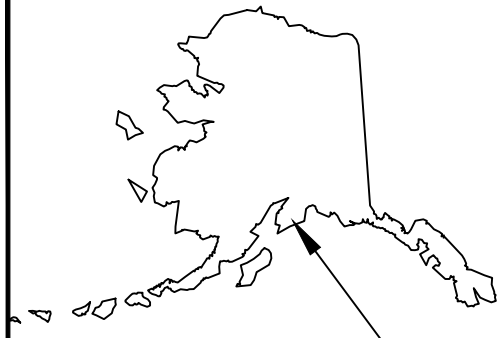


# ALASKA RAILROAD CORPORATION

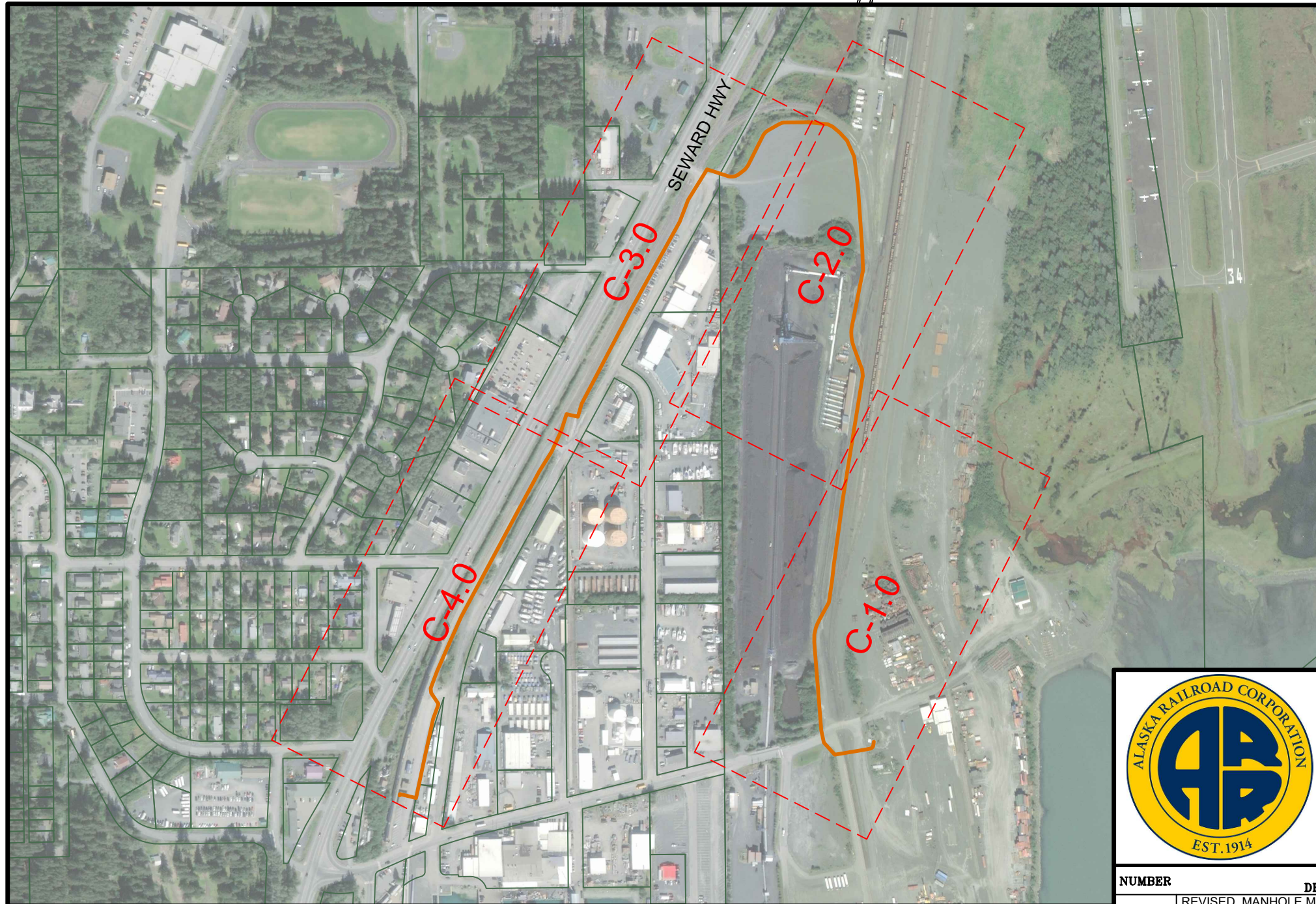
## ITG FTTB

### SEWARD ALASKA

### P.O.# 117533



PROJECT LOCATION  
SEWARD



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ISSUED FOR CONSTRUCTION 06/12/2020



**TempTel, Inc.**  
A Subsidiary of Mid-State Consultants, Inc.

CUSTOMER PO#: 117533  
**ALASKA RAILROAD CORPORATION**  
**FIBER PROJECT**  
COVERSHEET

PROJECT NO: 20-135  
ADDITIONAL INFO: MILEPOST -  
SCALE: NTS DESIGNED BY: STW  
DRAWN BY: LEP CHECKED BY: STW

NUMBER	REVISION DESCRIPTIONS	DATE
REV1	REVISED MANHOLE MANUFACTURER G-2.0 & G2.1	19 JUNE 2020
REV2	ADDED BORES C-3.0 & C-4.0 AND TABBING UPDATED	07 JULY 2020
REV3	REVISED NOTES, ADJUSTED WL 7 AND BORE NEAR WL 4	15 JULY 2020

# G-1.0

SHEET: 1 OF 10

## DESIGN AND CONSTRUCTION GENERAL NOTES:



1. CALL 1-800-478-3121 FOR LOCATION OF OTHER UTILITIES PRIOR TO DIGGING. CAUTION BURIED POWER, GAS, TELEPHONE, COMMUNICATION, & HIGHWAY CONTROL. CABLES ARE KNOWN TO EXIST IN THE AREA TO BE EXCAVATED. NUMEROUS EXISTING UTILITIES MAY EXIST ALONG THE PROPOSED FOC ROUTE. EXISTING UTILITIES HAVE NOT BEEN DELINEATED ON THE PLAN SHEETS DUE TO THE UNRELIABILITY OF RECORD INFORMATION. VERIFY LOCATION BY OBTAINING UTILITY LOCATES PRIOR TO BEGINNING CONSTRUCTION. COORDINATE WITH FIELD ENGINEER ANY CONFLICTS BETWEEN PROPOSED FOC ALIGNMENT AND EXISTING UTILITIES. USE EXTREME CAUTION & WHEN REQUIRED, POTHOLE PRIOR TO COMMENCING WORK.
2. VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION. RECORD LOCATIONS AND CHANGES TO UTILITIES IN SURVEY NOTES AND ON AS-BUILT DRAWINGS.
3. CONDUIT SHALL BE CUT OFF ONE FOOT INSIDE EACH HANDHOLE. ENDS OF THE CONDUIT SHALL BE SEALED WITH A WATERPROOF BLANK PLUG WHICH CAN BE REMOVED. THE CONDUIT SHALL BE INSTALLED CENTERED ON THE ALIGNMENT AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL OBTAIN THE APPROVAL OF THE ENGINEER PRIOR TO DEVIATING FROM THE PLAN AND SHALL MAINTAIN A SET OF AS-BUILT RED LINE MARKUP DRAWINGS ON THE SITE. C.O.E. APPROVAL MUST BE OBTAINED PRIOR TO INCREASING WETLAND IMPACT. CONDUIT SPLICES BETWEEN HANDHOLES SHALL BE CONNECTED AND SEALED WITH COUPLERS AND SHRINK WRAP.
4. PLOWABLE UNDERGROUND UTILITY MARKING TAPE SHALL BE "SAFETY ALERT ORANGE", 5.0 MIL. THICK WITH A TENSILE STRENGTH OF 28 LB/IN (5,600PSI).
5. ONE CABLE OF 24 STRAND SINGLE MODE FIBER OPTIC CABLE SHALL BE INSTALLED IN THE 1 1/4" H.D.P.E. CONDUIT. THE FOC SHALL COME IN ONE CONTINUOUS LENGTH IN A SINGLE SPOOL. 100 FEET OF FOC SHALL BE COILED IN EACH INTERMEDIATE HANDHOLE OR AS SPECIFIED ON PLANS.
6. VERIFY THAT QUALITY ASSURANCE HAS MADE O.T.D.R. READINGS ON REEL BEFORE TAKING TO THE FIELD. IF REQUIRED.
7. DURING FIGURE EIGHT OPERATIONS USE CAUTION TO ENSURE THAT MINIMUM RADIUS IS NOT VIOLATED, THAT KINKING DOES NOT OCCUR, AND THAT THE CABLE IS NOT CRUSHED. DO NOT LEAVE GROUND LAID F.O.C. UNATTENDED!!! BENDING RADIUS OF FIBER OPTIC CABLE VARIES PER TYPE OF FIBER OPTIC CABLE.
8. TRENCH FOR THE DUCT SHALL BE EXCAVATED OR PLOWED WITH A MINIMUM OF 42 INCHES COVER PROVIDED OVER THE TOP OF THE DUCT. UNDERGROUND UTILITY MARKING TAPE SHALL BE INSTALLED APPROXIMATELY ONE FOOT BELOW THE GROUND SURFACE (± 6 INCHES). WHEN ROCK IS ENCOUNTERED IT SHALL BE SAWN OR RIPPED TO A DEPTH OF 16 INCHES AND 2 INCHES OF SAND BEDDING INSTALLED UNDER THE DUCT AND 2 INCHES OF SAND BACK FILL PLACED OVER THE DUCT. ROAD AND RAILROAD CROSSINGS, AND UNSTABLE AREAS WILL REQUIRE A MINIMUM OF 48 INCHES OF COVER FROM THE DUCT TO THE TOE OF THE EMBANKMENT OR GROUND SURFACE. SEE DRAWINGS AND DETAILS FOR ADDITIONAL REQUIREMENTS.
9. AT ALL TRENCHED ROAD CROSSINGS, THE EXCAVATED NATIVE SOIL MAY BE PLACED BACK IN THE TRENCH AS BACK FILL IN 6 INCH LIFTS, COMPACTED TO 95% MINIMUM OF THE MAXIMUM STANDARD DENSITY, UNLESS DIRECTED OTHERWISE BY THE ENGINEER. TRENCHED EXCAVATIONS OUTSIDE OF ROAD PRISMS SHALL BE BACK FILLED WITH NATIVE MATERIAL IN 12 INCH LIFTS COMPACTED TO APPROXIMATELY 90% RELATIVE DENSITY. DO NOT DROP BACK FILL ONTO THE DUCT. SPLIT CONDUIT SHALL BE INSTALLED AT ROAD CROSSINGS. SEE DRAWINGS AND DETAILS FOR ADDITIONAL REMARKS.
10. BORING SHALL BE DONE BY CREWS AND EQUIPMENT APPROVED BY THE ENGINEER. THE BORE SHALL NOT DESCEND AT A RATE OF MORE THAN 30 DEGREES. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE A.D.E.C. REGULATIONS ON BORING AND THE USE OF BENTONITE. BORES OCCURRING UNDER ROAD OR RAILROAD PRISMS SHALL BE 4 FEET BELOW THE DITCH (TOE OF EMBANKMENT) BOTTOM FOR ROAD CROSSINGS. BORES OF EXISTING DRIVEWAYS/ROADS OF 50 FEET OR LESS MAY BE DONE WITH A "HOLE HOG" AND DO NOT REQUIRE HAND HOLES AT THEIR TERMINATION POINTS. BORES UNDER RIVERS SHALL BE MIN. 10' BELOW SCOUR LINE.
11. CABLE BORES SHALL BE ROUTED BELOW EXISTING UTILITY LINES. ALL UTILITY LINES LOCATES SHALL BE REQUESTED BY THE CONTRACTOR, AND THE DEPTH OF THE LINES SHALL BE DETERMINED BY POTHOLING OR FROM INFORMATION OBTAINED FROM THE LOCAL AGENCIES.
12. SIGN AND/OR FLAG WORK LOCATIONS WITHIN OR ADJACENT TO HIGHWAY/ROAD ROW IN ACCORDANCE WITH STATE & BOROUGH SAFETY PROCEDURES. TRAFFIC CONTROL & SAFETY PLANS WILL HAVE TO BE PREPARED BY THE CONTRACTOR & SUBMITTED TO ADOT FOR APPROVAL PRIOR TO START OF CONSTRUCTION.
13. TIE WRAP F.O.C. CABLE DESIGNATION TAGS IN EACH HAND HOLE OVER CABLE. MINIMUM 1 PER HOLE UNDER CLAMP IN AERIAL BUILD.
14. CONDUIT ENDS MUST BE CAPPED AT ALL TIMES, WITH BLANK PLUGS.
15. RETURN ALL EXCAVATED AREAS OR AREAS DISTURBED BY CONSTRUCTION BACK TO AS GOOD OR BETTER THAN ORIGINAL CONDITION. DO NOT DISTURB LOT PINS OR SURVEY MARKERS. ALL SURVEY STAKES & LATH PLACED BY THE CONTRACTOR ARE TO BE REMOVED AND CLEANED UP PRIOR TO COMPLETION OF CONSTRUCTION.
16. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITY WILL HAVE TO BE RESEEDDED.
17. SHORING & LADDERS WILL BE REQUIRED FOR ENTERING TRENCH, WHEN TRENCH DEPTH EXCEEDS MAXIMUMS ESTABLISHED BY STATE & OSHA.
18. DISTANCES AND STATIONING OF CONSTRUCTION WORK IS IN FEET.
19. STATIONING IS MEASURED ALONG CENTERLINE OF FOC.
20. MAINTAIN MINIMUM TWO FOOT HORIZONTAL & 18 INCH VERTICAL SEPARATION FROM SEWER & WATER LINES AT ANY POINT.
21. DISCHARGE OF SILT LADEN RUNOFF FROM THE JOB SITE IS FORBIDDEN.
22. MAINTAIN A SUPPLY OF OIL ABSORBENT FABRIC ON SITE TO CLEAN UP MINOR SPILLS.
23. KEEP SITE FREE OF LITTER.
24. MINIMIZE OFF-SITE VEHICLE TRACKING OF SEDIMENTS. WATER EXPOSED SOILS AS NECESSARY TO CONTROL GENERATION OF DUST.
25. THE INSPECTOR WILL INSPECT THE SITE PRIOR TO PLACING FILL AND AT REGULAR INTERVALS UNTIL COMPLETION OF THE WORK.
26. COMPACTION AND COMPACTION TESTS SHALL BE PERFORMED ON ALL FILL PLACED WITHIN PAVED ROAD PRISMS.
27. ALL CONSTRUCTION WILL MEET ALL APPLICABLE STATE OF ALASKA, CODES, RULES AND REGULATIONS.
28. DEWATERING MAY BE REQUIRED FOR EXCAVATIONS THAT PENETRATE THE GROUND SURFACE.
29. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE REGULATIONS FOR NOISE, HOURS OF OPERATION AND DUST CONTROL.
30. CONTAMINATED SOILS ARE NOT ANTICIPATED TO BE ENCOUNTERED THROUGHOUT THIS JOB. ANY CONTAMINATED SOILS WHICH ARE ENCOUNTERED ARE OUTSIDE THE SCOPE OF WORK FOR THIS PROJECT. IF CONTAMINATED SOILS ARE ENCOUNTERED, CEASE ANY EXCAVATION AND NOTIFY THE ENGINEER AT ONCE, WHO WILL THEN MAKE APPROPRIATE NOTIFICATION TO ADEC.
31. PLACE CARSONITE CABLE WARNING SIGNS AT ALL ROAD CROSSINGS AND AT 500 FEET INTERVALS ALONG FOC ROUTE AND AS SHOWN ON THE DETAILS.
32. THE MANHOLES ARE MANUFACTURED BY CHANNELL. THE MANHOLES ARE 30" BY 48" BY 36" HIGH, MODEL NUMBER BULK736N102 HDPE WITH DUCTILE IRON COVERS. MANHOLES ARE PROVIDED WITH CABLE RACKING. THE MANHOLE BODY HAS AN H-20 RATING PER AASHTO M306-10, BUT FEATURES A RATING OF 56,200 LBS WITH THE 3-PIECE DUCTILE IRON LID ASSEMBLY.

## UNITS & SUMMARY

UNIT NUMBER	UNIT DESCRIPTION
<b>BM92 1.25</b>	INNERDUCT, 1.25IN, BLK/ORG STRIPE
<b>BM92 1.25P</b>	INNERDUCT, 1.25IN, BLK/ORG STRIPE - HAND DIG
<b>UFO 24</b>	CABLE F/O 24 - Dbl Jkt, Sngl Armor, underground in conduit
<b>BM60 (3.5)</b>	BORED Duct Plastic, 3.5", (4" O.D.)
<b>UD 1.25-V</b>	2x1.25 INNERDUCT IN CONDUIT
<b>BM72 (SQFT)</b>	CUT AND PATCH ASPHALT, Labor for cut/remove
<b>BHF-2T KIT</b>	HANDHOLE 30x48x36IN, steel plate cover
*Includes BA 22	POST, WOOD, RECT, 3.5x4.5IN x 8FT
*Includes BM 11	MARKER, YLW, 4FT, CLAMPS
*Includes BM 53-1	SIGN WARNING F/O BURIED CABLE
*Includes blank sign	SIGN, BLANK, YELLOW, 4 Holes
<b>NEMA BOX</b>	36X48X12" STAINLESS STEEL NEMA BOX INCLUDES MOUNTING, DRILLING, LIQUIDTITE AND HARDWARE INSTALLATION
<b>BM 53-1</b>	SIGN WARNING F/O BURIED CABLE. PLACED EVERY 300FT BETWEEN HH LOCATIONS.

UNIT DESCRIPTION	BM92-1.25	BM92-1.25P	UFO 24	BM60 (3.5)	UD 1.25	BM72 (SQFT)	BHF-2T KIT	BM 53	NEMA BOX
<b>TOTAL</b>	4116	1570	7233	627	627	180	9	19	1

ISSUED FOR CONSTRUCTION 06/12/2020

		CUSTOMER PO#: 117533												
	<b>ALASKA RAILROAD CORPORATION FIBER PROJECT</b> UNIT SUMMARY AND GENERAL NOTES													
PROJECT NO:		20-135												
ADDITIONAL INFO:		MILEPOST -												
SCALE:	NTS	DESIGNED BY: STW												
DRAWN BY:	LEP	CHECKED BY: STW												
G-2.0		SHEET: 2 OF 10												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">NUMBER</th> <th style="text-align: left;">REVISION DESCRIPTIONS</th> <th style="text-align: left;">DATE</th> </tr> </thead> <tbody> <tr> <td>REV1</td> <td>REVISED MANHOLE MANUFACTURER G-2.0 &amp; G2.1</td> <td>19 JUNE 2020</td> </tr> <tr> <td>REV2</td> <td>ADDED BORES C-3.0 &amp; C-4.0 AND TABBING UPDATED</td> <td>07 JULY 2020</td> </tr> <tr> <td>REV3</td> <td>REVISED NOTES, ADJUSTED WL 7 AND BORE NEAR WL 4</td> <td>15 JULY 2020</td> </tr> </tbody> </table>		NUMBER	REVISION DESCRIPTIONS	DATE	REV1	REVISED MANHOLE MANUFACTURER G-2.0 & G2.1	19 JUNE 2020	REV2	ADDED BORES C-3.0 & C-4.0 AND TABBING UPDATED	07 JULY 2020	REV3	REVISED NOTES, ADJUSTED WL 7 AND BORE NEAR WL 4	15 JULY 2020	
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## ASSEMBLY DESCRIPTIONS:

### SECTION BM92 1.25

#### BURIED CONDUIT ASSEMBLY UNITS

CONSISTS OF ONE (1) FOOT (0.305 M) OF BURIED CONDUIT PLOWED OR TRENCHED IN PLACE. THIS UNIT INCLUDES ALL MATERIAL AND LABOR FOR INSTALLING, RIPPING (WHERE NECESSARY AS DETERMINED BY THE ENGINEER), AND BACKFILLING, EXCEPT AS SPECIFICALLY PROVIDED FOR IN OTHER UNITS. WHERE THE CABLE IS PLOWED, RIPPING MAY BE NECESSARY TO PROVIDE A RIPPED PATH TO ALLOW PLACEMENT AT THE REQUIRED DEPTH, AND MAY REQUIRE MORE THAN ONE RIPPED PASS. THIS UNIT ALSO CONSISTS OF SETTING UP THE CONDUIT WITHIN THE MANHOLE AND HANDHOLE, PLACING CONDUIT COUPLING SEALS OR PLUGS, ALL AS REQUIRED IN ACCORDANCE WITH THE DETAILED PLANS AND SPECIFICATIONS. THIS UNIT INCLUDES ALL MATERIAL AND LABOR REQUIRED IN THE REPAIR AND/OR REPLACEMENT OF STREETS, ROADS, SIDEWALKS, DRIVES, FENCES, LAWNS, SHRUBBERY, WATER MAINS, PIPES, PIPELINES AND CONTENTS, UNDERGROUND POWER AND TELECOMMUNICATIONS FACILITIES AND ANY OTHER PROPERTY DAMAGED BY THE EXCAVATING. THE CONDUIT IS CARLON PART NUMBER A6C6N1JNNA8000, 1-1/4" SMOOTH OUTSIDE AND INSIDE, ORANGE DUCT.

OPTIONS DESIGNATED BY THE FOLLOWING SUFFIXES APPLY:

<u>SUFFIX</u>	<u>DESCRIPTION</u>
<b>P</b>	PREDESIGNATED CONDUIT WILL BE MORE DIFFICULT TO INSTALL THAN NORMAL FOR THIS PROJECT BECAUSE OF THE PRESENCE OF UNDERGROUND FACILITIES OR SEVERE RIGHT-OF-WAY RESTRICTIONS. THIS SUFFIX WILL BE SPECIFIED ON THE CONSTRUCTION DRAWINGS IN ADVANCE OF BIDDING, AND WILL NOT BE SPECIFIED LATER UNLESS CHANGES IN THE PRESENCE OF UNDERGROUND UTILITIES, RIGHT-OF-WAY EASEMENT, OR ROUTE CHANGES OCCUR THAT WOULD, IN THE JUDGMENT OF THE ENGINEER, GREATLY INCREASE THE DIFFICULTY OF CONDUIT PLACEMENT. ALSO, THIS SUFFIX WILL BE SPECIFIED DURING CONSTRUCTION WHEN UNDOCUMENTED BURIED FACILITIES ARE ENCOUNTERED THAT, IN THE JUDGMENT OF THE ENGINEER, GREATLY INCREASE THE DIFFICULTY OF CONDUIT PLACEMENT.
<b>WSC</b>	SAW CUT TRENCH AND WINTER CONDUIT HDPE INSTALLATION.
<b>PF</b>	TRENCH AND CONDUIT HDPE INSTALLATION IN PERMAFROST.

### SECTION BHF-#

#### BURIED MANHOLE AND HANDHOLE ASSEMBLY UNITS

CONSISTS OF LABOR AND MATERIAL FOR ONE (1) BURIED MANHOLE/HANDHOLE INSTALLED IN PLACE, INCLUDING THE BASE, TOP COVER AND CABLE RACKING HARDWARE, AND GRAVEL. THE MANHOLE AND HANDHOLE SIZE, AMOUNT OF GRAVEL AND THE INSTALLATION SHALL BE AS SPECIFIED BY THE CONSTRUCTION DRAWINGS OR BY THE ENGINEER. THE MANHOLE/HANDHOLE ASSEMBLY UNIT SHALL BE USED ONLY IN AREAS OF NON-VEHICULAR TRAFFIC. WHEN REQUIRED FOR USE IN AREAS OF VEHICULAR TRAFFIC, THE MANHOLE/HANDHOLE SHALL BE RATED TO WITHSTAND VEHICULAR TRAFFIC. WHERE SPECIFIED, VEHICULAR TRAFFIC RATED MANHOLE/HANDHOLES SHALL BE SUFFIXED WITH THE LETTER "T".

THE MANHOLES ARE MANUFACTURED BY CHANNELL. THE MANHOLES ARE 30" BY 48" BY 36" HIGH, MODEL NUMBER BULK736N102 HDPE WITH DUCTILE IRON COVERS. MANHOLES ARE PROVIDED WITH CABLE RACKING. THE MANHOLE BODY HAS AN H-20 RATING PER AASHTO M306-10, BUT FEATURES A RATING OF 56,200 LBS WITH THE 3-PIECE DUCTILE IRON LID ASSEMBLY. MANHOLE MUST BE INSTALLED PER MANUFACTURERS INSTRUCTIONS.

THE ASSEMBLY UNITS ARE DEFINED AS FOLLOWS:

- BHF-3** BURIED SPLICE MANHOLE FOR FIBER OPTIC CABLE.
- BHF-2** BURIED HANDHOLE FOR FIBER OPTIC CABLE.
- BHF-2T** BURIED HANDHOLE FOR FIBER OPTIC CABLE WITH TRAFFIC RATED LID.

### UFO 24

#### FIBER OPTIC CABLE ASSEMBLY UNITS

CONSISTS OF ONE (1) FOOT (0.305 M) OF FIBER OPTIC CABLE INSTALLED IN UNDERGROUND CONDUIT AND MANHOLES OR HANDHOLES. THIS UNIT ALSO CONSISTS OF SETTING UP THE CABLE WITHIN THE MANHOLE, AND PLACING CABLE SUPPORTS AND CABLE RACK HOOKS, PULLING-IN CABLES, DUCT SEALS OR PLUGS, CABLE TAGS, MANHOLE CABLE RACKS, AND RODDING AND CLEANING OF DUCTS, ALL AS REQUIRED IN ACCORDANCE WITH THE DETAILED PLANS AND SPECIFICATIONS. THIS UNIT DOES NOT INCLUDE CABLE CLOSURE ASSEMBLY OR CABLE SPLICING. THEY WILL BE SPECIFIED SEPARATELY. FIBER OPTIC CABLE, CABLE SUPPORTS, CABLE RACKING, DUCT PLUGS, AND CONDUIT COUPLERS WILL BE PROVIDED BY THE CONTRACTOR. OPTIONS DESIGNATED BY THE FOLLOWING SUFFIXES APPLY:

<u>SUFFIX</u>	<u>DESCRIPTION</u>
<b>A</b>	200' CABLE COIL IN SPLICE MANHOLE
<b>B</b>	100' CABLE COIL IN HANDHOLE

EACH FIBER OPTIC CABLE ASSEMBLY UNIT IS LISTED IN ACCORDANCE WITH THE NUMBER OF OPTICAL FIBERS. EACH UNIT IS PREFIXED BY THE LETTERS UFO. THE FOLLOWING ILLUSTRATION INDICATES THE METHOD OF DESIGNATING THE MATERIAL REQUIRED. UFO 24 AN UNDERGROUND FILLED FIBER OPTIC CABLE WITH 24 FIBERS.

### SECTION BM#

#### MISCELLANEOUS ASSEMBLY UNITS

#### **BM53** WARNING SIGN ASSEMBLY UNIT

CONSISTS OF ONE (1) STAKED MOUNTED WARNING SIGN, IN PLACE AS SHOWN ON THE CONSTRUCTION DRAWINGS. THIS UNIT INCLUDES ALL LABOR AND MATERIAL TO INSTALL THE STAKE MOUNTED SIGN (SEE DETAIL DRAWING SPECIFIED BY THE ENGINEER). THE WARNING SIGN WILL BE PROVIDED BY THE CONTRACTOR.

#### **BM55** SPLICE LOCATION SIGN ASSEMBLY UNIT

CONSISTS OF ONE (1) STAKE MOUNTED SPLICE LOCATION SIGN, IN PLACE, AS SHOWN ON THE CONSTRUCTION DRAWINGS. THIS UNIT INCLUDES ALL LABOR AND MATERIAL TO INSTALL THE STAKE MOUNTED SIGN (SEE DETAIL DRAWING SPECIFIED BY THE ENGINEER). THE WARNING SIGN WILL BE PROVIDED BY THE CONTRACTOR.

#### **BM60( )** UNDERGROUND PIPE BORE ASSEMBLY UNIT

CONSISTS OF ONE (1) LINEAL FOOT (0.305 M) OF SDR11 HIGH DENSITY POLYETHYLENE PIPE (HDPE) PIPE, WITH THE INSIDE DIAMETER IN INCHES (METERS) SPECIFIED IN PARENTHESES, INSTALLED IN PLACE. THIS UNIT INCLUDES BORING, PUSHING OF PIPE AND ANY EXCAVATION, BACKFILLING AND TAMPING NECESSARY FOR THE INSTALLATION OF THE PIPE. THE PIPE SHALL BE INSTALLED AT THE DEPTH SPECIFIED BY THE ENGINEER. THE INSTALLED PIPE SHALL BE FREE OF ANY SHARP PROJECTIONS TO AVOID DAMAGE TO THE CONDUIT OR OUTER JACKET OF THE BURIED CABLE DURING ITS INSTALLATION IN THE PIPE. THE CONTRACTOR WILL BE COMPENSATED FOR LABOR AND MATERIAL FOR THE BURIED CONDUIT AND CABLE UNDER SEPARATE UNITS.

OPTIONS DESIGNATED BY THE FOLLOWING SUFFIXES APPLY:

<u>SUFFIX</u>	<u>DESCRIPTION</u>
<b>D</b>	DIRECTIONAL BORING REQUIRED.
<b>L</b>	LONG BORE GREATER THAN 400 FEET.
<b>R</b>	ROCK BORE

#### **BM65( )** GUARD ASSEMBLY UNIT

CONSISTS OF THE NECESSARY LABOR AND MATERIAL FOR INSTALLING ONE (1) LINEAL FOOT (0.305 M) OF SPLIT GALVANIZED STEEL GUARD. THE SECTIONS OF GUARD MAY BE STRAIGHT AND OR CURVED. THIS UNIT MAY BE USED AS ATTACHMENTS TO BRIDGES, ABUTMENTS, WALLS, ETC., AND ANY BELOW GROUND LOCATION. ALL HANGERS, BOLTS, AND OTHER ATTACHMENT HARDWARE ALONG WITH EXCAVATION, BACKFILLING, TAMPING, AND RESTORATION ARE INCLUDED AS PART OF THIS UNIT. THE DIAMETER OF THE GUARD SHALL BE INDICATED IN THE PARENTHESES. THE CONTRACTOR WILL BE COMPENSATED FOR LABOR AND MATERIAL FOR THE BURIED CABLE AND CONDUIT UNDER SEPARATE UNITS. (SEE DETAILED DRAWINGS AS SPECIFIED BY THE ENGINEER). WHERE A SPLIT PLASTIC GUARD IS REQUIRED, THE UNIT SHALL BE SUFFIXED BY THE LETTER "P".

#### **BM71** ROCK EXCAVATING UNIT

CONSISTS OF ONE (1) LINEAL FOOT (0.305 M) OF TRENCHING, BLASTING, SAWING, ETC., MEASURED PARALLEL TO THE SURFACE OF THE GROUND, IN ROCK, INCLUDING EXCAVATION, BACKFILLING AND TAMPING TO PLACE CABLE TO THE DEPTH SPECIFIED IN THE SPECIFICATIONS. THIS UNIT INCLUDES ALL MATERIAL AND LABOR REQUIRED IN THE REPAIR AND/OR REPLACEMENT OF STREETS, ROADS, SIDEWALKS, DRIVES, FENCES, LAWNS, SHRUBBERY, WATER MAINS, PIPES, PIPELINES AND CONTENTS, UNDERGROUND POWER AND TELECOMMUNICATIONS FACILITIES AND ANY OTHER PROPERTY DAMAGED BY THE EXCAVATING. THIS UNIT WILL BE SPECIFIED BY THE ENGINEER ONLY WHEN FIELD CONDITIONS AT THE SITE SHOW THE EXISTENCE OF ROCK TO A DEPTH REQUIRED BY THE SPECIFICATION, WHICH CANNOT BE TRENCHED, PLOWED OR RIPPED. IF EXTRA DEPTH IS REQUIRED, THE UNIT SHALL BE SUFFIXED BY "E( )", WHERE THE REQUIRED DEPTH IN ROCK SHALL BE SHOWN INSIDE THE PARENTHESES. THE CONTRACTOR WILL BE COMPENSATED FOR LABOR AND MATERIAL FOR THE BURIED CONDUIT AND CABLE UNDER SEPARATE UNITS.

#### **BM72** ASPHALT ASSEMBLY UNIT

CONSISTS OF LABOR AND MATERIAL NECESSARY TO REMOVE AND RESTORE ONE (1) LINEAL FOOT (0.305 M) OF ASPHALT PAVEMENT (WHERE THE REMOVAL DOES NOT NECESSITATE THE BREAKING UP OF CONCRETE) MEASURED ALONG THE ROUTE OF THE CABLE. ANY TRENCHING WHICH MAY BE NECESSARY FOR THE INSTALLATION OF BURIED CONDUIT IS INCLUDED IN THIS UNIT. ALL WORK SHALL BE PERFORMED AS REQUIRED IN ACCORDANCE WITH FEDERAL, STATE AND/OR LOCAL CONSTRUCTION STANDARDS IN EFFECT AT THE TIME OF BID DATE. (PURSUANT TO THESE FEDERAL, STATE AND/OR LOCAL STANDARDS, RESTORATION MAY INCLUDE THE USE OF ANY BASE AND SUB-BASE MATERIALS SUCH AS CONCRETE, CRUSHED STONE, ETC.). THE CONTRACTOR WILL BE COMPENSATED FOR LABOR AND MATERIAL FOR THE BURIED CABLE UNDER THE SEPARATE UNITS.

#### **BM73** CONCRETE ASSEMBLY UNIT

CONSISTS OF THE LABOR AND MATERIAL NECESSARY TO REMOVE AND RESTORE ONE (1) LINEAL FOOT (0.305 M) OF CONCRETE PAVEMENT (OR ANY COMBINATION OF CONCRETE PAVEMENT AND OTHER SURFACING MATERIAL) WHERE THE REMOVAL NECESSITATES THE BREAKING UP OF CONCRETE PAVEMENT, MEASURED ALONG THE ROUTE OF CABLE OR WIRE. ANY TRENCHING WHICH MAY BE NECESSARY FOR THE INSTALLATION OF BURIED CONDUIT IS INCLUDED IN THIS UNIT. ALL WORK SHALL BE PERFORMED AS REQUIRED IN ACCORDANCE WITH FEDERAL, STATE AND/OR LOCAL CONSTRUCTION STANDARDS IN EFFECT AT THE TIME OF BID DATE. (PURSUANT TO THESE FEDERAL, STATE AND/OR LOCAL STANDARDS, RESTORATION MAY INCLUDE THE USE OF ANY BASE AND SUB-BASE MATERIALS SUCH AS CONCRETE, CRUSHED STONE, ETC.) THE CONTRACTOR WILL BE COMPENSATED FOR LABOR AND MATERIAL FOR THE BURIED CONDUIT AND CABLE SEPARATE UNITS.

#### **BM74** TREE AND BRUSH CLEARING UNIT

THIS UNIT INCLUDES:



CLEARING OF RIGHT-OF-WAY. (THE ENGINEER WILL BE RESPONSIBLE FOR SPECIFYING ANY SPECIAL CONDITIONS OR INSTRUCTIONS CONCERNING THE RIGHT-OF-WAY CLEARING ON THE CONSTRUCTION DRAWINGS). THE CLEARING WIDTH SHALL BE OF SUFFICIENT WIDTH FOR THE OPERATION OF THE CABLE PLOWING AND CABLE REEL INSTALLATION EQUIPMENT, WITH A MINIMUM CLEARING WIDTH OF 12 FEET. DISRUPTION OF THE GROUND SURFACE SHALL BE KEPT TO A MINIMUM AND THE CABLE PLOWING OPERATION WILL FOLLOW THE TERRAIN OF THE EXISTING GROUND. GRUBBING OF ROOTS SHALL NOT BE ALLOWED UNDER THIS UNIT TO PROTECT THE GROUND SURFACE.

**NOTE 1:** TREES THAT ARE FELLED THAT ARE 6" DIAMETER AT BREAST HEIGHT OR GREATER SHALL BE CUT TO 8 FOOT LENGTHS AND STACKED ON THE SIDE OF THE RIGHT-OF-WAY FOR THE LANDOWNER.

**NOTE 2:** TREES LESS THAN 6", BRUSH, BRANCHES, AND REFUSE FROM THE CLEARING OPERATIONS SHALL BE MECHANICALLY CLEARED WITH A HYDRO AX OR CHIPPER AND DISPOSED OF BY THE FOLLOWING METHODS AS DIRECTED BY THE ENGINEER.

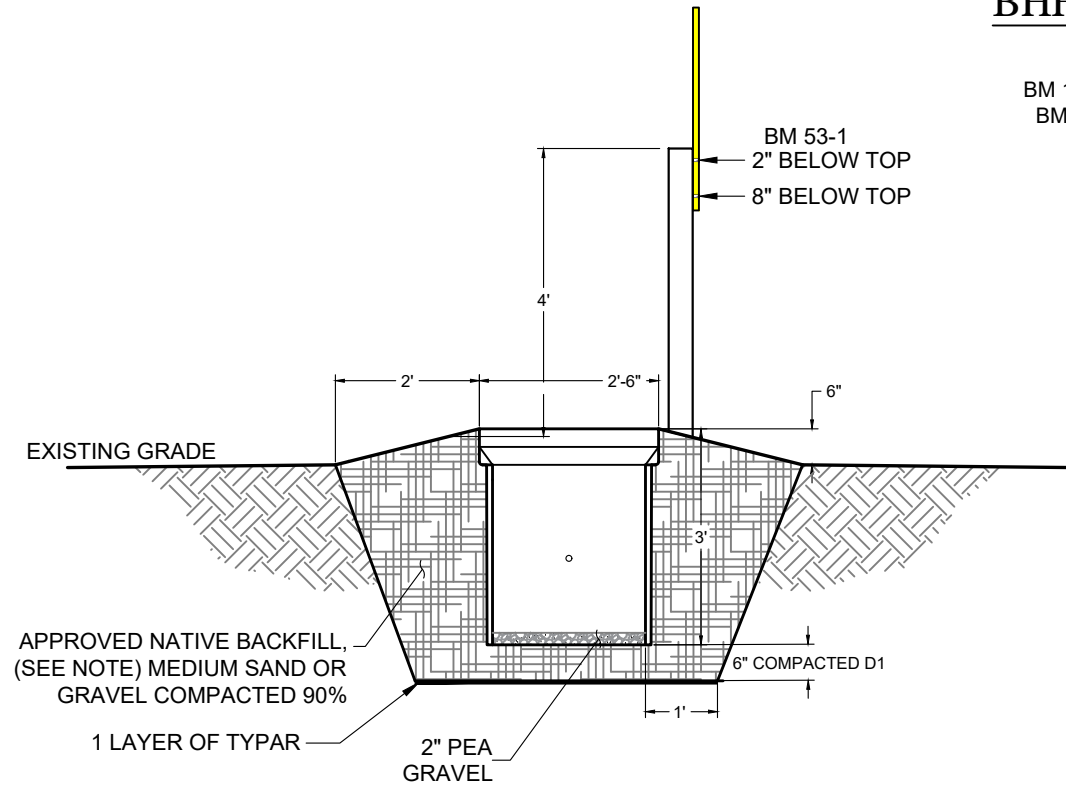
<u>CODE</u>	<u>DISPOSITION</u>
<b>A</b>	CHIPPED OR MECHANICALLY CLEARED WITH A HYDRO AX.
<b>B</b>	REMOVED FROM THE VICINITY OF THE RIGHT-OF-WAY.
<b>C</b>	PILED ON ONE SIDE OF THE RIGHT-OF-WAY IN SUCH MANNER AS TO NOT OBSTRUCT ROADS, DITCHES, ETC..

ISSUED FOR CONSTRUCTION 06/12/2020

		CUSTOMER PO#: 117533  <b>ALASKA RAILROAD CORPORATION</b> <b>FIBER PROJECT</b> ASSEMBLY DESCRIPTIONS												
	PROJECT NO: 20-135 ADDITIONAL INFO: MILEPOST - SCALE: NTS    DESIGNED BY: STW DRAWN BY: LEP    CHECKED BY: STW													
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">NUMBER</th> <th style="text-align: left;">REVISION DESCRIPTIONS</th> <th style="text-align: left;">DATE</th> </tr> </thead> <tbody> <tr> <td>REV1</td> <td>REVISED MANHOLE MANUFACTURER G-2.0 &amp; G2.1</td> <td>19 JUNE 2020</td> </tr> <tr> <td>REV2</td> <td>ADDED BORES C-3.0 &amp; C-4.0 AND TABBING UPDATED</td> <td>07 JULY 2020</td> </tr> <tr> <td>REV3</td> <td>REVISED NOTES, ADJUSTED WL 7 AND BORE NEAR WL 4</td> <td>15 JULY 2020</td> </tr> </tbody> </table>		NUMBER	REVISION DESCRIPTIONS	DATE	REV1	REVISED MANHOLE MANUFACTURER G-2.0 & G2.1	19 JUNE 2020	REV2	ADDED BORES C-3.0 & C-4.0 AND TABBING UPDATED	07 JULY 2020	REV3	REVISED NOTES, ADJUSTED WL 7 AND BORE NEAR WL 4	15 JULY 2020	<div style="font-size: 2em; font-weight: bold;">G-2.1</div> SHEET: 3 OF 10
NUMBER	REVISION DESCRIPTIONS	DATE												
REV1	REVISED MANHOLE MANUFACTURER G-2.0 & G2.1	19 JUNE 2020												
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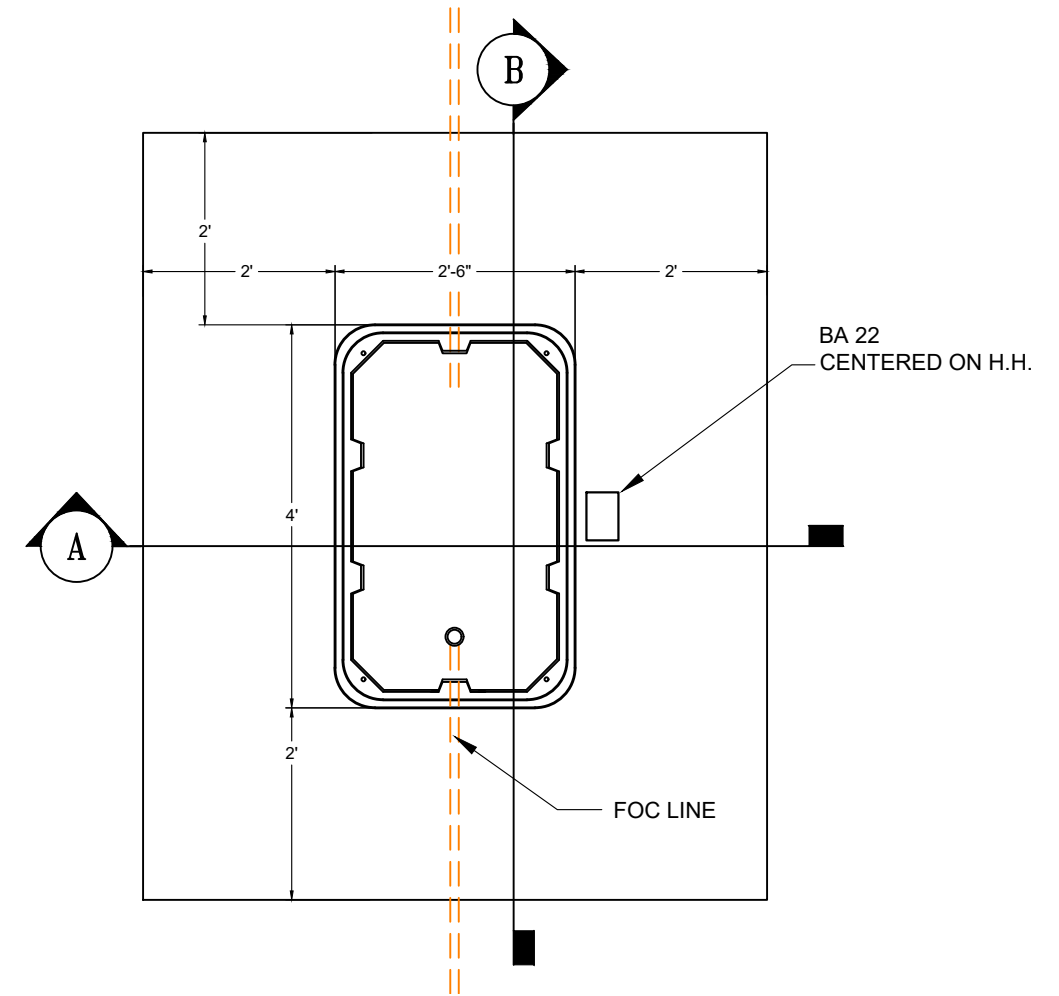
# BHF-2T KIT DETAIL

BHF-2T KIT INCLUDES  
 BA 22 WOOD POST  
 BM 11 YELLOW SNOW MARKER  
 BM 53 BLANK SIGN PLACARD

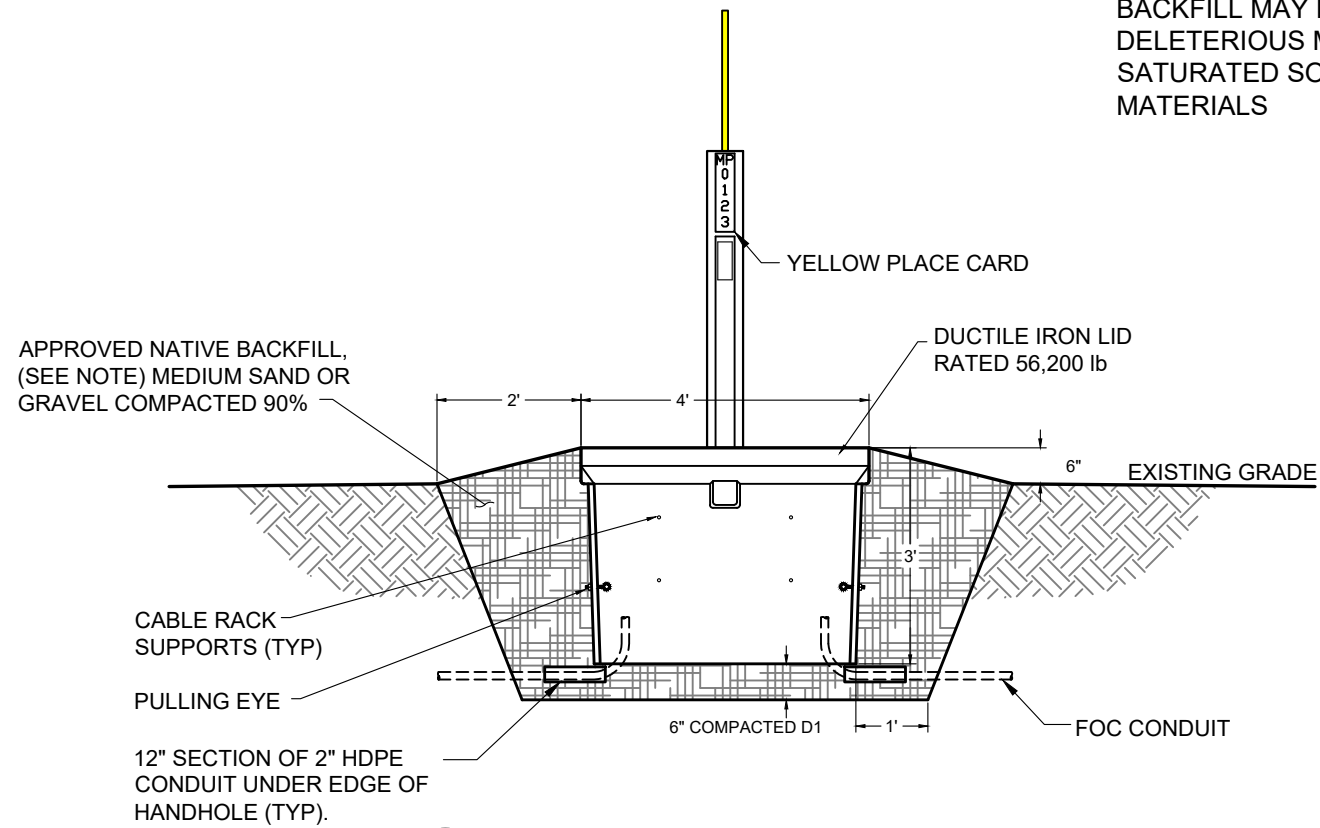


**A** HDPE HANDHOLE SECTION SIDE VIEW  
 SCALE: 3/8" = 1'-0"

**BACKFILL NOTE:**  
 BACKFILL MAY NOT CONTAIN ORGANICS OR OTHER  
 DELETERIOUS MATERIALS, SHALL NOT CONTAIN  
 SATURATED SOILS, AND SHALL BE FREE DRAINING  
 MATERIALS




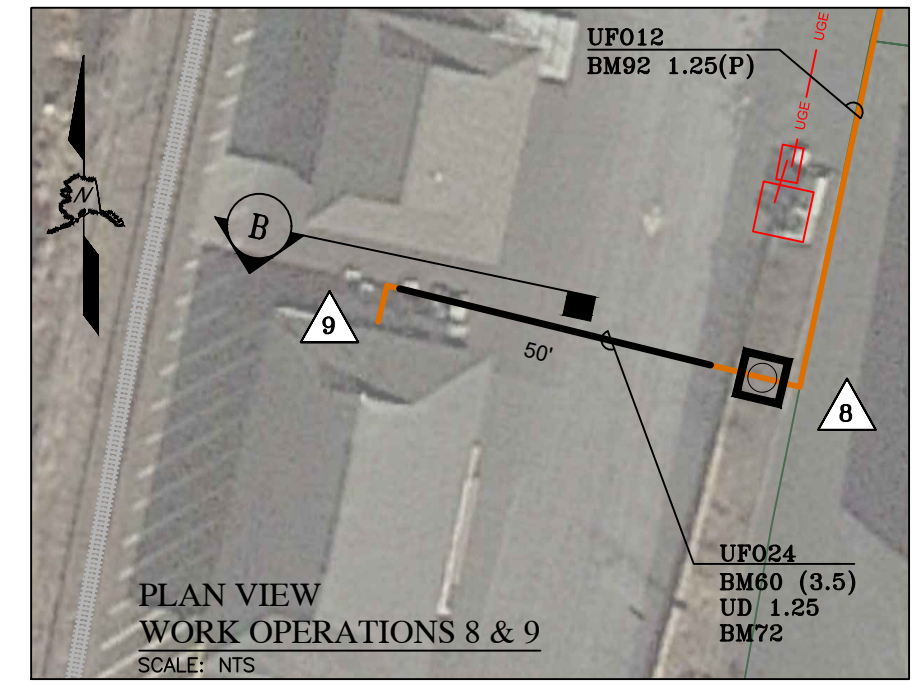
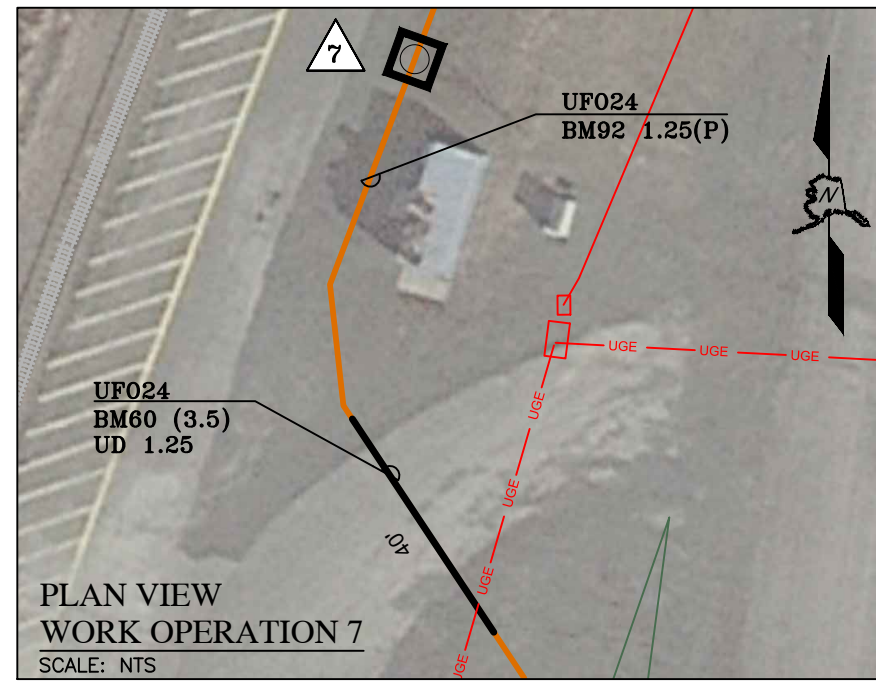
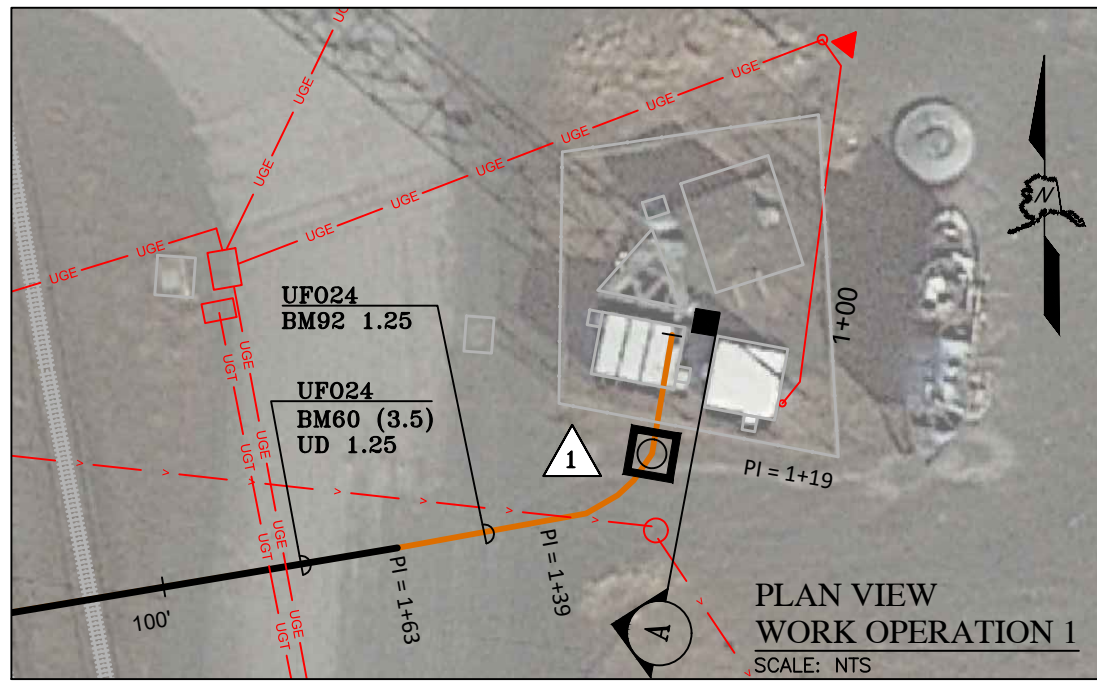
**1** HDPE HANDHOLE SECTION PLAN VIEW  
 SCALE: 1/2" = 1'-0"



**B** HDPE HANDHOLE SECTION FRONT VIEW  
 SCALE: 3/8" = 1'-0"

ISSUED FOR CONSTRUCTION 06/12/2020

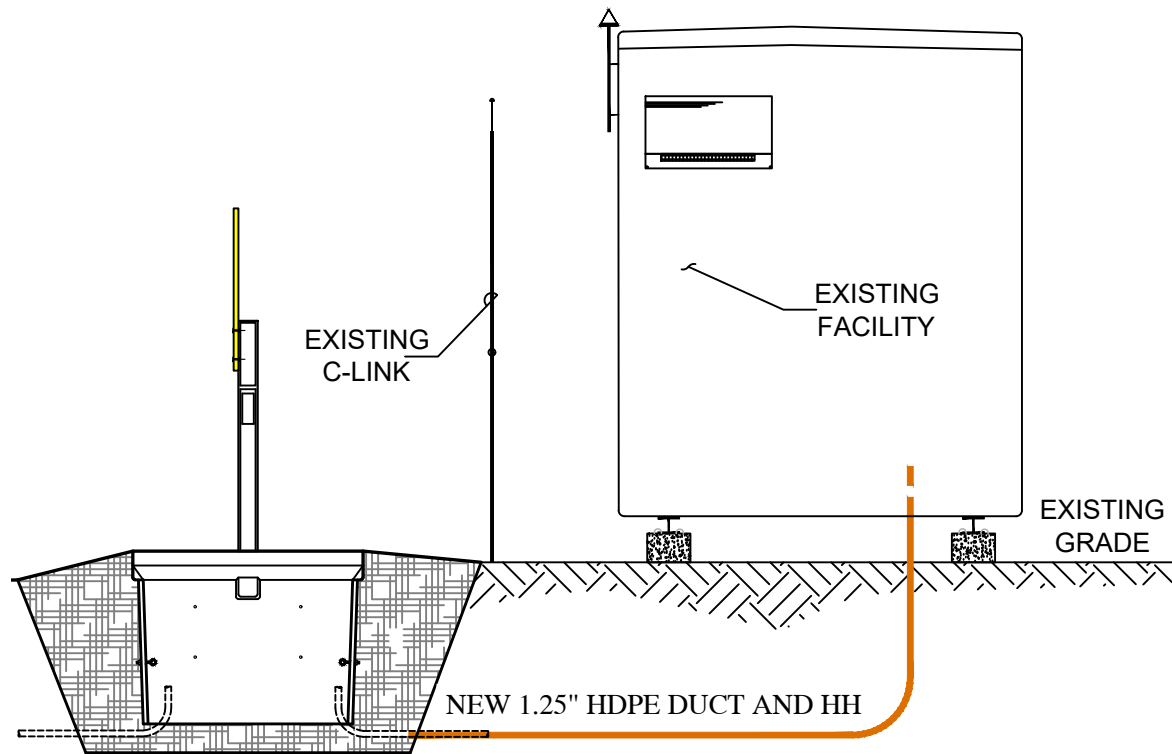
	CUSTOMER PO#: 117533 <b>ALASKA RAILROAD CORPORATION</b> <b>FIBER PROJECT</b> BHF-2 KIT DETAIL	
	PROJECT NO: 20-135 ADDITIONAL INFO: MILEPOST -	SCALE: NTS DESIGNED BY: STW DRAWN BY: LEP CHECKED BY: STW
NUMBER REVISION DESCRIPTIONS DATE		SHEET: <b>G-3.0</b> 4 OF 10
(Empty table for revisions)		



**\*\*CONSTRUCTION NOTE\*\***  
ROUTE 1.25" HDPE DUCT TO A THROUGH-FLOOR PENETRATION IN THE SOUTHEAST CORNER OF THE TELECOM HUT. HAND DIGGING REQUIRED IN THIS AREA.

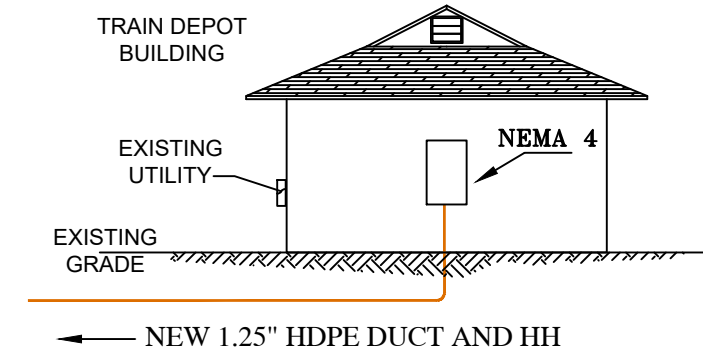
**\*\*CONSTRUCTION NOTE\*\***  
PLACE CABLE 5 FEET OFF EDGE OF PAVEMENT AND NO CLOSER THAN 5 FEET FROM EXISTING STRUCTURE NEAR WO 7.

**\*\*CONSTRUCTION NOTE\*\***  
WO 9 - INSTALL NEMA 4 BOX ON BUILDING WALL AND DRILL SERVICE ENTRANCE HOLE.





**A** EXISTING UTILITY ENTRY SIDE VIEW  
SCALE: N.T.S.

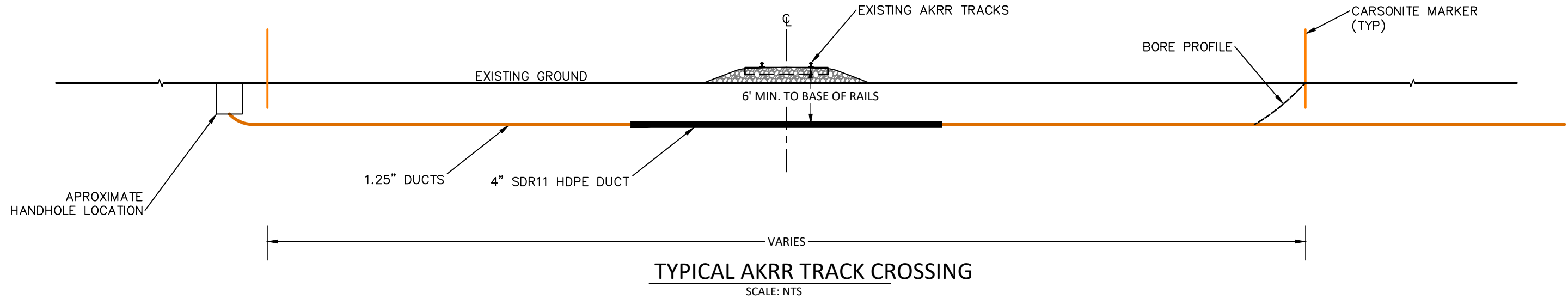
**\*\*CONSTRUCTION NOTE\*\***  
EXISTING BURIED UTILITIES ARE KNOWN TO BE IN THE PROJECT ROUTE, HOWEVER THE LOCATIONS ARE NOT KNOWN. CALL FOR LOCATES IN ADVANCE AND PROCEED WITH CAUTION.



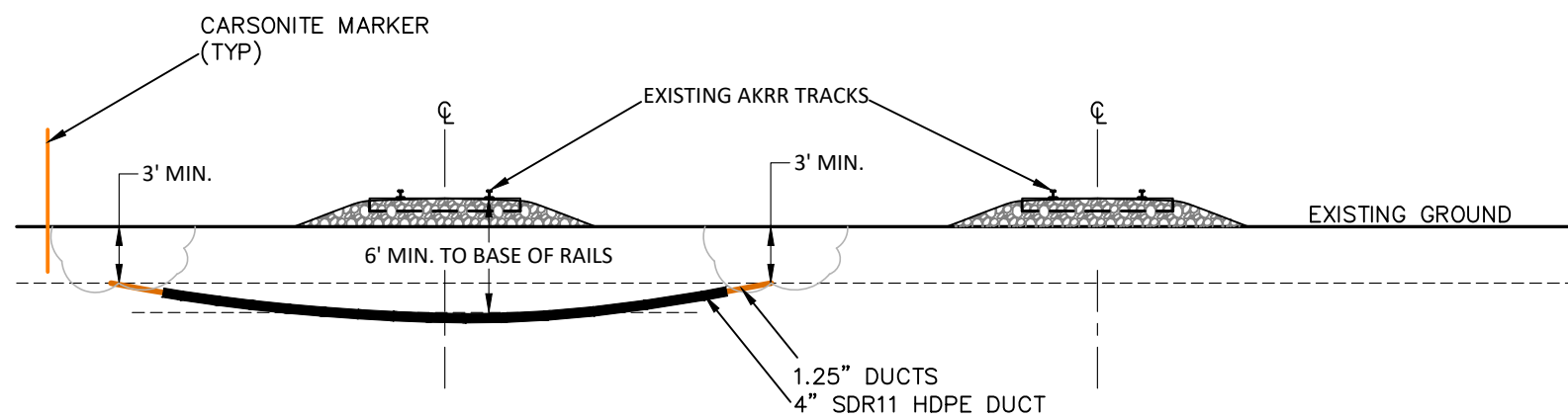
**B** NEMA PANEL INSTALL LOCATION SIDE VIEW  
SCALE: N.T.S.

ISSUED FOR CONSTRUCTION 06/12/2020

	CUSTOMER PO#: 117533 <b>ALASKA RAILROAD CORPORATION</b> <b>FIBER PROJECT</b> WORK OPERATION DETAILS													
	PROJECT NO: 20-135 ADDITIONAL INFO: MILEPOST - SCALE: NTS DRAWN BY: LEP DESIGNED BY: STW CHECKED BY: STW	SHEET: 6 OF 10												
	<b>G-4.0</b>													
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REV3	REVISED NOTES, ADJUSTED WL 7 AND BORE NEAR WL 4	15 JULY 2020												



**TYPICAL AKRR TRACK CROSSING**  
SCALE: NTS



**AKRR TRACK CROSSING  
@ APROX STA 18+98**  
SCALE: NTS

ISSUED FOR CONSTRUCTION 06/12/2020

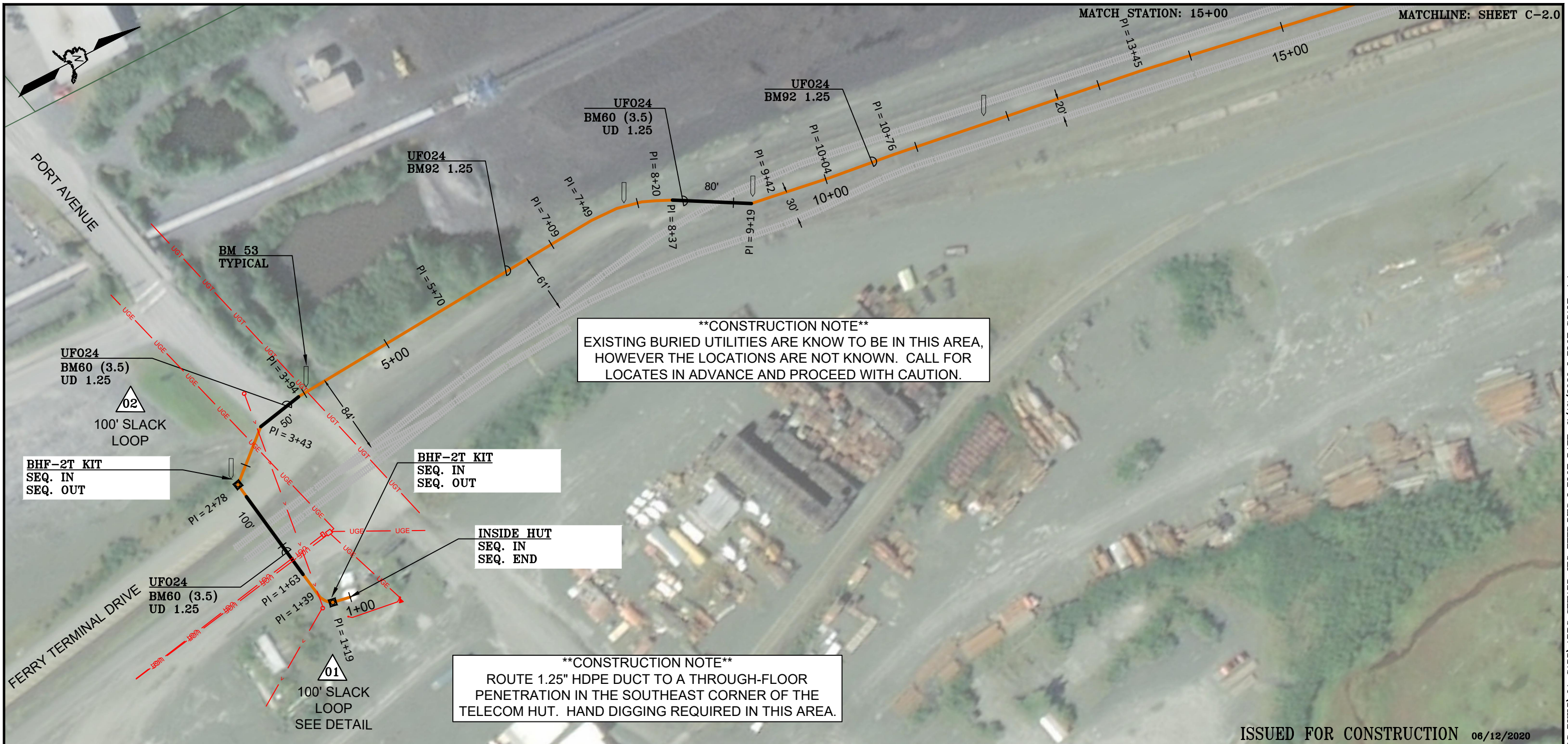


CUSTOMER PO#: 117533  
**ALASKA RAILROAD CORPORATION  
FIBER PROJECT**  
BURIED DETAIL

PROJECT NO: 20-135  
ADDITIONAL INFO: MILEPOST -  
SCALE: NTS DESIGNED BY: STW  
DRAWN BY: LEP CHECKED BY: STW

NUMBER	REVISION DESCRIPTIONS	DATE

**G-5.0**  
SHEET: 6 OF 10

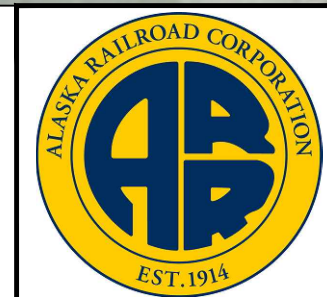


**\*\*CONSTRUCTION NOTE\*\***  
 EXISTING BURIED UTILITIES ARE KNOWN TO BE IN THIS AREA, HOWEVER THE LOCATIONS ARE NOT KNOWN. CALL FOR LOCATES IN ADVANCE AND PROCEED WITH CAUTION.

**\*\*CONSTRUCTION NOTE\*\***  
 ROUTE 1.25" HDPE DUCT TO A THROUGH-FLOOR PENETRATION IN THE SOUTHEAST CORNER OF THE TELECOM HUT. HAND DIGGING REQUIRED IN THIS AREA.

ISSUED FOR CONSTRUCTION 06/12/2020

UNIT DESCRIPTION	BM92-1.25	BM92 -1.25P	UFO 24	BM60 (3.5)	UD 1.25	BM72 (SQFT)	BHF-2T KIT	BM 53	NEMA BOX				
1 ▲	0	19	119	0	0	0	1	0	0				
2 ▲	59	0	259	100	100	0	1	0	0				
▲													
▲													
▲													
<b>TOTALS</b>	59	19	378	100	100	0	2	0	0				



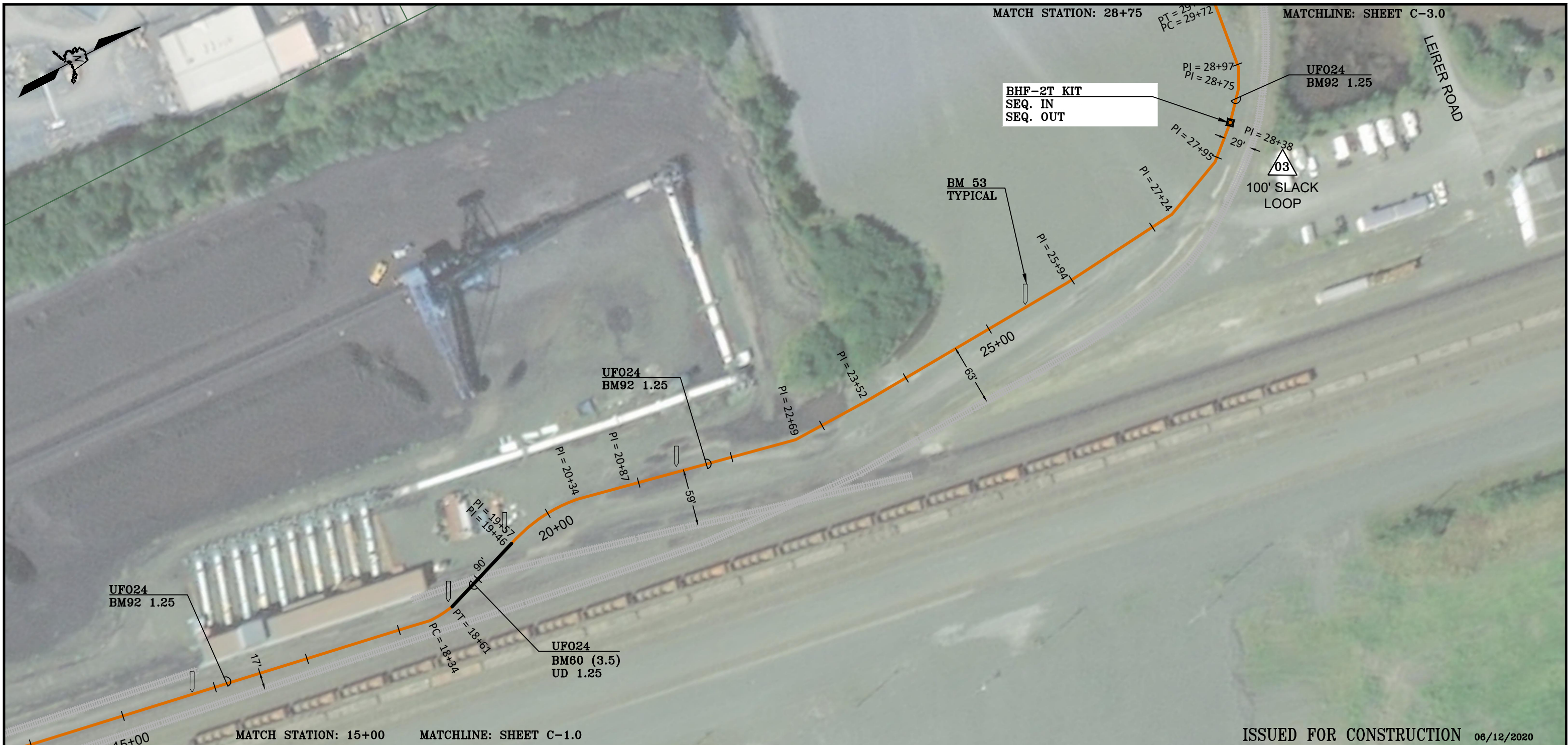
CUSTOMER PO#: 117533  
**ALASKA RAILROAD CORPORATION**  
**FIBER PROJECT**  
 STAKING

PROJECT NO: 20-135  
 ADDITIONAL INFO: MILEPOST -  
 SCALE: 1"=100' DESIGNED BY: STW  
 DRAWN BY: LEP CHECKED BY: STW

NUMBER	REVISION DESCRIPTIONS	DATE
REV1	REVISED MANHOLE MANUFACTURER G-2.0 & G2.1	19 JUNE 2020
REV2	ADDED BORES C-3.0 & C-4.0 AND TABBING UPDATED	07 JULY 2020
REV3	REVISED NOTES, ADJUSTED WL 7 AND BORE NEAR WL 4	15 JULY 2020

**C-1.0**  
 SHEET: 7 OF 10

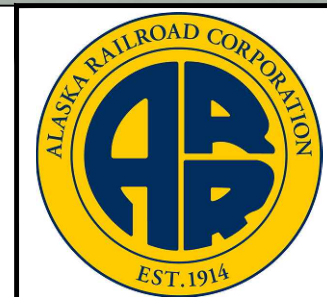
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MATCH STATION: 15+00 MATCHLINE: SHEET C-1.0

ISSUED FOR CONSTRUCTION 06/12/2020

UNIT DESCRIPTION	BM92-1.25	BM92 -1.25P	UFO 24	BM60 (3.5)	UD 1.25	BM72 (SQFT)	BHF-2T KIT	BM 53	NEMA BOX				
3 ▲	2340	0	2660	220	220	0	1	10	0				
▲													
▲													
▲													
▲													
<b>TOTALS</b>	2340	0	2660	220	220	0	1	10	0				



NUMBER	REVISION DESCRIPTIONS	DATE
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CUSTOMER PO#: 117533

**ALASKA RAILROAD CORPORATION  
FIBER PROJECT**

STAKING

PROJECT NO: 20-135

ADDITIONAL INFO: MILEPOST -

SCALE: 1"=100' DESIGNED BY: STW

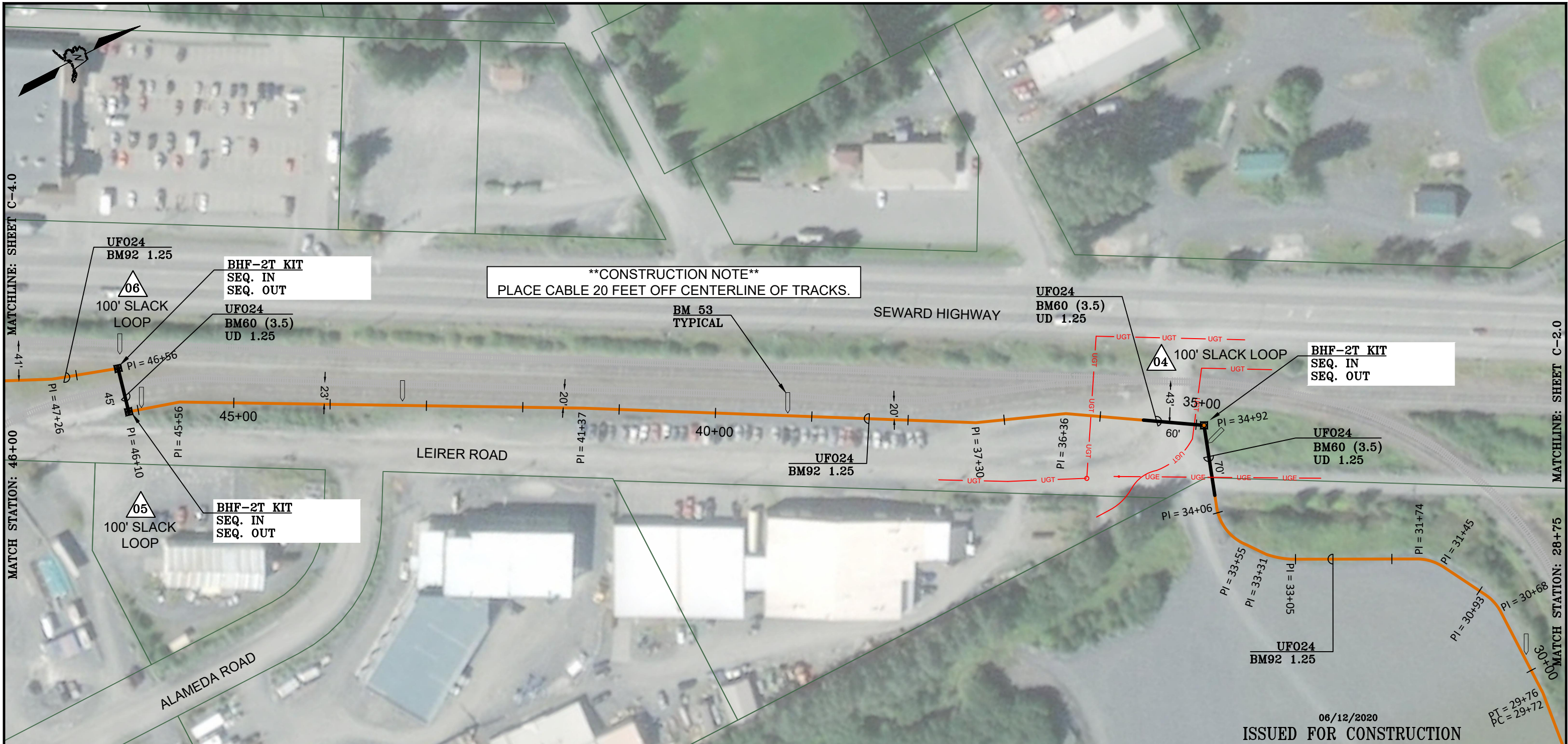
DRAWN BY: LEP CHECKED BY: STW

C-2.0

SHEET: 8 OF 10

FILE: F:\TEMPTEL\20-135 ARRC SEWARD ITG FOC BUILD\01-CADD\ARRC SEWARD\_ITG\_FTTB.DWG I PLOT DATE: 7/17/2020 I PLOT SCALE: 1:1





MATCHLINE: SHEET C-4.0

MATCHLINE: SHEET C-2.0

06/12/2020  
ISSUED FOR CONSTRUCTION

REA	BM92-1.25	BM92 -1.25P	UFO 24	BM60 (3.5)	UD 1.25	BM72 (SQFT)	BHF-2T KIT	BM 53	NEMA BOX			
4 ▲	584	0	754	70	70	0	1	2	0			
5 ▲	1074	0	1234	60	60	0	1	2	0			
6 ▲	0	0	147	47	47	0	1	0	0			
▲												
▲												
<b>TOTALS</b>	1658	0	2135	177	177	0	3	4	0			



CUSTOMER PO#: 117533  
**ALASKA RAILROAD CORPORATION**  
FIBER PROJECT  
STAKING

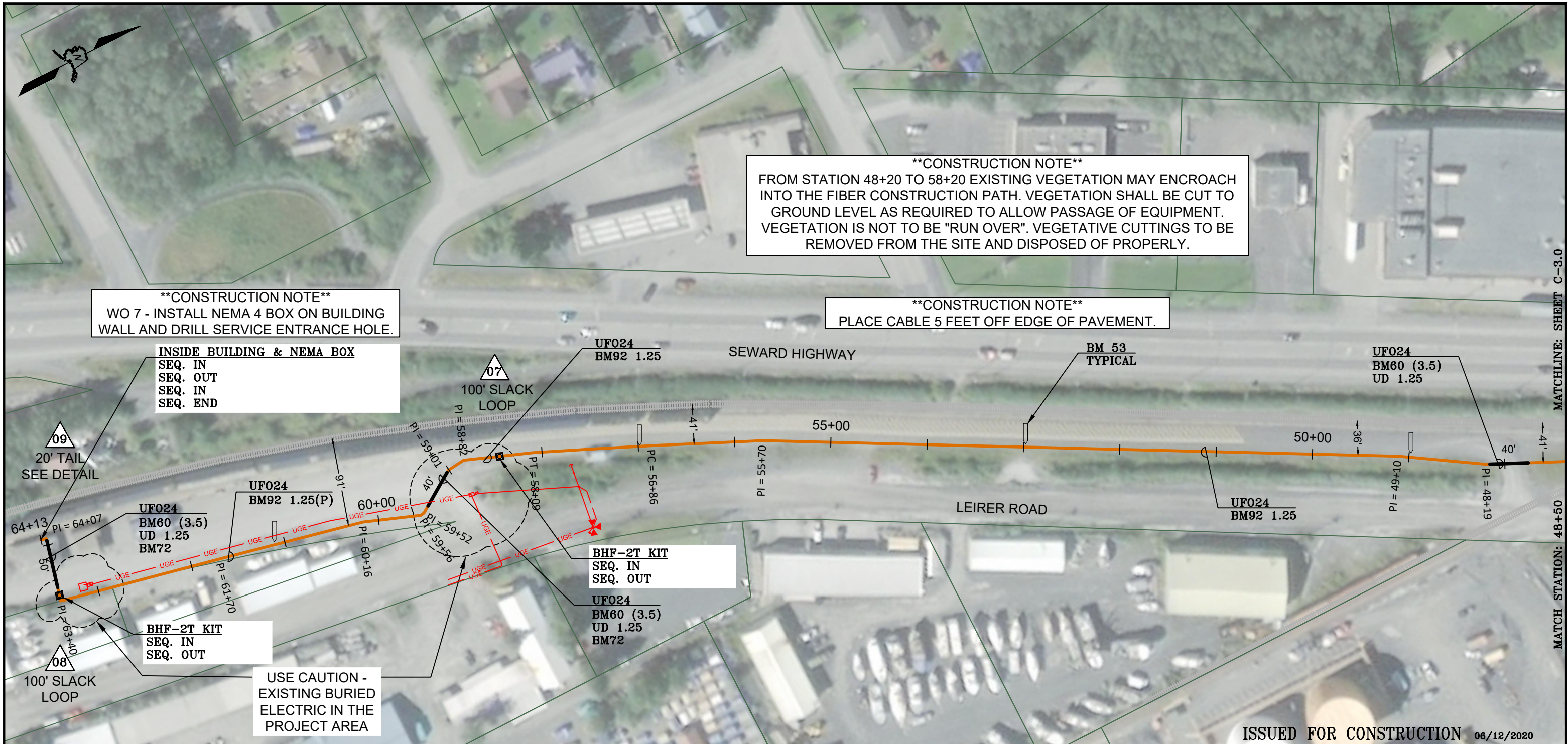
PROJECT NO: 20-135  
ADDITIONAL INFO: MILEPOST -  
SCALE: 1"=100' DESIGNED BY: STW  
DRAWN BY: LEP CHECKED BY: STW

NUMBER	REVISION DESCRIPTIONS	DATE
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C-3.0

SHEET: 9 OF 10

FILE: F:\TEMPTEL\20-135 ARRC SEWARD ITG FOC BUILD\01-CADD\ARRC SEWARD\_ITG\_FTB.DWG I PLOT DATE: 7/17/2020 I PLOT SCALE: 1:1



**\*\*CONSTRUCTION NOTE\*\***  
 FROM STATION 48+20 TO 58+20 EXISTING VEGETATION MAY ENCROACH INTO THE FIBER CONSTRUCTION PATH. VEGETATION SHALL BE CUT TO GROUND LEVEL AS REQUIRED TO ALLOW PASSAGE OF EQUIPMENT. VEGETATION IS NOT TO BE "RUN OVER". VEGETATIVE CUTTINGS TO BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.

**\*\*CONSTRUCTION NOTE\*\***  
 WO 7 - INSTALL NEMA 4 BOX ON BUILDING WALL AND DRILL SERVICE ENTRANCE HOLE.

**\*\*CONSTRUCTION NOTE\*\***  
 PLACE CABLE 5 FEET OFF EDGE OF PAVEMENT.

**INSIDE BUILDING & NEMA BOX**  
 SEQ. IN  
 SEQ. OUT  
 SEQ. IN  
 SEQ. END

**BHF-2T KIT**  
 SEQ. IN  
 SEQ. OUT

**BHF-2T KIT**  
 SEQ. IN  
 SEQ. OUT

USE CAUTION -  
 EXISTING BURIED  
 ELECTRIC IN THE  
 PROJECT AREA

ISSUED FOR CONSTRUCTION 06/12/2020

UNIT DESCRIPTION	BM92-1.25	BM92 -1.25P	UFO 24	BM60 (3.5)	UD 1.25	BM72 (SQFT)	BHF-2T KIT	BM 53	NEMA BOX				
7 ▲	0	1131	1271	40	40	0	1	4	0				
8 ▲	59	397	596	40	40	80	1	1	0				
9 ▲	0	23	193	50	50	100	1	0	1				
▲													
▲													
<b>TOTALS</b>	59	1551	2060	130	130	180	3	5	1				



NUMBER	REVISION DESCRIPTIONS	DATE
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CUSTOMER PO#: 117533  
**ALASKA RAILROAD CORPORATION**  
**FIBER PROJECT**  
 STAKING

PROJECT NO: 20-135  
 ADDITIONAL INFO: MILEPOST -  
 SCALE: 1"=100' DESIGNED BY: STW  
 DRAWN BY: LEP CHECKED BY: STW

**C-4.0**

SHEET: 10 OF 10

MATCHLINE: SHEET C-3.0  
 MATCH STATION: 48+50  
 FILE: F:\TEMPTEL\20-135 ARRC SEWARD ITG FOC BUILD\01-CADD\ARRC SEWARD\_ITG\_FTTB.DWG I PLOT DATE: 7/17/2020 I PLOT SCALE: 1:1