

# SURVEY CONTROL REPORT

**NEW YORK STATE THRUWAY AUTHORITY  
I-90 BRIDGE OVER BEAR TRAP CREEK  
BIN 5510130  
MP 282.62  
THE ONTARIO SECTION  
COUNTY OF ONONDAGA  
D214386  
ASSIGNMENT #9**

Prepared for:



*NEW YORK STATE THRUWAY AUTHORITY*

Surveyed By:

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C. Pascuzzo, L.S.....Project Surveyor  
M. Miller.....CADD  
S. Michaloski.....Crew Chief  
J. Scuderi.....Instrument Person

**FISHER**   
ASSOCIATES



**New York State  
Thruway Authority**

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**New York State  
Thruway Authority**

## **Project Narrative**

The survey described herein was performed for the following purposes:

Providing detailed boundary and topographic survey and mapping services for the design of replacing the mainline bridge over Bear Trap Creek, (BIN 5510130). The survey limits of the project were as follows;

- 1000 feet east of the bridge along the mainline and 1500 feet west of the bridge along the mainline,
  - Bandwidth along the mainline is the full width from ROW to ROW including an additional 20 feet beyond the ROW upstream and downstream at the bridge.
- And, including hydraulic stream sections per NYSDOT standards for hydraulic analysis.

The project is located at MP 282.62 along I-90 in the Town of Salina, Onondaga County.

Fisher Associates provided conventional base mapping and topography (DTM) in Microstation V8i and InRoads as per NYSDOT CADD Standards and Procedures.





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## **Horizontal and Vertical Narrative**

Primary control points CP 10, CP 20 were established by Fisher Associates using Static GPS methods from the NYSDOT CORS Network. All horizontal values are English units in US Survey Feet and refer to the New York State Plane Coordinate System, Central Zone, NAD 83 (2011) Epoch 2010.00. CP 10 and CP 20 are located south side of the East Bound shoulder of I-90 (NYS Thruway) east of the I-81 interchange.

Conventional traversing was run utilizing a Leica TCRP 1203 Robotic Total Station, which measures angles to 3 seconds of arc. Fisher Associates set on CP 10 and CP 20 for distance checks and then established secondary control points throughout the project limits from which the topographic and boundary survey was completed. Checks were made between primary and secondary control points where possible.

The entire control network including primary and secondary control was adjusted using the Star-Net Least Squares adjustment program.

Elevations are referenced to the North American Vertical Datum of 1988 (Geoid 12A) using Static GPS methods from the NYS CORS Network.

Primary vertical benchmarks BM 1 and BM 2 were established by Fisher Associates. Holding the GPS static elevation for CP 10, differential levels were run through the horizontal control point CP 20, BM 1 and BM 2 and closed on the GPS static elevation of CP 10. The differential level run closed on CP 10 with 0.00 feet of misclosure. No elevation adjustments were made.

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Not to scale







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## **Boundary Procedures**

Highway boundaries shown in the mapping for this project were plotted based on existing Acquisition maps for the New York State Thruway - The Ontario Section, County of Onondaga, Subdivision No. 8-A, District No. 3. Fisher Associates located existing monumentation along Interstate 90 to establish the highway boundaries.

The highway boundaries were determined through the analysis of record mapping and existing monumentation. Numerous monuments were located throughout the limits of the project and beyond. After an exhaustive analysis, it was determined to hold the geometry of the computed acquisition maps and place the highway boundaries by holding the monument located at the Northwest corner of Parcel 379, Map 354R-1, at station A2328+17±, 110 feet left and rotating the highway boundary geometry to the monument located at the Southeast corner of Parcel 372, Map 347, at station 10+88±, 45 feet right.

File  
ME  
DRAFTED BY: MM  
CHECKED BY: TA  
DESIGNED BY: TA  
DESIGN SUPERVISOR: TA

CB 1010+00.00

CB 10 IS A 5/8" REBAR WITH ALUMINUM CAP  
STAMPED FISHER ASSOCIATES  
S 72°02'11" E 938.00' TO CB 20

NOT TO SCALE

GRID COORDINATES

N = 1127144.68  
E = 932377.24  
ELEV = 380.52'

CB 2019+38.00

CB 20 IS A 5/8" REBAR WITH ALUMINUM CAP  
STAMPED FISHER ASSOCIATES  
N 72°02'11" W 938.00' TO CB 10

NOT TO SCALE

GRID COORDINATES

N = 1126855.39  
E = 933269.52  
ELEV = 384.43'

SURVEY NOTES:

- PRIOR TO INITIATION OF THE PROJECT, THE CONTRACTOR SHALL VERIFY BENCHMARK ELEVATIONS AND RE-ESTABLISH THE SURVEY CONTROL BASELINE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE E.I.C.
- THE CONTRACTOR SHALL LOCATE, MARK, SAFEGUARD AND PRESERVE ALL SURVEY CONTROL MONUMENTS AND R.O.W. MONUMENTS IN THE AREA OF CONSTRUCTION. EXISTING SURVEY MONUMENTS DISTURBED OR DESTROYED BY THE CONTRACTOR SHALL BE REPAIRED OR RESTORED AT THE CONTRACTOR'S EXPENSE.
- THE HORIZONTAL DATUM SHOWN HEREON IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, TRANSVERSE MERCATOR PROJECTION, NAD 83 (2011) EPOCH 2010.00 USING GPS PROCEOURES AND THE NEW YORK STATE DOT CORS NETWORK, IN US SURVEY FEET. BEARINGS AND DISTANCES SHOWN HEREON ARE GRID. THE AVERAGE PROJECT COMBINED GRID AND ELEVATION FACTOR IS 0.99993885.
- THE VERTICAL DATUM SHOWN HEREON IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (GEOID 12A) IN US SURVEY FEET, USING GPS PROCEDURES.
- THE HORIZONTAL CONTROL FOR THIS PROJECT CONSISTS OF ONE PRIMARY CONTROL NETWORK FROM EAST TO WEST ALONG THE NEW YORK STATE THRUWAY. THE PRIMARY CONTROL BEGINS ON FISHER CONTROL POINT 10 WEST OF BEAR TRAP CREEK AND CLOSSES ON FISHER CONTROL POINT 20 EAST OF BEAR TRAP CREEK. UNDER THIS CONTRACT D214386, THE PROJECT LIMITS ARE WITHIN THE LIMITS OF THE PRIMARY CONTROL.

BENCH MARK TABLE		
BENCHMARK NO.	ELEVATION	DESCRIPTION
1	371.51	TOP OF CONC. ROW MONUMENT, SOUTH SIDE OF NYS TRUWAY EASTBOUND, AT THE COR. OF CHAIN LINK FENCE, WEST SIDE OF BEAR TRAP CREEK
2	384.43	TOP OF REBAR/CAP, CONTROL POINT 20, SOUTH SIDE OF NYS TRUWAY EASTBOUND, EAST SIDE OF BEAR TRAP CREEK

GENERAL NOTES:

- BASELINE DATA FOR CB 10 AND CB 20 ON THIS SHEET.
- BENCHMARK DESCRIPTIONS ARE SHOWN ON ON THIS SHEET.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE. THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REVISIONS			
DATE	DESCRIPTION	BY	SYM.



TITLE OF PROJECT	I-90 BRIDGE OVER BEAR TRAP CREEK
LOCATION OF PROJECT	M.P. 282.62 SYRACUSE DIVISION
TITLE OF DRAWING	SURVEY CONTROL BASELINE CONTROL POINT TIES

CONTRACT NUMBER:	D214386
DATE:	03/17/17
DRAWING NUMBER:	SCP-1

Summary of Files Used and Option Settings  
 =====

Project Folder and Data Files

Project Name SYRACUSE CONTROL  
 Project Folder H:\PROJECTS\...\SUR\STARNET\SYRACUSE  
 Data File List 1. 20161220TOPO edit.dat

Project Option Settings

STAR\*NET Run Mode : Adjust with Error Propagation  
 Type of Adjustment : 3D  
 Project Units : FeetUS; DMS  
 Coordinate System : Mercator NAD83; NY Central 3102  
 Geoid Height Model : H:\PROJECTS\...\NYGEOID12A.GHT  
 Longitude Sign Convention : Positive West  
 Input/Output Coordinate Order : North-East  
 Angle Data Station Order : At-From-To  
 Distance/Vertical Data Type : Slope/Zenith  
 Convergence Limit; Max Iterations : 0.001000; 10  
 Default Coefficient of Refraction : 0.070000  
 Create Coordinate File : Yes  
 Create Geodetic Position File : No  
 Create Ground Scale Coordinate File : No  
 Create Dump File : No

Instrument Standard Error Settings

Project Default Instrument

Distances (Constant) : 0.030000 FeetUS  
 Distances (PPM) : 0.000000  
 Angles : 4.000000 Seconds  
 Directions : 3.000000 Seconds  
 Azimuths & Bearings : 4.000000 Seconds  
 Zeniths : 10.000000 Seconds  
 Elevation Differences (Constant) : 0.050000 FeetUS  
 Elevation Differences (PPM) : 0.000000  
 Differential Levels : 0.010000 FeetUS / Mile  
 Centering Error Instrument : 0.000000 FeetUS  
 Centering Error Target : 0.000000 FeetUS  
 Centering Error Vertical : 0.000000 FeetUS

Company Library Instrument LeicaTCRP1203

Note: New 12/04 3" robotic total station

Distances (Constant) : 0.006562 FeetUS  
 Distances (PPM) : 2.000000  
 Angles : 4.000000 Seconds  
 Directions : 2.000000 Seconds  
 Azimuths & Bearings : 4.000000 Seconds  
 Zeniths : 10.000000 Seconds  
 Elevation Differences (Constant) : 0.004921 FeetUS  
 Elevation Differences (PPM) : 2.000000  
 Differential Levels : 0.010000 FeetUS / Mile  
 Centering Error Instrument : 0.006562 FeetUS  
 Centering Error Target : 0.005577 FeetUS  
 Centering Error Vertical : 0.005577 FeetUS



# Listing of Input Data

=====

[File: H:\Projects\151021-09-Rplcmt\_8\_Bridges\Sur\Starnet\Syracuse\20161220TOPO edit.dat]

# STAR\*CARLSON Version 1.0.3

# Copyright 2005 Starplus Software, Inc.

# Input Field File : H:\Projects\151021-09-Rplcmt\_8\_Bridges\Sur\Field\Syracuse Site - MP282.62\B

# Date Processed : 01-10-2017 14:41:26

.Units FeetUS  
.Units DMS  
.Order AtFromTo  
.Sep -  
.3D

# C 10	1127144.68500	932344.45400	270.18300	'CB
# C 20	1126855.38700	933269.51700	274.13000	'CB
# C 10	1127144.68500	932344.45400	270.18000	'CB
# C 20	1126855.38700	933269.51700	274.09000	'CB
# C 10	1127144.68500	932377.45400	270.18000	'CB
# C 60	1127144.76580	932377.20490	270.18000	'CB

#Static coords level run elevations

C 20	1126855.38700	933269.51700	384.43000	! ! !	'CB 20
C 10	1127144.68000	932377.45000	380.52000	! * !	'CB 10

#Shawns inverse coords

#C 20	1126855.38700	933269.51700	384.43000	! ! !	'CB 20
#C 10	1127144.76580	932377.20490	380.52000	! * !	'CB 10

# Job : 20161220TOPO

# Date : 12-20-2016

# Time : 05:38:25

.instrument LeicaTCRP1203

.Delta Off

#DV 20-10		938.0711	90-14-36.50	5.070/5.090	'CB
#SS 20-10-100	0-00-04.00	938.0712	90-14-38.00	5.070/5.090	'CHK
#DV 20-50		938.0719	90-14-37.00	5.070/5.090	'CB
DV 20-10		938.0707	90-14-37.50	5.070/5.090	'CB 10
SS 20-10-101	0-00-01.00	938.0712	90-14-36.00	5.070/5.090	'CHK@BS
DV 20-10		938.0721	90-14-17.00	5.070/5.090	'CB
M 20-10-21	9-06-00.00	999.9446	90-07-54.50	5.070/5.290	'CB 21
#SS 20-10-102	13-23-35.00	596.9257	90-41-02.00	5.070/5.290	'VOID
DV 20-10		938.0703	90-14-17.50	5.070/5.090	'CB
M 20-10-22	79-43-58.00	180.5489	91-01-36.00	5.070/4.790	'CB 22
SS 20-10-305	0-00-07.00	938.0676	90-14-33.00	5.070/5.090	'CHK
DV 20-10		938.0657	90-14-18.00	5.070/5.090	'CB
M 20-10-23	12-45-14.00	590.2259	90-31-28.00	5.070/5.050	'CB 23
DV 23-20		590.2172	89-29-45.00	5.050/4.930	'CB
SS 23-20-306	0-00-0.00	590.2175	89-29-46.00	5.050/4.930	'CHK@BS
M 23-20-21	171-07-12.00	412.6540	89-36-35.00	5.050/5.020	'CHK@21
DV 21-20		999.9231	89-51-21.00	4.790/4.930	'CB
SS 21-20-541	0-00-0.00	999.9227	89-51-21.00	4.790/4.930	'CHK@BS
M 21-20-23	354-46-12.00	412.6464	90-22-18.00	4.790/5.020	'CHK@23
SS 21-20-579	359-59-41.00	999.9250	89-51-18.00	4.790/4.930	'CHK@BS
DV 21-20		999.9236	89-50-58.50	4.790/4.930	'CB
M 21-20-24	179-49-37.50	661.5491	88-47-15.50	4.790/4.980	'CB 24
DV 21-20		999.9234	89-50-57.50	4.790/4.930	'CB
M 21-20-25	163-08-31.50	618.7702	88-51-19.50	4.790/5.030	'CB 25

M 21-20-10	63-35-35.00	165.5642	90-24-38.00	4.790/5.020	'CHK@10
DV 23-20		590.2192	89-29-29.00	4.990/4.920	'CB
SS 23-20-581	0-00-01.00	590.2175	89-29-28.00	4.990/4.920	'CHK@BS
SS 23-20-626	359-59-38.00	590.2156	89-29-22.00	4.990/4.920	'CHK@BS
DV 24-21		661.5409	91-11-55.00	5.050/5.040	'CB
SS 24-21-627	359-59-59.00	661.5426	91-11-54.00	5.050/5.040	'CHK@BS
SS 24-21-798	359-59-53.00	661.5406	91-11-53.00	5.050/5.040	'CHK@BS
DV 20-10		938.0643	90-13-33.50	4.970/5.190	'CB
SS 20-10-799	0-00-01.00	938.0653	90-13-34.00	4.970/5.190	'CHK@BS
SS 20-10-1043	0-00-16.00	938.0634	90-13-33.00	4.970/5.190	'CHK@BS
SS 20-10-1044	355-31-42.00	754.3156	90-58-55.00	4.970/5.190	'MPM
#V 20-10			90-13-32.00	4.970/5.020	'CB
SS 20-10-26	357-04-51.00	652.6983	91-04-15.00	4.970/5.020	'CB 26
#DV 24-21		618.7674	91-08-26.00	5.040/4.870	'CB
DV 25-21		618.7664	91-08-26.00	5.040/4.870	'CB
SS 25-21-1045	359-59-55.00	618.7683	91-08-26.00	5.040/4.870	'CHK@BS
M 25-21-10	14-11-40.00	666.6333	91-10-06.00	5.040/5.020	'CHK@10
DV 10-20		938.0699	89-45-33.00	5.000/5.080	'CB
SS 10-20-1233	0-00-02.00	938.0703	89-45-29.00	5.000/5.080	'CHK@BS
M 10-20-21	252-41-31.00	165.6544	89-33-20.00	5.000/4.870	'CHK@21
M 10-20-26	6-35-54.00	288.3329	91-39-07.00	5.000/5.020	'CHK@26
#SS 10-20-1326	349-31-52.00	20.0536	100-56-03.00	5.000/0.000	'VOID
DV 23-20		590.2182	89-29-27.00	4.990/4.920	'CB
SS 23-20-540	0-00-0.00	590.2188	89-29-28.00	4.990/4.920	'CHK@BS
SS 23-20-585	0-00-0.00	590.2195	89-29-28.00	4.990/4.920	'CHK@BS
DV 10-20		938.0535	89-46-18.00	4.980/4.920	'CB
SS 10-20-586	0-00-0.00	938.0545	89-46-18.00	4.980/4.920	'CHK@BS
SS 10-20-631	359-59-55.00	938.1332	89-46-15.00	4.980/4.920	'CHK@BS

## Summary of Unadjusted Input Observations

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Number of Entered Stations (FeetUS) = 2

Fixed Stations	N	E	Elev	Description
20	1126855.3870	933269.5170	384.4300	CB 20

Partially Fixed	N StdErr	E StdErr	Elev StdErr	Description
10	1127144.6800	932377.4500	380.5200	CB 10
	FIXED	FREE	FIXED	

Number of Measured Angle Observations (DMS) = 11

At	From	To	Angle	StdErr	t-T
20	10	21	9-06-00.00	4.35	-0.00
20	10	22	79-43-58.00	10.61	0.00
20	10	23	12-45-14.00	4.71	-0.00
23	20	21	171-07-12.00	7.65	-0.01
21	20	23	354-46-12.00	5.37	-0.01
21	20	24	179-49-37.50	5.65	-0.02
21	20	25	163-08-31.50	5.75	-0.01
21	20	10	63-35-35.00	11.15	-0.01
25	21	10	14-11-40.00	4.77	0.00
10	20	21	252-41-31.00	11.90	-0.01
10	20	26	6-35-54.00	6.64	-0.00

Number of Measured Distance Observations (FeetUS) = 26

From	To	Distance	StdErr	HI	HT	Comb Grid	Type
20	10	938.0707	0.0121	5.070	5.090	0.9999390	S
20	10	938.0721	0.0121	5.070	5.090	0.9999390	S
20	21	999.9446	0.0121	5.070	5.290	0.9999390	S
20	10	938.0703	0.0121	5.070	5.090	0.9999390	S
20	22	180.5489	0.0110	5.070	4.790	0.9999391	S
20	10	938.0657	0.0121	5.070	5.090	0.9999390	S
20	23	590.2259	0.0116	5.070	5.050	0.9999391	S
23	20	590.2172	0.0116	5.050	4.930	0.9999391	S
23	21	412.6540	0.0113	5.050	5.020	0.9999390	S
21	20	999.9231	0.0121	4.790	4.930	0.9999390	S
21	23	412.6464	0.0113	4.790	5.020	0.9999390	S
21	20	999.9236	0.0121	4.790	4.930	0.9999390	S
21	24	661.5491	0.0117	4.790	4.980	0.9999385	S
21	20	999.9234	0.0121	4.790	4.930	0.9999390	S
21	25	618.7702	0.0116	4.790	5.030	0.9999385	S
21	10	165.5642	0.0110	4.790	5.020	0.9999389	S
23	20	590.2192	0.0116	4.990	4.920	0.9999391	S
24	21	661.5409	0.0117	5.050	5.040	0.9999385	S
20	10	938.0643	0.0121	4.970	5.190	0.9999390	S
25	21	618.7664	0.0116	5.040	4.870	0.9999385	S
25	10	666.6333	0.0117	5.040	5.020	0.9999386	S
10	20	938.0699	0.0121	5.000	5.080	0.9999390	S
10	21	165.6544	0.0110	5.000	4.870	0.9999389	S
10	26	288.3329	0.0112	5.000	5.020	0.9999392	S
23	20	590.2182	0.0116	4.990	4.920	0.9999391	S
10	20	938.0535	0.0121	4.980	4.920	0.9999390	S

Number of Zenith Observations (DMS) = 26

From	To	Zenith	StdErr	HI	HT
20	10	90-14-37.50	10.15	5.070	5.090
20	10	90-14-17.00	10.15	5.070	5.090
20	21	90-07-54.50	10.13	5.070	5.290
20	10	90-14-17.50	10.15	5.070	5.090

20	22	91-01-36.00	13.46	5.070	4.790
20	10	90-14-18.00	10.15	5.070	5.090
20	23	90-31-28.00	10.37	5.070	5.050
23	20	89-29-45.00	10.37	5.050	4.930
23	21	89-36-35.00	10.75	5.050	5.020
21	20	89-51-21.00	10.13	4.790	4.930
21	23	90-22-18.00	10.75	4.790	5.020
21	20	89-50-58.50	10.13	4.790	4.930
21	24	88-47-15.50	10.30	4.790	4.980
21	20	89-50-57.50	10.13	4.790	4.930
21	25	88-51-19.50	10.34	4.790	5.030
21	10	90-24-38.00	14.01	4.790	5.020
23	20	89-29-29.00	10.37	4.990	4.920
24	21	91-11-55.00	10.30	5.050	5.040
20	10	90-13-33.50	10.15	4.970	5.190
25	21	91-08-26.00	10.34	5.040	4.870
25	10	91-10-06.00	10.29	5.040	5.020
10	20	89-45-33.00	10.15	5.000	5.080
10	21	89-33-20.00	14.01	5.000	4.870
10	26	91-39-07.00	11.48	5.000	5.020
23	20	89-29-27.00	10.37	4.990	4.920
10	20	89-46-18.00	10.15	4.980	4.920

Number of Measured Sideshots (DMS, FeetUS) = 19

At	From To	Angle	Distance	Vertical	HI	HT
20	10					
	101	0-00-01.00	938.0712	90-14-36.00	5.070	5.090
	305	0-00-07.00	938.0676	90-14-33.00	5.070	5.090
23	20					
	306	0-00--0.00	590.2175	89-29-46.00	5.050	4.930
21	20					
	541	0-00--0.00	999.9227	89-51-21.00	4.790	4.930
	579	359-59-41.00	999.9250	89-51-18.00	4.790	4.930
23	20					
	581	0-00-01.00	590.2175	89-29-28.00	4.990	4.920
	626	359-59-38.00	590.2156	89-29-22.00	4.990	4.920
24	21					
	627	359-59-59.00	661.5426	91-11-54.00	5.050	5.040
	798	359-59-53.00	661.5406	91-11-53.00	5.050	5.040
20	10					
	799	0-00-01.00	938.0653	90-13-34.00	4.970	5.190
	1043	0-00-16.00	938.0634	90-13-33.00	4.970	5.190
	1044	355-31-42.00	754.3156	90-58-55.00	4.970	5.190
	26	357-04-51.00	652.6983	91-04-15.00	4.970	5.020
25	21					
	1045	359-59-55.00	618.7683	91-08-26.00	5.040	4.870
10	20					
	1233	0-00-02.00	938.0703	89-45-29.00	5.000	5.080
23	20					
	540	0-00--0.00	590.2188	89-29-28.00	4.990	4.920
	585	0-00--0.00	590.2195	89-29-28.00	4.990	4.920
10	20					
	586	0-00--0.00	938.0545	89-46-18.00	4.980	4.920
	631	359-59-55.00	938.1332	89-46-15.00	4.980	4.920



# Adjustment Statistical Summary

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Iterations	=	2
Number of Stations	=	8
Number of Observations	=	63
Number of Unknowns	=	19
Number of Redundant Obs	=	44

Observation	Count	Sum Squares of StdRes	Error Factor
Angles	11	35.907	2.162
Distances	26	62.532	1.856
Zeniths	26	29.088	1.266
Total	63	127.527	1.702

Warning: The Chi-Square Test at 5.00% Level Exceeded Upper Bound  
Lower/Upper Bounds (0.792/1.208)

# Adjusted Station Information

=====

## Coordinate Changes from Entered Provisionals (FeetUS)

Station	dN	dE	dZ
20	-0.0000	-0.0000	-0.0000
10	-0.0000	-0.2092	-0.0000

## Adjusted Coordinates (FeetUS)

Station	N	E	Elev	Description
20	1126855.3870	933269.5170	384.4300	CB 20
10	1127144.6800	932377.2408	380.5200	CB 10
21	1127310.2949	932379.1337	381.9489	CB 21
22	1127034.2698	933293.6917	381.4787	CB 22
23	1127156.8347	932762.1520	379.0890	CB 23
24	1127609.4146	931789.2850	395.7835	CB 24
25	1127419.9020	931770.3050	394.0978	CB 25
26	1127024.8835	932639.3580	372.1824	CHK@26

## Adjusted Positions and Ellipsoid Heights (FeetUS)

Station	Latitude	Longitude	Ellip Ht	Geoid Ht
20	43-05-30.851315	76-09-36.188710	274.1167	-110.3133
10	43-05-33.753074	76-09-48.194752	270.1840	-110.3360
21	43-05-35.388819	76-09-48.158063	271.6097	-110.3392
22	43-05-32.616999	76-09-35.850728	271.1623	-110.3164
23	43-05-33.854060	76-09-43.006258	268.7601	-110.3289
24	43-05-38.372431	76-09-56.087775	285.4274	-110.3561
25	43-05-36.501480	76-09-56.356305	283.7451	-110.3527
26	43-05-32.556821	76-09-44.670149	261.8537	-110.3287
			Average:	-110.3339

## Convergence Angles (DMS) and Grid Factors at Stations

(Grid Azimuth = Geodetic Azimuth - Convergence)

(Elevation Factor Includes a Geoid Height Correction at Each Station)

Station	Convergence Angle	Scale	x	Elevation	=	Combined
20	0-17-21.03	0.99995210		0.99998690		0.99993900
10	0-17-12.85	0.99995187		0.99998709		0.99993896
21	0-17-12.88	0.99995187		0.99998702		0.99993889
22	0-17-21.27	0.99995211		0.99998704		0.99993915
23	0-17-16.39	0.99995197		0.99998715		0.99993913
24	0-17-07.48	0.99995172		0.99998636		0.99993808
25	0-17-07.29	0.99995172		0.99998644		0.99993816
26	0-17-15.25	0.99995194		0.99998748		0.99993943
Project Averages:	0-17-14.30	0.99995192		0.99998693		0.99993885

# Adjusted Observations and Residuals

=====

## Adjusted Measured Angle Observations (DMS)

At	From	To	Angle	Residual	StdErr	StdRes
20	10	21	9-05-57.74	-0-00-02.26	4.35	0.5
20	10	22	79-43-58.00	0-00-00.00	10.61	0.0
20	10	23	12-45-09.75	-0-00-04.25	4.71	0.9
23	20	21	171-07-03.47	-0-00-08.53	7.65	1.1
21	20	23	354-46-15.48	0-00-03.48	5.37	0.6
21	20	24	179-49-37.50	0-00-00.00	5.65	0.0
21	20	25	163-08-33.21	0-00-01.71	5.75	0.3
21	20	10	63-35-30.40	-0-00-04.60	11.15	0.4
25	21	10	14-11-12.68	-0-00-27.32	4.77	5.7*
10	20	21	252-41-28.14	-0-00-02.86	11.90	0.2
10	20	26	6-35-54.00	-0-00-00.00	6.64	0.0

## Adjusted Measured Distance Observations (FeetUS)

	From	To	Distance	Residual	StdErr	StdRes
	20	10	938.0674	-0.0033	0.0121	0.3
	20	10	938.0674	-0.0047	0.0121	0.4
	20	21	999.9257	-0.0189	0.0121	1.6
	20	10	938.0674	-0.0029	0.0121	0.2
	20	22	180.5489	0.0000	0.0110	0.0
	20	10	938.0674	0.0017	0.0121	0.1
	20	23	590.2215	-0.0044	0.0116	0.4
	23	20	590.2203	0.0031	0.0116	0.3
	23	21	412.6522	-0.0018	0.0113	0.2
	21	20	999.9266	0.0035	0.0121	0.3
	21	23	412.6509	0.0045	0.0113	0.4
	21	20	999.9266	0.0030	0.0121	0.2
	21	24	661.5469	-0.0022	0.0117	0.2
	21	20	999.9266	0.0032	0.0121	0.3
	21	25	618.7781	0.0079	0.0116	0.7
	21	10	165.6402	0.0760	0.0110	6.9*
	23	20	590.2207	0.0015	0.0116	0.1
	24	21	661.5431	0.0022	0.0117	0.2
	20	10	938.0665	0.0022	0.0121	0.2
	25	21	618.7768	0.0104	0.0116	0.9
	25	10	666.6014	-0.0319	0.0117	2.7
	10	20	938.0678	-0.0021	0.0121	0.2
	10	21	165.6410	-0.0134	0.0110	1.2
	10	26	288.3329	0.0000	0.0112	0.0
	23	20	590.2207	0.0025	0.0116	0.2
	10	20	938.0672	0.0137	0.0121	1.1

## Adjusted Zenith Observations (DMS)

	From	To	Zenith	Residual	StdErr	StdRes
	20	10	90-14-24.30	-0-00-13.20	10.15	1.3
	20	10	90-14-24.30	0-00-07.30	10.15	0.7
	20	21	90-07-55.99	0-00-01.49	10.13	0.1
	20	10	90-14-24.30	0-00-06.80	10.15	0.7
	20	22	91-01-36.00	0-00-00.00	13.46	0.0
	20	10	90-14-24.30	0-00-06.30	10.15	0.6
	20	23	90-31-21.48	-0-00-06.52	10.37	0.6
	23	20	89-29-32.44	-0-00-12.56	10.37	1.2
	23	21	89-36-32.35	-0-00-02.65	10.75	0.2
	21	20	89-50-58.22	-0-00-22.78	10.13	2.2
	21	23	90-21-51.18	-0-00-26.82	10.75	2.5
	21	20	89-50-58.22	-0-00-00.28	10.13	0.0
	21	24	88-47-15.00	-0-00-00.50	10.30	0.0
	21	20	89-50-58.22	0-00-00.72	10.13	0.1

21	25	88-51-17.12	-0-00-02.38	10.34	0.2
21	10	90-24-49.66	0-00-11.66	14.01	0.8
23	20	89-29-14.97	-0-00-14.03	10.37	1.4
24	21	91-11-54.50	-0-00-00.50	10.30	0.0
20	10	90-13-40.32	0-00-06.82	10.15	0.7
25	21	91-08-24.79	-0-00-01.21	10.34	0.1
25	10	91-10-05.46	-0-00-00.54	10.29	0.1
10	20	89-45-21.66	-0-00-11.34	10.15	1.1
10	21	89-33-07.23	-0-00-12.77	14.01	0.9
10	26	91-39-07.00	0-00-00.00	11.48	0.0
23	20	89-29-14.97	-0-00-12.03	10.37	1.2
10	20	89-45-52.44	-0-00-25.56	10.15	2.5



Adjusted Bearings (DMS) and Horizontal Distances (FeetUS)

=====

(Relative Confidence of Bearing is in Seconds)

NOTE - Adjustment Failed the Chi-Square Test

Angular and Distance Errors are Scaled by Total Error Factor

From	To	Grid Bearing	Grid Dist	95% RelConfidence
			Grnd Dist	Brg Dist PPM
10	20	S72-02-10.73E	938.0017	1.18 0.0165 17.5754
			938.0590	
10	21	N00-39-17.39E	165.6257	25.54 0.0255 154.2148
			165.6359	
10	25	N65-36-27.13W	666.4219	25.28 0.0321 48.1445
			666.4629	
10	26	S65-26-16.74E	288.1955	27.70 0.0466 161.8167
			288.2130	
20	21	N62-56-13.00W	999.8618	5.80 0.0178 17.8524
			999.9229	
20	22	N07-41-47.27E	180.5089	44.23 0.0460 255.1031
			180.5199	
20	23	N59-17-00.99W	590.1610	10.11 0.0205 34.7509
			590.1969	
21	23	S68-09-57.53E	412.6174	14.72 0.0229 55.6148
			412.6425	
21	24	N63-06-35.52W	661.3577	24.24 0.0345 52.1061
			661.3984	
21	25	N79-47-39.81W	618.6162	23.73 0.0293 47.3586
			618.6542	

# Sideshot Coordinates Computed After Adjustment

=====

Station	N	E	Elev	Description
101	1127144.6854	932377.2387	380.4441	CHK@BS
305	1127144.7103	932377.2505	380.4578	CHK
306	1126855.3882	933269.5149	384.4068	CHK@BS
541	1126855.3886	933269.5138	384.3454	CHK@BS
579	1126855.4696	933269.5577	384.3600	CHK@BS
581	1126855.3860	933269.5130	384.4083	CHK@BS
626	1126855.4436	933269.5449	384.4255	CHK@BS
627	1127310.2980	932379.1347	381.9674	CHK@BS
798	1127310.3160	932379.1417	381.9707	CHK@BS
799	1127144.6840	932377.2433	380.5261	CHK@BS
1043	1127144.7483	932377.2661	380.5307	CHK@BS
1044	1127031.3398	932536.1709	371.2947	MPM
26	1127024.7677	932639.3387	372.1908	CB 26
1045	1127310.3112	932379.1279	381.9590	CHK@BS
1233	1126855.3775	933269.5167	384.4193	CHK@BS
540	1126855.3878	933269.5156	384.4083	CHK@BS
585	1126855.3875	933269.5162	384.4083	CHK@BS
586	1126855.3908	933269.5054	384.3364	CHK@BS
631	1126855.3881	933269.5872	384.3503	CHK@BS

# Error Propagation

=====

## Station Coordinate Standard Deviations (FeetUS)

NOTE - Adjustment Failed the Chi-Square Test  
Standard Deviations are Scaled by Total Error Factor

Station	N	E	Elev
20	0.000000	0.000000	0.000000
10	0.000000	0.007080	0.000000
21	0.010407	0.008768	0.011950
22	0.018763	0.015872	0.020059
23	0.010921	0.009516	0.018996
24	0.032938	0.021947	0.041509
25	0.032265	0.016373	0.032262
26	0.016418	0.019740	0.027320

## Station Coordinate Error Ellipses (FeetUS)

NOTE - Adjustment Failed the Chi-Square Test  
Error Ellipses are Scaled by Total Error Factor  
Confidence Region = 95%

Station	Semi-Major Axis	Semi-Minor Axis	Azimuth of Major Axis	Elev
20	0.000000	0.000000	0-00	0.000000
10	0.017331	0.000000	90-00	0.000000
21	0.028233	0.017674	33-35	0.023421
22	0.046048	0.038706	7-42	0.039316
23	0.028932	0.020495	32-49	0.037232
24	0.088774	0.038796	27-44	0.081357
25	0.082587	0.031985	18-29	0.063233
26	0.049313	0.038959	109-02	0.053546

## Relative Error Ellipses (FeetUS)

NOTE - Adjustment Failed the Chi-Square Test  
Relative Error Ellipses are Scaled by Total Error Factor  
Confidence Region = 95%

Stations From	To	Semi-Major Axis	Semi-Minor Axis	Azimuth of Major Axis	Vertical
10	20	0.017331	0.000001	90-00	0.000000
10	21	0.026998	0.018549	27-08	0.023421
10	25	0.082192	0.030701	17-22	0.063233
10	26	0.046635	0.038705	114-34	0.053546
20	21	0.028233	0.017674	33-35	0.023421
20	22	0.046048	0.038706	7-42	0.039316
20	23	0.028932	0.020495	32-49	0.037232
21	23	0.029563	0.022788	30-05	0.037411
21	24	0.077736	0.034461	26-53	0.077913
21	25	0.071403	0.028730	15-14	0.061501

Elapsed Time = 00:00:00

# MYSTA - BEAR TRAP

FILE 20161209

CP (10)

H.I. = 6.56

START 10:25a

START: 11:29a

CP (20)

H.I. = 6.56

START: 11:34a

STOP =

SPM  
TS  
2500

09 DEC 16

15102109

CP (10) 5/8" BEERO w/ PL FA CAPSET  
BACKSIDE G. RAIL oppo GREEN  
DEL 75' +/- Ely BIKE WAY  
OVER PASS, EAST BOUND

CP (20) 5/8" BEERO w/ PL FA CAP SET  
4'S OF TOB DITCH S SIDE  
EAST BOUND MAINLINE @ 282.5



10Y STA - BEAR TRAP CREEK  
MP

SYRACUSE

(10)

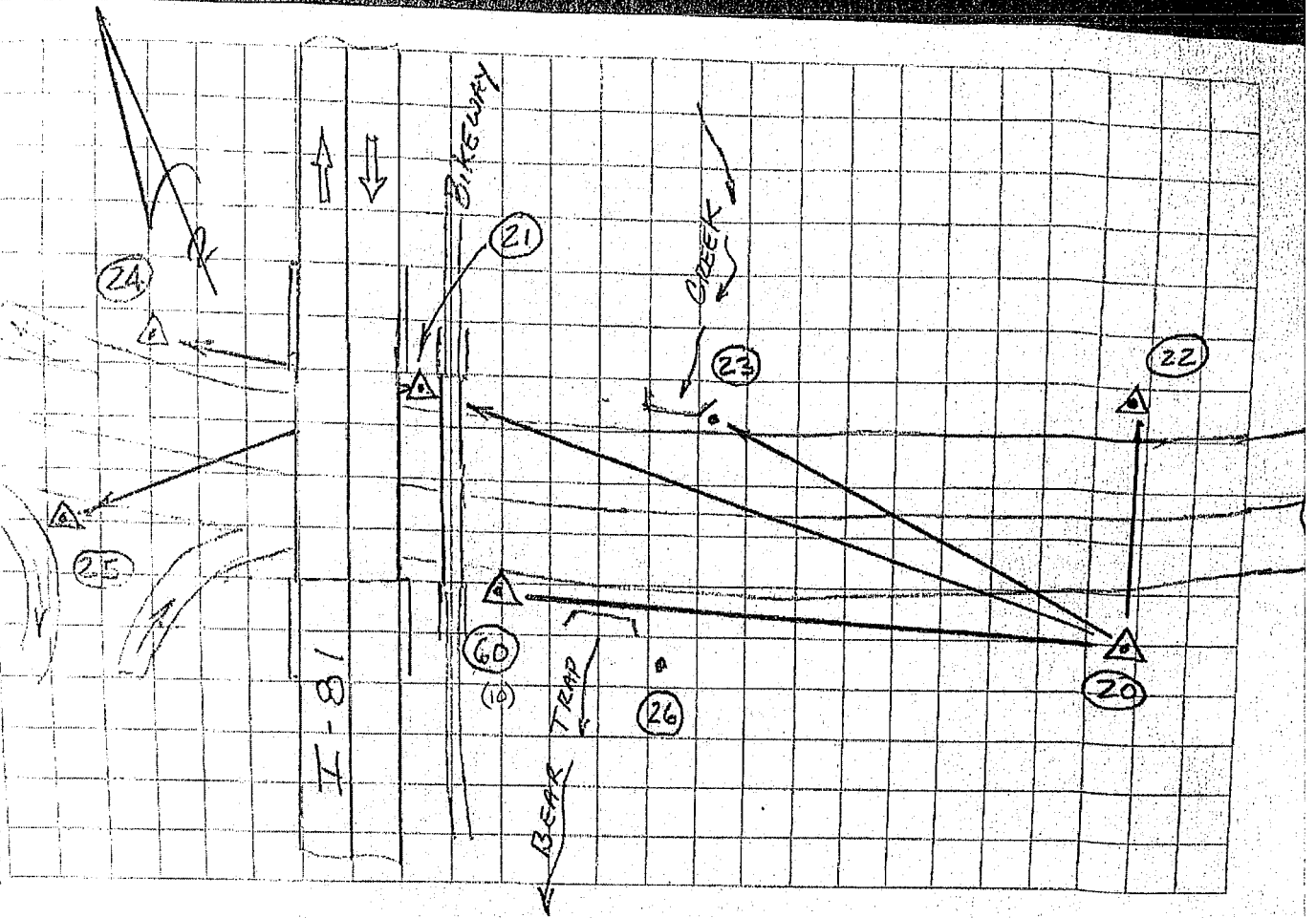
CB (20)

SET 5 1/4" RETROD w/ PL FA CAP  
BACK SIDE EAST BOUND GUIDE RAIL

CB (20) SET 5 1/4" RETROD w/ PL FA CAP  
TOP HEIGHT OF LAND 14.5'ly  
OF EDGE PAV EB

SFA 2  
IS

151021.09-2



NYSTA - SYRACUSE (BEAR TRAP)

RTK CONTROL FOR HYDRO

LEICA SR UNIT 'D' NYSPC CENTRAL

MAAD '83/11 MAAD '88 GEO 2.4

(30) MN IN PKG LOT C LEX CREEK TR,  
ACCESS TO BEAR TRAP BIKEWAY

(31) MN IN ASPH PATH WLY OF US/  
FACE STRUCTURE C 17+75 +/- DS

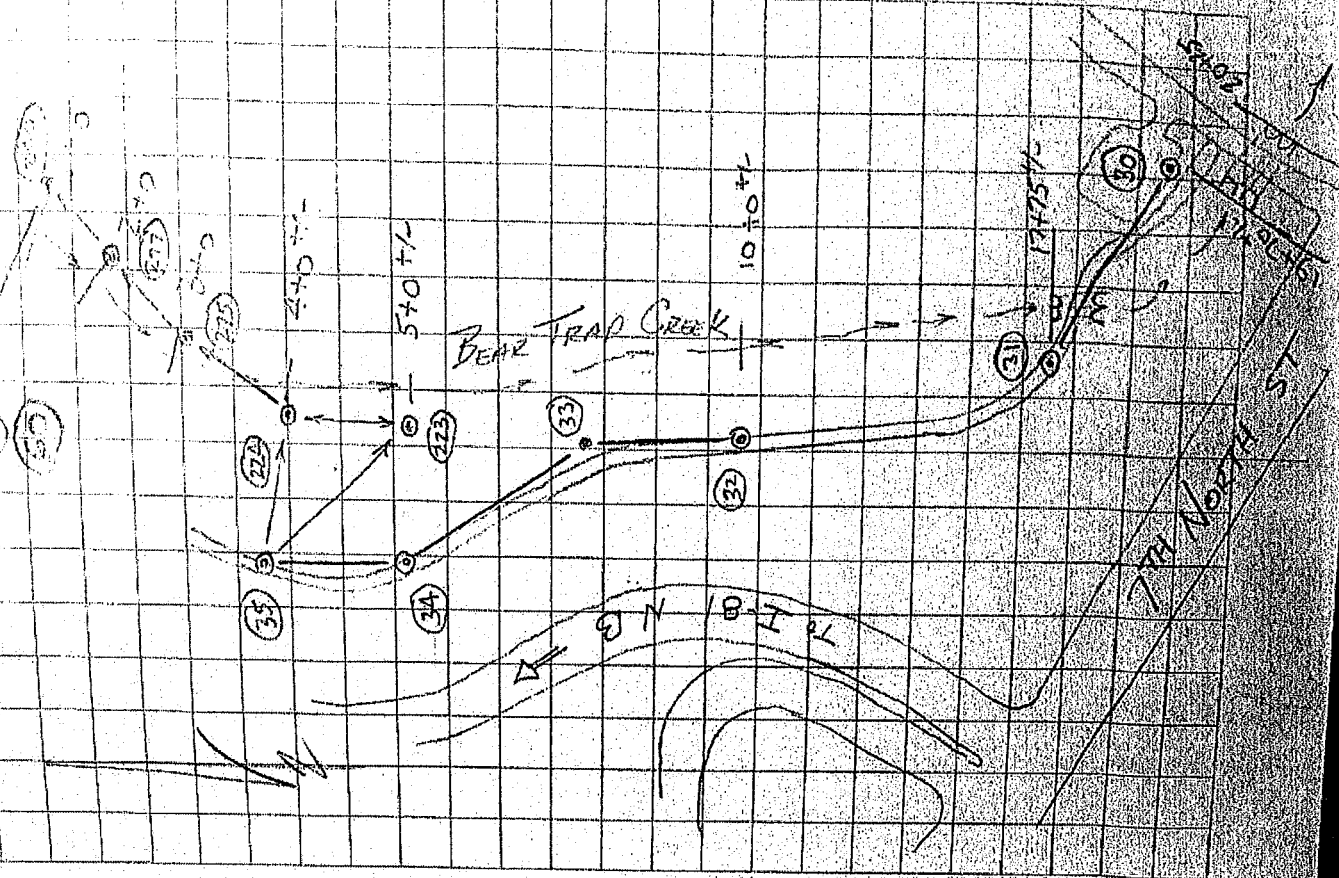
(32) MN IN E EDGE ASPH PATH NEND/  
STA 10+0 DS

(33) Gd Top Bank NELY SWDS/  
BIKEWAY ON CURVE

(34) SET MN ASPH BIKEWAY WLY/  
OF 5+0 +/-

151021.09-2

FILE: 20161212



NY STA 1 SYRACUSE

Risk CONTROL FOR HYDRO

(35)

SET MIN ASPH BIKENNY WLY ✓  
of 4+0 +/-

151021.09-Z

12 SEP 80

NY STA - SYRACUSE

HYDROS

Xe (30) BS (31) W / 0°

HI = 5.29 ✓ HT = 5.02

HD = 201.34 HER = -0.01 VER = -0.02

100

DS 19+70 (US FACE TWIN 7.2x11' Cmp)

101

113 EDGE H2O

ARCHED

117 INV N'LY 7.2x11.0' ELIP Cmp

125 INV S'LY " "

128 EDGE H2O

130 "

139-143 & PAV LEY CREEK DR

144 N INV DS 7.2x11.0' Arched Cmp

145 S INV DS

DS FACE TWIN Cmps (20+25 +1-)

ARCHED

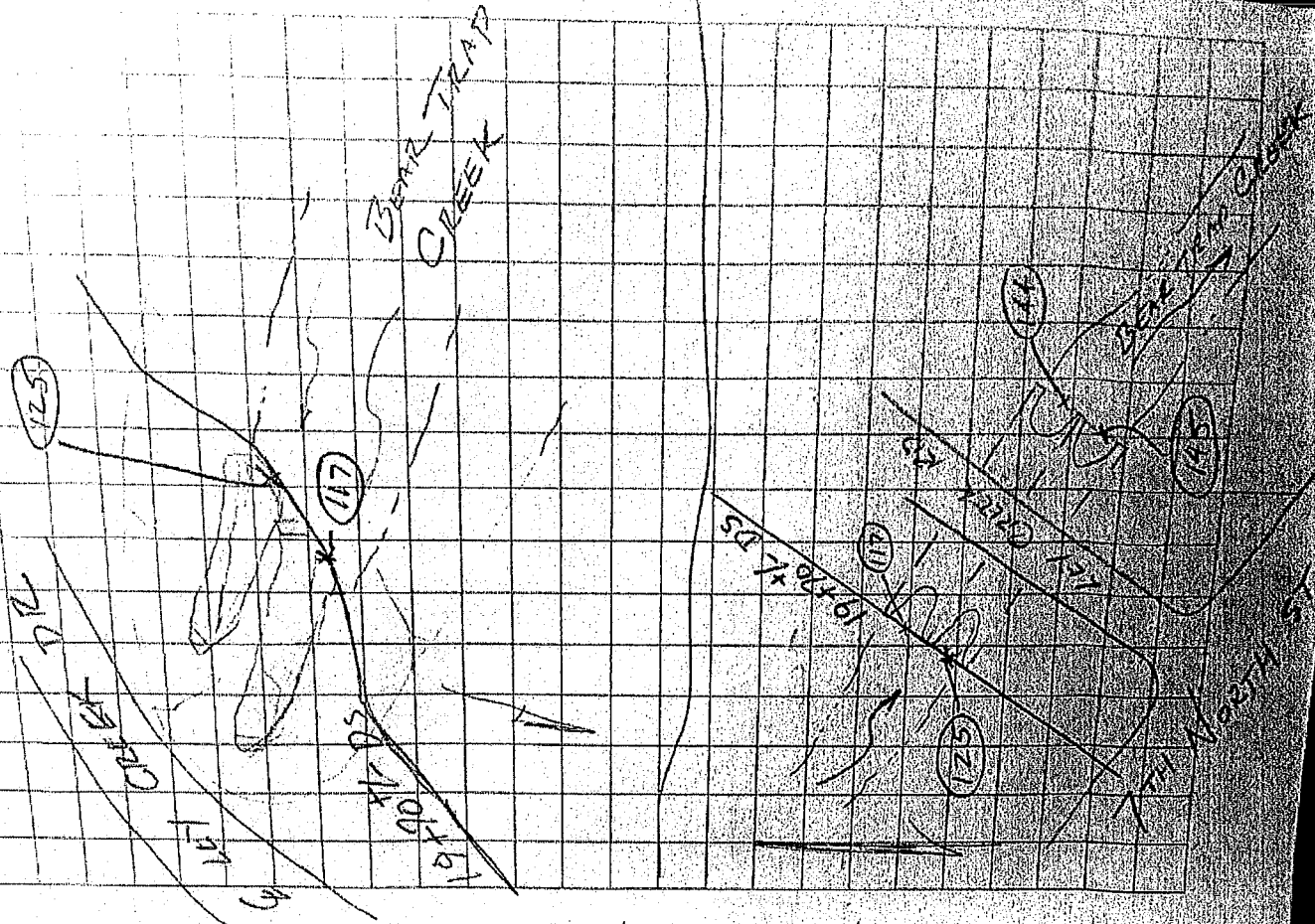
146 E INV DS 7.2x11.0' ELIP Cmp

147 W INV DS " "

151021.09-2

12 DEC 16

FILE: NY 151021





NYSTA - SYRACUSE  
HYDROS -

DS 17+75 US FACE TWIN CREEPS

148-

EDGE 1/20-

161 INV ELY 7.2 X 11.0 ELIP CMP

166 INV WLY " " "

170 EDGE 1/20-

174 TOB ✓

175-179 8' ASPH BIKEWAY

180 ✓ (30) ✓

PC (31) 133 (30) w/ 0°

HI = 5.22 ✓ HT = 5.02 ✓

HD = 201.36 Here = +0.01 Ver = -0.02

181 ✓ (30) ✓

Complete DS 17+75

182-191

192 ✓ (30) ✓

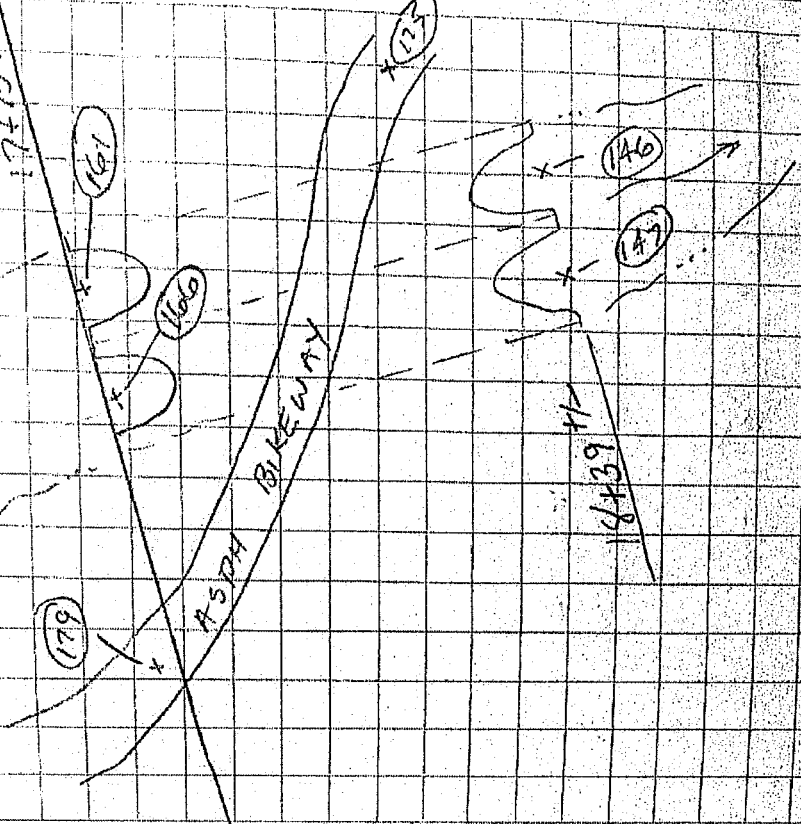
SFM  
IS 6

DEC 16

151021.09-2

BEAR TRAP CREEK

17+75 DS



NYSTA - SYRACUSE

HYDROS

Te (32)

BS

(33)

w/ 0°

HT = 5.11

HT = 5.02

HD = 186.71

HER = +0.04

VER = -0.01

193 ✓ (32)

10+0 DS

194

(3)

204

EDGE H20

210

EDGE H20

↓

220

H

221

✓ (33)

Te (35)

BS

(34)

w/ 0°

HT = 5.05

HT = 5.02

HD = 201.22

HER = -0.07

VER = -0.02

222

✓ (34)

(223)

SET 60 d

e 5+0 +1-

(224)

SET 60 d

e 4+0 +1-

15102109-2

16 DEC 13

5PM

12°

14°

16°

18°

20°

22°

24°

26°

28°

30°

32°

34°

36°

38°

40°

42°

44°

46°

48°

50°

52°

54°

56°

58°

60°

62°

64°

66°

68°

70°

NY STA- SYRACUSE

HYDROS -

W/O

(35)

TC (233) 35

H<sub>1</sub> = 4.73 ✓

H<sub>2</sub> = 5.02 ✓

WD = 285.15 H<sub>2</sub>O = +0.01 V<sub>2</sub>R = 0.00

225 ✓ (35) ✓

540 DS

220 G

↓

230 EDGE H<sub>2</sub>O ✓

241 EDGE H<sub>2</sub>O ✓

↓

248 " G

249 ✓ (224) ✓

15102109-2

15102109-2

234167

NY STA - SYRACUSE  
- HYDROS -

Ke (272)

BS (35) w/o

HI = 5.091

HT = 5.021

HP = 305.32 HIR = +0.04 VER = 0.00

250 ✓ (35)

4+0 DS

251 G

↓

257 EDGE H2O ✓

265 EDGE H2O ✓

↓

274 "

(275) SET 60 d @ 3+0 1/2 ✓

Ke (275) BS (274) w/o

HI = 4.71 ✓

HT = 5.02 ✓

HP = 105.77 HIR = -0.03 VER = 46.03

276 ✓ 274 ✓

277 SET 60 d @ 2+0 1/2

3+0 DS

278 G

EDGE H2O

EDGE H2O

G

297

15102109-2 15 DE 10

NYSTA - SYRACUSE  
- HYDROS -

Te (277) BS (275) w/o  
HT = 5.12 ✓ HT = 5.02 ✓

HT = 95.43 H<sub>ERR</sub> = 40.01 VER = +0.03

298 ✓ (275)

(299) SET 60d c 1-0 +1-

2+0 DS

300 G

↓

307 EDGE H<sub>20</sub> ✓

313 " " ✓

↓

320 G

321 ✓ CB (10) 40?

Te (299) BS (277) w/o

HT = 5.13 ✓ HT = 5.02 ✓

HDE 80.64 H<sub>ERR</sub> = -0.02 VER +0.05

322 ✓ (277)

1+0 DS

323 G

332 EDGE H<sub>20</sub> ✓

339 " " ✓

↓

350 G

(351) ✓ 1277 ✓

15102109-2 16 DEC 10

502-10

~~322~~  
~~323~~  
~~324~~  
~~325~~



# NYSTA - SYRACUSE

RTK CONTROL FOR HYDRO

(40) MIN ELY EDGE BIKEWAY & INTERSECT OF CURVE R, & GOLF PL  
1127721.24 932704.20 385.83

(41) MIN @ W END RAILROAD BOX CURVE FROM I-81 RAMP  
1127606.93 932981.41 379.60

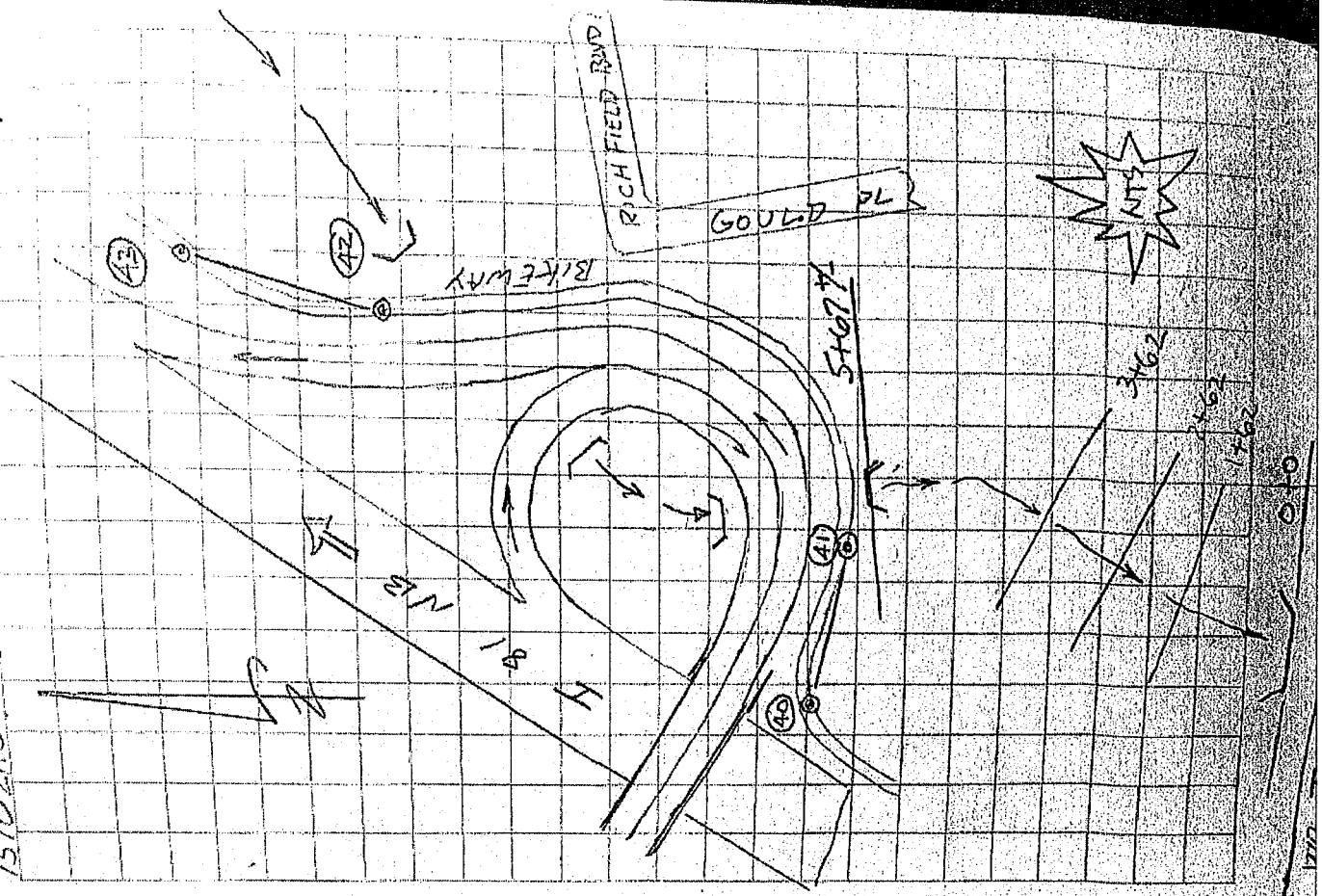
(42) MIN @ W EDGE BIKEWAY ALONG I-81 NB ON RAMP

(43) MIN @ W EDGE BIKEWAY ALONG I-81 NB ON RAMP

EXIST CULV	162' PER DRAWING
+100	2462
+200	3462
+300	6462

15102109-2

197216



57M 12  
IS

15102109-2 2-60120151 01 DEC 16

HELD STATIC GPS ELEV.

TOP GR POST

70212

CP (20) STATIC GRS = 274.13

7222E

TURLEY

Top of Tri. Conc. Rwy Mon. S. Side East Bound  
@ Cor. C.L. # 30'  $\frac{1}{2}$  Wly of Wly Top Bank  
Bear Trap Creek & approx. 60' S. of Pav

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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3352  
27018

~~134.3~~

# h o m

71262  
64762

21.2 1.99 1.99

379. 344  
~~269.50~~

7.37	276.27	4.76
------	--------	------

224-09

33408

2.47	7386.89	2.79
	<del>270.55</del>	

C 20  
USE AS BM 2

15-693

3.05	30090	7.04
------	-------	------

373.20  
~~202.96~~

5.52	268.48	9.6
------	--------	-----

1515

51-6-53  
50-1-53  
51-1-53

BM 1.  
PLOS 134A

7.90	<del>269.05</del>	7.3
------	-------------------	-----

375.42  
265.88

[illegible]

81-017  
[3805]

790-15

2.66

~~20~~  
20

-0.05

[illegible]
$$\frac{1}{\rho_0} = 0.00375 \text{ g/cm}^3$$



# NYSTA - SYRACUSE

AC (20) 35 (10) w/ 0°  
 HI = 5.07 HT = 5.09  
 HD = 938.06 HER = 40.26 VER = -0.09  
 100 ✓ (10) —  
 (50) 1017 —

AC (20) 35 (40) w/ 0°  
 HI = 5.07 HT = 5.09 ✓  
 HD = 938.06 HER = 0.00 VER = -0.10  
 101 ✓ (60) —

(21) SET 10" GAN SPIKE NLY  
 SIDE WB B/N I 81.5  
 BIKEWAY BRIDGE HT = 5.29 ✓

(22) SET 10" GAN SPIKE NLY SIDE  
 WB c TOP BANK BACKSIDE  
 OF DITCH oppo MM 282.5  
 HT = 4.79 ✓

5th 13  
 33

15102109-2 20 Dec 10  
 \* ADJ ELEV OF 3820 TO 274.09

(INV 937.80)  
 ← ADD STATIC COORDS MEAS  
 + 0.26 ON GROUND (INV 937.79)

\* HELD HORIZ ADJ'D STATIC  
 C CP (20), HELD INV AZ  
 TO CP (10) AZ = 287° 58' 05"  
 HELD MEAS'D GROUND DIST TO  
 CP (10) TO RE-COORDINATE AS  
 CP (30) IE: (10) 1017  
 (10)

FILE 20161220topo

# NYSTA - SYRACUSE TOPO

153 2 5' CONE WATER EXPOS  
TOP CONC = 274.16  
FR/CON, LOOSE NO MATT NET  
COMPLETELY OVER HOLE IN CONC  
LID

304 // LEB 7

305 ✓ (60) 20.00

(23) SET MN e N END BOX  
CULV @ NE COR  
HT = 5.05 ✓

SM 14  
IS

15102109.2

\* NOTE: BOTH FILES (20161220 TOPO

& HYDROS HAVE COMMON PT

#'S BEGINNING @ 100; DO

NOT COMBINE FILES.

NYSTA - SYRACUSE

HYDROS

XC (41) 135 (40) w/o

H/E = 5.01 ✓ H/E = 5.021

H/D = 299.81 4.07 - 0.04 1.03 - 0.02

352 ✓ (40)

353-355 10.10

3462 US

356 G

360-365 EDGE H2O ✓

↓

376 G

2462 US

377 G

↓

G (PARTIAL - W SIDE ONLY)

381

(392) SET CBS ON 2462 SECTION ✓

1462 US

383 G (PARTIAL - W SIDE ONLY)

-391

1460

151021.09-2 20 DEC '6

FILE: HYDROS

NOT COMPLETE, NEED GROUND TO UPHILL  
E SIDE STREAM

Completed 03 JAN 17

Completed 03 JAN 17

Completed 03 JAN 17

NYSTA - SYRACUSE

TORO

TR (23) BS (20) w/ 0°  
HT = 5'05" HT = 4'93" ✓  
HT = 5'90.19 HWC = -0.01 ✓ HT = -0.07 ✓  
306 ✓ (20) ✓

\* 337 - 341 HT = 8.0 ✓

352 PIN FLAGS "645" ✓  
888-637-2344

354 MFS UFO 888-MFS-2016  
MP 282.6 9/8 13' ✓

\* 432 HT = 8.0 ✓

508 10" GALV STEEL I BEAM POSTS  
w/ EXIT BG SIGN ✓

539 BIKE WAY ABUT. ✓

540 ✓ (21)

15102109-2

2

FILE: 201612201010

(NYSTA CONFIDENTIAL)

315-438-2367

NYSTA - SYRACUSE

---TOPD---

Re (21)

Bs (20) W 0°

HI = 4.79 /

HT = 4.93 /

HD = 999.92 HER = 0.02 VER = 0.14

541 V (20) /

542 V (23) /

→ ΔN +0.01 ΔE -0.02 Δ3 -0.04 /

569 BOT STREET W FACIA I 81 SB (BUCL)

572 " " E FACIA I 81 SB (BUCL)

573 " " W. FACIA B. Keweenaw (BUCL)

574 " " E. FACIA " (BUCL)

575 W FACIA BIKEWAY DNC

577 E FACIA I 81 OVERPASS DNC

579 V (20) /

20 DEC 19

151021.09-2



11

15102102-2

A hand-drawn sketch on grid paper showing a highway interchange. The main highway is labeled "I 81" and "BIKEWAY". An exit ramp is labeled "EXIT 36". A road branching off is labeled "I 90". There are several numbered circles (20, 21, 24, 25, 60) and triangles (20, 21, 24, 25, 60) indicating specific locations or points of interest. Arrows indicate traffic flow.

⑥ 30

\* CHECKING  
6/27/08  
6/27/08  
SUBT 0.97  
FROM PISTON OR  
AZ 1980

NYSTA - SYRACUSE  
- HYDROS -

Te (382) BS (41) w/ 0°  
HI = 4.93 ✓ HT = 5.22 ✓  
HD = 264.45 HER = -0.02 VER = -0.01  
393 ✓ (41) ✓

2+62 US

394

G

↓

399

G

400

EDGE 4/20 ✓

407

EDGE 4/20 ✓

408

G C

↓

415

G

3+62 US

416-

G C STRUCTURE

417-419

G

(420)

SET LARGE PK ON 1+62 US ✓

5PM  
15  
300

0307N 17

151021.09-Z

FILE: HYDROS



5 PM

18

15102109-E 0300N 17

NY STA - SVZ

HYDROS -

KE 420 153 382 1210

HI = 5.10 ✓ HT = 5.02 ✓

HD = 8390 HPR = -0.01 VSR = +0.03

421 ✓ 420 ✓

1462 US

422 G

427 G

428 EDGE H20 ✓

436 " " ✓

437 G

444

445 ✓ 40 -

NYSTA SYP

- HYDROS -

Tc (41) BS (23) W/ 0°  
 HT = 5.14 ✓ HT = 5.02 ✓  
 HD = 299.79 HPR = -0.06 VSR = 0.02  
 446 ✓ (40)

5467 CUN (DS FACE)

447 G

455 G

(456) SET PK EDGE BIKENY C CUN

457 ✓ (40) ✓

Tc (456) BS (41) W/ 0°  
 HT = 5.17 ✓ HT = 5.02 ✓  
 HD = 299.81 HPR = -0.01 VSR = 0.00  
 458 ✓ (41) ✓

5467 CUN (Cavita)

459

460 G e W ENO CONC HOWELL

461 EDGE H2O -

464 INV W/ 8A" Ø CONC CMP IN HOWELL

467 EDGE H2O -

151021 09-Z

Top HOWELL + 8.55

479 E END

NY STA 5767 US  
HYDROS

Te (456)

5767 CUN (CONT'D)

468-470 G-15000  
471 EDGE H2O ✓  
474 INV 84" CMP ✓  
477 EDGE H2O ✓  
479 G.C.E. ENO CONC. H2O ✓  
480-482 G  
\* 483 COR FP (FOR ROW ✓) ✓

SET PK c BIKELWAY

Te (484) 133 (456) w/ 0°  
HI = 4.97 ✓ HT = 5.02 ✓  
+17 = 105.28 HERR = 0.00 VER = 40.02 ✓  
485 ✓ 456 ✓

5767 CUN (CONT'D)

486 G  
492 G  
493 ✓ (456) ✓

15102109-2

81" CMP

84" CMP

5767 US

(474)

(464)

(484)

ANSTAD - SUR

4477805 -

KE (42) BS (43) w/o

HE = 532.1

UTE = 502.1

H/D = 293.11

4200 = 40.03

1/2" = -0.07

494 ✓ (43) -

7 + 87 1/2' CULV (UPSTREAM FACE)

495 DET (H. PT. ELSIAE RAMP)

496 W. PE RAMP

497-498 G

499-504 SLY DET RAMP - T/R SECT -

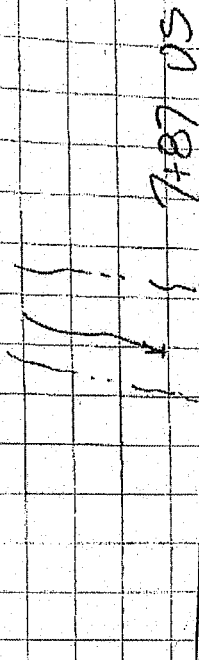
(505) SET PK W OF US FACE -  
CULV

506 ✓ (43) -

500  
IS 21

08 JAN 17

151021092



84"  
Cmps

7+81 RAMP'S

WATER P205

NY STA - SYRACUSE

HYDROS -

TR 505 33 (42) W/ 00

HI = 5.29 ✓  
 HI = 5.54.38  
 HI = 5.02 ✓  
 VOP = 40.01  
 VOP = -0.10

507 ✓ (42) ✓

7+87± CUL

508-511 G

512 G C ELY ENO CONC HOWELL

513 G

514 EDGE H20 -

517 11W ELY 84" Cmp -

523 11W WLY 84" Cmp -

527 EDGE H20 -

528 G

529 G C WLY ENO HOWELL

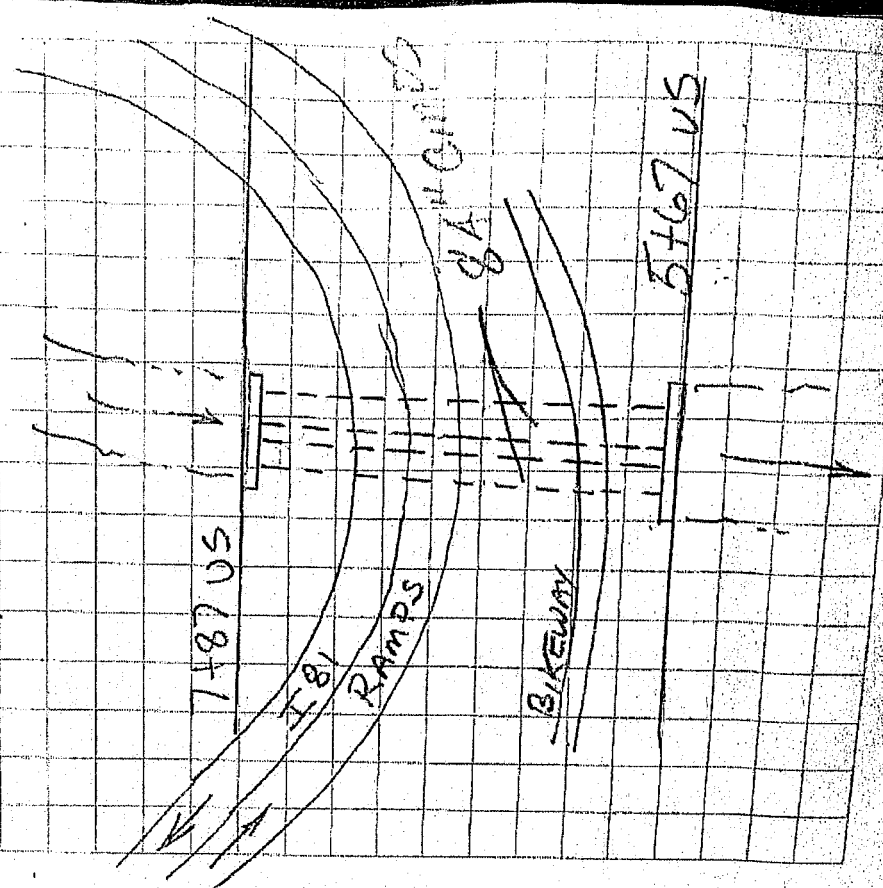
530-537 G

538 Top HOWELL ELEV ✓

539 ✓ (42)

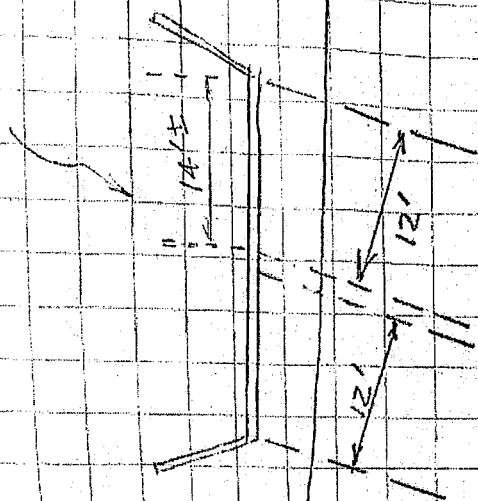
SFM  
 IS  
 22

51021.09-2 0.15 JAN 17



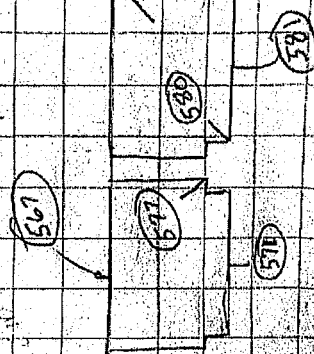
SFM 23  
JS

15/02/09-2 04 JAN 17



WB L 90

LOOKING DS  
MENS 12'



NY STOP - SURVIVOR  
- UNIT MENS -

7.2.23 BS (20) W/O

HT = 4.99' HT = 4.92'

HD = 590.20 HER = -0.01 VER = -0.07

540 1 20

040 US FACE CULV

541-551 G

551-553 TOP OF E BOX CULV

554-556 TOP OF E BOX CULV

559-565 G

566 G & E.S.

567 TOP (CROWN) OF E BOX CULV

(WB Box Culvert Top is

EXTREMELY SPACED / BROKEN /

CRUMBLING, APPEARS OR. G.W.M.

WAS EQUAL)

568 BOT/G & E ABUT

571 CONC BOT CULV / INV

572 " " E EDGE CENTER PIER

\* 572-574 VOID

575 BOT CULV (CONC) & FACE FOOTER

576 TOP FOOTER

577 TOP " " E FACE PIER

578 " " " "



NYSTA SY RAUSE  
HYDROB

	OTO	US	FAZE	CUN
579			TOP	FOOTER
580			BOT	FOOTER
581			CONE	BOT / INN W BOX CULVERT
582-83				
584			5	W. W. WALL

585 ✓ (50)



SPW 24-  
JES

15102109-2 04-2011



26  
17/19

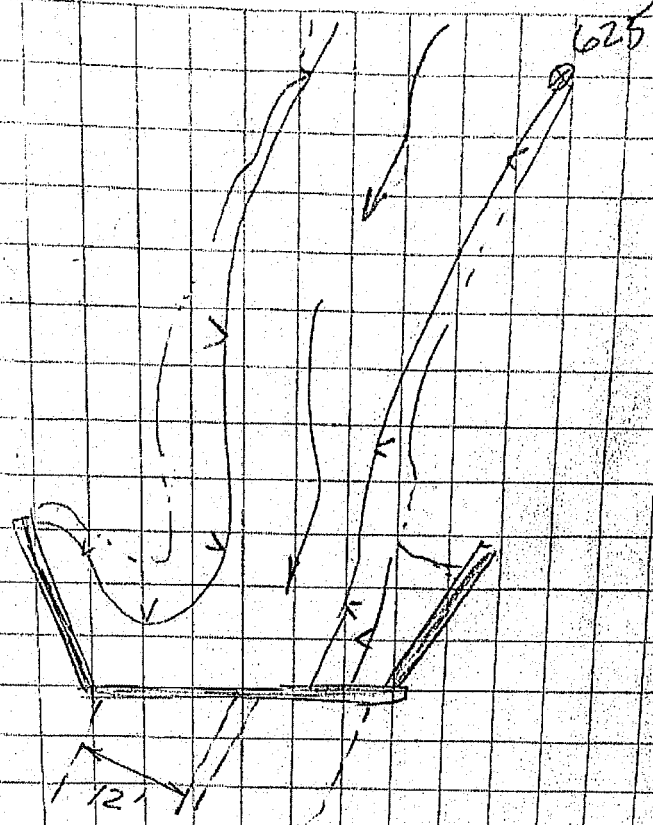
170

51071,07-2

1. *Journal of the American Medical Association*, 1997; 277: 1000-1005.

100

[illegible]



36  
27

15102109-E 04-7-11-17

Key Creek V

18+39 DS

7th North St

692 ✓ (31)

72 (30) 25 (21) 60/00

42 = 4.02 ✓ = 5.02 ✓

42 = 20131 LER = -0.03 1/2 = +0.08

632 ✓ (31) ✓

18+39 DS (END CUL)

633-643 G

\* 642 G ✓

644 Edge H2O

649 " "

650-651 G - 10 LAND

652 Edge H2O

657 " " ✓

658-659 G

660 Edge H2O ✓ 3 DITCH

663 " "

667 G

20+25 DS CUL

668 SEP 7th North St

669 G

670 NEP

671-673 G

674 Edge H2O

684 " "

685-691 G

SYRACUSE  
MUDROS

52 (30) 73 (30) w/o  
HI = 4.49 / WTS 500 /  
HTE = 201.35 HFE = 10.01 VEE = 10.02  
697 ✓ (30) /

18+39 DS (CONT)

698-697 GRND

697 = N EP 7<sup>th</sup> NORTH ST

698 ✓ (30)

SFM JS 28

151021.09-2

04 JAN 17

COMPLETE 18+39 DS

NY STA - SYRACUSE  
- TOPO -

X c (24) BS (21) w/00

HI = 5.05 ✓ HT = 5.04 ✓

HQ = 661.40 11.77 = 0.0 10.77 = -0.02

627 ✓ (21) ✓

665 N 100' 24" C/P w/ METAL ES  
w/ ANIMAL GRATE /

794-795 W FACIA I-81 OVERPASS

798 ✓ (21)

151021.09-2

FILE: 20161220 TOPO

(568) ABOUT

(565)

(565)

(665)

(24)

I 81 OVERPASS

I 90 WB

798

11/02/02 - SYMPOSE

SPW 30  
11/02/02

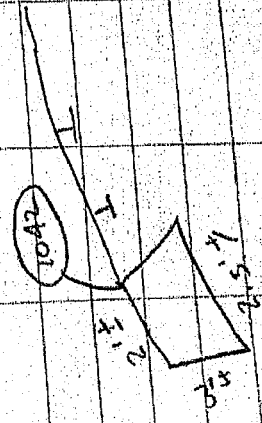
790 1000 0.00  
HT = 5.19  
WT = 0.00  
VER = -0.01

790 1000

853 SAN 11/02

957 OLD EDGE ASPH BEHIND G. RAIL  
997 W BEAM APPROX 8  
CONC ANCHOR - BURIED

1042 2 COR CONC ANCHOR SET IN  
GROUND ON SIDE



1043 ✓ 60

15/02/02 - 2  
1000 0.00



NYSTA - SYRACUSE  
- Topo -

RESET BS

HD = 939.06

HT = 0.0

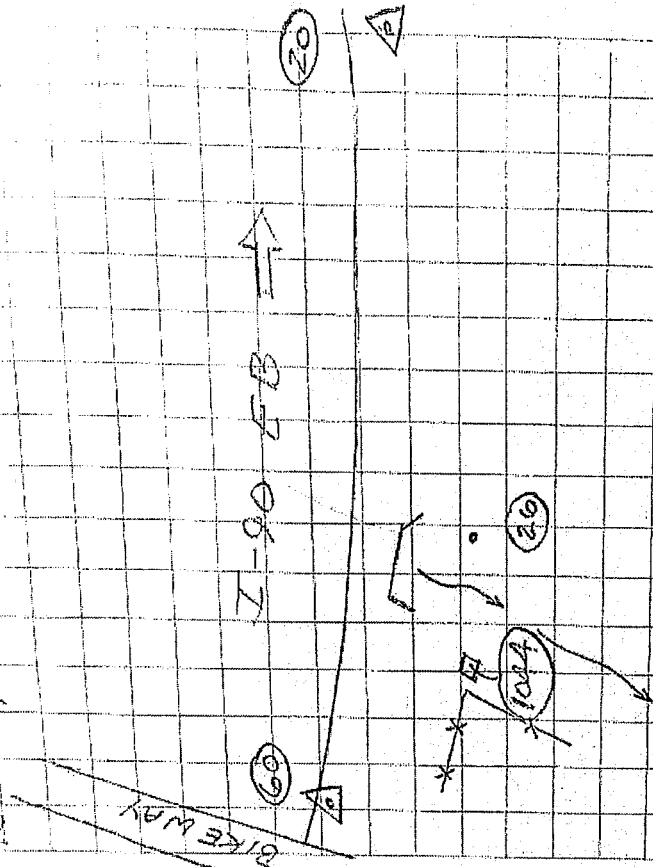
VER = 0.01

(100A)

ENC. OLD 4" x 4" CONCRETE  
THRUWAY MON. APPROX. 1'  
HIGH, GOOD COND., TOP  
LEANS SLIGHTLY NW'LY  
0.1 - 0.2'. HERE BEST GUESS  
OF ORIGINAL BASE

SET GOOD SPIKE S SIDE  
MAINLINE & E TOP OF  
BANK OF CREEK  
HT = 5.02 ✓

15102109-2 25741





NY STA - SYRACUSE

Topo -

KR (25) BS (21) w/ 00

HI = 5.04 / 1.75 = 2.97 ✓

HD = 618.64 HIR = 0.00 VER = -0.03

1045 / (21) ✓

1068 3' 1' WIDE CONC. WARP ✓

SPLASH BLOCK

1094 E DI - 3.8 24" RCP TO E  
392.27 FROM W 388.47

1183 E DI - 3.6 24" RCP FROM W 382.13  
385.78 - 3.8 24" RCP TO E 381.98  
- 3.4 18" RCP FROM W 382.35

1185 E DI - 5.2 18" RCP TO SW 382.72  
387.92

1194 INV 30" CMP ✓

1232 V (60) ✓

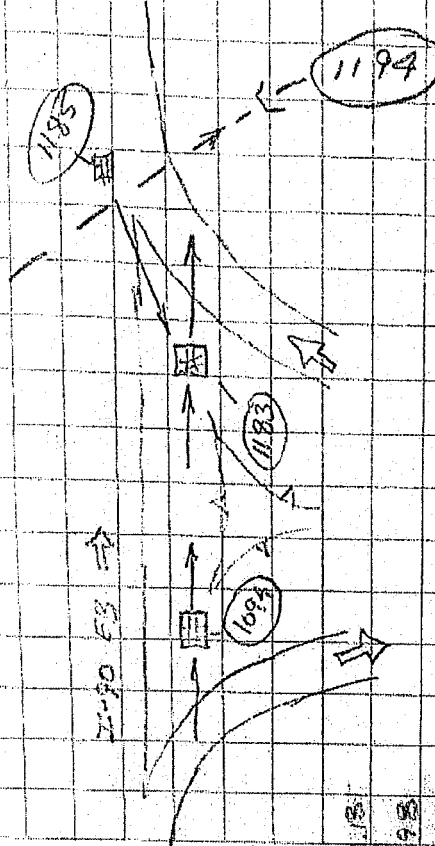
ΔN - 0.07 ΔE - 0.01 ΔZ - 0.06

Sta 32

15021085

15021085

1003 1000



NYSTA - SUTZMAN

TOP

$\Delta E = 5.00$  ✓  
 $BS = 29$  ✓  
 $HI = 5.00$  ✓  
 $HT = 5.08$  ✓  
 $4D = 938.06$  ✓  
 $H/E = 0.00$  ✓  
 $VER = -0.04$  ✓  
 $1233$  ✓  
 $20$  ✓

$1234$  ✓  
 $21$  ✓  
 $HT = 4.87$

$\Delta N = 0.0$  ✓  
 $\Delta E = +0.01$  ✓  
 $\Delta Z = +0.03$  ✓

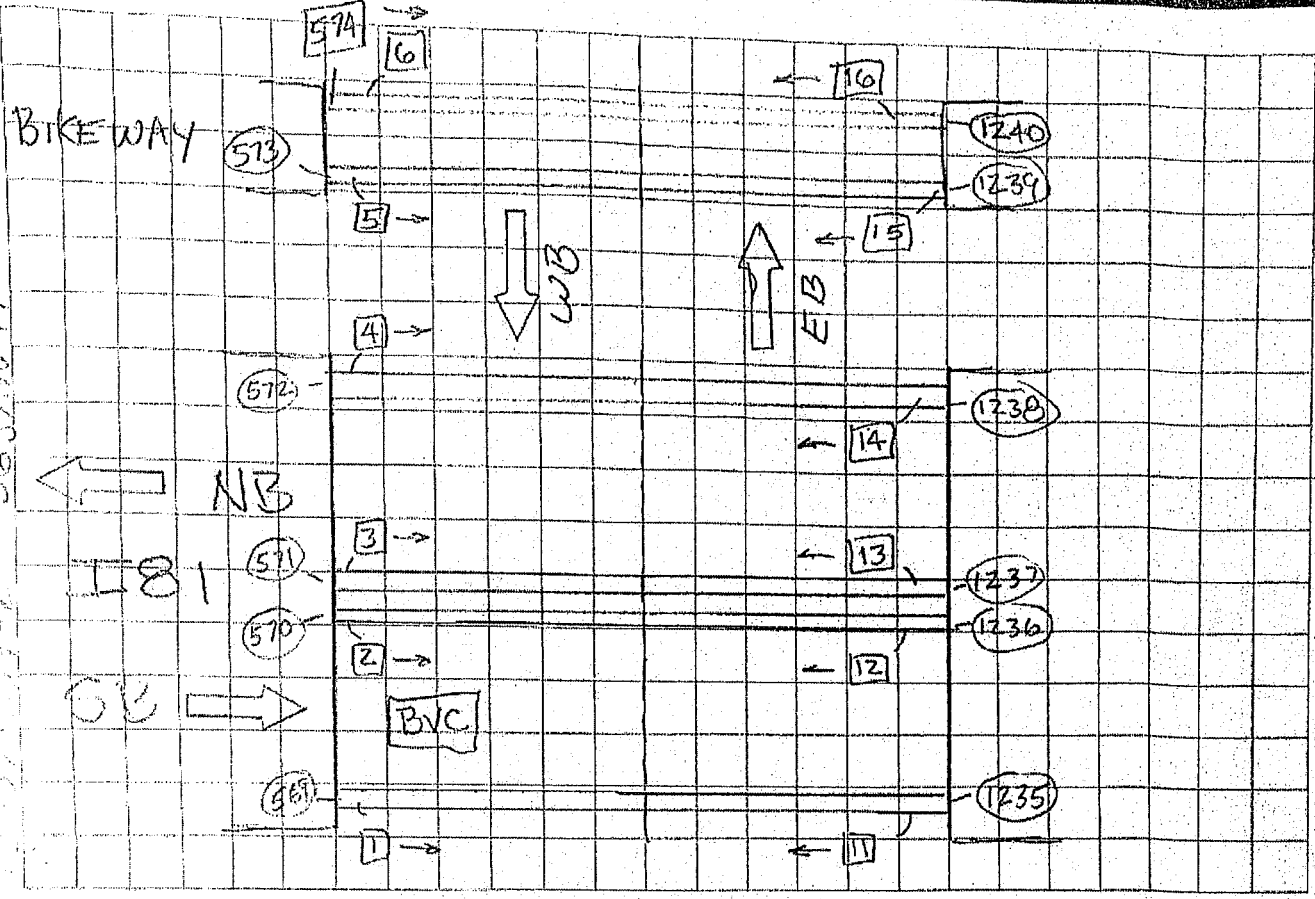
$1313$  ✓  
 $6$

$1325$  ✓  
 $26$  ✓  
 $\Delta N = 0.12$  ✓  
 $\Delta E = +0.02$  ✓  
 $\Delta Z = 0.00$  ✓

$*1326$  ✓  
 $1017$

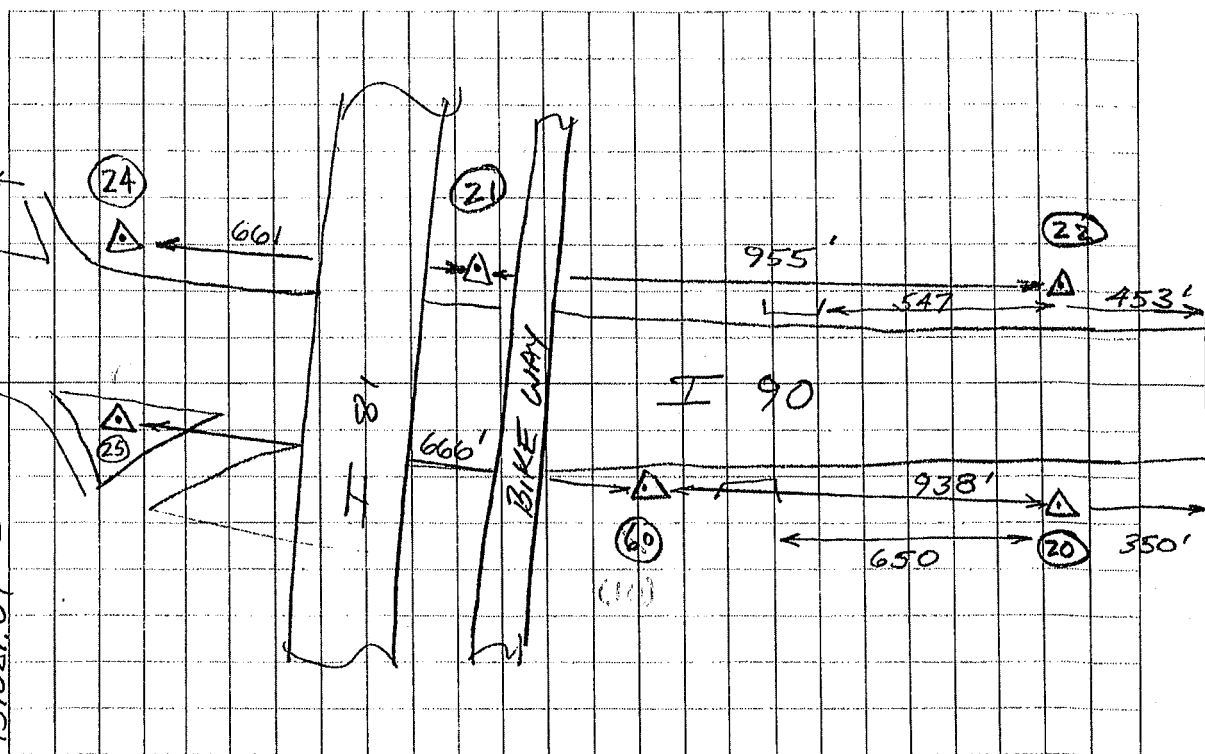
33  
 JS  
 SFM

06 Jan 17



I-81 Ramps SPM 34

151021.09-2



NYSTA SYRACUSE  
- LIMITS -

# NYSTA SYRACUSE

MAINLINE WB

Te (22) BS (21) w/ 0°  
 HT = 4.80 ✓ HT = 4.98 ✓  
 HD = 955.35 ✓ HPR = -0.03 VER = +0.03

1327 ✓ (21) ✓

1414 ✓ (23) ✓

LA ΔN + 0.12 ΔE + 0.07 ΔZ + 0.04

Te (21) BS (24) w/ 0°  
 HT = 4.83 ✓ HT = 5.00 ✓

HD = 661.40 HPR = 0.00 VER = +0.06

1415 ✓ (23) ✓

1416 1417 ✓ (23) ✓ + 16.00

LA

1465 ✓ (24)

1555 Te (24) BS (21) w/ 0°  
 HT = 5.29 ✓ HT = 5.10 ✓

HD = 661.39 HPR = -0.01 VER = -0.02

1466 ✓ (21) ✓

1581 ✓ (21) ✓

SFM  
 JS 35  
 35° 0'

11 JAN 17

15102109-2

NY STA - SYZAL USE

- MAINLINE WB -

KE (22) BS (21) w/o

HIE = 5.14 ✓ HT = 5.04 ✓

HD = 955.35 HER = -0.03 VER = +0.01

1582 ✓ 21 ✓

TH 377.14

KAG LELB 1482 RUM

1720 E DI -3.5 12" FROM NW UEP? 373.64

-4.15 24" TO SW 1/4 370.99

-3.5 FROM SE UEP? 373.64

V BS + 0.1"

KE (21) BS (24) w/o

HIE = 4.75 ✓ HT = 5.26 ✓

HD = 661.40 HER = 0.00 VER = +0.03

1721 ✓ (24)

\* 1722 - 1729 HT = 7.02 \*

1774 E DI -3.4 24" TO NE 331.67

14 355.09 -3.3 12" FROM NW UEP? 351.79

1784 ✓ (24)

SFM

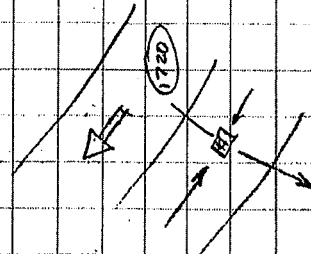
JS

45°

36

151021.09-2

11 JAN 17



SFM 37  
JS

11 Jan 17

15102109Z

NY STA - SYRACUSE  
- MAIN LINE WB -

$\pi e$  (24) BS (21) W/ 0°  
 HI = 5.13 ✓ HT = 5.15 ✓  
 HD = 661.40 HPR = 0.00 VER = -0.02  
 1785 ✓ (21) -  
 1830 VOID 1834 VOID 1838 VOID  
 1842 PELI 1846 PELI 1850 PELI

1866 ✓ (21) ✓



NYSTA - SYRACUSE

TC (26) BS (20) w/ 00  
 HT = 4.97 ✓ HT = 5.02 ✓  
 HD = 652.56 HERR = -0.02 ✓

1867 ✓ (20) ✓

1922 WATER SEEPING FROM  
 BANK & POOLING IN  
 HOLE APPROX 3' DIA & 3'  
 DEEP ? ? BURIED  
 PIPE ? COULD NOT "FEEL"  
 ANYTHING IN HOLE

1984 ✓ PROJ BM 261.17 P 12

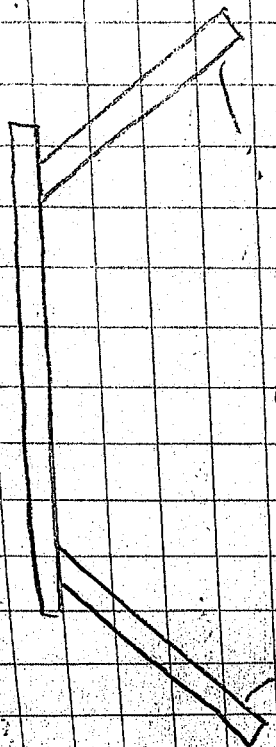
→ 261.19 ✓

1985 ✓ (12) ✓ (20) ✓  
 → AN + 0.15 ΔE -0.02 ΔZ +0.02 ✓

12 JAN 17

151021.09-2

FILE: ADDL TOPO



BEAR TRAP CREEK

1322

151021.09-2 12 TN

FILE: BTC ROW

RE (43) BS (42) w/ 0°

HT = 4.98 / HT = 5.02 /

HD = 293.09 HER = +0.02 VER = +0.0 - /

1986 ✓ (42)

1987 ENO TRI CONC ROW MOD, 0.5' H<sub>100</sub>

GOOD CONO HERO BRASS DIN TOP Q

1988 XPT FE 6' C.L.

1989 ✓ (42)

RE (42) BS (43) w/ 0°

HD = 293.08 HER = +0.01

1990 ✓ (43)

1991 ENO FE C CREEK /

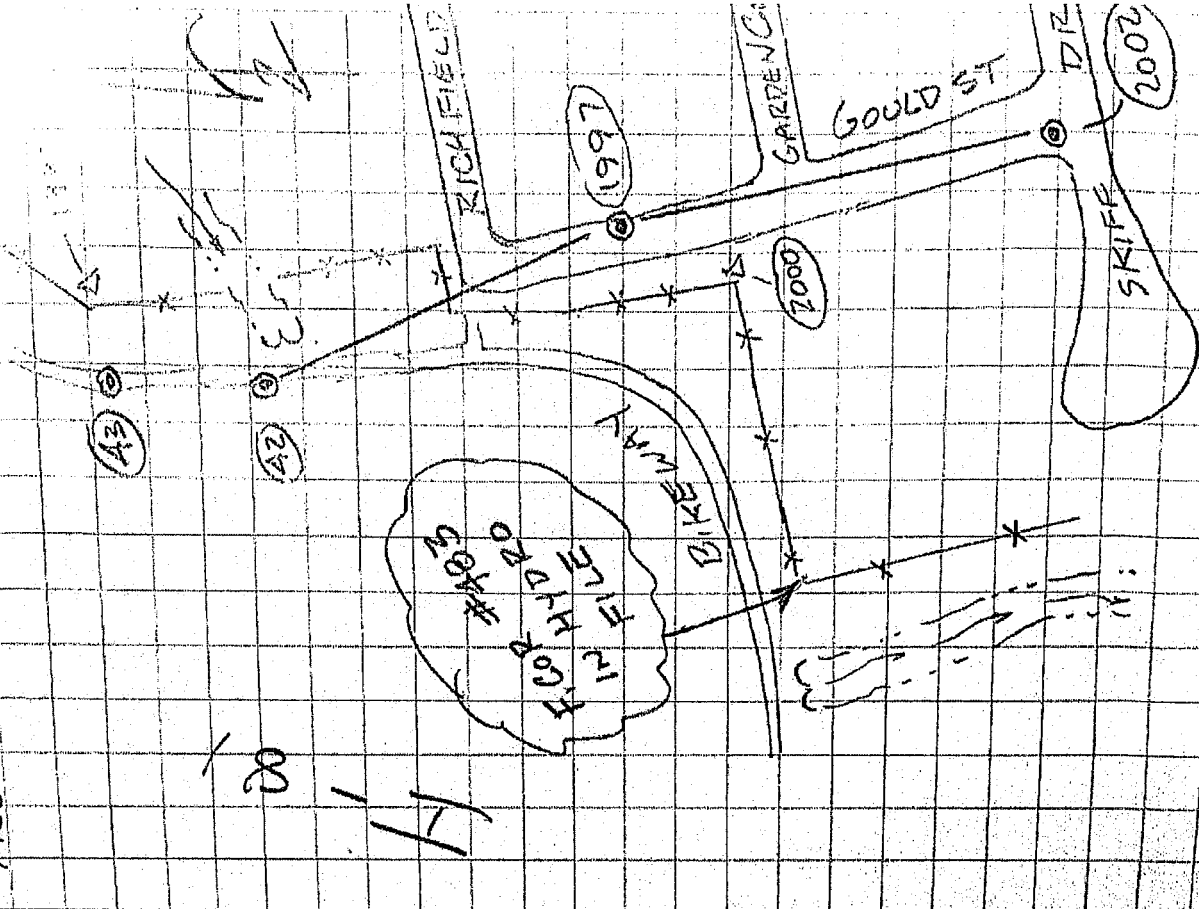
1992 BEG FE C CREEK /

1993-1994 COR FE

1995-1996 XPT FE

(1997) SET MN ✓ E EDGE GOULD PL

1998 ✓ (43) -2"



NYSTA- SYRACUSE  
ROW

Ne (1997) BS (42) w/o  
HID = 520.07 HER = +0.01

1999 ✓ (42) ✓

2000 FND TRI Δ CONC MON ✓  
GOOD CONO w/ BRASS PIN  
0.4' BELOW GRADE

2001 COR PE

(2002) SET MN / C XION GOULD ST  
1' SKIFF DR.

151021.09-2

# NYSTA - SYRACUSE

ROW

TE (41) BS (40) w/o  
HD = 297.81 HER = -0.04

2003 ✓ (40) /

(2004) SET SM MN SKIFF DR  
CUL-DE-SAC

TE (2004) BS (41) w/o  
HD = 352.64 HER = +0.02

2005 ✓ (41) /

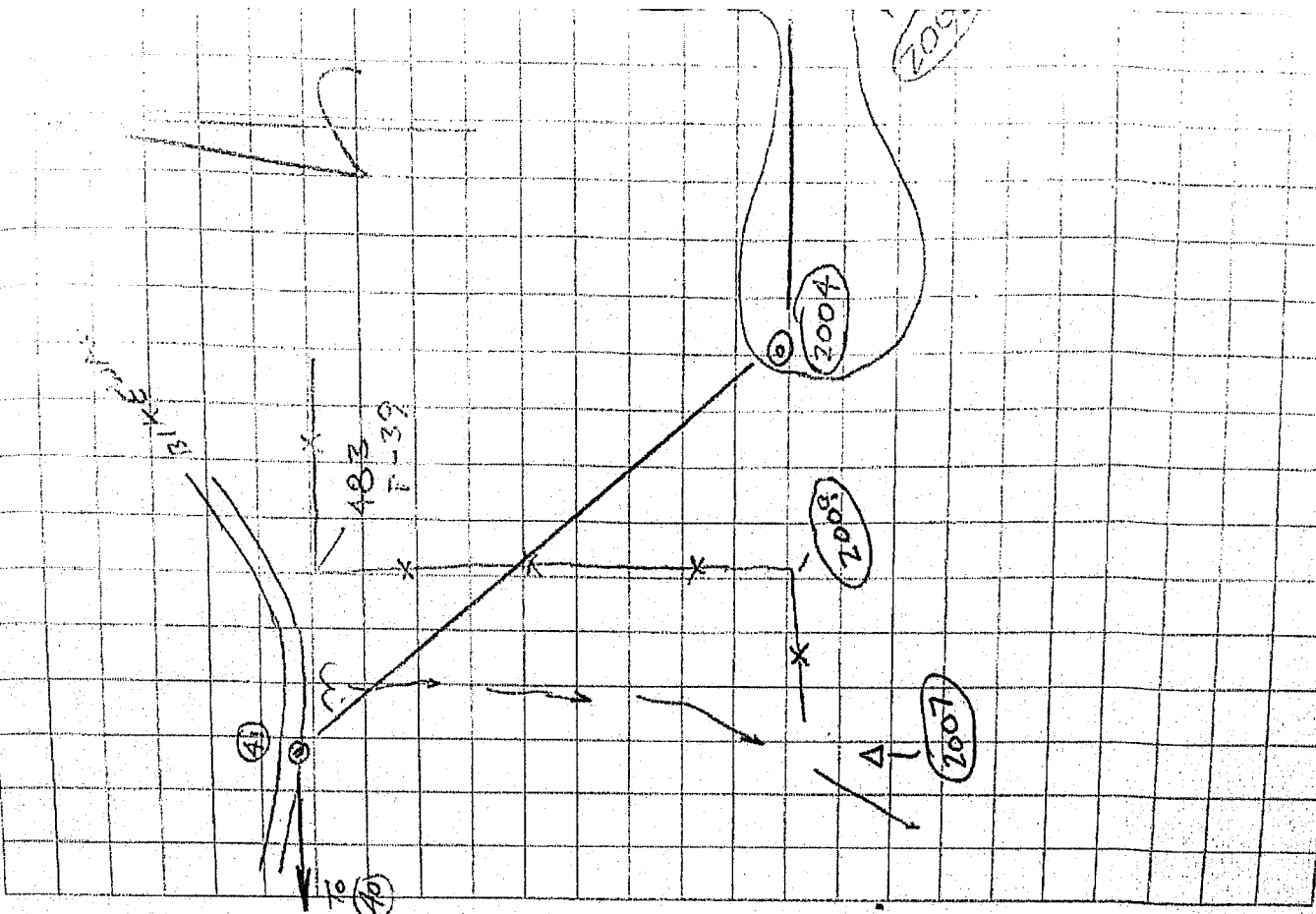
(2006) ✓ MN (2002)  
ΔN -0.28 ΔE +0.30

2007 ENO TRIA CONC MON, 0.3' HIGH  
C BANK OF CREEK, GOOD  
CONO. HERO TOP & BEARS PIN

2008 G.C.L. E!  
2009 COR E!  
2010 & OE TRANSMISSION LINE

2011 ✓ (41) /

151021.09-2



NYSTA - SYRACUSE

row -

Re (2006)

AKA

(2002)

BS

(2004)

w/ 20°

HD = 237.49

HER = 0.0 07.030

2012

✓ (2002)

2013

✓ (1997)

0.00 0.45

→

ΔN - 0.29 ΔE + 0.26

STARNET HOLD 40.41 ± 42.43 ?

— RTK PAIRS —

Xe (23)

BS (20)

w/ 0°

HD = 590.21

HER = +0.01

2014

✓ (20)

(2015)

FNO OLD 4" x 4" CONC MON

1.8" HIGH, TOP OF CONC

SPALLED / CRUMBLED / REBAR

EXPOSED, H2O & BASE;

MON & BANK OF STREAM

IN MUDGISTEM BRUSH, LEANS

W'LY

151021.09-2

13-41-

TRAVELLED B/A A ROAD

PAIRS SET FOR

HYDRO SURVEY

NY STA - SYRACUSE

KE (21) BSC (20) W 0°  
 HT = 4.96 ✓ HT = 5.13 ✓  
 HD = 20000 VER = -0.01 VER = -0.04

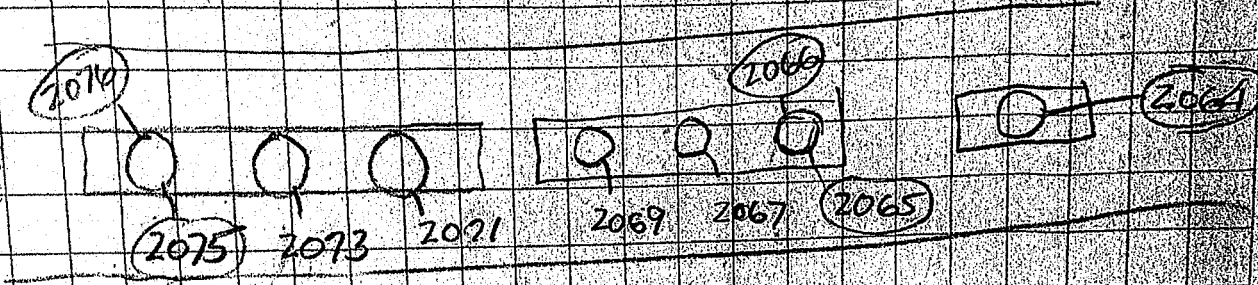
2017  
 2014 E ELY FACE (20) 0 CONC  
 PIER - BIKE WAY  
 2016 EDGE (36") PIER - 2 SHOTS  
 EACH PIER TOTAL OF 6

2077 BNC  
 -2082  
 2083 ✓ (20)

KE (20) BSC (20) W 0°  
 HT = 5100 ✓ HT = 5.18 ✓  
 HD = 938.06 HPR = -0.01 VER = -0.01  
 2084 ✓ (20)

2085 BNC  
 ↓  
 2090  
 2091, 2092 ELY FACE BIKEWAY  
 2093 ✓ (20)

I 90 WRB



I 90 EB

15 JAN 17

15102109-E



NY STA - SYRACUSE  
ADD'L ROW

LEICA SR 1111

NYSPC CERTIFIED 83/11  
FILED 2017 9/11/16

2094 / GCS (32) - DTK-

2095 TWO 4" x 4" CONC MON W/ 5/8" /  
PERIOD GOOD COND 0.2' HIGH

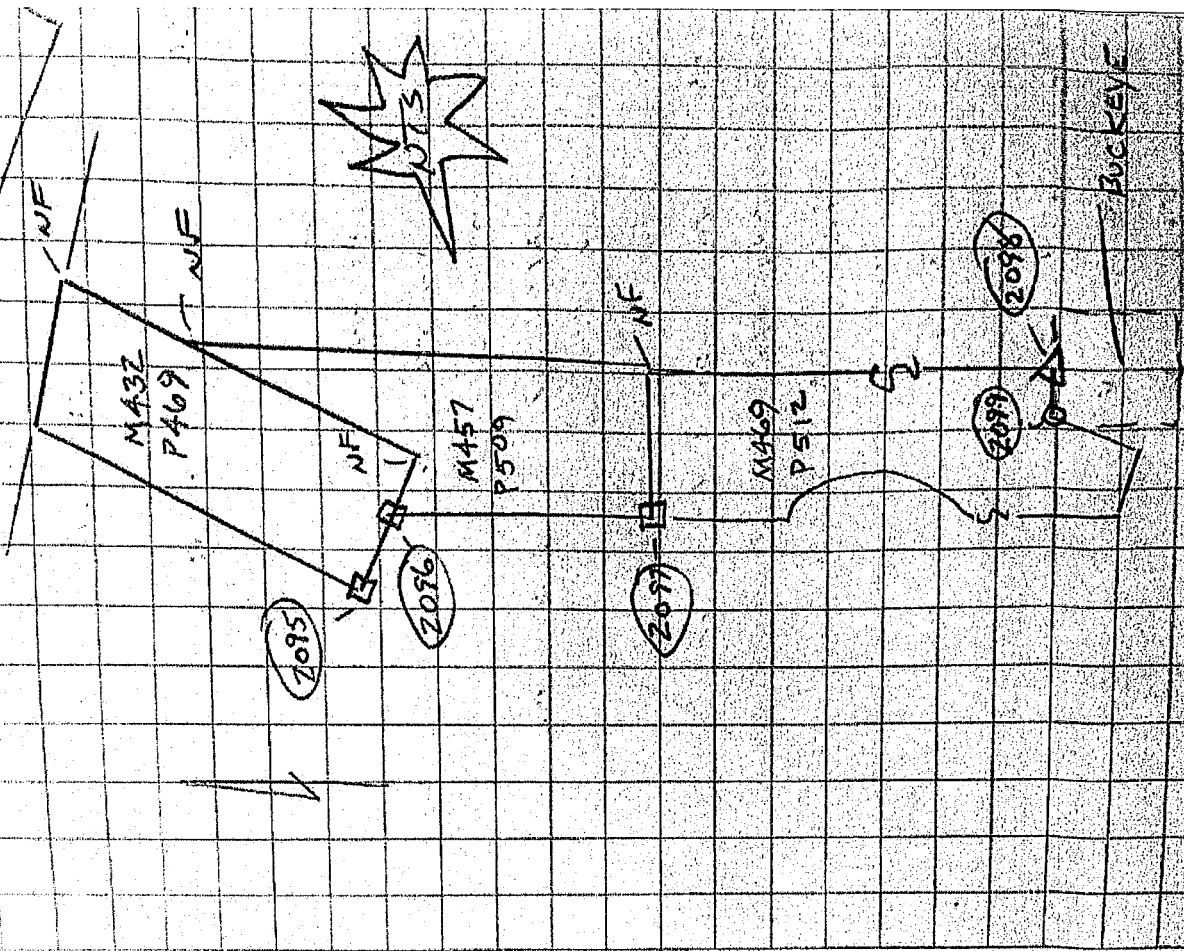
UNDER 420  
TYP ✓

2096 TWO 4" x 4" CONC MON W/ ✓  
5/8" PERIOD GOOD COND 0.3' HIGH

2098 TWO BROKEN CONC MON, TOP  
CRUMBBLED IN STILL CONNECTED  
TO TRI Δ BASE W/ RETROD,  
HERO & TRI Δ BASE 0.3'  
BELOW GRADE

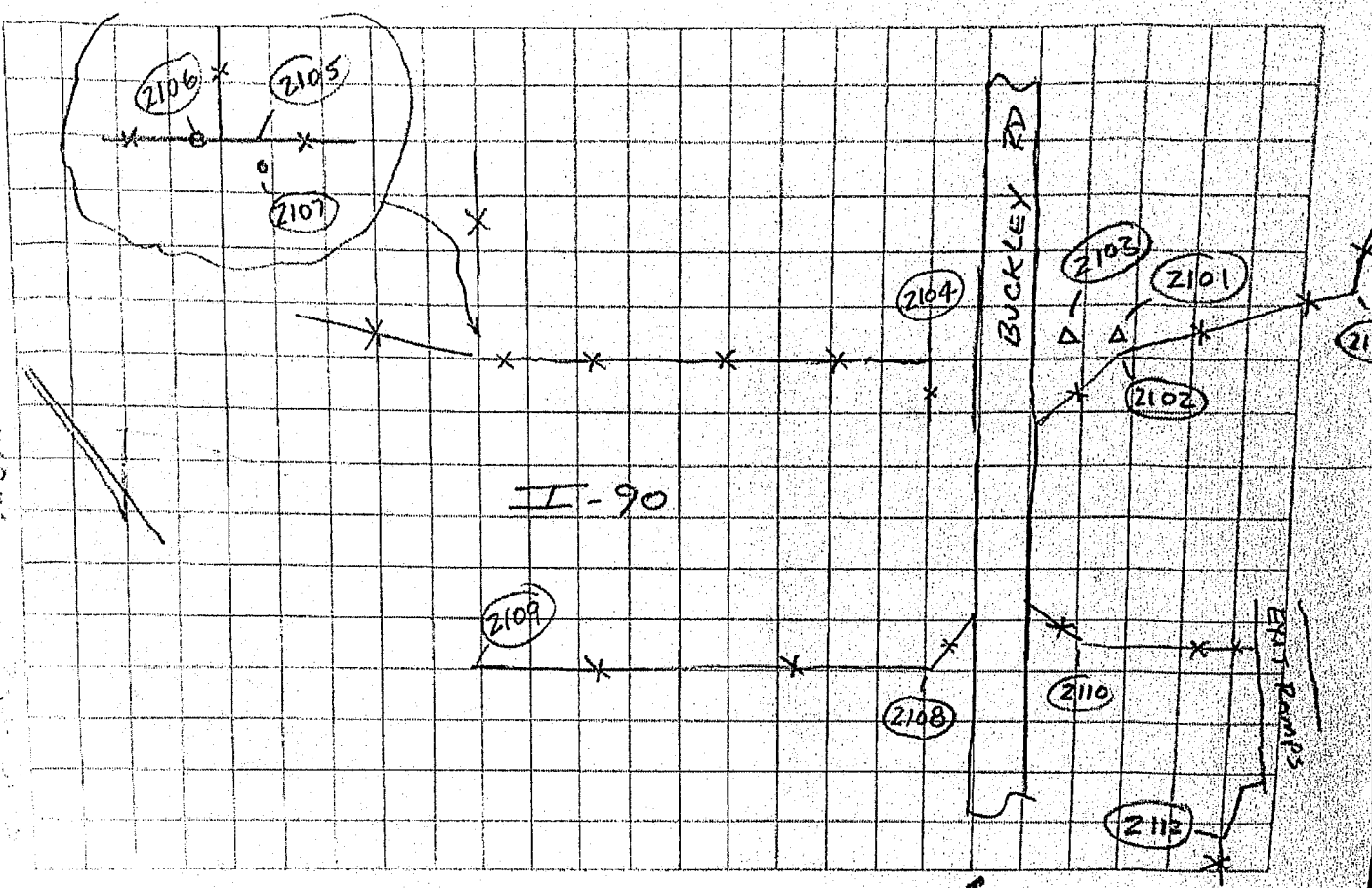
2099 1" Ø IRON PIPE / FLUSH @ NWLY  
COR BUCKEYE M:R SITE POSSIBLY  
COR OLD TAKE

SPD2102102 16 JAN 17 SFM 44  
IS



SFM 45  
JS

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NY STA - 347 ACRES  
- ROW -

- 2100 X PT E / N.Y. ST. RAMP  
C EXIT 36 W.B. ST. RAMP
- 2101 FWD TRI A CONC MON. 0.4' BIG.  
SPALLS 0.2' UNDER ROAD  
BRASS PIN /
- 2102 X PT FEN /
- 2103 FWD OLD MON W/ SKINCO TOP /  
W/ FLUSH BRASS PIN STUB  
EXISTING, 1.5' BELOW GRADE
- 2104 COR E /
- 2105 E /
- 2106 3/4" IRON PIPE FLUSH O E /
- 2107 FWD 5/8" REBAR 0.1' HIGH /
- 2108 X PT FEN /
- 2109 W END E /
- 2110 X PT E /
- 2111 E NEAR EXIT 36 RAMP (CONC ABUT)
- 2112 X PT E /
- 2113 E (X PT ?)
- 2114 X PT E /
- 2115 FWD TRI A CONC MON 0.4' BIG.  
GOOD COND, HELD BRASS PIN TOPS  
(FEN COR 0.6' E ÷ 0.55) EBT  
MOVE N ROW 7th NORTH ST EXIT RAMP

NY STA - 8 RACONTE  
MAY 1968

TE (55) BS (60) w/o  
HT = 5.131 / HT = 5.01 /  
HD = 666.46 / VER = -0.02 / VER = -0.05

2116 / (60) /

2218 /

✓ BS + 06"

TE (60) BS (20) w/o  
HT = 4.91 / HT = 4.99 /  
HD = 938.05 / VER = -0.01 / VER = -0.01

2219 / (20) /

2223 / (20) /

TE (20) BS (60) w/o  
HT = 4.91 / HT = 5.02 /  
HD = 938.05 / VER = -0.01 / VER = -0.03

2274 / (60) /

2299 / (60) /

SEM  
75

50

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15:02:09-2

# MYSTA - SURFACE MANHOLE BE

TO 33 33 11/00

HT = 5.02

HT = 5.02 / VER = -0.01 VER = -0.04

- 2401 METAL PANEL BOX W/ 2 CONDUITS
- 2404 METAL BOX W/ 2 PANEL BOXES
- 2405 CAMERA POLE W/ PANEL BOX

2441 BEG CONC

2519 110 80

TO 33 33 20 w/o  
HT = 5.011 HT = 4.75

HD = 938.05 HEP = -0.01 VER = -0.0

2520 120

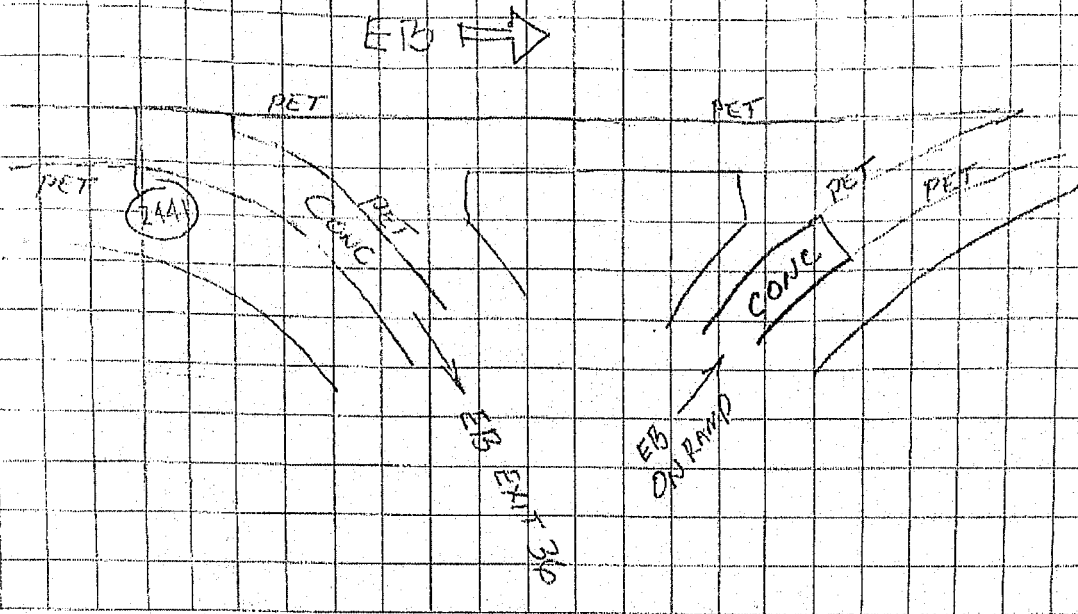
2528 JOIN RDP PT # 1037

2539

135

51  
53

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NYSTA - SYRACUSE

MAIN LINE ES

TE 30 34 30

WT = 4.931

H7 = 038.05

2540 ✓ 30 30

2612 ✓ 30 30

WT = 4.871

WT = -0.01

VER = -0.00

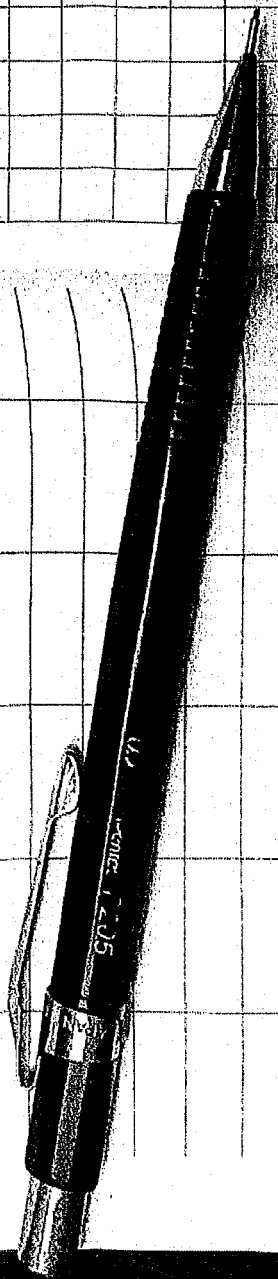
SFM

JS

52

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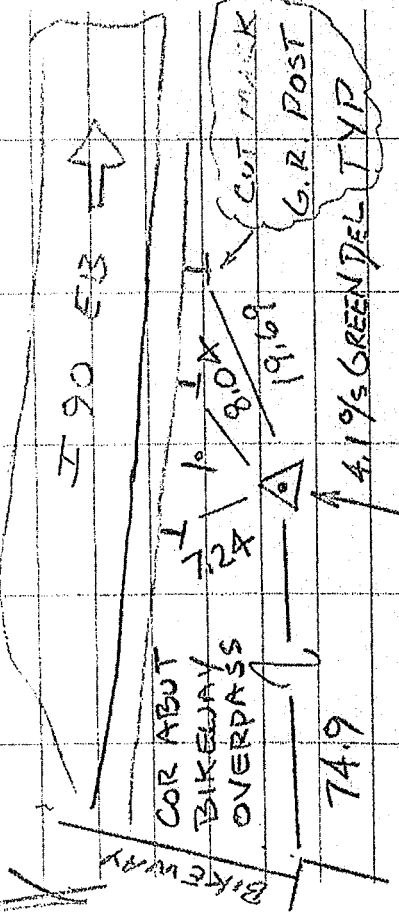
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# WYSTA - BEAR TRAP CREEK MAP

SYRACUSE

CB (60) SET 5/8" REROD W/ PL FA CAP  
BACKSIDE EAST BOUND GUIDE RAIL



CB (20) SET 5/8" REROD W/ PL FA CAP  
TOP HEIGHT OF LAND, 14% SLY  
OF EDGE PAV EB, 15% WHITE WD FR ASE

