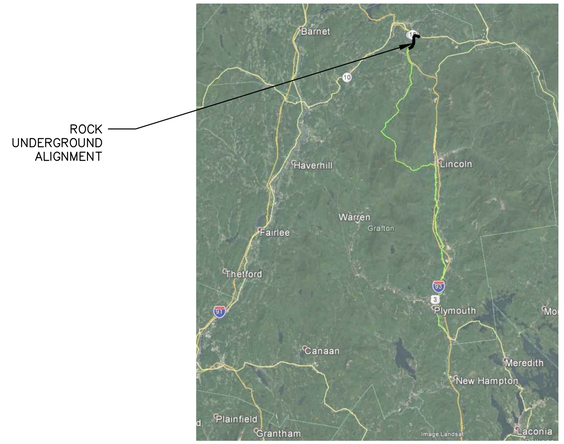
NORTHERN PASS TRANSMISSION (NPT) PROJECT

THE NORTHERN PASS

ROCKS ESTATE BYBASS (ROCK) UNDERGROUND ALIGNMENT

PERMIT PACKAGE – NH DOT DISTRICT 1

DECEMBER 07, 2016



VICINITY MAP
(NOT TO SCALE)

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ROCKC105	UNDERGROUND ALIGNMENT–STA 29+00 TO 37+50
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ROCKTCP–5	TRAFFIC CONTROL TYPICALS
ROCKTCP–6	TRAFFIC CONTROL TYPICALS

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DWG. NO.	DWG. TITLE
N/A	N/A

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DWG. NO.	DWG. TITLE
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ROCKC504	TRENCH AND UTILITY DETAILS
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GENERAL CONTRACTOR
PAR ELECTRICAL CONTRACTORS, INC.
70 FULLER ROAD
CHICOPEE, MA 01020

CIVIL ENGINEER
SGC ENGINEERING, LLC.
501 COUNTY ROAD
WESTBROOK, ME 04092

TRAFFIC ENGINEER
LOUIS BERGER
100 COMMERCIAL STREET,
2ND FLOOR NORTH
MANCHESTER, NH 03101

CIVIL ENGINEER – TRENCHLESS
BRIERLEY ASSOCIATES
167 SOUTH RIVER ROAD, #8
BEDFORD, NH 03110

PRELIMINARY - NOT FOR CONSTRUCTION

PRELIMINARY - NOT FOR CONSTRUCTION

EXISTING

- RIGHT OF WAY
- ADJACENT PROPERTY LINE
- WETLAND
- STREAM EDGE
- STREAM CENTERLINE
- EDGE OF VERNAL POOL
- FENCE
- STONEWALL
- OVERHEAD WIRES
- TREELINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- BUILDING
- GRAVEL ROAD
- PAVED ROAD
- IRON PIPE OR ROD
- STONE OR CONCRETE BOUND
- UTILITY POLE
- SEWER MANHOLE
- CATCH BASIN
- WELL
- FIRE HYDRANT
- WATER SHUT OFF
- GATE VALVE
- LIGHT POLE
- BOREHOLE
- MAILBOX

PROPOSED

- TRENCH LIMITS
- CABLE ROUTE
- UG SPLICE LOCATION
- UG SPLICE W/ FIBER SPLICE LOCATION
- UG SPLICE W/ LINK BOX LOCATION
- TRENCHLESS INSTALLATION

TEMPORARY TRAFFIC CONTROL NOTES:

1. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL EXISTING SIDE ROADS AND DRIVEWAYS.
2. ALL ROAD WORK SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF MUTCD.
3. ALL WORK VEHICLES, SHADOW VEHICLES, AND POLICE CRUISERS SHALL HAVE HIGH-INTESITY ROTATING, FLASHING, OSCILLATING, AND/OR STROBE LIGHTS ACTIVE AT ALL TIMES.
4. ACTUAL PLACEMENT OF CONSTRUCTION SIGNS SHALL BE CAREFULLY CONSIDERED TO AVOID OBSTRUCTING EXISTING SIGNS OR ALLOWING EXISTING SIGNS, VEGETATION, OR OTHER PHYSICAL FEATURES TO OBSTRUCT OR LIMIT VISIBILITY TO CONSTRUCTION SIGNS. CONSTRUCTION SIGNS SHALL ALSO BE PLACED AT LOCATIONS THAT AVOID OVERWHELMING MOTORISTS WITH INFORMATION WHEN COMBINED WITH THE PLANS.
5. CONES SHALL NOT BE USED FOR EITHER LONG-TERM STATIONARY OR INTERMEDIATE-TERM STATIONARY WORK APPLICATIONS. CONES REGARDLESS OF SIZE, SHALL NOT BE USED AT NIGHT AS THE PRIMARY CHANNELIZATION DEVICE, EXCEPT DURING WORK HOURS. CONES MAY, HOWEVER, BE USED TO SUPPLEMENT OTHER CHANNELIZING DEVICES SUCH AS DRUMS AND BARRICADES IN PLACE AT NIGHT. FOR NIGHTTIME USE, CONES SHALL BE PROVIDED BY A WHITE BAND 150mm(6in) WIDE LOCATED 75 TO 100mm (3 TO 4in) FROM THE TOP OF THE CONES AND AN ADDITIONAL 100mm(4in) WIDE BAND APPROXIMATELY 50mm(2in) BELOW THE 150mm(6in) BAND.

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
1+00		43+50	CONDUIT INSTALLATION	ROCKTCP-1
43+50		45+10	CONDUIT INSTALLATION	ROCKTCP-5
45+10		45+50	CONDUIT INSTALLATION	ROCKTCP-6
45+50		46+00	CONDUIT INSTALLATION	ROCKTCP-7
46+00		63+32	CONDUIT INSTALLATION	ROCKTCP-1
63+32		64+20	CONDUIT INSTALLATION	ROCKTCP-3
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1
22+00		24+00	WIRE PULLING/SPLICING	ROCKTCP-4
45+20		47+20	WIRE PULLING/SPLICING	ROCKTCP-4
68+00		70+00	WIRE PULLING/SPLICING	ROCKTCP-4
91+00		93+00	WIRE PULLING/SPLICING	ROCKTCP-4
114+00		116+00	WIRE PULLING/SPLICING	ROCKTCP-4
135+00		137+00	WIRE PULLING/SPLICING	ROCKTCP-4
155+50		157+50	WIRE PULLING/SPLICING	ROCKTCP-4

*IN AREAS OF HDD THE TRAFFIC CONTROL NEEDS WILL BE AT THE ENTRY AND EXIT POINTS ONLY.

SURVEY NOTES:

1. SURVEY PROVIDED BY BL COMPANIES.
2. WETLAND AND STREAM MAPPING PROVIDED BY NORMANDEAU ASSOCIATES.
3. HORIZONTAL DATUM IS BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM, NAD 83F. ELEVATIONS DEPICTED ON THIS PLAN REFER TO THE NAVD OF 1988.
4. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES DEPICTED ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS, FIELD SURVEY, AND INFORMATION OF RECORD. IT IS NOT WARRANTED THAT ALL UNDERGROUND UTILITIES OR OTHER STRUCTURES ARE DEPICTED ON THIS PLAN. UTILITIES THAT REQUIRE FIELD VERIFICATION ARE NOTED ON THE PLANS.
5. A SURVEY CONTROL BASELINE WAS ESTABLISHED BY BL COMPANIES, UTILIZING A COMBINATION OF GPS AND CONVENTIONAL LAND SURVEYING ALONG THE PROJECT CORRIDOR. HORIZONTAL CONTROL WAS TIED INTO THE NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM NAD 83, (ZONE 2800, US SURVEY FOOT). THE ORDER OF ACCURACY OF THE CONTROL SURVEY IS SECOND ORDER, CLASS II. RESEARCH WAS CONDUCTED AT MULTIPLE TOWN, COUNTY AND STATE OFFICES TO OBTAIN RIGHT-OF-WAY INFORMATION, HIGHWAY LAYOUTS, PROPERTY OWNER INFORMATION, CURRENT DEEDS AND ANY FILED PLANS FOR PROPERTIES ALONG THE PROJECT CORRIDOR. ROADWAY RIGHT-OF-WAY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE DOCUMENTS, SUCH AS RECORD LAYOUTS AND HIGHWAY PLANS, AND THE BOUNDARY EVIDENCE RECOVERED AND FIELD SURVEYED ALONG THE PROJECT CORRIDOR. ADJACENT OWNER PROPERTY LINES HAVE BEEN COMPILED AND DEPICTED FROM TAX ASSESSOR INFORMATION, RECORDED DEEDS, AND THE SURVEYED FIELD EVIDENCE.
6. THE EXISTING CONDITIONS DEPICTED ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BASED ON AERIAL PHOTOGRAPHS, FIELD SURVEY, AND INFORMATION OF RECORD.
7. BEFORE CONSTRUCTION, ALL UTILITIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED CALL DIG SAFE; 1-888-DIG-SAFE (888-344-7233).
8. THE LOCATIONS OF EXISTING OVERHEAD ELECTRICAL DISTRIBUTION DEPICTED ON THIS PLAN ARE APPROXIMATE BASED UPON AERIAL PHOTOGRAMMETRIC MAPPING AND FIELD SURVEY. THEY ARE NOT WARRANTED TO BY EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILIITES OR OTHER STRUCTURES ARE DEPICTED ON THIS PLAN.

GENERAL NOTES:

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON AERIAL SURVEYS AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OR ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG.
2. VERTICAL RADII SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED. CABLE ROUTE – 100' R. TYPICAL, 25' R. MINIMUM.
3. CABLE ROUTE SHALL MAINTAIN MINIMUM COVER DEPTH OF 30" UNLESS OTHERWISE SHOWN ON DRAWINGS.
4. CABLE ROUTE SHALL MAINTAIN 2'-0" VERTICAL AND HORIZONTAL CLEARANCE OVER OR UNDER EXISTING UTILITIES UNLESS OTHERWISE SHOWN ON DRAWINGS.
5. SPLICE LOCATIONS ARE SUBJECT TO ADJUSTMENT DUE TO UNFORSEEN CONDITIONS. ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO APPROVE AND ADJUSTMENTS.
6. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RETURNED TO THE ORIGINAL CONDITIONS, INCLUDING CURBING, SIGNAGE, MAILBOXES, ETC.
7. ALL SPLICE LOCATIONS COORDINATES PROVIDED ARE TO THE CENTER OF THE SPLICE PIT.
8. CONTRACTOR SHALL PERFORM ALL RESTORATION WORK AS REQUIRED IN ACCORDANCE WITH SPECIFICATIONS.
9. MINIMUM DEPTH OF COVER, AS MEASURED TO THE TOP OF CONCRETE SPLICE PIT, SHALL BE A MINIMUM OF 30".
10. ALL OPEN TRENCHES AND EXCAVATIONS SHALL BE SECURED AT THE COMPLETION OF EACH DAYS WORK.
11. CONTRACTOR TO FIELD VERIFY ALL UTILITIES.
12. UTILITY SERVICES ARE NOT SHOWN AND SHALL BE FIELD LOCATED.
13. CONTRACTOR SHALL PROTECT IN PLACE EXISTING PIPES / UTILITIES AT OPEN EXCAVATION CROSSINGS.
14. WHEN EXCAVATING IN PROXIMITY OF EXISTING OR PAST FUEL SITES, ETC., COORDINATION THROUGH NHDES IS NECESSARY TO EVALUATE THE POTENTIAL OF CONTAMINATED SOILS BEING ENCOUNTERED DURING THE CONSTRUCTION.
15. WHEN EXCAVATING OR CONDUCTING WORK IN PROXIMITY OF EXISTING UTILITIES, CONTRACTOR RESPONSIBLE FOR PROTECTION AND MAINTENANCE OF EXISTING UTILITIES.
16. DETAILED SITE DEVELOPMENT PLANS INCLUDING GRADING AND SEDIMENTATION AND EROSION CONTROLS FOR TRENCH LOCATIONS OUTSIDE OF THE NHDOT RIGHT-OF-WAY ARE INCLUDED IN THE DES ALTERATION OF TERRAIN PERMIT APPLICATION.
17. TRENCH WIDTH MAY VARY FOR TRENCHES DEEPER THAN 5'. TRENCH DETAILS ON DRAWING ROCKC502 DEPICT THE POTENTIAL MAXIMUM WIDTH, BASED ON TRENCH DEPTH AND SITE SPECIFIC SOIL CONDITIONS.
18. CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION, SIGNAGE AND STRUCTURES WITHIN THE ROW. CONTRACTOR IS RESPONSIBLE FOR REPLACING, IN KIND, ANY MONUMENTATION, SIGNAGE OR STRUCTURES, REMOVED OR DAMAGED AS A RESULT OF CONTRACTOR'S WORK.
19. IF ANY HIGHWAY SIGNAGE IS REMOVED OR DAMAGED DURING CONSTRUCTION, CONTRACTOR SHALL REPLACE, IN KIND, WITHIN 48 HOURS OF PLACEMENT OF THE TEMPORARY PAVEMENT PATCH IN THAT AREA.

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
A	ISSUED FOR REVIEW	12/07/16	DGR	TDD	TMH
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH

SGC Engineering, LLC
A member of the Burns & Mcdonnell Engineering Company
LIC NO:

PAR ELECTRICAL CONTRACTORS, INC.
A MYR GROUP COMPANY

THE NORTHERN PASS
Transmission Business

B

NPT
ROCK-UNDERGROUND ALIGNMENT
GENERAL NOTES

DATE: 12/07/2016

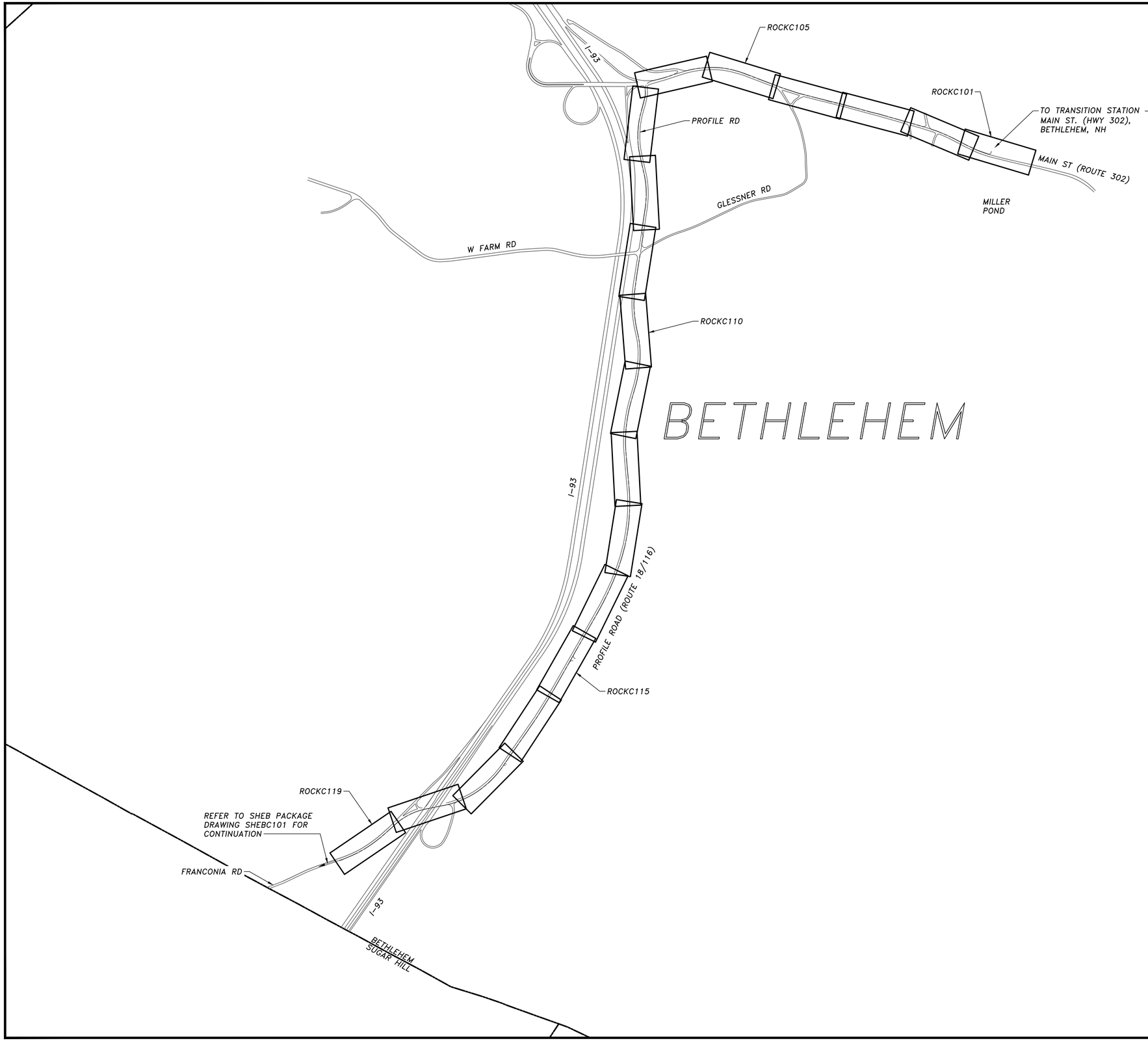
SCALE:

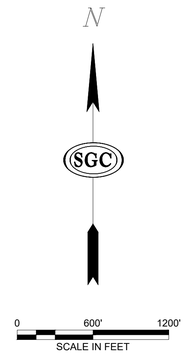
DES: TDD	CHK: TDD
DRW: DGR	APR: TMH

TOWN:

TRANSMISSION LINE:
ROCK

ROCKG001





PRELIMINARY - NOT FOR CONSTRUCTION

NO		DATE	DWN	CHKD	APPVD
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

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PAR ELECTRICAL CONTRACTORS, INC.
A QUANTA SERVICES COMPANY

THE NORTHERN PASS
Transmission Business

B

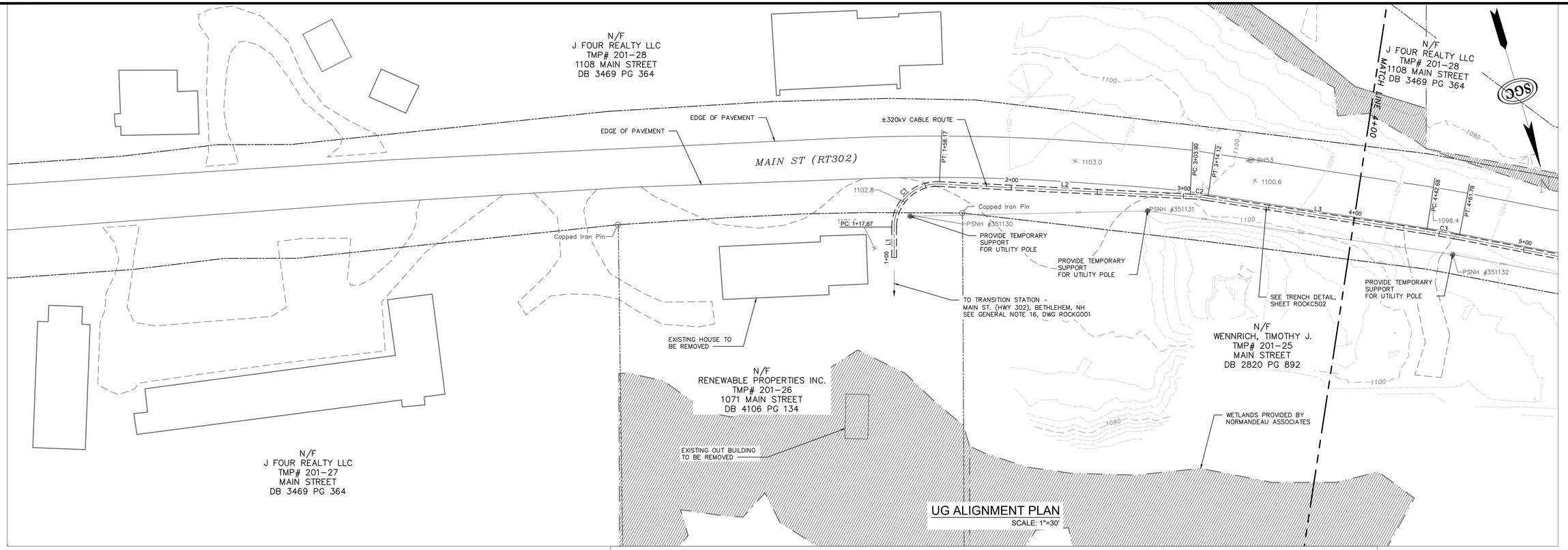
NPT
ROCK – UNDERGROUND ALIGNMENT
ALIGNMENT KEY MAP

DATE: 12/07/2016
SCALE: 1"=600'

DES: TDD | CHK: TDD
DRW: DGR | APR: TMH
TOWN:

TRANSMISSION LINE:
ROCK

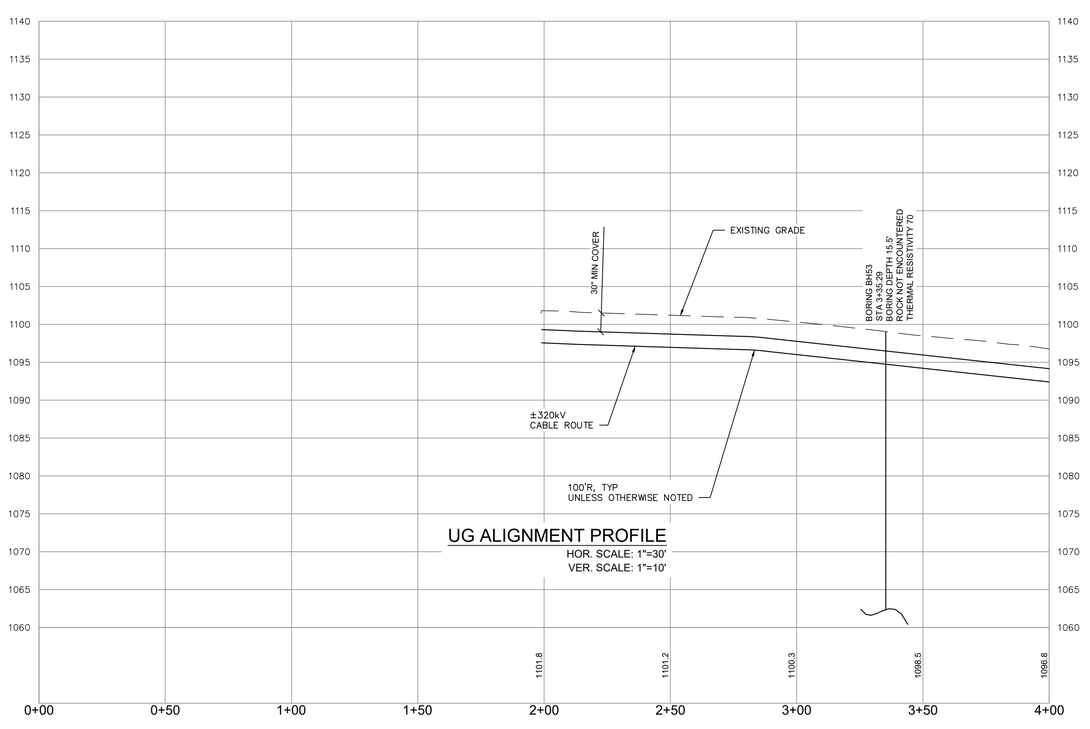
ROCKC100



UG ALIGNMENT PLAN
SCALE: 1"=30'

TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
1+00		43+50	CONDUIT INSTALLATION	ROCKTCP-1



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

PRELIMINARY - NOT FOR CONSTRUCTION

NO	ISSUED FOR REVIEW	DATE	DES	CHK'D	APP'D
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH

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THE NORTHERN PASS
Transmission Business

B

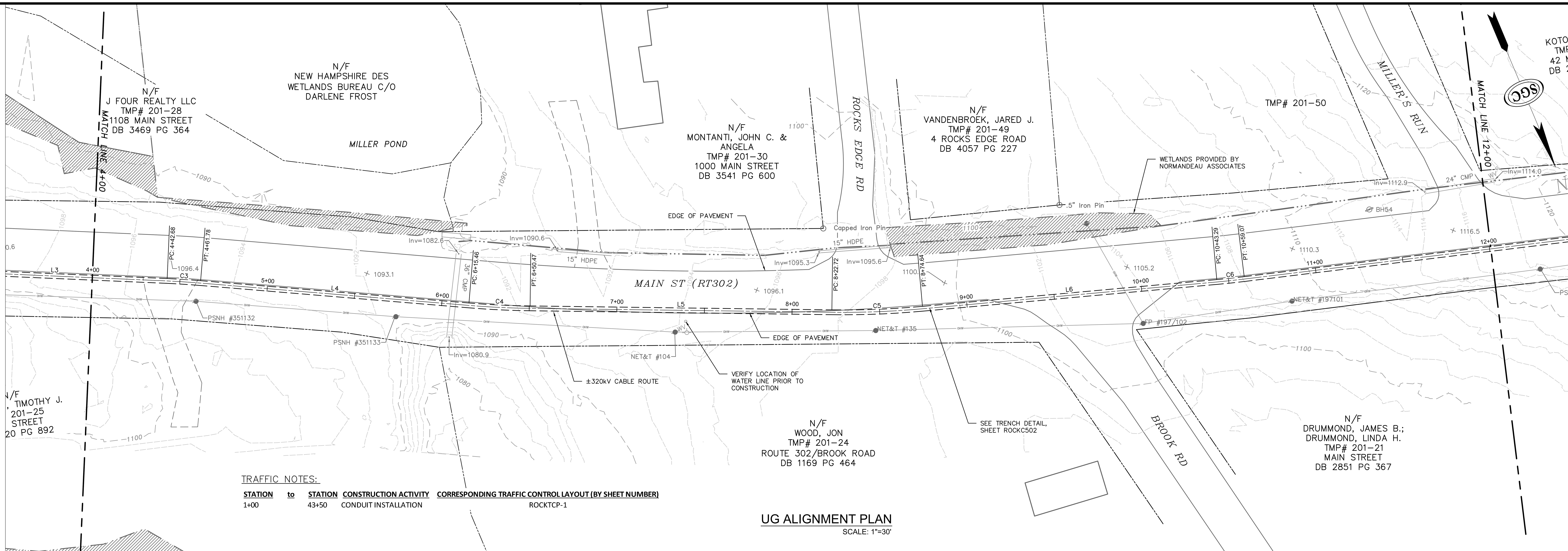
NPT
ROCK-UNDERGROUND ALIGNMENT
STA 1+00 TO 4+00

DATE: 12/07/2016
SCALE: H: 1"=30', V: 1"=10'

DES: TDD | CHK: TDD
DRW: DGR | APR: TMH
TOWN: BETHLEHEM

TRANSMISSION LINE:
ROCK

ROCKC101

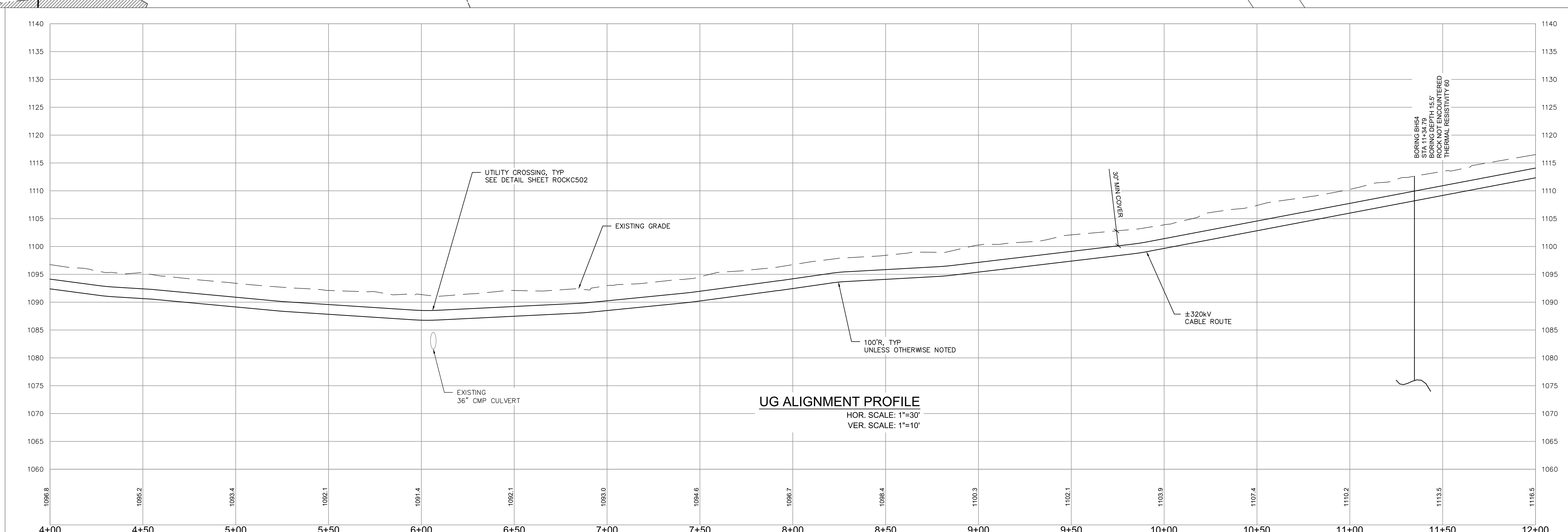


TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
1+00		43+50	CONDUIT INSTALLATION	ROCKTCP-1

UG ALIGNMENT PLAN

SCALE: 1"=30'



UG ALIGNMENT PROFILE

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

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
B	ISSUED FOR REVIEW–PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

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THE NORTHERN PASS

Transmission Business

B

NPT
ROCK–UNDERGROUND ALIGNMENT
STA 4+00 TO 12+00

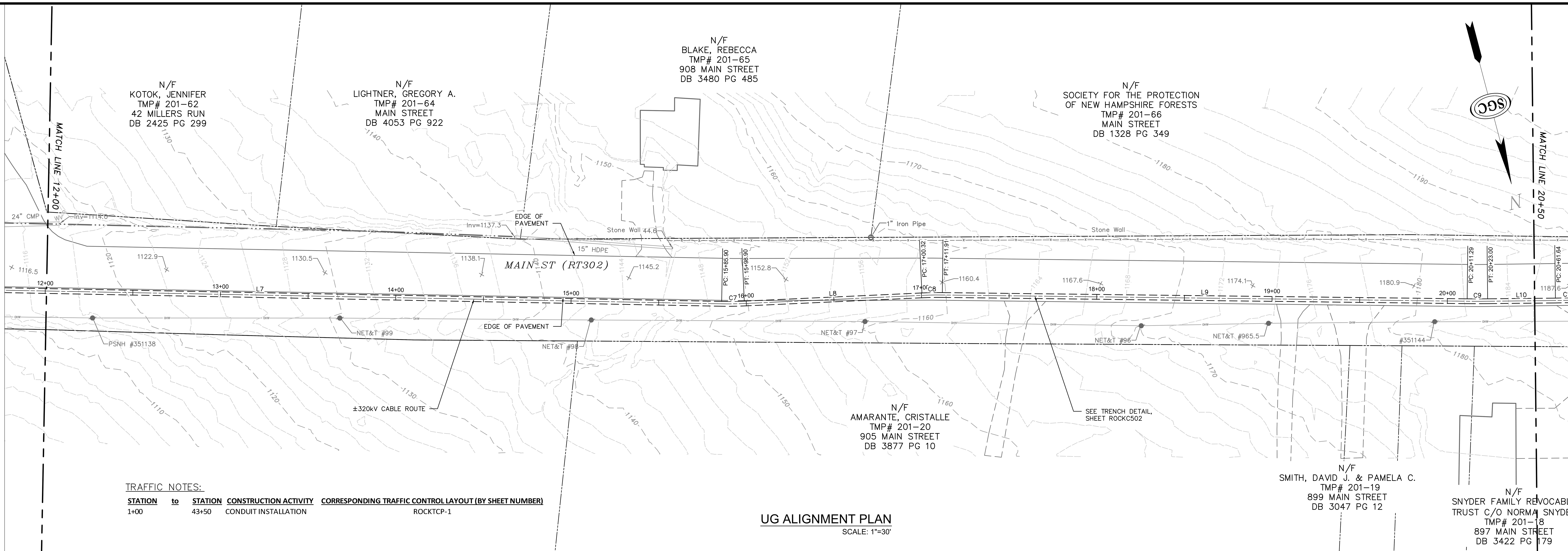
SCALE: H 1"=30', V 1"=10' DATE: 12/07/2016

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

TOWN: BETHLEHEM

TRANSMISSION LINE: ROCK

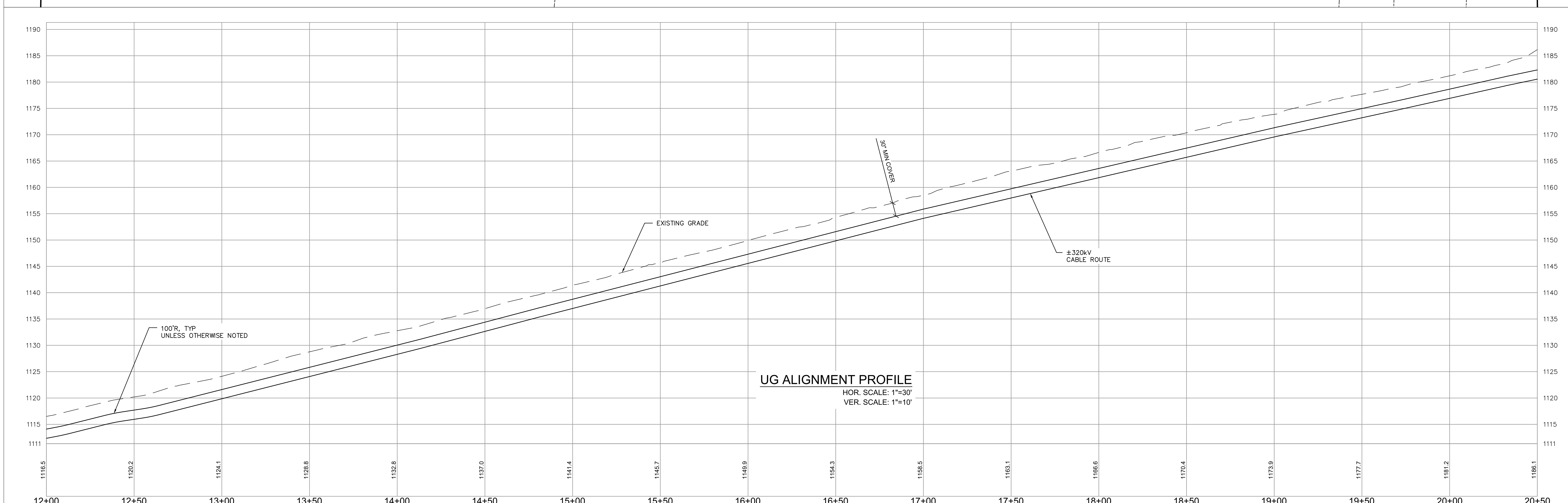
ROCKC102



TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
1+00		43+50	CONDUIT INSTALLATION	ROCKTCP-1

UG ALIGNMENT PLAN
SCALE: 1"=30'



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

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV
B	ISSUED FOR REVIEW–PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

SGC Engineering, LLC

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS

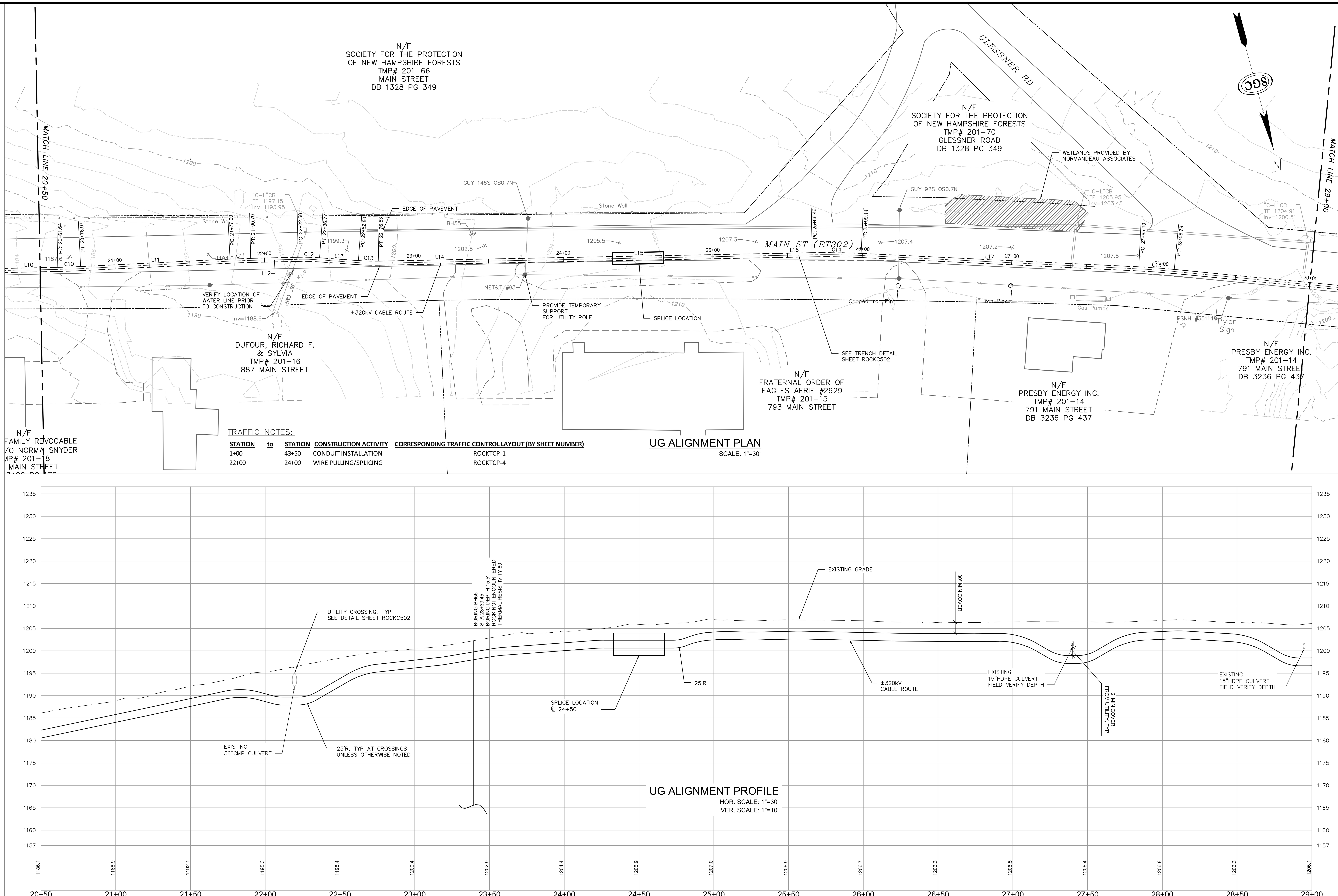
Transmission Business

B

NPT
ROCK–UNDERGROUND ALIGNMENT
STA 12+00 TO 20+50
DATE:12/07/2016

DES: TDD CHK: TDD
DRW: DGR APR: TMH
TOWN: BETHLEHEM
TRANSMISSION LINE: ROCK

ROCKC103



TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
1+00		43+50	CONDUIT INSTALLATION	ROCKTCP-1
22+00		24+00	WIRE PULLING/SPLICING	ROCKTCP-4

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPR
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

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PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS

Transmission Business

B

NPT
ROCK-UNDERGROUND ALIGNMENT
STA 20+50 TO 29+00

DATE:12/07/2016

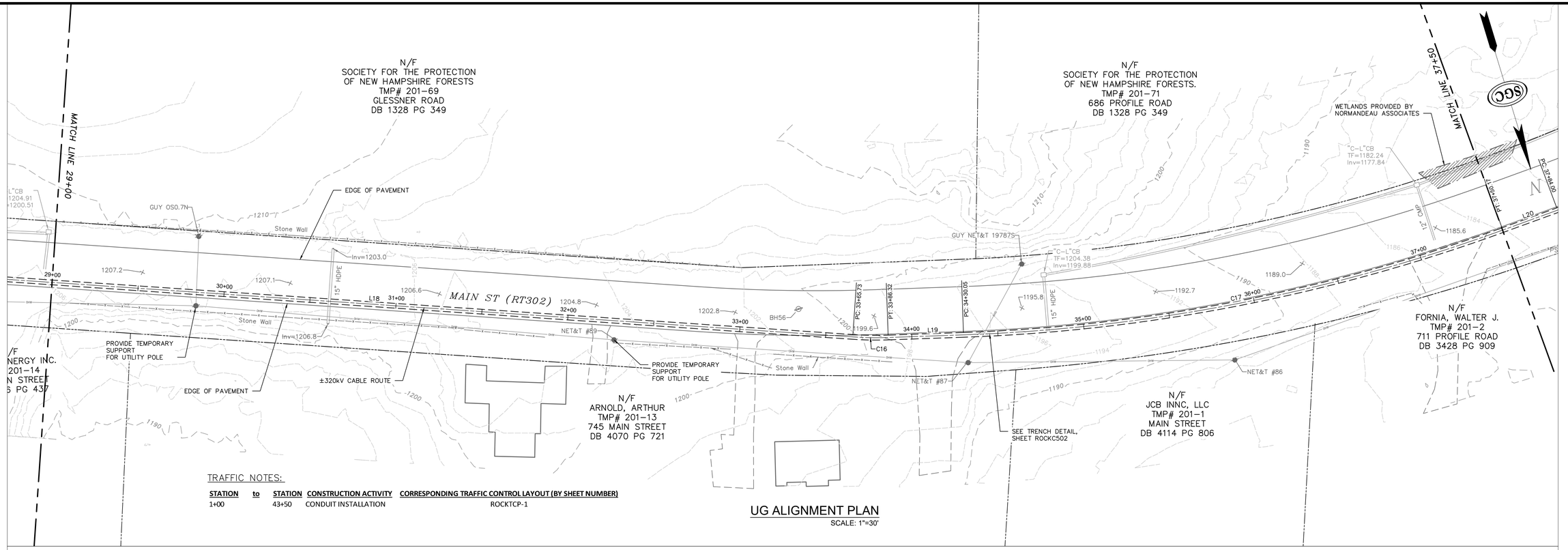
SCALE: H 1"=30', V 1"=10'

DES: TDD CHK: TDD
DRW: DGR APR: TMH

TOWN: BETHLEHEM

TRANSMISSION LINE: ROCK

ROCKC104

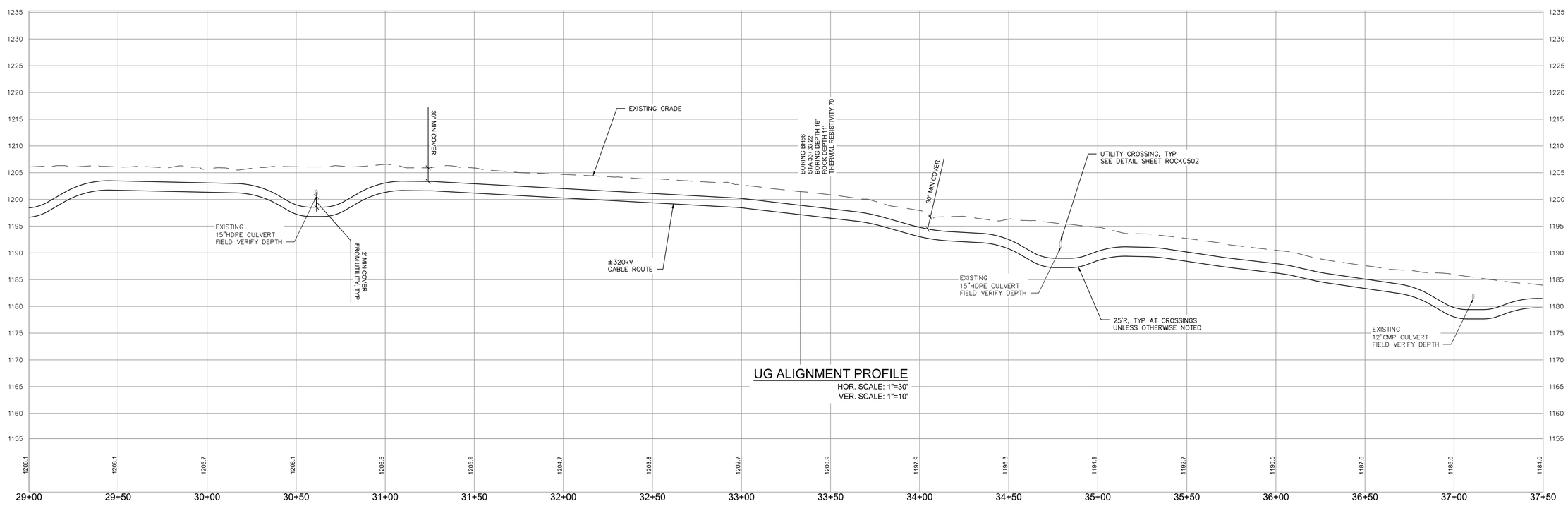


TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
1+00		43+50	CONDUIT INSTALLATION	ROCKTCP-1

UG ALIGNMENT PLAN

SCALE: 1"=30'



UG ALIGNMENT PROFILE

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

PRELIMINARY - NOT FOR CONSTRUCTION

NO	DESCRIPTION	DATE	DWN	CHKD	APPVD
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

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THE NORTHERN PASS
Transmission Business

B

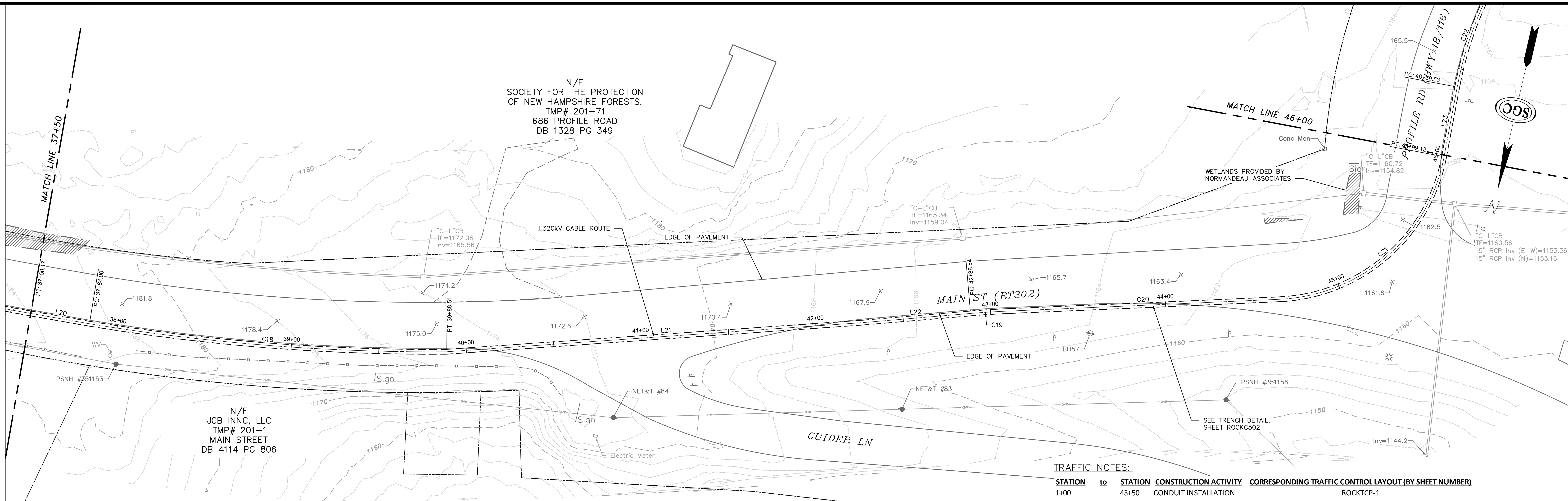
NPT
ROCK-UNDERGROUND ALIGNMENT
STA 29+00 TO 37+50

DATE: 12/07/2016
SCALE: H: 1"=30', V: 1"=10'

DES: TDD | CHK: TDD
DRW: DGR | APR: TMH
TOWN: BETHLEHEM

TRANSMISSION LINE:
ROCK

ROCKC105

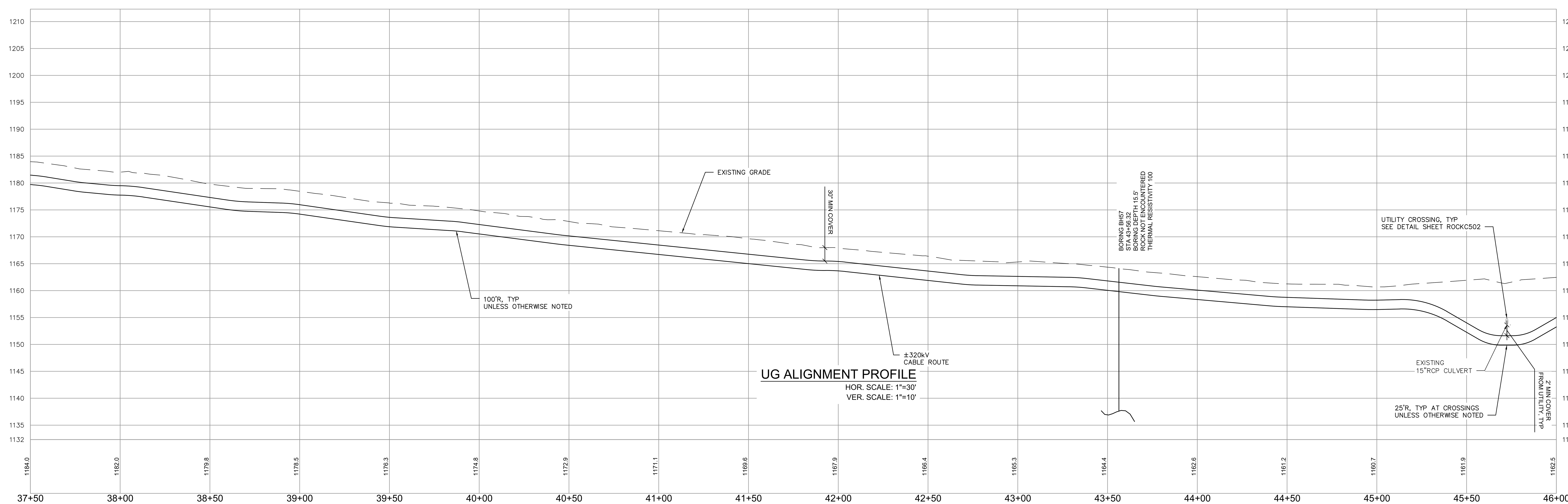


TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
1+00		43+50	CONDUIT INSTALLATION	ROCKTCP-1
43+50		45+10	CONDUIT INSTALLATION	ROCKTCP-5
45+10		45+50	CONDUIT INSTALLATION	ROCKTCP-6
45+50		46+00	CONDUIT INSTALLATION	ROCKTCP-7
46+00		63+32	CONDUIT INSTALLATION	ROCKTCP-1
45+20		47+20	WIRE PULLING/SPLICING	ROCKTCP-4

UG ALIGNMENT PLAN

SCALE: 1"=30'



UG ALIGNMENT PROFILE

HOR. SCALE: 1"=30'

VER. SCALE: 1"=10'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
B	ISSUED FOR REVIEW–PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

SEAL

SGC Engineering, LLC

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS

Transmission Business

B

NPT
ROCK–UNDERGROUND ALIGNMENT
STA 37+50 TO 46+00

DATE: 12/07/2016

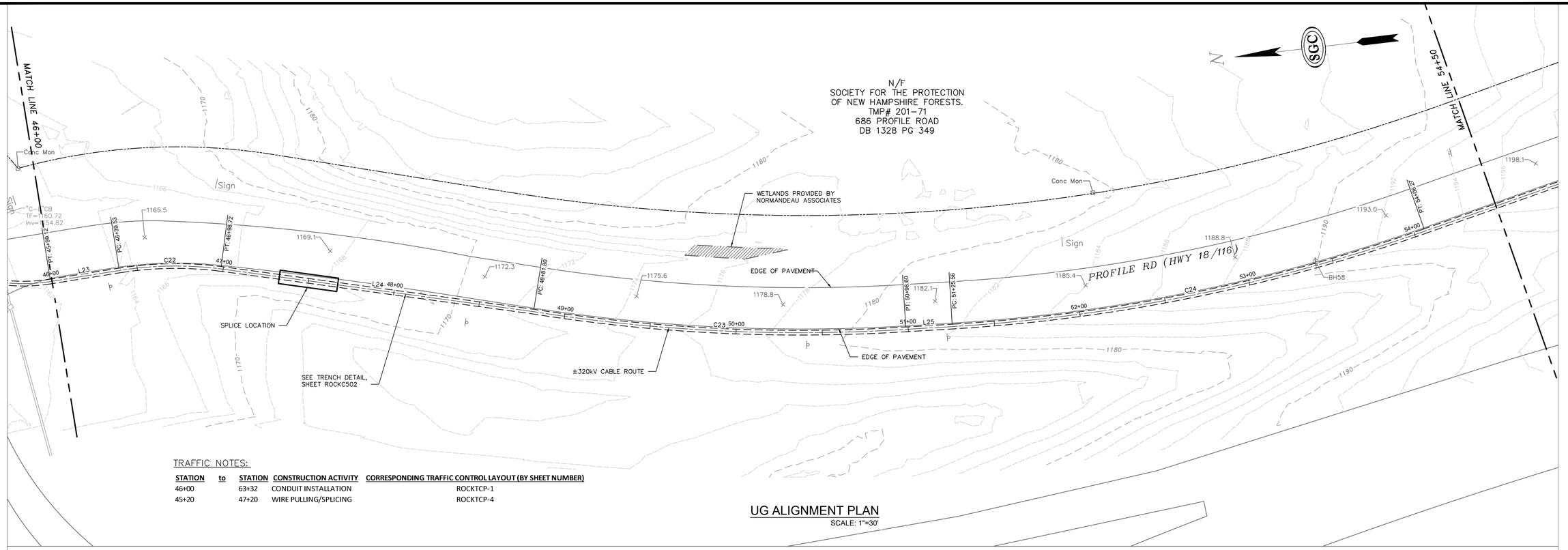
SCALE: H 1"=30', V 1"=10'

DES: TDD CHK: TDD
DRW: DGR APR: TMH

TOWN: BETHLEHEM

TRANSMISSION LINE: ROCK

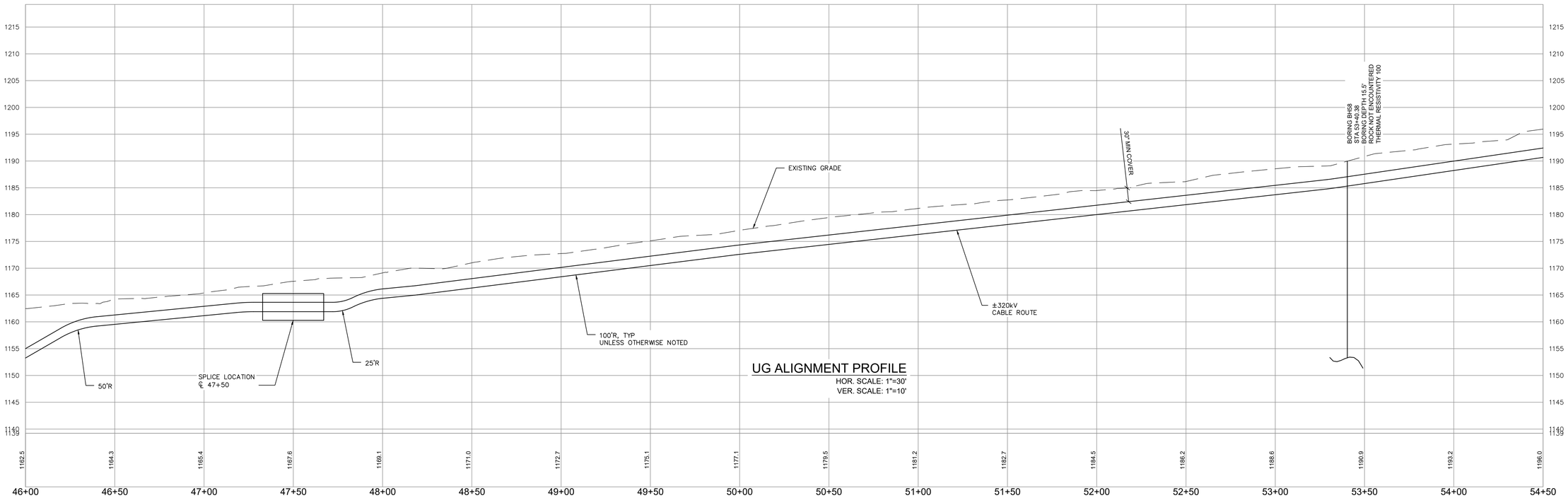
ROCKC106



TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
46+00		63+32	CONDUIT INSTALLATION	ROCKTCP-1
45+20		47+20	WIRE PULLING/SPLICING	ROCKTCP-4

UG ALIGNMENT PLAN
SCALE: 1"=30'



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

PRELIMINARY - NOT FOR CONSTRUCTION

NO	DESCRIPTION	DATE	DWN	CHKD	APPVD
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

SGC Engineering, LLC
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PAR ELECTRICAL CONTRACTORS, INC.
A QUANTA SERVICES COMPANY

THE NORTHERN PASS
Transmission Business

B

NPT
ROCK-UNDERGROUND ALIGNMENT
STA 46+00 TO 54+50

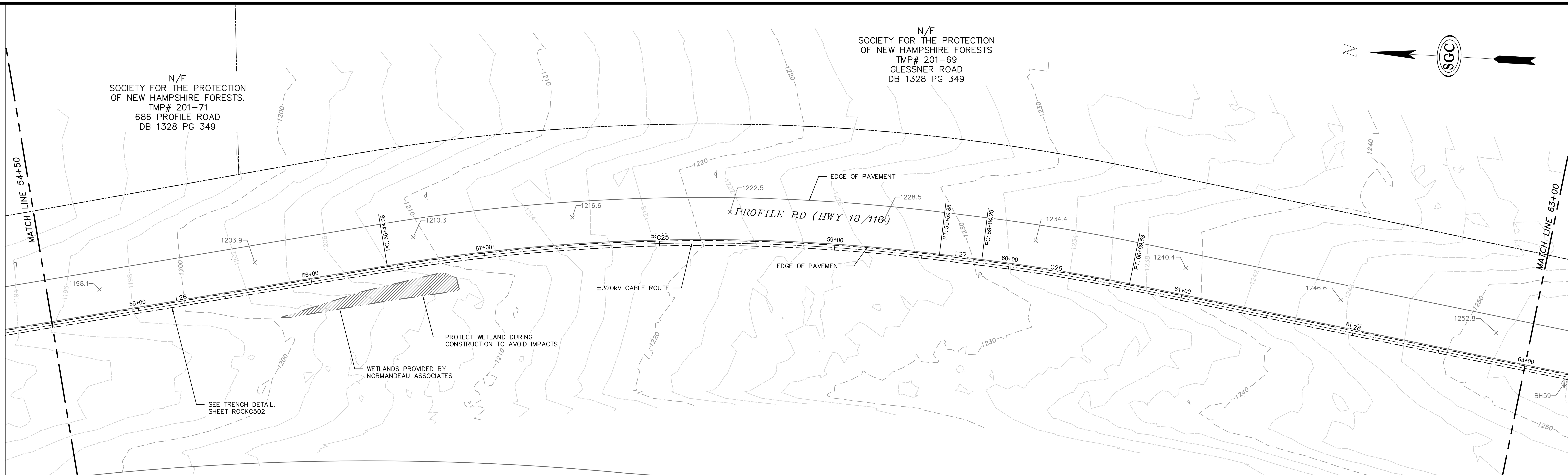
DATE: 12/07/2016
SCALE: H: 1"=30', V: 1"=10'

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

TOWN:
BETHLEHEM

TRANSMISSION LINE:
ROCK

ROCKC107

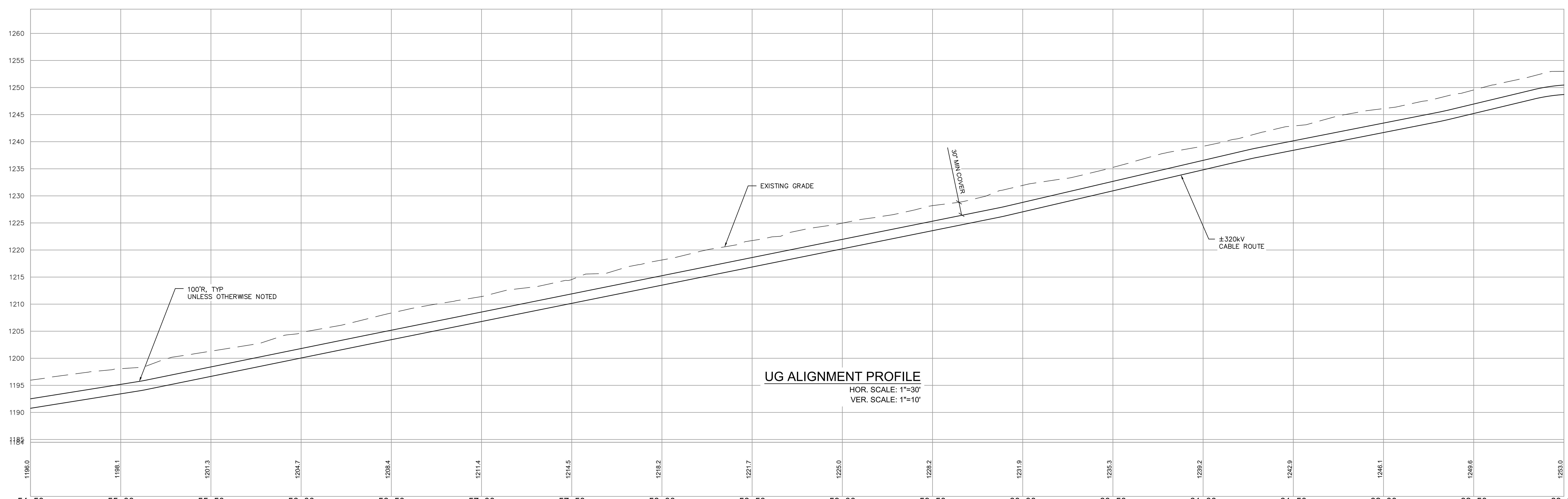


TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
46+00		63+32	CONDUIT INSTALLATION	ROCKTCP-1
63+32		64+20	CONDUIT INSTALLATION	ROCKTCP-3

UG ALIGNMENT PLAN

SCALE: 1"=30'



UG ALIGNMENT PROFILE

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

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
B	ISSUED FOR REVIEW–PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

SEAL

SGC Engineering, LLC

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS

Transmission Business

B

NPT
ROCK–UNDERGROUND ALIGNMENT
STA 54+50 TO 63+00

DATE: 12/07/2016

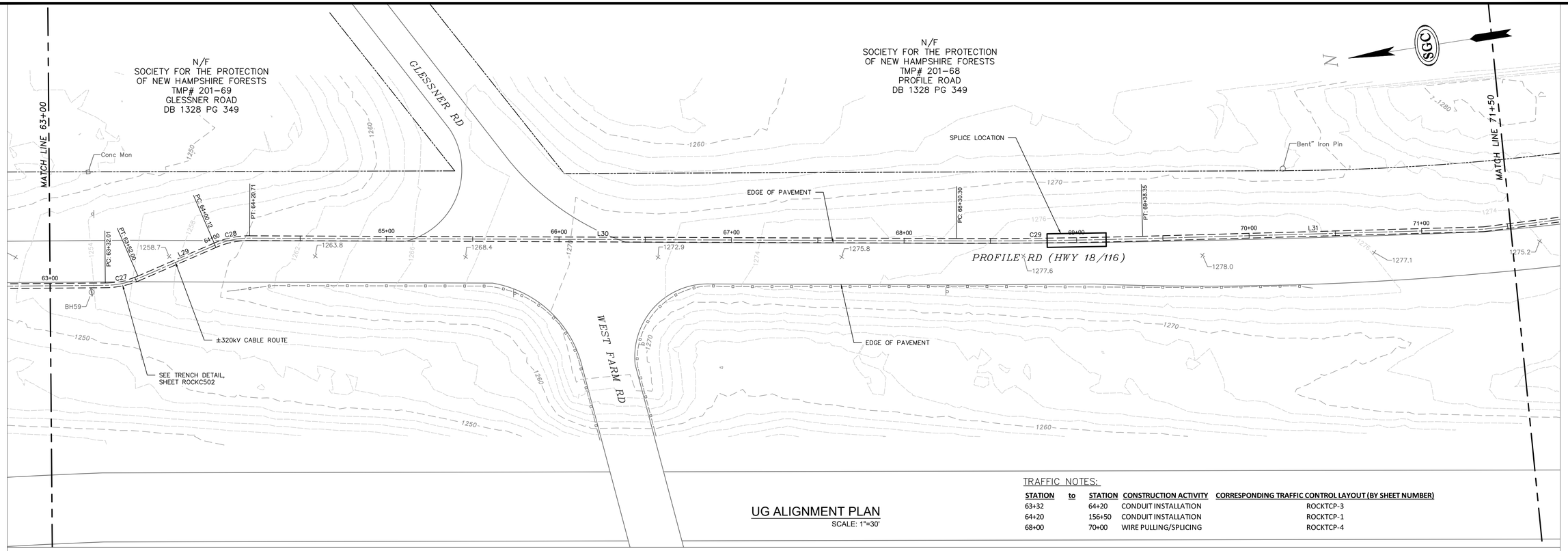
SCALE: H 1"=30', V 1"=10'

DES: TDD CHK: TDD
DRW: DGR APR: TMH

TOWN: BETHLEHEM

TRANSMISSION LINE: ROCK

ROCKC108

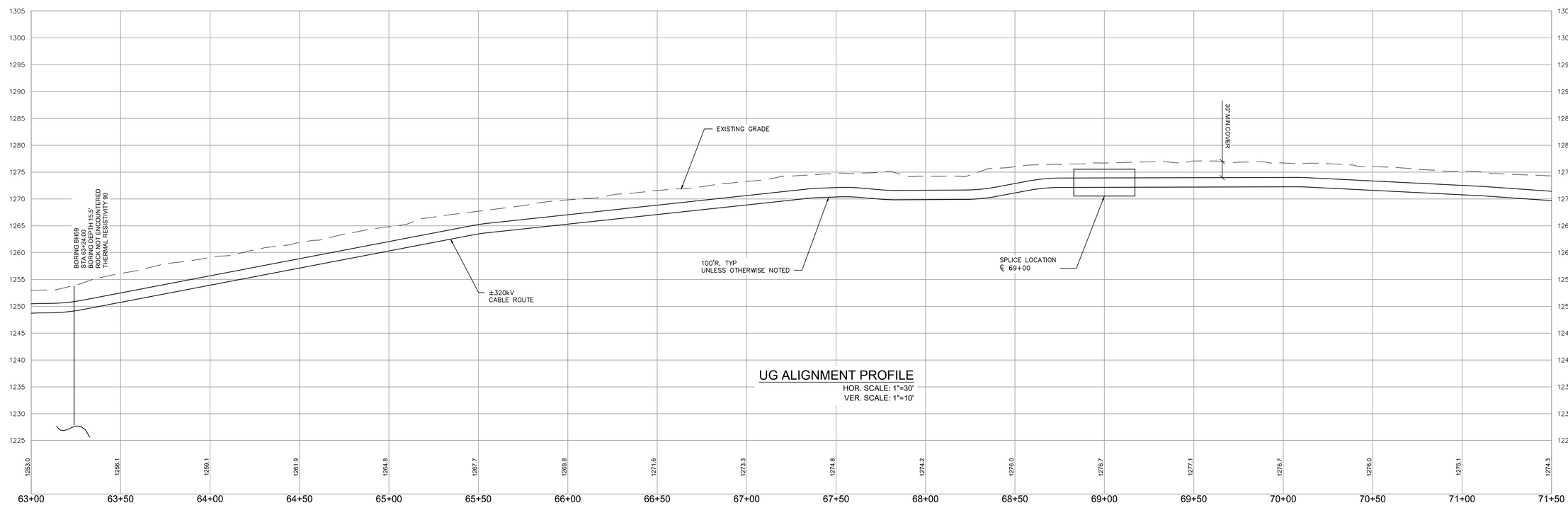


UG ALIGNMENT PLAN

SCALE: 1"=30'

TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
63+32		64+20	CONDUIT INSTALLATION	ROCKTCP-3
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1
68+00		70+00	WIRE PULLING/SPLICING	ROCKTCP-4



UG ALIGNMENT PROFILE

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

PRELIMINARY - NOT FOR CONSTRUCTION

NO	DESCRIPTION	DATE	DWN	CHKD	APPVD
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

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THE NORTHERN PASS
Transmission Business

B

NPT
ROCK-UNDERGROUND ALIGNMENT
STA 63+00 TO 71+50

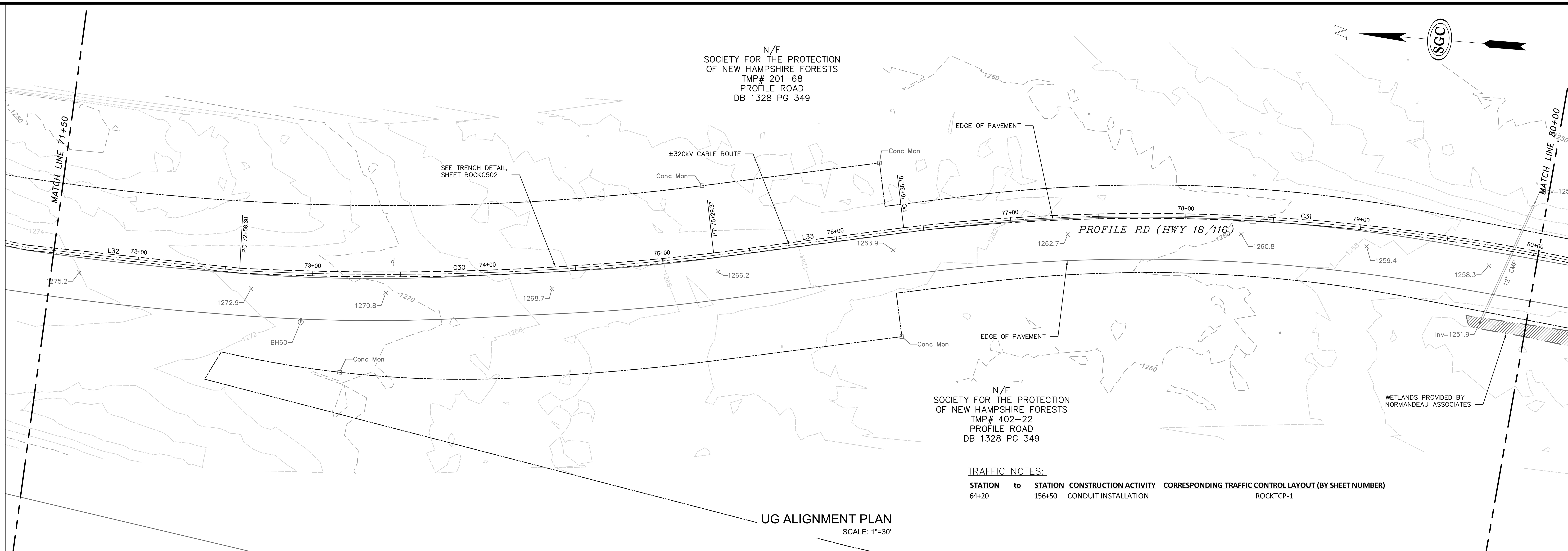
DATE: 12/07/2016
SCALE: H: 1"=30', V: 1"=10'

DES: TDD | CHK: TDD
DRW: DGR | APR: TMH
TOWN: BETHLEHEM

TRANSMISSION LINE:
ROCK

ROCKC109

PRELIMINARY - NOT FOR CONSTRUCTION

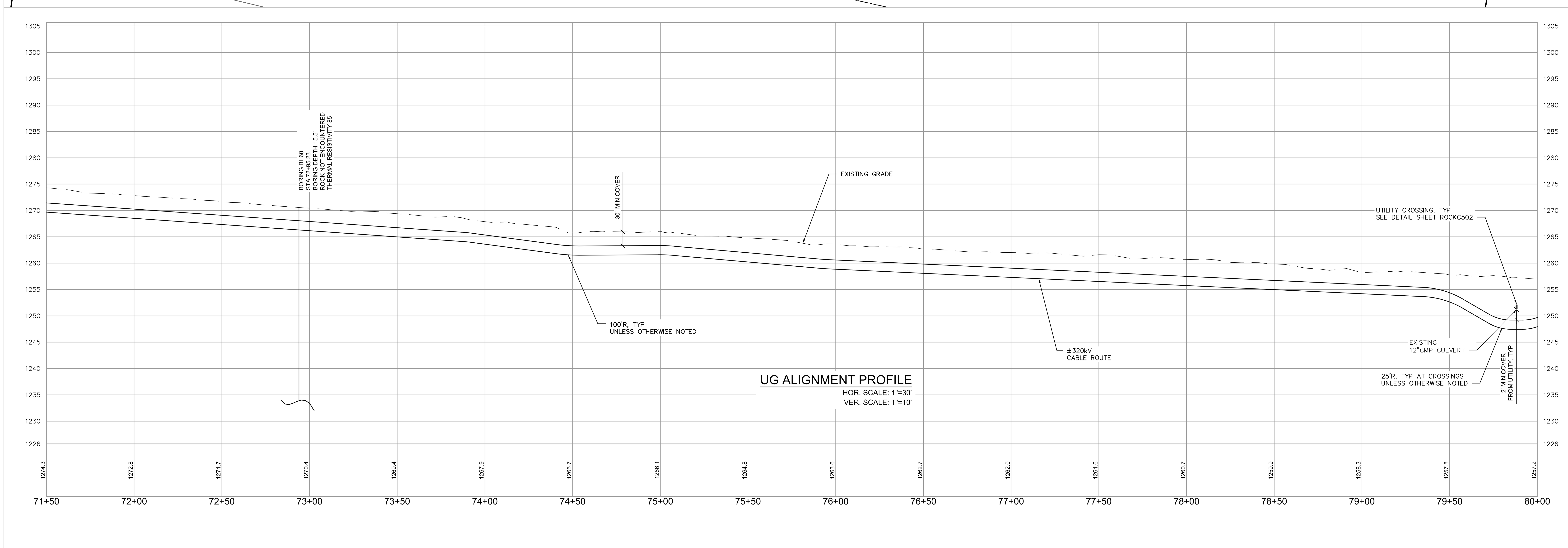


TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1

UG ALIGNMENT PLAN

SCALE: 1"=30'



UG ALIGNMENT PROFILE

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

NO.	REVISION	DATE	DRWN	CHKD	APPR'D
B	ISSUED FOR REVIEW–PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

SGC Engineering, LLC

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS

Transmission Business

B

NPT
ROCK–UNDERGROUND ALIGNMENT
STA 71+50 TO 80+00

DATE: 12/07/2016

SCALE: H 1"=30', V 1"=10'

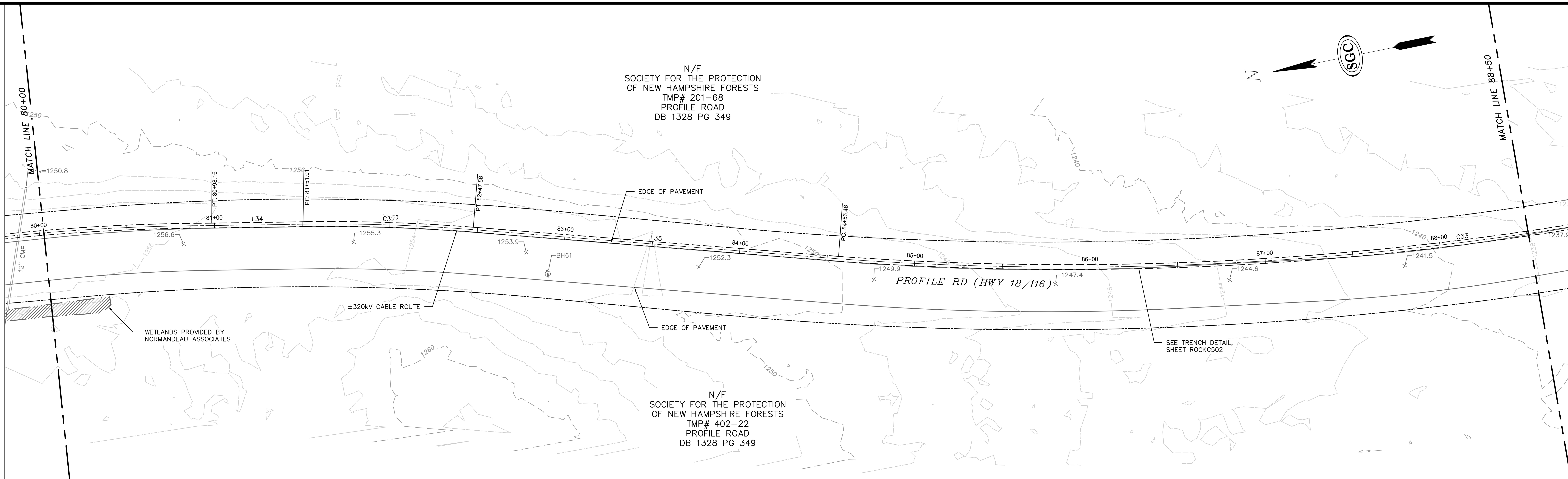
DES: TDD | CHK: TDD
DRW: DGR | APR: TMH

TOWN: BETHLEHEM

TRANSMISSION LINE: ROCK

ROCKC110

PRELIMINARY - NOT FOR CONSTRUCTION

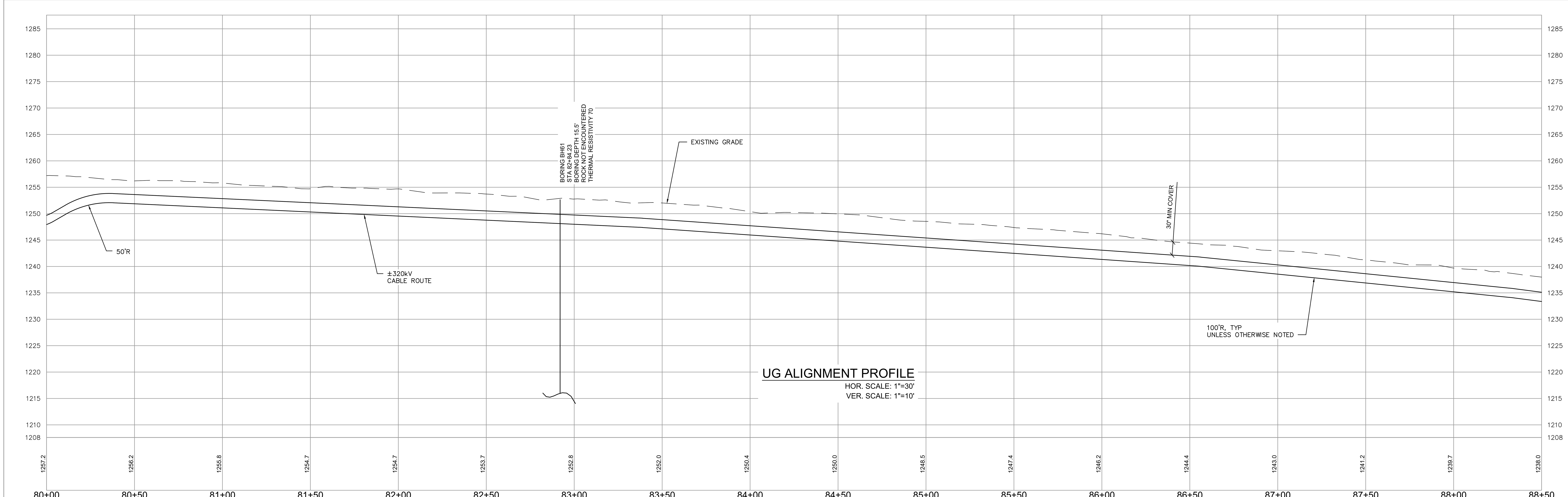


TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1

UG ALIGNMENT PLAN

SCALE: 1"=30'



UG ALIGNMENT PROFILE

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

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

SEAL

SGC Engineering, LLC

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THE NORTHERN PASS
Transmission Business

B

NPT
ROCK-UNDERGROUND ALIGNMENT
STA 80+00 TO 88+50

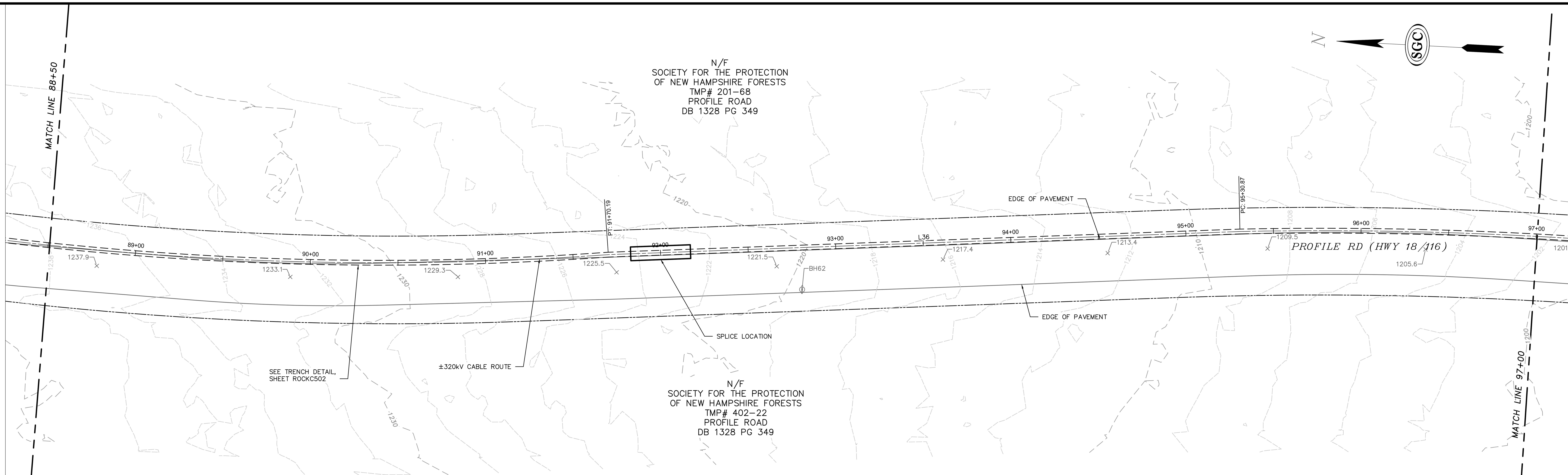
DATE: 12/07/2016
SCALE: H 1"=30', V 1"=10'

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

TOWN: BETHLEHEM

TRANSMISSION LINE: ROCK

ROCKC111

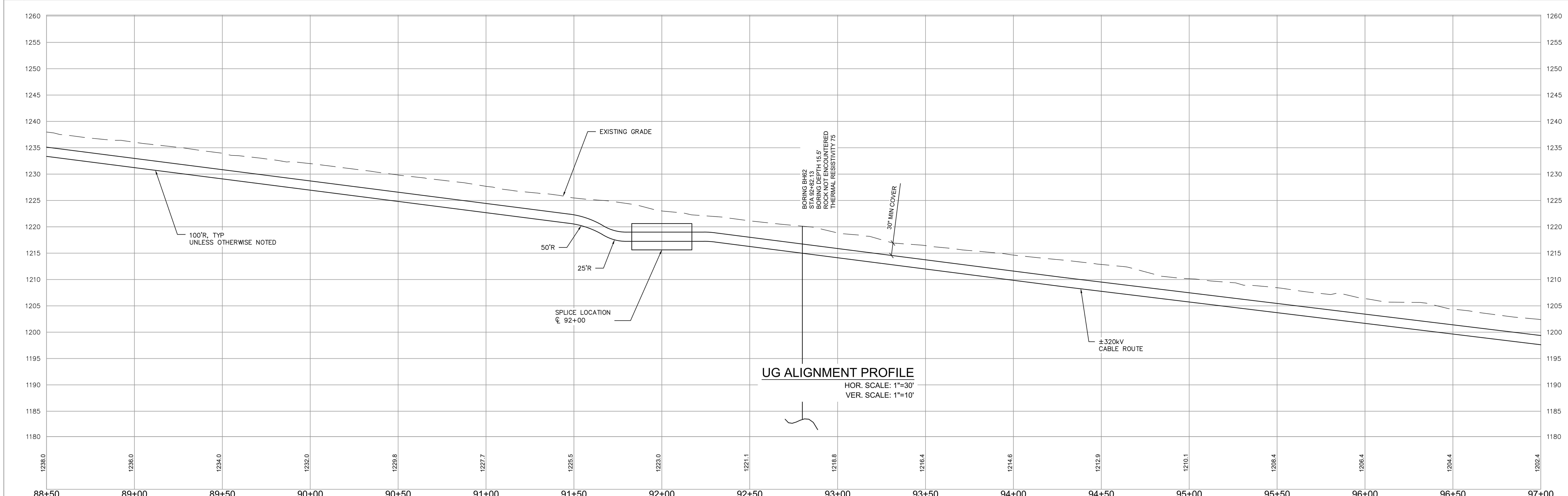


TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1
91+00		93+00	WIRE PULLING/SPLICING	ROCKTCP-4

UG ALIGNMENT PLAN

SCALE: 1"=30'



UG ALIGNMENT PROFILE

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

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
B	ISSUED FOR REVIEW–PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

SEAL

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THE NORTHERN PASS

Transmission Business

B

NPT
ROCK–UNDERGROUND ALIGNMENT
STA 88+50 TO 97+00

DATE: 12/07/2016

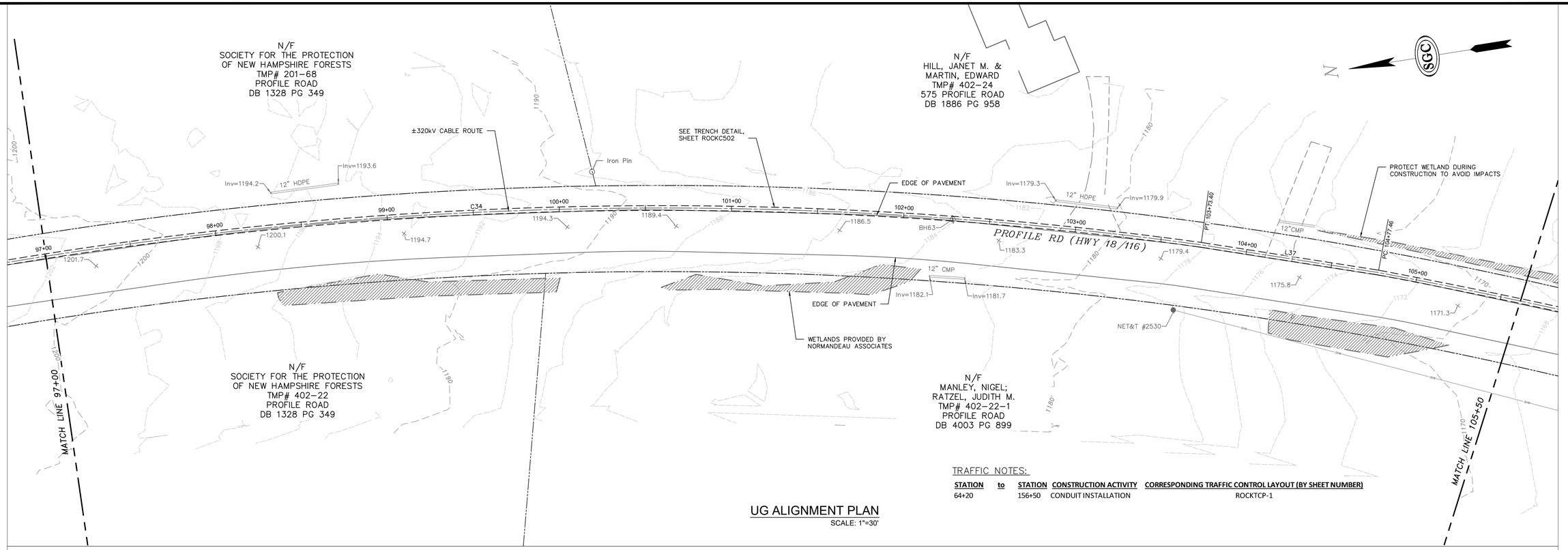
SCALE: H 1"=30', V 1"=10'

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

TOWN: BETHLEHEM

TRANSMISSION LINE: ROCK

ROCKC112

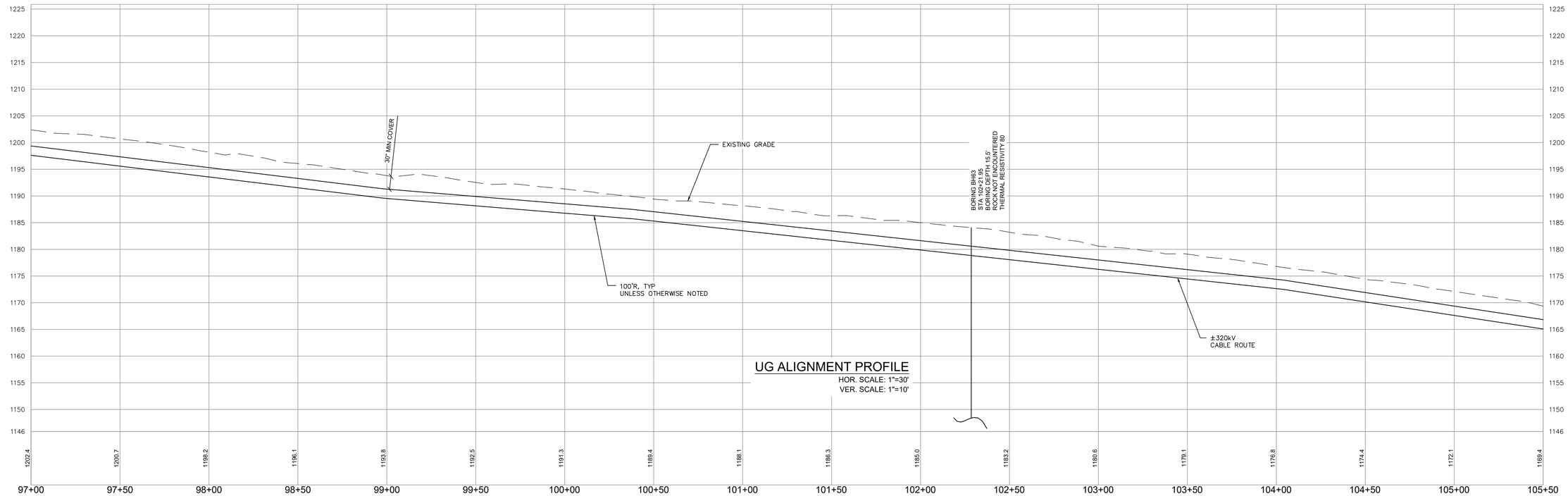


TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1

UG ALIGNMENT PLAN

SCALE: 1"=30'



UG ALIGNMENT PROFILE

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

PRELIMINARY - NOT FOR CONSTRUCTION

B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD
NO.		DATE	DRWN	CHKD

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THE NORTHERN PASS
Transmission Business

B

NPT
ROCK – UNDERGROUND ALIGNMENT
STA 97+00 TO 105+50

DATE: 12/07/2016
SCALE: H: 1"=30', V: 1"=10'

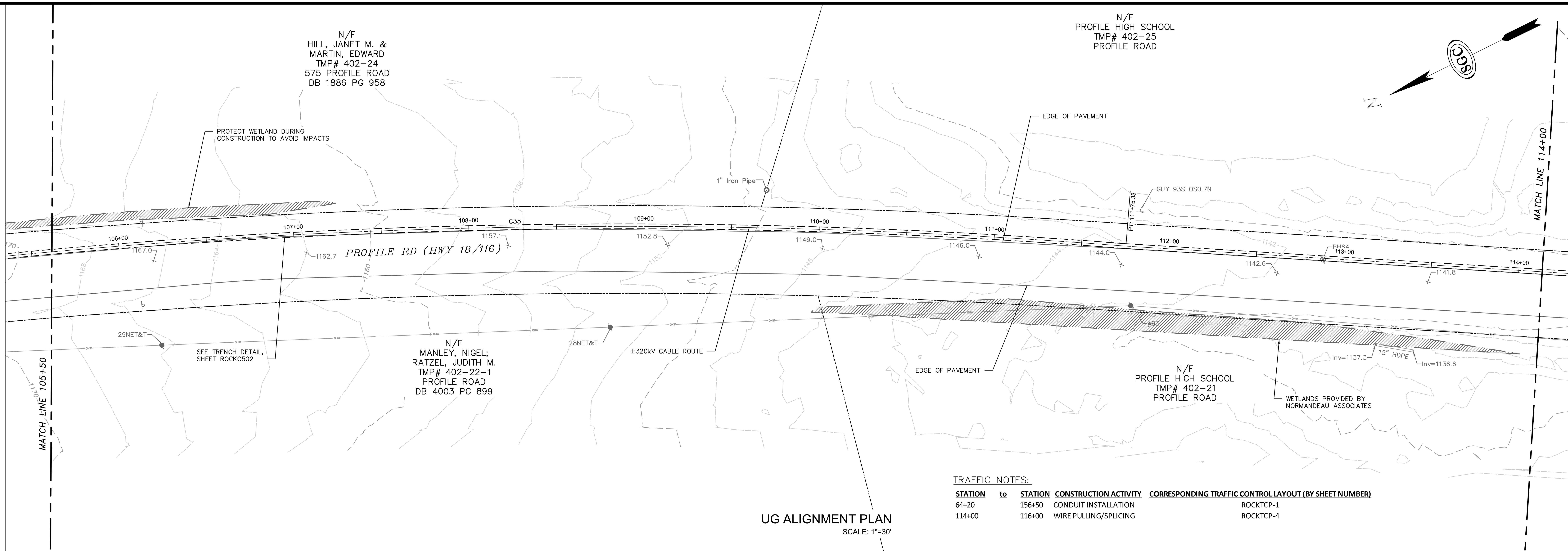
DES: TDD | CHK: TDD
DRW: DGR | APR: TMH

TOWN:
BETHLEHEM

TRANSMISSION LINE:
ROCK

ROCKC113

PRELIMINARY - NOT FOR CONSTRUCTION

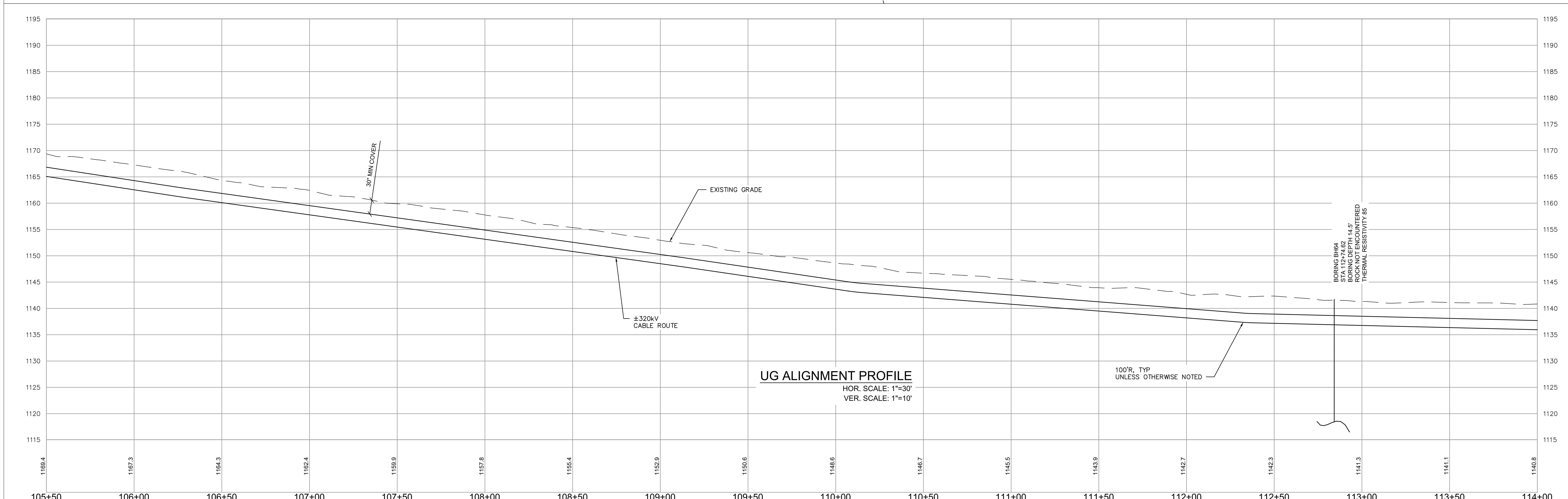


UG ALIGNMENT PLAN

SCALE: 1"=30'

TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1
114+00		116+00	WIRE PULLING/SPLICING	ROCKTCP-4



UG ALIGNMENT PROFILE

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

NO.	REVISION	DATE	DRWN	CHKD	APPR.
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

SGC Engineering, LLC

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THE NORTHERN PASS
Transmission Business

B

NPT
ROCK-UNDERGROUND ALIGNMENT
STA 105+50 TO 114+00

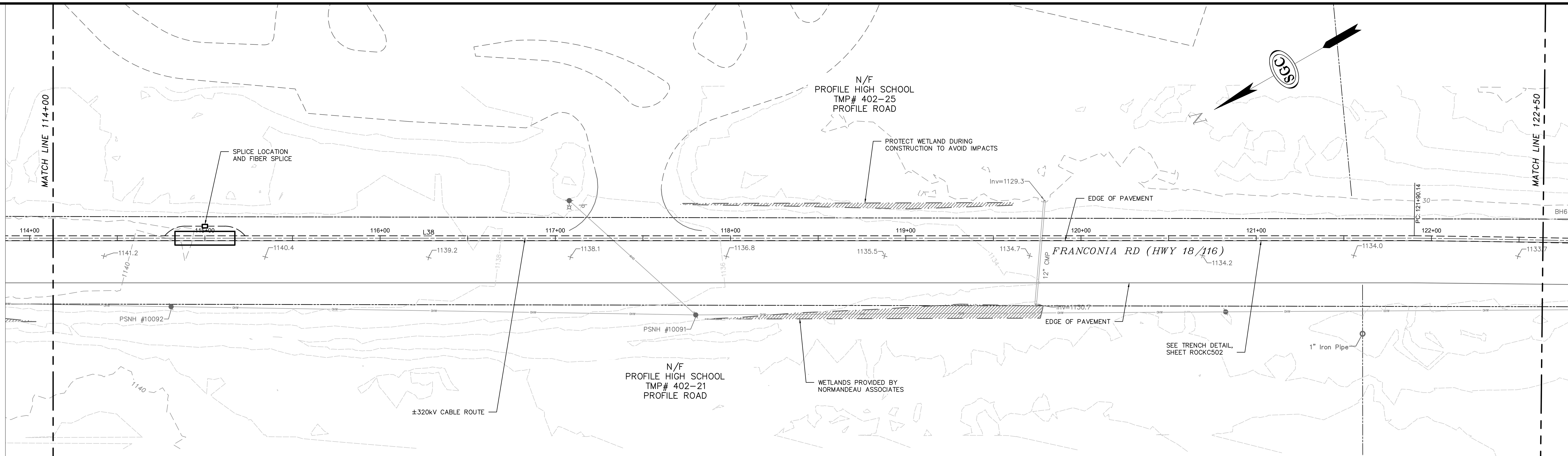
DATE: 12/07/2016
SCALE: H 1"=30', V 1"=10'

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

TOWN: BETHLEHEM

TRANSMISSION LINE: ROCK

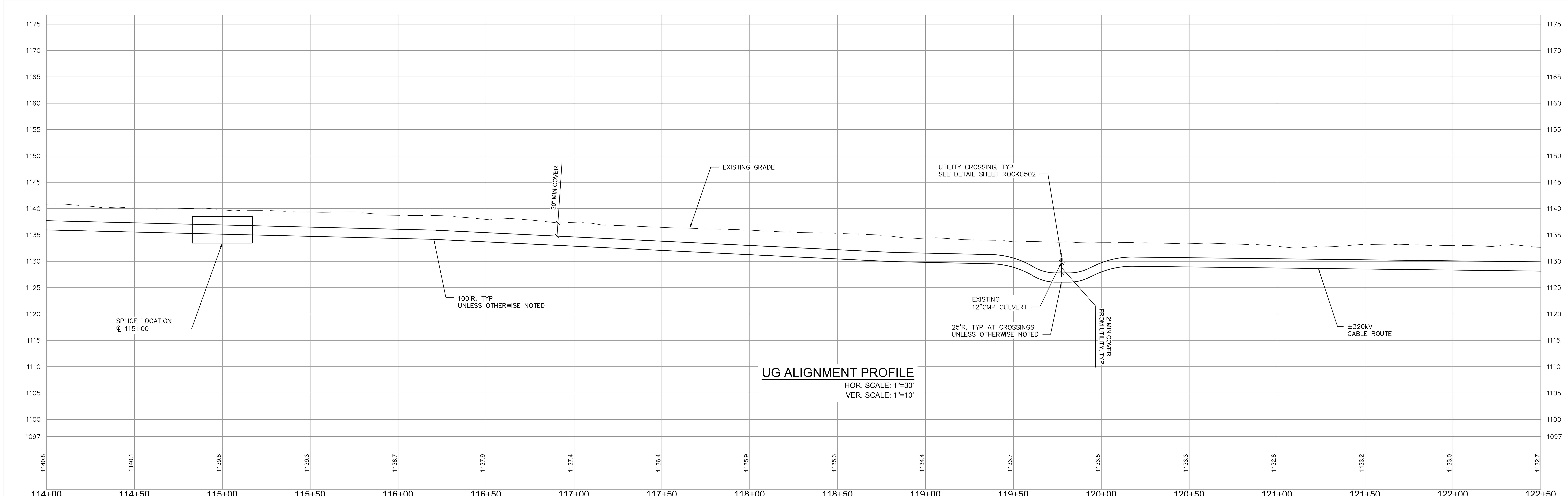
ROCKC114



TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1
114+00		116+00	WIRE PULLING/SPLICING	ROCKTCP-4

UG ALIGNMENT PLAN
SCALE: 1"=30'



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

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV
B	ISSUED FOR REVIEW–PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

SGC Engineering, LLC

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS

Transmission Business

B

NPT
ROCK–UNDERGROUND ALIGNMENT
STA 114+00 TO 122+50

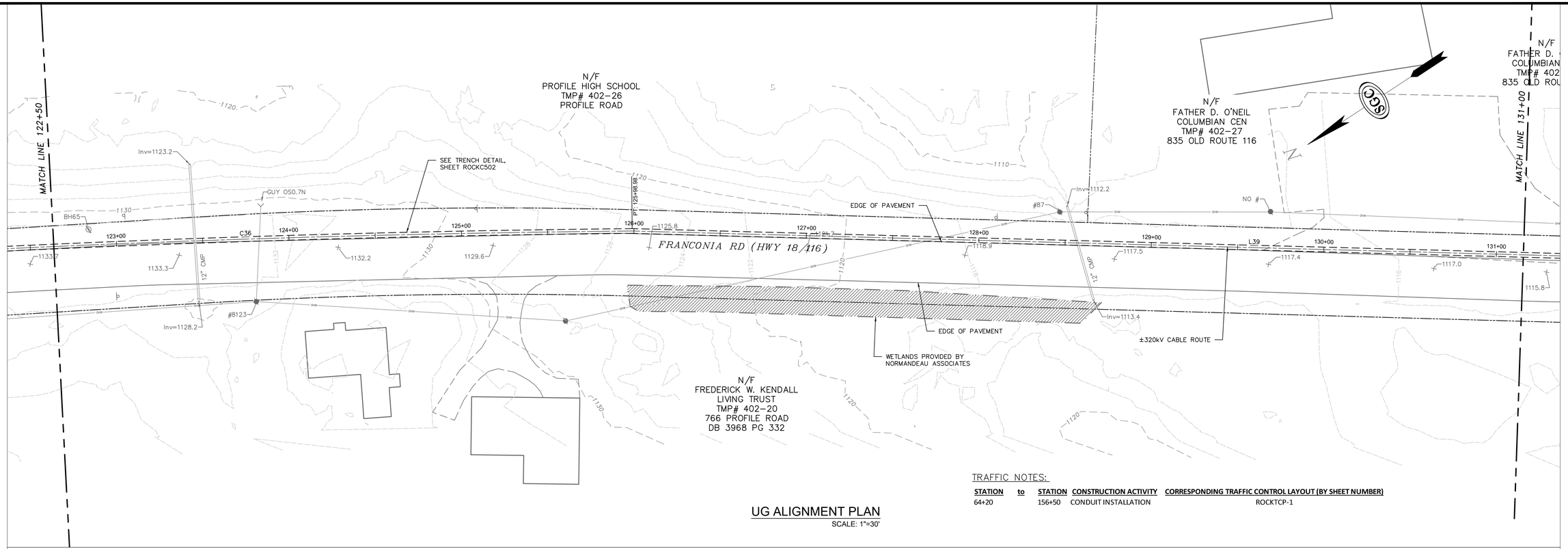
DATE:12/07/2016
SCALE:H 1"=30', V 1"=10'

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

TOWN: BETHLEHEM

TRANSMISSION LINE: ROCK

ROCKC115

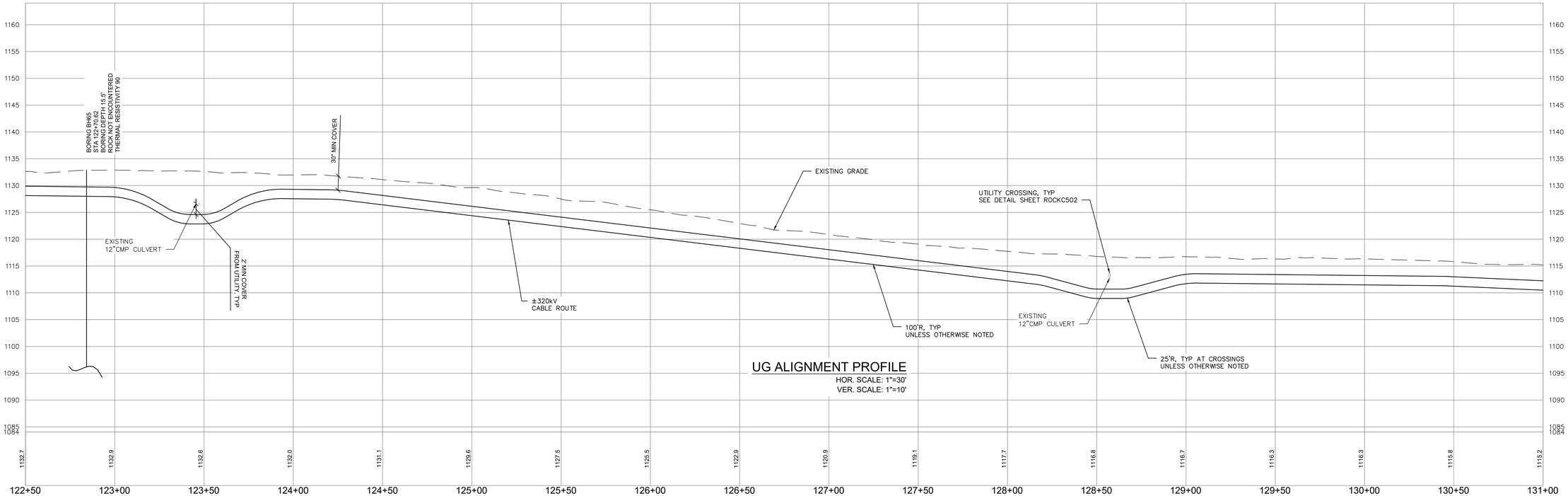


UG ALIGNMENT PLAN

SCALE: 1"=30'

TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1



UG ALIGNMENT PROFILE

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

PRELIMINARY - NOT FOR CONSTRUCTION

NO	DESCRIPTION	DATE	DWN	CHKD	APPVD
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

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THE NORTHERN PASS
Transmission Business

B

NPT
ROCK-UNDERGROUND ALIGNMENT
STA 122+50 TO 131+00

DATE: 12/07/2016

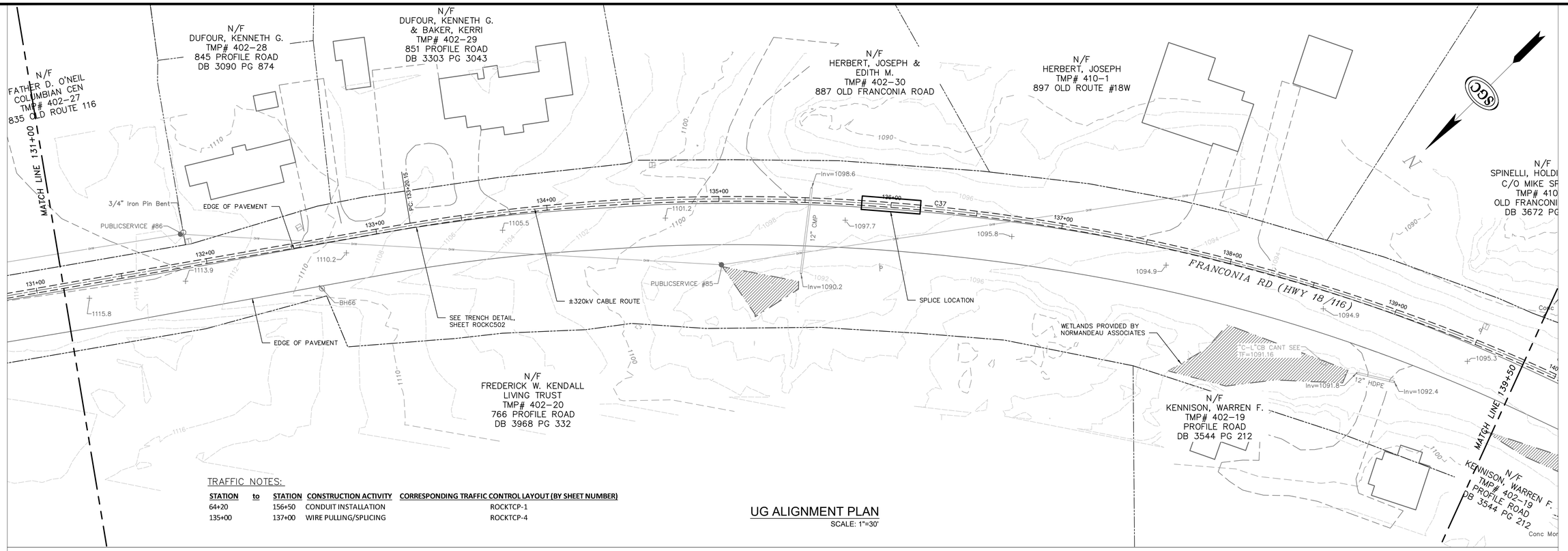
SCALE: H 1"=30', V 1"=10'

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

TOWN:
BETHLEHEM

TRANSMISSION LINE:
ROCK

ROCKC116

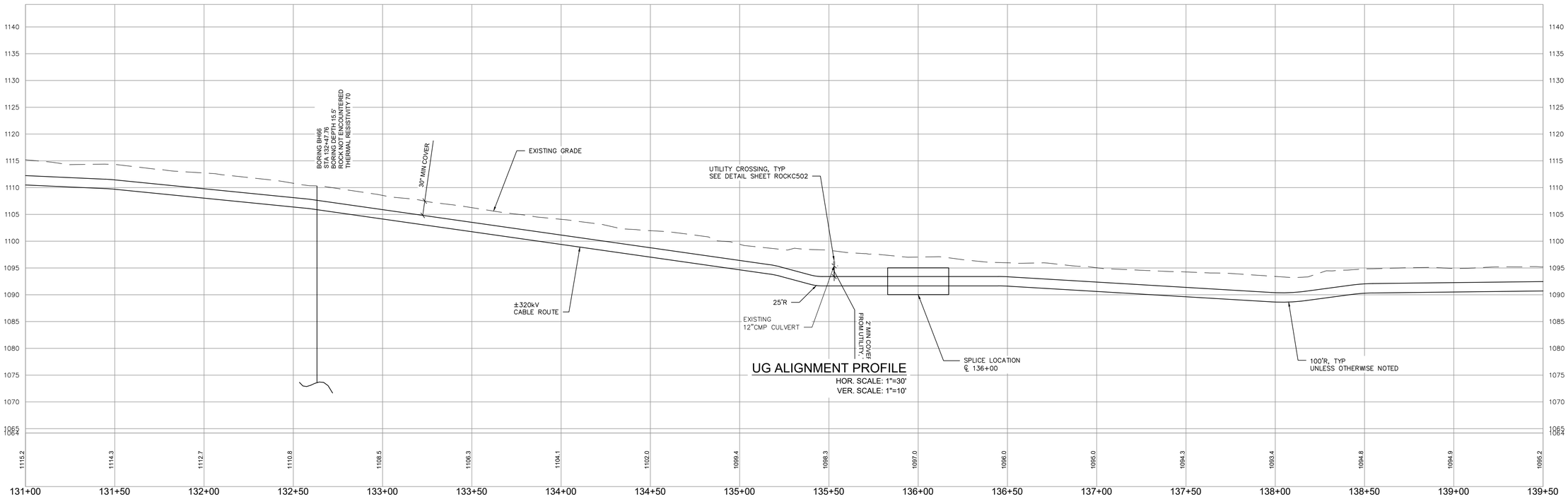


TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1
135+00		137+00	WIRE PULLING/SPLICING	ROCKTCP-4

UG ALIGNMENT PLAN

SCALE: 1"=30'



UG ALIGNMENT PROFILE

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

PRELIMINARY - NOT FOR CONSTRUCTION

B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD
A	ISSUED FOR REVIEW	12/02/16	DGR	CHKD
NO.	REVISION	DATE	DRWN	APPVD

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THE NORTHERN PASS

Transmission Business

B

NPT
ROCK–UNDERGROUND ALIGNMENT
STA 131+00 TO 139+50

DATE: 12/07/2016

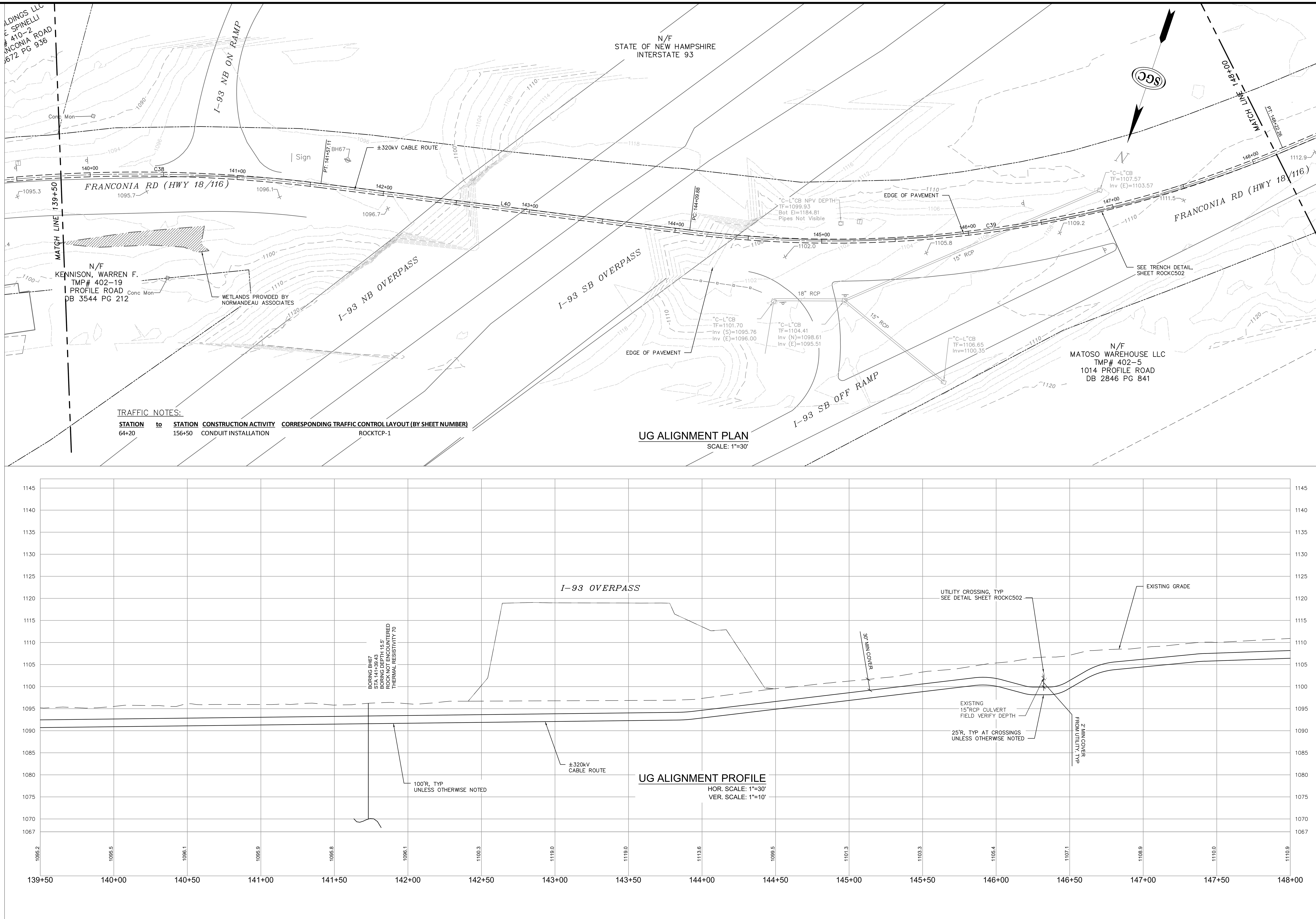
SCALE: H: 1"=30', V: 1"=10'

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

TOWN:
BETHLEHEM

TRANSMISSION LINE:
ROCK

ROCKC117



PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPR.
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DGR	TDD	TMH

SGC Engineering, LLC

PAR Electrical Contractors, Inc.

THE NORTHERN PASS

Transmission Business

B

NPT
ROCK-UNDERGROUND ALIGNMENT
STA 139+50 TO 148+00

DATE:12/07/2016

SCALE: H 1"=30' V 1"=10'

DES: TDD CHK: TDD
DRW: DGR APR: TMH

TOWN: BETHLEHEM

TRANSMISSION LINE: ROCK

ROCKC118

N/F
POWERS, INC JAMES W.
TMP# 402-18
OLD FRANCONIA ROAD
DB 2545 PG 289

N/F
THOMPSON, ASHLEY
TMP# 402-17
1057 PROFILE ROAD
DB 4032 PG 805

N/F
BROWN TRUSTEE,
PATRICIA CORRENTI
TMP# 402-14
FRANCONIA ROAD
DB 3640 PG 5

N/F
STATE OF NEW HAMPSHIRE
INTERSTATE 93

MATCH LINE 148+00

PT: 148+22.26

SEE TRENCH DETAIL,
SHEET ROCKC502

PC: 150+32.44

PT: 150+65.49

Capped Iron Pin

PC: 150+97.56

PROVIDE TEMPORARY
SUPPORT
FOR UTILITY POLE

EDGE OF PAVEMENT

PSNH #10077

Inv=1083.6

PT: 154+85.05

N/F
RENEWABLE PROPER
TMP# 402-1
1082 PROFILE
DB 4103 PG

PC: 156+23.50

PT: 156+27.77

Conc Mon

FRANCONIA RD (HWY 18/116)

L44 156+50

C40 C41 L42 C42 C43 C44 L41 L43

148+00 149+00 150+00 151+00 152+00 153+00 154+00 155+00 156+00

1112.9 1112.8 1111.7 1108.1 1103.4 1095.6 1090.0 1087.5 1085.7

BH68

PSNH #10078

12"RCP

Inv=1085.5

Conc Mon

±320kV CABLE ROUTE

EDGE OF PAVEMENT

SPLICE LOCATION
AND LINK BOX

N/F
MATOSO WAREHOUSE LLC
TMP# 402-5
1014 PROFILE ROAD
DB 2846 PG 841

N/F
MATOSO WAREHOUSE LLC
TMP# 402-7-1
PROFILE ROAD
DB 2846 PG 841

N/F
SIME, ELIZABETH S.
TMP# 402-7-2
1072 PROFILE ROAD
DB 3732 PG 990

N/F
WALKER, DANIEL C.
TMP# 402-4-11
NORTHWOODS LANE

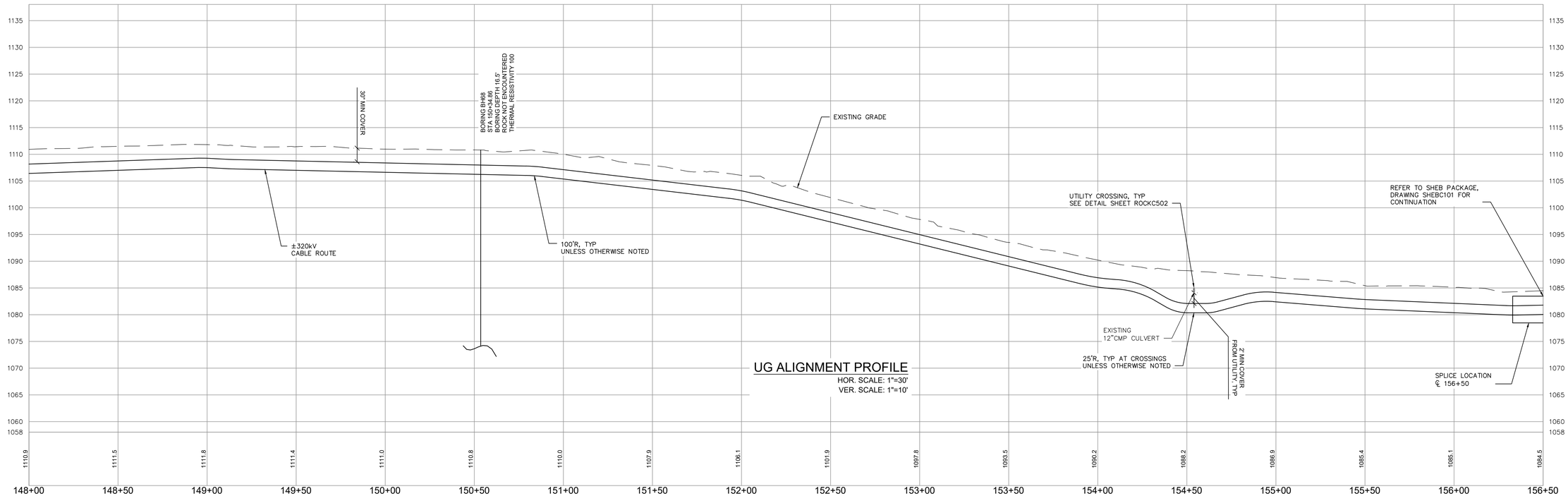
N/F
WALKER, DA
TMP# 402-
NORTHWOODS

TRAFFIC NOTES:

STATION	to	STATION	CONSTRUCTION ACTIVITY	CORRESPONDING TRAFFIC CONTROL LAYOUT (BY SHEET NUMBER)
64+20		156+50	CONDUIT INSTALLATION	ROCKTCP-1
155+50		157+50	WIRE PULLING/SPLICING	ROCKTCP-4

UG ALIGNMENT PLAN

SCALE: 1"=30'



UG ALIGNMENT PROFILE

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

PRELIMINARY - NOT FOR CONSTRUCTION

NO	DESCRIPTION	DATE	DWN	CHKD	APPVD
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DDR	TDD	TMH
A	ISSUED FOR REVIEW	12/02/16	DDR	TDD	TMH

SGC Engineering, LLC
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PAR ELECTRICAL CONTRACTORS, INC.
A QUANTA SERVICES COMPANY

THE NORTHERN PASS
Transmission Business

B

NPT
ROCK-UNDERGROUND ALIGNMENT
STA 148+00 TO 156+50

DATE: 12/07/2016

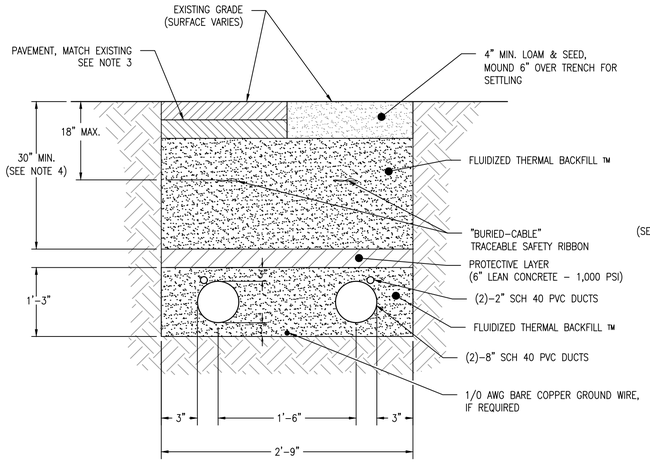
SCALE: H 1"=30', V 1"=10'

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

TOWN:
BETHLEHEM

TRANSMISSION LINE:
ROCK

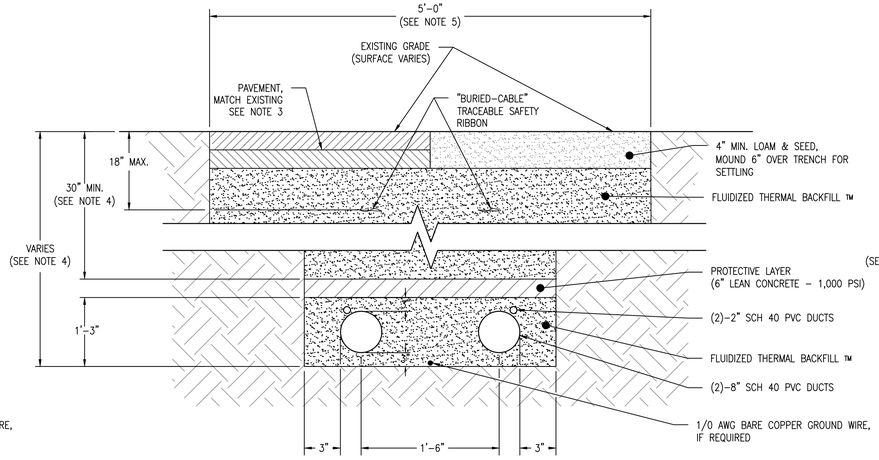
ROCKC119



NOTES:
1. CONDUITS TO BE ARRANGED USING DUCTBANK SPACER MODEL #2882W9434-2 BY UNDERGROUND DEVICES OR EQUAL.
2. DUCT SPACERS TO BE LOCATED EVERY 5 FEET.
3. PAVING TO MEET NHDOT STANDARDS. SEE PAVEMENT PATCH DETAIL SHEET WMNFC504.
4. DEPTH VARIES, SEE PROFILE DRAWINGS. 48" MINIMUM COVER REQUIRED WHERE TRENCH IS INSTALLED BENEATH ROADSIDE DITCHES.

DETAIL 1
TYPE 1 - ±320 kV CABLE TRENCH CROSS SECTION

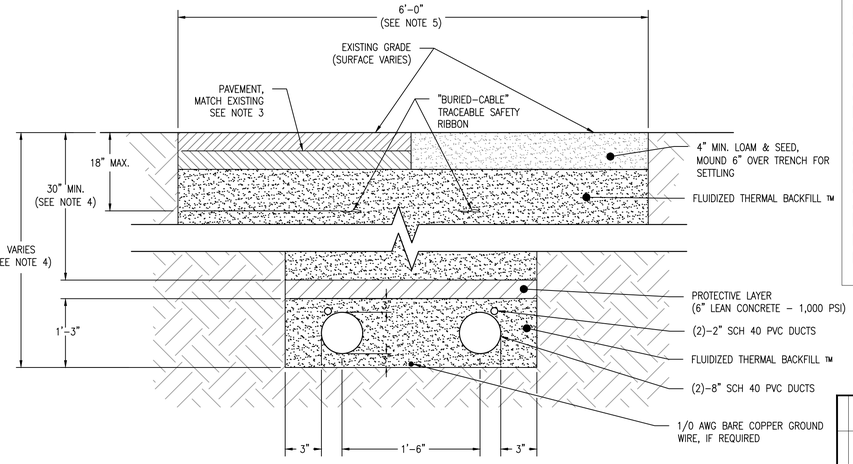
(NOT TO SCALE)



NOTES:
1. CONDUITS TO BE ARRANGED USING DUCTBANK SPACER MODEL #2882W9434-2 BY UNDERGROUND DEVICES OR EQUAL.
2. DUCT SPACERS TO BE LOCATED EVERY 5 FEET.
3. PAVING TO MEET NHDOT STANDARDS. SEE PAVEMENT PATCH DETAIL SHEET WMNFC504.
4. DEPTH VARIES, SEE PROFILE DRAWINGS. TRENCHES 5'-8' DEEP SHALL BE 5' WIDE.
5. TRENCH WIDTH AT THE SURFACE IS MEANT TO DEPICT POTENTIAL MAXIMUM WIDTH BASED ON SOIL CONDITIONS AND DEPTH OF TRENCH.

DETAIL 1A
TYPE 1 - ±320 kV CABLE TRENCH CROSS SECTION (5'-8' DEEP)

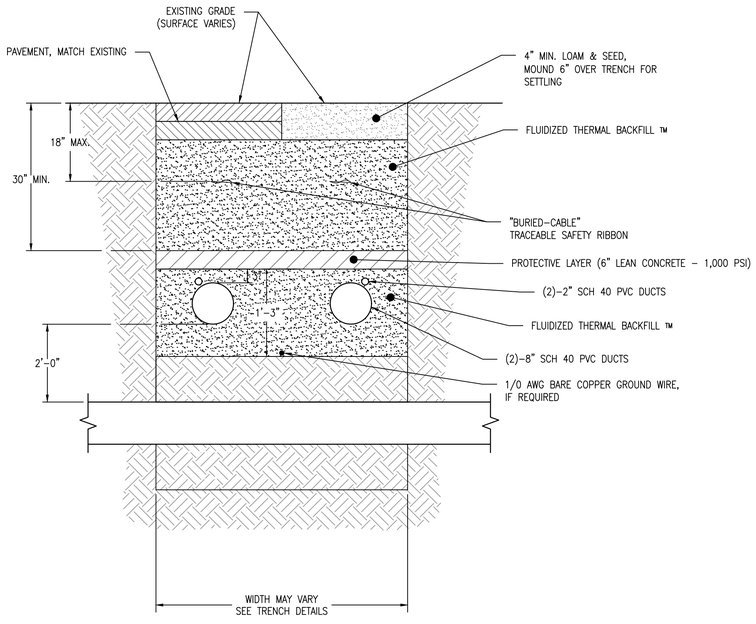
(NOT TO SCALE)



NOTES:
1. CONDUITS TO BE ARRANGED USING DUCTBANK SPACER MODEL #2882W9434-2 BY UNDERGROUND DEVICES OR EQUAL.
2. DUCT SPACERS TO BE LOCATED EVERY 5 FEET.
3. PAVING TO MEET NHDOT STANDARDS. SEE PAVEMENT PATCH DETAIL SHEET WMNFC504.
4. DEPTH VARIES, SEE PROFILE DRAWINGS. TRENCHES 8' DEEP OR MORE SHALL BE 6' WIDE.
5. TRENCH WIDTH AT THE SURFACE IS MEANT TO DEPICT POTENTIAL MAXIMUM WIDTH BASED ON SOIL CONDITIONS AND DEPTH OF TRENCH.

DETAIL 1B
TYPE 1 - ±320 kV CABLE TRENCH CROSS SECTION (8'+ DEEP)

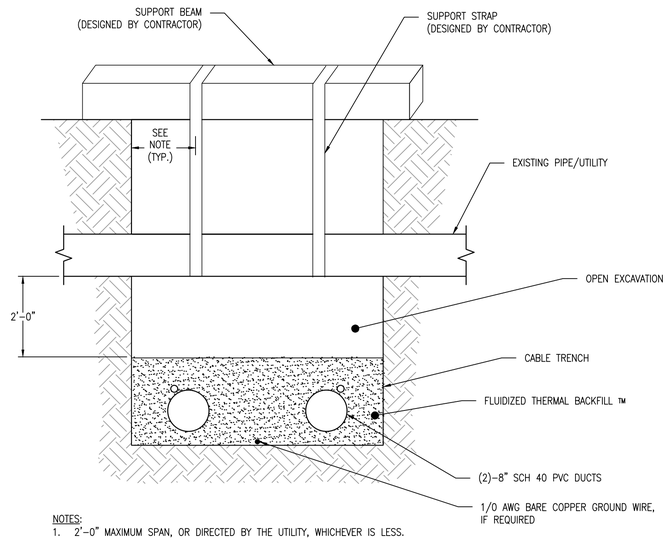
(NOT TO SCALE)



NOTES:
1. CONTRACTOR TO FIELD VERIFY EXISTING UTILITY INVERTS.

DETAIL 2
CABLE TRENCH CROSSING SECTION (W/ UTILITY BELOW)

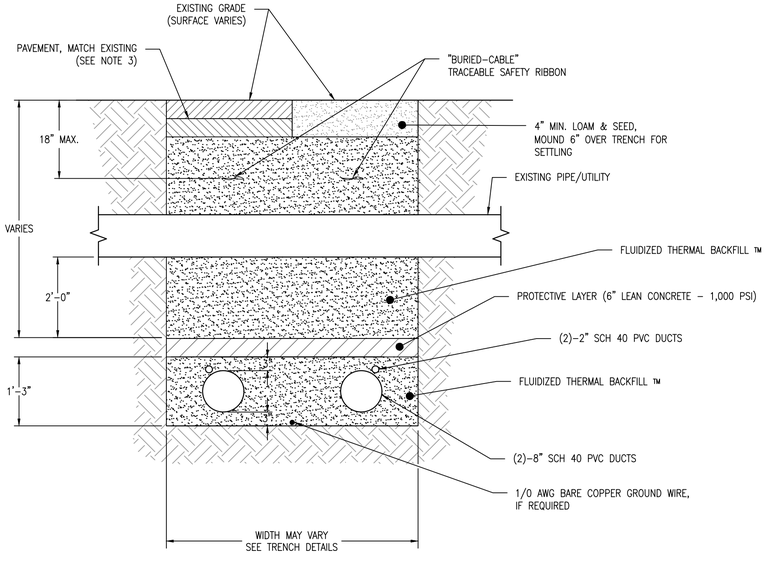
(NOT TO SCALE)



NOTES:
1. 2'-0" MAXIMUM SPAN, OR DIRECTED BY THE UTILITY, WHICHEVER IS LESS.

DETAIL 3
TYPICAL EXISTING UTILITY SUPPORT DETAILS

(NOT TO SCALE)



NOTES:
1. CONTRACTOR TO FIELD VERIFY EXISTING UTILITY INVERTS.

DETAIL 4
CABLE TRENCH CROSSING SECTION (W/ UTILITY ABOVE)

(NOT TO SCALE)

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHK'D	APPR'V
A	ISSUED FOR REVIEW	12/07/16	DGR	TDD	TMH
B	ISSUED FOR REVIEW	12/07/16	DGR	TDD	TMH

B

NPT
ROCK-UNDERGROUND ALIGNMENT
CABLE TRENCH DETAILS

DATE: 12/07/2016

SCALE: NOT TO SCALE

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

TOWN:

TRANSMISSION LINE:
ROCK

ROCKC502

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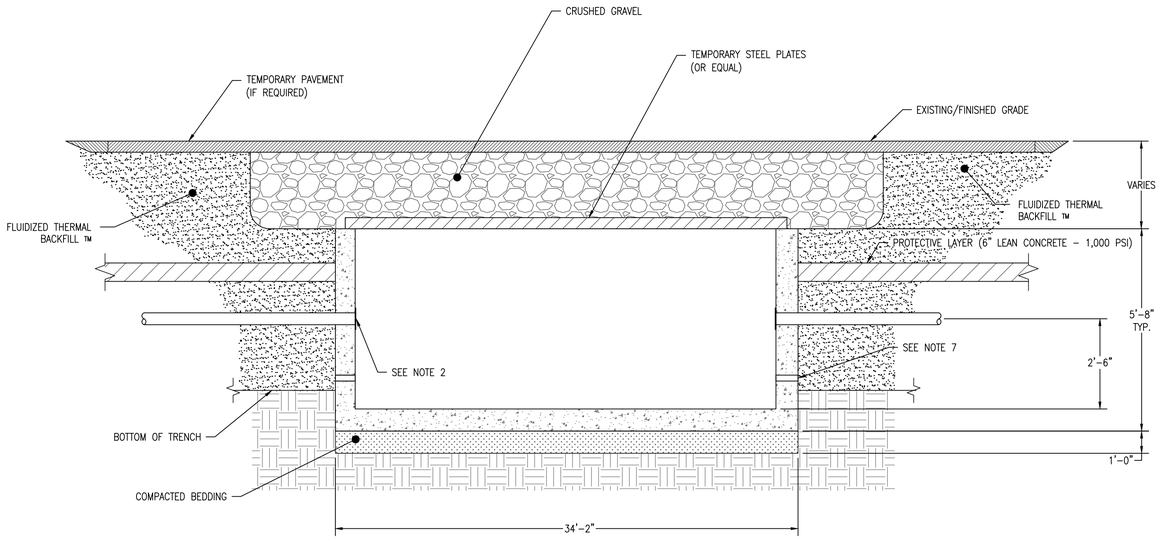
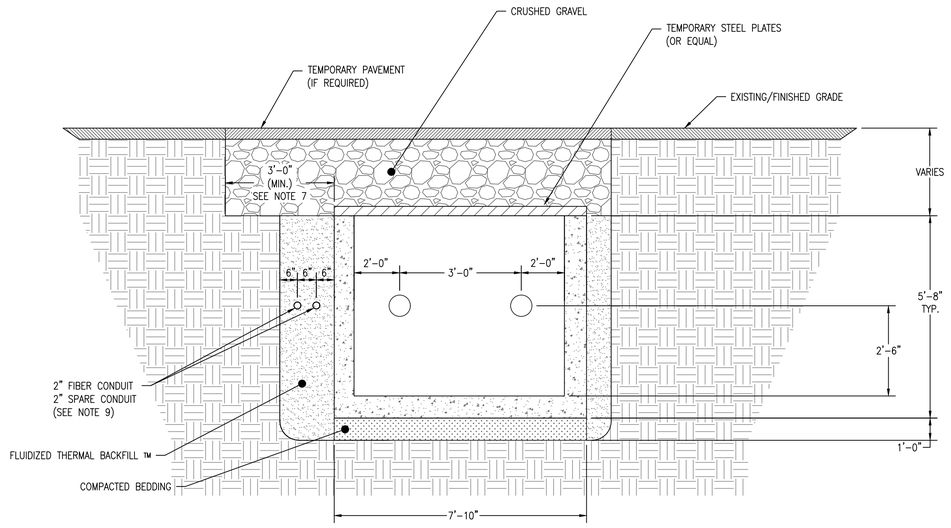


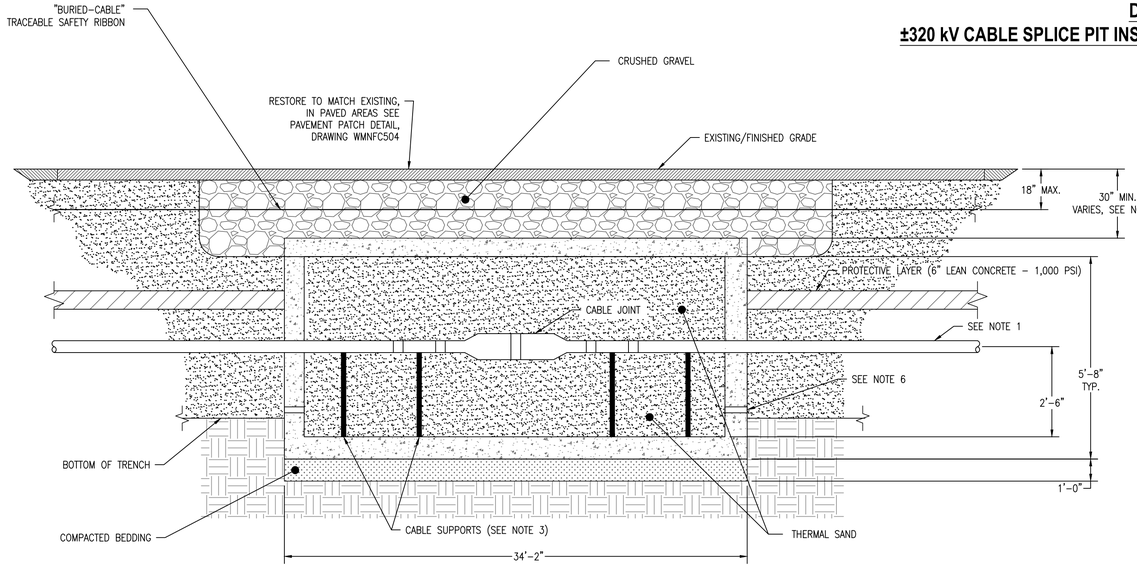
SIDE VIEW
(NOT TO SCALE)



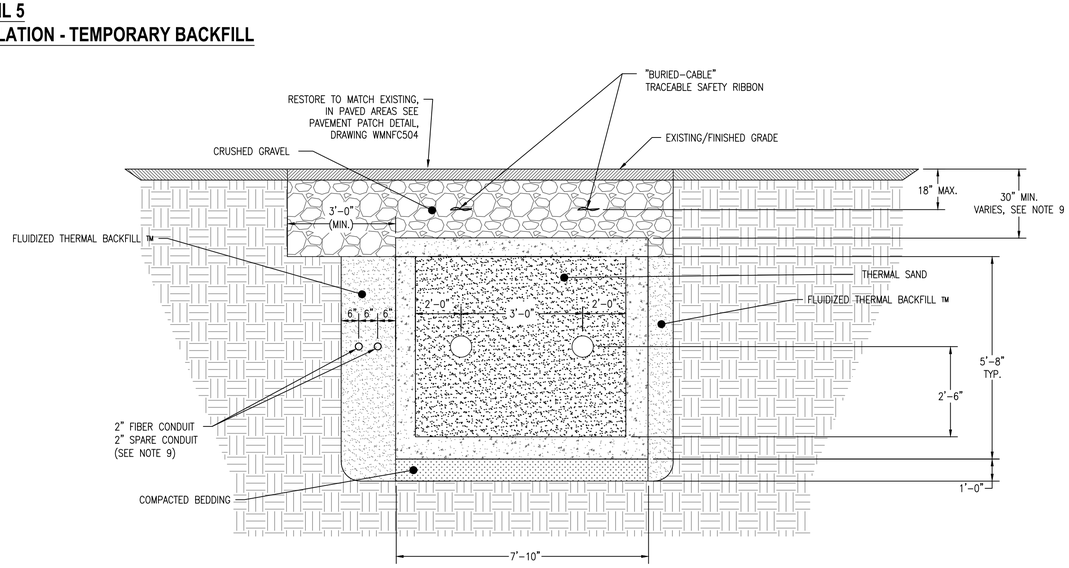
END VIEW
(NOT TO SCALE)

NOTES:
1. FOLLOWING INSTALLATION OF SPLICE PITS AND CONDUITS, IF CABLE PULLING OPERATIONS ARE NOT READY TO COMMENCE, STEEL PLATES (OR EQUAL) SHALL BE PLACED OVER THE CONCRETE PIT. PIT SHALL BE BACKFILLED TO GRADE. TEMPORARY PAVEMENT MAY BE REQUIRED.
2. ALL CONDUITS SHALL BE FURNISHED WITH BELL ENDS AT ENTRANCE TO PITS.
3. EACH END OF SPLICE PIT SHALL INCLUDE CABLE PULLING EYES. PULLING EYES SHALL BE CAPABLE OF WITHSTANDING MAXIMUM PULLING FORCE.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWING OF PROPOSED CONCRETE PIT PRIOR TO CONSTRUCTION.
5. WITHIN AREAS TO BE PAVED, CRUSHED GRAVEL, STANDARD SPECIFICATIONS SECTION 304, OR APPROVED EQUAL TO THE EXISTING GRAVEL COURSE, SHALL BE PLACED IN LAYERS NOT EXCEEDING SIX (6) INCHES COMPACTED THICKNESS, AND THOROUGHLY COMPACTED.
6. ADDITIONAL 3' BENCH TO BE PROVIDED AT TOP OF PIT (ONE SIDE) FOR SPLICE CONTAINER.
7. ADDITIONAL PENETRATIONS REQUIRED AT LINK BOX LOCATIONS, SEE DETAIL 9.
8. ALL PENETRATIONS TO BE SEALED WITH POLYWATER FST DUCT SEALANT OR EQUAL.
9. ORIENTATION OF FIBER CONDUITS OUTSIDE SPLICE PIT MAY VARY DEPENDING ON FIELD CONDITIONS.
10. FINAL SPLICE PIT DESIGN SHALL INCLUDE ANTI–FLOTATION CONSIDERATIONS IN AREAS OF HIGH GROUNDWATER.

DETAIL 5
±320 kV CABLE SPLICE PIT INSTALLATION - TEMPORARY BACKFILL



SIDE VIEW
(NOT TO SCALE)



END VIEW
(NOT TO SCALE)

NOTES:
1. ALL CONDUITS SHALL BE FURNISHED WITH BELL ENDS AT ENTRANCE TO PITS.
2. CONTRACTOR SHALL SUBMIT PROPOSED CABLE SUPPORT METHOD FOR OWNER APPROVAL. (E.G. SAND BAGS, CABLE CRADLES, ETC.)
3. EACH END OF SPLICE PIT SHALL INCLUDE CABLE PULLING EYES. PULLING EYES SHALL BE CAPABLE OF WITHSTANDING MAXIMUM PULLING FORCE.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWING OF PROPOSED CONCRETE PIT PRIOR TO CONSTRUCTION.
5. WITHIN AREAS TO BE PAVED, CRUSHED GRAVEL, STANDARD SPECIFICATIONS SECTION 304, OR APPROVED EQUAL TO THE EXISTING GRAVEL COURSE, SHALL BE PLACED IN LAYERS NOT EXCEEDING SIX (6) INCHES COMPACTED THICKNESS, AND THOROUGHLY COMPACTED.
6. ADDITIONAL PENETRATIONS REQUIRED AT LINK BOX LOCATIONS, SEE DETAIL 9.
7. ALL PENETRATIONS TO BE SEALED WITH POLYWATER FST DUCT SEALANT OR EQUAL.
8. FINAL SPLICE PIT DESIGN SHALL INCLUDE ANTI–FLOTATION CONSIDERATIONS IN AREAS OF HIGH GROUNDWATER.
9. DEPTH OF COVER OVER PIT SHALL BE 30–INCH MINIMUM OUTSIDE PAVEMENT, 18–INCHES BELOW PAVEMENT STRUCTURE BOX WHEN UNDER PAVEMENT AND 48–INCHES UNDER DITCHES.

DETAIL 6
±320 kV CABLE SPLICE PIT INSTALLATION - FINAL

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN.	CHKD	APPRV.
A	ISSUED FOR REVIEW–PAGE TURN	12/07/16	DGR	TDD	TMH
B	ISSUED FOR REVIEW	12/07/16	DGR	TDD	TMH

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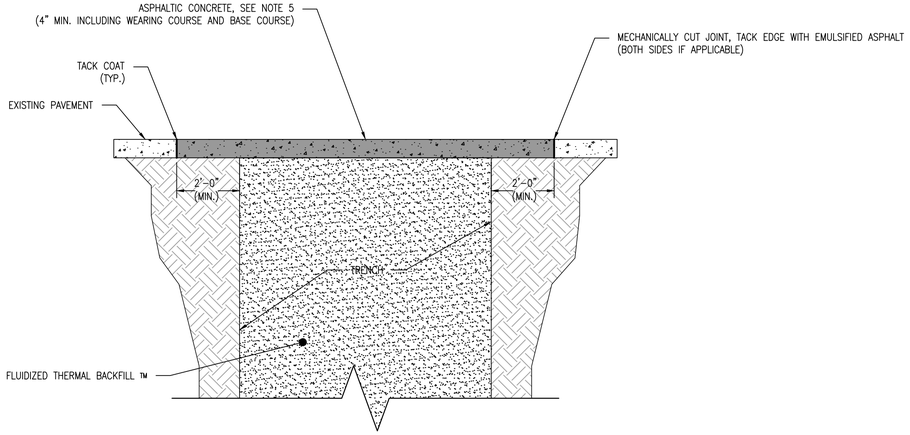
NPT
ROCK–UNDERGROUND ALIGNMENT
CABLE SPLICE PIT DETAILS
DATE: 12/07/2016
SCALE: NOT TO SCALE

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

TOWN:

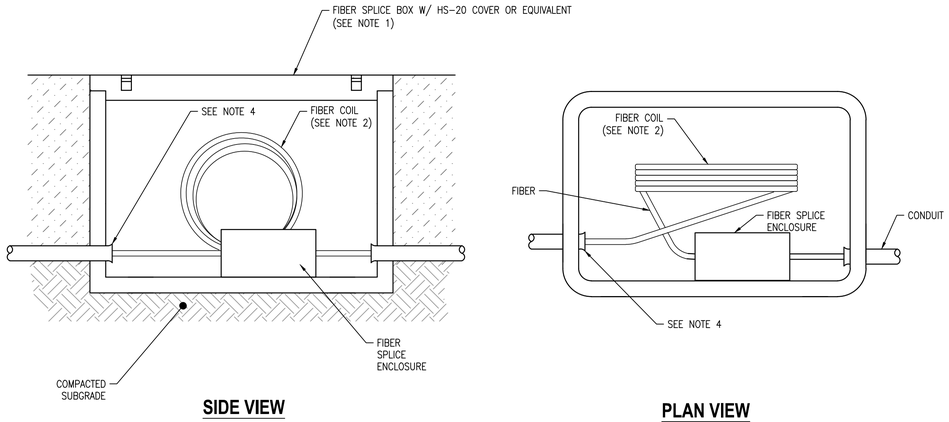
TRANSMISSION LINE:
ROCK

ROCKC503



NOTES:
1. IN AREAS WHERE THE PAVEMENT IS TO BE EXCAVATED, IT SHALL BE NEATLY AND UNIFORMLY CUT BY MACHINE, WITH SQUARE EDGES BY MACHINE, AT EACH SIDE OF ALL TRENCHES. EVERY PRECAUTION SHALL BE USED TO PREVENT UNDERMINING OF THE REMAINING PAVEMENT, UTILIZING SHEETING AS REQUIRED, TO PREVENT CAVE-IN. IN AREAS THAT ARE INADVERTENTLY UNDERMINED SHALL HAVE THE PROJECTING PAVEMENT CUT SQUARE AND REMOVED.
2. WHERE FLUIDIZED THERMAL BACKFILL IS NOT USED, ALL BACKFILL MATERIAL IN TRENCHES AND BELOW BASE COURSES SHALL CONSIST OF EXCAVATED MATERIAL SUITABLE FOR BACKFILL AS DEFINED IN STANDARD SPECIFICATIONS, SECTION 603. ALL BACKFILL SHALL BE COMPACTED AT OR NEAR OPTIMUM MOISTURE CONTENT IN LAYERS NOT EXCEEDING SIX (6) INCHES COMPACTED THICKNESS, USING PNEUMATIC TAMPERS, VIBRATORY COMPACTORS, OR OTHER APPROVED MEANS. THE MATERIAL SHALL BE COMPACTED TO NOT LESS THAN NINETY FIVE (95) PERCENT OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T99 (STANDARD PROCTOR TEST). WATER SHALL BE UNIFORMLY APPLIED DURING COMPACTION IN THE AMOUNT NECESSARY FOR PROPER COMPACTION.
3. JUST BEFORE COMPLETION OF THE PROJECT AND AFTER SUITABLE EXPOSURE OF TEMPORARY PATCHES TO TRAFFIC COMPACTION, THE PAVEMENT SHALL BE SAWN, AS DIRECTED, ON EITHER SIDE OF THE TRENCH TO PROVIDE A TWO (2) FOOT MINIMUM OVERLAP OF THE FINAL PATCH ON UNDISTURBED MATERIAL.
4. FINISHED PAVEMENT MUST REPLICATE THE ORIGINAL PAVEMENT. SAW CUTS FOR FINAL PATCHING SHALL BE AS DIRECTED BY THE DISTRICT ENGINEER.
5. STRUCTURAL PAVEMENT DESIGN REQUIREMENTS MAY VARY ACROSS THE PROJECT. FINAL PAVEMENT DESIGN TO BE COORDINATED WITH NHDOT.

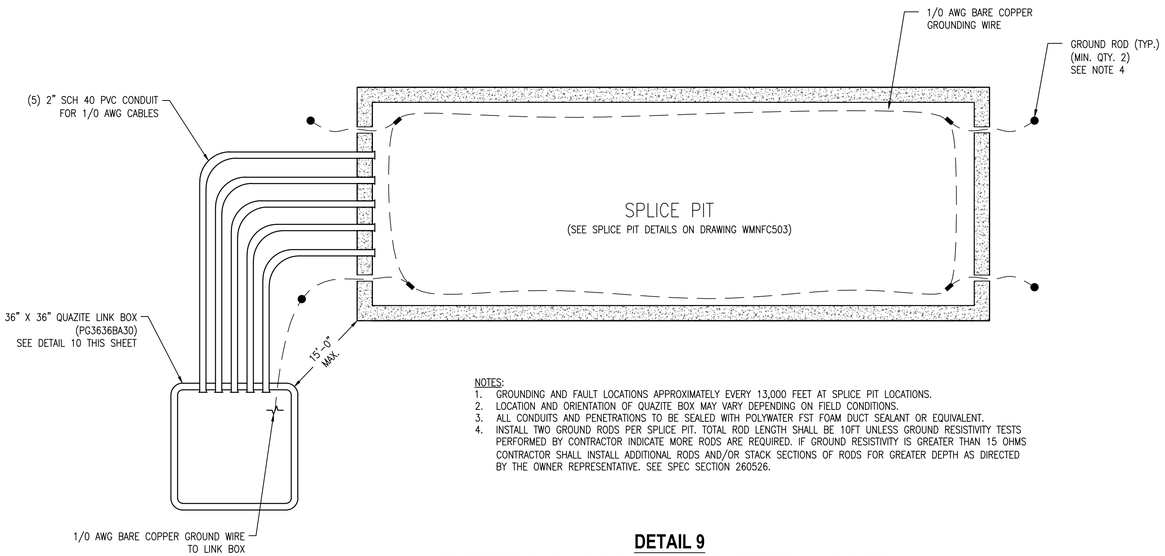
DETAIL 7
PAVEMENT PATCH DETAIL
(NOT TO SCALE)



SIDE VIEW **PLAN VIEW**

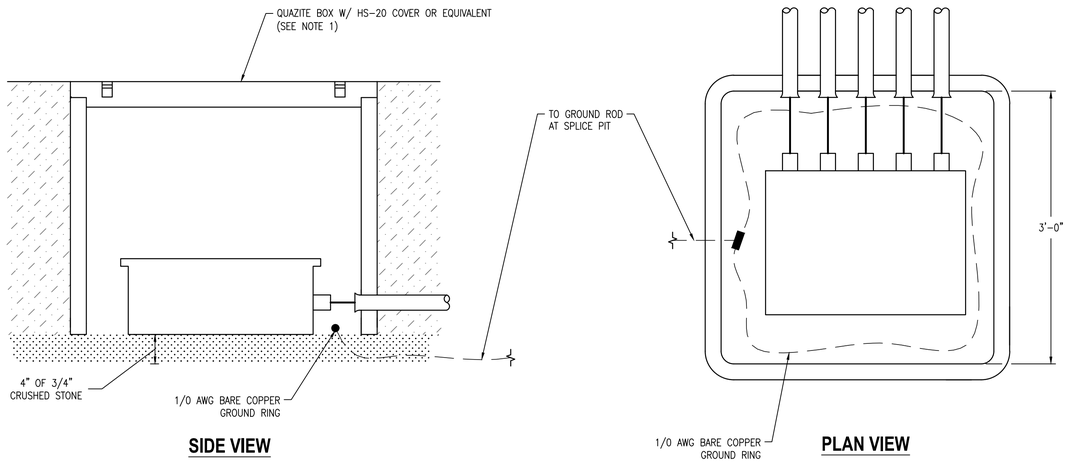
NOTES:
1. ALL FIBER SPLICE BOXES SHALL BE QUAZITE 24" X 36" X 30" DEEP SPLICE ENCLOSURE #PG2436DG30 OR APPROVED EQUAL.
2. COIL 30' (MIN.) OF FIBER OPTIC CABLE IN ENCLOSURES TO ALLOW FOR SPLICING AND MAINTENANCE. CONTRACTOR TO VERIFY REQUIRED CABLE LENGTHS PRIOR TO INSTALLATION.
3. SEE UNDERGROUND ALIGNMENT DRAWINGS FOR FIBER SPLICE ENCLOSURE LOCATIONS.
4. FOAM END OF CONDUIT INSIDE FIBER SPLICE BOXES FOR BOTH ENTERING AND EXITING LOCATIONS.
5. FIBER SPLICE BOXES SHALL BE CO-LOCATED WITH CABLE SPLICE LOCATIONS.

DETAIL 8
FIBER OPTIC SPLICE ENCLOSURE
(NOT TO SCALE)



NOTES:
1. GROUNDING AND FAULT LOCATIONS APPROXIMATELY EVERY 13,000 FEET AT SPLICE PIT LOCATIONS.
2. LOCATION AND ORIENTATION OF QUAZITE BOX MAY VARY DEPENDING ON FIELD CONDITIONS.
3. ALL CONDUITS AND PENETRATIONS TO BE SEALED WITH POLYWATER FST FOAM DUCT SEALANT OR EQUIVALENT.
4. INSTALL TWO GROUND RODS PER SPLICE PIT. TOTAL ROD LENGTH SHALL BE 10FT UNLESS GROUND RESISTIVITY TESTS PERFORMED BY CONTRACTOR INDICATE MORE RODS ARE REQUIRED. IF GROUND RESISTIVITY IS GREATER THAN 15 OHMS CONTRACTOR SHALL INSTALL ADDITIONAL RODS AND/OR STACK SECTIONS OF RODS FOR GREATER DEPTH AS DIRECTED BY THE OWNER REPRESENTATIVE. SEE SPEC SECTION 260526.

DETAIL 9
SPLICE PIT GROUNDING AND FAULT DETECTION LOCATION
(NOT TO SCALE)



SIDE VIEW **PLAN VIEW**

NOTES:
1. 36" x 36 INCH QUAZITE LINK BOX (PG3636BA30).
2. ALL CONDUITS AND PENETRATIONS TO BE SEALED WITH POLYWATER FST FOAM SEALANT OR EQUAL.

DETAIL 10
LINK BOX DETAIL
(NOT TO SCALE)

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN.	CHKD	APPRV.
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH
A	ISSUED FOR REVIEW	10/31/16	DGR	TDD	TMH

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NPT
ROCK-UNDERGROUND ALIGNMENT
TRENCH AND UTILITY DETAILS
DATE: 12/07/2016
SCALE: NOT TO SCALE

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

TOWN:

TRANSMISSION LINE:
ROCK

ROCKC504

GENERAL SITE GRADING NOTES:

1. ALL NEW DRIVE AND PARKING AREA SURFACES SHALL PITCH 1/4 INCH PER FOOT MINIMUM UNLESS OTHERWISE NOTED.
2. ALL AREAS THAT ARE EXCAVATED, FILLED, OR OTHERWISE DISTURBED BY THE CONTRACTOR SHALL BE LOAMED, GRADED, LIMED, FERTILIZED, SEEDED AND MULCHED, UNLESS OTHERWISE NOTED. THE TOP 4 INCHES OF SOIL SHALL BE TOPSOIL.
3. ALL ELEVATIONS REFER TO NAVD 83F. THE CONTRACTOR WILL BE PROVIDED WITH A TEMPORARY BENCHMARK PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL CONTROL DUST ON THE CONSTRUCTION SITE TO A REASONABLE LIMIT, TO THE SATISFACTION OF THE MUNICIPALITY AND ENGINEER.
5. CONTRACTOR SHALL NOT TRACK OR SPILL EARTH, DEBRIS, OR OTHER CONSTRUCTION MATERIAL ON PUBLIC OR PRIVATE STREETS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMMEDIATE ASSOCIATED CLEAN UP.
6. ALL BURIED FACILITIES WITH SURFACE ACCESS SHALL BE ADJUSTED TO MATCH FINAL GRADES, UNLESS OTHERWISE INDICATED.
7. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL DEBRIS AND EXCESS EXCAVATED MATERIAL FROM WITHIN THE CONSTRUCTION LIMIT OF WORK, TO A SUITABLE OFF-SITE LOCATION PROVIDED BY THE CONTRACTOR, IN COMPLIANCE WITH STATE AND LOCAL REGULATIONS. STUMPS SHALL NOT BE BURIED ONSITE.
8. CONTRACTOR SHALL REMOVE AND REPLACE, OR REPAIR ALL PAVEMENT AND OTHER ITEMS DAMAGED BY HIS CONSTRUCTION ACTIVITIES TO AT LEAST THEIR ORIGINAL CONDITION, TO THE SATISFACTION OF NHDOT.
9. WHERE EXISTING PAVEMENT IS REMOVED AND REPLACED, MATCH EXISTING GRADES TO THE EXTENT POSSIBLE. COORDINATE FINE GRADING WITH THE ENGINEER.
10. NO PERCHLORATES ARE TO BE USED IN BLASTING MATERIALS.

NEW HAMPSHIRE DES EROSION CONTROL NOTES:

1. 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.
2. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED OR STONED WITHIN 72 HOURS AFTER THEIR CONSTRUCTION.
3. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   c. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR
   d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

GENERAL EROSION CONTROL NOTES:

1. ALL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ARE A MINIMUM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING EROSION AND SEDIMENT CONTROL PRACTICES IN ACCORDANCE WITH LOCAL REGULATIONS AND GOVERNING AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING STORM WATER MANAGEMENT PRACTICES IN ACCORDANCE WITH LOCAL REGULATIONS AND GOVERNING AUTHORITIES.
3. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION AND SHALL BE MAINTAINED UNTIL FINAL SURFACING AND LANDSCAPING ARE ESTABLISHED.
4. THE CONTRACTOR SHALL PROVIDE PROPER EROSION CONTROL AND DRAINAGE MEASURES IN ALL AREAS OF WORK, AND CONFINE SOIL SEDIMENT TO WITHIN THE LIMITS OF EXCAVATION AND GRADING. PRIOR TO BEGINNING EXCAVATION WORK, SILT/HAYBALE FENCE SHALL BE INSTALLED AT THE DOWNGRADIENT PERIMETER OF THE ACTUAL LIMITS OF GRUBBING AND/OR GRADING, AND AS SHOWN ON THE DRAWINGS. EROSION CONTROL MEASURES SHOWN ON THE DRAWINGS ARE A MINIMUM, CONTRACTOR SHALL TAKE ALL OTHER NECESSARY MEASURES TO CONTROL EROSION. EROSION CONTROL FENCE SHALL ALSO BE INSTALLED AT THE DOWNGRADIENT PERIMETER OF THE TOPSOIL STOCKPILES. ALL DISTURBED EARTH SURFACES SHALL BE STABILIZED IN THE SHORTEST PRACTICAL TIME AND TEMPORARY EROSION CONTROL DEVICES SHALL BE EMPLOYED UNTIL SUCH TIME AS ADEQUATE SOIL STABILIZATION HAS BEEN ACHIEVED. TEMPORARY STORAGE OF EXCAVATED MATERIAL SHALL BE STABILIZED IN A MANNER THAT WILL MINIMIZE EROSION. ALL INSTALLED EROSION CONTROL FACILITIES SHALL BE REMOVED AT THE END OF THE PROJECT. IF SEDIMENT SHOULD ESCAPE UNDER THE EROSION CONTROL MEASURES, CORRECTIVE MEASURES SHOULD BE TAKEN WITHIN 48 HOURS TO RESTORE THE BARRIER.
5. CATCH BASIN AND STORM DRAIN PROTECTION MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION TO PROTECT EXISTING SYSTEMS FROM RECEIVING RUNOFF FROM UNSTABILIZED SURFACES.
6. SEEDING SHALL BE INSTALLED ON EXPOSED AREAS OF THE SITE WHERE GRADING ACTIVITIES WILL CEASE FOR A PERIOD OF MORE THAN 21 DAYS. SEEDING SHALL BE INSTALLED BY THE 14TH DAY AFTER THE LAST DISTURBANCE. TEMPORARY SEEDING SHALL BE INSTALLED ON SUCH AREAS AS GRADED SLOPES, STOCKPILE AREAS, ETC.

EROSION CONTROL SEED MIX SHALL MEET THE FOLLOWING CRITERIA:

SEED	% WEIGHT	% GERMINATION
WINTER RYE	80 MINIMUM	85 MIN
RED FESCUE (CREEPING)	4 MIN	80 MIN
PERENNIAL RYE GRASS	3 MIN	90 MIN
RED CLOVER	3 MIN	90 MIN
OTHER CROP GRASS	0.5 MAX	
NOXIOUS WEED SEED	0.5 MAX	
INERT MATTER	1.0 MAX	

7. THE CONTRACTOR SHALL INSPECT THE EROSION AND SEDIMENTATION CONTROL DEVICES AFTER EACH RAINSTORM AND DURING MAJOR STORM EVENTS. REPAIRS SHALL BE MADE AS NECESSARY. ACCUMULATED SEDIMENT TRAPPED BY EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE REMOVED AS NECESSARY.
8. DURING CONSTRUCTION, TEMPORARY OUTLETS OF THE DRAINAGE SYSTEMS SHALL BE PROTECTED BY SEDIMENT BASINS.
9. TEMPORARY EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE REMOVED AND THOSE AND ADJACENT AREAS RESTORED UPON COMPLETION OF THE WORK OR WHEN SO ORDERED BY THE ENGINEER.
10. THE METHOD OF STRIPPING VEGETATION SHALL BE SUCH AS TO MINIMIZE EROSION. FILLS SHALL BE PLACED AND COMPACTED IN SUCH A MANNER THAT SOIL SLIDING AND EROSION IS MINIMIZED. GRADING SHALL BE DONE IN SUCH A MANNER AS NOT TO DIVERT WATER ON TO ADJOINING PROPERTY.
11. TEMPORARY MULCHING IS TO BE APPLIED TO ALL DISTURBED AREAS LEFT INACTIVE AND UNSTABILIZED FOR A PERIOD GREATER THAN 7 DAYS.
12. RIPRAP INLET/OUTLET PROTECTION SHALL BE INSTALLED WITHIN 48 HOURS OF CULVERT INSTALLATION.
13. EROSION CONTROL BLANKET SHALL BE USED FOR ALL DITCH INVERTS AS CHANNEL/DITCH STABILIZATION. EITHER MULCHING OR EROSION CONTROL BLANKET MAY BE USED ON SIDE SLOPES.
14. PERMANENT STONE CHECK DAMS ARE TO BE INSTALLED WITHIN ALL PROPOSED AND DISTURBED DRAINAGE SWALES AT INTERVALS SPECIFIED BY STONE CHECK DAM DETAIL.
15. TEMPORARY CONSTRUCTION ENTRANCES ARE TO BE PROVIDED AT ALL CONNECTION POINTS WITH PUBLIC ROADS USED FOR CONSTRUCTION ACCESS.

CONSTRUCTION SEQUENCING NOTES:

SITE CLEARING/DISTURBANCE

1. PRIOR TO ANY CLEARING ACTIVITY ON SITE, INSTALL A STABILIZED CONSTRUCTION ENTRANCE AT THE ACCESS POINT.
2. CONTRACTOR SHALL SUBMIT A "STORMWATER MANAGEMENT PLAN" PRIOR TO ANY CONSTRUCTION ACTIVITIES.
3. PRIOR TO SITE ACTIVITY INSTALL ALL EROSION CONTROL MEASURES.
4. PROTECT EXISTING VEGETATION AND NATURAL FOREST COVER THAT IS DESIGNATED TO REMAIN ON THE SITE. DELINEATE AREAS THAT ARE TO REMAIN UNDISTURBED WITH ORANGE CONSTRUCTION FENCE. EXCLUDE VEHICLES AND OTHER CONSTRUCTION EQUIPMENT FROM THESE AREAS TO PRESERVE EXISTING VEGETATION
5. ALL METHODS OF CLEARING AND CUTTING EXISTING VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES POTENTIAL FOR SOIL EROSION. TREE STUMPS SHALL BE LEFT IN PLACE FOLLOWING CLEARING EFFORTS UNTIL SUCH TIME THAT GRUBBING AND SITE GRADING OCCURS.

STUMP REMOVAL, GRUBBING, BLASTING, AND SITE GRADING

1. PRIOR TO ANY GROUND DISTURBANCE, ADEQUATE EROSION CONTROL MEASURES SHALL BE INSTALLED DOWN GRADIENT FROM AREAS OF DISTURBANCE IN SUCH A MANNER THAT WILL PREVENT EXPOSED SOIL FROM ERODING AND TRAVELING BEYOND THE ACTIVE WORKING AREA. PERIMETER EROSION CONTROLS ESTABLISHED PRIOR TO SITE CLEARING ACTIVITIES ARE TO BE CONSIDERED A MINIMUM. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES, SUCH AS SILT FENCE AND EROSION CONTROL LOGS TO ENSURE EACH AREA OF EXPOSED SOIL IS ADEQUATELY PROTECTED USING EROSION CONTROL MEASURES.
2. STUMP REMOVAL, GRUBBING, BLASTING, AND SITE GRADING SHALL BE PHASED TO LIMIT THE EXTENT OF DISTURBED AREAS. THE SMALLEST AREA PRACTICABLE SHALL BE DISTURBED AT ANY ONE TIME AND AT NO TIME SHALL THE DISTURBED AREA EXCEED 5 ACRES WITHOUT TEMPORARY SOIL STABILIZATION MEASURES IN PLACE.
3. TEMPORARY MULCHING SHALL BE APPLIED TO ALL DISTURBED AREAS OF EXPOSED SOIL LEFT INACTIVE AND UNSTABILIZED FOR A PERIOD OF 72 HOURS. ADDITIONALLY, ALL DISTURBED AREAS SHALL BE TEMPORARY MULCHED 24 HOURS PRIOR TO A FORECASTED RAIN EVENT THAT IS TO EXCEED 0.5".
4. PROPERLY SIZED EROSION CONTROL FILTER LOGS SHALL BE INSTALLED AROUND THE PERIMETER OF EACH STOCKPILE OF EXCAVATED MATERIAL AND THE STOCKPILED MATERIAL SHALL BE STABILIZED.
5. ALL AREAS SHALL BE STABILIZED (PERMANENT OR TEMPORARY) WITHIN 45 DAYS OF INITIAL DISTURBANCE.

CONSTRUCTION

1. ALL CATCH BASINS, STORM DRAINS, DITCHES, SWALES, AND STORMWATER TREATMENT DEVICES SHALL BE INSTALLED IMMEDIATELY FOLLOWING ROUGH GRADING OF THE SITE.
2. ALL CATCH BASINS, STORM DRAIN INLETS, AND STORMWATER TREATMENT DEVICES SHALL BE ADEQUATELY PROTECTED DURING CONSTRUCTION TO PREVENT THEM FROM RECEIVING RUNOFF FROM UNSTABILIZED AREAS.
3. DURING CONSTRUCTION OF ALL SITE DRAINAGE AND STORMWATER TREATMENT DEVICES, TEMPORARY OUTLETS FROM THESE DEVICES SHALL BE PROTECTED BY A SEDIMENT BASIN.
4. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THESE DEVICES.
5. INSTALL EROSION CONTROL BLANKET ON ALL DITCH INVERTS WHERE NEEDED FOR CHANNEL/DITCH STABILIZATION. INSTALL EITHER MULCH OR EROSION CONTROL BLANKET WHERE REQUIRED ON SIDE SLOPES.
6. RIPRAP INLET AND OUTLET PROTECTION SHALL BE INSTALLED WITHIN 48 HOURS OF ALL CULVERT INSTALLATIONS.
7. TEMPORARY SEEDING SHALL BE ESTABLISHED ON ALL AREAS OF THE SITE WHERE CONSTRUCTION OR GRADING ACTIVITIES WILL CEASE FOR GREATER THAN 72 HOURS.
8. PERMANENT SEEDING AND STABILIZATION SHOULD OCCUR ON ALL AREAS WHERE DISTURBANCE AND CONSTRUCTION IS COMPLETE WITHIN 72 HOURS OF FINAL GRADING.
9. AN AREA SHALL BE CONSIDERED STABLE ONLY IF ONE OF THE FOLLOWING HAS OCCURRED
   a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   c. A MINIMUM OF 3" NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR
   d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
10. ALL AREAS TO BE SEEDED FOR PERMANENT VEGETATION SHALL BE PREPARED WITH A 4" SURFACE LAYER OF LOAM OR TOP SOIL, THEN GRADED, LIMED, AND FERTILIZED PRIOR TO SEED APPLICATION.
    a. LIMESTONE SHALL BE APPLIED AT A RATE OF 3 TONS PER ACRE (138 LBS. PER 1000 SQUARE FEET).
    b. FERTILIZER SHALL BE RESTRICTED TO A LOW PHOSPHATE (E.G. 10:0:10, N:P:K), SLOW RELEASE NITROGEN FERTILIZER. SLOW RELEASE FERTILIZERS MUST BE AT LEAST 50% SLOW RELEASE NITROGEN COMPONENT, MEANING HALF OF THE NITROGEN APPLIED WILL NOT BE IMMEDIATELY AVAILABLE FOR PLANT UPTAKE.
    c. ALL FERTILIZER APPLICATIONS SHALL BE CARRIED OUT BY A LICENSED PROFESSIONAL APPLICATOR

MAINTENANCE

1. ALL AREAS OF RILL OR GULLY EROSION SHOULD BE IMMEDIATELY INVESTIGATED AND REPAIRED AS NEEDED.
2. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS OF RAIN EVENTS EXCEEDING 0.5".
3. REPAIRS SHALL BE MADE, AS NECESSARY, TO EROSION AND SEDIMENTATION CONTROL DEVICES FOLLOWING INSPECTION.
4. ACCUMULATED SEDIMENT TRAPPED BY EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE REMOVED AS NECESSARY.
5. SITE SHALL BE SWEPT WEEKLY AFTER THE BINDER COURSE IS PAVED AND UNTIL THE SITE IS FULLY STABILIZED.

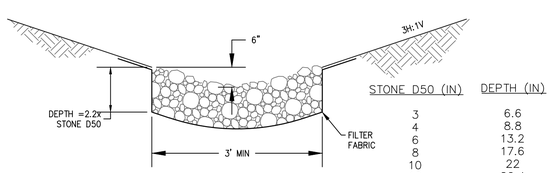
WINTER EROSION CONTROL AND STABILIZATION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING ALL WINTER EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH LOCAL REGULATIONS AND GOVERNING AUTHORITIES.
2. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ONE TIME.
3. DISTURBED AREAS ARE TO BE LIMITED TO AREAS WHERE WORK IS TO BE COMPLETED WITHIN 15 DAYS AND CAN BE MULCHED IN ONE DAY PRIOR TO A SNOW EVENT.
4. THE SITE STABILIZATION SCHEDULE BEFORE WINTER SHALL BE AS FOLLOWS:

OCTOBER 15 — ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 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 ON FLATTER SLOPES. 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.

OCTOBER 15 — ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATVE GROWN BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE FLOW CONDITIONS AS DIRECTED BY THE EROSION CONTROL INSPECTOR.

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 SPEC 304.3.

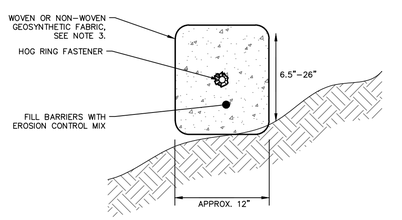


STONE D50 (IN)	DEPTH (IN)
3	6.6
4	8.8
6	13.2
8	17.6
10	22
12	26.4

DETAIL 12
STONE LINED SWALE DETAIL
(NOT TO SCALE)

NEW HAMPSHIRE DES EROSION CONTROL MONITORING NOTES:

1. A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL OR A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE ("MONITOR") SHALL BE EMPLOYED TO INSPECT THE SITE FROM THE START OF ALTERATION OF TERRAIN ACTIVITIES UNTIL THE SITE IS IN FULL COMPLIANCE WITH THE ALTERATION OF TERRAIN PERMIT ("PERMIT").
2. DURING THIS PERIOD, THE MONITOR SHALL INSPECT THE SUBJECT SITE AT LEAST ONCE A WEEK, AND IF POSSIBLE, DURING ANY ½ INCH OR GREATER RAIN EVENT (I.E. ½ INCH OF PRECIPITATION OR MORE WITHIN A 24 HOUR PERIOD). IF UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THIS EVENT.
3. THE MONITOR SHALL PROVIDE TECHNICAL ASSISTANCE AND RECOMMENDATIONS TO THE CONTRACTOR ON THE APPROPRIATE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROLS REQUIRED TO MEET THE REQUIREMENTS OF RSA 485-A:17 AND ALL APPLICABLE DES PERMIT CONDITIONS.
4. ROUTINE INSPECTION FREQUENCY MAY BE REDUCED FROM ONCE EACH WEEK TO AT LEAST ONCE EACH MONTH IF EITHER OF THE FOLLOWING CONDITIONS IS MET:
   a. WORK HAS BEEN SUSPENDED AND THE ENTIRE SITE IS STABILIZED IN ACCORDANCE WITH THE DES DEFINITION OF STABILITY (DES EROSION CONTROL NOTE #4 ABOVE); OR
   b. RUNOFF IS UNLIKELY BECAUSE THE GROUND IS FROZEN OR THE SITE IS COVERED WITH SNOW OR ICE; AND THE PROJECT IS IN AN AREA WHERE FROZEN CONDITIONS ARE ANTICIPATED TO CONTINUE FOR MORE THAN ONE MONTH.
   c. UPON THE DECISION TO REDUCE EROSION AND SITE STABILITY INSPECTIONS, FIRST VERIFY WITH THE CITY OF LACONIA PLANNING DEPARTMENT SO THEY CAN ADJUST SITE VISITS ACCORDINGLY.
5. WITHIN 24 HOURS OF EACH INSPECTION, THE MONITOR SHALL SUBMIT A REPORT TO DES ALTERATION OF TERRAIN BUREAU VIA EMAIL.
6. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR'S NAME, ADDRESS, AND PHONE NUMBER SHALL BE SUBMITTED TO DES ALTERATION OF TERRAIN BUREAU VIA EMAIL.



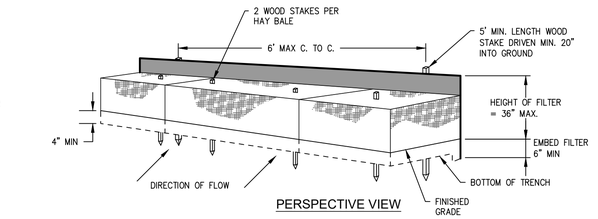
SEDIMENT LOG INSTALLATION CHART					
Slope %	MAXIMUM SLOPE LENGTH ABOVE BARRIER				
	8" BARRIER	12" BARRIER	18" BARRIER	24" BARRIER	32" BARRIER
<2	600	750	1000	1300	1650
5	400	500	550	650	750
10	200	250	300	400	500
15	140	170	200	325	450
20	100	125	140	260	400
25	80	100	110	200	275
30	60	75	90	130	200
35	60	75	80	115	150
40	60	75	80	100	125
45	40	50	60	80	100
50	40	50	55	65	75
INSTALLED EFFECTIVE DEPTH	6.5"	9.5"	14.5"	19"	26"

SECTION VIEW
(NOT TO SCALE)

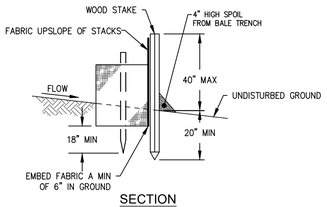
NOTES:

1. EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZED AND MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. THE MIX COMPOSITION SHALL MEET THE FOLLOWING STANDARDS.
   1.1. THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80 AND 100 PERCENT, DRY WEIGHT BASIS.
   1.2. PARTICLE SIZE BY WEIGHT SHALL BE 100 PERCENT PASSING A 6-INCH SCREEN AND A MINIMUM OF 70 PERCENT, MAXIMUM OF 85 PERCENT, PASSING A 3/4-INCH SCREEN.
   1.3. THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
   1.4. LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX.
   1.5. SUITABLE SALTS CONTENT SHALL BE LESS THAN 4.0 MINIMUM.
2. THE BARRIER MUST BE PLACED ALONG A RELATIVELY LEVEL CONTOUR. TALL GRASSES MAY NEED TO BE CUT TO AVOID VOID SPACES THAT WOULD ALLOW FINES TO WASH UNDER THE BARRIER
3. BARRIER TO BE FILTREXX FILTERSOXX OR EQUIVALENT.
4. STAKES SHALL BE INSTALLED THROUGH THE MIDDLE OF THE BARRIER AT 10' CENTERS USING 2"X2" GRADE STAKES. STAKING DEPTH 12" MIN FOR SILT LOAM SOILS, 8" MIN FOR CLAY SOILS. PLACE CONCRETE BLOCKS BEHIND BARRIER IN INSTALLATIONS ON PAVEMENT OR LEDGE.
5. FROZEN GROUND, OUTCROPS OF BEDROCK AND VERY ROOTED FORESTED AREAS ARE LOCATIONS WHERE BERMS OF EROSION CONTROL MIX ARE MOST PRACTICAL AND EFFECTIVE.

DETAIL 13
EROSION CONTROL MIX FILTER 'LOG' DETAL
(NOT TO SCALE)



PERSPECTIVE VIEW



SECTION

NOTES:

1. FILTER CLOTH TO BE STAPLED OR WIRED TO THE STACKS.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
3. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.
5. IMMEDIATELY CLEAN ANY SEDIMENTATION GENERATED FROM AN OVERTOPPING INCIDENT.

DETAIL 11
SILT FENCE/HAY BALE BARRIER DETAL
(NOT TO SCALE)

PLAN

SECTION

NOTES

1. FOOTPRINT OF BASIN AND ASSOCIATED NUMBER OF BALES MAY VARY BASED ON SITE CONDITIONS. PERIMETER WALL TO BE COMPRISED OF THREE TIERS AS SHOWN. STAKES SHALL BE INSERTED TO PENETRATE A MINIMUM OF TWO BALES.
2. THE BASIN SHALL BE SIZED TO PREVENT DISCHARGE WATER FROM OVERTOPPING BASIN. IF BASIN IS OVERTOPPED DISCONTINUE USE IMMEDIATELY AND RE-SIZE. IMMEDIATELY CLEAN ANY SEDIMENTATION GENERATED FROM AN OVERTOPPING INCIDENT.
3. KEEP BASIN AS FAR FROM WETLANDS AS PRACTICAL. DO NOT LOCATE BASIN WITHIN 50 FEET OF WETLANDS OR OTHER RESOURCES
4. BASINS SHALL BE LOCATED IN AREAS THAT ARE GENERALLY FLAT WITH SLOPES FROM 0-2%.
5. CLEAN AND REMOVE BASIN AS SOON AS DEWATERING IS COMPLETE.
6. CONCRETE JERSEY BARRIERS CAN BE SUBSTITUTED FOR HAYBALES AS DESIRED.
7. IF SOILS ARE JUDGED NOT TO BE SUFFICIENTLY PERMEABLE, OR WHERE PORTABILITY IS DESIRED, A STANDARD 20 TO 40 CUBIC YARD STEEL WASTE CONTAINER CAN BE USED. THE STEEL CONTAINER SHALL BE DIVIDED INTO TWO CHAMBERS VIA A FILTER BARRIER WHERE THE INFLUENT CHAMBER WILL BE USED TO ENTRAP SOLIDS AND THE SECOND CHAMBER WILL BE USED AS A CLEAR WELL FROM WHICH THE CLARIFIED FLOW WILL BE PIPED TO A TEMPORARY STONE BERM FOR DISPERSION TO EXISTING GRADE.

DETAIL 14
TEMPORARY SEDIMENTATION BASIN DETAIL
(NOT TO SCALE)

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN.	CHKD	APPRV.
A	ISSUED FOR REVIEW	12/07/16	DGR	TDD	TMH
B	ISSUED FOR REVIEW-PAGE TURN	12/07/16	DGR	TDD	TMH

SGC Engineering, LLC
A member of the Lloyd's Register Group

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS
Transmission Business

B

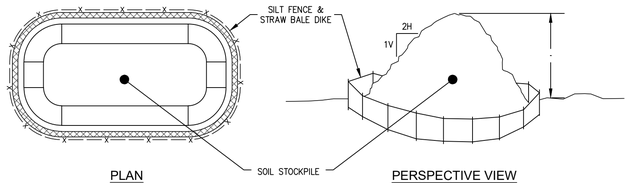
NPT
ROCK-UNDERGROUND ALIGNMENT
EROSION CONTROL DETAILS-1
DATE: 12/07/2016
SCALE: NOT TO SCALE

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

TOWN:

TRANSMISSION LINE:
ROCK

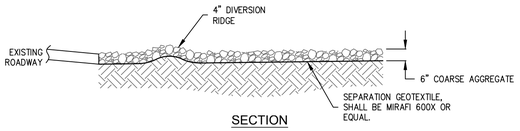
ROCKC505



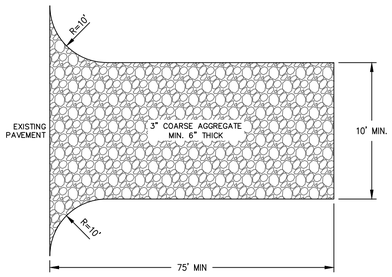
NOTES:

1. SOIL STOCKPILES SHALL BE SITUATED IN A DRY AREA.
2. SILT FENCE AND STRAW BALES MUST BE PLACED CONTINUOUSLY AROUND THE PERIMETER OF ALL STOCKPILES.
3. IMMEDIATELY APPLY MULCH TO ALL STOCKPILES WHICH WILL BE INACTIVE. IN LIEU OF MULCHING, STOCKPILES MAY BE COVERED WITH A SECURE TARP.

DETAIL 15
SOIL STOCKPILE DETAIL
(NOT TO SCALE)



SECTION

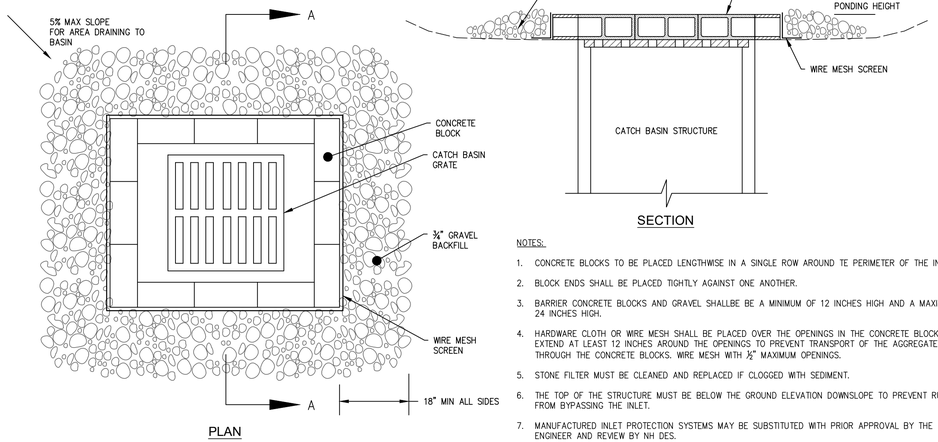


PLAN

NOTES:

1. STONE SIZE – USE 3 INCH STONE.
2. LENGTH – NOT LESS THAN 75 FEET.
3. THICKNESS – NOT LESS THAN SIX (6) INCHES.
4. WIDTH – TEN (10) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. GEOTEXTILE MIRAFI 600X MUST BE PLACED OVER THE ENTIRE BED PRIOR TO PLACING OF STONE.
6. MIN 15"ø CULVERT SHALL BE INSTALLED FOR DRAINAGE BENEATH CONSTRUCTION ENTRANCES. IF CULVERT IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. CONSTRUCTION ENTRANCE TO BE INSPECTED WEEKLY. ADDITIONAL STONE TO BE ADDED AS NECESSARY.
9. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
10. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

DETAIL 18
STABILIZED CONSTRUCTION ENTRANCE DETAIL
(NOT TO SCALE)



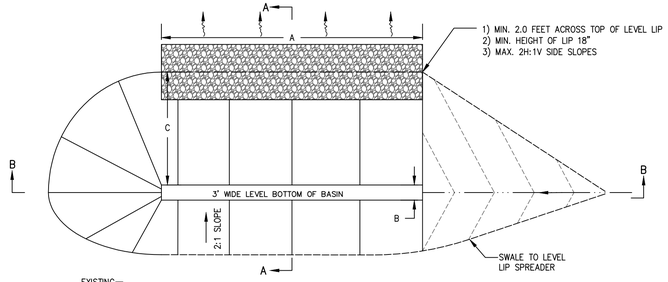
PLAN

SECTION

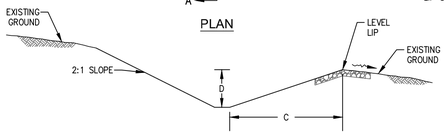
NOTES:

1. CONCRETE BLOCKS TO BE PLACED LENGTHWISE IN A SINGLE ROW AROUND TE PERIMETER OF THE INLET.
2. BLOCK ENDS SHALL BE PLACED TIGHTLY AGAINST ONE ANOTHER.
3. BARRIER CONCRETE BLOCKS AND GRAVEL SHALLBE BE A MINIMUM OF 12 INCHES HIGH AND A MAXIMUM OF 24 INCHES HIGH.
4. HARDWARE CLOTH OR WIRE MESH SHALL BE PLACED OVER THE OPENINGS IN THE CONCRETE BLOCKS AND EXTEND AT LEAST 12 INCHES AROUND THE OPENINGS TO PREVENT TRANSPORT OF THE AGGREGATE THROUGH THE CONCRETE BLOCKS. WIRE MESH WITH ½" MAXIMUM OPENINGS.
5. STONE FILTER MUST BE CLEANED AND REPLACED IF CLOGGED WITH SEDIMENT.
6. THE TOP OF THE STRUCTURE MUST BE BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET.
7. MANUFACTURED INLET PROTECTION SYSTEMS MAY BE SUBSTITUTED WITH PRIOR APPROVAL BY THE ENGINEER AND REVIEW BY NH DES.

DETAIL 19
TEMPORARY STORM DRAIN INLET PROTECTION DETAIL
(NOT TO SCALE)

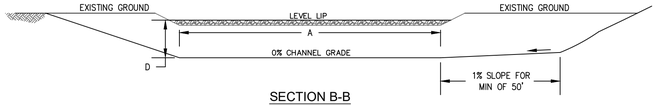


PLAN



SECTION A-A

LEVEL LIP BERM STONE SIZE GRADATION SPECIFICATION	
SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
12 IN.	100
6 IN.	84–100
3 IN.	68–83
1 IN.	42–55
NO. 4	8–12



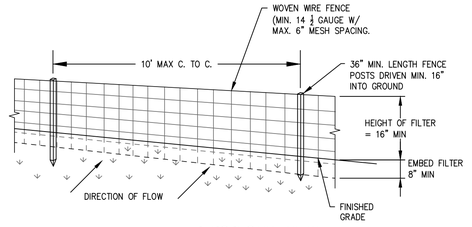
SECTION B-B

LEVEL SPREADER	10–YEAR STORM FLOW	A, FEET	B, FEET	C, FEET	D, FEET	LIP ELEVATION, FEET
1	6.38 CFS	26.0	3.0	3.0	1.5	540
2	3.24 CFS	13.0	3.0	3.0	1.5	538

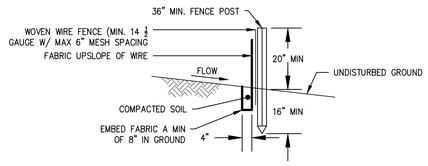
NOTES:

1. CONSTRUCT LEVEL LIP AND SPREADER ON ZERO PERCENT GRADE.
2. LEVEL SPREADER NOT TO BE CONSTRUCTED ON FILL.
3. STORM RUNOFF CONVERTED TO SHEET FLOW SHALL OUTLET ONTO STABILIZED UNDISTURBED AREA.
4. WATER SHALL NOT BE CHANNELIZED IMMEDIATELY BELOW POINT OF DISCHARGE.
5. THE GRASS AREA IMMEDIATELY DOWNGRADIENT FROM THE LEVEL LIP SPREADER SHALL BE MOWED A MAXIMUM OF ONCE PER YEAR.

DETAIL 16
LEVEL LIP SPREADER
(NOT TO SCALE)



PERSPECTIVE VIEW

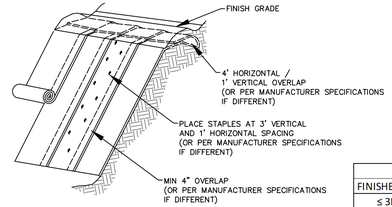


SECTION

NOTES:

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 14 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER– LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

DETAIL 20
SILT FENCE DETAIL
(NOT TO SCALE)



BLANKET INSTALLATION TABLE		
FINISHED SLOPE	MANUFACTURER	MODEL #
≤ 3H:1V	American Excelsior Co.	Curlex NetFree
≤ 2H:1V	American Excelsior Co.	Curlex I
≤ 1.5H:1V	American Excelsior Co.	Curlex II
≤ 1H:1V	American Excelsior Co.	Curlex III
≤ 0.75H:1V	American Excelsior Co.	Curlex Enforcer

NOTES:

1) SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS. ROUGH UP THE SLOPE PRIOR TO SEEDING AND INSTALLING BLANKETS. BLANKETS SHALL HAVE GOOD SOIL CONTACT.

2) APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.

3) LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

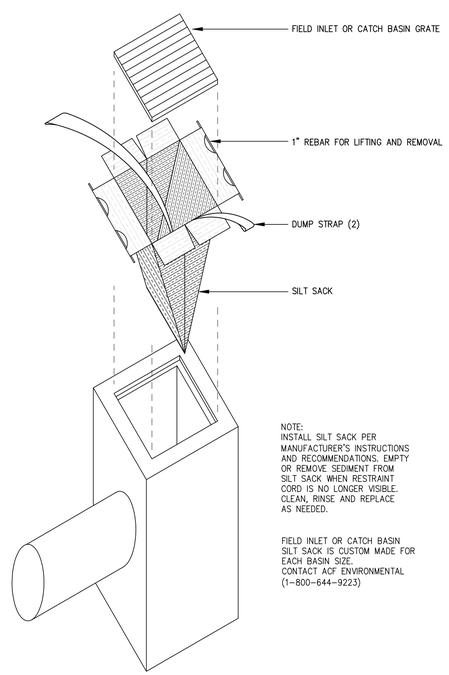
4) INSTALL BLANKETS VERTICALLY DOWNSLOPE.

5) DEGRADABLE STAPLES ARE RECOMMENDED.

6) TRENCH IN THE TOP OF THE SLOPE AND CREATE WATER BREAKS EVERY 50 FEET TO 100 FEET.

7) IF HYDROSEED IS USED IT SHOULD BE APPLIED FROM VARIOUS ANGLES TO PREVENT UNSEEDED AREAS.

DETAIL 17
EROSION CONTROL BLANKET DETAIL
(NOT TO SCALE)



DETAIL 21
CATCH BASIN SILT SACK
(NOT TO SCALE)

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN.	CHKD	APPRV.
A	ISSUED FOR REVIEW–PAGE TURN	12/07/16	DGP	TDD	TMH
B	ISSUED FOR REVIEW	12/20/16	DGP	TDD	TMH

SGC Engineering, LLC
A Member of the Stantec Engineering Group

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS
Transmission Business

B

NPT
ROCK–UNDERGROUND ALIGNMENT
EROSION CONTROL DETAILS – 2

DATE: 12/07/2016
SCALE: NOT TO SCALE

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

TOWN:

TRANSMISSION LINE:
ROCK

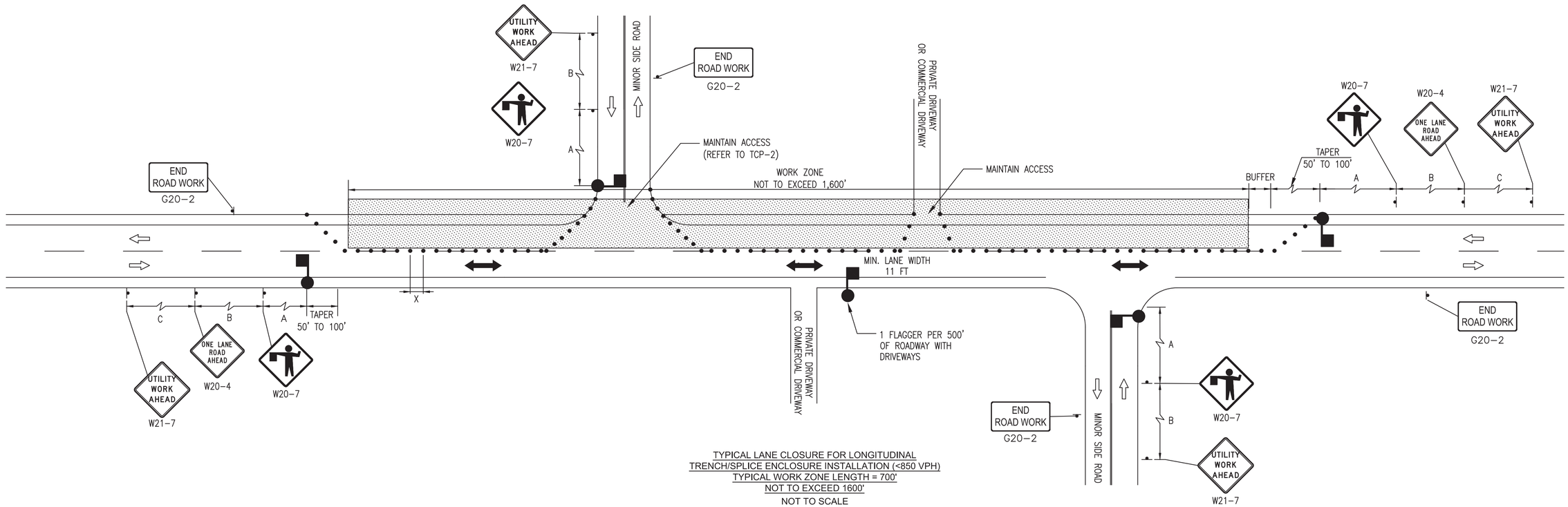
ROCKC506

PRELIMINARY - NOT FOR CONSTRUCTION

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)



TYPICAL LANE CLOSURE FOR LONGITUDINAL
TRENCH/SPLICE ENCLOSURE INSTALLATION (<850 VPH)
TYPICAL WORK ZONE LENGTH = 700'
NOT TO EXCEED 1600'
NOT TO SCALE

QUICK REFERENCE TABLES

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

Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)*	100 feet	100 feet	100 feet
Urban (high speed)*	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,640 feet

* Speed category to be determined by the highway agency
** The column headings A, B, and C are the dimensions shown in Figures 6H-1 through 6H-46. The A dimension is the distance from the transition or 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 and third signs. (The "first sign" is the sign in a three-sign series that is closest to the TTC zone. The "third sign" is the sign that is furthest upstream from the TTC zone.)

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

Type of Taper	Taper Length
Merging Taper	at least L
Shifting Taper	at least 0.5 L
Shoulder Taper	at least 0.33 L
One-Lane, Two-Way Traffic Taper	50 feet minimum, 100 feet maximum
Downstream Taper	50 feet minimum, 100 feet maximum

Note: Use Table 6C-4 to calculate L

Table 6C-4. Formulas for Determining Taper Length

Speed (S)	Taper Length (L) in feet
40 mph or less	$L = \frac{WS^2}{60}$
45 mph or more	$L = WS$

Where: L = taper length in feet
W = width of offset in feet
S = posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

NO.	REVISION	DATE	DRWN	CHKD	APPRV
6	REV6	-	-	-	-
5	REV5	-	-	-	-
4	REV4	-	-	-	-
3	REV3	-	-	-	-
2	REV2	-	-	-	-
A	REV1	-	-	-	-
NO.					

Louis Berger

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS
Transmission Business

A

NPT
ROCK
TRAFFIC CONTROL TYPICALS

DATE: mm/dd/yyyy
SCALE: NTS

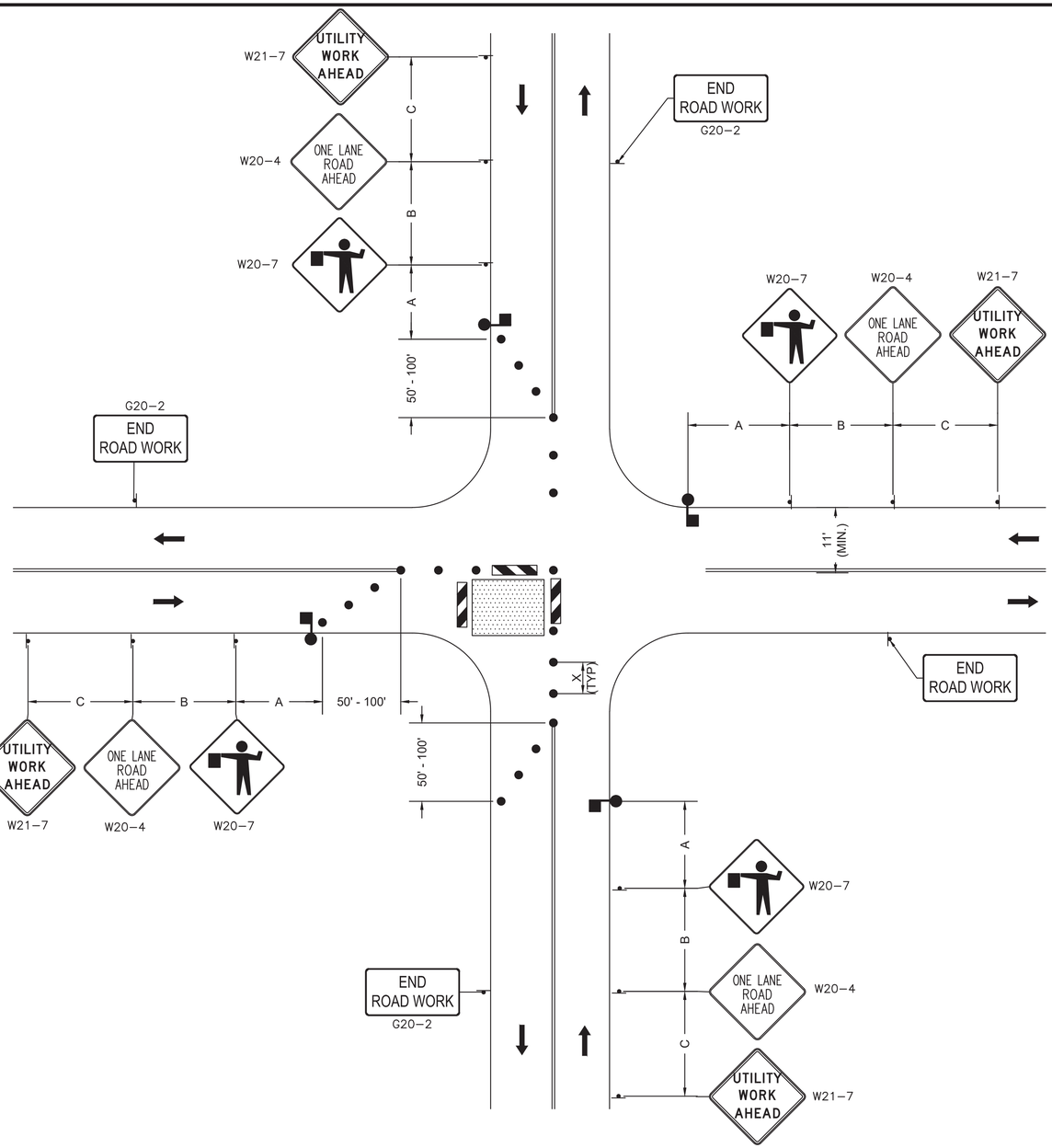
DES: - CHK:
DRW: - APR:
TOWN:
TRANSMISSION LINE: ROCK
MILE NO:
DISCIPLINE/SHT NO: -
SHEET OF

ROCKTCP-1

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)



TYPICAL TEMPORARY LANE CLOSURE AT INTERSECTIONS
NOT TO SCALE

QUICK REFERENCE TABLES

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

Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)*	100 feet	100 feet	100 feet
Urban (high speed)*	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,640 feet

* Speed category to be determined by the highway agency
** The column headings A, B, and C are the dimensions shown in Figures 6H-1 through 6H-46. The A dimension is the distance from the transition or 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 and third signs. (The "first sign" is the sign in a three-sign series that is closest to the TTC zone. The "third sign" is the sign that is furthest upstream from the TTC zone.)

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

Type of Taper	Taper Length
Merging Taper	at least L
Shifting Taper	at least 0.5 L
Shoulder Taper	at least 0.33 L
One-Lane, Two-Way Traffic Taper	50 feet minimum, 100 feet maximum
Downstream Taper	50 feet minimum, 100 feet maximum

Note: Use Table 6C-4 to calculate L

Table 6C-4. Formulas for Determining Taper Length

Speed (S)	Taper Length (L) in feet
40 mph or less	$L = \frac{WS^2}{60}$
45 mph or more	$L = WS$

Where: L = taper length in feet
W = width of offset in feet
S = posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
6	REV6				
5	REV5				
4	REV4				
3	REV3				
2	REV2				
1	REV1				

Louis Berger

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS
Transmission Business

A

NPT
ROCK
TRAFFIC CONTROL TYPICALS

DATE: mm/dd/yyyy
SCALE: N.T.S.

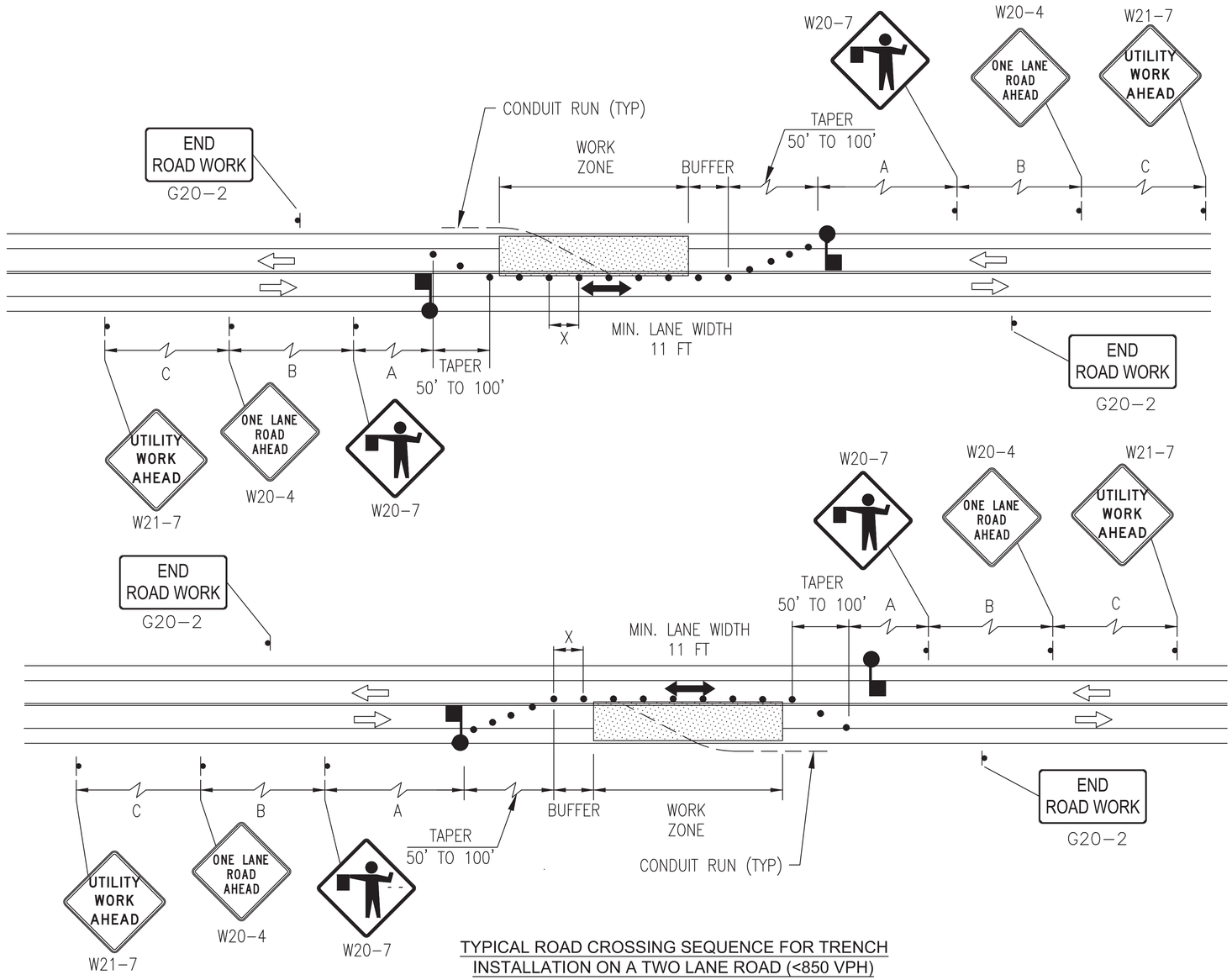
DES.: CHK.:
DRW.: APP.:
TOWN:
TRANSMISSION LINE: ROCK
MILE NO:
DISCIPLINE/SHT NO.: .
SHEET OF

ROCKTCP-2

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)



TYPICAL ROAD CROSSING SEQUENCE FOR TRENCH
INSTALLATION ON A TWO LANE ROAD (<850 VPH)
TYPICAL WORK ZONE LENGTH = 200'
NOT TO EXCEED 1600'
NOT TO SCALE

QUICK REFERENCE TABLES

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

Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)*	100 feet	100 feet	100 feet
Urban (high speed)*	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,640 feet

* Speed category to be determined by the highway agency
** The column headings A, B, and C are the dimensions shown in Figures 6H-1 through 6H-46. The A dimension is the distance from the transition or 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 and third signs. (The "first sign" is the sign in a three-sign series that is closest to the TTC zone. The "third sign" is the sign that is furthest upstream from the TTC zone.)

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

Type of Taper	Taper Length
Merging Taper	at least L
Shifting Taper	at least 0.5 L
Shoulder Taper	at least 0.33 L
One-Lane, Two-Way Traffic Taper	50 feet minimum, 100 feet maximum
Downstream Taper	50 feet minimum, 100 feet maximum

Note: Use Table 6C-4 to calculate L

Table 6C-4. Formulas for Determining Taper Length

Speed (S)	Taper Length (L) in feet
40 mph or less	$L = \frac{WS^2}{60}$
45 mph or more	$L = WS$

Where: L = taper length in feet
W = width of offset in feet
S = posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
6	REV6				
5	REV5				
4	REV4				
3	REV3				
2	REV2				
1	REV1				

Louis Berger

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS

Transmission Business

A

NPT
ROCK
TRAFFIC CONTROL TYPICALS

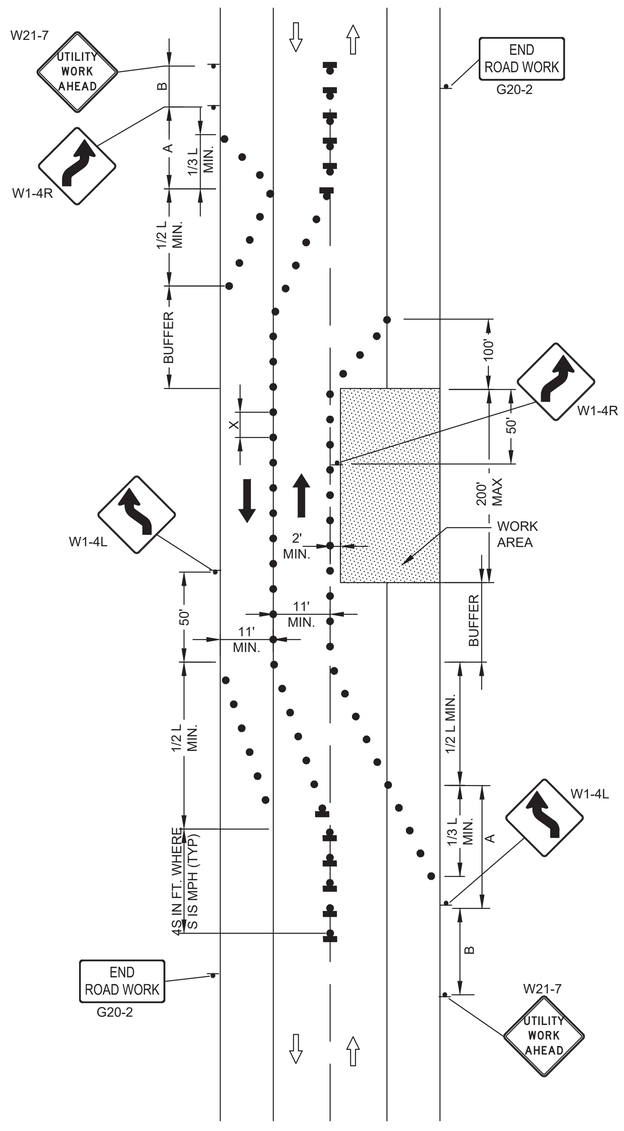
DATE: mm/dd/yyyy
SCALE: NTS

DES: . CHK: .
DRW: . APR: .
TOWN:
TRANSMISSION LINE: ROCK
MILE NO:
DISCIPLINE/SHT NO. .
SHEET OF
ROCKTCP-3

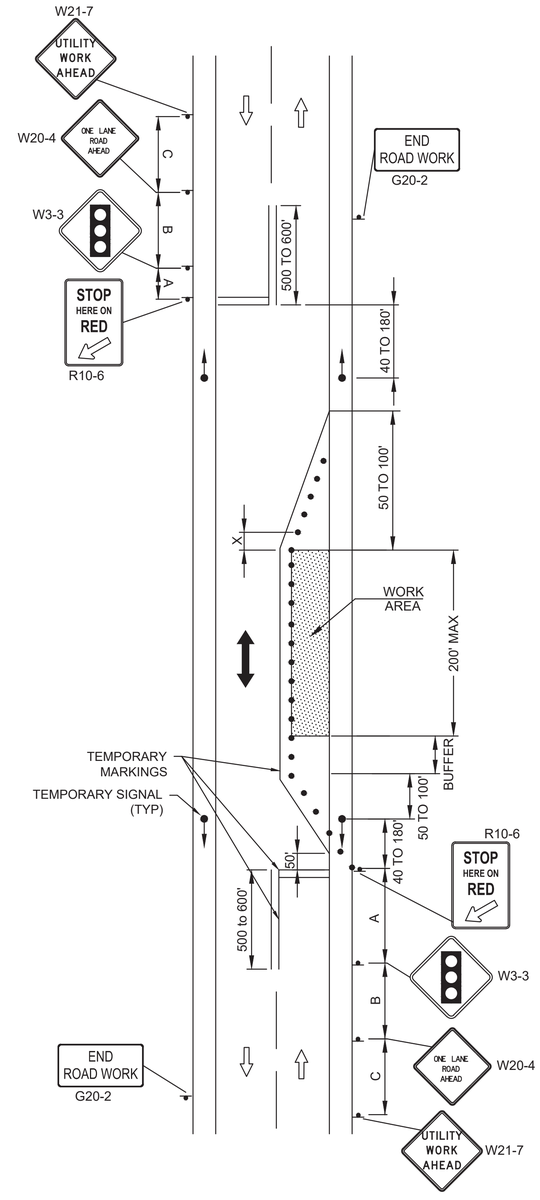
LEGEND

- REFLECTORIZED PLASTIC DRUM
- REFLECTORIZED PLASTIC DRUM WITH BEACON
- 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)



PREFERRED: LANE SHIFT FOR SPLICING OPERATIONS
NOT TO SCALE



ALTERNATIVE LANE CLOSURE FOR SPLICING OPERATIONS
NOT TO SCALE

QUICK REFERENCE TABLES

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

Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)*	100 feet	100 feet	100 feet
Urban (high speed)*	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,640 feet

* Speed category to be determined by the highway agency
** The column headings A, B, and C are the dimensions shown in Figures 6H-1 through 6H-46. The A dimension is the distance from the transition or 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 and third signs. (The "first sign" is the sign in a three-sign series that is closest to the TTC zone. The "third sign" is the sign that is furthest upstream from the TTC zone.)

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

Type of Taper	Taper Length
Merging Taper	at least L
Shifting Taper	at least 0.5 L
Shoulder Taper	at least 0.33 L
One-Lane, Two-Way Traffic Taper	50 feet minimum, 100 feet maximum
Downstream Taper	50 feet minimum, 100 feet maximum

Note: Use Table 6C-4 to calculate L

Table 6C-4. Formulas for Determining Taper Length

Speed (S)	Taper Length (L) in feet
40 mph or less	$L = \frac{WS^2}{60}$
45 mph or more	$L = WS$

Where: L = taper length in feet
W = width of offset in feet
S = posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

Value of Taper Length (L)

Posted Speed Limit (S)	Width of Offset in Feet (W)												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	6.7 ft	13.3 ft	20.0 ft	26.7 ft	33.3 ft	40.0 ft	46.7 ft	53.3 ft	60.0 ft	66.7 ft	73.3 ft	80.0 ft	86.7 ft	93.3 ft
25	10.4 ft	20.8 ft	31.3 ft	41.7 ft	52.1 ft	62.5 ft	72.9 ft	83.3 ft	93.8 ft	104.2 ft	114.6 ft	125.0 ft	135.4 ft	145.8 ft
30	15.0 ft	30.0 ft	45.0 ft	60.0 ft	75.0 ft	90.0 ft	105.0 ft	120.0 ft	135.0 ft	150.0 ft	165.0 ft	180.0 ft	195.0 ft	210.0 ft
35	20.4 ft	40.8 ft	61.3 ft	81.7 ft	102.1 ft	122.5 ft	142.9 ft	163.3 ft	183.8 ft	204.2 ft	224.6 ft	245.0 ft	265.4 ft	285.8 ft
40	26.7 ft	53.3 ft	80.0 ft	106.7 ft	133.3 ft	160.0 ft	186.7 ft	213.3 ft	240.0 ft	266.7 ft	293.3 ft	320.0 ft	346.7 ft	373.3 ft
45	45.0 ft	90.0 ft	135.0 ft	180.0 ft	225.0 ft	270.0 ft	315.0 ft	360.0 ft	405.0 ft	450.0 ft	495.0 ft	540.0 ft	585.0 ft	630.0 ft
50	50.0 ft	100.0 ft	150.0 ft	200.0 ft	250.0 ft	300.0 ft	350.0 ft	400.0 ft	450.0 ft	500.0 ft	550.0 ft	600.0 ft	650.0 ft	700.0 ft
55	55.0 ft	110.0 ft	165.0 ft	220.0 ft	275.0 ft	330.0 ft	385.0 ft	440.0 ft	495.0 ft	550.0 ft	605.0 ft	660.0 ft	715.0 ft	770.0 ft
60	60.0 ft	120.0 ft	180.0 ft	240.0 ft	300.0 ft	360.0 ft	420.0 ft	480.0 ft	540.0 ft	600.0 ft	660.0 ft	720.0 ft	780.0 ft	840.0 ft
65	65.0 ft	130.0 ft	195.0 ft	260.0 ft	325.0 ft	390.0 ft	455.0 ft	520.0 ft	585.0 ft	650.0 ft	715.0 ft	780.0 ft	845.0 ft	910.0 ft
70	70.0 ft	140.0 ft	210.0 ft	280.0 ft	350.0 ft	420.0 ft	490.0 ft	560.0 ft	630.0 ft	700.0 ft	770.0 ft	840.0 ft	910.0 ft	980.0 ft

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV
6	REV6				
5	REV5				
4	REV4				
3	REV3				
2	REV2				
A	REV1				

Louis Berger

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS
Transmission Business

A

NPT
ROCK
TRAFFIC CONTROL TYPICALS

DATE: mm/dd/yyyy
SCALE: NTS

DES: . CHK: .
DRW: . APR: .
TOWN:
TRANSMISSION LINE: ROCK
MILE NO:
DISCIPLINE/SHT NO: .
SHEET OF

ROCKTCP-4

PRELIMINARY - NOT FOR CONSTRUCTION

N

END ROAD WORK G20-2

END ROAD WORK G20-2

W13-4(P) ON RAMP

M6-2R

WORKZONE

100' TAPER

100' TAPER

25' (TYP.)

I-93 NB ON RAMP

GUIDER LN

MAIN ST (ROUTE 302)

W20-7

500'

W20-4 ONE LANE ROAD AHEAD

W21-7 UTILITY WORK AHEAD

500'

W21-7 UTILITY WORK AHEAD

END ROAD WORK G20-2

35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00

500' 500' 500'

W21-7 UTILITY WORK AHEAD

W20-4 ONE LANE ROAD AHEAD

W20-7

I-93 NB OFF RAMP

230'

W20-7

230'

W20-4 ONE LANE ROAD AHEAD

230'

G20-2 END ROAD WORK

W21-7 UTILITY WORK AHEAD

PROFILE RD (ROUTE 18)

45+00 46+00 47+00 48+00 49+00 50+00 51+00

500'

W20-7

500'

W20-4 ONE LANE ROAD AHEAD

500'

W21-7 UTILITY WORK AHEAD

PHASE 1
INTERSECTION OF PROFILE ROAD (ROUTE 18) AND MAIN STREET (ROUTE 302) - BETHLEHEM, NH

NO.	REVISION	DATE	DRWN	CHKD	APPRV
6	REV6				
5	REV5				
4	REV4				
3	REV3				
2	REV2				
1	REV1				

Louis Berger

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS
Transmission Business

A

NPT ROCK TRAFFIC CONTROL TYPICALS

DATE: mm/dd/yyyy

SCALE: N/S

DES: . CHK: .
DRW: . APR: .

TOWN: PLYMOUTH

TRANSMISSION LINE: ROCK

MILE NO:

DISCIPLINE/SHT NO.: .

SHEET OF

ROCKTCP-5

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN.	CHKD	APPRV.
6	REV6				
5	REV5				
4	REV4				
3	REV3				
2	REV2				
1	REV1				

Louis Berger

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS
Transmission Business

A

NPT
ROCK
TRAFFIC CONTROL TYPICALS

DATE: mm/dd/yyyy

SCALE: NTS

DES: . CHK: .
DRN: . APR: .

TOWN: PLYMOUTH

TRANSMISSION LINE: ROCK

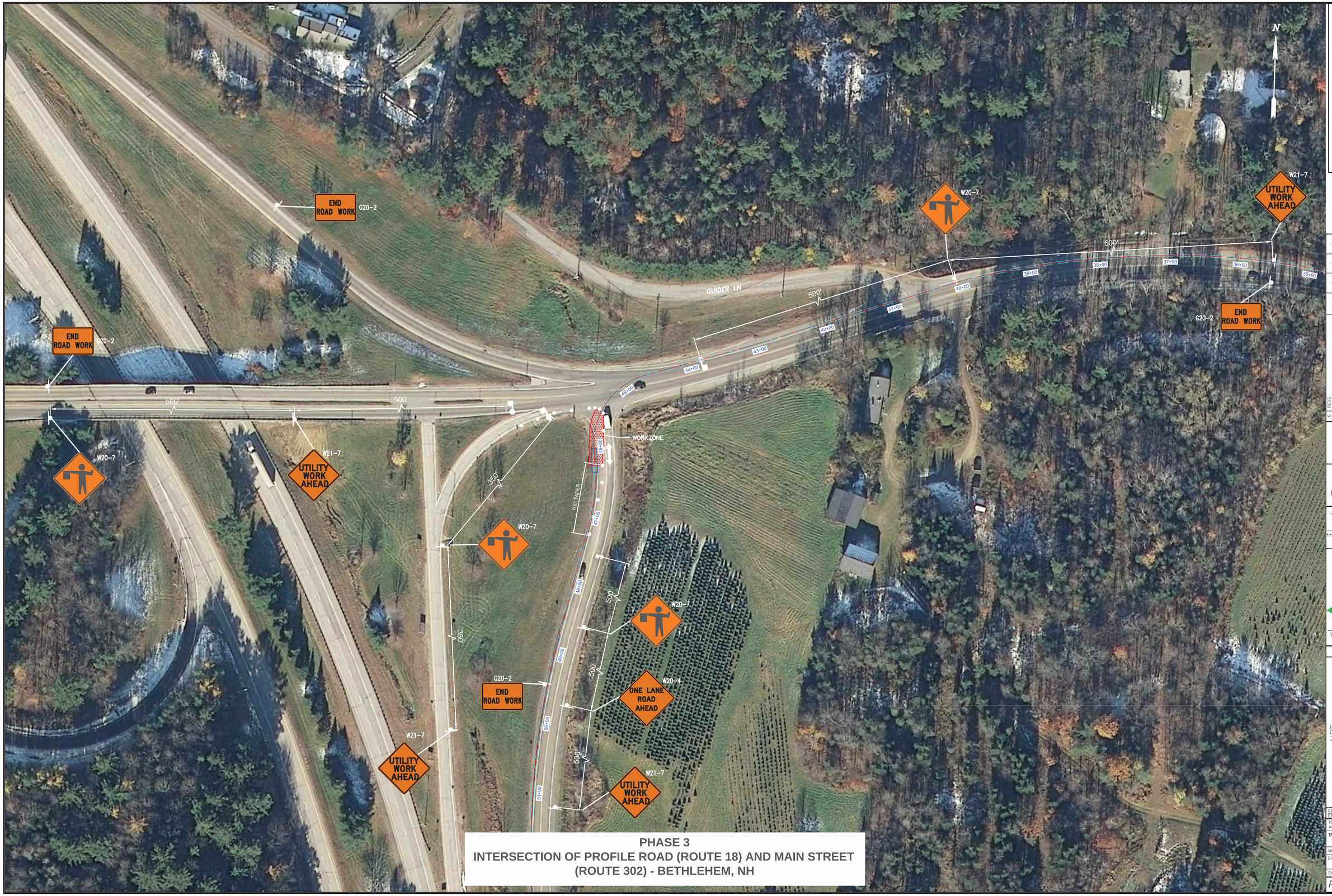
MILE NO:

DISCIPLINE/SHT NO. .

SHEET OF

ROCKTCP-6

PHASE 2
INTERSECTION OF PROFILE ROAD (ROUTE 18) AND MAIN STREET (ROUTE 302) - BETHLEHEM, NH



PRELIMINARY - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN.	CHKD	APPRV.
6	REV6				
5	REV5				
4	REV4				
3	REV3				
2	REV2				
1	REV1				

Louis Berger

PAR ELECTRICAL CONTRACTORS, INC.

THE NORTHERN PASS
Transmission Business

A

NPT ROCK TRAFFIC CONTROL TYPICALS

DATE: mm/dd/yyyy

SCALE: N.T.S.

DES: . CHK: .
DRW: APR: .

TOWN: PLYMOUTH

TRANSMISSION LINE: ROCK

MILE NO:

DISCIPLINE/SHT NO.: .

SHEET OF

ROCKTCP-7

PHASE 3
INTERSECTION OF PROFILE ROAD (ROUTE 18) AND MAIN STREET (ROUTE 302) - BETHLEHEM, NH