CONTROL REPORT
GPS SURVEY
FOR THE CITY OF
LACONIA, NEW HAMPSHIRE
MAPPING PROJECT

PREPARED FOR:

CARTOGRAPHIC ASSOCIATES, INC.
11 PLEASANT STREET
P.O. BOX 267
LITTLETON, NEW HAMPSHIRE 03561-0267
800-322-4540
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PREPARED BY

COSTELLO, LOMASNEY & DE NAPOLI, INC.
CONSULTING ENGINEERS
MANCHESTER, NH

Contract between City of Laconia and Cartographic Associates, Inc.
Supplement A

As referenced in Section 1. CONTRACTING OF THE CONTRACTOR ; SERVICES TO BE RENDERED., the following modifications, selections, additions, or deletions are made to the CAI Proposal dated February 25, 1998:

1. The "Basic Product" is the chosen alternative, photo scale at 1"-500', mapping scale at 1"=50' and 1"=100' as indicated.
2. Page 3, Item 2 - Along with complete sets of blue line prints bound in durable books CAI will provide the City with one set of 24" x 36" mylars and a set of paper prints reduced to 11" x 17".
3. Page 3, Items 3 and 4 - the street and index map shall be produced at a 1"-1,000' scale. The index map shall be adjusted to an appropriate even number scale to fit a 24" x 36" sheet format for inclusion with tax map books.
4. Page 5, V. - CAI and the City shall develop a specific schedule for the delivery and return of check plots for the planimetric mapping and tax map sheets.
5. Page 6, Section 4. - All subcontractors, including those of ADM shall be listed and proof of insurance provided in the required amounts.
6. Page 9, Options - The City may decide to delete the GPS locationing of any features at a later date.
7. Page 11, Section 1.2 - Ownership status of each parcel shall be as of April 1, 1999 and delivery of final maps on or before April 30, 1999.
8. Page 11, Section 2.1 - Office space will be provided on an as-needed and as-available basis. It is assumed that the City will accommodate CAI, however, space will not be dedicated.
9. Page 13, Section 3.8 - Certificate of calibration for the camera is required.
10. Page 14, Section 3.13 - Delete delivery of rectified photos. Also the City will not require photo enlargements.
11. Page 15, Section 4.1.1. - Differential leveling will not be required. Elevations will be obtained by GPS. A minimum of five well spaced NHDOT permanent benchmarks, (if able to be occupied) will be tied into by GPS to insure vertical accuracy to ± 2 centimeters. Monumentation - The City will work with CAI to determine sites for permanent monuments. The city shall be responsible for the cost of purchasing and setting granite bounds. The purpose is to achieve as many permanent monuments as possible while maintaining the integrity of desired photo control.
12. Generated digital files for the horizontal and vertical survey including raw GPS data and adjustment files will be a deliverable item and will be reviewed by the NHDOT Geodetic Section to ensure accuracy's are met.
13. Page 16, 4.2.4 - Final coordinate listing in NAD 1983, 1996 adjustment, Vertical elevations in NAV 88.
14. Page 22, Section 7.1 - Sheet formats will be approved by the City.
15. Page 28, Section 8 - Parcel numbering will be as approved by the City.
16. Page 29, Section 9.2 - All database files shall be submitted in Microsoft Access.
17. Page 33, Section 13.2 - Both parties agree that no licensing agreement will be required.
18. Page 33, Section 14 - The following deliverables will be included at no charge: 1) ward and zoning district layers shall be provided at the 1"=1,000' scale, 2) a street number layer will be added to the base map, and 3) if water levels permit, the contour of the mean high water level as determined by the Water Resources Bureau of the NH Dept. of Environmental Services for Lake Winnipesaukee, Lake Opechee, Paugus Bay and Lake Winnisquam shall be a layer of the base map.

LACONIA, NEW HAMPSHIRE

GPS GROUND CONTROL SURVEY FOR PHOTOGRAMMETRICALLY-PRODUCED TOPOGRAPHIC MAPPING

SCOPE OF SURVEY PROJECT

This surveying assignment included the establishment of horizontal coordinates and elevations for twenty-two permanent monumented control points, identified as LAC-I through LAC-22, and temporary points for photo control, identified as LAC-101 through LAC-146. The points were pre-targeted.

SURVEY DATE

April 21 through April 24, 1998.

HARDWARE/SOFTWARE/OPERATIONAL MODE

Hardware

4 - Leica System 300 dual frequency sensors.

Software

Leica SKI software package (Ver. 2.1).

Operational Mode

Static observation of a minimum of four satellites simultaneously.

HORIZONTAL/VERTICAL CONTROLS UTILIZED

For horizontal controls, the survey was based on three HARN (NAD83/96) points designated by the New Hampshire Department of Transportation (NHDOT) and the National Geodetic Survey (NGS) as stations 307-0460, 329-0220 & CONCORD BASE STATION (a/k/a NHDOT BASE) located in Milton, New Hampton and Concord, respectively. Station NHDOT BASE is a continuously operating base receiver located on the John O. Morton building in Concord and is maintained by the NHDOT. Vertical control was based on five known stations in and around the City of Laconia. These vertical stations are published by the NHDOT on the National Geodetic Vertical Datum of 1929 (NGVD29) and were converted to the North American Vertical Datum of 1988 (NAVD88) by a NGS conversion program named Vertcon. It should be noted that the NAVD88 datum is approximately 0.43 feet lower than NGVD29 within the surveyed area.

Information provided by the New Hampshire Department of Transportation and the National Geodetic Survey on these control points is included in Appendix A of this report.

DISCUSSION OF SURVEY

This GPS control survey is a three network design and was performed utilizing the static operational mode with 15° elevation mask. The following briefly outlines the three networks:

- Network 1 consisted of three HARN points and points LAC-2, LAC-12, LAC-18 & LAC-21 with three hour sessions and 10 sec. recording rate for establishment of horizontal control based on the HARN datum.
- Network 2 consisted of points LAC-1 through LAC-22, 329-0220 & 295-0070 with forty five minute sessions and 5 sec. recording rate for establishment of horizontal and vertical control for twenty two permanently monumented control points.
- Network 3 consisted of points LAC-101 through LAC-146 with twenty five minute sessions and 5 sec. recording rate for establishment of horizontal and vertical control for photo control points.

Network design configurations are included in Appendix C of this report.

Eight published vertical points were initially observed during Network 2 sessions. Three of the eight vertical points did not fit the network adjustment. These vertical differences are tabulated and included in Appendix C of this report. Geoid 96 was used to obtain the orthometric heights for the vertical values tabulated in the Horizontal and Vertical Control sheet also included in Appendix C of this report.

APPENDIX A

NATIONAL GEODETIC SURVEY AND
NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

CONTROL POINT DATA SHEETS

NEW HAMPTON

National Geodetic Survey, Retrieval Date = SEPTEMBER 3, 1997
FBN - This is a Candidate for Federal Base Network Control.
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DESIGNATION - 329 0220 PID - OC2812
STATE/COUNTY- NH/BELKNAP USGS QUAD - WINNISQUAM LAKE (1987)

CURRENT SURVEY CONTROL

NAD 83(1996)-	43 37 20.78355(N)	071 36 09.93845(W)	ADJUSTED
NAVD 88 -	180.3 (meters)	592. (feet)	GPS OBS

X	-	1,459,548.098 (meters)	COMP
Y	-	-4,388,269.387 (meters)	COMP
Z	-	4,377,924.956 (meters)	COMP
LAPLACE CORR	-	-0.51 (seconds)	DEFLEC96
ELLIP HEIGHT	-	153.00 (meters)	GPS OBS
GEOID HEIGHT	-	-27.30 (meters)	GEOID96

OBTAINED FROM NHDOT 4/98

HORZ ORDER - B
ELLP ORDER - FIRST CLASS I

ORTHO HEIGHT = 180.457m (NGVD29)

The horizontal coordinates were established by GPS observations and adjusted by the National Geodetic Survey in July 1997.
The orthometric height was determined by GPS observations.
The X, Y, and Z were computed from the position and the ellipsoidal ht.
The Laplace correction was computed from DEFLEC96 derived deflections.
The ellipsoidal height was determined by GPS observations and is referenced to NAD 83.
The geoid height was determined by GEOID96.

		North	East	Units	Scale	Converg.
SPC NH	-	124,694.087	305,157.876	MT	0.99996699	+0 02 38.7
UTM 19	-	4,833,231.275	290,003.666	MT	1.00014245	-1 47 46.7

SUPERSEDED SURVEY CONTROL

NAD 83(1986)- 43 37 20.78960(N) 071 36 09.94015(W) ADJUSTED

Superseded values are not recommended for survey control. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums. See file format.dat to determine how the superseded data were derived.

MARKER: DD = SURVEY DISK
SETTING: 66 = SET IN ROCK OUTCROP
STAMPING: 329 0220
STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD POSITION/ELEVATION WELL
SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR SATELLITE OBSERVATIONS - October 13, 1992

HISTORY	- Date	Condition	Recov. By
HISTORY	- 1990	MONUMENTED	NHDOT

HISTORY - 19921013 GOOD NGS

STATION DESCRIPTION

DESCRIBED BY NATIONAL GEODETIC SURVEY 1992
THE STATION IS LOCATED ABOUT 7.7 KM (4.80 MI) NORTH FROM NORTH SANBORN, 6.0 KM (3.70 MI) WEST FROM MERIDITH CENTER, 1.1 KM (0.70 MI) WEST FROM THE MEREDITH/NEW HAMPTON TOWN LINE AND IN NEW HAMPTON.
OWNERSHIP--STATE RIGHT-OF-WAY.

TO REACH THE STATION FROM THE STATE ROUTE 104 BRIDGE OVER THE PEMIGEWASSET RIVER AT THE BRISTOL/NEW HAMPTON TOWN LINE, GO EAST FOR 1.85 KM (1.15 MI) ON ROUTE 104 TO THE I-93 OVERPASS BRIDGE. CONTINUE STRAIGHT AHEAD AND GO EAST FOR 3.8 KM (2.35 MI) ON ROUTE 104 TO SMITTYS PLACE RESTAURANT AND THE STATION ON THE RIGHT.

THE STATION IS A STANDARD NHDOT DISK STAMPED---329 0220---, SET INTO THE TOP OF A 13-FT X 40-FT LEDGE OUTCROP FLUSH WITH THE GROUND AND 1.0 M (3.3 FT) ABOVE THE HIGHWAY. 11.3 M (37.1 FT) SOUTH FROM THE CENTER OF THE HIGHWAY, 10.2 M (33.5 FT) EAST FROM THE EAST EDGE OF THE ASPHALT ENTRANCE TO THE RESTAURANT, 33.5 M (109.9 FT) WEST FROM POWER POLE NH COOP/125/79/4/85-1/NET, AND 22.9 M (75.1 FT) NORTHEAST FROM THE NORTHWEST CORNER OF THE RESTAURANT.

MILTON

National Geodetic Survey, Retrieval Date = SEPTEMBER 3, 1997
CBN - This is a Cooperative Base Network Control Station.
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DESIGNATION - 307 0460 PID - OC2811
STATE/COUNTY- NH/STRAFFORD USGS QUAD - MILTON (1984)

CURRENT SURVEY CONTROL

NAD 83(1996)-	43 27 30.67087(N)	070 59 38.82114(W)	ADJUSTED
NAVD 88 -	169.7 (meters)	557. (feet)	GPS OBS

X	- 1,510,164.117	(meters)	COMP
Y	- -4,384,372.582	(meters)	COMP
Z	- 4,364,715.911	(meters)	COMP
LAPLACE CORR	-	1.54 (seconds)	DEFLEC96
ELLIP HEIGHT	-	142.79 (meters)	GPS OBS
GEOID HEIGHT	-	-26.82 (meters)	GEOID96

HORZ ORDER - B
ELLP ORDER - FIRST CLASS I

The horizontal coordinates were established by GPS observations and adjusted by the National Geodetic Survey in July 1997.
The orthometric height was determined by GPS observations.
The X, Y, and Z were computed from the position and the ellipsoidal ht.
The Laplace correction was computed from DEFLEC96 derived deflections.
The ellipsoidal height was determined by GPS observations and is referenced to NAD 83.
The geoid height was determined by GEOID96.

		North	East	Units	Scale	Converg.
SPC NH	-	106,700.372	354,429.063	MT	1.00000309	+0 27 45.4
SPC ME W	-	69,785.735	833,034.873	MT	1.00002181	-0 34 09.0
UTM 19	-	4,813,666.072	338,674.824	MT	0.99992014	-1 22 18.9

SUPERSEDED SURVEY CONTROL

NAD 83(1986)- 43 27 30.67625(N) 070 59 38.82610(W) ADJUSTED

Superseded values are not recommended for survey control. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums. See file format.dat to determine how the superseded data were derived.

MARKER: DD = SURVEY DISK
SETTING: 0 = UNSPECIFIED SETTING
STAMPING: 307 0460
STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR SATELLITE OBSERVATIONS - July 06, 1992

HISTORY	- Date	Condition	Recov. By
HISTORY	- 1989	MONUMENTED	NHDOT

STA 307 - 0460

HISTORY - 19891001 GOOD NHDOT
HISTORY - 19920706 GOOD

STATION DESCRIPTION

DESCRIBED BY NH DEPT OF TRANSP 1989
THE STATION IS LOCATED IN MILTON, 2.7 KM (1.65 MI) WEST OF THE MAINE/NEW HAMPSHIRE STATE LINE, 2.3 KM (1.40 MI) SOUTH OF LASKEY CORNER, AND 16.5 KM (10.25 MI) NORTH OF ROCHESTER. OWNERSHIP-- STATE RIGHT-OF-WAY.

TO REACH THE STATION FROM THE JUNCTION OF STATE ROUTE 11 AND THE SPAULDING TURNPIKE (ROUTE 16) IN ROCHESTER, GO NORTH FOR 6.6 KM (4.10 MI) ON THE TURNPIKE TO THE ROCHESTER/MILTON TOWN LINE. CONTINUE STRAIGHT AHEAD AND GO NORTH FOR 9.2 KM (5.70 MI) ON THE TURNPIKE TO THE BRIDGE OVER THE RAILROAD TRACKS. CONTINUE STRAIGHT AHEAD AND GO NORTH FOR 0.9 KM (0.55 MI) ON THE TURNPIKE TO THE STATION ON THE RIGHT.

THE STATION IS A STANDARD NHDPWH DISK STAMPED---307 0460---, SET INTO THE TOP OF A 4.5-FT LONG, 15-CM SQUARE GRANITE MONUMENT FLUSH WITH THE GROUND. 10.7 M (35.1 FT) EAST FROM THE EAST EDGE OF PAVEMENT OF THE TURNPIKE, 39.3 M (128.9 FT) WEST FROM THE STATE RIGHT-OF-WAY FENCE, 69.5 M (228.0 FT) NORTH FROM A STONE HEADWALL ON THE EAST SIDE OF THE TURNPIKE, 11.0 M (36.1 FT) NORTH-NORTHWEST FROM THE CENTER OF A SMALL CLUMP OF TREES, AND 79.6 M (261.2 FT) SOUTH FROM THE WEST END OF A STONE WALL AT THE WOODS LINE.

STATION RECOVERY (1992)

RECOVERED IN GOOD CONDITION.

CONCORD

* National Geodetic Survey, Retrieval Date = NOVEMBER 5, 1997 *

DESIGNATION - **CONCORD BASE STATION** PID - AD9917
STATE/COUNTY- NH/MERRIMACK USGS QUAD - CONCORD (1985)

CURRENT SURVEY CONTROL

NAD 83(1996)	-	43 12 47.12517(N)	71 31 11.61419(W)		ADJUSTED
NAVD 88	-	114.8 (meters)	377.	(feet)	GPS OBS
NAVD 88	-	114.64 (meters)	376.11	(feet)	NHDOT LEVELS

X	-	1,475,786.547	(meters)	COMP
Y	-	-4,415,755.490	(meters)	COMP
Z	-	4,344,844.917	(meters)	COMP
LAPLACE CORR-		2.55	(seconds)	DEFLEC96
ELLIP HEIGHT	-	87.21	(meters)	GPS OBS
GEOID HEIGHT	-	-27.42	(meters)	GEOID96

HORZ ORDER - A
ELLP ORDER - SECOND CLASS I

		North	East	Units	Scale	Converg.
SPC NH	-	79,224.982	311,926.243	MT	0.99996842	+0 06 01.8
UTM 19	-	4,787,561.535	295,314.668	MT	1.00011541	-1 43 33.6

SUPERSEDED SURVEY CONTROL:

NAD 83(1986)	-	43 12 47.1360(N)	071 31 11.6159(W)		NHDOT
NGVD 29	-	114.82 (meters)	376.72	(feet)	NHDOT

The horizontal coordinates were established by GPS observations and adjusted by the National Geodetic Survey in July 1997.
This is a SPECIAL STATUS position. See SPECIAL STATUS under the DATUM ITEM on the data sheet items page.
The orthometric height was determined by GPS observations.
Additional leveling data from the NHDOT was used to determine NAVD88 height.
The X, Y, and Z were computed from the position and the ellipsoidal ht.
The Laplace correction was computed from DEFLEC96 derived deflections.
The ellipsoidal height was determined by GPS observations and is referenced to NAD 83.
The geoid height was determined by GEOID96.

STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD POSITION/ELEVATION WELL

HISTORY - 1996 MONUMENTED BY NHDOT

STATION DESCRIPTION: DESCRIBED BY NH DOT, 1996 (KLH)

THE STATION IS LOCATED ON THE JOHN O MORTON BUILDING AT 1 HAZEN DRIVE, CONCORD, NH 03302. THE STATION IS THE TOP CENTER OF A 5/8-INCH BOLT WELDED TO THE TOP OF A HEAVY METAL BRACKET PERMANENTLY MOUNTED TO THE NORTHEAST FACE OF THE BRICK ELEVATOR SHAFT OF THE BUILDING. A TRIMBLE GEODETIC L1/L2 ANTENNA WITH GROUND PLANE ON A 4.00-FOOT POLE IS ATTACHED TO THE BRACKET. FOR ADDITIONAL INFORMATION CONTACT THE NEW HAMPSHIRE GEODETIC SURVEY SECTION, NHDOT, PO BOX 483, CONCORD, NH 03302. PHONE 603-271-1600.

03/25/98

NH DEPARTMENT OF TRANSPORTATION - GEODETIC CONTROL DATABASE

NAD83/86 COORDINATE SYSTEM - NGVD29 VERTICAL DATUM

PHONE: 603-271-1600 P.O. BOX 483, CONCORD, NH 03302

TOWN NAME:GILFORD TOWN NUMBER: 169 UNITS: METERS

STATION	SEQ	LATITUDE	LONGITUDE	NORTHING	EASTING	HORZ DATA Ord.	Agn	HEIGHT	VERT DATA Ord.	Type	GEOID HEIGHT	M C
AG 15	0	43°34'20.80879"	71°21'20.40574"	119184.841	325121.593	31	NHDOT	159.620	50	TRIG	-27.567	X
J 4 1933	0	43°34'19"	71°25'21"	119110	319720	0	_____	157.724	21	DIFF	_____	X
J 4 RESET 1958	0	43°34'19"	71°25'21"	119110	319720	0	_____	158.625	21	DIFF	_____	N
741 RESET 1964	10	43°32'51"	71°24'30"	116410	320890	0	_____	225.538	31	DIFF	_____	X
L 4 1933	20	43°34'31"	71°20'58"	119500	325620	0	_____	157.816	11	DIFF	_____	G
DG 46	30	43°33' 0.55915"	71°26'58.22135"	116684.167	317548.111	41	MON-N	227.988	21	DIFF	-27.620	G
DG 47	40	43°32'57.24655"	71°26'45.34481"	116582.698	317837.415	41	MON-N	254.872	21	DIFF	-27.616	G
DG 57	50	43°31'17.69714"	71°26'35.15373"	113511.117	318074.428	41	MON-N	230.861	21	DIFF	-27.587	G
DG 56	60	43°31'24.72862"	71°26'33.18351"	113728.234	318118.089	41	MON-N	229.692	31	DIFF	-27.588	G
K 4 1933	70	43°35' 4"	71°23'19"	120510	322460	0	_____	158.535	11	DIFF	_____	G
SKS 20 USGS 1954	80	43°33'58"	71°25'58"	0	0	0	_____	0.000	0	___	_____	?
SKS 21 USGS 1954	90	43°31' 3"	71°24'50"	0	0	0	_____	0.000	0	___	_____	?
AG 14	100	43°33'31.51048"	71°19'39.67220"	117672.276	327388.069	31	NHDOT	159.834	31	DIFF	-27.544	X
AG 15 RESET	110	43°34'20.59990"	71°21'18.13043"	119178.586	325172.671	21	NHDOT	159.064	21	DIFF	-27.567	G
AG 16	120	43°34'23.64364"	71°21'28.98515"	119271.611	324928.762	31	NHDOT	157.746	31	DIFF	-27.569	N
AG 17	130	43°34'51.04488"	71°23'18.79917"	120108.550	322461.943	31	NHDOT	177.126	31	DIFF	-27.600	X
AG 18	140	43°34'45.84724"	71°23'46.44975"	119946.098	321842.124	31	NHDOT	156.255	31	DIFF	-27.603	X
AG 19	150	43°34'34.64920"	71°24'11.44097"	119598.712	321282.528	21	NHDOT	157.457	21	DIFF	-27.604	G
LCI AP STA C 1974	160	43°34'33.21936"	71°24'35.59876"	119552.889	320740.643	21	NHDOT	157.117	21	DIFF	-27.609	G
LCI AP STA A-2 197	170	43°34'12.42140"	71°25'44.82210"	118906.420	319189.320	40	NOS	166.000	50	TRIG	_____	?
MART TOWER	180	43°33'57.42474"	71°25'44.95303"	118443.598	319187.708	44	NHDOT	190.000	99	MAP	-27.614	G
LCI AP STA L 1965	190	43°33'20.90060"	71°24'49.70091"	117320.079	320431.024	30	NGS	296.600	50	TRIG	-27.584	X
LCI AP ARP 1965	200	43°34'25.41607"	71°25'20.15813"	119309.056	319741.579	30	NGS	163.874	20	DIFF	-27.611	G
LCI AP STA A 1965	210	43°34' 2"	71°25'40"	118580	319300	0	_____	165.791	20	DIFF	_____	X
LCI AP STA J 1965	220	43°35'16.76424"	71°25'16.29386"	120893.979	319823.604	30	NGS	193.300	50	TRIG	-27.630	G
AIRPORT BCN LACONI	230	43°34' 5.58638"	71°25'30.24933"	118696.426	319516.935	40	NGS	0.000	0	___	-27.613	G
DG 43 1961	240	43°33'46.67840"	71°26'30.55035"	118109.108	318165.377	30	NGS	158.538	31	DIFF	-27.624	X
DG 44 1961 →	250	43°33'53.28588"	71°26'15.63888"	118313.936	318499.453	30	NGS	163.748	31	DIFF	-27.622	G
GUNSTOCK 1860	260	43°31' 4.05086"	71°22' 9.55110"	113108.652	324040.573	10	NHDOT	726.229	40	GPS	-27.513	G
GUNSTOCK 1860 ECC	270	43°31' 4.63809"	71°22' 9.69521"	113126.763	324037.271	21	NHDOT	725.830	50	TRIG	-27.513	G
MT BELKNAP LOT 195	280	43°31' 4.60235"	71°22' 9.71162"	113125.659	324036.907	40	NGS	730.000	99	MAP	-27.513	G
B 44 1965	290	43°33'53"	71°26' 3"	118310	318780	0	_____	164.812	20	DIFF	_____	G
169-0300	300	43°33'59.97871"	71°20'20.17961"	118547.193	326475.489	21	NHDOT	187.940	21	DIFF	-27.554	G
169-0310	310	43°34' 7.00624"	71°20'33.34682"	118762.912	326179.168	21	NHDOT	191.198	21	DIFF	-27.558	G
169-0320	320	43°34'11.60536"	71°20'48.39302"	118903.539	325840.991	21	NHDOT	188.992	21	DIFF	-27.561	G
169-0330	330	43°34'16.93544"	71°20'55.29530"	119067.437	325685.481	21	NHDOT	182.181	21	DIFF	-27.563	G
169-0340	340	43°34'25.14686"	71°21'39.75024"	119317.110	324687.046	21	NHDOT	190.506	21	DIFF	-27.571	G
169-0350	350	43°31'43.71585"	71°20'18.21504"	114342.151	326536.174	21	NHDOT	340.042	31	DIFF	-27.515	G
169-0360	360	43°31'45.53899"	71°20'29.12631"	114397.452	326290.949	21	NHDOT	347.473	31	DIFF	-27.516	G
169-0370	370	43°32'20.52418"	71°20'53.12593"	115475.044	325747.923	21	NHDOT	334.494	31	DIFF	-27.527	G
169-0380	380	43°32'29.97379"	71°20'57.77996"	115766.269	325642.325	21	NHDOT	328.221	31	DIFF	-27.530	G
169-0390	390	43°32'55.80057"	71°21'24.71873"	116561.031	325034.593	21	NHDOT	284.601	31	DIFF	-27.540	G
169-0400	400	43°33' 2.84615"	71°21'32.63418"	116777.805	324856.111	21	NHDOT	279.225	31	DIFF	-27.543	G
169-0410	410	43°33'51.65422"	71°23'12.53307"	118276.156	322608.694	21	NHDOT	246.136	31	DIFF	-27.572	G
169-0420	420	43°33'49.88988"	71°23'23.55344"	118220.878	322361.566	21	NHDOT	236.486	31	DIFF	-27.573	G
169-0430	430	43°34'15.13201"	71°23'47.41728"	118998.118	321823.498	21	NHDOT	159.756	31	DIFF	-27.586	G

03/25/98

NH DEPARTMENT OF TRANSPORTATION - GEODETIC CONTROL DATABASE

NAD83/86 COORDINATE SYSTEM - NGVD29 VERTICAL DATUM

PHONE: 603-271-1600 P.O. BOX 483, CONCORD, NH 03302

TOWN NAME:LACONIA TOWN NUMBER: 245 UNITS: METERS

STATION	SEQ	LATITUDE	LONGITUDE	NORTHING	EASTING	HORZ DATA Ord.	Agn	HEIGHT	VERT DATA Ord.	Type	GEOID HEIGHT	M C	D M
LACONIA TALL BAPT	0	43°31'44.23657"	71°28'16.85737"	114324.399	315788.547	40	NGS	0.000	0	___	-27.625	N	3
LACONIA TALL WHITE	0	43°31'45.91775"	71°28'15.10809"	114376.374	315827.704	40	NGS	0.000	0	___	-27.625	N	3
B 10 NH	10	43°30'50"	71°28' 9"	112660	315980	0	_____	199.728	21	DIFF	_____	G	3
245-0020 →	20	43°32'10"	71°28' 4"	115130	316070	0	_____	153.013	31	DIFF	_____	G	3
245-0030	30	43°31'52"	71°28' 3"	114550	316100	0	_____	152.614	31	DIFF	_____	G	3
DM 2 RESET	40	43°30'41.10546"	71°27'34.73876"	112378.403	316739.137	41	MON-N	200.838	21	DIFF	-27.598	G	3
DG 22	50	43°36'34.28627"	71°28'14.55528"	123275.790	315819.138	41	MON-N	219.981	31	DIFF	-27.677	G	3
DG 23 →	60	43°36'28.93821"	71°28' 4.88090"	123111.256	316036.475	41	MON-N	215.311	31	DIFF	-27.676	G	3
DG 30	70	43°34'53.94149"	71°26'36.91062"	120184.542	318017.071	41	MON-N	193.265	31	DIFF	-27.645	G	3
DG 31 →	80	43°34'59.27558"	71°26'41.61449"	120348.876	317911.102	41	MON-N	187.413	31	DIFF	-27.647	G	3
B 17 1935	90	43°33'46"	71°26'58"	118090	317550	0	_____	158.300	21	DIFF	_____	N	3
C 17 1935	100	43°35'25"	71°27'43"	121140	316530	0	_____	164.292	21	DIFF	_____	X	3
D 17 1935 →	110	43°36'13"	71°27'18"	122620	317090	0	_____	161.268	21	DIFF	_____	G	3
E 2 1934	120	43°30'19"	71°27' 1"	111690	317500	0	_____	194.286	31	DIFF	_____	N	3
503 USGS	130	43°31'50"	71°28'20"	114500	315720	0	_____	153.333	21	DIFF	_____	G	3
520 USGS	140	43°36'30"	71°27'35"	0	0	0	_____	158.638	31	DIFF	_____	G	
506 USGS = 507?	150	43°33' 5"	71°27'39"	116820	316630	0	_____	154.414	20	DIFF	_____	G	
D 4 1933	160	43°31'27"	71°28'33"	113790	315430	0	_____	148.572	12	DIFF	_____	X	
D 4 RESET 1972	170	43°31'27"	71°28'33"	113790	315430	0	_____	149.898	21	DIFF	_____	G	
TBM 569 569.635	180	43°31' 5"	71°27'43"	0	0	0	_____	173.625	31	DIFF	_____	G	
E 4 1933	190	43°31'45"	71°28'22"	114350	315670	0	_____	155.439	21	DIFF	_____	G	
F 4 1933	200	43°31'46"	71°28'10"	114380	315940	0	_____	154.792	21	DIFF	_____	G	
G 4 1933	210	43°32'51"	71°27'46"	116390	316480	0	_____	158.810	21	DIFF	_____	G	
H 4 1933	220	43°32'57"	71°27'43"	116570	316540	0	_____	155.833	21	DIFF	_____	G	
PUMP 1933	230	43°33'10"	71°27'38"	116970	316660	0	_____	153.934	21	DIFF	_____	G	
X 35 1955	240	43°36'36"	71°28'23"	123330	315630	0	_____	229.455	21	DIFF	_____	G	
G 4 RESET 1984	250	43°32'51"	71°27'46"	116390	316480	0	_____	158.227	21	DIFF	_____	G	
S 30 1942	260	43°36'57"	71°28'51"	123980	315000	0	_____	210.212	21	DIFF	_____	X	
245-0270 →	270	43°30'28.14022"	71°27'40.38209"	111977.971	316613.371	21	NHDOT	226.178	21	DIFF	-27.598	G	
245-0280	280	43°31' 4.21960"	71°27' 0.94235"	113093.657	317496.375	21	NHDOT	207.192	21	DIFF	-27.592	G	
245-0290	290	43°30'43"	71°27'34"	112440	316760	0	_____	195.321	21	DIFF	_____	G	
245-0300	300	43°30'47"	71°27'18"	112560	317110	0	_____	191.183	21	DIFF	_____	X	
A 44 1965	310	43°33'34"	71°27'14"	117720	317190	0	_____	155.255	20	DIFF	_____	G	
C 17 RESET 1966	320	43°35'25"	71°27'43"	121140	316530	0	_____	167.786	21	DIFF	_____	?	
DM 1	330	43°30'31.28153"	71°27'36.95290"	112075.105	316690.157	36	BM-61	217.238	31	DIFF	-27.597	G	
R 30 1942	340	43°36'36"	71°28'23"	123330	315630	0	_____	225.094	21	DIFF	_____	G	
E 1 1934	350	43°30'50"	71°27'26"	112650	316930	0	_____	178.111	21	DIFF	_____	G	
LAKEPORT GAGING ST	360	43°32'57"	71°27'54"	0	0	0	_____	0.000	0	___	_____	G	

03/25/98

NH DEPARTMENT OF TRANSPORTATION - GEODETIC CONTROL DATABASE

NAD83/86 COORDINATE SYSTEM - NGVD29 VERTICAL DATUM

PHONE: 603-271-1600 P.O. BOX 483, CONCORD, NH 03302

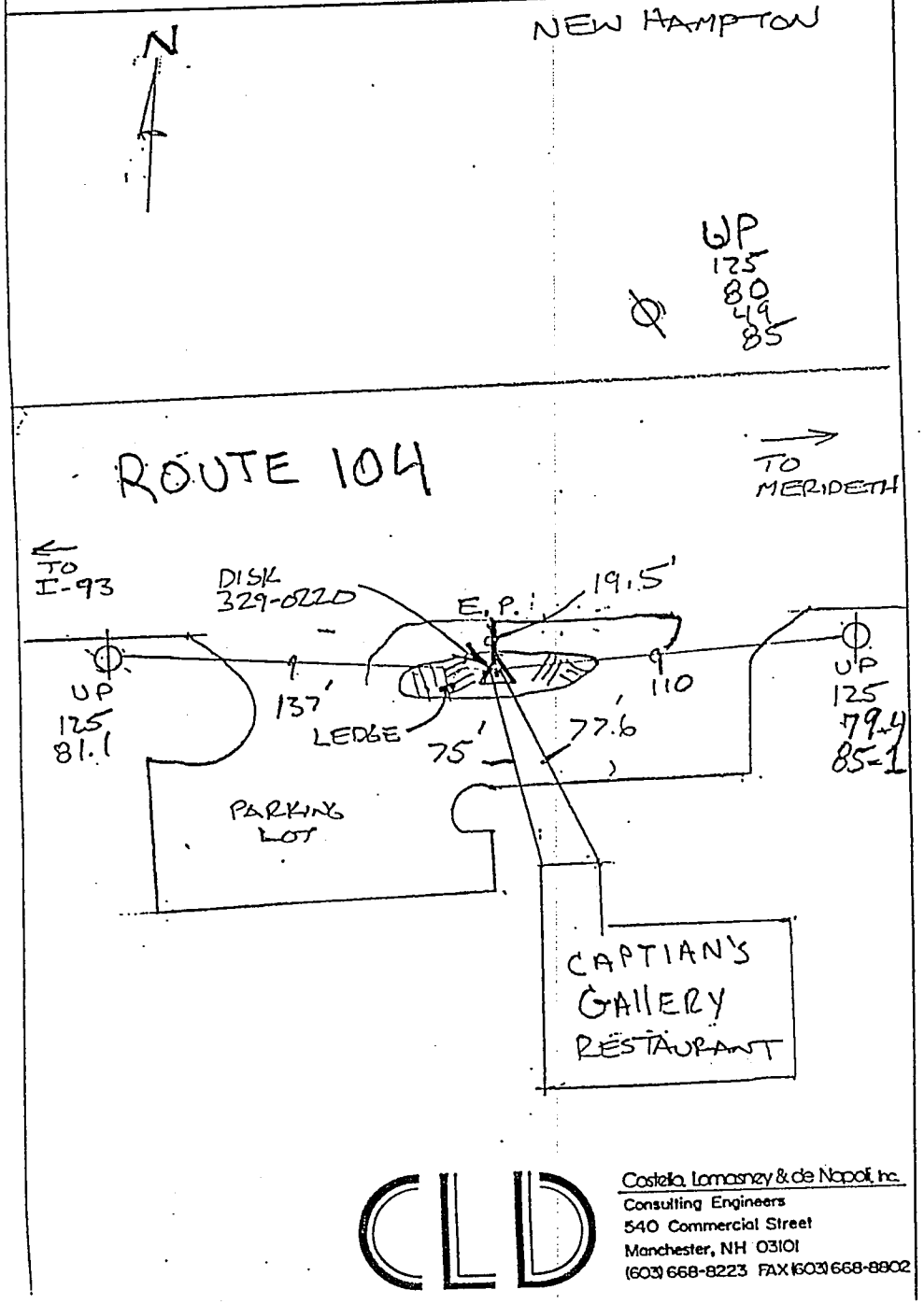
TOWN NAME:MEREDITH TOWN NUMBER: 295 UNITS: METERS

STATION	SEQ	LATITUDE	LONGITUDE	NORTHING	EASTING	HORZ DATA Ord.	Agn	HEIGHT	VERT Ord.	DATA Type	GEOID HEIGHT	M C	D M
295-0010	10	43°38'26"	71°31'19"	126720	311680	0	_____	214.940	21	DIFF	_____	G	3
295-0020	20	43°38' 3"	71°31'58"	126010	310800	0	_____	201.319	21	DIFF	_____	G	3
295-0030	30	43°37'25"	71°33'24"	124830	308880	0	_____	171.859	21	DIFF	_____	G	3
295-0040 = 295-023	40	43°37'50"	71°34'44"	125590	307080	0	_____	170.521	21	DIFF	_____	G	3
B 5	50	43°35'11"	71°37'33"	120680	303300	0	_____	220.529	21	DIFF	_____	G	3
B 19	60	43°34'53.49197"	71°37'33.28605"	120147.296	303291.490	36	T10-N	219.356	31	DIFF	-27.656	N	3
DG 4 RESET →	70	43°38'46.37773"	71°30' 4.60162"	127346.959	313343.301	21	NHDOT	208.323	21	DIFF	-27.702	G	3
DG 4	80	43°38'46"	71°30' 5"	127340	313340	0	_____	0.000	0	___	_____	X	3
DK 2	90	43°38'23.11335"	71°31'51.60702"	126624.636	310946.407	41	MON-N	230.334	31	DIFF	-27.703	G	3
DK 3	100	43°38'18.74541"	71°31'43.84100"	126490.121	311120.692	41	MON-N	225.798	21	DIFF	-27.703	G	3
DG 13	110	43°37'54.16291"	71°29'11.97916"	125737.983	314526.102	36	BM-61	184.546	21	DIFF	-27.695	G	3
DG 14	120	43°37'47.84912"	71°29'13.04244"	125543.079	314502.689	41	MON-N	194.119	21	DIFF	-27.695	G	3
D 29 1942	130	43°41'10.22393"	71°27'28.76903"	131794.163	316824.458	21	NHDOT	173.929	20	DIFF	-27.687	G	3
C 29 1942	140	43°40'54.43736"	71°28' 1.21443"	131305.173	316098.958	21	NHDOT	181.746	20	DIFF	-27.691	G	3
B 29 1942	150	43°40'26"	71°29' 1"	130420	314760	0	_____	223.404	20	DIFF	_____	X	3
A 29 1942	160	43°39'40"	71°29'40"	129000	313890	0	_____	158.370	21	DIFF	_____	X	3
Y 28 1942	170	43°38' 8.95690"	71°29'25.01961"	126193.921	314232.816	21	NHDOT	213.317	12	DIFF	-27.697	G	3
B 34 1955	180	43°39' 0"	71°30' 8"	127770	313270	0	_____	167.260	21	DIFF	_____	G	3
C 34 1955	190	43°38'52"	71°30'24"	127520	312910	0	_____	166.647	21	DIFF	_____	G	3
D 34 1955	200	43°39' 2"	71°31'31"	127830	311410	0	_____	167.266	21	DIFF	_____	G	3
525 USGS 1935	210	0° 0' 0"	0° 0' 0"	0	0	0	___	0.000	0	___	_____	X	
E 17 1935	220	43°37'29"	71°29'14"	124960	314480	0	_____	226.848	21	DIFF	_____	X	3
SPINDLE USGS 1954	230	43°37'50.19990"	71°27'15.17958"	125621.866	317144.607	35	USGS	217.320	50	TRIG	-27.682	G	3
A 34 1955	240	43°39' 2"	71°29'55"	127830	313560	0	_____	168.384	12	DIFF	_____	G	3
F 17 1935	250	43°38'20.46140"	71°29'53.76755"	126547.629	313587.723	21	NHDOT	255.778	12	DIFF	-27.700	G	3
B 6	260	43°38'22"	71°30' 1"	126600	313460	0	_____	248.996	31	DIFF	_____	N	
B 7	270	43°38'11"	71°30' 2"	126260	313440	0	_____	257.426	21	DIFF	_____	G	
MS 1	280	43°39'51.78749"	71°29'28.38478"	129367.277	314150.680	41	MON-N	204.840	31	DIFF	-27.700	G	
Z 28 1942	290	43°39' 2"	71°29'55"	127830	313560	0	_____	167.800	21	DIFF	_____	X	
C 2	300	43°40'13.88717"	71°30' 9.77108"	130047.414	313222.115	41	MON-N	172.786	21	DIFF	-27.701	G	
C 3	310	43°40'22.43087"	71°30'16.88701"	130310.774	313062.192	41	MON-N	174.584	31	DIFF	-27.701	G	
549 USGS MEREDITH	320	43°39' 0"	71°30' 8"	127770	313270	0	_____	167.344	21	DIFF	_____	X	
DG 3	330	43°39' 1.67930"	71°29'52.89344"	127819.718	313604.731	41	MON-N	175.763	31	DIFF	-27.701	G	
B 29 RESET 1989	340	43°40'31"	71°28'55"	130590	314930	0	_____	221.269	21	DIFF	_____	G	
295-0350	350	43°38'12.44564"	71°29'29.70123"	126301.366	314127.653	21	NHDOT	220.234	21	DIFF	-27.698	G	
295-0360	360	43°38'34.93692"	71°30' 4.56104"	126993.880	313344.914	21	NHDOT	230.352	21	DIFF	-27.701	G	
295-0370	370	43°38'42.45339"	71°30' 5.56369"	127225.805	313321.982	21	NHDOT	215.875	21	DIFF	-27.702	G	
295-0380	380	43°39' 7.93174"	71°29'48.82364"	128012.864	313695.537	21	NHDOT	165.951	21	DIFF	-27.701	G	
295-0390	390	43°39'57.75054"	71°29'24.30601"	129551.500	314241.669	21	NHDOT	204.228	21	DIFF	-27.699	G	
295-0400	400	43°40'13.14326"	71°29'13.31054"	130027.074	314486.975	21	NHDOT	225.216	21	DIFF	-27.698	G	
295-0410	410	43°40'20.34354"	71°29'10.53778"	130249.422	314548.607	21	NHDOT	232.127	21	DIFF	-27.697	X	
295-0420	420	43°40'23.85997"	71°29' 8.22931"	130358.058	314600.082	21	NHDOT	232.273	21	DIFF	-27.697	G	
295-0430	430	43°40'39.24851"	71°28'28.26571"	130834.988	315494.193	21	NHDOT	206.551	21	DIFF	-27.694	X	
295-0440	440	43°40'53.27610"	71°28' 6.78695"	131269.036	315974.263	21	NHDOT	185.334	21	DIFF	-27.692	G	
295-0450	450	43°37'30"	71°32'30"	124990	310130	0	_____	185.557	21	DIFF	_____	G	
295-0460	460	43°37'26"	71°33'10"	124870	309230	0	_____	164.980	21	DIFF	_____	G	

APPENDIX B

LOCATION SKETCHES FOR CONTROL POINTS

SKETCH NHDOT DISK 329-0220



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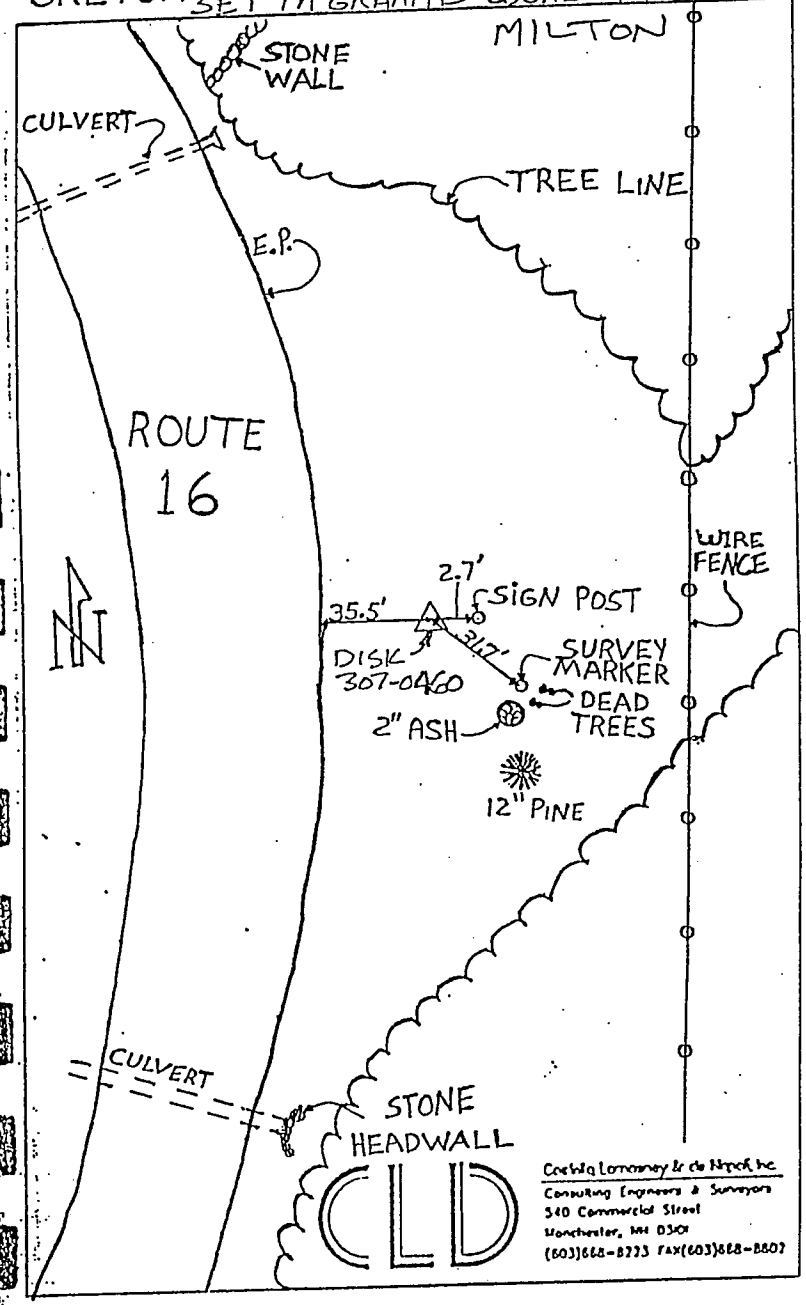
SKETCH 307-0460 STANDARD NHDPWH DISC. SET IN GRANITE BOUND FLUSH W/GROUND



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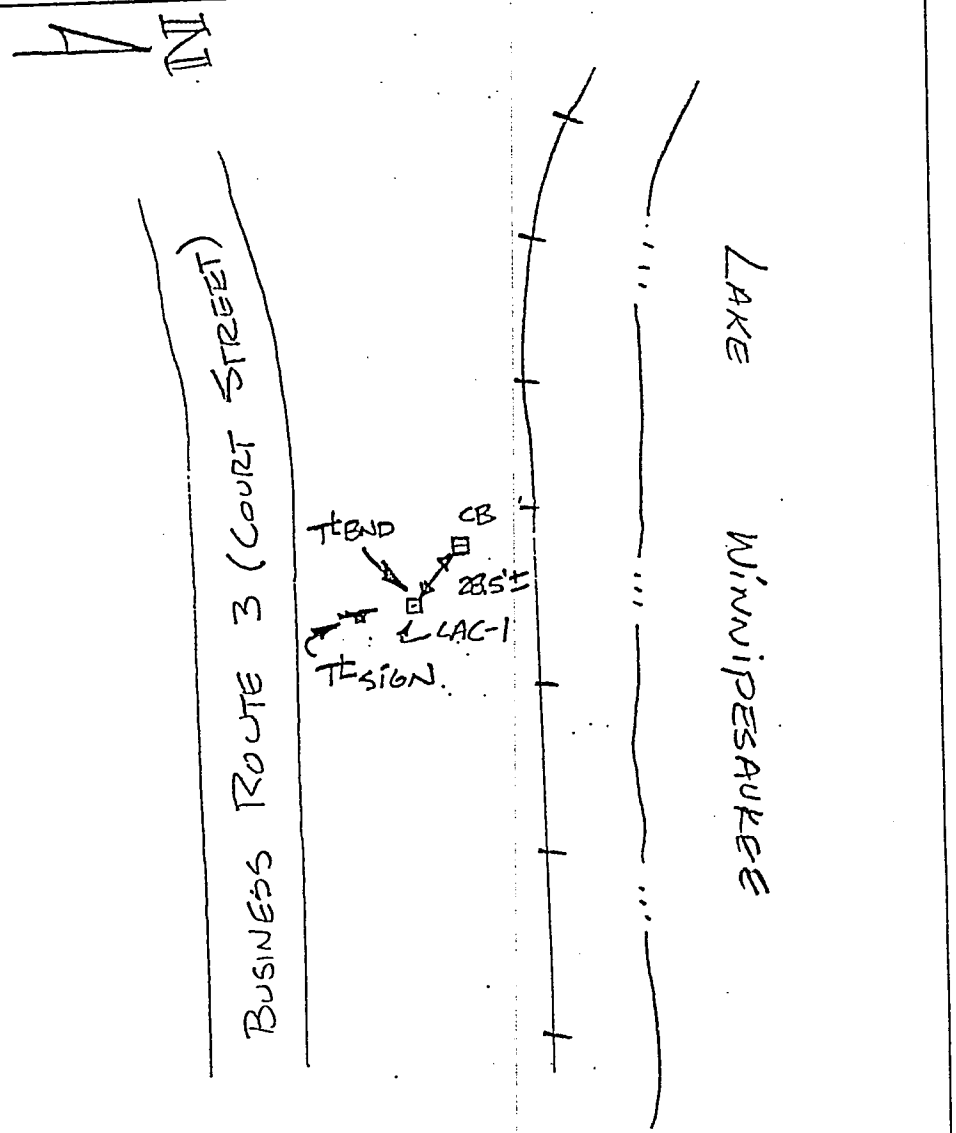
SKETCH LAC-1 DH IN T/L BOUND BELMONT/LACONIA



- 2.3' N'LY TT SIGN
- 11.8' OFF E.P.

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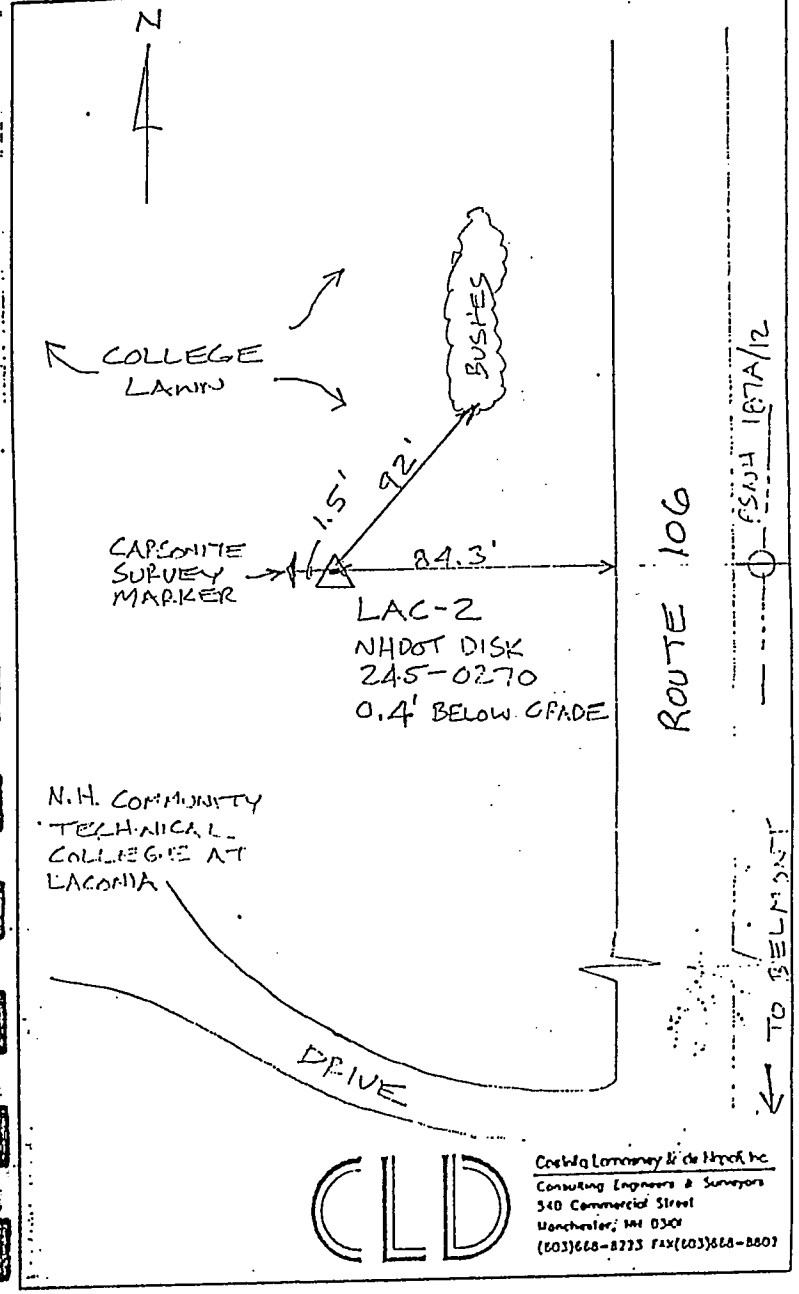
SKETCH LAC-2 NHDOT DISK 245-0270



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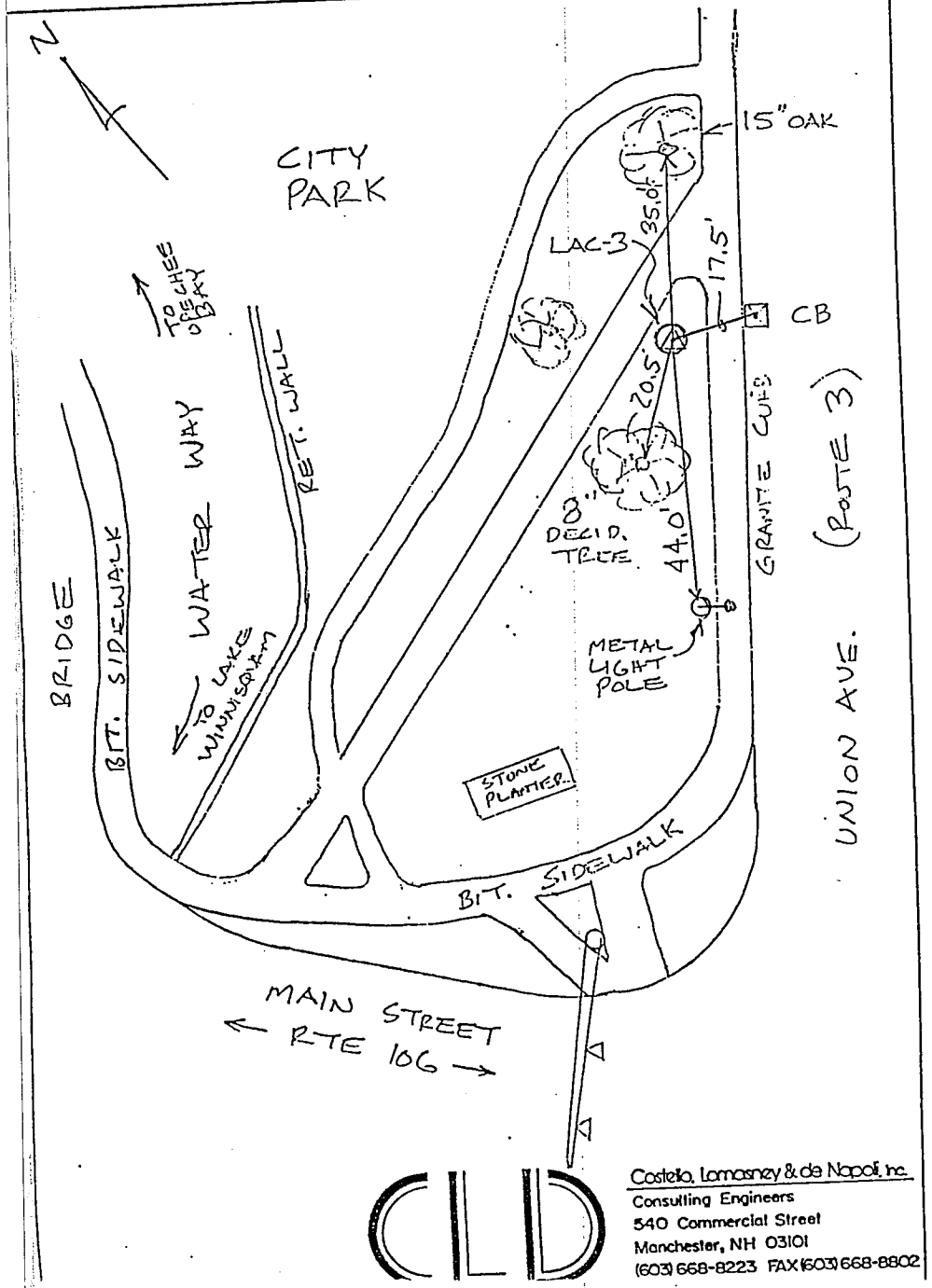
SKETCH LAC-3 CITY OF LACONIA DISK SET IN 6"SQ. GRAN. BOUND IN 1' DIA MON. BOX



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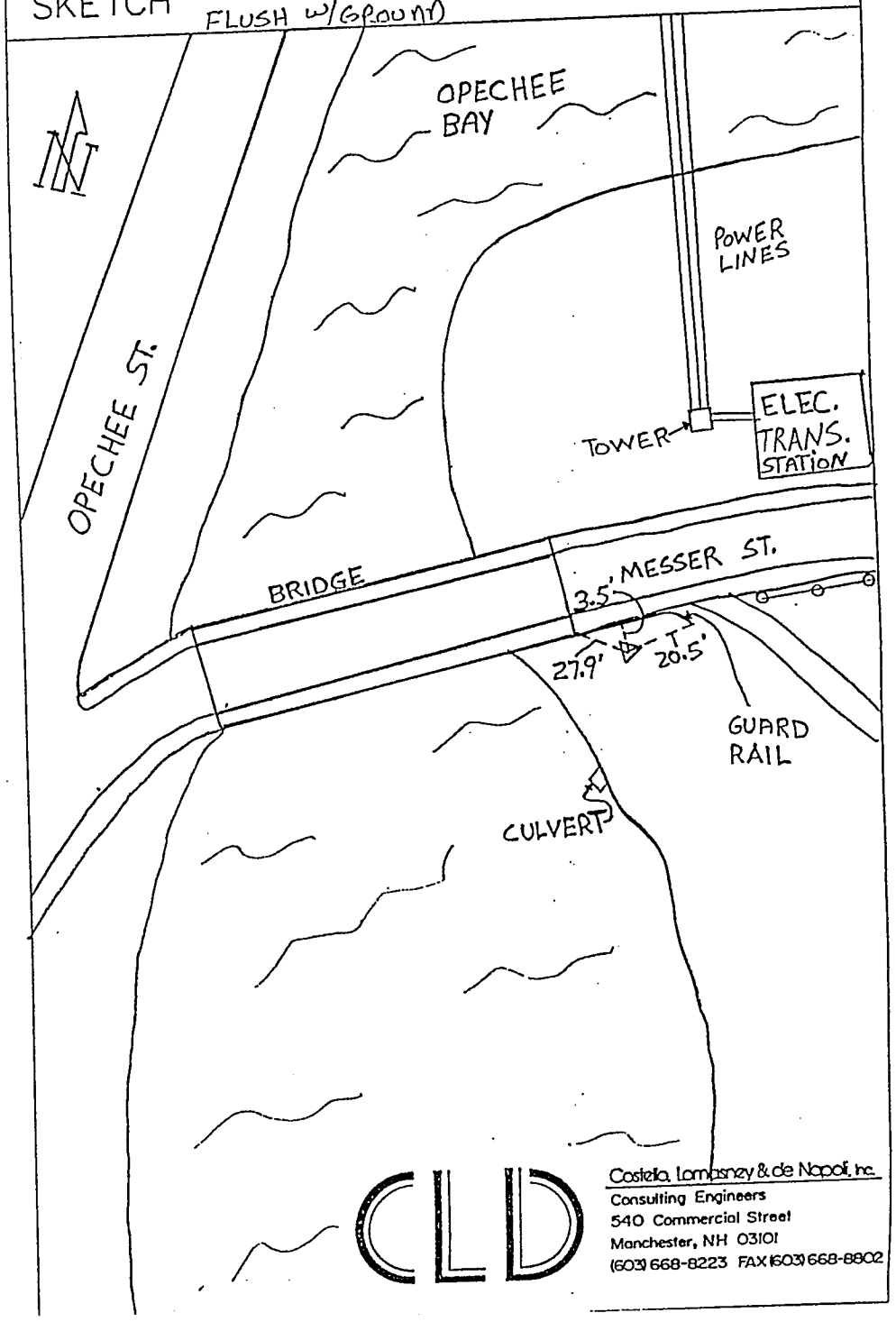
SKETCH LAC-4 6"x6" GRANITE BOUND W/LACONIA DISC FLUSH W/GROUND



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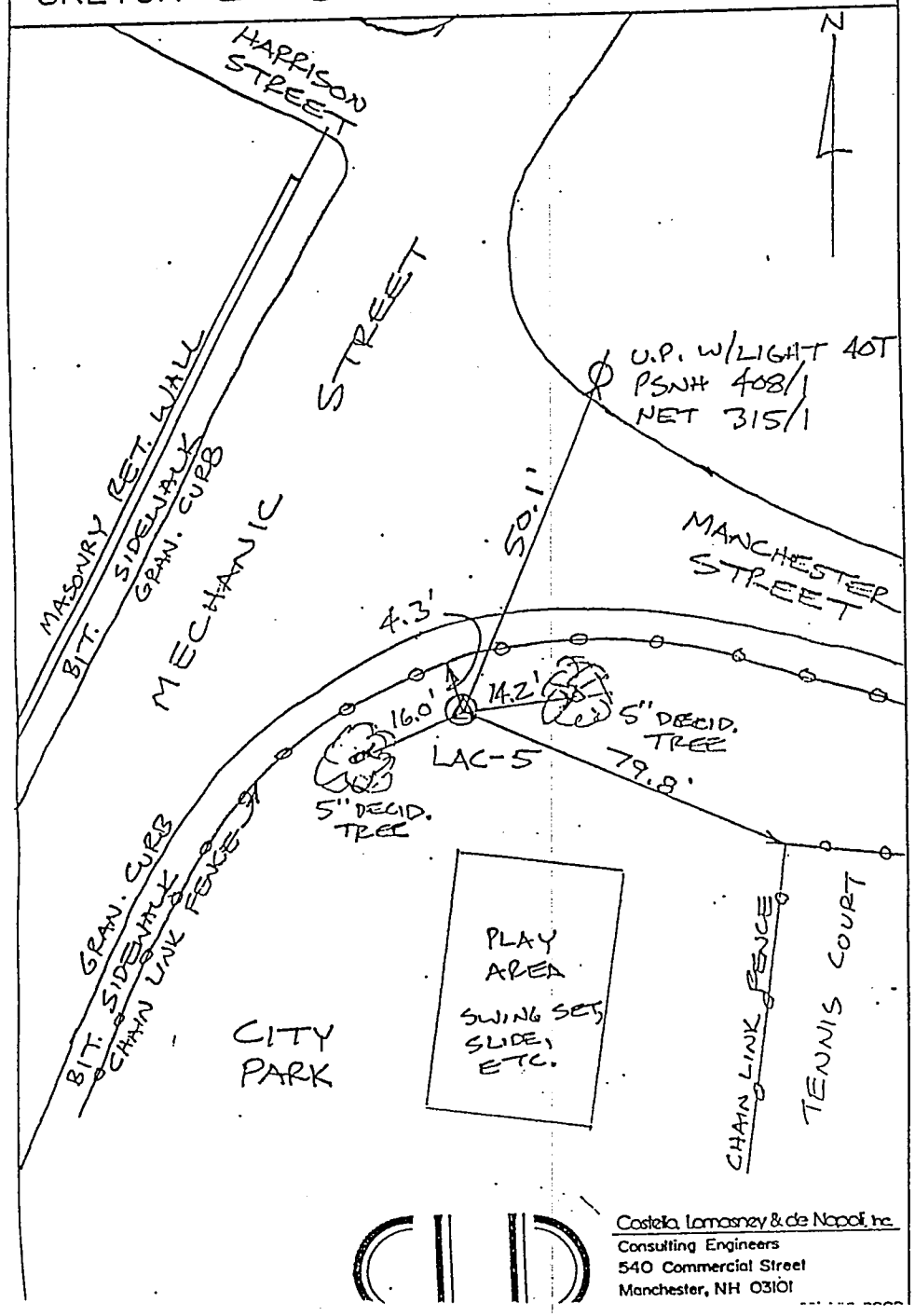
SKETCH LAC-5 CITY OF LACONIA DISK SET IN A 6" SQ. GRAN. BND. IN A 12" MON. BOX



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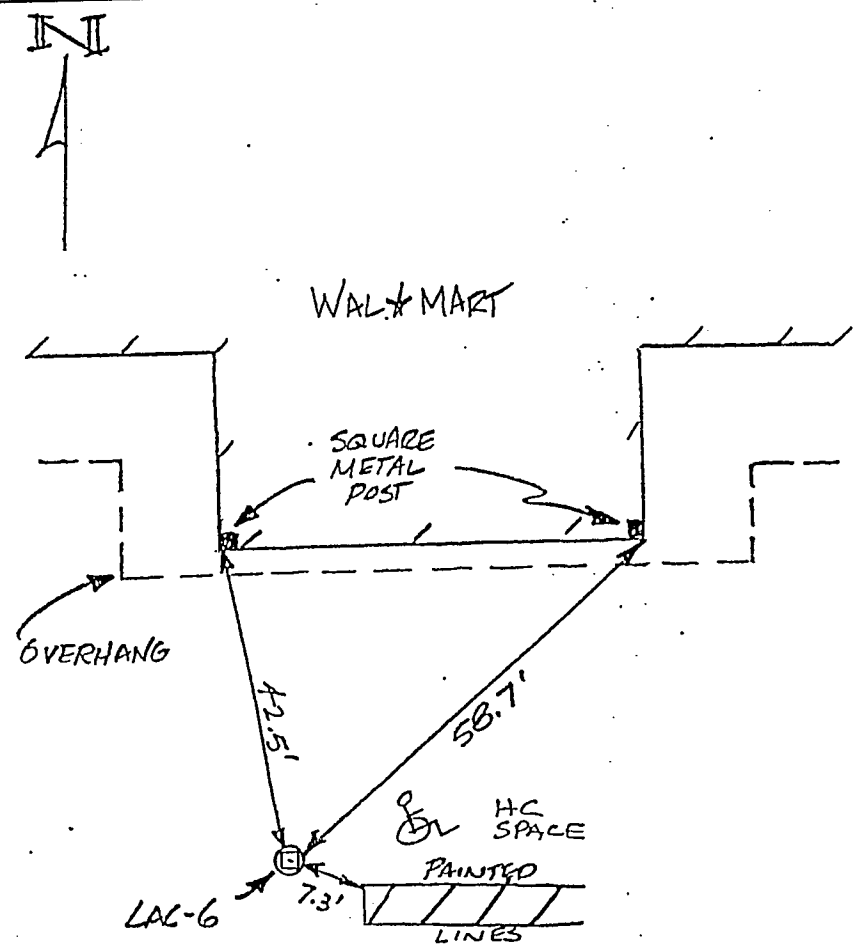
SKETCH LAC-6 DH IN 8" SQ. CONC. BND. IN MON. BOX IN PARKING LOT



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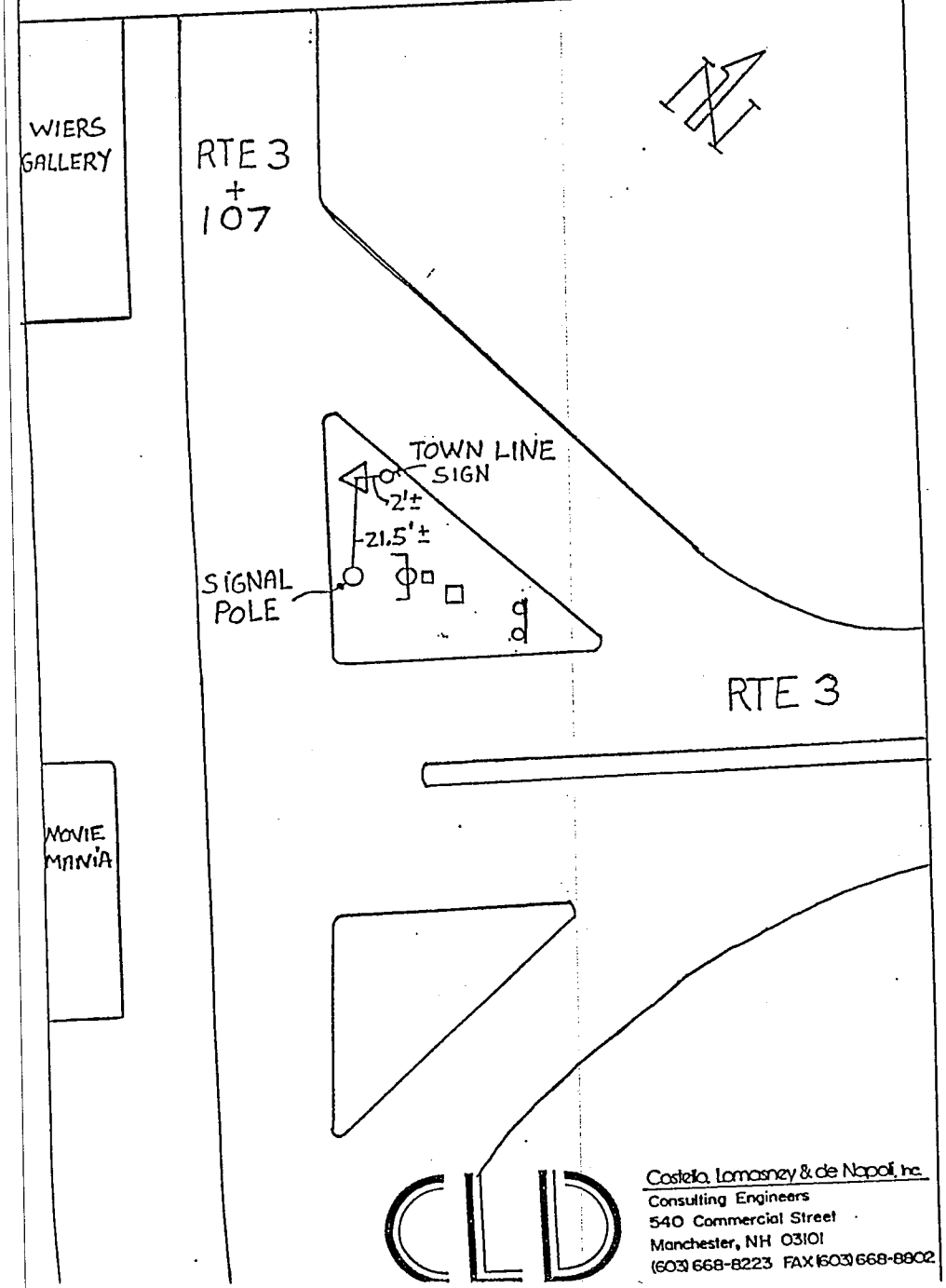
SKETCH LAC-7 GRANITE BOUND W/D.H. 2.7'H



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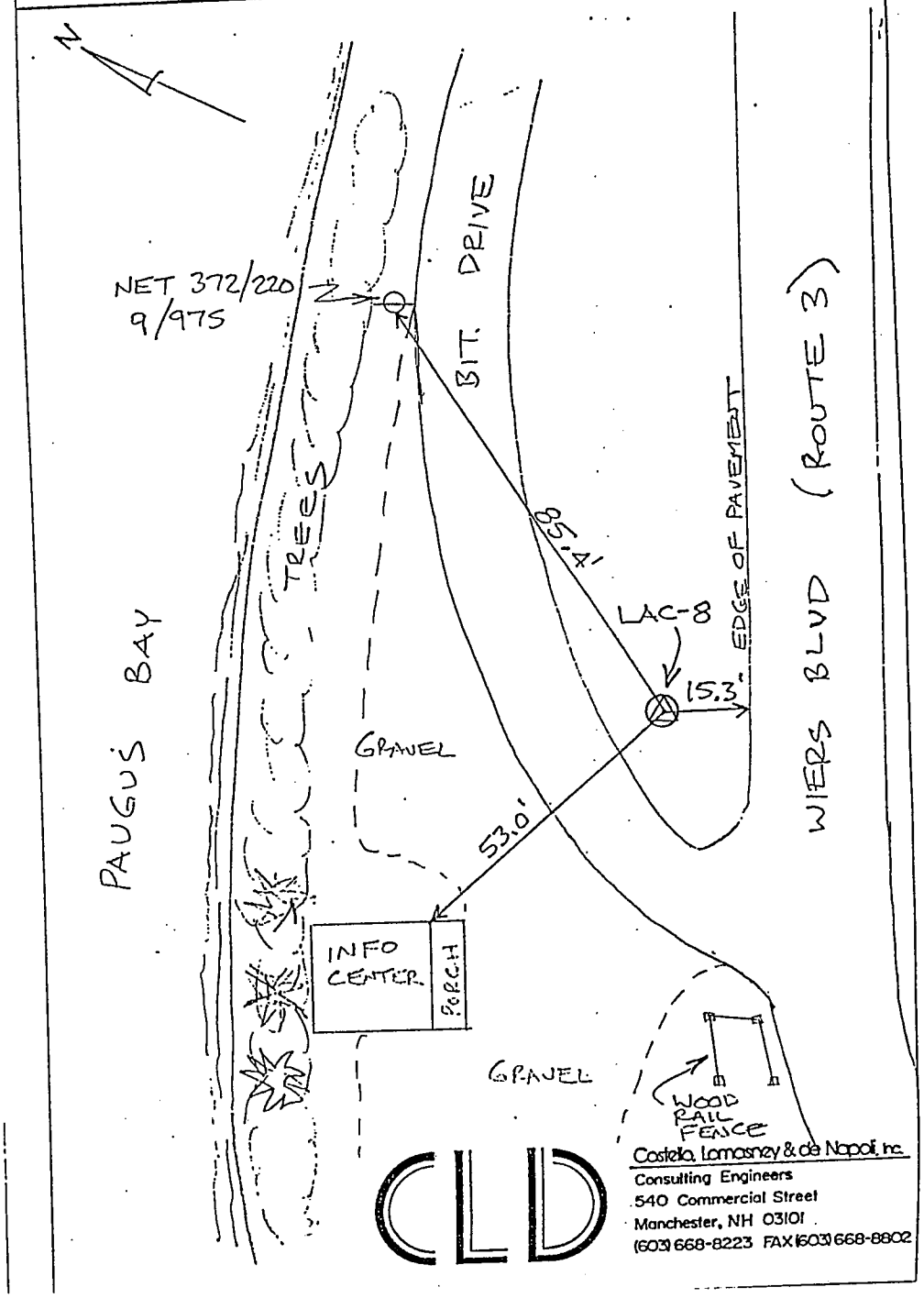
SKETCH LAC-8

2" DIA. CITY OF LACONIA DICK SET IN 6" SQ. GRAN. BND. IN 12" DIA. MON. SQ.



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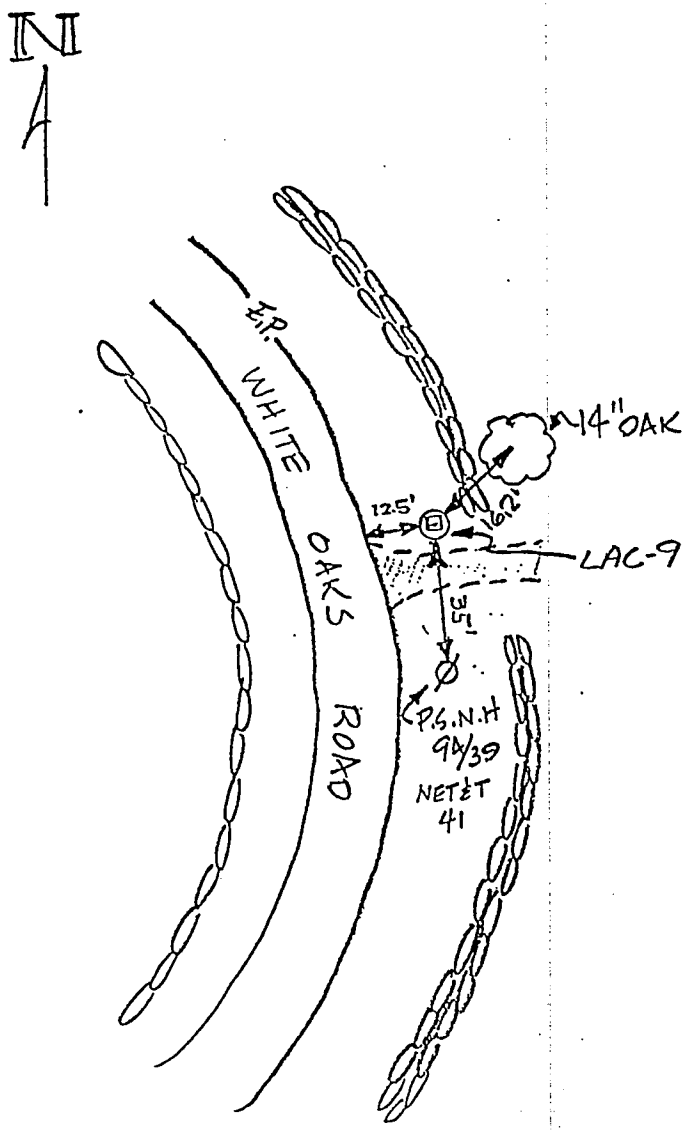
SKETCH LAC-9



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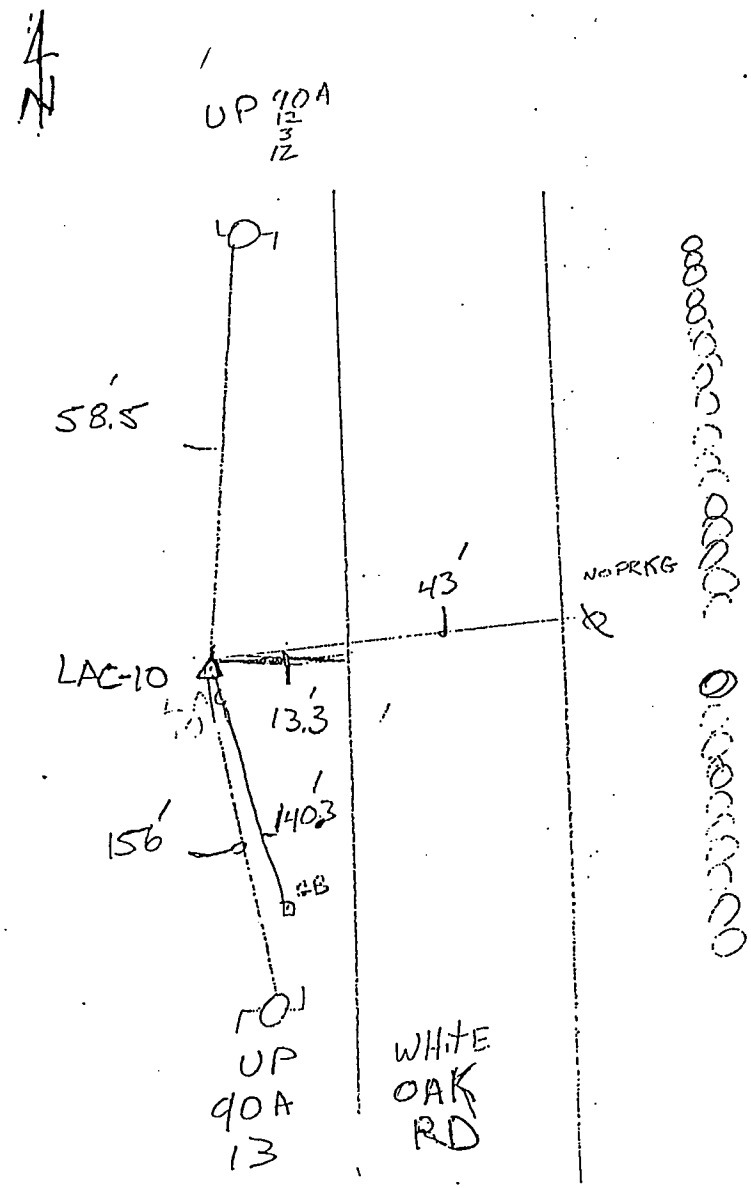
SKETCH LAC-10 CITY DISK IN 6" SQ. GRANITE BND. IN MON. BOX



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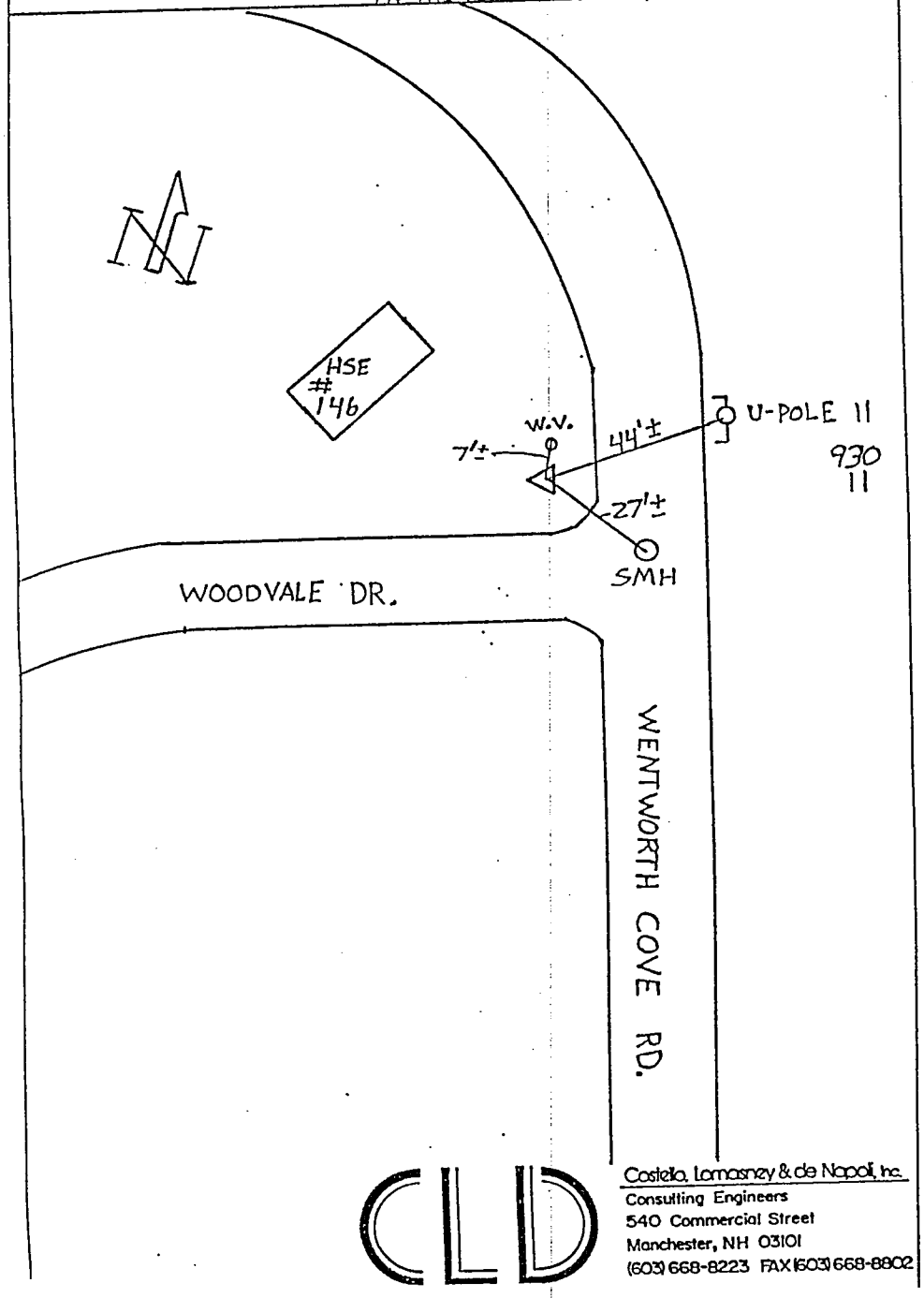
SKETCH LAC-11 GRAN. BOUND W/CITY OF LACONIA DISC IN MONUMENT BOX.



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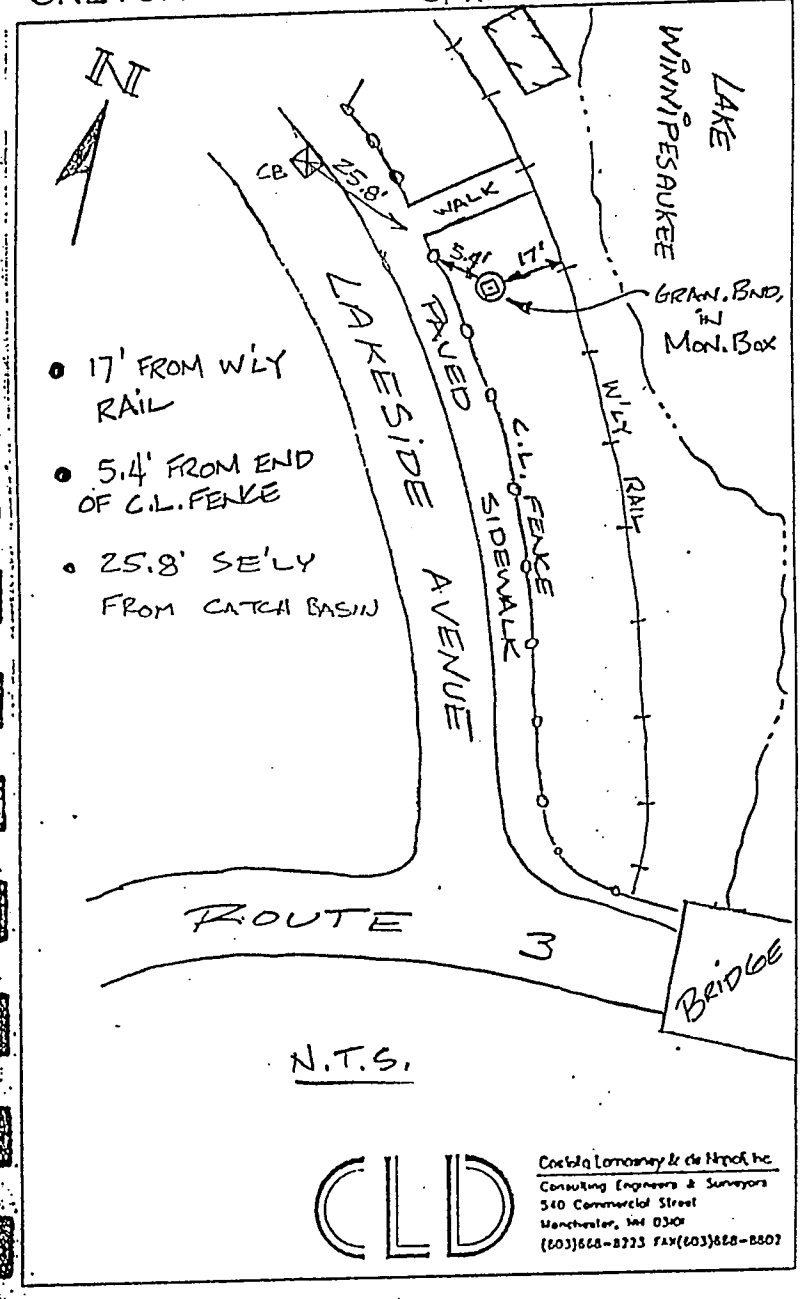
SKETCH LAC-12 CITY DISK IN 6"SQ GRAN. BND. IN MON. BOX



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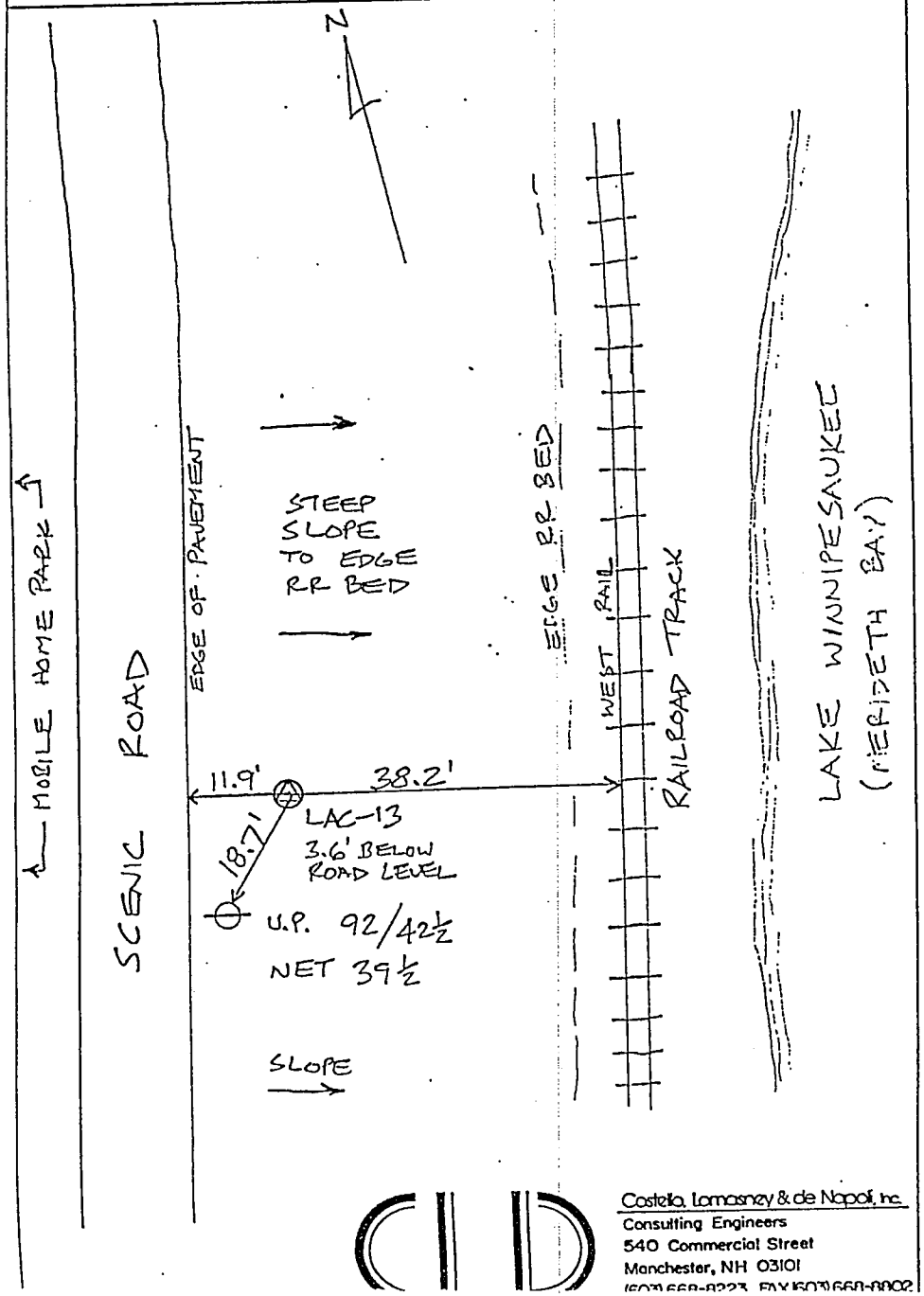
SKETCH LAC-13 CITY OF LACONIA DISK SET IN 6" SQ. GRANITE BOUND IN 12" MON. BOX



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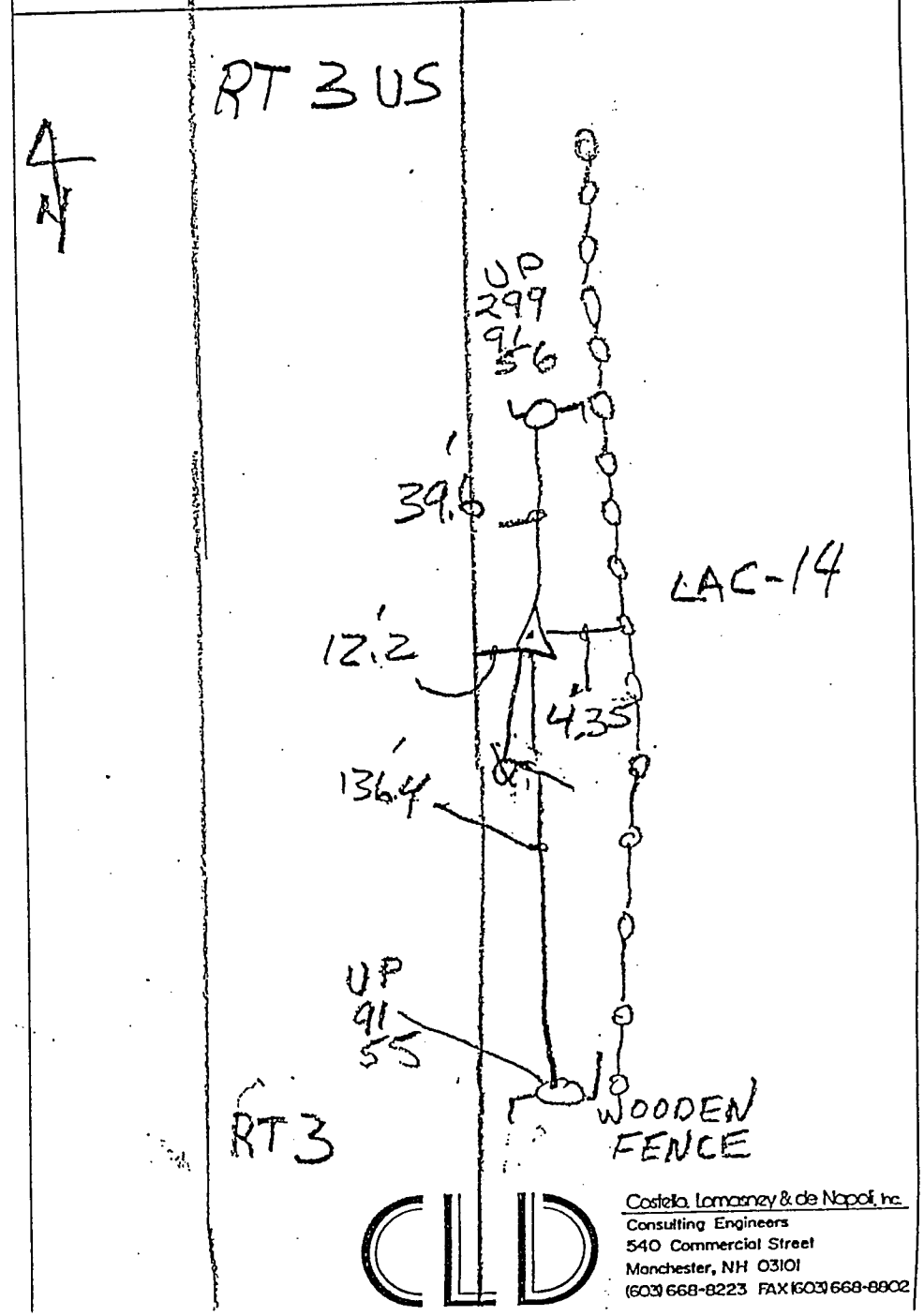
SKETCH LAC-14 CITY DISK IN 6" SQ. GRAN. BND. IN MON. BOX



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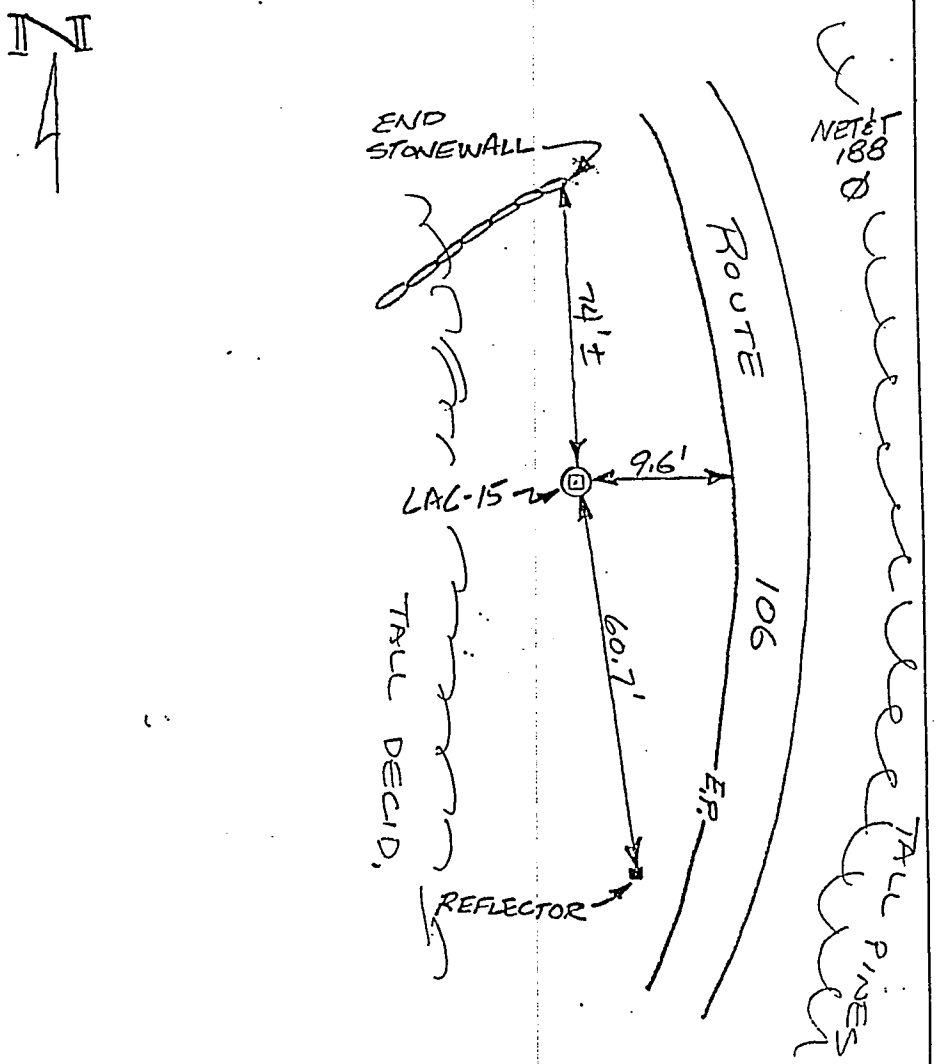
SKETCH LAC-15 CITY DISK IN 6" SQ. GRAN. BND IN MON. BOX



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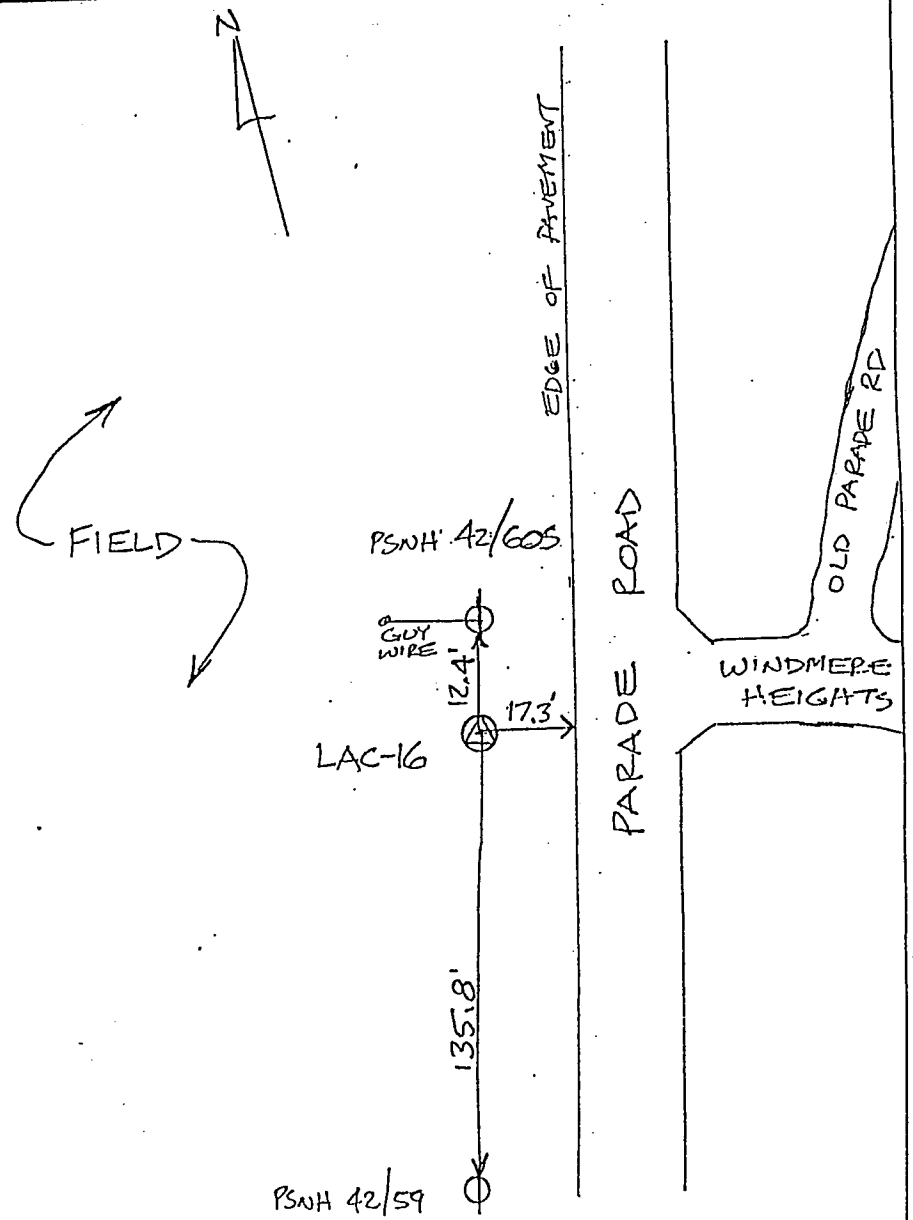
SKETCH LAC-16 CITY OF LACONIA DISK SET IN A 6" SQ. GRAN. BND IN MON. BOX



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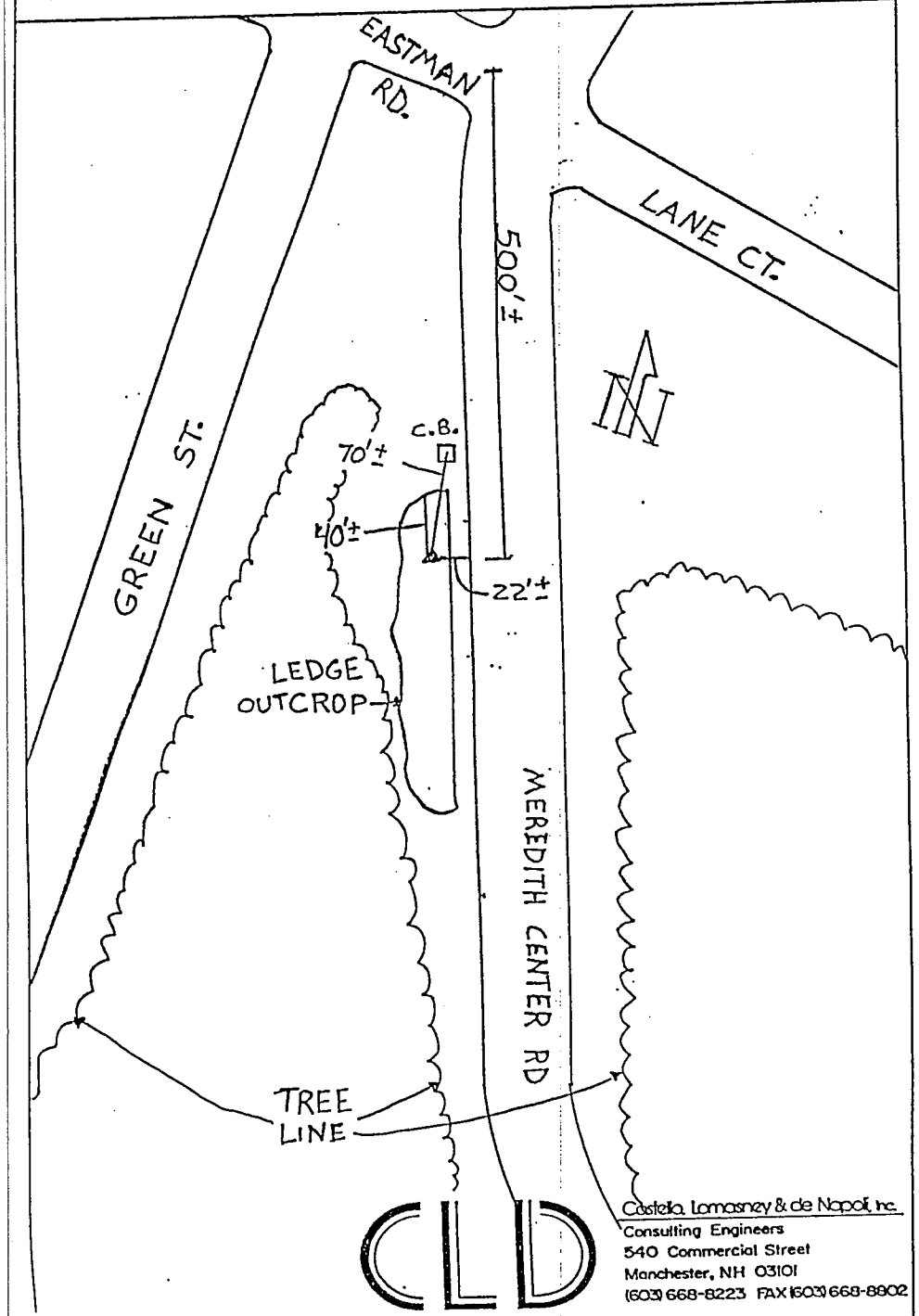
SKETCH LAC-17 CITY OF LACONIA DISC IN LEDGE OUTCROP



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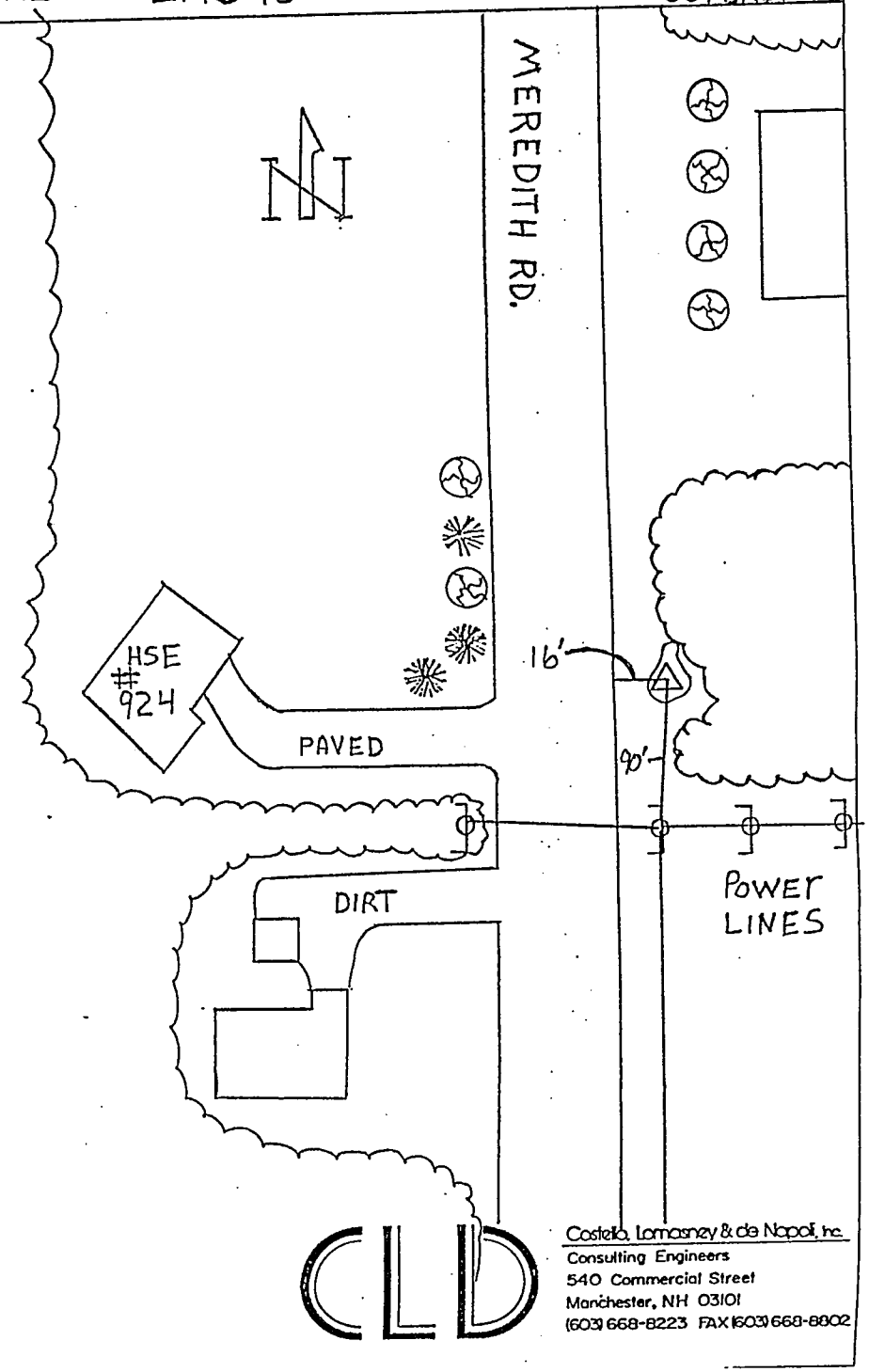
SKETCH LAC-18 CITY OF LACONIA DISC IN LEDGE OUTCROP



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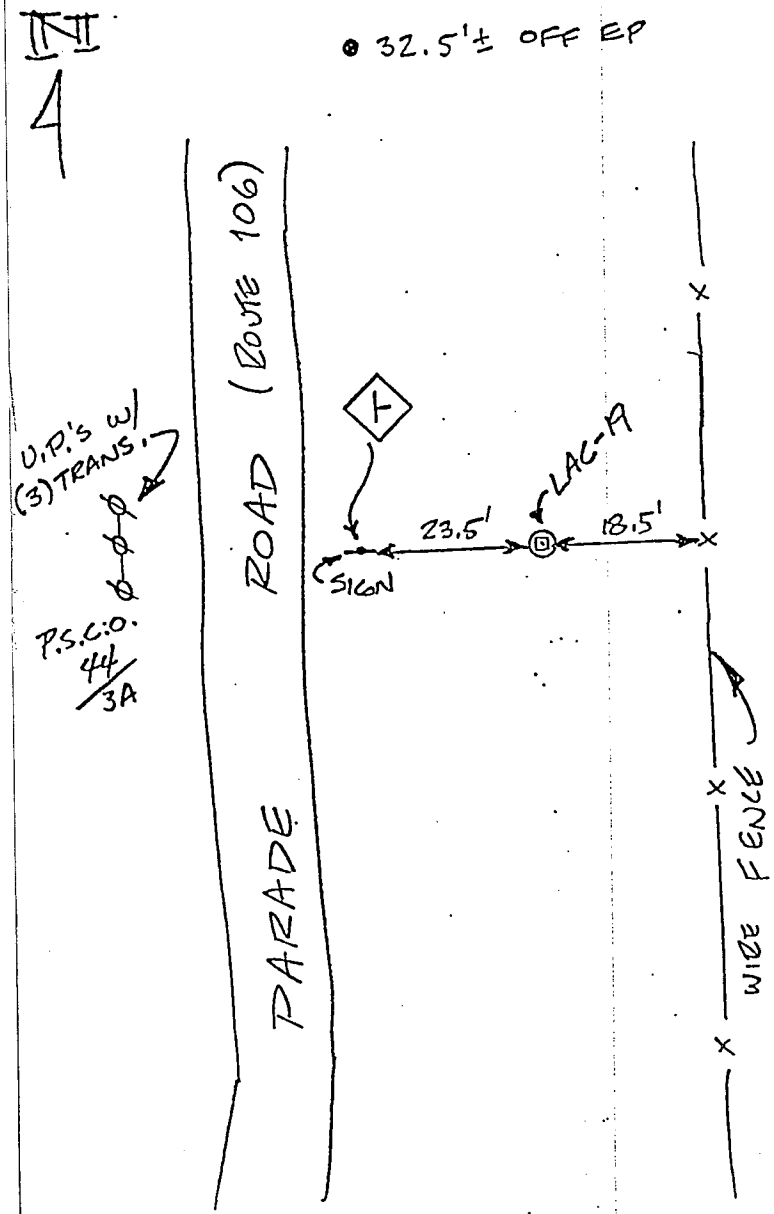
SKETCH LAC-19 CITY DISK IN 6"SQ. GRAN-BND IN MON. BOX

IN 4



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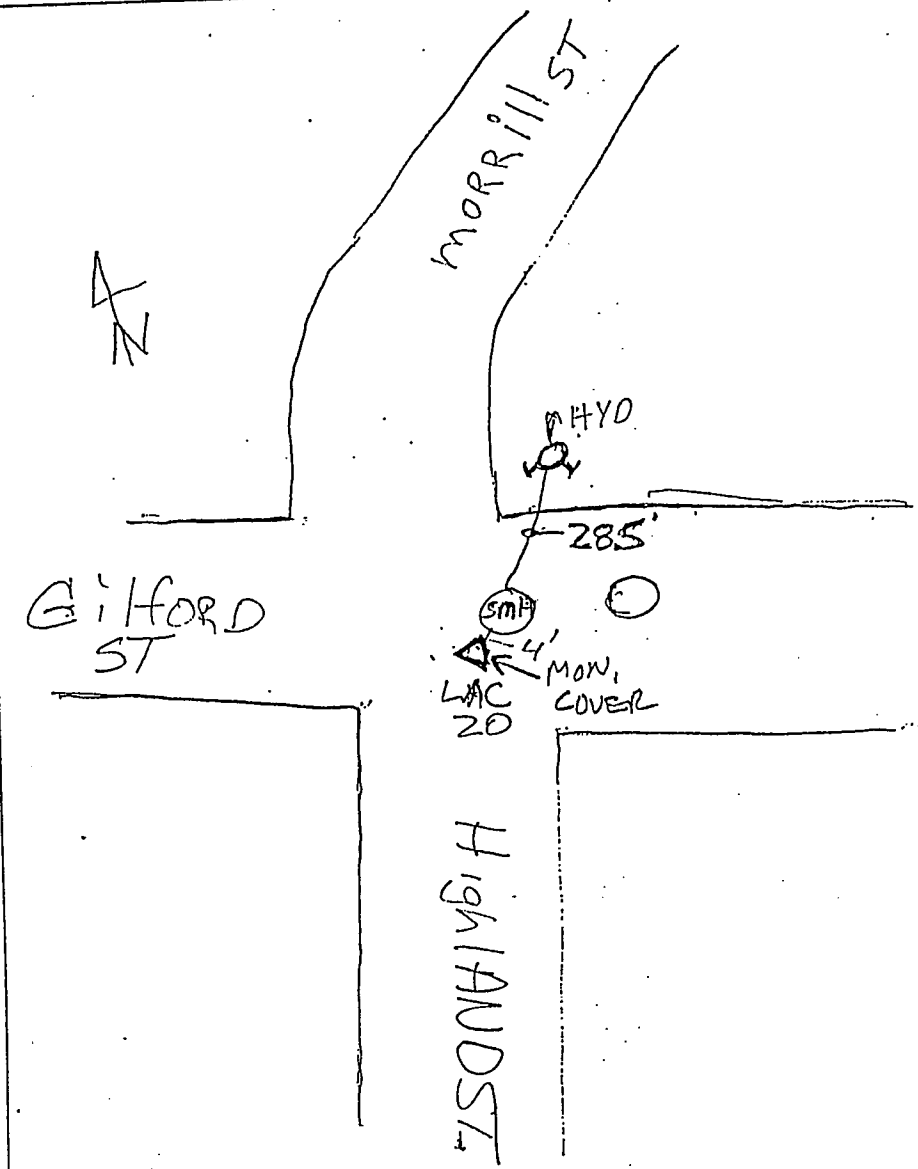
SKETCH LAC-20 BOUND IN STREET INTERSECTION IN MON. BOX



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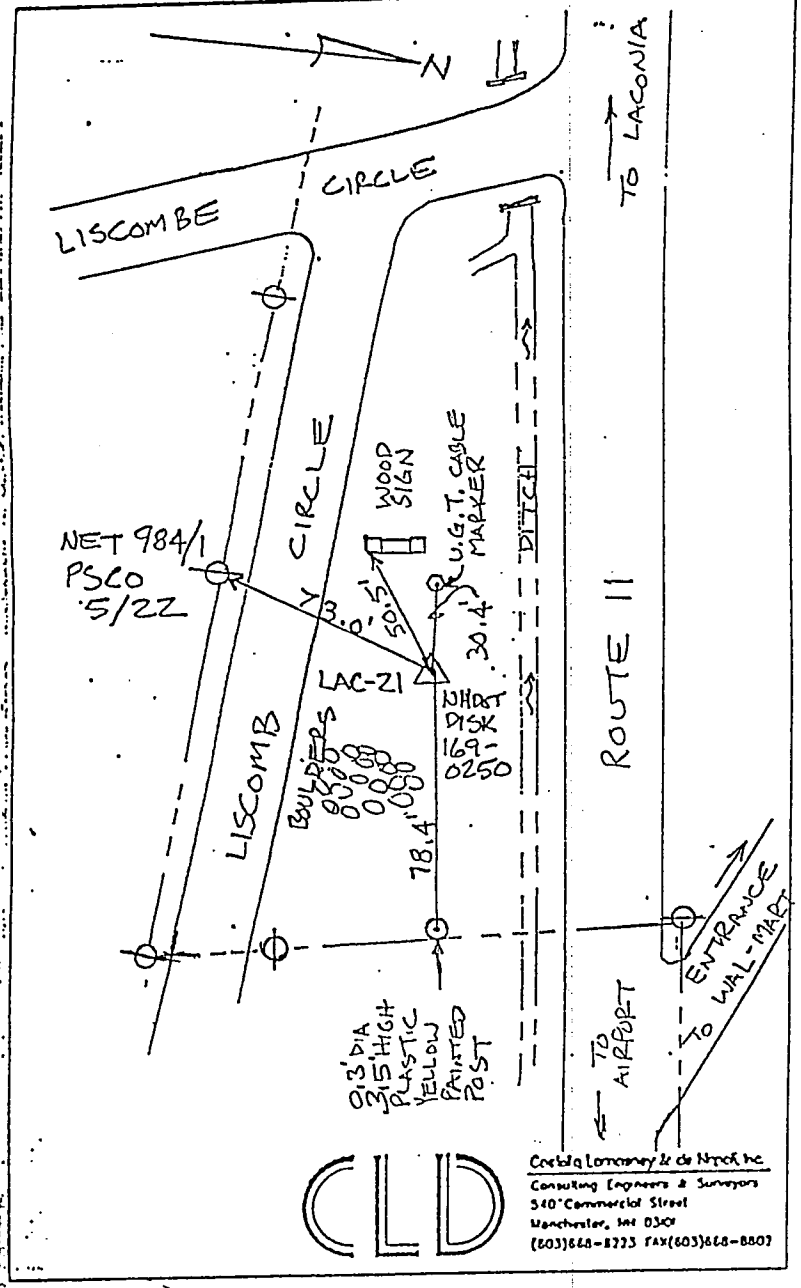
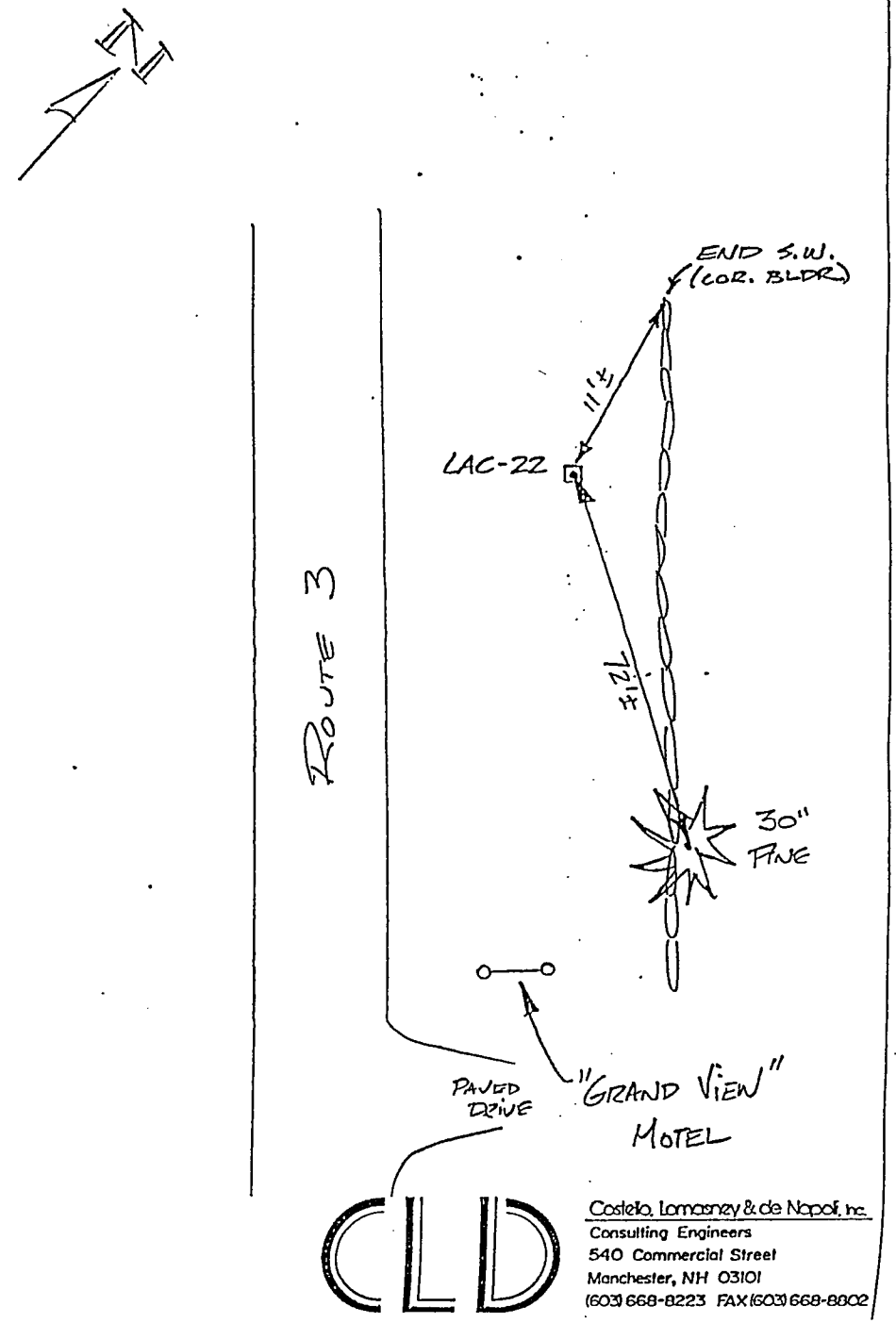
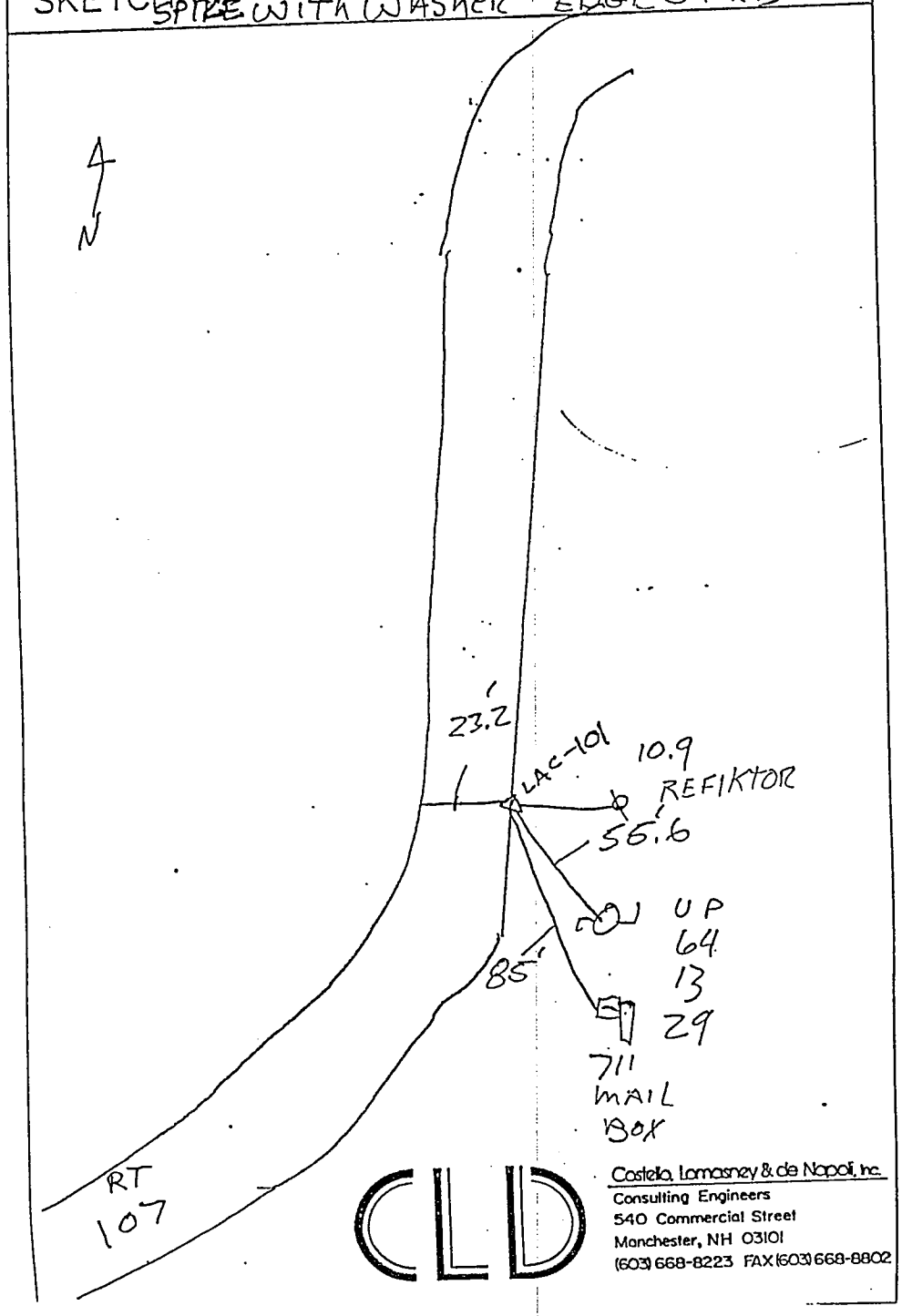
SKETCH LAC-21 NHDOT DISK 169-0250 STA DG 44 1961 (GILFORD)



SKETCH LAC-22 NHDOT DISK 245-0060 6" SQ. GRAN. BND. (DG 23)



SKETCH LAC-101 SPIKE WITH WASHER



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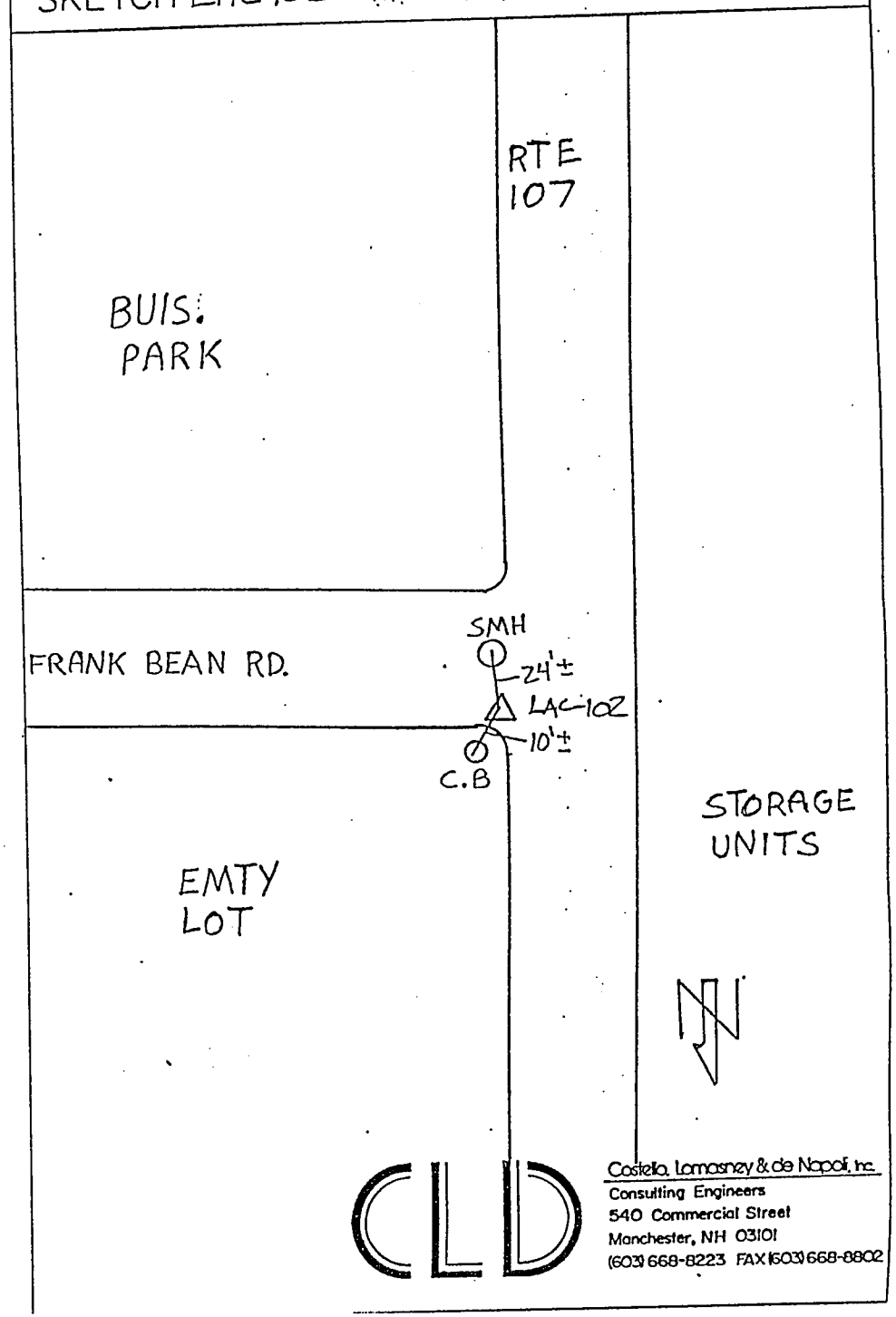
SKETCH LAC-102 SPIKE+WASHER



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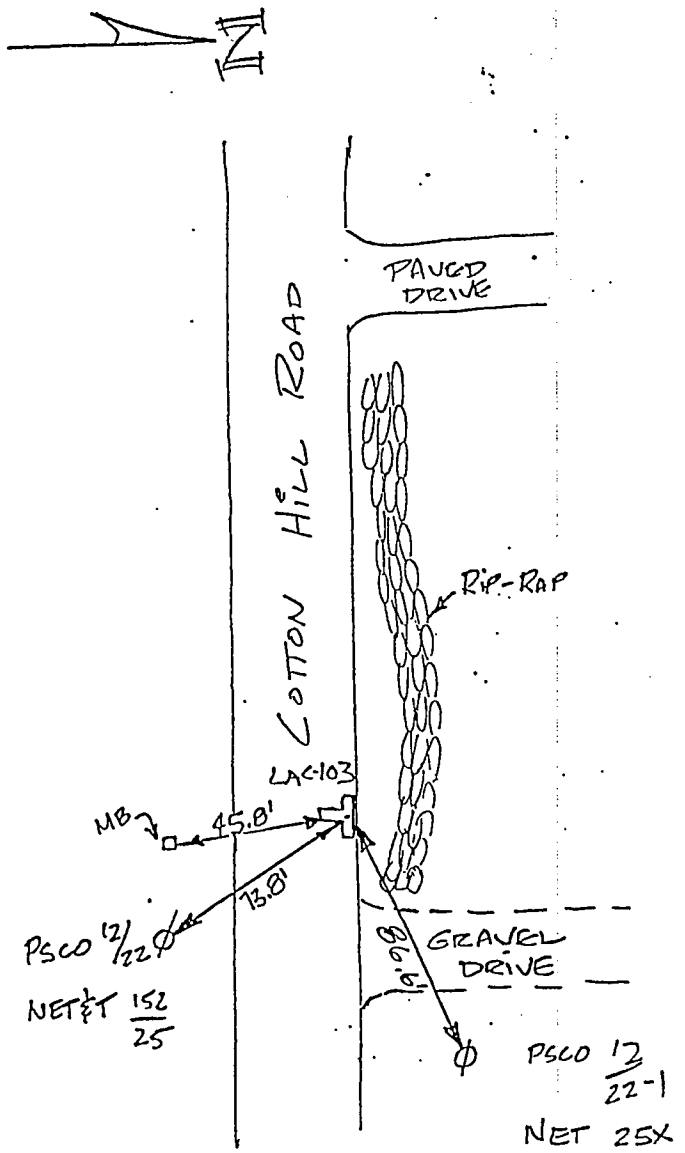
SKETCH LAC-103 SPIKE W/WASHER



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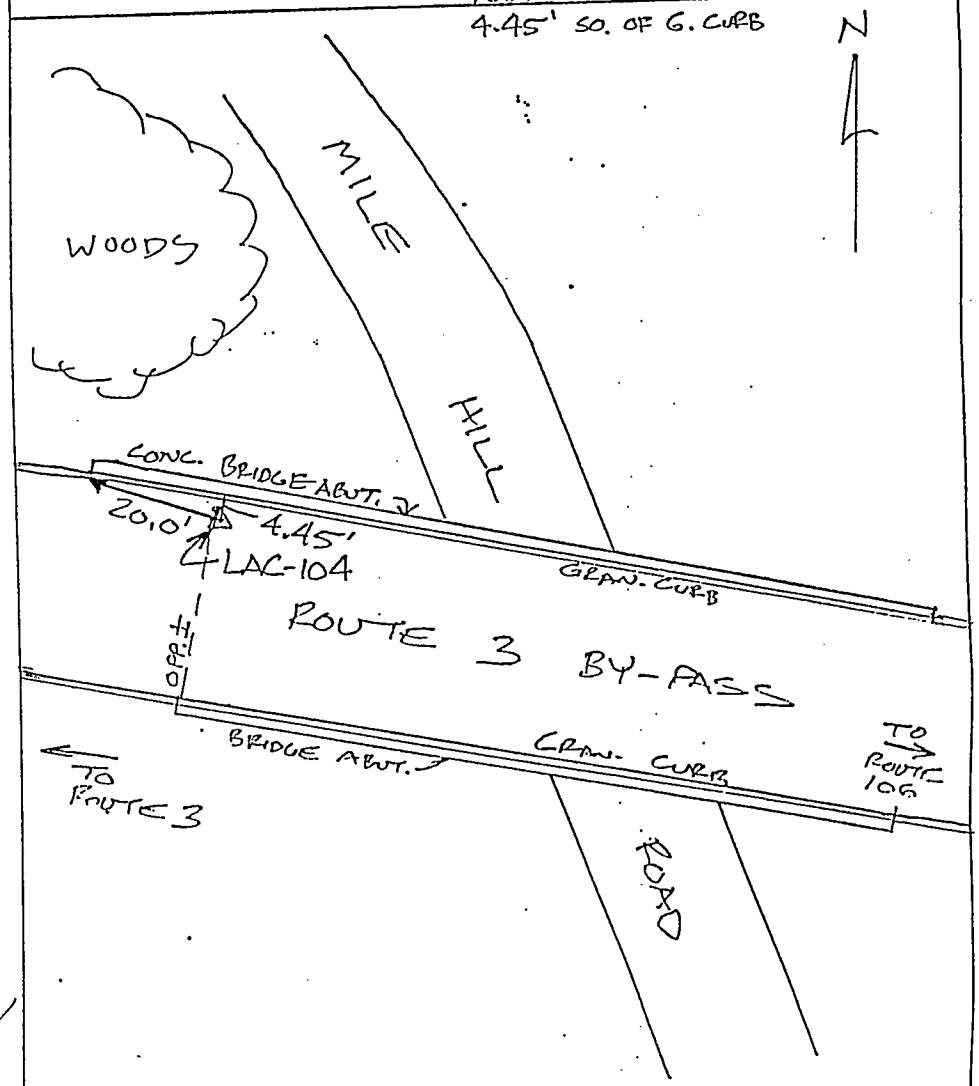
SKETCH LAC-104

SPIKE W/ WASHER SET IN BRIDGE SHOULDER. NW END OF BRIDGE 4.45' SO. OF G. CURB



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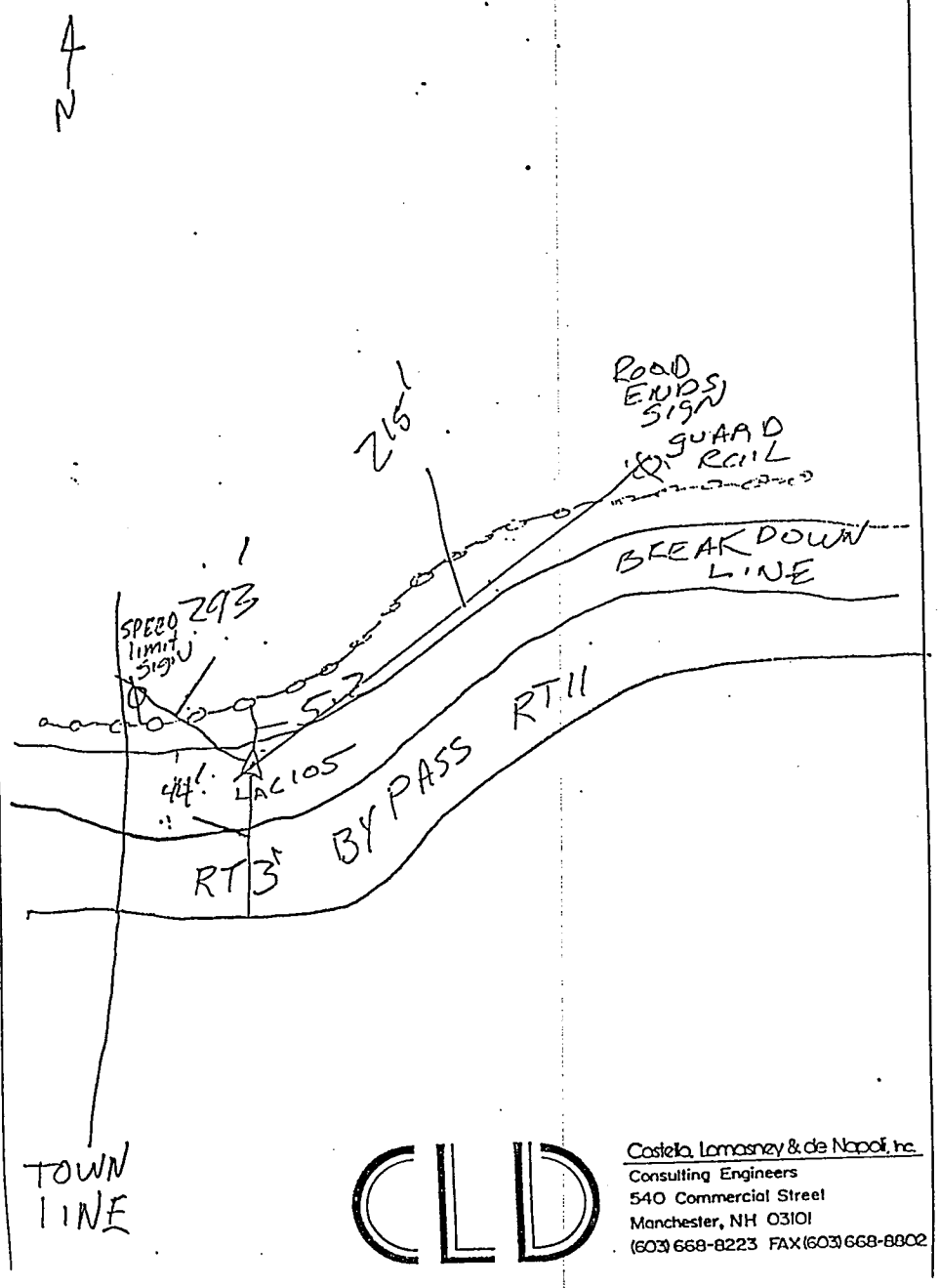
SKETCH LAC-105 ON NORTH SIDE OF RD PK & WASHER (ROUTE 3 BY-PASS)



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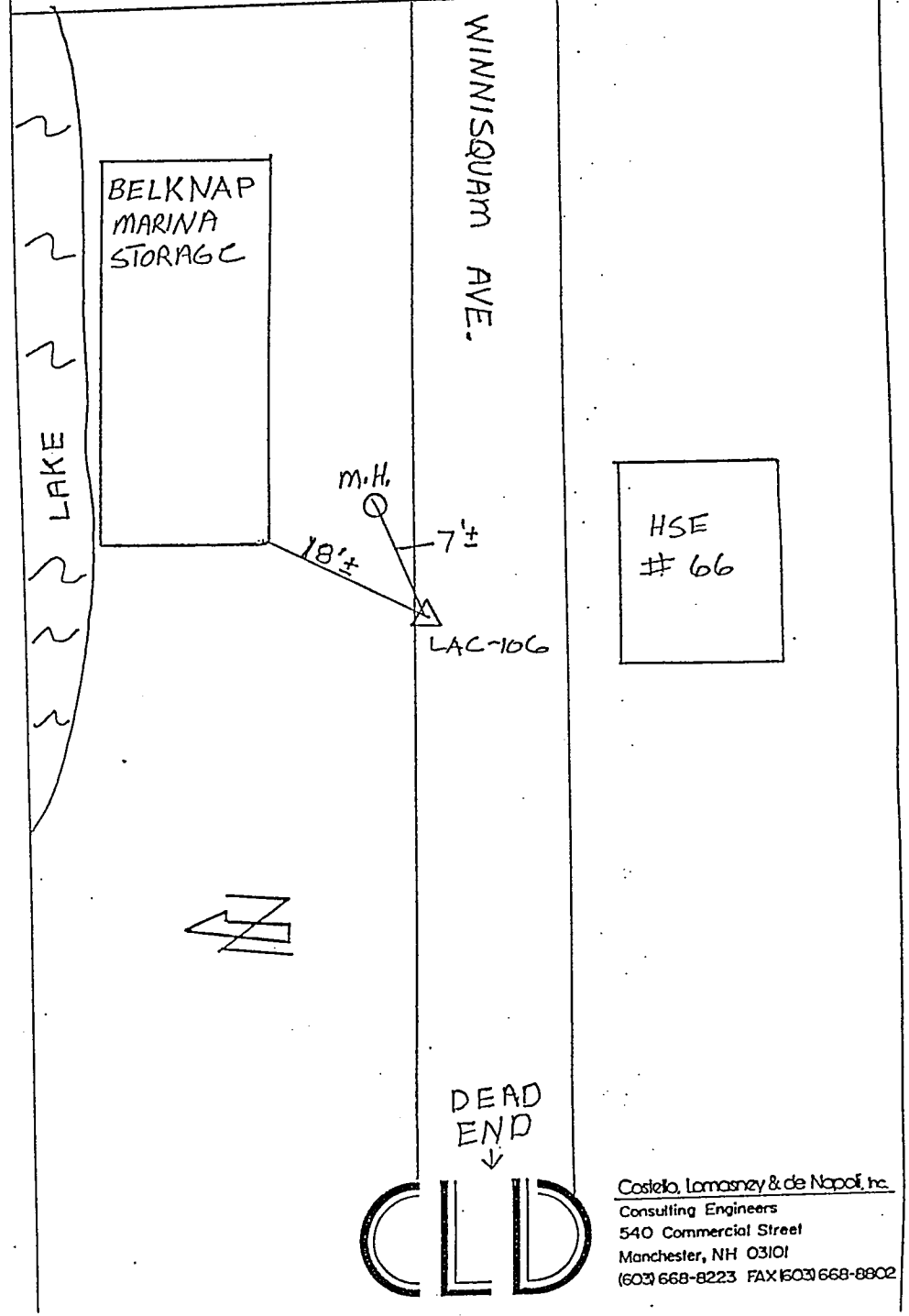
SKETCH LAC-106 PK+WASHER



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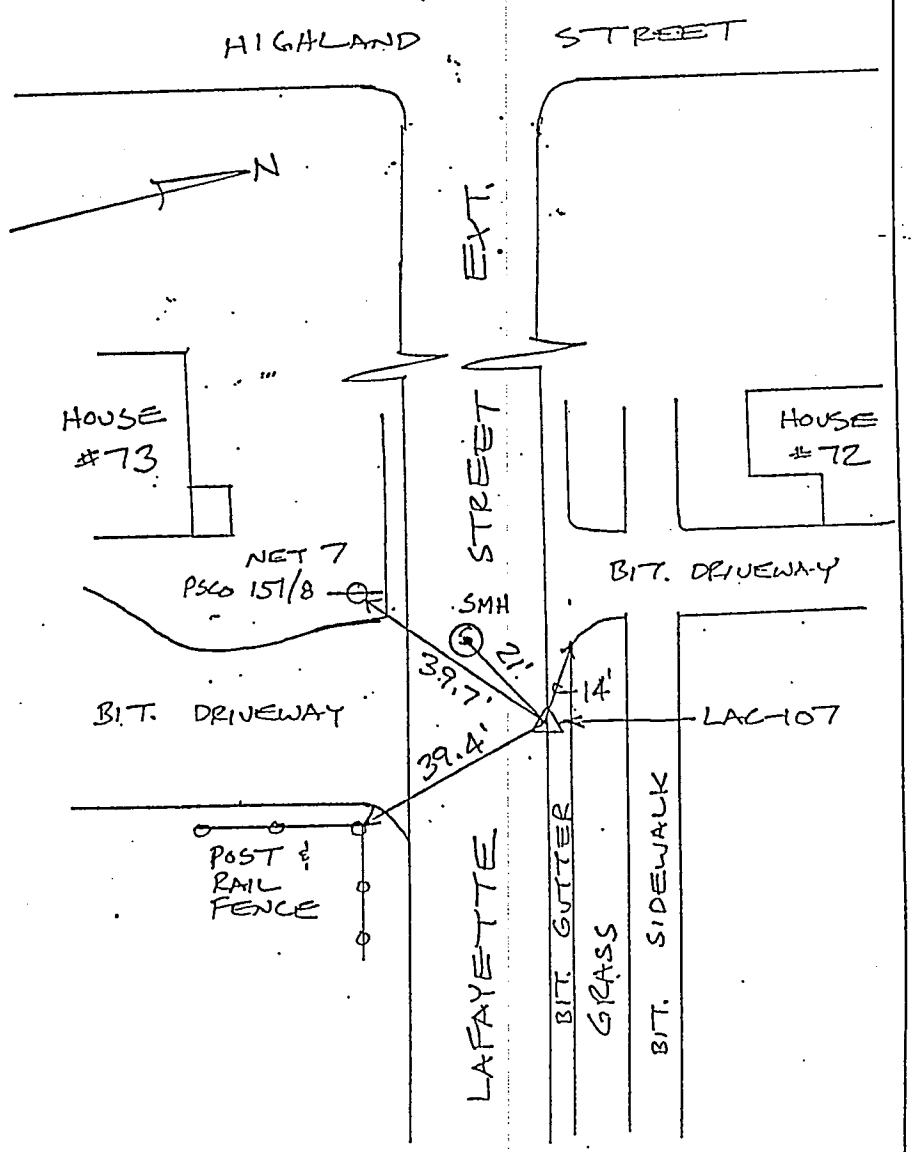
SKETCH LAC-107 SPIKE W/WASHER SET ON NO. SIDE LAFAYETTE ST. EXT.



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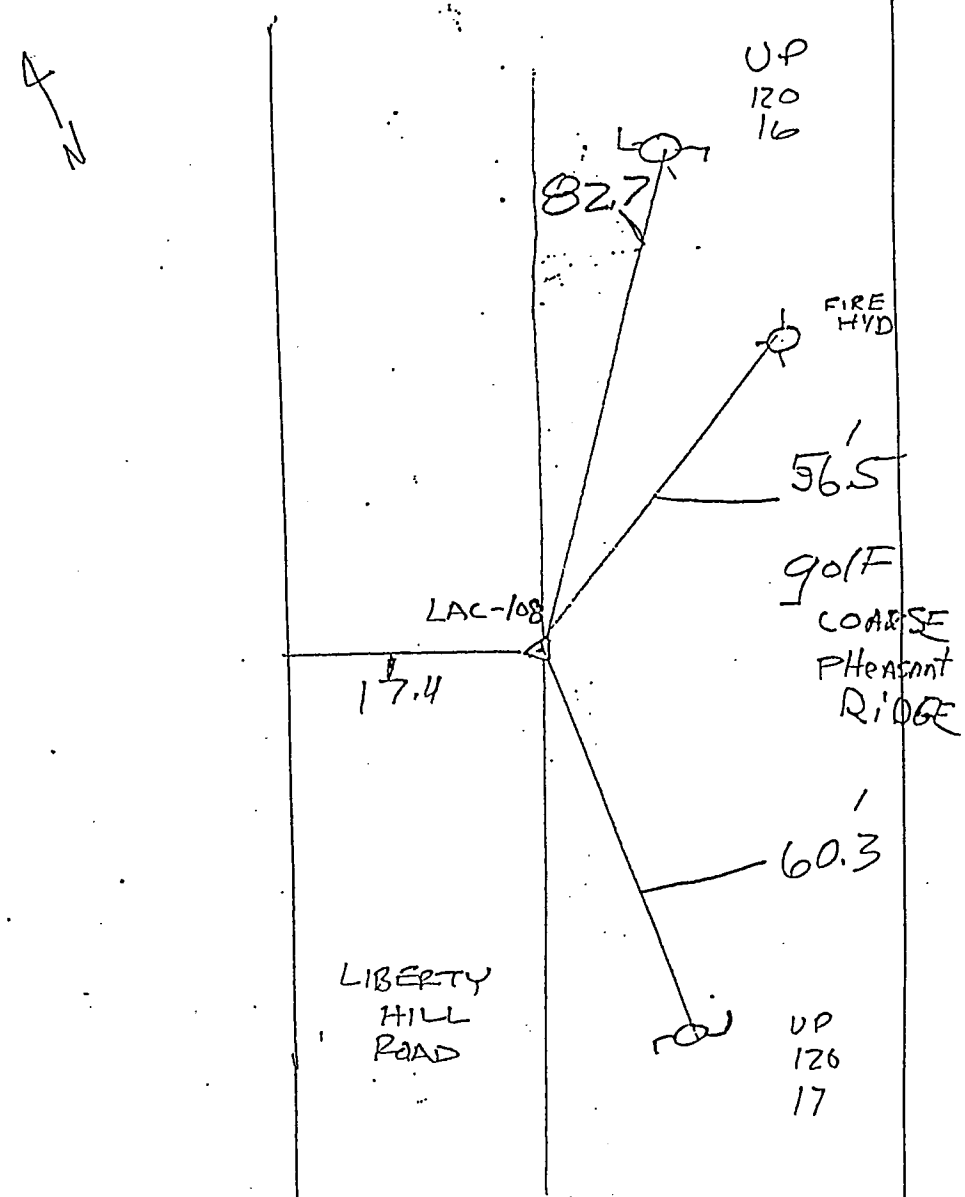
SKETCH LAC-108 SPIKE With WASHER EAST SIDE RD



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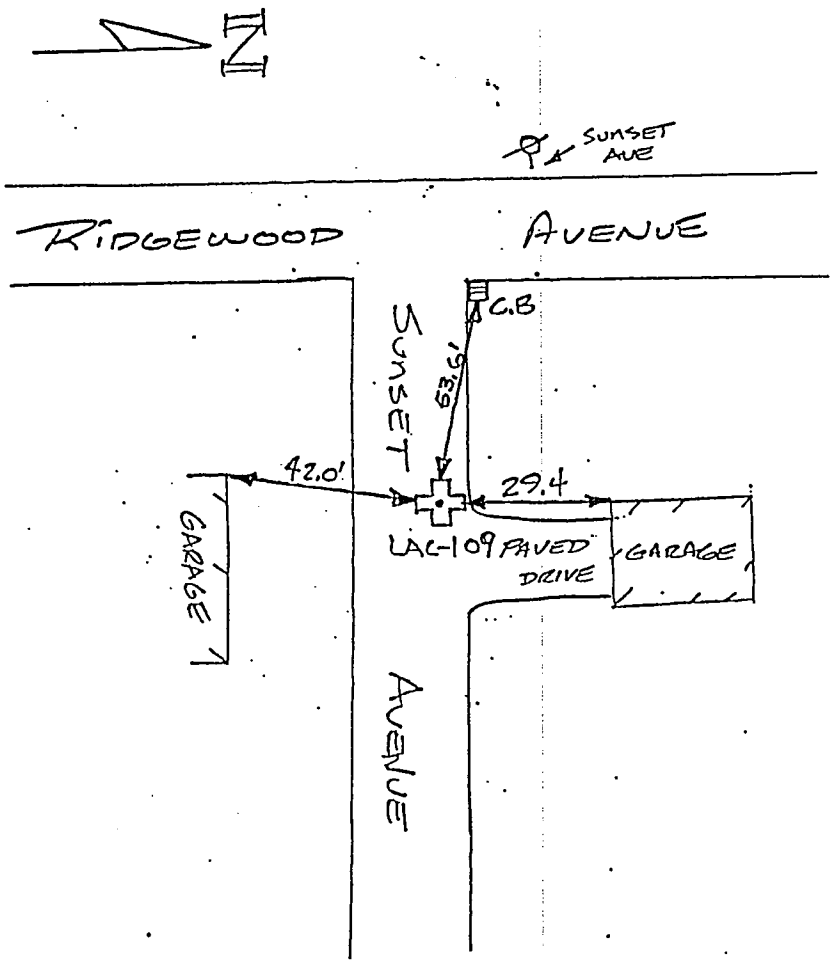
SKETCH LAC-109 SPIKE W/WASHER



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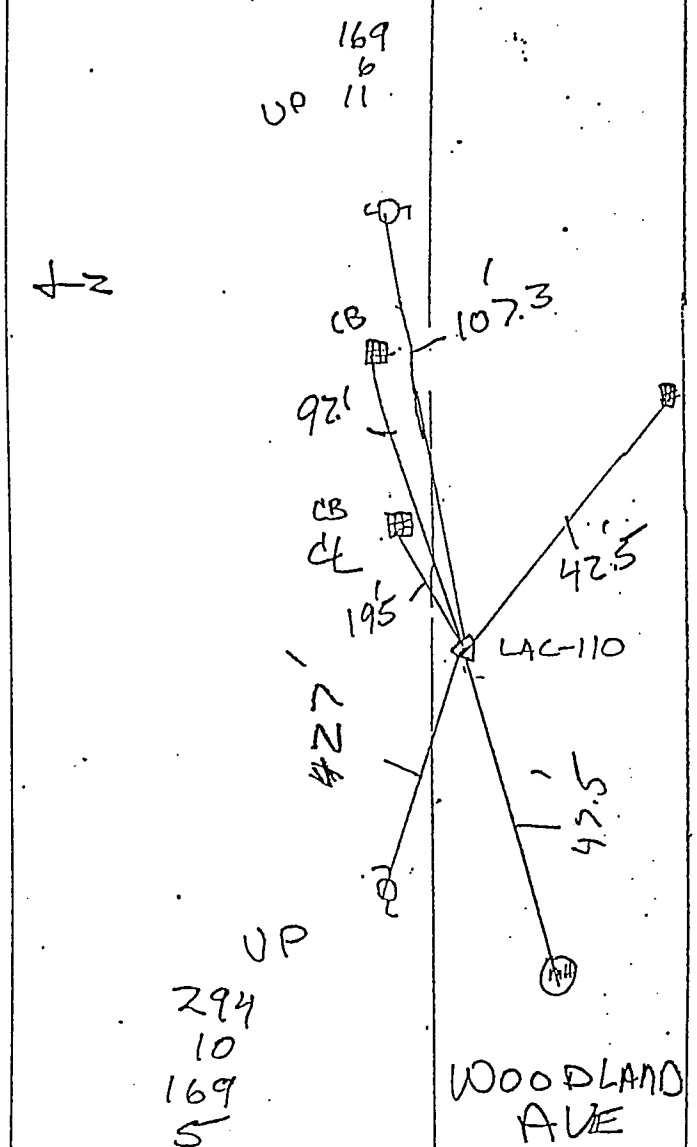
SKETCH LAC-110 PK & WASHER EDGE OF RD. NORTH SIDE



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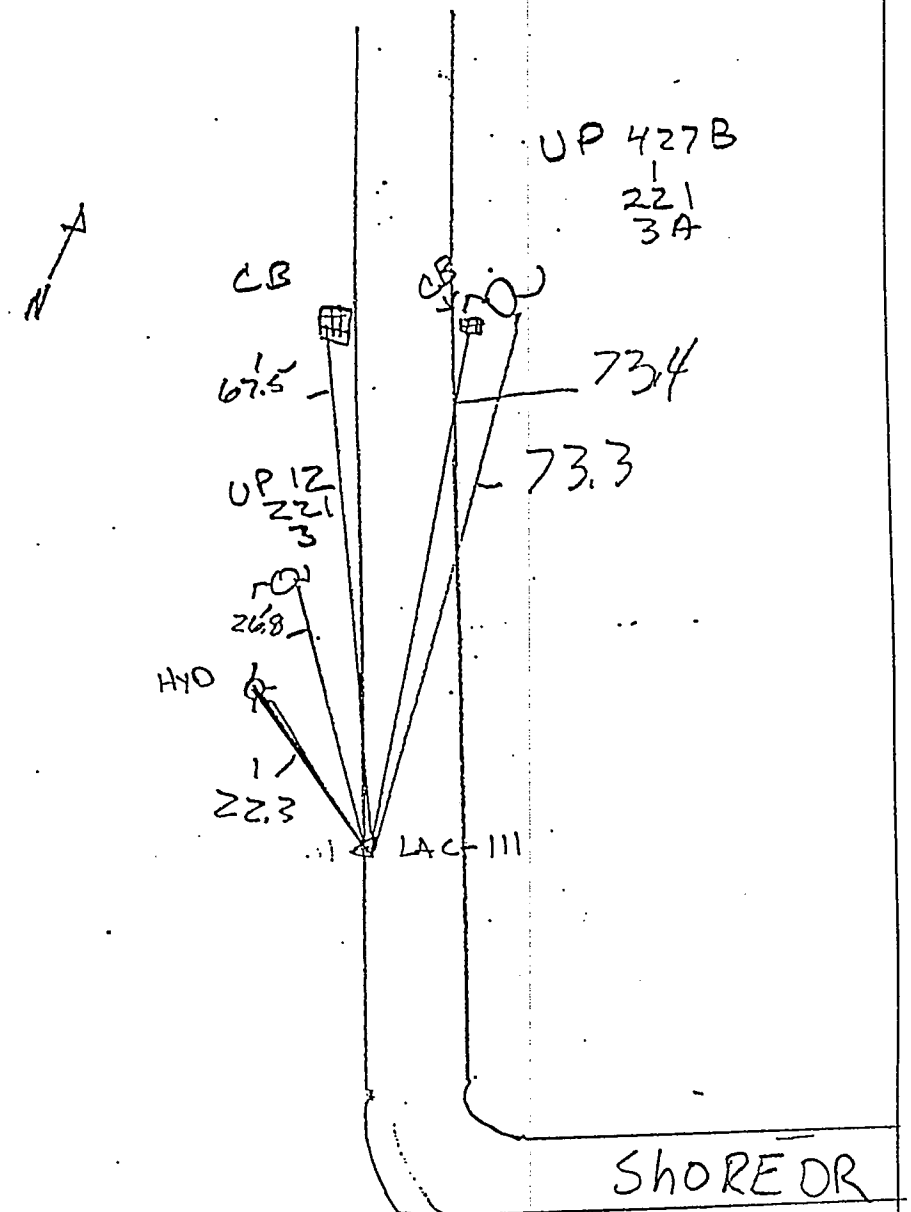
SKETCH LAC-111 PK with WASHER ON the WEST EDGE OF RD



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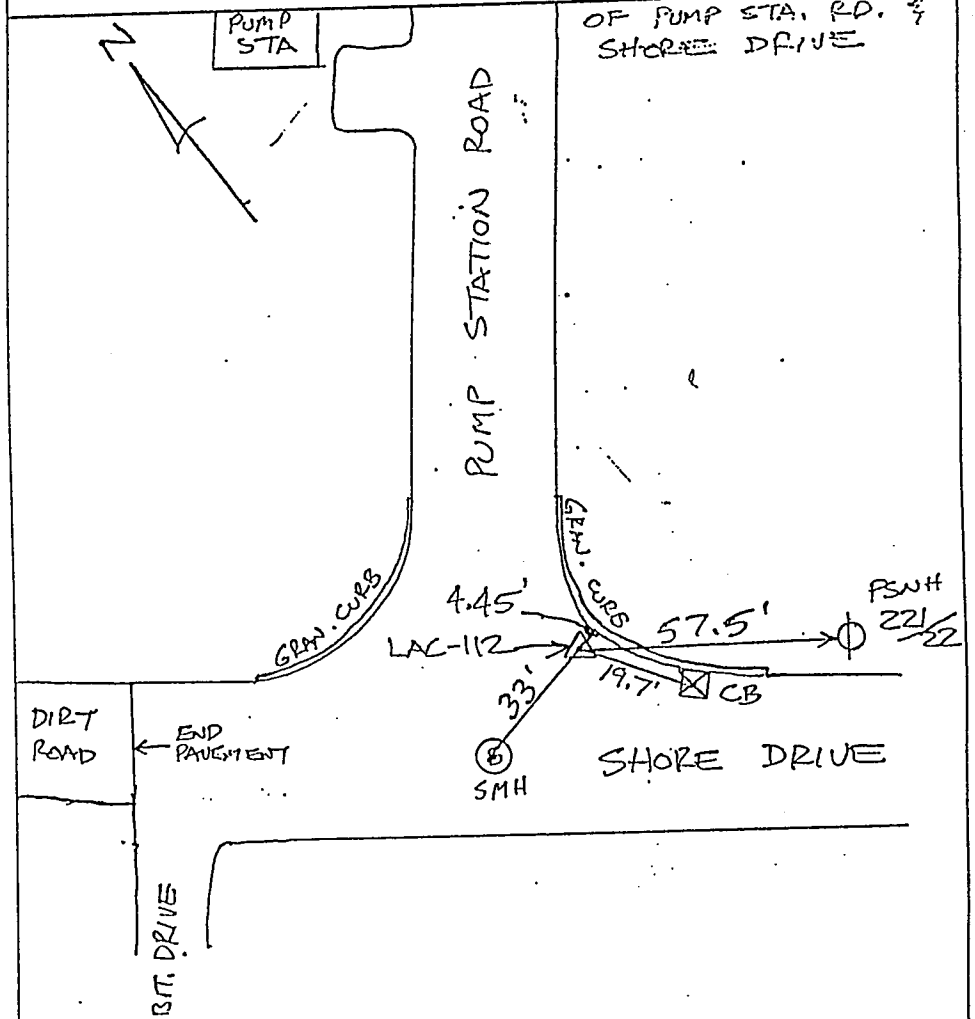
SKETCH LAC-112 SPIKE W/WASHER SET 4.45' W. OF CURB AT INT. OF PUMP STA. RD. & SHORE DRIVE



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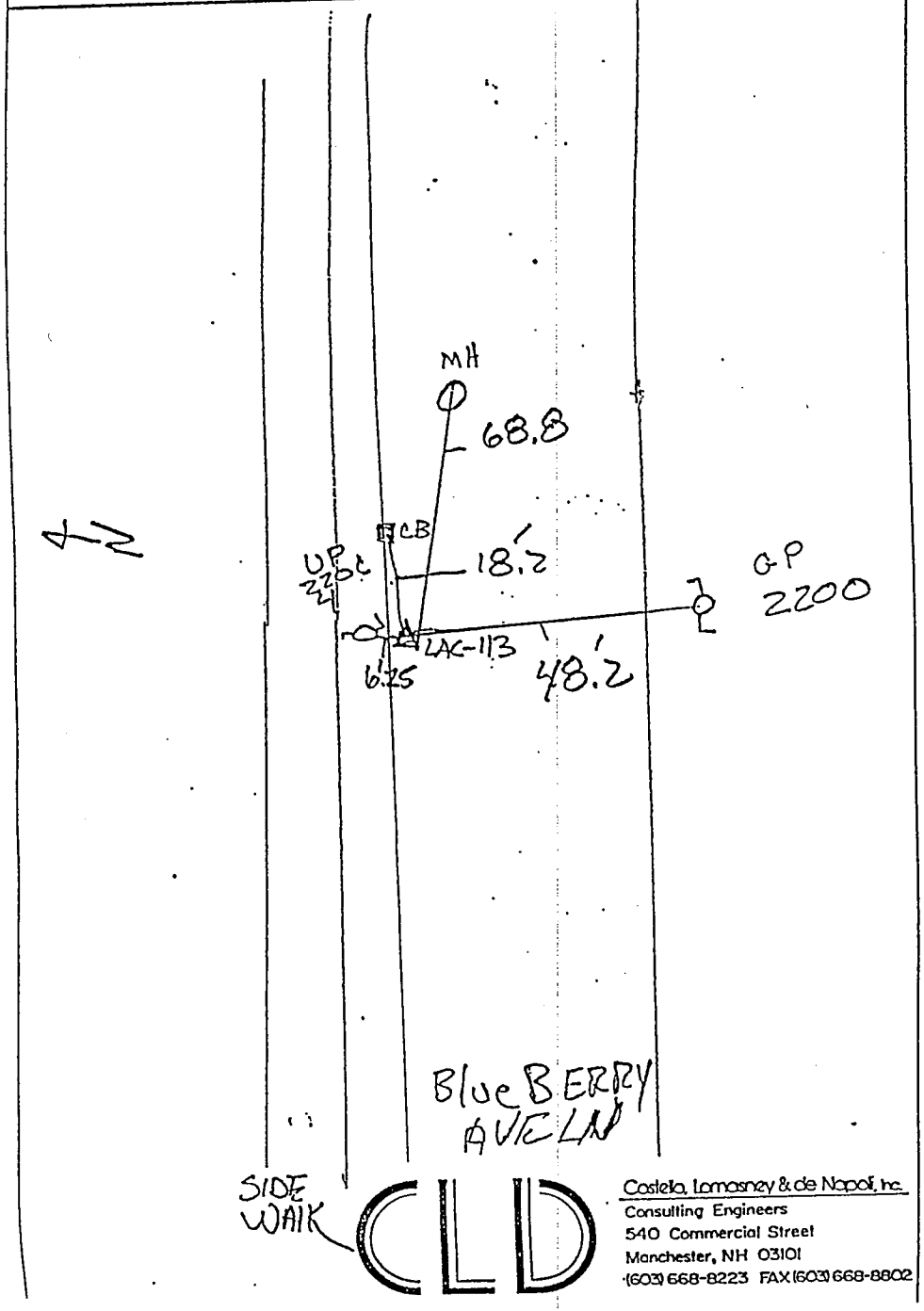
SKETCH LAC-113 SPIKE W/WASHER EDGE of North SIDE



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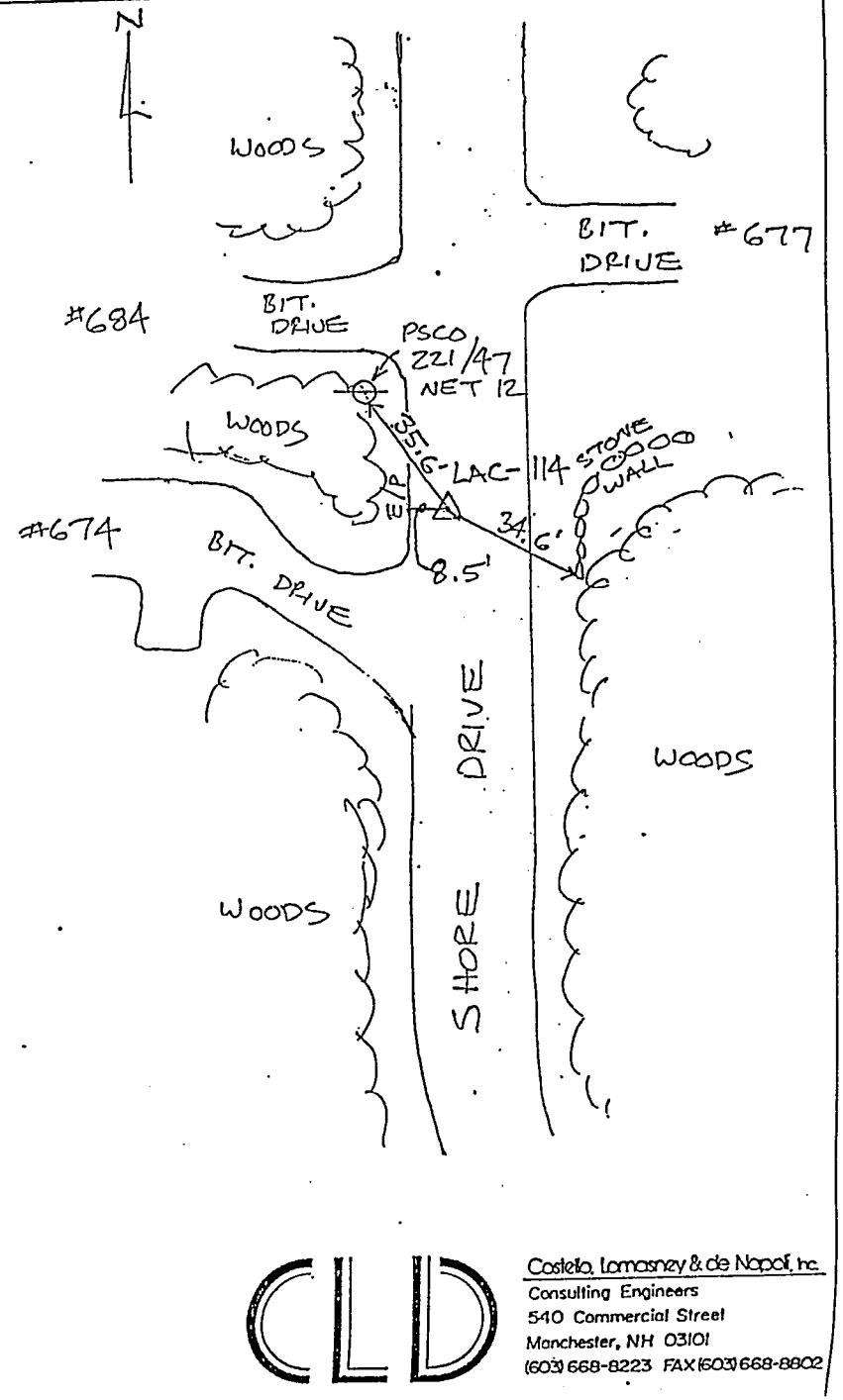
SKETCH LAC-114 PK W/WASHER SLIT IN ROAD BETWEEN E & WEST EDGE OF SHORE DRIVE



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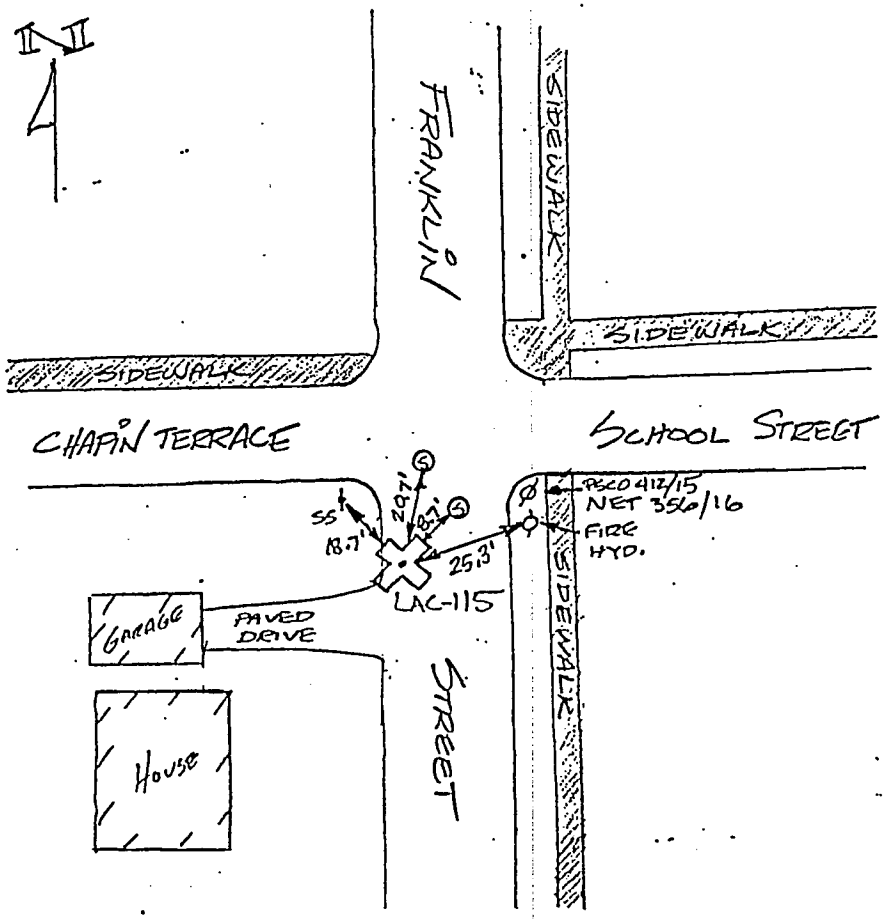
SKETCH LAC-115 PK W/WASHER



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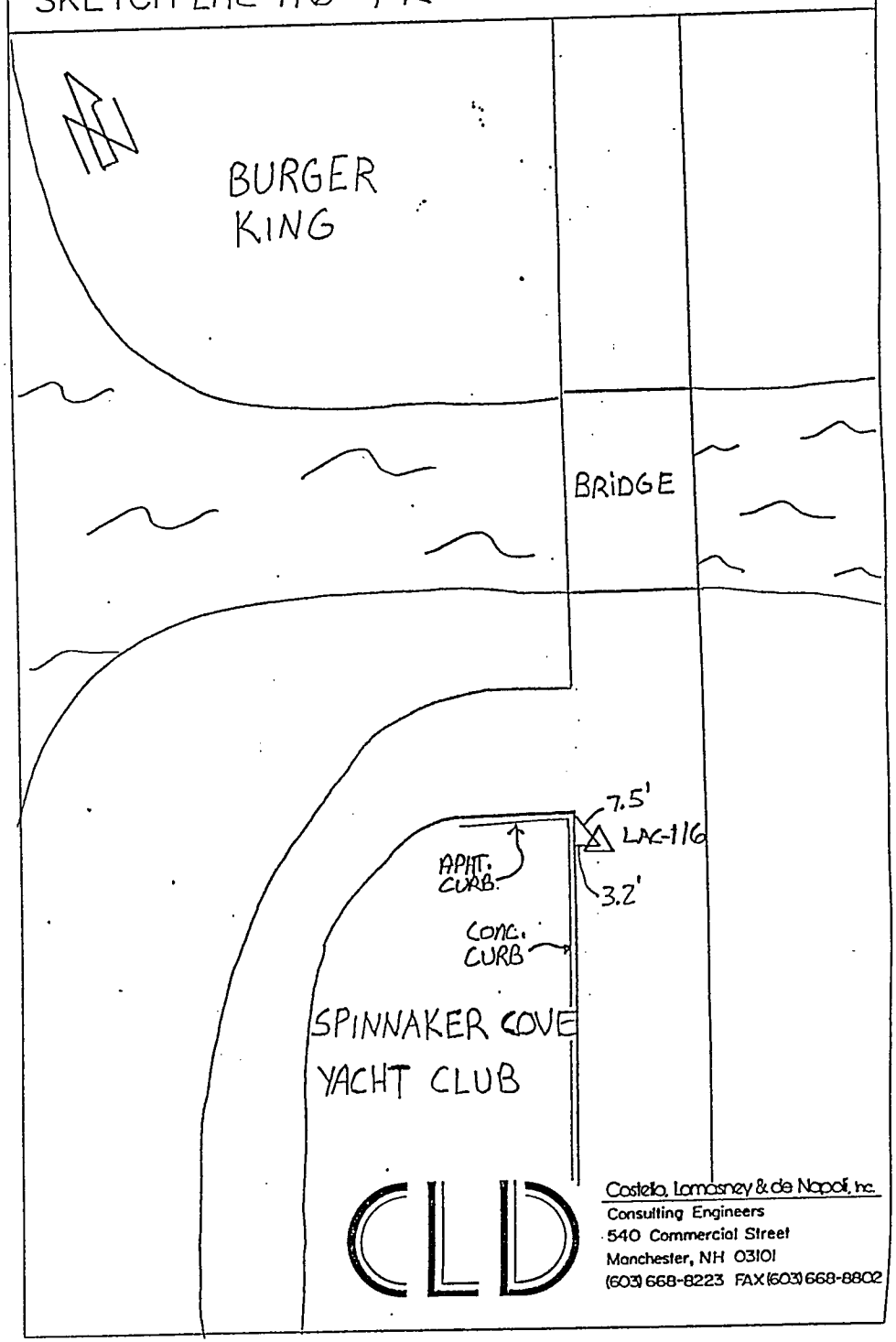
SKETCH LAC-116 PK



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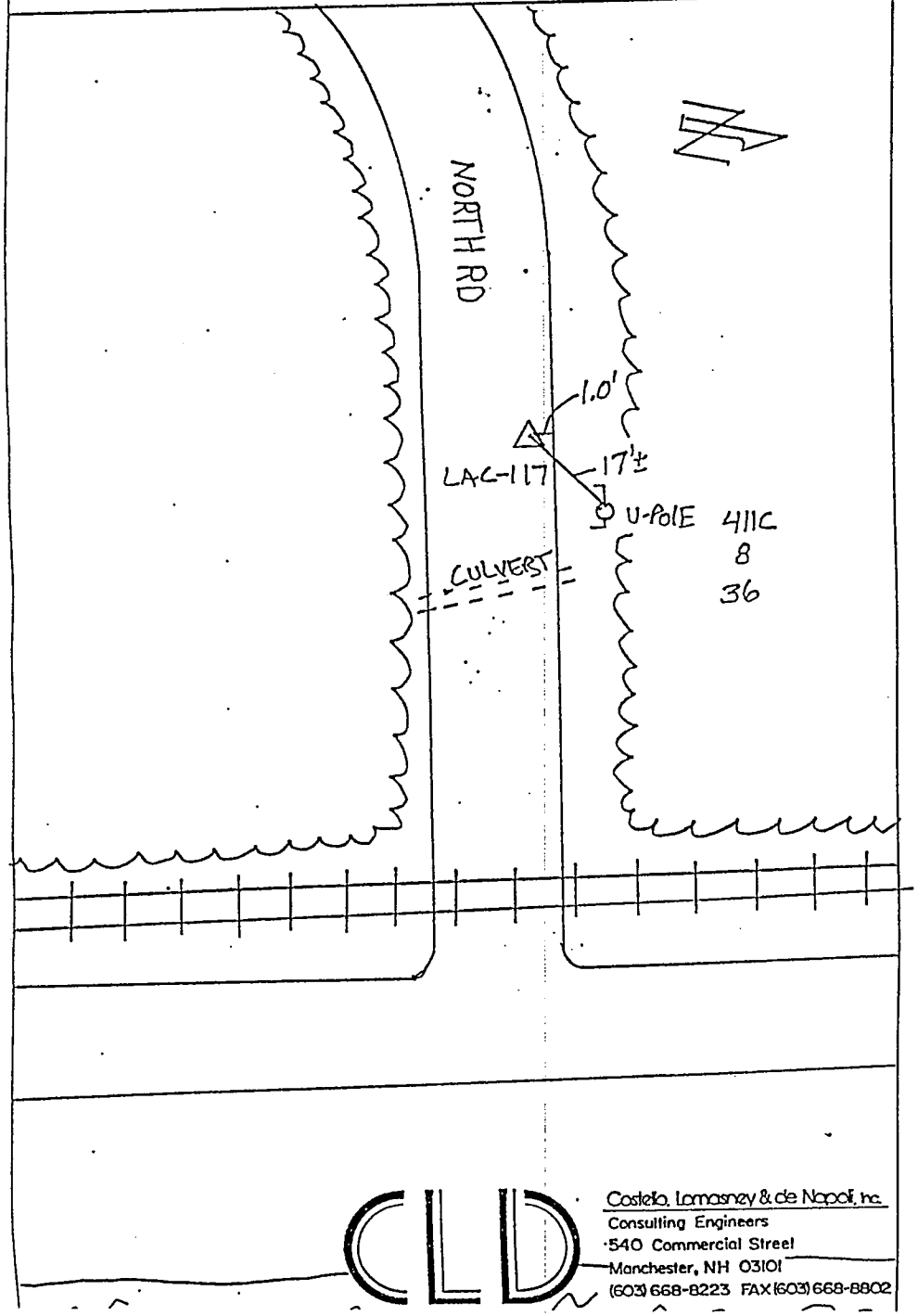
SKETCH LAC-117 SPIKE W/WASHER



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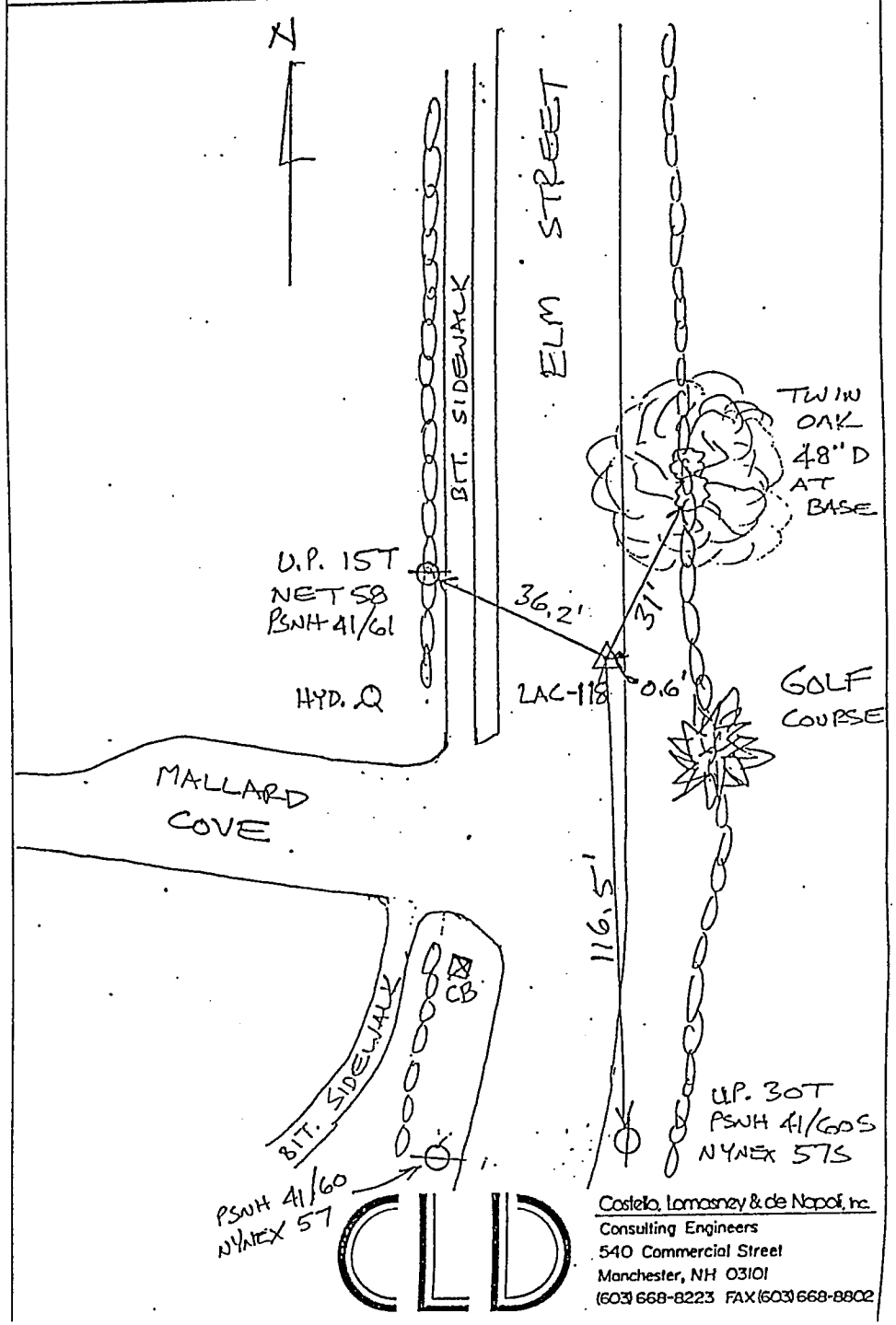
SKETCH LAC-118 P.K. W/WASHER SET AT EAST EDGE OF ELM ST.



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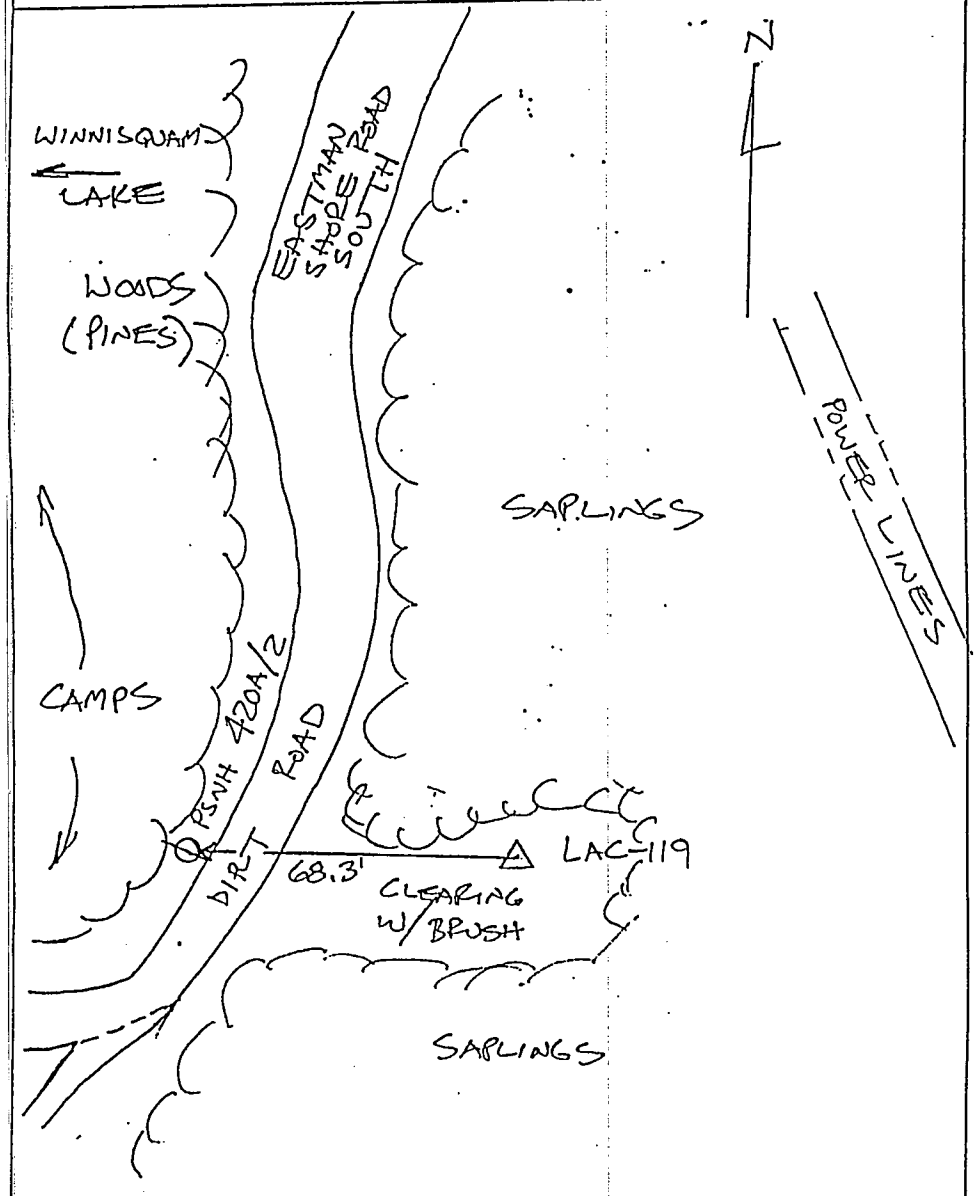
SKETCH LAC-119 SPIKE SET IN GROUND EAST OF DIRT ROAD AT CAMPS



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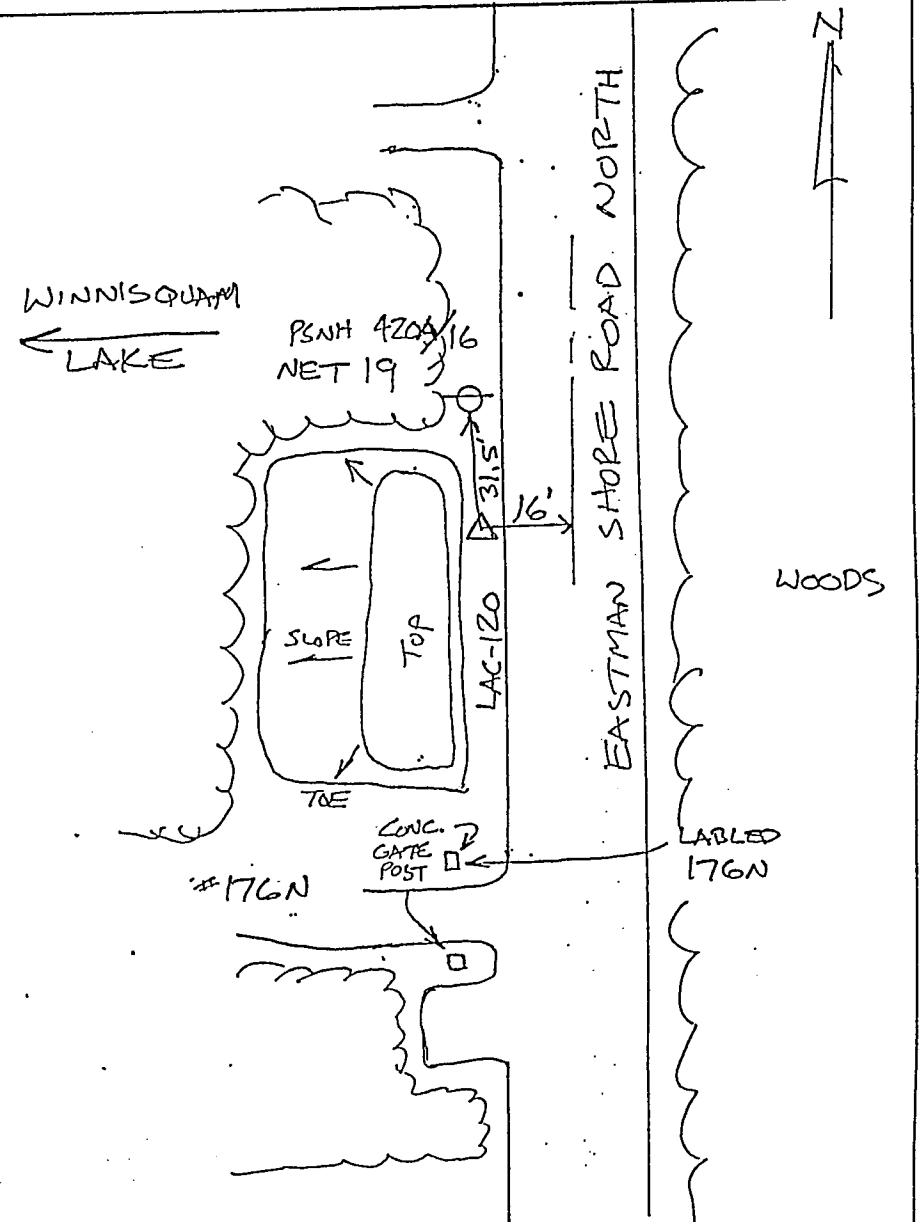
SKETCH LAC-120 NAIL IN 1.75" SQ. OAK HUB 16' WEST OF ℄ DIRT ROAD



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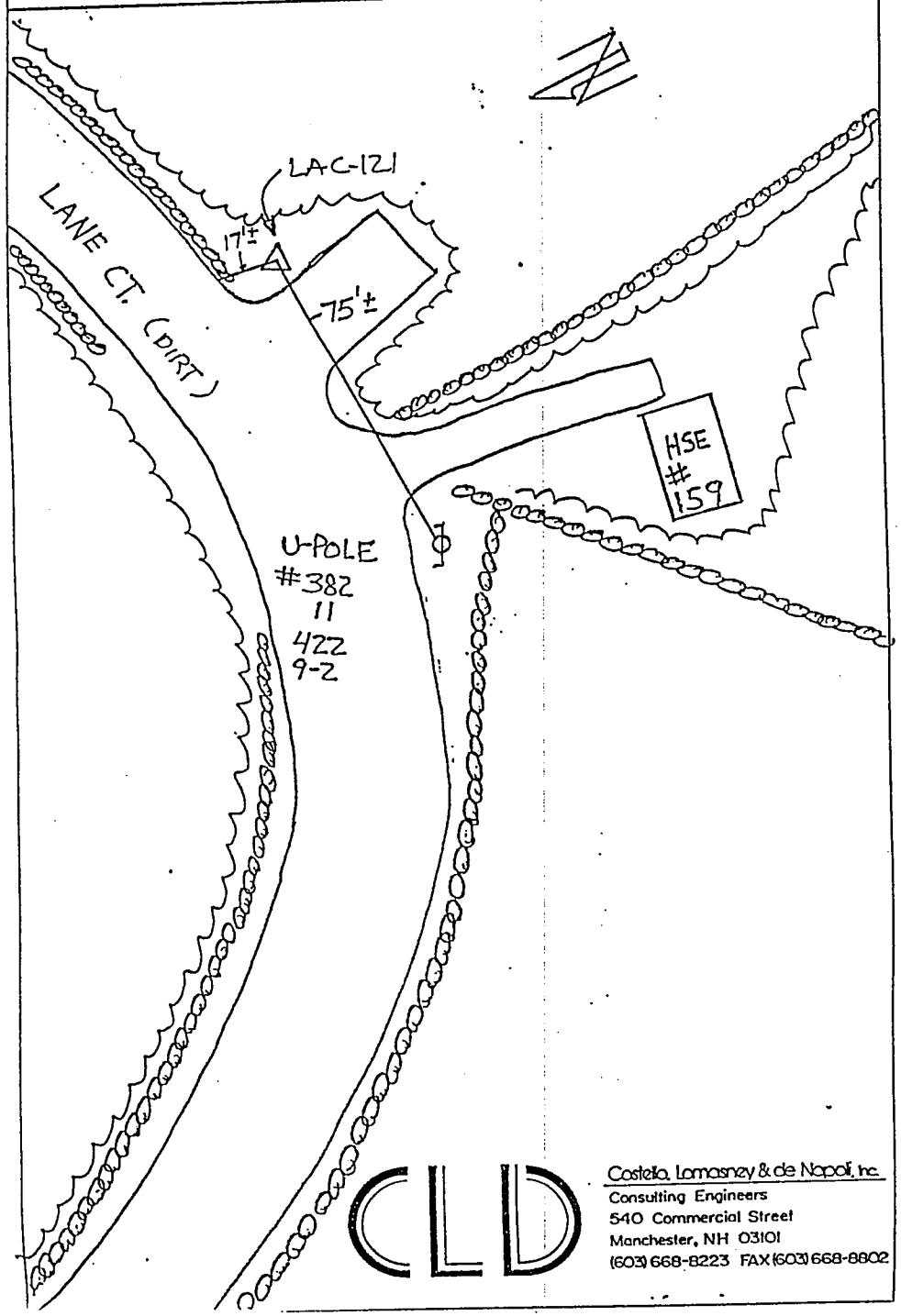
SKETCH LAC-121 MASON NAIL IN HUB



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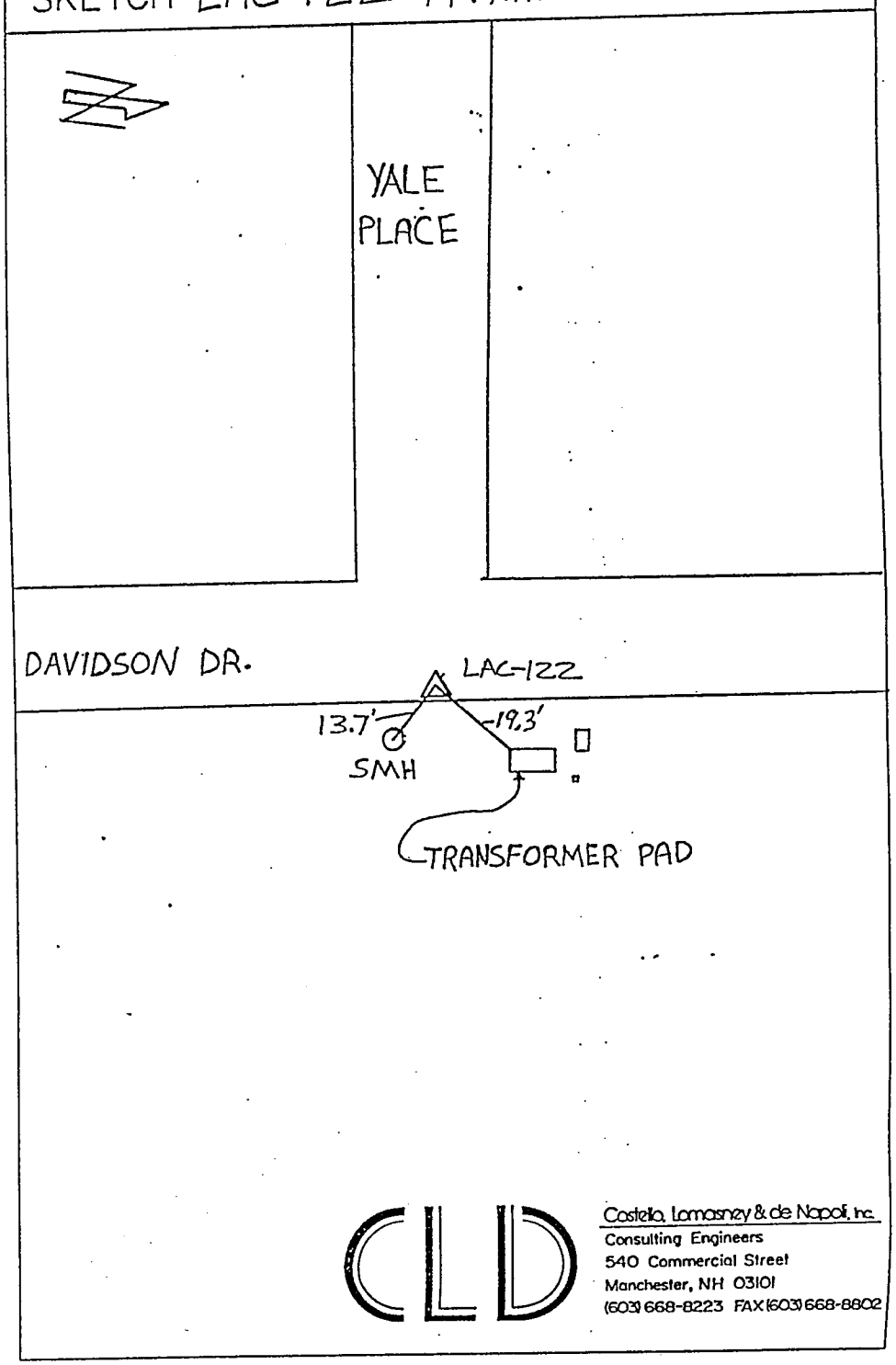
SKETCH LAC-122 PK NAIL



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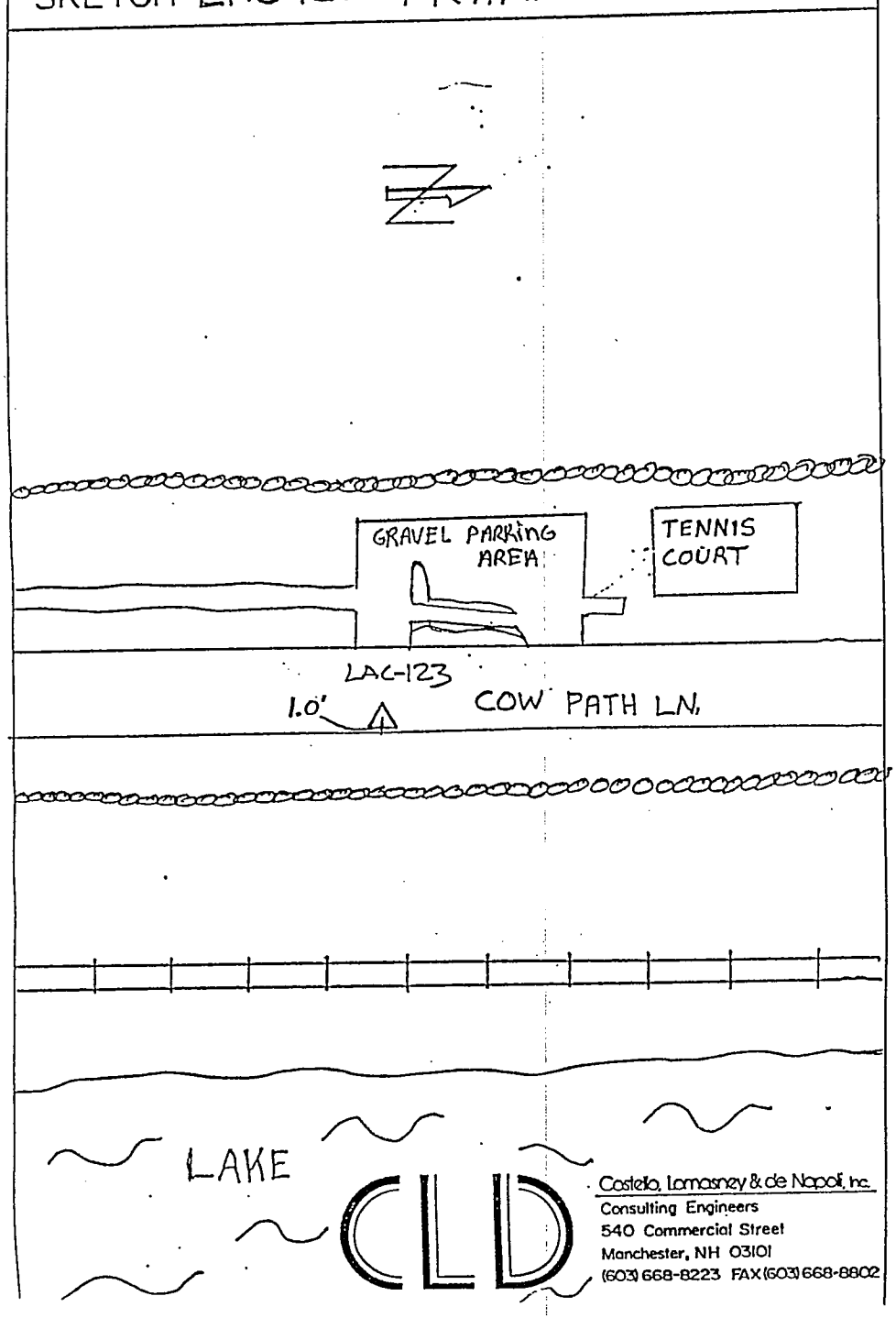
SKETCH LAC-123 PK NAIL



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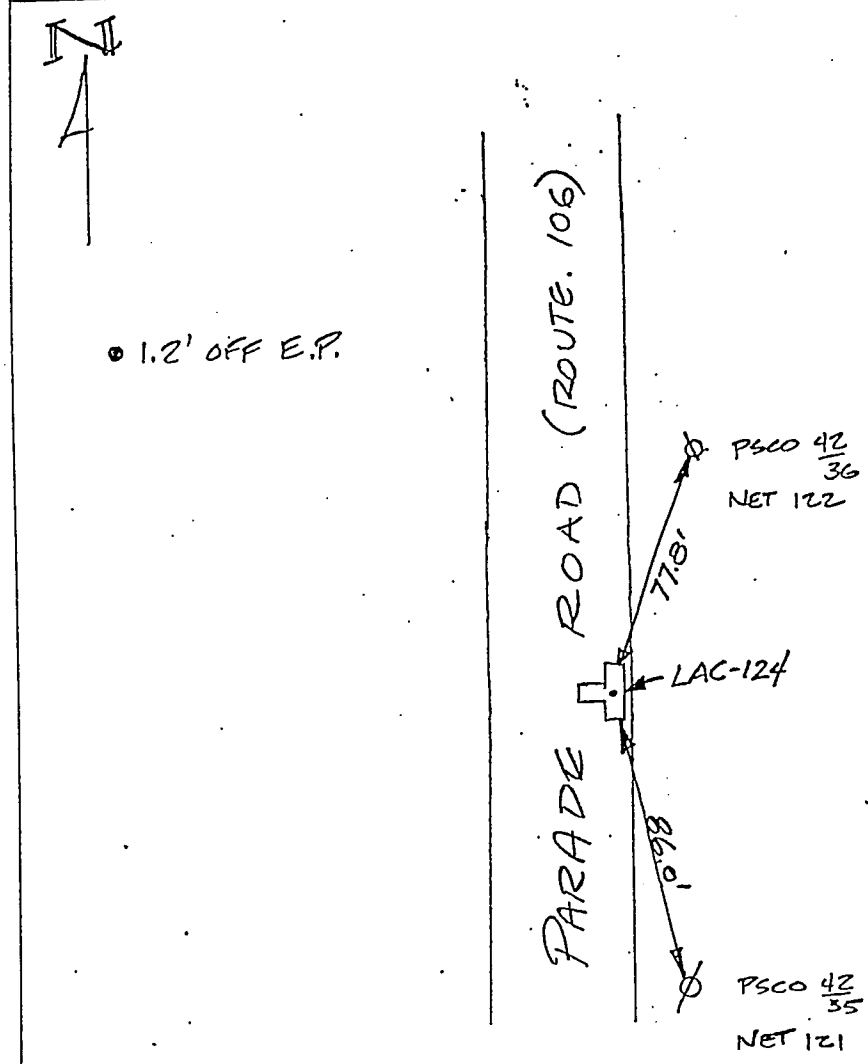
SKETCH LAC-124 PK W/WASHER



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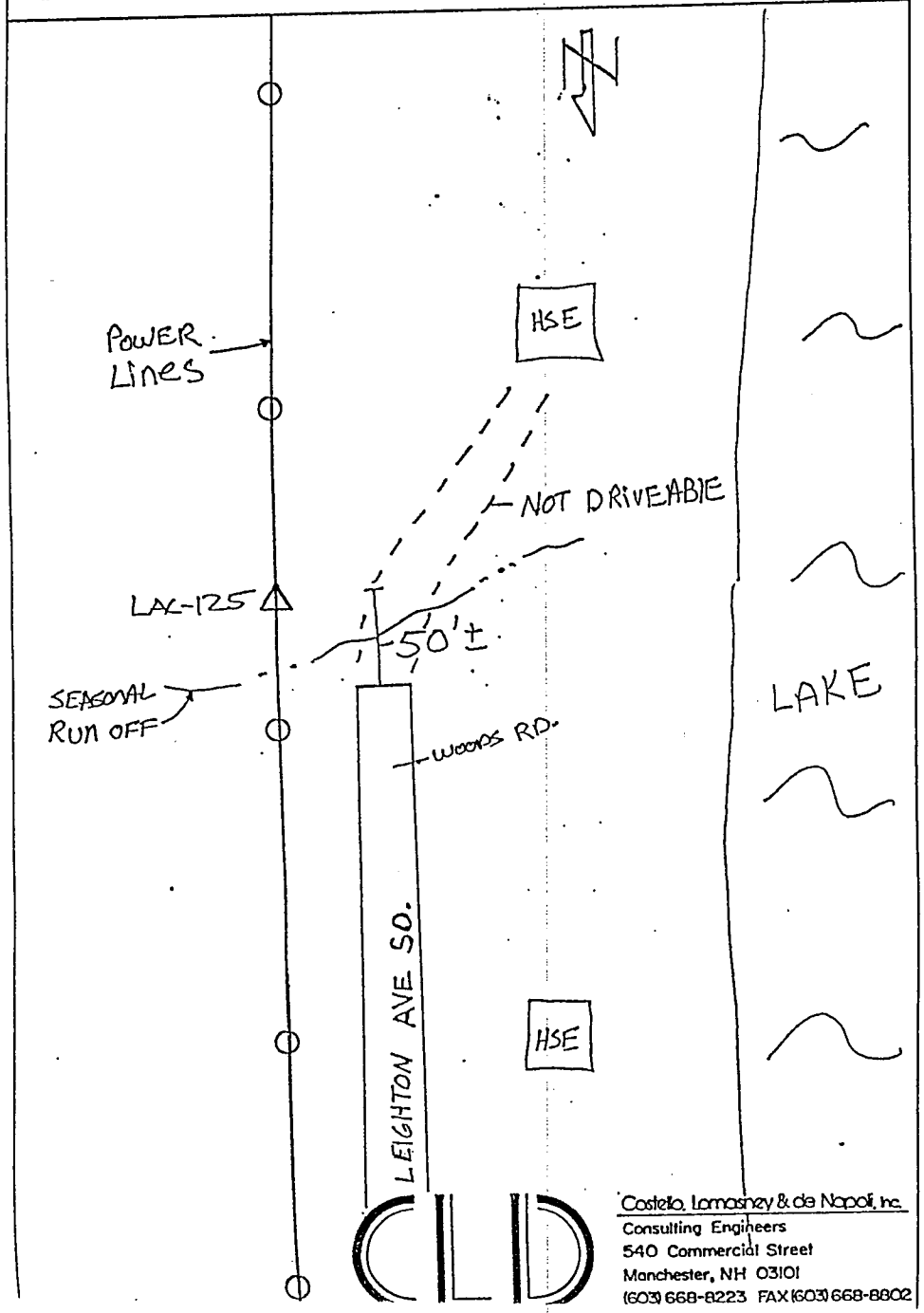
SKETCH LAC-125 SPIKE



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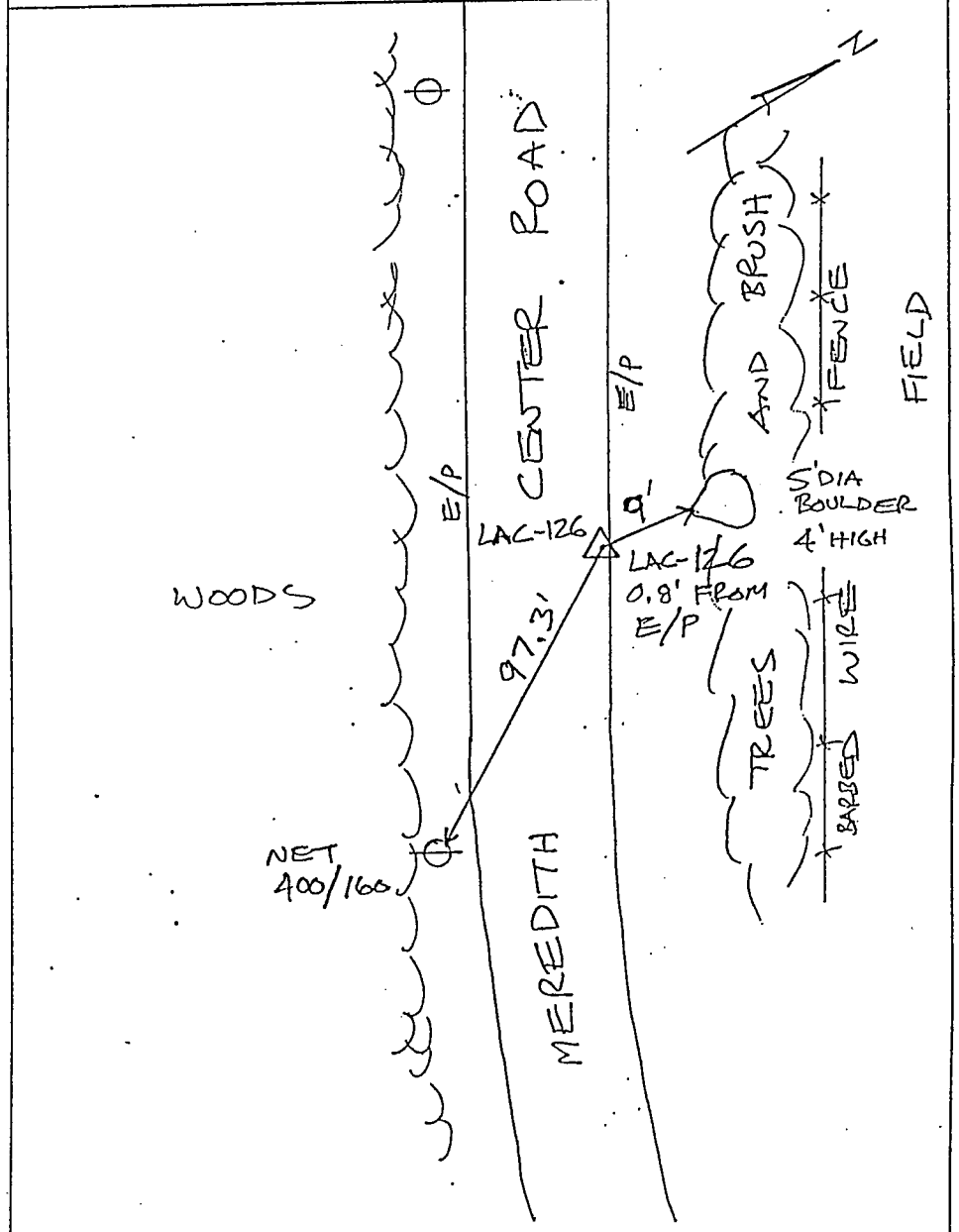
SKETCH LAC-126

PK SET ON NE SIDE MEREDITH CENTER RD



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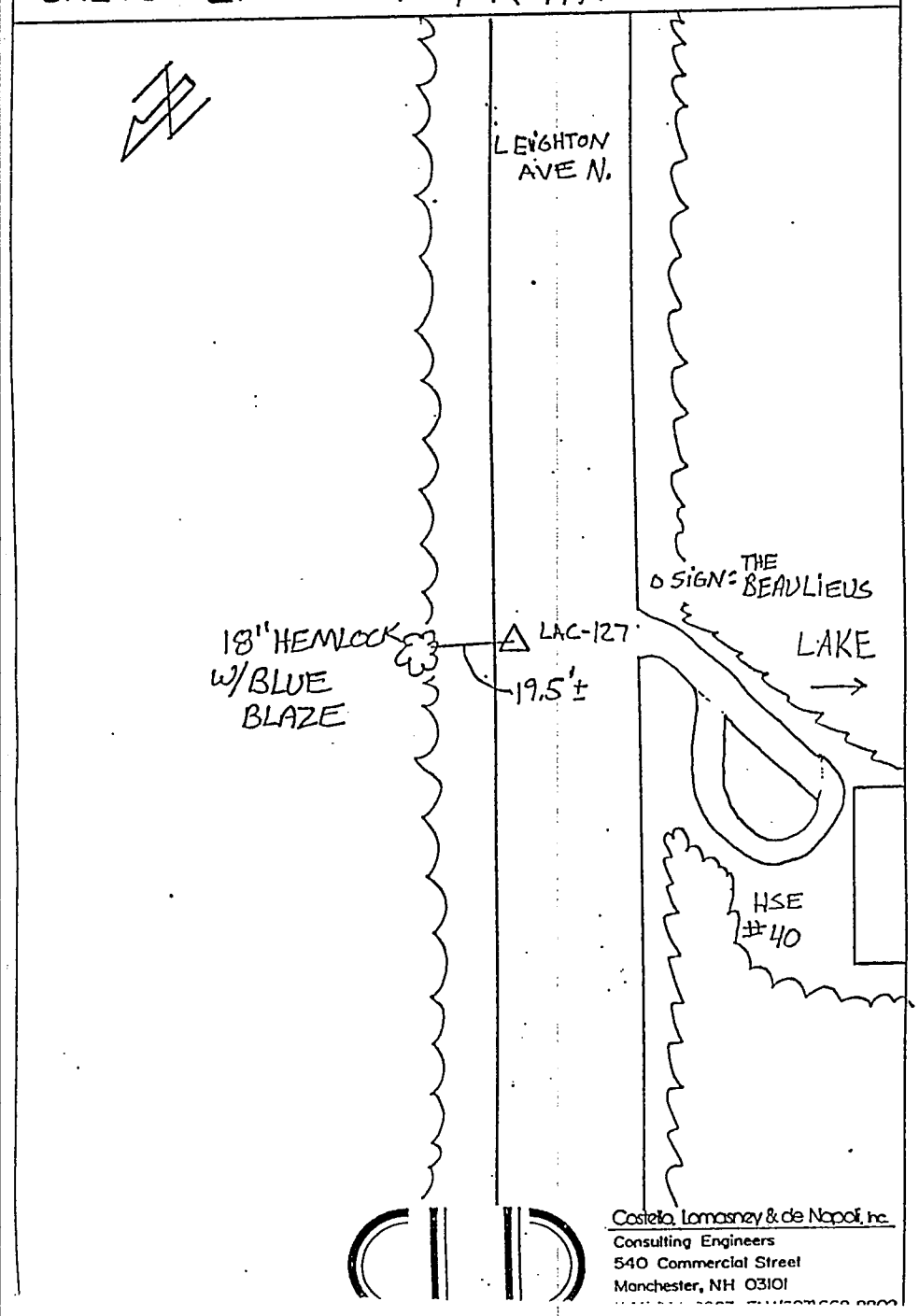
SKETCH LAC-127 PK NAIL



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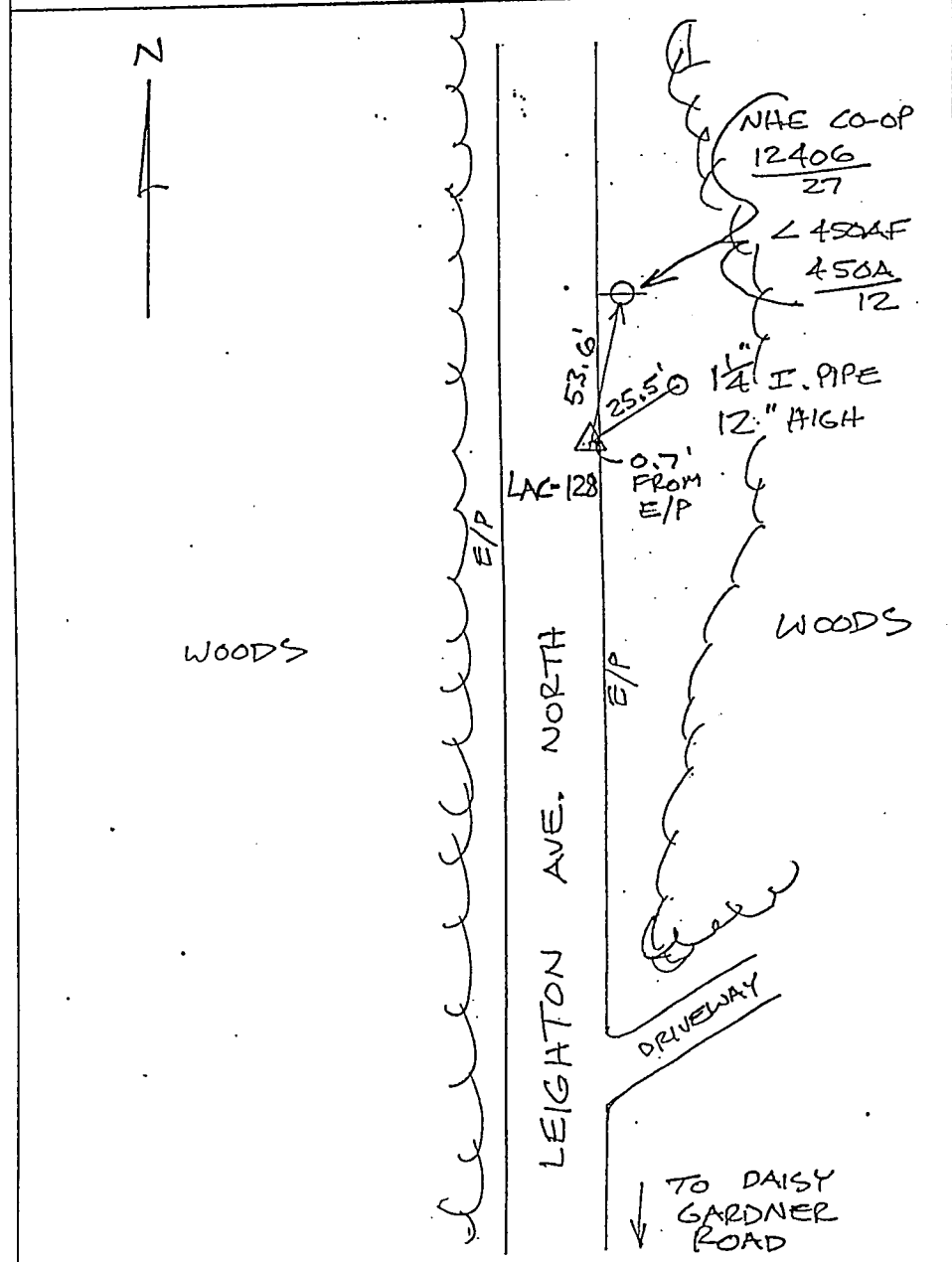
SKETCH LAC-128 PK SET ELY SIDE OF ROAD



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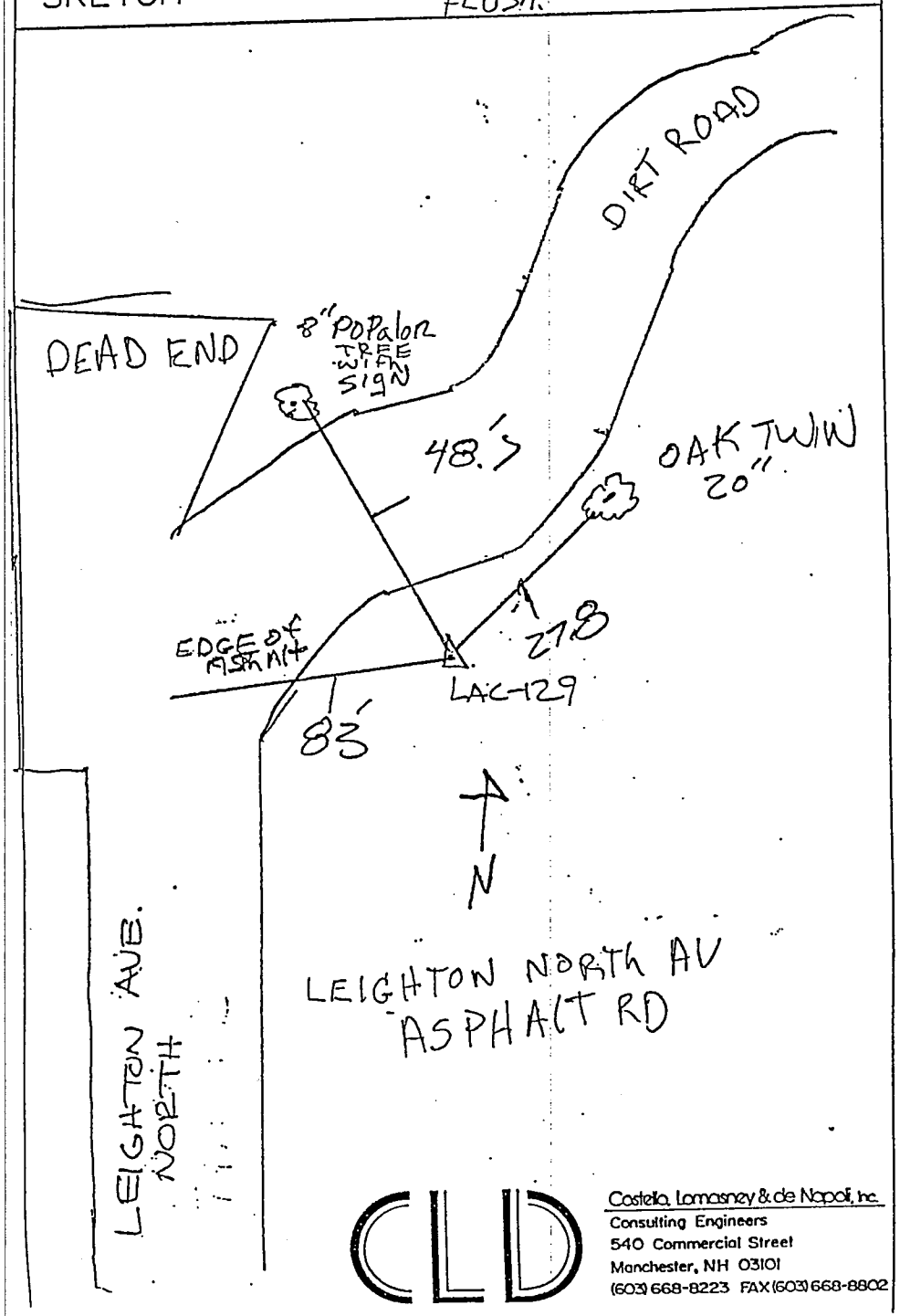
SKETCH LAC-129 SPIKE FLUSH IN GROUND



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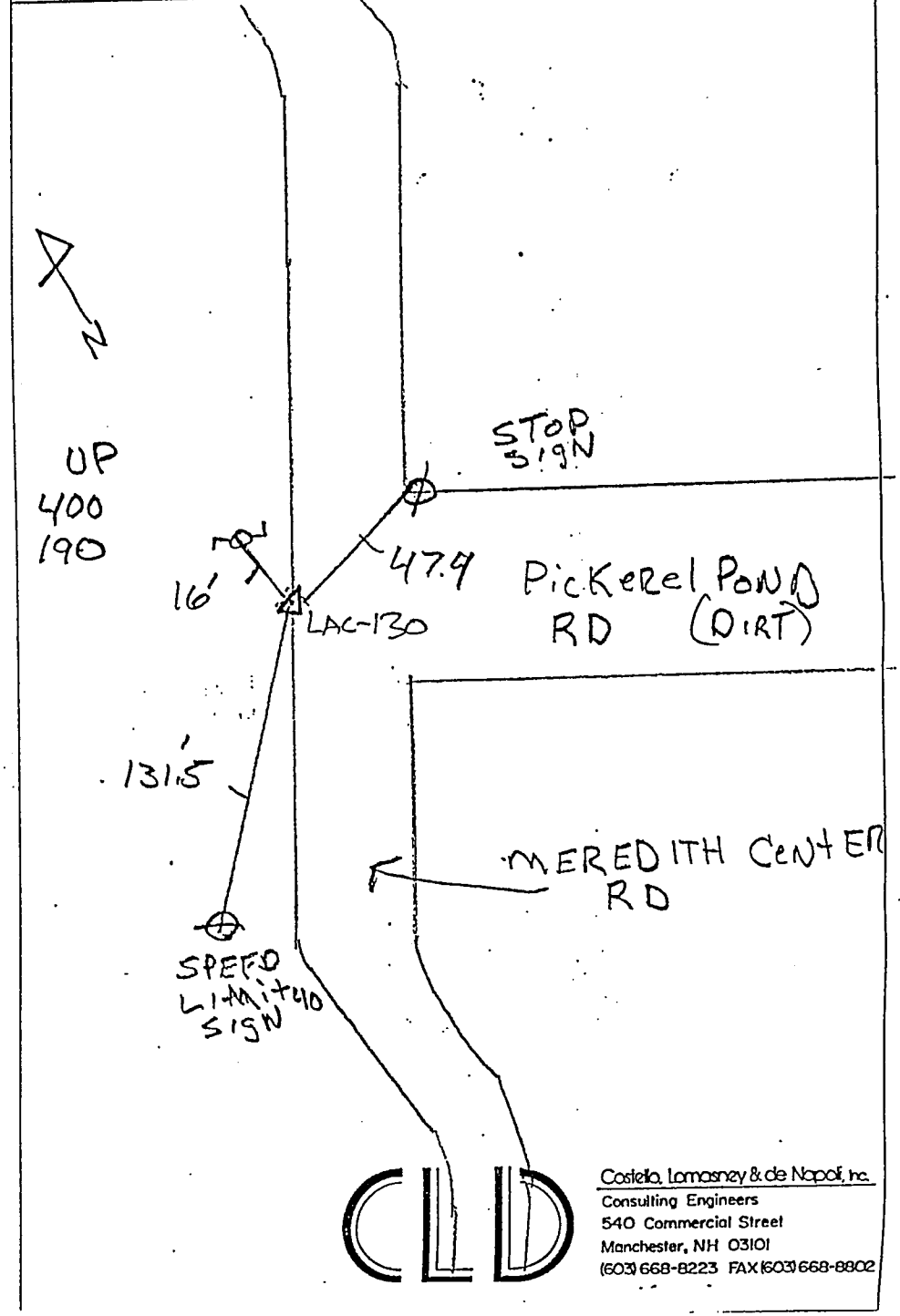
SKETCH LAC-130 PK
PK IS ON WEST SIDE OF RD



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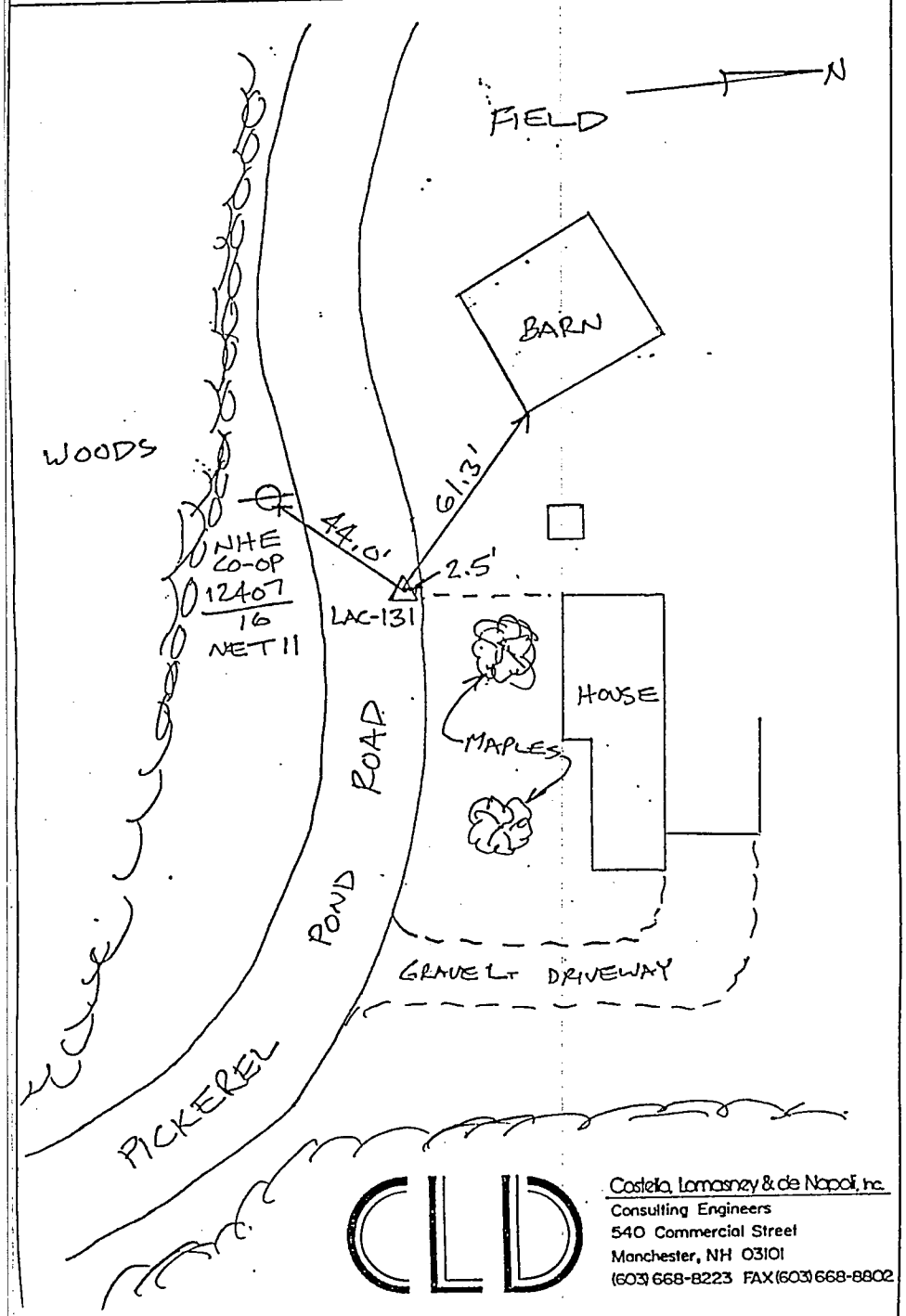
SKETCH LAC-131 PK SET N'LY SIDE OF ROAD



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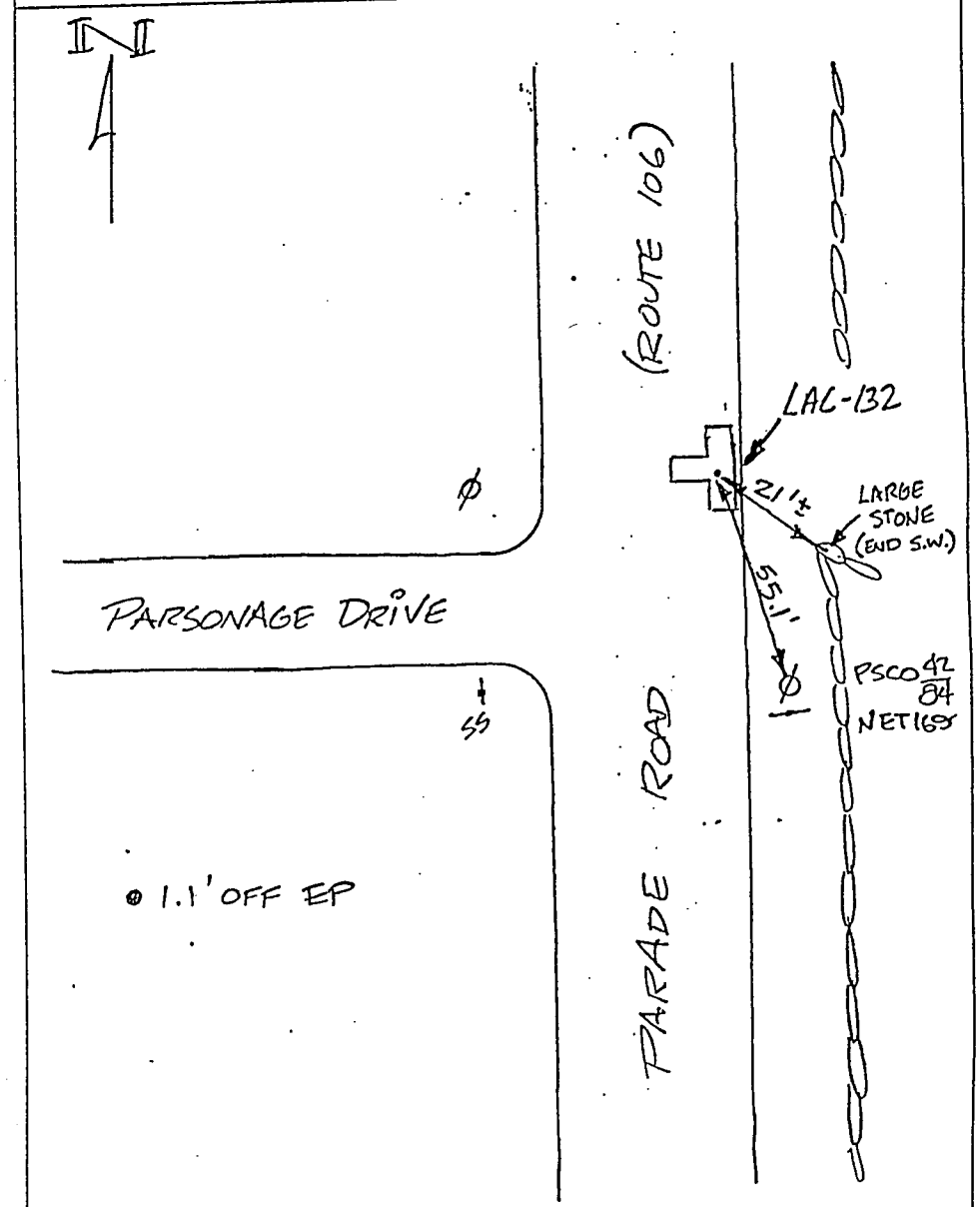
SKETCH LAC-132 PK W/WASHER EAST SIDE OF RD



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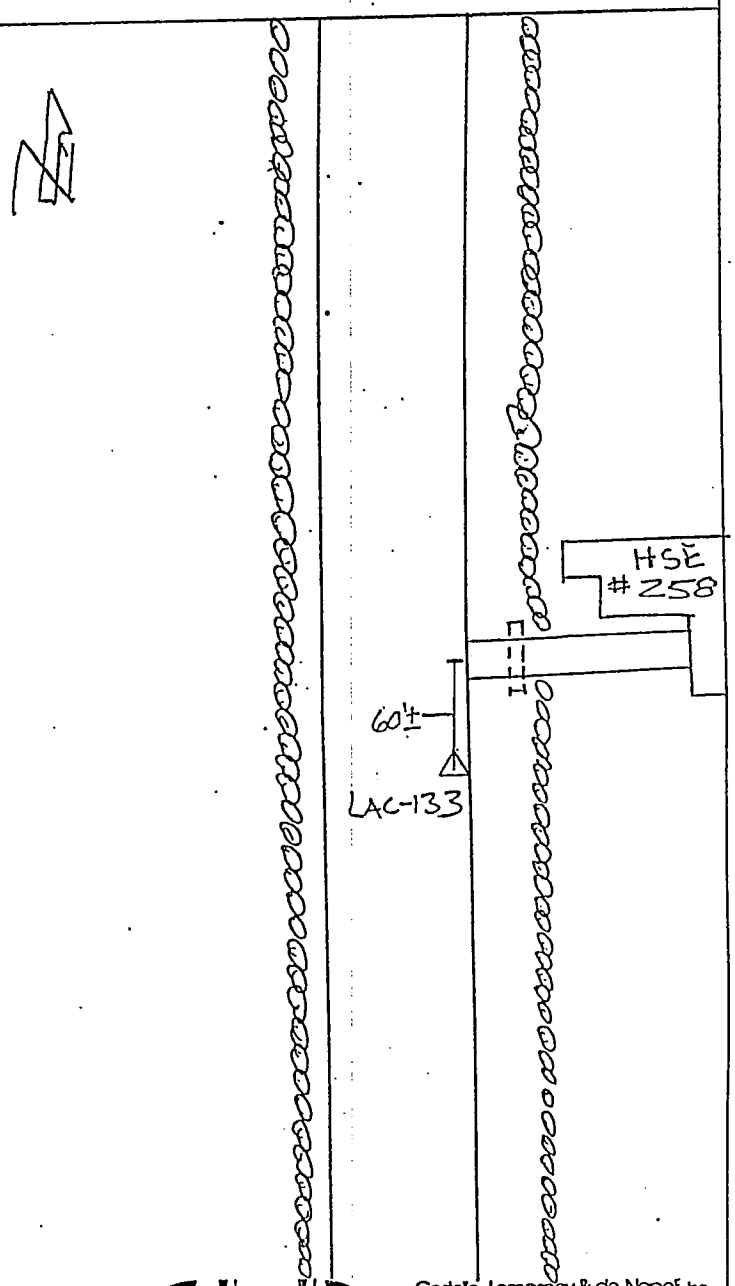
SKETCH LAC-133 PK NAIL



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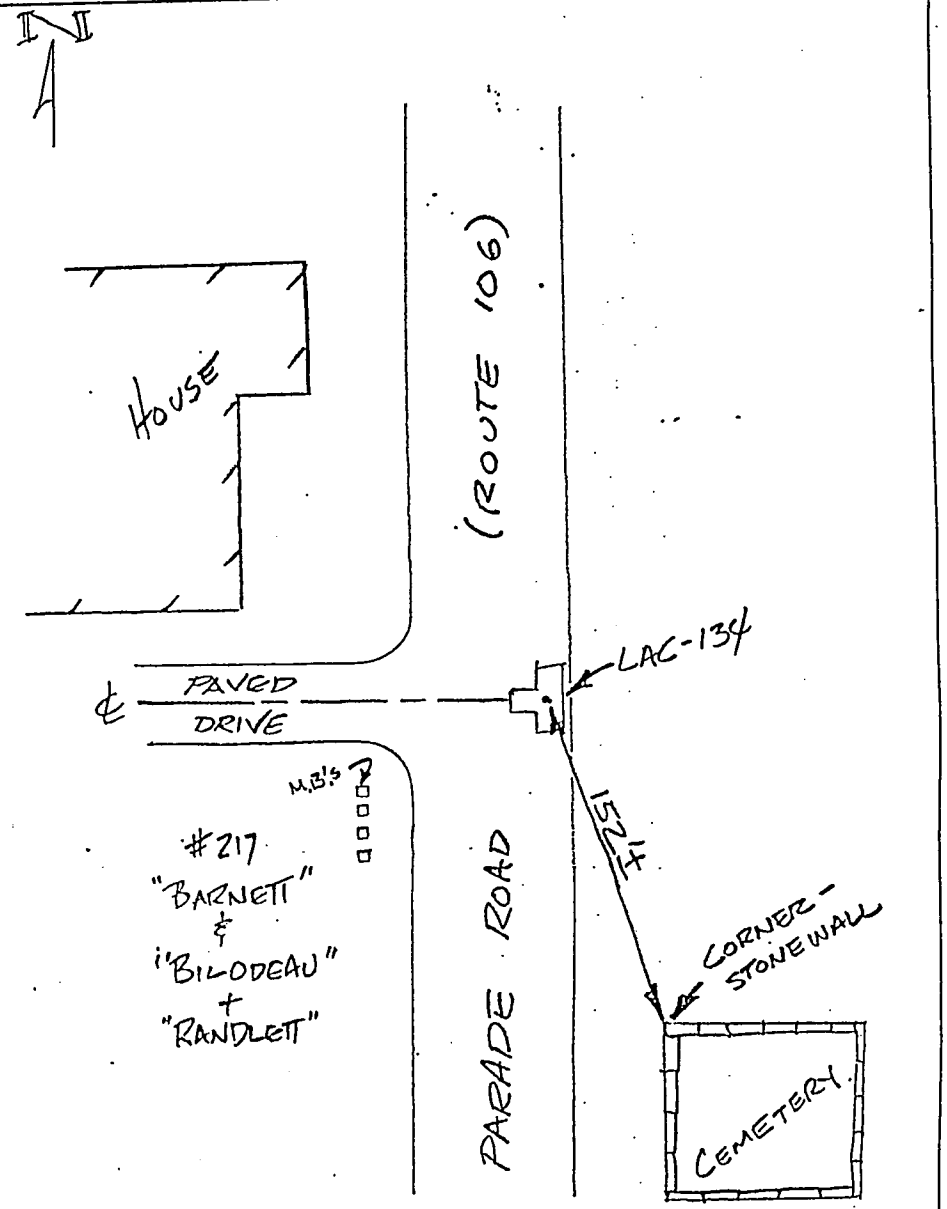
SKETCH LAC-134 PK W/WASHER EAST SIDE OF ROAD



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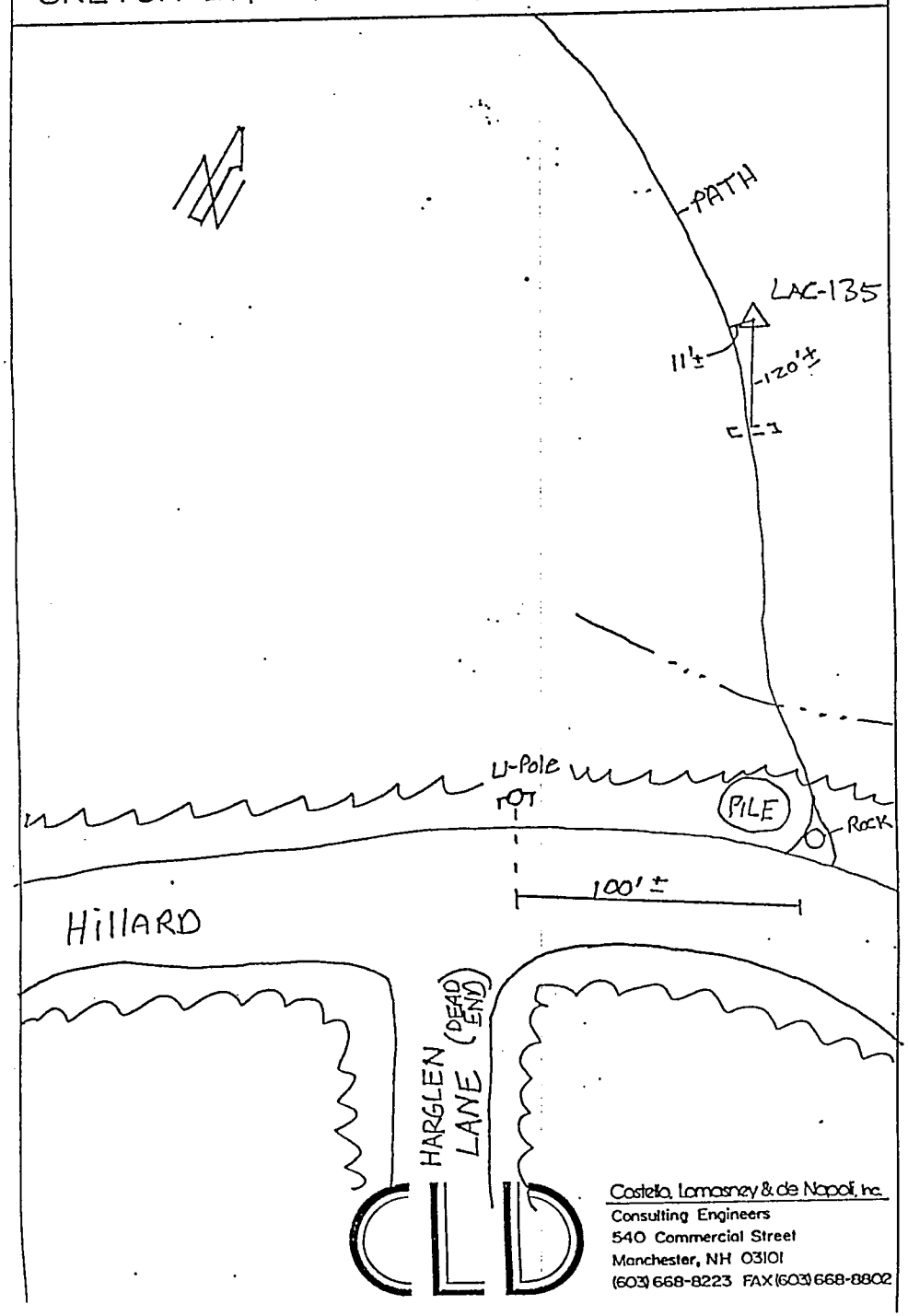
SKETCH LAC-135 SPIKE



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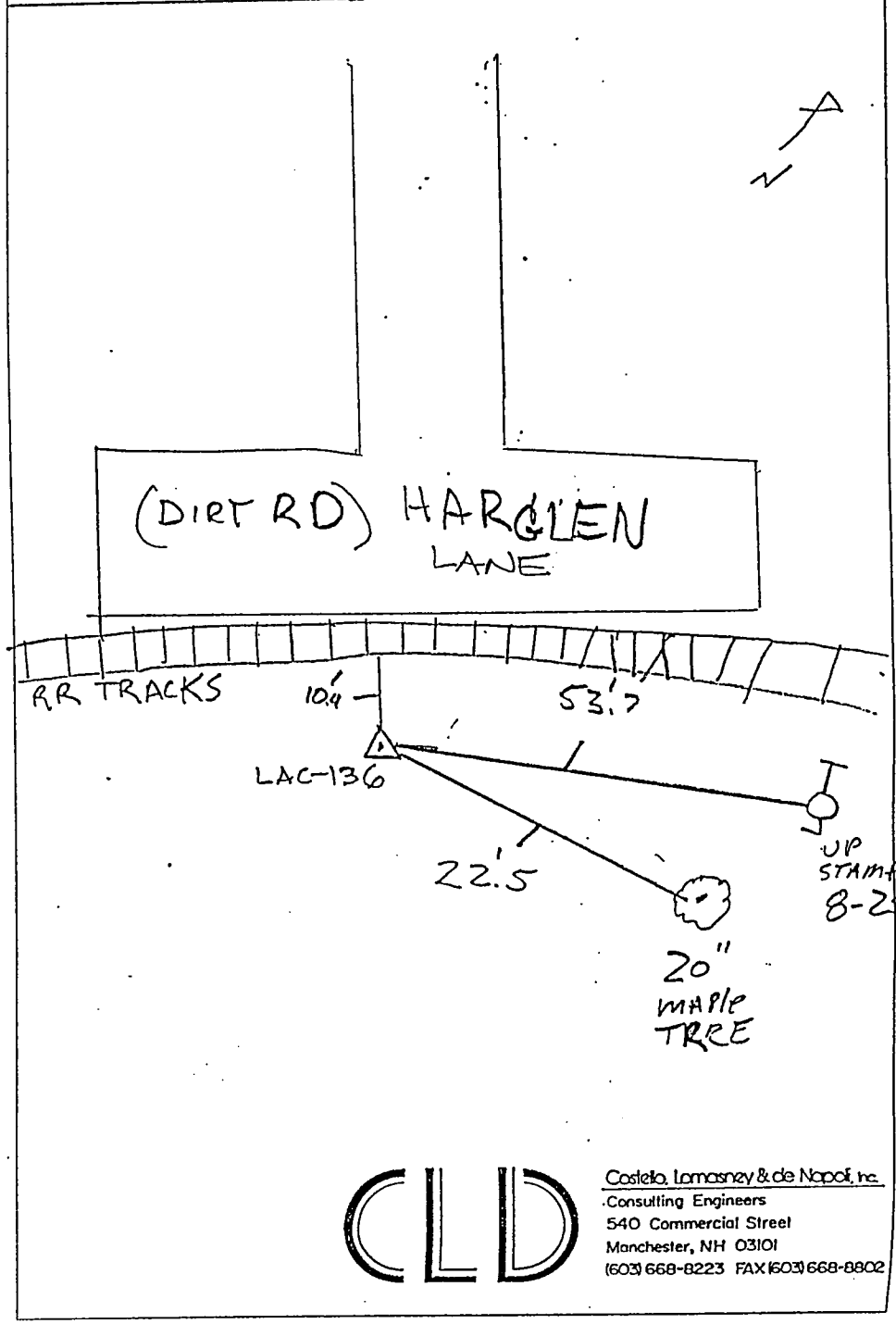
SKETCH LAC-136 SPIKE SET IN GROUND



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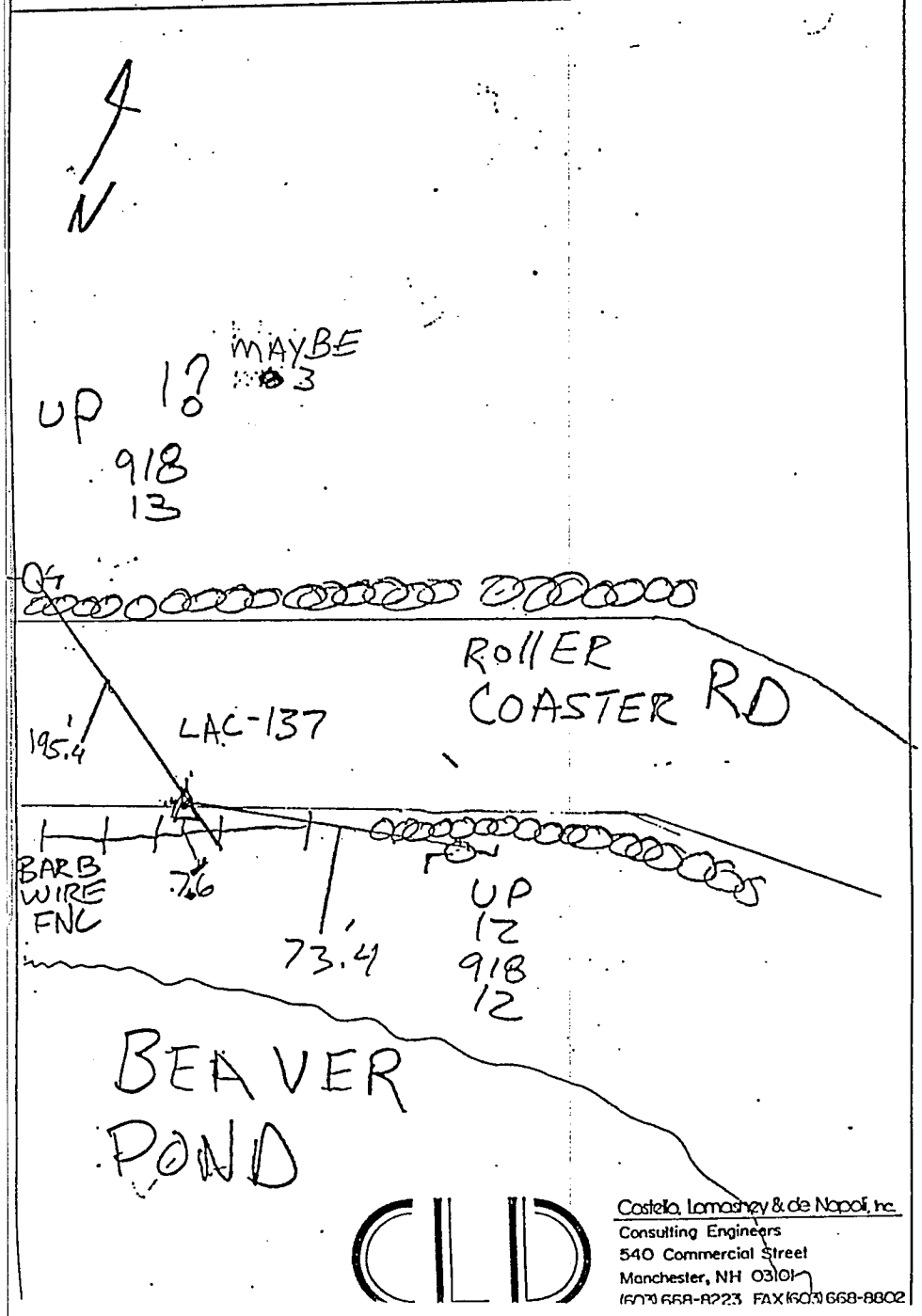
SKETCH LAC-137 SPIKE SET @ SO. SIDE OF ROAD



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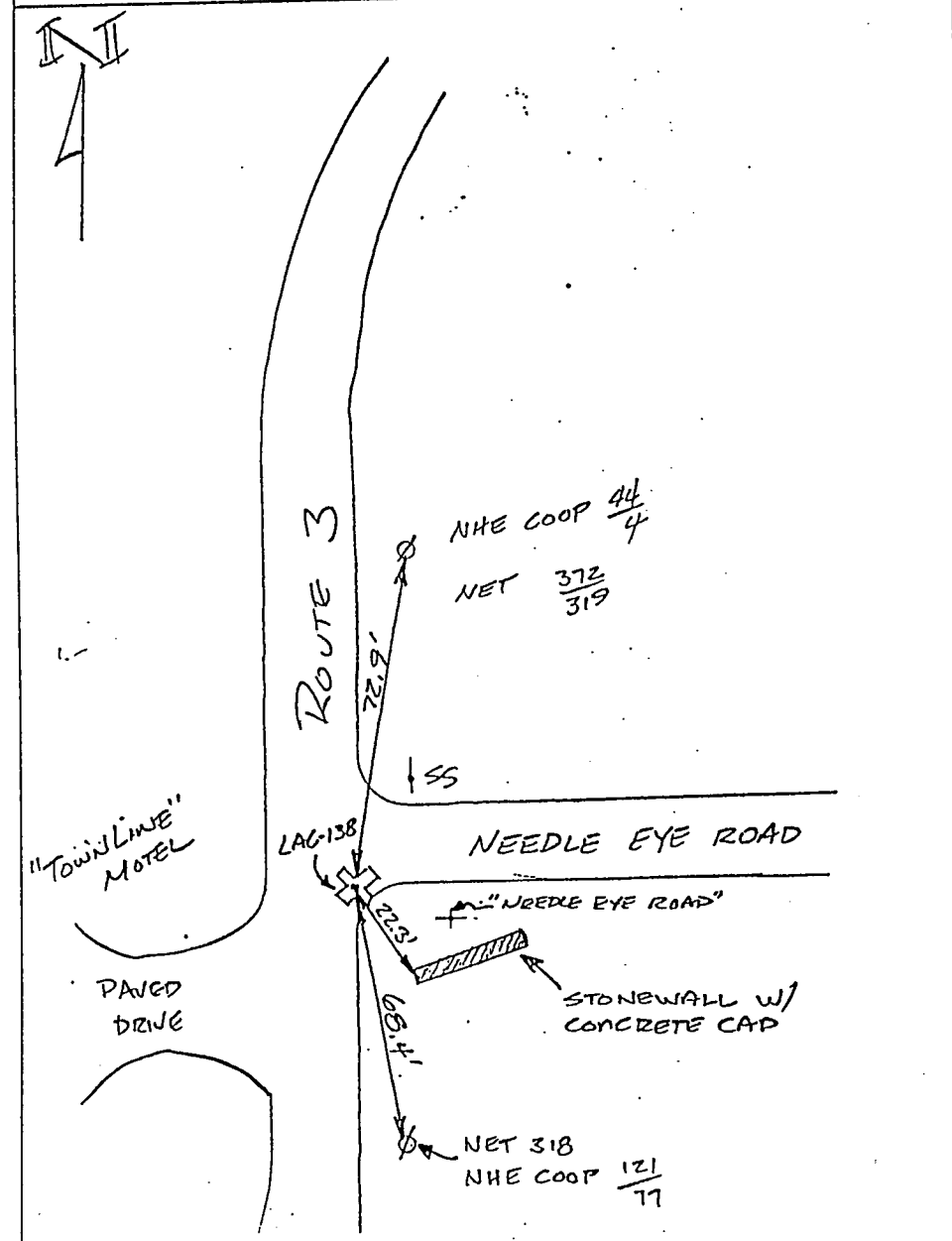
SKETCH LAC-138 PK @ SE CNR OF INTERSECTION



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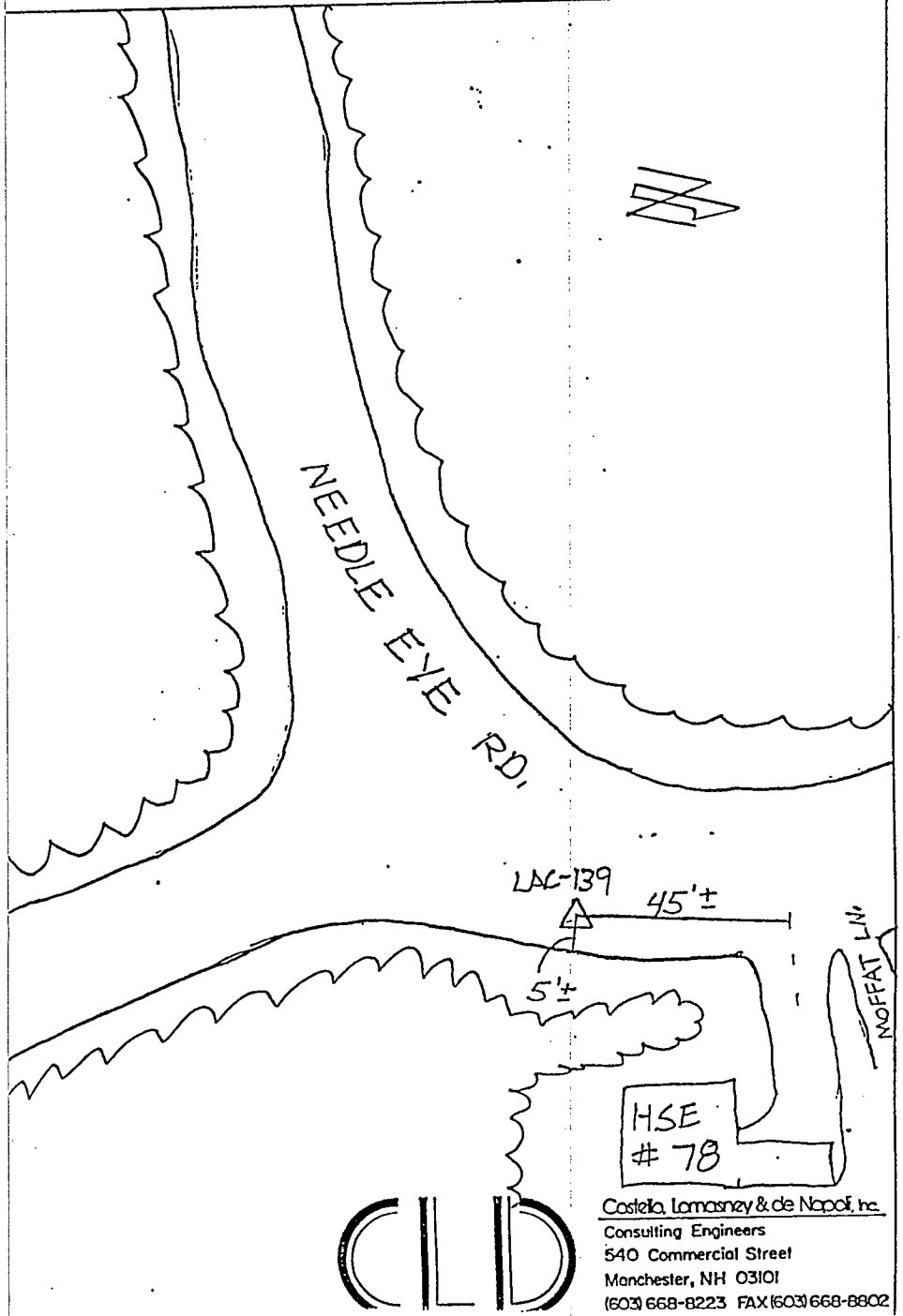
SKETCH LAC-139 PK NAIL



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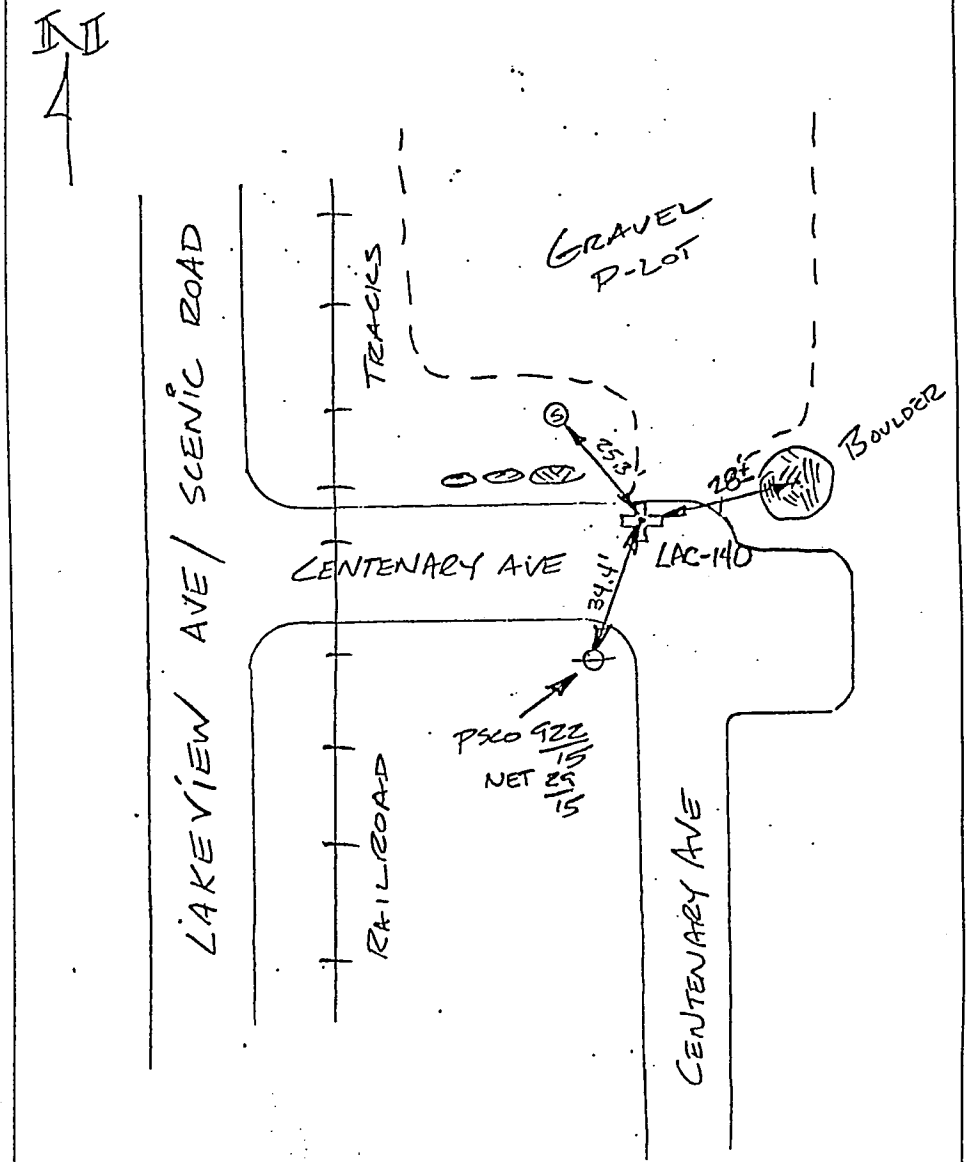
SKETCH LAC-140 PK SET @ NO. SIDE OF ROAD



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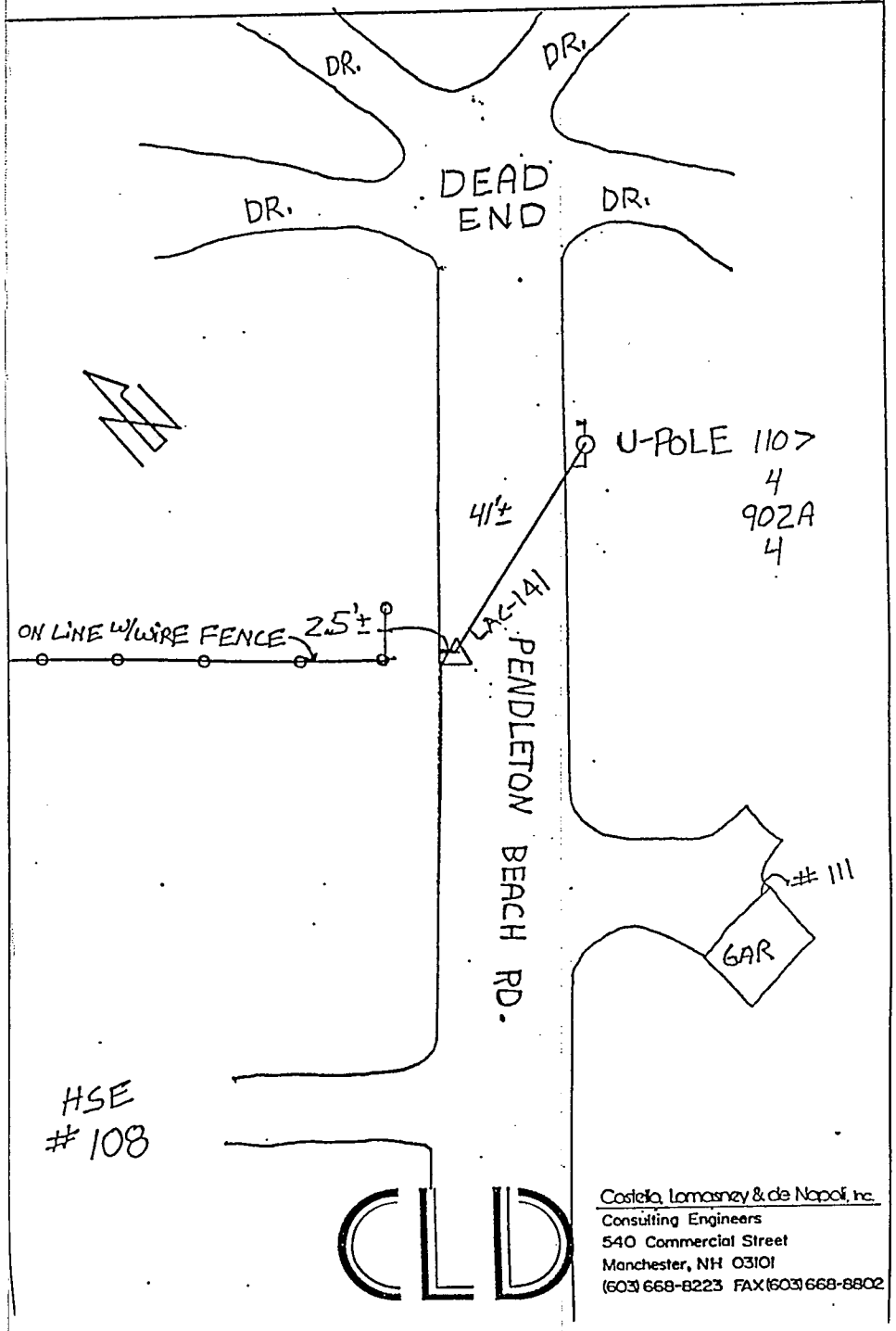
SKETCH LAC-141 PK NAIL



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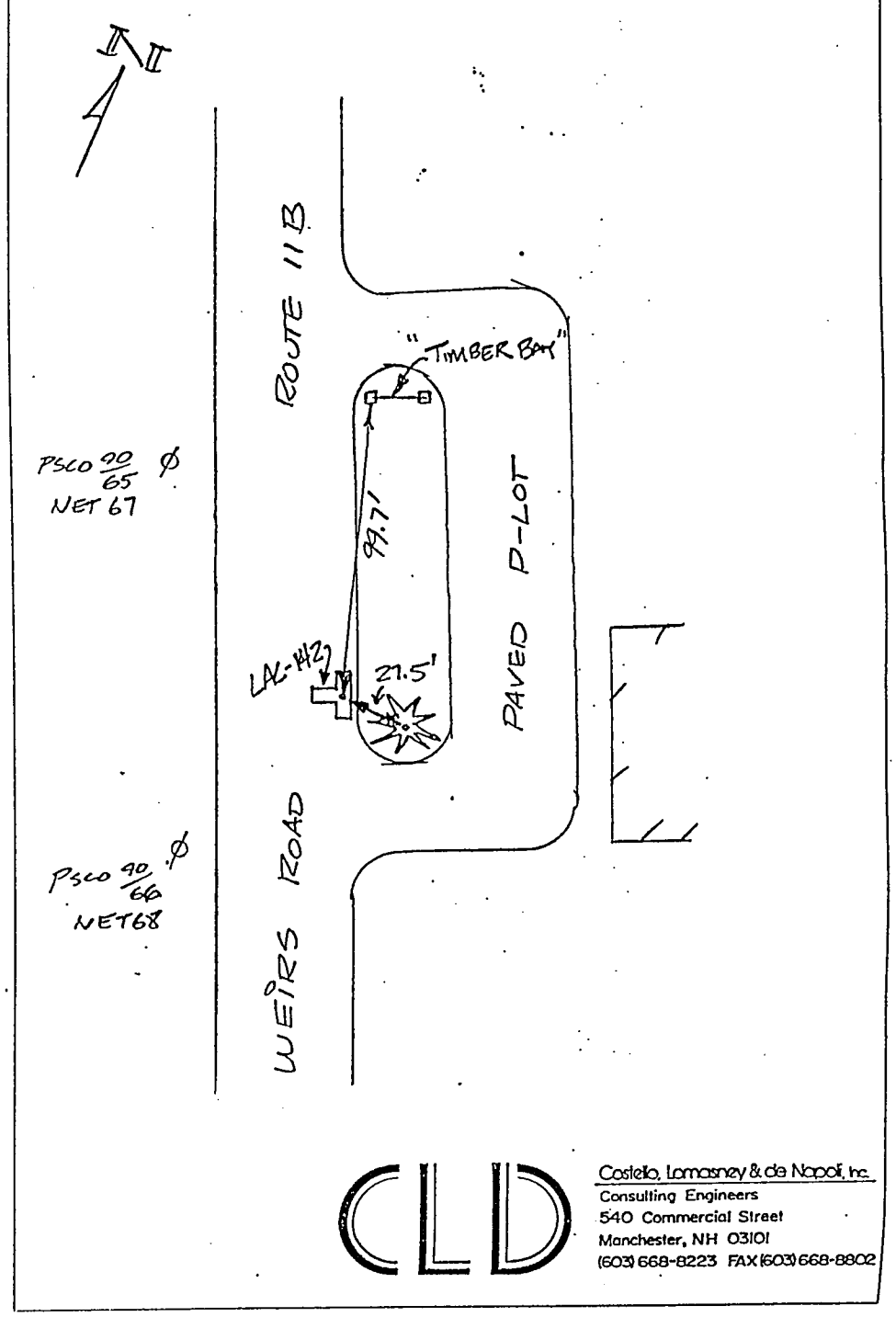
SKETCH LAC-142 PK SET @ EAST SIDE OF ROAD



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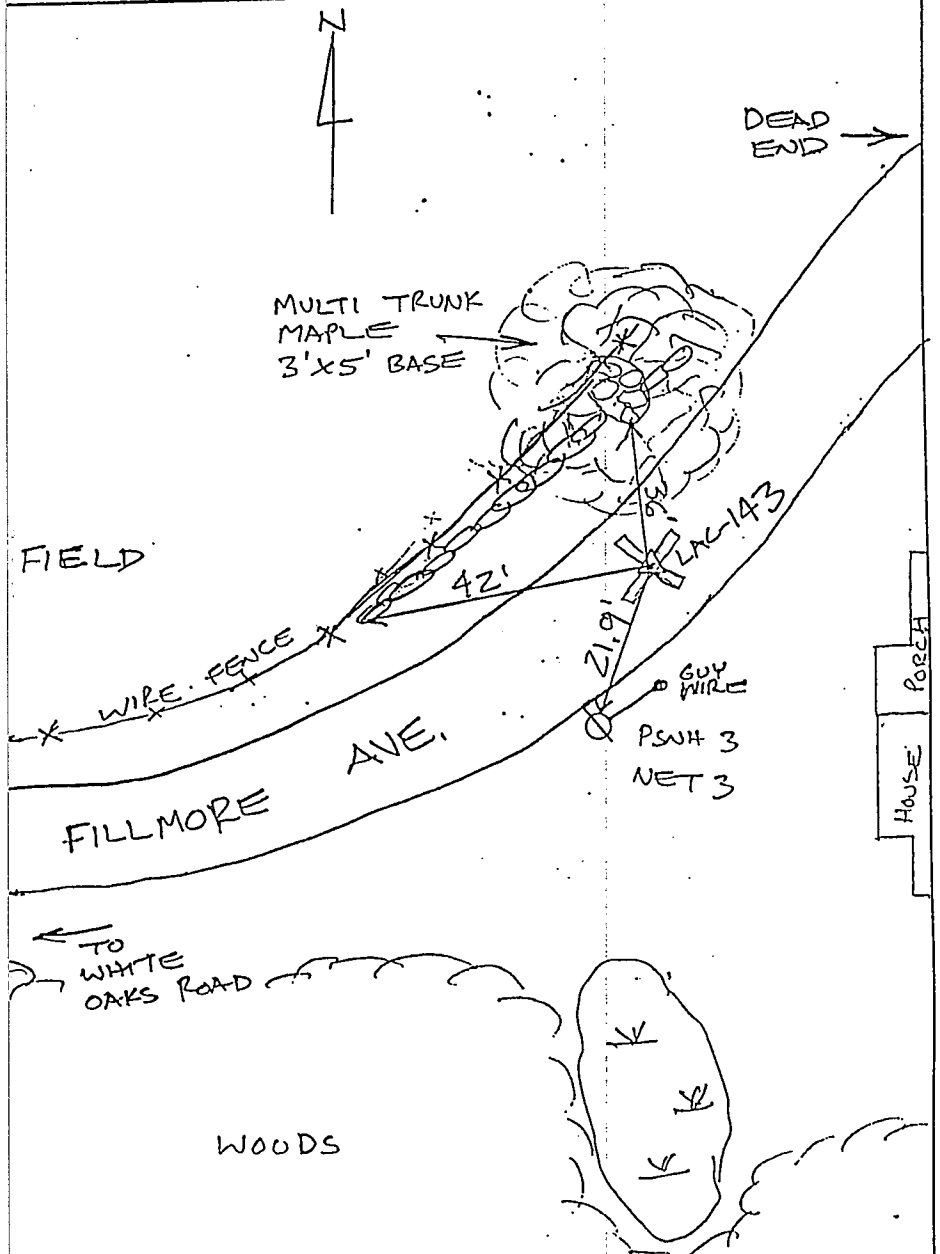
SKETCH LAC-143 PK SET ℄ ROAD



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Consulting Engineers
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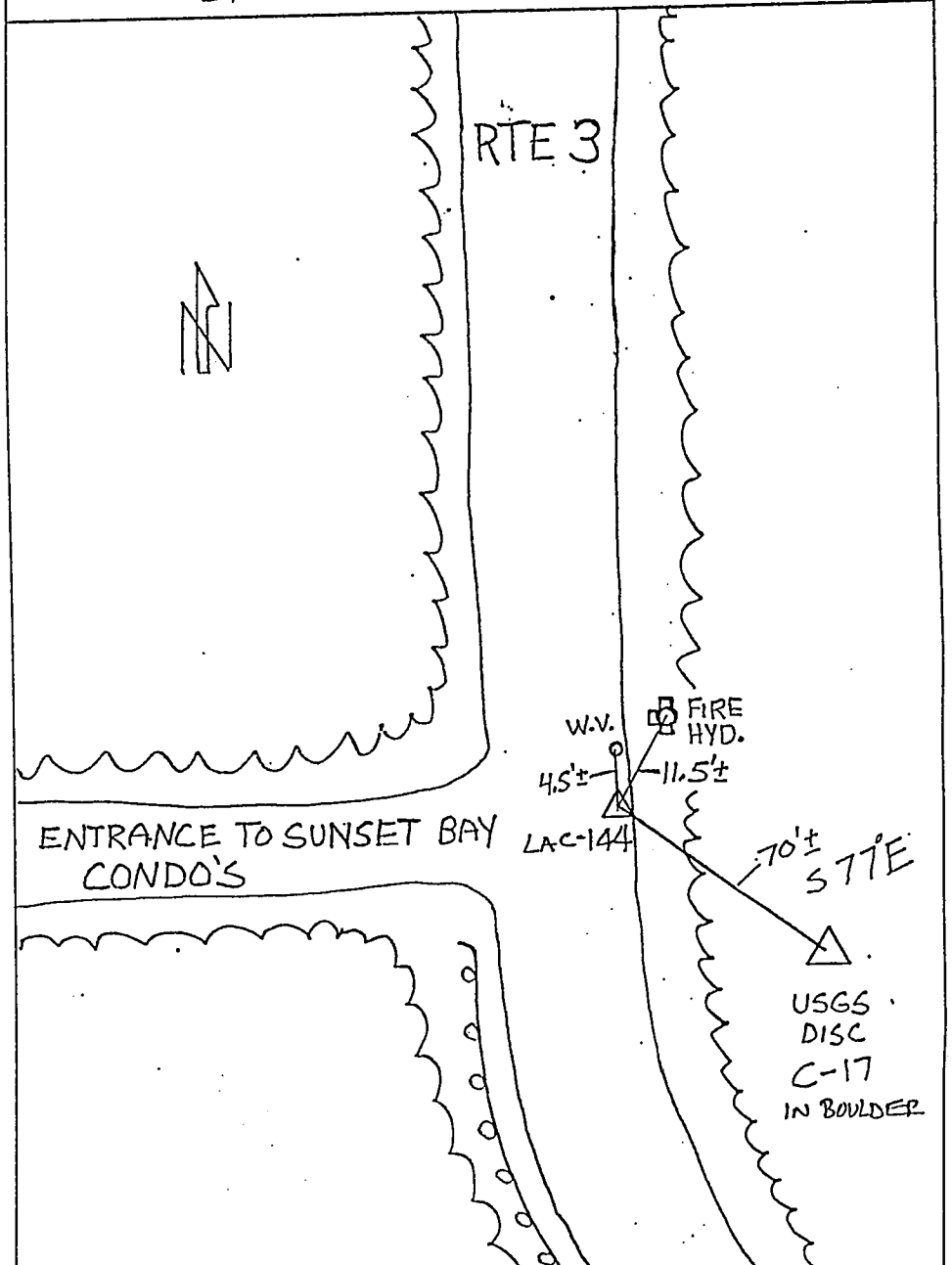
SKETCH LAC-144 PK NAIL



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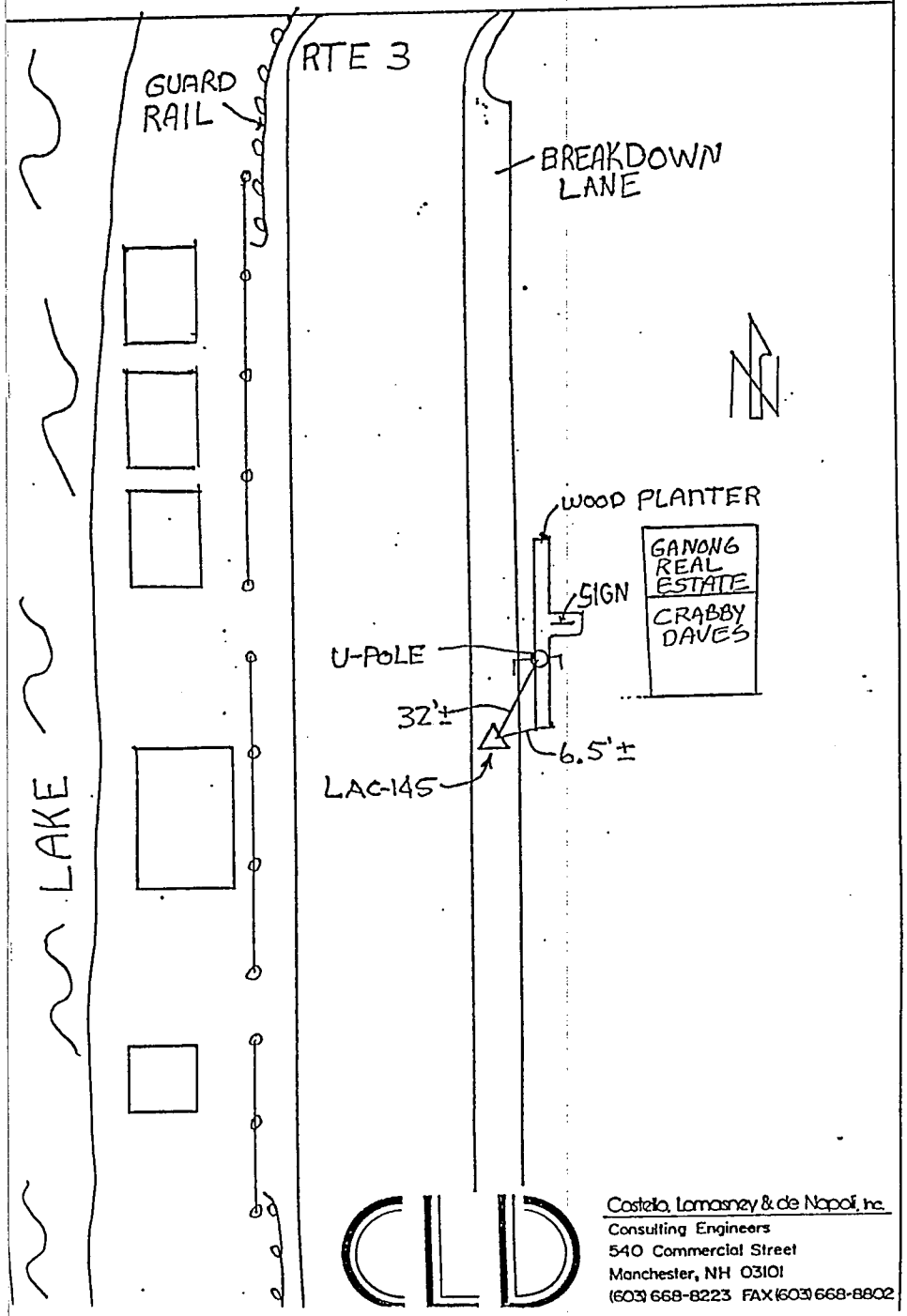
SKETCH LAC-145 PK NAIL



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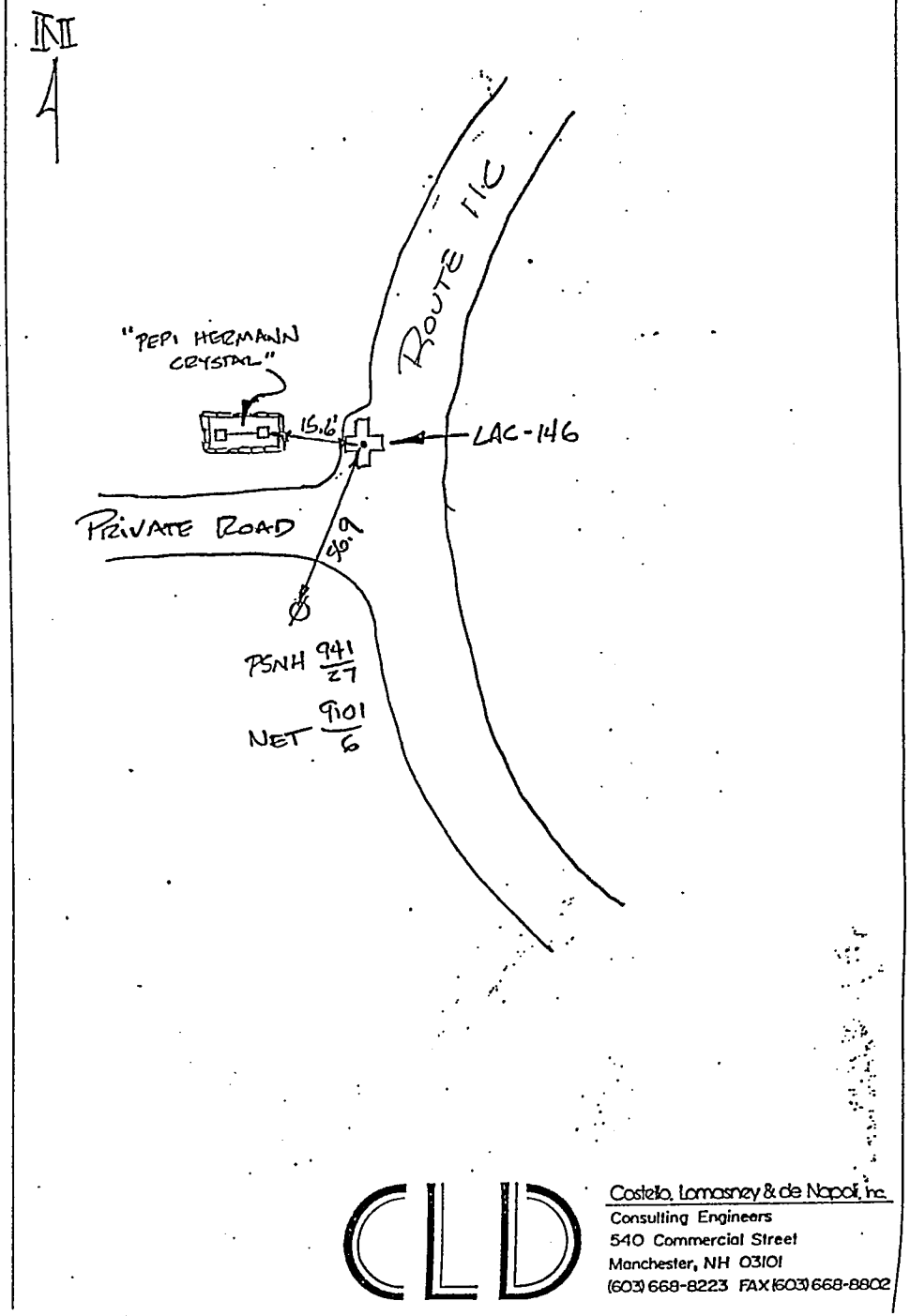
SKETCH LAC-146 PK NAIL



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Consulting Engineers
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(603) 668-8223 FAX (603) 668-8802

APPENDIX C

CLD-ESTABLISHED POINTS
TABULATION OF COORDINATES AND ELEVATIONS

98-132 LACONIA, NH
MAY 13, 1998 (REV. 5/28/98)

CONSULTING ENGINEERS
540 Commercial St., Manchester, NH 03101
(603) 668-8223 • FAX: (603) 668-8802
E-Mail: CLD@CLDENGINEERS.COM

VERTICAL DIFFERENCE BETWEEN PUBLISHED HEIGHTS AND ADJUSTED GPS NETWORK

NHDOT Station	A/K/A	CLD Station	Ortho Height NGVD29	Ortho Height NAVD88	VERTCON 2.0 NAVD88 - NGVD29 (meters)	CLD Network Adj. Height	Published - CLD	Geoid 96
329-0220	NEW HAMPTON	329-0220	180.457m	180.342m	-0.115	HELD		-27.304
295-0070	DG 4 RESET	295-0070	208.323m	208.195m	-0.128	HELD		-27.324
245-0020		Elev. Transferred to LAC-4	153.013m	152.879m	-0.134	HELD		-27.240
245-0060	DG 23	LAC-22	215.311m	**215.181m**	-0.130	**215.268m**	**-0.087m**	-27.298
245-0080	DG 31	Elev. Transferred to LAC-9	187.413m	187.280m	-0.133	HELD		-27.257
245-0110	D 17	Elev. Transferred to LAC-12	161.268m	**161.136m**	-0.132	**161.188m**	**-0.052m**	-27.291
245-0270		LAC-2	226.178m	226.048m	-0.130	HELD		-27.205
169-0250	DG 44	LAC-21	163.748m	**163.616m**	-0.132	**163.582m**	**+0.034m**	-27.234

98-132 LACONIA, NEW HAMPSHIRE
HORIZONTAL AND VERTICAL CONTROL

CONSULTING ENGINEERS
540 Commercial St., Manchester, NH 03101
(603) 668-8223 • FAX: (603) 668-8802
E-Mail: CLD@CLDENGINEERS.COM

Horizontal Datum: NAD83/96
Vertical Datum: NAVD88
Unit: Survey Feet
Coordinate type: Grid
Reference ellipsoid: WGS 1984
Projection set: New Hampshire 2800

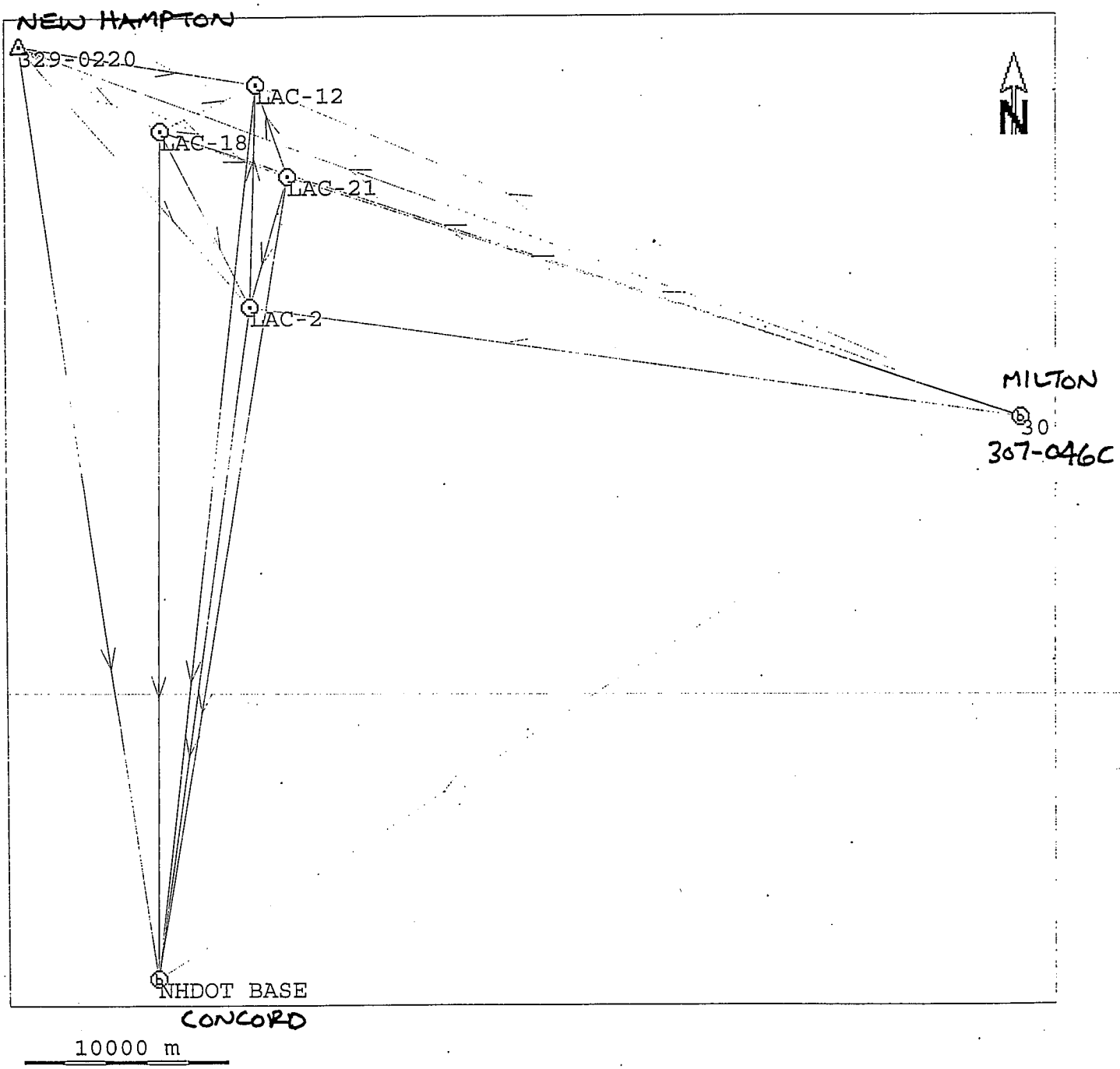
Note:
Coordinate values (X,Y,Z) tabulated below are a result of a GPS survey, utilizing four Leica System 300 dual-frequency sensors*, performed during April, 1998 by Costello, Lomasney & de Napoli, Inc. (CLD). Stations LAC-1 thru LAC-22 are permanent monumented control points and Stations LAC-101 thru LAC-146 are temporary points set for photo control. The City of Laconia control network is tied to three HARN (NAD83/96) stations located in Concord, Milton and New Hampton.
*Station NHDOT BASE in Concord is a continuously operating Trimble 4000SSE dual-frequency receiver.

Station	Northing	Easting	Station Elevation	Ground Elevation	Description
307-0460	350066.1370	1162822.6833			NHDOTDisk/Bnd.(MILTON)
329-0220	409100.5167	1001172.1311	591.67		NHDOTDisk/Ledge(NEWHAMPTON)
NHDOTBASE	259923.9633	1023378.0151			NHDOTBaseStation(CONCORD)
295-0070	417803.1391	1028027.3177	683.05		NHDOTDisk/Bnd.(DG4)
LAC-1	371202.1638	1032624.9404	505.98	505.78	T/LBnd.
LAC-2	367380.2703	1038756.0373	741.63	742.13	NHDOTDisk/Bnd.245-0270
LAC-3	374084.0920	1036918.9850	498.71	498.91	CityDisk/Bnd.
LAC-4	377611.0385	1036846.5446	500.67	500.67	CityDisk/Bnd.
LAC-5	382006.0463	1038877.1112	520.55	520.75	CityDisk/Bnd.
LAC-6	388730.3752	1044694.1069	562.36	562.76	D.H./8"Conc.Bnd.
LAC-7	387413.5930	1041978.8466	520.58	517.98	T/LConc.Bnd.
LAC-8	399449.0743	1038627.7798	518.10	518.30	CityDisk/Bnd.
LAC-9	394129.5208	1043404.4822	633.29	633.59	CityDisk/Bnd.
LAC-10	399967.5178	1042136.5407	727.49	727.99	CityDisk/Bnd.
LAC-11	402879.3062	1045602.0913	523.45	523.60	CityDisk/Bnd.
LAC-12	402871.6636	1039737.6345	520.45	520.60	CityDisk/Bnd.
LAC-13	408057.6607	1036863.5972	524.90	525.00	CityDisk/Bnd.
LAC-14	406467.9652	1033936.7496	719.82	720.02	CityDisk/Bnd.
LAC-15	402651.7476	1029099.1662	750.28	750.48	CityDisk/Bnd.
LAC-16	395725.6267	1030189.2923	813.66	813.86	CityDisk/Bnd.
LAC-17	388599.4564	1029630.7242	686.98	686.98	CityDisk/Ledge
LAC-18	395536.1866	1024101.1791	777.82	777.82	CityDisk/Ledge
LAC-19	384747.8241	1031355.9197	566.09	566.59	CityDisk/Bnd.
LAC-20	376626.1464	1039321.0439	524.14	524.54	D.H./5"X7"Bnd.
LAC-21	388167.9106	1044943.1094	536.69	536.89	NHDOTDisk/Bnd.169-0250(DG44)
LAC-22	403906.2026	1036864.1192	706.26	705.93	NHDOTDisk/Bnd.245-0060(DG23)
LAC-101	365058.7266	1042341.0416	682.40	682.40	Spike/Washer
LAC-102	368103.0109	1041370.7847	633.36	633.36	P.K./Washer
LAC-103	369672.3740	1043119.4633	748.52	748.52	P.K./Washer
LAC-104	369598.7955	1036630.6442	656.06	656.06	Spike/Washer
LAC-105	370324.7696	1034095.9856	599.74	599.74	P.K./Washer

Station	Northing	Easting	Station Elevation	Ground Elevation	Description
LAC-106	372937.1607	1034155.5500	484.28	484.28	P.K./Washer
LAC-107	373750.3429	1039587.3558	592.92	592.92	Spike/Washer
LAC-108	372161.7616	1043477.5555	753.69	753.69	Spike/Washer
LAC-109	377256.0424	1042193.8093	629.34	629.34	Spike/Washer
LAC-110	377691.4371	1039037.6261	537.94	537.94	P.K./Washer
LAC-111	376063.9681	1033070.1509	503.65	503.65	P.K./Washer
LAC-112	378551.6713	1030645.7569	490.06	490.06	Spike/Washer
LAC-113	379066.6580	1032217.7649	542.31	542.31	Spike/Washer
LAC-114	381831.0703	1028881.9883	524.06	524.06	P.K./Washer
LAC-115	383111.2147	1036009.1402	534.63	534.63	P.K./Washer
LAC-116	385751.7502	1040502.2687	513.27	513.27	P.K.Nail
LAC-117	388966.6343	1036906.7853	533.93	533.93	P.K./Washer
LAC-118	387339.8645	1033850.1794	534.49	534.49	P.K./Washer
LAC-119	386401.1340	1027730.8446	501.93	501.93	Spike
LAC-120	389273.4974	1026108.3130	522.25	522.25	Hub/Nail
LAC-121	390492.7473	1033312.1575	540.27	540.27	Hub/Nail
LAC-122	392274.6620	1036620.8499	541.10	541.10	P.K.Nail
LAC-123	395724.2849	1035893.7018	523.80	523.80	P.K.Nail
LAC-124	392190.2851	1030122.5587	721.78	721.78	P.K./Washer
LAC-125	391833.7136	1023621.8194	536.14	536.14	Spike
LAC-126	392923.1008	1026556.9517	698.71	698.71	P.K.Nail
LAC-127	393664.6257	1022360.5036	501.95	501.95	P.K.Nail
LAC-128	395981.7138	1020460.0223	509.49	509.49	P.K.Nail
LAC-129	398303.8606	1019535.3447	494.43	494.43	Spike
LAC-130	398818.9680	1023804.8415	683.95	683.95	P.K.Nail
LAC-131	399403.7445	1027386.3848	694.33	694.33	P.K.Nail
LAC-132	398999.4239	1029537.8227	845.41	845.41	P.K./Washer
LAC-133	401637.6932	1023031.7963	697.12	697.12	P.K.Nail
LAC-134	405234.0220	1027791.0451	630.14	630.14	P.K./Washer
LAC-135	401104.4940	1034390.8344	517.94	517.94	Spike
LAC-136	399584.8048	1036027.8013	514.74	514.74	Spike
LAC-137	406151.2851	1031719.0852	596.23	596.23	Spike/Washer
LAC-138	409334.5272	1032227.1536	699.52	699.52	P.K.Nail
LAC-139	411082.0828	1034352.3353	554.09	554.09	P.K.Nail
LAC-140	405191.9348	1038061.3823	516.82	516.82	P.K.Nail
LAC-141	404405.2003	1043271.7767	513.86	513.86	P.K.Nail
LAC-142	399090.3266	1047165.4340	526.82	526.82	P.K.Nail
LAC-143	397525.0509	1043751.4340	603.25	603.25	P.K.Nail
LAC-144	397555.6299	1038499.2051	535.66	535.66	P.K.Nail
LAC-145	393304.0383	1040632.3681	513.06	513.06	P.K.Nail
LAC-146	391782.6248	1046128.4394	563.71	563.71	P.K.Nail

Adjustment printout

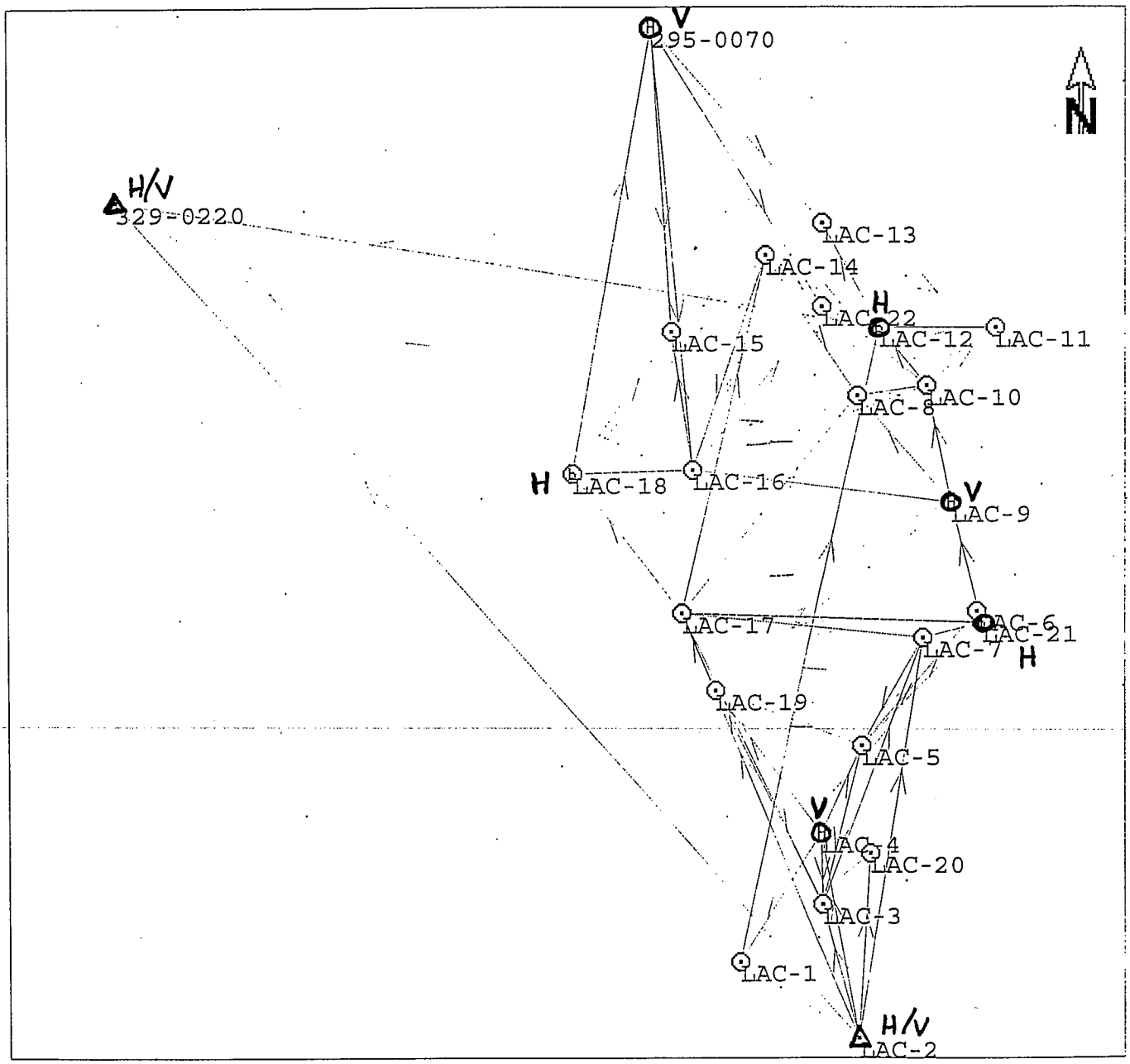
Network 1: LACONIA - HARN TIE IN



Adjustment printout

Network 2: LACONIA - Control Network

H = HORIZONTAL POSITION HELD
V = VERTICAL HEIGHT HELD



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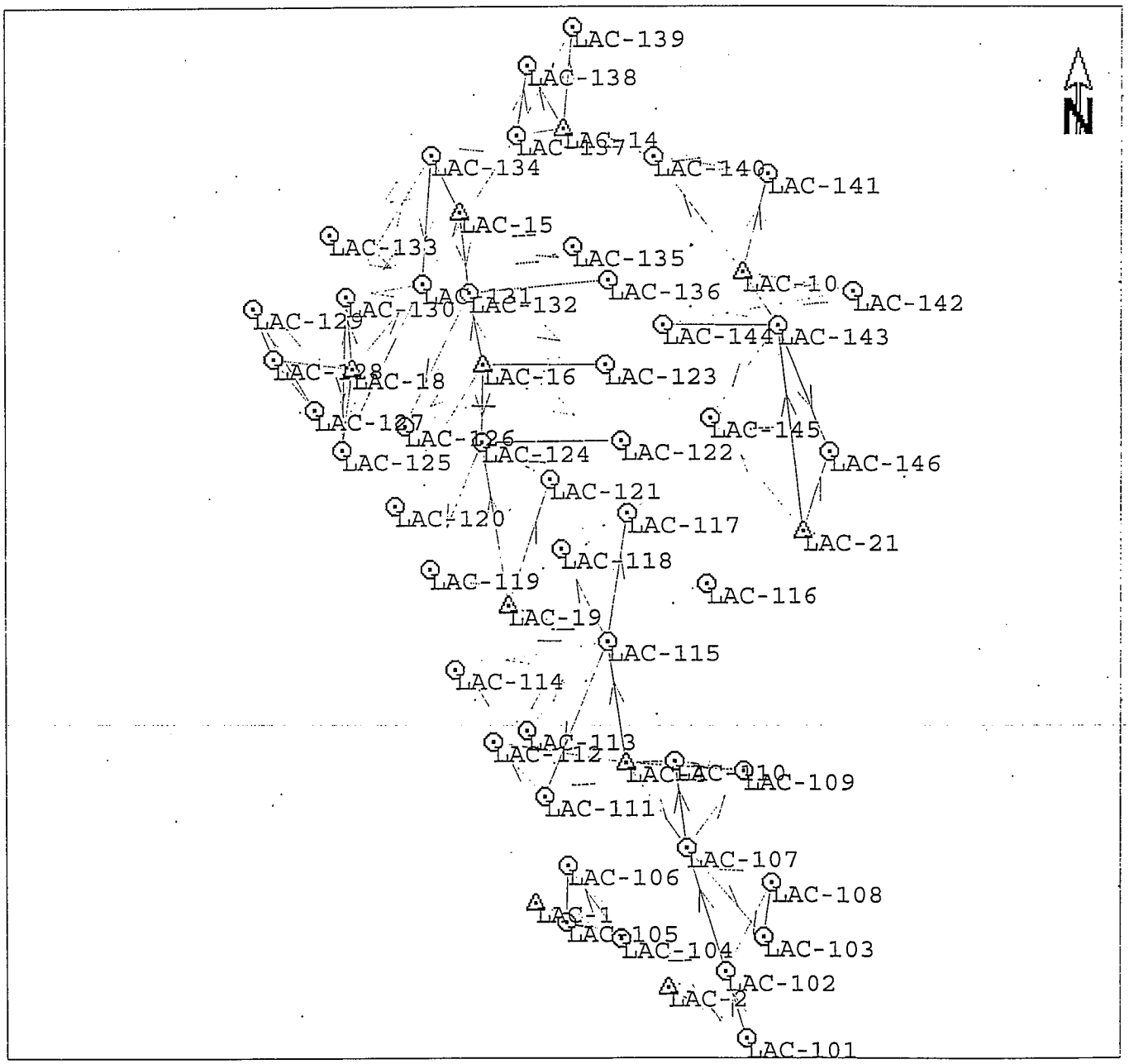
Adjustment printout

Network 3: LACONIA - Photo Control Net



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