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Sewall partners with clients to create practical, sustainable solutions.*

Ground Control Report

Ground Control Quality Check Points for the Coastal Northeast LiDAR project

State of Massachusetts Project

USGS Task Order G10PD02143 and G10PD01027

Prepared for:
Photo Science, Inc.

2 March 2011

Control Survey Report

Massachusetts Ground Control Quality Check Points

For the Northeast LiDAR Project

Task Order No.: G10PD02143 and G10PD01027

US Geological Survey

1400 Independence Road

Rolla, Missouri 65401

James W. Sewall Company was contracted by Photo Science, Inc. to locate a total of 60 quality assurance check points for this project. These points were divided into the following point designations: 5 BVY's, 7 CQX's, 3 EWB's, 5 GHG's, 8 HYA's, 5 LWM's, 7 MVY's, 5 OWD's, 5 PVC's, 5 PYM's, and 5 TAN's. These points were located on relatively flat terrain on surfaces that generally consisted of grass, gravel or bare earth.

Field work was conducted by four staff surveyors during November and December of 2010 with Topcon dual-frequency survey grade GPS receivers to locate the check points. Static sessions lasting a minimum of twenty minutes were conducted. Published control points were located during the course of the day to serve as a horizontal and vertical check. GPS session log sheets were completed along with several photos and a taping sketch which accompany this report.

The GPS data was submitted to NGS using the OPUS-RS utility. A sample of the data was post processed in Trimble Geomatics Office and / or Topcon Tools and processed using the nearest Continuously Operating Reference Station (CORS) to check the OPUS-RS results. CORS stations used in processing are referenced with the processed data and included in this report.

The horizontal coordinates are Universal Transverse Mercator (UTM) coordinate system Zone 19; units are in meters, and the datum is the North American Datum of 1983 (NAD83). Vertical data is in the North American Vertical Datum of 1988 (NAVD88) Geoid09.



Ground Control Report Coastal Northeast LiDAR Project Massachusetts

GPS Control Survey Results

- 1.0 Coordinate Summary and Overview Map Location
- 2.0 Field Data Sheets & OPUR RS Solution Reports
- 3.0 Published Control Locations

1.0 Coordinate Summary
and Overview Map

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project -BVY data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
BVY6	369177.668	4723806.665	8.828	8" spike
BVY7	347300.215	4706608.750	6.951	8" spike
BVY8	349057.309	4722359.550	16.884	8" spike
BVY9	340999.315	4718039.378	20.619	8" spike
BVY10	332397.550	4710965.062	37.305	8" spike

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
844-1551A	367636.696	4724176.560	3.196	BBBJ40

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project - CQX data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
CQX39	419507.501	4630181.588	3.495	8" spike
CQX40	419788.954	4616980.312	13.493	8" spike
CQX41	413207.162	4620294.691	30.839	8" spike
CQX42	404097.758	4621899.937	10.672	8" spike
CQX43	405477.038	4613300.576	3.131	8" spike
CQX44	395123.282	4614934.960	11.466	8" spike
CQX45	420198.003	4612207.610	14.315	8" spike

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
6121C	401971.846	4656086.481	3.502	BBBV11
BM2-56	364185.832	4620445.270	5.220	BBBL81
AMTS	365500.816	4622381.409	11.877	BOURNE
OMTS	416273.160	4625421.929	16.937	ORLEANS

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project -EWB data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
EWB31	325170.063	4610547.129	57.585	Flagging
EWB32	340674.319	4619387.934	14.652	8" spike
EWB33	351734.546	4626708.033	12.406	8" spike

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
PC191A	320631.350	4618854.917	37.107	LW5833

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project -GHG data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
GHG16	353983.870	4675729.144	15.456	8" spike
GHG17	359222.873	4661893.355	4.582	Flagging
GHG18	350984.924	4669332.906	27.628	8" spike
GHG19	351873.541	4661021.711	10.571	8" spike
GHG20	350905.404	4655033.651	34.432	8" spike

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
DH-1	317571.969	4679949.457	74.083	BBBP74

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project -HYA data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
HYA46	389643.558	4617224.720	17.792	Flagging
HYA47	379462.524	4622285.384	4.996	8" spike
HYA48	372359.721	4628757.648	32.729	8" spike
HYA49	365600.366	4619242.074	1.545	8" spike
HYA50	375489.236	4612482.121	32.719	Flagging
HYA51	384702.826	4609150.144	10.159	8" spike
HYA52	383353.998	4615458.465	29.449	8" spike
HYA53	375781.376	4618544.046	50.530	8" spike

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
6121C	401971.846	4656086.481	3.502	BBBV11
BM2-56	364185.832	4620445.270	5.220	BBBL81
AMTS	365500.816	4622381.409	11.877	BOURNE
OMTS	416273.160	4625421.929	16.937	ORLEANS

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project -LWM data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
LWM1	350458.264	4745033.420	3.406	8" spike
LWM2	354368.535	4727031.438	1.970	8" spike
LWM3	307054.168	4727980.289	36.875	8" spike
LWM4	328734.231	4721259.982	75.637	8" spike
LWM5	335094.782	4735654.683	50.340	Flagging

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
489-0440	312889.562	4741878.151	81.552	BBBS84

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project -MVY data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
MVY54	377048.968	4605881.560	7.978	8" spike
MVY55	370805.012	4609211.549	23.357	8" spike
MVY56	365726.014	4611954.673	10.082	8" spike
MVY57	361295.068	4597985.619	16.570	8" spike
MVY58	367785.558	4605329.670	15.656	8" spike
MVY59	363771.138	4606736.144	15.150	Flagging
MVY60	368465.301	4600651.526	1.442	Flagging

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
6121C	401971.846	4656086.481	3.502	BBBV11
BM2-56	364185.832	4620445.270	5.220	BBBL81
AMTS	365500.816	4622381.409	11.877	BOURNE
OMTS	416273.160	4625421.929	16.937	ORLEANS

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project -OWD data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
OWD21	342128.709	4685368.466	1.890	8" spike
OWD22	342731.929	4679492.702	3.762	8" spike
OWD23	344601.729	4673248.635	36.767	8" spike
OWD24	332112.493	4669139.079	41.373	8" spike
OWD25	316501.974	4676409.520	65.992	8" spike

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
DH-1	317571.969	4679949.457	74.083	BBBP74

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project -PVC data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
PVC34	399288.506	4659008.559	1.995	8" spike
PVC35	400925.495	4654597.157	2.997	8" spike
PVC36	409257.354	4655354.807	14.691	8" spike
PVC37	413172.686	4649640.038	6.203	8" spike
PVC38	418044.257	4638011.496	6.371	8" spike

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
6121C	401971.846	4656086.481	3.502	BBBV11
BM2-56	364185.832	4620445.270	5.220	BBBL81
AMTS	365500.816	4622381.409	11.877	BOURNE
OMTS	416273.160	4625421.929	16.937	ORLEANS

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project -PYM data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
PYM11	360930.053	4653791.053	11.085	8" spike
PYM12	372086.508	4633766.032	8.867	8" spike
PYM13	344895.511	4658761.902	30.022	8" spike
PYM14	343534.822	4644928.889	14.500	Flagging
PYM15	354466.340	4632286.332	24.799	8" spike

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
DH-1	317571.969	4679949.457	74.083	BBBP74

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.

Control Summary

Project Number: 75980S - Massachusetts
 Project Name: Photo Science Inc - NE Lidar Project -PYM data
 Horizontal Datum: UTM NAD83 (Zone 19)
 Vertical Datum: NAVD 88 (GEOID09)
 Units: Meters
 Date: December 15, 2010

Station	Easting (X)	Northing (Y)	Elevation	Description
TAN26	316694.183	4622321.148	6.825	Flagging
TAN27	326973.192	4631096.404	8.433	8" spike
TAN28	317571.969	4679949.469	74.040	8" spike
TAN29	336412.858	4626938.862	26.870	8" spike
TAN30	320527.427	4616658.491	69.530	Flagging

Published Control Summary

Station	Easting (X)	Northing (Y)	Elevation	Name
DH-1	317571.969	4679949.457	74.083	BBBP74
PC191A	320631.350	4618854.917	37.107	LW5833

Notes: 1. Coordinates and elevations were derived from our GPS observations using OPUS RS processing and also Topcon Tools.
 2. Datum and unit conversions performed using Corpscon v.6.0.1 software.









2.0 Field Data Sheets & OPUS RS Solution Reports

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P.O. Box 433
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207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

LWM1

Proj. No.:

75980S

STATE Massachusetts

COUNTY Essex

LOCATION: Salisbury

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE 42-50-35.7

HGT. MTS

LONGITUDE 70-49-48.0

3.41

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

I

DATE:

12/01/10

DAY OF YEAR

335

START TIME

13:12

END TIME

13:35

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

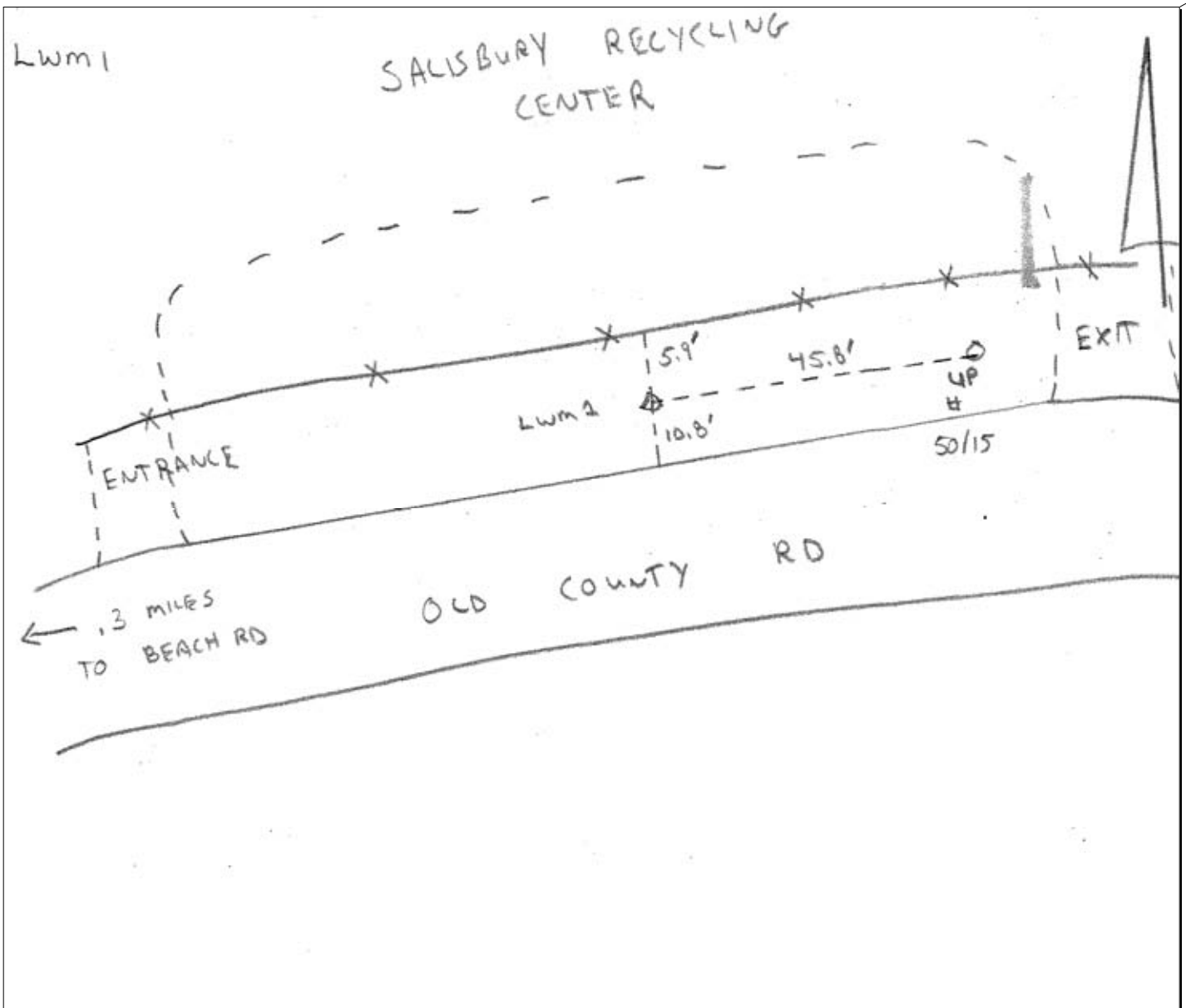
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:

1 of 2

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JOB REFERENCE

NE LIDAR

POINT ID:

LWM2

Proj. No.:

75980S

STATE Massachusetts

COUNTY Essex

LOCATION: Iswich

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE 42-40-55.1

HGT. MTS

LONGITUDE 70-46-39.2

1.97

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

L

DATE:

12/01/10

DAY OF YEAR

335

START TIME

15:02

END TIME

15:22

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Field

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

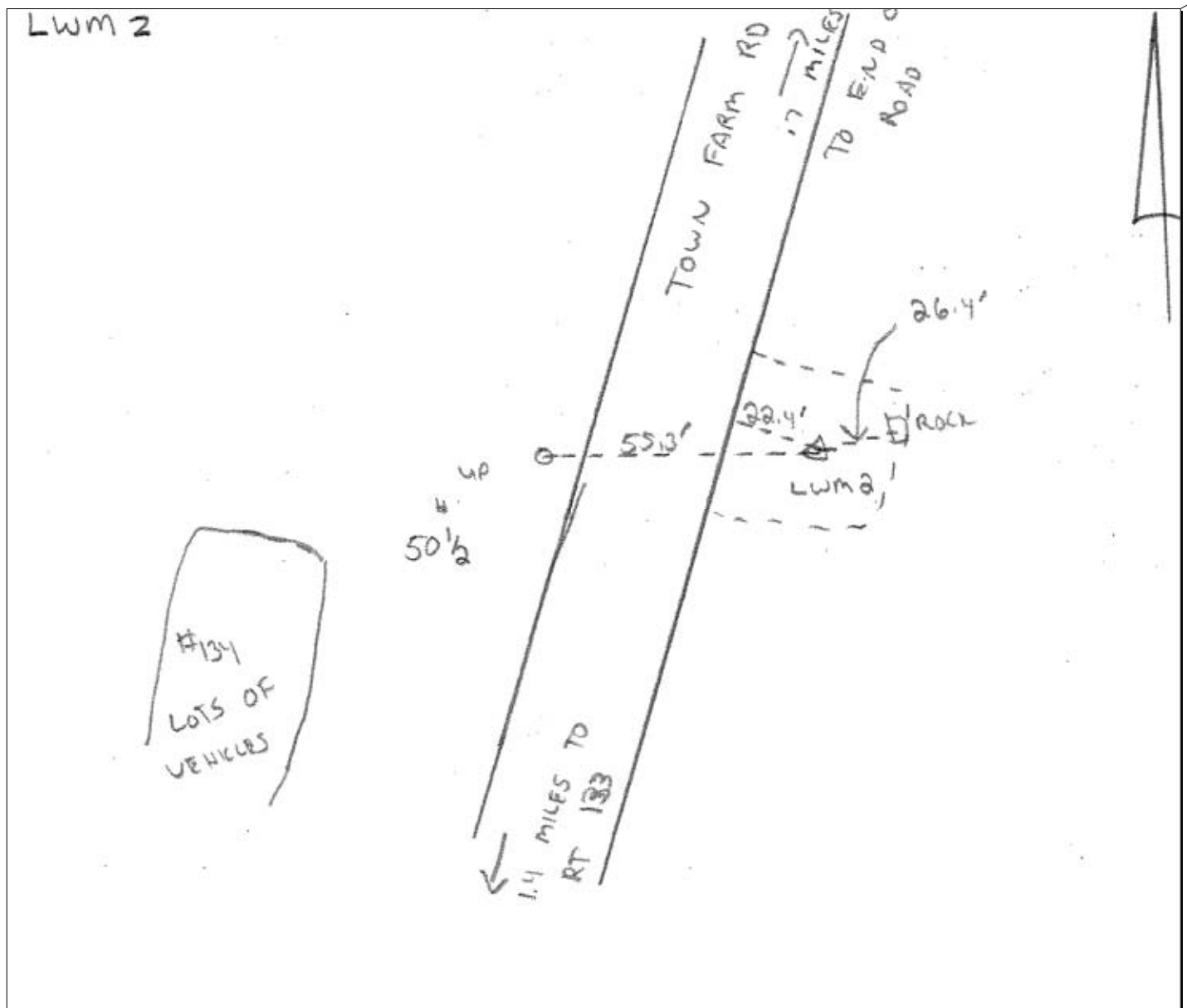
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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JOB REFERENCE

NE LIDAR

POINT ID:

LWM3

Proj. No.:

75980S

STATE Massachusetts

COUNTY Middlesex

LOCATION: Tynesborough

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE 42-40-48.4

HGT. MTS

LONGITUDE 71-21-17.8

36.88

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

C

DATE:

12/01/10

DAY OF YEAR

335

START TIME 07:57

END TIME 08:17

U.T.C.

X

LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

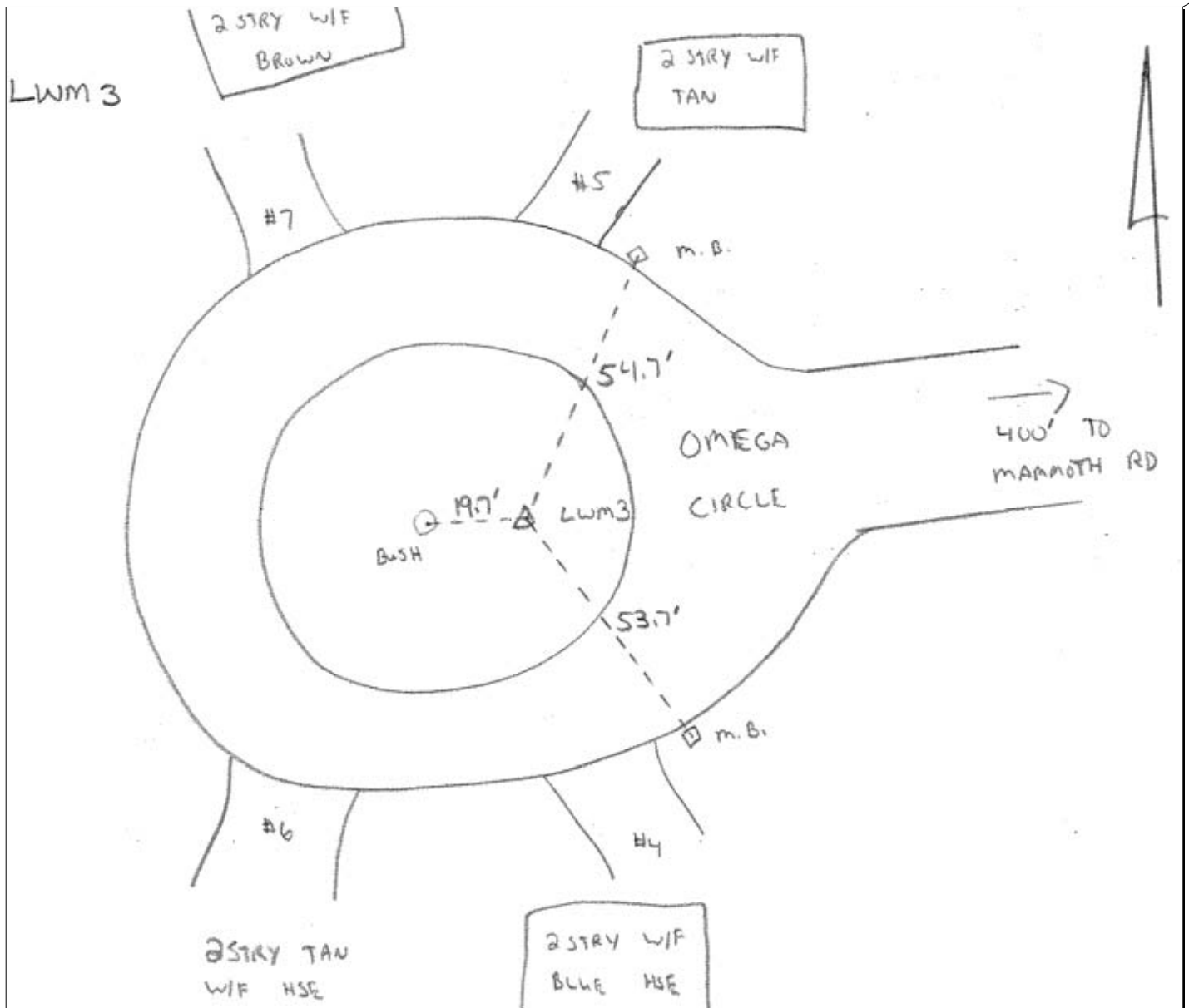
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:

1 of 2

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JOB REFERENCE

NE LIDAR

POINT ID:

LWM4

Proj. No.:

75980S

STATE Massachusetts

COUNTY Essex

LOCATION: North Andover

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE 42-37-29.1

HGT. MTS

LONGITUDE 71-05-18.6

75.64

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

J

DATE:

12/02/10

DAY OF YEAR

336

START TIME

13:43

END TIME

14:04

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Field

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

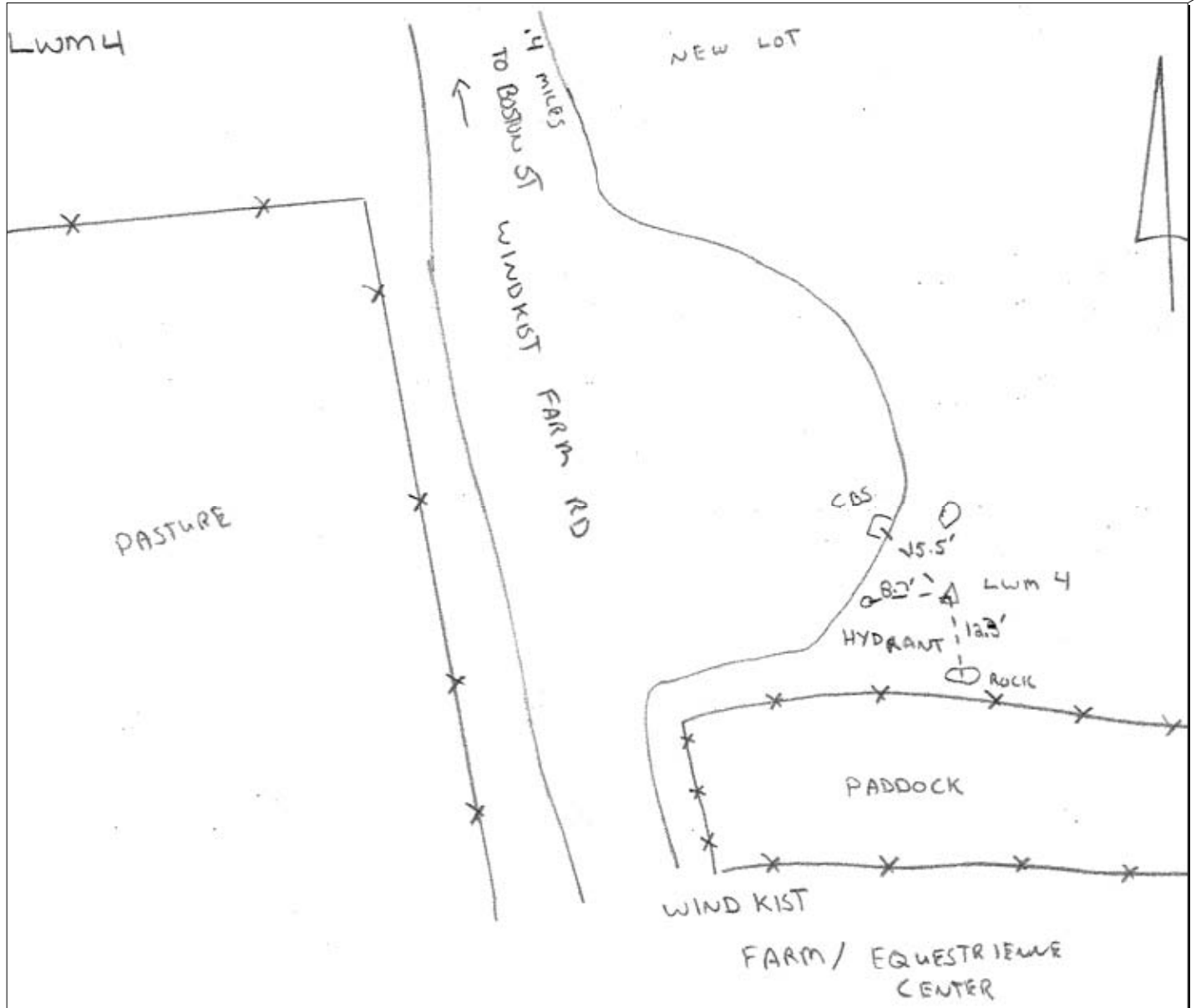
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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JOB REFERENCE

NE LIDAR

POINT ID:

LWM5

Proj. No.:

75980S

STATE Massachusetts

COUNTY Essex

LOCATION: Haverhill

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE 42-45-20.35

HGT. MTS

LONGITUDE 71-00-54.6

50.34

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

G

DATE:

12/01/10

DAY OF YEAR

335

START TIME

11:26

END TIME

11:46

U.T.C.

X LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

Point on Lawn, Private Property

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

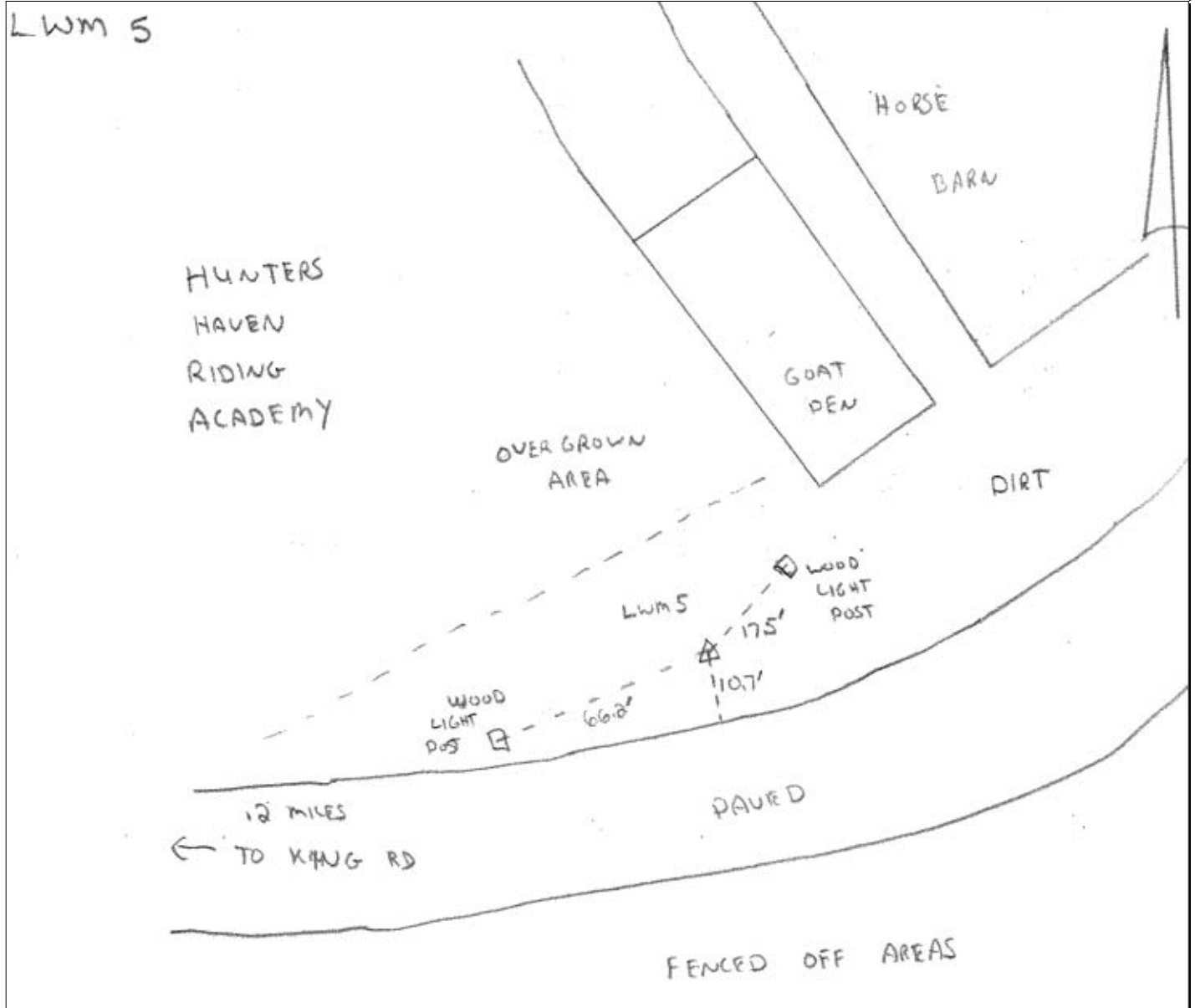
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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JOB REFERENCE
NE LIDAR

POINT ID: BVY6
Proj. No.: 75980S

STATE Massachusetts

COUNTY Essex

LOCATION: Rockport

OPERATOR E Jellison

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

LATITUDE 42-39-20.2
LONGITUDE 70-35-46.0
HGT. MTS 8.83

RECEIVER S/N 272-0793

ANTENNA INFO

SESSION

DATE: 12/02/10

RADIUS (M)

B

DAY OF YEAR 336

Antenna Serial #

START TIME 07:05

U.T.C.

Antenna Type

END TIME 07:26

X LOCAL

ANTENNA HEIGHT (SLANT)

Collection Rate

MTRS/FT

5 SECONDS

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

TOP OF MONUMENT IS: X FLUSH

MTRS/FT

1.8 Meters

MTRS/FEET ABOVE GROUND

MEASURED

X

FIXED HGT

MTRS/FEET BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

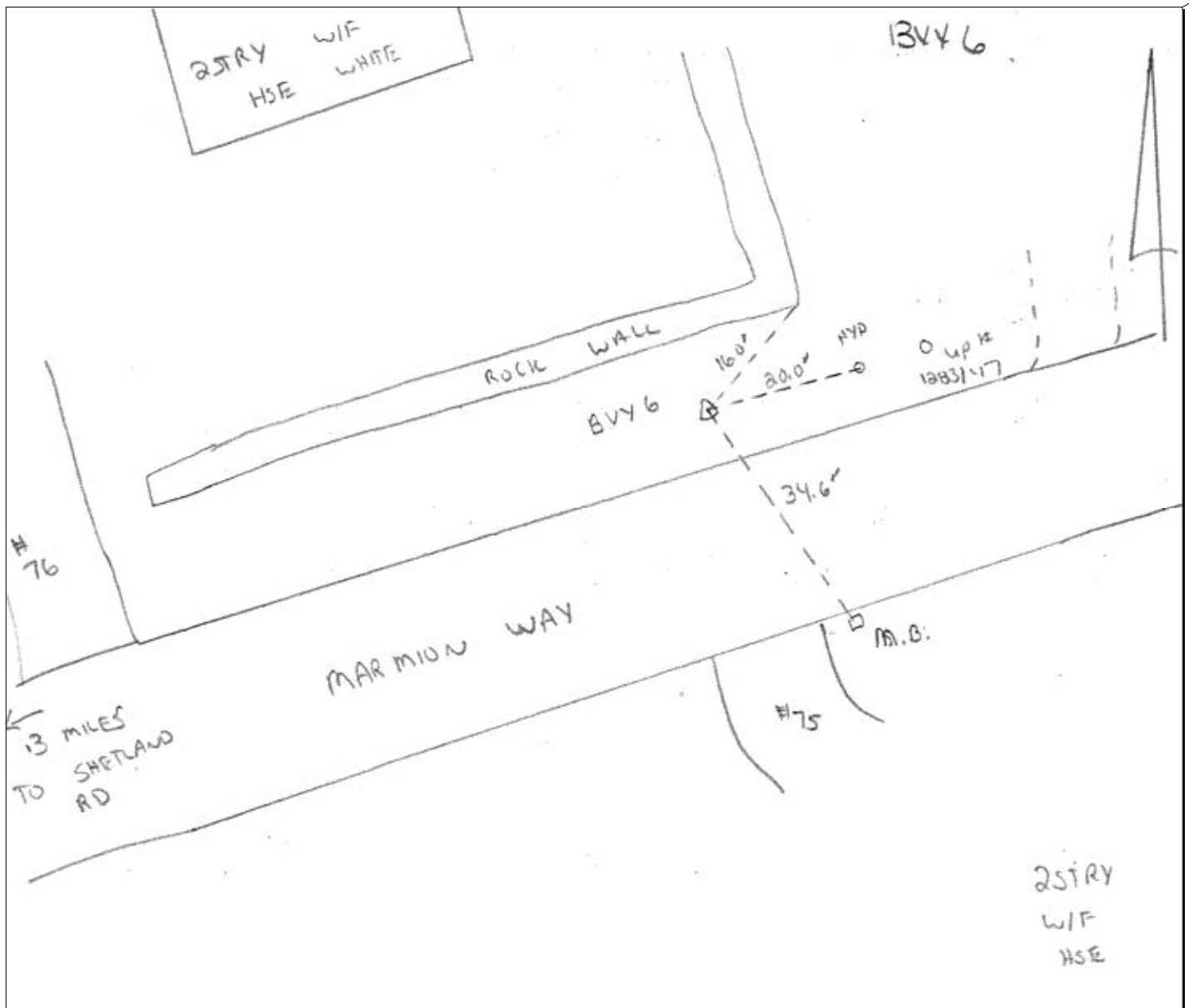
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

BVY7

Proj. No.:

75980S

STATE Massachusetts

COUNTY Essex

LOCATION: Marblehead

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE 42-29-48.4

HGT. MTS

LONGITUDE 70-51-29.9

6.95

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

F

DATE:

12/02/10

DAY OF YEAR

336

START TIME

10:26

END TIME

10:46

X

U.T.C.

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

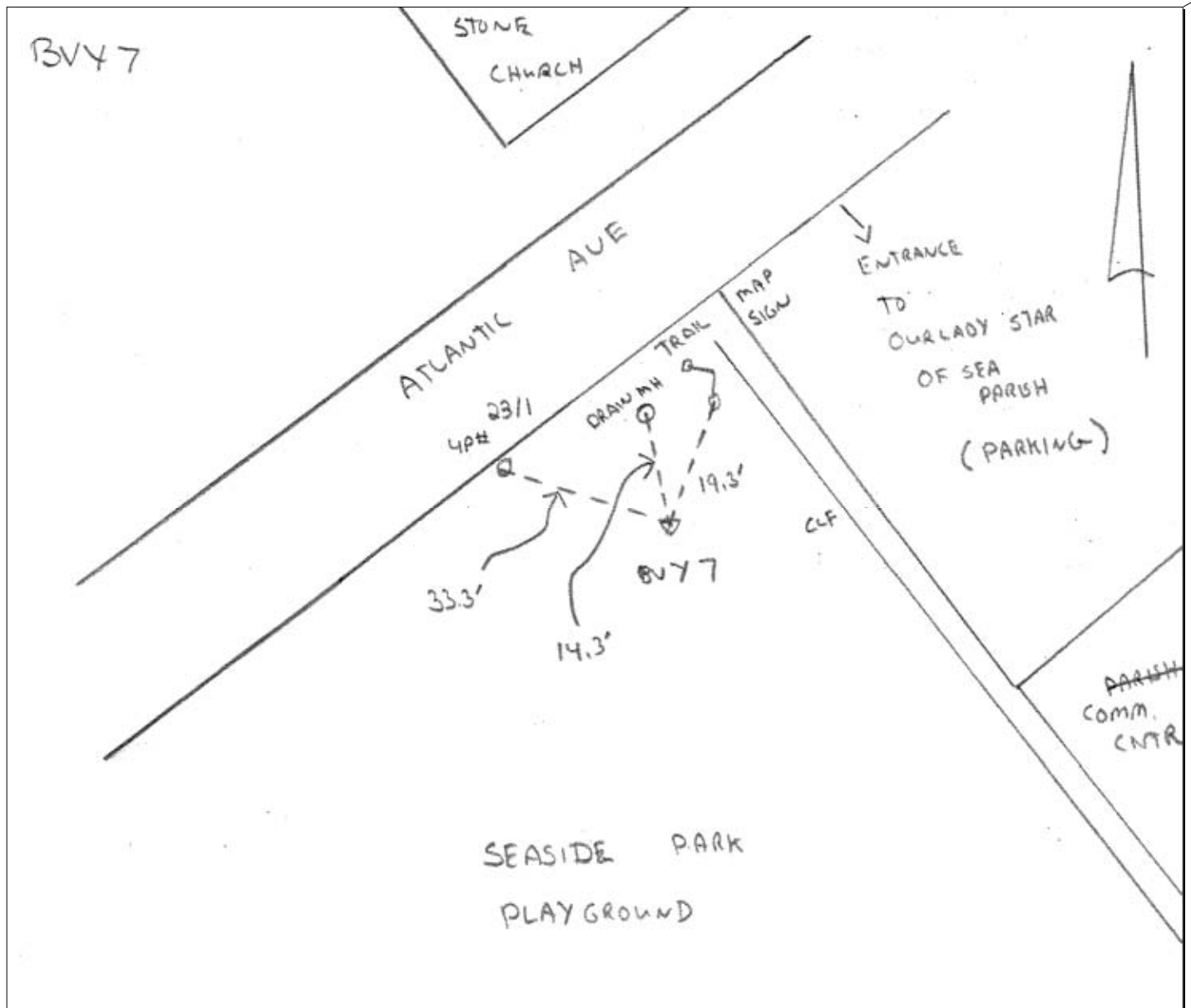
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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136 Center Street
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207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

BVY8

Proj. No.:

75980S

STATE Massachusetts

COUNTY Essex

LOCATION: Ipswich

OPERATOR E Jellison

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

LATITUDE 42-38-20.0 HGT. MTS

RECEIVER S/N 272-0793

LONGITUDE 70-50-27.9

ANTENNA INFO

SESSION

DATE:

12/02/10

RADIUS (M)

D

DAY OF YEAR

336

Antenna Serial #

START TIME 08:39

U.T.C.

Antenna Type

END TIME 09:00

X

LOCAL

ANTENNA HEIGHT (SLANT)

Collection Rate

MTRS/FT

MEASURED

FIXED HGT.

5

SECONDS

ANTENNA HEIGHT (ARP)

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FT

1.8 Meters

MTRS/FEET

ABOVE GROUND

MEASURED

X

FIXED HGT

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Grass

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

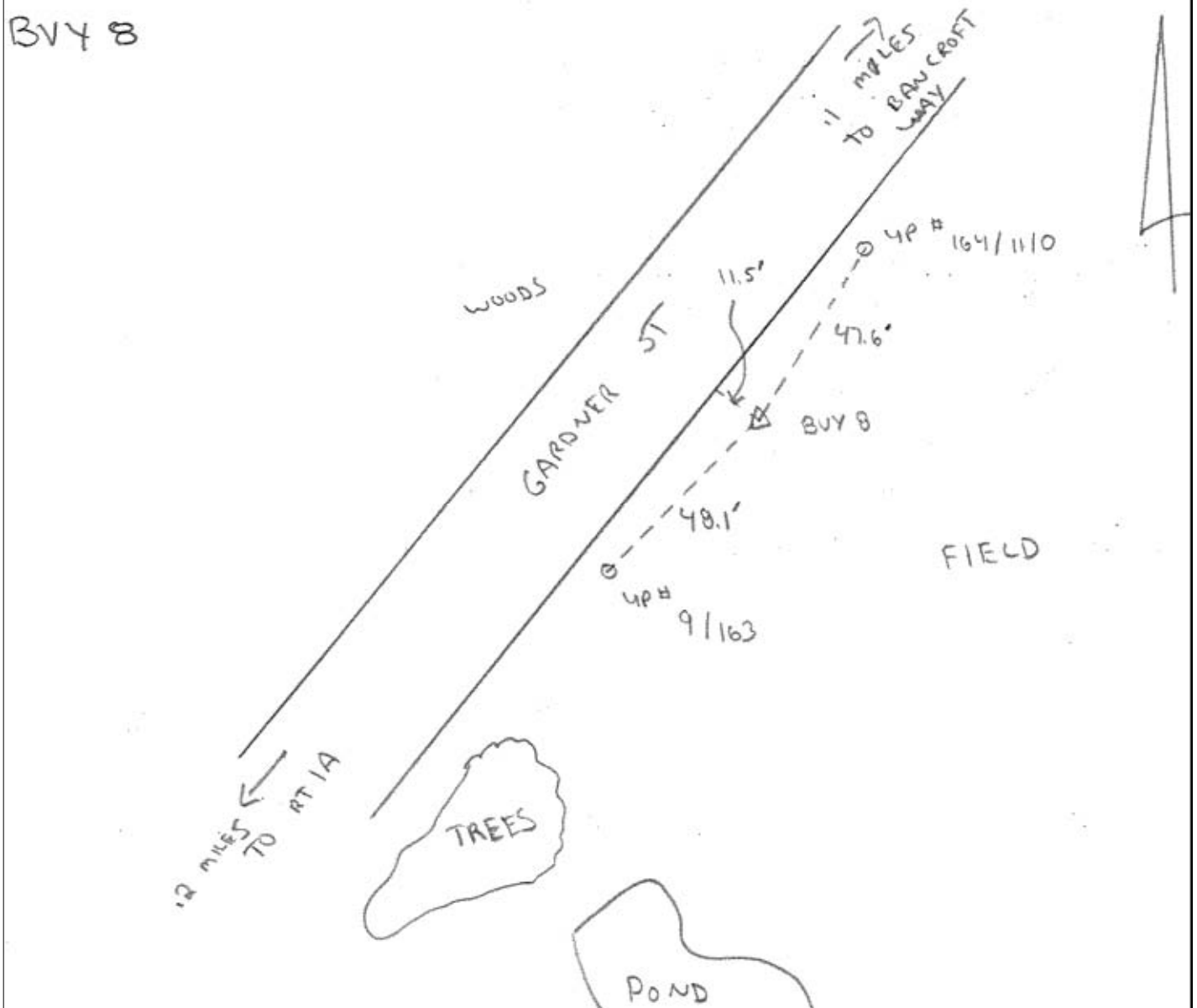
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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JOB REFERENCE

NE LIDAR

POINT ID:

BVY9

Proj. No.:

75980S

STATE Massachusetts

COUNTY Essex

LOCATION: Danvers

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE

42-35-54.2

HGT. MTS

LONGITUDE

70-56-17.2

20.62

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0793

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/02/10

Antenna Serial #

E

DAY OF YEAR

336

Antenna Type

START TIME

09:27

U.T.C.

END TIME

09:48

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Gravel

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

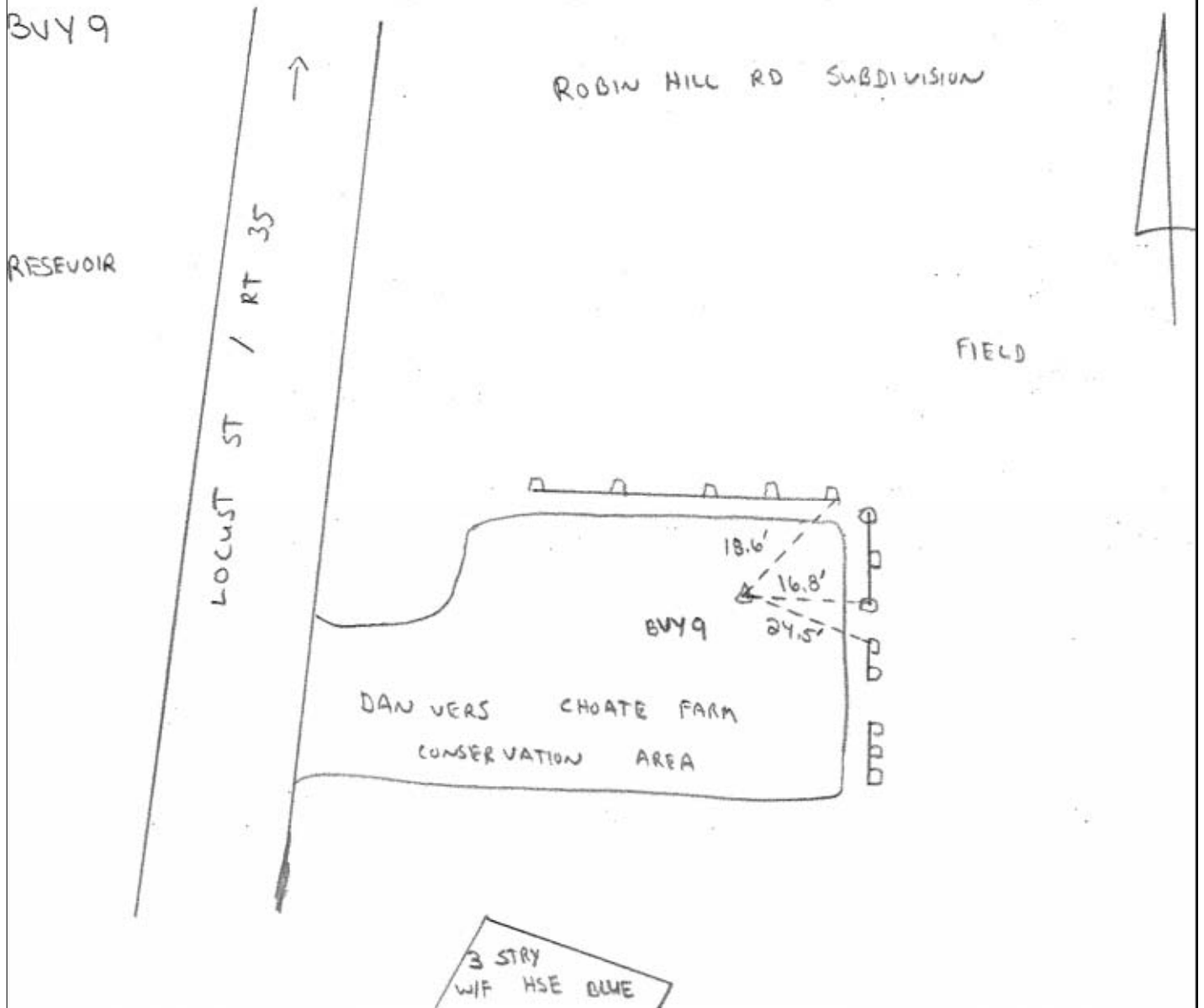
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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JOB REFERENCE

NE LIDAR

POINT ID:

BVY10

Proj. No.:

75980S

STATE Massachusetts

COUNTY Essex

LOCATION: Lynnfield

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE

42-31-58.5

HGT. MTS

LONGITUDE

71-02-27.0

37.31

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

H

DATE:

12/02/10

DAY OF YEAR

336

START TIME

12:00

END TIME

12:24

U.T.C.

X LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

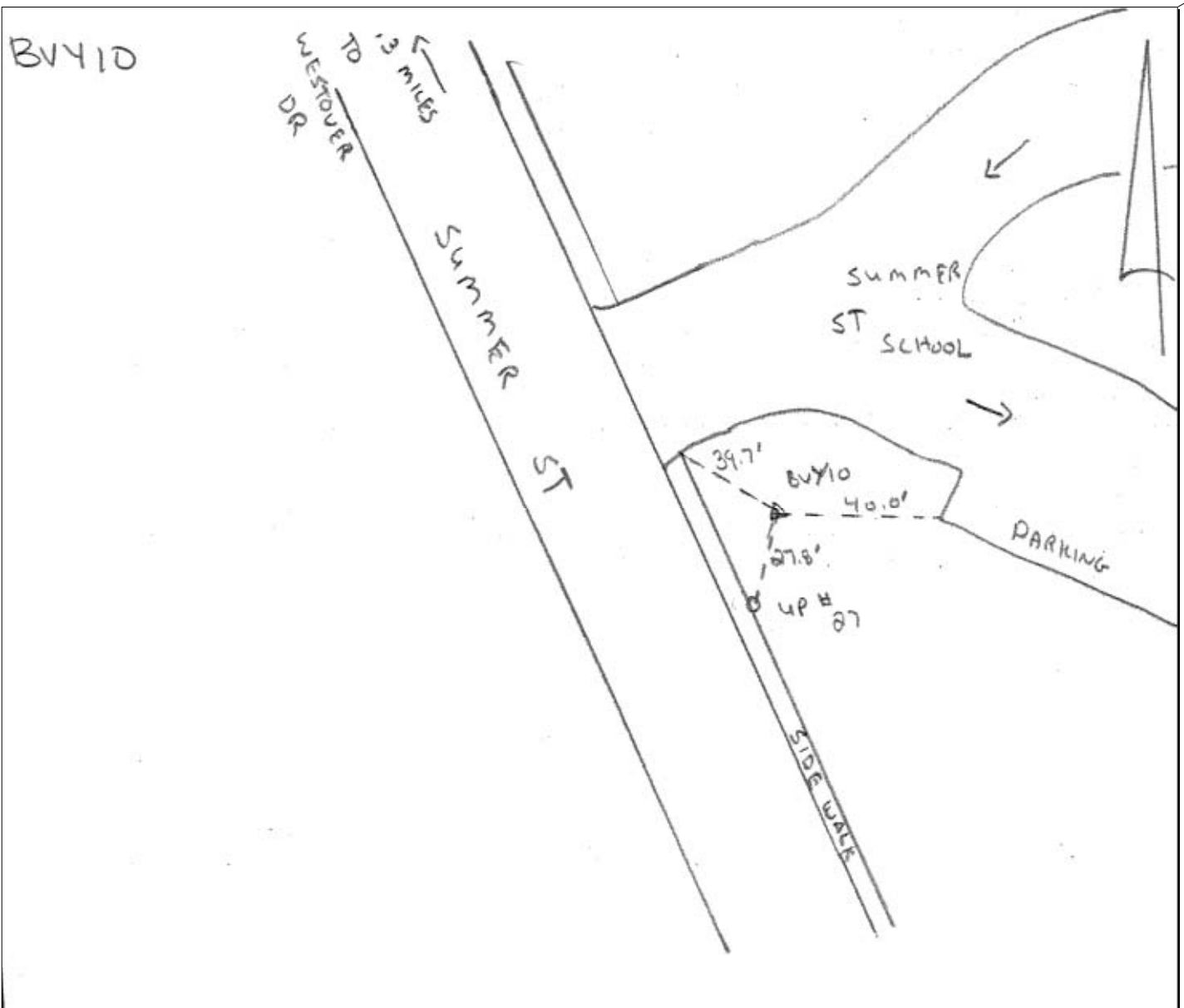
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

PYM11

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Duxbury

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 42-01-25.3

HGT. MTS

LONGITUDE 70-40-46.5

11.81

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0509

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

D

DATE:

12/03/10

DAY OF YEAR

337

START TIME

08:06

END TIME

08:26

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Lawn (Park Area)

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

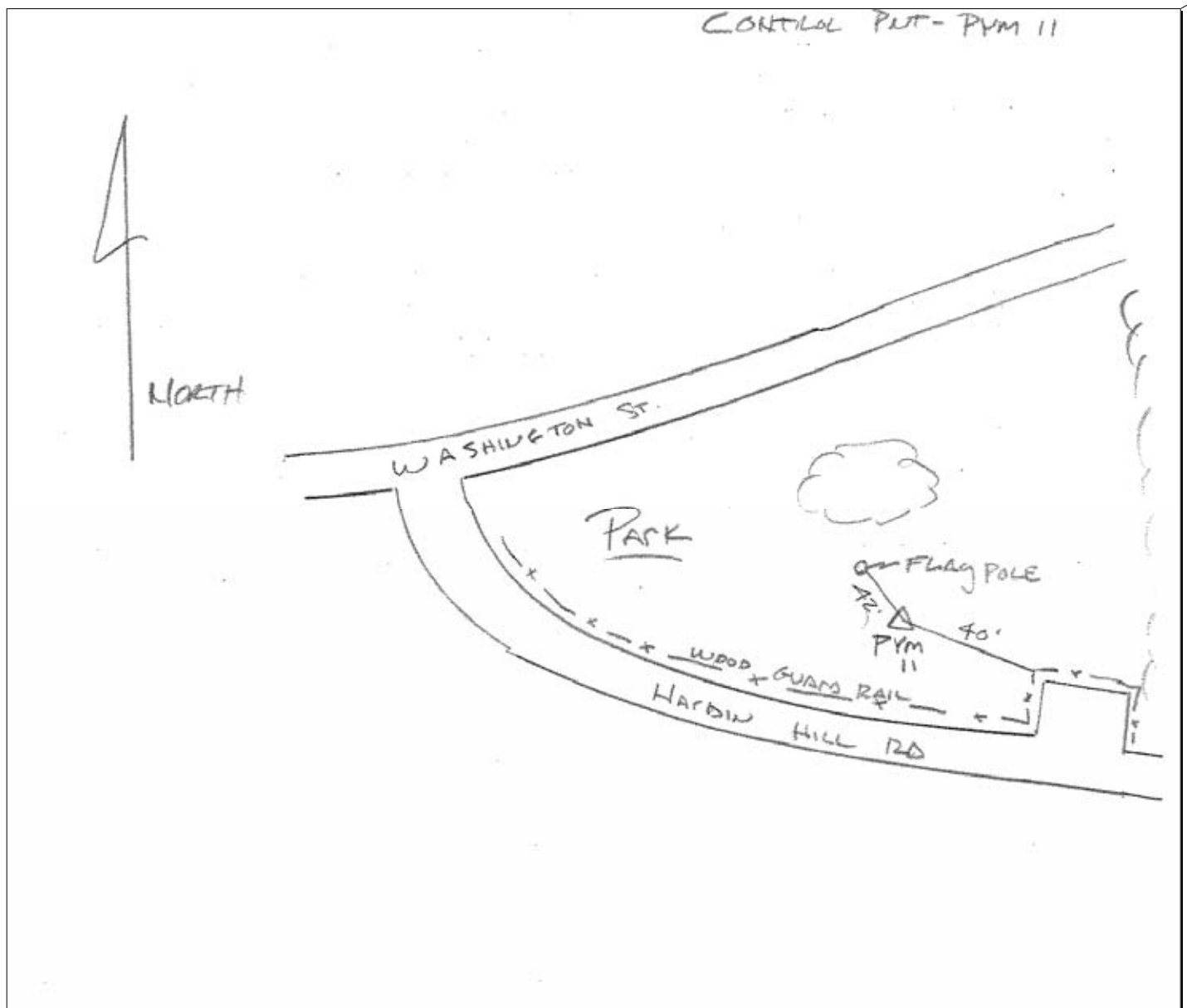
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

PYM12

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Plymouth

OPERATOR J Allen

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

LATITUDE 41-50-43.8

HGT. MTS

RECEIVER S/N 272-0509

LONGITUDE 70-32-26.6

8.87

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/01/10

Antenna Serial #

B

DAY OF YEAR

335

Antenna Type

START TIME

06:45

U.T.C.

END TIME

07:05

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Gravel/Sand Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:

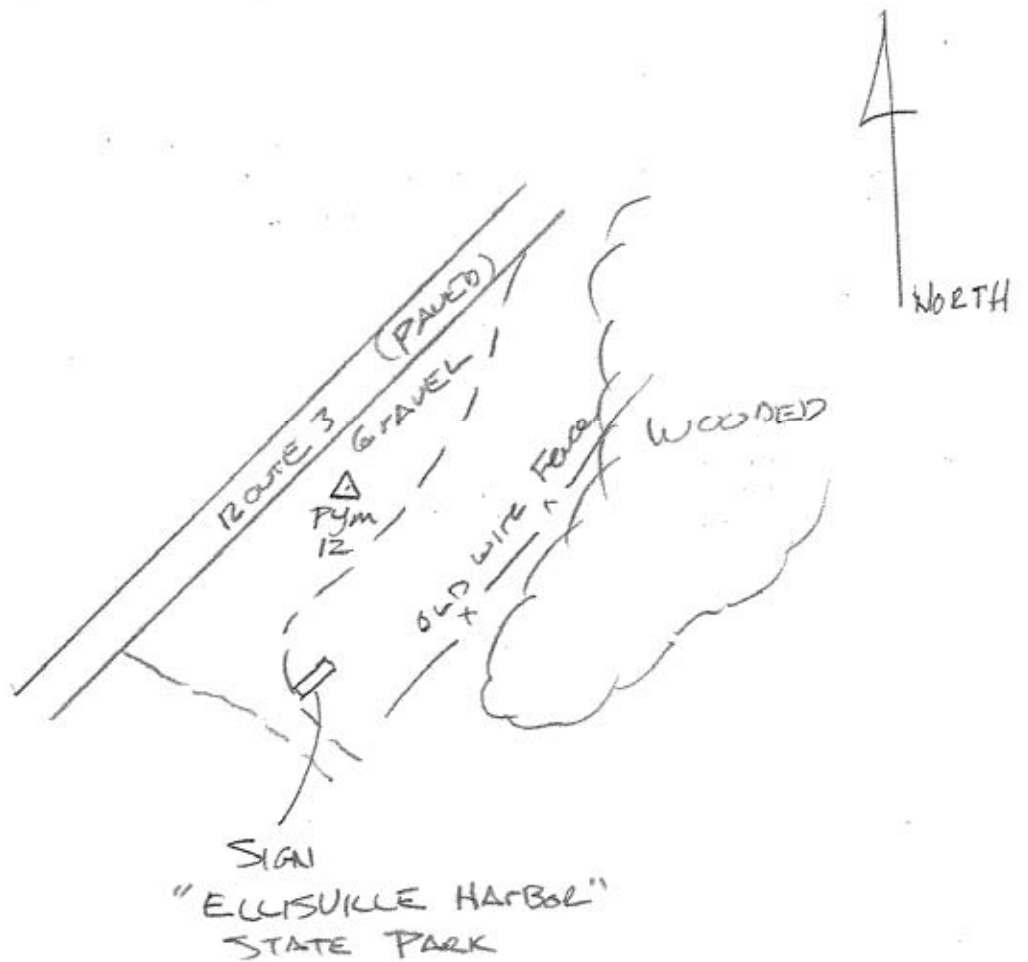


PHOTOS CONT'D:



SITE SKETCH:

CONTROL PNT - Pym 12



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JOB REFERENCE

NE LIDAR

POINT ID:

PYM13

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Hanson

OPERATOR D Livingstone

GPS OBSERVATIONS

LATITUDE 42-03-55.4

HGT. MTS

LONGITUDE 70-52-29.9

30.02

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

G

DATE:

12/07/10

DAY OF YEAR

341

START TIME 12:17

U.T.C.

END TIME 12:40

X LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Lawn Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:

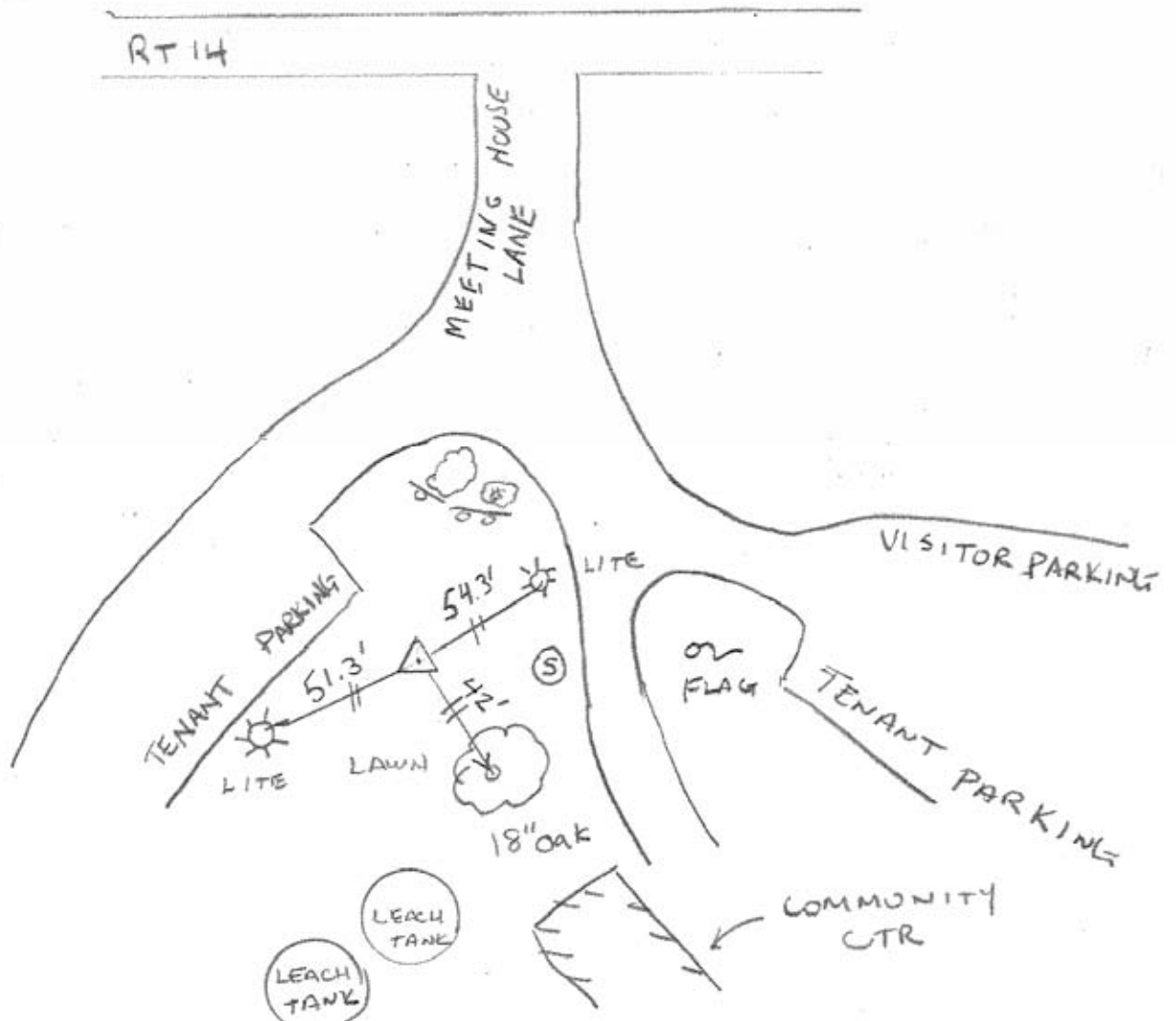


PHOTOS CONT'D:



SITE SKETCH:

Pym 13
10" SPIKE



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JOB REFERENCE

NE LIDAR

POINT ID:

PYM14

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Middleborough

OPERATOR D Livingstone

GPS OBSERVATIONS

LATITUDE 41-56-27.3

HGT. MTS

LONGITUDE 70-53-15.7

14.50

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

E

DATE:

12/07/10

DAY OF YEAR

341

START TIME

10:27

END TIME

10:50

X

U.T.C.

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

No Spike, Lawn (Private Property)

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

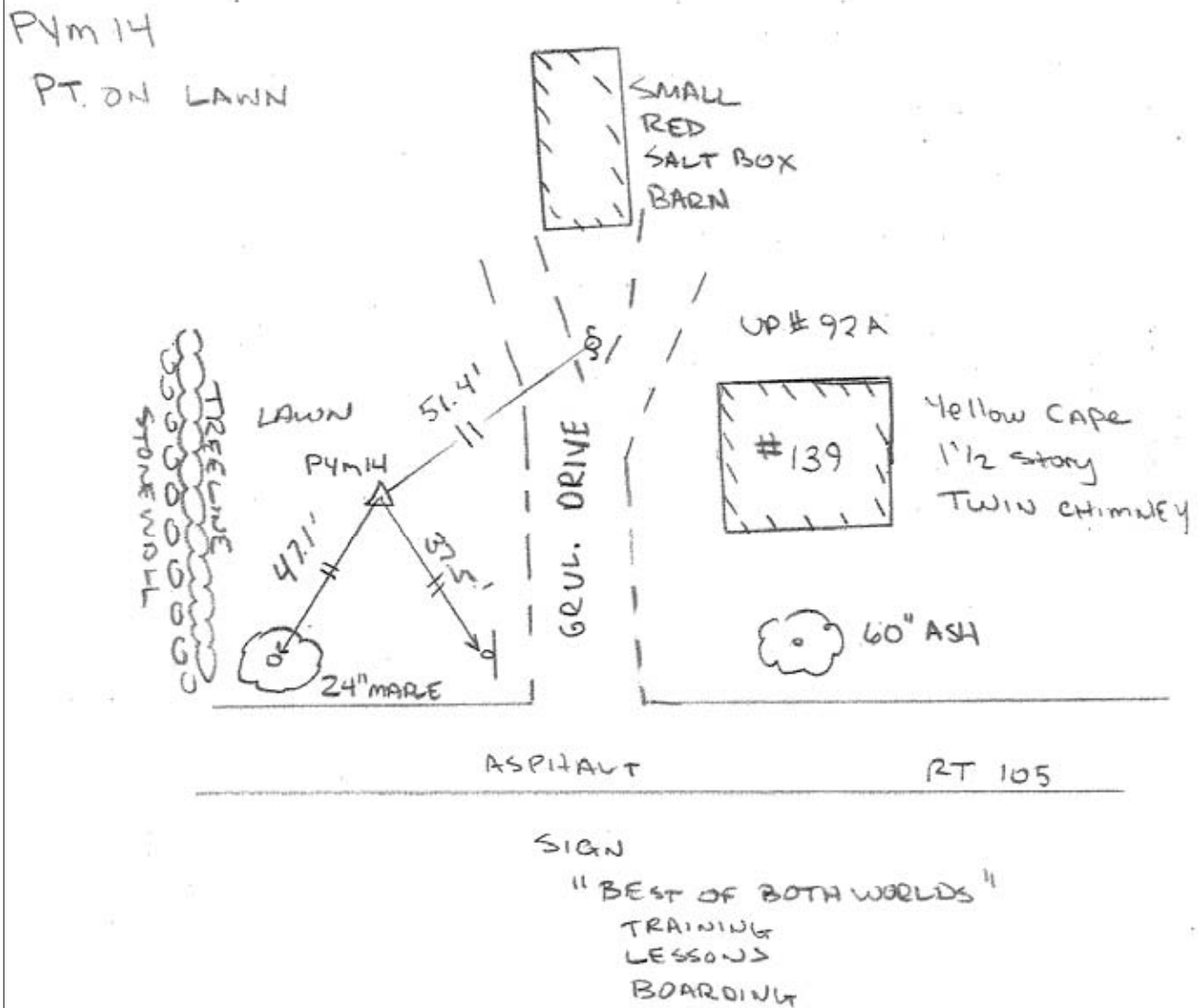
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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JOB REFERENCE

NE LIDAR

POINT ID:

PYM15

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Carver

OPERATOR D Livingstone

GPS OBSERVATIONS

LATITUDE

41-49-45.4

HGT. MTS

LONGITUDE

70-45-09.4

24.80

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

C

DATE:

12/07/10

DAY OF YEAR

341

START TIME

08:52

END TIME

09:15

U.T.C.

X LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Field

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

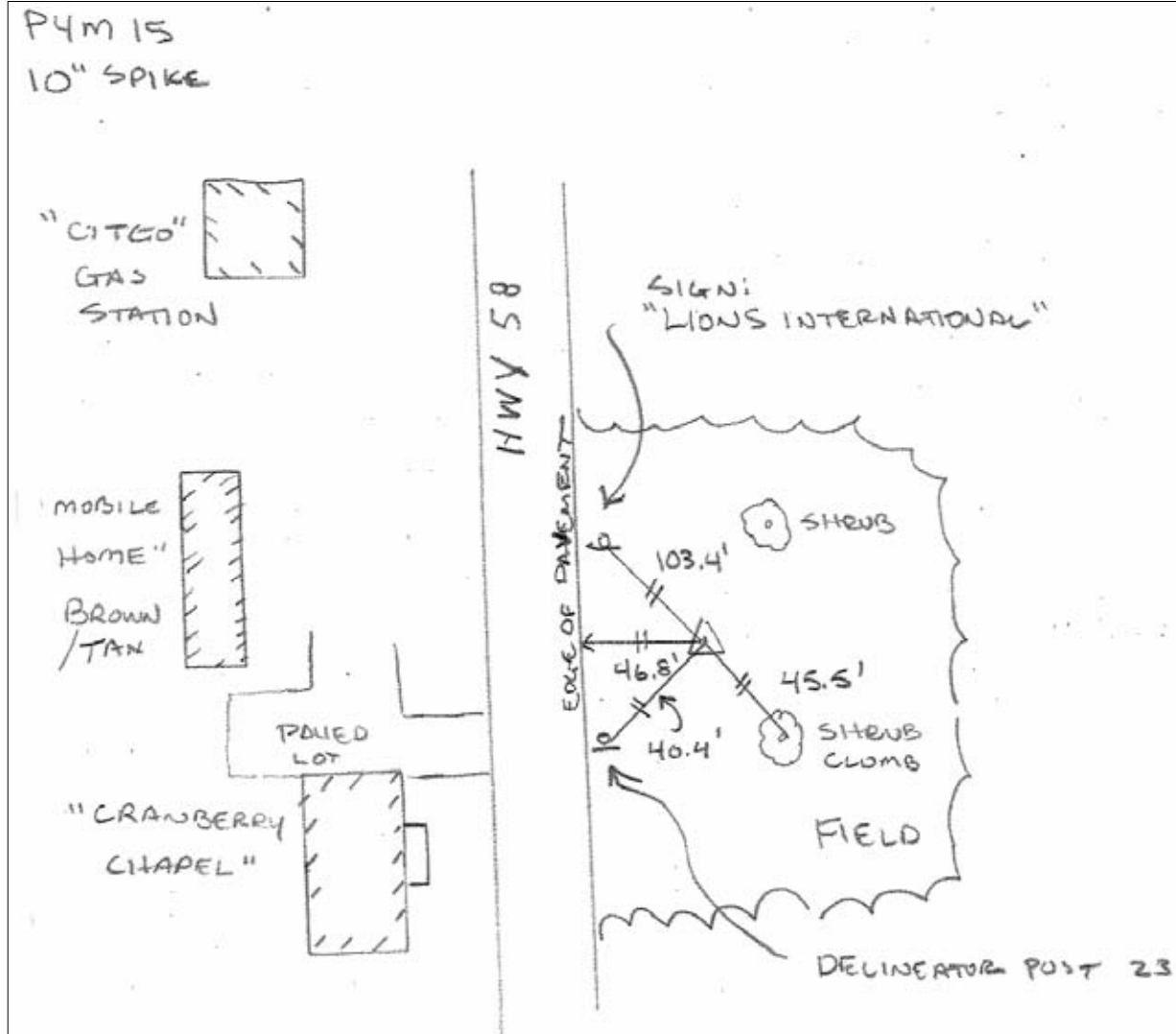
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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JOB REFERENCE

NE LIDAR

POINT ID:

GHG16

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: N. Scituate

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE 42-13-12.4

HGT. MTS

LONGITUDE 70-46-09.1

15.46

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

G

DATE:

12/03/10

DAY OF YEAR

337

START TIME

11:45

END TIME

12:08

X

U.T.C.

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

PHOTOS:



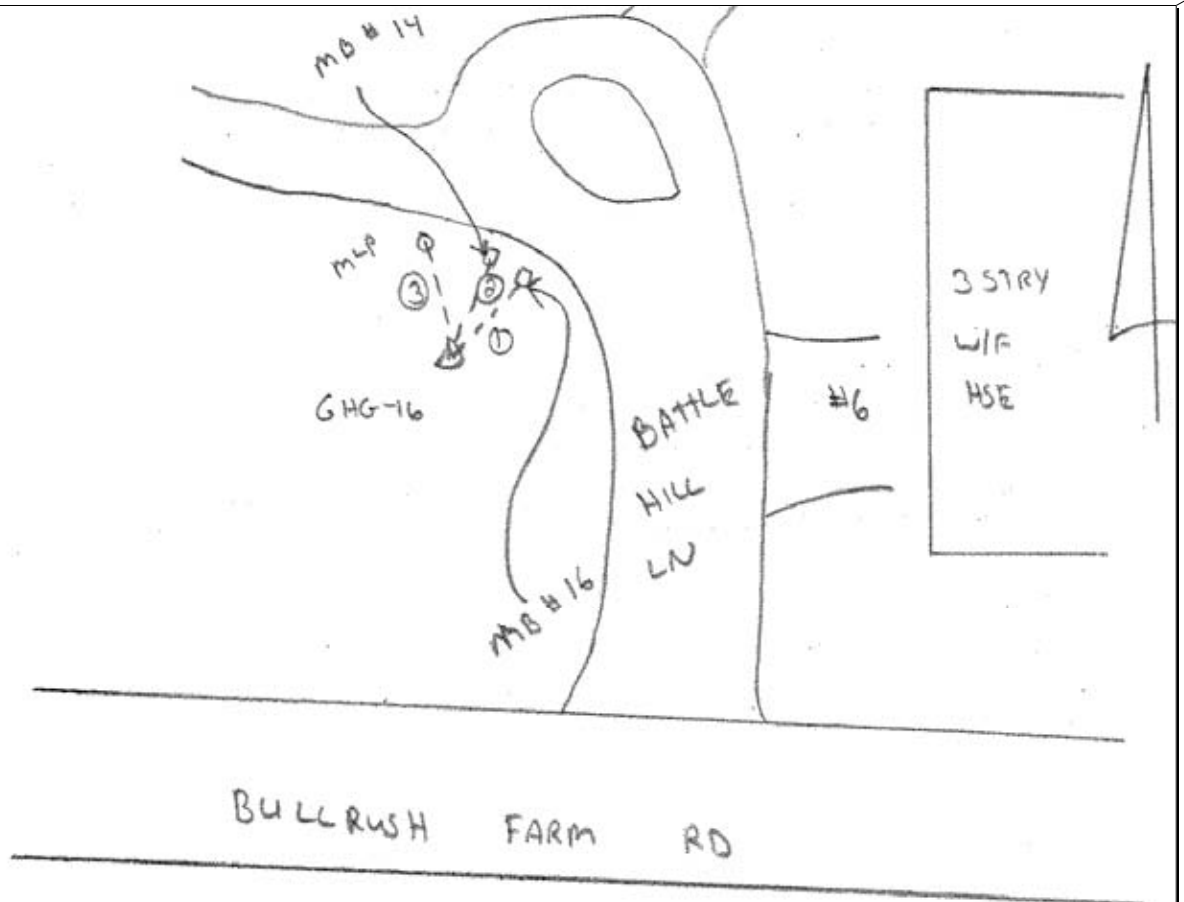
PHOTOS CONT'D:



SITE SKETCH:

GHG 16

- ① 16.3'
- ② 17.0'
- ③ 18.0'



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JOB REFERENCE

NE LIDAR

POINT ID:

GHG17

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Marshfield

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 42-05-47.8

HGT. MTS

LONGITUDE 70-41-09.0

4.58

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0509

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

F

DATE:

12/03/10

DAY OF YEAR

337

START TIME

09:28

END TIME

09:50

X

U.T.C.

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

Point on Lawn - Private House Lot

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:

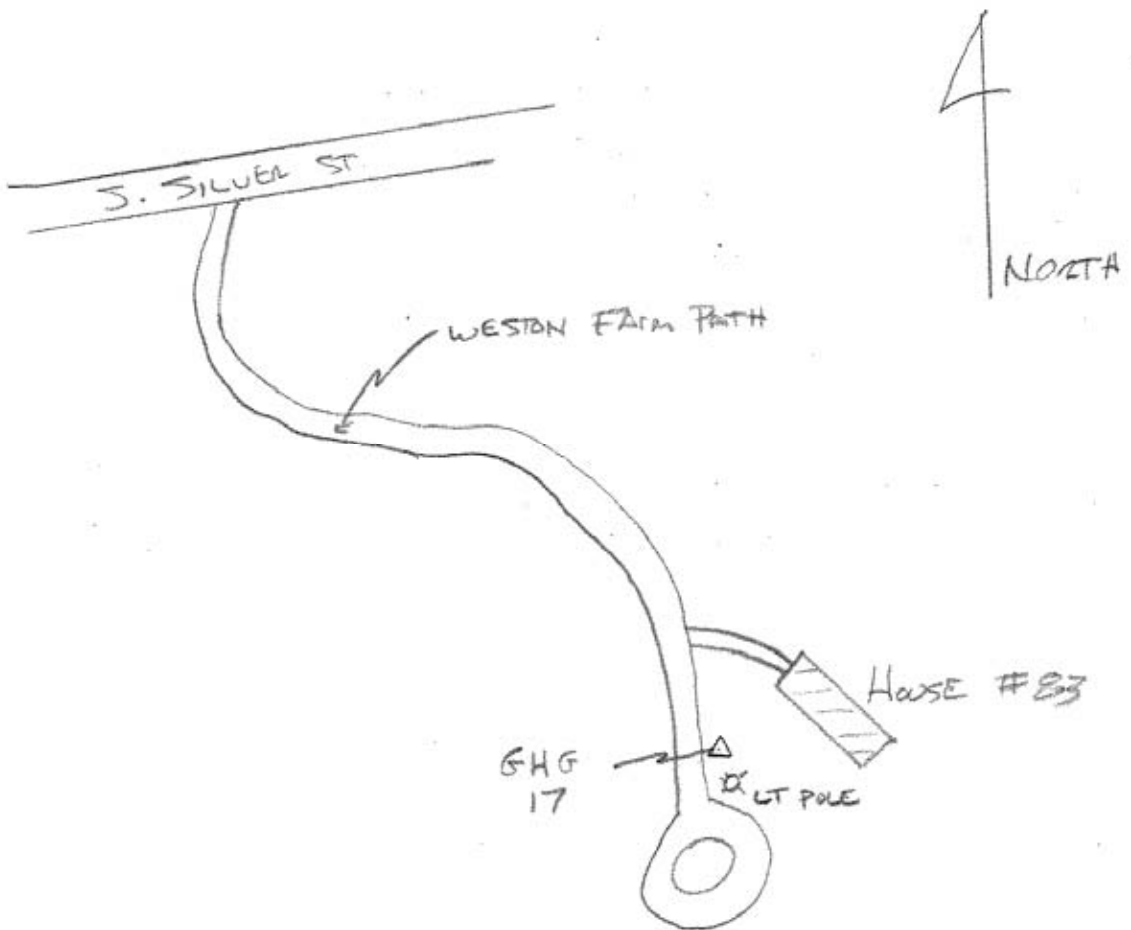


PHOTOS CONT'D:



SITE SKETCH:

CONTROL PNT - GHG 17





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:

1 of 2

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JOB REFERENCE

NE LIDAR

POINT ID:

GHG18

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Norwell

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE

42-09-43.5

HGT. MTS

LONGITUDE

70-48-13.8

27.63

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0509

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

G

DATE:

12/03/10

DAY OF YEAR

337

START TIME

10:10

END TIME

10:30

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Field

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

PHOTOS:

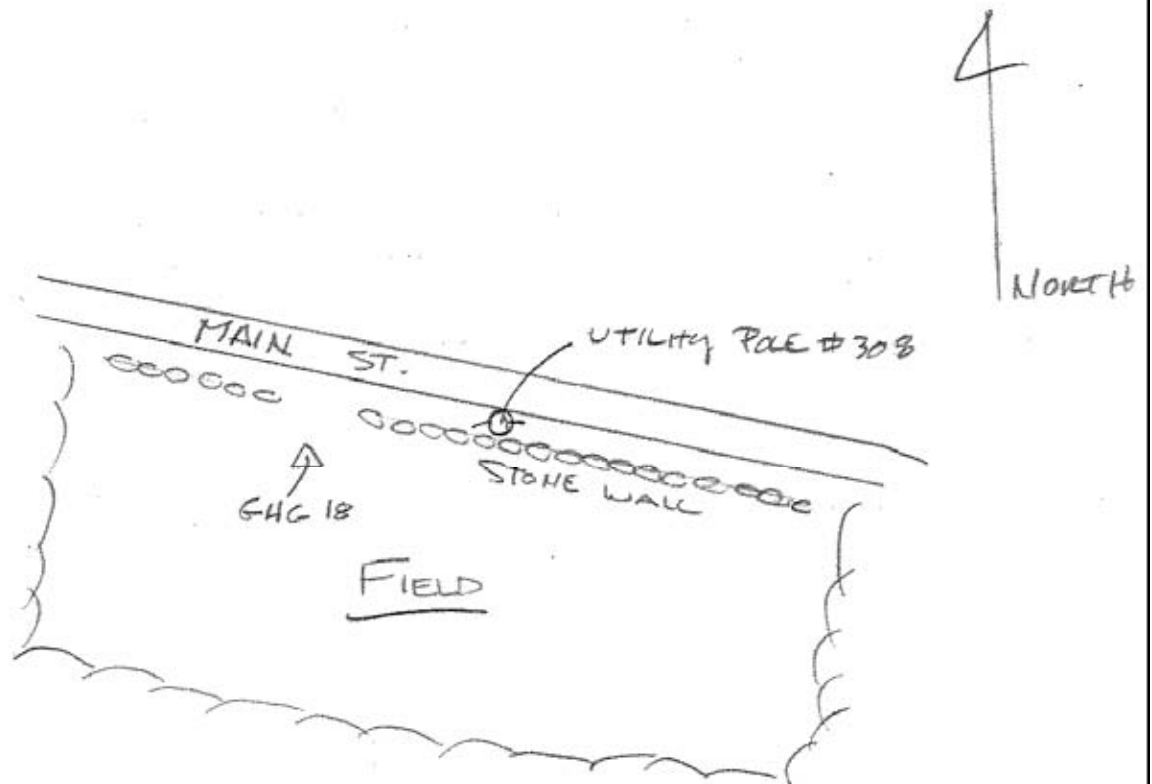


PHOTOS CONT'D:



SITE SKETCH:

CONTROL PNT - GHG 18



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JOB REFERENCE

NE LIDAR

POINT ID:

GHG19

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Pembroke

OPERATOR D Livingstone

GPS OBSERVATIONS

LATITUDE	42-05-14.2	HGT. MTS
LONGITUDE	70-47-26.9	10.57

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

H

DATE:

12/07/10

DAY OF YEAR

341

START TIME 12:59

END TIME 13:22

U.T.C.

X LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Mowed Area

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

PHOTOS:

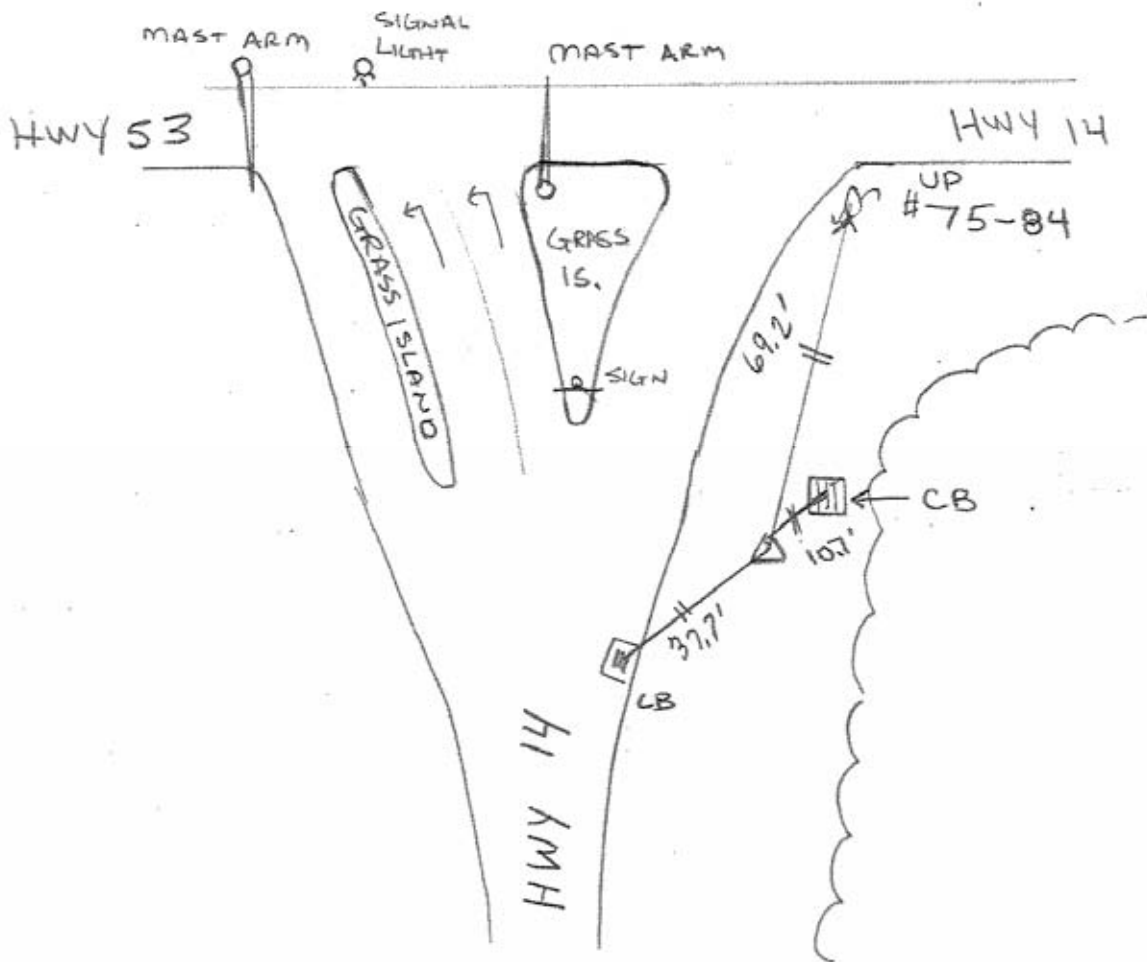


PHOTOS CONT'D:



SITE SKETCH:

GHG19





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:

1 of 2

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JOB REFERENCE

NE LIDAR

POINT ID:

GHG20

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Pembroke

OPERATOR D Livingstone

GPS OBSERVATIONS

LATITUDE	42-01-59.0	HGT. MTS
LONGITUDE	70-48-04.2	34.43

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

I

DATE:

12/07/10

DAY OF YEAR

341

START TIME

13:43

END TIME

14:07

U.T.C.

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn/Gravel Area

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X

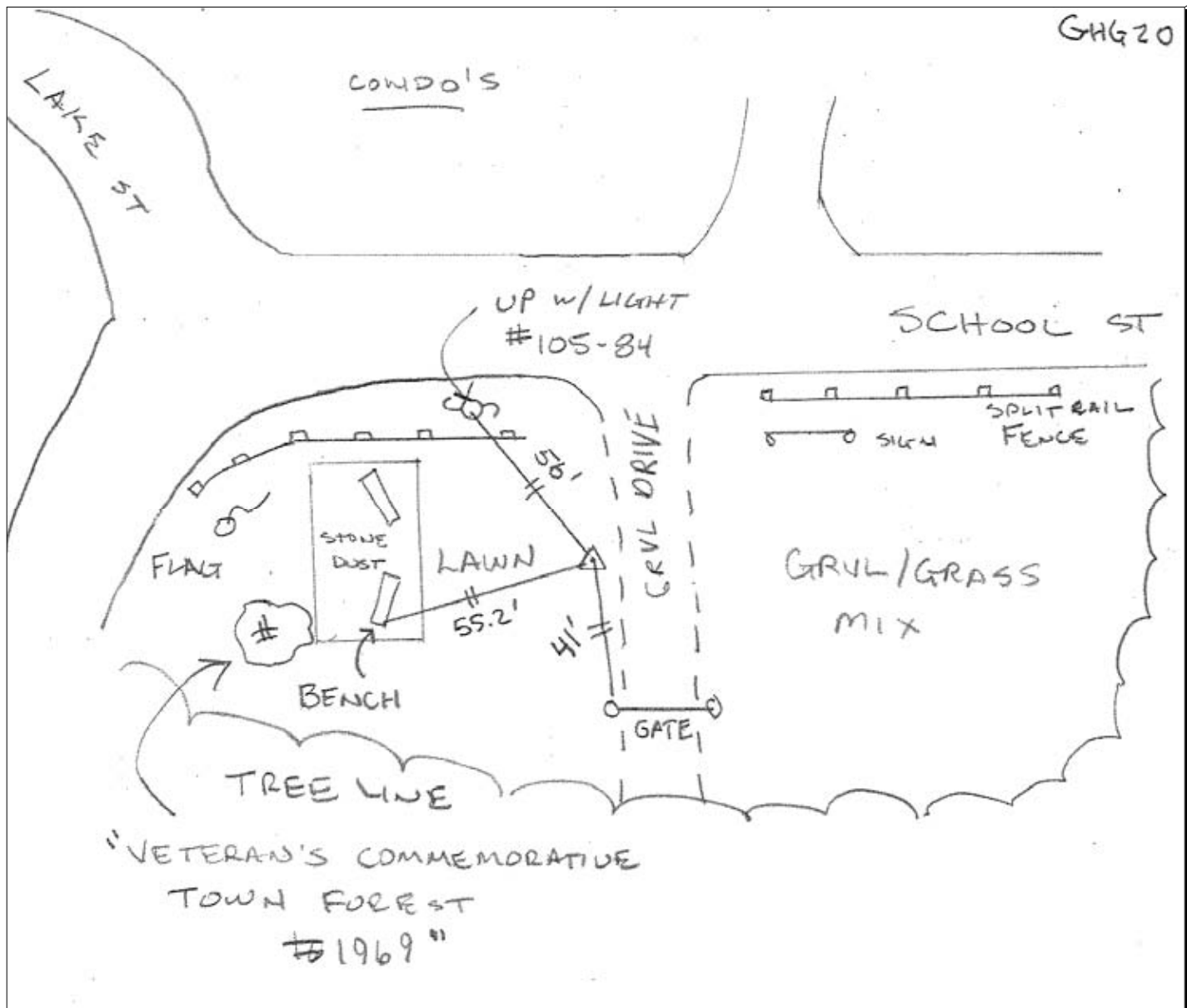
NEW CONTROL

NATURAL

PHOTOS:

PHOTOS CONT'D:

SITE SKETCH:



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JOB REFERENCE

NE LIDAR

POINT ID:

OWD21

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Hull

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE 42-18-16.4

HGT. MTS

LONGITUDE 70-54-55.3

1.89

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

F

DATE:

12/03/10

DAY OF YEAR

337

START TIME 10:39

U.T.C.

END TIME 11:03

X

LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Grass Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

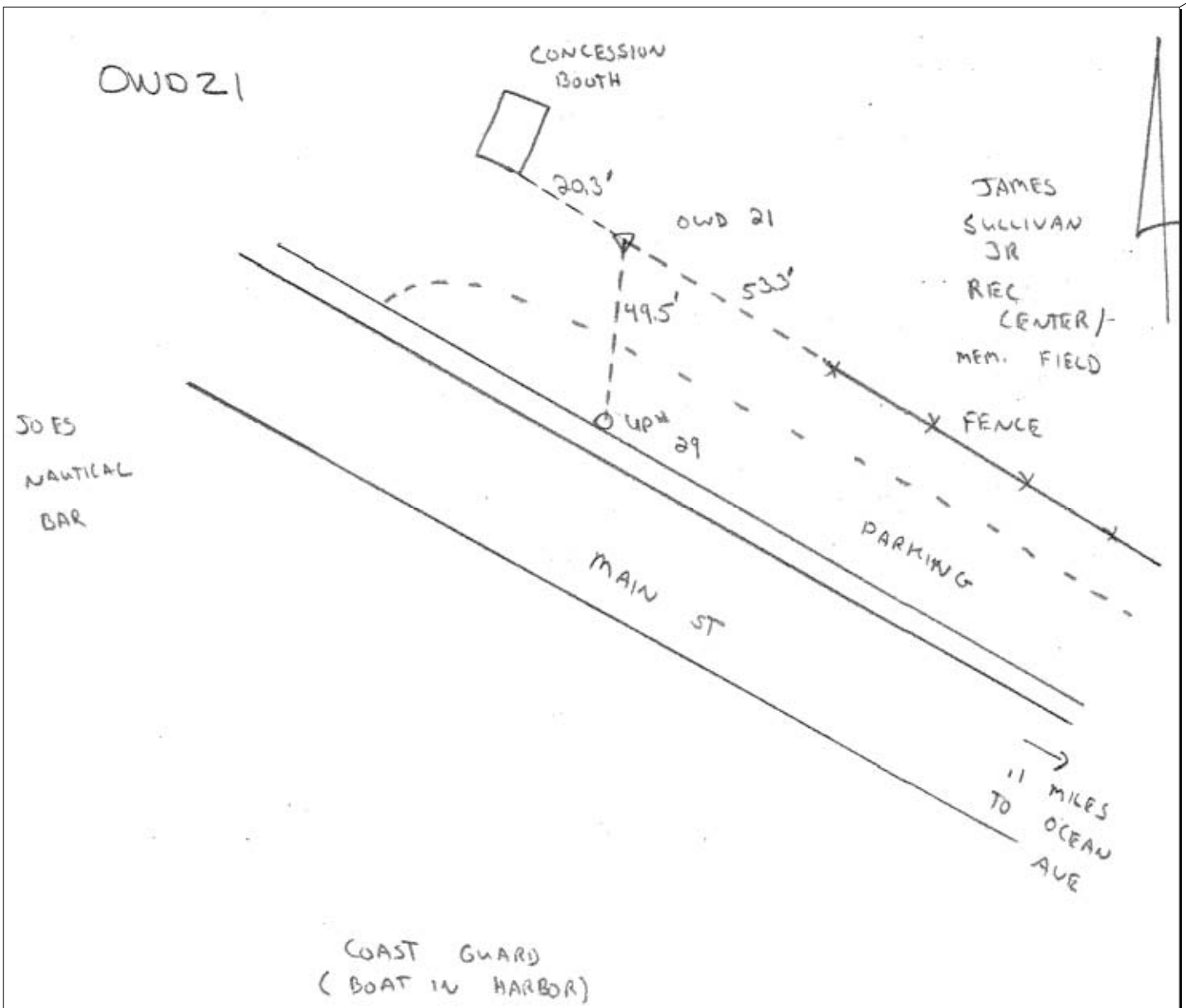
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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136 Center Street
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Old Town, Maine 04468

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GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
1 of 2

JOB REFERENCE

NE LIDAR

POINT ID:

OWD22

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Hingham

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE

42-15-06.5

HGT. MTS

LONGITUDE

70-54-23.3

3.76

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

E

DATE:

12/03/10

DAY OF YEAR

337

START TIME

09:55

END TIME

10:16

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Grass Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

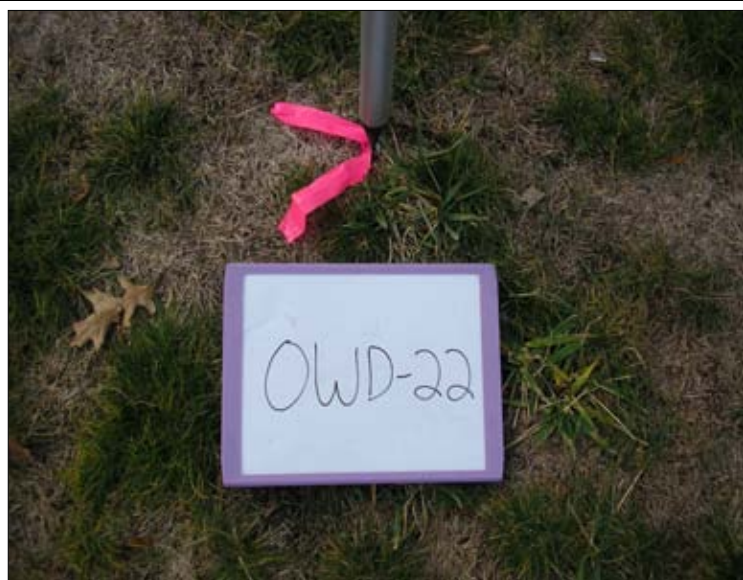
X

NEW CONTROL

PUB. CONTROL

NATURAL

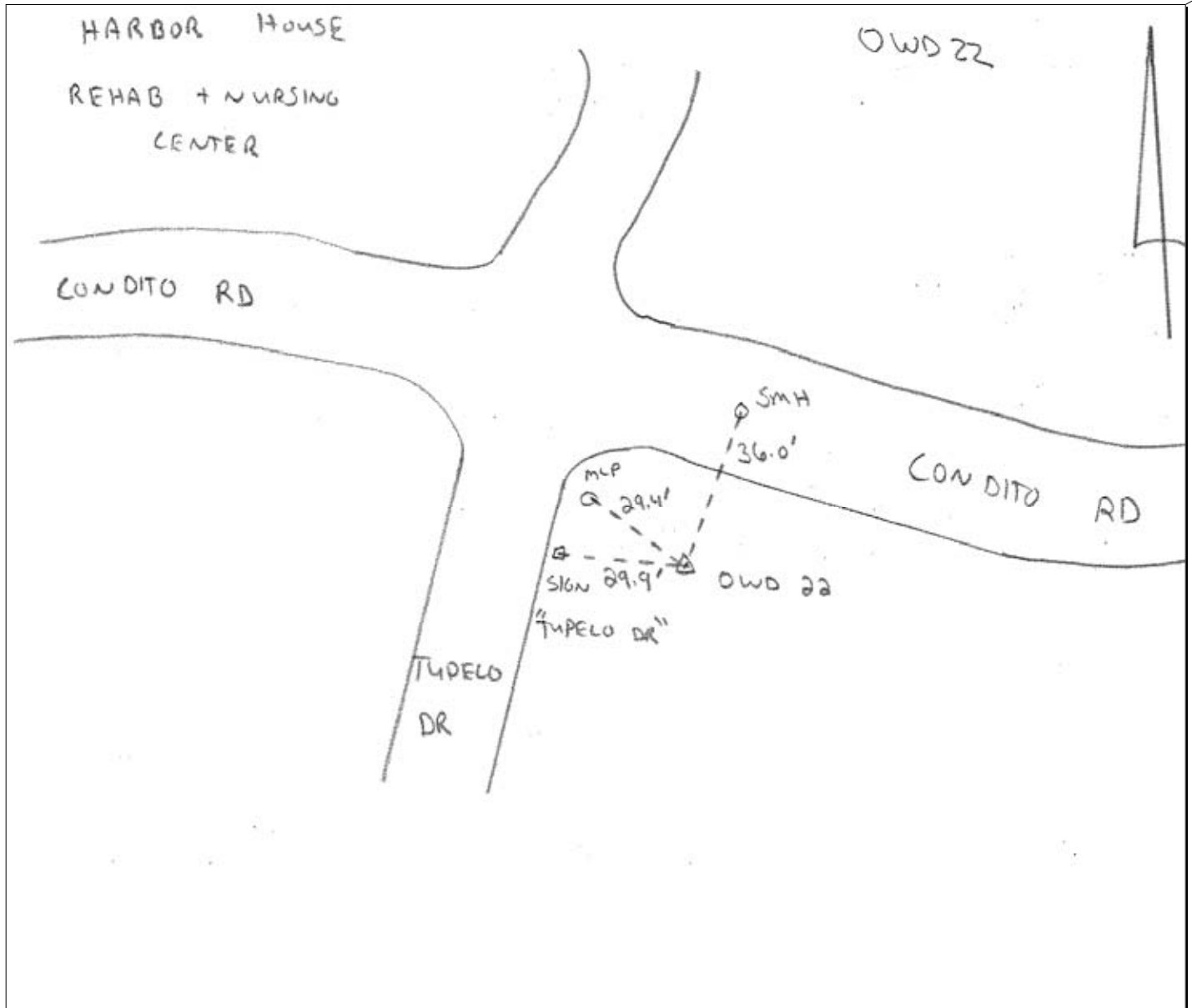
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

OWD23

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Hingham

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE 42-11-45.4

HGT. MTS

LONGITUDE 70-52-55.7

36.77

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

D

DATE:

12/03/10

DAY OF YEAR

337

START TIME 09:11

U.T.C.

END TIME 09:31

X

LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Grass Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

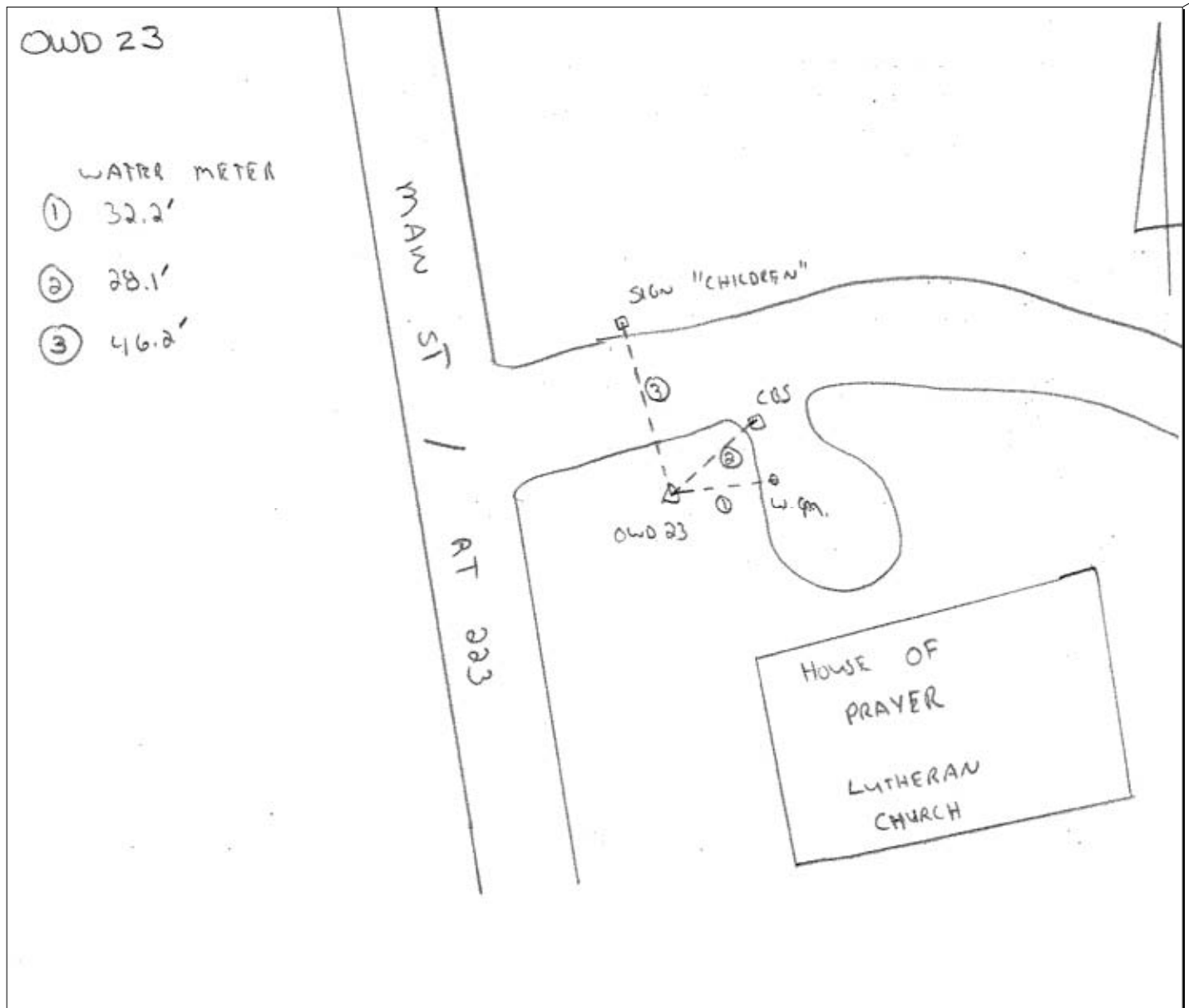
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

OWD24

Proj. No.:

75980S

STATE Massachusetts

COUNTY Norfolk

LOCATION: Randolph

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE

42-09-23.0

HGT. MTS

LONGITUDE

71-01-55.7

41.37

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

C

DATE:

12/03/10

DAY OF YEAR

337

START TIME

08:11

END TIME

08:34

U.T.C.

X LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Grass Area

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

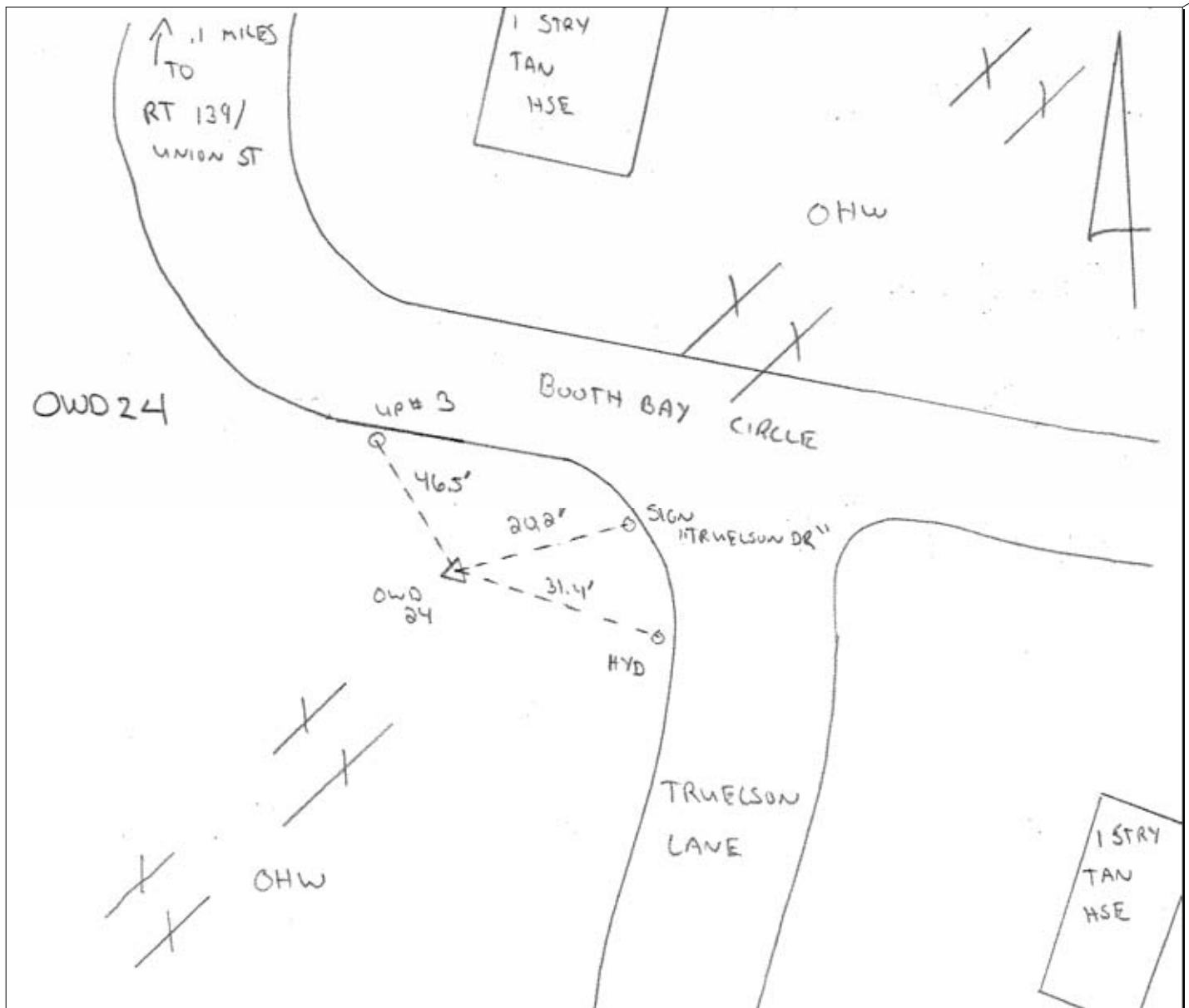
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

OWD25

Proj. No.:

75980S

STATE Massachusetts

COUNTY Norfolk

LOCATION: Westwood

OPERATOR E Jellison

GPS OBSERVATIONS

LATITUDE	42-13-05.9	HGT. MTS
LONGITUDE	71-13-23.7	65.99

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0793

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

B

DATE:

12/03/10

DAY OF YEAR

337

START TIME

07:14

END TIME

07:37

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Lawn Area

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

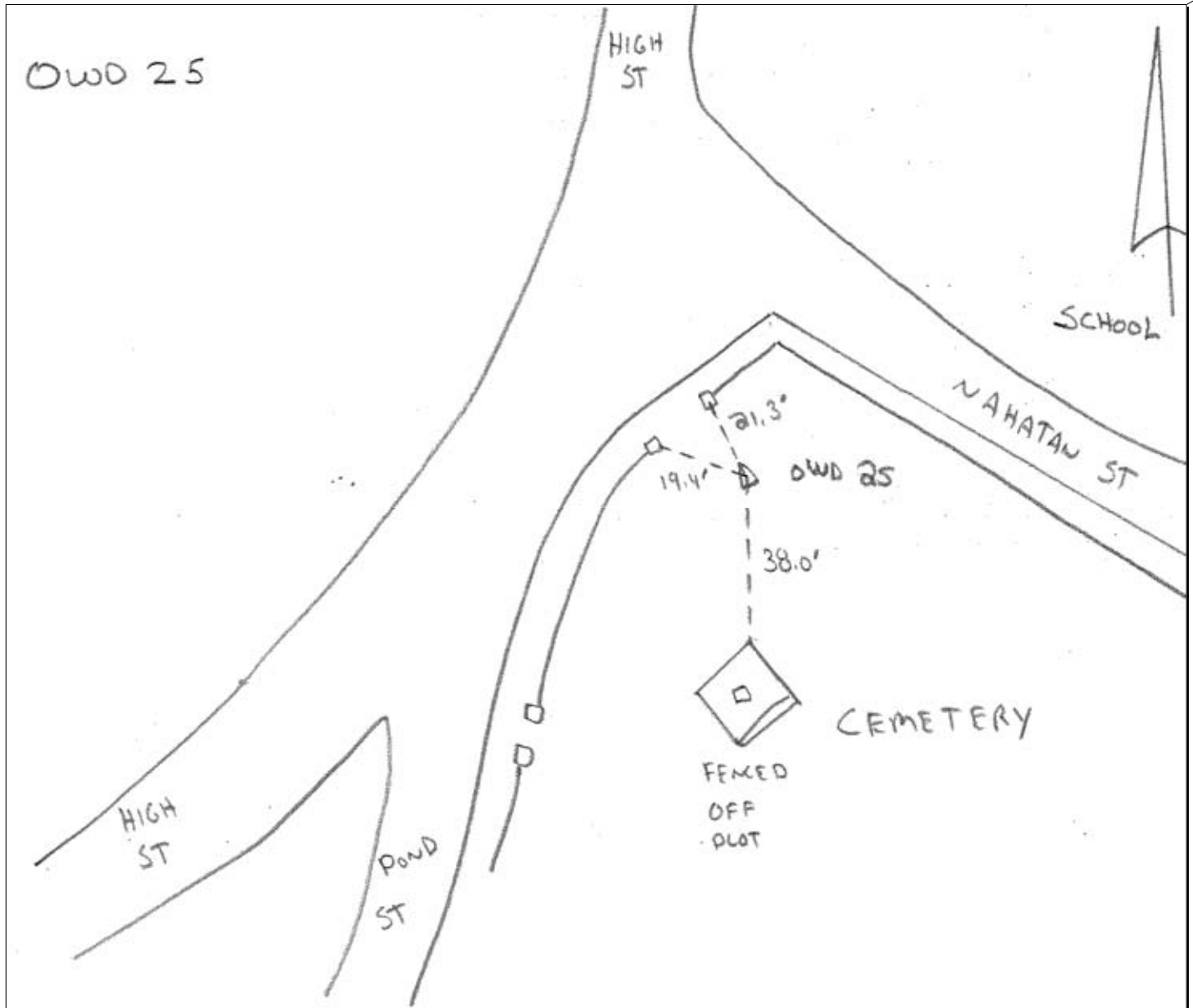
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

TAN26

Proj. No.:

75980S

STATE Massachusetts

COUNTY Bristol

LOCATION: Swansea

OPERATOR D Livingstone

GPS OBSERVATIONS

LATITUDE

41-43-54.7

HGT. MTS

LONGITUDE

71-12-14.4

6.83

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

D

DATE:

12/09/10

DAY OF YEAR

343

START TIME

09:07

END TIME

09:29

X

U.T.C.

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

Flagging in Lawn (Private Property)

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

PHOTOS:

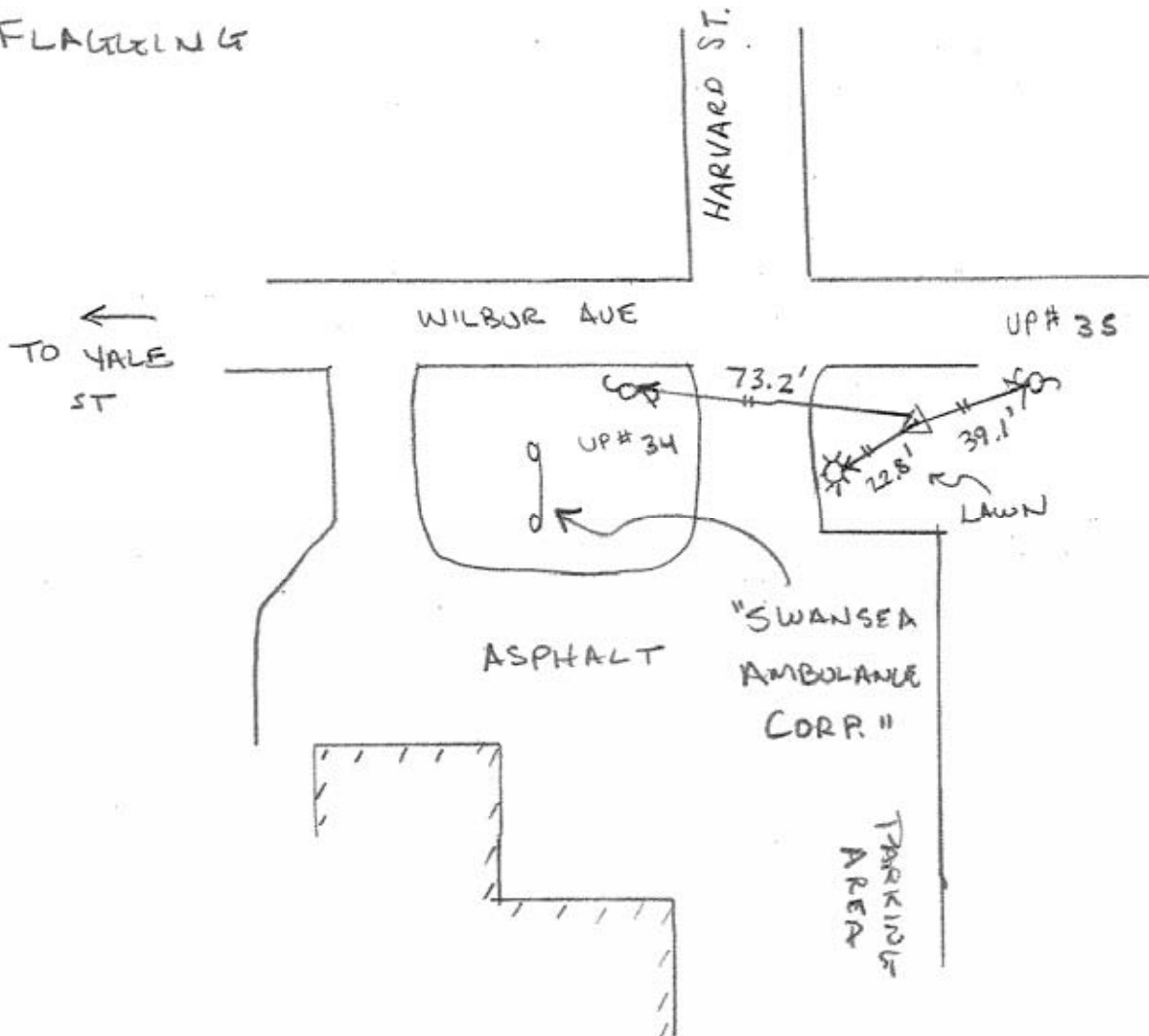


PHOTOS CONT'D:



SITE SKETCH:

TAN 26
FLAGGING



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JOB REFERENCE

NE LIDAR

POINT ID:

TAN27

Proj. No.:

75980S

STATE Massachusetts

COUNTY Bristol

LOCATION: Dighton

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE	41-48-46.7	HGT. MTS
LONGITUDE	70-04-58.7	8.43

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

B

DATE:

12/08/10

DAY OF YEAR

342

START TIME

08:27

END TIME

08:48

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Field

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

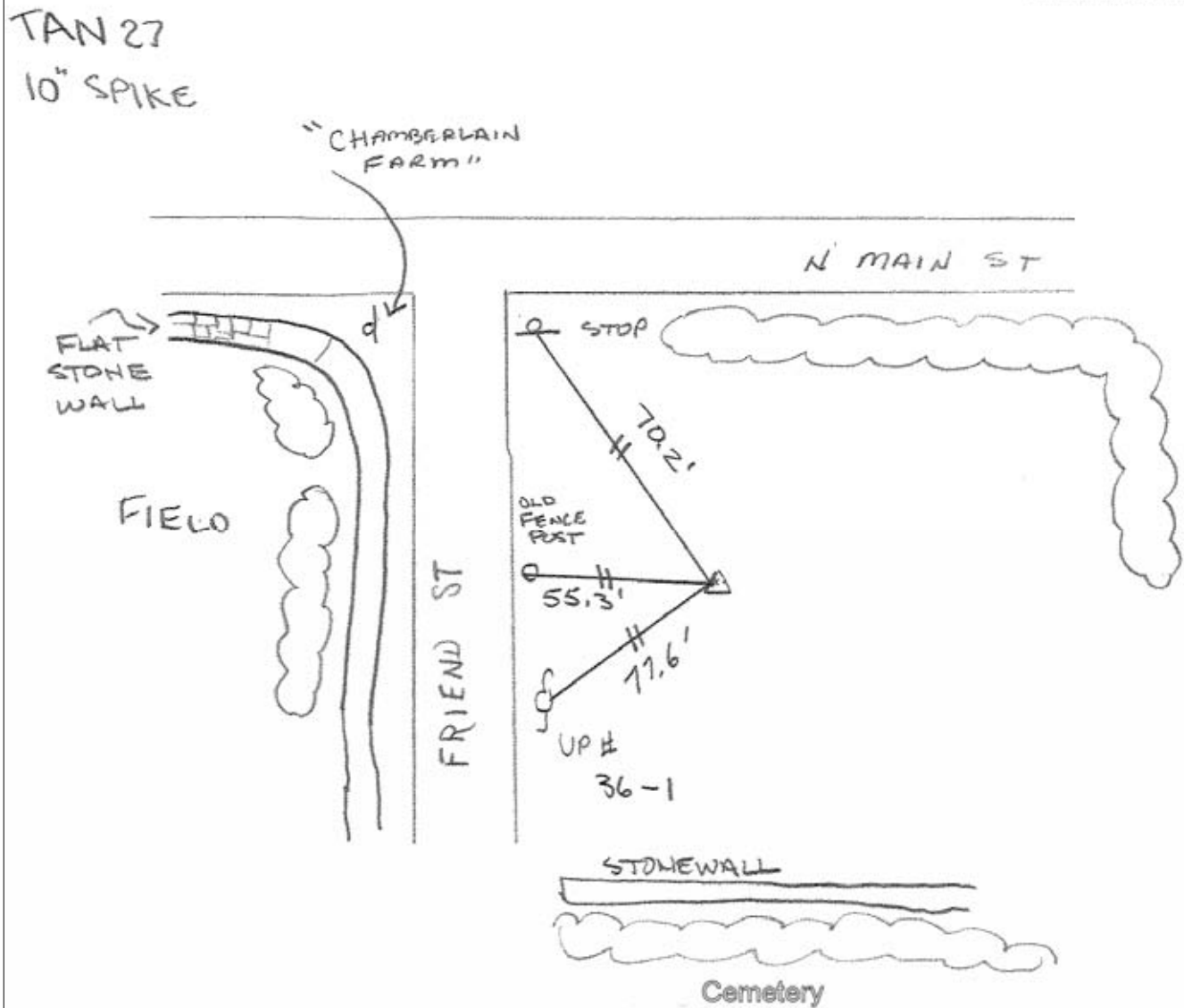
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

TAN28

Proj. No.:

75980S

STATE Massachusetts

COUNTY Bristol

LOCATION: Tauton

OPERATOR D Livingstone

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

LATITUDE 41-56-43.7

HGT. MTS

RECEIVER S/N 272-0788

LONGITUDE 71-06-56.1

74.04

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/07/10

Antenna Serial #

K

DAY OF YEAR

341

Antenna Type

START TIME 16:23

U.T.C.

END TIME 16:46

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

Collection Rate

MEASURED

FIXED HGT.

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

TOP OF MONUMENT IS:

X

FLUSH

MEASURED

X

FIXED HGT

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Lawn Area

AERIAL TARGET

PHOTO I.D.

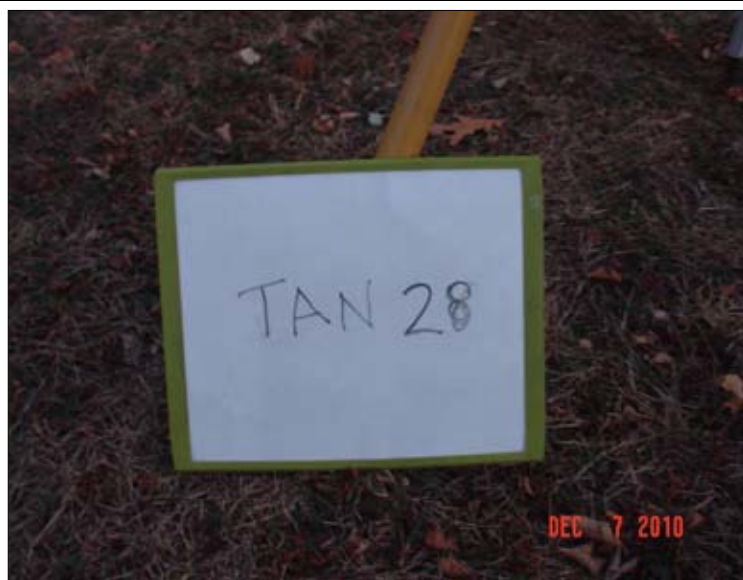
PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

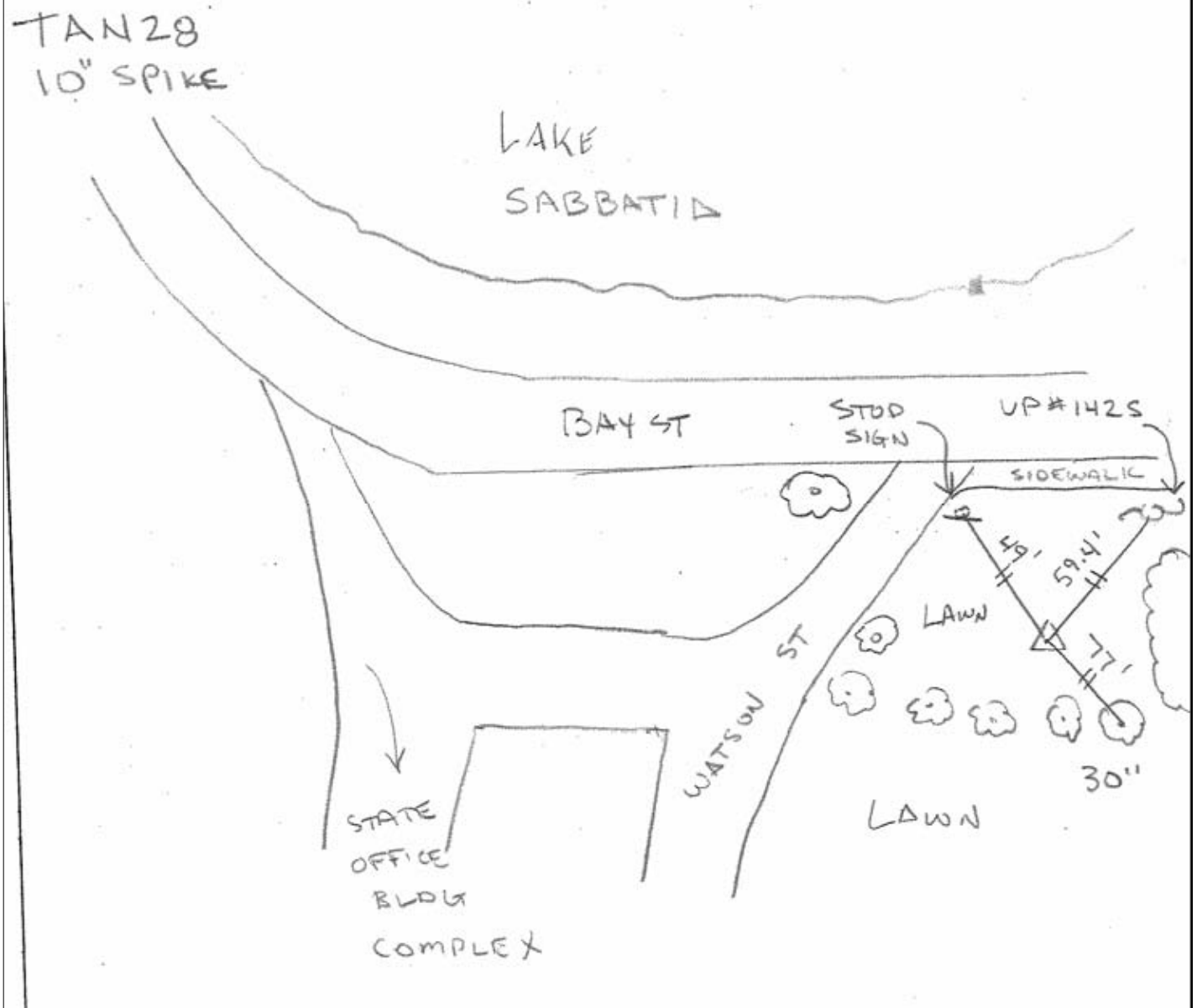
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

TAN29

Proj. No.:

75980S

STATE Massachusetts

COUNTY Bristol

LOCATION: Freetown

OPERATOR D Livingstone

GPS OBSERVATIONS

LATITUDE	41-46-39.2	HGT. MTS
LONGITUDE	70-58-06.6	26.87

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

C

DATE:

12/08/10

DAY OF YEAR

342

START TIME 09:09

END TIME 09:30

U.T.C.

X LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Gravel

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

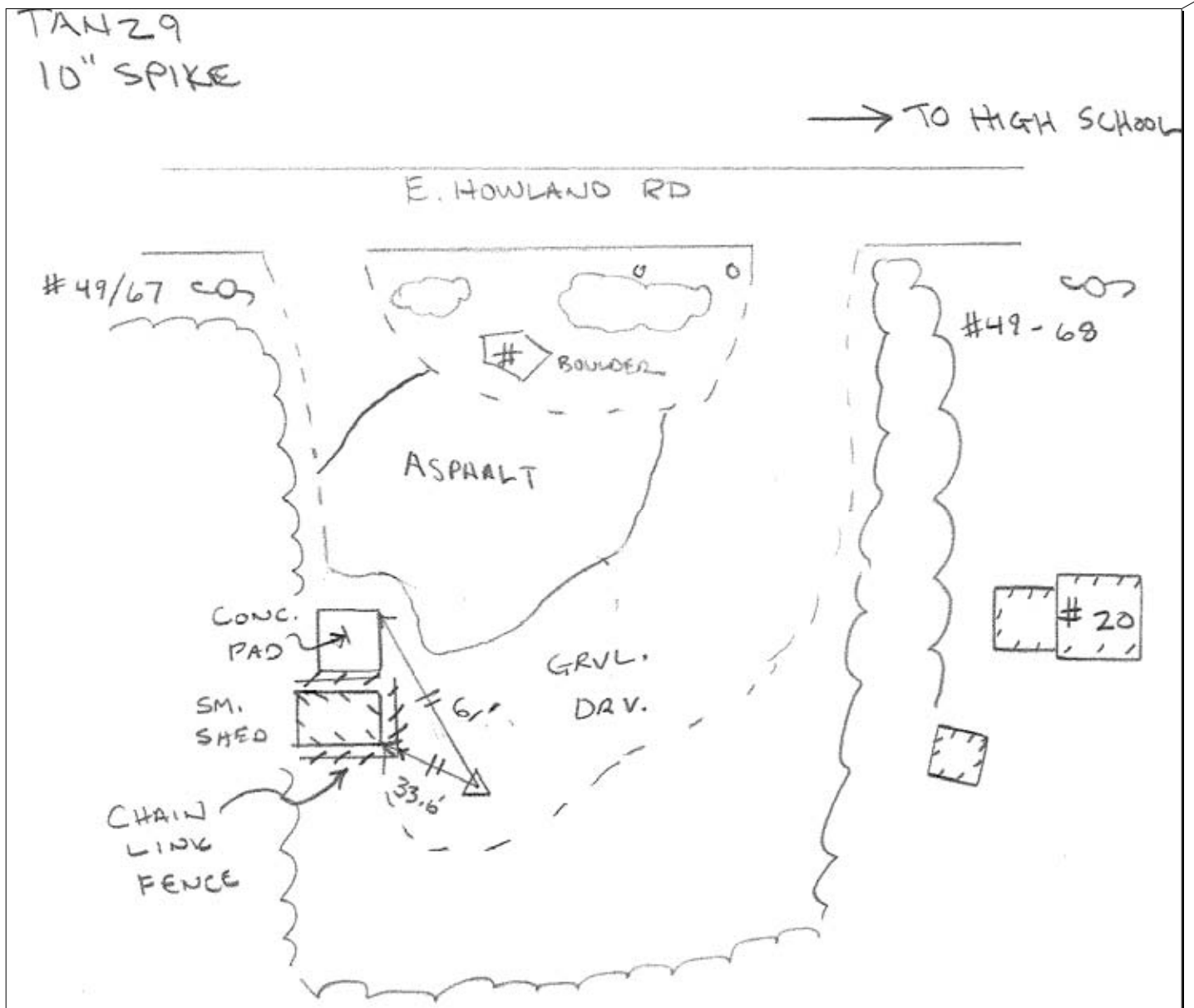
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

TAN30

Proj. No.:

75980S

STATE Massachusetts

COUNTY Bristol

LOCATION: Fall River

OPERATOR D Livingstone

GPS OBSERVATIONS

LATITUDE	41-40-53.0	HGT. MTS
LONGITUDE	71-09-23.2	69.53

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

C

DATE:

12/09/10

DAY OF YEAR

343

START TIME

08:17

END TIME

08:42

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

Flagging in Grass (Park Area)

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

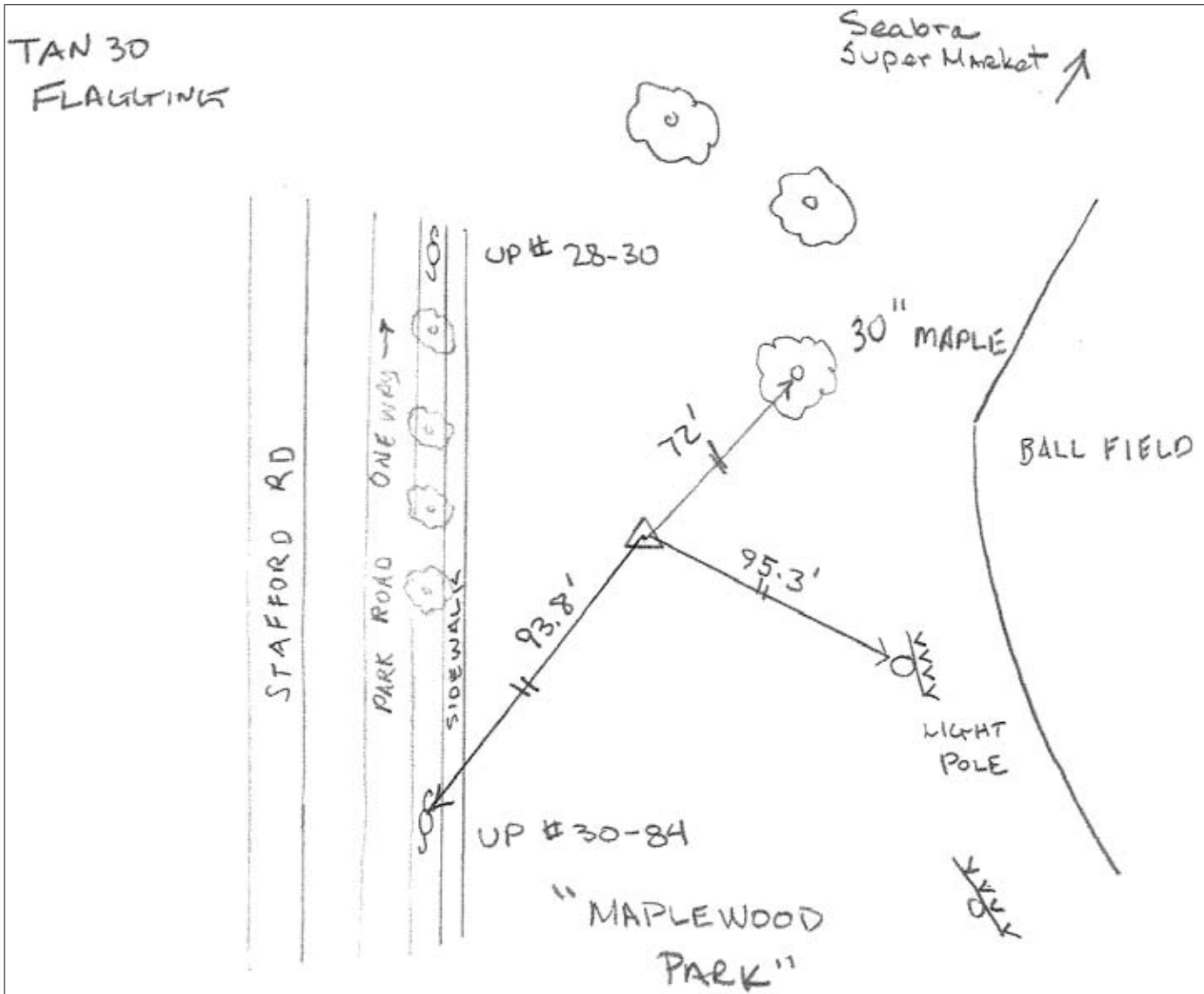
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

EWB31

Proj. No.:

75980S

STATE Massachusetts

COUNTY Bristol

LOCATION: Westport

OPERATOR D Livingstone

GPS OBSERVATIONS

LATITUDE 41-37-39.4

HGT. MTS

LONGITUDE 71-05-55.9

57.59

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

I

DATE:

12/08/10

DAY OF YEAR

342

START TIME

16:15

END TIME

16:38

U.T.C.

X LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

Flagging in Lawn

AERIAL TARGET

PHOTO I.D.

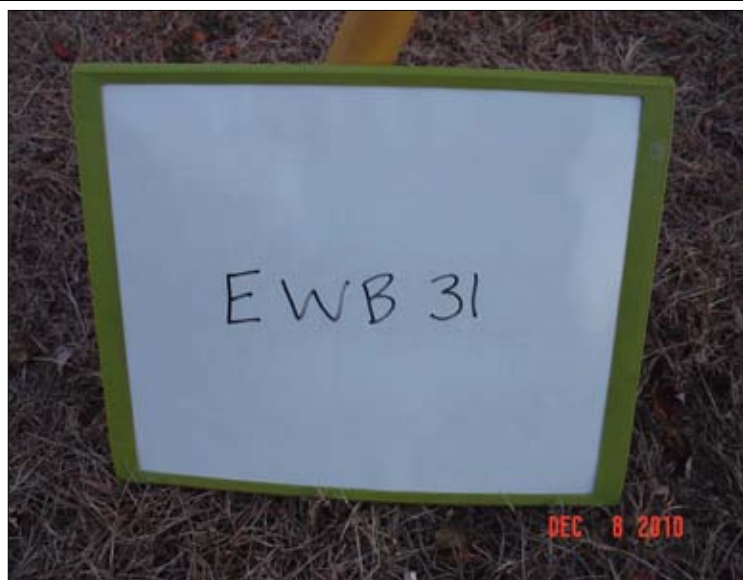
PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:

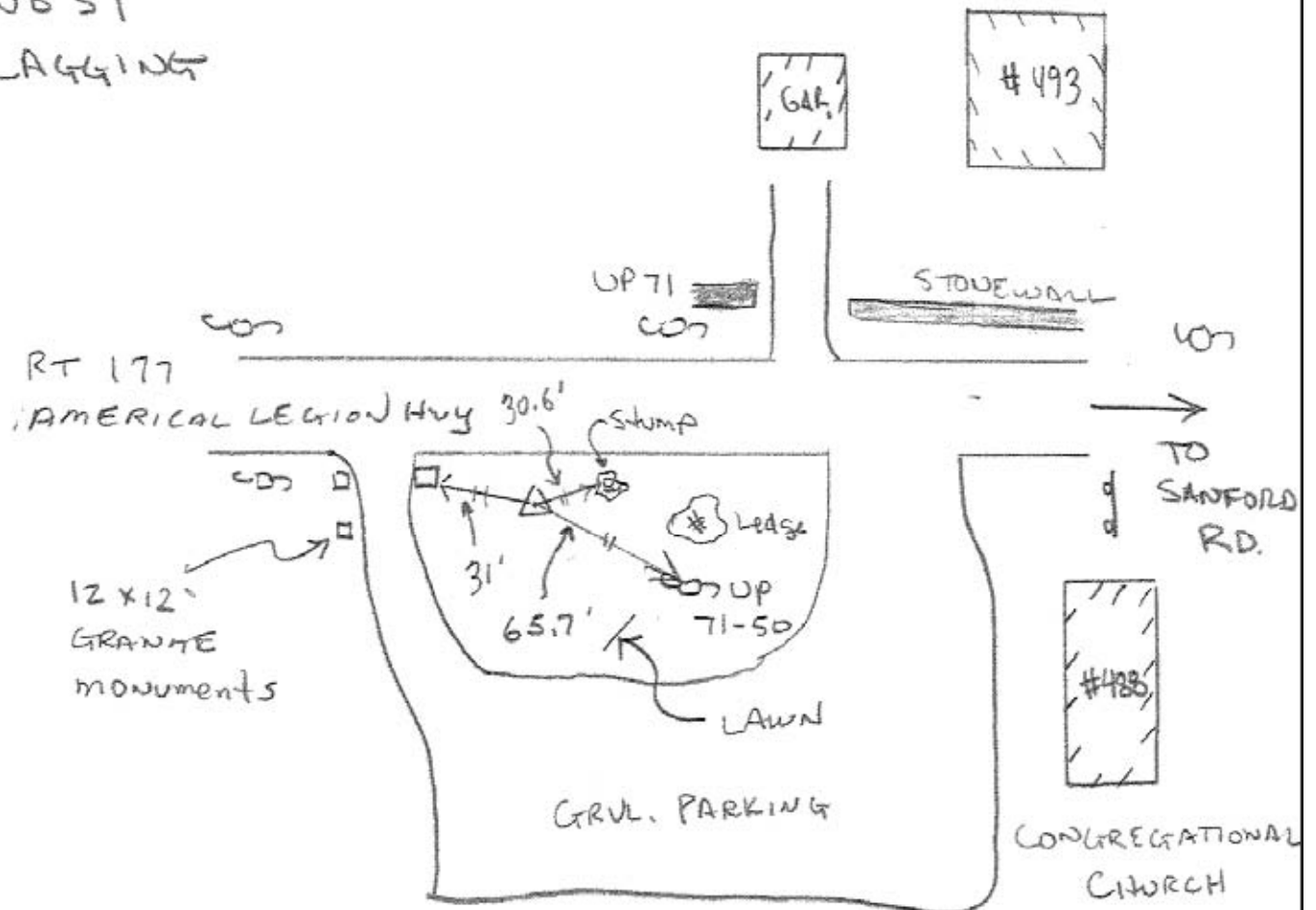


PHOTOS CONT'D:



SITE SKETCH:

EWB 31
FLAGGING





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:

1 of 2

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JOB REFERENCE

NE LIDAR

POINT ID:

EWB32

Proj. No.:

75980S

STATE Massachusetts

COUNTY Bristol

LOCATION: Achuset

OPERATOR D Livingstone

GPS OBSERVATIONS

LATITUDE	41-42-38.2	HGT. MTS
LONGITUDE	70-54-52.8	14.65

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0788

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

D

DATE:

12/08/10

DAY OF YEAR

342

START TIME 10:00

END TIME 10:27

U.T.C.

X LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Grass Area/Road Side

AERIAL TARGET

PUB. BENCH MARK

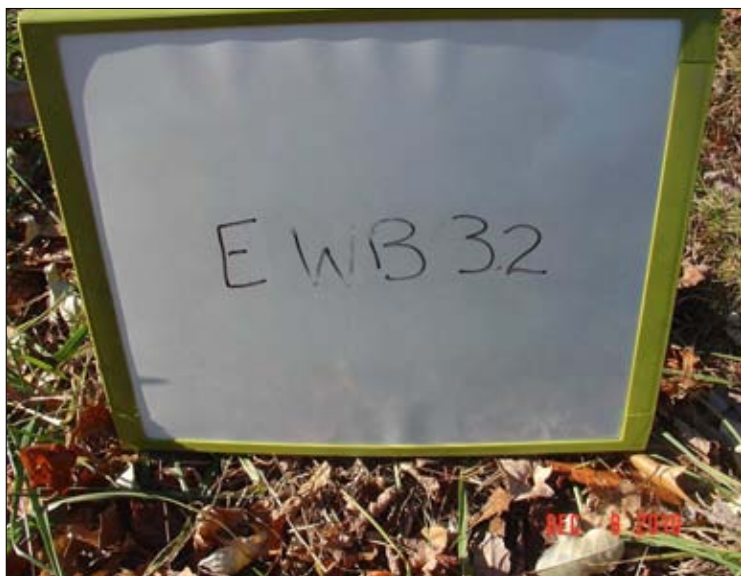
PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

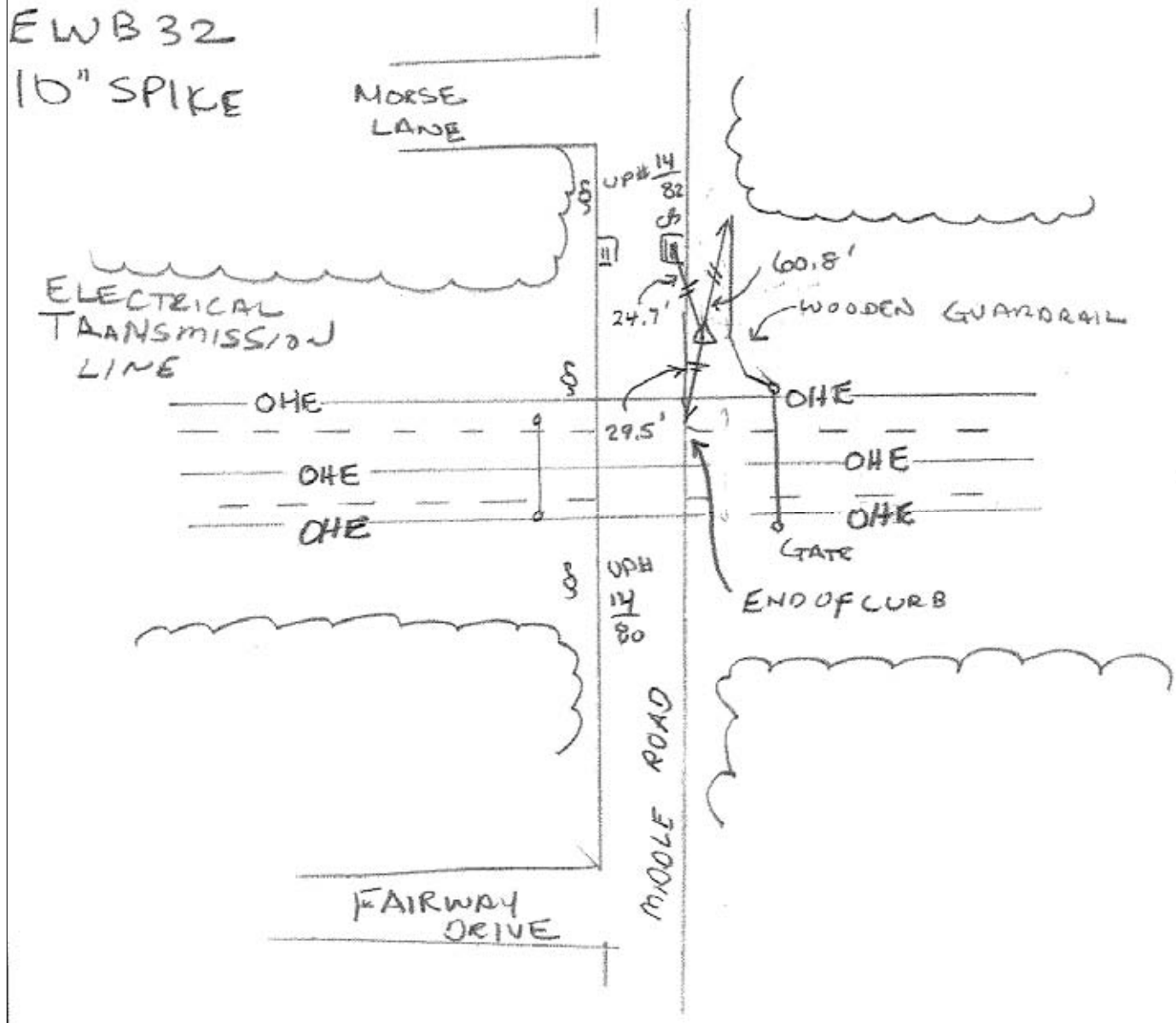
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

EWB33

Proj. No.:

75980S

STATE Massachusetts

COUNTY Plymouth

LOCATION: Rochester

OPERATOR D Livingstone

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0788

LATITUDE

41-46-42.7

HGT. MTS

LONGITUDE

70-47-03.4

12.41

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/07/10

Antenna Serial #

B

DAY OF YEAR

341

Antenna Type

START TIME

08:03

U.T.C.

END TIME

08:27

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Grass/Farm Road

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

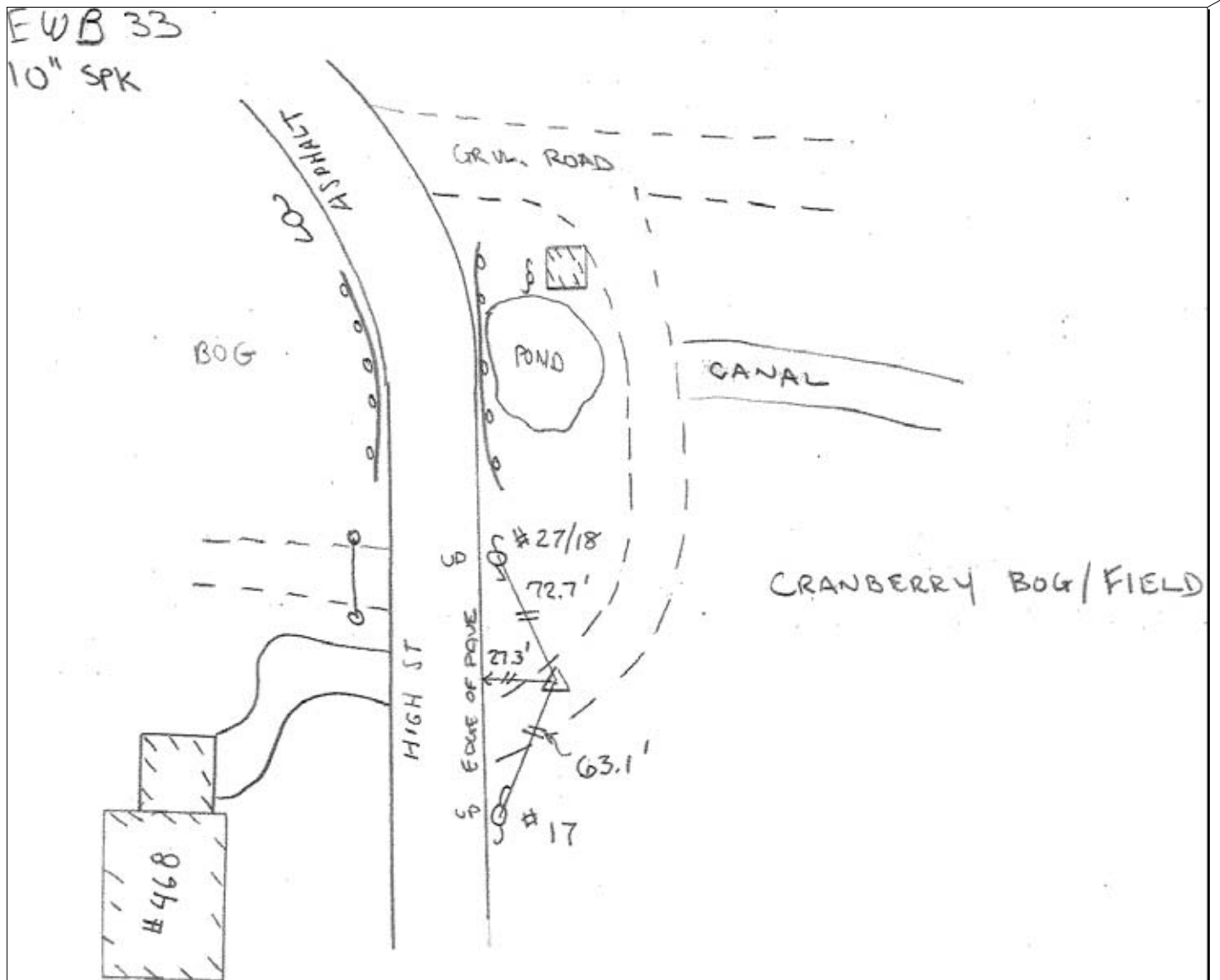
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

PVC34

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Provincetown

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE

42-04-36.0

HGT. MTS

LONGITUDE

70-13-02.9

2.00

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0509

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

A

DATE:

12/01/10

DAY OF YEAR

335

START TIME

06:48

END TIME

10:39

X

U.T.C.

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

4.90 Feet

x

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.493 Meters

MEASURED

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Grass Island

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

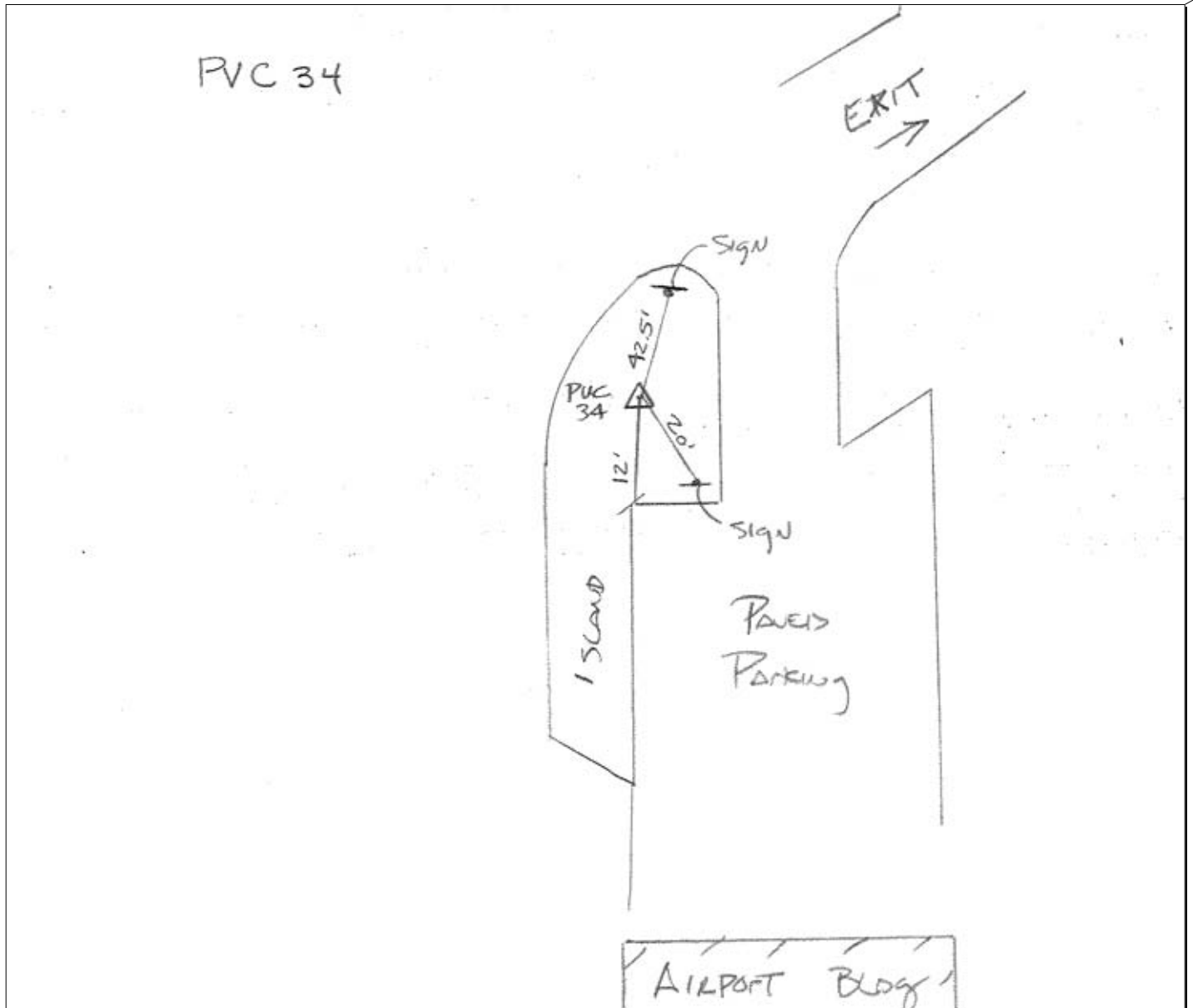
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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Old Town, Maine 04468

207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

PVC35

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Provincetown

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 42-02-13.7

HGT. MTS

LONGITUDE 70-11-49.3

3.00

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

A

DATE:

12/01/10

DAY OF YEAR

335

START TIME 07:20

U.T.C.

END TIME 07:56

X

LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Grass Island

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

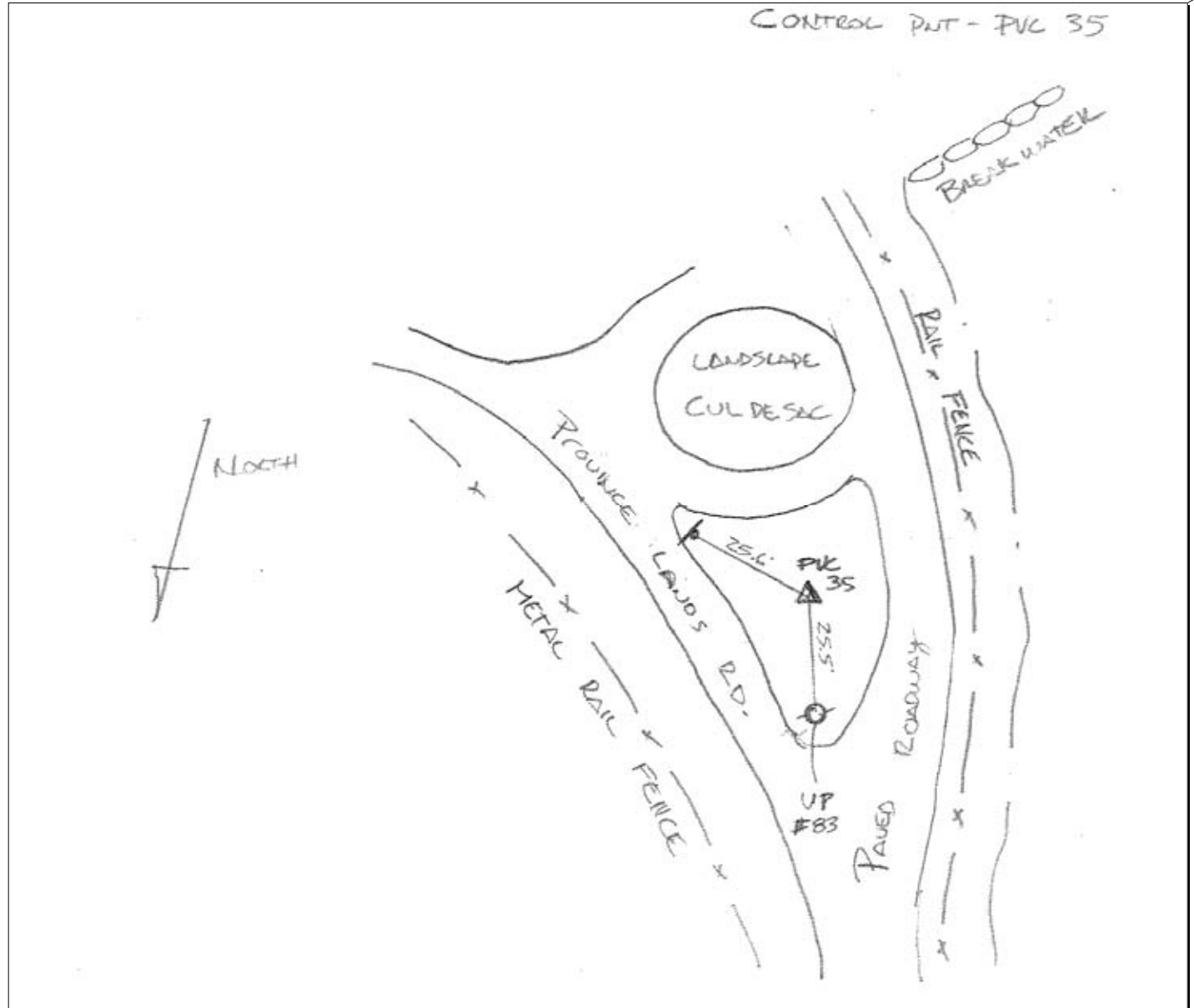
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
1 of 2

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JOB REFERENCE

NE LIDAR

POINT ID:

PVC36

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: North Truro

OPERATOR J Allen

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

LATITUDE 42-02-42.3

HGT. MTS

RECEIVER S/N 272-0515

LONGITUDE 70-05-47.5

14.69

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/01/10

Antenna Serial #

D

DAY OF YEAR

335

Antenna Type

START TIME 09:45

U.T.C.

END TIME 10:15

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Sandy Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

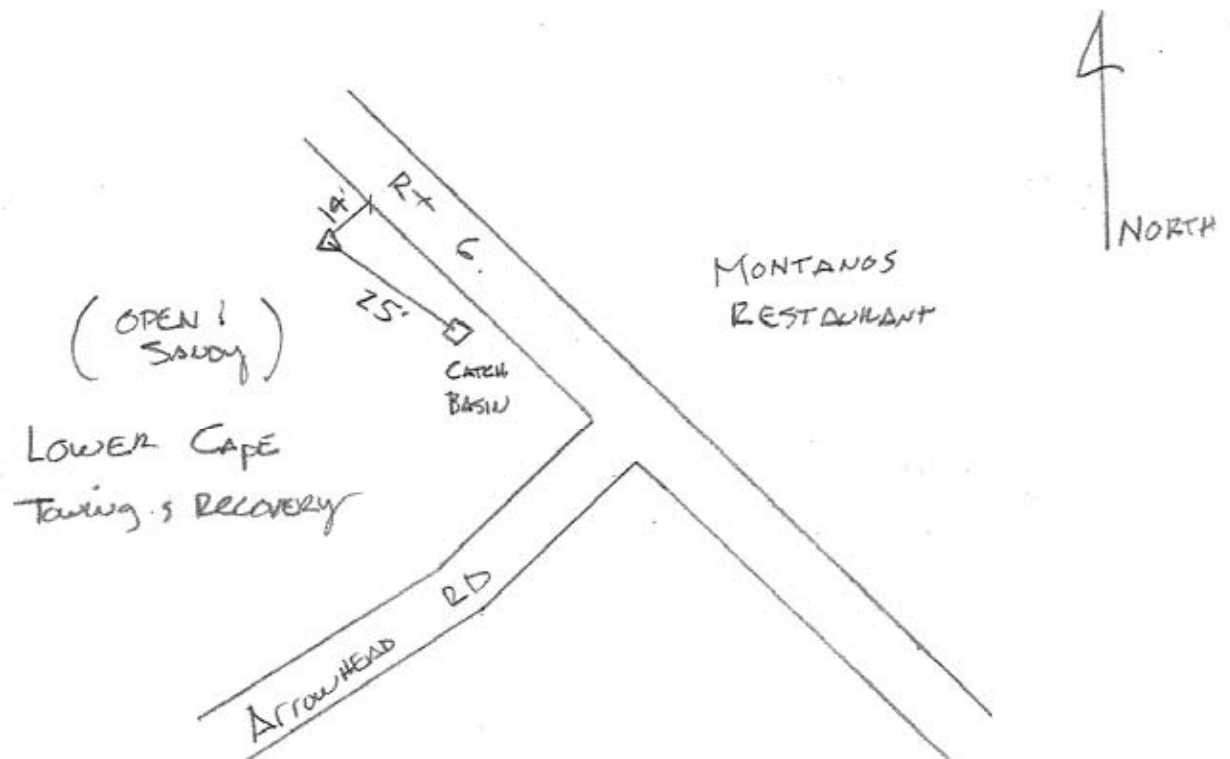
NATURAL

PHOTOS:





CONTRA PNT - PVC 36



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JOB REFERENCE

NE LIDAR

POINT ID:

PVC37

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Truro

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-59-39.3

HGT. MTS

LONGITUDE 70-02-54.1

6.20

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

E

DATE:

12/01/10

DAY OF YEAR

335

START TIME 11:05

END TIME 11:35

U.T.C.

X

LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Grass Area

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

PHOTOS:

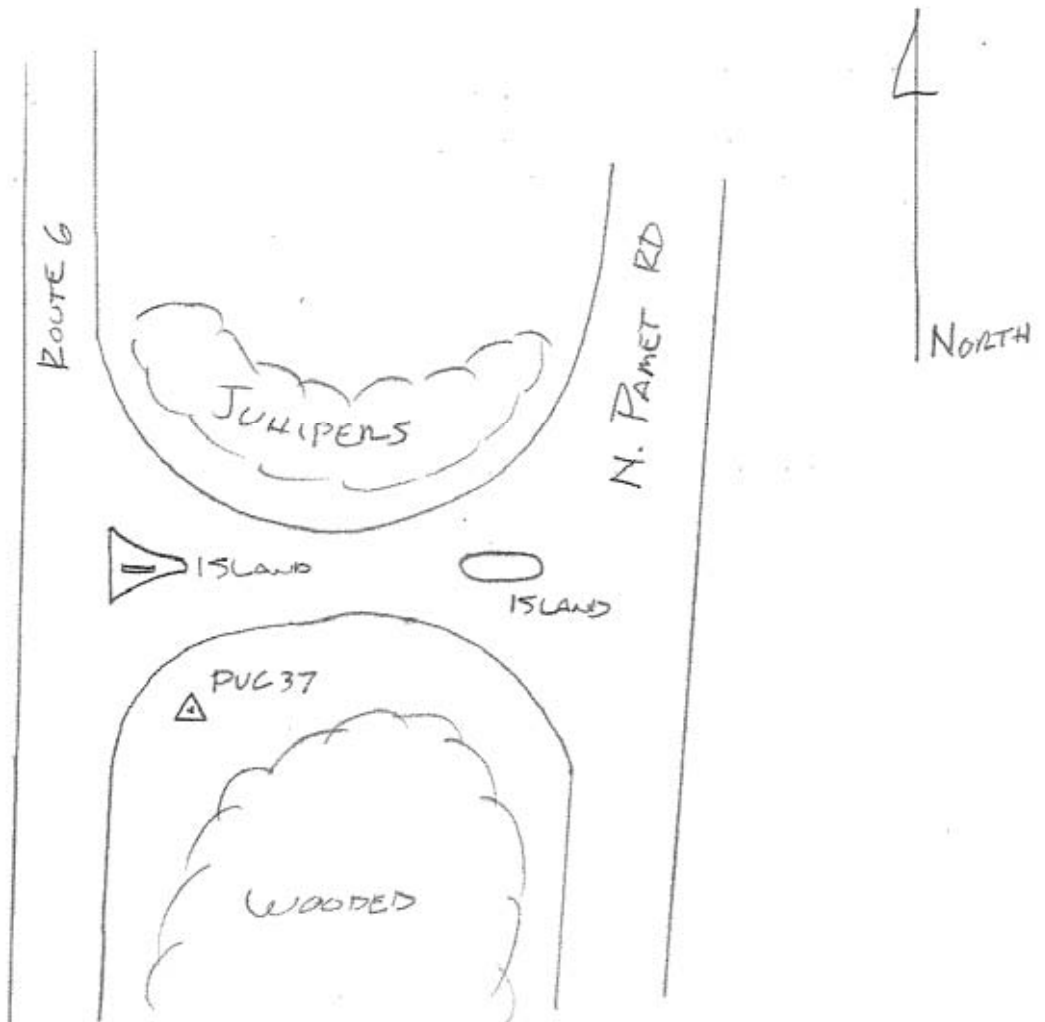


PHOTOS CONT'D:



SITE SKETCH:

CONTROL PNT - PVC 37



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JOB REFERENCE

NE LIDAR

POINT ID:

PVC38

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Wellfleet

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE

41-53-23.2

HGT. MTS

LONGITUDE

69-59-16.2

6.37

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0515

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/01/10

Antenna Serial #

F

DAY OF YEAR

335

Antenna Type

START TIME

11:56

U.T.C.

END TIME

12:20

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:

CONTROL PNT - PVC 38

"SEABERRY"
SURF

ROUTE 6

Sign

Grass
Island

18'

18'

Parking
Area

Flagpole

RILEY'S
T-SHIRT
OUTLET

4
NORTH

WOODS

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JOB REFERENCE

NE LIDAR

POINT ID:

CQX39

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Eastham

OPERATOR J Allen

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

LATITUDE 41-49-10.3

HGT. MTS

RECEIVER S/N 272-0515

LONGITUDE 69-58-09.0

3.50

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/01/10

Antenna Serial #

G

DAY OF YEAR

335

Antenna Type

START TIME

12:35

U.T.C.

END TIME

12:55

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

Collection Rate

MEASURED

FIXED HGT.

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

TOP OF MONUMENT IS:

X

FLUSH

MEASURED

X

FIXED HGT

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

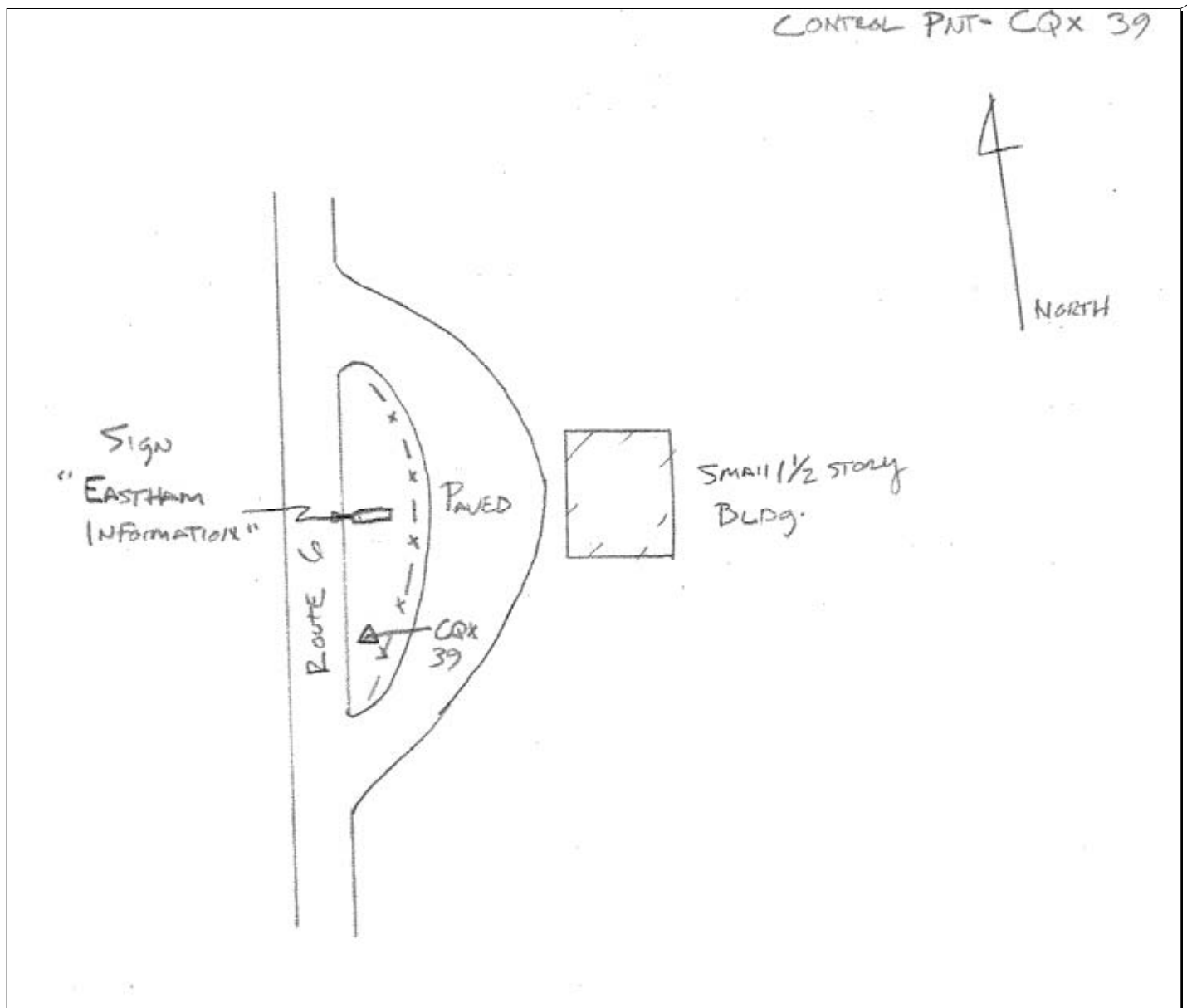
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
1 of 2

JOB REFERENCE

NE LIDAR

POINT ID:

CQX40

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Chatham

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE

41-42-02.3

HGT. MTS

LONGITUDE

69-57-50.4

13.49

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

J

DATE:

12/01/10

DAY OF YEAR

335

START TIME

14:33

END TIME

14:53

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

PHOTOS:

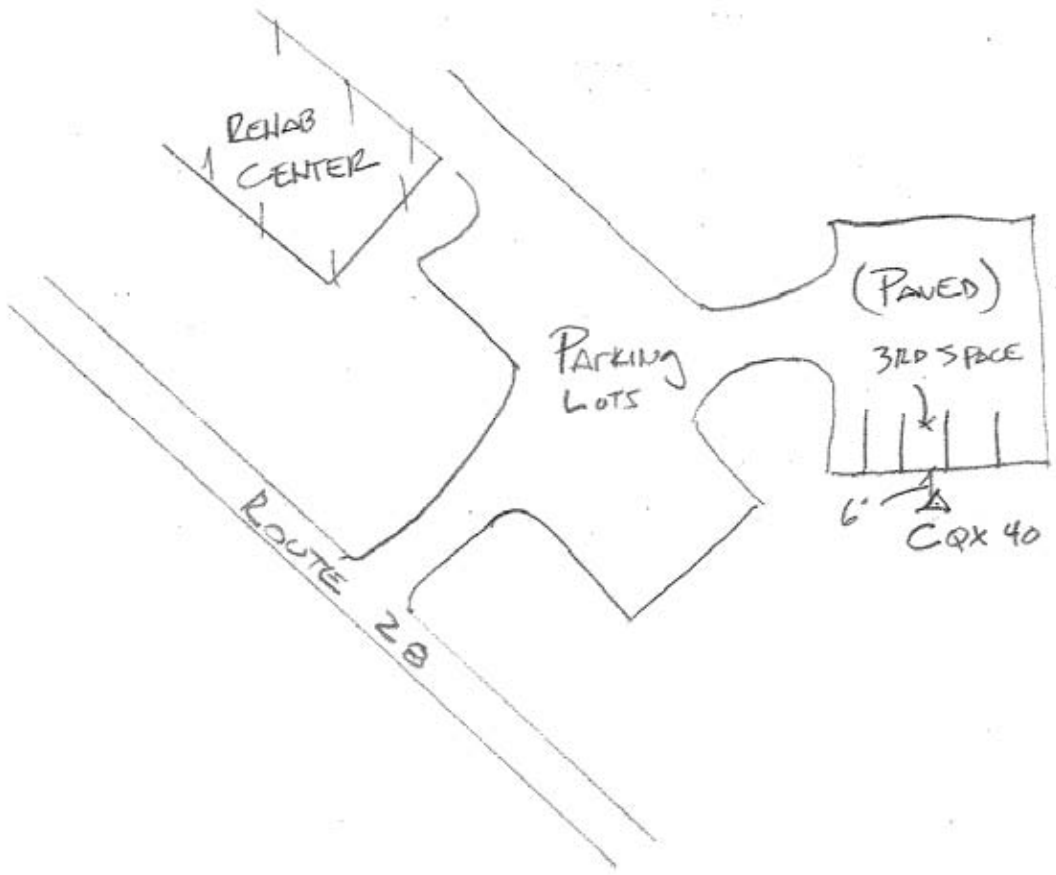


PHOTOS CONT'D:



SITE SKETCH:

Control Pt - CQX 40



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JOB REFERENCE

NE LIDAR

POINT ID:

CQX41

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Brewster

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-43-47.3

HGT. MTS

LONGITUDE 70-02-36.9

30.84

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/01/10

Antenna Serial #

I

DAY OF YEAR

335

Antenna Type

START TIME 13:55

U.T.C.

END TIME 14:15

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Gravel

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:

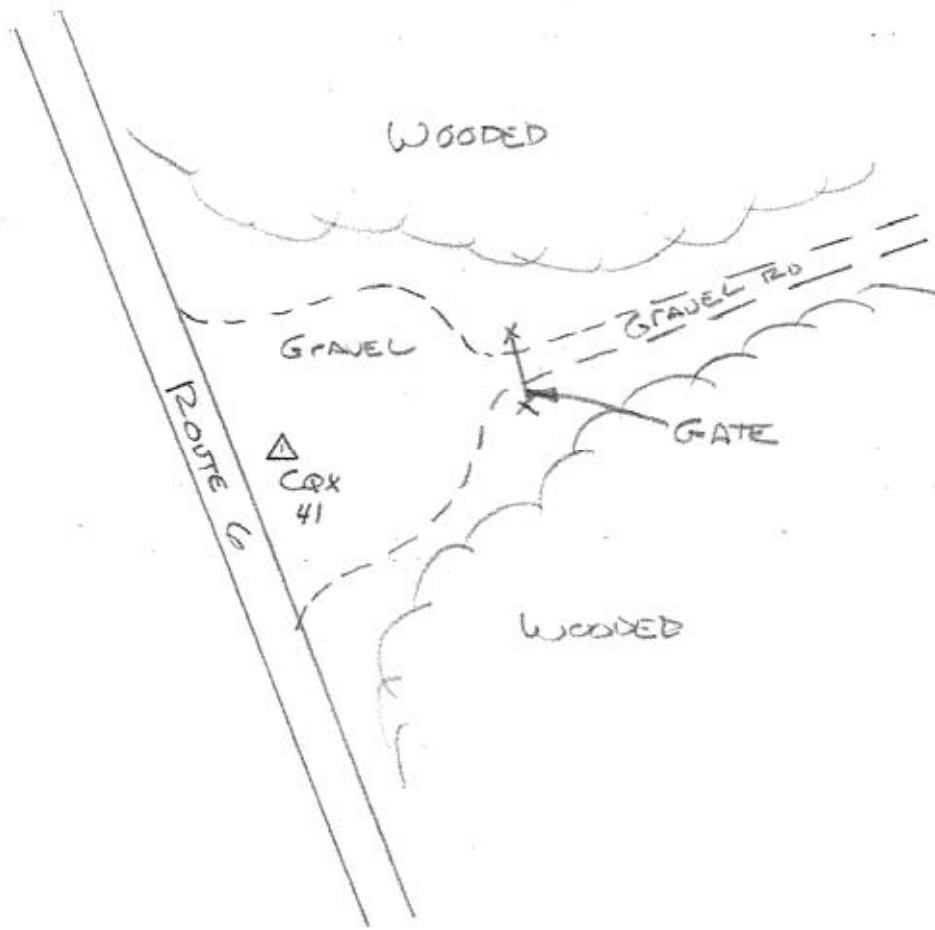


PHOTOS CONT'D:



SITE SKETCH:

CONTROL PNT - CQX 41



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JOB REFERENCE

NE LIDAR

POINT ID:

CQX42

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: South Dennis

OPERATOR J Allen

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

LATITUDE 41-44-35.7

HGT. MTS

RECEIVER S/N 272-0515

LONGITUDE 70-09-12.3

10.67

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

11/30/10

Antenna Serial #

D

DAY OF YEAR

334

Antenna Type

START TIME

13:48

U.T.C.

END TIME

14:13

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:

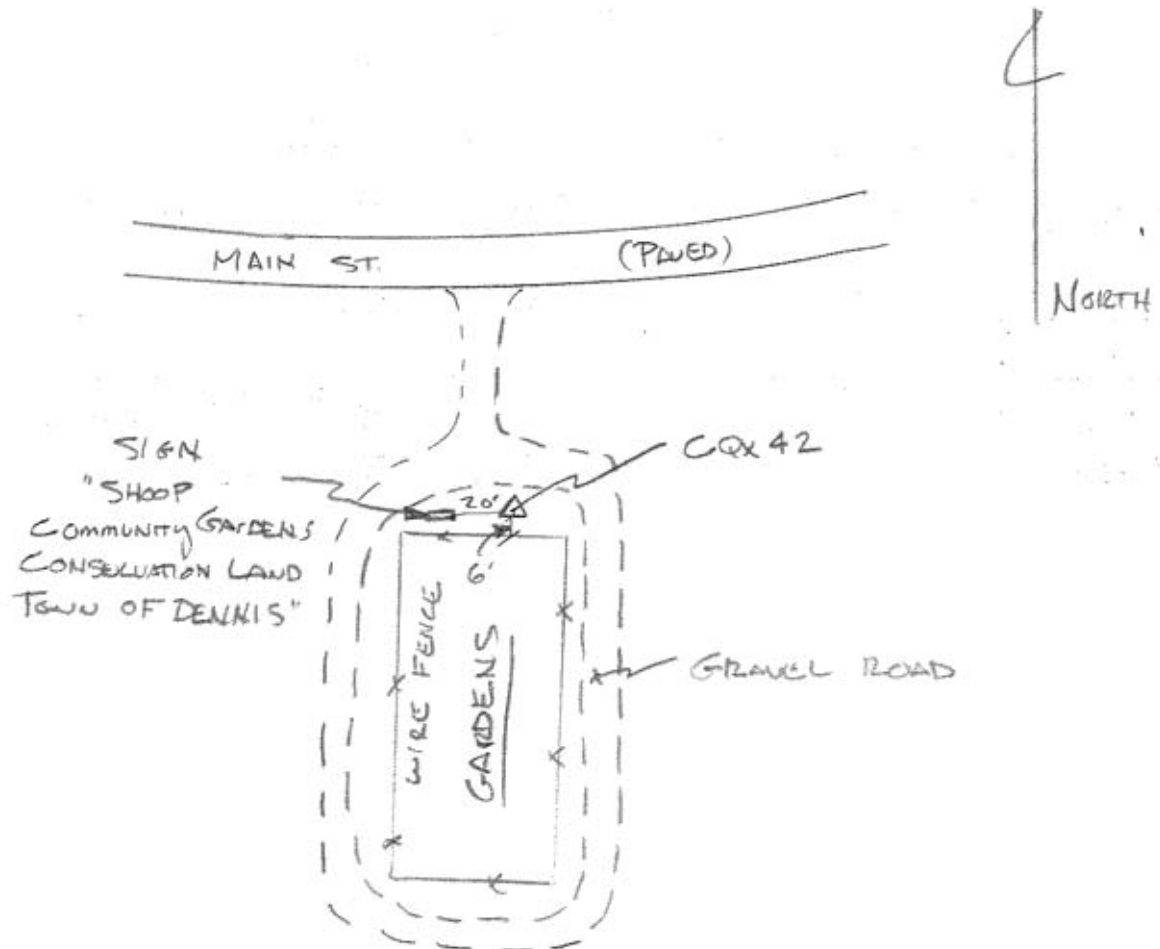


PHOTOS CONT'D:



SITE SKETCH:

CONTROL PNT - CQX 42



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JOB REFERENCE

NE LIDAR

POINT ID:

CQX43

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Dennis

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-39-57.3

HGT. MTS

LONGITUDE 70-08-07.4

3.13

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

L

DATE:

12/01/10

DAY OF YEAR

335

START TIME

16:07

END TIME

16:30

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Grass Island

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:

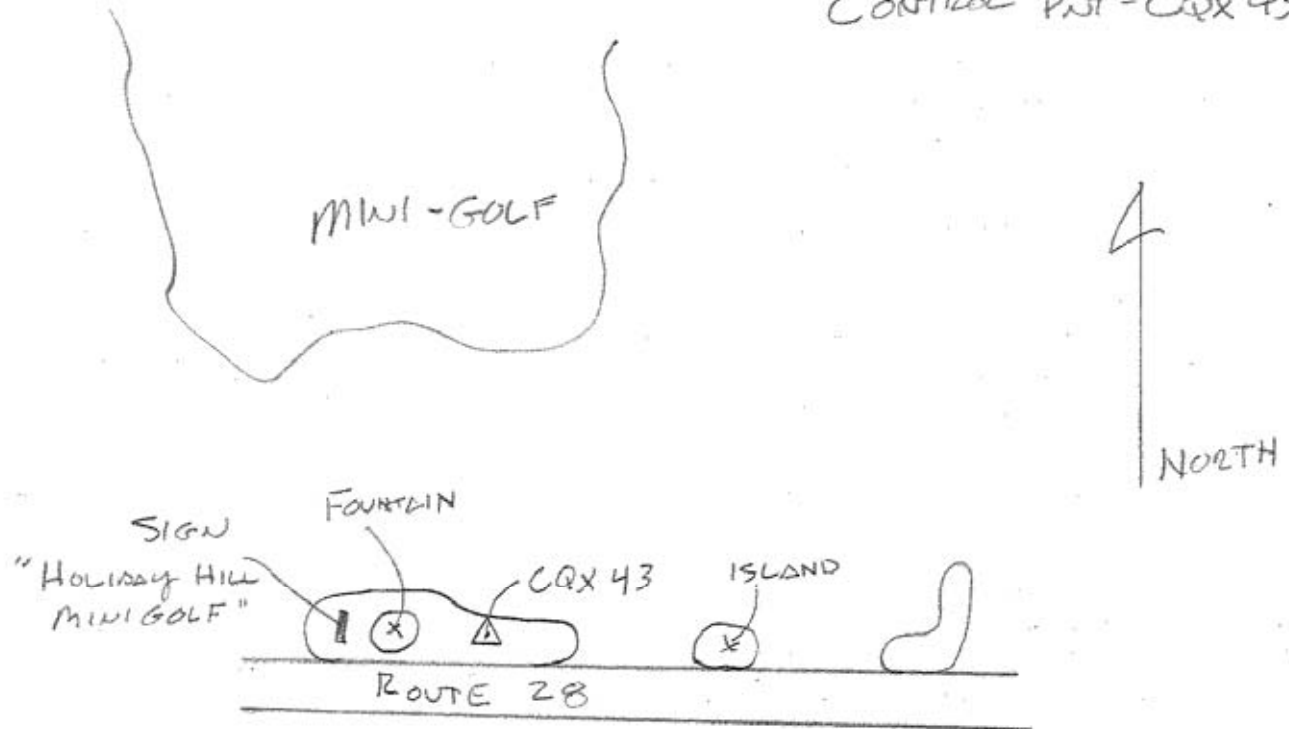


PHOTOS CONT'D:



SITE SKETCH:

CONTROL PNT - CQX 43



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JOB REFERENCE

NE LIDAR

POINT ID:

CQX44

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: West Yarmouth

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE

41-40-45.0

HGT. MTS

LONGITUDE

70-15-35.8

11.47

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0515

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

11/30/10

Antenna Serial #

C

DAY OF YEAR

334

Antenna Type

START TIME

13:05

U.T.C.

END TIME

13:30

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

Collection Rate

MEASURED

FIXED HGT.

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

TOP OF MONUMENT IS:

X

FLUSH

MEASURED

X

FIXED HGT

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Wood Chip/Mulch Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

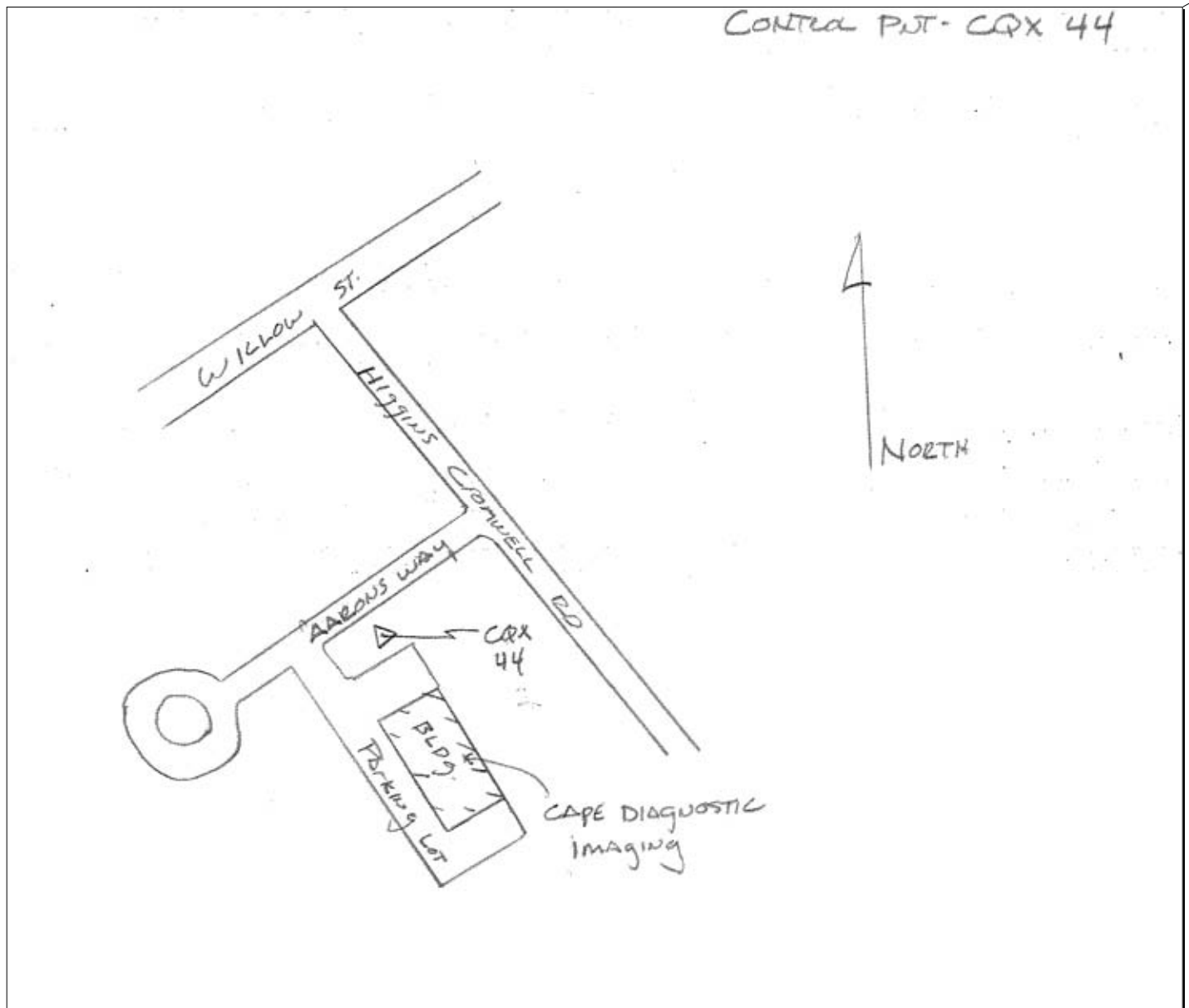
PHOTOS:



PHOTOS CONT'D:



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JOB REFERENCE

NE LIDAR

POINT ID:

CQX45

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Chatham

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE

41-39-27.5

HGT. MTS

LONGITUDE

69-57-30.8

14.32

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0515

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/01/10

Antenna Serial #

K

DAY OF YEAR

335

Antenna Type

START TIME

15:07

U.T.C.

END TIME

15:32

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:

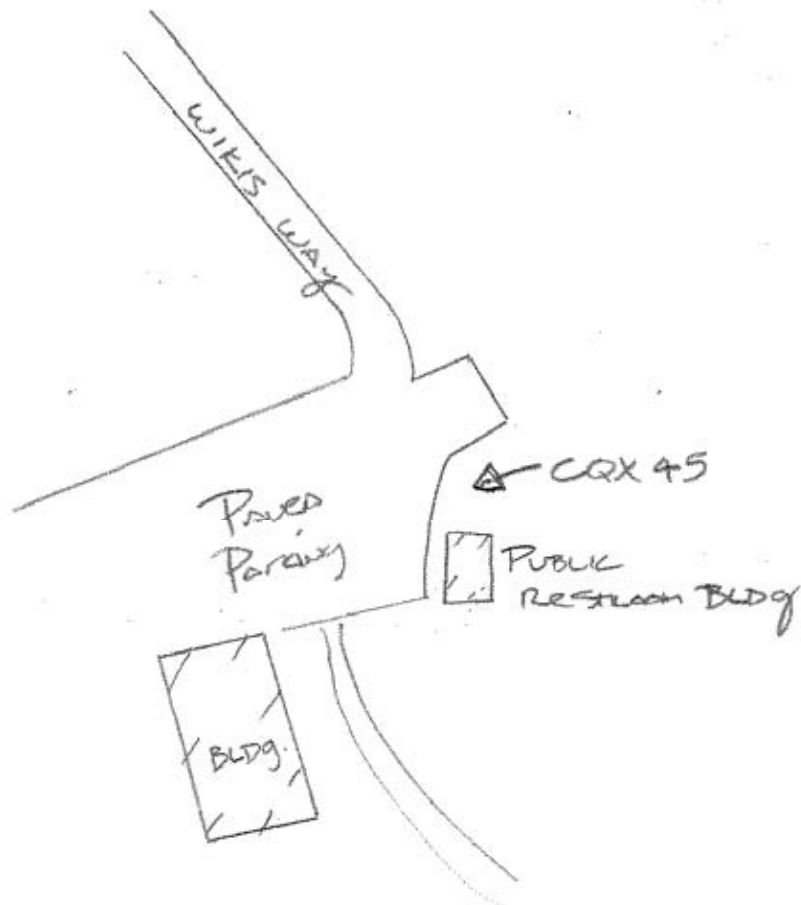


PHOTOS CONT'D:



SITE SKETCH:

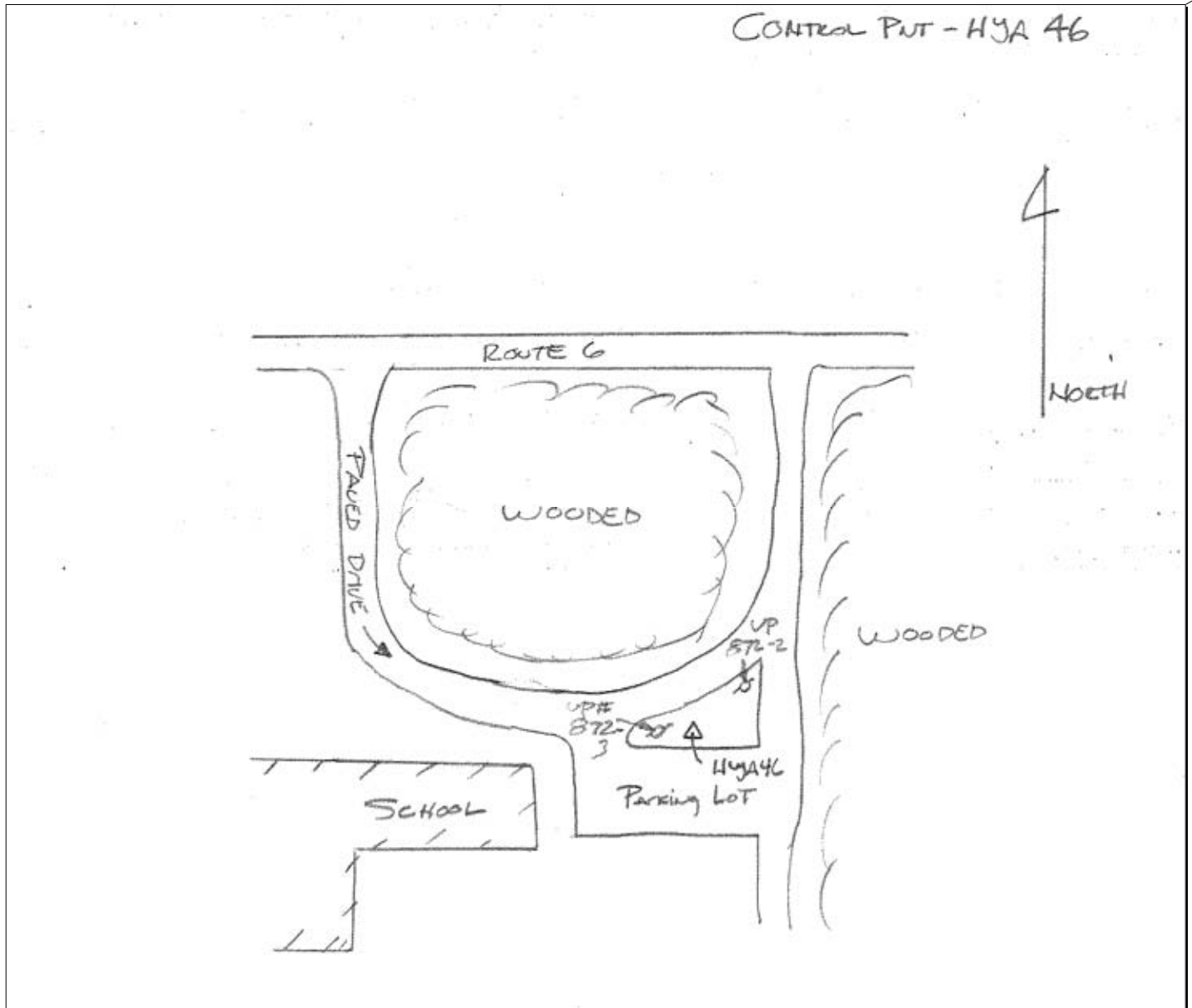
CONTROL PNT - CQX 45



PHOTOS CONT'D:



SITE SKETCH:





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:

1 of 2

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JOB REFERENCE

NE LIDAR

POINT ID:

HYA46

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: West Barnstable

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-41-57.0

HGT. MTS

LONGITUDE 70-19-34.3

17.79

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

E

DATE:

11/30/10

DAY OF YEAR

334

START TIME 14:52

END TIME 15:14

U.T.C.

X

LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

PHOTOS:



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JOB REFERENCE

NE LIDAR

POINT ID: HYA47

Proj. No.: 75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Sandwich

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-44-35.7 HGT. MTS

LONGITUDE 70-26-59.2 5.00

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

F

DATE: 11/30/10

DAY OF YEAR 334

START TIME 15:35

END TIME 16:00

U.T.C.

X LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5 SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS: X FLUSH

MTRS/FEET ABOVE GROUND

MTRS/FEET BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

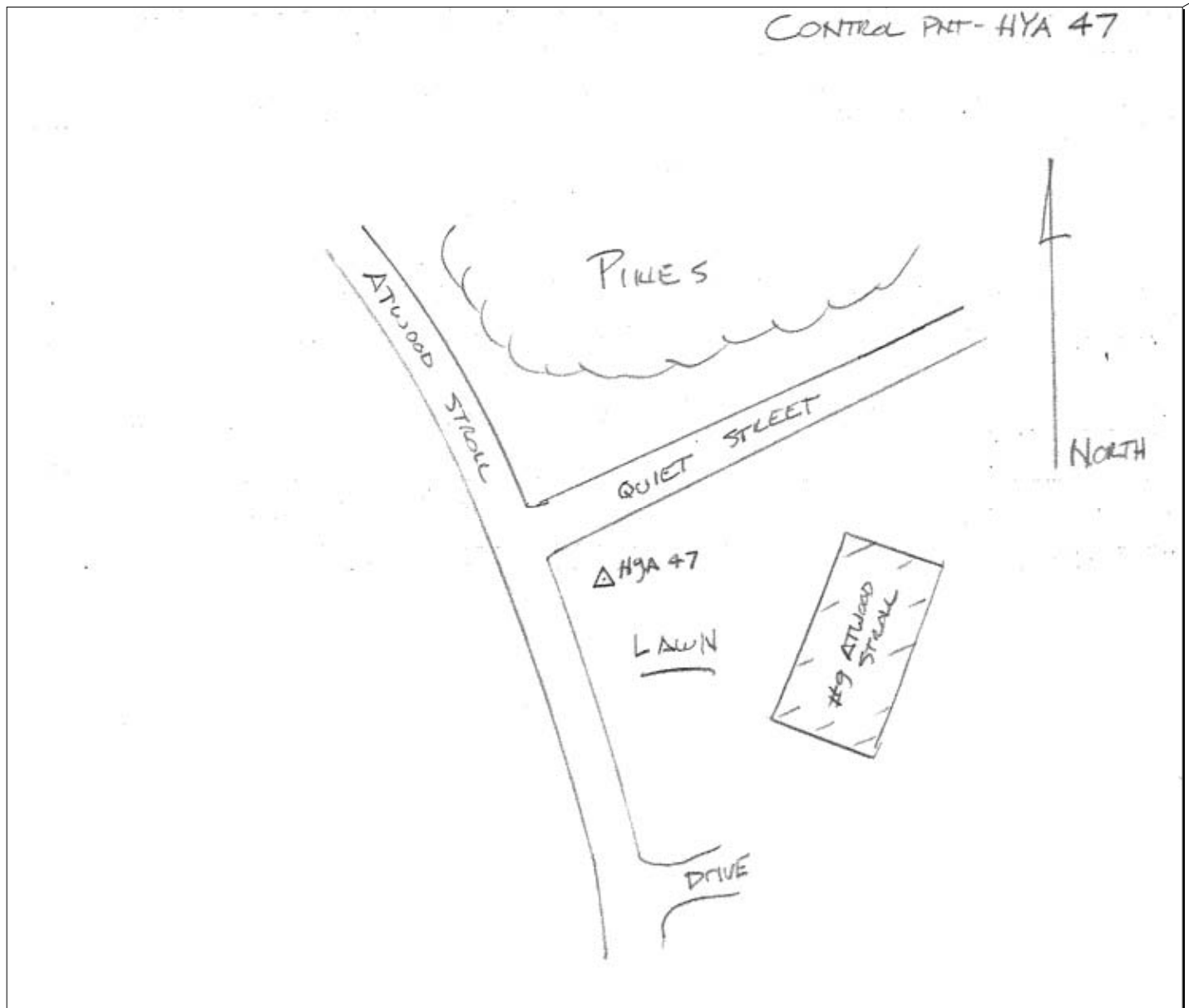
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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JOB REFERENCE

NE LIDAR

POINT ID:

HYA48

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Sagamore Beach

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-48-01.8

HGT. MTS

LONGITUDE 70-32-11.0

32.73

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

N

DATE:

12/02/10

DAY OF YEAR

336

START TIME 15:26

U.T.C.

END TIME 15:46

X LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Gravel/Grass

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

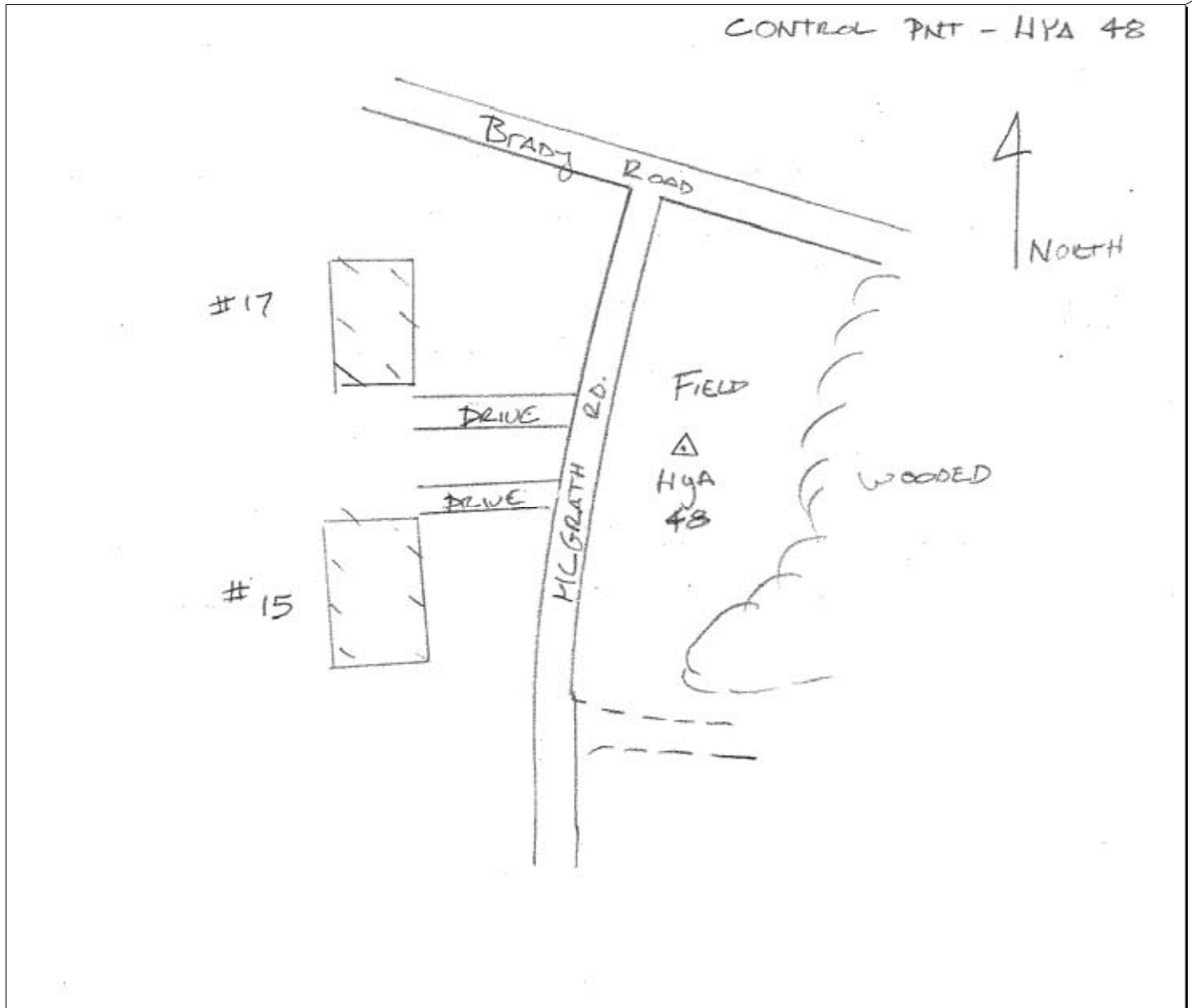
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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JOB REFERENCE

NE LIDAR

POINT ID:

HYA49

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Pocasset

OPERATOR J Allen

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

LATITUDE

41-42-49

HGT. MTS

LONGITUDE

70-36-56.7

1.55

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/02/10

Antenna Serial #

L

DAY OF YEAR

336

Antenna Type

START TIME

14:15

U.T.C.

END TIME

14:35

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Sandy/Gravel Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

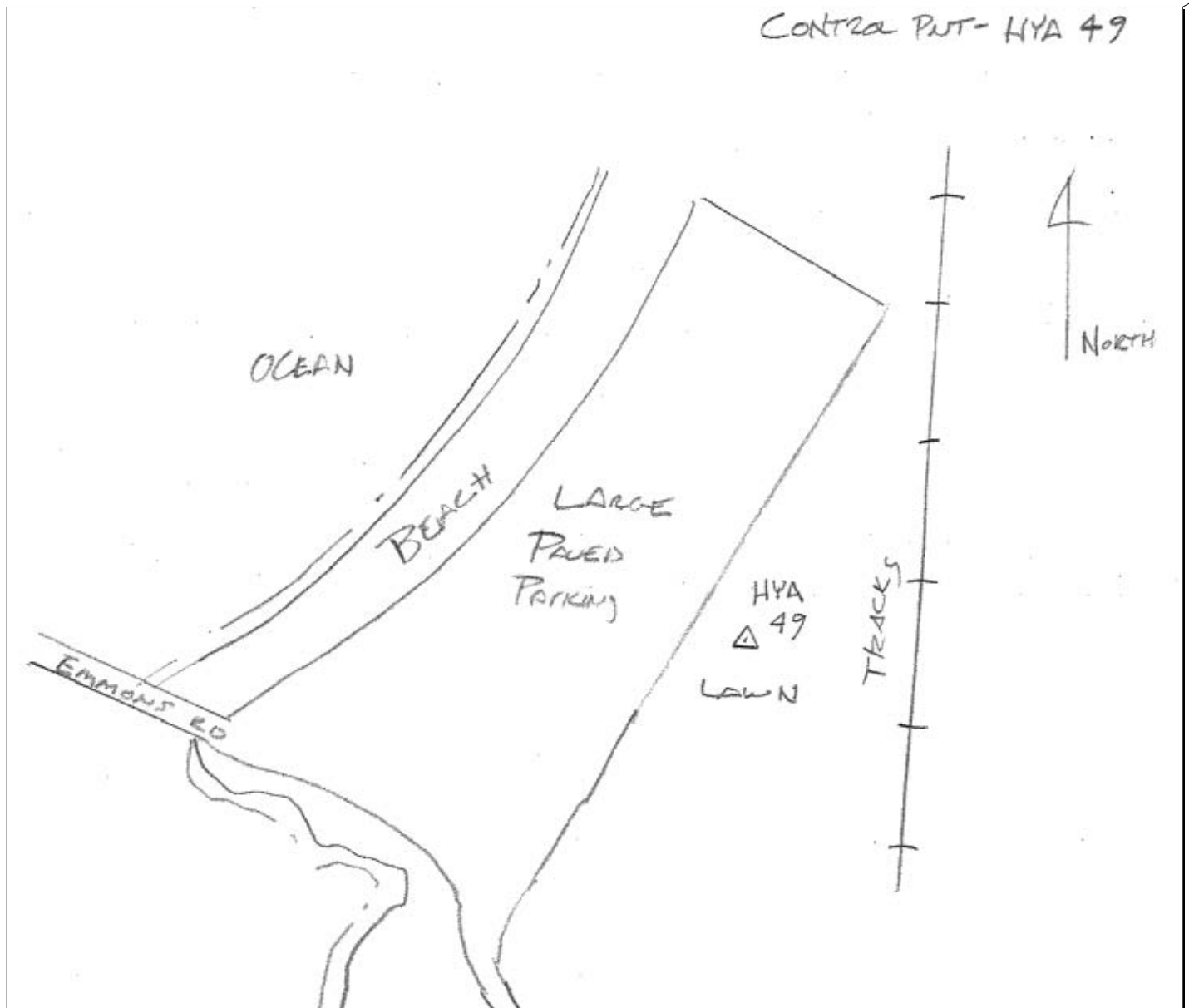
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



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JOB REFERENCE

NE LIDAR

POINT ID:

HYA50

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Mashpee

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-39-15.9

HGT. MTS

LONGITUDE 70-29-42.2

32.72

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

J

DATE:

12/02/10

DAY OF YEAR

336

START TIME 12:43

END TIME 13:05

U.T.C.

X

LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

Point in Baseball Field

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

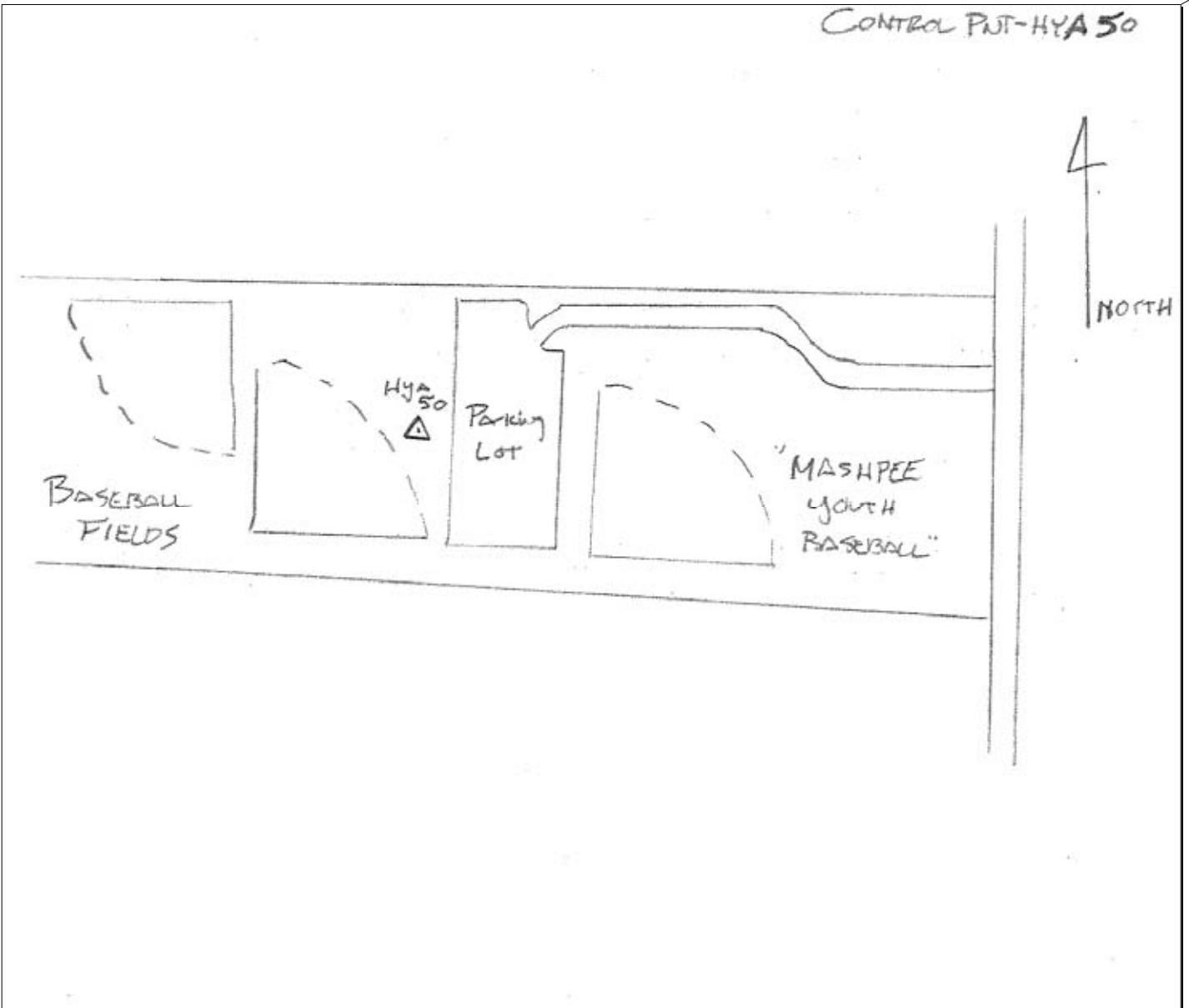
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



Offices nationwide
sewall.com
136 Center Street
P.O. Box 433
Old Town, Maine 04468
207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

HYA51

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Osterville

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE

41-37-33.3

HGT. MTS

LONGITUDE

70-23-03.0

10.16

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0515

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

11/30/10

Antenna Serial #

B

DAY OF YEAR

334

Antenna Type

START TIME

12:13

U.T.C.

END TIME

12:33

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Lawn

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

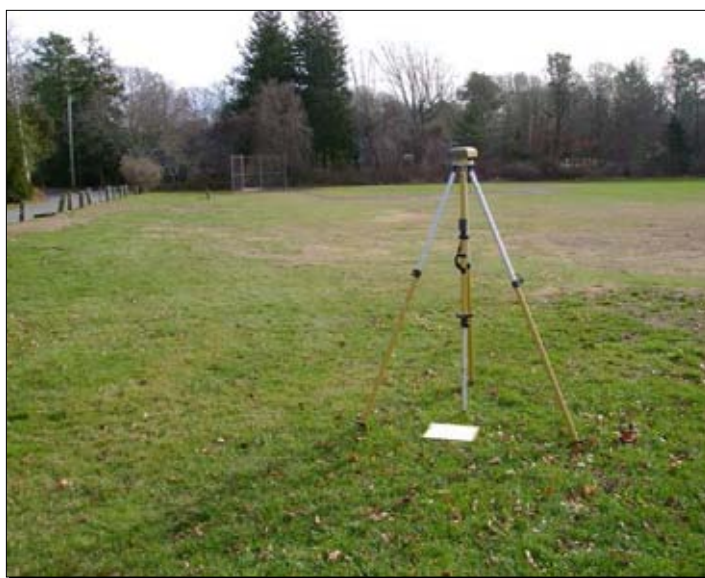
X

NEW CONTROL

PUB. CONTROL

NATURAL

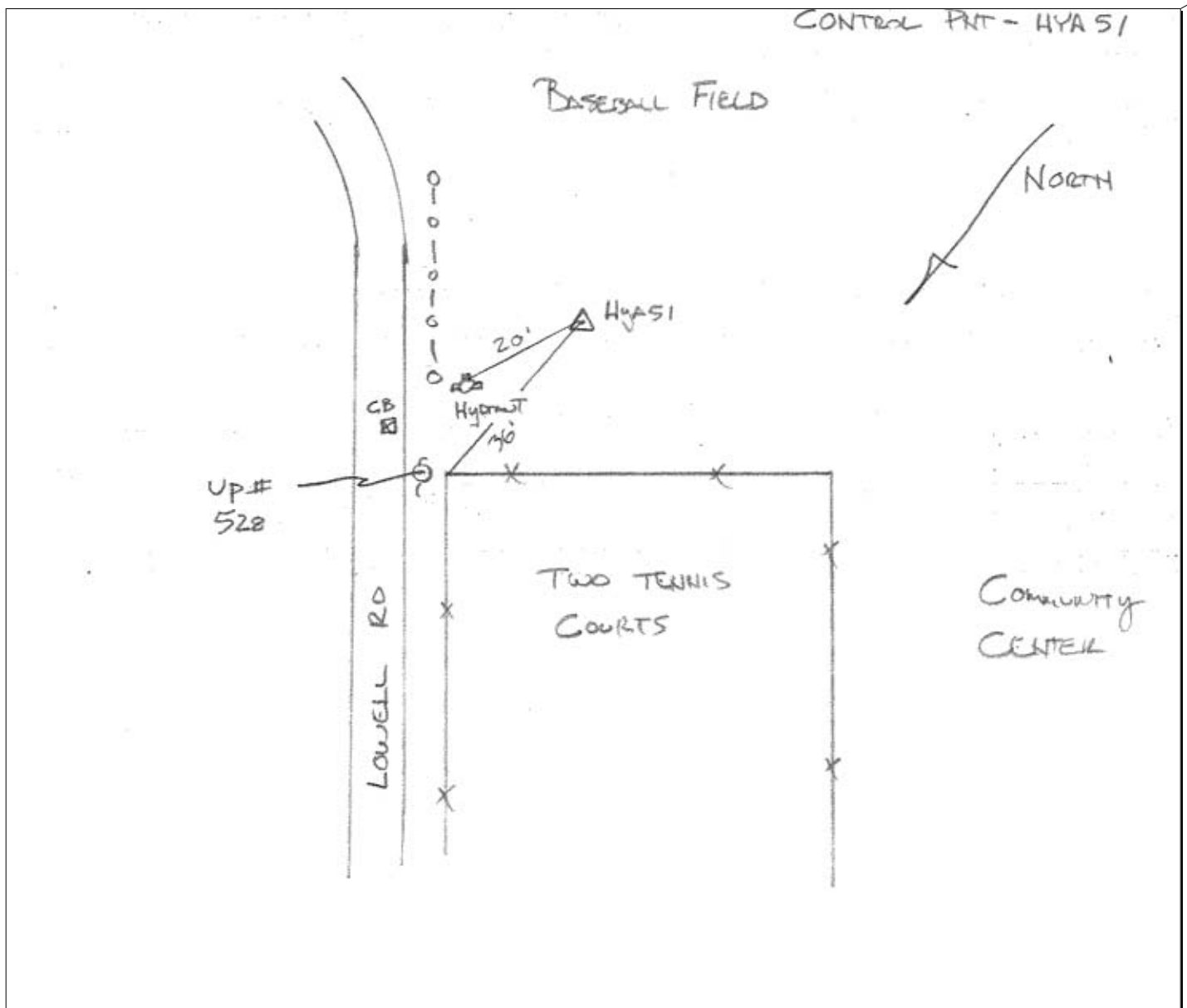
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



Offices nationwide
sewall.com
136 Center Street
P.O. Box 433
Old Town, Maine 04468
207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

HYA52

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: West Barnstable

OPERATOR J Allen

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

LATITUDE 41-40-56.3

HGT. MTS

RECEIVER S/N 272-0515

LONGITUDE 70-24-05.4

29.45

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

11/30/10

Antenna Serial #

A

DAY OF YEAR

334

Antenna Type

START TIME 11:26

U.T.C.

END TIME 11:46

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

Collection Rate

MEASURED

FIXED HGT.

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

TOP OF MONUMENT IS:

X

FLUSH

MEASURED

X

FIXED HGT

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Grass Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:

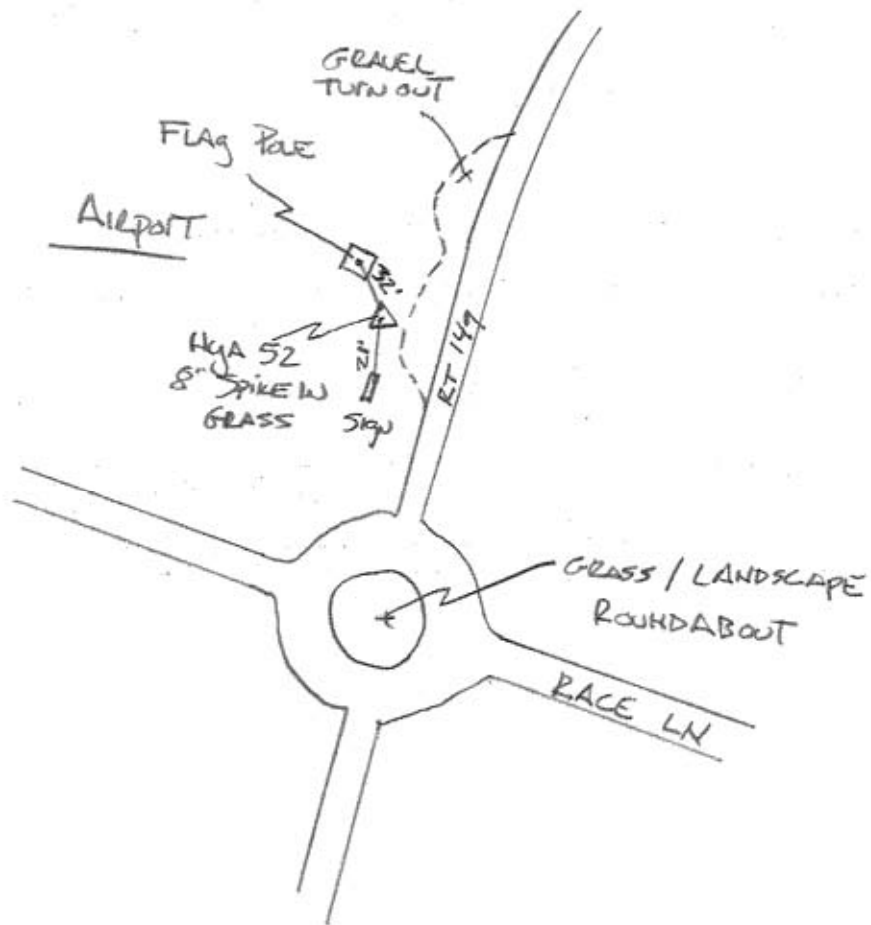


PHOTOS CONT'D:



SITE SKETCH:

CONTROL PNT - Hya 52



Offices nationwide
sewall.com

136 Center Street
P.O. Box 433
Old Town, Maine 04468

207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

HYA53

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Sandwich

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE

41-42-32.3

HGT. MTS

LONGITUDE

70-29-34.6

50.53

RECEIVER MODEL

TOPCON HIPER GD

RECEIVER S/N

272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

K

DATE:

12/02/10

DAY OF YEAR

336

START TIME

13:27

END TIME

13:50

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Bridge Spike in Grass

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

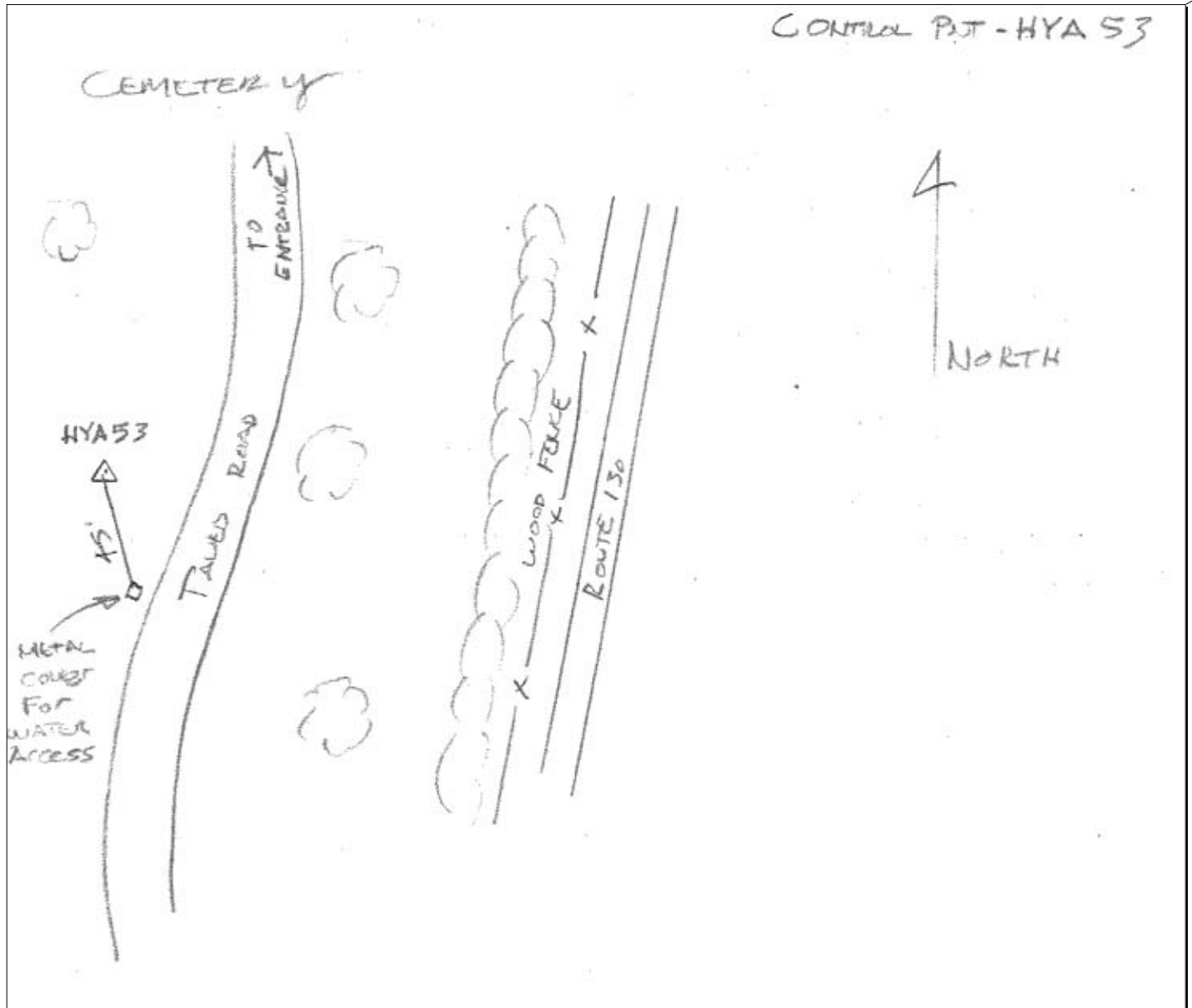
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



Offices nationwide
sewall.com

136 Center Street
P.O. Box 433
Old Town, Maine 04468

207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

MVY54

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Mashpee

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-35-42.4

HGT. MTS

LONGITUDE 70-28-31.1

7.98

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

B

DATE:

12/02/10

DAY OF YEAR

336

START TIME

07:30

END TIME

07:50

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Ground/Mulch Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

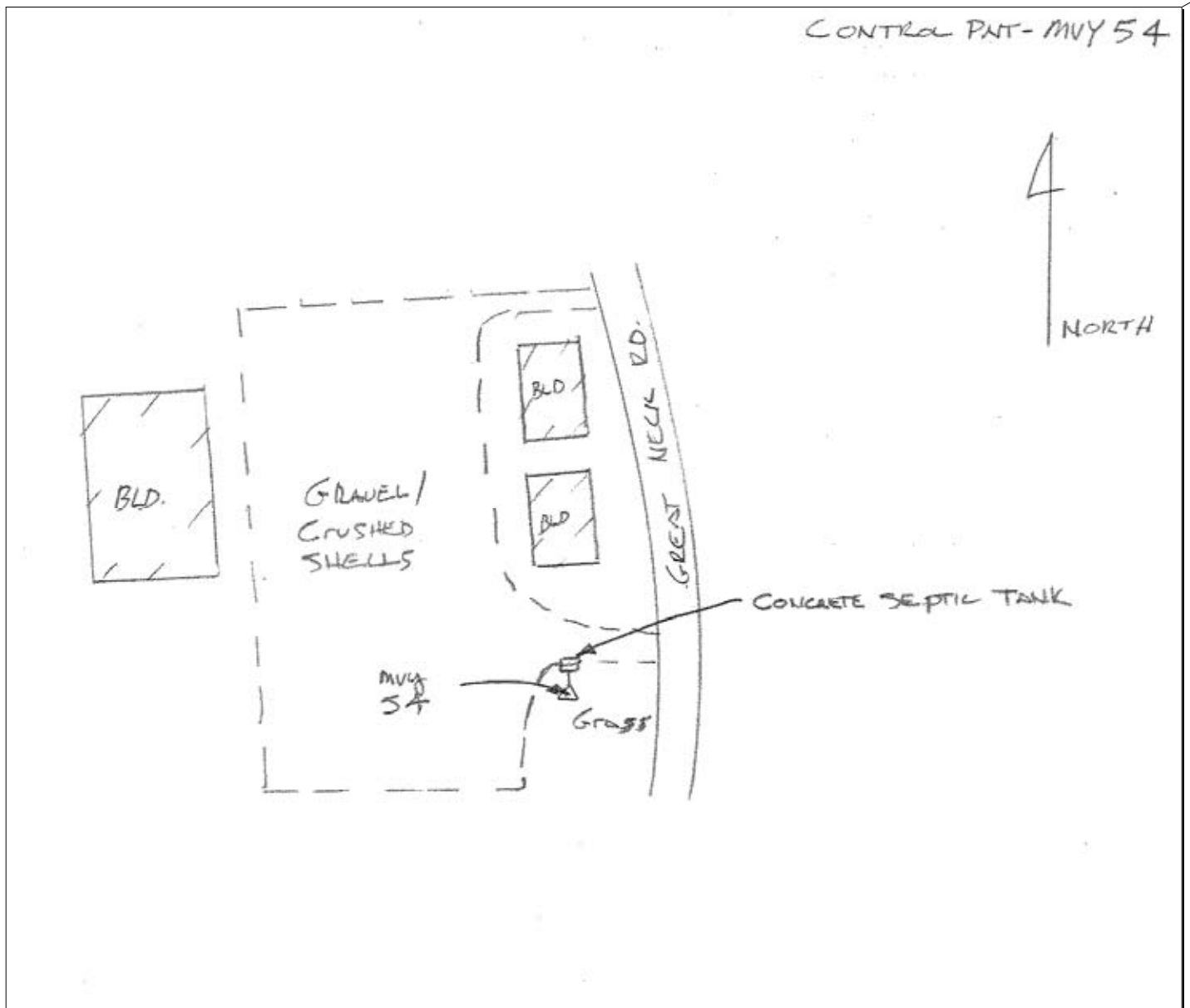
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



Offices nationwide
sewall.com
136 Center Street
P.O. Box 433
Old Town, Maine 04468
207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

MVY55

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: East Falmouth

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-37-26.8

HGT. MTS

LONGITUDE 70-33-02.9

23.36

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

I

DATE:

12/02/10

DAY OF YEAR

336

START TIME

12:00

END TIME

12:25

X

U.T.C.

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike Set in Gravel/Grassy Area

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

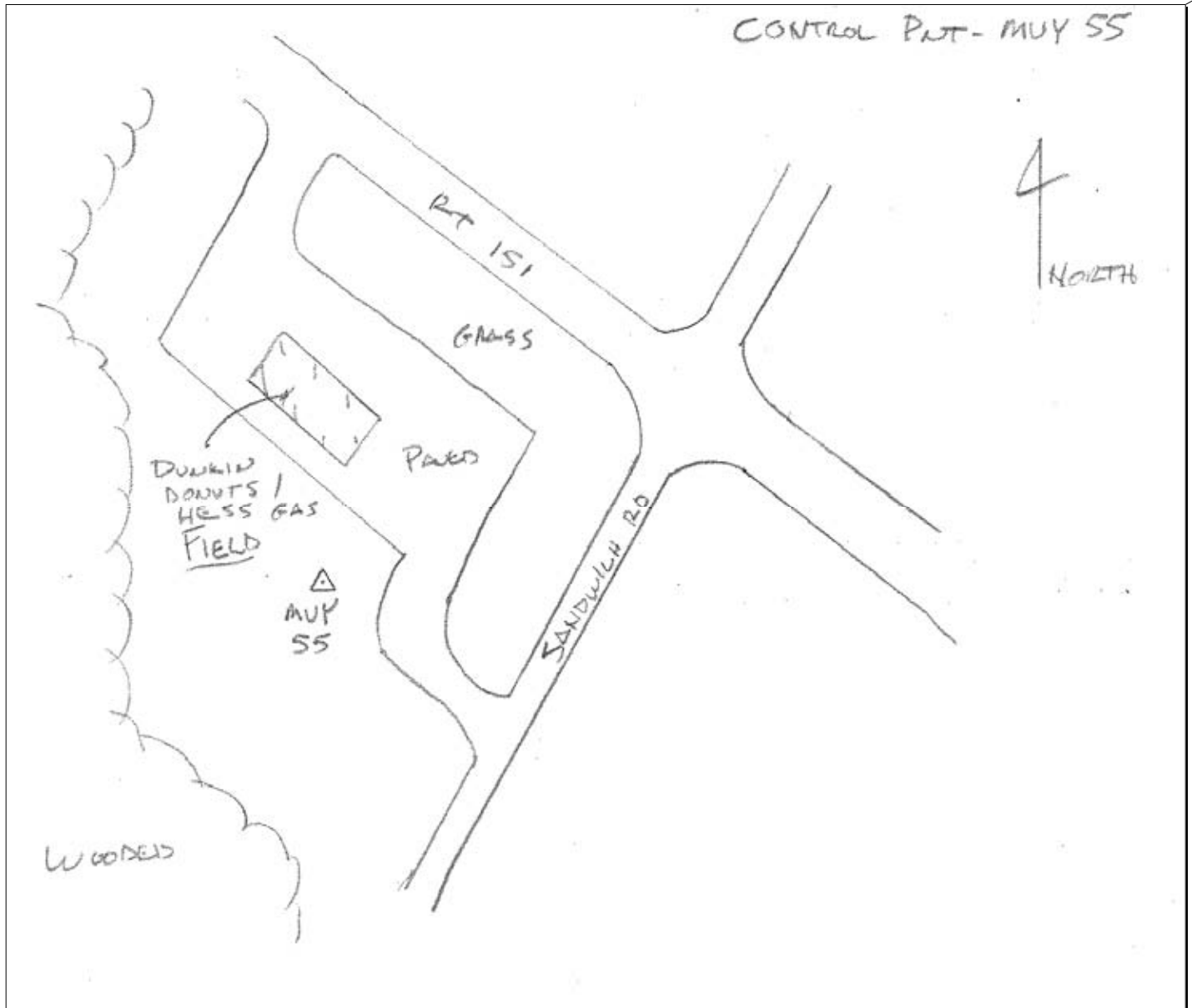
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



Offices nationwide
sewall.com

136 Center Street
P.O. Box 433
Old Town, Maine 04468

207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

MVY56

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: North Falmouth

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-38-53.1

HGT. MTS

LONGITUDE 70-36-45.3

10.08

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

H

DATE:

12/02/10

DAY OF YEAR

336

START TIME 11:27

U.T.C.

END TIME 11:50

X

LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Lawn

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X NEW CONTROL

PUB. CONTROL

NATURAL

PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



Offices nationwide
sewall.com
136 Center Street
P.O. Box 433
Old Town, Maine 04468
207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

MVY57

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Falmouth

OPERATOR J Allen

GPS OBSERVATIONS

RECEIVER MODEL TOPCON HIPER GD

LATITUDE 41-31-17.5

HGT. MTS

RECEIVER S/N 272-0515

LONGITUDE 70-39-45.2

16.57

ANTENNA INFO

RADIUS (M)

SESSION

DATE:

12/02/10

Antenna Serial #

F

DAY OF YEAR

336

Antenna Type

START TIME

10:12

U.T.C.

END TIME

10:35

X

LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

Collection Rate

5

SECONDS

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Gravel Parking Lot

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

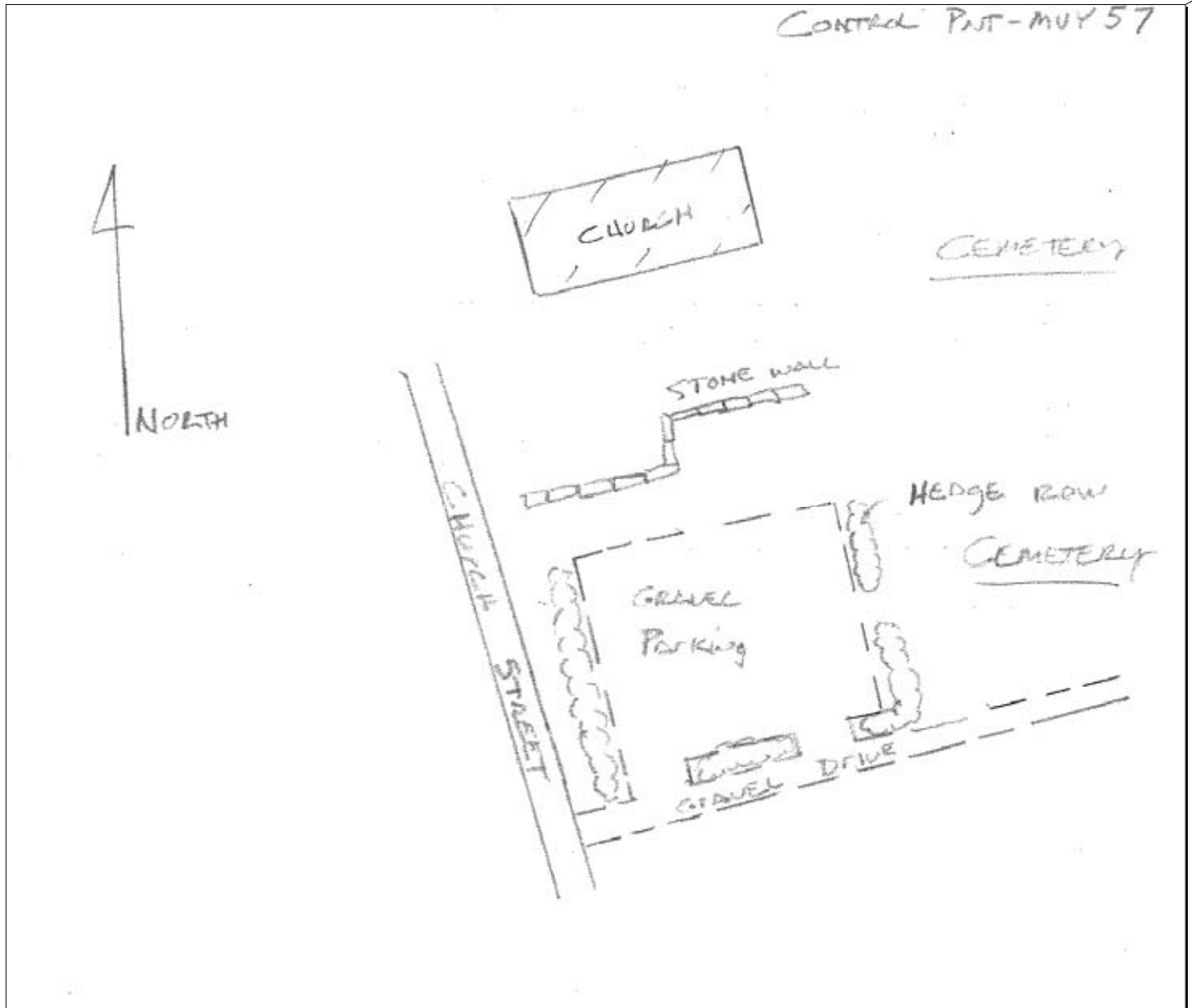
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



Offices nationwide
sewall.com
136 Center Street
P.O. Box 433
Old Town, Maine 04468
207 827 4456
fax: 207 827 3647
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

MVY58

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: East Falmouth

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE	41-35-18.9	HGT. MTS
LONGITUDE	70-35-10.4	15.66

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

C

DATE:

12/02/10

DAY OF YEAR

336

START TIME

08:11

END TIME

08:35

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

8" Spike in Grass Area - Cul-de-sac

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

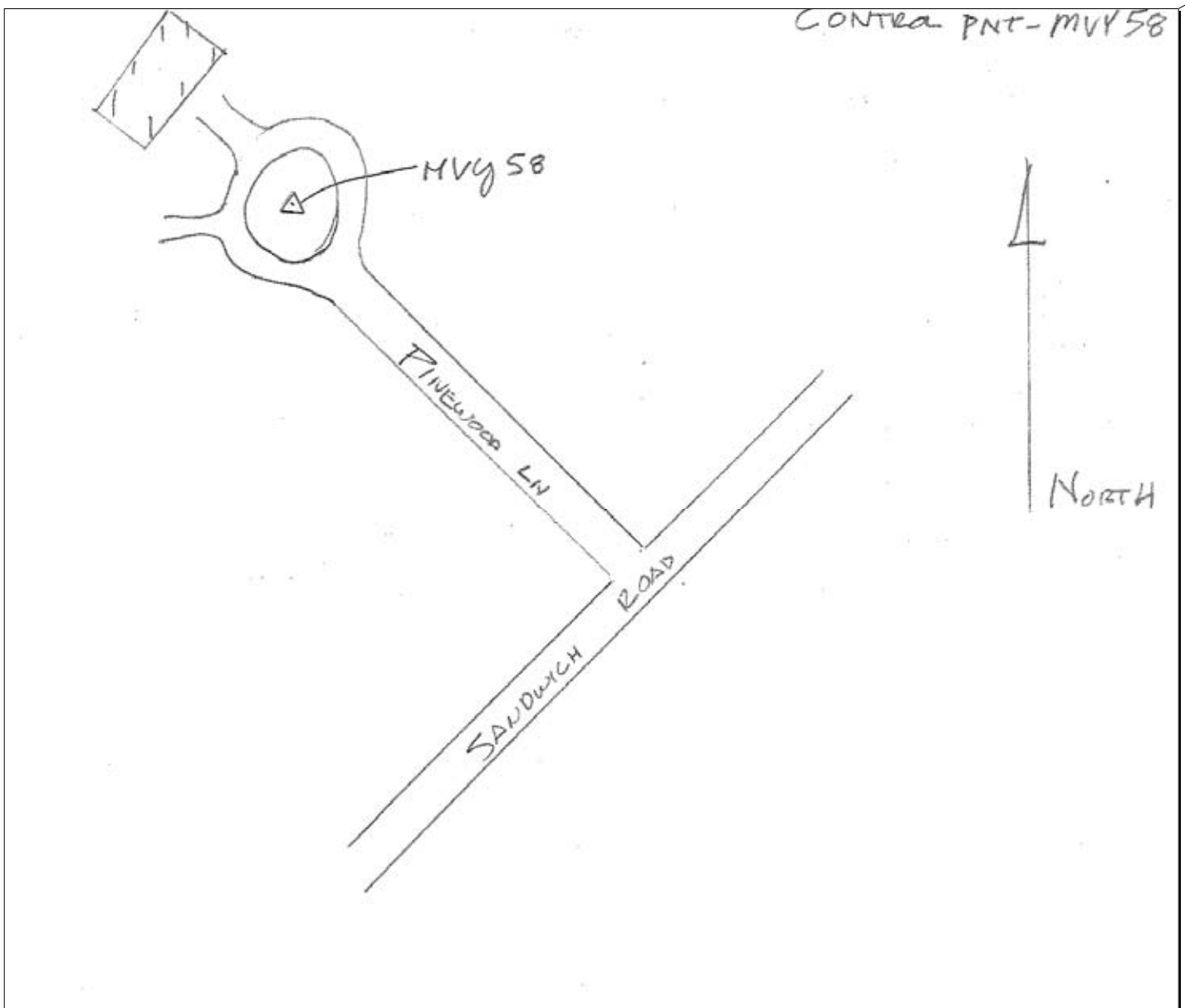
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



Offices nationwide
sewall.com

136 Center Street
P.O. Box 433
Old Town, Maine 04468

207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

MVY59

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: Falmouth

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-36-01.1

HGT. MTS

LONGITUDE 70-38-06.1

15.15

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

G

DATE:

12/02/10

DAY OF YEAR

336

START TIME 10:52

END TIME 11:15

U.T.C.

X

LOCAL

Collection Rate

5 SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

Point in Baseball Field - No spike set

AERIAL TARGET

PUB. BENCH MARK

PUB. CONTROL

PHOTO I.D.

X NEW CONTROL

NATURAL

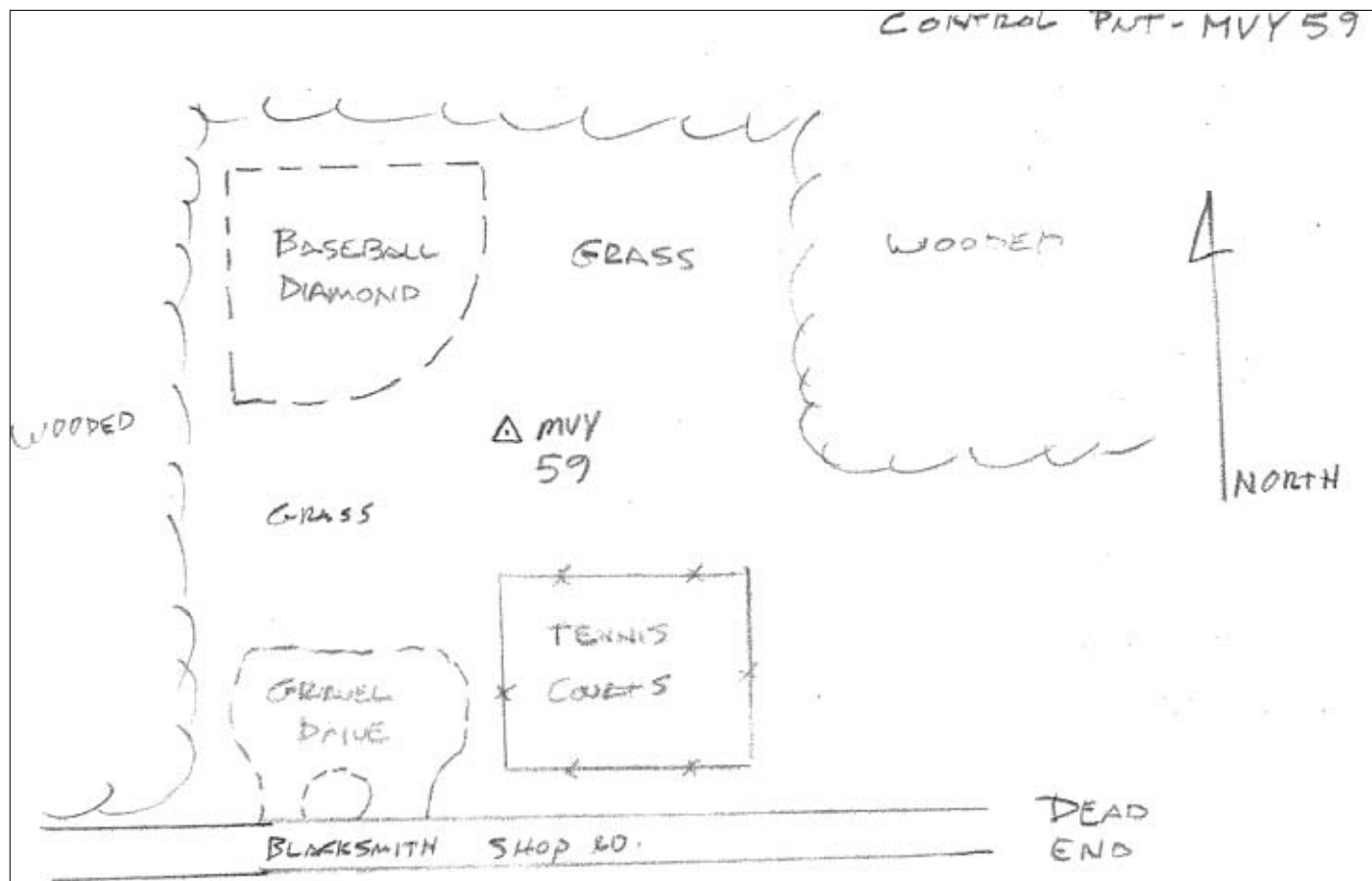
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



Offices nationwide
sewall.com

136 Center Street
P.O. Box 433
Old Town, Maine 04468

207 827 4456
fax: 207 827 3641
800 648 4202

JOB REFERENCE

NE LIDAR

POINT ID:

MVY60

Proj. No.:

75980S

STATE Massachusetts

COUNTY Barnstable

LOCATION: East Falmouth

OPERATOR J Allen

GPS OBSERVATIONS

LATITUDE 41-32-48.1

HGT. MTS

LONGITUDE 70-34-37.4

1.44

RECEIVER MODEL TOPCON HIPER GD

RECEIVER S/N 272-0515

ANTENNA INFO

RADIUS (M)

Antenna Serial #

Antenna Type

SESSION

E

DATE:

12/02/10

DAY OF YEAR

336

START TIME

09:25

END TIME

09:45

U.T.C.

X

LOCAL

Collection Rate

5

SECONDS

ANTENNA HEIGHT (SLANT)

MTRS/FT

MEASURED

FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT

1.8 Meters

MEASURED

X

FIXED HGT

TOP OF MONUMENT IS:

X

FLUSH

MTRS/FEET

ABOVE GROUND

MTRS/FEET

BELOW GROUND

DESCRIPTION

Point on Lawn - Private Property

AERIAL TARGET

PHOTO I.D.

PUB. BENCH MARK

X

NEW CONTROL

PUB. CONTROL

NATURAL

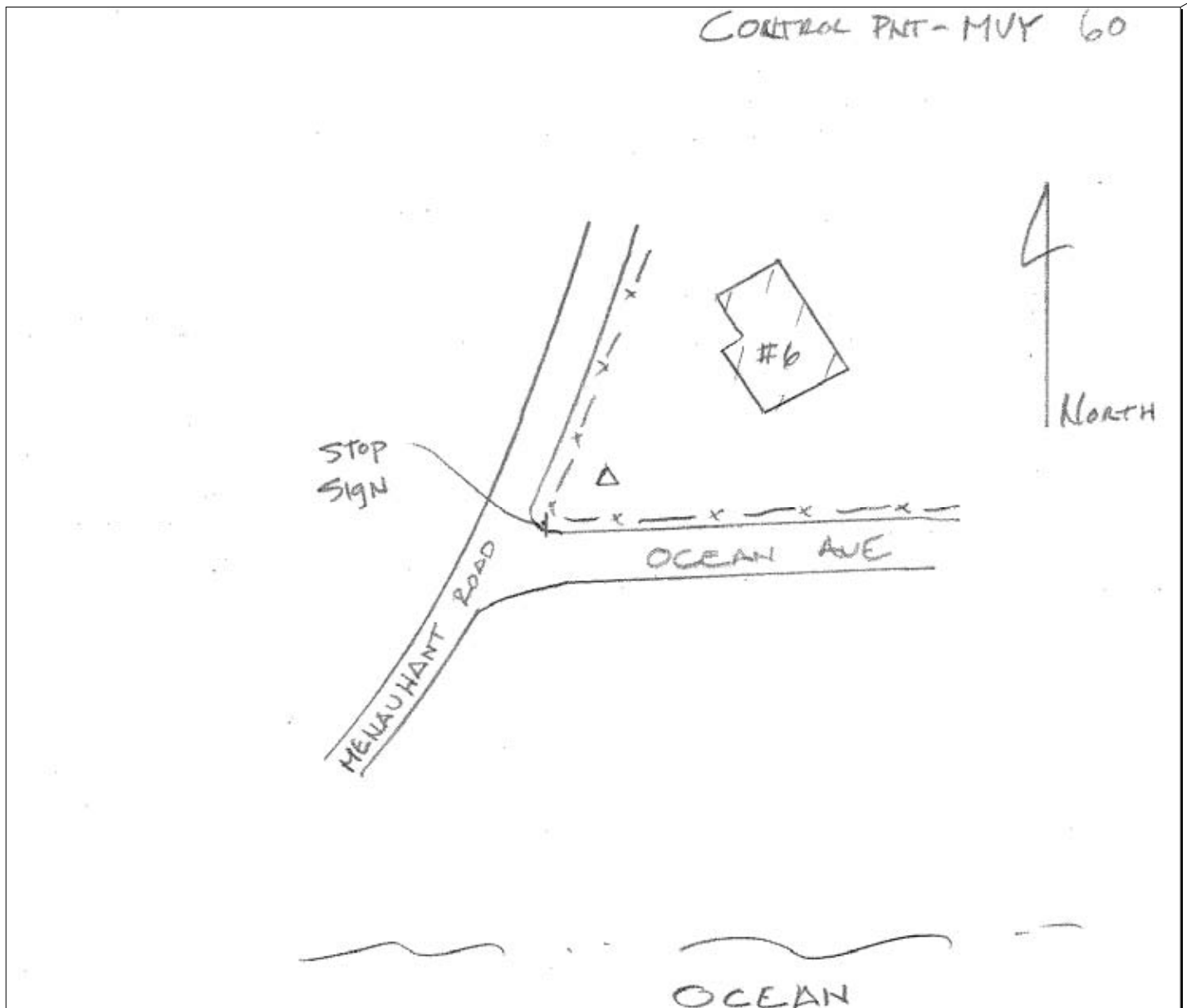
PHOTOS:



PHOTOS CONT'D:



SITE SKETCH:



LWM 1

FILE: 0793log1201i.tps 000180667

NGS OPUS-RS SOLUTION REPORT

=====

USER: john.allen@sewall.com
RINEX FILE: 0793335s.10o

DATE: December 13, 2010
TIME: 18:54:48 UTC

SOFTWARE: rsgps 1.35.1 RS11.prl 1.65 START: 2010/12/01 18:12:50
EPHEMERIS: igr16123.eph [rapid] STOP: 2010/12/01 18:36:00
NAV FILE: brdc3350.10n OBS USED: 2007 / 2889 : 69%
ANT NAME: TPSHIPER_GGD QUALITY IND. 7.73/ 1.27
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.346

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91717)

X:	1538026.541(m)	0.012(m)	1538025.765(m)	0.012(m)
Y:	-4424070.596(m)	0.036(m)	-4424069.169(m)	0.036(m)
Z:	4314734.822(m)	0.036(m)	4314734.764(m)	0.036(m)

LAT:	42 50 35.73176	0.010(m)	42 50 35.76570	0.010(m)
E LON:	289 10 11.95988	0.008(m)	289 10 11.94824	0.008(m)
W LON:	70 49 48.04012	0.008(m)	70 49 48.05176	0.008(m)
EL HGT:	-23.477(m)	0.050(m)	-24.692(m)	0.050(m)
ORTHO HGT:	3.406(m)	0.052(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4745033.420	954953.051
Easting (X) [meters]	350458.264	254771.140
Convergence [degrees]	-1.24462858	0.45005073
Point Scale	0.99987512	1.00002744
Combined Factor	0.99987880	1.00003112

US NATIONAL GRID DESIGNATOR: 19TCH5045845033(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	34703.2
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	60030.1
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	78518.1
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	89646.2
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	93225.7
AJ2693	YMTS MTS YARMOUTH COOP CORS ARP	N434754.610	W0701120.298	118177.9
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	122242.2
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	136361.8
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	139550.2

NEAREST NGS PUBLISHED CONTROL POINT

MY0178	P 36	N425024.	W0705005.	528.6
--------	------	----------	-----------	-------

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

LWM 2

FILE: 0793log1201l.tps 000180718

NGS OPUS-RS SOLUTION REPORT

=====

USER: JOHN.ALLEN@SEWALL.COM DATE: December 13, 2010
RINEX FILE: 0793335u.10o TIME: 19:18:51 UTC

SOFTWARE: rsgps 1.35.1 RS23.prl 1.65 START: 2010/12/01 20:46:05
EPHEMERIS: igr16123.eph [rapid] STOP: 2010/12/01 21:07:00
NAV FILE: brdc3350.10n OBS USED: 1854 / 1854 : 100%
ANT NAME: TPSHIPER_GGD QUALITY IND. 19.04/ 24.14
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.334

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91746)

X: 1546081.970(m) 0.013(m) 1546081.194(m) 0.013(m)
Y: -4434145.800(m) 0.016(m) -4434144.370(m) 0.016(m)
Z: 4301580.025(m) 0.020(m) 4301579.966(m) 0.020(m)

LAT: 42 40 55.11237 0.012(m) 42 40 55.14624 0.012(m)
E LON: 289 13 20.84716 0.012(m) 289 13 20.83565 0.012(m)
W LON: 70 46 39.15284 0.012(m) 70 46 39.16435 0.012(m)
EL HGT: -24.856(m) 0.023(m) -26.076(m) 0.023(m)
ORTHO HGT: 1.970(m) 0.026(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 19) SPC (2001 MA M)
Northing (Y) [meters] 4727031.438 937071.830
Easting (X) [meters] 354368.535 259212.075
Convergence [degrees] -1.20525784 0.48529545
Point Scale 0.99986093 0.99999980
Combined Factor 0.99986483 1.00000370

US NATIONAL GRID DESIGNATOR: 19TCH5436827031(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	53109.5
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	59191.3
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	69159.0
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	78936.4
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	104626.8
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	126310.1
AJ2693	YMTS MTS YARMOUTH COOP CORS ARP	N434754.610	W0701120.298	132932.8
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	146151.6
DJ7833	BRU6 BRUNSWICK 6 CORS ARP	N435322.916	W0695647.885	150164.3

NEAREST NGS PUBLISHED CONTROL POINT

MY0222 S 15 N424058. W0704638. 93.1

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

LWM 3

FILE: 0793log1201c.tps 000180716

NGS OPUS-RS SOLUTION REPORT

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USER: JOHN.ALLEN@SEWALL.COM DATE: December 13, 2010
RINEX FILE: 0793335m.10o TIME: 19:19:15 UTC

SOFTWARE: rsgps 1.35.1 RS41.prl 1.65 START: 2010/12/01 12:57:35
EPHEMERIS: igr16123.eph [rapid] STOP: 2010/12/01 13:18:20
NAV FILE: brdc3350.10n OBS USED: 1845 / 1845 : 100%
ANT NAME: TPSHIPER_GGD QUALITY IND. 24.06/ 15.63
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.292

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91657)

X: 1501371.120(m) 0.010(m) 1501370.345(m) 0.010(m)
Y: -4449659.024(m) 0.024(m) -4449657.597(m) 0.024(m)
Z: 4301450.018(m) 0.026(m) 4301449.957(m) 0.026(m)

LAT: 42 40 48.36082 0.006(m) 42 40 48.39451 0.006(m)
E LON: 288 38 42.15915 0.008(m) 288 38 42.14694 0.008(m)
W LON: 71 21 17.84085 0.008(m) 71 21 17.85306 0.008(m)
EL HGT: 9.290(m) 0.035(m) 8.072(m) 0.035(m)
ORTHO HGT: 36.875(m) 0.037(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4727980.289	936622.838
Easting (X) [meters]	307054.168	211888.205
Convergence [degrees]	-1.59692612	0.09743035
Point Scale	1.00005804	0.99999953
Combined Factor	1.00005658	0.99999807

US NATIONAL GRID DESIGNATOR: 19TCH0705427980(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	13556.8
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	42818.3
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	68987.5
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	95915.4
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	100106.1
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	110973.5
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	126886.5
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	133076.8
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	139079.2

NEAREST NGS PUBLISHED CONTROL POINT

MY2662 WHORTLEBERRY HILL 1894 N424023.227 W0712218.753 1588.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

LWM 4

FILE: 0793log1202j.tps 000180680

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0793336s.10o

DATE: December 13, 2010
TIME: 19:02:46 UTC

SOFTWARE: rsgps 1.35.1 RS26.prl 1.65 START: 2010/12/02 18:43:15
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 19:05:15
NAV FILE: brdc3360.10n OBS USED: 2682 / 2826 : 95%
ANT NAME: TPSHIPER_GGD QUALITY IND. 30.16/ 38.39
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.311

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91997)

X:	1523407.424(m)	0.008(m)	1523406.649(m)	0.008(m)
Y:	-4446596.871(m)	0.012(m)	-4446595.442(m)	0.012(m)
Z:	4296954.569(m)	0.008(m)	4296954.508(m)	0.008(m)

LAT:	42 37 29.11262	0.006(m)	42 37 29.14635	0.006(m)
E LON:	288 54 41.39415	0.009(m)	288 54 41.38230	0.009(m)
W LON:	71 5 18.60585	0.009(m)	71 5 18.61770	0.009(m)
EL HGT:	48.351(m)	0.013(m)	47.131(m)	0.013(m)
ORTHO HGT:	75.637(m)	0.017(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4721259.982	930545.941
Easting (X) [meters]	328734.231	233757.035
Convergence [degrees]	-1.41466352	0.27641526
Point Scale	0.99996088	0.99999191
Combined Factor	0.99995330	0.99998433

US NATIONAL GRID DESIGNATOR: 19TCH2873421259(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	33237.4
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	46323.6
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	58594.7
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	63714.0
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	99286.2
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	104164.0
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	122803.3
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	131292.8
DJ8961	VTSP SPRINGFIELD VT CORS ARP	N431653.241	W0722839.238	134796.4

NEAREST NGS PUBLISHED CONTROL POINT

MY2568	HOLT	N423827.800	W0710623.077	2333.4
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

LWM 5

FILE: 0793log1201g.tps 000180665

Your station is 24.1 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0793335q.10o

DATE: December 13, 2010
TIME: 18:53:27 UTC

SOFTWARE: rsgps 1.35.1 RS10.prl 1.65 START: 2010/12/01 16:26:05
EPHEMERIS: igr16123.eph [rapid] STOP: 2010/12/01 16:47:20
NAV FILE: brdc3350.10n OBS USED: 1176 / 1736 : 68%
ANT NAME: TPSHIPER_GGD QUALITY IND. 6.90/ 14.07
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.359

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91696)

X:	1525882.758(m)	0.032(m)	1525881.982(m)	0.032(m)
Y:	-4435299.953(m)	0.022(m)	-4435298.525(m)	0.022(m)
Z:	4307629.100(m)	0.043(m)	4307629.041(m)	0.043(m)
LAT:	42 45 20.49623	0.047(m)	42 45 20.53009	0.047(m)
E LON:	288 59 5.38546	0.025(m)	288 59 5.37362	0.025(m)
W LON:	71 0 54.61454	0.025(m)	71 0 54.62638	0.025(m)
EL HGT:	23.216(m)	0.021(m)	21.999(m)	0.021(m)
ORTHO HGT:	50.340(m)	0.024(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4735654.683	945123.013
Easting (X) [meters]	335094.782	239689.957
Convergence [degrees]	-1.36835391	0.32567374
Point Scale	0.99993457	1.00001144
Combined Factor	0.99993092	1.00000780

US NATIONAL GRID DESIGNATOR: 19TCH3509435654(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	42259.2
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	79249.2
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	92356.5
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	119287.9
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	125569.9
DJ8961	VTSP SPRINGFIELD VT CORS ARP	N431653.241	W0722839.238	132746.3
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	146947.7

NEAREST NGS PUBLISHED CONTROL POINT

MY2523	CENTENNIAL HILL 1890	N424529.657	W0710119.356	629.1
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

BVY 6

FILE: 0793log1202b.tps 000180672

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0793336m.10o

DATE: December 13, 2010
TIME: 18:57:38 UTC

SOFTWARE: rsgps 1.35.1 RS10.prl 1.65 START: 2010/12/02 12:05:35
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 12:26:45
NAV FILE: brdc3360.10n OBS USED: 1890 / 1989 : 95%
ANT NAME: TPSHIPER_GGD QUALITY IND. 27.11/ 30.67
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.285

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91921)

X: 1560776.187(m) 0.006(m) 1560775.411(m) 0.006(m)
Y: -4431105.163(m) 0.014(m) -4431103.732(m) 0.014(m)
Z: 4299431.026(m) 0.030(m) 4299430.967(m) 0.030(m)

LAT: 42 39 20.18867 0.016(m) 42 39 20.22257 0.016(m)
E LON: 289 24 13.98635 0.007(m) 289 24 13.97508 0.007(m)
W LON: 70 35 46.01365 0.007(m) 70 35 46.02492 0.007(m)
EL HGT: -17.913(m) 0.029(m) -19.135(m) 0.029(m)
ORTHO HGT: 8.828(m) 0.032(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4723806.665	934284.671
Easting (X) [meters]	369177.668	274112.279
Convergence [degrees]	-1.08166459	0.60716554
Point Scale	0.99981056	0.99999604
Combined Factor	0.99981337	0.99999885

US NATIONAL GRID DESIGNATOR: 19TCH6917723806(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	61405.4
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	73741.0
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	79979.6
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	85005.5
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	104115.6
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	117398.7
AJ2693	YMTS MTS YARMOUTH COOP CORS ARP	N434754.610	W0701120.298	131207.0
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	135740.5
DJ7833	BRU6 BRUNSWICK 6 CORS ARP	N435322.916	W0695647.885	146888.6

NEAREST NGS PUBLISHED CONTROL POINT

MY4846 ROCKPORT COAST GUARD CUPOLA N423932.514 W0703552.382 407.7

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

BVY 7

FILE: 0793log1202f.tps 000180675

Your station is 9.5 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0793336p.10o

DATE: December 13, 2010
TIME: 19:00:57 UTC

SOFTWARE: rsgps 1.35.1 RS28.prl 1.65 START: 2010/12/02 15:26:25
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 15:47:25
NAV FILE: brdc3360.10n OBS USED: 2034 / 2637 : 77%
ANT NAME: TPSHIPER_GGD QUALITY IND. 25.67/ 20.75
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.347

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91959)

X:	1544396.612(m)	0.008(m)	1544395.837(m)	0.008(m)
Y:	-4449476.275(m)	0.023(m)	-4449474.844(m)	0.023(m)
Z:	4286437.448(m)	0.031(m)	4286437.387(m)	0.031(m)

LAT:	42 29 48.40956	0.012(m)	42 29 48.44326	0.012(m)
E LON:	289 8 30.10934	0.008(m)	289 8 30.09783	0.008(m)
W LON:	70 51 29.89066	0.008(m)	70 51 29.90217	0.008(m)
EL HGT:	-20.126(m)	0.036(m)	-21.351(m)	0.036(m)
ORTHO HGT:	6.951(m)	0.038(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4706608.750	916447.366
Easting (X) [meters]	347300.215	252747.904
Convergence [degrees]	-1.25561626	0.43104630
Point Scale	0.99988689	0.99997788
Combined Factor	0.99989004	0.99998104

US NATIONAL GRID DESIGNATOR: 19TCH4730006608(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	52785.2
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	57952.4
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	72144.8
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	107921.2
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	123752.3
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	140492.5
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	145134.1
AJ2693	YMTS MTS YARMOUTH COOP CORS ARP	N434754.610	W0701120.298	154520.2
DJ8961	VTSP SPRINGFIELD VT CORS ARP	N431653.241	W0722839.238	158406.6

NEAREST NGS PUBLISHED CONTROL POINT

MY4389	MARBLEHEAD STAR OF THE SEA CH	N422952.793	W0705134.335	169.3
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

BVY 8

FILE: 0793log1202d.tps 000180673

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0793336n.10o

DATE: December 13, 2010
TIME: 18:58:43 UTC

SOFTWARE: rsgps 1.35.1 RS30.prl 1.65 START: 2010/12/02 13:39:55
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 14:01:00
NAV FILE: brdc3360.10n OBS USED: 1548 / 1791 : 86%
ANT NAME: TPSHIPER_GGD QUALITY IND. 27.89/ 26.86
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.342

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91939)

X: 1542230.325(m) 0.007(m) 1542229.549(m) 0.007(m)
Y: -4438931.359(m) 0.013(m) -4438929.929(m) 0.013(m)
Z: 4298071.206(m) 0.019(m) 4298071.146(m) 0.019(m)

LAT: 42 38 20.04007 0.012(m) 42 38 20.07389 0.012(m)
E LON: 289 9 32.05280 0.007(m) 289 9 32.04123 0.007(m)
W LON: 70 50 27.94720 0.007(m) 70 50 27.95877 0.007(m)
EL HGT: -10.018(m) 0.020(m) -11.239(m) 0.020(m)
ORTHO HGT: 16.884(m) 0.023(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4722359.550	932244.705
Easting (X) [meters]	349057.309	254040.311
Convergence [degrees]	-1.24734862	0.44260441
Point Scale	0.99988031	0.99999377
Combined Factor	0.99988188	0.99999534

US NATIONAL GRID DESIGNATOR: 19TCH4905722359(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	53580.1
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	56678.0
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	62113.8
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	72230.3
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	99523.3
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	109588.4
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	119236.4
AJ2693	YMTS MTS YARMOUTH COOP CORS ARP	N434754.610	W0701120.298	139295.1
DJ8961	VTSP SPRINGFIELD VT CORS ARP	N431653.241	W0722839.238	151402.8

NEAREST NGS PUBLISHED CONTROL POINT

MY4967 22 X 1934 N423756.776 W0705147.157 1940.2

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

BVY 9

FILE: 0793log1202e.tps 000180674

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 07933360.10o

DATE: December 13, 2010
TIME: 19:00:09 UTC

SOFTWARE: rsgps 1.35.1 RS11.prl 1.65 START: 2010/12/02 14:27:25
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 14:49:25
NAV FILE: brdc3360.10n OBS USED: 2070 / 2376 : 87%
ANT NAME: TPSHIPER_GGD QUALITY IND. 42.54/ 4.16
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.361

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91948)

X:	1535707.030(m)	0.015(m)	1535706.255(m)	0.015(m)
Y:	-4444418.789(m)	0.034(m)	-4444417.359(m)	0.034(m)
Z:	4294762.559(m)	0.074(m)	4294762.499(m)	0.074(m)

LAT:	42 35 54.22141	0.035(m)	42 35 54.25518	0.035(m)
E LON:	289 3 42.75986	0.009(m)	289 3 42.74822	0.009(m)
W LON:	70 56 17.24014	0.009(m)	70 56 17.25178	0.009(m)
EL HGT:	-6.401(m)	0.074(m)	-7.623(m)	0.074(m)
ORTHO HGT:	20.619(m)	0.075(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4718039.378	927688.365
Easting (X) [meters]	340999.315	246112.454
Convergence [degrees]	-1.31210255	0.37742939
Point Scale	0.99991105	0.99998861
Combined Factor	0.99991205	0.99998961

US NATIONAL GRID DESIGNATOR: 19TCH4099918039(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	45590.4
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	53065.3
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	60460.6
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	64712.9
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	95045.9
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	110375.1
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	132545.7
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	142597.3
AJ2693	YMTS MTS YARMOUTH COOP CORS ARP	N434754.610	W0701120.298	146568.8

NEAREST NGS PUBLISHED CONTROL POINT

MY0261	B 05 C AZ MK	N423519.	W0705640.	1206.1
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

BVY 10

FILE: 0793log1202h.tps 000180677

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0793336r.10o

DATE: December 13, 2010
TIME: 19:05:13 UTC

SOFTWARE: rsgps 1.35.1 RS40.prl 1.65 START: 2010/12/02 17:00:45
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 17:24:40
NAV FILE: brdc3360.10n OBS USED: 1704 / 2056 : 83%
ANT NAME: TPSHIPER_GGD QUALITY IND. 20.14/ 7.19
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.376

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91977)

X:	1529340.127(m)	0.010(m)	1529339.352(m)	0.010(m)
Y:	-4451830.098(m)	0.030(m)	-4451828.668(m)	0.030(m)
Z:	4289415.646(m)	0.027(m)	4289415.585(m)	0.027(m)

LAT:	42 31 58.45613	0.004(m)	42 31 58.48981	0.004(m)
E LON:	288 57 33.00411	0.008(m)	288 57 32.99235	0.008(m)
W LON:	71 2 26.99589	0.008(m)	71 2 27.00765	0.008(m)
EL HGT:	10.021(m)	0.041(m)	8.797(m)	0.041(m)
ORTHO HGT:	37.305(m)	0.043(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4710965.062	920363.180
Easting (X) [meters]	332397.550	237722.458
Convergence [degrees]	-1.37995049	0.30843618
Point Scale	0.99994562	0.99998133
Combined Factor	0.99994405	0.99997976

US NATIONAL GRID DESIGNATOR: 19TCH3239710965(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	38210.4
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	41938.5
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	54890.5
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	68114.1
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	88595.2
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	99262.2
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	122769.4
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	129657.8

NEAREST NGS PUBLISHED CONTROL POINT

MY5537	4830	N423122.507	W0710330.087	1817.3
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

PYM 11

FILE: 0509log1203d.tps 000176516

Your station is 18.2 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0509337n.10o

DATE: December 04, 2010
TIME: 21:14:11 UTC

SOFTWARE: rsgps 1.35.1 RS10.prl 1.65 START: 2010/12/03 13:04:30
EPHEMERIS: igu16125.eph [ultra-rapid] STOP: 2010/12/03 13:27:40
NAV FILE: brdc3370.10n OBS USED: 2538 / 2538 : 100%
ANT NAME: TPSHIPER_GD QUALITY IND. 45.88/ 40.17
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.292

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92206)

X:	1569937.791(m)	0.011(m)	1569937.018(m)	0.011(m)
Y:	-4477983.132(m)	0.015(m)	-4477981.694(m)	0.015(m)
Z:	4247562.073(m)	0.011(m)	4247562.008(m)	0.011(m)

LAT:	42 1 25.91916	0.005(m)	42 1 25.95259	0.005(m)
E LON:	289 19 12.63090	0.009(m)	289 19 12.61987	0.009(m)
W LON:	70 40 47.36910	0.009(m)	70 40 47.38013	0.009(m)
EL HGT:	-17.055(m)	0.018(m)	-18.297(m)	0.018(m)
ORTHO HGT:	11.085(m)	0.022(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4653791.053	864046.698
Easting (X) [meters]	360930.802	267923.614
Convergence [degrees]	-1.12472187	0.55093523
Point Scale	0.99983798	0.99996929
Combined Factor	0.99984066	0.99997196

US NATIONAL GRID DESIGNATOR: 19TCG6093053791(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	35565.6
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	47454.2
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	70052.4
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	92207.7
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	101195.0
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	126257.4
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	131168.2
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	137324.1
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	165179.4

NEAREST NGS PUBLISHED CONTROL POINT

MY3976	SOUTH DUXBURY LIVERY CUPOLA	N420122.682	W0704057.574	254.9
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

PYM 12

FILE: 0509log1203b.tps 000176514

Your station is 29.1 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 05093371.10o

DATE: December 04, 2010
TIME: 21:14:42 UTC

SOFTWARE: rsgps 1.35.1 RS28.prl 1.65 START: 2010/12/03 11:43:15
EPHEMERIS: igu16125.eph [ultra-rapid] STOP: 2010/12/03 12:06:40
NAV FILE: brdc3370.10n OBS USED: 2709 / 3015 : 90%
ANT NAME: TPSHIPER_GD QUALITY IND. 42.92/ 8.95
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.269

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92191)

X:	1585211.429(m)	0.008(m)	1585210.656(m)	0.008(m)
Y:	-4486644.262(m)	0.015(m)	-4486642.822(m)	0.015(m)
Z:	4232819.675(m)	0.007(m)	4232819.609(m)	0.007(m)

LAT:	41 50 43.67030	0.007(m)	41 50 43.70363	0.007(m)
E LON:	289 27 33.20247	0.008(m)	289 27 33.19167	0.008(m)
W LON:	70 32 26.79753	0.008(m)	70 32 26.80833	0.008(m)
EL HGT:	-19.351(m)	0.014(m)	-20.599(m)	0.014(m)
ORTHO HGT:	8.867(m)	0.019(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4633766.032	844353.026
Easting (X) [meters]	372086.508	279661.362
Convergence [degrees]	-1.02802812	0.64433753
Point Scale	0.99980134	0.99998365
Combined Factor	0.99980437	0.99998669

US NATIONAL GRID DESIGNATOR: 19TCG7208633766(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	30903.9
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	63645.2
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	90058.8
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	112094.9
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	137980.2
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	147990.9
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	179320.3
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	187851.3
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	200704.4

NEAREST NGS PUBLISHED CONTROL POINT

LW1528	M 3 BM USGS	N415034.	W0703248.	572.7
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

PYM 13

FILE: 0788log1207g.tps 000179361

Your station is 22.1 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com DATE: December 09, 2010
RINEX FILE: 0788341r.10o TIME: 23:20:18 UTC

SOFTWARE: rsgps 1.35.1 RS12.prl 1.65 START: 2010/12/07 17:19:15
EPHEMERIS: igr16132.eph [rapid] STOP: 2010/12/07 17:40:20
NAV FILE: brdc3410.10n OBS USED: 1512 / 2025 : 75%
ANT NAME: TPSHIPER_GD QUALITY IND. 12.94/ 21.48
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.309

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93350)

X: 1553682.372(m) 0.010(m) 1553681.599(m) 0.010(m)
Y: -4480376.891(m) 0.019(m) -4480375.455(m) 0.019(m)
Z: 4251018.366(m) 0.017(m) 4251018.301(m) 0.017(m)

LAT: 42 3 56.21581 0.006(m) 42 3 56.24921 0.006(m)
E LON: 289 7 30.94883 0.009(m) 289 7 30.93753 0.009(m)
W LON: 70 52 29.05117 0.009(m) 70 52 29.06247 0.009(m)
EL HGT: 1.727(m) 0.025(m) 0.488(m) 0.025(m)
ORTHO HGT: 30.022(m) 0.028(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 19) SPC (2001 MA M)
Northing (Y) [meters] 4658761.902 868546.898
Easting (X) [meters] 344895.511 251748.154
Convergence [degrees] -1.25628804 0.42000746
Point Scale 0.99989602 0.99996731
Combined Factor 0.99989575 0.99996704

US NATIONAL GRID DESIGNATOR: 19TCG4489558761(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	31098.5
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	35786.1
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	53605.3
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	83962.2
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	116917.7
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	127059.1
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	148437.0
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	151959.3
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	158817.6

NEAREST NGS PUBLISHED CONTROL POINT

MY4246 HANSON CONGREGATIONAL CHURCH N420332.717 W0705229.579 726.7

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

PYM 14

FILE: 0788log1207e.tps 000179359

Your station is 0.7 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com DATE: December 09, 2010
RINEX FILE: 0788341p.10o TIME: 23:22:44 UTC

SOFTWARE: rsgps 1.35.1 RS29.prl 1.65 START: 2010/12/07 15:27:10
EPHEMERIS: igr16132.eph [rapid] STOP: 2010/12/07 15:50:35
NAV FILE: brdc3410.10n OBS USED: 2421 / 2673 : 91%
ANT NAME: TSPHIPER_GD QUALITY IND. 19.13/ 14.22
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.359

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93329)

X:	1555718.235(m)	0.006(m)	1555717.462(m)	0.006(m)
Y:	-4489475.574(m)	0.019(m)	-4489474.136(m)	0.019(m)
Z:	4240707.598(m)	0.014(m)	4240707.532(m)	0.014(m)

LAT:	41 56 26.96747	0.006(m)	41 56 27.00080	0.006(m)
E LON:	289 6 45.03897	0.007(m)	289 6 45.02771	0.007(m)
W LON:	70 53 14.96103	0.007(m)	70 53 14.97229	0.007(m)
EL HGT:	-14.096(m)	0.022(m)	-15.339(m)	0.022(m)
ORTHO HGT:	14.500(m)	0.025(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4644928.889	854679.027
Easting (X) [meters]	343534.822	250792.261
Convergence [degrees]	-1.26178276	0.41144108
Point Scale	0.99990125	0.99997478
Combined Factor	0.99990346	0.99997699

US NATIONAL GRID DESIGNATOR: 19TCG4353444928(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	21910.8
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	33033.0
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	73196.3
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	83215.5
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	112350.9
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	117895.3
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	133594.6
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	150238.9
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	154695.2

NEAREST NGS PUBLISHED CONTROL POINT

LW4990	HALIFAX CORNER 1 1889	N415653.801	W0705208.866	1731.9
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

PYM 15

FILE: 0788log1207c.tps 000179357

Your station is 11.4 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com DATE: December 09, 2010
RINEX FILE: 0788341n.10o TIME: 23:20:16 UTC

SOFTWARE: rsgps 1.35.1 RS23.prl 1.65 START: 2010/12/07 13:53:05
EPHEMERIS: igr16132.eph [rapid] STOP: 2010/12/07 14:15:30
NAV FILE: brdc3410.10n OBS USED: 2430 / 2430 : 100%
ANT NAME: TPSHIPER_GD QUALITY IND. 14.91/ 34.53
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.311

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93311)

X:	1569019.566(m)	0.010(m)	1569018.793(m)	0.010(m)
Y:	-4493628.724(m)	0.022(m)	-4493627.284(m)	0.022(m)
Z:	4231475.908(m)	0.018(m)	4231475.841(m)	0.018(m)

LAT:	41 49 44.76004	0.007(m)	41 49 44.79332	0.007(m)
E LON:	289 14 50.76042	0.009(m)	289 14 50.74936	0.009(m)
W LON:	70 45 9.23958	0.009(m)	70 45 9.25064	0.009(m)
EL HGT:	-3.790(m)	0.028(m)	-5.037(m)	0.028(m)
ORTHO HGT:	24.799(m)	0.030(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4632286.332	842359.613
Easting (X) [meters]	354466.340	262089.152
Convergence [degrees]	-1.16901062	0.50207248
Point Scale	0.99986063	0.99998545
Combined Factor	0.99986123	0.99998605

US NATIONAL GRID DESIGNATOR: 19TCG5446632286(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	14664.8
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	48832.7
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	94689.4
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	121275.6
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	146815.9
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	161895.5
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	165313.5
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	170641.8
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	190238.3

NEAREST NGS PUBLISHED CONTROL POINT

LW4520	BOUNDARY STONE WAREHAM 4 1/2	N414821.030	W0704449.932	2627.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

GHG 16

FILE: 0793log1203g.tps 000180691

Your station is 33.0 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0793337q.10o

DATE: December 13, 2010
TIME: 19:06:58 UTC

SOFTWARE: rsgps 1.35.1 RS11.prl 1.65 START: 2010/12/03 16:45:35
EPHEMERIS: igr16125.eph [rapid] STOP: 2010/12/03 17:09:00
NAV FILE: brdc3370.10n OBS USED: 2241 / 2502 : 90%
ANT NAME: TPSHIPER_GGD QUALITY IND. 28.99/ 12.22
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.353

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92248)

X:	1558137.713(m)	0.007(m)	1558136.939(m)	0.007(m)
Y:	-4466626.122(m)	0.014(m)	-4466624.687(m)	0.014(m)
Z:	4263732.170(m)	0.014(m)	4263732.107(m)	0.014(m)

LAT:	42 13 12.35557	0.007(m)	42 13 12.38912	0.007(m)
E LON:	289 13 50.92782	0.008(m)	289 13 50.91657	0.008(m)
W LON:	70 46 9.07218	0.008(m)	70 46 9.08343	0.008(m)
EL HGT:	-12.323(m)	0.018(m)	-13.558(m)	0.018(m)
ORTHO HGT:	15.456(m)	0.021(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4675729.144	885774.507
Easting (X) [meters]	353983.870	260336.463
Convergence [degrees]	-1.18906838	0.49090824
Point Scale	0.99986234	0.99996461
Combined Factor	0.99986427	0.99996654

US NATIONAL GRID DESIGNATOR: 19TCG5398375729(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	43404.2
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	53823.2
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	73894.2
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	99296.7
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	102773.0
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	131233.3
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	144879.2
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	154681.6
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	163051.0

NEAREST NGS PUBLISHED CONTROL POINT

MY4090	TANK	N421318.417	W0704518.886	1164.4
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

GHG 17

FILE: 0509log1203f.tps 000182121

Your station is 16.6 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 05093370.10o

DATE: December 16, 2010
TIME: 16:20:55 UTC

SOFTWARE: rsgps 1.35.1 RS23.prl 1.66 START: 2010/12/03 14:26:35
EPHEMERIS: igs16125.eph [precise] STOP: 2010/12/03 14:48:35
NAV FILE: brdc3370.10n OBS USED: 1890 / 2286 : 83%
ANT NAME: TPSHIPER_GD QUALITY IND. 38.08/ 17.34
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.314

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92222)

X:	1566385.989(m)	0.007(m)	1566385.215(m)	0.007(m)
Y:	-4473495.436(m)	0.022(m)	-4473493.999(m)	0.022(m)
Z:	4253547.975(m)	0.021(m)	4253547.911(m)	0.021(m)

LAT:	42 5 47.41601	0.004(m)	42 5 47.44950	0.004(m)
E LON:	289 17 51.38176	0.008(m)	289 17 51.37064	0.008(m)
W LON:	70 42 8.61824	0.008(m)	70 42 8.62936	0.008(m)
EL HGT:	-23.423(m)	0.030(m)	-24.662(m)	0.030(m)
ORTHO HGT:	4.582(m)	0.032(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4661893.355	872096.587
Easting (X) [meters]	359222.873	265979.135
Convergence [degrees]	-1.14144016	0.53577485
Point Scale	0.99984386	0.99996619
Combined Factor	0.99984753	0.99996987

US NATIONAL GRID DESIGNATOR: 19TCG5922261893(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	42086.0
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	45495.5
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	65128.5
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	86844.2
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	96226.5
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	100724.6
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	117987.7
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	131544.5
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	140419.3

NEAREST NGS PUBLISHED CONTROL POINT

MY3964	MARSHFIELD CONGREGATIONAL CH	N420530.911	W0704235.632	802.9
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

GHG 18

FILE: 0509log1203g.tps 000182122

Your station is 8.5 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0509337p.10o

DATE: December 16, 2010
TIME: 16:30:17 UTC

SOFTWARE: rsgps 1.35.1 RS53.prl 1.66 START: 2010/12/03 15:09:50
EPHEMERIS: igs16125.eph [precise] STOP: 2010/12/03 15:30:35
NAV FILE: brdc3370.10n OBS USED: 2502 / 2583 : 97%
ANT NAME: TPSHIPER_GD QUALITY IND. 29.84/ 25.85
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.282

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92230)

X:	1556862.934(m)	0.011(m)	1556862.160(m)	0.011(m)
Y:	-4471673.189(m)	0.013(m)	-4471671.753(m)	0.013(m)
Z:	4258955.055(m)	0.011(m)	4258954.991(m)	0.011(m)

LAT:	42 9 43.03600	0.005(m)	42 9 43.06950	0.005(m)
E LON:	289 11 46.07748	0.010(m)	289 11 46.06621	0.010(m)
W LON:	70 48 13.92252	0.010(m)	70 48 13.93379	0.010(m)
EL HGT:	-0.347(m)	0.017(m)	-1.583(m)	0.017(m)
ORTHO HGT:	27.628(m)	0.021(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4669332.906	879292.503
Easting (X) [meters]	350984.924	257525.977
Convergence [degrees]	-1.21102953	0.46761225
Point Scale	0.99987323	0.99996478
Combined Factor	0.99987328	0.99996483

US NATIONAL GRID DESIGNATOR: 19TCG5098469332(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	38508.1
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	46980.3
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	54858.5
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	75743.9
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	94473.9
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	109603.4
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	126081.9
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	138443.9
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	152494.6

NEAREST NGS PUBLISHED CONTROL POINT

MY4151	JONES	N420928.614	W0705000.096	2474.2
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

GHG 19

FILE: 0788log1207h.tps 000179362

Your station is 36.7 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com DATE: December 09, 2010
RINEX FILE: 0788341r.10o TIME: 23:22:32 UTC

SOFTWARE: rsgps 1.35.1 RS10.prl 1.65 START: 2010/12/07 17:59:05
EPHEMERIS: igr16132.eph [rapid] STOP: 2010/12/07 18:21:35
NAV FILE: brdc3410.10n OBS USED: 1980 / 2736 : 72%
ANT NAME: TSPHIPER_GD QUALITY IND. 36.84/ 28.77
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.328

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93358)

X: 1559692.290(m) 0.012(m) 1559691.516(m) 0.012(m)
Y: -4476563.529(m) 0.012(m) -4476562.093(m) 0.012(m)
Z: 4252793.646(m) 0.013(m) 4252793.581(m) 0.013(m)

LAT: 42 5 14.29866 0.006(m) 42 5 14.33209 0.006(m)
E LON: 289 12 32.37703 0.011(m) 289 12 32.36579 0.011(m)
W LON: 70 47 27.62297 0.011(m) 70 47 27.63421 0.011(m)
EL HGT: -17.571(m) 0.017(m) -18.810(m) 0.017(m)
ORTHO HGT: 10.571(m) 0.021(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 19) SPC (2001 MA M)
Northing (Y) [meters] 4661021.711 871010.111
Easting (X) [meters] 351873.541 258657.659
Convergence [degrees] -1.20066166 0.47625134
Point Scale 0.99986999 0.99996650
Combined Factor 0.99987274 0.99996925

US NATIONAL GRID DESIGNATOR: 19TCG5187361021(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	38110.3
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	58727.6
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	90371.5
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	117961.3
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	124251.5
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	133972.0
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	154791.3
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	159090.8
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	166136.2

NEAREST NGS PUBLISHED CONTROL POINT

MY4177 PEMBROKE UNITARIAN CHURCH N420418.103 W0704836.476 2348.8

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

GHG 20

FILE: 0788log1207i.tps 000179363

Your station is 24.9 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com DATE: December 09, 2010
RINEX FILE: 0788341s.10o TIME: 23:31:24 UTC

SOFTWARE: rsgps 1.35.1 RS50.prl 1.65 START: 2010/12/07 18:43:35
EPHEMERIS: igr16132.eph [rapid] STOP: 2010/12/07 19:07:20
NAV FILE: brdc3410.10n OBS USED: 2097 / 2493 : 84%
ANT NAME: TPSHIPER_GD QUALITY IND. 31.26/ 19.91
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.345

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93367)

X: 1560226.542(m) 0.012(m) 1560225.769(m) 0.012(m)
Y: -4480657.972(m) 0.020(m) -4480656.535(m) 0.020(m)
Z: 4248349.077(m) 0.021(m) 4248349.012(m) 0.021(m)

LAT: 42 1 59.58032 0.009(m) 42 1 59.61372 0.009(m)
E LON: 289 11 55.74457 0.012(m) 289 11 55.73338 0.012(m)
W LON: 70 48 4.25543 0.012(m) 70 48 4.26662 0.012(m)
EL HGT: 6.154(m) 0.028(m) 4.914(m) 0.028(m)
ORTHO HGT: 34.432(m) 0.030(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 19) SPC (2001 MA M)
Northing (Y) [meters] 4655033.651 864995.717
Easting (X) [meters] 350905.404 257865.025
Convergence [degrees] -1.20622350 0.46941605
Point Scale 0.99987353 0.99996880
Combined Factor 0.99987256 0.99996783

US NATIONAL GRID DESIGNATOR: 19TCG5090555033(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	32951.2
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	37350.9
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	60676.9
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	85468.1
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	91395.5
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	121708.7
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	155138.1
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	163822.1
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	173188.2

NEAREST NGS PUBLISHED CONTROL POINT

MY4173 KINGSTON CORNER 7 1888 N420114.112 W0704748.211 1453.4

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

OWD 21

FILE: 0793337p.100 000181154

Your station is 26.5 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: JOHN.ALLEN@SEWALL.COM DATE: December 14, 2010
RINEX FILE: 0793337p.100 TIME: 17:11:42 UTC

SOFTWARE: rsgps 1.35.1 RS50.prl 1.65 START: 2010/12/03 15:39:55
EPHEMERIS: igr16125.eph [rapid] STOP: 2010/12/03 16:03:30
NAV FILE: brdc3370.10n OBS USED: 2439 / 2682 : 91%
ANT NAME: TPSHIPER_GGD QUALITY IND. 24.02/ 33.43
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.314

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92236)

X:	1544669.675(m)	0.008(m)	1544668.901(m)	0.008(m)
Y:	-4464615.127(m)	0.021(m)	-4464613.694(m)	0.021(m)
Z:	4270666.286(m)	0.020(m)	4270666.223(m)	0.020(m)
LAT:	42 18 16.41434	0.006(m)	42 18 16.44789	0.006(m)
E LON:	289 5 4.63605	0.010(m)	289 5 4.62457	0.010(m)
W LON:	70 54 55.36395	0.010(m)	70 54 55.37543	0.010(m)
EL HGT:	-25.792(m)	0.028(m)	-27.023(m)	0.028(m)
ORTHO HGT:	1.890(m)	0.030(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4685368.466	895062.656
Easting (X) [meters]	342128.709	248202.647
Convergence [degrees]	-1.28945231	0.39270677
Point Scale	0.99990666	0.99996619
Combined Factor	0.99991071	0.99997024

US NATIONAL GRID DESIGNATOR: 19TCG4212885368(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	38482.6
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	43419.0
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	58619.2
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	62357.0
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	92249.6
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	103869.1
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	124759.7
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	142153.8
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	149368.3

NEAREST NGS PUBLISHED CONTROL POINT

MY4586	HULL OREGON HOUSE CUPOLA	N421811.926	W0705445.663	261.7
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

OWD 22

FILE: 0793log1203e.tps 000181169

Your station is 0.3 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: JOHN.ALLEN@SEWALL.COM DATE: December 14, 2010
RINEX FILE: 0793337o.10o TIME: 17:22:39 UTC

SOFTWARE: rsgps 1.35.1 RS30.prl 1.65 START: 2010/12/03 14:55:45
EPHEMERIS: igr16125.eph [rapid] STOP: 2010/12/03 15:17:05
NAV FILE: brdc3370.10n OBS USED: 2700 / 2934 : 92%
ANT NAME: TPSHIPER_GGD QUALITY IND. 22.88/ 27.67
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.288

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92227)

X:	1546654.192(m)	0.008(m)	1546653.418(m)	0.008(m)
Y:	-4468102.206(m)	0.014(m)	-4468100.772(m)	0.014(m)
Z:	4266330.761(m)	0.017(m)	4266330.698(m)	0.017(m)

LAT:	42 15 6.45269	0.007(m)	42 15 6.48623	0.007(m)
E LON:	289 5 36.71253	0.009(m)	289 5 36.70109	0.009(m)
W LON:	70 54 23.28747	0.009(m)	70 54 23.29891	0.009(m)
EL HGT:	-24.064(m)	0.020(m)	-25.297(m)	0.020(m)

ORTHO HGT: 3.762(m) 0.024(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4679492.702	889206.771
Easting (X) [meters]	342731.929	248978.070
Convergence [degrees]	-1.28215256	0.39869197
Point Scale	0.99990433	0.99996495
Combined Factor	0.99990810	0.99996872

US NATIONAL GRID DESIGNATOR: 19TCG4273179492(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	35268.4
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	44493.3
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	56474.5
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	62807.6
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	99020.3
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	122562.9
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	139248.9
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	143128.0
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	148562.6

NEAREST NGS PUBLISHED CONTROL POINT

MY2167	F 42	N421459.	W0705424.	231.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

OWD 23

FILE: 0793log1203d.tps 000180688

Your station is 26.8 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 07933370.10o

DATE: December 13, 2010
TIME: 19:05:24 UTC

SOFTWARE: rsgps 1.35.1 RS10.prl 1.65 START: 2010/12/03 14:11:30
EPHEMERIS: igr16125.eph [rapid] STOP: 2010/12/03 14:31:55
NAV FILE: brdc3370.10n OBS USED: 2043 / 2106 : 97%
ANT NAME: TPSHIPER_GGD QUALITY IND. 29.91/ 10.04
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.299

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92219)

X:	1549923.941(m)	0.007(m)	1549923.167(m)	0.007(m)
Y:	-4471405.948(m)	0.014(m)	-4471404.513(m)	0.014(m)
Z:	4261760.426(m)	0.015(m)	4261760.362(m)	0.015(m)

LAT:	42 11 45.46057	0.006(m)	42 11 45.49407	0.006(m)
E LON:	289 7 4.28354	0.010(m)	289 7 4.27215	0.010(m)
W LON:	70 52 55.71646	0.010(m)	70 52 55.72785	0.010(m)
EL HGT:	8.807(m)	0.018(m)	7.571(m)	0.018(m)
ORTHO HGT:	36.767(m)	0.022(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4673248.635	883019.815
Easting (X) [meters]	344601.729	251030.273
Convergence [degrees]	-1.26442862	0.41503195
Point Scale	0.99989714	0.99996455
Combined Factor	0.99989576	0.99996317

US NATIONAL GRID DESIGNATOR: 19TCG4460173248(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	33802.6
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	47621.2
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	68417.4
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	89626.5
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	95087.3
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	105307.4
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	121629.0
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	136245.5
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	145640.4

NEAREST NGS PUBLISHED CONTROL POINT

MY4138	HINGHAM TROPICAL WEST MAST	N421204.476	W0705156.516	1478.1
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

OWD 24

FILE: 0793log1203c.tps 000180687

Your station is 10.5 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0793337n.10o

DATE: December 13, 2010
TIME: 19:05:38 UTC

SOFTWARE: rsgps 1.35.1 RS23.prl 1.65 START: 2010/12/03 13:11:35
EPHEMERIS: igr16125.eph [rapid] STOP: 2010/12/03 13:35:40
NAV FILE: brdc3370.10n OBS USED: 2025 / 2160 : 94%
ANT NAME: TPSHIPER_GGD QUALITY IND. 41.18/ 25.40
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.317

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92208)

X:	1539173.367(m)	0.011(m)	1539172.594(m)	0.011(m)
Y:	-4478241.987(m)	0.022(m)	-4478240.552(m)	0.022(m)
Z:	4258506.070(m)	0.022(m)	4258506.005(m)	0.022(m)

LAT:	42 9 23.00905	0.007(m)	42 9 23.04247	0.007(m)
E LON:	288 58 4.31035	0.010(m)	288 58 4.29882	0.010(m)
W LON:	71 1 55.68965	0.010(m)	71 1 55.70118	0.010(m)
EL HGT:	13.168(m)	0.031(m)	11.932(m)	0.031(m)

ORTHO HGT: 41.373(m) 0.033(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4669139.079	878545.902
Easting (X) [meters]	332112.493	238666.275
Convergence [degrees]	-1.36419925	0.31427765
Point Scale	0.99994683	0.99996485
Combined Factor	0.99994476	0.99996278

US NATIONAL GRID DESIGNATOR: 19TCG3211269139(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	20775.8
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	37403.0
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	47408.5
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	63392.7
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	84800.0
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	108540.7
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	133881.7
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	140402.9
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	149515.3

NEAREST NGS PUBLISHED CONTROL POINT

MY3476 RANDOLPH ORTHODOX CONG CHURCH N420945.261 W0710230.639 1056.1

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

OWD 25

FILE: 0793log1203b.tps 000180685

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0793337m.10o

DATE: December 13, 2010
TIME: 19:03:32 UTC

SOFTWARE: rsgps 1.35.1 RS11.prl 1.65 START: 2010/12/03 12:14:55
EPHEMERIS: igr16125.eph [rapid] STOP: 2010/12/03 12:37:25
NAV FILE: brdc3370.10n OBS USED: 1422 / 2016 : 71%
ANT NAME: TPSHIPER_GGD QUALITY IND. 27.17/ 19.81
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.332

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92197)

X:	1522746.304(m)	0.015(m)	1522745.531(m)	0.015(m)
Y:	-4478994.486(m)	0.038(m)	-4478993.053(m)	0.038(m)
Z:	4263619.540(m)	0.036(m)	4263619.475(m)	0.036(m)

LAT:	42 13 5.95582	0.004(m)	42 13 5.98922	0.004(m)
E LON:	288 46 36.30362	0.009(m)	288 46 36.29182	0.009(m)
W LON:	71 13 23.69638	0.009(m)	71 13 23.70818	0.009(m)
EL HGT:	37.690(m)	0.054(m)	36.458(m)	0.054(m)
ORTHO HGT:	65.992(m)	0.055(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4676409.520	885355.637
Easting (X) [meters]	316501.974	222849.640
Convergence [degrees]	-1.49434459	0.18590159
Point Scale	1.00001432	0.99996460
Combined Factor	1.00000841	0.99995869

US NATIONAL GRID DESIGNATOR: 19TCG1650176409(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	17300.2
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	49187.9
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	59645.6
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	65502.5
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	84866.8
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	98106.4
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	105049.5
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	117366.9
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	126432.6

NEAREST NGS PUBLISHED CONTROL POINT

MY3588	WEST DEDHAM CHURCH	N421251.735	W0711245.647	976.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

TAN 26

FILE: 0788log1209d.tps 000181222

NGS OPUS-RS SOLUTION REPORT

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USER: livda@sewall.com
RINEX FILE: 07883430.10o

DATE: December 14, 2010
TIME: 18:48:21 UTC

SOFTWARE: rsgps 1.35.1 RS50.prl 1.65 START: 2010/12/09 14:06:50
EPHEMERIS: igr16134.eph [rapid] STOP: 2010/12/09 14:29:20
NAV FILE: brdc3430.10n OBS USED: 2088 / 2232 : 94%
ANT NAME: TPSHIPER_GD QUALITY IND. 32.13/ 5.29
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.303

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93862)

X: 1535881.666(m) 0.011(m) 1535880.894(m) 0.011(m)
Y: -4512672.312(m) 0.017(m) -4512670.873(m) 0.017(m)
Z: 4223385.639(m) 0.011(m) 4223385.570(m) 0.011(m)

LAT: 41 43 53.65899 0.007(m) 41 43 53.69208 0.007(m)
E LON: 288 47 45.36434 0.011(m) 288 47 45.35278 0.011(m)
W LON: 71 12 14.63566 0.011(m) 71 12 14.64722 0.011(m)
EL HGT: -22.633(m) 0.019(m) -23.881(m) 0.019(m)
ORTHO HGT: 6.825(m) 0.023(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4622321.148	831298.031
Easting (X) [meters]	316694.183	224621.072
Convergence [degrees]	-1.46752549	0.19878772
Point Scale	1.00001350	0.99999785
Combined Factor	1.00001705	1.00000140

US NATIONAL GRID DESIGNATOR: 19TCG1669422321(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	26414.3
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	37111.9
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	66144.3
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	83170.4
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	100815.6
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	125884.6
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	131699.4
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	135541.4
DI1874	NYRH RIVERHEAD CORS ARP	N405524.088	W0724250.560	155029.8

NEAREST NGS PUBLISHED CONTROL POINT

LW5420 192 D N414359.275 W0711150.219 589.6

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

TAN 27

FILE: 0788log1208b.tps 000179369

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com DATE: December 09, 2010
RINEX FILE: 0788342n.10o TIME: 23:25:38 UTC

SOFTWARE: rsgps 1.35.1 RS12.prl 1.65 START: 2010/12/08 13:26:40
EPHEMERIS: igu16133.eph [ultra-rapid] STOP: 2010/12/08 13:48:20
NAV FILE: brdc3420.10n OBS USED: 1728 / 2178 : 79%
ANT NAME: TPSHIPER_GD QUALITY IND. 19.10/ 13.47
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.260

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93580)

X:	1543455.563(m)	0.015(m)	1543454.791(m)	0.015(m)
Y:	-4503731.299(m)	0.023(m)	-4503729.860(m)	0.023(m)
Z:	4230120.593(m)	0.017(m)	4230120.525(m)	0.017(m)

LAT:	41 48 46.30468	0.008(m)	41 48 46.33786	0.008(m)
E LON:	288 55 0.81519	0.011(m)	288 55 0.80376	0.011(m)
W LON:	71 4 59.18481	0.011(m)	71 4 59.19624	0.011(m)
EL HGT:	-20.716(m)	0.029(m)	-21.963(m)	0.029(m)
ORTHO HGT:	8.433(m)	0.032(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4631096.404	840368.745
Easting (X) [meters]	326973.192	234640.350
Convergence [degrees]	-1.38915078	0.28003905
Point Scale	0.99996841	0.99998732
Combined Factor	0.99997166	0.99999057

US NATIONAL GRID DESIGNATOR: 19TCG2697331096(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	18033.4
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	31146.1
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	61728.4
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	67621.1
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	94197.4
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	134698.6
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	140492.8
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	144432.1
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	148095.1

NEAREST NGS PUBLISHED CONTROL POINT

LW2051	FARM HOUSE WHITE CHIMNEY	N414830.179	W0710451.258	531.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

TAN 28

FILE: 0788log1207j.tps 000179365

Your station is 12.0 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com DATE: December 09, 2010
RINEX FILE: 0788341u.10o TIME: 23:23:44 UTC

SOFTWARE: rsgps 1.35.1 RS42.prl 1.65 START: 2010/12/07 20:17:45
EPHEMERIS: igr16132.eph [rapid] STOP: 2010/12/07 20:37:55
NAV FILE: brdc3410.10n OBS USED: 1710 / 1791 : 95%
ANT NAME: TSPHIPER_GD QUALITY IND. 25.36/ 17.35
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.344

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93384)

X: 1522901.829(m) 0.011(m) 1522901.055(m) 0.011(m)
Y: -4476415.791(m) 0.017(m) -4476414.358(m) 0.017(m)
Z: 4266265.706(m) 0.012(m) 4266265.641(m) 0.012(m)

LAT: 42 15 1.54654 0.006(m) 42 15 1.57998 0.006(m)
E LON: 288 47 18.93538 0.010(m) 288 47 18.92355 0.010(m)
W LON: 71 12 41.06462 0.010(m) 71 12 41.07645 0.010(m)
EL HGT: 45.832(m) 0.021(m) 44.600(m) 0.021(m)
ORTHO HGT: 74.040(m) 0.024(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 19) SPC (2001 MA M)
Northing (Y) [meters] 4679949.469 888925.278
Easting (X) [meters] 317571.969 223815.304
Convergence [degrees] -1.48729794 0.19385630
Point Scale 1.00000950 0.99996493
Combined Factor 1.00000231 0.99995774

US NATIONAL GRID DESIGNATOR: 19TCG1757179949(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	19797.4
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	62388.9
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	68287.4
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	88562.5
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	100903.7
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	118030.4
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	123231.2
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	128312.9
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	131573.8

NEAREST NGS PUBLISHED CONTROL POINT

MY5400 10925 N421457.363 W0711226.384 360.1

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

TAN 29

FILE: 0788log1208c.tps 000179371

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com
RINEX FILE: 07883420.10o

DATE: December 09, 2010
TIME: 23:29:02 UTC

SOFTWARE: rsgps 1.35.1 RS11.prl 1.65 START: 2010/12/08 14:08:50
EPHEMERIS: igu16133.eph [ultra-rapid] STOP: 2010/12/08 14:31:20
NAV FILE: brdc3420.10n OBS USED: 2032 / 2232 : 91%
ANT NAME: TPSHIPER_GD QUALITY IND. 25.30/ 26.86
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.309

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93588)

X:	1553329.955(m)	0.012(m)	1553329.183(m)	0.012(m)
Y:	-4503123.469(m)	0.027(m)	-4503122.030(m)	0.027(m)
Z:	4227199.936(m)	0.029(m)	4227199.868(m)	0.029(m)

LAT:	41 46 38.79105	0.008(m)	41 46 38.82422	0.008(m)
E LON:	289 1 53.82683	0.011(m)	289 1 53.81555	0.011(m)
W LON:	70 58 6.17317	0.011(m)	70 58 6.18445	0.011(m)
EL HGT:	-2.178(m)	0.039(m)	-3.425(m)	0.039(m)
ORTHO HGT:	26.870(m)	0.041(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4626938.862	836487.741
Easting (X) [meters]	336412.858	244197.490
Convergence [degrees]	-1.31170251	0.35710343
Point Scale	0.99992931	0.99999166
Combined Factor	0.99992965	0.99999201

US NATIONAL GRID DESIGNATOR: 19TCG3641226938(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	7747.4
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	39495.1
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	70048.5
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	77673.2
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	102471.7
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	144613.0
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	150803.5
DI1874	NYRH RIVERHEAD CORS ARP	N405524.088	W0724250.560	174172.8

NEAREST NGS PUBLISHED CONTROL POINT

DF6869	204 P	N414648.191	W0705743.104	606.2
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

TAN 30

FILE: 0788log1209c.tps 000181221

NGS OPUS-RS SOLUTION REPORT

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USER: livda@sewall.com
RINEX FILE: 0788343n.10o

DATE: December 14, 2010
TIME: 18:45:14 UTC

SOFTWARE: rsgps 1.35.1 RS42.prl 1.65 START: 2010/12/09 13:17:45
EPHEMERIS: igr16134.eph [rapid] STOP: 2010/12/09 13:42:50
NAV FILE: brdc3430.10n OBS USED: 1800 / 2232 : 81%
ANT NAME: TPSHIPER_GD QUALITY IND. 24.30/ 39.16
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.263

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93853)

X:	1540853.735(m)	0.006(m)	1540852.963(m)	0.006(m)
Y:	-4514937.919(m)	0.016(m)	-4514936.479(m)	0.016(m)
Z:	4219273.633(m)	0.014(m)	4219273.563(m)	0.014(m)

LAT:	41 40 53.32269	0.004(m)	41 40 53.35574	0.004(m)
E LON:	288 50 37.31311	0.009(m)	288 50 37.30163	0.009(m)
W LON:	71 9 22.68689	0.009(m)	71 9 22.69837	0.009(m)
EL HGT:	40.029(m)	0.020(m)	38.779(m)	0.020(m)
ORTHO HGT:	69.530(m)	0.023(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4616658.491	825749.212
Easting (X) [meters]	320527.427	228617.289
Convergence [degrees]	-1.43429892	0.23087186
Point Scale	0.99999639	1.00000534
Combined Factor	0.99999011	0.99999906

US NATIONAL GRID DESIGNATOR: 19TCG2052716658(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	23452.4
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	37636.9
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	43188.8
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	72668.1
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	83912.8
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	87940.5
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	107189.0
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	129748.8
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	133536.8

NEAREST NGS PUBLISHED CONTROL POINT

LW0526	N 17	N414042.	W0710919.	360.3
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

EWB 31

FILE: 0788log1208i.tps 000179376

Your station is 3.1 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com DATE: December 09, 2010
RINEX FILE: 0788342v.10o TIME: 23:27:05 UTC

SOFTWARE: rsgps 1.35.1 RS42.prl 1.65 START: 2010/12/08 21:16:00
EPHEMERIS: igu16133.eph [ultra-rapid] STOP: 2010/12/08 21:38:25
NAV FILE: brdc3420.10n OBS USED: 1854 / 2412 : 77%
ANT NAME: TSHIPER_GD QUALITY IND. 34.00/ 31.61
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.285

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93670)

X:	1546674.227(m)	0.008(m)	1546673.456(m)	0.008(m)
Y:	-4517149.687(m)	0.021(m)	-4517148.246(m)	0.021(m)
Z:	4214786.412(m)	0.018(m)	4214786.342(m)	0.018(m)

LAT:	41 37 39.00729	0.004(m)	41 37 39.04032	0.004(m)
E LON:	288 54 4.42272	0.009(m)	288 54 4.41137	0.009(m)
W LON:	71 5 55.57728	0.009(m)	71 5 55.58863	0.009(m)
EL HGT:	28.074(m)	0.027(m)	26.822(m)	0.027(m)
ORTHO HGT:	57.585(m)	0.029(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4610547.129 819775.153
Easting (X) [meters]	325170.063 233435.606
Convergence [degrees]	-1.39453498 0.26951671
Point Scale	0.99997615 1.00001424
Combined Factor	0.99997175 1.00000984

US NATIONAL GRID DESIGNATOR: 19TCG2517010547(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	21843.9
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	38952.5
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	50080.9
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	72343.5
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	79933.6
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	85796.6
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	93308.3
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	114257.7
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	134688.9

NEAREST NGS PUBLISHED CONTROL POINT

LW2134	PORTE	N413639.150	W0710424.474	2803.8
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

EWB 32

FILE: 0788log1208d.tps 000179372

Your station is 2.1 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com DATE: December 09, 2010
RINEX FILE: 0788342p.10o TIME: 23:28:27 UTC

SOFTWARE: rsgps 1.35.1 RS10.prl 1.65 START: 2010/12/08 15:00:25
EPHEMERIS: igu16133.eph [ultra-rapid] STOP: 2010/12/08 15:28:00
NAV FILE: brdc3420.10n OBS USED: 2907 / 3582 : 81%
ANT NAME: TSHIPPER_GD QUALITY IND. 22.92/ 28.33
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.320

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93599)

X:	1559135.615(m)	0.009(m)	1559134.843(m)	0.009(m)
Y:	-4506358.443(m)	0.019(m)	-4506357.003(m)	0.019(m)
Z:	4221630.586(m)	0.017(m)	4221630.518(m)	0.017(m)

LAT:	41 42 37.20695	0.003(m)	41 42 37.24010	0.003(m)
E LON:	289 5 5.59946	0.008(m)	289 5 5.58827	0.008(m)
W LON:	70 54 54.40054	0.008(m)	70 54 54.41173	0.008(m)
EL HGT:	-14.409(m)	0.026(m)	-15.659(m)	0.026(m)
ORTHO HGT:	14.652(m)	0.029(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4619387.934 829063.503
Easting (X) [meters]	340674.319 248677.287
Convergence [degrees]	-1.27451554 0.39288654
Point Scale	0.99991238 1.00000093
Combined Factor	0.99991464 1.00000319

US NATIONAL GRID DESIGNATOR: 19TCG4067419387(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	4358.0
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	48133.6
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	56683.1
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	78707.9
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	83631.5
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	103455.2
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	107840.0
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	111100.2
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	149848.8

NEAREST NGS PUBLISHED CONTROL POINT

DF6876	204 G	N414247.982	W0705618.398	1967.4
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

EWB 33

FILE: 0788log1207b.tps 000179356

Your station is 8.6 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com DATE: December 09, 2010
RINEX FILE: 0788341n.10o TIME: 23:23:05 UTC

SOFTWARE: rsgps 1.35.1 RS41.prl 1.65 START: 2010/12/07 13:02:55
EPHEMERIS: igr16132.eph [rapid] STOP: 2010/12/07 13:27:20
NAV FILE: brdc3410.10n OBS USED: 2196 / 2196 : 100%
ANT NAME: TPSHIPER_GD QUALITY IND. 35.52/ 32.54
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.280

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93302)

X:	1567782.775(m)	0.012(m)	1567782.003(m)	0.012(m)
Y:	-4498027.840(m)	0.020(m)	-4498026.400(m)	0.020(m)
Z:	4227267.743(m)	0.017(m)	4227267.676(m)	0.017(m)

LAT:	41 46 42.14736	0.007(m)	41 46 42.18059	0.007(m)
E LON:	289 12 57.40406	0.010(m)	289 12 57.39302	0.010(m)
W LON:	70 47 2.59594	0.010(m)	70 47 2.60698	0.010(m)
EL HGT:	-16.307(m)	0.026(m)	-17.556(m)	0.026(m)
ORTHO HGT:	12.406(m)	0.029(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4626708.033	836703.357
Easting (X) [meters]	351734.546	259520.812
Convergence [degrees]	-1.18884420	0.48092117
Point Scale	0.99987051	0.99999154
Combined Factor	0.99987307	0.99999410

US NATIONAL GRID DESIGNATOR: 19TCG5173426708(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	9377.2
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	50026.5
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	79526.2
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	92769.9
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	116486.8
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	152159.5
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	159819.3
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	164874.4
DI1874	NYRH RIVERHEAD CORS ARP	N405524.088	W0724250.560	187347.8

NEAREST NGS PUBLISHED CONTROL POINT

LW5039	TREMONT 1935	N414723.581	W0704603.858	1864.4
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

PVC 34

FILE: 0509log1201a.tps 000000672

NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: <http://www.ngs.noaa.gov/OPUS/about.html#accuracy>

USER: john.allen@sewall.com DATE: December 04, 2010
RINEX FILE: 05093351.10o TIME: 20:57:25 UTC

SOFTWARE: page5 1009.28 master11.pl 120210 START: 2010/12/01 11:47:00
EPHEMERIS: igr16123.eph [rapid] STOP: 2010/12/01 15:38:00
NAV FILE: brdc3350.10n OBS USED: 10245 / 10546 : 97%
ANT NAME: TPSHIPER_GD NONE # FIXED AMB: 46 / 52 : 88%
ARP HEIGHT: 1.5 OVERALL RMS: 0.014(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.9166)

X:	1604685.921(m)	0.018(m)	1604685.147(m)	0.018(m)
Y:	-4461465.920(m)	0.037(m)	-4461464.481(m)	0.037(m)
Z:	4251913.443(m)	0.026(m)	4251913.380(m)	0.026(m)

LAT:	42 4 36.09533	0.010(m)	42 4 36.12892	0.010(m)
E LON:	289 46 56.93807	0.025(m)	289 46 56.92758	0.025(m)
W LON:	70 13 3.06193	0.025(m)	70 13 3.07242	0.025(m)
EL HGT:	-25.581(m)	0.043(m)	-26.822(m)	0.043(m)

ORTHO HGT: 1.995(m) 0.073(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4659008.554	870385.436
Easting (X) [meters]	399288.500	306119.480
Convergence [degrees]	-0.81595682	0.86148047
Point Scale	0.99972480	0.99996688
Combined Factor	0.99972881	0.99997089

US NATIONAL GRID DESIGNATOR: 19TCG9928859008(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	126980.7
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	104138.3
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	85497.2

NEAREST NGS PUBLISHED CONTROL POINT

AB3260	PVC A	N420428.954	W0701258.863	240.9
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

HYA 46

FILE: 0515log1130e.tps 000176489

Your station is 46.8 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515334t.10o

DATE: December 04, 2010
TIME: 20:59:57 UTC

SOFTWARE: rsgps 1.35.1 RS26.prl 1.65 START: 2010/11/30 19:50:35
EPHEMERIS: igr16122.eph [rapid] STOP: 2010/11/30 20:13:10
NAV FILE: brdc3340.10n OBS USED: 2160 / 2184 : 99%
ANT NAME: TPSHIPER_GD QUALITY IND. 31.61/ 28.67
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.314

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91462)

X:	1605643.490(m)	0.010(m)	1605642.717(m)	0.010(m)
Y:	-4490878.035(m)	0.021(m)	-4490876.592(m)	0.021(m)
Z:	4220706.489(m)	0.014(m)	4220706.423(m)	0.014(m)

LAT:	41 41 56.96956	0.008(m)	41 41 57.00287	0.008(m)
E LON:	289 40 25.38765	0.005(m)	289 40 25.37718	0.005(m)
W LON:	70 19 34.61235	0.005(m)	70 19 34.62282	0.005(m)
EL HGT:	-10.328(m)	0.025(m)	-11.580(m)	0.025(m)
ORTHO HGT:	17.749(m)	0.028(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4617224.725	828327.393
Easting (X) [meters]	389643.551	297697.354
Convergence [degrees]	-0.88235682	0.78842057
Point Scale	0.99974987	1.00000261
Combined Factor	0.99975149	1.00000423

US NATIONAL GRID DESIGNATOR: 19TCG8964317224(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	46880.2
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	114006.3
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	131781.6
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	156862.2
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	168392.8
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	198702.4
DI1874	NYRH RIVERHEAD CORS ARP	N405524.088	W0724250.560	217699.5
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	222291.5

NEAREST NGS PUBLISHED CONTROL POINT

LW4011	BARNSTABLE 1846	N414148.607	W0701823.767	1656.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

HYA 47

FILE: 0515log1130f.tps 000176490

Your station is 36.3 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515334u.10o

DATE: December 04, 2010
TIME: 20:58:54 UTC

SOFTWARE: rsgps 1.35.1 RS28.prl 1.65 START: 2010/11/30 20:33:15
EPHEMERIS: igr16122.eph [rapid] STOP: 2010/11/30 20:58:15
NAV FILE: brdc3340.10n OBS USED: 2232 / 2250 : 99%
ANT NAME: TPSHIPER_GD QUALITY IND. 19.65/ 22.26
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.324

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91470)

X:	1594878.158(m)	0.009(m)	1594877.385(m)	0.009(m)
Y:	-4491244.122(m)	0.016(m)	-4491242.680(m)	0.016(m)
Z:	4224353.059(m)	0.019(m)	4224352.993(m)	0.019(m)

LAT:	41 44 35.69456	0.006(m)	41 44 35.72787	0.006(m)
E LON:	289 33 1.34584	0.007(m)	289 33 1.33520	0.007(m)
W LON:	70 26 58.65416	0.007(m)	70 26 58.66480	0.007(m)
EL HGT:	-23.118(m)	0.025(m)	-24.368(m)	0.025(m)
ORTHO HGT:	4.979(m)	0.028(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4622285.385	833090.177
Easting (X) [meters]	379462.532	287370.683
Convergence [degrees]	-0.96526799	0.70556623
Point Scale	0.99977879	0.99999622
Combined Factor	0.99978242	0.99999984

US NATIONAL GRID DESIGNATOR: 19TCG7946222285(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	36347.8
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	75391.8
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	102852.1
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	120850.0
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	140992.9
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	146513.7
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	160831.1
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	188649.0
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	191895.5

NEAREST NGS PUBLISHED CONTROL POINT

LW4056	SPRING HILL ACADEMY 1848	N414458.674	W0702734.799	1095.6
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

HYA 48

FILE: 0515log1202n.tps 000176513

Your station is 29.3 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515336u.10o

DATE: December 04, 2010
TIME: 21:13:04 UTC

SOFTWARE: rsgps 1.35.1 RS26.prl 1.65 START: 2010/12/02 20:34:55
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 21:00:40
NAV FILE: brdc3360.10n OBS USED: 2340 / 2340 : 100%
ANT NAME: TPSHIPER_GD QUALITY IND: 36.02/ 31.82
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.276

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92018)

X:	1586671.216(m)	0.007(m)	1586670.443(m)	0.007(m)
Y:	-4489686.027(m)	0.016(m)	-4489684.586(m)	0.016(m)
Z:	4229106.765(m)	0.010(m)	4229106.699(m)	0.010(m)

LAT:	41 48 1.49097	0.003(m)	41 48 1.52430	0.003(m)
E LON:	289 27 48.92987	0.009(m)	289 27 48.91910	0.009(m)
W LON:	70 32 11.07013	0.009(m)	70 32 11.08090	0.009(m)
EL HGT:	4.448(m)	0.018(m)	3.199(m)	0.018(m)
ORTHO HGT:	32.711(m)	0.021(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4628757.656	839353.828
Easting (X) [meters]	372359.742	280080.684
Convergence [degrees]	-1.02421230	0.64727213
Point Scale	0.99980048	0.99998880
Combined Factor	0.99979978	0.99998811

US NATIONAL GRID DESIGNATOR: 19TCG7235928757(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	29800.5
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	66058.9
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	89538.1
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	93268.1
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	112875.0
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	136380.1
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	139438.6
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	152949.0
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	180056.1

NEAREST NGS PUBLISHED CONTROL POINT

LW1524	Q 43	N414811.	W0703244.	814.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

HYA 49

FILE: 0515log1202l.tps 000176512

Your station is 22.8 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515336t.10o

DATE: December 04, 2010
TIME: 21:14:52 UTC

SOFTWARE: rsgps 1.35.1 RS11.prl 1.65 START: 2010/12/02 19:15:00
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 19:39:30
NAV FILE: brdc3360.10n OBS USED: 2384 / 2424 : 98%
ANT NAME: TPSHIPER_GD QUALITY IND. 22.35/ 38.70
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.289

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92003)

X:	1582588.020(m)	0.012(m)	1582587.248(m)	0.012(m)
Y:	-4497908.192(m)	0.024(m)	-4497906.750(m)	0.024(m)
Z:	4221894.939(m)	0.013(m)	4221894.872(m)	0.013(m)

LAT:	41 42 49.04743	0.009(m)	41 42 49.08067	0.009(m)
E LON:	289 23 3.87667	0.006(m)	289 23 3.86587	0.006(m)
W LON:	70 36 56.12333	0.006(m)	70 36 56.13413	0.006(m)
EL HGT:	-26.951(m)	0.028(m)	-28.202(m)	0.028(m)
ORTHO HGT:	1.547(m)	0.030(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4619242.084	829643.487
Easting (X) [meters]	365600.386	273600.390
Convergence [degrees]	-1.07518676	0.59408368
Point Scale	0.99982228	1.00000045
Combined Factor	0.99982651	1.00000467

US NATIONAL GRID DESIGNATOR: 19TCG6560019242(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	22786.4
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	94489.7
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	107829.9
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	132747.7
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	161117.3
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	174641.4
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	177705.0
DI1874	NYRH RIVERHEAD CORS ARP	N405524.088	W0724250.560	196386.4

NEAREST NGS PUBLISHED CONTROL POINT

LW1555	844 7355 TIDAL 3	N414309.	W0703652.	624.3
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

HYA 50

FILE: 0515log1202j.tps 000176510

Your station is 34.0 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515336r.10o

DATE: December 04, 2010
TIME: 21:09:00 UTC

SOFTWARE: rsgps 1.35.1 RS11.prl 1.65 START: 2010/12/02 17:42:00
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 18:03:35
NAV FILE: brdc3360.10n OBS USED: 1584 / 2205 : 72%
ANT NAME: TPSHIPER_GD QUALITY IND. 15.99/ 18.26
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.277

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91985)

X:	1593493.090(m)	0.009(m)	1593492.318(m)	0.009(m)
Y:	-4498724.858(m)	0.023(m)	-4498723.415(m)	0.023(m)
Z:	4217000.537(m)	0.019(m)	4217000.470(m)	0.019(m)

LAT:	41 39 15.71986	0.004(m)	41 39 15.75309	0.004(m)
E LON:	289 30 16.74661	0.007(m)	289 30 16.73598	0.007(m)
W LON:	70 29 43.25339	0.007(m)	70 29 43.26402	0.007(m)
EL HGT:	4.432(m)	0.030(m)	3.178(m)	0.030(m)
ORTHO HGT:	32.669(m)	0.033(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4612482.128	823173.139
Easting (X) [meters]	375489.250	283683.953
Convergence [degrees]	-0.99398886	0.67485345
Point Scale	0.99979078	1.00000970
Combined Factor	0.99979008	1.00000900

US NATIONAL GRID DESIGNATOR: 19TCG7548912482(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	34030.2
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	77460.9
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	88041.4
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	106289.9
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	119036.5
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	134540.0
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	143059.0
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	169523.1
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	184825.2

NEAREST NGS PUBLISHED CONTROL POINT

LW4096	HOUSE CHIMNEY	N413920.126	W0702932.703	279.2
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

HYA 52

FILE: 0515log1130a.tps 000176484

Your station is 40.9 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515334q.10o

DATE: December 04, 2010
TIME: 20:58:52 UTC

SOFTWARE: rsgps 1.35.1 RS11.prl 1.65 START: 2010/11/30 16:24:05
EPHEMERIS: igr16122.eph [rapid] STOP: 2010/11/30 16:49:55
NAV FILE: brdc3340.10n OBS USED: 1421 / 2065 : 69%
ANT NAME: TPSHIPER_GD QUALITY IND. 7.16/ 0.36
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.389

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91423)

X:	1600165.339(m)	0.072(m)	1600164.567(m)	0.072(m)
Y:	-4494159.603(m)	0.050(m)	-4494158.160(m)	0.050(m)
Z:	4219320.749(m)	0.077(m)	4219320.682(m)	0.077(m)

LAT:	41 40 56.48511	0.100(m)	41 40 56.51837	0.100(m)
E LON:	289 35 54.58625	0.052(m)	289 35 54.57574	0.052(m)
W LON:	70 24 5.41375	0.052(m)	70 24 5.42426	0.052(m)
EL HGT:	1.304(m)	0.029(m)	0.051(m)	0.029(m)
ORTHO HGT:	29.400(m)	0.031(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4615458.473	826378.074
Easting (X) [meters]	383353.974	291460.406
Convergence [degrees]	-0.93210548	0.73789138
Point Scale	0.99976744	1.00000520
Combined Factor	0.99976723	1.00000499

US NATIONAL GRID DESIGNATOR: 19TCG8335315458(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	40932.3
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	142891.9
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	150680.3
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	168402.7
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	192588.0
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	198385.6
DI1874	NYRH RIVERHEAD CORS ARP	N405524.088	W0724250.560	211202.5

NEAREST NGS PUBLISHED CONTROL POINT

LW4070	AIRPORT	N414101.048	W0702424.253	457.4
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

HYA 53

FILE: 0515log1202k.tps 000176511

Your station is 32.9 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515336s.10o

DATE: December 04, 2010
TIME: 21:10:33 UTC

SOFTWARE: rsgps 1.35.1 RS10.prl 1.65 START: 2010/12/02 18:26:35
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 18:50:05
NAV FILE: brdc3360.10n OBS USED: 2430 / 2925 : 83%
ANT NAME: TPSHIPER_GD QUALITY IND. 34.39/ 44.09
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.292

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91994)

X:	1592326.600(m)	0.009(m)	1592325.828(m)	0.009(m)
Y:	-4494871.834(m)	0.013(m)	-4494870.392(m)	0.013(m)
Z:	4221543.854(m)	0.013(m)	4221543.787(m)	0.013(m)

LAT:	41 42 32.38002	0.007(m)	41 42 32.41327	0.007(m)
E LON:	289 30 24.83141	0.010(m)	289 30 24.82076	0.010(m)
W LON:	70 29 35.16859	0.010(m)	70 29 35.17924	0.010(m)
EL HGT:	22.325(m)	0.018(m)	21.074(m)	0.018(m)
ORTHO HGT:	50.521(m)	0.021(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4618544.055	829242.308
Easting (X) [meters]	375781.381	283799.388
Convergence [degrees]	-0.99355878	0.67636200
Point Scale	0.99978988	1.00000113
Combined Factor	0.99978638	0.99999763

US NATIONAL GRID DESIGNATOR: 19TCG7578118544(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	32960.3
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	89649.7
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	102411.5
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	117931.3
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	136390.3
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	142951.4
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	163651.8
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	184803.3
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	190208.0

NEAREST NGS PUBLISHED CONTROL POINT

LW4063	BOURNE HILL 1835	N414400.615	W0702909.819	2790.4
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

MVY 54

FILE: 0515log1202b.tps 000176504

Your station is 38.0 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515336m.10o

DATE: December 04, 2010
TIME: 21:09:15 UTC

SOFTWARE: rsgps 1.35.1 RS26.prl 1.65 START: 2010/12/02 12:29:15
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 12:50:15
NAV FILE: brdc3360.10n OBS USED: 2106 / 2124 : 99%
ANT NAME: TPSHIPER_GD QUALITY IND. 21.44/ 0.48
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.243

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91925)

X:	1596523.029(m)	0.008(m)	1596522.257(m)	0.008(m)
Y:	-4502264.386(m)	0.017(m)	-4502262.942(m)	0.017(m)
Z:	4212069.886(m)	0.016(m)	4212069.818(m)	0.016(m)

LAT:	41 35 42.63209	0.004(m)	41 35 42.66527	0.004(m)
E LON:	289 31 29.04039	0.007(m)	289 31 29.02981	0.007(m)
W LON:	70 28 30.95961	0.007(m)	70 28 30.97019	0.007(m)
EL HGT:	-20.311(m)	0.024(m)	-21.567(m)	0.024(m)
ORTHO HGT:	7.964(m)	0.026(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4605881.567	816619.302
Easting (X) [meters]	377048.974	285435.580
Convergence [degrees]	-0.97949767	0.68834284
Point Scale	0.99978603	1.00002000
Combined Factor	0.99978922	1.00002318

US NATIONAL GRID DESIGNATOR: 19TCG7704805881(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	37997.4
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	82807.7
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	88606.8
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	112042.0
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	122366.0
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	134655.4
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	145329.8
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	176303.3
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	186347.3

NEAREST NGS PUBLISHED CONTROL POINT

LW4043	SOUTH MASHPEE	N413456.293	W0702834.070	1434.7
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

MVY 56

FILE: 0515log1202h.tps 000176509

Your station is 25.1 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515336q.10o

DATE: December 04, 2010
TIME: 21:10:10 UTC

SOFTWARE: rsgps 1.35.1 RS40.prl 1.65 START: 2010/12/02 16:26:30
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 16:50:20
NAV FILE: brdc3360.10n OBS USED: 1448 / 2104 : 69%
ANT NAME: TPSHIPER_GD QUALITY IND. 20.26/ 15.42
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.299

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91971)

X:	1584445.452(m)	0.010(m)	1584444.680(m)	0.010(m)
Y:	-4502396.895(m)	0.025(m)	-4502395.453(m)	0.025(m)
Z:	4216459.673(m)	0.019(m)	4216459.605(m)	0.019(m)

LAT:	41 38 52.91772	0.004(m)	41 38 52.95089	0.004(m)
E LON:	289 23 15.21264	0.008(m)	289 23 15.20186	0.008(m)
W LON:	70 36 44.78736	0.008(m)	70 36 44.79814	0.008(m)
EL HGT:	-18.463(m)	0.032(m)	-19.716(m)	0.032(m)
ORTHO HGT:	10.073(m)	0.034(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4611954.680	822361.497
Easting (X) [meters]	365726.025	273938.234
Convergence [degrees]	-1.07171203	0.59619888
Point Scale	0.99982187	1.00001075
Combined Factor	0.99982477	1.00001365

US NATIONAL GRID DESIGNATOR: 19TCG6572611954(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	25152.3
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	70287.3
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	78359.1
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	99854.9
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	109765.1
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	124943.1
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	133384.2
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	175093.7

NEAREST NGS PUBLISHED CONTROL POINT

LW1560	L 48	N413848.	W0703644.	153.2
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

MVY 57

FILE: 0515log1202f.tps 000176507

Your station is 31.0 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515336p.10o

DATE: December 04, 2010
TIME: 21:11:17 UTC

SOFTWARE: rsgps 1.35.1 RS23.prl 1.65 START: 2010/12/02 15:10:10
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 15:33:30
NAV FILE: brdc3360.10n OBS USED: 2466 / 2889 : 85%
ANT NAME: TPSHIPER_GD QUALITY IND. 27.87/ 8.33
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.297

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91956)

X:	1583609.198(m)	0.008(m)	1583608.427(m)	0.008(m)
Y:	-4512582.227(m)	0.018(m)	-4512580.783(m)	0.018(m)
Z:	4205952.551(m)	0.012(m)	4205952.482(m)	0.012(m)

LAT:	41 31 17.41264	0.004(m)	41 31 17.44573	0.004(m)
E LON:	289 20 15.36357	0.008(m)	289 20 15.35281	0.008(m)
W LON:	70 39 44.63643	0.008(m)	70 39 44.64719	0.008(m)
EL HGT:	-12.238(m)	0.021(m)	-13.495(m)	0.021(m)
ORTHO HGT:	16.581(m)	0.024(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4597985.628	808266.783
Easting (X) [meters]	361295.084	269914.608
Convergence [degrees]	-1.10218145	0.56264060
Point Scale	0.99983676	1.00003429
Combined Factor	0.99983868	1.00003621

US NATIONAL GRID DESIGNATOR: 19TCF6129597985(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	30911.2
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	72334.9
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	77577.9
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	107981.0
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	117789.5
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	131118.3
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	169655.8
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	175224.5
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	181632.9

NEAREST NGS PUBLISHED CONTROL POINT

LW4726	CHURCH OF MESSIAH STEEPLE	N413119.865	W0703946.322	85.3
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

MVY 58

FILE: 0515log1202c.tps 000176505

Your station is 30.4 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515336n.10o

DATE: December 04, 2010
TIME: 21:09:30 UTC

SOFTWARE: rsgps 1.35.1 RS28.prl 1.65 START: 2010/12/02 13:09:20
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 13:34:15
NAV FILE: brdc3360.10n OBS USED: 2691 / 2691 : 100%
ANT NAME: TPSHIPER_GD QUALITY IND. 48.02/ 50.26
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.300

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91933)

X:	1587958.493(m)	0.011(m)	1587957.721(m)	0.011(m)
Y:	-4505802.215(m)	0.017(m)	-4505800.772(m)	0.017(m)
Z:	4211539.117(m)	0.012(m)	4211539.049(m)	0.012(m)

LAT:	41 35 19.41639	0.006(m)	41 35 19.44954	0.006(m)
E LON:	289 24 49.48122	0.009(m)	289 24 49.47050	0.009(m)
W LON:	70 35 10.51878	0.009(m)	70 35 10.52950	0.009(m)
EL HGT:	-12.932(m)	0.021(m)	-14.187(m)	0.021(m)
ORTHO HGT:	15.601(m)	0.024(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4605329.686	815797.939
Easting (X) [meters]	367785.569	276190.119
Convergence [degrees]	-1.05307522	0.61378857
Point Scale	0.99981512	1.00002118
Combined Factor	0.99981715	1.00002321

US NATIONAL GRID DESIGNATOR: 19TCG6778505329(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	30333.9
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	76355.0
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	106189.2
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	113743.8
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	125458.7
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	136228.8
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	175201.6
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	179576.4
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	188504.5

NEAREST NGS PUBLISHED CONTROL POINT

LW4682 E FALMOUTH ST ANTHONYS CATH CH N413441.205 W0703401.487 1986.3

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

MVY 60

FILE: 0515log1202e.tps 000176506

Your station is 33.8 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515336o.10o

DATE: December 04, 2010
TIME: 21:16:52 UTC

SOFTWARE: rsgps 1.35.1 RS50.prl 1.65 START: 2010/12/02 14:23:30
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 14:45:35
NAV FILE: brdc3360.10n OBS USED: 2430 / 2556 : 95%
ANT NAME: TPSHIPER_GD QUALITY IND. 18.14/ 40.00
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.297

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91947)

X:	1589706.094(m)	0.009(m)	1589705.322(m)	0.009(m)
Y:	-4508457.322(m)	0.020(m)	-4508455.878(m)	0.020(m)
Z:	4208038.857(m)	0.020(m)	4208038.788(m)	0.020(m)

LAT:	41 32 48.18216	0.006(m)	41 32 48.21528	0.006(m)
E LON:	289 25 22.51943	0.007(m)	289 25 22.50873	0.007(m)
W LON:	70 34 37.48057	0.007(m)	70 34 37.49127	0.007(m)
EL HGT:	-27.196(m)	0.028(m)	-28.453(m)	0.028(m)
ORTHO HGT:	1.364(m)	0.031(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4600651.536	811140.552
Easting (X) [meters]	368465.315	277005.797
Convergence [degrees]	-1.04611585	0.61995321
Point Scale	0.99981292	1.00002921
Combined Factor	0.99981718	1.00003348

US NATIONAL GRID DESIGNATOR: 19TCG6846500651(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	33783.3
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	79611.2
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	110213.6
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	115997.6
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	125287.0
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	137649.1
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	177106.0
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	181397.8
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	191284.5

NEAREST NGS PUBLISHED CONTROL POINT

LW4681	DAVIS NECK	N413254.220	W0703346.862	1186.2
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.



Project Summary

Project name: 75980S - Cape Cod data.ttp

Surveyor:

Comment:

Linear unit: Meters

Projection: UTMNorth-Zone_19 : 72W to 66W

Geoid: g2009u04

Adjustment Summary

Adjustment type: Plane + Height, Constraint

Confidence level: 95 %

Number of adjusted points: 37

Number of plane control points: 2

Number of used GPS vectors: 42

A posteriori plane UWE: 0.6930414 , Bounds: (0.6341473 , 1.365912)

Number of height control points: 1

A posteriori height UWE: 0.6894426 , Bounds: (0.4546061 , 1.551881)

Used GPS Observations

Name	dN (m)	dE (m)	dHt (m)	Horizontal	Vertical
6121C CONTROL-PVC34	2922.077	-2683.34	-1.431	0.002	0.003
BM2-56 CONTROL-MTS	1936.138	1314.984	6.701	0.002	0.002
CQX39-MTS ORLEANS MA	-4759.66	-3234.341	13.391	0.004	0.007
CQX40-MTS ORLEANS MA	8441.617	-3515.795	3.553	0.008	0.009
CQX41-MTS ORLEANS MA	5127.238	3065.997	-13.841	0.01	0.015
CQX42-MTS BOURNE MA	481.461	-38596.93	0.693	0.022	0.032
CQX42-MTS ORLEANS MA	3521.994	12175.399	6.309	0.008	0.012
CQX43-MTS ORLEANS MA	12121.353	10796.122	13.982	0.01	0.018
CQX44-MTS ORLEANS MA	10486.969	21149.878	5.655	0.014	0.023
CQX45-MTS ORLEANS MA	13214.319	-3924.844	2.787	0.01	0.015
HYA46-MTS BOURNE MA	5156.683	-24142.738	-6.338	0.018	0.024
HYA46-MTS ORLEANS MA	8197.214	26629.595	-0.68	0.019	0.027
HYA47-MTS BOURNE MA	96.025	-13961.708	6.493	0.007	0.014
HYA48-MTS BOURNE MA	-6376.239	-6858.905	-21.075	0.007	0.013
HYA49-MTS BOURNE MA	3139.334	-99.55	10.346	0.002	0.002
HYA50-MTS BOURNE MA	9899.288	-9988.42	-21.083	0.009	0.017
HYA51-MTS BOURNE MA	13231.238	-19202.037	1.44	0.067	0.037
HYA51-MTS ORLEANS MA	16271.805	31570.352	7.007	0.061	0.033
HYA52-MTS ORLEANS MA	9963.464	32919.162	-12.338	0.019	0.029
HYA53-MTS BOURNE MA	3837.362	-10280.56	-38.94	0.007	0.011

MA BP14-MTS BOURNE	-14618.788	-2390.798	-39.895	0.009	0.023
MA BP15-MTS ORLEANS	-31130.903	14734.092	9.203	0.013	0.022
MA BP15-PVC34	2455.727	-2250.561	-5.344	0.001	0.003
MA BP16-MTS ORLEANS	4253.315	1318.565	-16.802	0.002	0.004
MA BP17-MTS BOURNE	8397.346	-26332.014	-1.486	0.012	0.024
MA BP18-MTS BOURNE	17475.957	-2005.546	-1.718	0.011	0.02
MTS BOURNE MA-MTS	3040.528	50772.334	5.618	0.018	0.029
MTS BOURNE MA-MVY54	-16499.848	11548.152	-3.695	0.011	0.025
MTS BOURNE MA-MVY55	-13169.86	5304.196	11.562	0.008	0.014
MTS BOURNE MA-MVY56	-10426.736	225.198	-1.848	0.006	0.011
MTS BOURNE MA-MVY57	-24395.79	-4205.748	4.353	0.018	0.023
MTS BOURNE MA-MVY58	-17051.739	2284.742	3.725	0.009	0.017
MTS BOURNE MA-MVY59	-15645.265	-1729.678	3.113	0.01	0.016
MTS BOURNE MA-MVY60	-21729.883	2964.486	-10.516	0.014	0.024
MTS BOURNE MA-PYM12	11384.621	6585.69	-2.746	0.007	0.014
MTS ORLEANS MA-PVC34	33586.632	-16984.651	-14.56	0.013	0.022
MTS ORLEANS MA-PVC35	29175.224	-15347.67	-13.645	0.009	0.022
MTS ORLEANS MA-PVC36	29932.883	-7015.803	-1.923	0.013	0.024
MTS ORLEANS MA-PVC37	24218.109	-3100.474	-10.484	0.012	0.019
MTS ORLEANS MA-PVC38	12589.567	1771.097	-10.429	0.006	0.012
PVC34-PVC35	-4411.402	1636.989	0.897	0.002	0.004
PVC34-PVC36	-3653.752	9968.847	12.64	0.005	0.009

GPS Observation Residuals

Name	dN (m)	dE (m)	dHt (m)	Horizontal	Vertical
6121C CONTROL-PVC34	2922.077	-2683.34	-1.431	0.002	0.003
BM2-56 CONTROL-MTS	1936.138	1314.984	6.701	0.002	0.002
CQX39-MTS ORLEANS MA	-4759.66	-3234.341	13.391	0.004	0.007
CQX40-MTS ORLEANS MA	8441.617	-3515.795	3.553	0.008	0.009
CQX41-MTS ORLEANS MA	5127.238	3065.997	-13.841	0.01	0.015
CQX42-MTS BOURNE MA	481.461	-38596.93	0.693	0.022	0.032
CQX42-MTS ORLEANS MA	3521.994	12175.399	6.309	0.008	0.012
CQX43-MTS ORLEANS MA	12121.353	10796.122	13.982	0.01	0.018
CQX44-MTS ORLEANS MA	10486.969	21149.878	5.655	0.014	0.023
CQX45-MTS ORLEANS MA	13214.319	-3924.844	2.787	0.01	0.015
HYA46-MTS BOURNE MA	5156.683	-24142.738	-6.338	0.018	0.024
HYA46-MTS ORLEANS MA	8197.214	26629.595	-0.68	0.019	0.027
HYA47-MTS BOURNE MA	96.025	-13961.708	6.493	0.007	0.014
HYA48-MTS BOURNE MA	-6376.239	-6858.905	-21.075	0.007	0.013
HYA49-MTS BOURNE MA	3139.334	-99.55	10.346	0.002	0.002
HYA50-MTS BOURNE MA	9899.288	-9988.42	-21.083	0.009	0.017
HYA51-MTS BOURNE MA	13231.238	-19202.037	1.44	0.067	0.037
HYA51-MTS ORLEANS MA	16271.805	31570.352	7.007	0.061	0.033
HYA52-MTS BOURNE MA	6922.941	-17853.18	-17.958	0.076	0.056

HYA52-MTS ORLEANS MA	9963.464	32919.162	-12.338	0.019	0.029
HYA53-MTS BOURNE MA	3837.362	-10280.56	-38.94	0.007	0.011
MA BP14-MTS BOURNE	-14618.788	-2390.798	-39.895	0.009	0.023
MA BP15-MTS ORLEANS	-31130.903	14734.092	9.203	0.013	0.022
MA BP15-PVC34	2455.727	-2250.561	-5.344	0.001	0.003
MA BP16-MTS ORLEANS	4253.315	1318.565	-16.802	0.002	0.004
MA BP17-MTS BOURNE	8397.346	-26332.014	-1.486	0.012	0.024
MA BP18-MTS BOURNE	17475.957	-2005.546	-1.718	0.011	0.02
MTS BOURNE MA-MTS	3040.528	50772.334	5.618	0.018	0.029
MTS BOURNE MA-MVY54	-16499.848	11548.152	-3.695	0.011	0.025
MTS BOURNE MA-MVY55	-13169.86	5304.196	11.562	0.008	0.014
MTS BOURNE MA-MVY56	-10426.736	225.198	-1.848	0.006	0.011
MTS BOURNE MA-MVY57	-24395.79	-4205.748	4.353	0.018	0.023
MTS BOURNE MA-MVY58	-17051.739	2284.742	3.725	0.009	0.017
MTS BOURNE MA-MVY59	-15645.265	-1729.678	3.113	0.01	0.016
MTS BOURNE MA-MVY60	-21729.883	2964.486	-10.516	0.014	0.024
MTS BOURNE MA-PYM12	11384.621	6585.69	-2.746	0.007	0.014
MTS ORLEANS MA-PVC34	33586.632	-16984.651	-14.56	0.013	0.022
MTS ORLEANS MA-PVC35	29175.224	-15347.67	-13.645	0.009	0.022
MTS ORLEANS MA-PVC36	29932.883	-7015.803	-1.923	0.013	0.024
MTS ORLEANS MA-PVC37	24218.109	-3100.474	-10.484	0.012	0.019
MTS ORLEANS MA-PVC38	12589.567	1771.097	-10.429	0.006	0.012
PVC34-PVC35	-4411.402	1636.989	0.897	0.002	0.004
PVC34-PVC36	-3653.752	9968.847	12.64	0.005	0.009

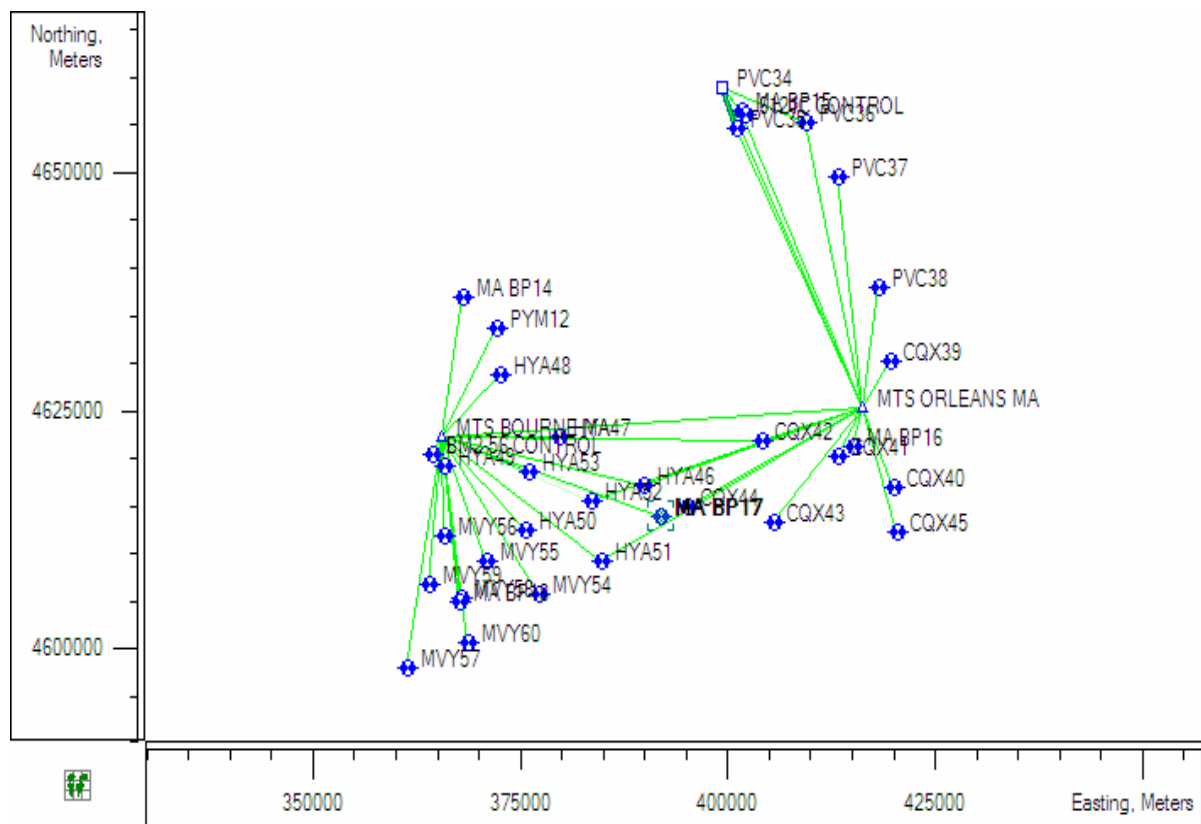
Control Points

Name	Grid Northing (m)	Grid Easting	Elevation	Code
MTS BOURNE MA	4622381.409	365500.816	11.867	
MTS ORLEANS MA	4625421.929	416273.16	16.927	
PVC34	4659008.559	399288.506	2.018	

Adjusted Points

Name	Grid Northing (m)	Grid Easting	Elevation	Code
6121C CONTROL	4656086.481	401971.846	3.492	
BM2-56 CONTROL	4620445.27	364185.832	5.21	
CQX39	4630181.588	419507.501	3.485	
CQX40	4616980.312	419788.954	13.483	
CQX41	4620294.691	413207.162	30.829	
CQX42	4621899.937	404097.758	10.664	
CQX43	4613300.576	405477.038	3.121	
CQX44	4614934.96	395123.282	11.456	
CQX45	4612207.611	420198.003	14.305	
HYA46	4617224.72	389643.558	17.783	
HYA47	4622285.384	379462.524	4.987	

HYA48	4628757.648	372359.721	32.72
HYA49	4619242.074	365600.366	1.536
HYA50	4612482.121	375489.235	32.706
HYA51	4609150.144	384702.826	10.149
HYA52	4615458.465	383353.998	29.439
HYA53	4618544.046	375781.376	50.521
MA BP14	4637000.197	367891.614	51.535
MA BP15	4656552.832	401539.067	7.399
MA BP16	4621168.614	414954.594	33.779
MA BP17	4613984.063	391832.829	12.995
MA BP18	4604905.452	367506.362	13.652
MTS BOURNE MA	4622381.409	365500.816	11.867
MTS ORLEANS MA	4625421.929	416273.16	16.927
MVY54	4605881.56	377048.968	7.968
MVY55	4609211.549	370805.012	23.347
MVY56	4611954.673	365726.014	10.073
MVY57	4597985.619	361295.068	16.561
MVY58	4605329.67	367785.558	15.646
MVY59	4606736.144	363771.138	15.141
MVY60	4600651.526	368465.302	1.433
PVC34	4659008.559	399288.506	2.018
PVC35	4654597.157	400925.495	2.987
PVC36	4655354.807	409257.354	14.681
PVC37	4649640.038	413172.686	6.193
PVC38	4638011.496	418044.257	6.361
PYM12	4633766.029	372086.506	8.852





Project Summary

Project name: 75980S OWD-GHG-PYM-BP checks.ttp

Surveyor:

Comment:

Linear unit: Meters

Projection: UTMNorth-Zone_19 : 72W to 66W

Geoid: g2009u04

Adjustment Summary

Adjustment type: Plane + Height, Minimal constraint

Confidence level: 95 %

Number of adjusted points: 19

Number of plane control points: 1

Number of used GPS vectors: 20

A posteriori plane UWE: 1.114996 , Bounds: (0.3478505 , 1.668832)

Number of height control points: 1

A posteriori height UWE: 0.4079529 , Bounds: (0.1590597 , 1.920937)

Used GPS Observations

Name	dN (m)	dE (m)	dHt (m)	Horizontal	Vertical
BP9-hmts	-9948.45	-2551.299	-15.554	0.011	0.021
BP10-hmts	7409.696	10023.663	-8.257	0.006	0.01
BP11-hmts	6909.997	-9628.05	-5.821	0.018	0.028
BP11-hmts	6909.996	-9628.065	-5.803	0.014	0.024
BP13-hmts	20189.18	6075.159	2.791	0.016	0.028
BP14-hmts	26390.335	-17602.306	-33.104	0.018	0.044
BP19-hmts	37732.446	1551.386	6.679	0.015	0.038
GHG16-hmts	-12338.593	-3694.566	2.554	0.026	0.047
GHG16-hmts	-12338.622	-3694.548	2.538	0.013	0.023
GHG17-hmts	1497.173	-8933.55	13.504	0.021	0.04
GHG18-hmts	-5942.34	-695.607	-9.461	0.005	0.008
GHG19-hmts	2368.833	-1584.225	7.815	0.002	0.003
GHG20-hmts	8356.916	-616.115	-15.983	0.01	0.011
OWD21-hmts	-21977.923	8160.605	16.014	0.016	0.028
OWD22-hmts	-16102.159	7557.38	14.267	0.015	0.025
OWD23-hmts	-9858.102	5687.587	-18.607	0.007	0.014
OWD24-hmts	-5748.547	18176.824	-23.048	0.013	0.019
PYM11-hmts	9599.487	-10641.485	7.225	0.009	0.016
PYM13-hmts	4628.641	5393.809	-11.57	0.003	0.005
PYM14-hmts	18461.655	6754.492	4.289	0.012	0.02

GPS Observation Residuals

Name	dN (m)	dE (m)	dHt (m)	Horizontal	Vertical
BP9-hmts	-9948.45	-2551.299	-15.554	0.011	0.021
BP10-hmts	7409.696	10023.663	-8.257	0.006	0.01
BP11-hmts	6909.997	-9628.05	-5.821	0.018	0.028
BP11-hmts	6909.996	-9628.065	-5.803	0.014	0.024
BP13-hmts	20189.18	6075.159	2.791	0.016	0.028
BP14-hmts	26390.335	-17602.306	-33.104	0.018	0.044
BP19-hmts	37732.446	1551.386	6.679	0.015	0.038
GHG16-hmts	-12338.593	-3694.566	2.554	0.026	0.047
GHG16-hmts	-12338.622	-3694.548	2.538	0.013	0.023
GHG17-hmts	1497.173	-8933.55	13.504	0.021	0.04
GHG18-hmts	-5942.34	-695.607	-9.461	0.005	0.008
GHG19-hmts	2368.833	-1584.225	7.815	0.002	0.003
GHG20-hmts	8356.916	-616.115	-15.983	0.01	0.011
OWD21-hmts	-21977.923	8160.605	16.014	0.016	0.028
OWD22-hmts	-16102.159	7557.38	14.267	0.015	0.025
OWD23-hmts	-9858.102	5687.587	-18.607	0.007	0.014
OWD24-hmts	-5748.547	18176.824	-23.048	0.013	0.019
PYM11-hmts	9599.487	-10641.485	7.225	0.009	0.016
PYM13-hmts	4628.641	5393.809	-11.57	0.003	0.005
PYM14-hmts	18461.655	6754.492	4.289	0.012	0.02

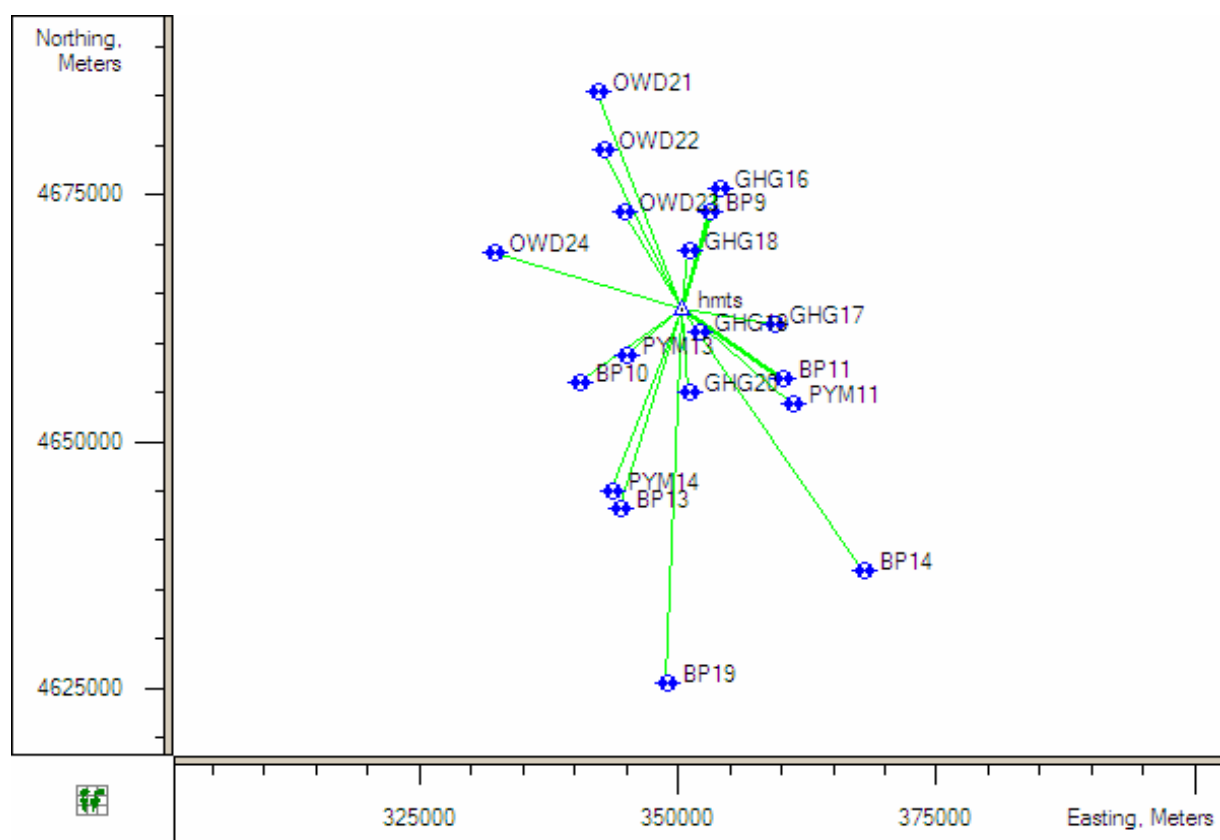
Control Points

Name	Grid Northing (m)	Grid Easting (m)	Elevation (m)	Code
hmts	4663390.533	350289.329	18.325	

Adjusted Points

Name	Grid Northing (m)	Grid Easting (m)	Elevation (m)	Code
BP9	4673338.983	352840.628	33.612	
BP10	4655980.837	340265.666	26.881	
BP11	4656480.536	359917.388	24.121	
BP13	4643201.353	344214.17	16.036	
BP14	4637000.198	367891.635	51.572	
BP19	4625658.087	348737.942	12.312	
GHG16	4675729.149	353983.881	15.443	
GHG17	4661893.36	359222.879	4.707	
GHG18	4669332.873	350984.936	27.642	
GHG19	4661021.699	351873.554	10.534	
GHG20	4655033.617	350905.443	34.467	
OWD21	4685368.456	342128.724	1.875	
OWD22	4679492.692	342731.949	3.765	
OWD23	4673248.635	344601.742	36.772	
OWD24	4669139.08	332112.505	41.459	

PYM11	4653791.045	360930.814	11.121
PYM13	4658761.892	344895.52	30.072
PYM14	4644928.878	343534.837	14.513



3.0 Published Control Locations

SURVEY DATASHEET (Version 1.0)

PID: BBBJ40

Designation: 844 1551 A

Stamping: 1551 A 1992

Stability: Monument will probably hold position well

Setting: Retaining wall or concrete ledge

Mark Condition: G

Description: Recovered as described.

Observed: 2011-02-03T14:05:00Z See Also [2009-06-05](#)

Source: OPUS - page5 1009.28



Close-up View

REF_FRAME: NAD_83 (CORS96)	EPOCH: 2002.0000	SOURCE: NAVD88 (Computed using GEOID09)	UNITS: m	SET PROFILE	DETAILS
LAT: 42° 39' 31.22762" ± 0.024 m LON: -70° 36' 53.98045" ± 0.020 m ELL HT: -23.566 ± 0.046 m X: 1559238.008 ± 0.016 m Y: -4431397.566 ± 0.034 m Z: 4299677.702 ± 0.043 m ORTHO HT: 3.173 ± 0.079 m			UTM 19 SPC 2001(MA M) NORTHING: 4724176.562m 934609.050m EASTING: 367636.706m 272560.800m CONVERGENCE: -1.09452631° 0.59448352° POINT SCALE: 0.99981555 0.99999647 COMBINED FACTOR: 0.99981925 1.00000016		

CONTRIBUTED BY

[stephen.randall](#)

 [National Geodetic Survey](#)



Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.

SURVEY DATASHEET (Version 1.0)

PID: BBBL81

Designation: MASNEE BM 2

Stamping: BM 2 56

Stability: May hold, commonly subject to ground movement

Setting: Set in top of concrete monument

Description: STATION IS LOCATED ON THE WESTERN SIDE OF MASNEE RD ON APPROACH TO MASNEE ISLAND, ON THE EASTERN SHORE OF THE HEAD OF BUZZARDS BAY AND THE APPROACH TO THE CAPE COD CANAL. SURFACE MARK IS A STANDARD DISK SET IN THE TOP OF A CONC MON AND PROTRUDES 0.5 FT ABOVE GROUND. DISK IS WITNESSED BY A USACE PROPERTY BOUNDARY WITNESS POST. STATION IS LOCATED 0.5 MI SW ON MASHNEE RD FROM SOUTH END OF GRAY GABLES AREA, 100 FT NE OF LOCKED GATE AT ACCESS RD TO HIGH BLUFF (HOG ISLE) AND 70 FT WEST OF EOP.

Observed: 2009-09-24T14:52:00Z

Source: OPUS - page5 0909.08



Close-up View

REF_FRAME: NAD_83
(CORS96)

EPOCH:
2002.0000

SOURCE: NAVD88 (Computed using
GEOID03)

UNITS:
m

SET
PROFILE

DETAILS

LAT: 41° 43' 27.18065" ± 0.019 m

LON: -70° 37' 58.30064" ± 0.021 m

ELL HT: -23.276 ± 0.063 m

X: 1580973.356 ± 0.035 m

Y: -4497649.015 ± 0.052 m

Z: 4222775.537 ± 0.027 m

ORTHO HT: 5.271 ± 0.068 m

UTM 19 SPC 2001(MA M)

NORTHING: 4620445.272m 830805.161m

EASTING: 364185.852m 272151.152m

CONVERGENCE: -1.08690985° 0.58248194°

POINT SCALE: 0.99982699 0.99999890

COMBINED FACTOR: 0.99983064 1.00000255

CONTRIBUTED BY

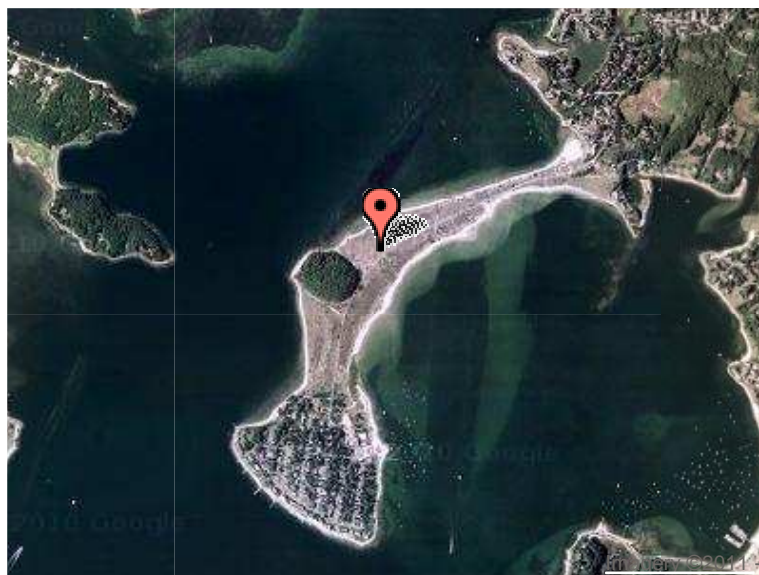
[jah](#)



[Halnon Land Surveying, Inc.](#)



Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.

SURVEY DATASHEET (Version 1.0)

PID: BBBP74

Designation: DH 1

Stamping: DH-1

Stability: Most reliable; expected to hold position well

Setting: In rock outcrop or ledge

Description: In Dedham, set in ledge on the north side of Country Club Road just east of the driveway to house number 85. The mark is 70 feet east from a utility pole located at the intersection of Country Club Road and the driveway to house number 85, 16.6 feet north from a signpost, and approximately 3 feet above the level of the road.

Observed: 2009-10-07T12:58:00Z

Source: OPUS - page5 0909.08



Close-up View

REF_FRAME: NAD_83 (CORS96)	EPOCH: 2002.0000	SOURCE: NAVD88 (Computed using GEOID09)	UNITS: m	SET PROFILE	DETAILS
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LAT: 42° 15' 1.54665" ± 0.036 m
LON: -71° 12' 41.06483" ± 0.023 m
ELL HT: 45.871 ± 0.063 m
X: 1522901.833 ± 0.014 m
Y: -4476415.818 ± 0.072 m
Z: 4266265.735 ± 0.016 m
ORTHO HT: 74.079 ± 0.075 m

UTM 19 SPC 2001(MA M)
NORTHING: 4679949.473m 888925.281m
EASTING: 317571.964m 223815.299m
CONVERGENCE: -1.48729798° 0.19385626°
POINT SCALE: 1.00000950 0.99996493
COMBINED FACTOR: 1.00000230 0.99995773

CONTRIBUTED BY

[john.barnes](mailto:john.barnes@mass.gov)

☐ [MassDOT Geodetic Survey](#)



Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.

SURVEY DATASHEET (Version 1.0)

PID: BBBS84

Designation: 489-0440

Stamping: 489 0440

Stability: Most reliable; expected to hold position well

Setting: In rock outcrop or ledge

Description: In Windham, From the Junction of NH Route 111 and North Lowell Road, go northeast for 0.55 mi on route 111 to the Park and Ride & the station on the left. 28.5 ft North from the white fogline, 74.2 ft East from Pole # PSNH / 11 1/2A, 31.2 ft South from light pole L2 with mast arm at chainlink fence.

Observed: 2010-03-01T13:37:00Z

Source: OPUS - page5 0909.08



Close-up View

REF_FRAME: NAD_83
(CORS96)

EPOCH:
2002.0000

SOURCE: NAVD88 (Computed using
GEOID09)

UNITS:
m

SET
PROFILE

DETAILS

LAT: 42° 48' 23.75743" ± 0.031 m

LON: -71° 17' 18.19141" ± 0.003 m

ELL HT: 54.182 ± 0.018 m

X: 1503490.794 ± 0.008 m

Y: -4438909.295 ± 0.022 m

Z: 4311800.706 ± 0.027 m

ORTHO HT: 81.552 ± 0.026 m

UTM 19 SPC 2800(NH)

NORTHING: 4741878.151m 34127.155m

EASTING: 312889.562m 330940.883m

CONVERGENCE: -1.55546768° 0.25705317°

POINT SCALE: 1.00003073 0.99997844

COMBINED FACTOR: 1.00002224 0.99996994

CONTRIBUTED BY

[rcrevier](#)

New Hampshire DOT



Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.

489-0440

FILE: 0793log1201d.tps 000180661

NGS OPUS-RS SOLUTION REPORT

=====

USER: john.allen@sewall.com
RINEX FILE: 0793335n.10o

DATE: December 13, 2010
TIME: 18:50:08 UTC

SOFTWARE: rsgps 1.35.1 RS23.prl 1.65 START: 2010/12/01 13:45:30
EPHEMERIS: igr16123.eph [rapid] STOP: 2010/12/01 14:07:00
NAV FILE: brdc3350.10n OBS USED: 1899 / 1989 : 95%
ANT NAME: TPSHIPER_GGD QUALITY IND. 17.77/ 17.63
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.298

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91666)

X:	1503490.800(m)	0.014(m)	1503490.024(m)	0.014(m)
Y:	-4438909.289(m)	0.026(m)	-4438907.863(m)	0.026(m)
Z:	4311800.704(m)	0.024(m)	4311800.644(m)	0.024(m)

LAT:	42 48 23.75746	0.005(m)	42 48 23.79126	0.005(m)
E LON:	288 42 41.80893	0.009(m)	288 42 41.79671	0.009(m)
W LON:	71 17 18.19107	0.009(m)	71 17 18.20329	0.009(m)
EL HGT:	54.178(m)	0.037(m)	52.964(m)	0.037(m)
ORTHO HGT:	81.548(m)	0.038(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2800 NH)
Northing (Y) [meters]	4741878.152	34127.156
Easting (X) [meters]	312889.570	330940.890
Convergence [degrees]	-1.55546762	0.25705323
Point Scale	1.00003073	0.99997844
Combined Factor	1.00002224	0.99996994

US NATIONAL GRID DESIGNATOR: 19TCH1288941878(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	27255.5
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	46328.2
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	57665.3
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	82171.4
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	102639.4
DJ8961	VTSP SPRINGFIELD VT CORS ARP	N431653.241	W0722839.238	110326.1
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	122635.4
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	141615.2
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	147689.9

NEAREST NGS PUBLISHED CONTROL POINT

MY5426	489 0270	N424843.889	W0711634.545	1169.5
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

844-1551A Rockport

FILE: 0793log1202a.tps 000180671

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 07933361.10o

DATE: December 13, 2010
TIME: 18:57:31 UTC

SOFTWARE: rsgps 1.35.1 RS23.prl 1.65 START: 2010/12/02 11:28:35
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 11:49:55
NAV FILE: brdc3360.10n OBS USED: 2268 / 2520 : 90%
ANT NAME: TPSHIPER_GGD QUALITY IND. 24.43/ 30.06
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.294

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.91914)

X:	1559238.005(m)	0.008(m)	1559237.229(m)	0.008(m)
Y:	-4431397.587(m)	0.012(m)	-4431396.156(m)	0.012(m)
Z:	4299677.716(m)	0.024(m)	4299677.657(m)	0.024(m)

LAT:	42 39 31.22754	0.015(m)	42 39 31.26143	0.015(m)
E LON:	289 23 6.01912	0.008(m)	289 23 6.00784	0.008(m)
W LON:	70 36 53.98088	0.008(m)	70 36 53.99216	0.008(m)
EL HGT:	-23.543(m)	0.022(m)	-24.765(m)	0.022(m)
ORTHO HGT:	3.196(m)	0.025(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4724176.560	934609.048
Easting (X) [meters]	367636.696	272560.790
Convergence [degrees]	-1.09452639	0.59448344
Point Scale	0.99981555	0.99999647
Combined Factor	0.99981924	1.00000016

US NATIONAL GRID DESIGNATOR: 19TCH6763624176(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	60387.1
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	72216.8
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	78803.6
DI0966	XMTS MTS FOX COOP CORS ARP	N420350.018	W0711501.669	84293.7
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	104099.4
DL7764	P776 GUNSTOCKMRNH2008 CORS ARP	N433235.721	W0712242.789	116283.1
AJ2693	YMTS MTS YARMOUTH COOP CORS ARP	N434754.610	W0701120.298	131273.1
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	134731.2
DJ7833	BRU6 BRUNSWICK 6 CORS ARP	N435322.916	W0695647.885	147128.4

NEAREST NGS PUBLISHED CONTROL POINT

MY0231	TIDAL 10 STA 8	N423928.	W0703658.	135.3
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

BM2 56 Masnee

FILE: 0515log1202m.tps 000178052

Your station is 21.2 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 0515336t.10o

DATE: December 07, 2010
TIME: 21:49:18 UTC

SOFTWARE: rsgps 1.35.1 RS29.prl 1.65 START: 2010/12/02 19:55:30
EPHEMERIS: igr16124.eph [rapid] STOP: 2010/12/02 20:11:00
NAV FILE: brdc3360.10n OBS USED: 1998 / 2097 : 95%
ANT NAME: TPSHIPER_GD QUALITY IND. 23.61/ 25.05
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.267

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92010)

X:	1580973.334(m)	0.017(m)	1580972.562(m)	0.017(m)
Y:	-4497648.984(m)	0.032(m)	-4497647.543(m)	0.032(m)
Z:	4222775.512(m)	0.017(m)	4222775.445(m)	0.017(m)

LAT:	41 43 27.18083	0.022(m)	41 43 27.21406	0.022(m)
E LON:	289 22 1.69891	0.012(m)	289 22 1.68807	0.012(m)
W LON:	70 37 58.30109	0.012(m)	70 37 58.31193	0.012(m)
EL HGT:	-23.320(m)	0.031(m)	-24.570(m)	0.031(m)
ORTHO HGT:	5.208(m)	0.033(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4620445.278	830805.166
Easting (X) [meters]	364185.841	272151.141
Convergence [degrees]	-1.08690993	0.58248185
Point Scale	0.99982699	0.99999890
Combined Factor	0.99983064	1.00000256

US NATIONAL GRID DESIGNATOR: 19TCG6418520445(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0884	ACU6 ACUSHNET 6 CORS ARP	N414435.676	W0705311.720	21214.4
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	79038.4
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	92638.4
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	106191.1
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	131287.7
DI1075	NHUN U NEW HAMPSHIRE CORS ARP	N430833.179	W0705706.863	159718.4
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	173051.3
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	176619.8
DI1874	NYRH RIVERHEAD CORS ARP	N405524.088	W0724250.560	195613.4

NEAREST NGS PUBLISHED CONTROL POINT

LW4813	HOG	N414322.296	W0703800.571	159.9
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

DH1 A

FILE: 0788log1207j.tps 000179364

Your station is 12.0 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com
RINEX FILE: 0788341u.10o

DATE: December 09, 2010
TIME: 23:21:10 UTC

SOFTWARE: rsgps 1.35.1 RS26.prl 1.65 START: 2010/12/07 20:17:45
EPHEMERIS: igr16132.eph [rapid] STOP: 2010/12/07 20:37:55
NAV FILE: brdc3410.10n OBS USED: 1710 / 1791 : 95%
ANT NAME: TPSHIPER_GD QUALITY IND. 25.36/ 17.35
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.344

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93384)

X: 1522901.829(m) 0.011(m) 1522901.055(m) 0.011(m)
Y: -4476415.791(m) 0.017(m) -4476414.358(m) 0.017(m)
Z: 4266265.706(m) 0.012(m) 4266265.641(m) 0.012(m)

LAT: 42 15 1.54654 0.006(m) 42 15 1.57998 0.006(m)
E LON: 288 47 18.93538 0.010(m) 288 47 18.92355 0.010(m)
W LON: 71 12 41.06462 0.010(m) 71 12 41.07645 0.010(m)
EL HGT: 45.832(m) 0.021(m) 44.600(m) 0.021(m)
ORTHO HGT: 74.040(m) 0.024(m) [NAVD88 (Computed using GEOID09)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4679949.469	888925.278
Easting (X) [meters]	317571.969	223815.304
Convergence [degrees]	-1.48729794	0.19385630
Point Scale	1.00000950	0.99996493
Combined Factor	1.00000231	0.99995774

US NATIONAL GRID DESIGNATOR: 19TCG1757179949(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	19797.4
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	62388.9
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	68287.4
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	88562.5
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	100903.7
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	118030.4
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	123231.2
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	128312.9
DJ8953	VTD2 DUMMERSTON CORS ARP	N425506.108	W0723206.441	131573.8

NEAREST NGS PUBLISHED CONTROL POINT

MY5400 10925 N421457.363 W0711226.384 360.1

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

DH 1 - WESTWOOD

FILE: 0793log1203a.tps 000180684

Your station is 2.1 KM outside the polygon enclosing the reference stations.

NGS OPUS-RS SOLUTION REPORT

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USER: john.allen@sewall.com
RINEX FILE: 07933371.10o

DATE: December 13, 2010
TIME: 19:06:10 UTC

SOFTWARE: rsgps 1.35.1 RS30.prl 1.65 START: 2010/12/03 11:39:55
EPHEMERIS: igr16125.eph [rapid] STOP: 2010/12/03 12:01:35
NAV FILE: brdc3370.10n OBS USED: 2376 / 2583 : 92%
ANT NAME: TPSHIPER_GGD QUALITY IND. 39.89/ 25.69
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.319

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.92190)

X:	1522901.842(m)	0.010(m)	1522901.068(m)	0.010(m)
Y:	-4476415.829(m)	0.016(m)	-4476414.396(m)	0.016(m)
Z:	4266265.726(m)	0.011(m)	4266265.661(m)	0.011(m)

LAT:	42 15 1.54614	0.007(m)	42 15 1.57958	0.007(m)
E LON:	288 47 18.93539	0.007(m)	288 47 18.92356	0.007(m)
W LON:	71 12 41.06461	0.007(m)	71 12 41.07644	0.007(m)
EL HGT:	45.875(m)	0.020(m)	44.643(m)	0.020(m)
ORTHO HGT:	74.083(m)	0.023(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4679949.457	888925.266
Easting (X) [meters]	317571.969	223815.304
Convergence [degrees]	-1.48729794	0.19385630
Point Scale	1.00000950	0.99996493
Combined Factor	1.00000230	0.99995773

US NATIONAL GRID DESIGNATOR: 19TCG1757179949(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	19797.4
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	46510.2
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	62388.9
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	68287.4
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	88562.5
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	100903.7
DE8093	HAMP NORTHAMPTON CORS ARP	N421903.873	W0723822.404	118030.4
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	123231.2
DH5829	CTEG EAST GRANBY CORS ARP	N415524.347	W0724155.881	128312.9

NEAREST NGS PUBLISHED CONTROL POINT

MY5400	10925	N421457.363	W0711226.384	360.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

PC 191A

FILE: 0788log1208j.tps 000179377

NGS OPUS-RS SOLUTION REPORT

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USER: dan.landsurveyor@gmail.com
RINEX FILE: 0788342w.10o

DATE: December 09, 2010
TIME: 23:27:20 UTC

SOFTWARE: rsgps 1.35.1 RS23.prl 1.65 START: 2010/12/08 22:23:00
EPHEMERIS: igu16133.eph [ultra-rapid] STOP: 2010/12/08 22:46:45
NAV FILE: brdc3420.10n OBS USED: 2358 / 2835 : 83%
ANT NAME: TPSHIPER_GD QUALITY IND. 27.98/ 40.15
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.296

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2010.93682)

X:	1540419.943(m)	0.004(m)	1540419.171(m)	0.004(m)
Y:	-4513515.438(m)	0.015(m)	-4513513.998(m)	0.015(m)
Z:	4220893.689(m)	0.012(m)	4220893.620(m)	0.012(m)

LAT:	41 42 4.57725	0.004(m)	41 42 4.61034	0.004(m)
E LON:	288 50 39.42809	0.005(m)	288 50 39.41661	0.005(m)
W LON:	71 9 20.57191	0.005(m)	71 9 20.58339	0.005(m)
EL HGT:	7.643(m)	0.018(m)	6.394(m)	0.018(m)
ORTHO HGT:	37.107(m)	0.021(m)	[NAVD88 (Computed using GEOID09)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 19)	SPC (2001 MA M)
Northing (Y) [meters]	4618854.917	827947.748
Easting (X) [meters]	320631.350	228657.332
Convergence [degrees]	-1.43446394	0.23126650
Point Scale	0.99999593	1.00000229
Combined Factor	0.99999473	1.00000109

US NATIONAL GRID DESIGNATOR: 19TCG2063118854(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	22851.5
DE6262	URIL U OF RI COOP CORS ARP	N412920.158	W0713139.778	38963.2
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	64815.6
DI0964	FMTS MTS FRAM COOP CORS ARP	N421800.171	W0712630.865	70608.1
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	84975.4
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	87864.6
AF9520	WES2 WESTFORD CORS ARP	N423647.975	W0712935.968	105079.3
DH7113	CTNE PAQUETTE CORS ARP	N414024.717	W0724252.252	129811.0
DH5833	CTGU GILFORD CORS ARP	N411721.742	W0724004.444	134297.4

NEAREST NGS PUBLISHED CONTROL POINT

LW5399	191 A	N414204.577	W0710920.572	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.