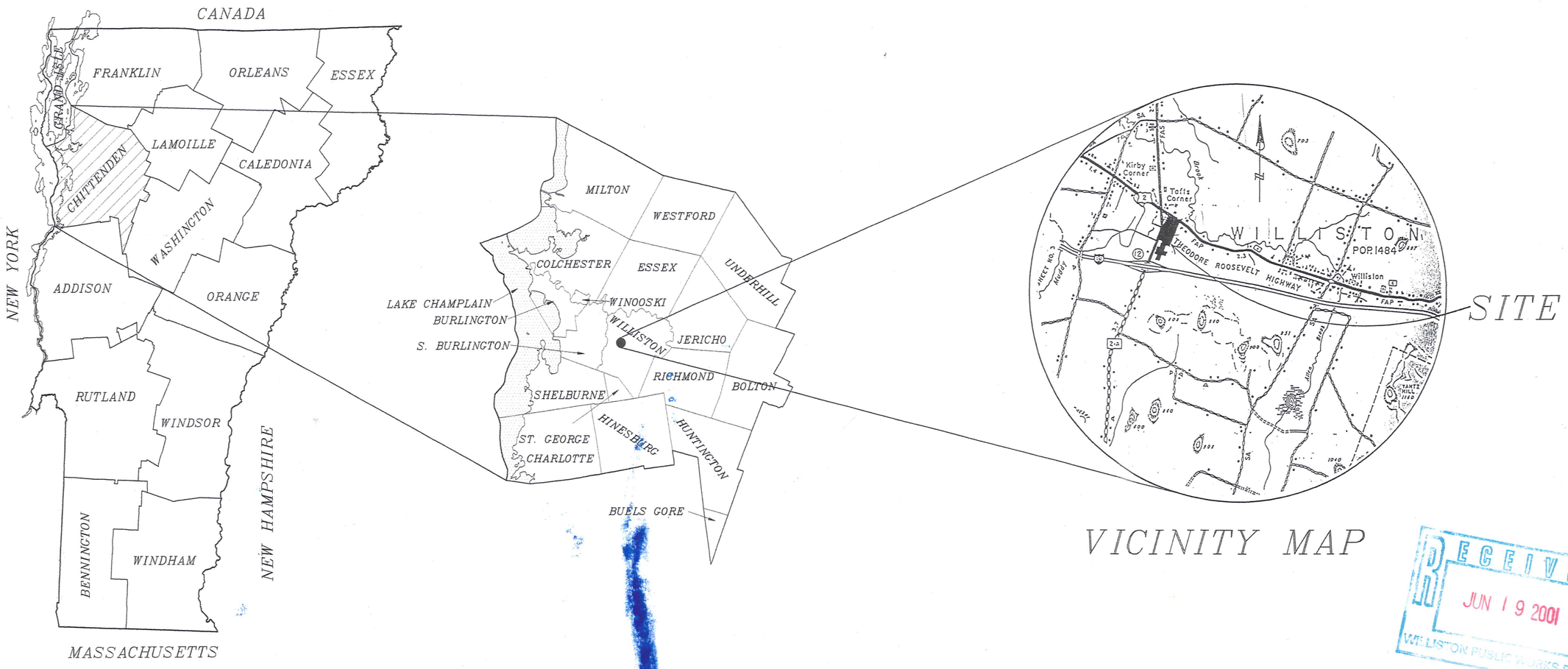
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT



RECEIVED
JUN 19 2001
WILLISTON PUBLIC WORKS DEPT.

DONALD L. HAMLIN CONSULTING ENGINEERS, INC.
136 Pearl Street, Essex Junction Vermont 05452

STATE OF VERMONT RICHARD F. HAMLIN No. 5260 REGISTERED PROFESSIONAL ENGINEER

STATE OF VERMONT DONALD L. HAMLIN No. 2035 REGISTERED PROFESSIONAL ENGINEER

REVISED SEPT. 7, 2000
MARCH 2000

Fri Sep 15 12:09:41 2000

LEGEND

- COMBINATION POLE
- POWER POLE
- TELEPHONE POLE
- LIGHT
- SUPPORT POLE
- BUSH
- SHRUB
- CONIFER TREE
- DECIDUOUS TREE
- STUMP
- CONCRETE MONUMENT
- IRON PIPE FOUND
- SURVEY STATION
- EXISTING SEWER MANHOLE
- TELEPHONE MANHOLE
- WATER SHUT-OFF
- EDGE OF WOODS
- DRAINAGE DITCH
- CO CLEAN OUT
- GSV NATURAL GAS VALVE
- EXISTING CATCH BASIN
- EXISTING HYDRANT
- EXISTING GATE VALVE
- MONITOR WELL
- SIGN
- MAILBOX
- 400 NEW CONTOUR & LABEL
- 400 EXISTING CONTOUR & LABEL
- PROPERTY LINE
- RIGHT OF WAY
- —W— EXISTING WATER LINE
- —S— EXISTING SEWER LINE
- —D— EXISTING STORM DRAIN LINE
- —T— UNDER GROUND TELEPHONE
- —E— UNDER GROUND ELECTRICAL
- —G— NATURAL GAS LINE
- NEW SEWER LINE & MANHOLE
- NEW WATER LINE, HYDRANT & GATE VALVE
- NEW STORM DRAIN & CATCH BASIN
- NEW UNDERDRAIN AND CLEAN OUT

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LAYOUT & GRADING PLAN	4gr
LAYOUT & GRADING PLAN	5gr
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SITE PLAN	S-4
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P & P – CENTERLINE "A", STA. 22+00.00A – STA. 28+50.00A	P-A2
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P & P – CENTERLINE "C", STA. 21+50.00C – STA. 27+22.05C	P-C2
P & P – CENTERLINE "D", STA. 9+99.28D – STA. 22+00.00D	P-D1
P & P – CENTERLINE "D", STA. 22+00.00D – STA. 30+83.95D	P-D2
P & P – CENTERLINE "E", STA. 10+00.00E – STA. 19+50.00E	P-E1
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P & P – CENTERLINE "G", STA. 10+00.00G – STA. 12+77.29G	P-G1
P & P – CENTERLINE "H", STA. 10+00.00H – STA. 21+40.22H	P-H1
P & P – CENTERLINE "I", STA. 10+00.00I – STA. 11+32.11I	P-I1
P & P – CENTERLINE "L", STA. 10+00.00L – STA. 10+89.70L	P-L1
P & P – CENTERLINE "M", STA. 10+00.00M – STA. 20+88.12M	P-M1
P & P – CENTERLINE "N", STA. 10+00.00N – STA. 10+89.70N	P-N1
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PAVEMENT MARKINGS & SIGNAGE PLAN	3st
PAVEMENT MARKINGS & SIGNAGE PLAN	4st
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AREAS OF NON-DISTURBANCE STAKEOUT PLAN	2sz
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EROSION CONTROL DETAILS	2er
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ROADWAY SECTION DETAILS	2rd
ROADWAY SECTION DETAILS	3rd
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BOUNDARY PLAT	3bp

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
INDEX OF SHEETS
~PROGRESS PLAN~

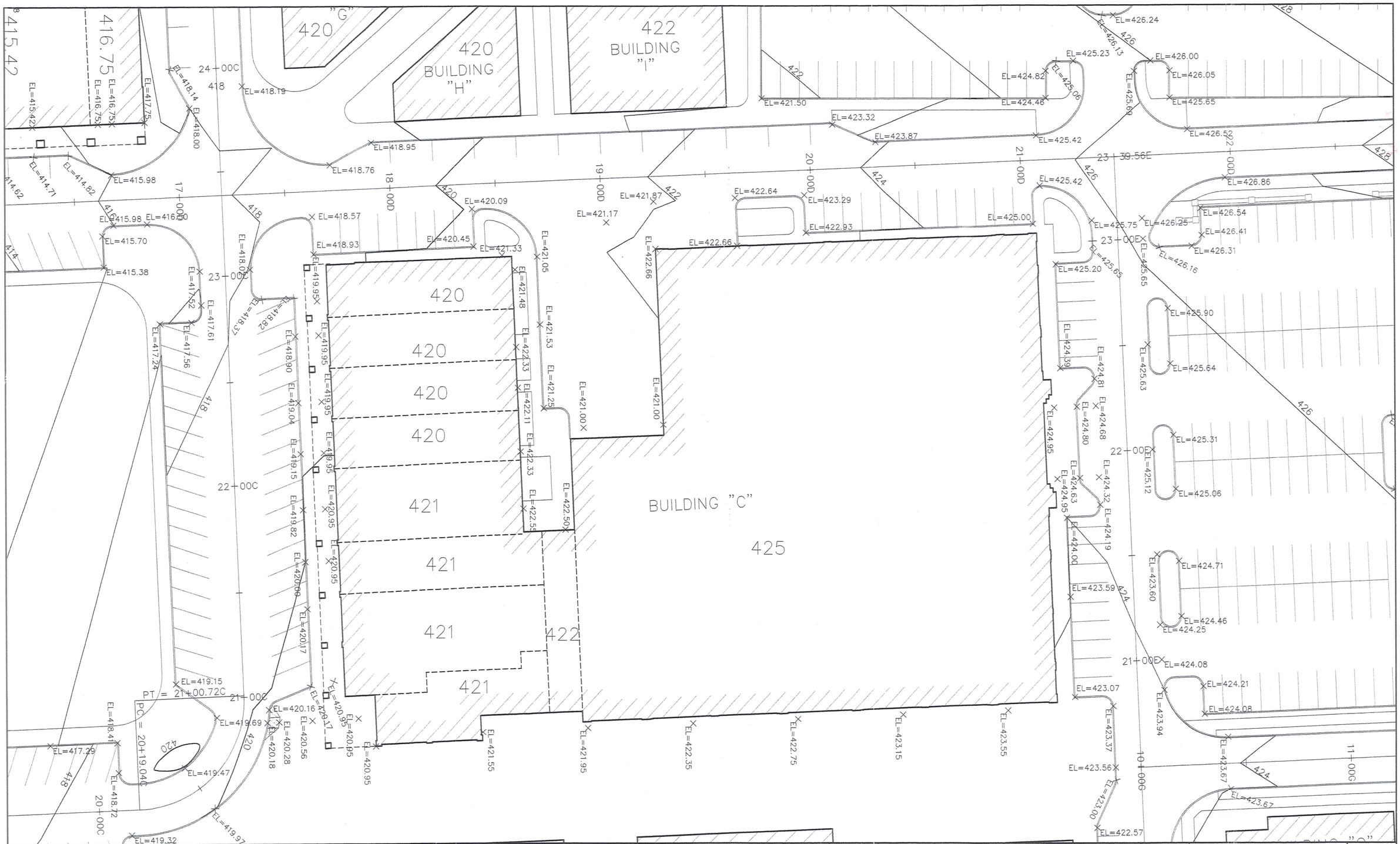
DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT · RICHARD F. HAMLIN · No. 5260 · REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	---
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin
Consulting
Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	INDEX



GRAPHIC SCALE

20 0 20 40 60

(IN FEET)
1 inch = 20 ft.

CLIENT	STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430
PROJECT TITLE	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT
DRAWING TITLE	PROPOSED SITE DEVELOPMENT BUILDINGS "C" GRADING CHECK

DATE	REVISION	BY
04/17/01	BLDG "C" NORTH GRADING	SOL
04/11/01	BLDG "C" NORTH GRADING	SOL

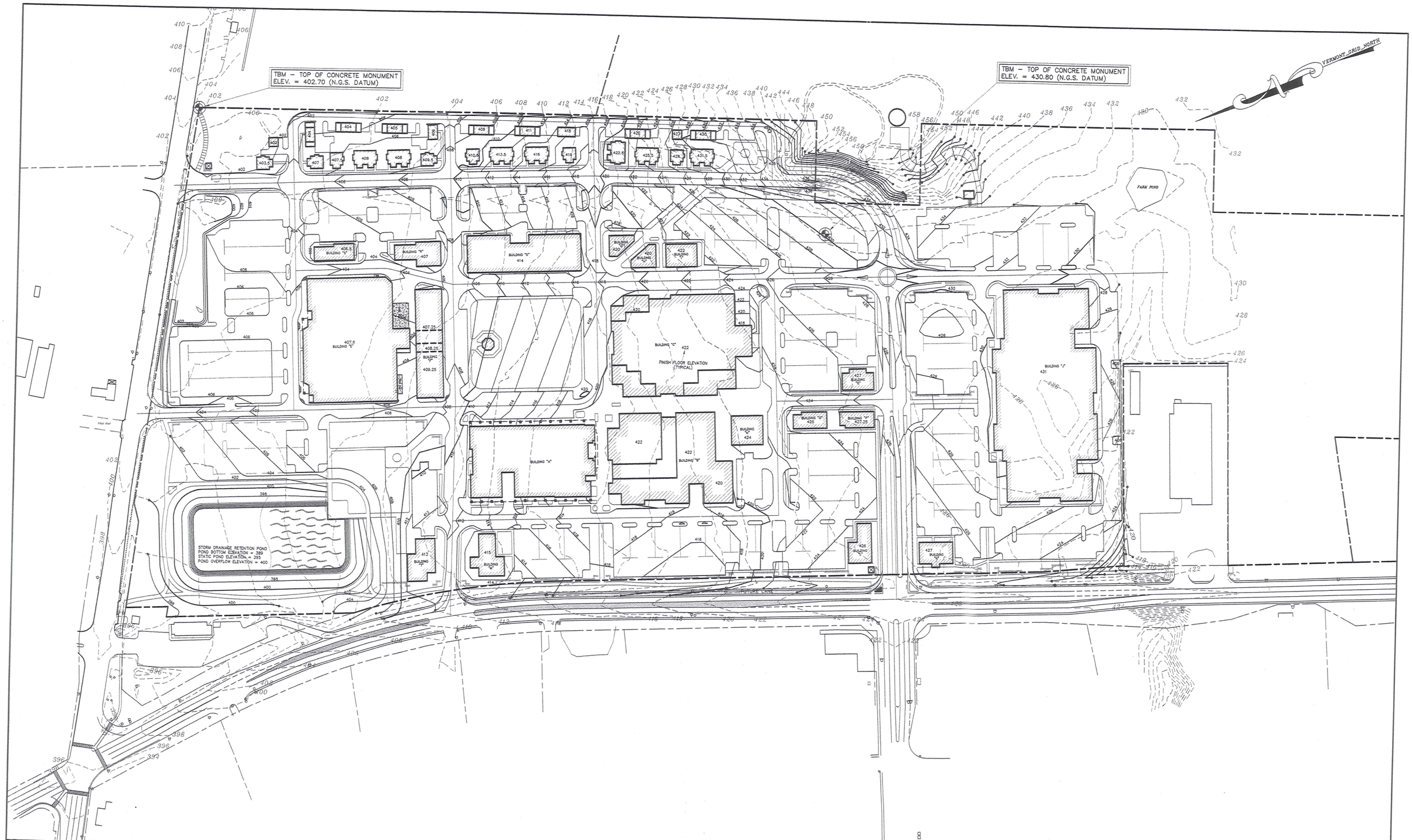
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	SOL
Drawn	SOL
Checked	RFH
Date	03/15/01

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 20'
Job	99-293
File	
Drawing	BLDG "C" GRADING

Tue Apr 17 10:57:28 2001



GRAPHIC SCALE

100 0 100 200 400

(IN FEET)
1 inch = 100 ft.

CLIENT

STARWOOD–CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

GENERAL GRADING PLAN

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin
Consulting
Engineers, Inc.

136 Pearl Street
Essex Junction, Vermont

Scale	1" = 100'
Job	99-293
File	
Drawing	1gr

Fri Sep 15 09:17:17 2000

NOTE:
1. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

NOTES:
1. THE TYPICAL PARKING AREA CURB RADIUS IF NOT LABELED IS 5.00'.
2. GRADES SHOWN HERE ARE FINISH GRADE OF PAVEMENT AT THE FACE OF CURB.

STORM DRAINAGE RETENTION POND
POND BOTTOM ELEVATION = 389
STATIC POND ELEVATION = 395
POND OVERFLOW ELEVATION = 400

MATCHLINE 3gr

N= 710699.855
E= 341431.841

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	GRADING AND LAYOUT SITE PLAN ~PROGRESS PLAN~

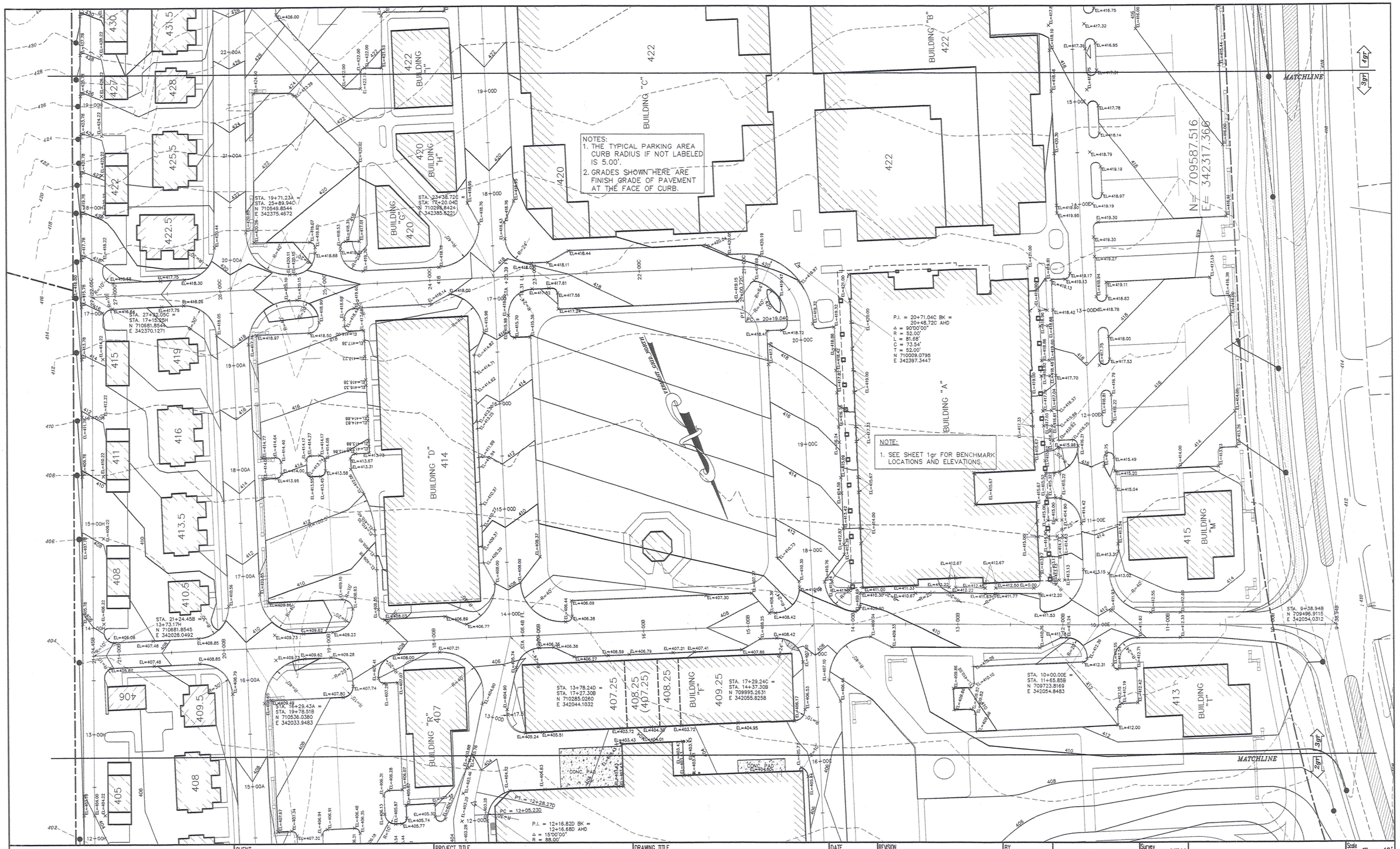
DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	2gr



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	GRADING AND LAYOUT SITE PLAN ~PROGRESS PLAN~

DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

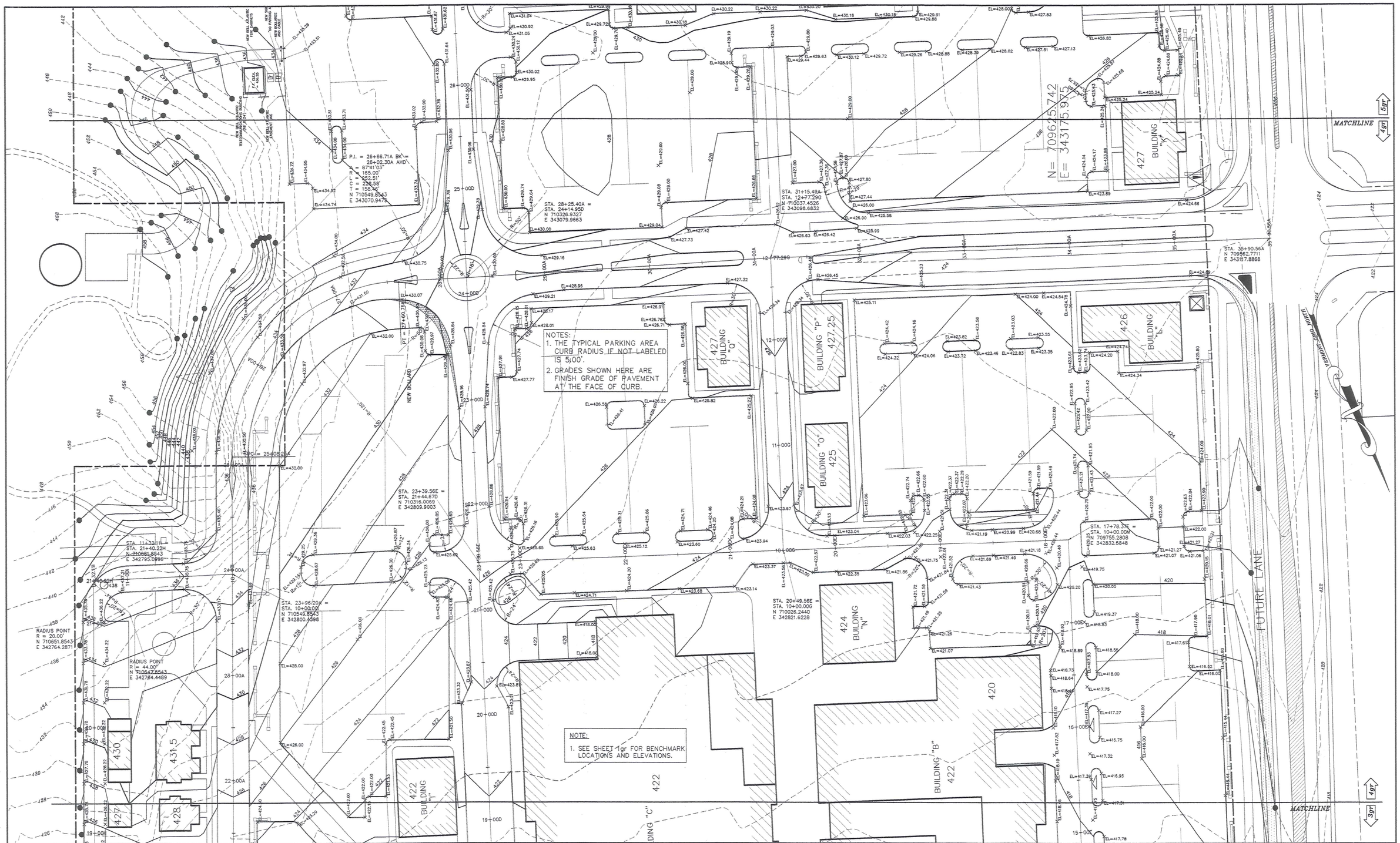
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	3gr

Fri Sep 15 10:35:42 2000



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	GRADING AND LAYOUT SITE PLAN ~PROGRESS PLAN~

DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

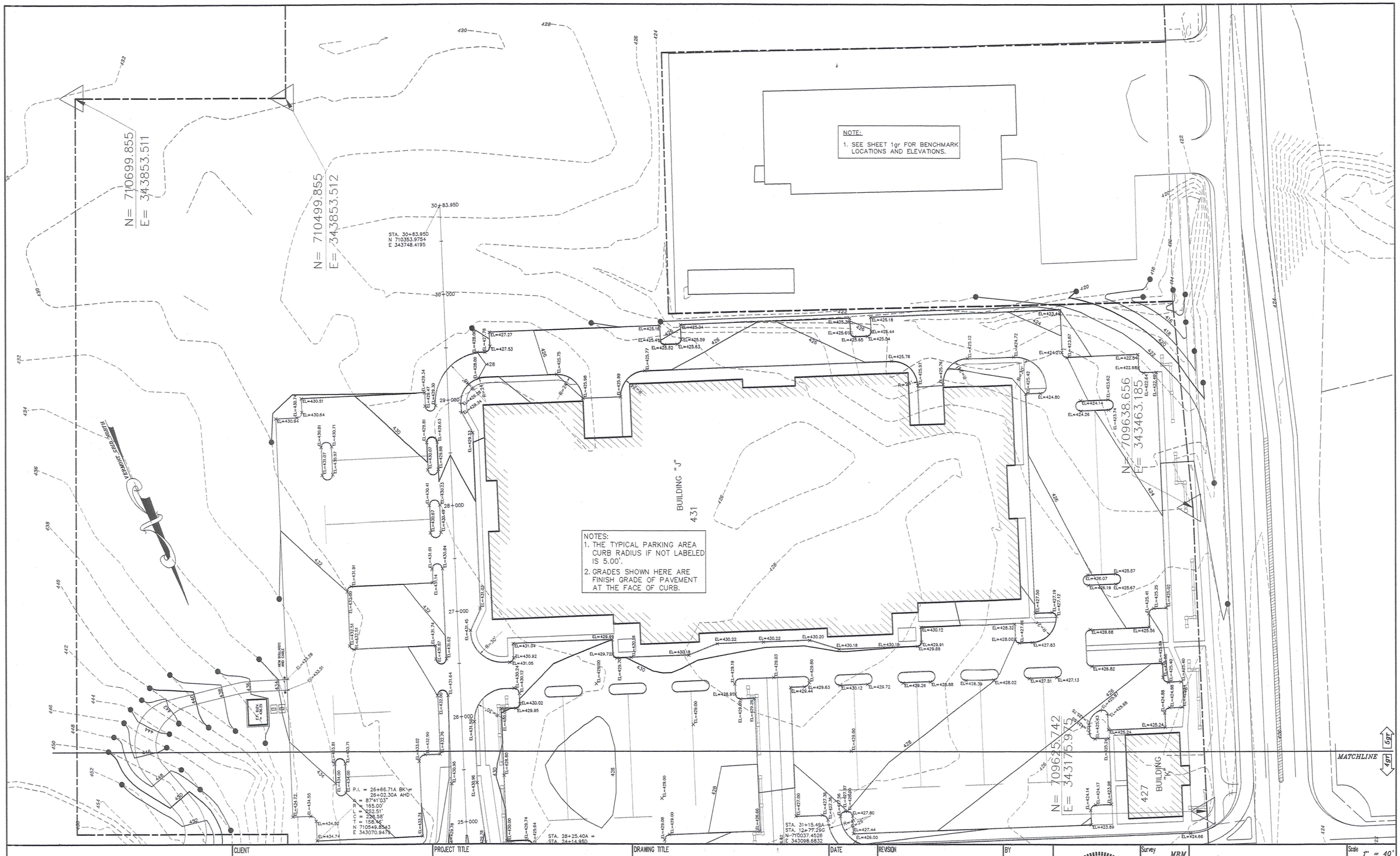
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin
Consulting
Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	4gr

Wed Sep 06 14:06:32 2000



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

CLIENT	PROJECT TITLE	DRAWING TITLE	DATE	REVISION	BY
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	GRADING AND LAYOUT SITE PLAN ~PROGRESS PLAN~	DATE	REVISION	BY
			DATE	REVISION	BY
			DATE	REVISION	BY
			DATE	REVISION	BY
			DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

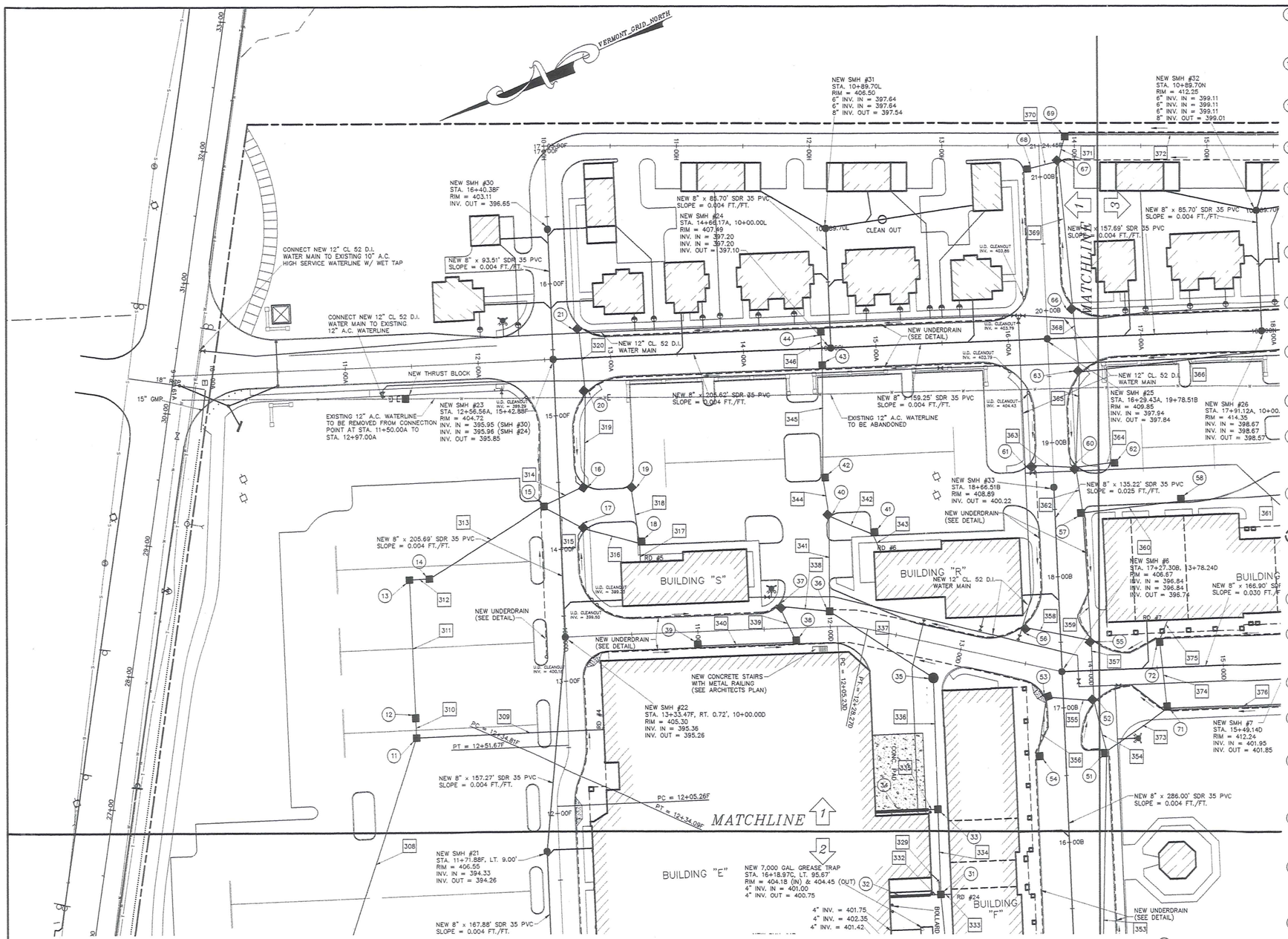
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED
PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	5gr

Wed Sep 06 14:16:03 2000



NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

- UNCHANGED DRAINAGE PIPE
- REVISED DRAINAGE PIPE
- UNCHANGED DRAINAGE STRUCTURE
- REVISED DRAINAGE STRUCTURE

(11) CB #7, TYPE III
STA. 12+61.91F, LT. 114.00'
RIM = 405.50
18" INV. IN = 398.39
24" INV. IN = 397.73
30" INV. OUT = 396.73

(12) CB #8, TYPE II
STA. 12+76.94F, LT. 114.04'
RIM = 405.50
24" INV. IN = 397.75
24" INV. OUT = 397.75

(13) CB #9, TYPE III
STA. 12+81.94F, LT. 114.53'
RIM = 404.75
24" INV. IN = 397.95
24" INV. OUT = 397.95

(14) CB #10, TYPE II
STA. 13+82.01F, LT. 99.53'
RIM = 404.75
24" INV. IN = 397.97
24" INV. OUT = 397.97

(15) CB #11, TYPE III
STA. 14+32.24F, LT. 13'
RIM = 403.86
4" UD INV. IN = 398.57
4" UD INV. IN = 398.57
15" INV. IN = 398.26
15" INV. IN = 398.26
24" INV. OUT = 398.16

(16) CB #12, TYPE I
STA. 14+46.25F, RT. 19.49'
RIM = 403.87
4" UD INV. IN = 398.60
15" INV. IN = 398.33
15" INV. OUT = 398.33

(17) CB #13, TYPE I
STA. 14+14.70F, RT. 18.44'
RIM = 403.85
4" UD INV. IN = 398.60
15" INV. IN = 398.33
15" INV. OUT = 398.33

(18) CB #14, TYPE I
STA. 14+02.15F, RT. 59.40'
RIM = 404.28
8" INV. IN = 399.01
15" INV. IN = 398.41
15" INV. OUT = 398.41

(19) CB #15, TYPE I
STA. 14+44.85F, RT. 54.32'
RIM = 405.00
15" INV. OUT = 398.49

(20) CB #16, TYPE II
STA. 15+16.88F, RT. 23.02'
RIM = 404.70
6" UD INV. IN = 400.17 (A)
4" UD INV. OUT = 399.30 (F)
15" INV. IN = 398.46
15" INV. OUT = 398.46

(21) CB #17, TYPE II
STA. 12+76.64A, LT. 23.08'
RIM = 404.55
6" UD INV. IN = 399.47
15" INV. OUT = 398.55

(31) CB #23, TYPE III
STA. 15+64.52B, LT. 98.51'
RIM = 403.58
4" INV. IN = 399.50
12" INV. IN = 398.78
12" INV. IN = 398.78
18" INV. IN = 398.78
24" INV. OUT = 396.78

(32) TRENCH DRAIN #1
STA. 16+64.55B, LT. 121.70'
RIM = 403.43
12" INV. OUT = 401.34

(33) CB #24, TYPE II
STA. 16+28.52B, LT. 97.95'
RIM = 403.58
12" INV. IN = 398.72
18" INV. IN = 396.90
18" INV. OUT = 396.90

(34) TRENCH DRAIN #2
STA. 16+28.55B, LT. 125.08'
RIM = 403.43
12" INV. OUT = 401.43

(35) DMH #5, TYPE I
STA. 12+84.68D, RT. 25.91'
RIM = 405.00
18" INV. IN = 397.09
18" INV. OUT = 397.09

(36) CB #25, TYPE II
STA. 12+00.00D, LT. 12.00'
RIM = 403.20
4" UD INV. IN = 398.03
15" INV. IN = 397.27
15" INV. IN = 397.27
18" INV. OUT = 397.27

(37) CB #26, TYPE II
STA. 11+62.28D, LT. 17.15'
RIM = 403.96
4" UD INV. IN = 398.02
15" INV. IN = 397.34
15" INV. OUT = 397.34

(38) CB #27, TYPE II
STA. 11+73.74D, RT. 11.00'
RIM = 403.23
4" UD INV. IN = 397.98
4" UD INV. IN = 397.98
15" INV. IN = 397.39
15" INV. OUT = 397.39

(39) CB #28, TYPE I
STA. 10+99.50D, RT. 11.00'
RIM = 403.86
4" UD INV. IN = 398.42
4" UD INV. OUT = 398.42
15" INV. OUT = 397.54

(40) CB #29, TYPE I
STA. 18+52.29B, LT. 170.21'
RIM = 406.06
15" INV. IN = 399.17
15" INV. IN = 399.17
15" INV. OUT = 399.17

(41) CB #30, TYPE I
STA. 18+37.51B, LT. 138.00'
RIM = 406.07
12" INV. IN = 399.23
15" INV. OUT = 399.23

(42) CB #31, TYPE I
STA. 18+81.61B, LT. 173.74'
RIM = 406.40
15" INV. IN = 399.22
15" INV. OUT = 399.22

(43) CB #32, TYPE II
STA. 14+58.95A, RT. 14.00'
RIM = 407.09
6" UD INV. IN = 401.90
6" UD INV. OUT = 401.90
15" INV. IN = 399.37
15" INV. OUT = 399.37

(44) CB #33, TYPE II
STA. 14+58.95A, LT. 14.00'
RIM = 407.09
6" UD INV. IN = 401.90
6" UD INV. OUT = 401.90
15" INV. OUT = 399.42

(51) CB #40, TYPE V
STA. 16+66.28B, RT. 31.00'
RIM = 406.09
4" UD INV. IN = 401.26
4" UD INV. OUT = 401.26
24" INV. IN = 397.58
30" INV. IN = 397.58
36" INV. OUT = 397.56

(52) CB #41, TYPE III
STA. 17+04.26B, RT. 22.98'
RIM = 406.85
4" UD INV. IN = 401.12 (B)
4" UD INV. IN = 401.79 (D)
15" INV. IN = 398.65
24" INV. IN = 398.75
24" INV. OUT = 397.65

(53) CB #42, TYPE I
STA. 17+08.48B, LT. 12.60'
RIM = 406.15
4" UD INV. OUT = 400.99 (D)
4" UD INV. IN = 401.10 (B)
15" INV. IN = 399.72
15" INV. OUT = 398.72

(54) CB #43, TYPE I
STA. 16+64.73B, LT. 21.00'
RIM = 406.27
4" UD INV. IN = 401.26
4" UD INV. OUT = 401.26
15" INV. OUT = 399.80

(55) CB #44, TYPE III
STA. 14+01.25D, LT. 23.01'
RIM = 407.00
4" UD INV. IN = 401.33 (B)
4" UD INV. IN = 401.19 (D)
15" INV. IN = 398.83
24" INV. IN = 398.83
24" INV OUT = 398.83

(56) CB #45, TYPE I
STA. 17+62.53B, LT. 27.04'
RIM = 406.10
4" UD INV. OUT = 400.34 (D)
4" UD INV. IN = 401.47 (B)
15" INV. OUT = 398.93

(57) CB #46, TYPE II
STA. 18+46.51B, RT. 21'
RIM = 408.03
4" UD INV. OUT = 403.00
15" INV. IN = 401.01
18" INV. IN = 399.01
24" INV. OUT = 399.01

(58) CB #47, TYPE I
STA. 18+52.19B, RT. 94.83'
RIM = 409.90
15" INV. IN = 403.75
15" INV. OUT = 402.42

(60) CB #49, TYPE II
STA. 18+80.66B, RT. 17.15'
RIM = 409.03
4" UD INV. IN = 403.65
15" INV. IN = 399.10
15" INV. IN = 401.10
15" INV. IN = 401.10
18" INV. OUT = 399.10

(61) CB #50, TYPE I
STA. 18+83.66B, LT. 17.15'
RIM = 408.99
4" UD INV. IN = 403.71
15" INV. OUT = 401.16

(62) CB #51, TYPE I
STA. 18+83.35B, RT. 44.69'
RIM = 409.10
15" INV. OUT = 401.83

(63) CB #52, TYPE II
STA. 19+52.50B, RT. 23.01'
RIM = 410.24
4" UD INV. OUT = 404.47 (B)
6" UD ONV. IN = 404.82 (A)
15" INV. IN = 399.25
15" INV. IN = 400.25
15" INV. OUT = 399.25

(66) CB #55, TYPE II
STA. 16+49.51A, LT. 23.05'
RIM = 409.71
6" UD INV. OUT = 404.08 (B)
6" UD INV. IN = 404.80 (A)
15" INV. IN = 399.34
15" INV. OUT = 399.34

(67) CB #56, TYPE I
STA. 21+11.47B, RT. 14.11'
RIM = 406.00
4" UD INV. IN = 400.22 (H)
6" UD INV. IN = 400.44 (B)
15" INV. IN = 399.56
15" INV. IN = 399.56
15" INV. OUT = 399.56

(68) CB #57, TYPE I
STA. 21+06.48B, LT. 11.06'
RIM = 405.90
6" UD INV. IN = 400.71
15" INV. OUT = 399.61

(69) CB #58, TYPE I
STA. 13+92.67H, LT. 9'
RIM = 405.68
4" UD INV. IN = 400.31
15" INV. IN = 399.60
15" INV. OUT = 399.60

(71) CB #60, TYPE III
STA. 14+56.32D, RT. 31.00'
RIM = 408.37
4" UD INV. IN = 403.62
4" UD INV. OUT = 403.62
15" INV. IN = 403.00
30" INV. IN = 397.68
30" INV. OUT = 397.68

(72) CB #61, TYPE I
STA. 14+52.74D, LT. 21.00'
RIM = 409.29
4" UD INV. IN = 403.50
4" UD INV. OUT = 403.50
12" INV. IN = 403.20
15" INV. OUT = 403.10

308 30" X 184.53'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

309 18" X 137.97'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

310 24" X 10.03'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

311 24" X 101.00'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

312 24" X 11.00'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

313 24" X 96.05'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

314 15" X 31.52'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

315 15" X 32.50'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

316 15" X 39.84'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

317 8" X 11.90' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

318 15" X 40.00'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

319 15" X 67.81' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

320 15" X 45.16' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

332 12" X 5.18' SDR 35
PVC DRAIN LINE
SLOPE = 0.494 FT./FT.

333 12" X 5.50' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

334 18" X 59.50'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

335 12" X 5.62' SDR 35
PVC DRAIN LINE
SLOPE = 0.482 FT./FT.

336 18" X 93.97'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

337 18" X 89.43'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

338 15" X 34.57'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

339 15" X 27.39'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

340 15" X 71.24'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

341 15" X 67.72'
HDPE DRAIN LINE
SLOPE = 0.028 FT./FT.

342 15" X 32.44'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

343 12" X 12.95' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

344 15" X 26.54'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

345 15" X 79.96' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

346 15" X 24.00' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

353 36" X 204.54'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

354 24" X 32.32'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

355 15" X 31.83'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

356 15" X 41.55'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

357 24" X 41.05'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

358 15" X 47.52'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

359 24" X 92.23'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

360 15" X 70.55'
HDPE DRAIN LINE
SLOPE = 0.020 FT./FT.

362 18" X 30.37'
HDPE DRAIN LINE
SLOPE = 0.003 FT./FT.

363 15" X 30.93'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

364 15" X 24.17'
HDPE DRAIN LINE
SLOPE = 0.030FT./FT.

365 15" X 68.58' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

366 15" X 158.26' SDR 35
PVC DRAIN LINE
SLOPE = 0.025 FT./FT.

368 15" X 45.15' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

369 15" X 107.07' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

370 15" X 22.66 SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

371 15" X 18.98' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

372 15" X 164.69' SDR 35
PVC DRAIN LINE
SLOPE = 0.025 FT./FT.

373 30" X 50.83'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

374 15" X 48.12'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

375 12" X 4.08' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PROPOSED SITE DEVELOPMENT
SITE PLAN
~PROGRESS PLAN~

DATE	REVISION	BY
04/17/01	GENERAL REVISIONS	SOL
2/12/01	GENERAL REVISIONS	SOL
9/7/00	GENERAL REVISIONS	SOL

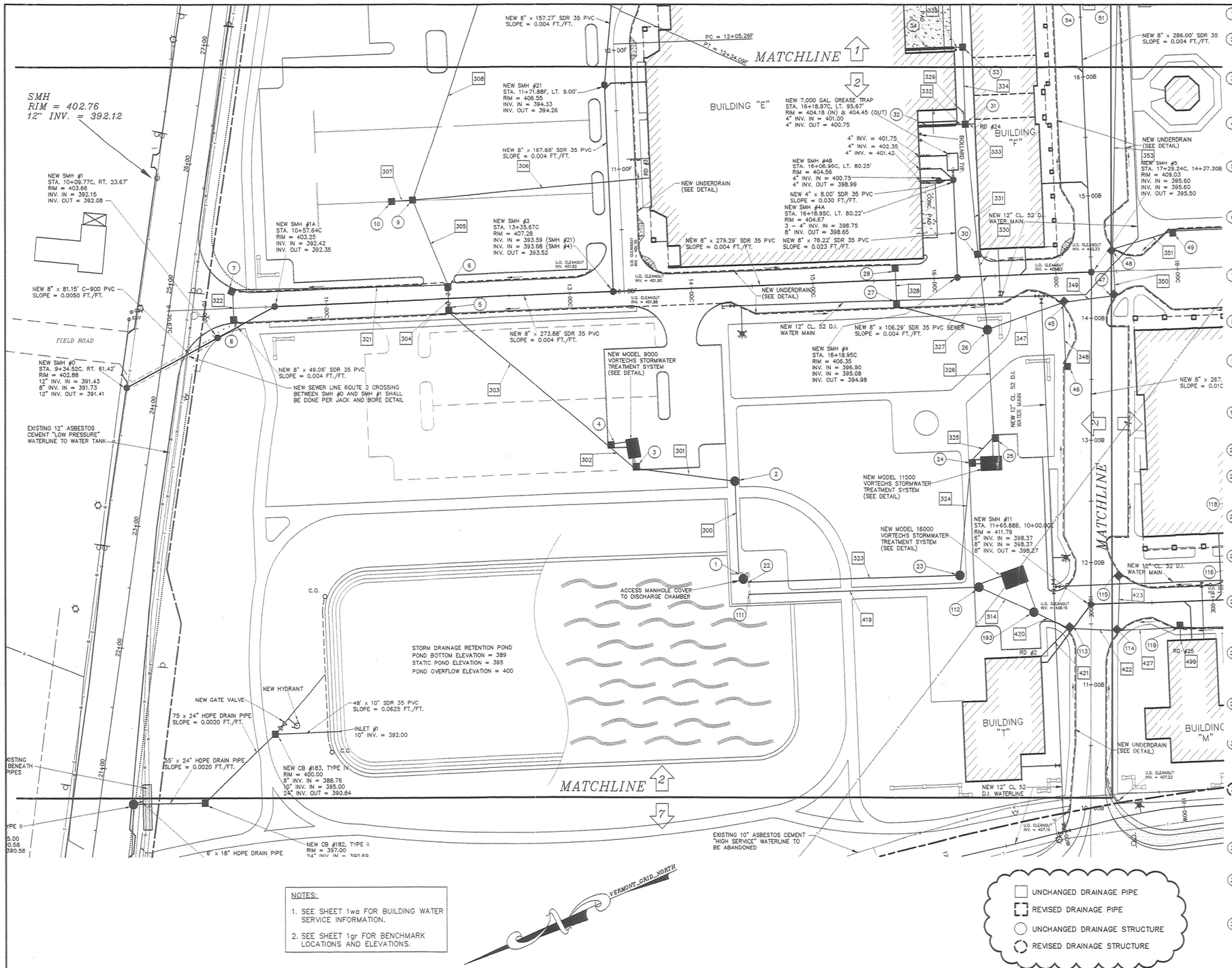
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin
Consulting
Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	S-1

Tue Apr 17 10:17:43 2001



1. OUTLET #1
STA. 14+29.07C, RT. 234.89'
36" INV. OUT = 395.50

2. DMH #1, TYPE III
STA. 14+29.07C, RT. 159.42'
RIM = 402.00
36" INV. IN = 395.64
36" INV. OUT = 395.64

3. CB #1, TYPE V
STA. 13+47.24C, RT. 146'
RIM = 405.52
24" INV. IN = 395.81
36" INV. IN = 395.81
36" INV. OUT = 395.81

4. CB #2, TYPE V
STA. 13+27.24C, RT. 127'
RIM = 405.66
36" INV. IN = 395.86
24" INV. OUT = 395.86
36" INV. OUT = 395.86

5. CB #3, TYPE IV
STA. 12+00.00C, RT. 11'
RIM = 405.13
36" INV. IN = 396.19
4" UD INV. IN = 399.88
36" INV. OUT = 396.19

6. CB #4, TYPE IV
STA. 12+00.00C, LT. 11'
RIM = 405.13
36" INV. IN = 396.22
15" INV. IN = 396.50
4" UD INV. IN = 399.88
4" UD INV. OUT = 399.88
36" INV. OUT = 396.22

7. CB #174, TYPE I
STA. 10+23.45C, LT. 14.99'
RIM = 402.80
4" UD INV. IN = 397.60
15" INV. IN = 396.84
15" INV. OUT = 396.84

8. CB #175, TYPE I
STA. 10+23.45C, RT. 11.03'
RIM = 402.86
4" UD INV. IN = 397.60
15" INV. OUT = 396.89

9. CB #5, TYPE V
STA. 11+74.35C, LT. 81.35'
RIM = 404.80
18" INV. IN = 398.01
30" INV. IN = 396.36
30" INV. IN = 396.36
36" INV. OUT = 396.36

10. CB #6, TYPE III
STA. 11+57.15C, LT. 80.82'
RIM = 404.80
30" INV. OUT = 396.39

22. OUTLET #2
STA. 14+36.57C, RT. 241.64'
48" INV. OUT = 395.50

23. DMH #9, TYPE IV
STA. 11+89.22B, LT. 107.84'
RIM = 411.00
42" INV. IN = 395.84
42" INV. OUT = 395.84

24. CB #18, TYPE V
STA. 12+81.59B, LT. 99.24'
RIM = 409.66
42" INV. IN = 395.02
24" INV. IN = 396.02
42" INV. OUT = 396.02

25. CB #19, TYPE V
STA. 13+02.45B, LT. 80.14'
RIM = 409.66
36" INV. IN = 396.07
24" INV. OUT = 396.07
42" INV. OUT = 396.07

26. DMH #3, TYPE IV
STA. 13+90.25B, LT. 85.48'
RIM = 407.75
15" INV. IN = 396.22
24" INV. IN = 396.46
36" INV. IN = 396.22
36" INV. OUT = 396.22

27. CB #20, TYPE I
STA. 15+68.00C, RT. 21'
RIM = 405.78
4" UD INV. IN = 400.53
4" UD INV. IN = 400.53
15" INV. IN = 396.36
15" INV. OUT = 396.36

28. CB #21, TYPE I
STA. 15+68.00C, LT. 11'
RIM = 405.78
4" UD INV. IN = 400.53
15" INV. OUT = 396.42

30. CB #22, TYPE II
STA. 16+36.74C, LT. 19.22'
RIM = 406.22
4" UD INV. IN = 401.20
24" INV. IN = 396.57
24" INV. OUT = 396.57

31. CB #23, TYPE III
STA. 15+64.52B, LT. 98.51'
RIM = 403.58
4" INV. IN = 399.50
12" INV. IN = 398.78
12" INV. IN = 398.78
18" INV. IN = 396.78
24" INV. OUT = 396.78

32. TRENCH DRAIN #1
STA. 15+64.55B, LT. 121.70'
RIM = 403.43
12" INV. OUT = 401.34

33. CB #24, TYPE II
STA. 16+28.52B, LT. 97.95'
RIM = 403.58
12" INV. IN = 398.72
18" INV. IN. = 396.90
18" INV. OUT = 396.90

34. TRENCH DRAIN #2
STA. 16+28.55B, LT. 125.08'
RIM = 403.43
12" INV. OUT = 401.43

45. CB #34, TYPE IV
STA. 14+12.58B, LT. 23.85'
RIM = 408.23
4" UD INV. = 402.74 (C)
4" UD INV. = 403.77 (B)
15" INV. IN = 398.34
36" INV. IN = 397.00
36" INV. OUT = 396.34

46. CB #35, TYPE I
STA. 13+60.45B, LT. 21.00'
RIM = 409.33
4" UD INV. IN = 404.32
4" UD INV. OUT = 404.32
15" INV. OUT = 398.44

47. CB #36, TYPE IV
STA. 14+18.54B, RT. 19.60'
RIM = 410.10
4" UD INV. IN = 403.74 (C)
4" UD INV. IN = 403.74 (B)
36" INV. IN = 397.08
36" INV. OUT = 397.08

48. CB #37, TYPE IV
STA. 17+47.57C, LT. 18.32'
RIM = 409.25
4" UD INV. OUT = 403.35 (B)
4" UD INV. IN = 404.19 (C)
15" INV. IN = 399.15
36" INV. IN = 397.15
36" INV. OUT = 397.15

49. CB #38, TYPE I
STA. 17+37.32C, LT. 31.00'
RIM = 410.73
4" UD INV. IN = 405.99
4" UD INV. OUT = 405.99
15" INV. IN = 402.57
15" INV. OUT = 400.57

111. OUTLET #3
STA. 11+73.02B, LT. 281.31'
54" INV. OUT = 395.50

112. DMH #2, TYPE IV
STA. 11+79.77B, LT. 92.16'
RIM = 411.49
54" INV. IN = 395.83
36" INV. IN = 395.83
54" INV. OUT = 395.83

113. CB #96, TYPE V
STA. 11+46.29B, LT. 18.72'
RIM = 411.80
4" UD INV. IN = 406.49
6" INV. IN = 398.80
54" INV. IN = 395.98
54" INV. OUT = 395.98

114. CB #97, TYPE V
STA. 11+44.43B, RT. 22.38'
RIM = 411.80
4" UD INV. IN = 406.50 (B)
4" UD INV. IN = 406.89 (E)
15" INV. IN = 400.05
48" INV. IN = 396.05
54" INV. OUT = 396.05

118. CB #98, TYPE I
STA. 10+24.72E, LT. 23.65
RIM = 412.00
4" UD INV. OUT = 406.05 (B)
4" UD INV. IN = 407.02 (E)
15" INV. OUT = 400.86

15" INV. OUT = 409.54

119. CB #100, TYPE V
STA. 10+72.26E, RT. 21.00'
RIM = 413.31
4" UD INV. IN= 408.43
4" UD INV. OUT = 408.43
8" INV. IN = 400.00
48" INV. IN = 396.41
48" INV. OUT = 396.41

193. DMH #2A, TYPE IV
STA. 11+59.18B, LT. 46.98'
RIM = 412.47
54" INV. IN = 395.91
36" INV. OUT = 395.91
54" INV. OUT = 395.91

300. 36" X 72.46'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

301. 36" X 82.66'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

302. 36" X 20.57'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

303. 36" X 167.18'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

304. 36" X 17.00'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

305. 36" X 69.88'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

306. 18" X 191.90'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

307. 30" X 10.70'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

308. 30" X 184.53'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

321. 15" X 172.10
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

322. 15" X 23.02'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

323. 42" X 170.00'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

324. 42" X 84.77'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

325. 42" X 20.28'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

326. 36" X 79.96'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

327. 15" X 71.55'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

328. 15" X 28.00'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

330. 24" X 56.66'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

331. 24" X 104.17'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

332. 12" X 5.18' SDR 35
PVC DRAIN LINE
SLOPE = 0.494 FT./FT.

333. 12" X 5.50' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

334. 18" X 59.50'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

335. 12" X 5.62' SDR 35
PVC DRAIN LINE
SLOPE = 0.482 FT./FT.

347. 36" X 58.74'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

348. 15" X 47.69'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

349. 36" X 38.16'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

350. 36" X 32.93'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

351. 15" X 47.34'
HDPE DRAIN LINE
SLOPE = 0.030 FT./FT.

353. 36" X 204.54'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

419. 54" X 185.27'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

420. 54" X 23.06'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

421. 6" X 29.38' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

422. 54" X 33.14'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

423. 15" X 40.65'
HDPE DRAIN LINE
SLOPE = 0.020 FT./FT.

427. 48" X 43.87'
HDPE DRAIN LINE
SLOPE = 0.008 FT./FT.

499. 6" X 8.00' SDR 35
PVC DRAIN LINE
SLOPE = 0.008 FT./FT.

514. 54" X 41.64'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

- UNCHANGED DRAINAGE PIPE
- REVISED DRAINAGE PIPE
- UNCHANGED DRAINAGE STRUCTURE
- REVISED DRAINAGE STRUCTURE

GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PROPOSED SITE DEVELOPMENT
SITE PLAN
~PROGRESS PLAN~

DATE	REVISION		BY
04/17/01	REVISION	GENERAL REVISIONS	SOL
2/12/01	REVISION	GENERAL REVISIONS	SOL
9/7/00	REVISION	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	RFH
Date	3/21/00

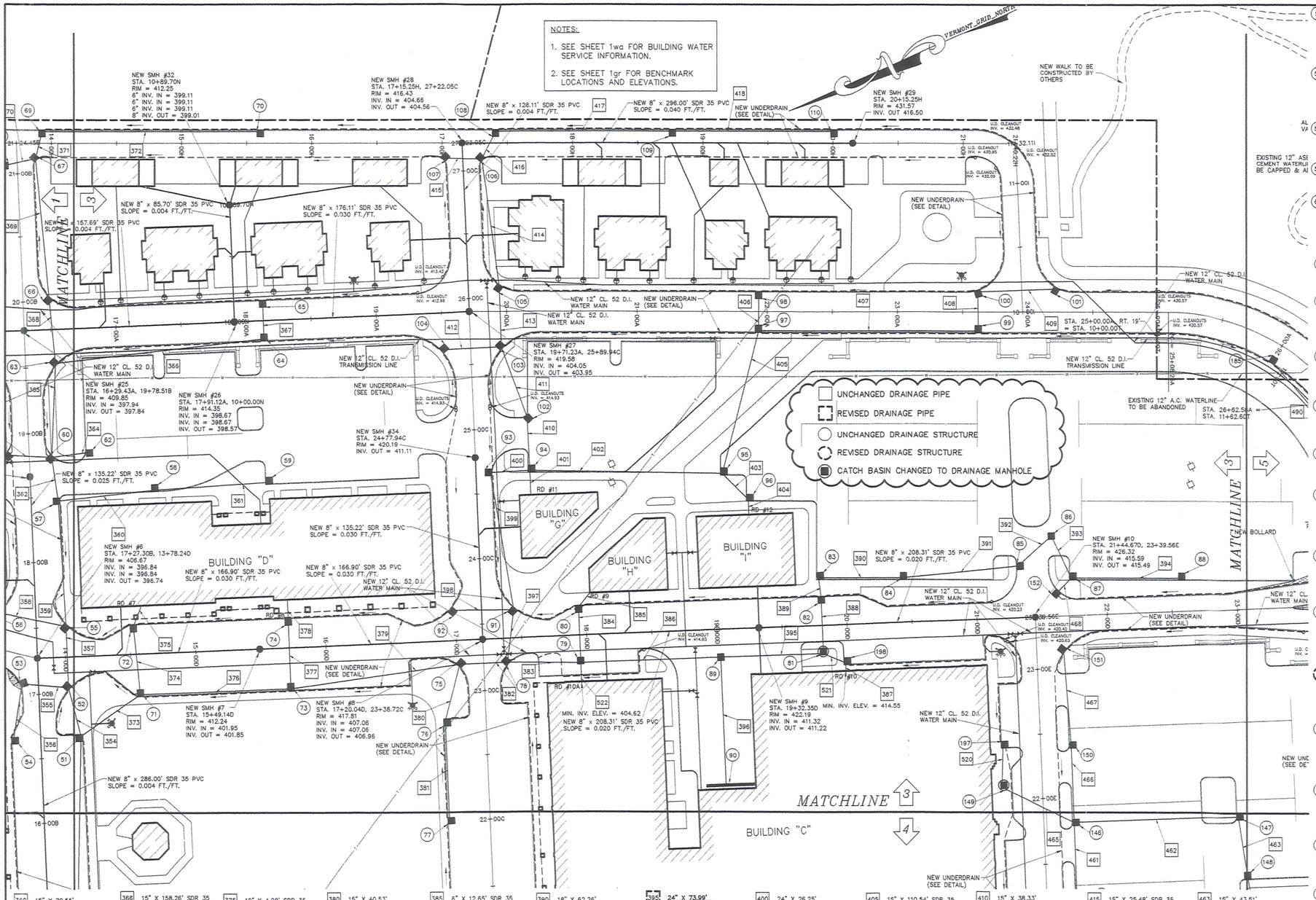
Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	S-2

Tue Apr 17 09:02:27 2001

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.



51 CB #40, TYPE V
STA. 16+66.28B, RT. 31.00'
RIM = 406.09
4" UD INV. IN = 401.26
4" UD INV. OUT = 401.26
24" INV. IN = 397.58
30" INV. IN = 397.58
36" INV. OUT = 397.58

57 CB #46, TYPE II
STA. 18+46.51B, RT. 21'
RIM = 408.03
4" UD INV. OUT = 403.00
15" INV. IN = 401.01
18" INV. IN = 399.01
24" INV. OUT = 399.01

58 CB #47, TYPE I
STA. 18+52.19B, RT. 94.83'
RIM = 409.90
15" INV. IN = 403.75
15" INV. OUT = 402.42

59 CB #48, TYPE I
STA. 18+54.51B, RT. 181.90'
RIM = 413.73
15" INV. OUT = 406.27

60 CB #49, TYPE II
STA. 18+80.66B, RT. 17.15'
RIM = 409.03
4" UD INV. IN = 403.65
15" INV. IN = 399.10
15" INV. IN = 401.10
15" INV. IN = 401.10
18" INV. OUT = 399.10

62 CB #51, TYPE I
STA. 18+83.35B, RT. 44.69'
RIM = 409.10
15" INV. OUT = 401.83

64 CB #53, TYPE II
STA. 18+13.25A, RT. 14.00'
RIM = 414.68
6" UD INV. IN = 409.50
6" UD INV. OUT = 409.50
15" INV. IN = 406.21
15" INV. OUT = 404.21

65 CB #54, TYPE II
STA. 18+13.25A, LT. 14.00'
RIM = 414.68
6" UD INV. IN = 409.50
6" UD INV. OUT = 409.50
15" INV. OUT = 408.71

68 CB #58, TYPE I
STA. 13+92.87H, LT. 9'
RIM = 405.68
4" UD INV. IN = 400.31
15" INV. IN = 399.60
15" INV. OUT = 399.60

70 CB #59, TYPE I
STA. 15+60.56H, LT. 9'
RIM = 410.37
4" UD INV. = 405.08
15" INV. OUT = 403.72

71 CB #60, TYPE III
STA. 14+56.32D, RT. 31.00'
RIM = 408.37
4" UD INV. IN = 403.62
4" UD INV. OUT = 403.62
15" INV. IN = 403.00
30" INV. IN = 397.68
30" INV. OUT = 397.68

72 CB #61, TYPE I
STA. 14+52.74D, LT. 21.00'
RIM = 409.29
4" UD INV. IN = 403.50
4" UD INV. OUT = 403.50
12" INV. IN = 403.20
15" INV. OUT = 403.10

73 CB #62, TYPE IV
STA. 15+71.74D, RT. 31.00'
RIM = 412.27
4" UD INV. IN = 407.50
4" UD INV. OUT = 407.50
15" INV. IN = 400.34
30" INV. IN = 399.34
30" INV. OUT = 399.34

74 CB #63, TYPE I
STA. 15+71.74D, LT. 21.00'
RIM = 413.00
4" UD INV. IN = 407.50
4" UD INV. OUT = 407.50
12" INV. IN = 401.13
15" INV. OUT = 400.44

75 CB #64, TYPE IV
STA. 23+20.39C, LT. 18.31'
RIM = 417.00
4" UD INV. OUT = 411.80 (D)
4" UD INV. IN = 412.24 (C)
15" INV. IN = 403.15
30" INV. IN = 401.22
30" INV. OUT = 401.22

76 CB #65, TYPE I
STA. 22+77.70C, LT. 31.00'
RIM = 417.24
4" UD INV. IN = 412.41
4" UD INV. OUT = 412.41
15" INV. IN = 406.77
15" INV. OUT = 404.77

77 CB #66, TYPE I
STA. 22+00.27C, LT. 31.00'
RIM = 418.08
4" UD INV. IN = 413.32
4" UD INV. OUT = 413.32
15" INV. OUT = 409.75

78 CB #67, TYPE IV
STA. 17+38.37D, RT. 18.31'
RIM = 418.21
4" UD INV. IN = 412.24 (C)
4" UD INV. IN = 412.88 (D)
24" INV. IN = 402.59
24" INV. IN = 402.39
30" INV. OUT = 401.69

79 CB #68, TYPE III
STA. 17+94.54D, RT. 21.00'
RIM = 419.40
12" INV. IN = 404.50
15" INV. IN = 404.50
24" INV. IN = 402.50
24" INV. OUT = 402.50

80 CB #69, TYPE I
STA. 17+94.54D, LT. 21.00'
RIM = 418.95
4" UD INV. IN = 413.96
4" UD INV. OUT = 413.96
6" INV. IN = 406.00
15" INV. OUT = 405.28

81 CB #70, TYPE III
STA. 19+80.99D, RT. 21.00'
RIM = 423.80
15" INV. IN = 413.86
24" INV. IN = 408.00
24" INV. OUT = 406.15

82 CB #71, TYPE II
STA. 19+80.99D, LT. 21.00'
RIM = 422.70
4" UD INV. IN = 417.65
4" UD INV. OUT = 417.65
24" INV. IN = 410.95
24" INV. OUT = 408.95

83 CB #72, TYPE II
STA. 19+79.53D, LT. 36.55'
RIM = 421.50
18" INV. IN = 413.24
24" INV. OUT = 411.24

84 CB #73, TYPE II
STA. 20+44.74D, LT. 33.91'
RIM = 422.90
18" INV. IN = 415.78
18" INV. OUT = 414.78

85 CB #133, TYPE I
STA. 21+33.04D, LT. 39.30'
RIM = 425.30
15" INV. IN = 417.92
18" INV. OUT = 417.92

86 CB #132, TYPE I
STA. 21+59.34D, LT. 61.47'
RIM = 426.15
15" INV. IN = 418.70
15" INV. OUT = 418.70

87 CB #131, TYPE I
STA. 21+73.44D, LT. 28.71'
RIM = 425.65
15" INV. IN = 419.52
15" INV. IN = 419.52
15" INV. OUT = 419.52

88 CB #134, TYPE I
STA. 22+58.29D, LT. 25.28'
RIM = 427.42
15" INV. OUT = 421.14

89 CB #74, TYPE III
STA. 19+09.00D, RT. 21.00'
RIM = 421.17
12" INV. IN = 406.67
24" INV. IN = 404.67
24" INV. OUT = 404.67

90 TRENCH DRAIN #3
STA. 19+05.86D, RT. 120.00'
RIM = 421.00
12" INV. OUT = 419.00

91 CB #75, TYPE III
STA. 17+44.80D, LT. 21.36'
RIM = 418.00
4" UD INV. IN = 412.50 (C)
4" UD INV. IN = 412.92 (D)
15" INV. IN = 404.39
24" INV. IN = 403.39
24" INV. OUT = 403.39

92 CB #76, TYPE I
STA. 23+61.73C, LT. 23.00'
RIM = 417.00
4" UD INV. IN = 412.50 (C)
4" UD INV. OUT = 411.75 (D)
15" INV. OUT = 405.28

93 CB #77, TYPE III
STA. 24+65.96C, RT. 11.14'
RIM = 419.50
4" UD INV. IN = 414.50
4" UD INV. OUT = 414.50
24" INV. IN = 405.05
24" INV. OUT = 404.93

94 CB #78, TYPE II
STA. 24+66.17C, RT. 41.39'
RIM = 417.01
6" INV. IN = 405.95
15" INV. IN = 407.95
15" INV. IN = 405.95
24" INV. OUT = 405.95

95 CB #80, TYPE I
STA. 24+58.20C, RT. 188.79'
RIM = 422.15
15" INV. IN = 412.27
15" INV. IN = 412.27
15" INV. OUT = 410.27

96 CB #81, TYPE I
STA. 24+37.41C, RT. 207.96'
RIM = 421.53
8" INV. IN = 412.32
15" INV. OUT = 412.32

97 CB #82, TYPE II
STA. 21+93.32A, RT. 14.00'
RIM = 426.07
6" UD INV. IN = 420.85
6" UD INV. OUT = 420.85
15" INV. IN = 416.59
15" INV. IN = 417.59
15" INV. OUT = 415.59

98 CB #83, TYPE II
STA. 21+93.47A, LT. 14.00'
RIM = 426.07
6" UD INV. IN = 420.85
6" UD INV. OUT = 420.85
15" INV. OUT = 419.19

99 CB #84, TYPE II
STA. 23+52.19A, RT. 14.00'
RIM = 433.45
6" UD INV. IN = 428.32
6" UD INV. OUT = 428.32
15" INV. IN = 425.23
15" INV. OUT = 424.23

100 CB #85, TYPE II
STA. 23+61.74A, LT. 15.46'
RIM = 433.45
6" UD INV. OUT = 428.32 (A)
6" UD INV. IN = 429.76 (I)
15" INV. IN = 426.55
15" INV. OUT = 426.55

101 CB #86, TYPE II
STA. 24+21.76A, LT. 17.68'
RIM = 435.49
6" UD INV. IN = 429.76 (I)
6" UD INV. IN = 429.76 (A)
15" INV. OUT = 428.26

102 CB #87, TYPE I
STA. 25+08.00C, RT. 40.97'
RIM = 418.88
15" INV. IN = 409.03
15" INV. OUT = 408.03

103 CB #88, TYPE II
STA. 25+62.36C, RT. 23.60'
RIM = 420.48
4" UD INV. IN = 414.40 (C)
6" UD INV. IN = 414.73 (A)
15" INV. IN = 409.14
15" INV. OUT = 409.14

104 CB #89, TYPE II
STA. 25+62.06C, LT. 21.25'
RIM = 419.25
6" UD INV. OUT = 413.49 (A)
4" UD INV. IN = 414.40 (C)
15" INV. OUT = 409.22

105 CB #90, TYPE II
STA. 19+94.31A, LT. 19.16'
RIM = 419.45
6" UD INV. OUT = 413.67 (C)
6" UD INV. IN = 414.73 (A)
15" INV. IN = 409.73
15" INV. OUT = 409.73

106 CB #91, TYPE I
STA. 27+09.08C, RT. 14.38'
RIM = 417.65
6" UD INV. IN = 411.21 (C)
4" UD INV. IN = 411.53 (H)
15" INV. IN = 409.93
15" INV. IN = 409.93
15" INV. OUT = 409.93

107 CB #92, TYPE I
STA. 27+10.54C, LT. 14.07'
RIM = 416.10
4" UD INV. OUT = 410.27 (H)
6" UD INV. IN = 411.21 (C)
15" INV. OUT = 409.98

108 CB #93, TYPE I
STA. 17+41.06H, LT. 9.00'
RIM = 417.37
4" UD INV. IN = 412.08
4" UD INV. OUT = 412.08
15" INV. IN = 410.37
15" INV. OUT = 409.97

109 CB #94, TYPE I
STA. 18+76.78H, LT. 9.00'
RIM = 424.13
4" UD INV. IN = 418.88
4" UD INV. OUT = 418.88
15" INV. IN = 417.68
15" INV. OUT = 415.68

110 CB #95, TYPE I
STA. 20+01.01H, LT. 9.00'
RIM = 430.60
4" UD INV. IN = 425.32
4" UD INV. OUT = 425.32
15" INV. OUT = 423.74

146 CB #124, TYPE III
STA. 21+80.55E, RT. 23.29'
RIM = 425.06
15" INV. IN = 414.35
15" INV. IN = 414.35
15" INV. IN = 414.35
18" INV. OUT = 414.35

147 CB #125, TYPE I
STA. 21+80.56E, RT. 149.29'
RIM = 426.30
15" INV. IN = 418.80
15" INV. OUT = 416.80

148 CB #126, TYPE I
STA. 21+34.37E, RT. 154.79'
RIM = 425.91
8" INV. IN = 418.89
15" INV. OUT = 418.89

149 CB #127, TYPE I
STA. 22+09.84E, LT. 31.00'
RIM = 424.90
15" INV. IN = 416.93
15" INV. OUT = 414.93

150 CB #128, TYPE I
STA. 22+40.89E, RT. 23.52'
RIM = 425.64
15" INV. IN = 416.62
15" INV. OUT = 416.62

151 CB #129, TYPE I
STA. 23+13.69E, RT. 20.69'
RIM = 426.15
4" UD INV. IN = 421.13 (D)
4" UD INV. OUT = 420.56 (E)
15" INV. OUT = 419.41

152 CB #130, TYPE I
STA. 21+62.37D, LT. 18.32'
RIM = 426.13
4" UD INV. IN = 421.04
15" INV. OUT = 419.64

197 CB #175, TYPE I
STA. 22+41.65E, LT. 31.00'
RIM = 424.39
4" UD INV. IN = 419.80
4" UD INV. OUT = 419.80
15" INV. OUT = 417.22

198 CB #176, TYPE I
STA. 19+97.67D, RT. 29.00'
RIM = 422.93
4" UD INV. IN = 417.99
12" INV. IN = 414.50
15" INV. OUT = 414.00

[520] 15" X 28.89'
HDPE DRAIN PIPE
SLOPE = 0.010 FT./FT.

[521] 15" X 14.50'
HDPE DRAIN PIPE
SLOPE = 0.010 FT./FT.

[522] 12" X 12.42' SDR 35
PVC DRAIN PIPE
SLOPE = 0.010 FT./FT.

360 15" X 70.55'
HDPE DRAIN LINE
SLOPE = 0.020 FT./FT.

361 15" X 84.10'
HDPE DRAIN LINE
SLOPE = 0.030 FT./FT.

362 18" X 30.37'
HDPE DRAIN LINE
SLOPE = 0.003 FT./FT.

364 15" X 24.17'
HDPE DRAIN LINE
SLOPE = 0.030FT./FT.

365 15" X 68.58' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

366 15" X 158.26' SDR 35
PVC DRAIN LINE
SLOPE = 0.025 FT./FT.

367 15" X 24.00' SDR 35
PVC DRAIN LINE
SLOPE = 0.100 FT./FT.

372 15" X 164.69' SDR 35
PVC DRAIN LINE
SLOPE = 0.025 FT./FT.

373 30" X 50.83'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

374 15" X 48.12'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

375 12" X 4.08' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

376 30" X 110.43'
HDPE DRAIN LINE
SLOPE = 0.015 FT./FT.

377 15" X 48.00'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

378 12" X 4.08' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

379 30" X 125.60'
HDPE DRAIN LINE
SLOPE = 0.015 FT./FT.

380 15" X 40.53'
HDPE DRAIN LINE
SLOPE = 0.040 FT./FT.

381 15" X 74.43'
HDPE DRAIN LINE
SLOPE = 0.040 FT./FT.

382 30" X 31.64'
HDPE DRAIN LINE
SLOPE = 0.015 FT./FT.

383 24" X 47.03'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

384 15" X 38.50'
HDPE DRAIN LINE
SLOPE = 0.020 FT./FT.

385 6" X 12.65' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

[386] 24" X 102.46'
HDPE DRAIN LINE
SLOPE = 0.021 FT./FT.

[387] 12" X 11.50' SDR 35
PVC DRAIN LINE
SLOPE = 0.010 FT./FT.

388 24" X 38.00'
HDPE DRAIN LINE
SLOPE = 0.025 FT./FT.

389 24" X 11.62'
HDPE DRAIN LINE
SLOPE = 0.025 FT./FT.

390 18" X 62.26'
HDPE DRAIN LINE
SLOPE = 0.025 FT./FT.

391 18" X 86.46'
HDPE DRAIN LINE
SLOPE = 0.025 FT./FT.

392 15" X 32.39'
HDPE DRAIN LINE
SLOPE = 0.025 FT./FT.

393 15" X 33.66'
HDPE DRAIN LINE
SLOPE = 0.025 FT./FT.

394 15" X 81.92'
HDPE DRAIN LINE
SLOPE = 0.020 FT./FT.

[395] 24" X 73.99'
HDPE DRAIN LINE
SLOPE = 0.020 FT./FT.

[396] 12" X 95.50' SDR 35
PVC DRAIN LINE
SLOPE = 0.150 FT./FT.

397 24" X 39.89'
HDPE DRAIN LINE
SLOPE = 0.020 FT./FT.

398 15" X 44.30'
HDPE DRAIN LINE
SLOPE = 0.020 FT./FT.

399 24" X 102.76'
HDPE DRAIN LINE
SLOPE = 0.015 FT./FT.

400 24" X 26.25'
HDPE DRAIN LINE
SLOPE = 0.034 FT./FT.

401 6" X 16.63' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

402 15" X 144.11'
HDPE DRAIN LINE
SLOPE = 0.030 FT./FT.

403 15" X 26.28'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

404 8" X 33.89' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

405 15" X 110.54' SDR 35
PVC DRAIN LINE
SLOPE = 0.030 FT./FT.

406 15" X 24.00' SDR 35
PVC DRAIN LINE
SLOPE = 0.100 FT./FT.

407 15" X 165.88 SDR 35
PVC DRAIN LINE
SLOPE = 0.040 FT./FT.

408 15" X 26.46' SDR 35
PVC DRAIN LINE
SLOPE = 0.050 FT./FT.

409 15" X 57.06' SDR 35
PVC DRAIN LINE
SLOPE = 0.030 FT./FT.

410 15" X 38.33'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

411 15" X 54.08' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

412 15" X 40.85' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

413 15" X 41.79' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

414 15" X 98.36' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

415 15" X 25.48' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

416 15" X 21.00' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

417 15" X 132.72'
HDPE DRAIN LINE
SLOPE = 0.040 FT./FT.

418 15" X 121.24'
HDPE DRAIN LINE
SLOPE = 0.050 FT./FT.

462 18" X 122.50'
HDPE DRAIN LINE
SLOPE = 0.020 FT./FT.

463 15" X 43.51'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

465 15" X 58.18'
HDPE DRAIN LINE
SLOPE = 0.010 FT./FT.

466 15" X 56.84'
HDPE DRAIN LINE
SLOPE = 0.040 FT./FT.

467 15" X 69.85'
HDPE DRAIN LINE
SLOPE = 0.040 FT./FT.

468 15" X 12.18'
HDPE DRAIN LINE
SLOPE = 0.010 FT./FT.

GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PROPOSED SITE DEVELOPMENT
SITE PLAN
~PROGRESS PLAN~

DATE	REVISION	BY
04/17/01	BUILDING "C" REVISIONS	SOL
04/11/01	BUILDING "C" REVISIONS	SOL
03/15/01	BUILDING "C" & "D" REVISIONS	SOL
9/7/00	GENERAL REVISIONS	SOL

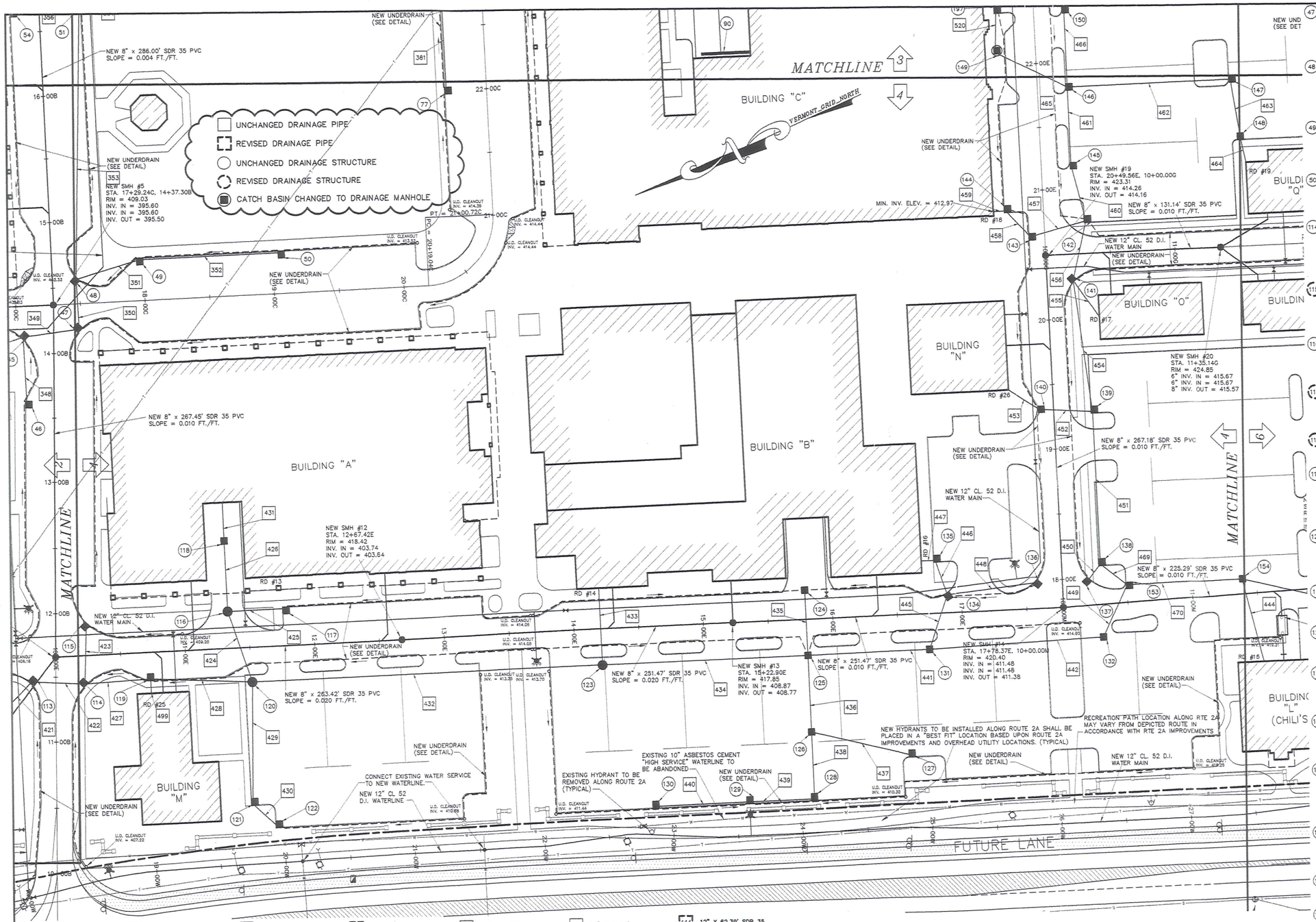
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	S-3

Tue Apr 17 10:28:51 2001



350	36" X 32.93' HDPE DRAIN LINE SLOPE = 0.002 FT./FT.	423	15" X 40.65' HDPE DRAIN LINE SLOPE = 0.020 FT./FT.
351	15" X 47.34' HDPE DRAIN LINE SLOPE = 0.030 FT./FT.	424	24" X 52.03' HDPE DRAIN LINE SLOPE = 0.020 FT./FT.
352	15" X 106.24' HDPE DRAIN LINE SLOPE = 0.030 FT./FT.	425	24" X 39.17' HDPE DRAIN LINE SLOPE = 0.020 FT./FT.
426	15" X 50.08' HDPE DRAIN LINE SLOPE = 0.040 FT./FT.	427	48" X 43.87' HDPE DRAIN LINE SLOPE = 0.008 FT./FT.
428	48" X 71.52' HDPE DRAIN LINE SLOPE = 0.008 FT./FT.	429	15" X 87.39' HDPE DRAIN LINE SLOPE = 0.030 FT./FT.
430	15" X 22.46' HDPE DRAIN LINE SLOPE = 0.030 FT./FT.	431	12" X 28.00' SDR 35 PVC DRAIN LINE SLOPE = 0.005 FT./FT.
432	48" X 263.05' HDPE DRAIN LINE SLOPE = 0.008 FT./FT.	433	18" X 56.98' HDPE DRAIN LINE SLOPE = 0.002 FT./FT.
434	48" X 152.83 HDPE DRAIN LINE SLOPE = 0.008 FT./FT.	435	15" X 46.05' HDPE DRAIN LINE SLOPE = 0.050 FT./FT.
436	24" X 54.70' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.	437	15" X 76.26' HDPE DRAIN LINE SLOPE = 0.040 FT./FT.
438	18" X 47.25' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.	439	15" X 46.84' HDPE DRAIN LINE SLOPE = 0.002 FT./FT.
440	15" X 69.63' HDPE DRAIN LINE SLOPE = 0.002 FT./FT.	441	48" X 87.98' HDPE DRAIN LINE SLOPE = 0.008 FT./FT.
442	48" X 128.69' HDPE DRAIN LINE SLOPE = 0.008 FT./FT.	444	12" X 62.39' SDR 35 PVC DRAIN LINE SLOPE = 0.002 FT./FT.
445	18" X 39.54' HDPE DRAIN LINE SLOPE = 0.050 FT./FT.	446	15" X 24.56' HDPE DRAIN LINE SLOPE = 0.020 FT./FT.
447	15" X 9.32' HDPE DRAIN LINE SLOPE = 0.002 FT./FT.		

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

47	CB #36, TYPE IV STA. 14+18.54B, RT. 19.60' RIM = 410.10 4" UD INV. IN = 403.74 (C) 4" UD INV. IN = 403.74 (B) 36" INV. IN = 397.08 36" INV. OUT = 397.08
48	CB #37, TYPE IV STA. 17+47.57C, LT. 18.32' RIM = 409.25 4" UD INV. OUT = 403.35 (B) 4" UD INV. IN = 404.19 (C) 15" INV. IN = 399.15 36" INV. IN = 397.15 36" INV. OUT = 397.15
49	CB #38, TYPE I STA. 17+97.32C, LT. 31.00' RIM = 410.73 4" UD INV. IN = 405.99 4" UD INV. OUT = 405.99 15" INV. IN = 402.57 15" INV. OUT = 400.57
50	CB #39, TYPE I STA. 19+06.55C, LT. 31.00' RIM = 414.73 4" UD INV. IN = 409.94 4" UD INV. OUT = 409.94 15" INV. OUT = 405.76
114	CB #97, TYPE V STA. 11+44.43B, RT. 22.38' RIM = 411.80 4" UD INV. IN = 406.50 (B) 4" UD INV. IN = 406.89 (E) 15" INV. IN = 400.05 48" INV. IN = 396.05 54" INV. OUT = 396.05
115	CB #98, TYPE I STA. 10+24.72E, LT. 23.65 RIM = 412.00 4" UD INV. OUT = 406.05 (B) 4" UD INV. IN = 407.02 (E) 15" INV. OUT = 400.86
116	DMH #10A, TYPE III STA. 11+34.21E, LT. 29.00' RIM = 415.22 15" INV. IN = 407.54 24" INV. IN = 407.54 24" INV. OUT = 404.04
117	CB #99, TYPE III STA. 11+77.87E, LT. 29.00' RIM = 415.62 4" UD INV. IN = 411.05 24" INV. OUT = 408.32
118	CB #99A, TYPE I STA. 11+34.21E, LT. 83.08' RIM = 415.50 12" INV. IN = 409.54 15" INV. OUT = 409.54
119	CB #100, TYPE V STA. 10+72.26E, RT. 21.00' RIM = 413.31 4" UD INV. IN= 408.43 4" UD INV. OUT = 408.43 6" INV. IN = 400.00 48" INV. IN = 396.41 48" INV. OUT = 396.41
120	DMH #10, TYPE IV STA. 11+50.54E, RT. 27.20' RIM = 415.30 15" INV. IN = 399.01 24" INV. IN = 403.00 48" INV. IN = 396.98 48" INV. OUT = 396.98
121	CB #101, TYPE I STA. 11+46.31E, RT. 120.00' RIM = 413.23 15" INV. IN = 403.63 15" INV. OUT = 401.63
122	CB #102, TYPE I STA. 11+64.31E, RT. 138.00' RIM = 413.26 4" UD INV. IN = 407.76 15" INV. OUT = 404.30
123	DMH #6, TYPE IV STA. 14+20.59E, RT. 27.98' RIM = 418.75 18" INV IN = 401.08 48" INV. IN = 399.08 48" INV. OUT = 399.08
124	CB #103A, TYPE I STA. 15+79.42E, LT. 23.00' RIM = 417.82 4" UD INV. IN = 412.08 4" UD INV. IN = 412.08 15" INV. OUT = 407.60
125	CB #103, TYPE V STA. 15+79.42E, RT. 27.55' RIM = 416.60 (2) 4" UD INV. IN= 412.08 24" INV. IN = 402.30 15" INV. IN = 405.30 48" INV. IN = 400.30 48" INV. OUT = 400.30
126	CB #104, TYPE II STA. 15+79.12E, RT. 87.26' RIM = 415.80 15" INV. IN = 404.85 18" INV. IN = 404.85 24" INV. OUT = 402.85
127	CB #105, TYPE I STA. 16+55.86E, RT. 109.00' RIM = 416.52 15" INV OUT = 407.90
128	CB #106, TYPE II STA. 15+78.87E, RT. 138.00' RIM = 415.44 18" INV. IN = 407.32 18" INV. OUT = 405.32
129	CB #107, TYPE II STA. 15+29.02E, RT. 138.00' RIM = 415.44 4" UD INV. IN = 409.94 4" UD INV. IN = 409.94 15" INV. IN = 409.41 18" INV. OUT = 407.41
130	CB #108, TYPE I STA. 14+56.40E, RT. 138.00' RIM = 415.95 15" INV. OUT = 409.56
131	CB #109, TYPE V STA. 16+73.40E, RT. 27.55' RIM = 418.30 18" INV. IN = 403.00 48" INV. IN = 401.00 48" INV. OUT = 401.00
132	CB #110, TYPE V STA. 10+28.90M, RT. 25.41' RIM = 421.56 15" INV. IN = 404.03 48" INV. IN = 402.03 48" INV. OUT = 402.03
134	CB #112, TYPE II STA. 16+89.17E, LT. 14.10' RIM = 419.30 4" UD INV. IN = 413.38 4" UD INV. OUT = 413.38 15" INV. IN = 407.00 18" INV. IN = 407.00 18" INV. OUT = 405.00
135	CB #113, TYPE I STA. 16+81.19E, LT. 41.00' RIM = 419.95 15" INV. IN = 407.49 15" INV OUT = 407.49
136	CB #114, TYPE I STA. 17+98.47E, LT. 20.06' RIM = 420.40 4" UD INV. OUT = 414.61 4" UD INV. IN = 415.15 15" INV. OUT = 409.64
137	CB #115, TYPE I STA. 10+20.64M, LT. 19.50' RIM = 420.40 4" UD INV. IN = 415.15 15" INV. OUT = 407.38
138	CB #116, TYPE IV STA. 18+10.56E, RT. 30.00' RIM = 421.44 15" INV. IN = 406.46 30" INV. IN = 404.46 30" INV. OUT = 404.46
139	CB #117, TYPE IV STA. 19+27.56E, RT. 30.00' RIM = 422.61 15" INV. IN = 409.36 30" INV. IN = 409.36 30" INV. OUT = 407.36
140	CB #118, TYPE I STA. 19+31.24E, LT. 11.13' RIM = 421.85 4" UD INV. IN= 416.58 4" UD INV. OUT 416.58 12" INV. IN = 412.85 15" INV. OUT = 410.85
141	CB #119, TYPE III STA. 20+29.59E, RT. 20.20' RIM = 423.00 4" UD INV. OUT = 417.61 (E) 4" UD INV. IN = 418.03 (G) 8" INV. IN = 412.34 24" INV. IN = 410.34 30" INV. OUT = 410.34
142	CB #120, TYPE III STA. 10+32.29G, LT. 25.50' RIM = 424.08 4" UD INV. IN = 417.09 (E) 4" UD INV. IN = 417.96 (G) 18" INV. IN = 410.76 24" INV. IN = 412.26 24" INV. OUT = 410.76
143	CB #121, TYPE II STA. 20+64.27E, LT. 11.00' RIM = 423.20 4" UD INV. IN= 417.97 4" UD INV. OUT = 417.97 18" INV. IN = 412.66 24" INV. OUT = 412.66
144	CB #122, TYPE II STA. 20+85.13E, LT. 30.00' RIM = 423.07 4" UD INV. IN = 418.18 4" UD INV. OUT = 418.18 12" INV. IN = 412.90 18" INV. OUT = 412.90
145	CB #123, TYPE II STA. 21+18.65E, RT. 22.98' RIM = 424.40 18" INV. IN = 413.17 18" INV. OUT = 411.17
146	CB #124, TYPE III STA. 21+80.55E, RT. 23.29' RIM = 425.06 15" INV. IN = 414.35 15" INV. IN = 414.35 15" INV. IN = 414.35 18" INV. OUT = 414.35
147	CB #125, TYPE I STA. 21+80.56E, RT. 149.29' RIM = 426.30 15" INV. IN = 418.80 15" INV. OUT = 416.80
148	CB #126, TYPE I STA. 21+34.37E, RT. 154.79' RIM = 425.91 8" INV. IN = 418.89 15" INV. OUT = 418.89
149	CB #127, TYPE I STA. 22+09.84E, LT. 31.00' RIM = 424.90 15" INV. IN = 416.93 15" INV. OUT = 414.93
150	CB #128, TYPE I STA. 22+40.89E, RT. 23.52' RIM = 425.64 15" INV. IN = 416.62 15" INV. OUT = 416.62
153	CB #135, TYPE V STA. 10+50.43M, LT. 13.54' RIM = 421.49 30" INV. IN = 403.30 42" INV. IN = 403.35 48" INV. OUT = 402.35
154	CB #136, TYPE IV STA. 11+39.13M, LT. 11.50' RIM = 423.55 12" INV. IN = 406.01 42" INV. IN = 404.01 42" INV. OUT = 404.01
448	15" X 65.91' HDPE DRAIN LINE SLOPE = 0.040 FT./FT.
449	48" X 36.50' HDPE DRAIN LINE SLOPE = 0.009 FT./FT.
450	15" X 9.14' HDPE DRAIN LINE SLOPE = 0.100 FT./FT.
451	30" X 112.00' HDPE DRAIN LINE SLOPE = 0.008 FT./FT.
452	15" X 37.29' HDPE DRAIN LINE SLOPE = 0.040 FT./FT.
453	12" X 36.50' SDR 35 PVC DRAIN LINE SLOPE = 0.002 FT./FT.
454	30" X 97.51' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.
455	8" X 54.08' SDR 35 PVC DRAIN LINE SLOPE = 0.002 FT./FT.
456	24" X 41.56' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.
457	24" X 40.00' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.
458	18" X 23.55' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.
459	12" X 7.45 SDR 35 PVC DRAIN PIPE SLOPE = 0.010 FT./FT.
460	18" X 41.07' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.
461	18" X 58.40' HDPE DRAIN LINE SLOPE = 0.020 FT./FT.
462	18" X 122.50' HDPE DRAIN LINE SLOPE = 0.020 FT./FT.
463	15" X 43.51' HDPE DRAIN LINE SLOPE = 0.002 FT./FT.
464	8" X 18.86' SDR 35 PVC DRAIN LINE SLOPE = 0.002 FT./FT.
465	15" X 58.18' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.
466	15" X 56.84' HDPE DRAIN LINE SLOPE = 0.040 FT./FT.
469	30" X 19.28' HDPE DRAIN LINE SLOPE = 0.008 FT./FT.
470	42" X 82.73' HDPE DRAIN LINE SLOPE = 0.008 FT./FT.
499	6" X 8.00' SDR 35 PVC DRAIN LINE SLOPE = 0.008 FT./FT.

GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PROPOSED SITE DEVELOPMENT
SITE PLAN
~PROGRESS PLAN~

DATE	REVISION	BY
04/11/01	BUILDING "C" REVISIONS	SOL
03/15/01	BUILDING "A", "C" & "L" REVISIONS	SOL
9/7/00	GENERAL REVISIONS	SOL

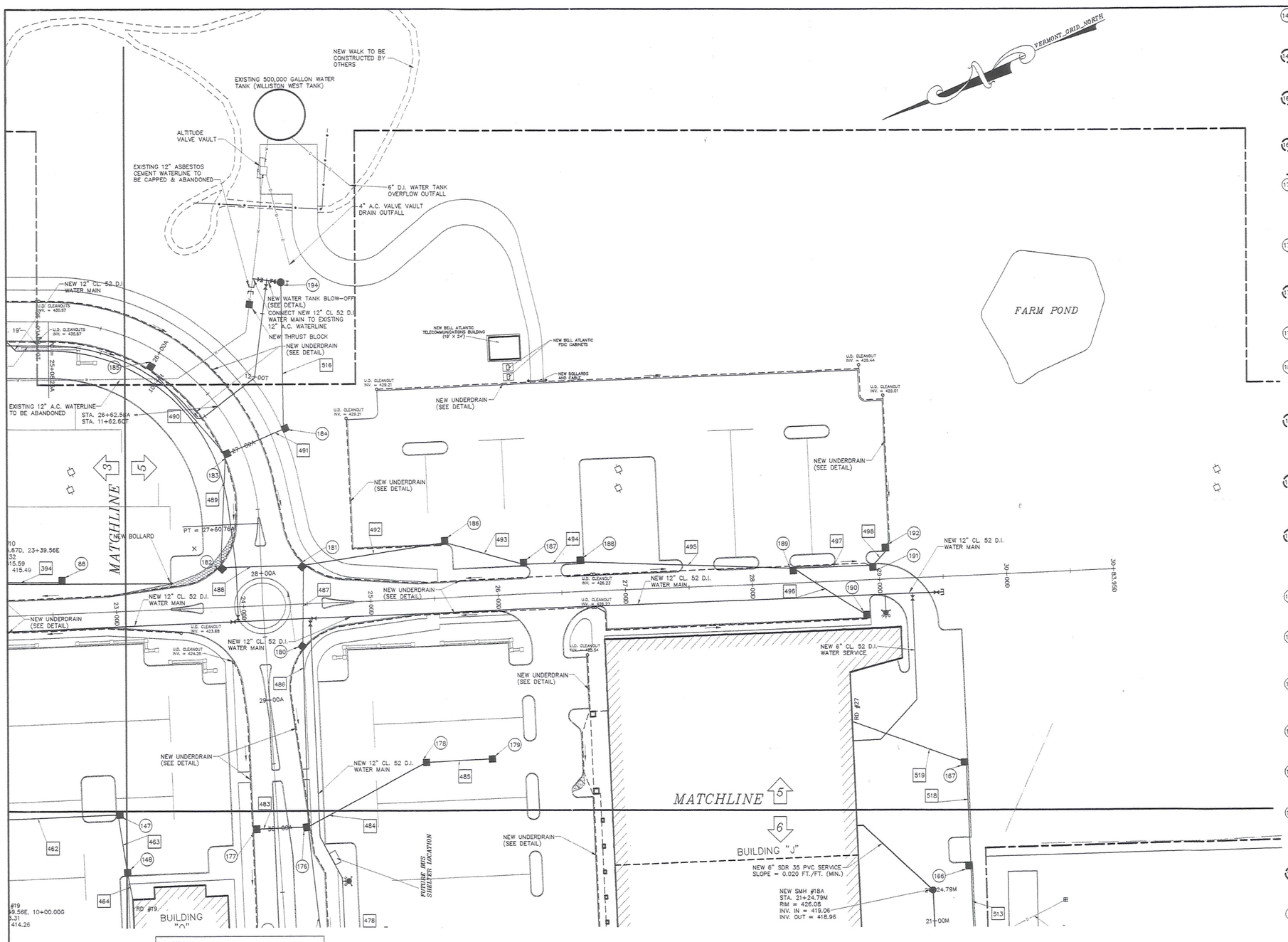
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale 1" =
Job 99-
File
Drawing S-

Wed Apr 11 11:45:00 2001



147 CB #125, TYPE I
STA. 21+80.56E, RT. 149.29'
RIM = 426.30
15" INV. IN = 418.80
15" INV. OUT = 416.80

148 CB #126, TYPE I
STA. 21+34.37E, RT. 154.79'
RIM = 429.91
8" INV. IN = 418.89
15" INV. OUT = 418.89

166 **CB #172, TYPE II**
STA. 21+44.30M, RT. 30.43'
RIM = 425.34
18" INV. IN = 416.96
24" INV. OUT = 416.96

167 CB #173, TYPE I
STA. 22+23.01M, RT. 30.43'
RIM = 424.69
10" INV. IN = 420.31
18" INV. OUT = 418.31

176 CB #148, TYPE IV
STA. 30+00.67A, LT. 23.67'
RIM = 428.00
6" UD INV. IN & OUT = 423.0
15" INV. IN = 416.11
18" INV. IN = 416.11
24" INV. IN = 414.11
30" INV OUT = 414.11

177 CB #147, TYPE II
STA. 29+99.56A, RT. 18.21'
RIM = 428.10
6" UD INV. IN = 423.00
6" UD INV. OUT = 423.00
15" INV. OUT = 417.61

178 **CB #149, TYPE II**
STA. 29+56.83A, LT. 119.86'
RIM = 426.90
15" INV. IN = 419.45
18" INV. OUT = 418.13

179 CB #150, TYPE I
STA. 29+57.93A, LT. 171.50'
RIM = 427.90
15" INV. OUT = 421.40

180 CB #151, TYPE II
STA. 28+59.71A, LT. 29.19'
RIM = 429.50
6" UD INV. IN = 424.83 (D)
6" UD INV. OUT = 424.40 (A)
24" INV. IN = 416.15
24" INV. OUT = 416.15

181 **CB #153, TYPE III**
STA. 27+95.11A, LT. 33.26'
RIM = 429.90
6" UD INV. IN = 424.86 (D)
6" UD INV. IN = 424.59 (A)
15" INV. IN = 419.35
24" INV. IN = 417.35
24" INV. OUT = 417.35

182 CB #154, TYPE II
STA. 27+94.06A, RT. 31.65'
RIM = 429.46
4" UD INV. OUT = 424.11 (D)
6" UD INV. IN = 424.59 (A)
15" INV. IN = 421.81
15" INV. OUT = 419.81

183 **CB #155, TYPE III**
STA. 27+00A, RT. 14.00'
RIM = 431.73
6" UD INV. IN = 426.73
6" UD INV. OUT = 426.73
15" INV. IN = 425.21
15" INV. IN = 425.21
15" INV. OUT = 425.21

184 CB #155A, TYPE II
STA. 27+00.00A, LT. 35.79'
RIM = 433.90
15" INV. IN = 427.30
15" INV. OUT = 425.30

185 CB #156, TYPE II
STA. 26+00.00A, RT. 14.00'
RIM = 433.96
6" UD INV. IN = 428.96
6" UD INV. OUT = 428.96
15" INV. OUT = 427.83

186 CB #157, TYPE II
STA. 25+59.95D, LT. 43.00'
RIM = 433.02
4" UD IN = 427.52
24" INV. IN = 419.52
24" INV. OUT = 419.52

187 CB #158, TYPE II
STA. 26+20.95D, LT. 23.00'
RIM = 432.00
24" INV. IN = 420.12
24" INV. OUT = 420.12

188 CB #159, TYPE II
STA. 26+66.95D, LT. 23.00'
RIM = 431.74
18" INV. IN = 420.96
24" INV. OUT = 420.96

189 CB #160, TYPE II
STA. 28+33.05D, LT. 11.31'
RIM = 429.88
6" UD INV. IN = 424.64
6" UD INV. OUT = 424.64
15" INV. IN = 422.59
15" INV. IN = 422.59
18" INV. OUT = 422.59

190 **CB #161, TYPE II**
STA. 28+80.20D, RT. 29.00'
RIM = 428.94
6" UD INV. IN = 424.05
15" INV. OUT = 422.92

191 CB #162, TYPE II
STA. 28+94.94D, LT. 11.00'
RIM = 429.30
6" UD INV. IN = 423.70
15" INV. IN = 423.18
15" INV. OUT = 423.18

192 CB #163, TYPE II
STA. 29+06.95D, LT. 23.00'
RIM = 429.34
4" UD INV. = 423.84
15" INV. OUT = 423.32

194 DMH #7, TYPE I
STA. 26+32.31A, LT. 102.45'
RIM = 453.50
15" INV. OUT = 447.50

462 18" X 122.50'
HDPE DRAIN LINE
SLOPE = 0.020 FT./FT.

463 15" X 43.51'
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

464 8" X 18.86' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

482 30" X 117.53' SDR 35
PVC DRAIN LINE
SLOPE = 0.010 FT./FT.

483 15" X 37.39 SDR 35
PVC DRAIN LINE
SLOPE = 0.040 FT./FT.

484 18" X 101.22' SDR 35
PVC DRAIN LINE
SLOPE = 0.020 FT./FT.

485 15" X 48.65'
HDPE DRAIN LINE
SLOPE = 0.040 FT./FT.

486 24" X 136.07' SDR 35
PVC DRAIN LINE
SLOPE = 0.015 FT./FT.

487 24" X 59.97' SDR 35
PVC DRAIN LINE
SLOPE = 0.020 FT./FT.

488 **15" X 61.41' SDR 35**
PVC DRAIN LINE
SLOPE = 0.008 FT./FT.

489 15" X 84.98' SDR 35
PVC DRAIN LINE
SLOPE = 0.040 FT./FT.

490 15" X 87.21' SDR 35
PVC DRAIN LINE
SLOPE = 0.030 FT./FT.

491 15" X 46.29' SDR 35
PVC DRAIN LINE
SLOPE = 0.002 FT./FT.

492 24" X 108.46' SDR 35
PVC DRAIN LINE
SLOPE = 0.020 FT./FT.

493 24" X 60.20' SDR 35
PVC DRAIN LINE
SLOPE = 0.010 FT./FT.

494 24" X 42.00' SDR 35
PVC DRAIN LINE
SLOPE = 0.020 FT./FT.

495 18" X 163.00' SDR 35
PVC DRAIN LINE
SLOPE = 0.010 FT./FT.

496 **15" X 65.94' SDR 35**
PVC DRAIN LINE
SLOPE = 0.005 FT./FT.

497 15" X 58.90' SDR 35
PVC DRAIN LINE
SLOPE = 0.010 FT./FT.

498 15" X 13.98' SDR 35
PVC DRAIN LINE
SLOPE = 0.010 FT./FT.

512 **24" X 61.00'**
HDPE DRAIN LINE
SLOPE = 0.002 FT./FT.

513 **24" X 88.00'**
HDPE DRAIN LINE
SLOPE = 0.010 FT./FT.

516 15" X 111.57'
HDPE DRAIN LINE
SLOPE = 0.181 FT./FT.

518 18" X 75.21'
HDPE DRAIN LINE
SLOPE = 0.016 FT./FT.

519 10" X 93.34' SDR 35
PVC DRAIN LINE
SLOPE = 0.010 FT./FT.

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

UNCHANGED DRAINAGE PIPE
REVISED DRAINAGE PIPE
UNCHANGED DRAINAGE STRUCTURE
REVISED DRAINAGE STRUCTURE

GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PROPOSED SITE DEVELOPMENT
SITE PLAN
~PROGRESS PLAN~

DATE	REVISION	BY
12/20/00	BUILDING "J" UTILITIES	SOL
9/7/00	GENERAL REVISIONS	SOL

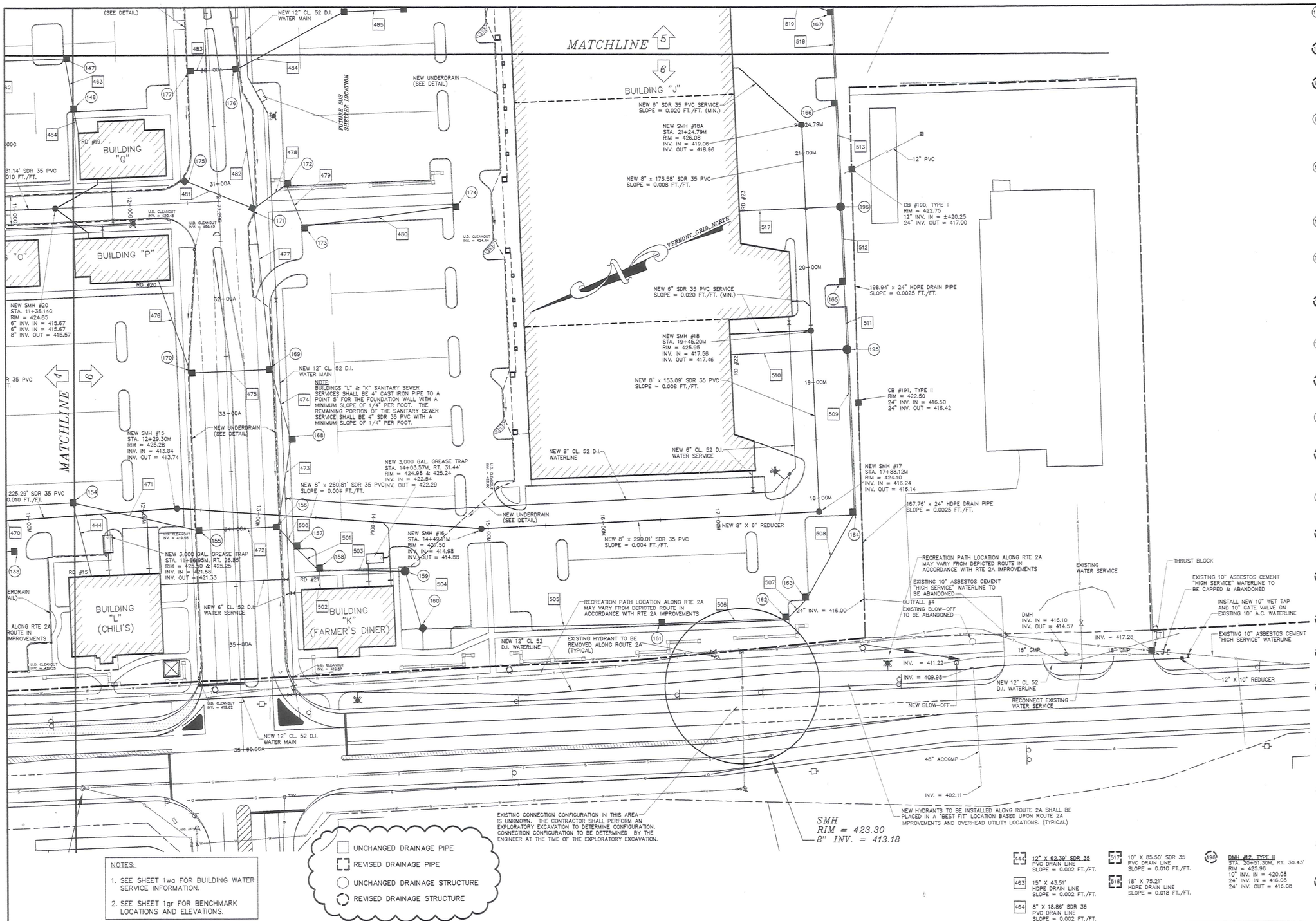
STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	S-5

Thu Dec 21 14:35:39 2000



NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

(147) CB #125, TYPE I
STA. 21+80.56E, RT. 149.29'
RIM = 426.30
15" INV. IN = 418.80
15" INV. OUT = 416.80

(148) CB #126, TYPE I
STA. 21+34.37E, RT. 154.79'
RIM = 425.91
8" INV. IN = 418.89
15" INV. OUT = 418.89

(154) CB #136, TYPE IV
STA. 11+39.13M, LT. 11.50'
RIM = 422.80
12" INV. IN = 406.01
42" INV. IN = 404.01
42" INV. OUT = 404.01

(155) CB #137, TYPE IV
STA. 34+00.00A, RT. 31.36'
RIM = 424.18
6" UD INV. IN = 419.34
6" UD INV. IN = 419.34
42" INV. IN = 404.85
42" INV. OUT = 404.85

(156) CB #138, TYPE V
STA. 34+00.00A, LT. 38.64'
RIM = 424.05
6" UD INV. IN = 419.34
6" UD INV. IN = 419.34
30" INV. IN = 407.35
30" INV IN = 407.35
42" INV. OUT = 405.35

(157) CB #164, TYPE III
STA. 34+18.49A, LT. 53.00'
RIM = 423.89
30" INV. IN = 408.56
30" INV. OUT = 407.56

(158) CB #165, TYPE III
STA. 13+55.08M, RT. 45.05'
RIM = 423.98
6" INV. IN = 410.8
30" INV. IN = 408.78
30" INV. OUT = 408.78

(159) DMH #8, TYPE II
STA. 14+30.48M, RT. 41.07'
RIM = 425.50
4" UD INV. IN = 420.00
30" INV. IN = 409.49
30" INV. OUT 409.49

(160) CB #166, TYPE III
STA. 14+48.31M, RT. 90.70'
RIM = 424.85
30" INV. IN = 409.97
30" INV. OUT = 409.97

(161) CB #167, TYPE III
STA. 16+46.15M, RT. 90.46'
RIM = 423.65
30" INV. IN = 412.01
30" INV. OUT = 412.01

(162) CB #168, TYPE III
STA. 17+55.23M, RT. 91.50'
RIM = 422.40
30" INV. IN = 413.06
30" INV. OUT = 413.06

(163) CB #169, TYPE III
STA. 17+73.39M, RT. 74.86'
RIM = 422.70
30" INV. IN = 413.26
30" INV. OUT = 413.26

(164) CB #170, TYPE III
STA. 17+88.12M, RT. 30.56'
RIM = 423.44
30" INV. IN = 414.06
30" INV. OUT = 414.06

(165) CB #171, TYPE III
STA. 19+85.30M, RT. 30.43'
RIM = 425.36
24" INV. IN = 415.96
30" INV. OUT = 415.96

(166) CB #172, TYPE II
STA. 21+44.30M, RT. 30.43'
RIM = 425.34
18" INV. IN = 416.96
24" INV. OUT = 416.96

(167) CB #173, TYPE I
STA. 22+23.01M, RT. 30.43'
RIM = 424.69
10" INV. IN = 420.31
18" INV. OUT = 418.31

(168) CB #139, TYPE IV
STA. 32+24.81A, LT. 53.00'
RIM = 425.26
30" INV. IN = 410.00
30" INV. OUT = 408.05

(169) CB #140, TYPE IV
STA. 32+63.26A, LT. 38.64'
RIM = 425.07
6" UD INV. IN = 420.38
6" UD INV. IN = 420.38
15" INV. IN = 412.58
30" INV. IN = 411.58
30" INV. OUT = 410.58

(170) CB #141, TYPE II
STA. 32+63.26A, RT. 31.36'
RIM = 425.22
6" INV. IN = 420.38
6" INV. IN = 420.38
8" INV. IN = 415.22
15" INV. OUT = 415.22

(171) CB #142, TYPE IV
STA. 31+23.33A, LT. 29.96'
RIM = 428.62
6" UD IN & OUT = 421.77
15" INV. IN = 414.93
15" INV. IN = 414.43
30" INV. IN = 412.93
30" INV. OUT = 412.93

(172) CB #143, TYPE II
STA. 31+04.91A, LT. 59.27'
RIM = 426.66
15" INV. IN = 417.66
15" INV. OUT = 415.66

(195) DMH #11, TYPE II
STA. 19+27.20M, RT. 30.43'
RIM = 453.50
10" INV. IN = 417.53
30" INV. IN = 415.43
30" INV. OUT = 415.43

(173) CB #144, TYPE I
STA. 31+40.49A, LT. 72.00'
RIM = 427.00
15" INV. IN = 419.11
15" INV. OUT = 419.11

(174) CB #145, TYPE I
STA. 31+29.49A, LT. 204.00'
RIM = 429.00
15" INV. OUT = 422.35

(175) CB #146, TYPE II
STA. 12+47.21G, LT. 20.08'
RIM = 426.90
6" UD INV. IN = 421.21 (A)
4" UD INV. OUT = 421.06 (C
15" INV. OUT = 417.40

(176) CB #148, TYPE IV
STA. 30+00.67A, LT. 23.67'
RIM = 428.00
6" UD INV. IN & OUT = 423
15" INV. IN = 416.11
18" INV. IN = 416.11
24" INV. IN = 414.11
30" INV OUT = 414.11

(177) CB #147, TYPE II
STA. 29+99.56A, RT. 18.21'
RIM = 428.10
6" UD INV. IN = 423.00
6" UD INV. OUT = 423.00
15" INV. OUT = 417.61

471 42" X 105.11' SDR 35 PVC DRAIN LINE SLOPE = 0.008 FT./FT.

472 42" X 63.00' SDR 35 PVC DRAIN LINE SLOPE = 0.008 FT./FT.

473 30" X 70.06' SDR 35 PVC DRAIN LINE SLOPE = 0.010 FT./FT.

474 30" X 58.20' SDR 35 PVC DRAIN LINE SLOPE = 0.010 FT./FT.

475 15" X 66.00' SDR 35 PVC DRAIN LINE SLOPE = 0.040 FT./FT.

476 8" X 63.58' SDR 35 PVC DRAIN LINE SLOPE = 0.002 FT./FT.

477 30" X 134.70' SDR 35 PVC DRAIN LINE SLOPE = 0.010 FT./FT.

478 15" X 30.67' SDR 35 PVC DRAIN LINE SLOPE = 0.040 FT./FT.

479 15" X 36.22' HDPE DRAIN LINE SLOPE = 0.040 FT./FT.

480 15" X 129.54' HDPE DRAIN LINE SLOPE = 0.025 FT./FT.

481 15" X 61.72' SDR 35 PVC DRAIN LINE SLOPE = 0.040 FT./FT.

482 30" X 117.53' SDR 35 PVC DRAIN LINE SLOPE = 0.010 FT./FT.

483 15" X 37.39 SDR 35 PVC DRAIN LINE SLOPE = 0.040 FT./FT.

484 18" X 101.22' SDR 35 PVC DRAIN LINE SLOPE = 0.020 FT./FT.

500 30" X 16.90' SDR 35 PVC DRAIN LINE SLOPE = 0.012 FT./FT.

501 30" X 22.46' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.

502 6" X 14.33' SDR 35 PVC DRAIN LINE SLOPE = 0.002 FT./FT.

503 30" X 70.50' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.

504 30" X 47.74' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.

505 30" X 203.71' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.

506 30" X 104.09' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.

507 30" X 19.63' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.

508 30" X 79.76' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.

509 30" X 138.91' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.

510 10" X 88.51' SDR 35 PVC DRAIN LINE SLOPE = 0.010 FT./FT.

511 30" X 53.09' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.

512 24" X 61.00' HDPE DRAIN LINE SLOPE = 0.002 FT./FT.

513 24" X 88.00' HDPE DRAIN LINE SLOPE = 0.010 FT./FT.

444 12" X 62.39' SDR 35 PVC DRAIN LINE SLOPE = 0.002 FT./FT.

463 18" X 43.51' HDPE DRAIN LINE SLOPE = 0.002 FT./FT.

464 8" X 18.86' SDR 35 PVC DRAIN LINE SLOPE = 0.002 FT./FT.

517 10" X 85.50' SDR 35 PVC DRAIN LINE SLOPE = 0.010 FT./FT.

518 18" X 75.21' HDPE DRAIN LINE SLOPE = 0.018 FT./FT.

196 DMH #12, TYPE II
STA. 20+51.30M, RT. 30.43'
RIM = 425.96
10" INV. IN = 420.08
24" INV. IN = 416.08
24" INV. OUT = 416.08

GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PROPOSED SITE DEVELOPMENT
SITE PLAN
~PROGRESS PLAN~

DATE	REVISION	BY
12/20/00	BUILDING "J" UTILITIES	SOL
11/7/00	BUILDINGS L & K UTILITIES	SOL
9/7/00	GENERAL REVISIONS	SOL

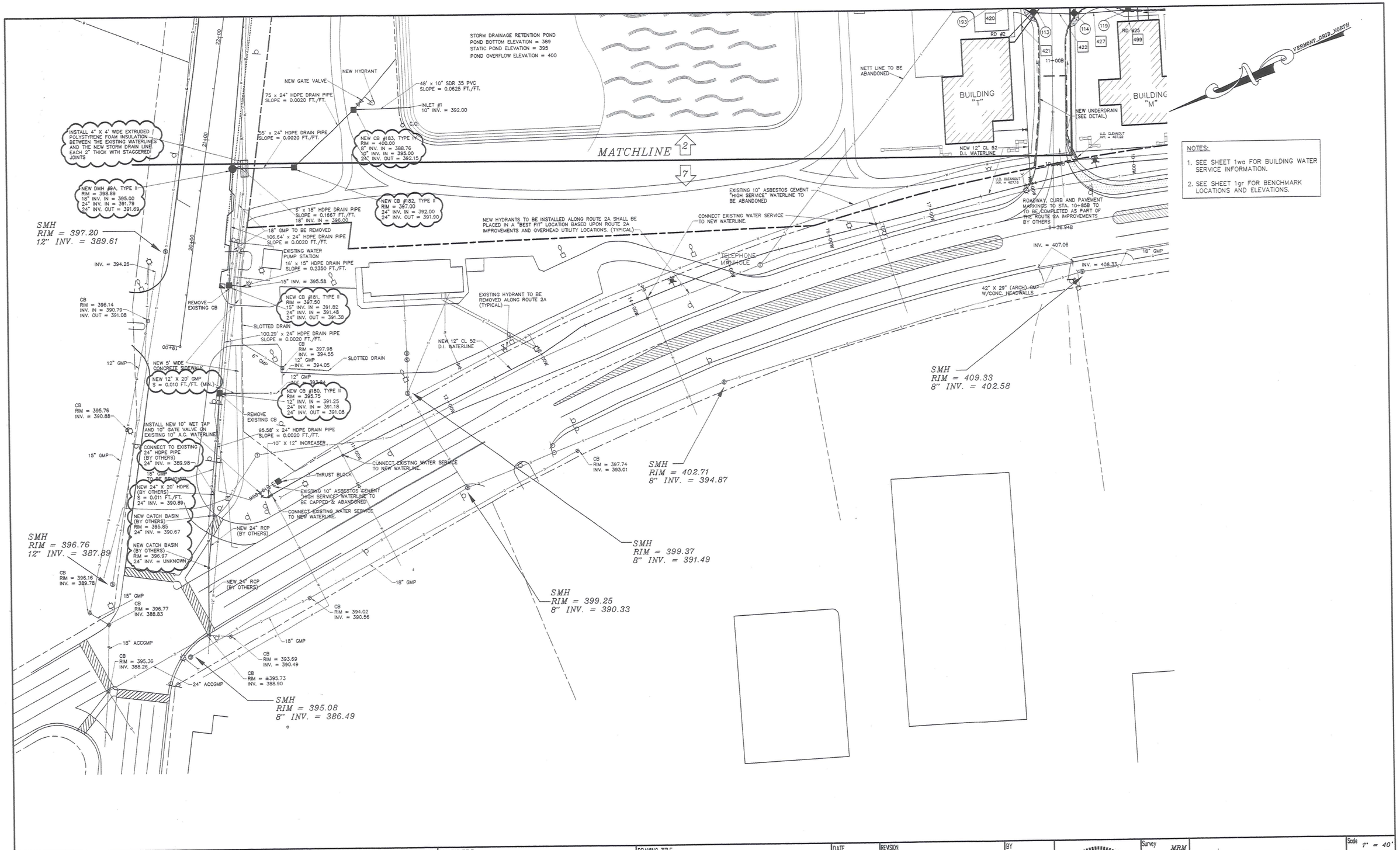
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	S-6

Wed Dec 20 11:51:02 2000



NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PROPOSED SITE DEVELOPMENT
SITE PLAN
~PROGRESS PLAN~

DATE	REVISION	BY
06/01/01	REVISED DRAINAGE FOR POND OUTLET CONNECTION	SOL
9/7/00	GENERAL REVISIONS	SOL

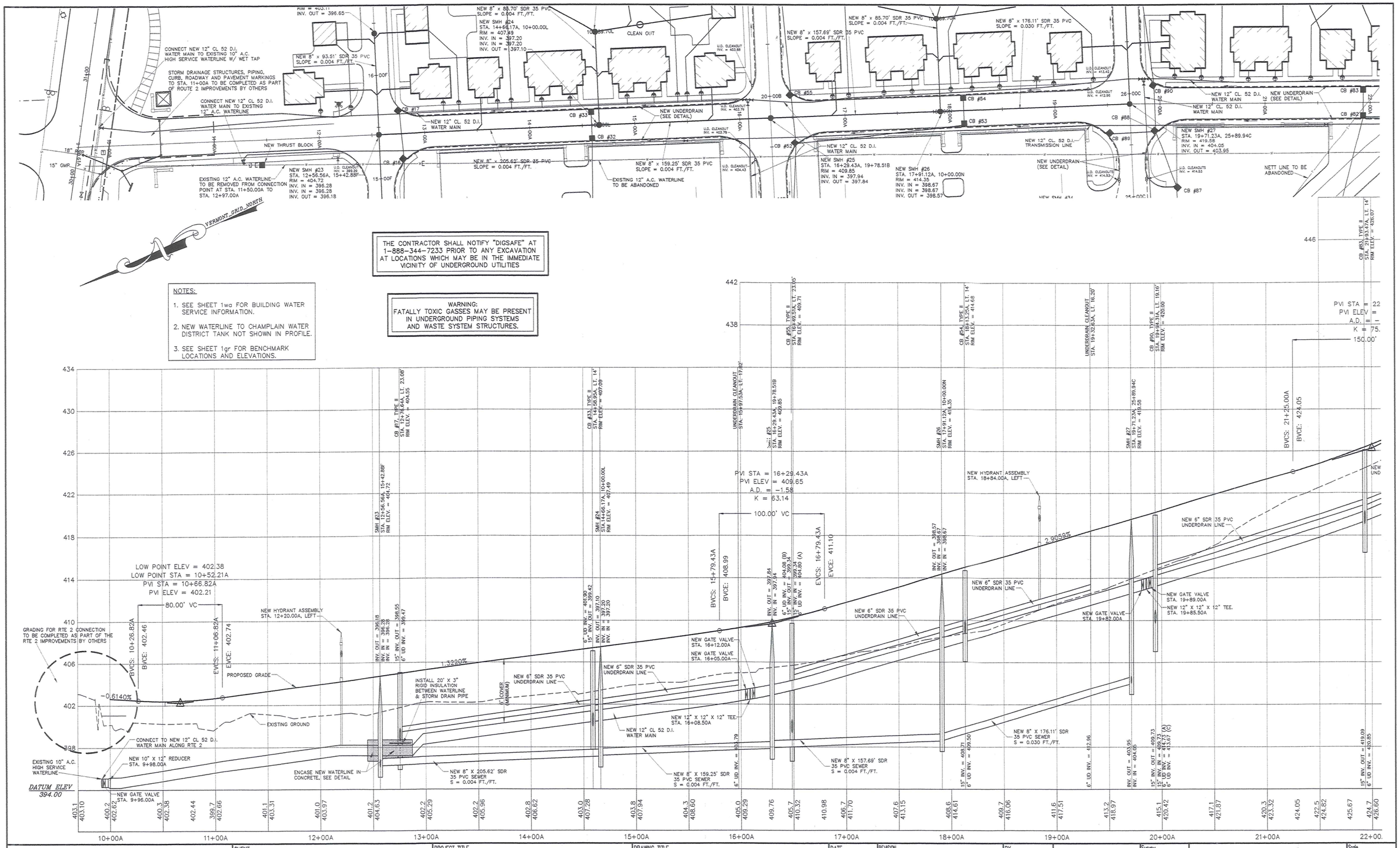
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	S-7

Fri Jun 01 11:12:43 2001



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL – 1" = 40'
VERTICAL – 1" = 4'

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	PLAN AND PROFILE CENTERLINE "A" STA. 9+70.61A TO STA. 22+00.00A ~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-A1

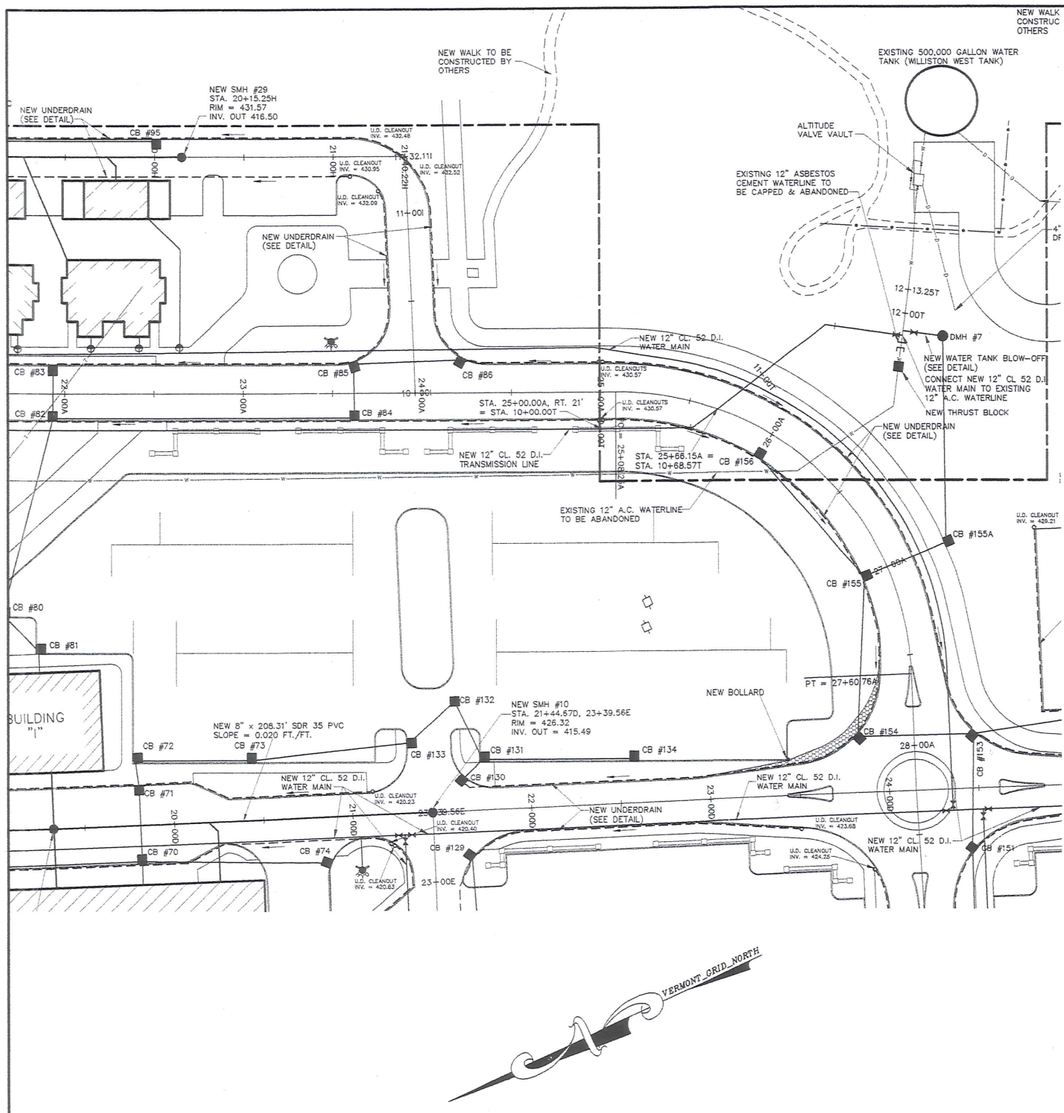
Wed Sep 20 08:47:42 2000

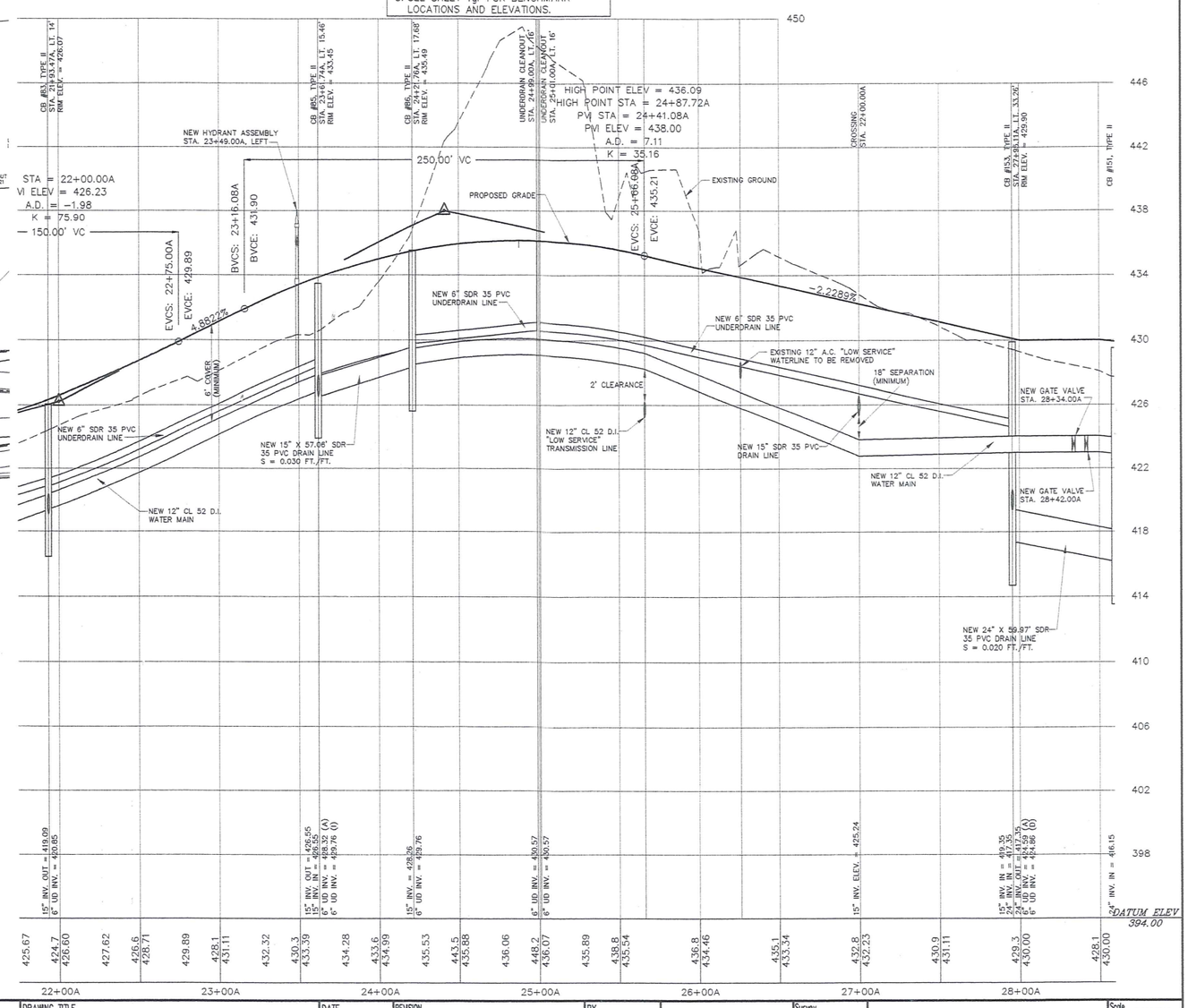
THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. NEW WATERLINE TO CHAMPLAIN WATER DISTRICT TANK NOT SHOWN IN PROFILE.
3. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.





GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.
PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL - 1" = 40'
VERTICAL - 1" = 4'

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PLAN AND PROFILE
CENTERLINE "A"
STA. 22+00.00A TO STA. 28+50.00A
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

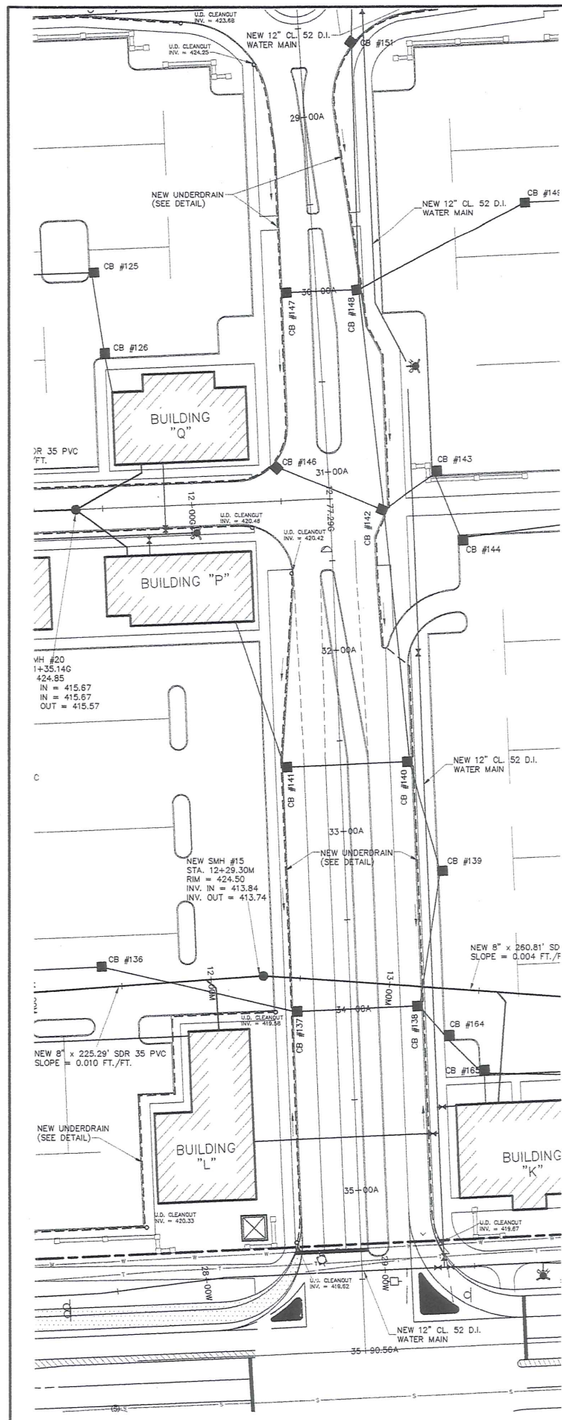
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

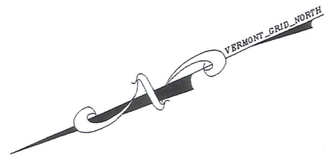
Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-A2

Wed Sep 20 08:39:17 2000



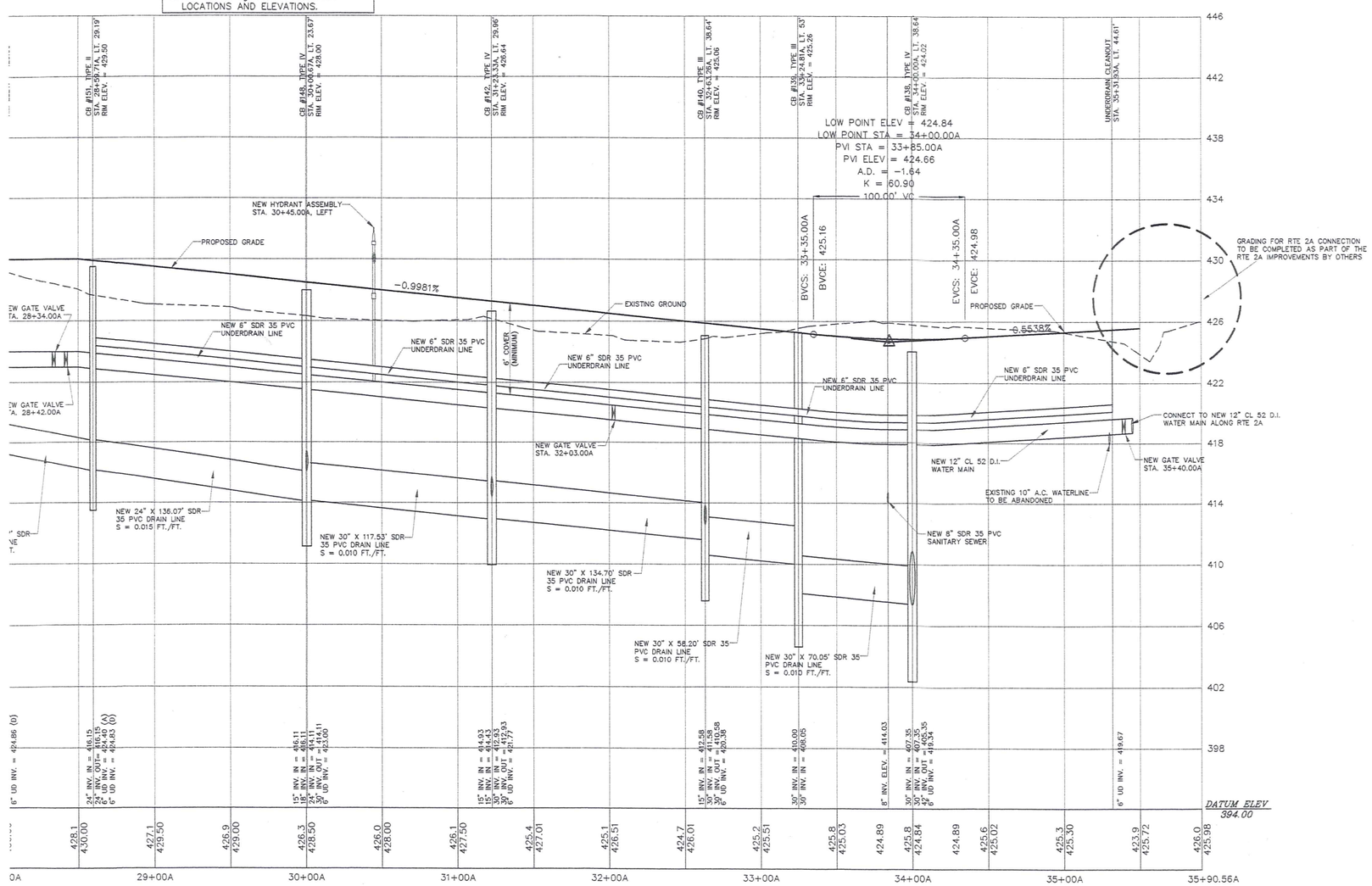


THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. NEW WATERLINE TO CHAMPLAIN WATER DISTRICT TANK NOT SHOWN IN PROFILE.
3. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL – 1" = 40'
VERTICAL – 1" = 4'

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PLAN AND PROFILE
CENTERLINE "A"
STA. 28+50.00A TO STA. 35+90.56A

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-A3

Fri Sep 22 11:29:02 2000

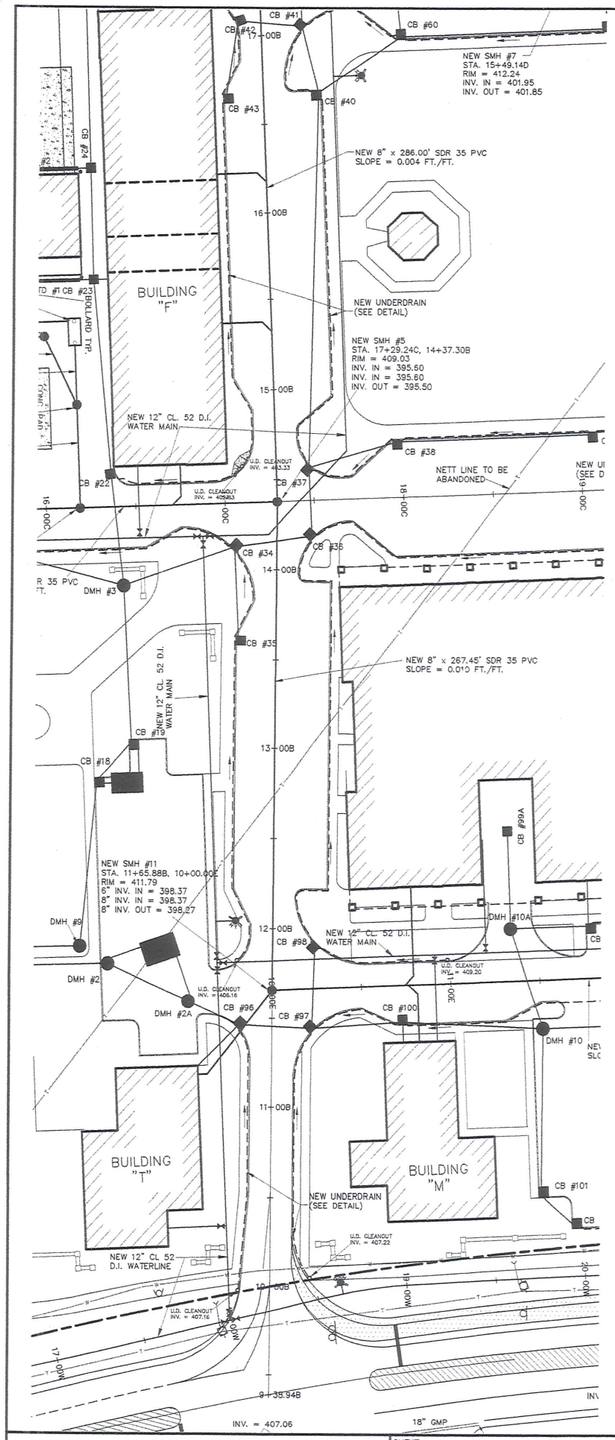
THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

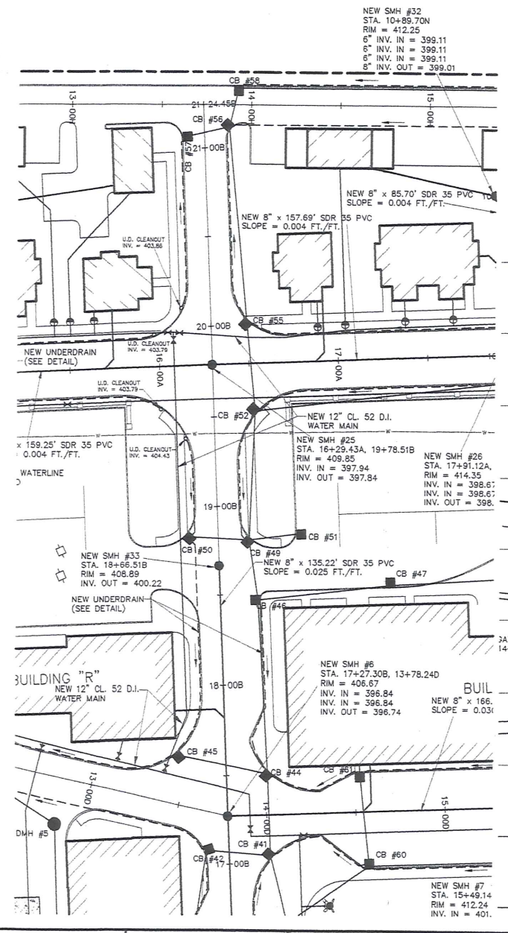
WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

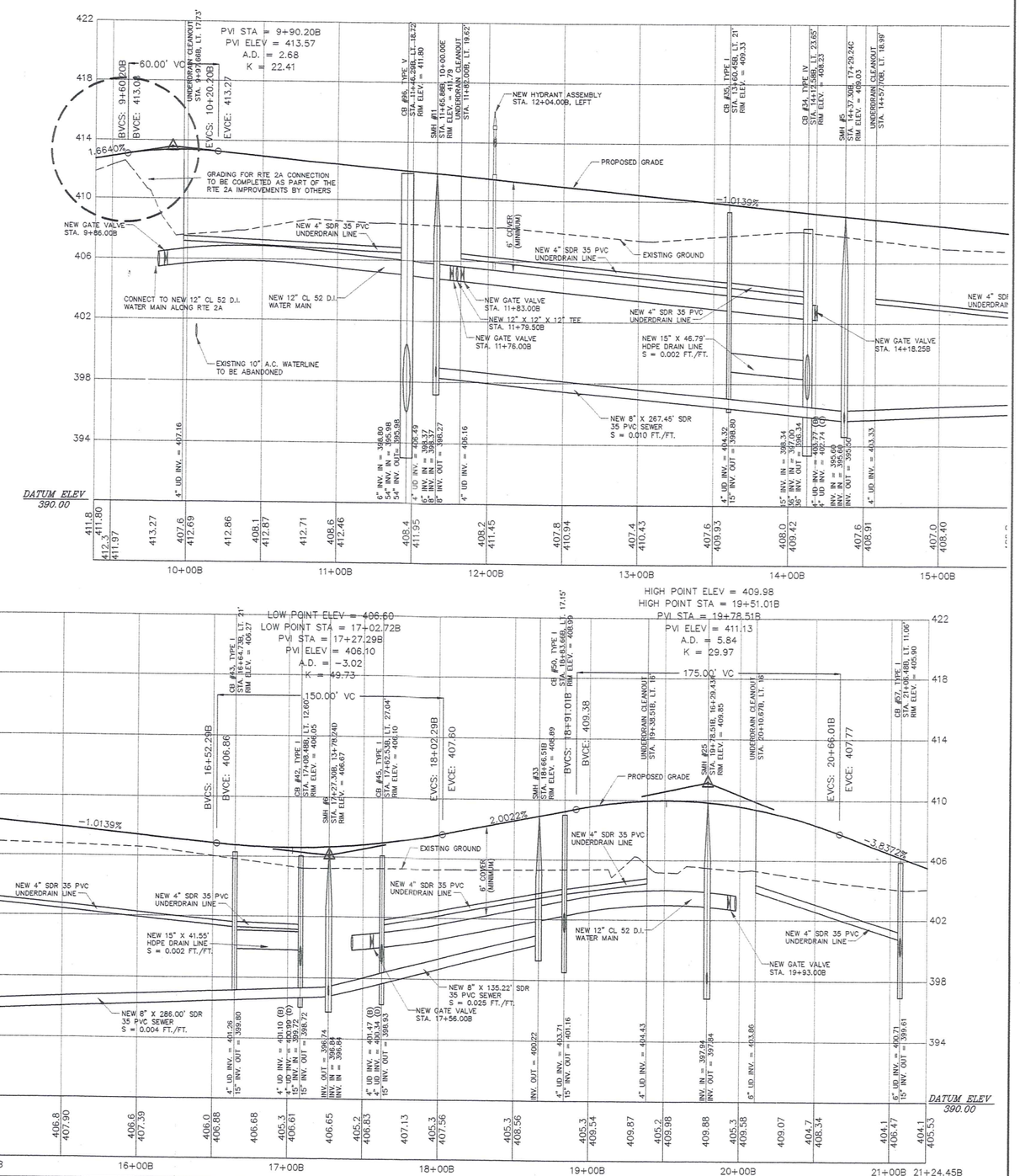
VERMONT GRID NORTH

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.







GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL - 1" = 40'
VERTICAL - 1" = 4'

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	PLAN AND PROFILE CENTERLINE "B" STA. 9+38.94B TO STA. 21+24.45B ~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

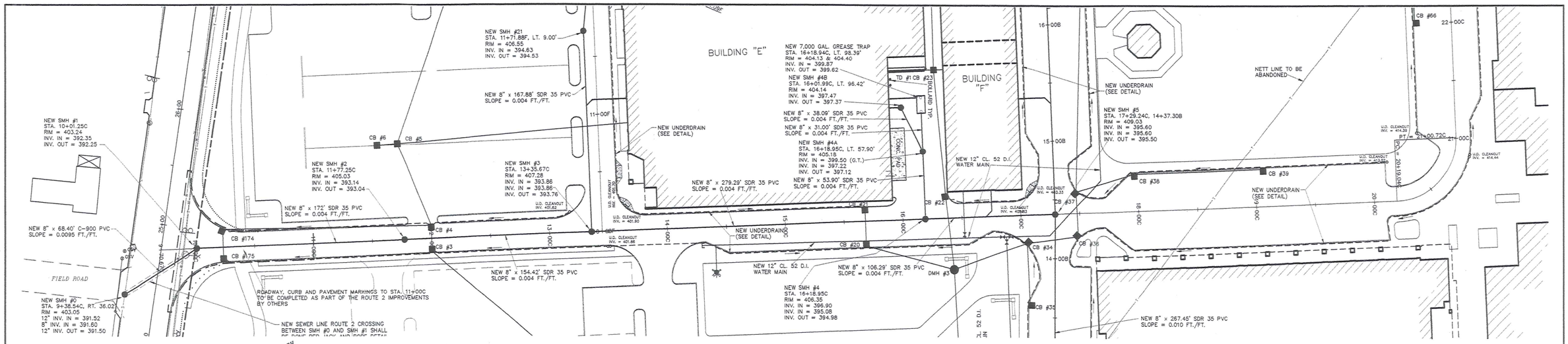
STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-B1

Fri Sep 22 15:04:43 2000



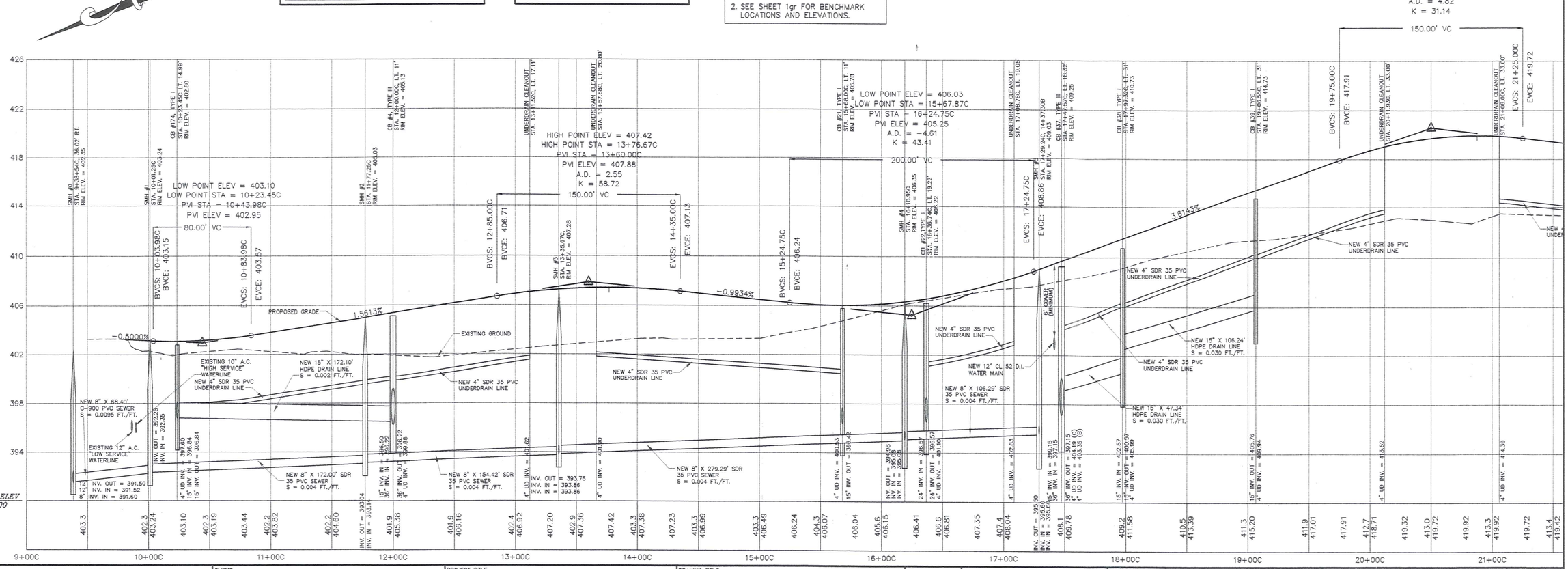
VERMONT GRID NORTH

THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.



GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.
PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL - 1" = 40'
VERTICAL - 1" = 4'

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PLAN AND PROFILE
CENTERLINE "C"
STA. 9+70.67C TO STA. 21+50.00C
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-C1

Wed Sep 20 10:13:23 2000

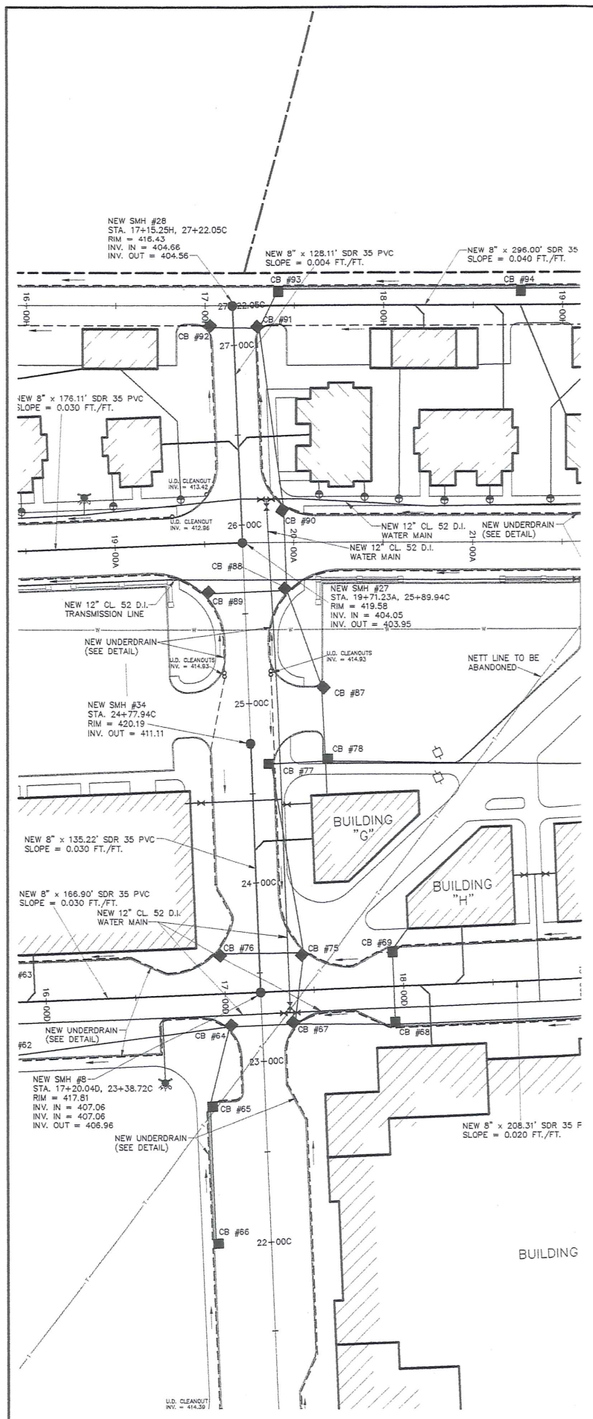
NOTES:

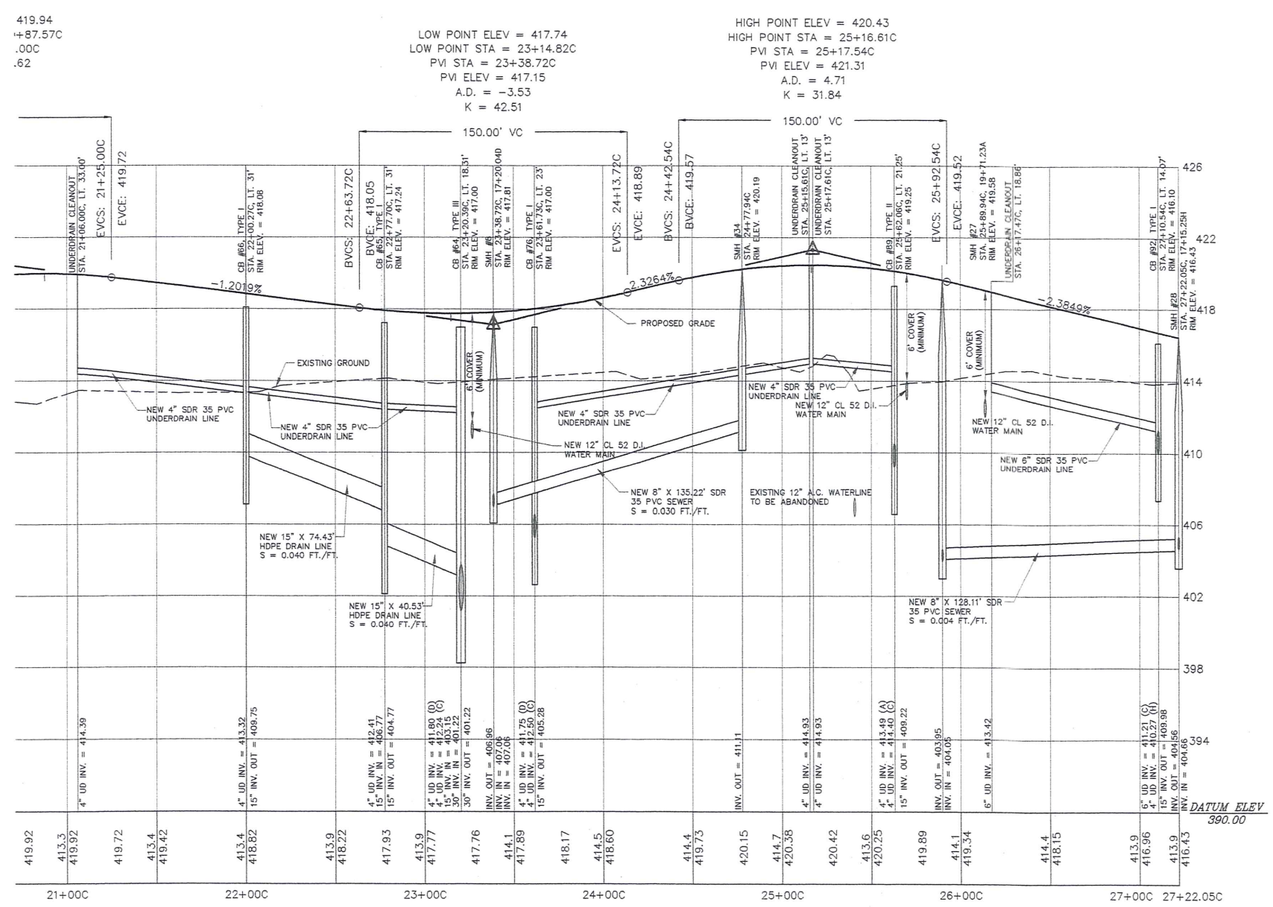
1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

VERMONT GRID NORTH

THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.





GRAPHIC SCALE	CLIENT	PROJECT TITLE	DRAWING TITLE	DATE	REVISION	BY
40 0 40 80 160 (IN FEET) 1 inch = 40 ft. PLAN VIEW SCALE	STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	PLAN AND PROFILE CENTERLINE "C" STA. 21+50.00C TO STA. 27+22.05C ~PROGRESS PLAN~	DATE	REVISION	BY
PROFILE SCALE: HORIZONTAL - 1" = 40' VERTICAL - 1" = 4'				DATE	REVISION	BY
				DATE	REVISION	BY
				DATE	REVISION	BY
				DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

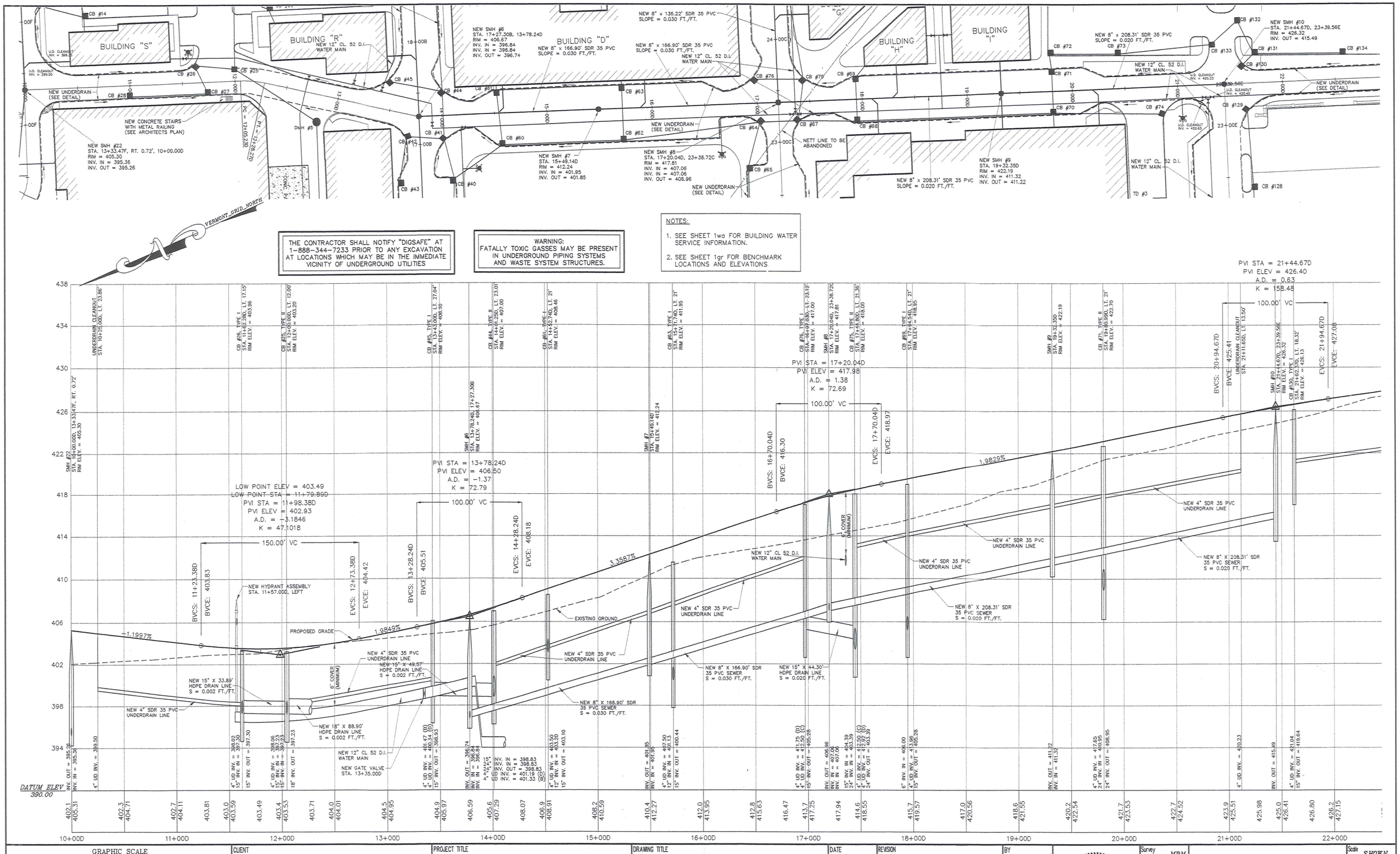
STATE OF VERMONT RICHARD F. HAMLIN No. 5260 REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-C2

Wed Sep 20 09:07:28 2000



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL - 1" = 40'
VERTICAL - 1" = 4'

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PLAN AND PROFILE
CENTERLINE "D"
STA. 9+99.28D TO STA. 22+00.00D

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

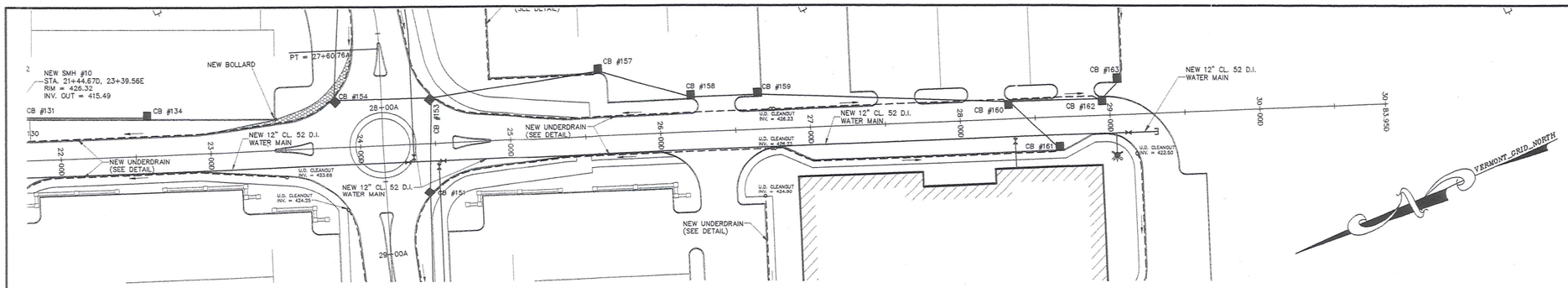
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-D1

Fri Sep 22 15:12:53 2000

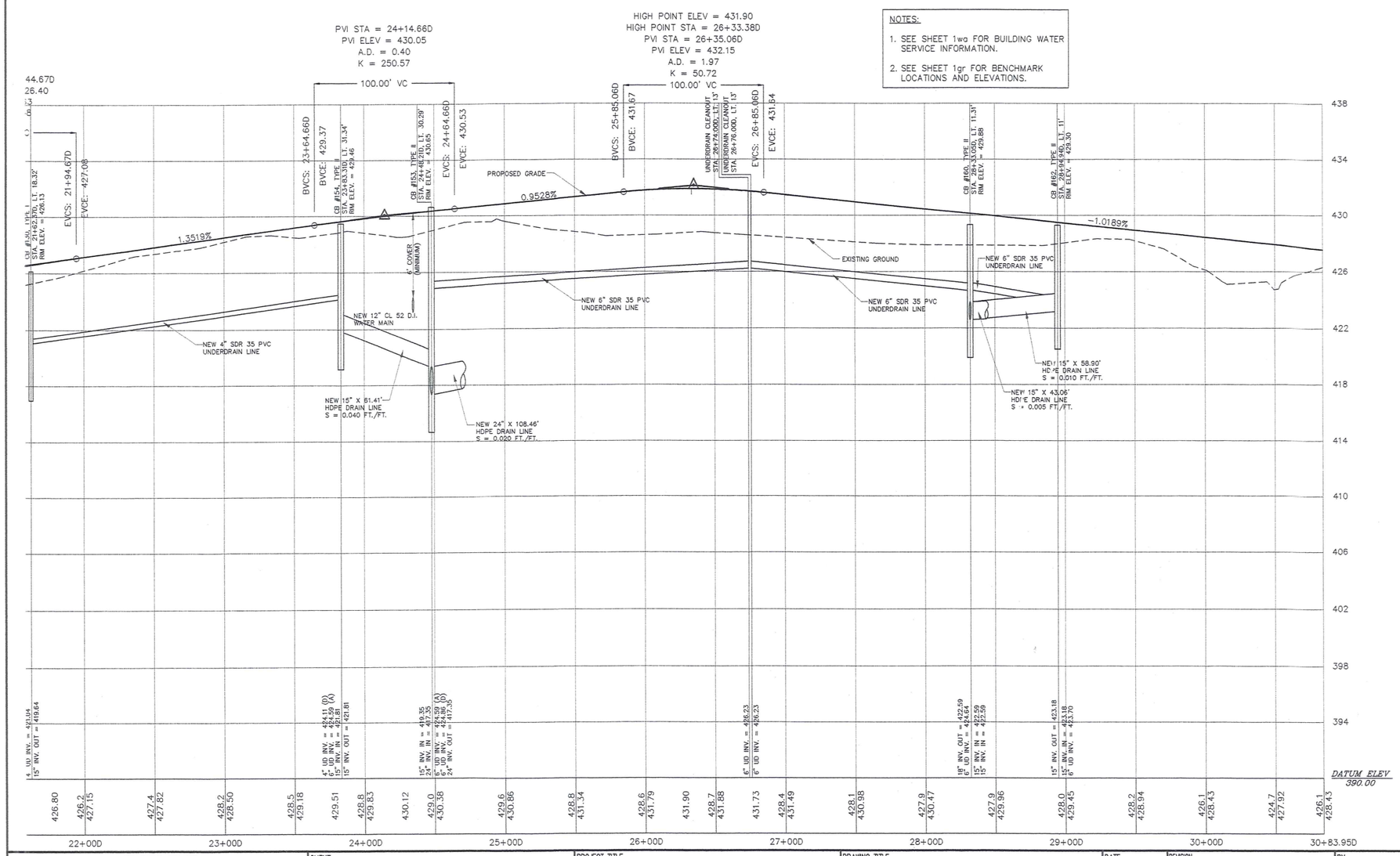


THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.



GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.
PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL - 1" = 40'
VERTICAL - 1" = 4'

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PLAN AND PROFILE
CENTERLINE "D"
STA. 22+00.00D TO STA. 30+83.95D
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

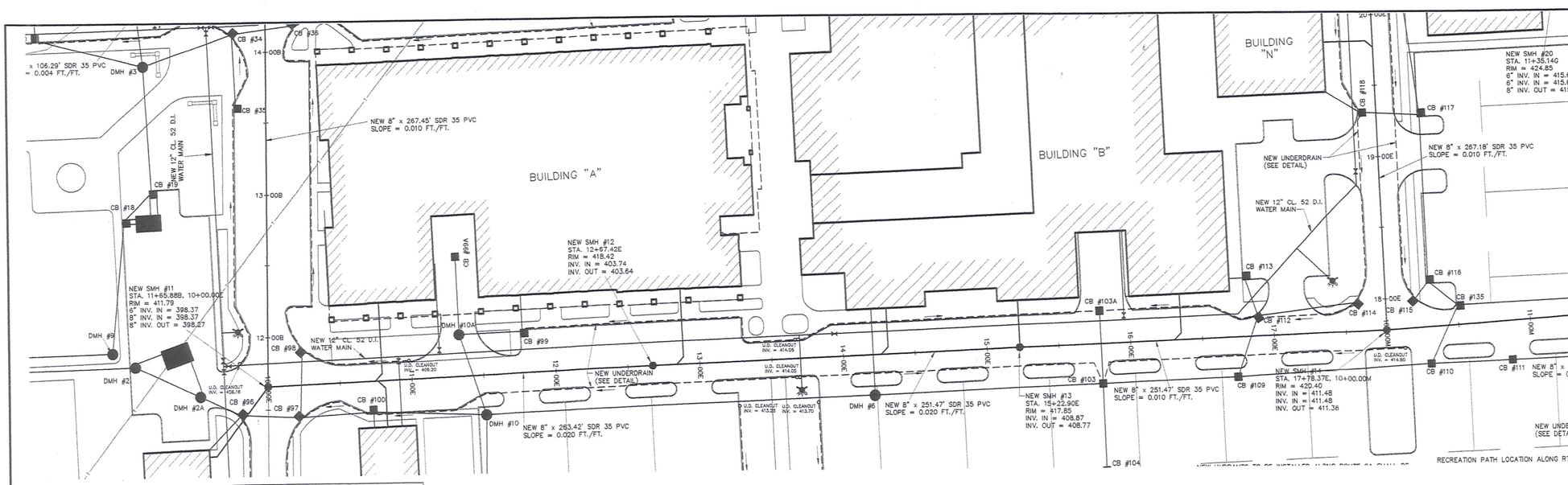
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-D2

Wed Sep 20 09:29:16 2000



THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

WARNING:
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VERMONT GRID NORTH

NOTES:

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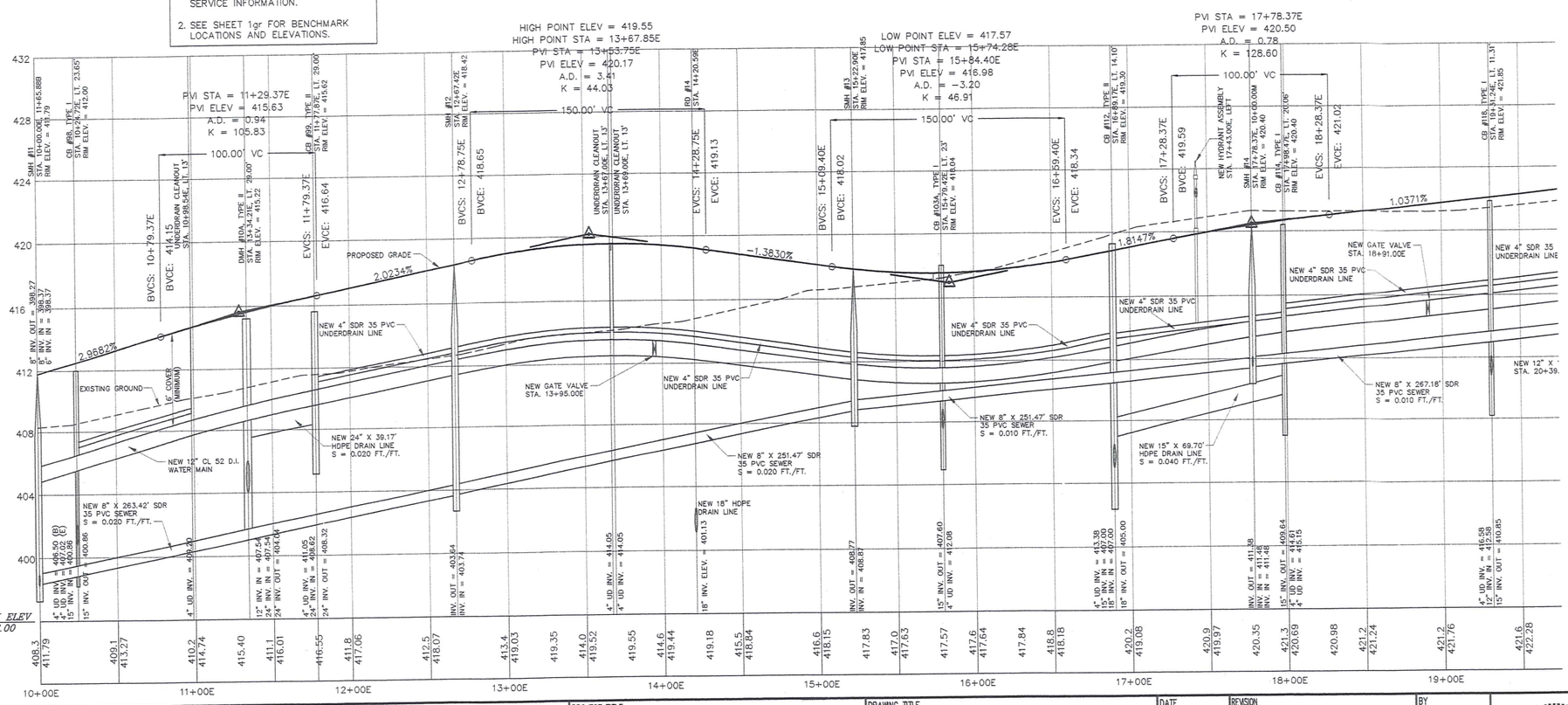


GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.
PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL – 1" = 40'
VERTICAL – 1" = 4'

CLIENT
STARWOOD–CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PLAN AND PROFILE
CENTERLINE "E"
STA. 10+00.00E TO STA. 19+50.00E
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

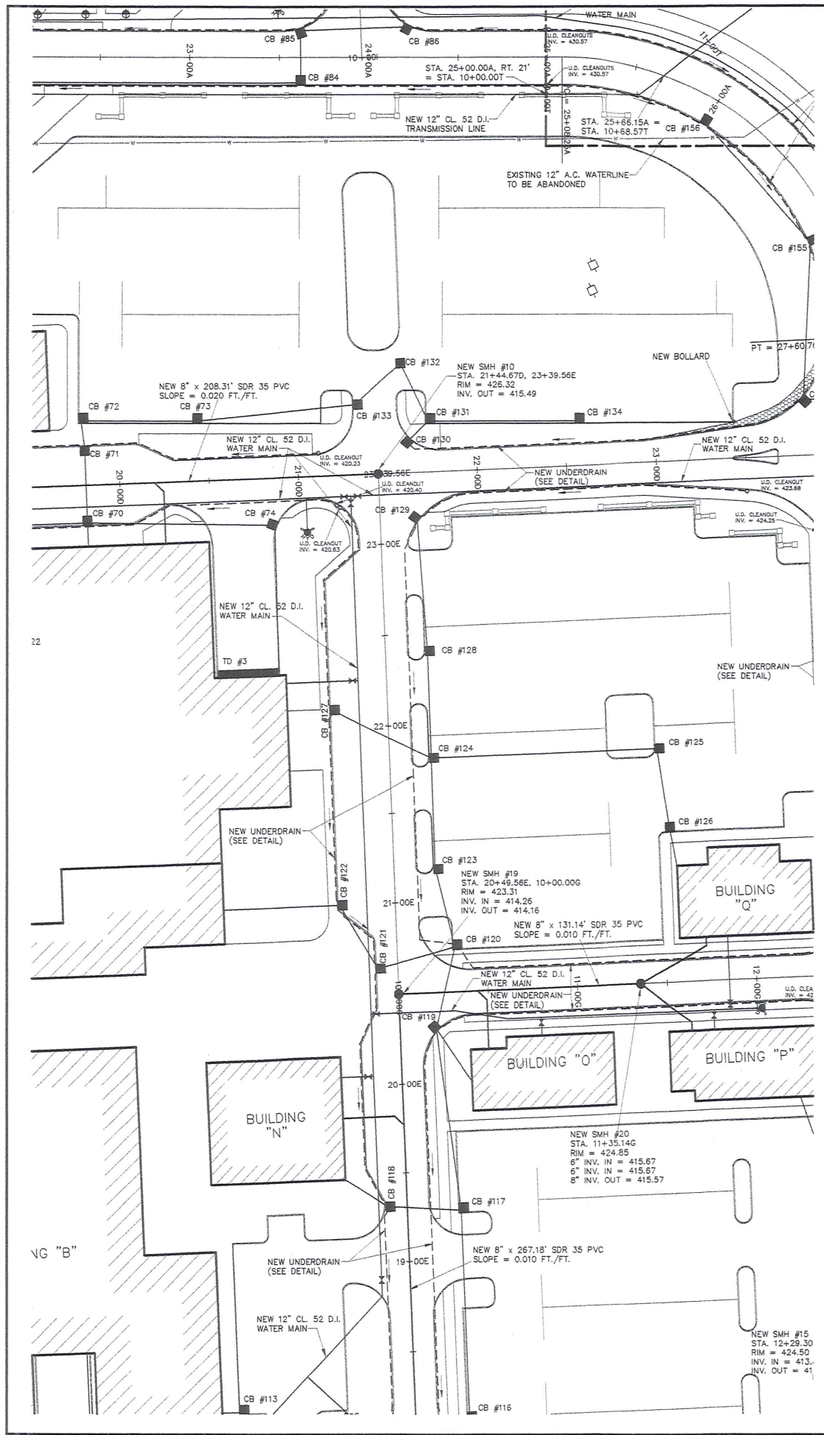
STATE OF VERMONT — RICHARD P. HAMLIN III — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

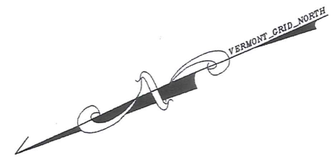
Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RPH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-E1

Wed Sep 20 10:23:12 2000





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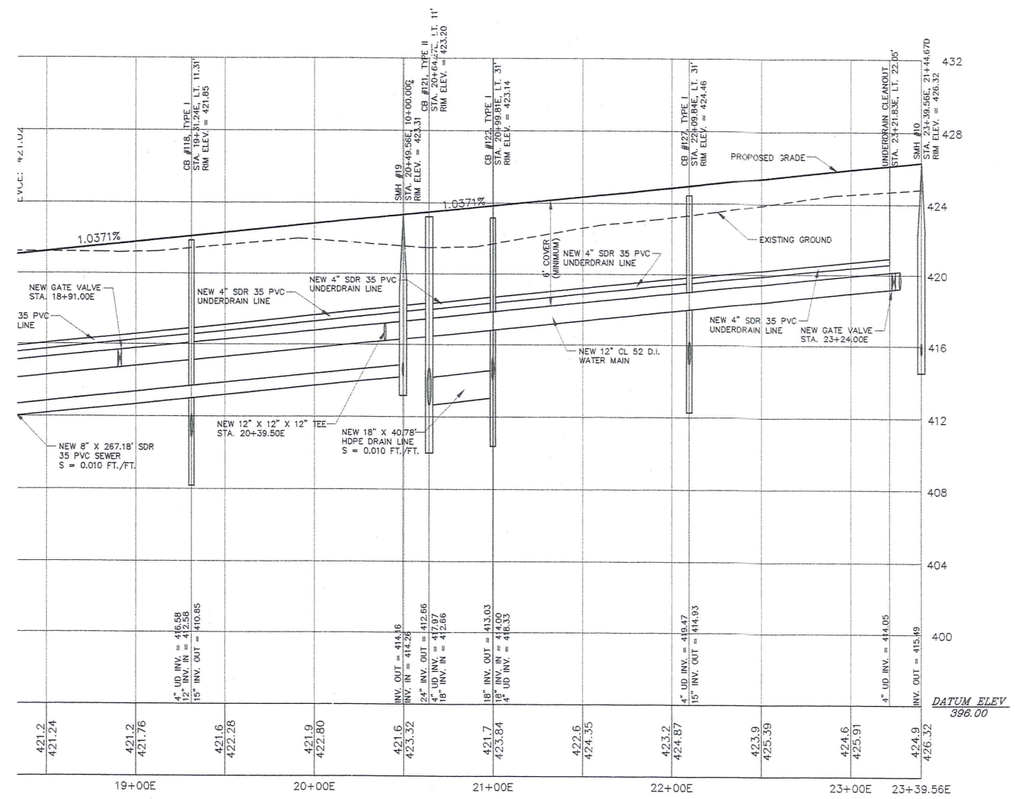


GRAPHIC SCALE	CLIENT	PROJECT TITLE	DRAWING TITLE	DATE	REVISION	BY
40 0 40 80 160 (IN FEET) 1 inch = 40 ft. PLAN VIEW SCALE	STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	PLAN AND PROFILE CENTERLINE "E" STA. 19+50.00E TO STA. 23+39.56E ~PROGRESS PLAN~	DATE	REVISION	BY
PROFILE SCALE: HORIZONTAL - 1" = 40' VERTICAL - 1" = 4'				DATE	REVISION	BY
				DATE	REVISION	BY
				DATE	REVISION	BY
				DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

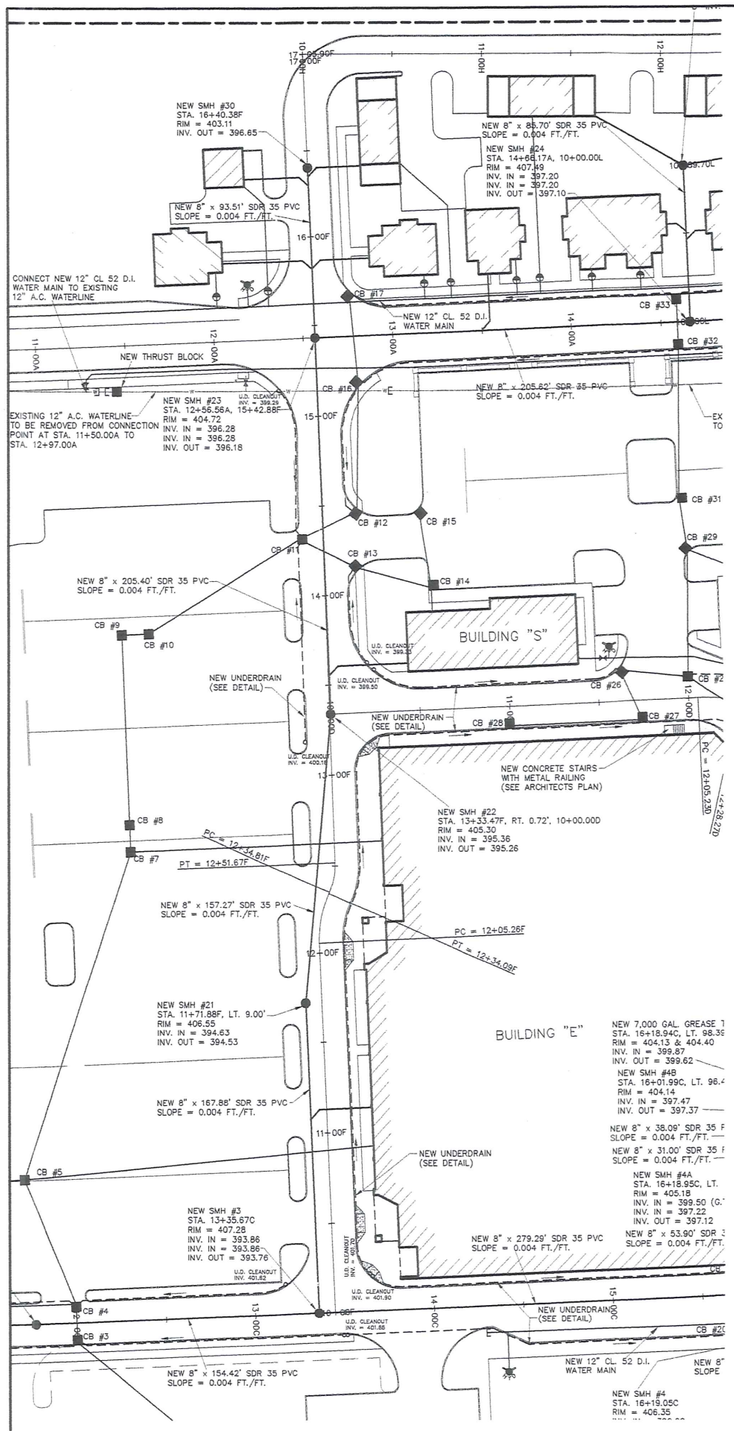
STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-E2

Wed Sep 20 10:31:30 2000



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WARNING:
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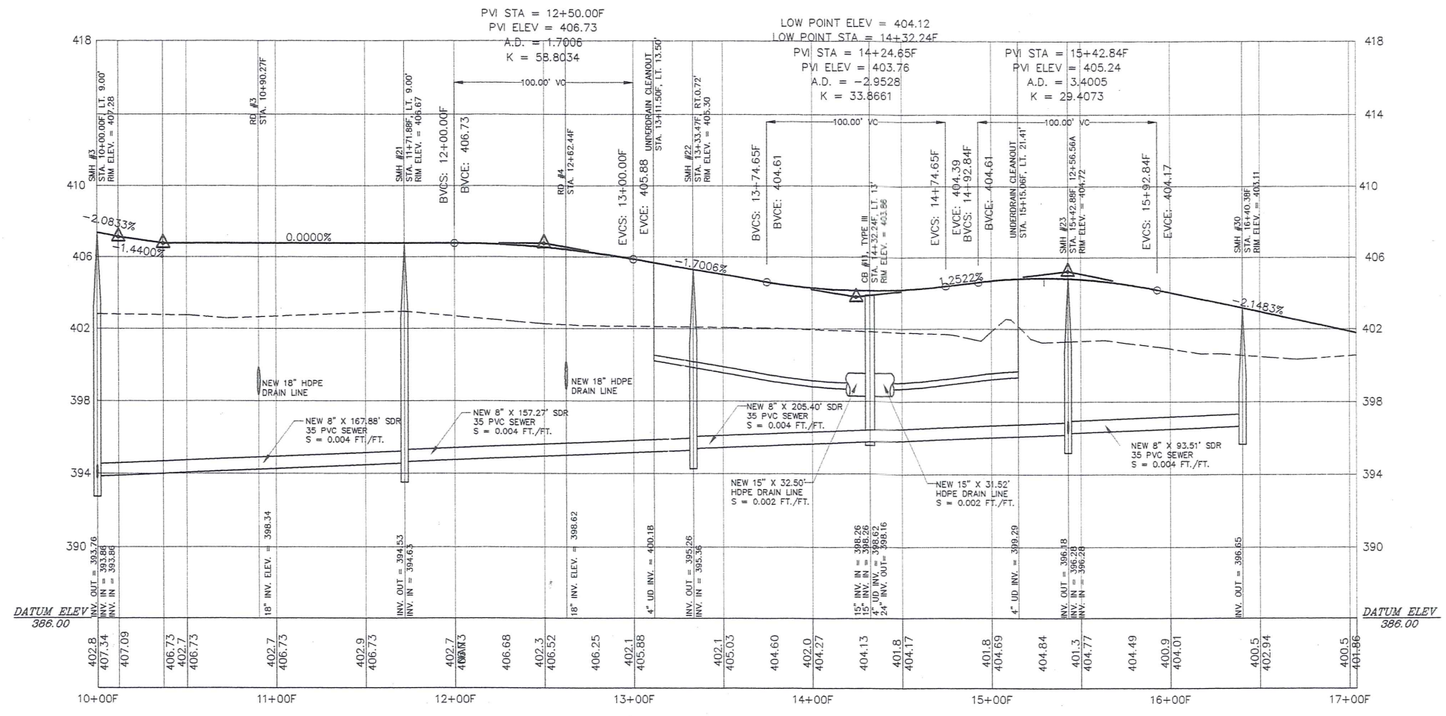
VERMONT GRID NORTH

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL – 1" = 40'
VERTICAL – 1" = 4'

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PLAN AND PROFILE
CENTERLINE "F"
STA. 10+00.00F TO STA. 17+03.90F

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

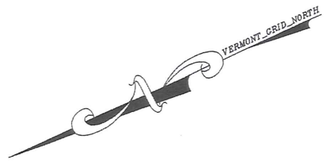
Donald L. Hamlin
Consulting
Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

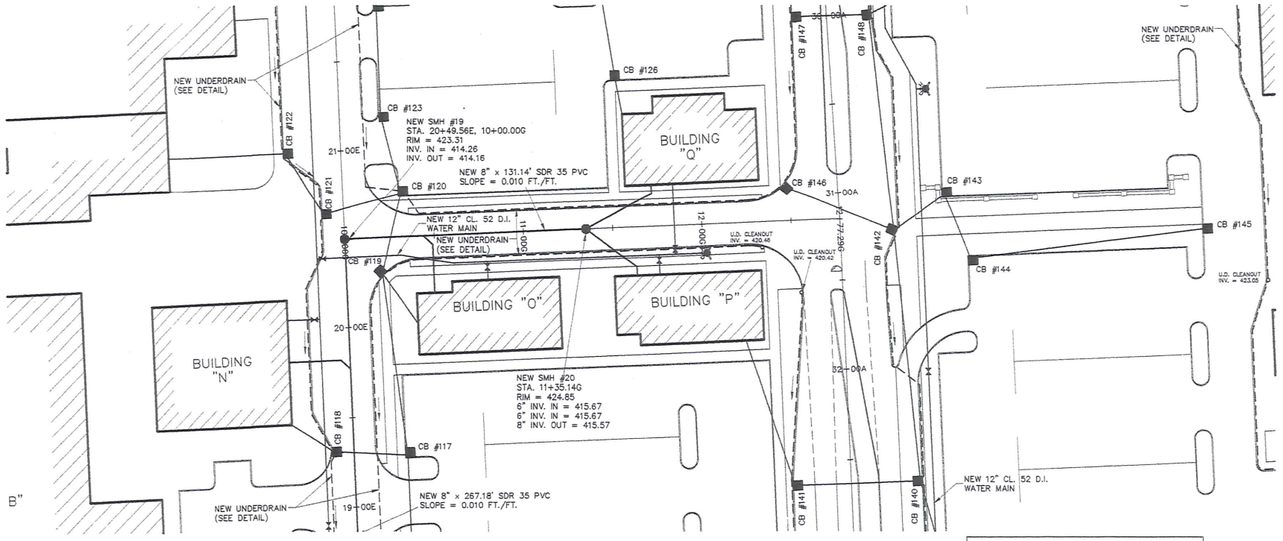
Scale	SHOWN
Job	99-293
File	
Drawing	P-F1

Fri Sep 08 11:10:09 2000

THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

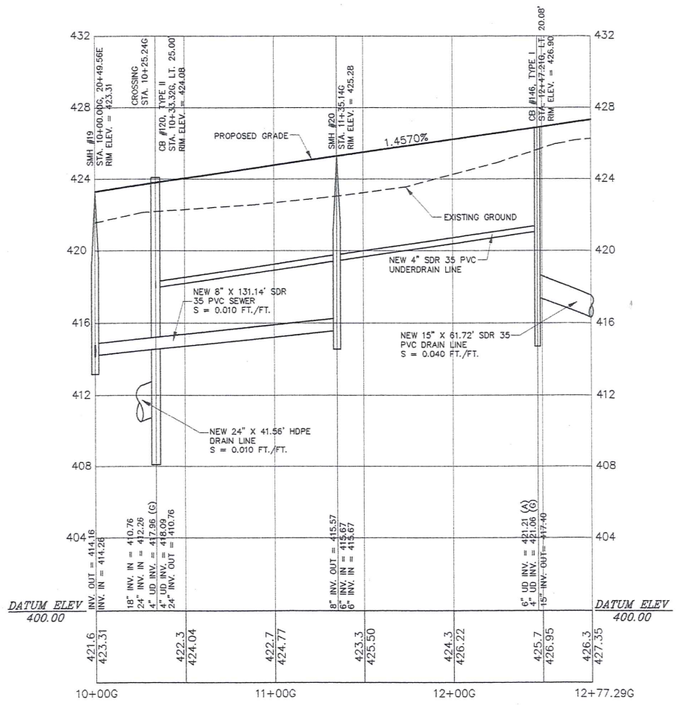
WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.





NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL - 1" = 40'
VERTICAL - 1" = 4'

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	PLAN AND PROFILE CENTERLINE "G" STA. 10+00.00G TO STA. 12+77.29G ~PROGRESS PLAN~

DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

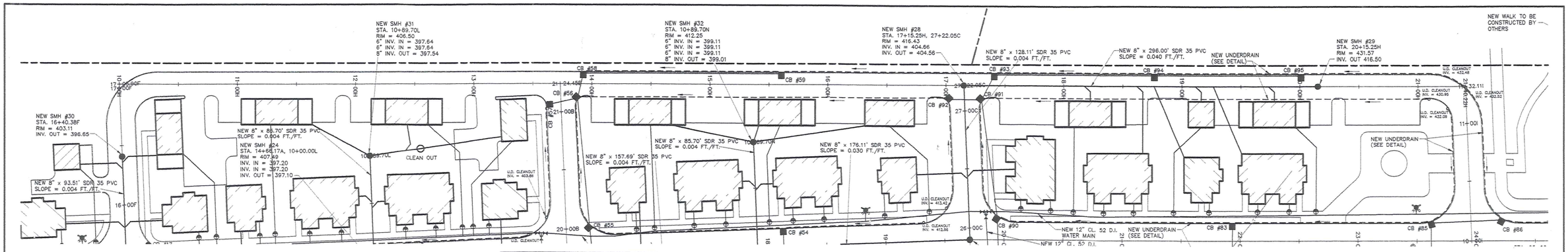
STATE OF VERMONT · RICHARD F. HAMLIN · No. 5260 · REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-G1

Wed Sep 20 10:39:30 2000

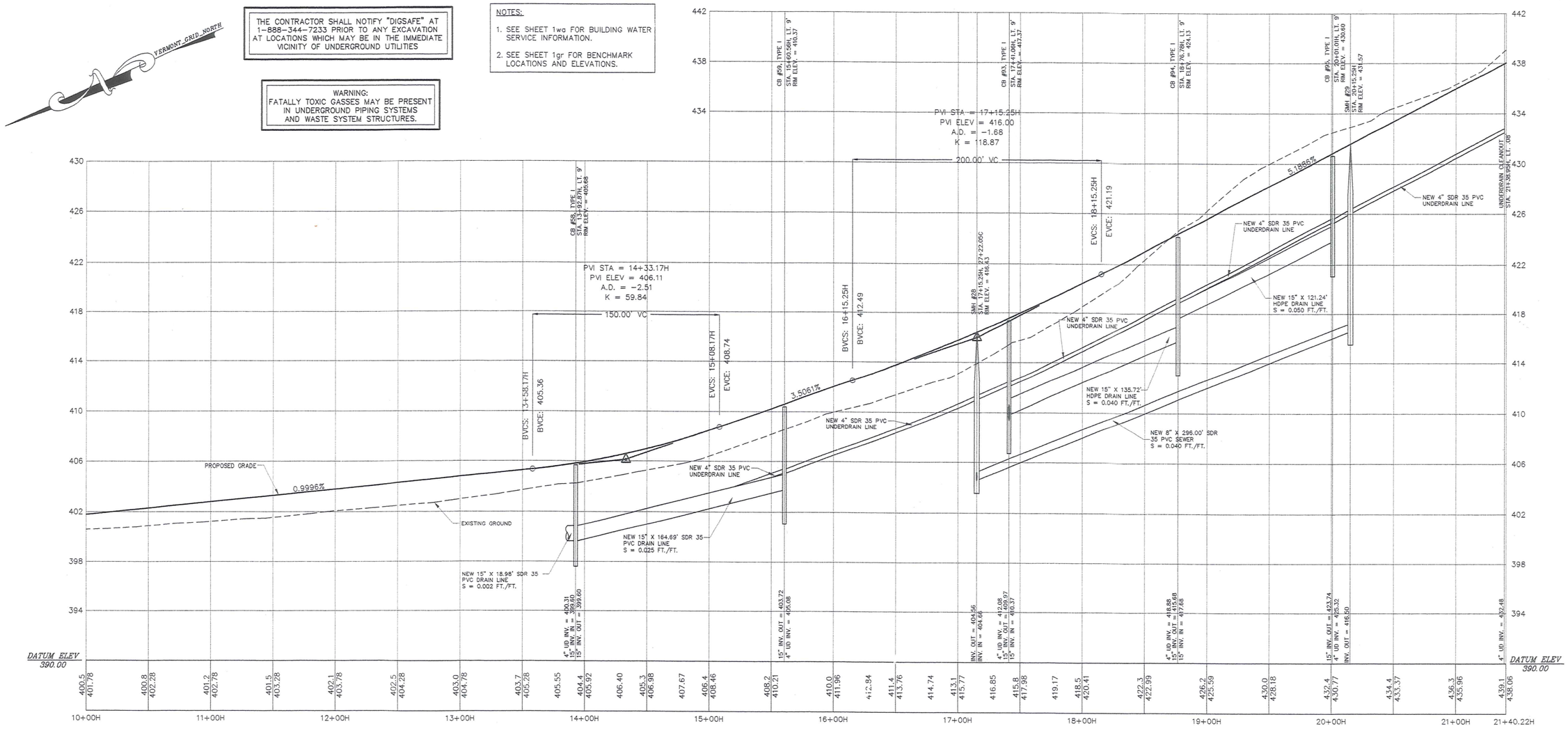


THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.



GRAPHIC SCALE	CLIENT	PROJECT TITLE	DRAWING TITLE	DATE	REVISION	BY
40 0 40 80 160 (IN FEET) 1 inch = 40 ft. PLAN VIEW SCALE	STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	PLAN AND PROFILE CENTERLINE "H" STA. 10+00.00H TO STA. 21+40.22H ~PROGRESS PLAN~	DATE	REVISION	BY
				DATE	REVISION	BY
				DATE	REVISION	BY
				DATE	REVISION	BY
PROFILE SCALE: HORIZONTAL - 1" = 40' VERTICAL - 1" = 4'				DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-H1

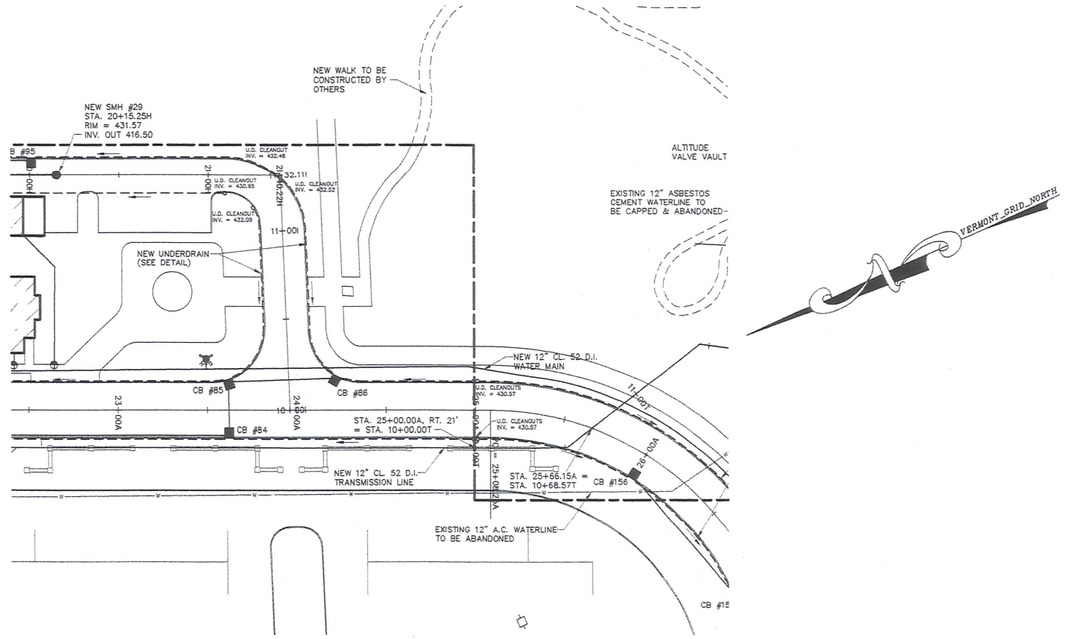
Fri Sep 08 10:48:30 2000

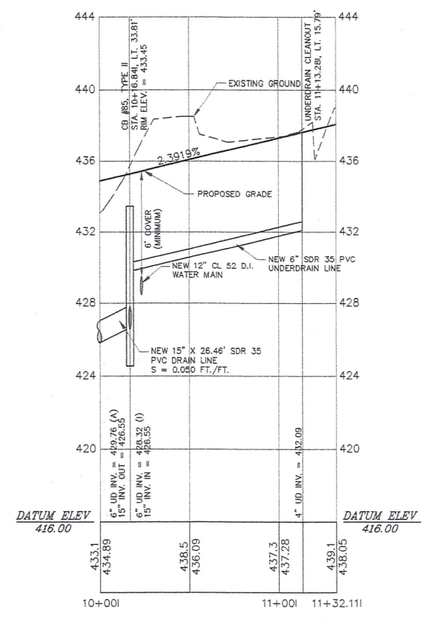
THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.





GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.
PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL – 1" = 40'
VERTICAL – 1" = 4'

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PLAN AND PROFILE
CENTERLINE "I"
STA. 10+00.00I TO STA. 11+32.11I
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

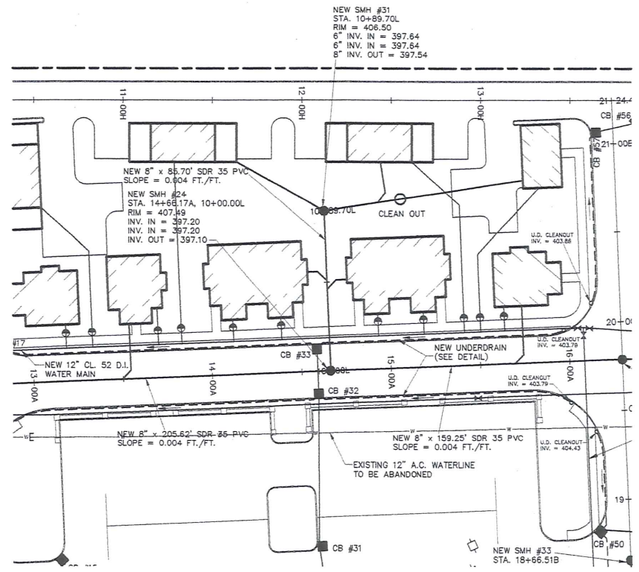
STATE OF VERMONT RICHARD F. HAMLIN No. 5260 REGISTERED PROFESSIONAL ENGINEER

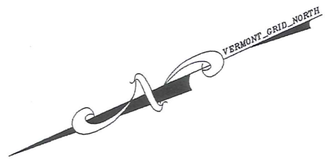
Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-I1

Wed Sep 20 10:48:33 2000



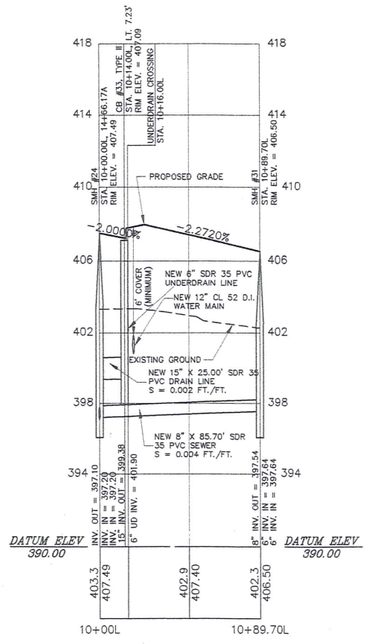


NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL - 1" = 40'
VERTICAL - 1" = 4'

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PLAN AND PROFILE
CENTERLINE "L"
STA. 10+00.00L TO STA. 10+89.70L

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED
PROFESSIONAL ENGINEER

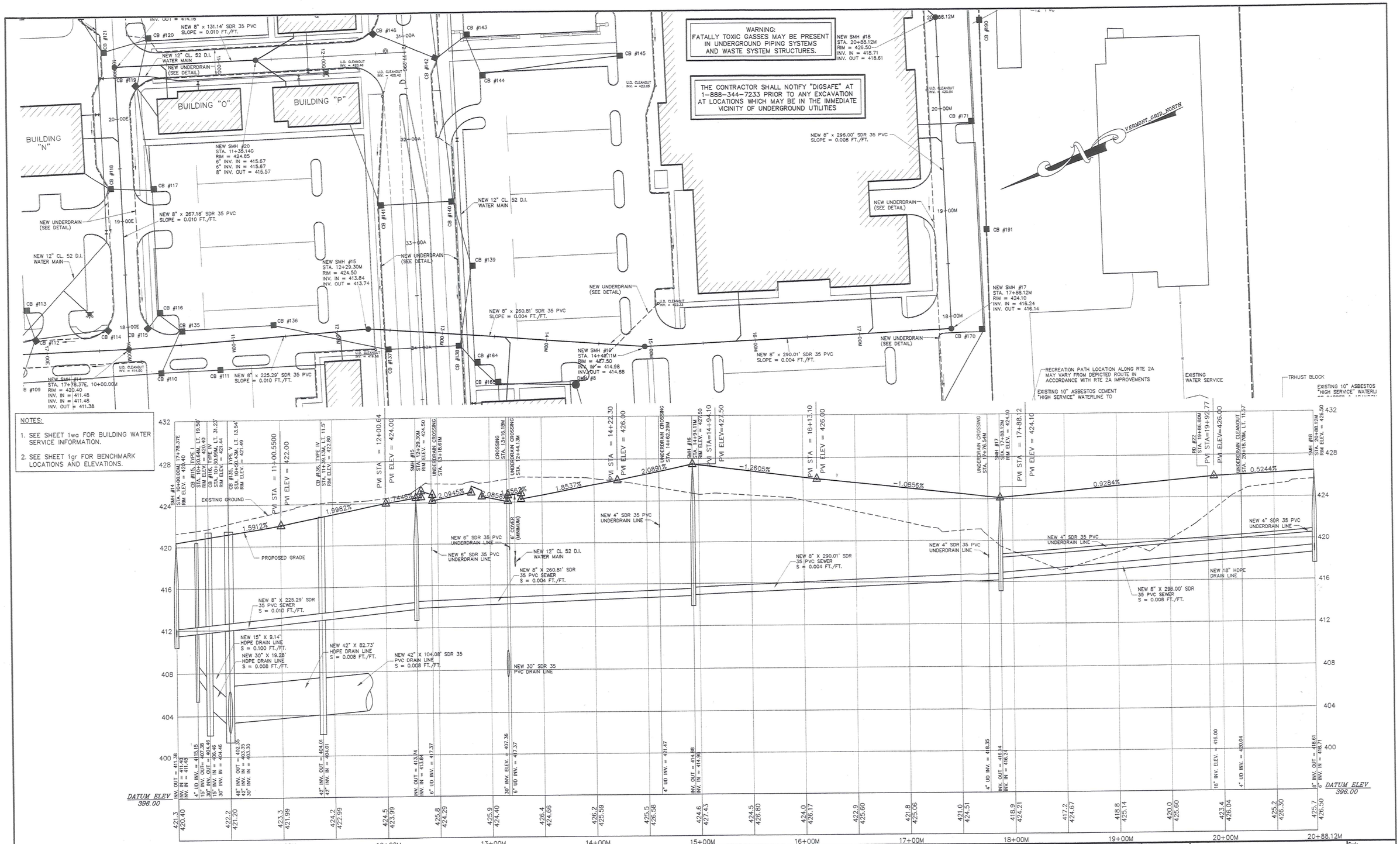
Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin
Consulting
Engineers, Inc.

136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-L1

Thu Sep 14 12:16:16 2000



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL - 1" = 40'
VERTICAL - 1" = 4'

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PLAN AND PROFILE
CENTERLINE "M"
STA. 10+00.00M TO STA. 20+88.12M

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

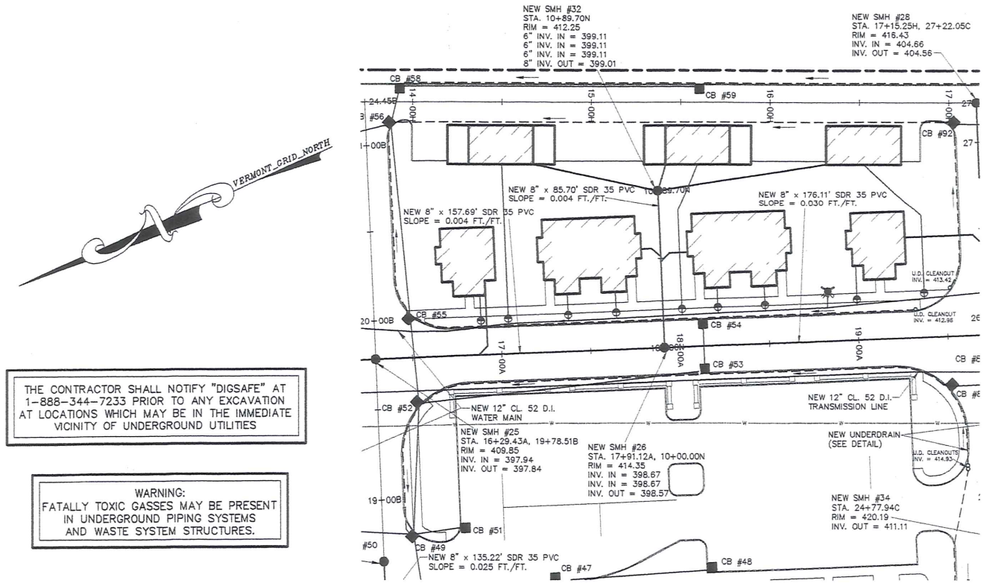
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-M1

Thu Sep 14 15:02:15 2000



THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

NOTES:

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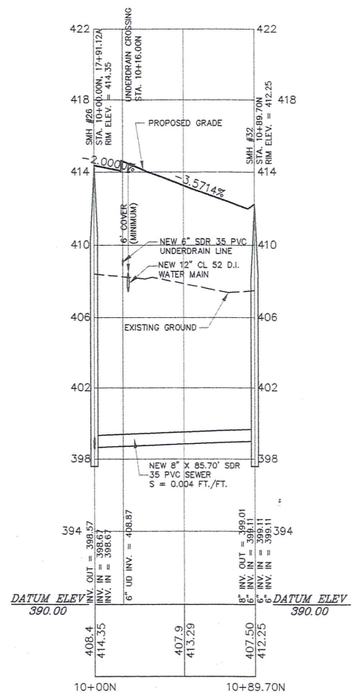
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL – 1" = 40'
VERTICAL – 1" = 4'

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PLAN AND PROFILE
CENTERLINE "N"
STA. 10+00.00N TO STA. 10+89.70N

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

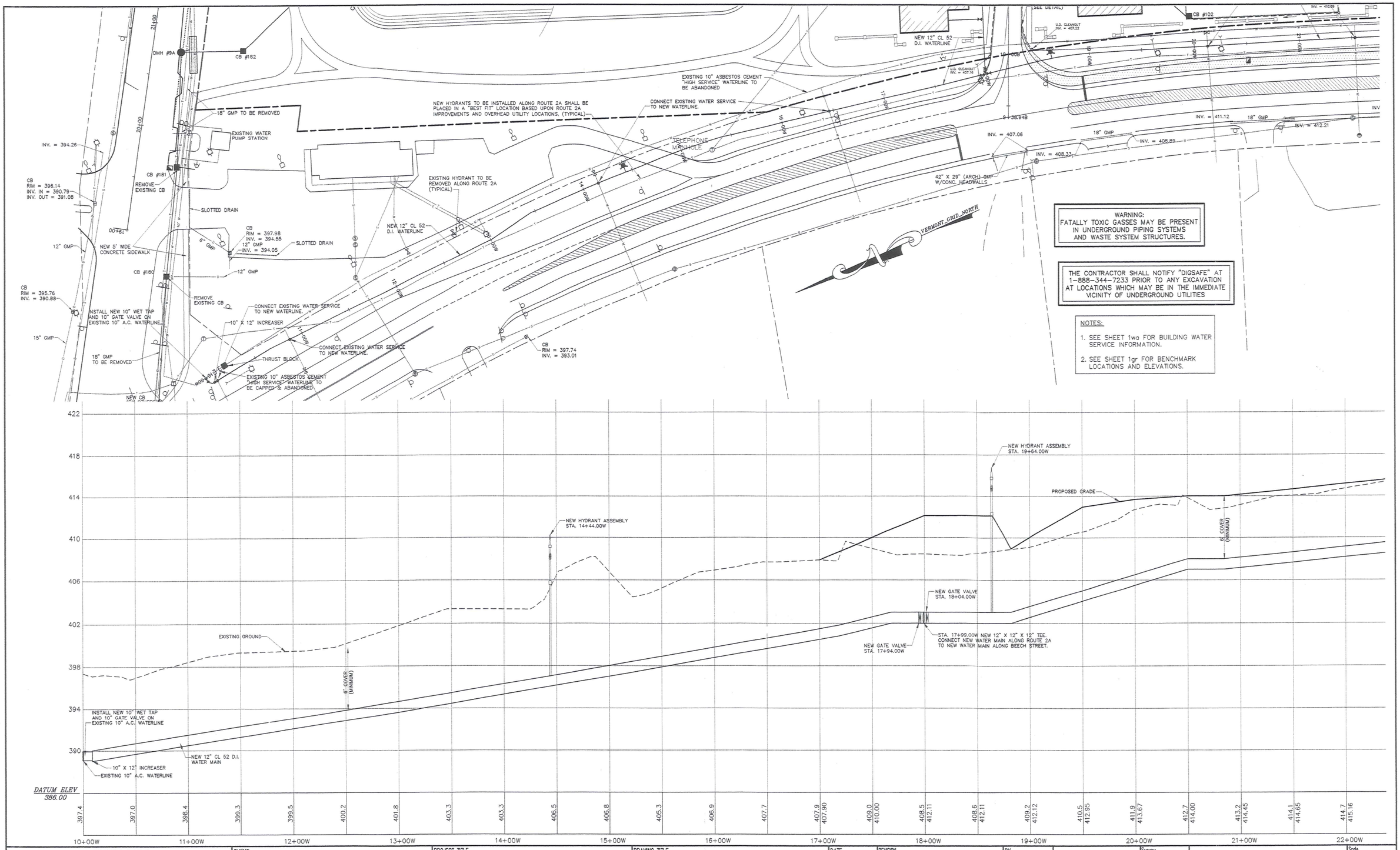
Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin
Consulting
Engineers, Inc.

136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-N1

Fri Sep 08 10:06:53 2000



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL – 1" = 40'
VERTICAL – 1" = 4'

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PLAN AND PROFILE
ROUTE 2A WATERLINE REPLACEMENT
STA. 10+00.00W TO STA. 22+00.00W

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-W1

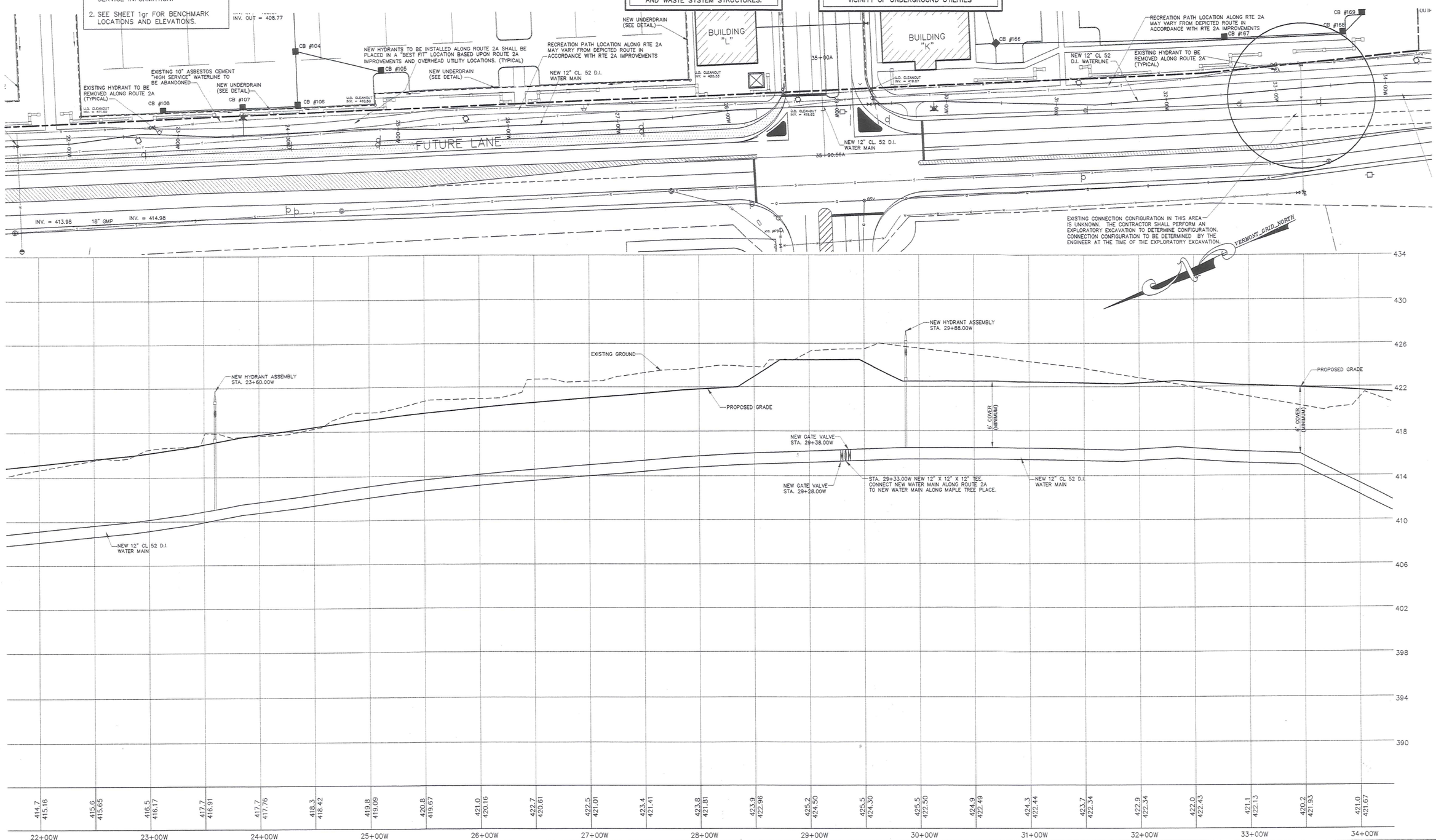
Fri Sep 22 12:52:44 2000

NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES



GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL – 1" = 40'
VERTICAL – 1" = 4'

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PLAN AND PROFILE
ROUTE 2A WATERLINE REPLACEMENT
STA. 22+00.00W TO STA. 34+00.00W

~PROGRESS PLAN~

DATE	REVISION	BY
6/7/00	GENERAL REVISIONS	SOL

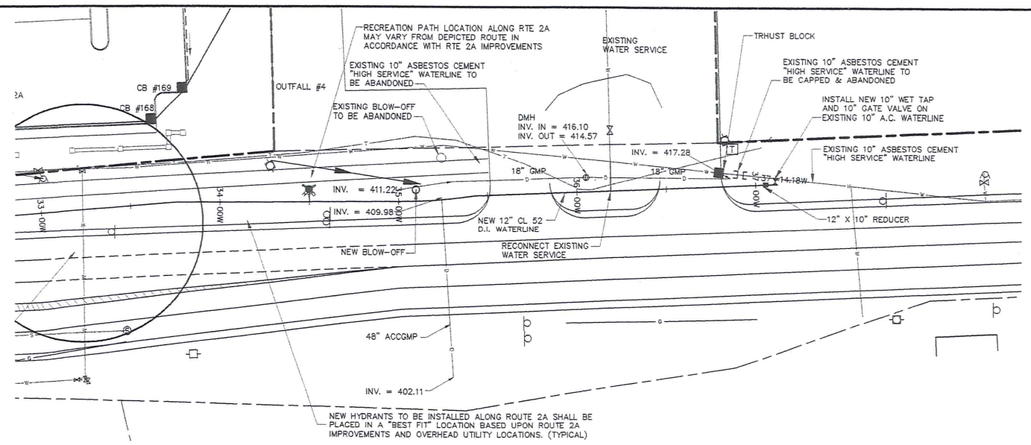
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

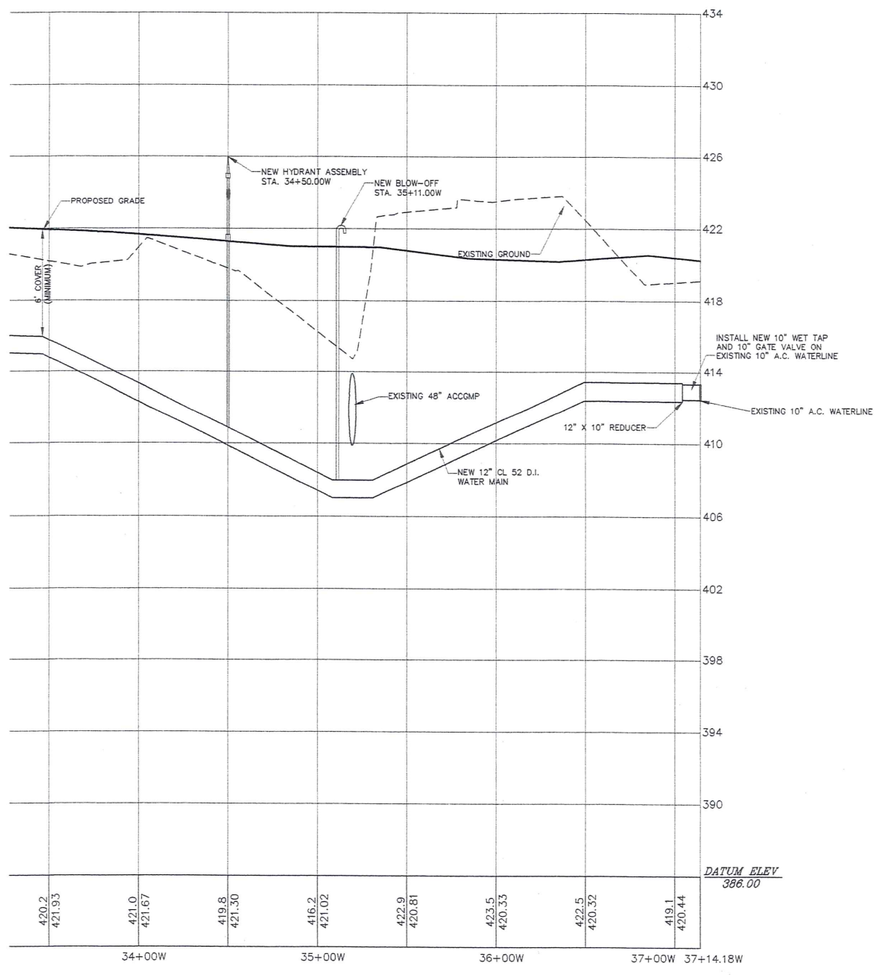
Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

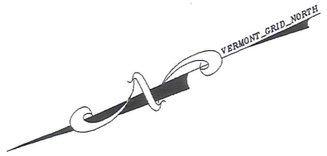
Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-W2

Fri Sep 22 14:02:27 2000







NOTES:

1. SEE SHEET 1wa FOR BUILDING WATER SERVICE INFORMATION.
2. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.
PLAN VIEW SCALE

PROFILE SCALE: HORIZONTAL - 1" = 40'
VERTICAL - 1" = 4'

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PLAN AND PROFILE
ROUTE 2A WATERLINE REPLACEMENT
STA. 34+00.00W TO STA. 37+37.73W
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

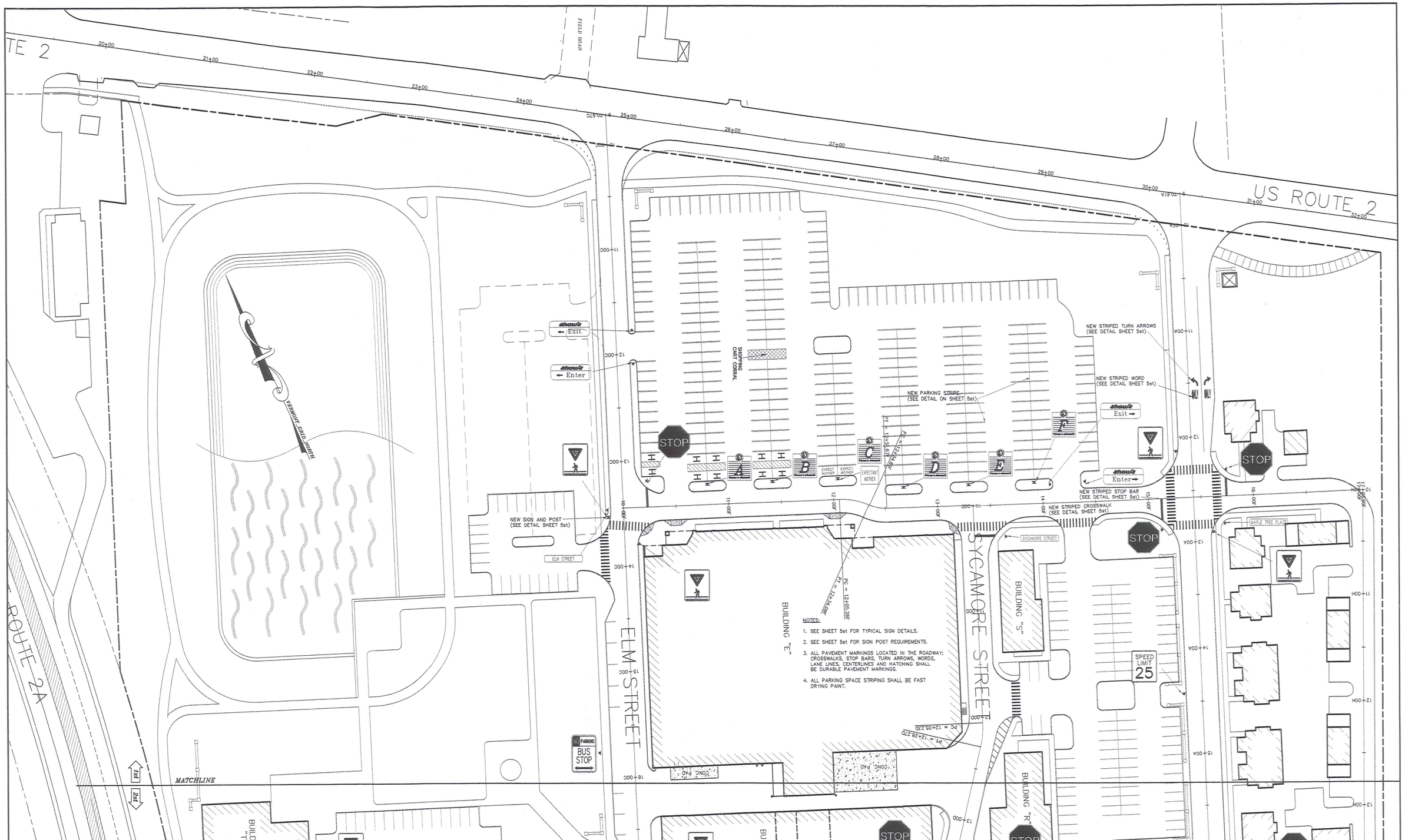
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	P-W3

Fri Sep 22 12:36:53 2000



NOTES:

1. SEE SHEET 5st FOR TYPICAL SIGN DETAILS.
2. SEE SHEET 5st FOR SIGN POST REQUIREMENTS.
3. ALL PAVEMENT MARKINGS LOCATED IN THE ROADWAY; CROSSWALKS, STOP BARS, TURN ARROWS, WORDS, LANE LINES, CENTERLINES AND HATCHING SHALL BE DURABLE PAVEMENT MARKINGS.
4. ALL PARKING SPACE STRIPING SHALL BE FAST DRYING PAINT.

GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PAVEMENT MARKINGS & SIGNAGE PLAN
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

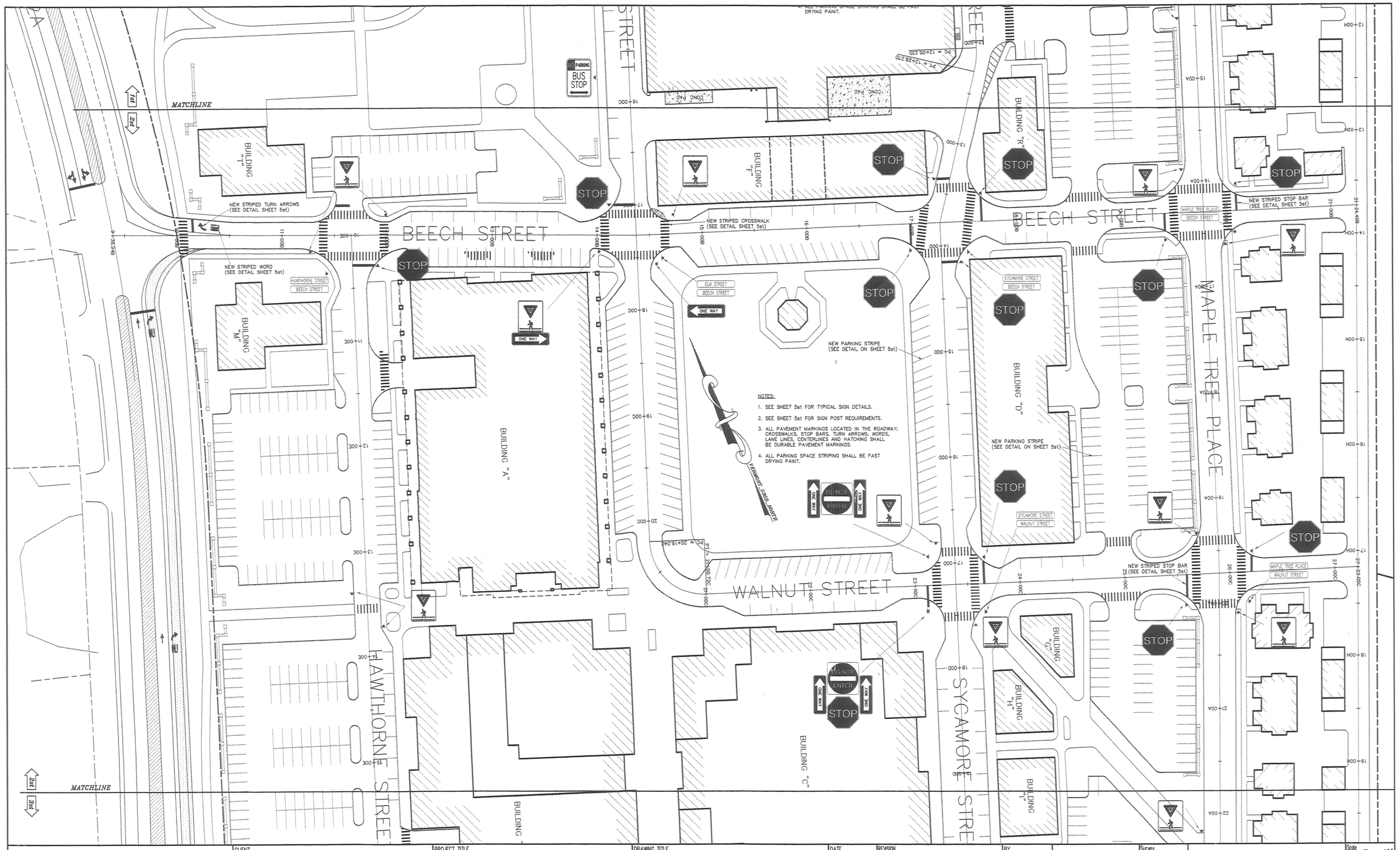
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	1st

Wed Sep 06 14:26:19 2000



GRAPHIC SCALE
40 0 40 80 160
(IN FEET)
1 inch = 40 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PAVEMENT MARKINGS & SIGNAGE PLAN
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

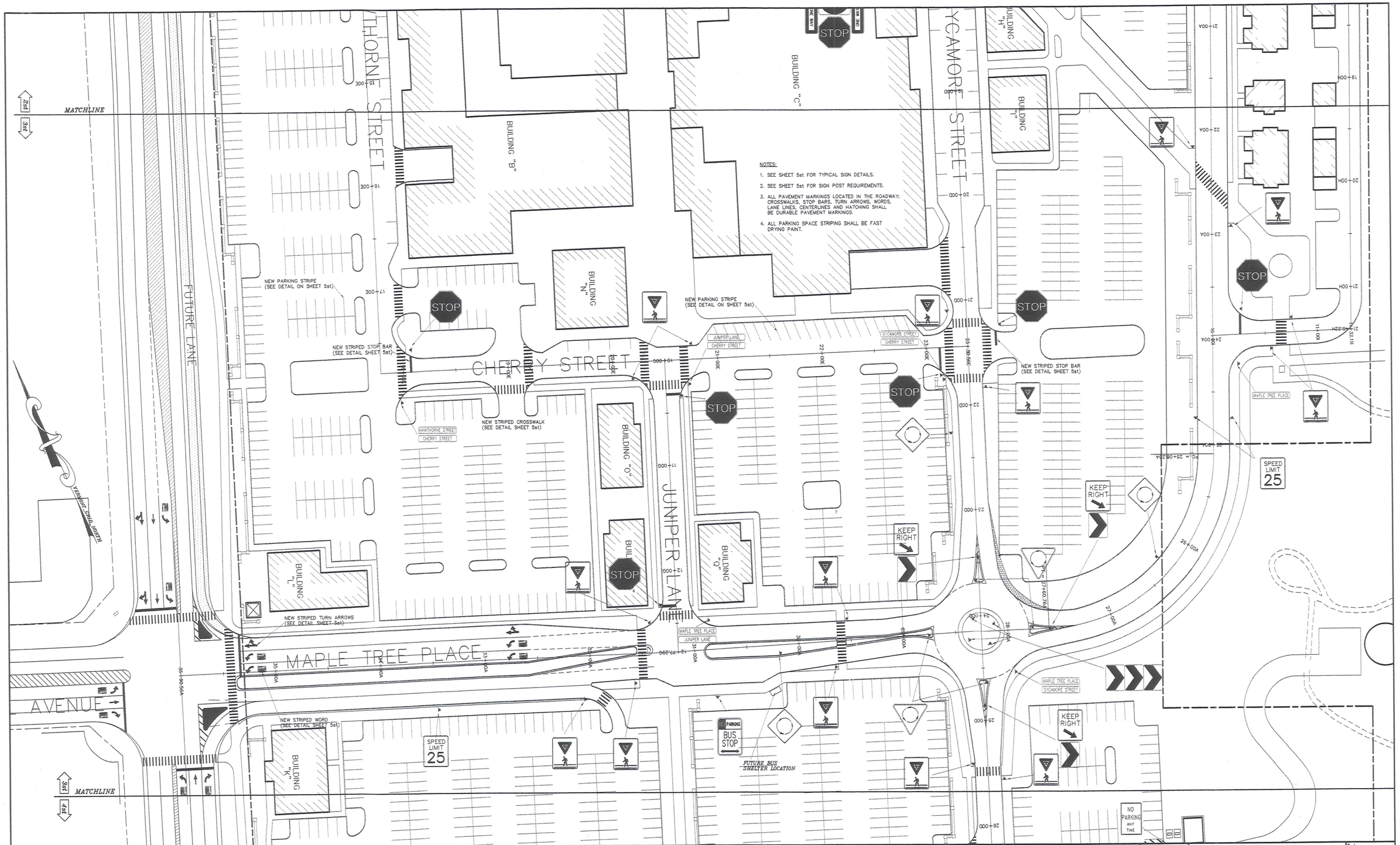
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-298
File	
Drawing	2st

Wed Sep 06 14:35:45 2000



CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	PAVEMENT MARKINGS & SIGNAGE PLAN ~PROGRESS PLAN~

DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

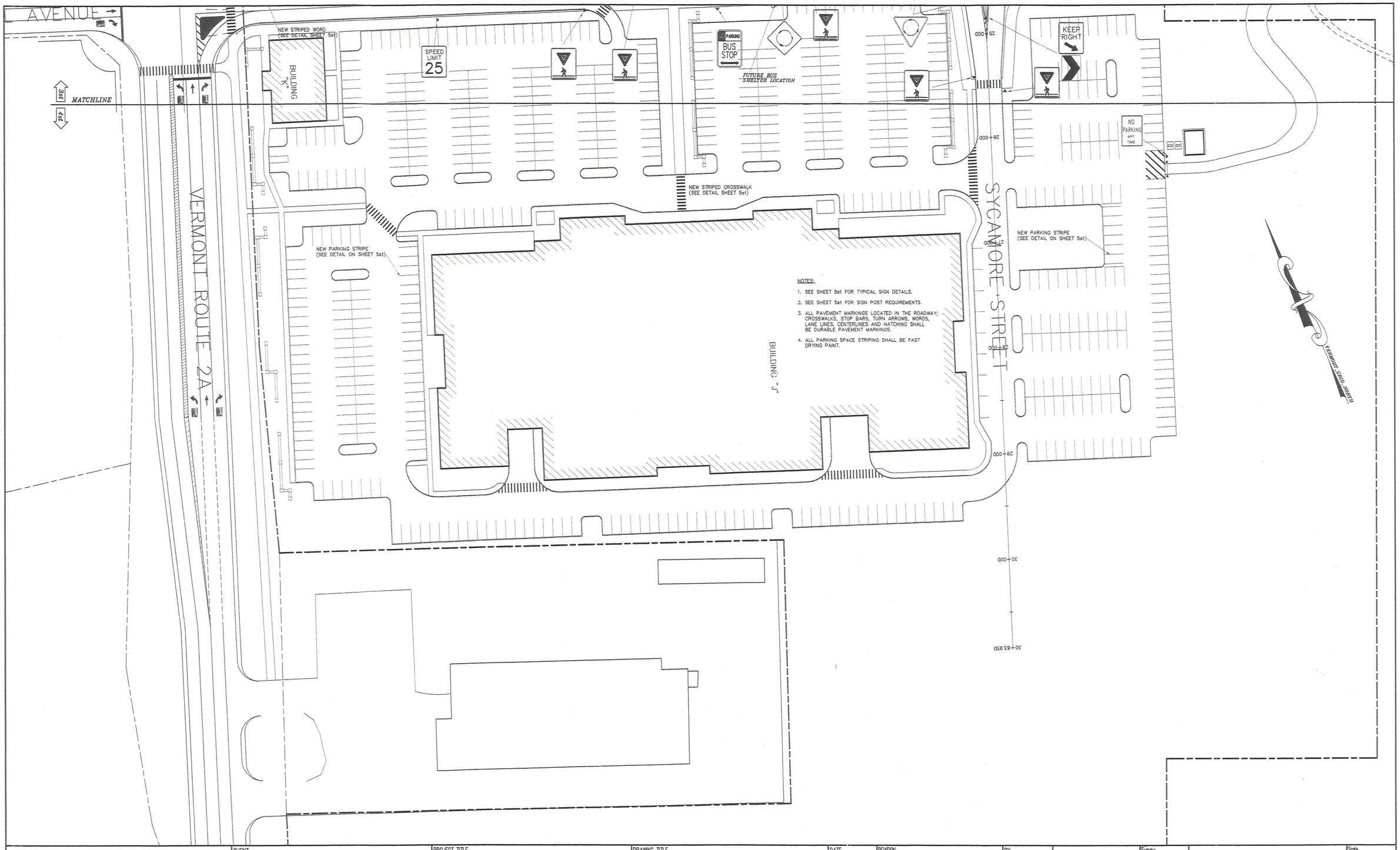
STATE OF VERMONT · RICHARD F. HAMLIN · No. 5260 · REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	3st

Wed Sep 06 14:44:42 2000



NOTES:

1. SEE SHEET 5st FOR TYPICAL SIGN DETAILS.
2. SEE SHEET 5st FOR SIGN POST REQUIREMENTS.
3. ALL PAVEMENT MARKINGS LOCATED IN THE ROADWAY; CROSSWALKS, STOP BARS, TURN ARROWS, WORDS, LANE LINES, CENTERLINES AND HATCHING SHALL BE DURABLE PAVEMENT MARKINGS.
4. ALL PARKING SPACE STRIPING SHALL BE FAST DRYING PAINT.

GRAPHIC SCALE

40 0 40 80 160

(IN FEET)
1 inch = 40 ft.

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PAVEMENT MARKINGS & SIGNAGE PLAN

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

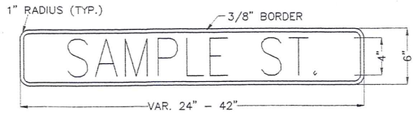
Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 40'
Job	99-293
File	
Drawing	4st

Wed Sep 06 14:53:25 2000

SIGN SCHEDULE

SIGN SYMBOL	MUTCD DESIGNATION	SIGN DIMENSIONS
DO NOT ENTER	R5–1 STD.	30" X 30" (6.25 S.F.)
STOP	R1–1 STD.	30" X 30" (5.20 S.F.)
ONE WAY	R6–1(L) STD.	12" X 36" (3.00 S.F.)
ONE WAY	R6–1(R) STD.	12" X 36" (3.00 S.F.)
KEEP RIGHT	R4–7b STD.	24" X 30" (5.00 S.F.)
	STD.	30" X 30" X 30" (7.50 S.F.)
	STD.	30" X 30" (6.25 S.F.)
	W1–8 MIN.	12" X 18" (1.50 S.F.)
NO PARKING BUS STOP	R7–107 STD.	12" X 18" (1.50 S.F.)
NO PARKING ANY TIME	R7–1 STD.	12" X 18" (1.50 S.F.)
	VR–004A STD.	24" X 30" (5.00 S.F.)
SPEED LIMIT 25	R2–1 STD.	24" X 30" (5.00 S.F.)
SAMPLE ST.	D3	PER TOWN STANDARDS SEE THIS SHEET



NOTES

MATERIALS:

The sign base materials used for the street name signs may either of the following:
A – Extruded aluminum blades with reflective sheeting
B – Flat aluminum blades with reflective sheeting

COLORS:

The signs shall have a reflectorized white or silver text (stick on reflective letters) on a reflectorized green background, the colors shall conform with those found in standard color tolerance charts as approved by the U.S. Department of Transportation, Federal Highway Administration.

LETTERING:

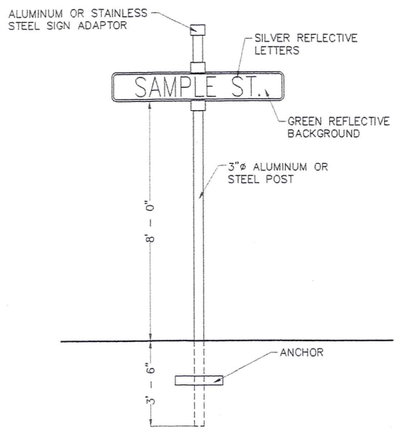
Letters and digits shall conform with the standard alphabets for highway signs printed by the Federal Highway Administration.

SPECIFICATIONS:

The sign shall meet the Vermont State Specifications for "Traffic Signs". The material of the blades shall be either extruded aluminum with a 0.25 inch flange thickness and a 0.090 inch webb (min.) or flat sheet aluminum with a minimum thickness of 0.125 inch. The preferred mounting method for street signs is post top mounting brackets. Hardware for mounting signs to post shall be subsidiary to other items. Minimum vertical clearance is 8 feet to the bottom of the sign. Signs shall have text on both sides.

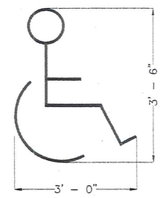
SIZE:

Use a 6 inch high blade in lengths of 24", 30", 36", or 42". Use series "B" lettering (minimum) with 4 inch high letters for the street name, 3 inch letters for other text.



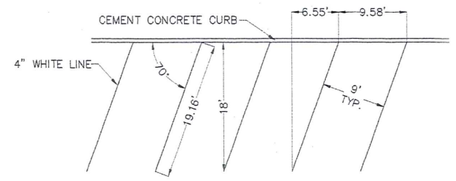
STREET SIGN DETAIL

NTS



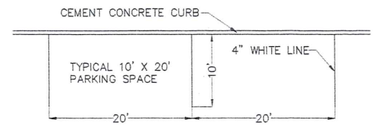
HANDICAP MARKING DETAIL

NTS



ANGLED PARKING SPACE DETAIL

NTS



PARALLEL PARKING SPACE DETAIL

NTS

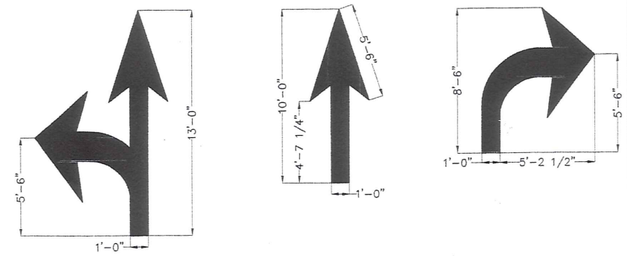
NOTES

Surfaces which are to receive markings are to be thoroughly cleaned of all dirt, dust, grease, oil, curing compounds, and other foreign substances. Markings shall not be applied over damp or wet surfaces, or when the temperature is below the manufacturer's suggested application temperature.

Markings shall be placed on fresh pavement surfaces. The Contractor shall be responsible for coordinating the placement of new pavement markings between the paving sub–contractor and the markings sub–contractor.

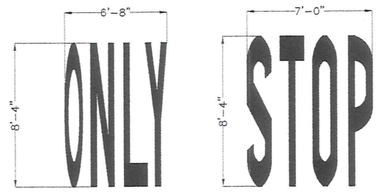
Markings shall be 3–M Stamark Intersection Grade Tape, Series 420.

Parking space lines shall be a single coat of fast drying paint having a width of 4 inches and white in color.



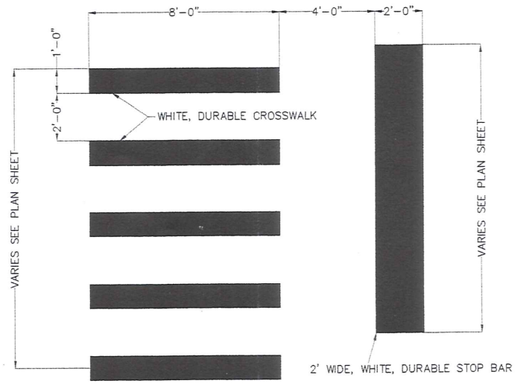
ARROW DETAILS

NTS



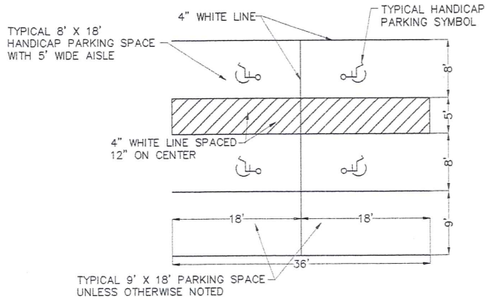
WORD MARKING DETAILS

NTS



CROSSWALK & STOP BAR DETAIL

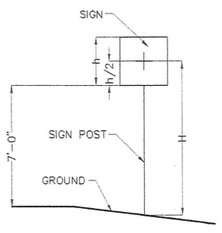
NTS

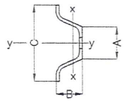


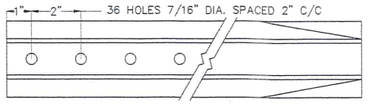
PARKING SPACE DETAIL

NTS

POST SELECTION CHART		
SIGN AREA (S.F.) X H (FT) ≤ SV (SELECTION VALUE)		
POST SIZE	SV	DESIGN CRITERIA
2 LB/FT. (ONE POST INSTALLATION)	32	WIND SPEED = 60 MPH (10–YEAR MEAN RECURRENCE INTERVAL) WIND PRESSURE = 13 PSF STEEL MIN. YIELD Fy = 50,000 PSI ALLOWABLE STRESS = (1.4) 0.60 Fy
2 LB/FT. (TWO POST INSTALLATION)	62	
3 LB/FT. (ONE POST INSTALLATION)	107	







POST MAY BE SQUARE OR TAPERED ON BOTTOM END

POST SIZE (LB/FT.)	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	SECTION MODULUS, X–X
2	1–9/32"	1–3/64"	3–1/16"	0.225 $IN.^3$
3	1–5/16"	1–7/8"	3–1/2"	0.403 $IN.^3$

SIMILAR DIMENSIONS ARE ACCEPTABLE, HOWEVER MINIMUM SECTION MODULUS VALUES SHALL BE MET.

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD–CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	STRIPING & SIGNAGE TYPICAL DETAILS ~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT RICHARD F. HAMLIN No. 5260 REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	SOL/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99–293
File	
Drawing	5st

Thu Sep 07 11:07:41 2000

NOTE:
CONTRACTOR MUST INSTALL 6' HIGH CHAIN LINK FENCE AROUND PERIMETER OF AREAS SHOWN PRIOR TO CONSTRUCTION.

VERMONT GRID NORTH

EXISTING WETLANDS NOT TO BE DISTURBED

EXISTING 42" OAK TREE NOT TO BE DISTURBED

ARCHAEOLOGIC ZONE NOT TO BE DISTURBED

6' HIGH CHAIN LINK FENCE

EXISTING WETLANDS NOT TO BE DISTURBED

6' HIGH CHAIN LINK FENCE

6' HIGH CHAIN LINK FENCE

EXISTING WETLANDS NOT TO BE DISTURBED

6' HIGH CHAIN LINK FENCE

EXISTING WETLANDS NOT TO BE DISTURBED

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6' HIGH CHAIN LINK FENCE

EXISTING WETLANDS NOT TO BE DISTURBED

6' HIGH CHAIN LINK FENCE

EXISTING WETLANDS NOT TO BE DISTURBED

6' HIGH CHAIN LINK FENCE

BUILDING "A"
BUILDING "B"
BUILDING "C"
BUILDING "D"
BUILDING "E"
BUILDING "F"
BUILDING "G"
BUILDING "H"
BUILDING "I"
BUILDING "J"
BUILDING "K"
BUILDING "L"
BUILDING "M"
BUILDING "N"
BUILDING "O"
BUILDING "P"
BUILDING "Q"
BUILDING "R"
BUILDING "S"
BUILDING "T"
BUILDING "U"
BUILDING "V"

FUTURE LANE

GRAPHIC SCALE
100 0 100 200 400
(IN FEET)
1 inch = 100 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
AREAS OF NON-DISTURBANCE
ARCHAEOLOGIC ZONES,
WETLAND ZONES, AND
OAK TREE SITE PLAN
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

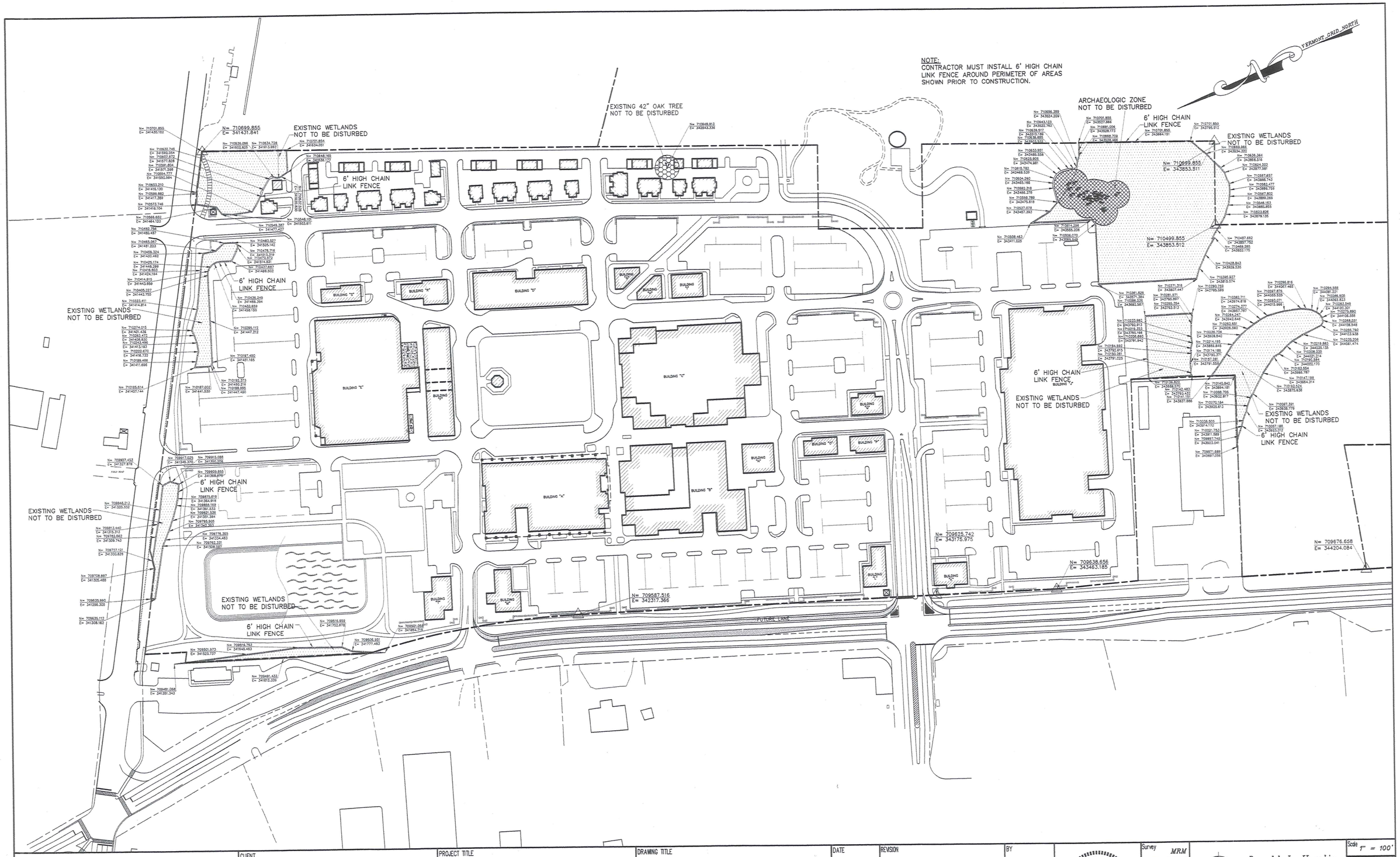
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin
Consulting
Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 100'
Job	99-293
File	
Drawing	1sz

Mon Sep 22 12:23:55 2000



GRAPHIC SCALE

100 0 100 200 400

(IN FEET)
1 inch = 100 ft.

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	AREAS OF NON-DISTURBANCE ARCHAEOLOGIC ZONES, WETLAND ZONES, AND OAK TREE STAKEOUT PLAN ~PROGRESS PLAN~

DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

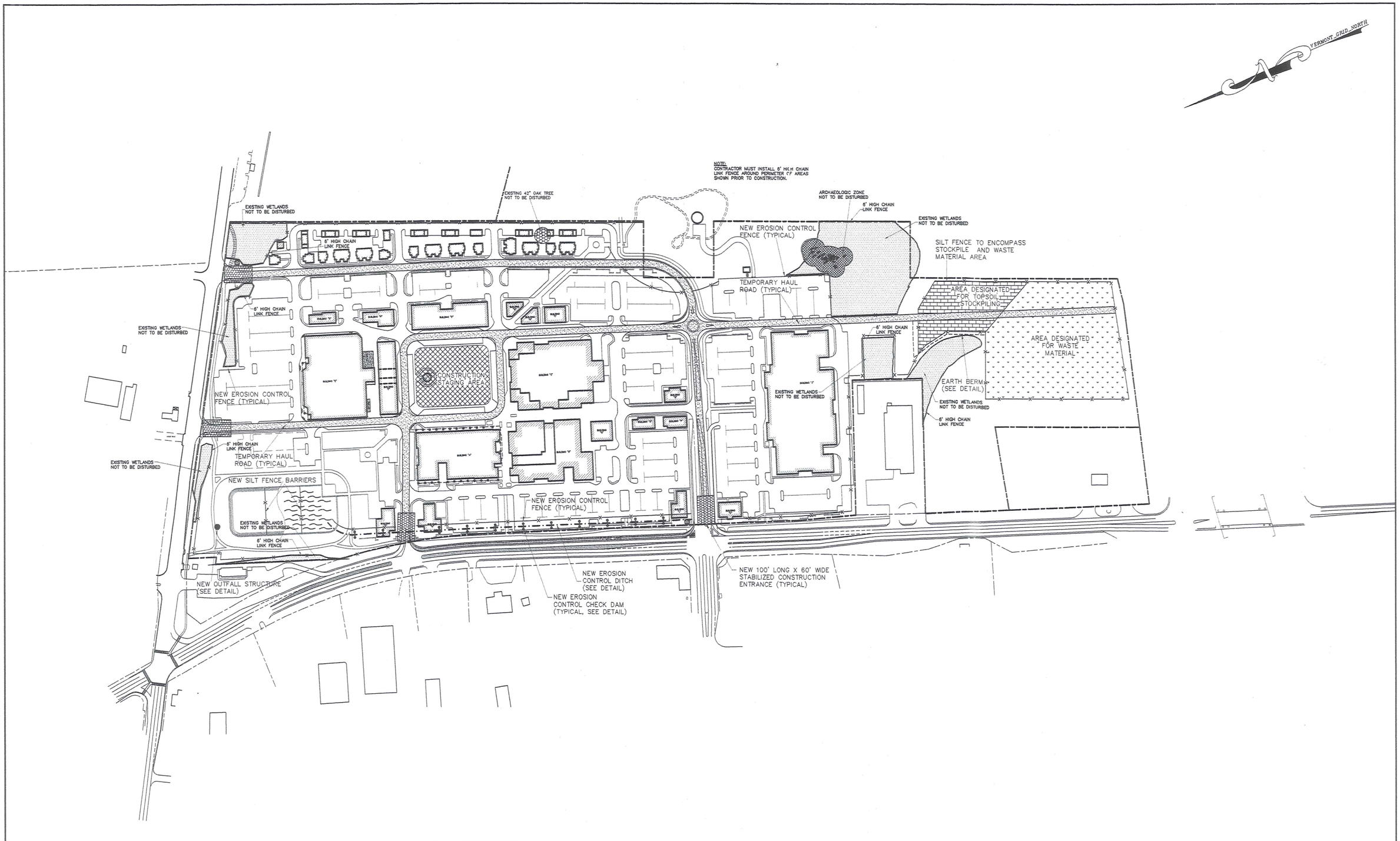
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	RFH
Drawn	SOL
Checked	RFH
Date	6/8/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 100'
Job	99-293
File	
Drawing	2sz

Fri Sep 22 14:52:59 2000



GRAPHIC SCALE

150 0 150 300 600

(IN FEET)
1 inch = 150 ft.

CLIENT	PROJECT TITLE	DRAWING TITLE	DATE	REVISION	BY
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	EROSION CONTROL LOCATION PLAN ~PROGRESS PLAN~	DATE	REVISION	BY
			DATE	REVISION	BY
			DATE	REVISION	BY
			DATE	REVISION	BY
			DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED
PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 150'
Job	99-293
File	
Drawing	1er

Mon Sep 11 12:41:39 2000

EROSION CONTROL

WORK INCLUDED: THE CONTRACTOR SHALL CARRY OUT HIS OPERATIONS IN SUCH A MANNER TO GIVE ADEQUATE PROTECTION TO WATER COURSES AND MINIMIZE SURFACE EROSION.

WITHIN 14 CALENDAR DAYS AFTER THE NOTICE TO PROCEED ON THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR ACCEPTANCE, THE CONTRACTOR'S PROPOSED METHODS OF EROSION CONTROL AND STREAM PROTECTION. NO WORK SHALL BE STARTED ON THE AREAS WHICH ARE HIGHLY SUSCEPTIBLE TO EROSION, AS DIRECTED BY THE ENGINEER, OR WITHIN EXISTING DRAINAGE CHANNELS UNTIL THE METHODS OF EROSION CONTROL , TO BE EMPLOYED ON THE PROJECT, HAVE BEEN APPROVED BY THE ENGINEER.

THE ENGINEER HAS THE AUTHORITY TO LIMIT THE SURFACE AREA OF ERODIBLE EARTH MATERIAL EXPOSED BY EXCAVATION, BORROW AND FILL OPERATIONS AND TO DIRECT THE CONTRACTOR TO PROVIDE IMMEDIATE EROSION CONTROL MEASURES TO PREVENT CONTAMINATION OF ADJACENT STREAMS OR OTHER WATER COURSES AND AREAS OF WATER IMPOUNDMENT. THESE MEASURES SHALL INCLUDE BUT NOT BE LIMITED TO, HAYBALE CHECK DAMS, HAYBALES, OR MULCHING AND MATTING. AS THE EXCAVATION PROCEEDS, CUT SLOPES SHALL BE SEEDED AND MULCHED TO THE EXTENT CONSIDERED DESIRABLE AND PRACTICAL BY THE ENGINEER. THE EXPOSURE OF UNCOMPLETED CUT SLOPES AND EMBANKMENTS TO THE ELEMENTS SHALL BE AS SHORT AS PRACTICAL. SEEDING, MULCHING, AND INSTALLATION OF EROSION CONTROL SHRUBBERY OR OTHER DESIGNED TREATMENT SHOULD BE INITIATED PROMPTLY AND CONCURRENTLY WITH THE OTHER WORK.

THE CONTRACTOR WILL BE REQUIRED TO INCORPORATE ALL PERMANENT EROSION CONTROL FEATURES INTO THE PROJECT AT THE EARLIEST PRACTICAL TIME AS OUTLINED IN HIS ACCEPTED SCHEDULE.

IF AND WHEN CONDITIONS DEVELOP THAT WILL SUSPEND CONSTRUCTION OPERATIONS FOR ANY APPRECIABLE LENGTH OF TIME, THE EXCAVATION AND EMBANKMENT AREAS SHALL BE SHAPED IN SUCH A MANNER THAT THE RUNOFF OF WATER MAY BE INTERCEPTED AND DIVERTED TO POINTS WHERE THE LEAST EROSION SHALL RESULT. SLOPE DRAINS SHALL BE INSTALLED AS SOON AS POSSIBLE TO ASSIST IN CARRYING THIS RUNOFF. IF THESE PREVENTION MEASURES SHOULD FAIL, AND AN APPRECIABLE AMOUNT OF MATERIAL BEGINS TO ERODE INTO A RIVER, STREAM OR IMPOUNDMENT, THE CONTRACTOR SHALL ACT IMMEDIATELY TO CORRECT AND PREVENT FURTHER EROSION.

EROSION CONTROL MEASURES SHALL BE CONTINUED UNTIL THE PERMANENT DRAINAGE FACILITIES HAVE BEEN CONSTRUCTED AND UNTIL GRASS SEEDED SLOPES OR SPECIALLY INSTALLED SHRUBBERY IS ESTABLISHED SUFFICIENTLY TO BE AN EFFECTIVE DETERRENT AGAINST EROSION.

UNLESS OTHERWISE APPROVED IN WRITING, MECHANIZED EQUIPMENT SHALL NOT BE OPERATED IN LIVE STREAMS EXCEPT AS MAY BE REQUIRED TO CONSTRUCT CHANGES IN CHANNEL AND PERMANENT OR TEMPORARY STRUCTURES. RIVERS, STREAMS AND IMPOUNDMENTS SHALL AS SOON AS CONSTRUCTION WILL ALLOW, BE CLEARED OF ALL FALSE WORK, PILING AND DEBRIS CAUSED BY THE CONSTRUCTION OPERATIONS.

THE CONTRACTOR SHALL PERFORM ALL OF THE STORM WATER AND EROSION CONTROL SPECIFICATIONS AND DETAILS SHOWN ON THE CONTRACT DRAWINGS INCLUDING INSTALLATION, MAINTENANCE AND REMOVAL OF TEMPORARY DAMS AND INLET PROTECTION.

SEQUENCING OF EROSION CONTROL

1. TEMPORARY EROSION CONTROL DURING CONSTRUCTION

GENERAL INFORMATION - TEMPORARY EROSION CONTROL STRUCTURES WILL BE INSTALLED AROUND THE PERIMETER OF THE SITE IN ORDER TO INTERCEPT AND RETAIN ANY EROSION WHICH MAY TAKE PLACE DITCHES WITH CHECK DAMS WILL COLLECT RUN-OFF AND ROUTE IT INTO THE POND. THE POND WILL ACT AS A SEDIMENTATION BASIN BY REMOVING ANY SOILS WHICH WERE NOT RETAINED IN THE CHECK DAMS. THE POND WILL HAVE ADDITIONAL SILT FENCE FILTERS TO PROVIDE AN EXTRA LEVEL OF INSURANCE THAT UNWANTED SOIL PARTICLES DO NOT ENTER DOWNSTREAM WATERS. THE POND OUTLET WILL BE FORMED BY CONCRETE CATCH BASINS WHICH WILL CONTROL THE OUTLET FLOW RATES.

THERE WILL BE FOUR ENTRANCE POINTS ON THE SITE FOR CONSTRUCTION VEHICLES IN ORDER TO MINIMIZE TRAFFIC DISTURBANCE AND MAINTAIN CONTROL OVER VEHICLES ENTERING AND EXITING THE SITE. THE ENTRANCE DRIVES ARE TO BE CONSTRUCTED OF CRUSHED STONE AT THE LOCATION AND LENGTH INDICATED ON THE EROSION CONTROL PLAN. THE USE OF STABILIZED, GRANULAR, ENTRANCE ROUTES WILL MINIMIZE THE TRACKING OF SOILS ONTO THE PUBLIC ROAD. DUST CONTROL AND ROADWAY CLEANUP WILL ALSO BE A ROUTINE PROCEDURE TO MINIMIZE THE DISTURBANCE TO PUBLIC TRAFFIC.

THE SEQUENCING OF EROSION CONTROL PROCEDURES IS TO BE CARRIED OUT AS FOLLOWS:

1. ERECT CHAIN LINK FENCE AROUND ALL SENSITIVE AREAS TO KEEP EQUIPMENT AWAY FROM ZONES THAT ARE NOT TO BE DISTURBED.

2. CONSTRUCT AND MAINTAIN TEMPORARY STABILIZED CONSTRUCTION ENTRANCES AS INDICATED ON THE EROSION CONTROL PLANS.

3. CONSTRUCT AND MAINTAIN CONSTRUCTION STAGING AREA AND TEMPORARY HAUL ROADS TO THIS AREA.

4. THE POND IS TO BE EXCAVATED TO ITS FINISH GRADES AND PERIMETER LIMITS. EXCAVATED MATERIAL IS TO BE USED ON-SITE AS FILL. THE INSTALLATION OF THE GABION POND EDGES, POND GROMEMBRANE, AND POND OUTLETS WILL BE COMPLETED AS WELL AS THE ESTABLISHMENT OF GRASS COVER AROUND THE POND PERIMETER.

5. INSTALL SILT FENCE ALONG EASTERN, NORTHERN, AND SOUTHERN BOUNDARIES OF PARCEL AND CONSTRUCT DRAINAGE DITCHES WITH CHECK DAMS AND SILT FENCE ON THE WESTERN BOUNDARY OF PARCEL. ALL DISTURBED AREAS SHALL BE IMMEDIATELY RESEEDED AND COVERED WITH EROSION CONTROL BLANKET CONSTRUCTED OF BIODEGRADABLE OR PHOTO DEGRADABLE MATERIALS.

6. CONSTRUCT TEMPORARY HAUL ROADS TO THE TEMPORARY TOPSOIL STOCKPILE AREA. CONSTRUCT EARTHEN BERMS AND INSTALL SILT FENCE AND CHECK DAMS AROUND PERIMETER OF TEMPORARY STOCKPILE AREA.

7. BEGIN STRIPING OF TOPSOIL. STRIPPED TOPSOIL IS TO BE STOCKPILED AT THE DESIGNATED LOCATION. DUE TO THE NATURE OF THE PROPOSED DEVELOPMENT THERE WILL EXIST A SIGNIFICANT QUANTITY OF STRIPPED TOPSOIL IN EXCESS OF THAT TO BE USED IN THE RE-ESTABLISHMENT OF THE PROPOSED GREEN AREAS. THE CONTRACTOR WILL BE ENCOURAGED TO TRUCK THIS MATERIAL OFF-SITE IN ORDER TO MINIMIZE THE POTENTIAL FOR EROSION OF STOCKPILES TOPSOIL.

8. INSTALL STORM DRAINAGE PIPING, CATCH BASINS, AND UNDERDRAINS. SET ELEVATIONS OF CATCH BASINS AT THE TEMPORARY ELEVATION FOR THE CONSTRUCTION PHASE.

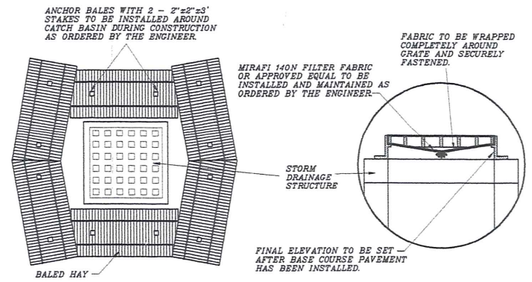
9. INSTALL TEMPORARY INLET PROTECTION AROUND ALL CATCH BASIN INLETS UPON INSTALLATION OF CATCH BASINS (SEE EROSION CONTROL DETAILS). MAINTAIN PROTECTION UNTIL SURROUNDING UPGRADE AREAS ARE PAVED.

10. PRIOR TO EXCAVATION AT THE CUT AREA NEAR THE WATER TANK, INSTALL SILT FENCE DOWNHILL OF AREA AS SHOWN ON PLANS.

11. TOPSOIL, SEED, AND MULCH ALL AREAS TO BE SEEDED AS WELL AS ANY AREAS INADVERTENTLY DISTURBED EARLY AS SITE CONSTRUCTION PERMITS FINISH GRADING THESE AREAS.

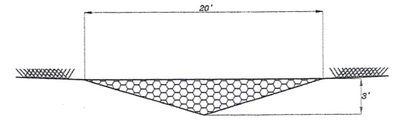
12. RESEED ALL SEEDED AREAS WHICH HAVE NOT GERMINATED WITHIN TWO WEEKS.

THE INSTALLATION AND MAINTENANCE OF THE EROSION CONTROL STRUCTURES AS INDICATED ON THE EROSION CONTROL PLAN COMBINED WITH THE HEAVY CLAYS AND SILTS AND FLAT SLOPES OF THE SITE WILL ENSURE THE CONTROL OF SOIL EROSION UNTIL THE COMPLETION OF CONSTRUCTION AND RE-ESTABLISHMENT OF GRASSED AREAS. ALL EROSION CONTROL MEASURES WILL BE CAREFULLY MONITORED, MAINTAINED, REPLACED AND MODIFIED AS REQUIRED BY THE ENGINEER OR APPROPRIATE STATE OFFICIALS.



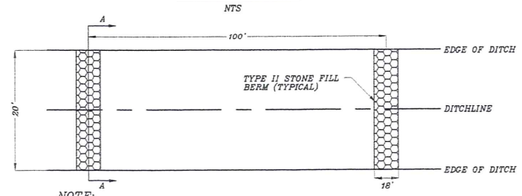
TYPICAL CATCH BASIN INLET PROTECTION

NTS



SECTION A-A

NTS

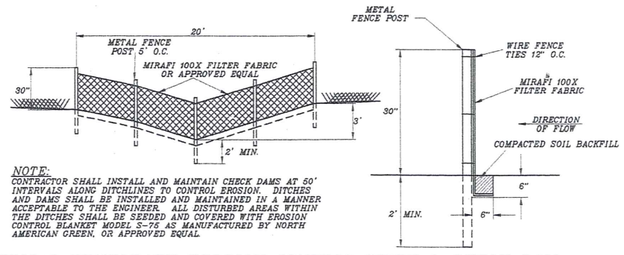


NOTE:
CONTRACTOR SHALL INSTALL AND MAINTAIN CHECK DAMS AT 100' INTERVALS ALONG DITCHLINE TO CONTROL EROSION. DITCHES AND DAMS SHALL BE INSTALLED AND MAINTAINED IN A MANNER ACCEPTABLE TO THE ENGINEER. ALL DISTURBED AREAS WITHIN THE DITCHES SHALL BE SEEDED AND COVERED WITH EROSION CONTROL BLANKET MODEL S-75 AS MANUFACTURED BY NORTH AMERICAN GREEN, OR APPROVED EQUAL.

TYPE II STONE FILL EROSION CONTROL CHECK DAM DETAIL

NTS

INSTALLATION DETAIL

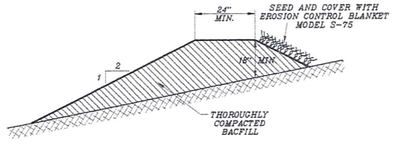


NOTE:
CONTRACTOR SHALL INSTALL AND MAINTAIN CHECK DAMS AT 50' INTERVALS ALONG DITCHLINES TO CONTROL EROSION. DITCHES AND DAMS SHALL BE INSTALLED AND MAINTAINED IN A MANNER ACCEPTABLE TO THE ENGINEER. ALL DISTURBED AREAS WITHIN THE DITCHES SHALL BE SEEDED AND COVERED WITH EROSION CONTROL BLANKET MODEL S-75 AS MANUFACTURED BY NORTH AMERICAN GREEN, OR APPROVED EQUAL.

TYPICAL TEMPORARY EROSION CONTROL DITCH & CHECK DAM

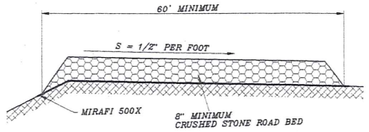
NTS

NOTE:
PRIOR TO CONSTRUCTION OF RETENTION POND, THE CONTRACTOR SHALL STRIP AND STOCKPILE ALL HYDRIC SOILS FROM THIS AREA. THE HYDRIC SOILS WILL THEN BE USED, IN PLACE OF TOPSOIL IN THE AREA BETWEEN THE GABION WALLS AND THE BIKE AND RECREATION PATH.



TYPICAL TEMPORARY EARTH BERM

NTS

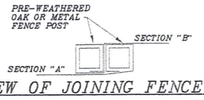


NOTES:

1. - STABILIZED ENTRANCE TO BE CONSTRUCTED AT LOCATIONS SHOWN ON PLANS.
2. - CRUSHED STONE SIZE TO BE 1-1/2" TO 2-1/2".
3. - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. PERIODIC TOP DRESSING WITH ADDITIONAL STONE MAY BE REQUIRED TO ACCEPTABLY MAINTAIN THE ENTRANCE ROAD. ALL SEDIMENT SPILLED, DROPPED, OR WASHED ONTO PUBLIC ROADS MUST BE REMOVED IMMEDIATELY.
4. - WHEN NECESSARY, THE WHEELS OF VEHICLES EXITING THE SITE SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO A PUBLIC ROADWAY. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN OR WATERCOURSE.

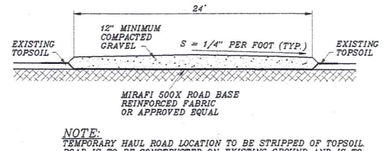
TYPICAL STABILIZED CONSTRUCTION ENTRANCE

NTS



TOP VIEW OF JOINING FENCE SECTIONS

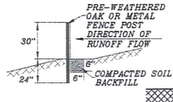
NTS



NOTE:
TEMPORARY HAUL ROAD LOCATION TO BE STRIPPED OF TOPSOIL. ROAD IS TO BE CONSTRUCTED ON EXISTING GROUND AND IS TO FOLLOW THE CONTOURS OF THE LAND.

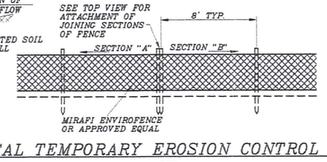
TYPICAL TEMPORARY HAUL ROAD

NTS



SIDE VIEW

NTS



TYPICAL TEMPORARY EROSION CONTROL FENCE

NTS

CLIENT	PROJECT TITLE	DRAWING TITLE	DATE	REVISION	BY
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	EROSION CONTROL DETAILS ~PROGRESS PLAN~			
			9/7/00	GENERAL REVISIONS	SOL

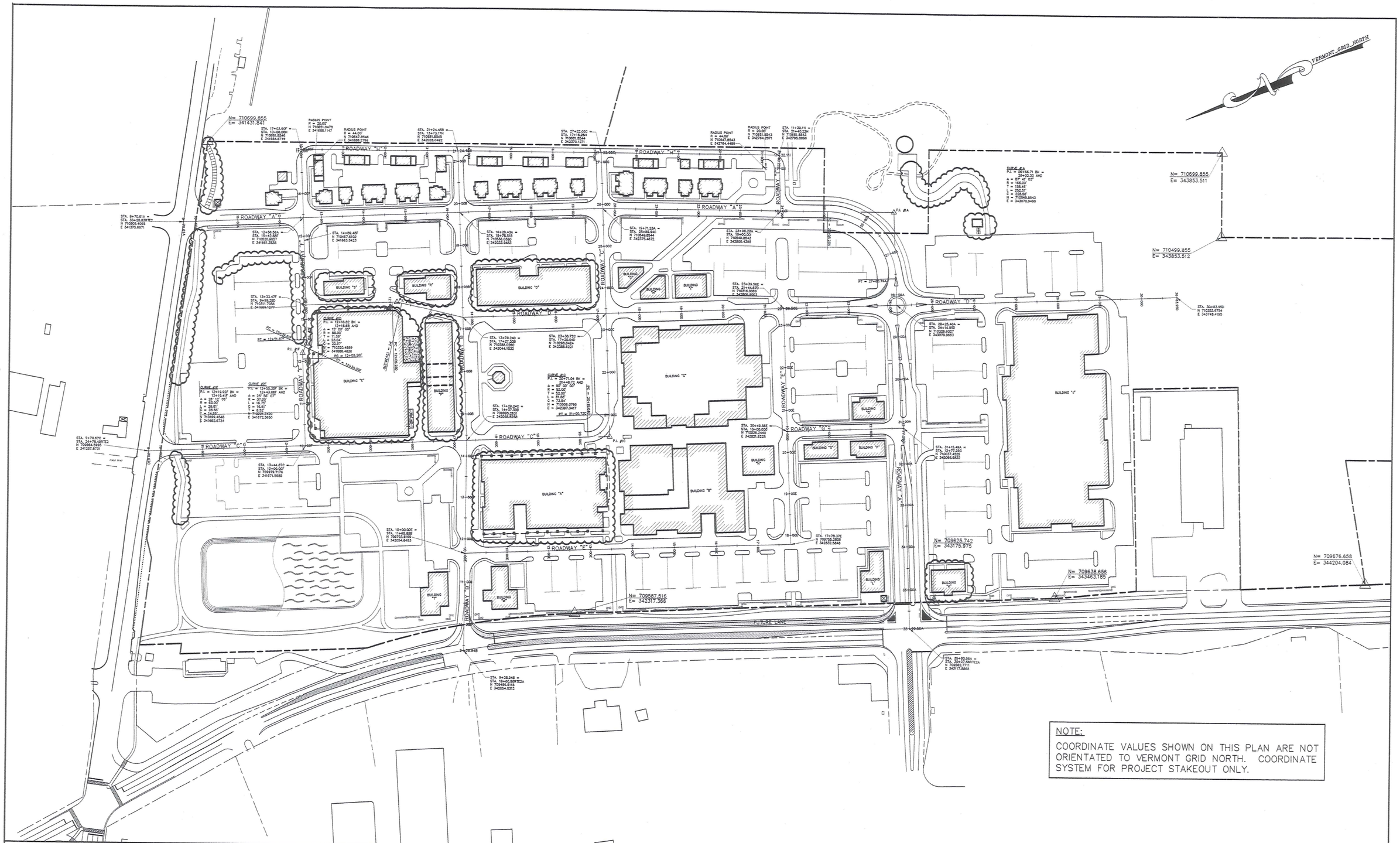
STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	JPK/RPH
Drawn	SOL
Checked	JPK/RPH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	2er

Thu Sep 07 10:57:47 2000



NOTE:

COORDINATE VALUES SHOWN ON THIS PLAN ARE NOT ORIENTATED TO VERMONT GRID NORTH. COORDINATE SYSTEM FOR PROJECT STAKEOUT ONLY.

GRAPHIC SCALE

100 0 100 200 400

(IN FEET)
1 inch = 100 ft.

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PROPOSED ROADWAY ALIGNMENTS
LOCATION PLAN

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

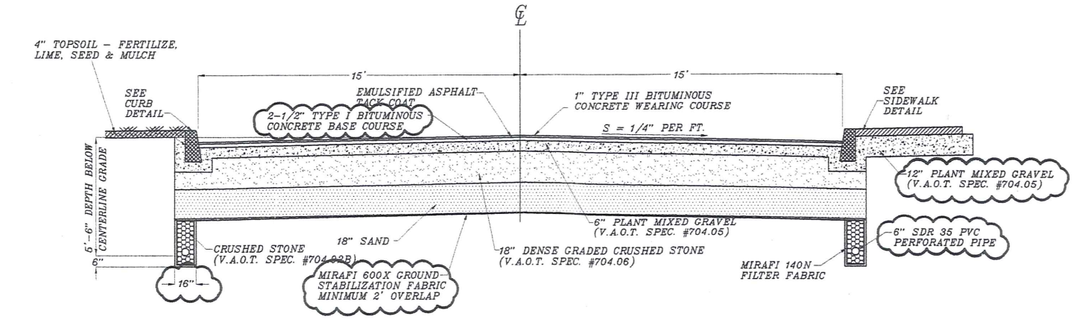
Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin
Consulting
Engineers, Inc.

136 Pearl Street
Essex Junction, Vermont

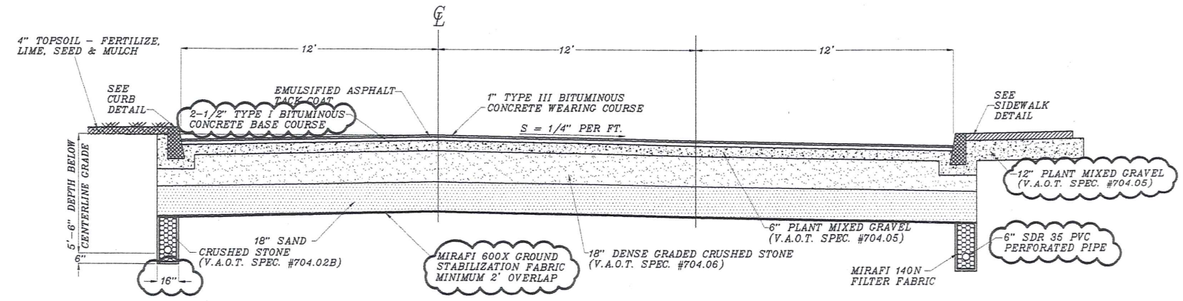
Scale	1" = 100'
Job	99-293
File	
Drawing	1rd

Wed Sep 20 16:04:19 2000



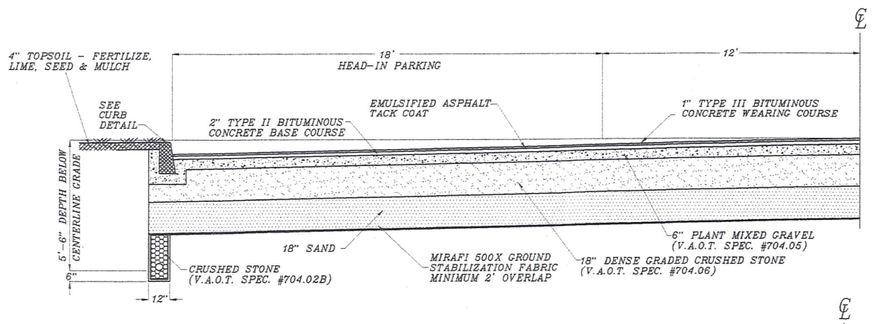
TYPICAL ROADWAY "A" ROAD CROSS SECTION with UNDERDRAIN

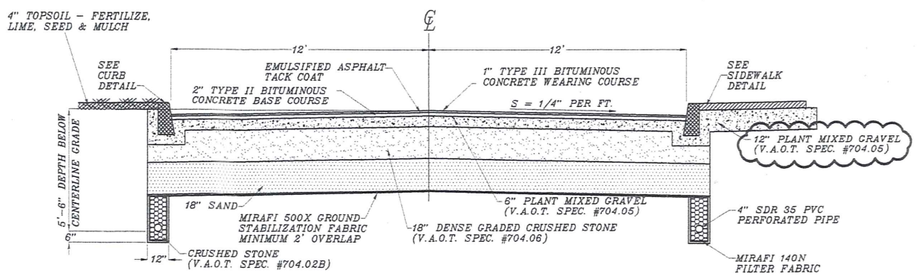
NTS



TYPICAL ROADWAY "A" ROAD CROSS SECTION with MULTIPLE LANES

NTS





TYPICAL MINOR ROAD CROSS SECTION with UNDERDRAIN

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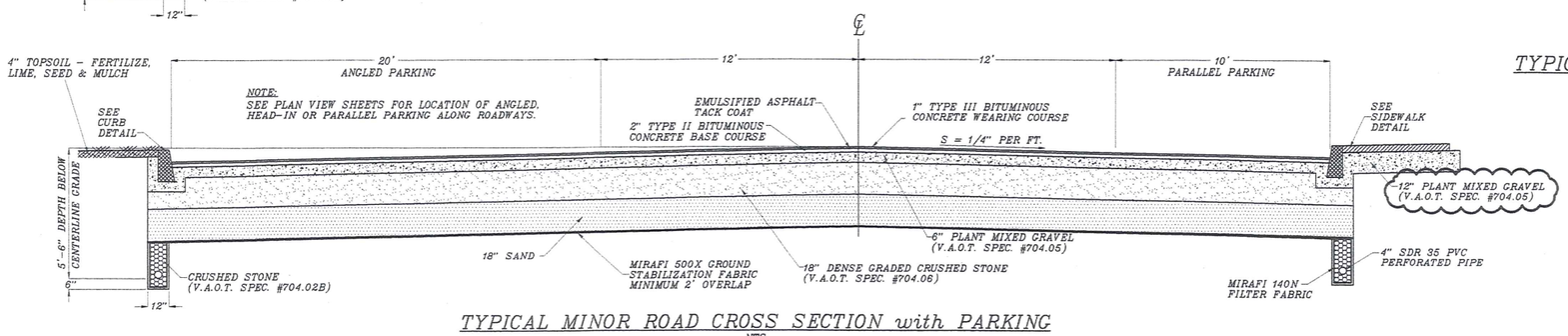


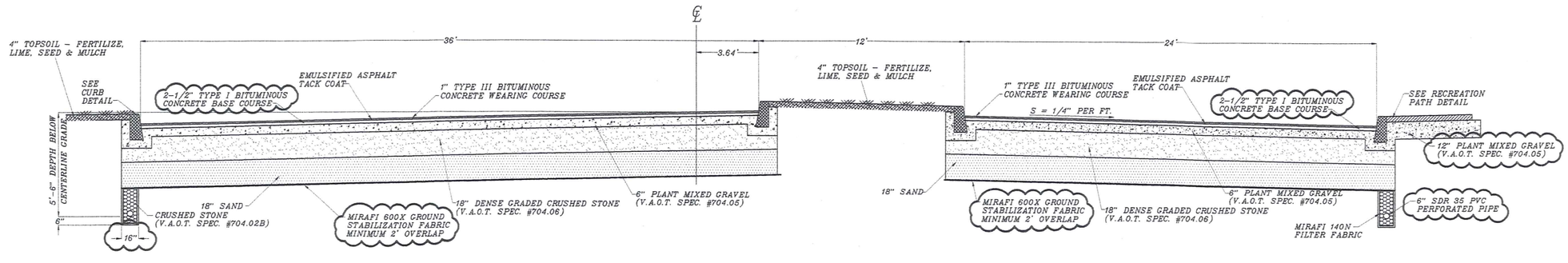
TYPICAL MINOR ROAD CROSS SECTION with PARKING

NTS

NOTES:

1. ALL 6" SDR 35 PVC UNDERDRAIN TO BE INSTALLED WITHIN THE TOWN OF WILLISTON RIGHT-OF-WAYS SHALL BE CONSTRUCTED WITH INVERT ELEVATION 5'-6" BELOW THE ROADWAY CENTERLINE ELEVATION.

2. ALL 4" SDR 35 PVC UNDERDRAIN TO BE INSTALLED WITH INVERT ELEVATION 5'-6" BELOW THE ROADWAY CENTERLINE ELEVATION.



TYPICAL ROADWAY "A" ROAD CROSS SECTION with MULTIPLE LANES & ISLAND

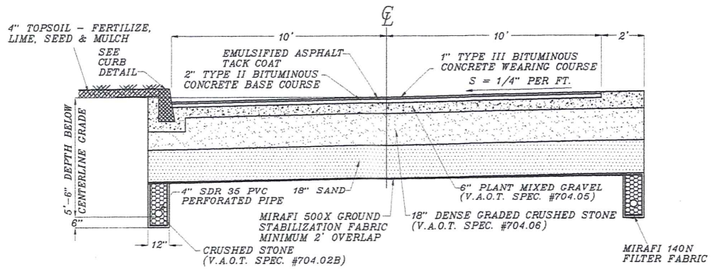
NTS

	CLIENT: STARWOOD-CERUZZI, LLC, 1720 POST ROAD, FAIRFIELD, CT. 06430	PROJECT TITLE: MAPLE TREE PLACE, PROPOSED SITE DEVELOPMENT, WILLISTON, VERMONT	DRAWING TITLE: ROAD SECTION DETAILS ~PROGRESS PLAN~	DATE / REVISION / BY			Survey ---	Scale SHOWN
				DATE / REVISION / BY			Design JPK/RFH	Job 99-293
				DATE / REVISION / BY			Drawn SOL	File
				DATE / REVISION / BY			Checked JPK/RFH	Drawing 2rd
				DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL	Date 3/21/00	

STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

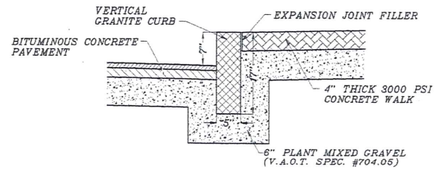
Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Wed Sep 20 16:24:59 2000



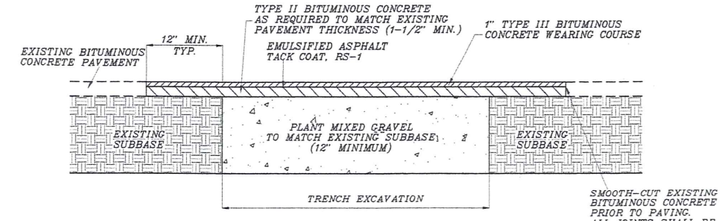
TYPICAL ROAD CROSS SECTION with SHOULDERS

NTS



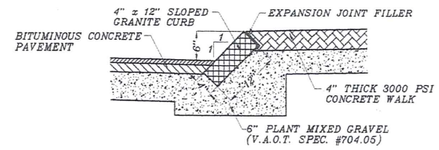
TYPICAL VERTICAL GRANITE CURB

NTS



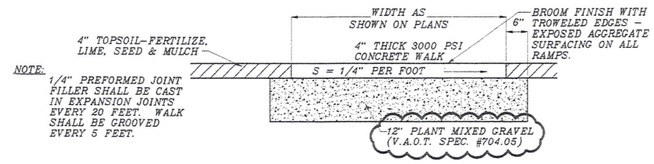
TYPICAL REPLACEMENT of EXISTING BITUMINOUS CONCRETE PAVEMENT

NTS



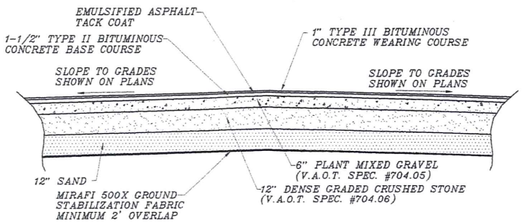
TYPICAL SLOPED GRANITE CURB

NTS



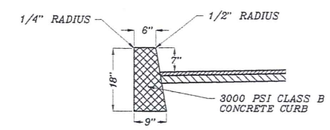
TYPICAL CEMENT CONCRETE SIDEWALK DETAIL

NTS



TYPICAL BITUMINOUS CONCRETE PARKING CROSS SECTION

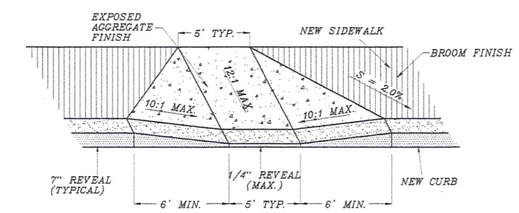
NTS



1. CURBING SHALL BE CONSTRUCTED IN 10' SECTIONS WITH 1/8" JOINTS BETWEEN SECTIONS.
2. EXPANSION JOINTS SHALL BE CONSTRUCTED EVERY 20' WITH 1/4" THICK PREFORMED EXPANSION JOINT FILLER MATERIAL CONFORMING TO AASHTO DESIGNATION M-1533.
3. CURB REVEAL AT DRIVEWAYS SHALL BE 1-1/2" MAX.
4. CURB REVEAL AT ALL HANDICAP ACCESSES SHALL BE A MAXIMUM OF 1/4".
5. ALL RADII LESS THAN 200' SHALL BE FORMED USING FLEXIBLE FORMS.
6. AN EMULSIFIED ASPHALT TACK COAT SHALL BE APPLIED TO THE CURB FACE PAVEMENT CONTACT AREA PRIOR TO PAVING.

TYPICAL CONCRETE CURB

NTS



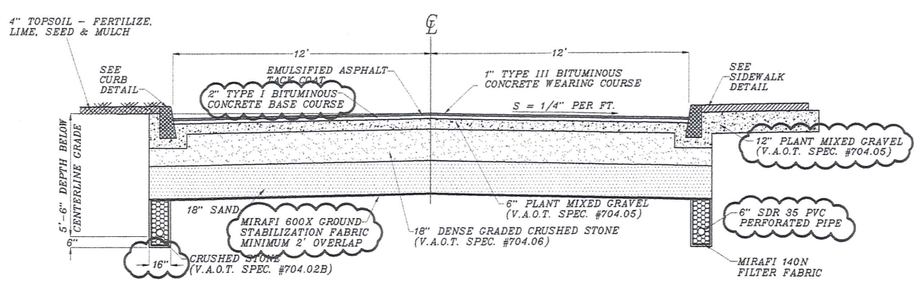
TYPICAL HANDICAP SIDEWALK ACCESS

NTS

NOTES:

1. ALL 6" SDR 35 PVC UNDERDRAIN TO BE INSTALLED WITHIN THE TOWN OF WILLISTON RIGHT-OF-WAYS SHALL BE CONSTRUCTED WITH INVERT ELEVATION 5'-6" BELOW THE ROADWAY CENTERLINE ELEVATION.

2. ALL 4" SDR 35 PVC UNDERDRAIN TO BE INSTALLED WITH INVERT ELEVATION 5'-6" BELOW THE ROADWAY CENTERLINE ELEVATION.



TYPICAL CONVEYED ROAD CROSS SECTION with UNDERDRAIN

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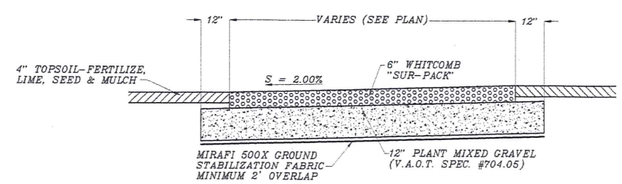
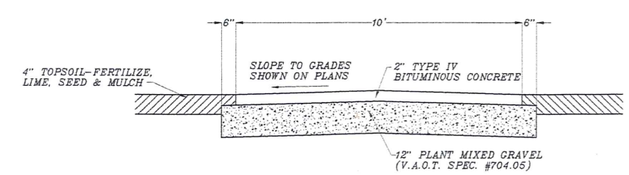


TYPICAL WATER TANK ACCESS DRIVE

NTS



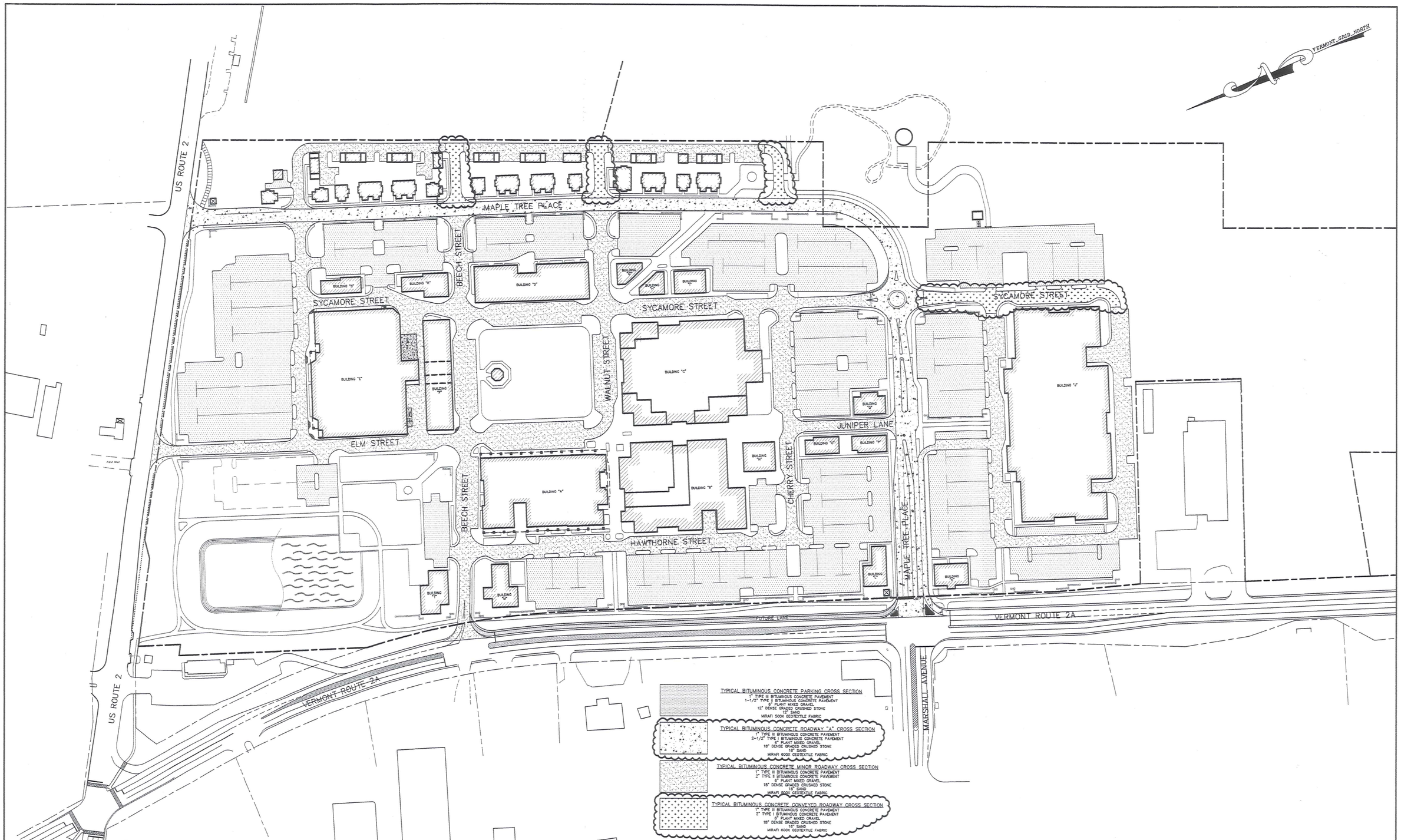
TYPICAL BITUMINOUS CONCRETE RECREATION PATH

NTS

	CLIENT: STARWOOD-CERUZZI, LLC, 1720 POST ROAD, FAIRFIELD, CT. 06430	PROJECT TITLE: MAPLE TREE PLACE, PROPOSED SITE DEVELOPMENT, WILLISTON, VERMONT	DRAWING TITLE: ROAD SECTION DETAILS ~PROGRESS PLAN~	DATE / REVISION / BY			Survey ---	Donald L. Hamlin Consulting Engineers, Inc.	Scale SHOWN
				DATE / REVISION / BY			Design JPK/RFH	136 Pearl Street, Essex Junction, Vermont	Job 99-293
				DATE / REVISION / BY			Drawn SOL		File
				DATE / REVISION / BY			Checked JPK/RFH		Drawing 3rd
				DATE 9/7/00 / REVISION GENERAL REVISIONS / BY SOL			Date 3/21/00		

STATE OF VERMONT · RICHARD F. HAMLIN · No. 5260 · REGISTERED PROFESSIONAL ENGINEER

Wed Sep 20 16:16:32 2000



GRAPHIC SCALE

100 0 100 200 400

(IN FEET)
1 inch = 100 ft.

CLIENT

STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE

MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE

PARKING AREA CROSS SECTION
LOCATION PLAN

~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK/RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin
Consulting
Engineers, Inc.

136 Pearl Street
Essex Junction, Vermont

Scale	1" = 100'
Job	99-293
File	
Drawing	4rd

Wed Sep 20 15:50:01 2000

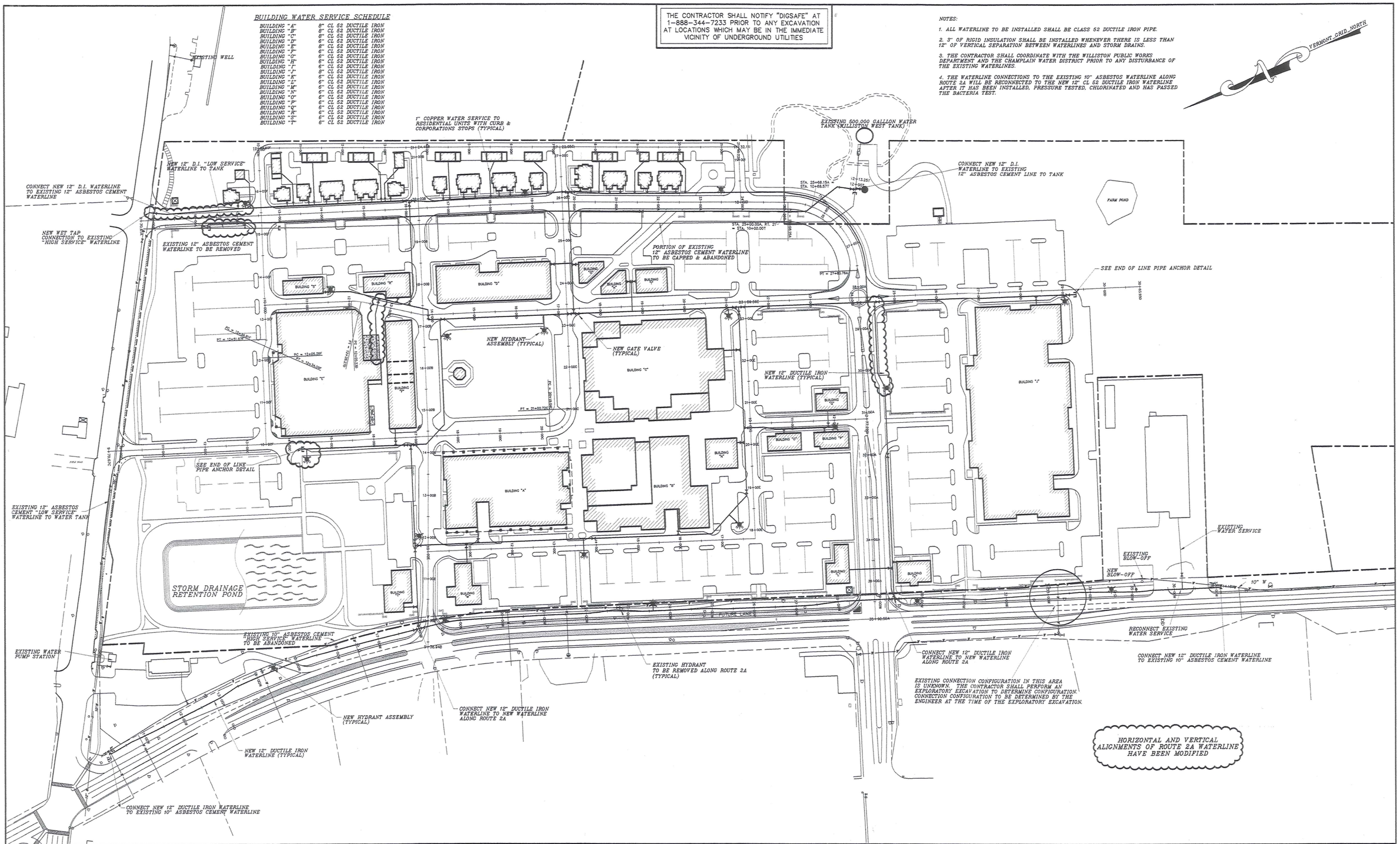
BUILDING WATER SERVICE SCHEDULE

BUILDING "A"	8" CL 52 DUCTILE IRON
BUILDING "B"	8" CL 52 DUCTILE IRON
BUILDING "C"	8" CL 52 DUCTILE IRON
BUILDING "D"	6" CL 52 DUCTILE IRON
BUILDING "E"	8" CL 52 DUCTILE IRON
BUILDING "F"	6" CL 52 DUCTILE IRON
BUILDING "G"	6" CL 52 DUCTILE IRON
BUILDING "H"	6" CL 52 DUCTILE IRON
BUILDING "I"	6" CL 52 DUCTILE IRON
BUILDING "J"	8" CL 52 DUCTILE IRON
BUILDING "K"	6" CL 52 DUCTILE IRON
BUILDING "L"	6" CL 52 DUCTILE IRON
BUILDING "M"	6" CL 52 DUCTILE IRON
BUILDING "N"	6" CL 52 DUCTILE IRON
BUILDING "O"	6" CL 52 DUCTILE IRON
BUILDING "P"	6" CL 52 DUCTILE IRON
BUILDING "Q"	6" CL 52 DUCTILE IRON
BUILDING "R"	6" CL 52 DUCTILE IRON
BUILDING "S"	6" CL 52 DUCTILE IRON
BUILDING "T"	6" CL 52 DUCTILE IRON

THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

NOTES:

1. ALL WATERLINE TO BE INSTALLED SHALL BE CLASS 52 DUCTILE IRON PIPE.
2. 3" OF RIGID INSULATION SHALL BE INSTALLED WHENEVER THERE IS LESS THAN 12" OF VERTICAL SEPARATION BETWEEN WATERLINES AND STORM DRAINS.
3. THE CONTRACTOR SHALL COORDINATE WITH THE WILLISTON PUBLIC WORKS DEPARTMENT AND THE CHAMPLAIN WATER DISTRICT PRIOR TO ANY DISTURBANCE OF THE EXISTING WATERLINES.
4. THE WATERLINE CONNECTIONS TO THE EXISTING 10" ASBESTOS WATERLINE ALONG ROUTE 2A WILL BE RECONNECTED TO THE NEW 12" CL 52 DUCTILE IRON WATERLINE AFTER IT HAS BEEN INSTALLED, PRESSURE TESTED, CHLORINATED AND HAS PASSED THE BACTERIA TEST.



GRAPHIC SCALE
100 0 100 200 400
(IN FEET)
1 inch = 100 ft.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
PROPOSED WATER SYSTEM LOCATION PLAN
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

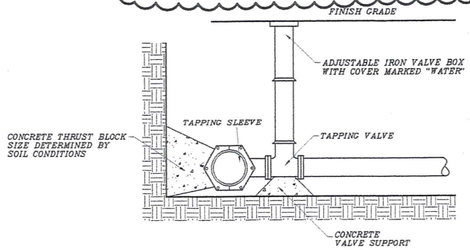
Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 100'
Job	99-293
File	
Drawing	1wa

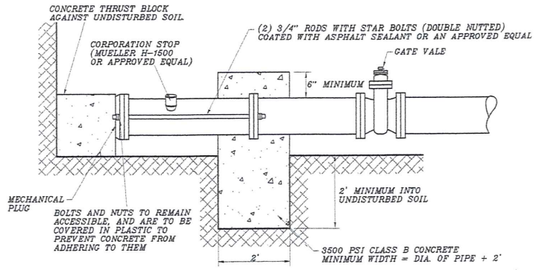
Fri Sep 22 13:10:02 2000

NOTES:
1. ALL FITTINGS THAT ARE TO HAVE CONCRETE POURED AROUND THEM ARE TO BE WRAPPED WITH 4 mil POLYETHYLENE PRIOR TO CONCRETE PLACEMENT.
2. THE EXISTING ASBESTOS CEMENT WATERLINES MUST BE EXPOSED AND THE OUTSIDE DIAMETER OF THE PIPE MEASURED PRIOR TO THE TAPPING SLEEVE BEING ORDERED BY THE CONTRACTOR.



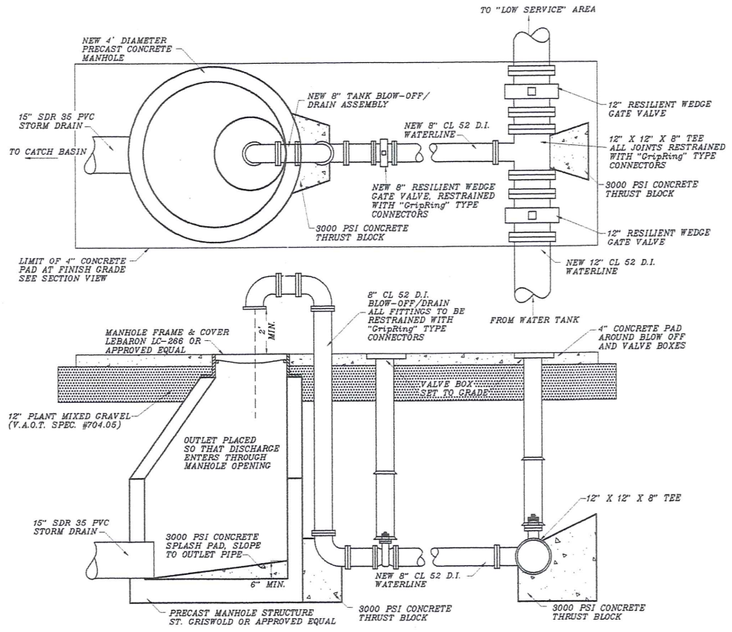
TYPICAL TAPPING SLEEVE AND VALVE DETAIL

NTS



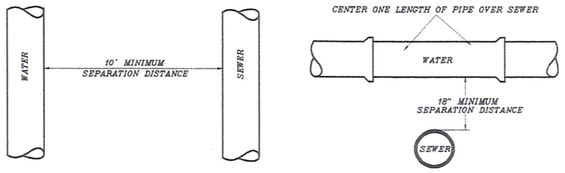
TYPICAL END OF LINE PIPE ANCHOR

NTS



WATER TANK BLOW-OFF/DRAIN DETAIL

NTS



PARALLEL INSTALLATION

CROSSINGS

SEWER - WATER SEPARATION NOTES

HORIZONTAL SEPARATION

SEWERS SHALL BE LAID AT LEAST TEN FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN. THE DISTANCE SHALL BE MEASURED EDGE OF PIPE TO EDGE OF PIPE. WHERE IMPRACTICAL DUE TO LOCAL GEOLOGIC OR OTHER PHYSICAL CONDITIONS TO MAINTAIN TEN FOOT HORIZONTAL SEPARATION BETWEEN SEWER AND WATER LINES, THE WATER LINE MAY BE IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF IN THE SEWER TRENCH PROVIDED THAT THE BOTTOM OF THE WATER LINE IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER. WHEREVER IMPOSSIBLE OR IMPRACTICAL TO MAINTAIN 18 INCHES VERTICAL SEPARATION, THE SEWER LINE SHALL BE CONSTRUCTED TO NORMAL WATERLINE STANDARDS AND PRESSURE TESTED TO 50 PSI FOR 15 MINUTES PRIOR TO BACKFILLING. NO LEAKAGE SHALL BE ALLOWED FOR THIS TEST.

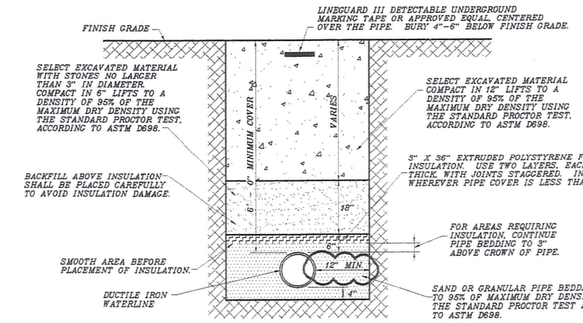
CROSSING

SEWER CROSSING WATER MAINS SHALL BE LAID BENEATH THE WATER MAIN WITH AT LEAST 18 INCHES VERTICAL CLEARANCE BETWEEN THE TOP OF THE SEWER AND THE BOTTOM OF THE WATERMAIN. WHEN IT IS IMPOSSIBLE TO MAINTAIN 18 INCHES VERTICAL SEPARATION OR WHEN THE SEWER MUST BE LAID ABOVE THE WATER MAIN, THE CROSSING SHALL BE ARRANGED SO THAT NO JOINT IN THE SEWER MAY BE CLOSER THAN 10 FEET TO ANY JOINT IN THE WATER LINE WITH SEWER JOINTS AS FAR AS POSSIBLE FROM WATER JOINTS. 2) THE SEWER PIPE MUST BE CONSTRUCTED TO WATER MAIN STANDARDS FOR A MINIMUM DISTANCE OF 50 FEET EITHER SIDE OF THE CROSSING OR A TOTAL OF THREE PIPE LENGTHS, WHICHEVER IS GREATER. 3) THE SECTION CONSTRUCTED TO WATER MAIN STANDARDS MUST BE PRESSURE TESTED TO MAINTAIN 50 PSI FOR 15 MINUTES WITHOUT LEAKAGE PRIOR TO BACKFILLING BEYOND ONE FOOT ABOVE THE PIPE TO ASSURE WATERTIGHTNESS. 4) WHERE WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATER MAIN.

NOTE:
A MINIMUM 5 FOOT HORIZONTAL SEPARATION DISTANCE MUST BE MAINTAINED BETWEEN STORM DRAINAGE PIPING AND STRUCTURES, AND THE WATER MAINS.

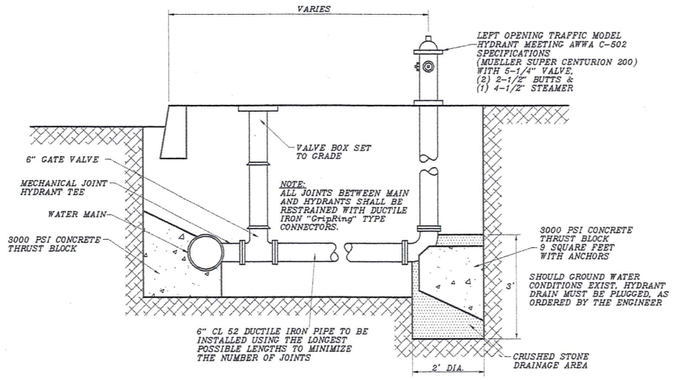
TYPICAL SEWER - WATER SEPARATION REQUIREMENTS

NTS



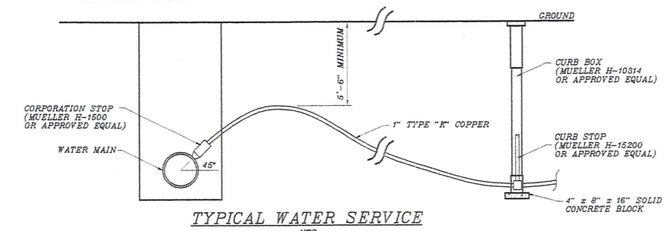
TYPICAL TRENCH DETAIL, DUCTILE IRON WATERLINE

NTS



TYPICAL HYDRANT & GATE VALVE CONNECTION

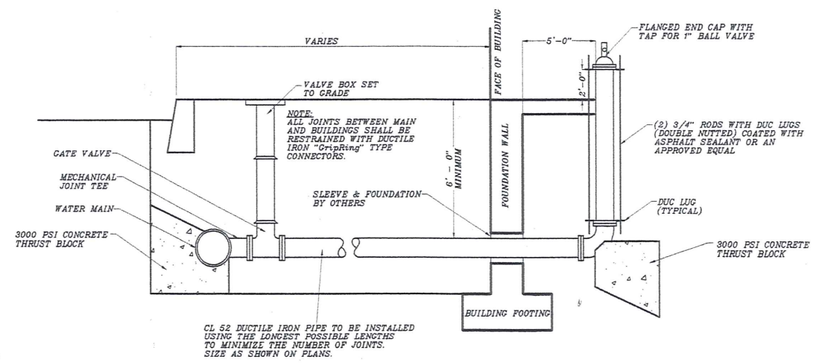
NTS



TYPICAL WATER SERVICE

NTS

NOTES:
1. BEDDING FOR COPPER SERVICE LINE TO BE SELECT GRANULAR MATERIAL WITH STONES NO LARGER THAN 2", FOR A DISTANCE OF 6" AROUND PIPE.
2. WHERE CURB BOX LID IS TO BE SET IN CEMENT OR BITUMINOUS CONCRETE, A CURB BOX SLEEVE WILL ALSO BE INSTALLED (MUELLER H-10342 OR APPROVED EQUAL).
3. BACKFILL TO BE PLACED IN 1' LIFTS AND COMPACTED TO A DENSITY OF 95% OF THE MAXIMUM DRY DENSITY BASED ON THE STANDARD PROCTOR TEST. ACCORDING TO ASTM D698.

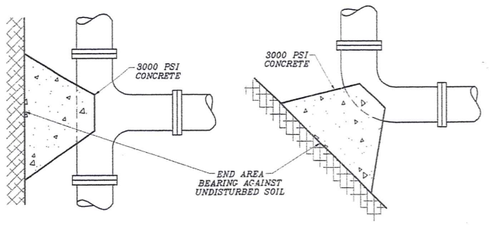


TYPICAL WATER SERVICE CONNECTION DETAIL

NTS

TYPICAL TEES AND CAPS

TYPICAL BENDS



NOTES:
1. ALL BOLTS AND NUTS TO REMAIN ACCESSIBLE AND ARE TO BE COVERED WITH PLASTIC TO PREVENT CONCRETE FROM ADHERING TO THEM.
2. BASED ON TESTING PRESSURE OF 200 PSI AND BEARING CAPACITY OF SAND OF 2000 LBS/SQUARE FOOT.

FITTINGS \ SIZE	6"	8"	10"	12"
11-1/4° OR 22-1/2°	3.0	3.0	4.0	6.0
45°	3.0	5.0	8.0	11.0
90°	6.0	10.0	14.0	20.0
TEES OR END CAPS	4.0	7.0	10.0	14.0
VALVES	2.0	2.0	2.0	2.0

THRUST BLOCK END AREA

(SQ. FT. BEARING AREA)

NTS

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	WATER DETAILS ~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL
6/6/00	REVISIONS PER CWD & STATE COMMENTS	SOL

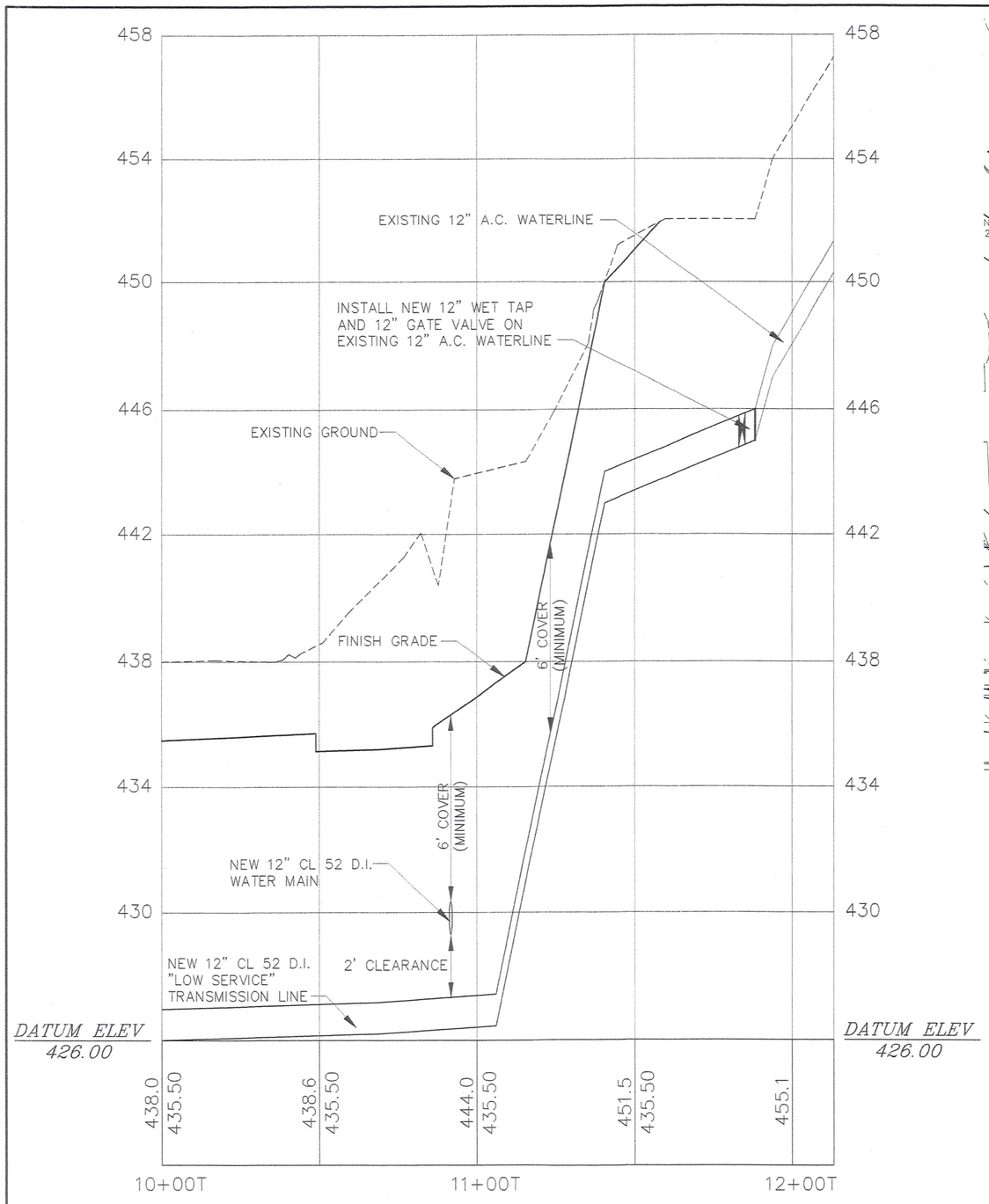
STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

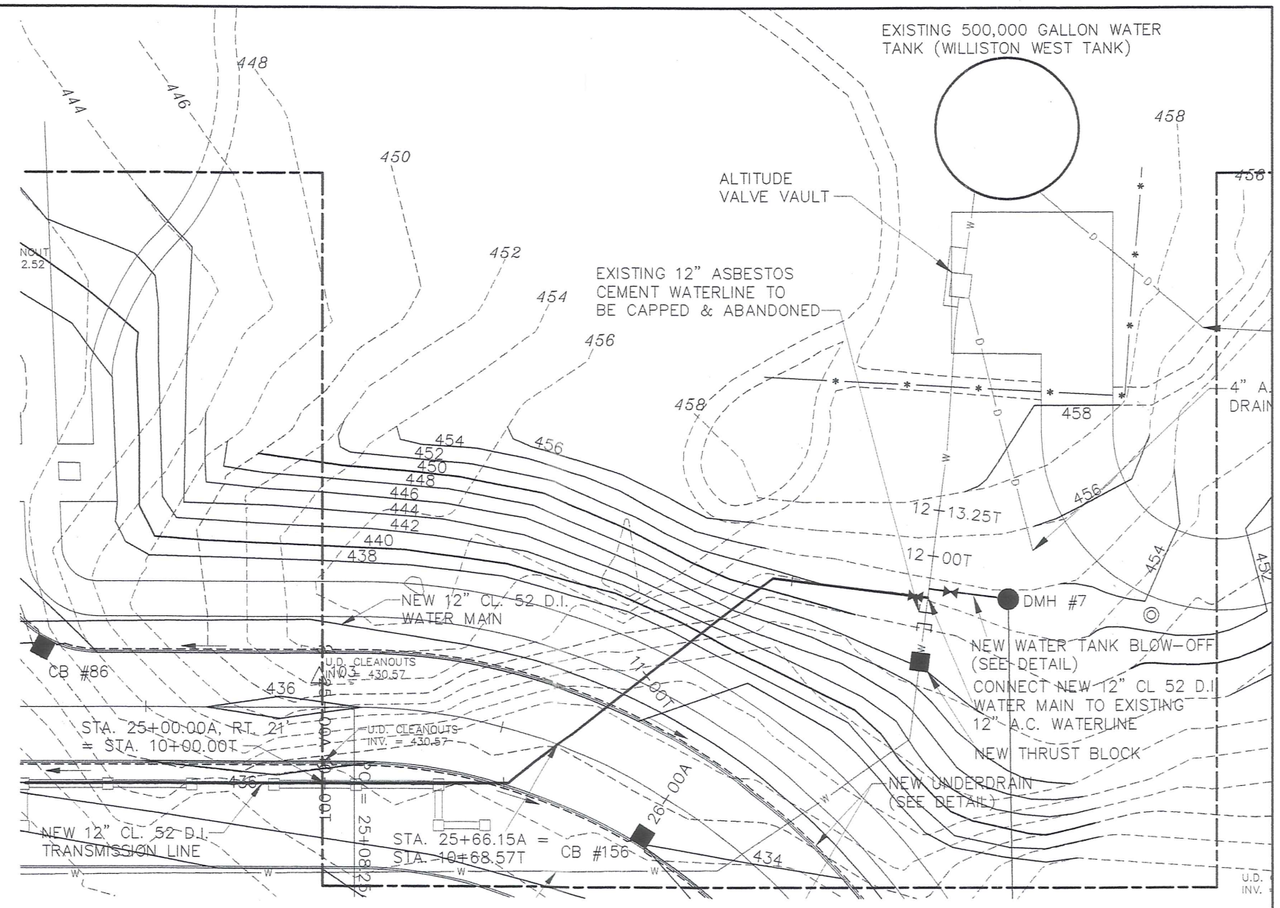
Survey	---
Design	JPK/RFH
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

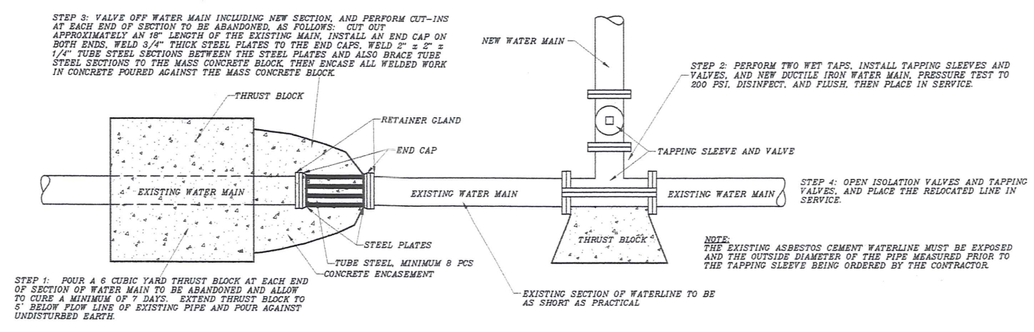
Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	2wa

Thu Sep 21 12:29:11 2000







TYPICAL CUT & CAP ASSEMBLY
NTS

GRAPHIC SCALE	CLIENT	PROJECT TITLE	DRAWING TITLE	DATE	REVISION	BY
20 0 20 40 80 (IN FEET) 1 inch = 20 ft. PLAN VIEW SCALE	STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	WATER DETAILS	DATE	REVISION	BY
PROFILE SCALE: HORIZONTAL - 1" = 20' VERTICAL - 1" = 2'.				DATE	REVISION	BY
				DATE	REVISION	BY
				DATE	REVISION	BY
			~PROGRESS PLAN~	DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

STATE OF VERMONT RICHARD F. HAMLIN No. 5260 REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

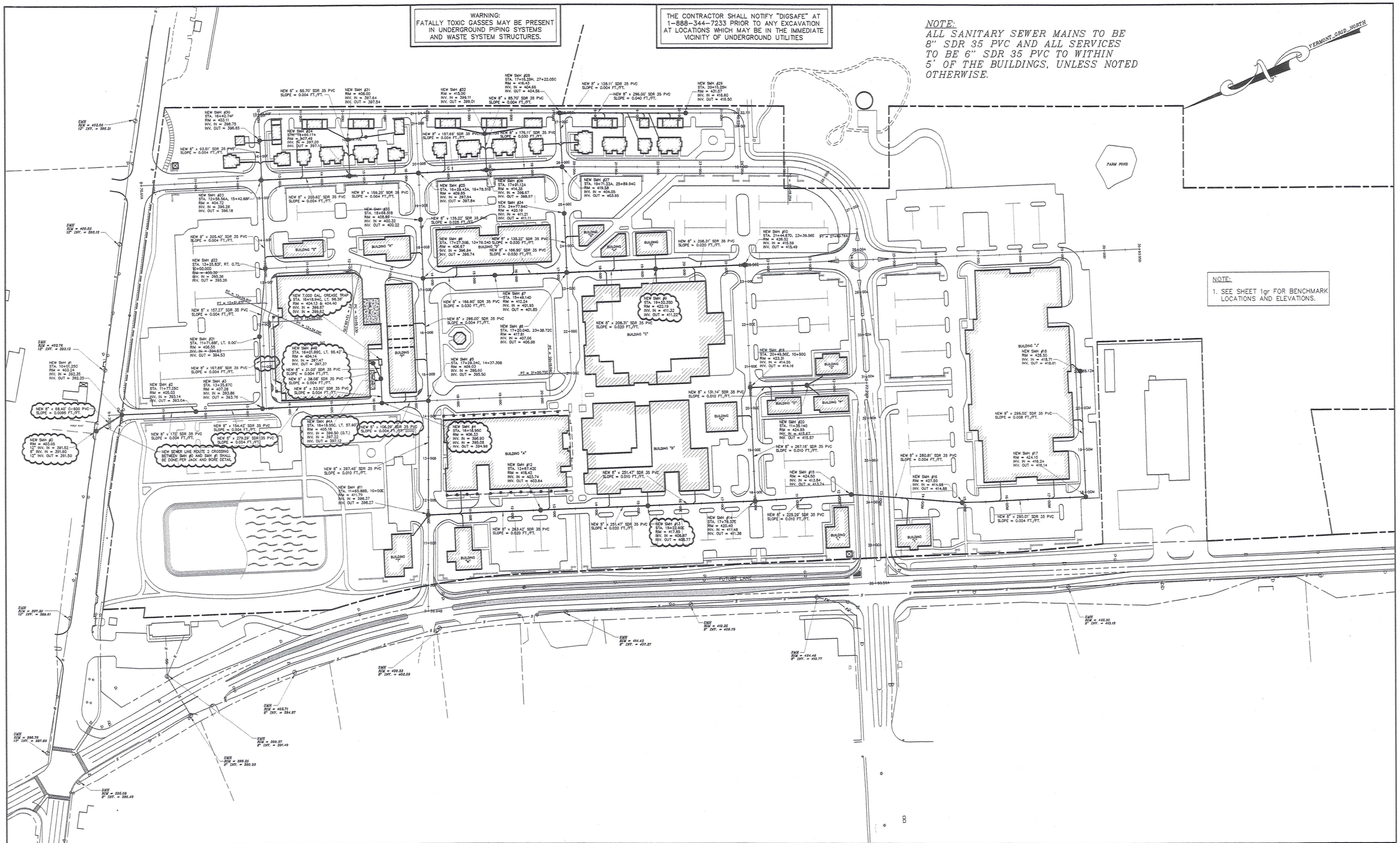
Scale	SHOWN
Job	99-293
File	
Drawing	3wa

Thu Sep 14 15:22:40 2000

WARNING:
FATALLY TOXIC GASSES MAY BE PRESENT IN UNDERGROUND PIPING SYSTEMS AND WASTE SYSTEM STRUCTURES.

THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES

NOTE:
ALL SANITARY SEWER MAINS TO BE 8" SDR 35 PVC AND ALL SERVICES TO BE 6" SDR 35 PVC TO WITHIN 5' OF THE BUILDINGS, UNLESS NOTED OTHERWISE.



NOTE:
1. SEE SHEET 1gr FOR BENCHMARK LOCATIONS AND ELEVATIONS.

GRAPHIC SCALE
100 0 100 200 400
(IN FEET)
1 inch = 100 ft.

CLIENT	STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430		
PROJECT TITLE	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT		
DRAWING TITLE	PROPOSED SANITARY SEWER SYSTEM LOCATION PLAN ~PROGRESS PLAN~		

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

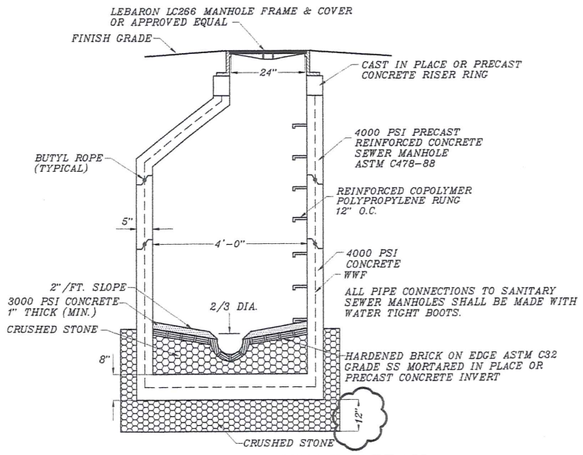
STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED PROFESSIONAL ENGINEER

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

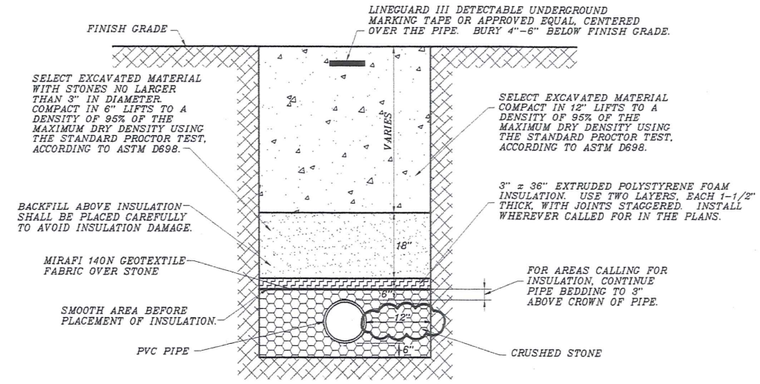
Scale	1" = 100'
Job	99-293
File	
Drawing	1ss

Fri Sep 22 14:38 2000



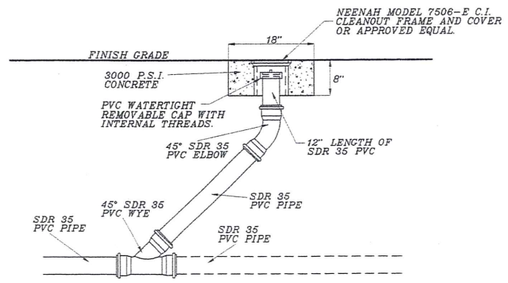
SANITARY SEWER MANHOLE DETAIL

NTS



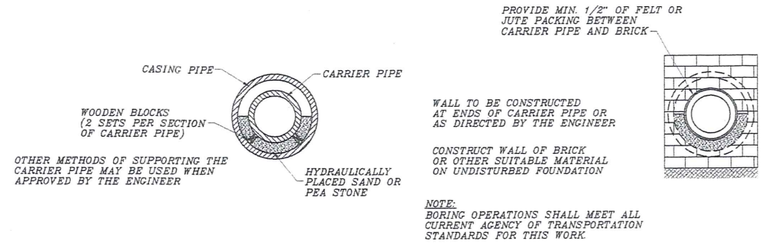
TYPICAL TRENCH DETAIL, PVC GRAVITY SEWER

NTS

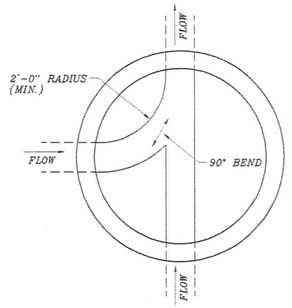


TYPICAL CLEAN OUT DETAIL

NTS

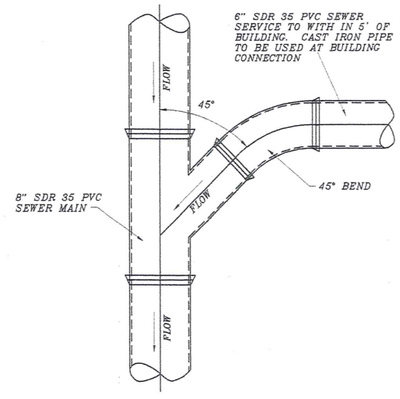


NOTE:
BORING OPERATIONS SHALL MEET ALL CURRENT AGENCY OF TRANSPORTATION STANDARDS FOR THIS WORK.



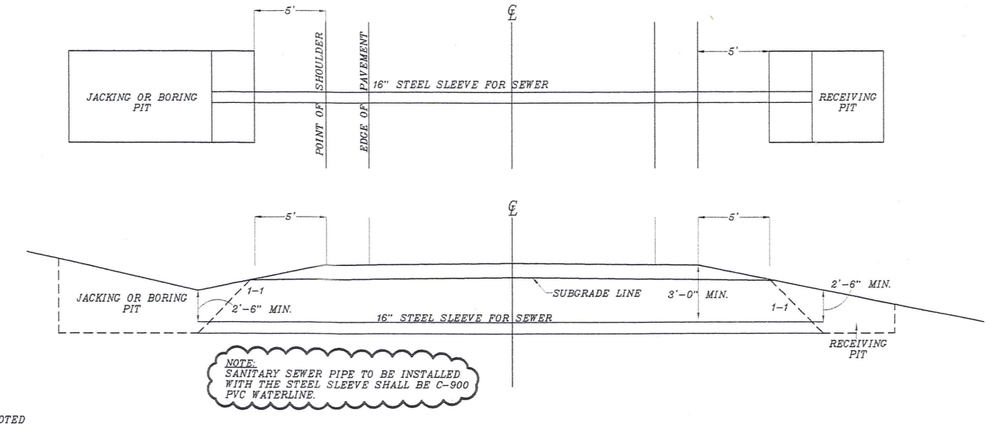
MANHOLE CHANNEL

NTS



SERVICE CONNECTION

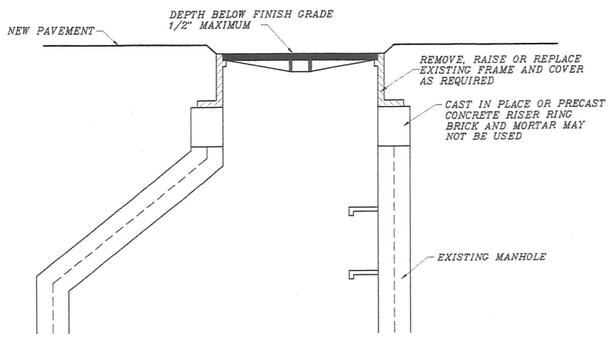
NTS



NOTE:
SANITARY SEWER PIPE TO BE INSTALLED WITH THE STEEL SLEEVE SHALL BE C-900 PVC WATERLINE.

SEWER BORE SLEEVE FOR ROUTE 2 CROSSING

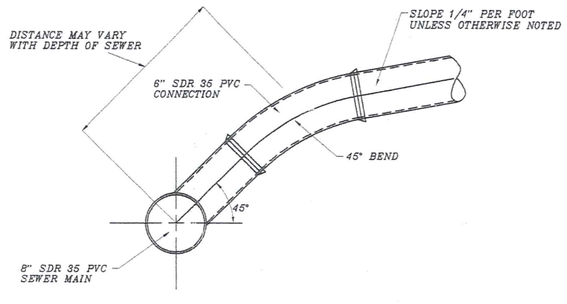
NTS



NOTE: FRAME & COVER SHALL BE SET TO FINISH GRADE AFTER THE BASE PAVING HAS BEEN COMPLETED.

TYPICAL MANHOLE FRAME & COVER ELEVATION ADJUSTMENT

NTS



SERVICE CONNECTION

NTS

BORING SLEEVE MINIMUM WALL THICKNESS SPECIFICATIONS	
NOMINAL DIAMETER (INCHES)	WHEN NOT COATED OR CATHODICALLY PROTECTED NOMINAL THICKNESS (INCHES)
12-3/4 AND UNDER	0.188
14	0.250
16	0.281
18	0.312
20 AND 22	0.344
24	0.375
26	0.406
28	0.438
30	0.469

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	SANITARY SEWER DETAILS ~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	JPK/RFH
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

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136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	2ss

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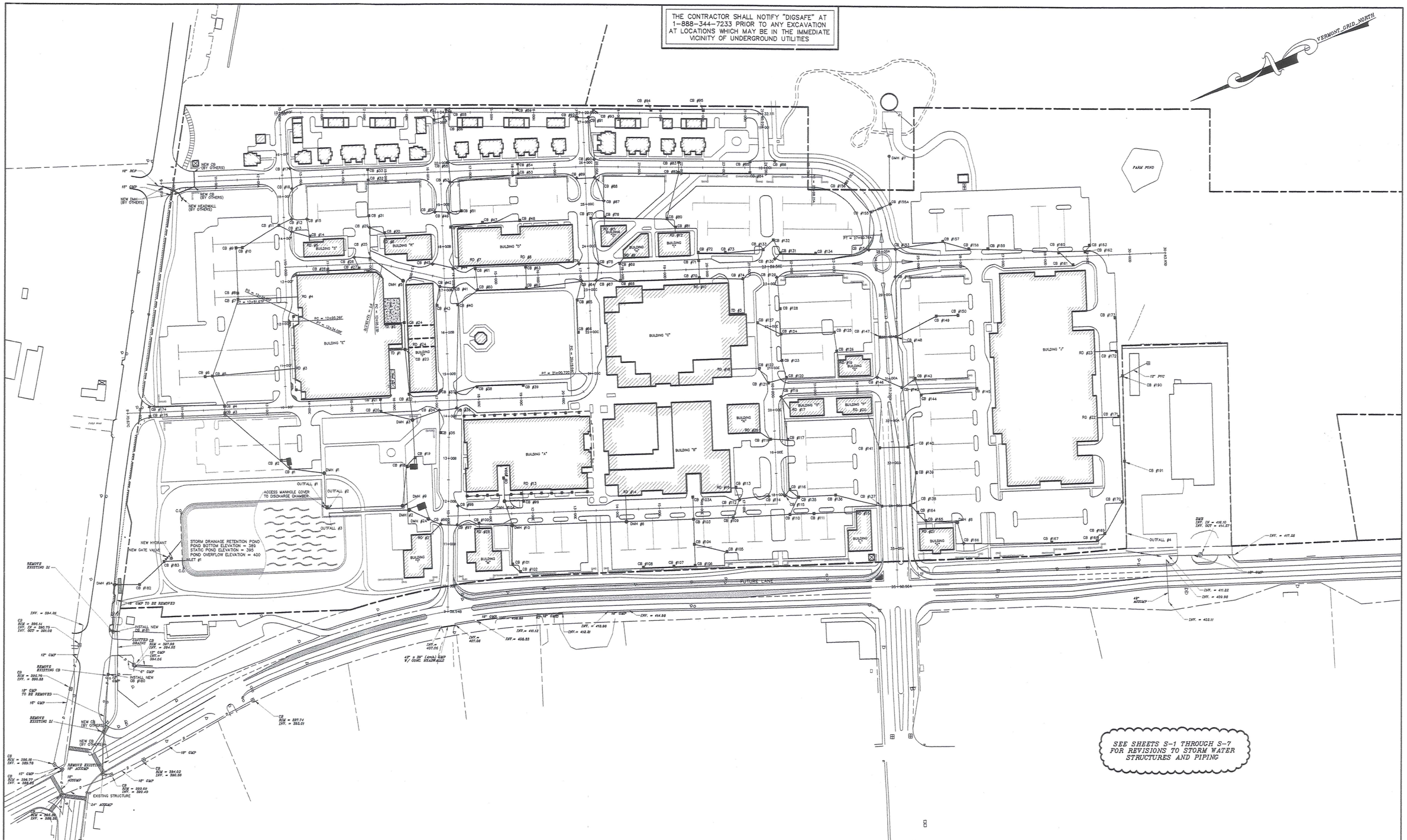
THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-344-7233 PRIOR TO ANY EXCAVATION AT LOCATIONS WHICH MAY BE IN THE IMMEDIATE VICINITY OF UNDERGROUND UTILITIES



GRAPHIC SCALE

100 0 100 200 400

(IN FEET)
1 inch = 100 ft.

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	PROPOSED STORM SEWER SYSTEM LOCATION PLAN ~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT — RICHARD F. HAMLIN — REGISTERED PROFESSIONAL ENGINEER — No. 5260

Survey	MRM
Design	JPK
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 100'
Job	99-293
File	
Drawing	1sd

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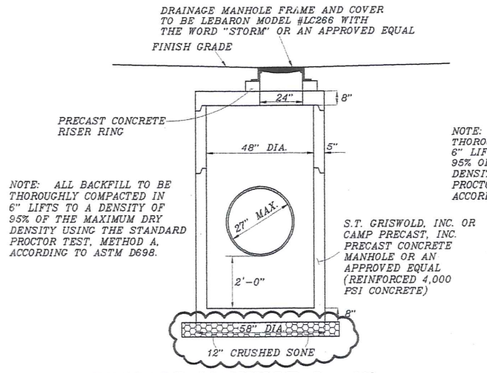
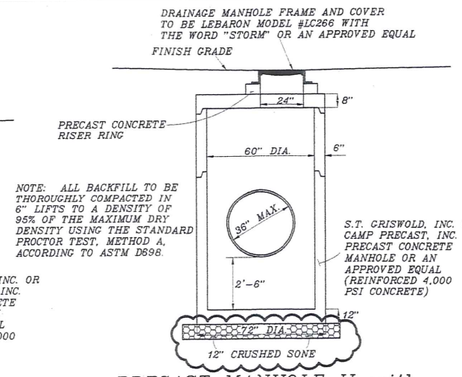


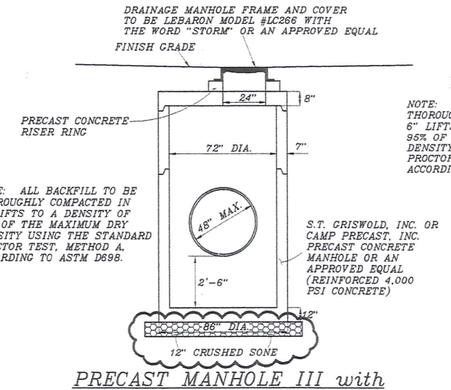
PRECAST MANHOLE I with STORM DRAIN LINE

NTS



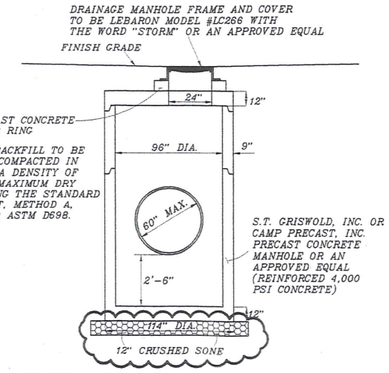
PRECAST MANHOLE II with STORM DRAIN LINE

NTS



PRECAST MANHOLE III with STORM DRAIN LINE

NTS

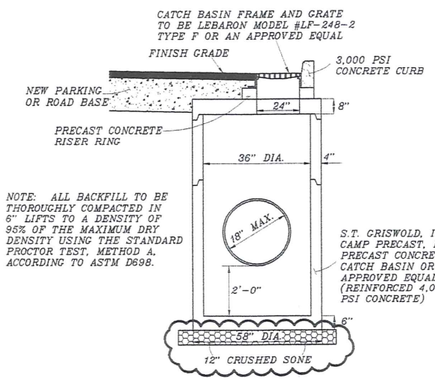


PRECAST MANHOLE IV with STORM DRAIN LINE

NTS

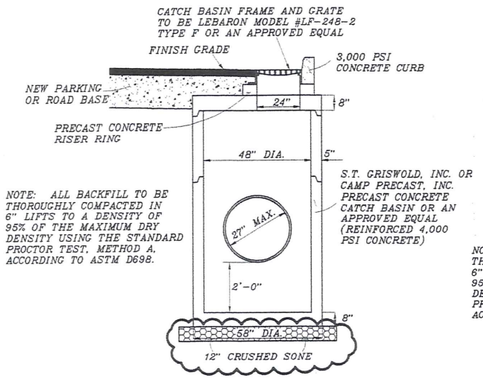
NOTES:

1. IF DRAINAGE STRUCTURE HAS MULTIPLE PIPES NO MORE THAN HALF OF THE CIRCUMFERENCE OF THE DRAINAGE STRUCTURE WALL MAY BE REMOVED TO ACCOMMODATE THE PIPES. IF MORE THAN HALF IS REMOVED USE NEXT SIZE STRUCTURE THAT WILL MEET THIS REQUIREMENT.
2. PIPES HAVING A 36" DIA. OR SMALLER SHALL BE CONNECTED TO DRAINAGE STRUCTURES UTILIZING KOR-N-SEAL CONNECTORS. PIPES WITH A DIAMETER GREATER THAN 36" SHALL BE CONNECTED UTILIZING CEMENT MORTAR, SMOOTH ON THE INSIDE AND BUILT UP WITH A HEAVY BEAD OF EXCESS MORTAR ON THE OUTSIDE.



PRECAST CATCH BASIN I with STORM DRAIN LINE

NTS



PRECAST CATCH BASIN II with STORM DRAIN LINE

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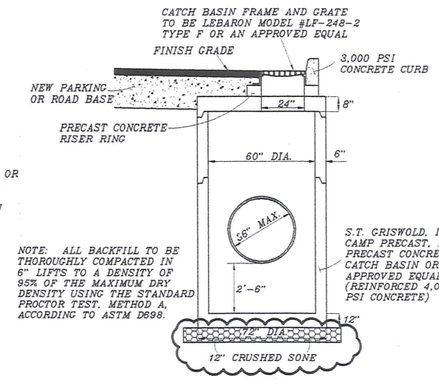
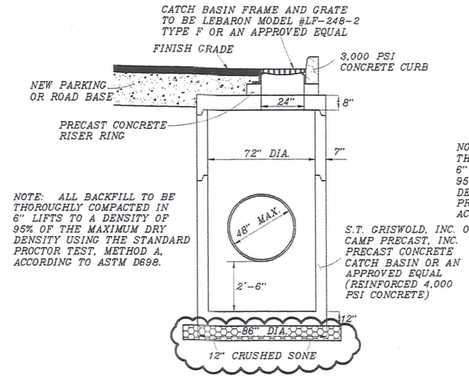


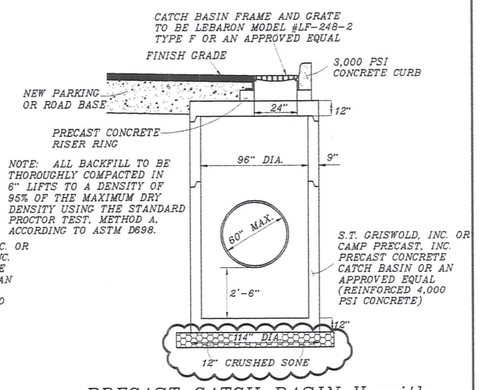
PRECAST CATCH BASIN III with STORM DRAIN LINE

NTS



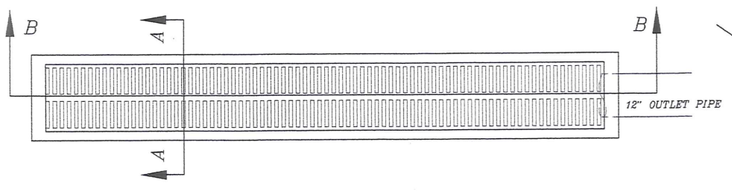
PRECAST CATCH BASIN IV with STORM DRAIN LINE

NTS



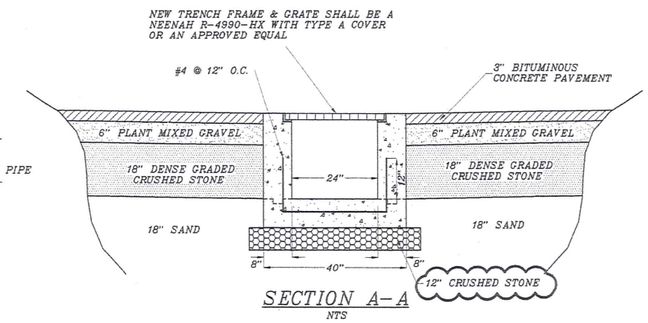
PRECAST CATCH BASIN V with STORM DRAIN LINE

NTS



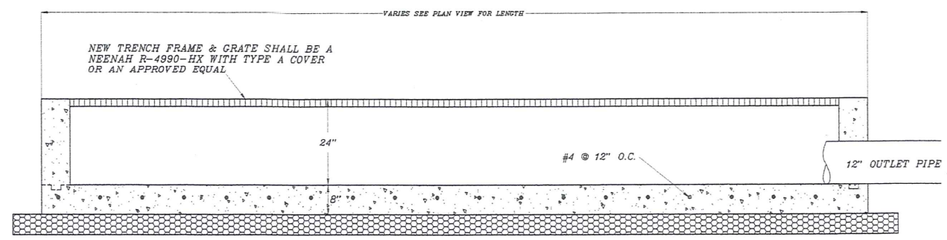
TRENCH DRAIN DETAIL "A"

NTS



SECTION A-A

NTS



SECTION B-B

NTS

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	STORM SEWER DETAILS ~PROGRESS PLAN~

DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

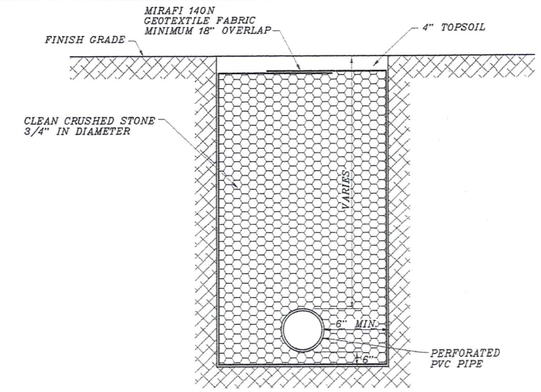
STATE OF VERMONT · RICHARD F. HAMLIN · No. 5260 · REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	JPK/RFH
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

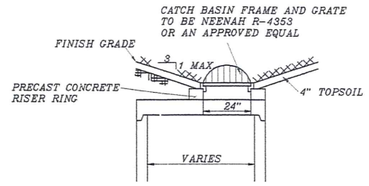
Scale	SHOWN
Job	99-293
File	
Drawing	2sd

Thu Sep 21 12:40:45 2000



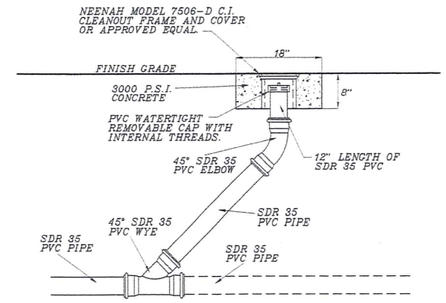
TYPICAL TRENCH DETAIL
PVC UNDERDRAIN

NTS



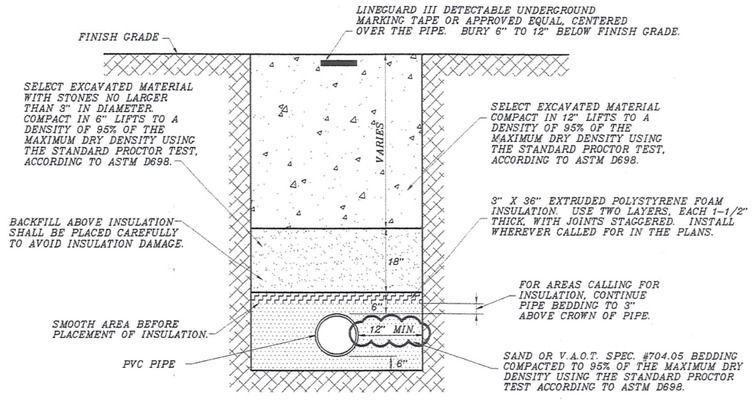
CATCH BASIN FRAME &
GRATE IN GRASS SWALE

NTS



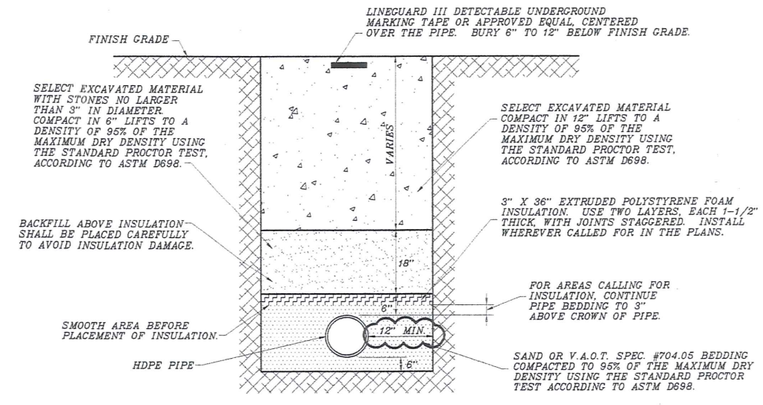
TYPICAL UNDERDRAIN CLEAN OUT DETAIL

NTS



TYPICAL TRENCH DETAIL, PVC STORM DRAIN

NTS



TYPICAL TRENCH DETAIL, HDPE STORM DRAIN

NTS

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	STORM SEWER DETAILS ~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

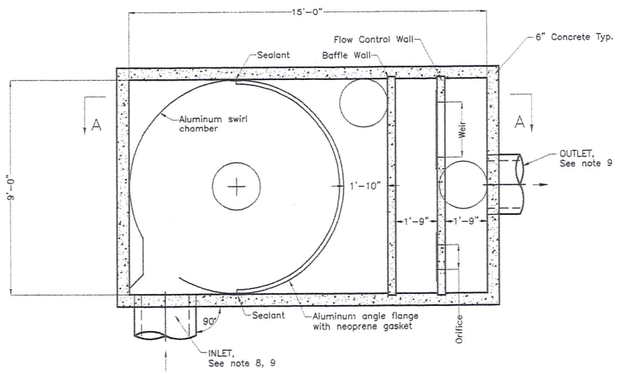
STATE OF VERMONT · RICHARD F. HAMLIN · No. 5260 · REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	JPK/RFH
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

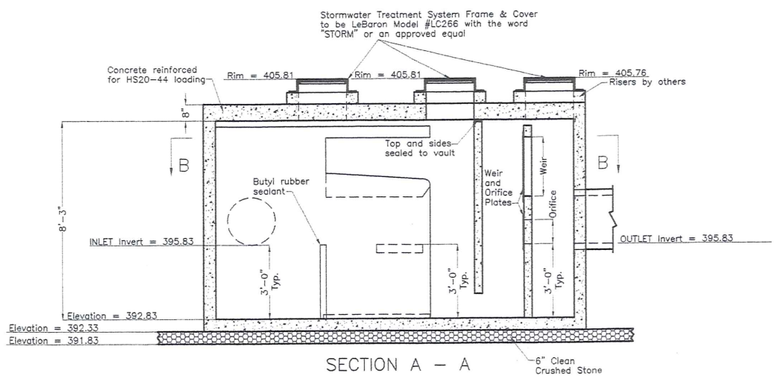
Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	3sd

Thu Sep 21 12:50:13 2000



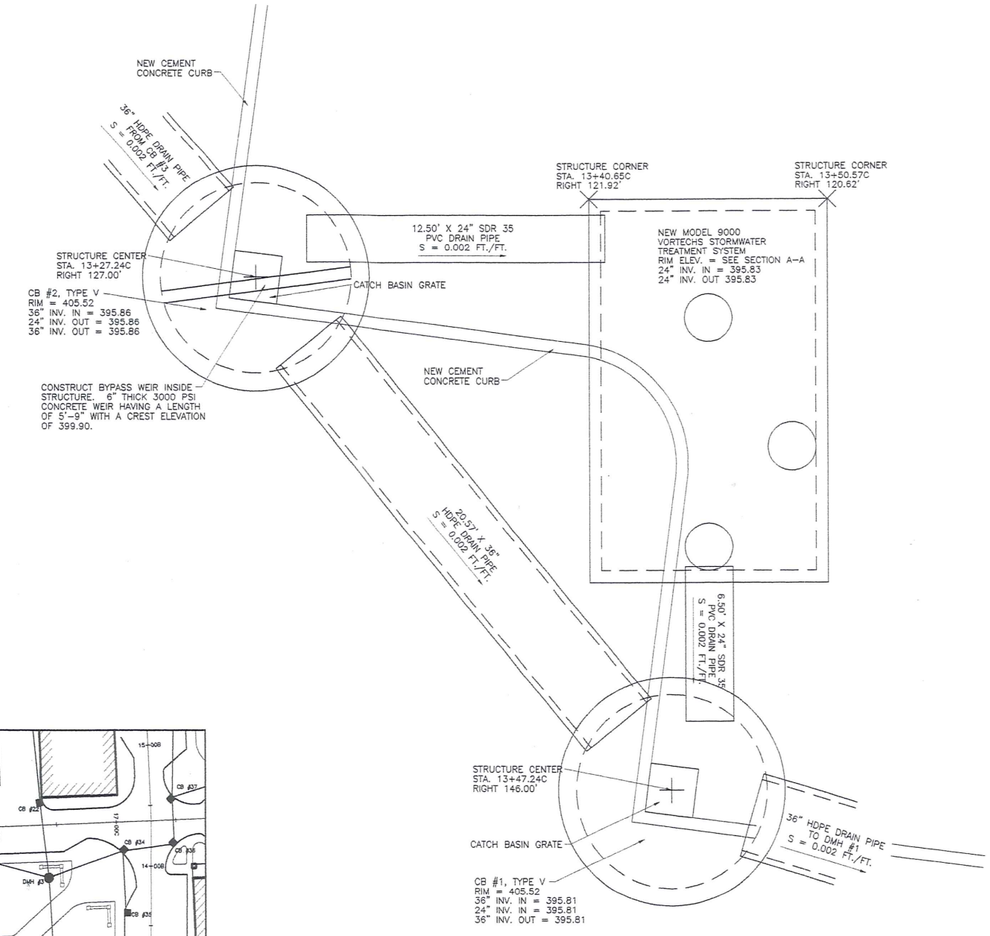
PLAN VIEW B – B



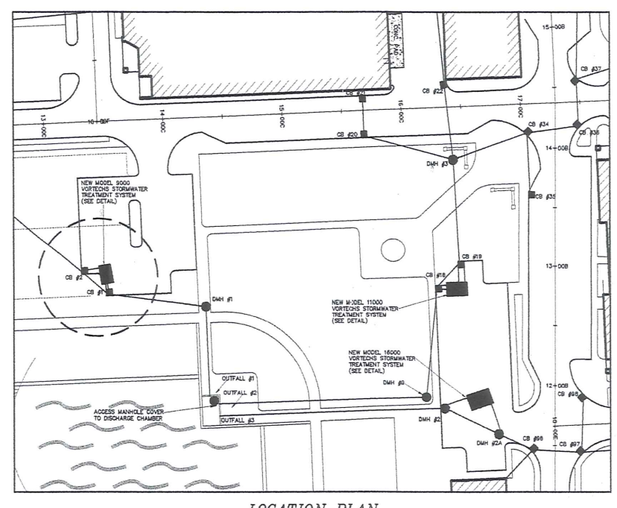
SECTION A – A

NOTES:
1. Stormwater Treatment System (SWTS) shall have:
   Peak treatment capacity: 14 cfs
   Sediment storage: 4.75 cu yd
   Oil storage: 1,500 gallons
   Sediment chamber dia: 9' min.
2. SWTS shall be contained in one rectangular structure
3. SWTS shall remove 80% of annual TSS loading
4. SWTS shall retain floatables and trapped sediment up to and including peak treatment capacity
5. SWTS inverts in and out shall be at the same elevation
6. SWTS shall not be compromised by effects of downstream tailwater
7. SWTS shall have no internal components that obstruct maintenance access
8. Inlet pipe must be perpendicular to the structure
9. Pipe orientation may vary; see site plan for size and location
10. Purchaser shall not be responsible for assembly of unit
11. Manhole frames and perforated covers supplied with system, not installed
12. Purchaser to prepare excavation and provide lifting equipment
13. Contact Vortechnics @ (207) 878-3662 Ext. 123 for ordering information

STANDARD DETAIL
STORMWATER TREATMENT SYSTEM
VORTECHS™ MODEL 9000



CONNECTION DETAIL
STORMWATER TREATMENT SYSTEM



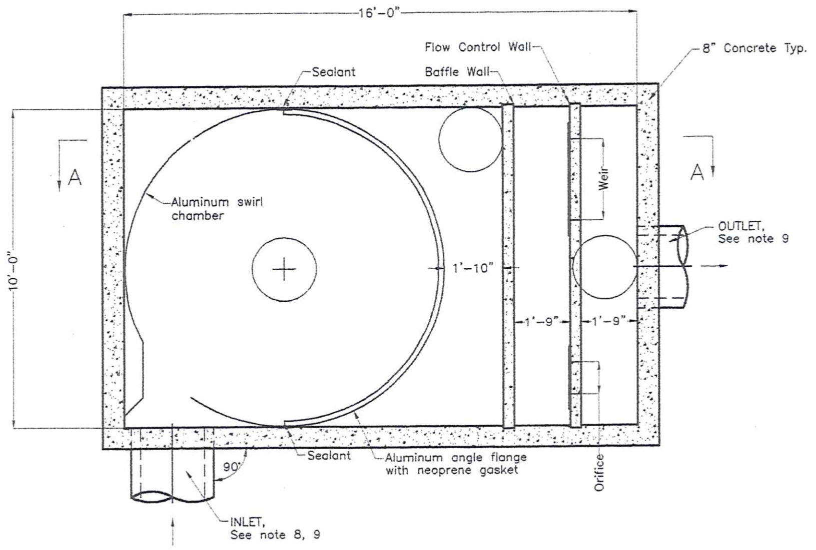
LOCATION PLAN
SCALE: 1" = 60'

	CLIENT	PROJECT TITLE	DRAWING TITLE	DATE	REVISION	BY	Survey ---	Scale 1" = 3'
	STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	VORTECHS STORMWATER TREATMENT SYSTEM – MODEL 9000 TYPICAL DETAILS ~PROGRESS PLAN~	DATE	REVISION	BY	Design SOL/RFH	Job 99-293
				DATE	REVISION	BY	Drawn SOL	File
				DATE	REVISION	BY	Checked RFH	Drawing 1vrt
				DATE	REVISION	BY		
				DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL	Date 3/21/00	

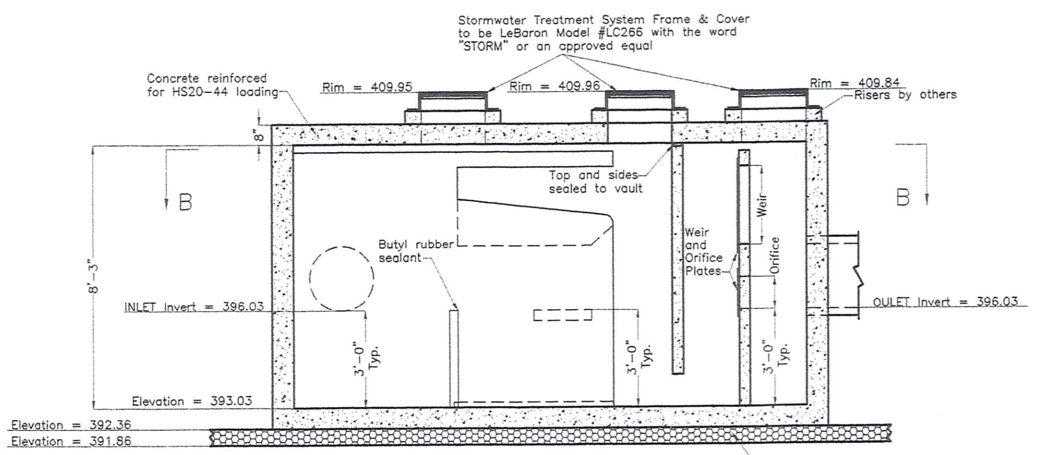
STATE OF VERMONT · RICHARD F. HAMLIN · No. 5260 · REGISTERED PROFESSIONAL ENGINEER

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Thu Sep 07 11:48:10 2000



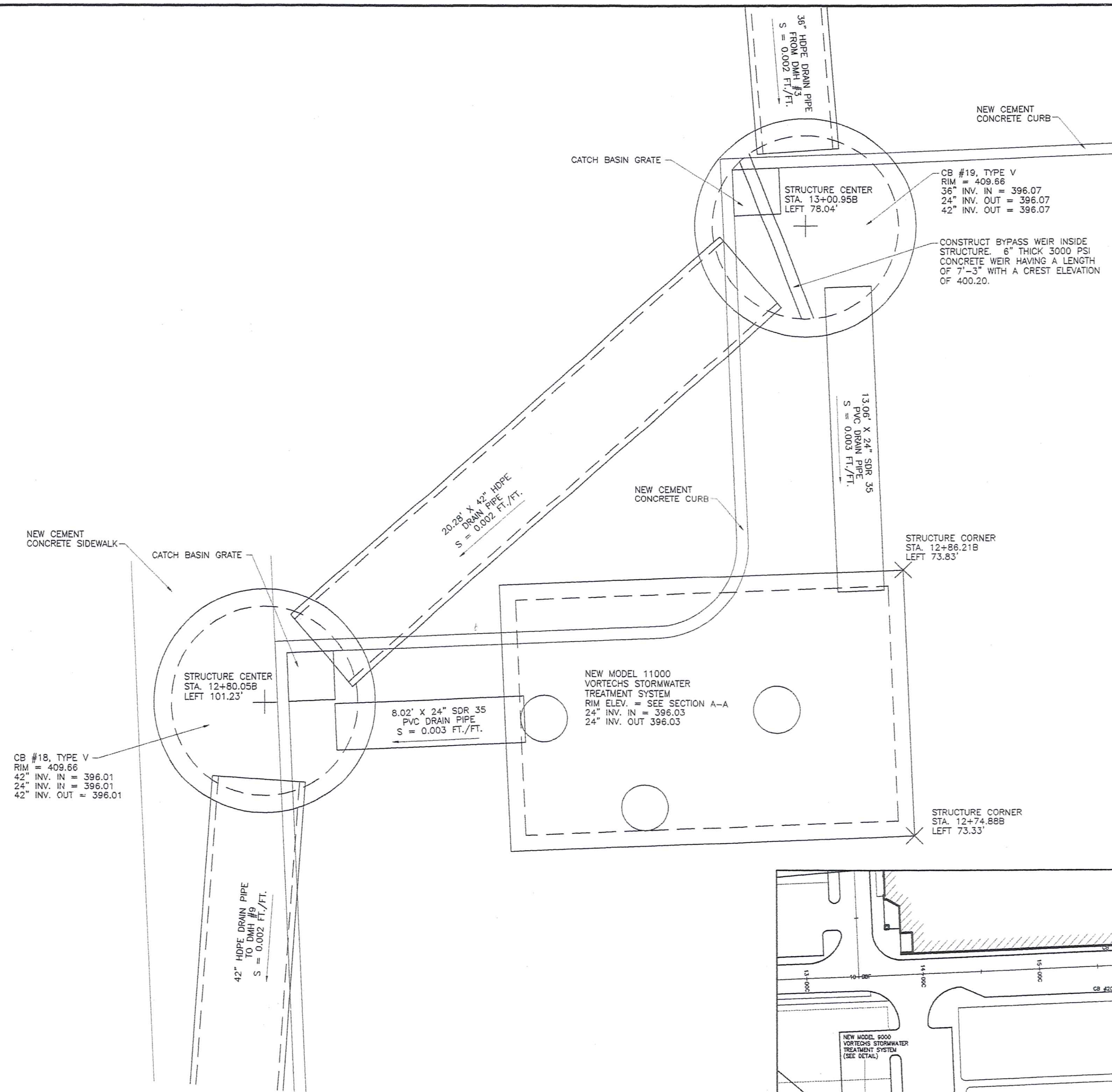
PLAN VIEW B – B



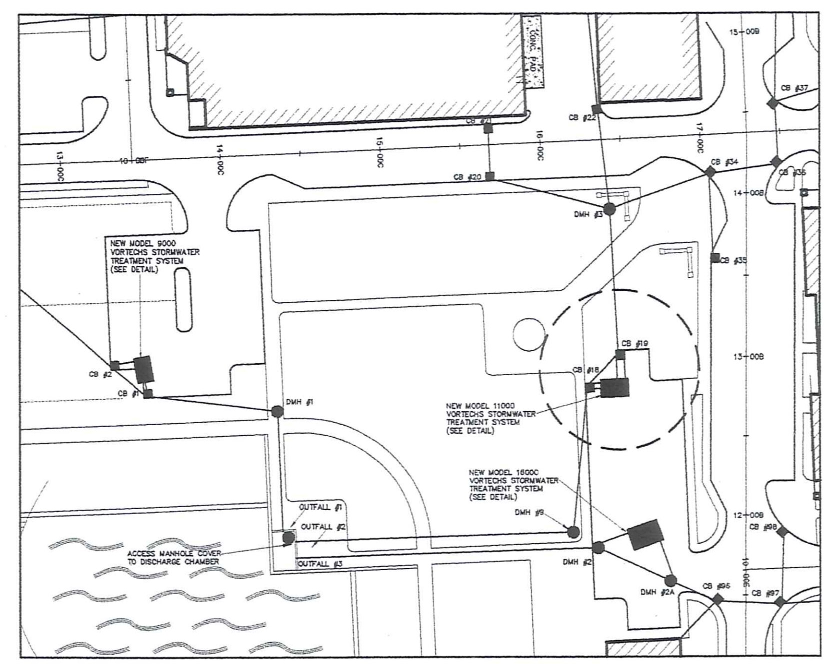
SECTION A – A

NOTES:
1. Stormwater Treatment System (SWTS) shall have:
   Peak treatment capacity: 17.5 cfs
   Maximum system capacity: 22 cfs
   Sediment storage: 5.5 cu yd
   Oil storage: 1,800 gallons
   Sediment chamber dia: 10' min.
2. SWTS shall be contained in one rectangular structure
3. SWTS shall remove 80% of annual TSS loading
4. SWTS shall retain floatables and trapped sediment up to and including peak treatment capacity
5. SWTS inverts in and out shall be at the same elevation
6. SWTS shall not be compromised by effects of downstream tailwater
7. SWTS shall have no internal components that obstruct maintenance access
8. Inlet pipe must be perpendicular to the structure
9. Pipe orientation may vary; see site plan for size and location
10. Purchaser shall not be responsible for assembly of unit
11. Manhole frames and perforated covers supplied with system, not installed
12. Purchaser to prepare excavation and provide lifting equipment

STANDARD DETAIL
STORMWATER TREATMENT SYSTEM
VORTECHS™ MODEL 11000



CONNECTION DETAIL
STORMWATER TREATMENT SYSTEM



LOCATION PLAN
SCALE: 1" = 60'

CLIENT	PROJECT TITLE	DRAWING TITLE	DATE	REVISION	BY
STARWOOD-CERUZZI, LLC *1720 POST ROAD* *FAIRFIELD, CT. 06430*	*MAPLE TREE PLACE* *PROPOSED SITE DEVELOPMENT* *WILLISTON, VERMONT*	*VORTECHS STORMWATER* *TREATMENT SYSTEM – MODEL 11000* *TYPICAL DETAILS* ~PROGRESS PLAN~	9/7/00	GENERAL REVISIONS	SOL

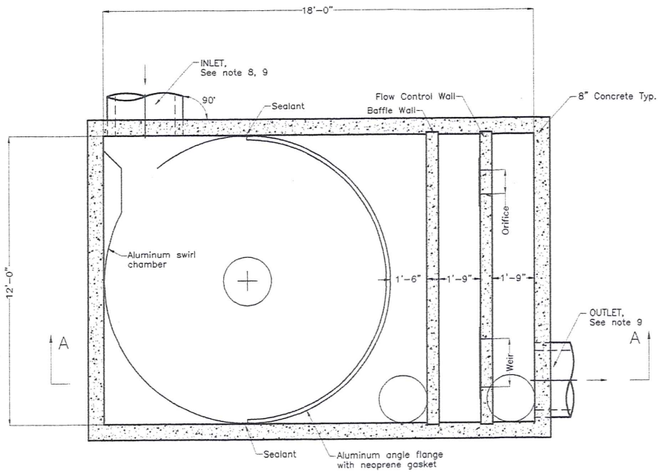
STATE OF VERMONT · RICHARD F. HAMLIN · No. 5260 · REGISTERED · PROFESSIONAL ENGINEER

Survey	---
Design	RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

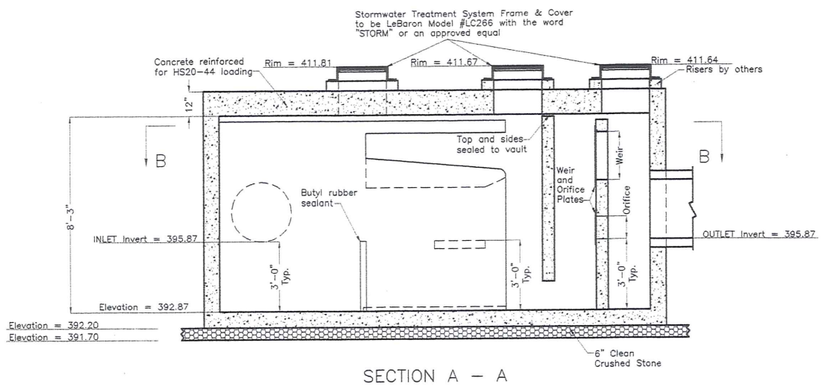
Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 3'
Job	99-293
File	
Drawing	2vrt

Fri Sep 08 13:54:13 2000



PLAN VIEW B – B



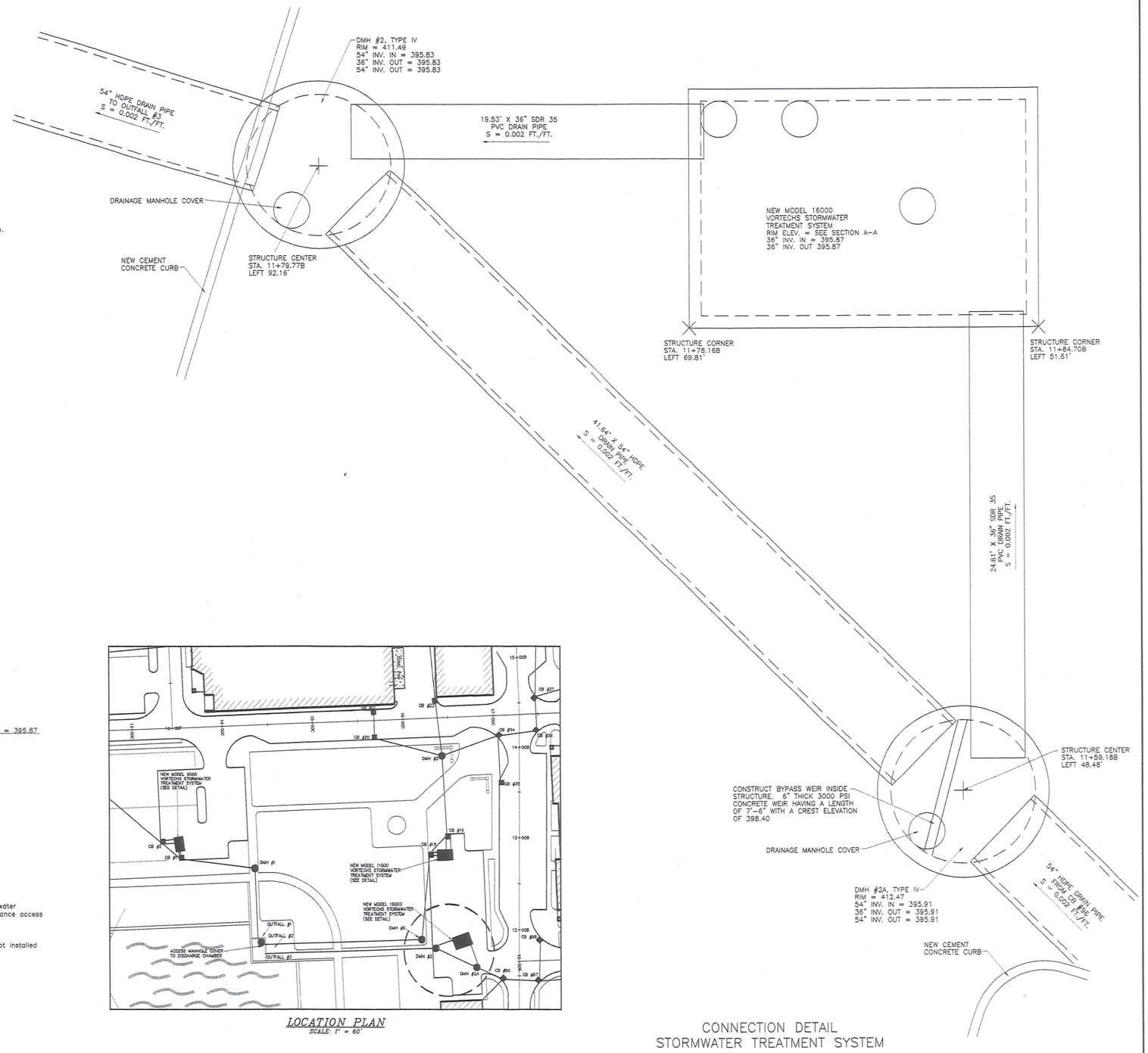
SECTION A – A

NOTES:

1. Stormwater Treatment System (SWTS) shall have:
   Peak treatment capacity: 25 cfs
   Maximum system capacity: 30 cfs
   Sediment storage: 7 cu yd
   Oil storage: 2,500 gallons
   Sediment chamber dia: 12' min.
2. SWTS shall be contained in one rectangular structure
3. SWTS shall remove 74% of annual TSS loading
4. SWTS shall retain floatables and trapped sediment up to and including peak treatment capacity
5. SWTS inverts in and out shall be at the same elevation
6. SWTS shall not be compromised by effects of downstream tailwater
7. SWTS shall have no internal components that obstruct maintenance access
8. Inlet pipe must be perpendicular to the structure
9. Pipe orientation may vary; see site plan for size and location
10. Purchaser shall not be responsible for assembly of unit
11. Manhole frames and perforated covers supplied with system, not installed
12. Purchaser to prepare excavation and provide lifting equipment

STANDARD DETAIL
STORMWATER TREATMENT SYSTEM
VORTECHS™ MODEL 16000

LOCATION PLAN
SCALE: 1" = 60'



CONNECTION DETAIL
STORMWATER TREATMENT SYSTEM

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC *1720 POST ROAD* *FAIRFIELD, CT. 06430*	*MAPLE TREE PLACE* *PROPOSED SITE DEVELOPMENT* *WILLISTON, VERMONT*	*VORTECHS STORMWATER TREATMENT SYSTEM – MODEL 16000 TYPICAL DETAILS* **~PROGRESS PLAN~**

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

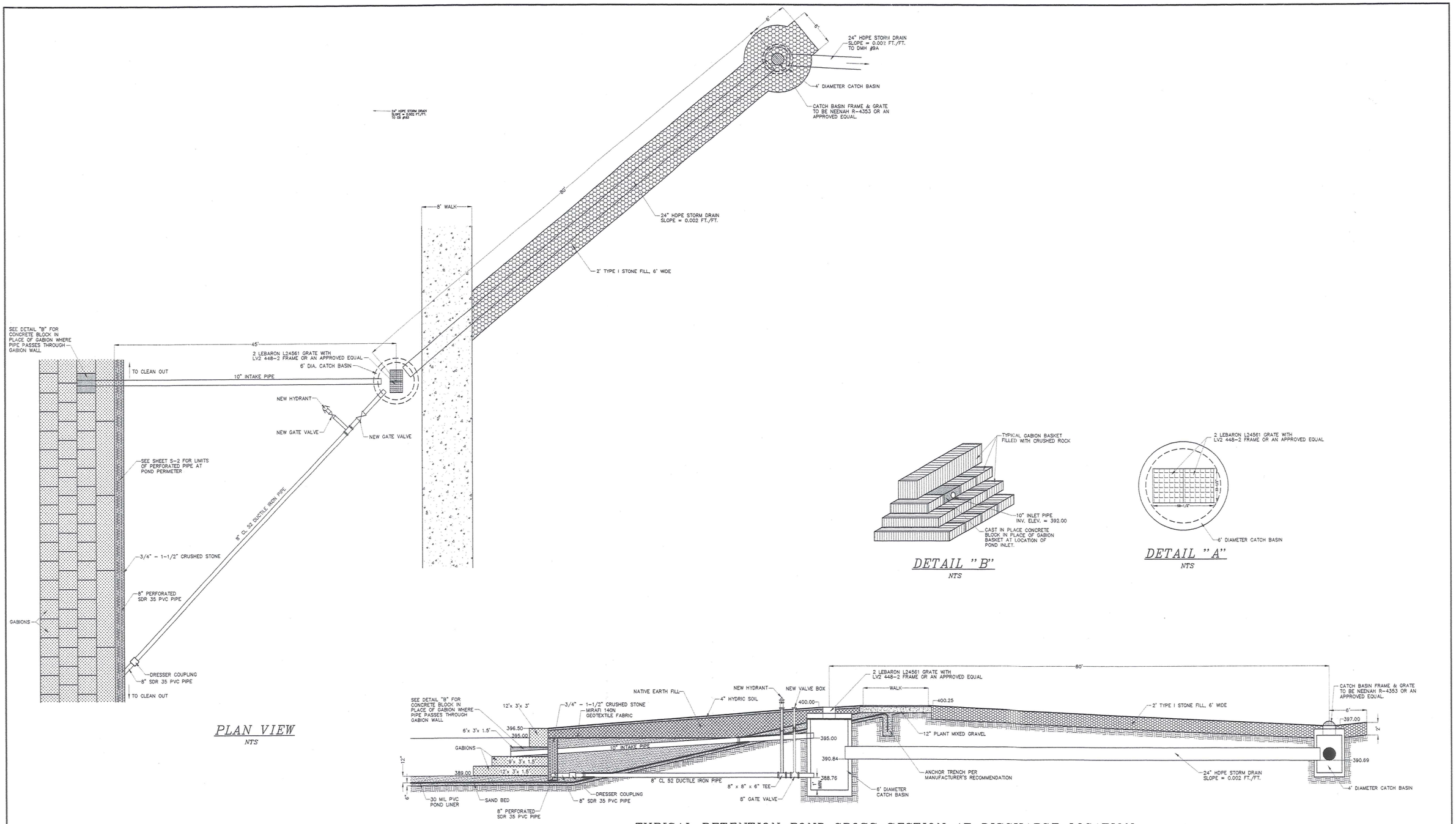
STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	RFH
Drawn	SOL
Checked	RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	1" = 3'
Job	99-293
File	
Drawing	3vrt

Thu, Sep 07 12:08:26 2000



TYPICAL RETENTION POND CROSS SECTION AT DISCHARGE LOCATION

NTS

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	RETENTION POND DETAILS ~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

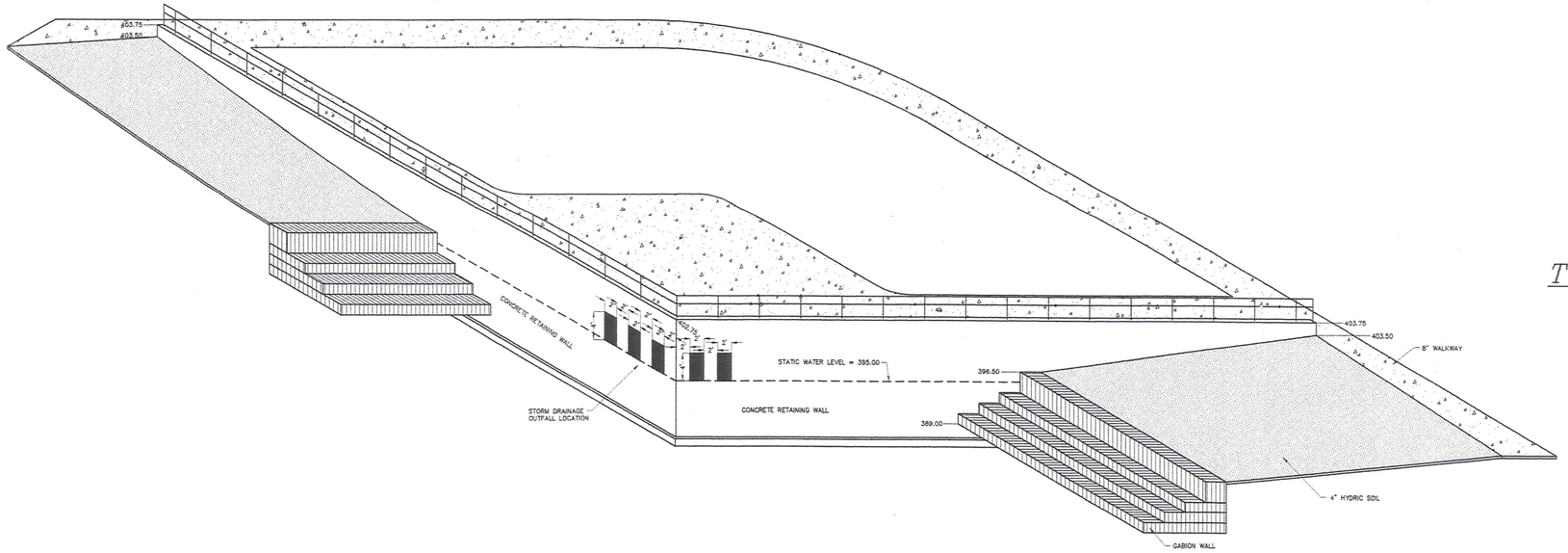
STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	RFH
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

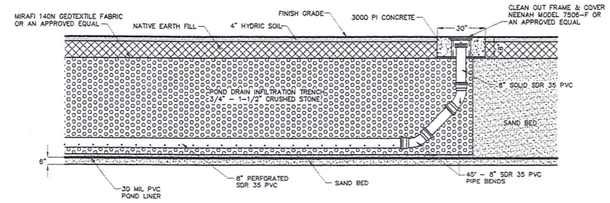
Scale	SHOWN
Job	99-293
File	
Drawing	1pd

Thu Sep 07 10:13:01 2000



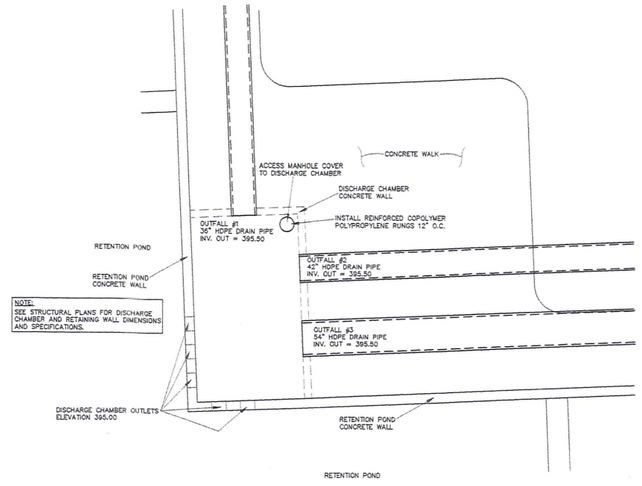
TYPICAL RETENTION POND OUTFALL DETAIL

NTS



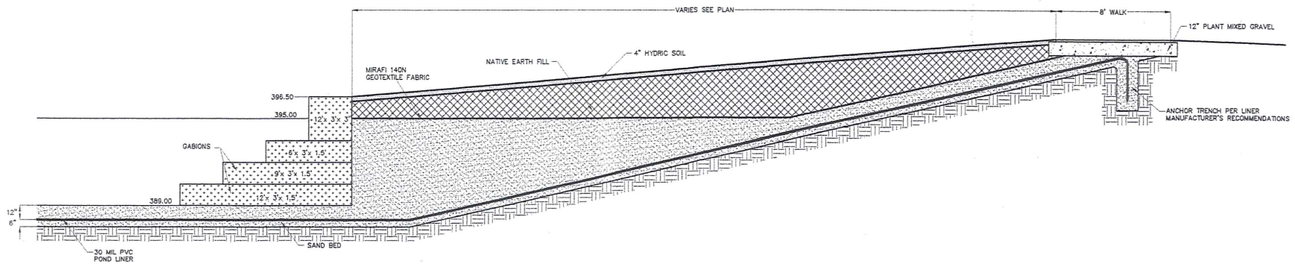
TYPICAL RETENTION POND CLEAN OUT

NTS



DISCHARGE CHAMBER DETAIL

NTS



TYPICAL RETENTION POND CROSS SECTION

NTS

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	RETENTION POND DETAILS ~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	RFH
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	2pd

Fri Sep 08 09:30:01 2000

01010
SUMMARY OF WORK AND SPECIAL CONSTRUCTION NOTES

Seed mix for lawn areas shall be Urban Mix as described in section 02820.

Seed mix for the ditches and detention basin shall be Swale Mix as described in section 02820.

SHOP DRAWINGS: See Construction Manager's bid documents for list of required shop drawings to be submitted.

PERMITS: The contractor shall insure that all permits and licensees have been obtained and all required fees have been paid prior to the start commencement of work.

Soils: The contractor shall submit proctor test results for native materials and subbase materials to be used. The contractor shall be responsible for providing compaction test results. Compaction tests shall be performed at a rate of 1 per 50' of pipe in trench per lift, and 1 per 2,500 sq. ft. of fill area per lift.

01011
GENERAL PROJECT MANAGEMENT

WORK INCLUDED: This section pertains to the general contract requirements which must be met by the Contractor and the project management and control standards which must be utilized by the Contractor.

MANAGEMENT OF PROJECT SITE: The Contractor shall ensure that at the end of each working day, the job site shall be left in a condition satisfactory to the Engineer. All excess and unnecessary construction equipment and debris shall be removed from the job site as work progresses.

The Contractor shall be responsible for protecting all existing structures and work completed under this Project at his own expense. The Contractor shall take all precautions and institute such procedures as are necessary to protect both life and property. All work, which, during its progress or before the final acceptance of the work as established by the Engineer's Certificate of Completion, may have become damaged from any cause, shall be removed and replaced at the Contractor's expense, for both labor and materials.

Care shall be exercised on the part of the Contractor to ensure that property damage does not occur on private property and that as little damage as possible is done within construction easements. Protection will be afforded cultivated trees and shrubbery, fences and walls, and similar features where adjacent to the construction. The Contractor is responsible for ensuring that the condition of private property or easement lands is restored to the condition which existed prior to the construction. The Contractor shall be held responsible for all damages resulting from a failure to comply with the provisions of this section.

SURVEY CONTROL PROVIDED: The Engineer shall provide the Contractor with road intersection control points. Such control shall be set one time only. Thereafter, the Contractor shall be responsible for protecting control points from damage and dislocation. Should additional work be required by the Engineer to reestablish control points, he shall be reimbursed by the Contractor.

Bench marks will be provided by the Engineer.

MEASUREMENT OF QUANTITIES OF WORK: Unless otherwise provided for in the payment clauses of the Specifications, the method of measurement of the work shall be that determined by the Engineer or Construction Manager. In the case of earth excavation and rock excavation, unless otherwise provided for, the method of measurement of quantities will consist of cross sections measured in the field at intervals determined by the Engineer and computations of volume by the method of average end areas.

In the case of quantities paid for on an area basis, unless otherwise provided for, the area to be paid for shall be within established pay limits, calculated using field measurements along final grade line.

For the computation of areas the "Planimeter" shall be considered an acceptable instrument of precision.

PROTECTION AND REPAIR OF EXISTING UTILITIES: Wherever culverts, sewers, drains, manholes, catch basin connections, water mains, valve chambers, electrical conduits, telephone conduits, utility poles, overhead lines, or other facilities are encountered, they shall be protected and supported by the Contractor, at his own expense, by methods approved by the Engineer until the excavation is backfilled and the existing facilities are made secure. Injury to any such facilities caused by or resulting from the Contractor's operations, shall be repaired at the Contractor's expense within a time period that will not place an unreasonable burden on the users. The Owner, Engineer and the Authority having charge shall be notified promptly of any damage to utilities.

Whenever the Engineer may require, pipes or other underground structures encountered in excavating or trenching shall be permanently supported with wooden supports across excavation or trench, or by other methods acceptable to the Engineer.

RECONSTRUCTION OF EXISTING UTILITIES: In case it shall become necessary, in the opinion of the Engineer, to move or reconstruct any water main, electrical conduit, telephone conduit, any connections thereto or any appurtenant structures, work will be done by the Contractor. The Contractor shall be responsible for providing notice to users before interrupting service. Unless specifically provided for in this contract, reconstruction of the utilities shall be at the Contractor's expense. In no case shall the Contractor alter any water main, electric conduit, telephone conduit or any underground cables, conduits or structures, without written permission of the Engineer or until the Engineer is satisfied that adequate warning to the users has been provided.

PROTECTION OF WATER SUPPLIES: Wherever sewers and water mains cross, construction shall be done in accordance with the "Sewer-Water Separation Details for Crossings" shown in the Appendix or on the plans. Where sewers and water mains will be parallel to each other, there shall be a minimum separation distance of ten (10) feet, measured edge to edge of pipe. If such distance cannot be maintained, as determined by the Engineer, the distance can be reduced, providing the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer.

WORK OUTSIDE RIGHTS-OF-WAY AND EASEMENTS: The Contractor shall not, without written consent from the owner, enter or occupy with men, tools, materials or equipment, any land outside the rights-of-way or easement limits. A copy of the written consent shall be provided to the Engineer.

PROJECT PROGRESS SCHEDULES: Before starting the work and from time to time during its progress, as the Engineer may request, the Contractor shall submit to the Engineer a written description of the methods he plans to use in doing the work and the various steps he intends to take.

Within 15 days after the date of starting work, the Contractor shall prepare and submit to the Engineer; (a) a written schedule fixing the dates at which additional drawings, if any, will be required and; (b) a written schedule fixing the respective dates for the start and completion of various parts of the work. Each such schedule shall be subject to review and change from time time to time during the progress of the work. Included with this schedule shall be a breakdown of monthly estimated construction costs and materials on-site.

WORK TO CONFORM: During its progress and on its completion, all work shall conform truly to the lines, levels and grades indicated on the drawings or given by the Engineer and shall be built in a thoroughly substantial and workmanlike manner, in accordance with the drawings and specifications and the directions, given from time to time by the Engineer. In no case shall any work in excess of the requirements of the drawings and specifications be paid for unless ordered in writing by the Engineer.

PERMITS: It shall be the Contractor's responsibility to obtain all federal, state, regional or local permits necessary for the construction of the project. The Contractor is also responsible for maintaining these permits in force during the length of the contract and for taking all required actions to comply with the content of these permits and permits previously obtained for the project.

SUBSURFACE INFORMATION PROVIDED: Subsurface information provided is to assist the Contractor in making a bid. Subsurface information provided as part of the Contract Documents is not guaranteed to be representative and bidders are encouraged to take additional borings prior to bidding.

COMPACTION: At the preconstruction conference, the Contractor shall be required to submit, in writing, to the Engineer, for approval, the method(s) to be utilized to meet the compaction requirements contained in these Specifications. The Contractor will be required to have specialized compaction equipment on the job site as may be needed to properly compact material specifically for this project. Pieces of equipment such as vibrating plate compactors, tampers, rammers, vibratory rollers, sheepsfoot rollers, wobbly wheeled rollers, rubber tired rollers, steel wheeled rollers and the like shall be considered suitable equipment for compaction.

Such pieces of equipment as backhoe buckets, bulldozers and the like shall not be considered for use as compaction equipment unless specifically approved by the Engineer for special cases.

SUPERVISORS ON THE JOB SITE: The Contractor shall be responsible for ensuring that there is a Supervisor under his direct employ on the job site at all times that construction is underway, whether or not the construction is being accomplished by the Prime Contractor or Subcontractors hired by the Prime Contractor.

SITE RESTORATION: Preconstruction photographs shall be taken by the owner or his representative of all areas to be affected by this contract. These photographs will be utilized upon completion of construction to establish satisfactory compliance with restoration of site to preconstruction condition. All previously vegetated areas which have been disturbed as a result of this construction shall be graded, topsoiled, seeded and mulched as per Section 02820 prior to October 1.

01030
UNDERGROUND UTILITY DAMAGE PREVENTION
"DIGSAFE"

Before the Contractor removes soil or rock to create an open space in the earth greater than one foot in depth by means of any powered or mechanized equipment within an underground utility easement or in the area of a public right-of-way in which an underground utility may be located, the Contractor shall notify "Digsafe" by calling their toll-free number 1-888-344-7233. Digsafe will then notify all utility companies having underground utilities in that area so that they can mark the location of these facilities. The utility companies should mark their lines within forty eight hours from the time Digsafe was notified (excluding Saturdays, Sundays, and legal holidays). Sewer and water facilities shall not be classified as a "utility" under this Specification. Emergency excavations are exempt from this requirement.

Effective January 1, 1988, the mandatory notification of Digsafe in the above mentioned situations became Vermont State Law. A fine of $1,000 may be levied for failure to telephone Digsafe before an excavation is made.

01080
APPLICABLE CODES

MATERIAL SPECIFICATIONS: All materials, unless specified otherwise, utilized on this contract shall be subject to the approval of the Engineer and shall meet the applicable requirements of the latest published specifications and standards of the following institutions, associations or departments.

American Concrete Institute
American Society of Testing and Materials
American Institute of Steel Construction
American Water Works Association
Vermont Agency of Transportation - "Standard Specifications for Highway and Bridge Construction"
American Welding Society
National Electrical Code
National Plumbing Code
All Applicable State and Local Codes and Permits

ABBREVIATIONS AND REFERENCES: Where reference is made to a specification of one of the below mentioned or other associations or societies, it is understood that the serial designation of specification in effect at the date of receipt of bids shall take precedence over those listed below.

ASTM American Society for Testing and Materials
ASA American Standards Association
AWWA American Water Works Association
AASHO American Association of State Highway Officials
AASHTO American Association of State Highway and Transportation Officials
ACI American Concrete Institute
AGMA American Gear Manufacturers Association
ANSI American National Standards Institute
AISC American Institute of Steel Construction
ASCE American Society of Civil Engineers
ASME American Society of Mechanical Engineers
ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers
AIA American Institute of Architects
ASSE American Society of Sanitary Engineers
AGC American General Contractors of America
CEC Consulting Engineers Council
EPA Environmental Protection Agency
IEEE Institute of Electrical and Electronics Engineers
NBFU National Board of Fire Underwriters
NBS National Bureau of Standards
NSPE National Society of Professional Engineers
NEWWA New England Water Works Association
NEC National Electric Code
NEMA National Electrical Manufacturers Association
PCA Portland Cement Association
SCPI Structural Clay Products Institute
UL Underwriters' Laboratories
WPCF Water Pollution Control Federation

01500
TEMPORARY FACILITIES

WORK INCLUDED: Included in this section pertains to the Contractor's responsibility of providing temporary facilities

The Contractor shall be responsible for and shall bear at his own expense all temporary facilities necessary for the proper fulfillment of the Contract, including but not limited to all temporary electricity, lighting, heating and ventilation, telephone service, water, sanitary facilities, safety and first aid facilities. The Contractor shall make all arrangements for temporary facilities well in advance of need so as to not delay construction. All temporary facilities shall be adequate to perform the function for which they are intended without risk of personal or property damage to any individual.

01560
SPECIAL CONTROLS

WORK INCLUDED: Work included in this section pertains to the special controls which the Contractor must institute and maintain during the length of the Contract.

DUST CONTROL: The Contractor shall be responsible at his own expense for ensuring that the dust created as a result of construction activities does not create a nuisance or a safety hazard. Where and when deemed necessary the Contractor will be required to wet sections of the construction area with water or apply calcium chloride or sweep the roadway with a power broom as dust control measures. Dust control measures shall be provided at all times, including evenings and weekends. Route 2 and Route 2A road entrance exits will be swept daily.

WATER CONTROL: The Contractor shall take all necessary measures to handle all water in excavations, shall furnish all materials and equipment and shall do all incidental work to keep the excavation entirely clear of water while pipelines, ponds, structures and their foundations are being built. The Contractor shall be responsible for choosing the method for control of water and shall assume all responsibility for the adequacy of the methods chosen. No construction shall be undertaken if, in the opinion of the Engineer, adequate control of water is not assured.

WATERTIGHTNESS: It is the responsibility of the Contractor to ensure that all new structures, pipes and equipment built under this contract for the purpose of containing water or other fluids or for conveying such liquids are watertight under all operating conditions for which they are intended. Any pipe or structures, where leakage is determined to be excessive by the Engineer, shall be subject to correction or replacement by the Contractor at his own expense.

POLLUTION CONTROL: During the construction period, the Contractor shall exercise every reasonable precaution to prevent pollution of the waters of the State. Pollutants such as chemicals, paints, fuels, lubricants, bitumens, raw sewage and other harmful waste shall not be discharged into or alongside these waters or into natural or man-made channels leading thereto. Applicable statues and regulations of the Vermont State Agency of Environmental Engineering relating to the prevention and abatement of pollution shall be complied with.

01568
PROTECTION OF THE PUBLIC

WORK INCLUDED: Work included in this section pertains to the Contractor's responsibility to protect the public and workmen.

The public shall be protected by the Contractor from any and all hazards connected with the work. Open trenches, materials or other equipment within the working limits are to be guarded by the use of adequate barricades, snow fence or flagmen. All barricades left in position overnight are to be properly lighted.

The Contractor shall be held responsible for the safety of all workmen and the general public and all damages to property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to protect persons or property from hazard of open trenches, materials or equipment at any time of the day or night within the working area. All work shall be in conformance with OSHA regulations, Title 19, Parts 1926.651 and applicable VOSHA regulations.

01570
MAINTENANCE AND PROTECTION OF TRAFFIC

WORK INCLUDED: This section includes the methods the Contractor shall employ to maintain and protect traffic.

The Contractor shall provide uniformed traffic police or flagmen as deemed necessary by the Engineer and/or governmental agencies.

The Contractor shall, as conditions warrant, employ flagmen at any location on the project where his equipment or construction operations are such that they will in any manner interfere with the movement or safety of the traveling public.

The Contractor shall erect warning signs in advance of any place on the project where operations may interfere with the use of the road by traffic and at all intermediate points where the project crosses or coincides with an existing road. Such warning signs shall be constructed and erected in accordance with the plans furnished and Section 10441, Signs for Traffic Control, of these specifications.

The cost of traffic police services occasioned by the Contract shall be paid for by the Contractor. The cost of uniformed traffic police will not be paid separately but shall be included in the prices stated in the several items of work in the Schedule of Prices in the Proposal. Two-way traffic shall be maintained unless otherwise authorized by the Engineer.

The Contractor shall notify the Engineer, local police and fire departments as well as municipal officials at least 72 hours in advance of any intent to close streets. The Contractor shall work with the local government to establish a suitable alternate route, and shall at his own expense, provide and maintain suitably marked and well lighted detour signs.

The employment or presence of traffic flagmen or uniformed police does not relieve the Contractor of any responsibility or liability under this contract.

01575
WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY

WORK INCLUDED: Included in this section are the requirements that the Contractor must meet while working within the State highway right-of-way.

GENERAL: The Contractor shall insure that Highway Permits have been obtained prior to the commencement of any construction within a public highway right-of-way. Permits for work within a State highway right-of-way shall be obtained from the Utilities Engineer, Vermont Agency of Transportation, Montpelier, Vermont.

A preconstruction meeting will be held prior to the Contractor beginning work. The Agency of Transportation's District Transportation Administrator and/or Utilities Engineer, the Construction Manager, the Contractor's superintendent, and the Engineer assigned to the project will be present at this meeting.

Upon completion of the work, a final inspection will be held, with the same parties present as at the preconstruction meeting. The Contractor will be required to restore the highway right-of-way to as good a condition as it was prior to doing the work, and to the satisfaction of the Agency of Transportation's District Transportation Administrator.

Ten (10) days written notice shall be given to the District Transportation Administrator before any work is done within a State Highway right-of-way. A copy of such notice shall be furnished to the Engineer. Inspection by the Agency of Transportation shall be permitted as construction progresses.

The Contractor's work shall be performed in such a manner that the roadway, appurtenances and highway traffic will be safeguarded.

The Contractor shall suspend all work within the State Highway right-of-way during the period from November 15th to April 15th. Prior to suspension of work, the Contractor shall hold a conference with the Engineer, District Transportation Administrator and the Owner. Any work required as a result of this conference shall be accomplished prior to November 15th. All bituminous paved travel ways, shoulders and parking areas disturbed under this Contract shall be restored prior to suspension of work. Gravel surfaces in travel ways and parking areas shall be restored to a condition equal to that which existed prior to start of construction. All bituminous paved and gravel surfaced travel ways and parking areas shall be maintained by the Contractor throughout the suspension of work period.

Traffic shall be protected at all times by suitable barricades, warning and advance warning signs, as required to protect the public during the construction period. All construction operations will be conducted so as to cause a minimum of interference with traffic. At least one-way traffic shall be maintained at all times. Two-way traffic shall be maintained at all times when construction operations are not in progress. Uniformed officers shall be provided for the control of traffic when two-way traffic cannot be maintained and at such other times as may be required by the District Transportation Administrator for the protection of the public.

APPROVAL: Before any construction operations are started, the Contractor shall submit to the Engineer in triplicate, a detailed written description of the equipment and methods he proposes to use and acceptable sketches showing details of the proposed operation. If a sub-contractor is to be used for the work, the name and address of the sub-contractor shall be indicated in the written description. No work shall proceed until the Contractor's plans and schedules have been approved in writing by the Owner, the Engineer and the District Transportation Administrator.

JACKING, DRILLING AND TUNNELING: The Contractor shall construct the casing pipe under the highway as indicated on the Drawings in such a manner that there shall be no interruption to traffic or disturbance of the roadway. Jacking, drilling or tunneling operations shall be confined to areas outside the traveled portion of the highway, as indicated on Vermont Agency of Transportation Standard Drawing D-20.

Jacking, drilling or tunneling operations, including installation of the casing and carrier pipe, shall be carried out in accordance with the approved plans, specifications and working drawings.

When excavating from within the jacking or drilling pipe, the Contractor shall use extreme care to avoid the loss of material from outside the limits of the pipe in its final position. Excavation shall be carried ahead of the casing pipe only to that extent possible without the loss of material.

When sheet piling is used to form the highway side of the boring pit, the piling shall be cut off 2 feet below grade and the remaining length left undisturbed following completion of construction operations.

No material shall be placed on the paved portion of the highway at any time unless authorized by the District Transportation Administrator.

Open cut excavation for highway crossings is not the option of the Contractor, and may be utilized only where attempted jacking, drilling or tunneling methods fail or otherwise prove impractical. Where such methods fail or prove to be impractical, the Contractor, with the written approval of the Engineer, shall obtain an appropriate modification of the highway permit from the District Transportation Administrator prior to the utilization of open cut methods. Prior to approval of each instance, evidence will be required that no practical alternative to open cutting exists.

EXCAVATION, BACKFILL AND SURFACE RESTORATION: Maximum dimensions of excavation within the highway right-of-way shall conform in general to details shown on Vermont Agency of Transportation Standard Drawing D-20. When excavating through portland cement concrete pavements, existing reinforcing shall be cut in the center of trench and carefully bent out of the way of excavation operations.

Immediately following installation of the casing and/or pipe, the trench shall be backfilled with approved material in 6" layers to the subgrade line. Each layer shall be compacted to not less than 95% of the maximum dry density as it is placed. Sub-base of gravel or crushed rock shall be placed on the properly compacted subgrade in 6" compacted layers and shall be a minimum depth of 18" or as directed by the Engineer. Each layer shall be thoroughly and solidly compacted.

At least a temporary pavement shall be provided within 36 hours of the completion of backfilling and prior to weekend shutdown at all locations where an open cut has been made through a roadway subject to vehicular traffic. The temporary pavement shall consist of at least one inch of thoroughly compacted bituminous concrete. Temporary pavements shall be properly maintained and shall be replaced with permanent pavement prior to completion of the project or suspension of work for the winter season.

Cement concrete pavements shall be replaced with concrete having a minimum thickness equal to the thickness of the existing pavement, but in no case less than 8" thick. The top surface shall be shaped to smoothly match adjoining pavement. An overlap (structural tie) shall be maintained between existing and new rebar or wire mesh. Reinforcing shall be placed with a minimum concrete cover of 2". Concrete shall be thoroughly compacted, struck off to the desired grade and cured for seven (7) days with moistened sisal paper or burlap covering before being subjected to traffic.

Bituminous pavements shall be replaced with 3" of bituminous plant mixed concrete or the thickness of the existing bituminous pavement, whichever is less, in accordance with Vermont Agency of Transportation Standard Drawing D-20.

Sidewalk and curbs shall be replaced in kind or in accordance with details shown on the plans.

Existing granite curbs may be salvaged and reset.

In areas presently grass covered, turf shall be re-established in accordance with Section 651, Vermont Agency of Transportation Standard Specifications for Highway and Bridge Construction, to the satisfaction of the District Transportation Administrator. The Contractor shall be responsible for the turf and grade of the ground surface for one year following the completion of the work, or as specified by the District Transportation Administrator.

02100
CLEARING, GRUBBING, AND STRIPING OF TOPSOIL

WORK INCLUDED: The Contractor shall do all clearing, grubbing and stripping necessary to permit construction of the work within the limits of the property or easements indicated in the drawings.

CLEARING AND GRUBBING: The Contractor shall do all necessary work of clearing and shall dispose of all material, including trees and brush as may be approved by the Engineer. Disposal shall comply with local ordinances. All areas cleared shall be left clean and presentable. Except within actual lines of trenches, manholes, roadways or sidewalks to be built, where trees must be removed, no live trees with trunks over four (4) inches in diameter shall be removed unless otherwise required or approved by the Engineer. Clearing shall be done in such a manner that present growth will merge with the construction limits to give a natural appearance. The Contractor shall remove all stumps and roots within permanent rights-of-way.

STRIPPING TOPSOIL: In general, where construction is not in roadways, it is carried across private and public rights-of-way, presently covered with topsoil. After trenching and pipe laying operation or construction of structures is completed, excess material shall be removed and area graded, provided with topsoil and seeded as specified in Section 02820. Ground surface shall be left in a condition equal to that which existed before construction.

02211
ROCK EXCAVATION

WORK INCLUDED: The Contractor shall excavate rock, if encountered, to the lines and grades indicated on the plans or as directed by the Engineer, properly dispose of the rock, and backfill with acceptable material. Generally, rock in pipe trenches shall be excavated so as not to be less than 6" from the bottom of the pipe after it has been laid.

Rock excavation shall mean boulders exceeding one cubic yard in volume or solid ledge rock, which, in the opinion of the Engineer, requires for its removal, drilling and blasting, wedging, sledging or barring. No hardpan, soft or disintegrated rock which can be removed with a pick; loose, shaken or previously blasted rock or broken stone, smaller than one cubic yard, in rockfilling or elsewhere; and no rocks exterior to the maximum limits of excavations approved by the Engineer, which may fall into the trench or other excavations, will be measured or allowed as rock excavation.

BLASTING: In rock excavation, it is required that blasting shall be conducted with all possible care so as to avoid injury to persons and property; that rock shall be well covered with effective appliances; that sufficient warning shall be given to all persons in the vicinity of work before blasting; that care shall be taken to avoid damage to water pipes, gas pipes, sewers, drains or other structures; and that caps or other primers shall not be kept in the same place where dynamite or other explosives are stored.

No blasting will be permitted under or adjacent to the State Highway unless special permission has been received from, and arrangements made with, the District Highway Engineer.

The Contractor, in addition to observing all laws and ordinances relating to storage and handling of explosives, shall also conform to any further regulations which the Engineer may deem necessary in this respect.

BLASTING (ECORDS: The Contractor shall keep and submit to the Engineer an accurate record of each blast. The record shall show the general location of the blast, the depth and number of drill holes, the kind and quality of explosive used and other data required for a complete record.

CLEARING OF BLASTED SURFACES: The Contractor will be responsible for clearing all blasted surfaces of loose rock as well as any objectionable foreign matter such as dirt, ice and scale prior to commencement of backfill or concrete or similar operations.

DISPOSAL OF BLASTED ROCK: Blasted rock may be utilized as backfill material from an elevation two feet above the highest pipe to be installed in the excavation. Adequate amounts of finer material shall be included in the backfill to prevent the formation of voids. The Engineer reserves the right to limit the size and/or the amount of blasted rock used as backfill. Blasted rock not used as trench backfill shall be disposed of in a manner approved by the Engineer.

NOTIFICATION OF LAND OWNERS: All adjacent land owners shall be given notice of the blasting 48 hours in advance.

02212
FILL & EMBANKMENTS

WORK INCLUDED: Embankments shall be constructed, as shown on the Contract Drawings, by the Contractor with either approved surplus excavated material or with approved material obtained elsewhere.

SURFACE PREPARATION: When the embankment to be constructed is less than 5 feet in depth above the existing grade, the area within the construction limits shall be prepared by clearing all trees, down timber, brush, bushes and shrubs. The area shall be grubbed to remove all stumps, roots, duff, grass turf, debris or other objectionable material. When the embankments are 5 feet and over, all stumps shall be cut off as close to the ground as practicable but not to exceed 6 inches above the existing ground as measured at base of the stump. The area shall not be grubbed but all objectionable material shall be removed.

All material resulting from clearing and grubbing shall be satisfactorily disposed of in a manner approved by the Engineer and in compliance with local ordinance.

When embankments are to be made on a hillside, the slope of the original ground on which the embankments are to be constructed shall be stepped and properly drained as the fill is constructed in accordance with the plans or as directed by the Engineer so that adverse movement of the slopes does not occur.

MATERIALS CONTROL: The excavated rock, ledge, boulders and stone, except where required in the construction of other items or otherwise directed, shall be used in the construction of embankments to the extent of the project requirements and, generally, shall be placed so as to form the base of an embankment.

Frozen material shall not be used in the construction of embankments, nor shall the embankments or successive layers of the embankments be placed upon frozen material. Placement of material other than rock shall stop when the sustained air temperature, below 32°F, prohibits the obtaining of the required compaction. If the material is otherwise acceptable, it shall be stockpiled and reserved for future use when its condition is acceptable to the Engineer for use in embankments.

EMBANKMENTS OVER UNSTABLE SOILS: When embankment is to be constructed across swamp, muck or areas of unstable soils, the unsuitable material shall be excavated to reach soils of adequate bearing capacity and the embankment begun. Alternative methods such as use of a filter fabric in place of excavation and backfill may be utilized only after approval of same by the Engineer.

Material from excavation on the project shall be used to the extent available and when not available shall be obtained from other sources when authorized in writing by the Engineer.

METHOD OF CONSTRUCTION: Material being placed in embankments shall be placed in horizontal layers of uniform thickness across the full width of the embankment except when it is impractical to construct full width of the embankment, partial width layers may be authorized by the Engineer. Stumps, trees, rubbish and other unsuitable material shall not be placed in embankments, except as designated on the plans or as ordered by the Engineer. The layers shall begin at the deepest part of the fill. Embankments shall be placed and compacted as in Section 02265 of these Specifications using 6 inch lifts to obtain 95% maximum dry density by the AASHTO T99 (Standard Proctor) or the ASTM D698 test. Field density testing shall be done in conformance with the Sand Cone Method, ASTM D1556 or the Nuclear Method described by ASTM D292 or AASHTO T238. Effective spreading equipment shall be used on each layer to obtain uniform thickness prior to compaction. Each layer shall be kept crowned to shed water to the outside edge of embankment and continuous leveling and manipulating will be required to assure uniform density. The entire area of each layer shall be uniformly compacted to at least the required minimum density by use of compaction equipment consisting of rollers, compactors or a combination thereof. Earth moving and other equipment not specifically manufactured for compaction purposes will not be considered as compaction equipment.

All fill material shall be compacted at a moisture content determined by the Engineer to be suitable for obtaining the required density. In no case, shall the moisture content in each layer under construction be more than 3 percent above the optimum moisture content and shall be less than that quantity that will cause the embankment to become unstable during compaction. Sponginess, shoving or other displacement under heavy equipment shall be considered prima facie evidence for an engineering determination of lack of stability under this requirement and further placement of material in the area affected shall be stopped or retarded to allow the material to stabilize.

When the moisture content of the material in the layer under construction is less than the amount necessary to obtain satisfactory compaction by mechanical compaction methods, water shall be added by pressure distributors or other approved equipment; water may also be added in excavation or borrow pits. The water shall be uniformly and thoroughly incorporated into the soil by disc, harrowing, blading or by other approved methods. This manipulation may be omitted for sands and gravel. When the moisture content of the material is in excess of 3 percent above the optimum moisture content, dry material shall be thoroughly incorporated into the wet material or the wet material shall be aerated by disking, harrowing, blading, rotary mixing or by other approved methods; or compaction of the layer of wet material shall be deferred until the layer has dried to the required moisture content by evaporation.

PIPELINES IN EMBANKMENTS: Pipelines and structures placed in embankments or fills shall conform to these specifications with respect to excavation, bedding, laying and backfilling.

Excavation for pipelines to be laid in embankments shall be made after the embankment has been completed to a height of 3 feet above the crown of the pipe. The pipe shall be laid, properly bedded and backfilled to the top of the trench excavation. Construction of the embankment shall then continue according to this section. Embankment material adjacent to pipelines shall meet the requirements for backfill. No payment for substitute backfill will be authorized for backfill trenches excavated in embankments.

COVER: Embankments shall be topsoiled and seeded in accordance with Section 02820 of these specifications unless specified otherwise on the plans. In embankment areas where erosion control plantings are to be made, the area shall be graded or bermed to provide cross-drainage and topsoiled prior to the planting.

02213
EXCAVATIONS FOR ROADWAYS AND PARKING

WORK INCLUDED: The following section describes the work to be done by the Contractor in making parking or road excavations.

GENERAL: Prior to the beginning of excavation, grading and embankment operations in any area, all necessary clearing and grubbing in that area shall have been completed.

SLOPES: All slopes in cut and embankment sections, ditches and waterways, whether old or newly constructed, shall be satisfactorily cleaned and cleared of obstructions and left in a neat and trim condition. Excavation shall be made in reasonably close conformity with the lines, grades and requirements indicated in the Contract or ordered by the Engineer.

CONSTRUCTION: During the construction, the roadways and parking shall be maintained so that they will be drained at all times. Where traffic is maintained, care shall be exercised to keep the portion open to traffic in a satisfactory condition.

REMOVAL OF MATERIAL: All suitable material removed from excavation shall be used in the formation of embankments as indicated on the plans or as directed by the Engineer. The extra or waste material excavated during construction of the roadways and parking will be used to the extent possible to uniformly flatten slopes, or be deposited in such places within the right-of-way as may be indicated on the plans or as directed by the Owner or Engineer. None of the extra or waste material will be removed from the project site. Any material not used in the right-of-way or to flatten slopes or to fill gullies or other low areas within the project lands as directed by the Owner or Engineer. All of the areas that are filled with this extra or waste material shall be graded to drain, topsoiled, seeded and mulched in accordance with the landscaping specifications.

The Contractor shall be responsible for the stability of all constructed embankments and shall replace at his own expense any portions which have become displaced and which are not attributable to the unavoidable movement of the natural ground upon which the embankment is made or to an Act of God.

BORROW MATERIAL: Unless authorized by the Engineer, borrow material shall not be placed until all suitable material has been excavated and placed in the embankments, except when Sand Borrow or Granular Borrow is called for on the plans or when Granular Borrow is required by the Engineer for use under embankments or used with material from roadway excavations in making embankments.

02221
PIPELINE TRENCHES AND EXCAVATIONS FOR STRUCTURES

WORK INCLUDED: The Contractor shall excavate to normal depth in earth for structures and trenches, backfill such excavations and grade and topsoil as necessary, as shown on the Contract Drawings or as directed by the Engineer.

GENERAL: The trenches and other excavations shall be of sufficient width and depth at all points to allow all pipes to be laid, joints to be formed and structures and appurtenant construction to be built in the most thorough and workmanlike manner and to allow for sheeting and shoring, pumping and draining and for removing and replacing unsuitable material. Trenches and excavations shall be at least twelve inches wider than the outside dimensions of the structure they are to contain; trenches must not be unnecessarily wide so as to materially increase load on the pipe resulting from backfill. Bottoms of trenches for and other excavations shall be carried to lines and shapes satisfactory to the Engineer. Bottoms of trenches for pipe shall be carried to a depth six inches greater than grade of pipeline, refilled to grade and bedded in the specified bedding method as detailed on the Contract Drawings. No tunneling will be permitted in place of open trench construction unless specifically authorized by the Engineer or required as specified under Section 01575, Work Within State Highway Rights-of-Way. Excavations adjacent to existing underground structures shall be done by hand so that foundations of structures shall not be disturbed.

Wherever boulders or ledge rock are encountered in excavations for pipelines or structures, such boulders or ledge rock shall be removed to a depth of six inches below grade and space occupied by them shall be refilled to grade with the specified bedding material. Trenches shall be opened at such times and to such extent only as may be permitted by the Engineer. All driveways, crosswalks, sod, shrubs, trees and any other surface material affected by the work shall be carefully taken up and kept separate from the other excavated material. If suitable, excavated material shall be used for embankments, backfill and fill. Side slopes of excavations shall be less than the angle of repose of material excavated and shall be flat enough to prevent slides or cave-ins. Any excavation required as a result of slides or cave-ins shall be done by the Contractor at his own expense.

Placement of bedding material shall not be done until the ground has been thoroughly dewatered and the Contractor is ready to install pipe or to construct foundations of various structures.

LENGTH OF TRENCH ALLOWED TO BE OPEN: Length of trench allowed to be open shall be determined by the Engineer. The total running length of all work in each section shall be kept as short as is practical. Only that length of trench which can be protected by means of barricades, fences, and the like shall be allowed to remain open overnight. Unless specifically permitted by the Engineer, all trench excavations shall be backfilled prior to work shut-down for each weekend.

MISCELLANEOUS EARTH EXCAVATION: Wherever required by the Engineer, the Contractor shall do earth excavation and backfilling in addition to the excavation and backfilling needed to construct the work required by the Contract Documents. Miscellaneous earth excavation and backfilling may be required by the Engineer for test pits or for other unforeseen purposes. It may be necessary to do some of this work by hand. Excavation for deepening or widening of permanent drainage ditches shall be included in this item. Temporary or permanent relocation of streams shall not be considered under miscellaneous earth excavation.

EARTH EXCAVATION BELOW GRADE: Wherever, in the opinion of the Engineer, material at or below grade line of pipe or structure plus depth of bedding material is unsuitable for foundations, it shall either be excavated to such additional depths as directed by the Engineer and then refilled with crushed stone, well compacted, or the Engineer may direct that a filter fabric as defined in Section 02545 be utilized in lieu of deeper excavation. If filter fabric is utilized, it shall be installed and the excavation then brought to grade line for pipe trenches as shown on the Contract Drawings.

UNAUTHORIZED EXCAVATION: If the bottom of any excavation has been removed below grade shown on the Contract Drawings, or that prescribed by the Engineer, it shall be brought to grade at the Contractor's expense by refilling with well compacted bedding material.

EARTH EXCAVATION: Earth excavation includes all materials not classified as rock excavation and includes, but is not limited to curbs, sidewalks, pavement, peat, clay, silt, sand, muck, gravel, hardpan, loose shale, loose stone in masses, and boulders measuring less than one cubic yard in volume.

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	TYPICAL SPECIFICATIONS ~PROGRESS PLAN~

DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY
DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	JPK/RFH
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	1sp

Thu Sep 07 08:36:32 2000

02265
BEDDING FOR PIPE AND BACKFILL

WORK INCLUDED: Work of this section pertains to the backfill requirements and definitions of materials utilized in backfill operations which the Contractor must comply with.

GENERAL: Each structure or portion of pipeline shall be inspected and approved for bedding and backfill before it is covered. Approval for bedding and backfill will not constitute final acceptance of the structure or pipeline. Any pipeline found to be out of line, deformed or damaged shall be re-laid or replaced without additional compensation. No backfilling will be allowed around manholes or other masonry structures until concrete or masonry has set sufficiently, as determined by the Engineer. All excess fill shall be removed from the construction site by the Contractor, unless directed otherwise by the Engineer, and disposed of in and acceptable manner. The Contractor is responsible for the location of a disposal site and obtaining any necessary permits associated with transportation to or disposal at the site. No excess fill may be stockpiled at the construction site.

PIPE BEDDING: Pipe bedding shall be that material in the trench directly adjacent to the pipe. For all plastic piping used for gravity sewer, storm drain, water main or force main, it shall extend from the bottom of the trench, 6" below the invert of the pipe, to a point 6" above the crown of the pipe and shall consist of crushed stone, sand or granular pipe bedding as detailed in the Contract Drawings. For ductile iron gravity sewer, water main or force main and for reinforced concrete or asphalt coated corrugated metal storm drain, the bedding shall extend from the bottom of the trench, 4" below the invert of the pipe, to the spring line of the pipe and shall consist of crushed stone, sand or granular pipe bedding as detailed in the Contract Drawings. The pipe bedding shall be compacted to the minimum density specified on the plans in order to provide uniform support around the pipe. Specific information relative to the pipe bedding to be utilized on this project shall be found on the Contract Drawings and under the sections covering specific types of pipe materials, Sections 02520, 02555, 02556, and 02560 as appropriate.

PIPE BACKFILL: Pipe backfill for this Project shall include all material placed above the pipe bedding to within 4" of finished grade or to road subgrade as shown on the Contract Drawings for pipes under roads and shall be selected compactable soil material from the excavation. Materials used for backfill shall be subject to the inspection and approval of the Engineer. If in the opinion of the Engineer the excavated material is unsuitable for backfill, the Contractor shall dispose of the material and substitute approved sand, gravel or other material in the amounts and proportions specified by the Engineer. Frozen material shall not be placed in backfills and backfills shall not be placed on frozen material. No stones in excess of 3" diameter shall be placed within 2 feet of the pipe. Larger stones may be used in the backfill provided care is taken that stones do not become nested and that all voids between stones are completely filled with fine materials. The size and quantities of stone used in backfill will be subject to approval by the Engineer. No backfill shall be dropped from a height of more than 3 feet from the top of the pipe.

The backfill shall consist of two separate zones. The first zone shall extend from the top of the bedding material to a height of 24" above the crown of the pipe. Select excavated material with stones no larger than 3" diameter shall be placed in 6" lifts and compacted to a density of 95% of the maximum dry density using the Standard Proctor Test, according to ASTM D698 or AASHTO T99 (latest version). The materials shall be placed carefully so as not to disturb the pipe or cause it to break or misalign.

The second zone shall extend from the top of the first zone to within 4" of finished grade or to road subgrade. Material in this zone shall be select excavated material, placed in 6" lifts and compacted to a density of 95% of maximum dry density using the Standard Proctor Test, according to ASTM D698 or AASHTO T99 (latest version). Suitable cohesive soil can be backfilled in this zone and compacted using impact type equipment, pneumatic tampers, engine or self-propelled, sheepsfoot rollers on wide trenches or other suitable equipment, providing the 95% compaction requirement is met. In cohesionless soils, vibratory plates in confined areas and vibratory rollers in unconfined areas can be utilized, providing the specified degree of compaction is met. Granular cohesionless material may, in some cases and upon approval of the Engineer, be compacted using water jetting or immersion type vibrators with flooding and pooling.

The entire trench width shall be uniformly compacted and brought to grade. The remaining 4" of trench between the top of the backfill and the final surface, on areas to be seeded or sodded, shall be backfilled with topsoil, compacted and finished in accordance with Section 02820, Final Grading, Topsoiling and Seeding of these Specifications. If the area is to be paved, the upper zone must be constructed in accordance with Sections 02649 and 02650 or 02651.

FIELD DENSITY TESTING: Unless specified elsewhere, the Construction Manager shall provide field density tests to verify that the compaction requirements of this section have been met. Material having a gradation with more than 30% retained on the 3/4" sieve will generally be considered too coarse for satisfactory density testing and therefore shall be replaced with finer material and recompacted before retesting. Additional field tests necessary, because of failure of the first test to comply with stated density requirements, shall be provided by the Construction Manager and charged against the Contractor. The field density determination will be made by the Engineer in accordance with Standard Method of Testing for Density of Soil In-Place by the Sand Cone Method, ASTM D1556 (AASHTO T191) or using Nuclear Methods in accordance with ASTM D2922 or AASHTO T238.

The Contractor shall notify the Engineer at least 24 hours in advance of need for compaction testing.

MATERIAL SPECIFICATIONS: This section pertains to the specifications which the Contractor must comply with regarding the quality and type of material to be utilized for fill, backfill and embankment operations.

GRANULAR PIPE BEDDING AND BACKFILL: Where reference is made to this material either on the plans or within these specifications, it shall mean a well graded material free from debris, stumps, branches, vegetation, pavement and similar objectionable material. It shall meet the gradation requirements for granular backfill defined as follows:

Sieve Designation	Percentage by weight Passing Total Sample	Square Mesh Sieves Sand Portion
3"	100%	---
2-1/2"	90% - 100%	---
No. 4	50% - 100%	100%
No. 100	---	0 - 18%
No. 200	---	0 - 8%

GRAVEL BORROW: Where reference is made to this material either on the plans or within the specifications, it shall mean a material reasonably free from silt, loam, clay or organic matter containing no more than 8% by weight passing the #200 sieve. It shall be uniformly graded and the largest stone shall not exceed 6" in any dimension.

SAND: Sand shall consist of clean, hard durable grains, uniformly graded from dense to fine and shall be free from injurious amounts of silt, loam, clay, organic matter or other harmful substances. It shall meet the gradation requirements for sand defined as follows:

Sieve Designation	Percentage by weight Passing Total Sample
1/2"	100%
No. 4	90% - 100%
No. 10	60% - 90%
No. 40	20% - 40%
No. 200	0% - 12%

CRUSHED STONE: Crushed stone or screened gravel, uniformly graded from 3/4" to 1/4" and of satisfactory quality shall be furnished to replace unsuitable material excavated below grade, to bed pipe, to replaced unauthorized excavation and to be used elsewhere as shown on the Contract Drawings or as required by the Engineer. It shall be clean, hard, durable and free from dust, loam, clay or organic matter and shall be well compacted in place.

STONE FILL: The Contractor shall line specified drainage ditches following excavation with stone fill in reasonably close conformity with the dimensions shown on the plan or as ordered by the Engineer.

Stone fill may also be used in the stabilization of embankment, and shall be placed in one course thickness as shown on the Plans in a manner that will result in a reasonably well graded surface. Care shall be taken in the placing to avoid displacing the underlying material.

The stones shall be so placed and distributed that there will be no accumulations of either the larger or smaller sizes of stone.

Rearrangement of the stone fill by hand labor or mechanical equipment may be required to obtain the specified results.

When stone fill and filter blanket are to be placed as part of an embankment, the protective materials shall be placed concurrently with the construction of the embankment unless otherwise authorized by the Engineer.

Where stone fill and filter blanket is to be placed under water, methods shall be used that will minimize segregation and insure that the required thickness of protective material will be obtained.

Stone for stone fill shall be approved hard blasted rock. The stone shall be angular in shape and shall not have a smallest dimension less than 1/3 of its longest dimension. The stone fill shall be reasonably well graded from the smallest to the maximum size stone specified so as to form a compact mass when in place.

a) Type 1: The longest dimension of the stone shall vary from 1 inch to 12 inches and at least 50 percent of the volume of the stone in place shall have a least dimension of 4 inches.

b) Type 2: The longest dimension of the stone shall vary from 2 inches to 36 inches and at least 50 percent of the volume of the stone in place shall have a least dimension of 12 inches.

c) Type 3: The longest dimension of the stone shall vary from 3 inches to 48 inches and at least 50 percent of the volume of the stone in place shall have a least dimension of 16 inches.

d) Type 4: The longest dimension of the stone shall vary from 3 inches to 60 inches and at least 50 percent of the volume of the stone in place shall have a least dimension of 20 inches.

RIPRAP: The Contractor shall furnish and place riprap in reasonably close conformity to the dimensions, elevations and at the locations indicated on the plans in accordance with these specifications or as ordered by the Engineer.

The slopes to be protected shall be graded and shaped to the lines indicated on the plans or as directed by the Engineer and if in a fill area, shall be compacted as per this section. All slopes shall be maintained and protected to the neat lines indicated on the plans prior to the placing of riprap.

Stone for riprap shall be approved, rough, unhewn quarry stone, as nearly rectangular in section as practical. The stones shall be hard, sound, resistant to the action of water and weathering and suitable in every respect for the purpose intended. The individual stones shall have a depth equal to the thickness of the course of riprap. The riprap, complete in place, shall consist of stones that have a minimum volume of 8 cubic feet, unless otherwise noted.

The voids between the stones shall be chinked with smaller stones to produce a relatively smooth and uniform surface. Rip rap shall generally be placed from an elevation 1' below the river bottom elevation to the elevation or height specified on the Contract Drawings.

02266
BEDDING FOR UNDERDRAIN

WORK INCLUDED: Work described in this section pertains to the backfill requirements of materials used in backfilling the underdrain.

Backfill material for the underdrain zone, as shown on the plans shall be crushed stone, as described in V.A.O.T Specification #704.02B.

This zone shall be wrapped with Mirafi 140N filter fabric as shown on the plans.

02401
SHEETING AND SHORING

WORK INCLUDED: Included in this section is all work necessary to install sheeting and shoring to protect the work, public and workmen.

SHEETING & MATERIAL FOR SHORING, RANGERS, BRACES & STRINGERS: The Contractor shall furnish, put in place and maintain such sheeting, shoring, bracing and the like as may be required to support the sides of excavations and to prevent any movement which could in any way injure workers, diminish necessary width of trench or other excavation adjacent structures. Sheeting shall be driven and excavation work conducted in such a manner as to prevent material in back of sheeting from running under sheeting and into trench. Care shall be taken to prevent voids outside of sheeting, but if voids are formed, they shall be immediately filled and well rammed. Sheeting shall not be carried to such a depth at manholes that if it crosses the pipe line it will bear upon pipe. Special precautions by using sheeting, shoring and bracing shall be taken to guard against any damage due to the settlement or movement of buildings, walls or other structures which are adjacent to work.

Bracing, rangers and sheeting shall be securely fastened in place so that they cannot loosen up and fall from position. The sheeting, shoring, bracing, etc., or parts thereof, shall be left in place after completion of work in location where ordered in writing by the Engineer. The Engineer may require that, at intervals, the sheeting shall be left in place to support existing structures and that other sheeting be removed. All sheeting which is left in place, whether ordered by the Engineer or left for the convenience of the Contractor, shall be cut off at least 2' below the surface.

Left-in-place sheeting shall be steel and shall be designed by the Contractor to meet applicable VOSHA safety requirements and good engineering practice. The design of all sheeting shall be performed by a Registered Professional Engineer. This does not relieve the Contractor from responsibility for a safe installation.

02510
UNDERDRAIN SYSTEM

WORK INCLUDED: Work in this section pertains to the installation of all perforated underdrain, clean-outs and appurtenances. Work shall be as shown and noted on the Contract Drawings or as directed by the Engineer.

TYPES OF PIPE: The pipe to be used shall be perforated SDR 35 PVC pipe. All materials and construction methods shall conform to Section 02520, Storm Drain Lines, Culverts and Related Construction, pertaining to the installation of PVC or HDPE pipe.

02520
STORM DRAIN LINES, CULVERTS, AND RELATED CONSTRUCTION

WORK INCLUDED: Work in this section pertains to the installation of all storm drain pipe lines, manholes, catch basins, culverts and appurtenances. Work shall be as shown and noted on the Contract Drawings or as directed by the Engineer.

TYPES OF PIPE: The type of pipe which may be used for storm drain lines is Polyvinyl Chloride Pipe (PVC), Smooth Interior and Annular Exterior Corrugated High Density Polyethylene Pipe (HDPE) or an approved equal.

The manhole water stop gasket and stainless steel clamp assembly must be approved by the Engineer prior to the installation of any pipe.

POLYVINYL CHLORIDE PIPE: PVC pipe shall conform in all respects to the latest revision of ASTM specification D3034 or F679 or F794, Type PSM or PS Polyvinyl Chloride (PVC) Sewer Pipe and Fittings, SDR 35 or Perma-Loc Series 46. Wall thickness of all PVC pipe shall meet ASTM Specifications for SDR 35 or Perma-Loc Series 46 pipe. All pipe and fittings shall be clearly marked as follows:

Manufacturer's Name and Trademark
Nominal pipe size
Material Designation 12454C PVC
Legend "Type PSM SDR 35 PVC Sewer Pipe" or "PS 46 PVC Sewer Pipe"
Designation ASTM D3034, F794 or F679

Joints shall be push-on type using elastic gaskets, and shall conform to ASTM D3212. The gaskets shall be factory installed. The pipe shall be furnished in nominal 13 foot lengths. Sufficient numbers of short lengths and fully machined fittings shall be provided for use at manholes, chimneys, and connections. All connections will require the use of manufactured fittings. Field fabricated saddle type connections will not be considered acceptable.

Any pipe or fitting having a crack, or other defect, or which has received a severe blow shall be marked rejected and removed at once from the work site.

All field cuts are to be made with saw, at 90 degrees to the pipe centerline. The cut end is to be beveled to the same angle as the factory bevel and all interior burrs are to be removed. A homing mark will be placed on all pipes prior to assembly.

The pipe installed under this specification shall be installed so that the deflection shall be less than 5% as measured a minimum of 30 days after installation.

The Contractor will submit certification that the materials of construction have been sampled, tested, inspected and meet all the requirements including wall thickness in accordance with ASTM D3034 for all pipe and fittings to be included in the project work.

SMOOTH INTERIOR AND ANNULAR CORRUGATED HIGH DENSITY POLYETHYLENE PIPE: This specification describes 4- to 60-inch (100 to 1500 mm) Smooth Interior and Annular Exterior Corrugated High Density Polyethylene (HDPE) Pipe with a Silt Tight and Leak Resistant Joint for use in nonpressure gravity flow drainage applications.

* AASHTO M252: Standard Specification for Corrugated Polyethylene Pipe, 4" to 10"(100 to 250mm), Type S.
* AASHTO M294: Standard Specification for Corrugated Polyethylene Pipe, 12" to 48" (300 to 1200 mm), Type S.
* AASHTO MP7-97: Standard Specification for Corrugated Polyethylene Pipe, 54" to 60" (1350 and 1500 mm), Type S.
* ASTM D2321: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
* ASTM D3350: Standard Specification for Polyethylene Plastic Pipe and Fittings Materials.
* ASTM F477: Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

* Pipe and fitting material shall be high-density polyethylene meeting ASTM D3350 minimum cell classification 324420C for 4- through 10-inch diameters or 335420C for 12-through 60-inch diameters.

* Pipe manufactured for this specification shall comply with the requirements for test methods, dimensions, and markings found in AASHTO M252, AASHTO M294 and/or AASHTO MP7-97. The prescribed sizes of pipe are nominal inside diameters. Pipe sizes shall be no less than 99% of nominal inside diameter and have a minimum of 20.0 feet laying length.
* For 4- to 10-inch (100 to 250 mm) diameters, the pipe supplied shall be smooth interior and Annular Exterior Corrugated High Density Polyethylene (HDPE) Pipe meeting the requirements of AASHTO M252, Type S.

* For 54- to 60- inch (1350 to 1500mm) diameters, the pipe supplied shall be smooth interior and Annular Exterior Corrugated High Density Polyethylene (HDPE) Pipe meeting the requirements of AASHTO MP7-97, Type S.
* Manning's "n" value for use in design shall not be less than 0.010.

FITTINGS: Fittings shall conform to AASHTO M252, M294 or MP7-97. Fabricated fittings shall be welded on the interior and exterior at all junctions.

JOINTS: Pipe shall be joined with bell-and-spigot joints meeting AASHTO M252, M294 or MP7-97. Joints shall provide silt tight and leak resistant joint.
Pipe joints shall incorporate a gasket meeting the requirements of ASTM F477 to form silt tight and leak resistant connection. Joints shall exceed the soil tight joint performance criteria of AASHTO Standard Specifications for Highway Bridges, Division II, Section 26.

* Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris.
* A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.

* Smooth Interior and Annular Exterior Corrugated HDPE Pipe shall be Sure-Lok F477 as manufactured by Hancor, Inc. or a pre-approved equal. All alternate products must be submitted to the Engineer two weeks before bid date for approval.

Installation
* Installation shall be in accordance with ASTM D2321 with the exception that minimum cover in trafficked areas shall be one foot (0.3 m) for 4" - 48" pipe and 18"(0.5 m) for 54" and 60" pipe.
* Backfill the pipe with material meeting the requirements of ASTM D2321 Class I, II or III subject to the approval of the Engineer. Backfill shall be placed in six to twelve inch lifts compacted to a minimum 90% standard proctor or as designated by the Engineer.
* Trench width should be wide enough to place and compact backfill around the entire pipe. The trench width shall be outside diameter+24" for pipe sizes 12" to 30" and outside diameter+36" for pipe sizes 36" to 60".

LAYING PIPE: Storm drains and culverts shall be constructed on a trench bottom prepared and bedded as shown on the Contract Drawings. Each pipe shall be checked just prior to laying to ensure that it is clear of all dirt and debris and shall be laid true to line and grade as indicated on the Contract Drawings. All joints shall be tight and culverts shall be continuous. When pipe is to be laid within the State Highway Right-of-Way it shall also be installed in accordance with requirements of Section 601 of the Vermont Highway Department Specifications.

Care shall be exercised when unloading pipe from delivery trucks and moving pipe to its final position. When damaged pipe is rejected by the Engineer, new pipe shall be furnished by the Contractor at the Contractor's expense.

Where existing pipe is to be retained or re-laid and it becomes damaged due to the fault of the Contractor, it shall be replaced with new pipe at the Contractor's expense.

PIPE BEDDING: Pipe bedding shall be as specified in Section 02265 of these Specifications. Reinforced concrete and asphalt coated corrugated metal pipe shall be bedded from the trench bottom, 4" below the invert of the pipe, to the spring line of the pipe with sand or granular pipe bedding as detailed in the Contract Drawings. Plastic pipe shall be bedded from the trench bottom, 6" below the invert of the pipe, to 6" above the crown of the pipe with sand or granular pipe bedding as detailed in the Contract Drawings. Backfill above the pipe bedding shall be suitable excavated material free of stones larger than 3" and shall be placed according to Section 02265 of these specifications.

MANHOLES, CATCH BASINS AND OTHER APPURTENANCES: Where indicated on the plans, the Contractor shall furnish and install manholes which meet the requirements of Section 03401 of these Specifications. The Contractor shall also furnish and install catch basins, where indicated on the plans, which meet the requirements of Section 03402 of these Specifications. All manhole or catch basin steps, covers, grates and other miscellaneous metal shall be furnished and installed in accordance with Section 05550 of these Specifications.

HEADWALLS: The Contractor shall construct pipe headwalls at the locations shown and in reasonably close conformity with the lines, grades and dimensions shown on the Contract Drawings or as ordered by the Engineer. Headwalls shall be either specifically designed asphalt coated, corrugated galvanized metal end sections or shall be of concrete construction, as shown on the Contract Drawings.

If constructed of concrete, all concrete utilized shall meet the requirements for Class B concrete as per Section 03300 of these Specifications.

02530
DEWATERING

WORK INCLUDED: The work includes all work necessary to provide a stable work area for installation of piping and structures and protecting the work from damage caused by water.

The Contractor shall at his expense remove by pumping, draining, bailing or otherwise, any water which may accumulate or be found in trenches and other excavations made under this contract, and shall form all pump wells, sumps, dams, flumes, or other works necessary to keep trenches and other excavations entirely clear of water while pipe lines and structures and their foundations are being built. Newly made masonry shall be protected from damage resulting from dewatering work, by use of canvas, tar paper, or by such other sufficient methods as may be approved by the Engineer. The Contractor shall at all times, have sufficient pumping machinery so that structures will be built in the dry.

Excavation and trenches shall be dewatered where necessary by use of stone drains, pipe underdrains or by use of well points.

Pipe used for underdrains shall be of ample size to dewater trench for proper drainage during construction work. Pipe shall be asbestos-cement pipe, corrugated metal or PVC, as hereinafter specified. Areas to be excavated and trenches shall be excavated to such additional depth as required to lay under drain in a bed of clean gravel or broken stone.

If a well point system is used for dewatering excavation, well points shall be spaced and driven to a depth to thoroughly dewater the construction area.

All dewatering, regardless of method, shall be accomplished so that adequate bearing capacity of the soil is reached to allow stable support of pipe lines, structures, and foundations. Removal of visual running water in the trench without provision of stable trench bottom support for piping or structures does not constitute adequate dewatering.

The Contractor shall furnish, install and maintain, all drainage systems and pumping equipment necessary to keep ground water level at an elevation low enough so that no structures to be built under this Contract shall move. The Contractor shall construct noise abatement structures around all pumps or machinery that must run after working hours. These structures must provide adequate sound absorption to prevent disturbance of the public.

Water from trenches and excavations shall be disposed of in such a manner as will not cause injury to public health nor to public or private property, nor to work completed or in progress, nor to surface of highways, nor cause any interference with use of same by the public. No silty, brackish or turbid water from trenches and excavations shall be allowed to discharge directly to a stream or natural drainage course leading to a stream. The turbid water can be discharged onto the ground providing the subsequent runoff does not create a turbid situation in the stream. Where ground application creates or is likely to create turbid stream conditions, the Contractor will be required to detain the trench excavation water in a temporary sedimentation pond or a similar method acceptable to the Engineer. Upon completion of construction, all temporary sedimentation ponds will be filled with native material and the site restored to its original condition.

02540
EROSION CONTROL

WORK INCLUDED: The Contractor shall carry out his operations in such a manner to give adequate protection to water courses and minimize surface erosion.

Within 7 calendar days after Notice to Proceed on the Project, the Contractor shall submit to the Engineer for acceptance, the Contractor's proposed methods of erosion control and stream protection. No work shall be started on areas which are highly susceptible to erosion, as indicated by the Engineer, or within existing drainage channels until the methods of erosion control, to be employed on the project, have been approved by the Engineer.

The Engineer has the authority to limit the surface area of erodible earth material exposed by excavation, borrow and fill operations and to direct the Contractor to provide immediate erosion control measures to prevent contamination of adjacent streams or other water courses and areas of water impoundment. These measures shall include but not be limited to, hay bale check dams, hay bales for mulch and matting. As the excavation proceeds, cut slopes shall be seeded and mulched to the extent considered desirable and practical by the Engineer. The exposure of uncompleted cut slopes and embankments to the elements shall be as short as practical. Seeding, mulching, installation of erosion control shrubbery or other designed treatment should be initiated promptly and concurrently with the other work.

The Contractor will be required to incorporate all permanent erosion control features into the Project at the earliest practical time as outlined in his accepted schedule.

If and when conditions develop that will suspend construction operations for any appreciable length of time, the excavation and embankment areas shall be shaped in such a manner that the runoff of water may be intercepted and diverted to points where least erosion shall result. Slope drains shall be installed as soon as possible to assist in carrying this runoff. If these preventative measures should fail and an appreciable amount of material begins to erode into a river, stream or impoundment, the Contractor shall act immediately to correct and prevent further erosion.

Erosion control measures shall be continued until the permanent drainage facilities have been constructed and until grass on seeded slopes or specially installed shrubbery is established sufficiently to be an effective deterrent against erosion.

Unless otherwise approved in writing, mechanized equipment shall not be operated in live streams except as may be required to construct changes in channel and permanent or temporary structures. Rivers, streams and impoundments shall, as soon as construction will allow, be cleared of all false work, piling and debris caused by the construction operations.

The Contractor shall perform all of the storm water and erosion control specifications and details shown on the Contract Drawings including installation, maintenance and removal of temporary dams and inlet protection.

02545
FILTER FABRIC FOR SOIL STABILIZATION

Where required on the plans or where directed by the Engineer, the Contractor shall install filter fabric such as Mirafi 500X as manufactured by Celanese Corporation, or TYPAR as manufactured by Dupont Corporation or an approved equal prior to placement fill or embankments.

Prior to placement of the filter fabric, the surface shall be smoothed to remove all objectionable material which could damage the fabric. Where more than one width of filter fabric must be employed to establish a stable base, fabric sections should be joined by overlapping each section a minimum of 24". The Contractor shall fasten each section to the ground surface with 6 inch minimum U-shaped wire pins, single shaft steel pins with metal-disc fasteners or similar devices. Fasteners should be placed 6 feet apart on the overlap; where utilized in channels or streams, the fabric should be overlapped in the direction of water flow. Toeing may be required to ensure that the fabric remains in place. Immediately after placing of the filter fabric a bedding-blanket of gravel or stone, depth as shown on plans, shall be carefully placed over the filter-fabric, so as to not damage or puncture the fabric.

02555
DUCTILE IRON WATERLINES AND RELATED CONSTRUCTION

WORK INCLUDED: The Contractor shall furnish, install and test all water mains and appurtenances as indicated in the Contract Drawings and Specifications.

MATERIALS: Pipes for all waterlines shall be ductile iron pipe of the thickness class designated on the plans. The minimum acceptable thickness pipe shall be the thickness Class designated on the plans. All ductile iron pipe shall be centrifugally cast in molds and shall conform to the latest revision of ANSI Standard A21.51, (AWWA C151) and ANSI Standard A21.11 (AWWA C111), Rubber Gasket Joints for Cast Iron and Ductile Iron Pressure Pipe Fittings and ANSI Standard A21.10 (AWWA C110) Gray-Iron and Ductile Iron Fittings 3 inch through 48 inch of Water and Other Liquids. All ductile iron pipe shall be cement lined and shall conform to ANSI Standard A21.4 (AWWA C104), Cement-Mortar Lining for Ductile Iron Pipe and Gray Iron Pipe and Fittings for Water.

All pipe joints, shall be the push-on type, except for joints at fittings and valves which shall be mechanical joint, unless noted otherwise on the plans. All fittings shall have body thickness and radii of curvature conforming to ANSI Standard A21.10 and push-on joints shall conform to Sections 11-2 through 11-5 and 11-7 through 11-8 of ANSI A21.11.

The electrical conductivity of the pipeline and attached services shall be maintained at all joints through the use of three brass wedges at each joint or with conduction straps. The electrical conductivity of the pipeline across all couplings, valves, and fittings shall be maintained through the use of conduction straps. No couplings shall be made at any point on the pipeline or attached services without incorporating provisions to maintain electrical conductivity.

Mechanical joint, ductile iron pipe shall be the thickness Class designated on the plans, and shall be installed where specified on the plans. Mechanical joint ductile iron pipe shall conform to the Specifications for ductile iron pipe, except for fittings which shall be mechanical joint with body thickness and radius of curvature conforming to ANSI A21.10 and mechanical joints which shall be in accord with Sections 11-2 through 11-6 of ANSI A21.11.

All pipe and fittings shall be manufactured by U.S. Pipe and Foundry, Co., Clow or an approved equal.

INSPECTION AND TESTING OF MATERIALS: All cast iron pipe and fittings shall be inspected and tested in accordance with the manufacturer's specifications and the aforementioned AWWA Specifications. The Contractor shall furnish for approval, certification from pipe manufacturer that all tests have been performed with satisfactory results. Pipe shall not be installed without the Engineer's approval.

HANDLING: Pipe, fittings and accessories shall be carefully handled to avoid damage. Prior to the date of acceptance of the project work by the Owner, the Contractor shall replace any pipe or accessory found to be defective at any time, including after it has been installed, at no expense to the Owner. The Contractor's attention is called to the fact that the cement lining of the pipe is quite brittle and special care should be taken in handling.

All cutting shall be done with a machine having wheel cutters or knives adapted to the purpose except as otherwise approved. All cut ends shall be examined for possible cracks caused by cutting.

All pipe showing cracks shall be rejected. If cracks occur in the pipe, the Contractor may, at his expense and with the approval of the Engineer, cut off the cracked portions at a point at least twelve inches from the visible limits of the crack and use the sound portion of the pipe.

All pipe and fittings shall be cleared of all foreign matter and debris prior to installation and shall be kept clean until the time of acceptance by the Owner.

LAYING PIPE: Pipe shall be laid upon a trench bottom and bed prepared as indicated on the Contract Drawings as specified in this section. Each pipe shall be laid true to line and grade and so laid as to form a tight joint with next adjoining pipe. All installation of pipe shall be done in accordance with AWWA Standard C600.

At all time when pipe laying is not actually in progress, the open ends of the pipe shall be closed by temporary watertight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

There shall be a minimum of six feet of cover on all pipes and fittings. The pipe shall be installed in trenches and at the line and grade shown on the Contract Drawings. Any deflection at joints shall be within the limits specified by the manufacturer. All piping and appurtenances connected to equipment shall be supported so that no strain will be imposed on the equipment. (If the equipment manufacturer's specifications indicate that pipe loads are not to be transferred, the Contractor shall submit certification of compliance).

Thrust blocks or properly installed tie rods shall be installed on all plugs, tees, and bends deflecting 11-1/4" or more. Care shall be taken to ensure that concrete will not come in contact with flanges, joints or bolts. The required area of thrust blocks are indicated on the Contract Drawings or shall be as approved by the Engineer.

In instances where the use of different types of pipes requires joining, the Contractor shall furnish and install all necessary adapters.

All trenching safety standards shall be in conformance with any applicable State and Federal guidelines.

No walking on or working over pipes after they are laid except as may be necessary in making joints, in placing cradles and in tamping backfill material will be permitted until pipes are backfilled as specified to a depth of 12 inches.

PIPE BEDDING AND BACKFILL: Pipe bedding and backfill for all waterlines shall be as indicated in Section 02265. Pipeline shall be laid on a prepared bed of 4" of sand or gravel and adjusted for proper alignment and grade. Sand or gravel, as indicated on the Contract Drawings, shall then be placed and compacted to the springline of the pipe (centerline). Backfill with excavated material containing stones no larger than 3" shall then be placed and compacted in 6" lifts to 24" over the pipe crown. Where sub-surface, "in-place" conditions warrant reduced bedding or compactive effort, the Engineer shall make a field determination as to whether the bedding requirements can be reduced. All projects shall use the standard outlined in this section and Section 02265 for pricing and any savings resulting from reduced bedding shall accrue to the Owner.

FIELD TESTING: Except as otherwise directed, all pipe lines shall be tested. Pipe lines laid in excavation or bedded in concrete and any exposed piping shall be tested prior to field painting.
The Contractor shall furnish all gauges, testing plugs, caps and all other necessary equipment and labor to perform leakage and pressure tests in sections of an approved length. Each valved section or a maximum of one thousand feet of pipe shall be tested. All water required for testing shall be potable. All testing shall be conducted in the presence of the Engineer.

The Contractor shall make the necessary provisions to tap the pipe at the high point to release all air and shall plug same after completing the test. Hydrants or blowoffs located at high points may be used for air release in lieu of taps if approved by the Engineer.

The pressure and leakage tests shall be performed as a combined test which shall be for a duration of two hours at 150% of normal operating pressure or 200 psi whichever is more in the line at the lowest elevation. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe to maintain the leakage test pressure after the pipe has been filled and the air has been expelled. No installation will be accepted if the leakage is greater than that determined by the formula:

$$L = \frac{SD\,(P)^{.5}}{133,200}$$

Where L is allowable leakage in gallons per hour, S is the length of pipe being tested, D is the nominal diameter of the pipe in inches, and P is the average test pressure in pounds per square inch gauge.

Should any section of pipe fail either the pressure or leakage tests the Contractor shall do everything necessary to locate and repair or replace the defective pipe, fittings or joints at no expense to the Owner.

If for any reason, the Engineer should alter the foregoing procedures, the Contractor shall remain responsible for the tightness of the line within the above requirements.

DISINFECTION: Chlorination of the water main shall be conducted only after the main has been satisfactorily tested and flushed and a clean stream is obtained as determined by the Engineer.

The Contractor shall furnish all labor, equipment, materials and tools necessary to disinfect the pipe and appurtenances in accordance with AWWA Standard for Disinfecting Water Mains C651 latest revision. The continuous feed method shall be performed under the supervision of the Engineer. The disinfection process shall be deemed acceptable only after samples of water from the flushed disinfected main show no evidence of bacteriological contamination based on Health Department testing or testing by another approved lab.

VALVES: All valves for waterlines shall meet the requirements of Section 15100.

HYDRANTS: All hydrants shall meet the requirements of Section 15109.

PIPE INSULATION: In areas where there is insufficient cover (i.e. less than five and one half feet) due to sewer pipes, etc. as indicated on the Contract Drawings, all pipe, fittings, etc. shall be insulated. The insulation shall be of extruded polystyrene and have a minimum thickness of 2 inches and shall be installed in strict compliance with the manufacturer's directions. The insulation shall be Styrofoam SM, and shall meet the compressive strength requirements of ASTM D1621-73 and shall be as manufactured by Dow Chemical Company, Midland, Michigan.

RECONNECTION OF SERVICES: All services to the existing water main shall be reconnected to the new main with pipe of equal size, and shall be provided with a corporation stop or valve as applicable.

02560
SEWER PIPE LINES AND RELATED CONSTRUCTION

WORK INCLUDED: The Contractor shall furnish and install all pipes, fittings and other materials necessary for the installation of gravity sewers, force mains, and all appurtenant construction related thereto including chimneys, service connections, thrust blocks and other related items as indicated on the Contract Drawings and as specified herein. The work shall also include testing and placing the system into satisfactory operation.

TYPES OF PIPE: Types of pipe which shall be used for the various parts of work are as follows:

a) Gravity Sewers shall be PVC solid wall pipe meeting ASTM Specifications D3034 or F679 or an approved equal.

PVC SEWER PIPE: PVC sewer pipe shall conform in all respects to the latest revision of ASTM Specification D3034, or F679, Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings, SDR 35. Wall thickness of all PVC pipe shall meet ASTM Specifications for SDR 35 pipe. All pipe and fittings shall be clearly marked as follows:

Manufacturer's Name and Trademark.
Nominal Pipe Size
Material Designation 12454C PVC
Legend "Type PSM SDR 35 PVC Sewer Pipe" or "PS 41 PVC Sewer Pipe"
Designation ASTM D3034 or F679

Joints shall be push-on type using elastomeric gaskets, and shall conform to ASTM D3212. The gaskets shall be factory installed.

The pipe shall be furnished in nominal 13 foot lengths. Sufficient numbers of short lengths and fully machined fittings shall be provided for use at manholes, chimneys, and connections. All connections will require the use of manufactured fittings, field fabricated, saddle type connections will not be considered acceptable.

Any pipe or fitting having a crack, or other defect, or which has received a severe blow shall be marked rejected and removed at once from the work site.

All field cuts are to be made at 90° to the pipe centerline. The contractor shall bevel the cut end to the same angle as the factory bevel, remove all interior burrs, measure and place a homing mark on the pipe before assembling.

The pipe installed under this specification shall be installed so that the initial deflection, measured as described below, shall be less than 5%.

Deflection tests shall be performed on all flexible pipe after the final backfill has been in place for at least 30 days. The deflection test shall be run using a rigid ball or mandrel having a diameter equal to 95% of the inside diameter of the pipe. No mechanical pulling devices shall be used during the deflection tests. All pipe not meeting the deflection test shall be re-excavated and replaced at the Contractor's expense.

The manhole water stop gasket and stainless steel clamp assembly must be approved by the Engineer prior to the installation of any pipe.

The Contractor will submit certification that the materials of construction have been sampled, tested, inspected and meet all the requirements including wall thickness in accordance with ASTM D3034 or ASTM F679 for all pipe and fittings to be included in the project work.

PVC pipe shall not be installed when the temperature drops below 32°F or goes above 100°F. During cold weather, the flexibility and impact resistance of PVC pipe is reduced. Extra care is required when handling PVC pipe during cold weather.

LAYING PIPE: Pipe shall be laid upon a trench bottom and bed prepared as indicated on the Contract Drawings as specified in this section. All pipe shall be carefully cleaned just before laying. Each pipe shall be laid true to line and grade so laid as to form a tight joint with next adjoining pipe and to bring inverts continuous.

Where the plans require service connections, Y-branches with 6 inch spurs shall be installed in the sewer main. Flexible pipe gaskets are required as per this section.

No walking on or working over pipes after they are laid except as may be necessary in making joints, in placing cradles and in tamping backfill material will be permitted until pipes are backfilled as specified to a depth of 12 inches. During construction all openings to pipe lines shall be protected from entrance of earth or other material. Open ends of branches and pipes when completed shall be sealed with stoppers or by equally effective methods. Where new pipes are to joint existing ones, the Contractor shall do such work as is necessary to make connections.

FROST PROTECTION FOR SHALLOW SEWERS: Sewers with less than 5-1/2 feet of cover over the crown or where indicated on the plans shall be protected against freezing by installation of 2" thick Styrofoam SM insulating sheets with a width of 3 feet or twice the pipe diameter, which ever is greater. The sheets shall be placed 6" above the crown of the sewer after compaction of the 6" lift immediately above the crown has been made. Care shall be exercised by the Contractor during backfill and compaction over the styrofoam sheets to prevent damage to the sheets. Styrofoam SM sheets shall meet the compressive strength requirements of ASTM D1621 and shall be as manufactured by Dow Chemical Company, Midland Michigan.

LEAKAGE TESTS AND ALLOWANCES FOR GRAVITY SEWERS: The low pressure air test will be used to simulate infiltration or exfiltration rates into or out of all gravity sewers.

Acceptance of the sewer shall depend upon the satisfactory performance of the sewer under test conditions. The test shall be performed on pipe between adjacent manholes after backfilling has been completed and compacted.

All wyes, tees, laterals, or end of side sewer stubs shall be plugged with flexible-joint caps, or acceptable alternate, securely fastened to withstand the internal test pressure. Such plugs or caps shall be readily removable, and their removal shall provide a joint suitable for making a flexible-jointed lateral connection or extension.

Prior to testing for acceptance, the pipe should be cleaned by passing through the pipe, a full gauge squeegee. It shall be the responsibility of the Contractor to have the pipe clean.

Immediately following the pipe cleaning, the pipe installation shall be tested with low-pressure air. Air shall be slowly supplied to the plugged pipe section until the internal air pressure reaches 4.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe. At least two minutes shall be allowed for temperature stabilization before proceeding further.

The pipe line shall be considered acceptable, when tested at an average pressure of 3.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe, if: (1) the total rate of air loss from any section tested in its entirety between manhole and cleanout structures does not exceed 2.0 cubic feet per minute; or (2) the section under test does not lose air at a rate greater than 0.0030 cubic feet per minute per square foot of internal pipe surface.

The requirements of this specification shall be considered satisfied if the time required in seconds for the pressure to decrease from 3.5 to 2.5 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe is not less than that computed according to ASTM C828.

Minimum Test Time for Various Pipe Sizes

Nominal Pipe Size	Time min. / 100 ft.	Nominal Pipe Size	Time min. / 100 ft.
3	0.2	3	3.0
4	0.3	4	3.6
6	0.7	6	4.2
8	1.2	8	4.8
10	1.5	10	5.4
12	1.8	12	6.0
15	2.1	15	6.6
18	2.4	18	7.3

If the pipe installation fails to meet these requirements, the Contractor shall determine at his own expense, the source or sources of leakage, and shall repair (if the extent and type of repairs proposed by the Contractor appear reasonable to the Engineer) or replace all defective materials or workmanship. The completed pipe installation shall meet the requirements of this test before being considered acceptable.

Since this test does not determine the tightness of manholes, they shall be tested separately. The exfiltration leakage allowance out of manholes shall be no greater than 1 gallon per day per vertical foot to depth. The manhole shall be filled with water to a point 1 foot above the highest joint between manhole sections. In areas of high ground water, there shall be no visible leakage due to infiltration.

Vacuum testing of manholes shall also be considered acceptable using the following guidelines: The test shall be done after assembly of the manhole. The manhole to pipe connection shall be flexible. A 60 inch/lb. torque wrench shall be used to tighten the external clamps. All lift holes shall be plugged with a non-shrink mortar, as approved by the Engineer. The seal between manhole sections shall be approved, preformed flexible mastic per ASTM C923. The completed manhole shall not be backfilled prior to testing. Manholes which have been backfilled shall be excavated to expose the entire exterior prior to vacuum testing or the manhole shall be tested for leakage by means of a hydrostatic test. Interior piping and plugs shall be adequately braced to prevent movement. A vacuum of 10" of Hg shall be drawn within the manhole. The manhole shall pass the test if the vacuum remains between 10" Hg and 9" Hg for at least two minutes.

It is noted that all existing sanitary sewers shall be kept operational until new work has been tested and approved by this Engineer. At such time existing sewers and sewer services shall be connected to the new sewers.

CLEANING OF PIPELINES AND APPURTENANCES: Upon completion of construction, all dirt and other foreign material shall be removed from pipe lines and their appurtenant construction. No materials shall be left in the pipe lines to impede normal flow through them.

SEWER SERVICE CONNECTIONS: Where required on the plans, sewer service connections shall be constructed of 6 inch pipe unless otherwise noted on the plans, of the type material specified under this section. The pipe shall be laid and its joints made as required for sewer construction in this specifications. Open ends of pipe shall be properly sealed to prevent damage and intrusion of foreign matter where hookup to the building sewer is not coincident with sewer main construction. Additionally, the Contractor will provide a stable temporary marker approved by the Engineer, such as a 2" x 4" or 1-1/2" PVC pipe, from the sewer service invert up to and protruding no more than 1" above finished grade and seated securely into the ground, for ease in relocating the end of sewer service connection for hooking up the building sewer.

In the case of reconnection of existing services, such reconnections will be made only after the new sewer main has been completed, tested and accepted.

CLIENT
STARWOOD-CERUZZI, LLC
1720 POST ROAD
FAIRFIELD, CT. 06430

PROJECT TITLE
MAPLE TREE PLACE
PROPOSED SITE DEVELOPMENT
WILLISTON, VERMONT

DRAWING TITLE
TYPICAL SPECIFICATIONS
~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT
RICHARD F. HAMLIN
No. 5260
REGISTERED
PROFESSIONAL ENGINEER

Survey ---
Design JPK/RFH
Drawn SOL
Checked JPK/RFH
Date 3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale SHOWN
Job 99-293
File
Drawing 2sp

Thu Sep 07 08:48:03 2000

02620
CAST -IN-PLACE CONCRETE CURB

This work shall consist of the construction or resetting of curb and the construction of gutters or combinations of curb and gutters in accordance with these specifications and in reasonably close conformity with the lines, grades and dimensions shown on the plans or as ordered by the Engineer.

Excavation shall be made to the required depth and the base material upon which the curb is to be set shall be compacted to a firm, even surface. All soft and unsuitable material shall be removed and replaced with suitable material which shall be thoroughly compacted.

Curbs shall be constructed of Class B concrete, 3,000 psi., all work shall conform to Section 03300, Cast-in-Place Concrete.

Approved forms shall be of metal, straight or curved as required, free from warp and of such construction that there will be no interference to the inspection of grade or alignment. All forms shall extend for the entire depth of the curb and shall be braced and secured sufficiently so that no deflection from alignment or grade will occur during the placing of the concrete.

All curb to be installed on a radius of two hundred feet or less shall be formed and cast so that the face of curb is constructed true to the radius indicated on the Contract Drawings unless otherwise approved by the Engineer. Curbing to be installed on a radius greater than two hundred feet may be formed and cast in straight sections having a length of ten feet unless otherwise specified by the Engineer.

Compaction of concrete placed in the forms shall be by spading or other approved methods. Forms shall be left in place for 24 hours or until the concrete has set sufficiently so that they can be removed without injury to the curbing. Upon removal of the forms, the exposed curbing face shall be given a rubbed finish.

Curbing shall be constructed in sections having a uniform length of ten feet, unless otherwise ordered. Sections shall be separated by open joints 1/8 inch wide except at expansion joints.

Expansion joints shall be formed using a preformed expansion joint filler having a thickness of 1/4 inch. They shall be constructed at 20 foot intervals or as directed by the Engineer. When the curb is constructed adjacent to or on concrete pavement, expansion joints shall be located opposite or at expansion joints on the pavement.

Immediately upon completion of the rubbing, the curbing shall be moistened and kept moist for 7 days or the curbing shall be cured by using a liquid membrane-forming compound. The method and details of curing shall be subject to the approval of the Engineer.

After the concrete has set sufficiently, the spaces in front and back of the curb shall be filled to the required elevation with layers of not more than 6 inches of the same material as the bedding and thoroughly compacted.

Anti-Spalling Compound: Upon completion of the curing period (approximately 28 days), Linseed Anti-Spalling Compound is to be applied in two coats to all exposed surfaces. The first coat shall be applied at the rate of .035 gallons per square yard and the second coat at a rate of .020 gallons per square yard. The mixture's temperature during application shall not be lower than 50(F. The Linseed Anti-Spalling Compound shall consist of 50% boiled linseed oil meeting ASTM specification D260 (latest revision) mixed with 50% mineral spirits meeting ASTM specification D235 (latest revision). All surfaces shall be exceptionally clean prior to application.

02621
GRANITE CURB

WORK INCLUDED: Work in this section shall consist of furnishing and installing granite curb for new construction or for the purpose of repairing existing granite curb damaged by construction. Curb shall conform to the type, size, line and grade as shown on the Contract Drawings. Work includes repair of bituminous pavement along the face of curb and blending of topsoil to the back of the curb where applicable.

MATERIALS: All curb shall be obtained from approved sources and shall be cut from hard durable quarried granite, gray in color and free from seams, cracks or other structural defects. Curb stones shall be furnished in minimum lengths of 6 feet and the top surface shall be sawed to true plane ±1/8". The top front arris line may be rounded to a 1/2" radius and the front face shall be smooth quarry split. The top 8" of the front face shall have no projections greater than 1" nor depressions deeper than 1/2".

CONSTRUCTION: Excavation shall be made to the required depth and the base material shall be compacted to a firm true surface. A fine dirty stone such as "Sur pack" may be used to level the bed for the curb.

Curb stones shall be set so that the front arris line conforms to the line and grade shown on the Contract Drawings. Top surfaces shall meet to within 1/8" and the front arris line shall be true to within 1/4" at each joint.

All curb to be installed on a radius of two hundred feet or less shall be cut and constructed so that the face of curb is true to the radius indicated on the Contract Drawings unless otherwise approved by the Engineer. Curbing to be installed on a radius greater than two hundred feet may be cut in straight sections having a length of six feet unless otherwise specified by the Engineer.

No joints larger than 1" will be permitted between stones. All joints shall be completely filled with mortar and shall be neatly pointed on front and top.

The Contractor should be aware that the finished product, when viewed along the curb, must appear smooth in both line and grade with no angular changes in horizontal or vertical alignment. String lines used to set curb shall be strung far enough ahead to enable the Contractor and the Engineer to verify that the desired end product will result. Slight adjustments from the specified line and grade may be necessary to obtain the required smooth appearance.

Within three (3) days after the joints have cured, remaining excavated areas shall be filled and compacted. Pavement shall be replaced as shown on the Contract Drawings. Any curb tipped or moved during construction shall be readjusted at the Contractor's expense.

Topsoil shall be filled against the back of curb and shall be blended to existing lawns. Fill slopes shall not exceed 6:1 unless authorized by the Engineer.

ACCESS TO DRIVES: The Contractor shall submit, in writing to the Engineer for approval, a schedule for construction of granite curbs across driveways prior to construction of that item of work. It shall be the Contractor's responsibility to notify each individual property owner twenty-four (24) hours prior to construction affecting use of the driveway. The Contractor shall maintain continuous access to all commercial drives without interruption of business or public access. The method of providing continuous access shall be approved by the Engineer prior to construction.

02630
CEMENT CONCRETE, BITUMINOUS CONCRETE, OR GRAVEL WALKS

WORK INCLUDED: The Contractor shall be responsible for construction or repair of all new or existing Portland Cement concrete, bituminous concrete or gravel walks as shown on the Contract Drawings or as directed by the Engineer.

PORTLAND CEMENT CONCRETE WALKS

MATERIALS: Gravel for walk base shall be the thickness as shown on the Contract Drawings and shall conform to the following gradation

Grading	Sieve Designation	Percentage By Weight Passing Square Mesh Sieves
FINE	2"	100%
	1-1/2"	90% - 100%
	No. 4	30% - 60%
	No. 100	0% - 12%
	No. 200	0% - 6%

The percent of wear of the crushed gravel shall be not more than 40 when tested in accordance with AASHTO T96 or ASTM C131.

At least 30 percent, by weight, of the material coarser than the No. 4 sieve shall have at least one fractured face.

Concrete shall be Class B, 3,000 psi strength.

CONSTRUCTION: Excavation shall be made to the required depth and width to allow placing of base material and installation and bracing of form work.

Base material shall be placed to the depth and section shown on the Contract Drawings. When the layer exceeds 6" in thickness layers of equal depth, not to exceed 6", shall be placed and compacted individually. Wetting of the gravel may be necessary to obtain adequate compaction.

Forms shall be metal or wood and shall extend the full depth of the concrete. Forms shall be either straight or curved as required and shall be adequately braced to prevent movement.

Concrete shall be placed over the compacted gravel base, shall be thoroughly worked to remove air voids and shall be floated smooth. After initial set, the edges shall be rounded to a 1/4" radius and the surface shall be broom finished across the width of the walk.

Expansion joints shall be placed every 20' and adjacent to all appurtenances such as manhole frames or valve boxes. Preformed joint filler, 1/4" thick, shall be cast in the expansion joints.

Every 5' between expansion joints, dummy joints shall be scored with a jointing tool. These grooves shall be 1/8" wide and 1/3 the depth of the slab.

Where the walk is adjacent to curbing, asphalt treated felt shall be placed between the curb and sidewalk.

The walk shall be cured by placement of plastic film over the surface or by application of an approved curing compound. During the curing period, barricades may be required to prevent damage. Any damage incurred shall be repaired at the Contractor's expense.

After the walk has properly cured, the spaces on each side of the walk shall be backfilled, compacted and graded.

Anti-Spalling Compound: Upon completion of the curing period (approximately 28 days), Linseed Anti-Spalling Compound is to be applied in two coats to all exposed surfaces. The first coat shall be applied at the rate of .035 gallons per square yard and the second coat at a rate of .020 gallons per square yard. The mixture's temperature during application shall not be lower than 50(F. The Linseed Anti-Spalling Compound shall consist of 50% boiled linseed oil meeting ASTM specification D260 (latest revision) mixed with 50% mineral spirits meeting ASTM specification D235 (latest revision). All surfaces shall be exceptionally clean prior to application.

BITUMINOUS CONCRETE WALKS

MATERIALS: Gravel base shall be as specified under Portland Cement concrete walks and shall be as shown on the Contract Drawings.

Bituminous concrete shall be Type IV as shown on the Contract Drawings and as specified in Section 02650 of these specifications.

CONSTRUCTION: Excavation and placement of base shall conform to the requirements under Portland Cement concrete walks.

Grade control forms such as 2x4's or other suitable devices shall be used when hand methods are used to place the bituminous concrete. These shall be securely anchored in place along each edge to provide a true grade and consistent width. Placement and compaction of walks shall be done according to Section 02650 of these specifications.

GRAVEL WALKS

MATERIAL: Base gravel shall be as specified under Portland Cement concrete walks and as shown on the Contract Drawings. A 1-1/2" thick surface layer of stone chips and stone dust equal to "Sur-Pack" or No. 2 Peastone, as produced by F.W. Whitcomb Corp., shall be used on the top surface.

CONSTRUCTION: Excavation and base placement shall be as specified under Portland Cement concrete walks. After the base gravel has been placed, compacted and graded, the Sur-Pack shall be spread, smoothed and compacted to form a hard, even walking surface. The finished surface condition will be subject to approval by the Engineer.

02649
PREPARATION OF SUBBASE

WORK INCLUDED: This work shall consist of furnishing and placing one or more courses of approved gravel, crushed gravel, or dense graded crushed stone, or otherwise proportioned material on a prepared surface, or at other locations, in accordance with these specifications as shown on the plans or as ordered by the Engineer.

CONSTRUCTION: The subbase material shall be placed on a prepared surface with an approved spreader box or by use of other approved mechanical spreading equipment. Dumping directly on the subgrade will not be permitted. A bulldozer may be used in lieu of a spreader box, providing the subbase material is first placed on the previously laid subbase and then completely removed from the area where it was first deposited.

Should segregation occur during the placing of the subbase, the Contractor shall be required to remove and replace the material or manipulate it until uniform grading is obtained.

If material below subgrade becomes intermixed with the subbase, resulting in an unacceptable product, the mixture shall be removed and replaced with new subbase material.

The maximum lift thickness for all subbase materials is 12". Where the finished depth of the subbase is to be greater than 12", it shall be placed and compacted in two or more lifts of approximately equal thickness. In the placement of lifts all joints shall be staggered at least 6 inches.

After each lift of subbase material is placed it shall be thoroughly compacted by rolling with an approved power roller weighing not less than 10 tons or by other methods approved by the Engineer. A power grader shall be used to obtain a true and even surface during compaction. All holes or depressions found during the compacting shall be filled with additional subbase material, reworked, and compacted in close conformity to the lines, grades and cross-sections shown on the Contract Drawings. If required, water shall be uniformly applied over the subbase materials during compaction in the amount necessary for proper consolidation.

When it is necessary to maintain traffic over the subbase, one half of the width shall be constructed at a time. The half under construction shall have the subbase material placed and compacted before opening to traffic. Subsequent traffic damage to the material shall be entirely the Contractor's responsibility. If the subbase loses its shape, the Contractor shall loosen, regrade and compact as necessary. The end of each section of a different depth of subbase shall be tapered for a distance of approximately 50 feet.

In the event the project shoulders are to remain unpaved, subbase or other designated material shall be placed in the shoulder area after final roadway paving is placed.

Gradation Requirements

Sand for subbase shall meet the following requirements:

Sieve Designation	Percentage by weight Passing Total Sample
1/2"	100%
No. 4	90% - 100%
No. 10	60% - 90%
No. 40	20% - 40%
No. 200	0% - 8%

Dense Graded Crushed Stone subbase shall meet the following gradation requirements:

Sieve Designation	Percentage by weight Passing Total Sample
3-1/2"	100%
3"	90% - 100%
2"	75% - 100%
1"	50% - 80%
1/2"	30% - 60%
No. 4	15% - 40%
No. 200	0% - 6%

Plant Mixed Gravel for subbase shall meet the following requirements:

Sieve Designation	Percentage by weight Passing Total Sample
2"	100%
1-1/2"	90% - 100%
No. 4	30% - 60%
No. 100	0% - 12%
No. 200	0% - 6%

Gravel for Fine Grading* of subbase shall meet the following requirements:

Sieve Designation	Percentage by weight Passing Total Sample
3/4"	100%
1/2"	95% - 100%
3/8"	80% - 95%
No. 4	50% - 75%
No. 8	30% - 50%
No. 16	20% - 40%
No. 30	15% - 35%
No. 50	10% - 30%
No. 100	5% - 20%
No. 200	2% - 10%

* #2 Peastone, as supplied by Frank W. Whitcomb Construction Corp. or "Sur Pack"

Aggregate for plant mixed gravel and dense graded crushed stone shall consist of clean, hard, crushed stone or crushed gravel. The blending of crushed stone and crushed gravel may be permitted if, in the opinion of the Engineer, the materials to be blended are equal in quality and are compatible. The several aggregate fractions shall be sized, uniformly graded, and combined in such proportions that the resulting gradation is as shown above. The aggregate shall be reasonably free from dirt, deleterious material and pieces which are structurally weak and shall meet the following requirements:

PERCENT OF WEAR: When the coarse aggregate is composed of crushed stone or crushed gravel, the percent of wear of the aggregate shall be not more the 35 when tested in accordance with AASHTO T96 or ASTM C131. When the aggregate is composed of crushed igneous rock, the percent of wear of the aggregate shall be not more than 50 when tested in accordance with AASHTO T96 or ASTM C131.

Fractured Faces: When crushed gravel is used, at least 50 percent, by weight, of the material coarser than the No. 4 sieve from each stockpile shall have at least one fractured face.

Thin and/or Elongated Pieces: Not more than 15 percent, by weight, of the material coarser than the No. 4 sieve from each stockpile shall consist of thin and/or elongated pieces.

02650
BITUMINOUS CONCRETE PAVEMENT

GENERAL: All road work and paving shall conform to the latest edition of the Vermont Agency of Transportation's Standard Specifications for construction.

02820
FINAL GRADING, TOPSOILING AND SEEDING

WORK INCLUDED: The Contractor shall be responsible for final grading, topsoiling, seeding, and establishing a healthy grass within the contract limits or as directed by the Engineer. Restoration shall occur within 7 days. Topsoil will come from material stockpiled on site.

GRADING AND TOPSOILING AND SURFACE PREPARATION: Where required, areas to be finished with topsoil shall be cleaned of all stones, debris and other kinds of rubbish. After areas have been brought to proper subgrade and approved by the Engineer, topsoil shall be spread to a depth of 4", due allowance being made for settlement. Topsoil shall not be hauled over, tramped over or packed in, in any way, and shall be left in a loose and friable condition. All topsoil shall be free from subsoil, gravel, roots and stones.

Topsoil shall receive a uniform application of fertilizer, lime, grass seed, and mulch either by hydraulic or dry methods. Fertilizer and seed may be mixed with water and the mixture sprayed over the area to be seeded. Any mechanical operation may be used which will place the limestone, fertilizer, seed and mulch, or any combination of these in direct contact with the soil and which meets the approval of the Engineer.

FERTILIZATION: The fertilizer shall be a standard commercial grade fertilizer and shall conform to the requirements of the State Fertilizer Law and to the Standards of the Association of Official Agricultural Chemists. Dry fertilizer, if used, shall be furnished in new, clean, sealed and properly labeled bags not exceeding 100 pounds each. Caked or damaged fertilizer shall not be used. Dry fertilizer shall contain not less than 10 percent nitrogen, 20 percent phosphate, and 10 percent potash and shall be applied at the rate of 850 pounds per acre. Liquid fertilizer if used in lieu of dry fertilizer, shall be applied in 1:2:1 ratio with the minimum rate to include 50 pounds of nitrogen, 100 pounds phosphate, and 50 pounds of potash per acre.

The limestone shall be a calcitic or dolomitic ground limestone containing not less than 85% of total (calcium or magnesium) carbonates. The limestone shall conform to the requirements of all state and federal regulations and to the Standards of the Association of Official Agricultural Chemists. The limestone shall be furnished in new, clean, sealed and properly labeled bags not exceeding 100 pounds each. Caked or damaged limestone shall not be acceptable. The limestone shall be applied at a rate of 1 ton per acre or as directed.

Urban Mix

% By Weight	Lbs. Live Seed Per Acre	Name
37.5	45	Creeping Red Fescue (Var. such as Pennlawn)
31.25	37.5	Kentucky Bluegrass (Common)
31.25	37.5	Winter Hardy, Perenial Rye Grass (Variety Pennfire, Manhattan or similar varieties)
100	120# live seed/acre	

Swale Mix

% By Weight	Lbs. Live Seed Per Acre	Name
47.0	20	Creeping Red Fescue
47.0	20	Tall Fescue
6.0	2	Redtop
100	42# live seed/acre	

All seed shall not exceed 1% in weed content. A guaranteed statement of composition from the dealer must be submitted to the Engineer for approval and be approved prior to commencing with seeding operations. After the seed has been applied, lawn areas shall be lightly raked to mix seed with the soil and rolled with a light-weight roller to the satisfaction of the Engineer.

MULCHING: Within 24 hours of application of fertilizer, lime and seed, the surface shall be mulched with a hay mulch. Mulch shall consist of mowed hay properly free from swamp grass, weeds, twigs, debris or other deleterious material. It shall be free from rot or mold and shall be acceptable to the Engineer. Spreading by mechanical spreading devices may be used if approved by the Engineer. The application of mulch shall be made in such a manner that lumps and thick spots are avoided. When deemed necessary, mulch shall be anchored by a light coating of brush or tree branches, use of stakes, twine, netting or other methods approved by the Engineer.

WATERING AND PRESERVATION OF GRASS COVER: All seeded areas shall be watered and maintained to the satisfaction of the Engineer. Within two weeks after the grass has come up, any areas where grass seed has not germinated properly or where the surface has been washed or damaged in any way, shall be re-seeded as before.

The grass cover shall be inspected again by the Engineer and Contractor during the month of May following completion of the work. Any areas where grass seed has not germinated properly or where the surface has been washed or damaged in any way shall be topsoiled and re-seeded as before.

02830
TREES, SHRUBS AND GROUND COVER

WORK INCLUDED: The Contractor shall be responsible for furnishing the necessary plantings and landscaping materials, the labor to install same and shall do all the landscaping work required by the Contract Drawings or as directed by the Engineer.

PLANTING SEASON: Unless otherwise directed by the Engineer or shown on the plans, the Contractor shall install plantings between April 1 and June 1 or between September 1 and October 15. No planting shall be done in frozen ground, when snow covers the ground or when the soil or weather is unsatisfactory for planting.

RESPONSIBILITY FOR CONDITION OF PLANTINGS: The Contractor shall be responsible for insuring that all trees, shrubs, vines and ground covers shall be true to name, first class nursery stock, wild crated, freshly dug and handled; grown, planted and maintained by experienced plantsmen in accordance with the best horticultural practices. Protection shall be given to all plants to keep them from drying out whether the plants are in transit, storage or on the project site awaiting planting.

Plants delivered but not scheduled for immediate planting shall be protected as follows:

a) Bare root material which are not planted immediately upon receipt shall have the bundles opened, the plants separated and heeled in moist soil so as to leave no air spaces and shall be properly maintained until planted.

b) Balled and burlapped plants shall be protected adequately by covering the earth balls with topsoil, wood chips or other suitable material until removed for planting and shall be kept in a moist condition.

LAYOUT: Plant material locations and bed outlines shall be staked on the project by the Contractor and approved by the Engineer.

EXCAVATION, BACKFILL AND SETTING OF PLANTS: All work pertaining to excavation backfill and setting of plants shall be done in accordance with the diagrams which are found in the Appendix to these specifications or on the Contract Drawings.

FERTILIZATION: Fertilizer shall be applied and cultivated into the top two inches of the plant pit area or shrub bed within five days after planting. No fertilization to be applied to seedlings.

The rates of application shall be approximately as follows:

Trees - 2 pounds per inch of caliper
Shrubs and Evergreens - 1/4 pound per foot of height
Vines - 1/10 pound per vine

A second application of fertilizer, at the same rates, shall be applied to all plant items over the mulch at the end of the establishment period.

WATERING OF PLANTS: All plants shall be watered during storage and then immediately after planting and at such intervals during the plant establishment period as necessary to promote good growth. Water shall not contain elements toxic to plant life. At each watering the soil around each plant shall be thoroughly saturated.

ESTABLISHMENT PERIOD AND REPLACEMENT: The Contractor shall properly maintain all added trees, shrubs and vines until final acceptance of the project, by necessary watering, weeding, fertilizing, spraying with approved insecticides or fungicides, providing protection from rodents and other work necessary to keep plants in living healthy condition. Any plants damaged, dried out or otherwise in poor condition shall be replaced at the Contractor's expense, with healthy stock in kind or substitute plant material when approved by the Engineer.

The acceptability of the plant material furnished and planted shall be determined at the end of the establishment period. The end of the establishment period shall be upon completion of any replanting required.

During September or May, following the first planting, the Engineer and Contractor shall inspect the planting and any dead or poor material shall be replaced by the Contractor, at his expense, during the following month after inspection.

The complete planting shall be inspected again by the Engineer and Contractor during the month of May or September following the second planting and any dead or poor material found at that time shall be replaced by the Contractor, at his expense.

03000
CONCRETE AND REINFORCING, GENERAL

STANDARDS: The Contractor shall perform all work pertaining to concrete and reinforcing in accord with the latest revisions of the following standards:

a) ACI Field Reference Manual SP15

b) Building Code Requirements for Reinforced Concrete ACI 318

c) C.R.S.I. Recommended Practice for Placing Reinforcing Bars

d) Recommended Practice for Selecting Proportions for Normal Weight Concrete ACI 211.1

e) Recommended Practice for Concrete Inspection ACI 311

The Contractor will be required to have a copy of ACI SP15 publication on the job at all times and publications shall be considered as an integral part of these Specifications. All sections of the specifications dealing with concrete shall comply with this section.

COMPLIANCE WITH MANUFACTURERS RECOMMENDATIONS: The Contractor shall construct, install or apply all manufactured items in strict accordance with the manufacturer's recommendations, unless specifically exempted from same by the Engineer or unless the manufacturer's recommendations conflict with the standards listed above, in which case the Engineer shall resolve conflicting specifications.

03100
FORMS AND FINISHES

FORMS AND FINISHES: Forms and finishes shall conform to requirements of standards as listed under Section 03000 in these specifications and to requirements of this section.

Forms for concrete construction shall be maintained in place for curing and weather protection purposes as specified under Section 03300. Forms for beams, girder columns, structural slabs and walls shall not be stripped in less than 7 days.

Vertical shores shall not exceed 4' o.c. in either direction and shall be adequately x-braced in both directions.

Shoring, posts or uprights shall not be removed until supported member has acquired sufficient strength to support safely, its own weight and all loads upon it. Members subjected to additional loads during construction shall be adequately shored and braced. Reshoring will not be permitted unless approval of specific method of reshoring is obtained from the Engineer.

The Contractor will provide 3/4 inch chamfers at all exposed concrete edges or as shown on drawings and 5/16" camber for every 14 feet of span in all beam and slab bottoms.

Unless noted otherwise, the concrete finish required for all exposed concrete surfaces (including interior structure walls) shall be secured by use of new plywood with joints carefully aligned and tightly butted or approved steel forms. The Engineer shall be consulted for approval of such form layouts. Proper and adequate form oil shall be used.

For areas described in the previous paragraph, the Contractor will be required to remove all fins, blemishes and defective concrete areas and patch where required with reworked cement mortar of approximately the same proportions as that used in concrete. Sufficient amount of White Portland Cement shall be added to the patching mortar to make the color of dry patch match the color of adjacent concrete. Form tie holes shall be plugged solid with reworked cement mortar of the same proportions as that used for patching.

The surface of all formed exposed concrete shall have a smooth rubbed finish. Prior to application of the smooth rubbed finish, the forms shall have been removed and necessary patching completed. Patching shall be completed as soon after placement as possible without jeopardizing the structure. A smooth rubbed finish shall be produced on newly hardened concrete no later than the day following form removal. Surfaces shall be wetted and rubbed with Carborundum brick or other abrasive until uniform color and texture are produced. No cement grout shall be used other than the cement paste drawn from the concrete itself by the rubbing process.

Pre-mixed, non-shrink, grout shall be used to patch any honeycomb areas and all tie holes in exterior walls (earth side only below grade where watertight concrete is required).

Concrete slabs shall be finished monolithically to produce an even, level, steel troweled surface, free from blemishes or trowel marks.

03200
CONCRETE REINFORCEMENT

GENERAL: Reinforcement steel and welded wire fabric for concrete shall be furnished in the sizes indicated on the plans and installed in accordance with the plans and specifications.

SHOP DRAWINGS: The Contractor shall submit drawings for the Engineer's approval in accordance with the requirements of Section 03300, showing size, length, bending and location of all rods and indicating typical clearance laps at splices and required accessories. All proposed construction joints shall be indicated.

HANDLING: Reinforcing steel shall be handled and stored in a manner to prevent unscheduled bending and shall be kept free from dirt, mortar, oil and other materials tending to destroy its bond with concrete. All reinforcing bars shall be supported and wired together to prevent displacement by construction loads or the placing of concrete beyond the tolerances listed hereafter.

MATERIALS:

Metal Reinforcement: Reinforcing bars shall conform to requirements of Standard Specifications for new billet steel bars for Concrete Reinforcement ASTM A615 or AASHTO M31, Grade 60. Rail steel bars may be utilized to prepare and report proposed mixes. Mixes will be proportioned by either laboratory trial batch or field experience methods, using materials to be employed on the project for each class of concrete required. The Contractor will ensure that the requirements of ACI 211.1 are complied with and reports of mix designs will be submitted to the Engineer for approval.

Class A concrete shall be designed as a watertight concrete mix in conformance with normally accepted standards. All materials used shall be so proportioned as to produce a well-graded mixture of high density and maximum workability with as specified 28-day compressive strength of 4000 psi. Minimum cement content shall be 564 lbs. per cubic yard with a maximum water-cement ratio of 0.48. Air content shall be 6% ((1 percent). Class B concrete shall be structural concrete with a minimum 28-day compressive strength of 3000 psi.

MIXING, PLACING, CURING AND PROTECTION: Mixing, placing, curing and protection shall conform to requirements of standards as listed under "General", this Specification, and to stipulations of this section. Before placing concrete, all debris, water, snow, ice, are to be removed from the space to be occupied by concrete. Do not place concrete on frozen ground.

Concrete placed in vertical forms shall not be allowed to fall freely more than 4 feet. To accomplish this, drop chutes of rubber or metal should be used, or else concrete placed through approved form ports.

Concrete in all piers and columns shall be cast at least 24 hours before casting concrete in members supported by such piers or columns.

Concrete shall be thoroughly compacted during placing operation and shall be thoroughly worked into corners and angles of forms and around reinforcement by use of spades. Vibrators shall be used to compact all concrete, but not until concrete is in final place. Extreme care shall be exercised to ensure that concrete will be carefully and thoroughly worked into position around all waterstops so that waterstop will end up being perpendicular to joint surface through which it extends. Vibrators shall not be used to move concrete.

Concrete shall be cured as follows: Paper membrane curing shall be installed over all horizontal slabs as soon as concrete has set sufficiently to permit application without marring surfaces. Paper shall be left in place 7 days. All concrete walls shall be cured for 7 days. Holding forms in place will constitute curing. If permitted by the Engineer to strip forms sooner than as specified, concrete shall be immediately cured for balance of period as directed.

It shall be the Contractor's responsibility to protect fresh concrete from freezing. Details of covering, insulation and housing newly placed concrete in cold weather shall be reviewed with the Engineer and shall be subject to his approval.

Use of admixtures, addition of extra cement, heating of materials, subgrade preparation, protective covering, heated enclosures, curing and form removal for winter concreting shall be as outlined in Recommended Practice for Cold Weather Concreting ACI 306. If minimum temperatures as specified in Table 1.4.1 of this reference are not maintained, formwork and shoring for structural concrete shall not be stripped until the Contractor can satisfy the Engineer that concrete has attained 65% of the required 28 day strength.

The Contractor shall record temperature daily as outlined in Proposed Recommended Practice for Cold Weather Concreting ACI 306.

In hot weather, temperature of freshly placed concrete shall not be allowed to exceed 85(F, conforming to ACI 305.

EMBEDDED MATERIALS: If the Contractor contemplates embedding any conduit or pipe in structural slabs, he must first submit layout of same to the Engineer for approval prior to any such installation. The following ACI Code requirements will have to be met:

a) The outside diameter of any embedded pipe or conduit cannot exceed one third the slab thickness. Such embedded pipe or conduit shall be carefully located at mid-depth of slab.

b) Adjacent pipe or conduit cannot be spaced closer than three diameters on center.

c) Reinforcing bars should not be displaced from proper elevations or plan positioning.

CAUTION: The Contractor shall exercise utmost care to ensure that no aluminum conduit or any other embedded aluminum materials are used in the concrete unless painted with zinc chromate.

DETAILS OF CONSTRUCTION:

Construction Joints: Joints shall conform to requirements of Building Code Requirements of Reinforced Concrete ACI 318 and to the stipulations of this section.

Construction joints in foundation slabs, footings and walls shall be keyed and located as shown on the plans, and shall incorporate a continuous waterstop fused soundly at all intersections and splices, so as to positively prevent any passage of any ground water into the building at any construction joints. The joint between foundation slab mat and walls shall also be provided with a continuous waterstop as indicated in sections. Horizontal construction joints will not be permitted unless shown on Drawings.

All bulkheads shall be keyed. Unless otherwise noted, keys at bulkheads for joints in any slab, including slabs-on-grade, shall be one third slab thickness.

Control Joints: Control joint former shall be used to shape edges of vertical construction joints in concrete walls. Joints shall be constructed by securing to each face of form, control joint former as specified under "Materials". When removed, form shall leave narrow, vertical grooves in concrete on face of beams or walls. Fill exterior control joints at buildings, and all construction joints with control joint formed edges, with 1/4" oakum rope backup and silicone rubber caulking seal as specified elsewhere.

The Contractor will be required to furnish a standard slump cone and rod to be kept on the job at all times. Slumps shall be taken by the Contractor and witnessed by the Engineer in accordance with "Standard Method of Slump Test for Consistency of Portland Cement Concrete," ASTM designated C143 or AASHTO T119.

Slump tests shall be made on each batch tested. Air content of air entrained concrete shall also be determined when specimens are taken in accordance with ASTM Specification C231 or AASHTO T 52. Duplicate reports on all tests shall be submitted promptly to the Engineer with another copy going directly to the Contractor.

The Contractor, in conjunction with the Engineer, shall notify the independent testing laboratory at least 24 hours in advance, as to approximate times (within 2 or 3 hours) of concrete placement for each area where a test is directed.

The Contractor shall submit weekly reports to the Engineer and independent laboratory on total amount of concrete placed during preceding week, also indicating locations.

When there is any question as to the quality of the concrete in the structure, the Engineer may require the Contractor, at his expense, to have tests made by an approved independent testing and inspection laboratory. Such testing shall be in accordance with the "Standard Methods of Securing, Preparing the Testing Specimens of Hardened Concrete for Compressive and Flexural Strengths" (ASTM Designation C42 or AASHTO T24) or Chapter 20 of the current ACI Building Code for Reinforced Concrete ACI 318, as may be required. The criteria for acceptability of the concrete under the latter shall be that given therein, and final acceptance shall be required from the Engineer. Concrete failing to meet requirements of the Contract documents will have to be replaced at the Contractor's expense.

Design mixes will be prepared for each type of concrete and an independent testing facility acceptable to the Engineer will be utilized to prepare and report proposed mixes. Mixes will be proportioned by either laboratory trial batch or field experience methods, using materials to be employed on the project for each class of concrete required. The Contractor will ensure that the requirements of ACI 211.1 are complied with and reports of mix designs will be submitted to the Engineer for approval.

Class A concrete shall be designed as a watertight concrete mix in conformance with normally accepted standards. All materials used shall be so proportioned as to produce a well-graded mixture of high density and maximum workability with as specified 28-day compressive strength of 4000 psi. Minimum cement content shall be 564 lbs. per cubic yard with a maximum water-cement ratio of 0.48. Air content shall be 6% (1 percent). Class B concrete shall be structural concrete with a minimum 28-day compressive strength of 3000 psi.

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Concrete placed in vertical forms shall not be allowed to fall freely more than 4 feet. To accomplish this, drop chutes of rubber or metal should be used, or else concrete placed through approved form ports.

Concrete in all piers and columns shall be cast at least 24 hours before casting concrete in members supported by such piers or columns.

Concrete shall be thoroughly compacted during placing operation and shall be thoroughly worked into corners and angles of forms and around reinforcement by use of spades. Vibrators shall be used to compact all concrete, but not until concrete is in final place. Extreme care shall be exercised to ensure that concrete will be carefully and thoroughly worked into position around all waterstops so that waterstop will end up being perpendicular to joint surface through which it extends. Vibrators shall not be used to move concrete.

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It shall be the Contractor's responsibility to protect fresh concrete from freezing. Details of covering, insulation and housing newly placed concrete in cold weather shall be reviewed with the Engineer and shall be subject to his approval.

Use of admixtures, addition of extra cement, heating of materials, subgrade preparation, protective covering, heated enclosures, curing and form removal for winter concreting shall be as outlined in Recommended Practice for Cold Weather Concreting ACI 306. If minimum temperatures as specified in Table 1.4.1 of this reference are not maintained, formwork and shoring for structural concrete shall not be stripped until the Contractor can satisfy the Engineer that concrete has attained 65% of the required 28 day strength.

The Contractor shall record temperature daily as outlined in Proposed Recommended Practice for Cold Weather Concreting ACI 306.

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a) The outside diameter of any embedded pipe or conduit cannot exceed one third the slab thickness. Such embedded pipe or conduit shall be carefully located at mid-depth of slab.

b) Adjacent pipe or conduit cannot be spaced closer than three diameters on center.

c) Reinforcing bars should not be displaced from proper elevations or plan positioning.

CAUTION: The Contractor shall exercise utmost care to ensure that no aluminum conduit or any other embedded aluminum materials are used in the concrete unless painted with zinc chromate.

DETAILS OF CONSTRUCTION:

Construction Joints: Joints shall conform to requirements of Building Code Requirements of Reinforced Concrete ACI 318 and to the stipulations of this section.

Construction joints in foundation slabs, footings and walls shall be keyed and located as shown on the plans, and shall incorporate a continuous waterstop fused soundly at all intersections and splices, so as to positively prevent any passage of any ground water into the building at any construction joints. The joint between foundation slab mat and walls shall also be provided with a continuous waterstop as indicated in sections. Horizontal construction joints will not be permitted unless shown on Drawings.

All bulkheads shall be keyed. Unless otherwise noted, keys at bulkheads for joints in any slab, including slabs-on-grade, shall be one third slab thickness.

Control Joints: Control joint former shall be used to shape edges of vertical construction joints in concrete walls. Joints shall be constructed by securing to each face of form, control joint former as specified under "Materials". When removed, form shall leave narrow, vertical grooves in concrete on face of beams or walls. Fill exterior control joints at buildings, and all construction joints with control joint formed edges, with 1/4" oakum rope backup and silicone rubber caulking seal as specified elsewhere.

CLIENT	PROJECT TITLE	DRAWING TITLE
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	TYPICAL SPECIFICATIONS ~PROGRESS PLAN~

DATE	REVISION	BY
9/7/00	GENERAL REVISIONS	SOL

STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	JPK/RFH
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	3sp

Thu Sep 07 09:05:07 2000

03401
PRECAST CONCRETE MANHOLES

The Contractor shall construct reinforced concrete manholes and drop manholes to the dimensions and at the locations shown on the Contract Drawings. All precast reinforced concrete manhole sections shall conform to the latest version of the ASTM Specifications C478 or AASHTO M199.

The footings may be either with cast-in-place, with Class B concrete, or pre-cast and shall conform to the dimensions indicated on the plans.

Shelves shall be constructed with Class B concrete, as defined in Section 03300 of these Specifications. Inverts for sewer manholes shall be as shown on the plans and details and shall be constructed of hand burned brick and mortar or, for straight runs, segments of pipe cut in half longitudinally. Inverts shall have the exact shape of the sewer to which they are connected and any change in size or direction shall be gradual and even. All construction of sewer manholes must be carried out to ensure watertight work. Any leaks in manholes shall be completely repaired to the satisfaction of the Engineer or the entire structure shall be removed and rebuilt.

All manholes shall be provided with cast-iron manholes frames and covers as specified under Section 05550. All manholes are to be provided with copolymer polypropylene steps with grade 60 steel reinforcement. These steps will have a minimum pull-out strength of 1,500 lbs. Precast risers and base for manholes shall conform to ASTM Specification C478 or AASHTO M199. The pipe opening in the precast manhole riser shall have a cast-in-place flexible gasket or an equivalent system for pipe installation, as approved by the Engineer. Joints between manhole risers shall be soft Butyl joint sealer (rope form). The manhole cover frames shall be set to final grade only after the base course paving has been completed. Manholes shall be constructed to grade with precast concrete riser rings. All manhole lift holes shall be grouted inside and out with expandable grout. All invert brickwork for precast concrete manholes shall meet the requirements of Section 04211.

03402
PRECAST CONCRETE CATCH BASINS

WORK INCLUDED: Shall include all work necessary to supply and place concrete catch basins as shown on the Contract Drawings. This is to include excavation, backfill and all other required operations to properly install the catch basins.

Catch basins shall be constructed of reinforced concrete and shall be provided with cast iron frames and grates as indicated on the Contract Drawings and as specified in Section 05550. Precast risers and base sections shall conform to ASTM C913, latest edition. Frames shall be brought to grade with precast concrete riser rings and shall be set in a full bed of mortar. All brick surfaces shall be plastered with cement mortar, the plaster being carried up as the brickwork progresses. Joints between pipes and catch basin base sections shall be sealed with boots for pipes 36" in diameter or smaller and with cement mortar for pipes larger than 36" in diameter, smoothed on the inside and built up with a heavy bead of excess mortar on the outside.

The grating frames shall be set to final grade only after the base course paving has been completed.

04110
CEMENT AND LIME MORTAR

WORK INCLUDED: This section pertains to the material and method requirements for use of mortar on block or brick masonry units under this contract. All masonry units shall be laid in mortar as described in this section, unless specified otherwise.

MATERIALS: Mortar used in masonry construction shall be highly plastic with high water retentivity and shall consist of, by volume, 1 part Portland Cement, 1/2 part to 1/4 part hydrated lime putty and 2-1/4 to 3 times the sum of the volumes of cement and lime putty for sand. Mixture may be adjusted slightly for workability.

Cement: Shall be a Portland Cement of American manufacture, conforming to the latest revision of the ASTM Specification C150 or AASHTO M85, Type II, and to be of a color approved by the Engineer.

Lime: Shall be a double hydrated, high calcium lime, conforming to the latest revision of the ASTM Specification C207-SS, Type S. Lime putty shall be a stiff mixture of lime and water.

Sand: Shall conform to the ASTM Specification C144 or AASHTO M45, 100% to pass #8 sieve, not over 25% to pass #100 sieve.

Water: Used in mixing mortars shall be potable water.

Use of prepared mortar mixes may be permitted, on request of the Contractor. Such work shall not proceed until permission is granted to use a prepared mix and the specific product to be used has been approved by the Engineer. Planting mortar for structural factory tile walls shall be proportioned by volume with 1 part Portland Cement, 1/8 part Type S hydrated lime and 2 parts graded (50 mesh or finer) sand to which ammonium stearate or calcium stearate is added in an amount equal to 2% of the weight of the cement used.

MEASUREMENTS AND MIXING: Measurement and mixing shall conform to ASTM Specification C270 or C476 (latest version) and all mortar shall be mixed in a machine type mixer for a least 5 minutes. Retempering shall be kept to a minimum and mortar mix more than two hours old shall be discarded. All mortar shall be ASTM C270, Type S. Mortar and grout for reinforced masonry shall conform to ASTM C476.

04211
BRICK MASONARY FOR MANHOLES, CATCH BASINS & SIMILAR UNDERGROUND STRUCTURES

WORK INCLUDED: The Contractor shall provide and install brick masonry where indicated on the plans or directed by the Engineer for construction for filling of manhole inverts and for similar uses.

Each brick shall be wetted and completely bedded in mortar at its bottom, sides and ends in one operation, care being taken to fill every joint. Brickwork shall be well bonded and joints shall be as close as practicable. No brick masonry shall be laid in water nor shall any water be allowed to rise on or around any brick masonry until it has set at least 24 hours. No masonry shall be laid in freezing weather.

The brick used to construct manhole inverts shall be good, sound, hard and uniformly burned, regular and uniform in shape and size. Brick used for this purpose shall conform to ASTM Specification C32 or AASHTO M191 latest version and shall be Grade SS.

Brick masonry shall be laid in Portland cement mortar composed of one part Portland cement and two parts of sand, measured by volume, to which not more than 10 pounds of lime shall be added for each bag of cement. The cement shall be as specified in Section 03300. Water for mortar shall be clean and only an amount sufficient to produce a workable mortar shall be used. Mortar shall be used within one hour from the time the cement was added to the mix.

The sand for mortar for brick masonry shall be uniformly graded, clean, sharp and contain no grains larger than will pass a 1/8 inch mesh screen.

05550
MISCELLANEOUS METALS FOR MANHOLES AND CATCH BASINS

WORK INCLUDED: The Contractor shall install manhole frames and covers as outlined and at locations indicated on the plans or as directed by the Engineer.

MANHOLE FRAMES AND COVERS: Manhole frames and covers shall conform to standards as designated on the Contract Drawings. Frames and covers shall be of tough, gray, cast iron. Casting shall be true pattern and free from flaws. Bearing surfaces of manhole frames and covers against each other shall be machined to give continuous contact throughout their entire circumference. All iron castings shall be thoroughly cleaned and then coated with hot tar before being delivered. Frames and covers shall be Neenah, LeBaron, or an approved equal with model numbers as designated on the Contract Drawings. Manhole cover shall be marked "Sewer" or "Storm-Sewer" or "Water" as required. The Contractor shall provide water-proof type manhole covers as noted on the plans or as required by the Engineer.

CATCH BASIN GRATES: Catch basin grates shall be as designated on the Contract Drawings.

CLEANOUT FRAMES AND COVERS: Cleanout frames and covers shall be of tough, gray, cast iron. Casting shall be true to pattern and free from flaws. The bearing surface of cleanout frames and covers against each other shall be machined to give continuous contact throughout their circumference. All iron castings shall be thoroughly cleaned and then coated with hot coal tar before being delivered.

07161
EXTERIOR SEALING FOR MANHOLE WALLS & SIMILAR STRUCTURES WITH COAL TAR EPOXY

GENERAL: Exterior sealing of manholes and similar concrete structures is required. The Contractor shall furnish and apply all materials as herein specified.

METHOD: The Contractor shall seal exterior manhole walls and other similar concrete structures with a coal-tar epoxy coating system similar to "Tnemec-Tar" as manufactured by Tnemec Company, Inc., Bitumastic 300-M as manufactured by Koppers, Company, Inc., or an approved equal. The coal-tar epoxy system shall contain no less than 68% solids by volume and shall be applied in no less than two coatings to achieve a minimum dry-film thickness of 15 mils.

The coating shall extend from a point 6" below ground level to 4" from the bottom edge of the base of the manhole. The surface on which the coating is to be applied shall be clean and dry, free of dirt, and loose material prior to application. No coating shall be applied to surfaces that will be exposed to rain before coating is dry or on surfaces with temperatures below 40°F. The Contractor shall apply all coatings in strict accordance with the manufacturer's recommendations and shall take all necessary safety precautions during the application of the coatings.

07200
INSULATION

WORK INCLUDED: The Contractor shall be responsible for furnishing and installing all insulation of the types, thickness and in the locations as shown on the Contract Drawings or as required by the Engineer.

RIGID INSULATION: Rigid panels of expanded polystyrene insulation shall be furnished and installed, in the thickness and in the locations as shown on the Contract Drawings. Care should be taken during all phases of handling to ensure that panels are isolated from sources of fire or high heat since polystyrene is a highly flammable material.

10411
SIGNS FOR TRAFFIC CONTROL

The Contractor shall provide and maintain, throughout the project, acceptable warning, direction, and detour signs at all closures, intersections, and along the construction and detour routes, directing the traffic control around the closed portions of the highway so that the temporary detour route or routes shall be indicated clearly throughout its or their entire length.

All barricades, warning signs, lights, temporary signals and other protective devices must conform with the Manual on Uniform Traffic Control Devices for Streets and Highways published by the U.S. Government Printing Office. Typical signs are included in the Contract Drawings.

In the event that the Contractor neglects to satisfactorily install and maintain barricades, lights, signs, and signals as ordered by the Engineer, the Engineer may proceed to have such installations made and the cost thereof shall be deducted from the monies due the Contractor.

When construction is suspended for any reason, the standard barricades and signs shall be established on a semi-permanent basis and shall be reflectorized, installed, and arranged as approved by the Engineer.

15100
VALVES AND VALVE BOXES

WORK INCLUDED: Work of this section pertains to the valves and valve boxes to be utilized on all new or reconstructed waterlines, at the locations shown on the Contract Drawings or as directed by the Engineer.

VALVES: Valves 3" to 12" in diameter shall be resilient-seated gate valves meeting all applicable requirements of AWWA C509, as manufactured by the Clow Corporation or an approved equal. The resilient wedge shall be permanently bonded to meet ASTM D429 testing for rubber metal bond.

Valves greater than 12" in diameter shall be double disc gate valves meeting all applicable requirements of AWWA C500, as manufactured by Clow Corporation or an approved equal.

All valves shall have non-rising stems and open left. All valves shall have mechanical joints in accordance with AWWA C110. A two inch, AWWA operating nut shall be provided on all valves.

A T-handled wrench extending a minimum of 24" and a maximum of 48" above the ground shall be supplied to the Owner to open all valves.

The minimum working pressure shall be 200 psi. The Contractor shall provide manufacturer's certification of satisfactory hydrostatic testing of 400 psi with shut-off test of 200 psi. There shall be zero (0) leakage (bubble tight) at the 200 psi test.

Valves to be used in wet tap process and the installer, must be approved by the Engineer prior to installation.

VALVE BOXES: Valve boxes are to be installed on all buried valves. The boxes shall be cast iron with a minimum 5-1/4" diameter and long enough to extend from the valve to finished grade. The boxes shall enclose the operating nut and the stuffing box of the valve. Valve boxes shall not transfer loads into the valve.

Covers shall be close fitting and dirt tight with the top of the cover flush with the top of the box rim. Covers shall be marked "water" with an arrow indicating the direction of the opening.

Valve boxes shall be manufactured by the Mueller Co., or an approved equal.

15109
HYDRANTS

The Contractor shall install fire hydrants of the number and at the locations as shown on the Contract Drawings. The hydrants shall be provided with an auxiliary valve of the size indicated on the Contract Drawings and as specified in this section under Valves.

The Contractor shall also provide a section of 6" diameter cement lined ductile iron pipe of sufficient length to connect the hydrant to the main line. Specific pipe requirements are as defined in this section under Materials.

Hydrants shall be Super Centurion 200, left opening hydrants as manufactured by Mueller Co. and shall have (2) 2-1/2" and (1) 4-1/2" National Standard hose connections.

TAPPING SLEEVES AND TAPPING VALVES

All materials used when tapping a water transmission or distribution pipelines shall be as specified below (these specifications meet the current Champlain Water District requirements):

A. Tapping Sleeves

A1. For use on existing asbestos cement, gray cast iron or ductile iron pipe

A1.1 Tapping sleeves shall be of the split sleeve design constructed with two solid half-sleeves bolted together. Sleeves shall be constructed of cast iron or ductile iron, shall have a working pressure of at least 150 psi, and shall have mechanical joint ends with end and side gasket seals.

A1.2 All iron body tapping sleeves shall be provided with a 3/4" NPT test plug, or other provisions must be made for air testing the valve and sleeve at maximum working pressure, prior to tapping.

A1.3 All bolts and nuts for mechanical joints of tapping sleeves shall be of high-strength cast iron or high-strength, low-alloy steel conforming to ANSI/AWWA C111/A21.11-90.

A1.4 All bolts and nuts for flanged joints of tapping sleeves shall be of high-strength, low-carbon steel conforming to ANSI/AWWA C110/A21.10-87, Appendix A.

A1.5 All bolts and nuts shall be sound, clean, and coated with a rust-resistant-lubricant; their surfaces shall be free of objectionable protrusions that would interfere with their fit in the made-up mechanical or flanged joint.

A1.6 All bolts and nuts used with all pipe sleeves shall, upon final tightening and testing, be brush coated heavily with bitumastic cold-applied material to thoroughly cover all exposed surfaces of the bolts and nuts.

B. Tapping Valves

B1. Tapping valves shall conform to ANSI/AWWA C509-87 Standard for Resilient-Seated Gate Valves for Water and Sewage Systems, except as modified herein. Valves shall open counterclockwise and shall have a minimum working pressure of 150 psi. Inlet flanges shall be Class 125 conforming to ANSI Specification B16.1 or ANSI/AWWA C110/A21.10, and outlet connection shall be Standardized Mechanical Joint unless specified otherwise on the Contract Drawings for the type of pipe required for the branch or lateral pipeline.

B1.1 Tapping valves 14" diameter and larger shall be installed with their stems horizontal, shall be equipped with rollers, tracks and scrapers, and shall be provided with bypass valves unless otherwise specified.

B1.2 Buried tapping valves shall be provided with a two inch square wrench nut and shall be installed with a cast iron valve box as required to allow positive access to the valve operating nut at all times. In installations where the depth from grade to top of valve operating nut is greater than 6'-0", a valve stem riser shall be provided and installed such that the depth from valve stem riser nut to grade is from 4'-0" to 6'-0" (minimum length of valve stem riser is 2'-0"). Valve stem riser shall be of high strength steel and of welded construction.

VORTECHNICS STORMWATER TREATMENT SYSTEM

PART 1.00 GENERAL

1.01 DESCRIPTION

A. Work included:

The Contractor, and/or a manufacturer selected by the Contractor and approved by the Engineer, shall furnish all labor, materials, equipment and incidentals required and install all precast concrete stormwater treatment systems and appurtenances in accordance with the Drawings and these specifications.

B. Related work described elsewhere:

1. Unit Masonry
2. Miscellaneous Metals
3. Waterproofing

1.02 QUALITY CONTROL INSPECTION

A. The quality of materials, the process of manufacture, and the finished sections shall be subject to inspection by the Engineer. Such inspection may be made at the place of manufacture, or on the project site after delivery, or at both places, and the sections shall be subject to rejection at any time if material conditions fail to meet any of the specification requirements, even though sample sections may have been accepted as satisfactory at the place of manufacture. Sections rejected after delivery to the site shall be marked for identification and shall be removed from the site at once. All sections which have been damaged beyond repair during delivery will be rejected and, if already installed, shall be repaired to the Engineer's acceptance level, if permitted, or removed and replaced, entirely at the Contractor's expense.

B. All sections shall be inspected for general appearance, dimensions, soundness, etc. The surface shall be dense, close textured and free of blisters, cracks, roughness and exposure of reinforcement.

C. Imperfections may be repaired, subject to the acceptance of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final acceptance. Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi at the end of 7 days and 5,000 psi at the end of 28 days when tested in 3 inch diameter by 6 inch long cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs.

1.03 SUBMITTALS

A. Shop Drawings

The Contractor shall be provided with dimensional drawings and, when specified, utilize these drawings as the basis for preparation of shop drawings showing details for construction, reinforcing, joints and any cast-in-place appurtenances. Shop drawings shall be annotated to indicate all materials to be used and all applicable standards for materials, required tests of materials and design assumptions for structural analysis. Design calculations and shop drawings shall be certified by a Professional Engineer retained by the system manufacturer or contractor and licensed in the state where the system is to be installed. Shop drawings shall be prepared at a scale of not less than 1/4" per foot. Six (6) hard copies of said shop drawings shall be submitted to the Engineer for review and approval.

B. Affidavit on patent infringement

The Contractor shall submit to the Engineer, prior to installation of the stormwater treatment system, an affidavit regarding patent infringement rights stating that any suit or claim against the Owner due to alleged infringement rights shall be defended by the Contractor who will bear all the costs, expenses and attorney's fees incurred thereof.

PART 2.00 PRODUCTS

2.01 MATERIALS AND DESIGN

A. Concrete for precast stormwater treatment systems shall conform to ASTM Designation C 857-95 and C 858-83 (Reapproved 1990) and meet the following additional requirements:

1. The wall thickness shall not be less than 6 inches or as shown on the dimensional drawings. In all cases the wall thickness shall be no less than the minimum thickness necessary to sustain HS20-44 loading requirements as determined by a Licensed Professional Engineer.

2. Sections shall have tongue and groove or ship-lap joints with a butyl mastic sealant conforming to ASTM C990.

3. Cement shall be Type III Portland cement conforming to ASTM Designation C 150.

4. Pipe openings shall be sealed by the Contractor with a hydraulic cement conforming to ASTM C595M-95a, and shall be sized to accept pipes of the specified size(s) and material(s).

5. Internal metal components shall be aluminum alloy 5052-H32 in accordance with ASTM B209-96.

6. Precast concrete riser rings shall be used to bring the manhole frame to grade.

7. Casting for manhole frames and covers shall be in accordance with The Miscellaneous Metals Section of these Specifications.

8. All sections shall be cured by an approved method. Sections shall not be shipped until the concrete has attained a compressive strength of 4,000 psi or until 5 days after fabrication and/or repair, whichever is the longer.

9. A butimen sealant in conformance with ASTM C990-91 shall be utilized in affixing the aluminum swirl chamber to the concrete vault.

2.02 PERFORMANCE

Each stormwater treatment system shall adhere to the following performance specifications at the specified design flows, as listed below for the specific applications:

Table 2.02

SYSTEM NUMBER	SWIRL CHAMBER DIAMETER (FT)	DESIGN TREATMENT CAPACITY (CFS)	SEDIMENT STORAGE (C.Y.)	OIL STORAGE VOLUME (GALLONS)	PERCENT OF TSS REMOVAL (%)
1	9	14.0	4.75	1,500	80
2	10	17.5	5.50	1,800	80
3	12	25.0	7.00	2,500	74

Each stormwater treatment system shall include a circular aluminum "swirl chamber" (or "grit chamber") with a tangential inlet to induce a swirling flow pattern that will accumulate and store settleable solids in a manner and a location that will prevent re-suspension of previously captured particulates. Each swirl chamber diameter shall not be less than the diameter listed in Table 2.02 (neglecting chamber wall thickness).

Each stormwater treatment system shall be of a hydraulic design that includes flow controls designed and certified by a professional engineer using accepted principles of fluid mechanics that raise the water surface inside the tank to a pre-determined level in order to prevent the re-entrainment of trapped floating contaminants.

Each stormwater treatment system shall be capable of removing the percentage of the Total Suspended Solids (TSS) as shown in the table above. Individual stormwater treatment systems shall have the design treatment capacity, as appropriately listed in Table 2.02, and shall not resuspend trapped sediments or re-entrain floating contaminants at flow rates up to and including the specified "Design Treatment Capacity".

Individual stormwater treatment systems shall have usable sediment storage capacity of not less than the appropriate volume listed in Table 2.02. The systems shall be designed such that the pump-out volume is less than 1/2 of the total system volume. The systems shall be designed to not allow surcharge of the upstream piping network during dry weather conditions.

A water-lock feature shall be incorporated into the design of the stormwater treatment system to prevent the introduction of trapped oil and floatable contaminants to the downstream piping during routine maintenance and to ensure that no oil escapes the system during the ensuing rain event. Direct access shall be provided to the sediment and floatable contaminant storage chambers to facilitate maintenance. There shall be no appurtenances or restrictions within these chambers.

Each stormwater treatment system manufacturer shall furnish documentation which supports all product performance claims and features, storage capacities and maintenance requirements.

Stormwater treatment systems shall be completely housed within one structure.

2.03 MANUFACTURER

Each stormwater treatment system shall be of a type that has been installed and used successfully for a minimum of 5 years. The manufacturer of said system shall have been regularly engaged in the engineering design and production of systems for the physical treatment of stormwater runoff.

Each stormwater treatment system shall be a Vortechs System as manufactured by Vortechnics, Inc., 41 Evergreen Drive, Portland, Maine 04103, phone: 207-878-3662, fax: 207-878-8507; as protected under U.S. Patent # 5,759,415.

PART 3.00 EXECUTION

3.01 INSTALLATION

A. Each Stormwater Treatment System shall be constructed according to the sizes shown on the Drawings and as specified herein. Install at elevations and locations shown on the Drawings or as otherwise directed by the Engineer.

B. Place the precast base unit on a granular subbase of minimum thickness of six inches after compaction or of greater thickness and compaction if specified elsewhere. The granular subbase shall be checked for level prior to setting and the precast base section of the trap shall be checked for level at all four corners after it is set. If the slope from any corner to any other corner exceeds 0.5% the base section shall be removed and the granular subbase material re-leveled.

C. Prior to setting subsequent sections place butimen sealant in conformance with ASTM C990-91along the construction joint in the section that is already in place.

D. Prior to setting the precast roof section install the circular swirl chamber wall by bolting the swirl chamber to the side walls at the three (3) tangent points and at the 3-inch wide inlet tab using HILTI brand concrete anchors or equivalent 1/2-inch diameter by 3-inch minimum length at heights of approximately three inches (3") off the floor and at the mid-height of the completed trap (at locations of pre-drilled holes in aluminum components). Seal the bottom edge of the swirl chamber to the concrete floor with an approved caulk, mastic or grout and seal the swirl chamber sidewalls to the inside of the concrete walls from the floor to the same height as the inlet pipe invert using a butyl mastic or approved equal sealant.

E. Prior to setting the precast roof section, butimen sealant equal to ASTM C990-91 shall be placed along the top of the baffle wall, using more than one layer of mastic if necessary, to a thickness at least one inch (1") greater than the nominal gap between the top of the baffle and the roof section.

The nominal gap shall be determined either by field measurement or the shop drawings. After placement of the roof section has compressed the butyl mastic sealant in the gap, finish sealing the gap with an approved non-shrink grout on both sides of the gap using the butyl mastic as a backing material to which to apply the grout. Also apply non-shrink grout to the joints at the side edges of the baffle wall.

F. After setting the precast roof section of the stormwater treatment system, set precast concrete manhole riser sections, to the height required to bring the cast iron manhole covers to grade, so that the sections are vertical and in true alignment with a 1/4 inch maximum tolerance allowed. Backfill in a careful manner, bringing the fill up in 6" lifts on all sides. If leaks appear, clean the inside joints and caulk with lead wool to the satisfaction of the Engineer. Precast sections shall be set in a manner that will result in a watertight joint. In all instances, installation of Stormwater Treatment Systems shall conform to ASTM specification C891-90 "Standard Practice For Installation of Underground Precast Utility Structures".

G. Plug holes in the concrete sections made for handling or other purposes with a nonshrink grout or by using grout in combination with concrete plugs.

H. Where holes must be cut in the precast sections to accommodate pipes, do all cutting before setting the sections in place to prevent any subsequent jarring which may loosen the mortar joints. The Contractor shall make all pipe connections.

GALVANIZED GABION SPECIFICATIONS

SCOPE

This specification covers the use of galvanized steel wire mesh box-shaped baskets filled with stone such as retaining walls, slope paving, river bank protection outfall structures, weirs and drop structures, etc.

DEFINITIONS

A) Gabions are defined as galvanized steel wire mesh box-shaped baskets, of various sizes. The baskets are filled on site with clean hard stones.

B) The selvedges of the gabions are the thicker perimeter and edge wires to which the wire mesh is securely tied to withstand sudden or gradual stress from any direction.

C) Reinforcing wires are the thicker wires incorporated into the netting during fabrication.

D) The diaphragms are internal wire mesh partitions which divide the gabion into cells.

E) Tiger-Tite Interlocking Fastener (TM) is used to assemble and join gabion units as an alternative to lacing wire to speed gabion construction time.

F) Lacing or binding wire is the wire used to assemble and join the gabion units.

G) Connecting wires are internal wires used to prevent the gabions from bulging.

H) Tact Ties (TACT) are fabricated, preformed internal cross tie wires.

FABRICATION

Galvanized Steel Wire Mesh Gabions. Gabions shall be fabricated in such a manner that the sides, ends, lid and diaphragms can be assembled at the construction site into rectangular baskets of the sizes specified and shown on the drawings. Gabions shall be of single unit construction: the base, lid, ends and sides shall be either woven into a single unit or one edge of these members connected to the base section of the gabion in such a manner that strength and flexibility at the connecting point does not compromise the engineered structural design of the gabion. Where the length of the gabion exceeds one and one-half its horizontal width, the gabion shall be divided by diaphragms of the same mesh and gauge as the body of the gabion, into cells whose length does not exceed the horizontal width. The gabion shall be furnished with the necessary diaphragms secured in proper position on the base in such a manner that no additional tying is required at this juncture.

Non-Raveling. The wire mesh is to be fabricated in such a manner as to be non-raveling. This is defined as the ability to resist pulling apart at any of the twists or connections forming the mesh when a single wire strand in a section of mesh is cut.

MATERIALS

Galvanized Steel Wire Mesh Gabions: Gabion basket units shall be of non-raveling construction and fabricated from a double twist by twisting each pair of wires through three half turns developing the appearance of a triple twist. The hexagonal mesh shall be hot dipped galvanized steel wire having a diameter of 0.120 inches (US gauge 11) after galvanization. The steel wire used shall be galvanized prior to weaving into mesh. All gabion diaphragms and frame wires shall equal or exceed Federal Specification QQ-W-461H, possess a minimum tensile strength of 70,000 PSI with a Finish 5, Class 3 zinc coating in accordance with the current ASTM A-641. The weight of zinc coating shall be determined by ASTM A-90. The grade of zinc used for coating shall be High Grade or Special High Grade as prescribed in ASTM B-6, Table 1. Uniformity of coating shall equal or exceed four 1-minute dips by the preece test, as determined by ASTM A-239. The mesh opening shall be hexagonal in shape and uniform in size measuring not more than 3-1/4 inches by 4-1/2 inches. Selvedge or perimeter basket frame wire shall be of a heavier gauge than the mesh wire with a diameter of 0.150 inches after galvanization. Lacing and connecting wire shall meet the same specifications as the wire used in the gabion body except that its diameter shall be of 0.091 inches (US gauge 13) after galvanization. The use of alternate wire fasteners shall be permitted in lieu of tie wire providing the alternate fastener produces a four (4) wire selvedge joint with a strength of 1,4000 lbs. per linear foot while remaining in a locked and closed condition. Properly formed interlocking fasteners shall be spaced from 4 to 6 inches and have a minimum 3/4 square inch inside area properly confine the required selvedge wires. Tiger-Tite Interlocking Fasteners are an approved alternate joint material. The Interlocking Wire Fasteners shall meet material specification ASTM A-764, Finish 2, Class 1, Type 3.

All of the above wire diameters are subject to tolerance limit of 0.004 inches in accordance with ASTM A-641.

GABION STANDARD SIZES

	Letter Code	Dimensions	No. of Cells	Capacity Cu. Yds.
	A	6' x 3' x 3'	2	2
	B	9' x 3' x 3'	3	3
	C	12' x 3' x 3'	4	4
	D	6' x 3' x 1'-6"	2	1
	E	9' x 3' x 1'-6"	3	1.5
	F	12' x 3' x 1'-6"	4	2
	G	6' x 3' x 1'	2	0.66
	H	9' x 3' x 1'	3	1
	I	12' x 3' x 1'	4	1.33

Tolerances. All gabions dimensions shall be within a tolerance limit plus or minus 5% of the manufacture's stated size.

MESH DEFORMATION

The wire mesh shall have deformability sufficient to permit a minimum mesh elongation equivalent to 10% of the unstretched length of the mesh test section without reducing the gauge or tensile strength of the individual wire strands to values less than those for similar wire, one gauge smaller in diameter.

GABION FILL

The material used for gabion fill shall be clean, hard stone with pieces ranging in size from four (4) to eight (8) inches in the greatest dimension. Stone filling shall not exceed a 12 inch vertical drop above the gabion basket.

ASSEMBLING AND PLACING

A) Each gabion shall be assembled by tying or fastening all untied edges. The binding wire shall be tightly looped around every mesh opening along seams in such a manner that single and double loops are alternated. The Tiger-Tite Interlocking Fasteners shall be applied at approximately 4" to 6" intervals. A minimum of two (2) interlocking fasteners per 1 foot, three (3) interlocking fasteners per 1.5 foot and six (6) interlocking fasteners per 3 foot vertical or horizontal edge seam is required.

B) A line of empty gabions, with joints staggered, shall be placed into position according to the contract drawings. Binding wire or interlocking Fasteners shall be used to secure each unit to the adjoining one along the vertical reinforced edges and the top selvedges. An approved corner closure tool shall be used to adjoin adjacent gabions to insure a tight, neat seam and minimize gabion wire joint deformation. The base of the empty gabion placed on top of a filled line of gabions shall be tightly wired or fastened to the latter at front and back. The lid shall be secured with an approved closure tool to insure proper closure without excessive mesh deformation.

C) To achieve optimum alignment and finish for retaining walls, a minimum amount of stretching may be required.

D) Connecting wires shall be inserted during the filling operation in the following manner.

36" GABIONS & 18" GABIONS FOR VERTICAL STRUCTURES ON THE EXPOSED FACE

I) Gabions shall be filled to a depth of twelve (12) inches.

II) For end units, two connecting wires or preformed TACT Tie wires in each direction shall be tightly tied to opposite faces of the end gabion cell at a height of twelve (12) inches above the base. Internal compartments shall have internal connecting wires connecting front face to back face of gabion. Preformed TACT Ties are placed diagonal in the gabion cell.

III) Gabions shall be filled a further depth of twelve (12) inches, and two connecting or preformed TACT Tie wires shall similarly be placed at this level.

IV) Gabions shall be filled to the top. Care shall be taken to insure gabion is not under filled.

All connecting wires shall be looped around two mesh openings and the ends of the wires shall be securely twisted to prevent their loosening. TACT Ties wires envelope one horizontal twist on the front face and envelopes one vertical twist on the side face.

BLASTING SPECIFICATIONS

All blasting will be done in conformance with the following specifications:

All work with explosives will be done in such a manner as not to endanger life or property. All storage areas for explosives and inflammable materials shall be clearly marked Dangerous. The method of storing and handling explosive and inflammable materials will conform to all Federal, State, and local laws and regulations.

A portion of the project requires bedrock removal near an active 0.5 million gallon steel water storage tank and the 12" diameter asbestos concrete watermain that serves this tank. A new 12" ductile iron watermain will replace a section of the 12" asbestos concrete watermain leading to the tank. The work must occur without service disruption to this water system or damage to the section of asbestos concrete pipe that will not be replaced.

In addition, bedrock removal may be required elsewhere on the site, as necessary to build the project as shown on the approved design drawings. Ledge probe and boring results are provided with the design drawings. The Contractor is encouraged to conduct additional investigations, as necessary, to ensure that the project can be constructed as shown.

The Contractor must submit a written Blasting Plan to the Engineer detailing proposed steps for the drilling, blasting, and removal of bedrock necessary for the proposed utility lines, new roadway, and incidental removal required for construction of the project.

The Contractor will be required to monitor each blast, and provide a printout record from one or more seismographs, as necessary, to document vibration control.

Areas of ledge removal that are geographically isolated from each other or which must be separated due to construction phasing may have individual Blasting Plans. Under no circumstances shall the Owner or Engineer be liable for damage or costs resulting from blasting.

The Engineer must approve the Blasting Plan in writing before the work can start in the field. Proposed modifications of the approved Blasting Plan must be approved in writing by the Engineer.

The Contractor shall keep a Blasting Log recording the time and date of each blast. The Log shall also record the quantity and type of material placed in each drill hole. The Log shall also record the loading of each drill hole. A copy of the Blasting Log shall be provided to the Engineer at the end of each work week in which blasting occurred.

The Contractor shall take all appropriate steps to minimize vibration and noise from blasting. Prior to blasting, the Contractor shall perform a survey of all structures within 500 feet of the blast zone. Qualified personnel shall perform this survey. The survey will record any observable cracks, deformation from any cause, and other damage that could be claimed. A written report of the survey findings, including photographs, shall be prepared and copies provided to the Engineer prior to the commencement of blasting.

Blasting shall take place only from 7 a.m. to 6 p.m., Monday through Friday, unless approved in writing by the Engineer.

The Contractor shall neither excavate nor remove any material outside the limits of the excavation slope and grade lines indicated on the plans, except as may be authorized in writing by the Engineer. Grading shall be to full cross section width at subgrade before placing of any type of subbase or pavement, except that partial-width construction is permissible where necessary for the maintenance of traffic.

The contractor shall strip overburden from ledge in a workmanlike manner and shall notify the Engineer that the area is ready for cross sectioning prior to making any rock excavation. Any ledge removed prior to the taking of cross sections shall be paid for as Common Excavation. In lieu of stripping, and with the approval of the Engineer, the Contractor may use other means of locating the rock line.

When excavating solid rock by the blasting method, the Contractor shall drill slope holes to the full depth of the rock lift along the line and plane of inclination of the slope, as shown on the plans or as otherwise directed by the Engineer. Using a spacing not exceeding three feet, center to center of holes, and a diameter of not greater than three inches. The line of holes immediately adjacent to the slope holes shall be drilled parallel to the plane of the slope holes and the portion of any drilled hole in this line shall be closer than four feet to the proposed finished slope. No portion of any blast hole larger than three inches in diameter will be permitted closer than 12 feet to the proposed finished slope.

When it is indicated on the plans that concrete will be placed on or against the limits of rock excavation, care shall be taken to avoid shattering, shattering or removing rock outside such limits. Any costs incurred due to the unauthorized removal, shattering or disturbing of the material outside the indicated limits shall be at the expense of the contractor.

The explosives used in the slope holes along the line of the finished slope and the adjacent slope holes shall be explosives for pre-splitting use only, prepared and packaged by explosives manufacturing firms and approved by the Engineer.

The slope holes along the line of the finished slope shall be loaded with approved explosives containing not more than 0.50 pounds of explosive per foot with spaced charges on detonating cord equal in length to the full depth of the hole and if spacers are used, shall be completely stemmed so that uniform breakage of the rock will result from top to bottom of the hole. A bottom charge of not more than eight pounds of explosive may be used. No explosive charge shall be placed within 30 inches, plus or minus six inches, of the collar of the finished slope holes.

The Contractor shall complete the drilling, loading, stemming and blasting of the slope holes at least 25 feet in advance of any other blasting.

In areas other than along the proposed finished rock cut slopes and adjacent slope holes, the spacing of holes, distribution of explosives, the methods of relief, and fractional second delay blasting, shall be adjusted by the Contractor according to the characteristics and structure of the rock encountered so as to obtain the required finished slopes with a minimum of over-break.

The depth of the rock lift within any one-excavation area shall be approved by the Engineer and shall be reduced if the proper alignment of the slope holes cannot be maintained.

CLIENT	PROJECT TITLE	DRAWING TITLE	DATE	REVISION	BY
STARWOOD-CERUZZI, LLC 1720 POST ROAD FAIRFIELD, CT. 06430	MAPLE TREE PLACE PROPOSED SITE DEVELOPMENT WILLISTON, VERMONT	TYPICAL SPECIFICATIONS ~PROGRESS PLAN~	DATE	REVISION	BY
			DATE	REVISION	BY
			DATE	REVISION	BY
			DATE	REVISION	BY
			DATE 9/7/00	REVISION GENERAL REVISIONS	BY SOL

STATE OF VERMONT — RICHARD F. HAMLIN — No. 5260 — REGISTERED PROFESSIONAL ENGINEER

Survey	---
Design	JPK/RFH
Drawn	SOL
Checked	JPK/RFH
Date	3/21/00

Donald L. Hamlin Consulting Engineers, Inc.
136 Pearl Street
Essex Junction, Vermont

Scale	SHOWN
Job	99-293
File	
Drawing	4sp

Fri Sep 22 15:20:54 2000

VERMONT GRID NORTH
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WB-3
WB-1
WB-4
WB-2
MTP #1
WB-6
MTP #2
MTP #3
MTP #4
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LP28
LP26
LP25
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GRAVEL
CONCRETE CURB
GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.
DATE
REVISION
BY
MAPLE TREE PLACE
WILLISTON, VERMONT
SOIL BORING
LOCATION PLAN
Survey MRM
Design ---
Drawn SOL
Checked JPK/RFH
Date 6/20/95
Donald L. Hamlin
Consulting
Engineers, Inc.
Essex Junction, Vermont
Scale 1" = 100'
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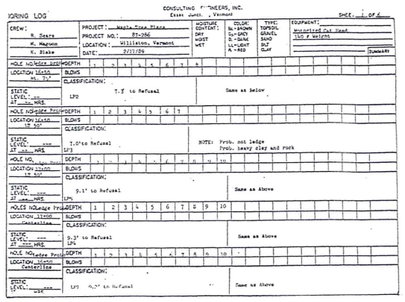

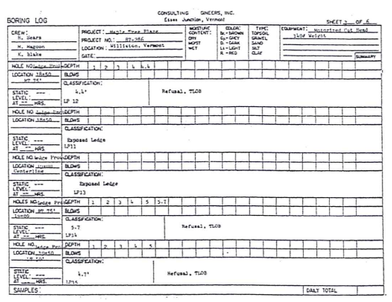

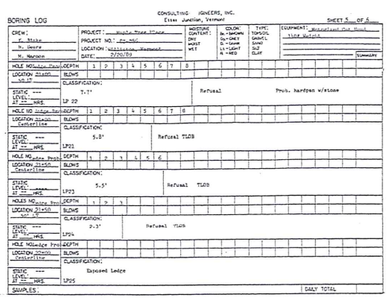

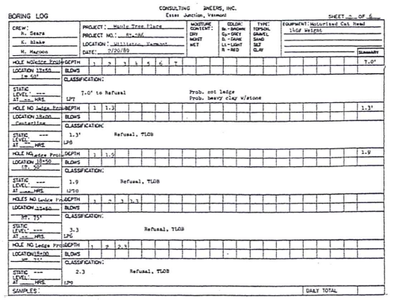

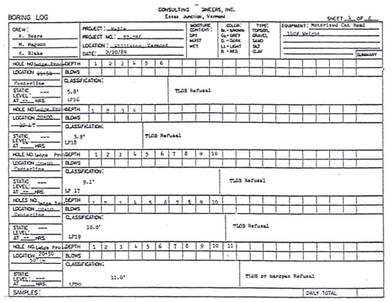

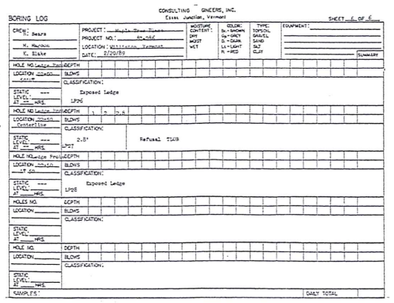

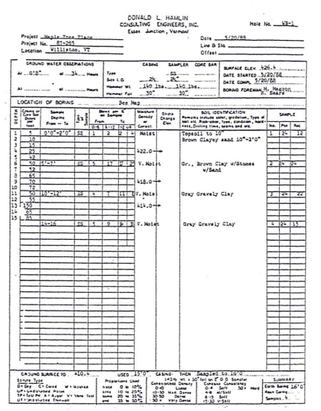

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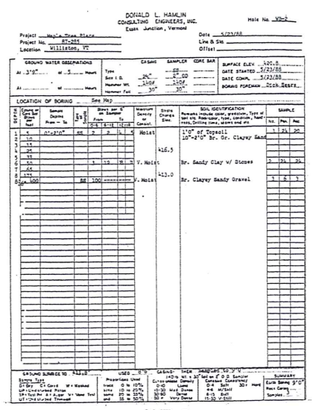

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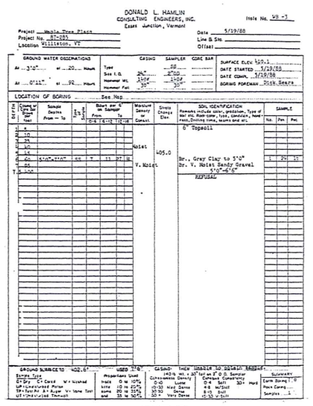

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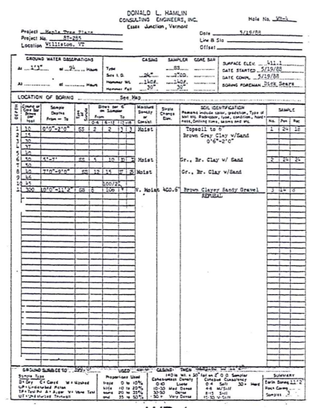
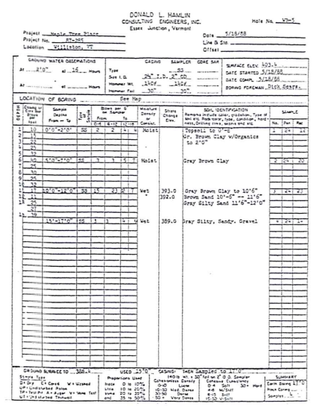
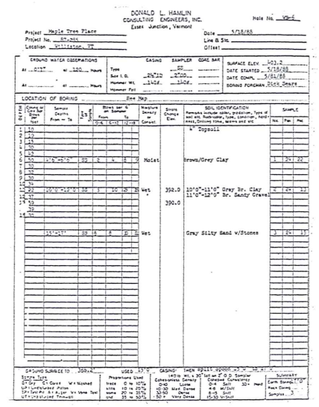


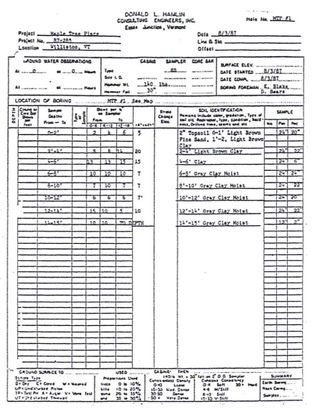
WB-4



WB-5



WB-6



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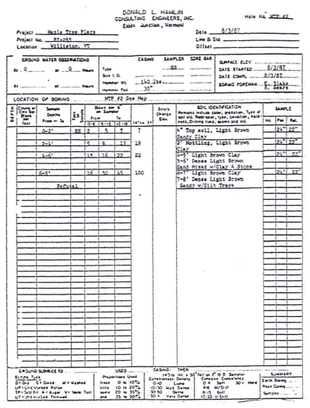

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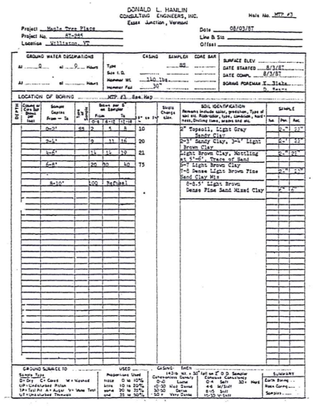

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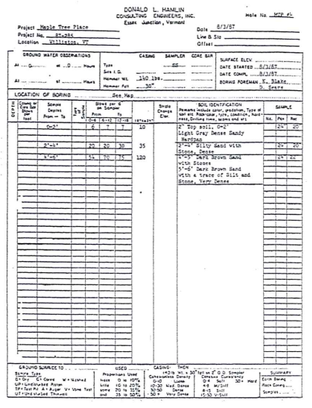


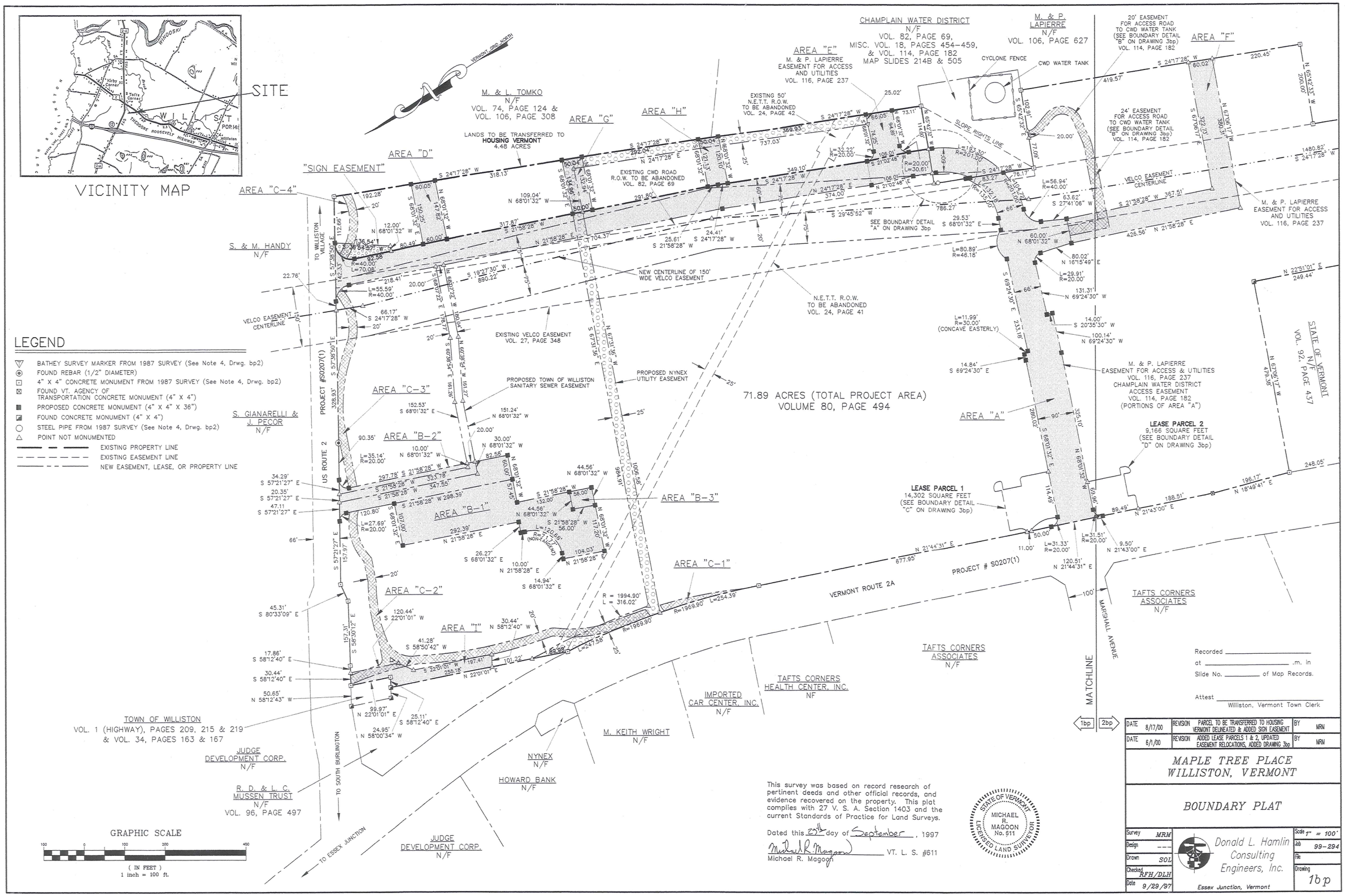
MTP #4

DATE	REVISION	BY

MAPLE TREE PLACE
WILLISTON, VERMONT

LEDGE PROBE AND
BORING LOG INFORMATION

Survey MRM	Donald L. Hamlin Consulting Engineers, inc. Essex Junction, Vermont	Scale SHOWN	
Design ---		Job 95-070	
Drawn SOL		File	
Checked JPK/RPH		Drawing 3sc	
Date 6/20/95			



LEGEND

- BATHEY SURVEY MARKER FROM 1987 SURVEY (See Note 4, Drwg. bp2)
- FOUND REBAR (1/2" DIAMETER)
- 4" X 4" CONCRETE MONUMENT FROM 1987 SURVEY (See Note 4, Drwg. bp2)
- FOUND VT. AGENCY OF TRANSPORTATION CONCRETE MONUMENT (4" X 4")
- PROPOSED CONCRETE MONUMENT (4" X 4" X 36")
- FOUND CONCRETE MONUMENT (4" X 4")
- STEEL PIPE FROM 1987 SURVEY (See Note 4, Drwg. bp2)
- POINT NOT MONUMENTED
- EXISTING PROPERTY LINE
- EXISTING EASEMENT LINE
- NEW EASEMENT, LEASE, OR PROPERTY LINE

This survey was based on record research of pertinent deeds and other official records, and evidence recovered on the property. This plat complies with 27 V. S. A. Section 1403 and the current Standards of Practice for Land Surveys.

Dated this 29th day of September, 1997

Michael R. Magoon VT. L. S. #611
Michael R. Magoon

STATE OF VERMONT MICHAEL R. MAGOON No. 611 LICENSED LAND SURVEYOR

Recorded _____
at _____ .m. in
Slide No. _____ of Map Records.

Attest _____
Williston, Vermont Town Clerk

DATE 8/17/00	REVISION PARCEL TO BE TRANSFERRED TO HOUSING VERMONT DELINEATED & ADDED SIGN EASEMENT	BY	MRM
DATE 6/1/00	REVISION ADDED LEASE PARCELS 1 & 2, UPDATED EASEMENT RELOCATIONS, ADDED DRAWING 3bp	BY	MRM

MAPLE TREE PLACE
WILLISTON, VERMONT

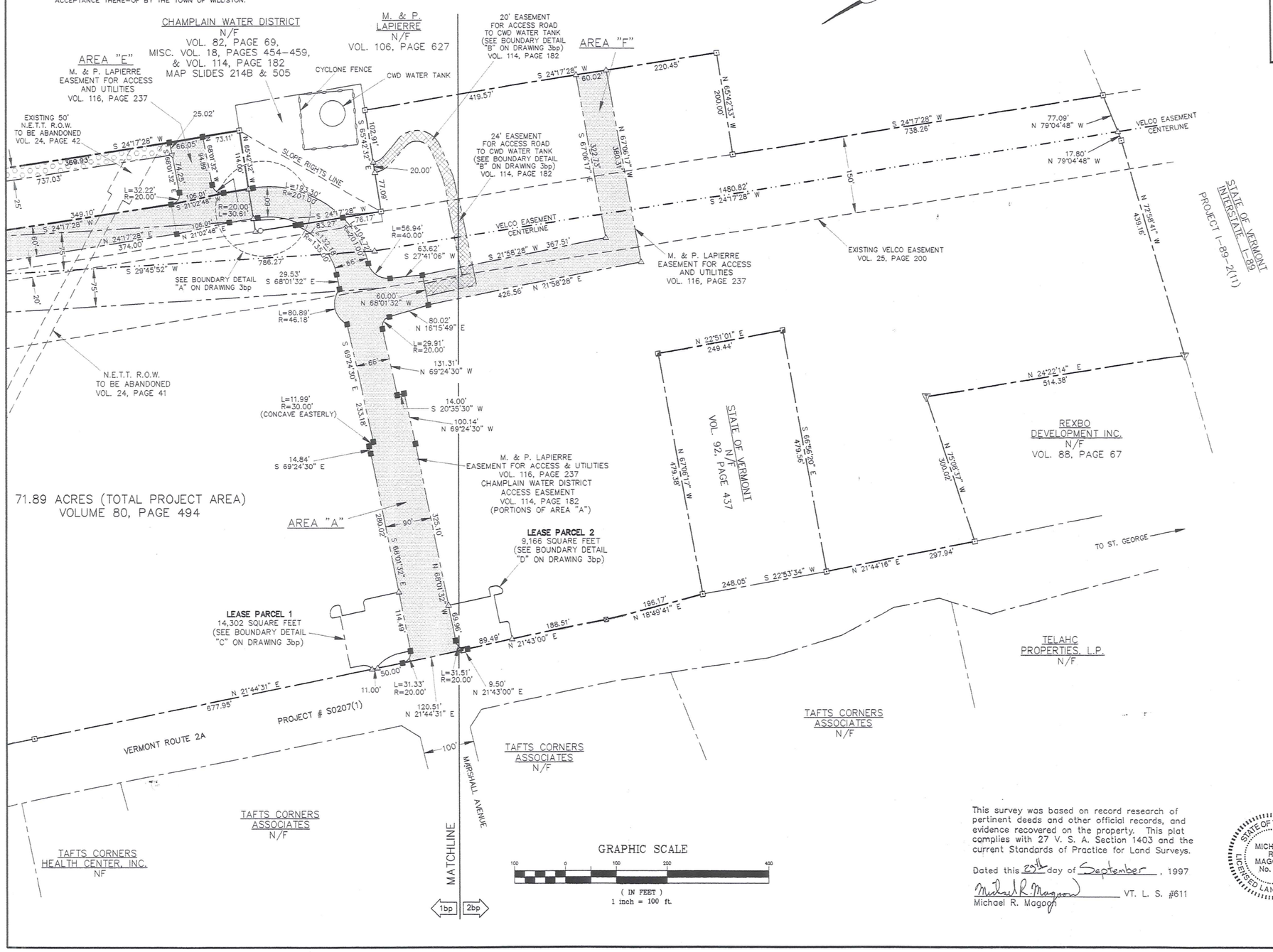
BOUNDARY PLAT

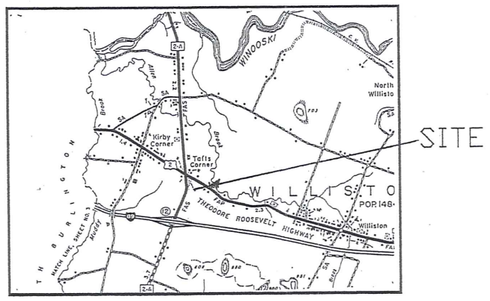
Survey MRM	Donald L. Hamlin Consulting Engineers, Inc.	Scale 1" = 100'	
Design ---		Job 99-294	
Drawn SOL		File	
Checked RFH/DLH		Drawing 1bp	
Date 9/29/97	Essex Junction, Vermont		

Thu Aug 17 15:38:30 2000

NOTES:

1. THE METHOD OF SURVEY WAS THEODOLITE AND EDM WITH A CLOSURE OF 1/65,000.
2. THE FOLLOWING PLANS OF RECORD SHOULD BE REFERENCED:
   A) VERMONT AGENCY OF TRANSPORTATION PROJECT #I-89 2(11) INTERSTATE 89.
   B) VERMONT AGENCY OF TRANSPORTATION PROJECT #S0207(1) ROUTE 116A, ROUTE 2, ROUTE 2A
   C) PROPERTY SURVEY OF LANDS OF JOHN DESCHENES BY ENGINEERS INCORPORATED OF VERMONT DATED MARCH 25, 1980.
   D) SUBDIVISION OF TAFTS CORNERS COMMERCIAL PARK BY TRUDELL CONSULTING ENGINEERS DATED JANUARY 17, 1987.
   E) SITE PLAN OF FRIENDLY ICE CREAM CORPORATION BY ROBERT W. FREY L.S. FEBRUARY 1986.
3. BEARINGS ARE BASED ON VERMONT GRID NORTH (1927 NAD). VERMONT GRID CONTROLS (1927 NAD) WERE ESTABLISHED BETWEEN VERMONT AGENCY OF TRANSPORTATION CONTROL STATIONS "TAFT" 1968 AND "WICKETT" 1983 WHICH WERE BOTH RECOVERED IN JUNE OF 1987.
4. THIS PLAN SUPERCEDES PRIOR RECORD OF SURVEY OF SUBJECT PROPERTY PREPARED BY THIS FIRM DATED JUNE 26, 1987 WITH REVISIONS THROUGH JUNE 15, 1995.
5. SEE OFFER OF DEDICATION OF MAPLE TREE PLACE ASSOCIATES TO THE TOWN OF WILLISTON, DATED EFFECTIVE ON APRIL 1, 1999, AND ATTACHED SCHEDULES, RECORDED IN MISC. VOLUME 44, PAGE 218 OF THE WILLISTON LAND RECORDS, FOR RIGHTS TO DISCHARGE STORMWATER TO MAPLE TREE PLACE STORMWATER FACILITIES FROM THOSE LANDS AND EASEMENTS DESCRIBED ON THIS BOUNDARY PLAT, AND ON SAID SCHEDULES, UPON ACCEPTANCE THERE-OF BY THE TOWN OF WILLISTON.





VICINITY MAP

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Dated this 29th day of September, 1997

Michael R. Magoon VT. L. S. #611

Michael R. Magoon

STATE OF VERMONT
MICHAEL R. MAGOON
No. 611
LICENSED LAND SURVEYOR

Recorded _____

at _____ .m. in

Slide No. _____ of Map Records.

Attest _____

Williston, Vermont Town Clerk

DATE 8/17/00	REVISION PARCEL TO BE TRANSFERRED TO HOUSING VERMONT DELINEATED & ADDED SIGN EASEMENT	BY MRM	
DATE 6/1/00	REVISION ADDED LEASE PARCELS 1 & 2, UPDATED EASEMENT RELOCATIONS, ADDED DRAWING 3bp	BY MRM	

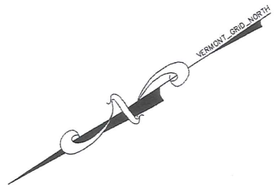
MAPLE TREE PLACE
WILLISTON, VERMONT

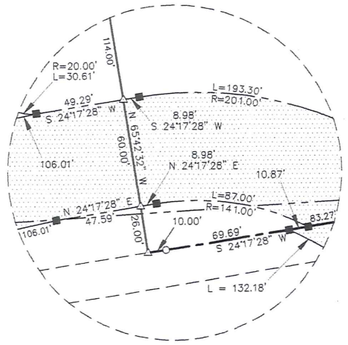
BOUNDARY PLAT

Survey MRM	Donald L. Hamlin Consulting Engineers, Inc.	Scale 1" = 100'	
Design ---		Job 99-294	
Drawn SOL		File	
Checked RFH/DLH		Drawing 2bp	
Date 9/29/97	Essex Junction, Vermont		

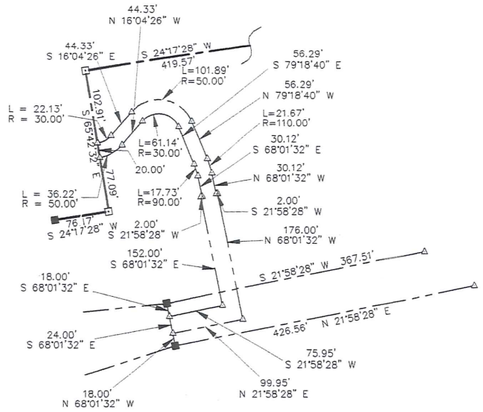
Thu Aug 17 15:47:58 2000

BOUNDARY DETAILS
(Not to Scale)





DETAIL "A"
(NOT TO SCALE)



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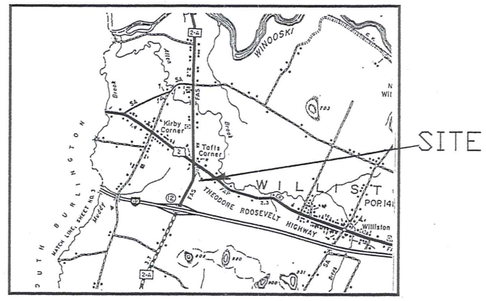
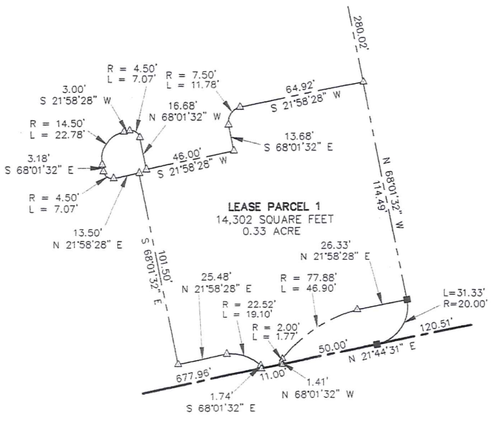


VICINITY MAP



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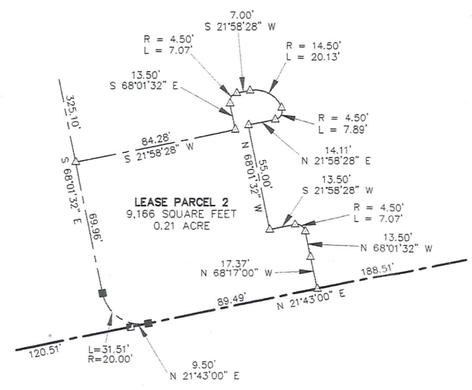

DETAIL "D"
(NOT TO SCALE)

LEGEND

- BATHEY SURVEY MARKER FROM 1987 SURVEY (See Note 4, Drwg. bp2)
- FOUND REBAR (1/2" DIAMETER)
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at _____ .m. in
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Attest _____
Williston, Vermont Town Clerk

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Dated this 1st day of June, 2000

Michael R. Magoon VT. L. S. #611
Michael R. Magoon

STATE OF VERMONT
MICHAEL R. MAGOON No. 611
LICENSED LAND SURVEYOR

DATE	REVISION	BY

MAPLE TREE PLACE
WILLISTON, VERMONT

BOUNDARY PLAT

Survey	MRM	Donald L. Hamlin Consulting Engineers, Inc.	Scale --
Design	---		Job 99-294
Drawn	MRM		File 7684
Checked	RFH/DLH		Drawing 3bp
Date	6/1/00	Essex Junction, Vermont	