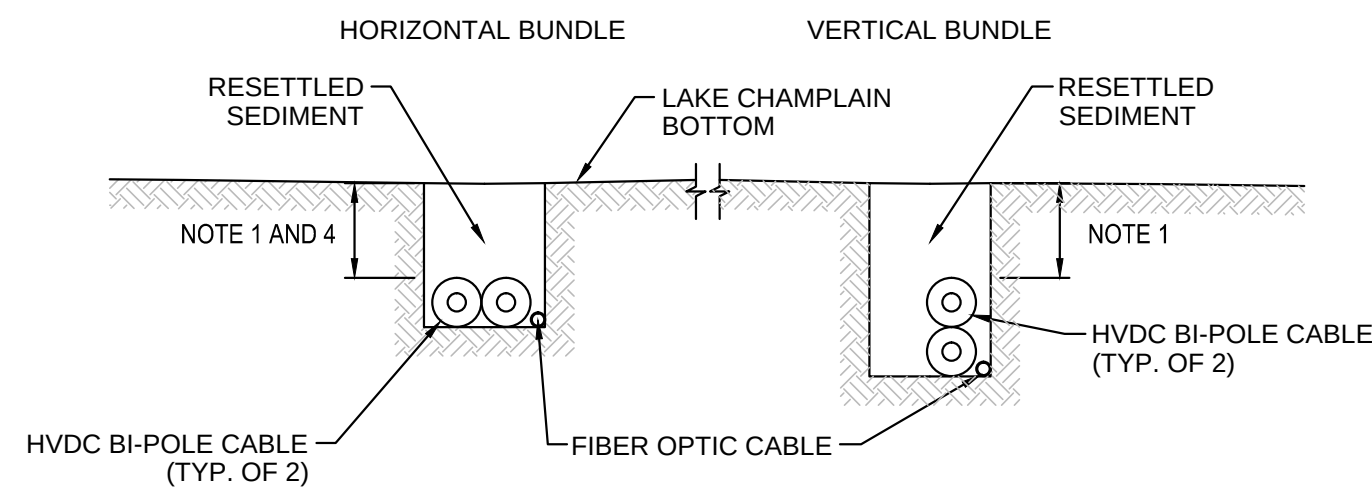
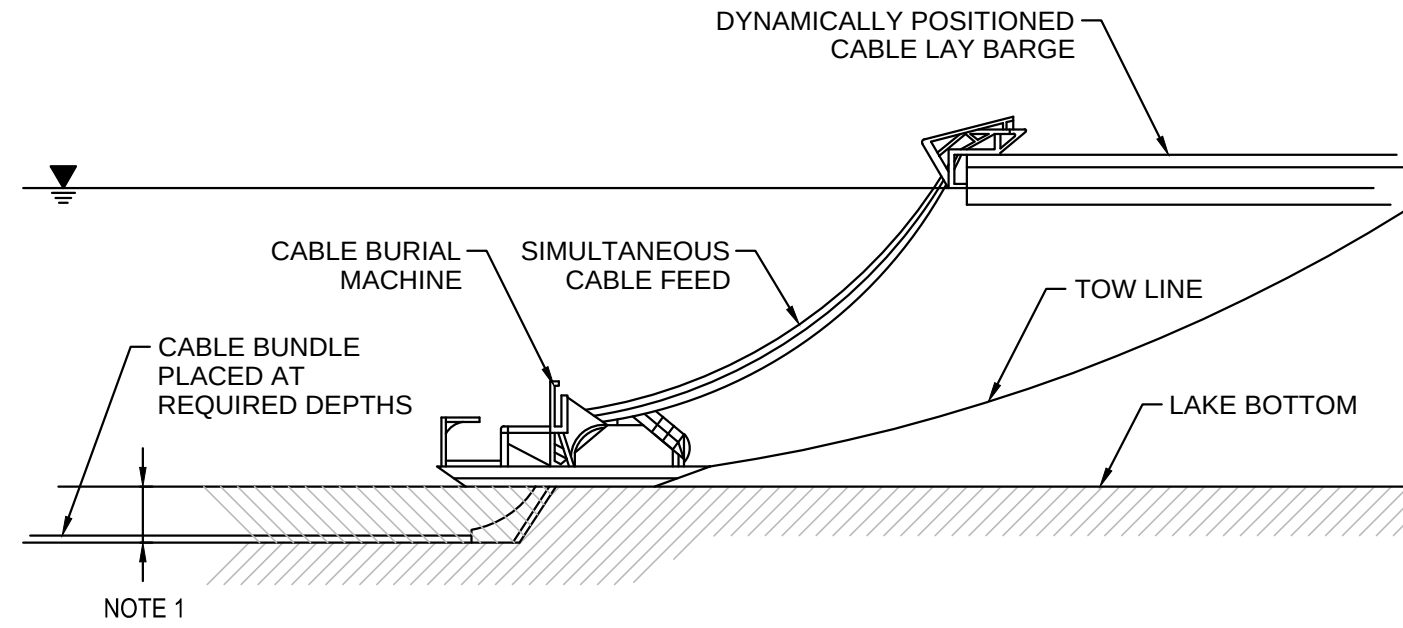




- NOTES**
- WHERE BOTTOM CONDITIONS PERMIT MINIMUM BURIAL DEPTH SHALL BE 3'-0" UNDER LAKE BOTTOM WITH WATER DEPTH OF LESS THAN 150 FT.
 - CABLE MAY BE SURFACE LAID IN WATER DEPTHS GREATER THAN 150'.
 - CABLE MAY BE BURIED IN EITHER A VERTICAL OR HORIZONTALLY CONFIGURED BUNDLE. VERTICAL CONFIGURATION IS GENERALLY ASSOCIATED WITH SHEAR OR JET PLOW BURIAL WHILE THE HORIZONTAL CONFIGURATION IS ASSOCIATED WITH MANUAL BURIAL OR SELF BURIAL.
 - IN WATER DEPTH OF 150 FT. AND GREATER CABLE WILL BE SURFACE LAID. ANALYSIS INDICATES THE CABLE WILL SINK TO DEPTHS OF ONE FOOT OR MORE IN BOTTOM SEDIMENTS.

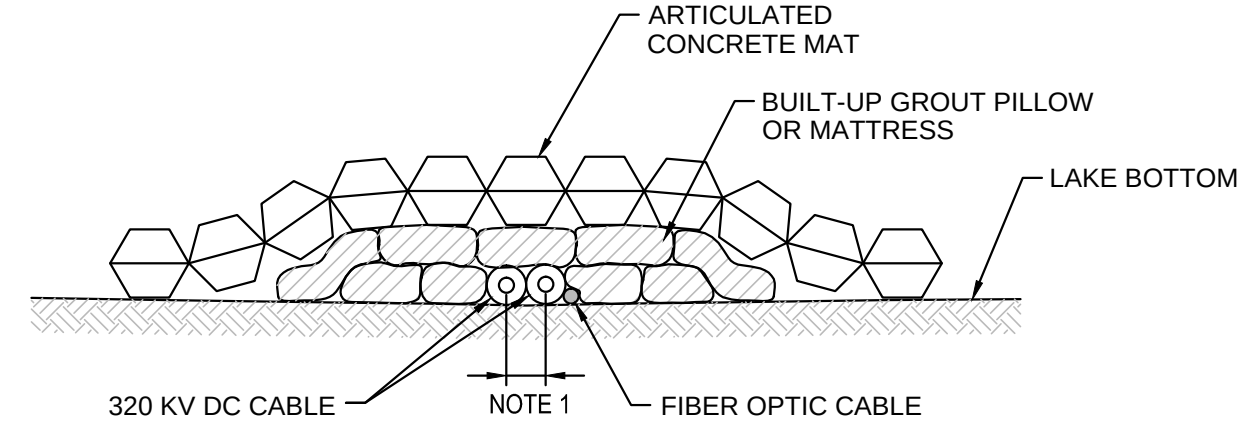
TYPICAL LAKE TRENCH SECTION
SCALE: N.T.S.



- NOTES**
- WHERE BOTTOM CONDITIONS PERMIT MINIMUM BURIAL DEPTH SHALL BE 3'-0" UNDER LAKE BOTTOM WITH WATER DEPTH OF LESS THAN 150 FT.
 - CABLE BURIAL MACHINE IS TYPICAL OF EQUIPMENT THAT MAY BE EMPLOYED. ACTUAL EQUIPMENT USED WILL BE DETERMINED BY THE EPC CONTRACTOR, SUBJECT TO PROJECT PERMIT RESTRICTIONS.

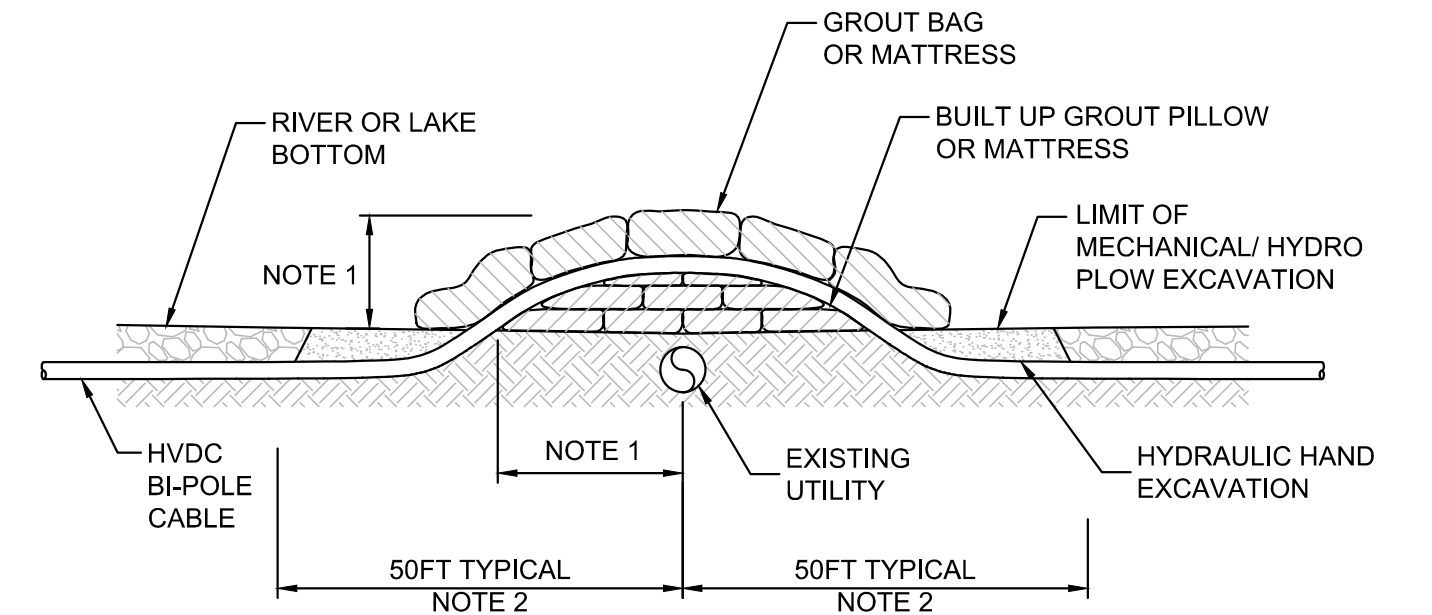
TYPICAL SHEAR PLOW/JET PLOW
SCALE: N.T.S.

**320KV DC CABLE NON-BURIAL CABLE INSTALLATION
USING ARTICULATED CONCRETE MAT PROTECTIVE COVERING**



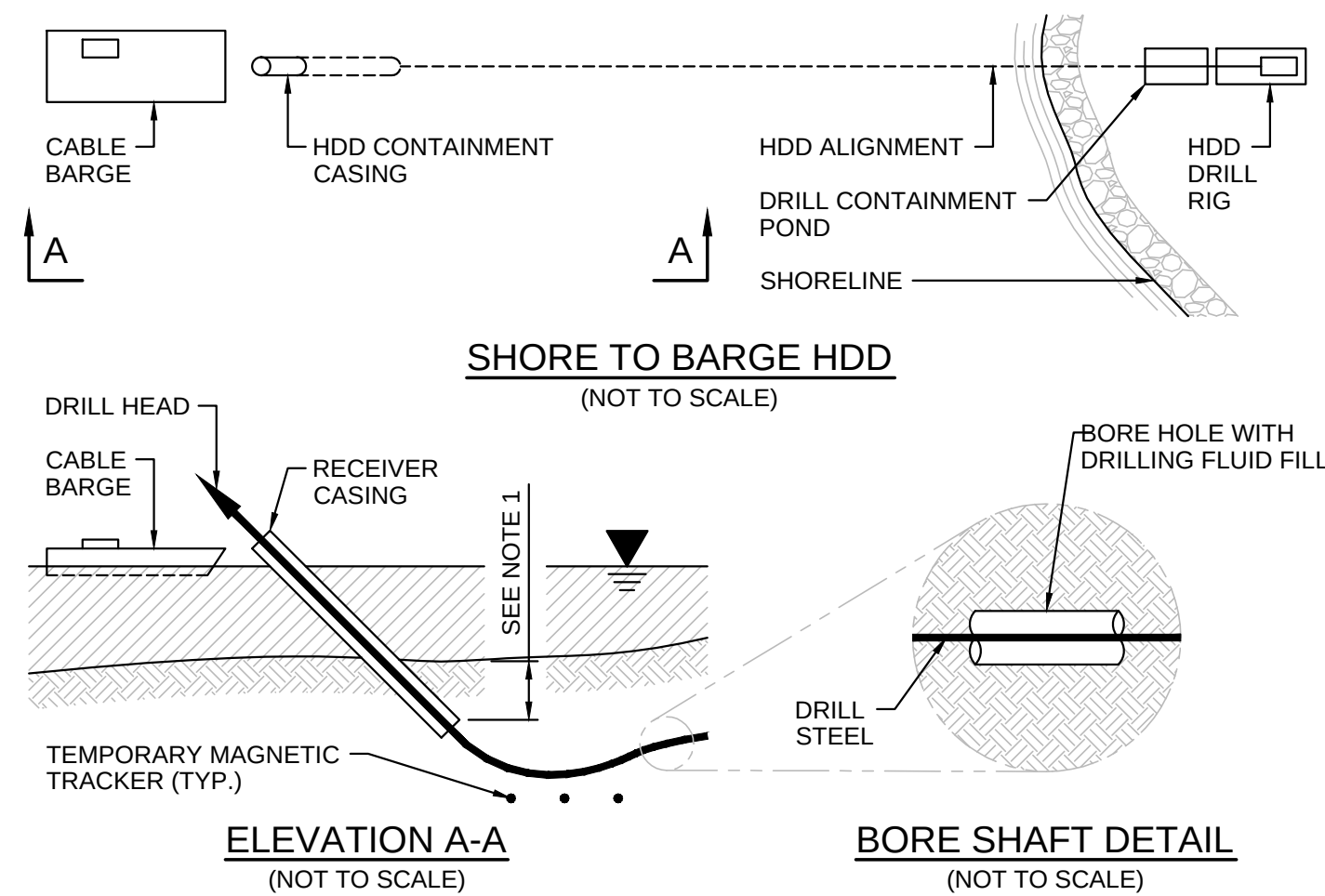
- NOTES**
- SPACE CABLE AS REQUIRED TO ENSURE PROPER SUPPORT OF GROUT PILLOWS WITHOUT UNDUE STRESS ON CABLE CASING. CABLE MAY BE IN DIRECT CONTACT.
 - BUILD UP PILLOWS AND MATTRESS WITH OVERLAPPING JOINTS (RUNNING BOND) AS NECESSARY TO BRIDGE OVER CONDUCTORS WITHOUT APPLYING UNDUE STRESS ON CONDUCTORS.
 - ARTICULATED CONCRETE MATS SHALL BE SUBMAR AS MANUFACTURED BY SLP PRE CAST, OR APPROVED EQUAL.

ARTICULATED CONCRETE MAT
SCALE: N.T.S.



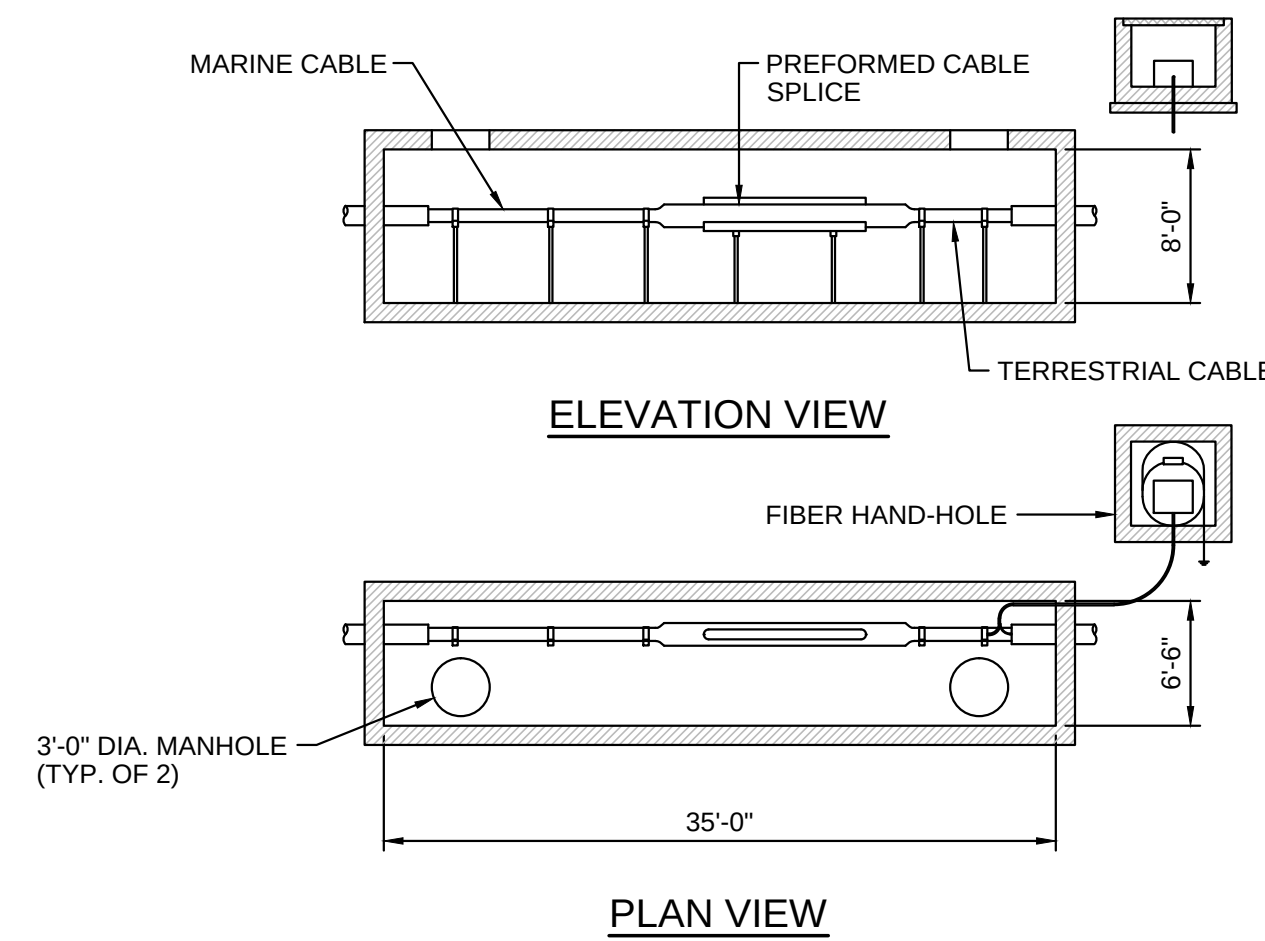
- NOTES**
- VARIABLES BASED ON STABILITY OF EXISTING BOTTOM SEDIMENT, UTILITY DIAMETER AND BEND RADIUS OF CABLE.
 - MECHANICAL PLOWING SHALL STOP/START 50FT MIN. ON EACH SIDE OF KNOWN UTILITY CROSSING. WHERE FEASIBLE, HVDC CABLE TRENCH WILL BE HAND EXCAVATED TO PROXIMITY OF EXISTING UTILITY. WHERE INFEASIBLE, HVDC CABLE WILL BE SURFACE LAID AND PROTECTED BY GROUT MATTRESSES, ARTICULATED MATS OR OTHER DEVICES.
 - WHERE CROSSING TAKES PLACE ON UNSTABLE SEDIMENT, ADDITIONAL SUPPORTS MAY BE PROVIDED. SUPPORTS MAY INCLUDE GROUT BAG STABILIZATION, RIP-RAP, PILES OR OTHER.

EXISTING UTILITY CROSSING
SCALE: N.T.S.



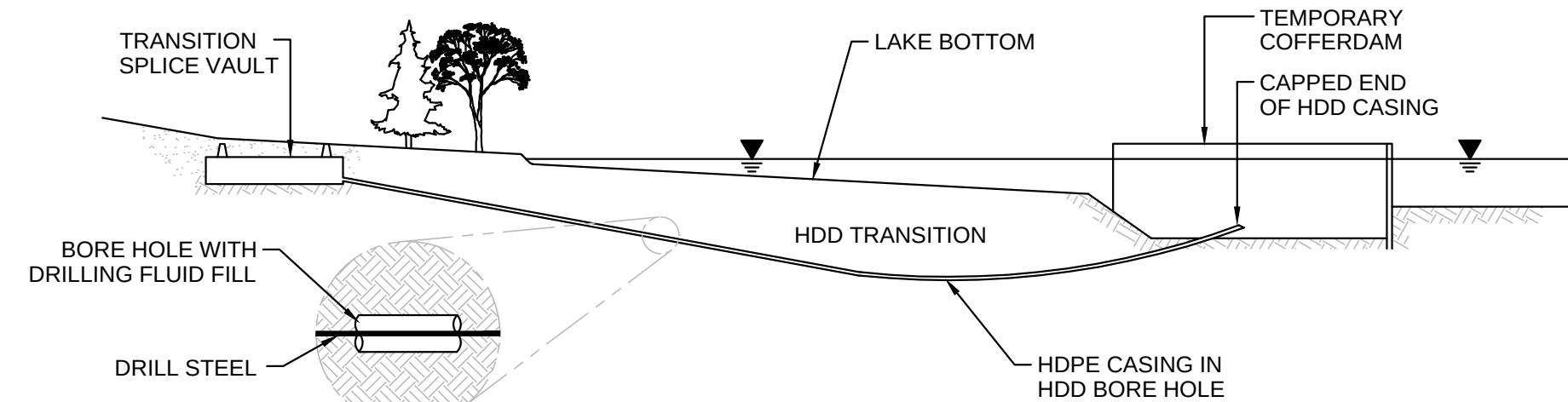
- NOTES**
- RECEIVER CASING SHALL BE DRIVEN INTO THE LAKE BOTTOM AT SUFFICIENT DEPTH TO ENSURE ADEQUATE EARTH COVER TO CONTAIN DRILL FLUID.
 - RECEIVER CASING SHALL BE 48 INCH OR LARGER STEEL PIPE DRIVEN INTO THE LAKE BOTTOM AND USED TO CONTAIN DRILL CUTTINGS AND DRILLING FLUID AT BREAK-OUT.
 - SUITABLE MAGNETIC TRACKING DEVICES OR SIMILAR SHALL BE USED TO GUIDE THE DRILL LEAD INTO THE RECEIVER CASING.
 - RECEIVER CASING AND TRACKING DEVICES SHALL BE REMOVED AT THE COMPLETION OF THE HDD OPERATION.
 - CABLE BARGE WILL BE USED FOR HDD TOOL INSTALLATION/REMOVAL, CASING PULL-IN AND CABLE PULLING.
 - COFFER DAM MAY BE USED IN LIEU OF RECEIVER CASING SHOULD BOTTOM CONDITIONS OR OTHER FACTORS NOT BE CONDUCTIVE TO RECEIVER INSTALLATION OR USE. REFER TO COFFERDAM DETAIL.
 - DRILLING FLUID IS TYPICALLY BENTONITE DRILLING MUD. WATER MAY BE USED UNDER SOME CIRCUMSTANCES.

HDD RECEIVER CASING
SCALE: N.T.S.



- NOTES**
- SPLICE VAULTS TO BE CONSTRUCTED IN IMMEDIATE VICINITY OF MARINE CABLE LANDFALL LOCATION. ONE SPLICE VAULT PER BI-POLE CONDUCTOR WILL BE REQUIRED.
 - ONLY ONE FIBER CABLE SPLICE HAND-HOLE WILL BE REQUIRED.
 - SPLICE VAULT DESIGN AND DIMENSIONS ARE CONCEPT ONLY. ACTUAL INSTALLED DIMENSIONS AND CONFIGUATION MAY DIFFER.

TYPICAL TRANSITION SPLICE VAULT
SCALE: 1" = 10'



- NOTES**
- COFFERDAM TO BE UTILIZED WHERE NECESSARY TO STABILIZE BOTTOM SEDIMENT AT HDD TERMINUS. ALTERNATIVES PROVIDING EQUIVALENT ENVIRONMENTAL PROTECTION MAY BE EMPLOYED WHERE BOTTOM CONDIITIONS DO NOT PERMIT DRIVEN PILES.
 - PILES SHALL BE REMOVED OR CUT BELOW THE MUD LINE AT COMPLETION OF CABLE INSTALLATION IN COORDINATION WITH BMP REQUIREMENTS.
 - COFFERDAM WILL EXTEND ABOVE THE WATERLINE IN SHALLOW WATER. EXPOSED STRUCTURE WILL BE MARKED BY BUOYS AND OTHER NAVIGATION AIDS. A NOTICE TO MARINERS WILL BE ISSUED WHEN APPROPRIATE.
 - COFFERDAMS IN DEEP WATER MAY NOT BE EXTENDED TO THE WATER SURFACE.EACH INSTALLATION WILL BE MARKED BY BUOYS AND OTHER NAVIGATION AIDS. A NOTICE TO MARINERS WILL BE ISSUED WHEN APPROPRIATE.
 - DRILLING FLUID IS TYPICALLY BENTONITE DRILLING MUD. WATER MAY BE USED UNDER SOME CIRCUMSTANCES.
 - IN LIEU OF COFFERDAM INSTALLATION, AN HDD RECEIVER CASING MAY BE USED. REFER TO RECEIVER DETAIL.

HDD COFFERDAM INSTALLATION
SCALE: N.T.S.

**20% DESIGN
NOT FOR CONSTRUCTION**

Designed	TRC
Drawn	TRC
Checked	-
Approved	-
Scale	AS NOTED

No.	Revision	Date	By	Ck	PE	PE #
A	20% ANR Submission	12/5/14	TRC	AMW		