

PV-20 Submarine Cable Replacement Project
Grand Isle, Vermont



Representative Site Photographs – Lake Encroachment Permit Application
November and December 2013; May 2015



Photograph 1. Looking north at the VELCO Grand Isle Terminal Station.



Photograph 2. Looking west at existing Terminal Station. Existing submarine cables emerge below wooden structure, and the oil reservoirs are located on the metal structure to the left.



Photograph 3. Looking west toward Lake Champlain from the Existing Terminal Station.



Photograph 4. From Lake Champlain shoreline, looking east. Existing submarine cables are buried from sign to Terminal Station.



Photograph 5. Lake Champlain Shoreline, looking west along existing cable corridor.



Photograph 6. Lake Champlain shoreline, looking north from existing cable corridor.

PV-20 Submarine Cable Replacement Project
Grand Isle, Vermont
Representative Site Photographs – Lake Encroachment Permit Application
November and December 2013; May 2015



Photograph 7. Lake Champlain shoreline, looking northwest where proposed cables would be buried beneath the shoreline.



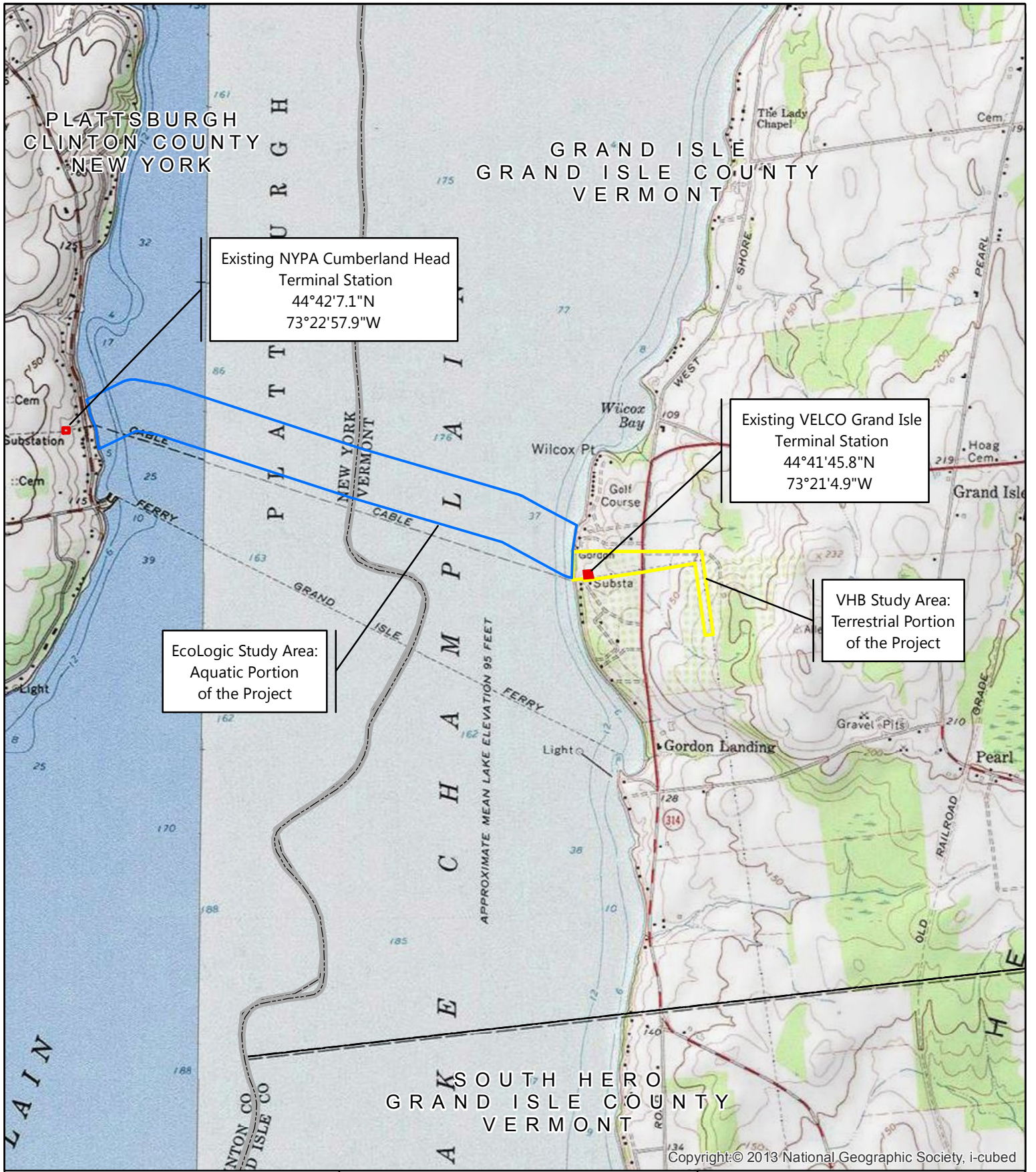
Photograph 8. Looking east from Lake toward proposed new terminal station location.



Photograph 9: Looking west toward Lake from approximate location of proposed transition station location.




Photograph 10: Looking west toward proposed transition station location.



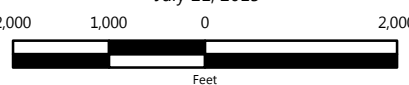
Legend

- Existing Terminal Station
- VHB Study Area
- Ecologic Study Area
- State Boundary



**Figure 1. Vermont Transco, LLC
PV-20 Cable Replacement Project
Grand Isle, VT and Plattsburgh, NY
Site Location Map**


July 21, 2015



2,000 1,000 0 2,000

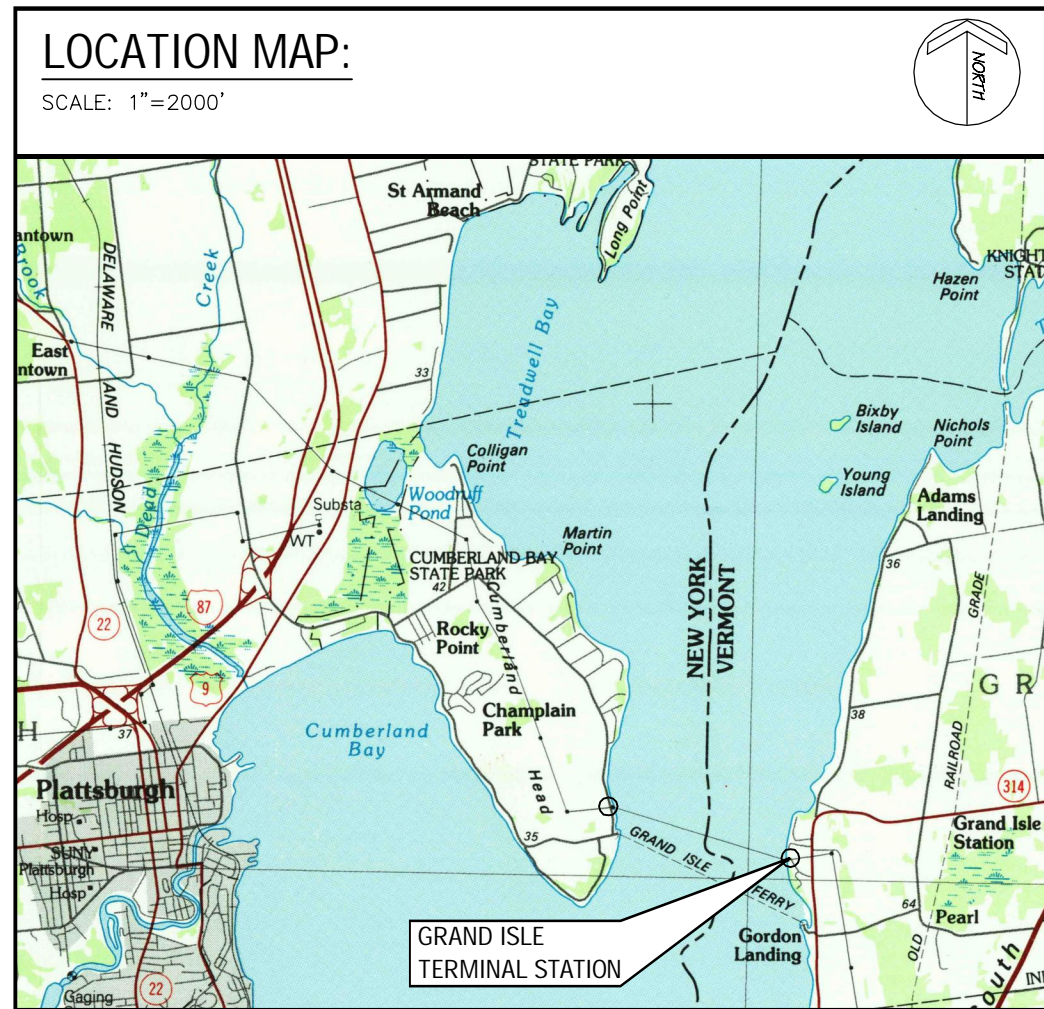
Feet

Sources: USGS Topo Quads from ESRI (2015); State and Town Boundaries from VCGI (2010); Approximate Replacement Cable Locations, Existing Transition Stations Locations from CHA (2015); VHB and Ecologic Study Areas by VHB (2015).



PV-20 CABLE REPLACEMENT PROJECT

Town of Grand Isle, Vermont

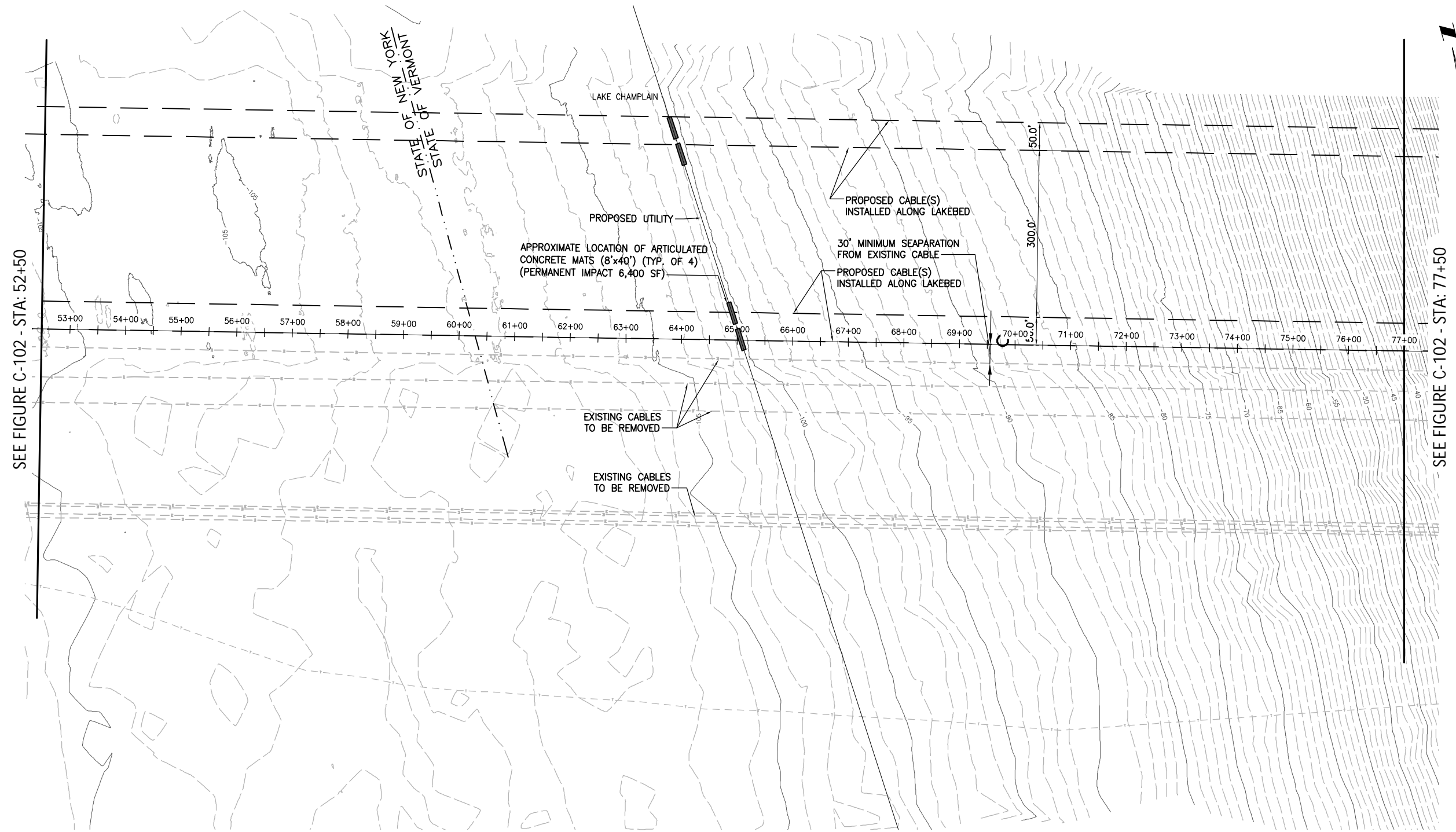


Sheet List Table	
SHEET NUMBER	SHEET TITLE
G-001	COVER SHEET AND INDEX
C-103	LAYOUT PLAN STA. 52+50 - 77+50
C-104	LAYOUT PLAN STA. 77+50 - 94+50
C-103a	PROFILE STA. 50+50 - 76+00
C-104a	PROFILE STA. 76+00 - 92+50
C-105	HDD WORK AREA
C-106	SITE LAYOUT AND GRADING
C-107	GRAND ISLE TERMINAL STATION LAYOUT
C-108	GRAND ISLE TERMINAL STATION SECTION - A
C-109	GRAND ISLE TERMINAL STATION SECTION - B & C
C-110	DETAILS
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C-112	EPSC PLAN
C-113	STABILIZATION PLAN
C-114	EPSC NOTES AND DETAILS

Issued for Permitting
11/30/2015
REV: 01/20/16



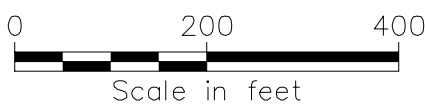
	 <small>III Winners Circle, PO Box 5269 Albany, NY 12205-0269 518.453.4500 · www.chacompanies.com</small>	COVER SHEET AND INDEX	PROJECT NO. 27406
		PV-20 CABLE REPLACEMENT PROJECT VT TRANSCO	DATE: 01/20/16
			FIGURE G-001



SEE FIGURE C-102 - STA: 52+50

SEE FIGURE C-102 - STA: 77+50

LAYOUT PLAN (52+50 - 77+50)

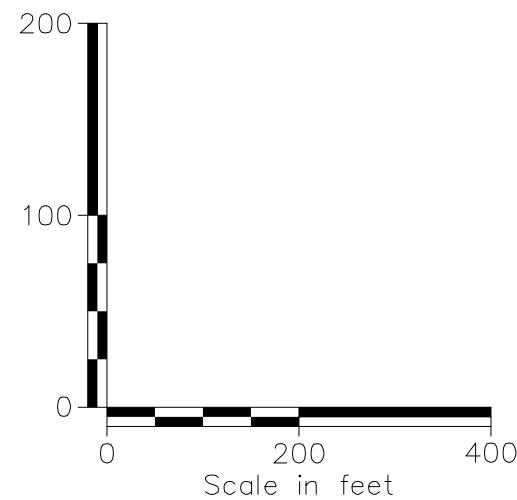
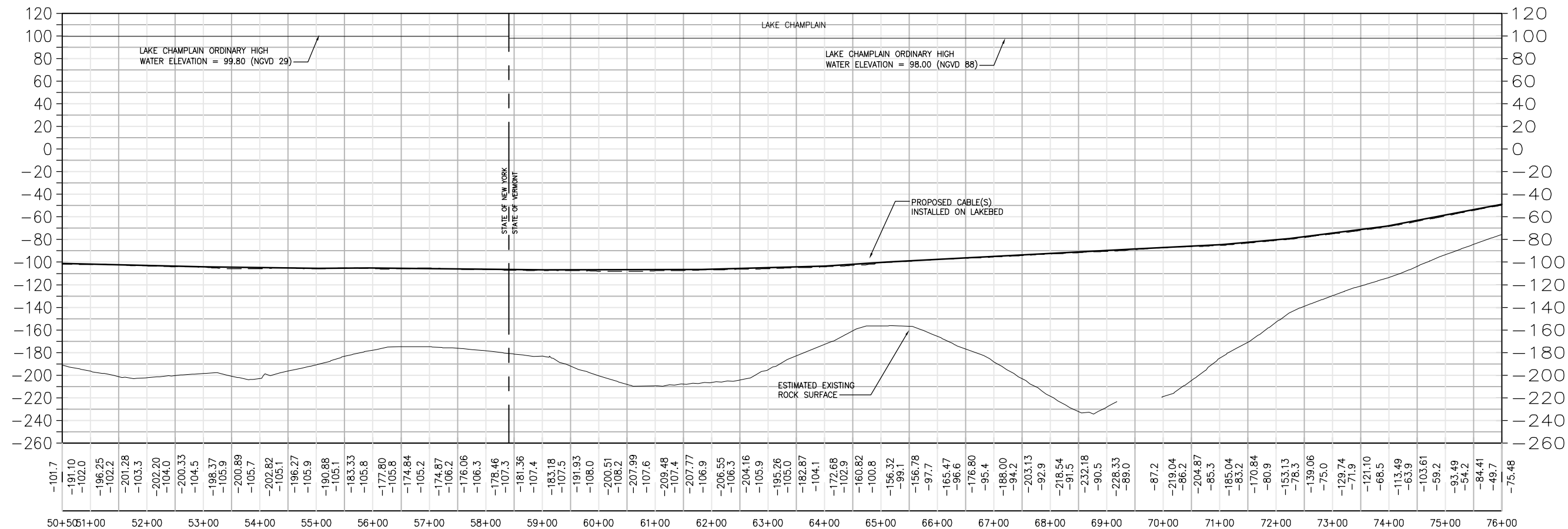


LAYOUT PLAN STA. 52+50 - 77+50
 PV-20 CABLE REPLACEMENT PROJECT
 NYPA / VT TRANSCO

PROJECT NO.
27406

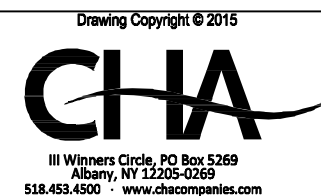
DATE: 01/20/16

FIGURE C-103



NOTES:

1. STATION 0+00 AT CUMBERLAND HEAD TERMINAL, NEW YORK

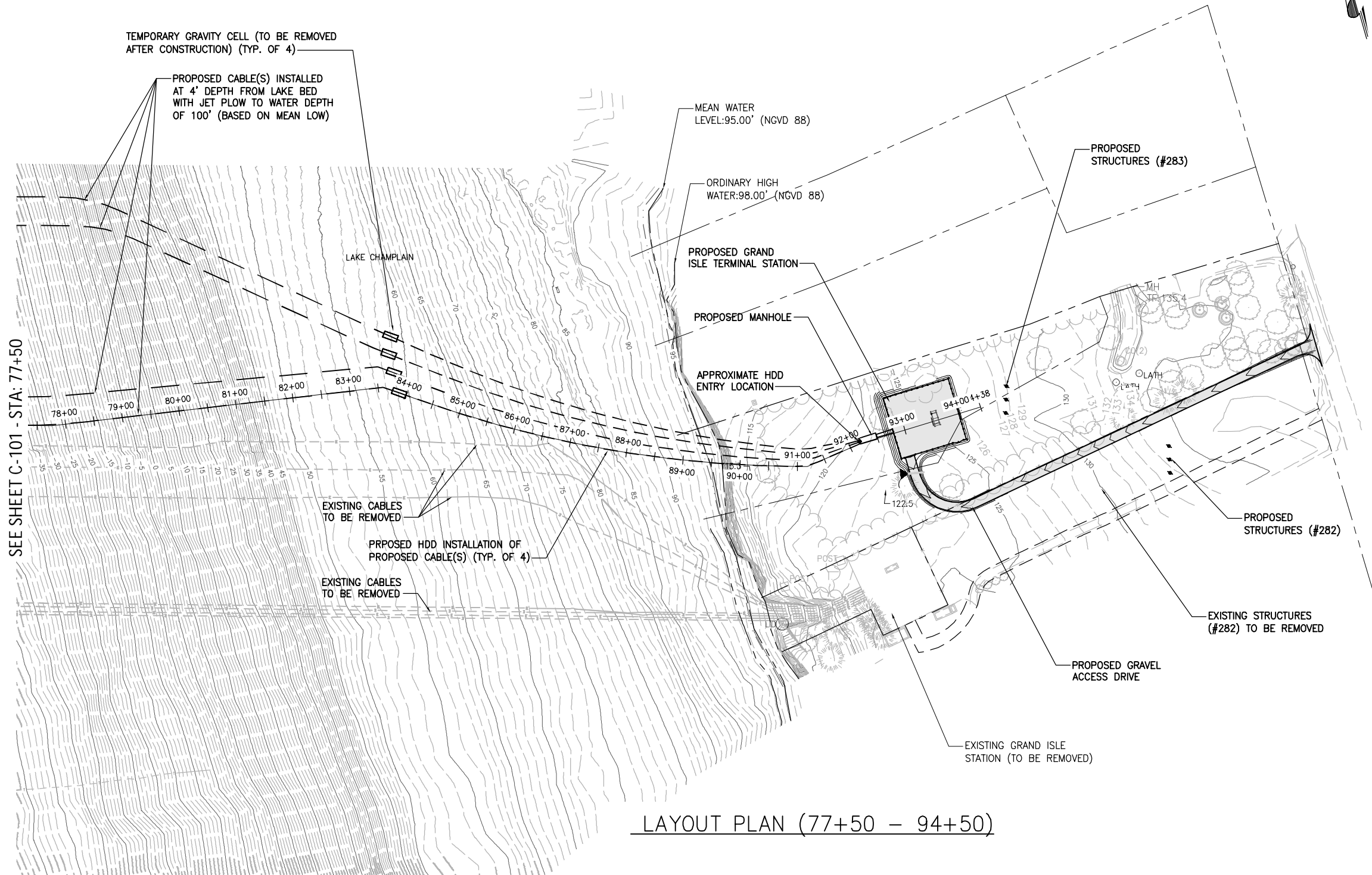


PROFILE STA. 50+50 - 76+00
 PV-20 CABLE REPLACEMENT PROJECT
 VT TRANSCO

PROJECT NO.
27406
 DATE: 01/20/16
 FIGURE C-103d

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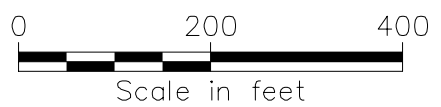
SEE SHEET C-101 - STA: 77+50



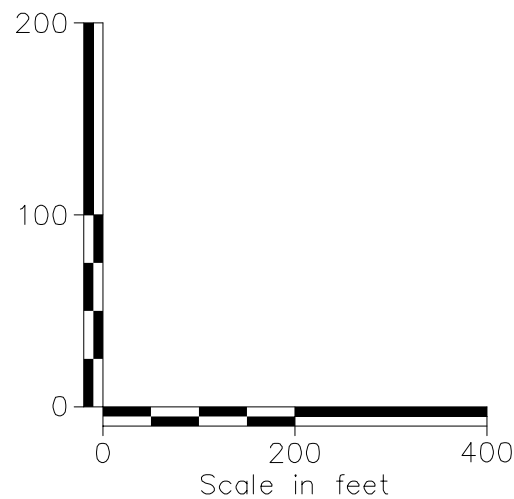
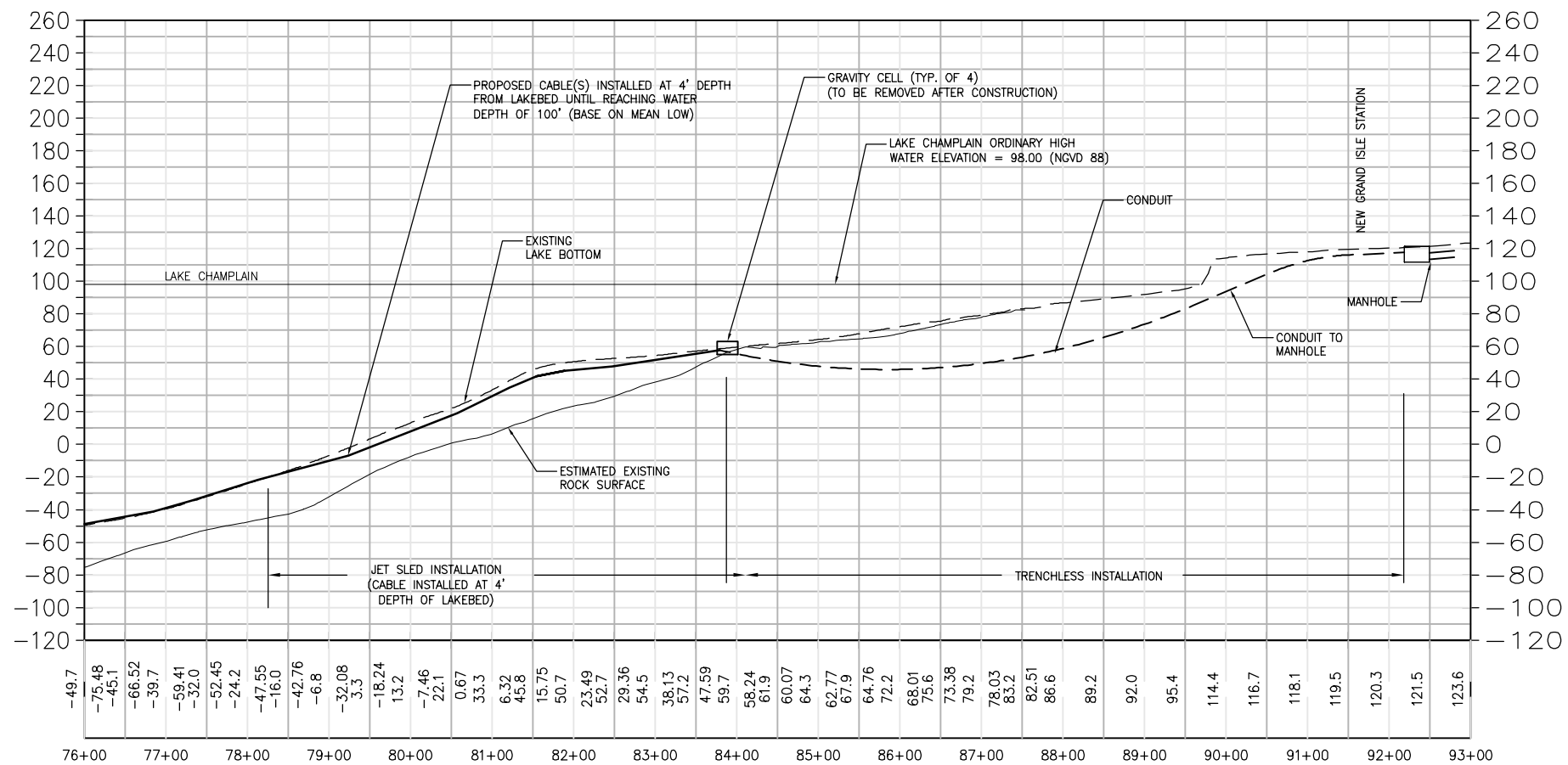
- MAPPING NOTES:**
1. BASE MAPPING PREPARED BY CHA FROM A NOVEMBER 2013 FIELD SURVEY.
 2. NORTH ORIENTATION IS TRUE NORTH BASED ON GPS OBSERVATION TAKEN AT THE TIME OF THE FIELD SURVEY. MAPPING PREPARED ON NAD83 STATE PLANE COORDINATE SYSTEM - NEW YORK EAST ZONE.
 3. CONTOURS AND ELEVATIONS SHOWN ON NAVD88 VERTICAL DATUM BASED ON GPS OBSERVATIONS.
 4. UNDERGROUND UTILITIES, STRUCTURES AND FACILITIES HAVE BEEN SHOWN FROM SURFACE LOCATIONS COMBINED WITH AVAILABLE RECORD PLANS. THEIR ACTUAL LOCATION MAY VARY SOMEWHAT FROM WHAT IS SHOWN AND OTHERS MAY EXIST. SIZE, TYPE AND LOCATION OF ALL UTILITIES AND STRUCTURES MUST BE VERIFIED BY PROPER AUTHORITIES PRIOR TO ANY AND ALL CONSTRUCTION. CALL DIG SAFE PRIOR TO ANY EXCAVATION.

- MAP REFERENCES:**
1. MAP ENTITLED "MAP OF DREAMLAND COURT SHOWING 4 LOT SUBDIVISION PREPARED FOR: G&P PROPERTIES, LLC ASSESSORS MAP #5B PARCEL 050277 GRAND ISLE, VERMONT". AS PREPARED BY "CENTRAL SURVEYS LLC", DATED JANUARY 29, 2010 AND FILED IN THE OFFICE OF GRAND ISLE MAP RECORDS IN SLEEVE 297.
 2. MAP ENTITLED "PLAT OF LAND TO BE PURCHASED FROM J. ALBERT CHABOT GRAND ISLE - VERMONT". DATED AUGUST 15 1957. DRAWING #L-3 FILED IN THE GRAND ISLE TOWN CLERKS OFFICE ON SEPTEMBER 14, 1957.
 3. TOWN OF GRAND ISLE, TAX MAP NUMBER 515, CLINTON COUNTY, NEW YORK, PREPARED BY RUSSELL GRAPHICS.

LAYOUT PLAN (77+50 - 94+50)

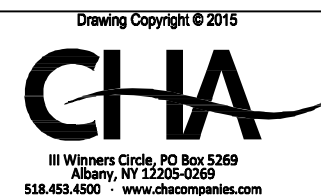


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		LAYOUT PLAN STA. 77+50 - 94+50		PROJECT NO. 27406
		PV-20 CABLE REPLACEMENT PROJECT VT TRANSCO		DATE: 01/20/16
			FIGURE C-104	



NOTES:

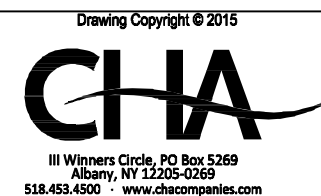
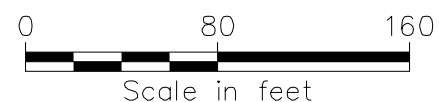
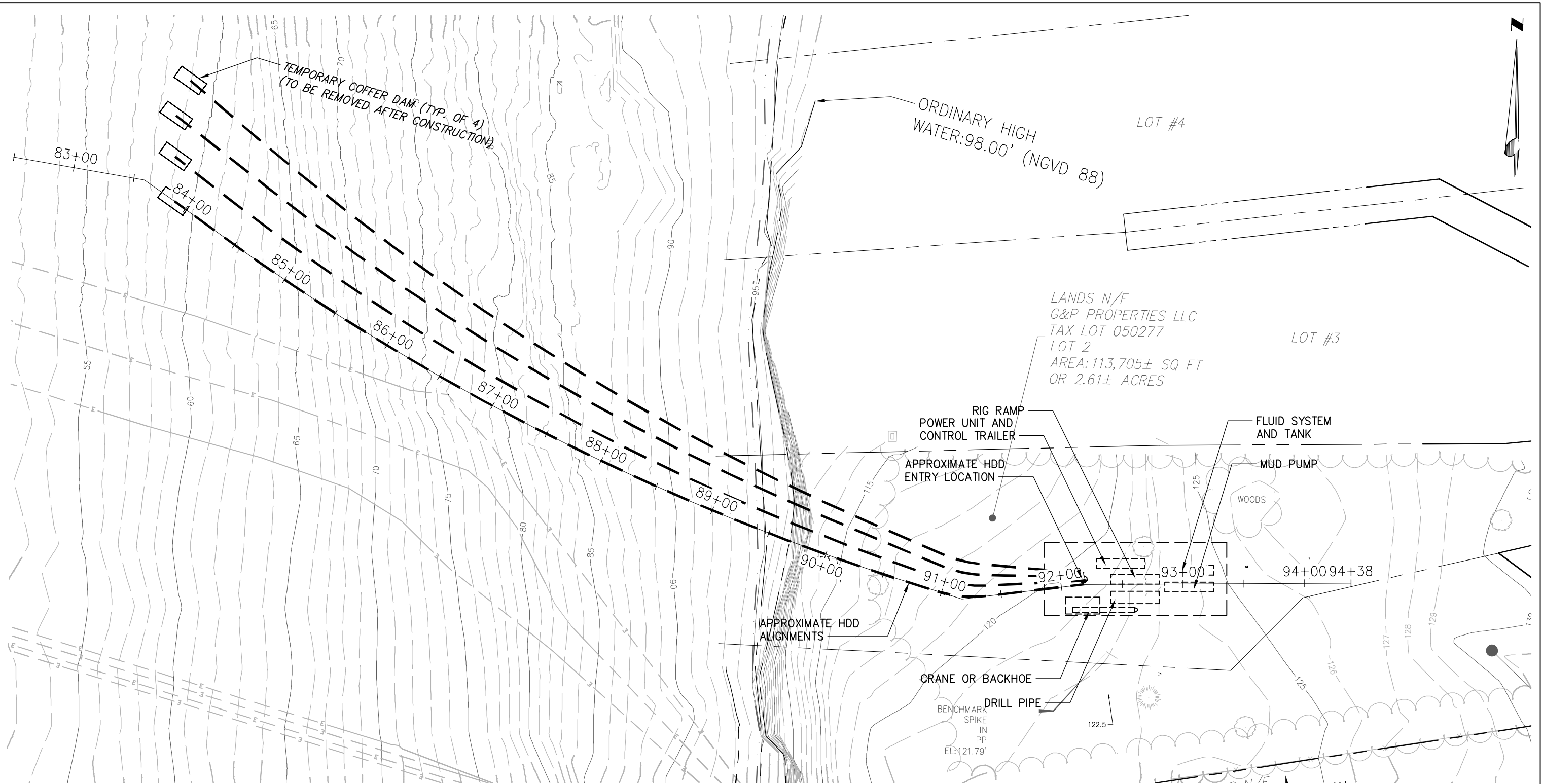
1. STATION 0+00 AT CUMBERLAND HEAD TERMINAL, NEW YORK



PROFILE STA. 76+00 - 92+50
 PV-20 CABLE REPLACEMENT PROJECT
 VT TRANSCO

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 27406
 DATE: 01/20/16
 FIGURE C-104d

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HDD WORK AREA

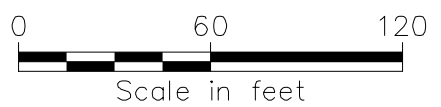
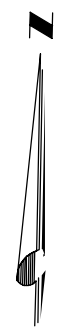
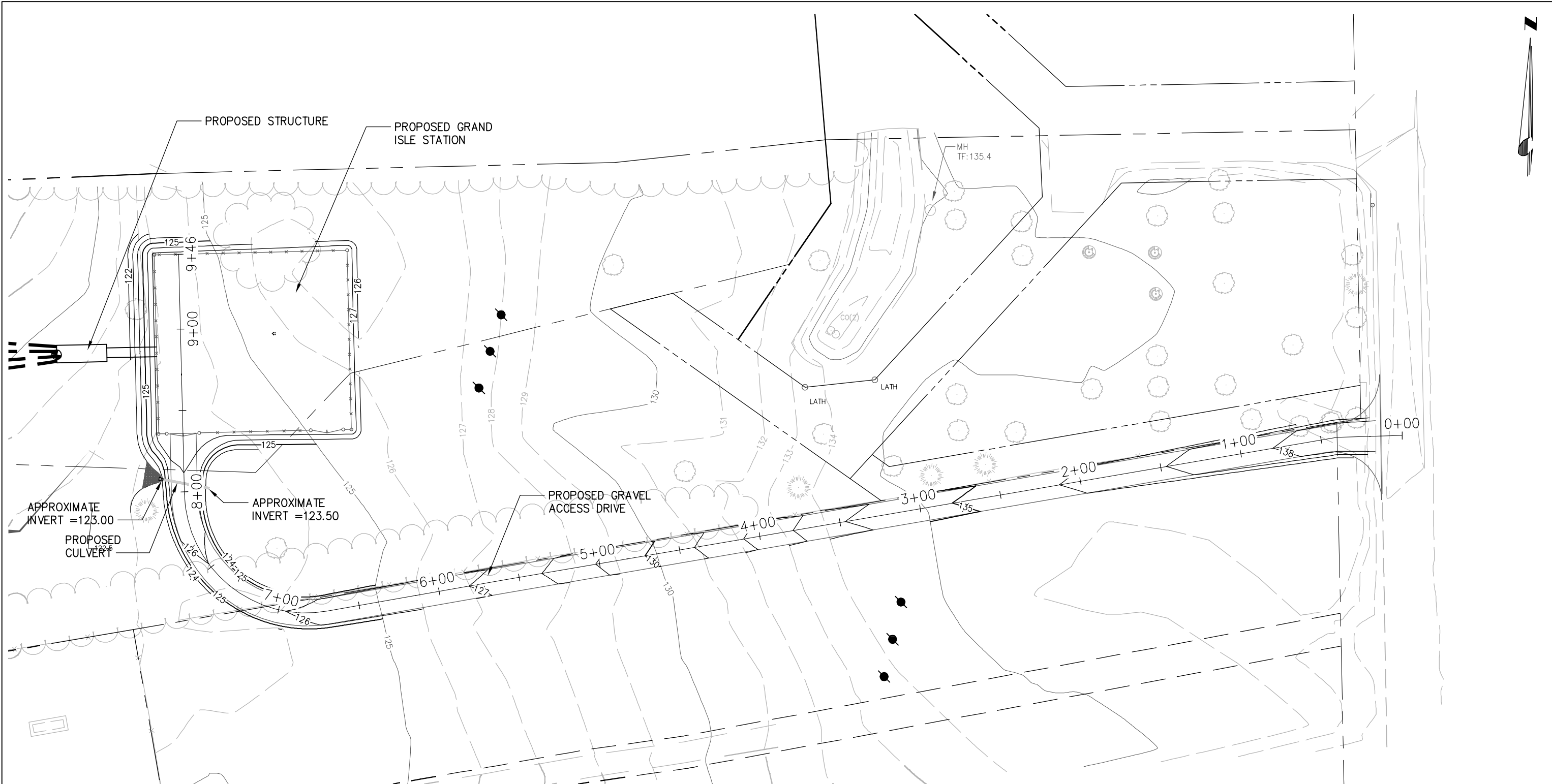
PV-20 CABLE REPLACEMENT PROJECT
VT TRANSCO


PROJECT NO.
27406

DATE: 01/20/16

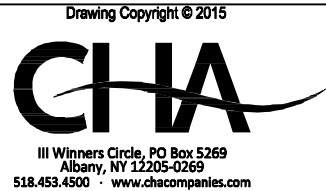
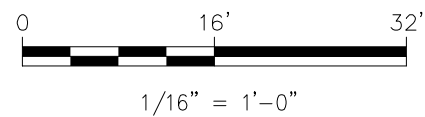
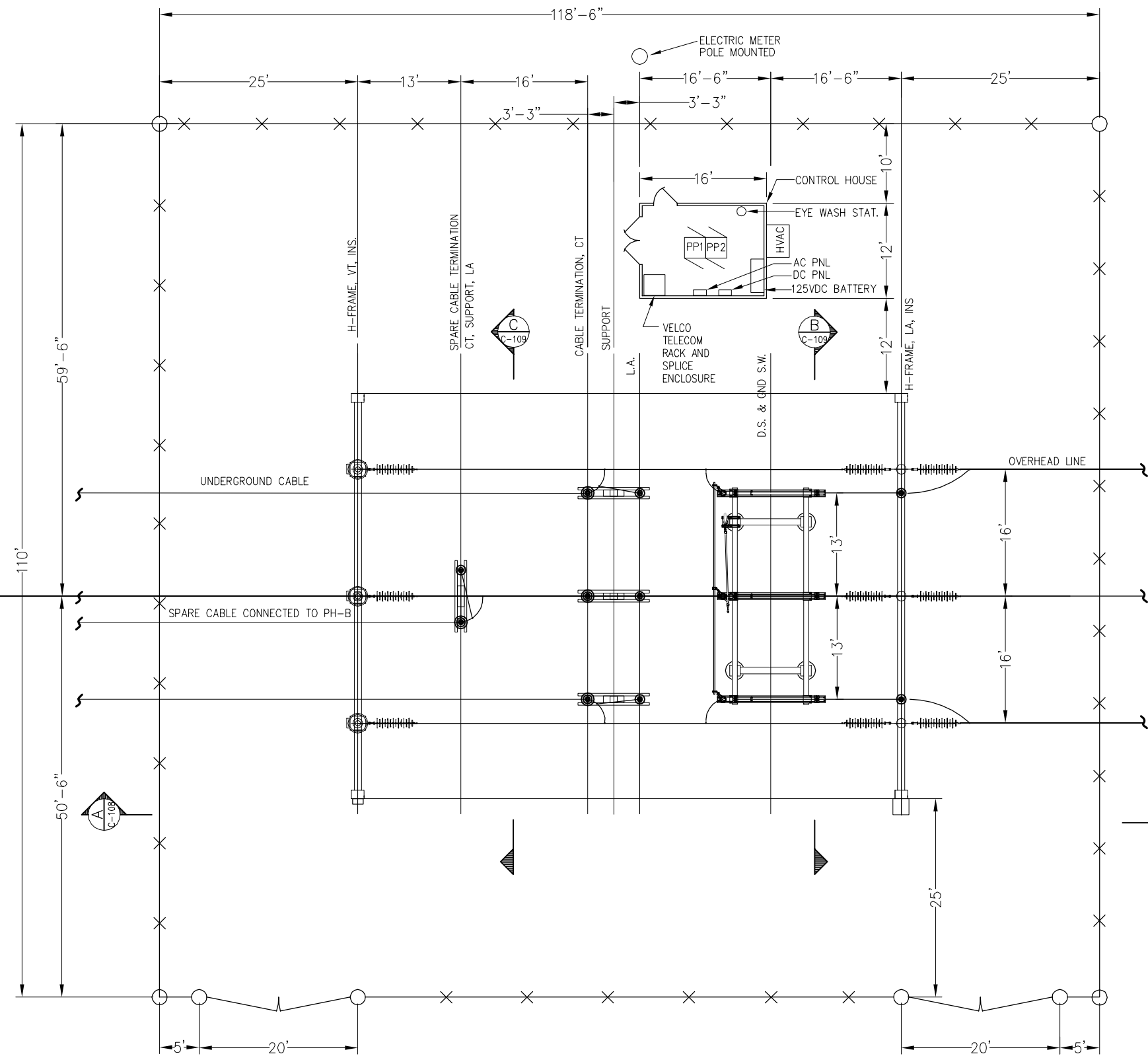
FIGURE C-105

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GRAND ISLE TERMINAL
STATION LAYOUT

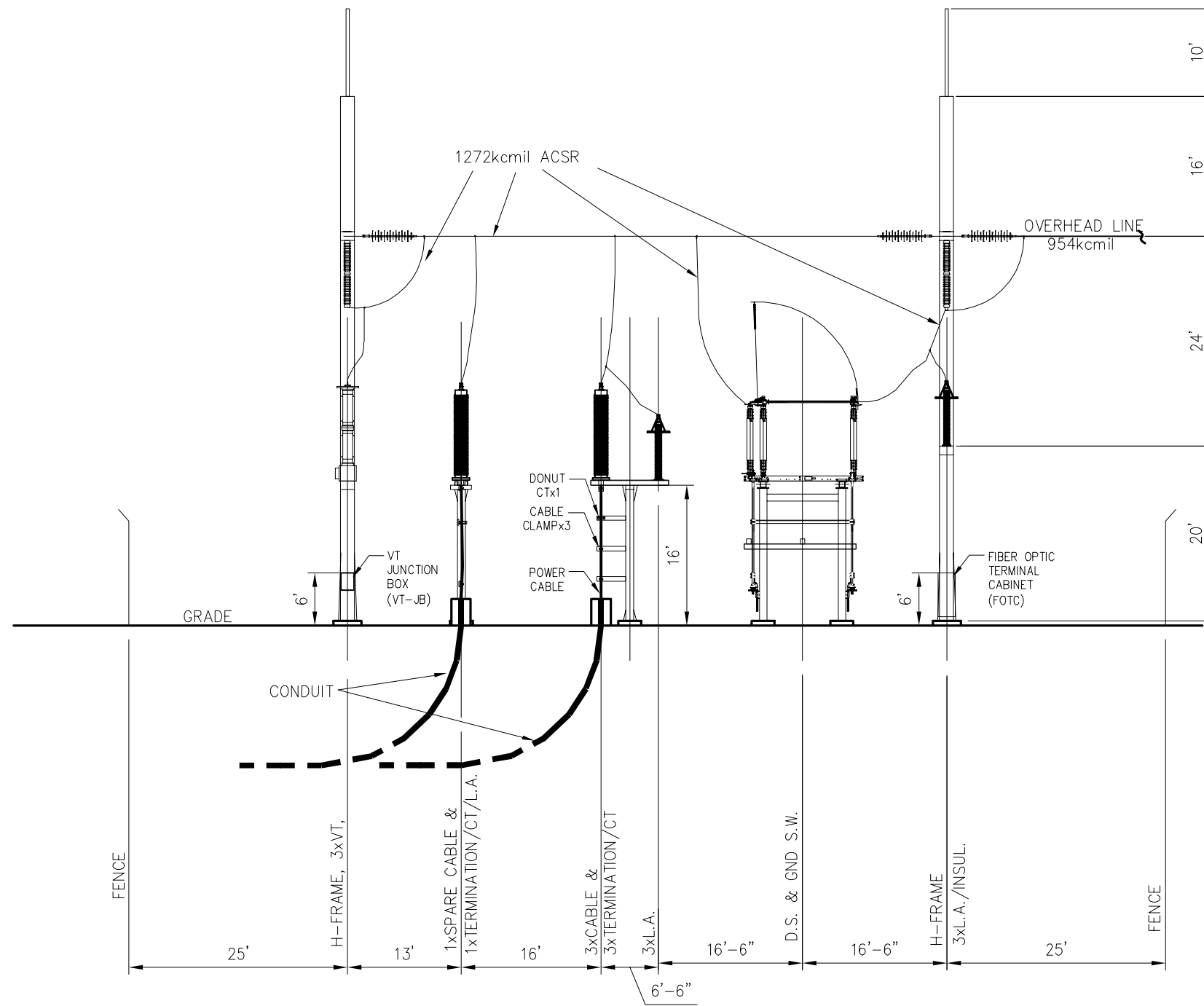
PV-20 CABLE REPLACEMENT PROJECT
VT TRANSCO

PROJECT NO.
27406

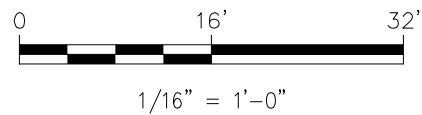
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FIGURE C-107

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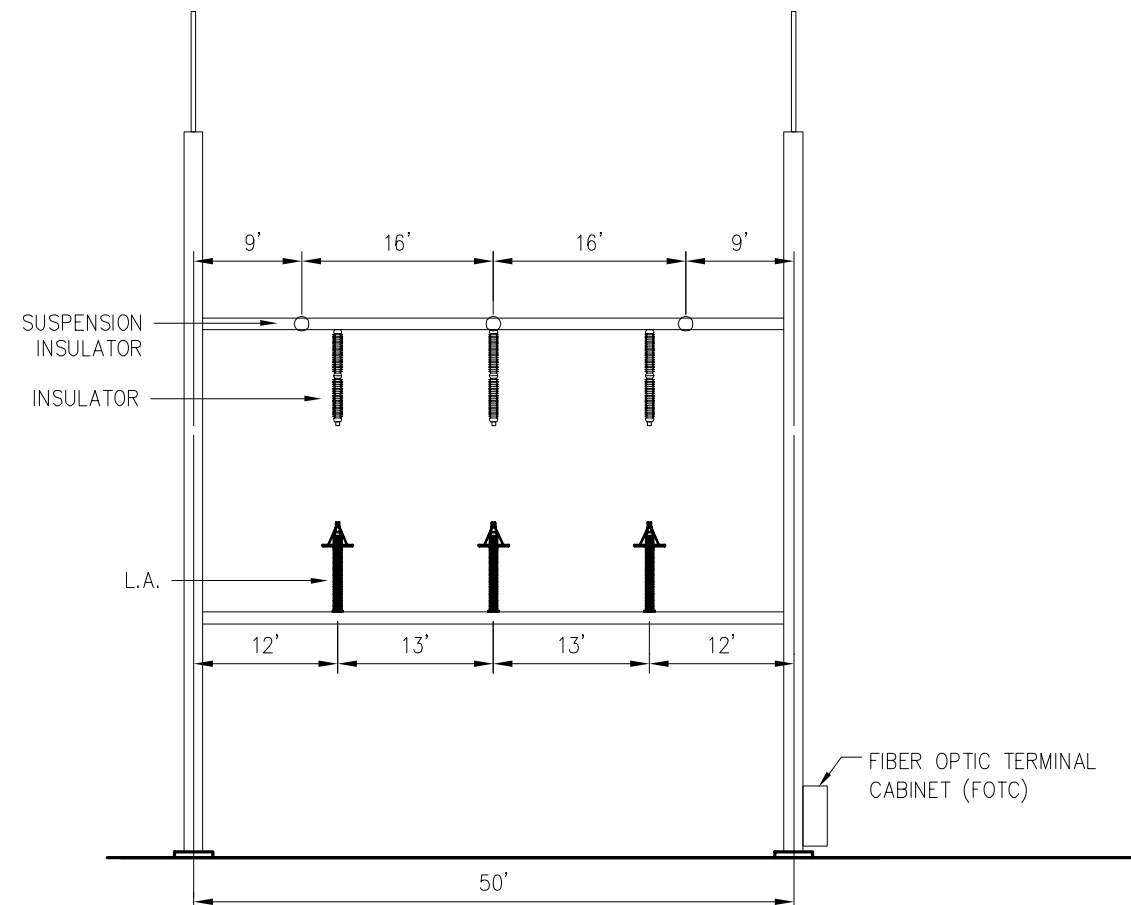
A STATION SECTION



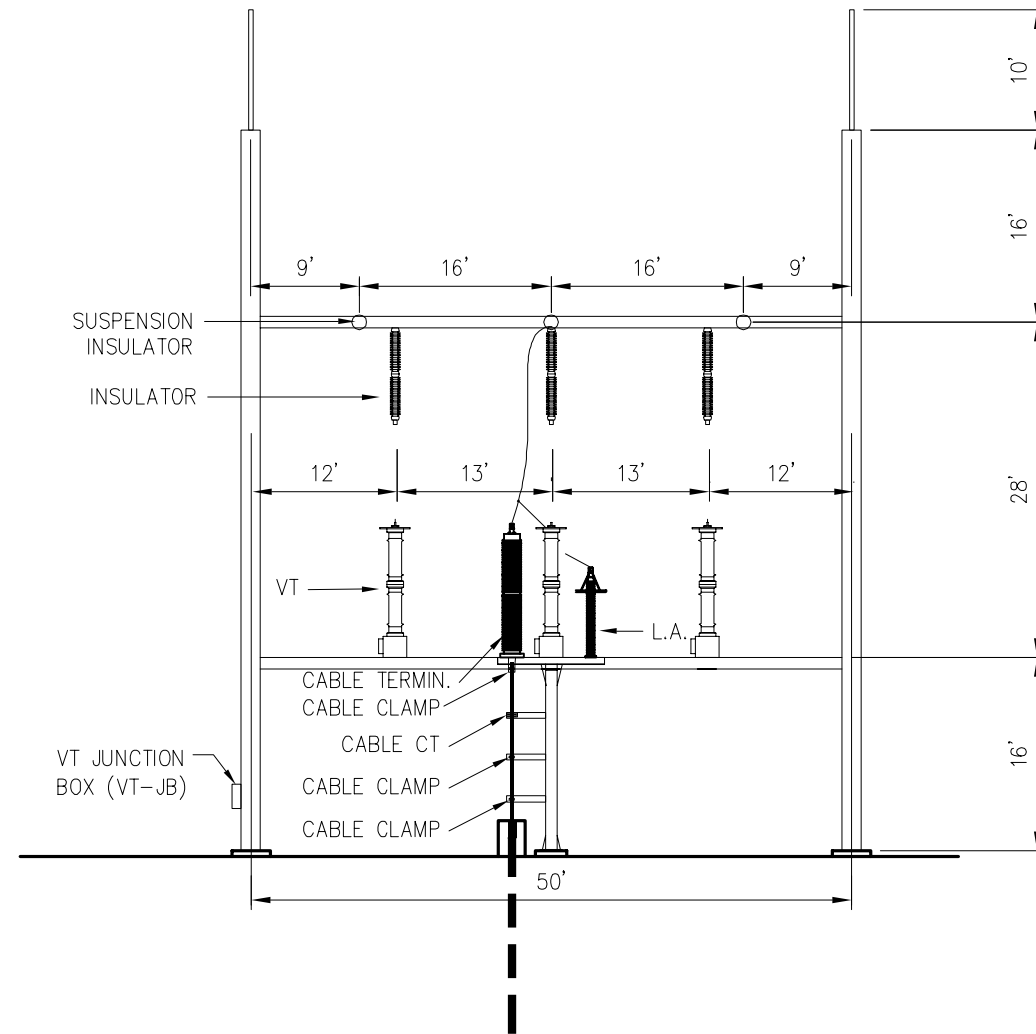
Drawing Copyright © 2015
 GRAND ISLE TERMINAL STATION
 SECTION - A
 PV-20 CABLE REPLACEMENT PROJECT
 VT TRANSCO

PROJECT NO.
 27406
 DATE: 01/20/16
 FIGURE C-108

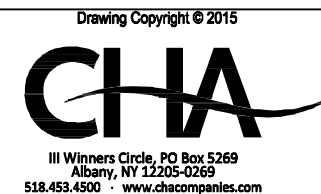
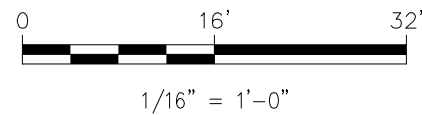
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B H-FRAME WITH L.A.



C H-FRAME WITH SPARE CABLE TERMINAL



GRAND ISLE TERMINAL STATION
SECTION - B & C
PV-20 CABLE REPLACEMENT PROJECT
VT TRANSCO

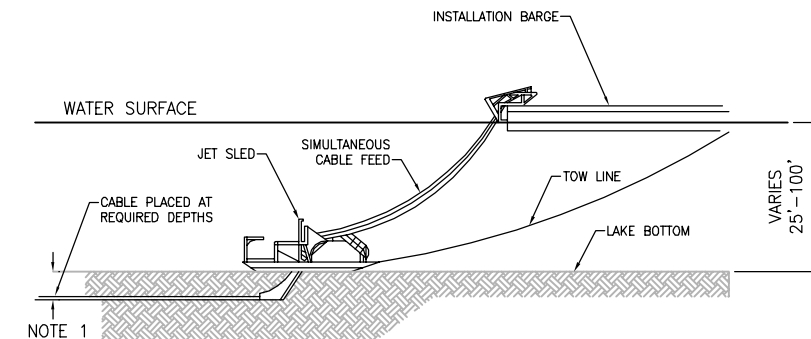
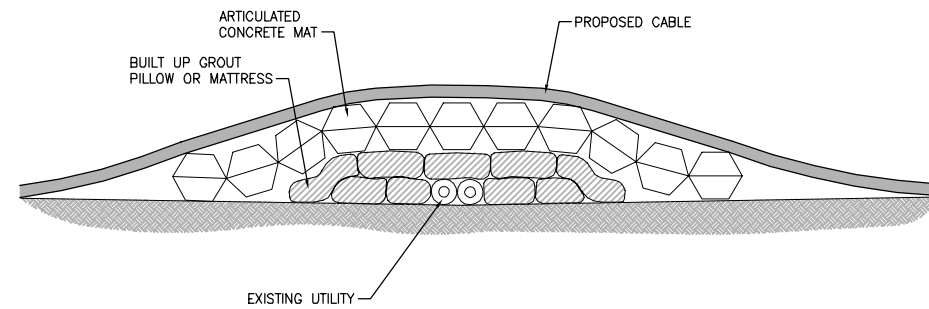
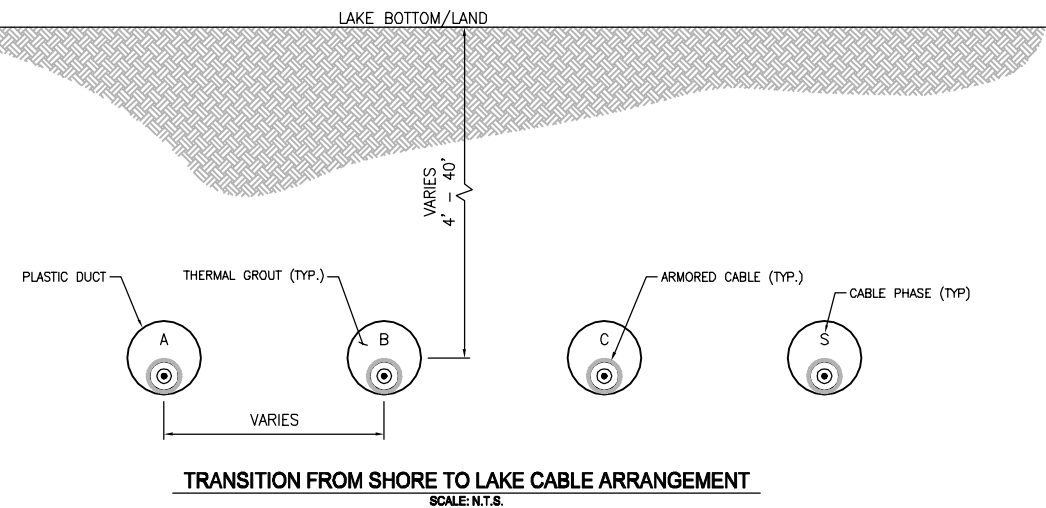


PROJECT NO.
27406

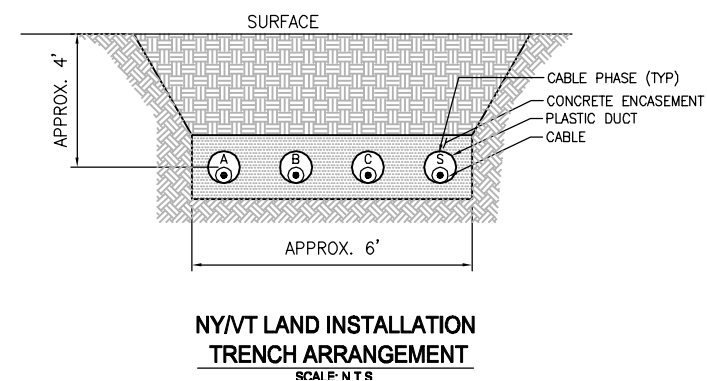
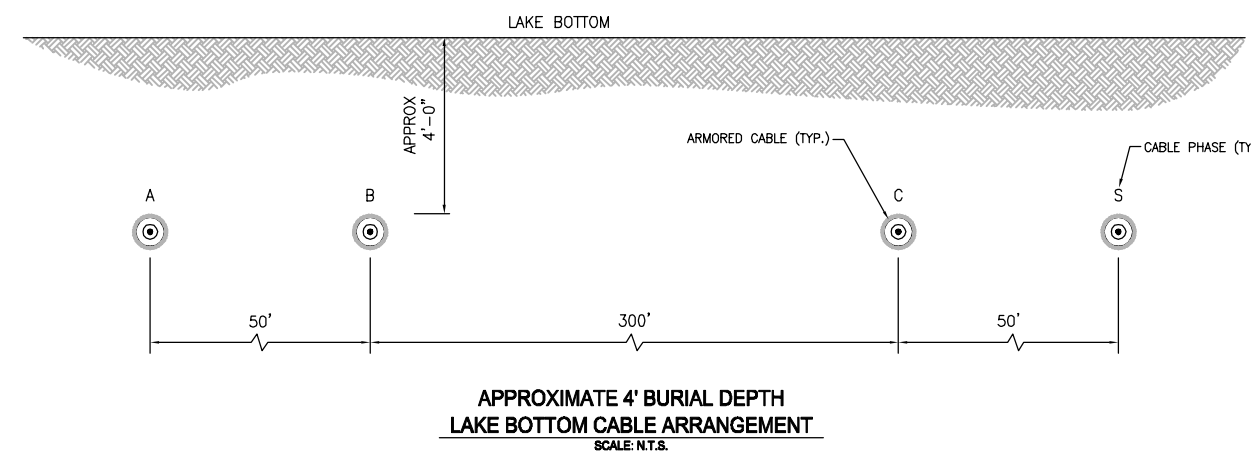
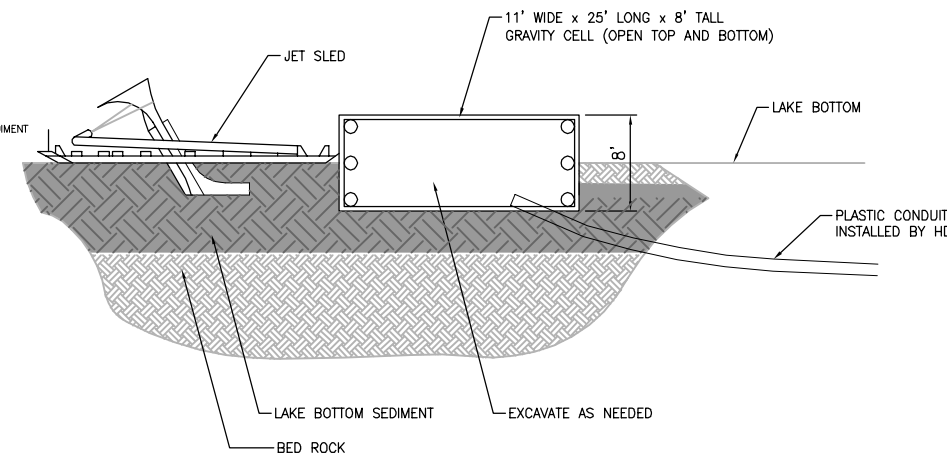
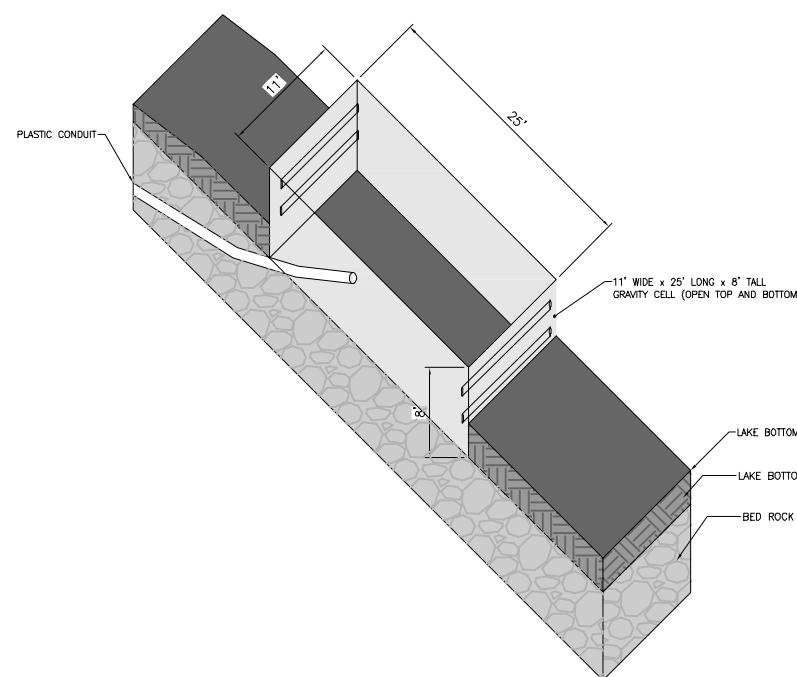
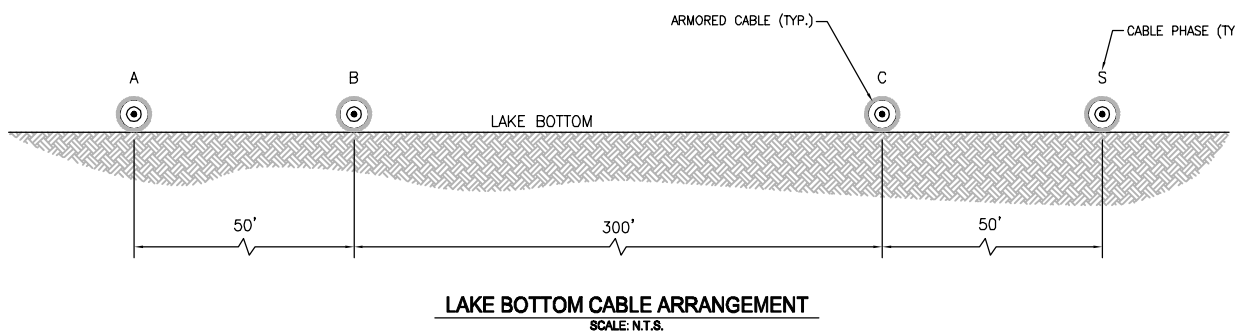
DATE: 01/20/16

FIGURE C-109

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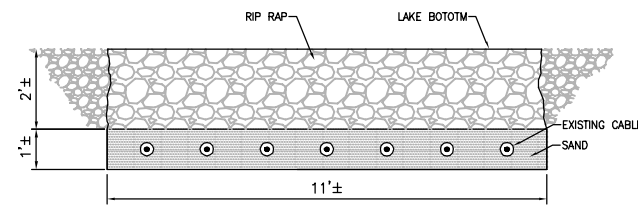
NOTES:
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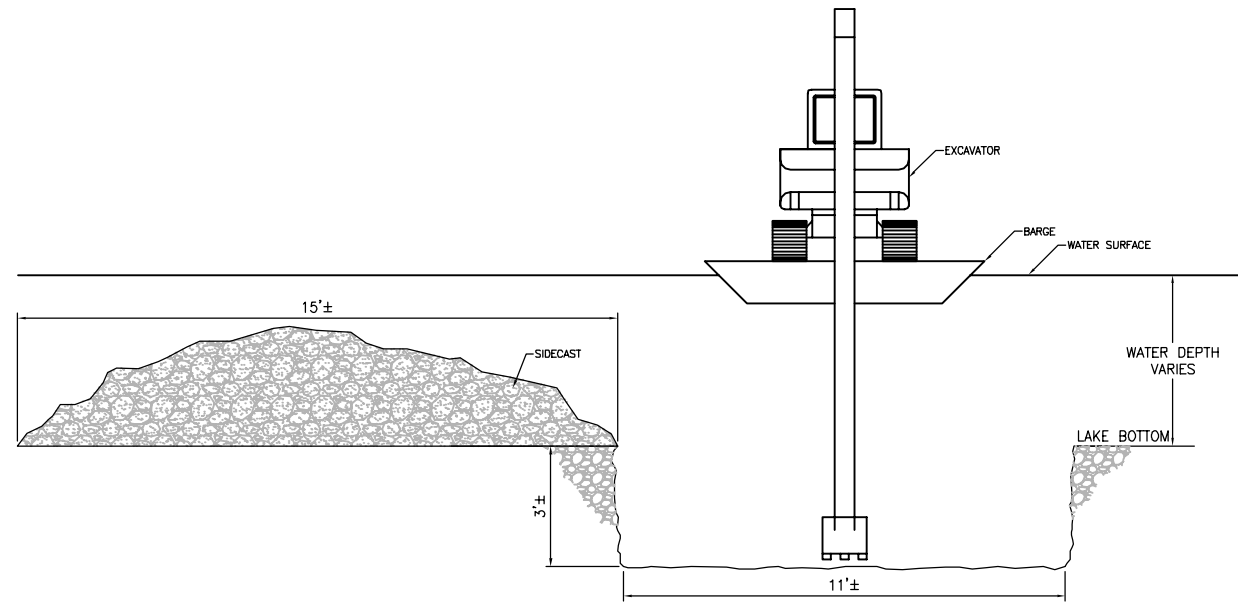
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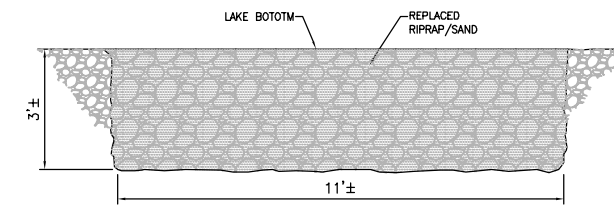
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1 - CABLE GROUP CONDITION
SCALE: N.T.S.



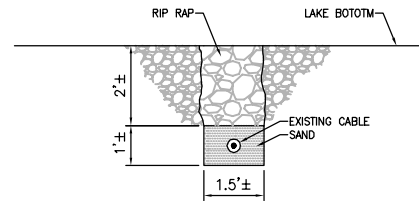
2 - MATERIAL REMOVAL
SCALE: N.T.S.



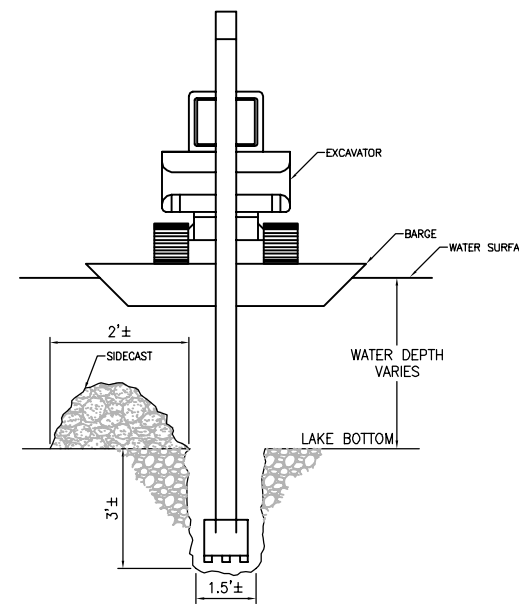
3 - FINAL CONDITION
SCALE: N.T.S.

TYPICAL CABLE GROUP REMOVAL

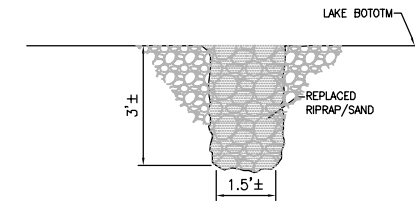
ESTIMATE OF TYPE AND AMOUNT OF MATERIAL			
NEW YORK			
TYPE	EXISTING CONDITION (CY)	MATERIAL REMOVED (CY)	FINAL CONDITION (CY)
RIPRAP	203.70	203.70	0
SAND	101.85	101.85	0
RIPRAP/SAND	0	0	305.55
VERMONT			
TYPE	EXISTING CONDITION (CY)	MATERIAL REMOVED (CY)	FINAL CONDITION (CY)
RIPRAP	203.70	203.70	0
SAND	101.85	101.85	0
RIPRAP/SAND	0	0	305.55



1 - EXISTING CABLE CONDITION
SCALE: N.T.S.




2 - MATERIAL REMOVAL
SCALE: N.T.S.





3 - FINAL CONDITION
SCALE: N.T.S.

TYPICAL CABLE REMOVAL




New York Power Authority





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DETAILS

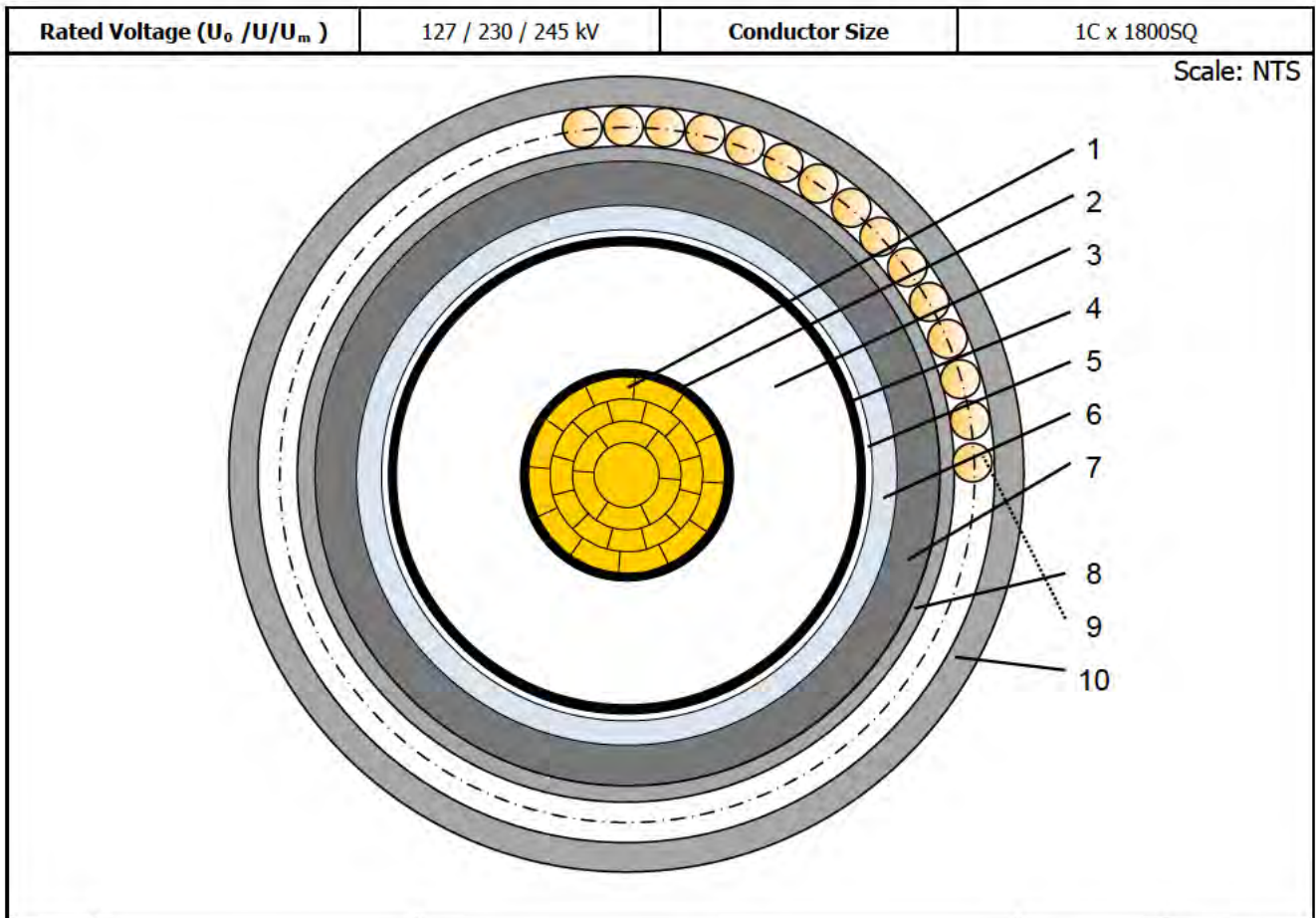
PV-20 CABLE REPLACEMENT PROJECT
NYPA / VT TRANSCO

PROJECT NO.
27406

DATE: 01/20/16

FIGURE C-111

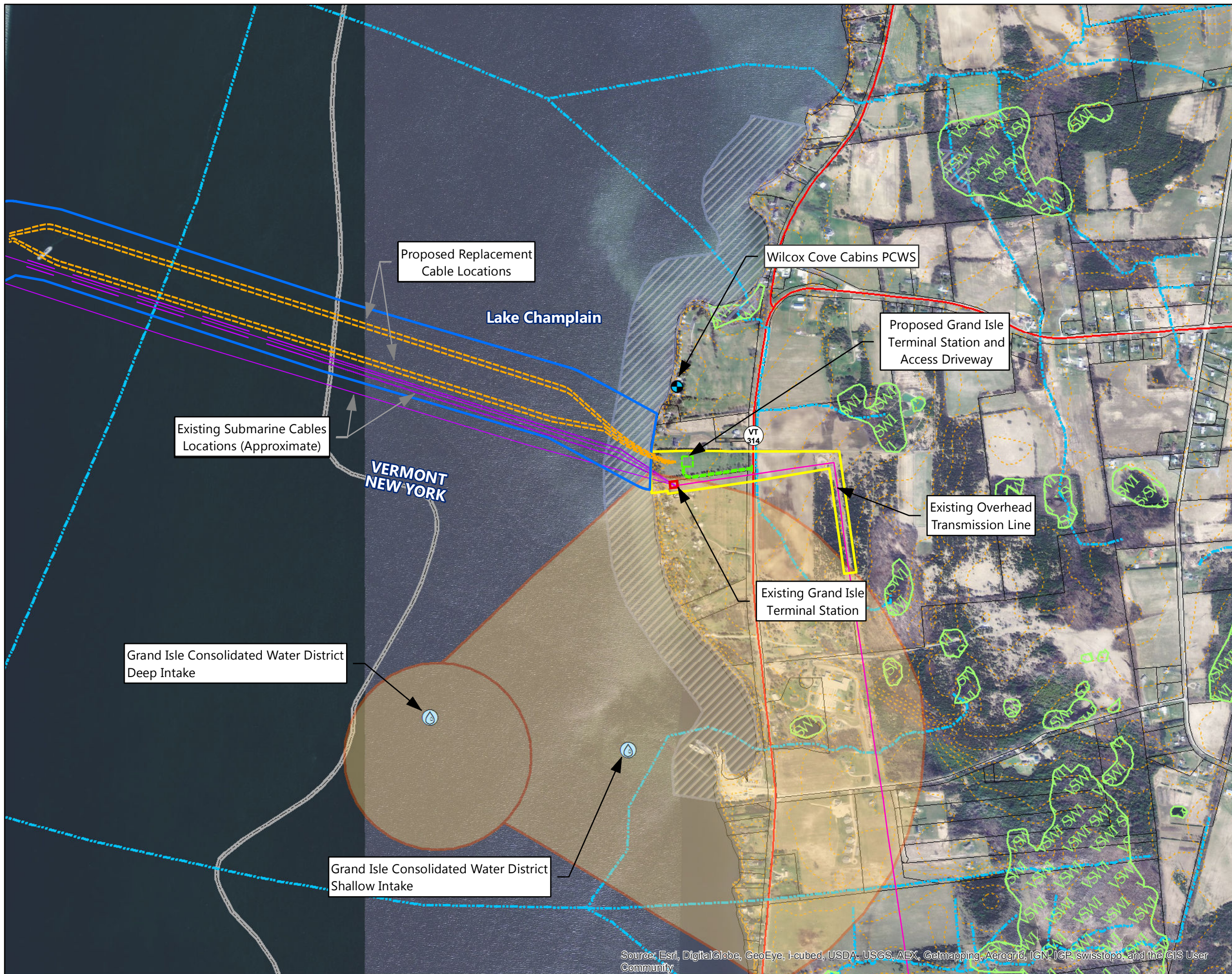
Attached table 1: Design Particular and Cross-sectional Drawing of Submarine Power Cable



No.	Item	Material	Thickness (mm/inch)	Indicative Diameter (mm/inch)
1	Conductor	Annealed profiled(keystone shaped) copper	-	50/1.97
2	Conductor shield	Extruded semi-conducting compound	App. 1.5/0.06	-
3	Insulation	Extruded cross-linked polyethylene (XLPE)	Nom. 20.0/0.79	95/3.74
4	Insulation shield	Extruded semi-conducting compound	App. 1.3/0.05	98/3.86
5	Water blocking layer	Semi-conducting swelling tape(s)	App. 0.5/0.02	-
6	Metallic sheath	Extruded lead alloy	Nom. 3.3/0.13	107/4.21
7	Anti-corrosion sheath	Extruded polyethylene	Nom. 2.9/0.11	113/4.45
8	Armor bedding	Polypropylene yarn with bitumen	App. 2.0/0.08	117/4.61
9	Wire armor	Copper wires with bitumen	Nom. 6.0/0.24	129/5.08
10	Serving	Polypropylene yarn with bitumen and black / yellow stripe	App. 4.0/0.16	138/5.44
	Overall diameter	-	-	
	Cable weight in air / water (kg/m)		App. 54 / 39	
Remark:				

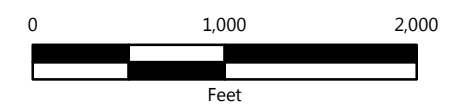
**Figure 4. Vermont Transco, LLC
PV-20 Cable Replacement Project
Grand Isle, Vermont
Water Resources Map**

July 13, 2015



Legend

- VHB Study Area (Terrestrial)
- EcoLogic Study Area (Aquatic)
- Surface Water Intake
- Groundwater Supply Source
- Groundwater SPA
- Surface Water SPA
- Wetland (VSWI)
- Stream (VHD)
- Floodplain (Zone AE) (FEMA)
- 10 ft. Contour (VCGI)
- State Boundary (ESRI)
- Parcel Boundry (VCGI)
- State Named Highway (VTrans)
- Town Road (VTrans)
- Existing Infrastructure**
- Terminal Station
- Submarine Cables (Approximate Location)
- Overhead Transmission Line
- Proposed Infrastructure**
- Proposed Replacement Cables
- Proposed Terminal Station and Access Driveway



Sources: Background Orthophoto by VMP (2012); Study Areas by VHB (2013-2015); Roads by VTrans (2012); VSWI wetlands and Surface Water Protection Area by VT ANR and downloaded from VCGI (2012); Streams and Waterbodies by VHD (2008); Contours and Parcel data(2007); State boundaries from ESRI (2013); Soils by NRCS and downloaded from VCGI (2009); Element Occurrences data downloaded from ANR (2015); Floodplain data from FEMA (1988); Existing and Proposed Project Infrastructure digitized from CHA Plans (2015).



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community