Maine Department of Transportation
Highway Program

Report of

SUBSURFACE INVESTIGATION FOR REHABILITATION AND RECONSTRUCTION ROUTE 117 IN THE TOWN OF NORWAY, OXFORD COUNTY

Prepared by

Kitty Breskin, P.E.
Geotechnical Design Engineer

Oxford County PIN 10020.00 Soils Report 2010-116
Federal STP-A002(000)X
October 18, 2010

Maine DOT proposes to rebuild a portion of Route 117 in Norway. This is the first and last sections of the project originally intended for this highway. The current project begins 4.74 km south of the intersection of Rte 118 and extends northerly for 1.78 km to Station 2+780. The first section of this project extends from Station 2+780 to Station 4+440 and has been completed. This project continues northerly for 1.3 km from Station 4+440 to the intersection of Route 118. This report is a compilation of the data for this section of the original project.

GeoPlan
Boring Logs
Lab Testing Summary Sheet
Grain Size Curves

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	STP-A002(000)X	1	18

10020.00

CURVE DATA

PI = 1+091.585
Δ = 0° - 30' - 47.7" Lt.
R = 5000.000 m
L = 44.790 m
T = 22.395 m
E = 0.050 m

PC = STA 1+069.190

PT = STA 1+113.980

BEGIN PROJECT
P/N 10020.00

1+000 | 1+020 | 1+040 | 1+060 | 1+080 | 1+100 | 1+120 | 1+140 | 1+160

N 12° - 32'- 24.8" W

N 13° -03' - 12.5" W

CONSTRUCT 11m WIDE ENTRANCE

375 mm x 15 m OPT.

375 mm x 20 m OPT.

BEGIN PROJECT
P/N 10020.00

LEGEND

HB- SOLID STEM AUGER W/DESCRIPTIONS

P- POWER AUGER PROBE

PC- PAVEMENT CORE

KEY

R = Refusal of augers (actual nature of refusal surface unknown)

NR = No Refusal surface encountered

W = Weathered Rock, top of

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K.BRESKIN	OCT 2010
	CHECKED	-----	-----
	REVISIONS	------	------
	FIELD CHANGES		

Filename: ...\GEOTECH\MSTA\001_Geoplan1.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

GEOPLANS

SHEET OF AUGUSTA, MAINE

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	2	18

10020.00

CONSTRUCT 11m WIDE ENTRANCE

375 mm x 15 m OPT. 1

REMOVE

450 mm x 16 m OPT. 1

REMOVE

375 mm x 20 m OPT. 1

375 mm x 18 m OPT. 1

750 mm x 20.1 m OPT. 1

REMOVE

HB-NOR-101

1+140
N 13° -03' - 12.5" W

1+160

1+180

1+200

1+220

1+240

1+260
N 12° - 31' - 20.2" W

1+280

1+300

1+320

PC = STA 1+167.127

PT = STA 1+199.576

CURVE DATA

PI = 1+183.352
Δ = 0° - 31' - 52.3" Rt.
R = 3500.000 m
L = 32.449 m
T = 16.225 m
E = 0.038 m

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K.BRESKIN	OCT 2010
CHECKED	-----	-----
REVISIONS	-----	-----
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

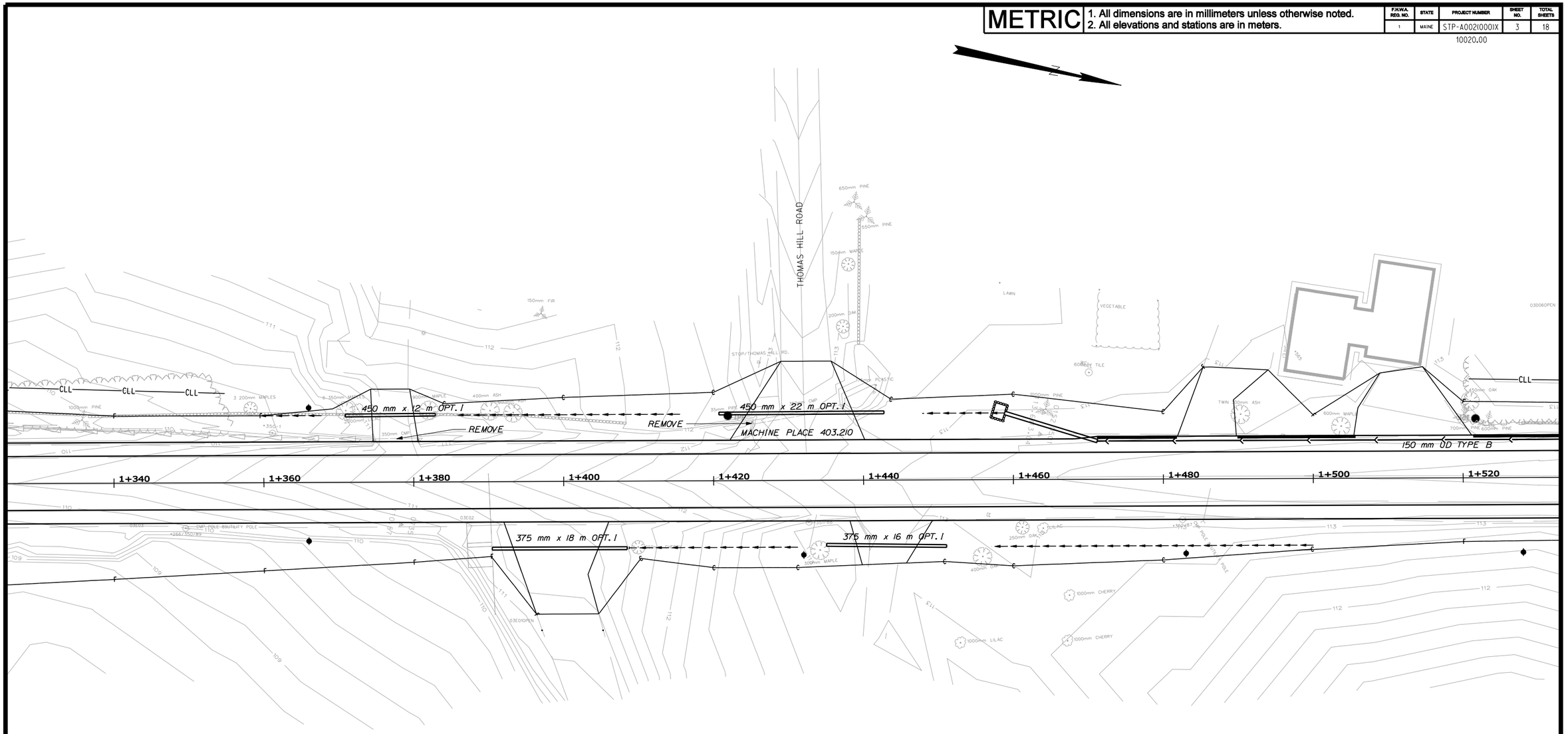
GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\ms1a\002_Geoplan2.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	3	18

10020.00



PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K.BRESKIN	OCT 2010
CHECKED	-----	-----
REVISIONS	------	------
FIELD CHANGES		

PLANS

Filename: ...\geotech\vnsto\003_Geoplan3.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

GEOPLANS

SHEET OF AUGUSTA, MAINE

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	4	18

10020.00

N

CLL CLL CLL CLL CLL CLL CLL CLL CLL CLL

150 mm UD TYPE B

150 mm UD TYPE B

375 mm x 14 m OPT. 1

375 mm x 42.7

CB TYPE BI-C

CB TYPE BI-C

DRY HYDRANT SEE GENERA

HB-NOR-102

1+520 1+540 1+560 1+580 1+600 1+620 1+640 1+660 1+680 1+700

PC = STA 1+661.327

CURVE DATA

PI = 1+715.580
Δ = 10° - 20' - 00.2"
R = 600.000 m
L = 108.211 m
T = 54.253 m
E = 2.448 m

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K.BRESKIN	OCT 2010
CHECKED	-----	-----
REVISIONS	------	------
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

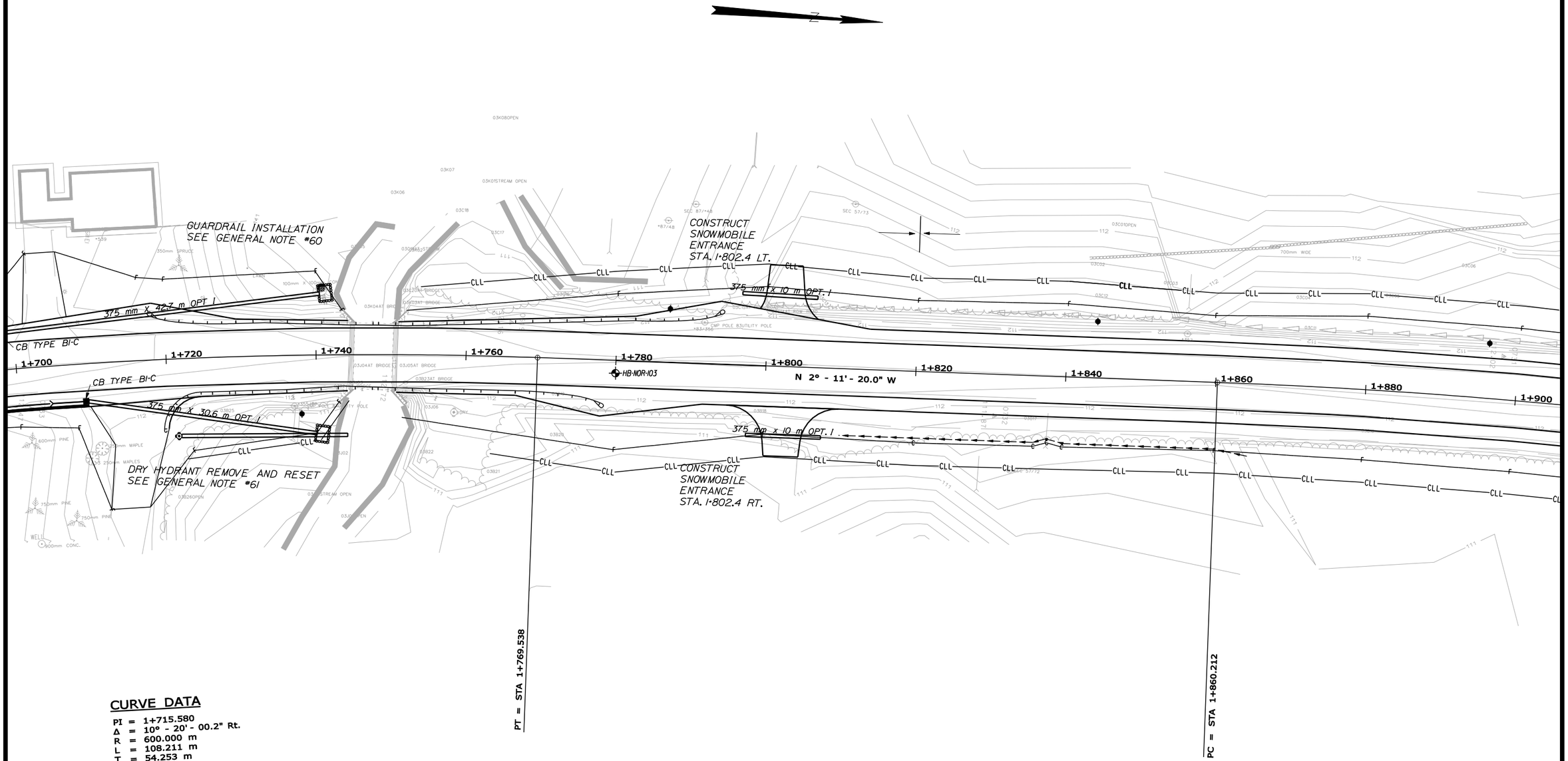
GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\ms1o\004_Geoplan4.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	5	18

10020.00



CURVE DATA

PI = 1+715.580
Δ = 10° - 20' - 00.2" Rt.
R = 600.000 m
L = 108.211 m
T = 54.253 m
E = 2.448 m

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K.BRESKIN	OCT 2010
	CHECKED	-----	-----
	REVISIONS	------	------
	FIELD CHANGES		

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

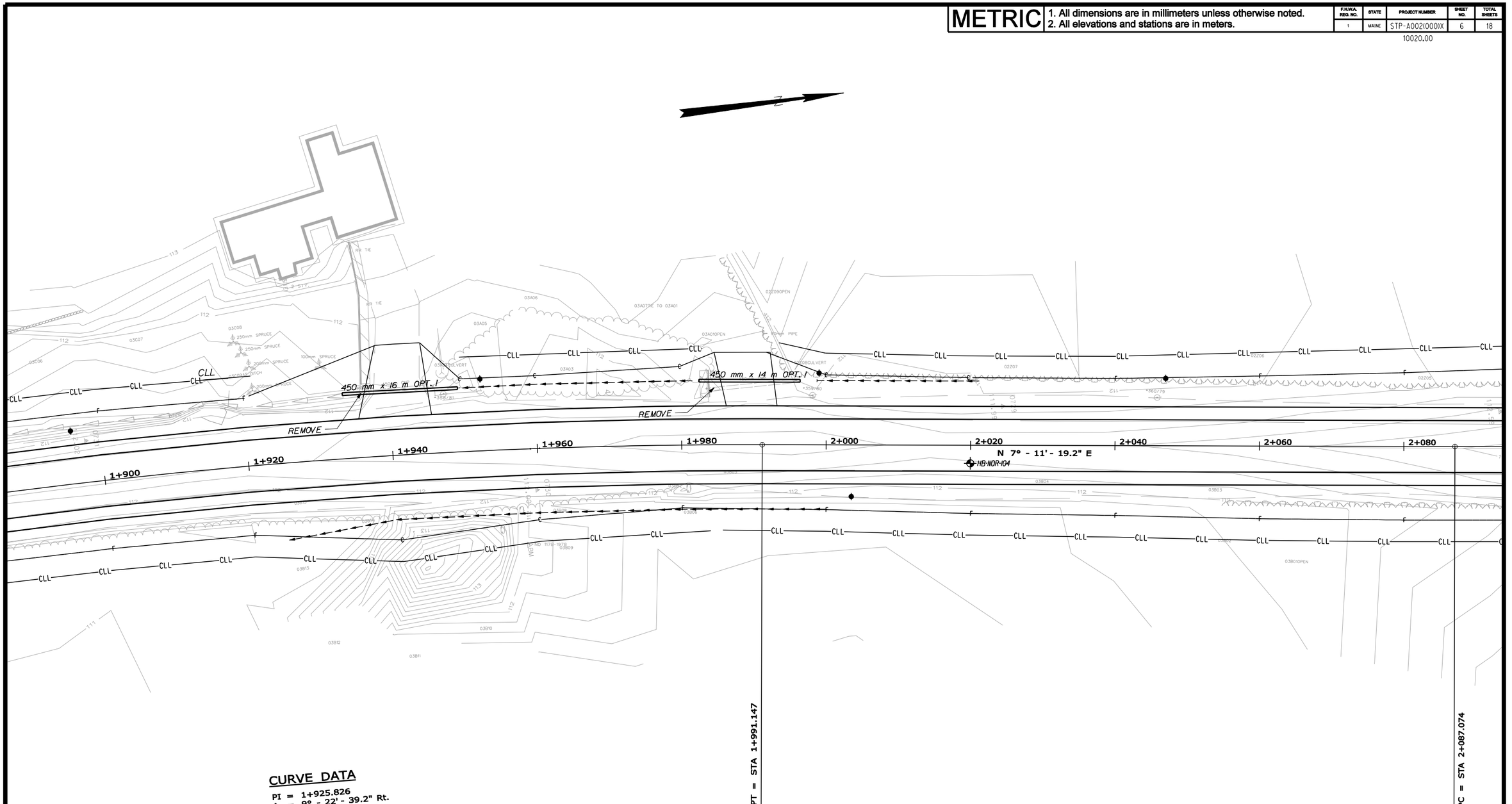
GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\mslo\005_Geoplan5.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	6	18

10020.00



CURVE DATA

PI = 1+925.826
Δ = 9° - 22' - 39.2" Rt.
R = 800.000 m
L = 130.935 m
T = 65.614 m
E = 2.686 m

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K.BRESKIN	OCT 2010
	CHECKED	-----	-----
	REVISIONS	------	------
	FIELD CHANGES		

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

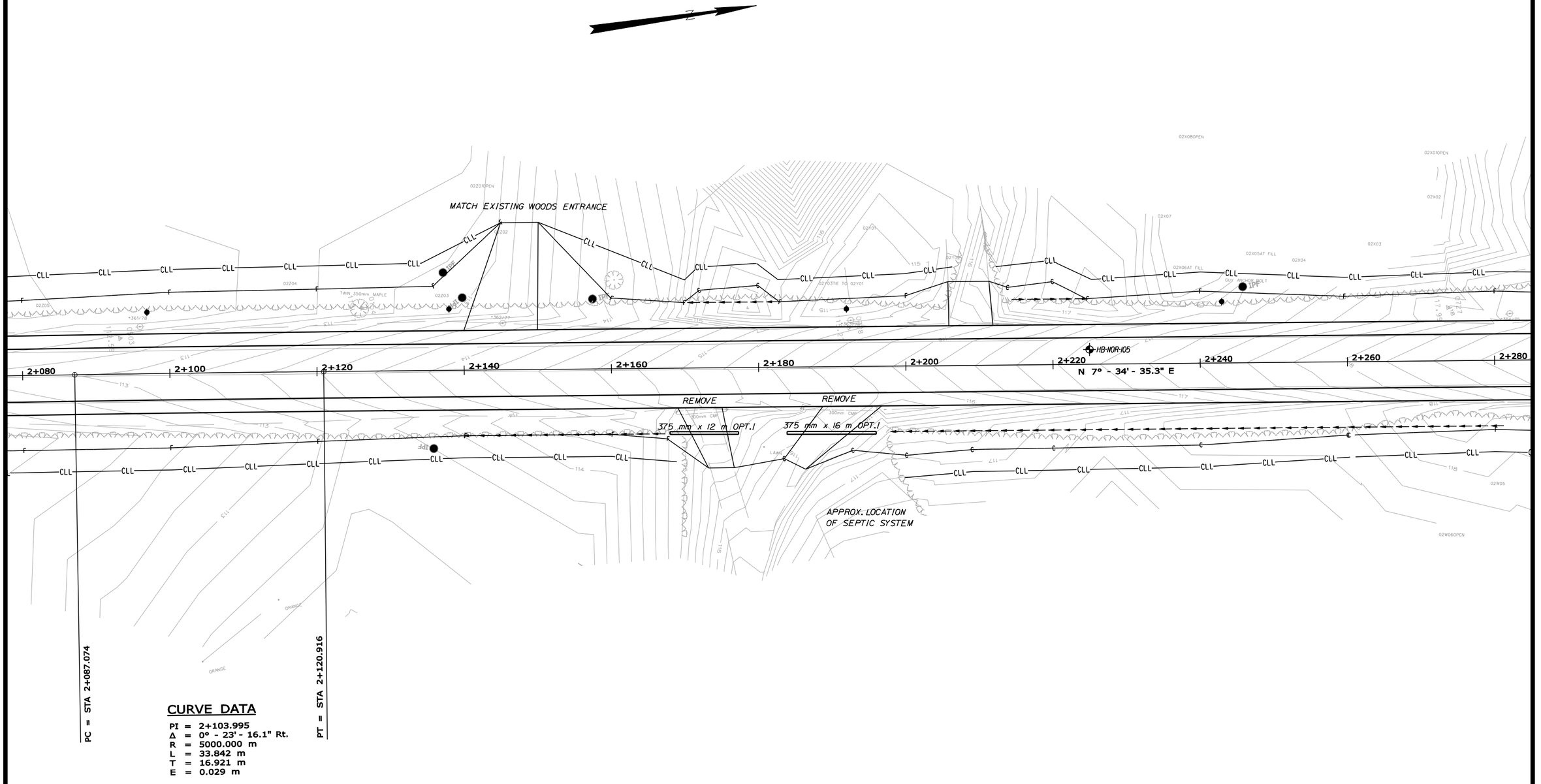
GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msta\006_Geoplan6.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	7	18

10020.00



CURVE DATA

PI = 2+103.995
Δ = 0° - 23' - 16.1" Rt.
R = 5000.000 m
L = 33.842 m
T = 16.921 m
E = 0.029 m

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K.BRESKIN	OCT 2010
CHECKED	-----	-----
REVISIONS	-----	-----
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msta\007_Geoplan7.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	8	18

10020.00

N

CURVE DATA

PI = 2+409.953
Δ = 19° - 32' - 51.8" Lt.
R = 480.000 m
L = 163.763 m
T = 82.685 m
E = 7.070 m

PC = STA 2+327.268

2+280 2+300 2+320 2+340 2+360 2+380 2+400 2+420 2+440 2+460

HB-NOR-106

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K.BRESKIN	OCT 2010
	CHECKED	-----	-----
	REVISIONS	------	------
	FIELD CHANGES	------	------

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

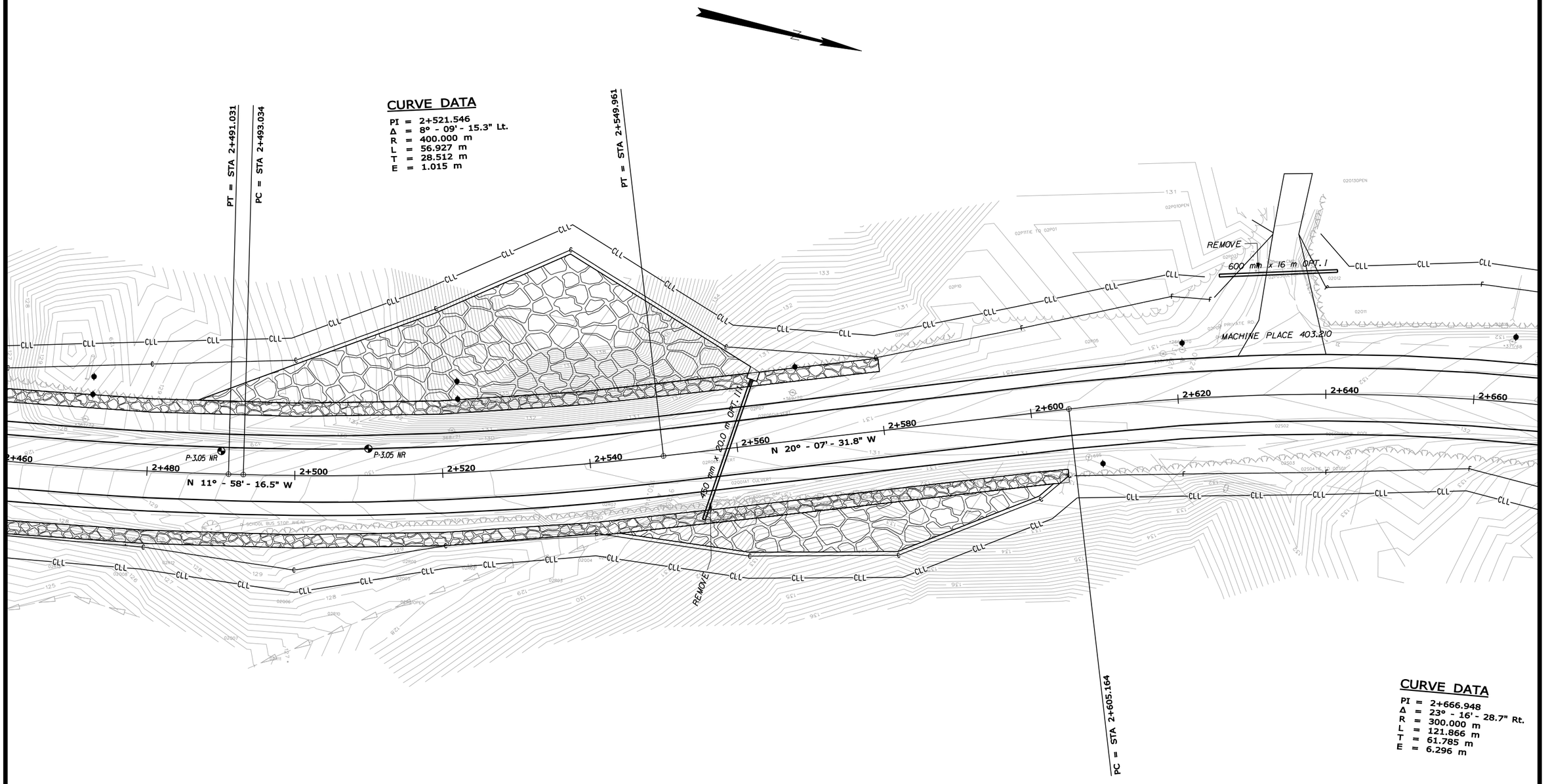
GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\vmsto\008_Geoplan8.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	9	18

10020.00



PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K.BRESKIN	OCT 2010
	CHECKED	-----	-----
	REVISIONS	------	------
	FIELD CHANGES		

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

GEOPLANS

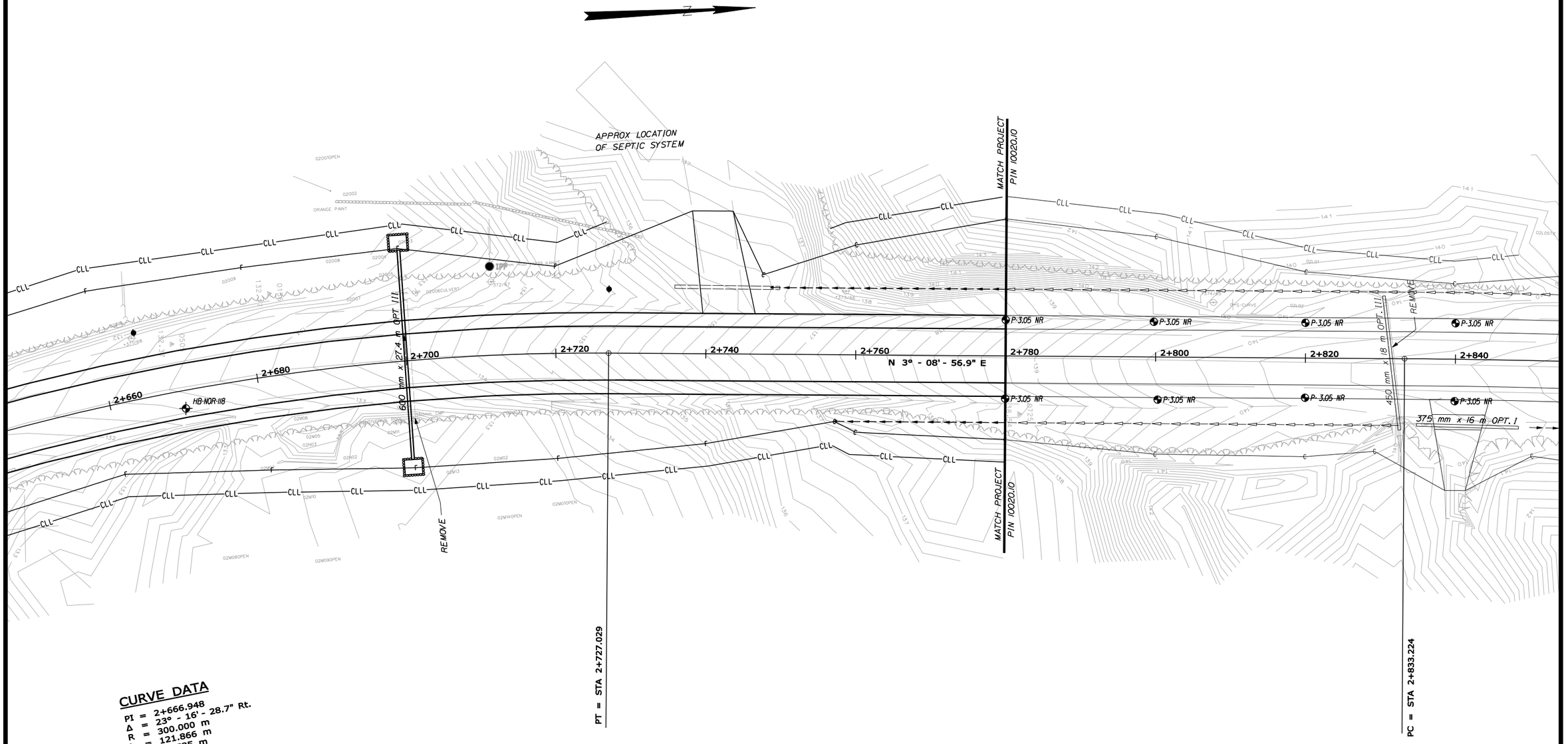
SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\rnsta\009_Geoplan9.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	STP-A002(000)X	10	18

10020.00



CURVE DATA

PI = 2+666.948
Δ = 23° - 16' - 28.7" Rt.
R = 300.000 m
L = 121.866 m
T = 61.785 m
E = 6.296 m

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K.BRESKIN	OCT 2010
	CHECKED	T.WHITE	-----
	REVISIONS	-----	-----
	FIELD CHANGES	-----	-----

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msla\010_Geoplan10.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	11	18

10020.00

CURVE DATA

PI = 4+473.854
Δ = 11° - 06' - 54.4" Lt.
R = 750.000 m
L = 145.497 m
T = 72.977 m
E = 3.542 m

PC = STA 4+400.877

PT = STA 4+546.373

Country Club Rd

Old Coach Stage Rd

26° - 05' - 15.0" E

4+360 4+380 4+400 4+420 4+440 4+460 4+480 4+500 4+520 4+540

2+000 2+020 2+040 2+047

3+020 3+040 3+048

450 mm x 18 m OPT. III — REMOVE

1200 mm x 44 m OPT. III

HB-NOR-I/9 — REMOVE

ANGLE PT = STA 3+026.913

MATCH PROJECT PIN 16022.10

150 mm UD TYPE B — REMOVE

STREAM RELOCATION
SEE SPECIAL PROVISION 656

CLL

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K.BRESKIN	OCT 2010
	CHECKED	T.WHITE	-----
	REVISIONS	-----	-----
	FIELD CHANGES	-----	-----

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY
ROUTE 117

GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\rmsta\011_Geoplan11.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	12	18

10020.00

PT = STA 4+546.373

CLL

150 mm UD OUTLET

375 mm x 16 m OPT. I

HB-NOR-II4 HB-NOR-II4A

N 14° - 58' - 20.6" E

150 mm UD TYPE B

150 mm UD OUTLET

450 mm x 17.1 m OPT. III

REMOVE

4+520 4+540 4+560 4+580 4+600 4+620 4+640 4+660 4+680 4+700 4+720

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K.BRESKIN	OCT 2010
CHECKED	T.WHITE	-----
REVISIONS	-----	-----
FIELD CHANGES	-----	-----

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

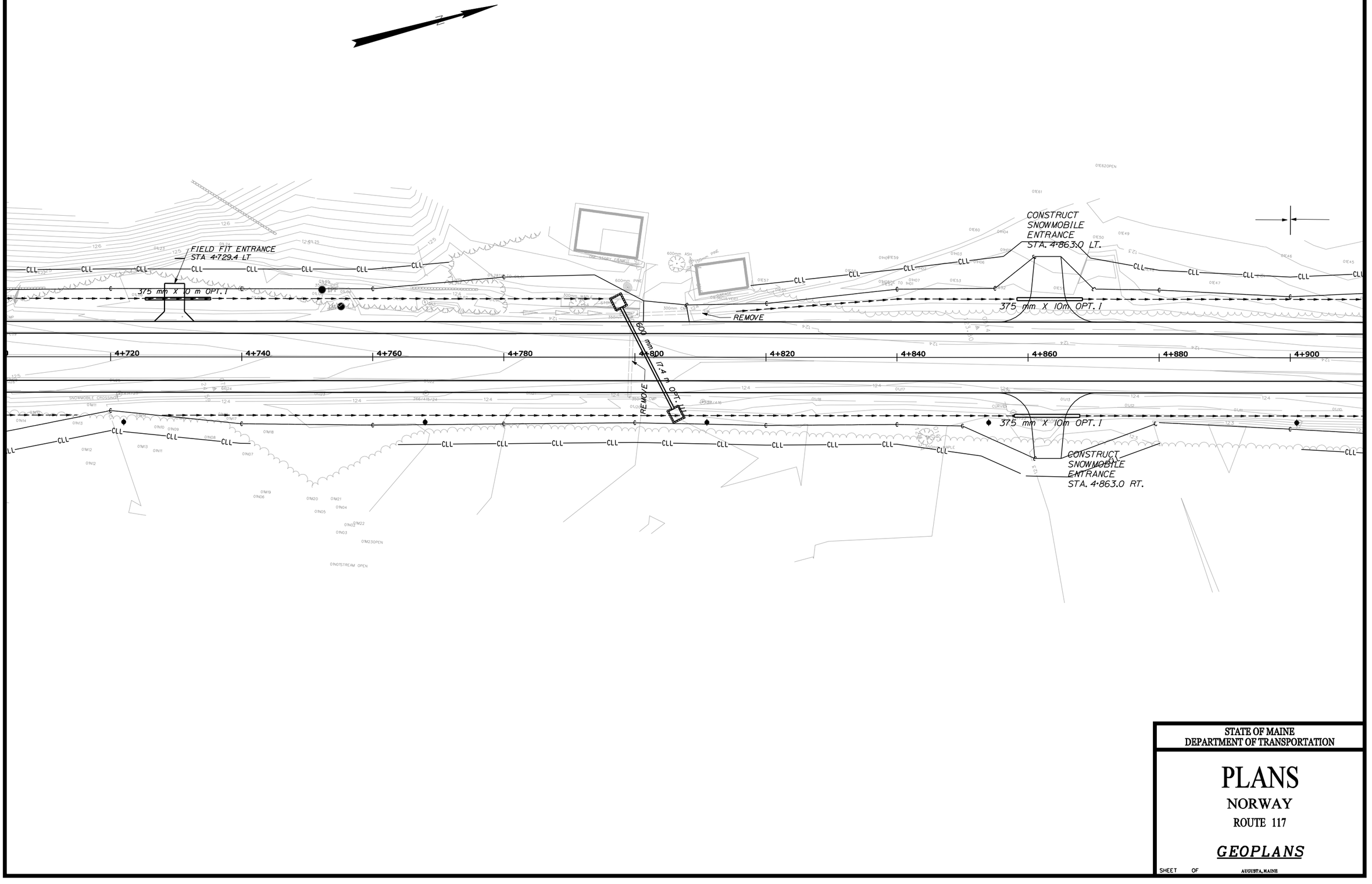
GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\mslo\012_Geoplan12.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	13	18

10020.00



PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K.BRESKIN	OCT 2010
CHECKED	T.WHITE	-----
REVISIONS	-----	------
FIELD CHANGES	------	------

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\rnsto\013_Geoplan13.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	14	18

10020.00

N

CURVE DATA

PI = 4+990.233
Δ = 20° - 24' - 08.4" Lt.
R = 300.000 m
L = 106.826 m
T = 53.985 m
E = 4.819 m

PC = STA 4+936.248

PRC = STA 5+043.075

4+900 4+920 4+940 4+960 4+980 5+000 5+020 5+040 5+060 5+080

450 mm x 15.8 m OPT. II

HB-NOR-113

1500 mm x 20.7 m RCP CL. III

REMOVE

600 mm x 21.0 m OPT. III

REMOVE

CLL

SPEED LIMIT 50 MPH

SPEED LIMIT 35 MPH

PRC = STA 5+043.075

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K.BRESKIN	OCT 2010
	CHECKED	T.WHITE	-----
	REVISIONS	-----	-----
	FIELD CHANGES	-----	-----
		-----	-----

Filename: ...\geotech\msta\014_Geoplan14.dgn Username: terry.white Date:10/18/2010 Division: GEOTECH

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

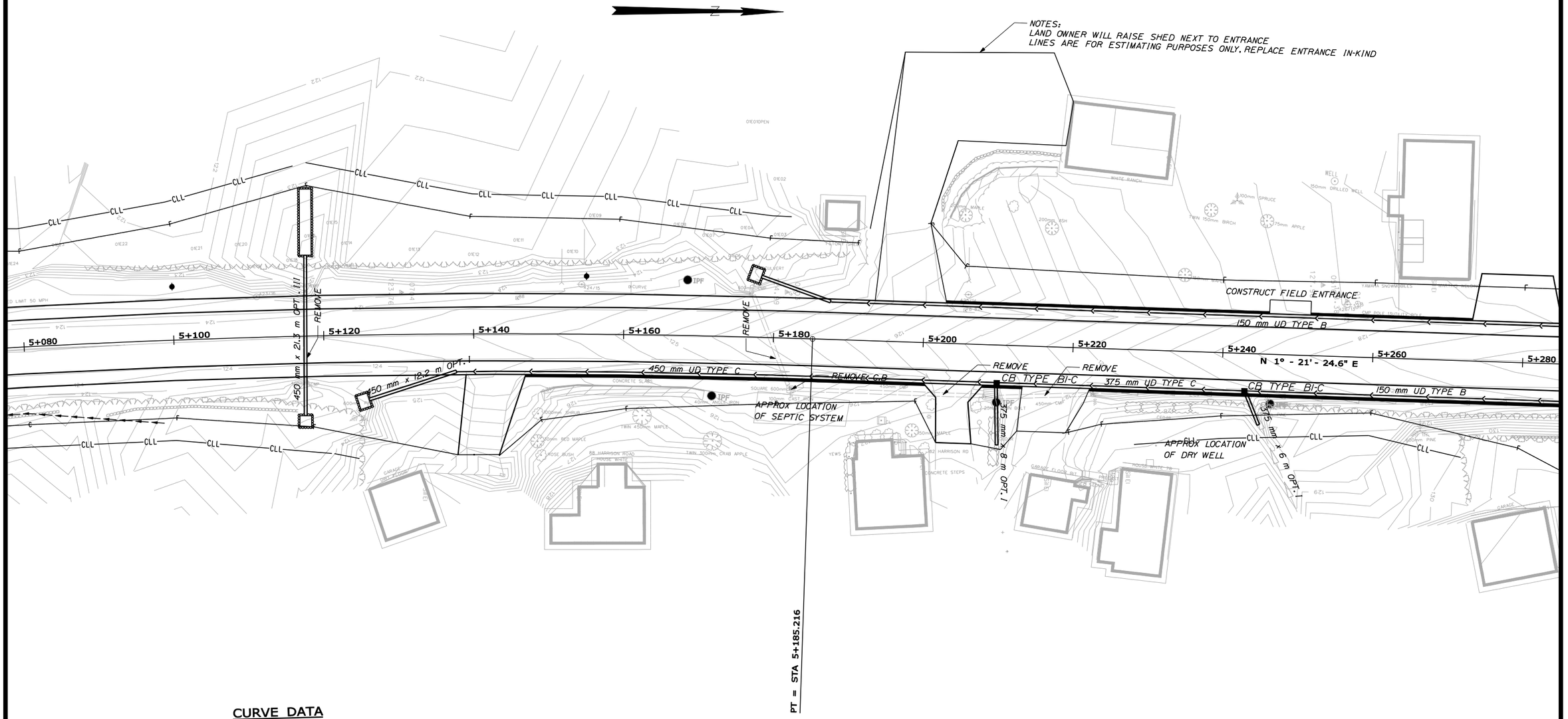
ROUTE 117

GEOPLANS

SHEET OF AUGUSTA, MAINE

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	15	18

10020.00



CURVE DATA

PI = 5+114.229
Δ = 6° - 47' - 12.4" Rt.
R = 1200.000 m
L = 142.142 m
T = 71.154 m
E = 2.108 m

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K.BRESKIN	OCT 200
	CHECKED	-----	-----
	REVISIONS	------	------
	FIELD CHANGES		

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\rnsto\015_Geoplan15.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

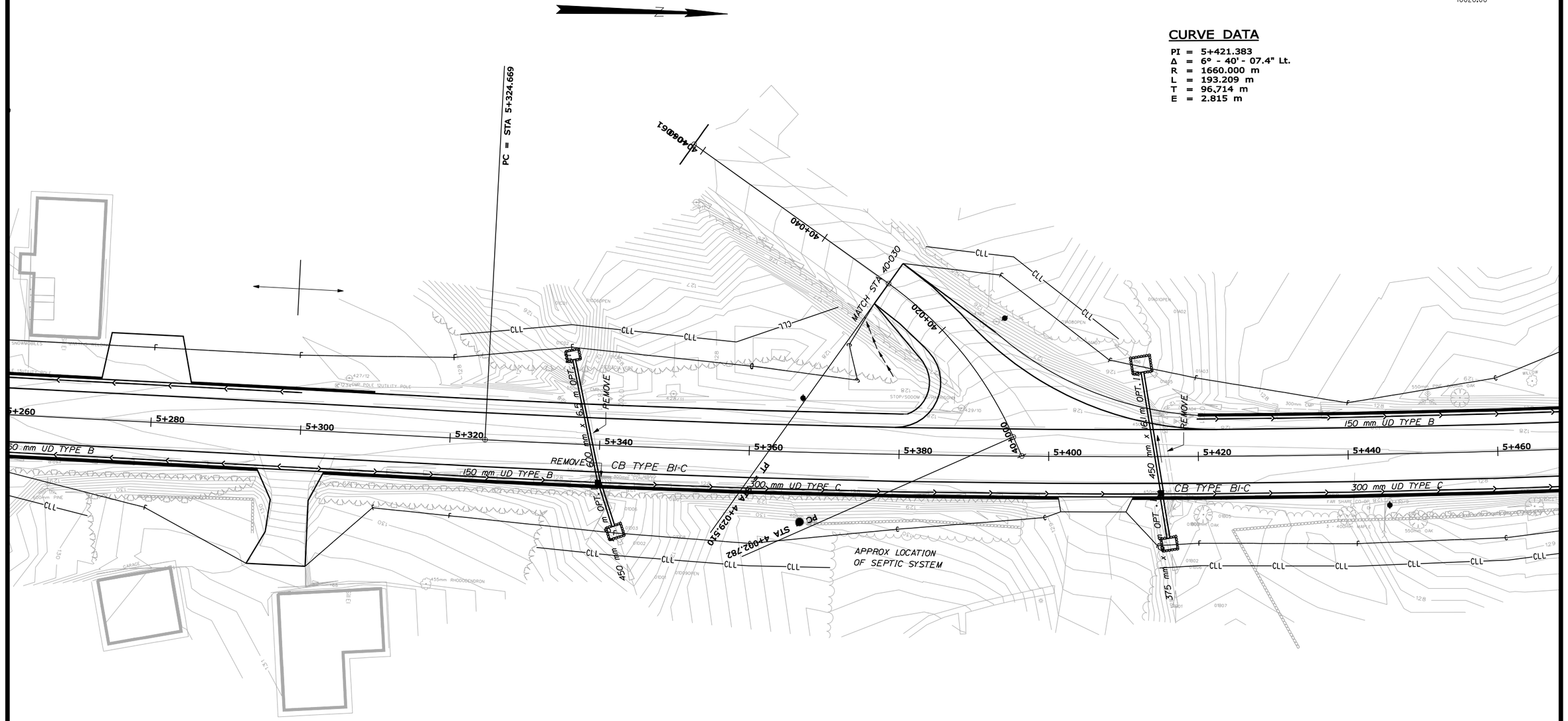
METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	STP-A002(000)X	16	18

10020.00

CURVE DATA

PI = 5+421.383
Δ = 6° - 40' - 07.4" Lt.
R = 1660.000 m
L = 193.209 m
T = 96.714 m
E = 2.815 m



PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K.BRESKIN	OCT 2010
	CHECKED	T.WHITE	-----
	REVISIONS	-----	-----
	FIELD CHANGES	-----	-----

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

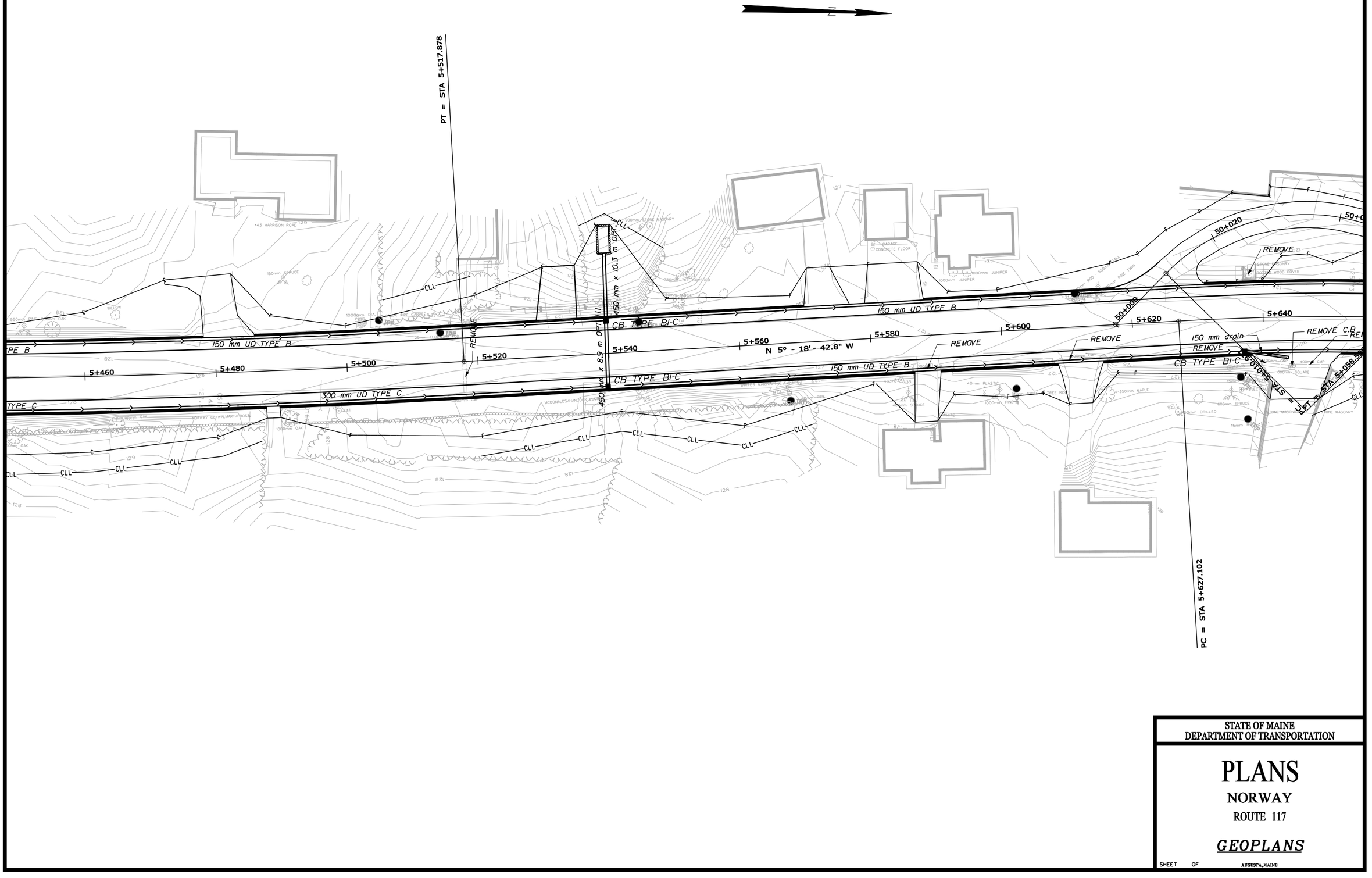
ROUTE 117

GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msto\016_Geoplan16.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	17	18
				10020.00		



PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K.BRESKIN	OCT 2010
CHECKED	-----	-----
REVISIONS	------	------
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

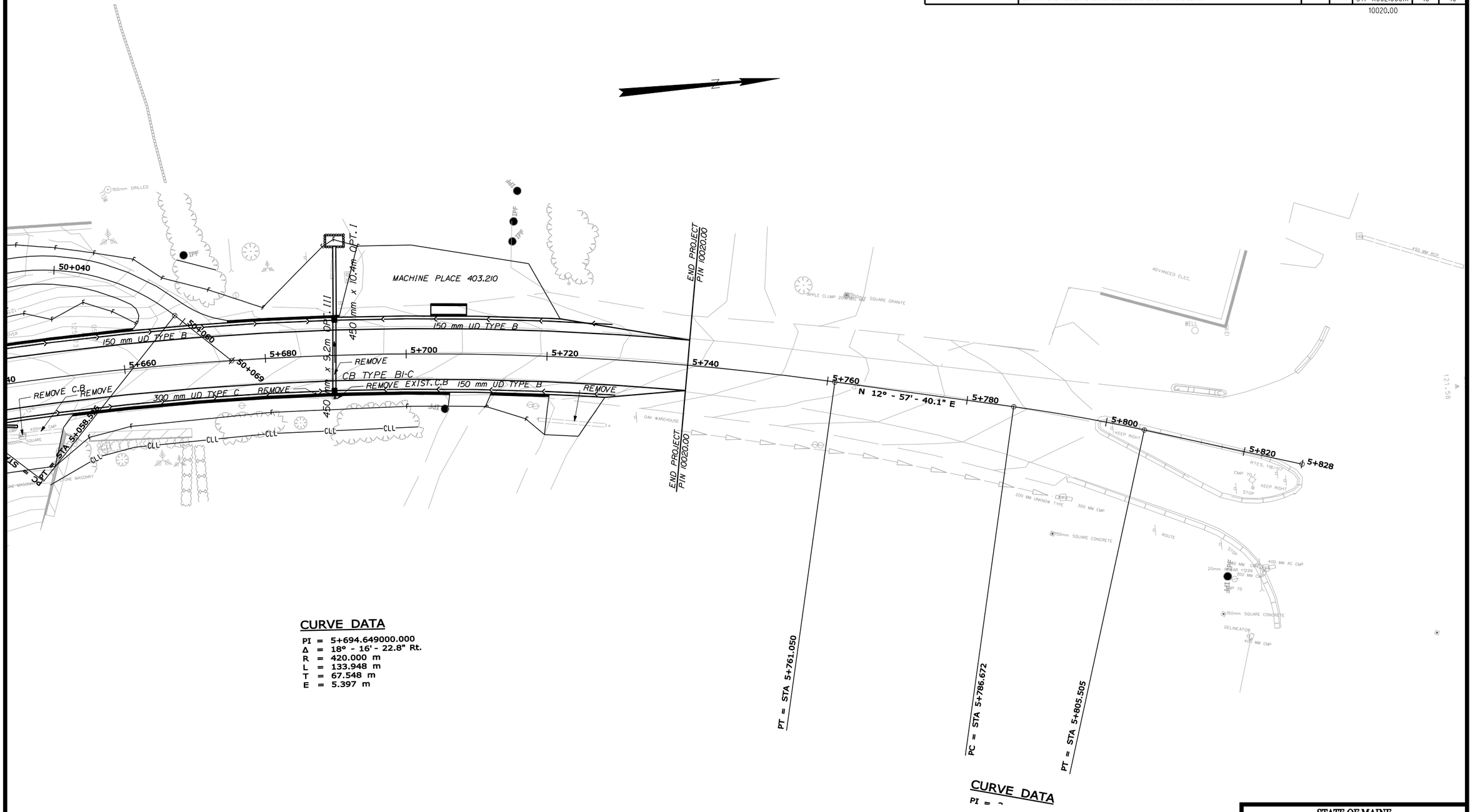
GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msta\017_Geoplan17.dgn Username: terry.white Date:10/18/2010 Division: GEOTECH

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	STP-A002(000)X	18	18

10020.00



CURVE DATA

PI = 5+694.649000.000
Δ = 18° - 16' - 22.8" Rt.
R = 420.000 m
L = 133.948 m
T = 67.548 m
E = 5.397 m

PT = STA 5+761.050

PC = STA 5+786.672

PT = STA 5+805.505

CURVE DATA

PI = 2

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K.BRESKIN	OCT 2010
CHECKED	-----	-----
REVISIONS	------	------
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS

NORWAY

ROUTE 117

GEOPLANS

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\mslo\018_Geoplan18.dgn Division: GEOTECH Username: terry.white Date:10/18/2010

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-101
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	Standard Split Spoon
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5 kg/760 mm
Date Start/Finish:	7/24/03-7/24/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	1+320, 2.5 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	1.43 m bgs.

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.10		PAVEMENT.	
									0.10	
	1D/AB	61.0/35.6	0.30 - 0.91	14/21/18/13	39				Brown, dry, dense, sandy GRAVEL, trace silt. (1D/A) 0.30-0.76 m bgs.	
							-0.76		0.76	
	2D/AB	61.0/38.1	0.91 - 1.52	2/2/2/3	4		-0.98		(1D/B) 0.76-0.98 m bgs. Brown, moist, dense, fine SAND, trace silt.	
1.2									0.98	
							-1.43		(2D/A) 0.98-1.43 bgs. Brown, moist, loose, fine sandy SILT, trace organics.	
									1.43	
									(2D/B) 1.43-1.52 m bgs. Grey, wet, loose, silty fine to coarse SAND.	
							-2.13		2.13	
2.4									**Bottom of Exploration at 2.13 m below ground surface.** No Refusal	
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-102
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	Standard Split Spoon
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5 kg/760 mm
Date Start/Finish:	7/24/03-7/24/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	1+550, 1.8 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	2.13 m bgs.

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.09		PAVEMENT.	
									0.09	
	1D/AB	61.0/35.6	0.30 - 0.91	16/23/17/12	40				Brown, dry, dense, SAND, some gravel, trace silt. (1D/A) 0.30-0.70 m bgs.	G#176201 A-1-b, SW-SM WC=2.4%
							-0.70		0.70	
1.2									(1D/B) 0.70-0.91 m bgs. Light brown, damp, dense, fine SAND, some sile, trace gravel.	G#176202 A-2-4, SM WC=5.6%
	2D	61.0/40.6	1.52 - 2.13	9/14/13/15	27		-1.52		1.52	
									Light brown, moist, medium dense SILT trace gravel.	G#176203 A-4, ML WC=22.8%
2.4							-2.13		2.13	
									Light brown, wet, medium dense, silty fine SAND with medium sand layers.	
	3D	61.0/40.6	3.05 - 3.66	4/5/6/5	11					
3.6							-3.66		3.66	
									Bottom of Exploration at 3.66 m below ground surface. No Refusal	
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: HB-NOR-102

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-103
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	Standard Split Spoon
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5 kg/760 mm
Date Start/Finish:	7/24/03-7/24/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	1+780, 1.7 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	1.58 m bgs.

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.17		PAVEMENT. 0.17	
	1D/AB	61.0/33.0	0.30 - 0.91	16/17/12/10	29		-0.67		Brown, dry, medium dense, sandy GRAVEL, trace silt. (1D/A) 0.30-0.67 m bgs. 0.67	
1.2									(1D/B) 0.67-0.91 m bgs. Light brown, damp, medium dense, fine SAND, trace silt.	
	2D/AB	61.0/35.6	1.52 - 2.13	2/1/2/3	3		-1.58		1.58 (2D/A) 1.58-1.92 m bgs.	
							-1.92		Brown, wet, very loose, fine to medium SAND, organic layers, trace coarse sand. 1.92	
2.4							-2.13		(2D/B) 1.92-2.13 m bgs. Brown, wet, very loose, silty fine to medium SAND. 2.13	
									Bottom of Exploration at 2.13 m below ground surface. No Refusal	
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: HB-NOR-103

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-104
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	Standard Split Spoon
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5 kg/760 mm
Date Start/Finish:	7/24/03-7/24/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	2+020, 2.5 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	1.22 m bgs.

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.07		PAVEMENT.	
							-0.13		0.07	
	1D/AB	61.0/40.6	0.30 - 0.91	20/18/19/21	37				Old unbound Pavement.	
							-0.61		0.13	
									Brown, dry, dense, sandy GRAVEL, trace silt. (1D/A) 0.30-0.61 m bgs.	
1.2									0.61	
							-1.22		(1D/B) 0.61-0.91 m bgs. Grey, damp, dense, fine SAND, trace gravel, trace silt.	
	2D	61.0/7.6	1.52 - 2.13	2/1/1/2	2				1.22	
									Brown, moist, very loose, silty fine to medium SAND, trace coarse sand, trace gravel.	
2.4							-2.13		2.13	
									Bottom of Exploration at 2.13 m below ground surface. No Refusal	
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: HB-NOR-104

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-105
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	Standard Split Spoon
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5 kg/760 mm
Date Start/Finish:	7/24/03-7/24/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	2+225, 2.0 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	2.13 m bgs.

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.09		PAVEMENT.	
	1D	17.8/10.2	0.30 - 0.48	26/25(25)	---				0.09	
							-0.49		Brown, dry, sandy GRAVEL, trace silt.	
									0.49	
1.2									Similar to above with cobbles.	
	2D	12.7/10.2	1.52 - 1.65	50(125)	---		-1.52		1.52	
									Similar to above with brown silty fine to medium sand layers.	
							-2.13		2.13	
2.4									Brown, wet, medium dense, fine to coarse SAND, little gravel.	
	3D	61.0/45.7	3.05 - 3.66	11/10/9/11	19					
3.6							-3.66		3.66	
									Bottom of Exploration at 3.66 m below ground surface.	
									No Refusal	
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: HB-NOR-105

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-106
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	Standard Split Spoon
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5 kg/760 mm
Date Start/Finish:	7/24/03-7/24/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	2+400, 2.1 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.11		PAVEMENT. 0.11	
	1D	61.0/38.1	0.30 - 0.91	28/25/14/23	39				Brown, dry, dense SAND, little silt, some gravel.	G#176204 A-1-b, SW-SM WC=4.2%
1.2										
	2D	61.0/30.5	1.52 - 2.13	7/14/21/32	35					
2.4							-2.29		2.29	
							-2.38		Augered into rock. 2.38	
3.6									**Bottom of Exploration at 2.38 m below ground surface.** Refusal	
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: HB-NOR-106

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-113
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	Standard Split Spoon
Logged By:	K.Breskin	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5 kg/760 mm
Date Start/Finish:	7/28/03-7/28/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	4+940, 1.7 Lt. of existing CL.	**Casing ID/OD:**	N/A	**Water Level*:**	0.91 m bgs.

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.12		ASPHALT PAVEMENT.	
									0.12	
	1D	61.0/35.6	0.30 - 0.91	9/16/9/5	25				Brown, moist, medium dense fine to medium SAND, some silt, trace gravel and cobbles. Cobble at 0.61 m bgs.	G#176210 A-2-4, SM WC=11.1%
1.2										
	2D	61.0/35.6	1.52 - 2.13	2/3/3/3	6		-1.52		1.52 Dark brown, wet, loose SAND, some silt trace gravel.	G#176211 A-2-4, SM WC=29.5%
							-2.13		2.13 **Bottom of Exploration at 2.13 m below ground surface.** No Refusal	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: HB-NOR-113

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-114
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. Breskin	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	7/28/03-7/28/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	4+610, 1.9 Lt. of existing CL.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.12		ASPHALT PAVEMENT. 0.12	
	MD	0.0/0.0	0.30 - 0.30	50(0)	---		-0.30		0.30	
									Bottom of Exploration at 0.30 m below ground surface. Boulder Refusal	
1.2										
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-114A
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	Standard Split Spoon
Logged By:	K. Breskin	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5 kg/760 mm
Date Start/Finish:	7/28/03-7/28/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	4+611, 1.9 Lt. of existing CL.	**Casing ID/OD:**	N/A	**Water Level*:**	1.46 m bgs.

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.12		ASPHALT PAVEMENT. 0.12	
	1D	61.0/40.6	0.30 - 0.91	14/18/10/13	28		-0.34		Red-brown, moist, sandy GRAVEL with cobbles. 0.34	
									Tan, moist, fine SAND, some silt.	
							-0.85		0.85 Brown, moist, fine to medium SAND, some silt.	
1.2										
	2D/AB	61.0/50.8	1.52 - 2.13	10/15/18/24	33		-1.52		1.52 (2D/A) 1.52-1.83 m bgs.	
							-1.83		Brown, saturated, fine SAND 1.83	
							-2.13		(2D/B) 1.83-2.13 m bgs. Brown, saturated, SAND and GRAVEL. 2.13	
2.4									**Bottom of Exploration at 2.13 m below ground surface.** No Refusal	
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: HB-NOR-114A

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-118
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	Standard Split Spoon
Logged By:	K. Breskin	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5 kg/760 mm
Date Start/Finish:	7/28/03-7/28/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	2+670, 2.4 Rt. of existing CL.	**Casing ID/OD:**	N/A	**Water Level*:**	0.82 m bgs.

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.12		ASPHALT PAVEMENT.	
							-0.27		0.12	
	1D	61.0/45.7	0.30 - 0.91	10/12/10/9	22				MACADAM.	
									0.27	
									Brown, moist, medium dense, SAND and GRAVEL.	
							-0.82		0.82	
1.2									Brown, wet, medium dense, SAND and GRAVEL.	
							-1.52		1.52	
	2D/A	35.6/35.6	1.52 - 1.88	22/27/50 (50)			-1.62		(2D) 1.52-1.62 m bgs.	
							-1.65		Brown, wet, fine SAND.	
							-1.71		1.62	
							-1.89		(2D/A) 1.62-1.1.65 m bgs.	
2.4									Red, wet, SAND and GRAVEL.	
									1.65	
									Sample combined with 2D/A.	
									Grey, wet, SAND and GRAVEL.	
									1.71	
									1.89	
3.6									**Bottom of Exploration at 1.89 m below ground surface.**	
									Refusal	
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Probably a boulder.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: HB-NOR-118

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-119
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. Breskin	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	7/28/03-7/28/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	4+400, 19.2 Rt. of existing CL.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.08		ASPHALT PAVEMENT.	
							-0.15		0.08	
									MACADAM.	
									0.15	
									Brown, moist, fine SAND, trace coarse sand.	
							-0.91		0.91	
1.2										
2.4										
							-3.05		3.05	
									Bottom of Exploration at 3.05 m below ground surface.	
3.6									No Refusal	
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Old stage road.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: HB-NOR-119

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: HB-NOR-120
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. Breskin	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	7/28/03-7/28/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	4+421, 21.0 Lt. of existing CL.	**Casing ID/OD:**	N/A	**Water Level*:**	1.68 m bgs.

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.08		ASPHALT PAVEMENT.	
									0.08	
									Brown, moist, fine SAND, some gravel.	
							-0.91		0.91	
1.2									Boulder from 1.37-1.83 m bgs.	
									Boulder from 2.13-2.44 m bgs.	
2.4										
							-3.05		3.05	
									Bottom of Exploration at 3.05 m below ground surface.	
3.6									No Refusal	
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Country Club Road, no macadam.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: HB-NOR-120

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: P-1
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. Breskin	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	7/28/03-7/28/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	2+530, 3.6 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	N/A

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA			Last 0.46 m got harder.	
1.2										
2.4										
							-3.05		3.05	
3.6									**Bottom of Exploration at 3.05 m below ground surface.** No Refusal	
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Boulder in Rt. and Lt. banks.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: P-1

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: P-2
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. Breskin	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	7/28/03-7/28/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	2+510, 3.6 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	N/A

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA			Last 2.13 m got harder.	
1.2										
2.4										
							-3.05		3.05 **Bottom of Exploration at 3.05 m below ground surface.** No Refusal	
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Boulder in Rt. and Lt. banks.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: P-2

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: Route 117
Location: Norway, Maine

Boring No.: P-3
PIN: 10020.00

Driller:	MDOT	**Elevation (m):**		**Auger ID/OD:**	125 mm
Operator:	C. Mann	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. Breskin	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	7/28/03-7/28/03	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	2+490, 3.1 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	N/A

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA			Last 0.46 m got harder.	
1.2										
2.4										
							-3.05		3.05 **Bottom of Exploration at 3.05 m below ground surface.** No Refusal	
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Boulder in Rt. and Lt. banks.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: P-3

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Paving
	Silty sand and gravel
	Poorly graded silty fine sand
	Description not given for: "0J"
	Silty sand
	Sand
	Description not given for: "SJ"
	Poorly graded sand
	Description not given for: "YZ:"
	Variable sand and silt mix
	Description not given for: "08B"
	Basalt (or generic rock)

Symbol	Description
	Description not given for: "0B"
	Blank
	Description not given for: "8S"
Misc. Symbols	
	Description not given for: "DOWNAROW"

Notes:

1. Exploratory borings were drilled on 7/28/03-7/28/03 using a 5-inch diameter continuous flight power auger.

2. No free water was encountered at the time of drilling or when re-checked the following day.

3. Boring locations were taped from existing features and elevations extrapolated from the final design schematic plan.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

State of Maine - Department of Transportation

Laboratory Testing Summary Sheet

Town(s): Norway Project Number: 10020.00

Boring & Sample Identification Number	Station (Meter)	Offset (Meter)	Depth (Meter)	Reference Number	G.S.D.C. Sheet	W.C.	L.L.	P.I.	Classification		
									Unified	AASHTO	Frost
HB-NOR-102, 1D/A	1+550	1.8 Rt.	0.30-0.70	176201	1	2.4			SW-SM	A-1-b	0
HB-NOR-102, 1D/B	1+550	1.8 Rt.	0.70-0.91	176202	1	5.6			SM	A-2-4	II
HB-NOR-102, 2D	1+550	1.8 Rt.	1.52-2.13	176203	1	22.8			ML	A-4	IV
HB-NOR-106, 1D	2+400	2.1 Rt.	0.30-0.91	176204	1	4.2			SW-SM	A-1-b	0
HB-NOR-113, 1D	4+940	1.7 Lt.	0.30-0.91	176210	3	11.1			SM	A-2-4	II
HB-NOR-113, 2D	4+940	1.7 Lt.	1.52-2.13	176211	3	29.5			SM	A-2-4	II

Classification of these soil samples is in accordance with AASHTO Classification System M-145-40. This classification is followed by the "Frost Susceptibility Rating" from zero (non-frost susceptible) to Class IV (highly frost susceptible). The "Frost Susceptibility Rating" is based upon the MDOT and Corps of Engineers Classification Systems.

GSDC = Grain Size Distribution Curve as determined by AASHTO T 88-93 (1996) and/or ASTM D 422-63 (Reapproved 1998)

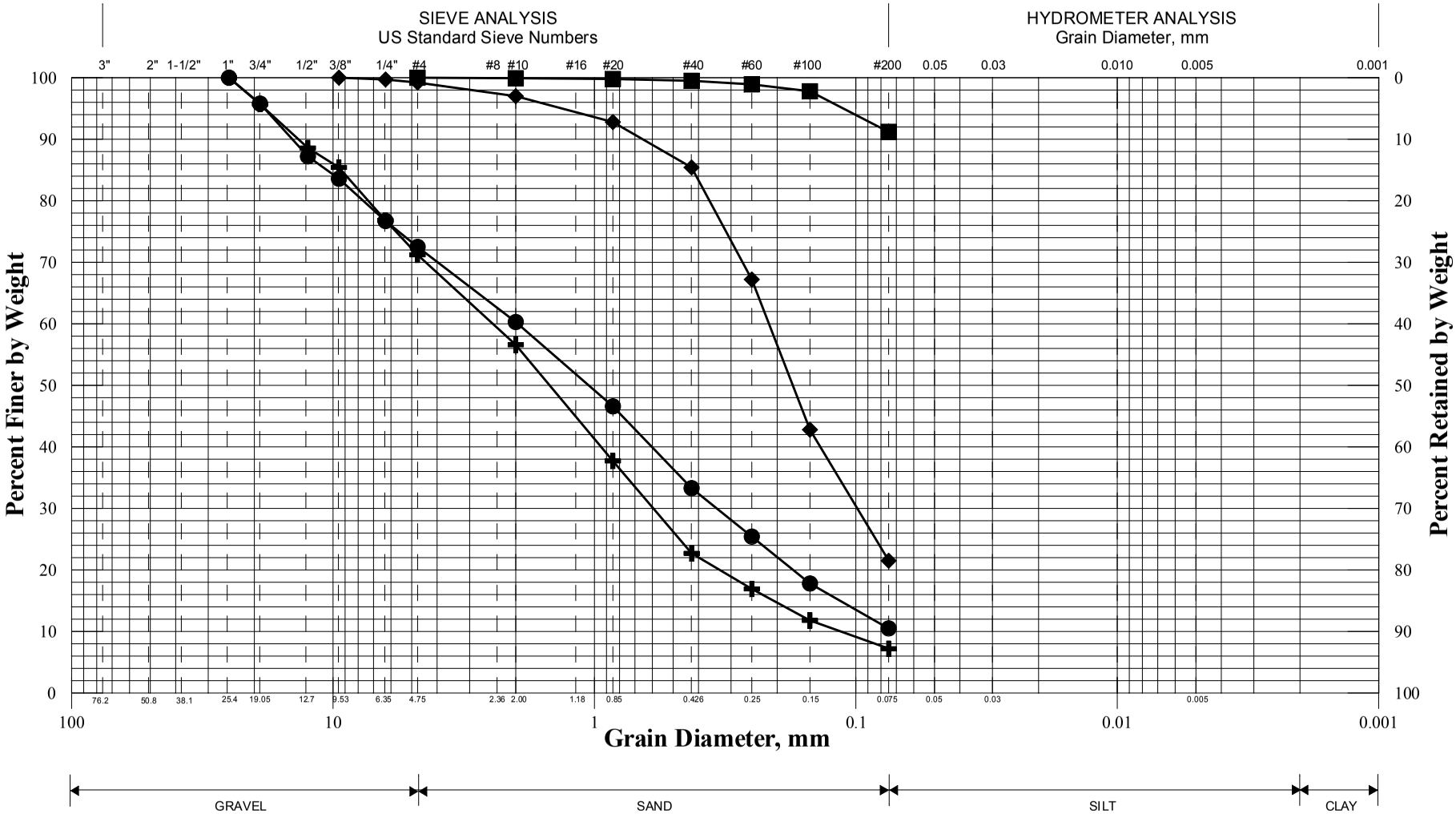
WC = water content as determined by AASHTO T 265-93 and/or ASTM D 2216-98

LL = Liquid limit as determined by AASHTO T 89-96 and/or ASTM D 4318-98

PI = Plasticity Index as determined by AASHTO 90-96 and/or ASTM D4318-98

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE



UNIFIED CLASSIFICATION

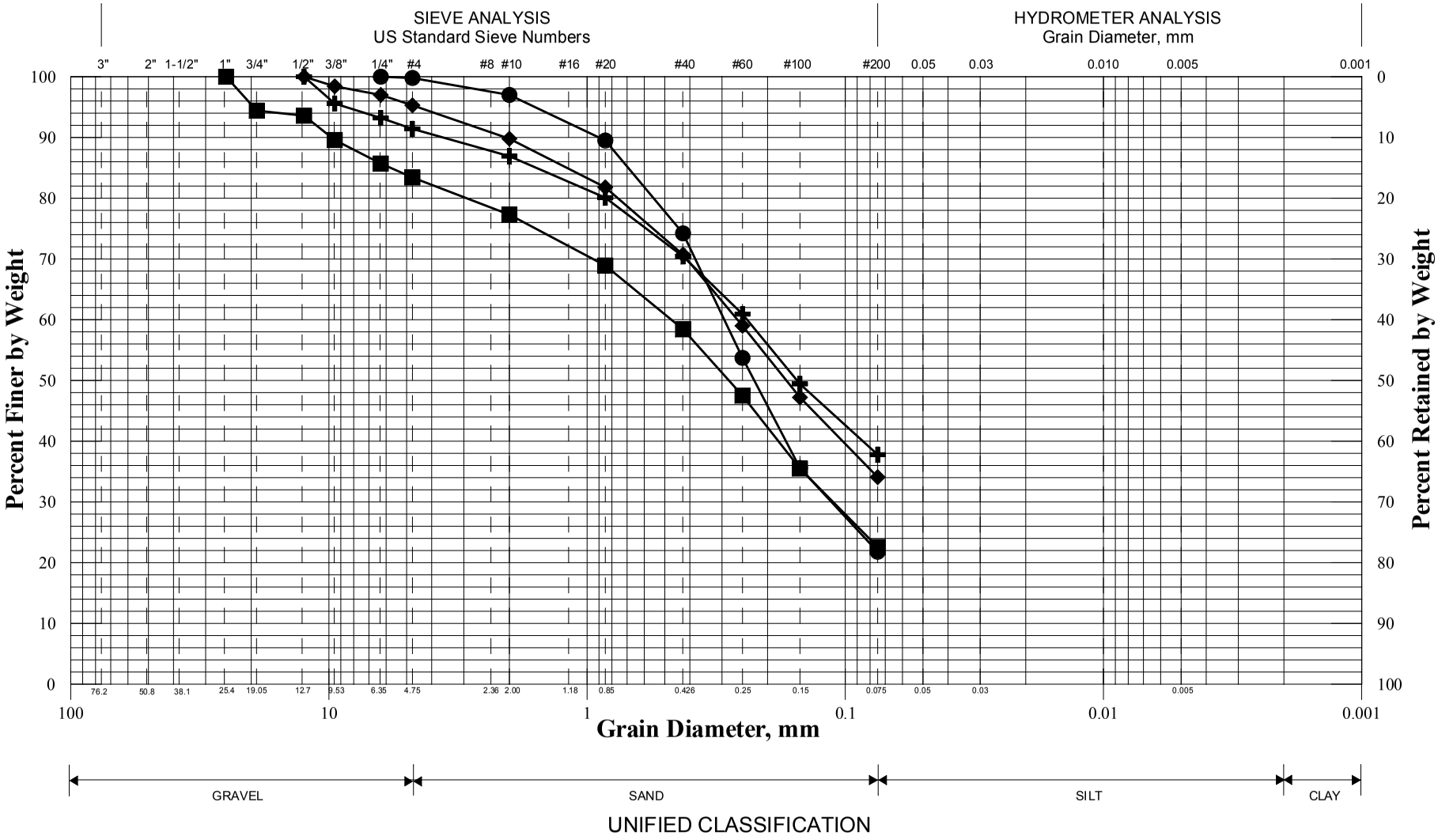
	Boring No.	Sample No.	Depth (m)	Description	w%	LL	PL	PI
+	HB-NOR-102	1D/A	0.30-0.70	SAND, some gravel, trace silt.	2.4			
◆	HB-NOR-102	1D/B	0.70-0.91	SAND, some silt, trace gravel.	5.6			
■	HB-NOR-102	2D	1.52-2.13	SILT, trace sand.	22.8			
●	HB-NOR-106	1D	0.30-0.91	SAND, some gravel, little silt.	4.2			
▲								
×								

PIN: 10020.00
Town: Norway
Reported by: T. White
Date: 8/26/03

SHEET NO. 1

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE



UNIFIED CLASSIFICATION

	Boring No.	Sample No.	Depth (m)	Description	w%	LL	PL	PI
+	HB-NOR-117	2D	1.52-2.13	Silty SAND, trace gravel.	10.3			
◆	HB-NOR-116	2D	1.52-2.13	SAND, some silt, trace gravel.	8.2			
■	HB-NOR-113	1D	0.30-0.91	SAND, some silt, little gravel.	11.1			
●	HB-NOR-113	2D	1.52-2.13	SAND, some silt, trace gravel.	29.5			
▲								
×								

PIN: 10020.00
Town: Norway
Reported by: T. White
Date: 8/26/03

SHEET NO. 3