



**ATTACHMENTS  
TO  
RESPONSE TO REQUEST FOR PROPOSALS  
FOR  
LONG-TERM CONTRACTS FOR  
CLEAN ENERGY PROJECTS**

**Submitted by  
Hydro Renewable Energy Inc. (HRE),  
an affiliate of Hydro-Québec, and  
Northern Pass Transmission LLC (NPT)**

**TO  
Fitchburg Gas & Electric Light Company d/b/a Unitil  
Massachusetts Electric Company d/b/a National Grid  
Nantucket Electric Company d/b/a National Grid  
NSTAR Electric Company d/b/a Eversource  
Western Massachusetts Electric Company d/b/a Eversource  
and  
Massachusetts Department of Energy Resources**

**July 27, 2017**

## LIST OF ATTACHMENTS

<i>Attachment</i>	<i>Description</i>
	REDACTED
	REDACTED
<a href="#">5.2.1</a>	HRE Authorization
<a href="#">5.2.2</a>	NPT Authorization
<a href="#">5.3.1</a>	Hydro-Québec – Financing Experience
<a href="#">5.3.2</a>	Eversource Energy – Financing Experience
<a href="#">5.4.1</a>	Financial Strength of Hydro-Québec as of December 31, 2016
<a href="#">5.4.2</a>	Eversource Energy – Financial Highlights
	REDACTED
	REDACTED
<a href="#">5.21</a>	Eversource Energy Corporate Chart
	REDACTED
<a href="#">6.1.2</a>	Des Cantons Substation Site Plan
<a href="#">6.1.3</a>	Quebec Line Route Map
<a href="#">6.1.4</a>	NPT Line Route Map
<a href="#">6.1.5</a>	Deerfield Substation Site Plan
<a href="#">6.1.6</a>	Franklin Terminal Site Plan
<a href="#">6.1.7</a>	NPT Transition Station Site Development Plan
	REDACTED
	REDACTED
<a href="#">6.5</a>	Project Interconnection Overview
<a href="#">6.6.1</a>	NPT I.3.9 Approval (1,090 MW) – ISO-NE QP 348
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED
<a href="#">7.3</a>	NPT Supplemental Environmental Analysis
<a href="#">7.4.1</a>	Hydro-Québec Public Participation Program
<a href="#">7.4.2</a>	NPT Public Support



<b><i>Attachment</i></b>	<b><i>Description</i></b>
	REDACTED
<a href="#"><u>8.1.2</u></a>	Operating History – Transmission Equipment (ABB)
	REDACTED
<a href="#"><u>9.1.2</u></a>	Overview of Maintenance Activities – NPT Line
<a href="#"><u>9.1.3</u></a>	Sample Converter Maintenance Activities
	REDACTED
	REDACTED
	REDACTED
	REDACTED
<a href="#"><u>11.3</u></a>	Phase II
<a href="#"><u>11.4.1</u></a>	Hydro Québec Executive Team
<a href="#"><u>11.4.2</u></a>	JDA Project Management Team (Roles and Curricula Vitae)
<a href="#"><u>11.4.3</u></a>	NPT Core Project Management Team (Curricula Vitae)
<a href="#"><u>11.5</u></a>	Eversource Energy Transmission Projects
	REDACTED
	REDACTED
<a href="#"><u>13.1.2</u></a>	Project Labor Agreement
	REDACTED
<a href="#"><u>14.1</u></a>	Northern Pass Line Description
	REDACTED
	REDACTED
	REDACTED
	REDACTED
	REDACTED

REDACTED

**Attachment 5.2.1**  
**HRE Authorization**

**HYDRO RENEWABLE ENERGY INC.**  
**(the "Corporation")**

TRUE COPY of extracts of a resolution adopted by the Directors of the Corporation as of June 16, 2017 by consent in writing as permitted by Section 141(f) of the Delaware General Corporation Law.

---

REA-12/2017

**AUTHORIZATION TO SIGN ONE OR MORE LONG-TERM AGREEMENTS REGARDING THE SALE OF ELECTRICITY AND ENVIRONMENTAL ATTRIBUTES FOR DELIVERIES IN NEW ENGLAND OVER A 20-YEAR PERIOD – AUTHORIZATION TO SIGN ONE OR MORE AGREEMENTS REGARDING THE SALE OF ENERGY AND BALANCING SERVICES WITH A WIND FARM DEVELOPER TO FIRM UP THE ENERGY DELIVERIES SOLD TO NEW ENGLAND OVER A 20-YEAR PERIOD**

WHEREAS the Board of Directors of Hydro-Québec authorized, on June 16, 2017, the Corporation, for the purposes of the Massachusetts request for proposals (MARFP), to conclude, jointly with a transmission line developer and, potentially, with one or more wind farm developers, one or more long-term agreements regarding the sale of electricity to distribution companies in Massachusetts,

**IT IS RESOLVED:**

TO authorize the Corporation, for the purposes of the Massachusetts request for proposals (MARFP), to conclude, jointly with a transmission line developer and, potentially, with one or more wind farm developers, one or more agreements regarding the sale of electricity to Massachusetts distribution companies, that is, Fitchburg Gas & Electric Light Company (doing business as Unitil), Massachusetts Electric Company and Nantucket Electric Company (doing business as National Grid), as well as NSTAR Electric Company and Western Massachusetts Electric Company (doing business as Eversource) (...)

TO authorize the Corporation, for the purposes of the Massachusetts request for proposals (MARFP), to conclude one or more agreements to combine Québec hydropower with wind power produced at a new wind farm located in Québec. These agreements will be signed in order to allow the wind power partners to submit a firm offer for long-term energy delivery with the distribution companies. (...)

TO authorize the Chairman of the Board and President or the General Manager of the Corporation to sign any document, instrument or agreement required for this purpose and to take all useful or necessary actions to give effect to this resolution.

---

I, the undersigned, Patrice Daigneault, Assistant Secretary of the Corporation, certify that the foregoing is a true copy of extracts of a resolution adopted by the Directors of the Corporation as of June 16, 2017 by consent in writing as permitted by Section 141(f) of the Delaware General Corporation Law and that they remain in force as adopted.

CERTIFIED TRUE COPY in Montréal on July 18, 2017.



Patrice Daigneault,  
Assistant Secretary

**Attachment 5.2.2**  
**NPT Authorization**

NORTHERN PASS TRANSMISSION LLC  
(Members Committee Written Consent)  
(Effective: June 15, 2017)

The undersigned, being all of the Representatives of the Members Committee of Northern Pass Transmission LLC, a New Hampshire limited liability company (the "Company"), in accordance with Section 7.7.3 of the Limited Liability Company Agreement of the Company, hereby consent to the following action in lieu of a meeting of the Members Committee of the Company:

**AUTHORIZATION TO SUBMIT BID PROPOSALS AND PARTICIPATE IN THE  
MASSACHUSETTS CLEAN ENERGY GENERATION RFP**

WHEREAS, in response to the Request for Proposals from Private Developers for Clean Energy Generation issued March 31, 2017, by the Commonwealth of Massachusetts Department of Energy Resources, Fitchburg Gas & Electric Light Company, d/b/a Unitil, Massachusetts Electric Company and Nantucket Electric Company, d/b/a National Grid, and NSTAR Electric Company and Western Massachusetts Electric Company d/b/a Eversource, including any amendments, reissuances or other modifications thereof (the "MA Clean Energy Generation RFP"), Northern Pass Transmission LLC ("Company") intends to submit one or more proposals and otherwise participate in the MA Clean Energy Generation RFP;

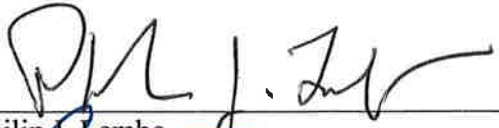

**NOW, THEREFORE, BE IT**

RESOLVED, that the Company be and hereby is authorized to submit one or more proposals in response to, and otherwise participate in, the MA Clean Energy Generation RFP upon such terms and conditions as any of the officers of the Company acting singly shall approve, the execution and delivery of such proposals by any such officer to be conclusive evidence of such approval.

RESOLVED, that the officers of the Company, and the officers of Eversource Energy Service Company, acting as agents of the Company, be, and each hereby is, authorized from time to time, in the name and on behalf of the Company, to execute, acknowledge, deliver and file any and all such certificates, petitions, applications, including applications for approval with any regulatory authorities or agencies having jurisdiction, including but not limited to the Federal Energy Regulatory Commission, and to do or cause to be done any and all such other acts and things and to pay or cause to be paid on behalf of the Company any and all such related costs and expenses as may be, in his, her or their judgment, necessary, desirable or appropriate in connection with any proposals submitted by the Company in response to the MA Clean Energy Generation RFP, and otherwise to effectuate the purposes and intent of the transactions authorized or contemplated by these resolutions, the taking of any such action to be conclusive evidence that the same has been authorized and approved by this Committee.

NORTHERN PASS TRANSMISSION LLC  
(Members Committee Written Consent)  
(Effective: June 15, 2017)

Signed by the Representatives as follows:

  
Philip J. Lembo  
  
Leon J. Olivier

### Attachment 5.3.1 Hydro-Québec – Financing Experience

Consistent with its approach to project financing described in Section 5 of this Proposal, Hydro-Québec will finance its transmission project at the corporate level through a combination of debt and equity, just as it financed the existing HQ Hydropower Resources. Therefore, Hydro-Québec does not maintain the types of project-specific financing information requested by the Distribution Companies. Furthermore, in 2016, about 59% of the investments were self-financed (paid with cash from operations). Between 2005 and 2016, that annual ratio<sup>1</sup> has varied between 41% and 83%. Hydro-Québec can provide additional information regarding its approach to funding infrastructure investments in general and/or the existing HQ Hydropower Resources in particular upon request by the Distribution Companies.

The tables set forth below present the most recent transmission projects carried out by Hydro-Québec TransÉnergie as well as the investments made by Hydro-Québec Production from 2005 through 2016.

HQ Transmission Project	Description	Amount*	In Service Date
1. Integration of the Romaine Complex	Construction of four segments of new transmission to interconnect 1,550 MW hydroelectric complex at La Romaine: Romaine-2 – Arnaud: 163 miles Romaine-1 – Romaine-2: 17 miles Romaine-4 – Montagnais: 109 miles Romaine-3 – Romaine-4: 20 miles Also includes 4 switchyards, a switching substation at 735 kV, and transmission system upgrades.	\$1,670	2014-2020
2. Integration of contracted wind farms pursuant to Hydro-Québec Distribution's March 2005 request for proposals	Integration of 14 wind farms totaling 1,936 MW of installed capacity.	\$1,466	2011-2015
3. Chamouchouane–Bout-de-l'Île Project	Construction of a new, 249 mile, 735 kV transmission line between Chamouchouane substation in La Doré (Lac-Saint-Jean) and the future 735/120/25 kV Judith-Jasmin substation, in Terrebonne, and moving a section of an existing 735 kV line over 11 miles.	\$1,135	2018

<sup>1</sup> Self-financing ratio: *Cash flows from operating activities less dividend paid, divided by sum of cash flows from investing activities, excluding net disposal or acquisition of short-term investments, and repayment of long term debt.*



<b>HQ Transmission Project</b>	<b>Description</b>	<b>Amount*</b>	<b>In Service Date</b>
4. Outaouais Interconnection	Construction of a new 1,250 MW HVDC interconnection between Hydro-Québec 315 kV network, from a new converter station built by ABB at Chenier, Montréal, to Ontario's Hydro One 230 kV network at a new converter station at the Outaouais substation.	\$662	2009-2010
5. Integration of contracted wind farms pursuant to Hydro-Québec Distribution's February 2003 request for proposals	Integration in the Gaspésie region of 8 wind farms totaling 990 MW of installed capacity.	\$598	2006-2012

*\* In millions of Canadian dollars. Amount approved by the Régie de l'énergie du Québec.*

**HQ Production Investments in generation assets for the years 2005 through 2016  
(in millions of Canadian dollars):**

	<b>Development</b>	<b>Maintenance</b>	<b>Total</b>
<b>2005</b>	1,334	446	1,780
<b>2006</b>	1,174	441	1,615
<b>2007</b>	1,404	403	1,807
<b>2008</b>	1,403	491	1,894
<b>2009</b>	1,422	644	2,066
<b>2010</b>	1,234	666	1,900
<b>2011</b>	951	516	1,467
<b>2012</b>	951	560	1,511
<b>2013</b>	965	416	1,381
<b>2014</b>	887	326	1,213
<b>2015</b>	663	294	957
<b>2016</b>	562	344	906
<b>Total</b>	<b>12,950</b>	<b>5,547</b>	<b>18,497</b>

### **Attachment 5.3.2**

#### **Eversource Energy – Financing Experience**

As summarized below and in the following table, Eversource Energy has extensive experience in financing major transmission projects in New England:

- In southwest Connecticut, an area that accounts for approximately 50 percent of the state's electric energy load, Eversource Energy constructed four major transmission projects, with a combined cost of over US\$1.6 billion. Those projects significantly reduced congestion and increased reliability.
- The New England East-West Solution (NEEWS) inter-related transmission projects, with a combined cost in excess of US\$670 million, were developed to address a number of interstate and intrastate problems threatening the regional power system reliability.
- In Massachusetts, Eversource Energy has extensive construction experience in connection with resolving reliability issues, including the Lower SEMA and Stoughton Cables projects totaling over US\$400 million.
- In New Hampshire, Eversource Energy constructed new and upgraded transmission and distribution assets, with a combined cost of approximately US\$140 million, solving reliability conditions in the seacoast and southwestern regions.

#### **RECENTLY COMPLETED EVERSOURCE PROJECTS > US\$70 MILLION**

<b>Project/Program</b>	<b>Description</b>	<b>Location</b>	<b>In-Service Date</b>	<b>Cost (US\$M)</b>
Bethel/Norwalk	Construction of a new 21-mile 345 kV line consisting of 2.1 miles of cross linked polyethylene (XLPE) cable, 9.7 miles of high pressure fluid filled (HPFF) cables and 8.6 miles of overhead construction	CT	2006	\$337
Glenbrook Cables	Construction of two sets of parallel 115 kV XLPE cables installed along an 8.7-mile route underneath roadways in a highly congested area of Fairfield County, close to New York City; and significant substation upgrades	CT	2008	\$239
Stoughton Cables	Construction in phases of two parallel 345 kV HPFF cables installed along a 17-mile route, and a third cable installed along an 11-mile route, all underneath roadways in and near Boston; a new 345 kV switching station, and associated substation improvements.	MA	2007 2009	\$317
Long Island Replacement Cable	Joint project with Long Island Power Authority: replacement of seven fluid-filled transmission cables between Norwalk, CT and Northport, NY by 3 138 kV XLPE marine cables, buried six feet below the sea bottom.	CT	2008	\$79*

Project/Program	Description	Location	In-Service Date	Cost (US\$M)
Middletown/Norwalk	Joint project with United Illuminating: Construction of a new 345 kV circuits consisting of 45 miles of overhead line and 24 miles of underground cables; reconstruction of 57 miles of 115 kV line; construction of new substations and expansion of existing substations.	CT	2009	\$955*
Greater Springfield Reliability (NEEWS)	Construction of 39 linear miles of new 345 kV transmission lines and reconstruction of existing 115 kV lines between Ludlow, Massachusetts, and Bloomfield, Connecticut with 13 new or rebuilt substations and switching stations (110 circuit miles)	MA/CT	2013	\$676
Long-Term Lower SEMA Upgrades	Construction of new 18 mile 345 kV line between Carver, MA, across Cape Cod canal to Bourne, MA and new 345 kV substation; reconstruction of pre-existing 345 kV line on separate towers, and related 115 kV modifications.	MA	2014	\$106
Interstate Reliability (NEEWS)	Joint project with National Grid: Connecticut portion: 37 miles of new 345 kV line with associated substation improvements.	CT	2015	\$218*

\* Eversource cost only

## Attachment 5.4.1

### Financial Strength of Hydro-Québec as of December 31, 2016

Hydro-Québec's cue card 2016-2017 can be found at:

[http://www.hydroquebec.com/publications/en/docs/cue-card/infocarte\\_2016-2017.pdf](http://www.hydroquebec.com/publications/en/docs/cue-card/infocarte_2016-2017.pdf)

#### HYDRO-QUÉBEC: A QUALITY INVESTMENT

Security	Debt Characteristics as at December 31, 2016	Credit Ratings as at December 31, 2016			
Unconditional guarantee by the Québec government on most of Hydro-Québec's debt (debentures, medium-term notes, commercial paper)	Average term: 17 years		Long-term debt	Commercial paper	Outlook/Trend
	Fixed rate <sup>9</sup> : 84.2%	Moody's	Aa2	P-1	Stable
	Floating rate <sup>9</sup> : 15.8%	Standard & Poor's	A+	A-1+	N/A <sup>10</sup>
	Breakdown by repayment currency <sup>9</sup> : C\$ 100% US\$ 0%	Fitch Ratings	AA-	F1+	Stable
		DBRS	A (high)	R-1 (middle)	Stable

9. Including derivatives. Derivatives consist of swaps and forward contracts traded for long-term risk management related to debt. Breakdown by currency at time of issue is 78.9% in C\$ and 21.1% in US\$.

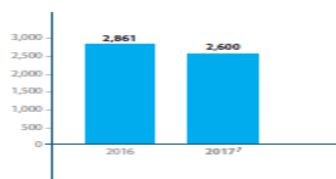
10. Standard & Poor's does not provide an outlook for Hydro-Québec's credit rating. However, it gave a "stable" outlook to the Québec government, Hydro-Québec's shareholder and guarantor, after upgrading the government's credit rating from A+ to AA- in June 2017.

#### 2016 HIGHLIGHTS

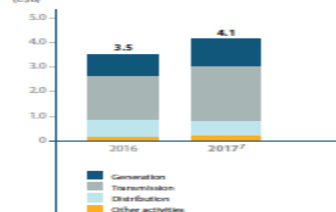
- Net electricity exports reached a historic high of 32.6 TWh, contributing \$803 million to net income.
- Hydro-Québec launched its *Strategic Plan 2016–2020*, which places customers at the heart of its priorities and sets new growth avenues for the company, including the acquisition of assets or stakes outside Québec.
- The company issued \$1.0 billion in fixed-rate medium-term notes at a cost of 1.1%, as well as variable-rate notes for a total amount of \$1.0 billion. Both series will mature in 2019.

#### 2017 FINANCIAL OUTLOOK

##### NET INCOME (C\$M)



##### INVESTMENTS IN PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS<sup>8</sup> (C\$B)



##### FINANCING ACTIVITIES<sup>9</sup> (C\$B)



7. Forecasts.

8. Excluding investments related to new growth avenues.

#### HYDRO-QUÉBEC: A QUALITY INVESTMENT

Security	Debt Characteristics as at December 31, 2016	Credit Ratings as at December 31, 2016			
Unconditional guarantee by the Québec government on most of Hydro-Québec's debt (debentures, medium-term notes, commercial paper)	Average term: 17 years		Long-term debt	Commercial paper	Outlook/Trend
	Fixed rate <sup>9</sup> : 84.2%	Moody's	Aa2	P-1	Stable
	Floating rate <sup>9</sup> : 15.8%	Standard & Poor's	A+	A-1+	N/A <sup>10</sup>
	Breakdown by repayment currency <sup>9</sup> : C\$ 100% US\$ 0%	Fitch Ratings	AA-	F1+	Stable
		DBRS	A (high)	R-1 (middle)	Stable

9. Including derivatives. Derivatives consist of swaps and forward contracts traded for long-term risk management related to debt. Breakdown by currency at time of issue is 78.9% in C\$ and 21.1% in US\$.

10. Standard & Poor's does not provide an outlook for Hydro-Québec's credit rating. However, the outlook it has given the Québec government, Hydro-Québec's shareholder and guarantor, went from "stable" to "positive" in 2016.

## Attachment 5.4.2

### Eversource Energy – Financial Highlights

- Eversource Energy is a large cap company traded on the New York Stock Exchange, with an equity market capitalization of approximately US\$17.5 billion.
- Eversource Energy is listed as number 343 on the Fortune 500 2016 list of the largest U.S. corporations (by gross revenues).
- Eversource Energy has a US\$1.45 billion commercial paper program that is used to fund short-term working capital requirements. Eversource initially draws on its commercial paper program to fund its projects. As short-term debt accumulates, it is refinanced with long-term debt sold in the capital markets.
- Eversource Energy has invested US \$5.3 billion in new energy infrastructure in the past three years.

In addition, the following table includes selected consolidated financial data (in millions of US dollars) of Eversource Energy.

#### Eversource Energy Selected Consolidated Financial Data – Balance Sheet and Income Statement

<i>(Millions of Dollars)</i>	<u>2016</u>	<u>2015</u>	<u>2014</u>
Balance Sheet Data:			
Property, Plant and Equipment, Net	\$21,351	\$19,892	\$18,647
Total Assets	32,053	30,580	29,740
Total Capitalization	20,470	19,542	18,946
Income Statement Data:			
Operating Revenues	7,639	7,955	7,742
Net Income	950	886	827

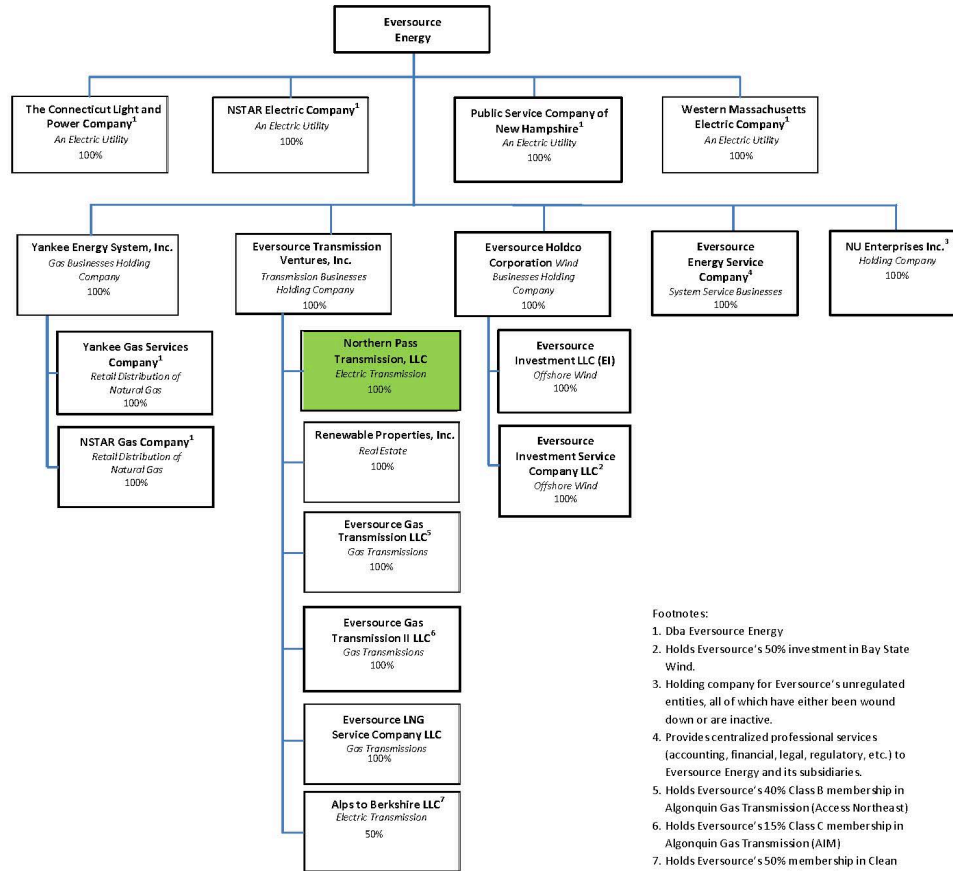
#### Eversource Energy Selected Consolidated Cash Flow Data – Funds from Operations and Debt Issuances

<i>(Millions of Dollars)</i>	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>Total</u>
Net Cash Flow Provided by Operating Activities	\$2,175	\$1,434	\$1,652	\$5,261
Issuance of Long-term Debt	800	1,225	725	2,750
Increase / (Decrease) in Short-term Debt	(12)	(242)	285	31
Total Debt Issuances	788	983	1,010	2,781

REDACTED

## Attachment 5.21

### Eversource Energy Corporate Chart<sup>2</sup>



<sup>2</sup> Major subsidiaries as of January 1, 2017.

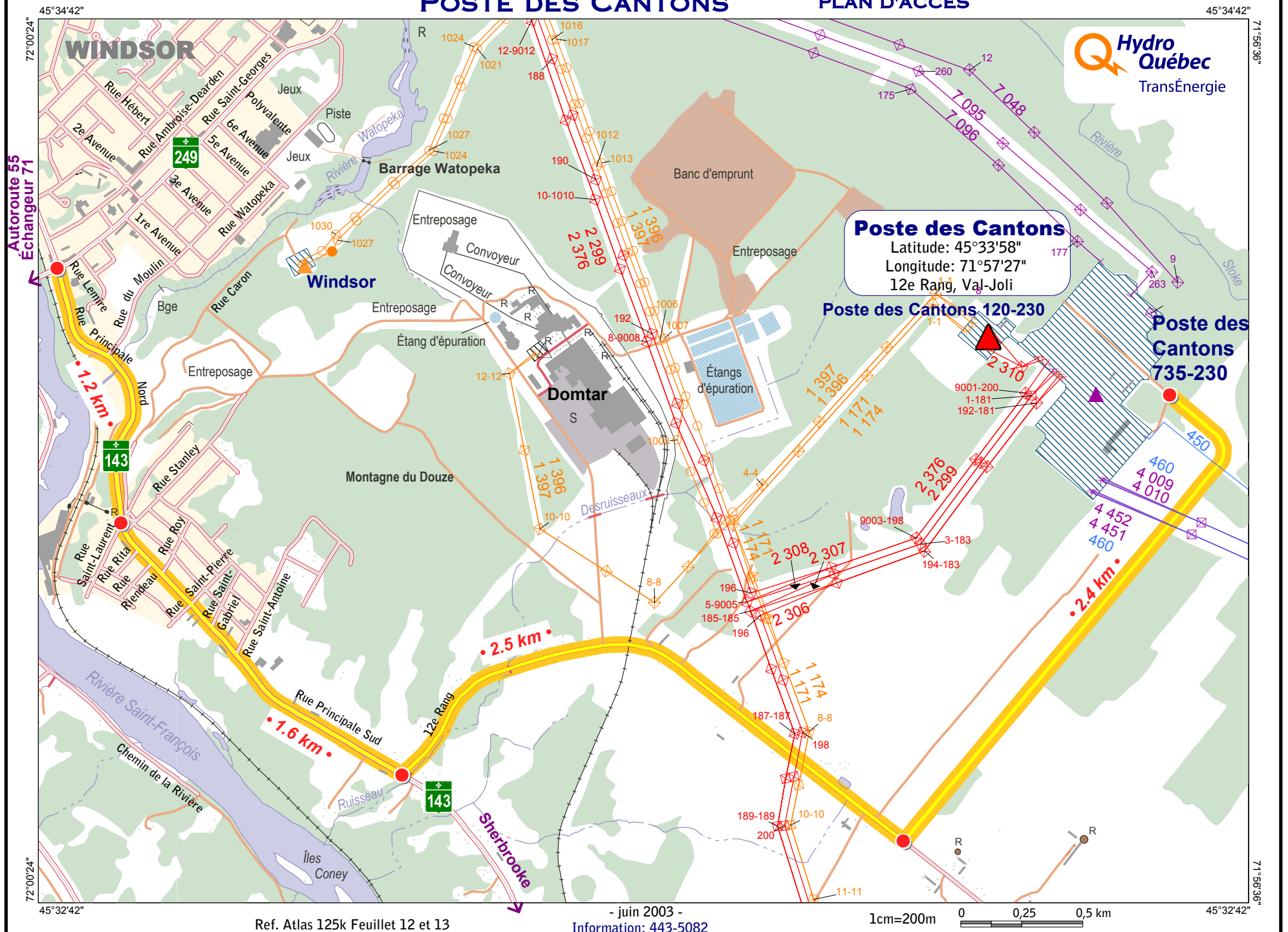
REDACTED



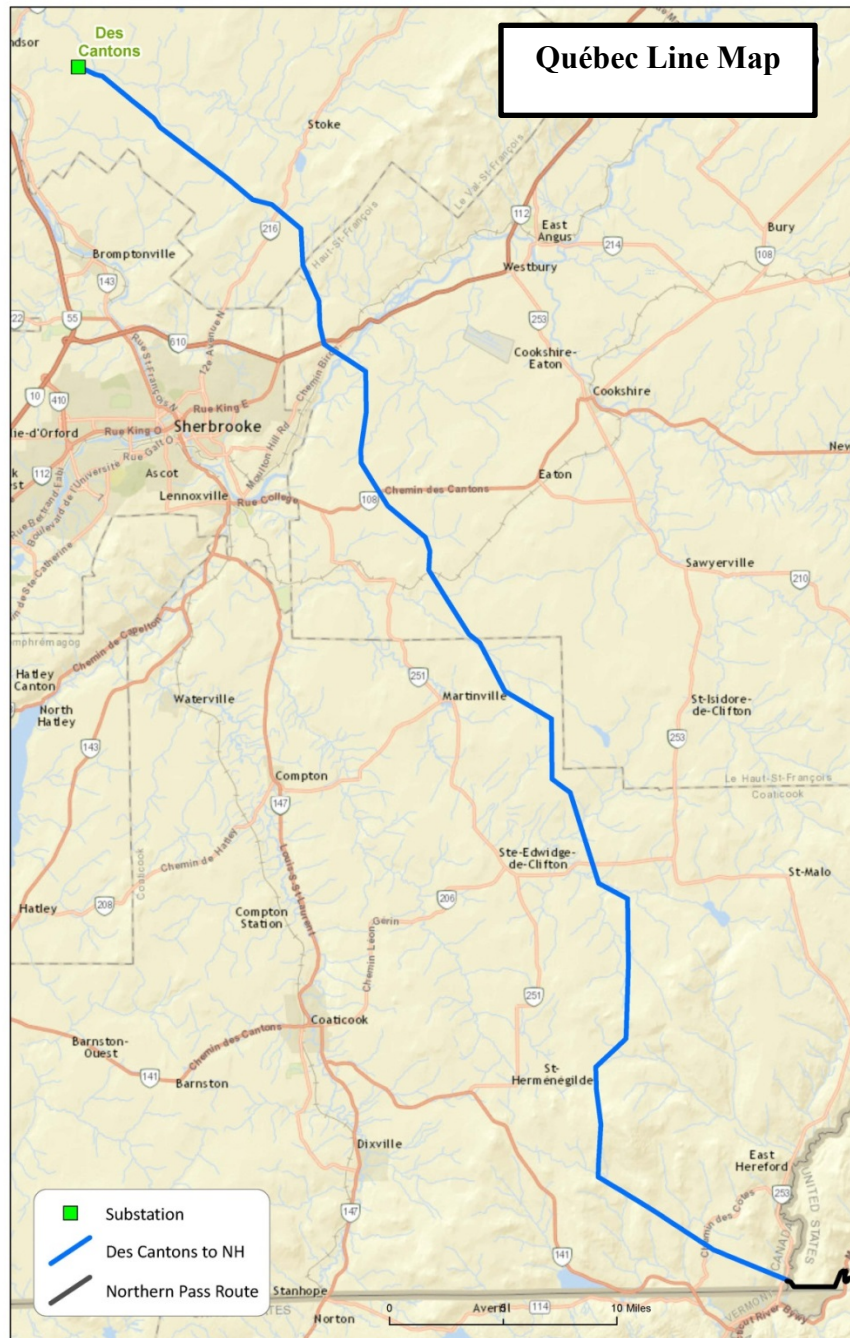
**Attachment 6.1.2**  
**Des Cantons Substation Site Plan**

# POSTE DES CANTONS

## PLAN D'ACCÈS

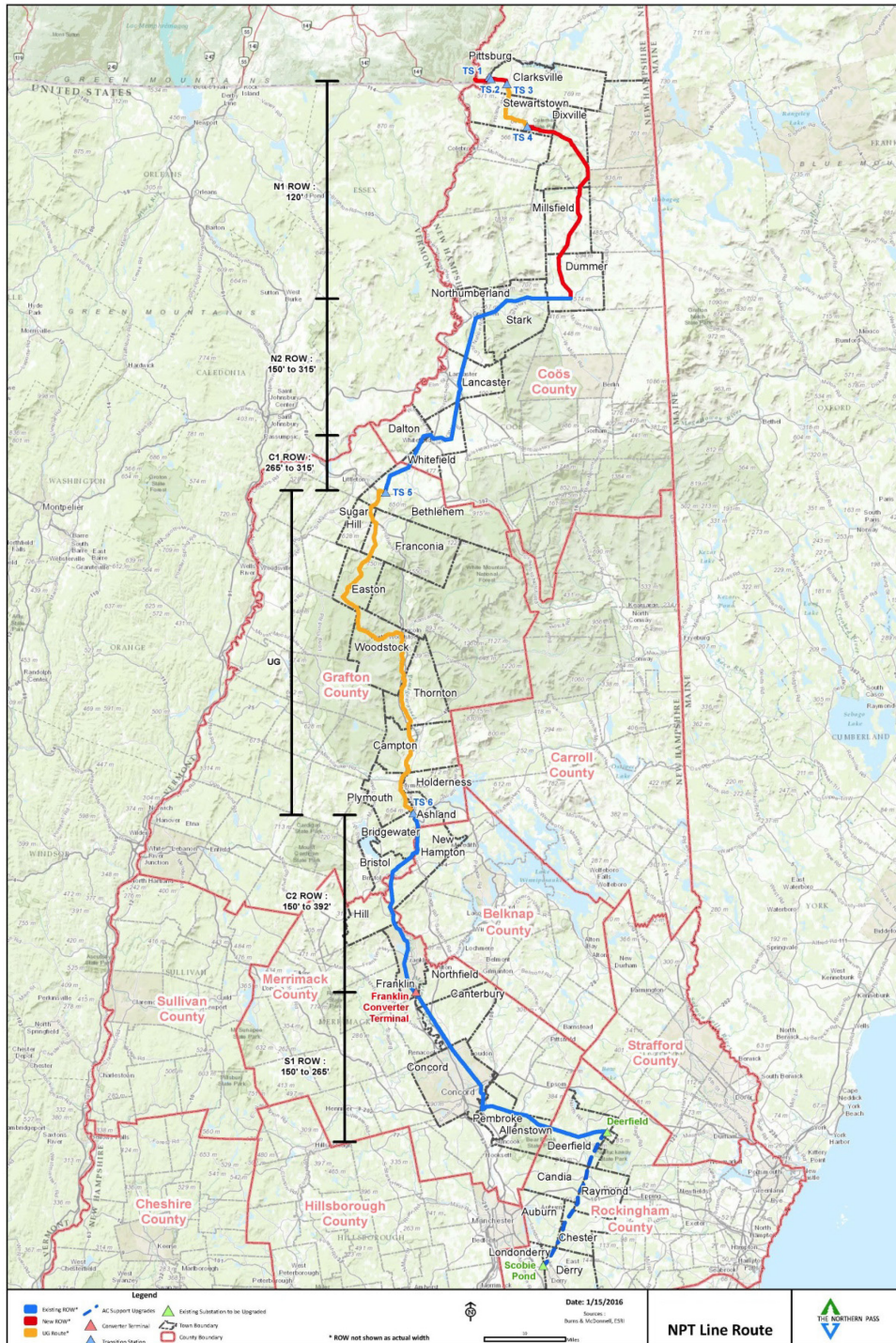


# Attachment 6.1.3 Quebec Line Route Map





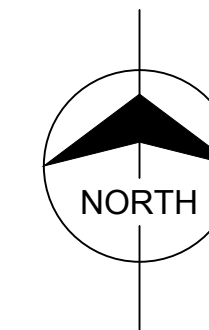
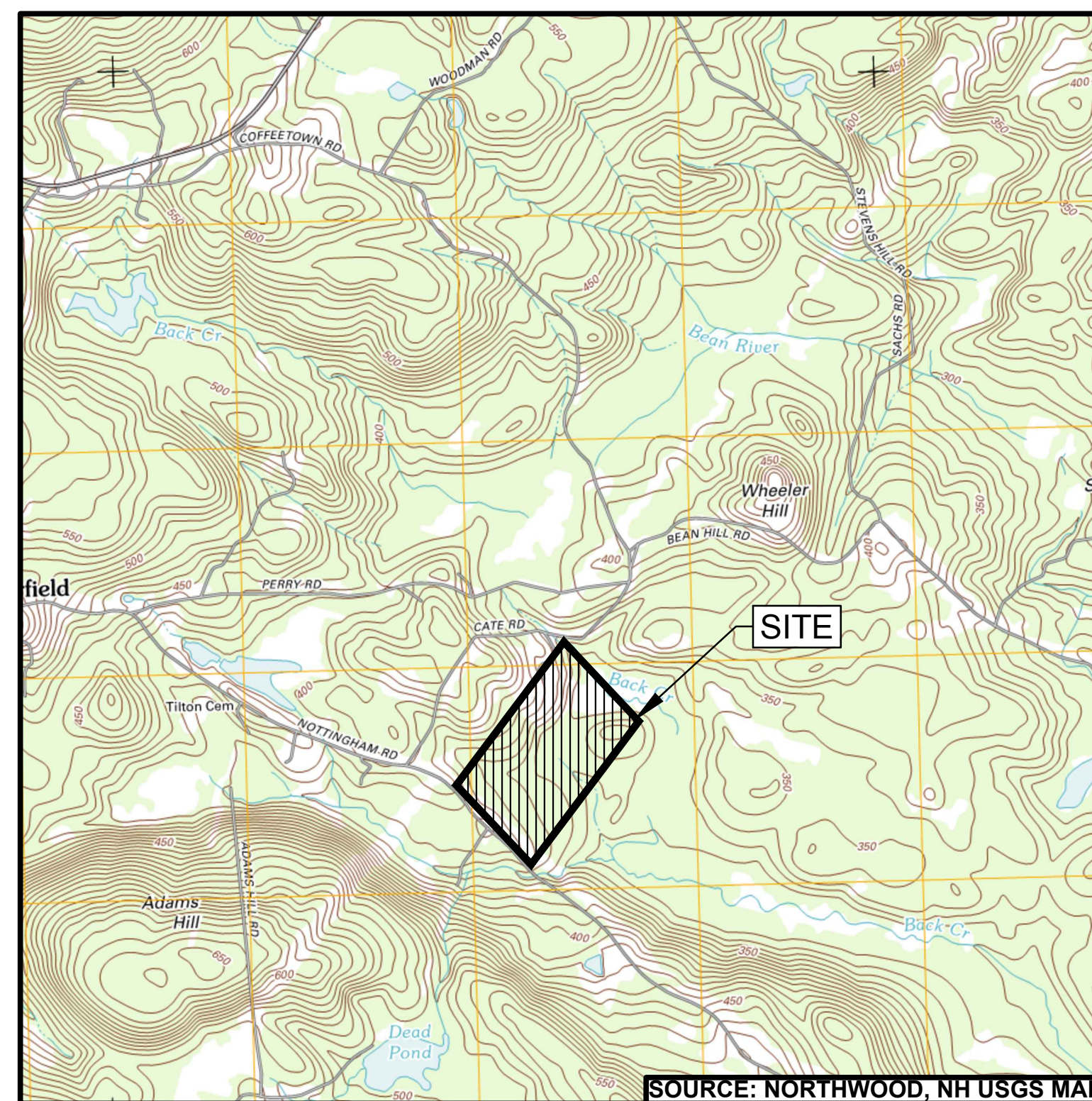
# Attachment 6.1.4 NPT Line Route Map



**Attachment 6.1.5**  
**Deerfield Substation Site Plan**



**CATE ROAD, DEERFIELD, NH 03037**



### VICINITY MAP

0 2000' 4000'

SCALE IN FEET

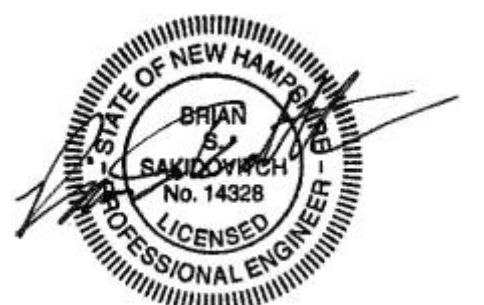
**OCTOBER 1, 2015**

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**


DRAWING	DESCRIPTION
CVR	COVER SHEET
G001	GENERAL NOTES AND LEGEND
C100	SITE LAYOUT PLAN
C101	GRADING PLAN
C102	EROSION AND SEDIMENTATION CONTROL PLAN
C103	PLANTING PLAN
C104	STORMWATER SYSTEM PLAN
C200	ACCESS ROAD PROFILE
C300	SITE CROSS SECTIONS
C500	EROSION AND SEDIMENTATION CONTROL NOTES
C501	EROSION AND SEDIMENTATION CONTROL DETAILS
C502	EROSION AND SEDIMENTATION CONTROL DETAILS
C503	CONSTRUCTION DETAILS
C504	CONSTRUCTION DETAILS
C505	CONSTRUCTION DETAILS
C506	CONSTRUCTION DETAILS
C507	CONSTRUCTION DETAILS
C508	CONSTRUCTION DETAILS
C509	CONSTRUCTION DETAILS



NEW HAMPSHIRE STATE LAW REQUIRES HOMEOWNERS AND CONTRACTORS TO CONTACT DIG SAFE, BY DIALING 8-1-1 AT LEAST THREE BUSINESS DAYS BEFORE BEGINNING ANY DIGGING OR EXCAVATION PROJECT. WHEN DIG SAFE RECEIVES A CALL, THE HOMEOWNER OR CONTRACTOR MUST WAIT 72 BUSINESS HOURS. DURING THIS TIME, UTILITY REPRESENTATIVES RESPOND TO MARK THEIR LINES WITHIN YOUR PRE-MARKED AREA. ALL INFORMATION REGARDING DIG SAFE RULES AND REGULATIONS CAN ALSO BE FOUND AT [www.digsafe.com](http://www.digsafe.com).



This document has been digitally sealed.  
Oct 5 2015

[illegible]Transmission  
Business

	#
--	---

DATE: 10/1/2015

DEERFIELD SUBSTA  
COVER SHEET

SCALE: NTS

ES: LRM	CHK:RLR
WRW: FP	APR: BSS
TOWN:	
DEERFIELD, NH	
TRANSMISSION LINE:	

SHEET 1 OF 19

NPTT601-CVR

W 11601 Cvr



**BACKGROUND NOTES:**









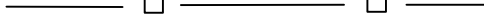

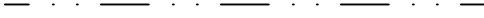









1. BACKGROUND INFORMATION TAKEN FROM "EXISTING CONDITIONS PLAN" FOR DEERFIELD STATION, OFF CATE ROAD, DEERFIELD, NH. PREPARED BY CHA, CONSULTING, INC. DATED DECEMBER 2, 2013. LAST REVISED SEPTEMBER 23, 2014. SURFACE OBSERVABLE INFORMATION AND CONTOURS SHOWN WITHIN THE LIMITS OF GROUND SURVEY AREA, IS THE RESULT OF AN ON-THE-GROUND SURVEY PERFORMED BY CHA, CONSULTING INC. ON OR BETWEEN OCTOBER 16, 2013 AND AUGUST, 2014. ALL OTHER CONTOURS SHOWN HEREON ARE THE RESULT OF LIDAR DATA PROVIDED BY GEODIGITAL INTERNATIONAL CORP. AND BASED ON NOVEMBER 2010 DATA COMPILATION.
2. ELEVATIONS, CONTOURS AND BENCHMARKS ARE BASED ON NAVD 1988 VERTICAL DATUM.
3. HORIZONTAL LOCATIONS ARE BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM NAD 83.
4. WETLAND FLAGS SHOWN HEREON WERE PROVIDED BY NORMANDEAU, DELINEATED BY NORMANDEAU IN JULY OF 2010.
5. THE SITE IS LOCATED WITHIN ZONE 'X' FLOOD ZONE AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AND WITHIN ZONE 'A', SPECIAL AREA SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD, NO FLOOD ELEVATIONS DETERMINED ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NUMBER 33015C0095E PANEL 95 OF 1300, ROCKINGHAM COUNTY, NH, DATED MAY 17, 2005.
6. PROPERTY AREA = 62.98 ACRES, NPDES/LIMIT OF DISTURBANCE (LOD) AREA TOTAL = 8.40 ACRES.

GENERAL NOTES:

1. GENERAL NOTES SHALL APPLY TO THE SITE DEVELOPMENT PLANS THROUGHOUT. REFER TO INDIVIDUAL SHEETS FOR SHEET SPECIFIC NOTES.
2. CONTRACTOR(S) TO TAKE AND VERIFY ALL DIMENSIONS AND CONDITIONS OF THE WORK AND BE RESPONSIBLE FOR COORDINATION OF SAME. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK.
3. ENGINEER ASSUMES NO RESPONSIBILITY AS TO THE CONTENT OF THE EXISTING CONDITIONS PLAN INCLUDING BUT NOT LIMITED TO LOCATION, SIZE, AND ELEVATIONS OF UTILITIES AND STRUCTURES NOT VISIBLE AND WHERE TAKEN FROM PLANS BY OTHERS.
4. EXISTING CONDITIONS SURVEY INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY COMPANY AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "DIGSAFE" PRIOR TO COMMENCEMENT OF WORK AT "811" AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
5. THE CONTRACTOR SHALL VERIFY ALL EXISTING SITE AND BUILDING CONDITIONS IN THE FIELD AND CONTACT THE OWNER AND ENGINEER IF THERE ARE ANY QUESTIONS AND/OR CONFLICTS REGARDING THE SITE DEVELOPMENT PLANS AND/OR EXISTING FIELD CONDITIONS PRIOR TO CONSTRUCTION. REFER TO THE PROJECT SPECIFICATIONS MANUAL FOR ADDITIONAL INFORMATION. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED, EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, INFORM THE OWNER AND CONSULT THE CIVIL ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.
6. ALL CONSTRUCTION SHALL COMPLY WITH PROJECT SPECIFICATION MANUAL, EVERSOURCE STANDARDS AND SPECIFICATIONS, AND THESE PLANS. IF SPECIFICATIONS ARE IN CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL APPLY. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE OSHA, FEDERAL, STATE AND LOCAL REGULATIONS. INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
  - a. NEW HAMPSHIRE STORMWATER MANUAL, VOLUMES 1, 2 & 3, DECEMBER 2008.
  - b. NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION MANUAL ON DRAINAGE DESIGN FOR HIGHWAYS, REVISION DATE APRIL 1998.
  - c. NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD PLANS AND SPECIFICATIONS (2010).
  - d. EVERSOURCE BEST MANAGEMENT PRACTICES MANUAL (TO BE FURTHER DEVELOPED).
  - e. EVERSOURCE STANDARD SPECIFICATIONS (10-24-2014).
7. DO NOT INTERRUPT EXISTING SERVICING UTILITIES AND FACILITIES OCCUPIED AND USED BY THE OWNER OR OTHERS DURING OCCUPIED HOURS EXCEPT WHEN SUCH INTERRUPTIONS HAVE BEEN AUTHORIZED IN WRITING BY THE OWNER, THE LOCAL MUNICIPALITIES, THE UTILITY PROVIDER, AND ANY APPLICABLE REGULATORY AGENCY. INTERRUPTIONS SHALL ONLY OCCUR AFTER ACCEPTABLE TEMPORARY SERVICE HAS BEEN PROVIDED.

- THE CONTRACTOR SHALL PROVIDE RECORD AS-BUILT DRAWINGS OF ALL CONSTRUCTION IN ACCORDANCE WITH OWNER AND REGULATORY AGENCY REQUIREMENTS (INCLUDING UNDERGROUND UTILITIES) TO THE OWNER AT THE END OF CONSTRUCTION.
9. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING PLANS. IN CASE OF CONFLICT BETWEEN PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
10. IF A CONFLICT ARISES BETWEEN PLANS, SPECIFICATIONS, AND/OR DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
11. THE CONTRACTOR SHALL ABIDE BY ALL OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS IN ALL INSTANCES AND WHEN OPERATING CRANES, BOOMS, HOISTS, ETC. IN CLOSE PROXIMITY TO OVERHEAD ELECTRIC LINES. IF CONTRACTOR MUST OPERATE EQUIPMENT CLOSE TO ELECTRIC LINES, CONTACT POWER COMPANY TO MAKE ARRANGEMENT FOR PROPER SAFEGUARDS. ANY UTILITY COMPANY FEES SHALL BE PAID FOR BY THE CONTRACTOR.
12. THE ENGINEER IS NOT RESPONSIBLE FOR SITE SAFETY MEASURES TO BE EMPLOYED DURING CONSTRUCTION. THE ENGINEER HAS NO CONTRACTUAL DUTY TO CONTROL THE SAFEST METHODS OR MEANS OF THE WORK, JOB SITE RESPONSIBILITIES, SUPERVISION OR TO SUPERVISE SAFETY AND DOES NOT VOLUNTARILY ASSUME ANY SUCH DUTY OR RESPONSIBILITY.
13. ALL NOTES AND DIMENSIONS DESIGNATED "TYPICAL" OR "(TYP.)" APPLY TO ALL LIKE OR SIMILAR CONDITIONS THROUGHOUT THE PROJECT.
14. ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF SUBMITTED, REVIEWED, AND APPROVED BY THE OWNER, ENGINEER, AND APPROPRIATE REGULATORY AGENCY PRIOR TO CONSTRUCTION.
15. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL PRODUCTS AND MATERIALS PER PLANS AND SPECIFICATIONS TO THE OWNER AND ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDERING, FABRICATION, OR DELIVERY TO THE SITE. FOR EACH SUBMITTAL, ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.
16. THE CONTRACTOR SHALL RESTORE ANY DRAINAGE STRUCTURE, PIPE, UTILITY, PAVEMENT, CURBS, SIDEWALKS, LANDSCAPED AREAS OR SIGNAGE AND OTHER INCIDENTAL DISTURBANCES AND DAMAGES DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER, AS APPROVED BY THE OWNER, ENGINEER AND REGULATORY AGENCY.
17. THE CONTRACTOR SHALL COMPLY WITH 29 CFR PART 1926 FOR EXCAVATION TRENCHING AND TRENCH PROTECTION REQUIREMENTS.
18. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
19. DEMOLITION OF EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO BUILDINGS, STRUCTURES, PAVEMENT, WELLS, SEPTIC, SANITARY SEWER, FENCES, TREES, ETC. SHALL BE PER THE DIRECTION OF EVERSOURCE AND SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
20. PERMANENT BENCHMARKS SHALL BE INSTALLED UPON COMPLETION OF CLEARING.
21. ELECTRICAL SUBSTATION COMPONENTS, UNDERGROUND TRANSMISSION LINES, OVER HEAD TRANSMISSION LINES AND THEIR FOUNDATIONS DEPICTED HEREIN ARE FOR REFERENCE ONLY.
22. ANY CLEARED AND EXCAVATED MATERIALS WHICH ARE SUSPECTED OF BEING ENVIRONMENTALLY POLLUTED, CONTAMINATED, OR IMPACTED SHALL BE STOCKPILED ON-SITE ON TOP OF POLYETHYLENE SHEETING AND COVERED WITH POLYETHYLENE SHEETING. THE OWNER AND ENGINEER SHALL BE IMMEDIATELY INFORMED UPON ENCOUNTERING THIS MATERIAL. STORAGE, TESTING, TREATMENT, REMOVAL, AND DISPOSAL OF ENVIRONMENTALLY POLLUTED, CONTAMINATED, OR IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
23. CONTRACTOR SHALL TAKE PRECAUTIONS TO ENSURE NO DISTURBANCE BEYOND THE DEPICTED LIMIT OF DISTURBANCE.
24. THE CONTRACTOR SHALL ESTABLISH BEST MANAGEMENT PRACTICES FOR BLASTING OF BEDROCK IN ACCORDANCE WITH THE NHDES PUBLICATION WD-10-12 "ROCK BLASTING AND WATER QUALITY MEASURES THAT CAN BE TAKEN TO PROTECT WATER QUALITY AND MITIGATE IMPACTS", 2010. IF THE BLAST ROCK VOLUME GENERATED IS GREATER THAN 5,000 CUBIC YARDS, THE CONTRACTOR SHALL DEVELOP A GROUNDWATER MONITORING PROGRAM FOR SUBMISSION TO THE OWNER AND ENGINEER. BLASTING SHALL NOT COMMENCE UNTIL THESE REQUIREMENTS ARE APPROVED BY THE NHDES, AS REQUIRED.
25. PROPOSED STORM DRAINAGE SYSTEM SHALL BE HS-20 RATED.

### EXISTING LEGEND

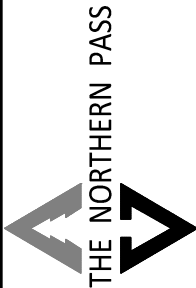
	PROPERTY LINE
	ADJOINING PROPERTY LINE
	RIGHT OF WAY LINE
	EASEMENT LINE
	MAJOR CONTOUR
	MINOR CONTOUR
	TREELINE
	OVER HEAD WIRE
	STOCKADE FENCE
	CHAIN LINK FENCE
	WETLANDS LINE
	STREAM OR WATERWAY
	STONEWALL
 WF600-9	WETLAND FLAG
 IP	IRON PIPE
 CB/DH	CONCRETE BOUND WITH DRILL HOLE
 SB/DH	STONE BOUND WITH DRILL HOLE
	SURVEY CONTROL POINT
	UTILITY POLE
	WETLANDS

## LIST OF ABBREVIATIONS

ACP	ASBESTOS CEMENT PIPE	MAX	MAXIMUM
APT	ANGLE POINT	MFR	MANUFACTURER
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MH	MANHOLE
BIT	BITUMINOUS CONCRETE	MIN	MINIMUM
BLDG	BUILDING	N	NORTHING
BM	BENCH MARK	NO	NUMBER
BW	BOTTOM OF WALL	NOM	NOMINAL
CB	CATCH BASIN	OC	ON CENTER
CATV	CABLE TELEVISION	OCS	OUTLET CONTROL STRUCTURE
CI	CAST IRON PIPE	OD	OUTSIDE DIMENSION
CIC	CAST IRON COVER	PC	POINT OF CURVATURE
CL	CENTERLINE	PCC	POINT OF CONCENTRIC CURVATURE
CL	CENTERLINE	POB	POINT OF BEGINNING
CLF	CHAIN LINK FENCE	PI	POINT OF INTERSECTION
CLR	CLEAR	PIV	POST INDICATOR VALVE
CMP	CORRUGATED METAL PIPE	PRC	POINT OF REVERSE CURVATURE
CO	CLEANOUT	PSI	POUNDS PER SQUARE INCH
CONC	CONCRETE	PT	POINT OF TANGENCY
COR	CORNER	PVC	POLYVINYL CHLORIDE PIPE
CTRS	CENTERS	R	RADIUS
DIA	DIAMETER	RAD PT	RADIUS POINT
DMH	DRAINAGE MANHOLE	RPC	REINFORCED CONCRETE PIPE
E	EASTING	SD	STORM DRAIN
EL	ELEVATION	SDMH	STORM DRAIN MANHOLE
EMH	ELECTRIC MANHOLE	SESC	SOIL EROSION AND SEDIMENT CONTROL
EOP	EDGE OF PAVEMENT	SS	SANITARY SEWER
EXP	EXPANSION	SSMH	SANITARY SEWER MANHOLE
EXIST	EXISTING	SSFM	SANITARY SEWER FORCE MAIN
G	GAS	SQ FT	SQUARE FOOT
GALV	GALVANIZED	SQ M	SQUARE METER
GR	GRATE	TYP	TYPICAL
HDPE	CORRUGATED HIGH DENSITY POLYETHYLENE PIPE	TW	TOP OF WALL
HT	HEIGHT	UC	UNDERGROUND COMMUNICATION
INV	INVERT	UD	UNDERDRAIN
LBS	POUNDS	UE	UNDERGROUND ELECTRICAL
LF	LINEAR FOOT	UP	UTILITY POLE
LFC	LOW FLOW CHANNEL	VC	VITRIFIED CLAY PIPE
LQD	LIMIT OF DISTURBANCE	W/O	WITHOUT

### PROPOSED LEGEND

	MAJOR CONTOUR
	MINOR CONTOUR
	TREELINE
	PERIMETER FENCE
	GUIDERAIL
	SILT FENCE
	CONSTRUCTION FENCE
	LIMIT OF STONE SURFACING
	LIMIT OF DISTURBANCE
	STORMWATER SWALE
	UNDERDRAIN
	FRENCH DRAIN
	STORM SEWER PIPE
	STORM INLET
	MANHOLE
	OUTLET CONTROL STRUCTURE
	INLET PROTECTION
	FLARED END SECTION
	CLEANOUT
	SPOT ELEVATION
	RIP RAP
	WETLAND IMPACT AREA
	STONE SURFACING
	GRASS
	NRCS SOIL TYPE/BOUNDARY

[illegible]Transmission  
Business

#

DEERFIELD SUBSTATION  
GENERAL NOTES  
AND LEGEND

DATE: 10/1/2015

---

DES: LRM  
DRW: FP

CHK: RLR  
APR: BSS

TOWN:  
DEERFIELD, NH

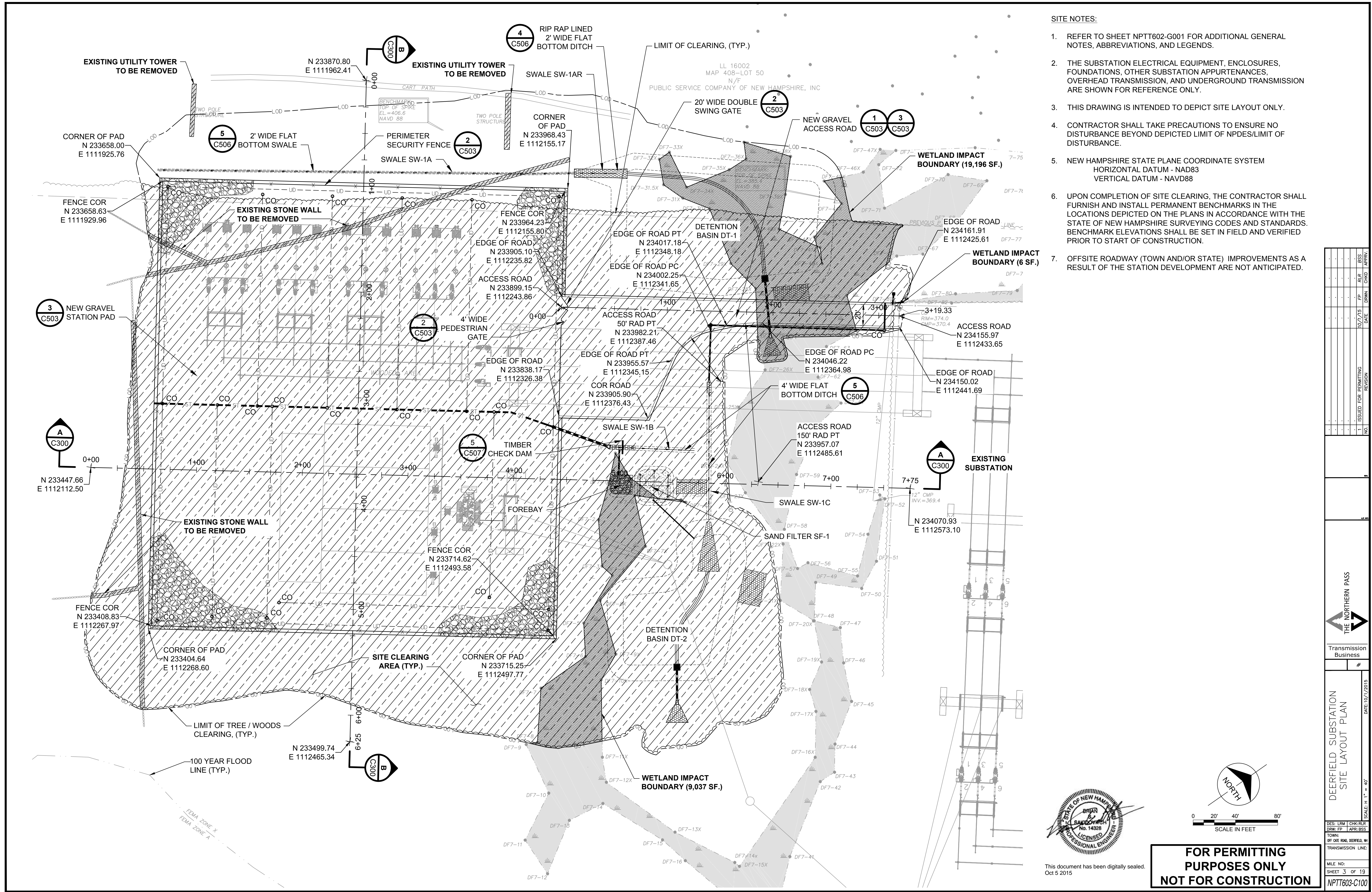
TRANSMISSION LINE:

MILE NO:
SHEET 2 OF 19

This document has been digitally sealed  
Oct 5 2015

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**






SITE NOTES:

1. REFER TO SHEET NPTT602-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
2. THE SUBSTATION ELECTRICAL EQUIPMENT, ENCLOSURES, FOUNDATIONS, OTHER SUBSTATION APPURTENANCES, OVERHEAD TRANSMISSION, AND UNDERGROUND TRANSMISSION ARE SHOWN FOR REFERENCE ONLY.
3. THIS DRAWING IS INTENDED TO DEPICT SITE LAYOUT ONLY.
4. CONTRACTOR SHALL TAKE PRECAUTIONS TO ENSURE NO DISTURBANCE BEYOND DEPICTED LIMIT OF NPDES/LIMIT OF DISTURBANCE.
5. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
6. UPON COMPLETION OF SITE CLEARING, THE CONTRACTOR SHALL FURNISH AND INSTALL PERMANENT BENCHMARKS IN THE LOCATIONS DEPICTED ON THE PLANS IN ACCORDANCE WITH THE STATE OF NEW HAMPSHIRE SURVEYING CODES AND STANDARDS. BENCHMARK ELEVATIONS SHALL BE SET IN FIELD AND VERIFIED PRIOR TO START OF CONSTRUCTION.
7. OFFSITE ROADWAY (TOWN AND/OR STATE) IMPROVEMENTS AS A RESULT OF THE STATION DEVELOPMENT ARE NOT ANTICIPATED.

DEERFIELD SUBSTATION SITE LAYOUT PLAN		#		DATE: 07/17/2015	
DES: LRM		CHK: RLR			
DRW: FP		APR: BSS			
TOWN: OFF. DATE ROAD, DEERFIELD, WI					
TRANSMISSION LINE:					
MILE NO:					
SHEET 3 OF 19					
NPTT603-C100					

Transmission Business				THE NORTHERN PASS	

1		ISSUED FOR PERMITTING		10/1/15		R/R		BSS	
NO.		REVISION		DATE		DRAWN		CHKD. APPROV.	

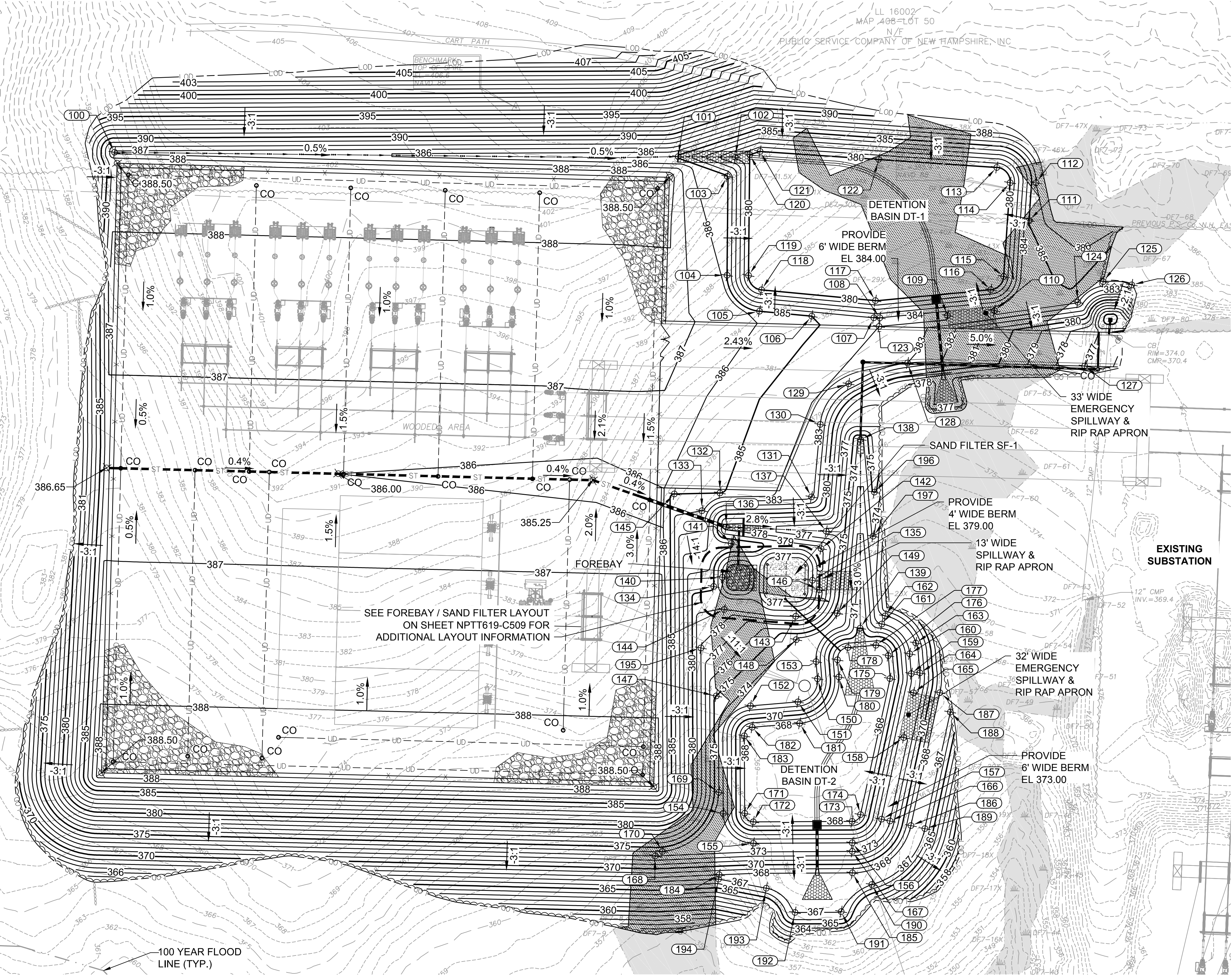


GRADING NOTES:

1. REFER TO SHEET NPTT602-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
2. REFER TO SHEET NPTT609-C300 FOR GRADING CROSS SECTIONS.
3. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
4. PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.
5. ALL FILL AND CUT SLOPES ARE 3-FT HORIZONTAL TO 1-FT VERTICAL (3:1) UNLESS NOTED OTHERWISE.

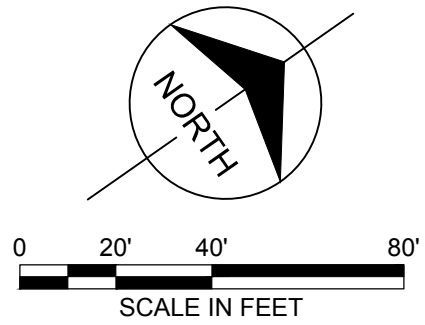
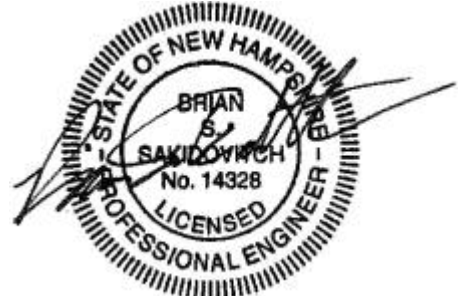
6. CONTRACTOR SHALL PLACE 4" TOPSOIL AND SEED ON ALL CUT AND FILL SLOPES AS SPECIFIED UNLESS ANOTHER SURFACE MATERIAL IS INDICATED. EROSION CONTROL BLANKETS (NORTH AMERICAN GREEN SC250 OR ENGINEER APPROVED EQUAL) SHALL BE PLACED OVER ALL SEEDED SIDE SLOPES.
7. AFTER COMPLETION OF YARD SUBGRADE WORK, THE SURFACE COURSE FOR THE SUBSTATION (INSIDE THE FENCE, 3-FT OUTSIDE THE FENCE, AND WHERE INDICATED ON THE PLANS) SHALL CONSIST OF A 4-INCH LAYER OF CRUSHED BASALT (ANGULAR STONE) MEETING THE GRADATION REQUIREMENTS EXPLAINED IN THE SPECIFICATIONS.
8. CONTRACTOR SHALL PROTECT/REPAIR ALL SLOPES UNTIL FINAL VEGETATIVE OR STONE STABILIZATION.

9. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED AND STABILIZED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS.
10. STABILIZE ALL DITCHES, SWALES, AND PONDS PRIOR TO DIRECTING STORMWATER RUNOFF TO THEM.
11. TURF REINFORCEMENT MAT (TRM) SHALL BE INSTALLED ON ALL 3-FT HORIZONTAL TO 1-FT VERTICAL SLOPES (3:1) OR STEEPER, AND BE NORTH AMERICAN GREEN SC250 OR APPROVED EQUAL.
12. EARTHWORK AND COMPACTION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL ENGINEERING REPORT BY OTHERS.



LAYOUT POINTS TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	233660.85	1111918.54	387.00	CL 2' DITCH
101	233981.72	1112146.85	385.00	CL 2' - 4' DITCH
102	234014.26	1112170.12	381.00	CL 4' DITCH
103	234001.90	1112177.80	385.00	TSLOPE
104	233962.14	1112234.39	385.00	TSLOPE
105	233966.26	1112267.96	385.00	TSLOPE
106	233994.22	1112291.77	385.00	TSLOPE
107	234029.07	1112317.52	384.00	TSLOPE
108	234032.51	1112319.92	384.00	TSLOPE
109	234072.08	1112345.81	384.00	32' SPILLWAY
110	234100.96	1112361.77	384.00	32' SPILLWAY
111	234156.87	1112324.10	385.00	TSLOPE
112	234175.94	1112305.24	386.00	TSLOPE
113	234159.75	1112280.76	380.00	BSLOPE
114	234161.24	1112294.82	380.00	BSLOPE
115	234119.94	1112345.95	380.00	BSLOPE
116	234107.24	1112348.37	380.00	BSLOPE
117	234036.85	1112308.38	380.00	BSLOPE
118	233975.99	1112256.54	380.00	BSLOPE
119	233974.34	1112243.11	380.00	BSLOPE
120	234023.45	1112174.46	380.00	BSLOPE
121	234030.68	1112176.70	380.00	BSLOPE
122	234095.40	1112228.76	380.00	BSLOPE
123	234028.61	1112324.61	384.00	TSLOPE
124	234152.06	1112390.41	384.00	TSLOPE
125	234174.86	1112388.80	384.00	TSLOPE
126	234189.89	1112402.08	384.00	TSLOPE
127	234130.41	1112429.68	377.00	TSLOPE
128	234030.26	1112356.97	383.00	TSLOPE
129	233988.17	1112345.26	383.00	TSLOPE
130	233955.67	1112357.16	383.00	TSLOPE
131	233921.60	1112395.11	383.00	TSLOPE
132	233870.77	1112356.18	385.00	TSLOPE
133	233853.39	1112359.15	384.00	TSLOPE
134	233829.69	1112407.22	380.00	TSLOPE
135	233888.72	1112443.26	378.00	FOREBAY/FILTER
136	233860.69	1112378.12	378.00	CL 4' DITCH
137	233916.25	1112420.70	376.00	CL 4' DITCH
138	233972.78	1112381.87	374.00	CL 4' DITCH
139	233896.80	1112489.81	370.00	CL 4' DITCH
140	233838.33	1112405.51	378.00	FOREBAY/FILTER
141	233856.88	1112389.53	381.00	T/SLOPE
142	233906.33	1112428.62	379.00	T/SLOPE
143	233864.72	1112457.23	379.00	T/SLOPE
144	233826.65	1112424.67	379.00	T/SLOPE
145	233844.28	1112338.45	385.00	BSLOPE
146	233888.95	1112451.52	379.00	13' SPILLWAY
147	233787.26	1112470.95	375.00	BSLOPE
148	233855.65	1112470.76	374.00	BSLOPE

LAYOUT POINTS TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
149	233889.86	1112472.07	371.00	BSLOPE
150	233852.15	1112501.67	373.00	TSLOPE
151	233831.63	1112507.07	373.00	TSLOPE
152	233802.86	1112490.30	373.00	TSLOPE
153	233858.19	1112491.30	373.00	TSLOPE
154	233744.18	1112540.95	373.00	TSLOPE
155	233749.47	1112570.18	373.00	TSLOPE
156	233806.25	1112609.55	373.00	TSLOPE
157	233832.46	1112607.73	373.00	TSLOPE
158	233877.89	1112569.87	373.00	32' SPILLWAY
159	233907.88	1112536.31	373.00	TSLOPE
160	233914.86	1112524.33	373.00	TSLOPE
161	233910.88	1112496.11	373.00	TSLOPE
162	233916.00	1112492.76	373.00	TSLOPE
163	233922.70	1112520.55	370.00	TSLOPE
164	233913.07	1112539.33	373.00	TSLOPE
165	233901.41	1112548.17	373.00	32' SPILLWAY
166	233836.53	1112612.13	373.00	TSLOPE
167	233802.83	1112614.48	373.00	TSLOPE
168	233888.20	1112538.09	373.00	TSLOPE
169	233750.14	1112527.09	374.00	BSLOPE
170	233694.18	1112538.39	374.00	BSLOPE
171	233756.51	1112549.50	368.00	BSLOPE
172	233758.02	1112557.85	368.00	BSLOPE
173	233814.80	1112597.23	368.00	BSLOPE
174	233822.29	1112596.70	368.00	BSLOPE
175	233893.66	1112530.60	368.00	BSLOPE
176	233901.91	1112516.78	368.00	BSLOPE
177	233899.02	1112505.84	368.00	BSLOPE
178	233882.09	1112495.97	368.00	BSLOPE
179	233871.15	1112498.85	368.00	BSLOPE
180	233865.10	1112509.22	368.00	BSLOPE
181	233824.08	1112520.03	368.00	BSLOPE
182	233795.30	1112503.26	368.00	BSLOPE
183	233787.35	1112505.03	368.00	BSLOPE
184	233717.26	1112574.49	368.00	BSLOPE
185	233794.28	1112626.81	368.00	BSLOPE
186	233846.71	1112623.16	368.00	BSLOPE
187	233916.56	1112558.68	368.00	BSLOPE
188	233914.78	1112573.93	367.00	TSLOPE
189	233853.49	1112630.50	367.00	TSLOPE
190	233800.73	1112641.26	367.00	TSLOPE
191	233772.32	1112644.44	367.00	TSLOPE
192	233745.55	1112626.48	367.00	TSLOPE
193	233738.84	1112601.08	367.00	TSLOPE
194	233715.19	1112576.73	367.00	TSLOPE
195	233797.78	1112437.29	378.00	BSLOPE
196	233959.46	1112417.62	375.00	TSLOPE
197	233941.05	1112442.30	374.00	TSLOPE



FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

THE NORTHERN PASS

Transmission Business

#

DEERFIELD SUBSTATION  
GRADING PLAN

DES: LRM | CHK: RLR  
DRAW: FP | APR: BSS  
TOWN: DEERFIELD, NH  
TRANSMISSION LINE:

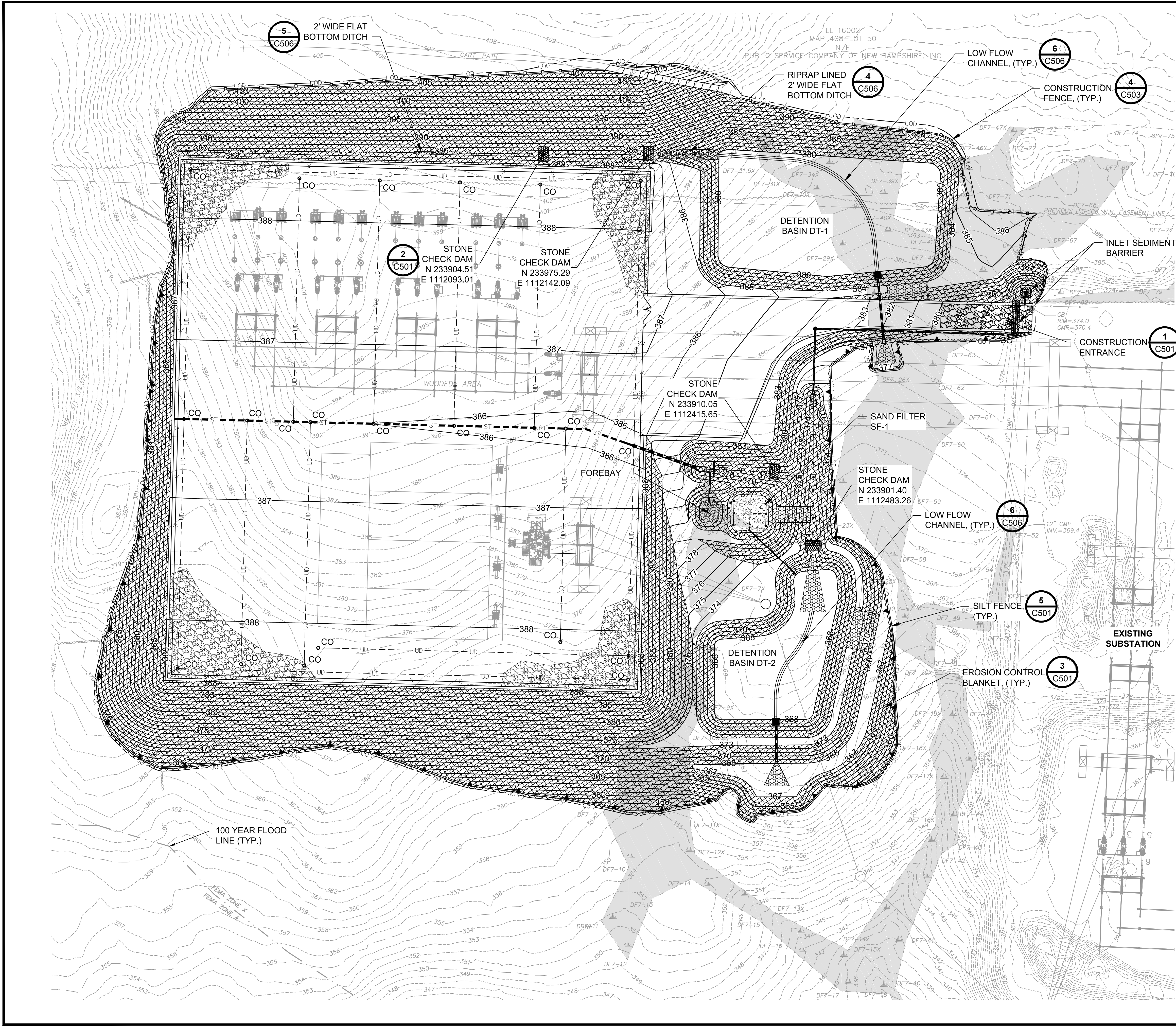
MILE NO:  
SHEET 4 OF 19

NPTT604-C101

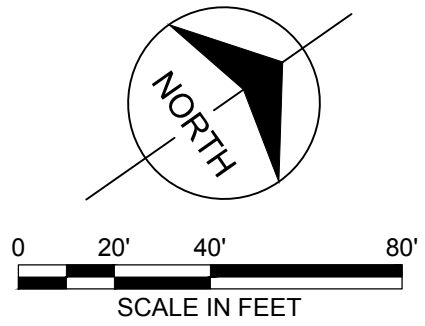
REVISION: 11/15/2013

1 ISSUED FOR PERMITTING  
10/1/15  
DATE  
NO.  
REV  
CHG  
APPR





- NOTES:
- SEE SHEET NPTT610-C500 FOR EROSION AND SEDIMENTATION NOTES.
  - TOTAL LIMIT OF DISTURBANCE = 363,902 SF = 8.40 ACRES



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

THE NORTHERN PASS

Transmission Business

#

DEERFIELD SUBSTATION  
EROSION AND SEDIMENTATION  
CONTROL PLAN

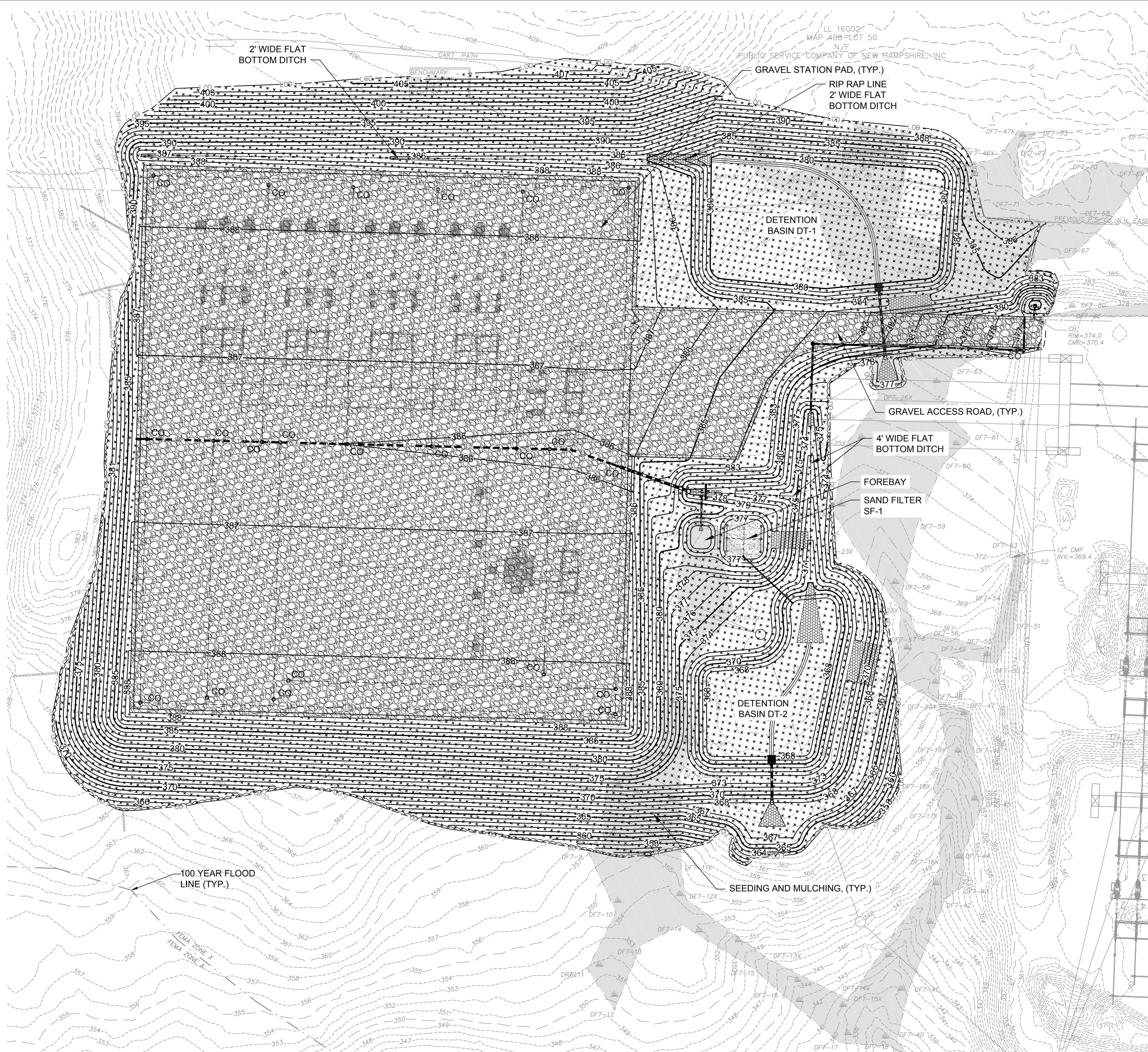
DATE: 10/1/2015  
SCALE: 1" = 40'

DES: LRM | CHK: RLR  
DRAW: FP | APR: BSS  
TOWN: DEERFIELD, NH  
TRANSMISSION LINE:  
MILE NO:  
SHEET 5 OF 19  
NPTT605-C102

REVISION: 11/10/2013

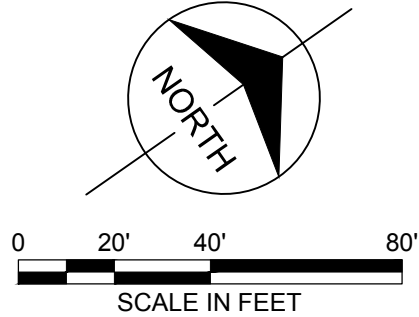
NO.	DATE	BY	CHK	APPV.
1	10/1/15	FP	DRWN	BSS
ISSUED FOR PERMITTING REVISION				





PLANTING PLAN NOTES:

- REFER TO SHEET NPPT602-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
- THIS DRAWING IS INTENDED TO DESCRIBE LANDSCAPE INFORMATION ONLY.
- ALL DISTURBED AREAS NOT OTHERWISE DEVELOPED SHALL HAVE A MINIMUM OF 4" OF LOAM AND THE FOLLOWING SEED MIXTURE:  
NHDOT TYPE 44 (MIN. 80 LBS/ACRE):  
44% CREEPING RED FESCUE (MIN. 35 LBS/ACRE)  
38% PERENNIAL RYEGRASS (MIN. 30 LBS/ACRE)  
6% REDTOP (MIN. 5 LBS/ACRE)  
6% ALSIKE CLOVER (MIN. 5 LBS/ACRE)  
6% BIRDSFOOT TREFOIL (MIN. 5 LBS/ACRE)  
ALL SEEDING SHALL BE IN ACCORDANCE WITH THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (2010) SECTION 644 -- GRASS SEED AND THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES STORMWATER MANUAL VOLUME 3 PERMANENT VEGETATION IN SECTION 4.1.
- NO SEEDING SHALL BE PLACED BEFORE ROUGH GRADING HAS BEEN PROPERLY COMPLETED.
- TOPSOIL SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4". CONTRACTOR SHALL SUBMIT SAMPLES FROM EACH PROPOSED TOPSOIL SOURCE TO A CERTIFIED TESTING LABORATORY TO DETERMINE pH, FERTILITY, ORGANIC CONTENT AND MECHANICAL COMPOSITION. CONTRACTOR SHALL SUBMIT THE TEST RESULTS TO OWNER OR LANDSCAPE ARCHITECT FOR REVIEW. CONTRACTOR SHALL INCORPORATE AMENDMENTS FOR PROPER SOIL pH AND PLANT GROWTH AS RECOMMENDED BY TEST REPORTS AT NO INCREASE IN CONTRACT PRICE.
- TEMPORARY AND PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE PLANTING PLAN, NH DES STORMWATER MANUAL VOLUME 3, AND NH DOT STANDARD SPECIFICATIONS SECTION 644.
- AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES -- 6 TO 12 INCHES ON COMPACTED SOILS -- PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING.
- PLACING LOAM ON SITE: ALL SUBGRADE ELEVATIONS SHOULD BE UNIFORMLY GRADED TO RECEIVE LOAM AND SHALL BE INSPECTED AND APPROVED BY THE GENERAL CONTRACTOR PRIOR TO PLACEMENT OF LOAM. PLACE LOAM TO FORM A MINIMUM DEPTH OF 4" WHEN ROLLED, UNLESS OTHERWISE INDICATED. ALL DEPRESSIONS EXPOSED DURING THE ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM.
- SEED BED PREPARATION: AFTER FINISH GRADING AND JUST BEFORE SEEDING, THE AREAS TO BE SEEDED SHALL BE LOOSENEED TO PROVIDE A ROUGH, FIRM BUT FINELY PULVERIZED SEEDBED. THE INTENT IS A TEXTURE CAPABLE OF RETAINING WATER, SEED AND FERTILIZER WHILE REMAINING STABLE AND ALLOWING SEED TIME TO GERMINATE. SEED SHALL BE APPLIED TO THE CONDITIONED SEEDBED NOT MORE THAN 48 HOURS AFTER THE SEEDBED HAS BEEN PREPARED.
- LIME AND FERTILIZER SHALL BE INCORPORATED INTO THE SOIL PRIOR TO OR AT THE TIME OF AT THE TIME OF SEEDING. A MINIMUM OF 2 TONS PER ACRE OF AGRICULTURAL LIMESTONE AND 500 LBS. PER ACRE OF 10-20-20 FERTILIZER SHALL BE APPLIED. SEEDING PRACTICES SHALL COMPLY WITH LOCAL USDA SOIL CONSERVATION SERVICES RECOMMENDATIONS.
- STRAW MULCH OR JUTE MATTING SHALL BE USED WHERE INDICATED ON THE PLANS. A MINIMUM OF 1.5 TONS OF MULCH PER ACRE SHALL BE APPLIED. MULCH SHALL BE ANCHORED IN PLACE WHERE NECESSARY. JUTE MATTING SHALL BE LAID IN THE DIRECTION OF RUNOFF FLOW AND APPLIED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS AREA NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 15 TO SEPTEMBER 15. NO DISTURBED AREA SHALL BE LEFT EXPOSED DURING WINTER MONTHS.



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

DES: LRM	CHK: RLR	DATE: 10/1/2015	SCALE: 1" = 40'
DRW: FP	APR: BSS		
TOWN: DEERFIELD, NH			
TRANSMISSION LINE:			
MILE NO:			
SHEET 6 OF 19			
NPPT606-C103			
REVISION: 11/10/2013			



STORMWATER SYSTEM NOTES:

1. REFER TO SHEET NPTT602-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
2. THIS DRAWING IS INTENDED TO DESCRIBE THE STORMWATER SYSTEM ONLY.
3. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
4. STORM DRAINAGE SYSTEM CONNECTIONS, MATERIALS, AND METHODS SHALL BE IN ACCORDANCE WITH THE NH DOT STANDARDS AND NH DOT SPECIFICATION SECTIONS 603 AND 604, AS WELL AS OTHER APPLICABLE INDUSTRY CODES AND GOVERNING AGENCY REQUIREMENTS.
5. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY THE ELEVATION AND LOCATION OF ALL UTILITIES BY VARIOUS MEANS PRIOR TO BEGINNING ANY EXCAVATION. TEST PITS SHALL BE DUG AT ALL LOCATIONS WHERE PROPOSED STORM PIPING WILL CROSS EXISTING UTILITIES, AND THE HORIZONTAL AND VERTICAL LOCATIONS OF THE UTILITIES SHALL BE DETERMINED. THE CONTRACTOR SHALL CONTACT THE ENGINEER IN THE EVENT OF ANY DISCOVERED OR UNFORESEEN CONFLICTS BETWEEN EXISTING AND PROPOSED SANITARY SEWERS, STORM PIPING AND UTILITIES SO THAT AN APPROPRIATE MODIFICATION MAY BE MADE.
6. MANHOLE RIMS AND CATCH BASIN GRATES SHALL BE SET TO ELEVATIONS SHOWN. SET ALL EXISTING MANHOLE RIMS, GRATES AND OTHER UTILITY TOPS TO BE RAISED OR LOWERED FLUSH WITH FINAL GRADE AS NECESSARY.
7. THE CONTRACTOR SHALL ARRANGE FOR AND COORDINATE WITH APPLICABLE REGULATORY AGENCIES FOR STORM DRAINAGE INSTALLATIONS AND CONNECTIONS.
8. THE CONTRACTOR SHALL COORDINATE WORK TO BE PERFORMED BY THE VARIOUS UTILITY PROVIDERS AND SHALL PAY ALL FEES FOR CONNECTIONS, DISCONNECTIONS, RELOCATIONS, INSPECTIONS, AND DEMOLITION UNLESS OTHERWISE STATED IN THE PROJECT SPECIFICATIONS MANUAL AND/OR GENERAL CONDITIONS OF THE CONTRACT.
9. ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
10. ALL UTILITY CONSTRUCTION IS SUBJECT TO INSPECTION FOR APPROVAL PRIOR TO BACKFILLING, IN ACCORDANCE WITH THE APPROPRIATE OWNER, UTILITY PROVIDER, AND APPLICABLE REGULATORY AGENCY REQUIREMENTS.
11. A ONE-FOOT MINIMUM VERTICAL CLEARANCE BETWEEN ELECTRICAL AND TELEPHONE LINES TO STORM PIPING SHALL BE PROVIDED.
12. SITE CONTRACTOR SHALL PROVIDE ALL BENDS, FITTINGS, ADAPTERS, ETC., AS REQUIRED FOR PIPE CONNECTIONS.
13. THE CONTRACTOR SHALL MAINTAIN ALL FLOWS AND UTILITY CONNECTIONS WITHOUT INTERRUPTION UNLESS/UNTIL AUTHORIZED BY THE OWNER, THE ENGINEER, UTILITY PROVIDERS AND GOVERNING AUTHORITIES.
14. STORM DRAINAGE SHALL BE RATED FOR HS-20 LOADING.
15. LAY UNDERDRAINS BELOW CABLE TRENCH AS SPECIFIED. PROVIDE MINIMUM 0.5% SLOPE ON ALL UNDERDRAINS. ADDITIONAL UNDERDRAINS MAY BE REQUIRED AS DEEMED NECESSARY BY THE OWNER, GEOTECHNICAL ENGINEER AND/OR ENGINEER BASED ON FINDINGS AFTER EARTHWORK AND EXCAVATION OPERATIONS COMMENCE. PROVIDE UNDERDRAIN CLEANOUTS AT A MINIMUM OF EVERY 200' OF PIPE OR ONE CLEANOUT PER PIPE RUN WHERE THE PIPE RUN IS LESS THAN 200'.

UNDERDRAIN SCHEDULE		
PIPE #	LENGTH (FT)	SLOPE
UD-1	205	0.005
UD-2	205	0.005
UD-3	370	0.005
UD-4	192	0.016
UD-5	218	0.015
UD-6	370	0.005
UD-7	200	0.015
UD-8	200	0.015
UD-9	200	0.010
UD-10	200	0.005
UD-11	200	0.005
UD-12	200	0.005
UD-13	255	0.015
UD-14	175	0.019

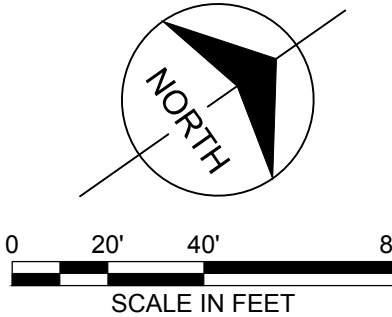
PIPE SCHEDULE			
PIPE #	LENGTH (FT)	SLOPE	SIZE
P-1	338	0.010	24" PERF. HDPE
P-2	42	0.015	24" PERF. HDPE
P-3	57	0.010	24" HDPE
P-4	44	0.017	4" PVC
P-5	53	0.019	18" RCP
P-6	164	0.005	12" HDPE
P-7	54	0.005	12" HDPE
P-8	10	0.004(*)	12" HDPE
P-9	53	0.009	6" HDPE
P-10	32	0.008	24" RCP

(\*) APPROXIMATE SLOPE TO MATCH EXISTING 12" CMP.

- NOTES:
1. UNDERDRAINS WITHIN SUBSTATION ARE 8" PERFORATED HDPE.
  2. UNDERDRAIN WITHIN SAND FILTER ARE 6" PERFORATED HDPE.

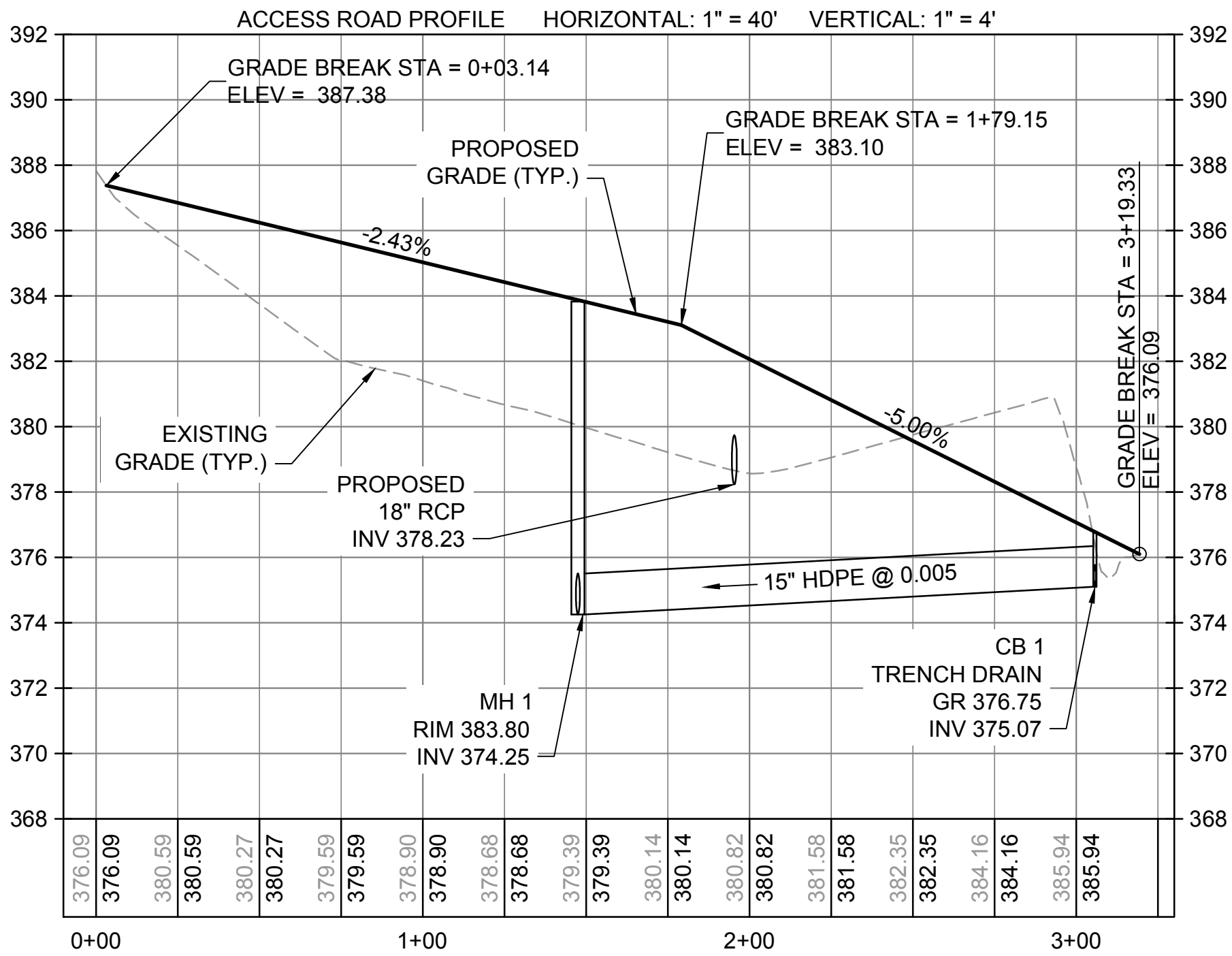
UNDERDRAIN LAYOUT POINT TABLE				
POINT #	NORTHING	EASTING	INVERT ELEV	DESCRIPTION
100	233659.68	1111936.95	383.52	UNDERDRAIN
101	233537.75	1112101.94	382.50	UNDERDRAIN
102	233415.83	1112266.92	383.52	UNDERDRAIN
103	233713.56	1112486.59	381.71	UNDERDRAIN
104	233827.82	1112331.98	378.58	UNDERDRAIN
105	233957.24	1112156.85	381.71	UNDERDRAIN
106	233887.99	1112112.03	382.60	UNDERDRAIN
107	233769.18	1112272.92	379.60	UNDERDRAIN
108	233834.92	1112072.81	383.20	UNDERDRAIN
109	233716.11	1112233.70	380.20	UNDERDRAIN
110	233781.85	1112033.59	382.90	UNDERDRAIN
111	233663.04	1112194.48	380.90	UNDERDRAIN
112	233728.76	1111994.36	382.60	UNDERDRAIN
113	233609.96	1112155.25	381.60	UNDERDRAIN
114	233579.53	1112132.76	382.00	UNDERDRAIN
115	233460.67	1112293.61	383.00	UNDERDRAIN
116	233621.29	1112163.62	381.50	UNDERDRAIN
117	233502.43	1112324.47	382.50	UNDERDRAIN
118	233520.20	1112319.19	385.01	UNDERDRAIN
119	233725.27	1112470.74	381.26	UNDERDRAIN
120	233685.95	1112429.25	382.80	UNDERDRAIN
121	233790.12	1112288.29	379.40	UNDERDRAIN

- STORMWATER SYSTEM DETAILS REFERENCE LIST**
- |               |                                |             |                     |                 |  |
|---------------|--------------------------------|-------------|---------------------|-----------------|--|
| 1<br>C504     | STORM MANHOLE /<br>CATCH BASIN | 6<br>C506   | LOW FLOW<br>CHANNEL | 5<br>C508       | TRENCH DRAIN                                     |
| 2<br>C504     | MANHOLE<br>FRAME & COVER       | 7<br>C506   | PIPE TRENCH         | 1,2,3,4<br>C508 | DETENTION BASIN /<br>SPILLWAY / SLOPE<br>DETAILS |
| 3<br>C504     | TYPE E GRATE                   | 1<br>C507   | FRENCH DRAIN        | 1,2,3<br>C509   | SAND FILTER /<br>FOREBAY                         |
| 1 & 2<br>C505 | OUTLET CONTROL<br>STRUCTURES   | 2,3<br>C507 | UNDER DRAIN         | 4<br>C509       | PIPE COLLAR                                      |
| 1,2,3<br>C506 | END SECTIONS                   | 4<br>C507   | CLEANOUT            |                 |  |
| 4,5<br>C506   | RIPRAP / GRASS<br>DITCH        | 5<br>C507   | TIMBER<br>CHECK DAM |                 |  |

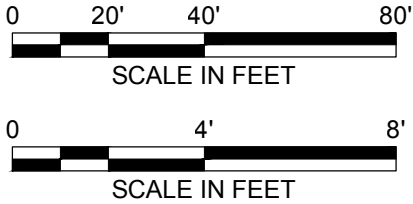
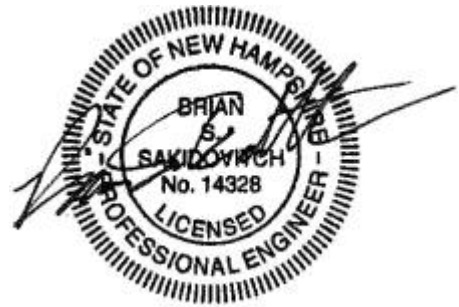


**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**



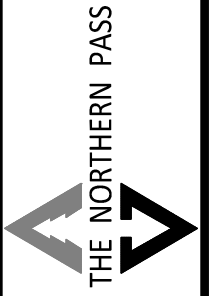


- ACCESS ROAD PROFILE NOTES:
- REFER TO SHEET NPTT602-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
  - THIS DRAWING IS INTENDED TO DESCRIBE THE STATION ACCESS ROAD GEOMETRY ONLY.
  - NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
  - PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

NO.	ISSUED FOR PERMITTING	REVISION	DATE	FP	DRWN	CHKD	APPRV.
1	ISSUED FOR PERMITTING		10/1/15				BSS



Transmission Business

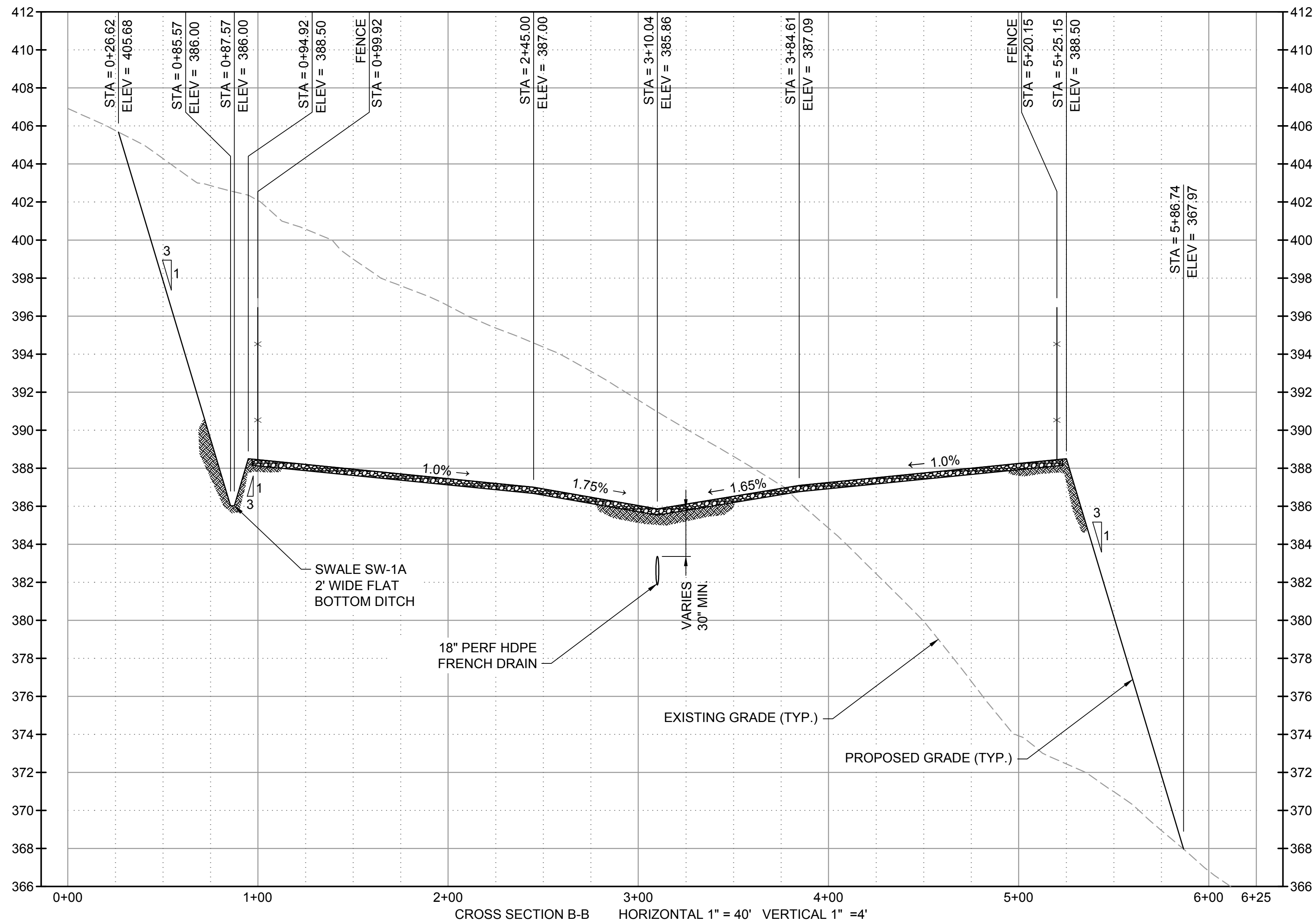
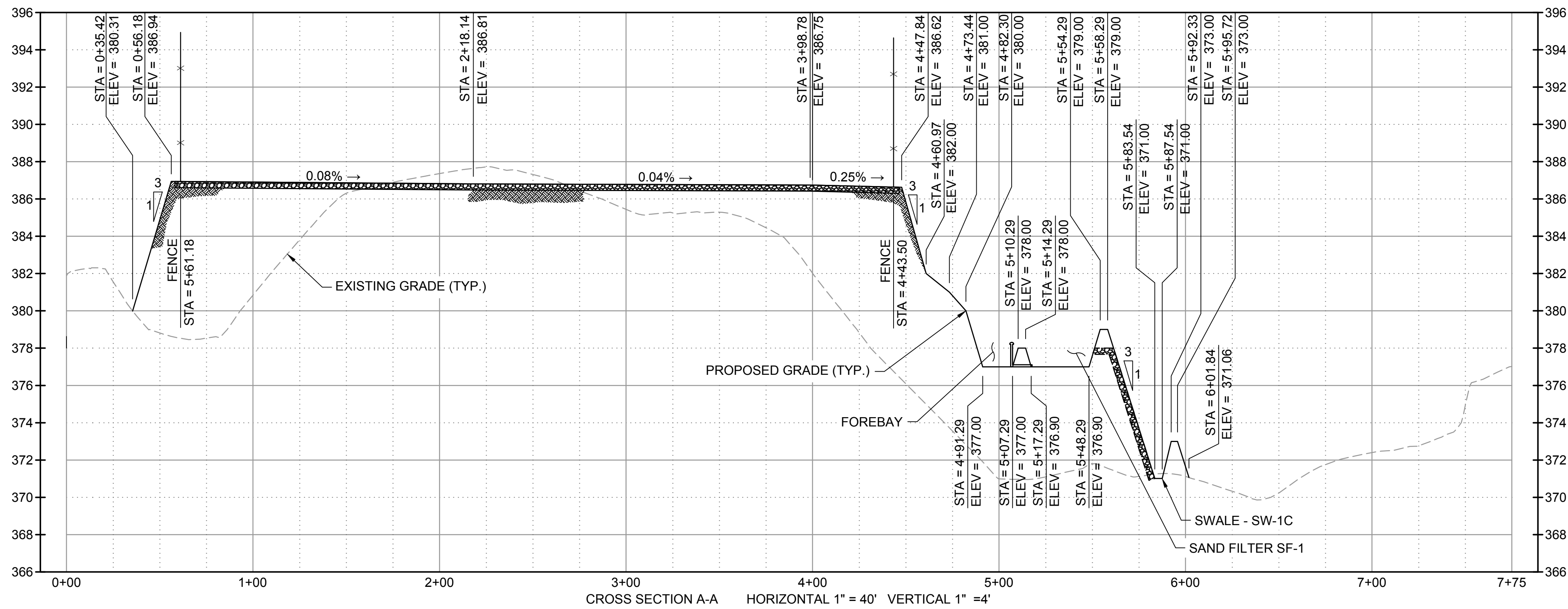
DEERFIELD SUBSTATION  
ACCESS ROAD PROFILE

DES: LRM | CHK: RLR  
DRW: FP | APR: BSS  
TOWN: DEERFIELD, NH  
TRANSMISSION LINE:

MILE NO:  
SHEET 8 OF 19

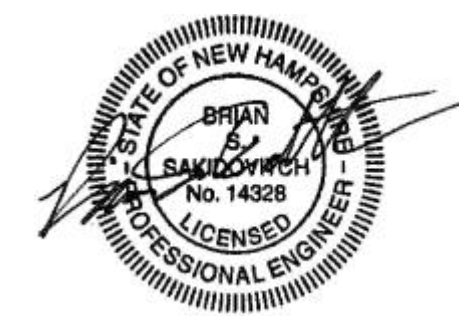
NPTT608-C200

REVISION: 11/10/2013

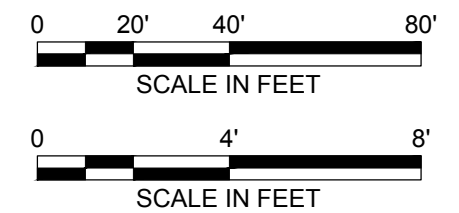


GRADING CROSS SECTION NOTES:

1. REFER TO SHEET NPTT602-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
2. THIS DRAWING IS INTENDED TO DESCRIBE THE GRADING CROSS SECTIONS ONLY.
3. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
4. PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.
5. CONTRACTOR SHALL PLACE 4" TOPSOIL AND SEED ON ALL CUT AND FILL SLOPES AS SPECIFIED UNLESS ANOTHER SURFACE MATERIAL IS INDICATED.
6. EARTHWORK AND COMPACTION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL ENGINEERING RECOMMENDATIONS REPORT BY OTHERS.
7. STRIP AND STOCKPILE EXISTING TOPSOIL IN AREAS OF PROPOSED GRADING AND EARTHWORK.



This document has been digitally sealed.  
Oct 5 2015



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

NO.	REVISION	DATE	FP	DRWN	CHKD	APPRV.
1	ISSUED FOR PERMITTING	10/1/15	FP	DRWN	CHKD	APPRV.
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						
73						
74						
75						
76						
77						
78						
79						
80						
81						
82						
83						
84						
85						
86						
87						
88						
89						
90						
91						
92						
93						
94						
95						
96						
97						
98						
99						
100						

REVISION: 11/15/2013

EROSION AND SEDIMENTATION CONTROL GENERAL NOTES:

1.

THE SEDIMENT AND EROSION CONTROL PLAN IS ONLY INTENDED TO DESCRIBE THE SEDIMENT AND EROSION CONTROL TREATMENT FOR THIS SITE. SEE SEDIMENT AND EROSION CONTROL DETAILS AND CONSTRUCTION SEQUENCE. REFER TO SITE PLAN FOR GENERAL INFORMATION AND OTHER CONTRACT PLANS FOR APPROPRIATE INFORMATION.
2.

CONSTRUCTION ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE GENERAL NOTES, SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING BY THE OWNER, QUALIFIED PROFESSIONAL, AND APPROPRIATE REGULATORY AGENCY PRIOR TO IMPLEMENTATION.
3.

THE EROSION AND SEDIMENTATION CONTROL MEASURES, CONSTRUCTION SEQUENCE AND PHASING IS THE MINIMUM RECOMMENDED. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ADDITIONAL MEASURES AND SEQUENCING AS REQUIRED BASED ON ACTUAL FIELD OPERATIONS AND CONDITIONS AND BE CONSISTENT WITH THE NEW HAMPSHIRE STORMWATER MANUAL. SIGNIFICANT ADDITIONS AND/OR MODIFICATIONS FROM THE PLANS SHALL BE SUBMITTED, REVIEWED AND APPROVED BY THE OWNER, QUALIFIED PROFESSIONAL AND APPLICABLE REGULATORY AGENCIES.
4.

THE SEDIMENT AND EROSION CONTROL PLAN WAS DEVELOPED TO HELP PROTECT THE EXISTING ROADWAY AND STORM DRAINAGE SYSTEMS, ADJACENT PROPERTIES, AND ADJACENT WETLAND AREA FROM SEDIMENT LADEN SURFACE RUNOFF AND EROSION.
5.

APPROPRIATE EROSION/SEDIMENT CONTROL MEASURES AS DESCRIBED HEREIN, SHALL BE INSTALLED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF ALL CLEARING, DEMOLITION AND CONSTRUCTION ACTIVITY WITHIN THE APPROVED LIMITS OF DISTURBANCE. SCHEDULE WORK TO MINIMIZE THE LENGTH OF TIME THAT BARE SOIL WILL BE EXPOSED. CONTRACTOR SHALL ONLY EXCAVATE AS MUCH UTILITY AND STORM PIPE TRENCH WORK AS CAN BE COMPLETED, BACKFILLED AND STABILIZED IN ONE DAY SO AS TO LIMIT THE AMOUNT OF OPEN, DISTURBED TRENCHING. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
6.

THE CONTRACTOR SHALL INSTALL ALL SPECIFIED EROSION/SEDIMENT CONTROL MEASURES AND WILL BE REQUIRED TO MAINTAIN THEM IN THEIR INTENDED FUNCTIONING CONDITION AND BE IN STRICT CONFORMANCE WITH THE STANDARDS BELOW. THE CONTRACTOR SHALL SUPPLY AND MAINTAIN THESE STANDARDS AND HAVE THEM AVAILABLE ONSITE FOR THE DURATION OF CONSTRUCTION. THE OWNER, AGENTS OF THE REGULATORY AGENCIES AND/OR QUALIFIED PROFESSIONAL SHALL HAVE THE AUTHORITY TO REQUIRE SUPPLEMENTAL MAINTENANCE OR ADDITIONAL MEASURES IF FIELD CONDITIONS ARE ENCOUNTERED BEYOND WHAT WOULD NORMALLY BE ANTICIPATED.

A.

EVERSOURCE BEST MANAGEMENT PRACTICES MANUAL (TO BE FURTHER DEVELOPED).

B.

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES STORMWATER MANUAL, DECEMBER 2008.
7.

IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
8.

THE CONTRACTOR SHALL KEEP A SUPPLY OF EROSION CONTROL MATERIAL (STRAW BALES, SILT FENCE, JUTE MESH, RIP RAP ETC.) ON-SITE FOR MAINTENANCE AND EMERGENCY REPAIRS.
9.

STONE CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED AT START OF CONSTRUCTION AND MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION. THE LOCATION OF THE TRACKING PADS MAY CHANGE AS VARIOUS PHASES OF CONSTRUCTION ARE COMPLETED.
10.

TOPSOIL SHALL BE STRIPPED AND STOCKPILED FOR USE IN FINAL LANDSCAPING. ALL EARTH STOCKPILES SHALL HAVE STRAW BALES OR SILT FENCE AROUND THE LIMIT OF PILE. PILES SHALL BE TEMPORARILY SEEDED IF PILE IS TO REMAIN IN PLACE FOR MORE THAN 2 MONTHS.
11.

COMPLY WITH REQUIREMENTS OF THE EPA FOR NPDES AND RECORD KEEPING.
12.

VISUAL SITE INSPECTIONS SHALL BE CONDUCTED WEEKLY, AND AFTER EACH MEASURABLE PRECIPITATION EVENT OF 0.50 INCHES OR GREATER BY QUALIFIED PERSONNEL, TRAINED AND EXPERIENCED IN EROSION AND SEDIMENT CONTROL, TO ASCERTAIN THAT THE EROSION AND SEDIMENT CONTROL (E&S) BMPS ARE OPERATIONAL AND EFFECTIVE IN PREVENTING POLLUTION. PROVIDE WRITTEN REPORTS IN ACCORDANCE WITH ANY APPLICABLE OWNER, QUALIFIED PROFESSIONAL, AND/OR REGULATORY AGENCY REQUIREMENTS.
13.

STOCKPILES OF EARTH MATERIALS SHALL CONFORM TO SOIL STOCKPILE PRACTICES IN SECTION 4.1 OF THE NH DES STORMWATER MANUAL VOLUME 3.
14.

DEWATERING SUMP PITS SHALL BE INSTALLED WHEN WATER COLLECTS DURING DURING EXCAVATION TO TRAP AND FILTER WATER FOR PUMPING INTO A SUITABLE DISCHARGE AREA. A PERFORATED VERTICAL STANDPIPE WRAPPED IN NON-WOVEN FILTER FABRIC IS PLACED IN THE CENTER OF THE PIT TO COLLECT FILTERED WATER WHERE IT IS THEN REMOVED FROM THE SUMP PIT IN AN AUTHORIZED MANNER. UNDER NO CIRCUMSTANCES SHALL DEWATERING DRAINAGE BE DISCHARGED INTO A SANITARY SEWER. CONSTRUCTION DEWATERING SHALL CONFORM TO CONSTRUCTION DEWATERING REQUIREMENTS OF THE NH DES STORMWATER MANUAL VOLUME 3 SECTION 4.2.

15.

WATER SHALL BE USED FOR DUST CONTROL IN APPROPRIATE AREAS.
16.

ALL REGULATORY AGENCY PERMITS REQUIRED FOR THE SITE SHALL BE OBTAINED PRIOR TO SITE WORK COMMENCES.
17.

ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.
18.

E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.
19.

MAXIMUM SLOPES SHALL NOT EXCEED 3-FT HORIZONTAL TO 1-FT VERTICAL (3:1), UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL VERIFY SLOPE STABILITY OF ALL SLOPES PRIOR TO CONSTRUCTION. UNSTABLE SLOPES SHALL BE LAID BACK (FLATTENED) UNTIL STABLE OR PROVIDE REINFORCING TO ACHIEVE STABILIZATION. SLOPE BENCHES SHALL BE IN ACCORDANCE WITH THE NHDES STORMWATER MANUAL.
20.

THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY HIS WORK AT ALL TIMES.
21.

TEMPORARY AND PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE PLANTING PLAN, NH DES STORMWATER MANUAL VOLUME 3, AND NH DOT STANDARD SPECIFICATIONS SECTION 644.

ALTERATION OF TERRAIN STANDARD NOTES:

1.

THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
2.

PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AS NECESSARY PRIOR TO FURTHER EARTH MOVING OPERATIONS. PREVENTION OF EROSION AND SEDIMENT TRANSPORTATION ISSUES WILL BE FACILITATED BY THE PROMPT EMPLOYMENT OF EFFECTIVE TEMPORARY AND PERMANENT CONTROL DEVICES, AS CONDITIONS WARRANT. ADDITIONAL CONTROL DEVICES THAT ARE DETERMINED NECESSARY, NOT OUTLINED HEREIN, MAY BE INSTALLED BY THE OWNER OR OPERATOR.
3.

PONDS AND SWALES SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE PRIOR TO ROUGH GRADING THE SITE AND OTHER EARTH MOVING ACTIVITIES.
4.

DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
5.

ROADWAYS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
6.

CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
7.

INSPECT AND MAINTAIN ALL EROSION AND SEDIMENTATION CONTROL MEASURES WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL DURING THE LIFE OF THE PROJECT. REMOVE TRAPPED SEDIMENT FROM COLLECTOR DEVICES AS NEEDED.
8.

STABLE IS DEFINED AS:

A.

BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED,

B.

A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED,

C.

A MINIMUM 3-INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED,

D.

OR EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
9.

ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
10.

TEMPORARY AND PERMANENT SEEDING SPECIFICATIONS ARE AS NOTED IN THE "VEGETATION MEASURES" SECTION ON THIS SHEET.
11.

STANDARD WINTER NOTES:

A.

ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

B.

ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

C.

AFTER NOVEMBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.

WINTER CONSTRUCTION NOTES:

1.

WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED AS SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.
2.

AN AREA WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE SHALL BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIER.
3.

TEMPORARY MULCH SHALL BE APPLIED WITHIN 7 DAYS OF SOIL EXPOSURE OR PRIOR TO ANY STORM EVENT, BUT AFTER EVERY WORKDAY IN AREAS WITHIN 100 FEET FROM A PROTECTED NATURAL RESOURCE.
4.

AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE SHALL BE PERMANENTLY MULCHED THE SAME DAY.
5.

IN THE EVENT OF A SNOWFALL GREATER THAN 1 INCH (FRESH OR CUMULATIVE), THE SNOW SHALL BE REMOVED FROM THE AREAS DUE TO BE SEEDED AND MULCHED.
6.

LOAM SHALL BE FREE OF FROZEN CLUMPS BEFORE IT IS APPLIED.
7.

A DITCH THAT WILL BE CONSTRUCTED DURING THE WINTER MUST BE STABILIZED WITH RIPRAP.
8.

PERMANENT STABILIZATION CONSISTS OF AT LEAST 85% VEGETATION, PAVEMENT/GRAVEL BASE OR RIPRAP.
9.

DO NOT EXPOSE SLOPES OR LEAVE SLOPES EXPOSED OVER THE WINTER OR FOR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS FULLY PROTECTED WITH MULCH AND EROSION CONTROLS.
10.

APPLY STRAW MULCH AT TWICE THE STANDARD RATE (150 LBS. PER 1,000 SF). THE MULCH MUST BE THICK ENOUGH SUCH THAT THE GROUND SURFACE WILL NOT BE VISIBLE AND MUST BE ANCHORED.
11.

USE MULCH AND MULCH NETTING OR AN EROSION CONTROL MULCH BLANKET OR MIX FOR ALL SLOPES GREATER THAN 8% OR OTHER AREAS EXPOSED TO DIRECT WIND.
12.

INSTALL AN EROSION CONTROL BLANKET IN ALL DRAINAGE WAYS (BOTTOM AND SIDES) WITH A SLOPE GREATER THAN 3%.
13.

SEE THE VEGETATION MEASURES FOR MORE INFORMATION ON SEEDING DATES AND TYPES.

CONSTRUCTION SEQUENCE:

- THE FOLLOWING CONSTRUCTION SEQUENCE IS RECOMMENDED (COORDINATE ALL SITE ACTIVITIES AND CONSTRUCTION SEQUENCE WITH THAT OF THE STATION ELECTRICAL EQUIPMENT, OVERHEAD AND UNDERGROUND TRANSMISSION LINES, AND OTHER STATION RELATED CONSTRUCTION):
1.

CONTACT THE OWNER, QUALIFIED PROFESSIONAL, AND REGULATORY AGENT AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF ANY DEMOLITION, CONSTRUCTION OR REGULATED ACTIVITY ON THIS PROJECT SITE.
2.

CLEARING LIMITS SHALL BE PHYSICALLY MARKED IN THE FIELD AND APPROVED BY THE REGULATORY AGENT PRIOR TO THE START OF WORK ON THE SITE. INSTALL PERIMETER EROSION/SEDIMENT CONTROL MEASURES.
3.

CONSTRUCT STONE CONSTRUCTION ENTRANCES/EXITS AND INSTALL INLET PROTECTION FOR CATCH BASINS OR INSTALL SILT SACKS ON CATCH BASIN INLETS LOCATED IN OFF-SITE ROADS. INSTALL SILT FENCE AND OTHER EROSION CONTROL DEVICES INDICATED ON THESE PLANS AT PERIMETER OF PROPOSED SITE DISTURBANCE AND INSTALL ALL EROSION/SEDIMENT CONTROL MEASURES AND TREE PROTECTION INDICATED ON THESE PLANS. INSTALL SEDIMENT BASINS AND SEDIMENT TRAPS IF REQUIRED AT LOW AREAS OF SITE OR AS ORDERED BY THE QUALIFIED PROFESSIONAL OR AS SHOWN ON THESE PLANS.
4.

CLEAR AND GRUB SITE. STOCKPILE CHIPS. STOCKPILE TOPSOIL. INSTALL EROSION CONTROLS AT STOCKPILES.
5.

COMMENCE INSTALLATION OF STORM DRAINAGE SYSTEM.
6.

COMMENCE EARTHWORK. CONSTRUCT FILL SLOPE. INSTALL ADDITIONAL EROSION CONTROLS AS WORK PROGRESSES AND CONTINUE STORM DRAINAGE SYSTEM CONSTRUCTION, TOPSOIL AND SEED SLOPES WHICH HAVE ACHIEVED FINAL SITE GRADING.
7.

CONSTRUCTION STAKING OF ALL FOUNDATION CORNERS, UTILITIES, ACCESS DRIVES, FENCES AND OTHER SITE APPURTENANCES.
8.

ROUGH GRADING AND FILLING OF SUBGRADES AND SLOPES.
9.

BEFORE DISPOSING OF SOIL OR RECEIVING BORROW FOR THE SITE, THE CONTRACTOR MUST PROVIDE EVIDENCE THAT EACH SPOIL OR BORROW AREA HAS AN EROSION AND SEDIMENT CONTROL PLAN APPROVED BY THE APPROPRIATE REGULATORY AGENCIES AND WHICH IS BEING IMPLEMENTED AND MAINTAINED. THE CONTRACTOR SHALL ALSO NOTIFY THE APPROPRIATE REGULATORY AGENCIES IN WRITING OF ALL RECEIVING SPOIL AND BORROW AREAS WHEN THEY HAVE BEEN IDENTIFIED.
10.

CONTINUE INSTALLATION OF STORM DRAINAGE AS SUBGRADE ELEVATIONS ARE ACHIEVED.
11.

CONSTRUCT PAD SUBGRADE PREPARATION AND BEGIN FOUNDATION CONSTRUCTION.

12.

THROUGHOUT CONSTRUCTION SEQUENCE, REMOVE SEDIMENT FROM BEHIND SILT FENCES, STRAW BALES AND OTHER EROSION CONTROL DEVICES, AND FROM SEDIMENT TRAPS AS REQUIRED. REMOVAL SHALL BE ON A PERIODIC BASIS (EVERY SIGNIFICANT RAINFALL OF 0.50 INCH OR GREATER). INSPECTION OF EROSION/SEDIMENT CONTROL MEASURES SHALL BE ON A WEEKLY BASIS AND AFTER EACH RAINFALL OF 0.50 INCHES OR GREATER. SEDIMENT COLLECTED SHALL BE DEPOSITED AND SPREAD EVENLY UPLAND ON SLOPES DURING CONSTRUCTION.
13.

COMPLETE GRADING TO SUBGRADES AND COMPLETE CONSTRUCTION OF FOUNDATIONS.
14.

CONSTRUCT CURBS, PAVEMENT STRUCTURE AND SIDEWALKS
15.

CONDUCT FINE GRADING.
16.

PAVING OF ACCESS ROAD
17.

CONSTRUCT OFF-SITE ROADWAY IMPROVEMENTS, AS NECESSARY.
18.

INSTALL YARD SURFACE STONE. FINAL FINE GRADING OF SLOPE AND NON-PAVED AREAS.
19.

PLACE 4" TOPSOIL ON SLOPES AFTER FINAL GRADING IS COMPLETED. FERTILIZE, SEED, AND MULCH.
20.

LANDSCAPE INTERIOR NON-PAVED AREAS, NON-GRAVELED AREAS, AND PERIMETER AREAS.
21.

INSTALL ON-SITE SIGNAGE AND PAVEMENT MARKINGS
22.

CLEAN STORM DRAINAGE PIPE STRUCTURES, DETENTION SYSTEMS AND WATER QUALITY DEVICES OF DEBRIS AND SEDIMENT.
23.

UPON DIRECTION OF THE OWNER, QUALIFIED PROFESSIONAL, AND REGULATORY AGENT, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED FOLLOWING STABILIZATION OF THE SITE.

ROUGH GRADING OPERATIONS

1.

DURING THE REMOVAL AND/OR PLACEMENT OF EARTH AS INDICATED ON THE GRADING PLAN, TOPSOIL SHALL BE STRIPPED AND APPROPRIATELY STOCKPILED FOR REUSE.
2.

ALL STOCKPILED TOPSOIL SHALL BE SEEDED, APPLY MULCH OR STRAW, AND ENCLOSED BY A SILTATION FENCE.

FILLING OPERATIONS

1.

PRIOR TO FILLING, ALL SEDIMENTATION AND EROSION CONTROL DEVICES SHALL BE PROPERLY IMPLEMENTED, MAINTAINED AND FULLY INSTALLED, AS DIRECTED BY THE QUALIFIED PROFESSIONAL AND AS SHOWN ON THIS PLAN.

PLACEMENT OF DRAINAGE STRUCTURES, UTILITIES, AND FOUNDATION CONSTRUCTION OPERATIONS

1.

SILT FENCES SHALL BE INSTALLED AT THE DOWNHILL SIDES OF EXCAVATIONS, MUD PUMP DISCHARGES, AND UTILITY TRENCH MATERIAL STOCKPILES. STRAW BALES MAY BE USED IF SHOWN ON THE EROSION CONTROL PLANS OR IF DIRECTED BY THE QUALIFIED PROFESSIONAL.

FINAL GRADING AND PAVING OPERATIONS

1.

ALL INLET AND OUTLET PROTECTION SHALL BE PLACED AND MAINTAINED AS SHOWN ON EROSION CONTROL PLANS AND DETAILS, AND AS DESCRIBED IN SPECIFICATIONS AND AS DESCRIBED HEREIN.
2.

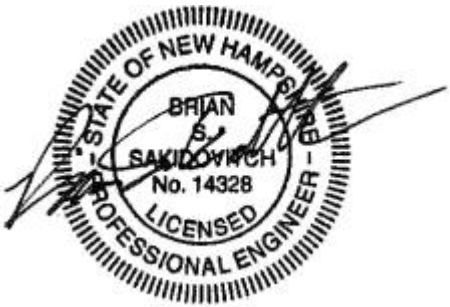
NO CUT OR FILL SLOPES SHALL EXCEED 2:1 EXCEPT WHERE STABILIZED BY ROCK FACED EMBANKMENTS OR EROSION CONTROL BLANKETS, JUTE MESH AND VEGETATION. ALL SLOPES SHALL BE SEEDED, AND ANY ROAD OR DRIVEWAY SHOULDER AND BANKS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF FINAL GRADING UNTIL TURF IS ESTABLISHED.
3.

PAVEMENT SUB-BASE AND BASE COURSES SHALL BE INSTALLED OVER AREAS TO BE PAVED AS SOON AS FINAL SUB-GRADES ARE ESTABLISHED AND UNDERGROUND UTILITIES AND STORM DRAINAGE SYSTEMS HAVE BEEN INSTALLED.
4.

AFTER CONSTRUCTION OF PAVEMENT, TOPSOIL, FINAL SEED, MULCH AND LANDSCAPING, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES ONLY AFTER ALL AREAS HAVE BEEN PAVED AND/OR GRASS HAS BEEN WELL ESTABLISHED AND THE SITE HAS BEEN INSPECTED AND APPROVED BY THE OWNER AND THE APPLICABLE REGULATORY AGENCIES.
5.

AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM OF 85% UNIFORM PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING OR OTHER MOVEMENTS.
6.

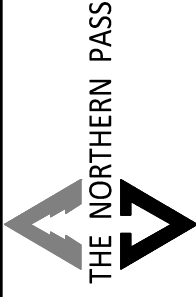
MAINTAIN ALL PERMANENT AND TEMPORARY SEDIMENT CONTROL DEVICES IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. UPON COMPLETION OF WORK SWEEP PARKING LOT AND REMOVE ALL TEMPORARY SEDIMENT CONTROLS WHEN AUTHORIZED BY LOCAL GOVERNING AUTHORITY. FILE NOT (NOTICE OF TERMINATION) WITH GOVERNING AUTHORITY RESPONSIBLE FOR REGULATING STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES PER NPDES.



This document has been digitally sealed.  
Oct 5 2015

FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

ISSUED FOR PERMITTING	10/7/15	DATE	NO.
REVISION			
CHG			
BSS			
R/R			
DRWN			
APPRV.			



Transmission  
Business

#

DEERFIELD SUBSTATION  
EROSION AND SEDIMENTATION  
CONTROL NOTES

DES: LRM | CHK:RLR  
DRW: FP | APR: BSS

TOWN:  
DEERFIELD, NH

TRANSMISSION LINE:

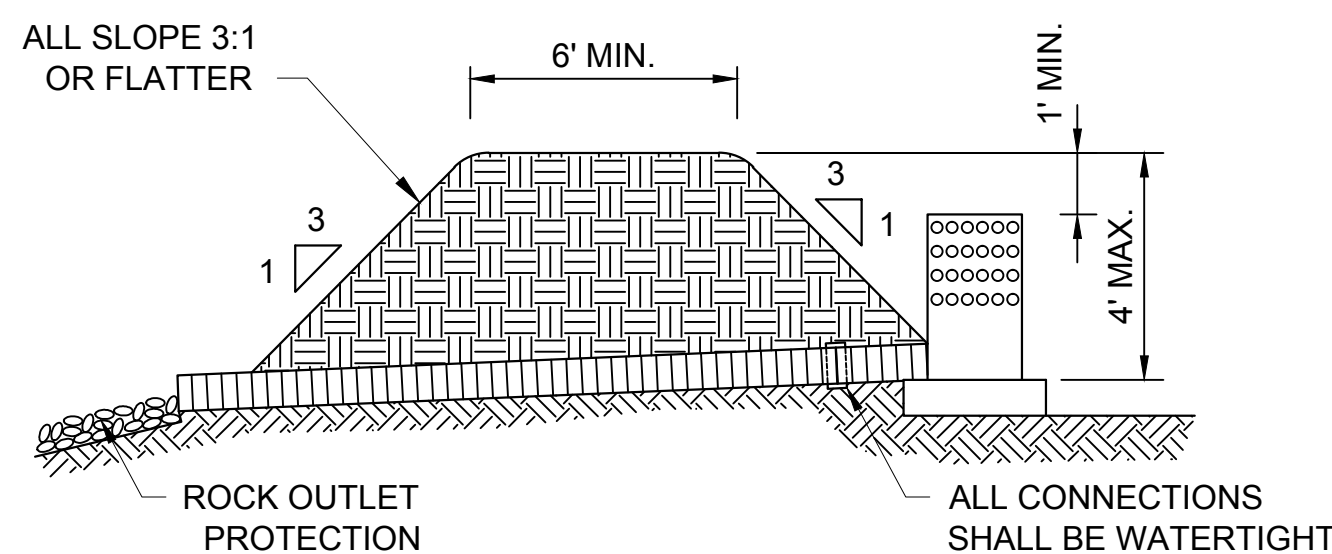
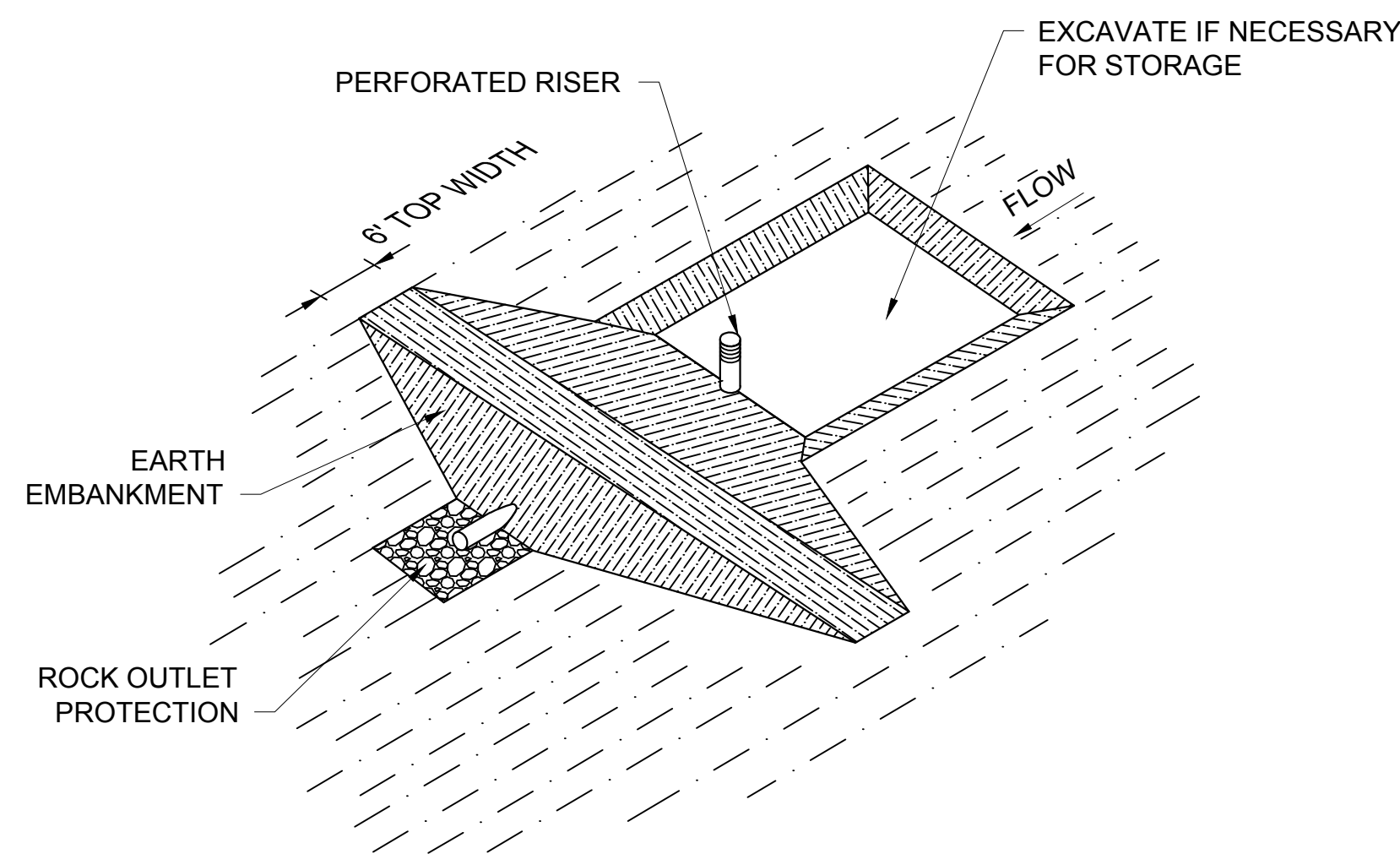
MILE NO:  
SHEET 10 OF 19

NPTT610-C500

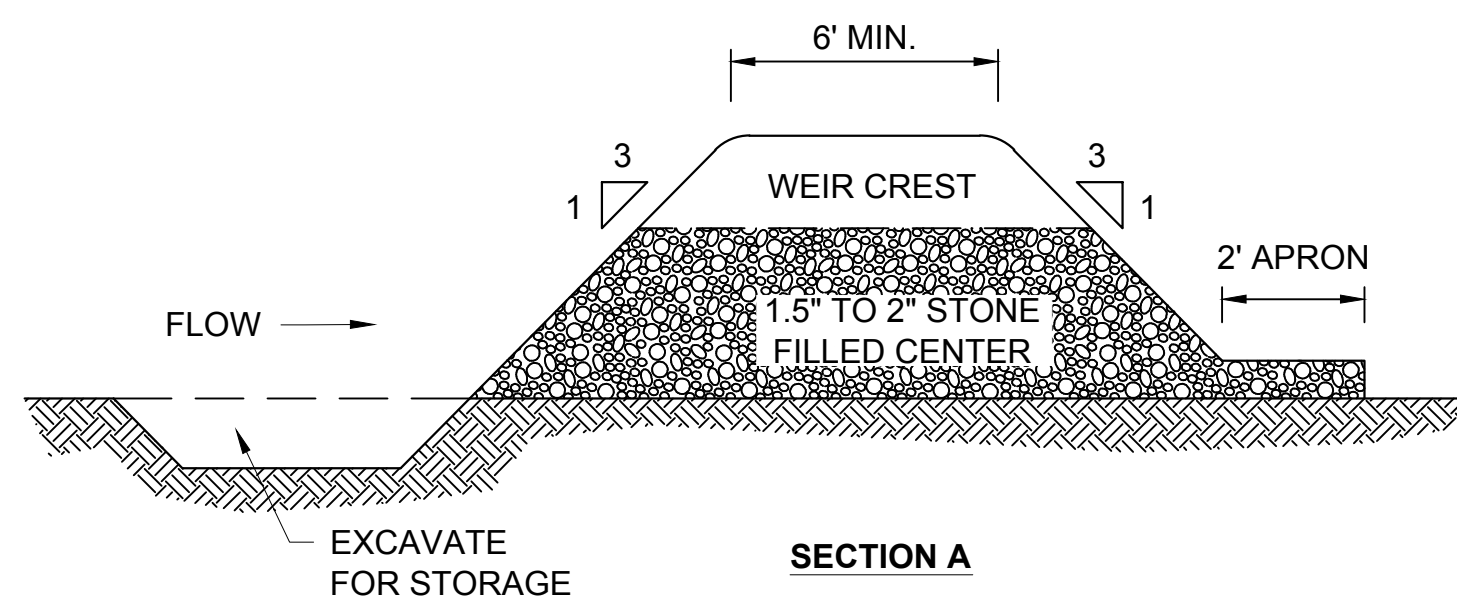
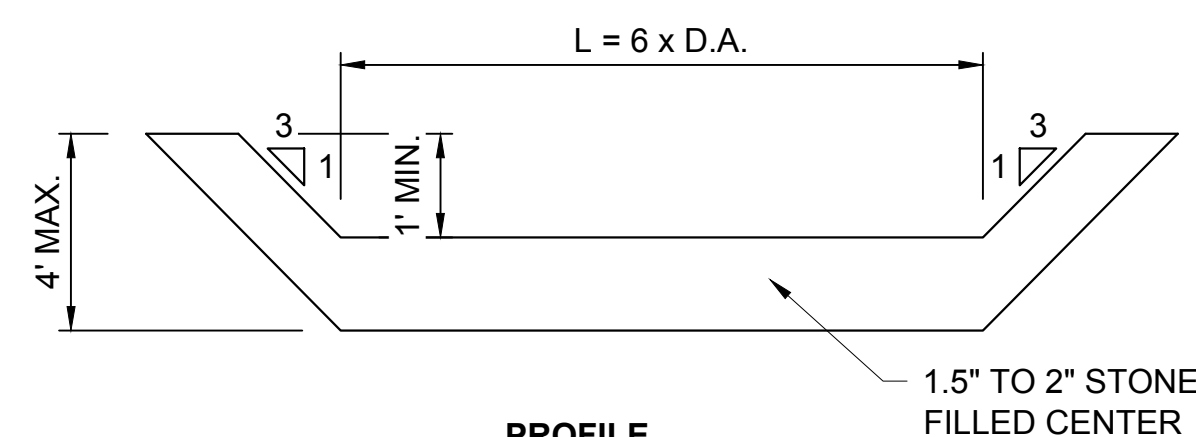
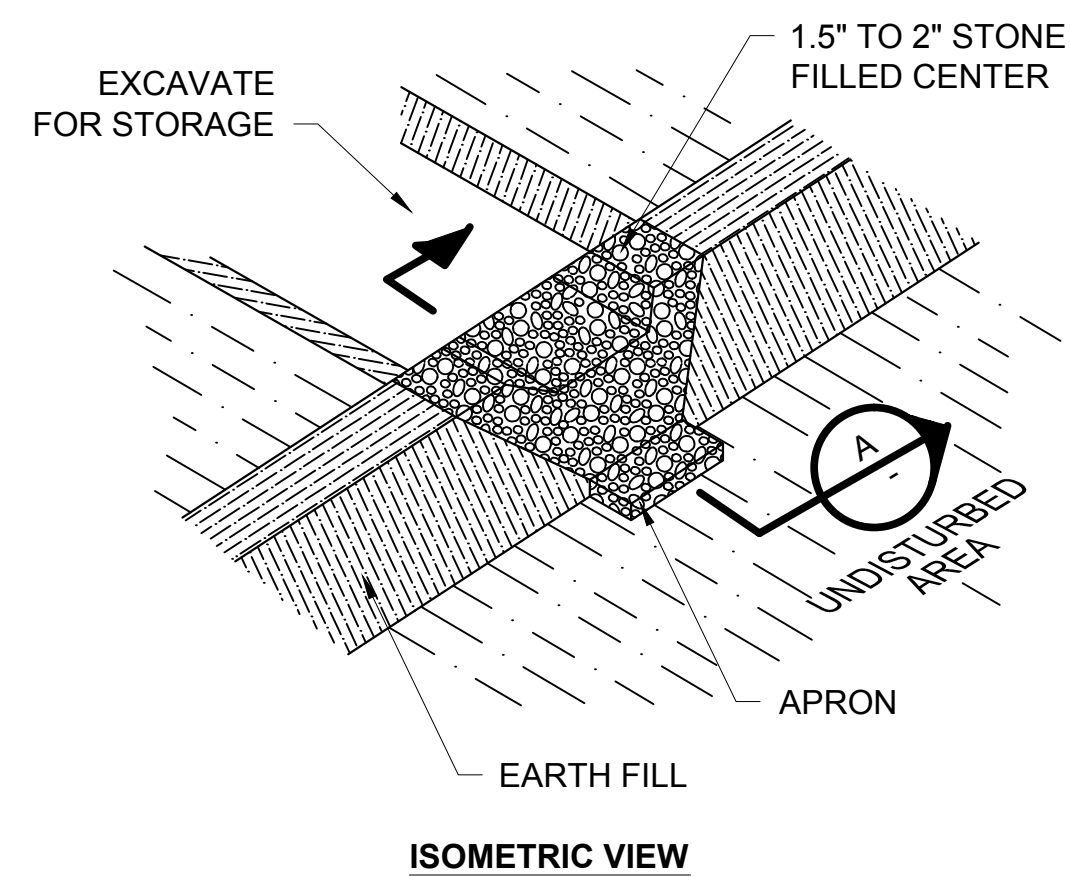




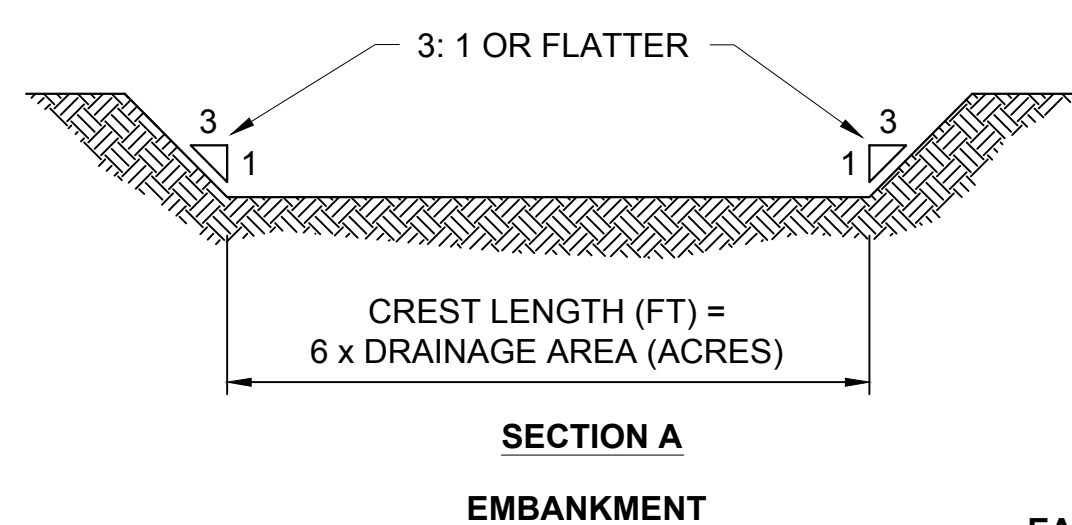
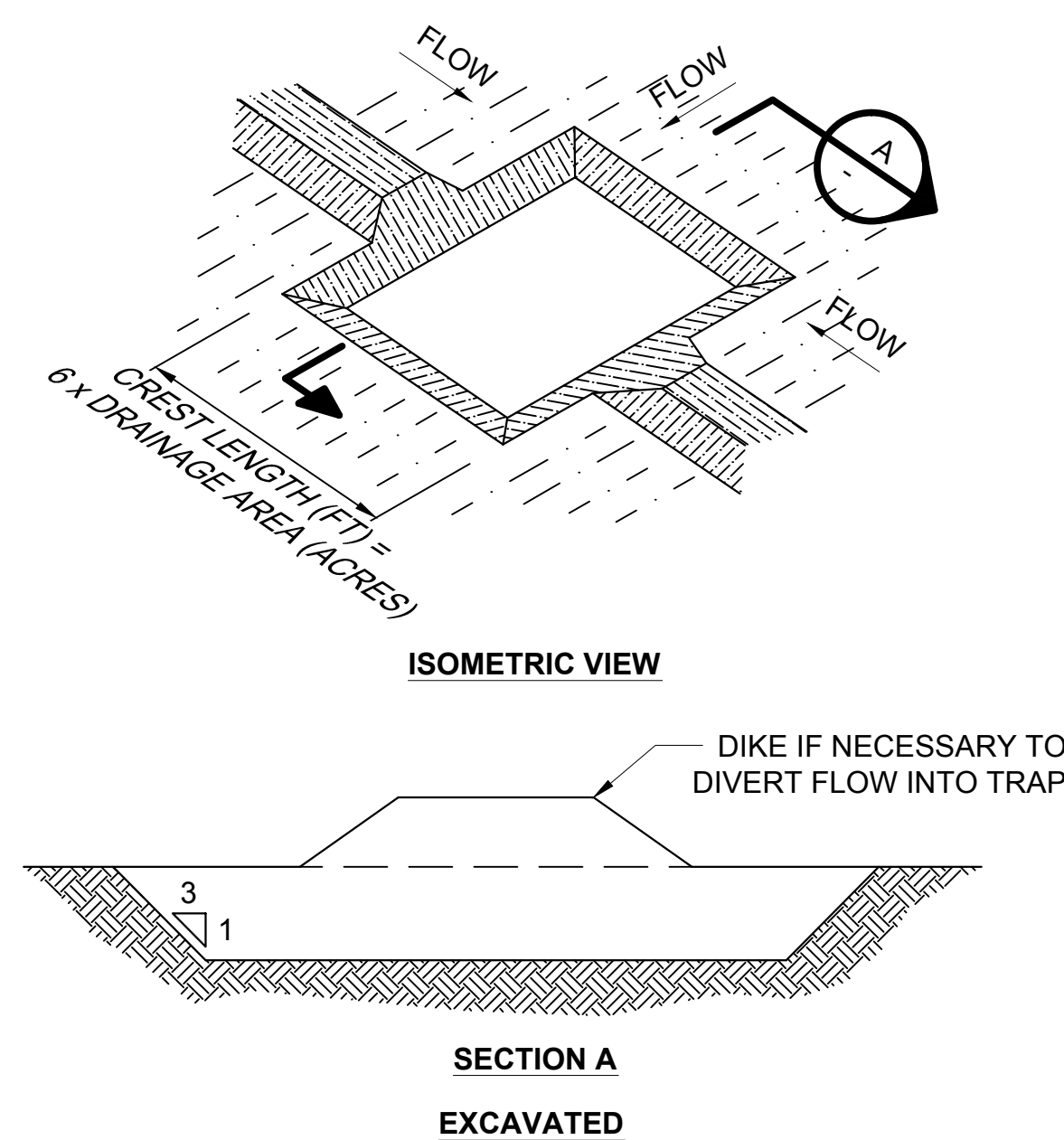
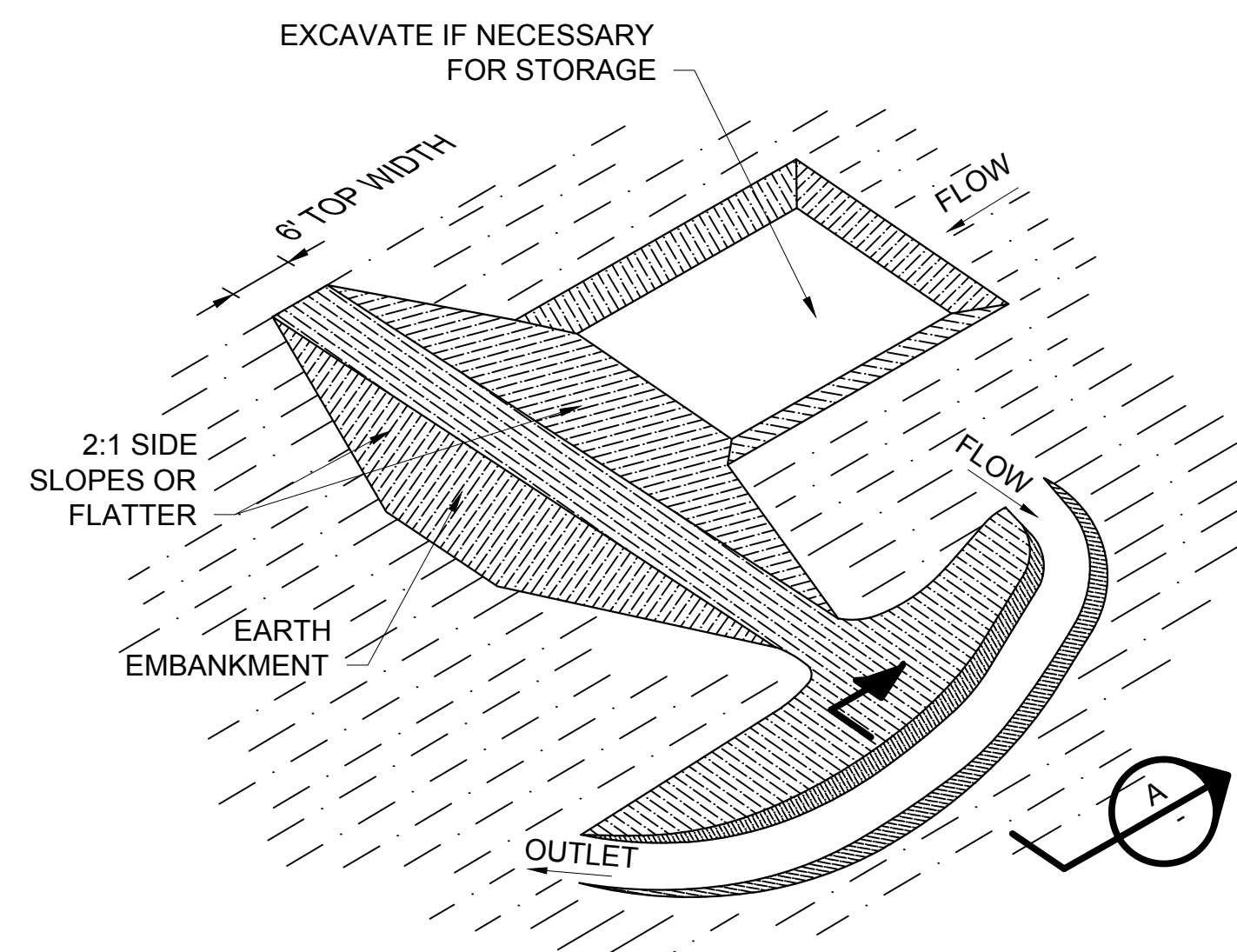




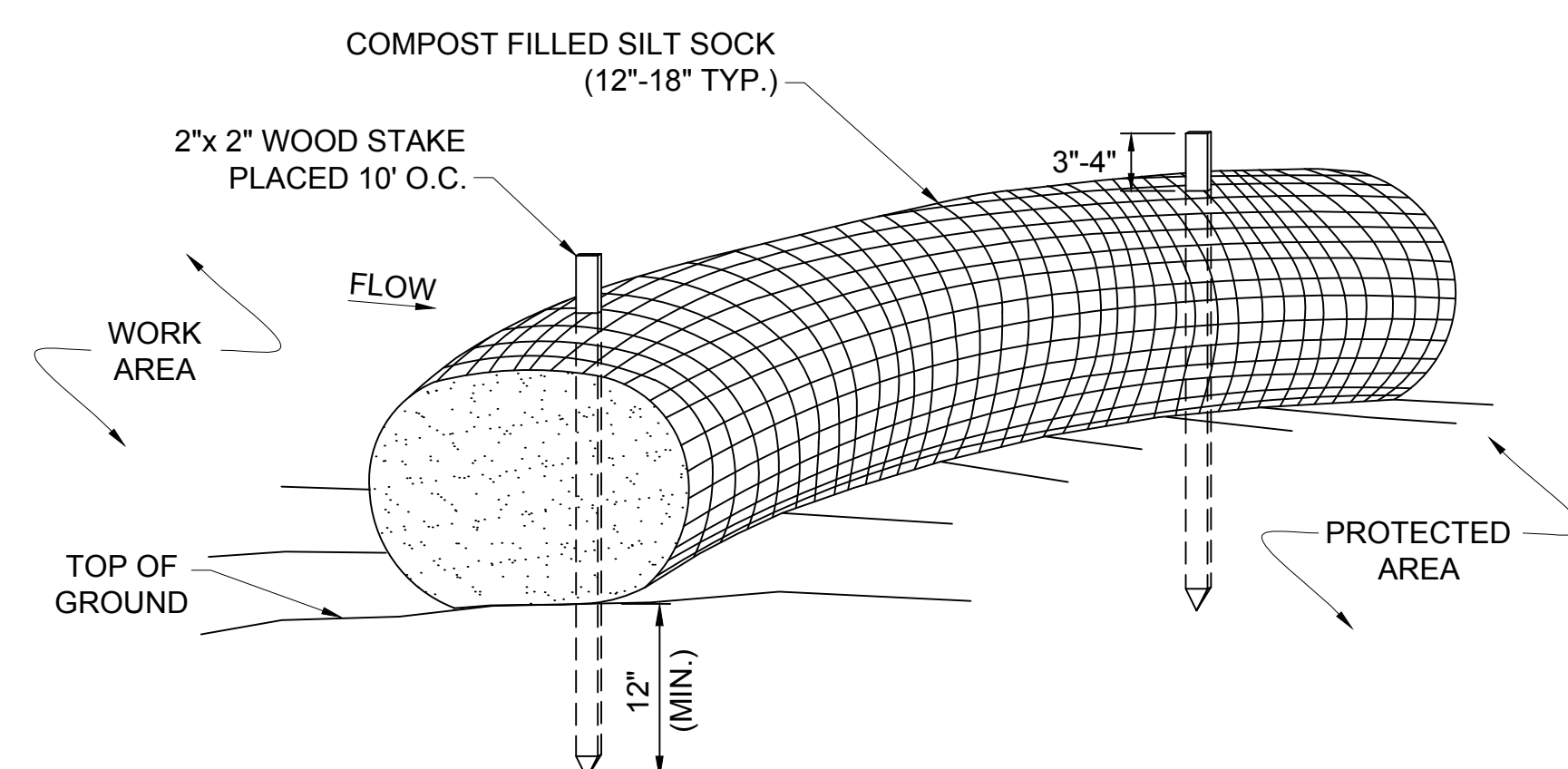
**PIPE OUTLET SEDIMENT TRAP**  
NOT TO SCALE



**STONE OUTLET SEDIMENT TRAP** **2**  
NOT TO SCALE C102



**EARTH OUTLET SEDIMENT TRAP**  
NOT TO SCALE

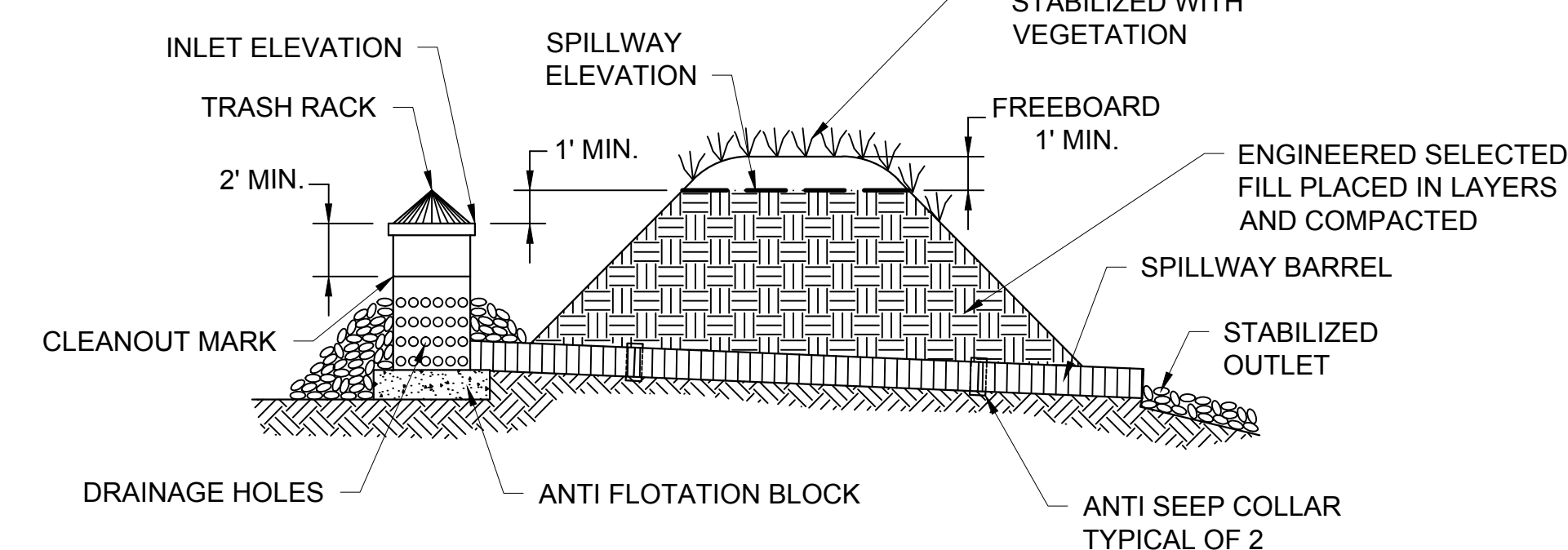
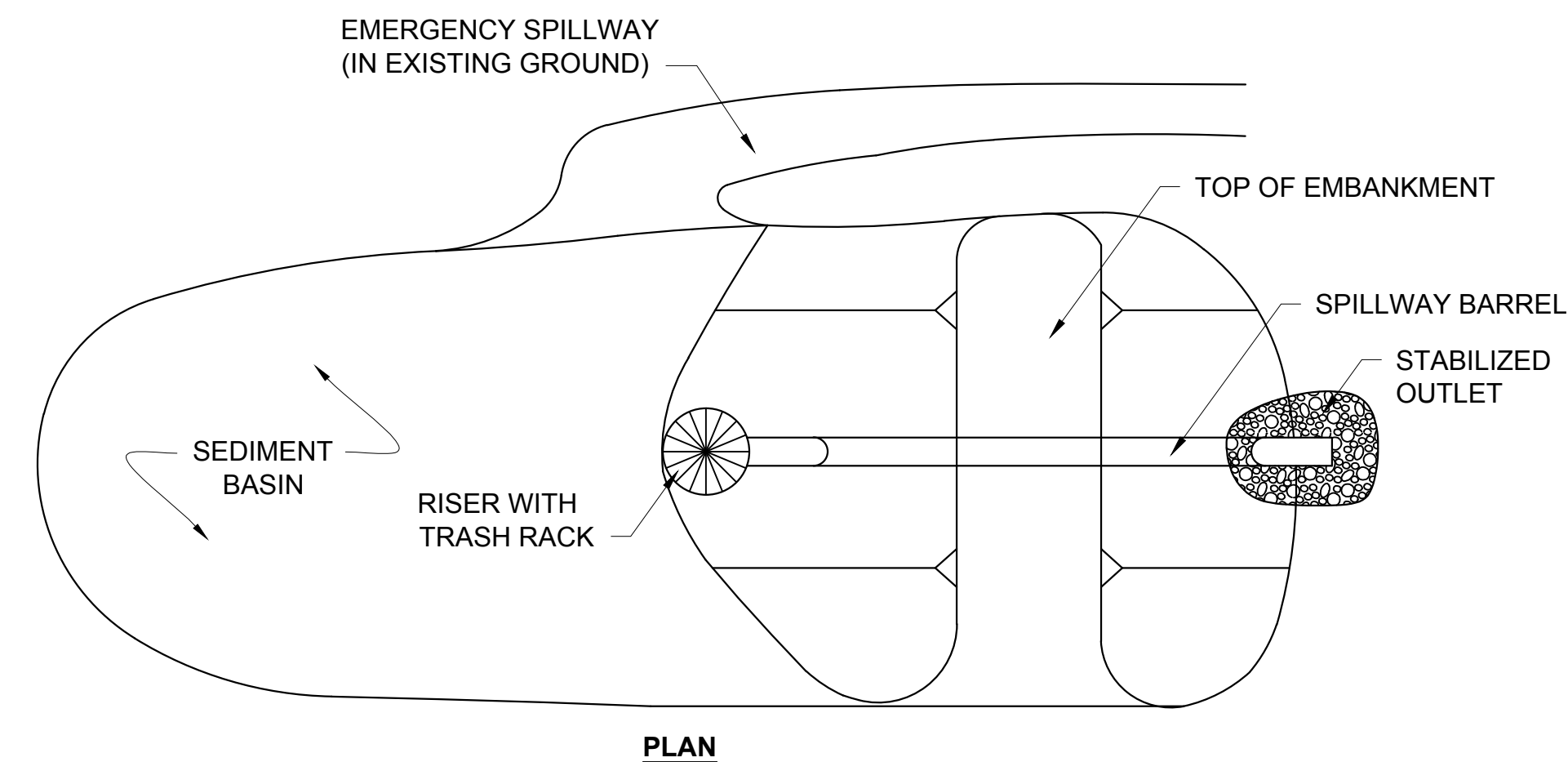


- NOTES:**
1. SILT SOCK SHALL BE FILTREXX™ SILTSOX™ OR APPROVED EQUIVALENT.
  2. SEE SPECIFICATIONS FOR SOCK SIZE AND COMPOST FILL REQUIREMENTS.
  3. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.
  4. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE QUALIFIED PROFESSIONAL.

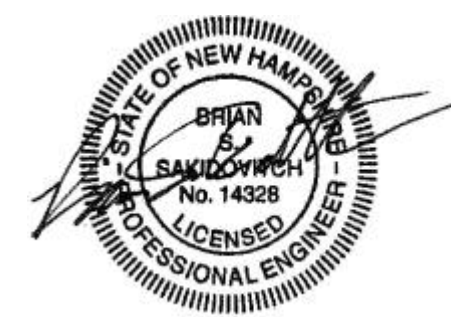
**SILT SOCK**  
**NOT TO SCALE**

**NOTES:**

1. REQUIRED FOR DISTURBED AREAS GREATER THAN 5 ACRES WITHIN A DRAINAGE AREA LESS THAN 100 ACRES.
2. SEDIMENT BASIN WILL BE REMOVED WITHIN 3 YEARS.

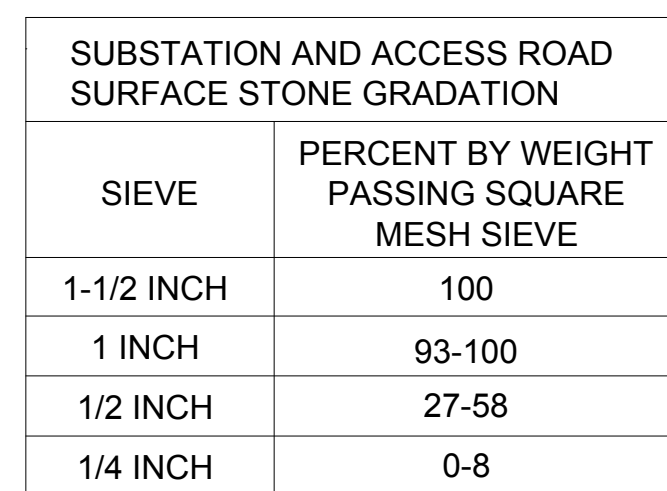


**TYPICAL SEDIMENT BASIN**  
NOT TO SCALE



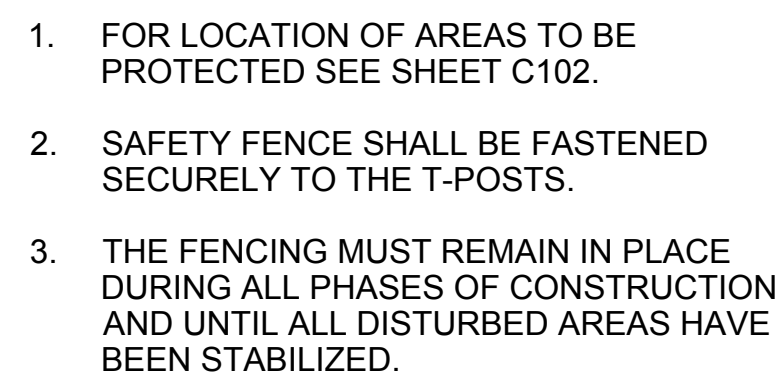
This document has been digitally sealed  
Oct 5 2015

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

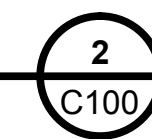


1. REMOVE ALL LOAM, CLAY, MUCK, STUMPS, AND OTHER IMPROPER ROAD FOUNDATION MATERIAL WITHIN 2' OF SUBGRADE. REPLACE WITH COMPACTED GRANULAR FILL MATERIAL ACCEPTABLE TO APPROVING AGENCY. COMPACTION TO BE AT LEAST 95% OF STANDARD PROCTOR.
2. SUBSTATION SURFACE STONE SHALL EXTEND 3-FT OUTSIDE THE SUBSTATION PERIMETER FENCE.
3. GRAVEL ACCESS ROADS SHALL HAVE AT LEAST 8 INCHES OF PROCESSED AGGREGATE BASE.

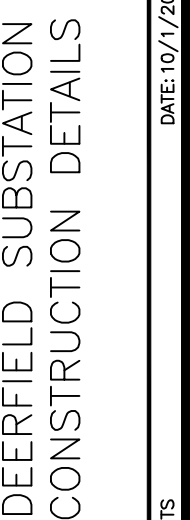
3  
C100  
C101-C104



4  
C102



A cross-sectional diagram of a tubular post installed in a concrete wall. The post is labeled "TUBULAR POST" and has a diameter of 6 inches. The concrete is labeled "CONCRETE CLASS A". The post is embedded 36 inches into the concrete. The top of the post is 6 inches from the left edge and 6 inches from the right edge. The ground line is indicated by a horizontal line with a hatched area below it. The distance from the ground line to the bottom of the post is 6 inches.

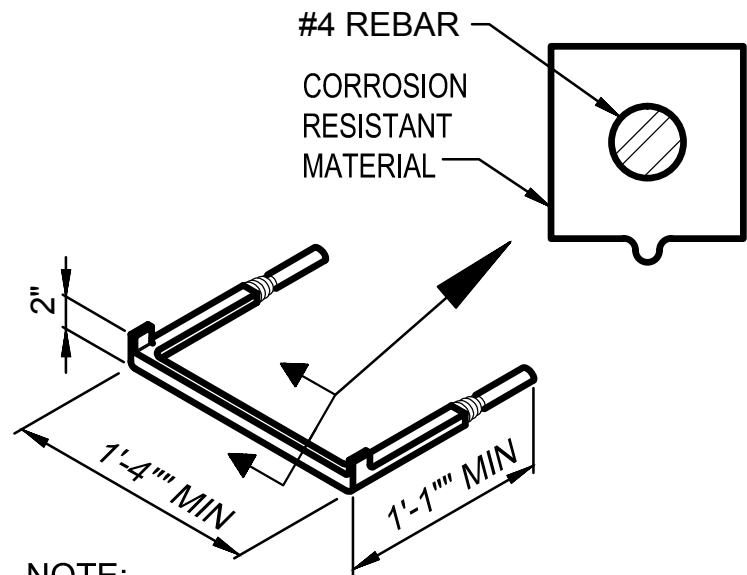
[illegible]

SHEET 13 OF 19

REVISION: 11/10/2013

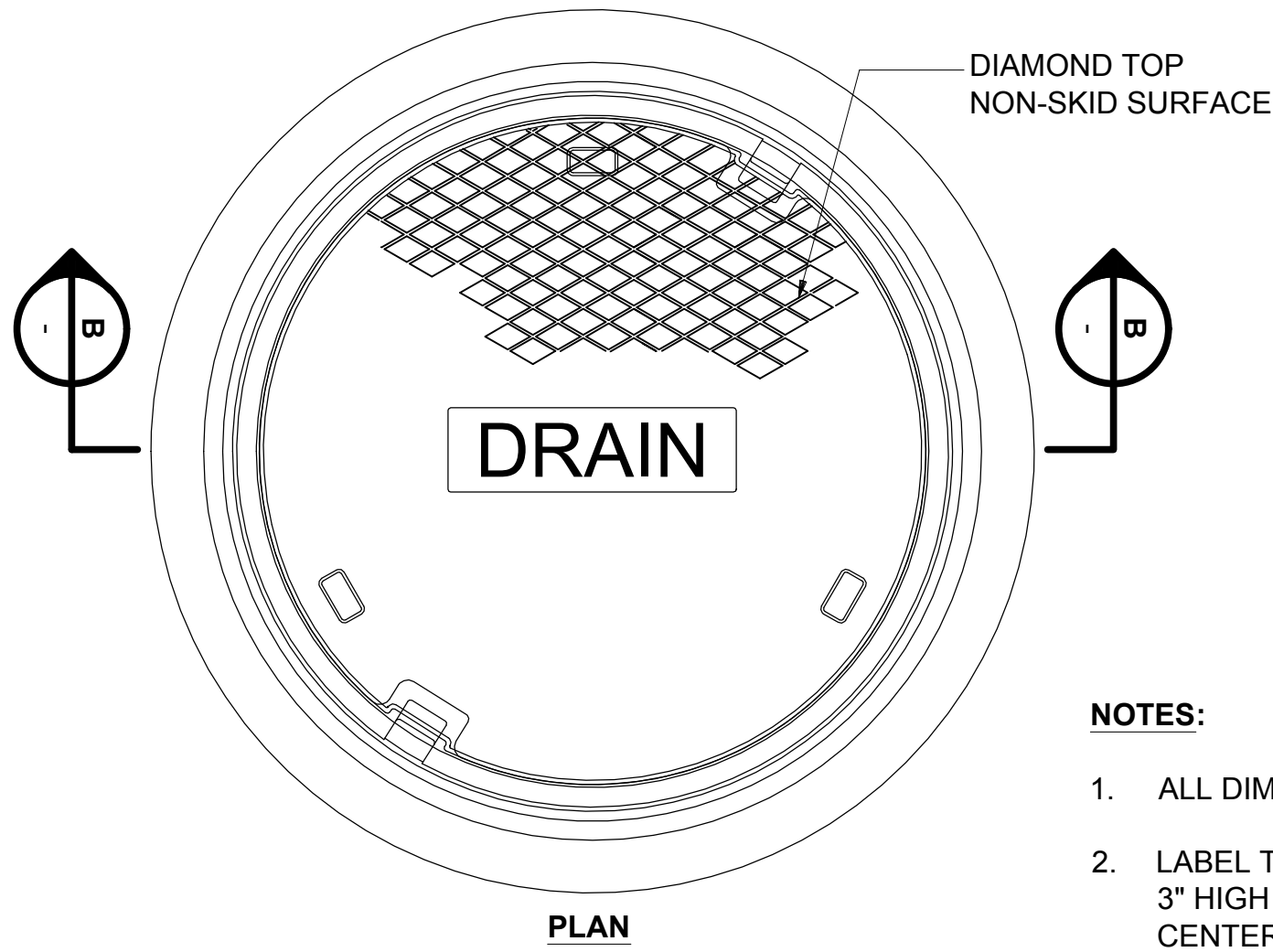
DIAMETER	WALL THICKNESS (MIN.)	FLOOR THICKNESS (MIN.)
4'	5"	6"
5'	6"	8"
6'	7"	8"
8'	9"	10"

CORE HOLE SIZE				
PIPE SIZE	RCP CORE HOLE DIA.		PLASTIC CORE HOLE DIA.	
INCHES	INCHES	FEET	INCHES	FEET
6			7	0.6
12	18	1.5	18	1.5
15	22	1.8	20	1.7
18	26	2.2	24	2.0
24	34	2.8	32	2.7
30	42	3.5	42	3.5
36	48	4.0	48	4.0
42	54	4.5	54	4.5
48	64	5.3	64	5.3
54	72	6.0		
60	78	6.5		



NOTE:  
No. 4 REBAR ENCASED IN CORROSION RESISTANT RUBBER OR OTHER MATERIAL APPROVED BY THE OWNER'S REPRESENTATIVE.

MANHOLE STEP  
NOT TO SCALE



NOTES:

- ALL DIMENSIONS ARE NOMINAL.
- LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN THE CENTER OF THE COVER.

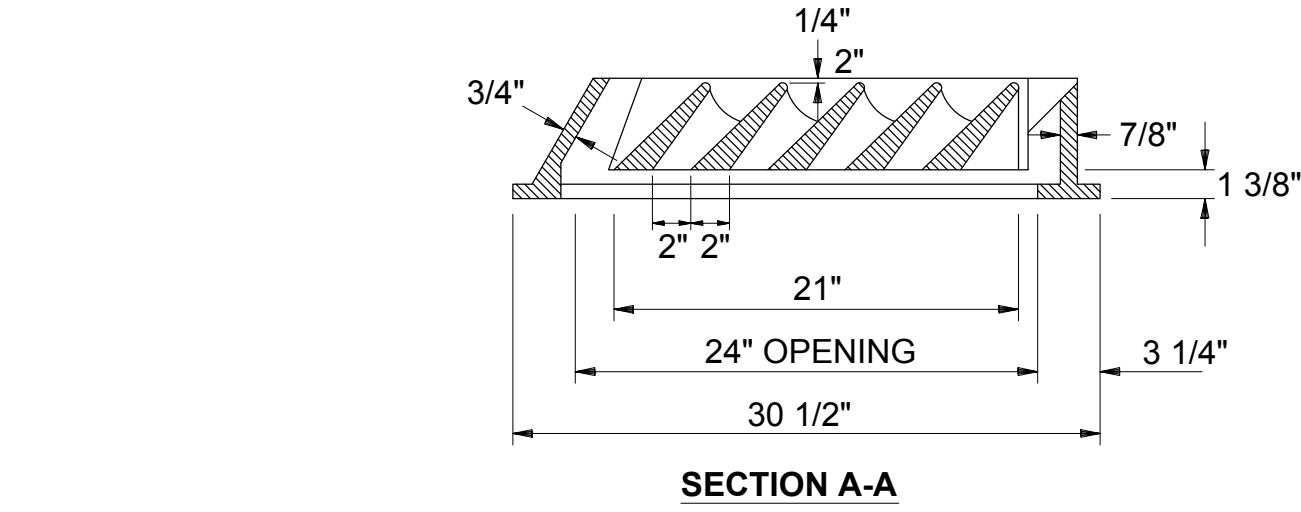
MANHOLE FRAME AND COVER  
NOT TO SCALE

NOTES:

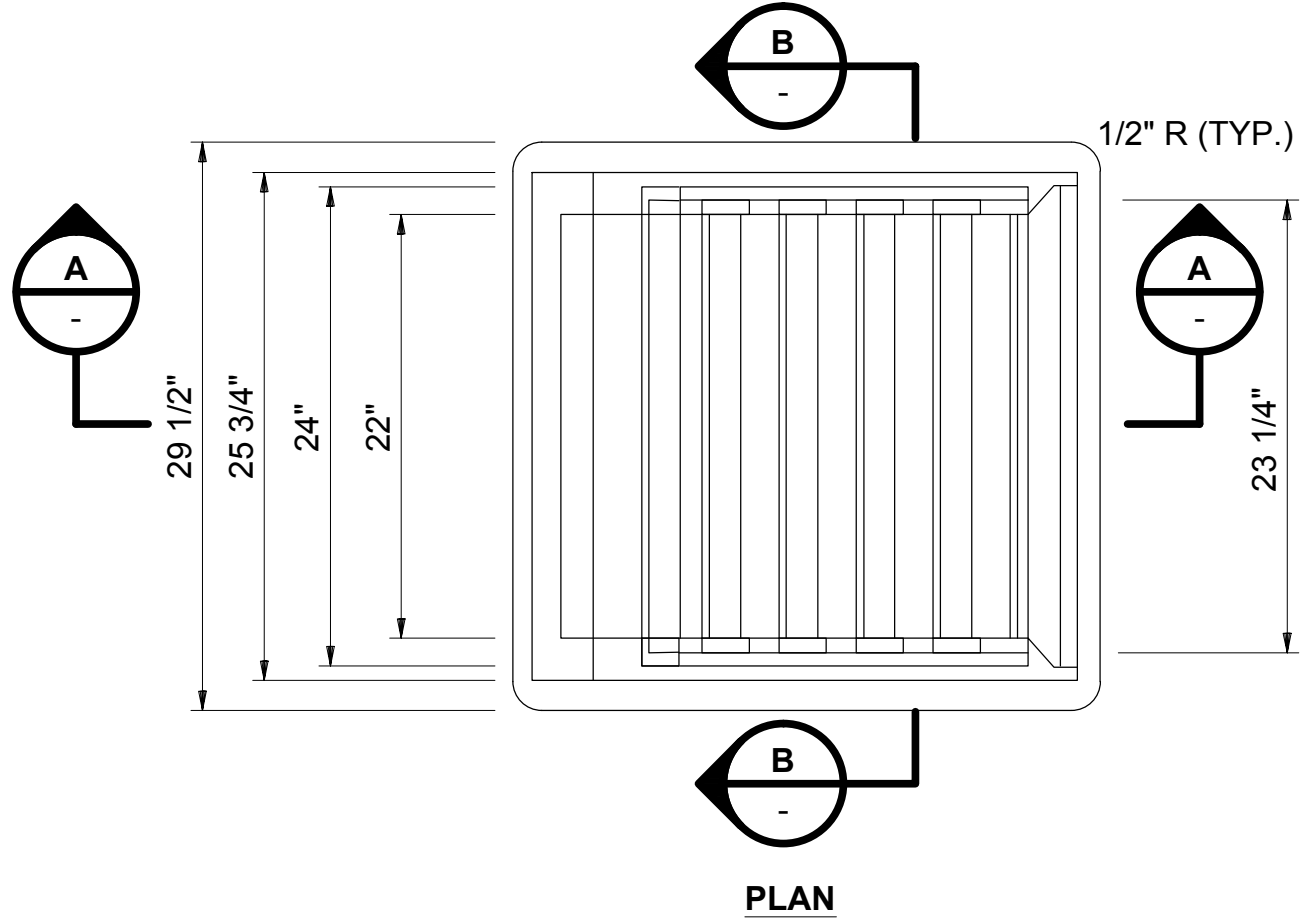
- ALL DIMENSIONS ARE NOMINAL.
- FREE OPEN AREA = 1.80 S.F.

PIPE DIAMETER INCHES	THROAT DEPTH "A" INCHES	
	ONE THROAT	ONE THROAT
12"	8"	8"
15"	8"	8"
18"	16"	8"
24"	18"	16"

IN A SERIES OF CONNECTING C.B.'S OR D.I.'S, THE OUTLET PIPES MAY INCREASE IN DIAMETER, BUT THE SURFACE THROAT OPENINGS ARE NOT AFFECTED.



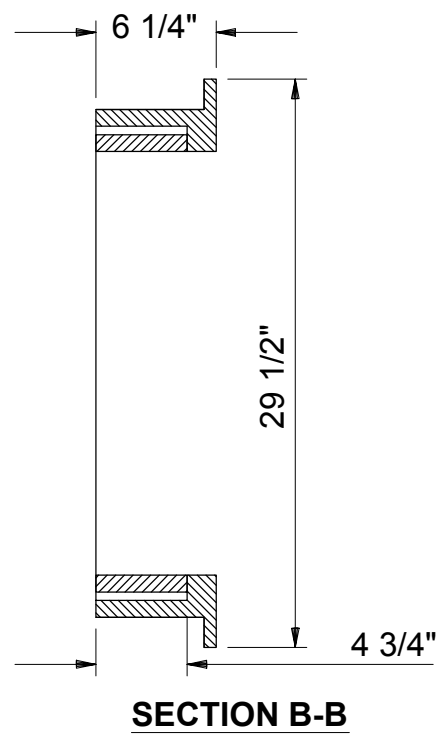
SECTION A-A



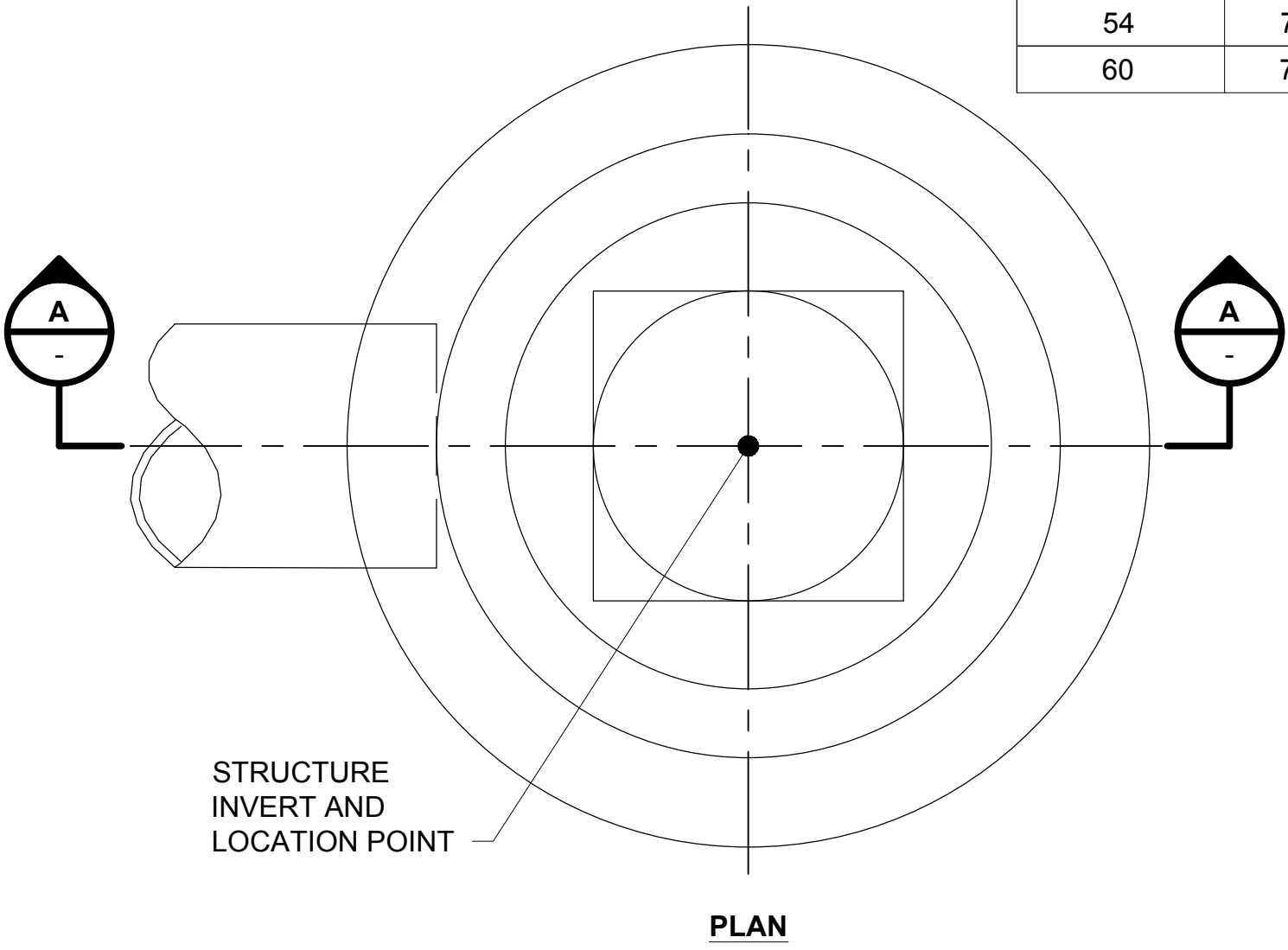
PLAN

TYPE "E" GRATE  
NOT TO SCALE

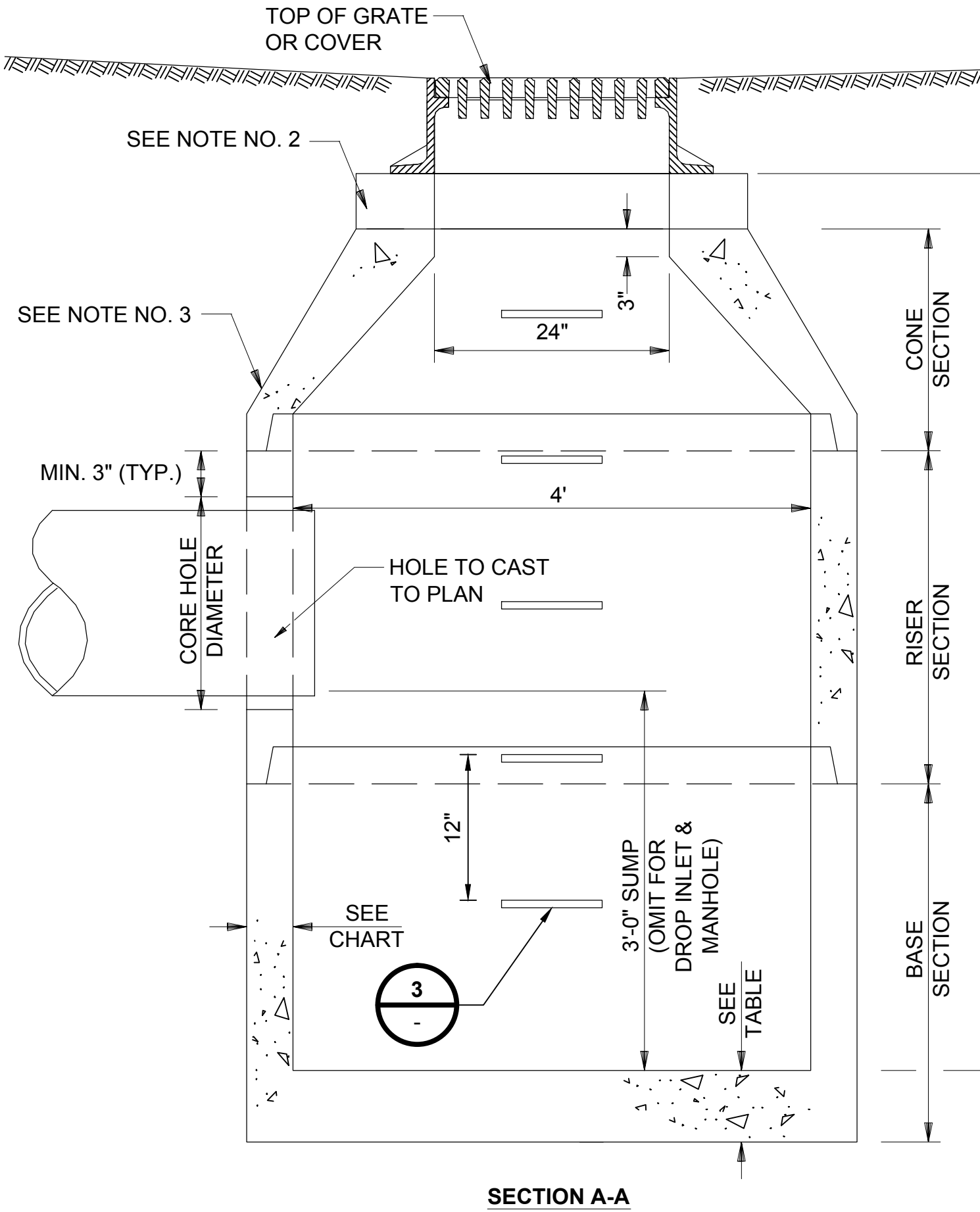
4  
C104



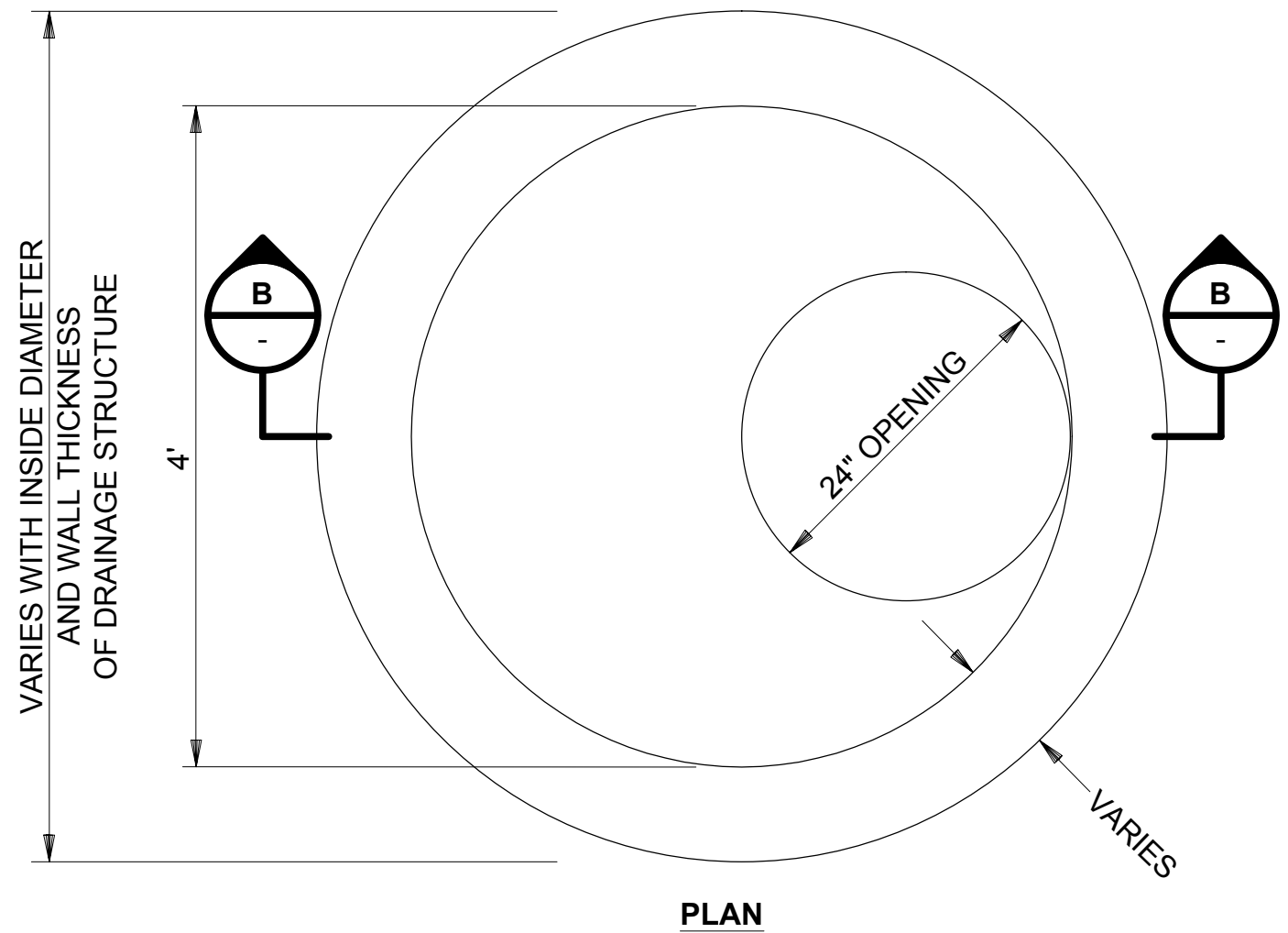
SECTION B-B



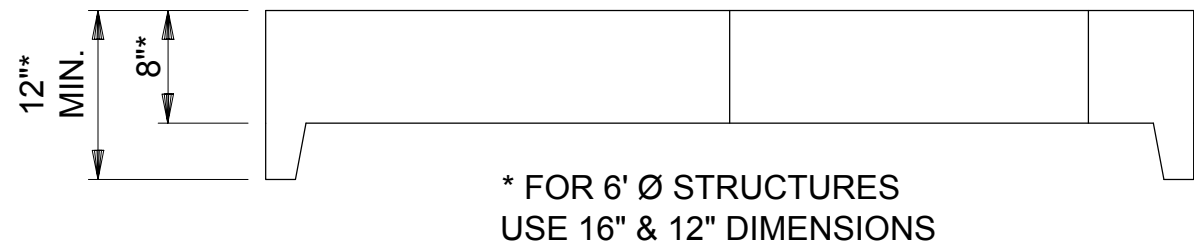
PLAN



SECTION A-A



PLAN



SECTION B-B  
FLAT SLAB TOP

GENERAL NOTES:

- CATCH BASIN TO CONFORM TO NH DOT SECTION 604.1 REQUIREMENTS.
- FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
- CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
- PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
- OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
- PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
- ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

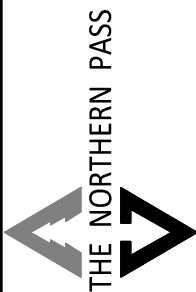
PRECAST CONCRETE  
MANHOLE AND CATCH BASIN  
NOT TO SCALE

1  
C104

This document has been digitally sealed.  
Oct 5 2015

FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
1	ISSUED FOR PERMITTING	10/1/15	FP	BSS	



Transmission  
Business

#

DEERFIELD SUBSTATION  
CONSTRUCTION DETAILS

DES: LRM | CHK: RLR  
DRW: FP | APR: BSS

TOWN:  
DEERFIELD, NH

TRANSMISSION LINE:

MILE NO:

SHEET 14 OF 19

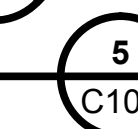
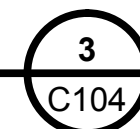
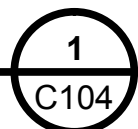
NPTT614-C504

REVISION: 11/10/2013

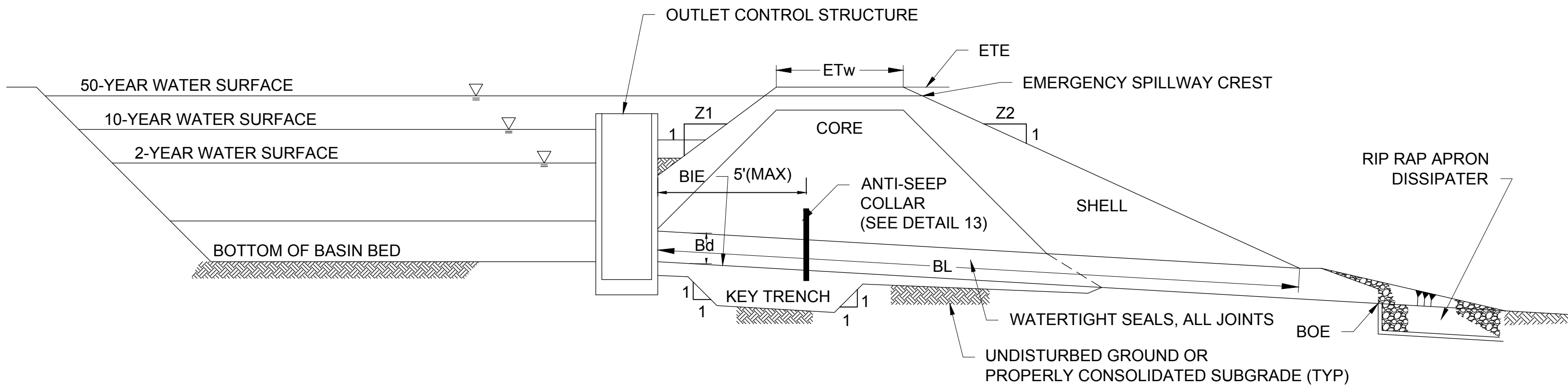






REVISION: 11/10/2013

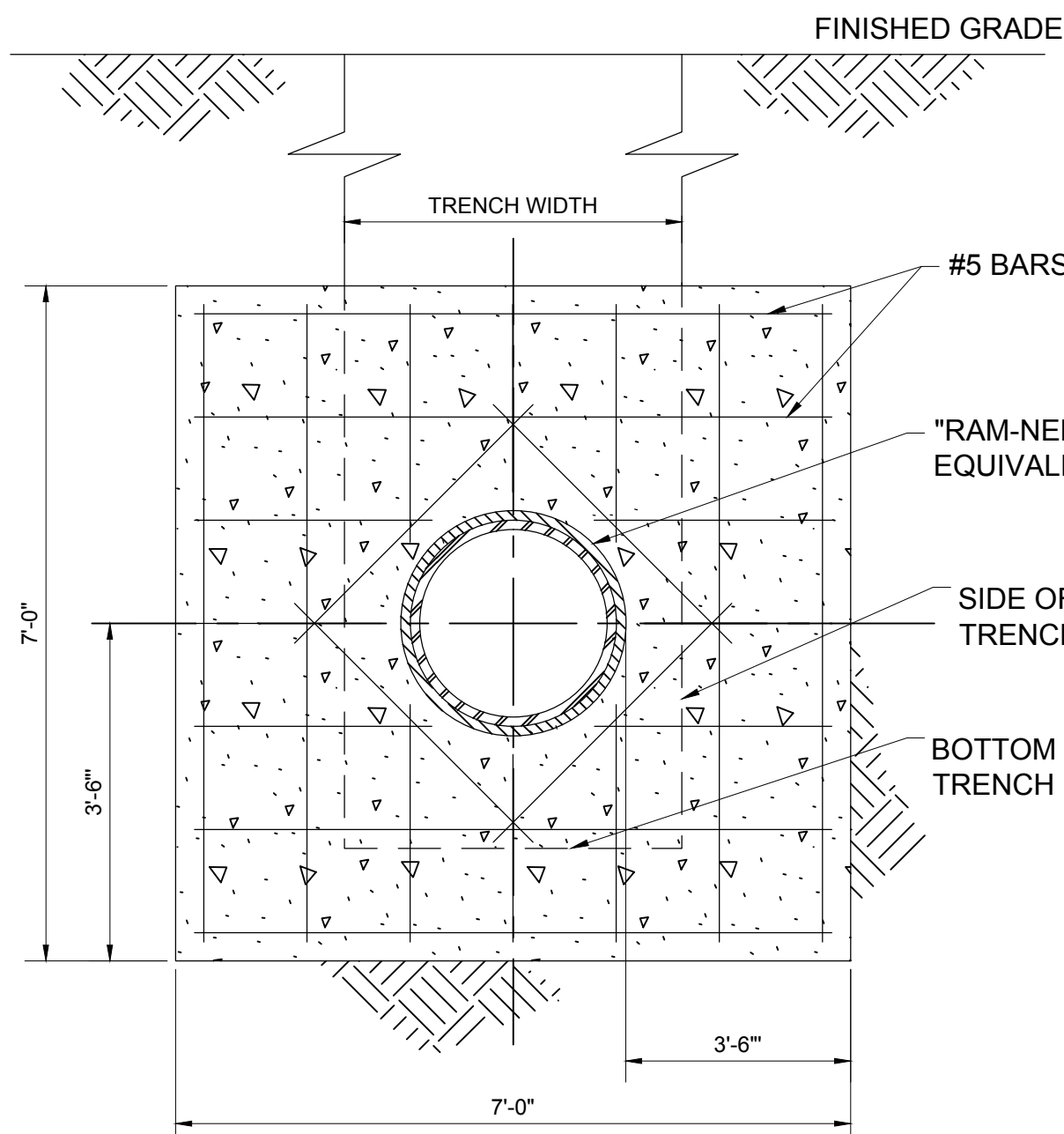




BASIN NO.	WATER SURFACE ELEVATION			BOTTOM BASIN ELEVATION	Z1 (FT)	Z2 (FT)	BARREL				EMBANKMENT			
	2 YEAR	10 YEAR	50 YEAR				DIA Bd (IN)	INLET ELEV BIE (FT)	MAT'L	LENGTH BL (FT)	OUTLET ELEV BOE (FT)	TOP ELEV ETE (FT)	TOP WIDTH ETw (FT)	CREST (FT)
DT-1	380.56	381.61	382.36	380.00	3	3	18	379.00	CLASS III RCP	53	378.00	384.00	6	383.00
DT-2	369.78	370.47	371.36	368.00	3	3	24	367.50	CLASS III RCP	31	367.25	373.00	6	372.00

**DETENTION BASIN CROSS SECTION**  
NOT TO SCALE

1  
C104



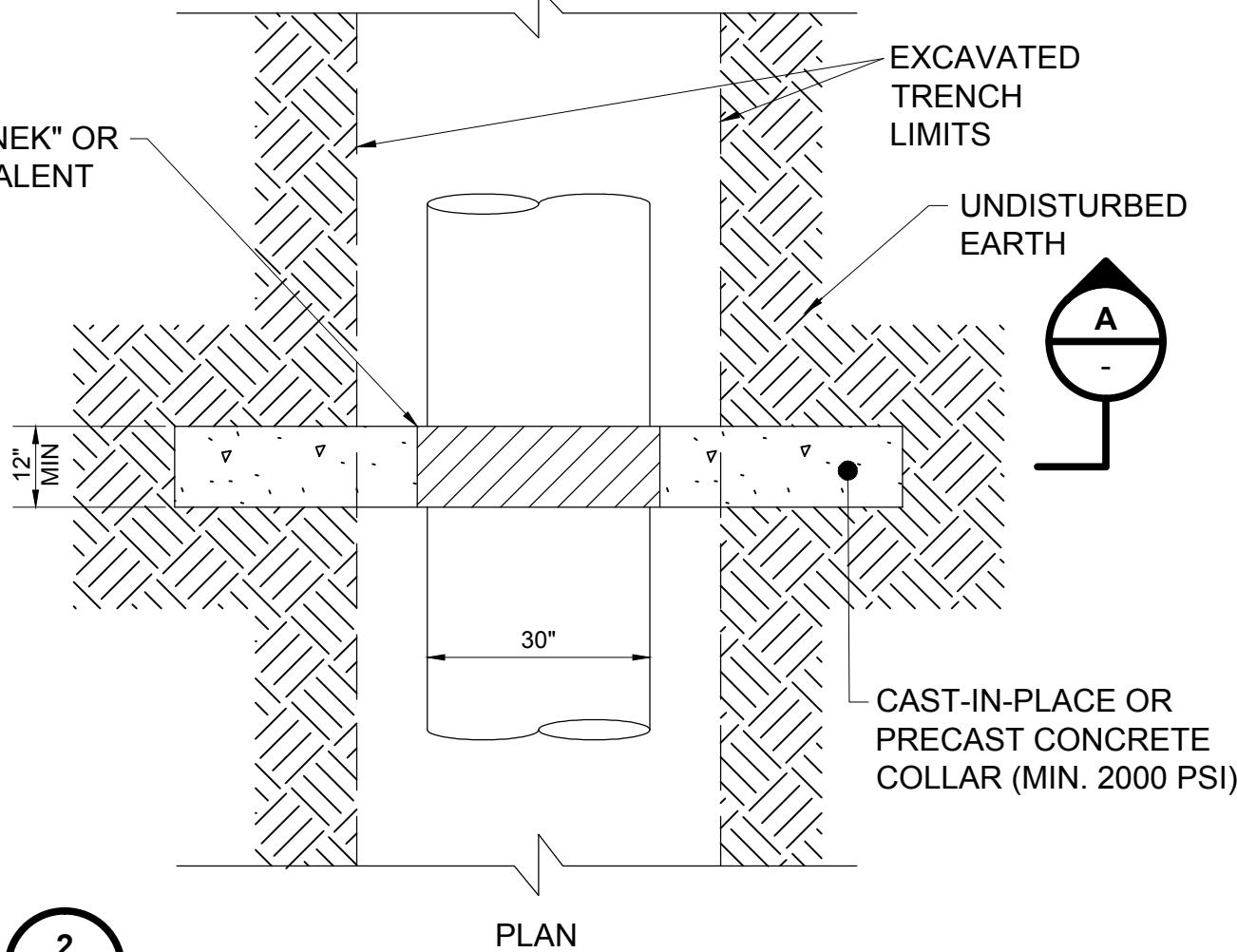
SECTION A-A

**ANTI SEEP COLLAR**  
NOT TO SCALE

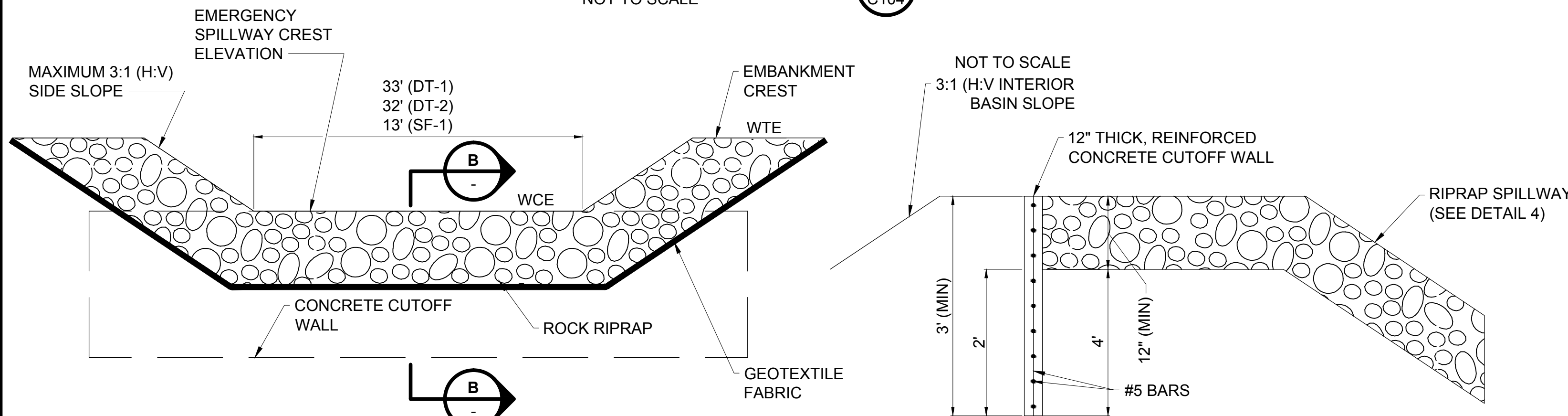
2  
C104

**NOTES:**

1. WRAP PIPE WITH "RAM-NEK" OR EQUIVALENT WHERE PIPE IS EXPOSED TO CONCRETE PRIOR TO POURING.
2. EXCAVATION & BACKFILL SHALL BE AS SPECIFIED.
3. DO NOT PLACE WITHIN 2 FEET OF A PIPE JOINT.
4. REFER TO DETAIL 1 FOR LOCATION.



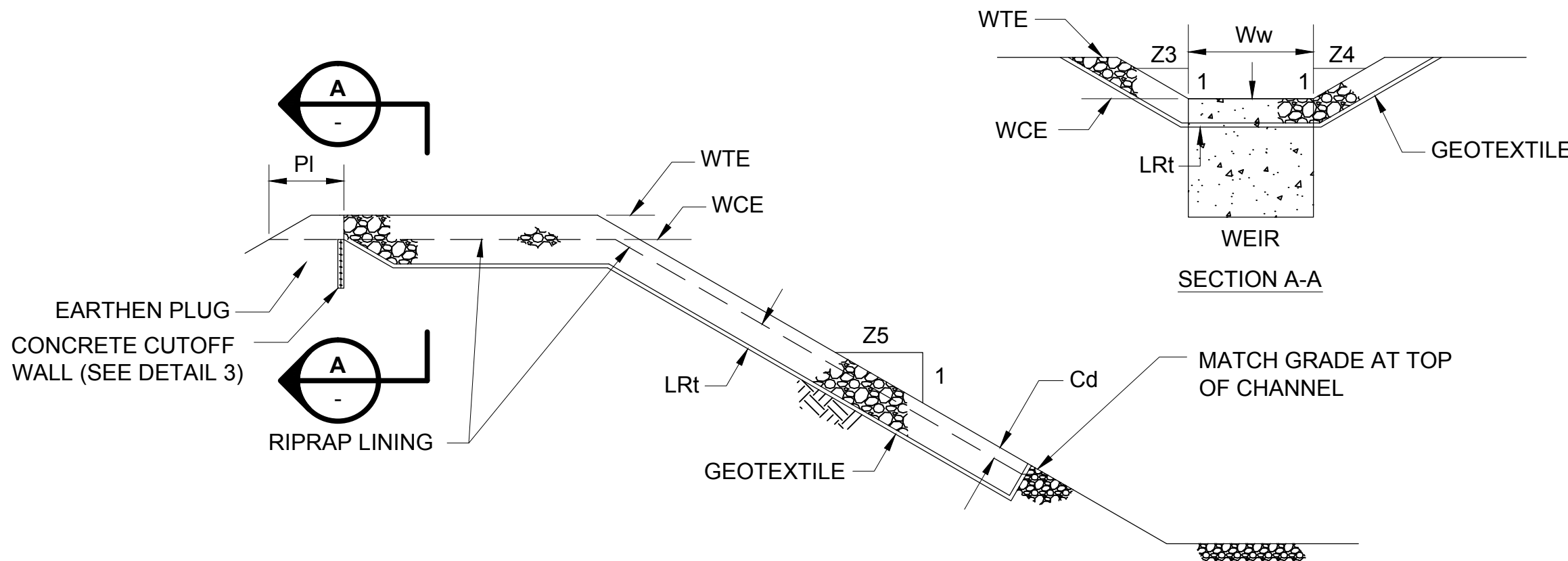
PLAN



- NOTES**
1. SEE SECTION THROUGH SPILLWAY FOR FURTHER INFORMATION.

**SPILLWAY APRON**  
NOT TO SCALE

3  
C104

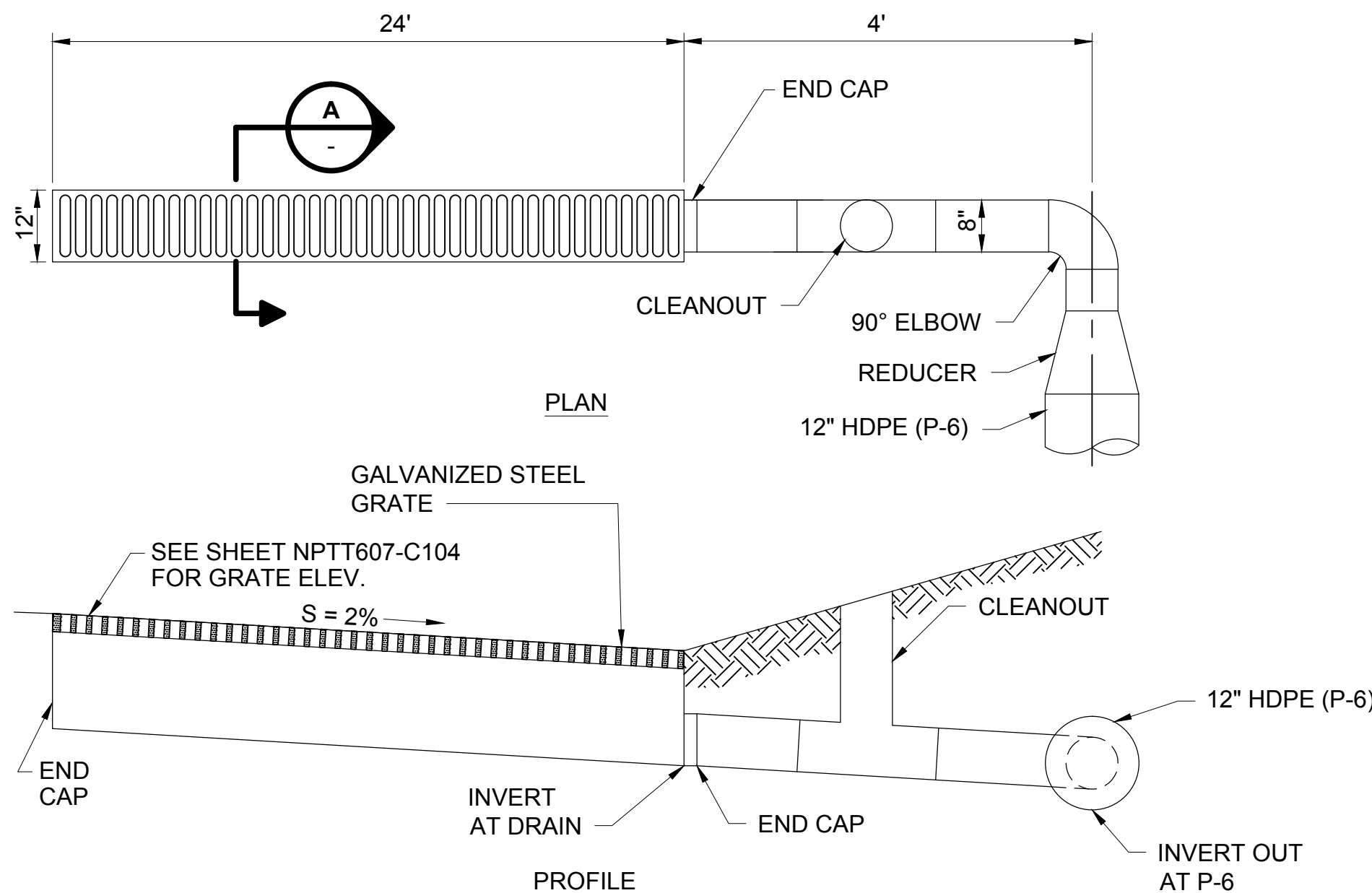


SECTION A-A

BASIN NO.	WEIR						LINING		CHANNEL	
	Z3 (FT)	Z4 (FT)	TOP ELEV WTE (FT)	CREST ELEV WCE (FT)	WIDTH Ww (FT)	PI (FT)	RIPRAP SIZE (d50)	RIPRAP THICK. Lrt (IN)	Z5 (FT)	DEPTH Cd (FT)
DT-1	3	3	384.00	383.00	32	1	12	36	3	0.50
DT-2	3	3	373.00	372.00	32	1	12	36	3	0.50
SF-1	3	3	379.00	378.00	13	1	12	36	3	0.50

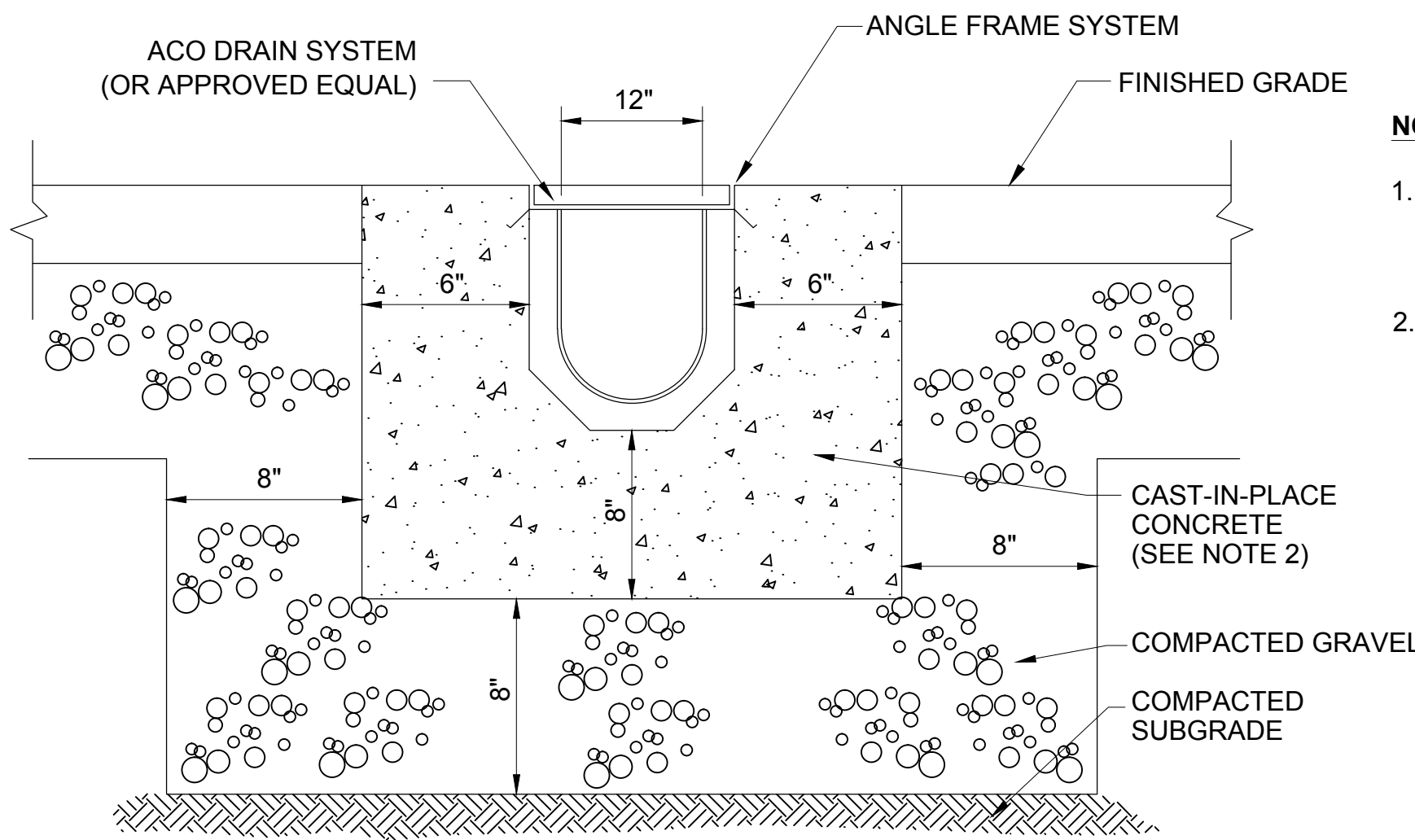
**SECTION THROUGH SPILLWAY**  
NOT TO SCALE

4  
C104



PLAN

PROFILE



SECTION A-A

**TRENCH DRAIN**  
NOT TO SCALE

5  
C104

**NOTES:**

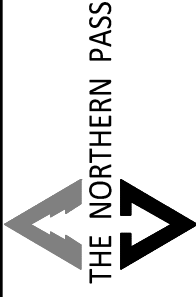
1. TRENCH DRAIN SHALL BE HEAVY DUTY TYPE DESIGNED FOR HS-20 LOADING.
2. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI, TYPE II CEMENT.



This document has been digitally sealed.  
Oct 5 2015

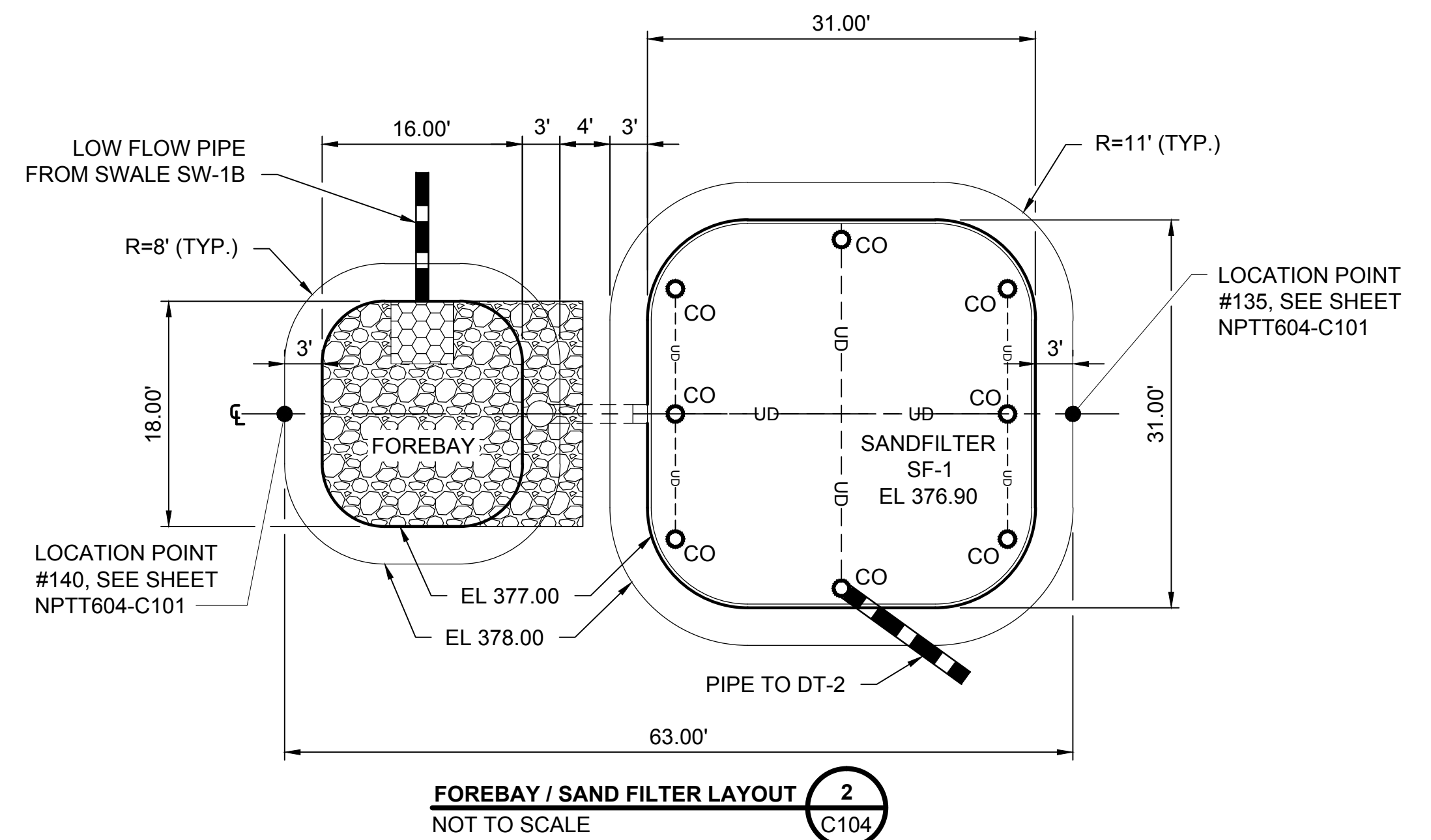
**FOR PERMITTING PURPOSES ONLY**  
**NOT FOR CONSTRUCTION**

NO.	DATE	REVISION	FOR PERMITTING	ISSUED	FOR	DATE	CHG	APPROV.	BSS
1	10/1/15	FP	DATE	NO.					



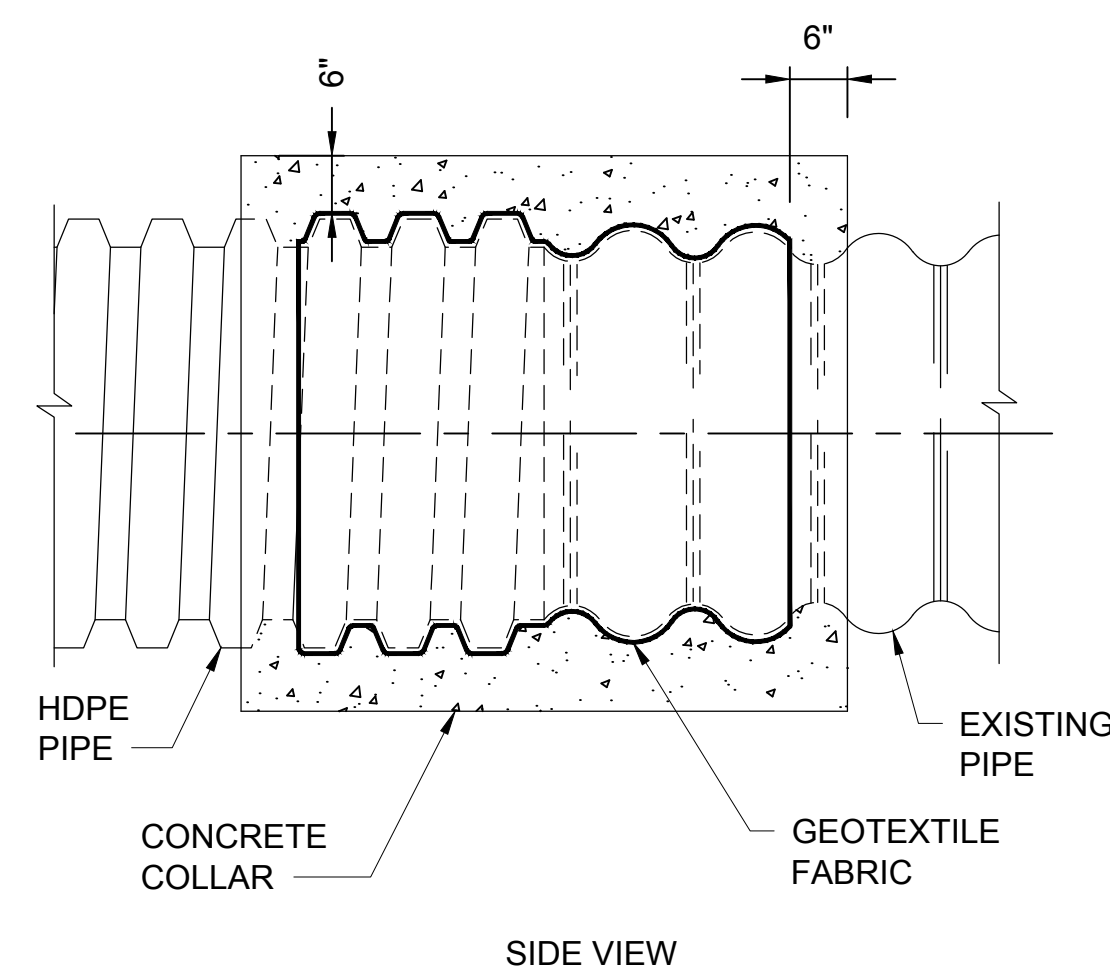
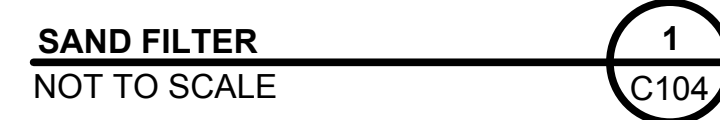
DEERFIELD SUBSTATION  
CONSTRUCTION DETAILS

MILE NO:  
SHEET 18 OF 19  
NPTT618-C508

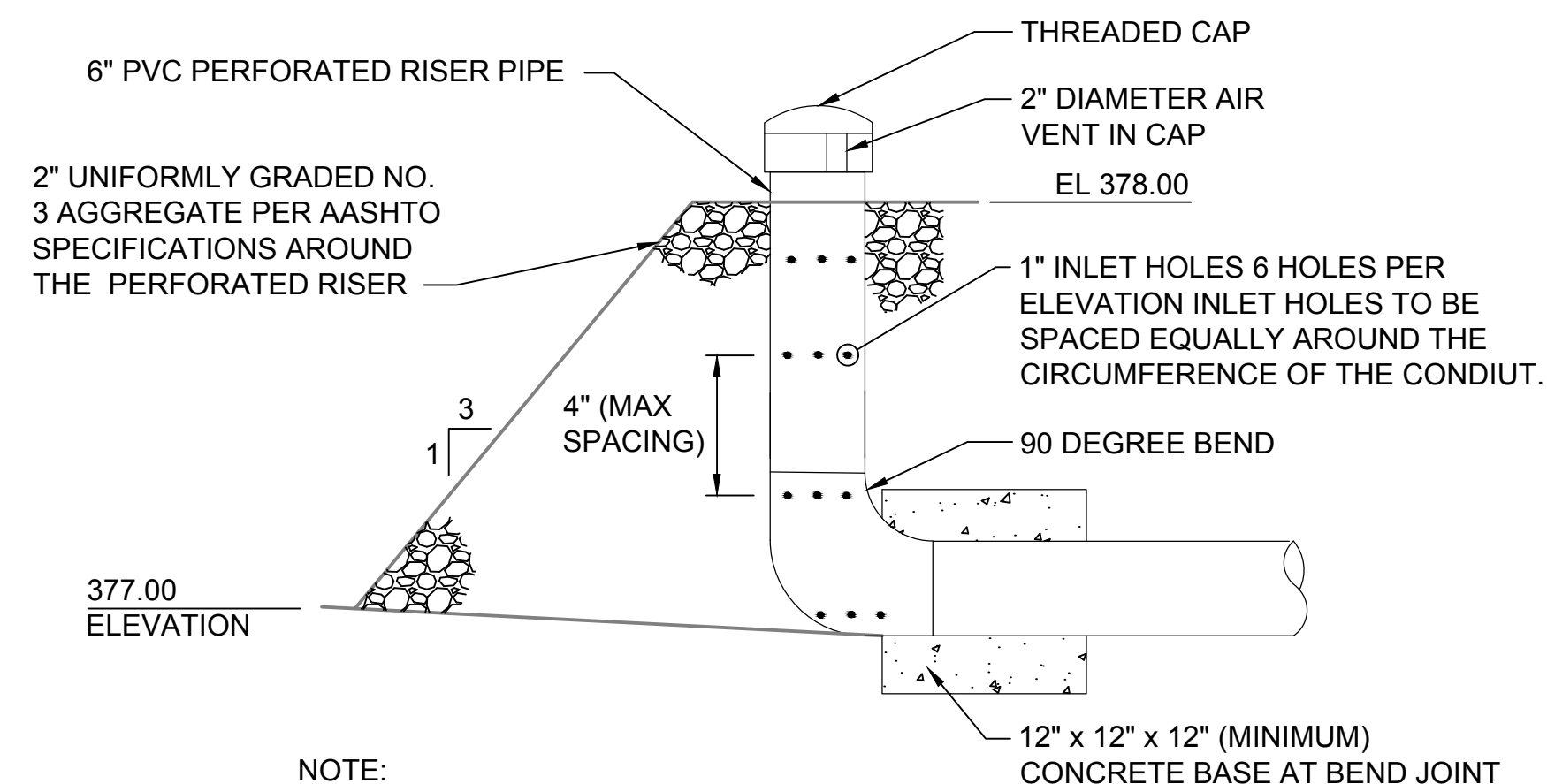


MATERIAL	SPECIFICATIONS / TEST METHOD	SIZE	NOTES
FILTER MIXTURE	NEW HAMPSHIRE FILTER MIXTURE A; ASTM C-33 CONCRETE SAND - 50% TO 55% BY VOLUME	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GREYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND
	LOAMY SAND TOPSOIL - 20% TO 30% BY VOLUME	15% TO 25% PASSING SIEVE NO. 200 BY WEIGHT	
	MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH - 20% TO 30% BY VOLUME	< 5 PASSING SIEVE NO. 200 BY WEIGHT	
UNDERDRAIN PIPING	ASTM F758, TYPE PS28 OR AASHTO-M-278	6" RIGID SCHEDULE 40 PVC OR HDPE	3/8" PERFORATED @ 6" ON CENTER, 4 HOLES PER ROW, MINIMUM OF 3" OF GRAVEL OVER PIPES.
UNDERDRAIN GRAVEL	ASTM C-33	NO. 4 (0.75" TO 2")	CLEAN WASHED STONE
STONE FILL	ASTM C-33	NO. 57 (1" TO 0.187")	CLEAN WASHED STONE
PEA GRAVEL	ASTM D448	NO. 8 OR NO. 9 (3/8" TO 1/8")	CLEAN WASHED STONE
FILTER FABRIC	GEOTEXTILE	N/A	PE TYPE 1, NON WOVEN

1. ABSOLUTELY NO RUNOFF IS TO ENTER THE SAND FILTER UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN STABILIZED. SURFACE OF FILTER BED IS TO BE LEVEL.

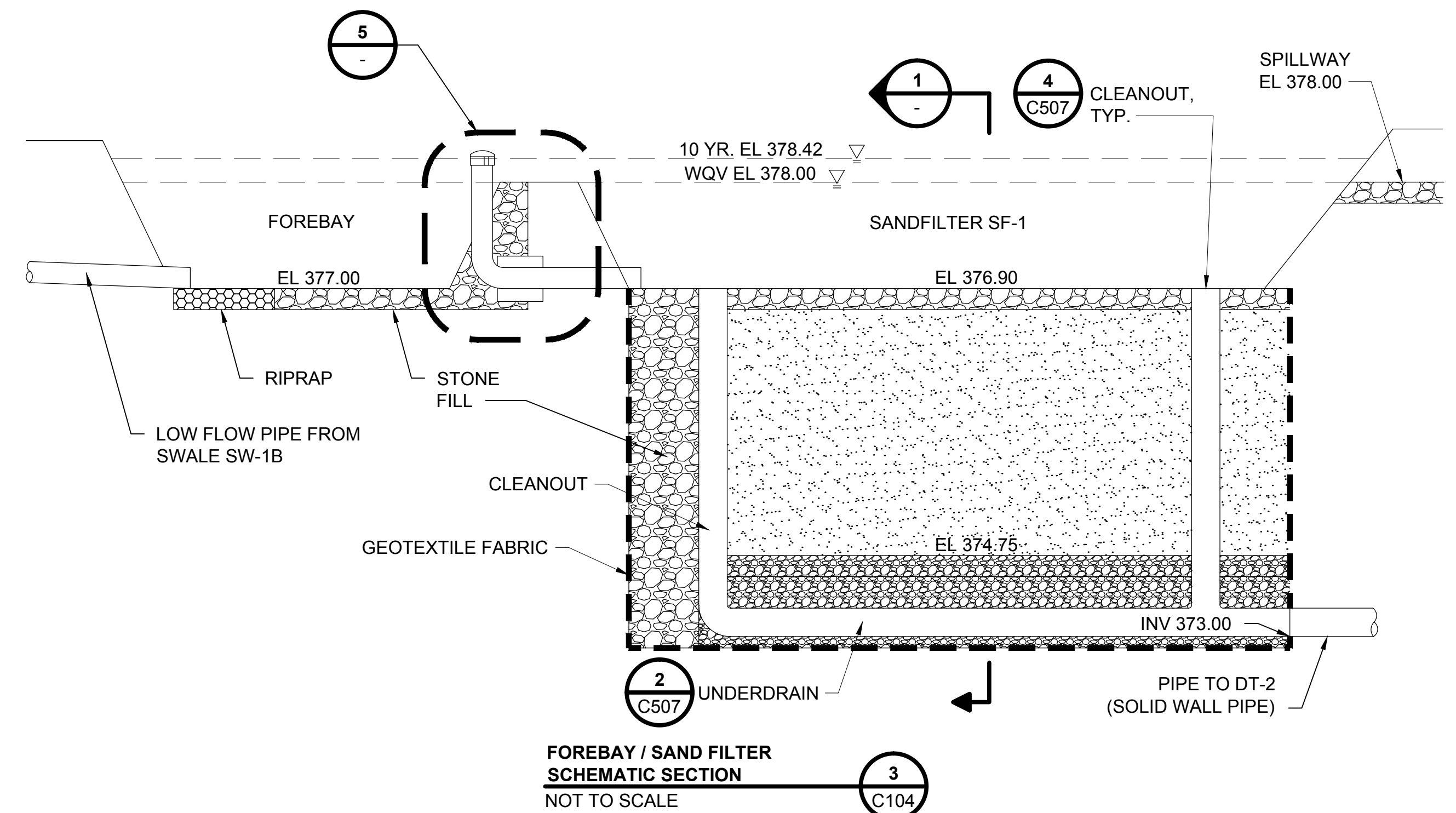


PIPE COLLAR  
NOT TO SCALE

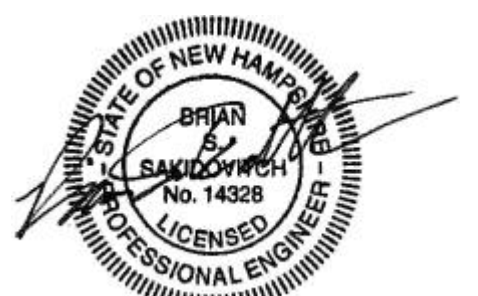


1. PERFORATIONS SHALL BE MADE IN THE 90 DEGREE BEND TO ASSURE THE DETENTION AREA COMPLETELY DRAINS TO THE SAND FILTER AREA.
2. POSITIVE DRAINAGE IS TO BE MAINTAINED FROM THE FOREBAY TO THE SAND FILTER AREA.

**PERFORATED STAND PIPE**  
NOT TO SCALE



**FOREBAY / SAND FILTER**  
**SCHEMATIC SECTION**  
NOT TO SCALE



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

TRANSMISSION LINE: DEERFIELD, NH		APR: BSS		CHK: RLR		LRM		DESIGNED BY:		TOWN:		SCALE: NTS		DATE: 10/7/2015		#		TRANSMISSION BUSINESS		THE NORTHERN PASS		DEERFIELD SUBSTATION CONSTRUCTION DETAILS		SHEET 19 OF 19		FILE NO: NPTT619-C509	
ISSUED FOR PERMITTING		REVISION		NO.		DATE		DRAWN		CHKD		APPROV.		BSS		RLR		FP		10/7/15		1					



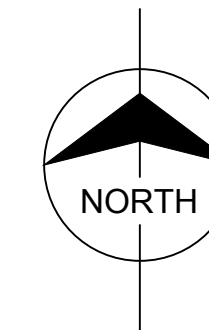
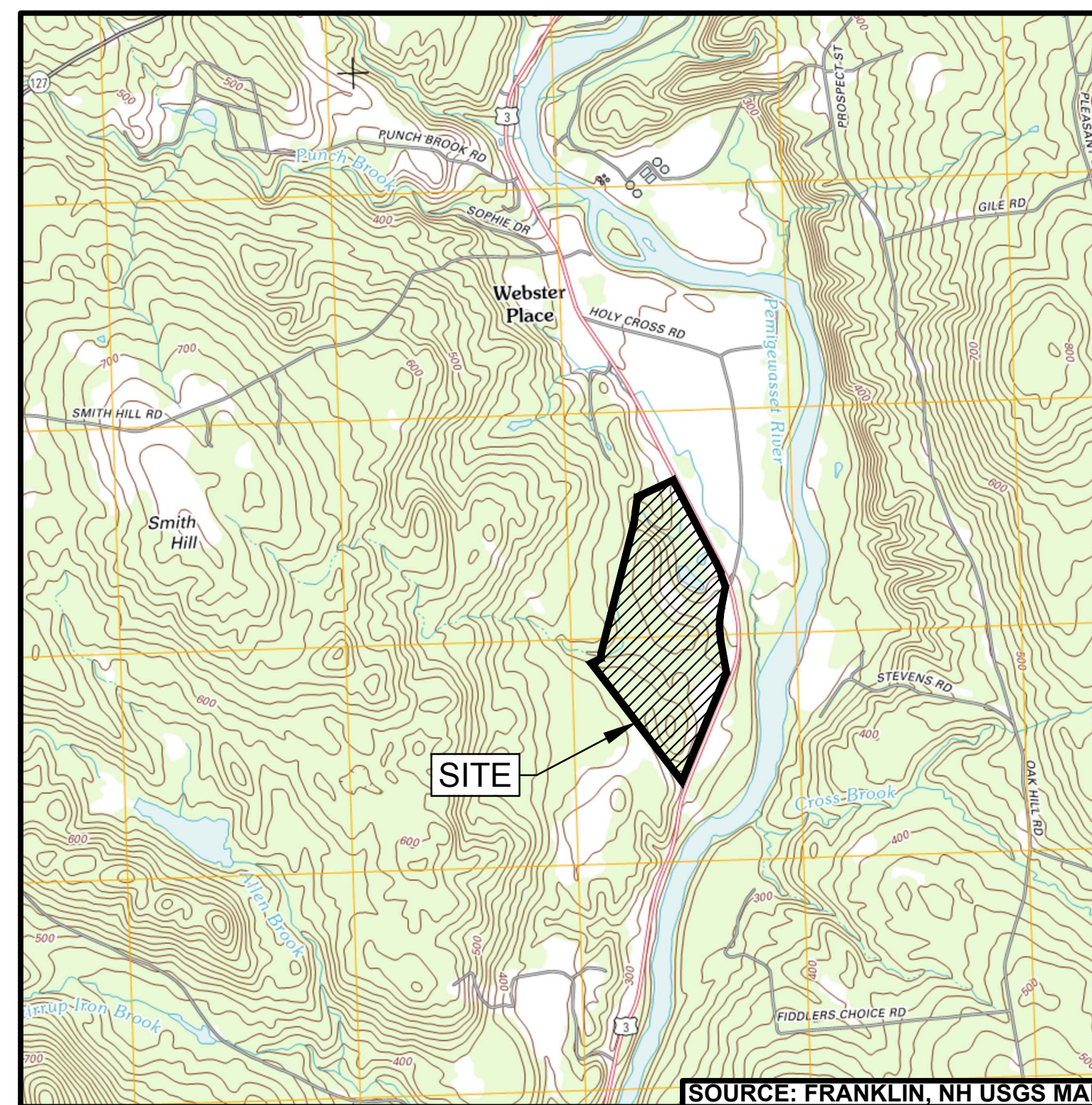
**Attachment 6.1.6**  
**Franklin Terminal Site Plan**



**SOUTH MAIN STREET, FRANKLIN, NH 03235**



THE NORTHERN PASS



DRAWING INDEX	
DRAWING	DESCRIPTION
CVR	COVER SHEET
G001	GENERAL NOTES AND LEGEND
C100	SITE LAYOUT PLAN
C101	GRADING PLAN
C102	EROSION AND SEDIMENTATION CONTROL PLAN
C103	PLANTING PLAN
C104	STORMWATER SYSTEM PLAN
C200	ACCESS ROAD PROFILES
C300	SITE CROSS SECTIONS
C301	SITE CROSS SECTIONS
C500	EROSION & SEDIMENTATION CONTROL NOTES
C501	EROSION & SEDIMENTATION CONTROL DETAILS
C502	EROSION & SEDIMENTATION CONTROL DETAILS
C503	CONSTRUCTION DETAILS
C504	CONSTRUCTION DETAILS
C505	CONSTRUCTION DETAILS
C506	CONSTRUCTION DETAILS
C507	CONSTRUCTION DETAILS
C508	CONSTRUCTION DETAILS



NEW HAMPSHIRE STATE LAW REQUIRES HOMEOWNERS AND CONTRACTORS TO CONTACT DIG SAFE, BY DIALING 8-1-1 AT LEAST THREE BUSINESS DAYS BEFORE BEGINNING ANY DIGGING OR EXCAVATION PROJECT. WHEN DIG SAFE RECEIVES A CALL, THE HOMEOWNER OR CONTRACTOR MUST WAIT 72 BUSINESS HOURS. DURING THIS TIME, UTILITY REPRESENTATIVES RESPOND TO MARK THEIR LINES WITHIN YOUR PRE-MARKED AREA. ALL INFORMATION REGARDING DIG SAFE RULES AND REGULATIONS CAN ALSO BE FOUND AT [www.digsafe.com](http://www.digsafe.com).

**OCTOBER 1, 2015**

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**



This document has been digitally sealed.  
Oct 5 2015



**BACKGROUND NOTES:**

1. BACKGROUND INFORMATION BASED ON "EXISTING CONDITIONS PLAN" BY CHA DESIGN/CONSTRUCTION SOLUTIONS DATED 12/02/2013.
2. ELEVATIONS, CONTOURS AND BENCHMARKS ARE BASED ON NAVD 1988 VERTICAL DATUM.
3. HORIZONTAL LOCATIONS ARE BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM NAD 83.
4. THERE ARE DELINEATED WATERCOURSES LOCATED ONSITE. REFER TO WETLANDS, RIVERS, STREAMS AND VERNAL POOLS DELINEATION REPORT BY NORMANDEAU ENVIRONMENTAL CONSULTANTS DATED NOVEMBER 22, 2013.
5. THE SITE IS LOCATED WITHIN FEMA ZONE 'X' FLOOD ZONE AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NUMBER 33013CO169E, DATED APRIL 19 2010.
6. PROPERTY AREA = 118.457 ACRES, NPDES/LIMIT OF DISTURBANCE (LOD) AREA TOTAL = 15.875 ACRES.

**GENERAL NOTES:**

1. GENERAL NOTES SHALL APPLY TO THE SITE DEVELOPMENT PLANS THROUGHOUT. REFER TO INDIVIDUAL SHEETS FOR SHEET SPECIFIC NOTES.
2. CONTRACTOR(S) TO TAKE AND VERIFY ALL DIMENSIONS AND CONDITIONS OF THE WORK AND BE RESPONSIBLE FOR COORDINATION OF SAME. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK.
3. ENGINEER ASSUMES NO RESPONSIBILITY AS TO THE CONTENT OF THE EXISTING CONDITIONS PLAN INCLUDING BUT NOT LIMITED TO LOCATION, SIZE, AND ELEVATIONS OF UTILITIES AND STRUCTURES NOT VISIBLE AND WHERE TAKEN FROM PLANS BY OTHERS.
4. EXISTING CONDITIONS SURVEY INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY COMPANY AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "DIGSAFE" PRIOR TO COMMENCEMENT OF WORK AT "811" AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
5. THE CONTRACTOR SHALL VERIFY ALL EXISTING SITE AND BUILDING CONDITIONS IN THE FIELD AND CONTACT THE OWNER AND ENGINEER IF THERE ARE ANY QUESTIONS AND/OR CONFLICTS REGARDING THE SITE DEVELOPMENT PLANS AND/OR EXISTING FIELD CONDITIONS PRIOR TO CONSTRUCTION. REFER TO THE PROJECT SPECIFICATIONS MANUAL FOR ADDITIONAL INFORMATION. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED, EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, INFORM THE OWNER AND CONSULT THE CIVIL ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.
6. ALL CONSTRUCTION SHALL COMPLY WITH PROJECT SPECIFICATION MANUAL, EVERSOURCE STANDARDS AND SPECIFICATIONS, AND THESE PLANS. IF SPECIFICATIONS ARE IN CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL APPLY. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE OSHA, FEDERAL, STATE AND LOCAL REGULATIONS. INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
  - a. NEW HAMPSHIRE STORMWATER MANUAL, VOLUMES 1, 2 & 3, DECEMBER 2008.
  - b. NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION MANUAL ON DRAINAGE DESIGN FOR HIGHWAYS, REVISION DATE APRIL 1998.
  - c. NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD PLANS AND SPECIFICATIONS (2010).
  - d. EVERSOURCE BEST MANAGEMENT PRACTICES MANUAL (TO BE FURTHER DEVELOPED).
  - e. EVERSOURCE STANDARD SPECIFICATIONS (10-24-2014).
7. DO NOT INTERRUPT EXISTING SERVICING UTILITIES AND FACILITIES OCCUPIED AND USED BY THE OWNER OR OTHERS DURING OCCUPIED HOURS EXCEPT WHEN SUCH INTERRUPTIONS HAVE BEEN AUTHORIZED IN WRITING BY THE OWNER, THE LOCAL MUNICIPALITIES, THE UTILITY PROVIDER, AND ANY APPLICABLE REGULATORY AGENCY. INTERRUPTIONS SHALL ONLY OCCUR AFTER ACCEPTABLE TEMPORARY SERVICE HAS BEEN PROVIDED.
8. THE CONTRACTOR SHALL PROVIDE RECORD AS-BUILT DRAWINGS OF ALL CONSTRUCTION IN ACCORDANCE WITH OWNER AND REGULATORY AGENCY REQUIREMENTS (INCLUDING UNDERGROUND UTILITIES) TO THE OWNER AT THE END OF CONSTRUCTION.
9. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING

PLANS. IN CASE OF CONFLICT BETWEEN PLAN SET AND ANY OTHER  
DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED  
IMMEDIATELY FOR CLARIFICATION.

10. IF A CONFLICT ARISES BETWEEN PLANS, SPECIFICATIONS, AND/OR DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
11. THE CONTRACTOR SHALL ABIDE BY ALL OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS IN ALL INSTANCES AND WHEN OPERATING CRANES, BOOMS, HOISTS, ETC. IN CLOSE PROXIMITY TO OVERHEAD ELECTRIC LINES. IF CONTRACTOR MUST OPERATE EQUIPMENT CLOSE TO ELECTRIC LINES, CONTACT POWER COMPANY TO MAKE ARRANGEMENT FOR PROPER SAFEGUARDS. ANY UTILITY COMPANY FEES SHALL BE PAID FOR BY THE CONTRACTOR.
12. THE ENGINEER IS NOT RESPONSIBLE FOR SITE SAFETY MEASURES TO BE EMPLOYED DURING CONSTRUCTION. THE ENGINEER HAS NO CONTRACTUAL DUTY TO CONTROL THE SAFEST METHODS OR MEANS OF THE WORK, JOB SITE RESPONSIBILITIES, SUPERVISION OR TO SUPERVISE SAFETY AND DOES NOT VOLUNTARILY ASSUME ANY SUCH DUTY OR RESPONSIBILITY.
13. ALL NOTES AND DIMENSIONS DESIGNATED "TYPICAL" OR "(TYP.)" APPLY TO ALL LIKE OR SIMILAR CONDITIONS THROUGHOUT THE PROJECT.
14. ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF SUBMITTED, REVIEWED, AND APPROVED BY THE OWNER, ENGINEER, AND APPROPRIATE REGULATORY AGENCY PRIOR TO CONSTRUCTION.
15. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL PRODUCTS AND MATERIALS PER PLANS AND SPECIFICATIONS TO THE OWNER AND ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDERING, FABRICATION, OR DELIVERY TO THE SITE. FOR EACH SUBMITTAL, ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.
16. THE CONTRACTOR SHALL RESTORE ANY DRAINAGE STRUCTURE, PIPE, UTILITY, PAVEMENT, CURBS, SIDEWALKS, LANDSCAPED AREAS OR SIGNAGE AND OTHER INCIDENTAL DISTURBANCES AND DAMAGES DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER, AS APPROVED BY THE OWNER, ENGINEER AND REGULATORY AGENCY.
17. THE CONTRACTOR SHALL COMPLY WITH 29 CFR PART 1926 FOR EXCAVATION TRENCHING AND TRENCH PROTECTION REQUIREMENTS.
18. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
19. DEMOLITION OF EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO BUILDINGS, STRUCTURES, PAVEMENT, WELLS, SEPTIC, SANITARY SEWER, FENCES, TREES, ETC. SHALL BE PER THE DIRECTION OF EVERSOURCE AND SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
20. PERMANENT BENCHMARKS SHALL BE INSTALLED UPON COMPLETION OF CLEARING.
21. ELECTRICAL STATION COMPONENTS, UNDERGROUND TRANSMISSION LINES, OVER HEAD TRANSMISSION LINES AND THEIR FOUNDATIONS DEPICTED HEREIN ARE FOR REFERENCE ONLY.
22. ANY CLEARED AND EXCAVATED MATERIALS WHICH ARE SUSPECTED OF BEING ENVIRONMENTALLY POLLUTED, CONTAMINATED, OR IMPACTED SHALL BE STOCKPILED ON-SITE ON TOP OF POLYETHYLENE SHEETING AND COVERED WITH POLYETHYLENE SHEETING. THE OWNER AND ENGINEER SHALL BE IMMEDIATELY INFORMED UPON ENCOUNTERING THIS MATERIAL. STORAGE, TESTING, TREATMENT, REMOVAL, AND DISPOSAL OF ENVIRONMENTALLY POLLUTED, CONTAMINATED, OR IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
23. CONTRACTOR SHALL TAKE PRECAUTIONS TO ENSURE NO DISTURBANCE BEYOND THE DEPICTED LIMIT OF DISTURBANCE.
24. THE CONTRACTOR SHALL ESTABLISH BEST MANAGEMENT PRACTICES FOR BLASTING OF BEDROCK IN ACCORDANCE WITH THE NHDES PUBLICATION WD-10-12 "ROCK BLASTING AND WATER QUALITY MEASURES THAT CAN BE TAKEN TO PROTECT WATER QUALITY AND MITIGATE IMPACTS", 2010. IF THE BLAST ROCK VOLUME GENERATED IS GREATER THAN 5,000 CUBIC YARDS, THE CONTRACTOR SHALL DEVELOP A GROUNDWATER MONITORING PROGRAM FOR SUBMISSION TO THE OWNER AND ENGINEER. BLASTING SHALL NOT COMMENCE UNTIL THESE REQUIREMENTS ARE APPROVED BY THE NHDES, AS REQUIRED.
25. PROPOSED STORM DRAINAGE SYSTEM SHALL BE HS-20 RATED.


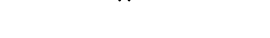

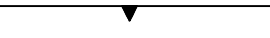
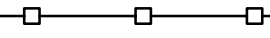
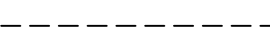










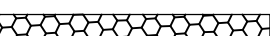
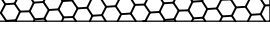

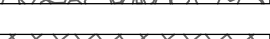

### EXISTING LEGEND

	PROPERTY LINE
	ADJOINING PROPERTY LINE
	RIGHT OF WAY LINE
	EASEMENT LINE
	MAJOR CONTOUR
	MINOR CONTOUR
	TREELINE
	OVER HEAD WIRE
	STOCKADE FENCE
	CHAIN LINK FENCE
	WETLANDS LINE
	STREAM OR WATERWAY
	STONEWALL
WF600-9	WETLAND FLAG
IP	IRON PIPE
CB/DH	CONCRETE BOUND WITH DRILL HOLE
SB/DH	STONE BOUND WITH DRILL HOLE
	SURVEY CONTROL POINT
	UTILITY POLE

## LIST OF ABBREVIATIONS

ACP	ASBESTOS CEMENT PIPE	LBS	POUNDS
APT	ANGLE POINT	LF	LINEAR FOOT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	LG	WALL HIGH GRADE
BIT	BITUMINOUS CONCRETE	LOD	LIMIT OF DISTURBANCE
BLDG	BUILDING	MAX	MAXIMUM
BM	BENCH MARK	MFR	MANUFACTURER
BW	BOTTOM OF WALL	MH	MANHOLE
CB	CATCH BASIN	MIN	MINIMUM
CATV	CABLE TELEVISION	N	NORTHING
CI	CAST IRON PIPE	NO	NUMBER
CIC	CAST IRON COVER	NOM	NOMINAL
CL	CENTERLINE	OC	ON CENTER
CL	CENTERLINE	OCS	OUTLET CONTROL STRUCTURE
CLF	CHAIN LINK FENCE	OD	OUTSIDE DIMENSION
CLR	CLEAR	PC	POINT OF CURVATURE
CMP	CORRUGATED METAL PIPE	POB	POINT OF BEGINNING
CO	CLEANOUT	PIV	POST INDICATOR VALVE
CONC	CONCRETE	PRC	POINT OF REVERSE CURVATURE
COR	CORNER	PSI	POUNDS PER SQUARE INCH
CTRS	CENTERS	PT	POINT OF TANGENCY
DIA	DIAMETER	PVC	POLYVINYL CHLORIDE PIPE
DMH	DRAINAGE MANHOLE	R	RADIUS
E	EASTING	RAD	RADIUS
EL	ELEVATION	RCP	REINFORCED CONCRETE PIPE
ELEV	ELEVATION	SD	STORM DRAIN
EMH	ELECTRIC MANHOLE	SDMH	STORM DRAIN MANHOLE
EOP	EDGE OF PAVEMENT	SESC	SOIL EROSION AND SEDIMENT CONTROL
EXP	EXPANSION	SS	SANITARY SEWER
EXIST	EXISTING	SSMH	SANITARY SEWER MANHOLE
G	GAS	SSFM	SANITARY SEWER FORCE MAIN
GALV	GALVANIZED	SQ FT	SQUARE FOOT
GR	GRATE	SQ M	SQUARE METER
HDPE	CORRUGATED HIGH DENSITY POLYETHYLENE PIPE	TYP	TYPICAL
HT	HEIGHT	TW	TOP OF WALL
INV	INVERT	UC	UNDERGROUND COMMUNICATION
		UD	UNDERDRAIN
		UE	UNDERGROUND ELECTRICAL
		UG	UNDERGROUND
		UP	UTILITY POLE
		VC	VITRIFIED CLAY PIPE
		W/O	WITHOUT

### PROPOSED LEGEND


	MAJOR CONTOUR
	MINOR CONTOUR
	TREELINE
	PERIMETER FENCE
	GUIDERAIL
	SILT FENCE
	CONSTRUCTION FENCE
	LIMIT OF STONE SURFACING
	LIMIT OF DISTURBANCE
	STORMWATER SWALE
	UNDERDRAIN PIPE
	STORM SEWER PIPE
	MANHOLE
	OUTLET CONTROL STRUCTURE
	FLARED END SECTION
	CLEANOUT
	SPOT ELEVATION
	RIP RAP
	GRAVEL STONE SURFACING
	BITUMINOUS CONCRETE PAVEMENT
	GRASS / MULCH COVER



This document has been digitally sealed  
Oct 5 2015

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

NO.	ISSUED FOR PERMITTING	DATE	CHKD	DOWN	BSS	JJS	APPRV.
*				*		*	*
*				*		*	*
*				*		*	*
*				*		*	*
*				*		*	*
1	ISSUED FOR PERMITTING	10/1/15	KRB	BSS	JJS		

Transmission  
Business

#

FRANKLIN STATION  
GENERAL NOTES & LEGEND

DES: RLR	CHK:JJS
DRW: KRB	APP: BSS

TOWN:

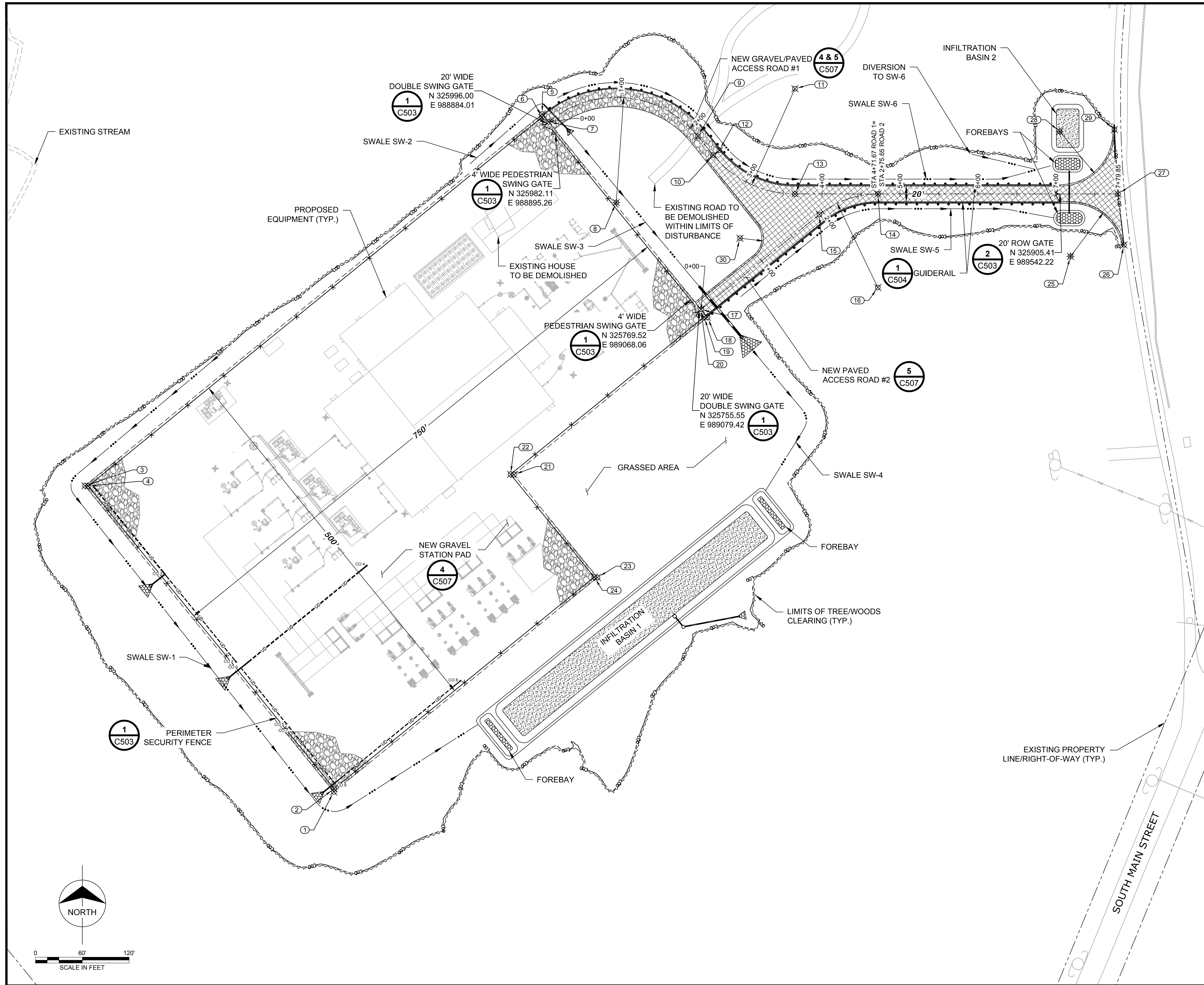
TRANSMISSION LINE:

MILE NO:

SHEET 2 OF 19

NPTT502-G001

REVISION: 11/10/2013



- SITE PLAN NOTES:**
1. REFER TO SHEET NPPT502-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
  2. THE STATION ELECTRICAL EQUIPMENT, ENCLOSURES, FOUNDATIONS, OTHER STATION APPURTENANCES, OVERHEAD TRANSMISSION, AND UNDERGROUND TRANSMISSION ARE SHOWN FOR REFERENCE ONLY.
  3. THIS DRAWING IS INTENDED TO DEPICT SITE LAYOUT ONLY.
  4. CONTRACTOR SHALL TAKE PRECAUTIONS TO ENSURE NO DISTURBANCE BEYOND DEPICTED LIMIT OF NPDES/LIMIT OF DISTURBANCE.
  5. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
  6. UPON COMPLETION OF SITE CLEARING, THE CONTRACTOR SHALL FURNISH AND INSTALL PERMANENT BENCHMARKS IN THE LOCATIONS DEPICTED ON THE PLANS IN ACCORDANCE WITH THE STATE OF NEW HAMPSHIRE SURVEYING CODES AND STANDARDS. BENCHMARK ELEVATIONS SHALL BE SET IN FIELD AND VERIFIED PRIOR TO START OF CONSTRUCTION.
  7. CONTRACTOR SHALL INSTALL GUIDERAIL SYSTEMS AS DEPICTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND STANDARD PLANS FOR THREE BEAM SINGLE FACED GUIDERAIL WITH STEEL POSTS AND TERMINAL UNIT TYPE G-2. THIS END SECTION IS NOT CRASH WORTHY. IT IS INTENDED FOR USE PRIMARILY ON LOW SPEED ACCESS ROADS WHERE IT CAN NOT BE HIT.
  8. OFFSITE ROADWAY (TOWN AND/OR STATE) IMPROVEMENTS AS A RESULT OF THE STATION DEVELOPMENT ARE NOT ANTICIPATED.

POINT TABLE			
PNT	NORTHING	EASTING	DESCRIPTION
1	325138.56	988610.55	CORNER OF PAD
2	325142.78	988610.99	FENCE CORNER
3	325531.21	988291.39	CORNER OF PAD
4	325530.77	988295.61	FENCE CORNER
5	326008.06	988878.03	CORNER OF PAD
6	326003.84	988877.60	FENCE CORNER
7	325997.97	988886.23	BEGIN ACCESS ROAD 1
8	325894.48	988972.94	135' RAD PT TO CL OF ROAD 1
9	325979.63	989077.69	ACCESS ROAD 1 - P.T.
10	325955.36	989097.42	ACCESS ROAD 1 - P.C.
11	326040.51	989202.18	135' RAD PT TO CL OF ROAD 1
12	325961.65	989105.19	ACCESS ROAD 1 - END PAVING
13	325905.51	989202.18	ACCESS ROAD 1 - P.T.
14	325905.51	989308.60	P.I. ACCESS ROADS 1 & 2
15	325879.13	989233.53	ACCESS ROAD 2 - P.C.
16	325785.51	989308.60	120' RAD PT TO CL OF ROAD 2
17	325757.43	989081.76	ACCESS ROAD 2 - END PAVING
18	325747.33	989089.97	CORNER OF PAD
19	325747.79	989085.72	FENCE CORNER
20	325757.43	989081.76	BEGIN ACCESS ROAD 2
21	325545.49	988841.65	CORNER OF PAD
22	325545.93	988837.43	FENCE CORNER
23	325413.57	988948.88	CORNER OF PAD
24	325414.01	988944.66	FENCE CORNER
25	325825.51	989555.77	70' RAD PT
26	325840.12	989624.22	TIE INTO EXISTING ROAD
27	325905.51	989616.78	TIE INTO EXISTING ROAD
28	325988.05	989542.00	70' RAD PT
29	325988.05	989611.96	TIE INTO EXISTING ROAD
30	325848.72	989131.66	30' RAD PT



This document has been digitally sealed.  
Oct 5 2015

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

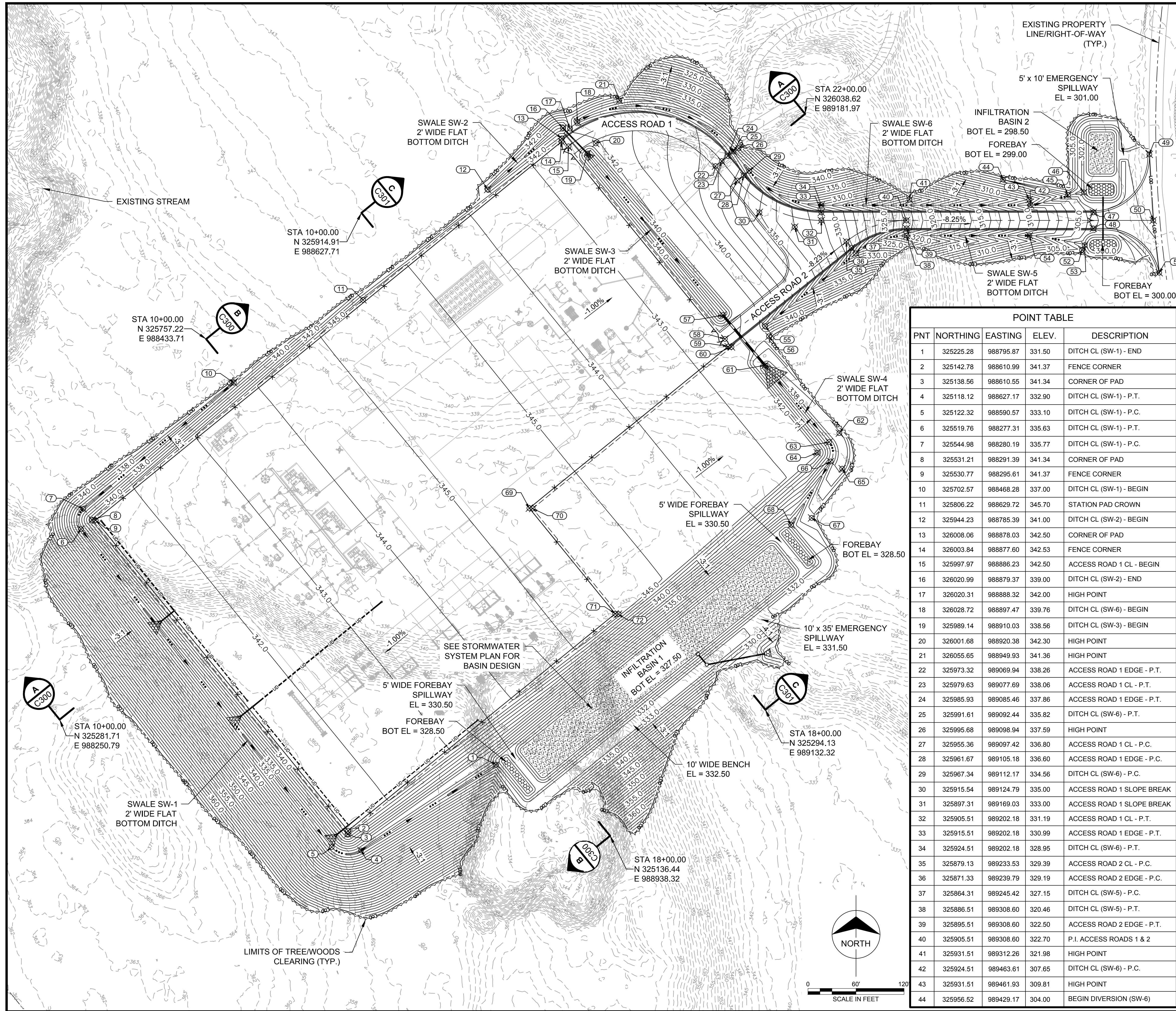
DATE	10/7/15	REVISION	NO.	1	ISSUED FOR PERMITTING	DATE	10/7/15	REVISION	NO.	1	ISSUED FOR PERMITTING
DATE	10/7/15	REVISION	NO.	1	ISSUED FOR PERMITTING	DATE	10/7/15	REVISION	NO.	1	ISSUED FOR PERMITTING

FRANKLIN STATION  
SITE LAYOUT PLAN

SCALE: 1"=50'

REVISION: 11/10/2013





GRADING PLAN NOTES:

- REFER TO SHEET NPTT502-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
- REFER TO SHEETS NPTT509-C300 AND NPTT510-C301 FOR GRADING CROSS SECTIONS.
- NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
- PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.
- ALL FILL AND CUT SLOPES ARE 3-FT HORIZONTAL TO 1-FT VERTICAL (3:1) UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL PLACE 4" TOPSOIL AND SEED ON ALL CUT AND FILL SLOPES AS SPECIFIED UNLESS ANOTHER SURFACE MATERIAL IS INDICATED. EROSION CONTROL BLANKETS (NORTH AMERICAN GREEN SC250 OR ENGINEER APPROVED EQUAL) SHALL BE PLACED OVER ALL SEEDED SIDE SLOPES.
- AFTER COMPLETION OF YARD SUBGRADE WORK, THE SURFACE COURSE FOR THE STATION (INSIDE THE FENCE, 3-FT OUTSIDE THE FENCE, AND WHERE INDICATED ON THE PLANS) SHALL CONSIST OF A 4-INCH LAYER OF CRUSHED BASALT (ANGULAR STONE) STONE MEETING THE GRADATION REQUIREMENTS INDICATED IN THE SPECIFICATIONS.
- CONTRACTOR SHALL PROTECT/REPAIR ALL SLOPES UNTIL FINAL VEGETATIVE OR STONE STABILIZATION.
- ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED AND STABILIZED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS.
- STABILIZE ALL DITCHES, SWALES, AND PONDS PRIOR TO DIRECTING STORMWATER RUNOFF TO THEM.
- TURF REINFORCEMENT MAT (TRM) SHALL BE INSTALLED ON ALL 3-FT HORIZONTAL TO 1-FT VERTICAL SLOPES (3:1) OR STEEPER, AND BE NORTH AMERICAN GREEN SC250 OR APPROVED EQUAL.
- EARTHWORK AND COMPACTION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL ENGINEERING REPORT BY OTHERS.

PNT	NORTHING	EASTING	ELEV.	DESCRIPTION
1	325225.28	988795.87	331.50	DITCH CL (SW-1) - END
2	325142.78	988610.99	341.37	FENCE CORNER
3	325138.56	988610.55	341.34	CORNER OF PAD
4	325118.12	988627.17	332.90	DITCH CL (SW-1) - P.T.
5	325122.32	988590.57	333.10	DITCH CL (SW-1) - P.C.
6	325519.76	988277.31	335.63	DITCH CL (SW-1) - P.T.
7	325544.98	988280.19	335.77	DITCH CL (SW-1) - P.C.
8	325531.21	988291.39	341.34	CORNER OF PAD
9	325530.77	988295.61	341.37	FENCE CORNER
10	325702.57	988468.28	337.00	DITCH CL (SW-1) - BEGIN
11	325806.22	988629.72	345.70	STATION PAD CROWN
12	325944.23	988785.39	341.00	DITCH CL (SW-2) - BEGIN
13	326008.06	988878.03	342.50	CORNER OF PAD
14	326003.84	988877.60	342.53	FENCE CORNER
15	325997.97	988886.23	342.50	ACCESS ROAD 1 CL - BEGIN
16	326020.99	988879.37	339.00	DITCH CL (SW-2) - END
17	326020.31	988888.32	342.00	HIGH POINT
18	326028.72	988897.47	339.76	DITCH CL (SW-6) - BEGIN
19	325989.14	988910.03	338.56	DITCH CL (SW-3) - BEGIN
20	326001.68	988920.38	342.30	HIGH POINT
21	326055.65	988949.93	341.36	HIGH POINT
22	325973.32	989069.94	338.26	ACCESS ROAD 1 EDGE - P.T.
23	325979.63	989077.69	338.06	ACCESS ROAD 1 CL - P.T.
24	325985.93	989085.46	337.86	ACCESS ROAD 1 EDGE - P.T.
25	325991.61	989092.44	335.82	DITCH CL (SW-6) - P.T.
26	325995.68	989098.94	337.59	HIGH POINT
27	325955.36	989097.42	336.80	ACCESS ROAD 1 CL - P.C.
28	325961.67	989105.18	336.60	ACCESS ROAD 1 EDGE - P.C.
29	325967.34	989112.17	334.56	DITCH CL (SW-6) - P.C.
30	325915.54	989124.79	335.00	ACCESS ROAD 1 SLOPE BREAK
31	325897.31	989169.03	333.00	ACCESS ROAD 1 SLOPE BREAK
32	325905.51	989202.18	331.19	ACCESS ROAD 1 CL - P.T.
33	325915.51	989202.18	330.99	ACCESS ROAD 1 EDGE - P.T.
34	325924.51	989202.18	328.95	DITCH CL (SW-6) - P.T.
35	325879.13	989233.53	329.39	ACCESS ROAD 2 CL - P.C.
36	325871.33	989239.79	329.19	ACCESS ROAD 2 EDGE - P.C.
37	325864.31	989245.42	327.15	DITCH CL (SW-5) - P.C.
38	325886.51	989308.60	320.46	DITCH CL (SW-5) - P.T.
39	325895.51	989308.60	322.50	ACCESS ROAD 2 EDGE - P.T.
40	325905.51	989308.60	322.70	P.I. ACCESS ROADS 1 & 2
41	325931.51	989312.26	321.98	HIGH POINT
42	325924.51	989463.61	307.65	DITCH CL (SW-6) - P.C.
43	325931.51	989461.93	309.81	HIGH POINT
44	325956.52	989429.17	304.00	BEGIN DIVERSION (SW-6)

PNT	NORTHING	EASTING	ELEV.	DESCRIPTION
45	325937.21	989510.18	303.00	END DIVERSION (SW-6)
46	325940.49	989530.16	301.00	DITCH CL (SW-6) - END
47	325915.51	989541.93	303.27	ACCESS ROAD EDGE - P.C.
48	325895.51	989541.93	303.27	ACCESS ROAD EDGE - P.C.
49	325988.05	989611.96	300.37	TIE INTO EXISTING ROAD
50	325905.51	989616.78	300.71	TIE INTO EXISTING ROAD
51	325840.12	989624.22	301.81	TIE INTO EXISTING ROAD
52	325868.62	989527.63	303.51	HIGH POINT
53	325874.51	989531.11	302.00	DITCH CL (SW-5) - END
54	325886.51	989462.16	307.79	DITCH CL (SW-5) - P.C.
55	325773.48	989132.14	339.00	DITCH CL (SW-5) - BEGIN
56	325760.68	989136.76	341.99	HIGH POINT
57	325787.18	989079.22	337.24	DITCH CL (SW-3) - END
58	325757.43	989081.76	342.50	ACCESS ROAD 2 CL - BEGIN
59	325747.79	989085.72	342.53	FENCE CORNER
60	325747.33	989089.97	342.50	CORNER OF PAD
61	325724.44	989131.69	336.83	DITCH CL (SW-4) - BEGIN
62	325639.68	989224.68	338.40	EDGE OF BERM
63	325628.51	989211.87	336.20	DITCH CL (SW-4) - P.C.
64	325615.27	989197.02	342.50	EDGE OF LEVEL GRADE
65	325595.23	989228.25	338.27	EDGE OF BERM
66	325604.21	989213.82	336.07	DITCH CL (SW-4) - P.T.
67	325533.76	989190.01	334.73	EDGE OF BERM
68	325524.89	989164.46	331.50	DITCH CL (SW-4) - END
69	325545.93	988837.43	345.67	FENCE CORNER
70	325545.49	988841.65	345.70	CORNER OF PAD
71	325414.01	988944.66	345.67	FENCE CORNER
72	325413.57	988948.88	345.70	CORNER OF PAD

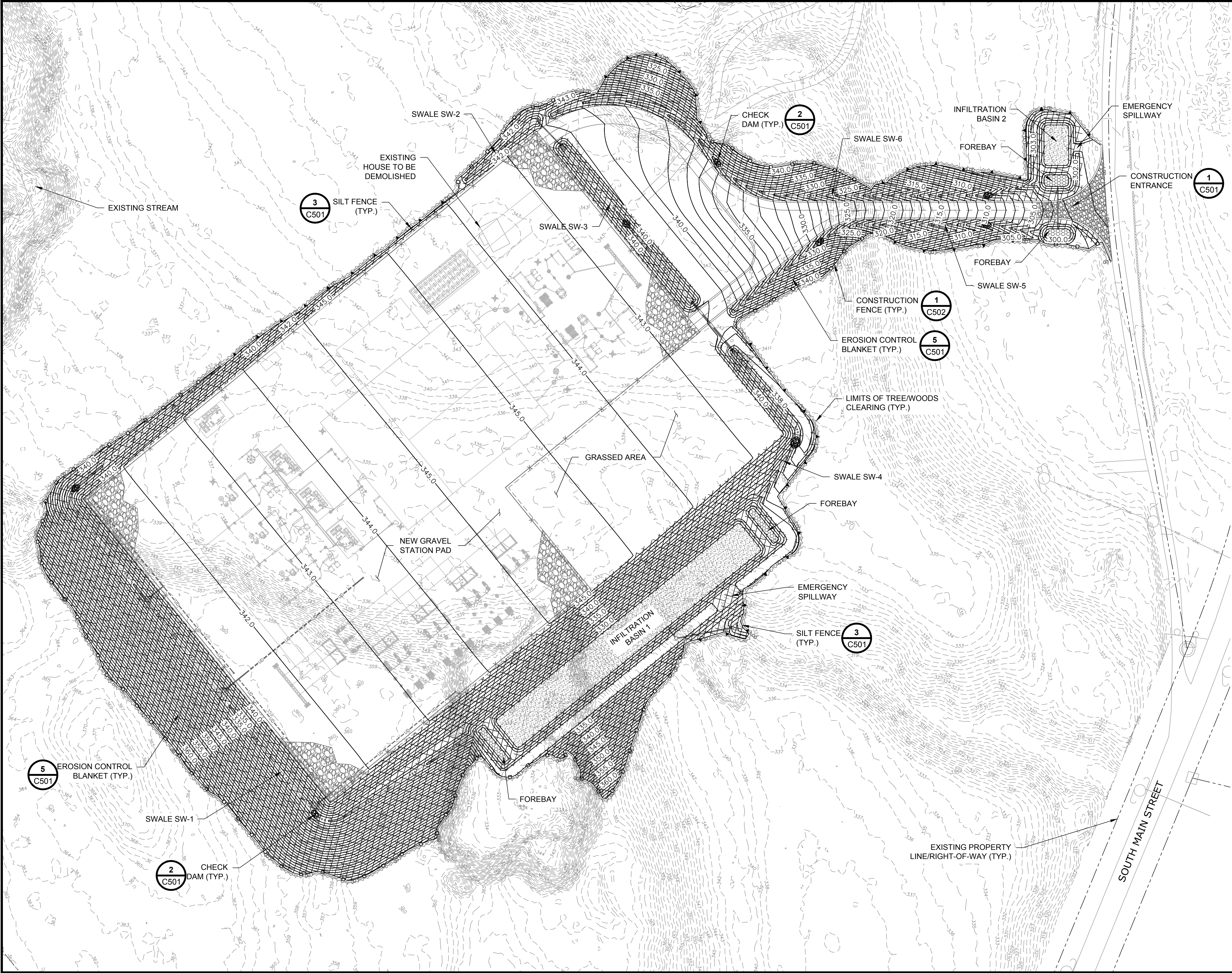
FOR PERMITTING PURPOSES ONLY  
NOT FOR CONSTRUCTION

FRANKLIN STATION  
GRADING PLAN

DES: RLB CHK: LJS  
DRAW: KRB APR: BSS  
TOWN: FRANKLIN, NH  
TRANSMISSION LINE:  
MILE NO:  
SHEET 4 OF 19  
NPTT504-C101

REVISION: 11/10/2013

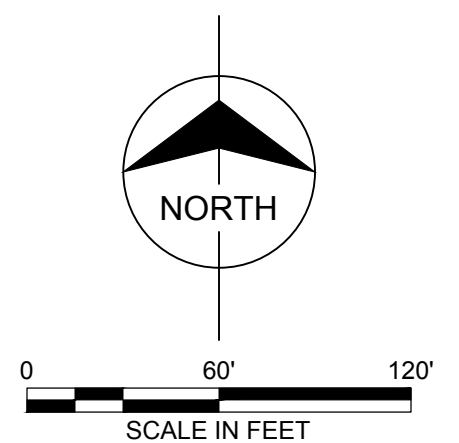




- EROSION & SEDIMENTATION CONTROL PLAN NOTES:**
1. REFER TO SHEET NPPT502-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
  2. REFER TO SHEET NPPT511-C500 FOR EROSION AND SEDIMENTATION CONTROL NOTES.
  3. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND SILT FENCE PRIOR TO EARTH DISTURBANCE.
  4. INSTALL ROCK CHECK DAMS IN ALL SWALES PER DETAIL 2 ON SHEET NPPT512-C501 .
  5. ALL SLOPES 3:1 AND STEEPER SHALL RECEIVE NA GREEN SC250 EROSION CONTROL MATTING.
  6. CONTRACTOR SHALL USE SILT FENCE OR SILT SOCKS AS INDICATED ON PLANS.
  7. TOTAL LIMITS OF DISTURBANCE (LOD) = 691,505 SF = 15.875 ACRES.

**LEGEND:**

	STONE CONSTRUCTION ENTRANCE
	EROSION CONTROL BLANKET
	STONE CHECK DAM
	SILT FENCE
	CONSTRUCTION FENCE



This document has been digitally sealed.  
Oct 5 2015

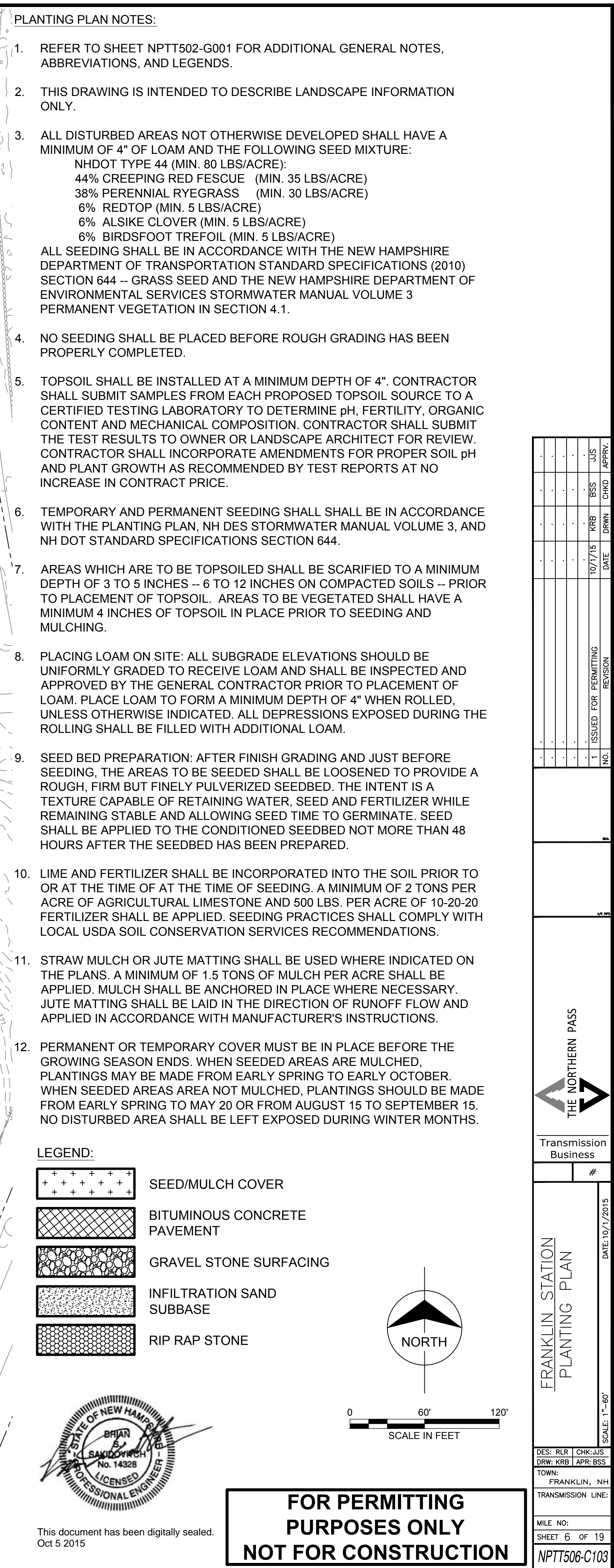
**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

DES: RLB	CHK: JUS	DATE: 10/1/2015
DRW: KRB	APR: BSS	SCALE: 1"=40'
TOWN: FRANKLIN, NH	TRANSMISSION LINE:	
MILE NO:	SHEET 5 OF 19	
NPPT505-C102		
REVISION: XXX		

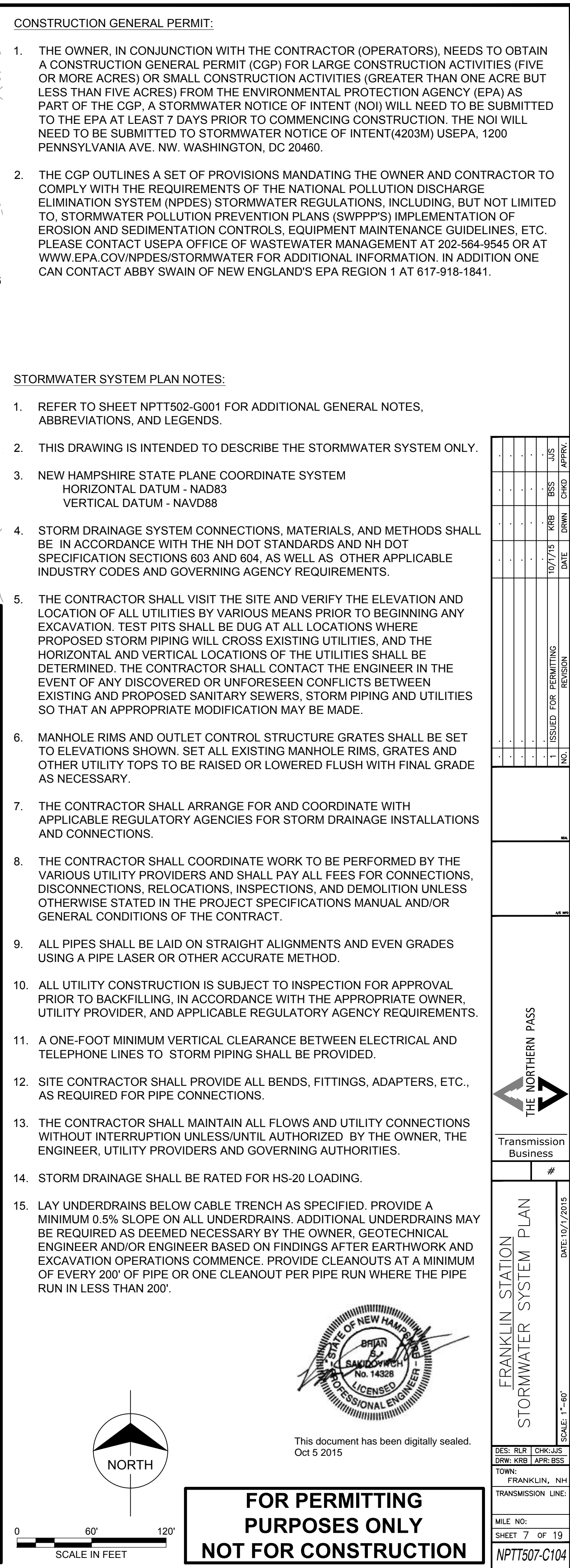
THE NORTHERN PASS  
Transmission Business

FRANKLIN STATION  
EROSION AND SEDIMENTATION  
CONTROL PLAN

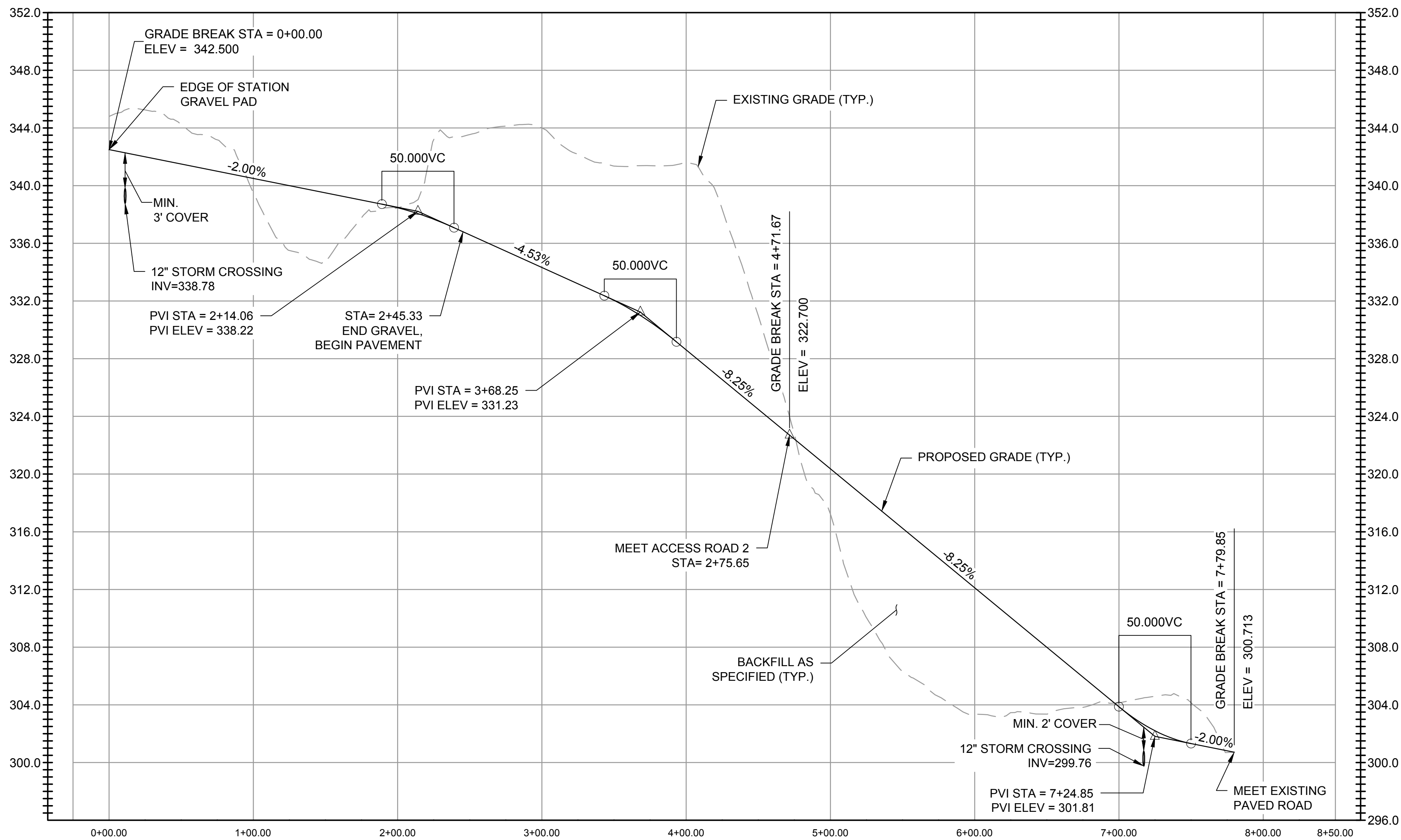




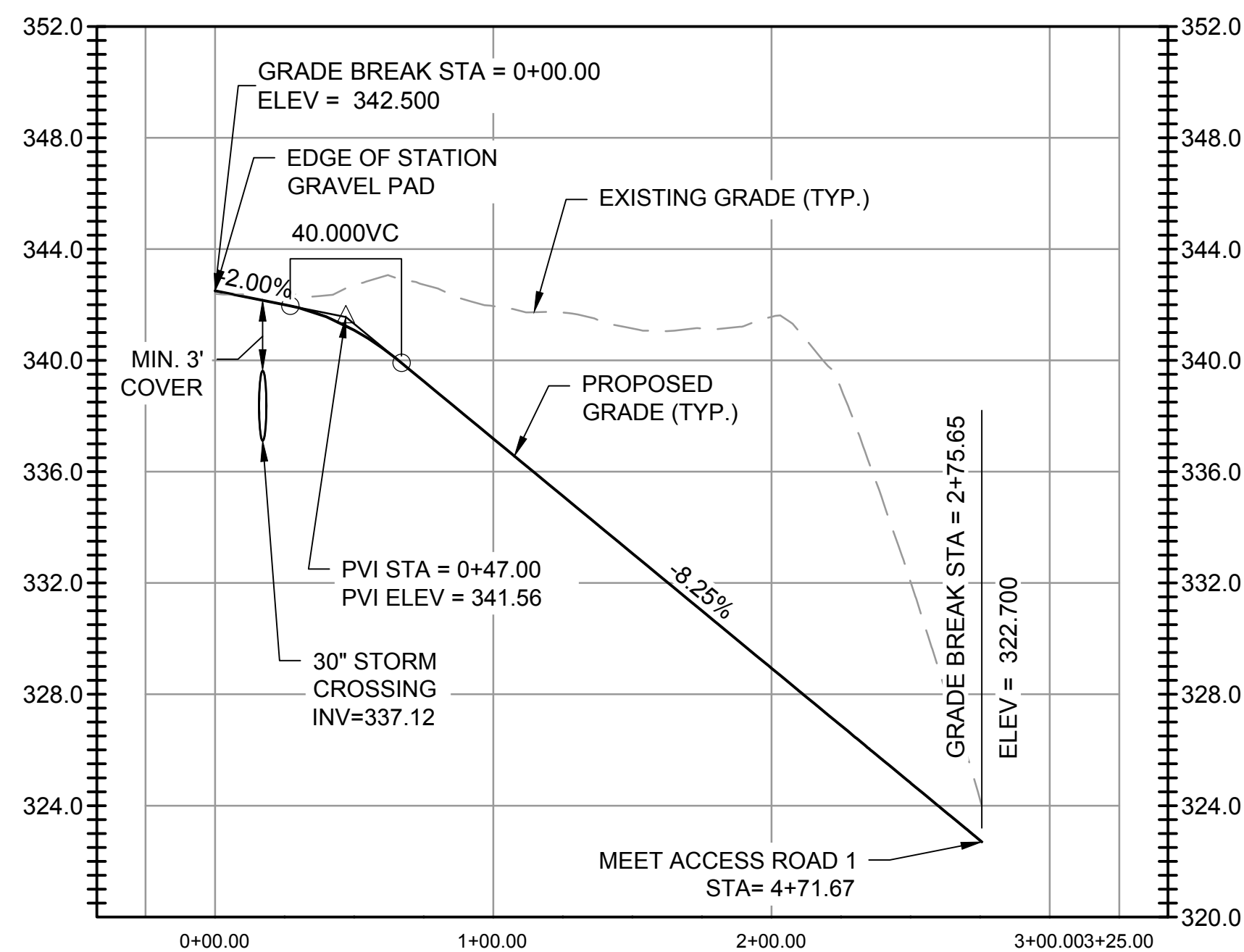




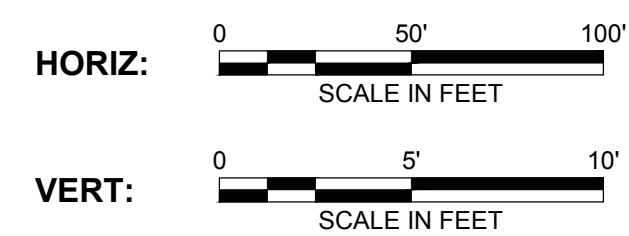




ACCESS ROAD 1 PROFILE

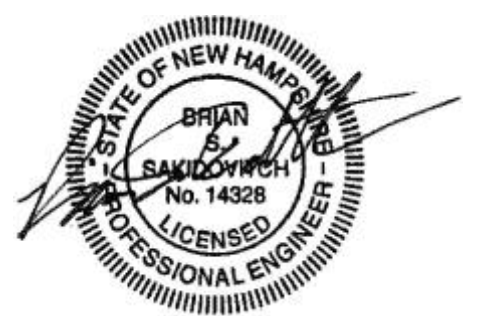


ACCESS ROAD 2 PROFILE



ACCESS ROAD PROFILE NOTES:

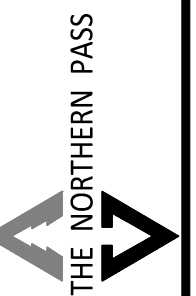
1. REFER TO SHEET NPTT502-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
2. THIS DRAWING IS INTENDED TO DESCRIBE THE STATION ACCESS ROAD GEOMETRY ONLY.
3. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
4. PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.



This document has been digitally sealed.  
Oct 5 2015

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

NO.	DATE	BY	CHKD	APPV.
1	10/7/15	KRB	BSS	JUS
ISSUED FOR PERMITTING				
REVISION				



Transmission  
Business

#

FRANKLIN STATION  
ACCESS ROAD PROFILES

DES: RLB | CHK: JUS  
DRW: KRB | APR: BSS

TOWN:  
FRANKLIN, NH

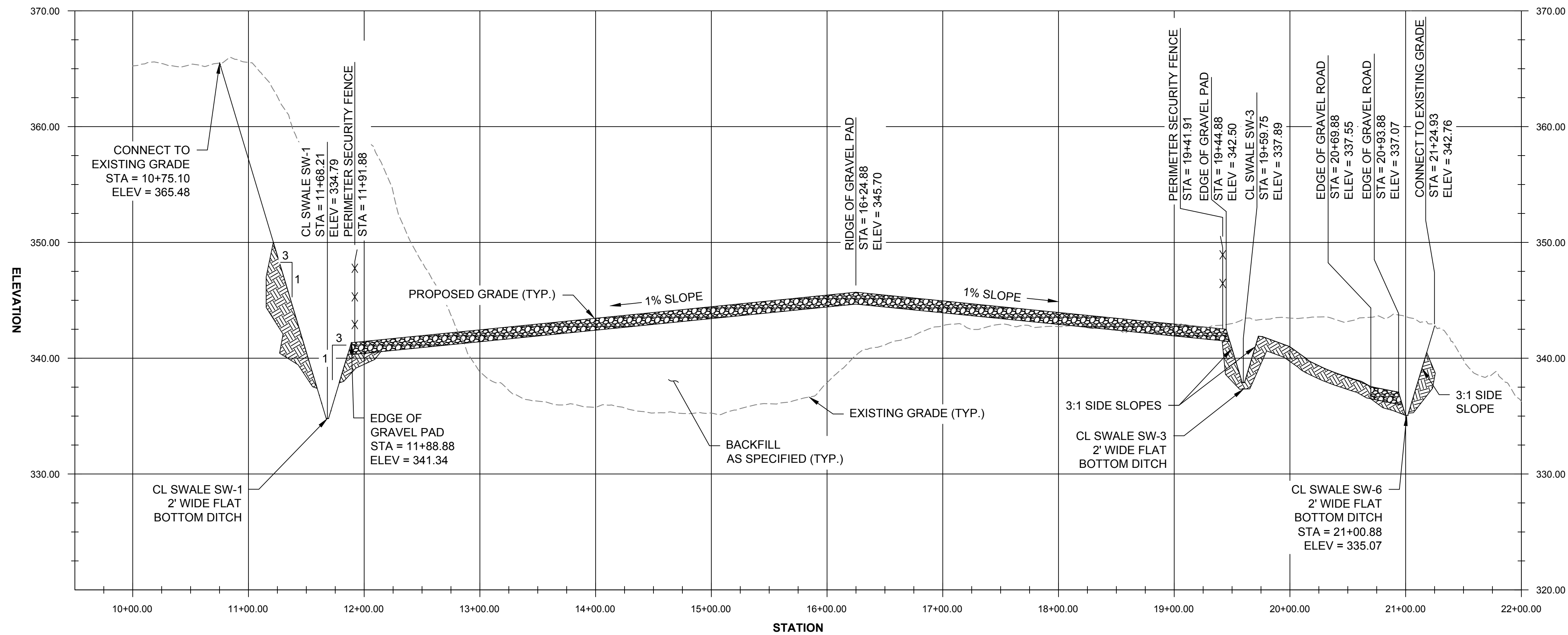
TRANSMISSION LINE:

MILE NO:

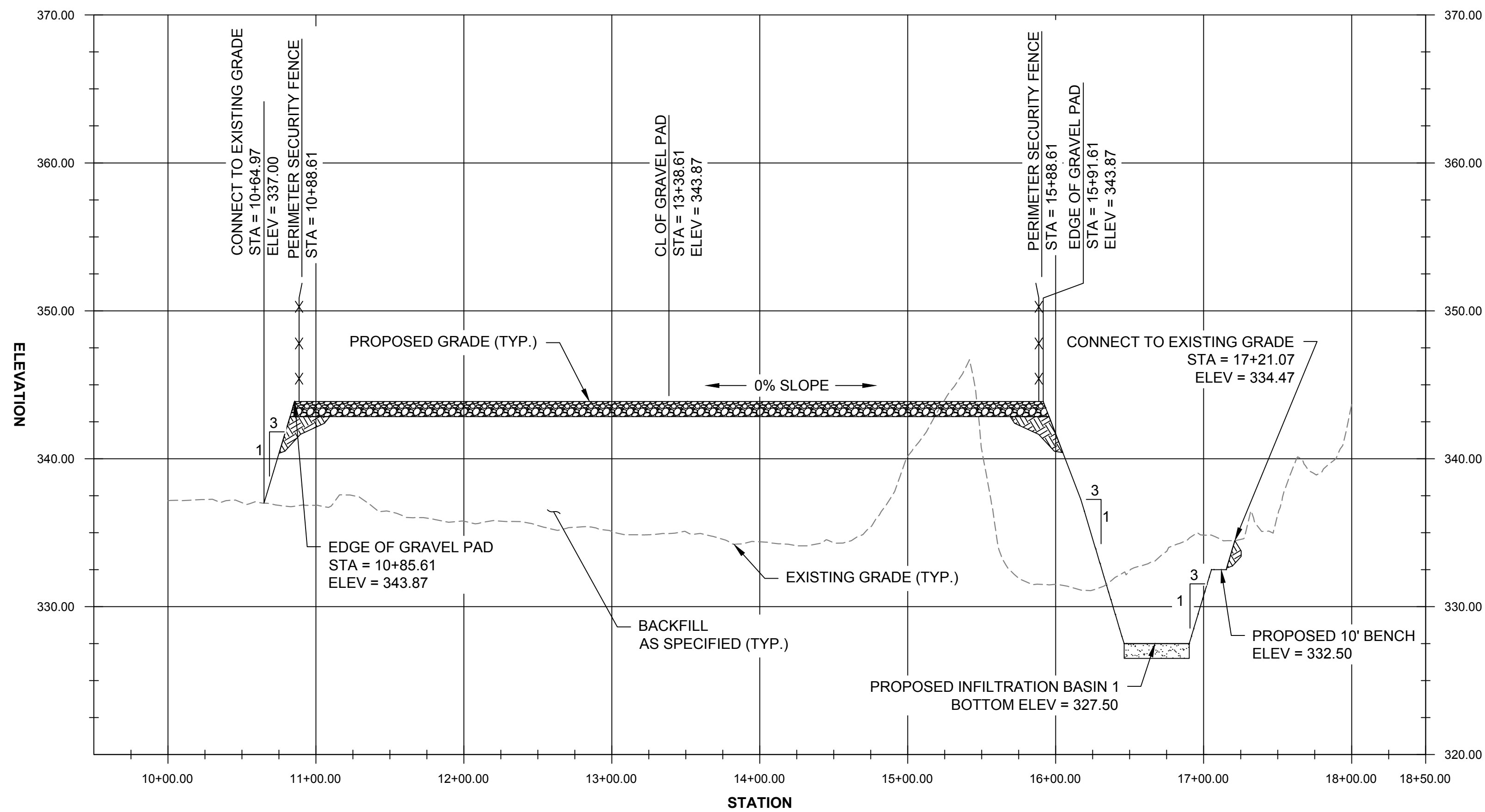
SHEET 8 OF 19

NPTT508-C200

REVISION: 11/15/2013

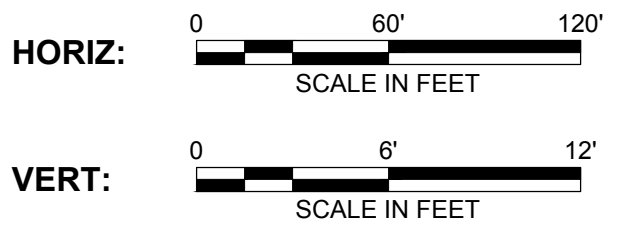


SECTION A-A  
A  
C101



SECTION B-B  
B  
C101

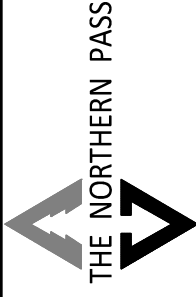
- GRADING CROSS SECTION NOTES:
1. REFER TO SHEET NPTT502-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
  2. THIS DRAWING IS INTENDED TO DESCRIBE THE GRADING CROSS SECTIONS ONLY.
  3. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM:  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
  4. PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.
  5. CONTRACTOR SHALL PLACE 4" TOPSOIL AND SEED ON ALL CUT AND FILL SLOPES AS SPECIFIED UNLESS ANOTHER SURFACE MATERIAL IS INDICATED.
  6. EARTHWORK AND COMPACTION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL ENGINEERING RECOMMENDATIONS REPORT BY OTHERS.
  7. STRIP AND STOCKPILE EXISTING TOPSOIL IN AREAS OF PROPOSED GRADING AND EARTHWORK.



FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

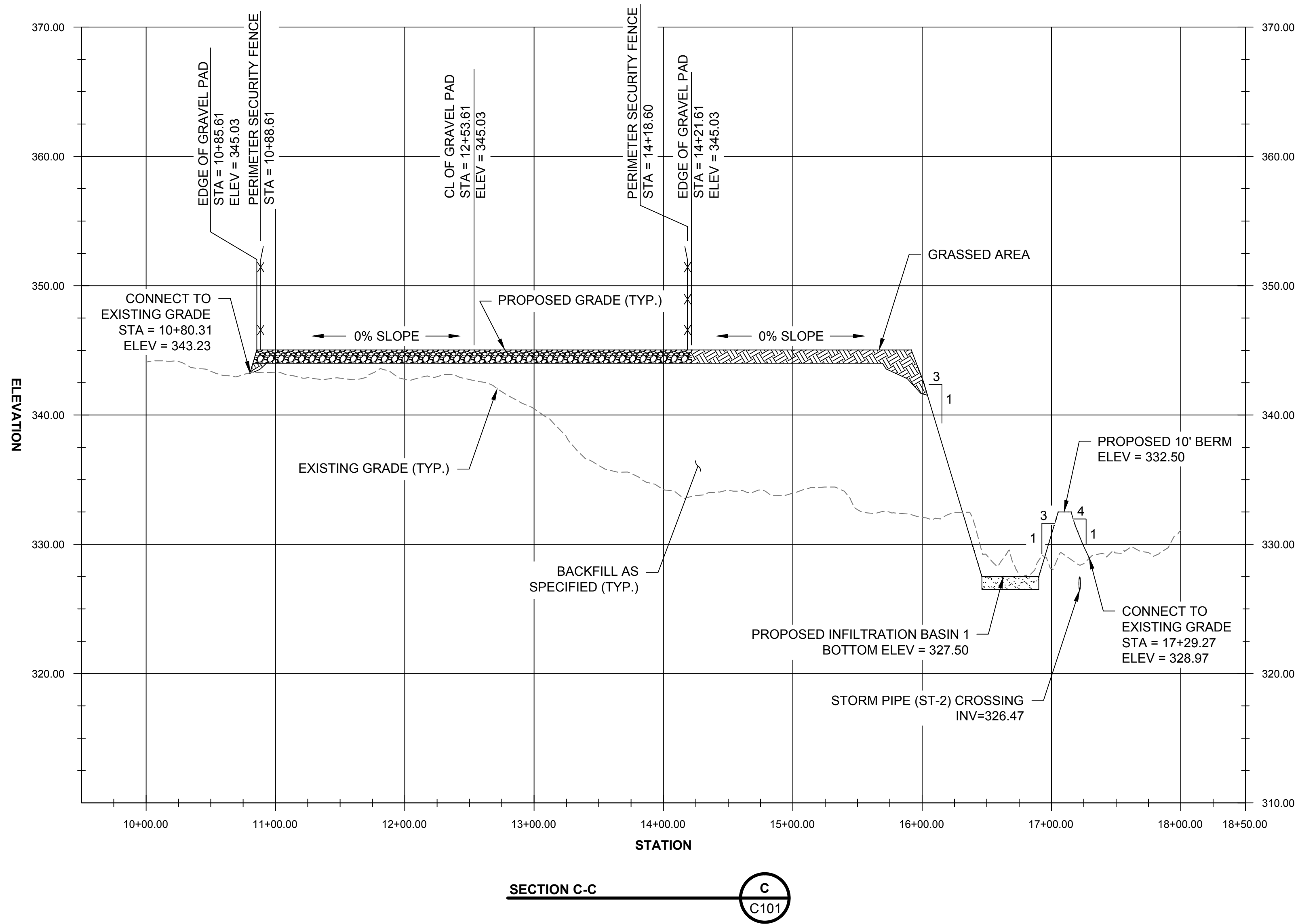
This document has been digitally sealed.  
Oct 5 2015

NO.	DATE	REVISION	CHKD	APPV.
1	10/7/15	ISSUED FOR PERMITTING	KRB	JUS



FRANKLIN STATION SITE CROSS SECTIONS	DATE: 10/1/2015
DES: RLR   CHK: JUS DRW: KRB   APR: BSS	
TOWN: FRANKLIN, NH	
TRANSMISSION LINE:	
MILE NO:	
SHEET 9 OF 19	
NPTT509-C300	

REVISION: 11/16/2013

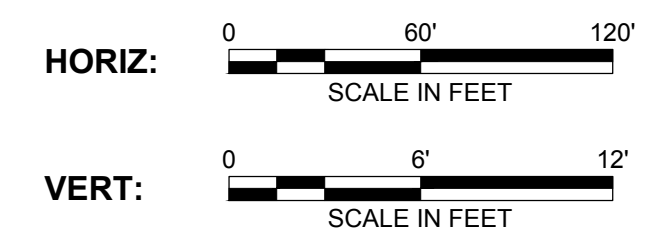


GRADING CROSS SECTION NOTES:

1. REFER TO SHEET NPTT502-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
2. THIS DRAWING IS INTENDED TO DESCRIBE THE GRADING CROSS SECTIONS ONLY.
3. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM:  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
4. PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.
5. CONTRACTOR SHALL PLACE 4" TOPSOIL AND SEED ON ALL CUT AND FILL SLOPES AS SPECIFIED UNLESS ANOTHER SURFACE MATERIAL IS INDICATED.
6. EARTHWORK AND COMPACTION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL ENGINEERING RECOMMENDATIONS REPORT BY OTHERS.
7. STRIP AND STOCKPILE EXISTING TOPSOIL IN AREAS OF PROPOSED GRADING AND EARTHWORK.

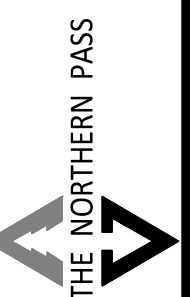


This document has been digitally sealed.  
Oct 5 2015



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

NO.	ISSUED FOR PERMITTING	REVISION	DATE	DRWN	CHKD	APPRV.
1	ISSUED FOR PERMITTING		10/7/15	KRB	BSS	JUS



Transmission  
Business

#

FRANKLIN STATION  
SITE CROSS SECTIONS

DATE: 10/1/2015  
SCALE: AS NOTED

DES: RLB | CHK: JUS  
DRW: KRB | APR: BSS  
TOWN: FRANKLIN, NH  
TRANSMISSION LINE:

MILE NO:  
SHEET 10 OF 19

NPTT510-C301

REVISION: 11/16/2013

1. THE SEDIMENT AND EROSION CONTROL PLAN IS ONLY INTENDED TO DESCRIBE THE SEDIMENT AND EROSION CONTROL TREATMENT FOR THIS SITE. SEE SEDIMENT AND EROSION CONTROL DETAILS AND CONSTRUCTION SEQUENCE. REFER TO SITE PLAN FOR GENERAL INFORMATION AND OTHER CONTRACT PLANS FOR APPROPRIATE INFORMATION.

4. THE SEDIMENT AND EROSION CONTROL PLAN WAS DEVELOPED TO HELP PROTECT THE EXISTING ROADWAY AND STORM DRAINAGE SYSTEMS, ADJACENT PROPERTIES, AND ADJACENT WETLAND AREA FROM SEDIMENT LADEN SURFACE RUNOFF AND EROSION.

6. THE CONTRACTOR SHALL INSTALL ALL SPECIFIED EROSION/SEDIMENT CONTROL MEASURES AND WILL BE REQUIRED TO MAINTAIN THEM IN THEIR INTENDED FUNCTIONING CONDITION AND BE IN STRICT CONFORMANCE WITH THE STANDARDS BELOW. THE CONTRACTOR SHALL SUPPLY AND MAINTAIN THESE STANDARDS AND HAVE THEM AVAILABLE ONSITE FOR THE DURATION OF CONSTRUCTION. THE OWNER, AGENTS OF THE REGULATORY AGENCIES AND/OR QUALIFIED PROFESSIONAL SHALL HAVE THE AUTHORITY TO REQUIRE SUPPLEMENTAL MAINTENANCE OR ADDITIONAL MEASURES IF FIELD CONDITIONS ARE ENCOUNTERED BEYOND WHAT WOULD NORMALLY BE ANTICIPATED.

7. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.

9. STONE CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED AT START OF CONSTRUCTION AND MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION. THE LOCATION OF THE TRACKING PADS MAY CHANGE AS VARIOUS PHASES OF CONSTRUCTION ARE COMPLETED.

11. COMPLY WITH REQUIREMENTS OF THE EPA FOR NPDES AND RECORD KEEPING.

13. STOCKPILES OF EARTH MATERIALS SHALL CONFORM TO SOIL STOCKPILE PRACTICES IN SECTION 4.1 OF THE NH DES STORMWATER MANUAL VOLUME 3.

15. WATER SHALL BE USED FOR DUST CONTROL IN APPROPRIATE AREAS.

21. TEMPORARY AND PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE PLANTING PLAN, NH DES STORMWATER MANUAL VOLUME 3, AND NH DOT STANDARD SPECIFICATIONS SECTION 644.

9. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

11. STANDARD WINTER NOTES:

- A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
- B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
- C. AFTER NOVEMBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.

2. AN AREA WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE SHALL BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIER.

13. SEE THE VEGETATION MEASURES FOR MORE INFORMATION ON SEEDING DATES AND TYPES

5. COMMENCE INSTALLATION OF STORM DRAINAGE SYSTEM.

9. BEFORE DISPOSING OF SOIL OR RECEIVING BORROW FOR THE SITE, THE

10. CONTINUE INSTALLATION OF STORM DRAINAGE AS SUBGRADE ELEVATIONS ARE ACHIEVED.

12. THROUGHOUT CONSTRUCTION SEQUENCE, REMOVE SEDIMENT FROM BEHIND SILT FENCES, STRAW BALES AND OTHER EROSION CONTROL DEVICES, AND FROM SEDIMENT TRAPS AS REQUIRED. REMOVAL SHALL BE ON A PERIODIC BASIS (EVERY SIGNIFICANT RAINFALL OF 0.50 INCH OR GREATER). INSPECTION OF EROSION/SEDIMENT CONTROL MEASURES SHALL BE ON A WEEKLY BASIS AND AFTER EACH RAINFALL OF 0.50 INCHES OR GREATER. SEDIMENT COLLECTED SHALL BE DEPOSITED AND SPREAD EVENLY UPLAND ON SLOPES DURING CONSTRUCTION.

- AGENT, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED FOLLOWING STABILIZATION OF THE SITE.

2. ALL STOCKPILED TOPSOIL SHALL BE SEEDED, AFFLEY MULCH OR STRAW, AND ENCLOSED BY A SILTATION FENCE.

**CONSTRUCTION OPERATIONS**

1. SILT FENCES SHALL BE INSTALLED AT THE DOWNHILL SIDES OF EXCAVATIONS.

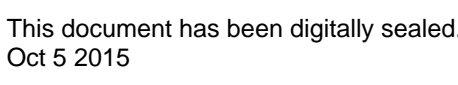
1. ALL INLET AND OUTLET PROTECTION SHALL BE PLACED AND MAINTAINED AS SHOWN ON EROSION CONTROL PLANS AND DETAILS, AND AS DESCRIBED IN SPECIFICATIONS AND AS DESCRIBED HEREIN.

2. ROADS FOR FILL VEHICLES SHALL EXCEED 2% EXCEPT WHERE GRADABLE BY ROAD FACED EMBANKMENTS OR EROSION CONTROL BLANKETS, JUTE MESH AND VEGETATION. ALL SLOPES SHALL BE SEEDED, AND ANY ROAD OR DRIVEWAY SHOULDER AND BANKS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF FINAL GRADING UNTIL TURF IS ESTABLISHED.

- BE PAVED AS SOON AS FINAL SUB-GRADES ARE ESTABLISHED AND UNDERGROUND UTILITIES AND STORM DRAINAGE SYSTEMS HAVE BEEN INSTALLED.
4. AFTER CONSTRUCTION OF PAVEMENT, TOPSOIL, FINAL SEED, MULCH AND LANDSCAPING, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES ONLY AFTER ALL AREAS HAVE BEEN PAVED AND/OR GRASS HAS BEEN WELL ESTABLISHED AND THE SITE HAS BEEN INSPECTED AND APPROVED BY THE OWNER AND THE APPLICABLE REGULATORY AGENCIES.

- IT HAS A MINIMUM OF 85% UNIFORM PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING OR OTHER MOVEMENTS.

- EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. UPON COMPLETION OF WORK SWEEP PARKING LOT AND REMOVE ALL TEMPORARY SEDIMENT CONTROLS WHEN AUTHORIZED BY LOCAL GOVERNING AUTHORITY. FILE NOT (NOTICE OF TERMINATION) WITH GOVERNING AUTHORITY RESPONSIBLE FOR REGULATING STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES PER NPDES.



1	ISSUED FOR PERMITTING	10/1/15	KRB	BSS	JJS
2	REVISION	DATE	DRWN	CHKD	APPRV.
3					
4					
5					
6					
7					
8					
9					
10					

509

A/E 207

Transmission

	#
--	---

FRANKLIN STATION  
EROSION AND SEDIMENTATION  
CONTROL NOTES

DES: RLR	CHK:JJS
----------	---------

DRW: KRB	APR: BSS
TOWN:	

FRANKLIN, NH

TRANSMISSION LINE:

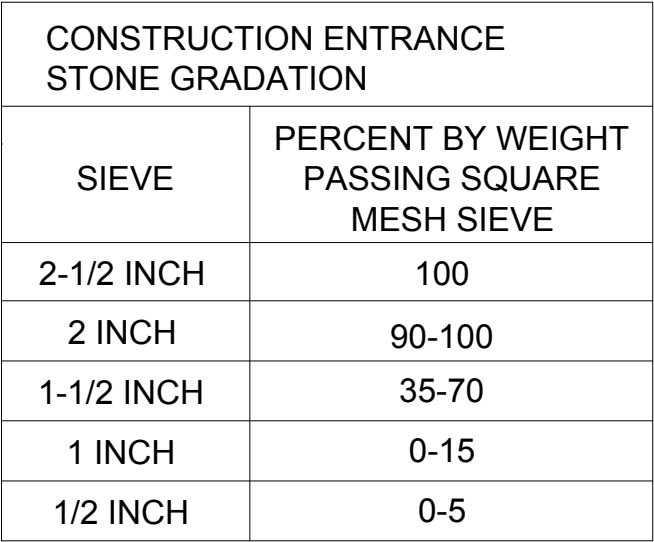
MILE NO:

SHEET 11 OF 19

NPTT511 C500

NF11511-C300

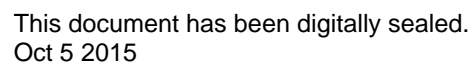




1. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE SURFACE.
2. WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
3. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
4. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN STORM EVENT.




1. ALL SLOPES 3:1 AND STEEPER SHALL RECEIVE EROSION CONTROL BLANKET.
2. SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
3. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
4. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
5. BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
6. THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

NO.	ISSUED FOR PERMITTING REVISION	DATE	DRWN	CHKD	APPRV.
1		10/1/15	KRB	BSS	JJS
2					
3					
4					
5					
6					
7					
8					
9					
10					

Transmission  
Business

FRANKLIN STATION  
EROSION AND SEDIMENTATION  
CONTROL DETAILS

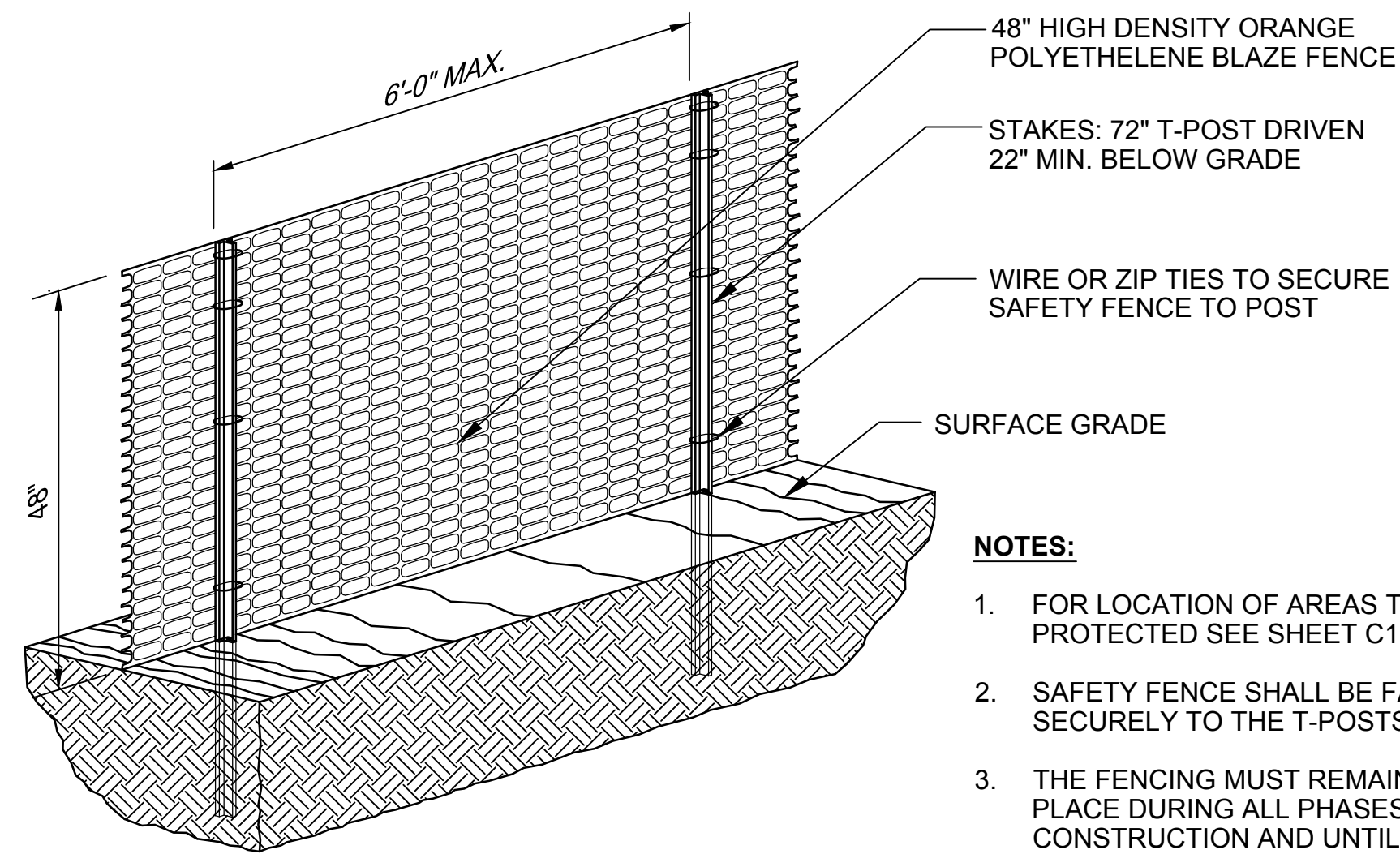
DES: RLR	CHK: JJS
DRW: KRB	APR: BSS

MILE NO:
SHEET 12 OF 19

NPTT512-C501

REVISION: 11/10/2013

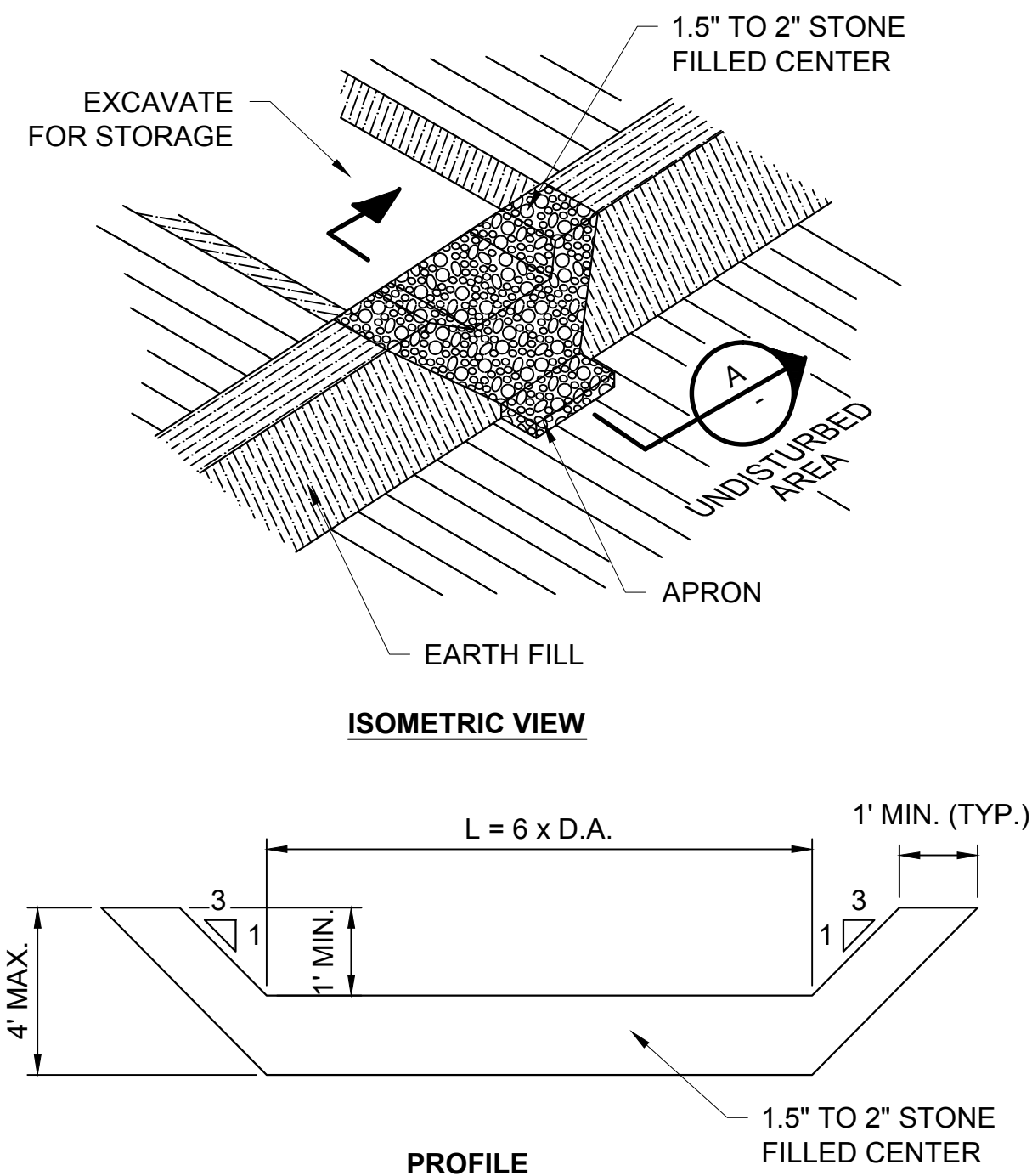




- NOTES:**
1. FOR LOCATION OF AREAS TO BE PROTECTED SEE SHEET C102.
  2. SAFETY FENCE SHALL BE FASTENED SECURELY TO THE T-POSTS.
  3. THE FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION AND UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED.

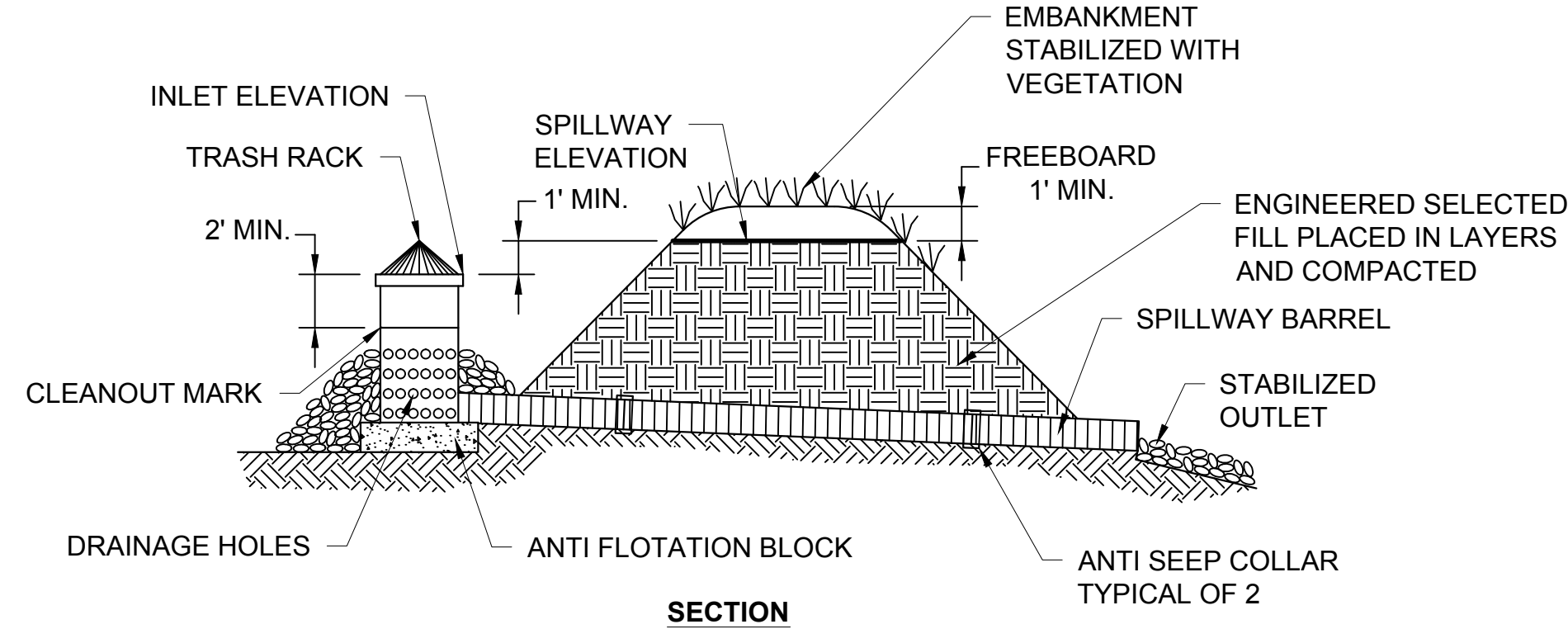
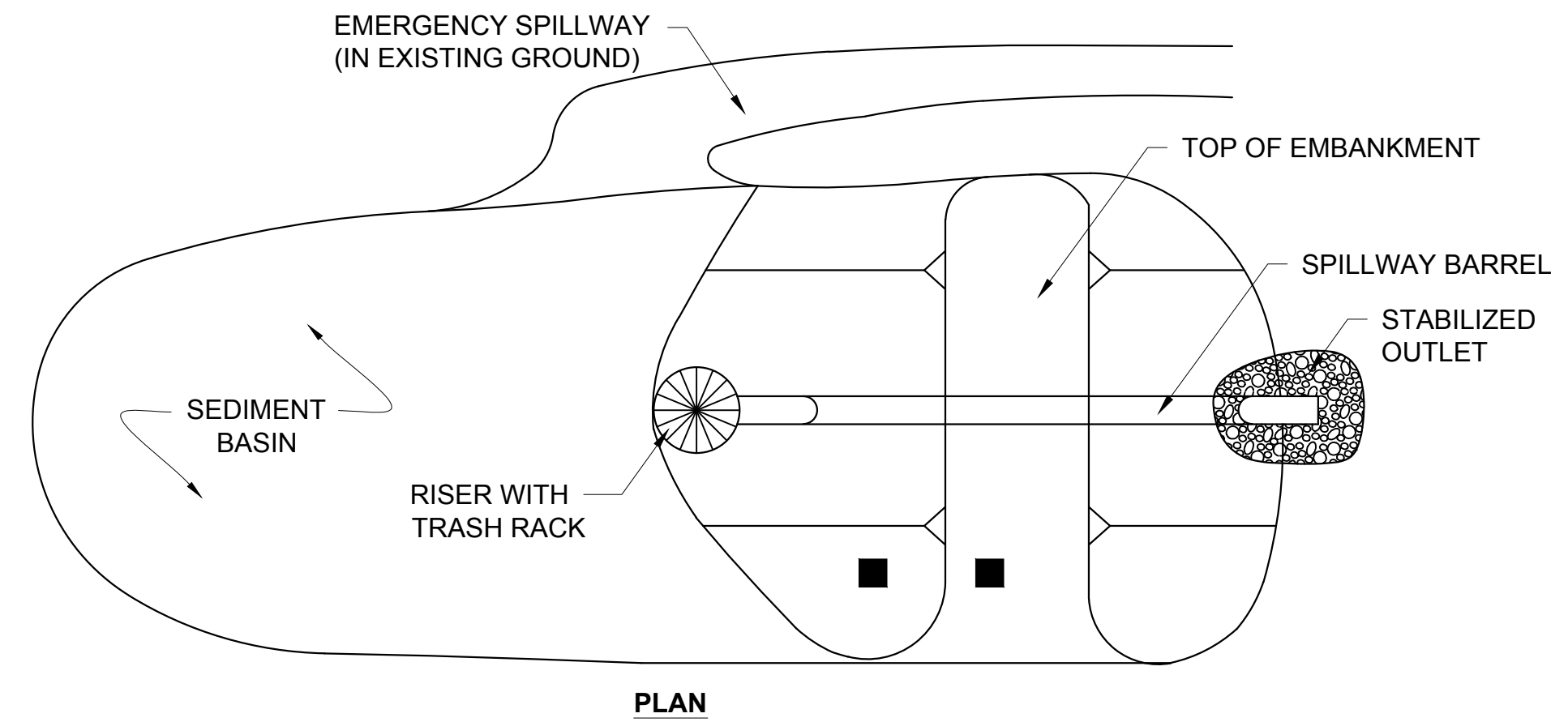
**CONSTRUCTION FENCE**  
NOT TO SCALE

1  
C102



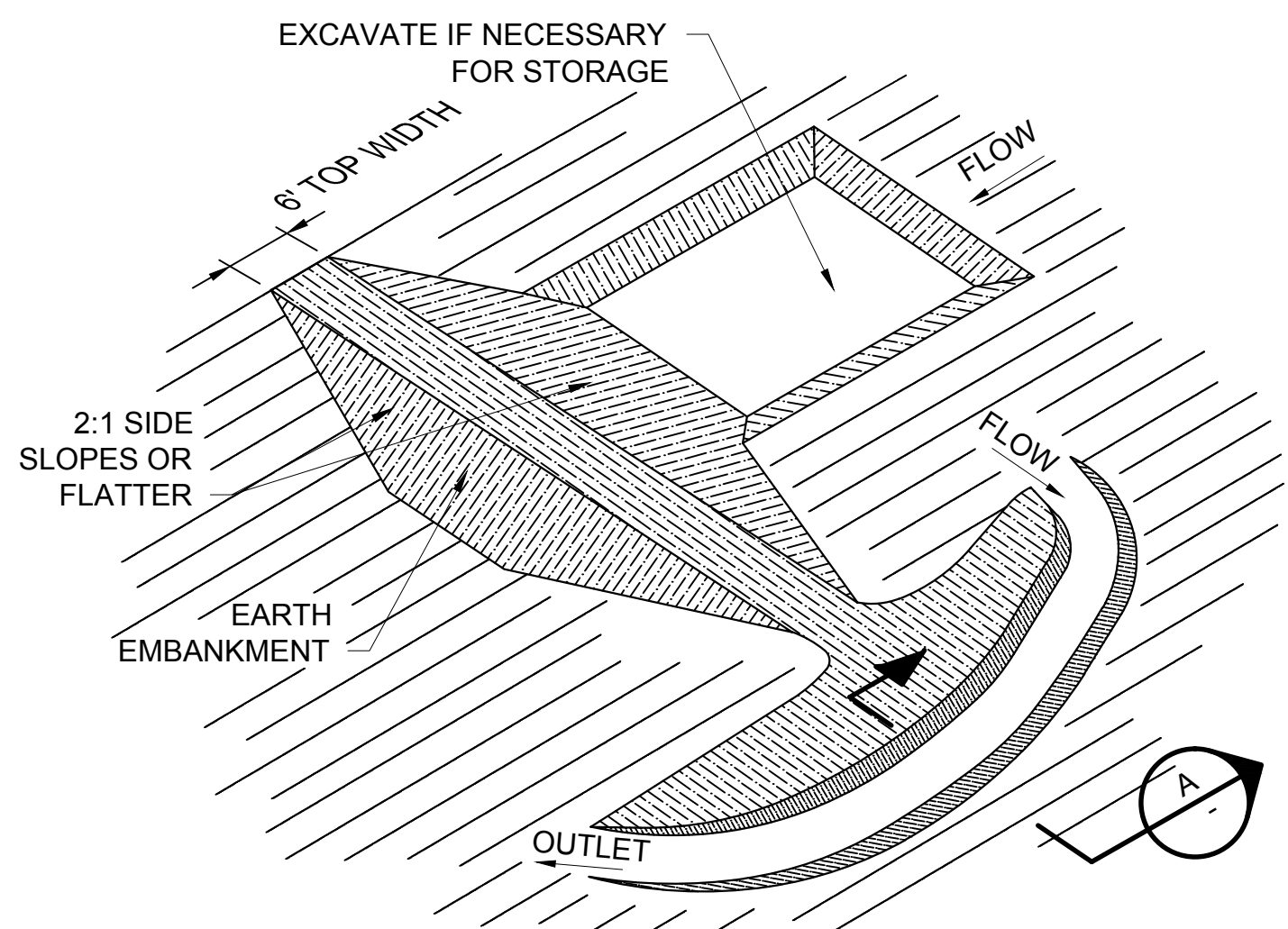
**STONE OUTLET SEDIMENT TRAP**  
NOT TO SCALE

2  
C102

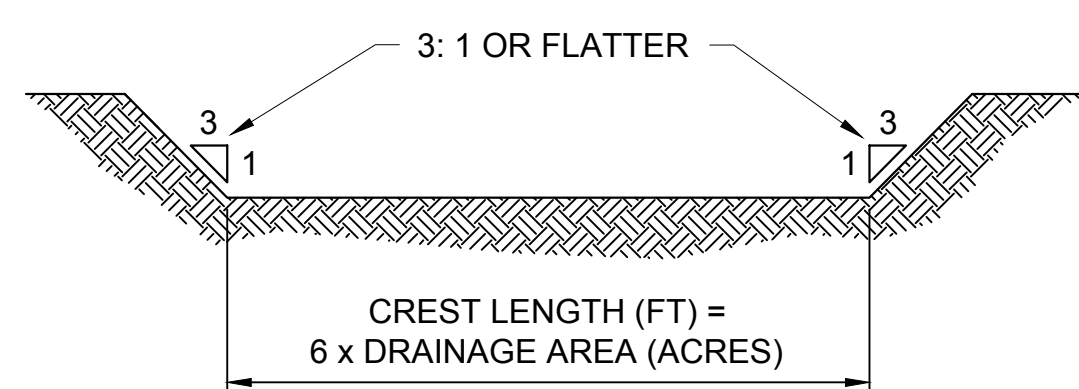


**TYPICAL SEDIMENT BASIN**  
NOT TO SCALE

3  
C102



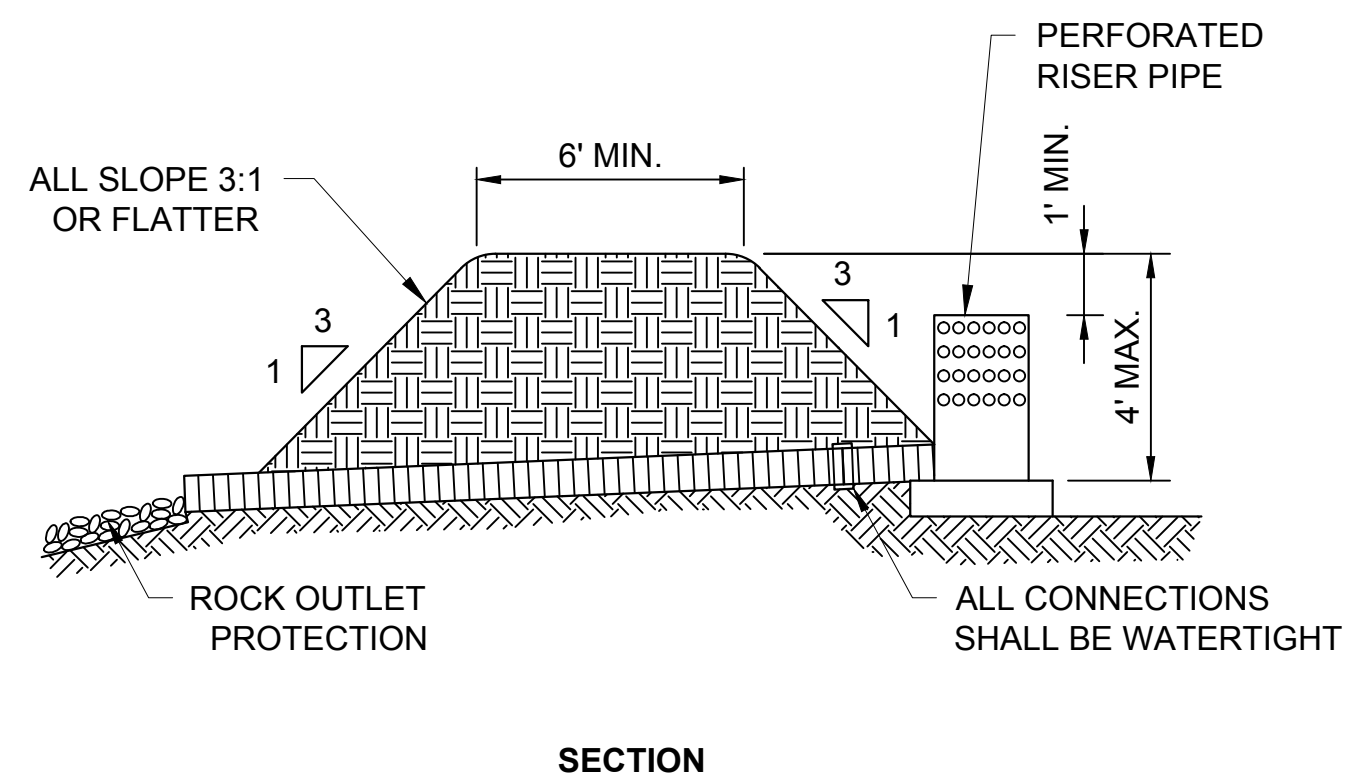
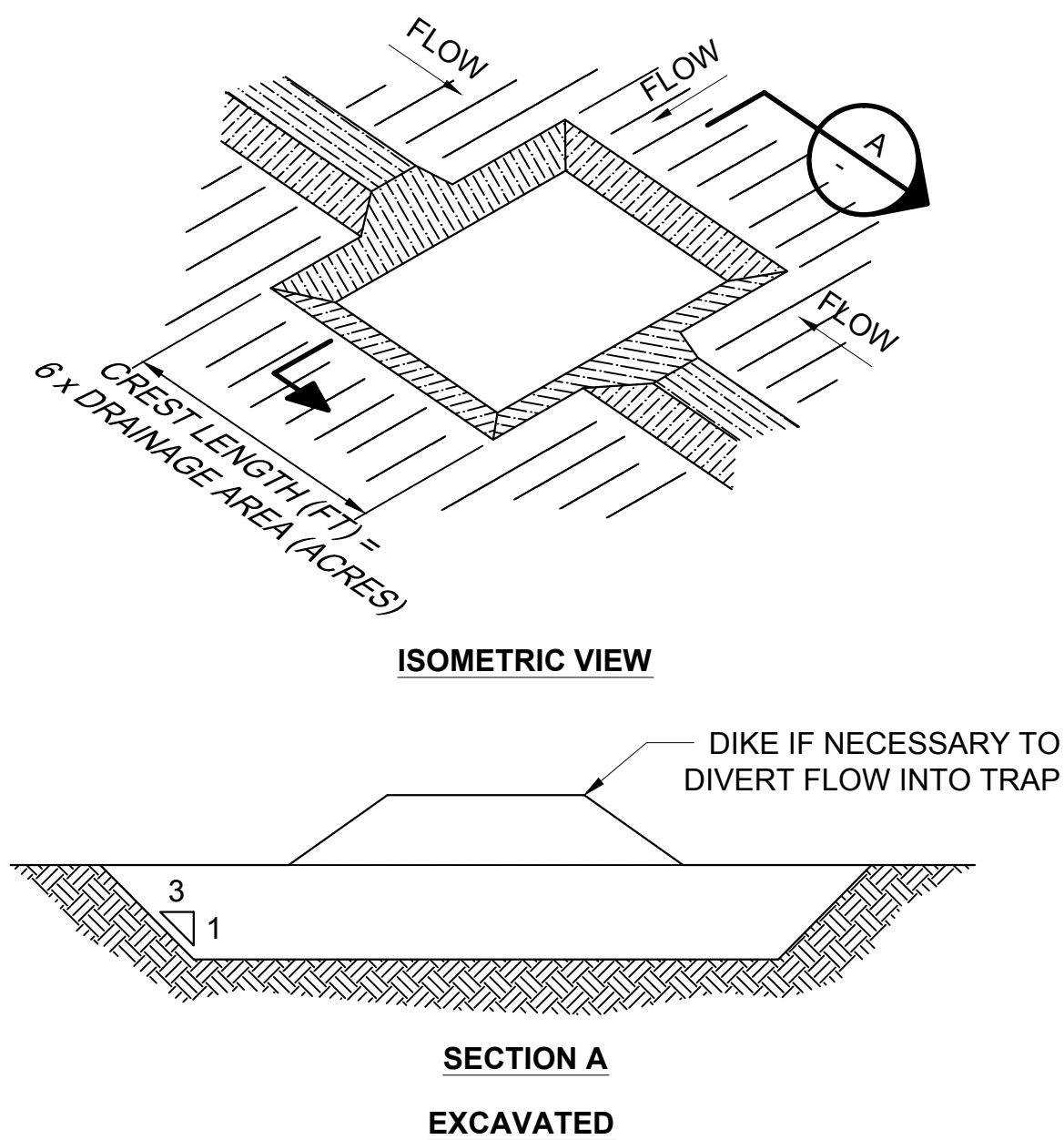
**ISOMETRIC VIEW**



**SECTION A**  
**EMBANKMENT**

**EARTH OUTLET SEDIMENT TRAP**  
NOT TO SCALE

4  
C102



**SECTION**

**PIPE OUTLET SEDIMENT TRAP**  
NOT TO SCALE

5  
C102

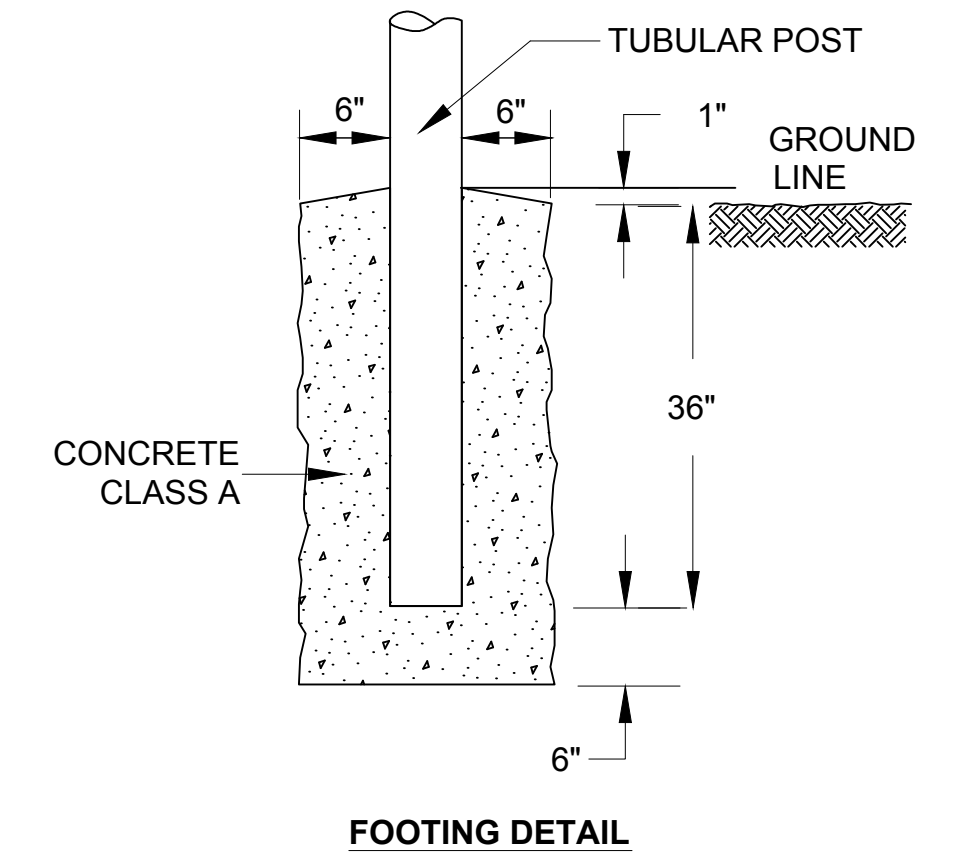


This document has been digitally sealed.  
Oct 5 2015

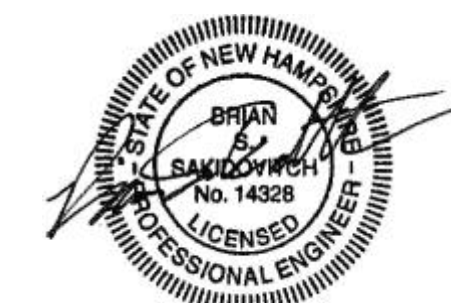
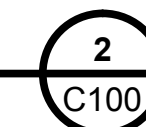
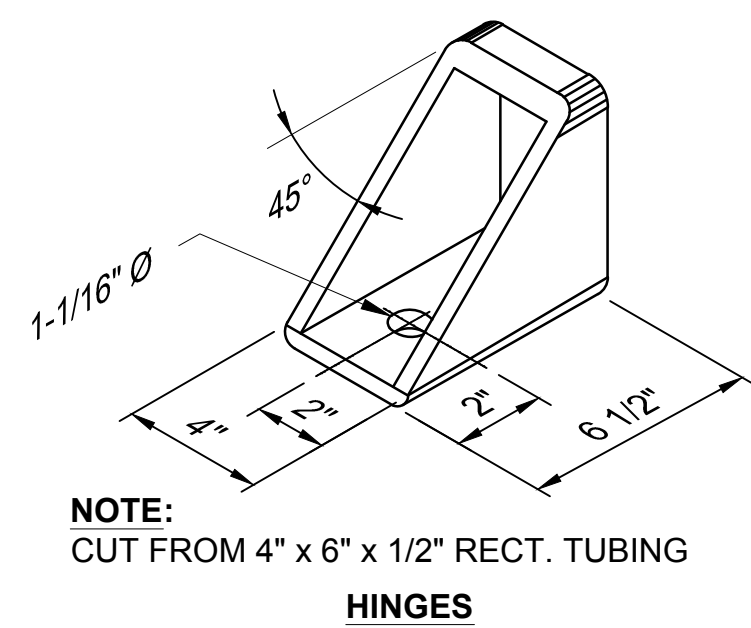
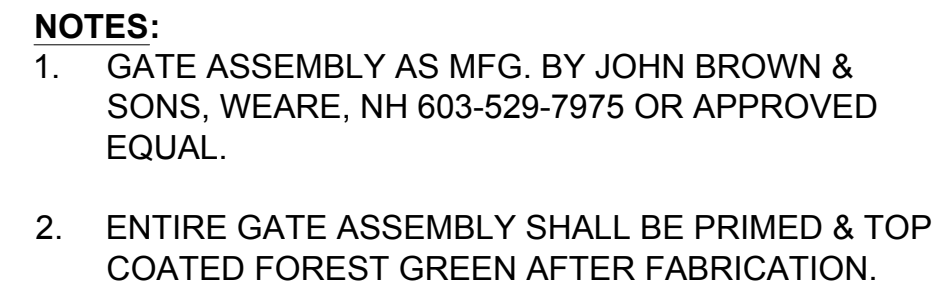
**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

DES: RLB	CHK: JUS	DATE: 10/7/15	REV: 1	ISSUED FOR PERMITTING	NO.	1	10/7/15	KRB	BSS	JUS	APPROV.
TOWN: FRANKLIN, NH	TRANSMISSION LINE:	SCALE: AS NOTED	DATE: 10/7/2015	REVISION	NO.	1	10/7/15	KRB	BSS	JUS	APPROV.
MILE NO:	SHEET 13 OF 19	REVISION	NO.	1	10/7/15	KRB	BSS	JUS	APPROV.	DATE	10/7/15
FRANKLIN STATION EROSION AND SEDIMENTATION CONTROL DETAILS	THE NORTHERN PASS	Transmission Business	#	1	10/7/15	KRB	BSS	JUS	APPROV.	DATE	10/7/15

REVISION: 11/10/2013

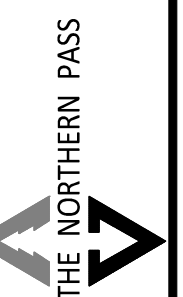


1  
C100



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
1	ISSUED FOR PERMITTING	10/17/15	KRB	BSS	JJS
•					
•					
•					
•					
•					

Transmission  
Business

	#
--	---

FRANKLIN STATION  
CONSTRUCTION DETAILS

CS: RLR	CHK: JJS
FW: KRB	APR: BSS

OWN:  
FRANKLIN, MI

FRANKLIN, NH  
 TRANSMISSION LINE

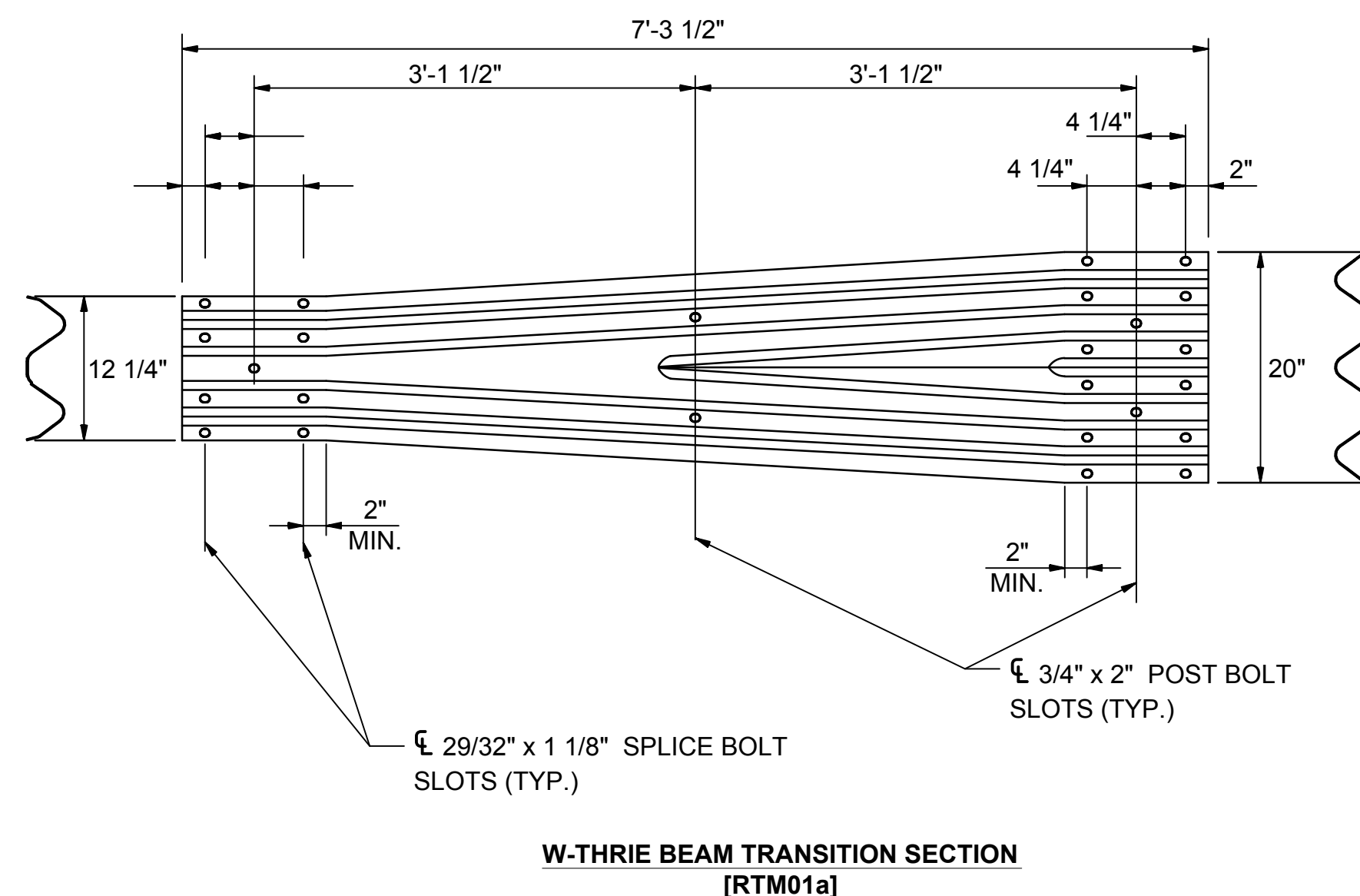
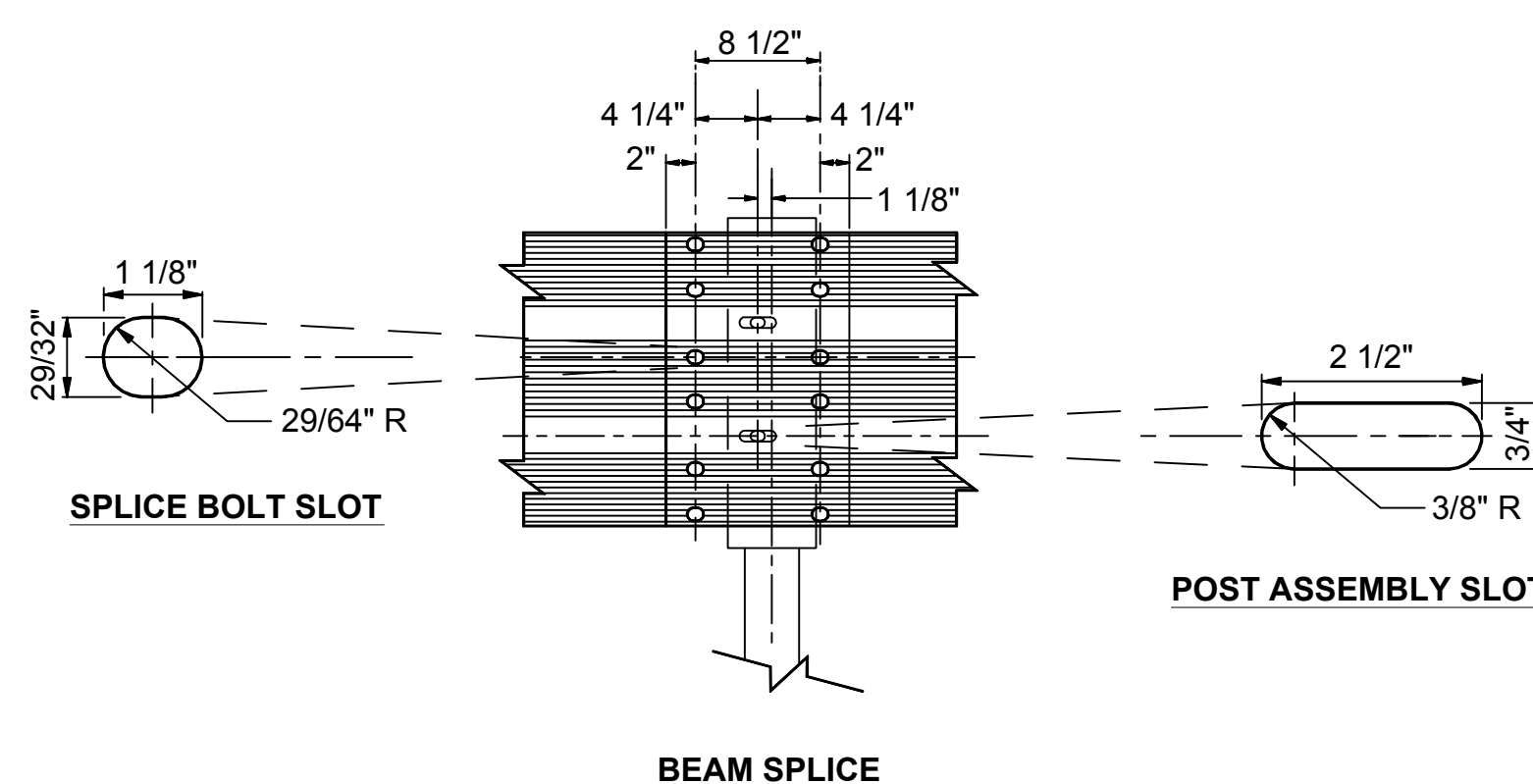
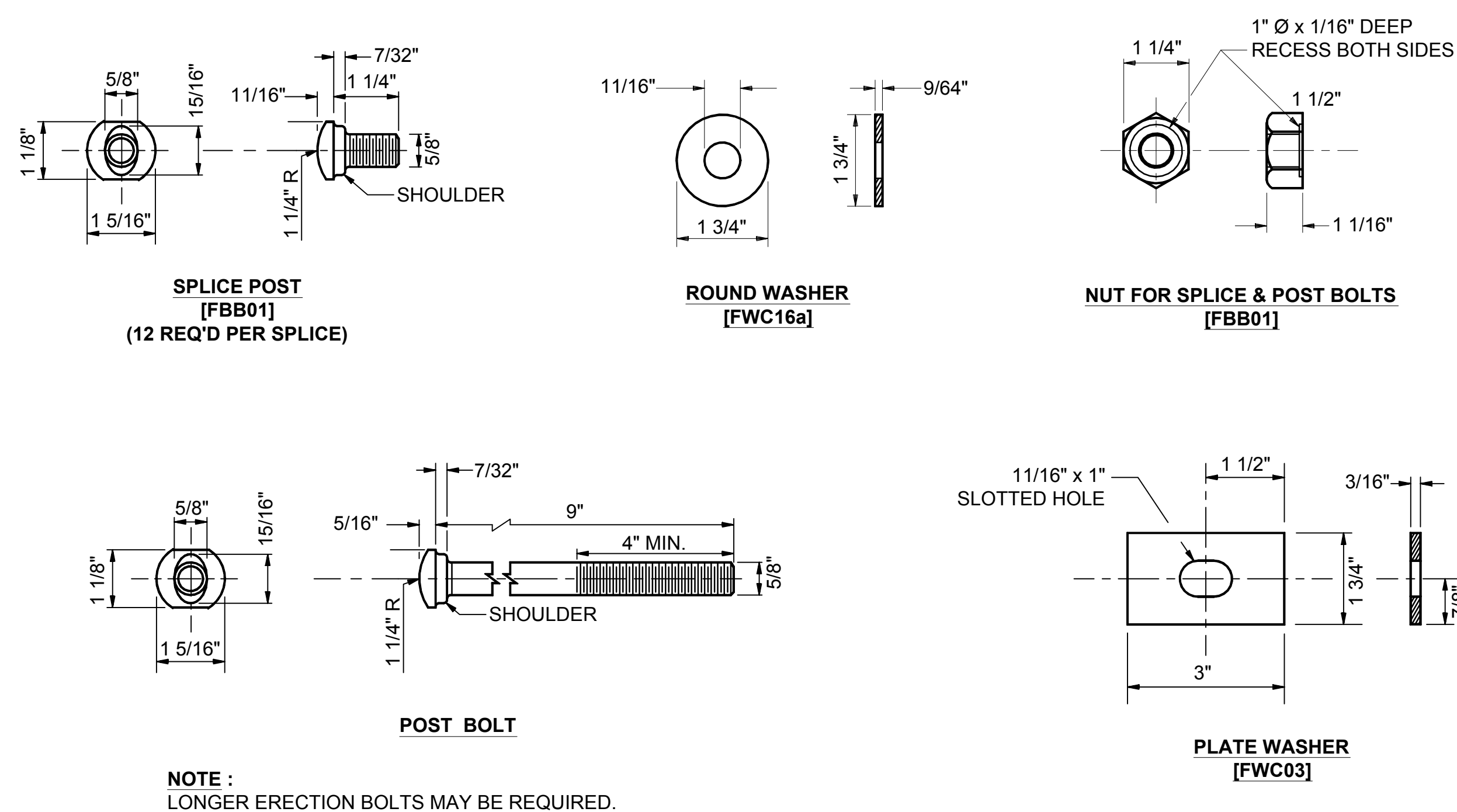
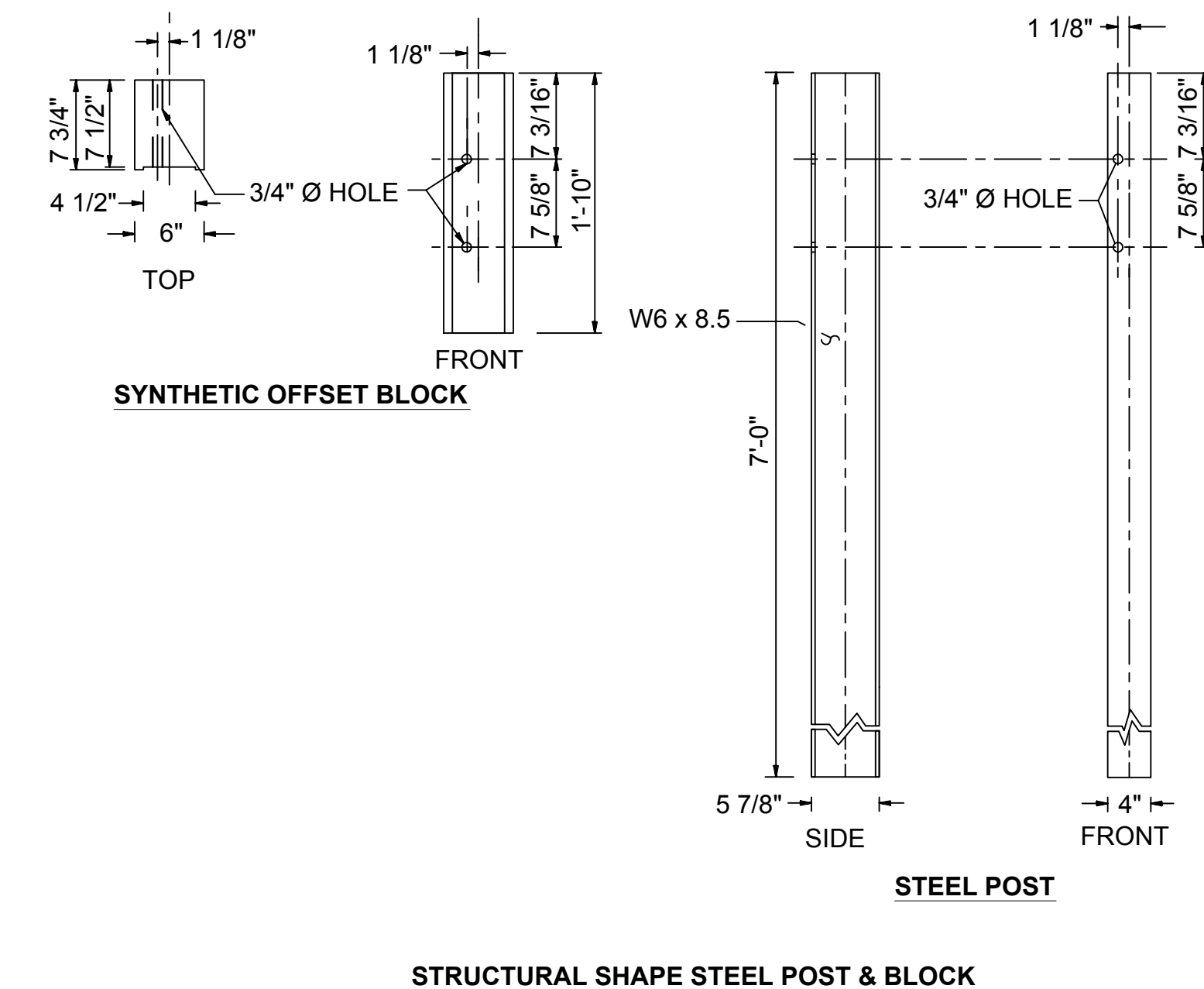
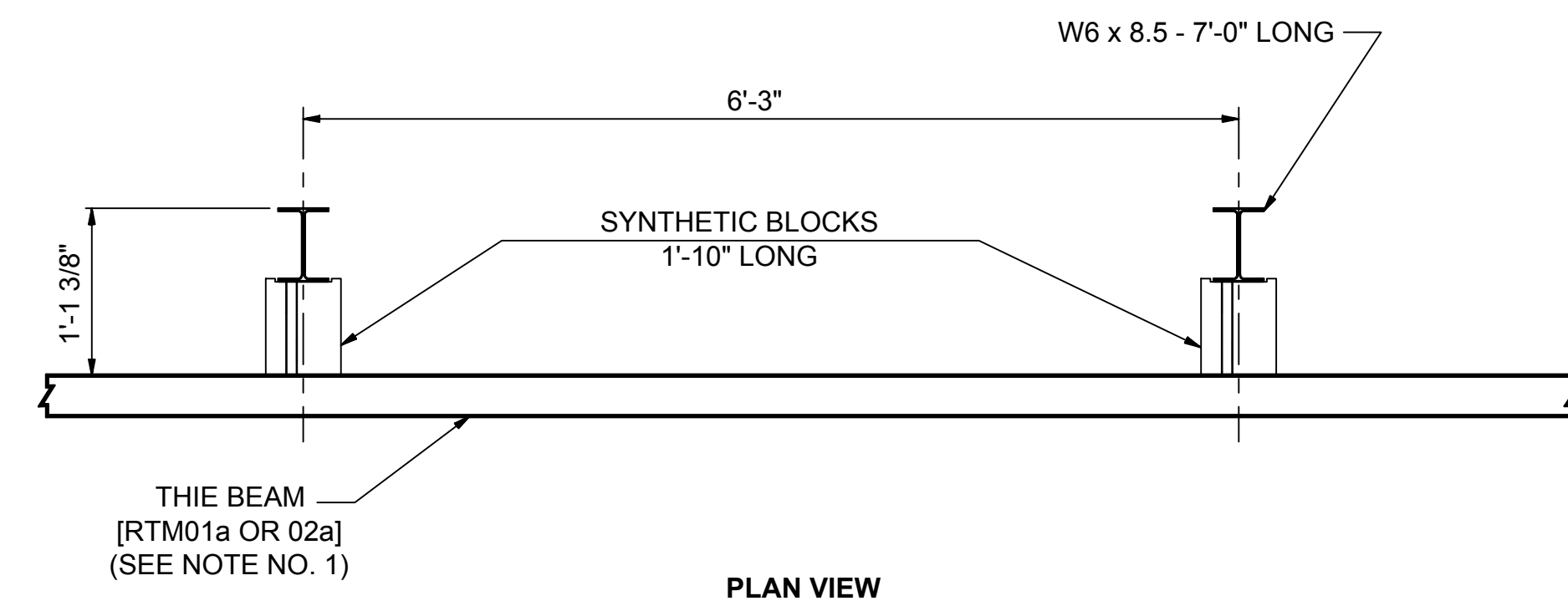
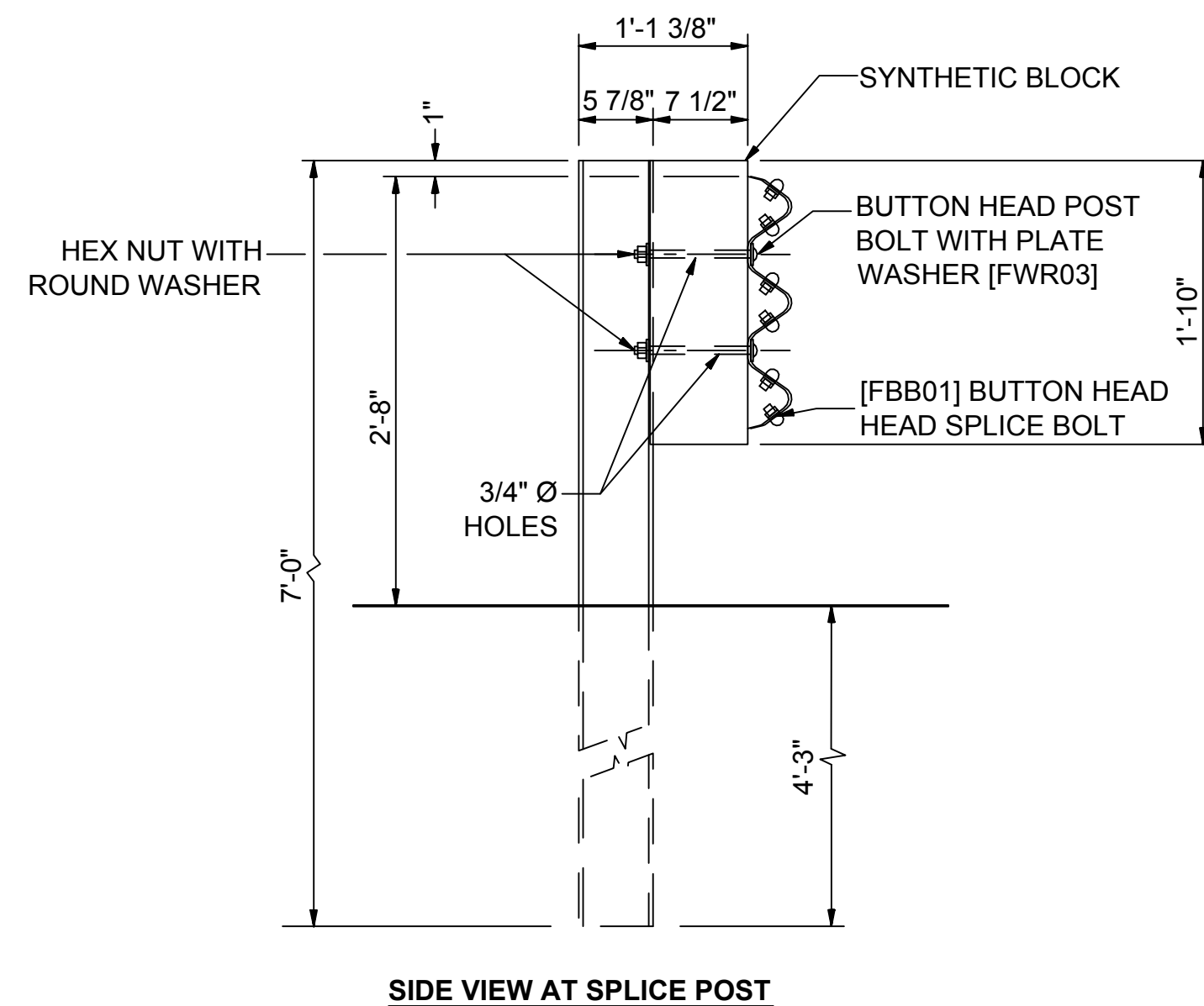
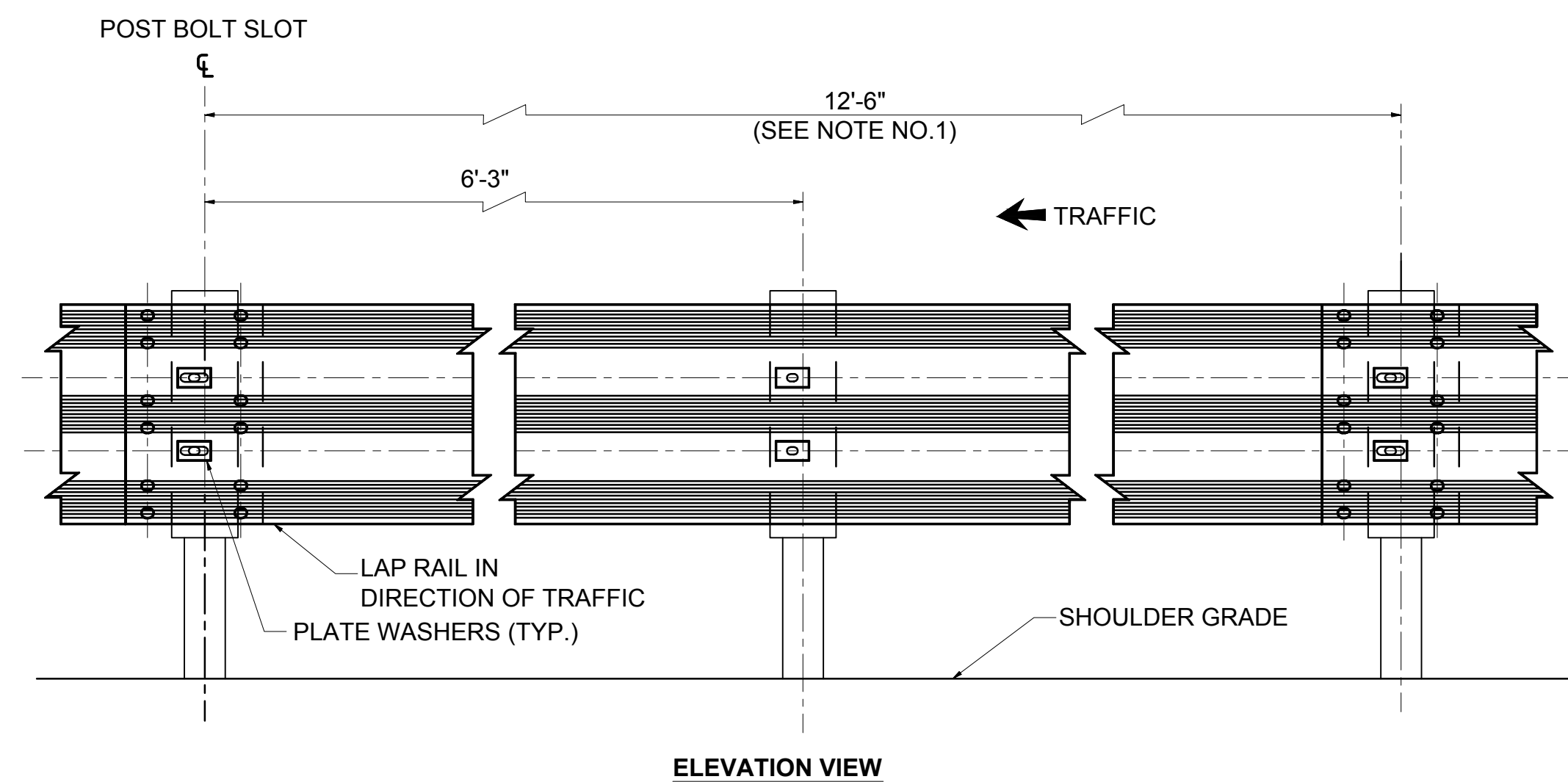
TRANSMISSION LINE:

FILE NO:	
----------	--

SHEET 14 OF 19

PTT514-C503

110110000



- NOTES:**

1. 25'-0" RAIL PANELS MAY BE USED IN PLACE OF 12'-6" PANELS, EXCEPT ON CURVES WITH A RAIL RADIUS OF LESS THAN 300 FT.
2. GUIDERAIL HEIGHT SHALL BE SET FROM THE GRADE AT THE FACE OF RAIL.
3. DESIGNATIONS PROVIDED IN BRACKETS [ ] REFERENCE STANDARD ELEMENTS DETAILED IN "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE", LATEST ADOPTED VERSION, AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
4. SEE STD. NO. DL-1 FOR BEAM GUIDERAIL DELINEATORS.
5. PAID FOR UNDER APPROPRIATE 606 ITEMS, OR AS SHOWN ON PLANS.
6. DIMENSIONS OF PLASTIC AND SYNTHETIC BLOCKOUTS ARE AS SHOWN ON MANUFACTURER'S DRAWINGS.
7. POSTS SHORTER THAN THE 7'-0" INDICATED ON THE DETAIL, BUT NOT LESS THAN 6'-6", MAY ONLY BE USED WHEN
  - A) THE SLOPE BEHIND THE GUIDERAIL IS NO STEEPER THAN 4:1
  - B) WHERE THE DISTANCE FROM THE BACK OF THE POST TO THE BREAK OF THE SLOPE IS A MINIMUM OF 2'-0"
  - C) AND THEN ONLY AS APPROVED OR SPECIFICALLY SHOWN ON THE PLANS.

**SOURCE:** NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.  
**NOTE :** NHDOT GUIDERAIL DETAILS SHOWN FOR REFERENCE ONLY.


**NHDOT GUIDERAIL (GR-14)**  
NOT TO SCALE

1  
C100



This document has been digitally sealed  
Oct 5 2015

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

[illegible]Transmission  
Business

	#
--	---

FRANKLIN STATION  
CONSTRUCTION DETAILS

DES: RLR	CHK: JJS
DRW: KRB	APR: BSS

TOWN:

FRANKLIN, NH

TRANSMISSION LINE

\_\_\_\_\_

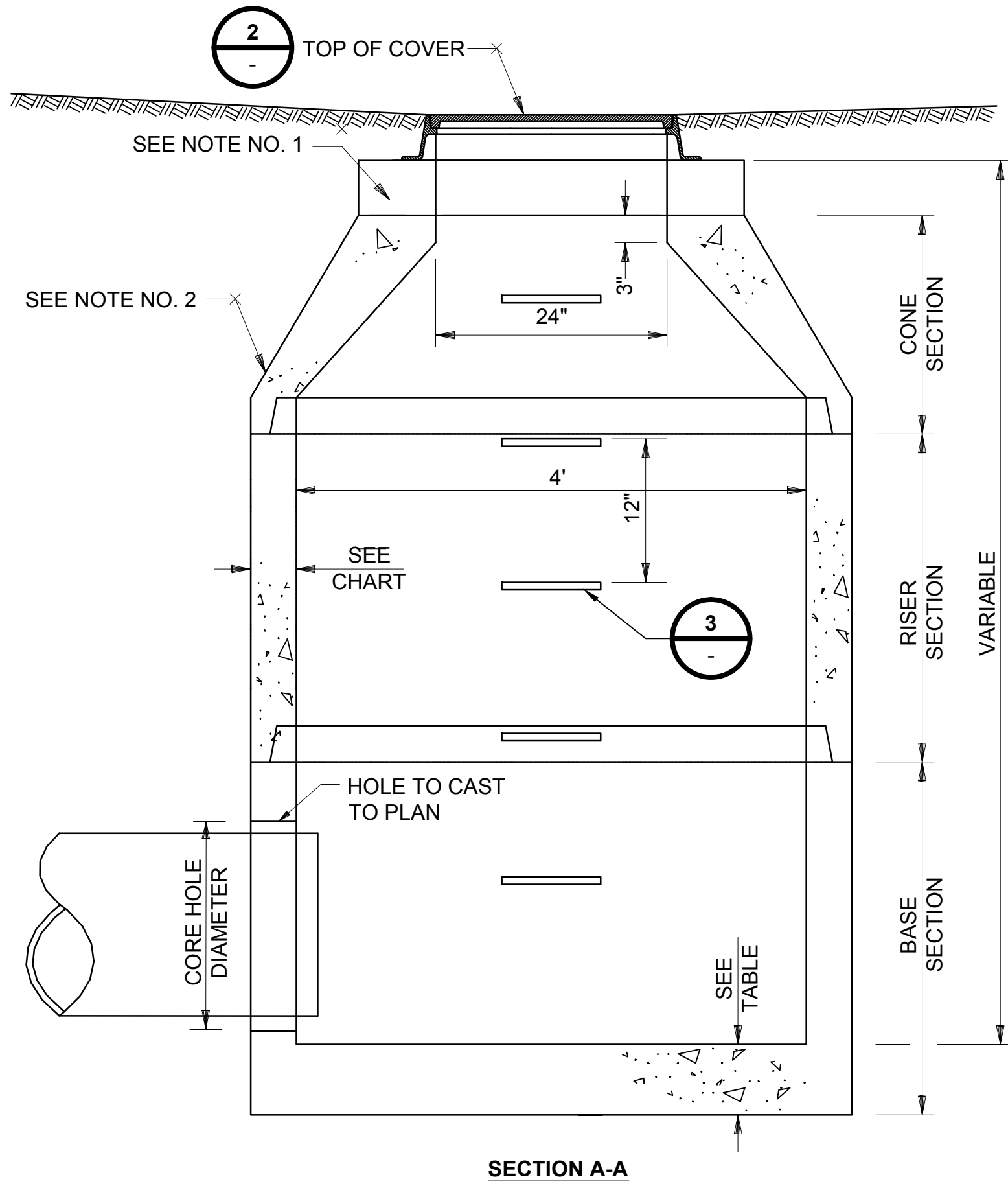
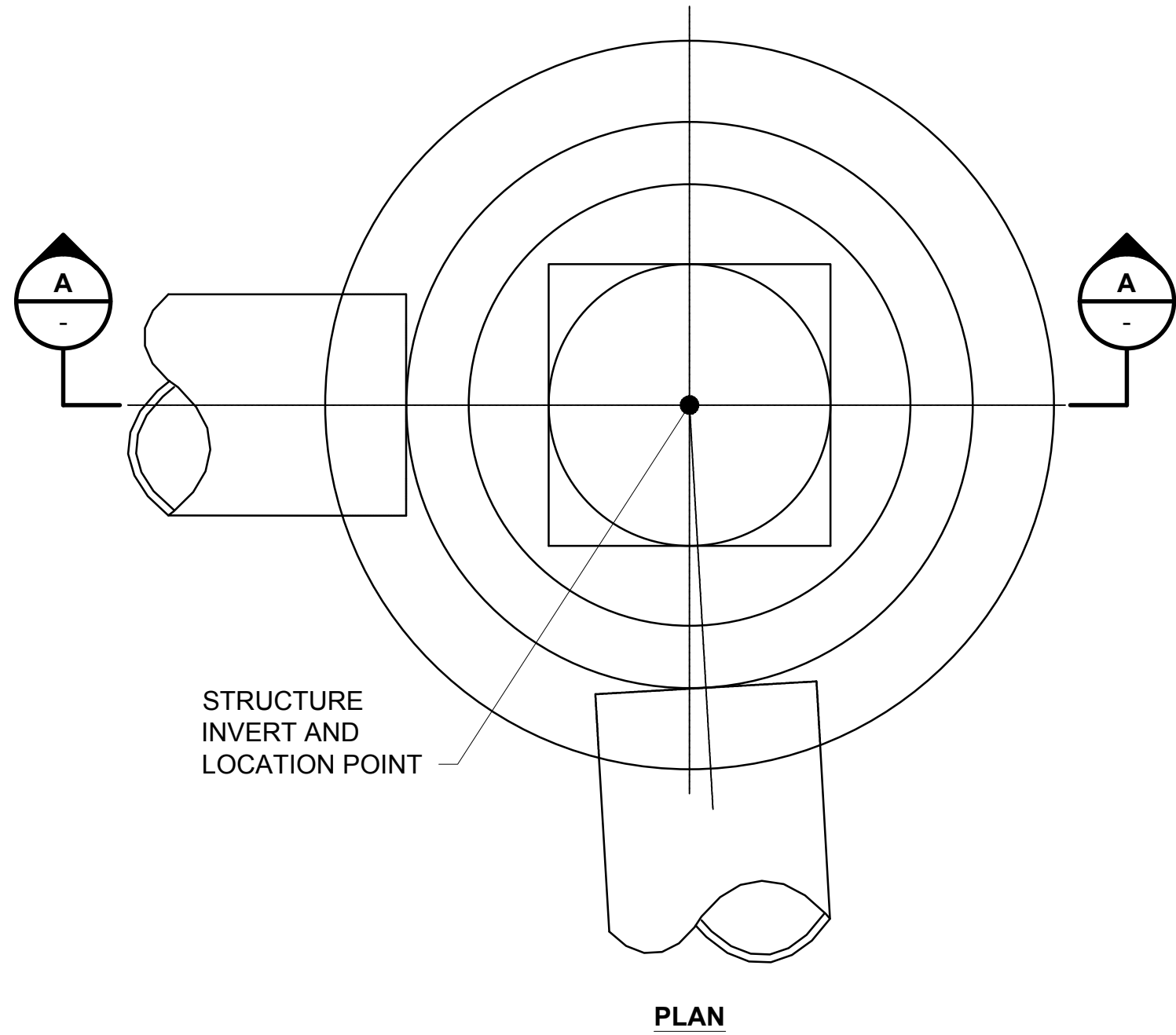
MILE NO:

PAGE 15 OF 10



DIAMETER	WALL THICKNESS (MIN.)	FLOOR THICKNESS (MIN.)
4'	5"	6"

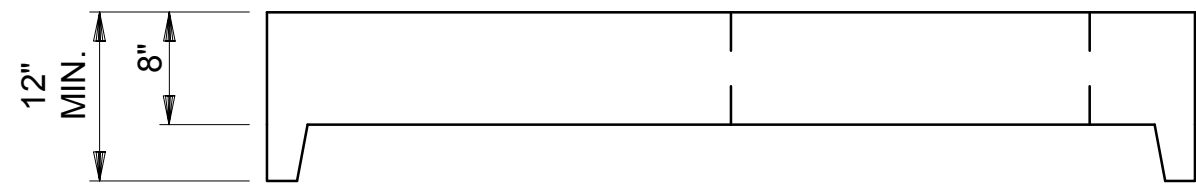
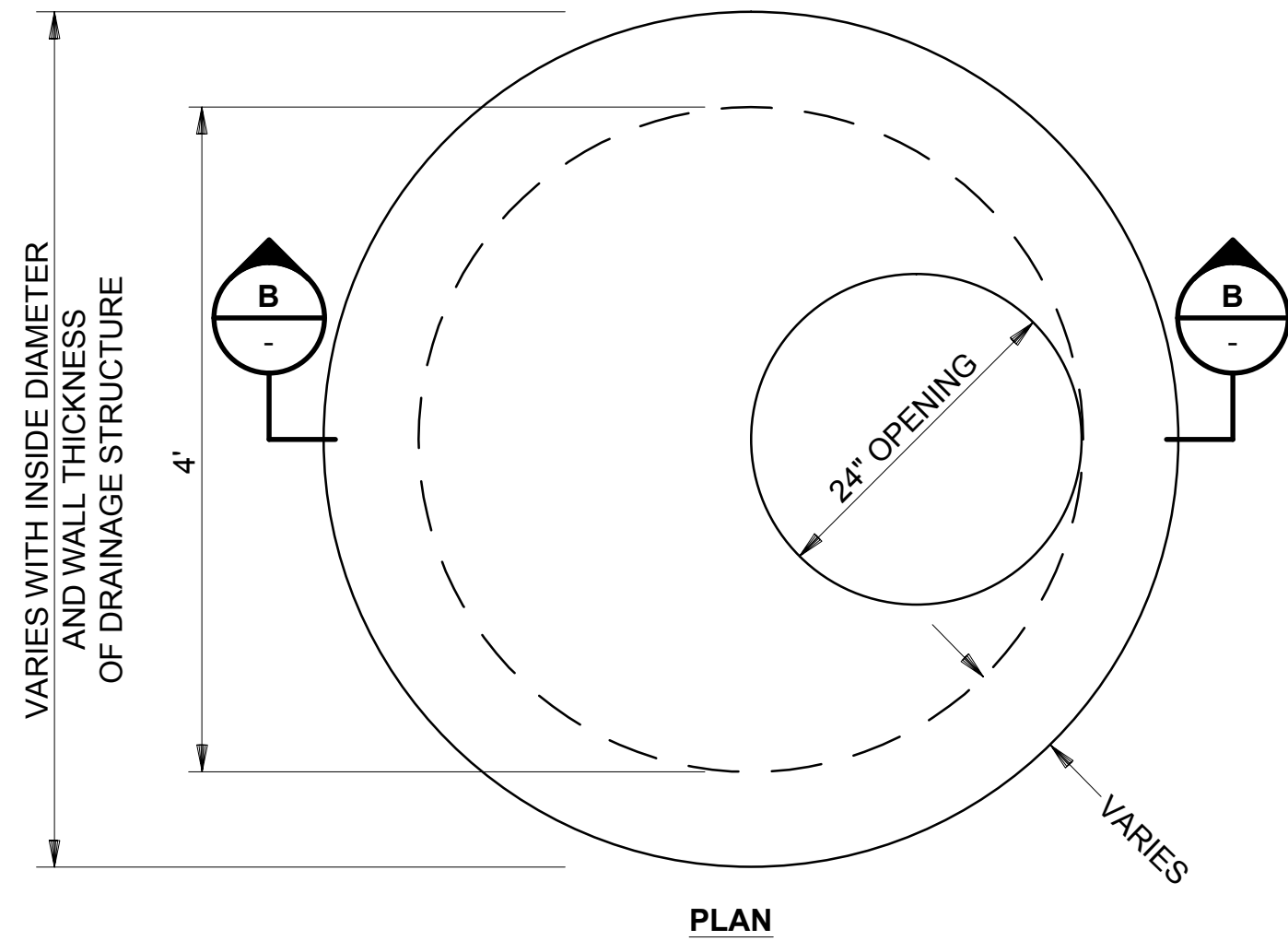
CORE HOLE SIZE		
PIPE SIZE	PLASTIC CORE HOLE DIA.	
INCHES	INCHES	FEET
12"	18	1.5



SOURCE: NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION  
STANDARD PLANS FOR ROAD CONSTRUCTION 2010.

PRECAST CONCRETE  
MANHOLE (MH-1)  
NOT TO SCALE

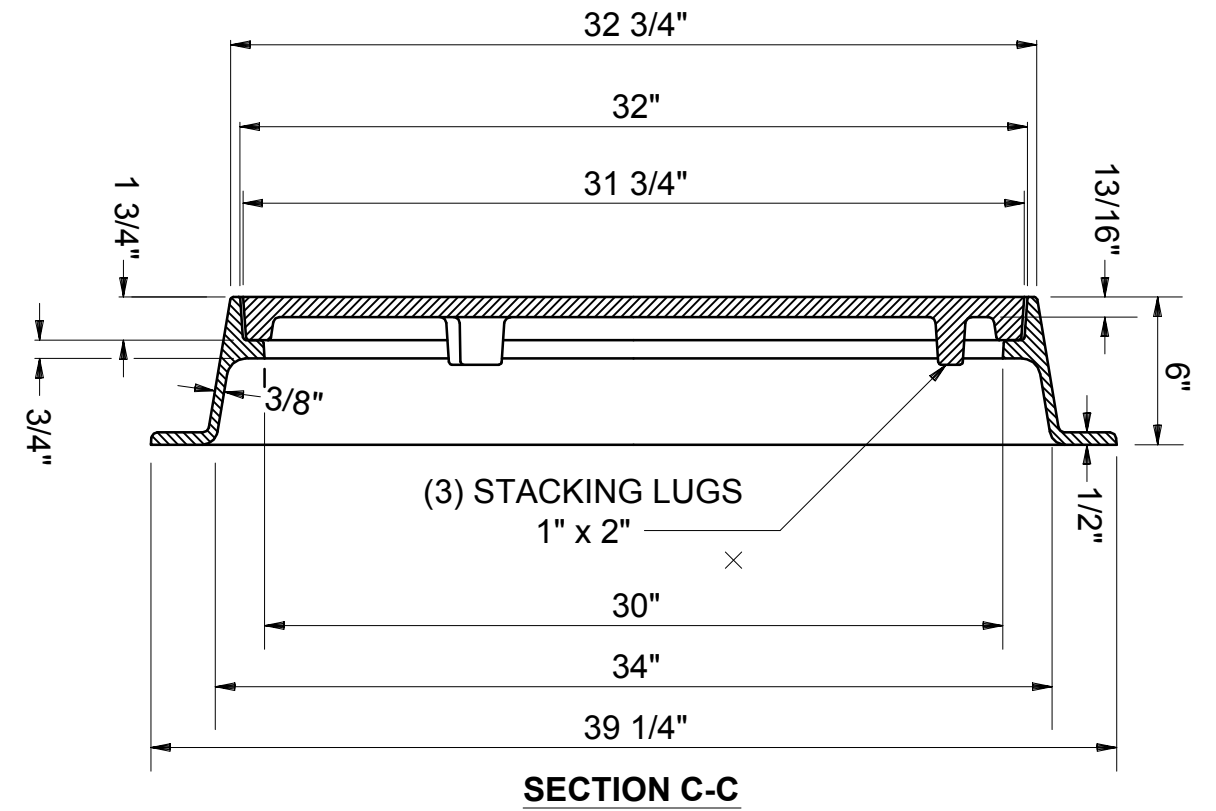
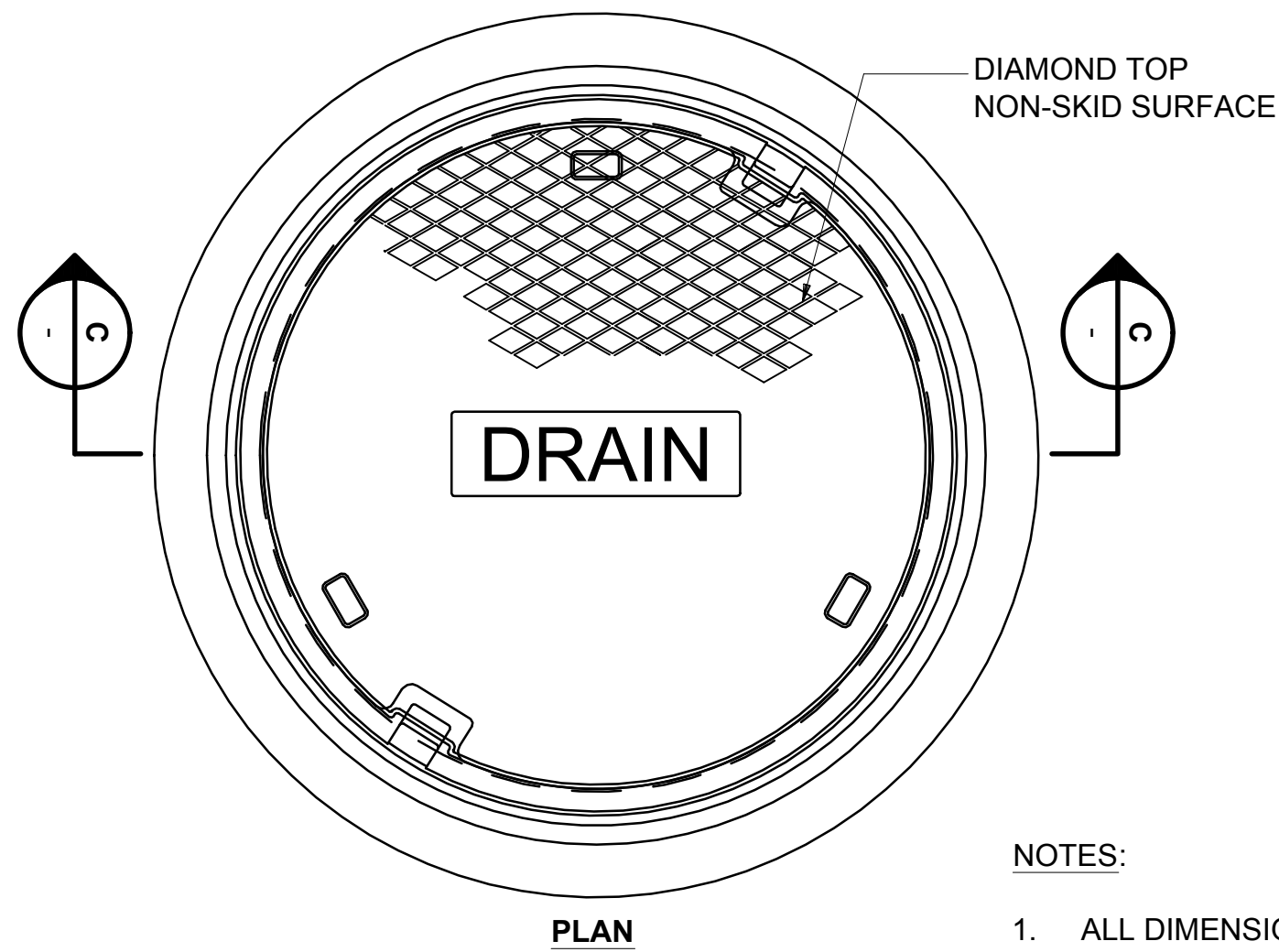
1  
C104



SECTION B-B  
FLAT SLAB TOP

GENERAL NOTES:

- FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
- CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
- PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
- OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
- PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
- ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

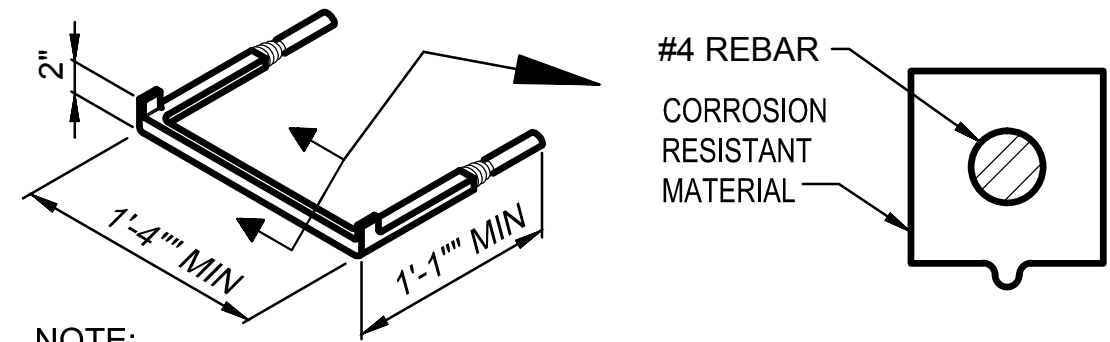


NOTES:

- ALL DIMENSIONS ARE NOMINAL.
- LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN THE CENTER OF THE COVER.

SOURCE: NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION  
STANDARD PLANS FOR ROAD CONSTRUCTION 2010.

MANHOLE FRAME AND COVER  
NOT TO SCALE



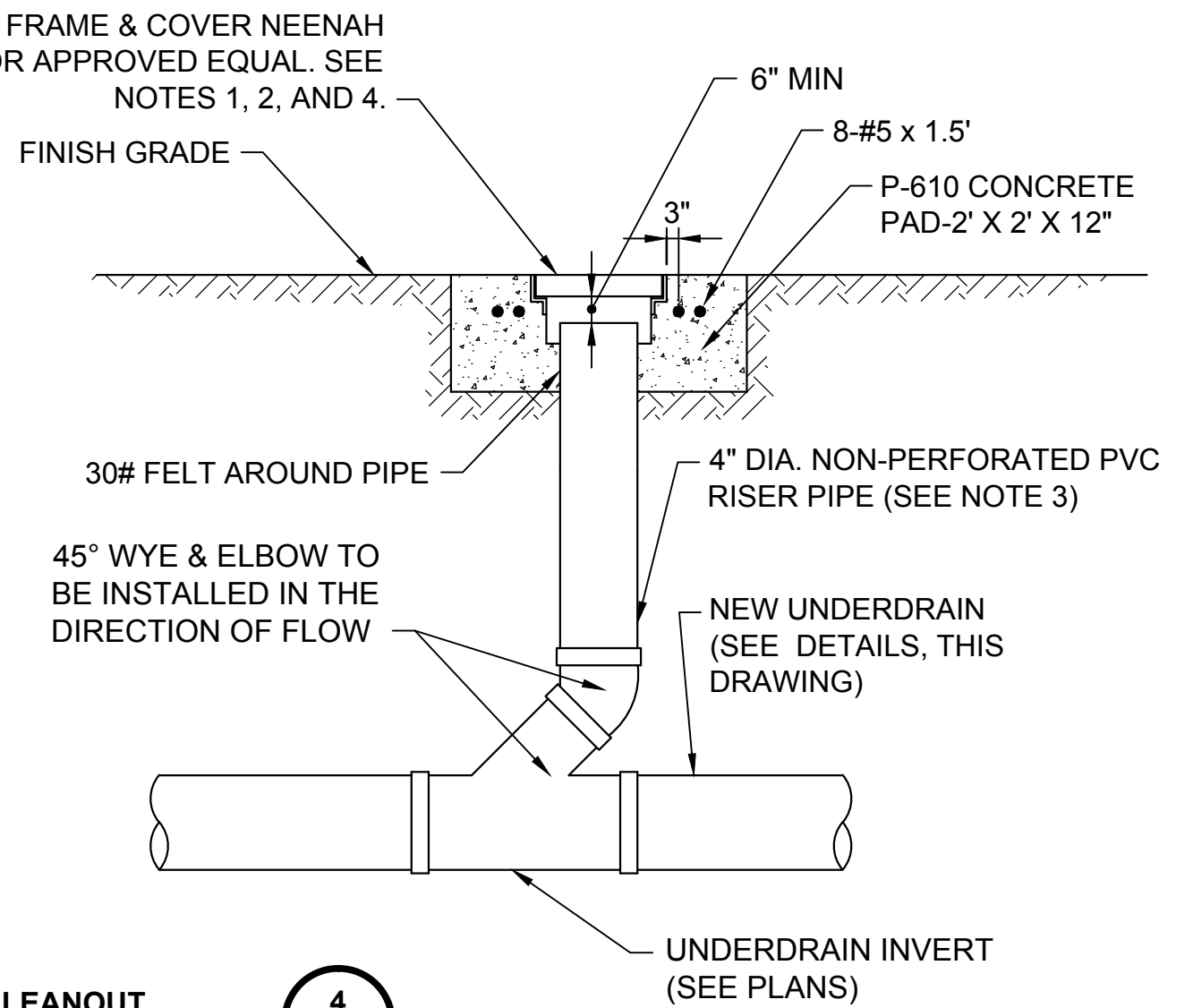
NOTE:  
No. 4 REBAR ENCASED IN CORROSION RESISTANT RUBBER OR OTHER MATERIAL APPROVED BY THE OWNER'S REPRESENTATIVE.

MANHOLE STEP  
NOT TO SCALE

NOTES

- CLEANOUT FRAME AND COVER SHALL BE DUCTILE IRON DESIGNED TO HS-20 LOADINGS.
- NO LOAD SHALL BE TRANSFERRED FROM FRAME AND COVER TO PVC UNDERDRAIN CLEANOUT OR COLLECTION STRUCTURE.
- STANDARD MANUFACTURER FITTINGS SHALL BE USED TO CONNECT VERTICAL UNDERDRAINS TO HDPE UNDERDRAINS AND OUTLET PIPES.
- ALL UNDERDRAIN CLEANOUT AND COLLECTION STRUCTURE COVERS SHALL BE BOLT DOWN TYPE.
- INVERTS FROM OPPOSITE DIRECTIONS MAY NOT BE AT THE SAME ELEVATIONS AS SHOWN IN DETAIL REFER TO THE PLANS FOR INVERT ELEVATIONS.

UNDERDRAIN CLEANOUT  
NOT TO SCALE

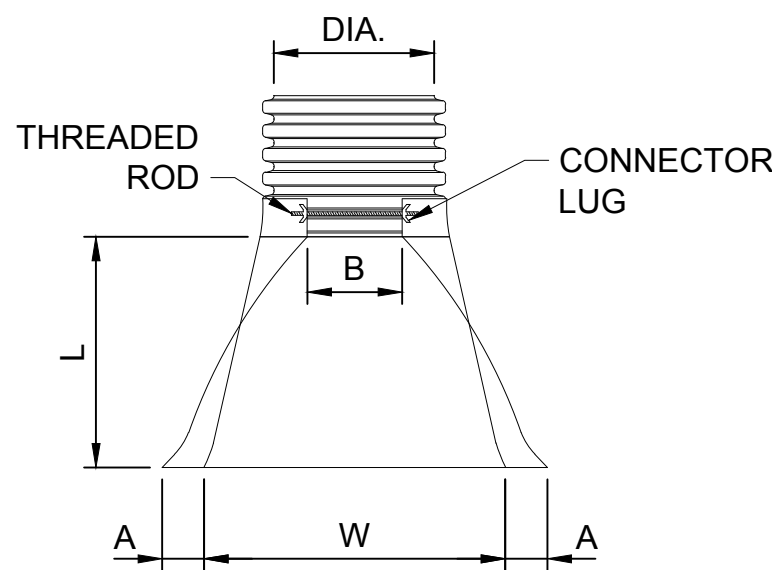


This document has been digitally sealed.  
Oct 5 2015

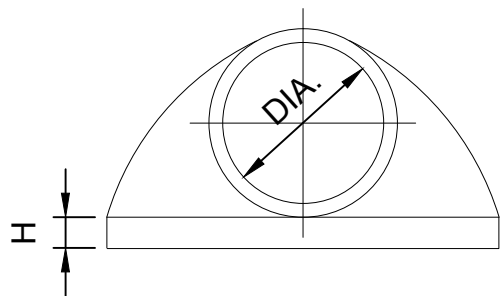
FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

DES: RLB	CHK: JUS	ISS: JUS	APPR: JUS
DRW: KRB	APR: BSS	REV: BSS	CHG: CHG
TOWN: FRANKLIN, NH	TRANSMISSION LINE:	DATE: 10/1/2015	SCALE: AS NOTED
MILE NO: SHEET 16 OF 19	REVISION: 11/16/2013	FRANKLIN STATION CONSTRUCTION DETAILS	

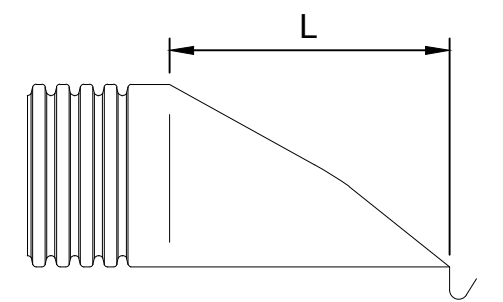




PLAN



ELEVATION



END VIEW

TYPICAL CROSS-SECTION

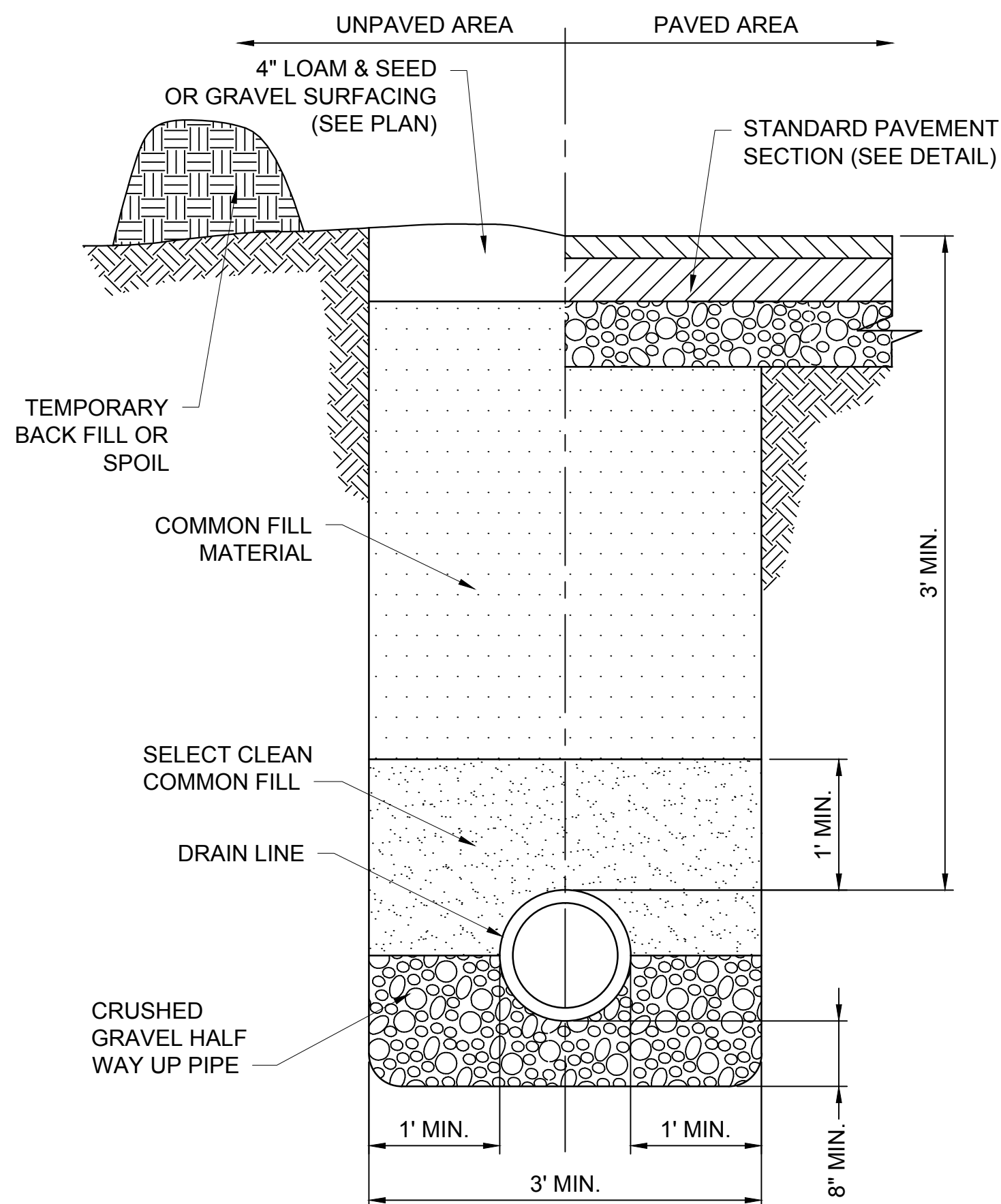
PIPE DIA.	A	B	H	L	W
12"	6.5"	10.0"	6.5"	25"	29"
18"	7.5"	15.0"	6.5"	32"	35"

NOTES:

- FLARED END SECTION SHALL BE HIGH DENSITY POLYETHYLENE MEETING ASTM D3350 MINIMUM CELL CLASSIFICATION 213320C.
- METAL THREADED FASTENING ROD SHALL BE STAINLESS STEEL.
- INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS

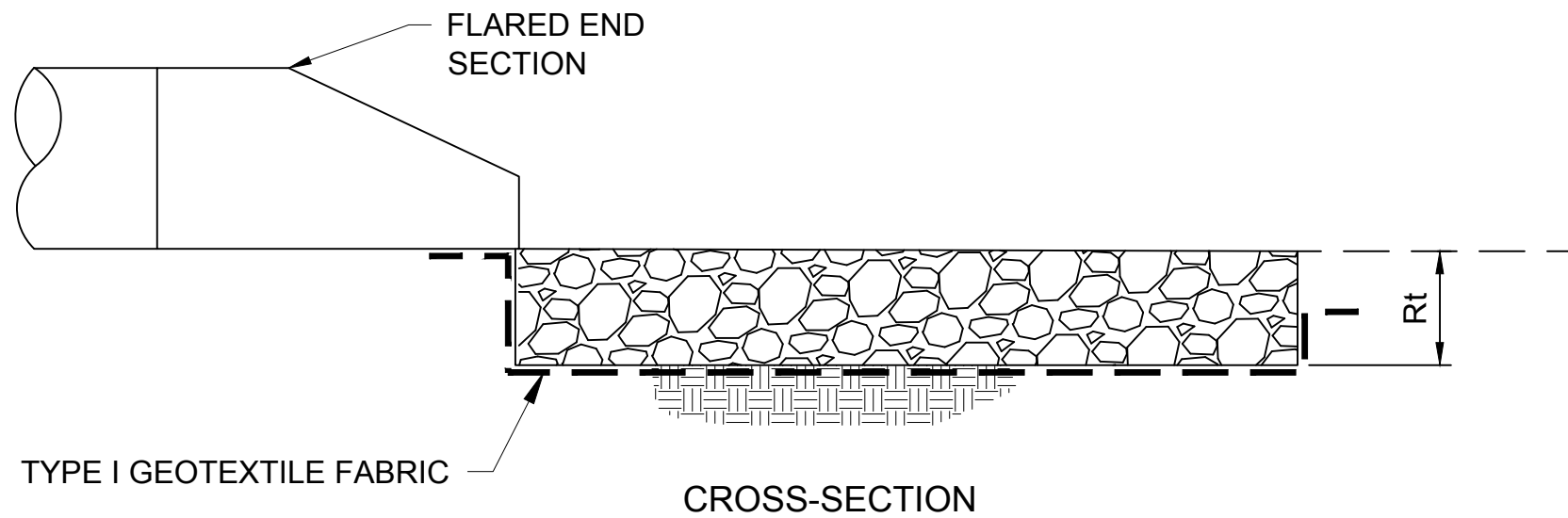
END SECTION FOR HDPE PIPE  
NOT TO SCALE

1  
C104

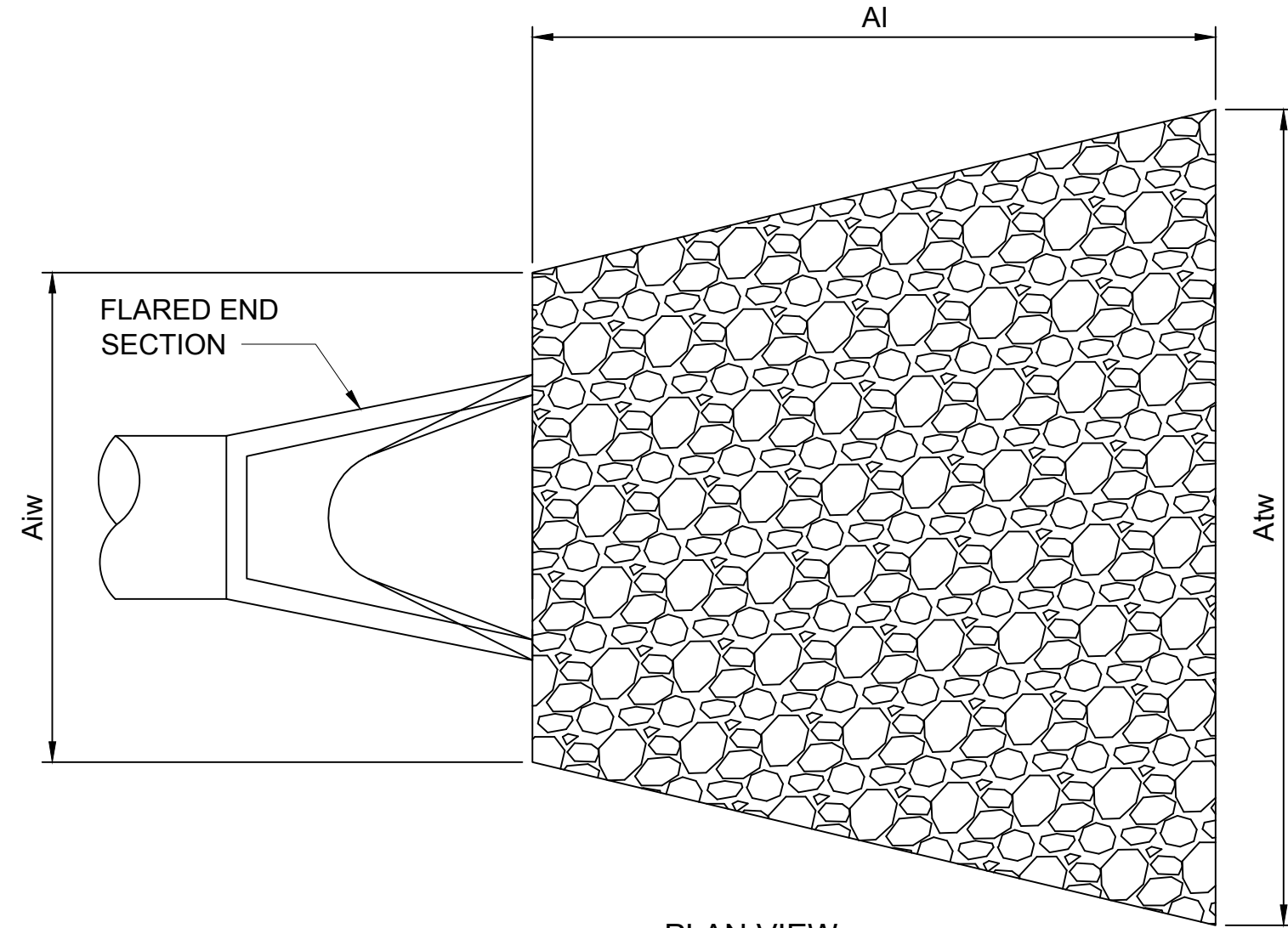


PIPE TRENCH  
NOT TO SCALE

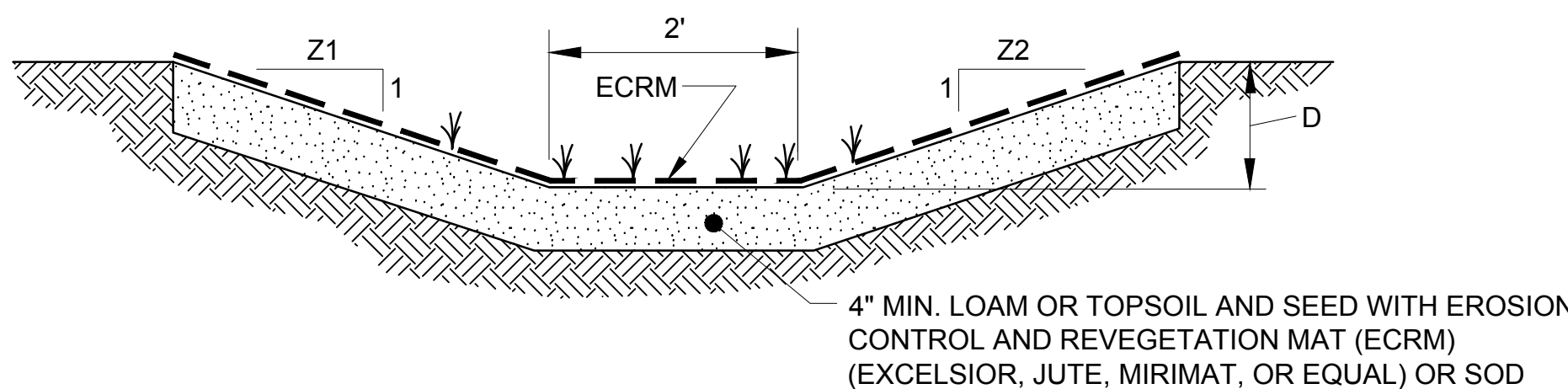
3  
C104



CROSS-SECTION



PLAN VIEW



NOTES

- CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL FINISH SURFACE GRADE.
- INSTALL EROSION CONTROL BLANKET LINING TO TOP OF CHANNEL.
- INSTALL LINING PER MANUFACTURES SPECIFICATIONS AND RECOMMENDATIONS. SEED SLOPES PRIOR TO INSTALLATION PER MANUFACTURER RECOMMENDATIONS.
- VEGETATED CHANNELS SHALL BE CONSTRUCTED FREE OF ROCKS, TREE ROOTS, STUMPS OR OTHER PROJECTIONS THAT WILL IMPEDE NORMAL CHANNEL FLOW AND/OR PREVENT GOOD LINING TO SOIL CONTACT. THE CHANNEL SHALL BE INITIALLY OVER-EXCAVATED TO ALLOW FOR THE PLACEMENT OF TOPSOIL.
- ALL CHANNELS MUST BE KEPT FREE OF OBSTRUCTIONS SUCH AS FILL GROUND, FALLEN LEAVES AND WOODY DEBRIS, ACCUMULATED SEDIMENT, AND CONSTRUCTION MATERIALS/WASTES. CHANNELS SHOULD BE KEPT MOWED AND/OR FREE OF ALL WEEDY, BRUSHY OR WOODY GROWTH. ANY UNDERGROUND UTILITIES RUNNING ACROSS/THROUGH THE CHANNEL(S) SHALL BE IMMEDIATELY BACKFILLED AND THE CHANNEL(S) REPAIRED AND STABILIZED PER THE CHANNEL CROSS-SECTION DETAIL. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

CHANNEL	LENGTH (FT.)	D	SIDE SLOPE		LINING	STAPLE PATTERN	SLOPE (%)
			Z1	Z2			
SW-1	1,020	2	3	3	SC-250	E	0.50 - 0.70
SW-2	122	2	3	3	SC-250	E	1.63
SW-3	263	3	3	3	SC-250	E	0.50
SW-4	245	3	3	3	SC-250	E	0.50 - 4.90
SW-5	439	2	3	3	SC-250	E	7.75 - 8.25
SW-6	680	2	3	3	SC-250	E	1.75 - 9.67

GRASS SWALE CROSS SECTION  
NOT TO SCALE

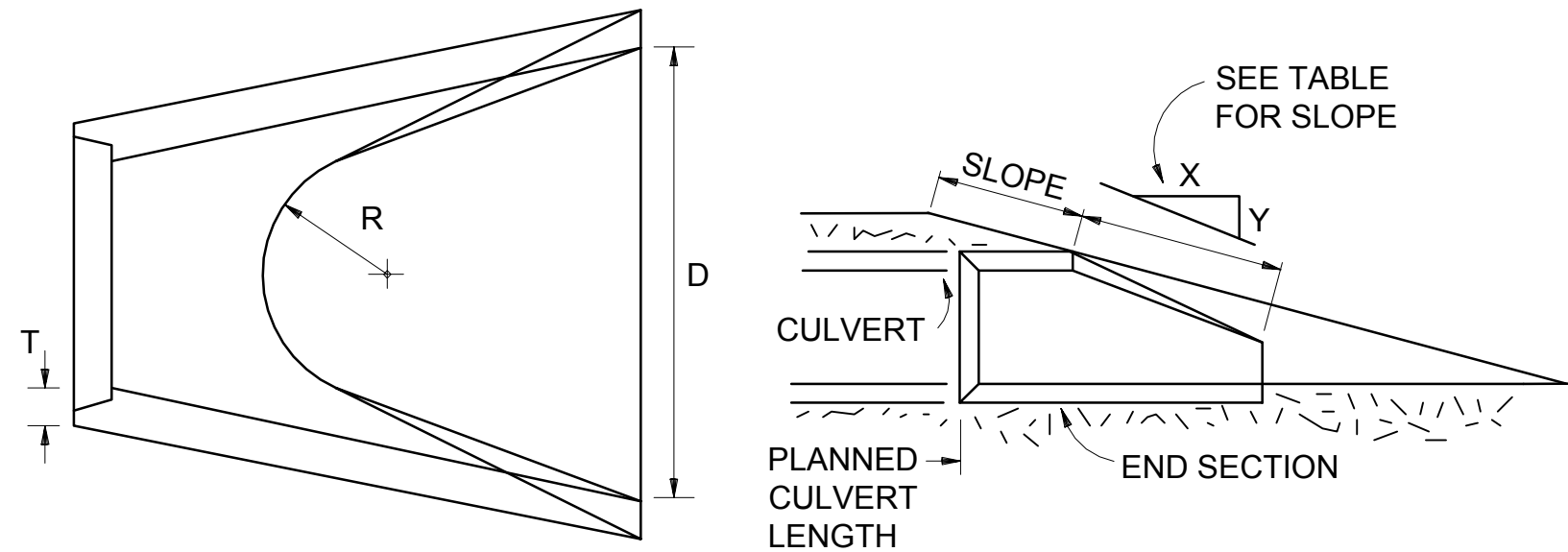
4  
C104

NOTES:

- THE SUBGRADE FOR GEOTEXTILE FABRIC AND RIP-RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN.
- THE ROCK USED FOR RIP-RAP SHALL CONFORM TO NHDOT CLASS C STONE.
- GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP-RAP. DAMAGED AREAS IN THE FABRIC SHALL BE PREPARED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
- STONE FOR THE RIP-RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

OUTLET PROTECTION  
NOT TO SCALE

2  
C104



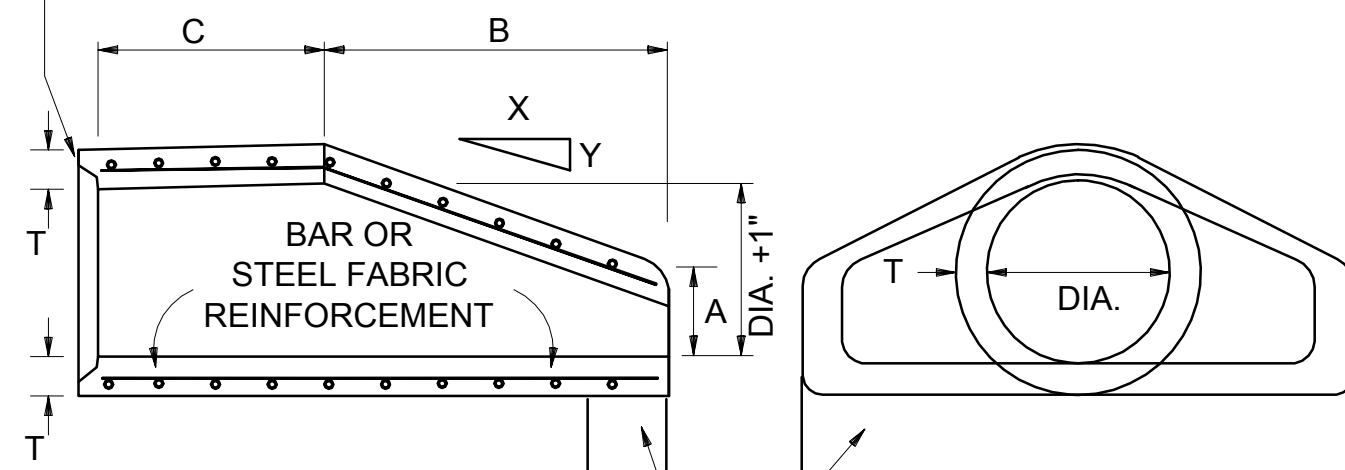
PLAN

SLOPE DETAIL

NOTES:

- DESIGN OF END SECTION SHALL CONFORM TO STANDARD REINFORCED CONCRETE PIPE.
- CUT OFF WALL TO BE POURED IN FIELD, IF NECESSARY, AS DIRECTED BY THE ENGINEER.
- PAYMENT FOR THE CUT OFF WALL WILL BE MADE UNDER THE APPROPRIATE CONTRACT ITEMS.
- PROVIDE ANIMAL BARRIER ON OUTLET. BARRIER SHALL NOT RESTRICT STORMWATER FLOW.

GROOVED END ON OUTLET END SECTION  
TONGUE END ON INLET END SECTION  
(OR END SECTION TO FIT PIPE USED)



LONGITUDINAL SECTION

END VIEW

OPTIONAL CONCRETE  
CUTOFF WALL - WHEN  
ORDERED

SOURCE: NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION  
STANDARD PLANS FOR ROAD CONSTRUCTION 2010.

ITEM NO.	PIPE DIA.	APPROX. SLOPE X TO Y	A	B	C	D	R	T
603.30112	12"	3 TO 1	4"	24"	48 7/8"	24"	9"	2"
603.30130	30"	3 TO 1	12"	54"	19 3/4"	60"	15"	3 1/2"

END SECTION FOR RCP PIPE  
NOT TO SCALE

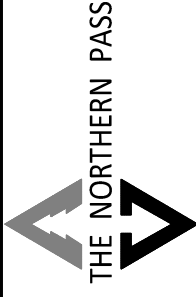
5  
C104



This document has been digitally sealed.  
Oct 5 2015

FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

NO.	DATE	REVISION	CHG	APPROV.
1	10/17/15	ISSUED FOR PERMITTING	KRB	JUS
			BSS	
			DRWN	
			CHKD	
			APPRV.	



Transmission  
Business

#

FRANKLIN STATION  
CONSTRUCTION DETAILS

TOWN: FRANKLIN, NH

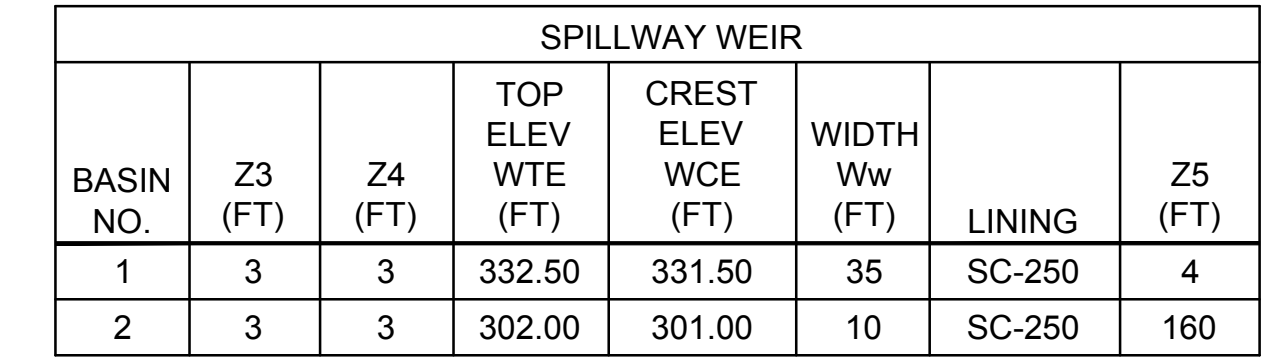
TRANSMISSION LINE:

MILE NO: 17

SHEET 17 OF 19

NPTT517-C506

REVISION: 11/16/2013



A cross-section diagram of a road construction layer. The diagram shows three distinct layers. The top layer is a thin, solid horizontal line. Below it is a thicker layer filled with a pattern of small circles and dots, representing crushed basalt. The bottom layer is the thickest and is filled with a hatched pattern. Labels with arrows point to each layer: 'FINISHED GRADE' points to the top line, '4" OF CRUSHED BASALT (ANGULAR STONE)' points to the middle layer, and 'SUITABLE SUBGRADE' points to the bottom layer.

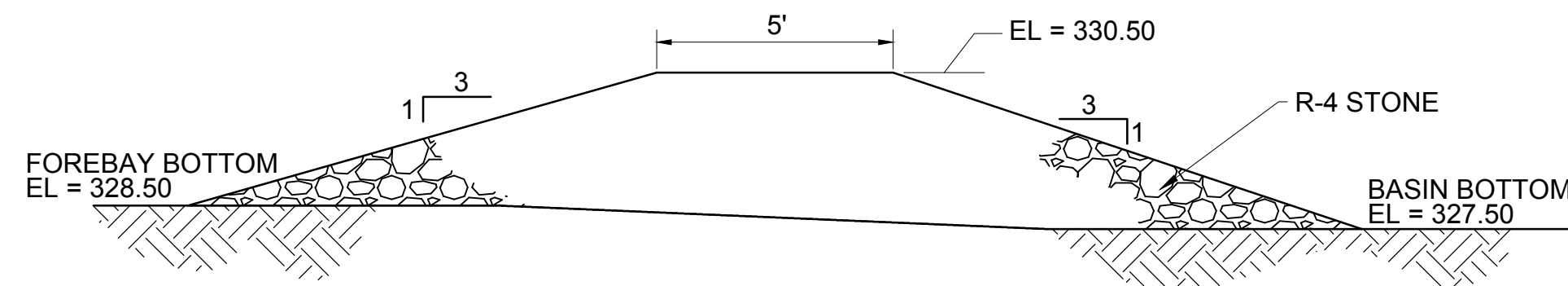
FINISHED GRADE

4" OF CRUSHED BASALT (ANGULAR STONE)

SUITABLE SUBGRADE

STATION AND ACCESS ROAD SURFACE STONE GRADATION	
SIEVE	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVE
1-1/2 INCH	100
1 INCH	93-100
1/2 INCH	27-58
1/4 INCH	0-8

- STATION AND ACCESS ROAD  
GRAVEL SURFACE SECTION  
NOT TO SCALE

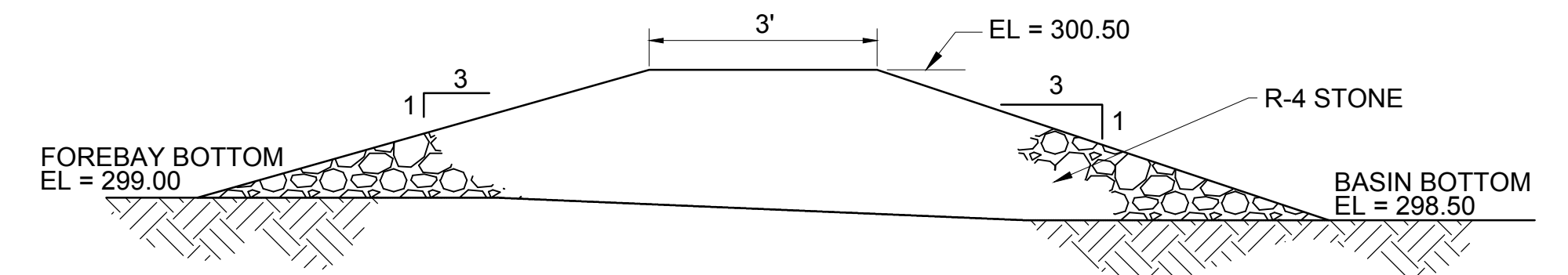


PAVEMENT AGGREGATE BASE STONE GRADATION	
SIEVE	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVE
2-1/2 INCH	100
2 INCH	95-100
3/4 INCH	50-75
1/4 INCH	25-45
NO. 40	5-20
NO. 100	2-12

BITUMINOUS CONCRETE  
PAVEMENT SECTION

NOT TO SCALE


5  
C100



**UNDERDRAIN**  
NOT TO SCALE



NO.	ISSUED FOR PERMITTING	DATE	DRAWN	BSS	JJS
	REVISION			CHKD	APPRV.
*				*	*
*				*	*
*				*	*
*				*	*
*				*	*
1		10/7/15	KRB	BSS	JJS

Transmission  
Business

#
---

DATE: 10/1/2015

FRANKLIN STATE  
CONSTRUCTION DE  
SCALE: AS NOTED

ES: RLR	CHK:JJS
RW: KRB	APR: BSS

OWN:  
FRANKLIN, NH

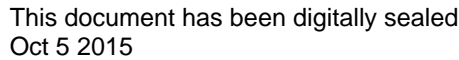
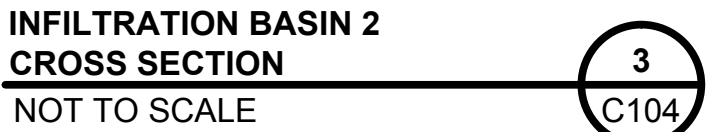
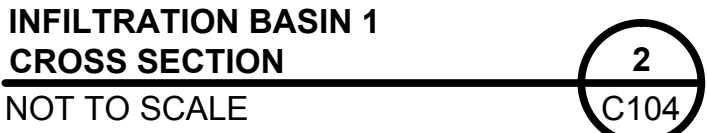
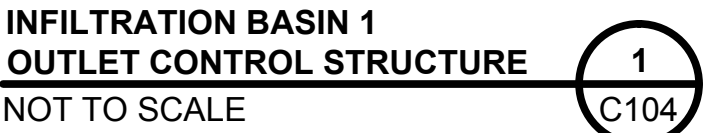
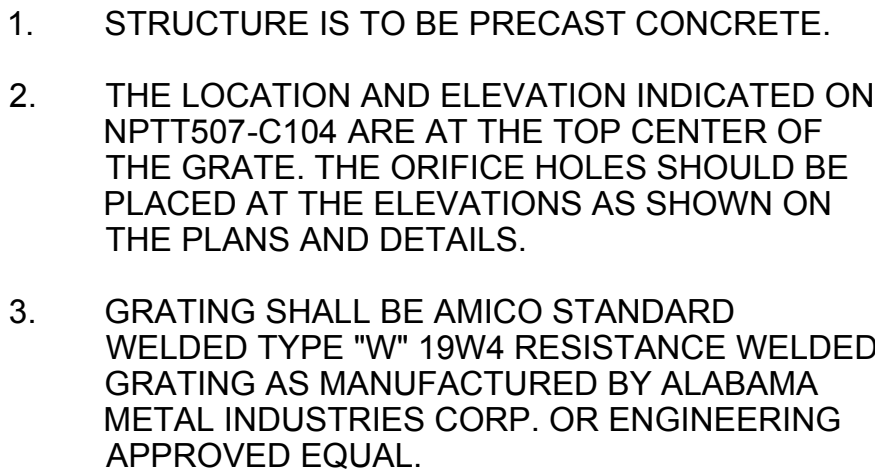
TRANSMISSION LINE:

FILE NO: \_\_\_\_\_


SHEET 18 OF 19

NPTT518-C507

0001031: 44 140 10043



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

[illegible]Transmission  
Business

	#
--	---

FRANKLIN STATION  
CONSTRUCTION DETAILS

DES: RLR	CHK: JJS
DRW: KRB	APR: BSS
TOWN: FRANKLIN, NH	
TRANSMISSION LINE:	
MILE NO:	
SHEET 19 OF 19	
NPTT519-C508	

REVISION: 11/10/2013

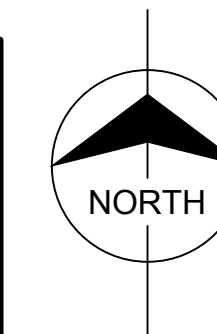
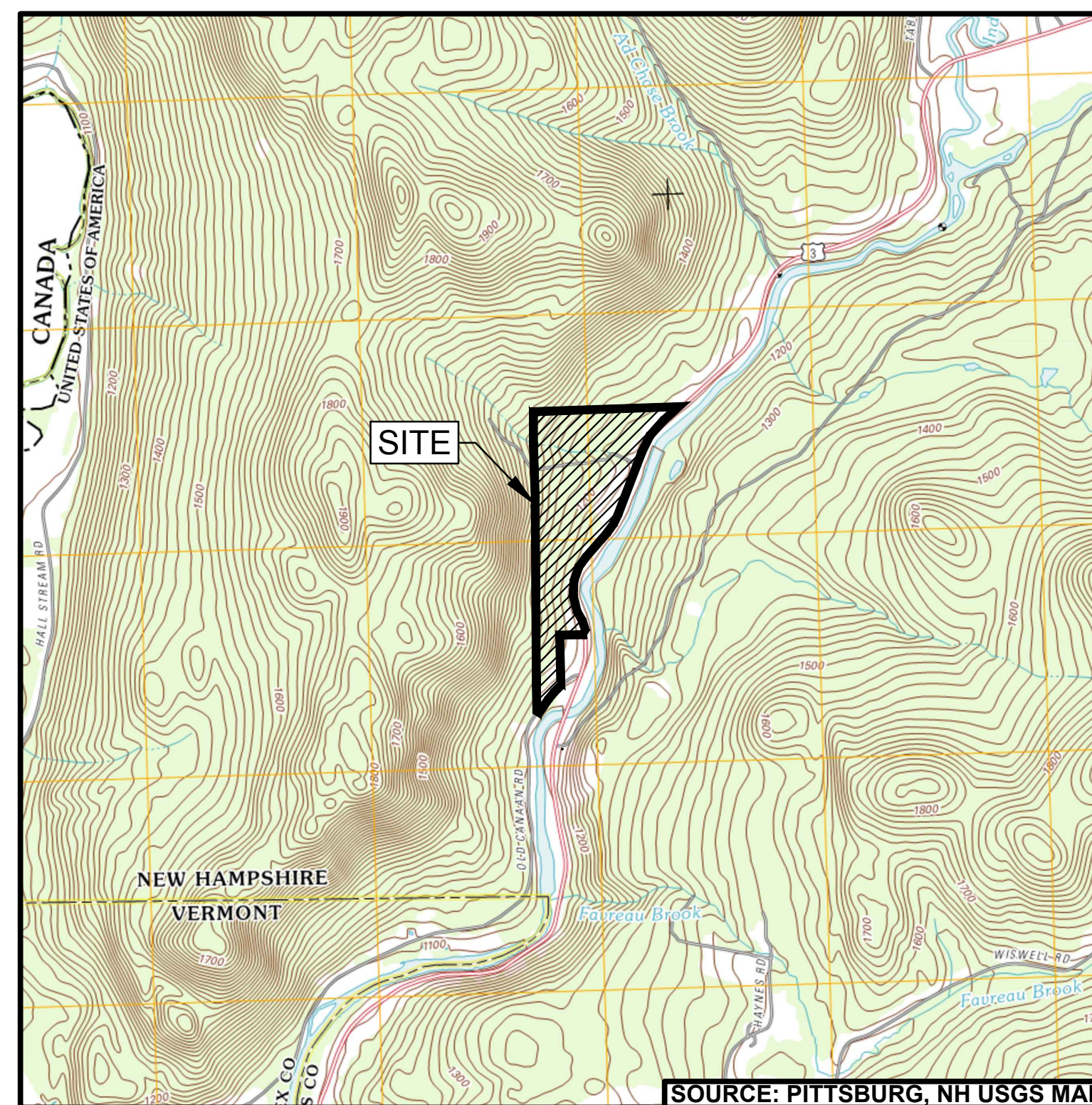
**Attachment 6.1.7**  
**NPT Transition Station Site Development Plan**



**OLD CANAAN ROAD, PITTSBURG, NH 03592**



THE NORTHERN PASS



### VICINITY MAP

0 2000' 4000'

SCALE IN FEET

**OCTOBER 1, 2015**

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

DRAWING INDEX	
DRAWING	DESCRIPTION
CVR	COVER SHEET
G-001	GENERAL NOTES AND LEGEND
C-100	SITE LAYOUT PLAN
C-101	GRADING PLAN
C-102	EROSION AND SEDIMENTATION CONTROL PLAN
C-103	PLANTING PLAN
C-104	STORMWATER SYSTEM PLAN
C-200	ACCESS ROAD PROFILE
C-300	SITE CROSS SECTIONS
C-500	EROSION AND SEDIMENTATION CONTROL NOTES
C-501	EROSION AND SEDIMENTATION CONTROL DETAILS
C-502	EROSION AND SEDIMENTATION CONTROL DETAILS
C-503	CONSTRUCTION DETAILS
C-504	CONSTRUCTION DETAILS
C-505	CONSTRUCTION DETAILS
C-506	CONSTRUCTION DETAILS
C-507	CONSTRUCTION DETAILS
C-508	CONSTRUCTION DETAILS
C-509	CONSTRUCTION DETAILS



NEW HAMPSHIRE STATE LAW REQUIRES HOMEOWNERS AND CONTRACTORS TO CONTACT DIG SAFE, BY DIALING 8-1-1 AT LEAST THREE BUSINESS DAYS BEFORE BEGINNING ANY DIGGING OR EXCAVATION PROJECT. WHEN DIG SAFE RECEIVES A CALL, THE HOMEOWNER OR CONTRACTOR MUST WAIT 72 BUSINESS HOURS. DURING THIS TIME, UTILITY REPRESENTATIVES RESPOND TO MARK THEIR LINES WITHIN YOUR PRE-MARKED AREA. ALL INFORMATION REGARDING DIG SAFE RULES AND REGULATIONS CAN ALSO BE FOUND AT [www.digsafe.com](http://www.digsafe.com).



BACKGROUND NOTES:

1. BACKGROUND INFORMATION TAKEN FROM "EXISTING CONDITIONS PLAN" FOR TRANSITION STATION #1, OLD CANAAN ROAD, PITTSBURG, NH. PREPARED BY CHA, CONSULTING, INC. DATED AUGUST 26, 2014. LAST REVISED OCTOBER 14, 2014. SURFACE OBSERVABLE INFORMATION SHOWN HEREON IS THE RESULT OF AN ON-THE-GROUND SURVEY PERFORMED BY CHA, CONSULTING INC. ON OR BETWEEN OCTOBER 16, 2013 AND AUGUST 22, 2014. WETLAND FLAGS SHOWN HEREON ARE BASED ON FIELD LOCATIONS BY CHA, CONSULTING, INC. IN NOVEMBER 2013. LOCATIONS PROVIDED BY NORMANDEAU, WETLANDS WERE DELINEATED BY NORMANDEAU IN 2013.
2. ELEVATIONS, CONTOURS AND BENCHMARKS ARE BASED ON NAVD 1988 VERTICAL DATUM.
3. HORIZONTAL LOCATIONS ARE BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM NAD 83.
4. THERE ARE DELINEATED WETLANDS AND WATERCOURSES LOCATED ONSITE. REFER TO WETLANDS, RIVERS, STREAMS AND VERNAL POOLS DELINEATION REPORT BY NORMANDEAU ENVIRONMENTAL CONSULTANTS DATED NOVEMBER 22, 2013.
5. THE SITE IS LOCATED WITHIN ZONE 'X' FLOOD ZONE AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NUMBER 33007C0215D PANEL 215 OF 1300, COOS COUNTY, NH, DATED FEBRUARY 20, 2013.
6. PROPERTY AREA = 93±-AC, NPDES/LIMIT OF DISTURBANCE (LOD) AREA TOTAL = 3.03-ACRES (OF WHICH 2.09-ACRES IS ON-SITE, 0.88-ACRES IS OFF-SITE IN EVERSOURCE RIGHT-OF-WAY, AND 0.06-ACRES IS OFFSITE IN OLD CANAAN ROAD).

GENERAL NOTES:

1. GENERAL NOTES SHALL APPLY TO THE SITE DEVELOPMENT PLANS THROUGHOUT. REFER TO INDIVIDUAL SHEETS FOR SHEET SPECIFIC NOTES.
2. CONTRACTOR(S) TO TAKE AND VERIFY ALL DIMENSIONS AND CONDITIONS OF THE WORK AND BE RESPONSIBLE FOR COORDINATION OF SAME. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK.
3. ENGINEER ASSUMES NO RESPONSIBILITY AS TO THE CONTENT OF THE EXISTING CONDITIONS PLAN INCLUDING BUT NOT LIMITED TO LOCATION, SIZE, AND ELEVATIONS OF UTILITIES AND STRUCTURES NOT VISIBLE AND WHERE TAKEN FROM PLANS BY OTHERS.
4. EXISTING CONDITIONS SURVEY INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY COMPANY AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "DIGSAFE" PRIOR TO COMMENCEMENT OF WORK AT "811" AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
5. THE CONTRACTOR SHALL VERIFY ALL EXISTING SITE AND BUILDING CONDITIONS IN THE FIELD AND CONTACT THE OWNER AND ENGINEER IF THERE ARE ANY QUESTIONS AND/OR CONFLICTS REGARDING THE SITE DEVELOPMENT PLANS AND/OR EXISTING FIELD CONDITIONS PRIOR TO CONSTRUCTION. REFER TO THE PROJECT SPECIFICATIONS MANUAL FOR ADDITIONAL INFORMATION. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED, EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, INFORM THE OWNER AND CONSULT THE CIVIL ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.
6. ALL CONSTRUCTION SHALL COMPLY WITH PROJECT SPECIFICATION MANUAL, EVERSOURCE STANDARDS AND SPECIFICATIONS. AND THESE PLANS. IF SPECIFICATIONS ARE IN CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL APPLY. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE OSHA, FEDERAL, STATE AND LOCAL REGULATIONS. INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

a. NEW HAMPSHIRE STORMWATER MANUAL, VOLUMES 1, 2 & 3, DECEMBER 2008.

b. NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION MANUAL ON DRAINAGE DESIGN FOR HIGHWAYS, REVISION DATE APRIL 1998.

c. NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD PLANS AND SPECIFICATIONS (2010).

d. EVERSOURCE BEST MANAGEMENT PRACTICES MANUAL (TO BE FURTHER DEVELOPED).

e. EVERSOURCE STANDARD SPECIFICATIONS (10-24-2014).
7. DO NOT INTERRUPT EXISTING SERVICING UTILITIES AND FACILITIES OCCUPIED AND USED BY THE OWNER OR OTHERS DURING OCCUPIED HOURS EXCEPT WHEN SUCH INTERRUPTIONS HAVE BEEN AUTHORIZED IN WRITING BY THE OWNER, THE LOCAL MUNICIPALITIES, THE UTILITY PROVIDER, AND ANY APPLICABLE REGULATORY AGENCY. INTERRUPTIONS SHALL ONLY OCCUR AFTER ACCEPTABLE TEMPORARY SERVICE HAS BEEN

PROVIDED.

8. THE CONTRACTOR SHALL PROVIDE RECORD AS-BUILT DRAWINGS OF ALL CONSTRUCTION IN ACCORDANCE WITH OWNER AND REGULATORY AGENCY REQUIREMENTS (INCLUDING UNDERGROUND UTILITIES) TO THE OWNER AT THE END OF CONSTRUCTION.
9. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING PLANS. IN CASE OF CONFLICT BETWEEN PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
10. IF A CONFLICT ARISES BETWEEN PLANS, SPECIFICATIONS, AND/OR DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
11. THE CONTRACTOR SHALL ABIDE BY ALL OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS IN ALL INSTANCES AND WHEN OPERATING CRANES, BOOMS, HOISTS, ETC. IN CLOSE PROXIMITY TO OVERHEAD ELECTRIC LINES. IF CONTRACTOR MUST OPERATE EQUIPMENT CLOSE TO ELECTRIC LINES, CONTACT POWER COMPANY TO MAKE ARRANGEMENT FOR PROPER SAFEGUARDS. ANY UTILITY COMPANY FEES SHALL BE PAID FOR BY THE CONTRACTOR.
12. THE ENGINEER IS NOT RESPONSIBLE FOR SITE SAFETY MEASURES TO BE EMPLOYED DURING CONSTRUCTION. THE ENGINEER HAS NO CONTRACTUAL DUTY TO CONTROL THE SAFEST METHODS OR MEANS OF THE WORK, JOB SITE RESPONSIBILITIES, SUPERVISION OR TO SUPERVISE SAFETY AND DOES NOT VOLUNTARILY ASSUME ANY SUCH DUTY OR RESPONSIBILITY.
13. ALL NOTES AND DIMENSIONS DESIGNATED "TYPICAL" OR "(TYP.," APPLY TO ALL LIKE OR SIMILAR CONDITIONS THROUGHOUT THE PROJECT.
14. ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF SUBMITTED, REVIEWED, AND APPROVED BY THE OWNER, ENGINEER, AND APPROPRIATE REGULATORY AGENCY PRIOR TO CONSTRUCTION.
15. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL PRODUCTS AND MATERIALS PER PLANS AND SPECIFICATIONS TO THE OWNER AND ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDERING, FABRICATION, OR DELIVERY TO THE SITE. FOR EACH SUBMITTAL, ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.
16. THE CONTRACTOR SHALL RESTORE ANY DRAINAGE STRUCTURE, PIPE, UTILITY, PAVEMENT, CURBS, SIDEWALKS, LANDSCAPED AREAS OR SIGNAGE AND OTHER INCIDENTAL DISTURBANCES AND DAMAGES DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER, AS APPROVED BY THE OWNER, ENGINEER AND REGULATORY AGENCY.
17. THE CONTRACTOR SHALL COMPLY WITH 29 CFR PART 1926 FOR EXCAVATION TRENCHING AND TRENCH PROTECTION REQUIREMENTS.
18. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
19. DEMOLITION OF EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO BUILDINGS, STRUCTURES, PAVEMENT, WELLS, SEPTIC, SANITARY SEWER, FENCES, TREES, ETC. SHALL BE PER THE DIRECTION OF EVERSOURCE AND SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
20. PERMANENT BENCHMARKS SHALL BE INSTALLED UPON COMPLETION OF CLEARING.
21. ELECTRICAL SUBSTATION COMPONENTS, UNDERGROUND TRANSMISSION LINES, OVER HEAD TRANSMISSION LINES AND THEIR FOUNDATIONS DEPICTED HEREIN ARE FOR REFERENCE ONLY.
22. ANY CLEARED AND EXCAVATED MATERIALS WHICH ARE SUSPECTED OF BEING ENVIRONMENTALLY POLLUTED, CONTAMINATED, OR IMPACTED SHALL BE STOCKPILED ON-SITE ON TOP OF POLYETHYLENE SHEETING AND COVERED WITH POLYETHYLENE SHEETING. THE OWNER AND ENGINEER SHALL BE IMMEDIATELY INFORMED UPON ENCOUNTERING THIS MATERIAL. STORAGE, TESTING, TREATMENT, REMOVAL, AND DISPOSAL OF ENVIRONMENTALLY POLLUTED, CONTAMINATED, OR IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
23. CONTRACTOR SHALL TAKE PRECAUTIONS TO ENSURE NO DISTURBANCE BEYOND THE DEPICTED LIMIT OF DISTURBANCE.
24. THE CONTRACTOR SHALL ESTABLISH BEST MANAGEMENT PRACTICES FOR BLASTING OF BEDROCK IN ACCORDANCE WITH THE NHDES PUBLICATION WD-10-12. ROCK BLASTING AND WATER QUALITY MEASURES THAT CAN BE TAKEN TO PROTECT WATER QUALITY AND MITIGATE IMPACTS, 2010. IF THE BLAST ROCK VOLUME GENERATED IS GREATER THAN 5,000 CUBIC YARDS, THE CONTRACTOR SHALL DEVELOP A GROUNDWATER MONITORING PROGRAM FOR SUBMISSION TO THE OWNER AND ENGINEER. BLASTING SHALL NOT COMMENCE UNTIL THESE REQUIREMENTS ARE APPROVED BY THE NHDES, AS REQUIRED.
25. PROPOSED STORM DRAINAGE SYSTEM SHALL BE HS-20 RATED.

EXISTING LEGEND

	PROPERTY LINE
	ADJOINING PROPERTY LINE
	RIGHT OF WAY LINE
	EASEMENT LINE
	MAJOR CONTOUR
	MINOR CONTOUR
	TREELINE
	OVER HEAD WIRE
	STOCKADE FENCE
	CHAIN LINK FENCE
	WETLANDS LINE
	STREAM OR WATERWAY
	STONEWALL
	WF600-9 WETLAND FLAG
	IP IRON PIPE
	CB/DH CONCRETE BOUND WITH DRILL HOLE
	SB/DH STONE BOUND WITH DRILL HOLE
	SURVEY CONTROL POINT
	UTILITY POLE
	WETLANDS

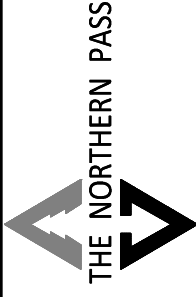
LIST OF ABBREVIATIONS

ACP	ASBESTOS CEMENT PIPE	LBS	POUNDS
APT	ANGLE POINT	LF	LINEAR FOOT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	LG	WALL HIGH GRADE
BIT	BITUMINOUS CONCRETE	LOD	LIMIT OF DISTURBANCE
BLDG	BUILDING	MAX	MAXIMUM
BM	BENCH MARK	MFR	MANUFACTURER
BW	BOTTOM OF WALL	MH	MANHOLE
CB	CATCH BASIN	MIN	MINIMUM
CATV	CABLE TELEVISION	N	NORTHING
CI	CAST IRON PIPE	NO	NUMBER
CIC	CAST IRON COVER	NOM	NOMINAL
CL	CENTERLINE	OC	ON CENTER
CL	CENTERLINE	OCS	OUTLET CONTROL STRUCTURE
CLF	CHAIN LINK FENCE	OD	OUTSIDE DIMENSION
CLR	CLEAR	PC	POINT OF CURVATURE
CMP	CORRUGATED METAL PIPE	POB	POINT OF BEGINNING
CO	CLEANOUT	PIV	POST INDICATOR VALVE
CONC	CONCRETE	PRC	POINT OF REVERSE CURVATURE
COR	CORNER	PSI	POUNDS PER SQUARE INCH
CTRS	CENTERS	PT	POINT OF TANGENCY
DIA	DIAMETER	PVC	POLYVINYL CHLORIDE PIPE
DMH	DRAINAGE MANHOLE	R	RADIUS
E	EASTING	RAD	RADIUS
EL	ELEVATION	RCP	REINFORCED CONCRETE PIPE
EMH	ELECTRIC MANHOLE	SD	STORM DRAIN
EOP	EDGE OF PAVEMENT	SDMH	STORM DRAIN MANHOLE
EXP	EXPANSION	SESC	SOIL EROSION AND SEDIMENT CONTROL
EXIST	EXISTING	SS	SANITARY SEWER
G	GAS	SSMH	SANITARY SEWER MANHOLE
GALV	GALVANIZED	SSFM	SANITARY SEWER FORCE MAIN
GR	GRATE	SQ FT	SQUARE FOOT
HDPE	CORRUGATED HIGH DENSITY POLYETHYLENE PIPE	SQ M	SQUARE METER
HT	HEIGHT	TYP	TYPICAL
INV	INVERT	TW	TOP OF WALL
		UC	UNDERGROUND COMMUNICATION
		UD	UNDERDRAIN
		UE	UNDERGROUND ELECTRICAL
		UP	UTILITY POLE
		VC	VITRIFIED CLAY PIPE
		W/O	WITHOUT

PROPOSED LEGEND

	MAJOR CONTOUR
	MINOR CONTOUR
	TREELINE
	PERIMETER FENCE
	GUIDERAIL
	SILT FENCE
	CONSTRUCTION FENCE
	LIMIT OF STONE SURFACING
	LIMIT OF DISTURBANCE
	STORMWATER SWALE
	STORM SEWER PIPE
	STORM INLET
	MANHOLE
	OUTLET CONTROL STRUCTURE
	FLARED END SECTION
	CLEANOUT
	SPOT ELEVATION
	RIP RAP
	STONE SURFACING
	NRCS SOIL TYPE/BOUNDARY

ISSUED FOR PERMITTING	REVISION	DATE	DRWN	CHKD	APPRV.
1		10/17/15	JUS	REC	BSS



Transmission Business

#

TRANSITION STATION #1  
GENERAL NOTES  
AND LEGEND

DATE: 10/17/2015  
SCALE: NTS

DES: JUS | CHK: REC  
DRW: JUS | APR: BSS

TOWN:  
OLD CANAAN ROAD, PITTSBURG, NH

TRANSMISSION LINE:

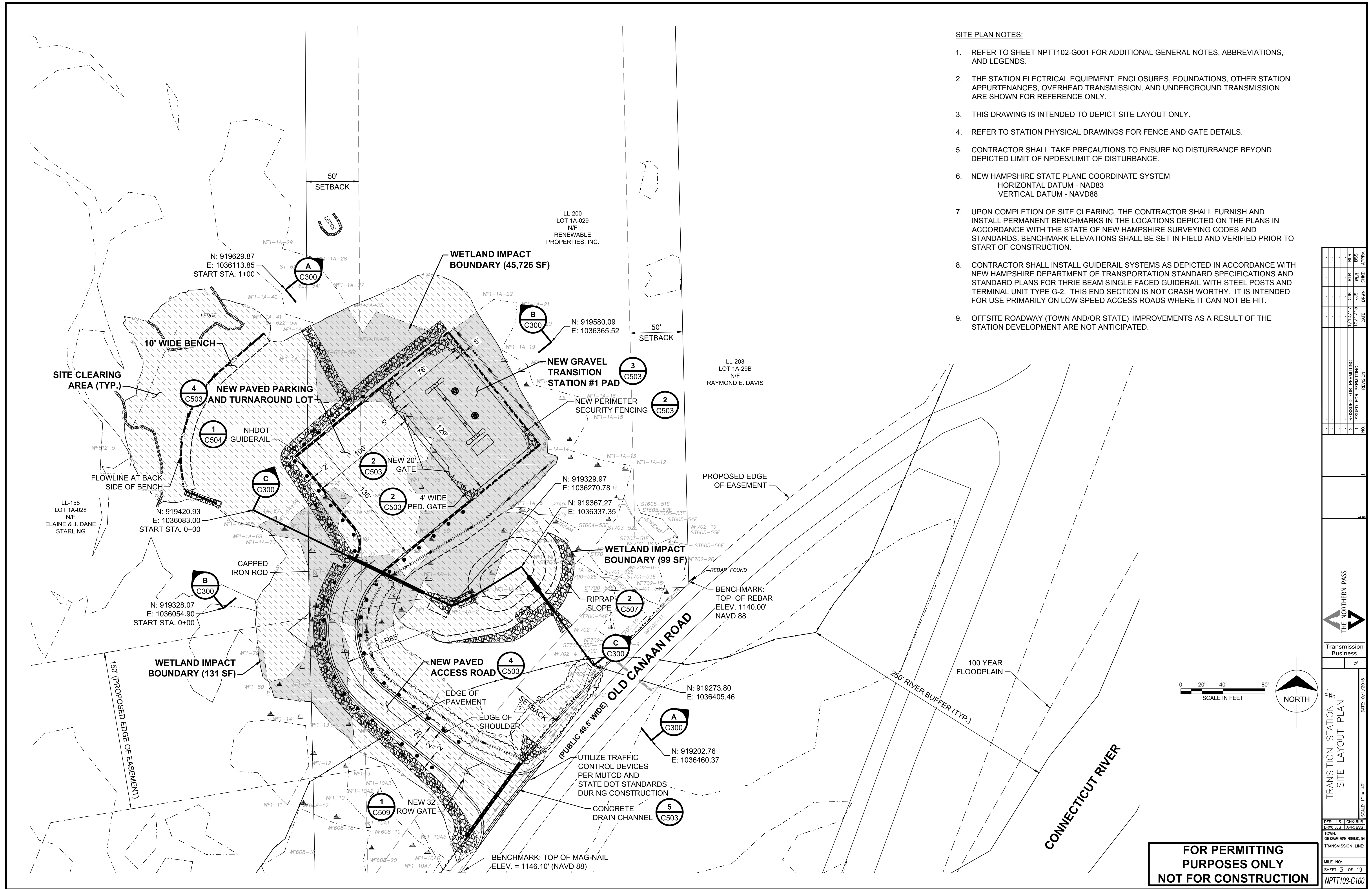
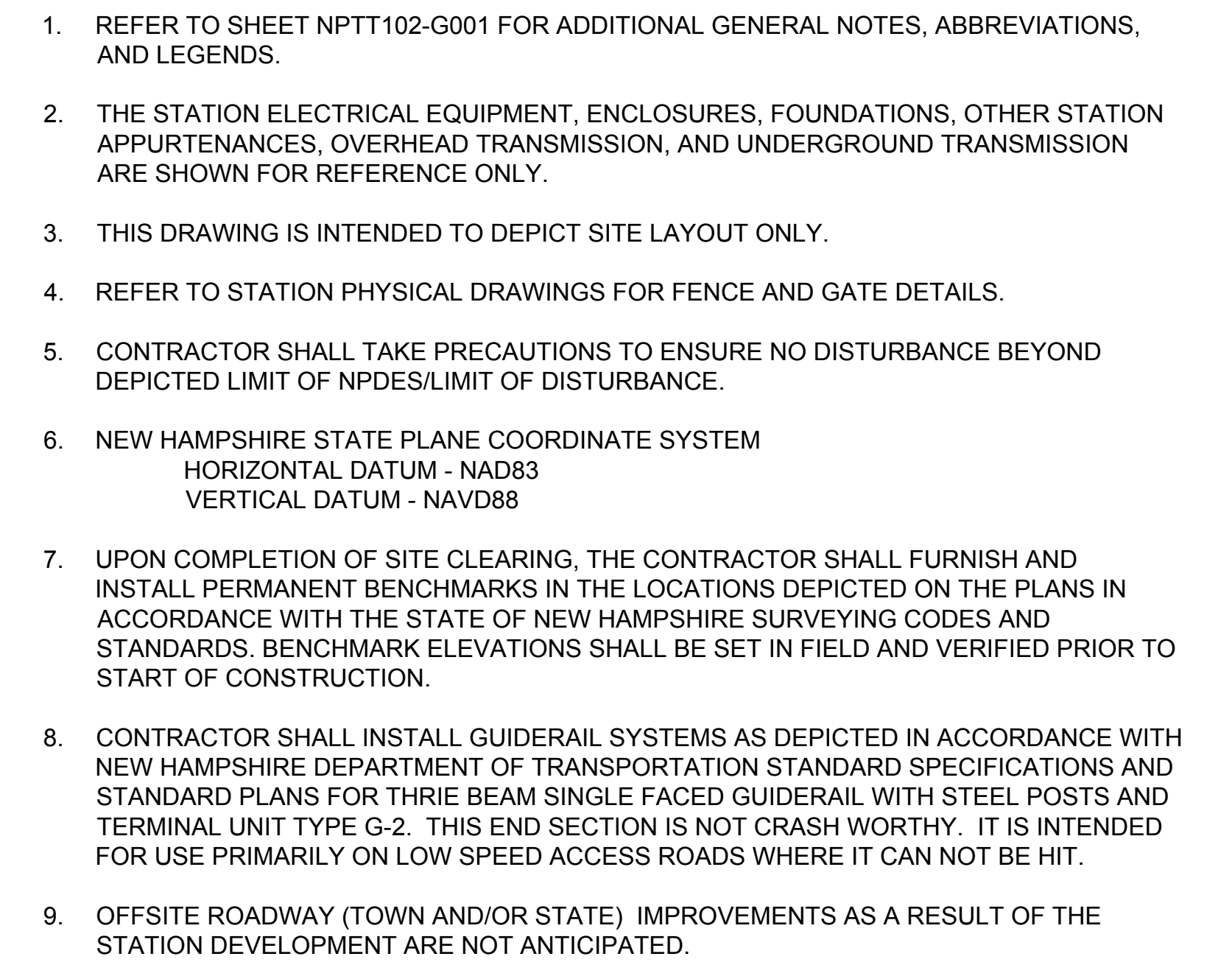
MILE NO:

SHEET 2 OF 19

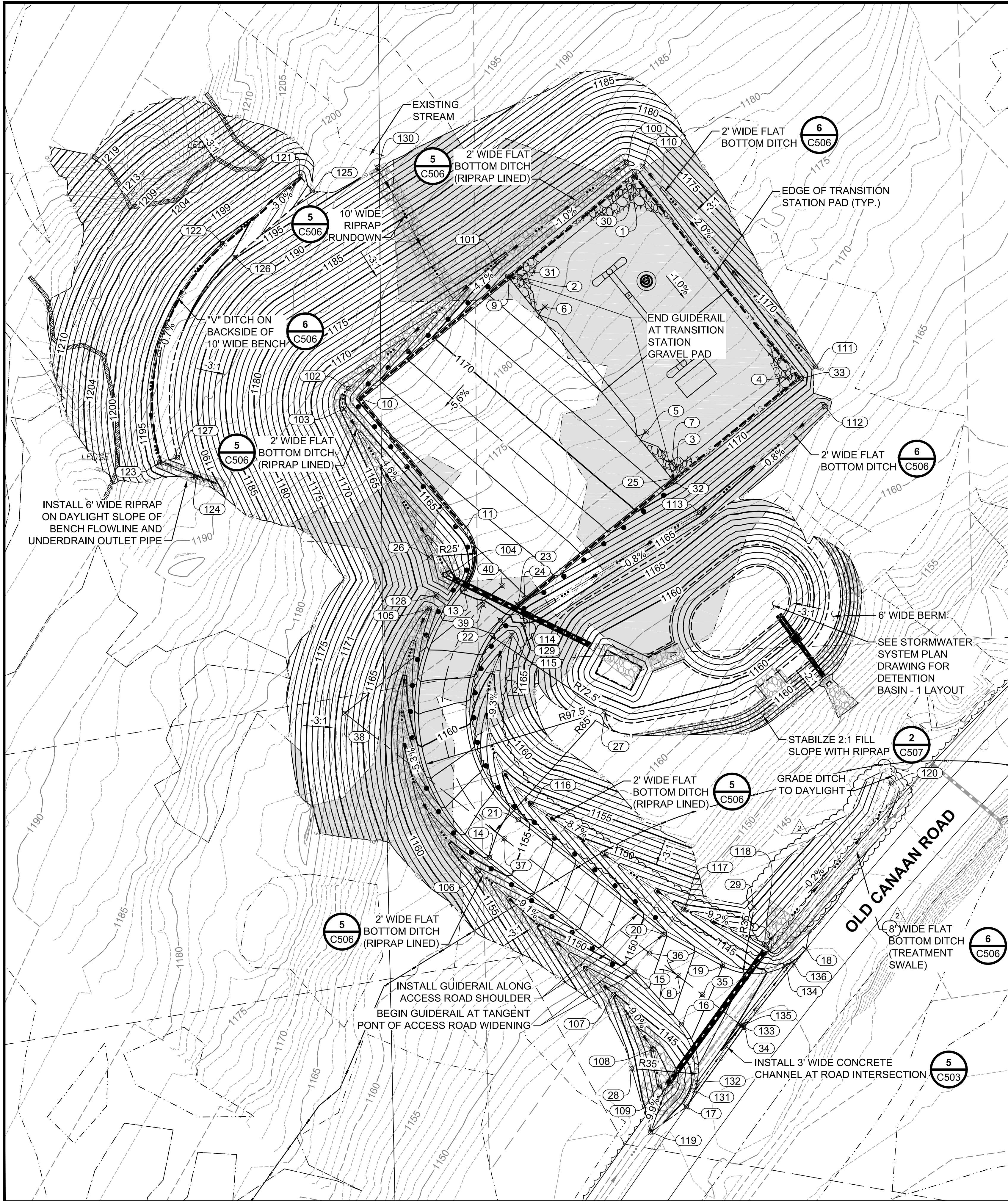
NPTT102-G001

REVISION: XXX

FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION







POINT TABLE

PNT	NORTHING	EASTING	ELEV.	DESCRIPTION
1	919583.55	1036267.42		CHAIN-LINK FENCE CORNER
2	919535.67	1036208.40		CHAIN-LINK FENCE CORNER
3	919435.49	1036289.67		CHAIN-LINK FENCE CORNER
4	919483.37	1036348.68		CHAIN-LINK FENCE CORNER
5	919454.53	1036274.23		CENTERLINE 20' CHAIN-LINK GATE
6	919520.15	1036220.99		CENTERLINE 20' CHAIN-LINK GATE
7	919438.60	1036287.15		HINGE POINT 4' CHAIN-LINK GATE
8	919168.87	1036290.96		CENTERLINE 32' ROW GATE
9	919534.85	1036202.62	1172.77	ASPHALT CORNER
10	919471.84	1036124.97	1167.25	ASPHALT CORNER
11	919404.52	1036179.59	1166.39	ASPHALT PC
13	919372.23	1036178.92	1165.16	ASPHALT PT & PC
14	919231.05	1036191.84	1155.98	ASPHALT PT
15	919170.90	1036268.17	1149.60	ASPHALT PI
16	919143.41	1036292.77	1147.66	ASPHALT PC
17	919100.02	1036295.37	1145.34	ASPHALT PT (MATCH EXISTING)
18	919182.83	1036358.06	1143.94	ASPHALT PC (MATCH EXISTING)
19	919174.05	1036314.23	1147.02	ASPHALT PT
20	919190.56	1036283.62	1149.10	ASPHALT PI
21	919250.79	1036207.18	1155.48	ASPHALT PC
22	919355.56	1036197.58	1164.66	ASPHALT - GRADE BREAK
23	919364.04	1036206.37	1165.59	ASPHALT PT
24	919367.01	1036210.02	1165.92	ASPHALT - GRADE BREAK
25	919430.01	1036287.68	1171.41	ASPHALT CORNER
26	919388.77	1036160.17		ASPHALT CENTER 25' RADIUS
27	919307.74	1036252.05		ASPHALT CENTER 72.5', 85' & 97.5' RADIUS
28	919120.07	1036266.69		ASPHALT CENTER 35' RADIUS
29	919204.85	1036330.85		ASPHALT CENTER 35' RADIUS
30	919590.59	1036268.15	1172.79	GRAVEL PAD CORNER
31	919536.40	1036201.36	1172.79	GRAVEL PAD CORNER
32	919428.46	1036288.94	1171.39	GRAVEL PAD CORNER
33	919482.65	1036355.73	1171.40	GRAVEL PAD CORNER
34	919141.63	1036325.52	1145.10	ACCESS ROAD CL - BEGINNING
35	919158.89	1036303.61	1147.04	ACCESS ROAD CL - GRADE BREAK
36	919180.73	1036275.90	1149.35	ACCESS ROAD CL - GRADE BREAK
37	919240.87	1036199.58	1155.73	ACCESS ROAD CL - PC
38	919306.77	1036115.94		ACCESS ROAD CL - PI
39	919363.79	1036188.38	1164.91	ACCESS ROAD CL - GRADE BREAK
40	919373.75	1036198.49	1165.74	ACCESS ROAD CL - PT
100	919596.04	1036263.76	1170.79	DITCH CL - BEGINNING
101	919543.91	1036195.41	1169.93	DITCH CL - PI
102	919477.31	1036117.69	1165.16	DITCH CL - PC
103	919466.64	1036115.49	1164.68	DITCH CL - PT
104	919379.46	1036169.98	1159.92	DITCH CL - PI
105	919361.61	1036160.38	1161.99	DITCH CL - BEGINNING
106	919224.00	1036186.24	1153.88	DITCH CL - PT
107	919159.10	1036257.08	1145.11	DITCH CL - PI
108	919130.13	1036277.87	1141.88	DITCH CL - PI
109	919110.91	1036281.14	1142.04	DITCH CL - PI
110	919594.07	1036272.40	1171.29	DITCH CL - BEGINNING
111	919488.67	1036363.10	1168.56	DITCH CL - DAYLIGHT
112	919467.91	1036367.72	1165.40	DITCH CL - BEGINNING
113	919412.08	1036302.16	1164.71	DITCH CL - PI
114	919358.27	1036212.36	1163.90	CATCH BASIN INLET & DITCH CL END
115	919347.69	1036203.70	1162.15	DITCH CL - BEGINNING
116	919258.97	1036213.84	1152.86	DITCH CL - PT
117	919203.80	1036293.83	1144.43	DITCH CL - PI
118	919185.43	1036337.29	1140.46	DITCH CL - INTERSECTION
119	919086.64	1036276.55	1144.00	DITCH CL - DAYLIGHT
120	919270.15	1036402.98	1140.24	DITCH CL - END
121	919588.70	1036092.46	1195.98	BENCH SWALE CL - PI
122	919553.67	1036051.57	1194.37	BENCH SWALE CL - PC
123	919438.26	1036018.44	1193.10	BENCH SWALE CL - PT
124	919430.72	1036037.41	1193.00	BENCH SWALE CL - DAYLIGHT

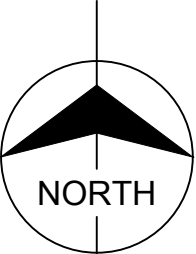
POINT TABLE

PNT	NORTHING	EASTING	ELEV.	DESCRIPTION
125	919581.11	1036098.97	1197.65	BENCH TOP - DAYLIGHT
126	919546.23	1036058.26	1195.16	BENCH TOP - PC
127	919441.19	1036028.00	1194.77	BENCH TOP - END
128	919368.93	1036163.87	1164.41	TOP OF BERM
129	919353.36	1036209.88	1165.25	TOP OF BERM
130	919593.40	1036132.85	1194.58	BENCH TOP - END
131	919108.65	1036299.77	1145.30	FLOWLINE CONCRETE CHANNEL
132	919112.80	1036300.92	1145.36	ASPHALT /CONCRETE CHANNEL - PT
133	919143.45	1036323.12	1145.10	ASPHALT /CONCRETE CHANNEL - PI
134	919173.89	1036347.17	1144.05	ASPHALT /CONCRETE CHANNEL - PT
135	919142.54	1036324.32	1145.04	FLOWLINE CONCRETE CHANNEL
136	919176.13	1036350.85	1143.99	FLOWLINE CONCRETE CHANNEL

GRADING PLAN NOTES:

- REFER TO SHEET NPTT102-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
- REFER TO SHEET NPTT109-C300 FOR GRADING CROSS SECTIONS.
- NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
- PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.
- ALL FILL AND CUT SLOPES ARE 3-FT HORIZONTAL TO 1-FT VERTICAL (3:1) UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL PLACE 4" TOPSOIL AND SEED ON ALL CUT AND FILL SLOPES AS SPECIFIED UNLESS ANOTHER SURFACE MATERIAL IS INDICATED. EROSION CONTROL BLANKETS (NORTH AMERICAN GREEN SC250 OR ENGINEER APPROVED EQUAL) SHALL BE PLACED OVER ALL SEEDED SIDE SLOPES.
- AFTER COMPLETION OF YARD SUBGRADE WORK, THE SURFACE COURSE FOR THE SUBSTATION (INSIDE THE FENCE, 5-FT OUTSIDE THE FENCE, AND WHERE INDICATED ON THE PLANS) SHALL CONSIST OF A 4-INCH LAYER OF CRUSHED BASALT (ANGULAR STONE) STONE MEETING THE GRADATION REQUIREMENTS EXPLAINED IN THE SPECIFICATIONS.
- CONTRACTOR SHALL PROTECT/REPAIR ALL SLOPES UNTIL FINAL VEGETATIVE OR STONE STABILIZATION.
- ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED AND STABILIZED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS.
- STABILIZE ALL DITCHES, SWALES, AND PONDS PRIOR TO DIRECTING STORMWATER RUNOFF TO THEM.
- TURF REINFORCEMENT MAT (TRM) SHALL BE INSTALLED ON ALL 3-FT HORIZONTAL TO 1-FT VERTICAL SLOPES (3:1) OR STEEPER, AND BE NORTH AMERICAN GREEN SC250 OR APPROVED EQUAL.
- EARTHWORK AND COMPACTION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL ENGINEERING REPORT BY OTHERS.

0 30' 60'  
SCALE IN FEET



FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

THE NORTHERN PASS

Transmission Business

#

TRANSITION STATION #1  
GRADING PLAN

DATE: 10/1/2015

SCALE: 1" = 30'

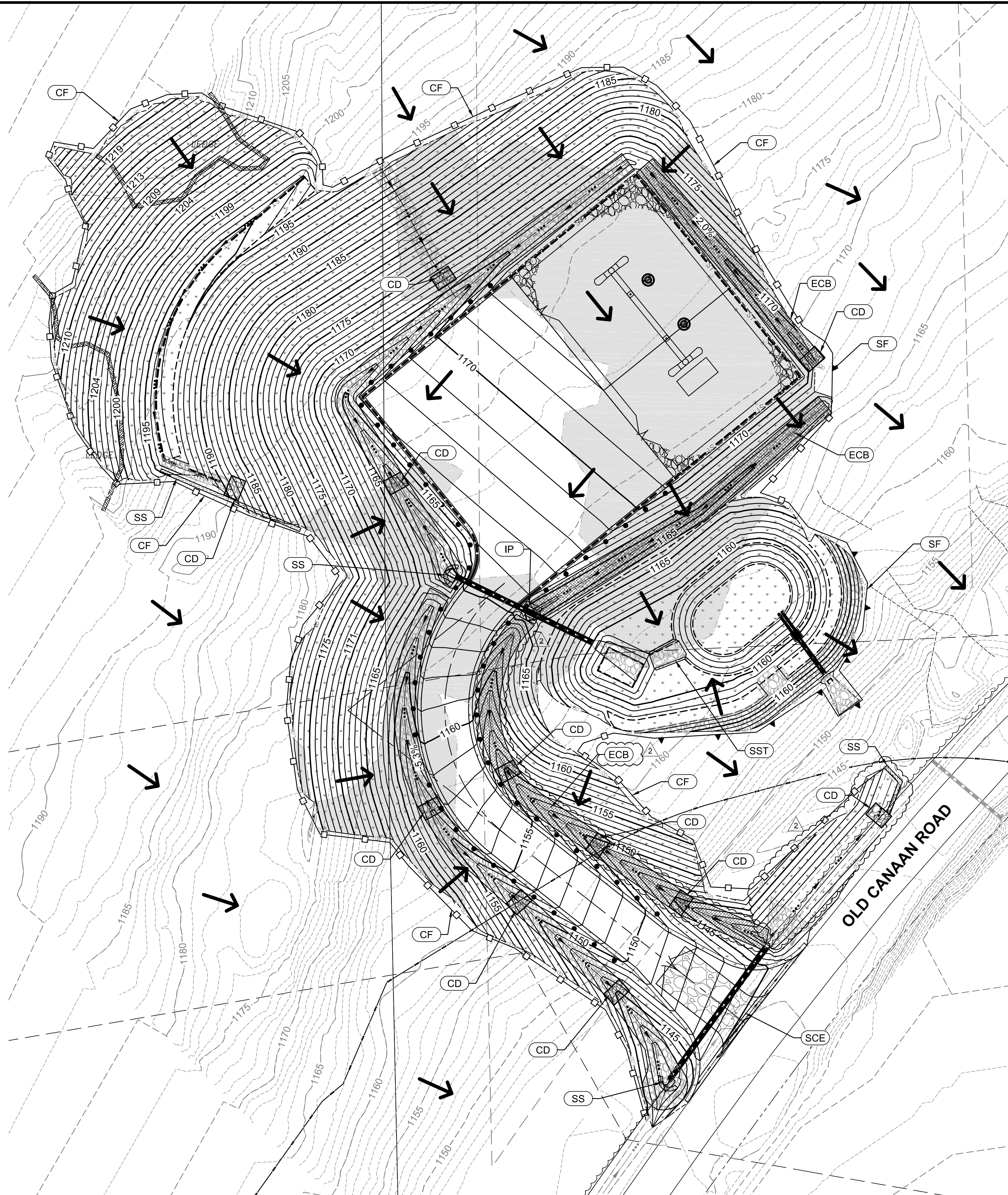
DES: JUS CHK:RLR  
DRW: JUS APR: BSS  
TOWN: OLD CANAAN TOWN, PITTSBURGH, NH  
TRANSMISSION LINE:

MILE NO:  
SHEET 4 OF 19

NPTT104-C101

REVISION: XXX





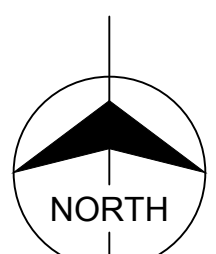
# SEDIMENT & EROSION CONTROL LEGEND

- 1 C503 FLOW ARROW
- 2 C501 CONSTRUCTION FENCE (CF)
- 5 C501 STONE CHECK DAM (CD)
- 5 C501 EROSION CONTROL BLANKET (ECB)
- 5 C502 INLET PROTECTION (IP)
- 4 C501 SILT SOCK (SS)
- 3 C501 SILT FENCE (SF)
- 1 C501 STABILIZED CONSTRUCTION ENTRANCE (SCE)
- 2 C502 STONE OUTLET SEDIMENT TRAP (SST)

## NOTES:

- REFER TO SHEET NPPT110-C500 FOR EROSION AND SEDIMENTATION NOTES.
- TOTAL LIMIT OF DISTURBANCE  $\frac{132,385}{2} \text{ SF} = 3.04 \text{ ACRES}$ .

0 30' 60'  
SCALE IN FEET



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

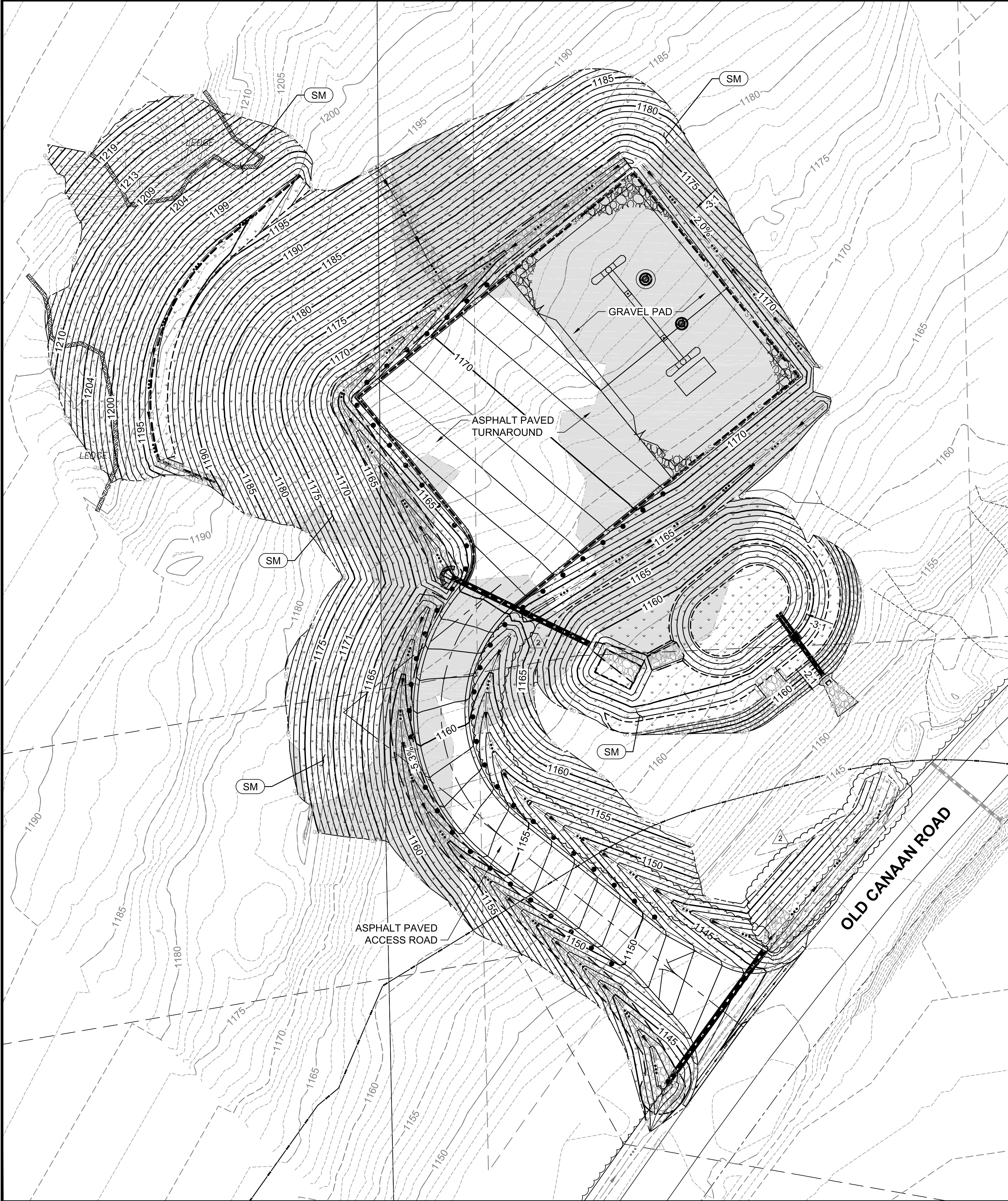
DES: JUS	CHK: RLR	DATE: 10/1/2015
DRW: JUS	APR: BSS	
TOWN: OLD CANAAN ROAD, PITTSBURGH, NH		
TRANSMISSION LINE:		
MILE NO:		
SHEET 5 OF 19		
NPPT1105-C102		
REVISION: XXX		

THE NORTHERN PASS  
Transmission Business  
#

TRANSITION STATION #1  
EROSION AND SEDIMENTATION  
CONTROL PLAN  
SCALE: 1" = 30'

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
1	ISSUED FOR PERMITTING	10/7/15	R/R	BSS	
2	RESUBMITTED FOR PERMITTING	1/13/17	C/K	R/R	

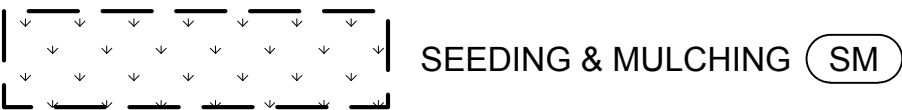




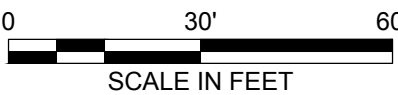
PLANTING PLAN NOTES:

1. REFER TO SHEET NPTT102-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
2. THIS DRAWING IS INTENDED TO DESCRIBE LANDSCAPE INFORMATION ONLY.
3. ALL DISTURBED AREAS NOT OTHERWISE DEVELOPED SHALL HAVE A MINIMUM OF 4" OF LOAM AND THE FOLLOWING SEED MIXTURE:  
NHDOT TYPE 44 (MIN. 80 LBS/ACRE):  
44% CREEPING RED FESCUE (MIN. 35 LBS/ACRE)  
38% PERENNIAL RYEGRASS (MIN. 30 LBS/ACRE)  
6% REDTOP (MIN. 5 LBS/ACRE)  
6% ALSIKE CLOVER (MIN. 5 LBS/ACRE)  
6% BIRDSFOOT TREFOIL (MIN. 5 LBS/ACRE)  
ALL SEEDING SHALL BE IN ACCORDANCE WITH THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (2010) SECTION 644 -- GRASS SEED AND THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES STORMWATER MANUAL VOLUME 3 PERMANENT VEGETATION IN SECTION 4.1.
4. NO SEEDING SHALL BE PLACED BEFORE ROUGH GRADING HAS BEEN PROPERLY COMPLETED.
5. TOPSOIL SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4". CONTRACTOR SHALL SUBMIT SAMPLES FROM EACH PROPOSED TOPSOIL SOURCE TO A CERTIFIED TESTING LABORATORY TO DETERMINE pH, FERTILITY, ORGANIC CONTENT AND MECHANICAL COMPOSITION. CONTRACTOR SHALL SUBMIT THE TEST RESULTS TO OWNER OR LANDSCAPE ARCHITECT FOR REVIEW. CONTRACTOR SHALL INCORPORATE AMENDMENTS FOR PROPER SOIL pH AND PLANT GROWTH AS RECOMMENDED BY TEST REPORTS AT NO INCREASE IN CONTRACT PRICE.
6. TEMPORARY AND PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE PLANTING PLAN, NH DES STORMWATER MANUAL VOLUME 3, AND NH DOT STANDARD SPECIFICATIONS SECTION 644.
7. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES -- 6 TO 12 INCHES ON COMPACTED SOILS -- PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING.
8. PLACING LOAM ON SITE: ALL SUBGRADE ELEVATIONS SHOULD BE UNIFORMLY GRADED TO RECEIVE LOAM AND SHALL BE INSPECTED AND APPROVED BY THE GENERAL CONTRACTOR PRIOR TO PLACEMENT OF LOAM. PLACE LOAM TO FORM A MINIMUM DEPTH OF 4" WHEN ROLLED, UNLESS OTHERWISE INDICATED. ALL DEPRESSIONS EXPOSED DURING THE ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM.
9. SEED BED PREPARATION: AFTER FINISH GRADING AND JUST BEFORE SEEDING, THE AREAS TO BE SEEDED SHALL BE LOOSENEED TO PROVIDE A ROUGH, FIRM BUT FINELY PULVERIZED SEEDBED. THE INTENT IS A TEXTURE CAPABLE OF RETAINING WATER, SEED AND FERTILIZER WHILE REMAINING STABLE AND ALLOWING SEED TIME TO GERMINATE. SEED SHALL BE APPLIED TO THE CONDITIONED SEEDBED NOT MORE THAN 48 HOURS AFTER THE SEEDBED HAS BEEN PREPARED.
10. LIME AND FERTILIZER SHALL BE INCORPORATED INTO THE SOIL PRIOR TO OR AT THE TIME OF AT THE TIME OF SEEDING. A MINIMUM OF 2 TONS PER ACRE OF AGRICULTURAL LIMESTONE AND 500 LBS. PER ACRE OF 10-20-20 FERTILIZER SHALL BE APPLIED. SEEDING PRACTICES SHALL COMPLY WITH LOCAL USDA SOIL CONSERVATION SERVICES RECOMMENDATIONS.
11. STRAW MULCH OR JUTE MATTING SHALL BE USED WHERE INDICATED ON THE PLANS. A MINIMUM OF 1.5 TONS OF MULCH PER ACRE SHALL BE APPLIED. MULCH SHALL BE ANCHORED IN PLACE WHERE NECESSARY. JUTE MATTING SHALL BE LAID IN THE DIRECTION OF RUNOFF FLOW AND APPLIED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
12. PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS AREA NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 15 TO SEPTEMBER 15. NO DISTURBED AREA SHALL BE LEFT EXPOSED DURING WINTER MONTHS.

PLANTING LEGEND



AREA TO BE SEEDED = 2.0 ACRES



FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

DES: JUS	CHK: RLR	DATE: 10/1/2015
DRW: JUS	APR: BSS	
TOWN: OLD CANAAN ROAD, PITTSBORO, NH		
TRANSMISSION LINE:		
MILE NO:		
SHEET 6 OF 19		
NPTT106-C103		
REVISION: XXX		

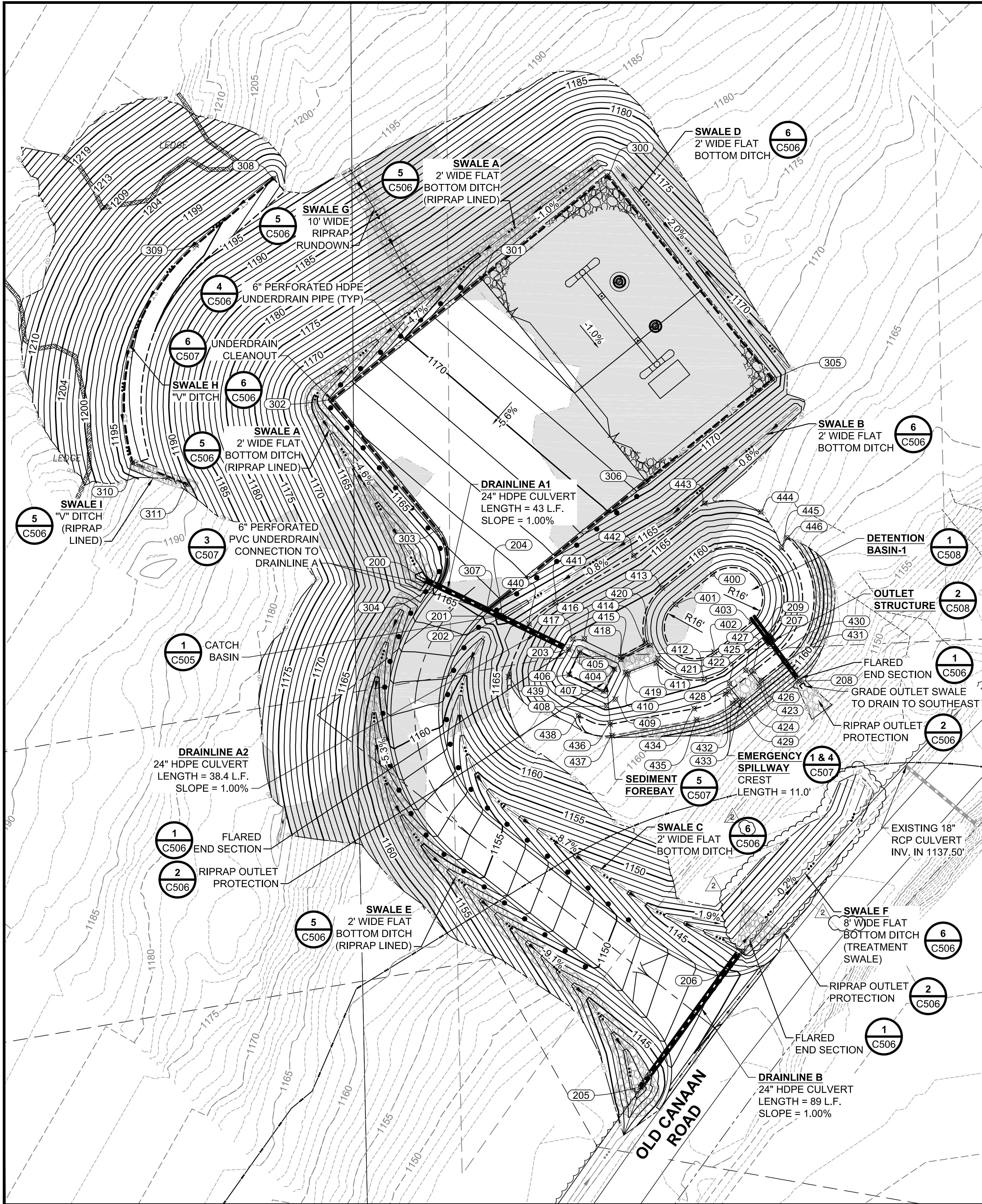
NO.	REVISION	DATE	DRWN	CHKD	APPRD
1	ISSUED FOR PERMITTING	10/1/15	R/R	R/R	R/R
2	ISSUED FOR PERMITTING	1/13/17	C/K	R/R	R/R

Transmission Business

#

TRANSITION STATION #1  
PLANTING PLAN



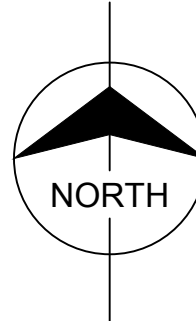
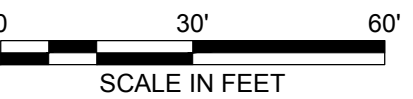


POINT TABLE

PNT	NORTHING	EASTING	ELEV.	DESCRIPTION
200	919377.34	1036172.99	1159.92	DRAINLINE A1 - 24" HDPE PIPE INVERT IN
201	919358.59	1036211.69	1159.49	DRAINLINE A1 - 24" HDPE PIPE INVERT OUT
202	919357.90	1036213.12	1159.24	DRAINLINE A2 - 24" HDPE PIPE INVERT IN
203	919341.15	1036247.69	1158.86	DRAINLINE A2 - 24" HDPE PIPE INVERT OUT (FES)
204	919358.27	1036212.36	1163.90	DRAINLINE A - GRATE FOR CATCH BASIN (TYPE E GRATE)
205	919111.76	1036285.41	1141.35	DRAINLINE B - 24" HDPE PIPE INVERT IN
206	919183.12	1036338.59	1140.46	DRAINLINE B - 24" HDPE PIPE INVERT OUT (FES)
207	919344.64	1036353.85	1155.50	POND OUTLET PIPE - 18" HDPE PIPE INVERT IN
208	919324.44	1036368.58	1155.25	POND OUTLET PIPE - 18" HDPE PIPE INVERT OUT (FES)
209	919346.40	1036352.57	1160.77	POND OUTLET STRUCTURE - GRATE ELEVATION
300	919589.18	1036268.00	1170.12	6" UNDERDRAIN INVERT - PI
301	919535.62	1036202.00	1169.27	6" UNDERDRAIN INVERT - PI
302	919471.99	1036123.56	1164.55	6" UNDERDRAIN INVERT - PI (INSTALL CLEANOUT)
303	919403.89	1036178.81	1163.67	6" UNDERDRAIN INVERT - PC
304	919374.28	1036179.31	1162.68	6" UNDERDRAIN INVERT - OUTLET
305	919482.78	1036354.31	1168.75	6" UNDERDRAIN INVERT - PI
306	919429.23	1036288.32	1167.89	6" UNDERDRAIN INVERT - GRADE BREAK
307	919361.74	1036205.18	1162.86	6" UNDERDRAIN INVERT - OUTLET
308	919587.94	1036093.11	1193.64	6" UNDERDRAIN INVERT - BEGIN
309	919553.04	1036052.38	1191.96	6" UNDERDRAIN INVERT - PC
310	919439.01	1036019.26	1190.70	6" UNDERDRAIN INVERT - PT
311	919427.61	1036047.95	1190.38	6" UNDERDRAIN INVERT - OUTLET
400	919380.42	1036323.18	1155.61	BOTTOM OF DETENTION POND - PT
401	919364.67	1036303.76	1155.61	BOTTOM OF DETENTION POND - PC
402	919339.82	1036323.92	1155.61	BOTTOM OF DETENTION POND - PT
403	919355.57	1036343.34	1155.61	BOTTOM OF DETENTION POND - PC
404	919330.87	1036271.60	1156.86	BOTTOM OF SEDIMENT FOREBAY - PI
405	919339.59	1036253.60	1156.86	BOTTOM OF SEDIMENT FOREBAY - PI
406	919327.89	1036247.93	1156.86	BOTTOM OF SEDIMENT FOREBAY - PI
407	919319.17	1036265.93	1156.86	BOTTOM OF SEDIMENT FOREBAY - PI
408	919311.44	1036267.57	1159.36	TOP OF SEDIMENT FOREBAY SLOPE - PC
409	919315.00	1036272.24	1159.36	TOP OF SEDIMENT FOREBAY SLOPE - PT
410	919327.97	1036278.52	1159.36	TOP OF WEIR - PI
411	919333.78	1036293.63	1159.36	TOP OF WEIR - PI
412	919325.45	1036318.83	1159.36	TOP OF WET POOL SLOPE - PC
413	919373.40	1036296.67	1159.36	TOP OF WET POOL SLOPE - PC
414	919344.43	1036287.74	1159.36	TOP OF WEIR - PI
415	919337.52	1036275.07	1159.36	TOP OF WEIR - PI
416	919346.77	1036255.97	1159.36	TOP OF SEDIMENT FOREBAY SLOPE - PC
417	919346.57	1036249.91	1159.36	TOP OF SEDIMENT FOREBAY SLOPE - PT
418	919335.83	1036275.11	1158.86	BOTTOM OF WEIR SLOPE - PI
419	919329.15	1036277.43	1158.86	BOTTOM OF WEIR SLOPE - PI
420	919343.36	1036290.48	1158.61	BOTTOM OF WEIR SLOPE - PI
421	919336.49	1036294.43	1158.61	BOTTOM OF WEIR SLOPE - PI
422	919323.22	1036331.99	1161.60	BOTTOM OF SPILLWAY SLOPE - PI
423	919321.61	1036347.46	1161.60	BOTTOM OF SPILLWAY SLOPE - PI
424	919314.68	1036338.92	1161.60	BOTTOM OF SPILLWAY SLOPE - PI
425	919330.15	1036340.53	1161.60	BOTTOM OF SPILLWAY SLOPE - PI
426	919325.05	1036348.53	1162.60	TOP OF SPILLWAY SLOPE / BERM - PI
427	919329.71	1036344.75	1162.60	TOP OF SPILLWAY SLOPE / BERM - PI
428	919319.00	1036331.55	1162.60	TOP OF SPILLWAY SLOPE / BERM - PI
429	919314.34	1036335.33	1162.60	TOP OF SPILLWAY SLOPE / BERM - PI
430	919339.28	1036356.55	1162.60	TOP OF BERM - PT
431	919334.63	1036360.33	1162.60	TOP OF BERM - PT
432	919317.74	1036329.99	1162.60	TOP OF BERM - PC
433	919312.92	1036333.58	1162.60	TOP OF BERM - PC
434	919310.10	1036313.45	1162.60	TOP OF BERM - PT
435	919304.24	1036314.80	1162.60	TOP OF BERM - PT
436	919301.89	1036269.36	1162.60	TOP OF BERM - PC
437	919295.99	1036270.46	1162.60	TOP OF BERM - PC
438	919306.39	1036252.82	1162.60	TOP OF BERM - PT
439	919326.68	1036216.34	1167.23	GRADE BREAK AT TOP OF POND SLOPE
440	919354.49	1036226.98	1167.01	GRADE BREAK AT TOP OF POND SLOPE
441	919365.71	1036240.78	1166.41	GRADE BREAK AT TOP OF POND SLOPE
442	919390.25	1036281.82	1166.73	GRADE BREAK AT TOP OF POND SLOPE
443	919417.72	1036318.94	1167.27	GRADE BREAK AT TOP OF POND SLOPE
444	919413.13	1036348.40	1166.00	TOP OF POND SLOPE (MATCH EXISTING)
445	919394.33	1036359.21	1162.60	TOP OF BERM (MATCH EXISTING)
446	919399.68	1036362.28	1162.60	TOP OF BERM (MATCH EXISTING)

STORMWATER SYSTEM PLAN NOTES:

- REFER TO SHEET NPTT102-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
- THIS DRAWING IS INTENDED TO DESCRIBE THE STORMWATER SYSTEM ONLY.
- NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
- STORM DRAINAGE SYSTEM CONNECTIONS, MATERIALS, AND METHODS SHALL BE IN ACCORDANCE WITH THE NH DOT STANDARDS AND NH DOT SPECIFICATION SECTIONS 603 AND 604, AS WELL AS OTHER APPLICABLE INDUSTRY CODES AND GOVERNING AGENCY REQUIREMENTS.
- THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY THE ELEVATION AND LOCATION OF ALL UTILITIES BY VARIOUS MEANS PRIOR TO BEGINNING ANY EXCAVATION. TEST PITS SHALL BE DUG AT ALL LOCATIONS WHERE PROPOSED STORM PIPING WILL CROSS EXISTING UTILITIES, AND THE HORIZONTAL AND VERTICAL LOCATIONS OF THE UTILITIES SHALL BE DETERMINED. THE CONTRACTOR SHALL CONTACT THE ENGINEER IN THE EVENT OF ANY DISCOVERED OR UNFORESEEN CONFLICTS BETWEEN EXISTING AND PROPOSED SANITARY SEWERS, STORM PIPING AND UTILITIES SO THAT AN APPROPRIATE MODIFICATION MAY BE MADE.
- MANHOLE RIMS AND CATCH BASIN GRATES SHALL BE SET TO ELEVATIONS SHOWN. SET ALL EXISTING MANHOLE RIMS, GRATES AND OTHER UTILITY TOPS TO BE RAISED OR LOWERED FLUSH WITH FINAL GRADE AS NECESSARY.
- THE CONTRACTOR SHALL ARRANGE FOR AND COORDINATE WITH APPLICABLE REGULATORY AGENCIES FOR STORM DRAINAGE INSTALLATIONS AND CONNECTIONS.
- THE CONTRACTOR SHALL COORDINATE WORK TO BE PERFORMED BY THE VARIOUS UTILITY PROVIDERS AND SHALL PAY ALL FEES FOR CONNECTIONS, DISCONNECTIONS, RELOCATIONS, INSPECTIONS, AND DEMOLITION UNLESS OTHERWISE STATED IN THE PROJECT SPECIFICATIONS MANUAL AND/OR GENERAL CONDITIONS OF THE CONTRACT.
- ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
- ALL UTILITY CONSTRUCTION IS SUBJECT TO INSPECTION FOR APPROVAL PRIOR TO BACKFILLING, IN ACCORDANCE WITH THE APPROPRIATE OWNER, UTILITY PROVIDER, AND APPLICABLE REGULATORY AGENCY REQUIREMENTS.
- A ONE-FOOT MINIMUM VERTICAL CLEARANCE BETWEEN ELECTRICAL AND TELEPHONE LINES TO STORM PIPING SHALL BE PROVIDED.
- SITE CONTRACTOR SHALL PROVIDE ALL BENDS, FITTINGS, ADAPTERS, ETC., AS REQUIRED FOR PIPE CONNECTIONS.
- THE CONTRACTOR SHALL MAINTAIN ALL FLOWS AND UTILITY CONNECTIONS WITHOUT INTERRUPTION UNLESS/UNTIL AUTHORIZED BY THE OWNER, THE ENGINEER, UTILITY PROVIDERS AND GOVERNING AUTHORITIES.
- STORM DRAINAGE SHALL BE RATED FOR HS-20 LOADING.
- PROVIDE MINIMUM 1% SLOPE ON ALL UNDERDRAINS. ADDITIONAL UNDERDRAINS MAY BE REQUIRED AS DEEMED NECESSARY BY THE OWNER, GEOTECHNICAL ENGINEER AND/OR ENGINEER BASED ON FINDINGS AFTER EARTHWORK AND EXCAVATION OPERATIONS COMMENCE. PROVIDE UNDERDRAIN CLEANOUTS AT A MINIMUM OF EVERY 200' OF PIPE OR ONE CLEANOUT PER PIPE RUN WHERE THE PIPE RUN IS LESS THAN 200'.



FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

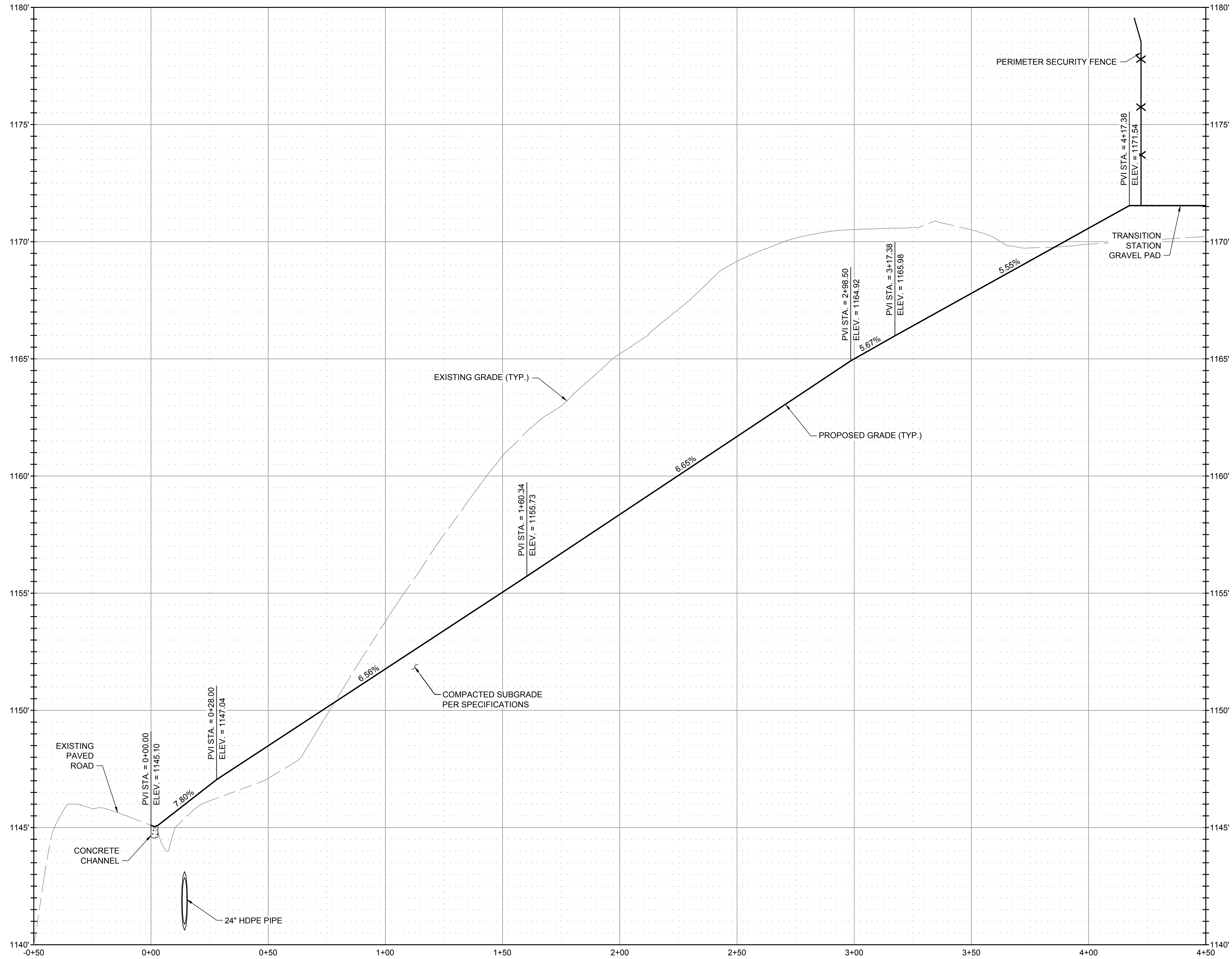
THE NORTHERN PASS

TRANSITION STATION #1  
STORMWATER SYSTEM PLAN

DES: JUS CHK: RLR  
DRAW: JUS APR: BSS  
TOWN: OLD CANAN REAL PHSB&B, NH  
TRANSMISSION LINE:  
MILE NO:  
SHEET 7 OF 19  
NPTT107-C104  
REVISION: XXX

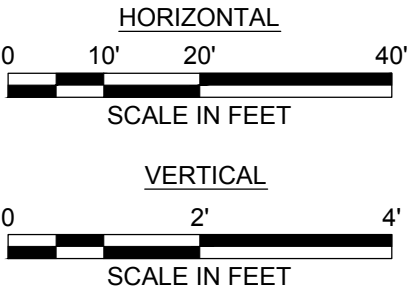


ACCESS ROAD PROFILE



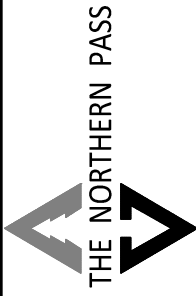
ACCESS ROAD PROFILE NOTES:

1. REFER TO SHEET NPTT102-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
2. THIS DRAWING IS INTENDED TO DESCRIBE THE STATION ACCESS ROAD GEOMETRY ONLY.
3. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
4. PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.



FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

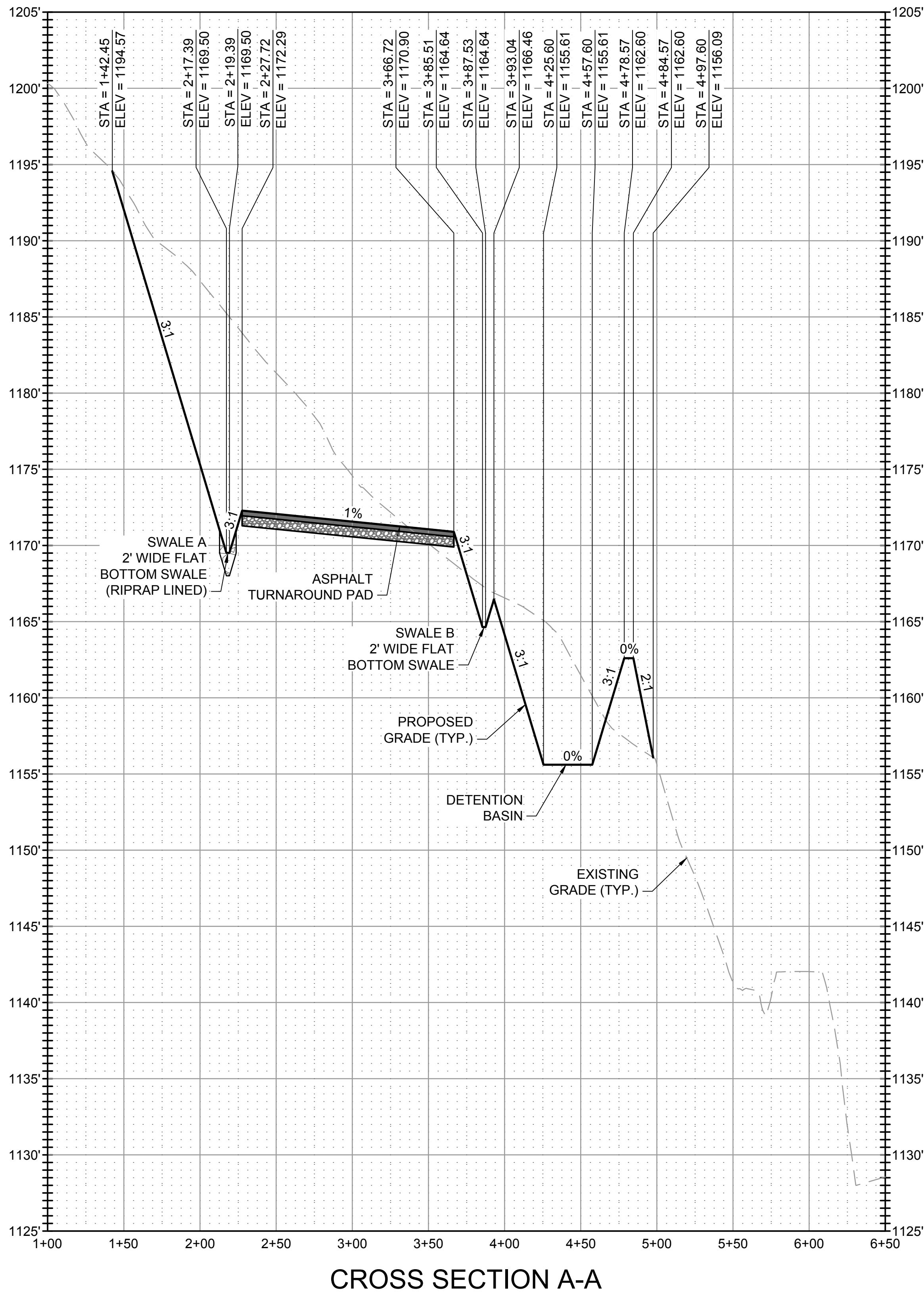
NO.	DATE	REV	BY	CHK	APP
1	10/1/15	JUS	R/R	BSS	
ISSUED FOR PERMITTING					



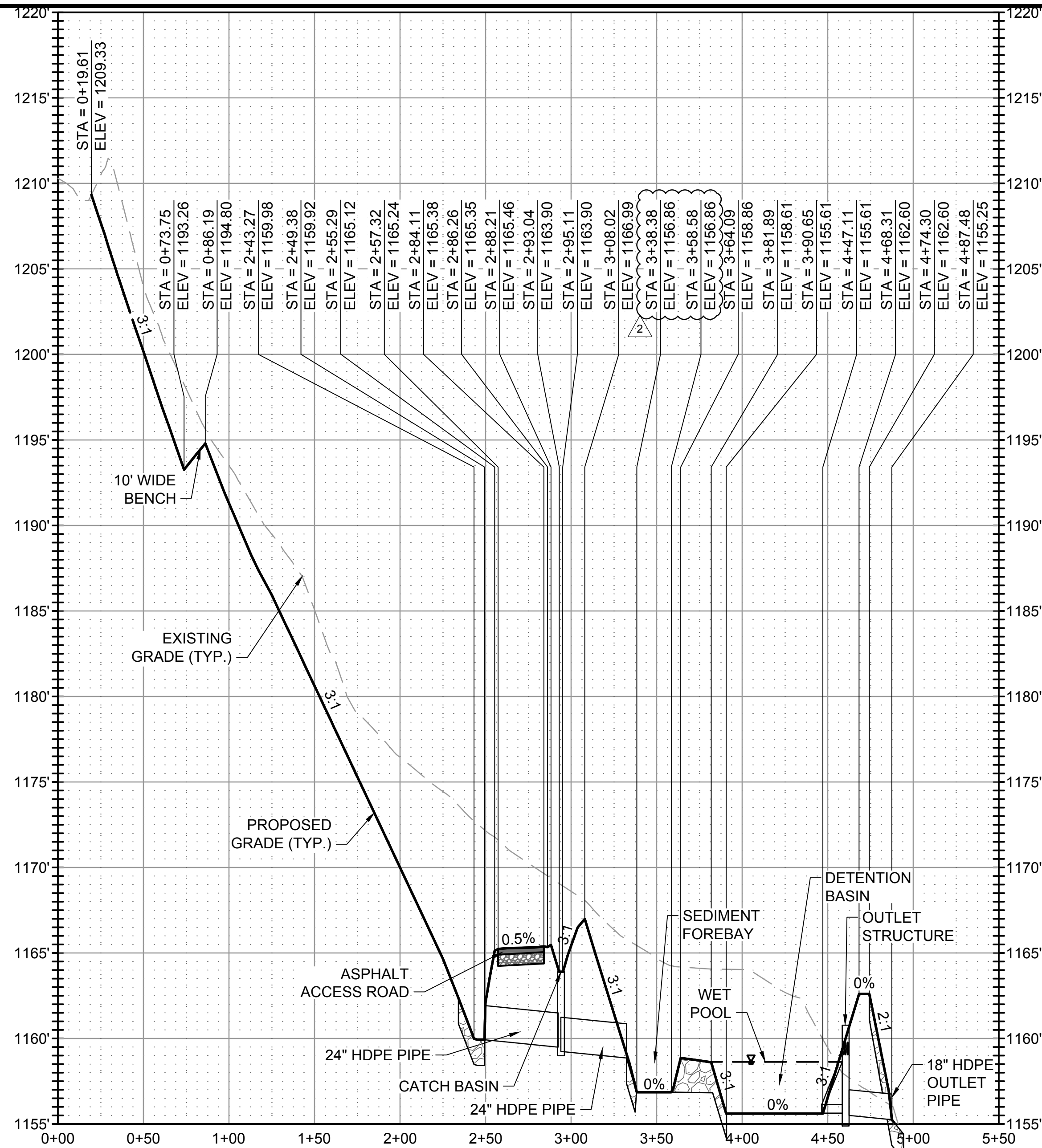
Transmission  
Business

TRANSITION STATION #1  
ACCESS ROAD PROFILE

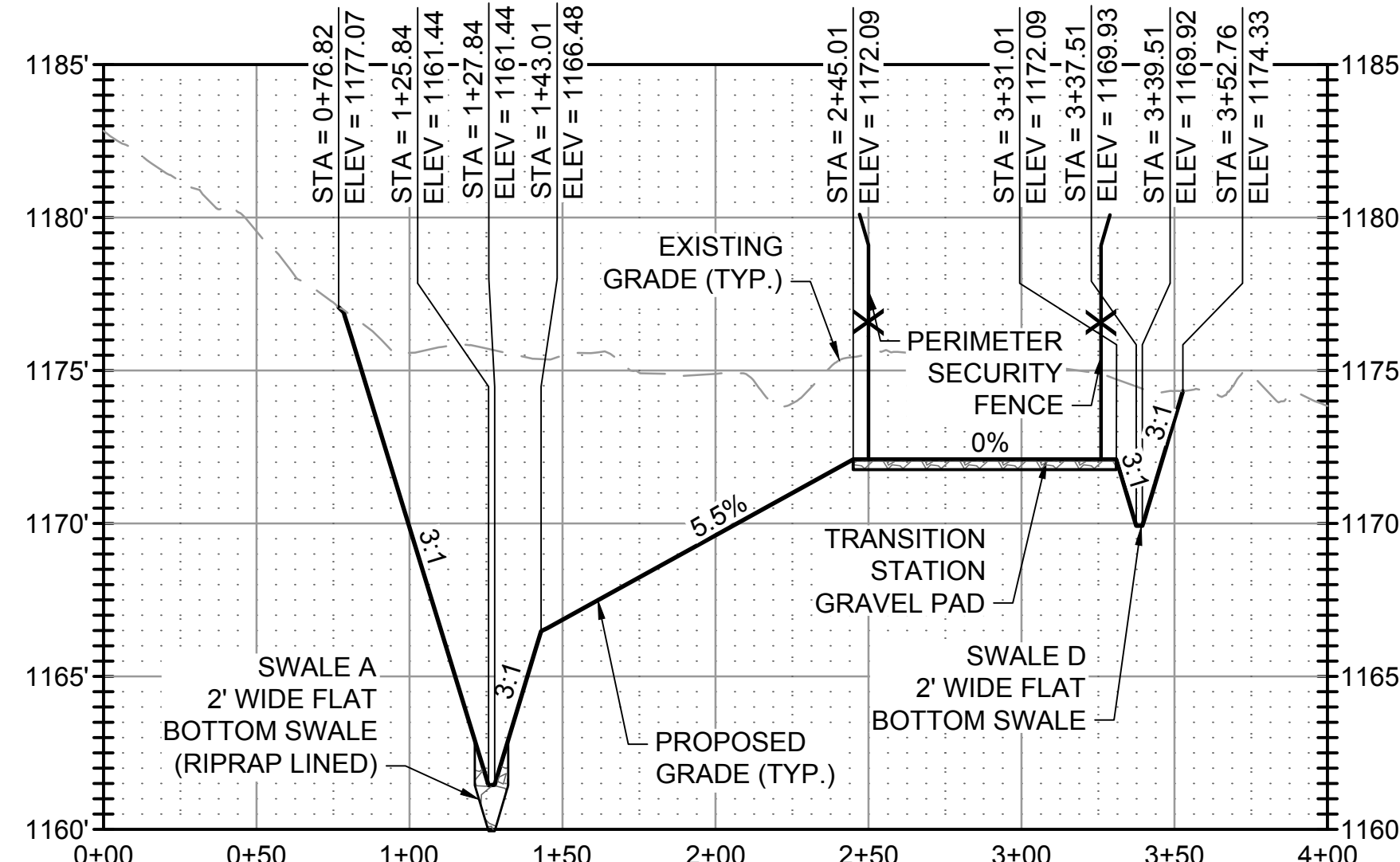
DES: JUS CHK: RLR  
DRW: JUS APR: BSS  
TOWN: 02 OWN: RAL P108R6, W  
TRANSMISSION LINE:  
MILE NO:  
SHEET 8 OF 19  
NPTT108-C200



CROSS SECTION A-A



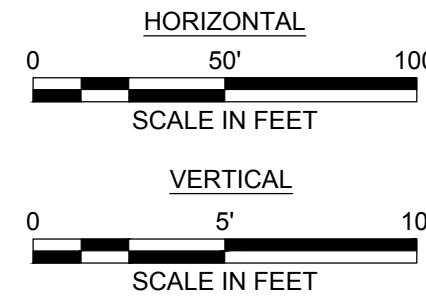
CROSS SECTION C-C



CROSS SECTION B-B

GRADING CROSS SECTION NOTES:

1. REFER TO SHEET NPTT102-G001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, AND LEGENDS.
2. THIS DRAWING IS INTENDED TO DESCRIBE THE GRADING CROSS SECTIONS ONLY.
3. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM  
HORIZONTAL DATUM - NAD83  
VERTICAL DATUM - NAVD88
4. PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.
5. CONTRACTOR SHALL PLACE 4" TOPSOIL AND SEED ON ALL CUT AND FILL SLOPES AS SPECIFIED UNLESS ANOTHER SURFACE MATERIAL IS INDICATED.
6. EARTHWORK AND COMPACTION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL ENGINEERING RECOMMENDATIONS REPORT BY OTHERS.
7. STRIP AND STOCKPILE EXISTING TOPSOIL IN AREAS OF PROPOSED GRADING AND EARTHWORK.



FOR PERMITTING PURPOSES ONLY  
NOT FOR CONSTRUCTION

THE NORTHERN PASS  
Transmission Business

TRANSITION STATION #1  
SITE CROSS SECTIONS

DES: JUS CHK:RLR  
TOWN: OLD MAN RAIL, PITTSBURGH, NH  
TRANSMISSION LINE:

REVISION: XXX

NO.	DATE	BY	CHK	APP
1	10/17/2015	JUS	RLR	BSS
2	10/17/2015	JUS	RLR	BSS



1. THE SEDIMENT AND EROSION CONTROL PLAN IS ONLY INTENDED TO DESCRIBE THE SEDIMENT AND EROSION CONTROL TREATMENT FOR THIS SITE. SEE SEDIMENT AND EROSION CONTROL DETAILS AND CONSTRUCTION SEQUENCE. REFER TO SITE PLAN FOR GENERAL INFORMATION AND OTHER CONTRACT PLANS FOR APPROPRIATE INFORMATION.

4. THE SEDIMENT AND EROSION CONTROL PLAN WAS DEVELOPED TO HELP PROTECT THE EXISTING ROADWAY AND STORM DRAINAGE SYSTEMS, ADJACENT PROPERTIES, AND ADJACENT WETLAND AREA FROM SEDIMENT LADEN SURFACE RUNOFF AND EROSION.

6. THE CONTRACTOR SHALL INSTALL ALL SPECIFIED EROSION/SEDIMENT CONTROL MEASURES AND WILL BE REQUIRED TO MAINTAIN THEM IN THEIR INTENDED FUNCTIONING CONDITION AND BE IN STRICT CONFORMANCE WITH THE STANDARDS BELOW. THE CONTRACTOR SHALL SUPPLY AND MAINTAIN THESE STANDARDS AND HAVE THEM AVAILABLE ONSITE FOR THE DURATION OF CONSTRUCTION. THE OWNER, AGENTS OF THE REGULATORY AGENCIES AND/OR QUALIFIED PROFESSIONAL SHALL HAVE THE AUTHORITY TO REQUIRE SUPPLEMENTAL MAINTENANCE OR ADDITIONAL MEASURES IF FIELD CONDITIONS ARE ENCOUNTERED BEYOND WHAT WOULD NORMALLY BE ANTICIPATED.

7. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.

9. STONE CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED AT START OF CONSTRUCTION AND MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION. THE LOCATION OF THE TRACKING PADS MAY CHANGE AS VARIOUS PHASES OF CONSTRUCTION ARE COMPLETED.

11. COMPLY WITH REQUIREMENTS OF THE EPA FOR NPDES AND RECORD KEEPING.

13. STOCKPILES OF EARTH MATERIALS SHALL CONFORM TO SOIL STOCKPILE PRACTICES IN SECTION 4.1 OF THE NH DES STORMWATER MANUAL VOLUME 3.

15. WATER SHALL BE USED FOR DUST CONTROL IN APPROPRIATE AREAS.

21. TEMPORARY AND PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE PLANTING PLAN, NH DES STORMWATER MANUAL VOLUME 3, AND NH DOT STANDARD SPECIFICATIONS SECTION 644.

9. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

11. STANDARD WINTER NOTES:

- PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
- B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
- C. AFTER NOVEMBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.

2. AN AREA WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE SHALL BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIER.

13. SEE THE VEGETATION MEASURES FOR MORE INFORMATION ON SEEDING DATES AND TYPES.

5. COMMENCE INSTALLATION OF STORM DRAINAGE SYSTEM.

- ## 8. ROUGH GRADING AND FILLING OF SUBGRADES AND SLOPES.

10. CONTINUE INSTALLATION OF STORM DRAINAGE AS SUBGRADE ELEVATIONS ARE ACHIEVED.

12. THROUGHOUT CONSTRUCTION SEQUENCE, REMOVE SEDIMENT FROM BEHIND SILT FENCES, STRAW BALES AND OTHER EROSION CONTROL DEVICES, AND FROM SEDIMENT TRAPS AS REQUIRED. REMOVAL SHALL BE ON A PERIODIC BASIS (EVERY SIGNIFICANT RAINFALL OF 0.50 INCH OR GREATER). INSPECTION OF EROSION/SEDIMENT CONTROL MEASURES SHALL BE ON A WEEKLY BASIS AND AFTER EACH RAINFALL OF 0.50 INCHES OR GREATER. SEDIMENT COLLECTED SHALL BE DEPOSITED AND SPREAD EVENLY UPLAND ON SLOPES DURING CONSTRUCTION.

23. UPON DIRECTION OF THE OWNER, QUALIFIED PROFESSIONAL, AND REGULATORY AGENT, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED FOLLOWING STABILIZATION OF THE SITE.

2. ALL STOCKPILED TOPSOIL SHALL BE SEEDED, APPLY MULCH OR STRAW, AND ENCLOSED BY A SILTATION FENCE.

## PLACEMENT OF DRAINAGE STRUCTURES, UTILITIES, AND FOUNDATION CONSTRUCTION OPERATIONS

DIRECTED BY THE QUALIFIED PROFESSIONAL.

1. ALL INLET AND OUTLET PROTECTION SHALL BE PLACED AND MAINTAINED AS SHOWN ON EROSION CONTROL PLANS AND DETAILS, AND AS DESCRIBED IN SPECIFICATIONS AND AS DESCRIBED HEREIN.

2. NO CUT OR FILL SLOPES SHALL EXCEED 2:1 EXCEPT WHERE STABILIZED BY ROCK FACED EMBANKMENTS OR EROSION CONTROL BLANKETS, JUTE MESH AND VEGETATION. ALL SLOPES SHALL BE SEEDED, AND ANY ROAD OR DRIVEWAY SHOULDER AND BANKS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF FINAL GRADING UNTIL TURF IS ESTABLISHED.

3. PAVEMENT SUB-BASE AND BASE COURSES SHALL BE INSTALLED OVER AREAS TO BE PAVED AS SOON AS FINAL SUB-GRADES ARE ESTABLISHED AND UNDERGROUND UTILITIES AND STORM DRAINAGE SYSTEMS HAVE BEEN INSTALLED.

4. AFTER CONSTRUCTION OF PAVEMENT, TOPSOIL, FINAL SEED, MULCH AND LANDSCAPING, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES ONLY AFTER ALL AREAS HAVE BEEN PAVED AND/OR GRASS HAS BEEN WELL ESTABLISHED AND THE SITE HAS BEEN INSPECTED AND APPROVED BY THE OWNER AND THE APPLICABLE REGULATORY AGENCIES.

5. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM OF 85% UNIFORM PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING OR OTHER MOVEMENTS.

6. MAINTAIN ALL PERMANENT AND TEMPORARY SEDIMENT CONTROL DEVICES IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. UPON COMPLETION OF WORK SWEEP PARKING LOT AND REMOVE ALL TEMPORARY SEDIMENT CONTROLS WHEN AUTHORIZED BY LOCAL GOVERNING AUTHORITY. FILE NOT (NOTICE OF TERMINATION) WITH GOVERNING AUTHORITY RESPONSIBLE FOR REGULATING STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES PER NPDES.

[illegible]Transmission  
Business

	#
--	---

TRANSITION STATION #1  
EROSION AND SEDIMENTATION  
CONTROL NOTES

DES: JJS	CHK:RLR
DRW: JJS	APR: BSS

TOWN:  
OLD CANAAN ROAD, PITTSBURG, NH

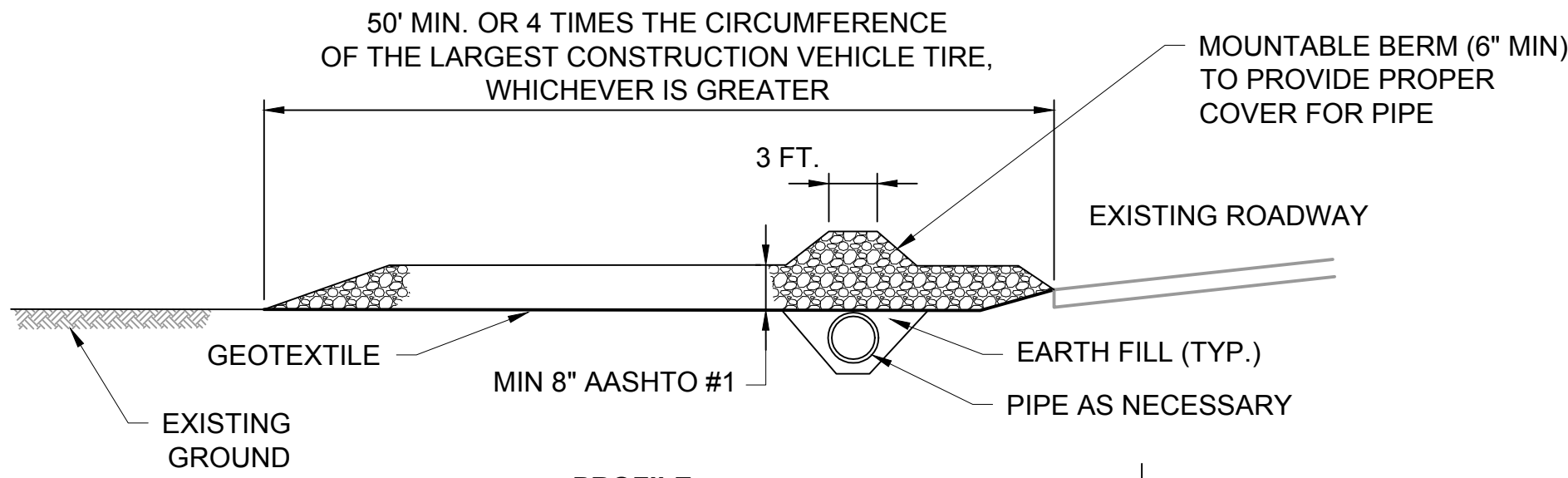
TRANSMISSION LINE:

MILE NO:
SHEET 10 OF 19

**NPTT110-C500**

REVISION: XXX

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

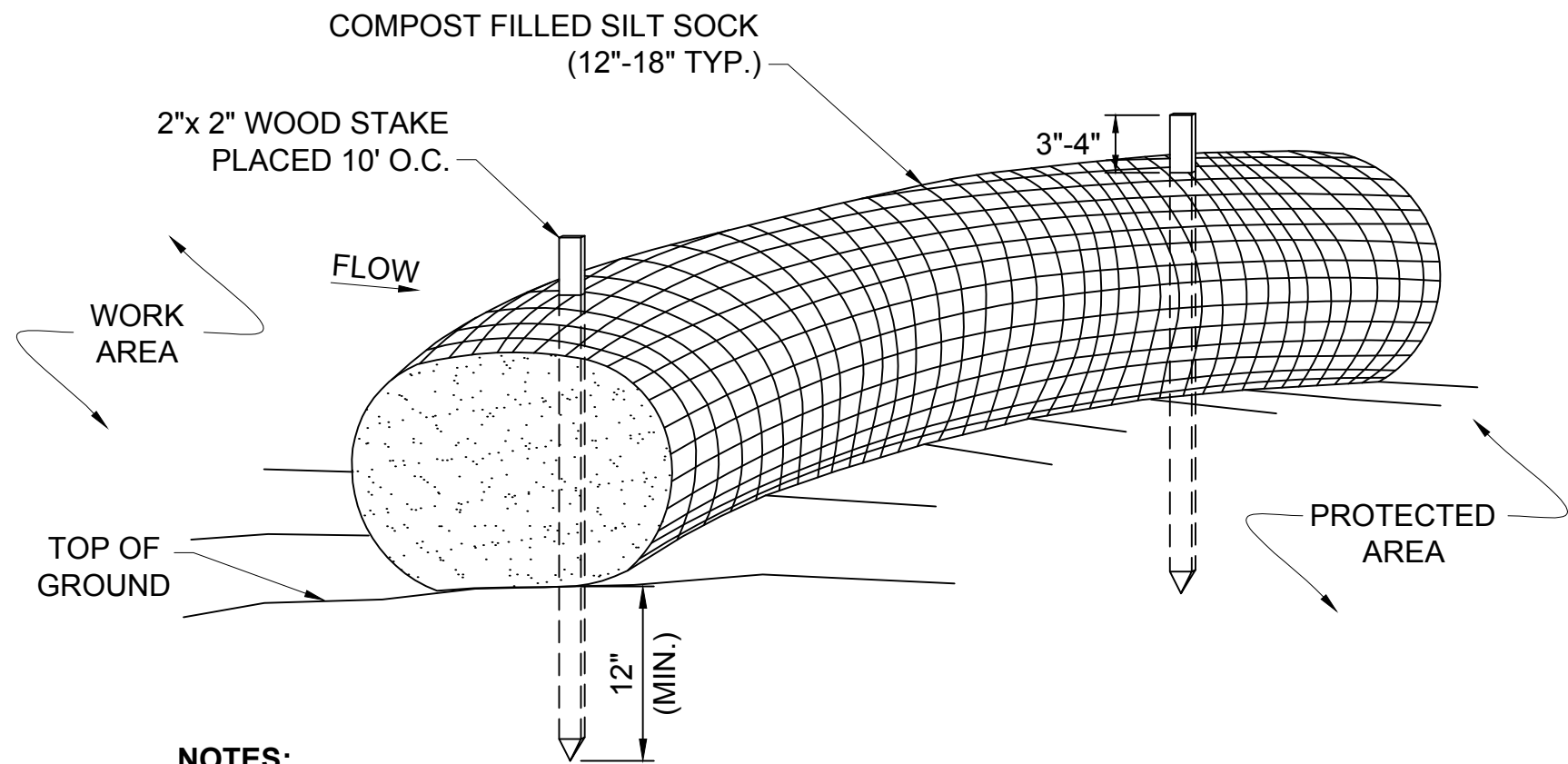


CONSTRUCTION ENTRANCE STONE GRADATION	
SIEVE	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVE
2-1/2 INCH	100
2 INCH	90-100
1-1/2 INCH	35-70
1 INCH	0-15
1/2 INCH	0-5

- NOTES:**
- FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE SURFACE.
  - WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
  - MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
  - WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
  - PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN STORM EVENT.

**STABILIZED  
CONSTRUCTION ENTRANCE**  
NOT TO SCALE

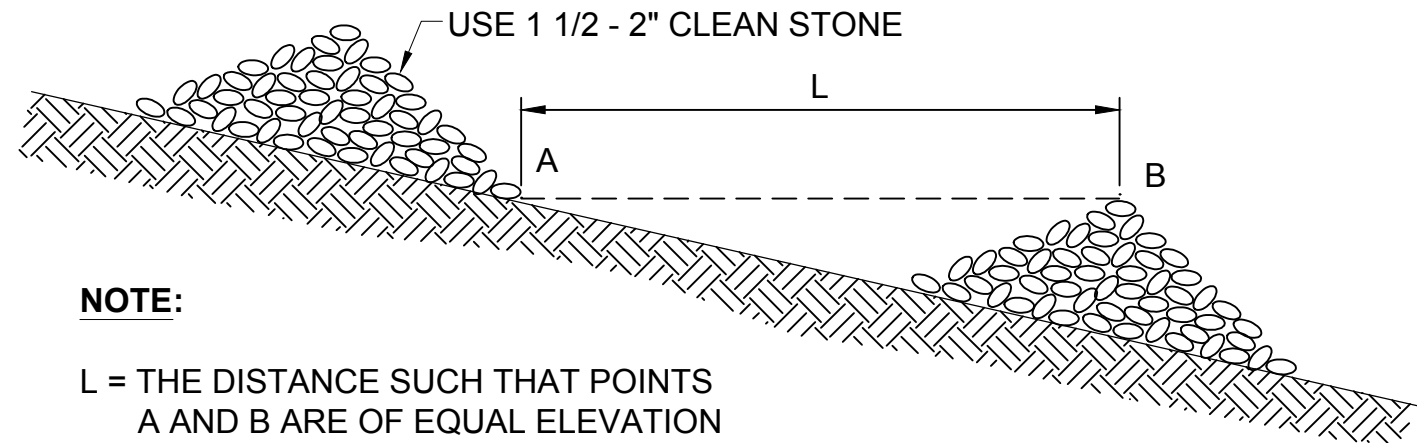
1  
C102



- NOTES:**
- SILT SOCK SHALL BE FILTREXX™ SILTSOXX™ OR APPROVED EQUIVALENT.
  - SEE SPECIFICATIONS FOR SOCK SIZE AND COMPOST FILL REQUIREMENTS.
  - SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.
  - COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE QUALIFIED PROFESSIONAL.

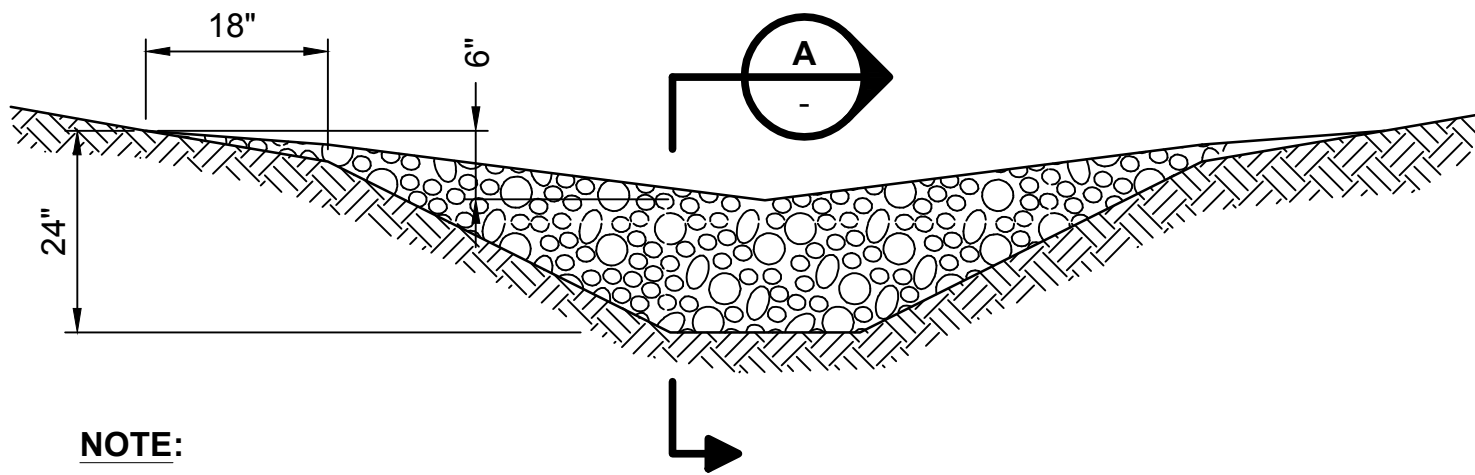
**SILT SOCK**  
NOT TO SCALE

4  
C102



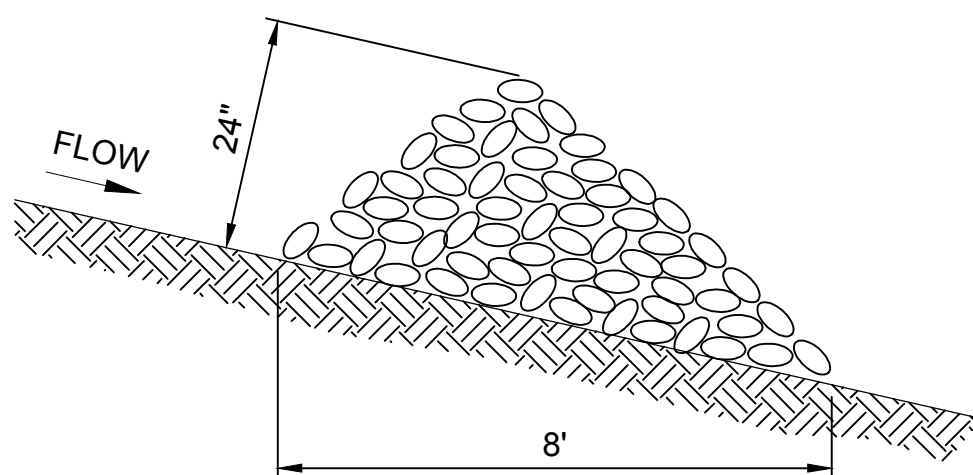
**NOTE:**  
L = THE DISTANCE SUCH THAT POINTS  
A AND B ARE OF EQUAL ELEVATION

**SIDE VIEW**



**NOTE:**  
KEY STONE INTO CHANNEL BANKS AND EXTEND IT BEYOND THE  
ABUTMENTS A MINIMUM OF 18" TO PREVENT FLOW AROUND THE DAM.

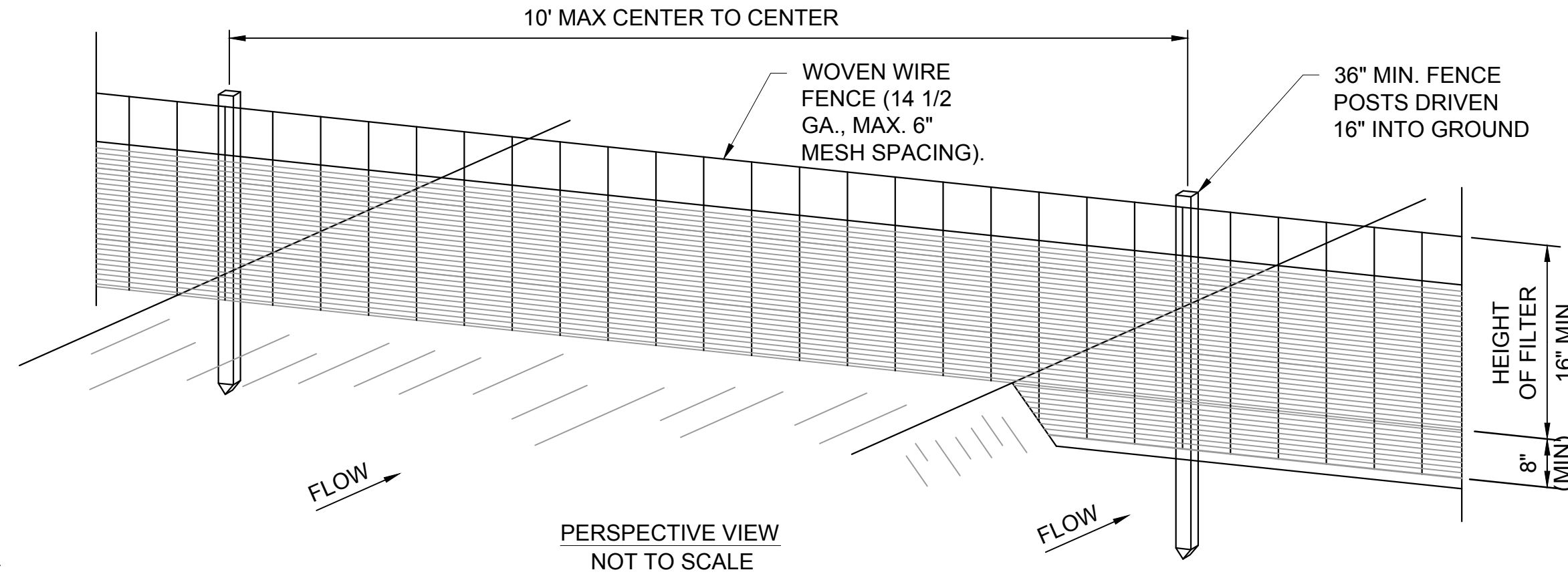
**VIEW LOOKING UPSTREAM**



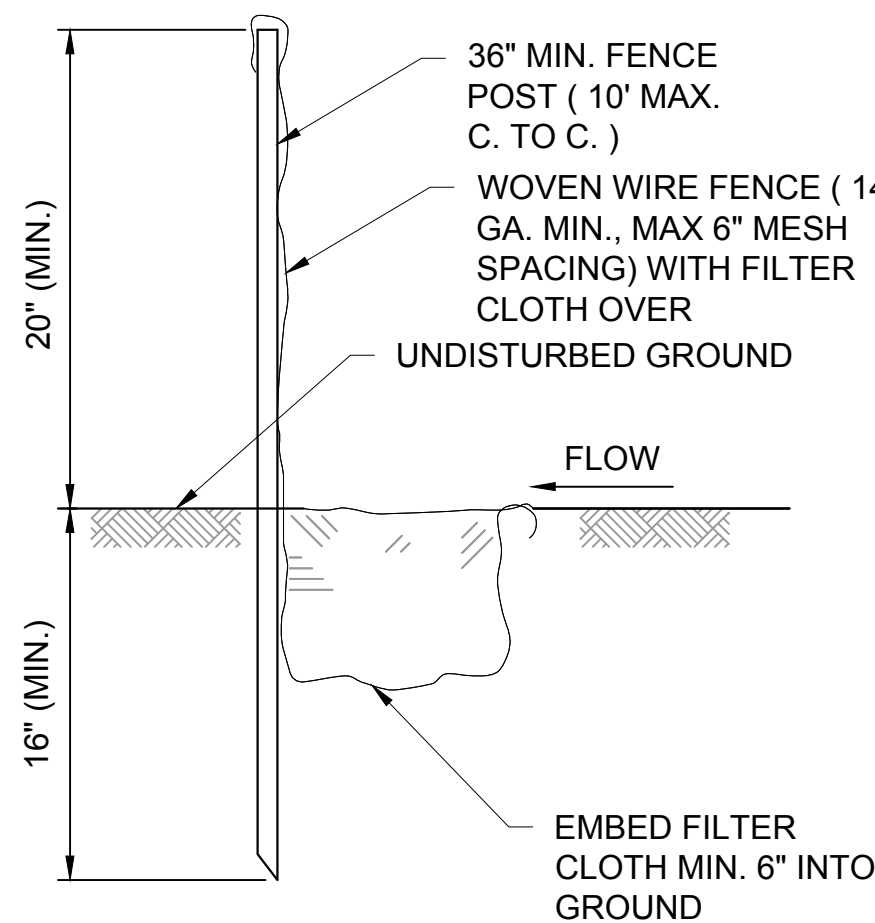
**SECTION A**

**STONE CHECK DAM**  
NOT TO SCALE

2  
C102



**PERSPECTIVE VIEW**  
NOT TO SCALE



- NOTES:**
- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
  - FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION
  - WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER- LAPPED BY SIX INCHES AND FOLDED.
  - MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

POSTS: STEEL EITHER "T" OR "U"  
TYPE OR 2" HARDWOOD.

FENCE: WOVEN WIRE 14 1/2 GA.  
6" MAX. MESH OPENING.

FILTER CLOTH: FILTER X, MIRAFI 100X,  
STABILINKA T140N OR  
APPROVED EQUAL.

PREFABRICATED UNIT: GEOFAB, ENVIROFENCE,  
OR APPROVED EQUAL.

**SILT FENCE**

NOT TO SCALE

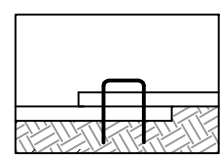
3  
C102

**NOTES:**

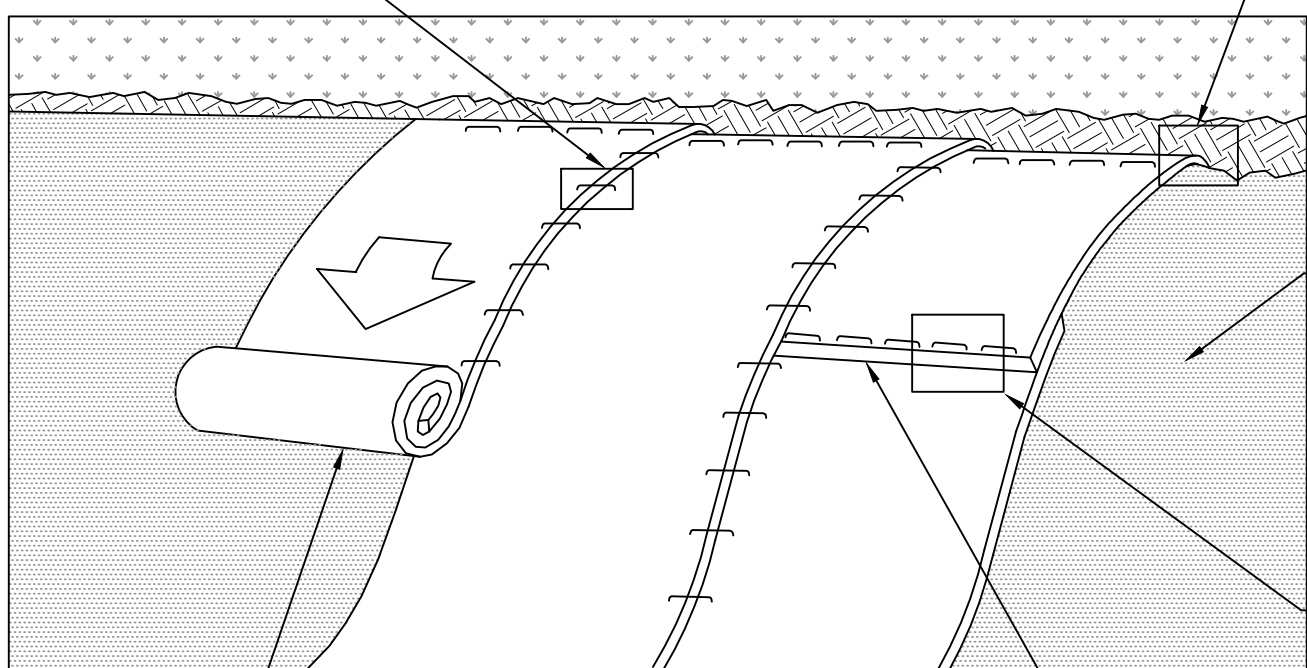
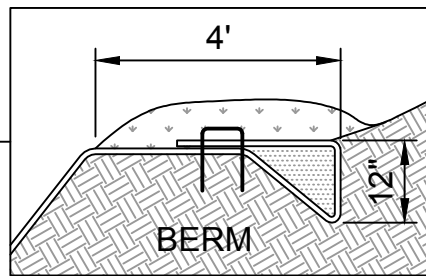
- SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
- PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
- SLOPE SURFACE SHALL BE FREE OF ROCKS, CLOUDS, STICKS, AND GRASS.
- BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
- THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

BLANKET EDGES STAPLED  
AND OVERLAPPED (4 IN. MIN.)

INSTALL BEGINNING OF  
ROLL IN 6 IN. x 6 IN. ANCHOR  
TRENCH, STAPLE, BACKFILL  
AND COMPACT SOIL



STARTING AT TOP OF SLOPE, ROLL  
BLANKETS IN DIRECTION OF WATER FLOW



THE BLANKET SHOULD  
NOT BE STRETCHED; IT  
MUST MAINTAIN GOOD  
SOIL CONTACT

OVERLAP BLANKET ENDS 6 IN. MIN.  
WITH THE UPSLOPE BLANKET  
OVERLYING THE DOWNSLOPE  
BLANKET (SHINGLE STYLE).  
STAPLE SECURELY.

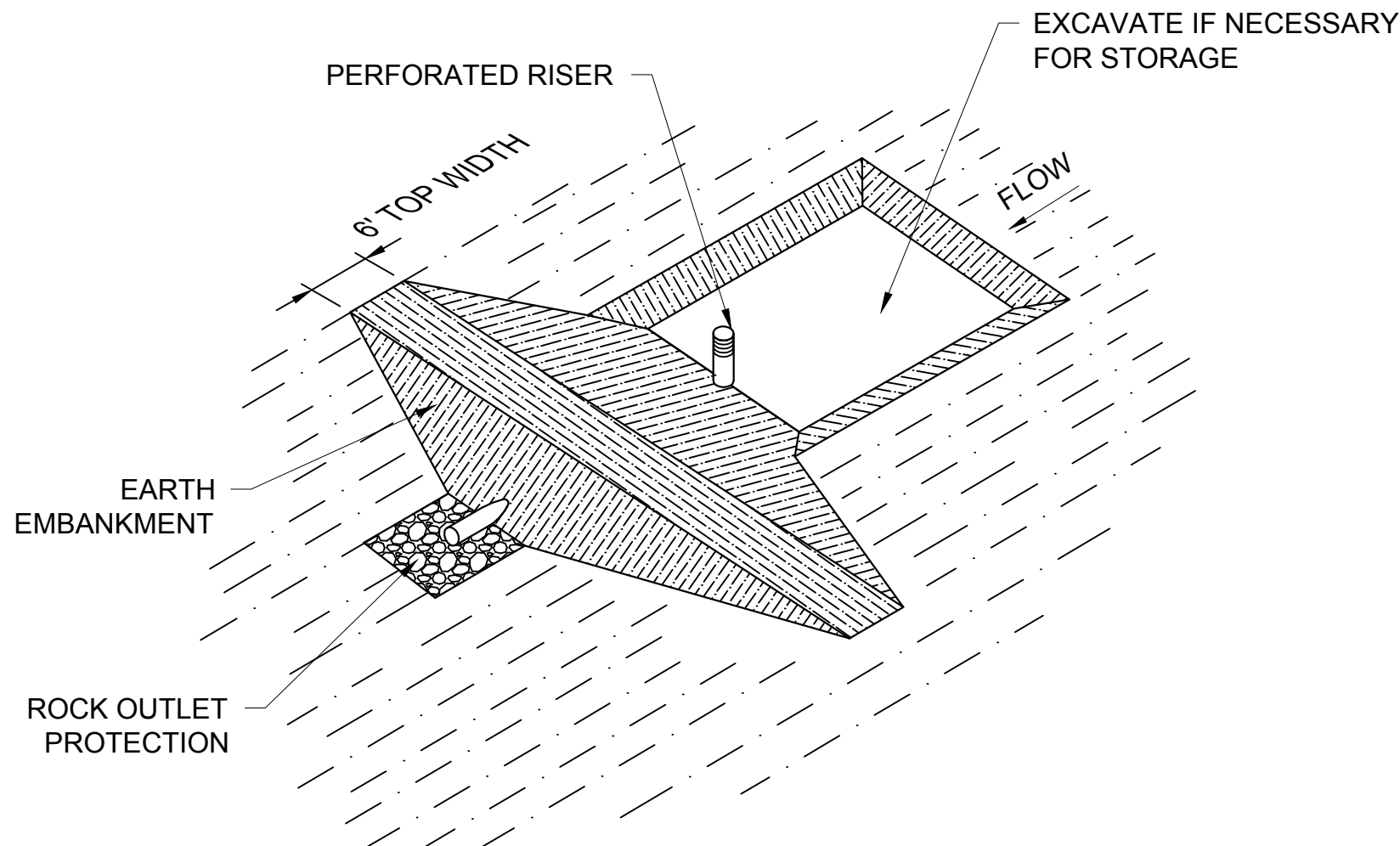
REFER TO MANUF.  
RECOMMENDED STAPLING  
PATTERN FOR STEEPNESS  
AND LENGTH OF SLOPE  
BEING BLANKETED

**EROSION CONTROL BLANKET**  
NOT TO SCALE

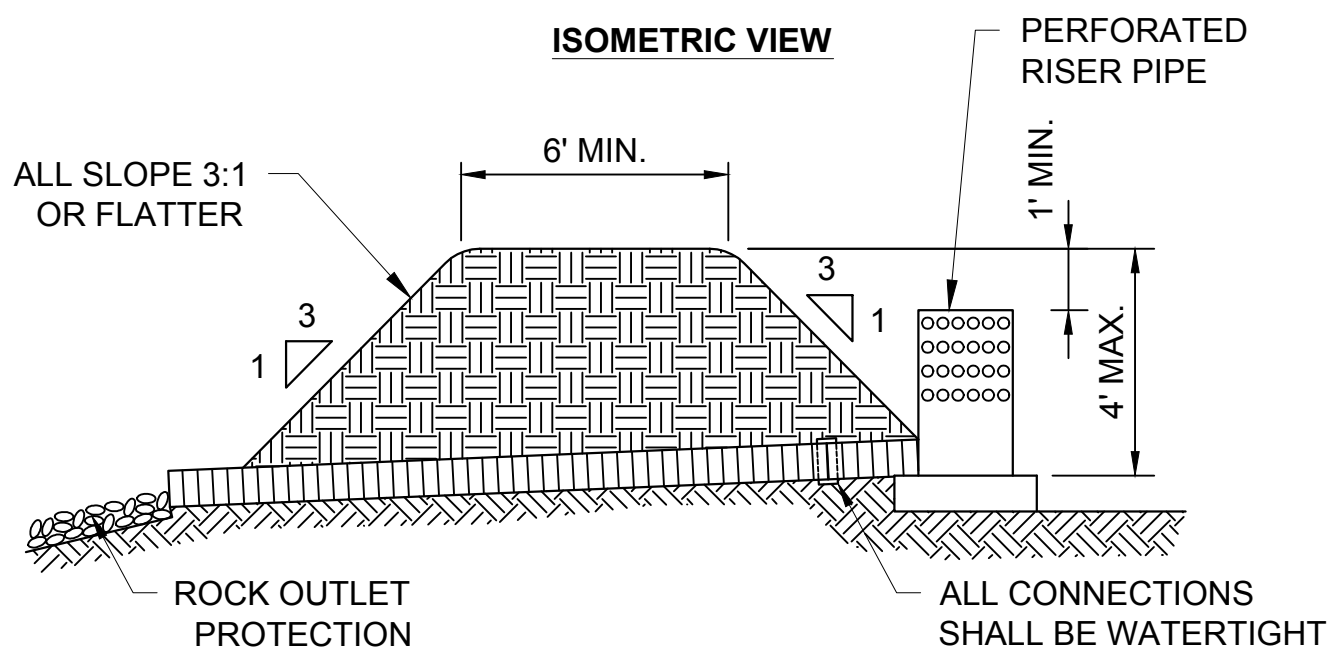
5  
C102

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**





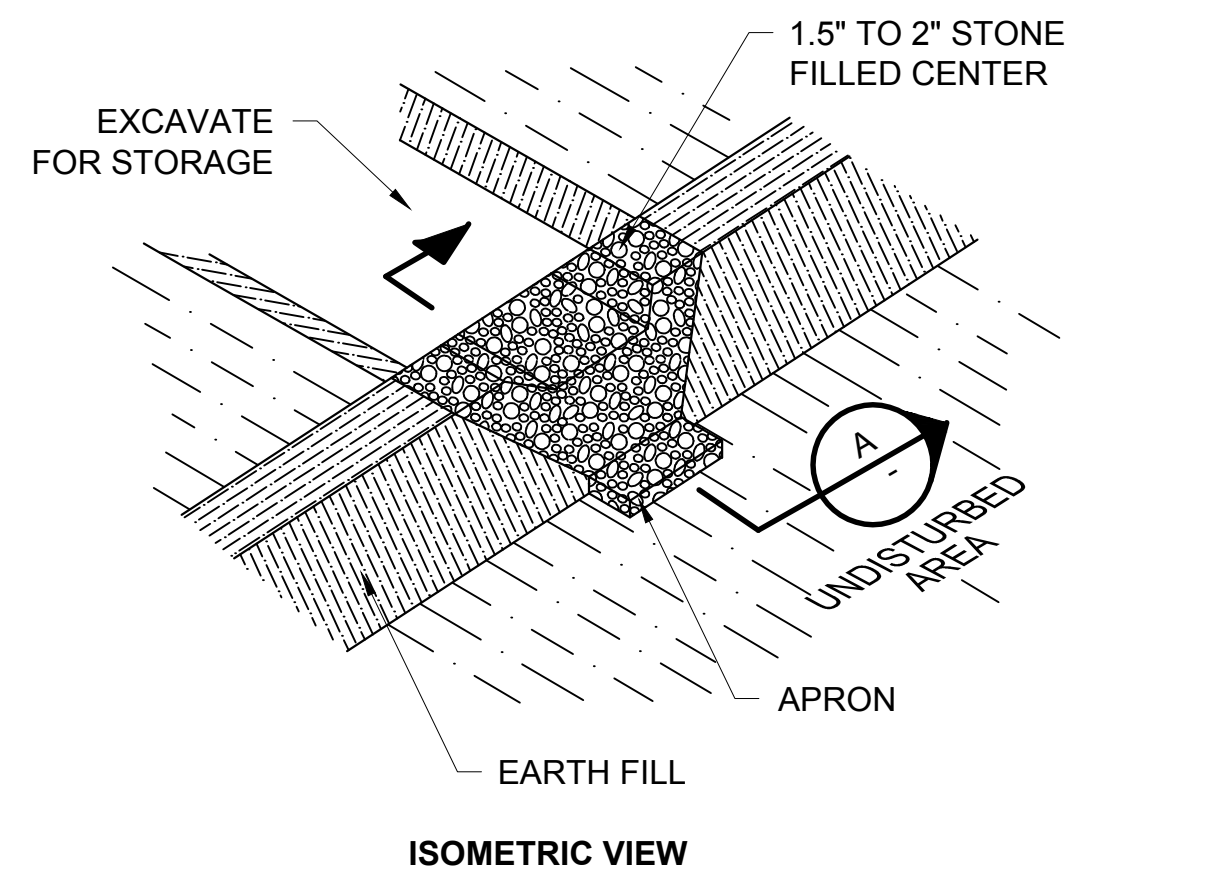
ISOMETRIC VIEW



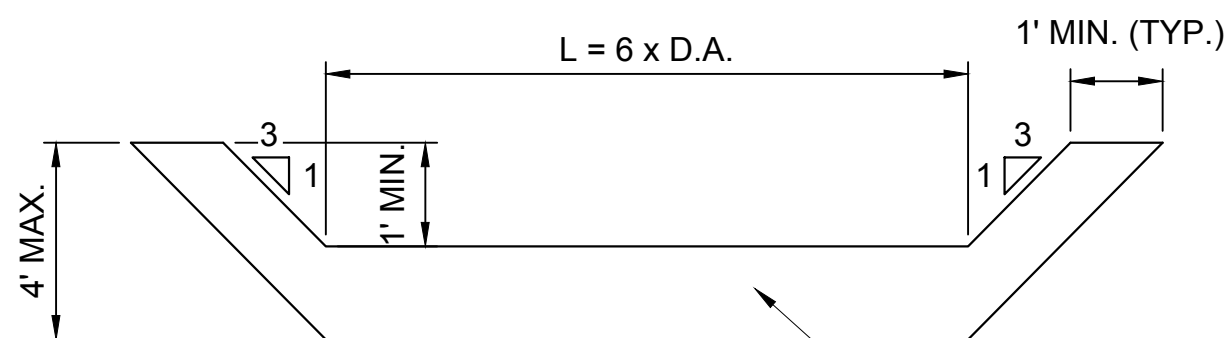
SECTION

PIPE OUTLET SEDIMENT TRAP  
NOT TO SCALE

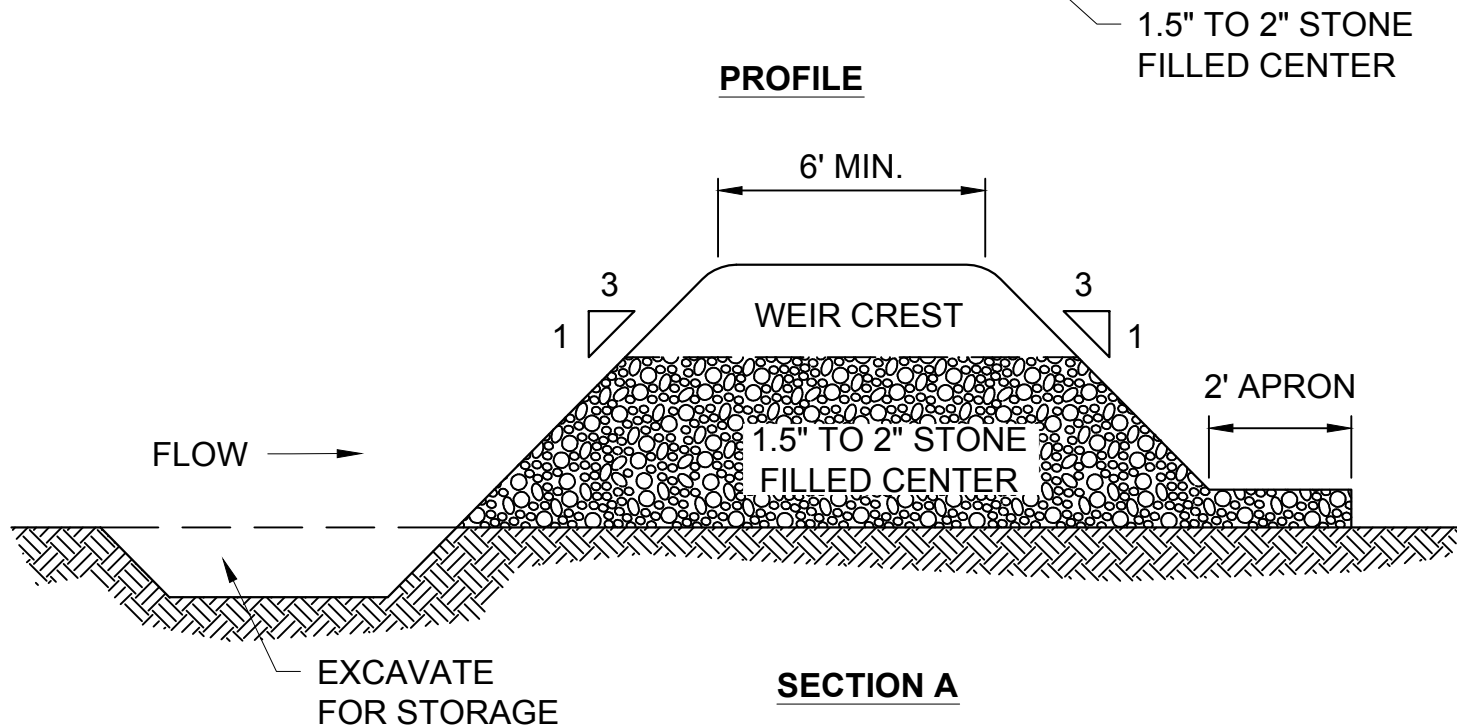
1  
C502



ISOMETRIC VIEW



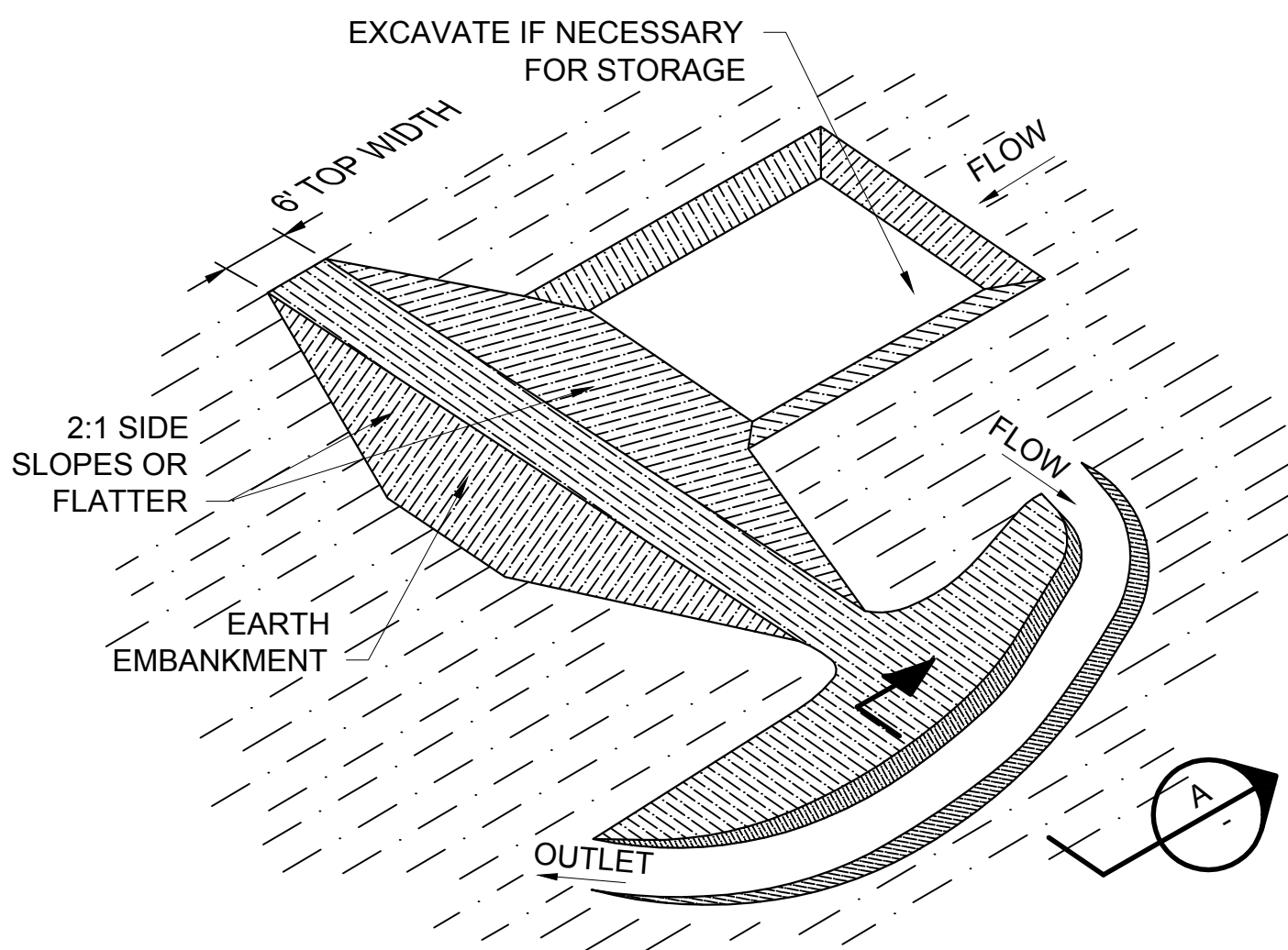
PROFILE



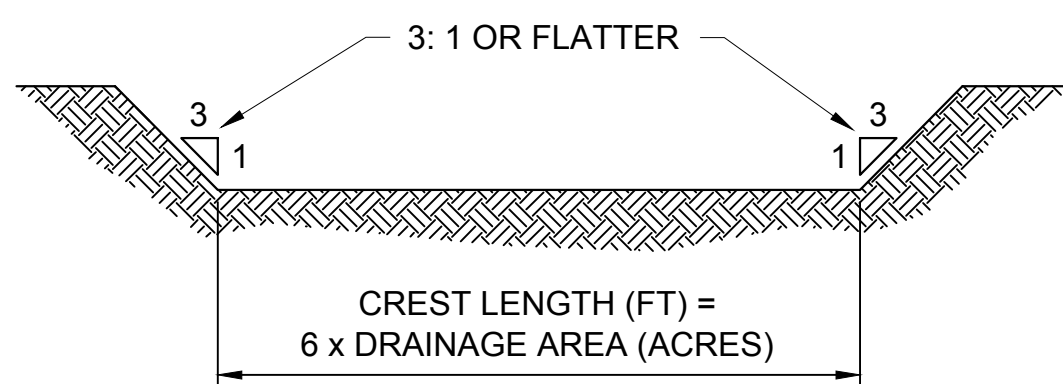
SECTION A

STONE OUTLET SEDIMENT TRAP  
NOT TO SCALE

2  
C502



ISOMETRIC VIEW

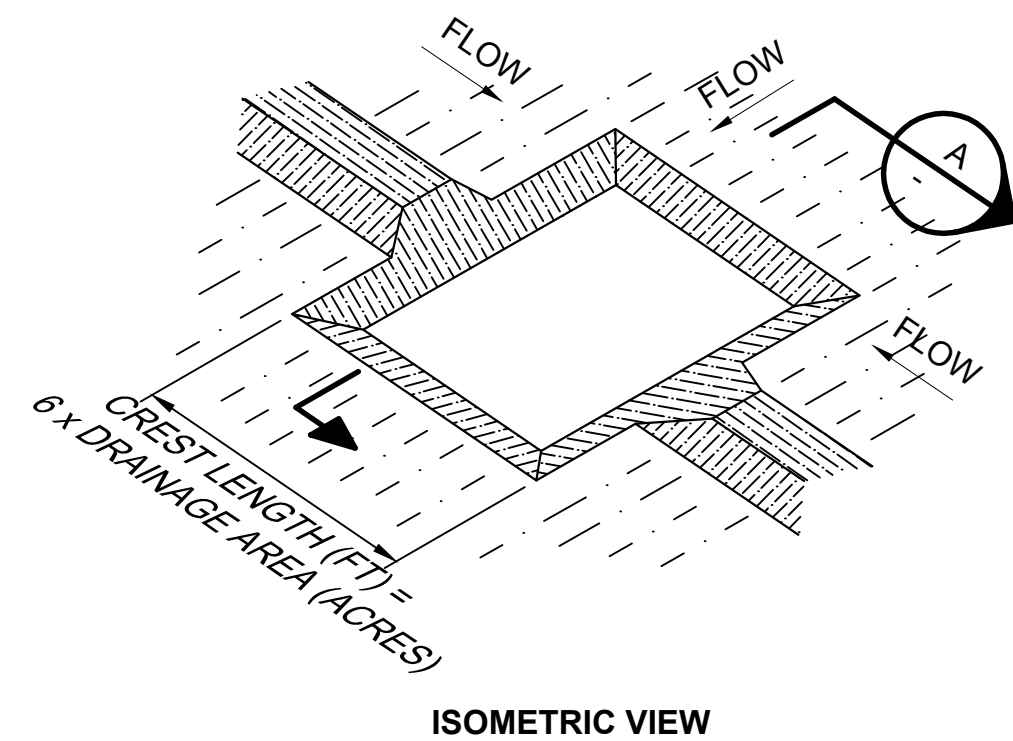


SECTION A

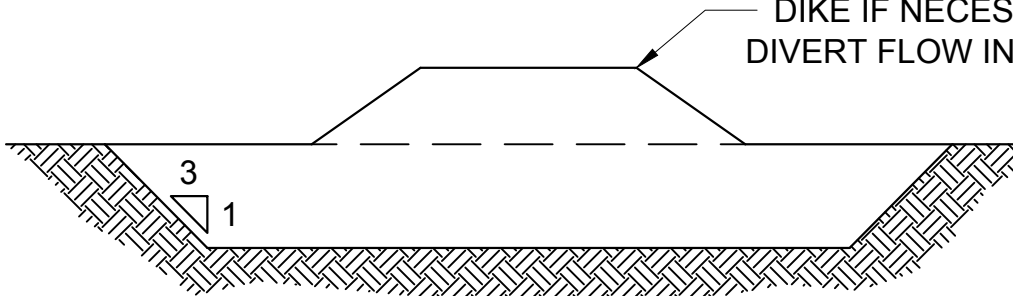
EMBANKMENT

EARTH OUTLET SEDIMENT TRAP  
NOT TO SCALE

4  
C502

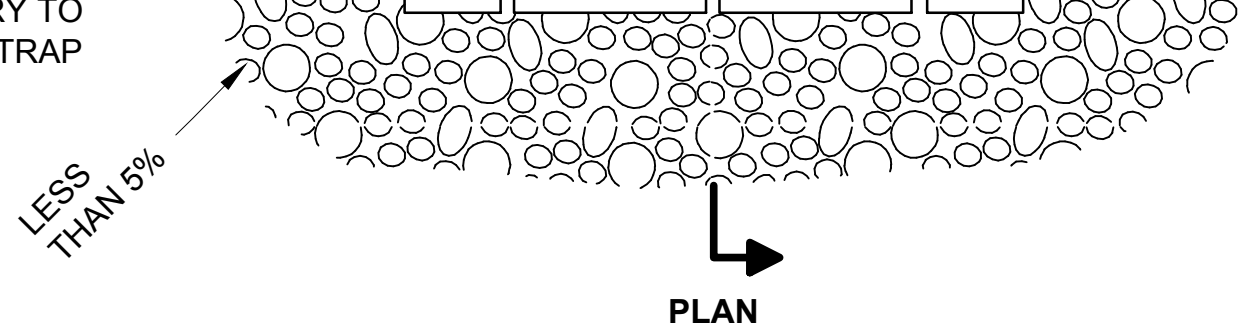


ISOMETRIC VIEW



SECTION A

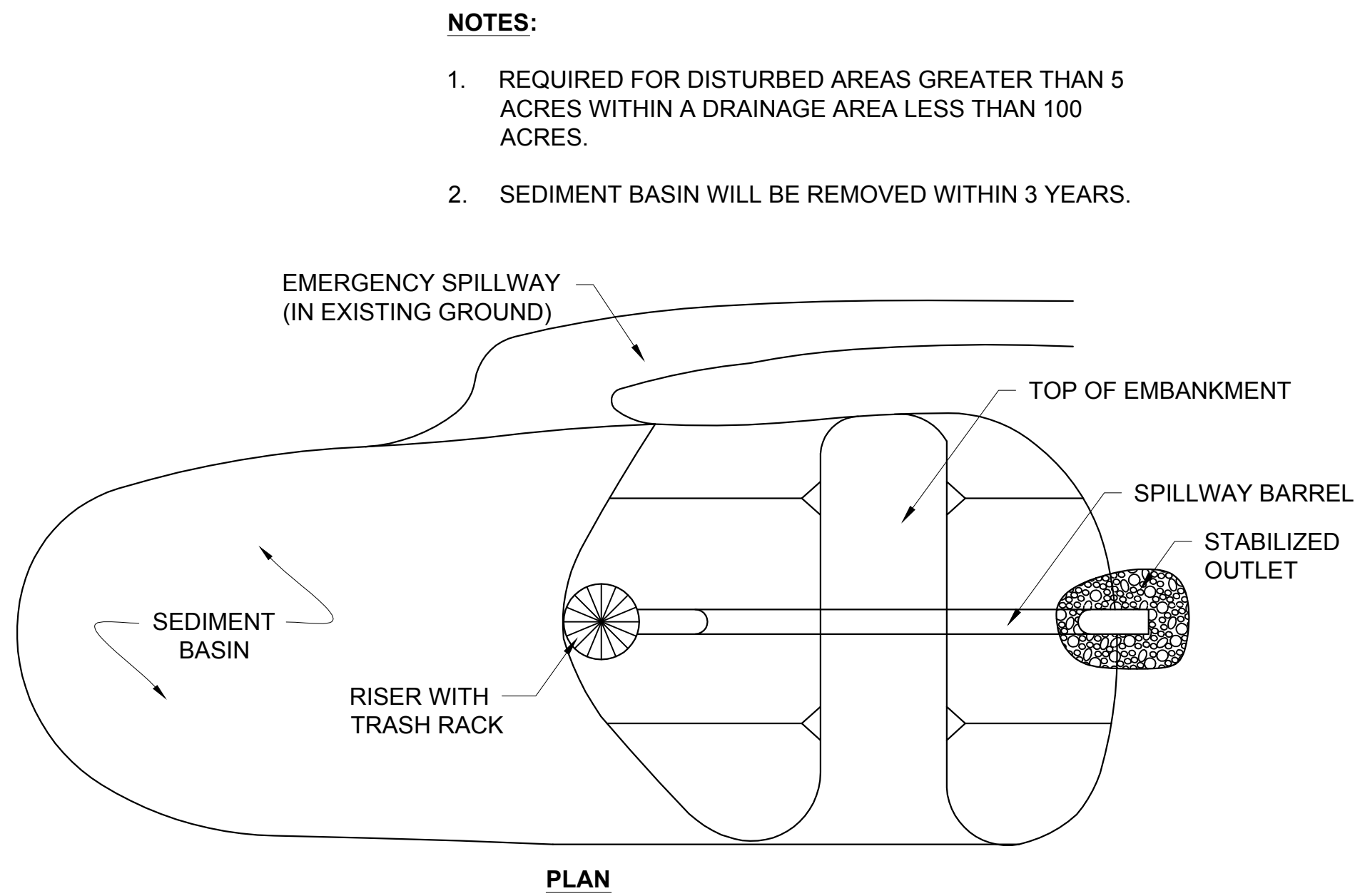
EXCAVATED



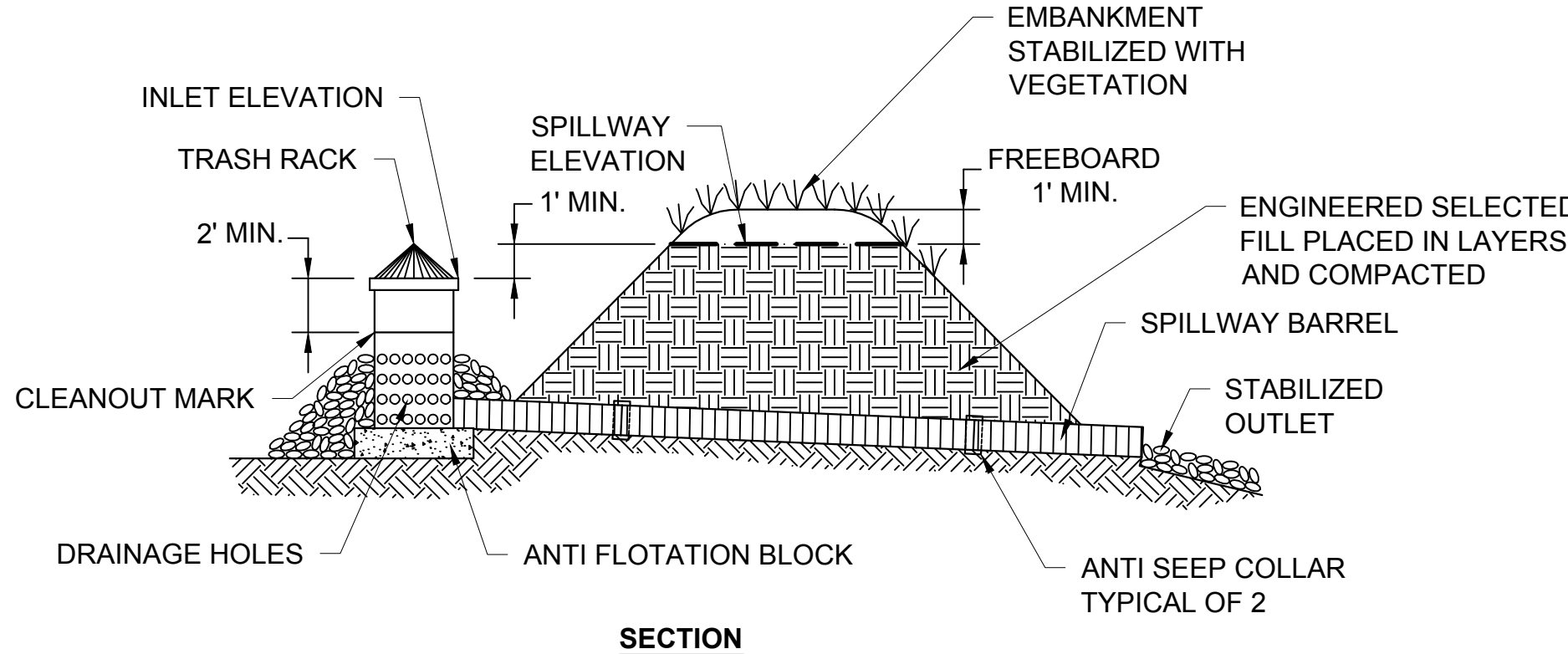
PLAN

CONCRETE BLOCK AND GRAVEL  
DROP INLET SEDIMENT BARRIER  
NOT TO SCALE

5  
C102



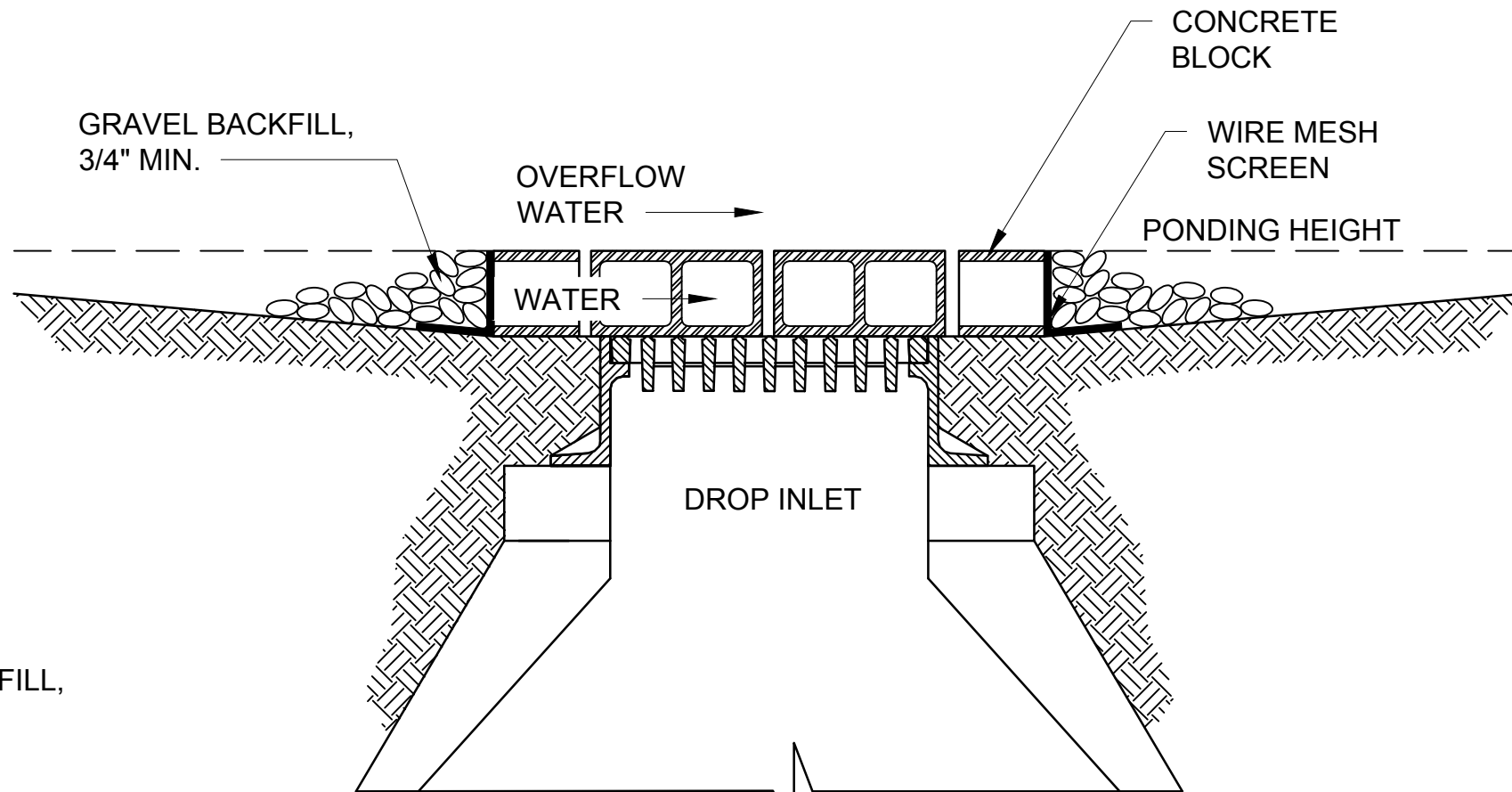
PLAN



SECTION

TYPICAL SEDIMENT BASIN  
NOT TO SCALE

3  
C502



SECTION A

NOTES:

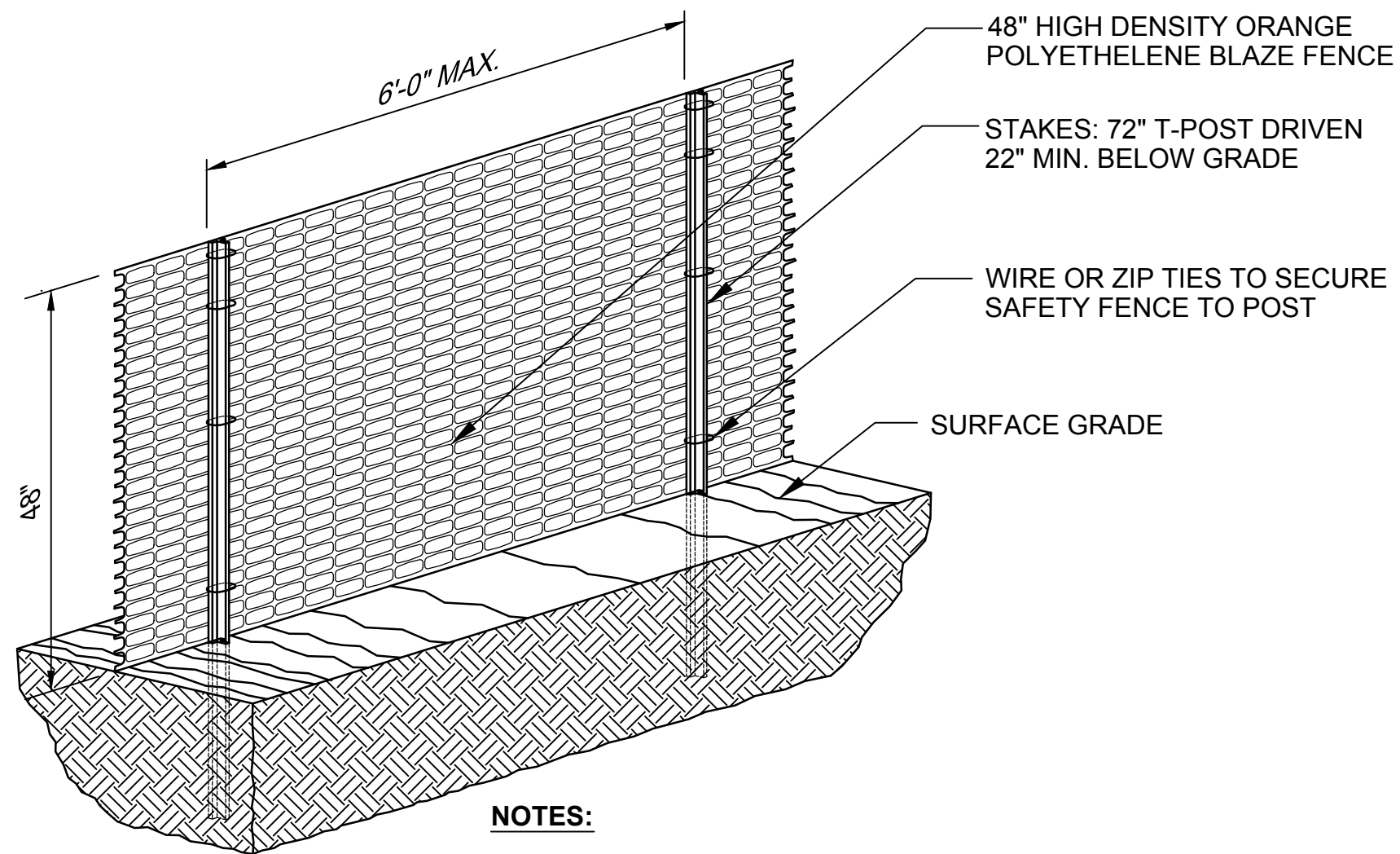
1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. EXCAVATE A BASIN OF SUFFICIENT SIZE ADJACENT TO THE DROP INLET.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.

NOTES:

1. REQUIRED FOR DISTURBED AREAS GREATER THAN 5 ACRES WITHIN A DRAINAGE AREA LESS THAN 100 ACRES.
2. SEDIMENT BASIN WILL BE REMOVED WITHIN 3 YEARS.

FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

DES: JUS	CHK: RLR	DATE: 10/1/2015	SCALE: NTS
DRW: JUS	APR: BSS		
TOWN: OLD MAN RAIL, PITTSBURG, WI			
TRANSMISSION LINE:			
MILE NO:			
SHEET 12 OF 19			
NPTT112-C502			
REVISION: XXX			

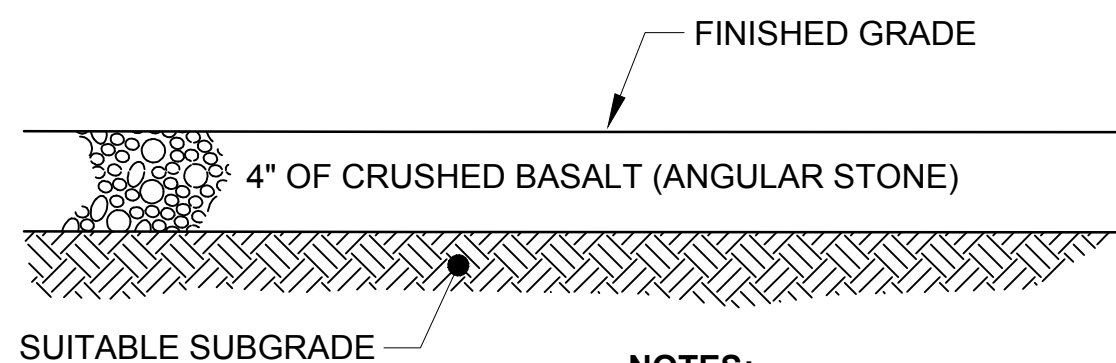


**NOTES:**

1. FOR LOCATION OF AREAS TO BE PROTECTED SEE SHEET C102.
2. SAFETY FENCE SHALL BE FASTENED SECURELY TO THE T-POSTS.
3. THE FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION AND UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED.

**CONSTRUCTION FENCE**  
NOT TO SCALE

1  
C102

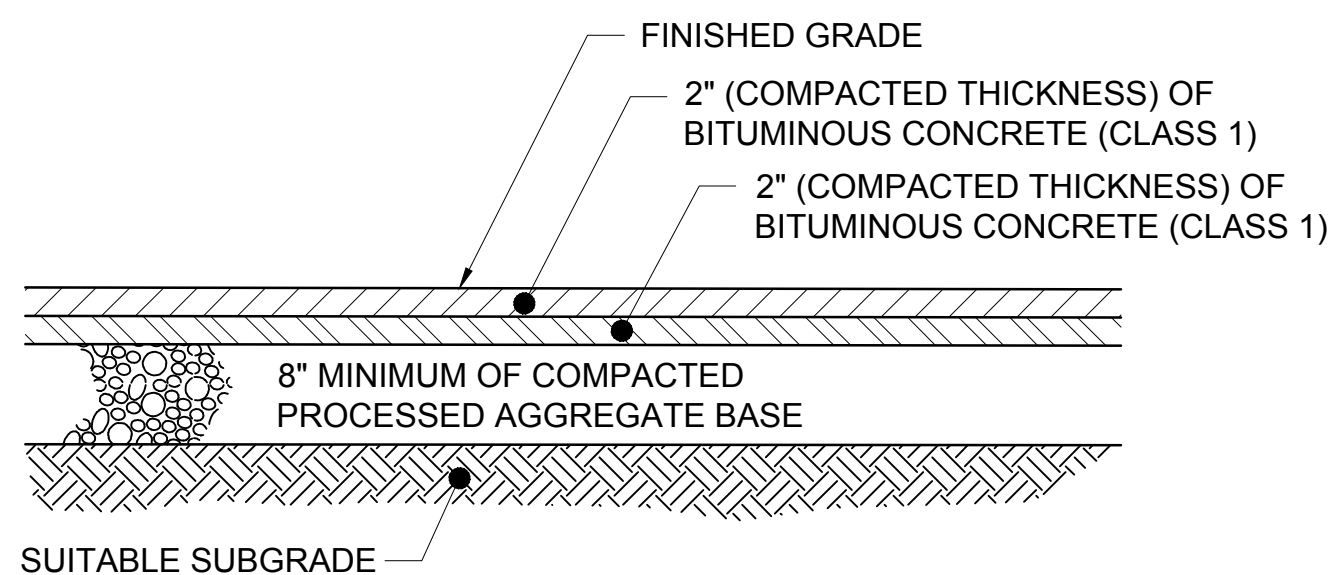


**NOTES:**

1. REMOVE ALL LOAM, CLAY, MUCK, STUMPS, AND OTHER IMPROPER ROAD FOUNDATION MATERIAL WITHIN 2' OF SUBGRADE. REPLACE WITH COMPACTED GRANULAR FILL MATERIAL ACCEPTABLE TO APPROVING AGENCY. COMPACTION TO BE AT LEAST 95% OF STANDARD PROCTOR.
2. SUBSTATION SURFACE STONE SHALL EXTEND 5-FT OUTSIDE THE SUBSTATION PERIMETER FENCE.
3. GRAVEL ACCESS ROADS SHALL HAVE AT LEAST 8-INCHES OF PROCESSED AGGREGATE BASE.

**SUBSTATION  
GRAVEL SURFACE SECTION**  
NOT TO SCALE

3  
C100



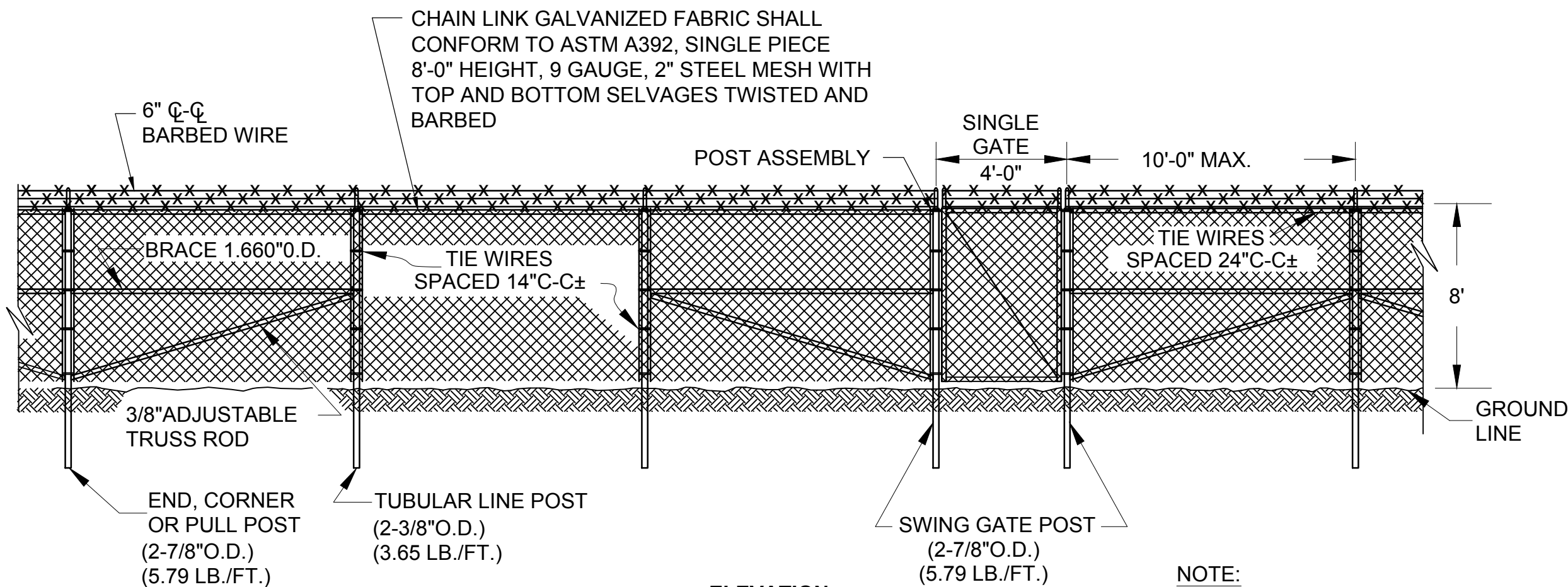
PAVEMENT AGGREGATE BASE STONE GRADATION	
SIEVE	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVE
2-1/2 INCH	100
2 INCH	95-100
3/4 INCH	50-75
1/4 INCH	25-45
NO. 40	5-20
NO. 100	2-12

**BITUMINOUS CONCRETE  
PAVEMENT SECTION**  
NOT TO SCALE

4  
C100

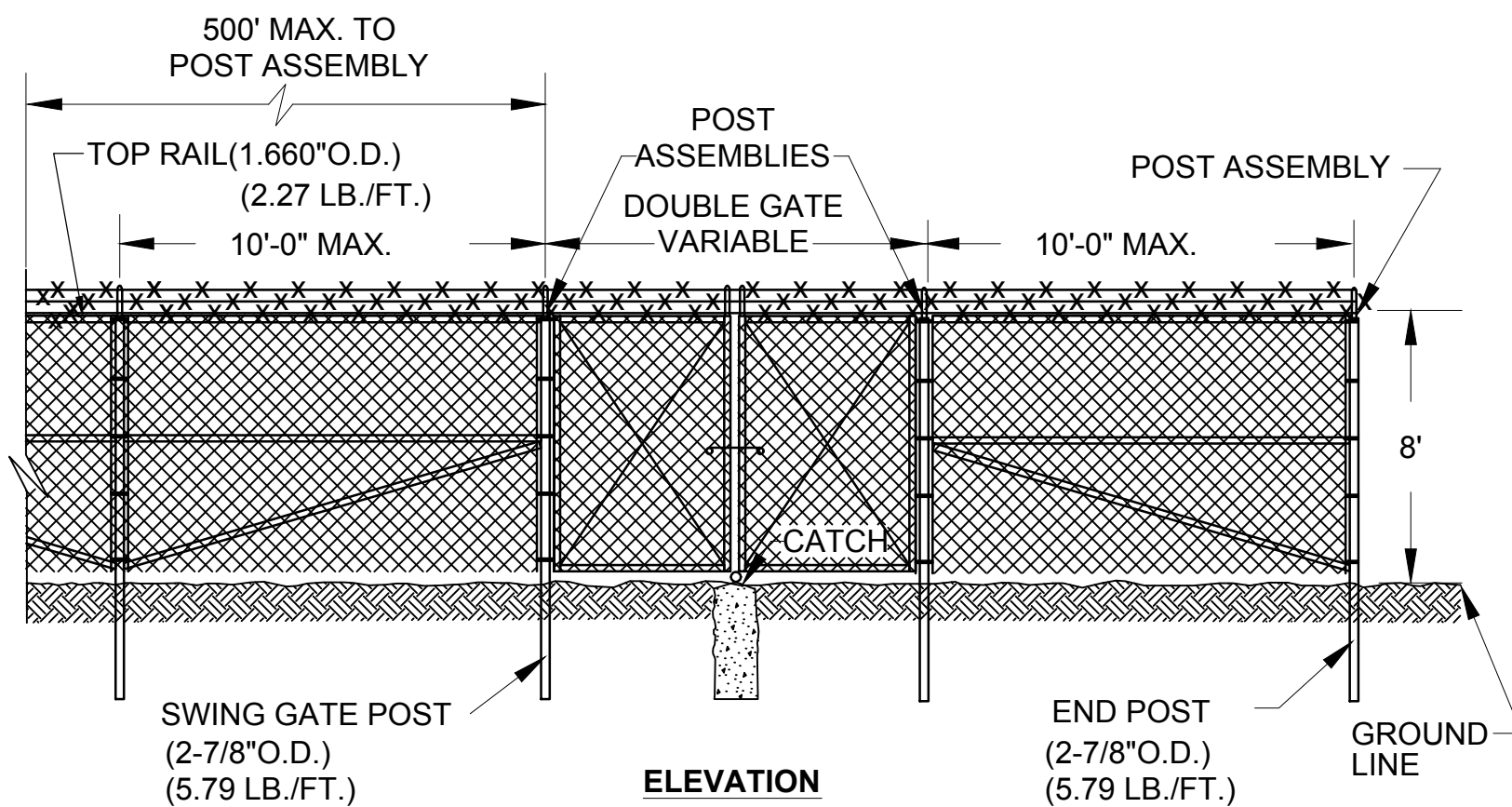
**ROAD CONSTRUCTION NOTES:**

1. REMOVE ALL LOAM, CLAY, MUCK, STUMPS, AND OTHER IMPROPER ROAD FOUNDATION MATERIAL WITHIN 2' OF SUBGRADE. REPLACE WITH COMPACTED GRANULAR FILL MATERIAL ACCEPTABLE TO APPROVING AGENCY. COMPACTION TO BE AT LEAST 95% OF STANDARD PROCTOR.
2. ALL PAVEMENT, BASE MATERIALS AND WORKMANSHIP TO BE IN COMPLIANCE WITH N.H.D.O.T. "STANDARDS FOR ROAD AND BRIDGE CONSTRUCTION" LATEST EDITION.

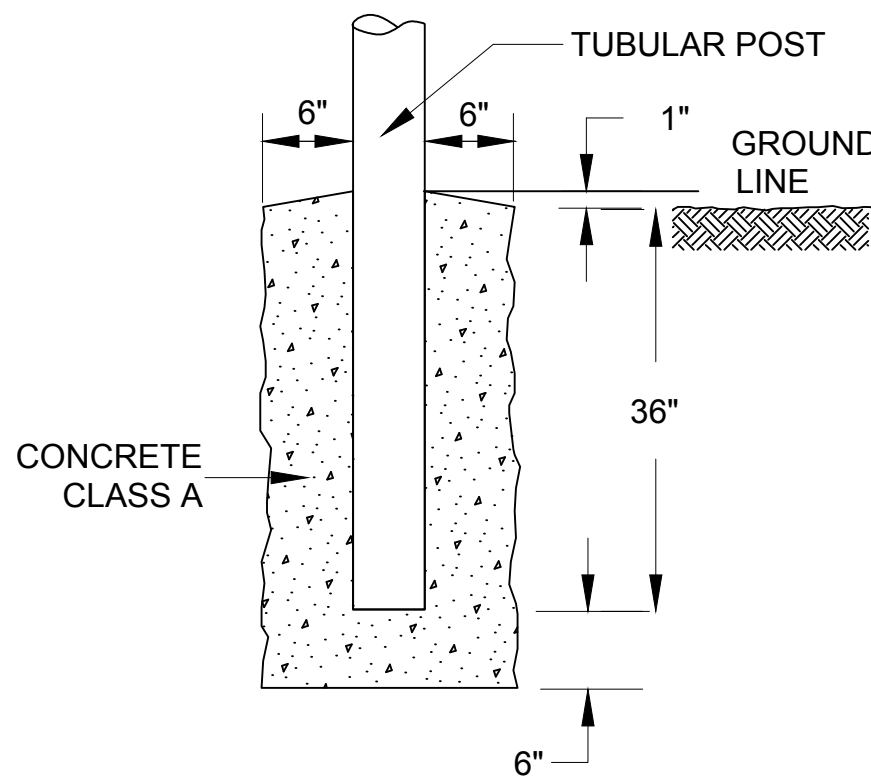


**ELEVATION**

NOTE:  
ALL END POSTS SHALL HAVE ONE BRACE  
ALL CORNER AND INTERMEDIATE BRACE OR  
PULL POSTS SHALL HAVE TWO BRACES, WITH  
A MAXIMUM SPACING OF BETWEEN POST  
ASSEMBLIES OF 500 FEET.



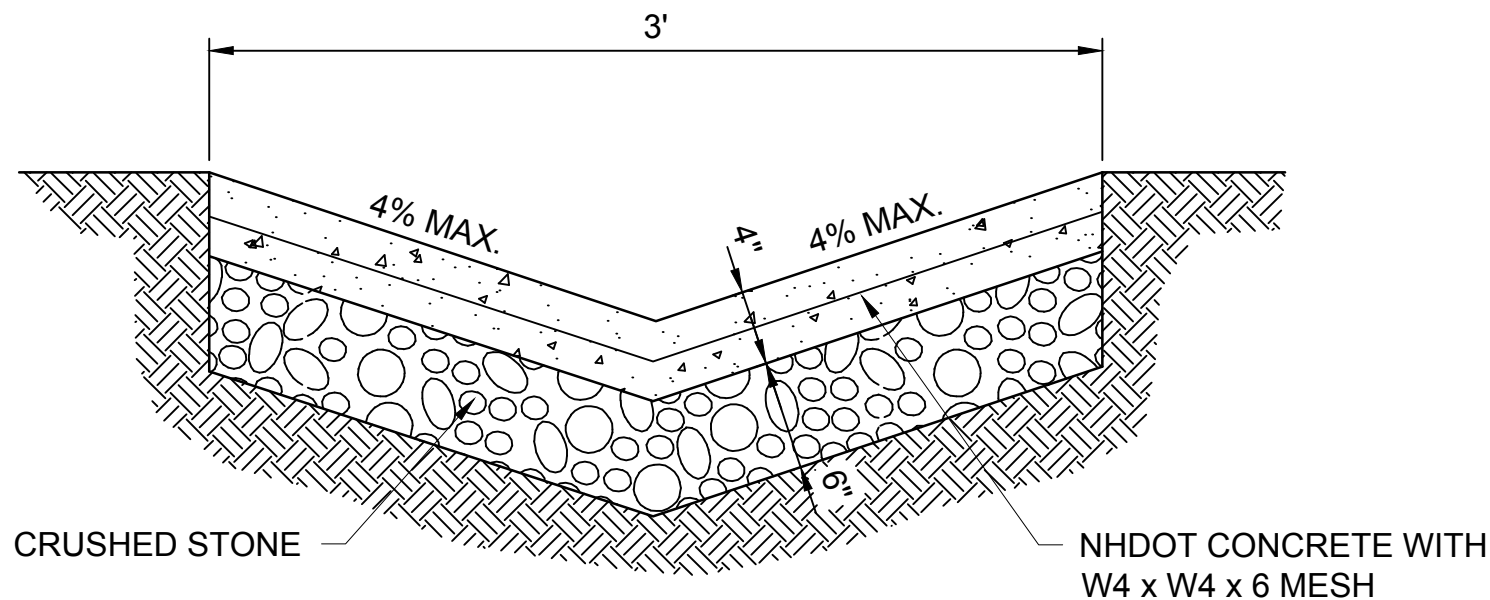
**ELEVATION**



**FOOTING DETAIL**

**SECURITY FENCE**  
NOT TO SCALE

2  
C100

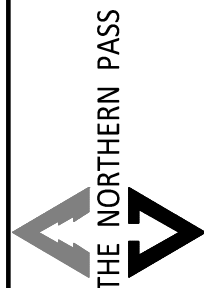


**CONCRETE CHANNEL**  
NOT TO SCALE

5  
C100  
C101

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

NO.	REVISION	DATE	BY	CHKD	APPV.
1	ISSUED FOR PERMITTING	10/1/15	JUS	R/LR	BSS



Transmission  
Business

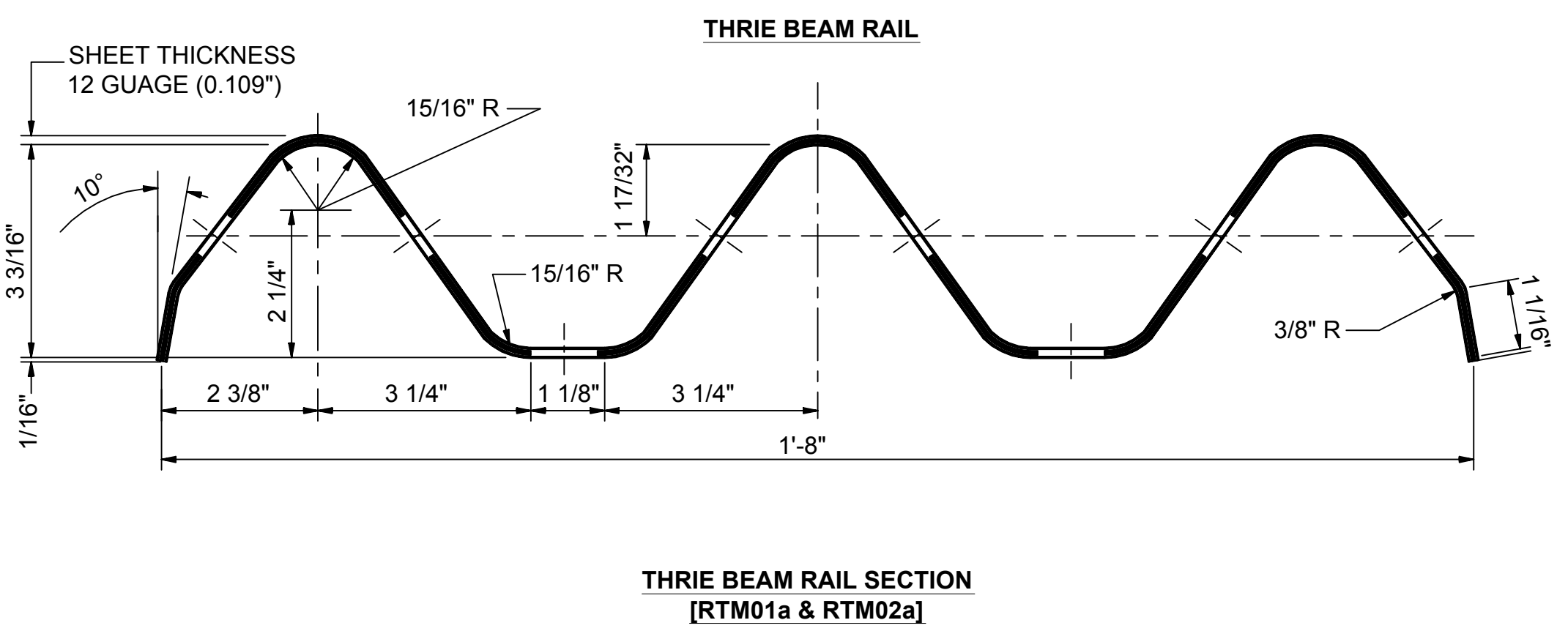
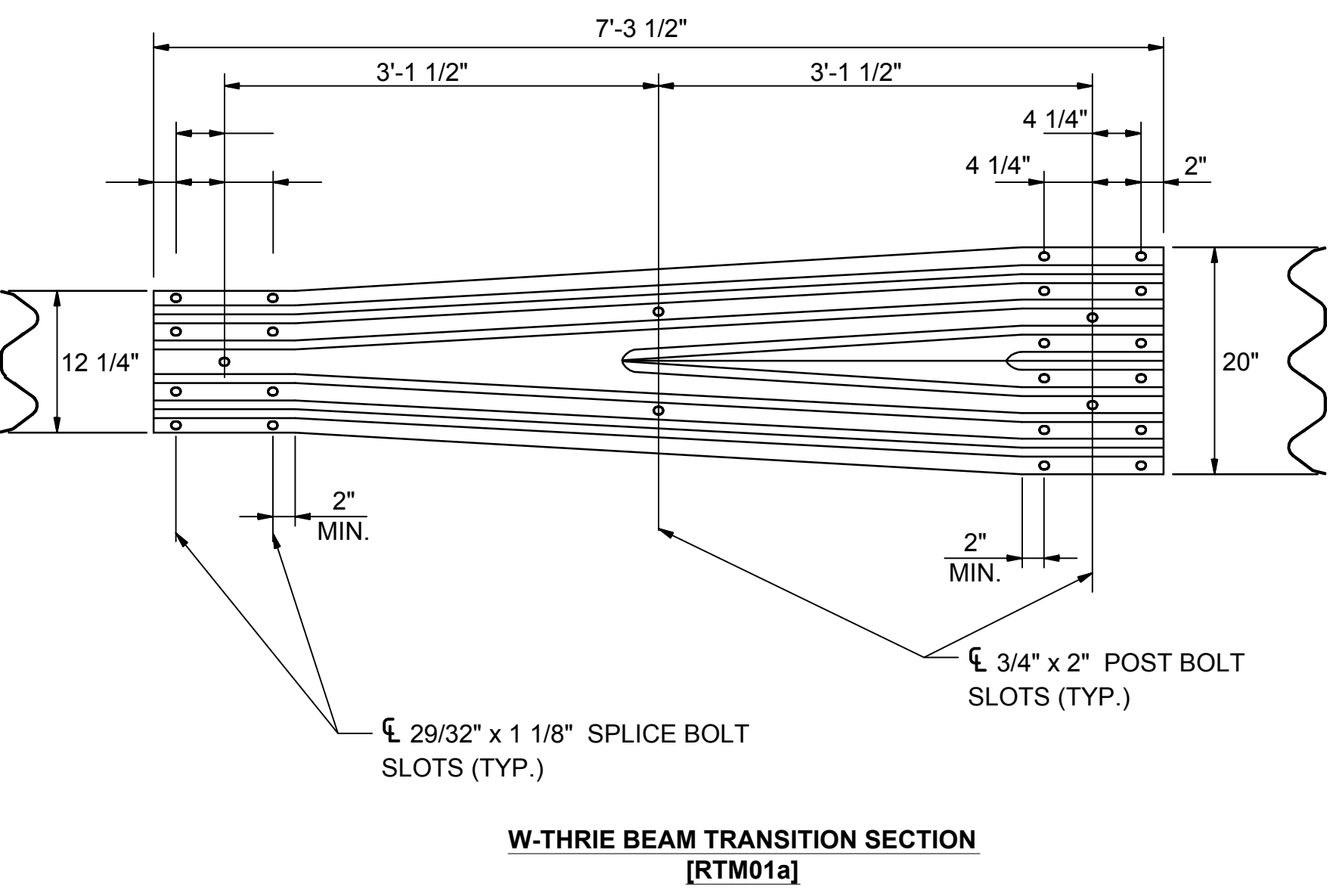
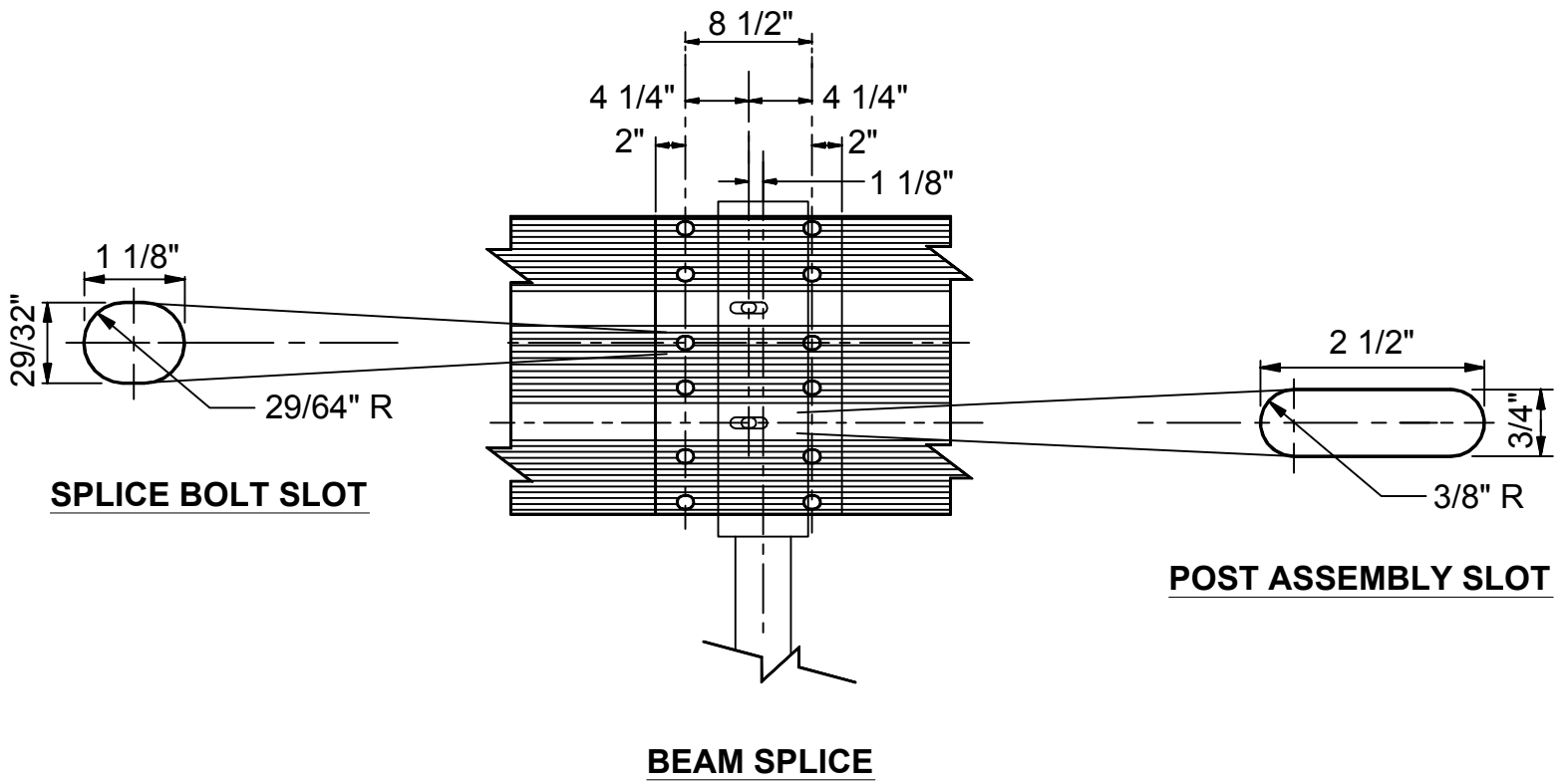
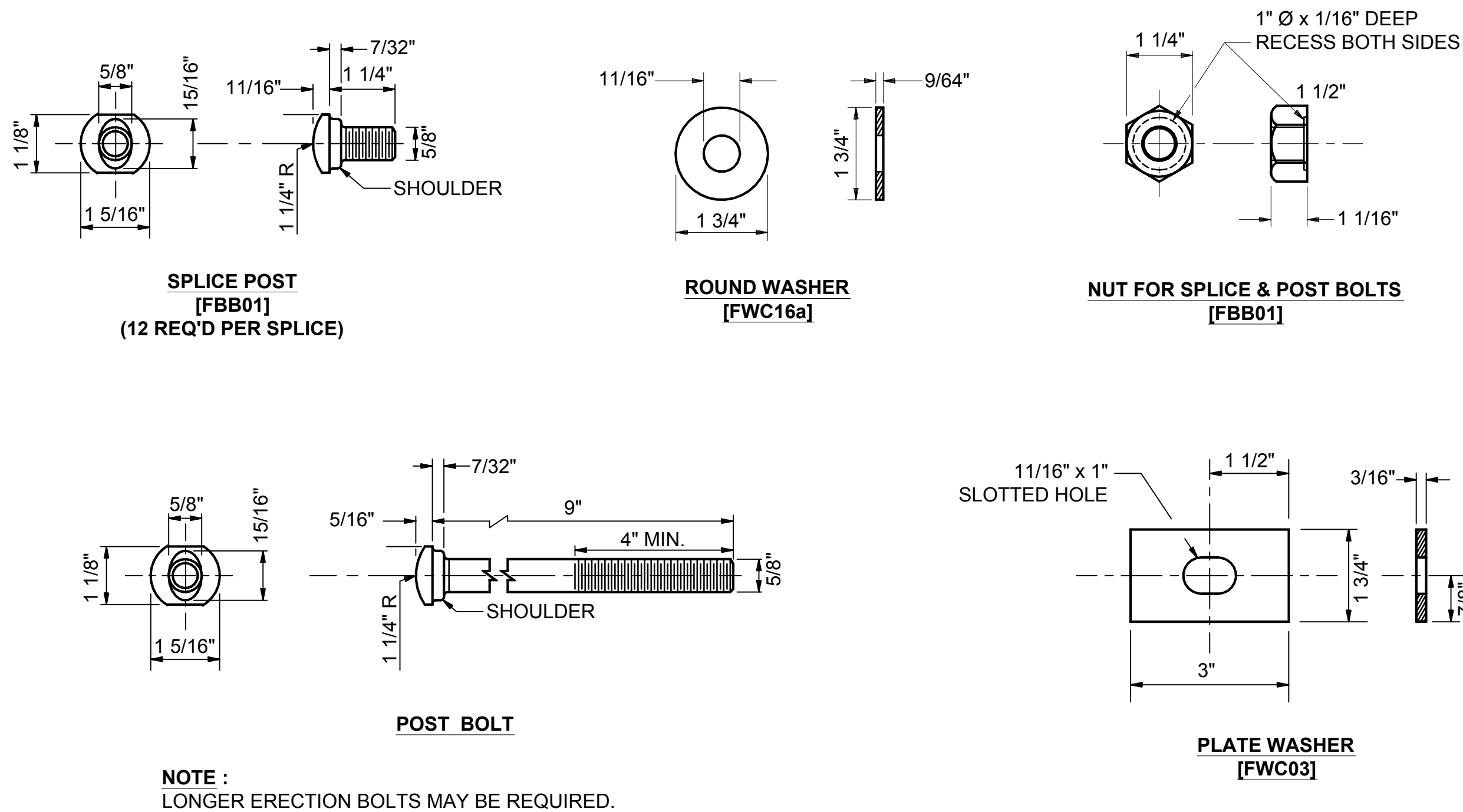
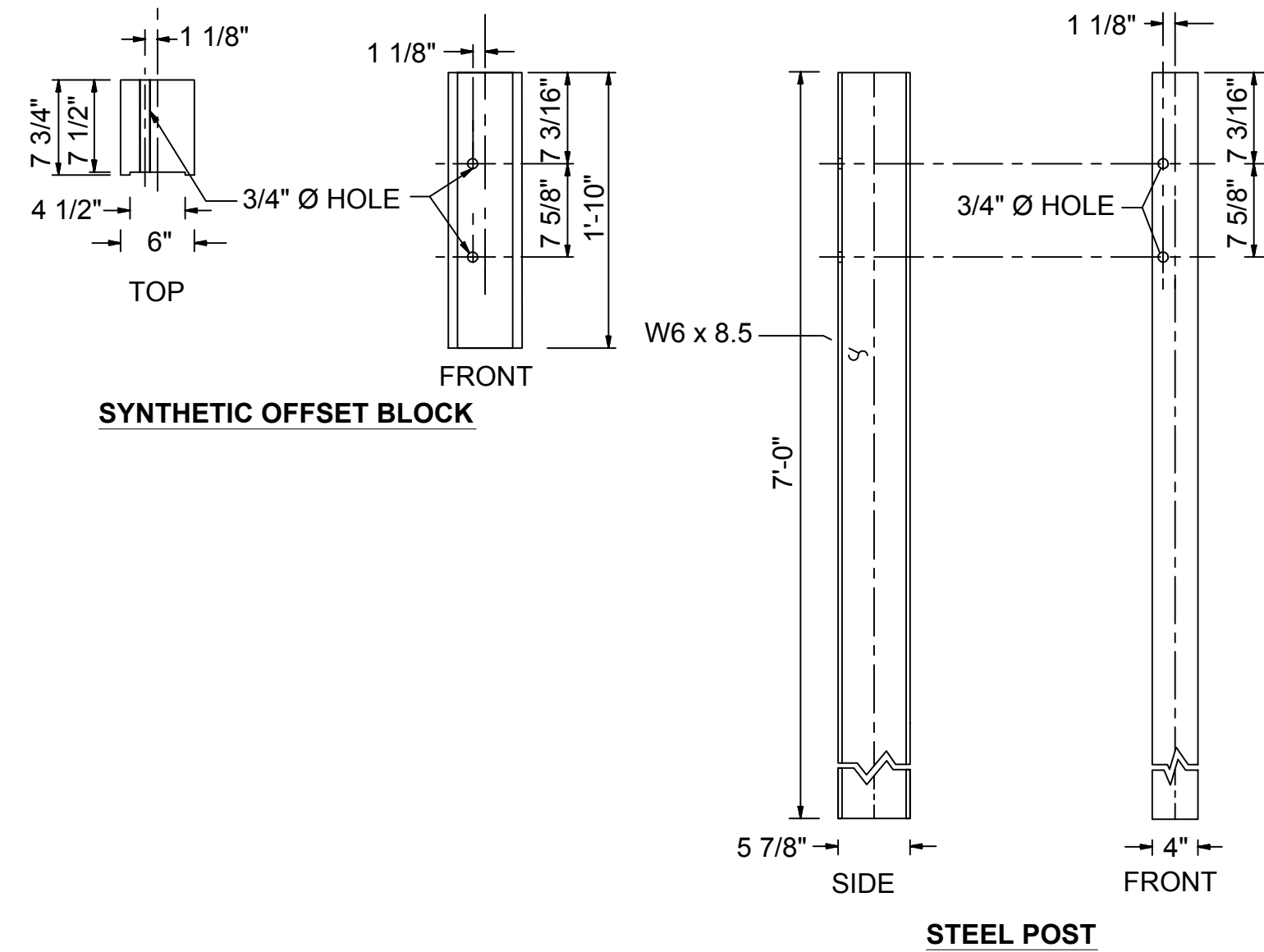
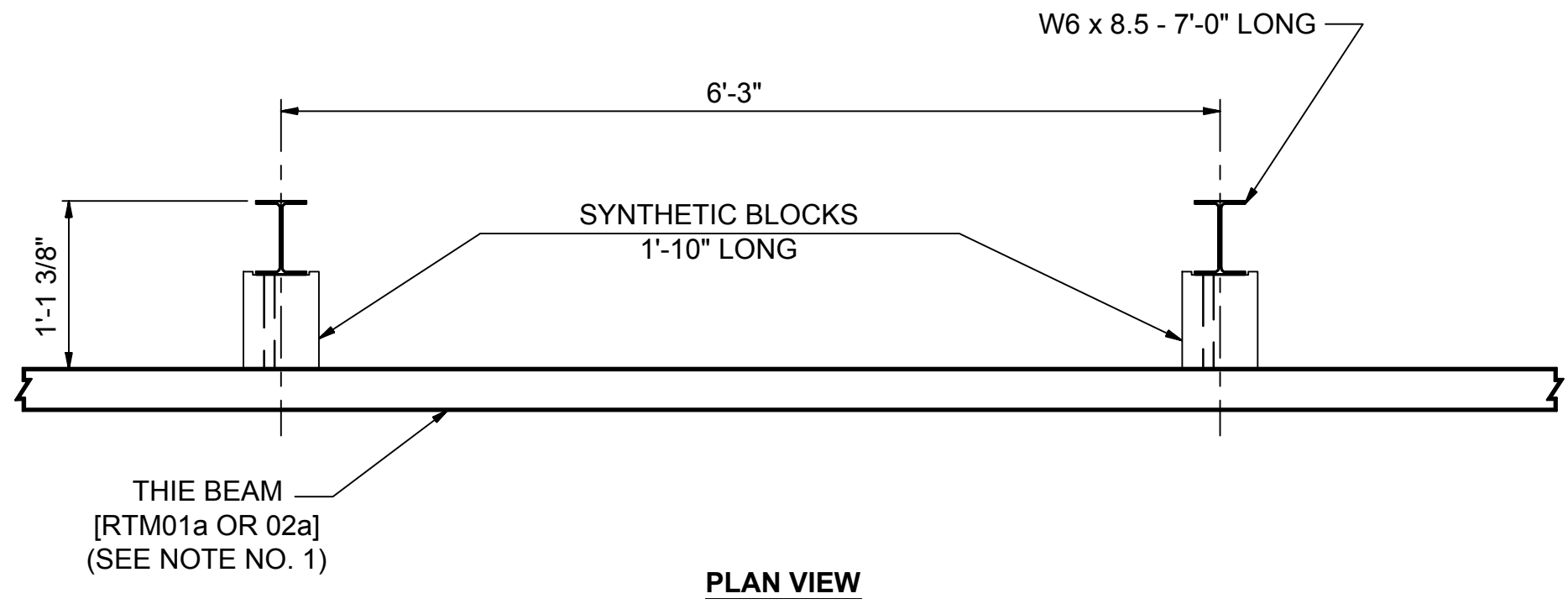
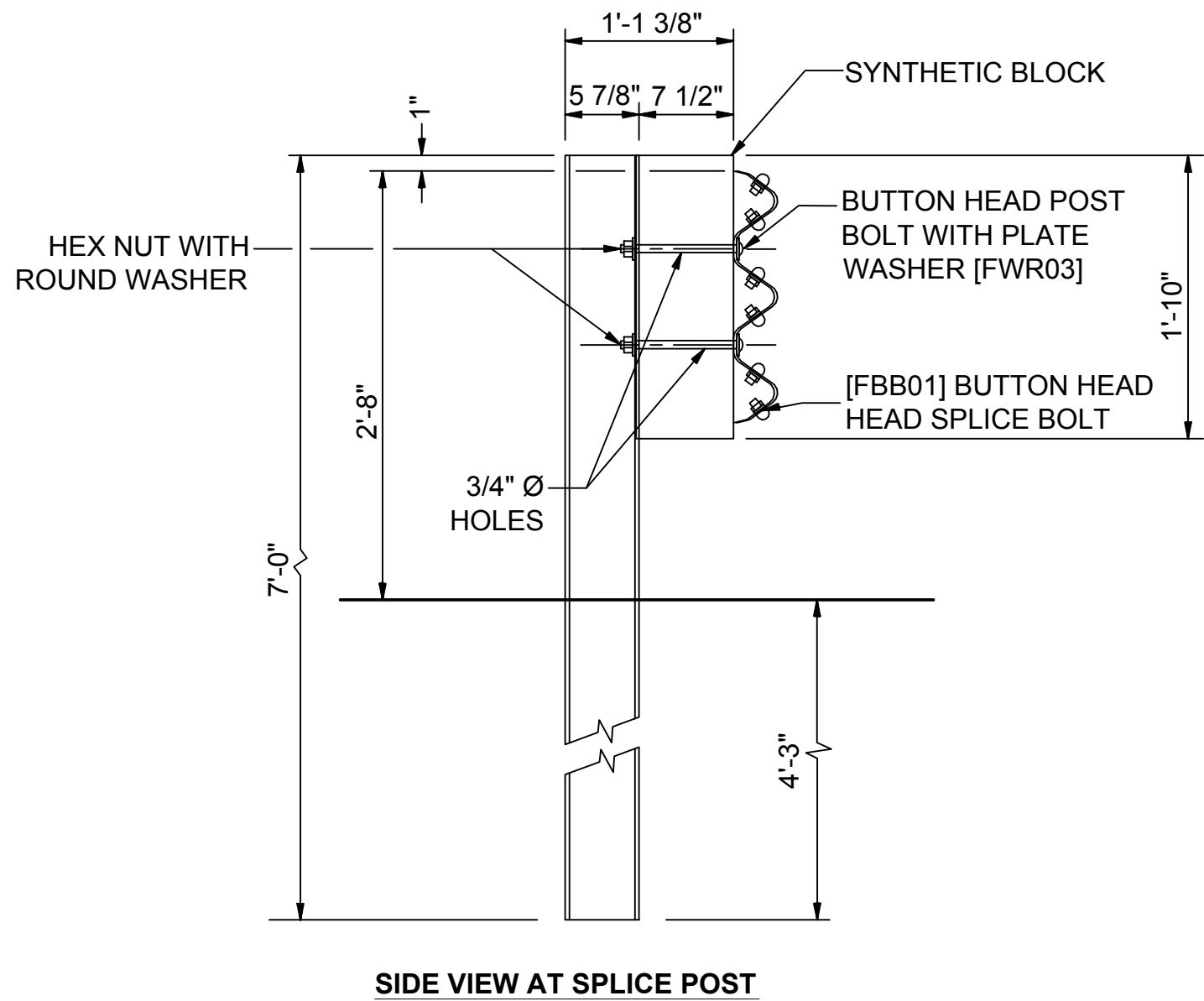
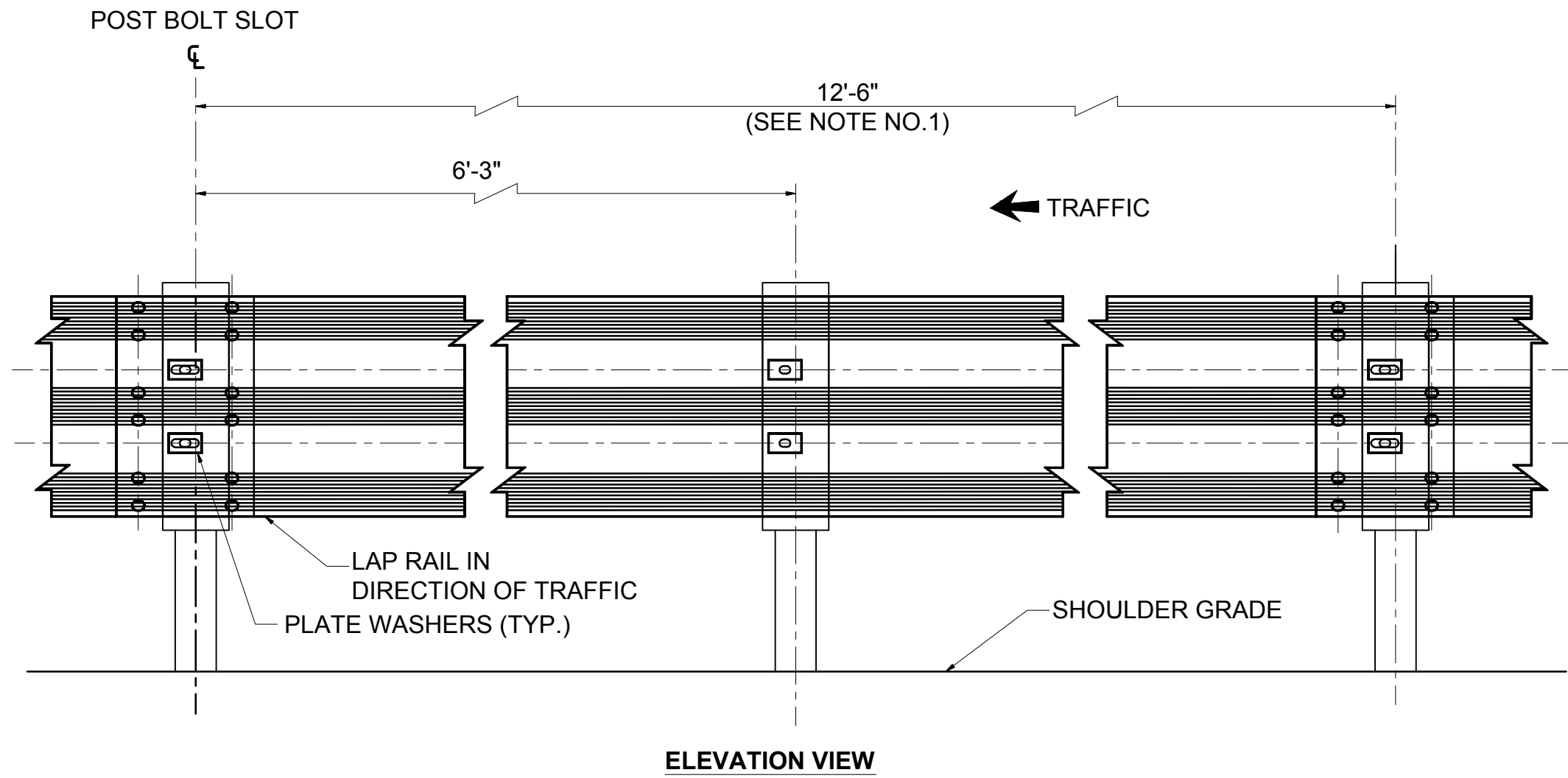
TRANSITION STATION #1  
CONSTRUCTION DETAILS

DES: JUS CHK: R/LR  
DRW: JUS APR: BSS  
TOWN: OLD MAN RAIL, PITTSBURG, NH  
TRANSMISSION LINE:

MILE NO:  
SHEET 13 OF 19

REVISION: XXX





- NOTES:**
- 25'-0" RAIL PANELS MAY BE USED IN PLACE OF 12'-6" PANELS, EXCEPT ON CURVES WITH A RAIL RADIUS OF LESS THAN 300 FT.
  - GUIDERAIL HEIGHT SHALL BE SET FROM THE GRADE AT THE FACE OF RAIL.
  - DESIGNATIONS PROVIDED IN BRACKETS [ ] REFERENCE STANDARD ELEMENTS DETAILED IN "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE", LATEST ADOPTED VERSION, AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
  - SEE STD. NO. DL-1 FOR BEAM GUIDERAIL DELINEATORS.
  - PAID FOR UNDER APPROPRIATE 606 ITEMS, OR AS SHOWN ON PLANS.
  - DIMENSIONS OF PLASTIC AND SYNTHETIC BLOCKOUTS ARE AS SHOWN ON MANUFACTURER'S DRAWINGS.
  - POSTS SHORTER THAN THE 7'-0" INDICATED ON THE DETAIL, BUT NOT LESS THAN 6'-6", MAY ONLY BE USED WHEN
    - THE SLOPE BEHIND THE GUIDERAIL IS NO STEEPER THAN 4:1
    - WHERE THE DISTANCE FROM THE BACK OF THE POST TO THE BREAK OF THE SLOPE IS A MINIMUM OF 2'-0"
    - AND THEN ONLY AS APPROVED OR SPECIFICALLY SHOWN ON THE PLANS.

SOURCE: NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.  
NOTE: NHDOT GUIDERAIL DETAILS SHOWN FOR REFERENCE ONLY.

**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

NO.	DATE	CHG	APPROV.	ISS.	R/R	BSS
1	10/7/15	JUS	DATE	ISSUED FOR PERMITTING	NO.	NO.

THE NORTHERN PASS

Transmission Business

#

TRANSITION STATION #1  
CONSTRUCTION DETAILS

SCALE: NTS

DATE: 10/7/2015

MILE NO:  
SHEET 14 OF 19

REVISION: XXX

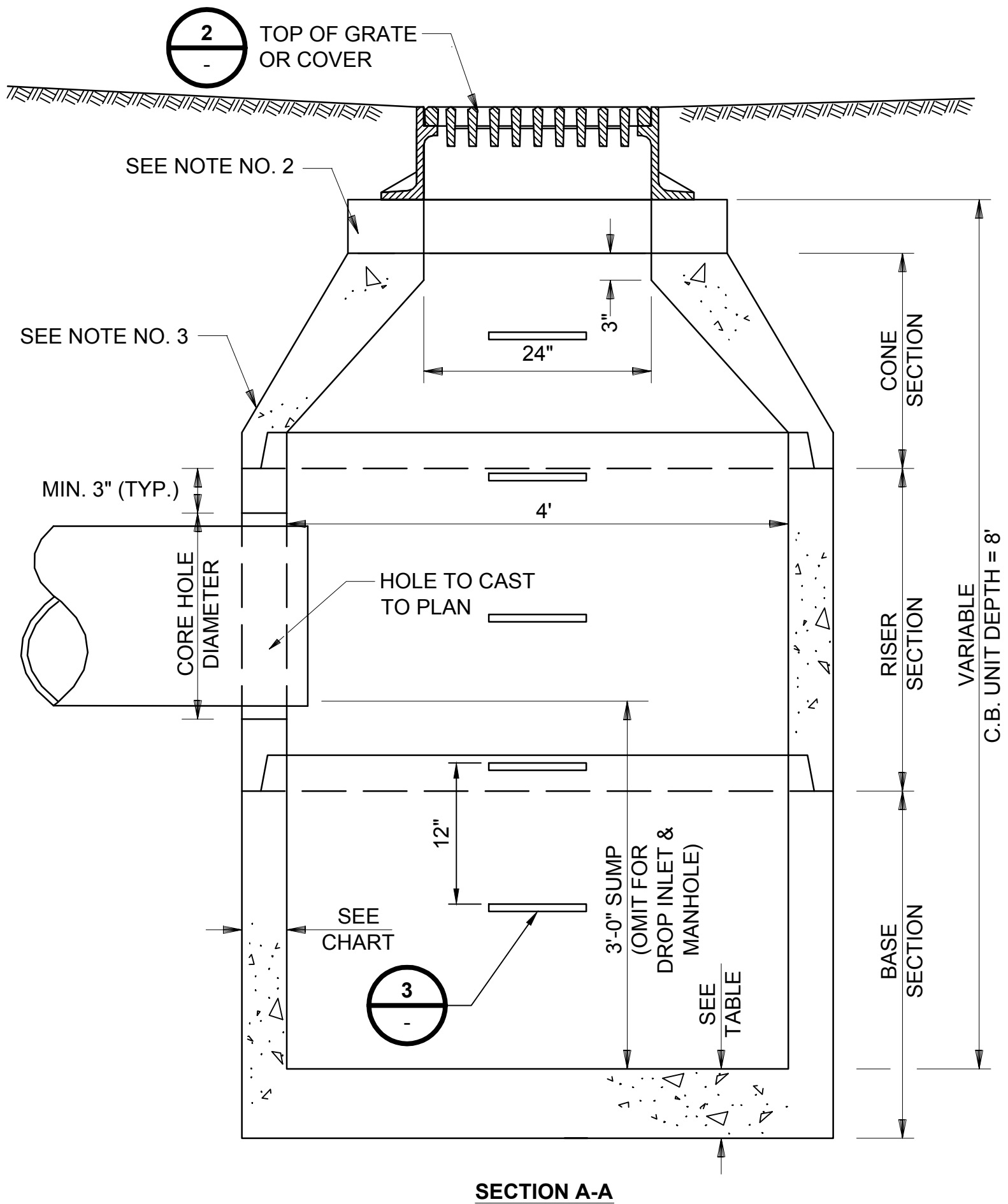
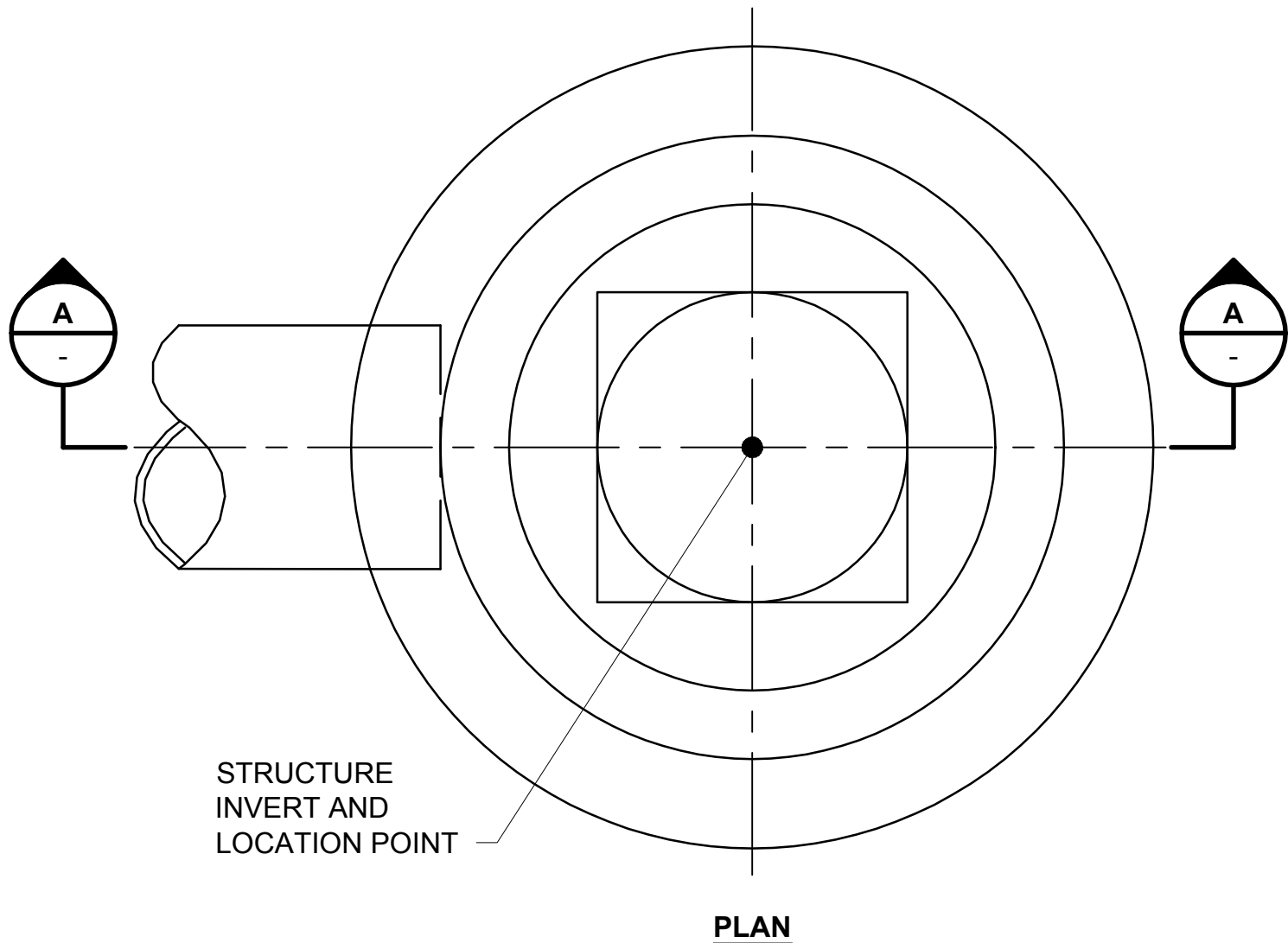
TOWN:  
OLD CHOWN RAIL, PITTSBURGH, NH

DES: JUS CHK: RLR  
DRW: JUS APR: BSS

NPTT114-C504

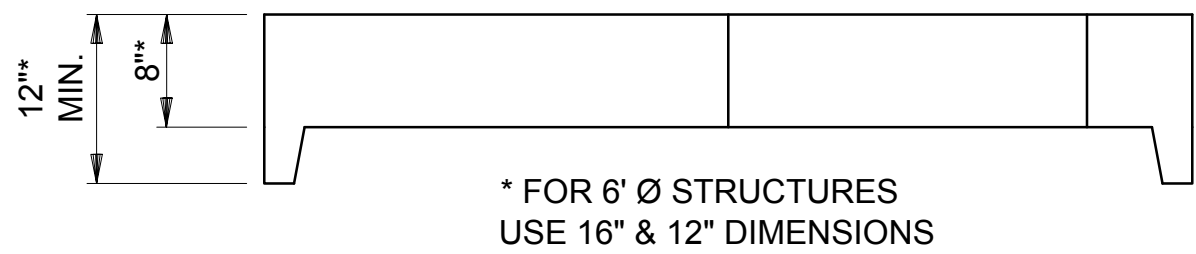
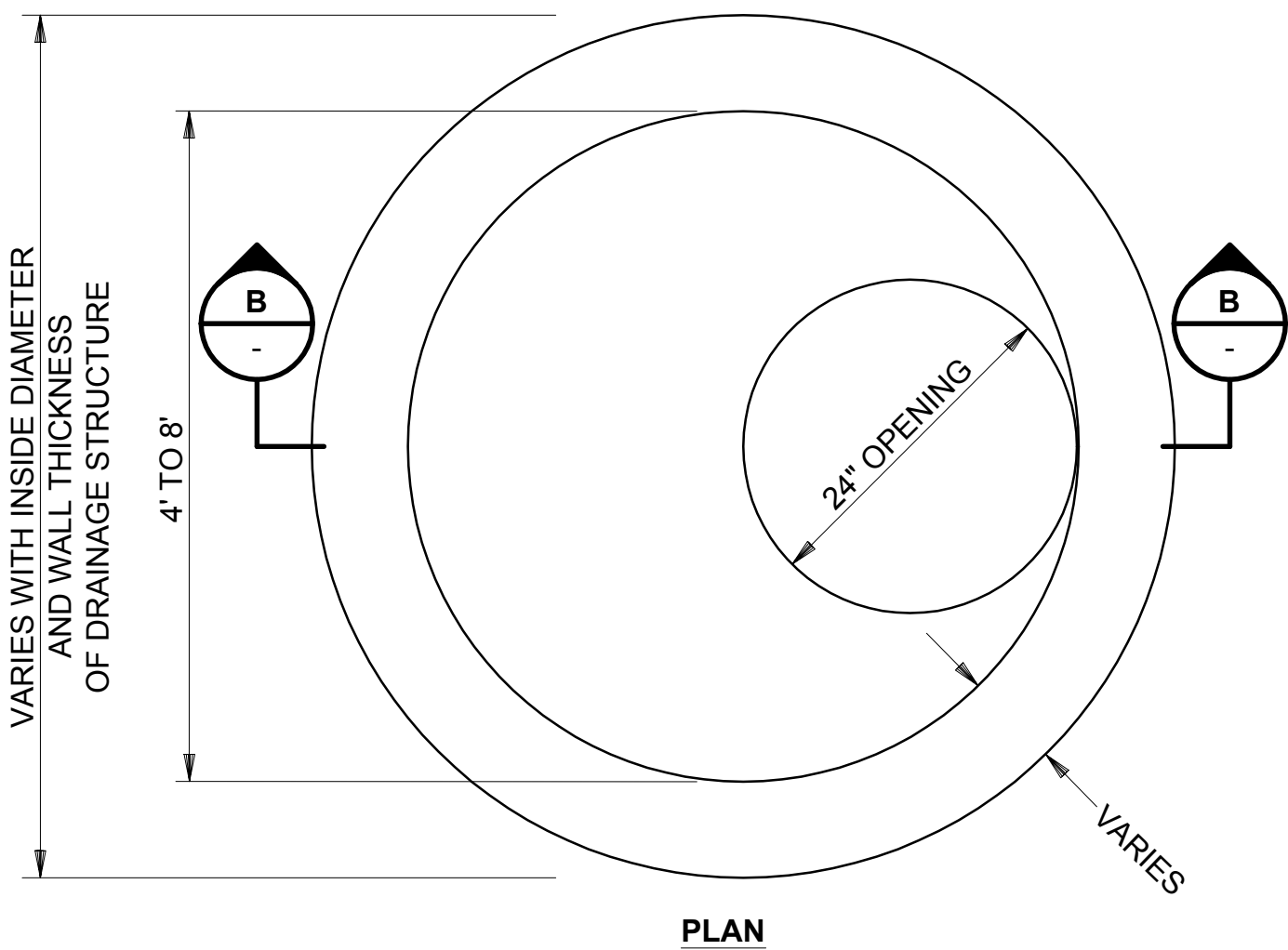
DIAMETER	WALL THICKNESS (MIN.)	FLOOR THICKNESS (MIN.)
4'	5"	6"
5'	6"	8"
6'	7"	8"
8'	9"	10"

CORE HOLE SIZE				
PIPE SIZE	RCP CORE HOLE DIA.		PLASTIC CORE HOLE DIA.	
	INCHES	FEET	INCHES	FEET
6			7	0.6
12	18	1.5	18	1.5
15	22	1.8	20	1.7
18	26	2.2	24	2.0
24	34	2.8	32	2.7
30	42	3.5	42	3.5
36	48	4.0	48	4.0
42	54	4.5	54	4.5
48	64	5.3	64	5.3
54	72	6.0		
60	78	6.5		



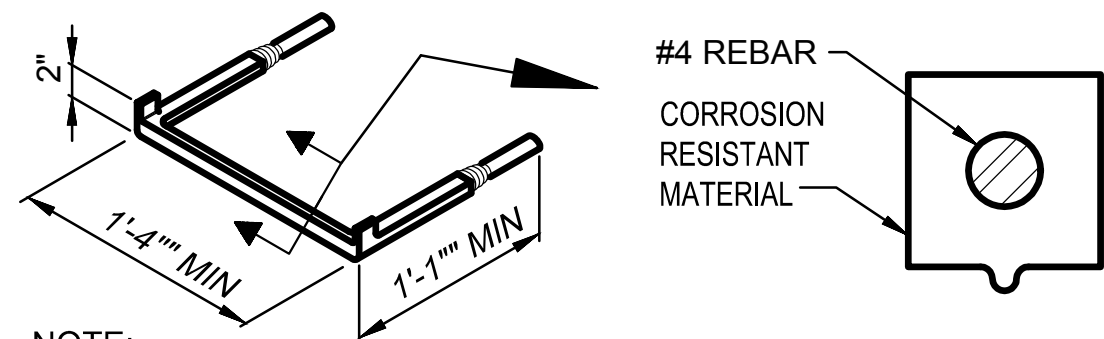
SOURCE: NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION  
STANDARD PLANS FOR ROAD CONSTRUCTION 2010.

PRECAST CONCRETE  
CATCH BASIN  
NOT TO SCALE



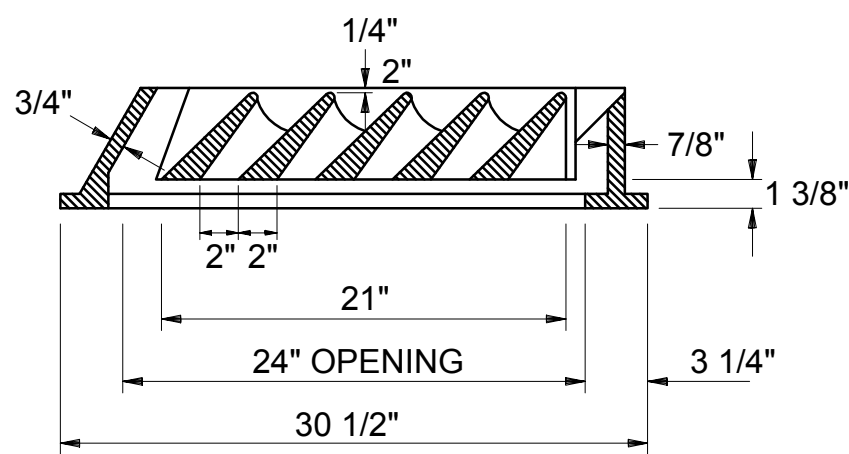
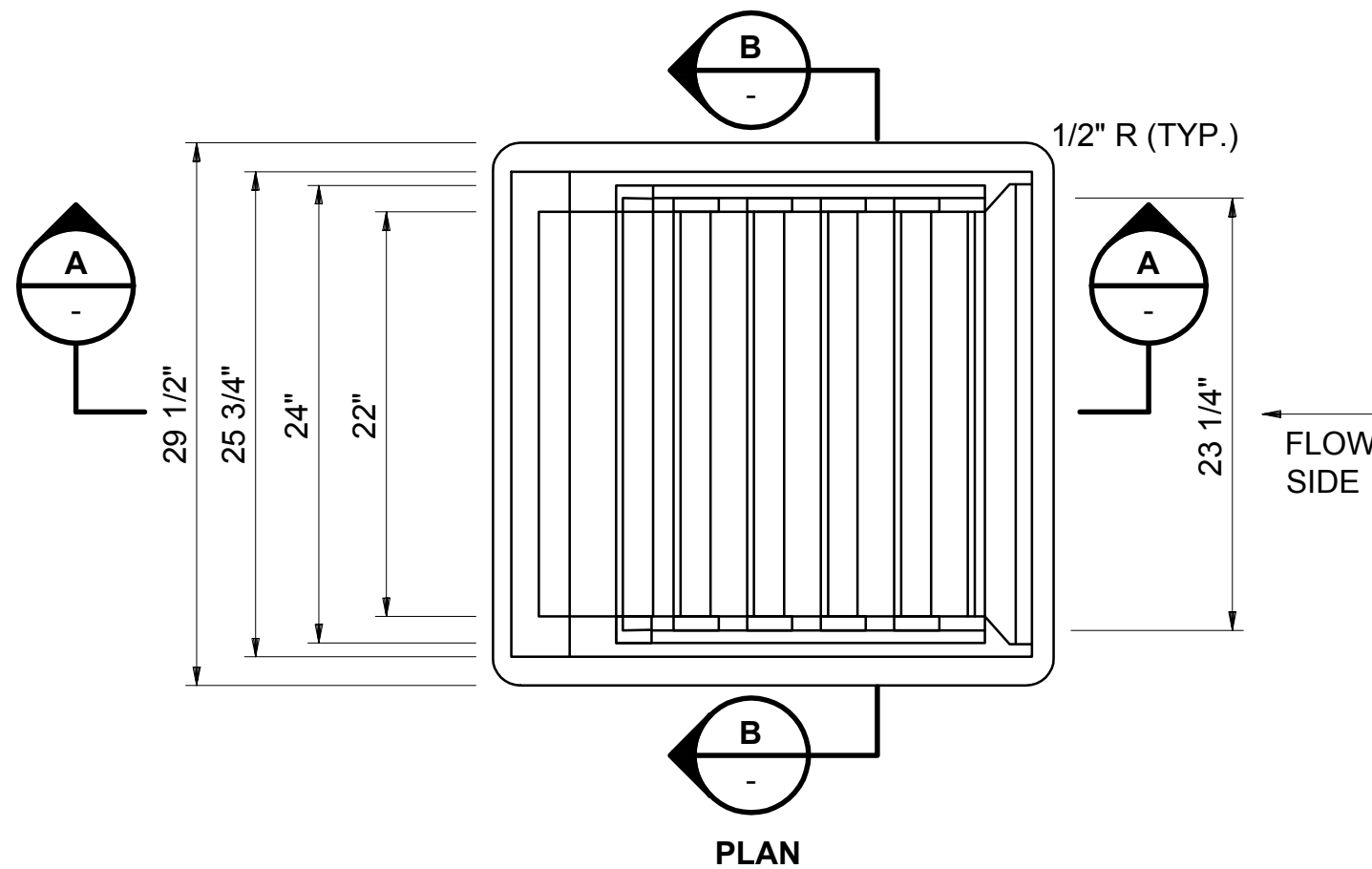
#### GENERAL NOTES:

- CATCH BASIN TO CONFORM TO NH DOT SECTION 604.1 REQUIREMENTS.
- FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
- CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
- PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
- OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
- PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
- ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.



NOTE:  
No. 4 REBAR ENCASED IN CORROSION RESISTANT RUBBER OR  
OTHER MATERIAL APPROVED BY THE OWNER'S REPRESENTATIVE.

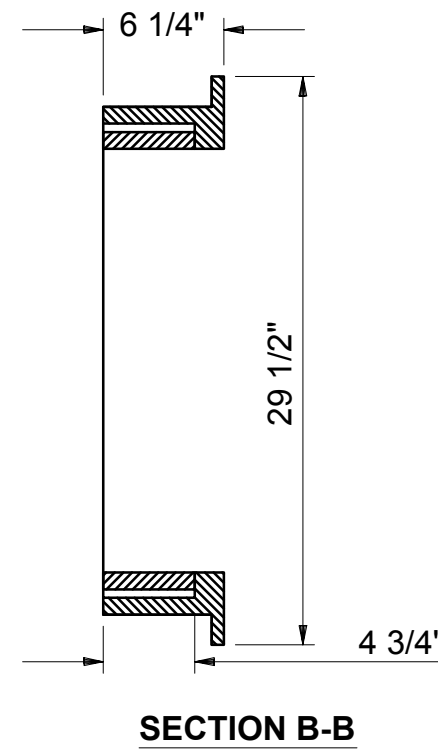
MANHOLE STEP  
NOT TO SCALE



#### SECTION A-A

SOURCE: NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION  
STANDARD PLANS FOR ROAD CONSTRUCTION 2010.

TYPE "E" GRATE  
NOT TO SCALE

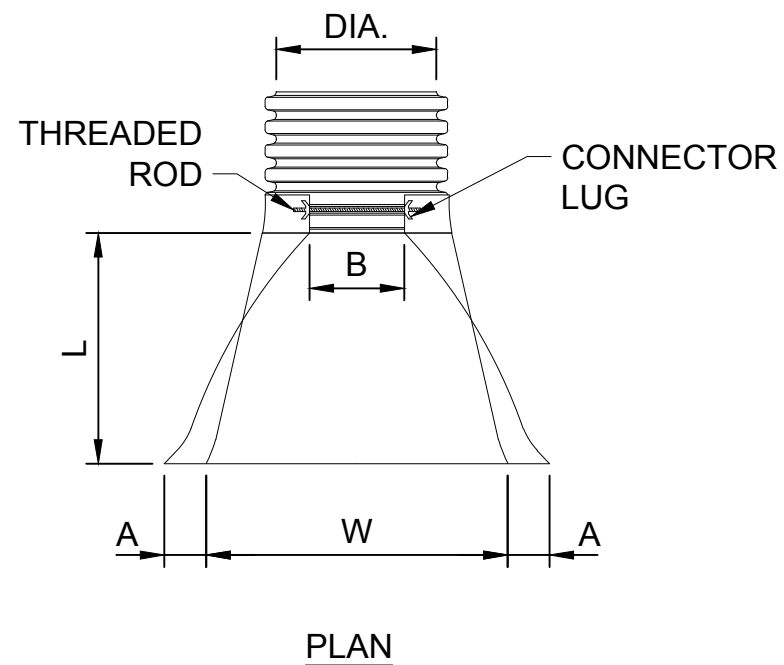


#### NOTES:

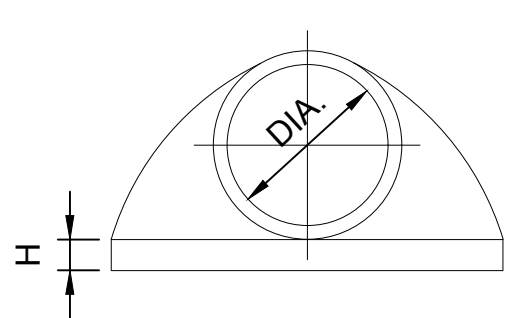
- ALL DIMENSIONS ARE NOMINAL.
- NOT TO BE USED WHEN BICYCLE TRAFFIC IS ANTICIPATED.
- USE 3-FLANGE FRAME IF INSTALLED ADJACENT TO GRANITE CURB.
- FREE OPEN AREA = 1.80 S.F.

FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION

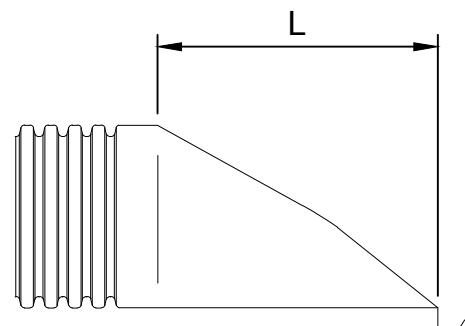




PIPE DIA.	A	B	H	L	W
12"	6.5"	10.0"	6.5"	25"	29"
15"	6.5"	10.0"	6.5"	25"	29"
18"	7.5"	15.0"	6.5"	32"	35"
24"	7.5"	18.0"	6.5"	36"	45"
30"	7.5"	22.0"	8.6"	58"	63"
36"	7.5"	25.0"	8.6"	58"	63"



ELEVATION



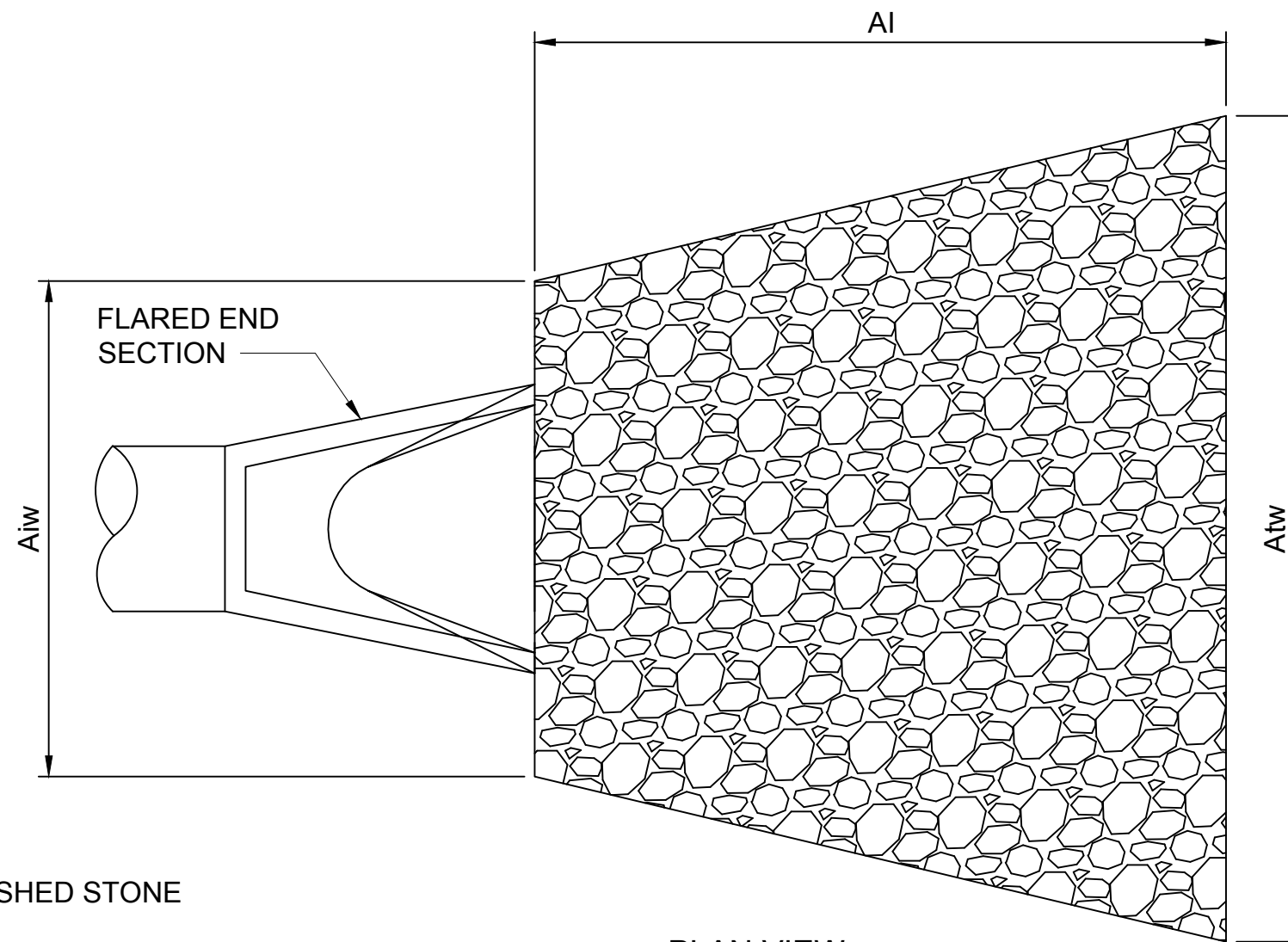
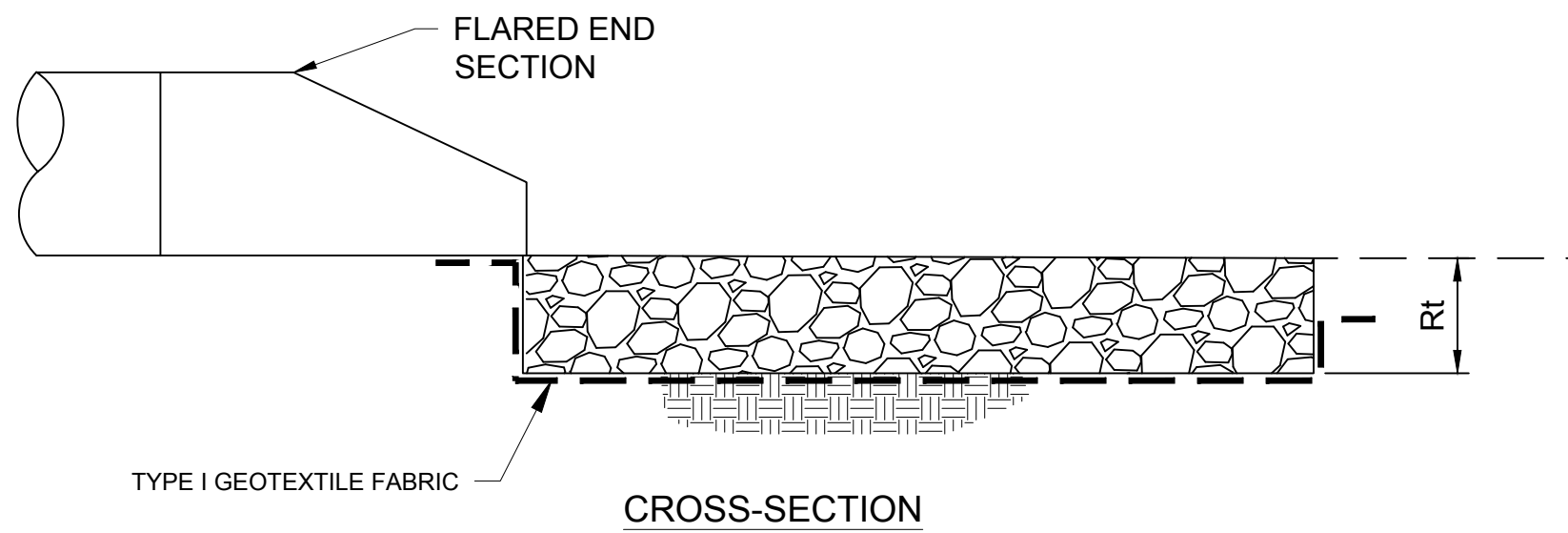
END VIEW  
TYPICAL CROSS-SECTION

END SECTION FOR HDPE PIPE  
NOT TO SCALE

1  
C104

NOTES:

- FLARED END SECTION SHALL BE HIGH DENSITY POLYETHYLENE MEETING ASTM D3350 MINIMUM CELL CLASSIFICATION 213320C.
- METAL THREADED FASTENING ROD SHALL BE STAINLESS STEEL.
- INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS



PLAN VIEW

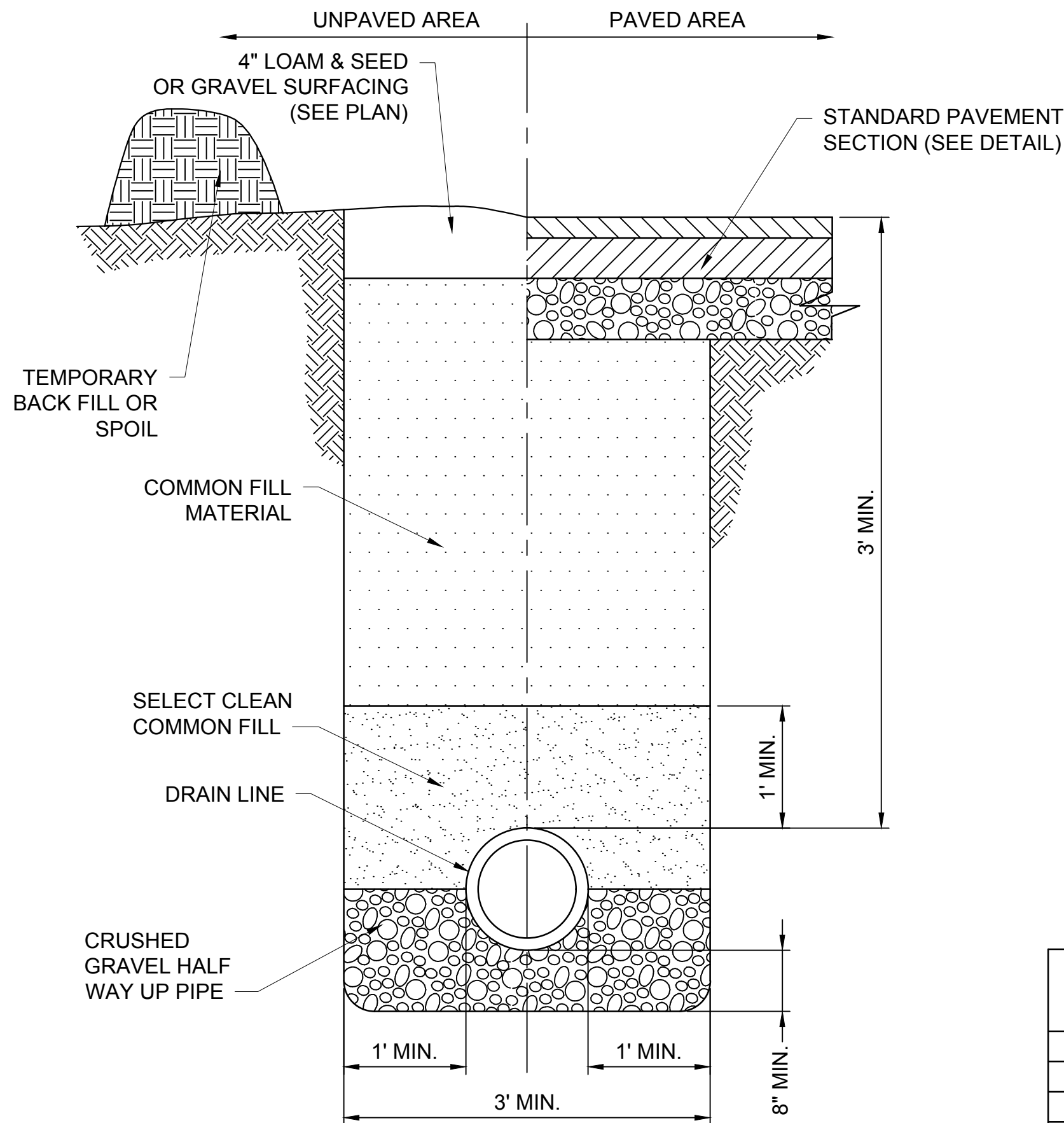
OUTLET PROTECTION  
NOT TO SCALE

2  
C104

OUTLET NO.	PIPE DIA Pd (IN)	RIP RAP		APRON		
		SIZE (D50)	THICK. Rt (IN)	LENGTH AI (FT)	INITIAL WIDTH Atw (FT)	TERMINAL WIDTH Atw (FT)
A	24	6	18	28	6	17
B	24	9	27	21	10	27
C	18	6	18	18	4.5	22

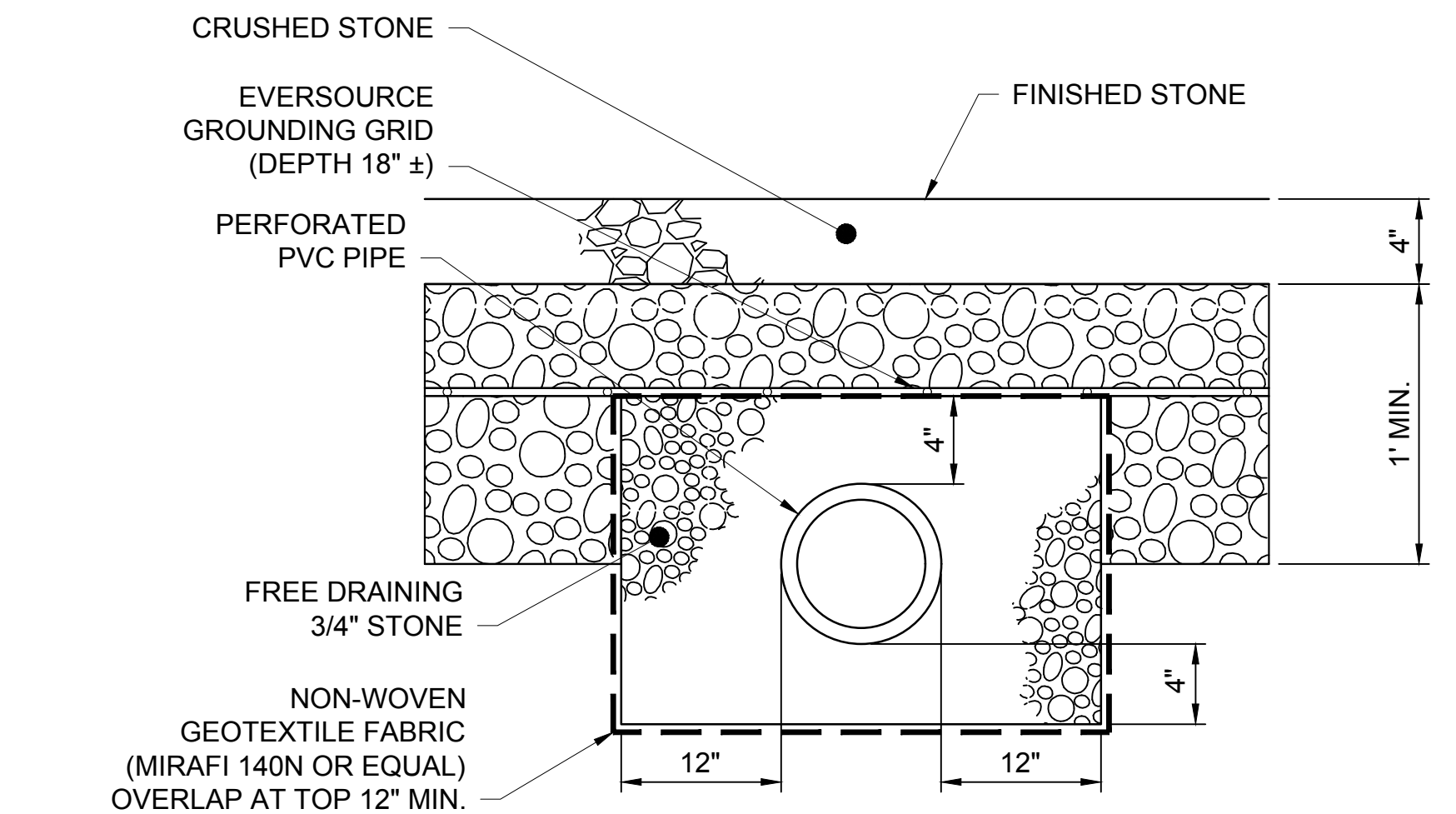
NOTES:

- THE SUBGRADE FOR GEOTEXTILE FABRIC AND RIP-RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN.
- THE ROCK USED FOR RIP-RAP SHALL CONFORM TO NHDOT CLASS C STONE.
- GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP-RAP. DAMAGED AREAS IN THE FABRIC SHALL BE PREPARED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
- STONE FOR THE RIP-RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.



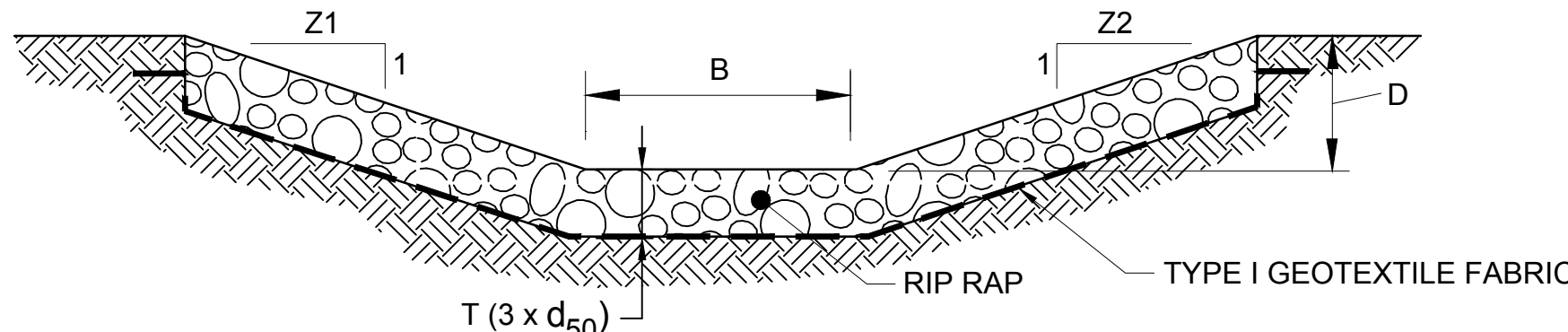
PIPE TRENCH  
NOT TO SCALE

3  
C506



UNDERDRAIN  
NOT TO SCALE

4  
C104



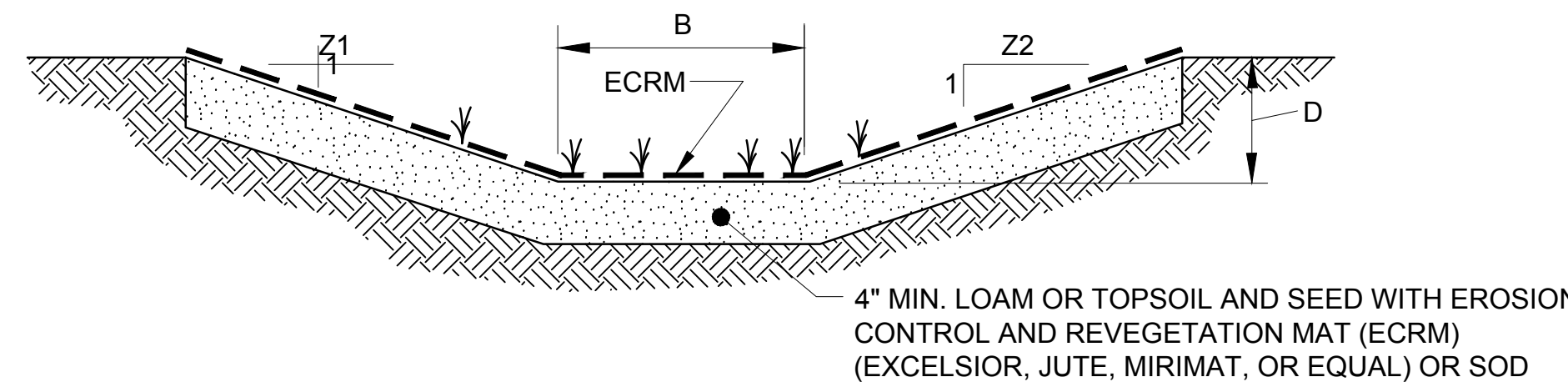
NOTES

- CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL.
- CHANNEL SHALL BE CONSTANTLY MAINTAINED. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY.
- DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.
- INSTALL RIPRAP PER SPECIFICATIONS IN THE NH DES STORMWATER MANUAL.

CHANNEL	LENGTH (FT.)	B	D	SIDE SLOPE		RIPRAP GRADATION	t (IN.)	UNDERLAYMENT	UNDERLAYMENT THICKNESS (IN.)
				Z1	Z2				
A	306	2'	1.5'	3	3	d50 = 12"	36	GRAVEL	6
E	310	2'	1.5'	3	3	d50 = 12"	36	GRAVEL	6
G	80	2'	0	0	0	d50 = 6"	18	GRAVEL	6
I	36	2'	1	3	3	d50 = 6"	18	GRAVEL	6

RIPRAP SWALE CROSS SECTION  
NOT TO SCALE

5  
C101  
C104



NOTES

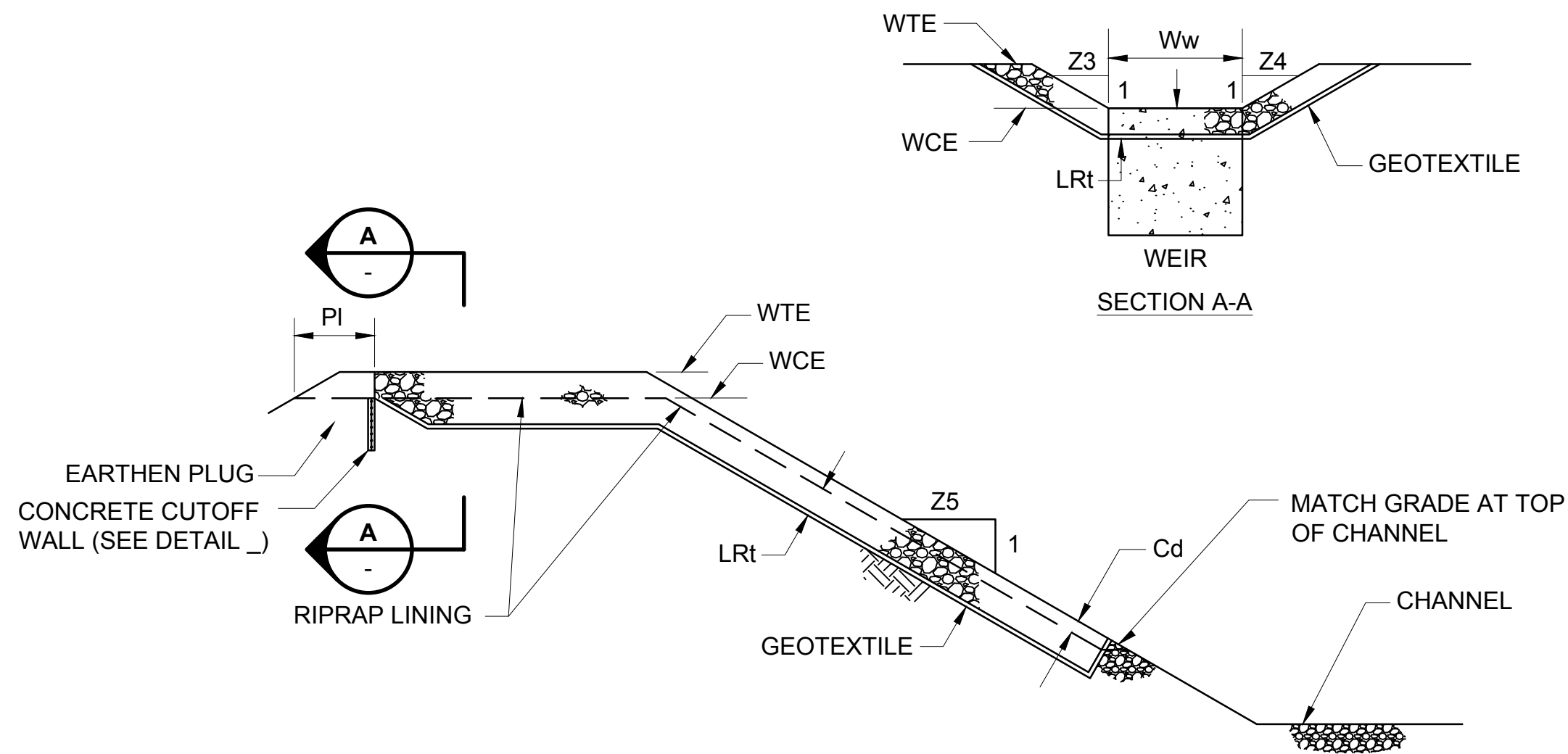
- CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL FINISH SURFACE GRADE.
- INSTALL EROSION CONTROL BLANKET LINING TO TOP OF CHANNEL.
- INSTALL LINING PER MANUFACTURES SPECIFICATIONS AND RECOMMENDATIONS. SEED SLOPES PRIOR TO INSTALLATION PER MANUFACTURER RECOMMENDATIONS.
- VEGETATED CHANNELS SHALL BE CONSTRUCTED FREE OF ROCKS, TREE ROOTS, STUMPS OR OTHER PROJECTIONS THAT WILL IMPEDE NORMAL CHANNEL FLOW AND/OR PREVENT GOOD LINING TO SOIL CONTACT. THE CHANNEL SHALL BE INITIALLY OVER-EXCAVATED TO ALLOW FOR THE PLACEMENT OF TOPSOIL.
- ALL CHANNELS MUST BE KEPT FREE OF OBSTRUCTIONS SUCH AS FILL GROUND, FALLEN LEAVES AND WOODY DEBRIS, ACCUMULATED SEDIMENT, AND CONSTRUCTION MATERIALS/WASTES. CHANNELS SHOULD BE KEPT MOWED AND/OR FREE OF ALL WEEDY, BRUSHY OR WOODY GROWTH. ANY UNDERGROUND UTILITIES RUNNING ACROSS/THROUGH THE CHANNEL(S) SHALL BE IMMEDIATELY BACKFILLED AND THE CHANNEL(S) REPAIRED AND STABILIZED PER THE CHANNEL CROSS-SECTION DETAIL. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

CHANNEL	LENGTH (FT.)	B	D	SIDE SLOPE		LINING	STAPLE PATTERN	SLOPE (%)
				Z1	Z2			
B	190'	2'	1.5'	3	3	SC-250	E	0.8
C	250'	2'	1.5'	3	3	SC-250	E	8.7
D	140'	2'	1.5'	3	3	SC-250	E	2.0
F	109'	8"	1.5'	3	3	SC-250	E	0.2
H	200'	0	1.5'	3	3	SC-250	E	0.7

GRASS SWALE CROSS SECTION  
NOT TO SCALE

6  
C101  
C104

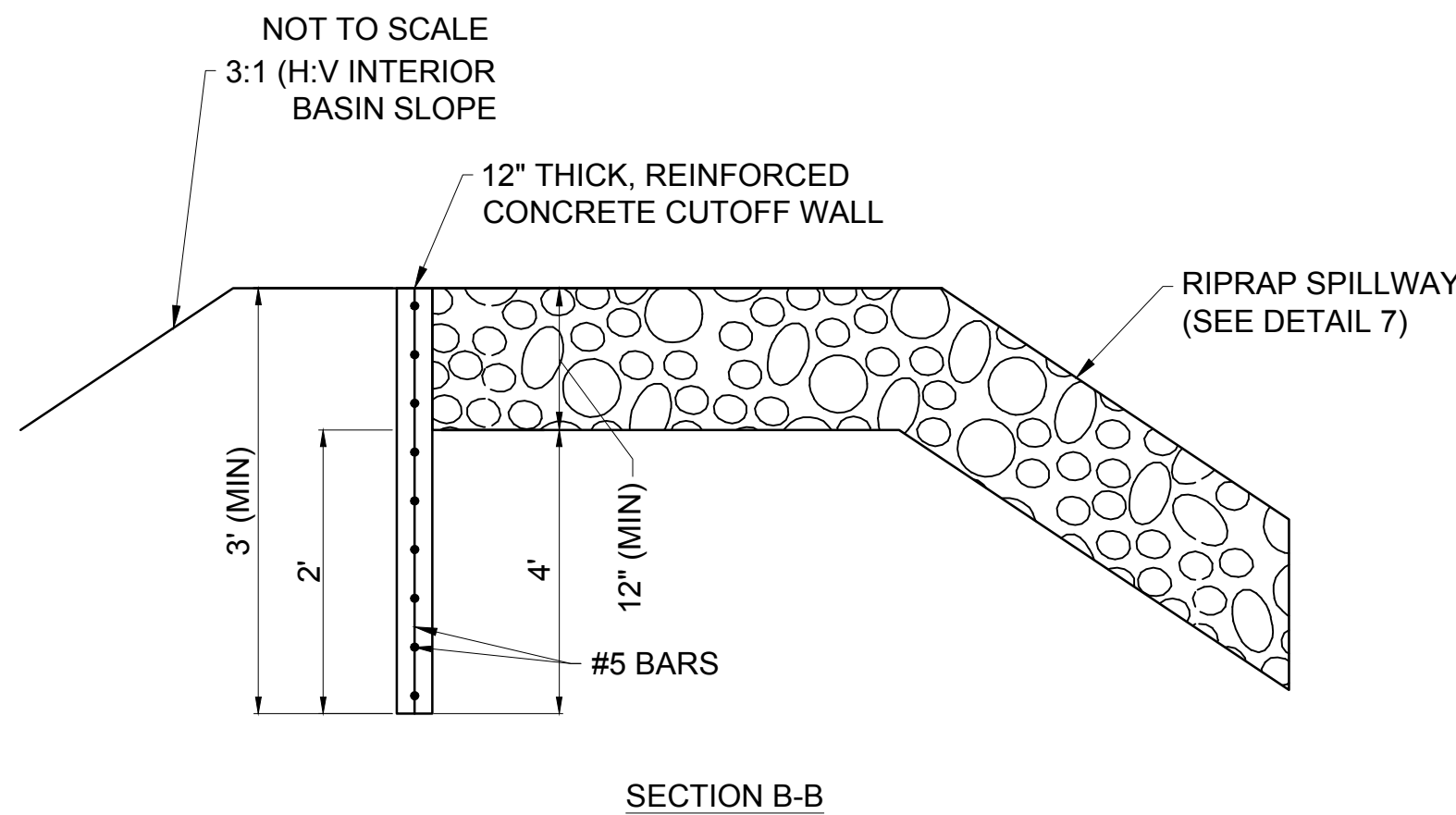
FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION



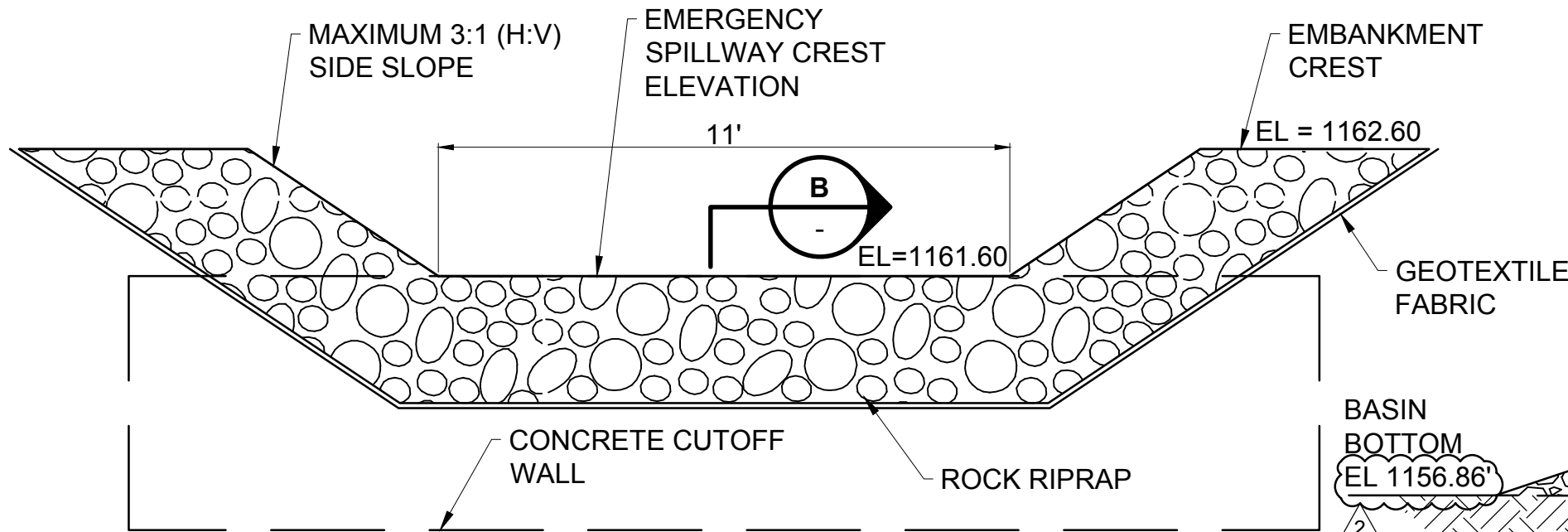
BASIN NO.	WEIR						LINING		CHANNEL	
	Z3 (FT)	Z4 (FT)	TOP ELEV WTE (FT)	CREST ELEV WCE (FT)	WIDTH Ww (FT)	PI (FT)	RIPRAP SIZE (R-)	RIPRAP THICK. Lrt (IN)	Z5 (FT)	DEPTH Cd (FT)
1	3	3	1162.60	1161.60	11	5	6	18	VARIES	0'

SECTION THROUGH SPILLWAY

1  
C104



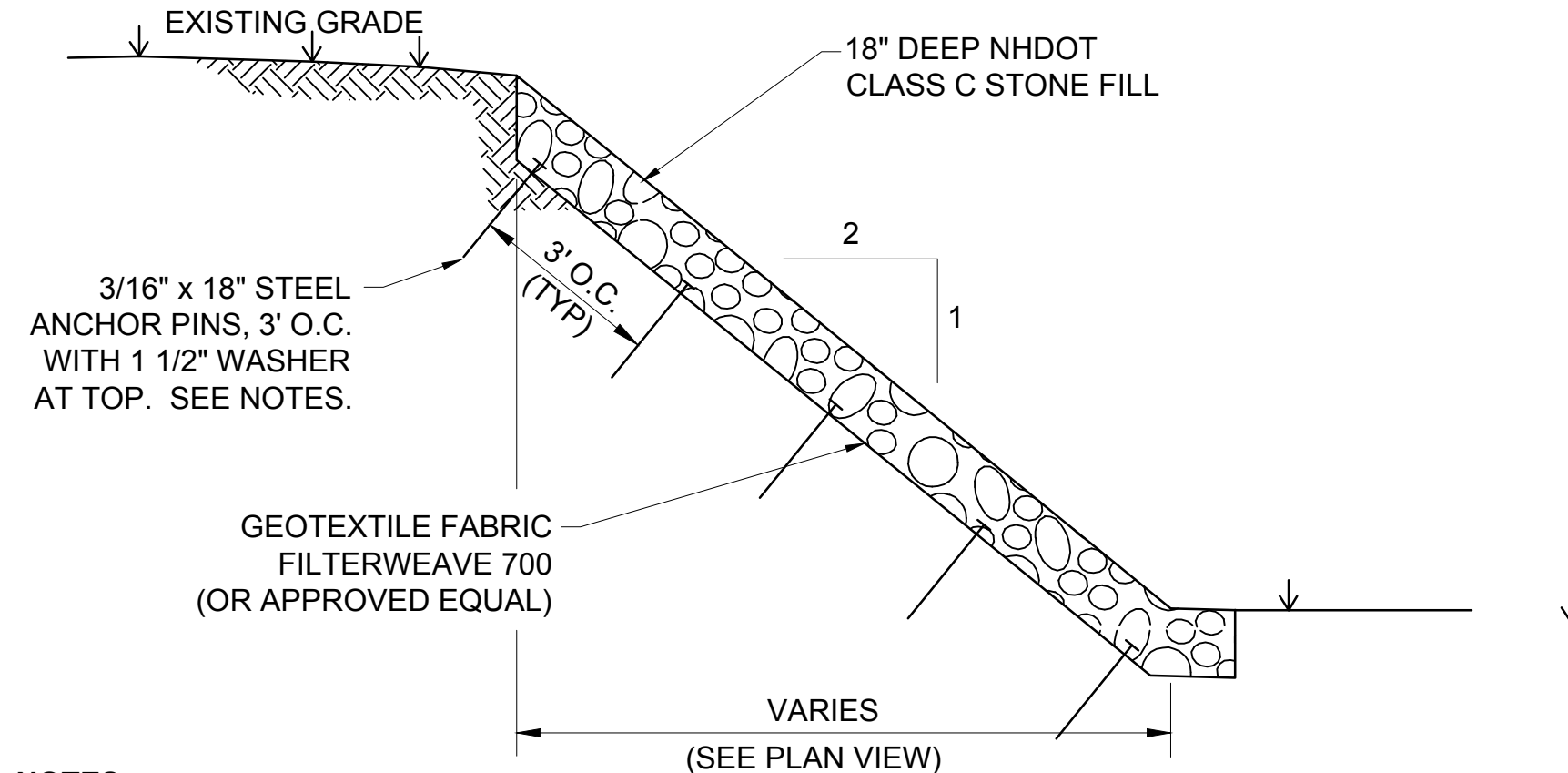
SECTION B-B



- NOTES  
1. SEE SECTION THROUGH SPILLWAY DETAIL 1 FOR FURTHER INFORMATION.

SPILLWAY APRON

4  
C104

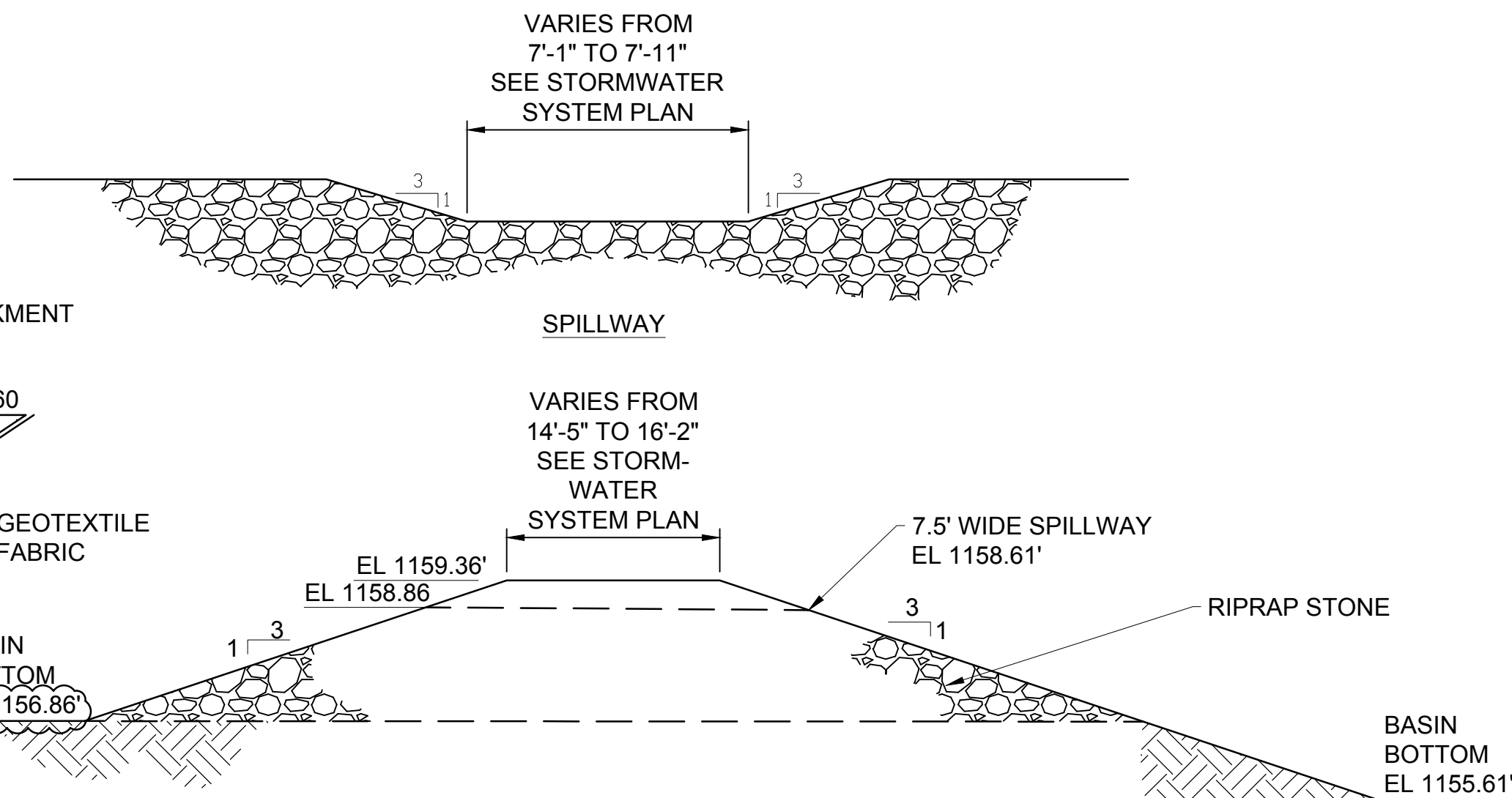


NOTES:

- GEOTEXTILE PLACEMENT: THE GEOTEXTILE SHALL BE PLACED ON A SMOOTH GRADED SURFACE APPROVED BY THE ENGINEER. THE GEOTEXTILE SHALL BE PLACED IN SUCH A MANNER THAT IT WILL NOT EXCESSIVELY STRETCH OR TEAR UPON PLACEMENT OF THE OVERLYING MATERIALS. CARE SHOULD BE TAKEN TO PLACE THE GEOTEXTILE IN INTIMATE CONTACT WITH THE SOIL SUCH THAT NO VOID SPACES EXIST BETWEEN THE UNDERLYING SOIL AND THE GEOTEXTILE. ANCHORING OF THE GEOTEXTILE SHALL BE ACCOMPLISHED THROUGH THE USE OF KEY TRENCHES OR APRONS AT THE CREST AND TOE OF SLOPE.
- GEOTEXTILE SHEETS SHALL BE JOINED BY EITHER SEWING OR OVERLAPPING. ALL OVERLAPS AND SEAMS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER. OVERLAPPED SHEETS SHALL HAVE A MINIMUM OVERLAP OF 18 IN. EXCEPT WHERE PLACED UNDERWATER WHERE THE OVERLAP SHALL BE A MINIMUM OF 3 FT. OVERLAPS SHALL BE CONSTRUCTED WITH THE UPSTREAM SHEET PLACED OVER THE DOWNSTREAM SHEET OR THE UPSLOPE SHEET PLACED OVER THE DOWNSLOPE SHEET. ALL OVERLAPS SHALL BE PINNED ON 3 FT. CENTERS TO HOLD THE OVERLAP IN PLACE DURING STONE PLACEMENT. PINS ARE RECOMMENDED TO BE 3/16 IN. DIAMETER, 18 IN. LONG STEEL PINS POINTED AT ONE END, AND FITTED WITH A 1.5 IN. DIAMETER WASHER AT THE OTHER.
- CARE SHALL BE TAKEN TO AVOID CONTAMINATION OF THE GEOTEXTILE DURING CONSTRUCTION. CONTAMINATED GEOTEXTILE SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. DAMAGED GEOTEXTILE SHALL BE REMOVED OR REPAIRED AS DIRECTED BY THE ENGINEER AT NO COST TO THE OWNER A GEOTEXTILE PATCH MAY BE PLACED OVER DAMAGED AREAS IF APPROVED BY THE ENGINEER. THE PATCH SHALL EXTEND 3 FT. BEYOND THE PERIMETER OF THE TEAR OR DAMAGE.
- GRAVEL AND RIP RAP: GRAVEL AND RIP RAP PLACEMENT SHALL BEGIN AT THE TOE AND PROCEED UP THE SLOPE. RIP RAP SHALL NOT BE DROPPED ONTO THE GEOTEXTILE FROM A HEIGHT OF MORE THAN 1 FT. GRAVEL SHALL NOT BE DROPPED ONTO THE GEOTEXTILE FROM A HEIGHT EXCEEDING 3 FT. ANY GEOTEXTILE DAMAGED DURING PLACEMENT OF RIP RAP OR GRAVEL SHALL BE REPLACED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE. IN UNDERWATER APPLICATIONS, THE GEOTEXTILE AND REQUIRED THICKNESS OF RIP RAP SHALL BE PLACED THE SAME DAY.

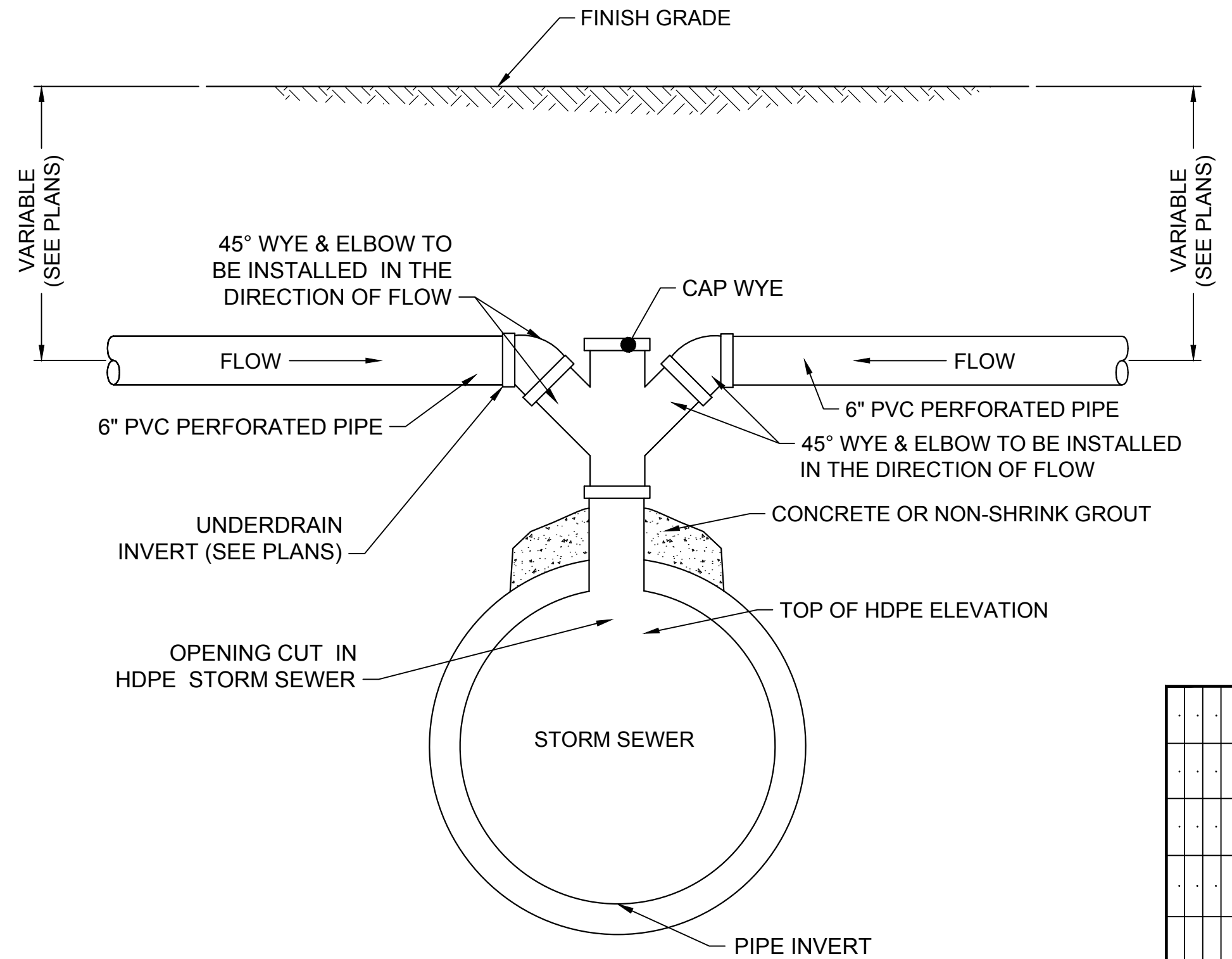
SLOPE DETAIL

2  
C100  
C101



SEDIMENT FOREBAY DETAIL

5  
C104



NOTES:

- STANDARD MANUFACTURER FITTINGS SHALL BE USED TO CONNECT VERTICAL UNDERDRAINS TO 6\"/>

UNDERDRAIN CONNECTION TO STORM DRAIN PIPE

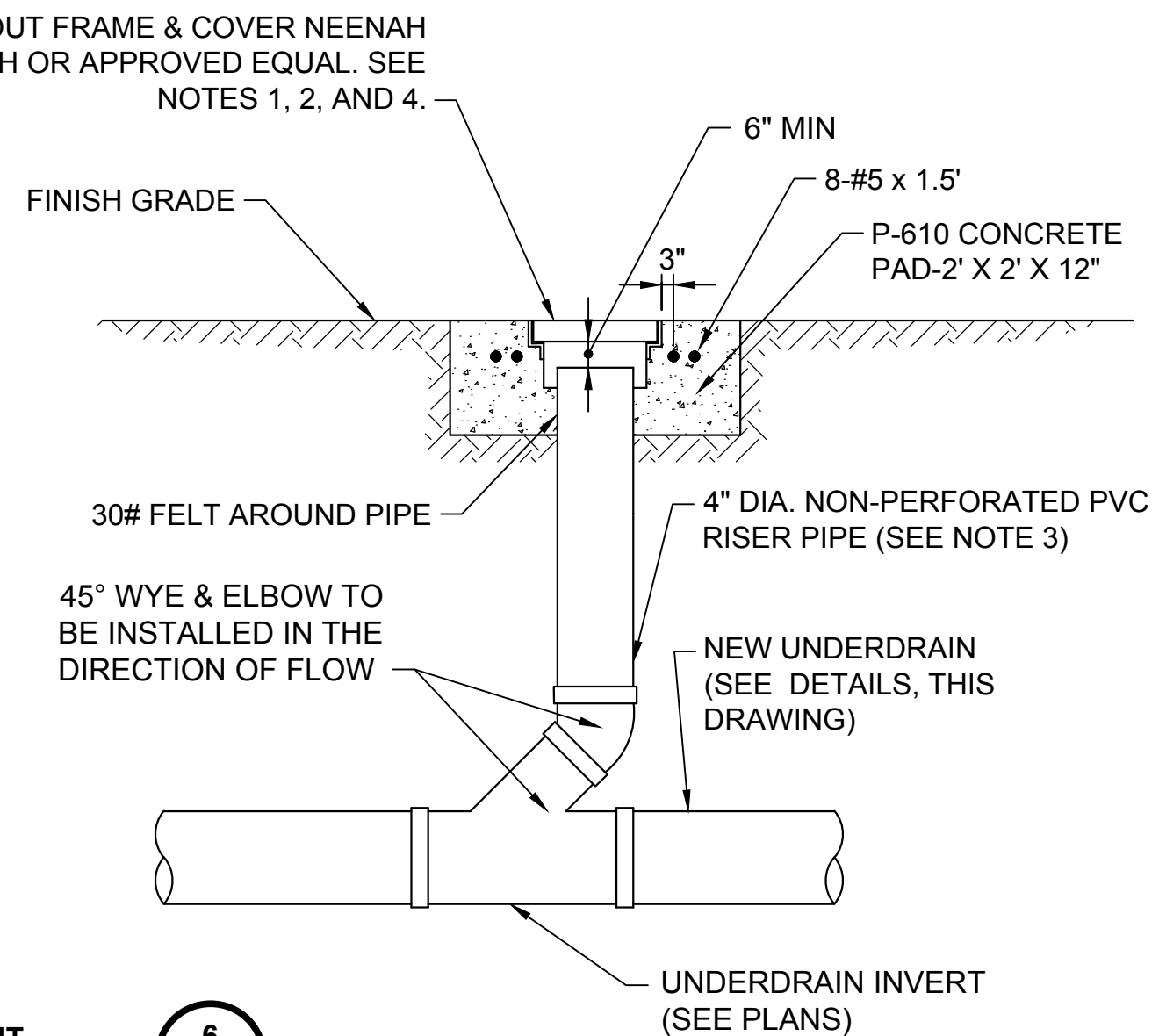
3  
C104

NOTES:

- MANHOLE FRAME AND COVER SHALL BE DUCTILE IRON DESIGNED TO HS-20 LOADINGS.
- NO LOAD SHALL BE TRANSFERRED FROM MANHOLE FRAME AND COVER TO 4\"/>

UNDERDRAIN CLEANOUT

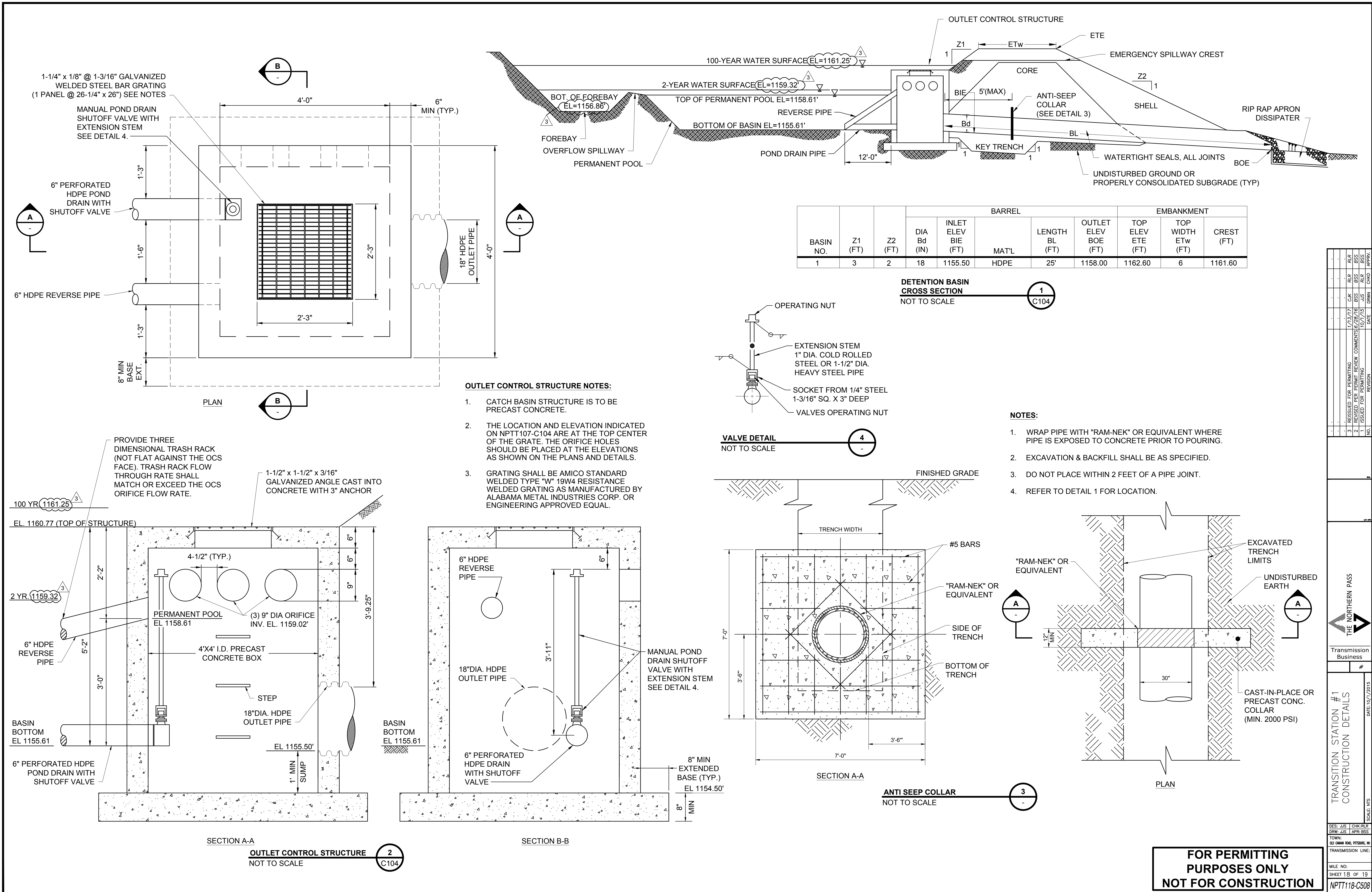
6  
C104



FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION


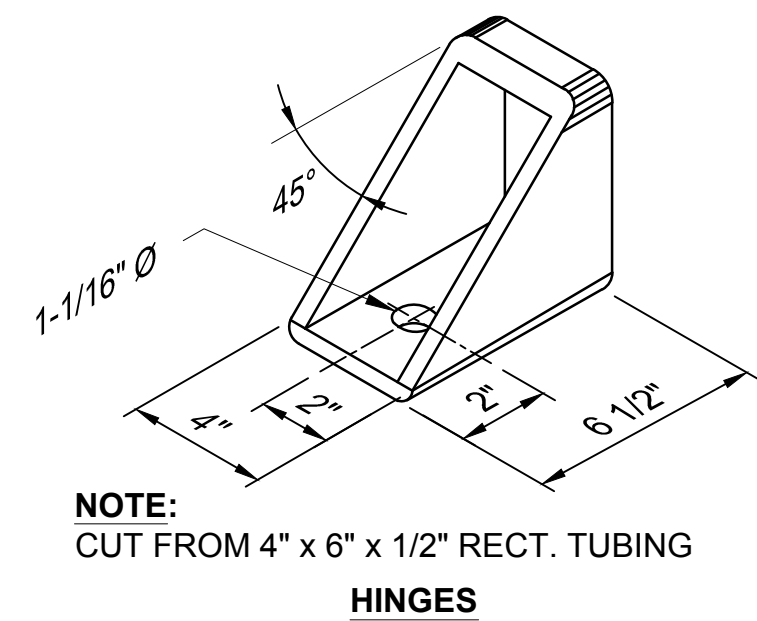
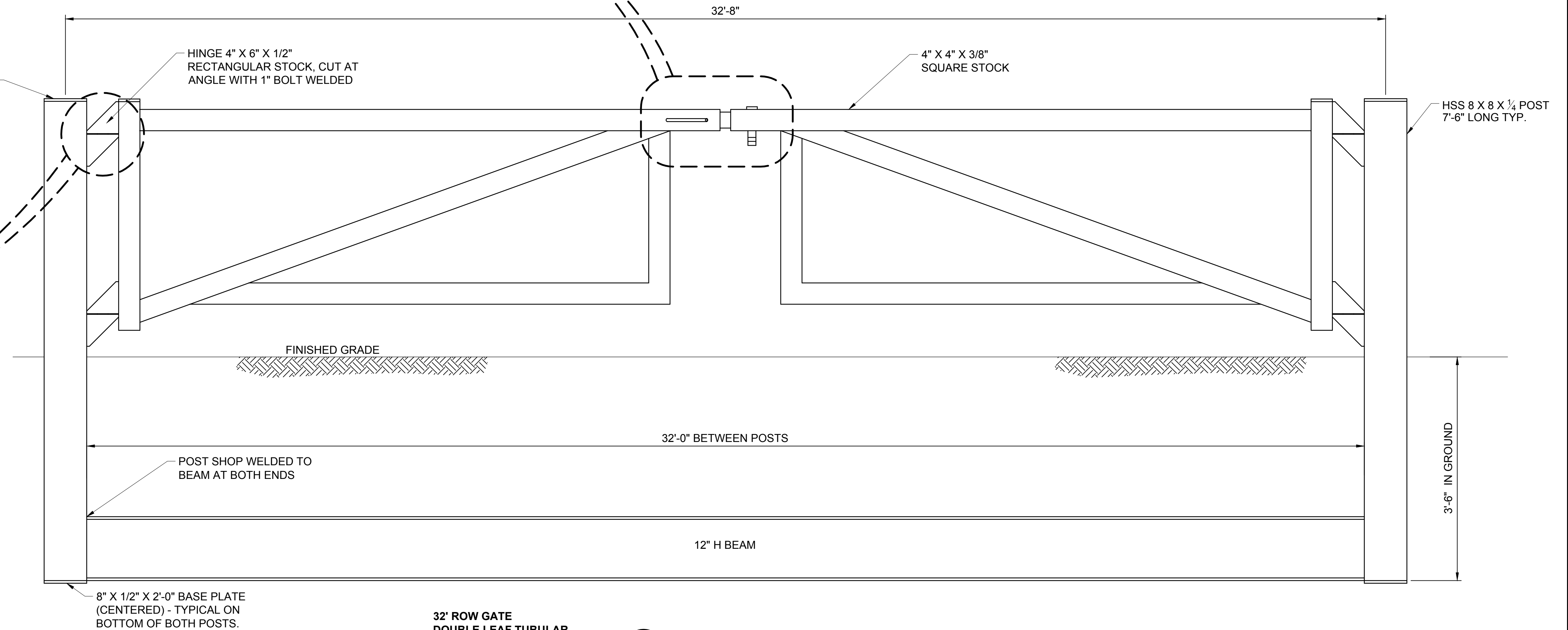
DES: JUS	CHK: RL	DATE: 10/17/2015	SCALE: NTS
DRW: JUS	APR: BSS		
TOWN: OLD COWN ROAD, PITTSBURGH, PA	TRANSMISSION LINE:		
MILE NO: 17	SHEET 17 OF 19		
NPTT117-C507			





DES: JUS	CHK: RLK	DATE: 10/1/2015	SCALE: NTS
DRW: JUS	APR: BSS		
TOWN: 02 OWN: RAL	PIT: BSS		
TRANSMISSION LINE:			
MILE NO:			
SHEET 18 OF 19			
NPTT118-C508			

1. GATE ASSEMBLY AS MFG. BY JOHN BROWN & SONS, WEARE, NH 603-529-7975 OR APPROVED EQUAL.
2. ENTIRE GATE ASSEMBLY SHALL BE PRIMED & TOP COATED FOREST GREEN AFTER FABRICATION.



**FOR PERMITTING  
PURPOSES ONLY  
NOT FOR CONSTRUCTION**

[illegible]

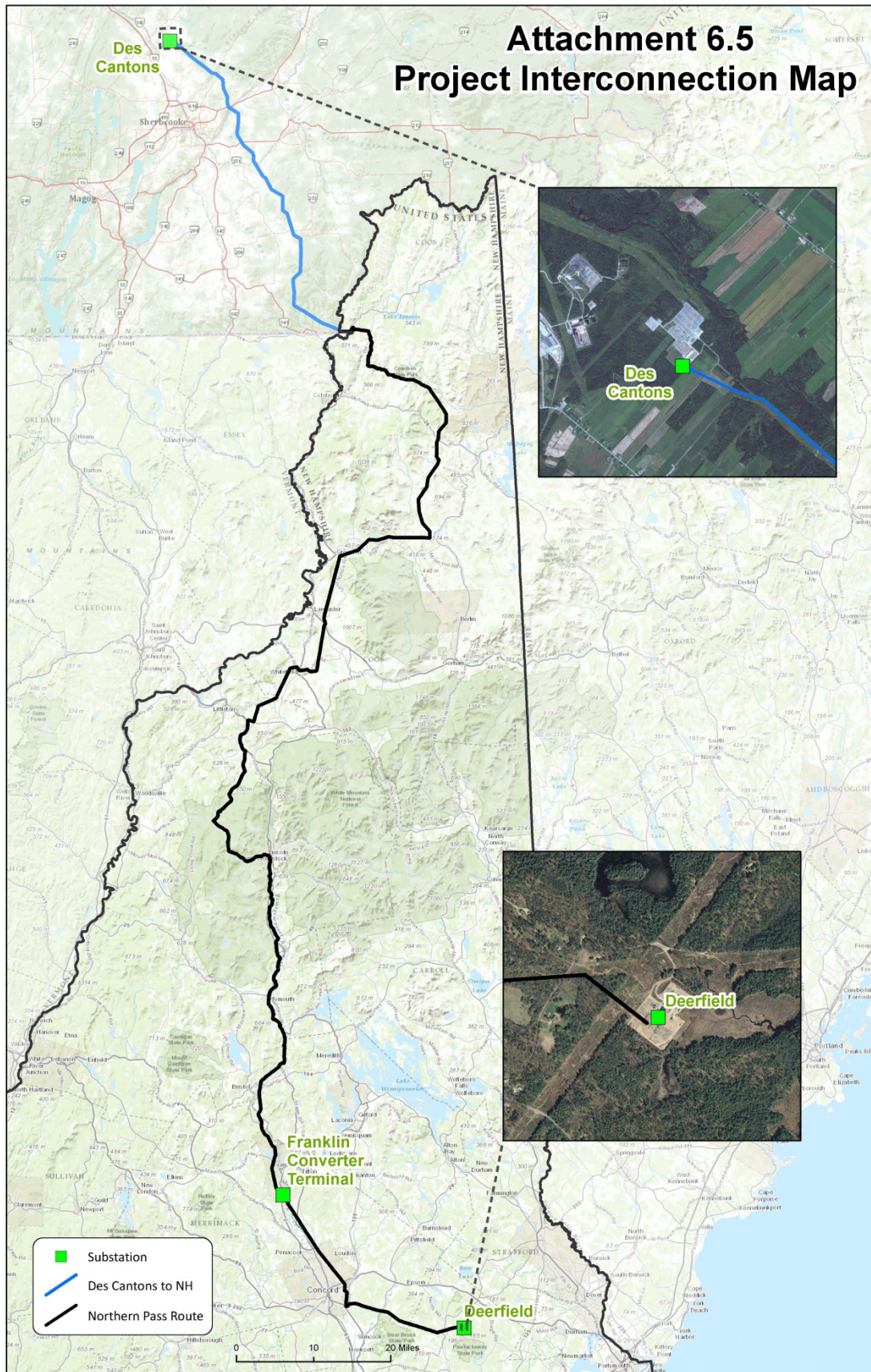


REDACTED

**Attachment 6.5**  
**Project Interconnection Overview**



# Attachment 6.5 Project Interconnection Map



**Attachment 6.6.1**  
**NPT I.3.9 Approval (1,090 MW) – ISO-NE QP 348**





Stephen J. Rourke  
Vice President, System Planning

July 19, 2016

Mr. Dennis Carberry  
Eversource Energy  
56 Prospect Street  
Hartford, CT 06103

Subject: Northern Pass Transmission Project - Proposed Plan Applications (PPAs) ES-16-T31 through ES-16-T37

Dear Mr. Carberry:

This letter is to inform you that, pursuant to review under Section I.3.9 of the ISO Tariff, no significant adverse effect has been identified with regard to the following PPAs:

**ES-16-T31 through ES-16-T37** – Transmission notifications from Eversource Energy (ES) for the Northern Pass Transmission Project

The in-service date of the project is May 31, 2019. The Reliability Committee (RC) reviewed the materials presented in support of the proposed project and did not identify a significant adverse effect on the reliability or operating characteristics of the transmission facilities of ES, the transmission facilities of another Transmission Owner or the system of any other Market Participant.

Having given due consideration to the RC review, ISO New England has determined that implementation of the plan will not have a significant adverse effect upon the reliability or operating characteristics of the Transmission Owner's transmission facilities, the transmission facilities of another Transmission Owner, or the system of a Market Participant.

A determination under Section I.3.9 of the ISO Tariff is limited to a review of the reliability impacts of a proposed project as submitted by Participants and does not constitute an approval of a proposed project under any other provisions of the ISO Tariff.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen J. Rourke", written over a horizontal line.

Stephen J. Rourke  
Vice President, System Planning

cc: Proposed Plan Applications

REDACTED



### **Attachment 7.3**

#### **NPT Supplemental Environmental Analysis**

The following summarizes the principal results of NPT's environmental analyses of the impacts requested in Section 7.3 as presented in the SEC Application.

- **Wetlands.** NPT adopted a methodic and exhaustive approach to analyzing wetlands (and other resources) and developing design solutions to eliminate, if possible, or otherwise minimize potential impacts. That effort included:
  - relocating structures and other facilities,
  - conducting constructability walkdowns, and
  - expanding the portion of the line to be constructed underground in public roads, rather than within the existing ROW.

Overall, more than 2,000 wetlands, 271 vernal pools, and almost 1,000 streams / rivers were delineated, classified, and assessed during project fieldwork along the proposed and alternatives routes, facility locations, and access roads. Using that comprehensive approach, NPT successfully avoided most potential permanent impacts to water resources; as a result, a total of only 2.53 acres of wetlands will be permanently affected. A compensation plan has been developed to offset these impacts (refer to the SEC Application Volume XXIX, Appendix 32 that can be found at <http://www.northernpass.us/state-filing-documents.htm>).

- **Wildlife.** Neither construction nor operation of the Northern Pass Line will adversely impact wildlife in any material respect; rather, the conversion of forestland to shrub/scrub habitat in the widened ROW would benefit those species that rely on shrubland or open field habitats for survival.
- **Rare, Threatened and Endangered (RTE) Plant and Wildlife Species.** The project area was found to include known or potential habitat for 25 state- or federally-listed threatened, endangered, or special concern species of wildlife and 20 state-designated plants or natural communities. Many of the species are known to inhabit the existing transmission line corridors. Studies show that temporary and permanent impacts of the construction and operation of the Northern Pass Line to RTE species will be low. Most of ROW for the NPT Line has already been impacted by logging or existing transmission facilities. To the extent that RTE will be impacted, NPT will implement minimization and mitigation measures that will further reduce the risk of adverse effects.
- **Visual Resources.** NPT commissioned experts to prepare a visual assessment of the entire 192-mile project route, including in each of the host towns and in 26 additional towns from which portions of the transmission line could potentially be visible. Based on the results of these analyses, NPT has substantially reduced the potential visual impact of the Northern Pass Line by:

- (a) locating significant portions of the project underground (including in visually-sensitive areas such as near the Franconia Notch, the White Mountain National Forest, and the Appalachian National Scenic Trail);
  - (b) co-locating a majority of the project within existing ROWs;
  - (c) planning new overhead transmission line structures near existing structures to maintain spacing and avoid irregular linear patterns; and
  - (d) maintaining or restoring vegetation at road and water crossings, and planting native tree and shrub species to restore landscapes disturbed by construction.
- **Cultural (Archaeological and Historic) Resources.** All areas of potential sensitivity for cultural resources have been identified through extensive archaeological and historic resource surveys, and NPT has developed a monitoring and compliance program to avoid or protect those resources using techniques successfully implemented for other recent large Eversource Energy transmission construction projects. In particular:
  - NPT retained a New Hampshire-based archaeological consulting firm to assess the potential effects of the project on cultural resources by conducting both initial investigations (research and field work, Phase I-A) and more detailed field surveys (Phase I-B, test pit excavations).
  - The DOE conducted a separate Phase I-A survey as part of its NEPA review.
  - NPT retained an independent consultant with expertise in historic resources to evaluate the project's potential effects on historic properties. As part of those studies, 1,284 potential historic properties in the vicinity of the overhead portions of the line were mapped and evaluated. Of those, 194 were scrutinized in more detail. After these analyses, the consultant determined that:
    - the settings of 12 historic properties may be indirectly affected;
    - the project will not affect the setting of a National Historic Landmark; and
    - the potential effects on one property already listed on the National Register of Historic Places will not be significant.

The potential impact of the project on archaeological resources is being reviewed, pursuant to Section 106 of the National Historic Preservation Act, as part of the ACOE and DOE reviews, as well as reviews by the New Hampshire Division of Historical Resources.

- **Noise.** The Northern Pass Line will not produce any noticeable, incremental impact on the acoustic environment.



## **Attachment 7.4.1**

### **Hydro-Québec Public Participation Program**

As soon as it begins a transmission project, Hydro-Québec implements a public participation program to inform local stakeholders and take the host community's concerns into account. This approach aims to provide an understanding of the project, respond to stakeholders' information needs and gather community concerns regarding the project. A variety of means of communication are established with representatives from various levels of government, official community representatives, affected property owners, citizens, community organizations and local media. These discussions help determine line routes and substation locations. They also contribute to ensuring that projects take into account the needs and expectations of the host community.

The public participation process includes many steps and is adjusted based on the scale of the project and specific needs. The objective is to maintain a dialogue with the public interested in the project to integrate, as much as possible, their concerns throughout each step of the project. Several stakeholder groups are informed and consulted during the process, including:

- Government departments
- Municipalities and regional county municipalities (RCM) (elected officials and staff)
- Landowners concerned, neighbors and citizens
- Farmers union
- Economic, Environmental, Recreation and tourism organizations (local, regional)
- Media, etc.

The consultation is conducted in 4 steps during draft-design studies.

1. General Information
2. Pre-Consultation
3. Public Consultation
4. Information on the solution selected

A multidisciplinary team leads the public consultation. This team typically consists of project management (engineer and project leader), environment (project manager), engineering (design engineer), real estate expertise and communications (community relations).

The following are examples of public participation activities:

- Different kind of meetings (public, by invitation and open houses)
- Jobsite visits
- Media relations

And examples of public participation tools include:

- Information bulletins and opinion submission forms
- Visual presentations

- Web pages
- Online Q&A
- Public notices, invitations
- Info-project line
- Press releases

Once the necessary government approvals are granted and construction has begun, Hydro-Québec continues to keep the public informed about the project. It remains attentive to the concerns of the affected publics and ensures that the impact of the work is kept to a minimum.



**Attachment 7.4.2**  
**NPT Public Support**



# The Senate of the State of New Hampshire

107 North Main Street, Concord, N.H. 03301-4951

**CHARLES W. MORSE**  
President of the Senate

State House, Room 302  
(603) 271-8472

July 18, 2017

Mr. Leon Olivier  
Chairman and President  
Northern Pass Transmission, LLC  
780 North Commercial Street  
Manchester, NH 03101

Dear Mr. Olivier,

I am pleased to offer my support for the Northern Pass Transmission project. I believe this project will provide tremendous benefits to New Hampshire and the entire New England region.

The energy market in New Hampshire and New England faces significant challenges in the coming years in terms of supply and cost, and without new energy supplies in the region this problem will continue to negatively impact businesses and our states' economies. I believe Northern Pass provides a large, near term solution to address this problem by importing more than 1,000 Megawatts of low cost, clean electricity into the New England electric market.

In addition, I believe the Northern Pass project will bring other benefits to New Hampshire and the region. This includes the creation of approximately 1,200 jobs, opportunities for small businesses throughout New Hampshire and the region, and a long-term investment in many New Hampshire municipalities.

I look forward to the Northern Pass completing its state and federal permitting in the coming months, and for the project to get underway. The immediate and long-term benefits of the Northern Pass project are significant, and will make our state and region stronger for decades to come.

Sincerely,

A handwritten signature in cursive script that reads "Charles Morse".

Senator Chuck Morse  
District 22





# CITY OF FRANKLIN, NEW HAMPSHIRE

*"The Three Rivers City"*

316 Central Street  
Franklin, NH 03235

(603) 934-3900  
fax (603) 934-7413  
cityhall@franklinnh.org

July 12, 2017

Mr. Leon Olivier  
Chairman and President  
Northern Pass Transmission, LLC  
780 North Commercial Street  
Manchester, NH 03101

Dear Mr. Olivier,

On behalf of the City of Franklin, I want to express our support for the Northern Pass Transmission project (NPT). We believe this project will bring significant benefits to our city, and we look forward to NPT being a long-term corporate partner in our community.

As you know, in recent years the City of Franklin has faced a number of challenges, but we are fortunate to have an active, committed community focused on overcoming those challenges and expanding economic development opportunities. Given the considerable investment NPT brings to our city, the project will play a critical role in the success of these initiatives and provides a long-term foundation for Franklin to address critical needs and encourage further economic growth.

We also look forward to our local business community realizing the benefits of construction of the project. Given that the project's converter terminal will be built in the Franklin, we appreciate the opportunity to host the companies and workers involved in its construction and look forward to their support of the city's small businesses during their time here.

Thank you for your commitment to the City of Franklin, and we look forward to working with you to successfully complete the project.

Sincerely,

Elizabeth Dragon  
Franklin City Manager

# City of Berlin, NH

Office of the Mayor



July 18, 2017

Mr. Leon Olivier  
Chairman and President  
Northern Pass Transmission, LLC  
780 North Commercial Street  
Manchester, NH 03101

Dear Mr. Olivier,

I am writing to offer my support for the Northern Pass Transmission project. I believe the project provides significant economic benefits to the City of Berlin, Coos County and the State of New Hampshire.

The City of Berlin and other areas of northern New Hampshire are actively working to build our local economy and create jobs, and the Northern Pass project's investment in Coos County would greatly assist this effort. The project's significant investment in the region will increase the county's tax base and provide additional tax revenues for the county. This will reduce the county tax burden on all municipalities and residents of the county, including the City of Berlin.

I also support the project's planned investment in the transmission infrastructure in Coos County. Northern New Hampshire has been a leader in the New England region's development of renewable energy, and these investments in transmission infrastructure will help our existing energy facilities move clean power onto the New England grid.

Finally, construction of this project will bring work for many local residents in the forestry and construction industry, and new business for many of the area's hotels, restaurants, retail shops and other local companies.

I look forward to continuing to work with you as the project is constructed, and building a long-term partnership that benefits the City of Berlin, our county and the state.

Sincerely,

Paul Grenier  
Mayor

City Hall, 168 Main Street  
Berlin, NH 03570  
Tel: 603-752-2340  
[www.berlinnh.gov](http://www.berlinnh.gov)



July 12, 2017

Mr. Leon Olivier  
Chairman and President  
Northern Pass Transmission, LLC  
780 North Commercial Street  
Manchester, NH 03101



Dear Mr. Olivier,

The International Brotherhood of Electrical Workers is pleased to offer our full support for the Northern Pass Transmission (NPT) project. In addition to providing significant work opportunities for our members, IBEW believes this project is critical to addressing the energy crisis that currently faces New England.

As you know, IBEW International Second District, IBEW Local 104 and IBEW Local 490 are all parties to the Project Labor Agreement (PLA) for the NPT project. Together, these IBEW locals service members throughout New England with a particular emphasis on New Hampshire and Massachusetts. This PLA is critical to ensuring local jobs on this project, and demonstrates the project's commitment to providing opportunities for local workers.

In addition to the tremendous opportunity this project provides for New Hampshire IBEW members to work close to home, this project will also provide significant work opportunities for our members in Massachusetts. Given the size of this project and the number of trained electrical workers needed, we anticipate this project will not only fully utilize all available New Hampshire members, but will also provide work for hundreds of our members from Massachusetts. The significant need for trained electrical workers will ensure that the economic benefits of this project extend into Massachusetts and other states.

Thank you for your commitment to the local members of the IBEW, and we look forward to being a partner that will ensure this project is constructed in a safe, efficient and reliable manner.

Sincerely,

Tiler Eaton  
IBEW International Second District



BOSTON HEADQUARTERS  
7 Winthrop Square, Boston, MA 02110-1245  
Phone: 617-542-8010 • Fax: 617-542-8028

WASHINGTON OFFICE  
1001 Connecticut Avenue NW, Suite 510, Washington, DC 20036  
Phone: 202-452-6252 • Fax: 202-463-9462

[www.nclc.org](http://www.nclc.org)

Mr. Leon Olivier  
Chairman and President  
Northern Pass Transmission, LLC  
780 North Commercial Street  
Manchester, NH 03101

July 19, 2017

## **LETTER OF ACKNOWLEDGEMENT**

Dear Mr. Olivier:

This letter acknowledges that Northern Pass Transmission, LLC (NPT) has committed to provide funding that will help to further support bill payment assistance and deliver energy efficiency services to low-income households throughout the Commonwealth of Massachusetts in the event that the Massachusetts Department of Public Utilities (DPU) approves a power purchase agreement for the delivery of power over the Northern Pass transmission line, in response to bids filed under the so-called “83D”<sup>1</sup> solicitation process.

In particular, NPT has committed to make an annual payment of \$500,000 to a non-profit Fiscal Agent, Action for Boston Community Development (ABCD), for a period of up to 20 years, should the DPU choose NPT as the successful “83D” bidder and the NPT project be in operation throughout the 20-year period. ABCD will distribute the funds to the non-profit and governmental agencies that operate the Low-Income Home Energy Assistance Program

---

<sup>1</sup> Acts of 2016, ch. 188, § 12, adding Section 83D to the Acts of 2008, ch. 169.



(LIHEAP) and Weatherization Assistance Program (WAP) in accordance with state-mandated funding formulas for those programs to ensure equitable allocation of the funds across the state.

In any year, \$500,000 would provide substantial bill payment assistance to low-income households that are having difficulty paying their heating and energy bills. Average benefits under LIHEAP are approximately \$500 in most years (depending on the level of federal funding, and the number of households that apply), and \$500,000 would therefore fully serve approximately 1,000 households, if this funding provided all of the assistance a household received. If, as another example, the \$500,000 was used to increase the payments to households already determined eligible for LIHEAP, this amount of funding could provide an additional \$100 of assistance to 5,000 households. Over the course of the 20-year agreement, the amount pledged by NPT could serve the home energy needs of tens of thousands of households.

On the energy efficiency side, \$500,000 per year would allow the local agencies that deliver WAP to provide full, whole-building insulation and related energy-saving measures to approximately 100 households, or approximately 2,000 households over the 20-year period.

NPT has offered that the Fiscal Agent will have reasonable discretion as to how to allocate this funding of \$500,000 between bill payment assistance and energy efficiency services, year-to-year. The Fiscal Agent will exercise that discretion through discussions with the local LIHEAP and WAP administering agencies.

On behalf of the low-income households we represent and serve, we appreciate the funding that may be made available, should NPT be chosen as the successful bidder.

Sincerely,

A handwritten signature in black ink that reads "Charles Harak". The signature is fluid and cursive, with the first name "Charles" and last name "Harak" clearly distinguishable.

Charles Harak, Esq.  
Senior Energy Attorney

On behalf of Action for Boston Community Development  
and Action, Inc.

July 18, 2017

Mr. Leon Olivier  
Chairman and President  
Northern Pass Transmission, LLC  
780 North Commercial Street  
Manchester, NH 03101

Dear Mr. Olivier,

As business owners and taxpayers in Coos County, New Hampshire, we are pleased to offer our support for the Northern Pass Transmission project. We believe that this project will not only provide jobs for the people of Coos County, but will provide a long-term investment in our region that will provide a foundation for economic growth.

Northern New Hampshire, and specifically Coos County, have faced a declining economy over the past decade. The loss of manufacturing in the region has not only eliminated jobs, but has also reduced our region's tax base. Together these changes have put a tremendous burden on the residents of Coos County.

The Northern Pass Transmission project will be an important part of the effort to rebuild our local economy. The project's commitment to provide local construction jobs on the project, such as logging, trucking and road construction, will bring direct benefits to many families. In addition, the secondary economic benefits of this large construction project and the influx of specialty electrical workers will support countless other small businesses in the region, such as lodging, restaurants, retail and tourism.

Finally, Northern Pass will provide enormous, long-term local tax benefits to Coos County at the municipal and county level. This project alone will go a long way toward replacing the tax base that has been lost over the past decade in our county. This will reduce the burden on residents of the county, while also providing needed taxes to support our local communities and the services required by our residents.

We look forward to working with Northern Pass Transmission to make this a successful project for everyone.

Sincerely,

*Cloutier Sand & Gravel*  
*Columbia N.H.*

*Nathan Cloutier*



John Brown  
NORTH STRATFORD, NH 03550

Frank W. King  
COLEBROOK

Harry L. Brown  
Stewartstown NH

Luc Cote  
ERROL L L COTE

Rep. Bing Judd  
Pittsburg N.H.

London Placey L & L  
ANTIQUES  
STEWARTSTOWN, N.H. & IN

DA DOSTIE Sand-Gravel  
Donald Dostie Colombar N.H.

Edward / Norman Lancaster, NH

Allen Benthall  
AB Excavating Inc  
Lancaster N.H. 03584

Harley E Mason  
Mason Enterprises  
653 West Milan N.H.  
03588

Rep. Hubert Rechaud  
LANCASTER N.H. Coos 4

Crosby Rick  
Rogers Campground  
Lancaster, N.H.

July 20, 2017

Mr. Leon J. Olivier  
Chairman and President  
Northern Pass Transmission, LLC  
780 North Commercial Street  
Manchester, NH 03101

Re: Northern Pass Transmission Project

Mr. Olivier;

I have been a longtime supporter of the Northern Pass transmission project ("Northern Pass" or "Project"), as have my companies Balsams Resort Holdings, LLC and Dixville Capital, LLC, the developers behind the revitalization of the former Balsams Resort underway in Dixville, NH. Our support stems from our longstanding belief, as developers of large resort properties, in the importance of having access to renewable and sustainable energy sources. Northern Pass exemplifies access to such resources. I have publically expressed my concern over the fact that significant generating capacity is slated for retirement across New England in the absence of sufficient quantities of new capacity coming online behind it. The Project's 1,090 megawatts of clean, renewable hydropower, is a significant part of the solution to close the looming capacity gap and satisfying the growing demand for renewable resources.

Meaningful energy diversity legislation signed into law last year in Massachusetts requires utilities to contract for approximately 1,200 megawatts of clean energy generation from hydropower, onshore wind and solar sources. As Northern Pass nears the completion of its state and federal siting processes, it is perfectly poised to provide the clean energy resources sought by the Commonwealth. I am pleased to offer my, and the Balsams' support of Northern Pass' proposal to satisfy this mandate. We believe the Project would be a logical and appropriate recipient of an award under the Request for Proposals for Long Term Contracts for Clean Energy Projects issued March 31, 2017 by the Massachusetts Department of Energy Resources ("RFP"), and will greatly assist the Commonwealth in satisfying these newly implemented, and important regulatory requirements as a means to reduce and stabilize electricity rates, diversify their energy portfolio, and provide substantial carbon emissions reductions.

Lastly, we are diligently working on redeveloping the former Balsams Resort into a premier year-round, vacation destination. Once operational, the Balsams will be a large energy consumer and having reliable access to a low cost, renewable supply will be important to the successful operation of the Resort. Undoubtedly, access to the low cost, clean hydropower delivered by Northern Pass will resonate with many businesses across New England, including those in Massachusetts, who share similar concerns about the availability of low cost, clean energy as key to running their businesses.

I compliment your organization on its tireless efforts to advance this important project, and provide our full support of proposal in response to the above referenced RFP. If I can lend further support as the process advances, please feel free to contact me directly.

Best regards,



Leslie B. Otten





## **Sununu: ‘New Hampshire is open for business’**

**In inaugural speech, governor calls for tax cuts, energy projects**

**BY BOB SANDERS**

*Published: January 6, 2017*

Right to work, supporting Northern Pass, cutting business taxes and a three-month freeze on new regulations. There's fighting words, yet Gov. Chris Sununu intermingled them in his inaugural speech Thursday with platitudes about the need to work together after an ugly election cycle. On the other hand, he also promised that he would be blunt.

Sununu's first substantive words were aimed at business. "When we talk about business, what are we going to do about business, not two or four years down the road, but five, 10?"

He started by laying out the problems: workforce issues, and rising health care and energy costs. Even when he discussed social issues like education and substance abuse, it tied into the economy.

Substance abuse "infiltrates everything in society" including the workforce. Education should result in "kids are coming out of high schools, community colleges, even the four-year schools with certifications and workforce-ready skills on day one." One of his solutions is greater school choice, but that's a proposal that likely won't go over on the other side of the aisle.

Most of his speech was aimed at creating more jobs to fill, as opposed to finding qualified workers to fill them. He reiterated his pledge to visiting 100 out-of-state companies in 100 days to "entice" them to come to the state. He said he has already met with companies from Canada and China and our neighbors in Massachusetts and Vermont. He didn't expect to get them all, but "you can't catch any fish if you don't go fishing."

As bait, he hopes to cut some of the costs of doing business in the state.

He said he wants to continue reducing business taxes, which are already scheduled to go down. The business profits tax, for instance, is scheduled to drop to 7.9 percent, a tenth of a percent below Massachusetts, at the end of this year. So it wasn't clear whether he meant that or proposals to cut it still further, including a proposal by Senate Majority Leader Jeb Bradley, R-Wolfeboro, to reduce the rate to 7.5 percent by July 2021. Others want to see even deeper and faster cuts, as well as various tax breaks, such as lifting the cap on the research and development tax credit.

## **Energy needs**

Sununu also said he asked his commissioners to “take a little pause” on passing new regulations, pledging that “we are going to break down those burdensome regulations, and there are a lot of regulations in this state. For such a small state, it is unbelievable.”

Sununu spent the most time in his speech talking about energy, charging that the state has “disregarded our responsibility of lowering energy costs for individuals, the businesses. We know it. We see manufacturers leaving in part because of high energy costs.”

“Do we need more natural gas in New England? Sure we do. We know that.” But he added, “we aren’t going to let companies come in here and drop their plans on us any old way.”

As for Northern Pass, with its “1,100 megawatts of clean renewable energy. How do we say no to that when we have the highest rates in the country?”

But when it comes to renewable energy, “you have to design a portfolio that is meant for us. So when we are making choices on our renewable energy portfolio, we are looking at the economic and the environmental impacts. We are not just signing off on everything that comes to our desk.”

Sununu didn’t mention energy efficiency, despite the continuing debate over membership in the Regional Greenhouse Gas Initiative or the energy-efficiency standard, which is being promulgated by the Public Utilities Commission and could result in a small surcharge in electric bills.

Indeed, what might be telling were the topics Sununu didn’t mention. The only concrete proposal when it came to labor law was his strong endorsement for right to work, which would allow employees to opt out of paying union fees even while benefiting from the contract negotiated by the union. Since only 4 percent of the private workforce belongs to a union in New Hampshire, and most of them are in larger companies, right to work would affect an even tinier fraction of businesses. But advocates say it would attract more jobs to the state.

“We are going to give employees the flexibility in the workplace by passing right to work, and let’s tell these companies New Hampshire is open for business,” Sununu said.

## **Praise and criticism**

Sununu didn’t say anything about paid family leave, which he said he would “absolutely” support during the campaign.

And despite talking about the high cost of health care, Sununu didn’t mention the looming issues of Medicaid expansion. The program now covers more than 50,000 people, but even under Obamacare, the federal government’s contribution was expected to drop from 95 percent to 90 percent in 2020. And President-elect Donald Trump and Republican supporters pledge to dismantle the Affordable Care Act as soon as possible, including eliminating all support for Medicaid expansion.



Instead, Sununu said he wanted to “increase competition on the insurance side and provide low-cost alternatives for individuals for independent groups and businesses. There are lots of options out there.”

Senate Democratic Leader Jeff Woodburn, D-Dalton, while grateful for the rhetoric on bipartisanship, said he was disappointed that Sununu didn’t talk about Medicaid expansion and family-friendly legislation.

The Democratic Party, in an e-blast, was more blunt in an email entitled “Stop Sununu, charging that the new governor wanted to “make it harder for NH employees to earn a fair wage, by tilting the playing field in favor of big corporations; make it harder for our kids to get a great education by diverting money away from public schools toward private schools; “make it harder to advance renewable energy by slowing down investments in solar energy in favor of fossil fuels.”

However, the National Federation of Independent Business praised the speech, saying Sununu hit “all the right notes for small business,” including right to work and reducing government regulation. Americans For Prosperity praised his support for business tax cuts and the right to work.



## Sununu reaffirms Northern Pass support during Canada visit

WMUR Associated Press

Published March 21, 2017

### **CONCORD, N.H. —**

Gov. Chris Sununu reaffirmed his commitment to the Northern Pass transmission line Monday and called for revisions to NAFTA in his first international trip to Canada.

"It's a win-win on both sides," Sununu said of Northern Pass. "It's a project I've always said should happen, could happen and I believe has to happen."

Northern Pass is a project between HydroQuebec and Eversource Energy that would bring hydropower into the New England energy grid through mostly overhead transmission lines running down New Hampshire. Sununu, a Republican, has long touted the project as a way to lower energy costs in New Hampshire. Opponents challenge its economic effect and charge it would ruin the state's natural landscape. Quebec Premier Philippe Couillard applauded Sununu's support.

The purpose of Sununu's trip was to meet with Couillard and discuss New Hampshire and Quebec's economic relationship with political, business and community leaders. Sununu pledged during his campaign to aggressively recruit new businesses into New Hampshire during his first days in office.

New Hampshire reporters were not notified of the trip until Monday morning, and Sununu's office did not provide details on remarks he made during a luncheon. Sununu's comments about Northern Pass and NAFTA, the North



American Free Trade Agreement, came during a press conference with Couillard that was streamed online.

Sununu was asked by a reporter to comment on what changes he'd like to see to NAFTA, an accord among the United States, Canada and Mexico. Republican President Donald Trump has called for renegotiating the agreement to make it more favorable to the United States.

Sununu said the agreement could be "updated and revised" to reflect advances in technology, but he offered no specifics. He also said it's important to have a system that fairly imposes taxes and fees.

"It's an important agreement to be sure," he said. "I'm hopeful that we're not just going to throw it out."

On climate change, Sununu told reporters that protecting the environment has "always been a priority." Sununu said he'll be working with fellow governors in the coming years to update the Regional Greenhouse Gas Initiative, a nine-state agreement to reduce carbon emissions.

Trump has called the science showing climate change a hoax. White House Budget Director Mick Mulvaney said last week the Trump administration was cutting spending for climate change efforts because "we consider that to be a waste of your money."

Sununu said he's "encouraged" by proposed changes to the federal Environmental Protection Agency, which would see its budget cut significantly under Trump's proposal. He did not mention specific changes he favors.



# On trip to Canada, Sununu says Northern Pass 'has to happen'; urges updates for NAFTA

**By: NH1 News Political Director Paul Steinhauser**

Published March 20, 2017

CONCORD – Gov. Chris Sununu says the much-debated Northern Pass hydro-electric transmission lines need to be “completed as soon as possible.”

In a trip to Canada, New Hampshire’s governor New Hampshire’s governor also urged that the more than two-decade old North American Free Trade Agreement be “updated and refined.”

And discussing the environment, Sununu said “I’m very encouraged about what has been proposed by the EPA.”

Sununu made his comments Monday in a joint-news conference in Montreal with Quebec Premier Philippe Couillard. The 24-hour trip to Canada, which the governor’s office highlighted as part of Sununu’s message that the Granite State is “open for business,” is Sununu’s first visit outside the U.S. since taking over at the beginning of the year in the Corner Office.

The state’s first GOP governor in a dozen years has long been a supporter of Northern Pass, telling NH1 News days after announcing his gubernatorial bid in September 2015 that the project should “absolutely be on the table.”

He was the biggest supporter of the proposed transmission lines among the seven major Democrat and Republican candidates for governor in last year’s campaign.

The lines are projected to bring 1,090 megawatts of power from Canada into the New England energy grid, which is enough to power some one million homes. The projected lines would run down through New Hampshire, which opponents argue will scar the state’s natural beauty. Those opposed to the lines also question the claims that the project will reduce energy costs for Granite Staters.



Proponents of the project say it's critical for lowering energy prices in a state known for high costs. Eversource Energy is partnering with HydroQuebec on the New Hampshire portion of the project.

At Monday's news conference, Sununu touted that Northern Pass is "a win, win, on both sides. It's a project that I always said should happen, could happen, and I believe has to happen. Now there is a process and we will continue to go through that process. Our site evaluation committee will make a determination this fall."

"I'm proud to stand here and say we've been as much of a promoter of the project as we can be and we will continue to do so, so people understand that at the end of the day it's about lowering energy prices and building certainty into the businesses that are going to be growing and coming into New Hampshire. That's the utmost responsibility of a governor. I take it very seriously," Sununu added.

Asked how soon he'd like to see the lines completed, the governor joked "I'd shoot for tomorrow if I could. I think we need to get this project done and completed as soon as possible."

Northern Pass has been in the political spotlight for years. Originally only 8 of the 192 miles of the project were buried, but that was increased to 60 miles after much push-back from opponents.

"I'm very encouraged by the folks at Hydro Quebec and Eversource ... they listened," Sununu said. "They really did listen and they changed their plans" based on that public opinion," he added.

#### **Sununu on NAFTA: 'I hope we're not just going to throw it out'**

President Donald Trump has begun moves to renegotiate NAFTA, which he's called the "worst trade deal ever approved in this country."

But Canadian Prime Minister Justin Trudeau disagrees, saying the agreement's led to a lot of great jobs on both sides of the U.S.-Canadian border.

Sununu said it's time for changes to the 1994 treaty.

"This was an agreement that was designed well before so many of the technologies that we deal with today," Sununu said. "So any agreement over time has to be updated and refined and it's not just in technologies, it's in a variety of other areas that we can look at."

But the governor didn't give many specifics on areas he would change, other than saying "there's just a lot of holes in it. It just needs to be updated and revised."

While he wants to revise NAFTA, Sununu was clear the treaty is needed.

"It's an important agreement to be sure. I hope we're not just going to throw it out," he emphasized.

And he said he puts a lot of faith in the President, Commerce Secretary Wilbur Ross, and Secretary of State Rex Tillerson, when it comes to renegotiating the trade deal.

“These are folks who understand international deals. They understand international agreements. They understand the pushes and pulls of how to get these things done the right way. They put results first over politics,” Sununu said.

### **Sununu ‘very encouraged’ by EPA proposals**

Sununu also highlighted his environmental credentials. And he mentioned a meeting he had last month with new Environmental Protection Agency administrator Scott Pruitt, who’s faced heavy criticism from environmentalists for his views on climate change.

Sununu said that “I sat down with the new EPA administrator, Scott Pruitt. We had breakfast about a month ago. We talked about a variety of different issues. I’m very encouraged about what has been proposed by the EPA. They’re going to have some budget cuts but they’ve very committed to making sure a lot of the state grants remain in place. I think they’re just taking a common sense approach. It’s a change to be sure.”

Sununu was accompanied on his visit to Quebec by staff from the New Hampshire Department of Resources and Economic Development (DRED), as well as Executive Councilor Joe Kenney, who represents the state’s North Country.

Discussing the long relationship between the Granite State and Quebec, Sununu said “we want to highlight that past, highlight that rich history, but also take that and decide where we want to go in the future.”

“There’s so much we can learn from each other and so many doors and opportunities that we can open for one another,” he added.

Monday evening Sununu and Kenney were scheduled to attend a reception at the Montreal residence of the U.S. Consulate General in Quebec.



March 16, 2016

Pamela G. Monroe, Administrator  
New Hampshire Site Evaluation Committee  
21 South Fruit Street, Suite 10  
Concord, NH 03301

**RE: SEC Docket No. 2015-06, Northern Pass Transmission - Eversource**

Dear Ms. Monroe,

While I am unable to join you and the New Hampshire Site Evaluation Committee at today's public hearing, as the Founder and CEO of Dyn in Manchester, NH and a major employer in our state, I want to express my strong support for the Northern Pass transmission project.

I have met with many companies across the state who are struggling under the weight of some of the highest energy prices in the nation. Without relief, companies that have long been the mainstay of our state's economy, providing well paying jobs for New Hampshire families, are now for competitive reasons making choices on when and where their future expansion plans will happen. Many are looking at out of state options. Our state's future economy is at risk.

Companies such as ours have made great strides in energy efficiency, as has the region as a whole. Yet overall energy consumption in the state and region continues to increase. That increase, combined with a regional energy generation fleet that has many key facilities retiring and being taken out of service, has business consumers in New Hampshire and New England very concerned.

We do have solutions. Hydroelectric power has proven to be an abundant, reliable, economical, renewable energy resource that is at our doorstep. Northern Pass will begin to bring predictability to our energy market and stabilize our energy cost.

The Northern Pass Transmission project will bring reliable, low-cost energy to New Hampshire. This will begin to address our high electricity costs, which will begin to remove a major obstacle to our region's economic competitiveness. For these reasons, I urge your thoughtful consideration of the application before you and hope you will join me and many in New Hampshire business community in supporting the Northern Pass transmission project.

Sincerely,

Jeremy Hitchcock  
Co-Founder & CEO  
Dyn  
Manchester, NH



**FOR IMMEDIATE RELEASE**  
**March 22, 2017**

**Contact:**

Scott Tranchemontagne  
Montagne Communications  
603-644-3200  
[scott@montagnecom.com](mailto:scott@montagnecom.com)

## **COMPLETION OF WORK FORCE STUDY MARKS ADVANCEMENT OF BALSAMS BFA APPLICATION PROCESS**

*Forward NH Plan, established by Northern Pass, provides advance funding to assist the resort with development and move it closer to breaking ground*

**Dixville, NH** – A newly completed Work Force Study confirms that the revitalization of the Balsams Resort has the potential to bring thousands of new jobs to the North Country. The report by PolEcon Research is the third and final independent report required to advance the Balsams application process before the New Hampshire Business Finance Authority (BFA) in collaboration with the project's senior lender.

The study concludes that there is sufficient available labor in the region to meet the staffing needs of the redeveloped Balsams Resort. It determined that the project will have a positive impact on workers in the region and provide a number of public benefits, including:

- **Putting people to work** – The Balsams Resort will increase the size of Coös County's labor force and raise the below-average labor force participation rate, especially among younger, working age residents.
- **Job diversity** – The Balsams Resort will create 600 construction jobs during Phase 1. Once operational, the Balsams Resort will employ roughly 400 people with the potential of creating more than 1,500 jobs once the build out is complete, as well as indirect jobs in the communities around Dixville.
- **Good wages** – Wages will average more than \$17 per hour and the median wages are above the median for all of Coös County.

The Forward NH Plan, established by Northern Pass, recently committed a \$3 million loan to assist the Balsams Resort through its final phases of design, permitting and financing. This has allowed the Balsams Resort to complete the required third-party reports, including the Work Force Study, to allow the advancement of the BFA application process.

"Helping to make this historic project a reality is a great example of the significant benefits the Forward NH Plan presents to all of New Hampshire, including creating jobs, stimulating the economy and the tourism industry," said Leon J. Olivier, President, Northern Pass Transmission, LLC.

The loan will also help the Balsams complete on-going development activities, achieve a financial close, and break ground on the renovation and expansion plan sometime in 2017. The Balsams' first phase is estimated to cost approximately \$160 million and will include renovating the historic Dix and Hampshire Houses, and constructing a new hotel, conference center, Nordic Baths and Spa, and expanded ski area.

"There is a great synergy between our projects," said Balsams lead developer Les Otten. "Northern Pass, through its Forward NH Plan, believes in the Balsams' future success and is playing a large role towards making it happen." Otten has long been a proponent of clean energy projects, and said he recognizes the clean-energy opportunity Northern Pass can bring.

"Northern Pass will benefit the Balsams for many years to come by providing a large amount of clean, low cost power to our very energy-intensive operation, particularly when it comes to snowmaking," said Otten. "Most important, Northern Pass will upgrade the transmission line system through the North Country so other renewable power sources can thrive and Coös County can begin to bring back critically important manufacturing jobs."

New Hampshire's First District Senator and Senate Minority Leader, Jeff Woodburn, recently praised the additional investment and supports the ways in which these projects have aligned in a collective effort to benefit the community.

"The completion of the Work Force Study and its findings are an important advancement in the BFA process, and a great step forward for the Balsams project and the North Country," said Woodburn. "From the project's initial announcement and the Legislature's work on SB 30, it has been exciting to see the state come together to support this project that is so vital to northern New Hampshire. Les Otten's continued efforts, the work of local communities and the state's support at all levels have helped move this project toward becoming a reality. I am also pleased that the Forward NH Plan has made critical advanced funding available to the Balsams project that will bring major, long-term economic benefits to our region. This demonstrates an understanding that the Northern Pass project, and the Forward NH Plan, must deliver substantial benefits to the North Country and the entire Granite state."

Otten concluded, "Thousands of jobs have left the North Country over the last decade. It has hurt the schools, hospitals, charitable organizations and communities at large. In making this advance to the Balsams from its Forward NH Plan, and other job creating projects around the North Country, Northern Pass is already stimulating the economy and creating real opportunities."

#### **About the Balsams redevelopment:**

The Balsams' redevelopment proposal includes renovating the historic Dix House, Hampshire House and Hale House, as well as the acclaimed Panorama golf course and clubhouse designed by pioneering golf course architect Donald Ross. The Balsams Lake Village, which will encompass the Dix and Hampshire Houses, will feature a new Lake Gloriette House condominium, a 600-seat conference center, Nordic hot baths and spa, a performing arts center and an open-air marketplace. The resort's fine cuisine and chef training programs, known worldwide, will return through multiple dining opportunities around the resort. All will embrace the farm-to-table concept by sourcing locally-grown meats, produce and dairy. The plan also includes expanding The Balsams Wilderness Ski Area into the largest and most technically advanced ski resort on the East Coast.

#### **About the Forward NH Plan:**

Northern Pass will transmit 1,090 MWs of clean hydropower from Canada to the New England power grid and will also provide small scale renewable generators with greater access to New England markets through the planned upgrade to the existing Coös Loop. The project is estimated to lower energy prices by \$63 million



annually for New Hampshire customers. It will provide additional energy cost savings and stability for Eversource NH customers through a firm power contract with Hydro-Québec. Northern Pass will also contribute an estimated \$30 million annually in new tax revenue to communities in which the line passes. In 2015, Northern Pass committed the Forward NH Plan to provide a wide range of potential economic, infrastructure, and tax benefits for New Hampshire. The Forward NH Plan, through the establishment of a separate fund in the future, is expected to allocate \$200 million over a 20-year period for projects associated with community betterment, clean energy innovation, economic development, and tourism throughout New Hampshire. In addition, Northern Pass has separately committed \$7.5 million to the North Country Job Creation Fund for economic and community development initiatives and job creation, training, and retention program.

More on the Balsams Resort at [www.thebalsamsresort.com](http://www.thebalsamsresort.com). Contact Scott Tranchemontagne - 603-644-3200 x15 or [scott@montagnecom.com](mailto:scott@montagnecom.com)

More on Northern Pass at [www.northernpass.us](http://www.northernpass.us) . Contact Martin Murray - (603) 634-2228 or [martin.murray@eversource.com](mailto:martin.murray@eversource.com).

###



October 19, 2015

Ms. Pamela G. Monroe, Administrator  
NH Site Evaluation Committee  
21 South Fruit Street, Suite 10  
Concord, NH 03301

Dear Ms. Monroe:

The Greater Manchester Chamber of Commerce is the largest chamber in the state, representing 900 businesses from across southern New Hampshire. The Chamber's Board of Directors first endorsed the Northern Pass project in 2012 and reaffirmed its position in September after reviewing the details of the Forward NH plan.

As Northern Pass moves into the formal Site Evaluation Committee process, we are writing to express the Chamber's strong support for the project. In reviewing the Northern Pass project and Forward NH plan, the Chamber Board of Directors recognized the statewide economic benefits of the project as well as the impact of accessing a new, large source of hydroelectric energy that can help stabilize our region's energy market.

New Hampshire faces a growing crisis around the cost of electricity. The business community, in particular, is greatly impacted by this issue and it threatens our ability to grow our economy and create jobs. While demand for energy increases, the region has an increasing numbers of older generating plants coming off line, representing a loss of thousands of megawatts of electricity. This combined with our increasing reliance on gas powered generation leaves us vulnerable to price spikes due to an inadequate supply of gas into our region. While there is no single solution to this challenge, we know that we must increase the supply and diversity of energy into New Hampshire and New England.

We believe Northern Pass plan will help address this challenge in several ways. First, bringing 1,000 megawatts of new energy into the region will help drive down the cost of electricity. New Hampshire customers will save an estimated \$80 million in energy costs simply as a result of the increase in supply. Second, a power purchase agreement between Eversource and Hydro

Quebec guarantees that New Hampshire customers will receive the lowest price for the power. Third, increasing the supply of clean hydro power into the region helps diversify our overall energy supply, which makes us less susceptible to the volatility we've seen in the energy markets over the last few years.

It clear that Eversource has listened to the concerns of New Hampshire and worked to reengineer and address many of the issues that had been raised with earlier versions of their plan. Their commitment to bury 60 miles of line, including all through the White Mountain region, goes a long way to address environmental and view shed concerns. In addition, the power purchase agreement and economic development fund make clear that there are significant, tangible benefits for New Hampshire.

We urge the SEC to provide a careful yet expeditious review of the project.

Thank you,

A handwritten signature in black ink, appearing to read "Michael Skelton", with a long horizontal stroke extending to the right.

Michael Skelton  
President and CEO  
Greater Manchester Chamber of Commerce

CC: Governor Maggie Hassan  
Senator Jeanne Shaheen  
Senator Kelly Ayotte  
Rep. Frank Guinta  
Rep. Annie Kuster  
Senate President Chuck Morse  
Senate Majority Leader Jeb Bradley



STATEMENT OF BUSINESS SUPPORT FOR  
THE FORWARD NEW HAMPSHIRE PLAN  
October 2015

The high cost of energy is a major concern for New Hampshire businesses, putting us at a competitive disadvantage with other states.

That's why we are pleased to support the Eversource Forward New Hampshire Plan. This is a balanced plan, which will help New Hampshire meet its energy challenges with reliable, competitively priced and clean hydro power from Canada. This power will lower energy costs by about \$80 million annually for New Hampshire businesses and residential customers.

New Hampshire has made it clear that energy projects must be developed with sensitivity to protecting communities, landowners and views that are important to our state. With the Forward NH Plan, Eversource has shown that it has listened.

Burying the proposed transmission line as it proceeds through the White Mountain National Forest, the Appalachian Trail, Franconia Notch and surrounding areas, and reducing the number of structures and their heights along the route helps to address concerns about impacts to New Hampshire's landscape and some of our most treasured views.

Establishing a \$200 million Forward New Hampshire Fund is a substantial investment in New Hampshire's future that will allow important community, economic development, and clean energy innovation initiatives to move forward, particularly in the North Country.

This plan will generate significant positive economic activity for New Hampshire, not just from lower electric rates, but from 2,400 construction jobs, a commitment to hire New Hampshire workers, and about \$30 million a year in new tax payments. It will also boost dozens of local economies where the line will be constructed.

The time has come for thoughtful solutions to the historic energy challenges we face. Forward NH is a true New Hampshire plan that deserves the support of our state. We urge New Hampshire's elected officials to join us in supporting this important energy plan and the \$3.8 billion in direct economic and unparalleled environmental benefits it will provide to the people and businesses of New Hampshire.

####

## **NH Business Leaders Supporting the Northern Pass**

Paul Markwardt, VP/Deputy General Manager, BAE Systems Electronic Systems, Nashua, NH  
Jeremy Hitchcock, CEO/Chairman, Dyn, Manchester, NH  
Andy Crews, President, AutoFair Companies, Manchester, NH  
Tom Boucher, CEO/Owner, Great NH Restaurants, Inc, Manchester, NH  
Marian Noronha, President, TURBOCAM International, Barrington, NH  
John Morison, Chairman & CEO, Hitchiner Manufacturing, Milford, NH  
Richard Verney, Chairman and CEO, Monadnock Paper Mills, Bennington, NH  
David Glendon, President & CEO Sprague Operating Resources, Portsmouth, NH  
Don Welch, President, Globe Manufacturing, Pittsfield, NH  
Jim Teetzel, President, Wilcox Industries, Newington, NH  
Paul & Anna Grace Holloway, Holloway Motor Cars, Greenland, NH  
Tom Sullivan, Vice President of Operations, Sturm Ruger, Newport, NH  
Susan Siegel, VP Corporate Communications Albany International Corp., Rochester, NH  
Tim Dining, President, Sealite USA LLC, Tilton, NH  
Robert Getchell, Getchell Professional Association, Nashua, NH  
Dennis Reed, Wilderness Trailer Sales, Franklin, NH  
Rick Lepene, PE Granite State Septic Designs, Tilton, NH  
Bryan Rineer Logging & Excavating, Thornton, NH  
Michael Kelley, Kel-Log, Inc., Milan, NH  
Donald Leveille, Owner, Leveille Trucking Inc., Shelburne, NH  
Kevin Henderson, First New England Real Estate, Sunapee, NH  
Daniel Mills, President, GI Plastek, Wolfeboro, NH  
Chet Homer, Owner, Shawnee Peak Ski Resort, Portsmouth, NH  
Suzanne Bresette, Bresette & Company, Portsmouth, NH  
Thomas Farrelly, Executive Director, Cushman & Wakefield, Manchester, NH  
Tom Colgan, Wagner Forest Management, Ltd. and Prime Timber Company LLC  
Jim Aberg, Franklin Business and Industrial Development, Franklin, NH  
Robert Ouellet, Owner, Errol General Store, Errol, NH  
Clark Lindley, CEO, Agricultural Insurance Management Services, Bow, NH  
Kedar Gupta, CEO, ARC Energy, Nashua, NH  
Linda Fanaras, Millinium Agency, Manchester, NH  
Douglas Lang, President, Lang Trucking, Milan, NH  
Mike Gagne, Gagne Trucking, Milan, NH  
Jonathan Lane, Lane Equipment Rentals, LLC, Errol, NH  
Clifford Lane, SB Lane Reality, Errol NH  
Peter Cook, Concord Litho Graphics, Concord, NH  
Gary Garfield, Principal Engineer, AECOM, Manchester, NH  
Tony Giunta, Senior Client Manager, Noblis Engineering, Concord, NH  
Bruno Halle, Halle Wood Industries, Milan, NH  
John Halle, President and CEO, Cate Street Capital, Inc., Exeter, NH  
Thomas Hartley, President, Hartley Transportation, Concord, NH  
Randy Paquette, RP Forestry, Colebrook, NH  
Pat Gagne, Gagne & Sons Logging, Dummer, NH  
Henri Fine, President, Uni-Cast, Londonderry, NH  
Lucas Champagne, LJRC Transport, W. Stewartstown, NH  
Anthony Bammarito, Manager, Property and Asset Management, Elliot Health System, Manchester, NH  
R. Sean O'Kane, Winward Strategies, Portsmouth, NH

**PRESIDENTIAL MOUNTAIN RESORT**  
1108 MAIN STREET BETHLEHEM, NH 03574

---

January 23, 2017

Pamela Monroe, Administrator  
New Hampshire Site Evaluation Committee  
21 South Fruit Street, Suite 10  
Concord, NH 03301

RE: New Hampshire Site Evaluation Committee Docket No. 2015-06  
Northern Pass Transmission Project - Eversource

Dear Ms. Monroe:

I am writing on behalf of Presidential Mountain Resort LLC ("Presidential"), developer and proponent of a redevelopment project planned for the area across from, and abutting, the Project's proposed Transition Station #5 on Route 302 in Bethlehem.

Presidential owns property abutting Transition Station #5 to the north and east identified by the Bethlehem tax assessor as Map 201, Lot 27 ("Presidential Parcel") on which Presidential is seeking approvals to develop a hotel in conjunction with a coordinated plan of development of the Presidential Parcel and Lots 28 and 29, also owned by Presidential (the "Presidential Development").

This letter is to express our appreciation of Eversource's collaborative and supportive efforts to date regarding the Presidential Development. Eversource actively sought our input on the proposed Transition Station #5 vis-à-vis our project, listened to our suggestions, and is working with us on our development needs.

Our project includes the renovation of the deteriorating Baker Brook cabins and the addition of a proposed restaurant – in addition to a hotel. Our proposed project is expected to revitalize a blighted area, and create economic benefit in the area by increasing tax revenues and advancing tourism and the economy in Bethlehem and neighboring areas. The Presidential Development has, for example, the potential to increase traffic to restaurants in Bethlehem, to bring more people in to play golf, to visit local businesses, and to increase attendance at movies and live performances at the Colonial Theatre.

From a business perspective, collaboration with the Project is important to the success of our redevelopment plans. We also appreciate the Project's efforts to bring affordable energy into the region and lower the price of energy on New Hampshire businesses.

We hope the information provided is useful in your review of the Project application.  
Sincerely,



Presidential Mountain Resort LLC  
By its Member, Yizchok Rudich

cc: Bethlehem Board of Selectmen  
Bethlehem Planning Board





February 22, 2016

Ms. Pamela G. Monroe, Administrator  
NH Site Evaluation Committee  
21 Fruit Street, Suite 10  
Concord, NH 03301

Dear Ms. Monroe:

I write today in my capacity as International Representative of the International Brotherhood of Electrical Workers (IBEW). The IBEW represents more than 3,000 New Hampshire workers in the electrical industry, and has filed to be an intervenor in Site Evaluation Committee (SEC) Docket No. 2015-06, Northern Pass Transmission's application for Certificate of Site and Facility.

The IBEW strongly objects to calls for delaying scheduled public hearings for the Northern Pass, and believes that such delays would not serve the public interest. The Northern Pass project will create thousands of jobs for local IBEW workers, and further delays to the SEC process will cause material harm to our members whose livelihoods depend on the timely consideration of this docket. Furthermore, delaying these scheduled hearings would be contrary to RSA 162-H:1, which states "the legislature finds that it is in the public interest...that undue delay in the construction of new energy facilities be avoided."

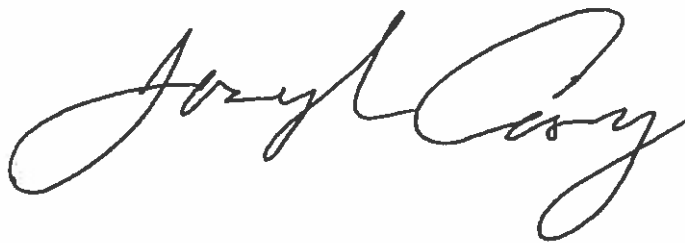
We call on the SEC to move forward with the five currently scheduled public hearings in March, including the two public hearings that are scheduled to be held jointly with the US Department of Energy. These hearings have been scheduled appropriately pursuant to RSA 162-H:10, and should move forward in accordance with the statute. The fact that the applicant has taken the opportunity to conform their existing application to current law does not alter the fact that current law requires the scheduled hearings to occur within 90 days of initial acceptance of the application. It is our view that the SEC does not have the authority under RSA 162-H to deviate from the required timeframe for such public hearings.

To date, the Northern Pass has held more than 20 public hearings and information sessions, and there are ongoing opportunities for the public to voice their opinions on this project in writing. Holding the next round of public hearings as scheduled would in no way impede public participation. To the contrary, postponing these public hearings will cause even more delays in the SEC process, resulting in time constraints that could actually diminish the opportunity for full consideration of public input during the adjudicative phase of this docket.

Overall, rescheduling these hearings would undermine the overall integrity of SEC process, be contrary to the public interest, and have a direct, negative impact on the livelihoods of IBEW workers in New Hampshire. The currently scheduled hearings are in keeping with statutory requirements, and should go forward.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Joe Casey". The signature is fluid and cursive, with the first name "Joe" and last name "Casey" clearly distinguishable.

**Joe Casey**  
International Representative  
International Brotherhood of Electrical Workers

# City of Berlin, NH

## City Council of the City of Berlin



December 7, 2015

New Hampshire Site Evaluation Committee  
Pamela G. Monroe, Administrator  
21 South Fruit Street, Suite 10  
Concord, NH 03301

Dear Ms. Monroe:

Please accept this letter on behalf of the City Council of the City of Berlin as express support for the Northern Pass project. The City Council voted unanimously on December 7, 2015 to provide this letter of support.

Coos County, its residents and communities are in need of economic development projects which expand the tax base. For decades, the average age of the Coos County resident has increased and the overall population has decreased. This has occurred during a time that the paper industry as well as other notable industries and employers have declined. Northern Pass is a utility project that will provide much needed tax revenue to the County and communities through which it passes. In addition, it will provide an economic stimulus through the construction jobs required to build the project.

Berlin's renewable energy portfolio includes both big and small elements. The Northern Forest Investment Zone Program from 2013 installed 40 wood pellet boilers in commercial and residential buildings. The City is home to electricity generation from wind, biomass and hydro facilities. The City is in support of bringing hydro-generated electricity into New England from Canada, in turn offsetting power generation that may otherwise occur through fossil fuel consumption and carbon emissions that negatively affect us locally and globally.

From the City's perspective, the project developers have worked diligently to address concerns regarding aesthetic issues created by overhead powerlines. We understand that many of the concerns have been mitigated, and we encourage Northern Pass and the SEC to continue to work with affected communities to create a final product that results in the anticipated economic and environmental benefits while minimizing negative effects to the landscape. The City appreciates the work of the Site Evaluation Committee in ensuring that environmental standards are met in the progress of the project. We are confident that the public interest will be both safeguarded and served as the project advances.

Sincerely,

Paul Grenier, Mayor

Michael Gentill, City Councilor

Michael Rozek, City Councilor

Russell A. Otis, City Councilor

Denise Morgan Allain, City Councilor

Roland Theberge, City Councilor

Lucie Remillard, City Councilor

Peter Higbee, City Councilor



RCVD 1/8/16  
AGW



CITY OF FRANKLIN, NEW HAMPSHIRE  
OFFICE OF THE CITY MANAGER

316 Central Street  
Franklin, New Hampshire 03235  
Telephone (603) 934-3900  
Fax (603) 934-7413

December 18, 2015

New Hampshire Site Evaluation Committee  
Pamela G. Monroe, Administrator  
21 South Fruit Street, Suite 10  
Concord, NH 03301

RE: City of Franklin Supports Proposed Northern Pass Project

Dear Ms. Monroe,

The City of Franklin wishes to pen this letter of support for the Northern Pass project for your consideration. Over the course of several years Franklin has articulated support for this project both verbally and written. This week the council yet again took a vote of unanimous support for project.

The socioeconomic impacts of this proposed project for not only the City of Franklin but also the State of NH are momentous. This 1.6 Billion dollar (TAXABLE) project will give communities a revenue boost at a time when we are fighting to come out of one the biggest recessions in recent memory. Communities & families have faced economic hardships and struggles across the state. Communities have deferred funding necessary projects because we simply can't afford it and neither can the taxpayers who are footing the bill.

The City of Franklin, which was once a vibrant mill town, has a population where over half of our students are eligible for free or reduced lunch. Over half!!! 1 out of every 2 children in this community is living at or below poverty level. That is our reality.

The City of Franklin has an overall tax base of just over \$524 million and this project would add another approximately \$394 million to the tax base (that's more than half of our current taxable assessed value) and would result in approximately 5 million dollars of new tax revenue to the city of Franklin. But it doesn't stop there:

- **Additional Tax Benefits:** Estimated Tax Benefits are not only for Franklin but several other towns & cities across NH as well counties and the state wide education funding system. At a time when funding education for children across New Hampshire is becoming more and more difficult-this project would generate over 7 million dollars directly to the State of NH education funding system.
- **Tax revenue without impacting our local services:** Often times when a project comes to town there is tax revenue but there is also an offsetting expense to the municipality. Once the lines and the facility are built there really is, for most communities, no impact to community services. Therefore, little to no increased costs to provide services to a project like this.

*Franklin - The Three Rivers City*

- **Jobs!!!!** Throughout the state during the construction period (expected to last several years) 1,100-1,300 jobs are expected to be created. Even though these jobs are temporary in nature it would certainly be a boost to NH's economy and impact unemployment rates as we continue to pull ourselves out of the recession. In Franklin alone there is expected to be 300-380 jobs.
- **Economic spin off:** Jobs mean people! This project would bring workers to our towns for the entire construction time period of approximately 3 years. People who need lunch, or might need to do a little shopping before or after work and maybe even some who are looking for a place to stay or a permanent home. This temporary boost to our local businesses is just what we need! A Temporary boost certainly isn't enough to base a long term business on. However, our businesses who have been struggling through the recession might be able to enjoy the benefits of increased revenue at their location- and put in that new floor that they have been putting off or pay down some expenses they have been floating through tough times. Whatever the case might be and for however temporary 1, 2, or 3 years...even the slightest boost to our businesses is a welcome boost!
- **Renewable Energy:** this project would provide enough renewable energy to power 1 million homes in New England. As each community discusses how to "go green" and how to reduce our carbon footprint this project must be part of that discussion. It will provide low carbon energy and it goes a long ways towards addressing New Hampshire's clean energy goals. Hydro power ranks as one of the lowest emission generating options per kilowatt hour produced.
- **HydroQuebec (Northern Pass) pay for the project (ENTIRELY):** Many utility companies build a project and then spread the cost of building that project out over the rate users in their utility bill! This project is "participant pays" which means HydroQuebec is entirely footing the cost of building the project. That is good news for the rate payer.

In reality, we all like to use our cell phones but too often we don't want the cell tower in our communities (our backyard)- but one can't function without the other. The same goes for projects like this. We all want to reduce our carbon foot print and have affordable energy to run our homes/business-- so we need projects like this to get us there.

This project is vital to the City of Franklin in terms of future tax revenue but hopefully my talking points illustrate that there are also many significant statewide and regional benefits to the project that shouldn't be overlooked.

On behalf of the Mayor, City Council, and City Manger- we are thankful for the opportunity to express our support for this project. It is our sincere hope that this project becomes a reality. It is easy to "sell fear"! People are afraid of change but change is not only inevitable it is necessary. This project will benefit the City of Franklin, The State of New Hampshire and the New England region for decades to come. If we can be of assistance or answer any questions, please don't hesitate to contact us.  
Sincerely,

City of Franklin Mayor, City Councilors & City Manager

*Franklin - The Three Rivers City*



CITY OF FRANKLIN  
DECEMBER 14, 2015 CITY COUNCIL MEETING

**Subject:** City of Franklin Supports Proposed Northern Pass Project

**MOTION:** *Councilor Giunta moved that the Franklin City Council unanimously supports the Northern Pass Transmission project and the Council authorizes the City Manager to write a letter of support enumerating the many benefits of the project. The letter is to be sent to the New Hampshire Site Evaluation Committee with specific reference to the Franklin City Council's unanimous support and Councilor Boyd seconded.*

***All in favor; motion passes unanimously.***

**Signatures:**

Mayor Kenneth Merrifield

Councilor Ted Starkweather

Councilor George Dzujna

Councilor Tony Giunta

Councilor Robert Desrochers, Sr.

Councilor Douglas Boyd

Councilor Glen Feener

Councilor James Wells

Councilor Scott Clarenbach

Councilor Steve Barton

City Manager Elizabeth Dragon

*Ken Merrifield*  
*Ted Starkweather*  
*George J. Dzujna*  
*Tony Giunta*  
*Robert Desrochers, Sr.*  
*Douglas Boyd*  
*Glen Feener*  
*James Wells*  
*absent*  
*Steve Barton*  
*Elizabeth Dragon*



# CONCORD MONITOR

## **Editorial: Northern Pass isn't ideal, but it's needed**

October 18, 2015

The question of whether this newspaper should support or oppose the Northern Pass Hydro-Quebec electricity transmission project starts with whether the line is necessary or advantageous. If the answer is yes, as we believe it is, the question becomes: Northern Pass in what form?

The Northern Pass project, which in its current proposed iteration would carry 1,000 megawatts of hydroelectric power 192 miles south from Quebec to a transfer station in Deerfield, has been in the works for more than a decade. As conceived, it was not needed to guarantee a reliable supply of power to serve New England customers. But that picture is changing.

The 350 power generators serving New England have 31,000 megawatts of capacity, which exceeds the region's all-time peak demand by about 3,000 MW, or the power from nearly three Seabrook nuclear plants. But ISO New England, the regional power authority created to balance supply and demand and ensure reliability, expects 8,300 MW of nonnatural gas capacity to be at risk of retirement within the next five years.

Those retirements have already begun. Massachusetts's biggest coal plant and several smaller plants have shut down, as did the Vermont Yankee nuclear power plant. This week, that plant's owner, Entergy, announced that it will close the 680 MW Pilgrim nuclear power plant in Plymouth, Mass., by June 2019. It also appears likely that the 2,000 MW Indian Point power plants in New York, which supply juice to New England in a pinch, will also close down. Despite conservation efforts that could be vastly improved in New Hampshire, more sources of power will be needed.

Ideally, that electricity would come from wind and solar. The long-term potential is there, but no large-scale, cost-effective means of storing the power for use when the sun doesn't shine or wind doesn't blow has yet been devised. In time, yes. Within a few years? Probably not. To ensure reliability and guarantee that the region's remaining coal plants run as little as possible, we support the Northern Pass project, which does less to exacerbate climate change than fossil fuel options.

In an ideal world, the entirety of the Northern Pass transmission line would be buried, but burial is more costly than erecting overhead lines. Estimates vary wildly, but most multiply the cost by a factor of three or more. At some point, known only to the company and their investors, the project becomes uneconomical. Burying the entire length of the line probably would, as the company claims, cross that point.

This week, following the recommendation of a study committee, Concord's city council unanimously agreed to request that all 8 miles of the proposed line passing through Concord be buried, but the city has no say over what ultimately happens.

In a sense, Concord has nothing to lose by insisting on burial, and we support the request. It's what the public wants, and the property taxes the city would receive – estimated at \$411,000 to \$647,000 in year one for overhead lines – would double or triple if the line were buried. The risk, however, is that if every city and town on the proposed route takes the same position and regulators agree, it could kill the project. Burial also may not be possible, Eversource says, since it has the right through much of its route to erect new towers but not, without landowner approval, to bury a transmission line. Should one or more landowners refuse, no matter the price, the company's choice would be give up or request a taking by eminent domain, which would spark public outrage.

The potential for compromise exists, and efforts should be made to achieve it. New Hampshire residents, who will see slightly lower electricity prices if the project is built, pay some of the highest electricity rates in the continental United States. Those rates place a special burden on low-income and elderly residents, and work against the state and city's efforts to attract employers.

Northern Pass is not the ideal answer to the region's electricity needs, but the ideal, green, impact-free energy is still in the future.

<http://www.concordmonitor.com/home/19021493-95/editorial-northern-pass-isnt-ideal-but-its-needed>

# NEW HAMPSHIRE UNION LEADER

## **Powerful compromise: Northern Pass: Much to like**

EDITORIAL

August 22, 2015

We hesitate to call it a win-win-win just yet, but the new Northern Pass electricity proposal unveiled last week by Eversource New Hampshire chief Bill Quinlan is pretty darned close to that. Only its most hardened opponents will remain unsatisfied. But they would be so unless there were no project, ever.

More reasonable critics, those with legitimate concerns about the North Country (particularly its tourist-dependent economy and its scenic vistas), are likely to be relieved, if not elated, by the new plan. They and others also have reason to take satisfaction in knowing they were right to demand a specific New Hampshire share of the projected savings from the cheaper Hydro Quebec power that would flow into the New England grid.

Even with the dramatic reduction in its above-ground portions, Northern Pass will run through New Hampshire and only New Hampshire. Granted, that means the state gets the direct benefits of a \$1.4 billion project, which are not to be sneezed at. One would need to go back to the Seabrook Nuclear project for an effort of comparable economic impact.

But it was not unreasonable for the Granite State to expect some specific and longer-term tangible benefits. Eversource has now laid them out: a guaranteed amount of the hydro power being allocated to New Hampshire consumers, and a \$200 million economic fund to assist tourism, economic development, community investment and clean energy.

An added, though much smaller bonus, is that the new plan buries some of the power line along state roads, meaning the state will be reimbursed for use of that right-of-way.

The biggest plus from the standpoint of many critics, of course, is Eversource's decision to bury an additional 52 miles of the line, much of it through the White Mountain National Forest as well as Sugar Hill and Franconia to the north and Thornton, Campton, and Ashland to the south.

That is a huge step, made possible in part by stepping down the power the line will carry from 1,200 to 1,000 megawatts. The reduction means less power for the grid, which may mean a higher cost for the power. But it also means the project can use a high-tech cable capable of being buried.



It also means a reduction in the height of transmission towers where the line will remain above ground, which is in current powerline rights of way. No eminent domain land-taking is contemplated.

So what is the win-win-win here? Environmentalists who say they favor "green power" such as hydro should warm to a plan that eliminates above-ground lines in the national forest.

North Country residents and small businesses should embrace a plan with substantial immediate and long-term benefits.

Businesses large and small throughout New Hampshire are already hailing a plan that provides some relief from high electricity costs.

Northern Pass and Eversource have made the compromise they needed to make. It is time for on-the-fence politicians and understandably skeptical North Country partisans to do likewise.

*J.W. McQuaid*

<http://www.unionleader.com/article/20150823/OPINION01/150829790?template=mobileart>

REDACTED

## **Attachment 8.1.2**

### **Operating History – Transmission Equipment (ABB)**

Attachments 8.1.2.1 and 8.1.2.2 to this Attachment 8.1.2 include HVDC project reference information provided by ABB from installations around the world. Line commutated converter (LCC) stations for HVDC transmission were commercialized in the mid 1950s and were initially built with so called mercury arc valves. With the introduction of thyristor technology and computerized control and protections systems for LCC stations in the 70s and 80s, efficiency and reliability of HVDC stations have continuously improved and HVDC transmission systems are now widely installed throughout the transmission industry, including in New England. With the introduction of voltage source converter (VSC) technology for HVDC transmission in the late 90s, the layout of HVDC stations has become less complex which, in turn, improves reliability, availability and maintainability of HVDC transmission systems.

Use of reliable and proven components and innovative engineering solutions with built-in redundancy for critical components and subsystems, have resulted in availability performance for modern HVDC systems at around 99% per converter station. HVDC suppliers typically verify availability performance targets through detailed engineering studies and evaluation of design solutions using historical component data. Also, HVDC suppliers normally support performance targets through multi-year availability guarantees and payment of liquidated damages if actual performance does not meet the guaranteed performance targets.



**Attachment 8.1.2.1**  
**HVDC Classic**



# HVDC Classic - Thyristor valve projects Reference list

# ABB HVDC Classic projects worldwide

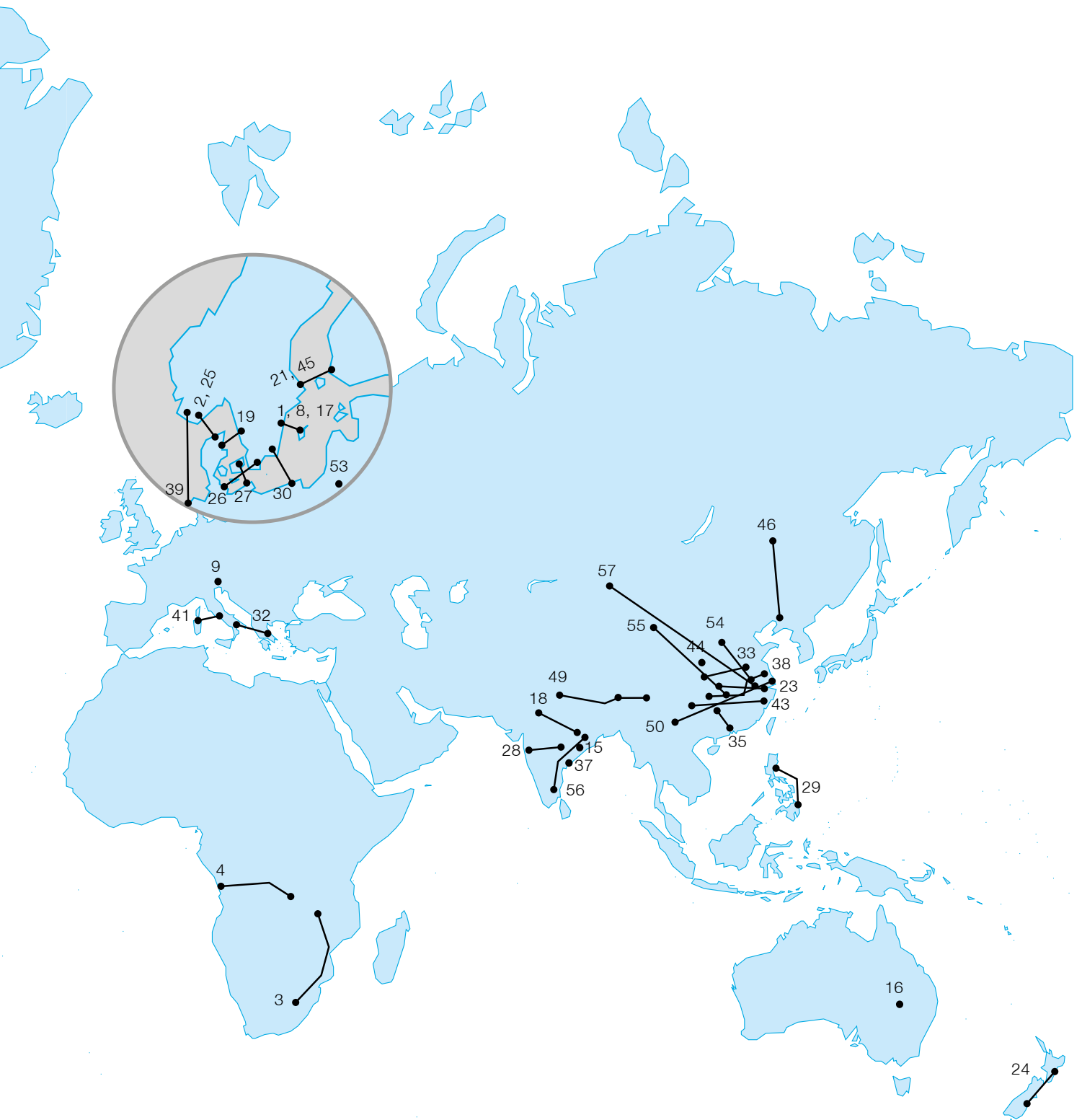
## Thyristor valve technology

Project	Page
(1) Gotland	10
(2) Skagerrak 1 & 2	10
(3) Cahora Bassa	14
(4) Inga-Kolwezi	14
(5) CU-project	4
(6) Nelson River 2	4
(7) Itaipu	8
(8) Gotland 2	10
(9) Dürnröhr	10
(10) Pacific Intertie	4
(11) Châteauguay	4
(12) Intermountain	5
(13) Highgate	5
(14) Blackwater	5
(15) Vindhyaçal	15
(16) Broken Hill	20
(17) Gotland 3	11
(18) Rihand-Delhi	15
(19) Konti-Skan 2	11
(20) Quebec-New England	5
(21) Fenno-Skan	11
(22) Pacific Intertie Expansion	6
(23) Gezhouba-Shanghai	15
(24) New Zealand	20
(25) Skagerrak 3	25
(26) Baltic Cable	12
(27) Kontek	12
(29) Leyte-Luzon	16
(30) SwePol	12
(31) Brazil-Argentina Interconnection 1	8
(32) Italy-Greece	12
(33) Three Gorges-Changzhou	16
(34) Brazil-Argentina Interconnection 2	8
(35) Three Gorges-Guangdong	16
(36) Rapid City	6
(37) Vizag II	16
(38) Three Gorges-Shanghai	17
(39) NorNed	13
(40) Sharyland	6
(41) SAPEI	13
(42) Outaouais	6
(43) Xiangjiaba-Shanghai	17
(44) Lingbao II Extension	17
(45) Fenno-Skan 2	13
(46) Hulunbeir-Liaoning	17
(47) Rio Madeira	8
(48) Rio Madeira back-to-back	9
(49) North-East Agra	18
(50) Jinping-Sunan	18
(51) Oklaunion	7
(52) Railroad DC Tie	7
(53) LitPol	13
(54) Jinbei-Nanjing	18
(55) Jiuquan-Hunan	18
(56) Raigarah - Pugalur	19
(57) Changji-Guquan	19

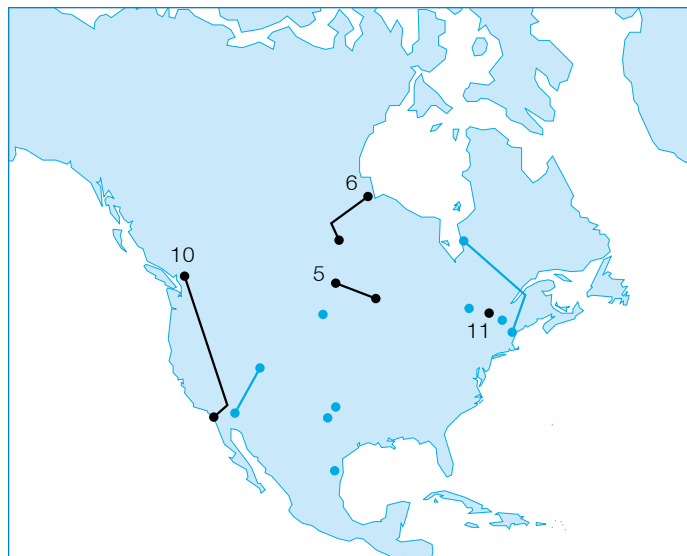
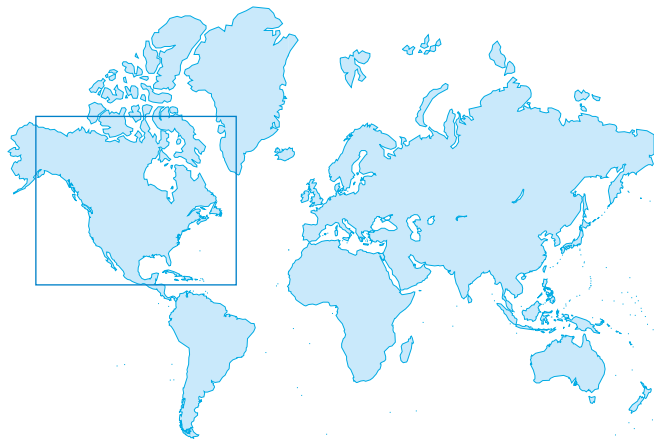


Part of the world	
North America	page 4-7
South America	page 8-9
Europe	page 10-13
Africa	page 14
Asia	page 15-19
Australia and Oceania	page 20



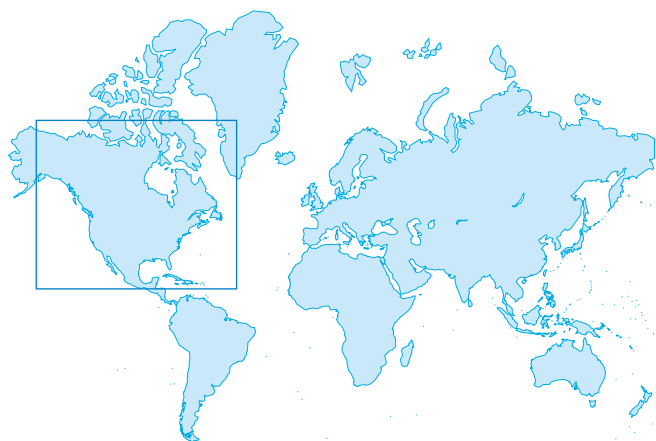


# North America



Scheme	5. CU-Project	6. Nelson River 2	10. Pacific Intertie	11. Châteauguay
Commissioning year	1979	1978-1985	1970	1984
Owner/Original customer/ Country	CPA, USA and UPA, USA	Manitoba Hydro, Canada	Bonneville Power Administration, USA and The Department of Water and Power of the City of Los Angeles, USA	Hydro-Quebec, Quebec, Canada
Main reason for choosing HVDC system	Connecting remote generation, Environment, Stability benefits	Interconnecting grids, Connecting remote generation	Connecting remote generation Stability benefits	Interconnecting grids
Power transmitted, MW	1000	2000	1440	2 x 500
Direct voltage, kV	±400	±500	±400	2 x 140.6
Converters per station	2	4	6	2 + 2
Direct voltage per converter, kV	400	250	133	140.6
Direct current, A	1250	2000	1800	2 x 3600
Reactive power supply	Capacitors Power generator	Capacitors	Capacitors	Capacitors and SVC
Converter station location and AC grid voltage	Coal Creek, 235 kV Dickinson, 350 kV	Henday, 230 kV Dorsey, 230 kV	Celilo, 230 kV Sylmar, 230 kV	Hydro-Quebec side, 315 kV U.S. side, 120 kV
Length of overhead DC line	687 km	940 km	1360 km	Back-to-back
Cable arrangement	-	-	-	-
Cable route length	-	-	-	-
Grounding of the DC circuit	For full current in two ground electrode stations (intermittent)	For full current in two electrode stations	For full current in one ground and one sea electrode station (intermittent)	One point grounded
AC grids at both ends	Synchronous	Asynchronous	Synchronous	Asynchronous
Control	Constant power, damping control	Constant power	Constant power in either direction and small signal modulation	Constant power
Emergency change of power flow	-	-	On manual or automatic order to preset values	-
Main supplier of converter equipment	ABB	ABB/Siemens/AEG	ABB/GE	ABB/Siemens

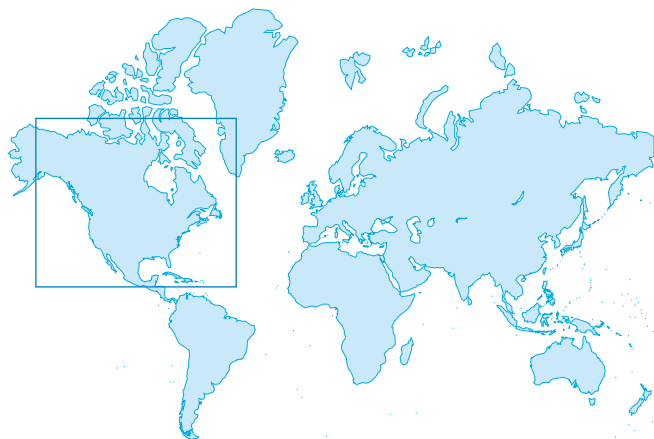
# North America



Scheme	12. Intermountain	13. Highgate	14. Blackwater	20. Quebec-New England
Commissioning year	1986	1985	1985	1990-1992
Owner/Original customer/ Country	Intermountain Power Agency, USA. Agent: The Department of Water and Power of the City Los Angeles, USA	Vermont Electric Power Company Inc., USA	Public Service Company of New Mexico, USA	Hydro Quebec, Quebec, Ca- nada and New England Hydro Transmission Electric Company Inc., USA
Main reason for choosing HVDC system	Connecting remote generation	Interconnecting grids	Interconnecting grids	Connecting remote generation, Interconnecting grids
Power transmitted, MW	1920	200	200	2000 (Multiterminal)
Direct voltage, kV	±500	57	56.8	±450
Converters per station	2	2	2	2
Direct voltage per converter, kV	500	57	56.8	450
Direct current, A	1920	3600	3600	2200
Reactive power supply	Capacitors	Capacitors	Capacitors	Capacitors
Converter station location and AC grid voltage	Intermountain, 345 kV Adelanto, 500 kV	Highgate North, 120 kV Highgate South, 115 kV	New Mexico side, 345 kV Texas side, 230 kV	Radisson, 315 kV Sandy Pond, 345 kV Nicolet, 230 kV
Length of overhead DC line	785 km	Back-to-back	Back-to-back	1480 km
Cable arrangement	-	-	-	-
Cable route length	-	-	-	-
Grounding of the DC circuit	For full current in two ground electrode stations (intermittent)	One point grounded	One point grounded	All stations grounded by totally three electrode stations
AC grids at both ends	Synchronous	Asynchronous	Asynchronous	HQ synchronous NEH asynchronous
Control	Constant power, damping control	Constant power in either direction	Constant power, reactive power control	Multiterminal, constant power control, frequency control
Emergency change of power flow	-	Automatic power reduction triggered by AC-signal	-	Isolation of Radisson from the AC system at severe AC disturbances
Main supplier of converter equipment	ABB	ABB	ABB	ABB

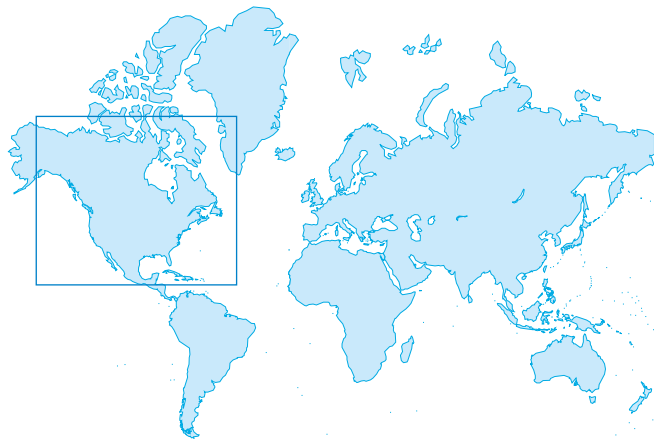


# North America



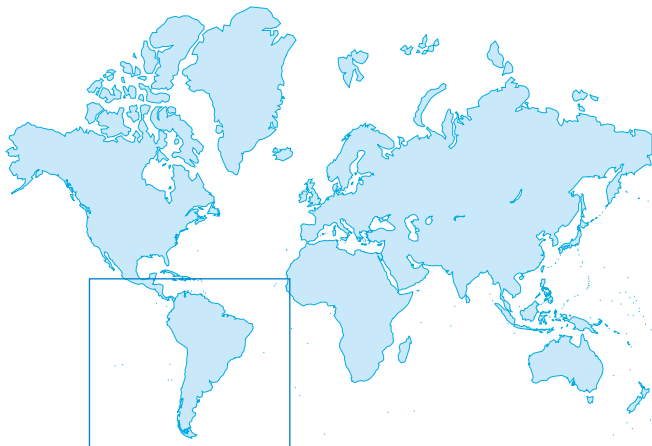
Scheme	22. Pacific Intertie Expansion	36. Rapid City	40. Sharyland	42. Outaouais
Commissioning year	1989	2003	2007	2009
Owner/Original customer/Country	Bonneville Power Administration, USA and The Department of Water and Power of the City of Los Angeles, USA	Basin Electric Power Cooperative and Black Hills Power & Light, USA	Sharyland Utilities, USA	Hydro Quebec, Quebec, Canada
Main reason for choosing HVDC system	Connecting remote generation, Interconnecting grids, Rapid control	Interconnecting grids	Interconnecting grids, Trading	Interconnecting grids
Power transmitted, MW	1100	2 x 100	150	2 x 625
Direct voltage, kV	±500	±13	±21	±87.5
Converters per station	(8) + 2	2 + 2	2	2 + 2
Direct voltage per converter, kV	500	26	42	175
Direct current, A	1100	3930	3600	3600
Reactive power supply	Capacitors	Capacitors	Capacitors	Capacitors
Converter station location and AC grid voltage	Celilo, 500 kV Sylmar, 230 kV	Rapid City, South Dakota, USA, 230 kV both sides	Mission, Texas, USA, 138 kV both sides	Outaouais, Quebec side, 315 kV Ontario side, 240 kV
Length of overhead DC line	1360 km	Back-to-back	Back-to-back	Back-to-back
Cable arrangement	-	-	-	-
Cable route length	-	-	-	-
Grounding of the DC circuit	For full current in one ground and one sea electrode station (intermittent)	Midpoint grounded no ground current	Midpoint grounded no ground current	Midpoint grounded no ground current
AC grids at both ends	Synchronous	Asynchronous	Asynchronous	Asynchronous
Control	Constant power in either direction and small signal modulation	Power Control, emergency power control, voltage control	Constant power	Constant power. Frequency dependant power control. Power swing damping control.
Emergency change of power flow	On manual or automatic order to preset value	-	-	Runback control.
Main supplier of converter equipment	ABB	ABB	ABB	ABB

# North America



Scheme	51. Oklaunion	52. Railroad DC Tie
Commissioning year	2014	2014
Owner/Original customer/ Country	American Electric Power (AEP), USA	Sharyland Utilities, USA
Main reason for choosing HVDC system	Interconnecting grids	Interconnecting grids
Power transmitted, MW	220	150
Direct voltage, kV	$\pm 31$	$\pm 21$
Converters per station	2	2
Direct voltage per converter, kV	31	21
Direct current, A	3600	3600
Reactive power supply	Capacitors	Capacitors
Converter station location and AC grid voltage	Oklaunion, 345 kV	Mission, Texas, USA, 138 kV both sides
Length of overhead DC line	Back-to-back	Back-to-back
Cable arrangement	-	-
Cable route length	-	-
Grounding of the DC circuit	Midpoint grounded no ground current	Midpoint grounded no ground current
AC grids at both ends	Asynchronous	Asynchronous
Control	Constant power	Constant power
Emergency change of power flow	-	-
Main supplier of converter equipment	ABB	ABB

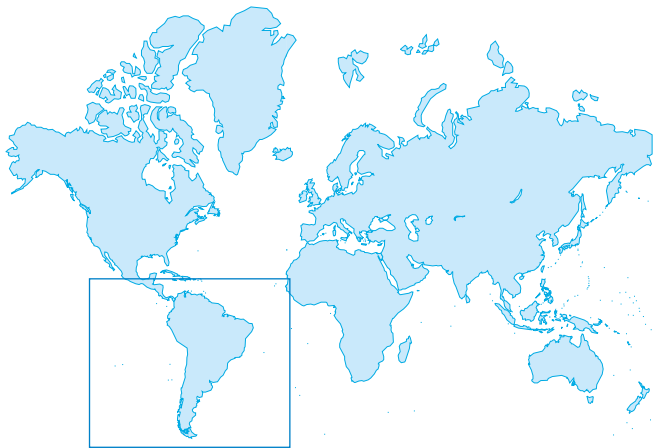
# South America



Scheme	7. Itaipu	31. Brazil-Argentina Interconnection 1	34. Brazil-Argentina Interconnection 2	47. Rio Madeira
Commissioning year	1984-1990	2000	2002	2012
Owner/Original customer/ Country	Furnas, Brazil	CIEN a company of the Endesa Group, Chile	CIEN a company of the Endesa Group, Chile	Eletronorte, Brazil
Main reason for choosing HVDC system	Interconnecting grids, Connecting remote generation	Interconnecting grids	Interconnecting grids	Connecting remote generation
Power transmitted, MW	3150 + 3150	2 x 550	2 x 550	3150
Direct voltage, kV	±600	±70	±70	±600
Converters per station	4 + 4	2 + 2	2 + 2	2
Direct voltage per converter, kV	300	70	70	600
Direct current, A	2610	3930	3930	2625
Reactive power supply	Capacitors Synchronous condensers	Capacitors	Capacitors	Capacitors
Converter station location and AC grid voltage	Foz do Iguaçu, 500 kV Ibiuna, 345 kV	Garabi, Brazil, 525 kV Argentina, 500 kV	Garabi, Brazil, 525 kV Argentina, 500 kV	Port Velho, Rondonia Araraquara, São Paulo 500 kV
Length of overhead DC line	785 and 805 km, respectively	Back-to-back	Back-to-back	2500 km
Cable arrangement	-	-	-	-
Cable route length	-	-	-	-
Grounding of the DC circuit	For full current in two ground electrode station per bipole	Midpoint grounded no ground current	Midpoint grounded no ground current	For full current in two electrode stations
AC grids at both ends	Foz do Iguaçu, 50 Hz Ibiuna, 60 Hz	Brazil, 60 Hz Argentina, 50 Hz	Brazil, 60 Hz Argentina, 50 Hz	Asynchronous
Control	Constant power, damping control	Constant power	Constant power	Constant power, frequency control
Emergency change of power flow	-	On automatic order to preset values	On automatic order to preset values	On automatic order
Main supplier of converter equipment	ABB	ABB	ABB	ABB

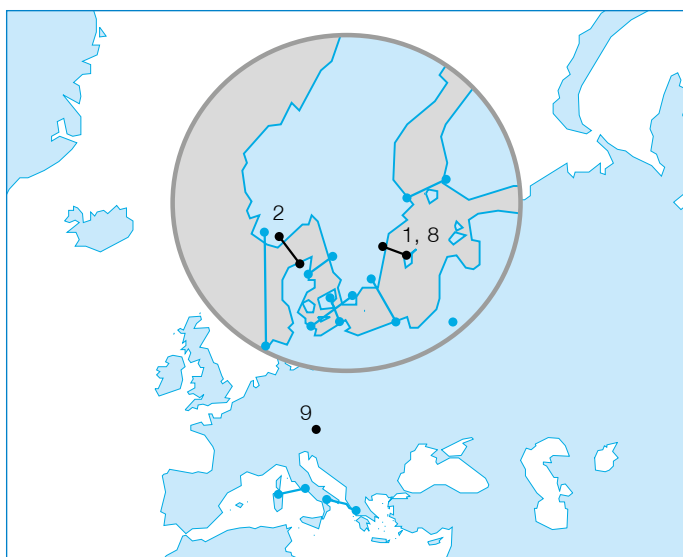
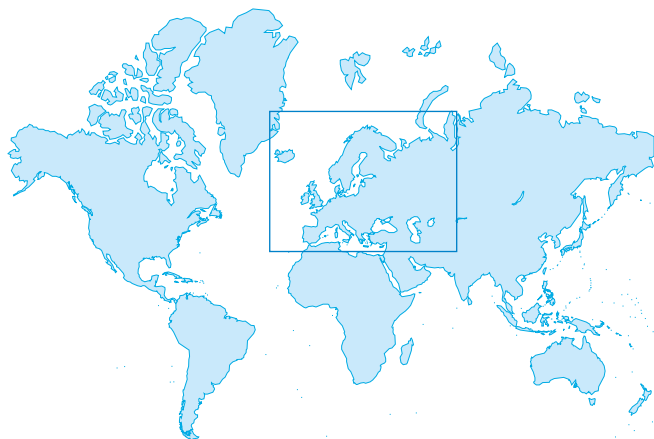


# South America



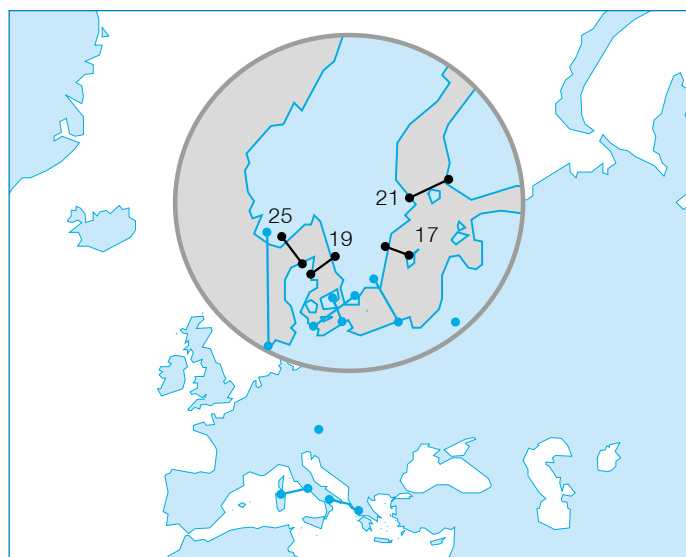
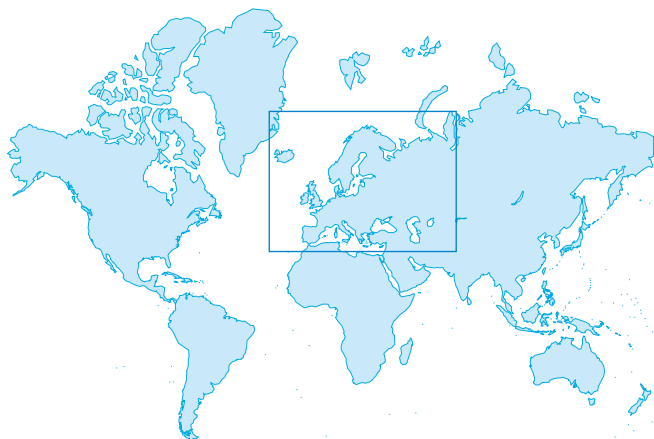
Scheme	48. Rio Madeira Back-to-back
Commissioning year	2013
Owner/Original customer/ Country	Eletrosul, Brazil
Main reason for choosing HVDC system	Interconnecting grids
Power transmitted, MW	2 x 400
Direct voltage, kV	±51
Converters per station	2
Direct voltage per converter, kV	102
Direct current, A	3930
Reactive power supply	Capacitors
Converter station location and AC grid voltage	Port Velho, Rondonia 500 kV/230 kV
Length of overhead DC line	Back-to-back
Cable arrangement	-
Cable route length	-
Grounding of the DC circuit	Midpoint grounded no ground current
AC grids at both ends	Asynchronous
Control	Constant power, frequency control, AC voltage control 230 kV side
Emergency change of power flow	On automatic order
Main supplier of converter equipment	ABB

# Europe



Scheme	1. Gotland	2. Skagerrak 1 & 2	8. Gotland 2	9. Dürnrohr
Commissioning year	1970	1976-1977	1983	1983
Owner/Original customer/ Country	Statens Vattenfallsverk, Sweden	Statkraft, Norway and Elsam, Denmark	Statens Vattenfallsverk, Sweden	Österreichische Elektrizitäts- wirtschafts AG, Austria
Main reason for choosing HVDC system	Interconnecting grids, Island connection, Long sea crossing, frequency control	Interconnecting grids, Sea crossing	Interconnecting grids, Island connection, Long sea crossing, frequency control	Interconnecting grids
Power transmitted, MW	(20) + 10	500	130	550
Direct voltage, kV	(100) + 50	±250	150	145
Converters per station	(2) + 1	2	1	2
Direct voltage per converter, kV	50	250	150	145
Direct current, A	200	1000	914	3790
Reactive power supply	Capacitors Synchronous condensers	Capacitors Synchronous condensers	Capacitors Synchronous condenser	Capacitors
Converter station location and AC grid voltage	Västervik, 130 kV Visby, 70 kV	Kristiansand, 275 kV Tjele, 150 kV	Västervik, 130 kV Visby, 70 kV	Dürnrohr, 420 kV both sides
Length of overhead DC line	–	113 km	7 km	Back-to-back
Cable arrangement	1 cable, ground return	1 cable per pole	1 cable, ground return	-
Cable route length	96 km	127 km	96 km	-
Grounding of the DC circuit	For full current in two sea electrode stations	For full current in two ground electrode stations	For full current in two sea electrode stations	One point grounded
AC grids at both ends	Asynchronous	Asynchronous	Asynchronous	Asynchronous
Control	Constant frequency on Gotland	Constant power in either direction	Constant frequency on Gotland	Constant power in either direction
Emergency change of power flow	-	On manual or automatic order to preset value	-	-
Main supplier of converter equipment	ABB	ABB	ABB	ABB/Siemens/AEG

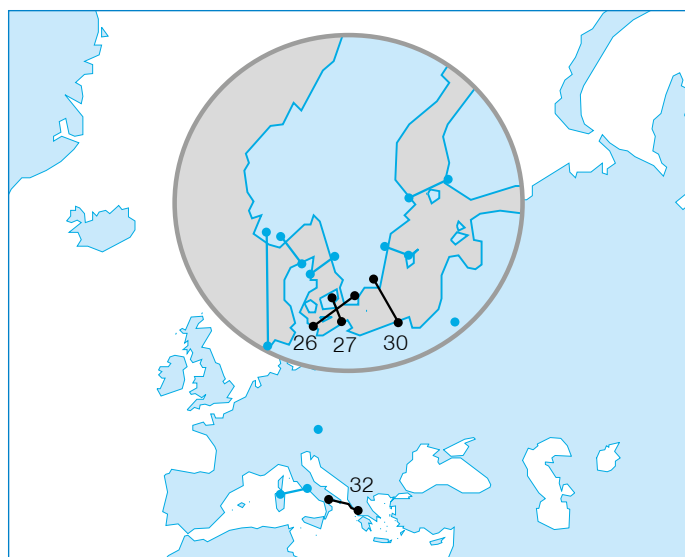
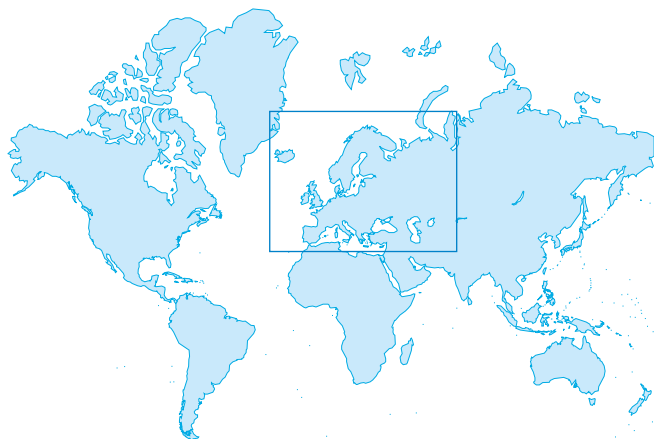
# Europe



Scheme	17. Gotland 3	19. Konti-Skan 2	21. Fenno-Skan	25. Skagerrak 3
Commissioning year	1987	1988	1989	1993
Owner/Original customer/ Country	Statens Vattenfallsverk, Sweden	Statens Vattenfallsverk, Sweden and Elsam, Denmark	Statens Vattenfallsverk, Sweden and Imatran Voima Oy, Finland	Statnett, Norway and Elsam, Denmark
Main reason for choosing HVDC system	Interconnecting grids, Island connection, Long sea crossing	Interconnecting grids, Sea crossing	Interconnecting grids, Sea crossing	Interconnecting grids, Sea crossing
Power transmitted, MW	130	300	500	440
Direct voltage, kV	150	285	400	350
Converters per station	1	1	1	1
Direct voltage per converter, kV	150	285	400	350
Direct current, A	914	1050	1250	1260
Reactive power supply	Capacitors Synchronous condenser	Capacitors	Capacitors	Capacitors Synchronous condensor
Converter station location and AC grid voltage	Västervik, 130 kV Visby, 70 kV	Lindome, 130 kV Vester Hassing, 400 kV	Dannebo, 400 kV Rauma, 400 kV	Kristiansand, 300 kV Tjele, 400 kV
Length of overhead DC line	7 km	61 km	33 km	113 km
Cable arrangement	1 cable	1 cable	1 cable	1 cable
Cable route length	96 km	88 km	200 km	127 km
Grounding of the DC circuit	For full current in two sea electrode stations	For full current in two sea electrode stations	For full current in two sea electrode stations	For full current in two ground electrode stations
AC grids at both ends	Asynchronous	Asynchronous	Synchronous	Asynchronous
Control	Constant frequency on Gotland	Constant power in either direction	Constant power, damping control	Constant power in either direction
Emergency change of power flow	-	On manual or automatic order to preset value		On manual or automatic order to preset value
Main supplier of converter equipment	ABB	ABB	ABB	ABB

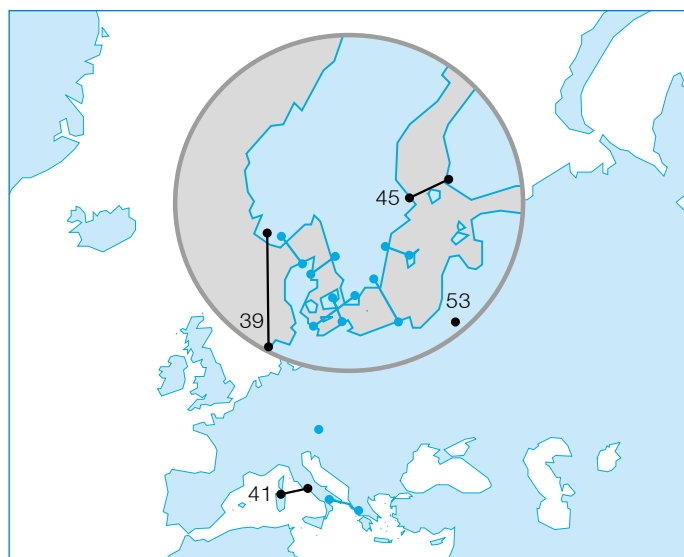
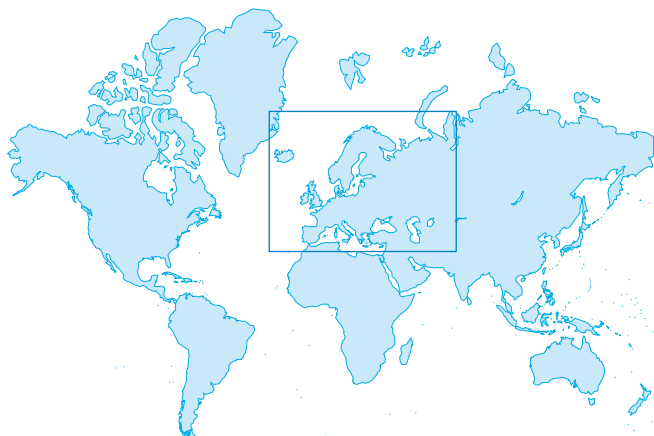


# Europe



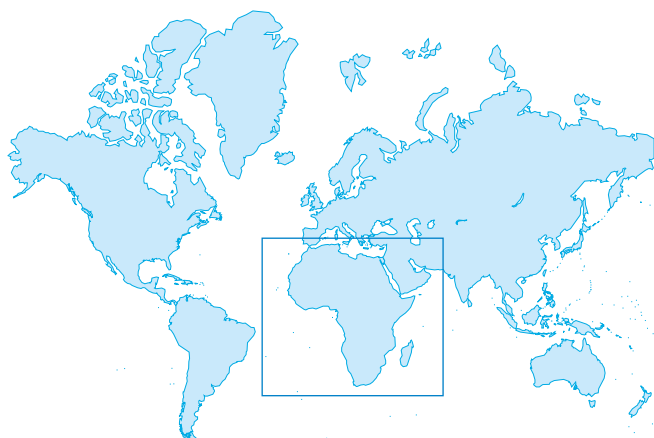
Scheme	26. Baltic Cable	27. Kontek	30. SwePol	32. Italy-Greece
Commissioning year	1994	1995	2000	2000
Owner/Original customer/ Country	Baltic Cable AB, Sweden	Elkraft, Denmark VEAG, Germany	SwePol Link AB, Sweden	ENEL, Italy and PPC, Greece
Main reason for choosing HVDC system	Interconnecting grids, Sea crossing	Interconnecting grids, Sea crossing	Interconnecting grids, Sea crossing	Interconnecting grids, Sea crossing
Power transmitted, MW	600	600	600	500
Direct voltage, kV	450	400	450	400
Converters per station	1	1	1	1
Direct voltage per converter, kV	450	400	450	400
Direct current, A	1364	1500	1330	1250
Reactive power supply	Capacitors	Capacitors	Capacitors	Capacitors
Converter station location and AC grid voltage	Kruseberg, 400 kV Herrenwyk, 380 kV	Bjæverskov, 400 kV Bentwisch, 400 kV	Stärnö, 400 kV Slupsk, 400 kV	Galatina, 400 kV Arachthos, 400 kV
Length of overhead DC line	12 km	-	-	110 km
Cable arrangement	1 cable	1 cable	1 cable + 2 cables for the return current	1 land and 1 sea cable
Cable route length	261 km	170 km (120 km under ground)	230 km	200 km (40 km + 160 km)
Grounding of the DC circuit	For full current in two sea electrodes	For full current in two sea electrodes	Metallic ground return with cable. No ground current.	For full current in two sea electrode stations
AC grids at both ends	Asynchronous	Asynchronous	Asynchronous	Asynchronous
Control	Constant power, frequency and damping control	Constant power, frequency and damping control	Power control, emergency power control	Constant power
Emergency change of power flow	On manual or automatic order to preset value	On manual or automatic order to preset value	On automatic order to set values	Frequency control
Main supplier of converter equipment	ABB	ABB	ABB	ABB

# Europe



Scheme	39. Norned	41. SAPEI	45. Fenno-Skan 2	53. LitPol
Commissioning year	2008	2011	2011	2015
Owner/Original customer/ Country	Statnett, Norway TenneT, The Netherlands	Terna, Italy	Fingrid, Finland and Svenska Kraftnät, Sweden	Litgrid AB, Lithuania
Main reason for choosing HVDC system	Interconnecting grids, Sea crossing, Trading	Interconnecting grids, Sea crossing	Interconnecting grids, Sea crossing	Interconnecting grids
Power transmitted, MW	700	1000	800	500
Direct voltage, kV	±450	±500	500	± 70
Converters per station	1	2	1	2
Direct voltage per converter, kV	450	500	500	70
Direct current, A	780	1000	1600	3600
Reactive power supply	Capacitors	Capacitors	Capacitors	Capacitors
Converter station location and AC grid voltage	Eemshaven, 400 kV Fedaa, 300 kV	Fiume Santo, 400 kV Latina, 400 kV	Finnbøle, 400 kV Rauma, 400 kV	Lithuanian side, 330 kV Polish side, 400 kV
Length of overhead DC line	-	-	70 km (Swedish side) 33 km(Finnish side)	Back-to-back
Cable arrangement	2 cables	2 cables	-	-
Cable route length	560 km	420 km (sea) + 15 km (land)	200 km	-
Grounding of the DC circuit	Midpoint grounded 12-pulse converter in Eemshaven. No ground current.	For full current in two sea electrode stations.	Grounded neutral. Common neutrals and electrodes with Fenno-Skan 1.	Midpoint grounded no ground current
AC grids at both ends	Asynchronous	Asynchronous	Synchronous	Asynchronous
Control	Constant power. Reactive/AC voltage control. Frequency dependant power control. Power swing damping control.	Frequency control on Sardinia	Constant power, damping control	Constant power, frequency control, AC voltage control
Emergency change of power flow	-	-	On manual order to preset value	On manual or automatic order
Main supplier of converter equipment	ABB	ABB	ABB	ABB

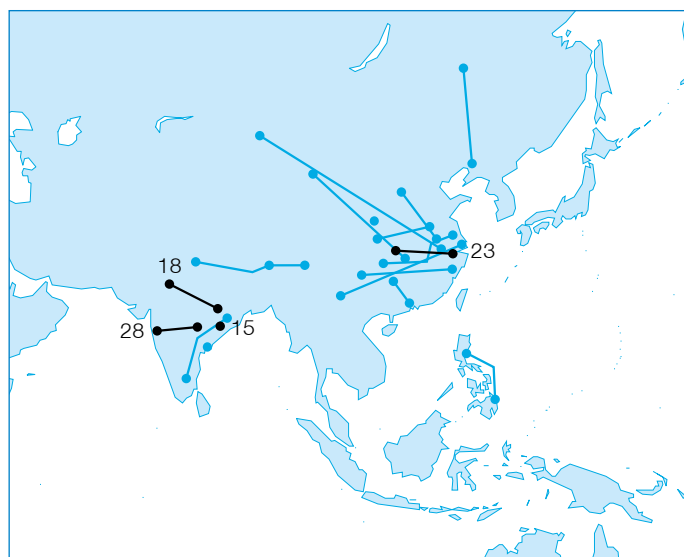
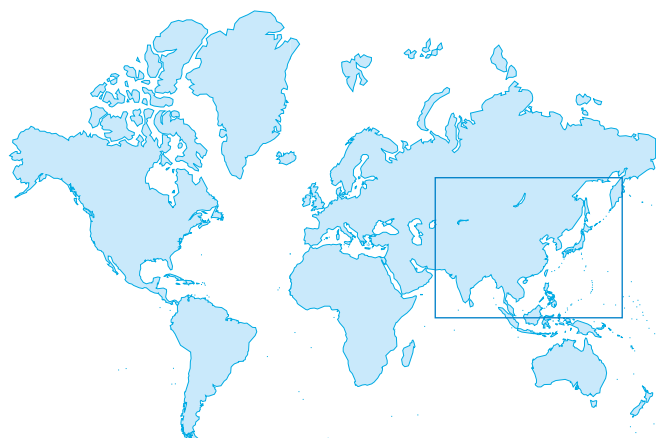
# Africa



Scheme	3. Cahora Bassa	4. Inga-Kolwezi
Commissioning year	1977-1979	1982
Owner/Original customer/ Country	Hidroelectrica de Cahora Bassa, Mocambique and Electricity Supply Commission, South Africa	SNEL, DR Congo
Main reason for choosing HVDC system	Connecting remote generation, Interconnecting grids	Connecting remote generation, Interconnecting grids
Power transmitted, MW	1930	560
Direct voltage, kV	±533	±500
Converters per station	8	2
Direct voltage per converter, kV	133	500
Direct current, A	1800	560
Reactive power supply	Capacitors	Capacitors Synchronous condensers
Converter station location and AC grid voltage	Songo, 220 kV Apollo, 275 kV	Inga (Zaire River), 220 kV Kolwezi (Shaba), 220 kV
Length of overhead DC line	1420 km	1700 km
Cable arrangement	-	-
Cable route length	-	-
Grounding of the DC circuit	For full current in two ground electrodes	For full current in two ground electrode stations
AC grids at both ends	Asynchronous	Asynchronous
Control	Constant power	Constant power or constant frequency in Shaba
Emergency change of power flow	-	-
Main supplier of converter equipment	ABB/Siemens/AEG	ABB

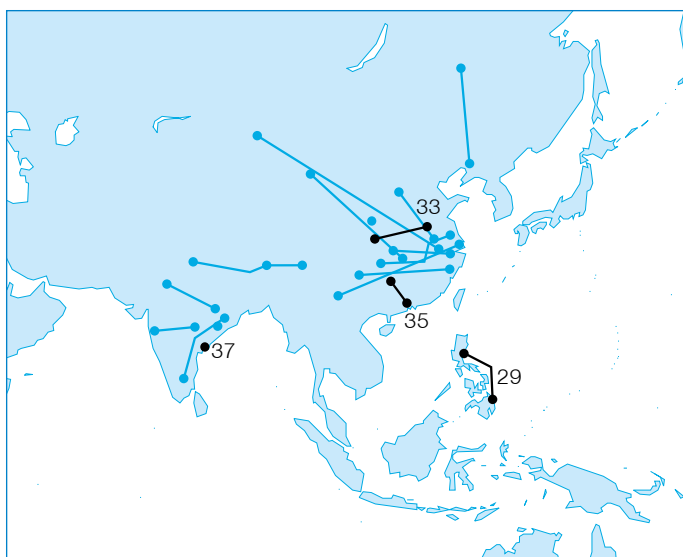
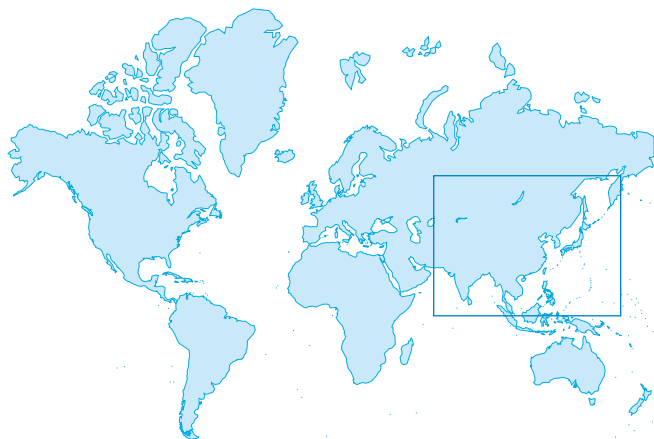


# Asia



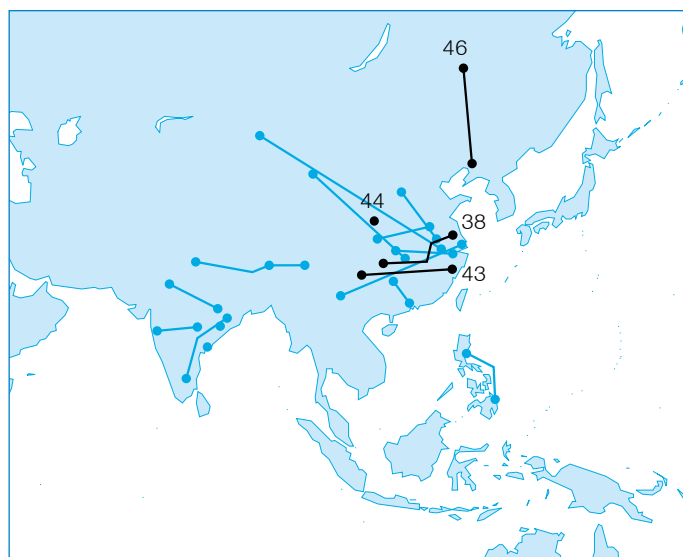
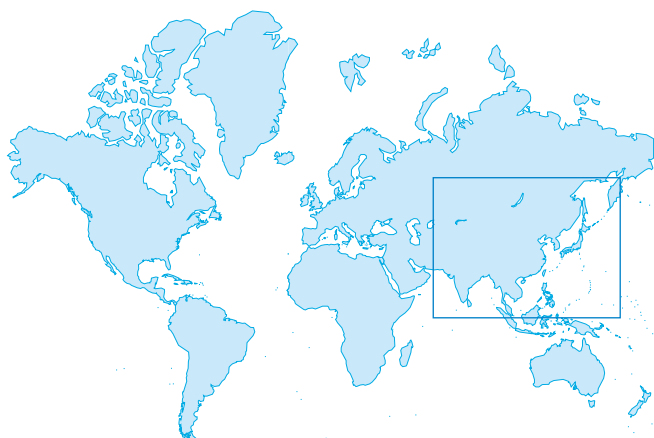
Scheme	15. Vindhyachal	18. Rihand-Delhi	23. Gezhouba-Shanghai	28. Chandrapur-Padghe
Commissioning year	1989	1990	1989	1998
Owner/Original customer/ Country	National Thermal Power Corporation, India	National Thermal Power Corporation, India	Central China Electric Power Administration, China and East China Electric Power Administration, China	Maharashtra State Electricity Board, India
Main reason for choosing HVDC system	Connecting remote generation	Connecting remote generation, Stability	Connecting remote generation, Interconnecting grids, Stability benefits	Connecting remote generation, Stability benefits
Power transmitted, MW	2 x 250	1568	1200	1500
Direct voltage, kV	70	±500	±500	±500
Converters per station	2 + 2	2	2	2
Direct voltage per converter, kV	70	500	500	500
Direct current, A	3600	1568	1200	1500
Reactive power supply	Capacitors	Capacitors	Capacitors	Capacitors
Converter station location and AC grid voltage	Northern system, 400 kV Western system, 400 kV	Rihand, 400 kV Dadri, 400 kV	Gezhouba, 500 kV Nan Qiao, 230 kV	Chandrapur, 400 kV Padghe, 400 kV
Length of overhead DC line	Back-to-back	814 km	1000 km	736 km
Cable arrangement	-	-	-	-
Cable route length	-	-	-	-
Grounding of the DC circuit	One point grounded	For full current in two ground electrode stations (intermittent)	For full current in two ground electrode stations	For full current in two electrode stations
AC grids at both ends	Asynchronous	Synchronous	Asynchronous	Synchronous
Control	Constant power in either direction, damping control	Constant power, damping control	Constant power, reactive power control	Constant power, frequency and damping control
Emergency change of power flow	Automatic power reduction triggered by AC signal	On manual or automatic order	On manual or automatic order to preset value	On manual or automatic order
Main supplier of converter equipment	ABB	BHEL, India, main contractor ABB subcontractor to BHEL under licence agreement	ABB/Siemens	ABB/BHEL

# Asia



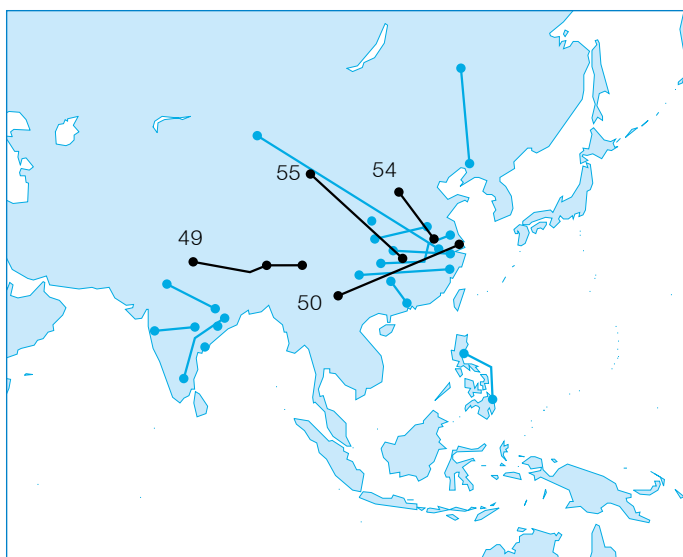
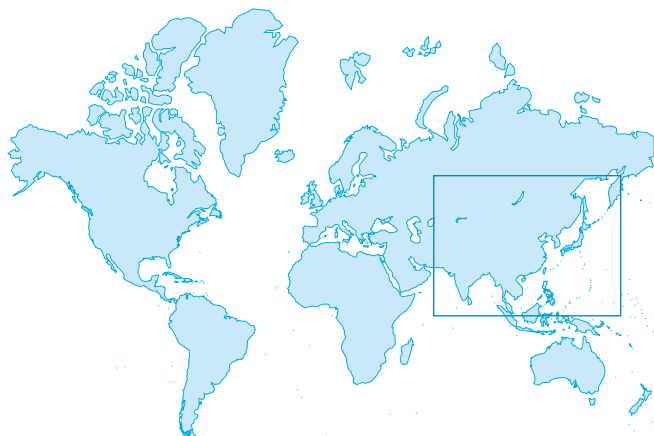
Scheme	29. Leyte-Luzon	33. Three Gorges-Changzhou	35. Three Gorges-Guangdong	37. Vizag II
Commissioning year	1997	2003	2004	2005
Owner/Original customer/Country	National Power Corporation, Manila, Philippines	China Power Grid Development Co Ltd, China	State Power Corporation of China, China	Powergrid Corporation of India Ltd. India
Main reason for choosing HVDC system	Interconnecting grids, Sea crossing	Connecting remote generation	Connecting remote generation	Interconnecting grids
Power transmitted, MW	440	3000	3000	500
Direct voltage, kV	350	±500	±500	±88
Converters per station	1	2	2	2
Direct voltage per converter, kV	350	500	500	176
Direct current, A	1260	3000	3000	2860
Reactive power supply	Capacitors	Capacitors	Capacitors	Capacitors
Converter station location and AC grid voltage	Ormoc, 230 kV, Naga, 230 kV	Longquan, 500 kV Zhengping, 500 kV	Jingzhou, 500 kV Huizhou, 500 kV	Visakhapatnam, India, 400 kV both sides
Length of overhead DC line	433 km	890 km	940 km	Back-to-back
Cable arrangement	1 cable + 1 spare	-	-	-
Cable route length	19 km	-	-	-
Grounding of the DC circuit	For full current in two sea electrodes	For full current in two ground electrode stations (intermittent)	For full current in two ground electrode stations (intermittent)	Midpoint grounded no ground current
AC grids at both ends	Asynchronous	Asynchronous	Asynchronous	Asynchronous
Control	Constant power, frequency control	Constant power	Constant power	Power Control, frequency control, voltage control
Emergency change of power flow	On manual or automatic order to preset value	-	-	-
Main supplier of converter equipment	ABB	ABB	ABB	ABB

# Asia



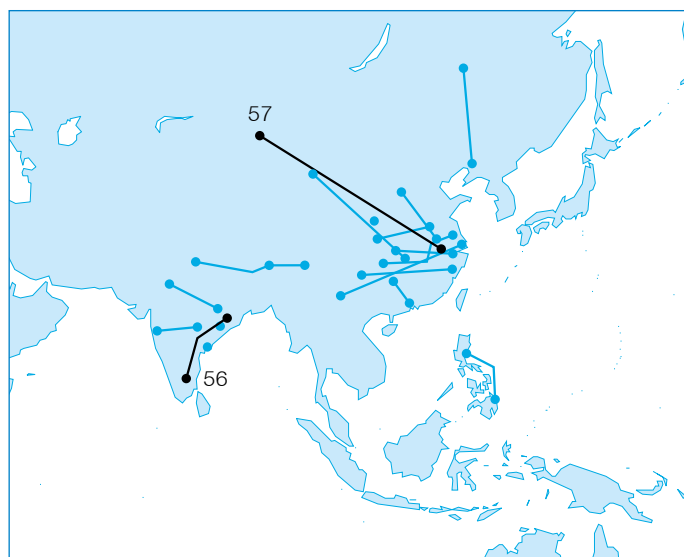
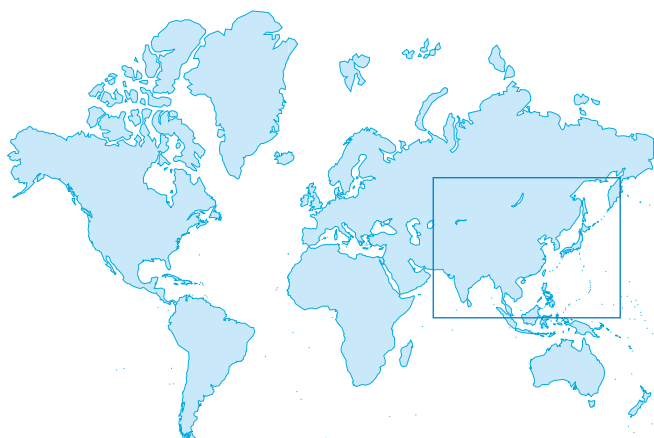
Scheme	38. Three Gorges-Shanghai	43. Xiangjiaba-Shanghai	44. Lingbao II Extension Project	46. Hulunbeir-Liaoning
Commissioning year	2006	2010	2010	2010
Owner/Original customer/Country	State Grid Corporation of China, China	State Grid Corporation of China, China	State Grid Corporation of China, China	State Grid Corporation of China, China
Main reason for choosing HVDC system	Connecting remote generation	Connecting remote generation	Interconnecting grids	Connecting remote generation, Interconnecting grids
Power transmitted, MW	3000	6400	750	3000
Direct voltage, kV	±500	±800	168	±500
Converters per station	2	4	2	2
Direct voltage per converter, kV	500	400	168	500
Direct current, A	3000	4000	4500	3000
Reactive power supply	Capacitors	Capacitors	Capacitors	Capacitors
Converter station location and AC grid voltage	Yidu, 500 kV Huaxin, 500 kV	Fulong: 525 kV Fengxian: 515 kV	Huazhong: 500 kV Xibei: 330 kV	Yimin: 500 kV Mujia: 500 kV
Length of overhead DC line	1059 km	2071 km	Back-to-back	920 km
Cable arrangement	-	-	-	-
Cable route length	-	-	-	-
Grounding of the DC circuit	For full current in two ground electrode stations (intermittent)	For full current in two electrode stations	One point grounded	For full current in two ground electrode stations (intermittent)
AC grids at both ends	Asynchronous	Synchronous	Asynchronous	Asynchronous
Control	Constant power	Constant power, frequency and damping control	Constant power, frequency control	Constant power
Emergency change of power flow	-	On manual or automatic order		
Main supplier of converter equipment	ABB - Chinese consortium	ABB/Siemens	ABB/XPR/XJ/CEPRI/TBEA/XB/Sifang	ABB/XPR/XJ/TBEA/NARI





Scheme	49. North-East Agra	50. Jinping-Sunan	54. Jinbei-Nanjing	55. Jiuquan-Hunan
Commissioning year	2015-2016	2013	2017	2017
Owner/Original customer/ Country	Power Grid Corporation of India Ltd. India	State Grid Corporation of China, China	State Grid Corporation of China (SGCC)	State Grid Corporation of China (SGCC)
Main reason for choosing HVDC system	Connecting remote generation, Interconnecting grids	Connecting remote generation	Connecting remote generation, Interconnecting grids	Connecting remote generation, Interconnecting grids
Power transmitted, MW	6 000 (Multiterminal) 4 x 2 000 (Converters)	7 200	8000	8000
Direct voltage, kV	±800	±800	±800	±800
Converters per station	2 + 2 + 4	4	4	4
Direct voltage per converter, kV	800	400	800	800
Direct current, A	2500 + 2500	4500	5000	5000
Reactive power supply	Capacitors	Capacitors	Capacitors	Capacitors
Converter station location and AC grid voltage	Biswanath Chariali: 400 kV Alipurduar: 400 kV Agra: 400 kV	Yulong: 535 kV Tongli: 505 kV	Jinbei: 500 kV Nanjing: 500 kV	Jinquanbei: 750 kV Hunan: 500 kV
Length of overhead DC line	1728 km	2090 km	1118 km	2390 km
Cable arrangement	-	-	-	-
Cable route length	-	-	-	-
Grounding of the DC circuit	For full current in three electrode stations	For full current in two electrode stations	For full current in two electrode stations	For full current in two electrode stations
AC grids at both ends	Synchronous/ Asynchronous	Synchronous	Synchronous	Synchronous
Control	Multiterminal, constant power, damping control, frequency control	Constant power, frequency and damping control	Constant power frequency and damping control	Constant power frequency and damping control
Emergency change of power flow	-	On manual or automatic order	On manual or automatic order	On manual or automatic order
Main supplier of converter equipment	ABB/BHEL	ABB/XD/XJ/NARI	ABB/XD/XJ/NARI	ABB/XD/XJ/NARI

# Asia



Scheme	56. Raigarh - Pugalur	57. Changji-Guquan
Commissioning year	2017-2019	2017-2018
Owner/Original customer/ Country	Power Grid Corporation of India Ltd.	State Grid Corporation of China (SGCC)
Main reason for choosing HVDC system	Connecting remote generation	Connecting remote generation, Interconnecting grids
Power transmitted, MW	6000	12000
Direct voltage, kV	±800	±1100
Converters per station	4	2
Direct voltage per converter, kV	800	400
Direct current, A	1875 + 1875	5454
Reactive power supply	Capacitors	Capacitors
Converter station location and AC grid voltage	Raigarh 400 kV Pugalur 400 kV	Changji Guquan
Length of overhead DC line	1830 km	3000 km
Cable arrangement	-	-
Cable route length	-	-
Grounding of the DC circuit	Dedicated Metallic Return	For full current in two electrode stations
AC grids at both ends	Synchronous/Asynchronous	Synchronous
Control	Multiterminal, constant power, damping control, frequency control	Constant power, frequency and damping control
Emergency change of power flow	-	On manual or automatic order
Main supplier of converter equipment	ABB/BHEL	ABB/XD/XJ/NARI

# Australia and Oceania



Scheme	16. Broken hill	24. New Zealand DC Hybrid Link
Commissioning year	1986	1991-1992
Owner/Original customer/ Country	Southern Power Corporation, Australia	Trans Power New Zealand Ltd., New Zealand
Main reason for choosing HVDC system	Interconnecting grids, Frequency control	Interconnecting grids, Sea crossing
Power transmitted, MW	40	560
Direct voltage, kV	8.3	-350
Converters per station	2	1
Direct voltage per converter, kV	8.3	350
Direct current, A	2400	1600
Reactive power supply	Capacitors Synchronous condenser	Capacitors Synchronous condensor
Converter station location and AC grid voltage	Broken Hill 22 kV and 6.9 kV	Benmore, 220 kV Haywards, 220 kV
Length of overhead DC line	Back-to-back	575 km
Cable arrangement	-	2 cables + 1 spare
Cable route length	-	42 km
Grounding of the DC circuit	Mid-point grounded	For full current in one ground and one sea electrode station
AC grids at both ends	Asynchronous	Asynchronous
Control	Constant 40 Hz frequency	Constant power, frequency and damping control
Emergency change of power flow	-	Frequency control of isolated Wellington area
Main supplier of converter equipment	ABB	ABB



## Notes

# Index

## A

## B

Baltic Cable.....	12
Blackwater .....	5
Brazil-Argentina Interconnection 1 .....	8
Brazil-Argentina Interconnection 2 .....	8
Broken Hill .....	20

## C

Cahora Bassa.....	14
Changji-Guquan .....	19
Chandrapur-Padghe .....	15
Châteauguay .....	4
CU-project .....	4

## D

Dürnröhr .....	10
----------------	----

## E

## F

Fenno-Skan.....	11
Fenno-Skan 2 .....	13

## G

Gezhouba-Shanghai .....	15
Gotland.....	10
Gotland 2 .....	10
Gotland 3 .....	11

## H

Highgate .....	5
Hulunbeir-Liaoning.....	17

## I

Inga-Kolwezi.....	14
Intermountain .....	5
Italy-Greece.....	12
Itaipu .....	8

## J

Jinbei-Nanjing .....	18
Jinping-Sunan .....	18
Jiuquan-Hunan .....	18

## K

Kontek .....	12
Konti-Skan 2 .....	11

## L

Leyte-Luzon .....	16
Lingbao II Extension.....	17
LitPol .....	13

## M

## N

Nelson River 2 .....	4
New Zealand .....	20
NorNed .....	13
North-East Agra .....	18

## O

Oklaunion.....	7
Outaouais .....	6

## P

Pacific Intertie.....	4
Pacific Intertie Expansion .....	6

## Q

Quebec-New England .....	5
--------------------------	---

## Y

## R

Raigarah - Pugalur .....	19
Railroad DC Tie .....	7
Rapid City .....	6
Rihand-Delhi .....	15
Rio Madeira .....	8
Rio Madeira back-to-back .....	9

## Z

## S

SAPEI .....	13
Sharyland .....	6
Skagerrak 1 & 2 .....	10
Skagerrak 3 .....	25
SwePol .....	12

## T

Three Gorges-Changzhou .....	16
Three Gorges-Guangdong .....	16
Three Gorges-Shanghai .....	17

## U

## V

Vindhyachal .....	15
Vizag II .....	16

## W

## X

Xiangjiaba-Shanghai .....	17
---------------------------	----



# Contact us

## ABB AB

### Uno Lamm HVDC Center

SE-771 80 Ludvika, Sweden

Phone: +46 21 32 50 00

[www.abb.com/hvdc](http://www.abb.com/hvdc)



#### HVDC on the web

To get more information, install QR code reader on your mobile device, scan the code and see more.

#### Note:

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein.

Any reproduction, disclosure to third parties or utilization of its contents - in whole or in parts - is forbidden without prior written consent of ABB.

Copyright© 2017 ABB

All rights reserved

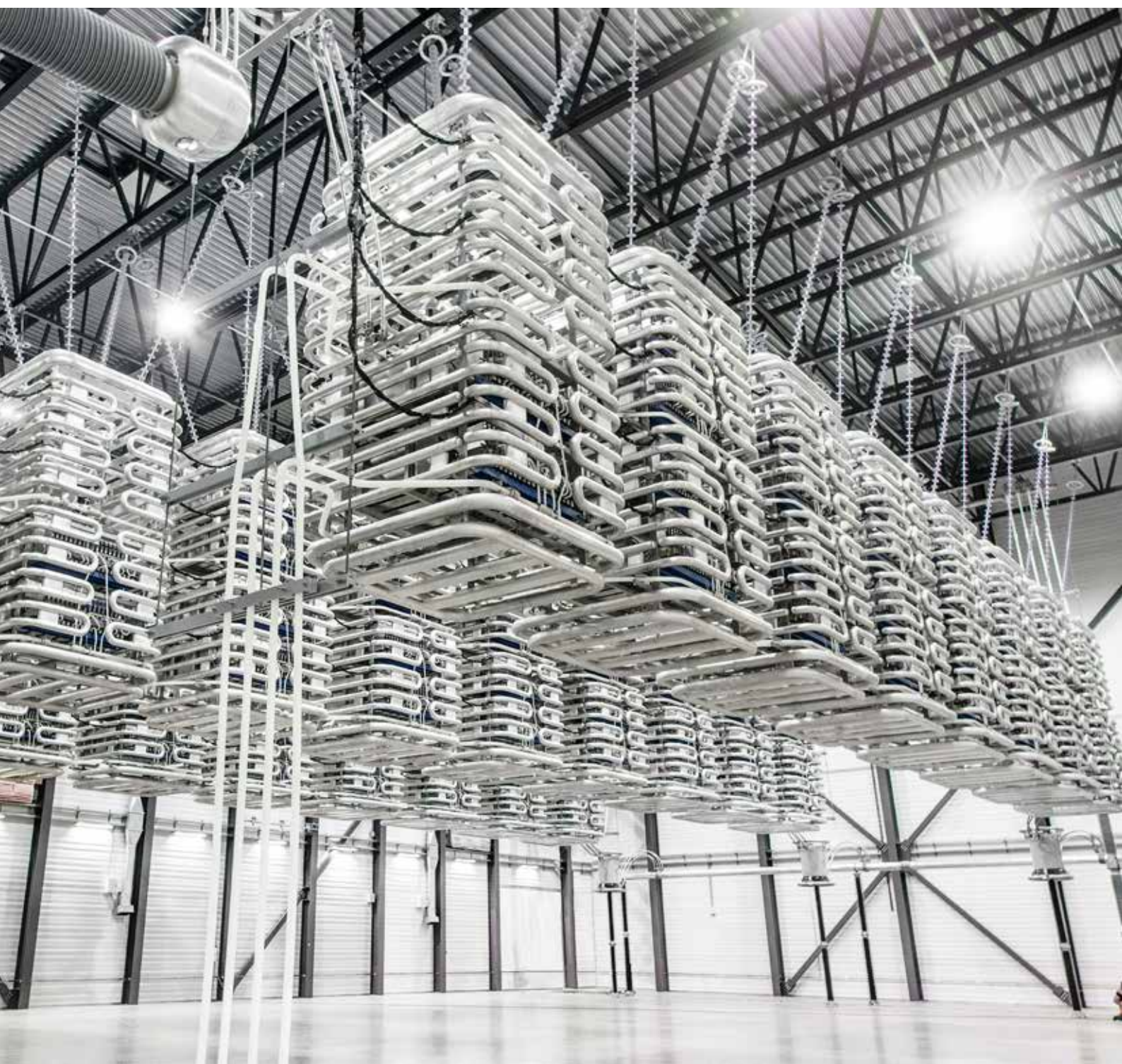
**Attachment 8.1.2.2**  
**HVDC Light**

---

REFERENCE LIST

# **HVDC Light®**

The original VSC technology





# ABB HVDC Light®

## Projects worldwide

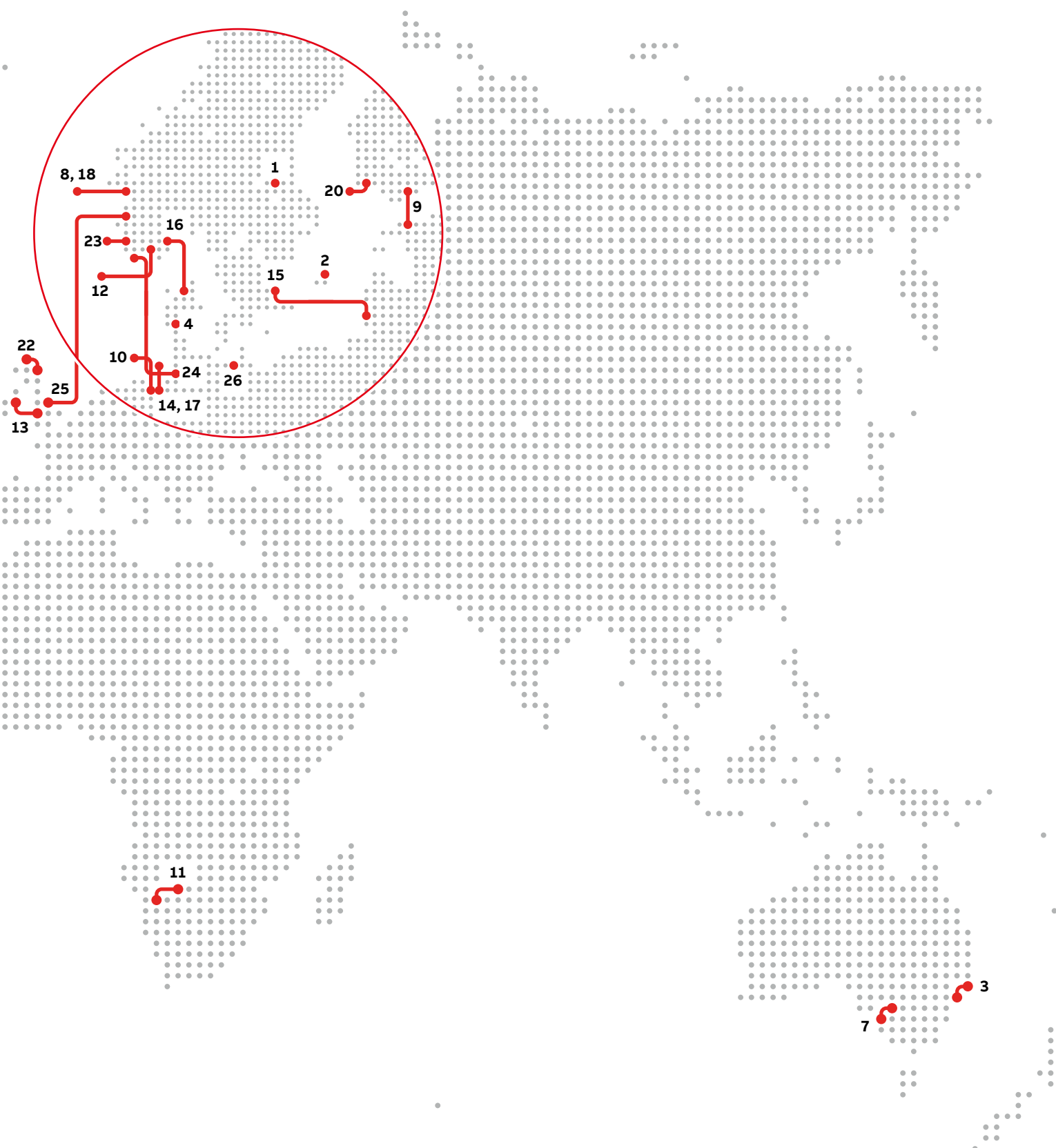
Project	Page
(1) Hällsjön	5
(2) Gotland	5
(3) Terranora Interconnector	11
(4) Tjaereborg	5
(5) Eagle Pass	4
(6) Cross Sound Cable	4
(7) Murraylink	11
(8) Troll A 1&2	5
(9) Estlink	6
(10) BorWin1	6
(11) Caprivi Link Interconnector	10
(12) Valhall	6
(13) East West Interconnector	6
(14) DolWin1	7
(15) Nordbalt	7
(16) Skagerrak 4	7
(17) DolWin2	7
(18) Troll A 3&4	8
(19) Mackinac	4
(20) Åland	8
(21) Maritime Link	4
(22) Caithness Moray HVDC Link	8
(23) Johan Sverdrup	8
(24) Nordlink	9
(25) NSL	9
(26) Kriegers Flak Combined Grid Solutions (KF CGS) HVDC	9

### Part of the world

North America	page 4
Europe	page 5-9
Africa	page 10
Australia and Oceania	page 11



For more information about the  
projects visit: [www.abb.com/hvdc](http://www.abb.com/hvdc)



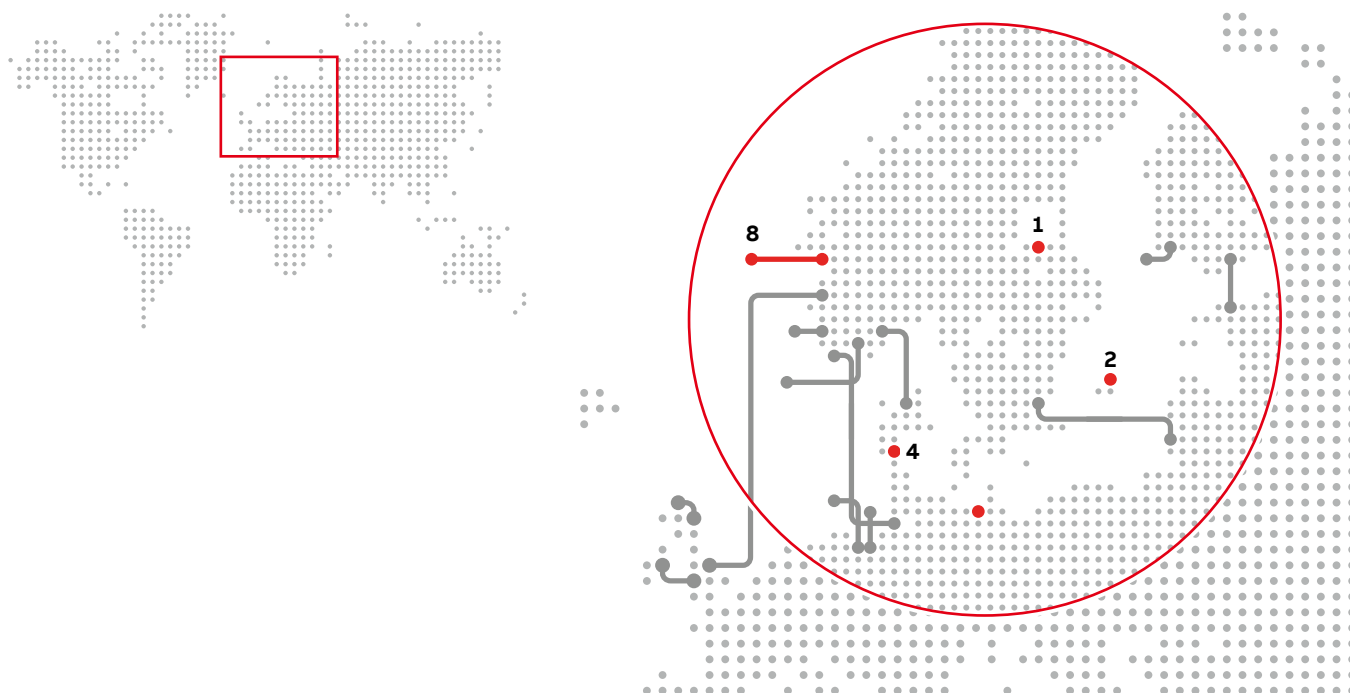
# North America



Scheme	5. Eagle Pass	6. Cross Sound Cable	19. Mackinac	21. Maritime Link
Commissioning year	2000	2002	2014	2017
Owner/Original customer/Country	AEP, USA	TransEnergie US, USA	American Transmission Company (ATC), USA	NSP Maritime Link Inc, NL, Canada
Main reason for choosing VSC system	Interconnecting grids, grid stability, energy trade	City center infeed, energy trade, controllability	DC links in AC grids, weak networks, grid stability	Connecting remote generation, interconnecting grids, stabilizing features
Power Transmitted, MW	36	330	200	2 X 250
Direct voltage, kV	±15.9	±150	±71	±200
Converters per station	2	1	1	2
Direct voltage per converter, kV	31.8	300	142	400
Direct current, A	-	1200	1408	1250
Reactive power range, MVar	±36	±150	±100	±125
Converter station location and AC grid voltage	Eagle Pass, 138 kV	New Haven, 345 kV Shoreham, 138 kV	Mackinac, 138 kV, both sides	Bottom Brook 230 kV Woodbine 345 kV
Length of overhead DC line, km	-	-	-	-
Cable arrangement	-	Bipolar	-	Bipolar
Cable route length, km	0 (Back to Back)	40	0 (Back to Back)	180
Grounding of the DC circuit	-	-	-	For full current in two electrode stations
AC grids at both ends	Asynchronous	Synchronous	Synchronous	Asynchronous
Control	Active and reactive power, AC voltage	Active and reactive power, AC voltage	Active and reactive power, STATCOM mode at outage of one converter, AC line emulation, Islanded operation	Active and reactive power, AC voltage, frequency control, damping control
Emergency change of power flow	Runback implemented	Runback implemented	Automatic runback, Black start	Automatic runback, Black start

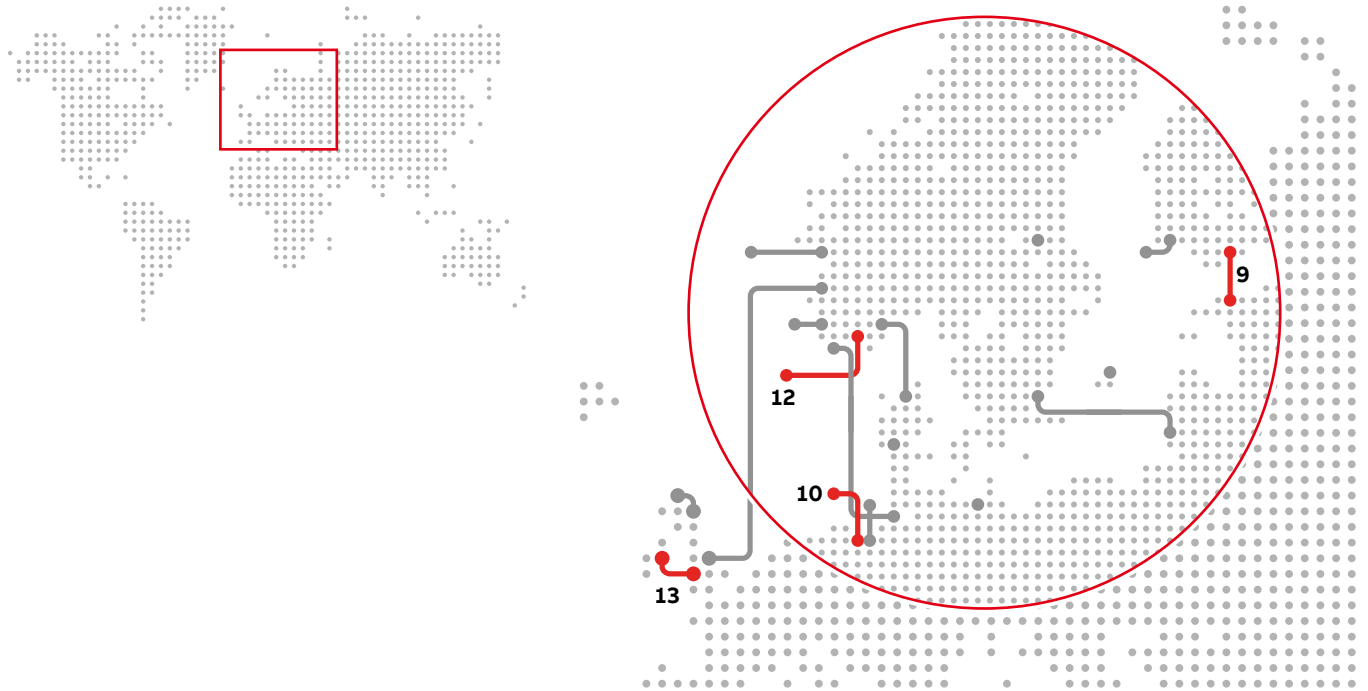


# Europe



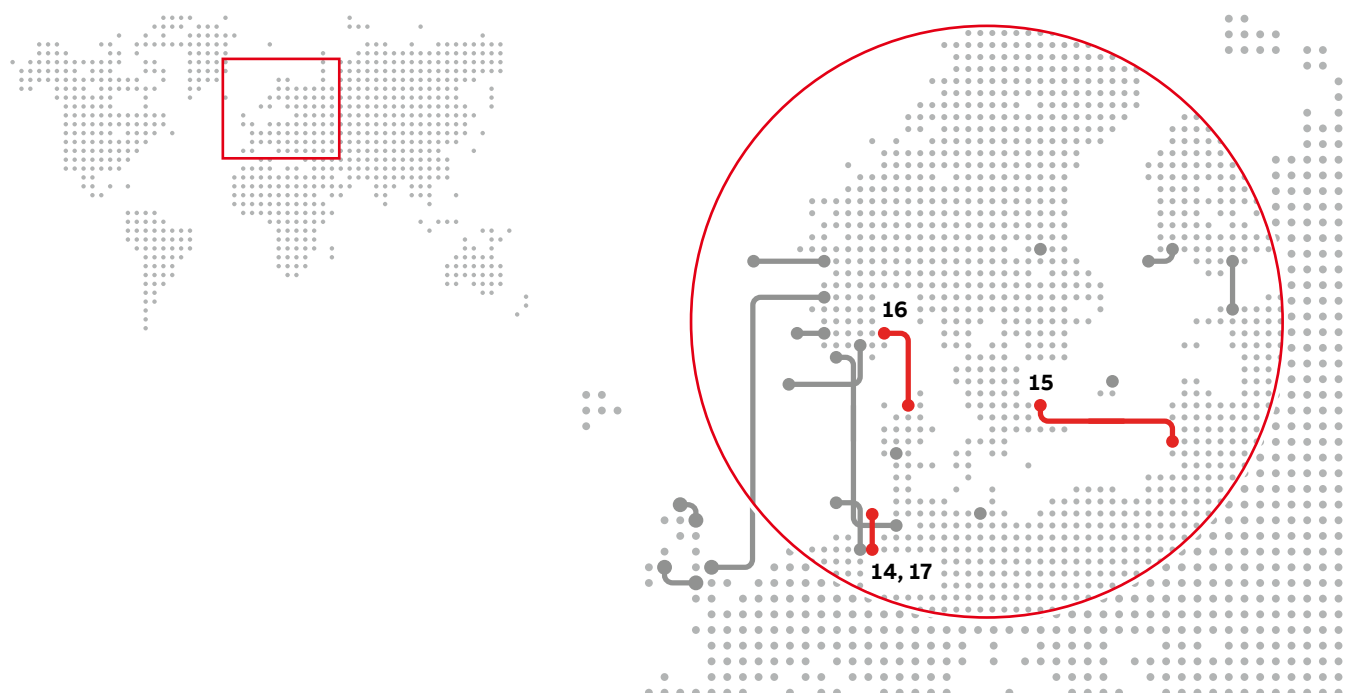
Scheme	1. Hällsjön	2. Gotland	4. Tjaereborg	8. Troll A 1&2
Commissioning year	1997	1999	2000	2005
Owner/Original customer/Country	VB Elnät, Sweden	GEAB, Sweden	Eltra, Denmark	Statoil, Norway
Main reason for choosing VSC system	Test installation	Interconnecting grids, environmental, controllability	Offshore wind connections, environment, controllability	Power from shore, environment, CO2-tax, compactness of converter on platform
Power Transmitted, MW	3	50	7.2	2 x 44
Direct voltage, kV	±10	±80	±9	±60
Converters per station	1	1	1	2
Direct voltage per converter, kV	20	160	18	120
Direct current, A	150	360	358	400
Reactive power range, MVar	±3	+50/-55	-3/+4	Troll A: NA Kollsnes: +24/-20
Converter station location and AC grid voltage	Hällsjön, 10 kV Grängesberg, 10 kV	Näs, 77 kV Bäcks, 77 kV	Enge, 10.5 kV Tjaereborg, 10.5 kV	Troll A, 56 kV Kollsnes, 132 kV
Length of overhead DC line, km	10	-	-	-
Cable arrangement	-	Bipolar	Bipolar	Bipolar
Cable route length, km	0.2	70	4.3	70
Grounding of the DC circuit	-	-	-	-
AC grids at both ends	Synchronous	Synchronous	Synchronous / asynchronous	-
Control	Active and reactive power	Active and reactive power, AC voltage	Active and reactive power, AC voltage, variable frequency control	Motordrive and VHV motor, AC voltage, frequency control
Emergency change of power flow	-	-	-	-

# Europe



Scheme	9. Estlink	10. BorWin1	12. Valhall	13. East West Interconnector
Commissioning year	2006	2012	2011	2012
Owner/Original customer/Country	TenneT/E.ON, Germany	TenneT/E.ON, Germany	BP, Norway	Eirgrid, Ireland
Main reason for choosing VSC system	Interconnecting grids, energy trade, controllability, black start	Offshore wind connections	Power from shore, environment, CO2-tax, compactness of converter on platform	Interconnecting grids, energy trade, AC voltage control, black start
Power Transmitted, MW	350	400	78	500
Direct voltage, kV	±150	±150	150	±200
Converters per station	1	1	1	1
Direct voltage per converter, kV	300	300	150	400
Direct current, A	1230	1200	573	1250
Reactive power range, MVar	±125	±150	Valhall:-10/+48, 110 transient Lista: ±50	± 150
Converter station location and AC grid voltage	Espoo, 400 kV Harku, 330 kV	Diele, 380 kV BorWin alpha, 170 kV	Lista, 300 kV Valhall, 11 kV	Woodland, 400 kV Shotton, 400 kV
Length of overhead DC line, km	-	-	-	-
Cable arrangement	Bipolar	Bipolar	-	Bipolar
Cable route length, km	105	200	292	261
Grounding of the DC circuit	-	-	-	-
AC grids at both ends	Asynchronous	Asynchronous	50 Hz, 60 Hz isolated	50 Hz, Asynchronous
Control	Active and reactive power, AC voltage, frequency control, damping control	Active and reactive power, AC voltage, frequency control	AC voltage, frequency control	Active and reactive power, AC voltage, frequency control, damping control
Emergency change of power flow	Runback implemented black start	Runback implemented	-	Black start

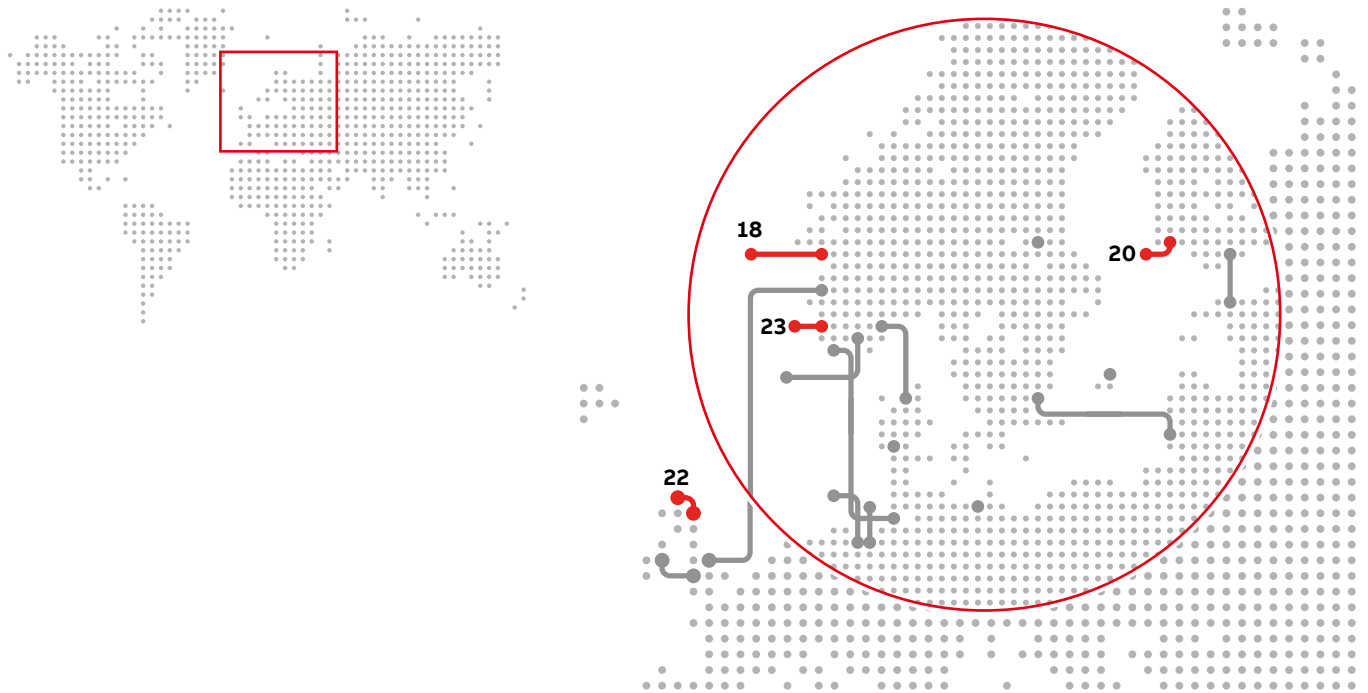
# Europe



Scheme	14. DolWin1	15. Nordbalt	16. Skagerrak 4	17. DolWin2
Commissioning year	2015	2015	2014	2015
Owner/Original customer/Country	Svenska Kraftnät, Sweden Litgrid Turtas AB, Lithuania	Svenska Kraftnät, Sweden Litgrid Turtas AB, Lithuania	Statnett, Norway Energinet.dk, Denmark	TenneT, Germany
Main reason for choosing VSC system	Offshore wind connection, length of cables	Interconnecting grids, prepare for future DC grid, black start	Interconnecting grids, grid stability, black start	Offshore wind connection, length of cables
Power Transmitted, MW	800	700	700	900
Direct voltage, kV	±320	±300	500	±320
Converters per station	1	1	1	1
Direct voltage per converter, kV	640	600	500	640
Direct current, A	1250	1250	1430	1406
Reactive power range, MVar	±260	±350	±80	-300/+380
Converter station location and AC grid voltage	Dörpen, 380 kV DolWin alpha, 155 kV	Klaipeda, 330 kV Nybro, 400 kV	Kristiansand, 400 kV Tjele, 400 kV	Dörpen, 380 kV DolWin beta, 155 kV
Length of overhead DC line, km	-	-	-	-
Cable arrangement	Bipolar	Bipolar	Bipolar	Bipolar
Cable route length, km	450	450	244	135
Grounding of the DC circuit	-	-	-	-
AC grids at both ends	Asynchronous	Asynchronous	Asynchronous	Asynchronous
Control	Active and reactive power, AC voltage, frequency control	Active and reactive power, AC voltage, frequency control, damping control	Active and reactive power, AC voltage, frequency control, damping control	Active and reactive power, AC voltage, frequency control
Emergency change of power flow	Black start	Black start	Black start	Black start

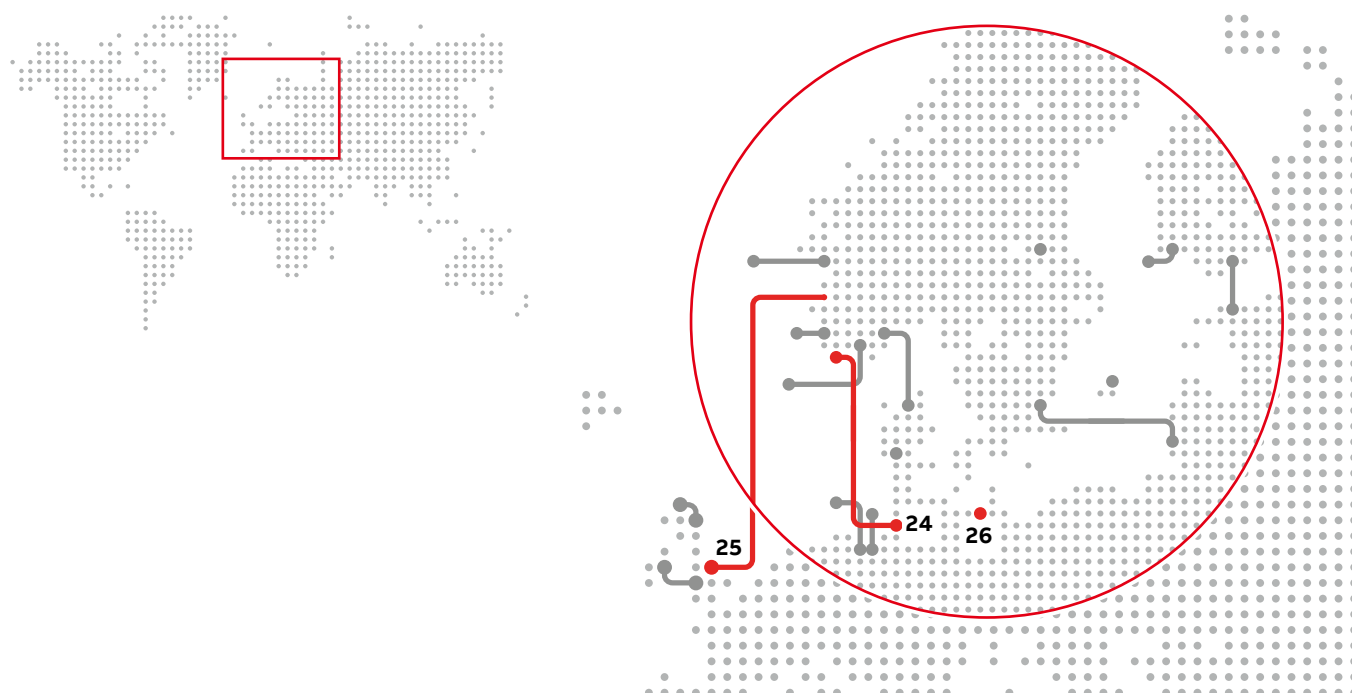


# Europe



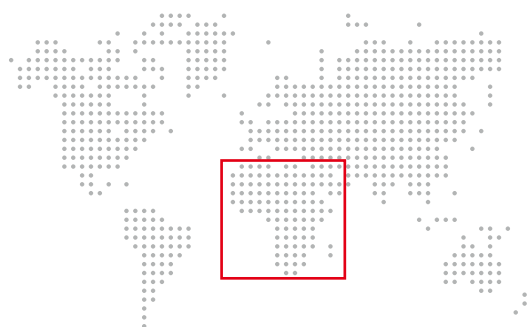
Scheme	18. Troll A 3&4	20. Åland	22. Caithness Moray HVDC Link	23. Johan Sverdrup
Commissioning year	2015	2015	2018	2019
Owner/Original customer/Country	Statoil, Norway	Kraftnät Åland AB, Finland	Scottish Hydro Electric Transmission Ltd (SHETL), UK	Statoil, Norway
Main reason for choosing VSC system	Power from shore, environment, CO2-tax, compactness of converter on platform	Interconnecting grids, asynchronous networks and length of sea crossing	Interconnecting grids, reinforcement of AC network	Power from shore, environment, CO2-tax, compactness of converter on platform
Power Transmitted, MW	2 X 50	100	800 and 1200	100
Direct voltage, kV	±60	±80	±320	±80
Converters per station	2	1	1	1
Direct voltage per converter, kV	120	160	640	160
Direct current, A	460	625	1881	700
Reactive power range, MVar	±24	±30	Spittal: ±263 Blackhillock: ±394	-
Converter station location and AC grid voltage	Troll A, 66 kV Kollsnes, 132 kV	Ytterby, 110 kV Naantali, 110 kV	Spittal, 230 kV Blackhillock, 400 kV	Haugeneset, 300 kV Johan Sverdrup, 33 kV
Length of overhead DC line, km	-	-	-	-
Cable arrangement	Bipolar	Bipolar	Bipolar	Bipolar
Cable route length, km	70	158	160	-
Grounding of the DC circuit	-	-	-	-
AC grids at both ends	-	Asynchronous	Synchronous	50 Hz, Asynchronous
Control	Motordrive and VHV motor, AC voltage, frequency control	Active and reactive power, AC voltage, frequency control, damping control	Active and reactive power, AC voltage, frequency control, damping control	Active and reactive power, AC voltage, frequency control
Emergency change of power flow	-	Black start	Black start	Black start

# Europe



Scheme	24. Nordlink	25. NSL	26. Kriegers Flak Combined Grid Solutions (KF CGS) HVDC
Commissioning year	2020	2021	2019
Owner/Original customer/Country	Statnett, Norway TenneT, Germany	Statnett, Norway National Grid, UK	50Hertz, Germany Energinet.DK, Denmark
Main reason for choosing VSC system	Interconnecting grids, energy trade	Interconnecting grids, energy trade	Interconnecting grids, asynchronous networks, offshore wind connection
Power Transmitted, MW	2 x 700	2 x 700	410
Direct voltage, kV	±500	±515	±140
Converters per station	2	2	2
Direct voltage per converter, kV	500	515	140
Direct current, A	1400	1400	1477
Reactive power range, MVar	-	-	±100
Converter station location and AC grid voltage	Ertsmyra, 400 kV Wilster, 380 kV	Kvilldal, 420 kV Blyth, 400 kV	Bentwisch, 400 kV/150kV
Length of overhead DC line, km	53	-	-
Cable arrangement	Bipolar	Bipolar	-
Cable route length, km	571	722	0 (Back-to-Back)
Grounding of the DC circuit	-	-	-
AC grids at both ends	Asynchronous	Asynchronous	Asynchronous
Control	Active and reactive power, AC voltage, frequency control, damping control	Active and reactive power, AC voltage, frequency control, damping control	Active and reactive power, AC voltage, frequency control, damping control, extremely week grid
Emergency change of power flow	Black start	Black start	Black start and Emergency Power Control (EPC)

# Africa



Scheme	11. Caprivi Link Interconnector
Commissioning year	2010
Owner/Original customer/Country	NamPower, Namibia
Main reason for choosing VSC system	Interconnecting grids, energy trade, weak networks
Power Transmitted, MW	300
Direct voltage, kV	350
Converters per station	1
Direct voltage per converter, kV	350
Direct current, A	857
Reactive power range, MVar	± 200
Converter station location and AC grid voltage	Zambezi, 330 kV Gerus, 400 kV
Length of overhead DC line, km	950
Cable arrangement	-
Cable route length, km	-
Grounding of the DC circuit	Earth electrode
AC grids at both ends	Synchronous
Control	Active power, AC voltage, frequency control
Emergency change of power flow	Runback implemented, power supply of black network



# Australia and Oceania



Scheme	3. Terranora Interconnector	7. Murraylink
Commissioning year	2000	2002
Owner/Original customer/Country	APA Group Australia/TransEnergy, USA and North Power, Australia	APA Group Australia /TransEnergie US, USA
Main reason for choosing VSC system	Interconnecting grids, energy trade, environment, controllability	DC link in AC grid, Energy trade, environment, controllability
Power Transmitted, MW	3 x 60	220
Direct voltage, kV	±80	±150
Converters per station	3	1
Direct voltage per converter, kV	160	300
Direct current, A	375	739
Reactive power range, MVar	+90/-165	+140 / -150
Converter station location and AC grid voltage	Terranora, 110 kV Mullumbimby, 132 kV	Berri, 132 kV Red Cliffs, 220 kV
Length of overhead DC line, km	-	-
Cable arrangement	Bipolar	Bipolar
Cable route length, km	59	180
Grounding of the DC circuit	-	-
AC grids at both ends	Asynchronous (when delivered)	Synchronous
Control	Active and reactive power, AC voltage	Active power and AC voltage
Emergency change of power flow	-	Runback implemented

# Index

<b>A</b>	<b>P</b>
<b>B</b>	<b>Q</b>
Borwin .....6	<b>R</b>
<b>C</b>	<b>S</b>
Caithness Moray HVDC Link.....8	Skagerrak 4..... 7
Caprivi Link Interconnector ..... 10	<b>T</b>
Cross Sound Cable .....4	Terranora Interconnector..... 11
<b>D</b>	Tjaereborg .....5
DolWin1 ..... 7	Troll A 1&2.....5
DolWin2 ..... 7	Troll A 3&4 .....8
<b>E</b>	<b>U</b>
Eagle Pass .....4	<b>V</b>
East West Interconnector .....6	Valhall .....6
Estlink .....6	<b>W</b>
<b>F</b>	<b>X</b>
<b>G</b>	<b>Y</b>
Gotland.....5	<b>Z</b>
<b>H</b>	<b>Å</b>
Hällsjön.....5	Åland .....8
<b>I</b>	
<b>J</b>	
Johan Sverdrup.....8	
<b>K</b>	
Kriegers Flak Combined Grid Solutions (KF CGS) HVDC .....9	
<b>L</b>	
<b>M</b>	
Mackinac .....4	
Maritime Link.....4	
Murraylink .....4	
<b>N</b>	
Nordbalt ..... 7	
Nordlink ..... 9	
NSL ..... 9	
<b>O</b>	



## Notes

[illegible]



[illegible]

[illegible]

—

**ABB AB**

**Uno Lamm HVDC Center**

SE-771 80 Ludvika

Sweden

Phone: +46 21 32 50 00

**[abb.com/hvdc](http://abb.com/hvdc)**



**HVDC on the web**

To get more information, install QR code reader on your mobile device, scan the code and see more.



REDACTED



## **Attachment 9.1.2**

### **Overview of Maintenance Activities – NPT Line**

#### Overview.

The Northern Pass Line will be maintained as an integrated part of the larger Eversource Energy transmission system. For the portion of the Northern Pass route where there are existing Eversource Energy transmission lines, the maintenance, testing, and inspection activities for the Northern Pass Line will be performed as Eversource Energy crews and contractors traverse the existing transmission ROW(s) for ongoing transmission system maintenance. In those locations, NPT will pay its allocated share of cost associated with the maintenance, testing, and inspection activities. Where the Northern Pass Line is not located with existing Eversource Energy transmission lines the maintenance, testing, and inspection activities will be paid by NPT and performed consistent with the existing Eversource Energy maintenance policies, procedures, and practices.

Eversource Energy's O&M program is based upon the following key attributes:

- Best practices for preventive maintenance;
- Assuring compliance with regulatory and power coordination authority standards and guidelines;
- Establishing maintenance practices that are practical and cost effective;
- Establishing maintenance practices that monitor equipment operating conditions and provide trend data; and
- Written descriptions of the maintenance program.

During operation, NPT and its contractors will follow Eversource Energy company policies, procedures and practices. Those policies and procedures include OSHA, State and Federal regulations, as well as other guidance documents to include self-identified and industry best-practices. In accordance with maintenance procedures, Eversource Energy inspects high voltage transmission lines (to include the Northern Pass Line) on the following basis:

- Aerial patrol of the line each year for a visual inspection of structures and conductors;
- A ground based 'Foot' patrol of the line each year to visually inspect the facilities;
- Thermographic inspection of the line two times per year to identify abnormal hot spots;
- Patrol of lines after every interruption where the specific cause of interruption cannot be identified;
- Aerial patrol of line each year for a vegetation management inspection to identify vegetation problem areas;
- A three year vegetation brush mowing and hazard tree maintenance program within cleared areas; and
- A six year side trimming and tree removal maintenance program as required.

In addition to construction and maintenance resources, vegetation management personnel at Eversource Energy provide the expertise and guidance for the pruning and removal of trees as

well as control of other vegetation in and around electrical lines and facilities. Eversource Energy supports good utility pruning and arboriculture practices, participates in educational and recertification programs that promote industry best practices, partners with local and regional organizations to coordinate clearing work and stays current on insects and diseases affecting trees and vegetation within its service territories. Vegetation management and line clearance activities associated with Northern Pass U.S. transmission facilities will be performed in accordance with established clearing and maintenance specifications and programs that follow industry best practices and applicable regulations. All work is performed in accordance with state requirements and regulations affecting work in sensitive areas including wetlands, vernal pools and threatened or endangered species habitat.

In addition, the O&M program provides the basis for performing maintenance on protection system components across the Eversource Energy system. The program meets or exceeds regulatory maintenance and requirements as defined by FERC, NERC, NPCC and ISO-NE. Additionally the O&M program employs internal controls comprised of tools, staffing and programs that ensure Eversource Energy meets its maintenance obligations.

NPT also will implement security measures consistent with industry practices and Eversource Energy policies to include the use of security cameras at stations. With regard to the stationary buildings, transition stations, converter terminal, underground sections, and substations, NPT will maintain the facilities in accordance with Eversource Energy's O&M program. Maintenance activities for those facilities will include:

- Monitoring, testing and maintaining civil, electrical, protection and communication equipment including visual inspection, sampling, trending, testing, and maintenance;
- Monitoring on-line key electrical devices to determine equipment status, load levels, and temperature to identify any abnormal conditions; and
- Maintaining an adequate supply of spare parts on the Eversource Energy system.

#### Proposed Staffing Levels.

NPT will rely on the staff of Eversource Energy's transmission maintenance and work management group to support the operating and maintenance requirements of the new facilities associated with the Northern Pass Line.<sup>3</sup> For daily operations, NPT expects 6 technicians will be working on the project. To the extent appropriate or required (including for emergency repair efforts resulting from storms or system events), Eversource Energy supplements its transmission maintenance and work management group with contractors having crews with the necessary skills and experience. In many cases, Eversource Energy has entered into contractual arrangements with those contractors (including master service agreements) that will allow NPT to quickly access supplemental services. The collective staff available to NPT will ensure that all maintenance and operational activities are performed in accordance the Eversource Energy's O&M program.

---

<sup>3</sup> Appropriate accounting mechanisms to prevent subsidization of NPT by PSNH and other regulated affiliates have been implemented in connection with the development of NPT and will be continued during operations to ensure that staffing and associated costs of maintaining the Northern Pass Line will be fully assigned to NPT.

### Role of Vendors.

For the most part, NPT's transmission facilities will be maintained by Eversource Energy resources in a manner consistent with its existing programs, policies, and processes to maintain its existing infrastructure. However, based on AC/DC converter technology being installed, NPT will contract with ABB (the manufacturer of the converter) for additional and extended maintenance services. Under that arrangement, maintenance will be performed in accordance with ABB's recommendations to maintain all equipment in proper working order. Attachment 9.1.3 includes a representative list of the types of maintenance activities recommended by ABB for the converter. Vendor maintenance tasks will be integrated into the Eversource Energy O&M plan, scheduled and tracked until completed.

### Major Maintenance.

Attachment 9.1.3 includes a representative list of the types of maintenance activities, including major maintenance, recommended by ABB for the converter.

Section 6.5 of the TSA prohibits scheduled maintenance or capital project with respect to Northern Pass transmission facilities that requires any interruption or reduction of scheduling rights during the months of January, February, March, June, July, August, September and December, unless approved by the parties or required by appropriate transmission authorities (including ISO-NE).

### Testing Plan (NPT).

Eversource Energy's O&M program contains comprehensive requirements for the inspection, testing and maintenance of transmission equipment. That program includes specific service intervals (similar to those developed by ABB for the converter (see Attachment 9.1.3)) for all equipment in the Eversource Energy transmission system, such as transformers, circuit breakers, capacitor banks, transmission lines, protection and communication systems, underground cables, control houses, batteries and security systems.

**Attachment 9.1.3**  
**Sample Converter Maintenance Activities**



**List of Maintenance Activities - 1JNL316869**

This list presents recommended maintenance activities for main circuit equipment as input for Reliability, availability and maintainability report

Project Name: Northern Pass Transmission

Station Name: Des Cantons

Life time (year) 40

Item Designation	Item Description	RS No.	No. Of Items	TBM (Year)	No. maint. during life time	PC	PB	PX	PV	PM	PE	PG	No of Crew	Duration/ Item(Hour)	Man_hour/ Year	Energized	Operation	Brief Description
=P1.U.(VNA,VNB,VNC,VPA,VPB,VPC).CE 1...CE39	Valve Cell	001	234	1	40				1		1		2	0.227	106.24	No	NO	Visual inspection for water drops, water leakage, damaged capacitors, damaged components in IGBT modules
			234	5	8				1		1		2	0.139	13.01	No	NO	Visual inspection of electrodes in cooling system
			1	1	40					1			1	2	2.00	No	NO	Check hand operated valves (Valve cooling system)
=P1.WT.T1	Power Transformer , 1phase 3 winding	002A	3	1	40			1			1		2	2	12.00	No	NO	Inspection and Cleaning
			3	15	2			1				1	2	24	7.20	No	NO	Revision VLTC
=P1.W1.L(1,2)	Converter Reactors, Single Phase	003	6	1	40						1		1	1	6.00	No	NO	Inspection and cleaning
			6	15	2						1	1	2	3	1.80	No	NO	Painting
=P1.WP(1,2).L1	Smoothing Reactor, Air-insulated	005	2	1	40						1		1	1	2.00	No	NO	Visual inspection and Cleaning
			2	15	2						1	1	2	3	0.60	No	NO	Painting
=P1.W1.Z1.L1	AC transformer neutral grounding reactor	007	1	5	8						1		1	1	0.20	No	NO	Visual inspection and Cleaning
			1	15	2						1	1	2	2	0.20	No	NO	Painting
=P1.W1.X1	AC switchyard to converter reactor hall Wall bushing	009	3	3	13						1		1	0.75	0.73	No	NO	Cleaning of insulator surface
=P1.U.(VNA,VNB,VNC,VPA,VPB,VPC).X1	Converter reactor hall to valve hall Wall bushing	009	6	3	13						1		1	0.75	1.46	No	NO	Cleaning of insulator surface
=P1.U.X(1,2)	DC Wall bushing	009	2	3	13						1		1	0.75	0.49	No	NO	Cleaning of insulator surface
=P1.WP(1,2).C1	DC Pole Capacitor	014	2	3	13						1		1	0.5	0.33	No	NO	Visual inspection, Damage to finish Leaking capacitor units
=P1.U.C(1,2)	DC HF filter capacitor	016	2	3	13						1		1	0.5	0.33	No	NO	Visual inspection, Damage to finish Leaking capacitor units
=P1.W1.L3	AC HF filter reactor	025A	3	5	8						1		1	1	0.60	No	NO	Visual inspection and Cleaning
			3	15	2						1	1	2	2	0.60	No	NO	Painting
=P1.U.L(1,2)	DC HF filter reactor	025B	4	5	8						1		1	1	0.80	No	NO	Visual inspection and Cleaning
=P1.WP(1,2).L2			4	15	2						1	1	2	2	0.80	No	NO	Painting
=P1.WT.R1	Pre-Insersion Resistor	037	3	3	13						1		1	1	0.98	No	NO	Visual inspection and Cleaning

=P1.U.R(1,2)	DC HF Filter Resistor	039	2	3	13					1	1	1	0.65	No	NO	Visual inspection and Cleaning	
=P1.WT.F1	AC transformer bus Arresters	042	3	3	13					1	1	0.5	0.49	No	NO	Visual inspection and Cleaning	
=P1.WT.F2	AC transformer neutral bus Arrester	042	1	3	13					1	1	0.5	0.16	No	NO	Visual inspection and Cleaning	
=P1.W1.F(1,2)	AC converter bus Arresters	042A	6	3	13					1	1	0.5	0.98	No	NO	Visual inspection and Cleaning	
=P1.WT.F(3,4)	AC converter bus Arresters	042A	6	3	13					1	1	0.5	0.98	No	NO	Visual inspection and Cleaning	
=P1.WP(1,2).F1	DC bus Arrester	044	2	3	13					1	1	0.5	0.33	No	NO	Visual inspection and Cleaning	
=P1.WP(1,2).F2	DC bus Arrester	044	2	3	13					1	1	0.5	0.33	No	NO	Visual inspection and Cleaning	
=P1.WP(1,2).F3	DC bus Arrester	044	2	3	13					1	1	0.5	0.33	No	NO	Visual inspection and Cleaning	
=P1.U.F(1,2)	DC HF filter resistor arrester	049	2	3	13					1	1	0.5	0.33	No	NO	Visual inspection and Cleaning	
=P1.WT.Q1	AC Breaker (3-phase)	051	1	2	20	1					1	1	0.50	No	NO	Visual inspection	
			1	15	2	1				1	2	2	0.20	No	NO	Preventive maintenance after 15 year or 5000	
			1	30	1	1				1	2	4	0.20	No	NO	Major overhaul after 30 year or 10000 operations	
=P1.WT.Q2	AC PIR by-pass breaker (3-phase)	051A	1	2	20	1					1	1	0.50	No	NO	Visual inspection	
			1	15	2	1				1	2	2	0.20	No	NO	Preventive maintenance after 15 year or 5000	
			1	30	1	1				1	2	4	0.20	No	NO	Major overhaul after 30 year or 10000 operations	
=P1.W1.Q21	AC Earthing Switch	052	3	3	13	1					1	2	1	1.95	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism
=P1.WT.Q11	AC disconnector with one earthing earthing switch (3-phase)	052	1	3	13	1					1	2	1	0.65	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism
=P1.U.(VNA,VNB,VNC,VPA,VPB,VPC).Q21	Valve hall earthing switch	054	6	3	13	1					1	2	1	3.90	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism
=P1.WP(1,2).Q11	DC Disconnector with two Earthing Switches	058	2	6	6	1					1	2	1.5	0.90	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism

=P1.U.Q(21,22) =P1.WP(1,2).Q21	DC Earthing Switches	058	4	6	6		1				1	2	1.5	1.80	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism
=P1.WT.T2	AC Current Transformer	071	3	3	13					1		1	0.5	0.49	No	NO	Inspection and cleaning
=P1.WT.T3	Capacitive Voltage Transformers (CVT)	073	3	3	13					1		1	1.5	1.46	No	NO	Inspection for Oil leakage, Damage of insulators, Connection of secondary wire and Cleaning of porcelain
=P1.W1.T1	AC converter bus Capacitive Voltage Transformers (CVT)	073	3	3	13					1		1	1.5	1.46	No	NO	Inspection for Oil leakage, Damage of insulators, Connection of secondary wire and Cleaning of porcelain
=P1.WP(1,2).T(1,3)	Direct Voltage Divider	075	4	3	13					1		1	1.3	1.69	No	NO	Inspection and cleaning
=P1.U.(VNA,VNB,VNC,VPA,VPB,VPC).T1	DC Optical Current Transformer (OCT)	078A	6	3	13					1		1	1	1.95	No	NO	Inspection and cleaning
=P1.WP(1,2).T2	DC Optical Current Transformer (OCT)	078A	2	3	13					1		1	1	0.65	No	NO	Inspection and cleaning
=P1.U.(VNA,VNB,VNC,VPA,VPB,VPC).Z(1,2)	DC High Frequency Damping Circuit	099A	12	3	13					1	1	2	3	23.40	No	NO	Visual inspection, Cleaning, Check of torque
<b>ABBREVIATION</b>										<b>Total Man-Hours</b>				<b>205.01</b>			
	<b>TBM</b> - Time Between Maintenance									<b>Man-Hours - Pole Operation</b>				(PO)	<b>0.00</b>		
	<b>PC</b> - PC is a Control Specialist									<b>Man-Hours - No Operation</b>				(NO)	<b>205.01</b>		
	<b>PB</b> - PB is a Breaker Specialist																
	<b>PX</b> - PX is a Transformer Specialist																
	<b>PV</b> - PV is a Valve Specialist																
	<b>PM</b> - PM is a Mechanic																
	<b>PE</b> - PE is an Electrician																
	<b>PG</b> - PG is a helper																
	<b>OP</b> - Operation																
	<b>NO</b> - No Operation																

**List of Maintenance Activities - 1JNL316869**

This list presents recommended maintenance activities for main circuit equipment as input for Reliability, availability and maintainability report

Project Name: Northern Pass Transmission

Station Name: Franklin

Life time (year)

40

Item Designation	Item Description	RS No.	No. Of Items	TBM (Year)	No. maint. during life time	PC	PB	PX	PV	PM	PE	PG	No of Crew	Duration/ Item(Hour)	Man_hour/ Year	Energized	Operation	Brief Description
=P1.U.(VNA,VNB,VNC,VPA,VPB,VPC).CE 1...CE34	Valve Cell	001	204	1	40				1		1		2	0.227	92.62	No	NO	Visual inspection for water drops, water leakage, damaged capacitors, damaged components in IGBT modules
			204	5	8				1		1		2	0.139	11.34	No	NO	Visual inspection of electrodes in cooling system
			1	1	40					1			1	2	2.00	No	NO	Check hand operated valves (Valve cooling system)
=P1.WT.T1	Power Transformer , 1phase 3 winding	002A	3	1	40			1			1		2	2	12.00	No	NO	Inspection and Cleaning
			3	15	2			1				1	2	24	7.20	No	NO	Revision VLTC
=P1.W1.L(1,2)	Converter Reactors, Single Phase	003	6	1	40						1		1	1	6.00	No	NO	Inspection and cleaning
			6	15	2						1	1	2	3	1.80	No	NO	Painting
=P1.WP(1,2).L1	Smoothing Reactor, Air-insulated	005	2	1	40						1		1	1	2.00	No	NO	Visual inspection and Cleaning
			2	15	2						1	1	2	3	0.60	No	NO	Painting
=P1.WT.L1	AC transformer neutral grounding reactor	007	1	5	8						1		1	1	0.20	No	NO	Visual inspection and Cleaning
			1	15	2						1	1	2	2	0.20	No	NO	Painting
=P1.W1.X1	AC switchyard to converter reactor hall Wall bushing	009	3	3	13						1		1	0.75	0.73	No	NO	Cleaning of insulator surface
=P1.U.(VNA,VNB,VNC,VPA,VPB,VPC).X1	Converter reactor hall to valve hall Wall bushing	009	6	3	13						1		1	0.75	1.46	No	NO	Cleaning of insulator surface
=P1.W1.X1	DC Wall bushing	009	2	3	13						1		1	0.75	0.49	No	NO	Cleaning of insulator surface
=P1.W1.Z1.C1	HP 30 AC Filter Capacitors	011	3	3	13						1		1	0.5	0.49	No	NO	Visual inspection, Damage to finish Leaking capacitor units
			3	3	13						1	1	2	2	3.90	No	NO	Measurement of capacitance, Cleaning of insulators, Bushing and Capacitor banks
=P1.WP(1,2).C1	DC Pole Capacitor	014	2	3	13						1		1	0.5	0.33	No	NO	Visual inspection, Damage to finish Leaking capacitor units
=P1.U.C(1,2)	DC HF filter capacitor	016	2	3	13						1		1	0.5	0.33	No	NO	Visual inspection, Damage to finish Leaking capacitor units
=P1.W1.Z1.L1	HP 30 AC Filter Reactors	021	3	5	8						1		1	1	0.60	No	NO	Visual inspection and Cleaning
			3	15	2						1	1	2	2	0.60	No	NO	Painting



=P1.WT.L1	AC HF filter reactor	025A	3	5	8					1		1	1	0.60	No	NO	Visual inspection and Cleaning
			3	15	2					1	1	2	2	0.60	No	NO	Painting
=P1.U.L(1,2)	DC HF filter reactor	025B	4	5	8					1		1	1	0.80	No	NO	Visual inspection and Cleaning
=P1.WP(1,2).L2			4	15	2					1	1	2	2	0.80	No	NO	Painting
=P1.W1.Z1.R1	HP30 AC Filter Resistor	031	3	3	13					1		1	1	0.98	No	NO	Visual inspection and Cleaning
=P1.WP(1,2).R2	Discharge Resistor	036	2	3	13					1		1	1	0.65	No	NO	Visual inspection and Cleaning
=P1.WT.R1	Pre-Inserion Resistor	037	3	3	13					1		1	1	0.98	No	NO	Visual inspection and Cleaning
=P1.U.R(1,2)	DC HF Filter Resistor	039	2	3	13					1		1	1	0.65	No	NO	Visual inspection and Cleaning
=P1.WT.F1	AC transformer bus Arresters	042	3	3	13					1		1	0.5	0.49	No	NO	Visual inspection and Cleaning
=P1.WT.F2	AC transformer neutral bus Arrester	042	1	3	13					1		1	0.5	0.16	No	NO	Visual inspection and Cleaning
=P1.W1.F(1,2)	AC converter bus Arresters	042A	6	3	13					1		1	0.5	0.98	No	NO	Visual inspection and Cleaning
=P1.WT.F(3,4)	AC converter bus Arresters	042A	6	3	13					1		1	0.5	0.98	No	NO	Visual inspection and Cleaning
=P1.W1.Z1.F1	HP 30 AC Filter Arrester	043	3	3	13					1		1	0.5	0.49	No	NO	Visual inspection and Cleaning
=P1.WP(1,2).F1	DC bus Arrester	044	2	3	13					1		1	0.5	0.33	No	NO	Visual inspection and Cleaning
=P1.WP(1,2).F2	DC bus Arrester	044	2	3	13					1		1	0.5	0.33	No	NO	Visual inspection and Cleaning
=P1.WP(1,2).F3	DC bus Arrester	044	2	3	13					1		1	0.5	0.33	No	NO	Visual inspection and Cleaning
=S(3,4,5,6).WP(1,2).F1	DC bus Arrester	044	8	3	13					1		1	0.5	1.30	No	NO	Visual inspection and Cleaning
=P1.U.F(1,2)	DC HF filter resistor arrester	049	2	3	13					1		1	0.5	0.33	No	NO	Visual inspection and Cleaning
=P1.W1.Z1.Q3	AC Filter bank Breaker, Single phase unit	051	1	2	20		1					1	1	0.50	No	NO	Visual inspection
			1	15	2		1				1	2	2	0.20	No	NO	Preventive maintenance after 15 year or 5000 operations
			1	30	1		1				1	2	4	0.20	No	NO	Major overhaul after 30 year or 10000 operations
=P1.WT.Q1	AC Breaker (3-phase)	051	1	2	20		1					1	1	0.50	No	NO	Visual inspection
			1	15	2		1				1	2	2	0.20	No	NO	Preventive maintenance after 15 year or 5000 operations
			1	30	1		1				1	2	4	0.20	No	NO	Major overhaul after 30 year or 10000 operations
=P1.WT.Q2	AC PIR by-pass breaker (3-phase)	051A	1	2	20		1					1	1	0.50	No	NO	Visual inspection
			1	15	2		1				1	2	2	0.20	No	NO	Preventive maintenance after 15 year or 5000 operations
			1	30	1		1				1	2	4	0.20	No	NO	Major overhaul after 30 year or 10000 operations

=P1.W1.Z1.Q21	AC Earthing Switch	052	3	3	13		1				1	2	1.5	2.93	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism
=P1.W1.Q21	AC Earthing Switch	052	3	3	13		1				1	2	1	1.95	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism
=P1.WT.Q(11,12)	AC disconnecter with one earthing earthing switch (3-phase)	052	2	3	13		1				1	2	1	1.30	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism
=P1.U.(VNA,VNB,VNC,VPA,VPB,VPC).Q21	Valve hall earthing switch	054	6	3	13		1				1	2	1	3.90	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism
=P1.WP(1,2).Q4	Cable discharge resistor switch	055	2	2	20		1					1	0.5	0.50	No	NO	Visual inspection
			2	8	5		1					1	2	0.50	No	NO	Eextended inspection after 5000 operations
			2	16	2		1				1	2	6	1.20	No	NO	Overhaul after 10000 operations
=P1.WP(1,2).Q11	DC Disconnecter with two Earthing Switches	058	2	6	6		1				1	2	1.5	0.90	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism
=P1.U.Q(21,22) =P1.WP(1,2).Q21	DC Earthing Switches	058	4	6	6		1				1	2	1.5	1.80	No	NO	Lubrication of sliding surfaces, Lubrication of Cogs in gear of motor operating device, Cleaning of contacts, Functional check of motor operating mechanism
=P1.WT.T2	AC Current Transformer	071	3	3	13					1		1	0.5	0.49	No	NO	Inspection and cleaning
=P1.W1.Z1.T2	HP 30 AC Filter Current Transformer	072	3	3	13					1		1	0.5	0.49	No	NO	Inspection and cleaning
=P1.WT.T3	Capacitive Voltage Transformers (CVT)	073	3	3	13					1		1	1.5	1.46	No	NO	Inspection for Oil leakage, Damage of insulators, Connection of secondary wire and Cleaning of porcelain
=P1.W1.T1	AC converter bus Capacitive Voltage Transformers (CVT)	073	3	3	13					1		1	1.5	1.46	No	NO	Inspection for Oil leakage, Damage of insulators, Connection of secondary wire and Cleaning of porcelain
=P1.WP(1,2).T(1,3)	Direct Voltage Divider	075	4	3	13					1		1	1.3	1.69	No	NO	Inspection and cleaning
=P1.U.(VNA,VNB,VNC,VPA,VPB,VPC).T1	DC Optical Current Transformer (OCT)	078A	6	3	13					1		1	1	1.95	No	NO	Inspection and cleaning

=P1.WP(1,2).T2	DC Optical Current Transformer (OCT)	078A	2	3	13						1		1	1	0.65	No	NO	Inspection and cleaning
=S(3,4,5,6).WP(1,2).T1	DC Optical Current Transformer (OCT)	078A	8	3	13						1		1	1	2.60	No	NO	Inspection and cleaning
=P1.U.(VNA,VNB,VNC,VPA,VPB,VPC).Z(1,2)	DC High Frequency Damping Circuit	099A	12	3	13						1	1	2	3	23.40	No	NO	Visual inspection, Cleaning, Check of torque
ABBREVIATION											Total Man-Hours				208.48			
	TBM - Time Between Maintenance										Man-Hours - Pole Operation				(PO)	0.00		
	PC - PC is a Control Specialist										Man-Hours - No Operation				(NO)	208.48		
	PB - PB is a Breaker Specialist																	
	PX - PX is a Transformer Specialist																	
	PV - PV is a Valve Specialist																	
	PM - PM is a Mechanic																	
	PE - PE is an Electrician																	
	PG - PG is a helper																	
	OP - Operation																	
	NO - No Operation																	

Rev.	Prepared	Approved
Revision text		





REDACTED

### **Attachment 11.3**

#### **Phase II**

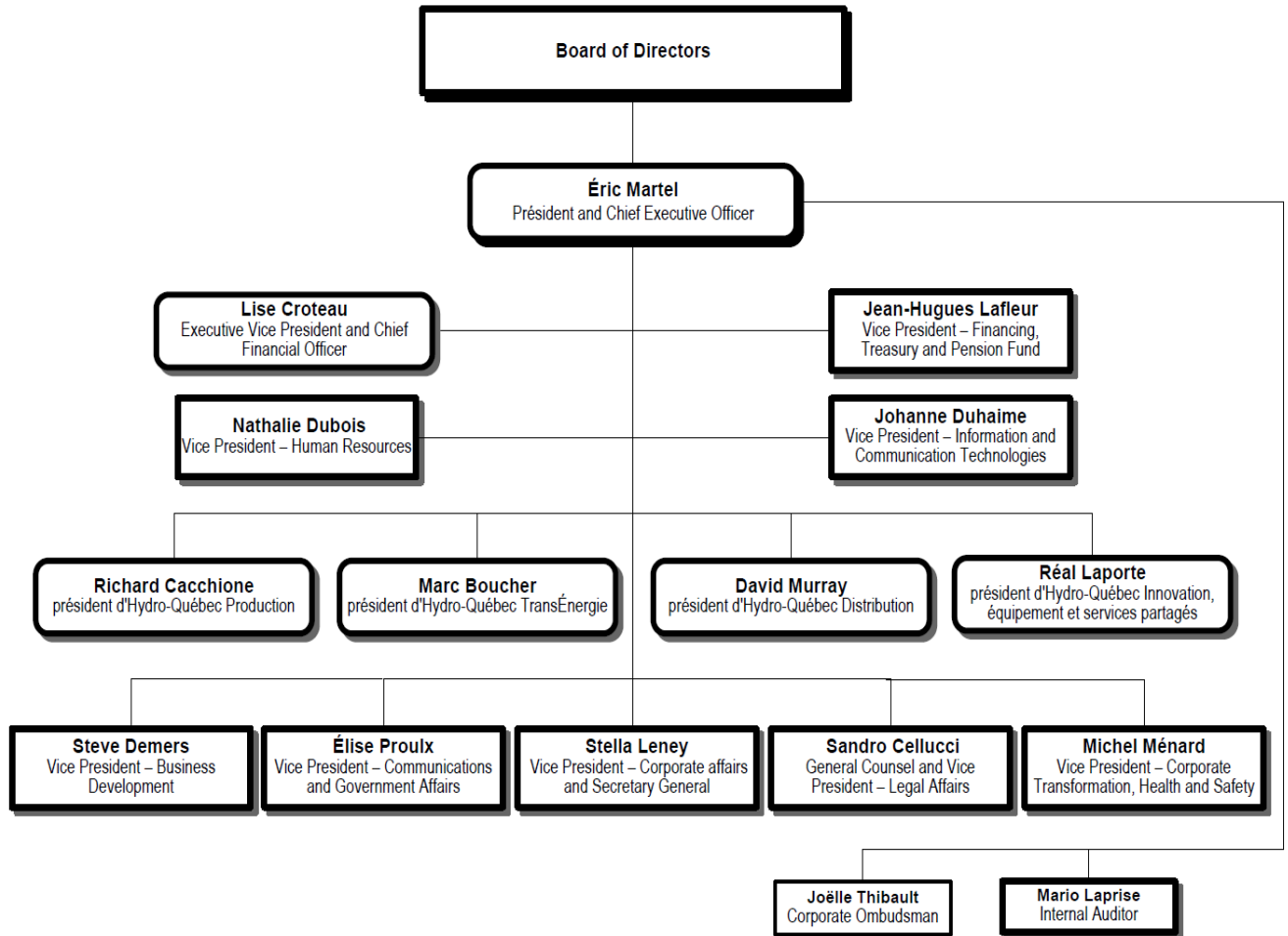
The Phase II transmission line is a very important interconnection for New England that delivers 1200-1400 MW or more on a regular basis. This line, which connects Radisson substation in Québec's James Bay region and Nicolet substation in the south of Québec with Sandy Pond substation just outside of Boston, was built beginning in the early 1980s through a partnership between Hydro-Québec and New England utilities in the New England Power Pool (NEPOOL). Two long-term energy contracts that solidified commitments to buy and sell energy were key to constructing these transmission facilities.

The Phase II project was a major step in HVDC technology development, because of its complexity. It is the world's first Multiterminal Direct Current power link. The length of the HVDC line was also ground-breaking at 932 miles and including the world's first 450 kV DC underwater link across the St-Lawrence river (3 miles).

For more than 20 years, the Phase II transmission line has performed with a high level of reliability and has enabled transmission of billions of kilowatt-hours of clean, renewable electricity between Québec and New England.

Many of the same issues that are creating challenges for New England today were evident in New England in the early 1980s and drove the development of this transmission line: the need to break the region's reliance on fossil fuels, environmental improvement goals, and the need for an economically competitive power supply.

## Attachment 11.4.1 Hydro Québec Executive Team



## Senior Management



**Eric Martel**

### President and Chief Executive Officer

Éric Martel took office as President and Chief Executive Officer of Hydro-Québec in July 2015. In this capacity, he is responsible for the company's strategic objectives. Mr. Martel immediately set out four priorities for Hydro-Québec: proactive communication, sustained growth of the company's activities, and improving customer service and productivity.

Prior to this appointment, Mr. Martel worked at Bombardier from 2002 to 2015. He held several senior management positions, including that of President, Bombardier Business Aircraft, where he managed some 12,000 employees throughout the world. He also served as President, Customer Services and Specialized and Amphibious Aircraft. Under his leadership, the Customer Services team expanded its international footprint, generating significant and sustained growth in revenue as well as improving customer satisfaction survey results. He also headed several operational activities.

During his career at Bombardier, Mr. Martel succeeded in implementing a solid quality culture throughout the organization, particularly in the course of his duties as Vice President, Quality, Achieving Excellence System and Transformation.

Before joining Bombardier, Mr. Martel worked for various high-profile international companies in the aerospace manufacturing sector, such as Pratt & Whitney and Rolls Royce, as well as for Procter & Gamble and Kraft Foods.

Éric Martel holds a Bachelor's degree in electrical engineering (1991) from Université Laval. He has been actively involved in Centraide of Greater Montréal since the early 2000s.





## **Lise Croteau, FCPA, FCA**

### **Executive Vice President and Chief Financial Officer**

Lise Croteau was appointed Executive Vice President and Chief Financial Officer of Hydro-Québec in 2015, after having served as Vice President – Accounting and Control since 2008. Her mandate includes orienting, developing and overseeing all financial, regulatory and management accounting activities, as well as financial planning, taxation, financial control and risk management. In addition, she is responsible for Hydro-Québec's financial statements and reports.

Learn more

From May to July 2015, Ms. Croteau also served as Acting President and Chief Executive Officer of Hydro-Québec, thus becoming the first woman to head the company. During this period, she represented Management on the Board of Directors.

Lise Croteau began her career in 1982 at the accounting firm Bélanger Hébert (today Raymond Chabot Grant Thornton). In 1985, she moved on to Charette, Fortier, Hawey/Touche Ross (today Deloitte), where she handled audit mandates. She joined Hydro-Québec in 1986, successively holding management positions in various fields of accounting. In 2004, she was appointed corporate controller—a first for women at Hydro-Québec. In this role, she oversaw the application of complex new accounting standards and was instrumental in their update, while also ensuring the implementation of strict corporate controls.

A chartered professional accountant since 1984, Lise Croteau holds a Bachelor's degree in Business Administration from the Université de Sherbrooke. In 2008, she was named a Fellow of the Ordre des comptables professionnels agréés du Québec (FCPA, FCA) in recognition of her exceptional contribution to the profession. In 2016, she ranked among Canada's Most Powerful Women: Top 100 Award Winners, a distinction bestowed by the Women's Executive Network (WXN) to honor the leadership skills and outstanding accomplishments of Canadian women from all walks of life. In addition to her executive functions, Ms. Croteau continues to be actively involved in training her staff, promoting gender equality and coaching women who aspire to management positions.

Ms. Croteau also lends her management and financial expertise to the community as chair of the Audit and Financial Administration Committee and a member of the Board of Trustees of the Montréal Museum of Fine Arts and a member of the Board of Directors of the Montréal Heart Institute Foundation.



## **Richard Cacchione**

### **President of Hydro-Québec Production**

In April 2005, Richard Cacchione was appointed President of Hydro-Québec Production. He joined Hydro-Québec in June 2002 as President of Hydro-Québec Équipement and was also President and CEO of the Société d'énergie de la Baie James (SEBJ) between 2003 and 2005.

[Learn more](#)

As President of Hydro-Québec Production, he directs all generation activities, including generating station operation and development projects. He is also responsible for electricity sales and trading on wholesale markets. He was previously in charge of engineering, procurement and construction activities for construction projects located south of the 49th parallel as President of Hydro-Québec Équipement, and for projects north of the 49th parallel as Chief Executive Officer of the Société d'énergie de la Baie James.

From 1999 to 2002, Richard Cacchione held positions in various industries in the new technologies sector. From 1992 to 1999, he worked for Aéroports de Montréal (ADM), where he started as Vice President of Finance and Administration, then became President and Head of Operations of the ADM-Capital subsidiary, followed by Executive Vice President of Operations and Marketing, and finally President of the company.

From 1984 to 1992, he worked for the Lavalin Group, initially as Director of Finance, then Director of Finance and Administration, followed by Vice President of Administration and Treasurer. Prior to 1984, he held various positions in companies such as Brown Boveri Canada, Équipements Rocbec, the Coopérative fédérée du Québec and Raymond Chabot Martin Paré.

Mr. Cacchione obtained an accounting degree from the Université du Québec à Montréal in 1978. In 2003, he was named a Fellow (FCGA) by CGA-Canada, the highest distinction awarded by the association. He holds a CGA diploma from the Ordre des comptables professionnels agréés du Québec (CPA) and the Certified General Accountants Association of Canada.

In addition to being a member of these associations, he sits on the boards of the Fondation de Polytechnique Montréal and the Fondation de l'Hôpital Maisonneuve-Rosemont. He is also actively involved in other charitable organizations.



## **Marc Boucher**

### **President of Hydro-Québec TransÉnergie**

Marc Boucher joined Hydro-Québec in June 2016 as President of Hydro-Québec TransÉnergie. This division operates and develops North America's most extensive power transmission system, which includes some 34,000 kilometres of lines. It also markets system capacity and manages power flows across Québec. Its assets total more than \$20 billion and its annual revenue exceeds \$3 billion.

[Learn more](#)

A mechanical engineer, Mr. Boucher has over 25 years of experience in transportation and aeronautics. After a few years of service in the Royal Canadian Air Force as the officer responsible for the maintenance of CF-18 aircraft, he moved on to Bombardier, where he held a number of strategic management positions. As Vice President, Operations, he was instrumental in establishing a presence in Mexico, where he managed 2,500 employees. From 2014 to 2016, he worked in Germany as the senior manager in charge of improving the project management and quality assurance functions for Bombardier Transportation. Over the course of his career, Mr. Boucher acquired solid experience in operations and organizational performance as well as the execution of complex, large-scale international projects.

Marc Boucher holds a Bachelor's degree in mechanical engineering from Université Laval (Québec, 1991) and a postgraduate diploma in aerospace engineering from the Canadian Forces School of Aerospace Technology and Engineering (1992).



## **David Murray**

### **President of Hydro-Québec Distribution**

David Murray took office as President of Hydro-Québec Distribution in September 2016. This Hydro-Québec division provides a secure supply of electricity to the Québec market by means of a distribution grid comprising more than 112,000 km of lines. The division has 6,000 employees serving 4 million customers throughout Québec.

[Learn more](#)

David Murray was previously Vice President – Information and Communications Technologies at Hydro-Québec since October 2015. In this capacity, he was responsible for activities related to information and telecommunication systems.

Mr. Murray has over 20 years of experience in large corporations, having worked for Bombardier, Flextronics, Nortel Networks and Rolls Royce. A dynamic and inspiring leader, he has played a pivotal role in bringing about organizational changes through the implementation of enterprise resource planning systems and other technological tools designed to increase efficiency and productivity.

Prior to joining Hydro-Québec, David Murray held a number of strategic management positions at Bombardier Aerospace, where he contributed to the creation of Bombardier Business Aircraft. From March 2014 to September 2015, he served as Vice President and General Manager responsible for the Learjet 70/75 programs and the Learjet plant in Wichita, Kansas. An executive member of the Aeronautical Industries Association of America and representative of the General Aviation Manufacturing Association, he also oversaw Bombardier's relations with Kansas government authorities.

He sits on the board of directors of Centraide of Greater Montreal and of Caisse Desjardins Hydro.

Mr. Murray holds a Bachelor of Business Administration (1992) from HEC Montréal.





## **Réal Laporte**

President of Hydro-Québec Innovation, équipement et services partagés

President and Chief Executive Officer of Société d'énergie de la Baie James

Réal Laporte was appointed President of Hydro-Québec Innovation, équipement et services partagés and confirmed in his position as President and Chief Executive Officer of the Société d'énergie de la Baie James in September 2016. Hydro-Québec's research institute (IREQ) was thus added to the business units already under his responsibility.

[Learn more](#)

Mr. Laporte was previously President of Hydro-Québec Équipement et services partagés and President and Chief Executive Officer of the Société d'énergie de la Baie James. In April 2005, he became responsible for construction and refurbishment projects for Hydro-Québec's generating and transmission facilities, and in January 2010 he also assumed responsibility for the company's shared services centre.

Since joining Hydro-Québec in 1988, he has been in charge of a number of jobsites, studies and infrastructure projects. He had previously held a variety of positions at different construction companies.

Réal Laporte holds a bachelor's degree in civil construction from the École de technologie supérieure and a master's degree in project management from Université du Québec à Montréal. He has over 30 years' experience in management and the development of large-scale projects.



## **Johanne Duhaime**

### **Vice President – Information and Communications Technologies**

Johanne Duhaime was appointed Vice President – Information and Communications Technologies at Hydro-Québec in September 2016. In this role, she is responsible for the activities related to information and telecommunication systems.

[Learn more](#)

In January 2016, Ms. Duhaime was appointed Director – ICT Governance, and her responsibilities included the project portfolio, corporate architecture, guidelines, technology monitoring and accountability regarding information and communications technologies.

Ms. Duhaime has over 30 years of experience in information technologies and operations in large corporations. She was previously Vice-President, IT Delivery Management for the Personal, Business, Marketing and Operations group at National Bank, and she has held several management positions at Cognicase and Hydro-Québec.

An experienced manager, Ms. Duhaime has led large work teams and prioritized improved process efficiency and streamlined work methods. She has also headed several major technological projects, contributing specifically to the contract negotiation with service providers and the restructuring of major transactional systems.

Ms. Duhaime holds an Executive MBA from UQAM and a certificate in business administration from McGill University.

*Coming soon*



**Élise Proulx**

**Vice President – Communications and Government Affairs**

Élise Proulx was appointed Vice President – Communications and Government Affairs at Hydro-Québec in January 2017. In this capacity, she is in charge of internal and external communications, public and government affairs, marketing and community relations.

[Learn more](#)

A seasoned manager with more than 20 years of experience, Ms. Proulx joined Hydro-Québec in 2013 as Director – Communications. Prior to that, she ran her own public relations firm, where she soon built an enviable reputation for her leadership, team spirit and intellectual rigor. She advised numerous decision-makers in various areas of the public and private sectors, including culture, luxury goods and customer service, as well as several Québec municipalities and regional county municipalities. Before setting up her own business, she managed the communications department at Hydro Ottawa and served as spokesperson and strategic advisor at Hydro-Québec.

Élise Proulx holds a Bachelor's degree in communications (public relations) from the Université du Québec à Montréal (UQAM) and an Executive MBA from UQAM's School of Management. She is also an accredited sommelier, for her own enjoyment. She sits on the boards of the Canadian Electricity Association, Montréal International and the Orchestre symphonique de Montréal.

[Reduce](#)



**Stella Leney, Ad. E.**

**Vice President – Corporate Affairs and Secretary General**

Stella Leney was appointed Vice President – Corporate Affairs and Secretary General at Hydro-Québec in January 2017. In this capacity, she is notably in charge of ethics, access to information, environmental issues, sustainable development and document management. She also provides governance oversight and support for the activities of the Board of Directors and Board committees as well as Hydro-Québec subsidiaries. In addition, Ms. Leney is Chair of the Board of Directors of the *Fondation Hydro-Québec pour l'environnement*.

[Learn more](#)

Ms. Leney joined Hydro-Québec in 1982. Until 1993, she worked in environmental law and acted as a liaison with government agencies. During that time, she was also the company's spokesperson for various hydroelectric projects. In 1993, Ms. Leney became Assistant Secretary of Hydro-Québec.

From 2004 to 2016, Ms. Leney also served as General Manager – Environment and Corporate Affairs. Her duties included supervising environmental matters, managing Hydro-Québec's corporate secretariat and overseeing access to information, ethics and the protection of personal information.

Stella Leney obtained an undergraduate law degree from the *Université du Québec à Montréal* in 1978 and a degree in administration from McGill University in 1982. She also earned certification from the Institute of Corporate Directors in June 2008. She is a member of the Québec Bar and was awarded the title of *Lawyer Emeritus (Advocatus Emeritus)* in 2016.

Ms. Leney is Chair of the Board of Directors of *Théâtre d'Aujourd'hui*. She also sits on the boards of the *Institut Hydro-Québec en environnement, développement et société* at *Université Laval*, the Québec Business Council on the Environment and the Space for Life Foundation.

[Reduce](#)





## **Jean-Hugues Lafleur**

### **Vice President – Financing, Treasury and Pension Fund**

Jean-Hugues Lafleur was named Vice President – Financing, Treasury and Pension Fund in September 2008. He joined Hydro-Québec in 1991 where he has held different management positions.

[Learn more](#)

Mr. Lafleur holds a Bachelor's degree in Administration from the Université du Québec à Hull and a Master's degree in Finance from the Université de Sherbrooke.

He began his career as a securities broker with the firm Lévesque Beaubien (now National Bank Financial). In the late 1980s, he was also a lecturer in portfolio management at the Université du Québec à Hull.

Following his arrival at Hydro-Québec, he held a number of finance-related positions, including responsibility for Commodities Risk Management. In 1996, he became Manager – Financial Risk Control. Two years later, he was appointed Director – Financial Markets and Assistant Treasurer with the Direction principale du financement et de la trésorerie. In 2007, he became Corporate Treasurer, followed by his appointment in September 2008 as Vice President – Financing, Treasury and Pension Fund. In this capacity, he is responsible for corporate financing, treasury operations and the Hydro-Québec pension fund, as well as the information technologies that support financial and accounting applications.

He is also Chairman of the Board and President and Chief Executive Officer of Hydro-Québec CapiTech, a wholly owned subsidiary of Hydro-Québec.

Mr. Lafleur has been a member of the board of Jeunes entreprises du Québec since 2005. He also chaired the 2009 fundraising campaign of the Fondation Ressources-Jeunesse.



## **Michel Ménard**

### **Vice President – Corporate Transformation, Health and Safety**

Michel Ménard was appointed Vice President – Corporate Transformation, Health and Safety at Hydro-Québec in January 2017. In this capacity, he is in charge of spearheading the transformation of the corporate culture and is also responsible for workplace health and safety. [Learn more](#)

Mr. Ménard joined Hydro-Québec in 1978 as Internal Auditor – Projects and Construction. He then went on to hold a variety of positions within the company, including Accounting Manager, Control Manager, Operations Auditing Manager, Operations Director in the Bas-Saint-Laurent region, Acting Vice President – Distribution and Customer Services – Richelieu Region, Director – Customer Service Expertise and Support, Director – Customer Service Projects and Development, International Project Director for Hydro-Québec Distribution, Territory Director for the **Centre de services partagés** (Hydro-Québec's shared services unit) and Real Estate Director.

Mr. Ménard also fulfilled various mandates abroad on behalf of Hydro-Québec International. He notably served as Assistant Accounting Manager for national electricity company **Électricité de Guinée** and General Director of Fortuna, in Panama.

From 2007 to 2016, Mr. Ménard was Senior Director – Shared Services. He was in charge of providing procurement, real estate management and materials management services, as well as transportation, food and accommodation services, to all Hydro-Québec divisions and corporate units. His primary mandate was to develop a partnership with these internal clients to enhance their financial performance while allowing them to focus on their core business. From 2010 to 2017, he also sat on the boards of the real estate companies held by Hydro-Québec's pension fund.

Michel Ménard received a Bachelor's degree in business administration from the **École des hautes études commerciales de Montréal (HEC Montréal)** in 1976.



## **Steve Demers**

### **Vice President – Business Development**

Steve Demers was named Vice President – Business Development in December 2015. In this capacity, he is in charge of the activities pertaining to Hydro-Québec's international presence. Mr. Demers joined Hydro-Québec in September 2011 as Senior Director – Energy Trading Floor – Wholesale Markets.

[Learn more](#)

Mr. Demers previously acted as Senior Director and Treasurer (Montréal) at Banque Nationale du Canada (BNC), a position he held since 2004. From 2002 to 2004, he worked General Manager of BNC's London, England office. From 1998 to 2002, he held the position of Foreign Exchange Director at BNC's headquarters in Montréal. In 1997 and 1998, Mr. Demers worked at State Street Bank and Trust Company, where he acted as portfolio manager.

Mr. Demers holds a Master's Degree in Management Sciences with a specialization in Finance from HEC Montréal, as well as a Bachelor's Degree in Business Administration from Laurentian University. He also holds a diploma from the Association Cambiste Internationale (ACI).

[Reduce](#)



## **Mario Laprise**

### **Internal Auditor**

Mario Laprise has been Hydro-Québec's Internal Auditor since September 2014.

[Learn more](#)

Mr. Laprise has an extensive background in security and governance, and over 25 years of management experience.

From 1979 to 2005, he worked for the Sûreté du Québec, where he was involved in implementing anti-organized crime structures and strategies. Among other achievements, he spearheaded Opération Carcajou in Montréal and Québec as well as Opération Printemps 2001, which he directed as provincial coordinator in the fight against organized crime. This operation mobilized nearly 2,000 police officers and led to the arrest of some 150 members of organized crime groups.

From 2005 to 2012, Mr. Laprise was head of industrial security at Hydro-Québec, where he was instrumental in deploying a host of measures to maintain the security of employees and corporate assets.

In 2012, Mr. Laprise was appointed director general of the Sûreté du Québec. In this capacity, he was responsible for managing a workforce of over 8,000 people while ensuring the protection of citizens and their property as well as the State and its resources. He also took part in overseeing large-scale operations, such as those organized in connection with the tragedies that occurred in Lac-Mégantic and L'Isle Verte. In addition, he worked closely with l'Unité permanente anticorruption (UPAC), the Commission of Inquiry on the Awarding and Management of Public Contracts in the Construction Industry (Charbonneau Commission) as well as various government agencies and police departments.

Mr. Laprise is renowned for his integrity and efficiency. His in-depth knowledge of Hydro-Québec and its safeguards, as well as his graduate work in public administration, are assets that he puts to good use in fulfilling his responsibilities as Internal Auditor.

[Reduce](#)





## **Joëlle Thibault**

### **Corporate Ombudsman**

Joëlle Thibault has served as Hydro-Québec's Corporate Ombudsman since May 1, 2012.

[Learn more](#)

A lawyer since 1989, Joëlle Thibault holds a Master of Advanced Studies in Commercial Law and a PhD in Law, with a specialization in amicable settlement of disputes from the **Université Paris II** (France). She also obtained a certificate in International Contract Law from the University of Cambridge (Great Britain).

Ms. Thibault articulated at the International Court of Arbitration of the International Chamber of Commerce in Paris and has worked for various arbitrators and mediators in Europe. From 2000 to 2001, she was Vice President at eResolution, a company specializing in the management of online negotiation, mediation and arbitration services for conflicts involving consumption, insurance and commercial transactions.

Between 2001 and 2010, Ms. Thibault worked as Ombudsman for clients and Vice President of Human Resources at the National Bank of Canada. In this capacity, she negotiated various agreements and resolved multiple conflicts.

In addition to her part-time position as Hydro-Québec's Corporate Ombudsman, Ms. Thibault takes on private mandates in mediation, training and complaint management process optimization.

## **Attachment 11.4.2**

### **JDA Project Management Team (Roles and Curricula Vitae)**

The following four people serve at the Project Board established under the Joint Development Agreement:

- Lead Board Member HQT: Benoît Delourme
- Board Member HQT: Hélène Marchand
- Project Manager HQT: Vincent Fihey
- Lead Board Member NPT: Jerry Fortier
- Board Member NPT: Kenneth Bowes
- Project Manager NPT: Brian Bosse

#### **Benoît Delourme (Lead Board Member – HQT):**

Benoît Delourme, Manager of the Bulk transmission system planning is responsible for managing all the planning studies and authorizations of Bulk transmission projects throughout the HQ TransÉnergie system. His recent accomplishments include the project "Chamouchouane Montréal" which consists of a new 248 mile 735 kV line and a new 735 kV substation for a total of CA\$ 1.3 billion. Employed by Hydro-Québec since 2010, he has more than 17 years of experience in the utility industry and holds a Bachelor of Science degree in Electrical Engineering from École Supérieure d'Électricité. He is a registered Professional Engineer in Québec.

#### **Hélène Marchand (Board Member – HQT):**

Hélène Marchand, Commercial Delegate in the Transmission services team at Hydro-Québec TransÉnergie, coordinates the interconnections requests that are developed between the province of Quebec and neighboring systems. She oversees the relations with transmission services customers and the neighboring utilities of New England and New Brunswick. She has more than 7 years of experience in the electricity industry in several commercial and strategic positions. She completed a Master degree in operational research from Hautes études commerciales de Montréal and holds a Bachelor degree of business administration again from Hautes études commerciales de Montréal.

#### **Vincent Fihey (Project Manager - HQT):**

Vincent Fihey, transmission planning engineer, joined Hydro-Québec TransÉnergie in 2003. He is responsible for the planning, engineering and permitting for the Québec portion of the Northern Pass project (Québec Line). He represents Hydro-Québec TransÉnergie on the Task Force on System Studies for the Northeast Power Coordinating Council (NPCC). He holds a Bachelor of Engineering degree in Electrical Engineering from McGill University and is a registered Professional Engineer in the province of Québec.

**Jerry Fortier (Lead Board Member - NPT):**

Jerry Fortier, Project Director, joined Eversource Energy in 2001, leads the siting/permitting, design, construction planning and construction execution of the Northern Pass Line. He has more than 33 years of experience leading, managing, and developing strategy for the successful outcome of major transmission capital projects governed within a regulated environment. His recent accomplishments include the Greater Springfield Reliability Project totaling \$718 million which included 35 miles of new 345 kV electric transmission line, 27 miles of upgraded 115-kV electric transmission lines, 3 major 345 kV Substation additions, 2 new 115 kV switching Stations, and 8 minor substation upgrades. He holds an Associate's degree in Electrical Engineering from the Wentworth Institute of Technology in Boston, Massachusetts, a Bachelor's of Arts degree in Organizational Management from Ashford University in Clinton, Iowa and a Master's Certification in Project Management from George Washington University in Washington, D.C.

**Kenneth B. Bowes (Board Member - NPT):**

Kenneth B. Bowes is the Vice President of Transmission Performance at Eversource Energy. He is responsible for the leadership and direction of Eversource Energy's transmission business. Bowes joined Eversource Energy in 1984 in the System Test Department and has served a number of engineering and management roles in that time, most previously as Vice President of Engineering. Bowes is the past Chairman of the Edison Electric Institute's (EEI) Transmission Committee and presently serves on the EEI Transmission and Security Committees.

**Brian Bosse (Project Manager – NPT):**

Brian J. Bosse is Engineering Project Manager for the Northern Pass. He has served in a variety of positions at Eversource Energy for more than 30 years, including substation engineering, Manager of Transmission Engineering, and Manager of Transmission Construction Test and Maintenance. Mr. Bosse has more than 31 years of experience in the electric utility industry, beginning his career as a substation engineer at United Illuminating in Connecticut. He received an Electrical Engineering Technology degree from the University of Maine, and is a registered Professional Engineer in the State of New Hampshire.

**Attachment 11.4.3**  
**NPT Core Project Management Team (Curricula Vitae)**

**NPT Management (Key Personnel)**

**Leon Olivier (Executive Vice President of Eversource Energy)**

Leon J. Olivier is Executive Vice President Enterprise Energy Strategy and Business Development at Eversource Energy. In his current position, he is responsible for the company's energy policy, long-range strategic plans, competitive position and business development. Specifically, Mr. Olivier oversees enterprise-wide energy policy, strategy, and development plans for addressing New England's energy market constraints, future natural gas and electric transmission regional investments, identifying Eversource Energy's requirements for Grid Modernization and establishing Eversource Energy's renewable energy strategy and supporting initiatives. Mr. Olivier received a Master of Business Administration degree from Northeastern University and received an honorary doctorate degree in Public Service from Bridgewater State College.

**William J. Quinlan (President Eversource Energy New Hampshire Operations)**

William "Bill" Quinlan has served as Eversource New Hampshire Operations President since 2013. He is responsible for ensuring the safe and reliable delivery of electricity to more than 500,000 Eversource customers in New Hampshire, as well as overseeing the construction, operation, and maintenance of Eversource's New Hampshire electricity infrastructure. Mr. Quinlan joined Eversource predecessor Northeast Utilities in 1984, and has extensive operations, policy, legal, regulatory, technology and business experience within the company. He is vice chairman of the electric industry's National Response Executive Committee and was formerly on the boards for Connecticut Yankee, Maine Yankee, and Yankee Atomic power companies.

**Jerry Fortier (Director Norther Pass Transmission Construction):**

See Attachment 11.4.1 for his curriculum vitae.

**Elizabeth Maldonado (Assistant General Counsel)**

Elizabeth A. Maldonado is Assistant General Counsel for Eversource Energy, responsible for state regulatory matters. Previously, Ms. Maldonado was in private practice with the firm of Vaglica, Meinhold and Maldonado in Colorado Springs and Denver, Colorado. She subsequently joined Eversource Energy in 1998 and has since held a number of legal and business roles, assuming her current role of Assistant General Counsel for state regulatory matters in 2016. She earned a Bachelor of Arts degree in Legal Studies from Quinnipiac University, a degree of Juris Doctor from the University of Connecticut School of Law, and a Master's of Business Administration from the University of Connecticut School of Business.



### **Mary-Jo Boisvert (Communications Director)**

Mary-Jo Boisvert is the Communications Director for the Northern Pass. She has served as a communications director at the company since 2007. Before leading communications efforts on Northern Pass, she was responsible for overseeing Public Service of New Hampshire's internal and external communications, including employee and media relations, advertising, corporate community relations and strategic issues management. Prior to joining Eversource, she was the director of public relations at a NH-based advertising and public relations firm. Mary-Jo holds a Bachelor of Arts degree in Communications from the University of New Hampshire, and is a graduate of both the Leadership New Hampshire and Leadership Manchester programs.

### **Additional Key Personnel (Extended NPT Team)**

#### **Catherine Finneran – Clean Energy and Environmental Outreach Lead**

Catherine Finneran is Director of Environmental Affairs at Eversource Energy. She manages 45 scientists, engineers and specialists focused on environmental protection, permitting for electric and gas transmission and distribution project siting, and regulatory compliance. She also serves as clean energy and environmental outreach lead for the Northern Pass project. Ms. Finneran has more than 20 years of experience, focused on clean energy, environmental protection, and economic development. Previously, she served as Senior Director of the Renewable Energy Generation Division at the Massachusetts Clean Energy Center (MassCEC), where she oversaw the design and implementation of rebate and grant programs targeted at growing the deployment of wind, solar photovoltaic, hydropower, and anaerobic digestion projects. Ms. Finneran received a Bachelor of Science degree in Environmental Design from the University of Massachusetts/Amherst.

#### **Marvin Bellis –Legal Lead**

Marvin P. Bellis, Esq. has served as Senior Counsel at Eversource Energy since 2007. He is responsible for managing legal issues associated with developing, siting and constructing large-scale energy infrastructure projects. In addition, he is responsible for addressing, or assisting clients in addressing, legal requirements for siting such projects, including federal, state and local permitting matters, development of risk management strategies, development of contracting strategies and negotiation of agreements, community outreach, adherence to prudent utility practice standards for cost recovery purposes, real estate acquisition and management, and claims negotiation and resolution. Before coming to Eversource, Mr. Bellis served as Legal Counsel for the Connecticut Conference of Municipalities where he managed all legal issues for the state's privately operated association of cities and towns. Previously, he was an Associate for Murtha Cullina LLP in Hartford, serving as regulatory attorney representing a wide variety of companies, municipalities, public utilities, and developers with respect to transactions, regulatory compliance, risk management, dispute resolution, permitting, enforcement actions, remediation, and environmental issue litigation. Mr. Bellis received a Juris Doctorate with Honors from the University of Connecticut Law School, and a Bachelor of Science in Political Science from Southern Connecticut State University.

**Brian Bosse –Engineering Lead**

See Attachment 11.4.1 for his curriculum vitae.

## **Attachment 11.5**

### **Eversource Energy Transmission Projects**

The following paragraphs describe Eversource Energy's recent large (> \$70 million) projects that have been successfully completed. Eversource Energy has also completed many smaller transmission projects, and can provide information about them on request.

#### **The Southwest Connecticut Projects**

The Southwest Connecticut (SWCT) Projects consisted of four interrelated projects designed to address serious reliability problems in the southwest Connecticut sub-area, where approximately 50% of the Connecticut energy load is located. In 2003, FERC identified SWCT as one of the nation's most severely congested regions. SWCT was the only part of the state that was not serviced by the 345 kilovolt (kV) system, largely because residents and public officials in this densely populated part of the state had avidly resisted new 345 kV projects, leading the load-serving utilities to resort to a series of 115 kV "patches" to keep up with growing load. By 2008, all four SWCT Projects had been sited, constructed, and placed in-service, ahead of schedule and under budget, both addressing reliability violations and reducing costly congestion charges for Connecticut customers. The SWCT projects won the 2008 Platts Global Energy Award for "Energy Construction Project of the Year" and the 2009 EEI Edison Award, which recognizes U.S. and international electric companies for outstanding leadership, innovation and advancement in the electric energy. This suite of projects consisted of:

##### ***The Bethel to Norwalk 345 kV Project***

The Bethel to Norwalk (B-N) Project provided the first phase of a new 345 kV loop, which extended the New England bulk power supply system into SWCT and the Norwalk-Stamford sub-area. The B-N project by itself increased transfer capability into both areas by providing an alternate path for power flow from the existing 115 kV network, and enabling the delivery of an additional 600 megawatts of electricity to SWCT and the region. During its first year of operation, the B-N project generated over \$150 million in congestion savings.

B-N was first proposed as a new, all overhead 345 kV line, approximately 20 miles in length. However, as Northern Pass is now doing, Eversource Energy overcame fierce public opposition to the project by responding to key concerns with innovative technology solutions. As ultimately revised, approved, and built, the B-N project entailed 8.6 miles of overhead construction, 9.7 miles of high pressure fluid filled (HPFF) underground cables, and 2.1 miles of underground cross linked polyethylene (XLPE) cable. At the time, HPFF was the technology of choice for land-based underground applications, and XLPE was considered to be an experimental application for voltages above 115 kV in the United States. However, XLPE had environmental and technical advantages over HPFF in many applications, and Eversource Energy's successful use of the technology in this trial application paved the way for its much more extensive use in the Middletown to Norwalk Project, discussed next, which completed the SWCT 345 kV loop. Now Northern Pass is proposing to use XLPE cable in an HVDC application in the project, in order to avoid traversing highly valued public forest land. The configuration of the B-N project was unusual in that it included two separate segments of

underground cables connected to overhead segments of a single transmission circuit. This "porpoising" configuration will also be used in the Northern Pass Project, with underground segments of the DC line at both its northern and southern ends.

The B-N Project was honored by the Edison Electric Institute with its first-ever Edison Award Finalist Commendation in 2007 and by "Utility Automation & Engineering T&D Magazine" as its 2006 Project of the Year.

### ***The Middletown to Norwalk 345 kV Project***

The Middletown to Norwalk (M-N) Project was a joint project of Eversource Energy and the United Illuminating Company, the other transmission owner (TO) serving SWCT. This project, which was placed in service in 2008, completed the new 345 kV loop into southwest Connecticut by providing a second transmission link into Norwalk, thereby providing the capability to transfer electricity to SWCT from both the north and the east, so that the transfers into the area can continue even if service on one "leg" of the loop is interrupted by an unplanned contingency. The completed loop facilitated the transport of electricity into the area, reduced the potential for 115 kV overloads, improved efficiency with reduced line losses, improved system voltage performance, reduced high levels of short circuit current and generally strengthened the entire New England electric grid by enhancing interconnections between SWCT and the rest of New England. The loop also unlocked existing generation in SWCT and enabled the siting of new generation in the region.

Because there was no existing overhead ROW available for much of the route, and acquisition of new ROW would have required the condemnation of many homes in a densely settled area, the TOs proposed to install 24 miles of underground cable in public streets. Technical considerations required the use of XLPE cable, and its success made Eversource Energy the unquestioned leader in extra high voltage applications of XLPE technology in the United States. Installation of that length of cable in public streets required close co-ordination and co-operation with the Connecticut Department of Transportation (CDOT), similar to that which NPT expects to provide to the New Hampshire DOT. The new M-N 345 kV line consisted of 45 miles of overhead and the 24 miles of underground cable (six miles of which were constructed by UI) and included 57 miles of reconstructed 115 kV line to facilitate 345 kV installation. The total of 69 miles of high-voltage transmission lines traversed 18 Connecticut municipalities. Extensive improvements to Eversource Energy substations and the construction of a major new substation by Eversource Energy were also required.

Eversource Energy expedited the 45 miles of overhead construction by stringing conductor from the air. Helicopters were first used by Eversource Energy to string transmission lines over wide bodies of water, rocky hills and in environmentally sensitive areas. The company found that the helicopter construction slashed work times for line-stringing from days to minutes. Helicopters rapidly stringing transmission lines from tower to tower in many settings enabled the company to finish sections of the routes months ahead of projected completion dates. Additionally, the project was completed with 2.4 million safe work hours and no major safety incidents.



### ***The Glenbrook Cables Project***

The Glenbrook Cables Project (GCP) consisted of two sets of 115 kV XLPE underground cables along an 8.7 mile route underneath roadways in a highly congested area of Fairfield County, close to New York City, together with extensive upgrades of substations in Norwalk and Stamford. The project needed to be placed into service following the completion of the B-N Project and prior to the M-N Project. As part of the SWCT suite of projects, the GCP extended the strong, reliable source of power resulting from the construction of the B-N Project's 345 kV line deep into the Norwalk-Stamford Sub-area, thereby bringing the benefits of these additional power supplies to the entire area west of Norwalk Substation, and in particular to the Stamford-Greenwich area. Installation of this project eliminated most violations of national and regional reliability criteria in this area. The project was energized ahead of schedule on November 11, 2008.

As it did in the M-N Project, Eversource Energy worked closely with the Connecticut CDOT in order to acquire necessary encroachment permits, minimize impacts on traffic flow and minimize construction-related congestion.

### ***The Long Island Cable Replacement Project***

This 11 mile underwater cable reliability project was energized on July 29, 2008, months ahead of schedule, improving reliability for customers during the summer peak load period. Working jointly with the Long Island Power Authority, Eversource Energy replaced seven fluid-filled transmission cables between Norwalk, Connecticut and Northport, New York with three new 138 kV XLPE cables, working jointly with the Long Island Power Authority. The replacement cables significantly strengthened reliability of service to both states while improving the environmental integrity of Long Island Sound.

The original seven underwater cables, laid in 1969, sat on the seabed, except in near-shore areas. Over the years, damage done by fishing vessels, working barges and ship anchors required costly and complex repairs to the cable, sometimes with lengthy service interruptions. The project was intended to achieve three significant benefits: 1) improve the circuit's reliability by making it less subject to lengthy interruptions from damage caused by anchors and other objects hitting the cables; 2) reduce future maintenance and repair costs; and 3) eliminate potential environmental concerns arising from the escape of insulating fluid whenever there is a break in the existing cables.

The LIRC Project used innovative technologies to secure the new cables underground, approximately six feet into the seabed, thereby protecting Long Island Sound. The project used the Skagerrak, one of the world's most technologically innovative vessels, to lay cable with a 7,000 ton capacity turntable and a state-of-the-art Global Positioning System. The GPS controlled the positioning of the ship while an underwater jet plow system used pressurized water to bury the cable below the seabed.

The new XLPE cable contains no fluid that could leak in the event of damage to the cable, and the cable is protected against external damage by its burial under the seabed. This project increased reliability for electric customers in New York and SWCT and improved the environmental integrity of Long Island Sound. It was energized on July 29, 2008, months ahead of schedule.

## **The NEEWS Projects**

The New England East-West Solution (NEEWS) is a comprehensive long-range plan developed by ISO-NE to address reliability problems throughout Southern New England, in large part by improving the capability of the 345 kV transmission system to move power from east to west and from west to east, across Massachusetts, Rhode Island, and Connecticut, and within Connecticut. NEEWS and its constituent projects have enhanced access to more competitively priced power and have provided environmental benefits through enhanced access to renewable energy, enabling retirement of high emission power plants.

After years of study, ISO-NE identified four interrelated major 345 kV projects to accomplish these goals: the Greater Springfield Reliability Project, the Rhode Island Reliability Project, the Interstate Reliability Project, and the Central Connecticut Reliability Project. The Rhode Island Reliability Project is located entirely in the service area of National Grid, U.S.A., and so was developed by National Grid. After multiple reevaluations in light of changing system conditions, The Central Connecticut Reliability Project has been subsumed into the Greater Hartford Central Connecticut 115 kV reliability projects, which Eversource Energy is now developing. The other two major NEEWS projects are discussed below:

### ***The Greater Springfield Reliability Project***

The Greater Springfield Reliability Project (GSRP) was developed and constructed by Eversource Energy operating companies in Connecticut and Massachusetts, and placed in service in 2013. Multiple siting and other approvals and agency consultations were required from both states, as well as a permit from the United States Army Corps of Engineers. The project entailed the construction of a new 345 kV transmission line along a 39 mile ROW between Bloomfield, Connecticut and Ludlow, Massachusetts, along with extensive upgrading of existing lines, and the construction or rebuilding of 13 substations. The GSRP team faced numerous unique siting, zoning and real estate acquisition issues due to multiple states' jurisdiction over the project, its route through eight communities in Connecticut and Massachusetts, and the active involvement of four different Native American Tribes in the Section 106 process.

Even though construction on GSRP was carried out during a period of historic storms including Superstorm Sandy and the blizzard of 2013, the pace of line work was accelerated during favorable weather conditions which helped to increase productivity and decrease costs. Over 2.6 billion man-hours were worked during a three-year period. Over 3,800 people employed throughout the duration of the project with 1,200 people at its peak. The project's stellar safety record (DART rate = 0.15) was ten times lower than the Bureau of Labor Statistics' national average rate.

Project costs were saved by contracting early with highly skilled contractors and making carefully timed purchases of commodities, including steel and copper products. Extensive planning was required to efficiently execute 700 outages over two years was required to build, test and place this project in service. Aided by efficient coordination of internal and contractor resources, the major construction on the project was finished both on time and under budget, despite challenging weather events.

In 2014, Engineering News Record designated GSRP as both the Best Energy / Industrial Project in New England and Best Overall Construction Project in New England.

### ***The Interstate Reliability Project***

The Interstate Reliability Project (Interstate) is a joint project of Eversource Energy and National Grid, U.S.A., involving the construction of approximately 75 miles of new 345 kV transmission lines and improvements to existing lines and substations in Connecticut, Rhode Island, and Massachusetts.

The Connecticut portion of Interstate consists approximately 36.8 miles of new 345 kV overhead line construction from Lebanon, Connecticut to the Connecticut – Rhode Island state border, where it interconnects with facilities being constructed by National Grid. The Connecticut portion of the project traverses 11 Connecticut towns and, for a distance of 1.4 miles federal lands administered by the U.S. Army Corps of Engineers. The Connecticut construction also included modifications to two existing substations. The permitting phase of the project required the co-ordination of siting proceedings in three states, with consistent outcomes of all three proceedings; and multiple state and federal environmental permits, consultations, and real estate consents. Construction of the Connecticut portion began in March 2014 and completed in 2015.

### **The Boston 345 kV Transmission Reliability Project (Stoughton Cables)**

This project was designed to address reliability needs in the Boston area and to increase the Boston import-transfer capability by approximately 1,000 MW. The project included the construction of a new 345 kV switching station in Stoughton, MA and the installation of three new underground 345 kV lines. Two of these lines extend for approximately 17 miles from Stoughton to the K Street Substation in South Boston, and the third is an 11 mile line from Stoughton to the Hyde Park Substation in Boston. The project was constructed and energized in phases, with the second phase complete in 2009.

### **The Lower SEMA Projects**

Required reliability improvements to the transmission system in the lower southeastern Massachusetts (SEMA) area, which includes Cape Cod, were separated into two phases. Phase 1 included projects that could be put in place in an expedited timeframe, so as to immediately address certain criteria violations and reduce dependency on high-cost generating units that were receiving "make whole" payments because they were needed to remain in-service to meet reliability requirements. Phase 2 included projects that would serve as the long-term solution for

reliable supply and would require state siting hearings. The short-term upgrades were completed in 2009, and the long-term upgrades were completed in 2014. The long-term improvements included a new, 18-mile 345 kV transmission line from the Carver substation to a new 345/115 kV substation in Barnstable, across the Cape Cod Canal. The Carver–Bourne section of the 345 kV line was constructed on new transmission support structures, and the Bourne–Barnstable portion used an existing 115 kV line built to 345 kV standards. The existing 345 kV Cape Cod Canal crossing was placed on separate towers and improvements to 115 kV facilities were also made.



REDACTED

**Attachment 13.1.2**  
**Project Labor Agreement**

**PROJECT LABOR AGREEMENT**  
**for the**  
**NORTHERN PASS TRANSMISSION PROJECT**

**July 21, 2017**

**PROJECT LABOR AGREEMENT  
FOR THE  
NORTHERN PASS TRANSMISSION PROJECT**

THIS PROJECT LABOR AGREEMENT FOR THE NORTHERN PASS TRANSMISSION PROJECT (hereinafter the "Agreement"), is entered into this \_\_\_\_ day of July 2017 (the "Effective Date"), by and between \_\_\_\_\_ (hereinafter the "Contractor"), its successors or assigns, and the signatory International Brotherhood of Electrical Worker Local Unions 104 and 490, each acting in its own behalf and on behalf of its respective affiliates and members (hereinafter collectively called the "I.B.E.W. Local Unions"). Contractor and the I.B.E.W. Local Unions are hereinafter referred to individually as a "Party" and collectively as the "Parties."

Contractor has contracted or may contract with Eversource Energy Service Company, as agent for Northern Pass Transmission LLC (hereinafter "Owner"), or its affiliates, to perform work associated with construction of the Northern Pass Transmission Project in New Hampshire, which consists of a 320 kV HVDC transmission line (comprised of underground and overhead segments), a converter terminal, an overhead 345 kV HVAC transmission line, and certain substation upgrades (hereinafter the "Work" or "Project"). Refer to Schedule B for a description of the specific details of the Project that will be subject to the terms of this Agreement.

The Parties understand that the Owner, at its sole option, may terminate, delay and/or suspend any or all portions of the Project at any time.

The Contractor shall monitor compliance with this Agreement, together with its subcontractors, assignees, or transferees, which have become bound hereto.

The term "Contractor" shall include all contractors and subcontractors of whatever tier engaged in on-site construction work within the scope of this Agreement.

The I.B.E.W. Local Unions, their assigns, subcontractors and transferees, and the Contractor agree to abide by the terms and conditions contained in this Agreement. As a condition of performance of work within the scope of this Agreement, all Contractors at all tiers must be signatory to the local Collective Bargaining Agreements ("CBAs") or other agreements shown on Schedule A attached hereto. (The CBAs and such other agreements may collectively be referred to as "Schedule A's.") This Agreement and Schedules A and B represent the complete understanding of the Parties. No practice, understanding, or agreement between a Contractor and the I.B.E.W. Local Unions, which is not explicitly set forth in this Agreement, shall be binding on any other Party unless endorsed in writing by Owner.

**ARTICLE I  
Purpose**

In certain instances, major projects can be carried out effectively and efficiently through the use of Project Labor Agreements, which assure that labor disputes are resolved without disruptions



resulting from strikes, lockouts or slowdowns and provide for enforceable guarantees that the project will be carried out in an orderly, efficient and timely manner without strikes, lockouts or slowdowns and with provisions protecting the wages, hours, working conditions and safety of those workers whose skills are required to complete such projects.

Further, it is recognized that the spirit of this Agreement was established in good faith and is intended to secure Union labor to perform the Work when possible. In order to achieve Project success, a well-defined alignment of contract labor sources has been developed and must be discussed and ultimately agreed upon with Union leaders. The following plan seeks to balance factors of safety, quality and consideration for local employment that will result in a contracting approach agreeable to Owner and the I.B.E.W. Local Unions.

The prioritization of labor sources is as stated below. It is explicitly acknowledged that excluded scope work, as listed in Article II, Section 7 of this Agreement, will be performed by the most appropriate and qualified contractors and, while not prohibited, is traditionally not performed by Union labor.

- (a) Priority 1): for all Work specifically bid under the provisions of this Agreement, Contractors on the Project will use NH-based Union workers, and, after the supply of such workers is exhausted, use MA-based Union workers, as the primary source for non-excluded substation, overhead and underground transmission line Work. It is understood that the supply of NH-based Union workers is limited and that MA-based Union workers will be necessary for the Work. The I.B.E.W. Local Unions will be contacted early in the contracting process to assess the availability of fully-qualified craft labor necessary to meet Project needs. The I.B.E.W. Local Unions will be expected to take timely and effective measures to cover any deficiencies through apprentice programs, training, and development of composite Work crews.
- (b) Priority 2): when Contractor elects to subcontract services and/or add labor resources, and when the supply of available, fully qualified NH and MA craft labor cited in Priority 1) above cannot fully meet requirements, the next labor source to be utilized will be non-Union NH companies, or non-Union companies from elsewhere utilizing predominantly NH labor. NH-based Unions shall assist Contractor in complying with this provision in accordance with Article II, Section 3, (a) and (b), and Article IX, Section 2.
- (c) Priority 3): if priority 1 and 2 sources are inadequate to meet Project needs, Contractors will work directly with NH-based Unions to staff the Project with the Union workers from "Neighboring States", specifically, Maine, Vermont and Rhode Island in accordance Article IX, Section 1.
- (d) Priority 4): when Contractor determines that it is necessary to meet Project needs, Contractor may supplement the ranks of Union craft workers with "travelers" from beyond Massachusetts and the Neighboring States. Owner must be notified early of this contingency, and Owner will retain final decision-making authority.

It is agreed that deviations from these priorities are allowed to address items such as performance related issues (i.e., quality, management and safety, etc.) and must be approved by the Project Relations Committee.

Accordingly, the Parties to this Agreement recognize that it is essential that the Work covered by this Agreement be done in an efficient and economical manner in order to secure optimum productivity and to eliminate any delays in the work. In recognition of the needs of the Project covered by this Agreement, and to maintain a spirit of harmony, labor-management peace, and stability during the term of this Agreement, the Parties agree to establish effective and binding methods for the settlement of all misunderstandings, disputes, or grievances that may arise. Therefore, the I.B.E.W. Local Unions agree not to engage in any strike (including sympathy strikes), slowdown or interruption of work and the Contractor agrees not to engage in any lockout.

It is agreed that the I.B.E.W. Local Unions that are a part of this Agreement may cross pre-established jurisdictional boundaries without discrimination contingent upon pre-approval from the Project Relations Committee and affected crafts.

## *ARTICLE II*

### *Scope of the Agreement*

Section 1. Scope of Agreement. This Agreement shall apply and is limited to all construction work under the direction of the Contractor and performed by those contractors of whatever tier, which have contracts awarded for such work on and after the effective date of this Agreement, for the Project as defined in Section 2 below.

Section 2. Project Scope. The Project is generally described as construction relating to installation of transmission lines, cables, and related substation work for the Project in New Hampshire, as included Schedule B.

Section 3. Award of Project Contracts.

- (a) Owner, Eversource Energy Service Company, and/or Contractor, as appropriate, has the absolute right to select any qualified bidder for the award of contracts on this Project without reference to the existence or non-existence of any agreements between such bidder and any Party to this Agreement; provided, however, only that such bidder is ready, willing and able to execute and comply with this Agreement, should it be designated the successful bidder.
- (b) It is agreed that all Contractors, of whatever tier, both Union and non-Union, who have been awarded contracts for the Work covered by this Agreement shall be required to accept and be bound by the terms and conditions of this Agreement and the appropriate Local Collective Bargaining Agreements.

- (c) Incorporated into this agreement by reference are the individual CBA's attached as Schedule A's.
- (d) Contractor shall provide to Owner the names, classifications and job locations of any employees who were former employees of Owner or any of its affiliates that Contractor desires to assign to perform work on behalf of Contractor and/or any subcontractor at least three (3) business days prior to those employees performing any work. Owner or Eversource Energy Service Company shall have the right to request Contractor to remove and replace (at no cost to Owner or Eversource Energy Service Company) any person determined by Owner or Eversource Energy Service Company in its discretion to be unqualified or unfit to perform the work.

Section 4. Contract Administration.

- (a) This Agreement is intended to provide close cooperation between management and labor. Eversource Energy Service Company will monitor compliance with this Agreement by all Contractors who, through their execution of this Agreement, together with their subcontractors or transferees, have become bound hereto. The I.B.E.W. Local Unions shall monitor compliance with this Agreement by all their affiliates who, through their execution of this Agreement; together with their subcontractors or transferees, have become bound hereto. The Contractor and the I.B.E.W. Local Unions, as well as the Owner and Eversource Energy Service Company, will assign representatives to this Project for the purpose of assisting the I.B.E.W. Local Unions, together with the Contractor, to complete the construction of the Project economically, efficiently, continuously and without interruptions, delays or work stoppages.
- (b) The provisions of this Agreement, including the Collective Bargaining Agreements, which are listed on and collectively designated as Schedule A, shall apply to the construction of the Work covered by this Agreement, notwithstanding the provisions of Local or International Agreements, which may conflict or differ from the terms of this Agreement. In the event that a Local Collective Bargaining Agreement expires during the course of the Project, all Parties to this Agreement shall continue to work under the terms of the expired Collective Bargaining Agreement until the I.B.E.W. Local Unions and the local employer organization reach an agreement on a new Collective Bargaining Agreement, whereupon the new Agreement shall become retroactively applied in accordance with the provisions of the applicable new CBA. Where a subject covered by the provisions of this Project Labor Agreement is also covered by any of the Collective Bargaining Agreements on Schedule A, the provisions of this Agreement shall prevail. Notwithstanding anything to the contrary herein, if the wage rates in a Schedule A Collective Bargaining Agreement are adjusted upwards during the term of this Agreement, then those adjusted (and higher) wage rates from the Schedule A Collective Bargaining Agreement shall prevail.

- (c) The Contractor and I.B.E.W. Local Unions that are signatories to this Agreement shall establish a Project Relations Committee which shall be composed of ten (10) members: The Contractor signatory to this Agreement shall appoint three (3) individuals, and the I.B.E.W. Local Unions signatories (acting as a whole) shall appoint three (3) individuals. Two (2) individuals shall be appointed by Owner. If applicable, Eversource Energy Service Company shall appoint two (2) individuals to the Committee, one (1) of whom shall be the facilitator of this Committee. If Eversource Energy Service Company does not appoint two (2) individuals to the Committee, then Owner shall appoint four (4) individuals to the committee, one (1) of whom shall be the facilitator of this committee. The voting members shall consist of individuals from the Owner, Eversource Energy Service Company, the Contractor, and the I.B.E.W. Local Unions.
- (d) The Project Relations Committee shall meet as required, but not less than once each quarter to review performance and the operation of this Agreement.
- (e) The purpose of this Project Relations Committee is as follows.
- 1) Improve communications between representatives of labor and management and engender cooperative and harmonious relations between labor and management performing work under this Agreement.
  - 2) Provide workers and Contractors with opportunities to study and explore new and innovative joint approaches to achieving organizational effectiveness. Example: Joint process to reduce worksite injuries.
  - 3) Provide a forum for open and honest discussion of problems confronting employees and Contractors (as well as subcontractors) in construction.
  - 4) Study and explore ways of increasing efficiency and productivity of both labor and management, and of eliminating potential problems.
  - 5) Enhance the involvement of workers in making decisions that affect their working lives, and to improve the quality of work life for the employees.
  - 6) Expand and improve working relationships between workers and managers.
  - 7) Identify issues and concerns between labor and management before they become disputes, and promptly assist in fairly resolving differences and disputes when they do arise.
  - 8) Seek to maintain a productive dialogue.
  - 9) The Project Relations Committee by means of the grievance procedure set forth in Article XIII shall administer and resolve questions and/or disputes arising from the interpretation of this Agreement. The Project Relations Committee will, upon its inception, establish the guidelines by which this process will take place. Such guidelines shall include a mechanism for periodic reports to Owner and Eversource Energy Service Company. The written agreement of signatory Parties will be required for changes to this Agreement.



Section 5. Binding Effect. This Agreement shall only be binding on the signatory Parties hereto and shall not apply to the parents, affiliates, subsidiaries, or ventures of any such Party.

Section 6. Limitations. Subject to Section 7 below, this Agreement shall be limited to work historically recognized as construction work, including, specifically, the site preparation and construction of transmission facilities necessary to complete the Project. Nothing contained herein shall be construed to prohibit, restrict, or interfere with the performance of any other operation, work, or function that may occur in or around the Project, or with any operations of Owner or Eversource Energy Service Company, or any of their contractors or other representatives.

Section 7. Exclusions. Items specifically excluded from the scope of this Agreement include, but are not limited to, the following:

- (a) Work of non-manual employees, including but not limited to, superintendents, supervisors, engineers, surveyors (except where surveyors are expressly covered by a current local Collective Bargaining Agreement under Schedule A hereof), inspectors, quality control personnel, quality assurance personnel, timekeepers, mail carriers, clerks and office workers, including messengers, guards, emergency medical and first aid technicians and other professional, engineering, administrative, supervisory and management employees.
- (b) Equipment and machinery owned, controlled, or operated by Owner or its affiliates.
- (c) All off-site handling of materials, equipment or machinery and all deliveries to and from the Project site, including drivers for concrete suppliers. However, on-site loading and unloading and the delivery of construction materials to the Project site, if traditionally and customarily performed by a trade, shall not be diverted from coverage under this Agreement for the purpose of avoiding this Agreement.
- (d) All on site testing, switching, and commissioning of equipment, by employees, and contractors of Owner or its affiliates, as necessary.
- (e) All work performed by contractors of Owner or its affiliates, provided that such persons are not to perform work covered within the scope of this Agreement and intended to be performed by trades workers under the terms of this Agreement.
- (f) Any work performed on or near, or leading to or into, the Project site by state, county, city or other governmental bodies, or their contractors; or by public utilities or their contractors and/or maintenance by Owner or its affiliates or its contractors.
- (g) Maintenance performed on leased equipment and supervision of such work.
- (h) All warranty functions and warranty work and supervision of such work, or work that could affect the integrity of the warranty, whether performed on-site or offsite.

- (i) Exploratory geophysical testing, and/or investigations.
- (j) Laboratory or specialty testing or inspections or monitoring activities not ordinarily done by the crafts.
- (k) Fabrication, manufacture, testing and purchase of materials and equipment, i.e., underground conductor, overhead conductor, substation equipment, overhead poles, other equipment brought to the site, etc.
- (l) Training, supervision, and testing, i.e., diagnostic/troubleshooting.
- (m) Environmental testing & sampling.
- (n) Equipment or material installations performed by a vendor as a condition of product warranty or partial or complete installation of specialty transmission class equipment such as underground cable, underground cable splices, sub-marine cable, transformer installation, fiber and telecommunications installations.
- (o) Maintenance, repair and operation of helicopters and/or other aircraft and Pilots thereof.
- (p) Service Vendors: The need for outside vendors is anticipated during this project. These vendors may include tire repair services, fuel deliveries, janitorial services, trash haulers, security services, porta-john services, etc. There may be other situations wherein services of outside vendors are required. It is understood that outside vendors performing services on site will not be required to become signatory to this Agreement.
- (q) Logging or tree clearing and removal operations.
- (r) On and off road access road construction.
- (s) Landscaping and final project restoration work activity.
- (t) Labor for placement of furniture, fixtures and similar equipment.
- (u) Labor for final cleaning.
- (v) Work to be self-performed by Owner or its affiliates with the exception of the defined scope of Work included in Schedule B unless otherwise noted.
- (w) All off-Project site visual and sound impact activities, signage, traffic control devices or other controls as may be required pursuant to state siting approvals.
- (x) Buildings erection including structural steel, building foundations and concrete flatwork, block work, concrete firewalls, building service mechanical systems (HVAC, plumbing, process piping), and building finishes.

Section 8. Applicability of Agreement. As areas and systems of the Project are inspected and construction tested by the Contractor and accepted by Owner, the Agreement shall not have further force or effect on such items or areas, except when the Contractor is directed by Owner or Eversource Energy Service Company to engage in repairs, modifications, check-out, and/or warranty functions associated with the construction of the Project and required by their contract(s) with the Owner or Eversource Energy Service Company.

Section 9. Termination, Delay or Suspension of the Project. It is understood by the Parties that the Owner, at its sole option, may terminate, delay, and or suspend any or all portions of the Project at any time.

Section 10. Contractor and I.B.E.W. Local Unions Liability. It is understood and agreed that the liability of any Contractor and the liability of the I.B.E.W. Local Unions under this Agreement shall be several and not joint. The I.B.E.W. Local Unions agree that this Agreement does not have the effect of creating any joint employment status between or among Owner, Eversource Energy Service Company, and/or Contractor.

### *ARTICLE III Union Recognition and Employment*

Section 1. Union Recognition. The Contractor recognizes the I.B.E.W. Local Unions as the sole and exclusive bargaining representatives of all craft employees working on facilities within the scope of this Agreement. The I.B.E.W. Local Unions acknowledge that under this Agreement neither the Owner nor Eversource Energy Service Company recognizes them as the exclusive collective bargaining representatives of any of its employees.

Section 2. Referrals. The I.B.E.W. Local Unions are recognized as a source of employment referrals. The appropriate I.B.E.W. Local Unions will be contacted and shall refer all applicants for employment to this Project according to the standards or criteria uniformly applied to any project in the area. In the event that the I.B.E.W. Local Unions are unable to fill any requisition for employees within a seventy-two (72) hour period after such requisition is made by the Contractor (Saturdays, Sundays and Holidays excepted), the Contractor may solicit and employ applicants from any other available source. The Contractor shall notify the I.B.E.W. Local Unions of employees hired by any source other than referral by the I.B.E.W. Local Unions.

Section 3. Referral Systems. Subject to the Contractor's right to call for a specific skill or ability, the job referral systems provided in the Collective Bargaining Agreements of the I.B.E.W. Local Unions set forth in Schedule A, hereto, will be in effect for the purpose of initial employment only. Such job referral system must be operated in a non-discriminatory manner and in full compliance with Federal, State, and Local laws and regulations that require equal employment opportunities and non-discrimination, and referrals shall not be affected in any way by the rules, regulations, by-laws, constitutional provisions or any other aspect or obligations of Union membership, policies or requirements and shall be subject to such other conditions as established in this Article.

Section 4. Competency. The Owner, Eversource Energy Service Company, and/or Contractor shall have the right to determine the competence of all employees, the right to determine the number of employees required and have the sole responsibility for selecting the employees to be laid-off consistent with this Agreement and the applicable Schedule A. The Owner, Eversource Energy Service Company, and/or Contractor shall also have the right to reject any applicant referred by any of the I.B.E.W. Local Unions.

Section 5. Union Security. All employees covered by this Agreement shall be subject to the Union Security provisions contained in the applicable I.B.E.W. Local Unions agreements, as amended from time to time, but only for the period of time during which they are performing on-site Project work. No employee shall be discriminated against at the Project site because of the employee's Union membership or lack thereof. In the case of unaffiliated employees and any other employees so electing, the dues payment will be received by the I.B.E.W. Local Unions as an agency shop fee and the employees' obligation shall be only, as permitted and required by law.

Section 6. Skilled Craftsmen. The I.B.E.W. Local Unions will exert their utmost efforts to recruit sufficient numbers of skilled craftsmen to fulfill the manpower requirements of the Contractor.

Section 7. Selection of Foremen. The selection of craft foremen and/or general foremen and the number of foremen required shall be entirely the responsibility of the Contractor. All foremen shall take directions exclusively from the designated Contractor. Except when the Contractor determines that it is not possible for a particular foreman to be a working foreman, the Contractor shall designate craft foremen as working foremen.

Section 8. Seniority. Individual seniority shall not be recognized or applied to employees working on the Project except as required in the applicable Schedule "A."

Section 9. Small Disadvantaged Businesses (SDB); Women Owned Small Businesses (WOSB); Service-Disabled Veteran-Owned Small Businesses (SDVOSB); Veteran Owned Small Businesses (VE) and businesses located in and qualified as Historically Underutilized Business Zones (HUB Zone); subcontracting Plan. The Parties recognize that the size and scope of the Project covered by this Agreement, the number of craftsmen and others expected to be employed in order to complete the work in a timely fashion, and the extended period of time during which the construction will be underway should provide significant employment opportunities for SDB, WOSB, SDV, VE and HUB Zone businesses. The business participation goals for the Project shall be in accordance with the applicable schedule included in the contracts between the Owner (or Eversource Energy Service Company) and Contractor.

#### *ARTICLE IV Union Representation*

Section 1. Access to the Project Site. Authorized and designated representatives of the I.B.E.W. Local Unions shall have reasonable access to the Project site, through established Contractor procedures, for the purpose of transacting business in connection with the job. Such



representatives shall not interfere with the work of workers on the Project site or cause unnecessary loss of time by the workers. Such representatives shall fully comply with the posted visitor and security and safety rules of the Project.

Section 2. Stewards.

- (a) Each of the I.B.E.W. Local Unions shall have the right to designate a working journeyman as a steward, and shall notify the Contractor of the identity of the designated steward prior to the assumption of such duties. Stewards shall not exercise any supervisory functions and will receive the regular rate of pay for their craft classifications. There will be no non-working stewards on the Project.
- (b) In addition to their work as an employee, the steward shall be allowed a reasonable amount of time to receive complaints or grievances and to discuss and assist in their adjustment with the Contractor's appropriate supervisor. Each steward shall be concerned with the employees of the steward's Contractor and, if applicable, subcontractors of that Contractor, but not with the employees of any other Contractor. The Contractor will not discriminate against the steward in the proper performance of Union duties.
- (c) The stewards shall not have the right to determine when overtime shall be worked. The Contractor shall assign overtime in accordance with the provisions of Section 7.5 below.
- (d) Contractors agree to notify the appropriate I.B.E.W. Local Union not less than twenty-four (24) hours prior to the layoff of a steward, except in cases of discipline or discharge for just cause. If a steward is protected against layoff by Schedule A, such provisions shall be recognized to the extent the steward possesses the necessary qualifications to perform the work required. In any case in which a steward is discharged or disciplined for just cause, the Contractor shall notify the I.B.E.W. Local Union involved immediately.

Section 3: Non-interference. On work where Owner personnel or personnel of other contractors not signatory to this Agreement may be working in close proximity of the construction activities, the I.B.E.W. Local Unions agree that the Stewards and individual workers covered under this Agreement will not interfere directly or indirectly with Owner or Eversource Energy Service Company personnel or the personnel of other contractors not signatory to this Agreement. In addition, there shall be no interference directly or indirectly by employees covered under this Agreement with onsite concessionaries, vendor or supplier deliveries on site since such deliveries shall not fall under this Agreement.

*ARTICLE V*  
*Management Rights*

Section 1. Management Rights. The Contractor retains full and exclusive authority for the management of its operation on the Project. The Contractor retains the right to (i) plan, direct

and control the workforce and the operation of all work, including the hiring, promotion, demotion, transfer, layoff, suspension, discipline or discharge for just cause of its employees; (ii) select foremen, determine the necessary qualifications of employees, and the size and make-up of each crew in conformity with Schedule B; (iii) assign and schedule work; (iv) promulgate work rules; (v) regulate the use of all equipment and other property of the Contractor, decide the amount of equipment to be used, the number of employees needed; and (vi) regulate overtime work in accordance with Section 7.5, the determination of when it shall be worked, and the number of employees engaged for such work. No rules, customs, or practices, which limit or restrict productivity, efficiency or the individual and/or joint working efforts of employees shall be permitted or observed. The Contractor shall have the right to change or shift an operating engineer to as many pieces of equipment as is reasonable and safe, including back to his original piece of equipment as in conformity with Schedule B. The Contractor may utilize any methods or techniques of construction. In case of a conflict between the terms of this Agreement and the terms of the Collective Bargaining Agreements from Schedule B, the terms of this Agreement shall prevail.

Section 2. Choice of Materials. There shall be no limitation or restriction upon the Contractor's choice of materials or design, nor, subject to the principle of legitimate work preservation set forth in the following sentence, upon the full use and installation of equipment, machinery, package units, pre-cast, pre-fabricated, pre-finished, or pre-assembled materials, tool, or other labor-saving devices. Except as provided in Section 4.7 above, the on-site installation or application of such items shall be performed by the craft having jurisdiction over such work: provided, however, it is recognized that other personnel having special talents or qualification may participate in the supervision, check-off or testing of specialized or unusual equipment or facilities.

Section 3. New Technology and Devices. It is recognized that the Contractor will initiate the use of new technology, equipment, machinery, tools and/or labor saving devices and methods of performing work from time to time during the Project. Each of the I.B.E.W. Local Unions agree that it will not in any way restrict the implementation of such new devices or work methods. If there is any disagreement between the Contractors and the I.B.E.W. Local Unions concerning the manner or implementation of such device or method of work, the implementation shall proceed as directed by the Contractor, and the I.B.E.W. Local Unions shall have the right to grieve and/or arbitrate the dispute as set forth in Articles XIII and XIV of the Agreement.

Section 4. Transfer of Employees. The Contractor shall have the right to transfer certain key employees and a percentage of each crafts work force to the Project in accordance with the Schedule B's for each craft, or as mutually agreed. It is understood that this provision is not intended to allow the Contractor to circumvent local hiring, but to allow him to utilize key employees within his organization. Therefore, the Contractor and the I.B.E.W. Local Union representative shall meet at a pre-job conference to determine the number of key non-supervisory employees to be transferred. Additionally, the Contractor may transfer employees working on the Project to other local jurisdictions within the Project.

## *ARTICLE VI Wages and Benefits*

Section 1. Wage Rates and Benefits. All employees covered by this Agreement shall be classified in accordance with work performed and paid at least the base hourly wage rates and benefits for those classifications as specified in Schedule A, subject to the language set forth in Article II, Section 4 (b) above. It is further agreed that all annual wage and fringe benefit package increases during the term of this Agreement shall apply to employees working under this Agreement.

*ARTICLE VII*  
*Hours of Work, Overtime, Shifts and Holiday*

Section 1. Work Week and Work Day. The regular workweek shall consist of forty (40) hours, consisting of an eight (8) hour work day, or a ten (10) hour work day for four (4) consecutive work days, in each case Monday through Friday. There shall be no guarantee of the number of hours to be worked except as may be required under Schedule A. The standard workday shall consist of eight (8) consecutive hours of work, with one-half hour unpaid lunch break, with no overtime, or up to ten (10) consecutive hours of work, with one-half hour unpaid lunch break, and with no overtime. The standard workday, including unpaid lunch breaks, may be changed to accommodate job conditions on three (3) prior days' notice from the Contractor, subject to adjustment, pursuant to Section 4 below, or less notice as is mutually agreed upon. Starting time shall commence and quitting time shall occur at the employee's Reporting location. Certain work on the Project may be conducted during night shifts. The Contractor shall set a standard for workday start times prior to the commencement of work. This standard workday may be changed on three (3) days' notice. The Parties affirm their policy of a fair day's work for a fair day's wage, and the I.B.E.W. Local Unions agree to cooperate in the implementation and application of reasonable work rules intended to enforce this commitment.

Section 2. Suspension of Job. It shall not be a violation of this Agreement if the Contractor considers it necessary to suspend all or a portion of the job to protect the life and safety of any person. In such cases, employees will be compensated only for the actual time worked; provided, however, if the Contractor were to request employees to remain at the site and available for work, the employees will be compensated for the standby time at their base hourly wage rate.

Section 3. Shifts. The Contractor shall have the right to establish shift work arrangements for all or any portion of the work without overtime pay but with shift differential pay. Local Municipalities and regulators may impose restrictions on portions of the work to minimize impacts upon traffic flow and certain quality of life issues for nearby residents. Therefore, it may be necessary to schedule some of the work in nonstandard shifts. A night shift may be scheduled for four (4) ten (10) hour shifts at the discretion of the Contractor and the agreement by the I.B.E.W. Local Unions. All work in this schedule will be at straight time, subject to Section 4 below. All shifts shall work eight (8) hours for eight (8) hours pay or work ten (10) hours for ten (10) hours pay.

Section 4. Overtime. All hours worked in excess of eight (8) hours per day or ten (10) hours per day, pursuant to Section 3, shall be paid in accordance with the attached Schedule A, except

as provided elsewhere in this Agreement. There shall be no pyramiding of overtime pay. On operations such as dewatering, curing, and protection of concrete, all overtime pay shall be time-and-one-half with no special premium for Saturdays, Sundays or holidays. Contractor may establish crews covering twenty-four (24) hours per day seven (7) days per week on such operations.

Section 5. **Reporting Pay.** Any employee who reports for their work as scheduled and for whom no work is provided shall receive show up pay in accordance with their Schedule A provided the employee remains available for work. Procedures for prior notification of work cancellation for inclement weather shall be established by the Contractor and the I.B.E.W. Local Unions. Employees must provide a current telephone number to the Contractor for use in notification to qualify for reporting pay. Procedures for notification shall be established at a pre-job conference with the I.B.E.W. Local Unions and the Contractor.

Section 6. **Holidays.** The following seven (7) days shall constitute the recognized holidays within the terms of this Agreement: New Year's Day, Columbus Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. If any of the above holidays fall on Saturday, Friday shall be observed as the holiday. If any of the holidays fall on Sunday, Monday shall be observed as the holiday. Payment of holidays, if applicable, will be in accordance with Schedule A.

Section 7. **Meal Period.** The Contractor will schedule an unpaid meal period of not more than one-half (1/2) hour duration at the work location as close to the midpoint of a shift as practicable but in no event more than one hour before or after the midpoint of a shift. Contractor may, for efficiency of the operation, establish a schedule which coordinates the meal periods of two or more crafts. Meals are to be taken at the Project site.

#### *ARTICLE VIII Working Conditions*

Section 1. **Job Site Conditions.** All Project site working conditions, including rest periods, coffee breaks and work practices, shall be as determined by the Contractor.

Section 2. **Project Rules.** The Contractor shall establish such other reasonable Project rules as Contractor deems appropriate. Employees who, by virtue of their craft membership and coverage under an appropriate collective bargaining agreement, are made subject to such rules shall observe all rules and regulations.

Section 3. **Code of Excellence.** The Parties to this Agreement recognize that to meet the needs of customers, both employer and employee must meet the highest levels of performance, professionalism, and productivity. Each I.B.E.W. Local Union and NECA chapter shall implement a Code of Excellence Program that shall include the minimum standards as designed by IBEW and NECA and attached hereto as Exhibit VIII.

#### *ARTICLE/X Employment Opportunities*



Section 1. Composite Opportunities. The Parties recognize that the size and scope of the Project covered by this Agreement, the number of craftsmen and others expected to be employed in order to complete the work in a timely fashion, and the extended period of time during which the construction will be underway should provide significant employment opportunities for qualified residents of New Hampshire and Massachusetts. Notwithstanding the foregoing, prior to the I.B.E.W. Local Unions seeking labor from outside of New Hampshire and Massachusetts, the I.B.E.W. Local Unions agree to employ and exhaust similar craft labor resources from within all I.B.E.W. Local Unions that are a part of this Agreement and that have the ability and skills to perform the applicable work on the Project. It is agreed that the I.B.E.W. Local Unions that are a part of this Agreement may cross pre-established jurisdictional boundaries without discrimination contingent upon pre-approval from the Project Relations Committee and affected crafts. The I.B.E.W. Local Unions agree to cooperate with Contractor, including but not limited to providing Union craft information regarding home residences to Contractor, in order for Contractor to submit documentation to the Owner on a quarterly or as requested basis regarding the number of local employees.

Section 2. Non Union Ooomtunities. The Parties recognize that the Owner's intent is to employ New Hampshire and then Massachusetts labor to the fullest extent possible. Once all skilled and qualified craft Union labor from New Hampshire and then Massachusetts is exhausted, the Contractor will seek to engage in-state non-Union subcontractors and labor to support the Project's needs with the assistance of NH-based Unions and in accordance with Article II, Section 3, (a) and (b). If additional labor resources are required after exhausting the use of in-state non-Union subcontractors and labor, the need for additional labor resources will be met in accordance with the priorities established in Article I.

[Section 3. Apprentice Program . Recognizing the need to maintain continuing supportive programs designed to develop adequate numbers of competent workers in the New Hampshire and Massachusetts construction industry, Contractor will employ apprentices in their respective crafts to perform such work as is within their capabilities which is customarily performed by the craft in which they are indentured. The Contractor may utilize New Hampshire and Massachusetts apprentices and such other appropriate classifications as they are contained in the Collective Bargaining Agreements of the I.B.E.W. Local Unions identified in Schedule A of this Agreement, or any other training program established by mutual agreement of the Parties and governmental agencies that provides for training of individuals defined as minorities under applicable state law. The I.B.E.W. Local Union signatories will cooperate with Contractor to permit utilization of the maximum number of apprentices permitted by law.]

## *ARTICLE X*

### *Safety, Protection of Person and Property*

Section 1. Safe Working Conditions. In accordance with the requirements of the Occupational Safety and Health Act, it shall be the exclusive responsibility of each Contractor on the job site to ensure safe working conditions for its employees and their compliance with any Project safety rules as established by the Contractor, provided however, it is understood that the employees have an obligation as set forth in Section 2 below.

Section 2. Safe Performance of Work. Employees must use diligent care to perform their work in a safe manner and to protect themselves, other persons, and the property of the Contractor and Owner, and its affiliates. Failure to do so will be grounds for discipline, including discharge.

Section 3. Safety, Secmity, and Visitor Rules. Employees covered by the terms of this Agreement shall at all times while in the employ of the Contractor be bound by the safety, security and visitor rules as established by the Contractor and/or Eversource Energy Service Company in accordance with applicable State and Federal safety and health statutes and regulations.

Section 4. Apprentice Safety. In order to maintain exceptional safety standards, I.B.E.W. Local Unions, in conjunction with the Contractor, shall provide appropriate Journeyman to Apprentice ratios. These ratios shall be considered maximums. The I.B.E.W. Local Unions and Contractor each have the discretion to reduce the number of apprentice per journeyman as otherwise limited by law.

(a) Energized (hot) work activity-One Journeyman per two Apprentices.

(b) Non-energized work activity-One Journeyman per three Apprentices.

Once assigned, each apprentice must remain on the Contractor crew to which the apprentice is assigned for a minimum of one (1) year unless Contractor approves a shorter assignment period.

*ARTICLE XI*  
*No Discrimination*

Section 1. No Discrimination. The Contractor and I.B.E.W. Local Unions agree that they will not individually or collectively discriminate against any employee or applicant for employment because of any reason prohibited by law or regulations. It is recognized that special procedures may be established by joint agreement of the Parties to this Agreement and governmental agencies for the training and employment of persons who have not previously qualified to be employed on construction projects of the type covered by this Agreement. The Parties to this Agreement will make all good faith efforts to assist in the proper implementation of such orders, regulations, or agreements for the benefit of the populations within the jurisdiction of New Hampshire.

Section 2. Complaints. Any complaints regarding application of the provisions of Section 1 of this Article should be brought to the immediate attention of the involved Contractor for consideration and resolution, and to the attention of Owner and Eversource Energy Service Company.

Section 3. Masculine or Feminine Gender. The use of the masculine or feminine gender in this Agreement shall be construed as including both genders.

Section 4. Support for Veterans. Owner, Eversource Energy Service Company, Contractor and I.B.E.W. Local Unions are committed to supporting the entry of military veterans into the construction industry. The Contractor and I.B.E.W. Local Unions shall utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment ("Center"), and the Center's "Helmets to Hardhats" program. The Center will be used for assessment of aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, and help in maintaining a database of veterans qualified and interested in employment opportunities on the Project. To the extent allowed by law, the I.B.E.W. Local Unions will give credit to such veterans for *bona fide* training and provable past experience.

*ARTICLE XII  
Work Stoppage and Lockouts*

Section 1. No Work Stoppage and Lockouts. There shall be no strike (including sympathy strikes), picketing, work stoppages, slowdowns, sick-outs or other disruptive activity for any reason by the I.B.E.W. Local Unions or employees against any Contractor covered under this Agreement, and there shall be no lockout by the Contractor. Failure of any I.B.E.W. Local Union or employee to cross any picket line established by any I.B.E.W. Local Union signatory, or any other organizations, at or in proximity to the Project site is a violation of this Article. Without limiting any other rights or remedies available at law and/or in equity to Owner or to Eversource Energy Service Company, violation of this Section by any I.B.E.W. Local Union or Contractor will subject such Party to liability for damages determined in a court of competent jurisdiction.

Section 2. Violations. The Contractor may discharge any employee for violation of Section 1 above. The Contractor and the I.B.E.W. Local Unions shall take all steps necessary to obtain compliance with this Article and neither shall be held liable for conduct for which it is not responsible.

*ARTICLE XIII Adjudication  
of Grievances*

Section 1. Agreement Interpretation. It is specifically agreed that in the event any disputes arise out of the interpretation or application of this Agreement, the same shall be settled by means of the grievance procedure set forth in Section 2 of this Article. Article XIV shall govern any disputes arising out of questions of jurisdiction of work. Section 3 of this Article XIII shall govern all disputes arising out of Contractor-employee issues. No such grievance shall be recognized unless called to the attention of the Contractor within seven (7) calendar days after the alleged violation was committed. Under no circumstance shall there be a work stoppage or lockout, including as a result of a grievance or dispute.

Section 2. Grievance Procedure.

- (a) This Agreement is intended to provide close cooperation between management and labor. The I.B.E.W. Local Unions will assign a representative to this Project

for the purpose of completing the construction of the Project economically, efficiently, continuously, and without interruptions, delays, or work stoppages.

- (b) The Contractor, I.B.E.W. Local Unions, and the employees, collectively and individually, realize the importance to all Parties to maintain continuous and uninterrupted performance of the work of the Project, and agree to resolve disputes in accordance with the grievance provisions set forth in this Article.
- (c) All grievances or questions in dispute shall be adjusted by the duly authorized representatives of each of the Parties to this Agreement. In the event that these two are unable to adjust any matter within 48 hours, they shall refer the unresolved matters to the Project Committee.
- (d) All matters coming before the Project Committee shall be decided by a majority vote. Four members of the Project Committee, one from each of the Parties hereto, one from the Owner, and one from Eversource Energy Service Company (or two from Owner if Eversource Energy Service Company does not have a member), shall be a quorum for the transaction of business, but each Party shall have a right to cast the full vote of its membership and shall be counted as though all were present and voting.
- (e) Should the Project Committee fail to agree or to adjust any matter, such shall then be referred to the Council on Industrial Relations for the Electrical Contracting Industry for adjudication. The Council's decisions shall be final and binding.
- (f) When any matter in dispute has been referred to conciliation or arbitration for adjustment, the provisions and conditions prevailing prior to the time such matters arose shall not be changed or abrogated until agreement has been reached or a ruling has been made.

Section 3. CBA Provisions. It is specifically agreed that in the event any disputes arise between the Contractor and an employee that do not involve the interpretation or application of this Agreement, the same shall be settled by means of the grievance procedures currently set forth in the local collective bargaining agreement set forth in Schedule A.

#### *ARTICLE XIV* *Jurisdictions*

Section 1. Continued Performance. Without limiting the provisions of Article XII above, there will be no strike, sympathy strikes, work stoppages or slowdowns, or other interferences with or interruptions of the Project work because of jurisdictional disputes. Pending the resolution of any such dispute, the work shall continue uninterrupted as assigned by the Contractor. As used in the Agreement, the term "jurisdictional dispute" shall mean any dispute, difference or disagreement involving the assignment of particular work to one class of craft employees rather than to a different class of craft employees, regardless of the applicable



Contractor's contractual relationship to any other employer contractor or organization on the Project site.

Section 2. Authority. In making any determinations hereunder, there shall be no authority to assign work to a double crew, that is, to more employees than the minimum required to perform the work involved; or to assign the work to employees who are not qualified to perform the work involved. This does not prohibit the establishment, with the agreement of the involved Contractor, of composite crews of different Union membership where more than one (1) employee is needed for the job. The aforesaid determinations shall decide only to whom the disputed work belongs.

Section 3. Awards. There shall be no work stoppage or interruption while any jurisdictional dispute is being resolved. The work shall proceed as assigned by the Contractor until finally resolved under the applicable procedure of this Article. The award or resolution shall be confirmed in writing to the involved Parties and shall be subject to enforcement in a court of competent jurisdiction. There shall be no strike, work stoppage or slowdown, or other interference with or interruption of work on the Project in protest of any such award or resolution. Jurisdictional issues determined under this Agreement shall apply only to work performed under this Agreement and shall not establish precedent to apply to any other case.

Section 4. Settlement of Jurisdictional Disputes. Jurisdictional disputes shall be settled according to the following procedure:

- (a) The assignments of work will be solely the responsibility of the Contractor performing the work involved; the President of the IBEW Local Unions or his or her designee shall resolve all jurisdictional disputes.
- (b) All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, or slow-down or any nature; and the Contractor's assignment shall be adhered to until the dispute is resolved. Individuals violating this section shall be subject to immediate discharge.
- (c) The Contractor will conduct a pre-job conference prior to commencing work. The Contractor, the Owner, and Eversource Energy Service Company will be advised in advance of all such conferences and may participate if they wish.

*ARTICLE XV Savings  
and Severability*

Section 1. Severability. It is not the intention of either the Contractor or the I.B.E.W. Local Union Parties to violate any laws governing the subject matter of this Agreement. The Parties hereto agree that in the event any provisions of the Agreement are finally held or determined to be illegal or void as being in violation of any applicable law or regulation, the remainder of the Agreement shall remain in full force and effect unless the part or parts so found to be void are wholly inseparable from the remaining portions of this Agreement. Further, the Contractor and I.B.E.W. Local Unions agree that if and when any and all provisions of this Agreement are

finally held or determined to be illegal or void by any Court of competent jurisdiction, the Parties will promptly enter into negotiations concerning the substance affected by such decision for the purpose of achieving conformity with the requirements of any applicable law and the intent of the Parties hereto.

Section 2. Disputes. This Article XV shall not be construed to waive the prohibitions of Article XII, and if the Parties are unable to resolve their differences, the matter shall be referred to arbitration for resolution as provided for in the grievance-arbitration procedure of Article XIII. The Parties acknowledge that the services to be rendered under this Agreement are of a special, unique, unusual and extraordinary character which gives them a peculiar value, the loss of which cannot be reasonably or adequately compensated by damages in any action at law, and the breach by the Contractor or the I.B.E.W. Local Unions of any of the provisions of this Agreement will cause the Owner irreparable injury and damage. The Parties expressly agree that the Owner shall be entitled to injunctive and other equitable relief in the event of, or to prevent, a breach of any provision of this Agreement. Resort to such equitable relief, however, shall not be construed to be a waiver of any other rights or remedies of Owner for damages or otherwise. The various rights and remedies of Owner under this Agreement shall be construed to be cumulative.

#### *ARTICLE XVI Duration of Agreement*

This Agreement shall become effective on the Effective Date and shall continue in effect for the duration of the Work. Construction of any phase, portion, section, or segment of the Project shall be deemed complete when such phase, portion, section, or segment has been turned over to Owner or its affiliate and has received the final acceptance from such representative.

#### *ARTICLE XVII Miscellaneous Provisions*

Section 1. Entire Agreement; Amendment. This Agreement, including the Schedules attached hereto, represents the complete understanding of the Parties with respect to the subject matter of this Agreement. No practice, understanding or agreement, whether written or oral, between the Contractor and an I.B.E.W. Local Union Party, which is not explicitly set forth in this Agreement, shall be binding on any other Party unless endorsed in writing by such Party. The written agreement of all Parties will be required for changes to this Agreement.

Section 2. Governing Law; Binding Effect. This Agreement and all rights, obligations and performances hereunder are subject to all applicable federal and state laws and to all duly authorized action of governmental authorities having jurisdiction. This Agreement shall be governed by and construed in accordance with the laws of the State of New Hampshire without giving effect to the conflict of laws provisions thereof, when not in conflict with or pre-empted by federal law. Subject to Section 17.5, below, this Agreement shall only be binding on the signatory Parties and shall not apply to any parent, affiliate, subsidiary, or joint venture of any such Party.

Section 3. Compliance with C II and CIP. To the extent that any Party obtains any critical energy infrastructure information ("CEI"), as defined by the Federal Energy Regulatory Commission pursuant to 18 CFR Sec. 388.13, in its performance under this Agreement, or in the performance of its other obligations or exercise of its rights under related agreements, such Party shall keep confidential any and all CEI applicable to Owner, Eversource Energy Service Company, the Project and/or the work being performed under this Agreement. To the extent that any work hereunder involves critical assets and critical cyber assets, each Party agrees to be bound by and comply with the North American Electric Reliability Council Critical Infrastructure Protection ("CIP") standards (CIP-002 through CIP-009), and any amendments or supplements thereto. In addition, upon request by Owner or Eversource Energy Service Company, any Party so requested shall execute an agreement confirming full compliance with the foregoing obligations.

Section 4. Third-Party Beneficiary. Neither Owner nor Eversource Energy Service Company is a signatory to this Agreement and therefore shall have no obligations under this Agreement, notwithstanding anything to the contrary in this Agreement. However, the Parties hereby recognize Owner and Eversource Energy Service Company as a third-Party beneficiary of this Agreement. Any and all rights of Owner or Eversource Energy Service Company under or with respect to this Agreement may not be modified or waived without the prior written consent of Owner and Eversource Energy Service Company, which may be granted or withheld in Owner's and Eversource Energy Service Company's sole and exclusive discretion

Section 5. Successors. This Agreement and the obligations of the Parties shall be binding on the respective heirs, administrators, executors, successors and assigns of such Parties.

Section 6. Unauthorized Departures. If labor chooses to depart from the Project without prior authorization from the Owner for other work, then they will be prohibited from returning to the Project for a period of at least ninety (90) days.

Section 7. Interpretation.

- (a) Insofar as reasonable, all terms and conditions of this Agreement shall be construed and interpreted consistently.
- (b) References to a given article, section or schedule is a reference to an article, section or schedule of this Agreement, unless otherwise specified. The terms "hereof", "herein", "hereto", "hereunder" and "herewith" refer to this Agreement as a whole.
- (c) As used in this Agreement, all singular terms include the plural and vice versa as the context may require.
- (d) Except where otherwise expressly provided or unless the context otherwise necessarily requires, in this Agreement: (1) reference to a given law or regulation shall mean such law or regulation in effect as amended or modified as of the Effective Date, or on the date on which the reference is made, or performance

and/or compliance is required, as applicable; and (2) reference to a given agreement or instrument is a reference to that agreement or instrument as originally executed, and as modified, amended, supplemented and restated through the date as of which reference is made to that agreement or instrument or performance is required under that agreement or instrument.

- (e) NH-Based Union Workers as used herein shall mean: (1) Union member whose primary residence is in New Hampshire; (2) Union member whose primary residence is outside of New Hampshire but who is a member of a New Hampshire Union. MA-Based Union Workers as used herein shall mean: (1) Union member whose primary residence is in Massachusetts; (2) Union member whose primary residence is outside of Massachusetts and New Hampshire but who is a member of a Massachusetts Union.

*[signature page follows]*

IN WITNESS WHEREOF the Parties have caused this Agreement to be signed by their duly authorized representatives on the day and date first above written.

Contractor <u>PAR Electrical Contractors, LLC</u>	Contractor <u>PAR Electrical Contractors</u>
By <u>Edward E. Farrington</u>	By <u>Lance Clute</u>
Signature <u>[Signature]</u>	Signature <u>[Signature]</u>
Title <u>President</u>	Title <u>Vice President</u>
Date _____	Date <u>7-21-17</u>

Contractor <u>B. LLC</u>	IBEW Local Union <u>114</u>
By <u>Roger Rasmussen/Stephan Schmitt</u>	By <u>Brian T. Murphy</u>
Signature <u>[Signature]</u>	Signature <u>[Signature]</u>
Title <u>Business Manager</u>	Title <u>Business Manager</u>
Date <u>July 20, 2017</u>	Date <u>07-21-2017</u>

IBEW Local Union <u>114</u>	IBEW Second District
By <u>Denis R. Beaudoin, Sr.</u>	By <u>Tiler F. Eaton</u>
Signature <u>[Signature]</u>	Signature <u>[Signature]</u>
Title <u>Business Manager</u>	Title <u>Second District Representative</u>
Date <u>7-21-17</u>	Date <u>7-21-2017</u>



*EXHIBIT VIII*

*IBEW Code of Excellence*

*SCHEDULE A*

*Collective Bargaining Agreements*

*SCHEDULER*

*Description of Project Scope within Project Labor Agreement*

## EXHIBIT VIII

# Code Of EXCELLENCE IBEW

The Code of Excellence is a program designed to bring out the best in our construction members and demonstrate to our customers that IBEW members:

- Perform the highest quality and quantity of work -
- Utilize their skills and abilities to the maximum -
- Exercise safe and productive work practices -

The Code of Excellence is not only about an IBEW job done right the first time, on schedule and within budget. It is also about pride in IBEW membership and craftsmanship and leaving a lasting impression of quality workmanship with the customer. Thus, prompting him to again employ the IBEW. On future projects the Code of Excellence program is also a means to build and project positive attitudes about who we are and the work we do on all of the job.

Lowell Hinton with respect to the Code of Excellence program "I believe (Quoted by Bill International Representative but, regardless of delivery method by whom, the Code of Excellence program ultimately is to convey a strong message that IBEW construction members will:

- Come to work on time, be on duty and ready to work
- Obey recognized customer and employer rules
- Demonstrate zero tolerance for alcohol and substance abuse
- Exercise proper safety, health and sanitation practices
- Own up to 'Bior B' and be on the job unless otherwise allowed or authorized to leave
- Follow safe, reasonable and legitimate management directives
- Encourage respect for the customer's rights and property, as well as for others on the job
- Exercise the skills and abilities of the trade
- Care for tools and equipment provided by the employer.
- Eliminate waste and other forms of property destruction including graffiti.
- Limit lunch and break times to allocated periods; adhere to established start and quit times
- Leave inappropriate behavior to those of lesser knowledge.
- Employ the proper tools for the job and maintain personal tool responsibilities
- do Not solicit funds or sell merchandise without the Business Manager's approval
- Curtail idle time or pursuit of personal business during work hours, including cell phone use
- Expel job disruptions and refuse to engage in slowdowns or activities designed to extend the job or create overtime or any other conduct that cast the IBEW in a bad light

With Stewards, IBEW members employed in management/supervision must have knowledge of the Code of Excellence program principles, its relationship to IBEW organizing and overall membership responsibilities to the Brotherhood. Yet, more importantly, members in these roles need to know how effectively managing their jobs will have a corresponding obligation to the Code of Excellence program. IBEW rank and file members honoring the Code of Excellence program will rightfully have similar expectations of Brothers and Sisters in management/supervision, with these being in the areas of:

- Management responsibilities: with the collective bargaining agreement
- Total acceptance of supervisory positions and related responsibilities
- Communication and cooperation with the job Steward
- Employment encouragement but, if necessary, fair and consistent discipline.
- Job safety, health and sanitation needs or requirements
- Arrange job layout/directions to minimize down time and maximize employee productivity
- Availability and timely delivery of necessary materials
- Proper number and type of tools and equipment to ensure job progress
- Maintenance and upkeep of tools and equipment
- Storage and protection of employer and employee tools and equipment
- Employ adequate number of employees to perform efficiently or, conversely, limit number of employees to the work at hand





# **INSIDE CONSTRUCTION AGREEMENT**

## **Local 490**

**International Brotherhood  
of Electrical Workers  
Concord, New Hampshire**



## **New Hampshire Division**

**Boston Chapter  
National Electrical  
Contractors Association**



**JUNE 1, 2015 to MAY 31, 2018**

## TABLE OF CONTENTS – INSIDE CONSTRUCTION

### Basic Principles

#### Article I: Effective Dates / Changes / Grievances / Disputes

Effective Dates	1.01
Standard CIR Language	1.02-1.09

#### Article II: Employer Rights / Union Rights

Management Rights	2.02
Workers' Comp Insurance	2.03
Surety Bond	2.04
Favored Nations	2.06
Union Recognition	2.07
Work Preservation	2.08
Non-resident Employees - ( <i>Portability</i> )	2.09
Union Right to Discipline Members	2.14
Appointment of Stewards	2.15
Union Job Access	2.16
Tool List	2.18
Union Security	2.20
Age Ratio Clause	2.21
Annulment/Subcontracting	2.22

#### Article III: Hours / Wages / Working Conditions

Hours (Workday-Workweek)	3.01
Overtime/Holidays	3.02
Payday	3.04
Wages	3.05
Travel Time and Pay	3.07
Union Dues/ COPE Deduction	3.08
Height Related Work	3.09
Ratio of Foremen to Journeymen	3.10
Foreman Call By Name	3.13
Layoff Pay	3.14
Show-up Pay	3.15
Shift Work -	3.16
Tunnel Work	3.17
Temporary Lights	3.18
Cutting and Threading	3.20
Welding	3.23
Mt. Washington	3.24
Respirators	3.25

#### Article IV: Referral Procedure

Referral Procedure	4.01-4.21
Group I -	4.05

Re registration	4.12
Repeated Discharge	4.14
Reverse Layoff	4.21
Employee Recall	4.22

#### Article V: Apprenticeship and Training

Apprenticeship and Training	5.01-5.16
-----------------------------	-----------

#### Article VI: Fringe Benefits

NEBF	6.01
Health & Welfare	6.02
Pension	6.03
Annuity	6.04
Default on Required Payments	6.05
Fringe Benefit Remedies	6.06

#### Article VII: National Electrical Industry Fund

National Electrical Industry Fund	7.01
-----------------------------------	------

#### Article VIII: LMCC

Local Labor-Management Cooperation Committee (LMCC) –	8.01
---	------

#### Article IX: NLMCC

National Labor-Management Cooperation Committee (NLMCC)	9.01-9.04
---	-----------

#### Article X: Safety

Safety Committee	10.01-10.03
High Voltage Work	10.04
Protective Equipment	10.07
Employer Responsibility	10.09

#### Article XI: Substance Abuse

Substance Abuse	11.01
-----------------	-------

#### Article XI: Code of Excellence

Code of Excellence	12.01
--------------------	-------

#### Separability Clause

#### Signature Page

#### Commercial Work Memorandum of Understanding



# **IBEW Local 490 and New Hampshire Division, Boston Chapter, NECA**

## **INSIDE AGREEMENT**

Agreement by and between the Electrical Contractors Association of Greater Boston, Inc., New Hampshire Division of N.E.C.A. and Local Union #490, I.B.E.W.

It shall apply to all firms who sign a Letter of Assent to be bound by the terms of this Agreement.

As used hereinafter in this Agreement, the term Chapter shall mean the Electrical Contractors Association of Greater Boston, Inc., New Hampshire Division of N.E.C.A., and the term Union shall mean Local Union #490, I.B.E.W.

The term "Employer" shall mean an individual firm who has been recognized by an assent to this Agreement.

## **BASIC PRINCIPLES**

The Employer and the Union have a common and sympathetic interest in the electrical industry. Therefore, a working system and harmonious relations are necessary to improve the relationship between the Employer, the Union, and the Public. Progress in the industry demands a mutuality of confidence between the Employer and the Union. All will benefit by continuous peace and by adjusting any differences by rational common-sense methods. Now, therefore, in consideration of the mutual promises and agreements herein contained the parties hereto agree as follows.

## **ARTICLE I**

### **EFFECTIVE DATES - CHANGES - GRIEVANCES - DISPUTES**

Section 1.01. This Agreement shall take effect June 1, 2015 and shall remain in effect until May 31, 2018 unless otherwise specifically provided for herein. It shall continue in effect from year to year thereafter, from June through May of each year, unless changed or terminated in the way later provided herein.

Section 1.02. (a) Either party or an Employer withdrawing representation from the Chapter or not represented by the Chapter, desiring to change or terminate this Agreement must provide written notification at least 90 days prior to the expiration date of the Agreement or any anniversary date occurring thereafter.

(b) Whenever notice is given for changes, the nature of the changes desired must be specified in the notice, or no later than the first negotiating meeting unless mutually agreed otherwise.

(c) The Existing provisions of the Agreement, including this Article, shall remain in full force and effect until a conclusion is reached in the matter of proposed changes.

(d) Unresolved issues or disputes arising out of the failure to negotiate a renewal or modification of this agreement that remain on the 20th of the month preceding the next regular meeting of the Council on Industrial Relations for the Electrical Contracting Industry (CIR) may be submitted jointly or unilaterally to the Council for adjudication. Such unresolved issues or disputes shall be submitted no

later than the next regular meeting of the Council following the expiration date of this agreement or any subsequent anniversary date. The Council's decisions shall be final and binding.

(e) When a case has been submitted to the Council, it shall be the responsibility of the negotiating committee to continue to meet weekly in an effort to reach a settlement on the local level prior to the meeting of the Council.

(f) Notice of a desire to terminate this Agreement shall be handled in the same manner as a proposed change.

Section 1.03. This Agreement shall be subject to change or supplement at any time by mutual consent of the parties hereto. Any such change or supplement agreed upon shall be reduced to writing, signed by the parties hereto, and submitted to the International Office of the I.B.E.W. for approval, the same as this Agreement.

Section 1.04. There shall be no stoppage of work either by strike or lockout because of any proposed changes in this Agreement or dispute over matters relating to this Agreement. All such matters must be handled as stated herein.

Section 1.05. There shall be a Labor/Management Committee of three (3) representing the Union and three (3) representing the Employers. It shall meet regularly at such stated times as it may decide. However, it shall also meet within forty-eight (48) hours when notice is given either party. It shall select its own Chairman and Secretary. The Local Union shall select the Union representatives and the Chapter shall select the management representatives.

Section 1.06. All grievances or questions in dispute shall be adjusted by the duly authorized representative of each of the parties to this Agreement. In the event that these two are unable to adjust any matter within forty-eight (48) hours, they shall refer the same to the Labor/Management Committee.

Section 1.07. All matters coming before the Labor/Management Committee shall be decided by a majority vote. Four members of the Committee, two from each of the parties hereto, shall be a quorum for the transaction of business, but each party shall have the right to cast the full vote of its membership and it shall be counted as though all were present and voting. In the absence of a deadlock, the Labor-Management Committee's decision shall be final and binding.

Section 1.08. Should the Labor/Management Committee fail to agree or to adjust any matter such shall then be referred to the Council on Industrial Relations for the Electrical Contracting Industry for adjudication. The Council's decisions shall be final and binding.

Section 1.09. When any matter in dispute has been referred to conciliation or arbitration for adjustment, the provisions and conditions prevailing prior to the time such matter arose shall not be changed or abrogated until agreement has been reached or ruling has been made.

## **ARTICLE II** **EMPLOYER RIGHTS - UNION RIGHTS**

Section 2.01. Certain qualifications, knowledge, experience and proof of financial responsibility are required of everyone desiring to be an Employer in the Electrical Industry. Therefore, an Employer who contracts for the electrical work is a person, firm, or corporation having these qualifications and

maintaining a place of business, a suitable financial status to meet payroll requirements, and employing not less than one (1) Journeyman/Wireman.

Section 2.02. The Union understands the Employer is responsible to perform the work required by the owner. The Employer shall, therefore, have no restrictions except those specifically provided for in the collective bargaining agreement; in planning, directing and controlling the operations of all his work, in deciding the number and kind of employees to properly perform the work, in hiring and laying off employees, in transferring employees from job to job within the Local Union's geographical jurisdiction, in determining the need and number as well as the person who will act as Foreman, in requiring all employees to observe the Employer's and/or owner's rules and regulations not inconsistent with this agreement, in requiring all employees to observe all safety regulations, and in discharging employees for proper cause.

Section 2.03. For all employees covered by this Agreement, the Employer shall carry Workmen's Compensation Insurance, with a company authorized to do business in the jurisdiction of Local Union #490, Social Security and such other protective insurance as may be required by the laws of the State in which the work is performed. He shall also make voluntary contributions to the State Unemployment Compensation Commission of the appropriate states regardless of the number of employees.

Section 2.04. Upon written request from the Business Manager to the Employer, said Employer shall post a security bond to guarantee payment of fringe benefits due to the Union.

Section 2.05. Employers engaged in joint venture jobs shall be considered as a new and separate individual Employer with all rights herein as apply to an individual participating Employer. There shall be no transfer of workmen between a joint venture and any or all of the Employers comprising the joint venture.

Section 2.06. The Union agrees that if during the life of this Agreement, it grants to any other Employer in the Electrical Contracting Industry on work covered by this Agreement, any better terms or conditions than those set forth in this Agreement, such better terms or conditions shall be made available to the Employer under this Agreement and the Union shall immediately notify the Employer of any such concessions.

Section 2.07. The Employer recognizes the Union as the exclusive representative of all its employees performing work within the jurisdiction of the Union for the purposes of collective bargaining in respect to rates of pay, wages, hours of employment and other conditions of employment.

Section 2.08. (a) In order to protect and preserve, for the employees covered by this Agreement, all work heretofore performed by them, in order to prevent any device or subterfuge to avoid the protection and preservations of such work, it is hereby agreed as follows: If and when the Employer shall perform any on-site construction work of the type covered by this Agreement, under its own name or under the name of another, as a corporation, company, partnership, or any other business entity including a joint-venture, wherein the Employer, through its officers, directors, partners or stockholders, exercises either directly or indirectly, management control or majority ownership, the terms and conditions of this Agreement shall be applicable to all such work. All charges or violations of this Section shall be considered as a dispute and shall be processed in accordance with the provisions of this Agreement covering the procedure for the handling of grievances and the final and binding resolution of disputes.

(b) As a remedy for violations of this Section, the Labor-Management Committee, the Council on Industrial Relations for the Electrical Contracting Industry and/or an independent arbitrator, as the case may be, are empowered, in their discretion and at the request of the Union, to require an Employer to (1) pay to affected employees covered by this Agreement, including registered applicants for employment, the equivalent of wages lost by such employees as a result of the violations; and (2) pay into the affected joint trust funds established under this Agreement any delinquent contributions to such funds which have resulted from the violations. Provision for this remedy herein does not make such remedy the exclusive remedy available to the Union for violation of this Section nor does it make the same or other remedies unavailable to the Union for violations of other Sections or other Articles of this Agreement.

(c) If, as a result of violations of this Section, it is necessary for the Union and/or the trustees of the joint trust funds to institute court action to enforce an award rendered in accordance with subsection (b) above, or to defend an action which seeks to vacate such award, the Employer shall pay any accountants' and attorneys' fees incurred by the Union and/or fund trustees, plus cost of the litigation, which have resulted from the bringing of such court action.

### **AGREEMENT ON EMPLOYEE PORTABILITY**

Section 2.09. An employer signatory to a collective bargaining agreement or to a letter of assent to an agreement with another I.B.E.W. Local Union, who signs an assent to this Agreement, may bring up to four bargaining unit employees employed in that Local Union's jurisdiction into this Local's jurisdiction and up to two bargaining unit employees per job from that Local's jurisdiction to this Local's jurisdiction for specialty or service and maintenance work. All charges of violations of this section shall be considered as a dispute and shall be processed in accordance with the provisions of this agreement for the handling of grievances with the exception that any decision of a local labor-management committee that may be contrary to the intent of the parties to the National Agreement on Employee Portability, upon recommendation of either or both the appropriate I.B.E.W. International Vice President or N.E.C.A Regional Executive Director, is subject to review, modification, or rescission by the Council on Industrial Relations.

Section 2.10. Employers shall not loan their employees to another Employer without first securing the permission of the Business Manager and then only when applicants possessing the required skills are not available through the Referral Procedure.

Section 2.11. No applicant or employee while he/she remains subject to employment by Employers operating under this Agreement shall be recognized as a contractor for the performance of any electrical work.

Section 2.12. Journeyman Wireman shall install all electrical work in a safe and workman-like manner and in accordance with applicable code and contract specifications. When necessary to perform temporary light and/or power on any foundation or building work, such temporary work shall be installed in a safe manner under the terms of this Agreement.

Section 2.13. A Journeyman shall be required to make corrections on improper workmanship for which he/she is responsible on his/her own time and during regular working hours unless errors were made by orders of the Employer or the Employer's representative. Employers shall notify the Union of the workmen who fail to adjust improper workmanship and the Union assumes the responsibility for the enforcement of this provision.

Section 2.14. The Union reserves the right to discipline its members for violation of its laws, rules, and agreements.

Section 2.15. The Union has the right to appoint Stewards at any shop and/or any job where workmen are employed under the terms of this Agreement. The Employer shall be notified and furnished the names of the Steward. Such Stewards shall be allowed sufficient time during the regular working hours, without loss of pay, to see that the terms and conditions of this Agreement are observed at his/her shop or his/her job. No Steward shall be discriminated against by any Employer because of his faithful performance of duties as Steward nor shall any Steward be removed from the job until notice has been given to the Business Manager of the Union.

Section 2.16. The representative of the Union shall be allowed access to any shop or job at any reasonable time where workmen are employed under the terms of this Agreement.

Section 2.17. (a) It shall not be a violation of this Agreement and it shall not be cause for discharge of any other disciplinary action by the Employer against any employee for an employee to refuse to cross a lawfully established primary picket line whether at the premises of another Employer of the employee's own Employer.

(b) Any employee exercising such right shall carefully put away all tools, materials, equipment, or any other property of the Employer in a safe manner. Each employee will be responsible for any loss to the Employer for neglect in carrying out this provision but only when a safe place is provided for by the Employer.

Section 2.18. Journeyman and Apprentices shall provide themselves with the following tools:

1 set of screwdrivers	hacksaw frame
2 pairs of channellocks	small level
claw hammer	roto-split
25' tape measure	voltage tester
diagonals	chalk line
sidecutters	6" & 8" crescent wrenches
wire strippers	nut drivers
electrician's knife	keyhole saw
Socket set (3/8" drive with standard sockets 3/8"-3/4")	

Drill motor, ladders, benders KO punches, and any other tools of that nature shall be furnished by the employer.

The employer will furnish necessary locked storage to reasonable protect tools from the weather and vandalism and will replace such tools listed above when tools are damaged on the job or stolen from the locked storage.

Section 2.19. The employer shall furnish all other necessary tools or equipment. Workmen will be held responsible for the tools or equipment issued to them providing the Employer furnishes the necessary lockers, tool boxes, or other safe place for storage.

Section 2.20. All employees covered by the terms of this Agreement shall be required to become and remain members of the Union as a conditions of employment from and after the eighth day following the date of their employment or the effective date of this Agreement whichever is later.



Section 2.21. On all jobs requiring five (5) or more Journeyman, at least every fifth Journeyman, if available, shall be fifty (50) years of age or older.

Section 2.22. The Local Union is a part of the International Brotherhood of Electrical Workers and any violation or annulment by an individual Employer of the approved Agreement of this or any other Local Union of the I.B.E.W., other than violations of Paragraph 2 of this Section, will be sufficient cause for cancellation of this Agreement by the Local Union, after a finding has been made by the International President of the Union that such a violation or annulment has occurred.

The subletting, assigning, or transfer by an individual Employer of any work in connection with electrical work to any person, firm or corporation not recognizing the I.B.E.W. or one of its Local Unions as the collective bargaining representative of his employees on any electrical work in the jurisdiction of this or any other Local Union to be performed at the site of the construction, alteration, painting, or repair of a building, structure, or other work, will be deemed a material breach of this Agreement.

All charges of violations of Paragraph 2 of this Section shall be considered as a dispute and shall be processed in accordance with the provision of this Agreement covering the procedure for the handling of grievances and the final and binding resolution of disputes.

Section 2.23. The Employer and the Union agree that job site productivity is a major concern for the unionized construction industry. Both parties to this contract agree to utilize work practices and technologies to promote increased productivity in the workplace.

### **ARTICLE III**

### **HOURS - WAGES - WORKING CONDITIONS**

Section 3.01. Eight hours work between the hours of 7:00 am and 4:30 pm, Monday through Friday, with not more than one half (1/2) hour for lunch period shall constitute a work week. There shall be a ten (10) minute coffee break mid-morning and another ten (10) minute coffee break at the end of the day when overtime is required and every two hours thereafter.

Section 3.02. On work performed outside the regular scheduled shift, workmen shall be paid in the following manner: For the first two (2) hours after the regular scheduled shift Monday through Friday, the rate of pay shall be at the rate of time and one half (1 1/2) the employees hourly rate of pay. For the first eight (8) hours from 7:00 am to 4:30 pm on Saturday, the rate of pay shall be at the rate of time and one half (1 1/2) the employees hourly rate of pay.

All work performed other than the above listed hours or work performed on Sunday, New Year's Day, Washington's (Presidents) Birthday, Memorial Day, Fourth of July, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, the Friday following Thanksgiving Day, Christmas Day, or days celebrated as such shall be paid for at double (2) the employees straight time rate of pay. Calendar holidays that fall on a Saturday shall be celebrated on Friday. Calendar holidays that fall on Sunday shall be celebrated on Monday.

Section 3.03. No work shall be performed on Labor Day, except in case of emergency, and then only after permission is granted by the Business Manager of the Union.

**Section 3.04(a).** Wages shall be paid in cash or by check weekly, not later than quitting time on Fridays, and not more than three (3) days wages may be withheld, (except for legal holidays excluded), at any time. Any workman laid off or discharged shall be paid his/her wages immediately. In the event he/she is not paid off, "waiting time" not to exceed eight (8) hours in any one twenty-four (24) hour period shall be paid. On all jobs the Employer must make every effort possible to pay weekly payroll on the job site. In the event of a difficulty and with written consent, of the Local Union Business Manager and employee, the Employer may mail the employee's weekly payroll check to the employee's preferred mailing address. On all jobs the Employer must provide a means of cashing payroll checks for his employees. The Employer shall furnish a weekly payroll report to Local Union #490 giving the workman's name, classification, wage rate, straight time worked, any overtime worked, and gross wages paid to all workmen.

**Section 3.04(b).** Employees may voluntarily allow for direct electronic deposit of wages on a weekly basis to the bank or credit union of the employee's choice. This manner of payment, once adopted, may not be changed except upon 14-day advance written notification between the employee and Employer with notification copied to the Union. Direct Deposit shall be provided at no cost to the employee.

**Section 3.05(a).** The minimum hourly rate of wages shall be as follows:

<b>Effective:</b>	<b>6/1/15</b>	<b>9/1/15</b>	<b>6/1/16<sup>6</sup></b>	<b>6/1/17<sup>6</sup></b>
JOURNEYMAN WIREMAN	\$28.00	\$28.00	\$28.00	\$28.50
JOURNEYMAN TECHNICIAN	100% OF JOURNEYMAN WIREMAN RATE			
GENERAL FOREMAN (+20%)	\$33.60	\$33.60	\$33.60	\$34.20
FOREMAN (+10%)	\$30.80	\$30.80	\$30.80	\$31.35
CREW LEADER (+5%)	\$29.40	\$29.40	\$29.40	\$29.93
APPRENTICE WIREMAN – SIX (6) PERIODS				
1ST PERIOD	50% OF JOURNEYMAN WIREMAN RATE			
2ND PERIOD	50% OF JOURNEYMAN WIREMAN RATE			
3RD PERIOD	60% OF JOURNEYMAN WIREMAN RATE			
4TH PERIOD	70% OF JOURNEYMAN WIREMAN RATE			
5TH PERIOD	80% OF JOURNEYMAN WIREMAN RATE			
6TH PERIOD	85% OF JOURNEYMAN WIREMAN RATE			
	90% OF JOURNEYMAN WIREMAN RATE			
	(With passing N.H. Journeyman's License Test)			

**Section 3.05(b).** In addition to the above hourly rates, payments shall be made as follows:

<b>Effective:</b>	<b>6/1/15</b>	<b>9/1/15</b>	<b>6/1/16<sup>6</sup></b>	<b>6/1/17<sup>6</sup></b>
JW Total Package	\$46.70	\$47.20	\$47.70	\$48.22
<b>Breakdown:</b>				
JW Wage Rate	\$28.00	\$28.00	\$28.00	\$28.50 per hr.
Health & Welfare Fund	\$8.20	\$9.70	\$9.70	\$9.70 per hr.
Local 490 Pension Fund	\$5.40	\$5.40	\$5.40	\$5.40 per hr.
L490 Annuity Fund	\$2.50	\$2.00	\$2.25	\$2.25 per hr.
L-M Cooperation Trust	\$1.00	\$0.50	\$0.75	\$0.75 per hr.
Apprenticeship & Training	\$0.75	\$0.75	\$0.75	\$0.75 per hr.
NLMCC <sup>4</sup>	\$0.01	\$0.01	\$0.01	\$0.01 per hr.
NEBF (3% of gross labor payroll) <sup>3</sup>	\$0.84	\$0.84	\$0.84	\$0.86
NEIF\SC <sup>5</sup> (0.6% of gross labor payroll%) <sup>5</sup>	\$0.17	\$0.17	\$0.17	\$0.17

**NOTES:**

- 1) **MANTAINANCE OF WAGE\FRINGE PACKAGE:** Wage rates for Journeymen Wiremen shall be adjusted on projects where employers do not make contributions to one or more of the established trust funds so that the "Total Package" rate shall be maintained. Wage rates for General Foremen, Foremen, Crew Leaders, and Apprentices shall be adjusted accordingly.
- 2) **First Year Apprentices** are excluded from receiving Pension and Annuity contributions.
- 3) **NEBF (3% of Gross Labor Payroll)** - National Electrical Benefit Fund
- 4) **NLMCC** - National Labor Management Cooperation Committee (to improve communication between representatives of labor and management).
- 5) **NEIF (0.6% of Gross Labor Payroll)** - This applies only to contractors that are members of the National Electrical Contractors Association.
- 6) **Disbursements-** For future periods, increases may be put into wages or benefits that will be determined at least 30 days prior to upcoming increments.

Working assessments shall be deducted from members wage at 4% of **gross wages**.

Local Union #490 Political Action Fund (COPE) 5 cents per hour shall be deducted from members wages upon written authorization.

General Foreman and Foreman employed on a job and in the employment for no less than ninety (90) days shall be paid for holidays, and also be provided with no less than forty (40) hours per week. General Foreman or Foreman in charge of a job and who report for work shall not lose time because of inclement weather.

Section 3.06. On work outside the jurisdiction of the Union, the Employer shall furnish transportation, board, and all other necessary expenses.

Section 3.07. Should workmen be requested to travel from the job first reported to, he/she will be reimbursed by the Employer at the allowed IRS rate for mileage deduction for all additional mileage. In the event the Employer furnishes transportation then no mileage will be paid.

Employees may transport a small quantity of tools or materials that fit conveniently in a car and cause no excessive use to the vehicle. The use of employees' personal trucks to transport materials is not encouraged by the union, but in special circumstances the union recognizes the need. When personal trucks are utilized to transport materials the owner shall be compensated for mileage and wear-and-tear to said vehicle. The Business Manager shall be made aware of any arrangements between the employer and truck owner being notified by the employer and the owner, and the Business Manager shall have the authority to approve or disapprove the arrangement.

Section 3.08. The Employer agrees to deduct, upon receipt of a voluntary written authorization, the working dues in the amount specified in the approved Local Union Bylaws. Such amount shall be certified to the Employer by the Local Union upon request by the Employer. Also upon receipt of a voluntary written authorization, a Political Action fund contribution, in the amount of five (5) cents per hour shall be deducted from the pay of each I.B.E.W. member.

Section 3.09. On jobs where workmen are required to work more than thirty (30) feet in the air, they shall receive 10% of the above minimum rates in addition to the regular straight time rate of pay unless a substantial staging is provided so that the risk is not greater than normal. This rule does not apply to upper floors of a building neither does this apply to protected catwalks or other railed-in sections of permanent structures, or on work from bucket trucks and aerial lifts, or on work performed from solidly built scaffoldings. On scaffolding suspended by ropes or cables thirty (30) feet in the air, workmen shall receive 10% above the minimum rates in addition to the straight time rate of pay.

If there is a difference of opinion between the Employer and the workmen regarding the risk involved and the safety of the scaffolding, the matter shall be referred to the Business Manager.

Section 3.10. On all jobs of one week or more with two (2) Journeymen or three (3) employees, one (1) employee shall be designated as a Crew Leader by the Employer. On all jobs with four (4) or more employees, one (1) employee shall be designated as Foreman by the Employer and the Crew Leader position will be eliminated. (Except when jobbing from job to job). No Foreman shall have more than ten (10) employees under his/her supervision at any time. Example as follows:

- 1 crew - 1 Foreman
  - 2 crews - 1 Foreman, 1 General Foreman
  - 3 crews - 2 Foremen, 1 General Foreman
  - 4 crews - 3 Foremen, 2 General Foremen
- and progress as such thereafter.

Section 3.11. On jobs having a Foreman, workmen are not to take directions or orders or accept layout of any job from anyone except their Foreman.

Section 3.12. No Foreman of one job shall, at the same time, perform work on another job.

Section 3.13. Foreman Call By Name; The employer shall have the right to call a Foreman by name provided:

- a. The employee has not quit his previous employer within the past two weeks.
- b. The employer shall notify the business manager in writing of the name of the individual who is to be requested for employment as a Foreman. Upon such request, the business manager shall refer said Foreman provided the name appears on the highest priority group.
- c. When an employee is called as a Foreman, he must remain as a Foreman for 30 days or must receive a reduction in force.

Section 3.14. Any worker reporting for work and being laid off not having been notified the day previous of such layoff shall receive not less than two (2) hours wages in order to gather his/her tools and personal belongings, and shall be paid off in full immediately. In the event the employee is not paid off waiting time at the regular rate shall be charges until payment is made.

Employees being laid off or discharged shall receive not less than two (2) hours wages in order to gather his/her tools and personal belongings. In the event the employee is not paid off waiting time at the regular rate shall be charges until payment is made.

Section 3.15. When workmen are directed to report to a job and do not start work due to weather conditions, lack of materials, or other cause beyond their control they shall receive two (2) hours pay unless notified before 7:00 AM. No workmen shall receive less than four (4) hours work pay during a regular work day that he works. Call-in pay after a regular shift will be a minimum of two hours pay, portal to portal.

Section 3.16 When so elected by the Contractor multiple shifts of at least five (5) days duration may be worked. When two (2) or three (3) shifts are worked then:

The first shift (day shift) shall be worked between the hours of 8:00 AM and 4:30 PM. Workmen on the "day shift" shall receive eight (8) hours pay at the regular hourly rate for eight (8) hours work.

The second shift (swing shift) shall be worked between the hours of 4:30 PM and 12:30 AM. Workmen on the "swing shift" shall receive eight hours pay at the regular hourly rate, plus 10% for seven and one-half (7 1/2) hours work.

The third shift (graveyard shift) shall be worked between the hours of 12:30 AM and 8:00 AM. Workmen on the "graveyard shift" shall receive eight (8) hours pay at the regular hourly rate, plus 15% for seven (7) hours work.

A lunch period of thirty (30) minutes shall be allowed on each shift. All overtime work required after completion of a regular shift shall be paid at one and one-half times the "shift" hourly rate.

There shall be no pyramiding of overtime rates and double the straight time rate shall be the maximum compensation for any hour worked. There shall be no requirement for a day shift when either the second or third shift is worked.

Section 3.17 (a) Work performed in "uncompleted tunnels" shall be compensated for at a rate of 110% of the regular shift hourly rate.

(b) "Uncompleted tunnels, cuts and shafts" refer to that period of construction prior to such time as structural outer shell, or wall are finished and includes the placing and/or pouring of concrete or grout in shells, floor, or ceiling slabs and walls. Tunnel entrance pits or shafts shall be considered part of the tunnel.

(c) The regular and shift work periods will start at the nearest egress and exit to the location of the work. If the Employer requires workers to start and end their work periods at the location of the work, then the following time shall be allowed to travel from the egress to the work and return:

Distance from Egress to work	Allowance for Travel Time
up to 5,000 feet	1/2 hour at the regular hourly rate
5,000 to 15,000 feet	1 hour at the regular hourly rate
over 15,000 feet	1 1/2 hour at the regular hourly rate

(d) On the job travel, compression and decompression time shall not be considered for pay purposes the same as time worked under pressure. Compensation for this time shall be the same as that set forth for



shift and regular work.

(e) Work under pressure shall be compensated for at the rate of one and one half (1 1/2) the hourly rate of pay for 1st, 2nd, and 3rd shifts.

(f) Work under pressure shall not exceed the following time limitations:

From 1 lb to & including 18 lbs.	6 hours work for 8 hours pay
Over 18 lbs. up to & including 26 lbs.	4 hours work for 8 hours pay
Over 26 lbs. up to & including 33 lbs.	3 1/2 hours work for 8 hours pay
Over 33 lbs. up to & including 38 lbs.	3 hours work for 8 hours pay

(g) There shall be a Journeyman/Wireman topside at all times.

(h) Where headings are 1,500 feet or more apart, it shall require two (2) Journeymen/Wiremen to work together.

Journeymen/Wiremen shall receive a sixteen (16) hour break before shifts or shall be paid at two (2) times the rate of pay for working such additional shifts.

Section 3.18 The work of installing, maintaining, connecting, shifting, controlling, or repairing all temporary lighting, heat & power, and the maintenance of all other electrical equipment in new buildings under construction, old buildings undergoing alterations, subways, tunnels, shafts, and bridges under construction, shall be performed by workmen employed under the term of this Agreement.

Section 3.19. The policy of the members of the Local Union is to promote the use of materials and equipment manufactured, processed, or repaired under economically sound wage, hour, and working conditions by their fellow members of the International Brotherhood of Electrical Workers.

Section 3.20. All conduits shall be cut and threaded on the job.

Section 3.21. Where pipe cutting and threading machines are used, such shall be operated by Journeymen/Wiremen or qualified Apprentices.

Section 3.22. On jobs of ten (10) or more men, the Employer must make a good faith effort to provide a warm dry place for employees to have lunch and clean up. The employer must provide soap and drying materials as needed.

Section 3.23. Welding. All equipment and protective clothing shall be furnished by the Employer. If an employee welds for twenty (20) hours or more per week he/she will be compensated an additional \$1.50 for all hours welding. If an employee is hired as a welder he/she will be compensated for all hours at an additional \$1.50 per hour.

Section 3.24 On all work performed on Mt. Washington, the Employer is to furnish transportation both ways up and down and the work day is to start at the bottom and end at the bottom of the mountain.

Section 3.25 Workmen required to wear canister respirator shall be paid 10% above the Employee's hourly rate of pay.

## **ARTICLE IV REFERRAL PROCEDURE**

Section 4.01. In the interest of maintaining an efficient system of production in the industry, providing for an orderly procedure of referral of applicants for employment, preserving the legitimate interests of

employees in their employment status within the area, and of eliminating discrimination in employment because of membership or non-membership in the Union, the parties hereto agree to the following system of referral of applicants for employment.

Section 4.02. The Union shall be the sole and exclusive source of referral of applicants for employment.

Section 4.03. The Employer shall have the right to reject any applicant for employment.

Section 4.04. The Union shall select and refer applicants for employment without discrimination against such applicants by reason of membership or non-membership in the Union and such selection and referral shall not be affected in any way by rules, regulations, bylaws, constitutional provisions or any other aspect or obligation of Union membership policies or requirements. All such selection and referral shall be in accord with the following procedure.

Section 4.05. The Union shall maintain a register of applicants for employment established on the basis of the Groups listed below. Each applicant for employment shall be registered in the highest priority Group for which he/she qualifies.

### **JOURNEYMAN WIREMAN - JOURNEYMAN TECHNICIAN**

Group I - All applicants for employment who have four or more years' experience in the trade, are residents of the geographical area constituting the normal construction labor market, have passed a Journeyman Wireman's examination given by a duly constituted Inside Construction Local Union of the I.B.E.W. or have been certified as a Journeyman Wireman by any Inside Joint Apprenticeship and Training Committee, and, who have been employed in the trade for a period of at least one year in the last four years in the geographical area covered by the collective bargaining agreement.

Group I status shall be limited to one Local Union at one time. An applicant who qualifies for Group I in a local union shall be so registered electronically and remain on Group I in that local union unless and until the applicant designates another local union as his or her Group I local union. If an applicant qualifies for Group I status in a local union other than his or her home local union and designates that local as his or her Group I local union, the business manager of the new Group I status local union shall by electronic means notify the business manager of the applicant's former Group I status local union.

Group II - All applicants for employment who have four (4) or more years' experience in the trade, and have passed a Journeyman/Wireman's examination given by a duly constituted Inside Construction Local Union of the I.B.E.W. or have been certified as a Journeyman/Wireman by any Inside Joint Apprenticeship and Training Committee.

Group III - All applicants for employment who have two (2) or more years' experience in the trade; are residents of the geographical area constituting the normal construction labor market; and who have been employed for at least six (6) months in the last three (3) years in the geographical area covered by the collective bargaining agreement.

Group IV - All applicants for employment who have worked at the trade for more than one (1) year.

Section 4.06. If the registration list is exhausted and the Local Union is unable to refer applicants for employment to the Employer within forty-eight (48) hours from the time of receiving the Employer's request; Saturdays, Sundays, and holidays excepted, the Employer shall be free to secure applicants

without using the Referral Procedure. Such applicants, if hired, shall have the status of "temporary employees".

Section 4.07. The Employer shall notify the Business Manager promptly of the names and social security numbers of such "temporary employees" and shall replace such "temporary employees" as soon as registered applicants for employment are available under the Referral Procedure.

Section 4.08. "Normal construction labor market" is defined to mean the following geographical area plus the commuting distance adjacent hereto which includes the area from which the normal labor supply is secured:

ENTIRE STATE OF NEW HAMPSHIRE

YORK COUNTY, MAINE  
(the following townships)

Alfred	Lebanon	Sanford
Berwick	N. Berwick	Wells
Eliot	Ogunquit	York
Kittery	S. Berwick	

The above geographical area is agreed upon by the parties to include the area defined by the Secretary of Labor to be the appropriate prevailing wage areas under the Davis-Bacon Act to which this Agreement applies.

Section 4.09. "Resident" means a person who has maintained his/her permanent home in the above defined geographical area for a period of not less than one year or who, having had a permanent home in this area, has temporarily left with the intention of returning to this areas as his/her permanent home.

Section 4.10. An "Examination" shall include experience rating tests if such examination shall have been given prior to the date of this procedure, but from and after the date of this procedure, shall include only written and/or practical examinations given by a duly constituted Inside Construction Local Union of the I.B.E.W. Reasonable intervals of time for examinations are specified as ninety (90) days. An applicant shall be eligible for examination if he/she has four years' experience in the trade.

Section 4.11. The Union shall maintain an "Out of Work List" which shall list the applicant within each Group in chronological order of the dates they register their availability for employment.

Section 4.12. An applicant who has registered on the "Out of Work List" must renew his/her application every 30 days or his/her name will be removed from the list.

Section 4.13. An applicant who is hired and who receives, through no fault of his/her own, work of forty hours or less shall, upon re-registration, be restored to his/her appropriate place within his/her Group.

Section 4.14(a). Employers shall advise the Business Manager of the Local Union of the number of applicants needed. The Business Manager shall refer applicants to the Employer by first referring applicants in Group I in the order of their place on the "Out of Work List" and then referring applicants in the same manner successively from the "Out of Work List" in Group II, then Group III, and then Group IV. Any applicant who is rejected by the Employer shall be returned to his/her appropriate place within his/her Group and shall be referred to other employment in accordance with the position of his/her Group and his/her place within his/her Group.

Section 4.14(b). An applicant who is discharged for cause two times within a 12-month period shall be referred to the neutral member of the Appeals Committee for a determination as to the applicant's continued eligibility for referral. The neutral member of the Appeals Committee shall, within three business days, review the qualifications of the applicant and the reasons for the discharges. The neutral member of the Appeals Committee may, in his or her sole discretion: (1) require the applicant to obtain further training from the JATC before again being eligible for referral; (2) disqualify the applicant for referral for a period of four weeks, or longer, depending on the seriousness of the conduct and/or repetitive nature of the conduct; (3) refer the applicant to an employee assistance program, if available, for evaluation and recommended action; or (4) restore the applicant to his/her appropriate place on the referral list.

Section 4.15. The only exceptions which shall be allowed in this order of referral are as follows:

(a) When the Employer states bona fide requirements for special skills and abilities in his/her request for applicants then the Business Manager shall refer the first applicant on the register possessing such skills and abilities.

(b) The age ratio clause in this Agreement calls for employment of an additional employee or employees on the basis of age. Therefore, the Business Manager shall refer the first applicant on the register satisfying the applicable age requirements provided, however, that all names in higher priority groups, if any, shall first be exhausted before such overage reference can be made.

Section 4.16. An Appeals Committee is hereby established composed on one (1) member appointed by the Union, one (1) member appointed by the Employer or by the Association, as the case may be, and a public member appointed by both these members.

Section 4.17. It shall be the function of the Appeals Committee to consider any complaint of any employee or applicant for employment arising out of the administration by the Local Union of Sections 4.04 through 4.15 of the Agreement. The Appeals Committee shall have the power to make a final and binding decision on any such complaint which shall be complied with by the Local Union. The Appeals Committee is authorized to issue procedural rules for the conduct of its business but it is not authorized to add to, subtract from, or modify any of the provisions of this Agreement and its decisions shall be in accord with this Agreement.

Section 4.18. A representative of the Employers of the Association, as the case may be, designated to the Union in writing shall be permitted to inspect the Referral Procedure records at any time during normal business hours.

Section 4.19. A copy of the Referral Procedure set forth in this Agreement shall be posted on the Bulletin Board in the offices of the Local Union and in the offices of the Employers who are parties to this Agreement.

Section 4.20. Apprentices shall be hired and transferred in accordance with the apprenticeship provisions of this Agreement between the parties.

Section 4.21. When making reductions in the number of employees due to lack of work, Employers shall use the following procedure:

(a) Temporary employees, if any are employed, shall be laid off first. Then employees in Group IV shall be laid off next, if any are employed in this Group. Next to be laid off are employees in Group III, if any are employed in this group, then those in Group II, and then those in Group I.

- (b) Paragraph (a) will not apply as long as the special skills requirement as provided for in Section 4.15 (a) is required.
- (c) Supervisory employees covered by the terms of this Agreement will be excluded from layoff as long as they remain in a supervisory capacity. When they are reduced to the status of Journeyman, they will be slotted in the appropriate group in paragraph (a) above.

**Section 4.22. Employee Recall:** An employer shall have the right to recall for employment any former employee that the employer has laid off, provided that:

- The former employee is in the highest level Group on the referral list containing applicants available for work, regardless of the individual's position on the list; or, if the former employee is a CW/CE, he or she is available for assignment regardless of the individual's position on the list;
- The recall is made within 45 days from the time of layoff;
- The former employee has not quit his most recent employer under this agreement within the two weeks prior to the recall request;
- And the former employee is not an apprentice.

## **ARTICLE V**

### **APPRENTICESHIP & TRAINING**

**Section 5.01.** There shall be a Local Joint Apprenticeship and Training Committee (JATC) consisting of a total of either 6 or 8 members who shall also serve as trustees to the local apprenticeship and training trust. An equal number of members (either 3 or 4) shall be appointed, in writing, by the local chapter of the National Electrical Contractors Association (N.E.C.A) and the local union of the International Brotherhood of Electrical Workers (I.B.E.W.).

The local apprenticeship standards shall be in conformance with national guideline standards and industry policies to ensure that each apprentice has satisfactorily completed the NJATC required hours and course of study. All apprenticeship standards shall be registered with the NJATC before being submitted to the appropriate registration agency.

The JATC shall be responsible for the training of apprentices, journeymen, installers, technicians, and all others (unindentured, intermediate journeymen, etc.).

**Section 5.02.** All JATC member appointments, reappointments, and acceptance of appointments shall be in writing. Each member shall be appointed for a 3 year term, unless being appointed for a lesser period of time to complete an unexpired term. The terms shall be staggered, with one (1) term from each side expiring each year. JATC members shall complete their appointed term unless removed for cause by the party they represent or they voluntarily resign. All vacancies shall be filled immediately.

The JATC shall select from its membership, but not both from the same party, a Chairman and a Secretary, who shall retain voting privileges. The JATC will maintain one (1) set of minutes for JATC committee meetings and a separate set of minutes for trust meetings.

The JATC should meet on a monthly basis and also upon the call of the Chairman.

**Section 5.03.** Any issue concerning an apprentice or an apprenticeship matter shall be referred to the JATC for its review, evaluation, and resolve, as per standards and policies. If the JATC deadlocks on any issue, the matter shall be referred to the Labor-Management Committee for resolution as outlined in



Article One of this Agreement, except for trust fund matters, which shall be resolved as stipulated in the local trust instrument.

Section 5.04. There shall be only one (1) JATC and one (1) local apprenticeship and training trust. The JATC may, however, establish joint subcommittees to meet specific needs, such as residential or telecommunications apprenticeship. The JATC may also establish a subcommittee to oversee an apprenticeship program within a specified area of the jurisdiction covered by this Agreement.

All subcommittee members shall be appointed, in writing by the party they represent. A subcommittee member may or may not be a member of the JATC.

Section 5.05. The JATC may select and employ a part-time or a full-time Training Director and other support staff, as it deems necessary. In considering the qualifications, duties, and responsibilities of the Training Director, the JATC should review the Training Director's Job Description provided by the NJATC. All employees of the JATC shall serve at the pleasure and discretion of the JATC.

Section 5.06. To help ensure diversity of training, provide reasonable continuous employment opportunities, and comply with apprenticeship rules and regulations, the JATC, as the program sponsor, shall have full authority for issuing all job training assignments and for transferring apprentices from one employer to another. The employer shall cooperate in providing apprenticeships with needed work experiences. The local union referral office shall be notified, in writing, of all job training assignments. If the employer is unable to provide reasonable continuous employment for apprentices, the JATC is to be so notified.

Section 5.07. All apprentices shall enter the program through the JATC as provided for in the registered apprenticeship standards and selection procedures.

An apprentice may have their indenture canceled by the JATC at any time prior to completion as stipulated in the registered standards. Time worked and accumulated in apprenticeship shall not be considered for local union referral purposes until the apprentice has satisfied all conditions of apprenticeship. Individuals terminated from apprenticeship shall not be assigned to any job in any classification, or participate in any related training, unless they are reinstated in apprenticeship as per the standards, or they qualify through means other than apprenticeship, at some time in the future, but no sooner than two years after their class has completed apprenticeship, and they have gained related knowledge and job skills to warrant such classification.

Section 5.08. The JATC shall select and indenture a sufficient number of apprentices to meet local manpower needs. The JATC is authorized to indenture the number of apprentices necessary to meet the job site ratio as per Section 5.12.

Section 5.09. Though the JATC cannot guarantee any number of apprentices; if a qualified employer requests an apprentice, the JATC shall make every effort to honor the request. If unable to fill the request within ten (10) working days, the JATC shall select and indenture the next available person from the active list of qualified applicants. An active list of qualified applicants shall be maintained by the JATC as per the selection procedures.

Section 5.10. To accommodate short-term needs when apprentices are unavailable, the JATC shall assign unindentured workers who meet the basic qualification for apprenticeship. Unindentured workers shall not remain employed if apprentices become available for OJT assignment. Unindentured workers

shall be used to meet job site ratios except on wage and hour (prevailing wage) job sites.

Before being employed, the unindentured person must sign a letter of understanding with the JATC and the employer - agreeing that they are not to accumulate more than two thousand (2,000) hours as an unindentured, that they are subject to replacement by indentured apprentices and that they are not to work on wage and hour (prevailing wage) job sites.

Should an unindentured worker be selected for apprenticeship, the JATC will determine, as provided for in the apprenticeship standards, if some credit for hours worked as an unindentured will be applied toward the minimum OJT hours of apprenticeship.

The JATC may elect to offer voluntary related training to unindentured; such as Math Review, English, Safety, Orientation/Awareness, Introduction to OSHA, First-Aid and CPR. Participation shall be voluntary.

Section 5.11. The employer shall contribute to the local health and welfare plans and to the National Electrical Benefit Fund (NEBF) on behalf of all apprentices and unindentured. Contributions to other benefit plans may be addressed in other sections of this agreement.

Section 5.12. Each job site shall be allowed a ratio of two (2) apprentice(s) for every three (3) Journeyman Wiremen(man).

Number of Journeymen	Maximum Number of Apprentices/Unindentured
1 to 3	2
4 to 6	4
etc.	etc.

The first person assigned to any job site shall be a Journeyman Wireman.

A job site is considered to be the physical location where employees report for their work assignments. The employer's shop (service center) is considered to be a separate, single job site. All other physical locations where workers report for work are each considered to be a single, separate job site.

Section 5.13. An apprentice is to be under the supervision of a Journeyman/Wireman at all times. This does not imply that the apprentice must always be in-sight-of a Journeyman Wireman. Journeymen are not required to constantly watch the apprentice. Supervision will not be of a nature that prevents the development of responsibility and initiative. Work may be laid out by the employer's designated supervisor or journeyman based on their evaluation of the apprentice's skills and ability to perform the job tasks. Apprentices shall be permitted to perform job tasks in order to develop job skills and trade competencies. Journeymen are permitted to leave the immediate work area without being accompanied by the apprentice.

Apprentices, who have satisfactorily completed the first four years of related classroom training using the NJATC curriculum and accumulated a minimum of 6,500 hours of OJT with satisfactory performance, shall be permitted to work alone on any job site and receive work assignments in the same manner as a Journeyman Wireman.

An apprentice shall not be the first person assigned to a job site and apprentices shall not supervise the

work of others.

Section 5.14. Upon satisfactory completion of apprenticeship, the JATC shall issue all graduating apprentices an appropriate diploma from the NJATC. The JATC shall encourage each graduating apprentice to apply for college credit through the NJATC. The JATC may also require each apprentice to acquire any electrical license required for journeymen to work in the jurisdiction covered by this Agreement.

Section 5.15. The parties to this Agreement shall be bound by the Local Joint Apprenticeship and Training Trust fund Agreement which shall conform to Section 302 of the Labor-Management Relations Act of 1947 as amended, ERISA, and other applicable regulations.

The Trustees authorized under this Trust Agreement are hereby empowered to determine the reasonable value of any facilities, materials or services furnished by either party. All funds shall be handled and disbursed in accordance with the Trust Agreement.

Section 5.16. All employers subject to the terms of this Agreement shall contribute the amount of funds specified by the parties' signatory to the local apprenticeship and training trust agreement. The current rate of contribution is \$0.75 per hour for each hour worked. Future contributions shall be determined at least 30 days prior to upcoming increments. This sum shall be due the Trust Fund by the same date as is their payment to the NEBF under the terms of the Restated Employees Benefit Agreement and Trust.

## **ARTICLE VI** **FRINGE BENEFITS**

Section 6.01. It is agreed that in accord with the Employees Benefit Agreement of the National Electrical Benefit Fund (NEBF), as entered into between the National Electrical Contractors Association and the International Brotherhood of Electrical Workers on September 3, 1946, as amended, and now delineated as the Restated Employees Benefit Agreement and Trust, that unless authorized otherwise by the NEBF, the individual employer will forward monthly to the NEBF's designated local collection agent an amount equal to 3% of the gross monthly labor payroll paid to, or accrued by, the employees in this bargaining unit, and a completed payroll report prescribed by the NEBF. The payment shall be made by check or draft and shall constitute a debt due and owing to the NEBF on the last day of each calendar month, which may be recovered by suit initiated by the NEBF or its assignee. The payment and the payroll report shall be mailed to reach the office of the appropriate local collection agent not later than fifteen (15) calendar days following the end of each calendar month.

The individual Employer hereby accepts, and agrees to be bound by, the Restated Employees Benefit Agreement and Trust.

An individual Employer who fails to remit as provided above shall be additionally subject to having his agreement terminated upon seventy-two (72) hours notice in writing being served by the Union, provided the individual employer fails to show satisfactory proof that the required payments have been paid to the appropriate local collection agent.

The failure of an individual Employer to comply with the applicable provisions of the Restated Employees Benefit Agreement and Trust shall also constitute a breach of his labor agreement.

Section 6.02. The individual Employer shall contribute and forward monthly to the New England

Electrical Workers Health Benefit Fund an amount equal to \$8.20 for each hour which he is obliged to pay to the employees in the bargaining unit, and a completed payroll report prescribed by the Trustees. The payment and payroll report shall be mailed to reach the Trustees or their designated agent not later than 15 calendar days following the end of each calendar month. The individual Employer accepts and hereby agrees to be bound by the New England Electrical Workers Benefit Trust. Future contributions shall be determined at least 30 days prior to upcoming increments.

Effective August 1, 2015, the individual Employer shall contribute and forward monthly to the NECA/IBEW Family Medical Care Plan (FMCP) an amount equal to \$9.70 per hour worked which he is obligated to pay to the employees in this bargaining unit, and a completed payroll report prescribed by the FMCP. The payment and payroll report shall be mailed to reach the FMCP or their designated agent not later than fifteen (15) calendar days following the end of each calendar month. The individual Employer hereby accepts, and agrees to be bound by, the FMCP Agreement and Trust.

Section 6.03. The individual Employer shall contribute and forward monthly to the Local Union 490, IBEW Pension Fund an amount equal to \$5.40 for each hour which he is obliged to pay to the employees in the bargaining unit, and a completed payroll report prescribed by the Trustees. The payment and payroll report shall be mailed to reach the Trustees or their designated agent not later than 15 calendar days following the end of each calendar month. The individual Employer accepts and hereby agrees to be bound by the Local Union 490, IBEW Pension Fund Agreement and Trust. Future contributions shall be determined at least 30 days prior to upcoming increments.

Section 6.04. The individual Employer shall contribute and forward monthly to the Local Union 490, IBEW Annuity Fund an amount equal to \$2.50 as of June 1, 2015, \$2.00 as of September 1, 2015, and \$2.25 as of June 1, 2016 for each hour which he is obliged to pay to the employees in the bargaining unit, and a completed payroll report prescribed by the Trustees. The payment and payroll report shall be mailed to reach the Trustees or their designated agent not later than 15 calendar days following the end of each calendar month. The individual Employer accepts and hereby agrees to be bound by the Local Union 490, IBEW Annuity Fund Agreement and Trust. Future contributions shall be determined at least 30 days prior to upcoming increments.

Section 6.05. Individual Employers who fail to remit as provided in Sections 6.02, 6.03, and 6.04 shall be additionally subject to having this Agreement terminated upon seventy-two (72) hours notice, in writing, being served by the Union provided the individual Employer fails to show satisfactory proof that the required payments have been made.

Section 6.06. (a) The failure of an individual Employer to comply with the provisions of Sections 6.01, 6.02, 6.03, and 6.04 shall also constitute a breach of this Labor Agreement. As a remedy for such a violation, the Labor-Management Committee and/or the Council on Industrial Relations for the Electrical Contracting Industry, as the case may be, are empowered, at the request of the Union, to require an Employer to pay into the affected Joint Trust Funds established under this Agreement any delinquent contributions to such funds which have resulted from the violation. (b) If as a result of violations of this section, it is necessary for the Union and/or the Trustees of the Joint Trust Funds to institute court action to enforce an award rendered in accordance with subsection (a) above, or to defend an action which seeks to vacate such award, the Employer shall pay any accountants' and attorneys' fees incurred by the Union and/or Fund Trustees plus cost of the litigation which may have resulted from the bringing of such court action.

## **ARTICLE VII**

## **NATIONAL ELECTRICAL INDUSTRY FUND (NEIF)**

Section 7.01. Each individual Employer shall contribute an amount not to exceed one percent (1%) nor less than .2 of 1% of the productive electrical payroll as determined by each local Chapter and approved by the Trustees, with the following exclusions:

1) Twenty-five percent (25%) of all productive electrical payroll in excess of 75,000 man-hours paid for electrical work in any one Chapter area during any one calendar year but not exceeding 150,000 man hours.

2) One hundred percent (100%) of all productive electrical payroll in excess of 150,000 man-hours paid for electrical work in any one Chapter area during any one calendar year.

(Productive electrical payroll is defined as the total wages including overtime paid with respect to all hours worked by all classes of electrical labor for which a rate is established in the prevailing labor area where the business is transacted.)

Payment shall be forwarded monthly to the National Electrical Industry Fund in a form and manner prescribed by the Trustees no later than fifteen (15) calendar days following the last day of the month in which the labor was performed. Failure to do so will be considered a breach of this Agreement on the part of the individual Employer.

## **ARTICLE VIII** **LABOR MANAGEMENT COOPERATION COMMITTEE (LMCC)**

Section 8.01. The parties agree to participate in a Labor Management Cooperation Fund, under authority of Section 6(b) of the Labor Management Cooperation Act of 1978, 29 U.S.C. 175(a) and Section 302(c)(9) of the Labor-Management Relations Act, 29 U.S.C. 186(c)(9). The purposes of this Fund include the following:

1. to improve communications between representatives of Labor and Management;
2. to provide workers and employers with opportunities to study and explore new and innovative joint approaches to achieving organizational effectiveness;
3. to assist workers and employers in solving problems of mutual concern not susceptible to resolution within the collective bargaining process;
4. to study and explore ways of eliminating potential problems which reduce the competitiveness and inhibit the economic development of the electrical construction industry;
5. to sponsor programs which improve job security, enhance economic and community development, and promote the general welfare of the community and industry;
6. to engage in research and development programs concerning various aspects of the industry, including, but not limited to, new technologies, occupational safety and health, labor relations, and new methods of improved production;
7. to engage in public education and other programs to expand the economic development of the electrical construction industry;
8. to enhance the involvement of workers in making decisions that affect their working lives; and
9. to engage in any other lawful activities incidental or related to the accomplishment of these purposes and goals.

Section 8.02. The Fund shall function in accordance with, and as provided in, its Agreement and Declaration of Trust, and any amendments thereto and any other of its governing documents. Each Employer hereby accepts, agrees to be bound by, and shall be entitled to participate in the LMCC, as



provided in said Agreement and Declaration of Trust.

Section 8.03. Each employer shall contribute \$1.00 per hour as of June 1, 2015, \$0.50 per hour as of September 1, 2015, and \$0.75 per hour as of June 1, 2016 for each hour worked. Future contributions shall be determined at least 30 days prior to upcoming increments. Payment shall be forwarded monthly, in a form and manner prescribed by the Trustees, no later than fifteen (15) calendar days following the last day of the month in which the labor was performed. The Boston Chapter, NECA, or its designee, shall be the collection agent for this Fund.

Section 8.04. If an Employer fails to make the required contributions to the Fund, the Trustees shall have the right to take whatever steps are necessary to secure compliance. In the event the Employer is in default, the Employer shall be liable for a sum equal to 15% of the delinquent payment, but not less than the sum of twenty dollars (\$20.00), for each month payment of contributions is delinquent to the Fund, such amount being liquidated damages, and not a penalty, reflecting the reasonable damages incurred by the Fund due to the delinquency of the payments. Such amount shall be added to and become a part of the contributions due and payable, and the whole amount due shall bear interest at the rate of ten percent (10%) per annum until paid. The Employer shall also be liable for all costs of collecting the payment together with attorneys' fees.

## **ARTICLE IX**

### **NATIONAL LABOR MANAGEMENT COOPERATION COMMITTEE (NLMCC)**

Section 9.01. The parties agree to participate in the NECA-IBEW National Labor-Management Cooperation Fund, under authority of Section 6(b) of the Labor Management Cooperation Act of 1978, 29 U.S.C. 175(a) and Section 302(c)(9) of the Labor-Management Relations Act, 29 U.S.C. 186(c) (9). The purposes of this Fund include the following:

1. to improve communication between representatives of labor and management;
2. to provide workers and employers with opportunities to study and explore new and innovative joint approaches to achieving organization effectiveness;
3. to assist worker and employers in solving problems of mutual concern not susceptible to resolution within the collective bargaining process;
4. to study and explore ways of eliminating potential problems which reduce the competitiveness and inhibit the economic development of the electrical construction industry;
5. to sponsor programs which improve job security, enhance economic and community development, and promote the general welfare of the community and the industry;
6. to encourage and support the initiation and operation of similarly constituted local labor-management cooperation committees;
7. to engage in research and development programs concerning various aspects of the industry, including, but not limited to, new technologies, occupation safety and health, labor relations, and new methods of improved production;
8. to engage in public education and other programs to expand the economic development of the electrical construction industry;
9. to enhance the involvement of workers in making decisions that affect their working lives; and
10. to engage in any other lawful activities incidental or related to the accomplishment of these purposes and goals.

Section 9.02. The Fund shall function in accordance with, and as proved in, it's Agreement and Declaration of Trust, and any amendments thereto and any other of its governing documents. Each

Employer hereby accepts, agrees to be bound by, and shall be entitled to participate in the NLMCC, as provided in said Agreement and Declaration of Trust.

Section 9.03. Each employer shall contribute one cent (.01) per hour worked under this Agreement up to a maximum of 150,000 hours per year. Payment shall be forwarded monthly, in a form and manner prescribed by the Trustees, no later than fifteen (15) calendar days following the last day of the month in which the labor was performed. Boston Chapter, NECA, or its designee, shall be the collection agent for this Fund.

Section 9.04. If an Employer fails to make the required contributions to the Fund, the Trustees shall have the right to take whatever steps are necessary to secure compliance. In the event the Employer is in default, the Employer shall be liable for a sum equal to 15% of the delinquent payment, but not less than the sum of twenty dollars (\$20.00), for each month payment of contributions is delinquent to the Fund, such amount being liquidated damages, and not a penalty, reflecting the reasonable damages incurred by the Fund due to the delinquency of the payments. Such amount shall be added to and become a part of the contributions due and payable, and the whole amount due shall bear interest at the rate of ten percent (10%) per annum until paid. The Employer shall also be liable for all costs of collecting the payment together with attorneys' fees.

## **ARTICLE X**

### **SAFETY**

Section 10.01. There shall be a Joint Safety Committee consisting of three (3) members representing the Employer and three (3) members representing the Union. The duties of this Committee shall be to develop and recommend safe work rules that are equal to or greater than the Standards of Construction as established by the Occupational Safety and Health Act of 1970 or other applicable Federal or State laws. Such rules, and the other safety rules provided in this Article, are minimum rules and not intended to imply that the Union objects to the establishment and imposition by the Employers of additional or more stringent safety rules to protect the health and safety of the employees.

Section 10.02. It shall also be the function of this Committee to study these safe work rules and recommend their update to the parties to this Agreement for possible inclusion in this Agreement. This Committee shall meet at least once each quarter and also when called by the Chairperson or when called by a majority of the current Committee members.

Section 10.03. Members of the Joint Safety Committee shall be selected by the party they represent. Their term of office shall be three (3) years unless removed by the party they represent. The term of one (1) Employer representative and one (1) Union representative shall expire each year with successors to be determined in the same manner as the original appointments. A committee member is eligible to succeed him/herself.

Section 10.04. Two (2) Journeymen shall work together on all energized circuits of 440 volts AC or 250 volts DC or respective higher voltage. Journeymen shall be used in assisting a Journeyman/Wireman while splicing cable.

Section 10.05. Journeymen/Wiremen while splicing cable shall not be required to work on wires or cables when the difference in potentials is over 200 volts between any two conductors or between any conductor and ground unless assisted by one Journeyman. At no time shall Journeymen/Wiremen while splicing cable be required to work on energized cables carrying in excess of 480 volts.

Section 10.06. No employees shall be compelled to use a powder actuated tool. Only qualified employees shall be permitted to use powder actuated tools.

Section 10.07. The Employer shall furnish hard hats when such are required and shall also furnish proper individual protective gear to workmen engaged in burning and welding operations. The Employer shall also furnish all rubber and protective clothing without charge when required by working conditions. Employees shall be responsible for rubber and protective clothing issued to them and shall return same to the Employer at the time of termination.

Section 10.08. The safe work practices that are in effect on utility company property which are more stringent than those in this Agreement shall apply to work which is performed on that property under the terms of this Agreement.

Section 10.09. It is the Employer's exclusive responsibility to insure the safety of its employees and their compliance with these safety rules and standards.

## **ARTICLE XI** **SUBSTANCE ABUSE**

Section 11.01. The dangers and costs which alcohol and other chemical abuses can create in the electrical contracting industry in terms of safety and productivity are significant. The parties to this Agreement resolve to combat chemical abuse in any form and agree that, to be effective, programs to eliminate substance abuse and impairment should contain a strong rehabilitation component. The local parties recognize that the implementation of a drug and alcohol policy and program must be subject to all applicable federal, state, and local laws and regulations. Such policies and programs must also be administered in accordance with accepted scientific principles, and must incorporate procedural safeguards to ensure fairness in application and protection of legitimate interests of privacy and confidentiality. To provide a drug-free workforce for the Electrical Construction Industry, each IBEW local union and NECA chapter shall implement an area-wide Substance Abuse Testing Policy. The policy shall include minimum standards as required by the IBEW and NECA. Should any of the required minimum standards fail to comply with federal, state, and/or local laws and regulations, they shall be modified by the local union and chapter to meet the requirements of those laws and regulations.

## **ARTICLE XII CODE OF** **EXCELLENCE**

Section 12.01. The parties to this Agreement recognize that to meet the needs of our customers, both employer and employee must meet the highest levels of performance, professionalism, and productivity. The Code of Excellence has proven to be a vital element in meeting the customers' expectations. Therefore each IBEW local union and NECA chapter shall implement a Code of Excellence Program. The program shall include minimum standards as designed by the IBEW and NECA.

### **Overview**

The Code of Excellence is a program for IBEW Local Unions in the Construction industry to promote and bring out the best from our construction members on the jobs performed by our signatory contractors.

The Code of Excellence:      Highest Quality and Quantity of work

Using best skills  
Using best work practices.

The goal of the Code of Excellence is a job built on time, under budget, and built right the first time.

The Code of Excellence will instill in our membership pride in their craftsmanship. Upon completion of the job, the lasting impression of quality workmanship will remain with the customer, prompting him to utilize the IBEW again.

The Code of Excellence can be accomplished through teamwork on the job, and projecting a good attitude about the work we do on and off the job.

The Code of Excellence must have the total support of the Local Union at all levels, and the officers of the local union must pay particular attention to this task by setting an example for others to follow, as well as promotion of the Code of Excellence.

Because the role of an "Excellence Steward" is critical to the program's success, the business manager, with the full support of the officers of the local union, will carefully appoint, extensively train, and activate stewards on the job. The steward shall have full responsibility for communicating the Code of Excellence to all members, and insuring all members are meeting fully their responsibility to our Code of Excellence.

#### **IBEW Local Union Responsibilities**

The business manager, through and in partnership with the stewards, shall insure the following responsibilities of the IBEW Local Union in implementing the Code of Excellence are being met, every day, and by every member:

- All members are adhering to the contractual starting and quitting times
- Break times are limited to the time allowed by the contract, or agreement(s)
- Members are adhering to the lunch periods established in the Agreement
- Members shall meet their responsibility to have all tools on the established tool list
- Members meet their responsibility in taking care of the tools provided by the employer
- Members meet their responsibility to be fit for duty, and our zero tolerance policy for substance abuse is strictly met
- Members are productive and idle time is kept to a minimum
- Members meet their responsibility to the employer and fellow members employed on the job to arrive for work on time and ready to work
- Members will meet their contractual responsibility to eliminate disruptions on the job
- Members will respect the property of the customer, and graffiti and other forms of destruction and waste will not be tolerated
- Member will respect the Customer, Client(s), Contractor, and the IBEW by not wearing clothing or buttons that have offensive wording or symbols
- The steward and leaders on the job will work with other members who have bad work habits, setting a standard of quality and productivity second to none, to which each member on the job, will comply effectively working as a team
- Members will carry the necessary and proper tools to meet their contractual responsibility as highly skilled, qualified craftsmen
- Slowdowns, and other methods utilized to extend jobs or provide for overtime will not be tolerated
- Outside activities that cast the Brotherhood or the local union in a bad light, and are not approved by the business manager or steward will not be tolerated

- Any inappropriate behavior toward another member or group of members will not be tolerated
- Members will meet their contractual responsibility to utilize proper safety equipment and methods
- Members must meet their responsibility to not leave the jobsite without proper approval
- No member shall solicit funds on any project or job without the prior approval of the business manager
- No use of personal cell phone(s) will be allowed on the project, except for lunch or break periods
- No sale of merchandise without the prior approval of the business manager

### **Employer Responsibilities**

NECA and its signatory employers have a responsibility to manage their jobs effectively, and as such have the following responsibilities under the Code of Excellence:

- To address ineffective superintendents, general foremen, and foremen
- To insure proper job layout, to minimize down time
- To insure that there are proper numbers and types of necessary tools
- To insure proper storage for contractor and employee tools
- To insure that there are adequate numbers of employees to perform the work efficiently, and conversely, to limit the number of employees to the work at hand, which demonstrates to the customer the efficiency of our partnership
- To provide the necessary leadership skills for jobsite leaders to eliminate problems
- To insure that proper types and quantities of materials are available to insure job progress
- To insure that jobsite leaders take the necessary responsibility for mistakes created by management decisions
- To eliminate unsafe work conditions, and insure that proper safety training, equipment, and methods are utilized

### **Methods of resolving problems through the Code of Excellence**

It is understood that both the IBEW Local Union and the signatory contractor have obligations and responsibilities under the Code of Excellence. The Local Union's role is to assist management with individual problems with its members, to insure that the Local Union's obligation to provide honest and diligent service to the employer is maintained and improved.

### **Local Union Responsibilities**

- The steward will work with members to correct and solve problems related to job performance
- The local union must provide specialized training for "Excellence" Stewards
- The steward will communicate on a regular basis with the management team to communicate job progress, work schedules, and work process problems to the members
- Monthly meetings will be established between the business manager, or his representative to discuss and resolve issues related to the compliance of the Code of Excellence. If applicable, management will be invited to attend and participate in the process
- In the event an individual member is not meeting membership responsibilities, the Local Union Executive board shall have the responsibility to address problem member(s) not meeting their obligation to the IBEW, up to and including charges being filed. The role of the local union is to correct the problem, by whatever means are at its disposal
- The steward and management will endeavor to correct problems with individual members on the jobsite. If the member is unwilling or unable to make the necessary changes, management must make the decision whether that employee/member is detrimental to the goals of the Code of Excellence, and should remain employed



### **Management Responsibilities**

The ultimate responsibility of managing the job falls squarely on the shoulders of contractor management. Problems with job performance can be addressed as follows:

- Management will address concerns brought forth by the steward. If the lowest level of management does not resolve the problem, the steward may choose to address the issue with higher levels of management
- If the issue is not resolved, the local union or contractor may call for a contractually established Labor-Management meeting to resolve concerns or issues
- The local union may elicit customer support to address the problem

### **Other methods for consideration, with contractor and local union support:**

- Weekly job progress "toolbox" meetings
- Weekly LMCC session to share problems between employers, and solutions to job problems
- Foremen and general foremen should be certified as "Excellence" job leaders through attendance of NECA's Electrical Project Supervision classes

### **SEPARABILITY CLAUSE**

Should any provision of this Agreement be declared illegal by any court of competent jurisdiction such provision shall immediately become null and void leaving the remainder of this Agreement in full force and effect and the parties shall, thereupon, seek to negotiate substitute provisions which are in conformity with the applicable law.

SUBJECT TO THE APPROVAL OF THE INTERNATIONAL PRESIDENT OF THE I.B.E.W.

Electrical Contractors Association of  
Greater Boston, Inc., New Hampshire  
Division of N.E.C.A.

Local Union #490, I.B.E.W.

\_\_\_\_\_  
Glenn Kingsbury, Executive Manager

\_\_\_\_\_  
Denis R. Beaudoin, Sr., Business Manager

Date: \_\_\_\_\_

Date: \_\_\_\_\_

MEMORANDUM OF UNDERSTANDING  
COMMERCIAL WORK

---

Memorandum of Understanding by and between the National Electrical Contractors Association, Boston Chapter, New Hampshire Division and Local Union 490, I.B.E.W. This Memorandum of Understanding will modify the Inside Agreement in currently effect between the parties.

1. **Term of Agreement** - This Memorandum of Understanding will become effective June 1, 2015 through May 31, 2018 and will continue in effect until terminated in the manner provided in the Inside Agreement
2. **Scope of Work** – The Scope of Work as outlined in the aforementioned Inside Agreement is hereby modified to include only that which is described as Commercial facilities such as: Educational, Health Care, Recreational, Wholesale, Agricultural, Retail Outlets, Parking Garages, and Churches. The rate shall not apply to industrial, utility, or Davis-Bacon work unless authorized by the Business Manager of Local 490 and the Manager of Boston Chapter, NECA. Residential Wireman shall be allowed to perform work under the Commercial heading.

**3. Rate of Pay**

<b>Effective:</b>	<b>6/1/15</b>	<b>9/1/15</b>	<b>6/1/16</b>	<b>6/1/17<sup>1</sup></b>	
JW Wage Rate	\$21.40	\$22.35	\$22.52	\$22.94	per hr.
Health & Welfare Fund	\$8.20	\$9.70	\$9.70	\$9.70	per hr.
Local 490 Pension Fund	\$5.40	\$5.40	\$5.40	\$5.40	per hr.
L490 Annuity Fund	\$1.50	--	--	--	per hr.
L-M Cooperation Trust	\$1.00	\$0.50	\$0.75	\$0.75	per hr.
Apprenticeship & Training	\$0.75	\$0.75	\$0.75	\$0.75	per hr.
NLMCC	\$0.01	\$0.01	\$0.01	\$0.01	per hr.
NEBF (3% of gross labor payroll)	\$0.84	\$0.84	\$0.84	\$0.86	
Total	\$38.90	\$39.38	\$39.81	\$40.24	

NEIF\SC (0.6% of gross labor payroll) \$0.17      \$0.17      \$0.17      \$0.17      (not included in Total)

Note 1: Rates for the Commercial Memorandum are set at 83.5% of the Inside Agreement Total Package. Wage\Fringe Package allocation for 6/1/17 remains to be determined.

4. **Apprentices:** The wage rate for apprentices working under this Memorandum will be based on a percentage of the Commercial Rate appropriate with their status in the program (i.e. Period 1&2, 50%; Period 3, 60%, etc.). Apprentices shall also receive the fringe benefit package as listed above.
5. **Project Approvals:** No individual job request or approval is required unless the work falls out of the Scope of Work as described in Section 2. If you have any question as to whether a project falls under the scope of the Commercial Rate, you are encouraged to contact the IBEW or NECA office.

Glenn W. Kingsbury, Executive Manager  
Boston Chapter, NECA-New Hampshire Division  
Date: \_\_\_\_\_

Denis R. Beaudoin, Sr., Business Manager  
Local Union 490, IBEW  
Date: \_\_\_\_\_



UTILITY AGREEMENT

between

NORTHEASTERN LINE CONSTRUCTORS CHAPTER NATIONAL  
ELECTRICAL CONTRACTORS ASSOCIATION, INC.

**and**

LOCAL UNION NO. 104 SOUTH

of the

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS

2015 - 2018

## **UTILITY AGREEMENT**

Agreement by and between the Northeastern Line Constructors Chapter, National Electrical Contractors Association, Inc., and Local Union No. 104, IBEW, entered into August 31, 2015.

It shall apply to all firms who sign a Letter of Assent to be bound by this Agreement.

As used hereinafter in this Agreement, the term "Chapter" shall mean the Northeastern Line Constructors Chapter, NECA, Inc., and the term "Union" shall mean Local Union No. 104, IBEW.

The term "Employer" shall mean an individual firm who has been recognized by an assent to this Agreement.

## **SCOPE OF AGREEMENT**

Work referred to in this Agreement, is Utility Outside Electrical Work as defined in Article XXVIII, Section 4 of the IBEW Constitution and the definitions in this section as follows:

Utility Outside Electrical work shall be defined as work performed for Electric Utility Companies, Telegraph Utility Companies, municipally owned Utility Companies, R.E.A. and Cooperatives.

This Agreement shall cover the construction and maintenance work (wood, metal or any other material), the digging of holes for poles, anchors, footer foundations (by hand or with mechanical equipment), the moving of men, tools and equipment, the unloading and loading of materials from the first drop at the job sites, the handling, assembling and erection of all materials necessary on through to the ultimate completion of this electrical construction and maintenance work.

Commercial Outside Electrical work shall be defined as work performed on the property of private owners, Federal and State Governments and their political subdivision including counties, cities, townships and municipal or state authorities as established by such governmental units, Switch Yards and Substations privately or Utility owned, Radio and Television work and all other work not defined as Utility work.



## **BASIC PRINCIPALS**

The Employer and the Union have a common and sympathetic interest in the Electrical Industry. Therefore, a working system and harmonious relations are necessary to improve the relationship between the Employer, the Union, and the Public. Progress in industry demands a mutuality of confidence between the Employer and the Union. All will benefit by continuous peace and by adjusting any differences by rational, common-sense methods. Now, therefore, in consideration of the mutual promises and agreements herein contained, the parties hereto agree as follows:

## **ARTICLE ■**

### **EFFECTIVE DATE      CHANGES -- GRIEVANCES -- DISPUTES**

**Section 1.01** This Agreement shall take effect August 30, 2015, and shall remain in effect until September 1, 2018, unless otherwise specifically provided for herein. It shall continue in effect from year to year thereafter, from September 1 through August 31 of each year, unless changed or terminated in the way later provided herein.

**Section 1.02** (a) Either party or an Employer withdrawing representation from the Chapter or not represented by the Chapter, desiring to change or terminate this Agreement must provide written notification at least 90 days prior to the expiration date of the Agreement or any anniversary date occurring thereafter.

(b) Whenever notice is given for changes, the nature of the changes desired must be specified in the notice, or no later than the first negotiating meeting unless mutually agreed otherwise.

(c) The existing provisions of the Agreement, including this Article, shall remain in full force and effect until a conclusion is reached in the matter of proposed changes.

(d) Unresolved issues or disputes arising out of the failure to negotiate a renewal or modification of this agreement that remain on the 20th of the month preceding the next regular meeting of the Council on Industrial Relations for the Electrical Contracting Industry (CIR) may be submitted jointly or unilaterally to the Council for adjudication. Such unresolved issues or disputes shall be submitted no later than the next

regular meeting of the Council following the expiration date of this agreement or any subsequent anniversary date. The Council's decisions shall be final and binding.

(e) When a case has been submitted to the Council, it shall be the responsibility of the negotiating committee to continue to meet weekly in an effort to reach a settlement on the local level prior to the meeting of the Council.

(f) Notice of a desire to terminate this Agreement shall be handled in the same manner as a proposed change.

**Section 1.03** This Agreement shall be subject to change or supplement at any time by mutual consent of the parties hereto. Any such change or supplement agreed upon shall be reduced to writing, signed by the parties hereto, and submitted to the International Office of the IBEW for approval, the same as this Agreement.

**Section 1.04** There shall be no stoppage of work either by strike or lockout because of any proposed changes in this Agreement or dispute over matters relating to this Agreement. All such matters must be handled as stated herein.

**Section 1.05** There shall be a Labor-Management Committee of three representing the Union and three representing the Employers. It shall meet regularly at such stated times as it may decide. However, it shall also meet within 48 hours when notice is given by either party. It shall select its own Chairman and Secretary. The Local Union shall select the Union representatives and the Chapter shall select the management representatives.

**Section 1.06** All grievances or questions in dispute shall be adjusted by the duly authorized representatives of each of the parties to this Agreement. In the event that these two are unable to adjust any matter within 48 hours, they shall refer the unresolved matters to the Labor-Management Committee.

**Section 1.07** All matters coming before the Labor-Management Committee shall be decided by a majority vote. Four members of the Committee, two from each of the parties hereto, shall be a quorum for the transaction of business, but each party shall have the right to cast the full vote of its membership and it shall be counted as though all were present and voting.

**Section 1.08** Should the Labor-Management Committee fail to agree or to adjust any matter, such shall then be referred to the Council on Industrial Relations for the Electrical Contracting Industry for adjudication. The Council's decisions shall be final and binding.

**Section 1.09** When any matter in dispute has been referred to conciliation or arbitration for adjustment, the provisions and conditions prevailing prior to the time such matters arose shall not be changed or abrogated until agreement has been reached or a ruling has been made.

## **ARTICLE II**

### **EMPLOYER RIGHTS - UNION RIGHTS**

**Section 2.01** The intent of this Agreement is to establish uniform conditions of employment for the Electrical Workers referred by the Union to the Electrical Contractor for the purpose of doing line construction, reconstruction, maintenance line work, station and cable work (underground residential distribution), or other electrical work coming properly under the outside branch of the trade based upon the IBEW Constitution and Local Union No. 104's By-Laws, and the Charter except as otherwise provided for in this Agreement or any supplement thereto.

**Section 2.02** The Union understands the Employer is responsible to perform the work required by the owner. The Employer shall, therefore, have no restrictions except those specifically provided for in the collective bargaining agreement, in planning, directing and controlling the operation of all his work, in deciding the number and kind of employees to properly perform the work, in hiring and laying off employees, in transferring employees from job to job within the Local Union's geographical jurisdiction, in determining the need and number as well as the person who will act as Foreman, in requiring all employees to observe the Employer's and/or owner's rules and regulations not inconsistent with this Agreement, in requiring all employees to observe all safety regulations, and in discharging employees for proper cause.

**Section 2.03** The Employer recognizes the Union to be the exclusive representative for the purpose of collective bargaining with respect to the rates of pay, wages, hours of employment and other conditions of employment.

**Section 2.04** This shall include all General Foreman, Head Lineman, Foreman, Journeyman Lineman, Splicer, Apprentices, Line Equipment Operator, Cablerman, Driver, Groundman (Material Man), Driver Groundman, Groundman employed by the Employer and such other employees as may perform work which is under the jurisdiction of the Union under the International Constitution of the International Brotherhood of Electrical Workers and the By-Laws of Local Union No. 104.

**Section 2.05** All employees who are members of the Union on the effective date of this Agreement shall be required to remain members of the Union as a condition of employment during the term of the Agreement. New employees shall be required to become and remain members of the Union as a condition of employment from and after the thirty-first day following the dates of their employment, or the effective date of this Agreement, whichever is

later.

**Section 2.06** The Union agrees that if, during the life of this Agreement, it grants to any other Employer in the Electrical Contracting Industry on work covered by this Agreement, any better terms or conditions than those set forth in this Agreement, such better terms or conditions shall be made available to the Employer under this Agreement and the Union shall immediately notify the Employer of any such concession.

**Section 2.07** Certain qualifications, knowledge, experience and financial responsibility are required of an Electrical Contractor. Therefore, an Electrical Contractor is a person, firm or corporation having these qualifications and maintaining a permanent place of business other than his residence, a suitable financial status to meet payroll requirements, is in possession of a valid State License as an Electrical Contractor and employs at least one (1) Journeyman Lineman regularly, and no Contractor shall work as Foreman or work with tools.

**Section 2.08** No Contractor shall directly or indirectly, or by a subterfuge sublet, or contract with members of the Union all or any part of the Labor services required by any contract of such contractor.

**Section 2.09** An employer signatory to a collective bargaining agreement or to a letter of assent to an agreement with another IBEW Local Union, who signs an assent to this Agreement, may bring up to four bargaining unit employees employed in that Local Union's jurisdiction into this Local's jurisdiction and up to two bargaining unit employees per job from that Local's jurisdiction to this Local's jurisdiction for specialty or service and maintenance work. All charges of violations of this section shall be considered as a dispute and shall be processed in accordance with the provisions of this agreement for the handling of grievances with the exception that any decision of a local Labor-Management Committee that may be contrary to the intent of the parties to the National Agreement on Employee Portability, upon recommendation of either or both the appropriate IBEW International Vice President or NECA Regional Executive Director, is subject to review, modification, or rescission by the Council on Industrial Relations.

**Section 2.10** For the employees covered by this Agreement, the Contractor shall make regular payments to the Federal and State Governments for social security, workmen's compensation, and unemployment insurance as provided by law, and shall furnish



satisfactory proof of such to the Union upon request.

**Section 2.11** The Local Union is a part of the International Brotherhood of Electrical Workers and any violation or annulment of an individual Employer of the approved Agreement of this or any other Local Union of the IBEW, other than violations of Paragraph 2 of this Section, will be sufficient cause for the cancellation of his Agreement by the Local Union, after a finding has been made by the International President of the Union that such a violation or annulment has occurred.

The subletting, assigning or transfer by an individual Employer of any work in connection with electrical work to any firm or corporation not recognizing the IBEW or one of its Local Unions as the collective bargaining representative of his employees on any electrical work in the jurisdiction of this or any other Local Union to be performed at the site of the construction, alteration, painting or repair of a building, structure or other work, will be deemed a material breach of this Agreement.

All charges of violations of Paragraph 2 of this Section shall be considered as a dispute and shall be processed in accordance with the provisions of this Agreement covering the procedure for the handling of grievances and the final and binding resolution of disputes.

**Section 2.12** The Business Manager shall have the right to appoint a Steward at any headquarters or any job where workmen are employed under the terms of this Agreement. Such Steward shall see that this Agreement and working rules are observed, and he shall be allowed sufficient time to perform these duties during regular working hours. Under no circumstances shall the Contractor dismiss or otherwise discriminate against an employee for making a complaint or giving evidence with respect to alleged violation of any provision of the Agreement. The Steward shall be a Journeyman Lineman and shall be the last man laid off. This provision is subject to the employer's rights under the Agreement.

**Section 2.13** The Union reserves the right to discipline its members for violations of its laws, rules and agreements.

**Section 2.14** The representatives of the Union shall be allowed access to any headquarters or job at any reasonable time where workmen are employed under the terms of this Agreement.

**Section 2.15** Grievances must be initiated and both parties informed within thirty (30) days from the time that the alleged violations became known.

## ARTICLE III

### HOURS -- WAGE PAYMENTS      WORKING CONDITIONS and HOLIDAYS

**Section 3.01**      (a) Eight (8) hours work between 6:30 a.m. and 5:00p.m. (unless otherwise mutually agreed upon between the Employer and the Union) with one-half (1/2) hour for lunch shall constitute a work day. Forty (40) hours within five (5) days, Monday through Friday shall constitute the work week.

(b) The employer, with twenty-four (24) hours prior notice to the Union, may institute a workweek consisting of four (4) consecutive ten (10) hour days between the hours of 6:30a.m. and 6:00 p.m., Monday through Thursday, with one-half (1/2) hour allowed for a lunch period. Friday may be used as a make-up day, and if utilized, a minimum of eight (8) hours must be scheduled. After ten (10) hours in a workday, or forty (40) hours in a workweek, overtime shall be paid at a rate of one and one-half (1 1/2) times the regular rate of pay.

(c) If a contractor works five (5) days per week, he must pay eight (8) hours straight time per day and any additional hours will be paid at the prevailing overtime rate.

**Section 3.02**      Wages shall be paid weekly, no later than quitting time on Friday, and no more than five (5) days wages may be withheld at any time. The employees shall be paid on employer's time. If regular pay day falls on a holiday, the employees shall be paid on the preceding day. There shall be no deductions from employees pay checks or pay envelopes except those provided and authorized by law and/or those authorized in writing by the individual employee. When the contractor has the technology, employers will make direct deposit available upon request of employee.

**Section 3.03**      Should more than five (5) days wages be withheld and an employee is not paid off, waiting time shall be charged at the regular rate of eight (8) hours per day until payment is made.

**Section 3.04**      When an employee gives one weeks notice of his intention to terminate his employment, he shall be paid all of his wages at the expiration of his notice. Any workman laid off by the employer shall be paid all his wages immediately. In the event he is not paid off, waiting time at the regular rate shall be charged until payment is made. Any workman discharged by the employer, the check will be issued the next business day.

**Section 3.05** When a man is assigned to a higher classification temporarily, he will be compensated at the higher rate for the entire eight (8) hour period.

**Section 3.06** Should either the Union or the Employer request a conference prior to the bid date on a specific project, this conference shall be held within seventy-two (72) hours of notification by either party.

**Section 3.07** All employees are to report to their designated reporting area at the specified starting time and return to that area at the completion of the days employment.

**Section 3.08** The Employer shall furnish transportation from headquarters to the work area and from the work area to headquarters.

**Section 3.09** Workmen shall not use their own cars for transporting tools or materials, nor shall be required to use his own car for transportation after reporting to headquarters.

**Section 3.10** The designated headquarters shall be determined by both parties with proper washing facilities (when and where possible), proper sanitary facilities, shelter from inclement weather, and parking.

**Section 3.11** Overtime on all jobs shall be equally and impartially divided when possible within the employee classification concerned.

**Section 3.12** When so elected by the contractor, multiple shifts of eight (8) hours for at least five (5) days' duration may be worked. When two (2) or three (3) shifts are worked:

The first shift (day shift) shall consist of eight (8) consecutive hours worked between the hours of 8:00AM and 4:30 PM. Workmen on the "day shift" shall be paid at the regular hourly rate of pay for all hours worked.

The second shift (swing shift) shall consist of eight (8) consecutive hours worked between the hours of 4:30 PM and 1:00AM. Workmen on the "swing shift" shall be paid at the regular hourly rate of pay plus 17.3% for all hours worked.

The third shift (graveyard shift) shall consist of eight (8) consecutive hours worked between the hours of 12:30 AM and 9:00 AM. Workmen on the "graveyard shift" shall be paid at the regular hourly rate of pay plus 31.4% for all hours worked.

The Employer shall be permitted to adjust the starting hours of the shift by up to two (2) hours in order to meet the needs of the customer.

If the parties to the Agreement mutually agree, the shift week may commence with the third shift (graveyard shift) at 12:30 AM Monday to coordinate the work with the customer's work schedule. However, any such adjustment shall last for at least a five (5) consecutive days duration unless mutually changed by the parties to this agreement.

An unpaid lunch period of thirty (30) minutes shall be allowed on each shift. All overtime work required before the established start time and after the completion of eight (8) hours of any shift shall be paid at one and one-half times the "shift" hourly rate.

There shall be no pyramiding of overtime rates and double the straight rate shall be the maximum compensation for any hour worked. There shall be no requirement for a day shift when either the second or third shift is worked.

**Section 3.13** When employees who are performing line work report for work and inclement weather conditions prevail, or there exists conditions beyond the employees' control, they shall be paid a minimum of two (2) hours or for actual hours worked. Employees must remain for the two (2) hour period unless excused by the proper authority. Management Representative shall decide or determine when work shall start and continue. If inclement weather interferes with the construction operation after the men have started work (work meaning productive, physical work), they shall receive a minimum of four (4) hours pay. After four (4) hours, employees shall be paid for actual hours worked. During the report period, when suitable weather protection is provided, the employee shall be required to perform such work as assigned by the employer.

(a) Crews required to perform aerial work or work on energized conductors and/or energized electrical equipment in inclement weather shall be paid double the hourly rate. This shall not apply to the clearance of lines, grounds, switches, etc. on routine work when the weather becomes inclement.

(b) Employees will have the option to work in inclement weather on work other than described in (a).

(c) Employees working in the rain shall be furnished with rain gear and slush boots. Employees shall be accountable for the equipment issued.

(d) When requested by the employer, employees may be placed "on call" during anticipated emergency work. These employees will hold themselves available so that they may be contacted within hour. For each twelve hour period during which an employee is "on call", he shall receive three (3) hours pay at straight time. For each additional "on call" hour after 12, a pro-rated portion shall be paid. On Saturday, Sunday or on an observed holiday, he shall receive four and one-half hours pay at straight time rate. When called out, the employee's time starts when he arrives at the headquarters of the employer.

**Section 3.14** Emergency work caused by storm, catastrophe, act of God, and circumstances beyond the control of the employer will be paid as follows:

(a) All stand-by hours are paid at time and one half (1 1/2), excluding Sundays and Holidays which are paid at double time.

(b) Stand-by pay will continue until the crews are sent to work or until they return to the contractor base.

(c) When crews are requested to stand-by at the contractor's base or hotel, hours are paid at time and one half (1 1/2) until they begin work.

(d) All work hours are paid at double time, including mobilization. Crews reporting to the customer are considered to be at work.

(e) After the crews have worked their shift, there is no pay for rest period.

(f) When de-mobilization occurs after a rest period, the workers are paid time and one-half (1 1/2) for a minimum of four (4) hours, excluding Sundays and Holidays which are paid at double time.

(g) When de-mobilization occurs at the end of a shift, double time will remain in effect.

Neither the employer nor the Union should decide when the emergency is over. That decision rests with the customer.

**Section 3.15** Where lunch hours are worked during the regularly scheduled work day, the employee will receive time and one-half (1 1/2) for his lunch hour and sufficient time to eat with no



deduction from his pay before the sixth hour of his regularly scheduled days work is completed.

**Section 3.16** When the company requires employees to work storm restoration or be away from their homes overnight, the company shall provide and pay for adequate lodgings and meals, and shall advance money therefore when requested by the employee in such cases.

**Section 3.17** When an employee is required to work two (2) or more hours beyond his scheduled work day and planned overtime shall be considered part of the work day, he shall be given time to eat then and every five (5) hours thereafter. Meals are to be paid for by the employer. He shall receive a meal allowance of twenty dollars (\$20.00) per meal. Planned overtime shall be considered as a scheduled work day.

**Section 3.18**     **Holidays**

To be eligible for a guaranteed paid holiday, a man must be employed by the given employer within the jurisdiction of Local Union No. 104 I.B.E.W. for a period of five (5) working days prior to the holidays listed herein next celebrated and shall be entitled to be paid wages and benefits for all holidays listed herein after that, during continuous employment with the given employer within the jurisdiction of Local Union No. 104 I.B.E.W.

The following are the guaranteed paid holidays:

New Year's Day	Labor Day
Memorial Day	Columbus Day
Independence Day	Thanksgiving Day
	Christmas Day

When working a four-ten workweek, holidays that fall during that week are to be paid at ten (10) hours.

**Section 3.19** Should an employee not work the regularly scheduled work day immediately previous to and the regularly scheduled work day immediately following the holiday, he shall not be paid for the holiday unless excused from working the forementioned days or portions thereof by the employer. A lay-off shall be considered being excused by the employer unless this is a termination of a contract by the utility that employs the Contractor.

**Section 3.20** (a) All hours worked on Sundays or Holidays shall be paid at the double time rate.

(b) If an employee is called outside his regular

scheduled hours of work, he will be compensated at the rate of not less than four (4) hours at time and one half (1 1/2) rate of pay.

(c) When required to work Emergency Work on a paid holiday, Employees who have been on the Employers payroll for fifteen (15) working days, shall be paid an eight (8) straight hour job-end bonus.

**Section 3.21** The Employer agrees to deduct and forward to the Financial Secretary of the Local Union upon receipt of a voluntary written authorization -- the additional working dues from the pay of each I.B.E.W. member. The amount to be deducted shall be the amount specified in the approved Local Union By-Laws, which is three and one-half percent (3 1/2%) of the gross wages. Such amount shall be certified to the Employer by the Local Union upon request by the Employer.

**Section 3.22** A line worker who is a certified live line worker that is performing work on an energized electrical system 69KV and above shall receive a 5% increase in their hourly rate of pay for each shift when energized work is performed.

**Section 3.23** A Joint Board of equal members from Labor and Management will determine upgrading of classifications and training for Equipment Operators and Driver Groundman.

**Section 3.24** Jury duty shall be observed in accordance with state laws and regulations.

### **Section 3.25 - Wages District 1**

Massachusetts, the counties of Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Suffolk, Plymouth, Worcester, and the Islands and waters adjacent thereto.

Rhode Island, the entire state and the Islands and waters adjacent thereto.

<b>EFFECTIVE DATES</b>	<b>8/30/15</b>	<b>8/28/16</b>	<b>9/03/17</b>
118% GENERAL FOREMAN	\$50.32	\$51.29	\$52.33
113% FOREMAN	48.18	49.12	50.12
108% HEAD LINEMAN	46.05	46.95	47.90
100% LINEMAN / SPLICER	42.64	43.47	44.35
APPRENTICES:			
90% 7TH PERIOD	38.38	39.12	39.92

85% 6TH PERIOD	36.24	36.95	37.70
80% 5TH PERIOD	34.11	34.78	35.48
75% 4TH PERIOD	31.98	32.60	33.26
70% 3RD PERIOD	29.85	30.43	31.08
65% 2ND PERIOD	27.72	28.26	28.83
60% 1ST PERIOD	25.58	26.08	26.61
85% EQUIPMENT OPERATOR "A"	36.24	36.95	37.70
75% EQUIPMENT OPERATOR "B"	31.98	32.60	33.26
85% CABLEMAN	36.24	36.95	37.70
70% DRIVER GROUNDMAN CDL	29.85	30.43	31.08
55% INEXPERIENCED DRIVER GROUNDMAN	23.45	23.91	24.39
60% CABLE TECHNICIAN	25.58	26.08	26.61
55%- GROUNDMAN	23.45	23.91	24.39
45% INEXPERIENCED GROUNDMAN	19.19	19.56	19.96

#### **ARTICE IV**

##### **REFERRAL PROCEDURE**

**Section 4.01** In the interest of maintaining an efficient system of production in the Industry, providing for an orderly procedure of referral of applicants for employment, preserving the legitimate interests of the employees in their employment status within the area and of eliminating discrimination in employment because of membership or non-membership in the Union, the parties hereto agree to the following system of referral of applicants for employment.

**Section 4.02** The Union shall be the sole and exclusive source of referral of applicants for employment.

**Section 4.03** The Employer shall have the right to reject any applicant for employment.

**Section 4.04** The Union shall select and refer applicants for employment without discrimination against such applicants by reason of membership or non-membership in the Union and such selection and referral shall not be affected in any way by rules, regulations, by-laws, constitutional provisions or any other aspect or obligation of Union membership policies or requirements. All such selection and referral shall be in accord with the following procedure.

**Section 4.05** The Union shall maintain a register of applicants for employment established on the basis of the classifications and Groups listed below. Each applicant for employment shall be registered in the highest priority Group in the classification or classifications for which he qualifies.

**CLASSIFICATION A -- JOURNEYMAN LINEMAN -- JOURNEYMAN TECHNICIAN**

**GROUP - I.** All applicants for employment who have three and one-half (3 1/2) or more years' experience in the trade, are residents of the geographical area constituting the normal construction labor market, have passed a Journeyman Lineman's examination given by a duly constituted Outside Construction Local Union of the IBEW or have been certified as a Journeyman Lineman by any Outside Joint Apprenticeship and Training Committee, and who have been employed in the trade for a period of at least one (1) year in the last three and one-half (3 1/2) years in the geographical area covered by the collective bargaining agreement.

Group I status shall be limited to one Local Union at one time. An applicant who qualifies for Group I in a local union shall be so registered electronically and remain on Group I in that local union unless and until the applicant designates another local union as his or her Group I local union. If an applicant qualifies for Group I status in a local union other than his or her home local union and designates that local as his or her Group I local union, the business manager of the new group 1 status local union shall by electronic means notify the business manager of the applicant's former Group I status local union.

**GROUP - II.** All applicants for employment who have three and one-half (3 1/2) or more years' experience in the trade and who have passed a Journeyman Lineman's

examination given by a duly constituted Outside Local Union of the IBEW or have been certified as a Journeyman Lineman by any Outside Joint Apprenticeship and Training Committee.

**GROUP - III.** All applicants for employment who have two or more years' experience in the trade, are residents of the geographical area constituting the normal construction labor market area, and who have been employed in the normal construction labor market: area for at least six (6) months in the last two and one-half (2 1/2) years in the geographical area covered by the collective bargaining agreement.

**GROUP - IV.** All applicants for employment who have worked at the trade for more than one year.

#### **CLASSIFICATION B -- HEAVY EQUIPMENT OPERATOR**

**GROUP - I.** All applicants for employment who have experience in the trade, are residents of the geographical area constituting the normal construction labor market, have passed an examination pertaining to their classification given by a duly constituted Outside Construction Local Union of the IBEW, and who have been employed in the trade for a period of at least one (1) year in the last four (4) years in the geographical area covered by the collective bargaining agreement.

**GROUP - II.** All applicants for employment who have experience in the trade and who have passed an examination pertaining to their classification given by a duly constituted Outside Construction Local Union of the IBEW.

**GROUP - III.** All applicants for employment who have experience in the trade, are residents of the geographical area constituting the normal construction labor market, and who have been employed in the normal construction labor market area for at least six (6) months in the last three (3) years in the geographical area covered by the collective bargaining agreement.

**GROUP - IV.** All applicants for employment who have worked at the trade for more than one year.



**CLASSIFICATION C -- GROUNDMAN -- TRUCK DRIVER**

- GROUP - I.** All applicants for employment who have experience in the trade, are residents of the geographical area constituting the normal construction labor market, have the necessary qualifications pertaining to their classification, and who have been employed in the trade for a period of at least one (1) year in the last four (4) years in the geographical area covered by the collective bargaining agreement.
- GROUP - II.** All applicants for employment who have worked in the trade for more than one year.
- GROUP - III.** All applicants for employment who have experience in the trade, are residents of the geographical area constituting the normal construction labor market, and who have been employed in the normal construction labor market area for at least six (6) months in the last three (3) years in the geographical area covered by the collective bargaining agreement.
- GROUP - IV.** All other applicants for employment.

**Section 4.06** If the registration list is exhausted and the Local Union is unable to refer applicants for employment to the Employer within 48 hours from the time of receiving the Employer's request, Saturdays, Sundays and holidays excepted, the Employer shall be free to secure applicants without using the Referral Procedure but such applicants, if hired, shall have the status of "temporary employees".

**Section 4.07** The Employer shall notify the Business Manager promptly of the names and Social Security numbers of such "temporary employees" and shall replace such "temporary employees" as soon as registered applicants for employment are available under the Referral Procedure.

**Section 4.08** "Normal construction labor market" is defined to mean the following geographical area plus the commuting distance adjacent thereto which includes the area from which the normal labor supply is secured:

State of Massachusetts

Entire State, with the

exception of Berkshire, Franklin Hampden, and Hampshire Counties.

State of Rhode Island ..... Entire State  
The Islands and the adjacent waters thereto.

The above geographical area is agreed upon by the parties to include the area defined by the Secretary of Labor to be the appropriate prevailing wage areas under the Davis-Bacon Act to which this Agreement applies.

**Section 4.09** "Resident" means a person who has maintained his permanent home in the above defined geographical area for a period of not less than one (1) year or who, having had a permanent home in this area, has temporarily left with the intention of returning to this area as his permanent home.

**Section 4.10** An "examination" shall include experience rating tests if such examination shall have been given prior to the effective date of this procedure, but from and after the date of the procedure, shall include only written and/or practical examinations given by a duly constituted Outside Construction Local Union of the I.B.E.W. Reasonable intervals of time for examinations are specified as ninety (90) days. An applicant shall be eligible for examination if he has had three and one-half (3 1/2) years' experience in the trade.

**Section 4.11** The Union shall maintain an "Out of Work List" which shall list the applicants within each Group in chronological order of the dates they register their availability for employment.

**Section 4.12** An applicant who is hired and who receives, through no fault of his own, work of forty hours or less, shall upon re-registration, be restored to his appropriate place within his group.

**Section 4.13** (a) Employers shall advise the Business Manager of the Local Union of the number of applicants needed. The Business Manager shall refer applicants to the Employer by first referring applicants in Group I in the order of their place on the "Out of Work List" and then referring applicants in the same manner successively from the "Out of Work List" in Group II, then Group III, and then Group IV. Any applicant who is rejected by the Employer shall be returned to his appropriate place within his Group and shall be referred to other employment in accordance with the position of his Group and his place within the Group.

(b) An applicant who is discharged for cause two times within a 12-month period shall be referred to the neutral member of the Appeals Committee for a determination as to the applicant's continued eligibility for referral. The neutral member of the Appeals Committee shall, within three\* business days, review the qualifications of the applicant and the reasons for the discharges. The neutral member of the Appeals Committee may, in his or her sole discretion: (1) require the applicant to obtain further training from the JATC before again being eligible for referral; (2) disqualify the applicant for referral for a period of four weeks or longer depending on the seriousness of the conduct and/or repetitive nature of the conduct; (3) refer the applicant to an employee assistance program, if available, for evaluation and recommended action; or 4) restore the applicant to his/her appropriate place on the referral list.

**Section 4.14** The only exceptions which shall be allowed in this order of referral are as follows:

(a) When the Employer states bona fide requirements for special skills and abilities in his request for applicants, the Business Manager shall refer the first applicant on the register possessing such skills and abilities.

(b) The age ratio clause in the Agreement calls for the employment of an additional employee or employees on the basis of age. Therefore, the Business Manager shall refer the first applicant on the register satisfying the applicable age requirements provided, however, that all names in higher priority Groups, if any, shall first be exhausted before such overage reference can be made.

**Section 4.15** An Appeals Committee is hereby established composed of one (1) member appointed by the Union, one (1) member appointed by the Employer or by the Association, as the case may be, and a Public Member appointed by both these members.

**Section 4.16** It shall be the function of the Appeals Committee to consider any complaint of any employee or applicant for employment arising out of the administration by the Local Union of Section 4.04 through 4.14 of this Agreement. The Appeals Committee shall have the power to make a final and binding decision on any such complaint which shall be complied with by the Local Union.

The Appeals Committee is authorized to issue procedural rules for

the conduct of its business, but it is not authorized to add to, subtract from, or modify any of the provisions of this Agreement and its decisions shall be in accord with this Agreement.

**Section 4.17** A representative of the Employer or of the Association, as the case may be, designated to the Union, in writing, shall be permitted to inspect the Referral Procedure records at any time during normal business hours.

**Section 4.18** A copy of the Referral Procedure set fourth in this Agreement shall be posted on the Bulletin Board in the offices of the Local Union and in the offices of the Employers who are parties to this Agreement.

**Section 4.19** Apprentices shall be hired and transferred in accordance with the Apprenticeship provisions of the Outside Area Training Agreemen.

**Section 4.20** When making reductions in the number of employees due to lack of work, Employers shall use the following procedure:

(a) Temporary employees, if any are employed, shall be laid off first. Then employees in Group IV shall be laid off next, if any are employed in this group. Next to be laid off are employees in Group III, if any in hisgroup, then those in Group II, and then those in Group I.

(b) Paragraph (a) will not apply as long as the special skills requirement as provided in Section 4.14 (a) is required.

(c) Supervisory employees covered by the terms of this Agreement will be excluded from layoff as long as they remain in a supervisory capacity. When they are reduced to the status of Journeyman, they will be slotted in the appropriate group in paragraph (a) above.

## **ARTICLE V**

### **OUTSIDE AREA APPRENTICESHIP AND TRAINING LANGUAGE**

**Section 5.01** The Area Training Agreement entered into between the Northeastern Line Constructors Chapter of NECA and the several I.B.E.W. Local Unions as approved by the International President on December 5, 2000, and as amended shall govern all matters of apprenticeship and training, and the financing thereof. Presently, the contribution rate to the Apprenticeship and Training Trust is one percent (1%) of the Gross Labor Payroll. When the NEAT Trust Fund reaches five million dollars (\$5,000,000.00), the contractors' contribution will be



reduced

U23

to three quarters of one percent ( $\frac{3}{4}$  of 1%). When the NEAT Trust Fund reaches a minimum of three million dollars (\$3,000,000.00), the contractors' contribution will be increased to one percent (1%). Apprentices' wages and ratio of apprentices to Journeymen are specified in the Area Training Agreement.

## ARTICLE VI

### FRINGE BENEFITS

**Section 6.01 NEBF** It is agreed that in accord with the Employees Benefit Agreement of the National Electrical Benefit Fund ("NEBF"), as entered into between the National Electrical Contractors Association and the International Brotherhood of Electrical Workers on September 3, 1946, as amended, and now delineated as the Restated Employees Benefit Agreement and Trust, that unless authorized otherwise by the NEBF, the individual employer will forward monthly to the NEBF's designated local collection agent an amount equal to three percent (3%) of the gross monthly labor payroll paid to, or accrued by, the employees in this bargaining unit, and a completed payroll report prescribed by the NEBF. The payment shall be made by check or draft and shall constitute a debt due and owing to the NEBF on the last day of each calendar month, which may be recovered by suit initiated by the NEBF or its assignee. The payment and the payroll report shall be mailed to reach the office of the appropriate local collection agent not later than fifteen (15) calendar days following the end of each calendar month.

The individual employer hereby accepts, and agrees to be bound by, the Restated Employees Benefit Agreement and Trust.

An individual employer who fails to remit as provided above shall be additionally subject to having his Agreement terminated upon seventy-two (72) hours notice in writing being served by the Union, provided the individual employer fails to show satisfactory proof that the required payments have been paid to the appropriate local collection agent.

The failure of an individual employer to comply with the applicable provisions of the Restated Employees Benefit Agreement and Trust shall also constitute a breach of his Labor Agreement.

### **Section 6.02 New England Electrical Workers Money Purchase Plan**

- A) The Employer agrees to contribute Thirteen Dollars and Seventy-Five Cents (**\$13.75**) per hour for all **Journeyman Lineman**.

Effective 8/28/16, the Employer agrees to contribute Fourteen Dollars and Fifty Cents (**\$14.50**) per hour for all **Journeyman Lineman**.

Effective 9/3/17, the Employer agrees to contribute Fifteen Dollars and Twenty-Five (**\$15.25**) per hour for all **Journeyman Lineman**.

- B) The employer agrees to contribute the following **per hour** for the **other classifications**:

	<u>8/30/15</u>	<u>8/28/16</u>	<u>9/3/17</u>
Equipment Operator "A"	<b>\$11.18</b>	<b>\$11.82</b>	<b>\$12.46</b>
Equipment Operator "B"	<b>\$ 8.07</b>	<b>\$ 8.63</b>	<b>\$ 9.19</b>
Cableman	<b>\$ 7.01</b>	<b>\$ 7.74</b>	<b>\$ 8.38</b>
Driver Groundman COL	<b>\$ 7.43</b>	<b>\$ 7.96</b>	<b>\$ 8.49</b>

Inexperienced Driver Groundman \$ **1.00**  
(2,000) hrs

Cable Technician \$ **1.00**  
Groundman \$ **1.00**  
Inexperienced Groundman \$ **1.00**

- C) The following will be the contribution **per hour** for Apprentices:

Seventh Period	<b>\$6.00</b>	Third Period	<b>\$2.50</b>
Sixth Period	<b>\$4.00</b>	Second Period	<b>\$2.50</b>
Fifth Period	<b>\$4.00</b>	First Period	<b>\$2.50</b>
Fourth Period	<b>\$4.00</b>		

**Section 6.03**      **New England Electrical Workers Benefit Fund**

- A) The Employer agrees to contribute **\$7.25 per hour** on all classifications of workers covered by the Agreement.

**Effective 8128116**, the Employer agrees to contribute **\$7.50 per hour** on all classifications of workers covered by the Agreement.

**Effective 913117**, the Employer agrees to contribute **\$7.75 per hour** on all classifications of workers covered by the Agreement.

#### **B) Vacation Holiday / Sick Leave Fund**

The employer agrees to contribute the following **per hour** on all classifications of workers covered by the Agreement into the **Vacation Holiday / Sick Leave Fund**:

General Foreman	\$1.18
Foreman	\$1.13
Head Lineman	\$1.08
Journeyman Lineman	\$1.00
Equipment Operator "A"	\$ .85
Equipment Operator "B"	\$ .75
Cableman	\$ .85
Driver Groundman COL	\$ .70
Inexperienced Driver	\$ .55
Groundman (2,000) hrs	
Cable Technician	\$ .60
Groundman	\$ .55
Inexperienced Groundman	\$ .45

#### **Apprentices:**

Seventh Period	\$ .90
Sixth Period	\$ .85
Fifth Period	\$ .80
Fourth Period	\$ .75
Third Period	\$ .70
Second Period	\$ .65
First Period	\$ .60

Contributions shall be paid no later than fifteen (15) days after each pay day to a Board of Trustees. One-half (1/2) of the Board shall be selected by the Union and one-half (1/2) by the Employer. Said Board of Trustees shall enter into a Trust Agreement whereby they will provide for the organization of the Board, the disposition of monies paid to them, the selection of a Local Bank



Depository and the acquisition of Insurance and Pension Benefits, as well as such other regulations as may be met and proper in funds of this kind. The above services to be extended equally to all Employees working for an Employer in the jurisdiction of Local Union 104, I.B.E.W.

**Section 6.04 Wage and Benefit Bond** Each Contractor paying by check will provide a Wage and Fringe Benefit Bond payable to the employees and/or applicable funds, in an amount at least twice the average weekly payroll for the previous year for the Local Contractors and twice the largest anticipated payroll for the Traveling Contractors. Any payment of delinquent wages, as such, are to be paid from the Bond directly to the Trustees of the affected funds.

3 to 5 persons	\$ 5,000.00	10 to 15 persons	\$15,000.00
5 to 10 persons	\$10,000.00	above 15 persons	\$25,000.00

In the event payroll for the current year is reduced drastically from previous year, Contractor Bond Requirement, may be reduced by mutual agreement between the Contractor and the Local Union.

**Section 6.05 Occupational Safety, Health and Education** The Employer and the Union hereby agree to be bound and abide by all of the terms and provisions of the Trust Agreement of the Local Union 104 Occupational Safety, Health and Education Trust Fund, and all amendments thereto during the term of this Agreement or any renewal or extension thereof. The Trust Fund shall be administered by the Board of Trustees consisting of any equal number of representatives of the Employer and the Union.

The Employer agrees to contribute to the said trust fund within fifteen (15) days of the end of the pay period, or at such times as the trustees shall hereinafter direct.

(a) The contribution shall be three (3%) of the gross labor payroll.

(b) One half percent (.5%) is for flame retardant clothing. When this contribution reaches \$100,000.00, the .5% contribution will cease until the fund drops below \$50,000.00, then the .5% contribution will begin again.

(c) One half percent (.5%) is for Commercial Driver License, Medical Test and Drug Test. When this contribution reaches \$100,000.00, the .5 contribution will cease until the fund

drops below \$50,000.00, then the .5% contribution will begin again.

(d) The OSHE Fund, as determined and directed by the trustees, shall perform and finance up to sixteen hours of on the job training per year to all individuals working under this agreement.

**Section 6.06 Committee on Political Education** The Employer agrees to deduct an amount equal to five cents (\$.05) for each hour worked from the wages of each employee who voluntarily signs an authorization card.

**Section 6.07** Employers doing work in the jurisdiction of Local Union 104, I.B.E.W. and failing to pay required Welfare Fund, Apprenticeship and Training Fund, Pension Fund, Working Dues, Occupational Safety, Health and Education deductions within the prescribed time limits, along with a remittance report on a form provided for that purpose by the office of these various funds, shall be subject to having this Agreement terminated upon seventy-two (72) consecutive hours, excluding Saturdays, Sundays and holidays, written notice being served by the Union, provided the Employer fails to show satisfactory proof that delinquent payments have been paid no later than fifteen (15) days after the current date.

**Section 6.08** Insurance, Pension, and C.O.P.E. fund payments shall be calculated on hours worked.

**Section 6.09 Market Recovery** The Employer agrees to contribute one dollar (\$1.00) per hour on all classifications of workers covered by this agreement to the Local Union's Market Recovery Fund.

## ARTICLE VII

**Section 7.01 National Electrical Industry Fund** Each individual Employer shall contribute an amount not to exceed one percent (1%) nor less than .2 of 1% of the productive electrical payroll, as determined by each local Chapter and approved by the Trustees, with the following exclusions:

1. Twenty-five percent (25%) of all productive electrical payroll in excess of 75,000 man-hours paid for electrical work in any one (1) Chapter area during any one (1) calendar year, but not exceeding 150,000 man-hours.

2. One hundred percent (100%) of all productive electrical payroll in excess of 150,000 man-hours paid for electrical work in any one (1) Chapter area during any one (1) calendar year.

(Productive electrical payroll is defined as the total wages ((including overtime)) paid with respect to all hours worked by all classes of electrical labor for which a rate is established in the prevailing labor area where the business is transacted.)

Payment shall be forwarded monthly to the National Electrical Industry Fund in the form and manner prescribed by the Trustees no later than fifteen (15) calendar days following the last day of the month in which the labor was performed. Failure to do so will be considered a breach of this Agreement on the part of the Employer.

**Section 7.02 Northeastern Line Contractors Administration Fund N.E.L.C.A.F.** Employers party to this collective bargaining agreement shall each contribute 3/4 of 1% of the rate of pay per hour for each hour worked by each employee covered by this labor agreement to the Electrical Industry Administrative Maintenance Trust of Northeastern Line Constructors Chapter, NECA. All such contributions shall be forwarded monthly, by the Employer on or before the fifteenth (15th) day of the month following the month in which the work was performed, to the Electrical Industry Administrative Maintenance Fund of Northeastern Line Constructors Chapter, NECA in the manner prescribed by the Fund Trustees. The fund shall be administered by seven (7) Trustees, all of whom shall be appointed by the Northeastern Line Constructors Chapter, NECA.

The fund shall operate in accordance with its Declaration of Trust, and any amendments thereto. The fund

shall expend its revenue for the purpose of administration of the collective bargaining agreement, including but not limited to collective bargaining negotiations, the processing of grievances, and all other management duties and responsibilities necessary to administer this Agreement.

The failure of any participating Employer to contribute the proper amount to the Electrical Industry Administrative Maintenance Fund as required shall be considered a breach of this agreement. The contributions to the Fund shall be subject to the same delinquency requirements as are the other Trust Funds set forth in this Agreement.

No part of the funds collected under this Trust shall be used for any purpose which is held to be in conflict with the interests of the International Brotherhood of Electrical Workers and its local unions.

The Fund Trustees, and not the Local Union, shall have the sole responsibility for the enforcement of this provision.

**Section 7.03 National Labor Management Cooperation Committee (N.L.M.C.C.)**

(a) The parties agree to participate in the NECA-IBEW National Labor-Management Cooperation Fund, under authority of Section 6(b) of the Labor Management Cooperation Act of 1978, 29 U.S.C. 175(a) and Section 302(c)(9) of the Labor-Management Relations Act, 29 U.S.C. 186(c)(9). The purposes of this Fund include the following:

(1) to improve communication between representatives of labor and management;

(2) to provide workers and employers with opportunities to study and explore new and innovative joint approaches to achieving organizational effectiveness;

(3) to assist workers and employers in solving problems of mutual concern not susceptible to resolution within the collective bargaining process;

(4) to study and explore ways of eliminating potential problems which reduce the competitiveness and inhibit the economic development of the electrical construction industry;

(5) to sponsor programs which improve job security, enhance economic and community development, and promote the general welfare of the community and the industry;

(6) to encourage and support the initiation and operation of similarly constituted local labor-management cooperation committees;

(7) to engage in research and development programs concerning various aspects of the industry, including, but not limited to, new technologies, occupational safety and health, labor relations, and new methods of improved production;

(8) to engage in public education and other programs to expand the economic development of the electrical construction industry;

(9) to enhance the involvement of workers in making decisions that affect their working lives; and

(10) to engage in any other lawful activities incidental or related to the accomplishment of these purposes and goals.

(b) The Fund shall function in accordance with, and as provided in, its Agreement and Declaration of Trust, and any amendments thereto and any other of its governing documents. Each Employer hereby accepts, agrees to be bound by, and shall be entitled to participate in the NLMCC, as provided in said Agreement and Declaration of Trust.

(c) Each employer shall contribute one cent (\$.01) per hour worked, up to a maximum of 150,000 hours per year, for work performed under the terms of IBEW Local Union agreements with the Northeastern Line Chapter, NECA. Payment shall be forwarded monthly, in a form and manner prescribed by the Trustees, no later than fifteen (15) calendar days following the last day of the month in which the labor was performed. The Northeastern Line Chapter, NECA, or its designee, shall be the collection agent for this Fund.

(d) If an Employer fails to make the required contributions to the Fund, the Trustees shall have the right to take whatever steps are necessary to secure compliance. In the event the Employer is in default, the Employer shall be liable for a sum equal to fifteen percent (15%) of the delinquent payment, but not less than the sum of twenty dollars (\$20 .00), for each month payment of contributions is delinquent to the Fund, such amount being liquidated damages, and not a penalty, reflecting the reasonable damages incurred by the Fund due to the delinquency of the payments. Such amount shall be added to and become a part of the contributions due and payable, and the whole amount due shall bear interest at the rate of ten percent (10%) per annum until paid. The Employer shall also be liable



for all costs of collecting the payment, together with attorneys' fees.

**Section 7.04 Labor Management Cooperation Committee (L.M.C.C.)**

(a) The parties agree to participate in a Labor-Management Cooperation Fund, under authority of Section 6(b) of the Labor Management Cooperation Act of 1978, 29 U.S.C. §175(a) and Section 302(c)(9) of the Labor-Management Relations Act, 29 U.S.C. §186(c)(9). The purposes of this Fund include the following:

(1) to improve communication between representatives of labor and management;

(2) to provide workers and employers with opportunities to study and explore new and innovative joint approaches to achieving organizational effectiveness;

(3) to assist workers and employers in solving problems of mutual concern not susceptible to resolution within the collective bargaining process;

(4) to study and explore ways of eliminating potential problems which reduce the competitiveness and inhibit the economic development of the electrical construction industry;

(5) to sponsor programs which improve job security, enhance economic and community development, and promote the general welfare of the community and the industry;

(6) to engage in research and development programs concerning various aspects of the industry, including, but not limited to, new technologies, occupational safety and health, labor relations, and new methods of improved production;

(7) to engage in public education and other programs to expand the economic development of the electrical construction industry;

(8) to enhance the involvement of workers in making decisions that affect their working lives; and

(9) to engage in any other lawful activities incidental or related to the accomplishment of these purposes and goals.

(b) The Fund shall function in accordance with, and as provided in, its Agreement and Declaration of Trust, and any amendments thereto and any other of its governing documents.

Each Employer hereby accepts, agrees to be bound by, and shall be entitled to participate in the LMCC, as provided in said Agreement and Declaration of Trust.

(c) Each employer shall contribute \$0.00 per hour. Payment shall be forwarded monthly, in a form and manner prescribed by the Trustees, no later than fifteen (15) calendar days following the last day of the month in which the labor was performed. The Northeastern Line Chapter, NECA, or its designee, shall be the collection agent for this Fund.

(d) If an Employer fails to make the required contributions to the Fund, the Trustees shall have the right to take whatever steps are necessary to secure compliance. In the event the Employer is in default, the Employer shall be liable for a sum equal to fifteen percent (15%) of the delinquent payment, but not less than the sum of twenty dollars (\$20.00), for each month payment of contributions is delinquent to the Fund, such amount being liquidated damages, and not a penalty, reflecting the reasonable damages incurred by the Fund due to the delinquency of the payments. Such amount shall be added to and become a part of the contributions due and payable, and the whole amount due shall bear interest at the rate of ten percent (10%) per annum until paid. The Employer shall also be liable for all costs of collecting the payment, together with attorneys' fees.

## **ARTICLE VIII**

### **GENERAL RULES AND SAFETY PRACTICES**

**Section 8.01** Crews may consist of two (2) or more qualified personnel. The number of employees assigned will be dependent on the work to be done. Additional qualified people will be supplied whenever required or requested by the Head Lineman in charge in order to perform the work safely.

**Section 8.02** The operation of setting a pole shall require two (2) qualified employees in the group. Additional qualified people will be supplied whenever required or requested by the Head Lineman in charge in order to perform the work safely.

There shall be a Foreman in charge of all permanent crews of four (4) men besides himself.

**Section 8.03** Employees are not to take directions, orders, or accept the layout of any job from anyone except the Foreman or Head Lineman.

**Section 8.04** Small crews shall be made up of one (1) Head Lineman, one (1) Journeyman Lineman, or a Qualified Apprentice, and one (1) Driver Groundman or Apprentice who may drive.

**Section 8.05** The Company shall furnish all tools and equipment required to perform the work covered by this Agreement, except pliers, hand connectors, climbers, safety belts and other personal tools.

**Section 8.06** The erection of steel towers or racks and the stringing of wire shall be done by regularly constituted line crews consisting of Foreman, Lineman, Apprentice Lineman, Line Equipment men and Groundmen.

**Section 8.07** All Journeyman Lineman working on live wires or electrical equipment of over 600 volts shall be assisted by a Journeyman or Qualified Apprentice.

**Section 8.08** It is the Employer's exclusive responsibility to insure the safety of its employees and their compliance with these safety rules and standards.

**Section 8.09** Each Journeyman and Apprentices is required to

supply the following tools:

Hammer	Rulers	Knife
Pliers	10-12u Crescent Wrenches	Files
Screw Drivers	Belt, Safety & Pouches	Speed Wrenches
10u Channel Locks	Lineman Bag	Spurs & Straps

All other classifications are required to supply the following tools:

Hammer	Knife	Pliers
Rulers	10-12u Crescent Wrenches	Files
Screw Drivers	Tool Bag	Speed Wrenches

Employees shall be responsible for using safe place and securing locks. If a safe place is used for tool storage, the employer will be responsible for theft if verified by a police report and affidavit by the employee. Claims or losses for tools, when the mutually approved inventory form has been signed by both parties on the employee's start date, shall be limited to:

Journeyman and Apprentices:	\$850.00
All other Classifications:	\$350.00

**Section 8.10** Employees shall keep their trucks in order, issue tools and materials. They shall see that tools are replaced on the truck in their proper places. The employee shall keep such records as required by the Employer and Federal and State DOT Laws. Employees shall assist Lineman and do other work assigned to them by the Foreman.

**Section 8.11 Substance Abuse** The dangers and costs that alcohol and other chemical abuses can create in the electrical contracting industry in terms of safety and productivity are significant. The parties to this Agreement resolve to combat chemical abuse in any form and agree that, to be effective, programs to eliminate substance abuse and impairment should contain a strong rehabilitation component. The local parties recognize that the implementation of a drug and alcohol policy and program must be subject to all federal, state, and local laws and regulations. Such policies and programs must also be administered in accordance with accepted scientific principles, and must incorporate procedural safeguards to ensure fairness in application and protection of legitimate interests of privacy and confidentiality. To provide a drug-free workforce for the

Electrical Construction Industry, each IBEW local union and NECA chapter shall implement an area-wide Substance Abuse Testing Policy. The Policy shall include minimum standards as required by the IBEW and NECA. Should any of the required minimum standards fail to comply with federal, state, and/or local laws and regulations, they shall be modified by the local union and chapter to meet the requirements of those laws and regulations.

## **ARTICLE IX**

### **CLASSIFICATIONS -- DUTIES**

**Section 9.01** The employees covered by this Agreement are classified as follows: General Foreman, Foreman, Head Lineman, Journeyman Lineman, Splicer, Apprentices, Line Equipment Operator, Cableman, Driver Groundman, Cable Technician, Groundman.

**Section 9.02** If workmen are needed for special work not listed in the general classification, they shall be paid a wage that relates in importance to one of the classifications herein provided.

**Section 9.03** (a) The employer shall have the right to call General Foreman and Foreman by name provided:

(1) The employee has not quit his previous employer within the past two (2) weeks.

(2) The employer shall notify the business manager in writing of the name of the individual who is to be requested for employment as a foreman. Upon such request the business manager shall refer said foreman provided the name appears on the highest priority group.

(3) When an employee is called as a foreman he must remain as a foreman for 1,000 hours or must receive a reduction in force.

**Section 9.04** General Foreman: (a) The General Foreman classification shall be part of this Agreement. His selection, duties and conduct shall be management's prerogative. However,



his selection shall be discussed with the Union.

(b) On energized overhead distribution work of 4kv and above, the General Foreman shall be a Qualified Journeyman Lineman.

**Section 9.05** General Foreman shall not do any work other than regular supervision and shall not haul, handle, or distribute any line material.

**Section 9.06** Foreman: Foreman must be a Qualified Journeyman Lineman. His work shall consist of supervision of the workmen in the crew. No Foreman shall supervise work of more than one (1) crew.

**Section 9.07** Head Lineman: Head Lineman shall supervise as well as perform the same work as Journeyman while working in small crews.

**Section 9.08** Journeyman Lineman: His work shall be the work normally assigned to this classification. He may perform the work of any lesser classification but only at the Journeyman rate of pay.

**Section 9.09** Splicer: Splicer duties are for medium and high voltage splices, not for Teledata work.

**Section 9.10** Groundman and Driver Groundman: Groundman and Driver Groundman shall work under the supervision of a Journeyman Lineman and shall assist the Journeyman Lineman as directed. Under no circumstances shall they climb poles, towers or ladders. Driver Groundman must have the proper state license to operate vehicles.

**Section 9.11** Equipment Operator: Will operate bulldozers, swamp buggies, tractor and trailer digging machines, cranes, side boom tractors, direct burial machines, any winch other than that normally mounted on a line truck. He will be responsible for the safe operation and normal maintenance of his equipment.

(a) It is understood under this section that the driver groundmen will drive and operate the following: Line Truck and Power Wagon and bumper winch thereon and that piece of equipment known as a wire puller.

**Section 9.12** For every eight (8) Linemen that employer employs, one (1) lineman who is physically unable to climb shall be employed. He shall be required to do any work assigned including that of a Journeyman Lineman. He shall not be required to climb

poles or towers. He shall not be employed beyond the normal retirement age.

**Section 9.13** On all jobs requiring five (5) or more Journeymen, at least every fifth Journeyman, if available, shall be fifty (50) years of age or older.

**Section 9.14** Cableman: Cableman shall work under the supervision of a Journeyman and shall assist in the set-up, pulling and related work necessary for installation of underground ducts and cables.

**Section 9.15** Cable Technician: Cable Technician shall work under the supervision of a Journeyman and shall assist in the set-up, pulling and related work necessary for the installation of communication cables in the power zone.

**Section 9.16** Workers employed under the terms of this agreement must yearly maintain and update all required OSHA and safety data, including but not limited to, first aide, CPR, pole-top rescue and bucket rescue, as a condition of employment and referral.

## **ARTICLE X**

### **CODE OF EXCELLENCE**

**Section 10.01** The parties to this agreement recognize that to meet the needs of our customers, both employer and employee must meet the highest levels of performance, professionalism, and productivity. The Code of Excellence has proven to be a vital element in meeting the customers' expectations. Therefore each IBEW local union and NECA chapter shall implement a Code of Excellence Program. The program shall include minimum standards as required by the IBEW and NECA.

### **SEPARABILITY CLAUSE**

Should any provision of this Agreement be declared illegal by any court of competent jurisdiction, such provisions shall immediately become null and void, leaving the remainder of the Agreement in full force and effect and the parties shall,

SEPARABILITY CLAUSE

Should any provision of this Agreement be declared illegal by any court of competent jurisdiction, such provisions shall immediately become null and void, leaving the remainder of the Agreement in full force and effect and the parties shall, thereupon, seek to negotiate substitute provisions which are in conformity with the applicable laws.

This Agreement shall not be binding on the Union until it is approved by the International President of the International Brotherhood of Electrical Workers.

IN WITNESS WHEREOF, the Parties hereto have made this Agreement subject to ratification by the membership of both organizations:

SIGNED FOR:

NORTHEASTERN LINE CONSTRUCTORS  
CHAPTER, NECA :



SIGNED FOR:

LOCAL UNION NO. 104  
INTERNATIONAL BROTHERHOOD OF  
ELECTRICAL WORKERS:

6. / . \_ u wpvt  
BUSINESS MANAGER

/C -?1-ot

## SCHEDULEB

### Description of Project Scope within Project Labor Agreement

The HVDC portion of the Project will run 158.3 miles from the international border between Canada and Pittsburgh, New Hampshire to Franklin, New Hampshire, where the electricity will be converted to alternating current ("AC") by a HVDC converter terminal. The power will then flow over a 345 kV AC line extending 33.7 miles before interconnecting with the transmission system at the existing substation at Deerfield, New Hampshire. The Project expects to upgrade the Deerfield substation and the Scobie Pond substation in Londonderry, each of which is owned and operated by PSNH, and will upgrade an anticipated ten structures between those substations.

The overhead portion of the HVDC line will be 97.8 miles long, consisting of a 32 mile section and 65.8 miles installed in existing PSNH ROWs. Where necessary, portions of the existing transmission and distribution lines will be relocated to allow room for the HVDC line construction.

The underground portion of the line will be installed in three sections for a total length of 60.5 miles: (1) a 0.7 mile segment in the towns of Pittsburg and Clarksville in the vicinity of the Route 3 bridge crossing of the Connecticut River; (2) a 7.5 mile segment in the towns of Clarksville and Stewartstown; and (3) a 52.3 mile segment starting in the Town of Bethlehem at Route 302, following Routes 302, 18, 116, 112 and 3 and ending at the intersection of the transmission ROW and Route 3 in Bridgewater. At the six locations where the overhead line transitions between the overhead line and cable, a 75' by 130' transition station will be installed.





REDACTED

## **Attachment 14.1**

### **Northern Pass Line Description**

NPT will construct a 192-mile transmission line with the capability to deliver 1,090 MW of renewable hydroelectric power from Canada to the State of New Hampshire and the New England region. The Northern Pass Line includes construction of 158.3 miles of +/- 320kV, HVDC transmission line from the New Hampshire/Canadian border to a new converter terminal in the Town of Franklin, where the electric power will be converted to alternating current. It will then be sent, via a 33.7-mile, 345 kV transmission line, to a substation in the Town of Deerfield, to connect to the New England power grid which serves customers throughout the region.

Other activities associated with the Northern Pass Line include ISO-NE transmission system impact upgrades required by ISO-NE's I.3.9 approval of the NPT Line at the Deerfield Substation in the Town of Deerfield and the Scobie Pond Substation in the Town of Londonderry, and small modifications to two existing 345 kV lines between those two substations.

The proposed route for the Northern Pass Line follows existing PSNH transmission line ROW or public roads for over 80% of its length. Within these existing PSNH ROWs, approximately 80.5 miles of existing transmission and distribution lines will be relocated to make room for the new line. Approximately 32 miles of the Northern Pass Line route requires clearing of new ROW, but much of that new corridor is a working forest and subject to routine timber harvesting.

A map depicting the NPT Line route, as described below, is included in Attachment 6.1.4 to this Proposal. Additional information regarding the Northern Pass Line can be found at NPT's website at <http://www.northernpass.us>. NPT also can supply a copy of an overview video submitted with the SEC Application upon request by the Distribution Companies.

#### Proposed Project Route.

The Northern Pass Line route enters New Hampshire from Canada at Hall's Stream, approximately 1,600 feet north of the Vermont state line and 1,000 feet west of Hall Stream Road in the Town of Pittsburg. Starting at that point, a +/- 320 kV, HVDC overhead transmission line will be constructed for approximately 2.1 miles in new ROW. The transmission line will transition underground for approximately 0.7 mile segment beneath the Connecticut River and Route 3, resurface in the Town of Clarksville, and continue overhead for approximately 2.3 miles in new ROW to the vicinity of Wiswell Road and Route 145.

The overhead transmission line will then transition underground for an approximately 7.5-mile segment along the highway ROWs of Old County Road, North Hill Road, and Bear Rock Road, to the junction with Heath Road in the Town of Stewartstown. It will then transition to an overhead segment along a new 27.5-mile ROW through the towns of Stewartstown, Dixville, Millsfield, and Dummer, and join an existing PSNH transmission ROW in the Town of Dummer west of Route 16.

The overhead transmission line will then follow existing PSNH ROW for 40.5 miles to Route 302 in the Town of Bethlehem.

At Route 302, the transmission line transitions underground and follows the highway ROW of Routes 302, 18, 112, 116, and 3 for approximately 52.3 miles, through the towns of Bethlehem, Sugar Hill, Franconia, Easton, Woodstock, Thornton, Campton, Plymouth, and Bridgewater, where the existing transmission line ROW intersects Route 3.

The transmission line will then transition overhead and follow existing PSNH transmission line ROW through the towns of Bridgewater, Ashland, New Hampton, Bristol, Hill, and Franklin.

In the Town of Franklin a converter terminal approximately 10 acres in size will be constructed to convert the +/- 320kV, HVDC transmission line to a 345 kV, AC transmission line, which will then continue overhead for 33.7 miles within existing PSNH ROW through the towns of Northfield and Canterbury, the City of Concord, and the Towns of Pembroke and Allenstown to the Deerfield Substation in the Town of Deerfield.

### Underground Lines.

The Northern Pass Line will include three underground segments:

1. An approximately 0.7 mile long segment in the towns of Pittsburg and Clarksville (in the vicinity of the Route 3 bridge-crossing of the Connecticut River);
2. An approximately 7.5-mile long segment in the towns of Clarksville and Stewartstown (beginning on property owned by NPT in the Town of Clarksville, continuing under Route 145, and progressing along Old County Road into the Town of Stewartstown where it will continue onto North Hill Road, Bear Rock Road, and property owned by NPT on Heath Road); and
3. An approximately 52.3-mile segment in the towns of Bethlehem, Sugar Hill, Franconia, Easton, Woodstock, Thornton, Campton, Plymouth, and Bridgewater (beginning in Bethlehem at Route 302, and running within the highway ROW of Routes 302, 18, 116, 112, and 3).

Two (2) underground cables will be installed using a combination of construction techniques including the burial of the cable in a conduit system, or the use of trenchless technology (directional boring and jack and bore). Those techniques result in cables being buried at different depths, as follows:

- Direct-buried cable will be installed approximately four feet below grade;
- Directional boring sections will be installed at a maximum depth of approximately 65 feet below grade; and
- Cables installed via jack and bore will approximately 25 to 30 feet below grade.

The exact depth of the direct buried cable, duct bank, or trenchless conduit installation may be adjusted based upon the final design. Duct banks are approximately four feet by four and one-half feet and are encased in flowable backfill with a concrete cap for physical protection. Cable splicing areas approximately 35 feet long and 8 feet wide are necessary to join the cable sections together and are located approximately every 1,800 feet.

### Transition Stations.

A transition station, resembling small switching station, must be installed at each of the six points where the line transitions between an overhead and an underground (or an underground and an overhead) configuration. Transition stations will be approximately 75 feet by 130 feet in size and enclosed by a fence. Equipment at each transition station will include a line terminal structure, surge arresters, disconnect switches, cable terminators, communications equipment, and a small control building.

### HVDC Converter Terminal.

The conversion from DC to AC will occur at an HVDC converter terminal in the Town of Franklin, on approximately 10 acres of a 118-acre former campground site. The converter terminal will be designed for a continuous DC to AC transfer rating of 1,090 MW using VSC DC converter technology. The main components of the converter include:

- A DC area where the line enters the terminal includes disconnect switches, circuit breakers, capacitors, reactors and instrument transformers.
- The conversion from DC to AC takes place in a valve hall, a building that will be approximately 235' by 180'. The main electrical component that transforms the energy between DC and AC is the insulated gate bi-polar transistor (IGBT). The IGBT is an electronic device that essentially builds an AC voltage from the DC voltage. In addition to the IGBTs, DC reactors are located in the valve hall. A control room and unmanned office space will be located adjacent to the valve hall.
- The AC portion of the converter terminal includes the converter transformers, reactors, filters, capacitors, instrument transformers, disconnect switches and circuit breakers.
- The entire converter terminal will be located within a security fence.

### AC System Interconnection.

The Northern Pass Line's interconnection to the New England electrical system will be at the existing PSNH Deerfield Substation located in the Deerfield, New Hampshire. The 345 kV AC line from the HVDC converter terminal will connect to an existing terminal in the Deerfield Substation. In order to establish the new line position, an existing 345 kV line connection in the substation will be relocated. That will require the addition of terminal structures, 345 kV switches, breakers, bus work, instrument transformers, and associated protection and control devices inside the existing Deerfield Substation.

### AC System Upgrades per I.3.9 Approval Process.

#### *Deerfield Substation.*

As part of the Northern Pass Line, a 345 kV AC line from the Town of Buxton, Maine to the Town of Londonderry, New Hampshire presently goes by the Deerfield Substation with no electrical connection. That line will be terminated at the Deerfield Substation splitting it into two segments: Buxton to Deerfield and Deerfield to Londonderry. Terminating that line will require the construction of two additional 345 kV bays at the Deerfield Substation, which will be done within the existing substation yard.

Also at the Deerfield Substation, it will be necessary to construct both a Static VAR Compensator (SVC) and two 345 kV capacitor banks to provide voltage support for the Northern Pass Line. That will be done in an area adjacent to the existing substation yard. This expansion area has been located to minimize wetland impacts, but will require some small disturbances for access to the new bay position.

#### *Scobie Pond Substation.*

To provide voltage support for the Northern Pass Line, four 345 kV capacitor banks will be constructed at the Scobie Pond Substation in an area adjacent to the existing substation yard. Based on current design, some small disturbances are required to construct the new capacitor banks. Additionally, two series circuit breakers will be installed to provide enhanced protection to Line 391 to Deerfield, Line 326 to Sandy Pond, and the new capacitor banks.

#### *Existing Structure Replacement.*

As part of the Northern Pass Line, minor upgrades (i.e. the replacement of 10 existing structures) are required to two existing 345 kV transmission lines extending 18 miles along existing PSNH ROW, between the Deerfield Substation in the Town of Deerfield and the Scobie Pond Substation in the Town of Londonderry. Those upgrades are required to provide additional power flow capabilities to support the Northern Pass Line.

### Existing Facility Rebuilding.

The Northern Pass Line has sought to utilize existing transmission ROW to the maximum extent practicable in order to minimize overall environmental and other impacts. In order for the Northern Pass Line to use certain segments of the existing ROW, some existing 115 kV transmission lines and 34 kV distribution lines will be relocated to accommodate Northern Pass Line facilities.

The need to relocate existing transmission or distribution lines is determined by total space available within the ROW, required clearances between lines within the ROW, and distances to the edges of the ROW. Clearances required between lines and between lines and vegetation (tall-growing trees) at ROW edges are governed by NESC requirements designed to assure safe and reliable transmission and distribution line operation.

In order to maximize the use of existing ROW and reduce structure heights in the HVDC portion of the Northern Pass Line, approximately 39.5 miles of existing 115 kV lines and 11.7 miles of 34.5 kV lines will be relocated. For the 345 kV AC portion of the Northern Pass Line, approximately 22.8 miles of existing 115 kV lines and 6.5 miles of 34.5 kV lines must be relocated. There are some areas in the City of Concord where relocation of existing facilities is not necessary to meet clearance requirements, but the Northern Pass Line will relocate lines in order to significantly reduce structure heights for the new 345 kV line. Specifically, six additional miles of 115 kV line will be relocated to allow use of H-frame structures.



REDACTED