Exception Request No.: 69
Town: Thornton
Highway: US 3 (Tier 2)
Section: WBR3
Station: 1778+50±
Drawing No.: WBR3 C135
Survey Report Reference No.: WBR3 C131
Exception Type: Crossing Over Existing Utility/Drainage

Traffic Information

NHS: No
ADT: 955
Traffic Control Type: Alt 1-way
Traffic Control Duration: Traffic control duration is estimated to be 6 days for the proposed installation. If the requested exception is not granted, NPT expects an additional 1-2 weeks of work requiring traffic control to install the duct bank below the drainage structure.

Summary of Justification for Exception

NPT is requesting an exception from the UAM guidelines for crossing above an existing 24--inch Reinforced Concrete Pipe (RCP) culvert on US 3, Daniel Webster Highway at station 1778+50±. (See Exhibit A).

There is 8.5 -feet of cover over the culvert. The proposed alignment will be set over the existing utility to avoid significant traffic impacts, unreasonable costs associated with a deeper excavation and increased construction width which will extend the duration of construction and traffic impacts. The attached exhibits have been provided for this location to illustrate the constraints associated with installing the ductbank below the existing RCP culvert.

Technical Discussion of Justification of Exception

The vertical positioning of the cable trench is constrained by the depth of the existing culvert (8.5-feet to the top of the culvert). Crossing under the existing culvert to meet the required 2-foot minimum separation will require a greater separation of the conduits and cable to accommodate shoring and thermal design criteria for the electric cables resulting from the additional depth. This trench width and additional offsets necessary for construction would likely result in significant traffic impacts, including extended duration of construction within roadway to allow for sheeting installation and removal and extensive excavation due to the depth and width of the trench. We estimate that these construction alternatives will add one to two weeks to the traffic impacts. Finally, we estimate the increase in cost associated with crossing underneath the culvert would be approximately $130,000 for this 200 foot section. (See Exhibit C.)

We have also evaluated a trenchless option to pass under the culvert. The trenchless installation will be unreasonably costly (a net estimated increase of $2,069,100 for the 36-inch culvert crossing section). (See cost estimate attached in Exhibit C). Also, traffic impacts would be increased for a trenchless installation due to the addition of trenchless work areas and the extended duration of installation.

Road closures are not needed for the proposed installation, which thereby minimizes traffic impacts and attendant safety issues.

Excavation limits and work areas are shown on the attached drawings (See Exhibits A and B). During construction, one lane will remain open to traffic at all times.

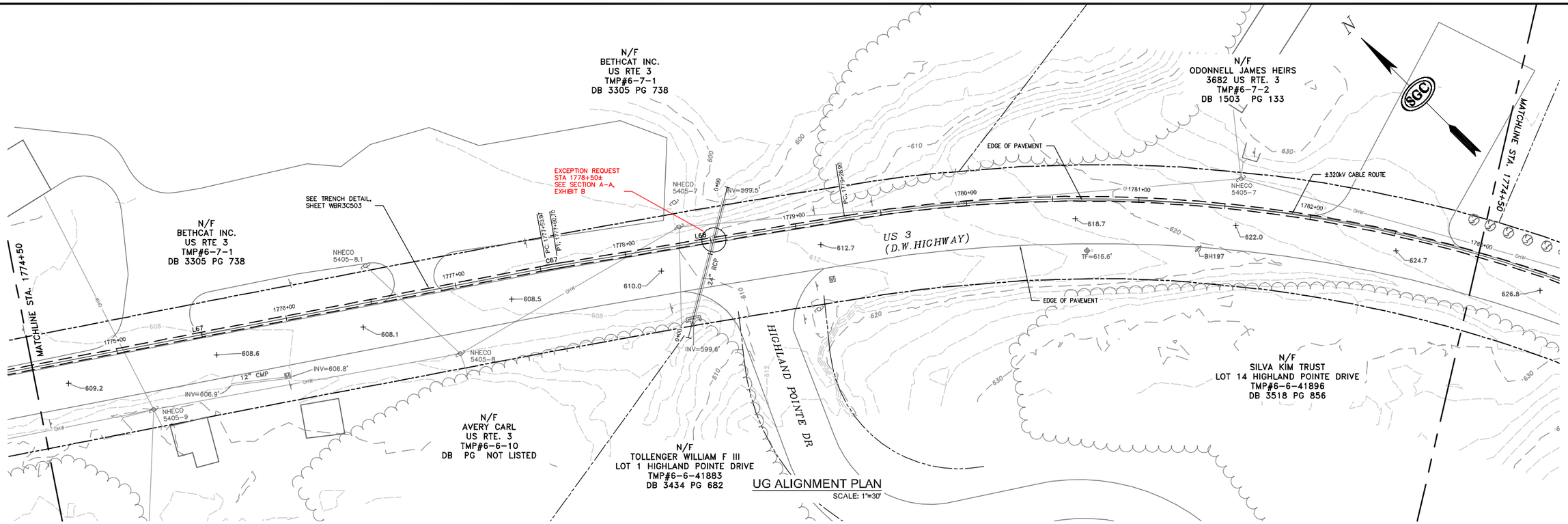
Impacts

At all locations where the new ductbank is constructed over an existing drainage structure or utility, NPT will add rebar to the concrete encasing of the ductbank for a 15-foot section on each side of the crossing to form a 30-foot self-sustaining bridge that will allow for excavation under the duct bank for purposes of future maintenance of existing utilities or drainage structures.

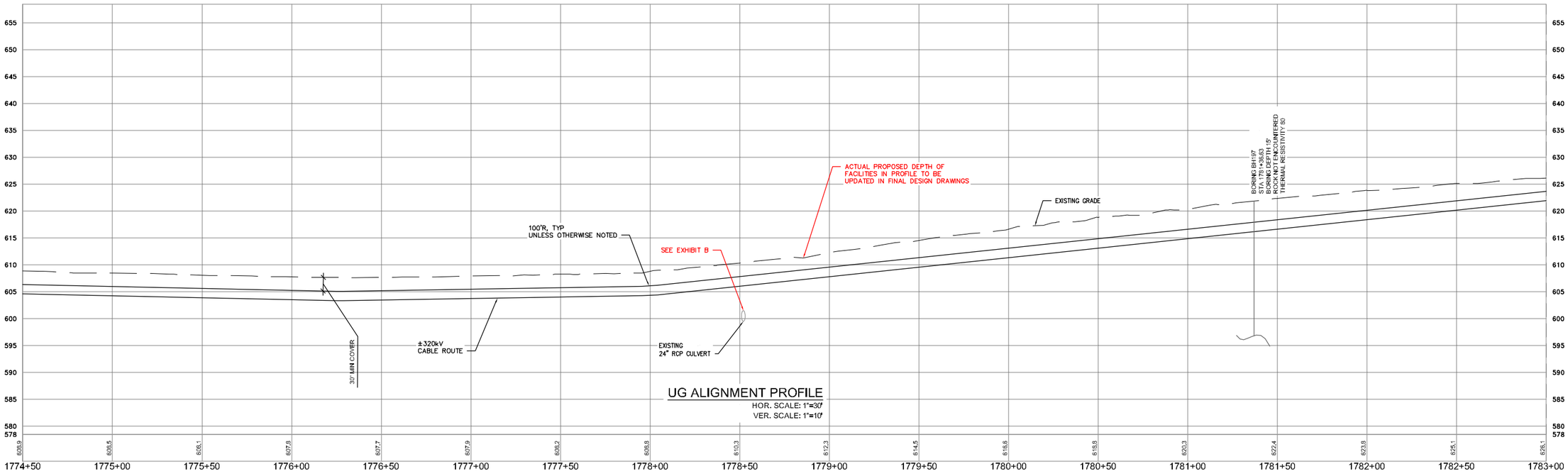
The design, as proposed, will not adversely affect the design, construction, stability, traffic, safety, environmental commitments, maintenance, or operation of the highway. In connection to future maintenance activities, especially related to the culvert, NPT will provide any and all required support, including but not limited to, providing crews to assist while work is being conducted in the vicinity of the culvert.

Supporting Documentation

See attached Exhibits A and B showing a plan, profile and section for the proposed installation, and Exhibit C for cost estimates.



UG ALIGNMENT PLAN
SCALE: 1"=30'



UG ALIGNMENT PROFILE
HOR. SCALE: 1"=30'
VER. SCALE: 1"=10'

30 15 0 30 60 HOR. SCALE: 1" = 30'

10 5 0 10 20 VERT. SCALE: 1" = 10'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
0	EXCEPTION REQUEST	05/19/17	TDD	TDD	TMH

SGC Engineering, LLC
a Stantec Registered Company

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS
Transmission Business

EXCEPTION 69-CROSSING OVER EXISTING UTILITY/DRAINAGE
NPT WBR3-UNDERGROUND ALIGNMENT
WBR3 SECTION-STA 1778+50±

DATE: 05/2017

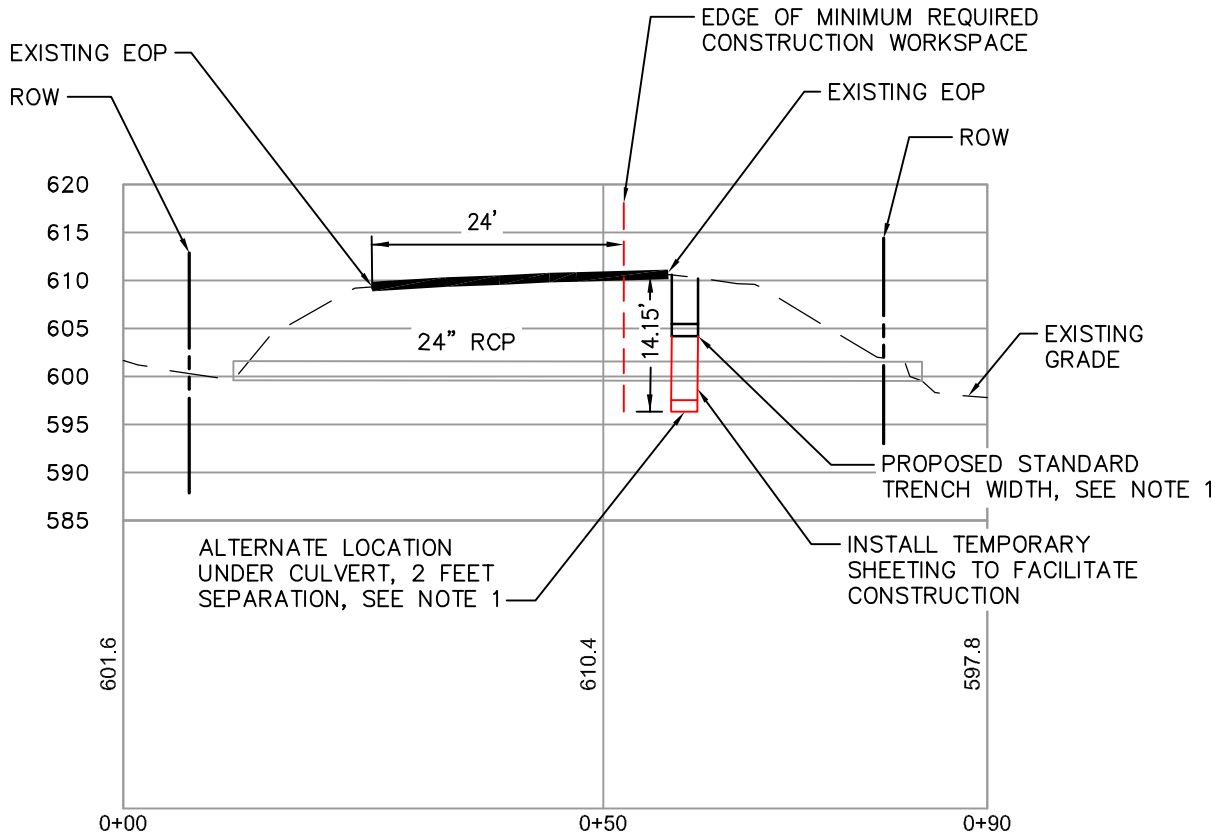
SCALE:

DES: MRR | CHK: TDD
DRW: MRR | APR: TMH

TOWN: THORNTON

TRANSMISSION LINE: WBR3

EXHIBIT A



NOTES:
1. TRENCH WIDTH SHOWN TO BE MAINTAINED USING TRENCH JACKS AND SHEETING

SECTION A-A

SCALE: 1"=20'

SCALE: 1" = 20'

20 10 0 20 40

JOB NO.: 1384001

TITLE:

EXCEPTION 69
CROSSING OVER EXISTING UTILITY/DRAINAGE
NPT-WBR3 UNDERGROUND ALIGNMENT
WBR3 SECTION-STA 1778+50±
TOWN: THORNTON

PREPARED FOR:

NH DOT
7 HAZEN DRIVE
CONCORD, NH

REVISIONS:

NO.	DATE	EXCEPTION REQUEST
0	05/19/2017	

EXHIBIT NO.: B | DATE: 05/2017 | DRAWN: MRR | SCALE: 1" = 20'

SGC ENGINEERING, LLC
• Civil Design & Survey Engineering
• Environmental & Regulatory Permitting
• Electrical Power Systems Engineering
SERVING OUR CLIENTS IN THE U.S.A. & CANADA
501 County Road, Westbrook, Maine 04092, Tel: 207-347-6100, Fax: 207-347-6101
40 Harlow Street, Suite 2, Bangor, Maine 04401, Tel: 207-217-5769, Fax: 207-217-6018
14 School Street, Suite 203-5, Bristol, VT 05443, Tel: 802-735-0258
Galleria Tower 1, Suite 2478, 2700 Post Oak Boulevard, Houston, TX 77056

Exhibit C - Exception 69 Cost Estimates

Additional Cost for Trenching Under 24" RCP Culvert

Length	200			
Max Depth	14.15'			
Min Depth	6.7'			
	Quantity	Units	Unit Price	Total
Trench Cost for Deeper Trench	200	LF	$800.00	$160,000.00
Deduct for Base Trench Cost	200	LF	$150.00	($30,000.00)
Net Additional Cost				$130,000.00

1. Cost assumes rock excavation not required.
2. Costs based on contractual unit pricing for the project.
3. 200 foot minimum length required for the trenching installation is required to accommodate the gradual slope necessary to accommodate the minimum bend.

Additional Cost for Installing HDD Under Culvert

Length	900			
Max Depth	27.5'			
Min Depth	6.7'			
	Quantity	Units	Unit Price	Total
HDD (2-8" Bores)	900	LF	$2,490.00	$2,241,000.00
Deduct for Base Trench Cost	900	LF	$150.00	($135,000.00)
Deduct for Surface Restoration	900	LF	$41.00	($36,900.00)
Net Additional Cost				$2,069,100.00

1. Cost assumes rock excavation not required.
2. Costs based on contractual unit pricing for the project.
3. 900 foot minimum length required for HDD installation to accommodate minimum bending requirements.