<table>
<thead>
<tr>
<th>UG ALIGNMENT PROFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALE: 1&quot;=30'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UG ALIGNMENT PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALE: 1&quot;=30'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BORING BH118</th>
</tr>
</thead>
<tbody>
<tr>
<td>STA 806+13</td>
</tr>
<tr>
<td>BORING DEPTH 14.3'</td>
</tr>
<tr>
<td>ROCK NOT ENCOUNTERED</td>
</tr>
<tr>
<td>THERMAL RESISTIVITY 80</td>
</tr>
</tbody>
</table>

**Transmission**

**Business**

**THE NORTHERN PASS**

**WMNF**
UG ALIGNMENT PROFILE

HOR. SCALE: 1"=30'
VER. SCALE: 1"=10'

UG ALIGNMENT PLAN

SHEET: 7

N/P
HARPEL, EFFREY & HADDEN
2910 EAST VALLEY ROAD
OR 02272-305

EGC

N/P
HARPEL, EFFREY & HADDEN
2910 EAST VALLEY ROAD
OR 02272-305

BORING DEPTH 15.5'
DEPTH TO ROCK 12.5'
THERMAL RESISTIVITY 55

HARPEL, EFFREY & HADDEN
2910 EAST VALLEY ROAD
OR 02272-305

BORING BH119
STA 807+16

Transmission

THE NORTHERN PASS
WMNF

E

PRELIMINARY - NOT FOR CONSTRUCTION

UG ALIGNMENT PROFILE

HOR. SCALE: 1"=30'
VER. SCALE: 1"=10'

UG ALIGNMENT PLAN

SHEET: 7

N/P
HARPEL, EFFREY & HADDEN
2910 EAST VALLEY ROAD
OR 02272-305

EGC

N/P
HARPEL, EFFREY & HADDEN
2910 EAST VALLEY ROAD
OR 02272-305

BORING DEPTH 15.5'
DEPTH TO ROCK 12.5'
THERMAL RESISTIVITY 55

HARPEL, EFFREY & HADDEN
2910 EAST VALLEY ROAD
OR 02272-305

BORING BH119
STA 807+16

Transmission

THE NORTHERN PASS
WMNF

E

PRELIMINARY - NOT FOR CONSTRUCTION
BORING BH130
STA 924+50
BORING DEPTH 14.7'  ROCK NOT ENCOUNTERED
THERMAL RESISTIVITY 90

UG ALIGNMENT PROFILE
VERTICAL SCALE: 1" = 10'

UG ALIGNMENT PLAN
VERTICAL SCALE: 1" = 30'

THE NORTHERN PASS WMNF PRELIMINARY - NOT FOR CONSTRUCTION
BORING BH31A
STA 1090+58
BORING DEPTH 75.0' 
DEPTH TO ROCK 8.5' 
THERMAL RESISTIVITY 55
TRANSMISSION BUSINESS

THE NORTHERN PASS

WMNF

Preliminary - Not for Construction

UG ALIGNMENT PLAN

STATIONS

CONSTRUCTION ACTIVITY

CORRESPONDING TRAFFIC CONTROL LAYOUT SHEET NUMBERS

UG ALIGNMENT PROFILE

HOR. SCALE: 1"=30'

VER. SCALE: 1"=10'

WHITE MOUNTAIN NATIONAL FOREST, C/O TON WAGNER
WHITE MOUNTAIN NATIONAL FOREST

BORING BH142

STA 1135+77

BORING DEPTH 15.5'

ROCK NOT ENCOUNTERED

THERMAL RESISTIVITY 75
GENERAL SITE GRADING NOTES:

1. All grading and compaction shall be performed in accordance with the approved site plan and grading plans.
2. All areas shall be graded to the appropriate elevations as shown on the plans.
3. Compaction of fills shall be performed in accordance with the specifications and approved by the engineer.
4. All borrow areas shall be graded to a smooth and stable surface before use.
5. All temporary access roads shall be graded to withstand the anticipated traffic.

WINTER EROSION CONTROL AND STABILIZATION NOTES:

1. All erosion control measures shall be installed prior to the start of the construction season.
2. All areas shall be covered with straw or mulch to prevent erosion.
3. All temporarily exposed surfaces shall be covered with erosion control blankets.
4. All areas shall be inspected weekly for erosion control.
5. All erosion control measures shall be maintained throughout the construction season.

GENERAL EROSION CONTROL NOTES:

1. All erosion control measures shall be installed prior to the start of the construction season.
2. All areas shall be covered with straw or mulch to prevent erosion.
3. All temporarily exposed surfaces shall be covered with erosion control blankets.
4. All areas shall be inspected weekly for erosion control.
5. All erosion control measures shall be maintained throughout the construction season.

NEW HAMPSHIRE DES EROSION CONTROL NOTES:

1. All erosion control measures shall be installed prior to the start of the construction season.
2. All areas shall be covered with straw or mulch to prevent erosion.
3. All temporarily exposed surfaces shall be covered with erosion control blankets.
4. All areas shall be inspected weekly for erosion control.
5. All erosion control measures shall be maintained throughout the construction season.

CONSTRUCTION SEQUENCING NOTES:

1. Construction shall proceed in a logical sequence to minimize disruption and protect the environment.
2. All areas shall be staged to allow for efficient movement of equipment and materials.
3. All temporary access roads shall be graded to withstand the anticipated traffic.
4. All erosion control measures shall be maintained throughout the construction season.
5. All areas shall be inspected weekly for erosion control.

NEW HAMPSHIRE DES EROSION CONTROL MONITORING NOTES:

1. All erosion control measures shall be monitored throughout the construction season.
2. All areas shall be inspected weekly for erosion control.
3. All erosion control measures shall be maintained throughout the construction season.
4. All areas shall be inspected weekly for erosion control.
5. All erosion control measures shall be maintained throughout the construction season.
LEGEND

- ReflectORIZED Plastic Drum
- Existing Travel Lane
- Proposed Travel Lane
- Proposed Sign
- Work Zone
- Flagger

**Type 3 Barricade**

X = Spacing of ReflectORIZED Plastic Drum.

Spacing shall equal the posted speed limit.

*Example: 35 MPH Speed Limit = 35’ Drum Spacing*

Quick Reference Tables

**Table 6C-1. Recommended Advance Warning Sign Minimum Spacing**

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Distance Between Signs[^1]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Urban (low speed)</td>
<td>100 feet</td>
</tr>
<tr>
<td>Urban (high speed)</td>
<td>200 feet</td>
</tr>
<tr>
<td>Rural</td>
<td>300 feet</td>
</tr>
<tr>
<td>Expressway/Freeway</td>
<td>1,000 feet</td>
</tr>
</tbody>
</table>

[^1]: Speed category is determined by the highway agency.

[^2]: The columns labeled A, B, and C are the dimensions shown in Figures 6C-1 through 6C-6. The A dimension is the distance between the first and second signs. The B dimension is the distance between the second and third signs. The C dimension is the distance between the third and fourth signs. (The "first sign" is the sign in a three-sign series that is closest to the TTC.)

**Table 6C-2. Taper Length Criteria for Temporary Traffic Control Zones**

<table>
<thead>
<tr>
<th>Type of Taper</th>
<th>Taper Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Taper</td>
<td>1,020 feet</td>
</tr>
<tr>
<td>One Lane, Two Way Taper</td>
<td>1,020 feet</td>
</tr>
</tbody>
</table>

**Table 6C-3. Formulas for Determining Taper Length**

<table>
<thead>
<tr>
<th>Formula</th>
<th>Taper Length in feet ^[^3]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (S) in mph</td>
<td>L = 80 + (S - 50) x 2</td>
</tr>
<tr>
<td>Speed (S) in mph</td>
<td>L = 80 + (S - 50) x 2</td>
</tr>
</tbody>
</table>

[^3]: Where: L = taper length in feet
S = either 50 mph or the observed, fifteen-second, operating speed prior to work signing or the posted speed, whichever is lower.
### QUICK REFERENCE TABLES

#### Table 6C-1. Recommended Advance Warning Sign Minimum Spacing

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Distance Between Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Urban (low speed)</td>
<td>100 feet</td>
</tr>
<tr>
<td>Urban (high speed)</td>
<td>300 feet</td>
</tr>
<tr>
<td>Rural</td>
<td>500 feet</td>
</tr>
<tr>
<td>Expressway</td>
<td>1,000 feet</td>
</tr>
</tbody>
</table>

1. Speed category is determined by the highway agency.
2. The column headings A, B, and C are the dimensions shown in Figures 6C-1 through 6C-6. The A dimension is the distance from the transition point or point of restriction to the first sign. The B dimension is the distance between the first and second sign. The C dimension is the distance between the second and third sign. The Convention for the distance between the minimum warning sign spacing and the control point was based on the ITS zone. The “third sign” is the sign that is furthest upstream from the ITS zone.

#### Table 6C-2. Taper Length Criteria for Temporary Traffic Control Zones

<table>
<thead>
<tr>
<th>Type of Taper</th>
<th>Taper Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder Type</td>
<td>at least 500 feet</td>
</tr>
<tr>
<td>Divider Type</td>
<td>at least 3,000 feet</td>
</tr>
<tr>
<td>Lane Closure</td>
<td>at least 3,000 feet</td>
</tr>
</tbody>
</table>

#### Table 6C-3. Formulas for Determining Taper Length

1. Taper Length = \( \frac{60 \times \text{Speed}}{22} \) feet
2. Taper Length = \( \frac{36 \times \text{Speed}}{22} \) feet
3. Taper Length = \( \frac{50 \times \text{Speed}}{22} \) feet

#### Table 6C-4. Formulas for Determining Taper Length

<table>
<thead>
<tr>
<th>Speed (S)</th>
<th>Taper Length (L) in Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-30</td>
<td>L = ( \frac{60 \times \text{Speed}}{22} )</td>
</tr>
<tr>
<td>31-60</td>
<td>L = ( \frac{36 \times \text{Speed}}{22} )</td>
</tr>
<tr>
<td>61-90</td>
<td>L = ( \frac{50 \times \text{Speed}}{22} )</td>
</tr>
</tbody>
</table>

Where:
- \( S \) = speed of either taper
- \( L \) = speed of either taper
- \( \text{Speed} \) = Speed limit in miles per hour
- \( \text{Speed} \) = Speed limit in kilometers per hour
UTILITY WORK AHEAD

LEGEND

REFLECTORIZED PLASTIC DRUM
EXISTING TRAVEL LANE
PROPOSED TRAVEL LANE
PROPOSED SIGN
WORK ZONE
FLAGGER
TYPE 3 BARRICADE

X = SPACING OF REFLECTORIZED PLASTIC DRUM. SPACING SHALL EQUAL THE POSTED SPEED LIMIT. (EXAMPLE: 35 MPH SPEED LIMIT = 35’ DRUM SPACING)

QUICK REFERENCE TABLES

Table 6C-1. Recommended Advance Warning Sign Minimum Spacing

<table>
<thead>
<tr>
<th>Roof Type</th>
<th>Distance Between Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Urban (low speed)</td>
<td>100'</td>
</tr>
<tr>
<td>Urban (high speed)</td>
<td>100'</td>
</tr>
<tr>
<td>Rural</td>
<td>500'</td>
</tr>
<tr>
<td>Expressway/Freeway</td>
<td>1,000'</td>
</tr>
</tbody>
</table>

1. Speed category is determined by the highway agency.
2. A, B, and C are the dimensions shown in Figures 6C-1 through 6C-6. The A dimension is the distance from the transition point of restriction to the first sign. The B dimension is the distance between the first and second signs. The C dimension is the distance between the second sign and the end of the Work Zone.

Table 6C-2. Type of Taper for Temporary Traffic Control Zones

<table>
<thead>
<tr>
<th>Type of Taper</th>
<th>Taper Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder</td>
<td>50 feet minimum, 100 feet maximum</td>
</tr>
<tr>
<td>Edge Line</td>
<td>50 feet minimum, 100 feet maximum</td>
</tr>
<tr>
<td>Dowel Bar</td>
<td>50 feet minimum, 100 feet maximum</td>
</tr>
</tbody>
</table>

Table 6C-3. Taper Length Criteria for Temporary Traffic Control Zones

<table>
<thead>
<tr>
<th>Type of Taper</th>
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<td>50 feet minimum, 100 feet maximum</td>
</tr>
<tr>
<td>Dowel Bar</td>
<td>50 feet minimum, 100 feet maximum</td>
</tr>
</tbody>
</table>

Table 6C-4. Formulas for Determining Taper Length

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>Taper Length (in feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 mph or less</td>
<td>L = 40</td>
</tr>
<tr>
<td>40 mph or more</td>
<td>L = NS</td>
</tr>
</tbody>
</table>

Legend:

- Shoulder
- Edge Line
- Dowel Bar

TYPICAL DOWNTOWN TRENCH INSTALLATION WITH LANE SHARING WORK ZONE

NOT TO SCALE
INTERSECTION OF LOST RIVER ROAD AND MAIN STREET - PHASE 2
WOODSTOCK, NH
NOTES:

GENERAL

1. VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN ON THESE PLANS PRIOR TO INSTALLING THE ALIGNMENTS. IF DISCREPANCIES ARE NOTED, NOTIFY BRIERLEY SO THAT APPROPRIATE REVISIONS CAN BE MADE TO THE HDD DESIGN.

2. IF UTILITIES WILL INTERFERE WITH INSTALLATION OF THE ALIGNMENTS AS SHOWN ON THESE DRAWINGS, NOTIFY BRIERLEY SO THAT APPROPRIATE REVISIONS CAN BE MADE TO THE HDD DESIGN.

3. PERFORM HDD CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS AND CONFORM TO ALL APPLICABLE SAFETY REGULATIONS INCLUDING THE PROVISIONS OF FEDERAL OSHA.

4. PROVIDE PROTECTIVE BARRIER AROUND ALL EXCAVATIONS THAT CONFORMS TO ALL APPLICABLE SAFETY REGULATIONS.

5. ALL UTILITIES DISCOVERED DURING DESIGN ARE INDICATED ON THE PROJECT DRAWINGS. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF ANY CONSTRUCTION. ALL UTILITIES WITHIN 15 FEET OF THE DRILL PATH SHALL BE EXPOSED AND PROTECTED DURING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

6. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING DIGSAFE AT 811, AT LEAST 72 HOURS BEFORE DIGGING OR DRILLING AND SHALL MAINTAIN AN ACTIVE PERMIT DURING ALL SUBSURFACE WORK. A COPY OF THIS PERMIT SHALL BE ONSITE AND AVAILABLE FOR VIEWING BY THE OWNER AND OWNER'S REPRESENTATIVES DURING ALL SUBSURFACE WORK.

7. REFER TO TEST BORING LOGS FOR SPECIFIC DETAILS OF SUBSURFACE CONDITIONS ENCOUNTERED.

8. ACTUAL SOIL CONDITIONS MAY VARY SIGNIFICANTLY FROM THOSE INDICATED ON THE PROFILES. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING EXISTING SUBSURFACE INFORMATION, AND SELECTING THE APPROPRIATE MEANS AND METHODS FOR COMPLETING THE WORK.

9. THE SUBCONTRACTOR SHALL VERIFY PROJECT COORDINATES, AZIMUTHS AND ELEVATIONS PRIOR TO CONSTRUCTION.

10. ALL DIRECTIONAL DRILLING SHALL BE COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND SPECIFICATION SECTION 16840 - HORIZONTAL DIRECTIONAL DRILL INSTALLATION.

11. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTAINMENT, CLEANUP AND DISPOSAL OF ALL DRILLING FLUIDS IN ACCORDANCE WITH APPROVED DRILL FLUID MANAGEMENT AND CONTINGENCY RELEASE PLAN, INCLUDING INADVERTENT SURFACE RETURNS.

12. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY TRAFFIC CONTROL.

13. THE PLANS AND PROFILES WERE DEVELOPED INCORPORATING THE INFORMATION AVAILABLE AT THE TIME OF DESIGN.
HDD 028 ENTRY AREA WORK SPACE

HDD 028 EXIT AREA WORK SPACE

DETAIL A - HDD DUCT BUNDLE
SCALE: N.T.S.

SCALE: 1"=30'

HDD 028 ENTRY AREA WORK SPACE

HDD 028 EXIT AREA WORK SPACE