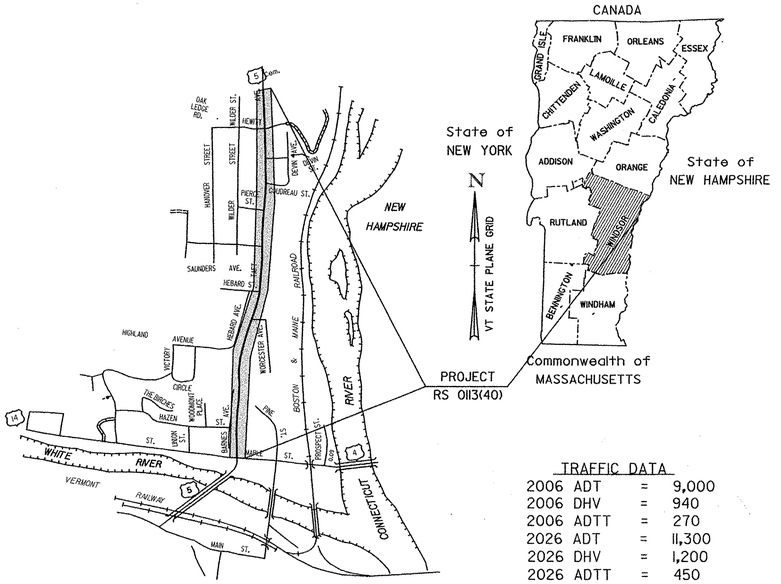
FOR INDEX OF SHEETS SEE SHEET 2 OF 239

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TOWN OF HARTFORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)

BEGINNING ON US ROUTE 5 AT THE INTERSECTION OF US ROUTE 5 AND US ROUTE 4/VT ROUTE 14 AND EXTENDING NORTHERLY 0.711 MILES.
LENGTH OF ROADWAY: 3755.00 FT. = 0.711 MILES
LENGTH OF PROJECT: 3755.00 FT. = 0.711 MILES
THIS PROJECT CONSISTS OF RECONSTRUCTION WITH MINOR RELOCATION, INCLUDING PAVEMENT, DRAINAGE, CURB, SIDEWALKS, U.S. RTE. 5 GROUND ANCHORED SOLDIER PILE WALL, BARNES AVENUE SHEET PILE RETAINING WALL, LANDSCAPING, WITH TRAFFIC SIGNALS AT RELOCATED HIGHLAND AVENUE AND WORCESTER AVENUE, AND INSTALLATION OF NEW WATER AND SEWER LINES



TRAFFIC DATA		
2006 ADT	=	9,000
2006 DHV	=	940
2006 ADTT	=	270
2026 ADT	=	11,300
2026 DHV	=	1,200
2026 ADTT	=	450
D	=	54%
T	=	4%
V	=	30 MPH
2006-2026 ESAL	=	2,403,000
2006-2046 ESAL	=	5,808,000



BITUMINOUS CONCRETE PAVEMENT SUPER PAVE MIXTURE DESIGN CRITERIA	
DESIGN LIFE ESAL (DESIGN LANE)	2,008,000
DESIGN NUMBER OF GYRATIONS	75
PERFORMANCE GRADED ASPHALT BINDER	PG58-34

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS (SR SR SR)
TOP OF CUT
TOE OF SLOPE

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 150 300
SCALE IN FEET

STATE OF VERMONT
JAMES V. ERRICO
LIC.# 6726
PROFESSIONAL ENGINEER
FOR GROUND ANCHORED SOLDIER PILE WALL ONLY

STATE OF VERMONT
PAUL G. SHARKEY
NO. 7599
LICENSED PROFESSIONAL ENGINEER

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROJECT DEVELOPMENT.
CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON MARCH, 2001 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

Green International Affiliates, Inc.
Consulting Engineers
Medford, MA

APPROVED _____ DATE 2/1/07
DIRECTOR OF PROJECT DEVELOPMENT

PROJECT HARTFORD
RS 0113(40)

SHEET 1 OF 239 SHEETS

RECORD PLANS

CONTRACTOR: PIKE INDUSTRIES, INC. – BERLIN, VT
RESIDENT ENGINEER: CHRIS BARKER
CONSTRUCTION BEGAN: JUNE 18, 2007
CONSTRUCTION COMPLETE: DECEMBER 22, 2009
RECORD PLANS BY: CHRIS BARKER & JENNA HYDE

I HEREBY CERTIFY THAT ALL THE CONSTUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY _____ RESIDENT ENGINEER
DATE 01/16/14

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.

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DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT NAME: HARTFORD

PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027frm.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K.ISHIKURA, E.ATKINS

PLOT DATE: 1/31/2007
DRAWN BY: P.MILEWSKI
CHECKED BY: K.ISHIKURA

TYPICAL SECTIONS
US ROUTE 5

MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT (TOTAL DEPTH ALL LAYERS)	+/- 1/4"
SUBBASE	+/- 1"
GRANULAR BORROW	+/- 1"
SAND BORROW	+/- 1"

1 3/4" BITUMINOUS CONCRETE PAVEMENT IN ONE LIFT (TYPE IIIS PG58-34)
2 3/4" BITUMINOUS CONCRETE PAVEMENT IN ONE LIFT (TYPE IIS PG58-34)
3" BITUMINOUS CONCRETE PAVEMENT IN ONE LIFT (TYPE IS PG58-34)
24" SUBBASE OF DENSE GRADED CRUSHED STONE
12" SAND BORROW (STA. 21+45 - 38+50)

SEEDING FORMULA
LOW GROW /FINE FESCUE SEEDING MIX

% WT.	LBS./A.	NAME	PUR %	GERM %
38.0	45.6	CREEPING RED FESCUE	98	85
29.0	34.8	SPARTEN HARD FESCUE	95	90
15.0	18.0	AZAY SHEEPS FESCUE	85	90
15.0	18.0	ANNUAL RYE GRASS	95	85
3.0	3.6	INERTS		
100.00	120.0			

GENERAL NOTES

SEED MIXTURE: SHALL BE APPLIED AT A RATE OF 120 LB/ACRE AND SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.

SEED: PERCENT OF SEED, CROP, WEED OR INERT MAY VARY +/- 2%. VARIETIES OF GRASSES MAY BE SUBSTITUTED ONLY WITH APPROVAL FROM RESIDENT ENGINEER.

FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 LBS./ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

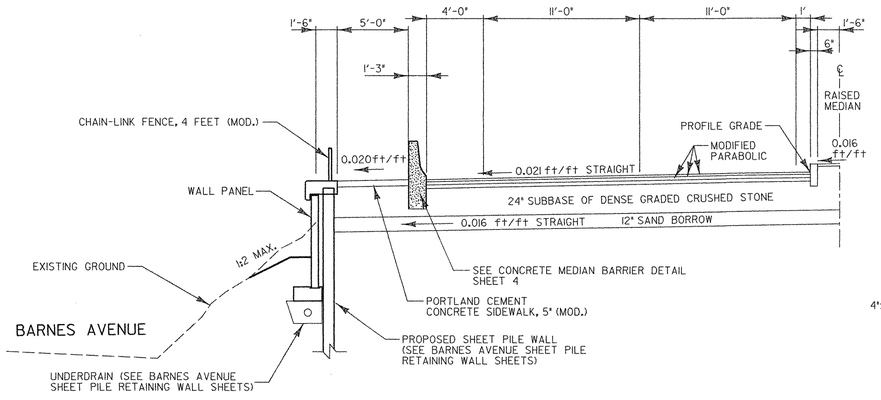
MOWING: RECOMMENDED EARLY MOWING ONCE OR TWICE WHEN GRASS REACHES 6" HEIGHT MAXIMUM TO PREVENT BROADLEAF WEED COMPETITION DURING ESTABLISHMENT PERIOD.

TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

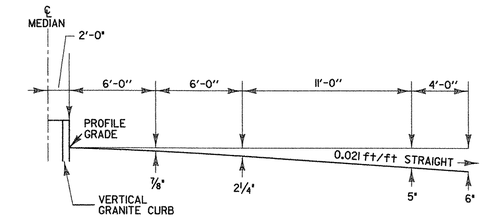
MARKER POSTS: TO BE PLACED AS INDICATED OR AS DIRECTED BY THE ENGINEER.

SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B - 5.

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.015 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.

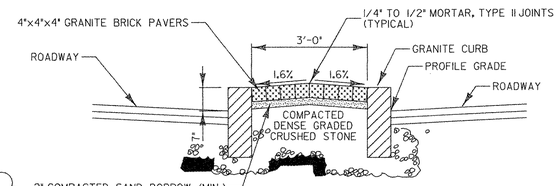


NORMAL SECTION WITH RAISED MEDIAN AND SHEET PILE RETAINING WALL ALONG BARNES AVENUE

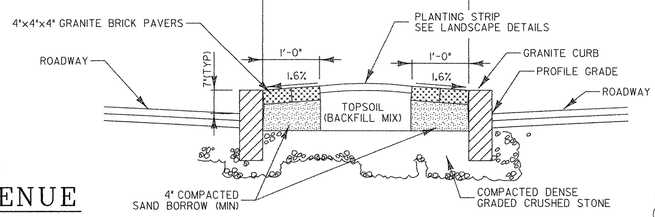


MODIFIED PARABOLIC DETAIL (WITH MEDIAN)
(NOT TO SCALE)

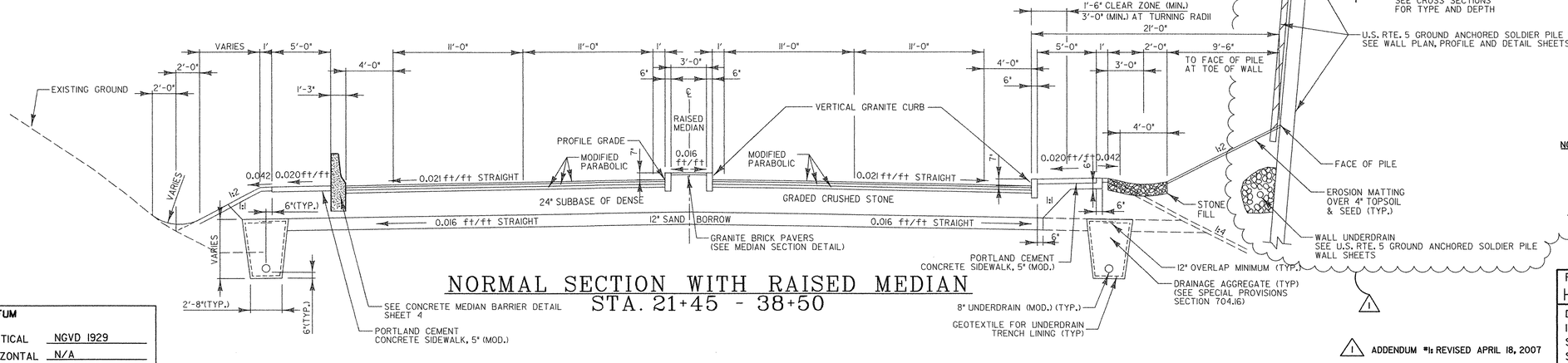
NOTE: FINISHED GRADE ON CROSS SECTIONS INDICATES PROPOSED CENTERLINE ELEVATION (TOP OF MEDIAN WHERE APPLICABLE)



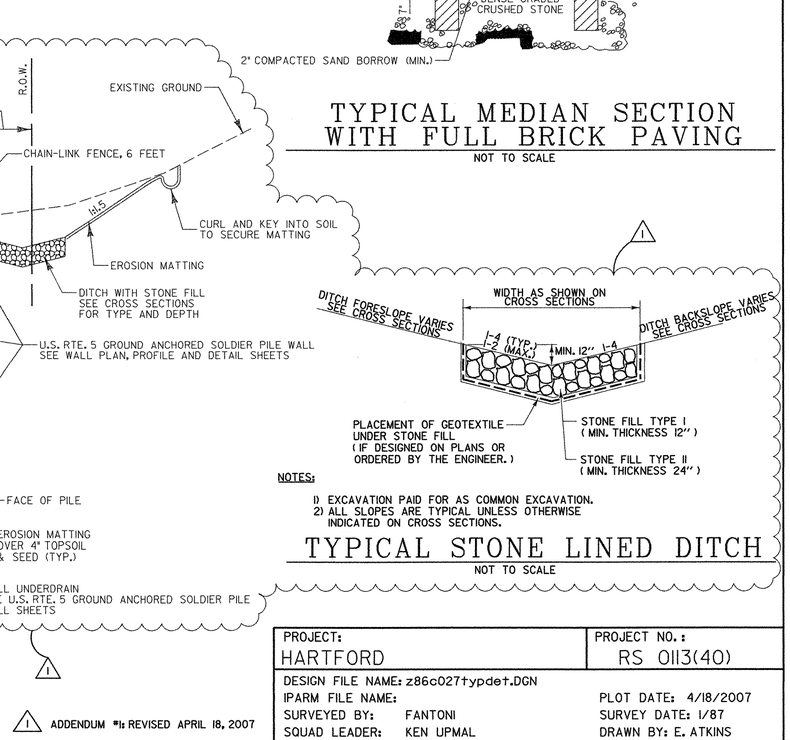
TYPICAL MEDIAN SECTION WITH FULL BRICK PAVING
NOT TO SCALE



TYPICAL MEDIAN SECTION WITH BRICK PAVING EDGING
NOT TO SCALE



NORMAL SECTION WITH RAISED MEDIAN
STA. 21+45 - 38+50



NOTES:
1) EXCAVATION PAID FOR AS COMMON EXCAVATION.
2) ALL SLOPES ARE TYPICAL UNLESS OTHERWISE INDICATED ON CROSS SECTIONS.

TYPICAL STONE LINED DITCH
NOT TO SCALE

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

1 ADDENDUM #1: REVISED APRIL 18, 2007

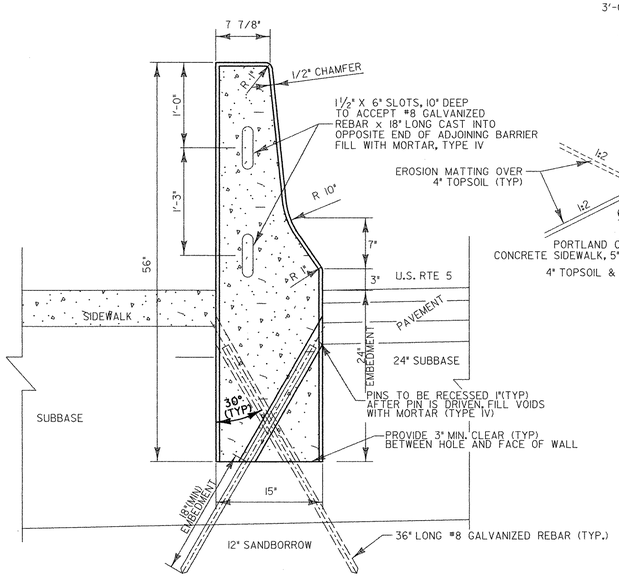
PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027typdet.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI — PLOT DATE: 4/18/2007
SQUAD LEADER: KEN UPMAL — SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 3 OF 239

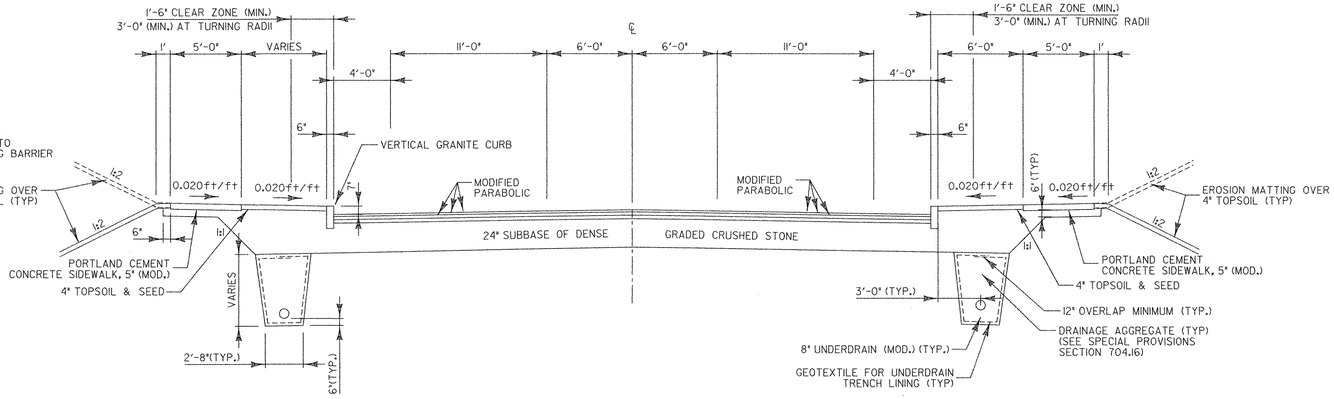
TYPICAL SECTIONS
US ROUTE 5

1¾" BITUMINOUS CONCRETE PAVEMENT IN ONE LIFT (TYPE IIIS PG58-34)
2¾" BITUMINOUS CONCRETE PAVEMENT IN ONE LIFT (TYPE IIS PG58-34)
3" BITUMINOUS CONCRETE PAVEMENT IN ONE LIFT (TYPE IS PG58-34)
24" SUBBASE OF DENSE GRADED CRUSHED STONE
12" SAND BORROW (STA. 21+45 - 38+50)

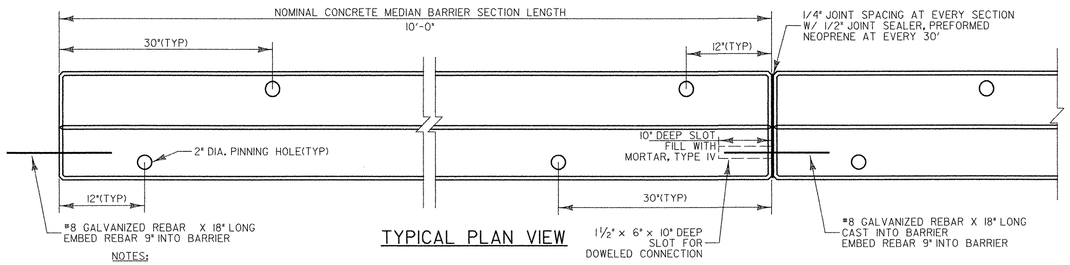
MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT (TOTAL DEPTH ALL LAYERS)	+/- ¼"
SUBBASE	+/- 1"
GRANULAR BORROW	+/- 1"
SAND BORROW	+/- 1"



TYPICAL SECTION VIEW



NORMAL SECTION WITH SHARED TURNING LANE
STA. 38+50 - 59+00

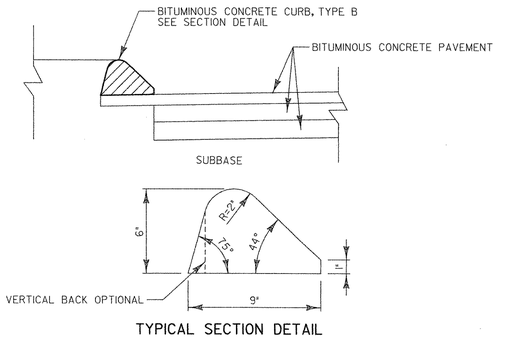


TYPICAL PLAN VIEW

NOTES;

1. FACE OF CONCRETE MEDIAN BARRIER SHALL HAVE THE SAME EXPOSED AGGREGATE TEXTURED FINISH AS THE RETAINING WALL PANELS. REFER TO SPECIFICATIONS FOR COLOR AND AGGREGATE REQUIREMENTS.
2. CONCRETE MEDIAN BARRIERS SHALL BE PRECAST AND UNLESS OTHERWISE SPECIFIED OR WHEN DIRECTED BY THE ENGINEER, CONCRETE MEDIAN BARRIER SECTION NOMINAL LENGTH SHALL NOT EXCEED 10'-0".
3. THE SPACING BETWEEN ADJACENT SECTIONS OF CONCRETE MEDIAN BARRIER SHALL BE 1/4" TO ALLOW FOR EXPANSION AND CONTRACTION.
4. A 1/2" JOINT SEALER, PREFORMED NEOPRENE SHALL BE PLACED AT 30' JOINT INTERVALS OF THE CONCRETE MEDIAN BARRIER.
5. PRECAST CONCRETE SHALL BE 4000 PSI @ 28 DAYS.
6. THE CONTRACTOR SHALL PROVIDE REINFORCING DESIGN DETAIL FOR APPROVAL. ALL REINFORCING SHALL BE GRADE 60, EPOXY COATED.
7. PAYMENT FOR GALVANIZED REBAR, MORTAR (TYPE IV), AND JOINT SEALER, PREFORMED NEOPRENE SHALL BE INCIDENTAL TO THE CONCRETE MEDIAN BARRIER (MOD.) ITEM.

TYPICAL PLAN AND SECTION
CONCRETE MEDIAN BARRIER (MOD.)
NOT TO SCALE



TYPICAL SECTION DETAIL

NOTE:

PAYMENT FOR THE BITUMINOUS CONCRETE CURB SHALL BE MADE UNDER THE BITUMINOUS CONCRETE CURB, TYPE B ITEM.

TYPICAL BITUMINOUS CONCRETE CURB, TYPE B SECTION
NOT TO SCALE

SEEDING FORMULA
LOW GROW /FINE FESCUE SEEDING MIX

% WT.	LBS./A.	NAME	PUR %	GERM %
38.0	45.6	CREEPING RED FESCUE	98	85
29.0	34.8	SPARTEN HARD FESCUE	95	90
15.0	18.0	AZAY SHEEPS FESCUE	85	90
15.0	18.0	ANNUAL RYE GRASS	95	85
3.0	3.6	INERTS		
100.00	120.0			

GENERAL NOTES

SEED MIXTURE: SHALL BE APPLIED AT A RATE OF 120 LB/ACRE AND SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.

SEED: PERCENT OF SEED, CROP, WEED OR INERT MAY VARY +/- 2%. VARIETIES OF GRASSES MAY BE SUBSTITUTED ONLY WITH APPROVAL FROM RESIDENT ENGINEER.

FERTILIZER: FORMULA 10-20-10. TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 LBS./ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

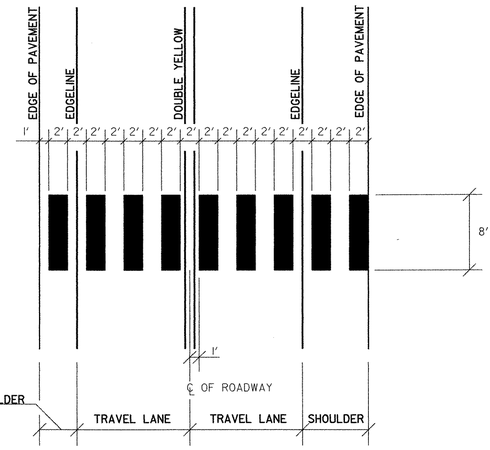
MOWING: RECOMMENDED EARLY MOWING ONCE OR TWICE WHEN GRASS REACHES 6" HEIGHT MAXIMUM TO PREVENT BROADLEAF WEED COMPETITION DURING ESTABLISHMENT PERIOD.

TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

MARKER POSTS: TO BE PLACED AS INDICATED OR AS DIRECTED BY THE ENGINEER.

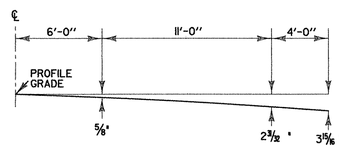
SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B - 5.

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.015 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.



ADJUST SPACING (1 - 2 FT) TO AVOID WHEEL PATHS

BLOCK TYPE CROSSWALK DETAIL
(NOT TO SCALE)



MODIFIED PARABOLIC DETAIL
(WITH SHARED TURNING LANE)
(NOT TO SCALE)

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027typdet.DGN	
IPARM FILE NAME:	PLOT DATE: 2/28/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 4 OF 239

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	TRAINING	LANDSCAPING	EROSION CONTROL	UTILITIES - BID ITEMS	BRIDGE NO. 1 (SHEET PILE WALL)	BRIDGE NO. 2 (GROUND ANCHORED	FULL C.E. ITEMS
1							
41800		3200					
1800							
130							
4500							
		25					
31000							
10100				10000			
130							
155					245	2400	
1235				590	100		
975							
25300							
70							
1							
11470				370			
15							
200				400			
630							
						1	
						4654	
						10	
					256.5		
						10644	
						25	
						4	
						15400	
1223							
90							
90							
90							
226							
226							
48							
48							

TOTALS

GRAND TOTAL	FINAL
1	
45000	
1800	
130	
4500	
25	
31000	
20100	
130	
2800	
1925	
975	
25300	
70	
1	
11840	
15	
600	
630	
1	
4654	
10	
256.5	
10644	
25	
4	
15400	
1223	
90	
90	
90	
226	
226	
48	
48	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER	ROUND
LS	CLEARING AND GRUBBING (INCLUDING INDIVIDUAL TREES & STUMPS)	201.10	-
CY	COMMON EXCAVATION	203.15	484
CY	SOLID ROCK EXCAVATION	203.16	150
CY	EXCAVATION OF SURFACES AND PAVEMENTS	203.28	5
CY	SAND BORROW	203.31	96
CY	GRANULAR BORROW	203.32	2
SY	FINE GRADING-SUBGRADE	203.40	269
CY	TRENCH EXCAVATION OF EARTH	204.20	212
CY	TRENCH EXCAVATION OF ROCK	204.21	6
CY	STRUCTURE EXCAVATION	204.25	50
CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	28
SY	COLD PLANING-BIT.PAVEMENT	210.10	20
CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	114
CWT	EMULSIFIED ASPHALT	404.65	9
LU	PRICE ADJUSTMENT ASPHALT CEMENT (N.A.B.I.)	406.50	-
TON	SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	490.30	17
CY	CONCRETE, CLASS B	501.25	2.5
CY	CONCRETE CLASS D (MOD. - FLOWABLE FILL)	501.31	26
LB	EPOXY COATED REINFORCING STEEL	507.17	8.4
LS	MOBILIZATION OF DRILLED SHAFT EQUIPMENT	512.30	-
LF	DRILLED SHAFT IN EARTH (3 FT. DIA.)	512.31	-
LF	DRILLED SHAFT OBSTRUCTION DRILLING AND REMOVAL (3 FT. DIA)	512.33	EST.
LF	RETAINING WALL (SHEET PILE WALL)	526.50	-
LF	PERMANENT SOIL NAILS (MOD. - GROUND ANCHORS)	535.16	-
EACH	VERIFICATION TEST NAILS (MOD. - PERFORMANCE ANCHOR TESTS)	535.20	-
EACH	VERIFICATION TEST NAILS (MOD. - PRE PRODUCTION TEST ANCHOR)	535.20	-
SF	TIMBER WALL FACING (MOD. - GROUND ANCHORED SOLDIER PILE WALL)	535.40	7
LF	36" CAAP .075 (2-2/3 X 1/2)	601.0246	-
	BEGIN OPTION AA		
LF	24" CAAP .075 (2-2/3 X 1/2)	601.0226	-
LF	24" PCCSP(PI) .064 (2-2/3X1/2)	601.0625	-
LF	24" CPEP	601.0920	-
	END OPTION AA		
	BEGIN OPTION BB		
LF	48" CAAP .105 (2-2/3 X 1/2)	601.0257	-
LF	48" PCCSP .109 (2-2/3 X 1/2)	601.0457	-
	END OPTION BB		
	BEGIN OPTION CC		
LF	54" CAAP .135 (2-2/3X1/2)	601.0263	-
LF	54" PCCSP .109 (3X1)	601.0527	-

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
COMMON EXCAVATION		
466	CY	OUTFALL
33,114	CY	MAINLINE
6,774	CY	SIDE STREETS
1,079	CY	DRIVES
3054	CY	LANDSCAPING
29	CY	SIDEWALK
484	CY	ROUNDING
45,000	CY	TOTAL
SOLID ROCK EXCAVATION		
1,650	CY	MAINLINE (OLD CONCRETE PAVEMENT)
150	CY	ESTIMATED & ROUNDING
1,800	CY	TOTAL
SAND BORROW		
4,404	CY	MAINLINE
0	CY	SIDE STREETS
96	CY	ROUNDING
4,500	CY	TOTAL
FINE GRADING-SUBGRADE		
24,210	SY	MAINLINE
5,358	SY	SIDE STREETS
1,163	SY	DRIVES
269	SY	TOTAL
31,000	SY	TOTAL
TRENCH EXCAVATION OF EARTH		
7,392	CY	NEW DRAINAGE
2,461	CY	UNDERDRAIN
3,496	CY	NEW WATER
6,397	CY	NEW SANITARY SEWER
142	CY	EXCAVATION OF EARTH TO REMOVE EXISTING DRAINAGE
212	CY	ROUNDING
20,100	CY	TOTAL
TRENCH EXCAVATION OF ROCK		
124	CY	REMOVAL/ABANDONMENT OF EXISTING STRUCTURES
6	CY	ROUNDING
130	CY	TOTAL
SUBBASE OF DENSE GRADED CRUSHED STONE		
20,467	CY	MAINLINE
3,976	CY	SIDE STREETS
743	CY	DRIVES
114	CY	ROUNDING
25,300	CY	TOTAL
SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (PG 58-34)		
		MAINLINE
2,109	TON	TYPE IIIS
3,313	TON	TYPE IIS
3,614	TON	TYPE IS
		SIDE STREETS
466	TON	TYPE IIIS
732	TON	TYPE IIS
799	TON	TYPE IS
		APPROACH
245	TON	TYPE IIIS
16	TON	TYPE IIS
		DRIVES
169	TON	TYPE IIIS
		TEMPORARY PATCHING
84	TON	TYPE IIIS
132	TON	TYPE IIS
144	TON	TYPE IS
17	TON	ROUNDING
11,840	TON	TOTAL
EROSION CONTROL		
1,100	SY	GEOTEXTILE FOR SILT FENCE
50	SY	GEOTEXTILE FOR FILTER CURTAIN
170	SY	GEOTEXTILE FOR FILTERS
400	LB	SEED (WINTER RYE)
7	TON	HAY MULCH
1,250	SY	EROSION MATTING
175	SY	STONE FILL (MOD. - CONSTRUCTION ENTRANCE)

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS0113 (40)**

FILE NAME: **z86c027quant.xls** PLOT DATE: **02/28/2007**
PROJECT MANAGER: **KEN UPMAL, PE** DRAWN BY: **E. ATKINS**
DESIGNED BY: **E. ATKINS** CHECKED BY: **KO ISHIKURA**
QUANTITY SHEET #1 SHEET **5** OF **239**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
	ROADWAY	TRAINING	LANDSCAPING	EROSION CONTROL	UTILITIES - BID ITEMS	BRIDGE NO. 1 (SHEET PILE WALL)	BRIDGE NO. 2 (GROUND ANCHORED	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
												END OPTION CC					
												BEGIN OPTION DD					
	2723								2723		LF	18" RCP CLASS III	601.0815	-			
	2723								2723		LF	18" CPEP(SL)	601.2615	-			
												END OPTION DD					
												BEGIN OPTION EE					
	787								787		LF	24" RCP CLASS III	601.0825	-			
	787								787		LF	24" CPEP(SL)	601.2620	-			
												END OPTION EE					
												BEGIN OPTION FF					
	106								106		LF	30" RCP CLASS III	601.0835	-			
	106								106		LF	30" CPEP(SL)	601.2625	-			
												END OPTION FF					
												BEGIN OPTION GG					
	878								878		LF	36" RCP CLASS III	601.0845	-			
	878								878		LF	36" CPEP(SL)	601.2630	-			
												END OPTION GG					
												BEGIN OPTION HH					
	1								1		EACH	54" CSPES .109 (2-2/3 X 1/2) (MOD.)	601.6061	-			
	1								1		EACH	48"CAAPES .105 (2-2/3 X 1/2) (MOD.)	601.6257	-			
												END OPTION HH					
												BEGIN OPTION II					
	1								1		EACH	24" CAAPES .060 (2-2/3X1/2)	601.6225	-			
	1								1		EACH	24" CPEPES	601.7020	-			
												END OPTION II					
	325								325		LF	RELAYING PIPE CULVERTS	601.99	13			
	58								58		EACH	PRECAST REINFORCED CONC. CATCH BASIN WITH CAST IRON GRATE (4' DIA.)	604.20	-			
	13								13		EACH	PRECAST REINFORCED CONC. CATCH BASIN WITH CAST IRON GRATE (5' DIA.)	604.20	-			
	5								5		EACH	PRECAST REINFORCED CONC. CATCH BASIN WITH CAST IRON GRATE (6' DIA.)	604.20	-			
	1								1		EACH	PRECAST REINFORCED CONC. CATCH BASIN WITH CAST IRON GRATE (8' DIA.)	604.20	-			
	1								1		EACH	PRECAST REINFORCED CONC. CATCH BASIN WITH CAST IRON GRATE (MOD. - DROP) (5' DIA.)	604.20	-			
	8								8		EACH	PRECAST REINFORCED CONCRETE MANHOLE WITH CAST IRON COVER (4' DIA.)	604.21	-			
	2								2		EACH	PRECAST REINFORCED CONCRETE MANHOLE WITH CAST IRON COVER (5' DIA.)	604.21	-			
	1								1		EACH	PRECAST REINFORCED CONCRETE MANHOLE WITH CAST IRON COVER (8' DIA.)	604.21	-			
					22				22		EACH	SANITARY SEWER MANHOLE	604.22	-			
					5				5		EACH	SANITARY SEWER MANHOLE (MOD. - OUTSIDE DROP)	604.22	-			
	2								2		EACH	CHANGING ELEVATION OF DROP INLETS, CATCH BASINS OR MANHOLES	604.40	-			
	4				1				5		EACH	REHABING DI,CB OR MH CLASS II	604.415	-			
	1				2				3		EACH	REHABING DI,CB OR MH CLASS III	604.418	-			
					4				4		EACH	CHANGING ELEVATION OF SEWER MANHOLE	604.42	-			

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS0113 (40)**

FILE NAME: **z86c027quant.xls**
PROJECT MANAGER: **KEN UPMAL, PE**
DESIGNED BY: **E. ATKINS**
QUANTITY SHEET #2

PLOT DATE: **02/28/2007**
DRAWN BY: **E. ATKINS**
CHECKED BY: **KO ISHIKURA**
SHEET **6** OF **239**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
		ROADWAY	TRAINING	LANDSCAPING	EROSION CONTROL	UTILITIES - BID ITEMS	BRIDGE NO. 1 (SHEET PILE WALL)	BRIDGE NO. 2 (GROUND ANCHORED	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
							265	635		900		LF	6" UNDERDRAIN (MOD.)	605.10	12			
		5600								5600		LF	8" UNDERDRAIN (MOD.)	605.11	55			
								40		40		LF	6" UNDERDRAIN CARRIER PIPE (MOD.)	605.20	4			
		400								400		LF	8" UNDERDRAIN CARRIER PIPE (MOD.)	605.21	14			
		360					20	35		415		LF	12" UNDERDRAIN CARRIER PIPE (MOD.)	605.23	23			
		49					2	5		56		EACH	UNDERDRAIN FLUSHING BASINS (MOD.)	605.95	-			
		400								400		HR	ROADWAY PATROL MAINTENANCE	607.10	EST.			
		25								25		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25	EST.			
		25								25		HR	POWER BROOM RENTAL	608.30	EST.			
		25								25		HR	POWER BROOM RENTAL,TYPE II	608.31	EST.			
		25								25		HR	TRUCK RENTAL	608.37	EST.			
					3500					3500		MGAL	DUST CONTROL WITH WATER	609.10	427			
				1000						1000		MGAL	DUST CONTROL WITH WATER (MOD. - PLANT WATERING)	609.10	171			
					35				1	35		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15	4.3			
					165			30		195		CY	STONE FILL, TYPE I	613.10	6.3			
					175					175		CY	STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)	613.10	17			
					23					23		CY	STONE FILL, TYPE I (MOD. - INLET PROTECTION)	613.10	-			
					110					110		CY	STONE FILL, TYPE I (MOD. - CHECK DAM)	613.10	6			
					1075					1075		CY	STONE FILL, TYPE II	613.11	51			
					10					10		CY	RIPRAP,HEAVY TYPE	613.15	7.7			
		20								20		LF	GRANITE SLOPE EDGING	616.20	4			
		8300								8300		LF	VERTICAL GRANITE CURB	616.21	92			
		16								16		TON	BITUMINOUS CONCRETE CURB, TYPE B	616.31	.6			
		2400								2400		LF	REMOVING AND RESETTING CURB	616.40	66			
		1050								1050		LF	REMOVAL OF EXISTING CURB	616.41	15			
		3950								3950		SY	PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)	618.10	22			
		380								380		SY	PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH (MOD.)	618.11	9			
		540								540		SY	BRICK PAVING	618.20	4			
		35								35		SY	DETECTABLE WARNING SURFACE	618.30	2			
						4				4		EACH	STEEL MARKER POSTS	619.16	-			
		69								69		EACH	YIELDING MARKER POSTS	619.17	-			
		6								6		EACH	REMOVING AND RESETTING PROPERTY MARKERS	619.20	-			
		865								865		LF	CHAIN - LINK FENCE, 4 FEET	620.11	52			
							260			260		LF	CHAIN - LINK FENCE, 4 FEET (MOD.)	620.11	1			
								650		650		LF	CHAIN - LINK FENCE, 6 FEET	620.12	20			
		37					2			39		EACH	BRACING ASSEMBLY FOR CHAIN - LINK FENCE, 4 FEET	620.20	-			
								9		9		EACH	BRACING ASSEMBLY FOR CHAIN - LINK FENCE, 6 FEET	620.21	-			
		1585								1585		LF	REMOVAL OF EXISTING FENCE	620.55	-			
				550						550		LF	SNOW FENCE (MOD. - ARCH)	620.70	37			
					2600					2600		LF	SNOW FENCE (MOD. - PDF)	620.70	169			

1 ADDENDUM #1: REVISED APRIL 18, 2007

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS0113 (40)**

FILE NAME: **z86c027quant.xls**
PROJECT MANAGER: **KEN UPMAL, PE**
DESIGNED BY: **E. ATKINS**
QUANTITY SHEET #3

PLOT DATE: **02/28/2007**
DRAWN BY: **E. ATKINS**
CHECKED BY: **KO ISHIKURA**
SHEET **7** OF **239**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS			
ROADWAY	TRAINING	LANDSCAPING	EROSION CONTROL	UTILITIES - BID ITEMS	BRIDGE NO. 1 (SHEET PILE WALL)	BRIDGE NO. 2 (GROUND ANCHORED	FULL C.E. ITEMS		GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
		175							175		LF	MISCELLANEOUS FENCE (WOOD POST AND RAIL)	620.80	4
18.75									18.75		LF	STEEL BEAM GUARD RAIL (GALVANIZED)	621.20	-
1289									1289		LF	CONCRETE MEDIAN BARRIER (MOD.)	621.45	-
1									1		EACH	MANUFACTURED TERMINAL SECTION (FLARED)	621.505	-
1									1		EACH	TERMINAL CONNECTOR FOR STEEL BEAM GUARD RAIL	621.53	-
30									30		LF	REMOVING AND RESET GUARD RAIL	621.75	7
1020									1020		LF	REMOVL AND DISP OF GUARD RAIL	621.80	15
11									11		EACH	REMOVL AND DISP OF GUIDE POSTS	621.81	-
1.5									1.5		MFBM	INSULATION BOARD	622.10	.4
				1200					1200		LF	PVC SEWER PIPE (6")	628.35	34
				520					520		LF	PVC SEWER PIPE (8")	628.35	8
				90					90		LF	PVC SEWER PIPE (10")	628.35	4
				3900					3900		LF	PVC SEWER PIPE (15")	628.35	36
				1					1		LS	TRANSFER TO NEW SYSTEM-SANITARY SEWER	628.42	-
				2					2		EACH	ADJUST ELEVATION OF VALVE BOX	629.20	-
				1190					1190		LF	SEAMLESS COPPER WATER TUBE (3/4")	629.23	20
				120					120		LF	SEAMLESS COPPER WATER TUBE (1")	629.23	14
				90					90		LF	SEAMLESS COPPER WATER TUBE (1 1/2")	629.23	6
				75					75		LF	SEAMLESS COPPER WATER TUBE (2")	629.23	7
				60					60		LF	DUCTILE, IRON PIPE, CEM LINED (4")	629.24	10
				275					275		LF	DUCTILE, IRON PIPE, CEM LINED (6")	629.24	5
				925					925		LF	DUCTILE, IRON PIPE, CEM LINED (8")	629.24	9
				160					160		LF	DUCTILE, IRON PIPE, CEM LINED (10")	629.24	6
				4100					4100		LF	DUCTILE, IRON PIPE, CEM LINED (12")	629.24	108
				23					23		EACH	EXTENSION SERVICE BOX AND CURB STOP (3/4")	629.25	-
				3					3		EACH	EXTENSION SERVICE BOX AND CURB STOP (1")	629.25	-
				3					3		EACH	EXTENSION SERVICE BOX AND CURB STOP (1 1/2")	629.25	-
				1					1		EACH	EXTENSION SERVICE BOX AND CURB STOP (2")	629.25	-
				1					1		EACH	GATE VALVE WITH VALVE BOX (4")	629.27	-
				11					11		EACH	GATE VALVE WITH VALVE BOX (6")	629.27	-
				13					13		EACH	GATE VALVE WITH VALVE BOX (8")	629.27	-
				4					4		EACH	GATE VALVE WITH VALVE BOX (10")	629.27	-
				28					28		EACH	GATE VALVE WITH VALVE BOX (12")	629.27	-
				11					11		EACH	HYDRANT	629.28	-
				4					4		EACH	HYDRANT (MOD. - YARD HYDRANT)	629.28	-
				6					6		EACH	HYDRANT, REMOVE	629.30	-
				4					4		EACH	METER PIT (MOD.)	629.31	-
				15500					15500		LB	DUCTILE IRON FITTINGS	629.38	870
				31					31		EACH	CORPORATION STOP (3/4")	629.39	-
				3					3		EACH	CORPORATION STOP (1")	629.39	-

DETAILED SUMMARY OF QUANTITIES		
QUANTITIES	UNIT	ITEMS

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS0113 (40)**

FILE NAME: **z86c027quant.xls**
PROJECT MANAGER: **KEN UPMAL, PE**
DESIGNED BY: **E. ATKINS**
QUANTITY SHEET #4

PLOT DATE: **02/28/2007**
DRAWN BY: **E. ATKINS**
CHECKED BY: **KO ISHIKURA**
SHEET **8** OF **239**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	TRAINING	LANDSCAPING	EROSION CONTROL	UTILITIES - BID ITEMS	BRIDGE NO. 1 (SHEET PILE WALL)	BRIDGE NO. 2 (GROUND ANCHORED	FULL C.E. ITEMS		GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
				4					4		EACH	CORPORATION STOP (1 1/2")	629.39	-			
				2					2		EACH	CORPORATION STOP (2")	629.39	-			
				1					1		LS	TRANSFER TO NEW SYSTEM-WATER SYSTEM	629.42	-			
				2000					2000		TON	CRUSHED STONE BEDDING	629.54	48			
3300									3300		HR	UNIFORMED TRAFFIC OFFICERS	630.10	66			
3750									3750		HR	FLAGGERS	630.15	28			
							1		1		LS	FIELD OFFICE-ENGINEERS	631.10	-			
							1		1		LS	TESTING EQUIPMENT - CONCRETE	631.16	-			
							1		1		LS	TESTING EQUIPMENT - BITUMINOUS	631.17	-			
							1		1		LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25	-			
	1040								1040		HR	EMPLOYEE TRAINEESHIP	634.10	EST.			
1									1		LS	MOBILIZATION / DEMOBILIZATION	635.11	-			
1									1		LS	TRAFFIC CONTROL	641.10	-			
1									1		LS	PUBLIC RELATIONS OFFICER	641.12	-			
4									4		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	EST.			
10750									10750		LF	DURABLE 4" WHITE LINE	646.40	352			
10000									10000		LF	DURABLE 4" YELLOW LINE	646.41	210			
110									110		LF	DURABLE 8" WHITE LINE	646.42	10			
110									110		LF	DURABLE 8" YELLOW LINE	646.43	5			
325									325		LF	DURABLE 24" STOP BAR	646.46	7			
124									124		EACH	DURABLE LETTER OR SYMBOL	646.50	-			
600									600		LF	DURABLE CROSSWALK MARKING W/DIAGONAL LINES (MOD. - BLOCK TYPE)	646.51	27			
10750									10750		LF	TEMPORARY 4" WHITE LINE	646.60	352			
10000									10000		LF	TEMPORARY 4" YELLOW LINE	646.61	210			
110									110		LF	TEMPORARY 8" WHITE LINE	646.62	10			
110									110		LF	TEMPORARY 8" YELLOW LINE	646.63	5			
325									325		LF	TEMPORARY 24" STOP BAR	646.66	7			
124									124		EACH	TEMPORARY LETTERS OR SYMBOLS	646.70	-			
600									600		LF	TEMPORARY CROSSWALK MARKING W/DIAGONAL LINES (MOD. - BLOCK TYPE)	646.71	27			
			170						170		SY	GEOTEXTILE FABRIC FOR FILTERS	649.10	57			
			3200						3200		SY	GEOTEXTILE UNDER STONE FILL	649.31	108			
10490					600	1410			12500		SY	GEOTEXTILE FOR UNDERDRAIN TRENCH LINING	649.41	70			
			1100						1100		SY	GEOTEXTILE FOR SILT FENCE	649.51	141			
			50						50		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61	27			
		400							400		LB	SEED	651.15	87			
			400						400		LB	SEED-WINTER RYE	651.17	87			
			1375						1375		LB	FERTILIZER	651.18	70			
		550							550		LB	FERTILIZER (MOD. - MYCORRHIZAL)	651.18	50			
			6						6		TON	AGRICULTURAL LIMESTONE	651.20	.8			
			7						7		TON	HAY MULCH	651.25	1.8			

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS0113 (40)**

FILE NAME: **z86c027quant.xls**
PROJECT MANAGER: **KEN UPMAL, PE**
DESIGNED BY: **E. ATKINS**
QUANTITY SHEET #5

PLOT DATE: **02/28/2007**
DRAWN BY: **E. ATKINS**
CHECKED BY: **KO ISHIKURA**
SHEET **9** OF **239**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
		ROADWAY	TRAINING	LANDSCAPING	EROSION CONTROL	UTILITIES - BID ITEMS	BRIDGE NO. 1 (SHEET PILE WALL)	BRIDGE NO. 2 (GROUND ANCHORED	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
				430						430		CY	CEDAR BARK MULCH	651.27	19			
				1500						1500		CY	TOPSOIL	651.35	108			
				3200						3200		CY	TOPSOIL (MOD.)	651.35	146			
					225					225		SY	GRUBBING MATERIAL	651.40	26			
					1					1		LS	EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.10	-			
					250					250		HR	MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.20	EST.			
					1					1		LU	MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN (N.A.B.I.)	652.30	-			
					1250					1250		SY	EROSION MATTING	654.10	64			
				3						3		EACH	EVERGREEN TREES (PICEA ABIES)(5-6' HT., B&B)	656.20	-			
				51						51		EACH	EVERGREEN TREES (PICEA GLAUCA)(5-6' HT., B&B)	656.20	-			
				20						20		EACH	EVERGREEN TREES (PINUS NIGRA)(5-6' HT., B&B)	656.20	-			
				10						10		EACH	EVERGREEN TREES (PINUS STROBUS - LARGE)(5-6' HT., B&B)	656.20	-			
				60						60		EACH	EVERGREEN TREES (PINUS STROBUS - SMALL)(3-4' HT., CONT.)	656.20	-			
				83						83		EACH	EVERGREEN TREES (THUJA OCCIDENTALIS)(5-6' HT., B&B)	656.20	-			
				50						50		EACH	EVERGREEN SHRUBS (JUNIPEROUS CHINENSIS PFITZERIANA COMPACTA)(24-30" HT., CONT.)	656.25	-			
				14						14		EACH	EVERGREEN SHRUBS (JUNIPERUS CHINENSIS 'SEA GREEN')(24-30" HT., CONT.)	656.25	-			
				254						254		EACH	EVERGREEN SHRUBS (MICROBIOTA DECUSSATA)(24" WIDTH, CONT.)	656.25	-			
				4						4		EACH	DECIDUOUS TREES (ACER SACCHARUM 'GREEN MOUNTAIN')(2.5-3" CAL., B&B)	656.30	-			
				15						15		EACH	DECIDUOUS TREES (ACER X FREEMANNI 'AUTUMN BLAZE')(2.5-3" CAL., B&B)	656.30	-			
				8						8		EACH	DECIDUOUS TREES (ACER X FREEMANNI 'CELEBRATION')(2.5-3" CAL., B&B)	656.30	-			
				35						35		EACH	DECIDUOUS TREES (AMELANCHIER GRANDIFLORA)(1-1.5" CAL., B&B MULTISTEM)	656.30	-			
				13						13		EACH	DECIDUOUS TREES (BETULA NIGRA 'HERITAGE')(2.5-3" CAL., B&B 2 STEM)	656.30	-			
				2						2		EACH	DECIDUOUS TREES (CARPINUS CAROLINIANA)(2.5-3" CAL., B&B)	656.30	-			
				1						1		EACH	DECIDUOUS TREES (CATALPA SPECIOSA)(2-2.5" CAL., B&B)	656.30	-			
				11						11		EACH	DECIDUOUS TREES (CELTIS OCCIDENTALIS)(2.5-3" CAL., B&B)	656.30	-			
				1						1		EACH	DECIDUOUS TREES (CLADRASTRIS KENTUCKEA)(2-2.5" CAL., B&B)	656.30	-			
				8						8		EACH	DECIDUOUS TREES (FRAXINUS PENNSYLVANICA 'CIMMARON')(2-2.5" CAL., B&B)	656.30	-			
				2						2		EACH	DECIDUOUS TREES (FRAXINUS PENNSYLVANICA 'PATMORE')(2-2.5" CAL., B&B)	656.30	-			
				6						6		EACH	DECIDUOUS TREES (GINKGO BILOBA 'AUTUMN GOLD')(2.5-3" CAL., B&B)	656.30	-			
				10						10		EACH	DECIDUOUS TREES (GINKGO BILOBA 'PRINCETON SENTRY')(2.5-3" CAL., B&B)	656.30	-			
				14						14		EACH	DECIDUOUS TREES (GLEDITSIA TRIACANTHOS 'SHADEMASTER')(2.5-3" CAL., B&B)	656.30	-			
				10						10		EACH	DECIDUOUS TREES (MALUS 'ADIRONDACK')(1.5" CAL., B&B)	656.30	-			
				16						16		EACH	DECIDUOUS TREES (MALUS 'HARVEST GOLD')(1.5" CAL., B&B)	656.30	-			
				4						4		EACH	DECIDUOUS TREES (MALUS BACCATA COLUMNARIS)(1.5" CAL., B&B)	656.30	-			
				7						7		EACH	DECIDUOUS TREES (QUERCUS RUBRA)(2.5-3" CAL., B&B BRANCH HT. TO 5')	656.30	-			
				21						21		EACH	DECIDUOUS TREES (SYRINGA RETICULATA 'IVORY SILK')(1.5-2" CAL., B&B)	656.30	-			
				1						1		EACH	DECIDUOUS TREES (TILIA AMERICANA 'REDMOND')(2.5-3" CAL., B&B)	656.30	-			
				2						2		EACH	DECIDUOUS TREES (ULMUS AMERICANA 'PRINCETON')(2.5-3" CAL., B&B BRANCH HT. TO 5')	656.30	-			
				10						10		EACH	DECIDUOUS TREES (ULMUS AMERICANA'VALLEY FORGE')(2.5-3" CAL., B&B BRANCH HT. TO 5')	656.30	-			
				4						4		EACH	DECIDUOUS TREES (ZELKOVA SERRATA 'GREEN VASE')(2.5-3" CAL., B&B)	656.30	-			

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS0113 (40)**

FILE NAME: **z86c027quant.xls**
PROJECT MANAGER: **KEN UPMAL, PE**
DESIGNED BY: **E. ATKINS**
QUANTITY SHEET #6

PLOT DATE: **02/28/2007**
DRAWN BY: **E. ATKINS**
CHECKED BY: **KO ISHIKURA**
SHEET **10** OF **239**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
		ROADWAY	TRAINING	LANDSCAPING	EROSION CONTROL	UTILITIES - BID ITEMS	BRIDGE NO. 1 (SHEET PILE WALL)	BRIDGE NO. 2 (GROUND ANCHORED	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
				11						11		EACH	DECIDUOUS SHRUBS (AESCULUS PARVIFLORA)(24-30" HT., CONT.)	656.35	-			
				33						33		EACH	DECIDUOUS SHRUBS (ILEX VERTICILLATA 'JIM DANDY')(30-36" HT., CONT.)	656.35	-			
				95						95		EACH	DECIDUOUS SHRUBS (ILEX VERTICILLATA 'RED SPRITE')(30-36" HT., CONT.)	656.35	-			
				36						36		EACH	DECIDUOUS SHRUBS (PHYSOCARPUS OPULIFOLIIUS 'COPPERTINA')(30-36" HT., CONT.)	656.35	-			
				285						285		EACH	DECIDUOUS SHRUBS (PHYSOCARPUS OPULIFOLIIUS 'NUGGET')(30-36" HT., CONT.)	656.35	-			
				15						15		EACH	DECIDUOUS SHRUBS (RHODODENDRON PJM)(30-36" HT., CONT.)	656.35	-			
				119						119		EACH	DECIDUOUS SHRUBS (RHUS AROMATICA 'GROW LOW')(18-24" WIDTH, B&B HEAVY)	656.35	-			
				120						120		EACH	DECIDUOUS SHRUBS (SPIREA X BUMALDA 'ANTHONY WATERER')(24-30" HT., CONT.)	656.35	-			
				9						9		EACH	DECIDUOUS SHRUBS (SYRINGA VULGARIS)(5-6' HT., B&B HEAVY)	656.35	-			
				10						10		EACH	DECIDUOUS SHRUBS (VIBURNUM LENTAGO)(4-5" HT., CONT.)	656.35	-			
				89						89		EACH	DECIDUOUS SHRUBS (VIBURNUM PRUNIFOLIUM)(3-4' HT., CONT.)	656.35	-			
				5						5		EACH	DECIDUOUS SHRUBS (WEIGELA FLORIDA)(30-36" HT., CONT.)	656.35	-			
				12						12		EACH	GROUND COVERS AND VINES (BAPTISIA AUSTRALIS)(2 GAL., CONT.)	656.40	-			
				60						60		EACH	GROUND COVERS AND VINES (CALAMAGROSTIS X ACUTIFLORA)(2 GAL., CONT.)	656.40	-			
				15						15		EACH	GROUND COVERS AND VINES (HEMEROCALLIS 'HYPERION')(2 GAL., CONT.)	656.40	-			
				115						115		EACH	GROUND COVERS AND VINES (PANICUM VIRGATUM)(2 GAL., CONT.)	656.40	-			
				75						75		EACH	GROUND COVERS AND VINES (PARTHENOCISSUS TRICUSPIDATA)(2 GAL., CONT.)	656.40	-			
				80						80		EACH	GROUND COVERS AND VINES (RUDBECKIA 'FULGIDA GOLDSTURN')(2 GAL., CONT.)	656.40	-			
				30						30		EACH	GROUND COVERS AND VINES (SEDUM 'AUTUMN JOY')(2 GAL., CONT.)	656.40	-			
		400.61								400.61		SF	TRAFFIC SIGNS, TYPE A	675.20	-			
		26.66								26.66		SF	TRAFFIC SIGNS, TYPE B	675.21	-			
													BEGIN OPTION JJ					
		1021.6								1021.6		LF	FLANGED CHANNEL SIGN POST	675.301	-			
		1021.6								1021.6		LF	SQUARE TUBE SIGN POSTS AND ANCHOR	675.341	-			
													END OPTION JJ					
		36								36		LF	SQUARE TUBE SIGN POSTS AND ANCHOR	675.341	-			
		55								55		EACH	REMOVING SIGNS	675.50	-			
		17								17		EACH	ERECTING SALVAGED SIGNS	675.60	-			
		1								1		EACH	TRAFFIC CONTROL SIGNAL SYSTEM-INTERSECTION (HIGHLAND @ SCHOOL)	678.15	-			
		1								1		EACH	TRAFFIC CONTROL SIGNAL SYSTEM-INTERSECTION (MOD.) (U.S. ROUTE 5 @ HIGHLAND AVE.)	678.15				
		1								1		EACH	TRAFFIC CONTROL SIGNAL SYSTEM-INTERSECTION (MOD.) (U.S. ROUTE 5 @ U.S. ROUTE 14/4)	678.15				
		160								160		LF	INTERCONNECTING CABLE	678.20	19			
		2320								2320		LF	VEHICLE LOOP DETECTOR	678.22	7			
		500								500		LF	WIRED CONDUIT (1 1/2")(PVC)	678.23	14			
		950								950		LF	WIRED CONDUIT (2")(PVC)	678.23	49			
		8								8		EACH	JUNCTION BOX	678.26	-			
		360								360		LF	ELECTRICAL CONDUIT SLEEVE (6")(PVC)	678.30	6			
		3								3		EACH	LIGHT POLE BASE	679.21	-			
		3								3		EACH	REMOVE & RESETTING LIGHT POLE	679.25	-			
		1								1		LU	FUEL PRICE ADJUSTMENT (N.A.B.I.)	690.50				

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS0113 (40)**

FILE NAME: **z86c027quant.xls**
PROJECT MANAGER: **KEN UPMAL, PE**
DESIGNED BY: **E. ATKINS**
QUANTITY SHEET #7

PLOT DATE: **02/28/2007**
DRAWN BY: **E. ATKINS**
CHECKED BY: **KO ISHIKURA**
SHEET **11** OF **239**

ITEM DETAIL AND DRAINAGE SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

DRAINAGE STRUCTURES

LABEL	STA.	STA.	POSITION	TYPE IN/OUT	DITCH IN	DITCH OUT	PIPE ARCH S IN	PIPE ARCH R IN	PIPE ARCH L FT	PIPE D IN	PIPE L FT	ALLOWABLE OPTIONS PCCSP TH	CAAP TH	RCP CL	CPEP TH	CPEP SL	~~PCCSP~~ TH	PIPE ELBOW NO-DEG	ES EA	CB	PRCSD	DEPTH CB/MH	CONC CL B CY	REIN STEEL LBS	CB/DI GRATE TYPE	CHAN ELEV	CRM CY	TR EXCAV EARTH CY	TR EXCAV ROCK CY	COMM EXC CY	~~UNC CHAN EXC~~ CY	STRUC EXCAV CY	GRAN BKF STRUC CY	GRAN BORR CY	EROS MATT SY	STONE FILL CY	STONE FILL TYPE	MRKR POSTS LT	MRKR POSTS RT	MANHOLE COVER
EXISTING DRAINAGE																	~~RELAY~~ PIPE													SOLID ROCK										
6	22+52	22+47	RT-LT	DI/DI						UKN	12																~~0~~ 2.9	~~0~~ 7.1											
33	40+12		LT	DI/SWR						UKN	UKN																	3.5											
37	42+58		LT	DI/SWR						UKN	UKN																6.6	3.4											
40	44+80		LT	DI/SMH						8	25																	1.9											
45	46+65	46+17	RT-LT	DI/DI						UKN	68																5.8	3.5											
46A	47+19	47+43	RT-RT	DI/DI						12	20																6.1	5.4											
47	48+79		LT	DI/SWR						UKN	UKN																	1.9											
53	50+44	50+58	RT-RT	CB/DI						UKN	18																6.6	3.5											
55	50+59	50+60	RT-RT	DI/DI						UKN	10																	1.9											
58	54+83	40+40	RT-RT	UKN/DI						UKN	UKN																	3.1											
59	56+61	57+16	LT-RT	DI/DI						18	60																6.7	5.0											
60	57+17		RT	DI/UKN						UKN	UKN																1.2	2.7											
61	57+16	58+40	RT-RT	DI/DI						18	120																20.4	10.0											
62	58+40	60+92	RT-RT	DI/DI						18	250																69.9	20.8											
64	60+92	61+00	RT-LT	DI/OL						18	70																15.9	7.2											
PROPOSED DRAINAGE																																							
(1) 12.0	~~19+80.0~~	19+30.5	RT-RT	CB/OL	X	X				54	48	0.109	0.135						1	1		14.2			STEEL	345.0	57.2	~~35.0~~		352.4		161.1 ~~148.0~~	~~19.3~~ 5.6	38.3		128.7 275	II		2		
STONE DITCH	~~20+09.0~~	19+80.0	RT-RT	HW/CB	X	X													-				15.6 ~~15~~	667 ~~630~~			346.0		36.2		~~466~~									
(2) 45.0	20+~~68.3~~	20+09.0	RT-RT	MH/HW		X	18			48	~~56~~ 54	0.109	0.105						-			14.0				346.0	105.4	~~186.4~~	105.9				~~19.8~~	3.5					1	
(3) 18.0	20+~~73.2~~	20+68.3	RT-RT	DI/MH						18	~~8~~	62			III		X		-								72.2	~~2.4~~	72.2				~~1.2~~	12.7						
(4) 77.6	21+~~76.8~~	20+68.3	RT-RT	CB/MH						48	~~104~~ 120.6	0.109	0.105						1			11.3			D		480.1	301.3	13.39		4.85		~~34.7~~	83.3						
(5)	21+63.1	21+~~76.8~~	LT-RT	CB/CB			~~77.6~~			18	~~78~~	77			III		X		1			6.8			D		38.1	~~43.0~~	2.07		2.16		~~10.0~~	21.0						
(6)	22+46.1	21+~~76.8~~	RT-RT	CB/CB			~~77.6~~			48	~~66~~ 60.5	0.109	0.105						1			10.1			D		118.6	~~103.5~~	5.81		4.85		~~22.4~~	26.5						
(7)	22+47.0	22+46.1	LT-LT	CB/CB						18	~~14~~	18			III		X		-								7.5	~~3.6~~					~~1.9~~	4.0						
(8)	22+46.1	22+46.1	LT-RT	CB/CB						18	60				III		X		1			6.7			D		20.4	~~24.7~~	0.81		2.15		~~8.4~~	10.7						
(9) 52	22+~~50.0~~	22+46.1	RT-RT	CB/CB						18	11				III		X		1			5.8			D		9.8	~~8.3~~	3.56				~~2.2~~	10.6						
(10)	24+20.0	22+46.1	RT-RT	CB/CB						36	~~170~~	172			III		X		1			11.7			E		177.2	~~196.4~~	3.88		3.24		~~41.6~~	26.8						
(11)	24+20.0	24+20.0	LT-RT	CB/CB						18	~~60~~	95.3			III		X	20	1			6.7			E		50.8	~~25.0~~					~~8.4~~	9.0						
(12)	25+22.2	24+20.0	RT-RT	CB/CB						36	~~100~~	98	0.075						1			15.9			E		269.2	~~191.5~~	11.86				~~24.8~~	14.7						
										36	19						X																							
(13)	25+21.6	25+22.2	RT-RT	DI/CB						18	~~14~~	16			III		X		-								12.6	~~7.4~~					~~1.9~~	2.1				1		
(14)	26+70.0	25+22.2	RT-RT	CB/CB						36	144		0.075						1			8.8			E		117.5	~~117.7~~					~~35.4~~	21.8						
(15)	26+70.0	26+70.0	LT-RT	CB/CB						18	~~50~~	51			III		X		1			6.6			E		17.2	~~18.8~~					~~7.1~~	3.7						
(16)	29+20.0	26+70.0	RT-RT	CB/CB						36	~~244~~	246	0.075						1			8.8			E		201.0	~~194.1~~					~~58.3~~	37.4						
(17)	29+20.0	29+20.0	LT-LT	CB/CB	X					18	~~14~~	10			III		X		1			6.0			B X2		10.6	~~12.3~~					~~2.9~~	0.62				1		
(18)	29+20.0	29+20.0	LT-RT	CB/CB						18	50				III		X		1			7.5			E		12.1	~~25.5~~					~~7.1~~	3.76						
(19)	29+50.0	29+20.0	RT-RT	CB/CB	X					18	34				III		X		1			6.2			B X2		27.0	~~15.3~~					~~5.5~~	2.6				1		
(20)	31+70.0	29+20.0	RT-RT	CB/CB						36	~~244~~	246	0.075						1			8.4			E		169.9	~~184.1~~					~~58.3~~	42.94						
(21)	31+70.0	31+70.0	LT-LT	CB/CB	X					18	~~10~~	12			III		X		1			6.1			B		8.8	~~10.8~~					~~2.0~~	0.77	39.93	II	1			
(22)	31+70.0	31+70.0	LT-RT	CB/CB						18	50				III		X		1			7.8			E		13.2	~~27.7~~					~~7.1~~	3.8						
(23)	31+70.0	31+70.0	RT-RT	CB/CB	X					18	8				III		X		1			6.2			B		11.6	~~6.2~~					~~1.7~~	0.55				1		
(24)	34+20.0	31+70.0	RT-RT	CB/CB						36	245		0.075						1			9.8			E		200.3	~~206.8~~					~~59.8~~	37.18						
(25)	34+20.0	34+20.0	LT-LT	CB/CB	X					18	16				III		X		1			6.2			B		10.4	~~18.2~~					~~2.7~~	1.22				1		
(26)	34+20.0	34+20.0	LT-RT	CB/CB						18	~~50~~	52			III		X		1			9.4			E		17.2	~~40.4~~					~~7.1~~	3.76						
(27)	34+20.0	34+20.0	RT-RT	CB/CB	X					18	8				III		X		1			6.2			B		6.8	~~6.3~~					~~1.7~~	0.55				1		
(28)	36+27.4	34+20.0	RT-RT	CB/CB						36	204		0.075						1			9.8			E		200.1	~~183.9~~					~~49.7~~	30.94						
(29)	36+27.4	36+27.4	LT-LT	CB/CB	X					18	18				III		X		1			6.2			B		11.3	~~19.8~~					~~3.0~~	1.23				1		
(30)	36+27.4	36+27.4	LT-RT	CB/CB						18	~~56~~	58			III		X		1			9.6			E		15.8	~~45.7~~					~~7.9~~	4.28						
																			1	8' Ø																				
																			6	6' Ø																				
																			5	5' Ø	← 1-5' Ø WITH OUTSIDE DROP																			
										18	609				III		X		14	4' Ø	4-5' Ø CB																			
										36	170				III		X																						1-8' Ø		
TOTALS										36	1181		0.075						1	26			15	630	9-B 5-D 13-E		2404.2	80.9	466		148.0	522.3		275	II	4	6	1
										48	226	0.109	0.105																										
										54	48	0.109	0.135																												

REMARKS
• REFER TO DRAINAGE LAYOUT SHEETS FOR REMOVAL OR ABANDONMENT REQUIREMENT
FOR EXISTING PIPES. QUANTITY OF PIPE REMOVAL IS INCLUDED IN TRENCH
EXCAVATION OF ROCK WHERE APPLICABLE
REMOVE ENTIRE STRUCTURE. BACKFILL WITH APPROVED MATERIAL REMOVED WITH NEW DS #9
REMOVE ENTIRE STRUCTURE. BACKFILL WITH APPROVED MATERIAL
REMOVE STRUCTURE TO 24" BELOW SUBGRADE. BACKFILL WITH APPROVED MATERIAL
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REMOVE ENTIRE STRUCTURE. BACKFILL WITH APPROVED MATERIAL
REMOVE ENTIRE STRUCTURE. BACKFILL WITH APPROVED MATERIAL
(1) 8' DIA. PRC CB (DOUBLE STEEL GRATE, SEE STD. D-11)
CONSTRUCT STONE LINED DITCH AND HEADWALL (SEE STORMWATER OUTFALL PLAN AND DETAILS)
(2) 8' DIA. PRC MANHOLE - C.I.P. HEADWALL (1 MANHOLE COVER)
(3) EXIST. DI. - 8' DIA. PRC MANHOLE (SEE STORMWATER OUTFALL PLAN AND DETAILS)
(4) 6' DIA. PRC CB - 8' DIA. PRC MANHOLE (1 GRATE FOR D.I.)
(5) 4' DIA. PRC CB - 6' DIA. PRC CB (1 GRATE EACH)
(6) 6' DIA. PRC CB - 6' DIA. PRC CB (1 GRATE EACH)
(7) EXIST. DI - 4' DIA. PRC CB (1 GRATE @ 22+46.11 LT)
(8) 4' DIA. PRC CB - 6' DIA. PRC CB (1 GRATE EACH)
(9) 4' DIA. PRC CB - 6' DIA. PRC CB (1 GRATE EACH), REM. EXIST.
(10) 5' DIA. PRC CB - 6' DIA. PRC CB (1 GRATE EACH)
(11) 4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(12) 5' DIA. PRC CB W/ DROP - 5' DIA. PRC CB (1 GRATE EACH),
REM. EXIST. DI@ 25+22 RT, CONSTRUCT DROP STRUCTURE
@ 25+22.2 RT (SEE TYPICAL DRAINAGE DETAILS)
(13) EXIST DI. - 5' DIA. PRC CB W/ DROP (1 GRATE EACH),
ADJUST EXIST. DI@ 25+21.6 RT, CONSTRUCT DROP STRUCTURE
@ 25+22.2 RT (SEE TYPICAL DRAINAGE DETAILS)
(14) 5' DIA. PRC CB - 5' DIA. PRC CB W/ DROP (1 GRATE EACH)
CONSTRUCT DROP STRUCTURE @ 25+22.2 RT (SEE TYPICAL DRAINAGE DETAILS)
(15) 4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(16) 5' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(17) 6' DIA. PRC CB - 4' DIA. PRC CB (2 GRATES & 1 GRATE)
(18) 4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(19) 6' DIA. PRC CB - 5' DIA. PRC CB (2 GRATES & 1 GRATE)
(20) 5'6" DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(21) 4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(22) 4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(23) 4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(24) 5'6" DIA. PRC CB - 5'6" DIA. PRC CB (1 GRATE EACH)
(25) 4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(26) 4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(27) 4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(28) 5' DIA. PRC CB - 5'6" DIA. PRC CB (1 GRATE EACH)
(29) 4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(30) 4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
TOTALS

GUARD RAIL

STA.	STA.	LT.	RT.	END TREATMENT
	REMOVE AND RESET GUARDRAIL			
20+30 RT	20+45 RT		25'	
	NEW GUARDRAIL			
37+08 LT	37+26.8 LT	18.8'		TERMINAL CONNECTOR TO BARRIER
37+26.8 LT	37+38.0 LT	-		MANUFACTURED TERMINAL
TOTALS				

DI'S UNDERDRAIN

	STA.	STA.	TYPE	POS.	D	L	TRENCH E	TRENCH R	GRAN BKF	12" RISER LEN.	FB	MKR PST
(A)	24+24	25+18	U	RT	8	94	~~37.3~~	55.6		~~8~~ 0	1	1
(A)	25+00	26+41.5	U	LT	8	142	~~71.2~~	109.3		~~8~~ 6	1	1
(B)	26+41.5	29+01.5	U	LT	6	262	-			~~10~~ 8	1	1
(A)	25+26	26+74	U	RT	8	148	~~52.0~~	83.2		~~8~~ 0	~~1~~	~~1~~
(A)	26+74	29+~~75~~20	U	RT	8	~~298~~ 252	~~106.7~~	114.6		~~8~~ 5	1	1
(A)	29+35	31+~~65~~50	U	LT	8	~~233~~ 215	~~92.9~~	68.9		~~6~~ 5	1	1
(A)	30+29	31+70	U	RT	6	138	-		INCLUDED	6	1	1
(A)	31+70	34+20	U	RT	6	248	-		WITH VE	6	1	1
(A)	34+20	36+13	U	RT	6	192	-		WALL	6	1	1
(A)	30+00	31+~~75~~68	U	RT	8	~~172~~ 150	~~60.9~~	97.9		~~6~~ 0	~~1~~	~~1~~
TOTAL 6"	UNDERDRAIN (MOD.)					840	-			72	10	10
TOTAL 8"	UNDERDRAIN (MOD.)					1087	421.0					
(A)	24+20	24+24	C	RT	8	6	~~2.4~~	3.0		~~8~~ 5	1	1
(A)	24+20	25+00	~~C~~ U	LT	8	78	~~27.1~~	40.5		~~8~~ 5	1	1
(A)	25+22	25+26	C	RT	8	6	~~2.4~~	1.7		~~8~~ 6	1	1
(A)	26+70	26+74	C	RT	8	6	~~1.8~~	2.2		5	1	1
(A)	29+50	30+00	C	RT	8	48	~~17.3~~	21.2		~~8~~	~~1~~	~~1~~
(A)	29+20	29+35	C	LT	8	14	~~5.6~~	3.2		~~6~~	~~1~~	~~1~~
(A)	30+13	30+29	C	RT	6	20	8.0		INCLUDED	6	1	1
(A)	31+70	31+70	C	RT	6	8	2.4		WITH VE	-		
(A)	34+20	34+20	C	RT	6	8	3.2		WALL	-		
(A)	31+70	31+75	C	RT	8	8	~~2.4~~	3.0		-		
TOTAL 6"	CARRIER PIPE (MOD.)					36	13.6			44	6	6
TOTAL 8"	CARRIER PIPE (MOD.)					166	59.0					
TOTAL 12"	CARRIER PIPE (MOD.) FOR RISERS									116		
TOTALS												

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027qty.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: E. ATKINS

PLOT DATE: 1/31/2007
DRAWN BY: A. DUMITRU
CHECKED BY: E. ATKINS
SHEET 12 OF 239

ITEM DETAIL AND DRAINAGE SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

DRAINAGE STRUCTURES

LABEL	STA.	STA.	POSITION	TYPE IN/OUT	DITCH IN	DITCH OUT	PIPE ARCH S IN	PIPE ARCH R IN	PIPE ARCH L FT	PIPE D IN	PIPE L FT	ALLOWABLE OPTIONS PCCSP TH	CAAP TH	RCP CL	CPEP TH	CPEP SL	~~PCCSP PI~~ ~~TH~~	PIPE ELBOW NO-DEG	PIPE ELBOW EA	ES	CB	DEPTH CB/MH	CONC CL B CY	REIN STEEL LBS	CB/DI GRATE TYPE	CHAN ELEV	CRM CY	TR EXCAV EARTH CY	TR EXCAV ROCK CY	COMM EXC CY	UNC CHAN EXC CY	STRUC EXCAV CY	GRAN BKF STRUC CY	GRAN BORR CY	EROS MATT SY	STONE FILL CY	STONE FILL TYPE	MRKR POSTS LT	MRKR POSTS RT	MANHOLE COVER		REMARKS
(31)	36+74.5	36+27.4	RT-RT	CB/CB						36	~~42~~	41	0.075				RELAY PIPE			1		8.4			E		46.4	~~45.0~~					~~11.0~~	6.27							(31)	5' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(32)	5+61.6	5+53.6	RT-LT	CB/CB						18	~~22~~	23			~~III~~	X				1		6.1			D		8.5	~~24.5~~					~~3.5~~	1.6							(32)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH), REM. EXIST. DI RT WORCESTER AVENUE
(33)	5+53.6	5+52.6	LT-LT	CB/~~MH~~						18	~~4~~	6.5			~~III~~	X				1		7.3			D		7.8	~~13.7~~					~~1.2~~	0.3							(33)	4' DIA. PRC CB - 4' DIA. PRC MANHOLE (1 GRATE - 1 COVER) WORCESTER AVENUE
(34)	5+52.6	36+74.5	LT-RT	MH/CB						18	~~136~~	138			III	X				-		9.5					62.1	~~132.8~~	1.00		1.91		~~18.3~~	9.4					1		(34)	4' DIA. PRC MANHOLE - 5' DIA. PRC CB (1 COVER - 1 GRATE) WORCESTER AVENUE
(35)	37+95.0	36+74.5	RT-RT	CB/CB						36	~~118~~	120.4			III	X				1		11.7			D		221	~~155.8~~					~~29.2~~	20.7							(35)	5' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(36)	3+20.6	3+20.6	RT-LT	CB/CB						18	30				III	X				1		6.2			D		20.4	~~29.9~~					~~4.6~~	2.2							(36)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH) RELOCATED WORCESTER AVENUE
(37)	3+20.6	37+95.0	LT-RT	CB/CB						18	36				III	X				1		6.3			D		14.7	~~34.0~~					~~5.3~~	2.6							(37)	4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH) RELOCATED WORCESTER AVENUE
(38)	15+74.0	15+74.0	RT-LT	CB/CB						18	18				III	X				1		6.4			D		10.7	~~22.6~~					~~3.0~~	1.2							(38)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH) SCHOOL ENTRANCE
(39)	15+74.0	15+29.9	LT-LT	CB/CB						18	46				III	X				1		6.7			D		18.9	~~41.9~~					~~6.6~~	3.4							(39)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH) SCHOOL ENTRANCE
(40)	15+29.9	11+16.9	LT-LT	CB/~~MH~~						18	78				III	X				1		6.1			D		28.8	~~61.4~~					~~10.8~~	5.8							(40)	4' DIA. PRC CB - 5' DIA. PRC MANHOLE (1 GRATE & 1 COVER), REM. EXIST. ~~MH~~ @ 11+16.9 LT
40A	15+43.5	15+29.9	LT-LT	CB/CB						18	13					X				1		6.0			D			12.5					1.1							40A	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(41)	15+~~42.5~~ 34.0	11+16.9	RT-LT	MH/~~MH~~						12	~~74~~ 72	~~RELAY EXISTING~~ 12" PVC PIPE @ NEW INVERTS								-		6.9					18.0	~~51.1~~					~~7.8~~	2.9					1		(41)	RELAY EXIST. 12" PVC PIPE FROM NEW 4' DIA. PRC MH TO 5' DIA. PRC MANHOLE (2 COVERS)
(42)	13+~~76.0~~ 59.0	11+16.9	~~RT~~ LT-LT	MH/MH						15	216 238	~~RELAY EXISTING~~ 15" PVC PIPE @ NEW INVERTS								-		-					54.3	~~159.7~~					~~27.7~~	12.3							(42)	RELAY EXIST. 15" PVC FROM 5' DIA. PRC MANHOLE TO EXIST. DRAIN MANHOLE @ 13+~~76.~~ 59 ORT
(43)	11+16.9	10+65.6	LT-LT	MH/CB						24	~~42~~	44			III	X				-		7.2					26.4	~~51.1~~					~~7.8~~	4.4					1		(43)	5' DIA. PRC MANHOLE - 4' DIA. PRC CB - (1 COVER & 1 GRATE) HIGHLAND AVENUE
(44)	10+~~42.8~~ 49.0	10+65.6	RT-LT	CB/CB						18	~~78~~	80			III	X	42			1		6.0			D		68.9	~~63.4~~					~~10.8~~	14.4							(44)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH) HIGHLAND AVENUE
(45)	10+65.6	37+95.0	LT-RT	CB/CB						24	~~72~~	74			III	X				1		6.7			D		21.7	~~41.5~~					~~12.5~~	7.7							(45)	4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH) HIGHLAND AVENUE
(46)	38+85.0	37+95.0	RT-RT	CB/CB						36	~~86~~	88			III	X				1		12.0			D		168.5	~~146.7~~					~~21.5~~	15.0							(46)	5' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(47)	40+10.0	38+85.0	RT-RT	CB/CB						36	~~122~~	125			III	X				1		12.3			D		243.9	~~207.3~~					~~30.1~~	21.4							(47)	5' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(48)	20+49.6	20+49.6	LT-RT	CB/CB						18	~~12~~	13.5			III	X				1		6.8			D		9.0	~~17.7~~					~~2.2~~	0.7							(48)	4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE - 2 GRATES) HEBARD AVENUE
(49)	20+49.6	40+10.0	RT-LT	CB/CB						18	~~22~~	23.5			III	X				1		9.3			D X2		37.3	~~42.9~~					~~3.7~~	1.6							(49)	5' DIA. PRC CB - 4' DIA. PRC CB (2 GRATES - 1 GRATE) HEBARD AVENUE
(50)	40+10.0	40+10.0	LT-RT	CB/CB						18	~~56~~	58			III	X				1		10.1			D		64.6	~~79.5~~	0.82		1.16		~~7.9~~	4.2							(50)	4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(51)	41+16.4	40+10.0	RT-RT	CB/~~MH~~ CB						36	~~104~~	107			III	X				-		12.5			D		226.4	~~234.1~~	0.12		0.88		~~25.8~~	19.2					1		(51)	5' DIA. PRC ~~MH~~ LB - 5' DIA. PRC CB (~~1 COVER~~ & 1 GRATE) EACH
51A	41+20	41+16.4	RT-RT							18	14					X																								51A	CONNECT TO EXISTING DIØ 41+20-39' RT
(52)	43+50.0	41+16.4	RT-RT	CB/~~MH~~ CB						36	~~232~~	236			III	X				1		11.2			D		442.3	~~483.6~~					~~56.4~~	40.5							(52)	5' DIA. PRC CB - 5' DIA. PRC MH (1 GRATE & ~~1 COVER~~) EACH
(53)	43+50.0	43+50.0	RT-RT	CB/CB						18	12				III	X				1		6.4			D		13.5	16.5					~~2.2~~	0.8					1		(53)	4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(54)	43+56.1	43+50.0	LT-LT	CB/CB						18	14				III	X				1		5.9			D		11.5	~~20.7~~	2.94				~~2.7~~	1.0							(54)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
54A	41+90	43+56.1	LT-LT	CB/CB						1															D		71.90													54A	4' DIA. PRC CB WITH 160' 12" PVC PIP ADDED WITH COD #12
(55)	43+50.0	43+50.0	LT-RT	CB/CB						18	~~34~~	36			III	X				1		6.3			D		14.7	~~33.0~~					~~5.1~~	2.6							(55)	4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(56)	44+00.0	43+50.0	RT-RT	CB/CB						36	46				III	X				1		11.0			D		111.3	~~105.9~~					~~11.9~~	7.5							(56)	5' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(57)	44+00.0	44+00.0	LT-RT	CB/CB						18	~~34~~	36			III	X				1		6.3			D		14.6	~~32.9~~					~~5.1~~	2.6							(57)	4' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(58)	45+10.0	44+00.0	RT-RT	CB/CB						30	~~106~~	108			III	X				1		10.3			D		146.7	189.5					~~22.4~~	25.5							(58)	6' DIA. PRC CB - 5' DIA. PRC CB (1 GRATE EACH)
(59)	25+45.7	25+44.1	LT-LT	CB/CB						18	~~7~~	8			III	X				1		7.2			D		11.9	~~16.1~~	3.67				~~1.7~~	0.4							(59)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(60)	25+44.1	25+44.1	LT-RT	CB/CB						18	20				III	X				1		6.3			D		12.4	~~24.0~~					~~3.3~~	1.6							(60)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH) SAUNDERS AVENUE
(61)	26+19.2	25+44.1	RT-RT	~~MH~~/CB						18	~~72~~	70			III	X				-		6.6					35.0	~~62.1~~					~~10.0~~	5.8					1		(61)	4' DIA. PRC ~~MH~~ - 4' DIA. PRC CB (1 COVER & 1 GRATE) INSTALL NEW MH OVER EXIST. PIPE (SEE CROSS SECTIONS)
(62)	25+44.1	45+10.0	RT-RT	CB/CB						18	~~58~~	60			III	X				1		7.7			D		41.0	~~65.1~~					~~8.2~~	4.4							(62)	4' DIA. PRC CB - 6' DIA. PRC CB (1 GRATE EACH) SAUNDERS AVENUE
																				1	6' Ø																			
										18	789				III	X				8	5' Ø																			
										24	114				III	X				20	4' Ø																	3	4' Ø		
										30	106				III	X																						1	5' Ø		
TOTALS										36	708				III	X																									
										36	42		0.075							26					26-D 1-E		2706.0						380.3					1	5		

GUARD RAIL

STA.	STA.	LT.	RT.	END TREATMENT	
TOTALS					

UNDERDRAIN

STA.	STA.	TYPE	POS.	D	L	TRENCH E	TRENCH R	GRAN BKF	8" RISER LEN.	FB	MKR PST
31+75	34+24~~20~~	U	RT	8	~~248~~ 228	~~99.2~~	~~39.8~~		~~8~~	~~1~~	~~1~~
34+24	35+50	U	RT	8	126	~~50.7~~	73.6		~~8~~ 6	1	1
31+80	34+29~~05~~	U	LT	8	~~250~~ 252	~~84.2~~	30.02		~~6~~ 5	1	1
34+~~29~~36	~~36+38~~ 35+85	U	LT	8	208	~~71.7~~	0		8 ~~6~~ 5	1	1
36+38	37+00	U	LT	8	62	~~24.9~~	16.6		~~8~~ 5	1	1
35+50	36+00	U	RT	8	50	~~20.1~~	28.9		~~8~~ 5	1	1
~~36+13~~	~~0+75~~	~~U~~	~~RT~~	~~6~~	~~48~~	~~-~~			~~6~~	~~1~~	~~1~~
~~36+77~~	~~38+10~~	~~U~~	~~RT~~	~~8~~	~~132~~	~~48.6~~			~~8~~	~~1~~	~~1~~
38+90	40+11	U	RT	8	124	66.7			8	1	1
~~39+04~~	~~39+57~~	~~U~~	~~LT~~	~~8~~	~~52~~	~~23.3~~			~~6~~	~~1~~	~~1~~
~~40+11~~	~~41+10~~	~~U~~	~~RT~~	~~8~~	~~100~~	~~54.0~~			~~8~~	~~1~~	~~1~~
40+50	42+00	U	LT	8	150	84.3			~~8~~	~~1~~	~~1~~
TOTAL 6"	UNDERDRAIN (MOD.)				48	0			88	12	12
TOTAL 8"	UNDERDRAIN (MOD.)				1502	527.7					
34+20	34+24	C	RT	8	8	~~2.2~~	3.6		-		
31+70	31+80	C	LT	8	12	~~4.8~~	0.4		~~6~~ 5	1	1
34+20	34+29~~36~~	C	LT	8	~~12~~ 9	~~3.3~~	0		5	1	
36+27	36+38	C	LT	8	12	~~3.4~~	0		5	1	1
~~36+75~~	~~36+77~~	~~C~~	~~RT~~	~~8~~	~~4~~	~~1.6~~			~~-~~		
~~38+85~~	~~38+90~~	~~C~~	~~RT~~	~~8~~	~~6~~	~~3.2~~			~~8~~	~~1~~	~~1~~
~~39+57~~	~~40+10~~	~~C~~	~~LT~~	~~8~~	~~50~~	~~17.5~~			~~6~~	~~1~~	~~1~~
~~40+10~~	~~40+11~~	~~C~~	~~RT~~	~~8~~	~~4~~	~~2.2~~			~~-~~		
~~40+10~~	~~40+50~~	~~C~~	~~LT~~	~~8~~	~~38~~	~~22.3~~			~~8~~	~~1~~	~~1~~
TOTAL 8"	CARRIER PIPE (MOD.)				146	60.5			28	4	4
TOTAL 12"	CARRIER PIPE (MOD.) FOR RISERS								116		
TOTALS											

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027qty.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: E. ATKINS

PLOT DATE: 1/31/2007
DRAWN BY: A. DUMITRU
CHECKED BY: E. ATKINS
SHEET 13 OF 239

ITEM DETAIL AND DRAINAGE SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

DRAINAGE STRUCTURES

LABEL	STA.	STA.	POSITION	TYPE IN/OUT	DITCH IN	DITCH OUT	PIPE ARCH S IN	PIPE ARCH R IN	PIPE ARCH L FT	PIPE D IN	PIPE L FT	ALLOWABLE OPTIONS PCCSP TH	CAAP TH	RCP CL	CPEP TH	CPEP SL	PCCSP Pi TH	PIPE ELBOW NO-DEG	ES EA	CB	PRCCD	DEPTH CB/MH	CONC CL B CY	REIN STEEL LBS	CB/DI GRATE TYPE	CHAN ELEV	CRM CY	TR EXCAV EARTH CY	TR EXCAV ROCK CY	COMM EXC CY	UNC CHAN EXC CY	STRUC EXCAV CY	GRAN BKF STRUC CY	GRAN BORR CY	EROS MATT SY	STONE FILL CY	STONE FILL TYPE	MRKR POSTS LT	MRKR POSTS RT	MANHOLE COVER
(63)	45+~~50~~.0	45+10.0	LT-RT	CB/CB						18	~~50~~	52		III		X	RELAY PIPE			1		6.3			D		21.3	~~44.5~~			SOLID ROCK		~~7.1~~	3.8			I			
(64)	46+15.0	45+10.0	RT-RT	CB/CB						24	~~102~~	104		III		X				1		9.5			D		103.3	~~144.0~~					~~17.4~~	10.5						
(65)	46+65.0	46+15.0	RT-RT	DI/CB						18	52			III		X				~~1~~		-			D		70.8	~~34.6~~	5.19				~~6.8~~	7.7				1		
(66)	47+10.0	46+15.0	RT-RT	CB/CB						24	~~93~~	95		III		X				1		9.3			D		92.0	~~127.9~~					~~15.9~~	9.5						
(67)	47+10.0	47+10.0	LT-RT	CB/CB						18	~~34~~	35		III		X				1		8.4			D		27.3	~~45.7~~					~~5.1~~	2.3						
(68)	49+40.0	47+10.0	RT-RT	CB/CB						24	~~220~~	230		III		X				1		9.4			D		187.2	~~292.2~~					~~38.1~~	23.5					I	
(69)	30+98.6	30+40.1	LT-RT	~~MH~~/CB						18	~~56~~	58		III		X	6			-		8.3			D		72.8	~~64.0~~					~~7.9~~	4.5					1	
(70)	30+36.2	30+40.1	LT-RT	CB/CB						18	~~18~~	22		III		X				1		6.4			D		11.5	~~23.0~~					~~3.0~~	1.4						
(71)	30+40.1	49+40.0	RT-LT	CB/CB						18	24			III		X				1		8.0			D		19.6	~~34.6~~					~~3.8~~	1.7						
(72)	49+40.0	49+40.0	LT-RT	CB/CB						18	~~34~~	36		III		X				1		8.5			D		30.8	~~46.8~~					~~5.1~~	2.6						
(73)	50+30.0	49+40.0	RT-RT	MH/CB						18	~~86~~	88		III		X				~~1~~		8.0			D		64.3	~~90.0~~					~~11.8~~	6.5					~~1~~	
(74)	50+44.0	50+30.0	RT-RT	CB/~~MH~~						18	~~20~~	23		III		X				1		6.2			D		33.6	~~25.4~~					~~3.3~~	1.6				1		
(75)	35+38.8	35+35.2	RT-LT	CB/CB						18	18			III		X				1		6.2			D		10.4	~~22.1~~					~~3.0~~	1.2						
(76)	35+35.2	52+45.0	LT-RT	CB/~~MH~~						18	~~26~~	27		III		X				1		6.5			D		13.6	~~29.0~~					~~4.0~~	2.0						
(77)	52+21.4 52+~~11.4~~	54+00 ~~52+45.0~~	LT ~~LT-RT~~	CB CB/~~MH~~						18	~~46~~	179		III		X				1		6.5			D		57.8	~~43.2~~					~~6.6~~	13.6						
(78)	52+45.0	54+00.0	RT-RT	CB ~~MH~~/CB						18	153			III		X				+		6.9			D		60.2	~~124.3~~					~~20.5~~	11.6					~~1~~	
(79)	54+00.0	54+00.0	LT-RT	CB/CB						18	~~34~~	38		III		X				1		6.3			D		16.1	~~33.2~~					~~5.1~~	2.6						
(80)	54+00.0	55+12.0	RT-RT	CB/~~MH~~						18	~~108~~	111		III		X				1		6.8			D		43.0	~~90.1~~					~~14.6~~	8.3						
(81)	40+36.1	40+36.1	RT-LT	CB/CB						18	~~14~~	15		III		X				1		6.2			D		9.3	~~19.3~~					~~2.5~~	1.0						
(82)	40+36.1	55+12.0	LT-RT	CB/~~MH~~						18	20			III		X				1		6.5			D		10.5	~~24.8~~					~~3.3~~	1.1						
(83)	55+12.0	55+12.0	LT-RT	CB/~~MH~~						18	~~32~~	35		III		X				1		6.2			D		15.8	~~32.3~~					~~4.8~~	2.5						
(84)	55+12.0	56+00.0	RT-RT	MH/CB						18	~~84~~	87		III		X				-		6.9					45.8	~~76.1~~					~~11.5~~	6.6					1	
(85)	56+00.0	56+77.7	RT-RT	CB/CB						18	~~74~~	76		III		X				1		7.3			D		43.5	~~72.1~~					~~10.2~~	5.6						
(86)	56+00.0	56+77.7	LT-LT	CB/CB						18	~~74~~	76		III		X				1		5.6			D		23.8	~~57.2~~					~~10.2~~	5.6						
(87)	56+77.7	56+77.7	LT-RT	CB/CB						18	36			III		X				1		7.3			D		23.4	~~40.9~~					~~5.3~~	2.5						
(88)	56+77.7	58+40.0	RT-RT	CB/CB						18	~~150~~	160		III		X				1		7.6			D		89.6	~~158.4~~	2.29		1.56		~~21.1~~	11.6						
(89)	45+35.2	45+37.3	RT-LT	CB/CB						18	~~12~~	14		III		X				1		6.4			D		9.5	~~18.3~~					~~2.2~~	1.0						
(90)	45+37.3	58+40.0	LT-RT	CB/CB						18	~~18~~	20		III		X				1		6.7			D		11.9	~~23.8~~					~~3.0~~	1.3						
(91)	58+65.0	58+40.0	LT-RT	CB/CB						18	44			III		X				1		8.2			D		31.9	~~54.0~~					~~6.4~~	3.0						
(92)	58+40.0	60+91.7	RT-RT	CB/CB						24	~~250~~	248		III		X				1		9.3			D		337.1	~~361.6~~					~~41.7~~	15.8						
(93)	60+91.7	60+98.7	RT-LT	CB/~~MH~~						24	60		0.075		0.079		0.109			1		11.8			D		117.8	~~119.8~~	6.14		0.96		~~10.5~~	0.6	12.0	I				
(94)	60+98.7	61+02.0	LT-LT	MH/OL						24	~~30~~	32.5	0.075		0.079		0.109			1		14.5					136.7	~~51.1~~					~~5.6~~	6.16	126.2	II			1	
																				3	-5'Ø																			
																				26	-4'Ø																			
										18	1325			III		X																						4 -4'Ø	
TOTALS										24 24	673 90		0.075	III	0.079	X	0.109			1	26		94.72	7106	24-D		2424.3						317.4					2	5	

LABEL	REMARKS
(63)	4' DIA. PRC CB - 6' DIA. PRC CB (1 GRATE EACH)
(64)	5' 4' DIA. PRC CB - 6' DIA. PRC CB (1 GRATE EACH)
(65)	4' DIA. PRL CB 5' EACH) CONNECT TO EXIST. DI - 4' DIA. PRC CB (1 GRATE @46+15.0 RT) ADJUST EXIST. DI@46+65.0 RT
(66)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(67)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(68)	5' 4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH) WITH 4'DIA. PRC MH @ 48+30 RT
(69)	4' DIA. PRC MH - 4' DIA. PRC CB (1 COVER & GRATE), PIERCE STREET INSTALL NEW MH ON EXIST. PIPE
(70)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH), PIERCE STREET
(71)	5' 4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(72)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(73)	CB 4' DIA. PRC MANHOLE - 4' DIA. PRC CB (1 COVER & 1 GRATE) EACH)
(74)	4' DIA. PRC CB - MH (1 GRATE & COVER), INSTALL NEW PRC CB ON EXIST. PIPE
(75)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH), GOUDREAU STREET
(76)	4' DIA. PRC CB - 4' DIA. PRC MH (1 GRATE & COVER), GOUDREAU STREET
(77)	REM. EXIST. DI'S & PIPE @52+45 RT- LT EACH) 4' DIA. PRC CB - 4' DIA. PRC MH (1 GRATE & 1 COVER)
(78)	CB CB EACH) 4' DIA. PRC MANHOLE - 4' DIA. PRC CB (1 COVER & 1 GRATE)
(79)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(80)	4' DIA. PRC CB - 4' DIA. PRC MANHOLE (1 GRATE & 1 COVER)
(81)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH), DEVIN STREET
(82)	4' DIA. PRC CB - 4' DIA. PRC MANHOLE (1 GRATE & 1 COVER), DEVIN STREET
(83)	4' DIA. PRC CB - 4' DIA. PRC MANHOLE (1 GRATE & 1 COVER)
(84)	4' DIA. PRC MANHOLE - 4' DIA. PRC CB (1 COVER & 1 GRATE)
(85)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(86)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(87)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(88)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(89)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH), ADVENT LANE
(90)	4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH), ADVENT LANE
(91)	5' 4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH)
(92)	5' 4' DIA. PRC CB - 4' DIA. PRC CB (1 GRATE EACH), REM. EXIST. PIPES
(93)	4' DIA. PRC CB - 4' DIA. PRC MANHOLE (1 GRATE & 1 COVER)
(94)	4' DIA. PRC MANHOLE - OUTLET (1 COVER) TYPE II STONE @ OUTLET

GUARD RAIL

STA.	STA.	LT.	RT.	END TREATMENT	
TOTALS					

UNDERDRAIN

STA.	STA.	TYPE	POS.	D	L	TRENCH E	TRENCH R	GRAN BKF	12" RISER LEN.	FB	MKR PST
42	42+00	44+54	U	LT	8	252	105.1		6	1	1
43	41+25	44+00	U	RT	8	276	143.6		6	1	1
44	44+00	44+90	U	RT	8	90	47.4		8	1	1
45	45+12	47+12	U	RT	8	202	111.0		8	1	1
45a	47+12	49+46	U	RT	8	235	120.3		8	1	1
45a	49+46	50+30	U	RT	8	83	42.5		8	1	1
46	45+29	47+10	U	LT	8	180	64.1		6	1	1
47	47+10	48+83	U	LT	8	172	75.4		6	1	1
47	49+43	51+50	U	LT	8	206	78.1		6	1	1
48	51+50	54+00	U	LT	8	250	92.7		-		
49	54+00	56+75	U	LT	8	274	105.2		6	1	1
50	50+45	51+85	U	RT	8	138	45.1		6	1	1
51	52+45	54+60	U	RT	8	214	63.0		6	1	1
52	55+12	56+77.7	U	RT	8	166	53.6		6	1	1
53	56+77.7	57+89	U	RT	8	112	36.4		6	1	1
54	58+43	59+50	U	RT	8	106	63.2		6	1	1
TOTAL 8" UNDERDRAIN (MOD.)						2956	1246.7		98	15	15
44	44+00	44+00	C	RT	8	4	2.2		8	1	
45	45+10	45+12	C	RT	8	4	2.2		8	1	1
46	47+10	47+12	C	RT	8	4	2.1		-		
46a	49+40	49+46	C	RT	8	6	2.0		-		
51	47+10	47+10	C	LT	8	4	1.8		8	1	1
53	49+40	49+43	C	LT	8	4	1.9		8	1	1
54	50+30	50+45	C	RT	8	14	6.6		6	1	1
55	54+60	40+36	C	RT	8	22	9.0		6	1	1
61	56+75	56+77.7	C	LT	8	4	1.6		6	1	1
63	56+77.7	56+77.7	C	RT	8	4	1.4		6	1	1
64	58+40	58+43	C	RT	8	4	1.5		6	1	1
TOTAL 8" CARRIER PIPE (MOD.)						74	32.3		62	9	9
TOTAL 12" CARRIER PIPE (MOD.) FOR RISERS									160		
TOTALS											

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027qty.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: E. ATKINS

PLOT DATE: 1/31/2007
DRAWN BY: A. DUMITRU
CHECKED BY: E. ATKINS
SHEET 14 OF 239

EARTHWORKS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATION	DIST	TOTAL EXCAVATION EARTH AND ROCK AREA	TOTAL EXCAVATION EARTH AND ROCK CU. YDS.	ROCK EXCAVATION AREA	ROCK EXCAVATION CU. YDS.	EMBANKMENT AREA	EMBANKMENT CU. YDS.		
21+45		437.2				1.1			
	55		693.6				4.1		
22+00		243.8				3.0			
	50		441.9				2.8		
22+50		233.4				0.1			
	50		440.9				0.1	CUT=	3697.2
23+00		242.7				0.0		FILL=	9.4
	50		445.8				0.0	F-FAC=	1.15
23+50		238.7				0.0			
	50		432.7				1.2	EX_C=	3686.4
24+00		228.7				1.3			
	50		431.8				1.2		
24+50		237.7				0.0			
	50		422.8				0.0		
25+00		218.9				0.0			
	50		387.7				0.0		
25+50		199.8				0.0			
	50		323.4				0.0		
26+00		149.5				0.0			
	50		245.7				0.0		
26+50		115.8				0.0			
	50		195.3				0.1		
27+00		95.1				0.1			
	50		143.4				1.4	CUT=	1490.4
27+50		59.8				1.3		FILL=	1049.3
	50		71.9				14.7	F-FAC=	1.15
28+00		17.9				14.6			
	50		21.0				48.0	EX_C=	283.7
28+50		4.8				37.2			
	50		10.9				179.5		
29+00		7.0				156.7			
	50		16.3				278.9		
29+50		10.6				144.5			
	50		122.7				268.7		
30+00		121.9				145.7			
	50		339.8				258.0		
30+50		245.1				132.9			
	50		627.6				225.4		
31+00		432.8				110.6			
	50		1318.3				206.4		
31+50		991.0				112.3			
	50		1934.6				214.4		
32+00		1098.4				119.2			
	50		1930.3				213.8	CUT=	12615.5
32+50		986.3				111.7		FILL=	3025.6
	50		1690.5				204.6	F-FAC=	1.15
33+00		839.4				109.3			
	50		1528.7				220.4	EX_C=	9136.1
33+50		811.6				128.7			
	50		1372.2				270.7		
34+00		670.4				163.7			
	50		1076.0				354.1		
34+50		491.8				218.8			
	50		700.0				494.5		
35+00		264.2				315.3			
	50		437.3				621.3		
35+50		208.0				355.7			
	50		424.0				601.2		
36+00		249.9				293.6			
	50		240.6				484.7		
36+50		9.9				229.9			
	50		19.8				365.0		
37+00		11.5				164.3			
	50		65.3				190.0	CUT=	2785.8
37+50		59.0				40.8		FILL=	1678.7
	50		174.1				37.8	F-FAC=	1.15
38+00		129.0				0.0			
	50		306.8				0.0	EX_C=	855.3
38+50		202.4				0.0			
	50		453.9				0.0		
39+00		287.9				0.0			
	50		537.5				0.0		
39+50		292.7				0.0			
	50		563.8						

STATION	DIST	TOTAL EXCAVATION EARTH AND ROCK AREA	TOTAL EXCAVATION EARTH AND ROCK CU. YDS.	ROCK EXCAVATION AREA	ROCK EXCAVATION CU. YDS.	EMBANKMENT AREA	EMBANKMENT CU. YDS.		
40+00		316.3				0.0			
	50		550.3				0.0		
40+50		278.0				0.0			
	50		539.2				0.0		
41+00		304.3				0.0			
	50		484.3				0.4		
41+50		218.7				0.4			
	50		360.6				1.0		
42+00		170.8				0.7		CUT=	4702.6
	50		329.7				0.6	FILL=	3.5
42+50		185.3				0.0		F-FAC=	1.15
	50		357.9				0.0		
43+00		201.2				0.0		EX_C=	4698.6
	50		397.4				0.5		
43+50		228.0				0.5			
	50		419.1				0.5		
44+00		224.7				0.0			
	50		499.2				0.1		
44+50		314.4				0.1			
	50		438.9				0.2		
45+00		159.6				0.1			
	50		326.0				0.2		
45+50		192.5				0.1			
	50		402.8				0.1		
46+00		242.5				0.0			
	50		398.9				0.4		
46+50		188.4				0.4			
	50		362.9				0.6		
47+00		203.6				0.3			
	50		367.5				0.3	CUT=	3658.8
47+50		193.3				0.0		FILL=	14.1
	50		359.3				2.3	F-FAC=	1.15
48+00		194.7				2.5			
	50		378.2				2.3	EX_C=	3642.6
48+50		213.8				0.0			
	50		379.5				0.0		
49+00		196.0				0.0			
	50		361.2				0.7		
49+50		194.1				0.7			
	50		347.2				1.4		
50+00		180.9				0.8			
	50		301.3				6.0		
50+50		144.5				5.8			
	50		276.2				9.3		
51+00		153.9				4.2			
	50		303.1				4.6		
51+50		173.6				0.8			
	50		306.9				0.7		
52+00		157.9				0.0			
	50		327.6				2.0		
52+50		196.0				2.1		CUT=	3516.5
	50		382.4				2.0	FILL=	24.2
53+00		217.0				0.0		F-FAC=	1.15
	50		467.6				0.0		
53+50		288.0				0.0		EX_C=	3488.7
	50		455.4				0.0		
54+00		203.8				0.0			
	50		363.9				0.0		
54+50		189.2				0.0			
	50		318.5				1.9		
55+00		154.8				2.0			
	50		314.9				3.7		
55+50		185.3				2.0			
	50		329.3				4.4		
56+00		170.4				2.7			
	50		318.3				5.0		
56+50		173.3				2.6		CUT=	2114.5
	50		344.0				2.7	FILL=	13.6
57+00		198.2				0.3		F-FAC=	1.15
	50		326.7				0.9		
57+50		154.6				0.7		EX_C=	2098.9
	50		260.1				0.6		
58+00		126.3				0.0			
	50		255.9				0.0		
58+50		150.1				0.0			
	50		280.2				0.0		

STATION	DIST	TOTAL EXCAVATION EARTH AND ROCK AREA	TOTAL EXCAVATION EARTH AND ROCK CU. YDS.	ROCK EXCAVATION AREA	ROCK EXCAVATION CU. YDS.	EMBANKMENT AREA	EMBANKMENT CU. YDS.		
59+00		152.5				0.0			
	50		182.9				0.0		
59+50		45.0				0.0		CUT=	182.9
								FILL=	0.0
								F-FAC=	1.15
								EX_C=	182.9

SUMMARY AND BALANCES

STATION TO STATION		TOTAL EXCAV EARTH & ROCK	ROCK EXCAV CUBIC YARDS	EMBANKMENT CUBIC YARDS	EXCESSES CUT	EXCESSES FILL	ACCUMULATIVE EXCESSES CUT	ACCUMULATIVE EXCESSES FILL
21+45	25+00	3697.2		9.4	3686.4		3686.4	
25+50	30+00	1490.4		1049.3	283.7		3970.1	
30+50	35+00	12615.5		3025.6	9136.1		13106.2	
35+50	39+50	2785.8		1678.7	855.3		13961.5	
40+00	45+00	4702.6		3.5	4698.6		18660.1	
45+50	50+00	3658.8		14.1	3642.6		22302.7	
50+50	55+00	3516.5		24.2	3488.7		25791.4	
55+50	58+50	2114.5		13.6	2098.9		27890.3	
59+00	59+87.5	182.9		0	182.9		28073.2	

REMARKS

EARTH AND ROCK EXCAVATION (37818.2 + 6773.5 + 1079.0) = 45670.7		
SOLID ROCK EXCAVATION (CONC. PVMT. EST. FROM 1931 REC. PLANS)		1650
EARTH EXCAVATION		44020.7
PLANIMETERED FILL		5818.4
LESS FACTORED SOLID ROCK		
LESS DISPLACEMENT OF ANY LARGE STRUCTURES		
NET PLANIMETERED FILL		
FACTOR		1.15
PLANIMETERED FILL INCLUDING FACTOR		6691.2
MATERIALS AVAILABLE FOR FILLS		
EARTH EXCAVATION		44020.7
CHANNEL EXCAVATION		
UNDERDRAIN EXCAVATION	(2458.8X60%)	1475.3
STRUCTURE EXCAVATION	(2750X60%)	1650
TOTAL MATERIAL AVAILABLE FOR FILL		47146.0
TOTAL FILL INCLUDING FACTOR		6691.2
TOTAL MATERIAL FOR FILL		47146.0
BORROW		
EXCESS EXCAVATION		40454.8

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027qty.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: E. ATKINS/K. ISHIKURA

PLOT DATE: 1/11/2007
DRAWN BY: A. DUMITRU
CHECKED BY: K. ISHIKURA
SHEET 15 OF 239

EARTHWORKS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATION	DIST	TOTAL EXCAVATION EARTH AND ROCK AREA	TOTAL EXCAVATION EARTH AND ROCK CU. YDS.	ROCK EXCAVATION AREA	ROCK EXCAVATION CU. YDS.	EMBANKMENT AREA	EMBANKMENT CU. YDS.		
RELOCATED WORCESTER AVENUE									
								CUT=	1486.1
0+50		399.7						FILL=	0
	50		464.9					F-FAC=	1.15
1+00		102.4							
	50		170.0					EX_C=	1486.1
1+50		81.3							
	50		149.5						
2+00		80.2							
	50		149.7						
2+50		81.5							
	50		281.3						
3+00		222.3							
	37.5		270.7						
3+37		167.5							
WORCESTER AVENUE									
5+25		173.0						CUT=	279.9
	25		143.0					FILL=	0
5+50		135.8						F-FAC=	1.15
	35		136.9						
5+85		75.4						EX_C=	279.9
HIGHLAND AVENUE									
10+33		490.0							
	17		302.2						
10+50		470.0							
	50		708.3						
11+00		295.0							
	50		515.6						
11+50		261.9						CUT=	2414.7
	50		387.0					FILL=	0
12+00		156.1						F-FAC=	1.15
	50		228.8						
12+50		91.0						EX_C=	2414.7
	50		145.1						
13+00		65.7							
	50		94.3						
13+50		36.1							
	50		33.4						
14+00		0.0							
SCHOOL ENTRANCE									
								CUT=	349.2
15+30		292.3						FILL=	0
	20		165.9					F-FAC=	1.15
15+50		155.7							
	45		183.3					EX_C=	349.2
15+95		64.3							
HEBARD AVENUE								CUT=	370.3
								FILL=	0
20+35		173.0						F-FAC=	1.15
	15		79.3						
20+50		112.6						EX_C=	370.3
	50		180.8						
21+00		82.7							
	40		110.1						
21+40		66.0							
SAUNDERS AVENUE									
25+20		213.5							
	30		192.4					CUT=	490.3
25+50		132.9						FILL=	0
	50		204.9					F-FAC=	1.15
26+00		88.4							
	50		93.0					EX_C=	490.3
26+50		12.1							
PIERCE STREET									
								CUT=	296.8
30+20		185.0						FILL=	0
	30		159.0					F-FAC=	1.15
30+50		101.1							
	50		137.8					EX_C=	296.8
31+00		47.7							

STATION	DIST	TOTAL EXCAVATION EARTH AND ROCK AREA	TOTAL EXCAVATION EARTH AND ROCK CU. YDS.	ROCK EXCAVATION AREA	ROCK EXCAVATION CU. YDS.	EMBANKMENT AREA	EMBANKMENT CU. YDS.		
GOUDREAU STREET									
								CUT=	331.0
35+20		195.0						FILL=	0
	30		173.4					F-FAC=	1.15
35+50		117.1							
	50		157.6					EX_C=	331.0
36+00		53.1							
DEVIN STREET									
								CUT=	297.2
40+20		200.0						FILL=	0
	30		161.2					F-FAC=	1.15
40+50		90.2							
	50		136.0					EX_C=	297.2
41+00		56.7							
ADVENT LN.									
								CUT=	265.3
45+20		163.0						FILL=	0
	30		140.0					F-FAC=	1.15
45+50		89.0							
	50		125.4					EX_C=	265.3
46+00		46.4							
HEWITT STREET									
								CUT=	192.7
50+20		160.0						FILL=	0
	30		128.0					F-FAC=	1.15
50+50		70.4							
	25		64.7					EX_C=	192.7
50+75		69.4							

EXCAVATION FOR TOPSOIL (MOD.) = 3054 CY (ADDED TO MAINLINE TOTALS)

STATION	DIST	TOTAL EXCAVATION EARTH AND ROCK AREA	TOTAL EXCAVATION EARTH AND ROCK CU. YDS.	ROCK EXCAVATION AREA	ROCK EXCAVATION CU. YDS.	EMBANKMENT AREA	EMBANKMENT CU. YDS.	AREA	CU. YDS.

SUMMARY AND BALANCES

STATION TO STATION		TOTAL EXCAV EARTH & ROCK	ROCK EXCAV CUBIC YARDS	EMBANKMENT CUBIC YARDS	EXCESSES CUT	EXCESSES FILL	ACCUMULATIVE EXCESSES CUT	ACCUMULATIVE EXCESSES FILL
RELOCATED WORCESTER AVENUE								
0+50	3+37	1486.1			1486.1		29559.3	
WORCESTER AVENUE								
5+22	5+85	279.9			279.9		29839.2	
HIGHLAND AVENUE								
10+32	14+00	2414.7			2414.7		32253.9	
SCHOOL ENTRANCE								
15+36	15+95	349.2			349.2		32603.1	
HEBARD AVENUE								
20+35	21+40	370.3			370.3		32973.4	
SAUNDERS AVENUE								
25+21	26+50	490.3			490.3		33463.7	
PIERCE STREET								
30+21	31+00	296.8			296.8		33760.5	
GOUDREAU STREET								
35+21	36+00	331.0			331.0		34091.5	
DEVIN STREET								
40+21	41+00	297.2			297.2		34388.7	
ADVENT LANE								
45+21	46+00	265.3			265.3		34654.0	
HEWITT STREET								
50+21	50+75	192.7			192.7		34846.7	
MAINLINE TOTALS		37818.2		5818.4				
SIDE STREET TOTALS		6773.5		0				
DRIVES		1079.0		0				

REMOVAL OF REINORCED CONCRETE PAVEMENT 1650 (SUBTRACT FROM TOTAL MAINLINE EXCAVATION)
(EST. FROM 1931 RECORD PLANS)

- NO FACTOR FOR ROCKS AS THE ROCK IS PORTLAND CEMENT CONCRETE PAVEMENT

REMARKS	
EARTH AND ROCK EXCAVATION	
SOLID ROCK EXCAVATION (CONC. PVMT. EST. FROM 1931 REC. PLANS)	
EARTH EXCAVATION	
PLANIMETERED FILL	
LESS FACTORED SOLID ROCK	
LESS DISPLACEMENT OF ANY LARGE STRUCTURES	
NET PLANIMETERED FILL	
FACTOR	1.15
PLANIMETERED FILL INCLUDING FACTOR	
MATERIALS AVAILABLE FOR FILLS	
EARTH EXCAVATION	
CHANNEL EXCAVATION	
UNDERDRAIN EXCAVATION	
STRUCTURE EXCAVATION	
TOTAL MATERIAL AVAILABLE FOR FILL	
TOTAL FILL INCLUDING FACTOR	
TOTAL MATERIAL FOR FILL	
BORROW	
EXCESS EXCAVATION	

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027qty.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: E. ATKINS/K. ISHIKURA

PLOT DATE: 1/11/2007
DRAWN BY: A. DUMITRU
CHECKED BY: K. ISHIKURA
SHEET 16 OF 239

STATE OF VERMONT
AGENCY OF TRANSPORTATION

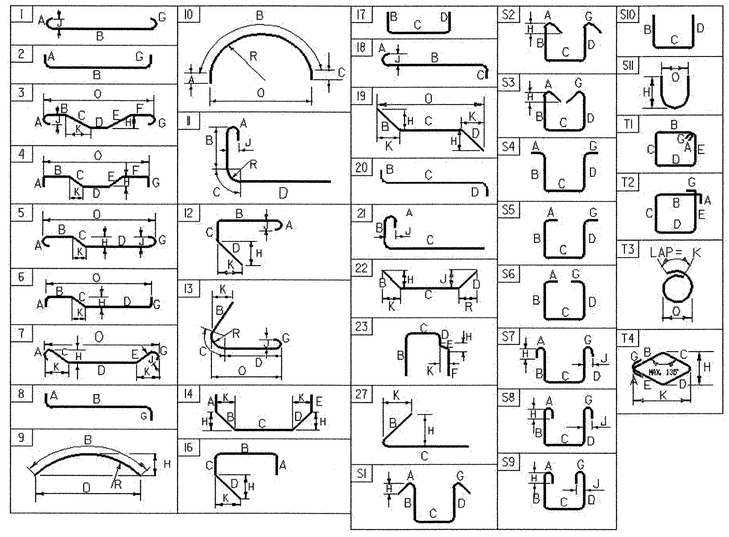
REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
BARNES AVENUE RETAINING WALL COPING																	
△	56	4	28'- 9"	1EW401	STR												
	260	4	3'- 7"	1EW402	17		0'- 7"	1'- 11"	1'- 1"								
	260	4	2'- 2"	1EW403	21	0'- 7"	0'- 8"	1'- 0"						0'- 5"			
CAST-IN-PLACE CONCRETE HEADWALL AT STORMWATER OUTFALL																	
✳	16	5	9'- 1"	2EW501	17		0'- 7"	0'- 9"	7'- 9"								
✳ ▲	15	5	9'- 1"	2EW502	17		0'- 7"	0'- 9"	9'- 1"								
✳	12	5	27'- 10"	2EW503	22		6'- 4"	15'- 2"	6'- 4"								

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES^2	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS 0113(40)**

FILE NAME: **Z86C027REINF.XLS**
PROJECT MANAGER: **KEN UPMAL, PE**
DESIGNED BY: **E. ATKINS**
REINFORCING STEEL SCHEDULE SHEET #1

PLOT DATE: **11/22/2006**
DRAWN BY: **E. ATKINS**
CHECKED BY: **KO ISHIKURA**
SHEET **17** OF **239**

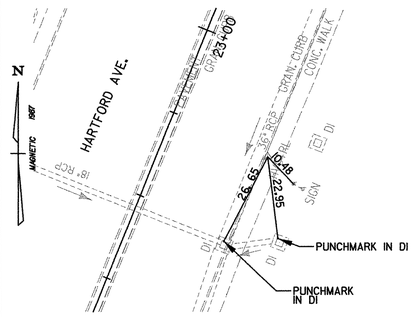
TRAVERSE TIES

TRAV. 1

NORTH = 10,103.676

EAST = 50,079.067

ELEV. = 357.73

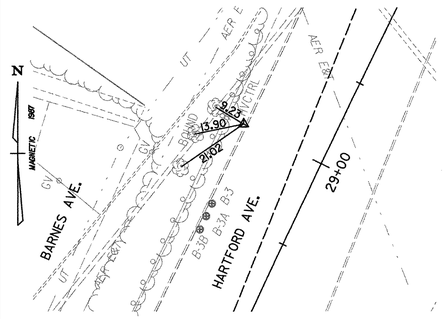


TRAV. 2

NORTH = 10,703.407

EAST = 50,272.685

ELEV. = 398.81

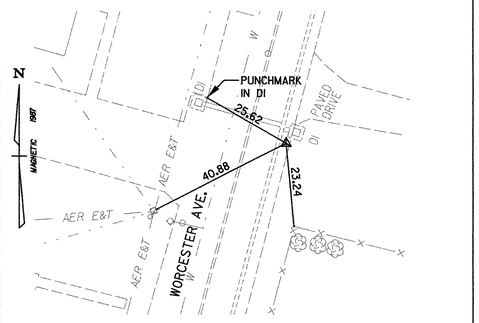


TRAV. 3

NORTH = 10,952.811

EAST = 50,747.803

ELEV. = 489.38

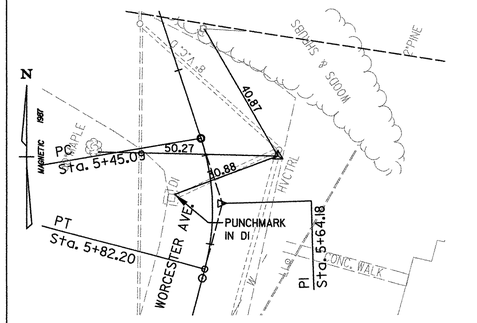


TRAV. 4

NORTH = 11,297.196

EAST = 50,839.410

ELEV. = 489.75

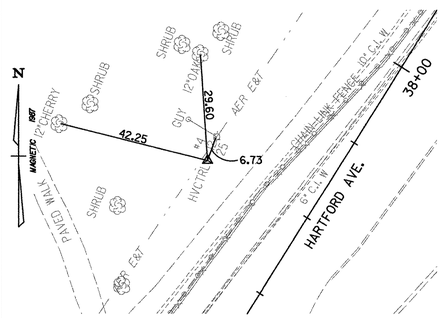


TRAV. 5

NORTH = 11,440.759

EAST = 50,696.991

ELEV. = 486.38

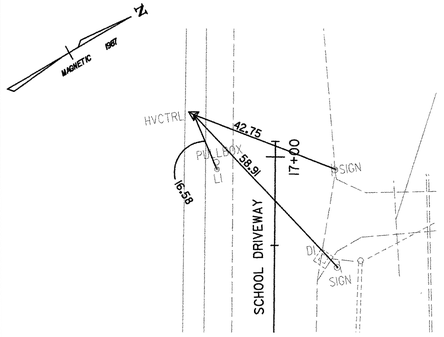


TRAV. 6

NORTH = 11,604.339

EAST = 50,436.992

ELEV. = 499.09

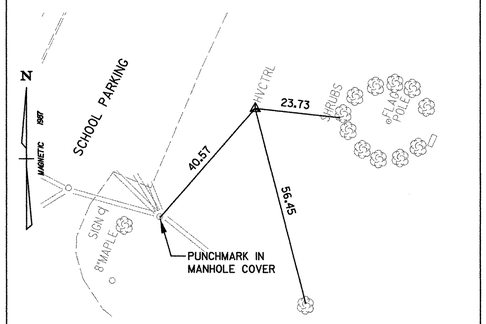


TRAV. 7

NORTH = 11,862.206

EAST = 50,208.992

ELEV. = 503.74

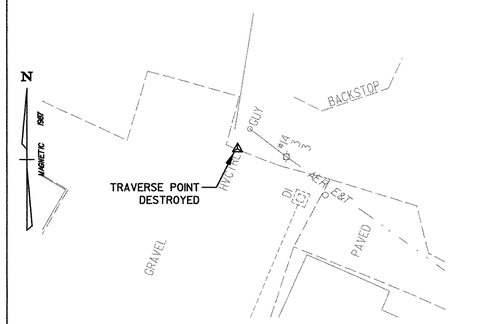


TRAV. 8

NORTH = 11,790.459

EAST = 50,519.907

ELEV. = 500.78



0 20 40

SCALE IN FEET

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT: HARTFORD

PROJECT NO.: RS 0113(40)

DESIGN FILE NAME: z86c027ties.DGN

IPARM FILE NAME:

SURVEYED BY: FANTONI

SQUAD LEADER: KEN UPMAL

PLOT DATE: 1/5/2007

SURVEY DATE: 1/87

DRAWN BY: E. ATKINS

SHEET: 18 OF 239

TIE SHEET 1

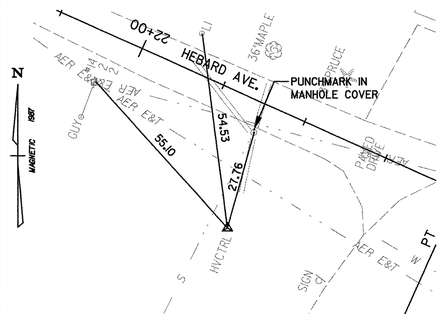
TRAVERSE TIES

TRAV. 9

NORTH = 11659.848

EAST = 50691.740

ELEV. = 490.34

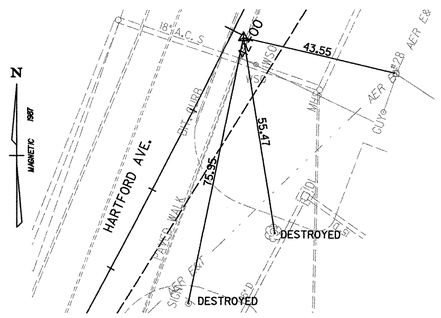


TRAV. 10

NORTH = 12320.975

EAST = 50954.523

ELEV. = 490.37

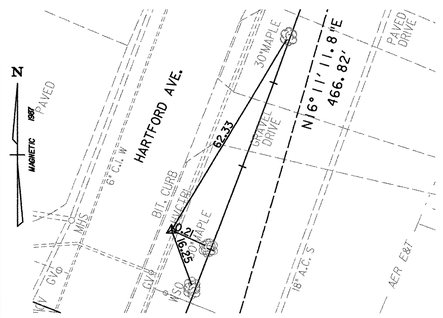


TRAV. 11

NORTH = 12115.238

EAST = 51072.922

ELEV. = 491.36

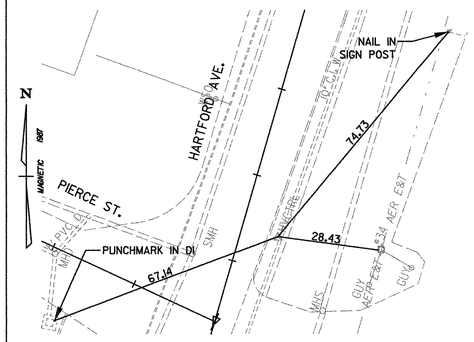


TRAV. 12

NORTH = 12496.702

EAST = 51220.478

ELEV. = 492.36

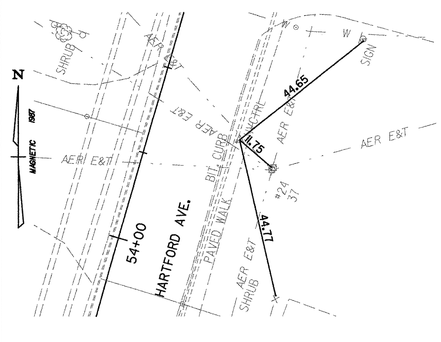


TRAV. 13

NORTH = 12973.654

EAST = 51374.174

ELEV. = 490.97

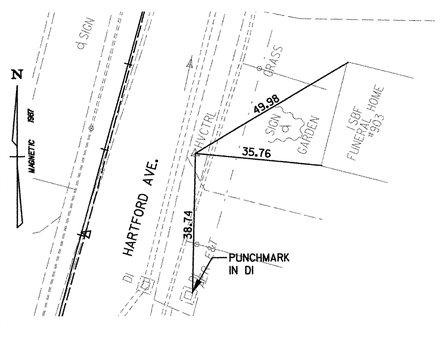


TRAV. 14

NORTH = 13281.519

EAST = 51461.787

ELEV. = 489.36

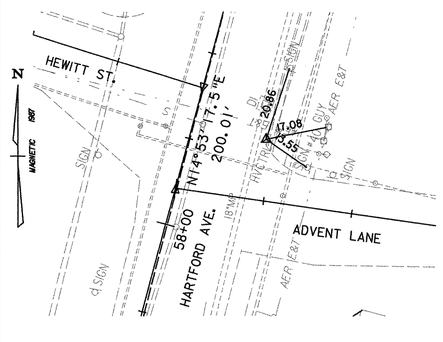


TRAV. 15

NORTH = 13354.714

EAST = 51477.824

ELEV. = 490.26



DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

0 20 40

SCALE IN FEET

PROJECT: HARTFORD

PROJECT NO.: RS 0113(40)

DESIGN FILE NAME: z86c027ties.DGN

IPARM FILE NAME:

SURVEYED BY: FANTONI

SQUAD LEADER: KEN UPMAL

PLOT DATE: 1/5/2007

SURVEY DATE: 1/87

DRAWN BY: E. ATKINS

SHEET: 19 OF 239

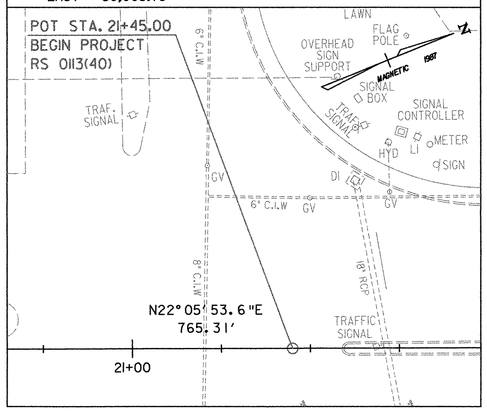
TIE SHEET 2

ALIGNMENT TIES

U.S. RTE 5 POT STA. 21+45.00
BEGIN PROJECT RS 0113(40)

NORTH = 9,995.59

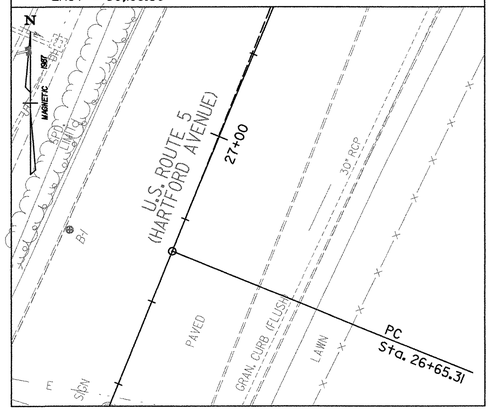
EAST = 50,003.76



U.S. RTE 5 PC STA. 26+65.31

NORTH = 10,477.68

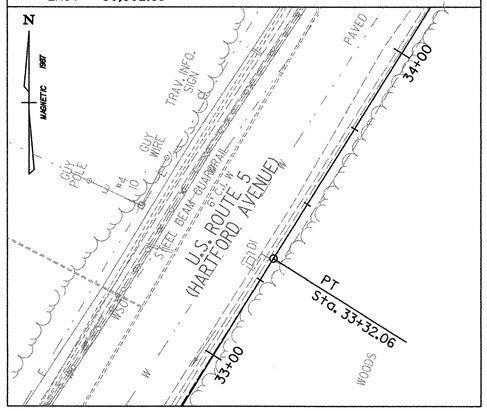
EAST = 50,199.50



U.S. RTE 5 PT STA. 33+32.06

NORTH = 11,070.49

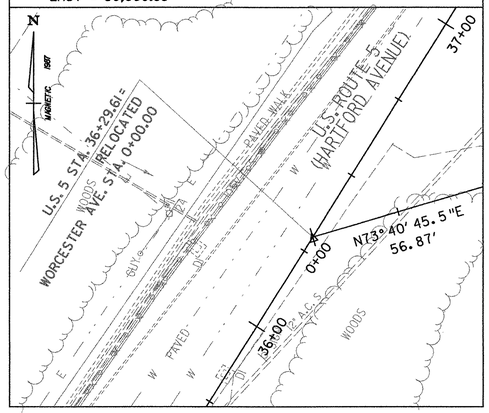
EAST = 50,502.83



U.S. RTE 5 POT STA. 36+29.61 = REL. WORC. AVE. STA. 0+00.00

NORTH = 11,322.54

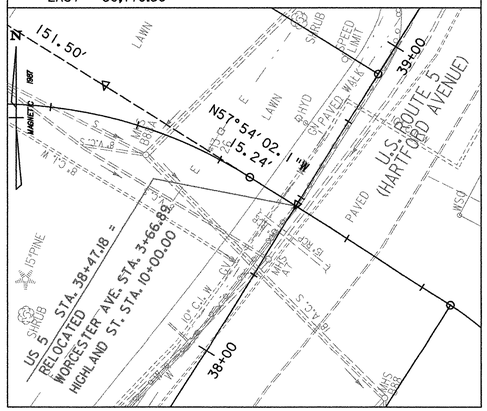
EAST = 50,660.95



U.S. RTE 5 POT STA. 38+47.18 = REL. WORC. AVE. STA. 3+66.89 HIGHLAND AVE. STA. 10+00.00

NORTH = 11,506.86

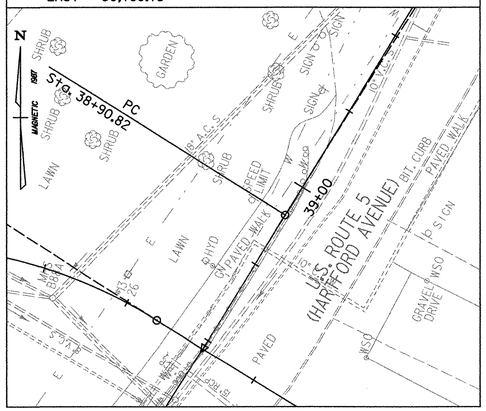
EAST = 50,776.56



U.S. RTE 5 PC STA. 38+90.82

NORTH = 11,543.83

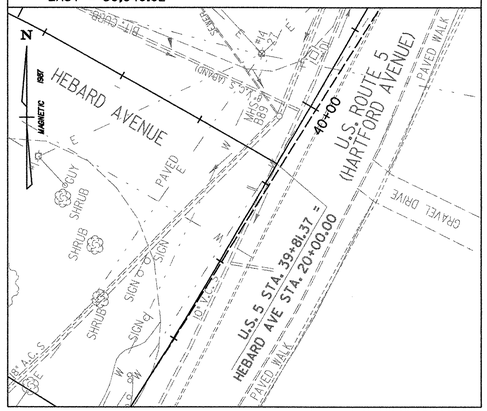
EAST = 50,799.75



U.S. RTE 5 POC STA. 39+81.37 = HEBARD AVE. STA. 20+00.00

NORTH = 11,621.17

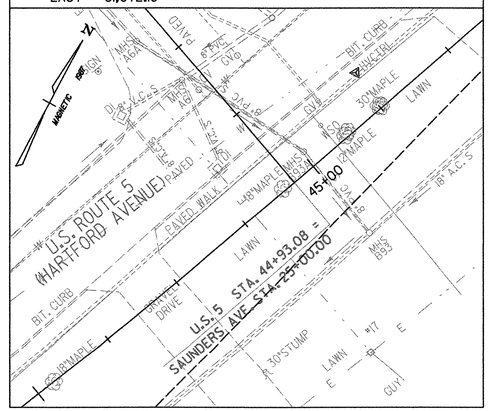
EAST = 50,846.82



U.S. RTE 5 POC STA. 44+93.08 = SAUNDERS AVE. STA. 25+00.00

NORTH = 12,080.03

EAST = 51,072.18



TIE SHEET 3

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

0 20 40

SCALE IN FEET

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027ties.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL

PLOT DATE: 1/5/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 20 OF 239

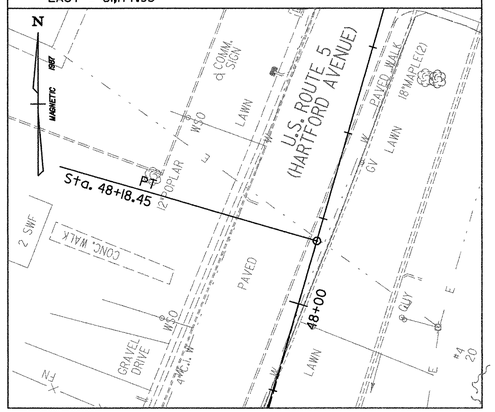
TIE SHEET 4

ALIGNMENT TIES

U.S. RTE 5 PT STA. 48+18.45

NORTH = 12,387.59

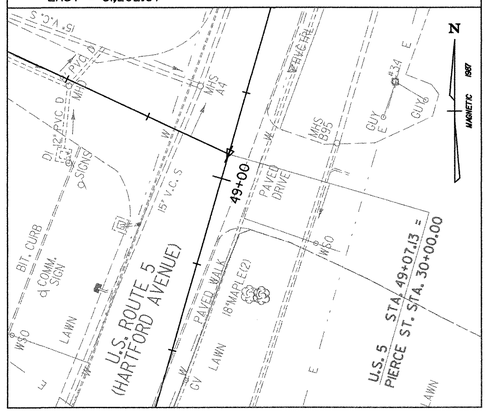
EAST = 51,177.95



U.S. RTE 5 POT STA. 49+07.13 = PIERCE ST. STA. 30+00.00

NORTH = 12,472.76

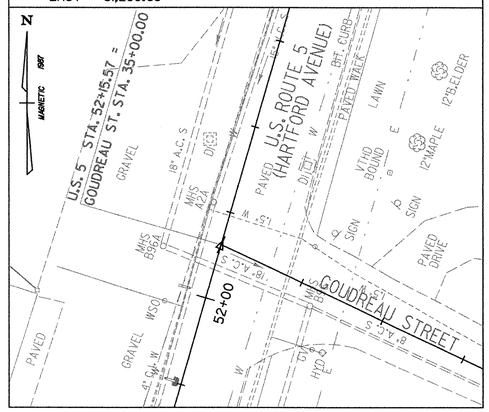
EAST = 51,202.67



U.S. RTE 5 POT STA. 52+15.57 = GOUDREAU ST. STA. 35+00.00

NORTH = 12,768.97

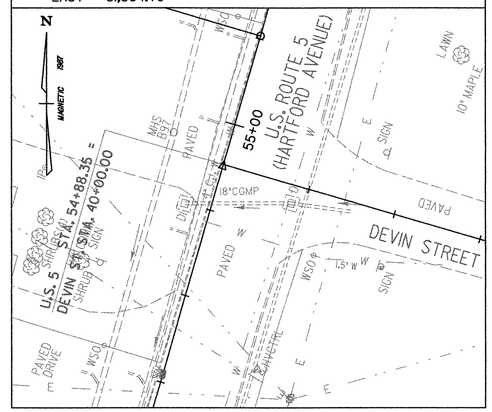
EAST = 51,288.65



U.S. RTE 5 POT STA. 54+88.35 = DEVINS ST. STA. 40+00.00

NORTH = 13,030.94

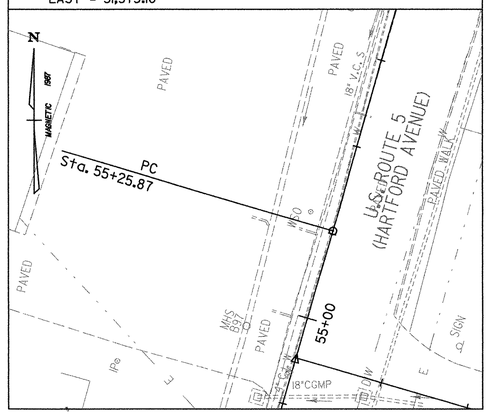
EAST = 51,364.70



U.S. RTE 5 PC STA. 55+25.87

NORTH = 13,066.98

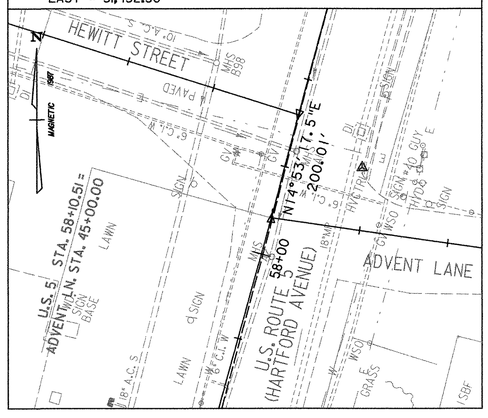
EAST = 51,375.16



U.S. RTE 5 POC STA. 58+10.51 = ADVENT LN. STA. 45+00.00

NORTH = 13,340.96

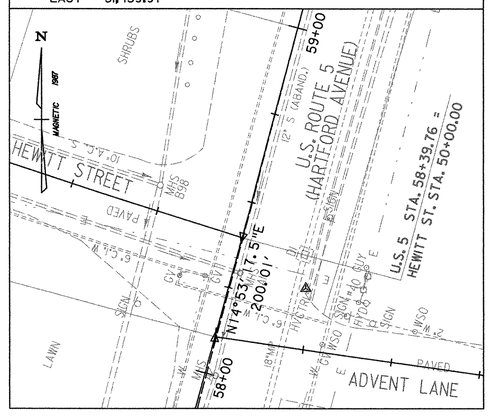
EAST = 51,452.30



U.S. RTE 5 POC STA. 58+39.76 = HEWITT ST. STA. 50+00.00

NORTH = 13,369.18

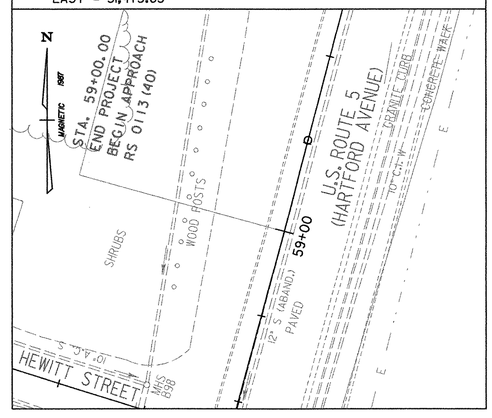
EAST = 51,459.97



U.S. RTE 5 POC STA. 59+00.00 END PROJECT RS 0113(40) BEGIN APPROACH

NORTH = 13,427.35

EAST = 51,475.63



0 20 40

SCALE IN FEET

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027t1es.DGN

IPARM FILE NAME:

SURVEYED BY: FANTONI

SQUAD LEADER: KEN UPMAL

PLOT DATE: 1/5/2007

SURVEY DATE: 1/87

DRAWN BY: E. ATKINS

SHEET: 21 OF 239

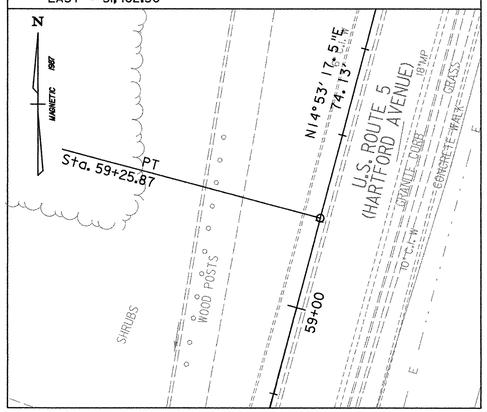
TIE SHEET 5

ALIGNMENT TIES

U.S. RTE 5 PT STA. 59+25.87

NORTH = 13,452.35

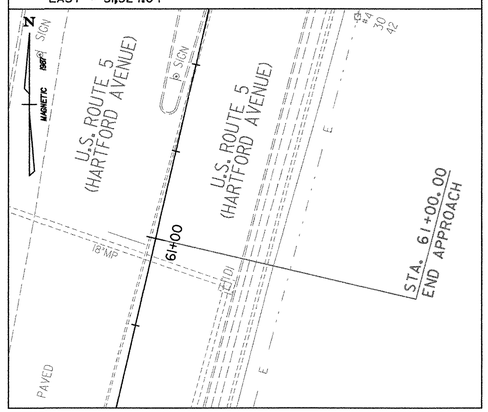
EAST = 51,482.30



U.S. RTE 5 POT STA. 61+00.00 END APPROACH

NORTH = 13,621.38

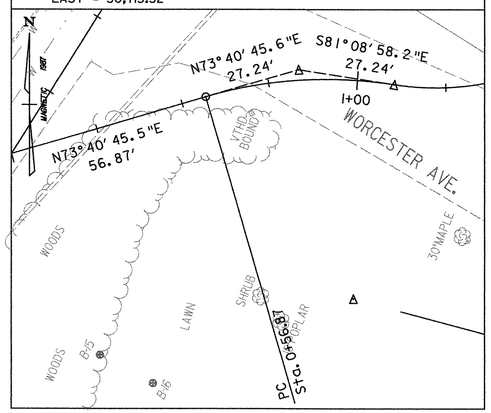
EAST = 51,524.04



RELOCATED WORCESTER AVE. PC STA. 0+56.87

NORTH = 11,338.53

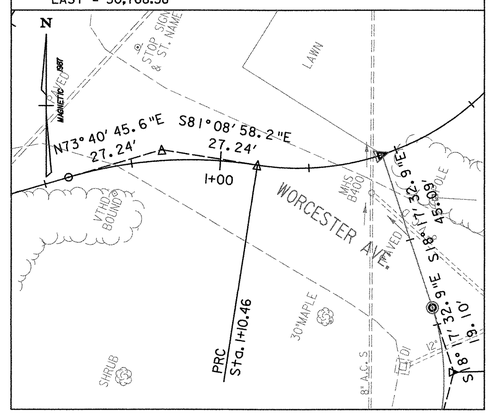
EAST = 50,715.52



RELOCATED WORCESTER AVE. PRC STA. 1+10.46

NORTH = 11,341.99

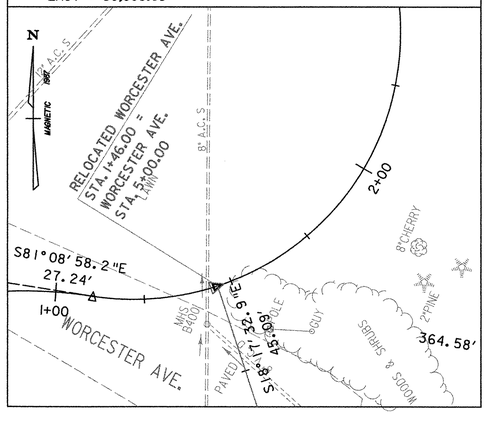
EAST = 50,768.58



RELOCATED WORCESTER AVE. POC STA. 1+46.00 = WORCESTER AVE. STA. 5+00.00

NORTH = 11,344.89

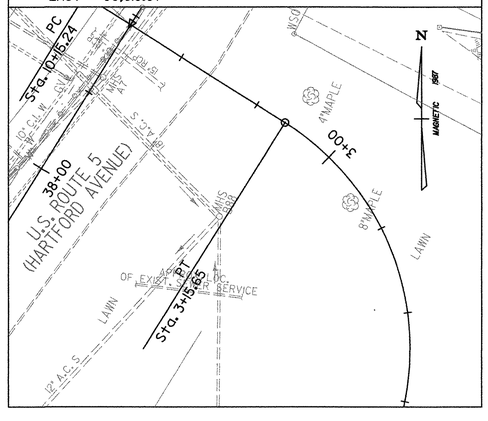
EAST = 50,803.65



RELOCATED WORCESTER AVE. PT STA. 3+15.65

NORTH = 11,479.63

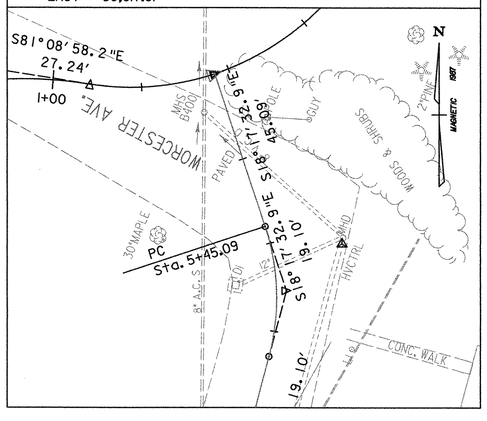
EAST = 50,819.97



WORCESTER AVE. PC STA. 5+45.09

NORTH = 11,302.08

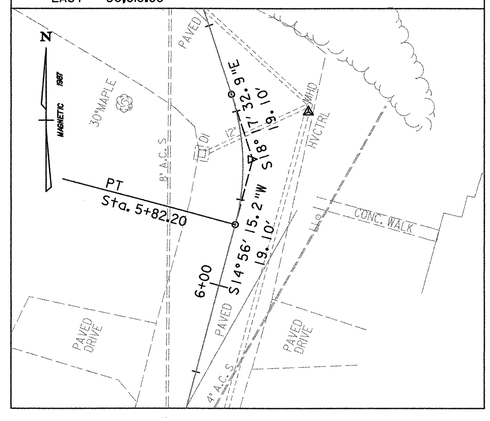
EAST = 50,817.81



WORCESTER AVE. PT STA. 5+82.20

NORTH = 11,265.49

EAST = 50,818.88



0 20 40

SCALE IN FEET

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027+1es.DGN

IPARM FILE NAME:

SURVEYED BY: FANTONI

SQUAD LEADER: KEN UPMAL

PLOT DATE: 1/5/2007

SURVEY DATE: 1/87

DRAWN BY: E. ATKINS

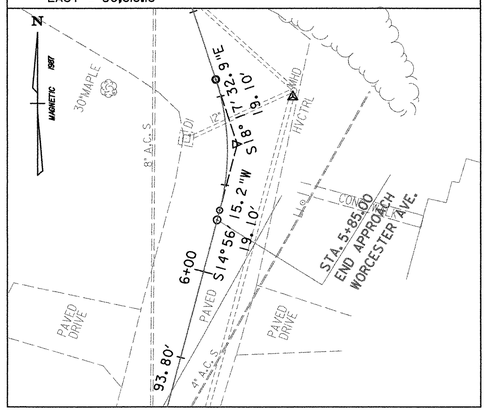
SHEET: 22 OF 239

ALIGNMENT TIES

WORCESTER AVE.
POT STA. 5+85.00

NORTH = 11,262.79

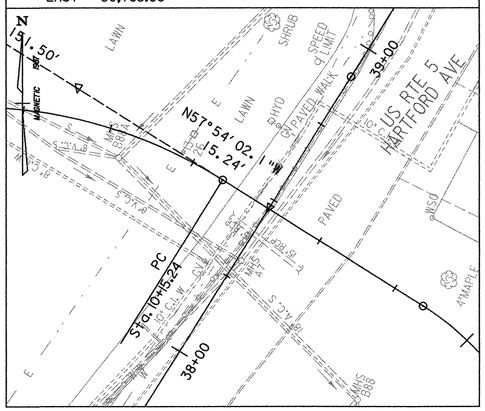
EAST = 50,818.16



HIGHLAND AVENUE
PC STA. 10+15.24

NORTH = 11,514.95

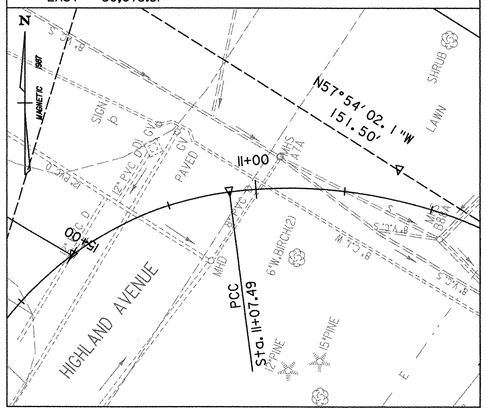
EAST = 50,763.66



HIGHLAND AVENUE
PCC STA. 11+07.49

NORTH = 11,534.34

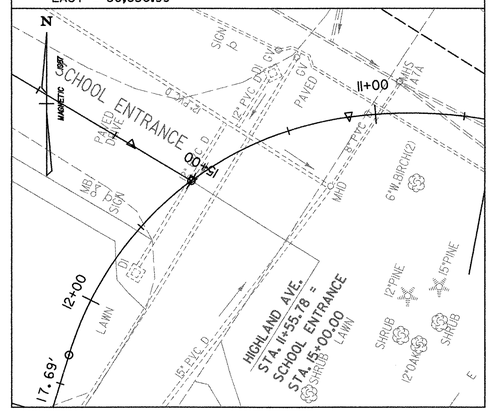
EAST = 50,675.31



HIGHLAND AVENUE
POC STA. 11+55.78 =
SCHOOL ENTRANCE STA. 15+00.00

NORTH = 11,516.51

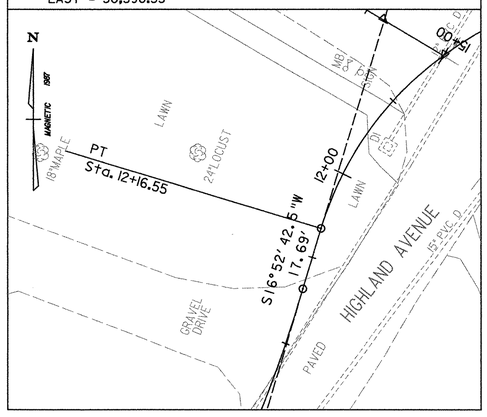
EAST = 50,630.99



HIGHLAND AVENUE
PT STA. 12+16.55

NORTH = 11,467.70

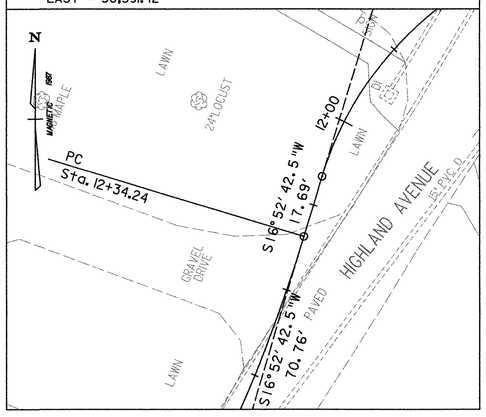
EAST = 50,596.55



HIGHLAND AVENUE
PC STA. 12+34.24

NORTH = 11,450.77

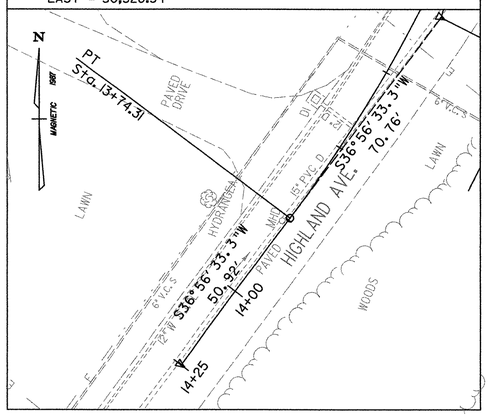
EAST = 50,591.42



HIGHLAND AVENUE
PT STA. 13+74.31

NORTH = 11,326.50

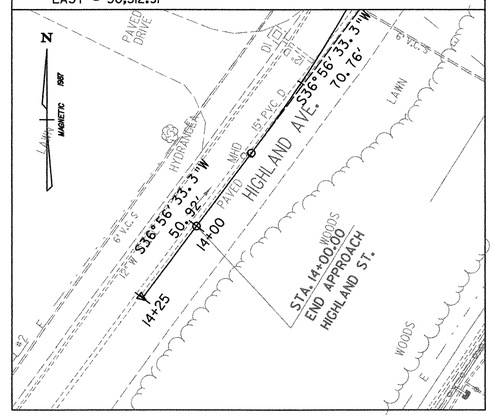
EAST = 50,528.34



HIGHLAND AVENUE
POT STA. 14+00.00
END APPROACH

NORTH = 11,305.98

EAST = 50,512.91



0 20 40

SCALE IN FEET

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT: HARTFORD

PROJECT NO.: RS 0113(40)

DESIGN FILE NAME: z86c027tles.DGN

IPARM FILE NAME:

SURVEYED BY: FANTONI

SQUAD LEADER: KEN UPMAL

PLOT DATE: 1/5/2007

SURVEY DATE: 1/87

DRAWN BY: E. ATKINS

SHEET: 23 OF 239

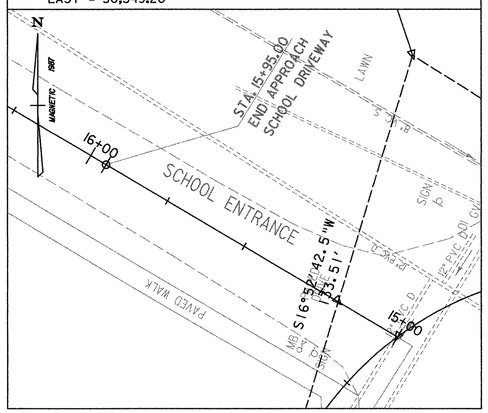
TIE SHEET 6

ALIGNMENT TIES

SCHOOL ENTRANCE
POT STA. 15+95.00
END APPROACH

NORTH = 11,564.83

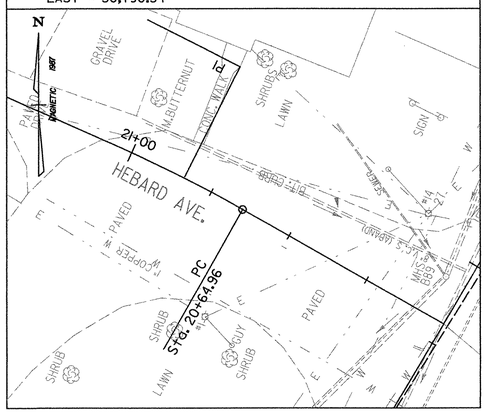
EAST = 50,549.20



HEBARD AVENUE
PC STA. 20+64.96

NORTH = 11,653.26

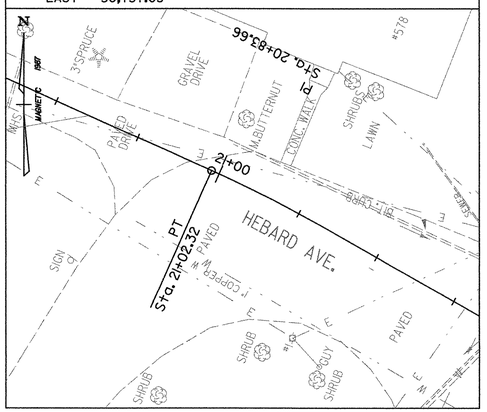
EAST = 50,790.34



HEBARD AVENUE
PT STA. 21+02.32

NORTH = 11,670.13

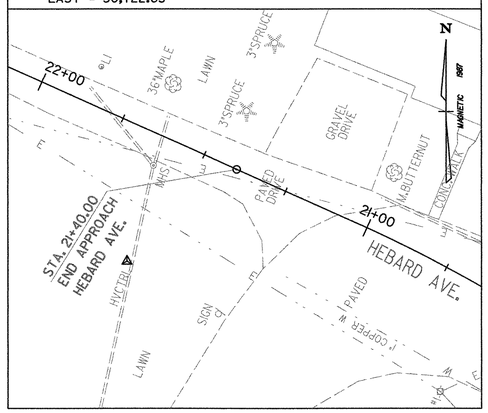
EAST = 50,757.03



HEBARD AVENUE
POT STA. 21+40.00
END APPROACH

NORTH = 11,685.53

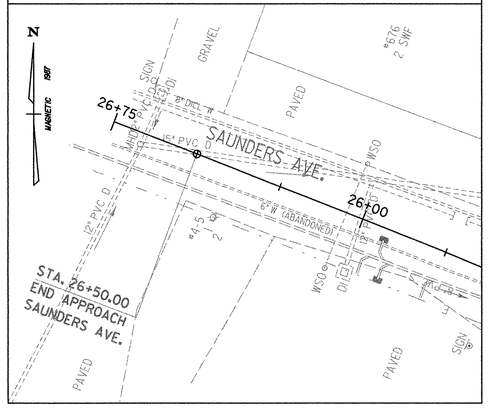
EAST = 50,722.63



SAUNDERS AVENUE
POT STA. 26+50.00
END APPROACH

NORTH = 12,134.62

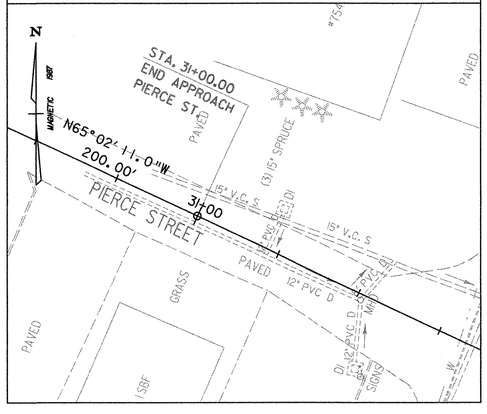
EAST = 50,932.47



PIERCE STREET
POT STA. 31+00.00
END APPROACH

NORTH = 12,514.96

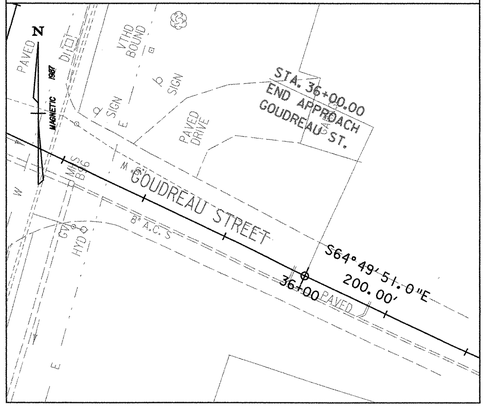
EAST = 51,112.01



GOUDREAU STREET
POT STA. 36+00.00
END APPROACH

NORTH = 12,726.44

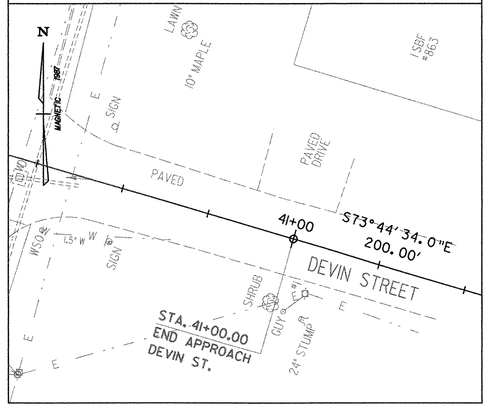
EAST = 51,379.16



DEVIN STREET
POT STA. 41+00.00
END APPROACH

NORTH = 13,002.94

EAST = 51,460.70



TIE SHEET

0 20 40

SCALE IN FEET

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027ties.DGN	
IPARM FILE NAME:	PLOT DATE: 1/11/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 24 OF 239

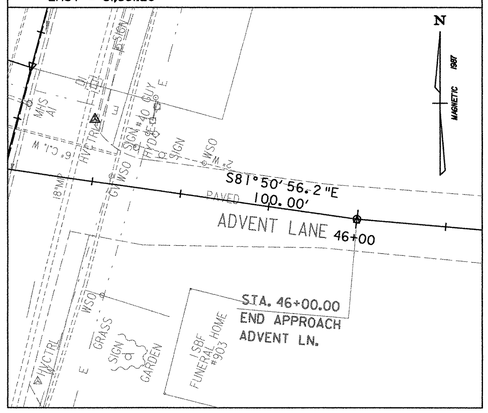
TIE SHEET 8

ALIGNMENT TIES

ADVENT LANE
POT STA. 46+00.00
END APPROACH

NORTH = 13,326.78

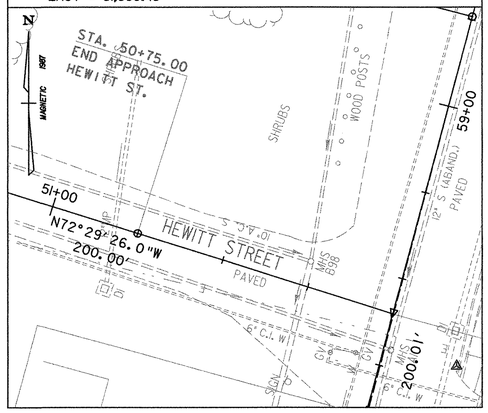
EAST = 51,551.29



HEWITT STREET
POT STA. 50+75.00
END APPROACH

NORTH = 13,391.75

EAST = 51,388.45



0 20 40

SCALE IN FEET

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027ties.DGN

IPARM FILE NAME:

SURVEYED BY: FANTONI — PLOT DATE: 1/5/2007

SQUAD LEADER: KEN UPMAL — SURVEY DATE: 1/87

DRAWN BY: E. ATKINS

SHEET: 25 OF 239

STATE OF VERMONT

AGENCY OF TRANSPORTATION

RIGHT OF WAY PLANS

ALPHABETICAL INDEX

GRANTOR	SHEET NO.	PARCEL NO.
A-C		
Alvin, Joe & Marie	47,56,58	13
Bernal, Eugene J. & Deborah E.	51,60	32
Blake, Carole I.	46,54,55	5
Blodgett Supply Co., Inc.	48,58	15
Carter, Derrol N. & Theresa A.	46,55	6
D-G		
Dauphinais, Timothy J.	47,55	10
	56,57	
Donahue, William J. & Katherine C.	50,60	27
Duclos, Stephen G. & Williams , Barbara J.	49,59	22
Gilbert, Kendall S. & Linda R.	46,55	7
H-K		
Hartford Land Company	46,53,	2
Henderson, Peter J. & Ellen C.	47,56	11
Hodgdon, Gary P. & Roberta W.	47,55	8
Knight & Knight Trust	51,61	35

GRANTOR	SHEET NO.	PARCEL NO.
L-P		
Lerner, Sheryl Rubin	47,55	9
Lillian Fellows-Abbott Trust-DELETED	50,60	28
Mascoma Savings Bank	46,53	1
Maintenance Agreement Zones / Town		
No. 1 Worcester Ave.	52,56	
No. 2 Worcester Ave.	52,56	
No. 3 Highland Ave.	52,56	
No. 4 Hebard Ave.	52,56	
No. 5 Saunders Ave.	52,58	
No. 6 Pierce St.	52,59	
No. 7 Goudreau St.	52,60	
No. 8 Devin St.	52,60	
No. 9 Advent Lane	52,61	
No. 10 Hewitt St.	52,61	
McDonald, Robert H. & Susan M.	49,58	17
McGinn, James R. & Martha E.-DELETED	51,60	31
Morris, Michael J. & Morris, Phyllis B.	49,58,59	18
Morris, Phyllis B. & Morris, Michael J.	49,58,59	18
M. T. Associates	51,61	36
Musty, Bill & Brenda	51,60,61	33
Niely & Spann Trust	47,56,58	12
Pitsey, Arthur J.	49,59	23

GRANTOR	SHEET NO.	PARCEL NO.
Q-R		
Relinquishments To Town of Hartford		
# I Barnes Ave. & Hazen St.	52,53,54	
# II Highland Ave, Hebard Ave. & School St.	52,56	
# III Worcester Ave.	52,56,57	
Richard, Margaret B.	49,59	19
Richard, Margaret B. & Richard, Steven L.	49,59	20
Richard, Margaret B.	49,59,	21
Richard, Steven L. & Richard, Margaret B.	49,59	20
S-T		
Simon, Melvin M.	50,60	29
Smith, Bjorn E.	46,54	3
Smith, Everett J. & Sandra F.	46,54,55	4
Spann & Neily Trust	47,56,58	12
St. Paul's Episcopal Church	50,59,60	25
Taft Group, LLC, The	48,58	14
Town of Hartford	48,55,57	16A
Approaches; Hebard Ave.	48,56	16B
Saunders Ave.	48,58	16C
Pierce St.	48,59	16D
Goudreau St.	48,60	16E
Devin St.	48,60	16F
Advent Lane	48,61	16G
Hewitt St.	48,61	16H

GRANTOR	SHEET NO.	PARCEL NO.
U-Z		
Upper Valley Haven Inc.	48,59	24
Utilities;		
Green Mountain Power Corp.		37
Verizon New England Inc.		38
Adelphia Cable Communications		39
Town of Hartford (sewer & water)		40
Veremedy, LLC	50,60	30
Vincent, Nancy A.	49,59,60	26
Williams, Barbara J. & Duclos, Stephen G.	49,59	22
Wilson, Stephen G.	51,61	34

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04-DEC-2006

HARTFORD
RS 0113 (40)
ROW SHEET 45 OF 62 SHEET 26 OF 239

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA±	AREA±	TYPE	(T)(P)	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
1	MASCOMA SAVINGS BANK,FSB	53	22+30.86 LT.	20+68.30 LT.			SLOPE	(T)	13.1 SF						
			22+46.87 LT.				CULVERT	(P)							INCLUDES DROP INLET
			22+41.99 LT.	22+51.20 LT.			INSTALL	(T)							EROSION CONTROL
2	HARTFORD LAND COMPANY	53	22+02.84 RT.	23+82.18 RT.			SLOPE	(T)	302.5 SF						INCLUDES PDF
			22+49.95 RT.				INSTALL & MAINT.	(P)							DROP INLET
			22+02.84 RT.	23+75.21 RT.			INSTALL	(T)							CURB
			23+75.19 RT.	24+47.88 RT.			INSTALL	(T)							EROSION CONTROL & PDF
3	SMITH, BJORN E.	54	27+01.13 LT.	27+10.44 LT.			INSTALL	(T)							EROSION CONTROL
4	SMITH, EVERETT J. & SANDRA F.	54,55	28+91.16 LT.	33+05.42 LT.	0.24A										
			28+91.22 LT.	29+13.64 LT.			SLOPE	(T)	213.1 SF						
			28+91.24 LT.	29+13.64 LT.			INSTALL	(T)	163.1 SF						EROSION CONTROL & PDF
			28+91.24 LT.	29+13.64 LT.			LANDSCAPE	(T)							TREES/SHRUBS
5	BLAKE, CAROLE I.	54,55	30+26.00 RT.	30+67.81 RT.			INSTALL & MAINTAIN	(P)	353.3 SF	WD	06/19/06	HARTFORD	404	650-	SOIL ANCHORS
			30+04.90 RT.	30+71.94 RT.			INSTALL	(T)						651	MODIFIED PDF FENCE
			30+13.58 RT.	30+70.74 RT.			LANDSCAPE	(T)							TREES/SHRUBS
			30+13.75 RT	30+70.94 RT			SLOPE	(P)	884.2 SF						
6	CARTER, DERROL N. & THERESA A.	55	30+65.68 RT.	31+75.07 RT.			INSTALL & MAINTAIN	(P)	0.07 A						SOIL ANCHORS
			30+71.94 RT.	31+73.17 RT.			INSTALL	(T)							MODIFIED PDF FENCE
			30+65.76 RT.	31+72.25 RT.			LANDSCAPE	(T)							TREES/SHRUBS
			30+65.68 RT.	31+71.49 RT			SLOPE	(P)	1501.1 SF						
7	GILBERT, KENDALL S. & LINDA R.	55	31+65.58 RT.	32+80.88 RT.			INSTALL & MAINTAIN	(P)	0.24 A						SOIL ANCHORS
			31+73.07 RT.	32+70.92 RT.			INSTALL	(T)							MODIFIED PDF FENCE
			31+65.68 RT.	32+70.52 RT.			LANDSCAPE	(T)							TREES/SHRUBS
			32+36.23 RT.	32+66.16 RT.			DIT. & DR.	(P)	5.3 SF						
			31+65.58 RT.	32+70.37 RT			SLOPE	(P)	2279.3 SF						

TABLE OF REVISIONS

REVISION NO.	SHEET NO.	DESCRIPTION	DATE
1	46,55	PARCEL NO. 5 BLAKE. ADD SLOPE (P) AT STA. 30+13.75 RT.	06/23/06
		~ 30+70.94 RT.; 884.2 SF±. REMOVE 1967 SLOPE LIMITS THAT	
		ARE ON THE LAYOUTS. PER C.O. 9457.	
		MADE BY: JAB APPROVED BY: RPD	
2	46,55	PARCEL NO. 6 CARTER. ADD SLOPE (P) AT STA. 30+65.68 RT.	06/23/06
		~ 31+74.49 RT.; 1501.1 SF±. REMOVE 1967 SLOPE LIMITS THAT	
		ARE ON THE LAYOUTS. PER C.O. 9458.	
		MADE BY: JAB APPROVED BY: RPD	
3	46,55	PARCEL NO. 7 GILBERT. ADD SLOPE (P) AT STA. 31+65.58 RT.	06/23/06
		~ 32+70.37 RT.; 2279.3 SF±. REMOVE 1967 SLOPE LIMITS THAT	
		ARE ON THE LAYOUTS. PER C.O. 9459.	
		MADE BY: JAB APPROVED BY: RPD	
4	47,55	PARCEL NO. 8 HODGDON. ADD SLOPE (P) AT STA. 32+66.25	06/23/06
		RT. ~ 33+65.97 RT.; 1359.8 SF±. REMOVE 1967 SLOPE LIMITS	
		THAT ARE ON THE LAYOUTS. PER C.O. 9460.	
		MADE BY: JAB APPROVED BY: RPD	
5	47,55	PARCEL NO. 9 LERNER. ADD SLOPE (P) AT STA. 33+63.43 RT.	06/23/06
		~34+58.58 RT.; 690.4 SF± REMOVE 1967 SLOPE LIMITS	
		THAT ARE ON THE LAYOUTS. PER C.O. 9461.	
		MADE BY: JAB APPROVED BY: RPD	
6	47, 55,56	PARCEL NO. 10 DALPHINAIS. ADD SLOPE (P) AT STA.	06/23/06
		34+52.59 35+50.75 RT.; 660.3 SF± REMOVE 1967 SLOPE	
		LIMITS THAT ARE ON THE LAYOUTS. PER C.O. 9462.	
		MADE BY: JAB APPROVED BY: RPD	
7	47,58	PARCEL NO. 13 ALVIN. REMOVE WALK (T) FROM LAYOUT	06/14/06
		AND DETAIL SHEET. CHANGE DRIVE STATION FROM	
		41+17 TO 41+14.50 PER C.O. 9465	
		MADE BY: JAB APPROVED BY: RPD	
8	48,58	PARCEL NO. 15 BLODGETT. CHANGE DRIVE STATION OF	06/14/06
		FROM 41+17.00 TO 41+14.50 LT. DELETE WALK (T). CHANGE	
		CHANGE THE STATIONS FOR TWO RIGHTS TO INSTALL	
		CURB TO THE FOLLOWING: 41+40.65 LT. ~ 41+7760 LT.	
		THE BEGINNING STA. 43+46.57 LT. TO 43+54.48 LT.	
		PER C.O. 9466	
		MADE BY: JAB APPROVED BY: RPD	
9	50,60	PARCEL NO. 26 VINCENT. CHANGE DRIVE STA. FROM	06/14/06
		50+25.00 TO 50+37.00 PER C.O. 9467	
		MADE BY: JAB APPROVED BY: RPD	
10	51,61	PARCEL NO. 36 M.T. ASSOCIATION. CHANDE DRIVE STA.	06/14/06
		FROM 57+01 TO 57+03 LT; 40' PER C.O. 9468	
		MADE BY: JAB APPROVED BY: RPD	

PLOT DATE 12/04/06

PLAN LEGEND

- EXISTING RIGHT-OF-WAY
- TAKING WITH ACCESS
- TAKING WITHOUT ACCESS
- CZ — CLEAR ZONE
- P / L — PROPERTY LINE
- TOE OF SLOPE
- TOP OF CUT
- SR (P) — SLOPE RIGHT
- CONST. (T) — CONSTRUCTION RIGHT
- PDF ——— PDF — PROJECT DEMARCATION FENCE

EC	-EROSION CONTROL
(P)	-PERMANENT
(T)	-TEMPORARY
DR.	-DRAINAGE RIGHT
DIT.	-DITCHING RIGHT
CH.	-CHANNEL RIGHT
DRIVE	-DRIVE RIGHT
CUL.	-CULVERT RIGHT
C&T	-CLEARING & TRIMMING RIGHT
SR	-SLOPE RIGHT
UE	-UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 03-28-06
CHIEF, PLANS & TITLES

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS 0113(40)**

FILE NAME: **86C027.XLS** PLOT DATE:
PROJECT LEADER: **0** DRAWN BY: **MR**
DESIGNED BY: **0** CHECKED BY: **FM**
R.O.W. SHEET 46 OF 62 SHEET **27** OF **239**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA±	AREA±	TYPE	(T)/(P)	AREA ±	TITLE TAKEN	DATE	TOWN / CITY	BOOK	PAGE	
8	HODGDON, GARY P. & ROBERTA W.	55	32+66.25 RT.	33+76.40 RT.			INSTALL & MAINTAIN	(P)	0.18 A						SOIL ANCHORS
			32+71.66 RT.	33+68.30 RT.			INSTALL	(T)							MODIFIED PDF FENCE
			32+66.25 RT.	33+65.66 RT.			LANDSCAPE	(T)							TREES/SHRUBS
			32+66.25 RT.	33+62.52 RT.			DIT. & DR.	(P)	78.1 SF						
			32+66.25 RT.	33+65.97 RT			SLOPE	(P)	1359.8 SF						
9	LERNER, SHERYL RUBIN	55	33+63.43 RT.	34+58.51 RT.			INSTALL & MAINTAIN	(P)	0.12 A						SOIL ANCHORS
			33+68.30 RT.	34+58.51 RT.			INSTALL	(T)							MODIFIED PDF FENCE
			33+63.43 RT.	34+58.45 RT.			LANDSCAPE	(T)							TREES/SHRUBS
			33+63.43 RT.	34+58.58 RT			SLOPE	(P)	690.4 SF						
10	DAUPHINAIS, TIMOTHY J.	55,,56	34+51.26 RT.	35+53.37 RT.			INSTALL & MAINTAIN	(P)	0.13 A						SOIL ANCHORS
			34+58.51 RT.	35+54.93 RT.			INSTALL	(T)							MODIFIED PDF FENCE
			34+51.29 RT.	35+51.21 RT.			LANDSCAPE	(T)							TREES/SHRUBS
			34+51.29 RT.	35+49.38 RT.			DIT. & DR.	(P)	335.6 SF						
			34+52.59 RT	35+50.75 RT			SLOPE	(P)	660.3 SF						
11	HENDERSON, PETER J. & ELLEN C.	56	RELOC. WORCESTER AVE.												
			3+03.24 RT.				DRIVE	(T)							24' PAVED IN COMMON/PARCEL #12
			RELOC. WORCESTER AVE.	RELOC. WORCESTER AVE.											
			2+55.76 RT.	2+92.24 RT.			SLOPE	(T)	454.3 SF						
			38+89.00 RT.	38+92.00 RT.			INSTALL	(T)							PROTECTIVE FENCING
12	KURT G. SPANN, TRUST	30,31	RELOC. WORCESTER AVE.												
	KURT G. SPANN, TRUSTEE	39,40	3+03.24 RT.				DRIVE	(T)							24' PAVED IN COMMON/PARCEL #11
	& ELIZABETH E. NEILY, TRUST	47,56	38+92.00 RT.	38+97.00 RT.			INSTALL	(T)							PROTECTIVE FENCING
	ELIZABETH E. NEILY, TRUSTEE	58	39+61.45 RT.	39+87.58 RT.			SLOPE	(T)	54.1 SF						
			39+92.00 RT.				DRIVE	(T)							12' PAVED MM 0448
			39+96.16 RT.	40+35.67 RT.			SLOPE	(T)	101.5 SF						
13	ALVIN, JOE & MARIE	30,31	HEBARD AVE.												
		39,40	21+18.00 RT.				DRIVE	(T)							30' PAVED
		47,56	HEBARD AVE.												
		57,58													
			HEBARD AVE.												
			21+03.19 RT.	40+97.13 LT.			SLOPE	(T)	809.3 SF						
			40+67.48 LT.	40+94.52 LT.			INSTALL	(T)							CURB
			40+74.76 LT.	41+00.94 LT.			REMOVE	(T)							EXISTING DRIVE
			40+30.86 LT.				REMOVE	(T)							SIGN PRIVATE
			41+14.50 LT.				DRIVE	(T)							42' PAVED IN COMMON/PARCEL #15
															MM 0448

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PLAN LEGEND

- EXISTING RIGHT-OF-WAY
- TAKING WITH ACCESS
- TAKING WITHOUT ACCESS
- CLEAR ZONE (CZ)
- PROPERTY LINE (P / L)
- TOE OF SLOPE
- TOP OF CUT
- SLOPE RIGHT (SR (P))
- CONSTRUCTION RIGHT (CONST. (T))
- PROJECT DEMARCATION FENCE (PDF)

EC	-EROSION CONTROL
(P)	-PERMANENT
(T)	-TEMPORARY
DR.	-DRAINAGE RIGHT
DIT.	-DITCHING RIGHT
CH.	-CHANNEL RIGHT
DRIVE	-DRIVE RIGHT
CUL.	-CULVERT RIGHT
C&T	-CLEARING & TRIMMING RIGHT
SR	-SLOPE RIGHT
UE	-UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 03-28-06
CHIEF, PLANS & TITLES

PROJECT NAME:	HARTFORD		
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FILE NAME:	86C027.XLS	PLOT DATE:	
PROJECT LEADER:	0	DRAWN BY:	MR
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R.O.W. SHEET 47 OF 62		SHEET 28 OF 239	

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

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					AREA±	AREA±	TYPE	(T)/(P)	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
14	THE TAFT GROUP, LLC	31,40	41.45+61 RT.												DRIVE, 26' PAVED MM 0448
		48,58	40+45.06 RT.	40+98.39 RT.			SLOPE	(T)	37.0 SF						
15	THE BLODGETT SUPPLY COMPANY, INC.	31,40	41+07.70 LT.				REMOVE	(T)							54' OF HEDGE
		48,58	41+11.82 LT.				REMOVE	(T)							52' OF FENCE
			41+14.50 LT.				DRIVE	(T)							42' PAVED IN COMMON/PARCEL #13
			41+37.93 LT.	43+50.05 LT.			SLOPE	(T)	528.0SF						
			41+40.65 LT.	41+77.60 LT.			INSTALL	(T)							CURB
			43+54.48 LT.	43+58.87 LT.			INSTALL	(T)							CURB
			43+53.69 LT.	43+58.13 LT.			CULVERT	(P)							INCLUDES DROP INLET
			43+70.00 LT.				DRIVE	(T)							25' PAVED MM 0453
			43+83.34 LT.	44+71.54 LT.			INSTALL	(T)	41.5 SF						CURB
			43+83.34 LT.	44+71.54 LT.			SLOPE	(T)	224.0 SF						
			43+83.34 LT.	44+71.54 LT.			REMOVE & RESET	(T)							PLANTERS
			44+66.01 LT.	44+72.07 LT.			CULVERT	(P)							INCLUDES DROP INLET
			44+01.37 LT.	44+36.63 LT.			LANDSCAPE	(T)							TREES/SCHRUBS
16A	TOWN OF HARTFORD	29,30	33+00.47 LT.	35+25.40 LT.	0.15A										
		38,39													
		48,55													
		56													
16B		30,39	39+81.37 LT.				APPROACH	(T)							HEBARD AVE. MM 0448
		48,56													
16C		31,32	44+93.08 LT.				APPROACH	(T)							SAUNDERS AVE. MM 0455
		40,41	45+07.00 LT.				CULVERT	(P)							
		48,58													
		59													
16D		32,41	49+07.13 LT.				APPROACH	(T)							PIERCE ST. MM 0463
		48,59													
16E		33,42	52+15.57 RT.				APPROACH	(T)							GOUDREAU ST. MM 0469
		48,60													
16F		33,42	54+88.35 RT.				APPROACH	(T)							DEVIN ST. MM 0474
		48,60													
16G		34,43	58+10.51 RT.				APPROACH	(T)							ADVENT LANE MM 0480
		48,61													
16H		34,43	58+39.76 LT.				APPROACH	(T)							HEWITT ST. MM 0481
		48,61	HEWITT ST.												
			50+80.00 LT.				INSTALL	(T)							EROSION CONTROL

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- TAKING WITHOUT ACCESS
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- P / L — PROPERTY LINE
- TOE OF SLOPE
- TOP OF CUT
- SR (P) — SLOPE RIGHT
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- PDF — PDF — PROJECT DEMARCATION FENCE

EC	-EROSION CONTROL
(P)	-PERMANENT
(T)	-TEMPORARY
DR.	-DRAINAGE RIGHT
DIT.	-DITCHING RIGHT
CH.	-CHANNEL RIGHT
DRIVE	-DRIVE RIGHT
CUL.	-CULVERT RIGHT
C&T	-CLEARING & TRIMMING RIGHT
SR	-SLOPE RIGHT
UE	-UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 03-28-06
CHIEF, PLANS & TITLES

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PROJECT NUMBER: **RS 0113(40)**

FILE NAME: **86C027.XLS**
PROJECT LEADER: **0**
DESIGNED BY: **0**
R.O.W. SHEET 48 OF 62

PLOT DATE:
DRAWN BY: **MR**
CHECKED BY: **FM**
SHEET **29** OF **239**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

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					AREA±	AREA±	TYPE	(T)(P)	AREA ±	TITLE TAKEN	DATE	TOWN / CITY	BOOK	PAGE	
17	McDONALD, ROBERT H. & SUSAN M.	31,40	43+70.00 RT.				DRIVE	(T)							15' GRAVEL MM 0453
		49,58													
18	MORRIS, MICHAEL J. & MORRIS, PHYLLIS B.	31,32	44+44.00 RT.				DRIVE	(T)							16' GRAVEL MM 0454
		40,41	45+65.00 RT.				DRIVE	(T)							12' GRAVEL MM 0457
		49,58													
		59													
19	RICHARD, MARGRET B.	32,41	SAUNDERS AVE.												
		49,59	26+11.44 RT.	45+72.61 LT.			SLOPE	(T)	271.6 SF						
			45+11.38 LT.	45+72.61 LT.			INSTALL	(T)	544.3 SF						CURB
			SAUNDERS AVE.	SAUNDERS AVE.											
			25+77.00 RT.	25+40.60 RT.			REMOVE	(T)							CULVERT
20	RICHARD, MARGRET B. &	32,41	45+72.61 LT.	45+95.29 LT.			SLOPE	(T)	39.2 SF						
	RICHARD, STEVEN L.	49,59	45+72.61 LT.	45+95.29 LT.			INSTALL	(T)	146.5 SF						CURB
			46+07.35 LT.				DRIVE	(T)							25' PAVED MM 0457
			46+19.06 LT.	46+49.24 LT.			SLOPE	(T)	69.6 SF						
			46+91.90 LT.				DRIVE	(T)							14' PAVED MM 0459 ON COMMON
															WITH PARCEL #21
21	RICHARD, MARGRET B.	32,41	46+91.90 LT.				DRIVE	(T)							14' PAVED MM 0459 IN COMMON WITH
		49,59													PARCEL #20
			47+02.00 LT.	47+32.00 LT.			INSTALL	(T)							PROTECTIVE FENCING
			47+43.60 LT.				WALK	(T)							3.5' CONCRETE
22	DUCLOS, STEPHEN G. & BARBARA J.	32,41	47+72.03 LT.				DRIVE	(T)							14' PAVED MM 0461
		49,59	47+97.08 LT.				WALK	(T)							4.5' CONCRETE
23	PISTEY, ARTHUR J.	32,41	48+55.10LT.				REMOVE	(T)							SIGN, PRIVATE
		49,59													
24	UPPER VALLEY HAVEN, INC.	32,41	46+64.08 RT.				INSTALL	(T)							EROSION CONTROL
		48,59	47+32.68 RT.				DRIVE	(T)							26' PAVED MM 0460
			49+01.00 RT.				DRIVE	(T)							37' PAVED IN COMMON WITH PARCEL
															# 25 MM 0463

TABLE OF REVISIONS

REVISION NO.	SHEET NO.	DESCRIPTION	DATE

PLOT DATE 12/04/06

PLAN LEGEND

- EXISTING RIGHT-OF-WAY
- TAKING WITH ACCESS
- TAKING WITHOUT ACCESS
- CLEAR ZONE (CZ)
- PROPERTY LINE (P L)
- TOE OF SLOPE
- TOP OF CUT
- SLOPE RIGHT (SR (P))
- CONSTRUCTION RIGHT (CONST. (T))
- PROJECT DEMARCATION FENCE (PDF — PDF)

EC	-EROSION CONTROL
(P)	-PERMANENT
(T)	-TEMPORARY
DR.	-DRAINAGE RIGHT
DIT.	-DITCHING RIGHT
CH.	-CHANNEL RIGHT
DRIVE	-DRIVE RIGHT
CUL.	-CULVERT RIGHT
C&T	-CLEARING & TRIMMING RIGHT
SR	-SLOPE RIGHT
UE	-UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 03-28-06
CHIEF, PLANS & TITLES

PROJECT NAME:	HARTFORD		
PROJECT NUMBER:	RS 0113(40)		
FILE NAME:	86C027.XLS	PLOT DATE:	12/9/98
PROJECT LEADER:	0	DRAWN BY:	MR
DESIGNED BY:	0	CHECKED BY:	FM
R.O.W. SHEET 49 OF 62		SHEET 30 OF 239	

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA±	AREA±	TYPE	(T)/(P)	AREA ±	TITLE TAKEN	DATE	TOWN / CITY	BOOK	PAGE	
25	THE RECTOR, WARDENS & VESTRYMEN	32,33	49+01.00 RT.				DRIVE	(T)							37' PAVED IN COMMON WITH PARCEL
	OF ST. PAUL'S EPISCOPAL CHURCH	41,42													#24 MM 0463
		50,59	50+39.37 RT.	50+48.68 RT.			INSTALL	(T)							EROSION CONTROL
		60	50+44.00 RT.				INSTALL& MAINT.	(P)							DROP INLET
			50+69.37 RT.	51+71.22 RT.			SLOPE	(T)	105.0SF						
			51+27.73 RT.				WALK	(T)							4' PAVED
26	VINCENT, NANCY A.	32,33	50+37.00 LT.												DRIVE 24' PAVED MM 0465
		41,42													
		50,59													
		60													
27	DONAHUE, WILLAIM J. & KATHERINE C.	33,42	50+72.00 LT.												16' PAVED DRIVE MM 0466
		50,60	51+25.00 LT.												15' PAVED DRIVE MM 0467
			51+15.55 LT.				REMOVE	(T)							SIGN, PRIVATE
28	DELETED	33,42													FORMERLY
		50,60													THE LILLIAN FELLOWS-ABBOTT-LIVING
															TRUST, LILLIAN FELLOWS-ABBOTT
															TRUSTEE
			GOUDREAU ST.	GOUDREAU ST.											
29	SIMON, MELVIN M.	33,42	35+68.15 LT.	35+87.11 LT.			SLOPE	(T)	16.0 SF						
		50,60	GOUDREAU ST.	GOUDREAU ST.											
			36+50.00 LT.												DRIVE 24' PAVED
30	VEREMEDY, LLC	33,42	53+37.65 RT.				REMOVE	(T)							TREE
		50,60	53+47.36 RT.				REMOVE	(T)							FENCE
			53+62.00 RT.				DRIVE	(T)							25' PAVED MM 0472
			53+75.54 RT.				REMOVE	(T)							FENCE
			53+81.40 RT.				REMOVE	(T)							SIGN, PRIVATE
			53+89.32 RT.				REMOVE	(T)							TREE
			53+73.49 RT.	53+88.07 RT.			SLOPE	(T)	12.9 SF						

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APPROVED: ROGER P. DUMAS DATE: 03-28-06
CHIEF, PLANS & TITLES

PROJECT NAME:	HARTFORD		
PROJECT NUMBER:	RS 0113(40)		
FILE NAME:	86C027.XLS	PLOT DATE:	
PROJECT LEADER:	0	DRAWN BY:	MR
DESIGNED BY:	0	CHECKED BY:	FM
R.O.W. SHEET 50 OF 62		SHEET 31 OF 239	

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA±	AREA±	TYPE	(T)(P)	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
31	MCGLINN, JAMES R. & MARTHA E.	33,42	53+24.00 LT.				REMOVE	(T)							SIGN, PRIVATE
		51,60													
32	BERNAL, EUGENE J. JR. & DEBORAH E.	33,42	54+21.00 LT.				DRIVE	(T)							14' PAVED MM 0473
		51,60	54+52.94 LT.				REMOVE	(T)							SIGN, PRIVATE
33	MUSTY, BILL & BRENDA	33,34	55+79.00 LT.												DRIVE 24' PAVED IN COMMON WITH
		42,43													PARCEL #34 MM 0476
		51,60													
		61													
34	WILSON, STEPHEN G.	34,43	55+79.00 LT.												DRIVE 24' PAVED IN COMMON WITH
		51,61													PARCEL #33 MM 0476
35	RALPH M. KNIGHT III & CAROL D. KNIGHT	33,43	56+77.83 RT.	57+11.70 RT.			SLOPE	(T)	25.7 SF						
	TRUSTEES, OF THE RALPH M. KNIGHT III	51,61	57+29.00 RT.				DRIVE	(T)							35' PAVED MM 0479
	REVOCABLE TRUST AND		57+46.56 RT.	57+62.68 RT.			SLOPE	(T)	7.8 SF						
	RUSSELL C. KNIGHT			ADVENT LANE											
			58+00.00 RT.	45+84.41 RT.			SLOPE	(T)	128.2 SF						
36	M.T. ASSOCIATES	34,43	57+03.00 LT.												DRIVE 40' PAVED MM 0478
		51,61	57+64.54 LT.				REMOVE	(T)							SIGN, PRIVATE
37	GREEN MOUNTAIN POWER CORPORATION														UTILITY
38	VERIZON NEW ENGLAND, INC.														UTILITY
39	ADELPHIA CABLE COMMUNICATIONS														UTILITY
40	TOWN OF HARTFORD (WATER & SEWER)														UTILITY
41	VERMONT TELEPHONE CO.,INC.														UTILITY

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UE	-UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 03-28-06
CHIEF, PLANS & TITLES

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS 0113(40)**

FILE NAME: **98C027.XLS** PLOT DATE:
PROJECT LEADER: **0** DRAWN BY: **MR**
DESIGNED BY: **0** CHECKED BY: **FM**
R.O.W. SHEET 51 OF 62 SHEET **32** OF **239**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					
					AREA±	AREA±	TYPE	(T)(P)	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
	MAINTENANCE AGREEMENT ZONE NO. 1	56	36+36.64 RT.	36+68.87 RT.											WORCESTER AVE. LENGTH 39.42'
															MM 0439
			RELOC. WORCESTER AVE.	RELOC. WORCESTER AVE.											
	MAINTENANCE AGREEMENT ZONE NO. 2	56	3+37.24 CL	3+21.30 CL											LENGTH 15.94'
															MM 0443
			HIGHLAND AVE.	HIGHLAND AVE.											
	MAINTENANCE AGREEMENT ZONE NO. 3	56	10+32.32 CL	10+56.40 CL											LENGTH 24.08'
															MM 0448
			HEBARD AVE.	HEBARD AVE.											
	MAINTENANCE AGREEMENT ZONE NO. 4	56	20+35.17 CL	20+50.39 CL											LENGTH 15.22'
															MM 0446
			SAUNDERS AVE.	SAUNDERS AVE.											
	MAINTENANCE AGREEMENT ZONE NO. 5	58	25+21.27 CL	25+32.85 CL											LENGTH 11.58'
															MM 0455
			PIERCE ST.	PIERCE ST.											
	MAINTENANCE AGREEMENT ZONE NO. 6	59	30+21.41 CL	30+44.81 CL											LENGTH 23.40'
															MM 0463
			GOUDREAU ST.	GOUDREAU ST.											
	MAINTENANCE AGREEMENT ZONE NO. 7	60	35+21.41CL	35+83.99 CL											LENGTH 62.58'
															MM 0469
			DEVIN ST.	DEVIN ST.											
	MAINTENANCE AGREEMENT ZONE NO. 8	60	40+20.70 CL	40+79.74 CL											LENGTH 59.04'
															MM 0474
			ADVENT LN.	ADVENT LN.											
	MAINTENANCE AGREEMENT ZONE NO. 9	61	45+20.70 CL	45+36.90 CL											LENGTH 16.20'
															MM 0480
			HEWITT ST.	HEWITT ST.											
	MAINTENANCE AGREEMENT ZONE NO. 10	61	50+21.25 CL	50+60.20 CL											LENGTH 38.95'
															MM 0481
	RELINQUISHMENT AREA # I	53,54	22+81.00 LT.	28+91.22 LT.											BARNES AVE. & HAZEN ST.(0.30A±)
	RELINQUISHMENT AREA # II	56,57	35+24.48 LT.	39+94.58 LT.											HIGHLAND AVE. / HEBARD AVE. / SCHOOL DRIVE (1.21A±)
	RELINQUISHMENT AREA # III	56,57	35+48.21 RT.	40+00.00 RT.											WORCESTER AVE. (0.91A±)

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APPROVED: ROGER P. DUMAS DATE: 03-28-06
CHIEF, PLANS & TITLES

PLOT DATE 12/04/06

PROJECT NAME: **HARTFORD**
PROJECT NUMBER: **RS 0113(40)**

FILE NAME: **88C027.XLS**
PROJECT LEADER:
DESIGNED BY: **0**
R.O.W. SHEET 52 OF 62

PLOT DATE:
DRAWN BY: **MR**
CHECKED BY: **FM**
SHEET **33** OF **239**

ROADWAY LAYOUT SHEET 1

BEGIN R.O.W. PROJECT
RS 0113(40) STA. 22+02.84 41.24' RT.

BEGIN RELINQUISHMENT AREA # I
STA. 22+81.00 70.63' LT. (0.30 AC.)

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
20+35 ~ 20+45 RT
21+45 ~ 25+00 RT
21+45 ~ 25+00 LT

EXISTING DRAINAGE
1. 21+62 LT ~ 21+77 RT — EXISTING PIPE & DI- REMOVE
2. 22+47 LT ~ 22+47 LT — EXISTING PIPE - REMOVE
3. EXISTING DI- RETAIN — 22+47 LT ~ 22+47 RT
4. EXISTING PIPE & DI- REMOVE — 22+52 RT ~ 22+47 RT
5. EXISTING PIPE & DI- REMOVE — 22+47 RT ~ 23+29 RT
6. EXISTING PIPE - ABANDON OR REMOVE AS REQUIRED — 20+73.1RT
7. EXISITNG DI- RETAIN & BULKHEAD EXIST. PIPES — 21+77 RT ~ 22+47 RT
8. EXISTING PIPE & DI- REMOVE — 22+47 RT ~ 23+29 RT
9. EXISTING PIPE & DI- REMOVE — 25+22.5 RT
10. EXISTING PIPE & DI- REMOVE

NEW DRAINAGE
1. 19+28.3 RT ~ 19+80.0 RT — NEW 54"x50' PCCSP/CAAP W/ PRC DI@ 19+80.0 RT W/ PCCSPES/CAAPES @ OUTLET
2. 20+09.0 RT ~ 20+68.3 RT — NEW 48"x58' PCCSP/CAAP W/ C.I.P. HEADWALL @ 20+09.0 RT W/8' DIA PRC MH @ 20+68.3 RT
3. 20+73.2 RT ~ 20+68.3 RT — NEW 18"x8' RCP/CPEP(SL) REHAB. EXIST. DI@ 20+73.2
4. 20+68.3 RT ~ 21+76.8 RT — NEW 48"x108' PCCSP/CAAP W/DI@ 21+76.8 RT
5. 21+63.1LT ~ 21+76.8 RT — NEW 18"x78' RCP/CPEP (SL) W/DI@ 21+63.1LT
6. 21+46.4 RT ~ 22+46.1RT — NEW 48"x68' PCCSP/CAAP W/DI@ 22+46.1RT
7. 22+47 LT ~ 22+46.1LT — NEW 18"x15' RCP/CPEP (SL)
8. 22+46.1LT ~ 22+46.1RT — NEW 18"x62' RCP/CPEP (SL) W/DI@ 22+46.1LT
9. 22+50 RT ~ 22+46.1RT — NEW 18"x12' RCP/CPEP (SL) W/DI@ 22+50 RT
10. 22+46.1RT ~ 24+20 RT — NEW 36"x72' RCP/CPEP (SL) W/DI@ 24+20 RT
11. 24+20 LT ~ 24+20 RT — NEW 18"x62' RCP/CPEP (SL) W/DI@ 24+20 LT
12. 24+20 RT ~ 25+22.4 RT — NEW 36"x100' CAAP W/DI@ 25+22.4 RT

CHANGING ELEVATION OF SEWER MANHOLE
24+64 LT

REHABING DI,CB OR MH CLASS II
22+47 LT

REHABING DI,CB OR MH CLASS III
20+73.2 RT

8" UNDERDRAIN
2. 24+24 RT ~ 25+18 RT — NEW 8"x94' UNDERDRAIN W/F.B.@ 25+18 RT

8" UNDERDRAIN CARRIER PIPE
1. 24+20 RT ~ 24+24 RT — NEW 8'x7' UNDERDRAIN CARRIER PIPE W/F.B.@ 24+24 RT
3. 24+20 LT ~ 25+00 LT — NEW 8'x79' UNDERDRAIN CARRIER PIPE W/F.B.@ 25+00 LT

STONE FILL, TYPE II
19+25 ~ 20+08 RT

RIPRAP, HEAVY TYPE
19+28 ~ 19+68 RT

VERTICAL GRANITE CURB
21+45 ~ 24+18 RT

BITUMINOUS CONCRETE CURB, TYPE B (MOD.)
21+75 ~ 23+75 RT

REMOVING AND RESETTING CURB
20+35 ~ 20+45 RT
20+68 ~ 20+75 RT (ISLAND)
21+45 ~ 25+00 RT
24+60 ~ 25+00 RT
21+59 ~ 25+00 RT (MEDIAN)
21+59 ~ 25+00 LT (MEDIAN)

REMOVAL OF EXISTING CURB
21+45 ~ 25+00 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)
20+35 ~ 20+45 RT
21+45 ~ 25+00 LT
21+45 ~ 25+00 RT
24+00 LT (5' WIDE X 4' LONG)

CONCRETE SIDEWALK RAMPS W/ DETECTABLE WARNING SURFACE
21+54 RT TYPE 6
21+54 LT TYPE 6

REMOVING AND RESETTING PROPERTY MARKERS
20+28.8 RT

CONCRETE MEDIAN BARRIER
24+19 ~ 25+00 LT

REMOVING AND RESET GUARD RAIL
20+35 RT ~ 20+45 RT

WHITE RIVER
TO WHITE RIVER JUNCTION
U.S. ROUTE 5
TO HARTFORD
MAGNETIC EAST
OVERHEAD SIGN SUPPORT
FLAG POLE
SIGNAL BOX
SIGNAL CONTROLLER
METER
SIGN
TRAF. SIGNAL
POT STA. 21+45.00
BEGIN PROJECT RS 0113(40)
21+55.83 93.06' LT.
21+78.67 68.13' LT.
12" BOX ELDER
3"APPLE
GSO GUY
22+03.79 49.86' LT.
INSTALL (T)
SR(T) CUL.(P)
OVERHEAD SIGN SUPPORT
CONC. WALK
GRAN. CURB
PAVED
3"HEMLOCKS
Mascoma Savings Bank FSB
SIGN BOLT ELEV. = 361.62'
Roger & Ellen Blake
24+20 RT ~ 25+22.4 RT
NEW 36"x100' CAAP
W/DI@ 25+22.4 RT
23+54.85 70.56' LT.
24+10.33 67.25' LT.
24+43.23 100.80' LT.
24+82.55 100.45' LT.
52.23'
19.32'
149.05'
HYD.
GUY
CONC. STEPS
GRAVEL DRIVE
73.91'
55.58'
PAVEMENT
BARNES AVE.
RELINQUISHMENT BOUNDARY
HAZEN ST.
N/F DINC Assets, LLC
24+95.32 88.71' LT.
Mower & News
24+25.32 (143.90')
22+90.79 48.74' LT.
U.S. ROUTE 5 (HARTFORD AVENUE)
State of Vermont
MATCH LINE STA. 25+00
TO ROW SHEET 54 OF 62
PROPOSED 8' DIA. PRECAST CONC. DROP STRUCTURE W/ ONE 2'X4' P-50 TYPE GRATE. GRATE SHALL BE SET AT DITCH GRADE (345' +/-) TO COLLECT STORMWATER DURING SMALLER STORM EVENTS
INV IN = 333.27
INV OUT = 333.27
N22°05'53.6"E 765.31'
19+00
20+00
21+00
22+00
23+00
24+00
PROP. 6' BOTTOM WIDTH STONE LINED CHANNEL TYPE II STONE FILL
PROPOSED CONCRETE HEADWALL TOP OF WALL ELEV.=352.0
PROTECT EXISTING OVERHEAD SIGN SUPPORT
108' 48" PIPE S=
INV.(in)=348.96
INV.(out)=348.86
WHITE RIVER
TURBIDITY CURTAIN
PROP. STONE FILL PAD, TYPE III W/ RIPRAP, HEAVY TYPE FOR ENERGY DISSIPATION W/ CAAPES
54" CAAPES OUTLET INV.=333.0+/-
8"ALDER(2)
12"MAPLE
8"MAPLE
PIPE OUTLET INV.=346.00
PROPOSED STONE LINED OVERFLOW DITCH STONE FILL, TYPE II
VTRANS GUARDRAIL
PROP. 4X6 D.I. INV(out)=347.84
PROP 8' DIA. PRC MANHOLE INV(in)=346.9 INV(out)=346.8
PROPOSED 58' - 48" DIA. PCCSP/CAAP S = 0.86%
TRAFFIC SIGNAL
22+04.54 40.02 RT.
21+55.60 76.40' RT.
INSTALL & MAINT. (P)
INSTALL (T)
INSTALL (T)
Hartford Land Co.
N/F Town of Hartford
PAVED PARKING LOT
RETAIL MALL
U.S. ROUTE 4 TO NEW HAMPSHIRE
R 400'
R 1000'
R 1006'
10' C.I. W
18" R.C.S.
18" A.C.S.
6' C.I. W
12" C.I. W
CHAINLINK FENCE
BOLLARDS(3)
F.H.
YIELD SIGN
#CMP 2-01
24+47.88 41.30' RT.
24+47.62 56.30' RT.
SMH
TMH
GV
UT
OHW
OHS
SIGN
SIGNS

1 2 3

FOR LANDSCAPE DETAIL SEE ROW SHEET 36 OF 62

FOR EROSION CONTROL DETAIL SEE ROW SHEET 27 OF 62

RIGHT-OF-WAY AGENT OF PROJECT: FRANK J. MALNATI JR.

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z027bdr.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
ROW SHEET 53 OF 62
PLOT DATE: 04-DEC-2006
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET 34 OF 239

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
25+00 ~ 28+66 RT
25+00 ~ 30+00 LT

EXISTING DRAINAGE
11 25+23.5 LT ~ 25+23.5 ℄ EXISTING PIPE - PLUG
12 25+23.5 ℄ ~ 25+22.5 RT EXISTING DI - REMOVE EXISTING PIPE - PLUG
13 25+21.6 RT ~ 25+22.5 RT EXISTING PIPE - REMOVE EXISTING DI - RETAIN
14 25+21.6 RT ~ 27+69 RT EXISTING PIPE & DI - ABANDON
15 27+69 RT ~ 29+21 RT EXISTING DI - ABANDON EXISTING PIPE - ABANDON
16 28+65 RT ~ 27+69 RT EXISTING DI - ABANDON EXISTING PIPE - ABANDON
17 29+61 LT ~ 29+21 RT EXISTING DI - REMOVE EXISTING PIPE - ABANDON
18 29+80 RT ~ 29+21 RT EXISTING DI - ABANDON EXISTING PIPE - ABANDON

RETAINING WALL (BARNES AVE)
26+43.5 LT ~ 29+00

NEW DRAINAGE
12 24+20 RT ~ 25+22.4 RT NEW 36"x100' CAAP W/DIℓ 25+22.4 RT
13 25+21.6 RT ~ 25+22.4 RT NEW 18"x15' RCP/CPEP (SL)
14 25+22.4 RT ~ 26+70 RT NEW 36"x146' CAAP W/DIℓ 26+70 RT
15 26+70 LT ~ 26+70 RT NEW 18"x52' RCP/CPEP (SL) W/DIℓ 26+70 LT
16 26+70 RT ~ 29+20 RT NEW 36"x244' CAAP W/DIℓ 29+20 RT
17 29+20 LT ~ 29+20 LT NEW 18"x17' RCP/CPEP (SL) W/DIℓ 29+20 LT
18 29+20 LT ~ 29+20 RT NEW 18"x52' RCP/CPEP (SL) W/DIℓ 29+20 LT

NEW DRAINAGE (CONT.)
19 29+20 RT ~ 29+50 RT NEW 18"x35' RCP/CPEP (SL) W/DIℓ 29+50 RT
20 29+20 RT ~ 31+70 RT NEW 36"x244' CAAP W/DIℓ 31+70 RT

CHANGING ELEVATION OF SEWER MANHOLE
29+46 LT

REHABING DI,CB OR MH CLASS II
25+21.6 RT

6" UNDERDRAIN
5 26+41.5 LT ~ 29+01.5 LT NEW 6"x260' UNDERDRAIN W/F.B. @ 29+01.5 LT

8" UNDERDRAIN
2 24+24 RT ~ 25+18 RT NEW 8"x34' UNDERDRAIN W/F.B. @ 25+18 RT
4 25+00 LT ~ 26+42 LT NEW 8" x 142' W/F.B. @ 26+42 LT
7 25+26 RT ~ 26+74 RT NEW 8"x148' UNDERDRAIN W/F.B. AT 26+74 RT
9 26+74 RT ~ 29+75 RT NEW 8"x301' UNDERDRAIN W/F.B. AT 29+75 RT
12 29+35 LT ~ 31+65 LT NEW 8"x230' UNDERDRAIN W/F.B. AT 31+65 LT

8" UNDERDRAIN CARRIER PIPE
6 25+22 RT ~ 25+26 RT NEW 8"x7' UNDERDRAIN CARRIER PIPE W/F.B. @ 25+26 RT
8 26+70 RT ~ 26+74 RT NEW 8"x7' UNDERDRAIN CARRIER PIPE W/F.B. @ 30+00 RT
10 29+50 RT ~ 30+00 RT NEW 8"x52' UNDERDRAIN CARRIER PIPE W/F.B. @ 30+00 RT
11 29+20 LT ~ 29+35 LT NEW 8"x15' UNDERDRAIN CARRIER PIPE W/F.B. @ 29+35 LT

STONE FILL, TYPE II
29+18 LT ~ 30+00 LT
29+48 RT ~ 30+00 RT

MAGNETIC BRG

VERTICAL GRANITE CURB
29+87 ~ 30+00 RT
26+15 ~ 30+00 RT (MEDIAN)
26+15 ~ 30+00 LT (MEDIAN)

REMOVING AND RESETTING CURB
25+00 ~ 29+87 RT
25+00 ~ 28+66 RT
25+00 ~ 26+15 RT (MEDIAN)
25+00 ~ 26+15 LT (MEDIAN)

REMOVAL OF EXISTING CURB
25+00 ~ 30+00 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)
25+00 ~ 30+00 RT
25+00 ~ 30+00 LT

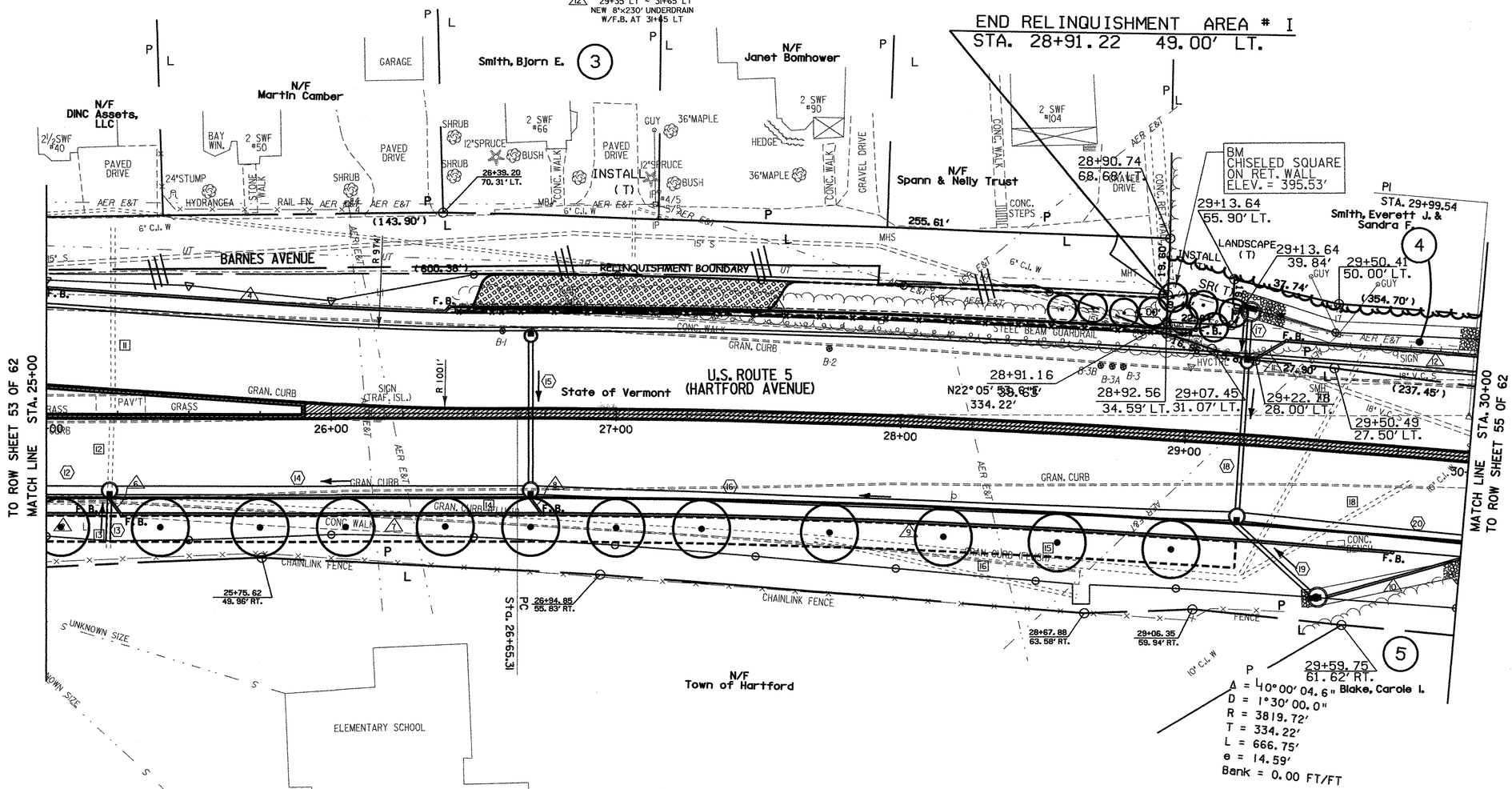
REMOVING AND RESETTING PROPERTY MARKERS
28+92 LT

CHAIN-LINK FENCE, 6 FEET (TYPE III)
26+43.5 LT ~ 29+00 LT (BARNES AVE WALL)

CONCRETE MEDIAN BARRIER
25+00 ~ 30+00 LT

REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL
26+45 ~ 29+27 LT

ADJUST ELEVATION OF VALVE BOX
28+83 LT



ROADWAY LAYOUT SHEET 2

FOR LANDSCAPE DETAIL SEE ROW SHEET 37 OF 62

FOR EROSION CONTROL DETAIL SEE ROW SHEET 28 OF 62

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

0 20 40
SCALE IN FEET

RIGHT-OF-WAY AGENT OF PROJECT: FRANK J. MALNATI JR.

DATUM
VERTICA
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 04-DEC-2006
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
ROW SHEET 54 OF 62	SHEET 35 OF 239

ROADWAY LAYOUT SHEET 3

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
30+00 ~ 35+00 LT

EXISTING DRAINAGE
- 19 — 31+70 LT — EXISTING DI - REMOVE — EXISTING PIPE - PLUG
- 20 — 32+00 LT — EXISTING DI - REMOVE — EXISTING PIPE - PLUG
- 21 — 33+28 LT — EXISTING DI - REMOVE — EXISTING PIPE - PLUG

RETAINING WALL
30+26 RT ~ 35+00 RT

NEW DRAINAGE
- 20 — 29+20 RT ~ 31+70 RT — NEW 36"x244' CAAP — W/DI @ 31+70 RT
- 21 — 31+70 LT ~ 31+70 LT — NEW 18"x13' RCP/CPEP (SL) — W/DI @ 31+70 LT
- 22 — 31+70 LT ~ 31+70 RT — NEW 18"x52' RCP/CPEP (SL) — W/DI @ 31+70 LT
- 23 — 31+70 RT ~ 31+70 RT — NEW 18"x8' RCP/CPEP (SL) — W/DI @ 31+70 RT
- 24 — 31+70 RT ~ 34+20 RT — NEW 36"x245' CAAP — W/DI @ 34+20 LT
- 25 — 34+20 LT ~ 34+20 LT — NEW 18"x15' RCP/CPEP (SL) — W/DI @ 34+20 LT
- 26 — 34+20 LT ~ 34+20 RT — NEW 18"x52' RCP/CPEP (SL) — W/DI @ 34+20 LT
- 27 — 34+20 RT ~ 34+20 RT — NEW 18"x7' RCP/CPEP (SL) — W/DI @ 34+20 RT
- 28 — 34+20 RT ~ 36+27 RT — NEW 36"x206' CAAP — W/DI @ 36+27 RT

8" UNDERDRAIN
- 12 — 29+35 LT ~ 31+65 LT — NEW 8"x230' UNDERDRAIN — W/F.B. @ 31+65 LT
- 13 — 30+00 RT ~ 31+75 RT — NEW 8"x175' UNDERDRAIN — W/F.B. @ 31+75 RT
- 15 — 31+75 RT ~ 34+24 RT — NEW 8"x249' UNDERDRAIN — W/F.B. @ 34+24 RT
- 17 — 34+24 RT ~ 35+50 RT — NEW 8"x126' UNDERDRAIN — W/F.B. @ 35+50 RT
- 19 — 31+80 LT ~ 34+29 LT — NEW 8"x249' UNDERDRAIN — W/F.B. @ 34+29 LT
- 21 — 34+29 LT ~ 36+38 LT — NEW 8"x209' UNDERDRAIN — W/F.B. @ 36+38 LT

8" UNDERDRAIN CARRIER PIPE
- 14 — 31+70 RT ~ 31+75 RT — NEW 8"x8' UNDERDRAIN CARRIER PIPE
- 16 — 34+20 RT ~ 34+24 RT — NEW 8"x7' UNDERDRAIN CARRIER PIPE
- 18 — 31+70 LT ~ 31+80 LT — NEW 8"x12' UNDERDRAIN CARRIER PIPE — W/F.B. @ 31+80 LT
- 20 — 34+20 LT ~ 34+29 LT — NEW 8"x12' UNDERDRAIN CARRIER PIPE — W/F.B. @ 34+29 LT

CHANGING ELEVATION OF SEWER MANHOLE
30+05 LT
30+10 LT
30+36 RT
31+95 LT

STONE FILL, TYPE I
32+75 RT ~ 35+00 RT (ABOVE WALL)

STONE FILL, TYPE II
30+00 LT ~ 35+00 LT
30+00 RT ~ 35+00 RT
30+00 RT ~ 32+75 RT (ABOVE WALL)

VERTICAL GRANITE CURB
30+00 ~ 35+00 RT
30+00 ~ 35+00 RT (MEDIAN)
30+00 ~ 35+00 LT (MEDIAN)

REMOVAL OF EXISTING CURB
30+00 ~ 31+80 LT

REMOVING AND RESETTING PROPERTY MARKERS
31+53 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH
30+00 ~ 35+00 RT
30+00 ~ 35+00 LT

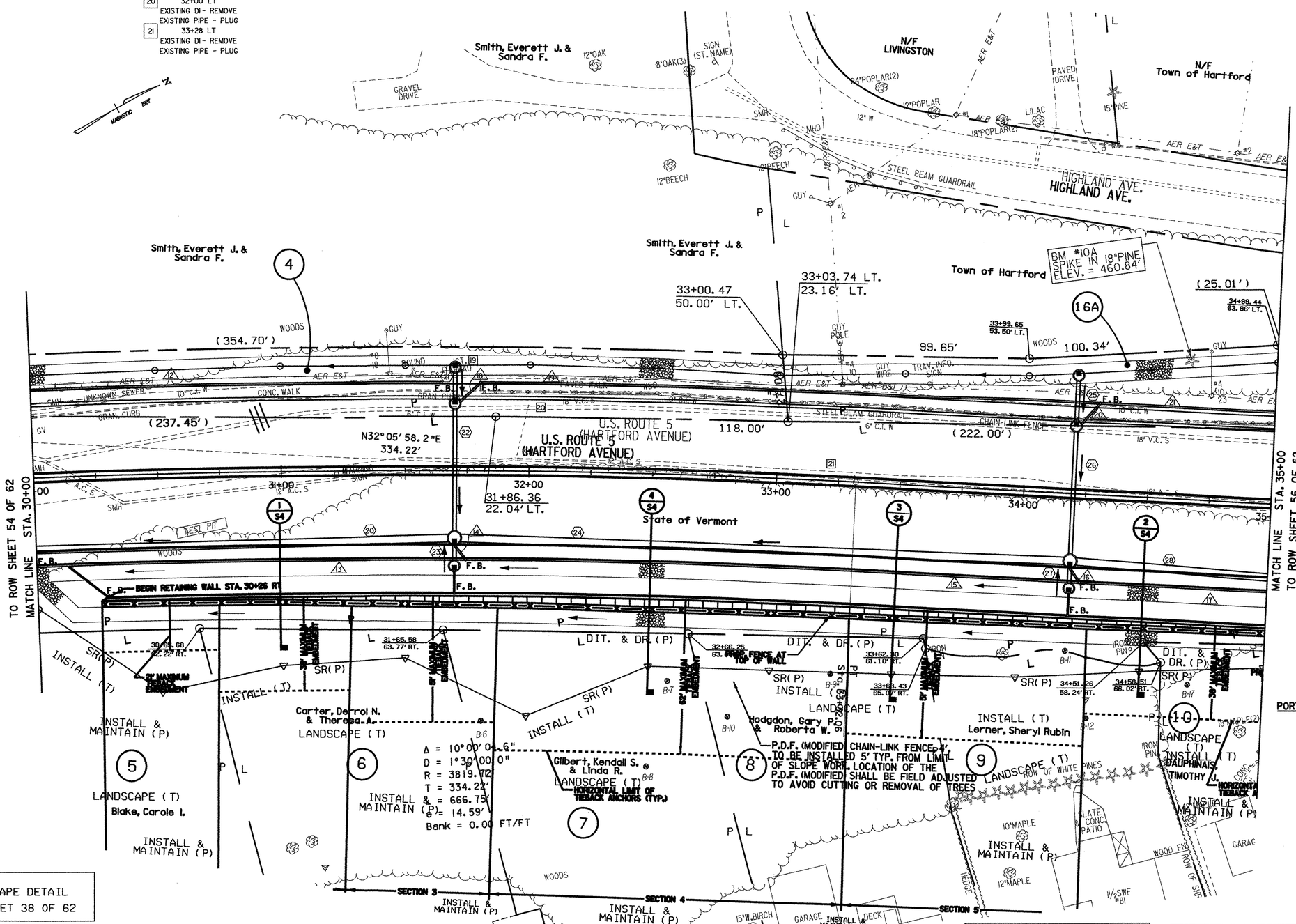
CHAIN-LINK FENCE, 6 FEET
30+26 ~ 35+00 RT

REMOVAL OF EXISTING FENCE
31+81 ~ 35+00 LT

CONCRETE MEDIAN BARRIER
30+00 ~ 35+00 LT

REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL
31+81 ~ 35+00 LT

ADJUST ELEVATION OF VALVE BOX
30+05 LT
32+45 LT
33+00 LT



FOR LANDSCAPE DETAIL SEE ROW SHEET 38 OF 62

FOR EROSION CONTROL DETAIL SEE ROW SHEET 29 OF 62

0 20 40
SCALE IN FEET

RIGHT-OF-WAY AGENT OF PROJECT: FRANK J. MALNATI JR.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N. _____

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 04-DEC-2006
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
ROW SHEET 55 OF 62	SHEET 36 OF 239

ROADWAY LAYOUT SHEET 4

EXCAVATION OF SURFACES AND PAVEMENTS
0+55 ~ 1+32 LT (WORCESTER AVE.)
20+47 ~ 21+37 LT (HEBARD AVE.)

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
39+04 ~ 39+87 RT
39+96 ~ 40+00 RT
35+00 ~ 39+20 LT
36+91 LT ~ 12+00 LT (HIGHLAND AVE)
11+82 LT ~ 11+85 RT (HIGHLAND AVE)

EXISTING DRAINAGE
22 11+17 LT ~ 14+00 LT (HIGHLAND AVE)
EXISTING PIPE - RETAIN
EXISTING MH - REMOVE
23 11+17 LT ~ 10+93 RT (HIGHLAND AVE)
EXISTING PIPE - PLUG
EXISTING MH - ADJUST
24 11+17 LT (HIGHLAND AVE) ~ 15+78 RT (SCHOOL DR)
EXISTING PIPE - RETAIN
25 11+25 RT ~ 11+37 LT (HIGHLAND AVE)
EXISTING PIPE - PLUG
EXISTING DI - REMOVE
26 11+39 RT ~ 11+85 LT (HIGHLAND AVE)
EXISTING PIPE - PLUG
EXISTING DI - REMOVE
27 13+41 RT ~ 13+41 LT (HIGHLAND AVE)
EXISTING PIPE & DI - RETAIN
28 5+52.6 LT ~ 6+75 LT (WORCESTER AVE)
EXISTING PIPE - RETAIN
29 5+61.6 LT ~ 5+52.6 LT (WORCESTER AVE)
EXISTING PIPE & DI - REMOVE
30 5+52.6 LT ~ 5+09 RT (WORCESTER AVE)
EXISTING PIPE - PLUG
EXISTING MH @ 5+52.6 LT - RETAIN
31 35+33 RT
EXISTING PIPE - PLUG
EXISTING DI - REMOVE
32 36+20 LT
EXISTING PIPE - PLUG
EXISTING DI - REMOVE

RETAINING WALL
35+00 ~ 36+50 RT

NEW DRAINAGE
28 34+20 RT ~ 36+27 RT
NEW 36"x206' CAAP
W/DI @ 36+27 RT
29 36+27 LT ~ 36+27 LT
NEW 18"x20' RCP/CPEP (SL)
W/DI @ 36+27 LT
30 36+27 LT ~ 36+27 RT
NEW 18"x58' RCP/CPEP (SL)
W/DI @ 36+27 LT
31 36+27 RT ~ 36+75 RT
NEW 36"x42' CAAP
W/DI @ 36+75 RT
32 5+61.6 RT ~ 5+53.6 LT (WORCESTER AVE)
NEW 18"x25' RCP/CPEP (SL)
W/DI @ 5+61.6 RT
33 5+53.6 LT ~ 5+52.6 LT (WORCESTER AVE)
NEW 18"x6' RCP/CPEP (SL)
W/DI @ 5+53.6 LT
34 5+52.6 LT (WORCESTER AVE) ~ 36+75 RT
NEW 18"x136' RCP/CPEP (SL)
W/JB @ 5+52.6 LT
35 36+75 RT ~ 37+95 RT
NEW 36"x119' RCP/CPEP (SL)
W/DI @ 37+95 RT
36 3+20.57 RT ~ 3+20.57 LT (WORCESTER AVE)
NEW 18"x33' RCP/CPEP (SL)
W/DI @ 3+20.57 RT
37 3+20.57 LT (WORCESTER AVE)~ 37+95 RT
NEW 18"x37' RCP/CPEP (SL)
W/DI @ 3+20.57 LT
38 15+69.6 RT ~ 15+69.6 LT (SCHOOL DR)
NEW 18"x21' RCP/CPEP (SL)
W/DI @ 15+69.6 RT
39 15+69.6 LT ~ 15+29.9 LT (SCHOOL DR)
NEW 18"x42' RCP/CPEP (SL)
W/DI @ 15+69.6 LT
40 15+29.9 LT (SCHOOL DR) ~ 11+16.9 LT (HIGHLAND AVE)
NEW 18"x80' RCP/CPEP (SL)
W/DI @ 15+29.9 LT
41 11+16.9 LT ~ 10+65.57 LT (HIGHLAND AVE)
NEW 24"x44' RCP/CPEP (SL)
W/JB @ 11+16.9 LT
42 10+41.9 RT ~ 10+65.57 LT (HIGHLAND AVE)
NEW 18"x84' RCP/CPEP (SL)
W/DI @ 10+41.9 RT
43 10+65.57 LT (HIGHLAND AVE)~ 37+95 RT
NEW 24"x71' RCP/CPEP (SL)
W/DI @ 10+65.57 LT
44 37+95 RT ~ 38+85 RT
NEW 36"x88' RCP/CPEP (SL)
W/DI @ 38+85 RT
45 38+85 RT ~ 40+10 RT
NEW 36"x124' RCP/CPEP (SL)
W/DI @ 40+10 RT
46 20+49.62 LT ~ 20+49.62 RT (HEBARD AVE)
NEW 18"x15' RCP/CPEP (SL)
W/DI @ 20+49.62 LT

CHANGING ELEVATION OF SEWER MANHOLE
35+51 RT
39+93 LT
38+31 RT
1+40 RT (WORCESTER AVE)
3+17 LT (WORCESTER AVE)
10+47 LT (HIGHLAND AVE)
10+93 RT (HIGHLAND AVE)
11+29 RT (HIGHLAND AVE)

CHANGING ELEV. OF DROP INLETS, CATCH BASINS, OR MANHOLES
MHD @ 13+76 RT (HIGHLAND AVE)

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

MATCH LINE TO A-A OF ROW SHEET 57 OF 62

MATCH LINE TO ROW SHEET 55 OF 62

MATCH LINE TO ROW SHEET 57 OF 62

MATCH LINE TO ROW SHEET 58 OF 62

BEGIN RELINQUISHMENT AREA # II
STA 35+24.48 64.86' LT.

BEGIN RELINQUISHMENT # III
STA. 35+48.21
55.13' RT.

END RELINQUISHMENT # III
STA. 40+00.00 42.43' RT.
0.91 ACRES±

STA. 14+00.00
END APPROACH
HIGHLAND ST.

STA. 15+95.00
END APPROACH
SCHOOL DRIVEWAY
State of Vermont

STA. 21+40.00
END APPROACH
HEBARD AVE.

STA. 5+85.00
END APPROACH
WORCESTER AVE.

HIGHLAND AVE.
STA. 11+55.78 =
SCHOOL ENTRANCE
STA. 15+00.00

RELINQUISHMENT BOUNDARY

U.S. 5 STA. 36+29.61 =
RELOCATED
WORCESTER AVE. STA. 0+00.00

RELOCATED WORCESTER AVE.
STA. 1+46.00 =
WORCESTER AVE.
STA. 5+00.00

END MAINTENANCE
AGREEMENT ZONE NO. 1
STA. 36+68.87 51.31' RT.
LENGTH 39.42'

BEGIN MAINTENANCE
AGREEMENT ZONE NO. 1
STA. 36+36.64 28.94' RT.

END MAINTENANCE
AGREEMENT ZONE NO. 2
RELOCATED
WORCESTER AVE.
STA. 3+21.30 CL
LENGTH 15.94'

BEGIN MAINTENANCE
AGREEMENT ZONE NO. 2
RELOC. WORCESTER AVE.
STA. 3+37.24 CL

END MAINTENANCE
AGREEMENT ZONE NO. 3
HIGHLAND AVE.
STA 10+50.54 STA 38+47.18 HWCTRL
LENGTH 28.64
RELOCATED
WORCESTER AVE. STA. 3+66.89
HIGHLAND ST. STA. 10+00.00

BEGIN MAINTENANCE
AGREEMENT ZONE NO. 3
HIGHLAND AVE.
STA. 10+32.32 CL

END MAINTENANCE
AGREEMENT ZONE NO. 4
HEBARD AVE.
STA. 20+50.39 CL
LENGTH 15.22'

BEGIN MAINTENANCE
AGREEMENT ZONE NO. 4
HEBARD AVE.
STA. 20+35.17 CL

U.S. ROUTE 5
(HARTFORD AVENUE)

WORCESTER AVE.

HIGHLAND AVE.

HEBARD AVE.

Town of Hartford

State of Vermont

N/F Frances & Timothy Covell

Dauphinais, Timothy J.

Robert & Reta Hornbrook

N/F CANTORE

Henderson, Peter J. & Ellen C.

Spann & Nelly Trusts

TOWN OF HARTFORD

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH
35+00 ~ 1+33 RT (WORCESTER AVE)
1+60 (WORCESTER AVE) ~ 40+00 RT
35+00 ~ 12+00 LT (HIGHLAND AVE)
11+51 (HIGHLAND AVE) ~ 39+69 LT
39+91 ~ 40+00 LT

CONSTRUCT CONCRETE SIDEWALK RAMPS W/ DETECTABLE WARNING SURFACE
38+96 RT TYPE 2
38+94 LT TYPE 2
5+23 RT TYPE 6 (WORCESTER AVE)
5+23 LT TYPE 6 (WORCESTER AVE)
10+40 LT TYPE 6 (HIGHLAND AVE)
11+50 RT TYPE I (HIGHLAND AVE)
11+83 RT TYPE 6 (HIGHLAND AVE)
12+00 RT TYPE 6 (HIGHLAND AVE)
12+00 LT TYPE I (HIGHLAND AVE)
20+44 RT TYPE 6 (HEBARD AVE)
20+44 LT TYPE I (HEBARD AVE)

FOR LANDSCAPE DETAIL SEE ROW SHEET 39 OF 62

FOR EROSION CONTROL DETAIL SEE ROW SHEET 30 OF 62

RIGHT-OF-WAY AGENT OF PROJECT: FRANK J. MALNATI JR.

CONSTRUCT BITUMINOUS CONCRETE DRIVES
39+86 ~ 39+98 RT
2+91 ~ 3+15 RT (WORCESTER AVE)
12+41 ~ 12+62 RT (HIGHLAND AVE)
13+47 ~ 13+70 RT (HIGHLAND AVE)

REMOVING AND RESETTING PROPERTY MARKERS
0+69 RT (WORCESTER AVE)

CHAIN-LINK FENCE, 4 FEET (MOD. - POST AND RAIL FENCE)
1+67 ~ 2+93 RT (WORCESTER AVE)

CHAIN-LINK FENCE, 6 FEET
35+00 ~ 36+50 RT

REMOVAL OF EXISTING FENCE
35+00 ~ 38+58 LT

CONCRETE MEDIAN BARRIER
35+00 ~ 37+08 LT

TERMINAL CONNECTOR FOR STEEL BEAM GUARDRAIL
37+08 LT ~ 1EACH

MODIFIED ECCENTRIC LOADER TERMINAL
37+10 ~ 37+48 LT

REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL
35+00 ~ 38+96 LT

ADJUST ELEVATION OF VALVE BOX
35+40 LT
38+25 LT
11+18 RT (HIGHLAND AVE)
11+21 RT (HIGHLAND AVE)
38+69 RT
38+97 RT

DUCTILE, IRON PIPE, CEM. LINED
35+47 ~ 35+53 RT (NEW 6"x30' PIPE)
39+25 RT ~ 39+25 LT
NEW 6"x75' PIPE

GATE VALVE WITH VALVE BOX
39+25 LT

HYDRANT, RELOCATE
38+69 LT
RELOCATE TO 39+25 LT

STONE FILL, TYPE I
35+25 ~ 37+00 LT (ABOVE WALL)
35+25 ~ 0+70 RT (WORCESTER AVE)
35+00 RT ~ 0+50 RT (WORCESTER AVE)

STONE FILL, TYPE II
35+00 ~ 35+25 LT
35+00 ~ 35+25 RT

VERTICAL GRANITE CURB
35+00 ~ 5+75 RT (WORCESTER AVE)
5+75 LT (WORCESTER AVE) ~ 2+91 RT (RELOCATED WORCESTER AVE)
3+15 (WORCESTER AVE) ~ 39+85 RT
39+98 ~ 40+00 RT
36+72 ~ 38+28 RT
0+57 ~ 3+16 LT (WORCESTER AVE)
35+00 ~ 37+99 RT (MEDIAN)
35+00 ~ 37+99 LT (MEDIAN)
37+08 ~ 12+48 LT (HIGHLAND AVE)
10+32 ~ 11+36 RT (MEDIAN HIGHLAND AVE)
10+32 ~ 11+36 LT (MEDIAN HIGHLAND AVE))
15+83 LT (SCHOOL DR) ~ 12+41 RT (HIGHLAND AVE)
15+83 RT (SCHOOL DR) ~ 39+71 LT
39+89 ~ 40+00 LT

8" UNDERDRAIN CARRIER PIPE
22 36+27 LT ~ 36+38 LT
NEW 8"x15' UNDERDRAIN CARRIER PIPE
21 36+75 RT ~ 36+77 RT
NEW 8"x37' UNDERDRAIN CARRIER PIPE
32 38+85 RT ~ 38+90 RT
NEW 8"x7' UNDERDRAIN CARRIER PIPE W/F.B. @ 38+90 RT
32 39+57 LT ~ 40+10 LT
NEW 8"x53' UNDERDRAIN CARRIER PIPE W/F.B. @ 39+57 LT

LIMITS OF ANCHORS & UNDERDRAIN
17 34+24 RT ~ 35+50 RT
NEW 8"x126' UNDERDRAIN W/F.B. @ 35+50 RT
21 34+30 LT ~ 36+38 LT
NEW 8"x209' UNDERDRAIN W/F.B. @ 36+38 LT
23 36+38 LT ~ 37+50 LT
NEW 8"x112' UNDERDRAIN W/F.B. @ 37+50 LT
24 35+50 RT ~ 36+00 RT
NEW 8"x50' UNDERDRAIN W/F.B. @ 36+00 RT
25 36+00 RT ~ 36+28.2 RT
NEW 8"x30' UNDERDRAIN W/F.B. @ 36+28.2 RT
26 36+28.2 RT ~ 0+63 RT (WORCESTER AVE)
NEW 8"x30' UNDERDRAIN W/F.B. @ 0+63 RT
28 36+77 RT ~ 38+10 RT
NEW 8"x133' UNDERDRAIN W/F.B. @ 38+10 RT
30 38+90 RT ~ 40+11 RT
NEW 8"x121' UNDERDRAIN W/F.B. @ 40+11 RT
NEW 8"x53' UNDERDRAIN W/F.B. @ 39+04 LT

2' MAXIMUM EXPOSURE HEIGHT B-10

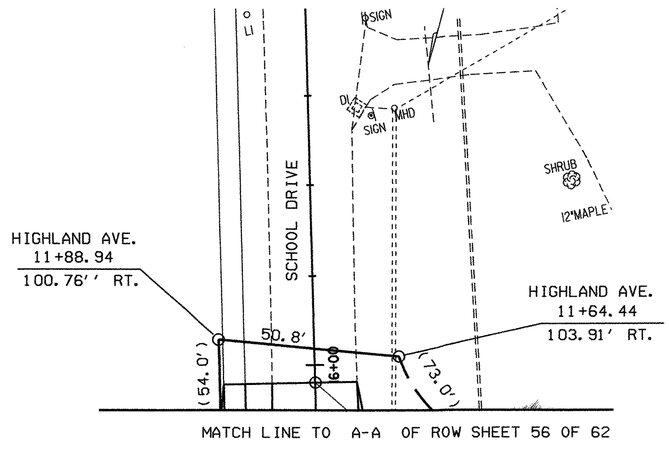
(P.D.C. (MODIFIED) CHAIN-LINK FENCE, 4' TO BE INSTALLED 5' TYP. FROM LIMIT OF SLOPE WORK. LOCATION OF THE G.R.F. (MODIFIED) MAY VARY AND SHALL BE FIELD ADJUSTED TO AVOID LIGHTING CONFLICTS, OTHER OBSTACLES AND REMOVAL OF TREES

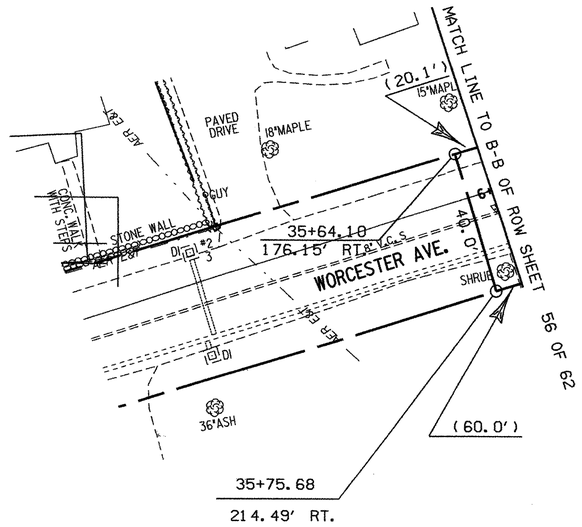
CONTRACTOR TO ENSURE TRENCHES DO NOT CONFLICT WITH EXISTING OR PROPOSED ANCHOR ANGLES

SCALE IN FEET 0 20 40

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 04-DEC-2006
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
ROW SHEET 56 OF 62	SHEET 37 OF 239





ROADWAY LAYOUT SHEET 4A

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

ALL GRAPHICS IN ZZZ

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: r86c027zzz.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI — PLOT DATE: 04-DEC-2006
SQUAD LEADER: KEN UPMAL — SURVEY DATE: 1/87
ROW SHEET 57 OF 62 SHEETS — DRAWN BY: E. ATKINS
SHEET 38 OF 239

ROADWAY LAYOUT SHEET 5

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)

40+00 ~ 40+68 RT
41+11 ~ 42+00 RT
42+00 ~ 43+62 LT
43+85 ~ 44+35 LT
44+52 ~ 45+00 LT

EXISTING DRAINAGE

33 40+12 LT
EXISTING DI- REMOVE
EXISTING PIPE - PLUG
34 41+16 RT ~ 41+20 RT
EXISTING DI@ 41+16 RT - REMOVE
EXISTING DI@ 41+20 RT - RETAIN
EXISTING PIPE - RETAIN
35 41+20 RT ~ 41+68 RT
EXISTING PIPE & DI- RETAIN
36 42+05 LT
EXISTING DI- REMOVE
EXISTING PIPE - PLUG
37 42+58 LT
EXISTING DI- REMOVE
EXISTING PIPE - PLUG
38 43+57 LT
EXISTING DI& PIPE - REMOVE
39 44+68 LT
EXISTING DI- REMOVE
EXISTING PIPE - PLUG
40 44+80 LT
EXISTING DI- REMOVE
EXISTING PIPE - PLUG
41 26+00 LT ~ 26+01 RT (SAUNDERS AVE)
EXISTING PIPE & DI- REMOVE
42 26+66 LT ~ 26+75 LT (SAUNDERS AVE)
EXISTING PIPE - RETAIN
43 26+66 LT ~ 26+67 RT (SAUNDERS AVE)
EXISTING PIPE - RETAIN

NEW DRAINAGE

45 38+85 RT ~ 40+10 RT
NEW 36"x124' RCP/CPEP (SL)
W/DI@ 40+10 RT
47 20+49.62 RT (HEBARD AVE)~ 40+10 LT
NEW 18"x23' RCP/CPEP (SL)
W/DI@ 20+49.62 RT
48 40+10 LT ~ 40+10 RT
NEW 18"x59' RCP/CPEP (SL)
W/DI@ 40+10 LT
49 40+10 RT ~ 41+16.36 RT
NEW 36"x106' RCP/CPEP (SL)
W/JB @ 41+16.36 RT
50 41+16.36 RT ~ 43+50 RT
NEW 36"x234' RCP/CPEP (SL)
W/DI@ 43+50 RT
51 43+50 RT ~ 43+50 RT
NEW 18"x12' RCP/CPEP (SL)
W/DI@ 43+50 RT
52 43+55 LT ~ 43+50 LT
NEW 18"x17' RCP/CPEP (SL)
W/DI@ 43+55 LT
53 43+50 LT ~ 43+50 RT
NEW 18"x37' RCP/CPEP (SL)
W/DI@ 43+50 LT
54 43+50 RT ~ 44+00 RT
NEW 36"x46' RCP/CPEP (SL)
W/DI@ 44+00 RT
55 44+00 LT ~ 44+00 RT
NEW 18"x38' RCP/CPEP (SL)
W/DI@ 44+00 RT
56 44+00 RT ~ 45+10 RT
NEW 30"x106' RCP/CPEP (SL)
W/DI@ 45+10 RT
57 25+44 LT ~ 25+44.06 LT (SAUNDERS AVE)
NEW 18"x8' RCP/CPEP (SL)
W/DI@ 25+44 LT
58 25+44.06 LT ~ 25+44.06 RT (SAUNDERS AVE)
NEW 18"x23' RCP/CPEP (SL)
W/DI@ 25+44.06 LT
59 26+19.2 RT ~ 25+44.06 RT (SAUNDERS AVE)
NEW 18"x72' RCP/CPEP (SL)
W/JB @ 26+19.2 RT

CHANGING ELEVATION OF SEWER MANHOLE

41+88 LT
41+96 RT
43+54 RT
25+42 LT (SAUNDERS AVE)
25+59 LT (SAUNDERS AVE)

8" UNDERDRAIN

30 38+90 RT ~ 40+11RT
NEW 8"x121' UNDERDRAIN
W/F.B. @ 38+90 RT
34 40+11RT ~ 41+10 RT
NEW 8"x99' UNDERDRAIN
W/F.B. @ 41+10 RT
36 40+50 LT ~ 41+75 LT
NEW 8"x125' UNDERDRAIN
W/F.B. @ 41+75 LT
37 43+56 LT ~ 44+54 LT
NEW 8"x96' UNDERDRAIN
W/F.B. @ 43+56 LT & 44+54 LT
38 41+25 RT ~ 44+00 RT
NEW 8"x275' UNDERDRAIN
W/F.B. @ 41+25 RT
40 44+00 RT ~ 44+90 RT
NEW 8"x90' UNDERDRAIN
W/F.B. @ 44+90 RT

8" UNDERDRAIN CARRIER PIPE

32 39+57 LT ~ 40+10 LT
NEW 8"x53' UNDERDRAIN CARRIER PIPE
W/F.B. @ 39+57 LT
33 40+10 RT ~ 40+11RT
NEW 8"x3' UNDERDRAIN CARRIER PIPE
W/F.B. @ 40+11RT
35 40+10 LT ~ 40+50 LT
NEW 8"x40' UNDERDRAIN CARRIER PIPE
W/F.B. @ 40+50 LT
39 44+00 RT ~ 44+00 RT
NEW 8"x4' UNDERDRAIN CARRIER PIPE
W/F.B. @ 44+00 RT

VERTICAL GRANITE CURB

40+00 ~ 41+33 RT
41+59 ~ 43+63 RT
43+79 ~ 44+36 RT
44+52 ~ 45+00 RT
40+00 ~ 40+94 LT
41+35 ~ 43+58 LT
43+83 ~ 44+79 LT

BITUMINOUS CONCRETE CURB, TYPE B

43+47 ~ 25+50 LT (SAUNDERS AVE)
25+50 RT (SAUNDERS AVE)~ 45+00 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH

40+00 ~ 41+27 RT
40+00 ~ 40+89 LT
41+65 ~ 45+00 RT
41+42 ~ 43+53 LT
43+89 ~ 44+57 LT
41+96 ~ 43+46 LT (PRIVATE)

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH

40+89 ~ 41+42 LT
41+27 ~ 41+65 RT
43+53 ~ 43+89 LT

CONSTRUCT CONCRETE SIDEWALK RAMPS W/ DETECTABLE WARNING SURFACE

25+28 LT TYPE I (SAUNDERS AVE)

CONSTRUCT BITUMINOUS CONCRETE DRIVES

21+03 ~ 21+33 RT (HEBARD AVE)
41+33 ~ 41+59 RT
43+64 ~ 43+79 RT
44+36 ~ 44+52 RT
40+94 ~ 41+35 LT
43+58 ~ 43+83 LT

REMOVAL OF EXISTING FENCE

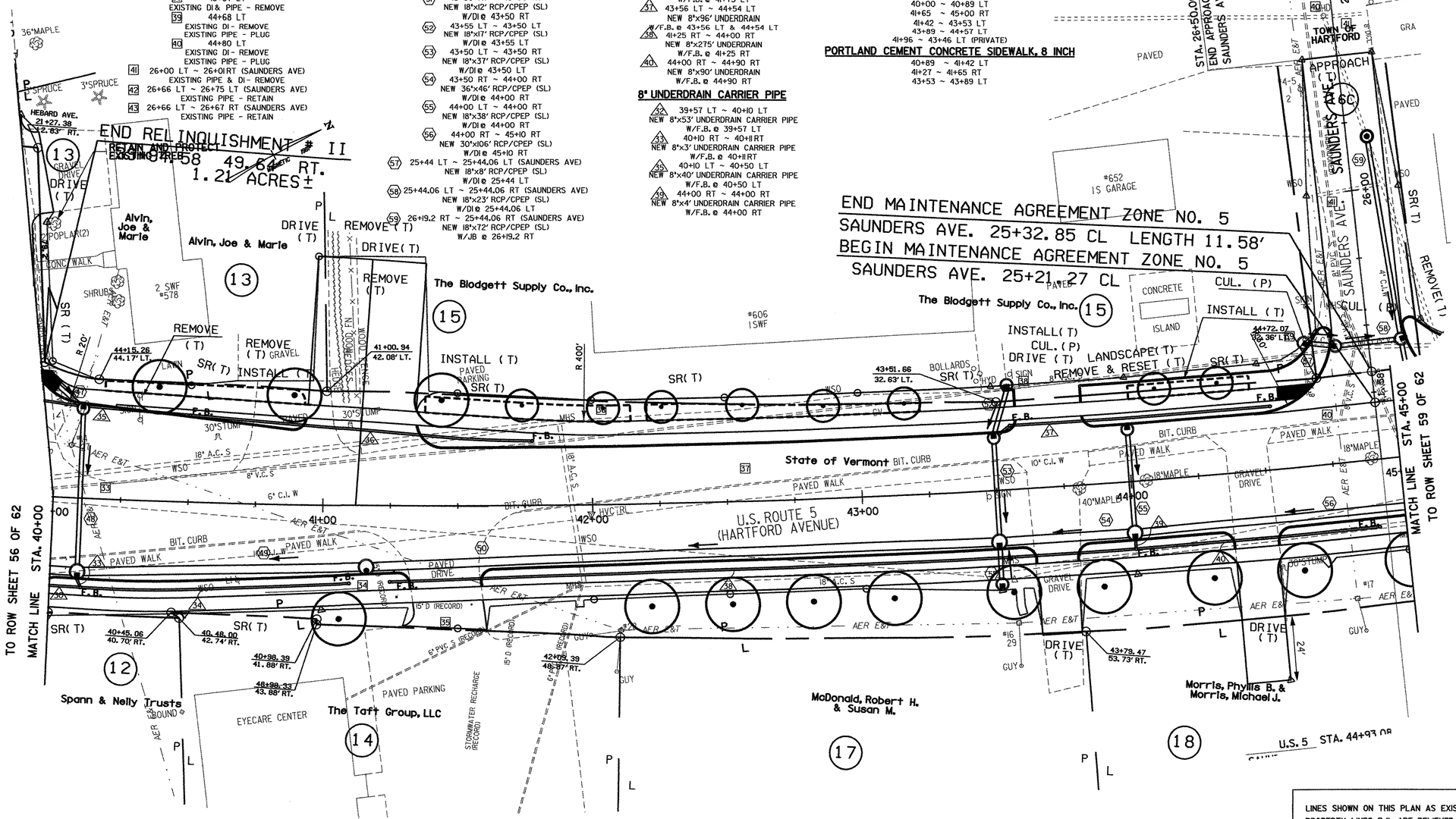
41+09 ~ 41+12 LT

ADJUST ELEVATION OF VALVE BOX

40+50 LT
40+57 RT
41+94 RT
42+91LT
43+04 LT
43+58 LT
44+89 LT
45+04 LT
26+04 RT (SAUNDERS AVE)
26+05 LT (SAUNDERS AVE)

DUCTILE IRON PIPE, CEM. LINED

43+45 LT ~ 43+62 LT
NEW 6"x17' DI PIPE



FOR LANDSCAPE DETAIL
SEE ROW SHEET 40 OF 62

FOR EROSION CONTROL DETAIL
SEE ROW SHEET 31 OF 62

RIGHT-OF-WAY AGENT OF
PROJECT: FRANK J. MALNATI JR.

0 20 40
SCALE IN FEET

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 04-DEC-2006
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
ROW SHEET 58 OF 62	SHEET 39 OF 239

ROADWAY LAYOUT SHEET 6

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)

45+00 ~ 45+53 LT
45+69 ~ 45+95 LT
46+11 ~ 47+36 LT
47+65 ~ 48+40 LT
48+40 ~ 48+88 RT
49+18 ~ 50+00 RT

EXISTING DRAINAGE

44 26+19.2 RT ~ 25+40 RT (SAUNDERS AVE)
EXISTING PIPE - REMOVE
45 46+17 LT ~ 46+65.2 RT
EXISTING DI(LT) - REMOVE
EXISTING DI(RT) - RETAIN
EXISTING PIPE - PLUG
46 47+12 LT
EXISTING DI - REMOVE
EXISTING PIPE - PLUG
47 48+79 LT
EXISTING DI - REMOVE
EXISTING PIPE - PLUG
48 30+43 LT ~ 30+48 LT (PIERCE ST.)
EXISTING DI - REMOVE
EXISTING PIPE - PLUG
49 30+48 LT ~ 30+98.6 LT (PIERCE ST)
EXISTING PIPE & DMH - REMOVE
50 30+48 LT ~ SEWER (PIERCE ST)
EXISTING PIPE - REMOVE AND PLUG AT SEWER
51 30+76 LT ~ 30+76 RT (PIERCE ST)
EXISTING PIPE & DI - REMOVE

NEW DRAINAGE

56 44+00 RT ~ 45+10 RT
NEW 30"X106' RCP/CPEP (SL)
W/DI@ 45+10 RT
59 26+19.2 RT ~ 25+44.06 RT (SAUNDERS AVE)
NEW 18"x72' RCP/CPEP (SL)
W/JB @ 26+19.2 (SAUNDERS AVE)
60 25+44.06 RT (SAUNDERS AVE) ~ 45+10 RT
NEW 18"x61' RCP/CPEP (SL)
W/DI@ 25+44.06 RT (SAUNDERS AVE)
61 45+50 LT ~ 45+10 RT
NEW 18"x54' RCP/CPEP (SL)
W/DI@ 45+50 LT
62 45+10 RT ~ 46+15 RT
NEW 24"x104' RCP/CPEP (SL)
W/DI@ 46+15 RT
63 46+65.2 RT ~ 46+15 RT
NEW 18"x54' RCP/CPEP (SL)
64 46+15 RT ~ 47+10 RT
NEW 24"x93' RCP/CPEP (SL)
W/DI@ 47+10 RT

NEW DRAINAGE (CONT.)

65 47+10 LT ~ 47+10 RT
NEW 18"x38' RCP/CPEP (SL)
W/DI@ 47+10 LT
66 47+10 RT ~ 49+40 RT
NEW 24"x229' RCP/CPEP (SL)
W/DI@ 49+40 RT
67 30+98.0 LT ~ 30+38.73 RT (PIERCE ST)
NEW 18"x60' RCP/CPEP (SL)
W/JB @ 30+98.0 LT
68 30+34.5 LT ~ 30+38.73 RT (PIERCE ST)
NEW 18"x22' RCP/CPEP (SL)
W/DI@ 30+36.94 LT
69 30+38.73 RT (PIERCE ST) ~ 49+40 LT
NEW 18"x24' RCP/CPEP (SL)
W/DI@ 30+38.73 RT
70 49+40 LT ~ 49+40 RT
NEW 18"x38' RCP/CPEP (SL)
W/DI@ 49+40 LT
71 49+40 RT ~ 50+30 RT
NEW 18"x88' RCP/CPEP (SL)
W/JB @ 50+30 RT

REHABING DI, CB OR MH, CLASS II

46+65.2 RT

MAINTENANCE AGREEMENT NO. 6
PIERCE ST. 30+44.81 CL LENGTH 23.40'
BEGIN MAINTENANCE AGREEMENT NO. 6
PIERCE ST. 30+21.41 CL

TOWN OF HARTFORD
APPROACH (T) 16C
GRAVEL
PAVED
#676 2 SWF
19
Richard, Margret B.
SAUNDERS AVE.
REMOVE(T)
SR(T)
INSTALL (T)
45+11.05 33.68' LT.
45+72.07 34.68' LT.
Richard, Margret B. & Richard, Steven L.
20
#694 1 SWF
21
Richard, Margret B.
#706 2 SWF
22
Duclos, Stephen G. & Barbara J.
#720 2 SWF
SIGN POLE
DRIVE (T)
PAVED DRIVE
CONC. WALK
LILACS
WALK(T)
GRAVEL DRIVE
12" POPLAR
23
LSBF #736
N/F Stephen & Karen Smith
Pistey, Arthur J.
48+88.36 44.05' LT.
REMOVE (T)
BIT. CURB
COMM. SIGN
16D
APPROACH (T) TOWN OF HARTFORD
N/F Norma Adams
PIERCE STREET
STA. 31+00.00 END APPROACH PIERCE ST.
(3) 15" SPRUCE
Vincent, Nancy A.
2 SWF LAUNDROMAT #754
26
49+38.91 44.40' LT.
PAVED
GRASS
U.S. ROUTE 5 (HARTFORD AVENUE)
State of Vermont
46+00
47+00
48+00
49+00
50+00
30"MAPLE
27"MAPLE
18"MAPLE(2)
18"SPRUCE
APPLE
MAPLE
SIGN
GRAVEL DRIVE
PAVED WALK
PAVED PARKING
BIT. CURB
HVCTRL
GV
UNKNOWN GV
F.H.
SMH
MHS
MHD
WSO
GUY
AER E&T
TO ROW SHEET 58 OF 62 MATCH LINE STA. 45+00
TO ROW SHEET 60 OF 62 MATCH LINE STA. 50+00
18
Morris, Phyllis B. & Morris, Michael J.
#71
45+91.91 50.68' RT.
24
INSTALL(T)
DRIVE (T)
47+31.31 BOUND 44.36' RT.
LOT LINE
STORM WATER TREATMENT UNIT
Upper Valley Haven, Inc.
#20A
48+71.13 39.14' RT.
48+70.16 42.15' RT.
U.S. 5 PIERCE ST. STA. 49+07.13 = STA. 30+00.00
25' R.O.W. TO Upper Valley Haven, Inc.
St. Paul's Episcopal Church
25
PAVED PARKING

CHANGING ELEVATION OF SEWER MANHOLE

45+00 RT
45+01 LT
45+18 LT
46+76 RT
49+19 RT
49+24 LT
30+49 LT (PIERCE STREET)

8" UNDERDRAIN

42 45+12 RT ~ 47+12 RT
NEW 8"x204' UNDERDRAIN
W/F.B. @ 46+81 RT
44 47+12 RT ~ 50+30 RT
NEW 8"x318' UNDERDRAIN
W/F.B. @ 50+30 RT
45 45+29 LT ~ 47+10 LT
NEW 8"x181' UNDERDRAIN
W/F.B. @ 45+29 LT
47 47+10 LT ~ 48+83 LT
NEW 8"x173' UNDERDRAIN
W/F.B. @ 48+83 LT
49 49+43 LT ~ 51+50 LT
NEW 8"x207' UNDERDRAIN
W/F.B. @ 51+50 LT

8" UNDERDRAIN CARRIER PIPE

41 45+10 RT ~ 45+12 RT
NEW 8"x3' UNDERDRAIN CARRIER PIPE
W/F.B. @ 45+12 RT
43 47+10 RT ~ 47+12 RT
NEW 8"x4' UNDERDRAIN CARRIER PIPE
W/F.B. @ 47+12 RT
46 47+10 LT ~ 47+10 LT
NEW 8"x4' UNDERDRAIN CARRIER PIPE
W/F.B. @ 47+10 LT
48 49+40 LT ~ 49+43 LT
NEW 8"x5' UNDERDRAIN CARRIER PIPE
W/F.B. @ 49+43 LT

GRANITE SLOPE EDGING

45+95 ~ 46+11 RT

VERTICAL GRANITE CURB

45+00 ~ 45+39 RT
45+71 ~ 45+93 RT
46+11 ~ 47+18 RT
47+44 ~ 48+78 RT
49+26 ~ 50+00 RT
45+06 ~ 45+95 LT
46+20 ~ 46+85 LT
46+99 ~ 47+65 LT
47+80 ~ 48+96 LT
49+27 ~ 50+00 LT

BITUMINOUS CONCRETE CURB, TYPE B

45+06 LT ~ 45+90 LT
45+91 LT ~ 45+94 LT
49+24 LT ~ 50+00 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH

45+13 ~ 45+90 LT
46+25 ~ 46+80 LT
47+05 ~ 48+95 LT
49+24 ~ 49+98 LT
45+00 ~ 45+90 RT
46+16 ~ 47+13 RT
47+49 ~ 48+80 RT
49+25 ~ 50+00 RT
47+43 LT (PRIVATE)
47+96 LT (PRIVATE)

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH

45+90 ~ 46+25 LT
45+90 ~ 46+16 RT
46+80 ~ 47+05 LT
47+13 ~ 47+49 RT
48+80 ~ 49+25 RT
49+98 ~ 50+00 LT

CONSTRUCT CONCRETE SIDEWALK RAMPS W/ DETECTABLE WARNING SURFACE

25+30 RT TYPE I(SAUNDERS AVE)
30+27 LT TYPE I(PIERCE ST)
30+33 RT TYPE I(PIERCE ST)

CONSTRUCT BITUMINOUS CONCRETE DRIVES

45+59 ~ 45+71 RT
47+18 ~ 47+44 RT
48+83 ~ 49+20 RT
45+95 ~ 46+20 LT
46+85 ~ 46+99 LT
47+65 ~ 47+79 LT

REMOVING AND RESETTING PROPERTY MARKERS

47+31 RT

ADJUST ELEVATION OF GATE VALVE

45+09 LT
45+13 LT
46+17 LT
46+33 LT
46+39 LT
46+60 LT
47+11 LT
47+20 LT
47+85 LT
47+95 LT
48+43 RT
48+90 RT
49+67 LT

DUCTILE, IRON PIPE, CEM. LINED

47+22 LT ~ 47+25 LT
NEW 6"x27' PIPE

GATE VALVE AND VALVE BOX

47+25 LT

HYDRANT, RELOCATE

47+30 RT
RELOCATE TO 47+25 LT

FOR EROSION CONTROL DETAIL SEE ROW SHEET 32 OF 62

RIGHT-OF-WAY AGENT OF PROJECT: FRANK J. MALNATI JR.

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

0 20 40
SCALE IN FEET

FOR LANDSCAPE DETAIL SEE ROW SHEET 41 OF 62

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
ROW SHEET 59 OF 62
PLOT DATE: 04-DEC-2006
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET 40 OF 239

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)

50+00 ~ 51+93 RT
52+35 ~ 53+50 RT
53+73 ~ 54+72 RT

EXISTING DRAINAGE

52 49+70 RT ~ 50+44 RT
EXISTING PIPE - RETAIN
53 50+44 RT ~ 50+58 RT
EXISTING PIPE & DI - REMOVE
54 50+58 LT
EXISTING DI ~ REMOVE
EXISTING PIPE - PLUG
55 50+59 RT
EXISTING DI ~ REMOVE
EXISTING PIPE - PLUG
56 52+44 RT ~ 52+46 LT
EXISTING PIPE & DI - REMOVE
57 54+75 LT ~ 54+83 RT
EXISTING PIPE & DI - REMOVE
58 54+83 RT ~ 40+40 RT (DEVIN ST)
EXISTING PIPE & DI - REMOVE
EXISTING PIPE - PLUG

NEW DRAINAGE

71 49+40 RT ~ 50+30 RT
NEW 18"x88' RCP/CPEP (SL)
W/JB @ 50+30 RT
72 50+44 RT ~ 50+30 RT
NEW 18"x21' RCP/CPEP (SL)
W/DI@ 50+44 RT
73 35+38.1 RT ~ 35+34.5 LT (GOUDREAU ST)
NEW 18"x21' RCP/CPEP (SL)
W/DI@ 35+38.1
74 35+34.5 LT (GOUDREAU ST) ~ 52+45 RT
NEW 18"x26' RCP/CPEP (SL)
W/DI@ 35+34.5 LT
75 52+11 LT ~ 52+45 RT
NEW 18"x48' RCP/CPEP (SL)
W/DI@ 52+11 LT AND JB @ 52+45 RT

NEW DRAINAGE (CONT.)

76 52+45 RT ~ 54+00 RT
NEW 18"x153' RCP/CPEP (SL)
W/DI@ 54+00 RT
77 54+00 LT ~ 54+00 RT
NEW 18"x38' RCP/CPEP (SL)
W/DI@ 54+00 LT
78 54+00 RT ~ 55+12 RT
NEW 18"x110' RCP/CPEP (SL)
W/JB @ 55+12 RT
79 40+36.06 RT ~ 40+36.06 LT (DEVIN ST)
NEW 18"x18' RCP/CPEP (SL)
W/DI@ 40+36.06 RT
80 40+36.06 LT (DEVIN ST) ~ 55+12 RT
NEW 18"x20' RCP/CPEP (SL)
W/DI@ 40+36.06 LT

CHANGING ELEVATION OF SEWER MANHOLE

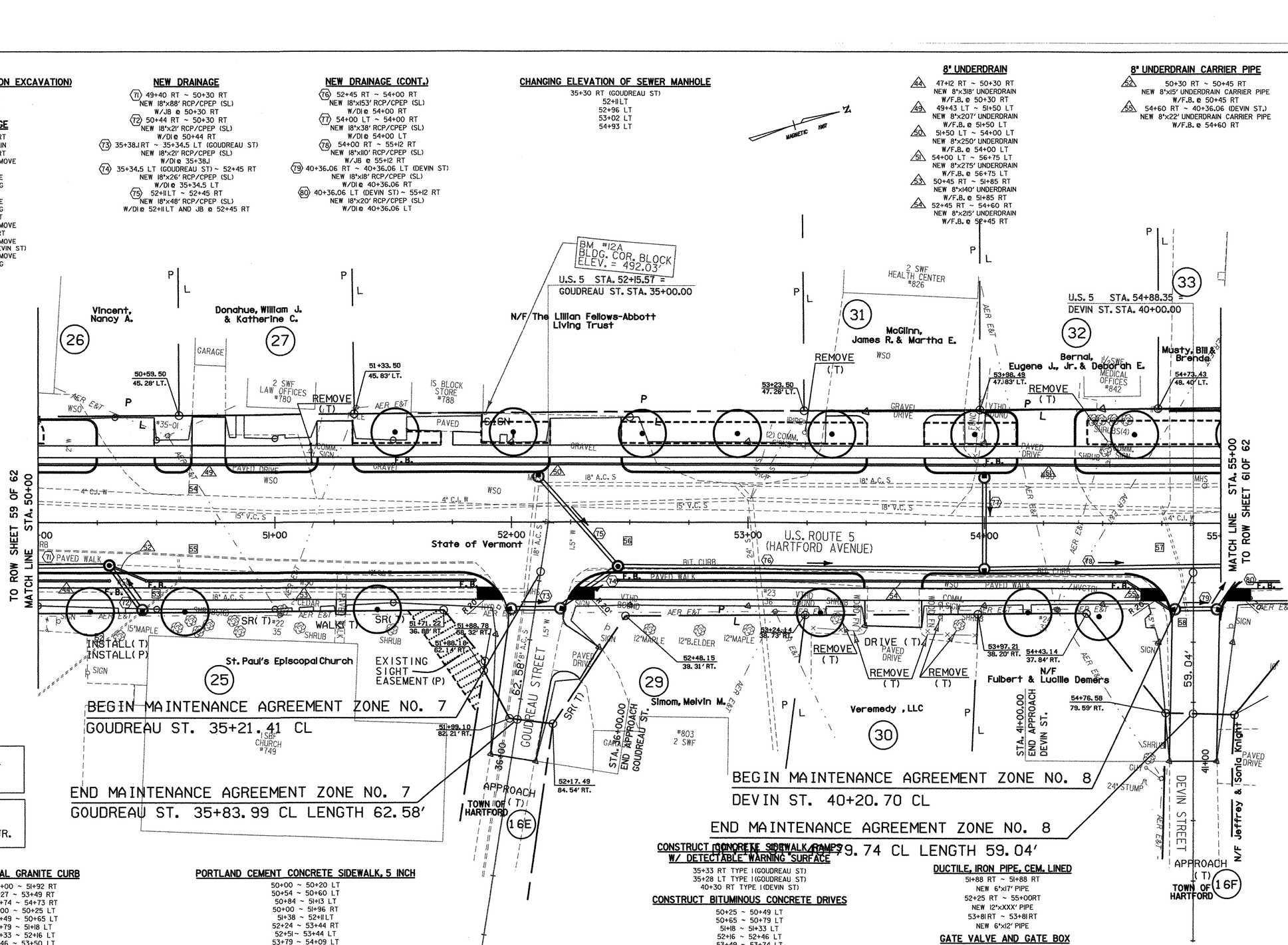
35+30 RT (GOUDREAU ST)
52+11 LT
52+96 LT
53+02 LT
54+93 LT

8" UNDERDRAIN

44 47+12 RT ~ 50+30 RT
NEW 8"x318' UNDERDRAIN
W/F.B.@ 50+30 RT
49 49+43 LT ~ 51+50 LT
NEW 8"x207' UNDERDRAIN
W/F.B.@ 51+50 LT
50 51+50 LT ~ 54+00 LT
NEW 8"x250' UNDERDRAIN
W/F.B.@ 54+00 LT
51 54+00 LT ~ 56+75 LT
NEW 8"x275' UNDERDRAIN
W/F.B.@ 56+75 LT
53 50+45 RT ~ 51+85 RT
NEW 8"x140' UNDERDRAIN
W/F.B.@ 51+85 RT
54 52+45 RT ~ 54+60 RT
NEW 8"x215' UNDERDRAIN
W/F.B.@ 52+45 RT

8" UNDERDRAIN CARRIER PIPE

52 50+30 RT ~ 50+45 RT
NEW 8"x15' UNDERDRAIN CARRIER PIPE
W/F.B.@ 50+45 RT
55 54+60 RT ~ 40+36.06 (DEVIN ST.)
NEW 8"x22' UNDERDRAIN CARRIER PIPE
W/F.B.@ 54+60 RT



FOR EROSION CONTROL DETAIL
SEE ROW SHEET 33 OF 62

RIGHT-OF-WAY AGENT OF
PROJECT: FRANK J. MALNATI JR.

VERTICAL GRANITE CURB

50+00 ~ 51+92 RT
52+27 ~ 53+49 RT
53+74 ~ 54+73 RT
50+00 ~ 50+25 LT
50+49 ~ 50+65 LT
50+79 ~ 51+18 LT
51+33 ~ 52+16 LT
52+46 ~ 53+50 LT
53+75 ~ 54+14 LT
54+38 ~ 55+00 LT

BITUMINOUS CONCRETE CURB, TYPE B

50+00 ~ 50+25 LT
54+38 ~ 54+47 LT
54+78 ~ 55+00 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH

50+00 ~ 50+20 LT
50+54 ~ 50+60 LT
50+84 ~ 51+13 LT
50+00 ~ 51+96 RT
51+38 ~ 52+11 LT
52+24 ~ 53+44 RT
52+51 ~ 53+44 LT
53+79 ~ 54+09 LT
53+79 ~ 54+77 RT
54+43 ~ 55+00 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH

50+20 ~ 50+54 LT
50+60 ~ 50+84 LT
51+13 ~ 51+38 LT
52+11 ~ 52+51 LT
53+44 ~ 53+79 LT
53+44 ~ 53+79 RT
54+09 ~ 54+43 LT

FOR LANDSCAPE DETAIL
SEE ROW SHEET 42 OF 62

CONSTRUCT CONCRETE SIDEWALK RAMPS W/ DETECTABLE WARNING SURFACE

35+33 RT TYPE I (GOUDREAU ST)
35+28 LT TYPE I (GOUDREAU ST)
40+30 RT TYPE I (DEVIN ST)

CONSTRUCT BITUMINOUS CONCRETE DRIVES

50+25 ~ 50+49 LT
50+65 ~ 50+79 LT
51+18 ~ 51+33 LT
52+16 ~ 52+46 LT
53+49 ~ 53+74 LT
53+49 ~ 53+74 RT
54+14 ~ 54+28 LT

REMOVING AND RESETTING PROPERTY MARKERS

53+25 RT
54+00 LT

ADJUST ELEVATION OF VALVE BOX

50+36 RT
51+02 LT
51+09 RT
51+96 LT
52+22 RT
53+87 RT
54+30 LT
54+71 LT

DUCTILE IRON PIPE, CEM. LINED

51+88 RT ~ 51+88 RT
NEW 6"x17' PIPE
52+25 RT ~ 55+00RT
NEW 12"xXXX' PIPE
53+81 RT ~ 53+81RT
NEW 6"x12' PIPE

GATE VALVE AND GATE BOX

51+88 RT

HYDRANT, RELOCATE

51+95 RT
RELOCATE TO 51+88 RT

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
ROW SHEET 60 OF 62
PLOT DATE: 04-DEC-2006
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET 41 OF 239

ROADWAY LAYOUT SHEET 7

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)

55+02 ~ 57+13 RT
57+49 ~ 57+99 RT
58+24 ~ 60+00 RT

EXISTING DRAINAGE

59 56+61 LT ~ 57+16 RT
EXISTING DI ~ REMOVE
EXISTING PIPE ~ PLUG
60 57+17 LT
EXISTING PIPE & DI ~ REMOVE
61 57+16 RT ~ 58+40 RT
EXISTING PIPE & DI ~ REMOVE
62 58+40 RT ~ 60+92 RT
EXISTING PIPE & DI ~ REMOVE
63 45+79 LT ~ 45+95 RT (HEWITT ST)
EXISTING PIPE ~ RETAIN

NEW DRAINAGE

80 40+36.06 LT (DEVIN ST) ~ 55+12 RT
NEW 18"x20' RCP/CPEP (SL)
W/DI @ 40+36.06 LT
81 55+12 LT ~ 55+12 RT
NEW 18"x35' RCP/CPEP (SL)
W/DI @ 55+12 LT
82 55+12 RT ~ 56+00 RT
NEW 18"x86' RCP/CPEP (SL)
W/DI @ 56+00 RT
83 56+00 RT ~ 56+77.66 RT
NEW 18"x76' RCP/CPEP (SL)
W/DI @ 56+77.66 RT
84 56+00 LT ~ 56+77.66 LT
NEW 18"x76' RCP/CPEP (SL)
W/DI @ 56+00 LT

NEW DRAINAGE (CONT.)

85 56+77.66 LT ~ 56+77.66 RT
NEW 18"x38' RCP/CPEP (SL)
W/DI @ 56+77.66 LT
86 56+77.66 RT ~ 58+40 RT
NEW 18"x160' RCP/CPEP (SL)
W/DI @ 58+40 RT
87 45+34.83 RT ~ 45+37.25 LT (ADVENT LN)
NEW 18"x16' RCP/CPEP (SL)
W/DI @ 45+34.83 RT
88 45+37.25 LT (ADVENT LN) ~ 58+40 RT
NEW 18"x20' RCP/CPEP (SL)
W/DI @ 45+37.25 LT
89 58+65 LT ~ 58+40 RT
NEW 18"x47' RCP/CPEP (SL)
W/DI @ 58+65 LT
90 58+40 RT ~ 60+91.7 RT
NEW 24"x251' RCP/CPEP (SL)
W/DI @ 60+91.7 RT

CHANGING ELEVATION OF SEWER MANHOLE

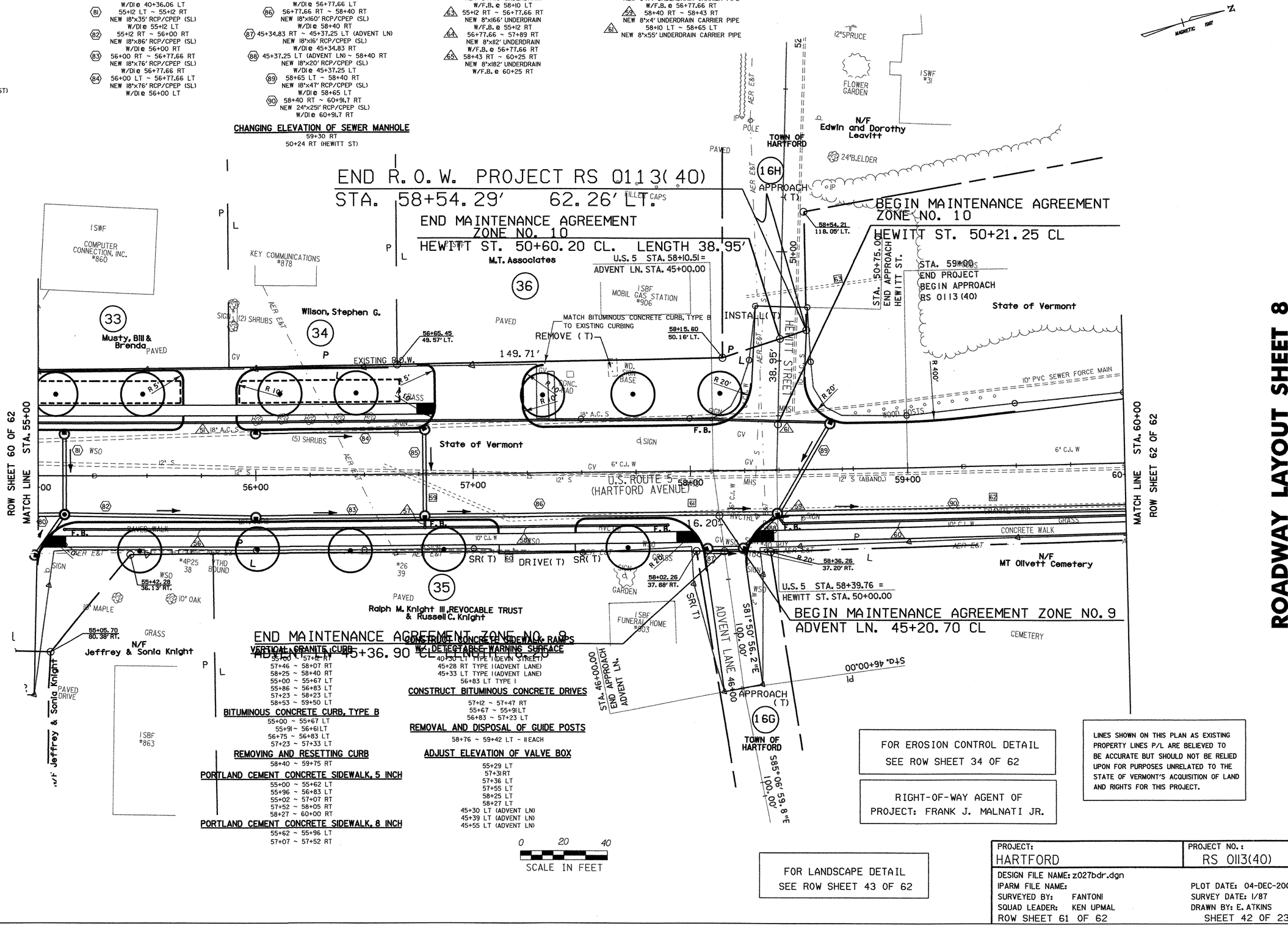
59+30 RT
50+24 RT (HEWITT ST)

8" UNDERDRAIN

51 54+00 LT ~ 58+10 LT
NEW 8"x410' UNDERDRAIN
W/F.B. @ 58+10 LT
63 55+12 RT ~ 56+77.66 RT
NEW 8"x166' UNDERDRAIN
W/F.B. @ 55+12 RT
64 56+77.66 ~ 57+89 RT
NEW 8"x112' UNDERDRAIN
W/F.B. @ 56+77.66 RT
65 58+43 RT ~ 60+25 RT
NEW 8"x182' UNDERDRAIN
W/F.B. @ 60+25 RT

8" UNDERDRAIN CARRIER PIPE

51 56+77.66 RT ~ 56+77.66 RT
NEW 8"x4' UNDERDRAIN CARRIER PIPE
W/F.B. @ 58+10 LT
59 58+40 RT ~ 58+43 RT
NEW 8"x4' UNDERDRAIN CARRIER PIPE
58+10 LT ~ 58+65 LT
61 NEW 8"x55' UNDERDRAIN CARRIER PIPE



ROADWAY LAYOUT SHEET 8

FOR EROSION CONTROL DETAIL
SEE ROW SHEET 34 OF 62

RIGHT-OF-WAY AGENT OF
PROJECT: FRANK J. MALNATI JR.

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

FOR LANDSCAPE DETAIL
SEE ROW SHEET 43 OF 62

CONSTRUCT CONCRETE SIDEWALK RAMPS W/ DETECTABLE WARNING SURFACE

40+30 LT TYPE I (DEVIN STREET)
45+28 RT TYPE I (ADVENT LANE)
45+33 LT TYPE I (ADVENT LANE)
56+83 LT TYPE I

VERTICAL GRANITE CURB

55+00 ~ 57+12 RT
57+46 ~ 58+07 RT
58+25 ~ 58+40 RT
55+00 ~ 55+67 LT
55+86 ~ 56+83 LT
57+23 ~ 58+23 LT
58+53 ~ 59+50 LT

BITUMINOUS CONCRETE CURB, TYPE B

55+00 ~ 55+67 LT
55+91 ~ 56+61 LT
56+75 ~ 56+83 LT
57+23 ~ 57+33 LT

REMOVING AND RESETTING CURB

58+40 ~ 59+75 RT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH

55+00 ~ 55+62 LT
55+96 ~ 56+83 LT
55+02 ~ 57+07 RT
57+52 ~ 58+05 RT
58+27 ~ 60+00 RT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH

55+62 ~ 55+96 LT
57+07 ~ 57+52 RT

CONSTRUCT BITUMINOUS CONCRETE DRIVES

57+12 ~ 57+47 RT
55+67 ~ 55+91 LT
56+83 ~ 57+23 LT

REMOVAL AND DISPOSAL OF GUIDE POSTS

58+76 ~ 59+42 LT ~ 11 EACH

ADJUST ELEVATION OF VALVE BOX

55+29 LT
57+31 RT
57+36 LT
57+55 LT
58+25 LT
58+27 LT
45+30 LT (ADVENT LN)
45+39 LT (ADVENT LN)
45+55 LT (ADVENT LN)

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z027bdr.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
ROW SHEET 61 OF 62
PLOT DATE: 04-DEC-2006
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET 42 OF 239

COLD PLANING - BCP
60+75 ~ 61+25

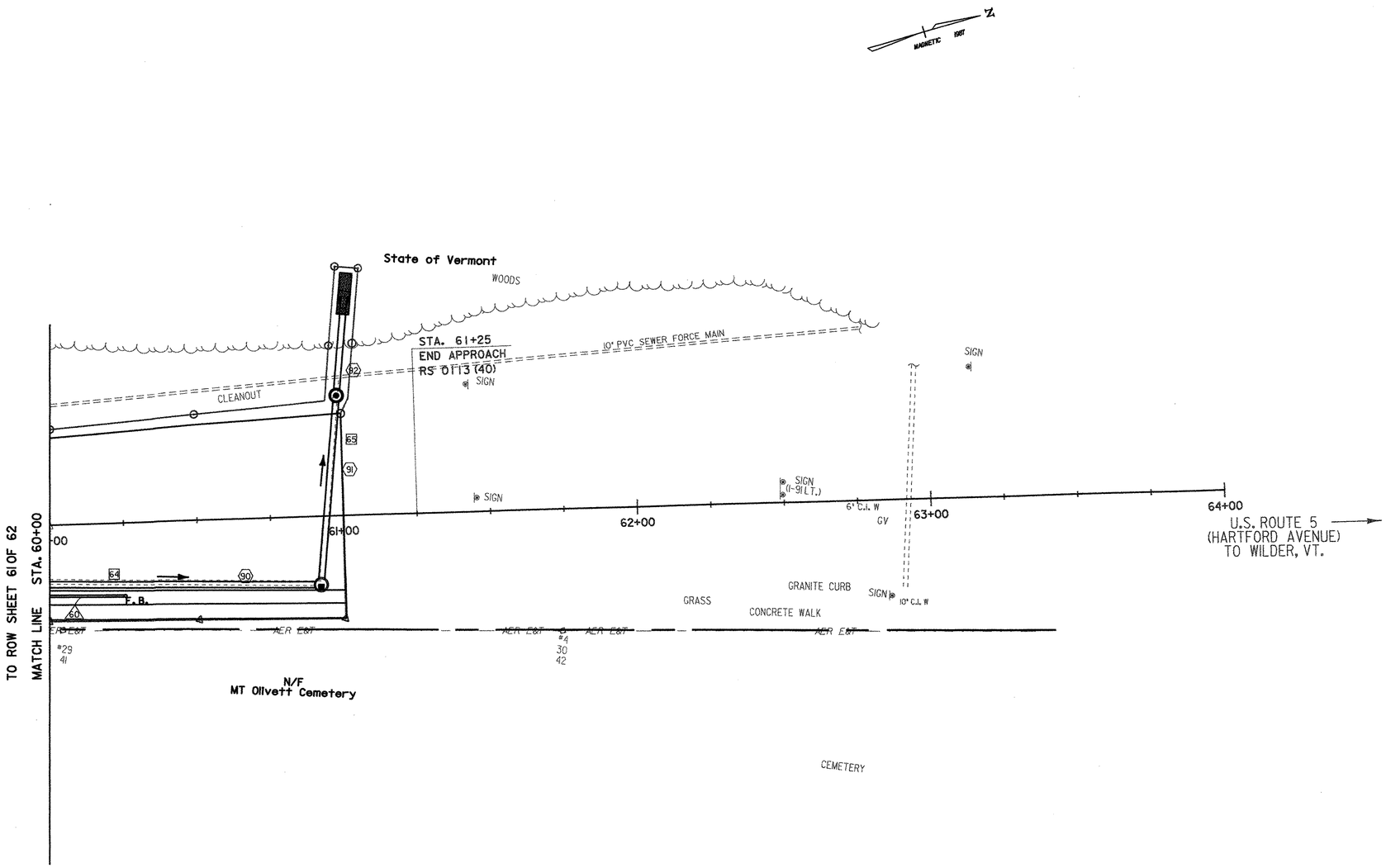
REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
60+00 ~ 61+25 RT

EXISTING DRAINAGE
64 58+40 RT ~ 60+92 RT
EXISTING PIPE & DI - REMOVE
65 60+92 RT ~ 61+00 LT
EXISTING PIPE & DI - REMOVE

NEW DRAINAGE
90 58+40 RT ~ 60+91.7 RT
NEW 24"X251' RCP/CPEP (SL)
W/DI @ 60+91.7 RT
91 60+91.7 RT ~ 60+97.4 LT
NEW 24"x63' CPEP (SL)/CAAP/PCCSP (PI)/CPEP
92 60+97.4 LT ~ 61+02 LT
NEW 24"x32' CPEP (SL)/CAAP/PCCSP (PI)/CPEP
W/JB @ 60+97.4 LT W/END SECTION @ OUTLET

8" UNDERDRAIN
60 58+43 RT ~ 60+25 RT
NEW 8"x182' UNDERDRAIN
W/F.B. @ 60+25 RT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH
60+00 ~ 61+25 RT



ROADWAY LAYOUT SHEET 9

FOR LANDSCAPE DETAIL
SEE ROW SHEET 44 OF 62

FOR EROSION CONTROL DETAIL
SEE ROW SHEET 35 OF 62

RIGHT-OF-WAY AGENT OF
PROJECT: FRANK J. MALNATI JR.

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 04-DEC-2006
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
ROW SHEET 62 OF 62	SHEET 43 OF 239

ROADWAY LAYOUT SHEET 1

CLEARING AND GRUBBING
(INCLUDING INDIVIDUAL TREES & STUMPS)
19+28 ~ 20+08 RT
19+55 RT (L)
19+84 RT (S)
20+03 RT (M)

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
20+35 ~ 20+45 RT
21+45 ~ 25+00 RT
21+45 ~ 25+00 LT

STONE FILL, TYPE II
19+28 ~ 20+10 RT

RIPRAP, HEAVY TYPE
19+25 ~ 19+28 RT

VERTICAL GRANITE CURB
21+45 ~ 21+52 LT
21+55 ~ 24+19 LT

BITUMINOUS CONCRETE CURB, TYPE B
21+75 ~ 23+75 RT

REMOVING AND RESETTING CURB
~~20+35 ~ 20+45 RT~~ 20+25 ~ 20+50 RT
20+68 ~ 20+75 RT (ISLAND)
21+45 ~ 25+00 RT
24+60 ~ 25+00 RT
21+59 ~ 25+00 RT (MEDIAN)
21+59 ~ 25+00 LT (MEDIAN)
} REMOVAL OF NEW CURB

BIT. CONCRETE TRAFFIC ISLANDS IMPRINTED COLORIZED PAVEMENT
21+59 ~ 24+00 ℄ - 90.2 SY

REMOVAL OF EXISTING CURB
21+45 ~ 25+00 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)
20+34 ~ 20+49 RT
21+45 ~ 25+00 LT
21+45 ~ 25+00 RT
24+00 LT (PRIVATE - 5' WIDE X 4' LONG)

BRICK PAVING
~~21+59.4 ~ 24+00.0 MEDIAN ISLAND - 84 SY~~
~~24+00.0 ~ 25+00.0 MEDIAN ISLAND EDGING - 23 SY~~

CONCRETE SIDEWALK RAMPS W/ DETECTABLE WARNING SURFACE
21+54 RT TYPE 6
21+54 LT TYPE 6

REMOVING AND RESETTING PROPERTY MARKERS
20+28.8 RT

CHAIN-LINK FENCE, 4 FEET
20+01~ 20+12 RT - ~~38~~ 53 FT

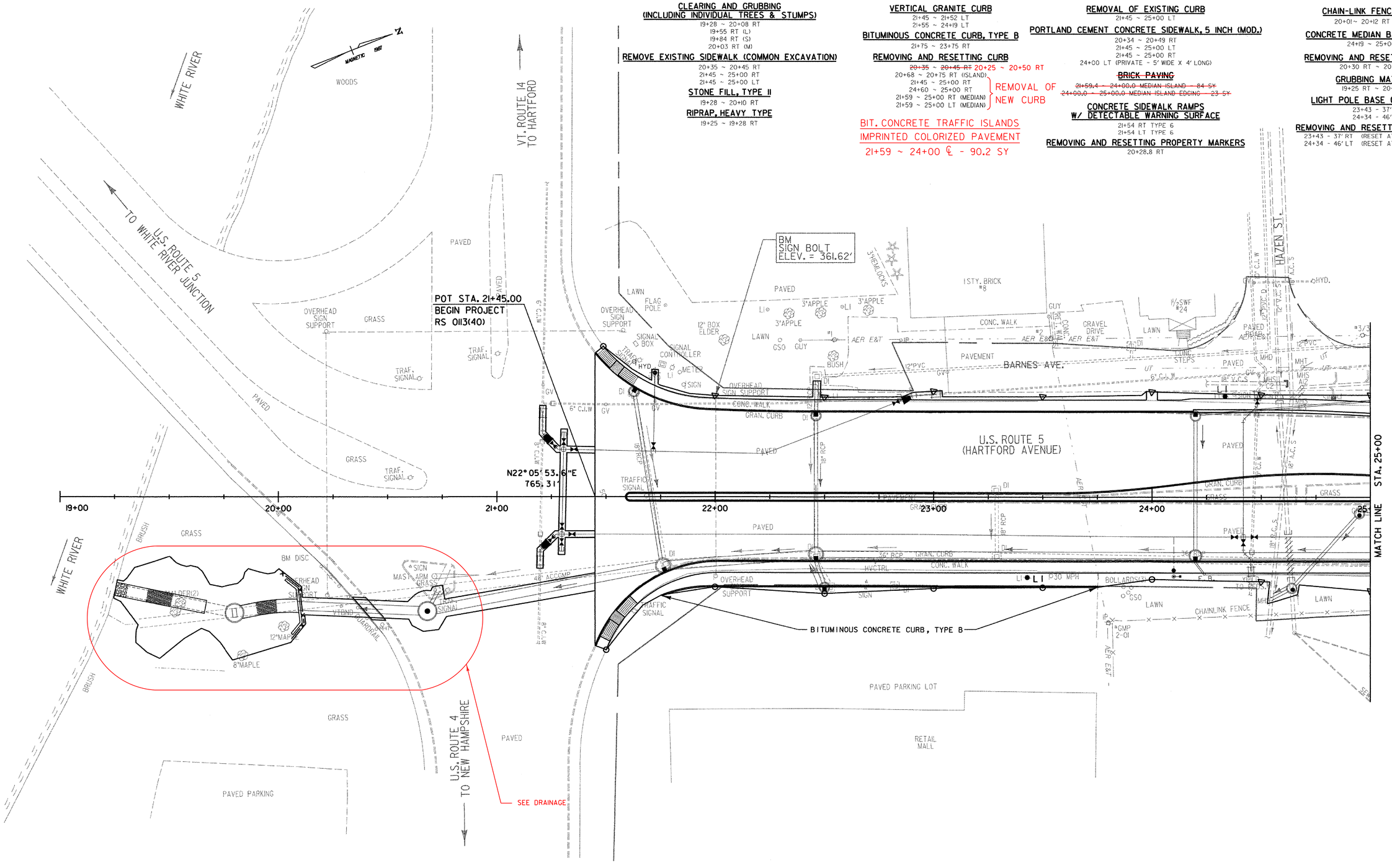
CONCRETE MEDIAN BARRIER (MOD.)
24+19 ~ 25+00 LT

REMOVING AND RESET GUARD RAIL
20+30 RT ~ 20+45 RT

GRUBBING MATERIAL
19+25 RT ~ 20+10 RT

LIGHT POLE BASE (BREAKAWAY)
23+43 - 37' RT
24+34 - 46' LT

REMOVING AND RESETTING LIGHT POLE
23+43 - 37' RT (RESET AT SAME LOCATION)
24+34 - 46' LT (RESET AT SAME LOCATION)



DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:
1) REFER TO CURB LAYOUT SHEETS FOR CURBING LAYOUT AND DIMENSIONS.
2) REFER TO DRAIN, SEWER, AND WATER LAYOUT SHEETS FOR UTILITY LAYOUT.

0 20 40
SCALE IN FEET

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 1/12/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 44 OF 239

CLEARING AND GRUBBING
(INCLUDING INDIVIDUAL TREES AND STUMPS)
29+50 ~ 30+00 RT
26+45 ~ 30+00 LT

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
25+00 ~ 28+66 RT
25+00 ~ 30+00 LT

~~**SOLID ROCK EXCAVATION**~~
~~**(REMOVAL OF EXISTING CONCRETE ROADWAY)**~~
~~28+50 ~ 30+00 7' x 22' WIDE~~
~~(EST. FROM 1931 REC. PLANS)~~

RETAINING WALL (SHEET PILE WALL)
26+43.5 LT ~ 29+00

STONE FILL, TYPE II
29+~~18~~ LT ~ 30+00 LT
29+48 RT ~ 30+00 RT

VERTICAL GRANITE CURB
29+87 ~ 30+00 RT
26+15 ~ 30+00 RT (MEDIAN)
26+15 ~ 30+00 LT (MEDIAN)

REMOVING AND RESETTING CURB
25+00 ~ 29+87 RT
25+00 ~ 28+66 RT
25+00 ~ 26+15 RT (MEDIAN)
25+00 ~ 26+15 LT (MEDIAN)
} REMOVAL OF NEW CURB

REMOVAL OF EXISTING CURB
25+00 ~ 30+00 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)
25+00 ~ 30+00 RT
25+00 ~ 30+00 LT

BRICK PAVING
~~25+00.0 ~ 25+90.7 MEDIAN ISLAND EDGING ~ 20.5 SY~~
~~25+90.7 ~ 26+00.0 MEDIAN ISLAND ~ 142.2 SY~~

BIT. CONCRETE TRAFFIC ISLANDS IMPRINTED COLORIZED PAVEMENT
25+90 ~ 30+00 ℄ ~ 149.2 SY

REMOVING AND RESETTING PROPERTY MARKERS
28+92 LT

CHAIN-LINK FENCE, 4 FEET
29+39 ~ 30+00 RT

CHAIN-LINK FENCE, 4 FEET (MOD.)
26+43.5 LT ~ 29+00 LT ~ ~~257~~ 255' (BARNES AVE WALL)

REMOVAL OF EXISTING FENCE
29+39 ~ 30+00 RT
(REMOVAL OF CHAIN-LINK FENCE, 4 FEET AT PROJECT COMPLETION)

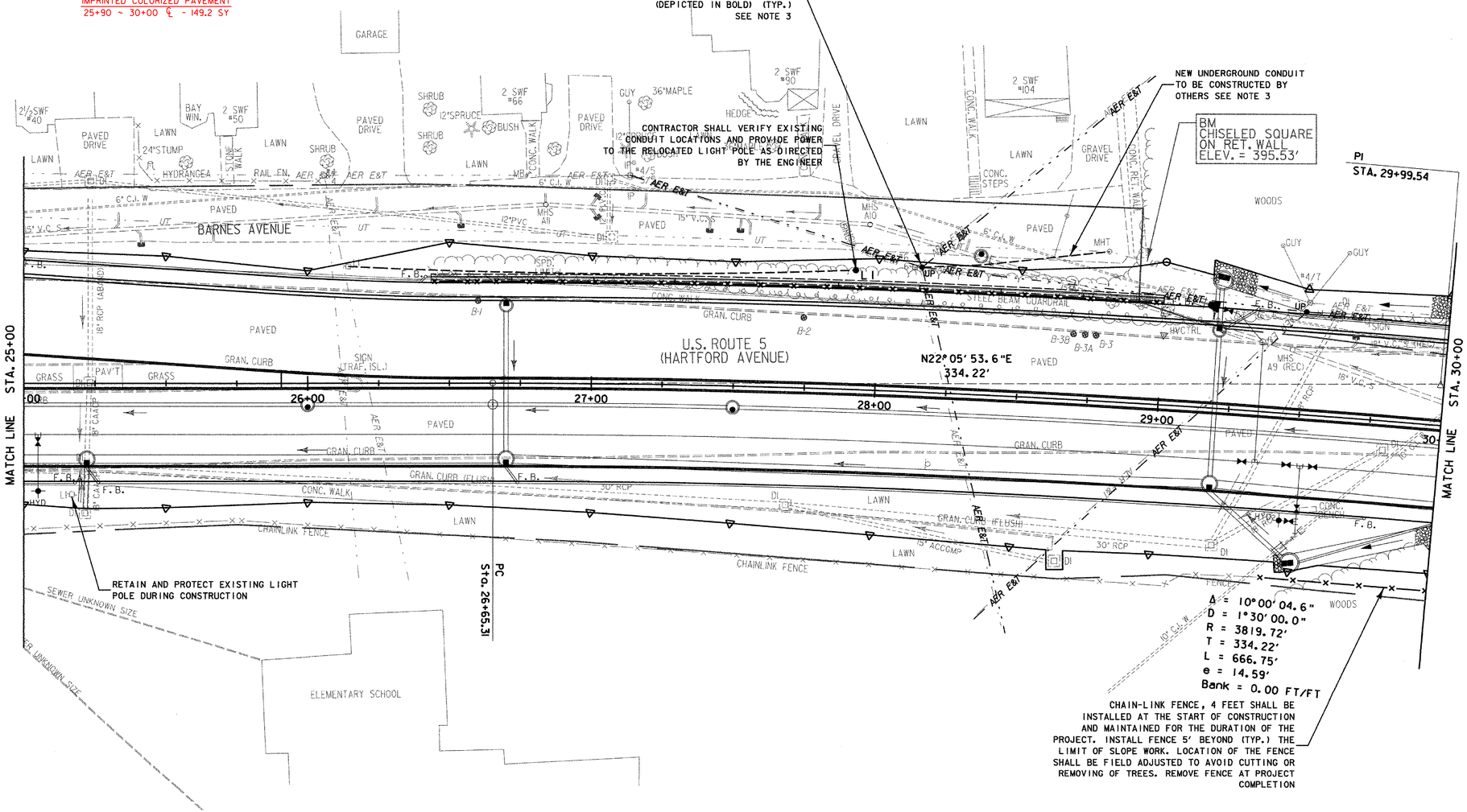
CONCRETE MEDIAN BARRIER (MOD.)
25+00 ~ 30+00 LT

REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL
26+45 ~ 29+27 LT

WIRED CONDUIT (2") (PVC)
26+14 LT (LP) ~ 27+92 LT (LP) - 179'

LIGHT POLE BASE (BREAKAWAY)
27+92 - 42' LT

REMOVING AND RESETTING LIGHT POLE
27+92 -35' LT RESET TO 27+92 - 42' LT



ROADWAY LAYOUT SHEET 2

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:
1) REFER TO CURB LAYOUT SHEETS FOR CURBING LAYOUT AND DIMENSIONS.
2) REFER TO DRAIN, SEWER, AND WATER LAYOUT SHEETS FOR UTILITY LAYOUT.
3) PROPOSED UTILITY POLES, OVERHEAD WIRES, AND UNDERGROUND CONDUIT TO BE CONSTRUCTED BY OTHERS; THE LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE.

0 20 40
SCALE IN FEET

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 2/28/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 45 OF 239

CLEARING AND GRUBBING
(INCLUDING INDIVIDUAL TREES AND STUMPS)
30+00 ~ 35+00 RT
30+00 ~ 35+00 LT

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
30+00 ~ 35+00 LT

SOLID ROCK EXCAVATION
(REMOVAL OF EXISTING CONCRETE ROADWAY)
31+75 ~~30+00~~ ~ 35+00 ~ 7' x ~~22'~~ WIDE 18'
(EST. FROM 1931 REC. PLANS)

~~U.S. RTE. 5~~
~~GROUND ANCHORED SOLDIER PILE WALL~~ VALUE ENGINEERING WALL
30+26 RT ~ 35+00 RT
30+25 RT ~ 35+00 RT

STONE FILL, TYPE I
32+75 RT ~ 35+00 RT (ABOVE WALL)

STONE FILL, TYPE II
30+00 LT ~ 35+00 LT
30+00 RT ~ 35+00 RT
30+00 RT ~ 32+75 RT (ABOVE WALL)

VERTICAL GRANITE CURB
30+00 ~ 35+00 RT
30+00 ~ 35+00 RT (MEDIAN)
30+00 ~ 35+00 LT (MEDIAN)

REMOVAL OF EXISTING CURB
30+00 ~ 31+80 LT

REMOVING AND RESETTING PROPERTY MARKERS
31+53 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)
30+00 ~ 35+00 RT
30+00 ~ 35+00 LT

~~BRICK PAVING~~
~~30+00.0 ~ 35+00.0 MEDIAN ISLAND 166.7 SY~~

CHAIN-LINK FENCE, 4 FEET
30+00 ~ 35+00 RT

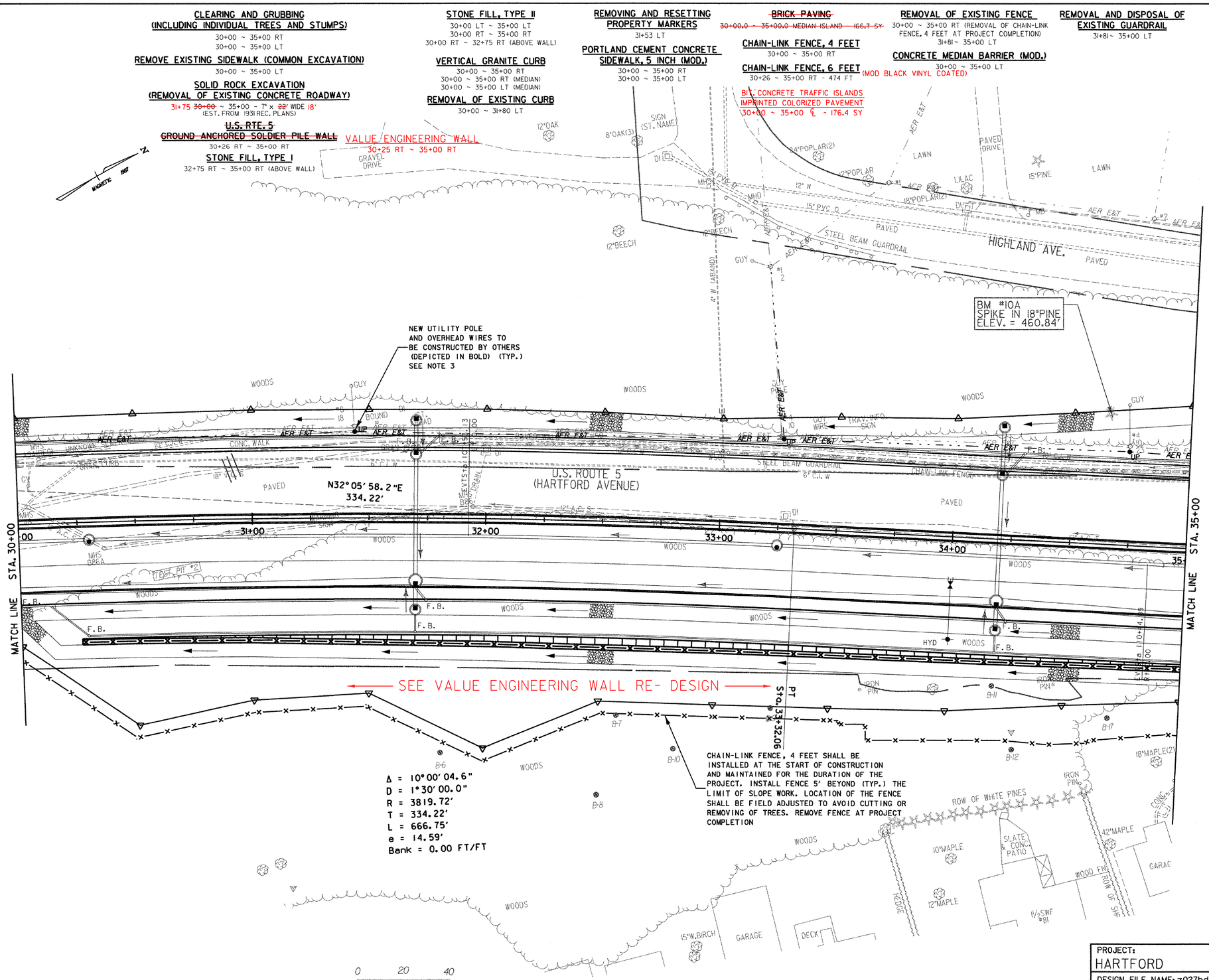
CHAIN-LINK FENCE, 6 FEET
30+26 ~ 35+00 RT ~ 474 FT

BIT. CONCRETE TRAFFIC ISLANDS IMPRINTED COLORIZED PAVEMENT
30+00 ~ 35+00 ℄ - 176.4 SY

REMOVAL OF EXISTING FENCE
30+00 ~ 35+00 RT (REMOVAL OF CHAIN-LINK FENCE, 4 FEET AT PROJECT COMPLETION)
31+81 ~ 35+00 LT

CONCRETE MEDIAN BARRIER (MOD.)
30+00 ~ 35+00 LT
(MOD BLACK VINYL COATED)

REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL
31+81 ~ 35+00 LT



ROADWAY LAYOUT SHEET 3

NOTES:
1) REFER TO CURB LAYOUT SHEETS FOR CURBING LAYOUT AND DIMENSIONS.
2) REFER TO DRAIN, SEWER, AND WATER LAYOUT SHEETS FOR UTILITY LAYOUT.
3) PROPOSED UTILITY POLES AND OVERHEAD WIRES TO BE CONSTRUCTED BY OTHERS; THE LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 2/28/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 46 OF 239

ROADWAY LAYOUT SHEET 4

CLEARING AND GRUBBING (INCLUDING INDIVIDUAL TREES AND STUMPS)
35+00 ~ 36+75 RT
35+00 ~ 36+85 LT
1+55 ~ 1+75 RT (WORCESTER AVE)
37+73 LT (S)
37+83 LT (S)
37+90 LT (M)
1+26 RT (M) (WORCESTER AVE)
2+85 LT (S) (WORCESTER AVE)
3+16 RT (S) (WORCESTER AVE)
10+88 LT (S) (HIGHLAND AVE)

COLD PLANING-BIT.PAVEMENT
13+75 ~ ~~14+00~~ (HIGHLAND AVE) 13+78

EXCAVATION OF SURFACES AND PAVEMENTS
36+97 ~ 37+44 LT COMMON EXC. (MOD)
54 ~~38+58~~ ~ 39+71 LT
~~0+55 ~ 1+32 LT (RELOC. WORCESTER AVE.)~~ COMMON EXC. (MOD)

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
39+04 ~ 39+87 RT
39+96 ~ 40+00 RT
35+00 ~ 39+20 LT
36+91 LT ~ 12+00 LT (HIGHLAND AVE)
11+82 LT ~ 11+85 RT (HIGHLAND AVE)

SOLID ROCK EXCAVATION (REMOVAL OF EXISTING CONCRETE ROADWAY)
35+00 ~ 40+00 - 7" x ~~22'~~ WIDE 18'
(EST. FROM 1931 REC. PLANS)

~~U.S. RTE. 5~~ VE WALL

~~GROUND ANCHORED SOLDIER PILE WALL~~
~~35+00 ~ 36+50 RT~~ 35+00 ~ 35+51 RT

STONE FILL, TYPE I
35+25 ~ 37+00 LT
35+25 ~ 0+76 RT (WORCESTER AVE)
35+00 RT ~ 0+74 RT (ABOVE WALL)

STONE FILL, TYPE II
35+00 ~ 35+25 LT
35+00 ~ 35+25 RT

VERTICAL GRANITE CURB
35+00 ~ 1+33 RT (WORCESTER AVE)
5+36 ~ 5+75 RT (WORCESTER AVE)
5+75 LT ~ 5+31 LT (WORCESTER AVE)
1+63 RT ~ 2+93 RT (WORCESTER AVE)
3+12 RT (WORCESTER AVE) ~ 38+93 RT
38+98 ~ 39+85 RT
39+97 ~ 40+00 RT
36+72 ~ 38+28 RT
0+57 ~ 3+16 LT (WORCESTER AVE)
35+00 ~ 37+99 RT (MEDIAN)
35+00 ~ 37+99 LT (MEDIAN)
37+08 ~ 37+86 LT
10+62 ~ 11+99 LT (HIGHLAND AVE)
12+05 ~ 12+48 LT (HIGHLAND AVE)
10+32 ~ 10+38 LT (MEDIAN HIGHLAND AVE)
10+32 ~ 10+36 RT (MEDIAN HIGHLAND AVE)
10+44 ~ 11+36 LT (MEDIAN HIGHLAND AVE)
10+41 ~ 11+36 RT (MEDIAN HIGHLAND AVE)
15+83 ~ 15+44 LT (SCHOOL DR)
11+85 ~ 11+97 RT (HIGHLAND AVE)
12+02 ~ 12+41 RT (HIGHLAND AVE)
15+37 ~ 15+83 RT (SCHOOL DR)
10+35 ~ 11+49 RT (HIGHLAND AVE)
39+66 ~ 38+95 LT
20+47 ~ 20+56 LT (HEBARD AVE)
20+47 ~ 20+56 RT (HEBARD AVE)

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)
35+00 ~ 1+33 RT (WORCESTER AVE)
1+60 ~ 2+88 RT (WORCESTER AVE)
3+16 RT (WORCESTER AVE) ~ 39+80 RT
35+00 ~ 12+00 LT (HIGHLAND AVE)
11+51 LT (HIGHLAND AVE) ~ 39+69 LT
39+91 ~ 40+00 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH (MOD.)
39+80 ~ 40+00 RT
2+88 ~ 3+16 RT (WORCESTER AVE)

~~BRICK PAVING~~
~~35+00 ~ 37+98.7 MEDIAN ISLAND 99.4 SY~~

CONSTRUCT CONCRETE SIDEWALK RAMPS W/ DETECTABLE WARNING SURFACE
38+96 RT TYPE 2
38+94 LT TYPE 2
5+33 RT TYPE 6 (WORCESTER AVE)
5+28 LT TYPE 6 (WORCESTER AVE)
10+40 LT TYPE 6 (HIGHLAND AVE)
11+50 RT TYPE 1 (HIGHLAND AVE)
11+83 RT TYPE 6 (HIGHLAND AVE)
12+00 RT TYPE 6 (HIGHLAND AVE)
12+00 LT TYPE 1 (HIGHLAND AVE)
20+44 RT TYPE 6 (HEBARD AVE)
20+44 LT TYPE 1 (HEBARD AVE)

CONSTRUCT BITUMINOUS CONCRETE DRIVES
~~39+85 ~ 39+97 RT~~ 40+04 - 40+16
2+93 ~ 3+12 RT (WORCESTER AVE)
12+41 ~ 12+62 RT (HIGHLAND AVE)
13+47 ~ 13+70 RT (HIGHLAND AVE)

REMOVING AND RESETTING PROPERTY MARKERS
0+69 RT (WORCESTER AVE)

MISCELLANEOUS FENCE (WOOD POST AND RAIL)
75
1+~~67~~ ~ 2+93 RT (WORCESTER AVE) - ~~172~~ FT 149.3 LF

CHAIN-LINK FENCE, 4 FEET
35+00 RT ~ 5+93 RT (WORCESTER AVE)

CHAIN-LINK FENCE, 6 FEET
35+00 ~ 36+50 RT - 159 FT

REMOVAL OF EXISTING FENCE
35+00 ~ 38+48 LT
35+00 RT ~ 5+93 RT (WORCESTER AVE)
(REMOVAL OF CHAIN-LINK FENCE, 4 FEET AT PROJECT COMPLETION)

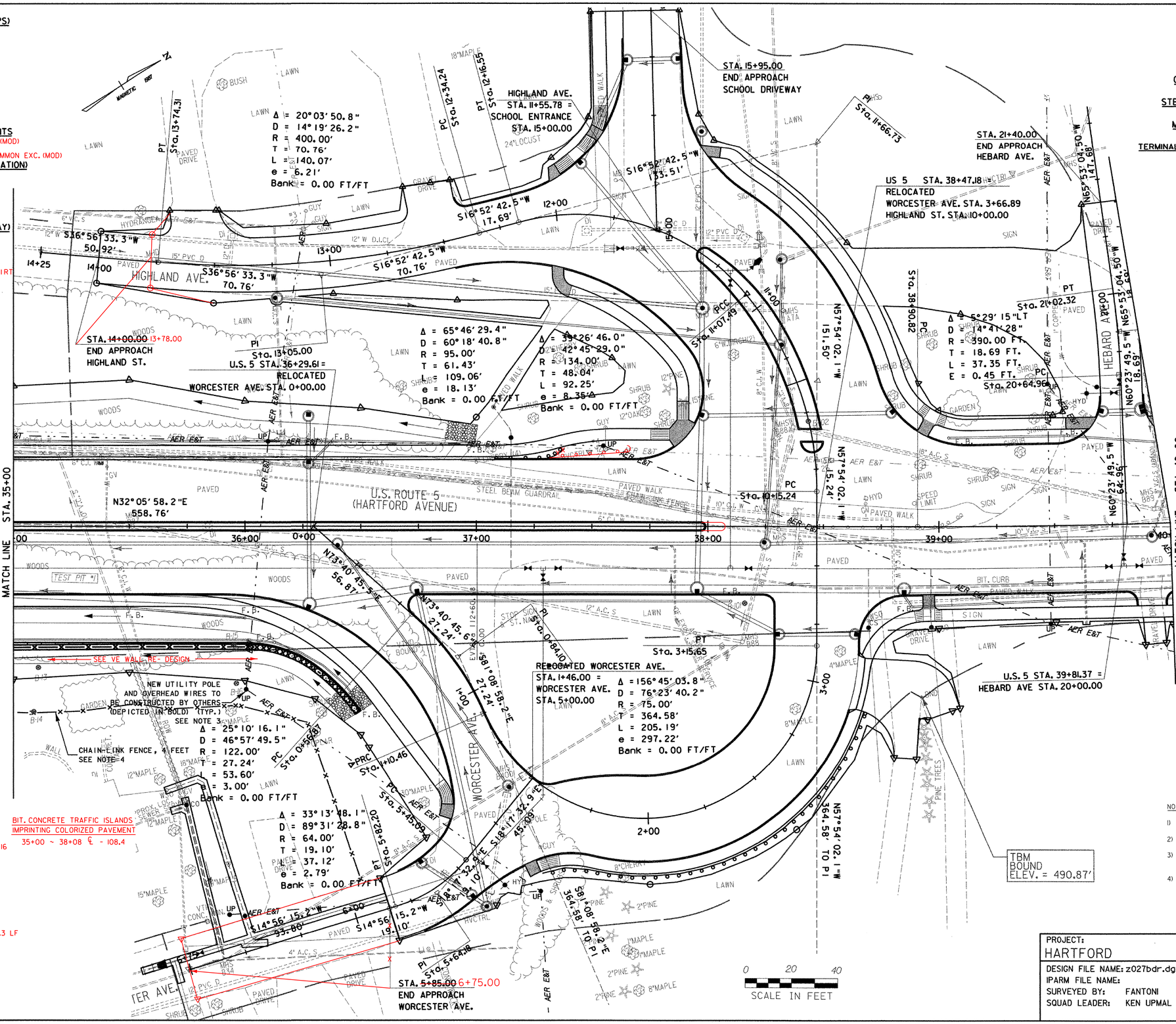
CONCRETE MEDIAN BARRIER (MOD.)
35+00 ~ 37+08 LT

STEEL BEAM GUARD RAIL (GALVANIZED)
37+08 ~ 37+26.8 LT

MANUFACTURED TERMINAL SECTION
37+26.8 LT - 1EACH

TERMINAL CONNECTOR FOR STEEL BEAM GUARDRAIL
37+08 LT - 1EACH

REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL
35+00 ~ 39+11 LT



NOTES:
1) REFER TO CURB LAYOUT SHEETS FOR CURBING LAYOUT AND DIMENSIONS.
2) REFER TO DRAIN, SEWER, AND WATER LAYOUT SHEETS FOR UTILITY LAYOUT.
3) PROPOSED UTILITY POLES AND OVERHEAD WIRES TO BE CONSTRUCTED BY OTHERS; THE LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE.
4) CHAIN-LINK FENCE, 4 FEET SHALL BE INSTALLED AT THE START OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. INSTALL FENCE 5' BEYOND (TYP.) THE LIMIT OF SLOPE WORK. LOCATION OF THE FENCE SHALL BE FIELD ADJUSTED TO AVOID CUTTING OR REMOVING OF TREES. REMOVE FENCE AT PROJECT COMPLETION.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 2/28/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 47 OF 239

CLEARING AND GRUBBING
(INCLUDING INDIVIDUAL TREES AND STUMPS)

40+60 LT (M)
41+10 LT (M)
43+81 RT (L)
44+06 RT (M)
44+53 RT (M)
44+89 LT (M)

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)

40+00 ~ 41+25 RT
41+62 ~ 42+48 RT
41+96 ~ 43+62 LT
43+85 ~ 44+35 LT
44+52 ~ 45+00 LT

SOLID ROCK EXCAVATION
(REMOVAL OF EXISTING CONCRETE ROADWAY)

40+00 ~ 45+00 - 7' x ~~22'~~ WIDE 18'
(EST. FROM 1931 REC. PLANS)

VERTICAL GRANITE CURB

40+00 ~ 41+33 RT
41+59 ~ 43+63 RT
43+78 ~ 44+37 RT
44+52 ~ 45+00 RT
40+00 ~ 40+~~94~~ LT62
~~41+34 ~ 43+59~~ LT 40+86 ~ 41+33 LT
43+83 ~ 44+65 LT 41+73 ~ 43+63 LT
25+31~ 25+48 LT (SAUNDERS AVE)

BITUMINOUS CONCRETE CURB, TYPE B

~~43+83 ~ 25+48 LT (SAUNDERS AVE)~~
~~43+55 ~ 43+59 LT~~

VERTICAL GRANITE CURB (MOD 2' HT)

40+00 LT ~ 40+70 LT - 85.4'

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)

40+02 ~ 41+28 RT
41+64 ~ 43+58 RT
43+83 ~ 44+32 RT
44+57 ~ 45+00 RT
40+00 ~ 40+~~89~~ LT62
~~41+39 ~ 43+54 LT~~ 41+73 ~ 43+54 LT
43+88 ~ 44+71 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH (MOD.)

40+00 ~ 40+02 RT
41+28 ~ 41+64 RT
43+58 ~ 43+83 RT
44+32 ~ 44+57 RT
~~40+89 ~ 41+39 LT~~ 40+62 ~ 40+86 LT
43+54 ~ 43+88 LT 41+33 ~ 41+73 LT

CONSTRUCT CONCRETE SIDEWALK RAMPS
W/ DETECTABLE WARNING SURFACE

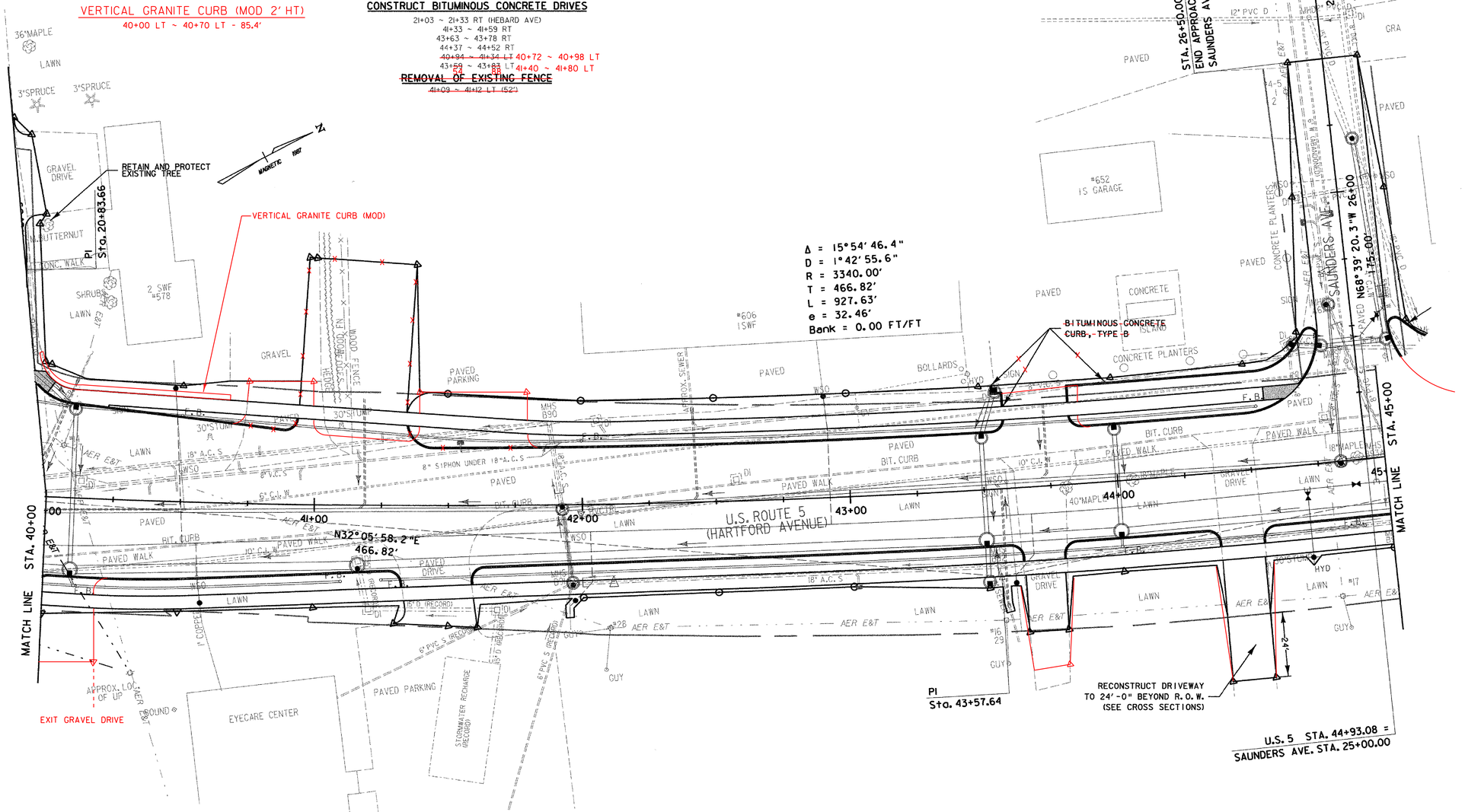
25+28 LT TYPE I (SAUNDERS AVE)

CONSTRUCT BITUMINOUS CONCRETE DRIVES

21+03 ~ 21+33 RT (HEBARD AVE)
41+33 ~ 41+59 RT
43+63 ~ 43+78 RT
44+37 ~ 44+52 RT
~~40+94 ~ 41+34 LT~~ 40+72 ~ 40+98 LT
43+~~59~~ 63 ~ 43+~~83~~ 88 LT 41+40 ~ 41+80 LT

REMOVAL OF EXISTING FENCE

~~41+09 ~ 41+12 LT (52')~~



ROADWAY LAYOUT SHEET 5

0 20 40
SCALE IN FEET

NOTES:

1) REFER TO CURB LAYOUT SHEETS FOR CURBING LAYOUT AND DIMENSIONS.
2) REFER TO DRAIN, SEWER, AND WATER LAYOUT SHEETS FOR UTILITY LAYOUT.

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 1/11/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 48 OF 239

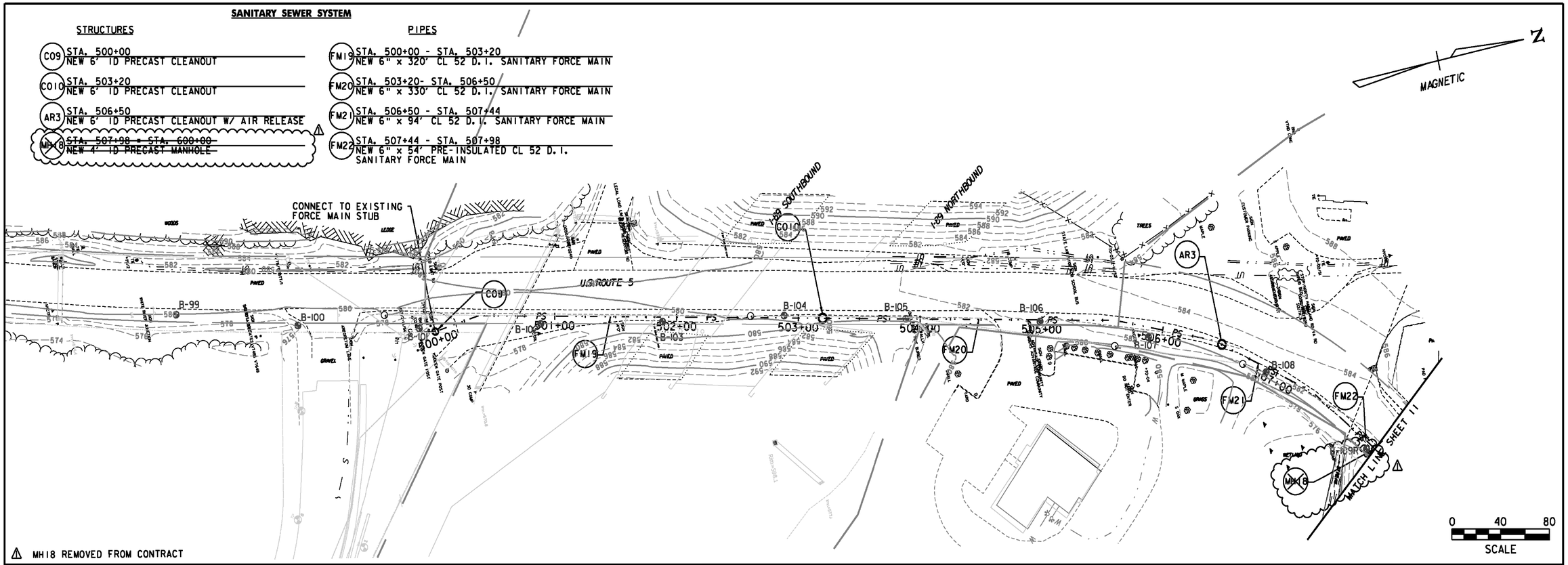
SANITARY SEWER SYSTEM

STRUCTURES

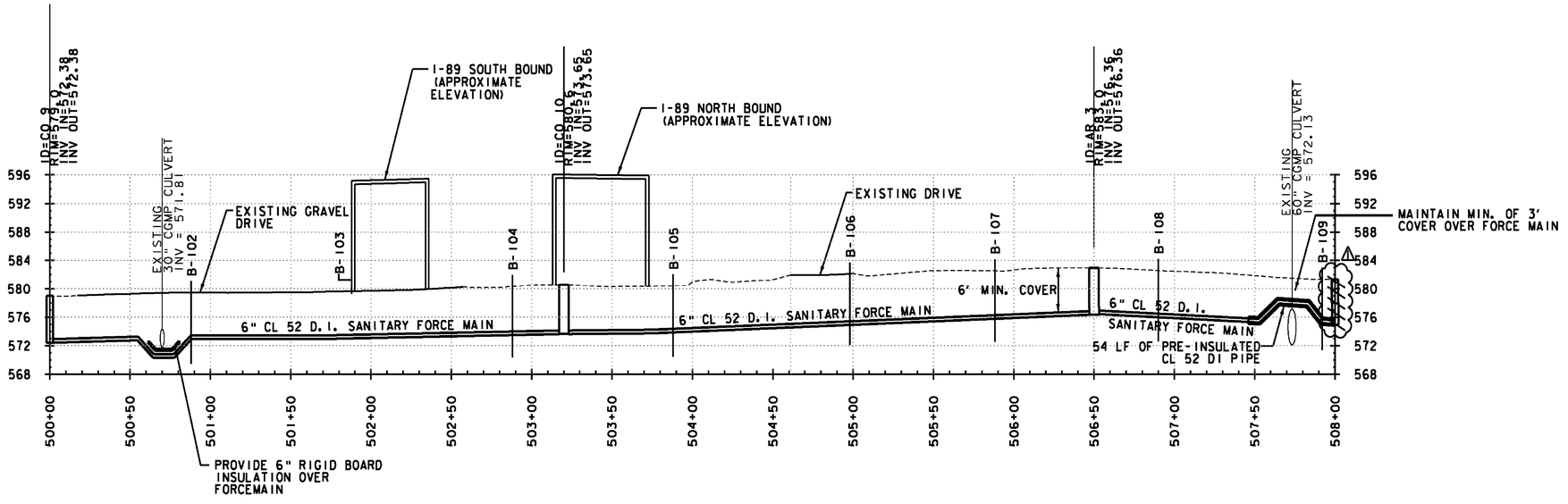
- C09 — STA. 500+00 — NEW 6' ID PRECAST CLEANOUT
- C010 — STA. 503+20 — NEW 6' ID PRECAST CLEANOUT
- AR3 — STA. 506+50 — NEW 6' ID PRECAST CLEANOUT W/ AIR RELEASE
- ~~MH18~~ — ~~STA. 507+98 - STA. 600+00~~ — ~~NEW 4' ID PRECAST MANHOLE~~ ⚠

PIPES

- FM19 — STA. 500+00 - STA. 503+20 — NEW 6" x 320' CL 52 D. I. SANITARY FORCE MAIN
- FM20 — STA. 503+20- STA. 506+50 — NEW 6" x 330' CL 52 D. I. SANITARY FORCE MAIN
- FM21 — STA. 506+50 - STA. 507+44 — NEW 6" x 94' CL 52 D. I. SANITARY FORCE MAIN
- FM22 — STA. 507+44 - STA. 507+98 — NEW 6" x 54' PRE-INSULATED CL 52 D. I. SANITARY FORCE MAIN



⚠ MH18 REMOVED FROM CONTRACT



20
10
SCALE
HORIZ. 1" = 40'
VERT. 1" =10'
40
80

Stantec

PROJECT NAME:	HARTFORD REST AREAS
PROJECT NUMBER:	IM BLDG(10)
FILE NAME: ...\U04A026PLT-UTL(revised).dgn	PLOT DATE: 9/16/2008
PROJECT LEADER: JTM	DRAWN BY: PZA
DESIGNED BY: MEHP	CHECKED BY: JTM
PLAN & PROFILE SHEET 10	SHEET 48R OF 70

ROADWAY LAYOUT SHEET 6

CLEARING AND GRUBBING (INCLUDING INDIVIDUAL TREES AND STUMPS)
45+12 LT(S)
45+25 LT (M)
45+89 LT (M)
46+46 RT (M)
47+27 RT (L)
47+31RT (L)
48+71RT (2) (M)

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
45+00 ~ 45+53 LT
45+69 ~ 45+95 LT
46+11 ~ 47+36 LT
47+65 ~ 48+40 LT
48+40 ~ 48+88 RT
49+18 ~ 50+00 RT

SOLID ROCK EXCAVATION (REMOVAL OF EXISTING CONCRETE ROADWAY)
45+00 ~ 50+00 ~ 7' x ~~22'~~ WIDE 18'
(EST. FROM 1931 REC. PLANS)

VERTICAL GRANITE CURB
~~GRANITE SLOPE EDGING~~
45+94 ~ 46+07 RT
(2" REVEAL)

VERTICAL GRANITE CURB
45+00 ~ 45+59 RT
45+71 ~ 45+94 RT
46+07 ~ 47+18 RT
47+44 ~ 48+86 RT
49+21 ~ 50+00 RT
25+48 ~ 25+32 RT (SAUNDERS AVE)
45+17 ~ 45+95 LT
46+19 ~ 46+85 LT
46+99 ~ 47+65 LT
47+79 ~ 48+91LT
30+30 ~ 30+38 LT (PIERCE ST)
49+27 ~ 50+00 LT

VERTICAL GRANITE CURB
~~BITUMINOUS CONCRETE CURB, TYPE B~~
25+48 RT (SAUNDERS AVE) ~ 45+95 LT
30+35 RT (PIERCE ST) ~ 50+00 LT

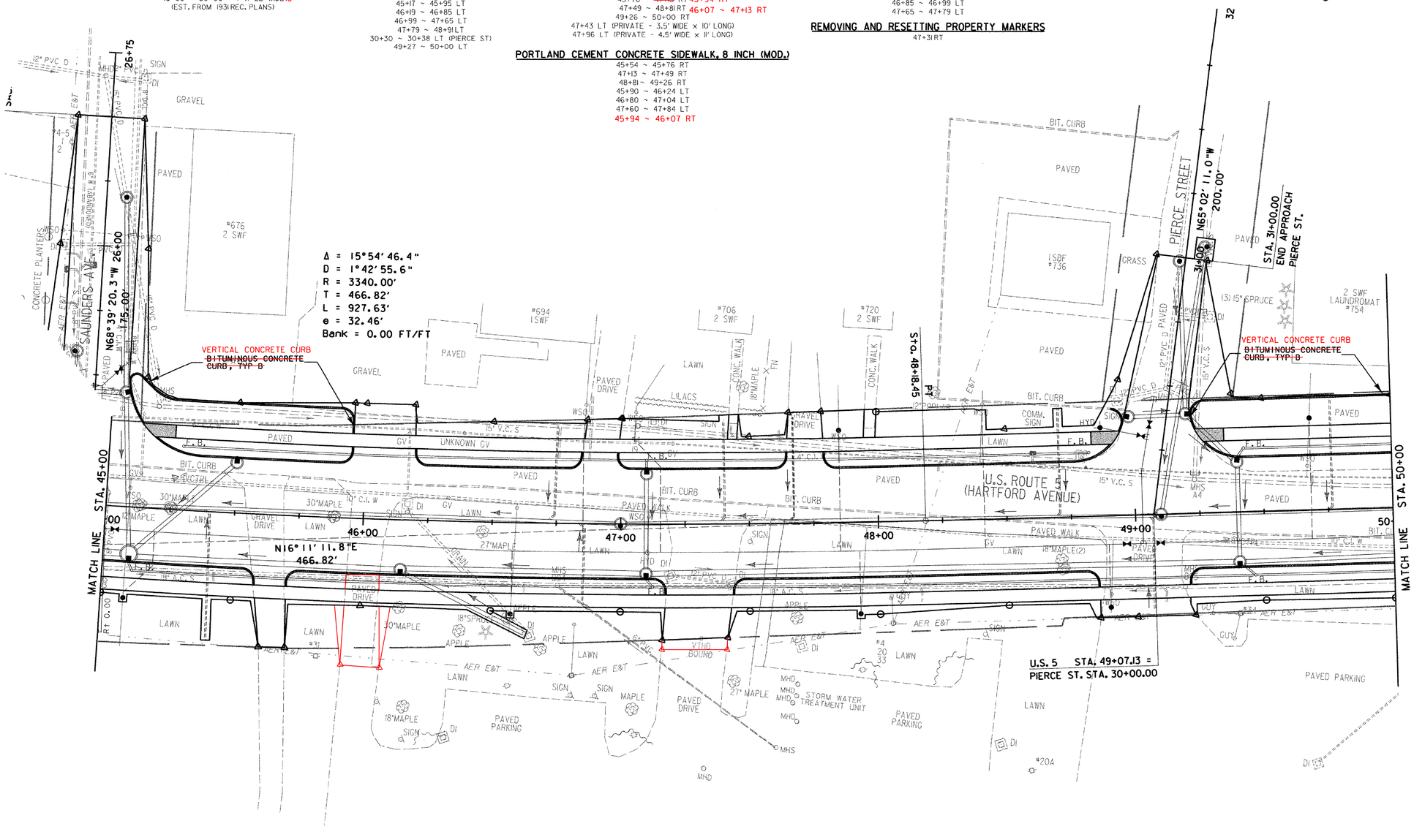
PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)
45+13 ~ 45+90 LT
46+24 ~ 46+80 LT
47+04 ~ 48+95 LT
49+24 ~ 50+00 LT
45+00 ~ 45+54 RT
45+76 ~ ~~47+13~~ RT 45+94 RT
47+49 ~ 48+81RT 46+07 ~ 47+13 RT
49+26 ~ 50+00 RT
47+43 LT (PRIVATE ~ 3.5' WIDE x 10' LONG)
47+96 LT (PRIVATE ~ 4.5' WIDE x 11' LONG)

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH (MOD.)
45+54 ~ 45+76 RT
47+13 ~ 47+49 RT
48+81 ~ 49+26 RT
45+90 ~ 46+24 LT
46+80 ~ 47+04 LT
47+60 ~ 47+84 LT
45+94 ~ 46+07 RT

CONSTRUCT CONCRETE SIDEWALK RAMPS W/ DETECTABLE WARNING SURFACE
25+30 RT TYPE I(SAUNDERS AVE)
30+27 LT TYPE I(PIERCE ST)
30+33 RT TYPE I(PIERCE ST)

CONSTRUCT BITUMINOUS CONCRETE DRIVES
45+59 ~ 45+71RT
47+18 ~ 47+44 RT
48+86 ~ 49+21RT
45+95 ~ 46+19 LT
46+85 ~ 46+99 LT
47+65 ~ 47+79 LT

REMOVING AND RESETTING PROPERTY MARKERS
47+31RT

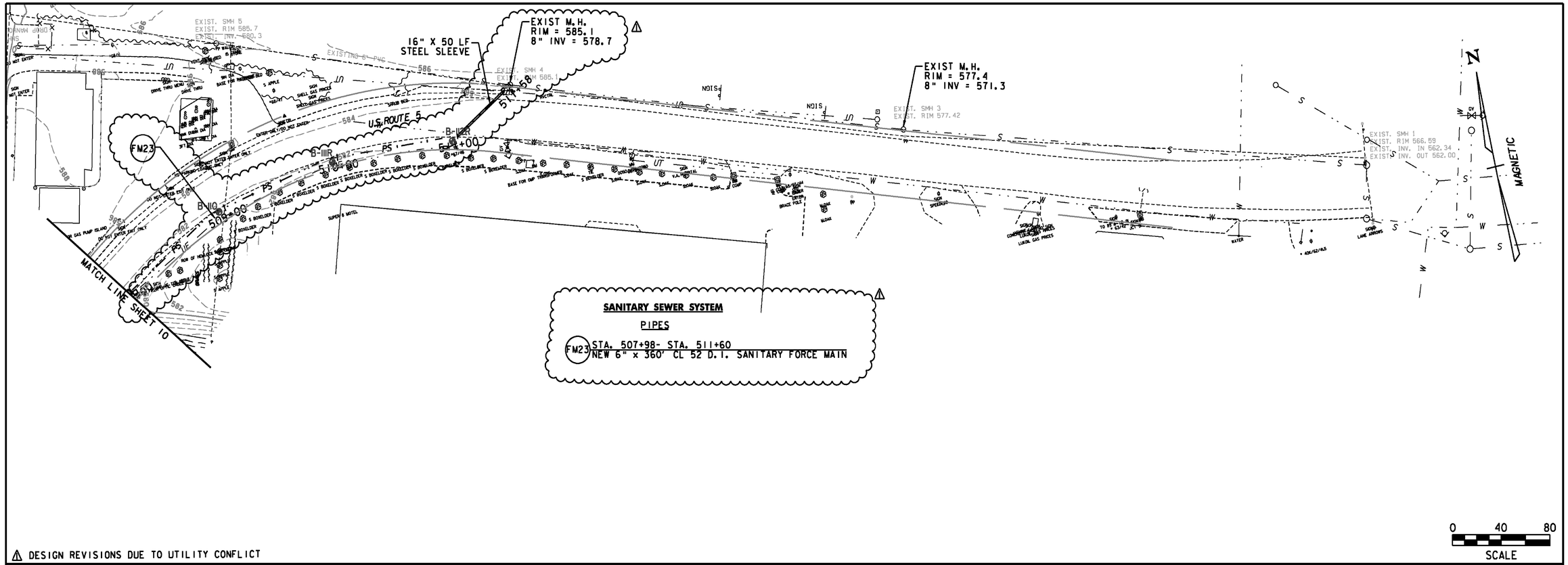


DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

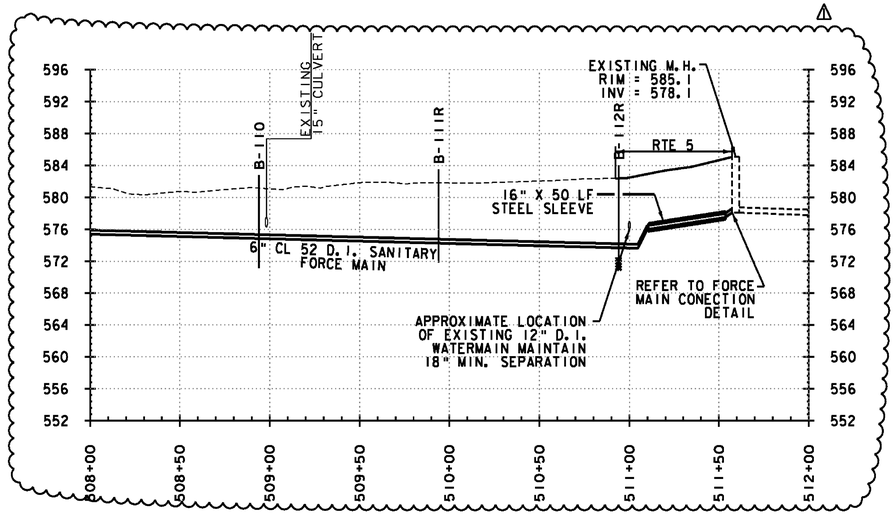
NOTES:
1) REFER TO CURB LAYOUT SHEETS FOR CURBING LAYOUT AND DIMENSIONS.
2) REFER TO DRAIN, SEWER, AND WATER LAYOUT SHEETS FOR UTILITY LAYOUT.

0 20 40
SCALE IN FEET

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	
SURVEYED BY: FANTONI	PLOT DATE: 1/13/2007
SQUAD LEADER: KEN UPMAL	SURVEY DATE: 1/87
	DRAWN BY: E. ATKINS
	SHEET: 49 OF 239



⚠ DESIGN REVISIONS DUE TO UTILITY CONFLICT



20
10
SCALE
HORIZ. 1" = 40'
VERT. 1" =10'
40
80

Stantec

PROJECT NAME:	HARTFORD REST AREAS
PROJECT NUMBER:	IM BLDG(10)
FILE NAME: ...\U04A026PLT-UTL(revised).dgn	PLOT DATE: 9/16/2008
PROJECT LEADER: JTM	DRAWN BY: PZA
DESIGNED BY: MEHP	CHECKED BY: JTM
PLAN & PROFILE SHEET 11	SHEET 49R OF 70

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)

50+00 ~ 51+93 RT
52+35 ~ 53+50 RT
53+73 ~ 54+72 RT

SOLID ROCK EXCAVATION
(REMOVAL OF EXISTING CONCRETE ROADWAY)

50+00 ~ 55+00 - 7' x ~~22'~~ WIDE18'
(EST. FROM 1931 REC. PLANS)

EXCAVATION OF SURFACES AND PAVEMENT

50+79 LT ~ 51+11 LT

VERTICAL GRANITE CURB

50+00 ~ 51+93 RT 50+00 ~ 50+25 LT
52+27 ~ 53+50 RT
53+74 ~ 54+74 RT
40+33 ~ 40+41 RT (DEVIN ST)
40+32 ~ 40+41 LT (DEVIN ST)
50+00 ~ 50+25 LT
50+49 ~ 50+65 LT
50+79 ~ 51+18 LT
51+33 ~ 52+~~16~~ LT 35
65 52+~~46~~ ~ 53+51 LT
53+75 ~ 54+14 LT
54+38 ~ ~~55+00~~ LT 54+78

~~**BITUMINOUS CONCRETE CURB, TYPE B**~~

~~50+00 ~ 50+25 LT~~
~~54+00 ~ 54+14 LT~~
~~54+38 ~ 54+47 LT~~
~~54+78 ~ 55+00 LT~~

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)

50+00 ~ 50+20 LT
50+54 ~ 50+60 LT
50+84 ~ ~~51+13~~ LT
50+00 ~ 51+96 RT
51+38 ~ 52+~~11~~ LT 35
52+24 ~ 53+45 RT
65 52+~~51~~ ~ 53+46 LT
53+80 ~ 54+09 LT
53+79 ~ 54+77 RT
54+43 ~ ~~55+00~~ LT 54+78 LT
51+28 RT (PRIVATE - 4' WIDE x 6' LONG)
51+73 LT (PRIVATE - 5' WIDE x 5' LONG)

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH (MOD.)

50+20 ~ 50+54 LT
50+60 ~ 50+84 LT
51+13 ~ 51+38 LT
35 52+~~11~~ ~ 52+~~51~~ LT 65
53+46 ~ 53+80 LT
53+45 ~ 53+79 RT
54+09 ~ 54+43 LT

CONSTRUCT CONCRETE SIDEWALK RAMPS
W/ DETECTABLE WARNING SURFACE

35+33 RT TYPE I (GOUDREAU ST)
35+28 LT TYPE I (GOUDREAU ST)
40+30 RT TYPE I (DEVIN ST)

CONSTRUCT BITUMINOUS CONCRETE DRIVES

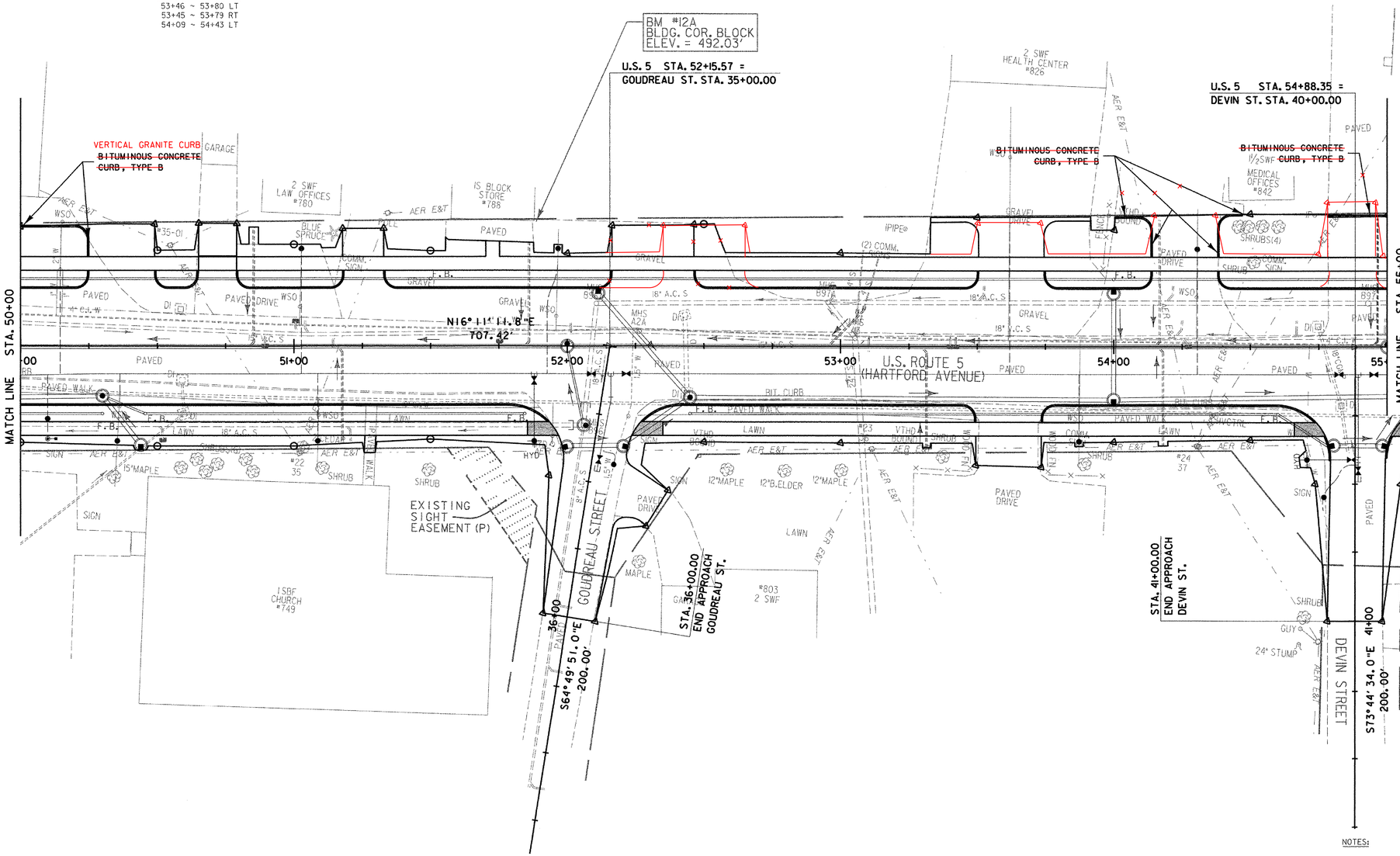
50+25 ~ 50+49 LT
50+65 ~ 50+79 LT
51+18 ~ 51+33 LT
~~52+16 ~ 52+46 LT~~ 52+35 ~ 52+65 LT
53+51 ~ 53+75 LT
53+50 ~ 53+74 RT
54+14 ~ 54+38 LT
54+77 ~ 54+94 RT

~~**REMOVING AND RESETTING PROPERTY MARKERS**~~

~~53+25 RT~~
~~54+00 LT~~

REMOVAL OF EXISTING FENCE

53+96 ~ 53+98 LT (20' TO R.O.W.)



ROADWAY LAYOUT SHEET 7

NOTES:

1) REFER TO CURB LAYOUT SHEETS FOR CURBING LAYOUT AND DIMENSIONS.
2) REFER TO DRAIN, SEWER, AND WATER LAYOUT SHEETS FOR UTILITY LAYOUT.

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z027bdr.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/11/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 50 OF 239

REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
55+02 ~ 57+13 RT
57+49 ~ 57+99 RT
58+24 ~ 60+00 RT

SOLID ROCK EXCAVATION (REMOVAL OF EXISTING CONCRETE ROADWAY)
55+26 55+00 ~ ~~60+00~~ ~ 7' x ~~22'~~ WIDE 18'
(EST. FROM 1931 REC. PLANS)

~~COLD PLANING BIT. PAVEMENT~~
~~59+50 ~ 60+00 RT~~

VERTICAL GRANITE CURB
55+05 ~ 57+12 RT
57+47 ~ 58+01 RT
45+32 ~ 45+45 RT (ADVENT LN)
45+45 ~ 45+34 LT (ADVENT LN)
58+30 ~ 58+45 RT
55+00 ~ 55+67 LT
55+91 ~ 56+82 LT
57+23 ~ 58+29 LT
58+53 ~ 59+50 LT

~~BITUMINOUS CONCRETE CURB, TYPE B~~
~~55+00 ~ 55+67 LT~~
~~55+91 ~ 56+61 LT~~
~~56+75 ~ 56+83 LT~~
~~57+23 ~ 57+33 LT~~

REMOVING AND RESETTING CURB
58+40 ~ 60+00 RT

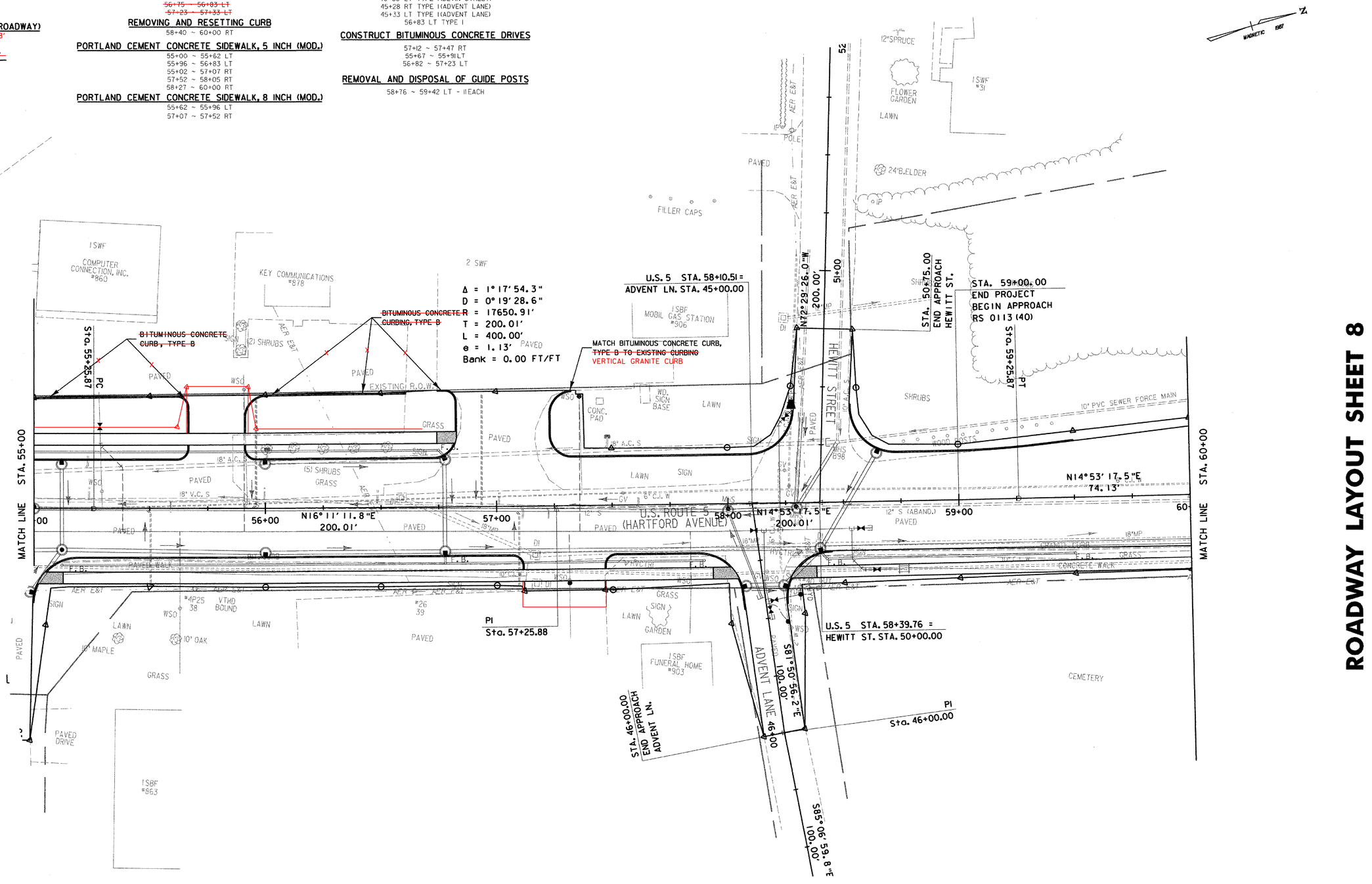
PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)
55+00 ~ 55+62 LT
55+96 ~ 56+83 LT
55+02 ~ 57+07 RT
57+52 ~ 58+05 RT
58+27 ~ 60+00 RT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH (MOD.)
55+62 ~ 55+96 LT
57+07 ~ 57+52 RT

CONSTRUCT CONCRETE SIDEWALK RAMPS W/ DETECTABLE WARNING SURFACE
40+30 LT TYPE I (DEVIN STREET)
45+28 RT TYPE I (ADVENT LANE)
45+33 LT TYPE I (ADVENT LANE)
56+83 LT TYPE I

CONSTRUCT BITUMINOUS CONCRETE DRIVES
57+12 ~ 57+47 RT
55+67 ~ 55+91 LT
56+82 ~ 57+23 LT

REMOVAL AND DISPOSAL OF GUIDE POSTS
58+76 ~ 59+42 LT ~ 11 EACH



ROADWAY LAYOUT SHEET 8

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:
1) REFER TO CURB LAYOUT SHEETS FOR CURBING LAYOUT AND DIMENSIONS.
2) REFER TO DRAIN, SEWER, AND WATER LAYOUT SHEETS FOR UTILITY LAYOUT.

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 1/13/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 51 OF 239

CLEARING AND GRUBBING
(INCLUDING INDIVIDUAL TREES AND STUMPS
60+80 LT ~ 61+00 LT

COLD PLANING-BIT.PAVEMENT
~~60+00 ~ 61+00~~ 61+28 ~ 61+56

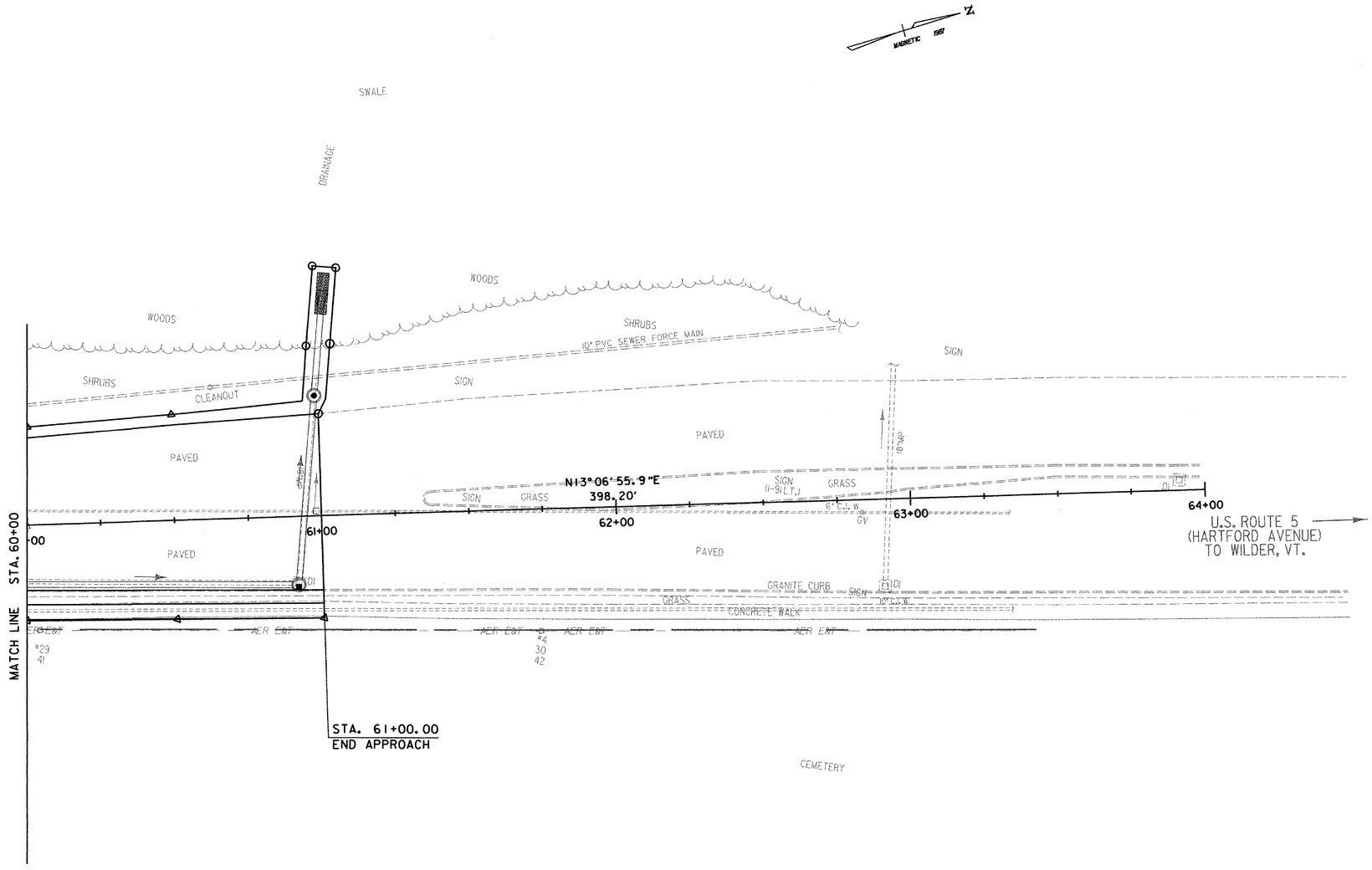
REMOVE EXISTING SIDEWALK (COMMON EXCAVATION)
60+00 ~ 61+00 RT

~~SOLID ROCK EXCAVATION~~
~~(REMOVAL OF EXISTING CONCRETE ROADWAY)~~
~~50+00 ~ 61+00 7'x 22' WIDE~~
~~(EST. FROM 1931 REC. PLANS)~~

STONE FILL, TYPE II
61+03 - 4' WIDE X 14' LONG =126.6 CY

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (MOD.)
60+00 ~ 61+00 RT

REMOVE & RESET CURB
60+00 ~ 61+05 RT



ROADWAY LAYOUT SHEET 9

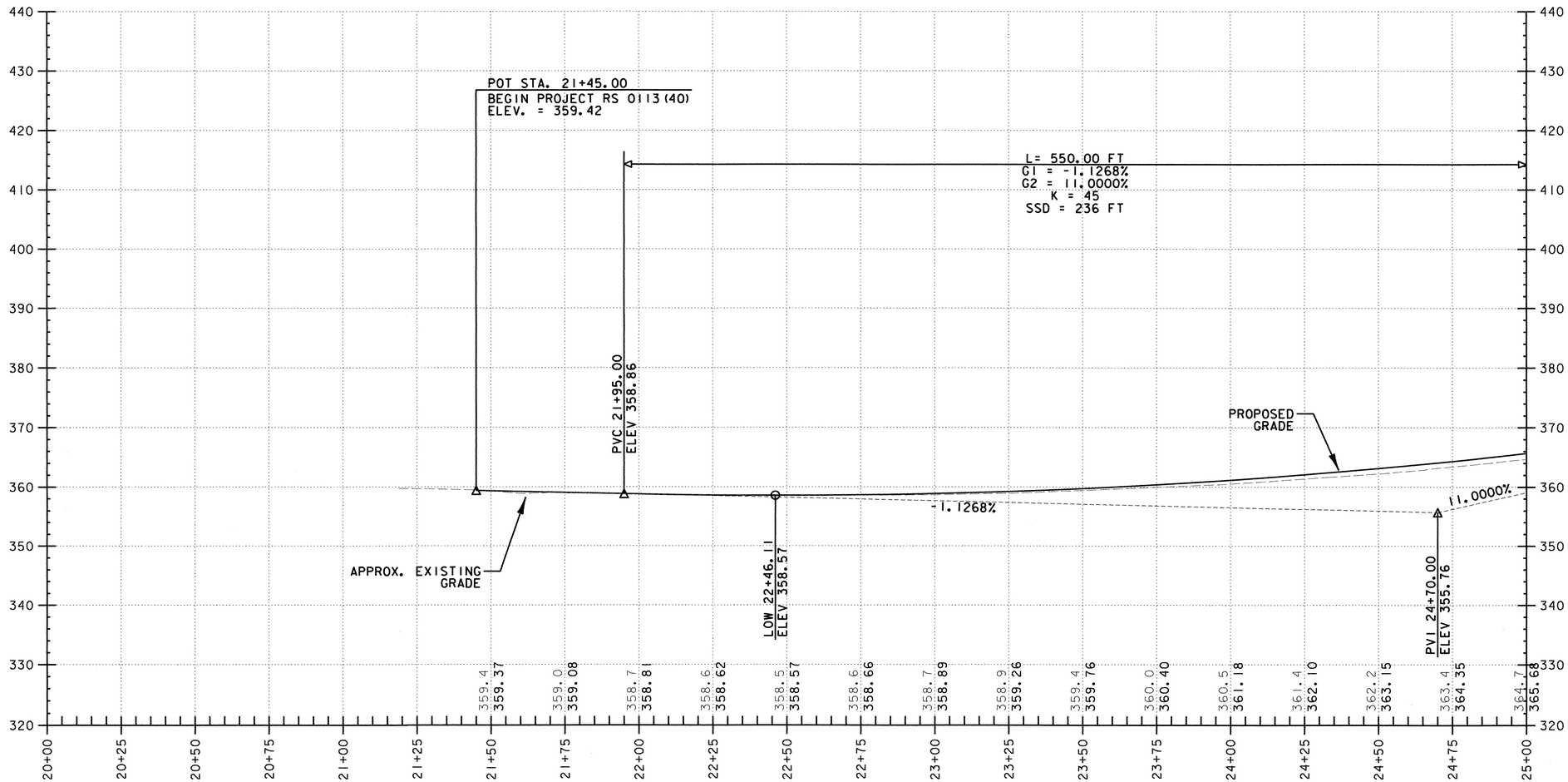
DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

NOTES:
1) REFER TO CURB LAYOUT SHEETS FOR CURBING LAYOUT AND DIMENSIONS.
2) REFER TO DRAIN, SEWER, AND WATER LAYOUT SHEETS FOR UTILITY LAYOUT.

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 1/11/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 52 OF 239

US ROUTE 5
PROFILE



VERTICAL 15 10 5 0
HORIZONTAL 0 10 20 30
SCALE IN FEET

DATUM

VERTICAL NGVD 1929

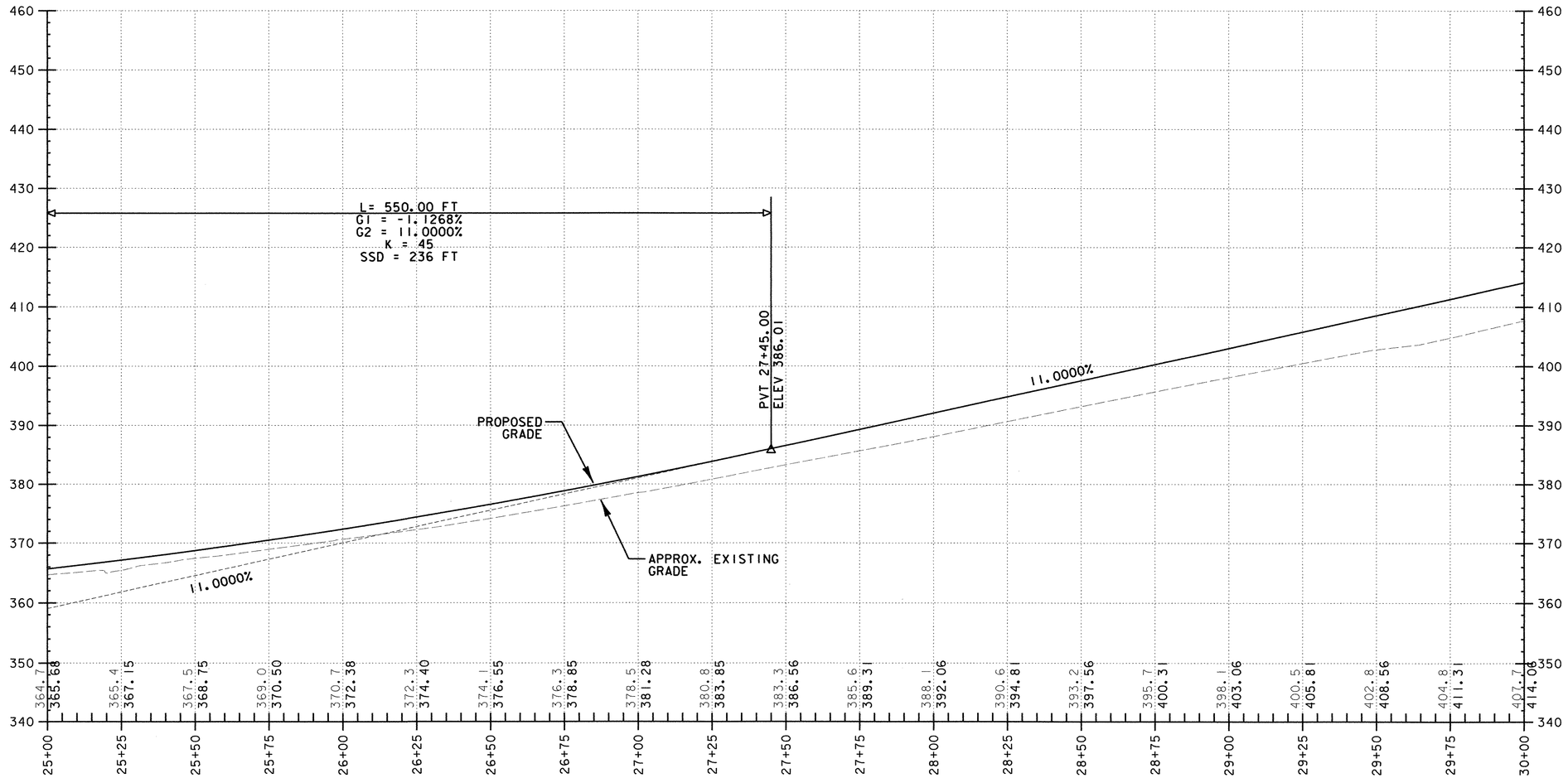
HORIZONTAL N/A

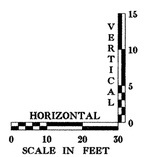
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS
PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 53 OF 239

US ROUTE 5
PROFILE





DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

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PROJECT NAME: HARTFORD
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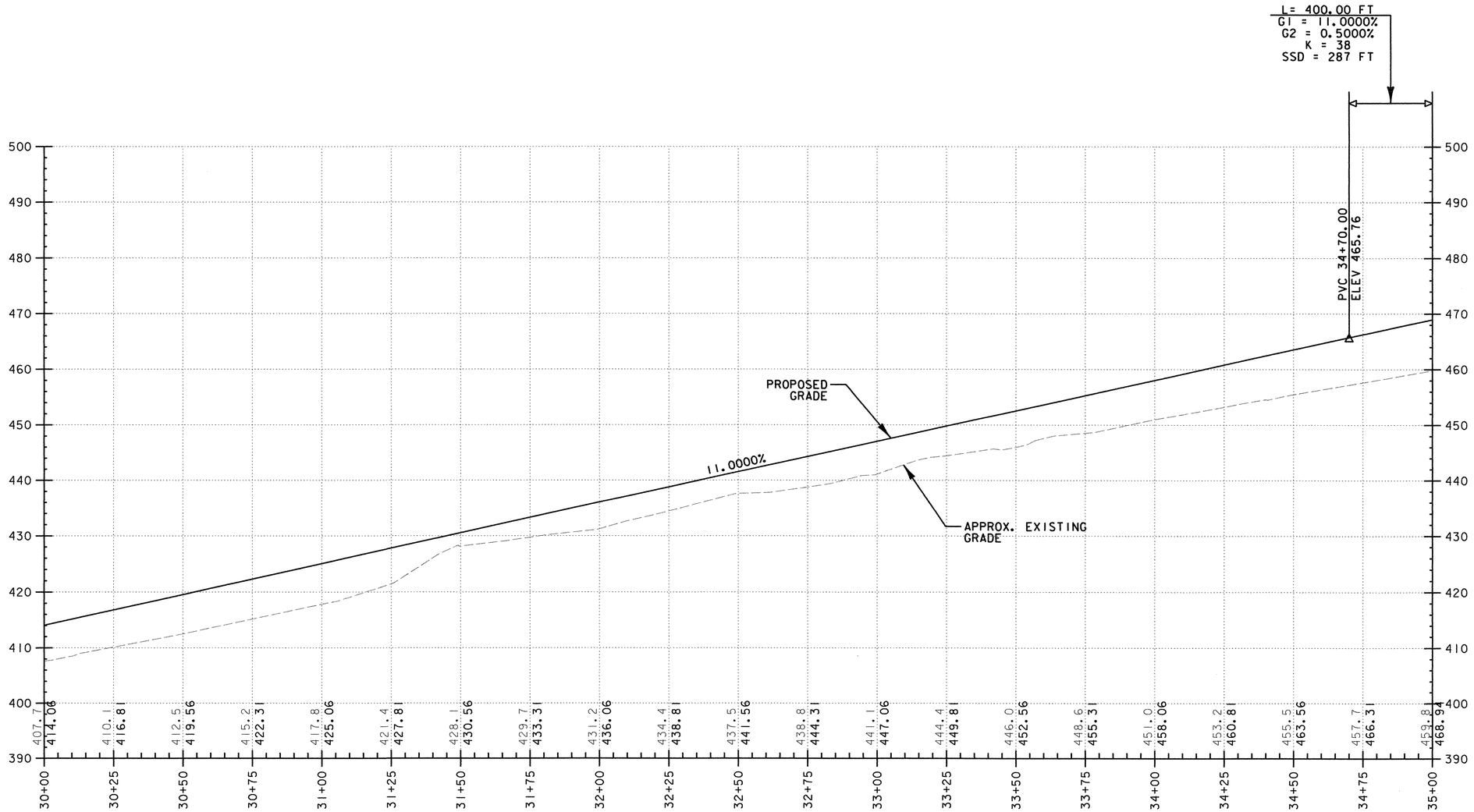
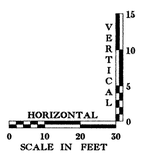
FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS

PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA

US ROUTE 5
PROFILE





DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

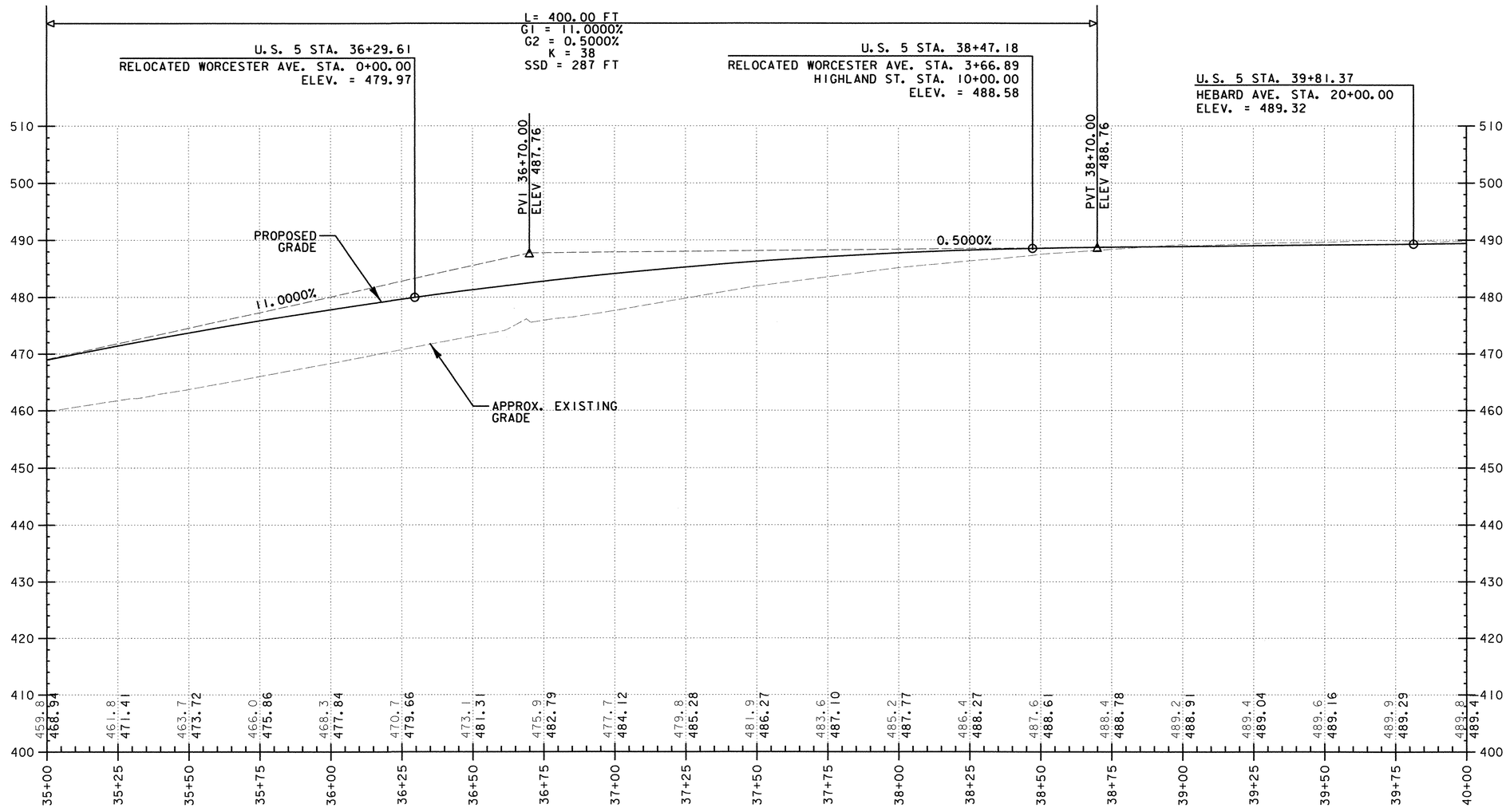
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

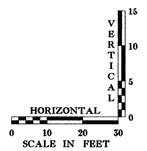
PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS

PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA

US ROUTE 5
PROFILE





DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

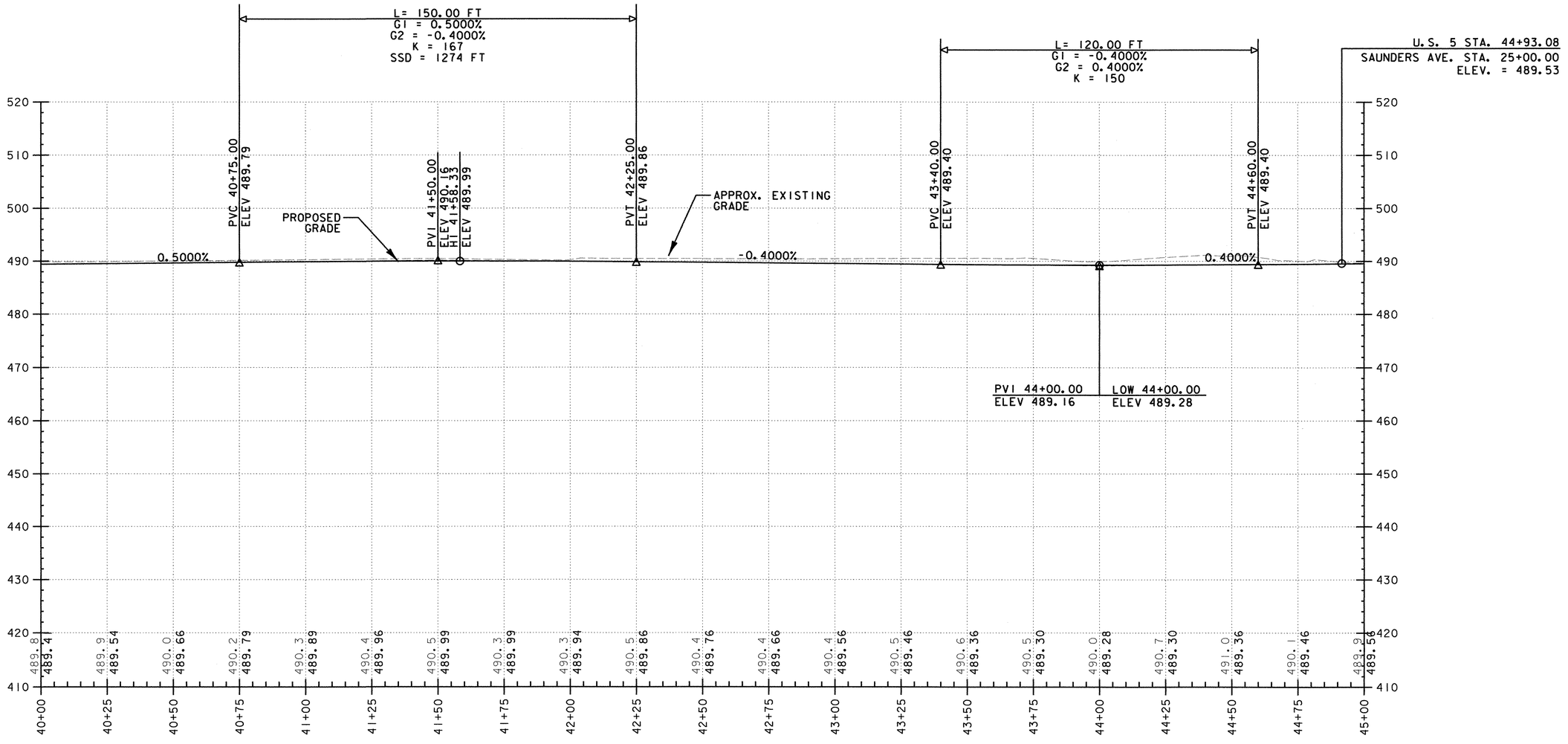
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

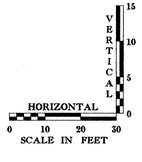
PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS

PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA

US ROUTE 5
PROFILE





DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

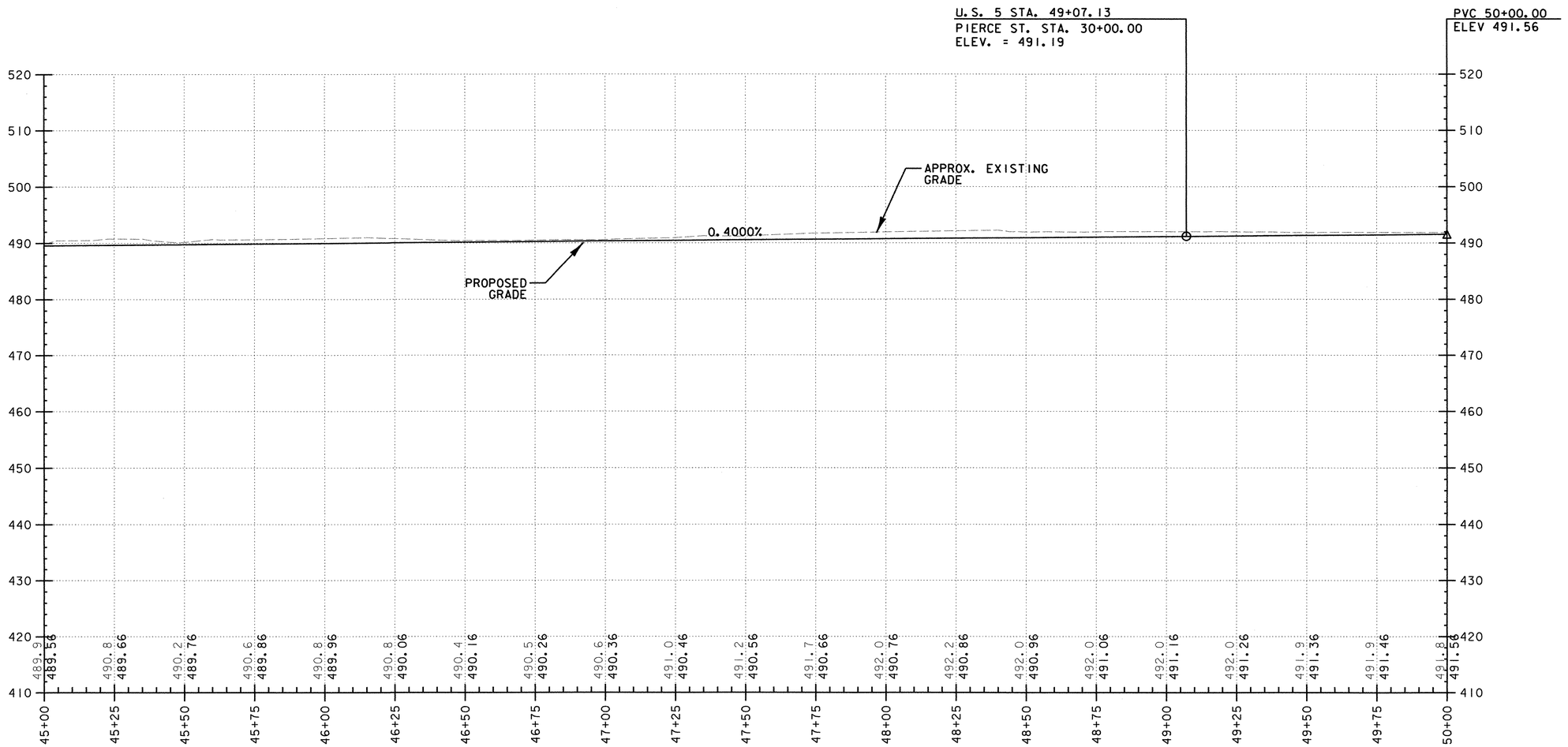
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

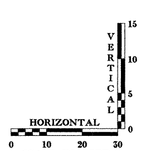
PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS

PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 57 OF 239

US ROUTE 5
PROFILE





DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

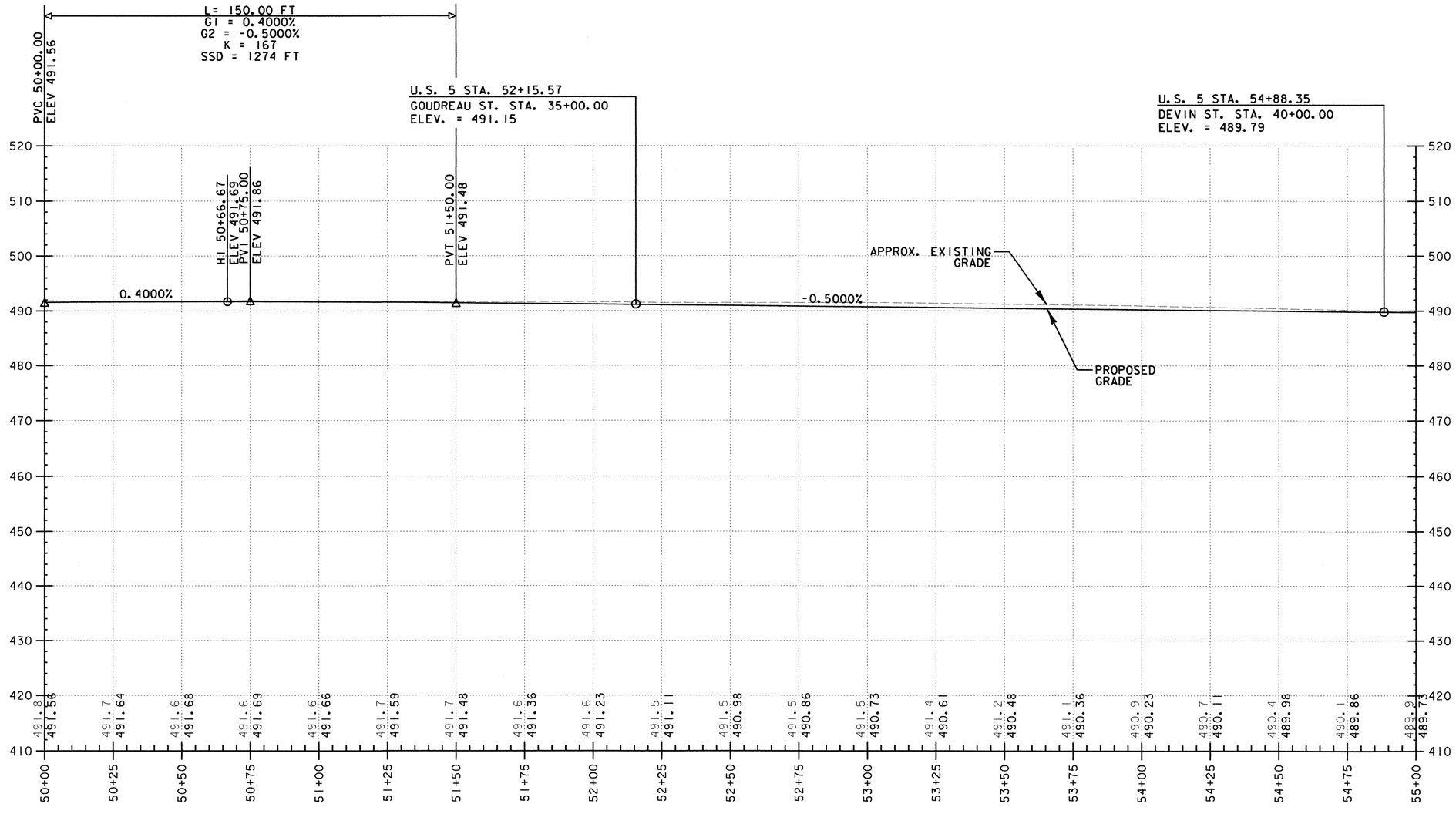
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS

PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 58 OF 239

US ROUTE 5
PROFILE



DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

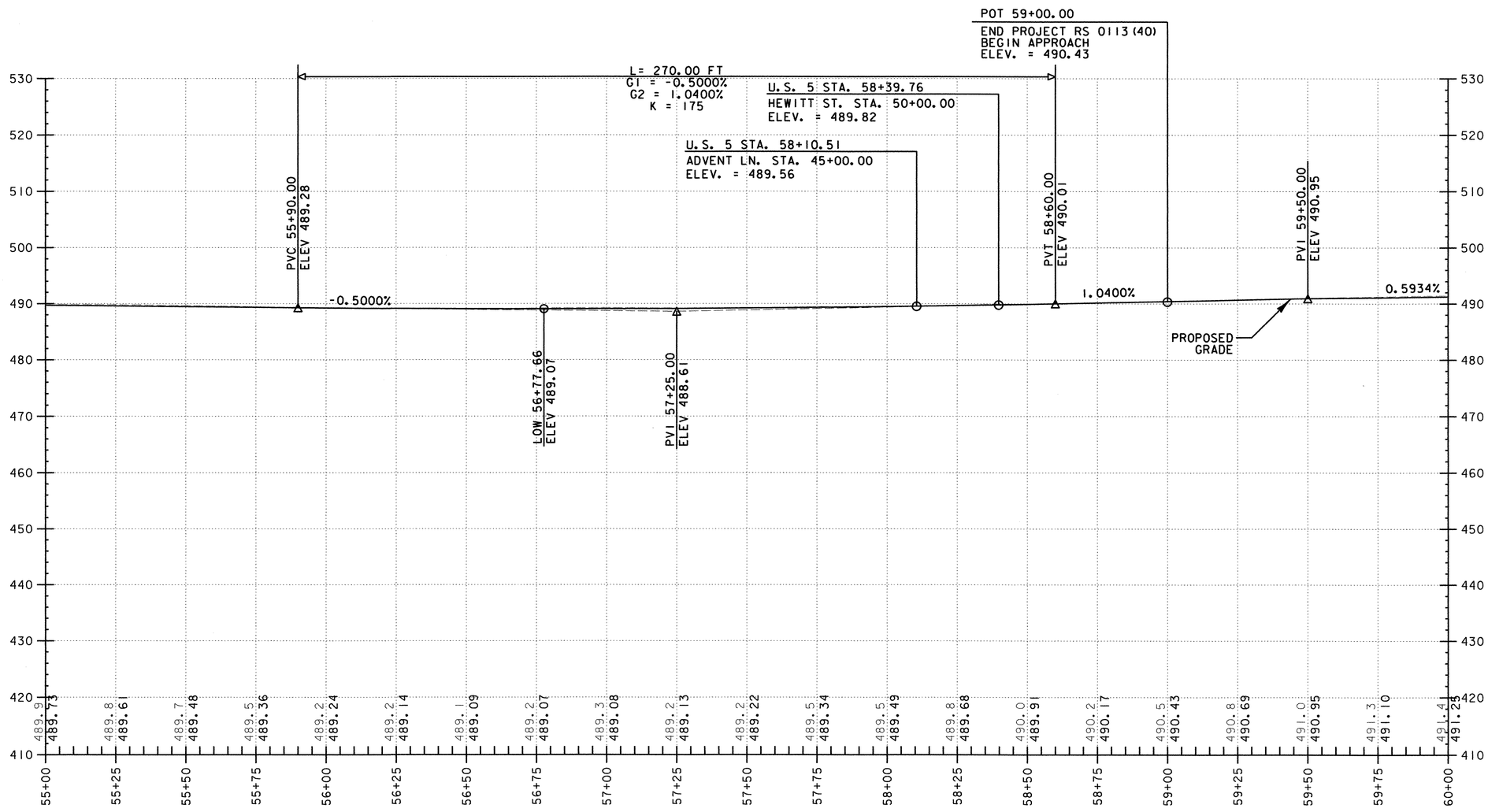
VERTICAL 0 5 10 15
HORIZONTAL 0 10 20 30
SCALE IN FEET

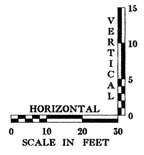
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS
PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 59 OF 239

US ROUTE 5
PROFILE





DATUM

VERTICAL NGVD 1929

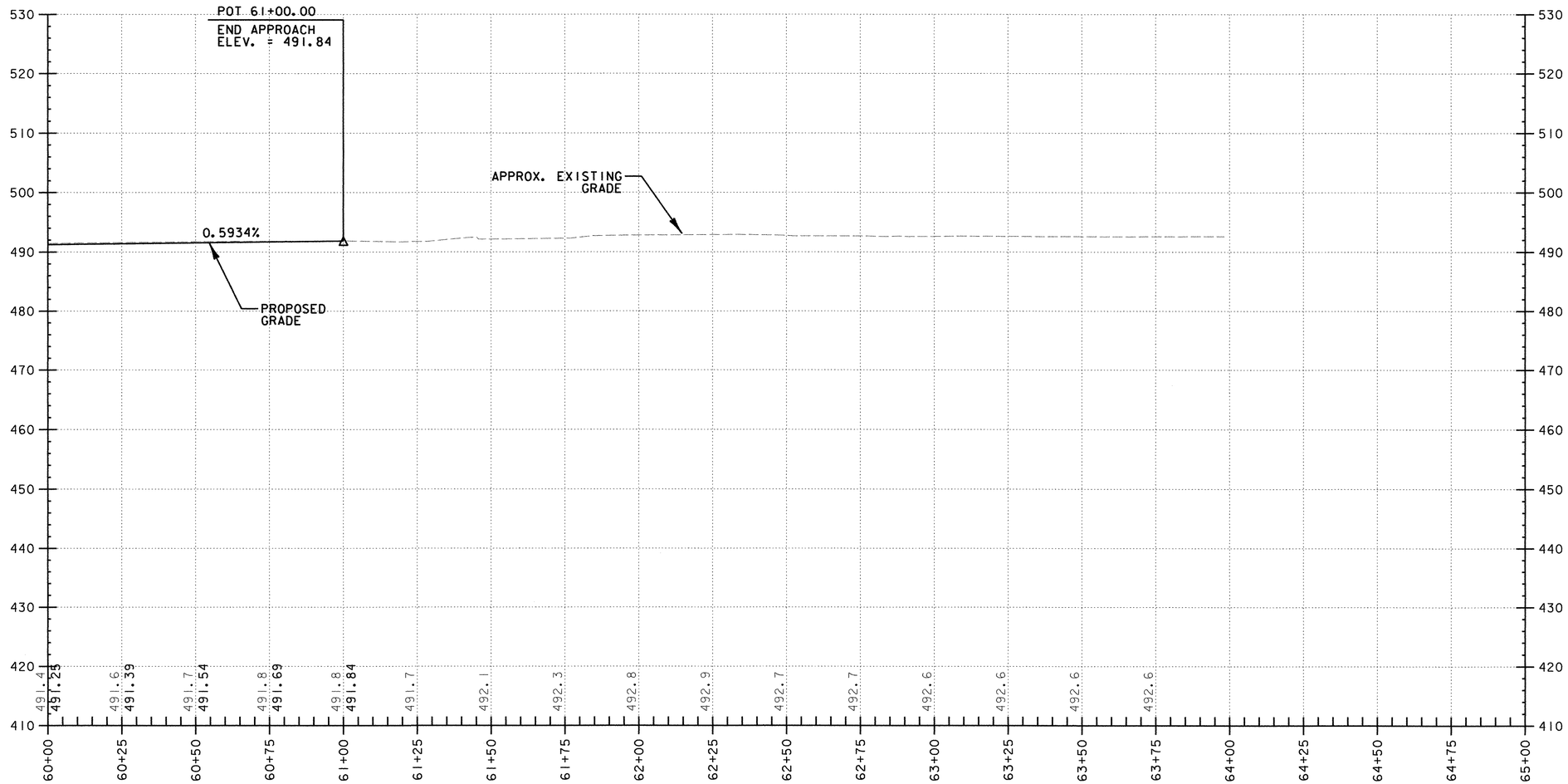
HORIZONTAL N/A

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS
PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 60 OF 239

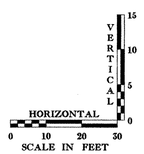
US ROUTE 5
PROFILE



DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

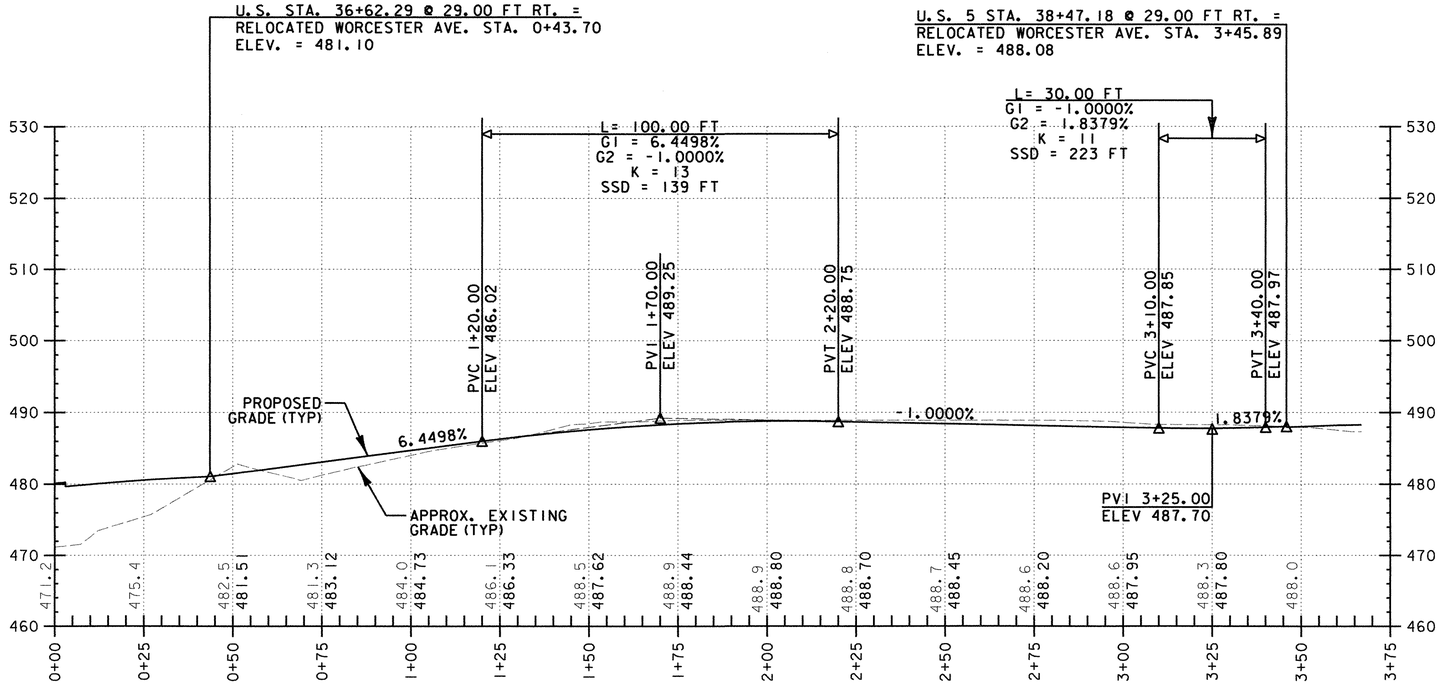


THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

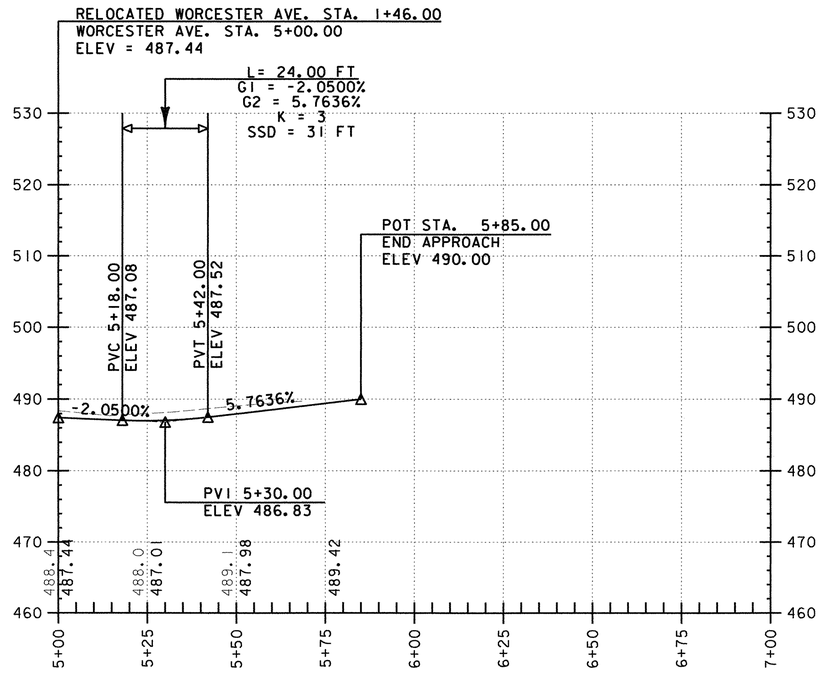
PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

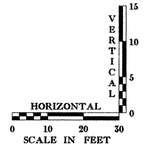
FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS
PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 61 OF 239

PROFILE
RELOCATED WORCESTER AVE.



PROFILE
WORCESTER AVENUE





DATUM

VERTICAL NGVD 1929

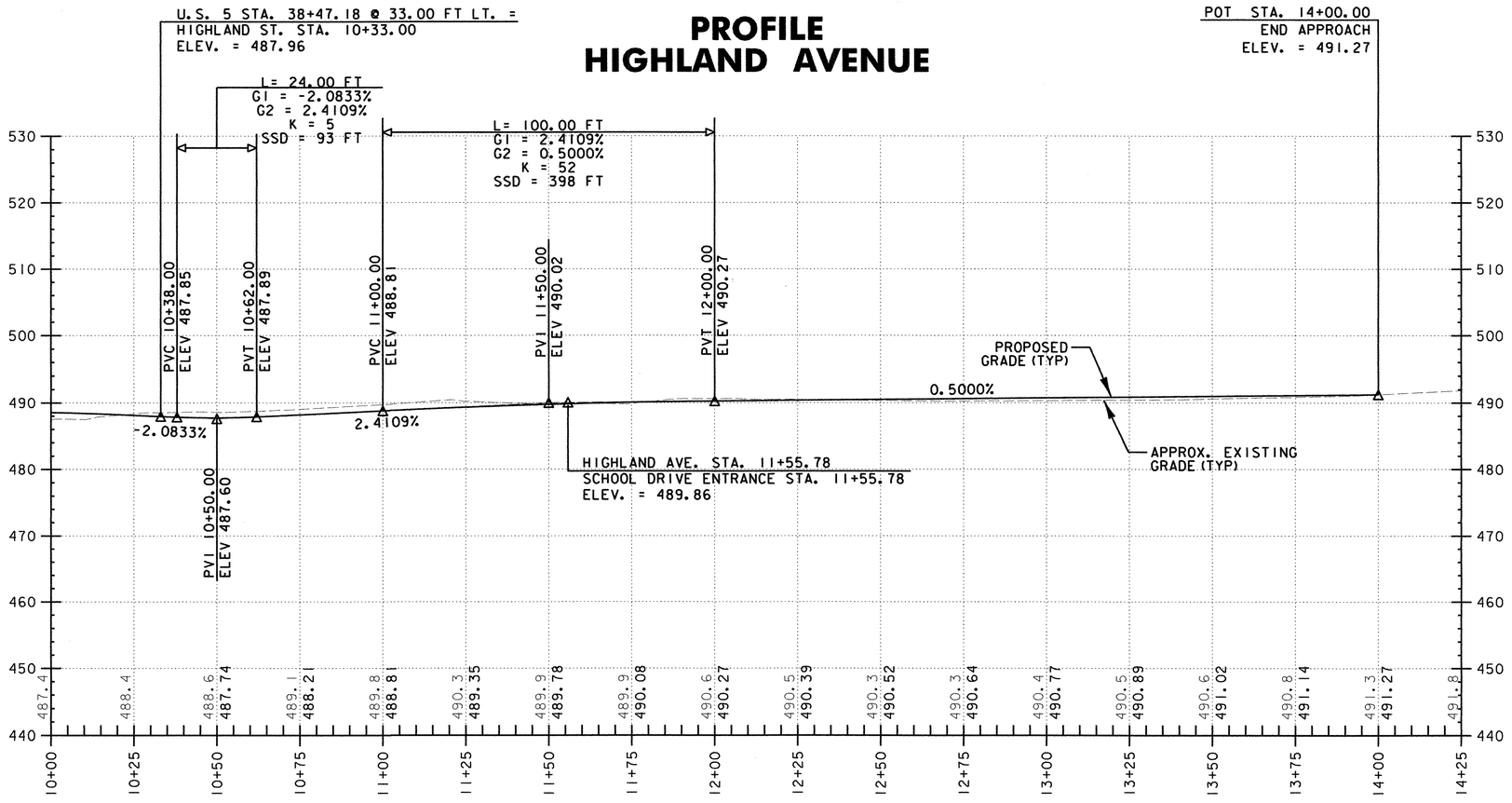
HORIZONTAL N/A

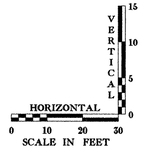
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS
PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 62 OF 239

PROFILE
HIGHLAND AVENUE





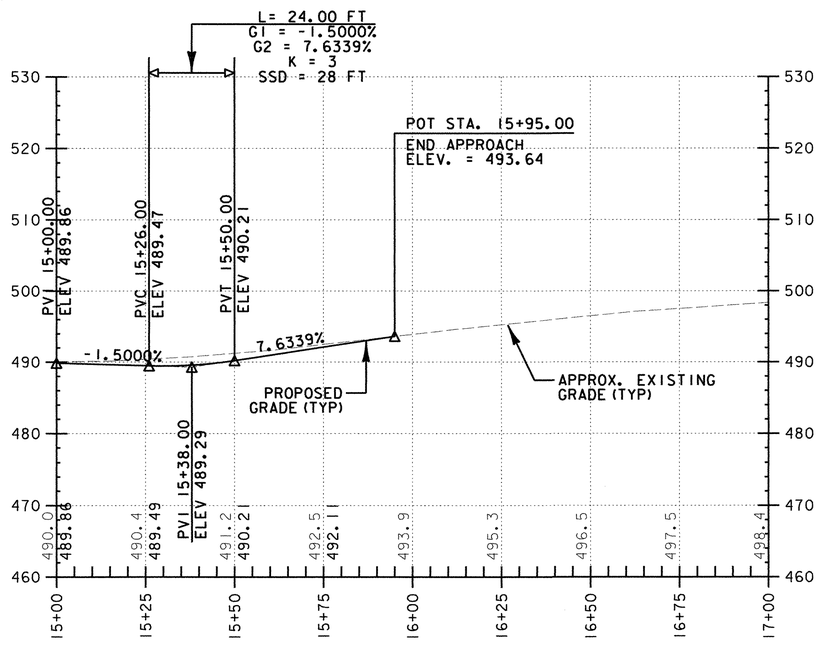
DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

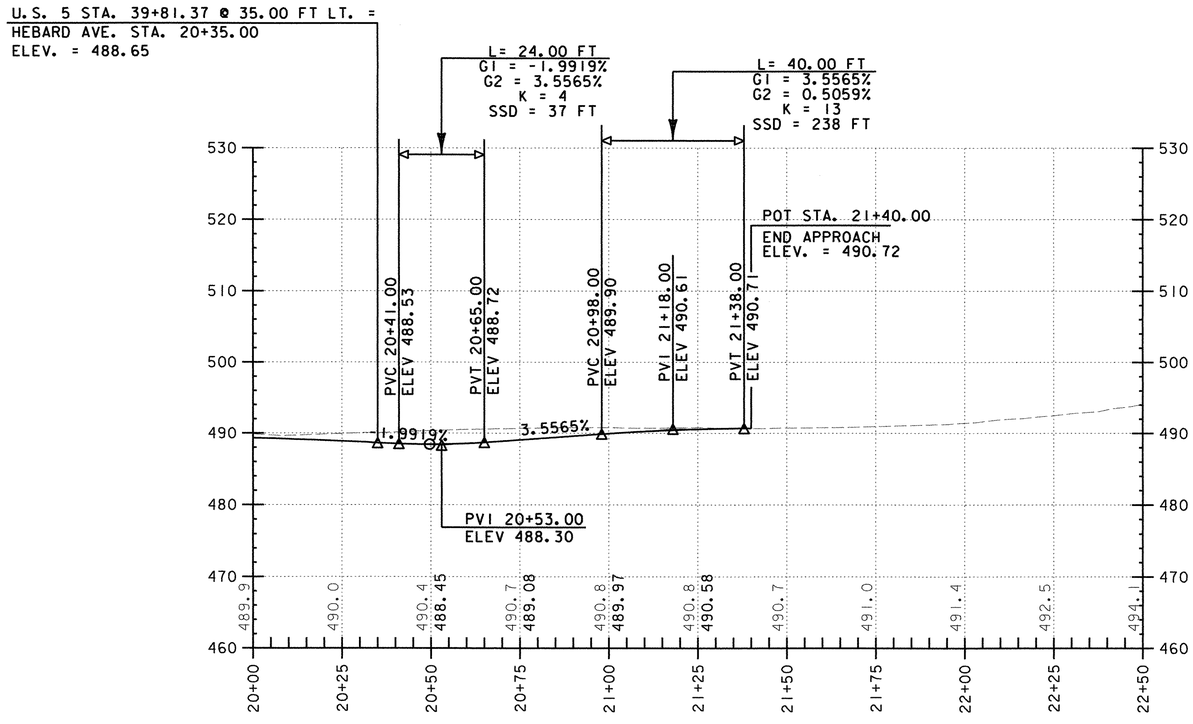
PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS
PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 63 OF 239

PROFILE
SCHOOL ENTRANCE DRIVE



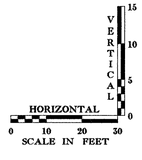
PROFILE
HEBARD AVENUE



DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A



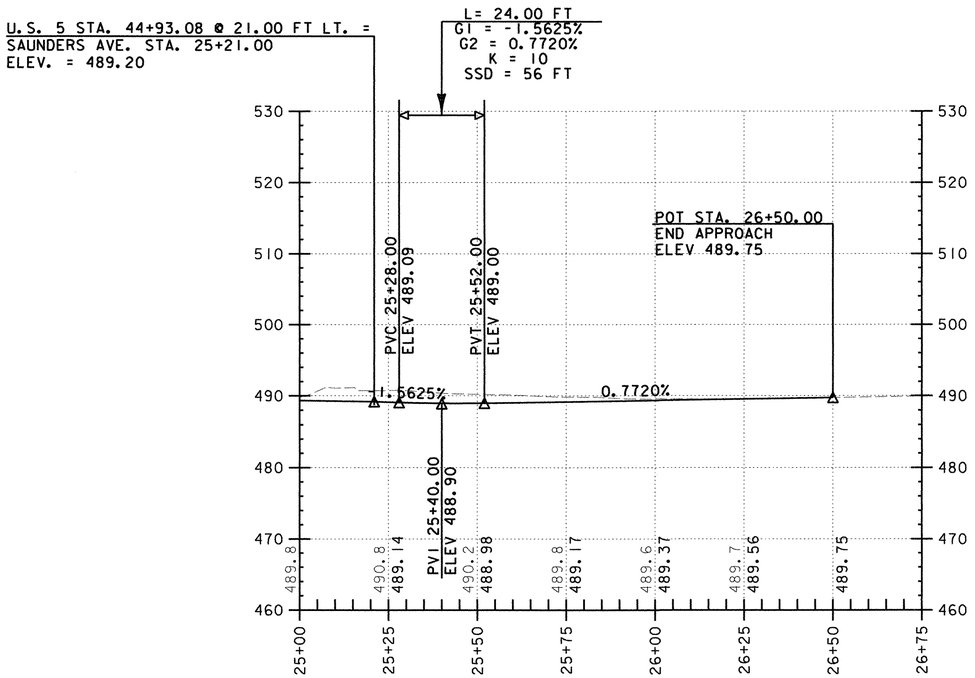
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

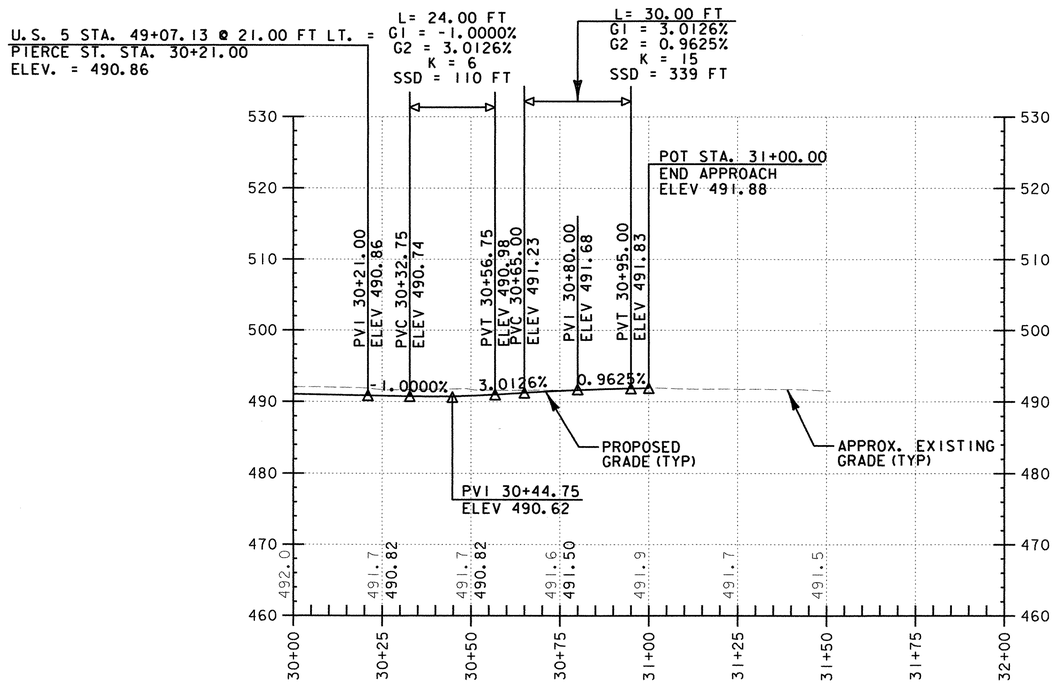
FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS

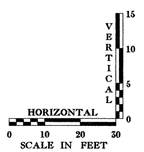
PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 64 OF 239

PROFILE
SAUNDERS AVENUE



PROFILE
PIERCE STREET





DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

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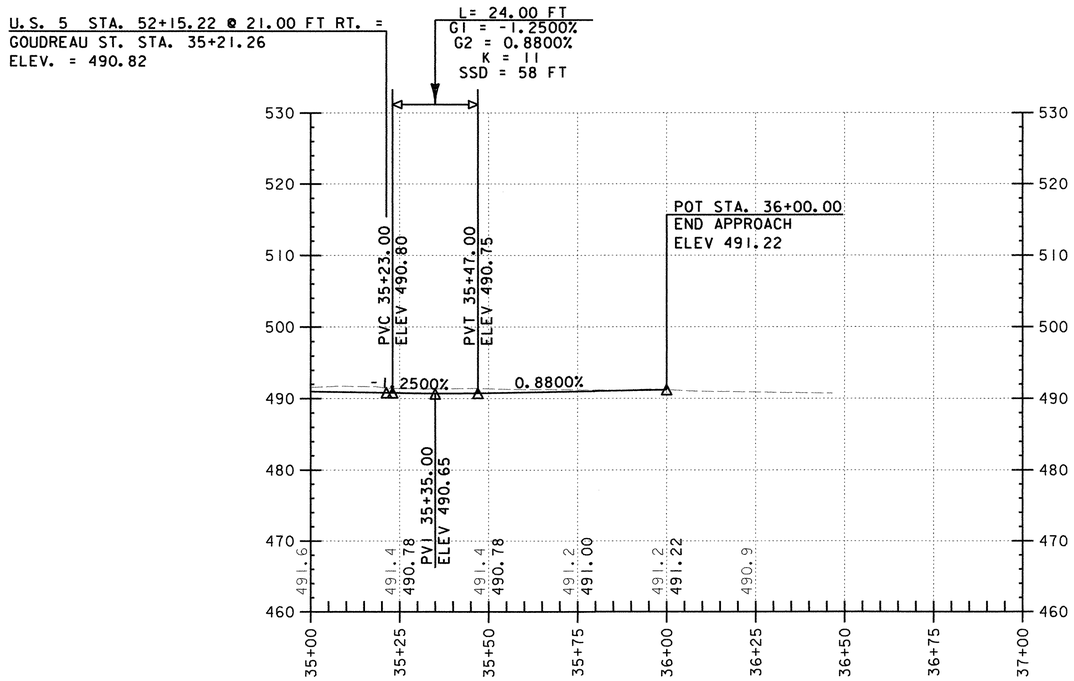
PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

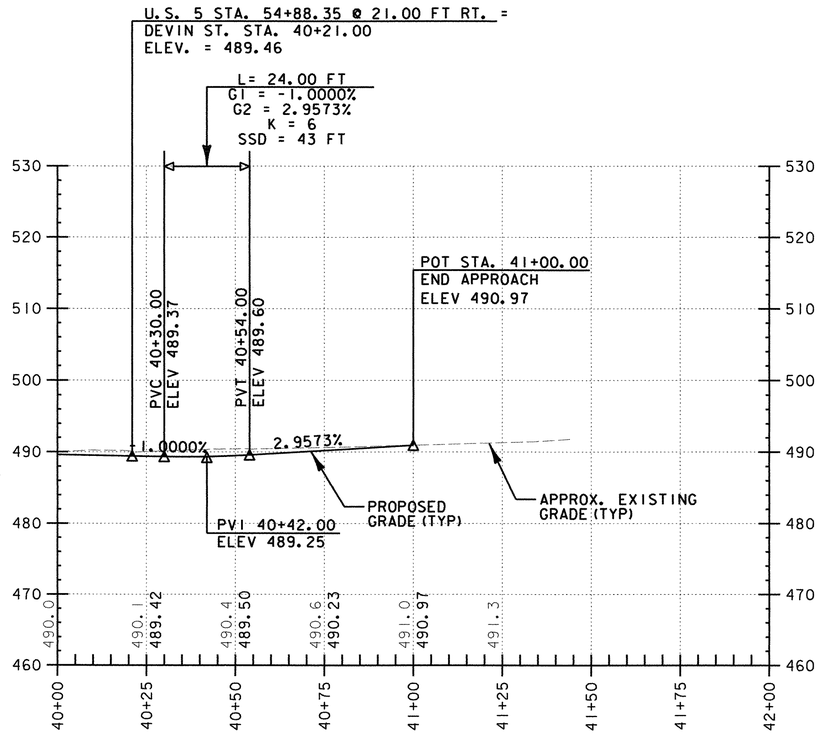
FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS

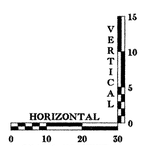
PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA

PROFILE
GOUDREAU STREET



PROFILE
DEVIN STREET





DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

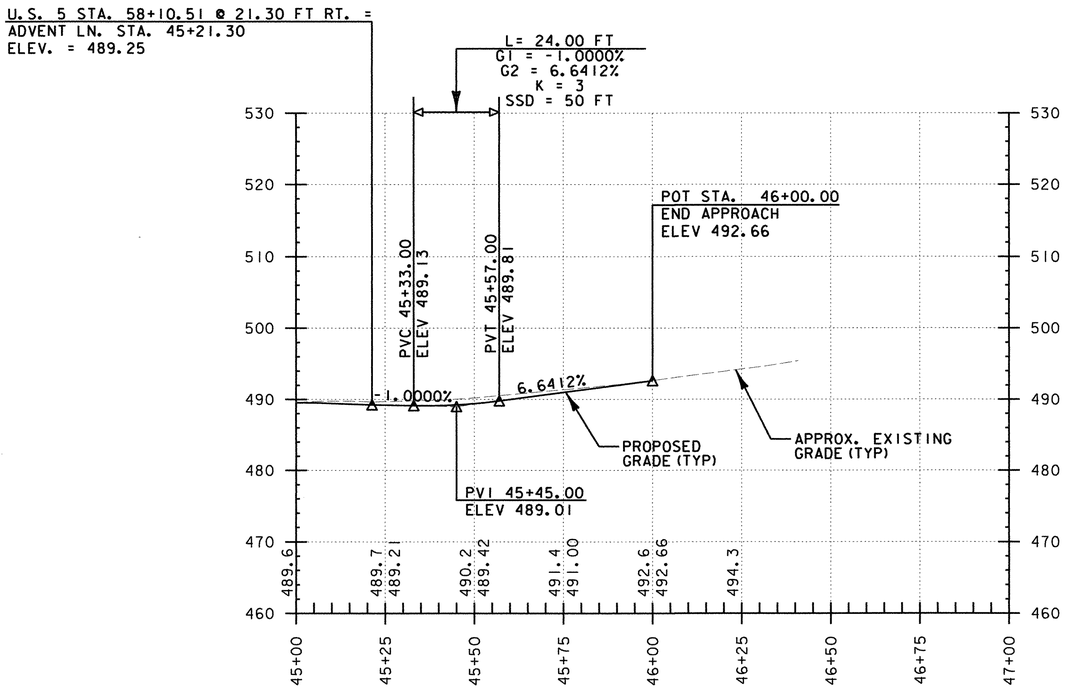
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

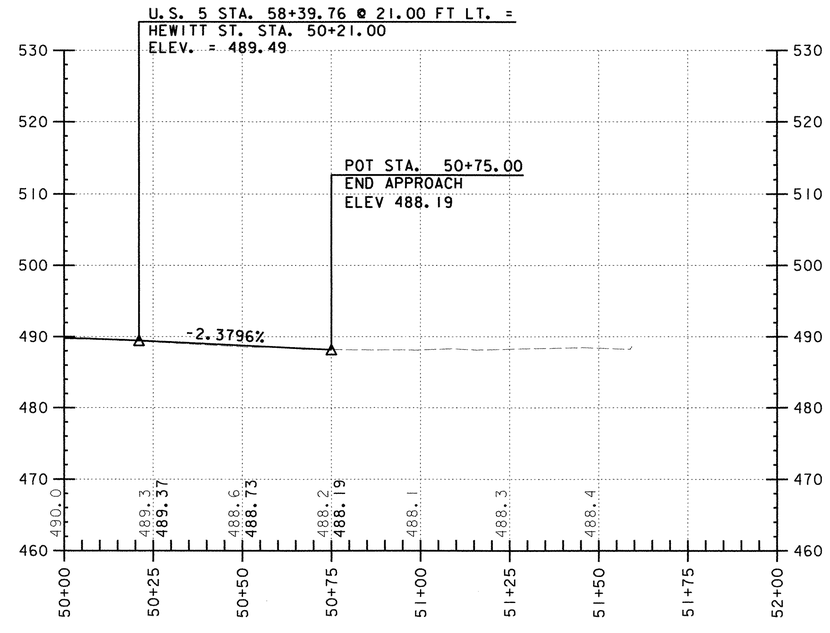
FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS

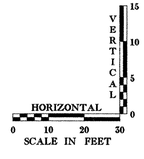
PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA

PROFILE
ADVENT LANE



PROFILE
HEWITT STREET





DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

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PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA/E. ATKINS

PLOT DATE: 1/9/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA

CURB TIE LAYOUT SHEET 1

ROADWAY CURB TIES

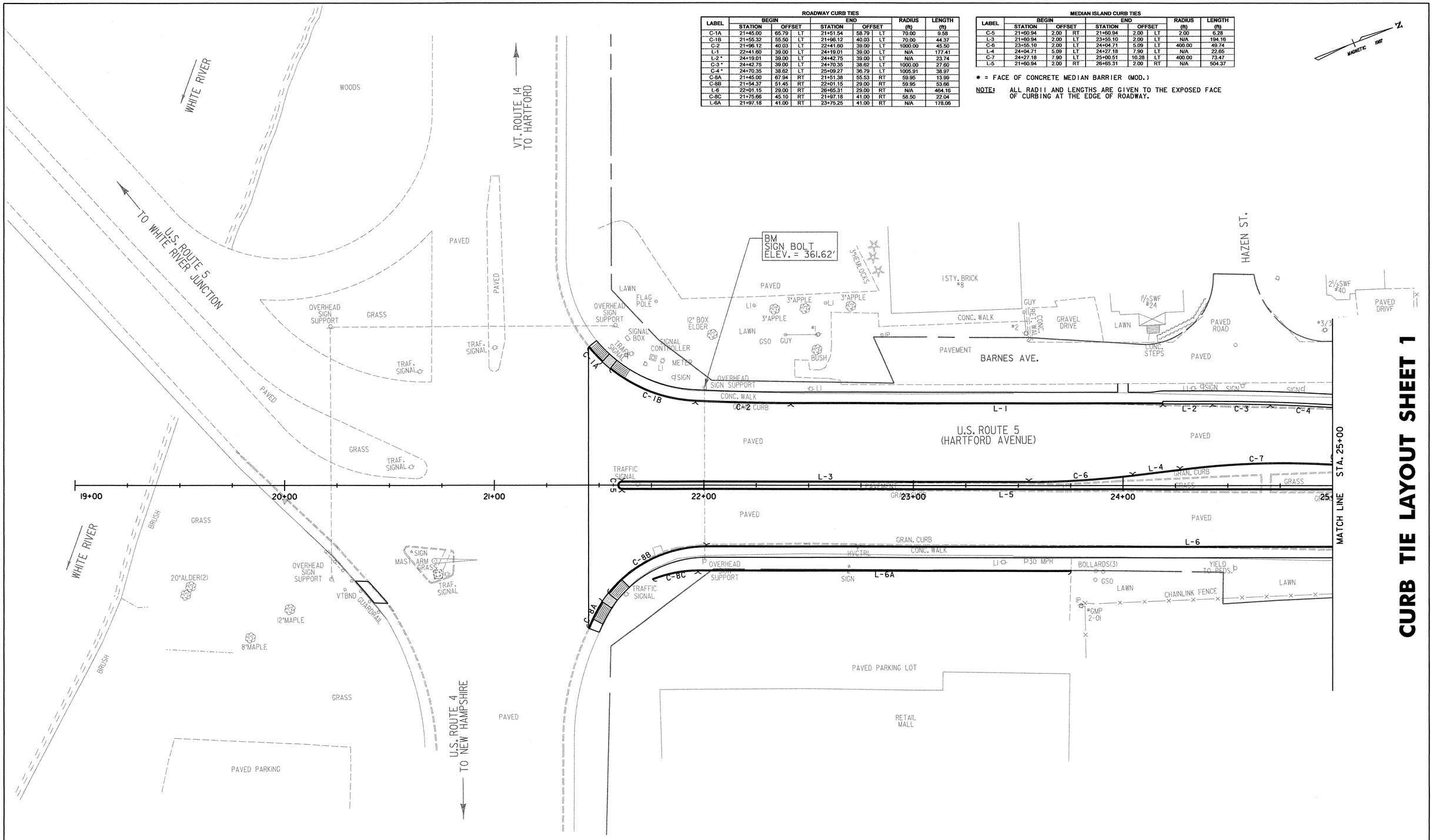
LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
C-1A	21+45.00	65.79	LT	21+51.54	58.79	LT	70.00	9.58
C-1B	21+55.32	55.50	LT	21+96.12	40.03	LT	70.00	44.37
C-2	21+96.12	40.03	LT	22+41.60	39.00	LT	1000.00	45.50
L-1	22+41.60	39.00	LT	24+19.01	39.00	LT	N/A	177.41
L-2 *	24+19.01	39.00	LT	24+42.75	39.00	LT	N/A	23.74
C-3 *	24+42.75	39.00	LT	24+70.35	38.62	LT	1000.00	27.60
C-4 *	24+70.35	38.62	LT	25+09.27	36.79	LT	1005.91	38.97
C-8A	21+45.00	67.94	RT	21+51.38	55.53	RT	59.95	13.99
C-8B	21+54.37	51.45	RT	22+01.15	29.00	RT	59.95	53.66
L-6	22+01.15	29.00	RT	26+65.31	29.00	RT	N/A	464.16
C-8C	21+75.66	45.10	RT	21+97.18	41.00	RT	58.50	22.04
L-6A	21+97.18	41.00	RT	23+75.25	41.00	RT	N/A	178.06

MEDIAN ISLAND CURB TIES

LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
C-5	21+60.94	2.00	RT	21+60.94	2.00	LT	2.00	6.28
L-3	21+60.94	2.00	LT	23+55.10	2.00	LT	N/A	194.16
C-6	23+55.10	2.00	LT	24+04.71	5.09	LT	400.00	49.74
L-4	24+04.71	5.09	LT	24+27.18	7.90	LT	N/A	22.65
C-7	24+27.18	7.90	LT	25+00.51	10.28	LT	400.00	73.47
L-5	21+60.94	2.00	RT	26+65.31	2.00	RT	N/A	504.37

* = FACE OF CONCRETE MEDIAN BARRIER (MOD.)

NOTE: ALL RADII AND LENGTHS ARE GIVEN TO THE EXPOSED FACE OF CURBING AT THE EDGE OF ROADWAY.



DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027curbbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/13/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 68 OF 239

CURB TIE LAYOUT SHEET 2

ROADWAY CURB TIES

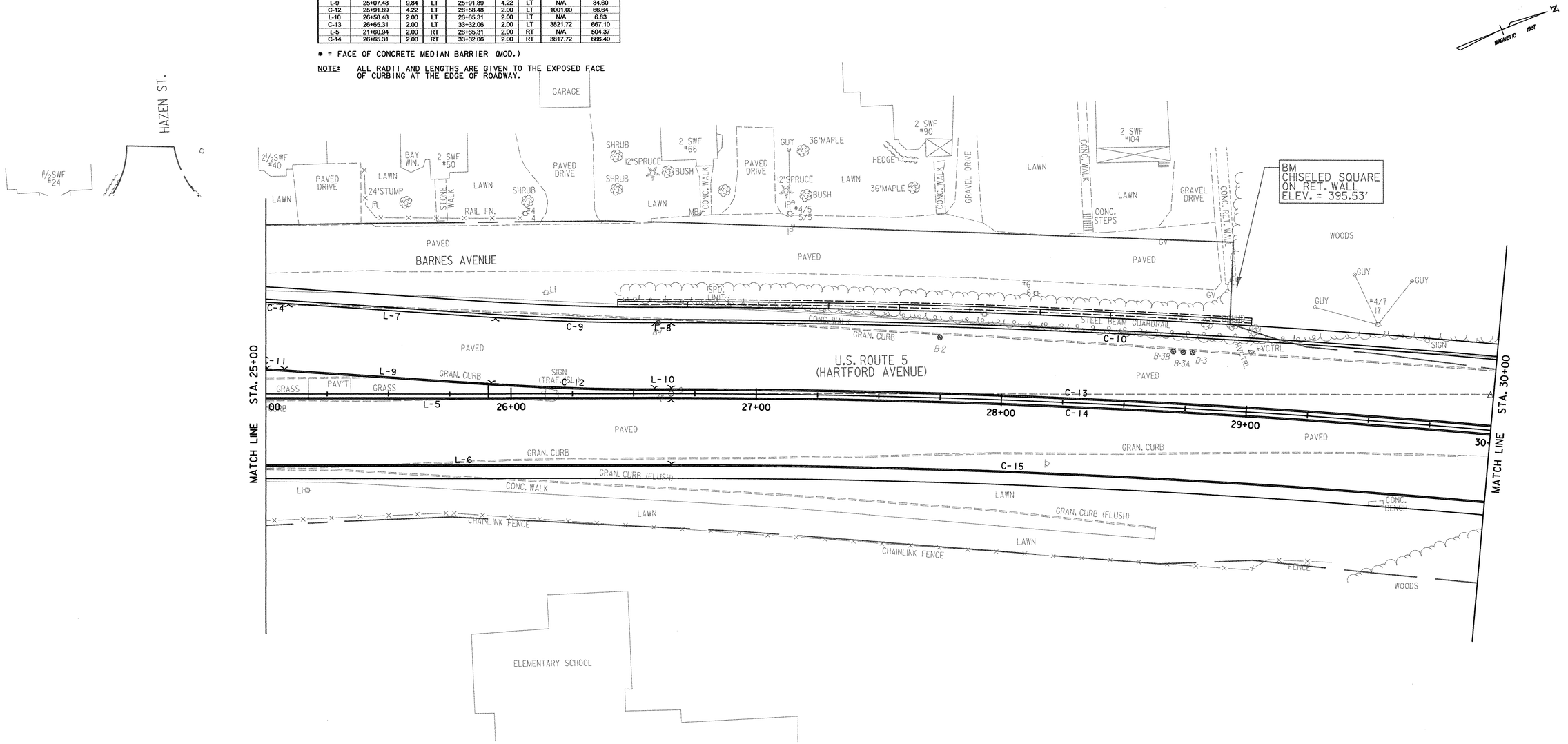
LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
C-4*	24+70.35	38.62	LT	25+09.27	36.79	LT	1005.91	38.97
L-7*	25+09.27	36.79	LT	25+93.69	31.16	LT	N/A	84.60
C-9*	25+93.69	31.16	LT	26+58.48	29.00	LT	974.00	64.84
L-8*	26+58.48	29.00	LT	26+65.31	29.00	LT	N/A	6.83
C-10*	26+65.31	29.00	LT	33+32.06	29.00	LT	3848.72	671.81
L-6	22+01.15	29.00	RT	26+65.31	29.00	RT	N/A	464.16
C-15	26+65.31	29.00	RT	33+32.06	29.00	RT	3780.72	661.69

MEDIAN ISLAND CURB TIES

LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
C-11	25+00.51	10.28	LT	25+07.48	9.84	LT	978.91	6.98
L-9	25+07.48	9.84	LT	25+91.89	4.22	LT	N/A	84.60
C-12	25+91.89	4.22	LT	26+58.48	2.00	LT	1001.00	66.64
L-10	26+58.48	2.00	LT	26+65.31	2.00	LT	N/A	6.83
C-13	26+65.31	2.00	LT	33+32.06	2.00	LT	3821.72	667.10
L-5	21+60.94	2.00	RT	26+65.31	2.00	RT	N/A	504.37
C-14	26+65.31	2.00	RT	33+32.06	2.00	RT	3817.72	666.40

* = FACE OF CONCRETE MEDIAN BARRIER (MOD.)

NOTE: ALL RADII AND LENGTHS ARE GIVEN TO THE EXPOSED FACE OF CURBING AT THE EDGE OF ROADWAY.



0 20 40
SCALE IN FEET

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027curbbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/13/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 69 OF 239

CURB TIE LAYOUT SHEET 3

ROADWAY CURB TIES

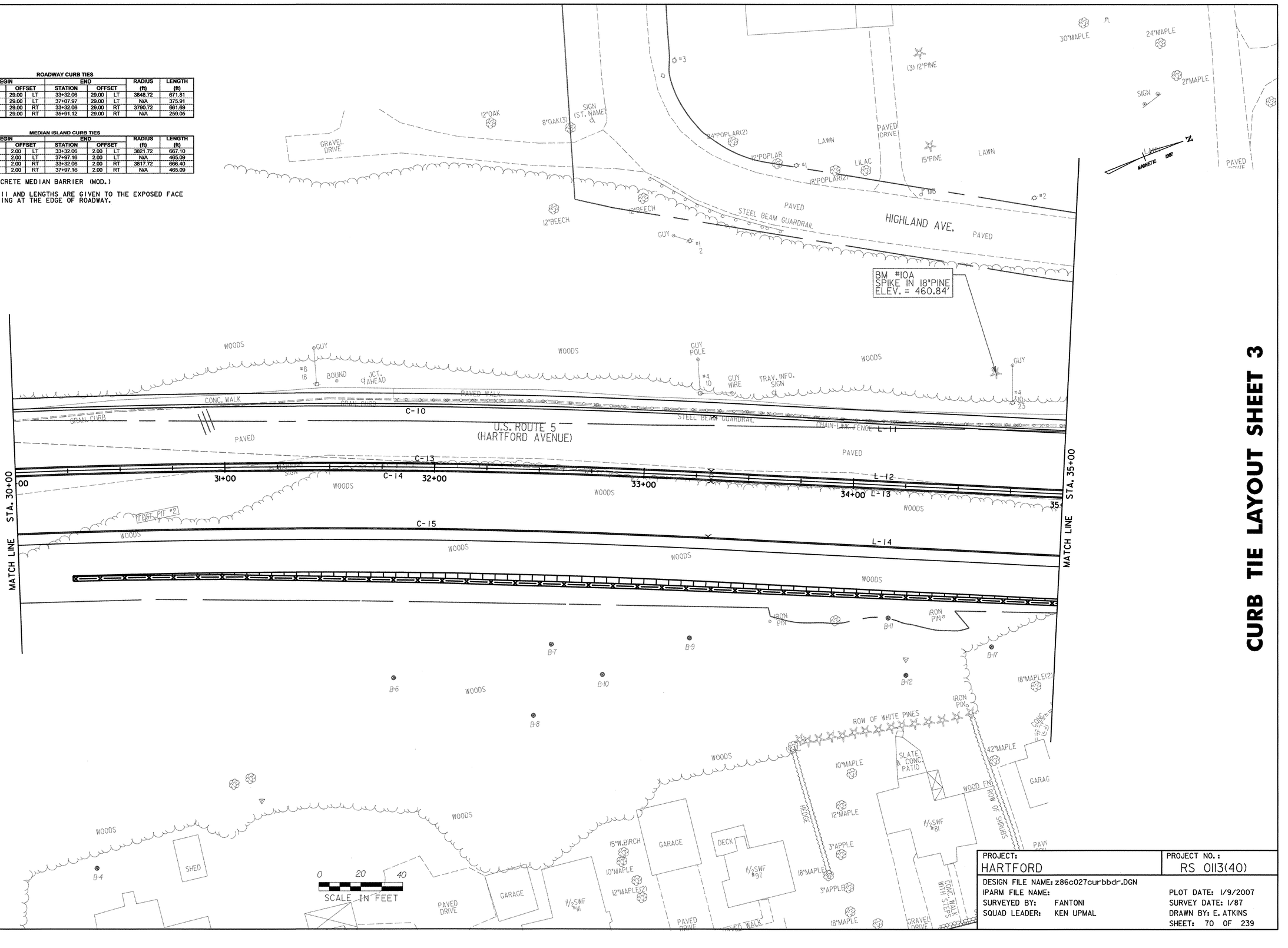
LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
C-10 *	26+65.31	29.00	LT	33+32.06	29.00	LT	3848.72	671.81
L-11 *	33+32.06	29.00	LT	37+07.97	29.00	LT	N/A	375.91
C-15	26+65.31	29.00	RT	33+32.06	29.00	RT	3790.72	661.69
L-14	33+32.06	29.00	RT	35+91.12	29.00	RT	N/A	259.05

MEDIAN ISLAND CURB TIES

LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
C-13	26+65.31	2.00	LT	33+32.06	2.00	LT	3821.72	667.10
L-12	33+32.06	2.00	LT	37+97.16	2.00	LT	N/A	465.09
C-14	26+65.31	2.00	RT	33+32.06	2.00	RT	3817.72	666.40
L-13	33+32.06	2.00	RT	37+97.16	2.00	RT	N/A	465.09

* = FACE OF CONCRETE MEDIAN BARRIER (MOD.)

NOTE: ALL RADII AND LENGTHS ARE GIVEN TO THE EXPOSED FACE OF CURBING AT THE EDGE OF ROADWAY.



DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027curbbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/9/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 70 OF 239

CURB TIE LAYOUT SHEET 4

ROADWAY CURB TIES

LABEL	BEGIN STATION	OFFSET		END STATION	OFFSET		RADIUS (ft)	LENGTH (ft)
L-11 *	33+32.06	29.00	LT	37+07.97	29.00	LT	N/A	375.91
L-15	37+07.97	29.00	LT	37+68.23	29.00	LT	N/A	60.25
C-16A	37+68.23	29.00	LT	37+85.59	34.54	LT	30.00	18.52
C-16B	10+61.82 (HIGHLAND AVE.)	47.38	LT	11+05.77 (HIGHLAND AVE.)	33.68	LT	30.00	35.39
C-17A	11+05.77 (HIGHLAND AVE.)	33.68	LT	11+98.62 (HIGHLAND AVE.)	22.94	LT	100.00	64.62
C-17B	12+04.99 (HIGHLAND AVE.)	21.29	LT	12+47.89 (HIGHLAND AVE.)	12.00	LT	100.00	42.69
C-18	12+41.38 (HIGHLAND AVE.)	17.63	RT	12+36.34 (HIGHLAND AVE.)	12.40	RT	5.00	7.95
C-19	12+36.34 (HIGHLAND AVE.)	12.40	RT	12+12.34 (HIGHLAND AVE.)	12.13	RT	500.00	24.51
C-20A	12+12.34 (HIGHLAND AVE.)	12.13	RT	12+01.54 (HIGHLAND AVE.)	14.82	RT	60.00	12.60
C-20B	11+97.02 (HIGHLAND AVE.)	17.38	RT	11+84.58 (HIGHLAND AVE.)	32.70	RT	60.00	22.05
C-20C	15+43.74 (SCHOOL ENTRANCE)	21.76	LT	15+76.26 (SCHOOL ENTRANCE)	12.48	LT	60.00	34.28
L-17	15+76.26 (SCHOOL ENTRANCE)	12.48	LT	15+83.00 (SCHOOL ENTRANCE)	12.35	LT	N/A	6.74
L-18	15+83.00 (SCHOOL ENTRANCE)	12.00	RT	15+63.33 (SCHOOL ENTRANCE)	12.51	RT	N/A	19.68
C-21A	15+63.33 (SCHOOL ENTRANCE)	12.51	RT	15+36.64 (SCHOOL ENTRANCE)	19.54	RT	60.00	27.85
C-21B	11+49.37 (HIGHLAND AVE.)	37.87	RT	11+33.63 (HIGHLAND AVE.)	32.67	RT	60.00	22.31
C-22	11+33.63 (HIGHLAND AVE.)	32.67	RT	10+88.94 (HIGHLAND AVE.)	34.17	RT	129.00	58.58
C-23	10+88.94 (HIGHLAND AVE.)	34.17	RT	10+54.67 (HIGHLAND AVE.)	33.84	RT	188.00	42.97
C-24A	10+54.67 (HIGHLAND AVE.)	33.84	RT	10+34.94 (HIGHLAND AVE.)	45.40	RT	40.00	28.63
C-24B	38+95.07	39.09	LT	39+13.17	35.16	LT	40.00	18.49
L-19	39+13.17	35.16	LT	39+50.96	35.41	LT	N/A	37.39

* = FACE OF CONCRETE MEDIAN BARRIER (MOD.)

NOTE: ALL RADII AND LENGTHS ARE GIVEN TO THE EXPOSED FACE OF CURBING AT THE EDGE OF ROADWAY.

MEDIAN ISLAND CURB TIES

LABEL	BEGIN STATION	OFFSET		END STATION	OFFSET		RADIUS (ft)	LENGTH (ft)
L-12	33+32.06	2.00	LT	37+97.16	2.00	LT	N/A	465.09
C-26	37+97.16	2.00	LT	37+97.16	2.00	RT	2.00	6.28
L-13	33+32.06	2.00	RT	37+97.16	2.00	RT	N/A	465.09
C-38	11+32.14 (HIGHLAND AVE.)	3.51	LT	11+32.46 (HIGHLAND AVE.)	3.70	RT	3.61	11.34
C-39	11+32.46 (HIGHLAND AVE.)	3.70	RT	10+89.15 (HIGHLAND AVE.)	5.17	RT	100.00	45.16
C-40	10+89.15 (HIGHLAND AVE.)	5.17	RT	10+41.38 (HIGHLAND AVE.)	4.72	RT	139.00	49.53
L-24	10+41.38 (HIGHLAND AVE.)	4.72	RT	10+43.51 (HIGHLAND AVE.)	5.26	RT	N/A	10.20
C-41	10+43.51 (HIGHLAND AVE.)	5.26	LT	11+32.17 (HIGHLAND AVE.)	3.01	LT	129.00	85.21
L-25	10+36.49 (HIGHLAND AVE.)	4.61	RT	10+38.21 (HIGHLAND AVE.)	5.31	LT	N/A	10.07
C-43	10+36.49 (HIGHLAND AVE.)	4.61	RT	10+37.36 (HIGHLAND AVE.)	5.32	LT	5.00	14.89
C-44	0+56.87 (RELOC. WORC. AVE)	0.00	CL	36+75.46	29.00	RT	5.00	12.08
L-26	36+75.46	29.00	RT	38+24.18	29.00	RT	N/A	148.72
C-45	38+24.18	29.00	RT	3+32.89 (RELOC. WORC. AVE)	18.00	LT	5.00	7.85
L-27	3+32.89 (RELOC. WORC. AVE)	18.00	LT	3+15.65 (RELOC. WORC. AVE)	18.00	LT	N/A	17.24
C-46	3+15.65 (RELOC. WORC. AVE)	18.00	LT	1+94.22 (RELOC. WORC. AVE)	18.00	LT	157.00	92.29
C-47	1+94.22 (RELOC. WORC. AVE)	18.00	LT	1+55.34 (RELOC. WORC. AVE)	3.48	LT	125.00	35.93
C-48	1+55.34 (RELOC. WORC. AVE)	3.48	RT	1+47.00 (RELOC. WORC. AVE)	0.00	CL	10.00	9.17
C-49	1+47.00 (RELOC. WORC. AVE)	0.00	CL	1+10.46 (RELOC. WORC. AVE)	0.00	CL	75.00	36.53
C-50	1+10.46 (RELOC. WORC. AVE)	0.00	CL	0+56.87 (RELOC. WORC. AVE)	0.00	CL	75.00	53.66

ROADWAY CURB TIES (Con't)

LABEL	BEGIN STATION	OFFSET		END STATION	OFFSET		RADIUS (ft)	LENGTH (ft)
C-25A	39+50.96	35.41	LT	39+65.90	41.89	LT	20.00	16.60
C-25B	20+47.08 (HEBARD AVE.)	11.11	LT	20+56.03 (HEBARD AVE.)	9.00	LT	20.00	9.27
L-20	20+56.03 (HEBARD AVE.)	9.00	RT	20+54.49 (HEBARD AVE.)	9.00	RT	N/A	1.53
L-14	33+32.06	29.00	RT	35+91.12	29.00	RT	N/A	259.05
C-27	35+91.12	29.00	RT	1+30.01 (RELOC. WORC. AVE.)	29.19	RT	100.00	143.74
C-28A	1+30.01 (RELOC. WORC. AVE.)	29.19	RT	1+32.66 (RELOC. WORC. AVE.)	31.99	RT	25.00	4.68
C-28B	5+35.90 (WORC. AVE.)	15.79	RT	5+45.37 (WORC. AVE.)	14.00	RT	25.00	9.63
C-29	5+45.37 (WORC. AVE.)	14.00	RT	5+75.00 (WORC. AVE.)	14.00	RT	50.00	23.15
C-30	5+75.00 (WORC. AVE.)	14.00	LT	5+54.47 (WORC. AVE.)	14.00	LT	78.00	25.02
C-31	5+54.47 (WORC. AVE.)	14.00	LT	5+30.54 (WORC. AVE.)	20.81	LT	97.00	27.14
C-32	1+62.92 (RELOC. WORC. AVE.)	28.39	RT	1+80.16 (RELOC. WORC. AVE.)	18.00	RT	40.00	25.19
C-33	1+80.16 (RELOC. WORC. AVE.)	18.00	RT	2+92.94 (RELOC. WORC. AVE.)	18.00	RT	93.00	139.85
C-34	3+12.30 (RELOC. WORC. AVE.)	18.00	RT	3+17.24 (RELOC. WORC. AVE.)	18.00	RT	93.00	5.75
C-35	3+17.24 (RELOC. WORC. AVE.)	18.00	RT	38+84.77	29.31	RT	20.00	31.38
L-21A	38+84.77	29.31	RT	38+93.06	29.15	RT	N/A	8.31
L-21B	38+98.02	29.07	RT	39+80.22	28.70	RT	N/A	82.91
C-36	39.80.22	28.70	RT	39+85.12	33.32	RT	5.00	7.44
L-22	39+85.12	33.32	RT	39+85.26	35.24	RT	N/A	1.92
L-23	39+97.17	35.37	RT	39+97.10	34.29	RT	N/A	1.09
C-37	39+97.10	34.29	RT	40+02.11	28.94	RT	5.00	8.27
C-51A	20+54.49 (HEBARD AVE.)	9.00	RT	20+46.55 (HEBARD AVE.)	10.65	RT	20.00	8.17

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027curbbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/13/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 71 OF 239

SCALE IN FEET 0 20 40

CURB TIE LAYOUT SHEET 5

ROADWAY CURB TIES

LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
C-51A	20+54.49 (HEBARD AVE.)	9.00	RT	20+46.55 (HEBARD AVE.)	10.65	RT	20.00	8.17
C-51B	39+94.67	13.82	RT	40+08.22	34.91	LT	20.00	15.38
L-28	40+08.22	34.91	LT	40+88.02	27.29	LT	N/A	79.42
C-52	40+88.02	27.29	LT	40+93.60	31.96	LT	5.00	8.10
C-53	41+34.46	29.55	LT	41+44.45	21.00	LT	10.00	14.27
C-54	41+44.45	21.00	LT	43+53.77	21.00	LT	3319.00	208.00
C-55	43+53.77	21.00	LT	43+58.78	25.50	LT	5.00	7.36
L-29	43+58.79	30.50	LT	43+58.77	35.86	LT	N/A	5.36
L-30	43+58.77	35.86	LT	43+55.04	35.84	LT	N/A	3.69
L-31	43+55.04	35.84	LT	43+55.04	38.50	LT	N/A	2.66
C-56	43+83.02	25.50	LT	43+88.03	21.00	LT	5.00	7.36
C-57	43+88.03	21.00	LT	44+49.02	21.00	LT	3319.00	60.61
C-58A	44+49.02	21.00	LT	44+65.01	25.50	LT	30.00	16.72
C-58B	25+30.73 (SAUNDERS AVE.)	21.45	LT	25+47.83 (SAUNDERS AVE.)	13.24	LT	30.00	19.30
C-59	25+47.83 (SAUNDERS AVE.)	13.24	LT	25+50.04 (SAUNDERS AVE.)	18.59	LT	3.00	7.83
L-32	25+50.04 (SAUNDERS AVE.)	18.59	LT	25+45.28 (SAUNDERS AVE.)	22.27	LT	N/A	6.02
C-60	25+45.28 (SAUNDERS AVE.)	22.27	LT	44+53.89	37.00	LT	20.00	18.64
C-61	44+53.89	37.00	LT	43+83.04	37.00	LT	3303.00	70.07
L-33	43+83.04	37.00	LT	43+83.01	30.50	LT	N/A	6.50
C-37	39+97.10	34.29	RT	40+02.11	28.94	RT	5.00	8.27
L-34	40+02.11	28.94	RT	40+16.02	29.17	RT	N/A	14.03
C-62	40+16.02	29.17	RT	40+54.12	28.26	RT	404.00	38.46
L-35	40+54.12	28.26	RT	41+27.43	24.21	RT	N/A	73.99
C-63	41+27.43	24.21	RT	41+32.56	28.54	RT	5.00	7.40
L-36	41+32.56	28.54	RT	41+32.82	30.49	RT	N/A	1.96
L-37	41+58.65	29.49	RT	41+58.52	28.46	RT	N/A	1.04
C-64	41+58.52	28.46	RT	41+63.28	22.83	RT	5.00	8.32
L-38	41+63.28	22.83	RT	42+73.42	21.00	RT	N/A	110.88
C-65	42+73.42	21.00	RT	43+58.50	21.00	RT	3361.00	85.61
C-67	43+58.50	21.00	RT	43+63.46	25.99	RT	5.00	7.84
L-39	43+63.46	25.99	RT	43+63.46	27.50	RT	N/A	1.51
L-40	43+78.34	27.50	RT	43+78.34	25.99	RT	N/A	1.51
C-68	43+78.34	25.99	RT	43+83.30	21.00	RT	5.00	7.84
C-69	43+83.30	21.00	RT	44+31.59	21.00	RT	3361.00	48.59
C-70	44+31.59	21.00	RT	44+36.55	26.00	RT	5.00	7.85
L-41	44+36.55	26.00	RT	44+36.55	27.50	RT	N/A	1.50
L-42	44+52.42	27.50	RT	44+52.42	25.97	RT	N/A	1.53
C-71	44+52.42	25.97	RT	44+57.39	21.00	RT	5.00	7.82
C-72	44+57.39	21.00	RT	45+53.84	21.00	RT	3361.00	97.06

NOTE: ALL RADII AND LENGTHS ARE GIVEN TO THE EXPOSED FACE OF CURBING AT THE EDGE OF ROADWAY.

U.S. ROUTE 5 (HARTFORD AVENUE)

SAUNDERS AVE.

MATCH LINE STA. 40+00

MATCH LINE STA. 45+00

TBM BOUND ELEV. = 490.87'

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027curbbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/9/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 72 OF 239

CURB TIE LAYOUT SHEET 6

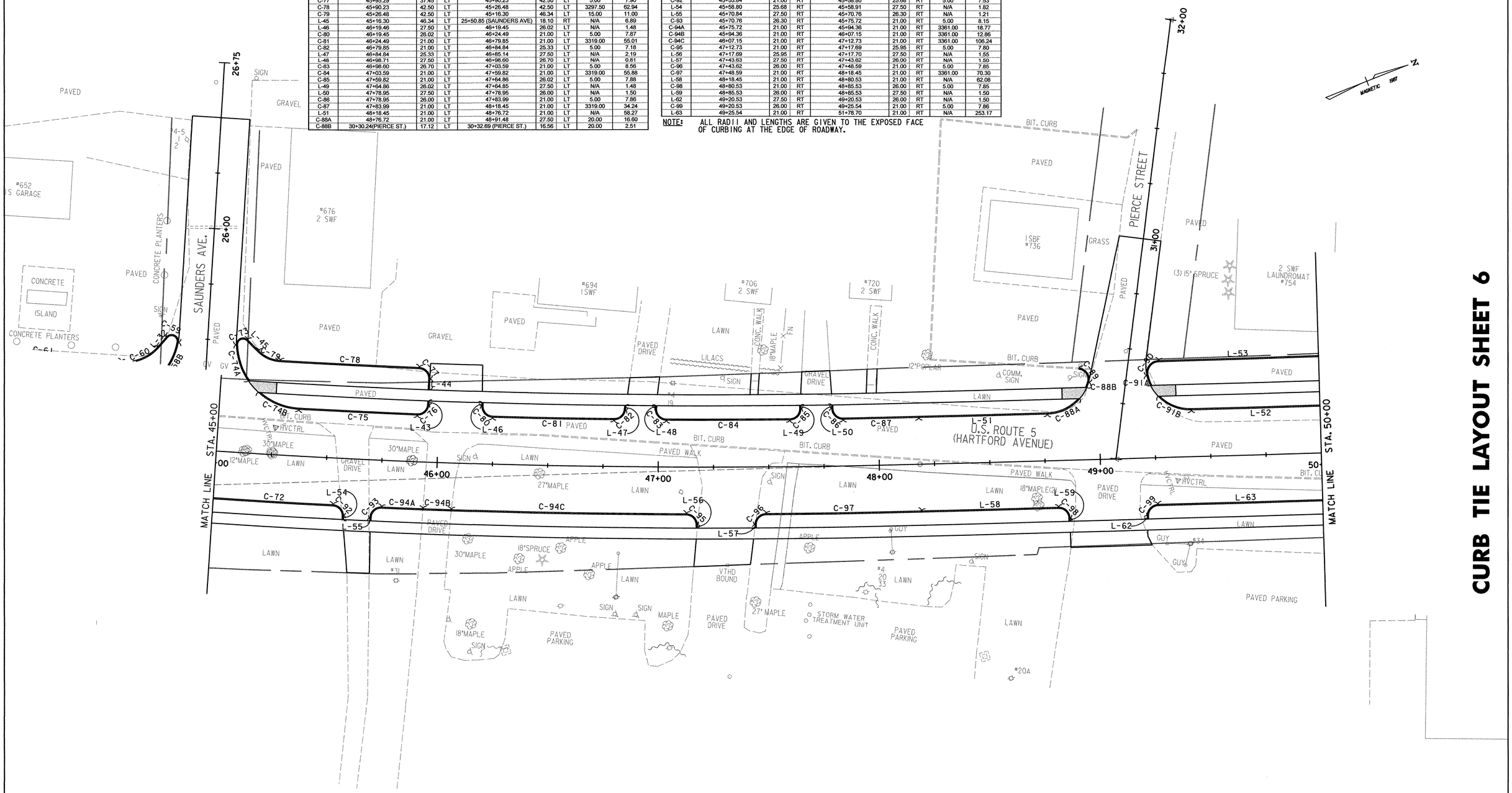
ROADWAY CURB TIES

LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
C-73	25+48.36 (SAUNDERS AVE)	13.11	RT	25+50.85 (SAUNDERS AVE)	18.10	RT	3.00	7.17
C-74A	25+48.36 (SAUNDERS AVE)	13.11	RT	25+32.41 (SAUNDERS AVE)	19.42	RT	30.00	17.39
C-74B	45+17.49	27.50	LT	45+36.36	21.00	LT	30.00	20.21
C-75	45+36.36	21.00	LT	45+90.22	21.00	LT	3319.00	53.52
C-76	45+90.22	21.00	LT	45+95.26	26.02	LT	5.00	7.88
L-43	45+95.26	26.02	LT	45+95.26	27.50	LT	N/A	1.48
L-44	45+95.24	32.50	LT	45+95.29	37.45	LT	N/A	4.95
C-77	45+95.29	37.45	LT	45+90.23	42.50	LT	5.00	7.90
C-78	45+90.23	42.50	LT	45+26.48	42.50	LT	3297.50	62.94
C-79	45+26.48	42.50	LT	45+16.30	46.34	LT	15.00	11.00
L-45	45+16.30	46.34	LT	25+50.85 (SAUNDERS AVE)	18.10	RT	N/A	6.89
L-46	46+19.46	27.50	LT	46+19.45	26.02	LT	N/A	1.48
C-80	46+19.45	26.02	LT	46+24.49	21.00	LT	5.00	7.87
C-81	46+24.49	21.00	LT	46+79.85	21.00	LT	3319.00	55.01
C-82	46+79.85	21.00	LT	46+84.84	25.33	LT	5.00	7.18
L-47	46+84.84	25.33	LT	46+85.14	27.50	LT	N/A	2.19
L-48	46+98.71	27.50	LT	46+98.60	26.70	LT	N/A	0.81
C-83	46+98.60	26.70	LT	47+03.59	21.00	LT	5.00	8.56
C-84	47+03.59	21.00	LT	47+59.82	21.00	LT	3319.00	55.88
C-85	47+59.82	21.00	LT	47+64.86	26.02	LT	5.00	7.88
L-49	47+64.86	26.02	LT	47+64.85	27.50	LT	N/A	1.48
L-50	47+78.95	27.50	LT	47+79.95	26.00	LT	N/A	1.50
C-86	47+78.95	26.00	LT	47+83.99	21.00	LT	5.00	7.86
C-87	47+83.99	21.00	LT	48+18.45	21.00	LT	3319.00	34.24
L-51	48+18.45	21.00	LT	48+76.72	21.00	LT	N/A	58.27
C-88A	48+76.72	21.00	LT	48+91.48	27.50	LT	20.00	16.60
C-88B	30+30.24(PIERCE ST.)	17.12	LT	30+32.69 (PIERCE ST.)	16.56	LT	20.00	2.51

ROADWAY CURB TIES (Con't)

LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
C-89	30+32.69 (PIERCE ST.)	16.56	LT	30+38.48 (PIERCE ST.)	21.80	LT	5.00	8.96
C-90	30+46.25 (PIERCE ST.)	13.53	RT	30+38.92 (PIERCE ST.)	9.22	RT	5.50	9.71
C-91A	30+38.92 (PIERCE ST.)	9.22	RT	30+34.65 (PIERCE ST.)	11.41	RT	20.00	4.81
C-91B	49+27.03	27.50	LT	49+41.79	21.00	LT	20.00	16.60
L-52	49+41.79	21.00	LT	50+20.00	21.00	RT	N/A	78.21
L-53	50+19.98	43.93	LT	49+27.56	43.64	LT	N/A	92.43
C-72	44+57.39	21.00	RT	45+53.84	21.00	RT	3361.00	97.06
C-92	45+53.84	21.00	RT	45+58.80	25.66	RT	5.00	7.53
L-54	45+58.80	25.66	RT	45+58.91	27.50	RT	N/A	1.82
L-55	45+70.84	27.50	RT	45+70.76	26.30	RT	N/A	1.21
C-93	45+70.76	26.30	RT	45+75.72	21.00	RT	5.00	8.15
C-94A	45+75.72	21.00	RT	45+94.36	21.00	RT	3361.00	18.77
C-94B	45+94.36	21.00	RT	46+07.15	21.00	RT	3361.00	12.86
C-94C	46+07.15	21.00	RT	47+12.73	21.00	RT	3361.00	106.24
C-95	47+12.73	21.00	RT	47+17.69	25.95	RT	5.00	7.80
L-56	47+17.69	25.95	RT	47+17.70	27.50	RT	N/A	1.55
L-57	47+43.63	27.50	RT	47+43.62	26.00	RT	N/A	1.50
C-96	47+43.62	26.00	RT	47+48.59	21.00	RT	5.00	7.85
C-97	47+48.59	21.00	RT	48+18.45	21.00	RT	3361.00	70.30
L-58	48+18.45	21.00	RT	48+80.53	21.00	RT	N/A	62.08
C-98	48+80.53	21.00	RT	48+85.53	26.00	RT	5.00	7.85
L-59	48+85.53	26.00	RT	48+85.53	27.50	RT	N/A	1.50
L-62	49+20.53	27.50	RT	49+20.53	26.00	RT	N/A	1.50
C-99	49+20.53	26.00	RT	49+25.54	21.00	RT	5.00	7.86
L-63	49+25.54	21.00	RT	51+78.70	21.00	RT	N/A	253.17

NOTE: ALL RADII AND LENGTHS ARE GIVEN TO THE EXPOSED FACE OF CURBING AT THE EDGE OF ROADWAY.



0 20 40
SCALE IN FEET

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027curbbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/9/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 73 OF 239

CURB TIE LAYOUT SHEET 7

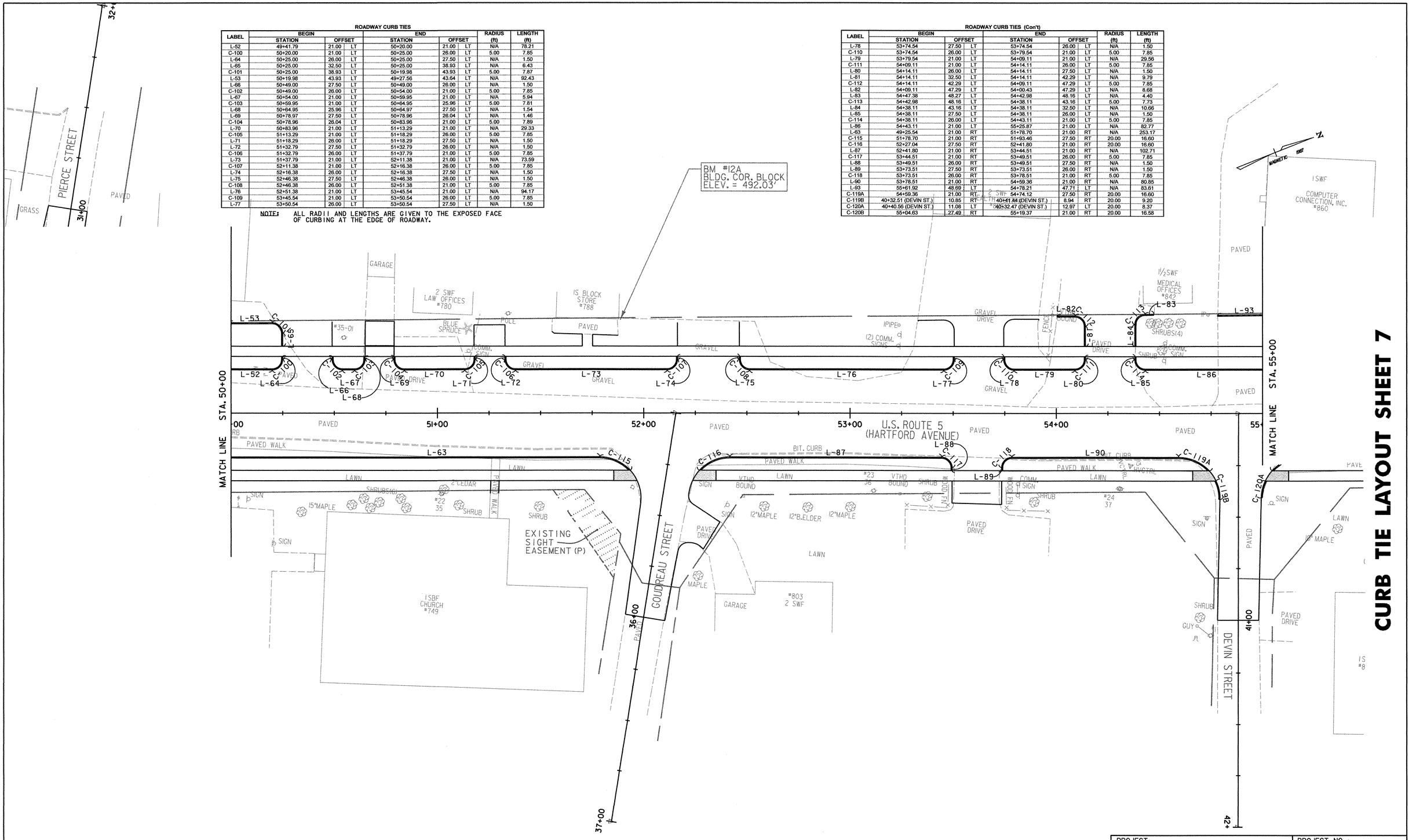
ROADWAY CURB TIES

LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
L-52	49+41.79	21.00	LT	50+20.00	21.00	LT	N/A	78.21
C-100	50+20.00	21.00	LT	50+25.00	26.00	LT	5.00	7.85
L-64	50+25.00	26.00	LT	50+25.00	27.50	LT	N/A	1.50
L-65	50+25.00	32.50	LT	50+25.00	38.93	LT	N/A	6.43
C-101	50+25.00	38.93	LT	50+19.98	43.93	LT	5.00	7.87
L-53	50+19.98	43.93	LT	49+27.56	43.64	LT	N/A	92.43
L-66	50+49.00	27.50	LT	50+49.00	26.00	LT	N/A	1.50
C-102	50+49.00	26.00	LT	50+54.00	21.00	LT	5.00	7.85
L-67	50+54.00	21.00	LT	50+59.95	21.00	LT	N/A	5.94
C-103	50+59.95	21.00	LT	50+64.95	25.96	LT	5.00	7.81
L-68	50+64.95	25.96	LT	50+64.97	27.50	LT	N/A	1.54
L-69	50+78.97	27.50	LT	50+78.96	26.04	LT	N/A	1.46
C-104	50+78.96	26.04	LT	50+83.96	21.00	LT	5.00	7.89
L-70	50+83.96	21.00	LT	51+13.29	21.00	LT	N/A	29.33
C-105	51+13.29	21.00	LT	51+18.29	26.00	LT	5.00	7.85
L-71	51+18.29	26.00	LT	51+18.29	27.50	LT	N/A	1.50
L-72	51+32.79	27.50	LT	51+32.79	26.00	LT	N/A	1.50
C-106	51+32.79	26.00	LT	51+37.79	21.00	LT	5.00	7.85
L-73	51+37.79	21.00	LT	52+11.38	21.00	LT	N/A	73.59
C-107	52+11.38	21.00	LT	52+16.38	26.00	LT	5.00	7.85
L-74	52+16.38	26.00	LT	52+16.38	27.50	LT	N/A	1.50
L-75	52+46.38	27.50	LT	52+46.38	26.00	LT	N/A	1.50
C-108	52+46.38	26.00	LT	52+51.38	21.00	LT	5.00	7.85
L-76	52+51.38	21.00	LT	53+45.54	21.00	LT	N/A	94.17
C-109	53+45.54	21.00	LT	53+50.54	26.00	LT	5.00	7.85
L-77	53+50.54	26.00	LT	53+50.54	27.50	LT	N/A	1.50

NOTE: ALL RADII AND LENGTHS ARE GIVEN TO THE EXPOSED FACE OF CURBING AT THE EDGE OF ROADWAY.

ROADWAY CURB TIES (Con't)

LABEL	BEGIN STATION	BEGIN OFFSET		END STATION	END OFFSET		RADIUS (ft)	LENGTH (ft)
L-78	53+74.54	27.50	LT	53+74.54	26.00	LT	N/A	1.50
C-110	53+74.54	26.00	LT	53+79.54	21.00	LT	5.00	7.85
L-79	53+79.54	21.00	LT	54+09.11	21.00	LT	N/A	29.56
C-111	54+09.11	21.00	LT	54+14.11	26.00	LT	5.00	7.85
L-80	54+14.11	26.00	LT	54+14.11	27.50	LT	N/A	1.50
L-81	54+14.11	32.50	LT	54+14.11	42.29	LT	N/A	9.79
C-112	54+14.11	42.29	LT	54+09.11	47.29	LT	5.00	7.85
L-82	54+09.11	47.29	LT	54+00.43	47.29	LT	N/A	8.68
L-83	54+47.38	48.27	LT	54+42.98	48.16	LT	N/A	4.40
C-113	54+42.98	48.16	LT	54+38.11	43.16	LT	5.00	7.73
L-84	54+38.11	43.16	LT	54+38.11	32.50	LT	N/A	10.66
L-85	54+38.11	27.50	LT	54+38.11	26.00	LT	N/A	1.50
C-114	54+38.11	26.00	LT	54+43.11	21.00	LT	5.00	7.85
L-86	54+43.11	21.00	LT	55+25.87	21.00	LT	N/A	82.77
L-93	49+25.54	21.00	RT	51+78.70	21.00	RT	N/A	253.17
C-115	51+78.70	21.00	RT	51+93.46	27.50	RT	20.00	16.60
C-116	52+27.04	27.50	RT	52+41.80	21.00	RT	20.00	16.60
L-87	52+41.80	21.00	RT	53+44.51	21.00	RT	N/A	102.71
C-117	53+44.51	21.00	RT	53+49.51	26.00	RT	5.00	7.85
L-88	53+49.51	26.00	RT	53+49.51	27.50	RT	N/A	1.50
L-89	53+73.51	27.50	RT	53+73.51	26.00	RT	N/A	1.50
C-118	53+73.51	26.00	RT	53+78.51	21.00	RT	5.00	7.85
L-90	53+78.51	21.00	RT	54+59.36	21.00	RT	N/A	80.85
L-83	55+61.92	48.69	LT	54+78.21	47.71	LT	N/A	83.61
C-119A	54+59.36	21.00	RT	54+74.12	27.50	RT	20.00	16.60
C-119B	40+32.51 (DEVIN ST.)	10.85	RT	40+41.44 (DEVIN ST.)	8.94	RT	20.00	9.20
C-120A	40+40.56 (DEVIN ST.)	11.08	LT	40+32.47 (DEVIN ST.)	12.97	LT	20.00	8.37
C-120B	55+04.63	27.49	RT	55+19.37	21.00	RT	20.00	16.58



DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027curbbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL

PLOT DATE: 1/13/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 74 OF 239

CURB TIE LAYOUT SHEET 8

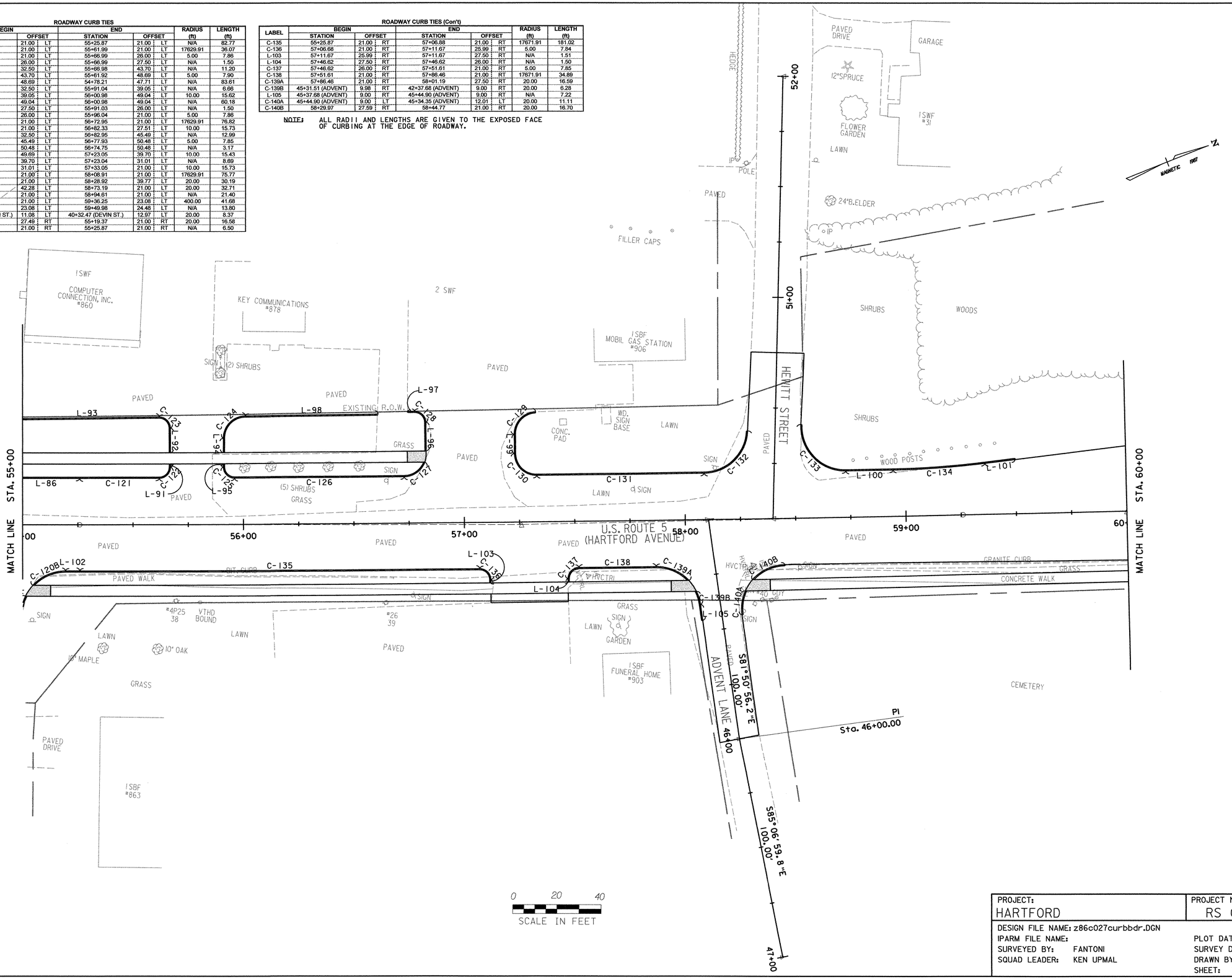
ROADWAY CURB TIES

LABEL	BEGIN STATION	BEGIN OFFSET		BEGIN	END STATION	END OFFSET		END	RADIUS (ft)	LENGTH (ft)
L-86	54+43.11	21.00	LT		55+25.87	21.00	LT		N/A	82.77
C-121	55+25.87	21.00	LT		55+61.99	21.00	LT		17629.91	36.07
C-122	55+61.99	21.00	LT		55+66.99	26.00	LT		5.00	7.86
L-91	55+66.99	26.00	LT		55+66.99	27.50	LT		N/A	1.50
L-92	55+66.99	32.50	LT		55+66.98	43.70	LT		N/A	11.20
C-123	55+66.98	43.70	LT		55+61.92	48.69	LT		5.00	7.90
L-93	55+61.92	48.69	LT		54+78.21	47.71	LT		N/A	83.61
L-94	55+91.03	32.50	LT		55+91.04	39.05	LT		N/A	6.66
C-124	55+91.04	39.05	LT		56+00.98	49.04	LT		10.00	15.62
L-98	56+61.33	49.04	LT		56+00.98	49.04	LT		N/A	60.18
L-95	55+91.03	27.50	LT		55+91.03	26.00	LT		N/A	1.50
C-125	55+91.03	26.00	LT		55+96.04	21.00	LT		5.00	7.86
C-126	55+96.04	21.00	LT		56+72.95	21.00	LT		17629.91	76.82
C-127	56+72.95	21.00	LT		56+82.33	27.51	LT		10.00	15.73
L-96	56+82.96	32.50	LT		56+82.95	45.49	LT		N/A	12.99
C-128	56+82.95	45.49	LT		56+77.93	50.48	LT		5.00	7.85
L-97	56+77.93	50.48	LT		56+74.75	50.48	LT		N/A	3.17
C-129	57+32.81	49.69	LT		57+23.05	39.70	LT		10.00	15.43
L-99	57+23.05	39.70	LT		57+23.04	31.01	LT		N/A	8.69
C-130	57+23.04	31.01	LT		57+33.05	21.00	LT		10.00	15.73
C-131	57+33.05	21.00	LT		58+08.91	21.00	LT		17629.91	75.77
C-132	58+08.91	21.00	LT		58+28.92	39.77	LT		20.00	30.19
C-133	58+53.18	42.28	LT		58+73.19	21.00	LT		20.00	32.71
L-100	58+73.19	21.00	LT		58+94.61	21.00	LT		N/A	21.40
C-134	58+94.61	21.00	LT		59+36.25	23.08	LT		400.00	41.68
L-101	59+36.25	23.08	LT		59+49.98	24.48	LT		N/A	13.80
C-120A	40+40.56 (DEVIN ST.)	11.08	LT		40+32.47 (DEVIN ST.)	12.97	LT		20.00	8.37
C-120B	55+04.63	27.49	RT		55+19.37	21.00	RT		20.00	16.58
L-102	55+19.37	21.00	RT		55+25.87	21.00	RT		N/A	6.50

ROADWAY CURB TIES (Con't)

LABEL	BEGIN STATION	BEGIN OFFSET		BEGIN	END STATION	END OFFSET		END	RADIUS (ft)	LENGTH (ft)
C-135	55+25.87	21.00	RT		57+06.88	21.00	RT		17671.91	181.02
C-136	57+06.68	21.00	RT		57+11.67	25.99	RT		5.00	7.84
L-103	57+11.67	25.99	RT		57+11.67	27.50	RT		N/A	1.51
L-104	57+46.62	27.50	RT		57+46.62	26.00	RT		N/A	1.50
C-137	57+46.62	26.00	RT		57+51.61	21.00	RT		5.00	7.85
C-138	57+51.61	21.00	RT		57+86.46	21.00	RT		17671.91	34.89
C-139A	57+86.46	21.00	RT		58+01.19	27.50	RT		20.00	16.59
C-139B	45+31.51 (ADVENT)	9.98	RT		42+37.68 (ADVENT)	9.00	RT		20.00	6.28
L-105	45+37.68 (ADVENT)	9.00	RT		45+44.90 (ADVENT)	9.00	RT		N/A	7.22
C-140A	45+44.90 (ADVENT)	9.00	LT		45+34.35 (ADVENT)	12.01	LT		20.00	11.11
C-140B	58+29.97	27.59	RT		58+44.77	21.00	RT		20.00	16.70

NOTE: ALL RADII AND LENGTHS ARE GIVEN TO THE EXPOSED FACE OF CURBING AT THE EDGE OF ROADWAY.

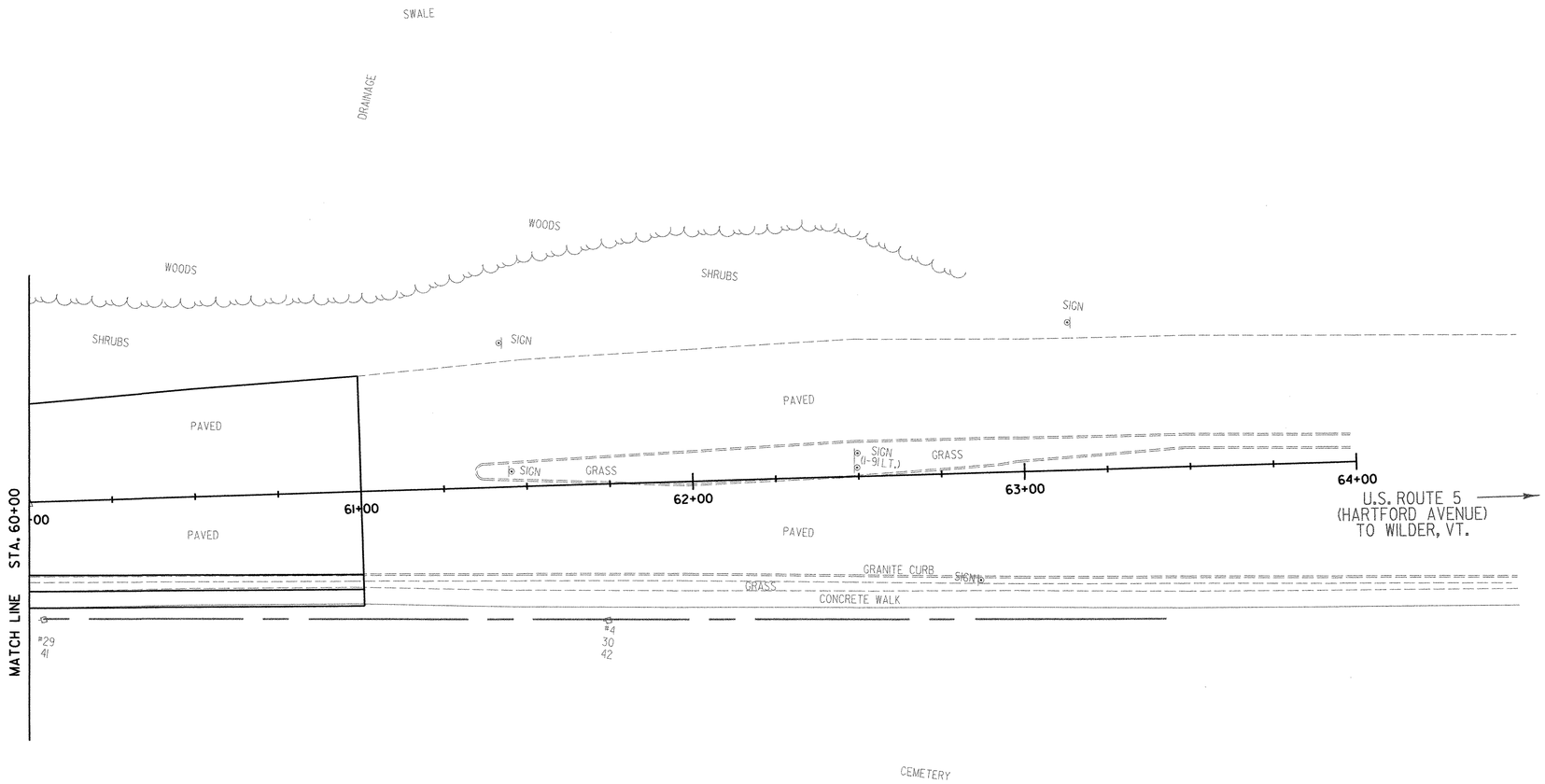


DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027curbbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/13/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 75 OF 239

CURB TIE LAYOUT SHEET 9



0 20 40
SCALE IN FEET

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027curbbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI — PLOT DATE: 1/9/2007
SQUAD LEADER: KEN UPMAL — SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 76 OF 239

UTILITY CONSTRUCTION GENERAL NOTES

SEQUENCE OF CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL PHASE ALL WORK IN A MANNER WHICH WILL MINIMIZE IMPACTS TO TRAFFIC AND LIMIT THE TOTAL AREA OF EARTH DISTURBANCE IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE STANDARD SPECIFICATIONS, SPECIAL PROVISIONS, EROSION CONTROL NARRATIVE, PLANS AND DETAILS AND THE CGP 3-9020(2006) FOR THIS PROJECT.

2. THE CONTRACTOR SHALL COMPLETE THE SEPARATION OF THE EXISTING STORMWATER FROM THE EXISTING SANITARY SEWER SYSTEM WITHIN THE PROJECT LIMITS BY COMPLETING: (1) PROPOSED STORMWATER OUTFALLS AND TRUNK LINE AND (2) SIDE STREET DRAINAGE CONNECTIONS TO THE NEW STORMWATER TRUNK LINE PRIOR TO OCTOBER 3, 2008. (1)

3. IN ORDER TO ACCOMPLISH THE SEPARATION OF THE STORMWATER FROM THE EXISTING SANITARY SEWER SYSTEM PRIOR TO OCTOBER 3, 2008 AND MINIMIZE IMPACTS TO TRAFFIC, THE FOLLOWING CONSTRUCTION SEQUENCE FOR MAJOR ITEMS, IS SUGGESTED:

   A. INSTALL U.S. RTE. 5 GROUND ANCHORED SOLDIER PILE WALL AND REGRADE THE AREA BETWEEN THE WALL AND EXISTING US ROUTE 5.
   B. INSTALL THE PROPOSED OUTFALL AT WHITE RIVER.
   C. INSTALL THE PROPOSED DRAINAGE TRUNK LINE AND MANHOLES AND MAKE THE PROPOSED SIDE STREET DRAINAGE CONNECTIONS.
   D. INSTALL THE PROPOSED OUTFALL NORTH OF HEWITT STREET.
   E. INSTALL THE PROPOSED DRAINAGE SYSTEM DISCHARGING TO THE OUTFALL NORTH OF HEWITT STREET.

4. TO MINIMIZE TRAFFIC AND UTILITY IMPACTS THE FOLLOWING IS A SUGGESTED CONSTRUCTION SEQUENCE TO COMPLETE THE REMAINING MAJOR ITEMS:

   A. REGRADE THE AREA BETWEEN STATION 38+00 AND STATION 61+00, IN ORDER TO ALLOW INSTALLATION OF THE NEW WATER AND SEWER MAINS AND TO MAINTAIN TRAFFIC DURING INSTALLATION OF THE NEW WATER AND SEWER MAINS.
   B. INSTALL THE PROPOSED WATER MAIN AND CONNECT NEW WATER SERVICES. THE NEW WATER MAIN AND SERVICES SHALL BE INSTALLED SUCH THAT THERE WILL BE NO CONFLICT WITH SUBSEQUENT SEWER MAIN AND SERVICE INSTALLATION. IT SHOULD BE NOTED THAT CONFLICTS EXIST BETWEEN THE EXISTING WATER MAINS AND PROPOSED SEWER MAIN. IF THE CONTRACTOR CHOOSES TO INSTALL THE PROPOSED SEWER MAIN AND SERVICES PRIOR TO THE INSTALLATION OF THE NEW WATER MAIN, THERE SHALL BE NO COST TO THE AGENCY FOR THE CONTRACTOR TO TEMPORARILY MAINTAIN THE REQUIRED FLOW OF THE EXISTING WATER MAINS.
   C. INSTALL THE PROPOSED SEWER MAIN, MANHOLES AND SERVICES. IT MAY BE NECESSARY TO PERFORM THE PROPOSED ROADWAY WIDENING PRIOR TO INSTALLATION OF THE NEW SEWER MAIN IN ORDER TO MAINTAIN REASONABLE TRAFFIC FLOW ALONG US ROUTE 5.
   D. INSTALL ROADWAY SAND BORROW, SUBBASE, CURBING, BASE COURSE AND BINDER COURSE.
   E. INSTALL PRECAST MEDIAN BARRIERS BETWEEN STATION 24+19 AND 37+08.
   F. INSTALL THE PROPOSED SIDEWALK AND LANDSCAPE FEATURES.
   G. INSTALL THE PROPOSED TRAFFIC SIGNAL SYSTEMS AT HIGHLAND AVENUE AND WORCESTER AVENUE.
   H. SET ALL CASTINGS TO FINISHED GRADE AND PAVE WITH FINAL SURFACE COURSE.

PROPOSED STORM DRAINAGE CONSTRUCTION NOTES

1. THE LOCATION, DEPTH, SIZE AND MATERIAL OF THE EXISTING UNDERGROUND STORM DRAIN SYSTEM PIPING ARE BASED ON INFORMATION OF RECORD, VIDEO INSPECTION AND LIMITED TOPOGRAPHICAL SURVEY OF AT-GRADE FEATURES SUCH AS DROP INLETS. THE LOCATION, DEPTH, SIZE AND MATERIAL OF THESE UNDERGROUND PIPES ARE NOT GUARANTEED TO BE EXACT. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE EXISTING PIPES WHERE NEW CONNECTIONS ARE PROPOSED. NO ADDITIONAL PAYMENT FOR PIPE AND TRENCH EXCAVATION SHALL BE MADE WHERE THE CONTRACTOR HAS FAILED TO FIELD VERIFY THE LOCATIONS AND DEPTHS OF EXISTING PIPES.

2. THE CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES TO PROTECT THE NEW DRAIN SYSTEM IN ACCORDANCE WITH THE EROSION CONTROL PLANS.

3. ALL EXISTING DRAIN PIPE TO BE ABANDONED AND NOT IN CONFLICT WITH THE PROPOSED IMPROVEMENTS SHALL BE CUT AND PLUGGED AND ABANDONED IN-PLACE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. WHERE THE EXISTING PIPE DIAMETER IS 10-INCHES OR GREATER, THE CONTRACTOR SHALL COMPLETELY FILL THE ENTIRE LENGTH OF THE EXISTING PIPE WITH AN APPROVED MATERIAL SUCH AS CONTROLLED DENSITY FILL (100 PSI MAX) OR SAND SO THAT ALL VOIDS WITHIN THE PIPE ARE FILLED. PAYMENT FOR ABANDONMENT OF EXISTING PIPE AND STRUCTURES SHALL BE MADE UNDER THE CONCRETE, CLASS D (MOD. - FLOWABLE FILL) ITEM. EXCAVATION REQUIRED TO INSTALL PLUGS ON EXISTING STORM DRAIN PIPES SHALL BE PAID UNDER TRENCH EXCAVATION OF EARTH.

4. STATION AND OFFSET LOCATIONS OF PROPOSED DRAINAGE STRUCTURES ARE GIVEN TO THE BACK CENTER (AT THE EDGE OF THE CURB) OF THE GRATES EXCEPT FOR MANHOLES AND STRUCTURES IN DITCHES WHICH ARE GIVEN TO THE CENTER OF THE GRATE OR MANHOLE COVER.

5. CONTRACTOR SHALL MAINTAIN EXISTING FLOWS OR PROVIDE MEASURES TO BY-PASS FLOWS IN EXISTING DRAINAGE UNTIL PROPOSED DRAINAGE IMPROVEMENTS HAVE BEEN COMPLETED.

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROPOSED SEWER CONSTRUCTION NOTES

1. THE LOCATION, DEPTH, SIZE AND MATERIAL OF THE EXISTING UNDERGROUND SEWER SYSTEM PIPING AND BUILDING SERVICES ARE BASED ON INFORMATION OF RECORD, VIDEO INSPECTION AND LIMITED TOPOGRAPHICAL SURVEY OF AT-GRADE FEATURES SUCH AS MANHOLES. THE LOCATION, DEPTH, SIZE AND MATERIAL OF THESE UNDERGROUND PIPES ARE NOT GUARANTEED TO BE EXACT. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE EXISTING PIPES TO WHICH NEW CONNECTIONS ARE PROPOSED. NO ADDITIONAL PAYMENT FOR PIPE AND TRENCH EXCAVATION SHALL BE MADE WHERE THE CONTRACTOR HAS FAILED TO FIELD VERIFY THE LOCATIONS AND DEPTHS OF EXISTING PIPES.

2. ALL NEW BUILDING SERVICES SHALL BE 6" PVC PIPE JOINED TO THE EXISTING SERVICE WITH A FLEXIBLE RUBBER TRANSITION COUPLING AS SHOWN ON THE DETAILS. THE CONTRACTOR SHALL VERIFY THE SIZE OF THE EXISTING SERVICE IN THE FIELD PRIOR TO INSTALLING THE NEW SERVICE. IF THE EXISTING SERVICE IS LARGER THAN 6", THE CONTRACTOR SHALL INSTALL NEW PIPE OF THE SAME SIZE AS THE EXISTING SERVICE UNLESS DIRECTED OTHERWISE BY THE ENGINEER OR OTHERWISE INDICATED ON THE PLANS.

3. THE CONTRACTOR SHALL MAINTAIN FLOWS IN THE EXISTING SEWER SYSTEM UNTIL THE PROPOSED SYSTEM IS CONSTRUCTED AND SHALL COORDINATE ALL WORK WITH THE TOWN OF HARTFORD UTILITIES SUPERINTENDENT.

4. THE CONSTRUCTION OF ALL SEWER IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THESE PLANS, CHAPTERS 1 AND 21 OF THE VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION ENVIRONMENTAL PROTECTION RULES AND THE TOWN OF HARTFORD ENACTMENT OF SEWAGE AND SEWERAGE ORDINANCE.

5. ALL EXISTING SEWER PIPE TO BE ABANDONED AND NOT IN CONFLICT WITH THE PROPOSED IMPROVEMENTS SHALL BE CUT AND PLUGGED AND ABANDONED IN-PLACE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. WHERE THE EXISTING PIPE DIAMETER IS 10-INCHES OR GREATER, THE CONTRACTOR SHALL COMPLETELY FILL THE ENTIRE LENGTH OF THE EXISTING PIPE WITH AN APPROVED MATERIAL SUCH AS CONTROLLED DENSITY FILL (100 PSI MAX) OR SAND SO THAT ALL VOIDS WITHIN THE PIPE ARE FILLED. PAYMENT FOR ABANDONMENT OF EXISTING PIPE AND STRUCTURES SHALL BE MADE UNDER THE CONCRETE, CLASS D (MOD. - FLOWABLE FILL) ITEM. EXCAVATION REQUIRED TO INSTALL PLUGS ON EXISTING SEWERS SHALL BE PAID UNDER TRENCH EXCAVATION OF EARTH.

6. AN EXISTING SANITARY SEWER FORCEMAIN DISCHARGES INTO THE EXISTING GRAVITY SYSTEM BEING REPLACED UNDER THIS PROJECT AT MANHOLE #B98 NEAR HEWITT STREET. THE CONTRACTOR SHALL AT NO TIME IMPEDE THE DISCHARGE FROM THE EXISTING SEWER FORCEMAIN AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THAT ADEQUATE BYPASS CAPACITY IS PROVIDED. PEAK FLOWS FROM THE FORCEMAIN ARE ESTIMATED TO BE 1200GPM.

PROPOSED WATER CONSTRUCTION NOTES

1. THE LOCATION, SIZE AND MATERIAL OF THE EXISTING UNDERGROUND WATER SYSTEM PIPING AND BUILDING SERVICES ARE BASED ON INFORMATION OF RECORD AND LIMITED TOPOGRAPHICAL SURVEY OF AT-GRADE FEATURES SUCH AS GATE VALVES. THE LOCATION, SIZE AND MATERIAL OF THESE UNDERGROUND PIPES ARE NOT GUARANTEED TO BE EXACT. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND SIZE OF THE EXISTING PIPES TO WHICH NEW CONNECTIONS ARE PROPOSED.

2. ALL NEW BUILDING SERVICES SHALL BE ¾" SEAMLESS COPPER WATER TUBE UNLESS OTHERWISE INDICATED ON THE PLANS.

3. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE TOWN OF HARTFORD UTILITIES SUPERINTENDENT. ONLY TOWN OF HARTFORD OFFICIALS OR THEIR DESIGNATED REPRESENTATIVES SHALL OPERATE THE WATER SYSTEM VALVES.

4. THE CONSTRUCTION OF ALL WATER IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THESE PLANS, CHAPTERS 1 AND 21 OF THE VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION ENVIRONMENTAL PROTECTION RULES AND THE TOWN OF HARTFORD ENACTMENT OF WATER RULES.

5. THE CONTRACTOR SHALL MAINTAIN THE FOLLOWING MINIMUM DISTANCES OF SEPARATION FROM THE PROPOSED WATER LINES AND SERVICES:
   - TO EDGE OF DRAIN PIPES AND STRUCTURES = 5' HORIZ. ; 1.5' VERT.
   - TO EDGE OF SEWER PIPES AND MANHOLES = 10'* HORIZ. ; 1.5' VERT.
   * EXCEPT AS SHOWN ON PLANS WHERE SEWER IS MORE THAN 5' BELOW PROPOSED WATER LINES.

6. ALL EXISTING WATER PIPE SHALL BE CUT AND CAPPED AND ABANDONED IN-PLACE OR REMOVED IF REQUIRED TO FACILITATE THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS AS DIRECTED BY THE ENGINEER. THE PLANS DO NOT NECESSARILY INDICATE ALL OF THE LOCATIONS WHERE CAPS ARE REQUIRED TO BE INSTALLED.

7. LIMITS OF PAYMENT FOR TRENCH EXCAVATION OF EARTH FOR THE INSTALLATION NEW WATER PIPE SHALL BE IN ACCORDANCE WITH SECTIONS 204 AND 629 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

8. PAYMENT FOR WORK ASSOCIATED WITH CAPPING AND ABANDONING EXISTING WATER LINES SHALL BE MADE UNDER THE CONCRETE, CLASS D (MOD. - FLOWABLE FILL) ITEM.

9. THE CONTRACTOR SHALL COORDINATE THE TRANSFER OF SERVICE FROM THE EXISTING WATER SYSTEM TO THE NEW WATER SYSTEM WITH THE TOWN OF HARTFORD WATER DEPARTMENT.

10. THE CONTRACTOR SHALL LIMIT THE DURATION THAT THE EXISTING WATER IS SHUT DOWN TO NO MORE THAN 4-HOURS.

11. CONTRACTOR SHALL COORDINATE SHUT-DOWNS WITH THE TOWN OF HARTFORD AT LEAST ONE-WEEK IN ADVANCE OF SHUT-DOWN DATE.

12. THE CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS AT LEAST 48 HOURS PRIOR TO ANY ANTICIPATED WATER SHUT-DOWN OR AS DIRECTED BY THE TOWN.

13. ALL PIPES, VALVES, FITTINGS, HYDRANTS, ETC. SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND THE TOWN OF HARTFORD WATER ORDINANCES.

LEGEND

WATER

- PROPOSED CAP
- PROPOSED TEE
- PROPOSED REDUCER/INCREASER
- CS● PROPOSED CURB STOP
- GV PROPOSED GATE VALVE
- PROPOSED MECHANICAL TRANSITION COUPLING
- HYD PROPOSED HYDRANT
- PROPOSED WATER HOUSE SERVICE
- PROPOSED METER PIT
- WSO● EXISTING WATER SHUT OFF

SEWER

- PROPOSED PLUG/BULKHEAD
- PROPOSED FLEXIBLE RUBBER COUPLING
- PROPOSED MANHOLE
- CO● PROPOSED SEWER CLEANOUT

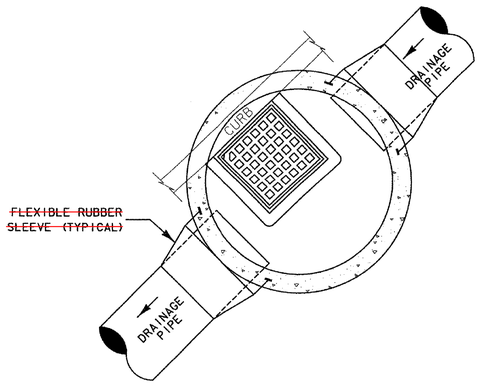
ABBREVIATIONS

DICL	DUCTILE IRON CEMENT LINED PIPE
CI	CAST-IRON
PVC	POLYVINYL CHLORIDE
AC	ASBESTOS CEMENT
VC	VITRIFIED CLAY
RCP	REINFORCED CONCRETE PIPE

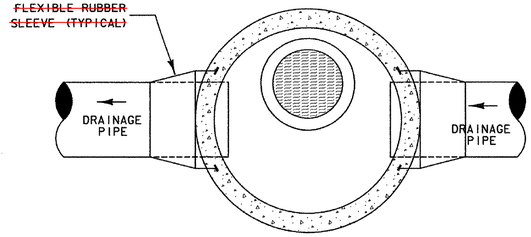
(1) ADDENDUM #1: REVISED APRIL 18, 2007

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027utnote.DGN	
IPARM FILE NAME:	PLOT DATE: 4/18/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 77 OF 239

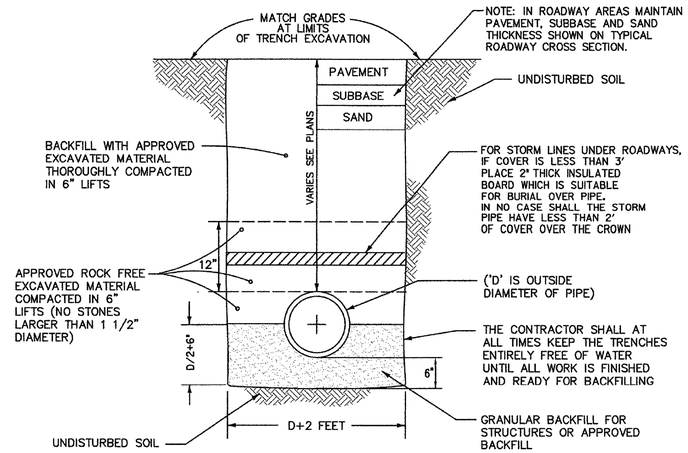
TYPICAL DRAINAGE DETAILS



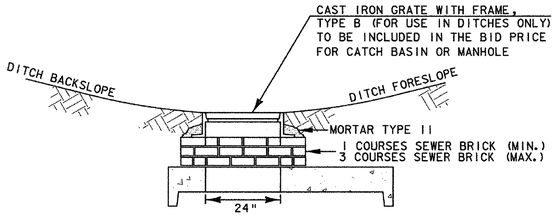
CATCHBASIN PLAN VIEW



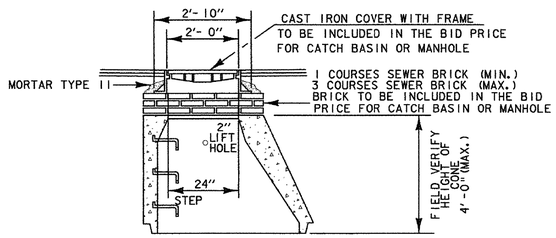
MANHOLE PLAN VIEW



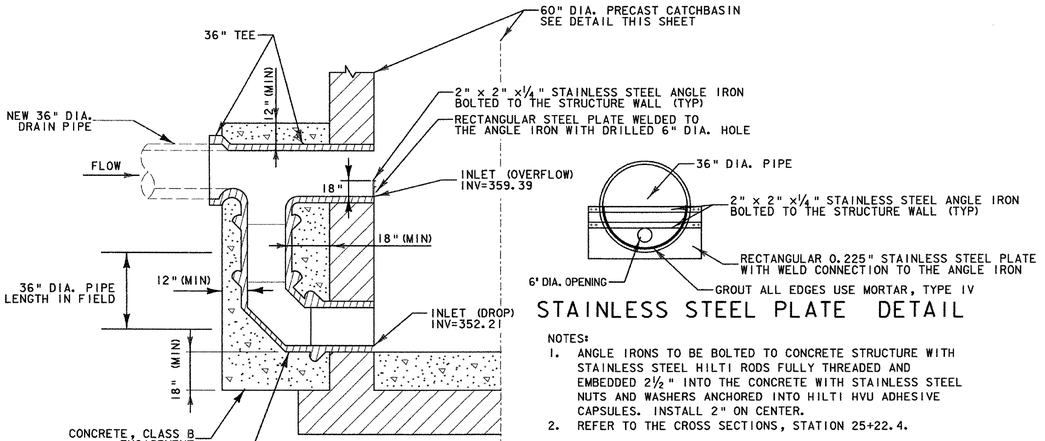
TYPICAL STORM DRAIN TRENCH



TYPICAL ELEVATION OF GRATE INSTALLATION IN DITCH

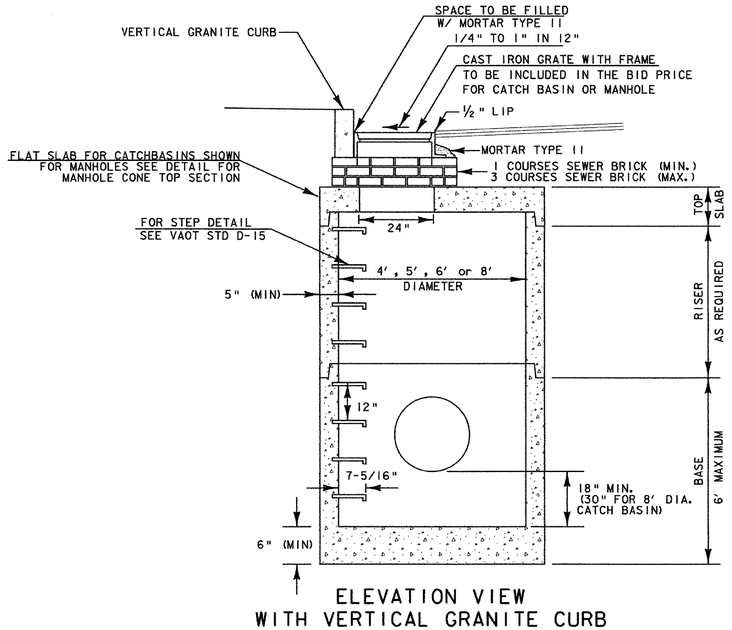


MANHOLE CONE TOP SECTION

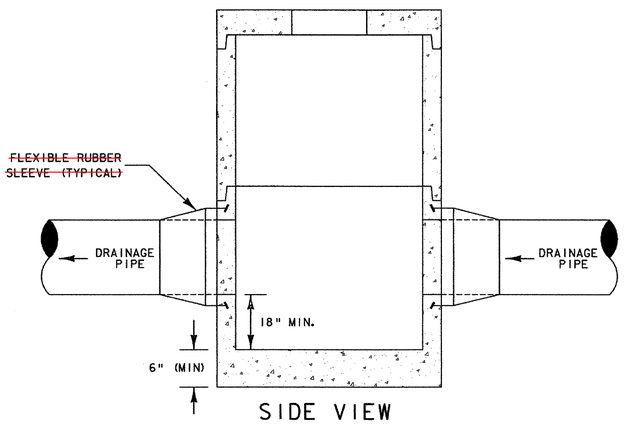


5' DIAMETER CATCH BASIN W/ DROP PIPE DETAIL

SCALE: NOT TO SCALE



ELEVATION VIEW WITH VERTICAL GRANITE CURB



SIDE VIEW

TYPICAL PRECAST CATCHBASIN OR MANHOLE INSTALLED IN ROADWAY

SCALE: NOT TO SCALE

STAINLESS STEEL PLATE DETAIL

NOTES:
1. ANGLE IRONS TO BE BOLTED TO CONCRETE STRUCTURE WITH STAINLESS STEEL HILTI RODS FULLY THREADED AND EMBEDDED 2½" INTO THE CONCRETE WITH STAINLESS STEEL NUTS AND WASHERS ANCHORED INTO HILTI HVU ADHESIVE CAPSULES. INSTALL 2" ON CENTER.
2. REFER TO THE CROSS SECTIONS, STATION 25+22.4.

PRECAST CONCRETE CATCH BASIN AND MANHOLE NOTES:

1) PRECAST CONCRETE SECTIONS SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND ASTM C-478.
2) MINIMUM CONCRETE COMPRESSIVE STRENGTH: 4,000 PSI AT 28-DAYS
3) STEEL REINFORCING SHALL CONFORM TO ASTM A185 OR A82 FOR HS25 LOADING.
4) MANHOLE STEPS SHALL BE 14" WIDE STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC CONFORMING TO ASTM C-478 AND SHALL BE CAST INTO MANHOLE SECTIONS BY THE PRECAST CONCRETE MANUFACTURER.
5) FACE OF PIPE SHALL NOT PROJECT MORE THAN 2" OR LESS THAN 1" FROM INSIDE WALL OF STRUCTURE.
6) ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF OUTSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.
7) FITTING FRAME TO FINAL GRADE MAY BE DONE WITH BRICK OR PRECAST CONCRETE GRADE RINGS OF APPROPRIATE THICKNESS (3 COURSES MAX).
8) FLAT SLAB TOPS SHALL BE USED FOR ALL CATCH BASINS UNLESS OTHERWISE PERMITTED BY THE ENGINEER.
9) ALL PIPE INVERTS AND PENETRATION ANGLES SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
10) PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT AND BE ASSEMBLED USING A BUTYL RUBBER OR APPROVED EQUAL SEALANT.
11) ~~PROVIDE FLEXIBLE RUBBER SLEEVES CONFORMING TO ASTM C-923, RESILIENT, OF SIZE REQUIRED, FOR EACH PIPE CONNECTING TO STRUCTURE. SLEEVES SHALL BE CAST INTO PRECAST STRUCTURE BY THE MANUFACTURER FOR ALL PIPE PENETRATIONS.~~
12) INSTALLATION OF MANHOLES OR CATCHBASINS OVER EXISTING PIPES SHALL INCLUDE CLEAN CUTTING OF EXISTING PIPES, PROVIDING AN EXTENSION PIPE OF SIMILAR MATERIAL AND SIZE AS THE EXISTING PIPE, COUPLINGS REQUIRED FOR THE CONNECTION BETWEEN THE EXTENSION PIPE AND THE EXISTING PIPE, AND INSTALLING FLEXIBLE RUBBER SLEEVES AS SHOWN IN DETAILS PROVIDED ON THIS SHEET.
13) PAYMENT FOR INSTALLATION OF THE CATCHBASINS SHALL BE MADE UNDER THE PRECAST REINFORCED CONC. CATCH BASIN WITH CAST IRON GRATE ITEM (604.20) FOR THE SPECIFIC SIZE.
14) PAYMENT FOR INSTALLATION OF THE MANHOLES SHALL BE MADE UNDER THE PRECAST REINFORCED CONCRETE MANHOLE WITH CAST IRON GRATE ITEM (604.21) FOR THE SPECIFIC SIZE.

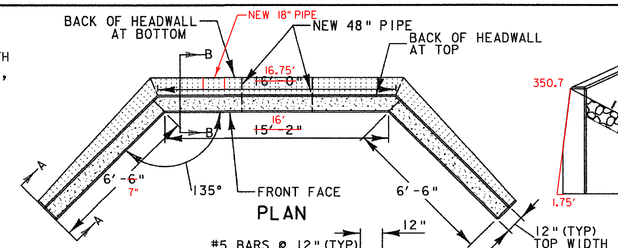
DATUM

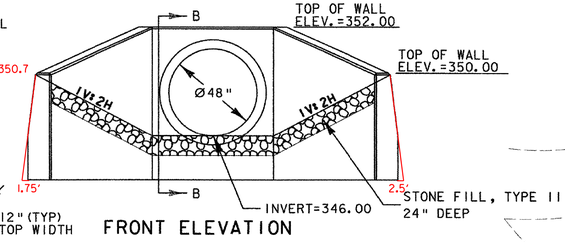
VERTICAL NGVD 1929
HORIZONTAL N/A

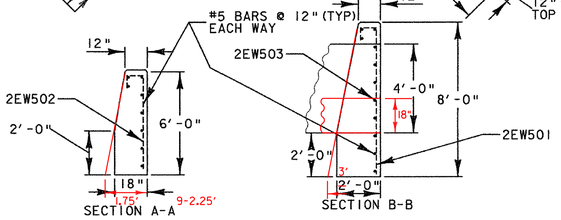
PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027drndet.DGN	
IPARM FILE NAME:	PLOT DATE: 1/13/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 78 OF 239

NOTES:

1. ABANDON, FILL AND PLUG EXISTING PIPES IN ACCORDANCE WITH STANDARD SPECIFICATIONS. FILL EXISTING DI WITH CONCRETE, CLASS B TO PROPOSED SUMP ELEVATION OF 352.50.
2. PROPOSED REINFORCED CAST-IN-PLACE CONCRETE HEADWALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAIL D-2 AND THE DIMENSIONS PROVIDED IN THE HEADWALL DETAIL ON THIS SHEET.
3. 6-INCHES OF GRUBBING MATERIAL AND SEED SHALL BE PLACED OVER THE ENTIRE SIDE SLOPES OF THE STONE FILL DITCHES FROM THE NEW HEADWALL TO THE OUTFALL AS DIRECTED BY THE ENGINEER. SEE TYPICAL SECTION A-A ON THIS SHEET.
3. REFER TO THE UTILITY GENERAL NOTES SHEET AND STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
4. REFER TO THE DRAINAGE LAYOUT SHEETS AND CROSS SECTION FOR CONTINUATION OF DRAINAGE.
5. REFER TO EROSION CONTROL SHEETS FOR REQUIRED EROSION CONTROL MEASURES.
6. THE CONTRACTOR SHALL ADHERE TO ALL REQUIREMENTS SET FORTH IN THE STREAM ALTERATION PERMIT.
7. TEMPORARY FILLS SHALL CONSIST OF CLEAN STONE ONLY. DISTURBED AREAS SHALL BE REVEGETATED OR STABILIZED WITH STONE FILL IMMEDIATELY. AREAS OF STONE FILL SHALL BE COVERED WITH GRUBBING MATERIAL AND SEEDED DOWN TO THE SPRING HIGH WATER LINE EXCEPT WITHIN CHANNEL AS SHOWN.





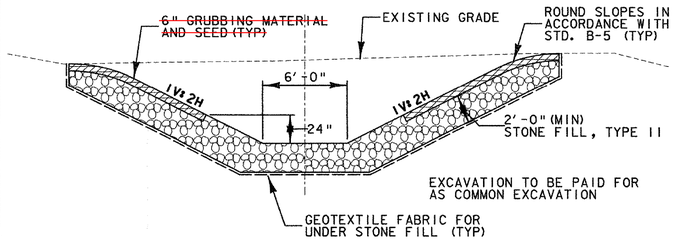


NOTES:

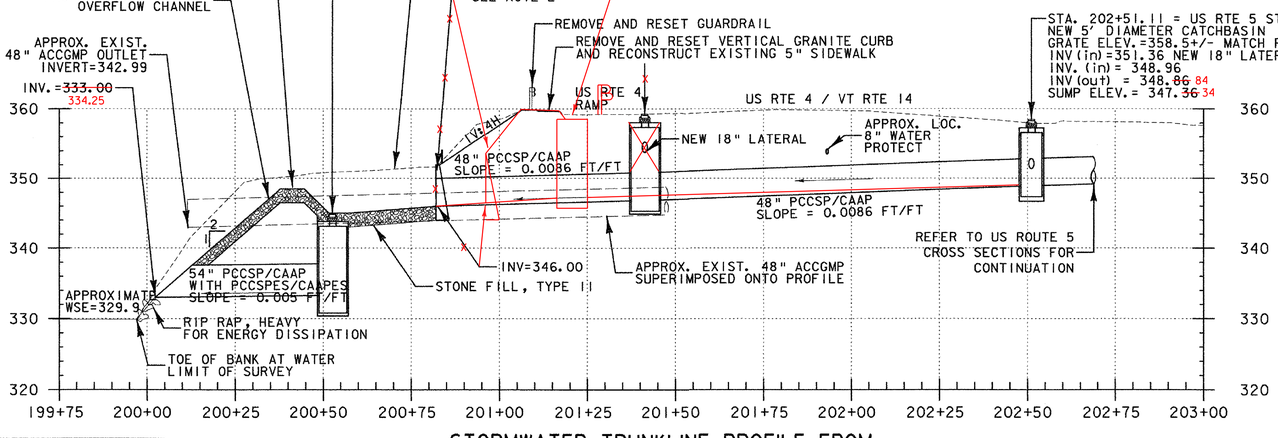
1. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ADJUST AS REQUIRED OR AS DIRECTED BY THE ENGINEER TO MATCH FIELD CONDITIONS.
2. EXPOSED EDGES AND CORNERS SHALL HAVE 1" CHAMFERS.
3. CONCRETE SHALL BE CONCRETE, CLASS B.
4. 1½" MINIMUM CLEAR COVER REQUIRED TO ALL STEEL REINFORCING.
5. SEE REINFORCING SCHEDULE SHEET FOR REINFORCING.

DETAIL OF PROPOSED HEADWALL

NOT TO SCALE

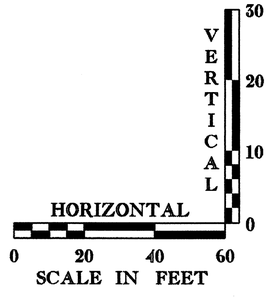


TYPICAL STONE LINED CHANNEL SECTION A-A
STATION 200+62 SHOWN



STORMWATER TRUNKLINE PROFILE FROM US ROUTE 5 STA. 21+76.10RT ~ 19+30.54RT = TRUNKLINE STA. 202+51.11 ~ 200+02.31

STORMWATER OUTFALL DETAIL PLAN



DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

STORMWATER OUTFALL DETAILS, PLAN AND PROFILE

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027drndet.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI — SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL — DRAWN BY: E. ATKINS
PLOT DATE: 1/13/2007
SHEET: 79 OF 239

DRAINAGE LAYOUT SHEET 1

EXISTING DRAINAGE

20+63 [1] ~~21+77~~ RT ~ 19+36 RT
EXISTING PIPE - ABANDON OR REMOVE AS REQUIRED
[2] 21+62 LT ~ 21+77 RT
EXISTING PIPE & DI- REMOVE
[3] 22+47 RT ~ 21+77 RT
EXISTING PIPE & DI- REMOVE
[4] 22+47 LT ~ 22+47 RT
EXISTING PIPE & DI- REMOVE
[5] 22+47 LT ~ 22+47 LT
EXISTING PIPE - REMOVE
EXISTING DI- RETAIN
[6] 22+52 RT ~ 22+47 RT
EXISTING PIPE & DI- REMOVE
[7] 23+29 RT ~ 22+47 RT
EXISTING PIPE & DI- REMOVE
[8] 20+73.1 RT
EXISTING DI- RETAIN, SEE STORMWATER OUTFALL DETAILS AND PROFILE
[9] 23+29 LT ~ 23+29 RT
EXISTING PIPE ~~& DI~~ - ABANDON
[10] 25+22.5 RT ~ 23+29 RT
EXISTING PIPE & DI- REMOVE

EXISTING DI REMOVE

[A] 21+77 RT ~ 20+63 RT
DI- REMOVE
EXISTING PIPE - REMOVE OR ABANDON AS REQUIRED

NEW DRAINAGE

(1) 19+80.0 RT ~ 19+30.5 RT
NEW 54"x48' PCCSP/~~CAAP~~
W/8' DIA. CB @ 19+80.0 RT
W/ PCCSPES/~~CAAPES~~ @ OUTLET

45 (2) 20+~~68.3~~ RT ~ 20+~~09.0~~ RT 18
24 NEW 48"x~~56'~~ PCCSP/~~CAAP~~
W/ C.I.P. HEADWALL @ 20+~~09.0~~ RT 18
W/8' DIA MH @ 20+~~68.3~~ RT 45

(3) 20+73.2 RT ~ 20+~~68.3~~ RT 20+18
67 NEW 18"x~~8'~~ ~~RCP~~/CPEP(SL)
REHAB. EXIST. DI @ 20+73.2

77.6 (4) 21+~~76.8~~ RT ~ 20+~~68.3~~ RT 45
140.6 NEW 48"x~~104'~~ PCCSP/~~CAAP~~
W/CB @ 21+~~76.8~~ RT 77.6

(5) 21+63.1LT ~ 21+76.8 RT
77' NEW 18"x~~78'~~ ~~RCP~~/CPEP (SL) 77.6
W/CB @ 21+63.1LT

(6) 22+46.1RT ~ 21+~~76.8~~ RT 77.6
61.5 NEW 48"x~~66'~~ PCCSP/~~CAAP~~
W/CB @ 22+46.1RT

(7) 22+47.0 LT ~ 22+46.1LT
18' NEW 18"x~~14'~~ ~~RCP~~/CPEP (SL)

(8) 22+46.1LT ~ 22+46.1RT
NEW 18"x60' ~~RCP~~/CPEP (SL)
W/CB @ 22+46.1LT

(9) 52 22+~~50.0~~ RT ~ 22+46.1RT
NEW 18"x11' ~~RCP~~/CPEP (SL)
W/CB @ 22+~~50~~ RT 52

(10) 24+20.0 RT ~ 22+46.1RT
172 NEW 36"x~~170'~~ ~~RCP~~/CPEP (SL)
W/CB @ 24+20 RT

(11) 24+20.0 LT ~ 24+20.0 RT
NEW 18"x60' ~~RCP~~/CPEP (SL)
W/CB @ 24+20 LT

(12) 25+22.2 RT ~ 24+20.0 RT
NEW 36"x~~100'~~ CAAP 98'
W/CB ~~@ 25+22.2~~ RT
~~#5~~

WITH OUTSIDE DROP

8" UNDERDRAIN (MOD.)

(A) 24+24 RT ~ 25+18 RT
NEW 8"x94' UNDERDRAIN
W/F.B. @ 25+18 RT (BURIED)

8" UNDERDRAIN CARRIER PIPE (MOD.)

(1) 24+20 RT ~ 24+24 RT
NEW 8"x6' UNDERDRAIN CARRIER PIPE
W/F.B. @ 24+24 RT

(2) 24+20 LT ~ 25+00 LT
NEW 8"x78' UNDERDRAIN ~~CARRIER PIPE~~
W/F.B. @ 25+00 LT

REHABING DI,CB OR MH CLASS II

22+47 LT

REHABING DI,CB OR MH CLASS III

20+73.2 RT - FILL WITH CONCRETE, CLASS B TO SUMP ELEV. SEE DETAILS

36"x19' CPEP (56)
WITH OUTSIDE DROP

REMOVED

WHITE RIVER
TO WHITE RIVER JUNCTION
U.S. ROUTE 5
VT. ROUTE 14 TO HARTFORD
WOODS
PAVED
GRASS
OVERHEAD SIGN SUPPORT
TRAF. SIGNAL
LAWN
FLAG POLE
3"APPLE
12" BOX ELDER
SIGNAL BOX
SIGNAL CONTROLLER
METER
SIGN
CSO
GUY
BUSH
3"HEMLOCKS
BM SIGN BOLT ELEV. = 361.62'
CONC. WALK
GRAN. CURB
BARNES AVE.
PAVEMENT
U.S. ROUTE 5 (HARTFORD AVENUE)
HAZEN ST.
GRAVEL DRIVE
CONC. STEPS
PAVED APRON
PAVED DRIVE
HYD.
MHD
MHT
MHS
12"PVC
18"V.C.S.
6" C.I.W
8" A.C.S
GV
UT
OHP
TRAFFIC SIGNAL
HVCTRL
30 MPH
BOLLARDS(3)
F.B.
YIELD TO PED.
CHAINLINK FENCE
PMP 2-DI
SEWER SERVICE
MATCH LINE STA. 25+00
19+00
20+00
21+00
22+00
23+00
24+00
BRUSH
BM DISC
SIGN MAST ARM
WIRE GUARDRAIL
12"MAPLE
8"MAPLE
SEE DETAIL PAGE 79 OF 239
U.S. ROUTE 4 TO NEW HAMPSHIRE
PAVED PARKING
PAVED PARKING LOT
RETAIL MALL
MAGNETIC NORTH 1987

0 20 40
SCALE IN FEET

NOTES:

1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED STORM DRAINAGE CONSTRUCTION NOTES.
2) REFER TO WATER AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED WATER AND SEWER LAYOUT.
3) SEE ROADWAY LAYOUT SHEETS FOR PLACEMENT OF STONE FILL.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027drnbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/31/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 80 OF 239

DRAINAGE LAYOUT SHEET 2

EXISTING DRAINAGE

11 25+23.5 LT ~ 25+23.5 ℄
EXISTING PIPE - ABANDON

12 25+23.5 ℄ ~ 25+22.5 RT REMOVE
EXISTING PIPE & DI @ 25+23.5 ℄ - ~~ABANDON~~
EXISTING DI @ 25+22.5 RT - REMOVE

13 25+21.6 RT ~ 25+22.5 RT
EXISTING PIPE - REMOVE
EXISTING DI - RETAIN

14 27+69 RT ~ 25+22.5 RT
EXISTING PIPE & DI - ABANDON

15 29+21RT ~ 27+69 RT
EXISTING PIPE & DI - ABANDON

16 28+65 RT ~ 27+69 RT
EXISTING PIPE & DI - ABANDON

17 29+61LT ~ 29+21RT — REMOVE
EXISTING PIPE & DI - ABANDON

18 29+80 RT ~ 29+21RT
EXISTING PIPE &DI - ABANDON — REMOVE

NEW DRAINAGE

12 25+22.2 RT ~ 24+20.0 RT
98' NEW 36'x~~166'~~ CAAP W/DROP STRUCTURE @ 25+22.2 RT

13 25+21.6 RT ~ 25+22.2 RT
16' NEW 18'x~~14' RCP~~/CPEP (SL)

14 26+70.0 RT ~ 25+22.2 RT
NEW 36'x144' CAAP W/CB @ 26+70.0 RT

15 26+70.0 LT ~ 26+70.0 RT
51' NEW 18'x~~50' RCP~~/CPEP (SL)
W/CB @ 26+70.0 LT

16 29+20.0 RT ~ 26+70.0 RT
246' NEW 36'x~~244'~~ CAAP W/CB @ 29+20.0 RT

17 29+20.0 LT ~ 29+20.0 LT
10' NEW 18'x~~14' RCP~~/CPEP (SL)
W/CB @ 29+20.0 LT

18 29+20.0 LT ~ 29+20.0 RT
NEW 18'x~~50' RCP~~/CPEP (SL)
W/CB @ 29+20.0 LT

19 29+50.0 RT ~ 29+20.0 RT
NEW 18'x34' RCP/CPEP (SL)
W/CB @ 29+50.0 RT

20 31+70.0 RT ~ 29+20.0 RT
NEW 36'x~~244'~~ CAAP W/CB @ 31+70.0 RT
246'

6" UNDERDRAIN (MOD.)

5 26+41.5 LT ~ 29+01.5 LT
NEW 6"x262' UNDERDRAIN
W/F.B. @ 26+41.5 LT AND 29+01.5 LT

8" UNDERDRAIN (MOD.)

2 24+24 RT ~ 25+18 RT
NEW 8"x94' UNDERDRAIN
W/F.B. @ 25+18 RT (BURIED)

4 25+00 LT ~ 26+41.5 LT
NEW 8" x 142'

7 25+26 RT ~ 26+74 RT
NEW 8"x148' UNDERDRAIN
W/F.B. AT 26+74 RT

9 26+74 RT ~ ~~29+75~~ RT 29+20
NEW 8"x298' UNDERDRAIN
W/F.B. AT ~~29+75~~ RT 29+20

12 29+35 LT ~ 31+~~65~~ LT 50
215' NEW 8"x~~23'~~ UNDERDRAIN
W/F.B. AT 31+~~65~~ LT 50

8" UNDERDRAIN CARRIER PIPE (MOD.)

6 25+22 RT ~ 25+26 RT
NEW 8"x6' UNDERDRAIN CARRIER PIPE
W/F.B. @ 25+26 RT

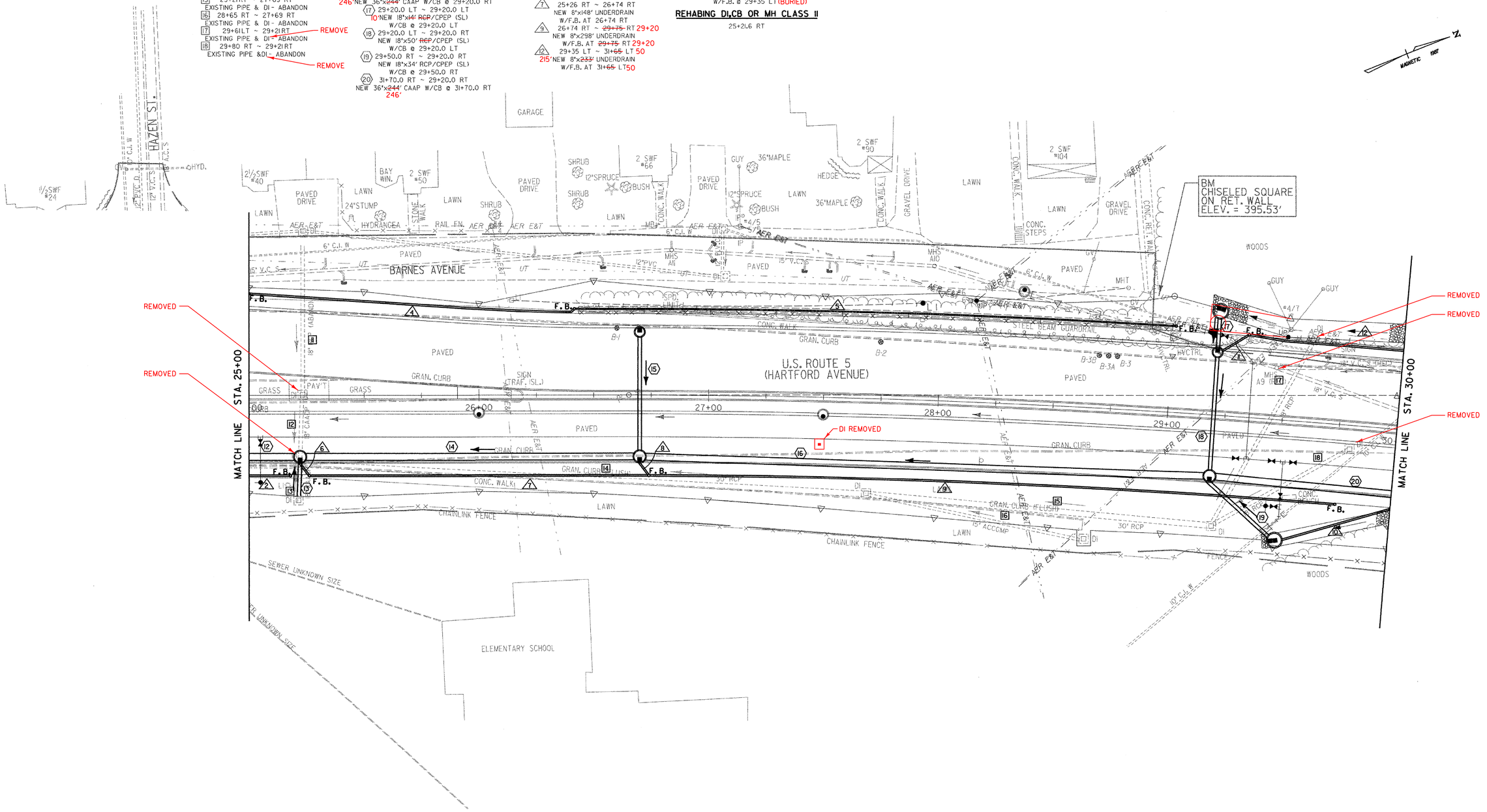
8 26+70 RT ~ 26+74 RT
NEW 8"x6' UNDERDRAIN CARRIER PIPE

10 29+50 RT ~ 30+00 RT
NEW 8"x48' UNDERDRAIN CARRIER PIPE
W/F.B. @ 30+00 RT (BURIED)

11 29+20 LT ~ 29+35 LT
NEW 8"x14' UNDERDRAIN CARRIER PIPE
W/F.B. @ 29+35 LT (BURIED)

REHABING DI,CB OR MH CLASS II

25+21.6 RT



0 20 40
SCALE IN FEET

NOTES:

1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED STORM DRAINAGE CONSTRUCTION NOTES.
2) REFER TO WATER AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED WATER AND SEWER LAYOUT.
3) SEE ROADWAY LAYOUT SHEETS FOR PLACEMENT OF STONE FILL.

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027drnbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 2/27/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 81 OF 239

DRAINAGE LAYOUT SHEET 3

EXISTING DRAINAGE

20	32+00 LT	REMOVE
EXISTING PIPE & DI		ABANDON
21	33+28 LT	REMOVE
EXISTING PIPE & DI		ABANDON

NEW DRAINAGE

(20) 31+70.0 RT ~ 29+20.0 RT
NEW 36"x~~244'~~ CAAP 246'
W/CB @ 31+70.0 RT

(21) 31+70.0 LT ~ 31+70.0 LT
NEW 18"x10'~~ RCP~~/CPEP (SL)
W/CB @ 31+70.0 LT

(22) 31+70.0 LT ~ 31+70.0 RT
NEW 18"x50'~~ RCP~~/CPEP (SL)
W/CB @ 31+70.0 LT

(23) 31+70.0 RT ~ 31+70.0 RT
NEW 18"x8'~~ RCP~~/CPEP (SL)
W/CB @ 31+70.0 RT

(24) 34+20.0 RT ~ 31+70.0 RT
NEW 36"x245' CAAP
W/CB @ 34+20.0 RT

(25) 34+20.0 LT ~ 34+20.0 LT
NEW 18"x16'~~ RCP~~/CPEP (SL)
W/CB @ 34+20.0 LT

(26) 34+20.0 LT ~ 34+20.0 RT
52'NEW 18"x~~50'~~ RCP/CPEP (SL)
W/CB @ 34+20.0 LT

(27) 34+20.0 RT ~ 34+20.0 RT
NEW 18"x8' RCP/CPEP (SL)
W/CB @ 34+20.0 RT

(28) 36+27.4 RT ~ 34+20.0 RT
NEW 36"x204' CAAP
W/CB @ 36+27.4 RT

6" UNDERDRAIN (MOD.)

(14) 30+29 RT ~ 31+70 RT
NEW 6"x138' UNDERDRAIN
W/F.B. @ 30+29 RT AND 31+70 RT

(16) 31+70 RT ~ 34+20 RT
NEW 6"x248' UNDERDRAIN
W/F.B. @ 34+20 RT

(18) 34+20 RT ~ ~~36+13~~ RT 35+50
NEW 6"x192' UNDERDRAIN
W/F.B. @ ~~36+13~~ RT 35+50

INCLUDE WITH VE WALL

6" UNDERDRAIN CARRIER PIPE (MOD.)

(13) 30+13 RT ~ 30+29 RT
NEW 6"x20' UNDERDRAIN CARRIER PIPE
W/F.B. @ 30+29 RT

(15) 31+70 RT ~ 31+70 RT
NEW 6"x8' UNDERDRAIN CARRIER PIPE

(17) 34+20 RT ~ 34+20 RT
NEW 6"x8' UNDERDRAIN CARRIER PIPE

INCLUDE WITH VE WALL

8" UNDERDRAIN (MOD.)

(12) 29+35 LT ~ 31+~~65~~ LT 50
215'NEW 8"x~~233'~~ UNDERDRAIN
W/F.B. @ 31+~~65~~ LT 50

(19) 30+00 RT ~ 31+~~75~~ RT 68
168'NEW 8"x~~172'~~ UNDERDRAIN
W/F.B. @ 31+~~75~~ RT 68 (BURIED)

(21) 31+75 RT ~ 34+~~24~~ RT
243'NEW 8"x~~240'~~ UNDERDRAIN
W/F.B. @ 34+~~24~~ RT 18 (BURIED)

(23) 34+24 RT ~ 35+50 RT
NEW 8"x126' UNDERDRAIN
W/F.B. @ 35+50 RT

(25) 31+80 LT ~ 34+~~29~~ LT 05
NEW 8"x250' UNDERDRAIN
W/F.B. @ 34+29 LT

(27) ~~36~~ 34+~~29~~ LT ~ ~~36+38~~ LT 35+86
156'NEW 8"x~~298'~~ UNDERDRAIN
W/F.B. @ ~~36+38~~ LT 35+86

8" UNDERDRAIN CARRIER PIPE (MOD.)

(20) 31+70 RT ~ 31+75 RT
NEW 8"x8' UNDERDRAIN CARRIER PIPE

(22) 34+20 RT ~ 34+24 RT
NEW 8"x8' UNDERDRAIN CARRIER PIPE

(24) 31+70 LT ~ 31+80 LT
NEW 8"x12' UNDERDRAIN CARRIER PIPE
W/F.B. @ 31+80 LT

(26) 34+20 LT ~ 34+~~29~~ LT 36
NEW 8"x12' UNDERDRAIN CARRIER PIPE
WITH FB @ 34+36

REMOVED
REMOVED
REMOVED
REMOVED

BM #10A
SPIKE IN 18"PINE
ELEV. = 460.84'

HIGHLAND AVE.
PAVED
STEEL BEAM GUARDRAIL
LAWN
PAVED DRIVE
SIGN (ST. NAME)
SIGN
TRAV. INFO. SIGN
GUY WIRE
GUY POLE
HYD.
MHD
DI
4" W. (ABAND.)
12" W
15" PVC @
12" OAK
8" OAK(3)
24" POPLAR(2)
12" POPLAR
18" POPLAR(2)
12" BEECH
LILAC
(3) 12" PINE
15" PINE
30" MAPLE
24" MAPLE
2" MAPLE
AER E&T
WOODS
U.S. ROUTE 5
(HARTFORD AVENUE)
CONC. WALK
CHAIN LINK FENCE
WARNING SIGN
MHS BB6
MHS BB6A
MHS BB6/DRAIN
12" A.C.P.
18" R.C.P.
12" R.C.P.
F.B.
STA. 30+00
STA. 35+00
MATCH LINE
MATCH LINE
B-4
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-17
IRON PIN
ROW OF WHITE PINES
ROW OF SHRUBS
WOOD FN.
HEDGE
SLATE & CONC. PATIO
CONC.
10" MAPLE
12" MAPLE
42" MAPLE
18" MAPLE(2)
3" APPLE
15" W. BIRCH
SHED
GARAGE
DECK
PAVED DRIVE
PAVED WALK
1½ SWF #9
1½ SWF #11
AER E&T
#1
#2
#3
#4
#5
#6
#7
#8
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#26
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#28

0 20 40
SCALE IN FEET

NOTES:

1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED STORM DRAINAGE CONSTRUCTION NOTES.
2) REFER TO WATER AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED WATER AND SEWER LAYOUT.
3) SEE ROADWAY LAYOUT SHEETS FOR PLACEMENT OF STONE FILL.

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027drnbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 2/27/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 82 OF 239

DRAINAGE LAYOUT SHEET 4

EXISTING DRAINAGE

22 13+76 RT ~ 11+17 LT (HIGHLAND AVE)
EXISTING PIPE - RELAY TO NEW INVERT
(SEE CROSS SECTIONS)
EXISTING MH @ 13+76 RT - REHAB
23 11+17 LT ~ 10+93 RT (HIGHLAND AVE)
EXISTING PIPE ~~& MH~~ - ABANDON
24 15+78 RT (SCHOOL DR) ~ 11+17 LT (HIGHLAND AVE)
EXISTING PIPE - RELAY FROM 15+42.5 RT TO 11+17 LT
TO NEW INVERTS (SEE CROSS SECTIONS)
25 11+25 RT ~ 11+37 RT (HIGHLAND AVE)
EXISTING PIPE & DI - ~~ABANDON~~ REMOVE
26 11+85 LT ~ 11+39 RT (HIGHLAND AVE)
EXISTING PIPE ~~& DI~~ - ABANDON
EXISTING DI REMOVE

EXIST MH
REMOVE

EXISTING DRAINAGE (CONT.)

27 13+41 RT ~ 13+41 LT (HIGHLAND AVE)
EXISTING PIPE CONNECT TO RELAID DRAIN
DI - RETAIN
28 6+75 LT ~ 5+52.6 LT (WORCESTER AVE)
EXISTING PIPE - RETAIN
29 5+61.6 RT ~ 5+52.6 LT (WORCESTER AVE)
EXISTING PIPE & DI - REMOVE
30 5+52.6 LT ~ 5+09 RT (WORCESTER AVE)
EXISTING PIPE - ABANDON
EXISTING MH @ 5+52.6 LT - REMOVE
31 35+84 LT
EXISTING PIPE & DI - ~~ABANDON~~ REMOVE
32 36+10 LT
EXISTING PIPE & DI - ~~ABANDON~~ REMOVE

NEW DRAINAGE

28 36+27.4 RT ~ 34.20.0 RT
NEW 36"x204' CAAP
W/CB @ 36+27.4 RT
29 36+27.4 LT ~ 36+27.4 LT
NEW 18"x18' ~~RCP~~/CPEP (SL)
W/CB @ 36+27.4 LT
30 36+27.4 LT ~ 36+27.4 LT
NEW 18"x~~56'~~ RCP/CPEP (SL) 50'
W/CB @ 36+27.4 LT
31 36+74.5 RT ~ 36+27.4 RT
NEW 36"x~~42'~~ CAAP 41'
W/CB @ 36+74.5 RT
32 5+61.6 RT ~ 5+53.6 LT (WORCESTER AVE)
23'NEW 18"x~~22'~~ RCP/CPEP (SL)
W/CB @ 5+61.6 RT
33 5+53.6 LT ~ 5+52.6 LT (WORCESTER AVE)
6.5'NEW 18"x~~4'~~ RCP/CPEP (SL)
W/CB @ 5+53.6 LT
34 5+52.6 LT (WORCESTER AVE) ~ 36+74.5 RT
138 NEW 18"x~~136'~~ RCP/CPEP (SL)
W/MH @ 5+52.6 LT

NEW DRAINAGE (CONT.)

35 37+95.0 RT ~ 36+74.5 RT
NEW 36"x~~98'~~ RCP/CPEP (SL) 120'
W/CB @ 37+95.0 RT
36 3+20.6 RT ~ 3+20.6 LT (WORCESTER AVE)
NEW 18"x30' ~~RCP~~/CPEP (SL)
W/CB @ 3+20.6 RT
37 3+20.6 LT (WORCESTER AVE)~ 37+95.0 RT
NEW 18"x36' RCP/CPEP (SL)
W/CB @ 3+20.6 LT
38 15+74.0 RT ~ 15+74.0 LT (SCHOOL DR)
NEW 18"x18' ~~RCP~~/CPEP (SL)
W/CB @ 15+74.0 RT
39 15+74.0 LT ~ 15+29.9 LT (SCHOOL DR)
NEW 18"x46' ~~RCP~~/CPEP (SL)
W/CB @ 15+74.0 LT
40 15+29.9 LT (SCHOOL DR) ~ 11+16.9 LT (HIGHLAND AVE)
NEW 18"x78' RCP/CPEP (SL)
W/CB @ 15+29.9 LT
40A 15+43.5 LT ~ 15+29.9 LT ~~(SCHOOL DR.)~~
NEW 18"x 13' CPEP (SL)
W/ CB @ 15+43.5

NEW DRAINAGE (CONT.)

34.5 41 15+~~42.5~~ RT (SCHOOL DR) ~ 11+16.9 LT (HIGHLAND AVE)
~~RELAY EXISTING~~ 12"x~~74'~~ PVC AT NEW INVERTS 81'
W/MH @ 15+42.5 RT (SCHOOL DR)
(SEE CROSS SECTIONS)
54.0 42 13+~~76.0 RT~~ (HIGHLAND AVE) ~ 11+16.9 LT
~~RELAY~~ EXISTING 15"x~~238'~~ PVC AT NEW INVERTS 222'
(SEE CROSS SECTIONS)
43 11+16.9 LT ~ 10+65.6 LT (HIGHLAND AVE)
NEW 24"x~~42'~~ RCP/CPEP (SL) 44'
W/MH @ 11+16.9 LT
49' 44 10+~~42.8 RT~~ ~ 10+65.6 LT (HIGHLAND AVE)
NEW 18"x~~78'~~ RCP/CPEP (SL) 80'
W/CB @ 10+~~42.8~~ RT 49
45 10+65.6 LT (HIGHLAND AVE)~ 37+95.0 RT
NEW 24"x~~72'~~ RCP/CPEP (SL) 74'
W/CB @ 10+65.6 LT
46 38+85.0 RT ~ 37+95.0 RT
NEW 36"x~~86'~~ RCP/CPEP (SL) 88'
W/CB @ 38+85.0 RT
47 40+10.0 RT ~ 38+85.0 RT HVCTRL
NEW 36"x~~122'~~ RCP/CPEP (SL) 125'
W/CB @ 40+10.0 RT
48 20+49.6 LT ~ 20+~~45.6~~ RT (HEBARD AVE)
NEW 18"x~~12'~~ RCP/CPEP (SL) 13.5'
W/CB @ 20+49.6 LT

CB WAS MOVED 10+49 RT SO 18' PIPE WOULD NOT INTERFERE WITH FOUNDATION FOR SIGNAL MAST ARM IN MEDIAN ISLAND

6" UNDERDRAIN (MOD.)

18 34+20 RT ~ ~~36+13~~ 35+50 RT
NEW 6"x192' UNDERDRAIN
W/F.B. @ ~~36+13~~ RT 35+50 INCL. WITH VE WALL
~~31 36+13 RT ~ 0+75 RT (WORCESTER AVE)~~
~~NEW 6"x148' UNDERDRAIN~~
~~W/F.B. @ 0+75 RT~~

8" UNDERDRAIN (MOD.)

23 34+24 RT ~ 35+50 RT
NEW 8"x126' UNDERDRAIN
W/F.B. @ 35+50 RT
27 36 34+~~29~~ LT ~ ~~36+38~~ LT 35+86
150 NEW 8"x~~208'~~ UNDERDRAIN
W/F.B. @ ~~36+38~~ LT 35+86
29 36+38 LT ~ 37+00 LT
NEW 8"x62' UNDERDRAIN
W/F.B. @ 37+00 LT
30 35+50 RT ~ 36+00 RT
NEW 8"x50' UNDERDRAIN
W/F.B. @ 36+00 RT

8" UNDERDRAIN (MOD.)(CONT.)

~~33 36+77 RT ~ 38+10 RT~~
~~NEW 8"x132' UNDERDRAIN~~
~~W/F.B. @ 38+10 RT~~
~~35 38+90 RT ~ 40+10RT~~
~~NEW 8"x124' UNDERDRAIN~~
~~W/F.B. @ 40+10RT~~
~~36 39+04 LT ~ 39+57 LT~~
~~NEW 8"x52' UNDERDRAIN~~
~~W/F.B. @ 39+04 LT~~

8" UNDERDRAIN CARRIER PIPE (MOD.)

28 36+27 LT ~ 36+38 LT WITH F.B. @ 36+38 LT
NEW 8"x12' UNDERDRAIN CARRIER PIPE
~~33 36+75 RT ~ 36+77 RT~~
~~NEW 6"x4' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 38+90 RT~~
~~35 38+85 RT ~ 38+90 RT~~
~~NEW 6"x6' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 38+90 RT~~
~~36 39+57 LT ~ 40+10 LT~~
~~NEW 8"x50' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 39+57 LT~~

RELAYING PIPE CULVERT

13+76 RT (HIGHLAND AVE) ~ 11+16.9 LT
~~RELAY EXISTING~~ 15" PVC AT NEW INVERTS
NEW (SEE CROSS SECTIONS)
15+42.5 (SCHOOL DR) ~ 11+16.9 LT (HIGHLAND AVE)
~~RELAY EXISTING~~ 12" PVC AT NEW INVERTS
NEW (SEE CROSS SECTIONS)

CHANGING ELEV. OF DROP INLETS, CATCH BASINS, OR MANHOLES

~~MHD @ 13+76 RT (HIGHLAND AVE)~~
~~DI @ 13+41RT (HIGHLAND AVE)~~

REHABING DI,CB OR MH CLASS II

MHD @ 13+~~76~~ 59 RT (HIGHLAND AVE)

TBM
BOUND
ELEV. = 490.87'

NOTES:
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2) REFER TO WATER AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED WATER AND SEWER LAYOUT.
3) SEE ROADWAY LAYOUT SHEETS FOR PLACEMENT OF STONE FILL.

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027drnbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 2/27/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 83 OF 239

EXISTING DRAINAGE

33 40+12 LT
EXISTING PIPE & DI - REMOVE

34 41+20 RT ~ 41+16 RT
EXISTING DI @ 41+16 RT - REMOVE
EXISTING DI @ 41+20 RT - RETAIN
REMOVE ~~EXISTING~~ PIPE - ~~RETAIN, CONNECT~~ INSTALL NEW 18" CPEP

35 41+68 RT ~ 41+20 RT
EXISTING PIPE & DI - RETAIN

36 42+05 LT
EXISTING PIPE & DI - ABANDON
REMOVED

37 42+58 LT
EXISTING PIPE & DI - REMOVE

38 43+57 LT
EXISTING DI & PIPE - REMOVE

39 44+68 LT
EXISTING PIPE & DI - REMOVE

40 44+80 LT
EXISTING PIPE & DI - REMOVE

41 26+00 LT ~ 26+01RT (SAUNDERS AVE)
EXISTING PIPE & DI - ~~ABANDON~~ REMOVE

42 26+75 LT ~ 26+66 LT (SAUNDERS AVE)
EXISTING PIPE - RETAIN

43 26+67 RT ~ 26+66 LT (SAUNDERS AVE)
EXISTING PIPE - RETAIN

51A 41+20 ~ 41+16.4 NEW 18" X 14' CPEP (SL)
CONNECTION TO EXIT DI AT 41+20 RT

NEW DRAINAGE

47 40+10.0 RT ~ 38+85.0 RT
NEW 36'x~~122' RCP~~/CPEP (SL) 125'
W/CB @ 40+10.0 RT

49 20+49.6 RT (HEBARD AVE) ~ 40+10.0 LT
NEW 18'x~~22' RCP~~/CPEP (SL) 23.5'
W/CB @ 20+49.6 RT

50 40+10.0 LT ~ 40+10.0 RT
NEW 18'x~~56'~~ RCP/CPEP (SL) 58'
W/CB @ 40+10.0 LT

51 41+16.4 RT ~ 40+10.0 RT
NEW 36'x~~104' RCP~~/CPEP (SL) 107'
CB W/MH @ 41+16.4 RT

52 43+50.0 RT ~ 41+16.4 RT
NEW 36'x~~232'~~ RCP/CPEP (SL) 236'
W/CB @ 43+50.0 RT

53 43+50.0 RT ~ 43+50.0 RT
NEW 18'x12' RCP/CPEP (SL)
W/CB @ 43+50.0 RT

54 43+56.1 LT ~ 43+50.0 LT
NEW 18'x14' ~~RCP~~/CPEP (SL)
W/CB @ 43+56.1 LT

55 43+50.0 LT ~ 43+50.0 RT
NEW 18'x~~34' RCP~~/CPEP (SL) 36'
W/CB @ 43+50.0 LT

56 44+00.0 RT ~ 43+50.0 RT
NEW 36'x~~45' RCP~~/CPEP (SL)
W/CB @ 44+00.0 RT

57 44+00.0 LT ~ 44+00.0 RT
NEW 18'x~~34' RCP~~/CPEP (SL) 36'
W/CB @ 44+00.0 LT

58 45+10.0 RT ~ 44+00.0 RT
NEW 30'x~~106' RCP~~/CPEP (SL) 108'
W/CB @ 45+10.0 RT

59 25+45.7 LT ~ 25+44.1LT (SAUNDERS AVE)
NEW 18'x~~7' RCP~~/CPEP (SL) 8'
W/CB @ 25+45.7 LT

60 25+44.1LT ~ 25+44.1RT (SAUNDERS AVE)
NEW 18'x20' ~~RCP~~/CPEP (SL)
W/CB @ 25+44.1LT

61 26+19.2 RT ~ 25+44.1RT (SAUNDERS AVE)
NEW 18'x~~72' RCP~~/CPEP (SL) 70'
W/MH @ 26+19.2 RT

54A 41+90 LT ~ 43+56.1LT NEW 12" X 160' PVC PIPE WITH CB @ 41+90 LT ADDED WITH COD = 12

~~8" UNDERDRAIN (MOD.)~~

~~39 38+90 RT ~ 40+11RT~~
~~NEW 8'x124' UNDERDRAIN W/F.B. @ 40+11RT~~

~~39 40+11RT ~ 41+10 RT~~
~~NEW 8'x100' UNDERDRAIN W/F.B. @ 41+10 RT~~

~~41 40+50 LT ~ 42+00 LT~~
~~NEW 8'x150' UNDERDRAIN W/F.B. @ 42+00 LT~~

~~42 42+00 LT ~ 44+54 LT~~
~~NEW 8'x252' UNDERDRAIN W/F.B. @ 44+54 LT~~

~~43 41+25 RT ~ 44+90 RT~~
~~NEW 8'x276' UNDERDRAIN W/F.B. @ 41+25 RT~~

~~46 44+00 RT ~ 44+90 RT~~
~~NEW 8'x90' UNDERDRAIN W/F.B. @ 44+90 RT~~

~~8" UNDERDRAIN CARRIER PIPE (MOD.)~~

~~39 39+57 LT ~ 40+10 LT~~
~~NEW 8'x50' UNDERDRAIN CARRIER PIPE W/F.B. @ 39+57 LT~~

~~38 40+10 RT ~ 40+11RT~~
~~NEW 8'x4' UNDERDRAIN CARRIER PIPE~~

~~40 40+10 LT ~ 40+50 LT~~
~~NEW 8'x38' UNDERDRAIN CARRIER PIPE W/F.B. @ 40+50 LT~~

~~45 44+90 RT ~ 44+90 RT~~
~~NEW 8'x4' UNDERDRAIN CARRIER PIPE W/F.B. @ 44+90 RT~~

ADDED DRAIN FOR PARKING LOT DS 54A

REMOVED

NEW 18" X 14' CPEP (SL) 51A

MATCH LINE STA. 40+00

MATCH LINE STA. 45+00

U.S. ROUTE 5 (HARTFORD AVENUE)

SAUNDERS AVE

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:
1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED STORM DRAINAGE CONSTRUCTION NOTES.
2) REFER TO WATER AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED WATER AND SEWER LAYOUT.
3) SEE ROADWAY LAYOUT SHEETS FOR PLACEMENT OF STONE FILL.

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027drnbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/31/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 84 OF 239

DRAINAGE LAYOUT SHEET 5

DRAINAGE LAYOUT SHEET 6

EXISTING DRAINAGE

44 26+19.2 RT ~ 25+40 RT (SAUNDERS AVE)
EXISTING PIPE - ABANDON
45 46+65.2 RT ~ 46+17 LT
EXISTING DI(LT) - REMOVE
EXISTING DI(RT) - ~~RETAIN~~ REMOVE
EXISTING PIPE - REMOVE
46 47+12 LT
EXISTING PIPE & DI - ABANDON
46A 47+19 RT~ 47+43 RT
EXISTING PIPE & DI(2) - REMOVE
47 48+79 LT
EXISTING DI - REMOVE
EXISTING PIPE - ABANDON
48 30+42 LT ~ 30+48 LT (PIERCE ST.)
EXISTING PIPE & DI - ~~ABANDON~~ REMOVE
49 30+98.6 LT ~ 30+48 LT (PIERCE ST)
EXISTING PIPE & DMH - ~~ABANDON~~ REMOVE
50 30+48 LT ~ 30+44 RT (PIERCE ST)
EXISTING PIPE - ABANDON
51 30+76 RT ~ 30+76 LT (PIERCE ST)
EXISTING PIPE & DI - ~~ABANDON~~ REMOVE

NEW DRAINAGE

58 45+10.0 RT ~ 44+00.0 RT
NEW 30"x~~106' RCP~~/CPEP (SL)108'
W/CB @ 45+10.0 RT
61 26+19.2 RT ~ 25+44.1RT (SAUNDERS AVE)
NEW 18"x~~72' RCP~~/CPEP (SL) 70'
W/MH @ 26+19.2 (SAUNDERS AVE)
62 25+44.1RT (SAUNDERS AVE) ~ 45+10.0 RT
NEW 18"x~~58' RCP~~/CPEP (SL) 60'
W/CB @ 25+44.1RT (SAUNDERS AVE)
63 45+~~50.0~~ LT ~ 45+10.0 RT 49
NEW 18"x~~50' RCP~~/CPEP (SL)52'
W/CB @ 45+~~50.0~~ LT 49 LT
64 46+15.0 RT ~ 45+10.0
NEW 24"x~~102' RCP~~/CPEP (SL)104'
W/CB @ 46+15.0 RT
65 46+65.0 RT ~ 46+15.0 RT
NEW 18"x52' RCP/CPEP (SL)
~~CONNECT TO EXISTING DI~~ WITH MH @ 46+65 RT
66 47+10.0 RT ~ 46+15.0 RT
NEW 24"x~~93' RCP~~/CPEP (SL) 95'
W/CB @ 47+10.0 RT
67 47+10.0 LT ~ 47+10.0 RT
NEW 18"x~~34' RCP~~/CPEP (SL) 35'
W/CB @ 47+10.0 LT
68 49+40.0 RT ~ 47+10.0 RT
NEW 24"x~~228' RCP~~/CPEP (SL)230'
W/CB @ 49+40.0 RT & 48+30 RT
69 30+98.6 LT ~ 30+40.1RT (PIERCE ST)
NEW 18"x~~56' RCP~~/CPEP (SL) 58'
W/MH @ 30+98.6 LT
70 30+36.2 LT ~ 30+40.1RT (PIERCE ST)
NEW 18"x~~18' RCP~~/CPEP (SL)22'
W/CB @ 30+36.2 LT
71 30+40.1RT (PIERCE ST) ~ 49+40.0 LT
NEW 18"x24' ~~RCP~~/CPEP (SL)
W/CB @ 30+40.1RT
72 49+40.0 LT ~ 49+40.0 RT
NEW 18"x~~34' RCP~~/CPEP (SL)36'
W/CB @ 49+40.0 LT
73 50+30.0 RT ~ 49+40.0 RT
NEW 18"x~~86' RCP~~/CPEP (SL)88'
W/MH @ 50+30.0 RT

~~8" UNDERDRAIN (MOD.)~~

~~47 45+12 RT ~ 47+12 RT~~
~~NEW 8"x202' UNDERDRAIN~~
~~W/F.B. @ 47+12 RT~~
~~49A 47+12 RT ~ 49+46 RT~~
~~NEW 8"x235' UNDERDRAIN~~
~~W/F.B. @ 49+46 RT~~
~~49B 49+46 RT ~ 50+30 RT~~
~~NEW 8"x83' UNDERDRAIN~~
~~W/F.B. @ 50+30 RT~~
~~50 45+29 LT ~ 47+10 LT~~
~~NEW 8"x180' UNDERDRAIN~~
~~W/F.B. @ 45+29 LT~~
~~52 47+10 LT ~ 48+83 LT~~
~~NEW 8"x172' UNDERDRAIN~~
~~W/F.B. @ 48+83 LT~~
~~53 49+43 LT ~ 51+50 LT~~
~~NEW 8"x206' UNDERDRAIN~~
~~W/F.B. @ 51+50 LT~~

~~8" UNDERDRAIN CARRIER PIPE (MOD.)~~

~~46 45+10 RT ~ 45+12 RT~~
~~NEW 8"x4' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 45+12 RT~~
~~48 47+10 RT ~ 47+12 RT~~
~~NEW 8"x4' UNDERDRAIN CARRIER PIPE~~
~~49 49+40 RT ~ 49+46 RT~~
~~NEW 8"x6' UNDERDRAIN CARRIER PIPE~~
~~51 47+10 LT ~ 47+10 LT~~
~~NEW 8"x4' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 47+10 LT~~
~~53 49+40 LT ~ 49+43 LT~~
~~NEW 8"x4' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 49+43 LT~~

~~REHABING DI, CB OR MH, CLASS II~~

~~46+65.2 RT~~

PREVIOUSLY REMOVED
REMOVED
PREVIOUSLY REMOVED
REMOVED
REMOVED
REMOVED
REMOVED

MATCH LINE STA. 45+00
MATCH LINE STA. 50+00
SAUNDERS AVE
PIERCE STREET
U.S. ROUTE 5 (HARTFORD AVENUE)
MAGNETIC 1987

0 20 40
SCALE IN FEET

NOTES:

1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED STORM DRAINAGE CONSTRUCTION NOTES.
2) REFER TO WATER AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED WATER AND SEWER LAYOUT.
3) SEE ROADWAY LAYOUT SHEETS FOR PLACEMENT OF STONE FILL.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027drnbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/31/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 85 OF 239

EXISTING DRAINAGE

52 49+70 RT ~ 50+44 RT
EXISTING PIPE - CONNECT TO NEW CB @ 50+44.0 RT
53 50+44 RT ~ 50+58 RT
EXISTING PIPE & DI - REMOVE
54 50+58 LT
EXISTING ~~PIPE & DI~~ - ABANDON
55 50+59 RT ~ 50+60 RT
EXISTING DI - REMOVE
EXISTING PIPE - ABANDON
56 52+44 RT ~ 52+46 LT
EXISTING DI @ 52+46 LT - ~~ABANDON~~
EXISTING PIPE - ABANDON
EXISTING DI @ 52+44 RT - REMOVE
57 54+75 LT ~ 54+83 RT
EXISTING DI - ~~ABANDON~~
EXISTING PIPE - REMOVE
58 40+40 RT (DEVIN ST) ~ 54+83 RT
EXISTING DI - REMOVE
EXISTING PIPE - ABANDON

NEW DRAINAGE

73 50+30.0 RT ~ 49+40.0 RT
NEW 18'x~~80'~~ RCP/CPEP (SL)
W/MH @ 50+30.0 RT
74 50+~~44.0~~ RT ~ 50+30.0 RT
NEW 18'x20' RCP/CPEP (SL)
W/CB @ 50+44.0 RT
CONNECT TO EXISTING PIPE
75 35+38.8 RT ~ 35+35.2 LT (GOUDREAU ST)
NEW 18'X18' ~~RCP~~/CPEP (SL)
W/CB @ 35+38.8 RT
76 35+35.2 LT (GOUDREAU ST) ~ 52+45.0 RT
NEW 18'x~~26' RCP~~/CPEP (SL)
W/CB @ 35+35.2 LT
77 52+~~11.4~~ LT ~ ~~52+45.0 RT~~
NEW 18'x~~46' RCP~~/CPEP (SL)
W/CB @ 52+11.4 LT
78 52+45.0 RT ~ 54+00.0 RT
NEW 18'x~~153' RCP~~/CPEP (SL)
W/~~MH~~ @ 52+45.0 RT
79 54+00.0 LT ~ 54+00.0 RT
NEW 18'x~~34' RCP~~/CPEP (SL)
W/CB @ 54+00.0 LT
80 54+00.0 RT ~ 55+12.0 RT
NEW 18'x~~108' RCP~~/CPEP (SL)
W/CB @ 54+00.0 RT
81 40+~~36.1~~ RT ~ 40+36.1 LT (DEVIN ST)
NEW 18'x~~41' RCP~~/CPEP (SL)
W/CB @ 40+~~36.1~~ RT
82 40+36.1 LT (DEVIN ST) ~ 55+12.0 RT
NEW 18'x20' ~~RCP~~/CPEP (SL)
W/CB @ 40+36.1 LT

~~8" UNDERDRAIN (MOD.)~~

~~49~~ ~~47+12 RT ~ 50+30 RT~~
~~NEW 8"x318' UNDERDRAIN~~
~~W/F.B. @ 50+30 RT~~
~~54~~ ~~48+43 LT ~ 51+50 LT~~
~~NEW 8"x206' UNDERDRAIN~~
~~W/F.B. @ 51+50 LT~~
~~55~~ ~~51+50 LT ~ 54+00 LT~~
~~NEW 8"x250' UNDERDRAIN~~
~~56~~ ~~54+00 LT ~ 56+75 LT~~
~~NEW 8"x274' UNDERDRAIN~~
~~W/F.B. @ 54+00 LT~~
~~58~~ ~~50+45 RT ~ 51+85 RT~~
~~NEW 8"x138' UNDERDRAIN~~
~~W/F.B. @ 51+85 RT~~
~~59~~ ~~52+45 RT ~ 54+60 RT~~
~~NEW 8"x214' UNDERDRAIN~~
~~W/F.B. @ 52+45 RT~~

~~8" UNDERDRAIN CARRIER PIPE (MOD.)~~

~~49A~~ ~~50+30 RT ~ 50+45 RT~~
~~NEW 8"x14' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 50+45 RT~~
~~58A~~ ~~54+60 RT ~ 40+36 RT (DEVIN ST.)~~
~~NEW 8"x22' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 54+60 RT~~

BM #12A
BLDG. COR. BLOCK
ELEV. = 492.03'

MATCH LINE STA. 50+00

MATCH LINE STA. 55+00

U.S. ROUTE 5
(HARTFORD AVENUE)

DEVIN STREET

GOUDREAU STREET

EXISTING SIGHT EASEMENT (P)

2 SWF HEALTH CENTER #826

2 SWF LAW OFFICES #780

I.S. BLOCK STORE #788

1½SWF MEDICAL OFFICES #842

1SWF COMPUTER CONNECTION, INC. #860

ISBF CHURCH #749

#803 2 SWF

#23 3T

#24 3T

#22 3S

REMOVED

0 20 40
SCALE IN FEET

DRAINAGE LAYOUT SHEET 7

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:

1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED STORM DRAINAGE CONSTRUCTION NOTES.
2) REFER TO WATER AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED WATER AND SEWER LAYOUT.
3) SEE ROADWAY LAYOUT SHEETS FOR PLACEMENT OF STONE FILL.

PROJECT: HARTFORD
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PLOT DATE: 1/31/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 86 OF 239

DRAINAGE LAYOUT SHEET 8

EXISTING DRAINAGE

59 56+61 LT ~ 57+16 RT
EXISTING DI - ABANDON
EXISTING PIPE - REMOVE

60 57+17 RT
EXISTING PIPE - REMOVE
EXISTING DI - ABANDON

61 57+16 RT ~ 58+40 RT
EXISTING PIPE & DI - REMOVE

62 58+40 RT ~ 60+92 RT
EXISTING PIPE & DI - REMOVE

63 50+79 LT ~ 50+95 RT (HEWITT ST)
EXISTING PIPE - RETAIN

NEW DRAINAGE

82 40+36.1 LT (DEVIN ST) ~ 55+12.0 RT
NEW 18"x20' ~~RCP~~/CPEP (SL)
W/CB @ 40+36.1 LT

83 55+12.0 LT ~ 55+12.0 RT
NEW 18"x~~32'~~ ~~RCP~~/CPEP (SL)35'
W/CB @ 55+12.0 LT

84 55+12.0 RT ~ 56+00.0 RT
NEW 18"x~~84'~~ ~~RCP~~/CPEP (SL)85'
W/MH @ 55+12.0 RT

85 56+00.0 RT ~ 56+77.7 RT
NEW 18"x~~74'~~ ~~RCP~~/CPEP (SL)76'
W/CB @ 56+00.0 RT

86 56+00.0 LT ~ 56+77.7 LT
NEW 18"x~~74'~~ ~~RCP~~/CPEP (SL)76'
W/CB @ 56+00.0 LT

NEW DRAINAGE (CONT.)

87 56+77.7 LT ~ 56+77.7 RT
NEW 18"x36' ~~RCP~~/CPEP (SL)
W/CB @ 56+77.7 LT

88 56+77.7 RT ~ 58+40.0 RT
NEW 18"x~~58'~~ ~~RCP~~/CPEP (SL)60'
W/CB @ 56+77.7 RT

89 45+35.2 RT ~ 45+37.3 LT (ADVENT LN)
NEW 18"x12' RCP/CPEP (SL)
W/CB @ 45+35.2 RT

90 45+37.3 LT (ADVENT LN) ~ 58+40.0 RT
NEW 18"x18' RCP/CPEP (SL)
W/CB @ 45+37.3 LT

91 58+65.0 LT ~ 58+40.0 RT
NEW 18"x44' RCP/CPEP (SL)
W/CB @ 58+65.0 LT

92 58+40.0 RT ~ 60+91.7 RT
NEW 24"x250' RCP/CPEP (SL)
W/CB @ 58+40.0 RT

~~8" UNDERDRAIN (MOD.)~~

~~58 54+00 LT ~ 56+75 LT~~
~~NEW 8"x274' UNDERDRAIN~~
~~W/F.B. @ 54+00 LT~~

~~62 55+12 RT ~ 56+77.7 RT~~
~~NEW 8"x166' UNDERDRAIN~~
~~W/F.B. @ 55+12 RT~~

~~63 56+77.7 ~ 57+89 RT~~
~~NEW 8"x112' UNDERDRAIN~~
~~W/F.B. @ 57+89 RT~~

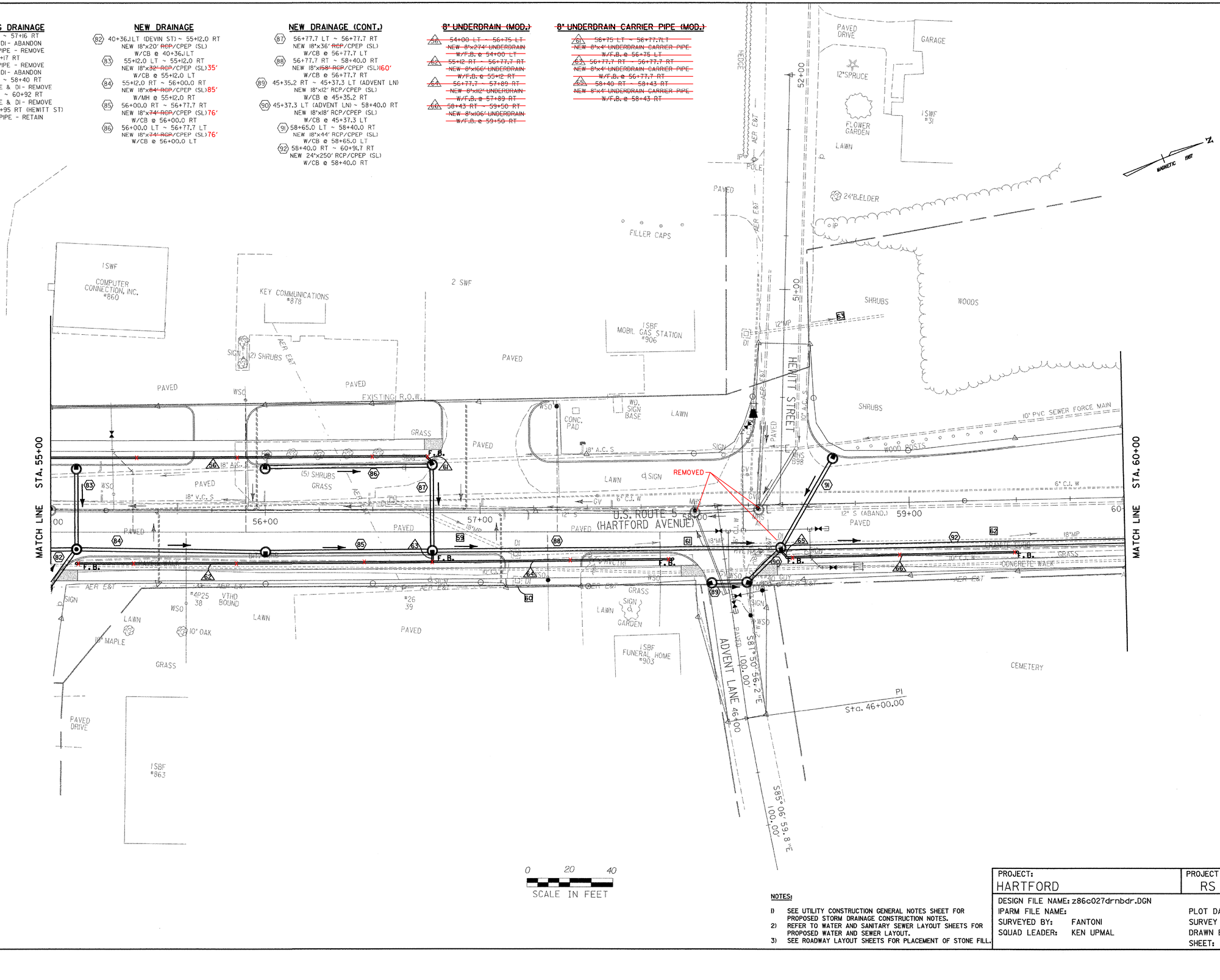
~~60 58+43 RT ~ 59+50 RT~~
~~NEW 8"x106' UNDERDRAIN~~
~~W/F.B. @ 59+50 RT~~

~~8" UNDERDRAIN CARRIER PIPE (MOD.)~~

~~61 56+75 LT ~ 56+77.7LT~~
~~NEW 8"x4' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 56+75 LT~~

~~62 56+77.7 RT ~ 56+77.7 RT~~
~~NEW 8"x4' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 56+77.7 RT~~

~~65 58+40 RT ~ 58+43 RT~~
~~NEW 8"x4' UNDERDRAIN CARRIER PIPE~~
~~W/F.B. @ 58+43 RT~~



0 20 40
SCALE IN FEET

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:

1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED STORM DRAINAGE CONSTRUCTION NOTES.
2) REFER TO WATER AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED WATER AND SEWER LAYOUT.
3) SEE ROADWAY LAYOUT SHEETS FOR PLACEMENT OF STONE FILL.

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SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 87 OF 239

DRAINAGE LAYOUT SHEET 9

EXISTING DRAINAGE

62 58+40 RT ~ 60+92 RT
EXISTING PIPE & DI - REMOVE

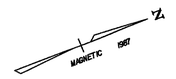
64 60+92 RT ~ 61+00 LT
EXISTING PIPE & DI - REMOVE

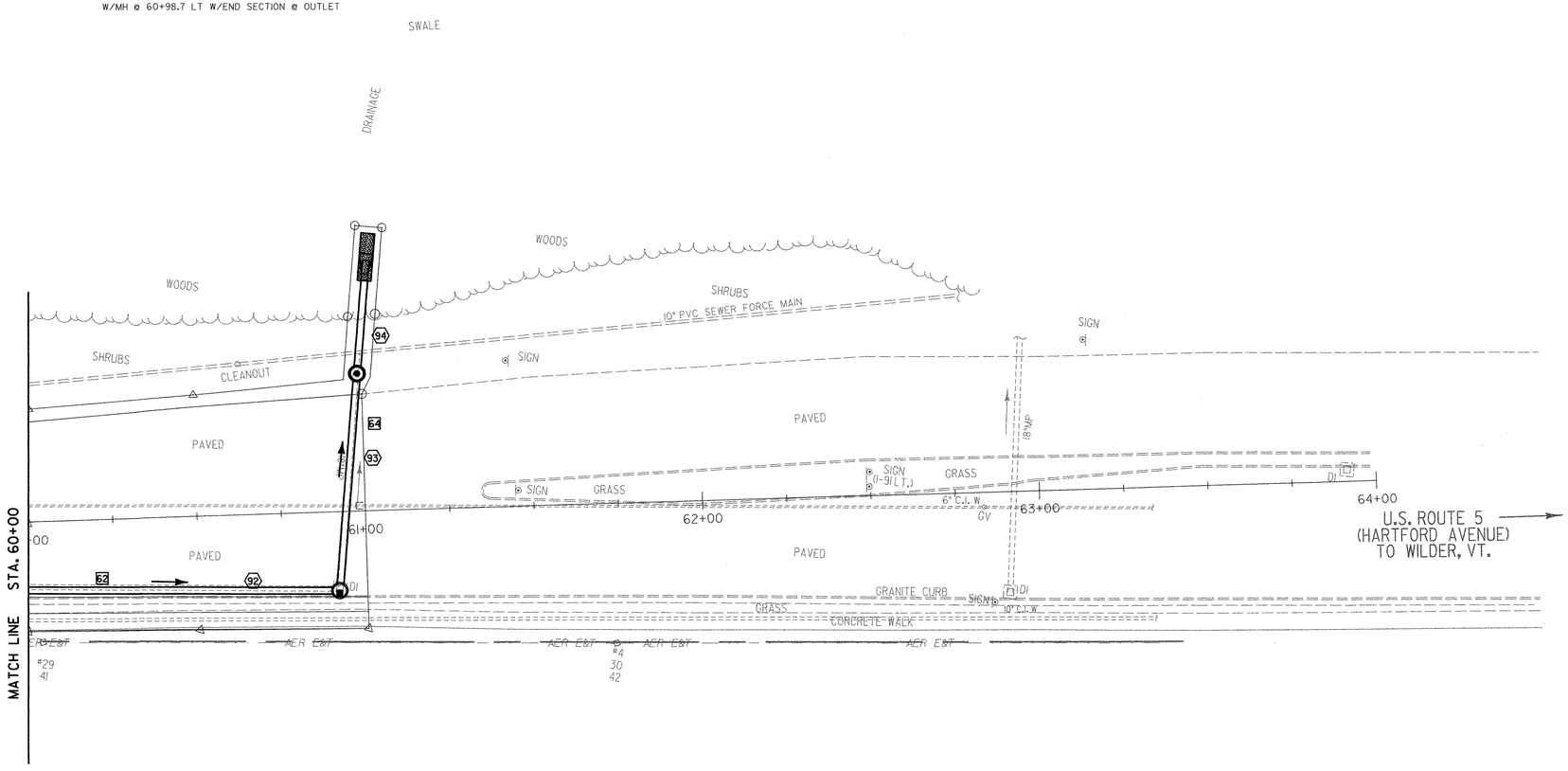
NEW DRAINAGE

92 58+40.0 RT ~ 60+91.7 RT
NEW 24"X250' RCP/CPEP (SL)
W/CB @ 58+40.0 RT

93 60+91.7 RT ~ 60+98.7 LT
NEW 24"x60' CPEP (SL)/CAAP/PCCSP (PI)/CPEP
W/CB @ 60+91.7 RT

94 60+98.7 LT ~ 61+02.0 LT
NEW 24"x30' CPEP (SL)/CAAP/PCCSP (PI)/CPEP
W/MH @ 60+98.7 LT W/END SECTION @ OUTLET





0 20 40
SCALE IN FEET

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:

1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED STORM DRAINAGE CONSTRUCTION NOTES.
2) REFER TO WATER AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED WATER AND SEWER LAYOUT.
3) SEE ROADWAY LAYOUT SHEETS FOR PLACEMENT OF STONE FILL.

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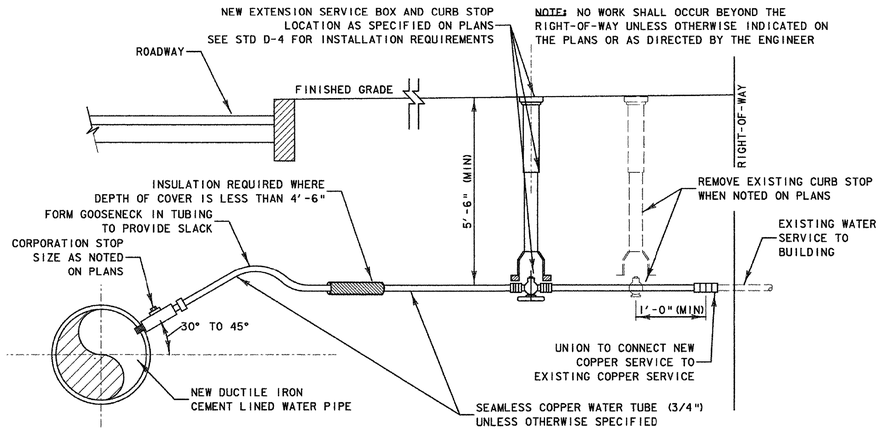
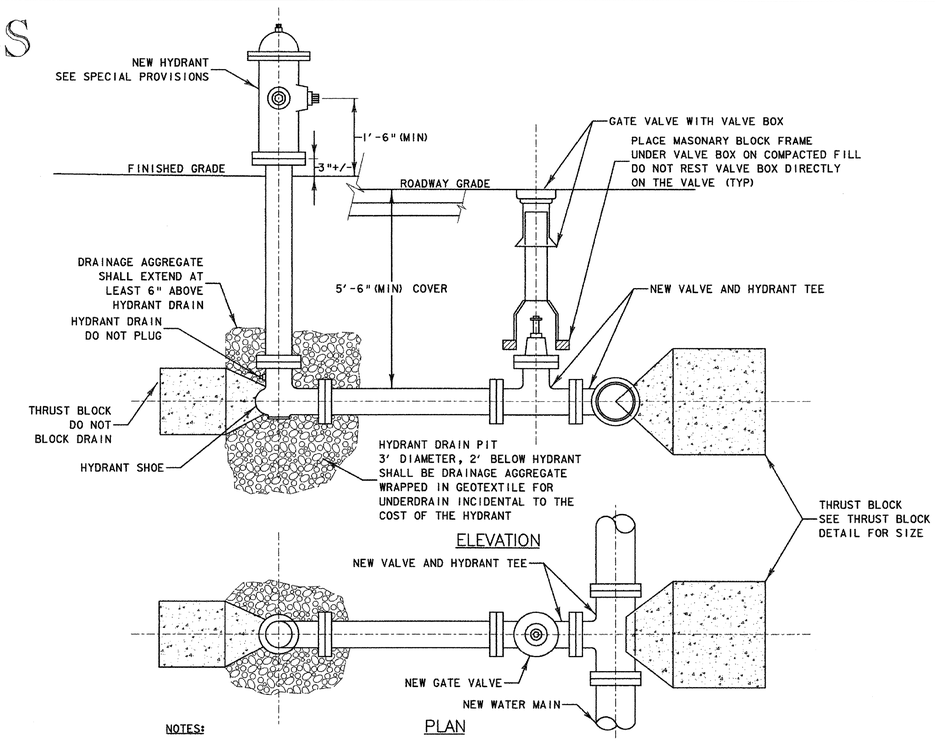
PLOT DATE: 1/31/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 88 OF 239

WATER DETAILS



TYPICAL SEAMLESS COPPER WATER TUBE SERVICE CONNECTION

NOT TO SCALE

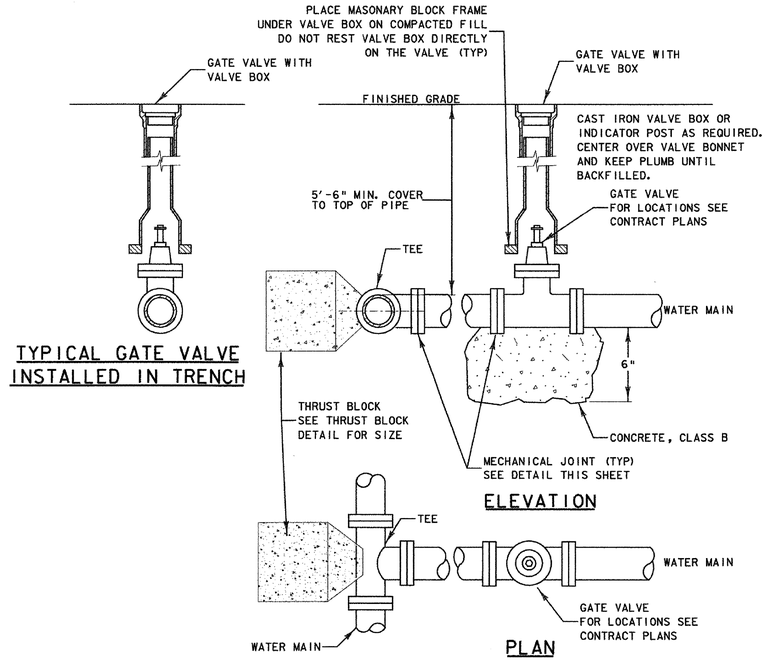


NOTES:

1) REFER TO THE TOWN OF HARTFORD WATER ORDINANCE "TYPICAL HYDRANT ASSEMBLY DETAIL" AND THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
2) COORDINATE ALL WATER WORK WITH THE TOWN OF HARTFORD WATER DEPARTMENT.

TYPICAL FIRE HYDRANT CONNECTION DETAIL

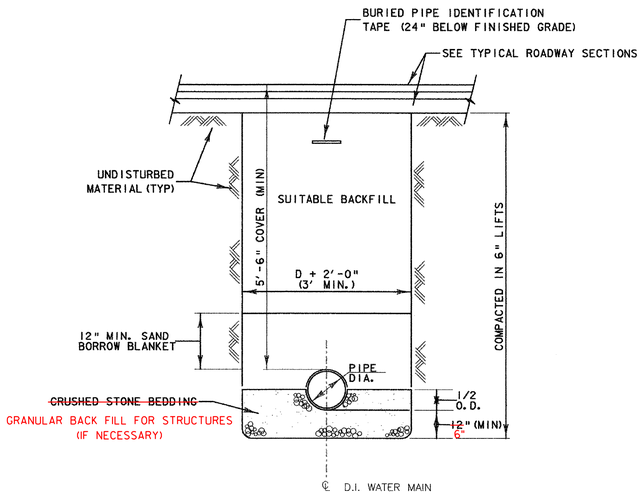
NOT TO SCALE



TYPICAL GATE VALVE INSTALLED IN TRENCH

TYPICAL SERVICE BRANCH CONNECTION DETAIL

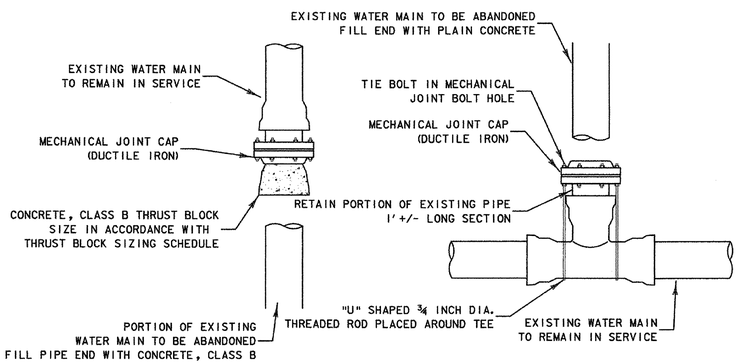
NOT TO SCALE



TRENCH IN EARTH

TYPICAL WATER MAIN TRENCH DETAILS

NOT TO SCALE



TYPICAL WATER PIPE ABANDONMENT DETAIL

NOT TO SCALE

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

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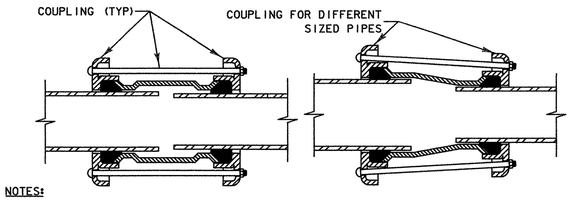
SURVEYED BY: FANTONI — PLOT DATE: 1/10/2007
SQUAD LEADER: KEN UPMAL — SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 89 OF 239

WATER DETAILS



NOTES:

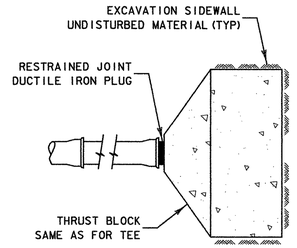
1) CONTRACTOR TO FIELD VERIFY THE OUTSIDE DIAMETERS OF EXISTING AND PROPOSED PIPES FOR SIZING COUPLINGS
2) TRANSITION COUPLINGS WITH LARGER GASKETS OR REDUCING MIDDLE RINGS (AS REQUIRED BY MANUFACTURER) ARE REQUIRED TO SPAN PIPES WITH DIFFERENT SIZE OUTSIDE DIAMETERS.

TYPICAL TRANSITION COUPLING INSTALLATION

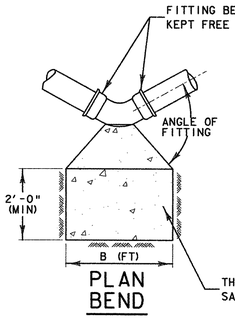
NOT TO SCALE

PIPE SIZE	4"		6"		8"		10"		12"	
DIMENSION	B	D	B	D	B	D	B	D	B	D
TEE/PLUG	2	2	2	2	3	3	4	4	4	4
90°	2	2	2	2	3	3	4	4	4	4
45°	2	2	2	2	2	2	3	3	4	4
22 1/2°	2	2	2	2	2	2	2	2	3	3
11 1/2°	N/A	N/A	N/A	N/A	2	2	2	2	2	2

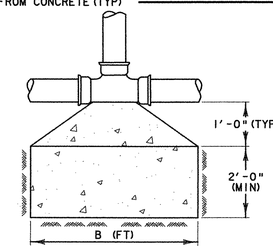
THRUST BLOCK SCHEDULE



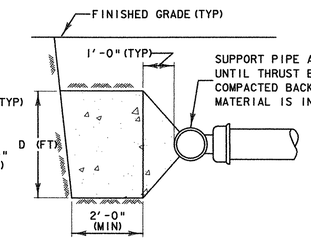
PLAN
DEAD END (PLUG)



PLAN
BEND



PLAN
TEE



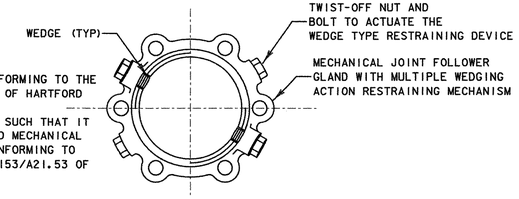
TYPICAL SECTION

NOTES:

1) CONCRETE FOR THRUST BLOCKS SHALL BE CONCRETE, CLASS B.
2) ALL DIMENSIONS ARE MINIMUM AND SHALL BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

THRUST BLOCK DETAILS

NOT TO SCALE

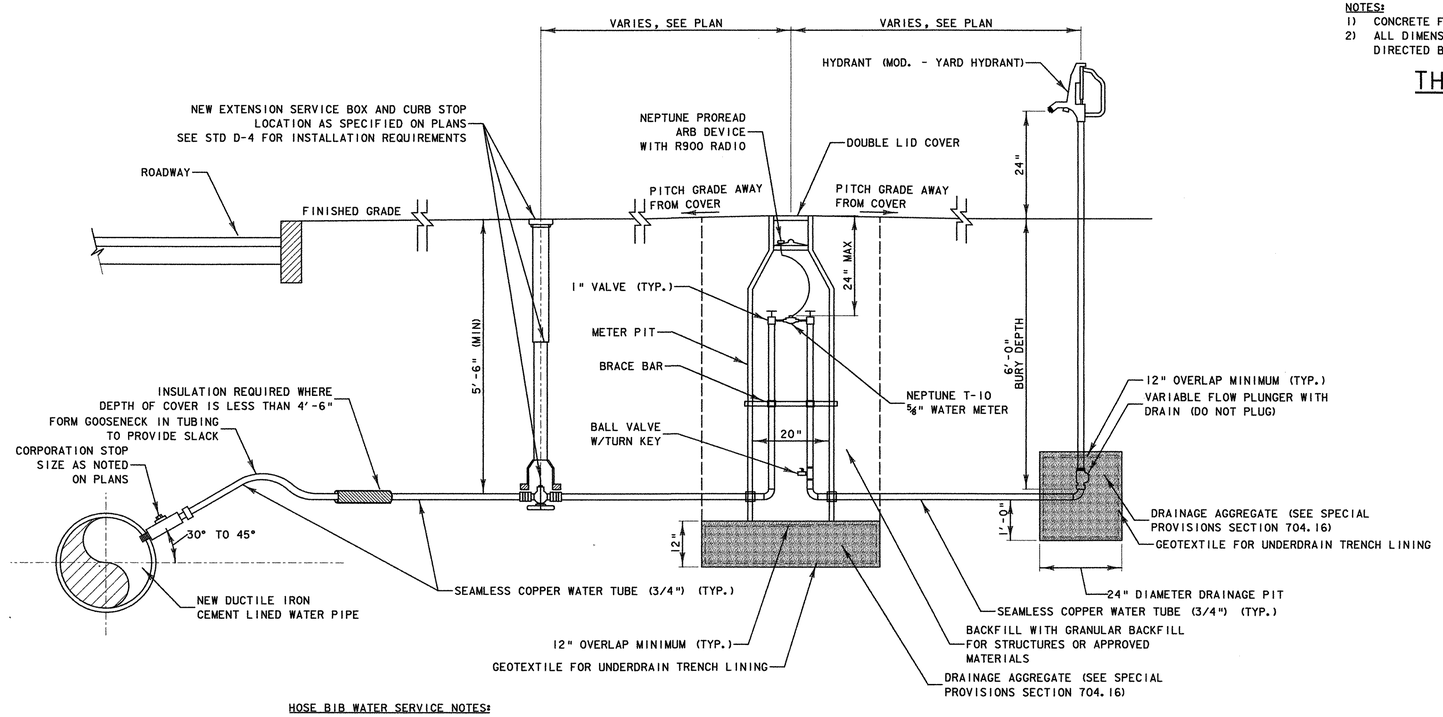


NOTES:

1) GLANDS SHALL BE DUCTILE IRON CONFORMING TO THE STANDARD SPECIFICATIONS AND TOWN OF HARTFORD WATER ORDINANCES.
2) DIMENSIONS OF THE GLAND SHALL BE SUCH THAT IT CAN BE USED WITH THE STANDARDIZED MECHANICAL JOINT BELL AND TEE-HEAD BOLTS CONFORMING TO ANSI/AWWA A21.11 AND ANSI/AWWA C153/A21.53 OF LATEST REVISION.

MECHANICAL JOINT RESTRAINT DETAIL

NOT TO SCALE



HOSE BIB WATER SERVICE NOTES:

1) NO WORK SHALL OCCUR BEYOND THE RIGHT-OF-WAY UNLESS OTHERWISE INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2) PAYMENT FOR INSTALLATION OF GEOTEXTILE FOR UNDERDRAIN TRENCH LINING AND DRAINAGE AGGREGATE FOR THE PROPOSED METER PIT SHALL BE MADE UNDER THE METER PIT (MOD.) ITEM.
3) PAYMENT FOR INSTALLATION OF GEOTEXTILE FOR UNDERDRAIN TRENCH LINING AND DRAINAGE AGGREGATE FOR THE PROPOSED YARD HYDRANT SHALL BE MADE UNDER THE HYDRANT (MOD. - YARD HYDRANT) ITEM.
4) ALL WORK SHALL CONFORM TO THE SPECIFICATIONS AND THE TOWN OF HARTFORD WATER ORDINANCES.

DIAGRAMMATIC LAYOUT FOR YARD HYDRANT AND METER PIT

NOT TO SCALE

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

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SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 90 OF 239

WATER LAYOUT SHEET 1

SEAMLESS COPPER WATER TUBE (3/4")
24+10 RT ~ 24+13 RT - 22'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP

DUCTILE IRON PIPE, CEMENT-LINED (6")
21+25 LT ~ 21+21 LT - 16'
W/ ONE 1/8 BEND, ONE MECHANICAL COUPLING
21+72 LT ~ 21+72 LT - 36'
22+86 LT ~ 23+01 LT - 16'
W/ ONE 1/16 BEND, ONE MECHANICAL COUPLING

DUCTILE IRON PIPE, CEMENT-LINED (8")
21+24 RT ~ 21+20 RT - 10'
W/ ONE 1/8 BEND, ONE MECHANICAL COUPLING
~~21+25 LT ~ 22+86 LT - 166'~~
~~W/ ONE 1/16 BEND, ONE 1/8 BEND, ONE 8X6X8 TEE,~~
~~ONE 8X6 REDUCER~~

DUCTILE IRON PIPE, CEMENT-LINED (10") 8"
~~24+48~~ LT ~ 24+45 RT - 84'
W/ FOUR 1/8 BENDS, TWO MECHANICAL COUPLINGS
24+62 RT-LT

DUCTILE IRON PIPE, CEMENT-LINED (12")
21+31LT ~ 21+24 RT - 62'
W/ ONE 1/8 BENDS, ONE 12X8X12X8 CROSS, ONE 12X12X12X12 CROSS,
ONE 12X8 REDUCER, TWO CAPS
21+30 RT ~ 25+00 RT - 370'
W/ ONE 12X10X12X10 CROSS

GATE VALVE WITH VALVE BOX
21+72 LT - 6" VALVE
21+26 LT - 8" VALVE
21+36 LT - 8" VALVE
22+83 LT - 8" VALVE
24+42 RT - 10" VALVE
24+48 LT - 10" VALVE
21+25 RT - 12" VALVE
21+30 RT - 12" VALVE
21+30 LT - 12" VALVE
21+35 RT - 12" VALVE
24+38 RT - 12" VALVE
24+46 RT - 12" VALVE

HYDRANT
21+72 - 57.0' LT - 1EACH
24+62 LT

HYDRANT (MOD. - YARD HYDRANT)
24+13 - 18.0' RT - 1EACH

HYDRANT, REMOVE
21+72 LT - 1EACH

METER PIT (MOD.)
24+10 - 18.0' RT - 1EACH

SEAMLESS COPPER WATER TUBE (1")
24+80 LT ~ 24+25 LT
WITH ONE CORPORATION STOP
ONE EXTENSION SERVICE BOX AND CURB STOP
24+80 LT ~ 24+45 LT
WITH ONE CORPORATION STOP
ONE EXTENSION SERVICE BOX AND CURB STOP
23+08 RT ~ 23+09 LT - 75'
WITH ONE CORPORATION STOP
ONE EXTENSION SERVICE BOX AND ONE CURB STOP

MAGNETIC WEST

WHITE RIVER
WOODS
VT. ROUTE 14 TO HARTFORD
TO U.S. ROUTE 5 WHITE RIVER JUNCTION
PAVED
OVERHEAD SIGN SUPPORT
GRASS
12" GV AS PER REQUEST OF TOWN OF HARTFORD
BM SIGN BOLT ELEV. = 361.62'
PROP. HYDRANT W/ 6" DICL PIPE
EXISTING VALVE 37
12" BOX ELDER
EXISTING VALVE 35
CAP FOR FUTURE EXPANSION
EXISTING VALVE 36
TRAF. SIGNAL
SIGNAL CONTROLLER
METER
LAWN
FLAG POLE
3"APPLE
3"HEMLOCKS
ISTY. BRICK #8
CONC. WALK
GUY
GRAVEL DRIVE
LONG STEPS
PAVED ROAD
PAVED DRIVE
VALVE #142 IS NEXT VALVE UP ON HAZEN STREET
REMOVE EXISTING HYDRANT
EXISTING VALVE 141
BURIED TELEPHONE CABLE
HAZEN ST.
BARNES AVE.
PAVEMENT
GRAN. CURB
U.S. ROUTE 5 (HARTFORD AVENUE)
75 LF OF 1"
18" RCP
36" RCP
HVCTR
P30 MPH
BOLLARDS(3)
CHAINLINK FENCE
CUT AND CAP EXIST. WATER (TYP)
12x8x12x8 CROSS
12x12x12x12 CROSS
1/8 BEND
CUT AND CAP EXIST. WATER (TYP)
12x8 REDUCER
1/8 BEND
PROP. 12" DICL
MECHANICAL TRANSITION COUPLING TO EXIST. 8" CI WATER
CAP FOR FUTURE USE
12x10 TEE
8" GV
1/8 BENDS
12x8 TEE
PROP. HYDRANT (MOD. - YARD HYDRANT) WITH METER PIT (MOD.) AND ONE STEEL MARKER POST
MECHANICAL TRANSITION COUPLING TO EXIST. 10" CI WATER
8"X6" TEE
8" DICL
MATCH LINE STA. 25+00
19+00
20+00
21+00
22+00
23+00
24+00
BRUSH
BM DISC
GUARDRAIL
12"MAPLE
8"MAPLE
U.S. ROUTE 4 TO NEW HAMPSHIRE
PAVED PARKING
PAVED PARKING LOT
RETAIL MALL

CHANGES TO DESIGNED WATERLINE WAS DONE AS
INSTRUCTED BY TOWN OF HARTFORD WATER DEPARTMENT

0 20 40
SCALE IN FEET

NOTES:
1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED WATER CONSTRUCTION NOTES AND LEGEND.
2) REFER TO DRAINAGE AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND SEWER LAYOUT.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027watbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 4/11/2012
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 91 OF 239

WATER LAYOUT SHEET 2

DUCTILE IRON PIPE, CEMENT-LINED (6")
25+05 RT ~ 25+05 RT - 20'
29+18 LT ~ 29+12 LT - 8'
W/ ONE MECHANICAL COUPLING
29+52 RT ~ 29+46 RT - 6'

DUCTILE IRON PIPE, CEMENT-LINED (8")
29+36 RT ~ 29+19 LT - 62'
W/ ONE 1/8 BEND, ONE 1/16 BEND, ONE 8X6 REDUCER

DUCTILE IRON PIPE, CEMENT-LINED (10")
29+52 RT ~ 29+47 RT - 32'
W/ ONE 10X6X10 TEE @ 29+52 - 38' RT,
ONE 1/8 BEND, ONE MECHANICAL COUPLING

DUCTILE IRON PIPE, CEMENT-LINED (12")
25+00 RT ~ 30+00 RT - 500'
W/ ONE 12X6X12 TEE @ 25+05 - 18' RT,
ONE 12X8X12 TEE @ 29+36 - 18' RT,
ONE 12X10X12 TEE @ 29+52 - 18' RT

GATE VALVE WITH VALVE BOX
25+05 RT - 6" VALVE
29+49 RT - 6" VALVE
29+23 LT - 8" VALVE
29+52 RT - 10" VALVE
29+31 RT - 12" VALVE
29+47 RT - 12" VALVE
29+56 RT - 12" VALVE

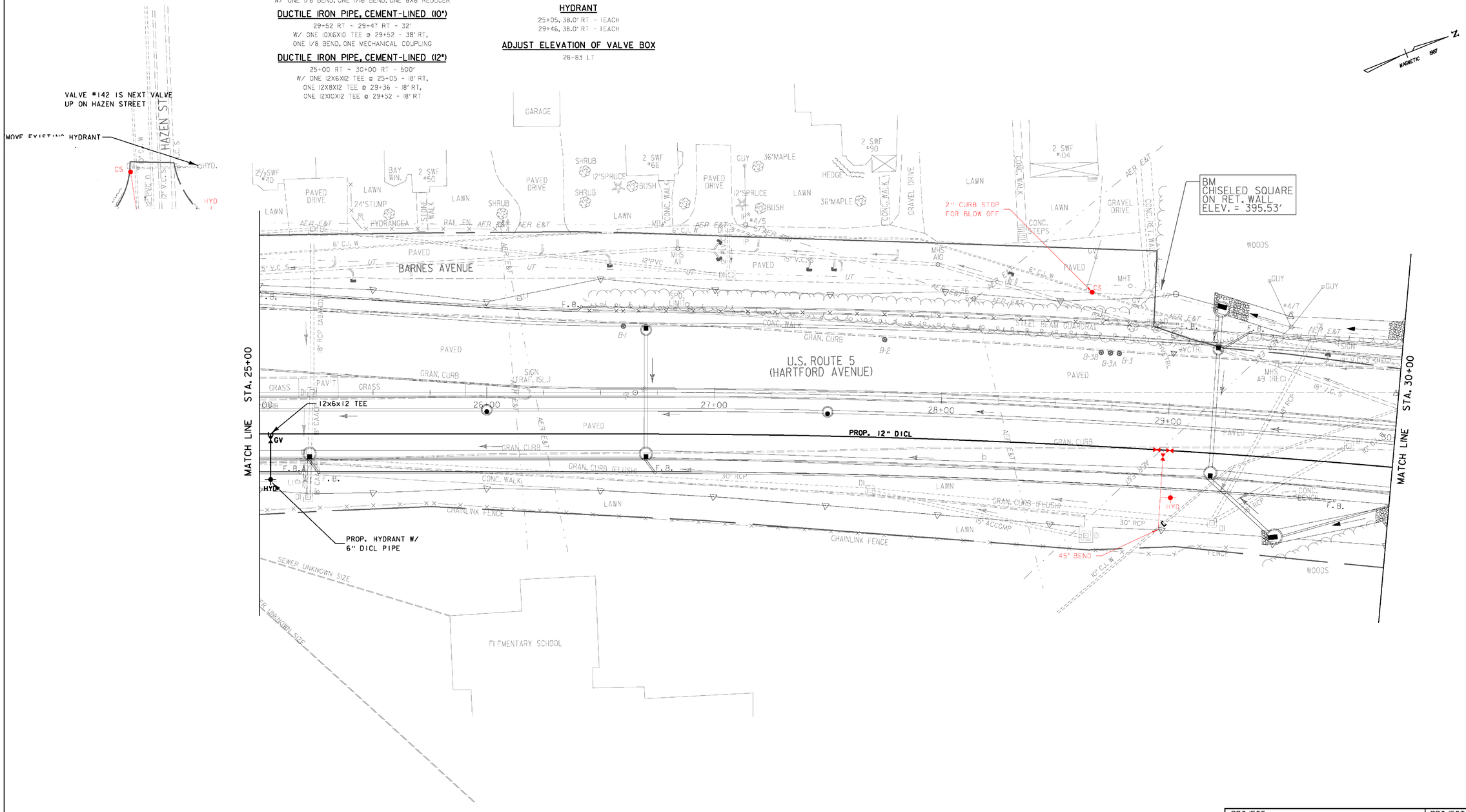
HYDRANT
25+05, 38.0' RT - 1EACH
29+46, 38.0' RT - 1EACH

ADJUST ELEVATION OF VALVE BOX
28+83 LT

VALVE #142 IS NEXT VALVE UP ON HAZEN STREET

MOVE EXISTING HYDRANT

HAZEN ST



MAGNETIC 1987

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

NOTES:
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2) REFER TO DRAINAGE AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND SEWER LAYOUT.

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SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 92 OF 239

WATER LAYOUT SHEET 3

DUCTILE IRON PIPE, CEMENT-LINED (6")
34+00 RT ~ 34+00 RT - 26'

DUCTILE IRON PIPE, CEMENT-LINED (12")
30+00 RT ~ 35+00 RT - 500'
W/ ONE 12X6X12 TEE

GATE VALVE WITH VALVE BOX
34+00 RT - 6' VALVE

HYDRANT
34+00, 44.0' RT - 1EACH

HIGHLAND AVE.
PAVED
STEEL BEAM GUARDRAIL
GRAVEL DRIVE
PAVED DRIVE
LAWN
LILAC
SIGN (ST. NAME)
12"OAK
8"OAK(3)
12"BEECH
24"POPLAR(2)
18"POPLAR(2)
12"POPLAR
15"PINE
(3)12"PINE
30"MAPLE
24"MAPLE
21"MAPLE
SIGN
12" W
15" PVC D
4" W. (ABAND)
HYD.
MH
DI
GUY
#1
#2
#3
#4
AER E&T
AERIAL PT. #2
BM #10A
SPIKE IN 18"PINE
ELEV. = 460.84'
CUT AND CAP
EXIST. WATER (TYP)
EXISTING VALVE 95
EXISTING VALVE 46
U.S. ROUTE 5
(HARTFORD AVENUE)
WOODS
CONC. WALK
PAVED WALK
GRASS PLOT
TRAV. INFO SIGN
GUY WIRE
GUY POLE
WARNING SIGN
CHAIN LINK FENCE
8" C.I. W
12" A.C. S
8" VCP
UNKNOWN SEWER
MH'S 886, 886A, 886B
MATCH LINE STA. 30+00
MATCH LINE STA. 35+00
PROP. 12" DICL
30+00
31+00
32+00
33+00
34+00
35+00
B-4
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-17
IRON PIN
ROW OF WHITE PINES
18"MAPLE(2)
42"MAPLE
10"MAPLE
12"MAPLE
3"APPLE
SLATE & CONC PATIO
WOOD FN.
ROW OF SHRUBS
HEDGE
GARAC
SHED
15"W.BIRCH
GARAGE
DECK
1½SWF
12"MAPLE(2)
CONC. WALK WITH STEPS
GRAVEL DRIVE
0 20 40
SCALE IN FEET

NOTES:
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2) REFER TO DRAINAGE AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND SEWER LAYOUT.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
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SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 93 OF 239

WATER LAYOUT SHEET 4

SEAMLESS COPPER WATER TUBE (3/4")
37+15 RT ~ 37+09 LT - 76'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
37+29 RT ~ 37+40 RT - 12'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
38+70 RT ~ 38+70 RT - 26'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP,
REMOVE EXISTING CURB STOP
38+97 RT ~ 38+97 RT - 26'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP,
REMOVE EXISTING CURB STOP

SEAMLESS COPPER WATER TUBE (3/4") (CONT.)
6+46 RT ~ 6+62 RT (WORCESTER AVE) - 86'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP,
REMOVE EXISTING CURB STOP AT PROPERTY LINE
6+49 RT ~ 6+41RT (WORCESTER AVE) - 10'
W/ ONE CORPORATION STOP
6+80 RT ~ 6+82 LT (WORCESTER AVE) - 8'
W/ ONE CORPORATION STOP

SEAMLESS COPPER WATER TUBE (1")
20+59 LT ~ 20+79 LT (HEBARD AVE) - 36'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP

DUCTILE IRON PIPE, CEMENT-LINED (6")
5+41LT ~ 5+43 LT (WORCESTER AVE) - 14'
6+83 RT ~ 6+92 RT (WORCESTER AVE) - 8'
W/ ONE MECHANICAL COUPLING
20+57 LT ~ 20+58 LT (HEBARD AVE) - 14'

DUCTILE IRON PIPE, CEMENT-LINED (8")
37+29 RT (HARTFORD AVE) ~ 6+83 RT (WORCESTER AVE) - 282'
W/ ONE 1/8 BEND, ONE 1'/16 BEND, ONE 8X6X8 TEE, ONE 8X6 REDUCER
39+80 RT (HARTFORD AVE) ~ 20+66 LT (HEBARD AVE) - 84'
W/ ONE 8X6X8 TEE, ONE CAP
11+15 RT ~ 11+21RT (HIGHLAND AVE) - 12'
W/ ONE 1/8 BEND, ONE MECHANICAL COUPLING

DUCTILE IRON PIPE, CEMENT-LINED (12")
35+00 RT ~ 40+00 RT - 500'
W/ TWO 12X8X12 TEE, ONE 12X12X12 TEE
38+10 RT (HARTFORD AVE) ~ 11+20 RT (HIGHLAND AVE) - 130'
W/ ONE 12X12X12 TEE
11+21RT ~ 11+75 LT (HIGHLAND AVE) - 68'
W/ THREE 1/8 BEND, ONE MECHANICAL COUPLING,
ONE 12X8 REDUCER

GATE VALVE WITH VALVE BOX
5+42 LT (WORCESTER AVE) - 6" VALVE
20+57 LT (HEBARD AVE) - 6" VALVE
37+29 RT - 8" VALVE
39+80 RT - 8" VALVE
1/2SWF6+69 RT (WORCESTER AVE) - 8" VALVE #19
20+62 LT (HEBARD AVE) - 8" VALVE
37+22 RT - 12" VALVE
37+35 RT - 12" VALVE
38+18 RT - 12" VALVE
39+73 RT - 12" VALVE
39+86 RT - 12" VALVE
11+14 RT (HIGHLAND AVE) - 12" VALVE
11+16 LT (HIGHLAND AVE) - 12" VALVE
11+69 LT (HIGHLAND AVE) - 12" VALVE

CUT AND CAP EXIST. WATER (TYP)
MECHANICAL TRANSITION COUPLING TO EXIST. 12" DI WATER
MECHANICAL TRANSITION COUPLING TO EXIST. 8" CI WATER
REMOVE EXIST. TEE
1/8 BENDS
12x12x12 TEE
12x8 REDUCER
PROP. HYDRANT (MOD. - YARD HYDRANT) WITH METER PIT (MOD.) AND ONE STEEL MARKER POST
PROP. 12" DICL
PROP. HYDRANT W/ 6" DICL PIPE
PROP. 1" SEAMLESS COPPER WATER TUBE SERVICE TO CONNECT TO EXISTING 1" COPPER SERVICE
8x6x8 TEE
EXISTING VALVE 119A
12x12x12 TEE
12x8x12 TEE
AS PER PLAN
PROP. 8" DICL
PROP. HYDRANT (MOD. - YARD HYDRANT) WITH METER PIT (MOD.) AND ONE STEEL MARKER POST
1/8 BEND
45° BEND
CAP EXISTING 6" WATER
8X6 REDUCER
MECHANICAL TRANSITION COUPLING TO EXIST. 6" CI WATER
TOWN EXTENDED AND REPLACED WATER MAIN
CONNECT EXIST. HOUSE SERVICES
NEW 3/4" SEAMLESS COPPER WATER TUBE SERVICE
CUT AND CAP EXISTING 6" WATER
PROP. HYDRANT W/ 6" DICL PIPE
TBM BOUND ELEV. = 490.87'

HYDRANT
5+42.7, 20' LT (WORCESTER AVE) - 1EACH
20+57.5, 15' LT (HEBARD AVE) - 1EACH

HYDRANT (MOD. - YARD HYDRANT)
37+09 - 54.5' LT - 1EACH
37+40 - 60.0' RT - 1EACH

HYDRANT, REMOVE
38+68 LT - 1EACH

METER PIT (MOD.)
37+07 - 51.8' LT - 1EACH
37+37 - 60.0' RT - 1EACH

MATCH LINE STA. 35+00
MATCH LINE STA. 40+00
HIGHLAND AVE.
HEBARD AVE.
WORCESTER AVE.
U.S. ROUTE 5 (HARTFORD AVENUE)

SCALE IN FEET: 0 20 40

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:
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2)

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SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 94 OF 239

WATER LAYOUT SHEET 5

SEAMLESS COPPER WATER TUBE (3/4")
40+51RT ~ 40+47 LT - 58'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
42+03 RT ~ 41+95 RT - 34'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
43+67 RT ~ 43+60 RT - 28'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP

SEAMLESS COPPER WATER TUBE (1")
40+56 RT ~ 40+58 RT - 22'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
42+92 RT ~ 42+92 LT - 48'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP

DUCTILE IRON PIPE, CEMENT-LINED (6")
44+70 RT ~ 44+70 RT - 24'

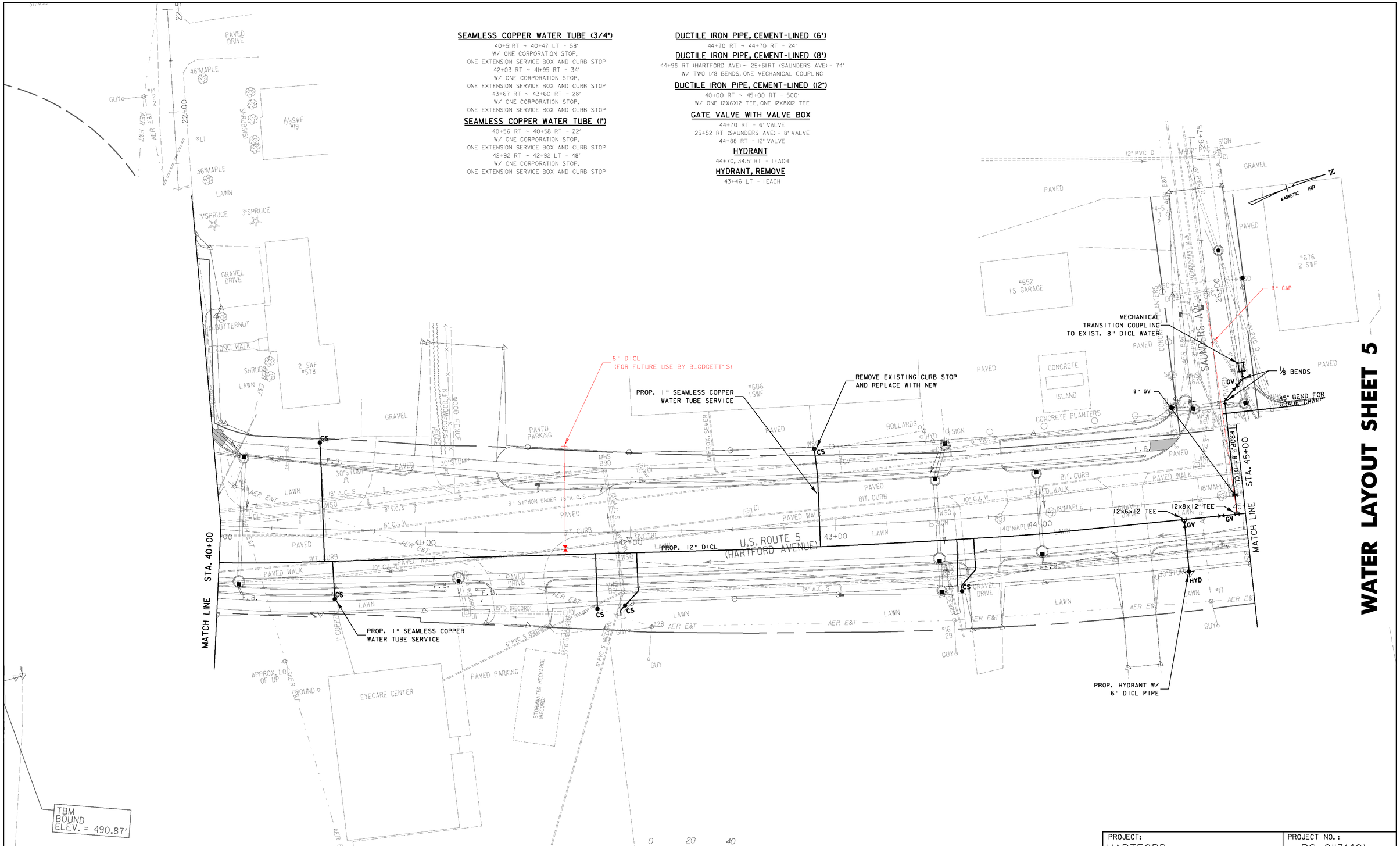
DUCTILE IRON PIPE, CEMENT-LINED (8")
44+96 RT (HARTFORD AVE) ~ 25+61RT (SAUNDERS AVE) - 74'
W/ TWO 1/8 BENDS, ONE MECHANICAL COUPLING

DUCTILE IRON PIPE, CEMENT-LINED (12")
40+00 RT ~ 45+00 RT - 500'
W/ ONE 12X6X12 TEE, ONE 12X8X12 TEE

GATE VALVE WITH VALVE BOX
44+70 RT - 6" VALVE
25+52 RT (SAUNDERS AVE) - 8" VALVE
44+88 RT - 12" VALVE

HYDRANT
44+70, 34.5' RT - 1EACH

HYDRANT, REMOVE
43+46 LT - 1EACH



DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

NOTES:

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SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 95 OF 239

WATER LAYOUT SHEET 6

SEAMLESS COPPER WATER TUBE (3/4")
45+19 RT ~ 45+09 RT - 30'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
46+58 RT ~ 46+58 RT - 24'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
46+85 RT ~ 46+86 LT - 50'
W/ ONE CORPORATION STOP,
RETAIN EXISTING CURB STOP
47+15 RT ~ 47+06 LT - 54'
W/ ONE CORPORATION STOP,
RETAIN EXISTING CURB STOP
47+85 RT ~ 47+85 LT - 46'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
47+93 RT ~ 47+93 RT - 24'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
48+41RT ~ 48+41LT - 52'
W/ ONE CORPORATION STOP,
RETAIN EXISTING CURB STOP
48+89 RT ~ 48+89 RT - 26'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
49+68 RT ~ 49+68 LT - 46'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP

DUCTILE IRON PIPE, CEMENT-LINED (6")
30+29 LT (PIERCE ST) ~ 48+87 LT (HARTFORD AVE) - 18'

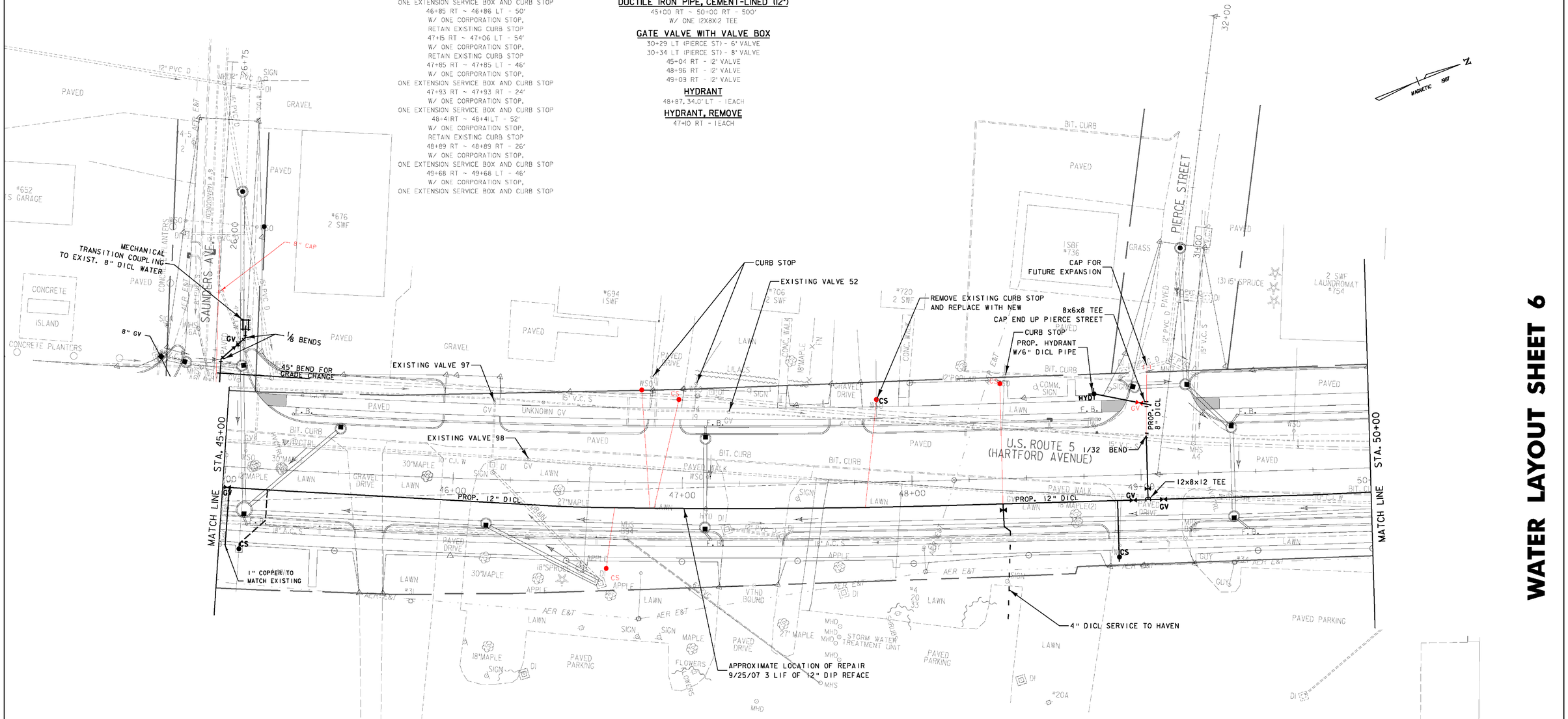
DUCTILE IRON PIPE, CEMENT-LINED (8")
49+03 RT (HARTFORD AVE) ~ 30+39 LT (PIERCE ST) - 58'
W/ ONE 8X6X8 TEE, ONE 1/32 BEND, ONE CAP

DUCTILE IRON PIPE, CEMENT-LINED (12")
45+00 RT ~ 50+00 RT - 500'
W/ ONE 12X8X12 TEE

GATE VALVE WITH VALVE BOX
30+29 LT (PIERCE ST) - 6" VALVE
30+34 LT (PIERCE ST) - 8" VALVE
45+04 RT - 12" VALVE
48+96 RT - 12" VALVE
49+09 RT - 12" VALVE

HYDRANT
48+87, 34.0' LT - 1EACH

HYDRANT, REMOVE
47+10 RT - 1EACH



DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

NOTES:
1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED WATER CONSTRUCTION NOTES AND LEGEND.
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SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 96 OF 239

SEAMLESS COPPER WATER TUBE (3/4")
50+10 RT ~ 50+13 RT - 26'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
50+36 RT ~ 50+35 RT - 26'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
51+03 RT ~ 51+03 LT - 46'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
51+09 RT ~ 51+08 RT - 24'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
51+93 RT ~ 51+97 LT - 46'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
53+62 RT ~ 53+62 LT - 56'
W/ ONE CORPORATION STOP,
RETAIN EXISTING CURB STOP
54+31RT ~ 54+31LT - 46'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP

SEAMLESS COPPER WATER TUBE (1 1/2")
35+38 LT ~ 35+45 LT (GOUDREAU ST) - 12'
W/ ONE CORPORATION STOP
ONE EXTENSION SERVICE BOX AND CURB STOP
40+43 RT ~ 40+60 RT (DEVIN ST) - 24'
W/ ONE CORPORATION STOP, ONE CURB STOP
53+87 RT ~ 53+87 RT - 26'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP

SEAMLESS COPPER WATER TUBE (2")
50+15 RT ~ 50+15 LT - 52'
W/ ONE CORPORATION STOP

DUCTILE IRON PIPE, CEMENT-LINED (6")
51+88 RT ~ 51+88 RT - 26'
40+41LT ~ 40+41RT (DEVIN ST) - 18'

DUCTILE IRON PIPE, CEMENT-LINED (8")
52+16 RT (HARTFORD AVE) ~ 35+46 LT (GOUDREAU ST) - 36'
W/ ONE 1/32 BEND, ONE CAP
54+89 RT (HARTFORD AVE) ~ 40+49 LT (DEVIN ST) - 40'
W/ ONE 8X6X8 TEE, ONE CAP

DUCTILE IRON PIPE, CEMENT-LINED (12")
50+00 RT ~ 55+00 RT - 500'
W/ ONE 12X6X12 TEE,
TWO 12X8X12 TEE

GATE VALVE WITH VALVE BOX
51+88 RT - 6" VALVE
40+41RT (DEVIN ST) - 6" VALVE
35+41LT (GOUDREAU ST) - 8" VALVE
40+45 LT (DEVIN ST) - 8" VALVE
52+09 RT - 12" VALVE
52+22 RT - 12" VALVE
54+82 RT - 12" VALVE
54+95 RT - 12" VALVE

HYDRANT
51+88, 34.5' RT - 1EACH
40+41.1, 17.6' RT (DEVIN ST) - 1EACH

HYDRANT (MOD. - YARD HYDRANT)
50+13 - 33.7' RT - 1EACH

HYDRANT, REMOVE
51+95 RT - 1EACH

METER PIT (MOD.)
50+10 - 33.7' RT - 1EACH

BM #12A
BLDG. COR. BLOCK
ELEV. = 492.03'

REMOVE
NEW CURB STOP
PROP. 2" SEAMLESS COPPER WATER TUBE SERVICE
PROP. HYDRANT (MOD. - YARD HYDRANT) WITH METER PIT (MOD.) AND ONE STEEL MARKER POST
PROP. HYDRANT W/ 6" DICL PIPE
PROVIDE SEGMENT OF 8" DICL AFTER VALVE AND BEYOND DRAIN TO FACILIATE 1½" TAP FOR EXISTING GOUDREAU STREET SERVICE CAP 8" DICL FOR FUTURE EXPANSION
EXISTING VALVE 74
PROP. 8" DICL
PROP. 1½" SEAMLESS COPPER WATER TUBE CONNECT TO EXIST. 1½" WATER FOR GOUDREAU STREET SERVICE
PROP. 1½" SEAMLESS COPPER WATER TUBE W/ SHUTOFF
EXISTING VALVE 53
PROP. HYDRANT W/ 6" DICL PIPE
PROP. 1½" SEAMLESS COPPER WATER TUBE W/ SHUTOFF CONNECT TO EXIST. 1½" COPPER FOR DEVIN STREET SERVICE
11.5 BEND
12x6x12 TEE
12x8x12 TEE
8x6x8 TEE
PROP. 12" DICL
PROP. 8" DICL
EXISTING SIGHT EASEMENT (IP)
U.S. ROUTE 5 (HARTFORD AVENUE)
GOUDREAU STREET
DEVIN STREET
MATCH LINE STA. 50+00
MATCH LINE STA. 55+00

WATER LAYOUT SHEET 7

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:
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DRAWN BY: E. ATKINS
SHEET: 97 OF 239

SEAMLESS COPPER WATER TUBE (3/4")
55+63 RT ~ 55+63 RT - 24'
W/ ONE CORPORATION STOP,
RETAIN EXISTING CURB STOP
55+91RT ~ 55+91LT - 58'
W/ ONE CORPORATION STOP,
RETAIN EXISTING CURB STOP
57+31RT ~ 57+31RT - 22'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP
57+36 RT ~ 57+36 LT - 58'
W/ ONE CORPORATION STOP,
ONE EXTENSION SERVICE BOX AND CURB STOP

SEAMLESS COPPER WATER TUBE (1 1/2")
57+84 RT ~ 57+84 RT - 22'
W/ ONE CORPORATION STOP,
RETAIN EXISTING CURB STOP

SEAMLESS COPPER WATER TUBE (2")
45+44 LT ~ 45+61LT (ADVENT LN) - 16'
W/ ONE CORPORATION STOP, ONE CURB STOP

DUCTILE IRON PIPE, CEMENT-LINED (4")
55+38 LT ~ 55+29 LT - 50'
W/ TWO 1/8 BENDS

DUCTILE IRON PIPE, CEMENT-LINED (6")
45+43 LT ~ 45+42 LT (ADVENT LN) - 14'
50+41LT ~ 50+47 LT (HEWITT ST) - 6'
W/ ONE MECHANICAL COUPLING

DUCTILE IRON PIPE, CEMENT-LINED (8")
58+15 RT (HARTFORD AVE) ~ 45+51LT (ADVENT LN) - 38'
W/ ONE 1/32 BEND, ONE 8X6X8 TEE, ONE CAP
58+23 RT (HARTFORD AVE) ~ 50+41LT (HEWITT ST)- 54'
W/ TWO 1/8 BENDS, ONE 8X6 REDUCER

DUCTILE IRON PIPE, CEMENT-LINED (10")
58+53 RT ~ 58+76 RT - 38'
W/ TWO 1/8 BENDS, ONE MECHANICAL COUPLING

DUCTILE IRON PIPE, CEMENT-LINED (12")
55+00 RT ~ 58+62 RT - 362'
W/ ONE 12X4X12 TEE, TWO 12X8X12 TEES,
ONE 12X10X12 TEE, ONE CAP

GATE VALVE WITH VALVE BOX
55+29 LT - 4" VALVE
45+43 LT (ADVENT LN) - 6" VALVE
50+36 LT (HEWITT ST) - 8" VALVE
45+46 LT (ADVENT LN) - 8" VALVE
58+64 RT - 10" VALVE
58+11RT - 12" VALVE
58+57 RT - 12" VALVE

HYDRANT
45+41.7, 15.3' LT (ADVENT LN) - 1EACH

HYDRANT, REMOVE
58+31RT - 1EACH

ADJUST ELEVATION OF VALVE BOX
45+55 LT (ADVENT LN)

WATER LAYOUT SHEET 8

MATCH LINE STA. 55+00

MATCH LINE STA. 60+00

1SWF COMPUTER CONNECTION, INC. #860

KEY COMMUNICATIONS #878

2 SWF

1SBF MOBIL GAS STATION #906

PAVED DRIVE

GARAGE

12"SPRUCE

1SWF #31

FLOWER GARDEN

LAWN

30"DGW

52+00

AEP E&T

POLE

PAVED

24"B.ELDER

IP

FILLER CAPS

SHRUBS

WOODS

51+00

12"MP

HEWITT STREET

SIGN

(2) SHRUBS

CURB STOP

WSO

EXISTING R.O.W.

REMOVE EXISTING CURB STOP AND REPLACE WITH NEW

MECHANICAL TRANSITION COUPLING TO EXIST. 6" CI WATER

EXISTING VALVE 100

EXISTING VALVE 73

8x6 REDUCER

LAWN

WD. SIGN BASE

CONC. PAD

CS

GS

10" PVC SEWER FORCE MAIN

WOOD POSTS

MHS 898

18" A.C. S

(5) SHRUBS

GRASS

EXISTING VALVE 54

45° BEND

WILL NEED TO CLOSE VALVE #55 ON EXIST. 6"CI

6" C.I.W

18" V.C. S

56+00

57+00

58+00

59+00

60+00

PROP. 12" DICL

U.S. ROUTE 5 (HARTFORD AVENUE)

12" S (ABAND.)

12X10 REDUCER

10" GATE VALVE

45°BENDS

PROP. HYDRANT W/ 6" DICL PIPE

EXISTING VALVE 99

REPLACE EXISTING CURB STOP AND BOX

PROP. 1½" SEAMLESS COPPER WATER TUBE

NEW CURB STOP

PROP. 8" DICL

1/32 BEND

8x6x8 TEE

F.H.

P.B.

4P25 38 VTHD BOUND

NEW CURB STOP

#26 39

10" OAK

10" MAPLE

PAVED WALK

CONCRETE WALK

CURB

ADVENT LANE

ISBF FUNERAL HOME #903

ISBF #863

CEMETERY

PAVED DRIVE

S68°50'55.2"E 100.00'

S85°06'59.8"E 100.00'

PI Sta. 46+00.00

46+00

MAGNETIC 1987

0 20 40

SCALE IN FEET

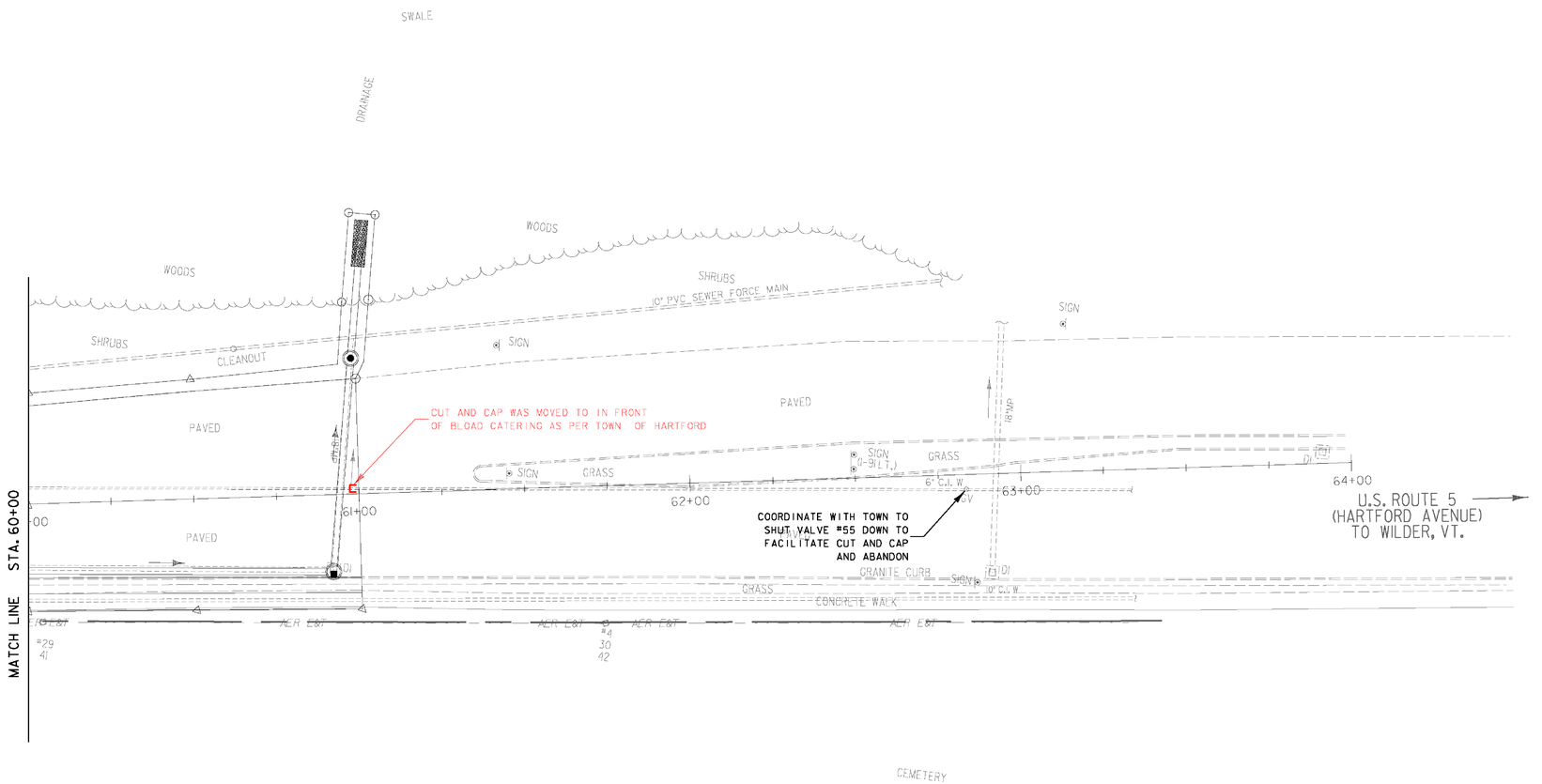
NOTES:

1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED WATER CONSTRUCTION NOTES AND LEGEND. REFER TO DRAINAGE AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND SEWER LAYOUT.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027watbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 4/11/2012
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 98 OF 239

WATER LAYOUT SHEET 9



DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

0 20 40

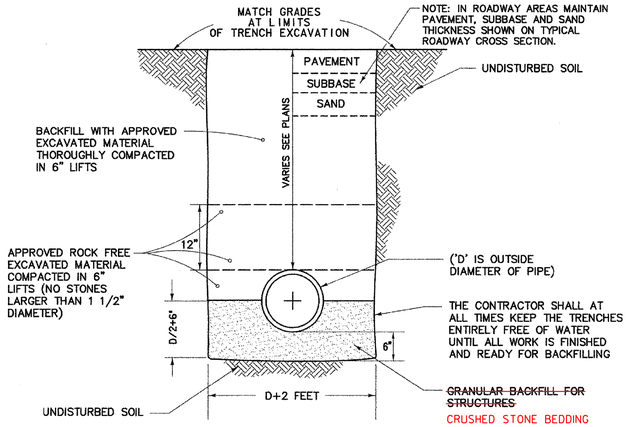
SCALE IN FEET

NOTES:

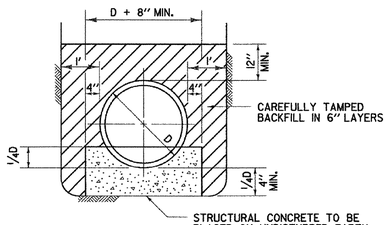
1) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED WATER CONSTRUCTION NOTES AND LEGEND.
2) REFER TO DRAINAGE AND SANITARY SEWER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND SEWER LAYOUT.

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027watbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 4/11/2012
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 99 OF 239

SEWER DETAILS



TYPICAL SANITARY SEWER TRENCH

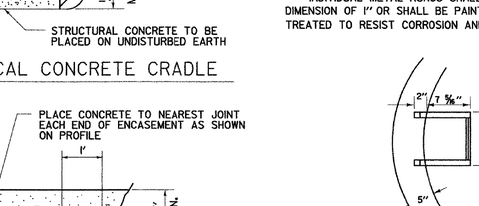


TYPICAL CONCRETE CRADLE

NOTE : PIPE SHALL BE SECURELY BRACED VERTICALLY AND HORIZONTALLY TO PREVENT FLOTATION DURING CONCRETE PLACEMENT.

TYPICAL CONCRETE ENCASEMENT

FOR NEW PIPE LARGER THAN EXISTING PIPE



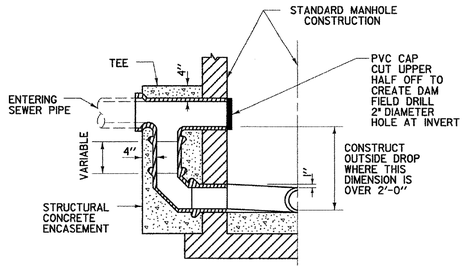
SIMILAR SIZE PIPES

NEW PIPE CONNECTION TO EXISTING PIPE

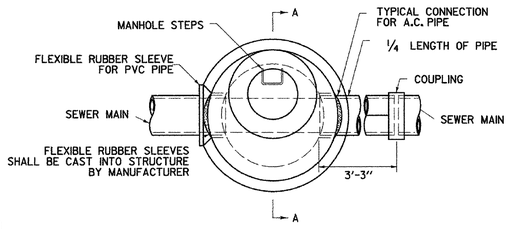
ALUMINUM STEP (DROP FRONT)

* - INDIVIDUAL METAL RUNGS SHALL HAVE A MINIMUM DIMENSION OF 1" OR SHALL BE PAINTED OR OTHERWISE TREATED TO RESIST CORROSION AND RUSTING.

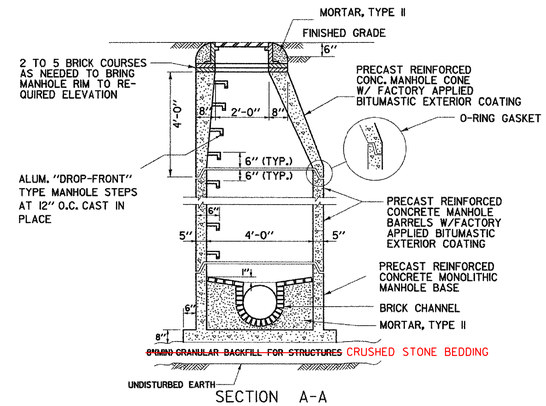
STEP DETAIL
TOP VIEW



OUTSIDE MANHOLE DROP DETAIL

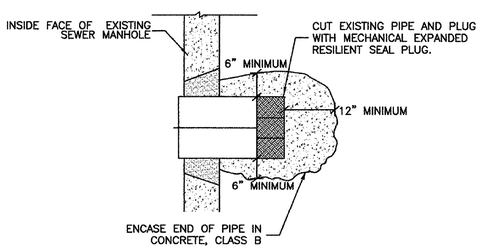


PLAN

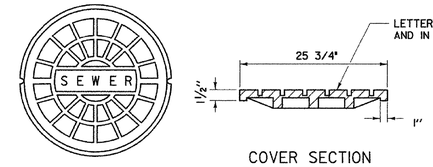


SECTION A-A

PRECAST REINFORCED CONCRETE SANITARY SEWER MANHOLE

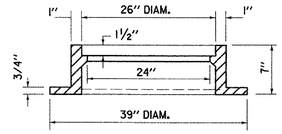


ABANDONMENT OF
EXISTING SEWER OR DRAIN PIPE CONNECTION



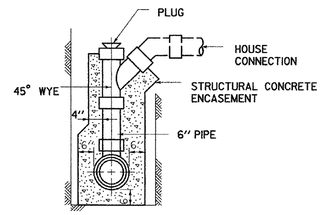
COVER PLAN

COVER SECTION

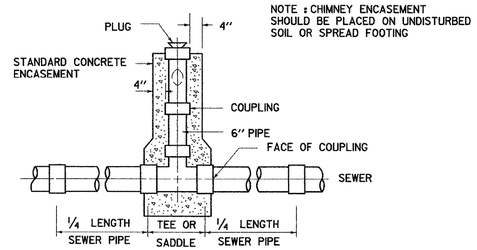


FRAME SECTION

MANHOLE FRAME AND COVER DETAIL

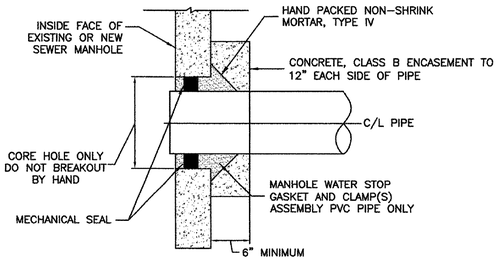


SECTION



ELEVATION

CHIMNEY DETAILS FOR
HOUSE SEWER CONNECTION



NEW PIPE CONNECTION TO EXISTING
SEWER OR DRAIN STRUCTURES

NOTES :

TRENCH EXCAVATION AND BACKFILLING OF SEWER PIPE SHALL BE AS SPECIFIED UNDER SECTION 628.

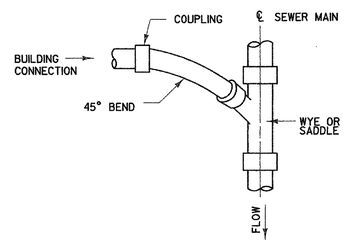
WHERE NEW SEWER MANHOLES ARE TO BE INSTALLED OVER EXISTING PIPES, INSTALLATION OF MANHOLES OVER EXISTING PIPES SHALL INCLUDE CLEAN CUTTING OF EXISTING PIPES, PROVIDING AN EXTENSION PIPE OF SIMILAR MATERIAL AND SIZE AS THE EXISTING PIPE, COUPLINGS REQUIRED FOR THE CONNECTION BETWEEN THE EXTENSION PIPE AND THE EXISTING PIPE, AND INSTALLING FLEXIBLE RUBBER SLEEVES AS SHOWN IN DETAILS PROVIDED.

CONCRETE ENCASEMENT OF SEWER LINES WILL BE REQUIRED WHERE THEY CROSS STORM DRAINS, WATER PIPES, OR OTHER STRUCTURES IN SUCH A MANNER AS TO IMPOSE UNUSUAL LOADING ON THE SEWER PIPE.

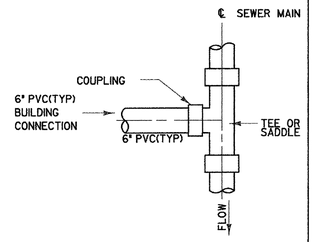
EMBANKMENTS SHALL BE COMPLETED AND COMPACTED TO AN ELEVATION AT LEAST 12 INCHES ABOVE THE TOP OF THE SEWER PIPE PRIOR TO EXCAVATING A TRENCH IN WHICH TO INSTALL THE PIPE

CHIMNEY DETAIL FOR HOUSE SEWER CONNECTION SHALL BE USED ONLY AS SHOWN ON THE PLANS OR WHEN DIRECTED BY THE ENGINEER.

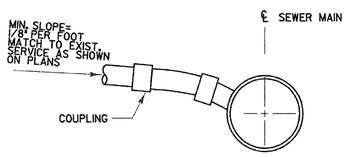
BUILDING CONNECTIONS TO BE TEE, WYE OR SADDLE AS APPROVED BY THE ENGINEER, AND COMPATIBLE WITH EXISTING FACILITIES.



PLAN

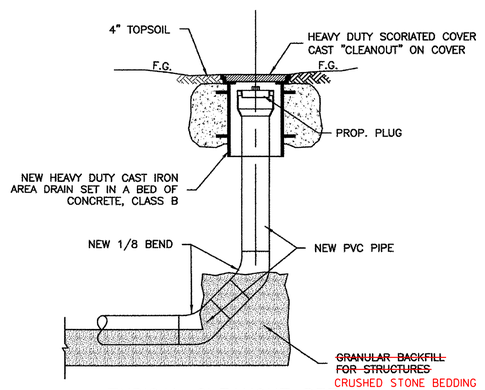


PLAN



ELEVATION

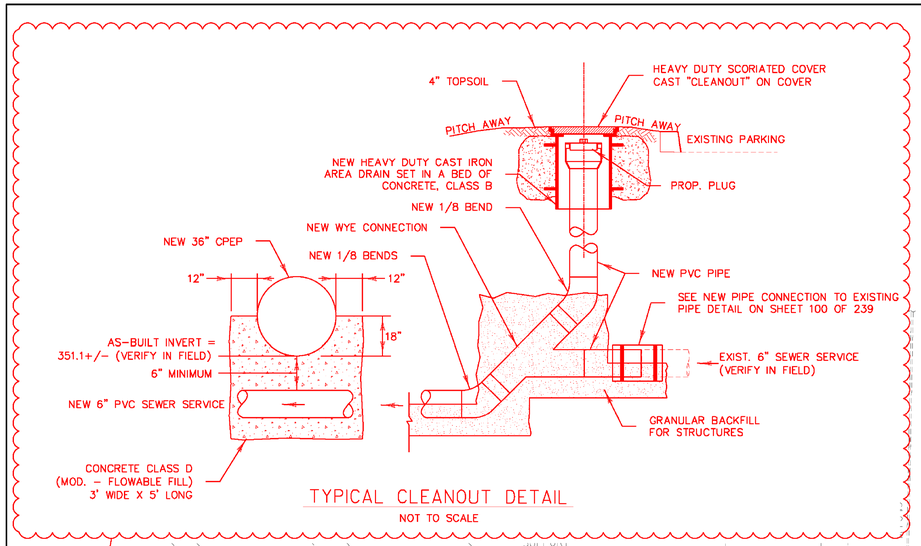
TYPICAL BUILDING SEWER CONNECTION



TYPICAL CLEANOUT DETAIL

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027sewdetls.DGN	
IPARM FILE NAME:	PLOT DATE: 1/10/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET:100 OF 239



TYPICAL CLEANOUT DETAIL

NOT TO SCALE

2

SANITARY SEWER MANHOLE 2
MHS D2 - 22+95.0, 2.5' RT
MHS C2 - 24+54.8, 59.2' LT
MHS DIA - 21+28.1, 50.0' RT

SANITARY SEWER MANHOLE (MOD. - OUTSIDE DROP)
MHS D1 - 24+64.0, 41.5' RT

PVC SEWER PIPE (6") 2
5A 22+82.3 RT ~ 22+80.6 LT - 94'
6A 23+07.1LT ~ 23+08.5 LT - SEE NOTES 4&5
7A 24+07.0 LT ~ 24+08.4 LT - SEE NOTES 4&5

PVC SEWER PIPE (8") 2
1A 21+28.0 LT ~ 24+54.8 LT - 328'
2A 24+54.8 LT ~ 24+64.0 LT - 6'

PVC SEWER PIPE (15")
1 24+64.0 RT ~ 24+54.7 RT - 10'
2 24+95.0 RT ~ 24+64.0 RT - 46'
3 26+00.0 RT ~ 24+95.0 RT - 106'

REHABING DI,CB OR MH CLASS III
MHS D3 - 24+54.7, 46.3' RT

CHANGING ELEVATION OF SEWER MANHOLE 2
24+64 LT
MHS A13 - 24+64.0, 45.3' LT
CREATE NEW PIPE PENETRATION
EXIST. MHS AT VT14 - 21+28.0, 34.0' LT
CREATE NEW PIPE PENETRATION

MHS C2
RIM=360.9+/-
INV (IN) =351.55 (EXIST. 12"VC)
INV (OUT) =351.51 (EXIST. 12"VC)
INV (IN) =348.08 (NEW 8"PVC)
INV (OUT) =347.98 (NEW 8"PVC)

PROP. 8" PVC
MHS A13 (SEE NOTE 7)
RIM=361.6+/-
INV (IN) =351.60 (EXIST. 15"VC)
INV (IN) =347.72 (EXIST. 18"ACS)
INV (IN) =347.95 (NEW 8"PVC) - SEE NEW PIPE CONNECTION TO EXISTING SEWER OR DRAIN STRUCTURES DETAIL ON SHEET 100 OF 239
INV (OUT) =347.72 (EXIST. 18"ACS)

BM
SIGN BOLT
ELEV. = 361.62'

TRAF. EXIST. MHS (SEE NOTE 7)
RIM=360.0+/-
INV (IN) =349.76 (EXIST. 12"VC)
INV (IN) =349.72 (EXIST. 12"VC FROM MHS C2)
INV (OUT) =349.62 (EXIST. 12"VC)
INV (OUT) =349.72 (NEW 8"PVC) - SEE NEW PIPE CONNECTION TO EXISTING SEWER OR DRAIN STRUCTURES DETAIL ON SHEET 100 OF 239
RESONSTRUCT BRICK SHELF AND CHANNEL
ABANDON EXIST. SEWER

MANHOLE ADDED TO AVOID EXISTING FIBER OPTIC

MHS DIA
RIM=359.8+/-
CONNECT DOWNSTREAM END OF EXIST PIPE TO MANHOLE (VERIFY IN FIELD)

CLEANOUT
RIM=358.7+/-
INV (IN) =354.51 (EXIST. 6" SERVICE - VERIFY IN FIELD)
INV (OUT) =350.21 (NEW 6" PVC)
REMOVE EXIST. DI AND REPLACE WITH CLEANOUT

CUT AND PLUG (TYP.)

REMOVE PIPE

PROP. 15" PVC

REHAB MANHOLE CLASS III

MATCH LINE STA. 25+00

POB Sta 100+00.00
PI Sta 100+10.52

HAZEN ST.
BARNES AVE.
U.S. ROUTE 5 (HARTFORD AVENUE)
U.S. ROUTE 4 TO NEW HAMPSHIRE
WHITE RIVER
PAVED PARKING LOT
RETAIL MALL
PAVED PARKING

19+00 20+00 21+00 22+00 23+00 24+00

0 20 40
SCALE IN FEET

MAGNETIC 1987

SANITARY SEWER LAYOUT SHEET 1

NOTES:

1) STATION AND OFFSETS FOR ALL MANHOLES ARE GIVEN TO THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL ROTATE THE TOP SECTIONS SUCH THAT THE FINAL LOCATION OF THE MANHOLE COVER IS NOT WITHIN THE PREDOMINANT VEHICLE WHEEL PATH.
2) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED SEWER CONSTRUCTION NOTES.
3) REFER TO DRAINAGE AND WATER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND WATER LAYOUT.
4) THE LOCATION OF EXISTING SEWER SERVICES SHOWN WERE PROVIDED BY THE TOWN OF HARTFORD BASED ON VIDEO INSPECTION. NOT ALL SERVICES SHOWN ARE ACTIVE; NEW CONNECTIONS TO INACTIVE SERVICES ARE NOT NEEDED. THE CONTRACTOR SHALL INSTALL NEW SERVICES AS DIRECTED BY THE ENGINEER.
5) THE LENGTH AND LOCATION OF THE NEW 6" PVC SEWER SERVICES SHALL BE DETERMINED IN FIELD AND/OR AS DIRECTED BY THE ENGINEER. SEE ALSO NOTE 10F THE PROPOSED SEWER CONSTRUCTION NOTES ON SHEET 77 OF 239.
6) ALL EXISTING INVERTS SHOWN ON THIS PLAN WERE PROVIDED BY VTRANS BASED ON FIELD MEASUREMENTS.
7) THE CONTRACTOR SHALL PROVIDE THE NECESSARY LATERAL SUPPORT FOR THE STRUCTURE (MHS A13) DURING EXCAVATION AND THE INSTALLATION OF THE NEW 8" SEWER PIPE.

2 ADDENDUM #2: REVISED JUNE 5, 2008

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027sewbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI — SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL — DRAWN BY: E. ATKINS
PLOT DATE: 4/17/2012
SHEET: 101 OF 239

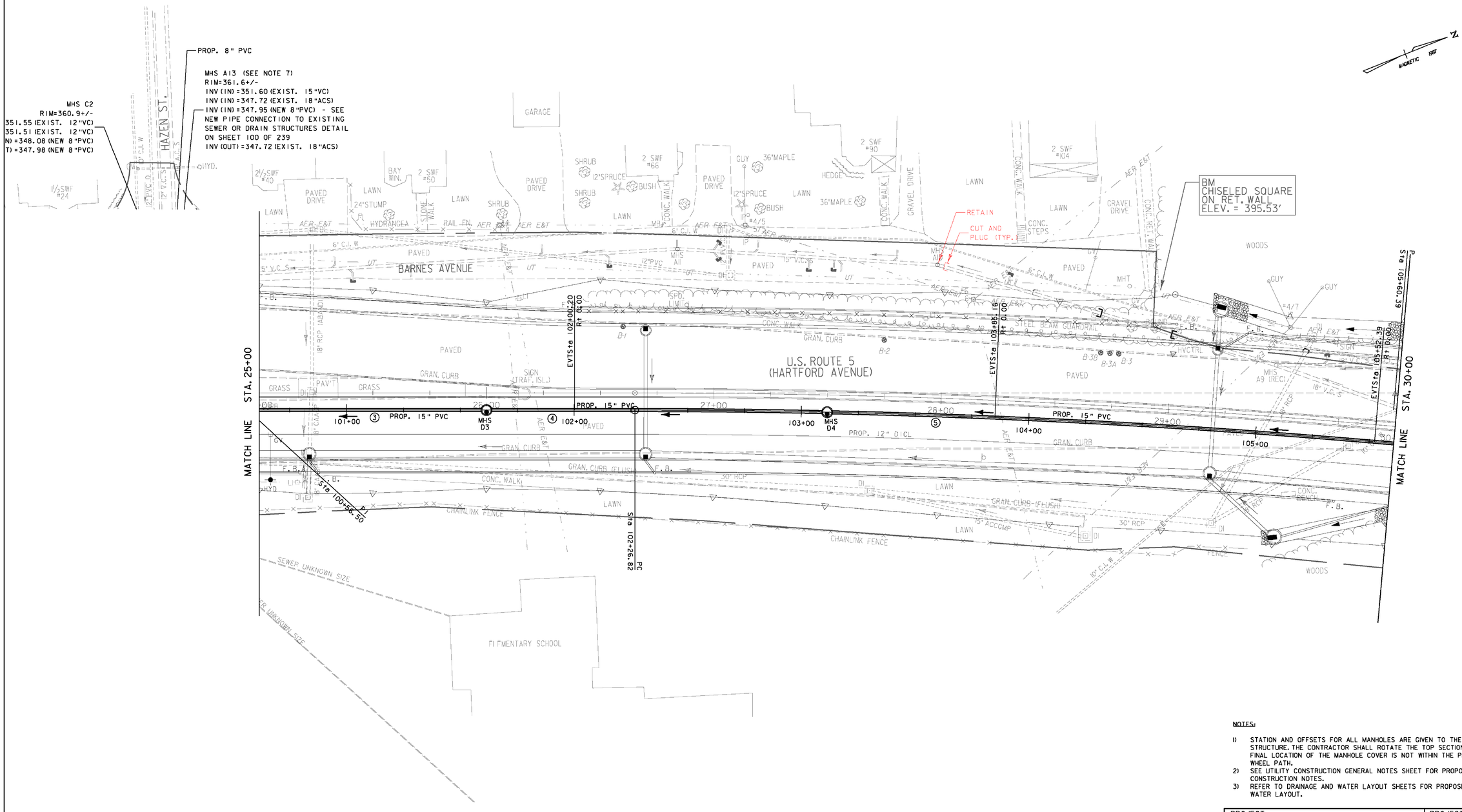
SANITARY SEWER LAYOUT SHEET 2

SANITARY SEWER MANHOLE
MHS D4 - 27+50.0, 7.5' RT

SANITARY SEWER MANHOLE (MOD. - OUTSIDE DROP)
MHS D3 - 26+00.0, 7.5' RT

CHANGING ELEVATION OF SEWER MANHOLE
29+46 LT

PVC SEWER PIPE (15")
③ 26+00.0 RT ~ 24+95.0 RT - 106'
④ 27+50.0 RT ~ 26+00.0 RT - 150'
⑤ 30+30.0 RT ~ 27+50.0 RT - 280'



NOTES:

1) STATION AND OFFSETS FOR ALL MANHOLES ARE GIVEN TO THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL ROTATE THE TOP SECTIONS SUCH THAT THE FINAL LOCATION OF THE MANHOLE COVER IS NOT WITHIN THE PREDOMINANT VEHICLE WHEEL PATH.
2) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED SEWER CONSTRUCTION NOTES.
3) REFER TO DRAINAGE AND WATER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND WATER LAYOUT.

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

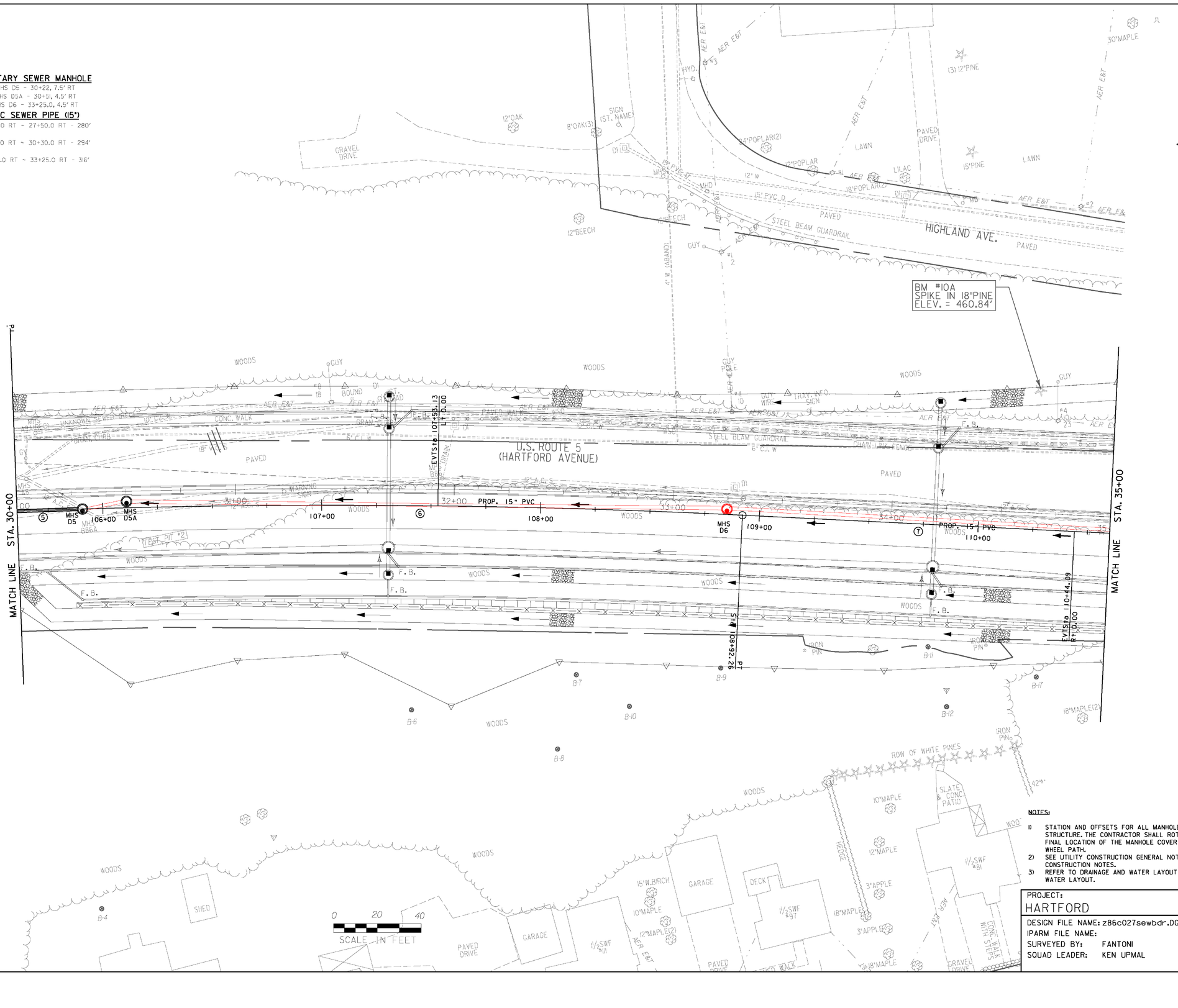
PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027sewbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI — SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL — DRAWN BY: E. ATKINS
PLOT DATE: 4/11/2012
SHEET: 102 OF 239

SANITARY SEWER LAYOUT SHEET 3

SANITARY SEWER MANHOLE
MHS D5 - 30+22.7, 5' RT
MHS D5A - 30+51, 4.5' RT
MHS D6 - 33+25.0, 4.5' RT

PVC SEWER PIPE (15")
⑤ 30+30.0 RT ~ 27+50.0 RT - 280'
⑥ 33+25.0 RT ~ 30+30.0 RT - 294'
⑦ 36+40.0 RT ~ 33+25.0 RT - 316'

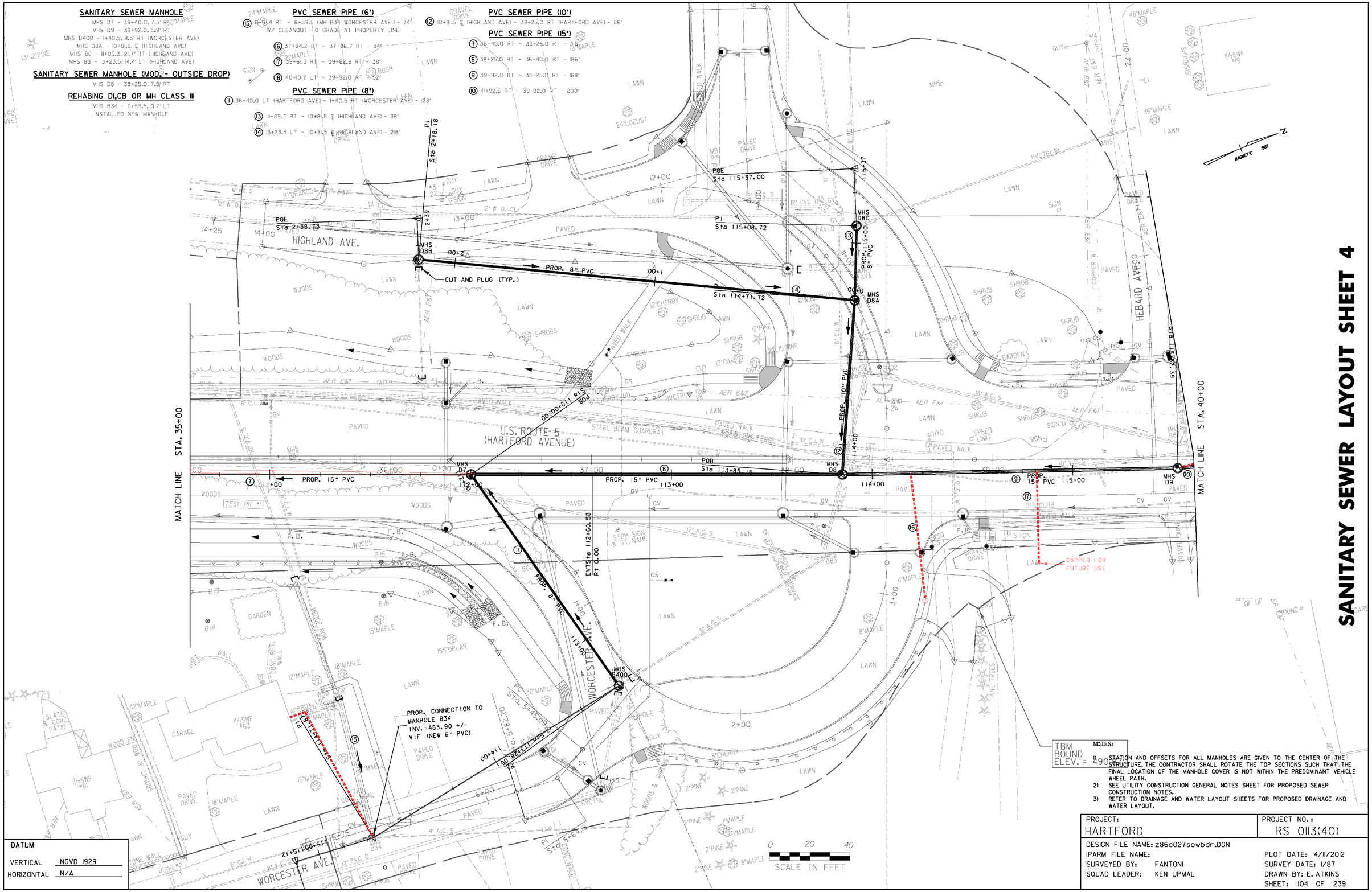


NOTES:

1) STATION AND OFFSETS FOR ALL MANHOLES ARE GIVEN TO THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL ROTATE THE TOP SECTIONS SUCH THAT THE FINAL LOCATION OF THE MANHOLE COVER IS NOT WITHIN THE PREDOMINANT VEHICLE WHEEL PATH.
2) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED SEWER CONSTRUCTION NOTES.
3) REFER TO DRAINAGE AND WATER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND WATER LAYOUT.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027sewbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 4/11/2012
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 103 OF 239



SANITARY SEWER LAYOUT SHEET 4

NOTES:

1) STATION AND OFFSETS FOR ALL MANHOLES ARE GIVEN TO THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL ROTATE THE TOP SECTIONS SUCH THAT THE FINAL LOCATION OF THE MANHOLE COVER IS NOT WITHIN THE PREDOMINANT VEHICLE WHEEL PATH.
2) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED SEWER CONSTRUCTION NOTES.
3) REFER TO DRAINAGE AND WATER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND WATER LAYOUT.

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027sewbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 4/11/2012
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 104 OF 239

SANITARY SEWER LAYOUT SHEET 5

SANITARY SEWER MANHOLE
MHS DIO - 41+92.5, 1.8' RT
•MHS B91 - 41+96.1, 29.1' RT
MHS A6A - 25+58.9, 7.9' LT (SAUNDERS AVE)
• B91 CHANGED TO REHAB, CLASS III

SANITARY SEWER MANHOLE (MOD. - OUTSIDE DROP)
MHS DII - 44+83.5, C
CONSTRUCT OUTSIDE DROP FOR 8" PVC

REHAB OF SEWER MANHOLE, CLASS III
MHS B91 - 41+96.1 - 29.1 RJ

PVC SEWER PIPE (6")
(18) 40+10.2 LT ~ 39+92.0 RT - 52'
(19) 41+96.1 RT ~ 41+92.5 RT - 28'
(23) 41+18.4 LT ~ 41+17.0 RT - 42'
(24) 42+41.9 LT ~ 42+41.9 LT - 34'
(25) 43+56.7 RT ~ 43+54.4 LT - 46'
(26) 43+74.0 LT ~ 43+72.0 LT - 28'

PVC SEWER PIPE (8")
(22) 25+58.9 LT (SAUNDERS AVE) ~ 44+83.5 ℄ (HARTFORD AVE) - 58'

PVC SEWER PIPE (15")
(10) 41+92.5 RT ~ 39+92.0 RT - 200'
(20) 44+83.5 ℄ ~ 41+92.5 RT - 292'
(21) 47+00.0 ℄ ~ 44+83.5 ℄ - 216'

PROP. 6" PVC
CONNECT TO EXIST.
WITH FLEXIBLE COUPLING

CUT & PLUG (TYP.)

CONSTRUCT MANHOLE
OVER LINE TO ALLOW
FOR BYPASS

PROP. 6" PVC

PROP. 6" PVC
CONNECT TO EXIST.
WITH FLEXIBLE COUPLING

TBM
BOUND
ELEV. = 490.87'

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

NOTES:
1) STATION AND OFFSETS FOR ALL MANHOLES ARE GIVEN TO THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL ROTATE THE TOP SECTIONS SUCH THAT THE FINAL LOCATION OF THE MANHOLE COVER IS NOT WITHIN THE PREDOMINANT VEHICLE WHEEL PATH.
2) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED SEWER CONSTRUCTION NOTES.
3) REFER TO DRAINAGE AND WATER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND WATER LAYOUT.

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027sewbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 4/11/2012
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 105 OF 239

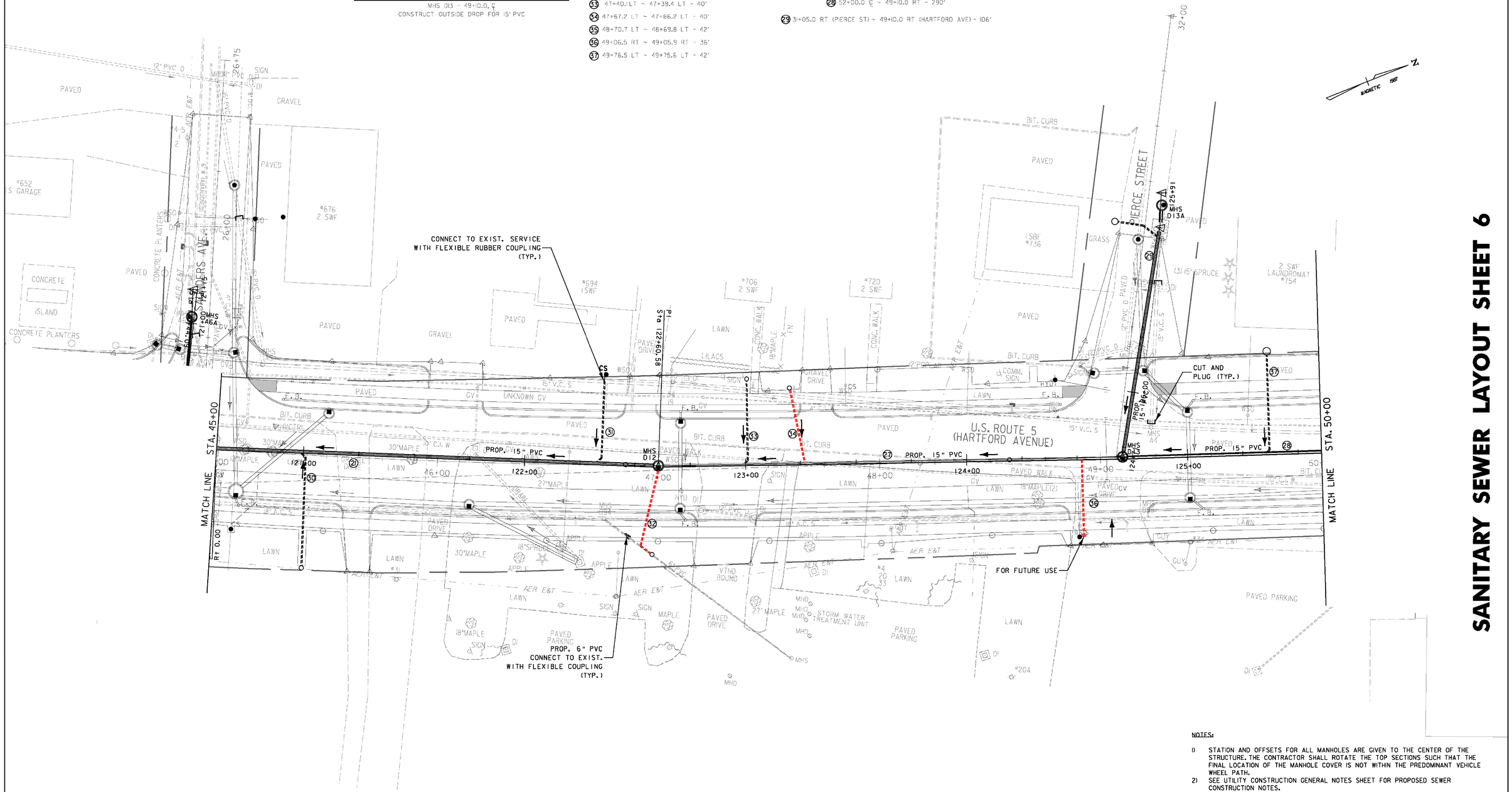
SANITARY SEWER LAYOUT SHEET 6

SANITARY SEWER MANHOLE
MHS DI2 - 47+00.0, ℄
MHS DI3A - 31+10.0, 6.8' RT (PIERCE ST)

SANITARY SEWER MANHOLE (MOD. - OUTSIDE DROP)
MHS DI3 - 49+10.0, ℄
CONSTRUCT OUTSIDE DROP FOR 15" PVC

PVC SEWER PIPE (6")
(30) 45+41.2 RT ~ 45+38.5 LT - 52'
(31) 46+75.2 LT ~ 46+72.4 LT - 38'
(32) 46+86.9 RT ~ 46+84.3 RT - 34'
(33) 47+40.1 LT ~ 47+39.4 LT - 40'
(34) 47+67.2 LT ~ 47+66.2 LT - 40'
(35) 48+70.7 LT ~ 48+69.8 LT - 42'
(36) 49+06.5 RT ~ 49+05.9 RT - 36'
(37) 49+76.5 LT ~ 49+75.6 LT - 42'

PVC SEWER PIPE (15")
(21) 47+00.0 ℄ ~ 44+83.5 ℄ - 216'
(27) 49+10.0 RT ~ 47+00.0 ℄ - 210'
(28) 52+00.0 ℄ ~ 49+10.0 RT - 290'
(29) 31+05.0 RT (PIERCE ST) ~ 49+10.0 RT (HARTFORD AVE) - 106'



0 20 40
SCALE IN FEET

NOTES:

1) STATION AND OFFSETS FOR ALL MANHOLES ARE GIVEN TO THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL ROTATE THE TOP SECTIONS SUCH THAT THE FINAL LOCATION OF THE MANHOLE COVER IS NOT WITHIN THE PREDOMINANT VEHICLE WHEEL PATH.
2) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED SEWER CONSTRUCTION NOTES.
3) REFER TO DRAINAGE AND WATER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND WATER LAYOUT.

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027sewbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI — PLOT DATE: 4/11/2012
SQUAD LEADER: KEN UPMAL — SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 106 OF 239

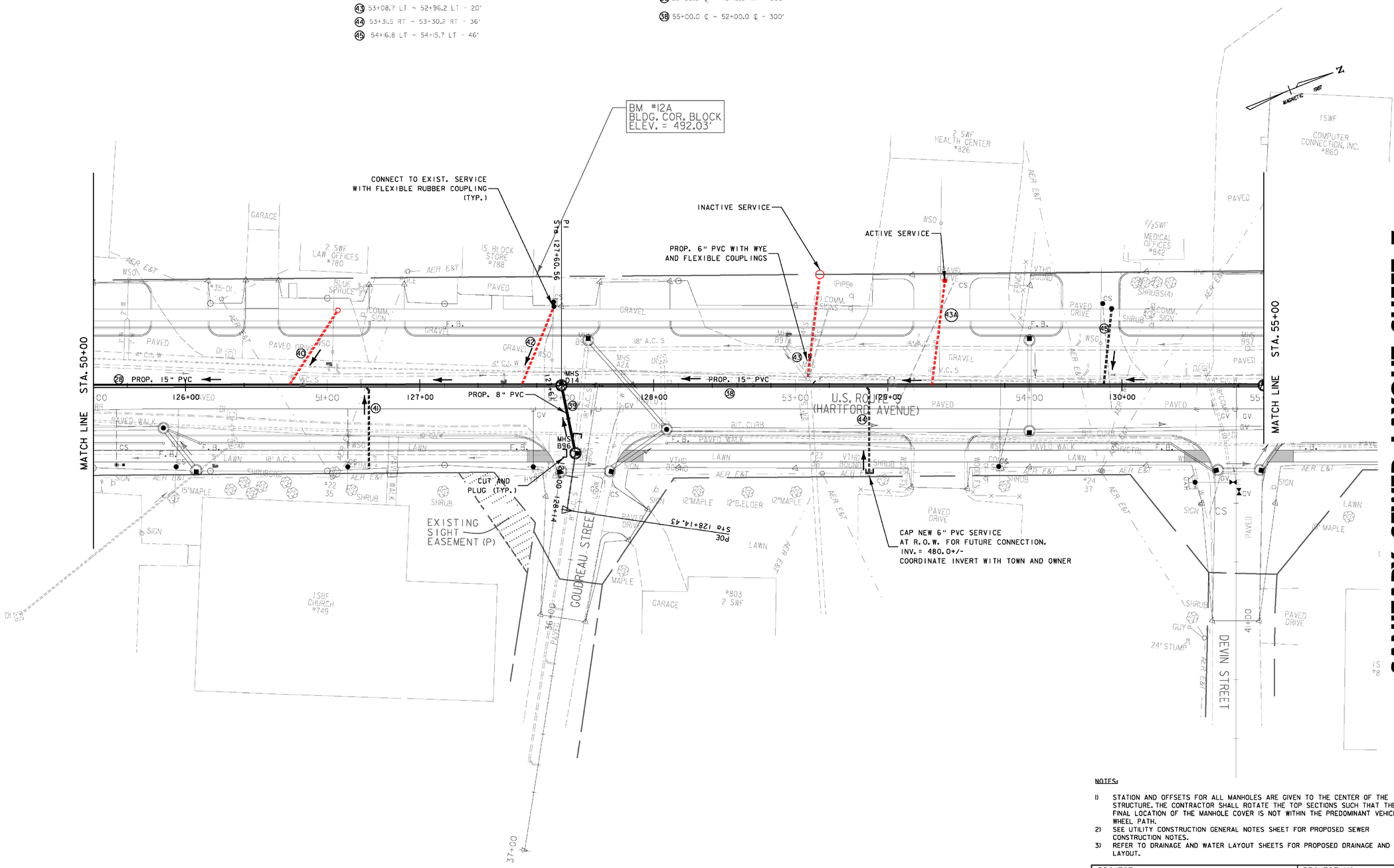
CHANGING ELEVATION C
B98 - 58+4

SANITARY SEWER MANHOLE
MHS D14 - 52+00.0 ℄
MHS D15 - 55+00.0 ℄
• MHS B96 - 35+29.9, 5.0' RT (GOUDREAU ST)
(CHANGED TO MODIFIED CLASS III)

PVC SEWER PIPE (6")
(40) 50+85.3 LT ~ 50+84.4 LT - 44'
(41) 51+17.7 RT ~ 51+16.4 RT - 36'
(42) 51+86.0 LT ~ 51+85.1LT - 38'
(43) 53+08.7 LT ~ 52+96.2 LT - 20'
(44) 53+31.5 RT ~ 53+30.2 RT - 36'
(45) 54+16.8 LT ~ 54+15.7 LT - 46'

PVC SEWER PIPE (8")
(39) 35+29.9 RT (GOUDREAU ST) ~ 52+00.0 ℄ (HARTFORD AVE) - 30'

PVC SEWER PIPE (15")
(28) 52+00.0 ℄ ~ 49+10.0 RT - 290'
(58) 55+00.0 ℄ ~ 52+00.0 ℄ - 300'



SANITARY SEWER LAYOUT SHEET 7

NOTES:

1) STATION AND OFFSETS FOR ALL MANHOLES ARE GIVEN TO THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL ROTATE THE TOP SECTIONS SUCH THAT THE FINAL LOCATION OF THE MANHOLE COVER IS NOT WITHIN THE PREDOMINANT VEHICLE WHEEL PATH.
2) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED SEWER CONSTRUCTION NOTES.
3) REFER TO DRAINAGE AND WATER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND WATER LAYOUT.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027sewbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI — SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL — DRAWN BY: E. ATKINS
PLOT DATE: 4/11/2012
SHEET: 107 OF 239

SANITARY SEWER LAYOUT SHEET 8

SANITARY SEWER MANHOLE
MHS D15 - 55+00.0, ℄
MHS A2 - 58+00.0, 3.1' RT
MHS A1 - 58+29.9, 2.3' RT

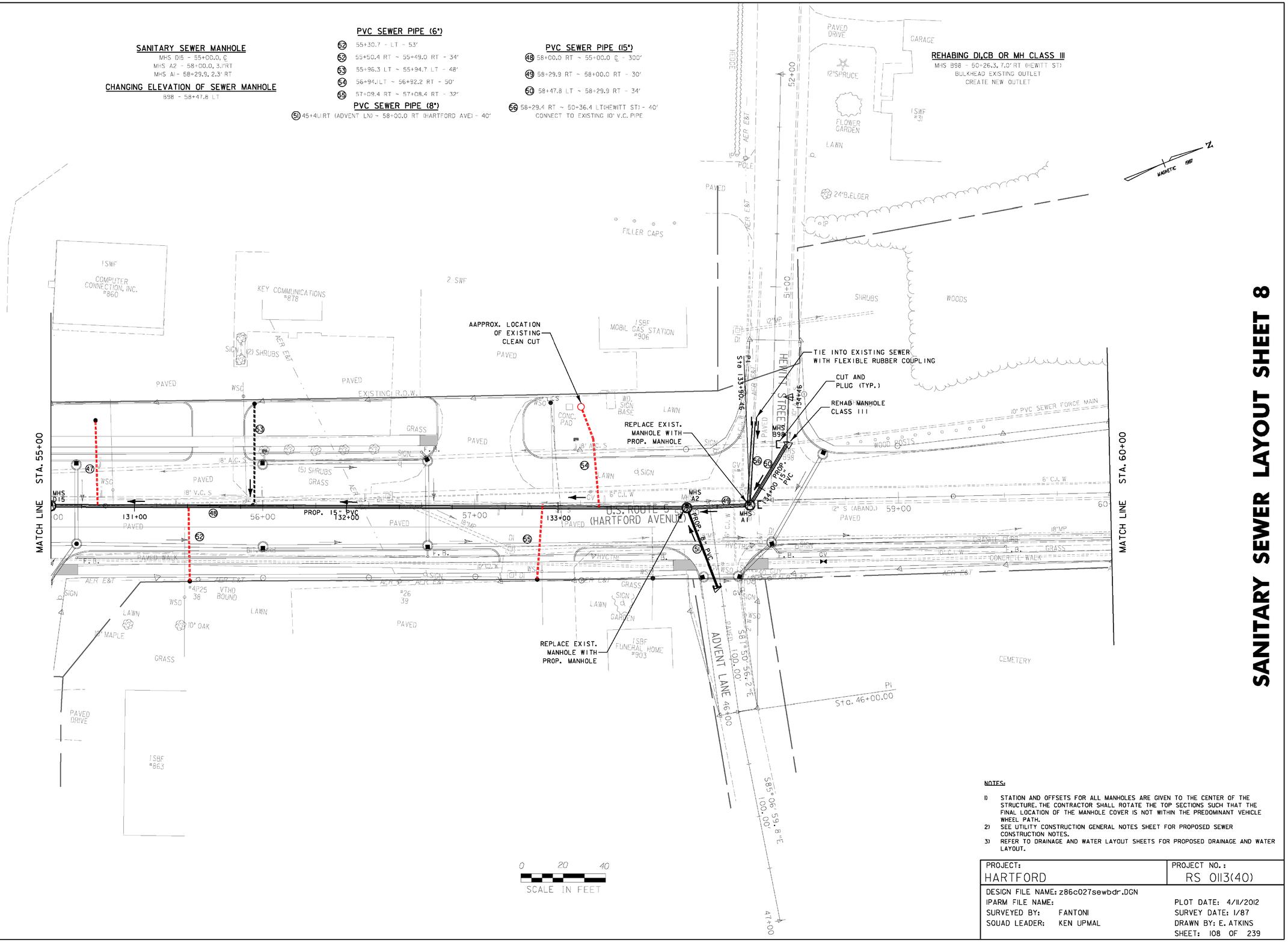
CHANGING ELEVATION OF SEWER MANHOLE
B98 - 58+47.8 LT

PVC SEWER PIPE (6")
(52) 55+30.7 - LT - 53'
(52) 55+50.4 RT ~ 55+49.0 RT - 34'
(53) 55+96.3 LT ~ 55+94.7 LT - 48'
(54) 56+94.1 LT ~ 56+92.2 RT - 50'
(55) 57+09.4 RT ~ 57+08.4 RT - 32'

PVC SEWER PIPE (8")
(51) 45+41.1 RT (ADVENT LN) ~ 58+00.0 RT (HARTFORD AVE) - 40'

PVC SEWER PIPE (15")
(48) 58+00.0 RT ~ 55+00.0 ℄ - 300'
(49) 58+29.9 RT ~ 58+00.0 RT - 30'
(50) 58+47.8 LT ~ 58+29.9 RT - 34'
(56) 58+29.4 RT ~ 50+36.4 LT (HEWITT ST) - 40'
CONNECT TO EXISTING 10" V.C. PIPE

REHABING DI, CB OR MH CLASS III
MHS B98 - 50+26.3, 7.0' RT (HEWITT ST)
BULKHEAD EXISTING OUTLET
CREATE NEW OUTLET



0 20 40
SCALE IN FEET

NOTES:

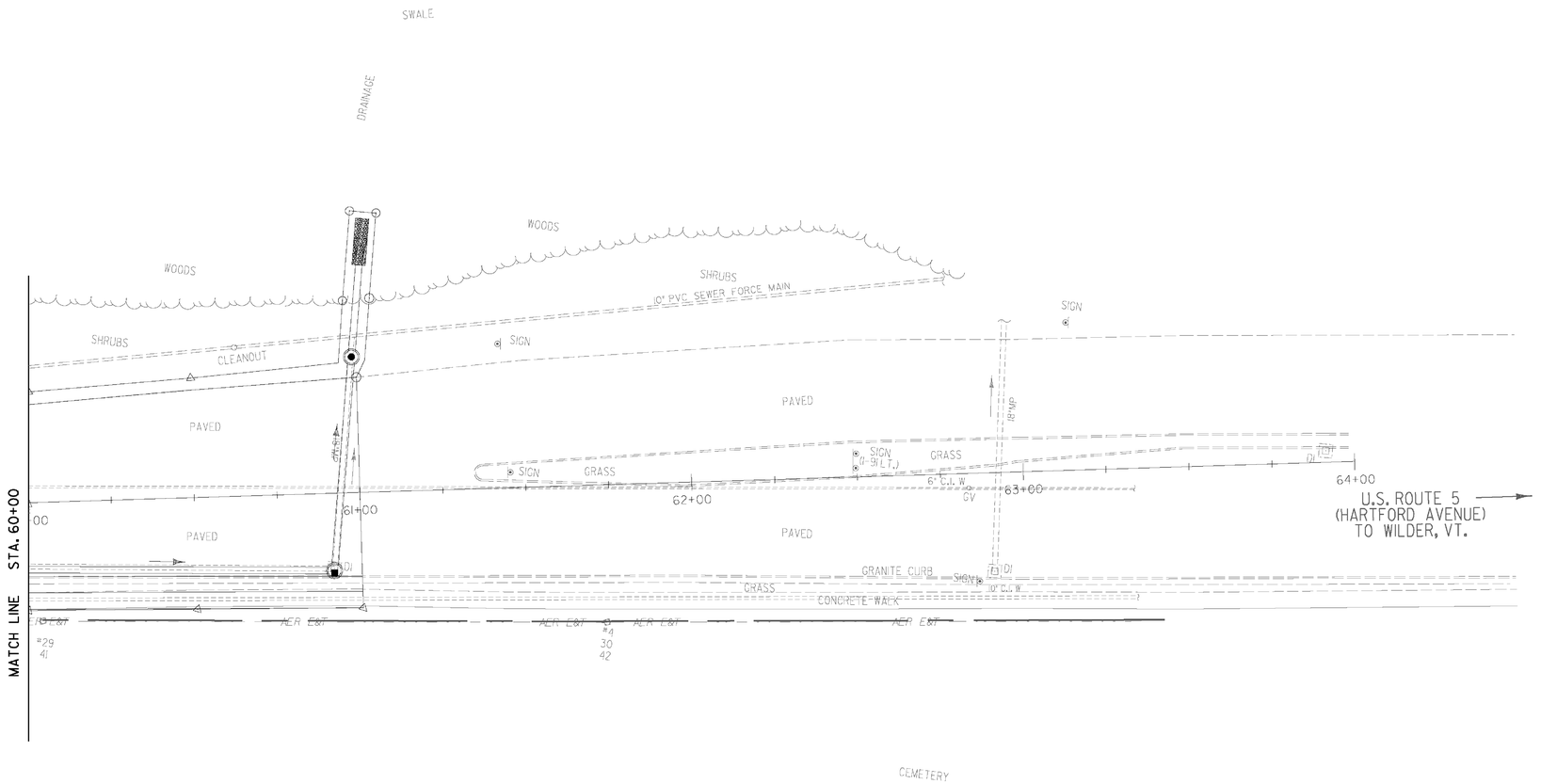
1) STATION AND OFFSETS FOR ALL MANHOLES ARE GIVEN TO THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL ROTATE THE TOP SECTIONS SUCH THAT THE FINAL LOCATION OF THE MANHOLE COVER IS NOT WITHIN THE PREDOMINANT VEHICLE WHEEL PATH.
2) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED SEWER CONSTRUCTION NOTES.
3) REFER TO DRAINAGE AND WATER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND WATER LAYOUT.

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027sewbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI — PLOT DATE: 4/11/2012
SQUAD LEADER: KEN UPMAL — SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 108 OF 239

SANITARY SEWER LAYOUT SHEET 9



NOTES:

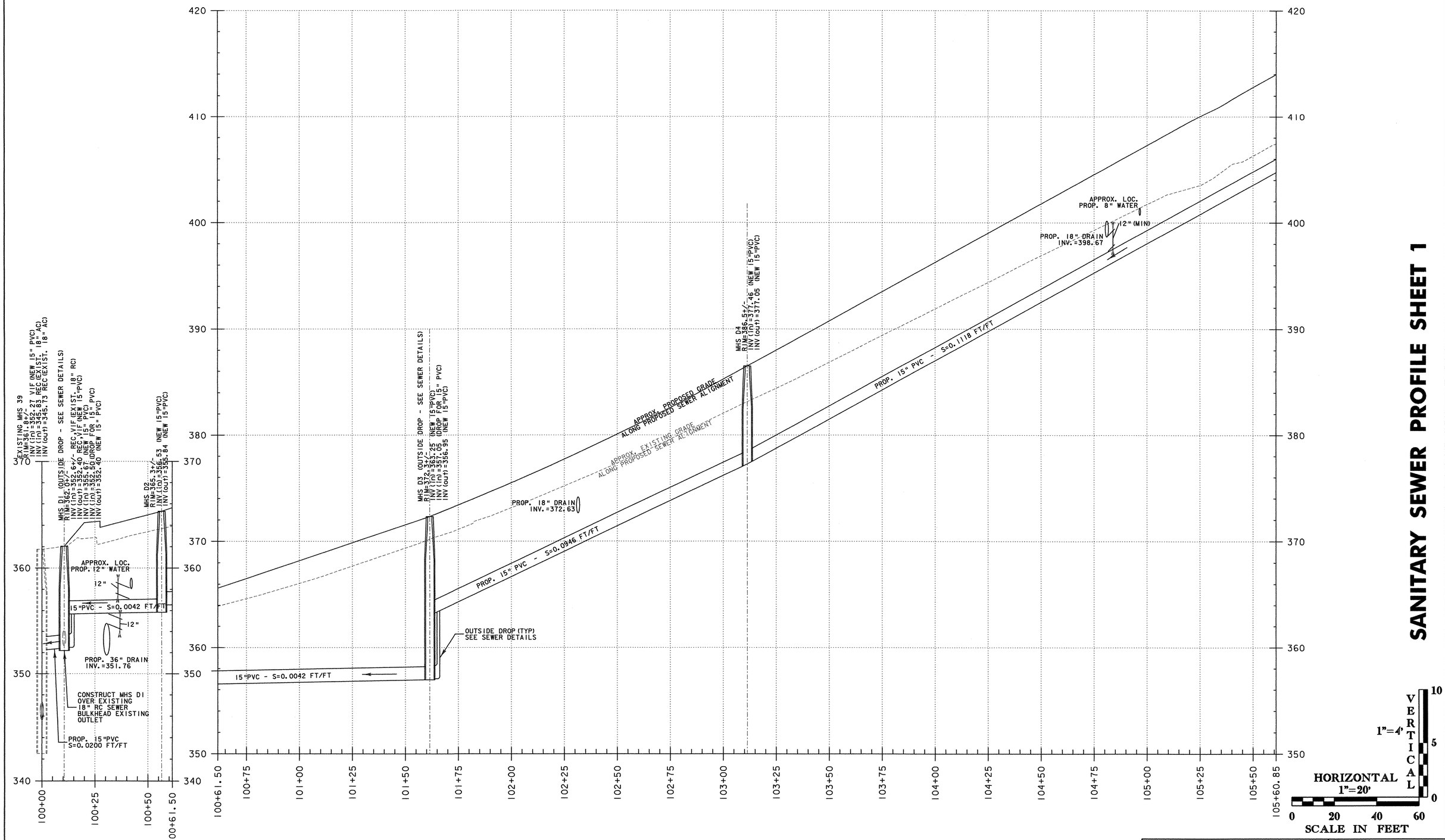
1) STATION AND OFFSETS FOR ALL MANHOLES ARE GIVEN TO THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL ROTATE THE TOP SECTIONS SUCH THAT THE FINAL LOCATION OF THE MANHOLE COVER IS NOT WITHIN THE PREDOMINANT VEHICLE WHEEL PATH.
2) SEE UTILITY CONSTRUCTION GENERAL NOTES SHEET FOR PROPOSED SEWER CONSTRUCTION NOTES.
3) REFER TO DRAINAGE AND WATER LAYOUT SHEETS FOR PROPOSED DRAINAGE AND WATER LAYOUT.

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027sewbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 4/11/2012
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 109 OF 239

SANITARY SEWER PROFILE SHEET 1



DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

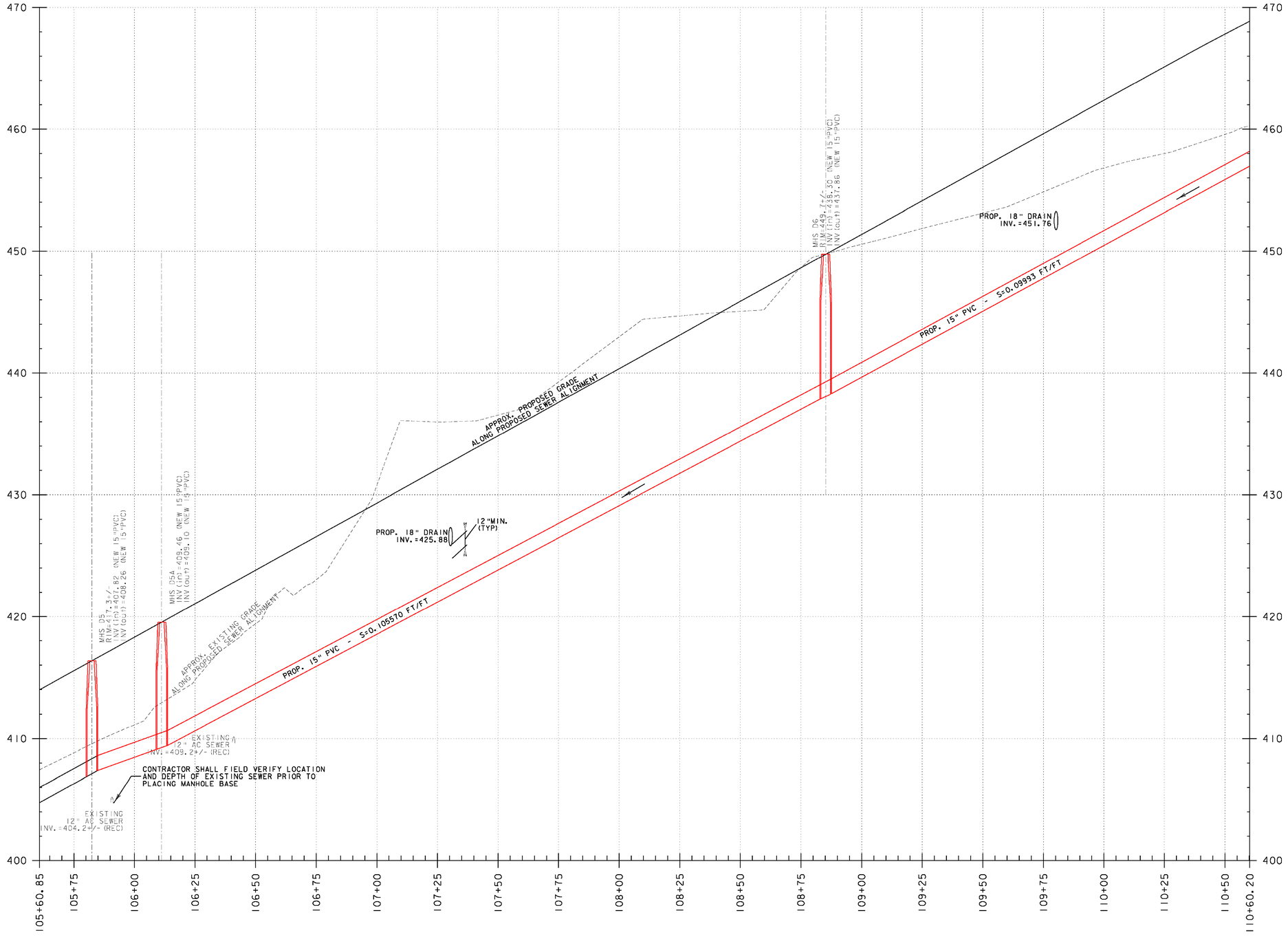
NOTES:

1) ALL RIM ELEVATIONS GIVEN ARE APPROXIMATE AND SHALL BE FIELD ADJUSTED TO MATCH FINAL GRADES.
2) EXISTING INVERTS ARE BASED ON THE BEST AVAILABLE INFORMATION OF RECORD OR TOPOGRAPHIC SURVEY AND SHALL BE FIELD VERIFIED WHERE PROPOSED INVERTS WOULD BE AFFECTED.

US RTE 5 TRUNKLINE PROFILE
MHS 39 TO US RTE 5 STA. 30+00

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027sew_prof.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/6/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 110 OF 239



SANITARY SEWER PROFILE SHEET 2

VERTICAL 1"=4' — 10 / 5 / 0

HORIZONTAL 1"=20' — 0 / 20 / 40 / 60

SCALE IN FEET

DATUM

VERTICAL NGVD 1929

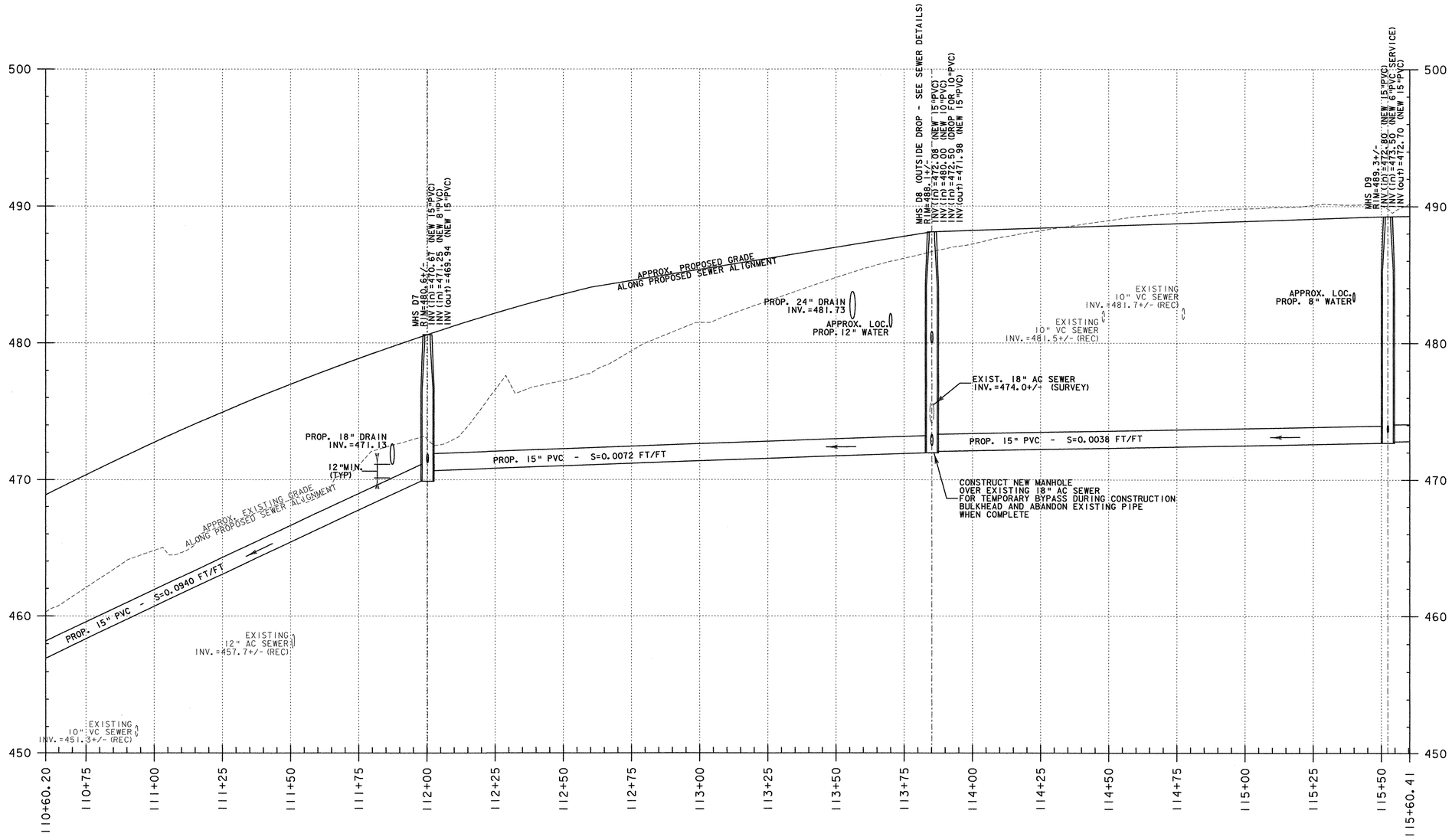
HORIZONTAL N/A

NOTES:

1) ALL RIM ELEVATIONS GIVEN ARE APPROXIMATE AND SHALL BE FIELD ADJUSTED TO MATCH FINAL GRADES.
2) EXISTING INVERTS ARE BASED ON THE BEST AVAILABLE INFORMATION OF RECORD OR TOPOGRAPHIC SURVEY AND SHALL BE FIELD VERIFIED WHERE PROPOSED INVERTS WOULD BE AFFECTED.

US RTE 5 TRUNKLINE PROFILE
US RTE 5 STA. 30+00 TO 35+00

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027sew_prof.DGN	
IPARM FILE NAME:	PLOT DATE: 4/11/2012
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 111 OF 239



SANITARY SEWER PROFILE SHEET 3

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

NOTES:

1) ALL RIM ELEVATIONS GIVEN ARE APPROXIMATE AND SHALL BE FIELD ADJUSTED TO MATCH FINAL GRADES.
2) EXISTING INVERTS ARE BASED ON THE BEST AVAILABLE INFORMATION OF RECORD OR TOPOGRAPHIC SURVEY AND SHALL BE FIELD VERIFIED WHERE PROPOSED INVERTS WOULD BE AFFECTED.

US RTE 5 TRUNKLINE PROFILE
US RTE 5 STA. 35+00 TO 40+00

PROJECT: HARTFORD

PROJECT NO.: RS 0113(40)

DESIGN FILE NAME: z86c027sew_prof.DGN

IPARM FILE NAME:

SURVEYED BY: FANTONI

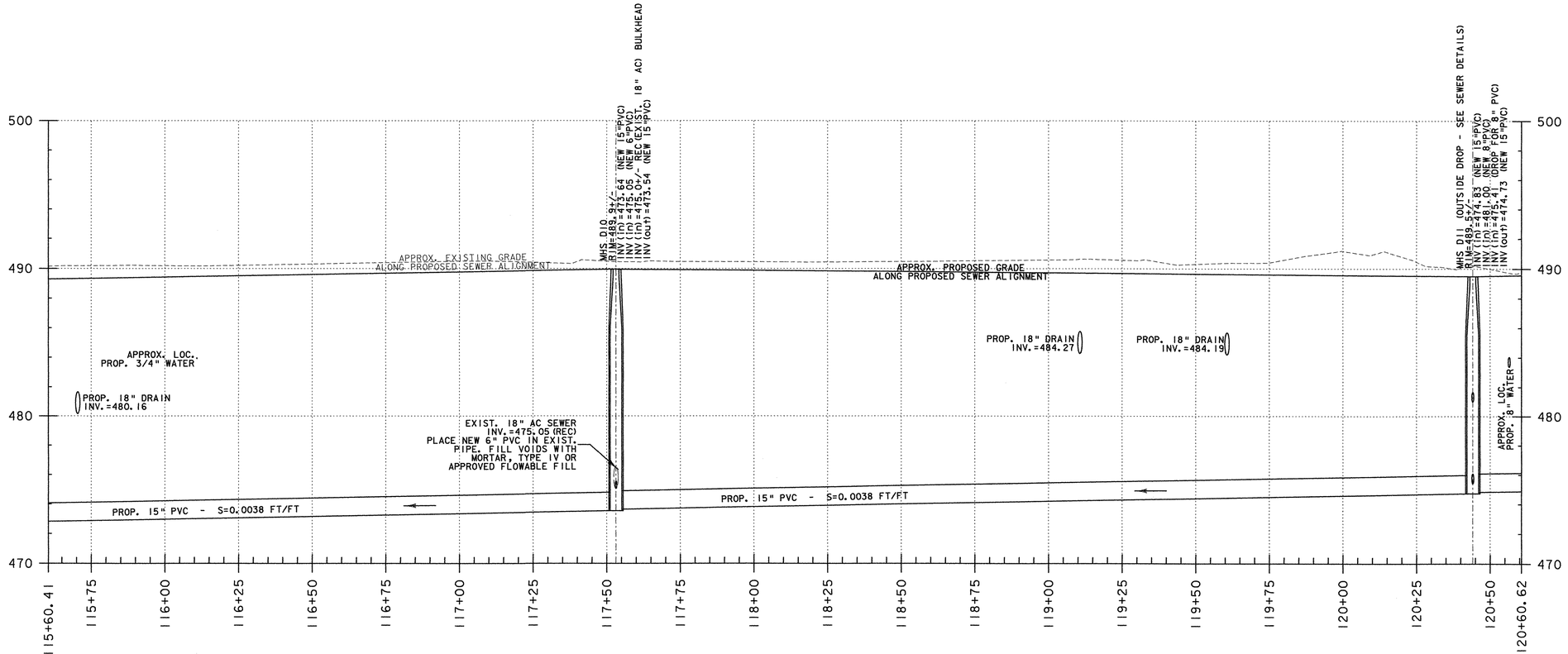
SQUAD LEADER: KEN UPMAL

PLOT DATE: 1/6/2007

SURVEY DATE: 1/87

DRAWN BY: E. ATKINS

SHEET: 112 OF 239



SANITARY SEWER PROFILE SHEET 4

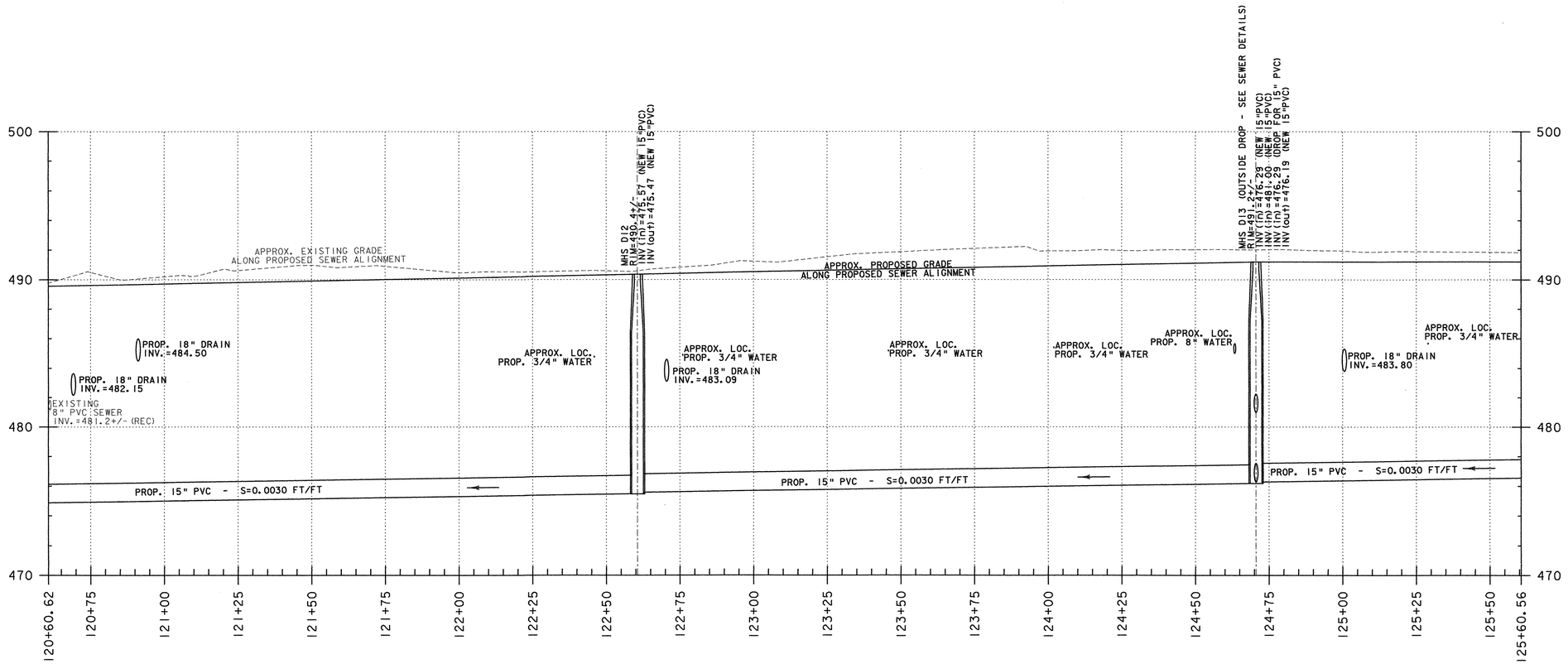
VERTICAL 1"=4' (0, 5, 10)
HORIZONTAL 1"=20' (0, 20, 40, 60)
SCALE IN FEET

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

NOTES:
1) ALL RIM ELEVATIONS GIVEN ARE APPROXIMATE AND SHALL BE FIELD ADJUSTED TO MATCH FINAL GRADES.
2) EXISTING INVERTS ARE BASED ON THE BEST AVAILABLE INFORMATION OF RECORD OR TOPOGRAPHIC SURVEY AND SHALL BE FIELD VERIFIED WHERE PROPOSED INVERTS WOULD BE AFFECTED.

US RTE 5 TRUNKLINE PROFILE
US RTE 5 STA. 40+00 TO 45+00

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027sew_prof.DGN	
IPARM FILE NAME:	PLOT DATE: 1/6/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 113 OF 239



SANITARY SEWER PROFILE SHEET 5

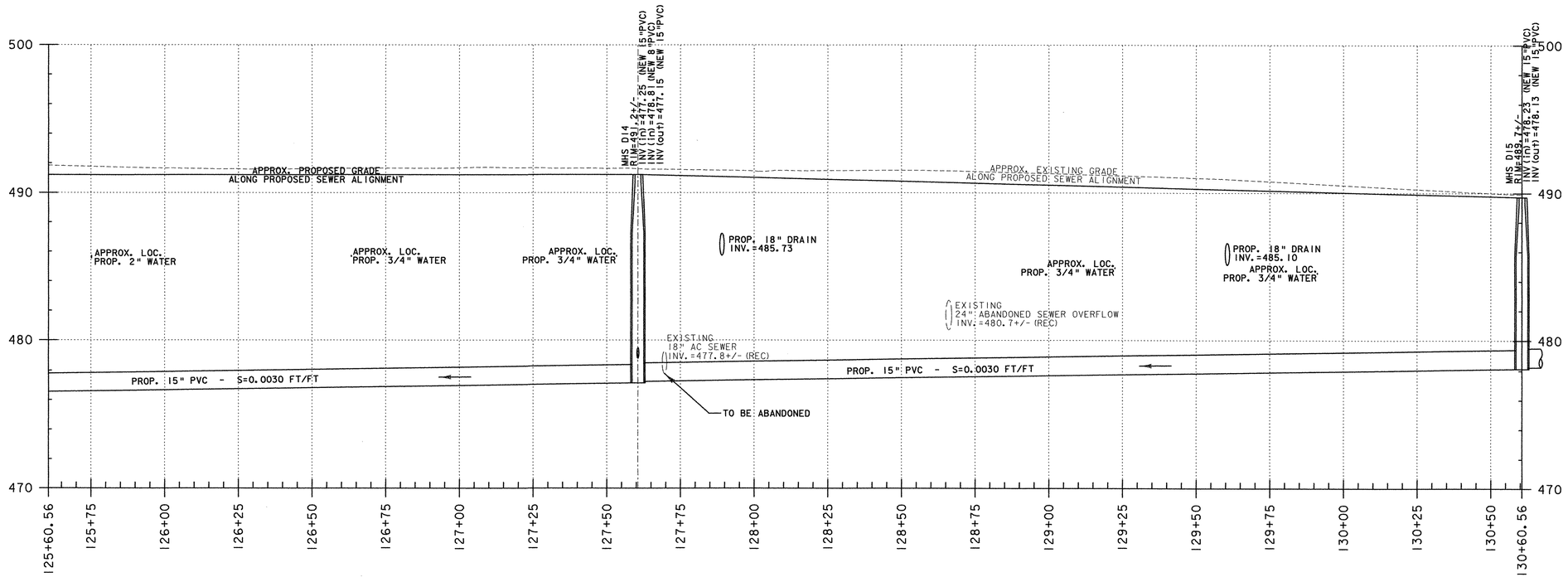
VERTICAL 1"=4' (0, 5, 10)
HORIZONTAL 1"=20' (0, 20, 40, 60)
SCALE IN FEET

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

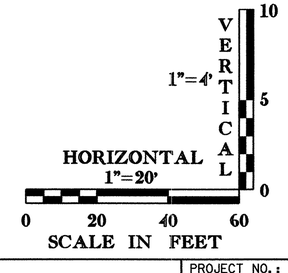
NOTES:
1) ALL RIM ELEVATIONS GIVEN ARE APPROXIMATE AND SHALL BE FIELD ADJUSTED TO MATCH FINAL GRADES.
2) EXISTING INVERTS ARE BASED ON THE BEST AVAILABLE INFORMATION OF RECORD OR TOPOGRAPHIC SURVEY AND SHALL BE FIELD VERIFIED WHERE PROPOSED INVERTS WOULD BE AFFECTED.

US RTE 5 TRUNKLINE PROFILE
US RTE 5 STA. 45+00 TO 50+00

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027sew_prof.DGN	
IPARM FILE NAME:	PLOT DATE: 1/6/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 114 OF 239



SANITARY SEWER PROFILE SHEET 6



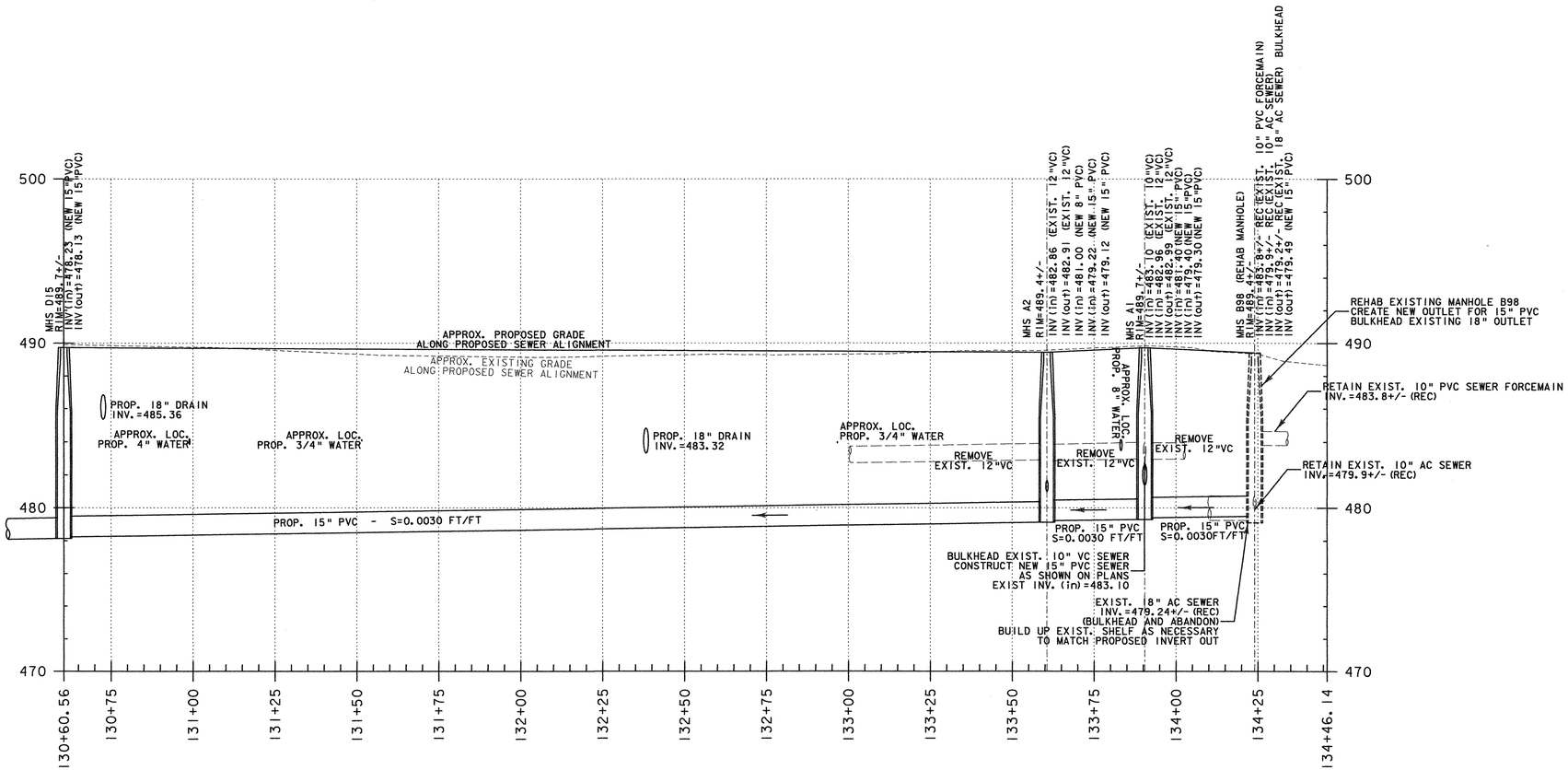
DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

NOTES:

1) ALL RIM ELEVATIONS GIVEN ARE APPROXIMATE AND SHALL BE FIELD ADJUSTED TO MATCH FINAL GRADES.
2) EXISTING INVERTS ARE BASED ON THE BEST AVAILABLE INFORMATION OF RECORD OR TOPOGRAPHIC SURVEY AND SHALL BE FIELD VERIFIED WHERE PROPOSED INVERTS WOULD BE AFFECTED.

US RTE 5 TRUNKLINE PROFILE
US RTE 5 STA. 50+00 TO 55+00

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027sew_prof.DGN	
IPARM FILE NAME:	PLOT DATE: 1/6/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 115 OF 239



SANITARY SEWER PROFILE SHEET 7

VERTICAL 1"=4' (0, 5, 10)
HORIZONTAL 1"=20' (0, 20, 40, 60)
SCALE IN FEET

DATUM

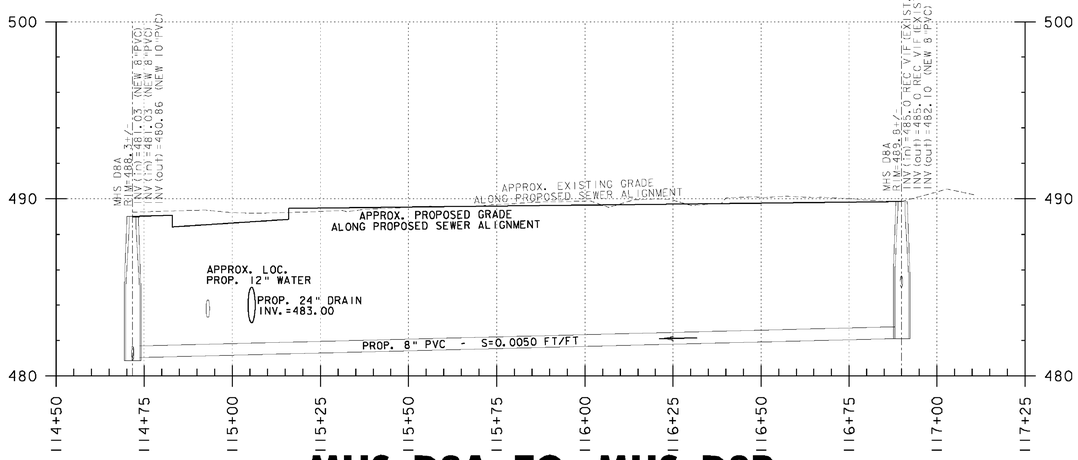
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:

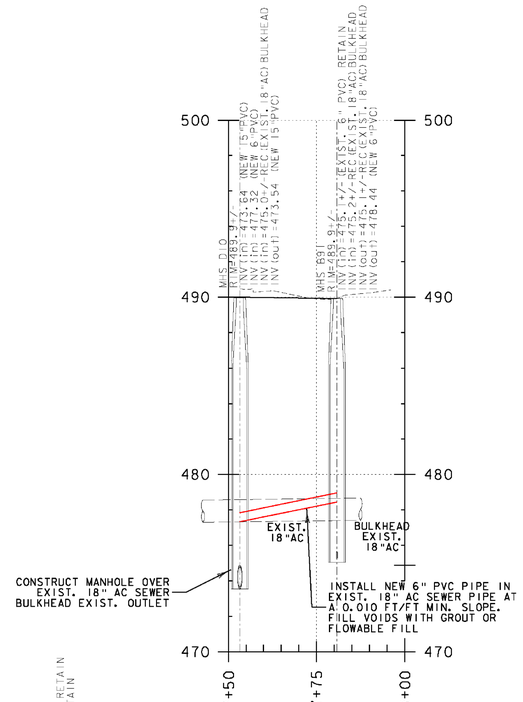
1) ALL RIM ELEVATIONS GIVEN ARE APPROXIMATE AND SHALL BE FIELD ADJUSTED TO MATCH FINAL GRADES.
2) EXISTING INVERTS ARE BASED ON THE BEST AVAILABLE INFORMATION OF RECORD OR TOPOGRAPHIC SURVEY AND SHALL BE FIELD VERIFIED WHERE PROPOSED INVERTS WOULD BE AFFECTED.

US RTE 5 TRUNKLINE PROFILE
US RTE 5 STA. 55+00 TO MHS B98

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027sew_prof.DGN	
IPARM FILE NAME:	PLOT DATE: 1/6/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 116 OF 239

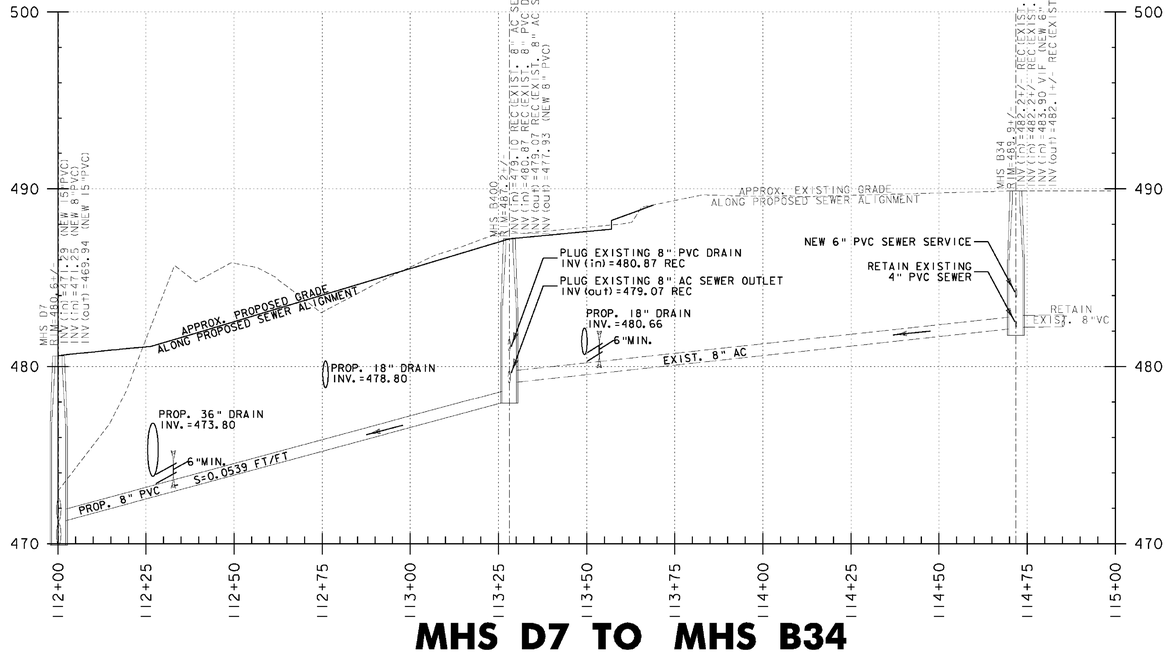


MHS D8A TO MHS D8B
HIGHLAND AVENUE

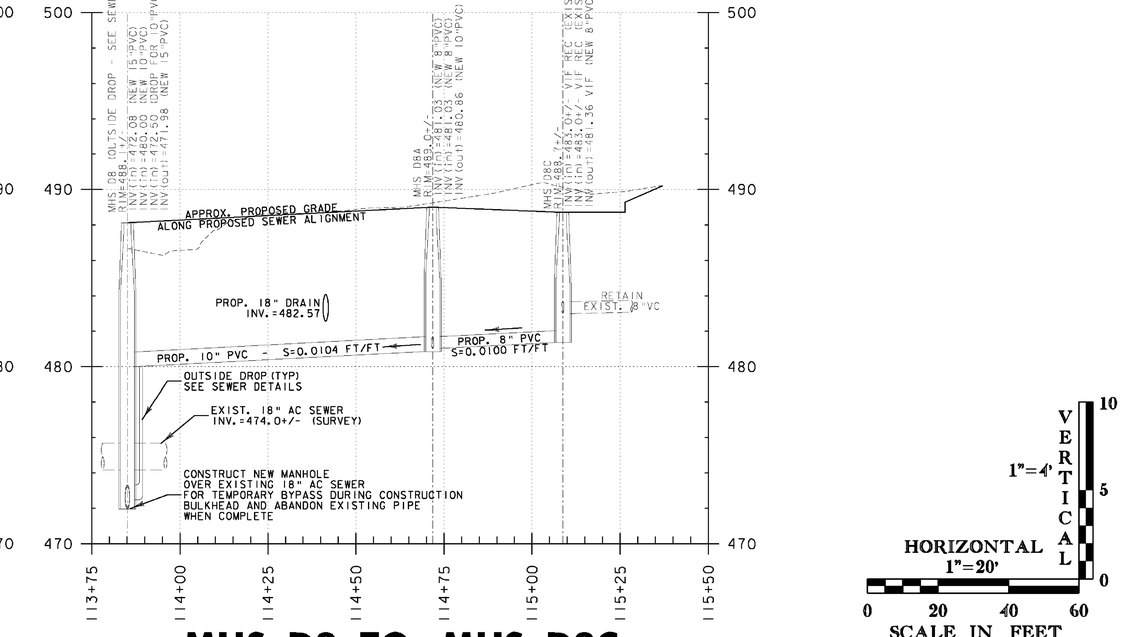


MHS D10 TO MHS B91

SANITARY SEWER PROFILE SHEET 8



MHS D7 TO MHS B34
WORCESTER AVENUE



MHS D8 TO MHS D8C
HIGHLAND AVENUE

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

NOTES:

1) ALL RIM ELEVATIONS GIVEN ARE APPROXIMATE AND SHALL BE FIELD ADJUSTED TO MATCH FINAL GRADES.
2) EXISTING INVERTS ARE BASED ON THE BEST AVAILABLE INFORMATION OF RECORD OR TOPOGRAPHIC SURVEY AND SHALL BE FIELD VERIFIED WHERE PROPOSED INVERTS WOULD BE AFFECTED.

SIDE STREET SEWER PROFILES

PROJECT: HARTFORD

PROJECT NO.: RS 0113(40)

DESIGN FILE NAME: z86c027sew_prof.DGN

IPARM FILE NAME:

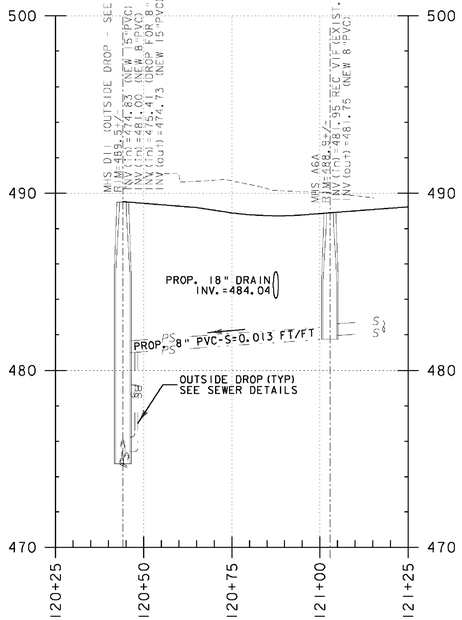
SURVEYED BY: FANTONI

SQUAD LEADER: KEN UPMAL

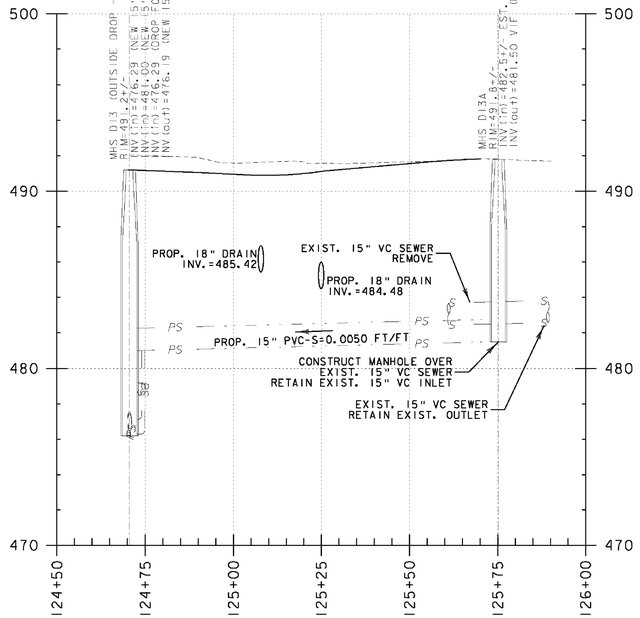
PLOT DATE: 4/13/2012

SURVEY DATE: 1/87

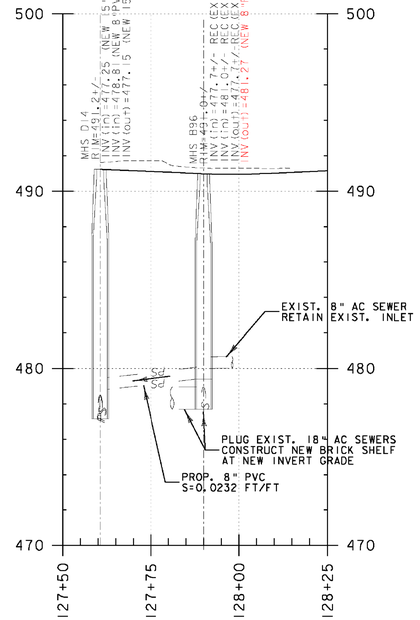
DRAWN BY: E. ATKINS



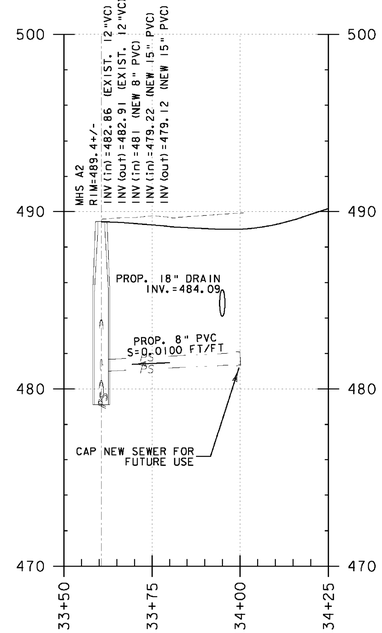
MHS D11 TO MHS A6A
SAUNDERS AVENUE



MHS D13 TO MHS D13A
PIERCE STREET

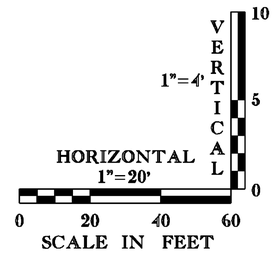


MHS D14 TO MHS B96
GOUDREAU STREET



MHS A2 TO PLUG
ADVENT LANE

SANITARY SEWER PROFILE SHEET 9



DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

NOTES:

1) ALL RIM ELEVATIONS GIVEN ARE APPROXIMATE AND SHALL BE FIELD ADJUSTED TO MATCH FINAL GRADES.
2) EXISTING INVERTS ARE BASED ON THE BEST AVAILABLE INFORMATION OF RECORD OR TOPOGRAPHIC SURVEY AND SHALL BE FIELD VERIFIED WHERE PROPOSED INVERTS WOULD BE AFFECTED.

SIDE STREET SEWER PROFILES

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027sew_prof.DGN	
IPARM FILE NAME:	PLOT DATE: 4/13/2012
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 118 OF 239

EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION

THE PROPOSED ROADWAY PROJECT INVOLVES THE REALIGNMENT AND FULL DEPTH RECONSTRUCTION OF APPROXIMATELY 3,900 FEET OF U.S. ROUTE 5 AND SIDE STREETS. THE PROJECT ALSO INCLUDES THE CONSTRUCTION OF A GROUND ANCHORED SOLDIER PILE WALL, A SHEET PILE RETAINING WALL, THE INSTALLATION OF TRAFFIC SIGNALS AT THE PROPOSED RELOCATED HIGHLAND AVENUE AND WORCESTER AVENUE, NEW WATER MAINS AND SERVICES, SEPARATION OF STORM DRAINS FROM THE EXISTING COMBINED SEWER SYSTEM, CONSTRUCTION OF NEW SANITARY SEWERS AND INSTALLATION OF NEW DRAIN INLETS, PIPES, AND OUTFALLS.

THE TOTAL DISTURBED AREA FOR THE PROPOSED PROJECT IS 9.7 ACRES. BASED ON THE DETAILED RISK EVALUATION WORKSHEET IN APPENDIX A OF CGP 3-9020(2006), THIS PROJECT FALLS INTO THE MODERATE RISK CATEGORY. THE EROSION PREVENTION AND SEDIMENT CONTROL PLANS WERE DEVELOPED IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT REQUIREMENTS TO MINIMIZE IMPACTS TO THE RECEIVING WATERS.

THERE ARE TWO OUTFALLS LOCATED WITHIN THE PROJECT AREA. BOTH OUTFALLS DISCHARGE STORMWATER RUNOFF COLLECTED BY EXISTING DRAIN INLETS FROM THE RESIDENTIAL AND COMMERCIAL PROPERTIES ALONG THE PROJECT AND U.S. ROUTE 5. ONE OUTFALL IS LOCATED ALONG THE NORTH BANK OF THE WHITE RIVER NEAR THE BEGINNING OF THE PROJECT. THE WHITE RIVER IS A CLASS B WATER AND IS NOT STORMWATER IMPAIRED OR AN OUTSTANDING WATER RESOURCE AS DETERMINED BY THE VERMONT WATER QUALITY STANDARDS. THE OTHER OUTFALL IS LOCATED NEAR THE END OF THE PROJECT AND DISCHARGES INTO AN EXISTING NATURAL DRAINAGE SWALE. WETLAND IMPACTS ARE NOT ANTICIPATED UNDER THIS PROJECT.

US ROUTE 5 WITHIN THE PROJECT AREA BEGINS AT THE INTERSECTION OF VT14 AND US ROUTE 4. US ROUTE 5 ASCENDS STEEPLY AT APPROXIMATELY 11% FOR APPROXIMATELY 1500 FEET TO A SECTION OF THE ROAD KNOWN AS "TAFTS FLATS". THE "TAFTS FLATS" PORTION IS FLAT WITH SLOPES LESS THAN 1%. SURROUNDING SITE TOPOGRAPHY IS ALSO GENERALLY FLAT IN THIS AREA. A REVIEW OF THE NATIONAL RESOURCES CONSERVATION SERVICE (NRCS) SOIL SURVEY MAPS WAS CONDUCTED TO DETERMINE THE TYPES AND LOCATIONS OF THE SOILS UNDERLYING THE PROJECT AREA. THE TABLE BELOW OUTLINES THE SOILS THAT WERE DETERMINED TO BE LOCATED WITHIN OR ADJACENT TO THE PROPOSED PROJECT LIMITS. SOIL SURVEY GIS DATA FROM THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI) WAS DOWNLOADED AND OVERLAID ONTO THE DESIGN PLANS TO DETERMINE THE EXTENT OF THE SOILS (REFER TO THE PRE-CONSTRUCTION PLAN SHEETS). NEARLY THE ENTIRE PROJECT SITE IS UNDERLAIN WITH URBAN-LAND-WINDSOR-AGAWAM COMPLEX SOILS WHICH HAVE A SOIL ERODIBILITY COEFFICIENT ('K' VALUE) OF 0.17. THE OTHER SOIL TYPE WITHIN THE PROJECT AREA IS THE ELDRIDGE FINE SANDY LOAM, WHICH HAS A 'K' VALUE OF 0.43. A VEIN OF THIS SOIL RUNS PERPENDICULAR TO US ROUTE 5 AT THE HILL. ALL DISTURBED AREAS WILL REQUIRE IMMEDIATE SOIL ROUGHENING, HAY MULCHING AND PROMPT SEEDING.

SOIL DESIGNATION	HYDROLOGIC SOILGROUP CLASSIFICATION	SOIL ERODABILITY COEFFICIENTS
32B URBAN LAND-WINDSOR-AGAWAM COMPLEX, 0% TO 8% SLOPES	NOT RATED	0.17 NOT HIGHLY ERODABLE
45E ELDRIDGE FINE SANDY LOAM, 25% TO 50% SLOPES	C	0.43 HIGHLY ERODABLE

THE GROUND ANCHORED SOLDIER PILE WALL ALONG THE EAST SIDE U.S. ROUTE 5 ALONG THE HILL WILL BE CONSTRUCTED FIRST; FOLLOWED BY THE INSTALLATION OF SEPARATED DRAINAGE AND WIDENING OF THE EXISTING ROADWAY IN THE TAFTS FLATS SECTION AND THEN THE INSTALLATION OF THE NEW UTILITIES IN THIS ORDER: WATER AND SANITARY SEWER. THE PROPOSED ROADWAY PROFILE GRADES WILL CLOSELY MATCH THE EXISTING TOPOGRAPHY IN THE TAFTS FLATS SECTION. THE EXISTING OUTFALLS WILL BE REPLACED AT THEIR CURRENT LOCATIONS. THE PLACEMENT OF STONE FILL AT BOTH OUTLETS AND HEAVY RIP-RAP AT THE WHITE RIVER OUTFALL IS PROPOSED FOR ENERGY DISSIPATION AND SCOUR PROTECTION. A STREAM ALTERATION PERMIT FOR THE PROPOSED WORK AT THE WHITE RIVER OUTFALL WAS ISSUED ON 9/28/2006, THE PERMIT NUMBER IS HD-1-0414.

PROPOSED EROSION PREVENTION AND SEDIMENT CONTROL MEASURES AND REQUIREMENTS

TO PREVENT CONSTRUCTION EQUIPMENT FROM UNNECESSARILY DISTURBING SOIL OR VEGETATION THE CONTRACTOR SHALL INSTALL PROJECT DEMARCATION FENCING (PDF) AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER; GENERALLY JUST BEYOND THE PROPOSED SILT-FENCE OR 10' OFF OF THE REQUIRED SOIL DISTURBANCE LIMIT IF SILT FENCE IS NOT PROPOSED. THE LIMITS OF THE PDF ARE SHOWN ON THE PLANS. THE PDF PROVIDES A PHYSICAL BOUNDARY THAT THE CONTRACTOR MUST NOT DISTURB BEYOND. THE PDF MUST BE INSTALLED AT THE BEGINNING OF THE PROJECT. WHENEVER DAMAGED; THE CONTRACTOR MUST IMMEDIATELY REPAIR OR REPLACE THE PDF. PDF IS NOT REQUIRED ACROSS LAWNS.

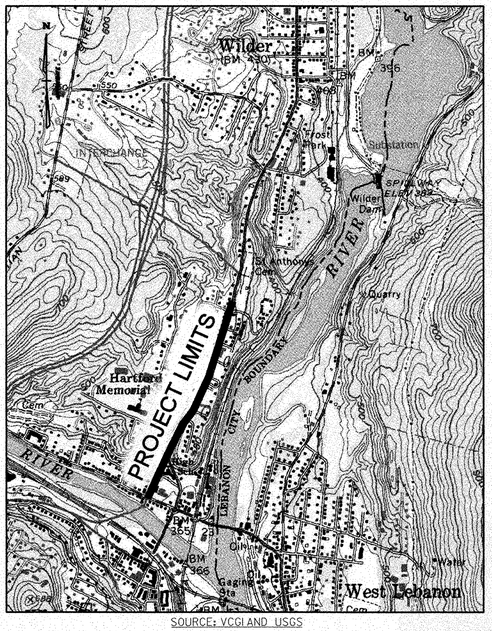
PROPOSED EROSION PREVENTION AND SEDIMENT CONTROL MEASURES AND REQUIREMENTS (CONTINUED)

THE CONTRACTOR SHALL DESIGNATE AN ON-SITE EROSION CONTROL COORDINATOR WHO WILL BE RESPONSIBLE FOR THE MAINTENANCE, INSPECTION AND RECORDS PROGRAM FOR ALL CONTROL MEASURES. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR DEVELOPING A DETAILED EROSION PREVENTION AND SEDIMENT CONTROL PLAN AND TIMETABLE WHICH WILL BE COORDINATED WITH THE ACTUAL PROJECT CONSTRUCTION SCHEDULE AND PHASING FOR REVIEW AND APPROVAL BY VTRANS. THE FINAL EROSION PREVENTION AND SEDIMENT CONTROL PLAN AND TIMETABLE SHALL BE SUBMITTED AND APPROVED BEFORE THE CONTRACTOR CAN COMMENCE WORK.

ALL MAJOR GRADING AND EARTHWORK OPERATIONS SHALL BE CONDUCTED IN DRY-WEATHER CONDITIONS BETWEEN APRIL 15TH AND OCTOBER 15TH WHENEVER PRACTICAL. NO MAJOR GRADING WORK SHALL BE PERFORMED BY THE CONTRACTOR IN THE WINTER BETWEEN OCTOBER 15TH AND APRIL 15TH WHEN SOILS ARE TYPICALLY SATURATED WITH WATER OR FROZEN IN THE COLDER MONTHS. TO ASSURE A VIGOROUS CATCH OF VEGETATIVE COVER, SEEDING AND MULCHING SHALL BE COMPLETED BY SEPTEMBER 15TH TO THE EXTENT POSSIBLE, OR AS DIRECTED BY THE RESIDENT ENGINEER. WINTER-RYE SEED SHALL BE USED TO ESTABLISH TEMPORARY VEGETATIVE COVER WHENEVER DISTURBED AREAS CAN NOT BE IMMEDIATELY PERMANENTLY SEEDED. ALL SEDIMENT AND EROSION PREVENTION AND CONTROL MEASURES SHALL BE COMPLETED AND BE IN PLACE BEFORE THE BEGINNING OF WORK. TO ENSURE SOIL STABILITY ALONG THE HILL AND PREVENT EROSION AND SEDIMENT TRANSPORT DURING CONSTRUCTION OF THE GROUND ANCHORED SOLDIER PILE AND LAGGING RETAINING WALL THE FOLLOWING BASIC LEVEL "TOP-DOWN" CONSTRUCTION SEQUENCE IS REQUIRED:

1) THE CONTRACTOR SHALL CONSTRUCT THE UPSLOPE STONE LINED DRAINAGE DITCH TO COLLECT AND DIVERT THE OFFSITE RUNOFF AROUND THE WALL CONSTRUCTION SITE,
2) CONSTRUCT TEMPORARY STONE CHECK DAMS AT LOCATIONS SHOWN IN THE PLANS,
3) DRILL THE SHAFTS AND PLACE SOLDIER PILES,
4) EXCAVATE THE FRONT FACE OF THE WALL FROM THE TOP DOWN IN FOUR FOOT VERTICAL STEPS. INSTALL TIEBACKS AND TREATED TIMBER LAGGING AND STABILIZE SOILS BEFORE EXCAVATING NEXT FOUR FOOT INCREMENT.
5) REPEAT STEP 4 UNTIL THE WALL IS COMPLETED.
6) INSTALL LANDSCAPING AND PERMANENT VEGETATION ABOVE WALL.

PROJECT LOCATION MAP



SOURCE: VCGI AND USGS

0 1250 2500

APPROXIMATE SCALE IN FEET

PROPOSED EROSION PREVENTION AND SEDIMENT CONTROL MEASURES AND REQUIREMENTS (CONTINUED)

THE CONTRACTOR, PRIOR TO THE START OF WORK, SHALL WRAP NON-WOVEN GEOTEXTILE FABRIC FOR FILTERS OVER ALL EXISTING DRAIN INLET GRATES WITHIN AREAS SUBJECT TO VEHICULAR TRAFFIC WHERE INDICATED IN THE PLANS AND MAINTAIN THEM UNTIL SUCH TIME AS THE PROJECT IS COMPLETED OR THE DRAIN INLET IS REMOVED. THE CONTRACTOR SHALL INSPECT THESE INLET PROTECTION MEASURES DAILY AND REMOVE ANY COLLECTED DEBRIS OR REPAIR OR REPLACE THE INLET PROTECTION MEASURES AS REQUIRED TO PROMOTE PROPER DRAINAGE. PROPOSED DRAIN INLETS WITHIN AREAS SUBJECT TO VEHICULAR TRAFFIC SHALL ALSO BE PROTECTED IN THIS MANNER. THE CONTRACTOR SHALL PROVIDE ENOUGH OVERLAP IN THE FABRIC TO ALLOW THE MATERIAL TO SET BETWEEN THE GRATE AND THE FRAME, USING THE WEIGHT OF THE GRATE TO HOLD THE FABRIC IN PLACE. DRAIN INLETS IN AREAS NOT SUBJECT TO VEHICULAR TRAFFIC SHALL BE PROTECTED WITH THE ROCK BARRIER TYPE INLET PROTECTION MEASURE AS SHOWN IN THE DETAIL SHEETS OR ENGINEER APPROVED EQUAL. THE CONTRACTOR SHALL INSPECT THESE INLET PROTECTION MEASURES WEEKLY AND REMOVE ANY COLLECTED DEBRIS OR REPAIR OR REPLACE THE INLET PROTECTION MEASURES AS REQUIRED TO PROMOTE PROPER DRAINAGE.

THE CONTRACTOR SHALL INSPECT THE INSIDE OF ALL EXISTING AND PROPOSED DRAIN INLETS AND CATCH BASINS WEEKLY. IF THE DEPTH OF COLLECTED SEDIMENT IN THE INLETS REACHES 3-INCHES BELOW THE OUTLET PIPE INVERT, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THIS MATERIAL. AT PROJECT COMPLETION, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY INLET PROTECTION MEASURES, INSPECT THE INLETS FOR SEDIMENTS AND REMOVE AND DISPOSE OF ANY DEBRIS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. MATERIALS SHALL BE DISPOSED OF AT A DISPOSAL SITE IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE CONTRACT DOCUMENTS AND THE CGP PERMIT.

THE CONTRACTOR SHALL IMMEDIATELY ROUGHEN ALL DISTURBED SOIL SURFACES TO THE SATISFACTION OF THE ENGINEER BY THE USE OF TRACK DRIVEN BULLDOZERS, SHEEPSFOOT ROLLERS OR OTHER APPROVED METHODS. THE CONTRACTOR SHALL APPLY DUST CONTROL MEASURES OVER EXPOSED SURFACES NOT INTENDED TO BE VEGETATED. THE ON-SITE PLAN COORDINATOR SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL STRUCTURES AND MEASURES IN ACCORDANCE WITH THE PRECEDING REQUIREMENTS BUT NO LESS OFTEN THAN AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND AS SOON AS POSSIBLE BUT NOT MORE THEN 24 HOURS AFTER ANY STORM EVENT. EXCEPT FOR THE INLET PROTECTION MEASURES IN AREAS SUBJECT TO VEHICULAR TRAFFIC, INSPECTION FREQUENCY MAY BE REDUCED TO NOT LESS THAN ONE (1) PER MONTH IF THE ENTIRE SITE IS TEMPORARILY STABILIZED.

IN ACCORDANCE WITH THE TYPICAL DETAILS, SILT FENCE IS PROPOSED AT THE TOE OF EMBANKMENT SLOPES. THE CONTRACTOR SHALL INSTALL SILT FENCE AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN AND REPAIR ALL SILT FENCES AS NECESSARY AND REMOVE COLLECTED DEBRIS AND SEDIMENT WHEN NECESSARY OR AT REGULAR INTERVALS AS DEFINED IN THE MAINTENANCE SCHEDULE OR AS DIRECTED BY THE ENGINEER.

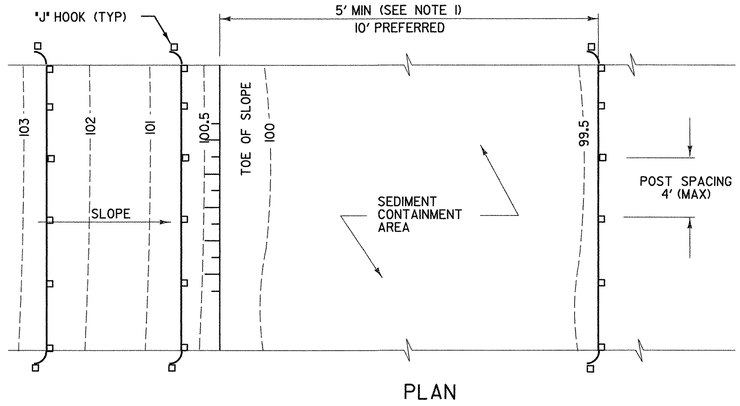
ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY OR FINAL STABILIZATION WITHIN 7 DAYS OF THE INITIAL DISTURBANCE. AFTER THIS TIME, ANY DISTURBANCE IN THE AREA MUST BE STABILIZED AT THE END OF EACH WORK DAY. THE FOLLOWING EXCEPTIONS APPLY: i) STABILIZATION IS NOT REQUIRED IF WORK IS TO CONTINUE IN THE AREA WITHIN THE NEXT 24 HOURS AND THERE IS NO PRECIPITATION FORECAST FOR THE NEXT 24 HOURS. ii) STABILIZATION IS NOT REQUIRED IF THE WORK IS OCCURRING IN A SELF-CONTAINED EXCAVATION WITH A DEPTH OF 2 FEET OF GREATER. THE CONTRACTOR SHALL LIMIT CONCURRENT EARTH DISTURBANCES TO TWO ACRES OR LESS AT ANY ONE TIME.

THE PROPOSED STONE LINED DITCH AND DROP STRUCTURE AT THE WHITE RIVER OUTFALL SHALL BE COMPLETED IN IT'S ENTIRETY BEFORE BEGINNING THE REMAINING DRAINAGE WORK. THE OUTFALL AND DROP STRUCTURE INLETS MUST BE PROTECTED AND MAINTAINED FOR THE DURATION OF THE PROJECT. THE DITCH, DROP STRUCTURE AND INLET PROTECTION MEASURES SHALL BE INSPECTED WEEKLY FOR DEBRIS AND ALL DEBRIS WHICH HAS COLLECTED IN THE CHANNEL OR DROP STRUCTURE SHALL BE REMOVED AND BE DISPOSED OF IN ACCORDANCE WITH THE WASTE MATERIAL DISPOSAL REQUIREMENTS SET FORTH IN THE CONTRACT DOCUMENTS. THE DROP STRUCTURE INLET MUST BE PROTECTED WITH THE ROCK BARRIER TYPE INLET PROTECTION MEASURE OR ENGINEER APPROVED EQUAL.

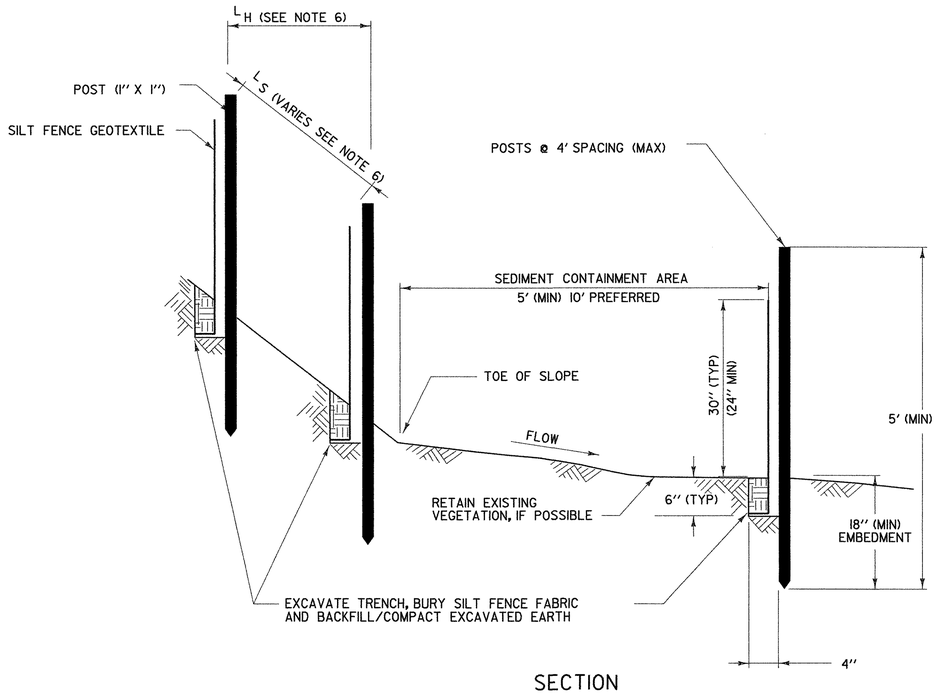
IT IS ANTICIPATED THAT CONSTRUCTION STAGING CAN BE ACCOMPLISHED WITHIN THE EXISTING LIMITS OF WORK. ALL MATERIAL HANDLING AND DISPOSAL WORK SHALL BE IN ACCORDANCE WITH SECTION 105 OF THE STANDARD SPECIFICATIONS AND THE VERMONT AGENCY OF NATURAL RESOURCES (VANR) REQUIREMENTS. WHEREVER POSSIBLE, EXCAVATED SOIL MATERIAL SHALL BE RE-USED WHEN APPROVED BY AND AT THE DISCRETION OF THE ENGINEER TO FORM EMBANKMENTS AND AS OTHER BORROW MATERIALS. EXCESS MATERIALS SHALL BE DISPOSED OF IN WASTE SITES APPROVED BY THE AGENCY TO RECEIVE THESE MATERIALS. THE CONTRACTOR SHALL SUBMIT TO THE AGENCY, FOR REVIEW AND APPROVAL, A "WASTE BORROW STAGING REVIEW SHEET" FOR EACH DISPOSAL SITE HE/SHE WISHES TO USE FOR THIS PROJECT. ANY ADDITIONAL PERMITTING REQUIRED FOR THE DISPOSAL SITES OR PROOF OF COMPLIANCE FOR THESE WASTE SITES MUST BE FURNISHED BY THE CONTRACTOR PRIOR TO USE. TEMPORARY AND PERMANENT STABILIZATION OF ALL STAGING AREAS AND WASTE DISPOSAL AREAS SHALL BE IN ACCORDANCE WITH SECTION 105 OF THE STANDARD SPECIFICATIONS AND IN ACCORDANCE WITH THE CGP 3-9020 AND VANR REQUIREMENTS.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027ecnarr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/31/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 119 OF 239



PLAN



SECTION

SILT FENCE - TEMPORARY

SILT FENCE

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.

B. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.

C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

GENERAL NOTES:

1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 5 FEET BEYOND TOE OF SLOPE, 10 FEET PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.

2. ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.

3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.

4. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 6 INCHES BELOW GROUND, AND KEYED IN 4 INCHES. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.

5. MAXIMUM DRAINAGE AREA TRIBUTARY TO 100 FEET OF SILT FENCE SHALL BE 0.25 ACRES.

6. THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS FOR THESE MEASURES:

CONSTRUCTED SLOPE	SLOPE LENGTH (LS) FT	HORIZONTAL LENGTH (LH) FT
3 : 1	80	75
4 : 1	130	125
5 : 1	200	200
> 5 : 1	250	250

7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.

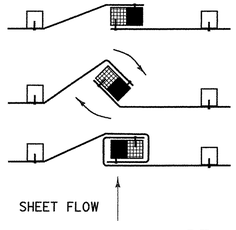
8. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.

9. SILT FENCE SHALL BE REMOVED WHEN THE AREA HAS BEEN STABILIZED. AT TIME OF REMOVAL OF THE SILT FENCE, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.

10. PAYMENT FOR INSTALLATION AND REMOVAL OF SILT FENCE SHALL BE MADE UNDER THE GEOTEXTILE FOR SILT FENCE ITEM.

11. PAYMENT FOR MONITORING SILT FENCE SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.

12. PAYMENT FOR MAINTAINING SILT FENCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

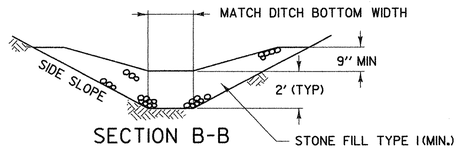


1. PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL
3. DRIVE BOTH POSTS 18 INCHES INTO THE GROUND AND BURY THE FLAP IN THE TRENCH.

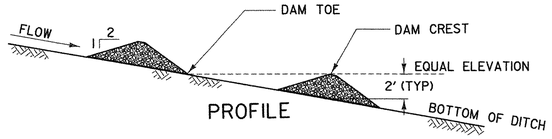
SPLICING DETAIL

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027erosdet.DGN	
IPARM FILE NAME:	PLOT DATE: 1/6/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 120 OF 239



SECTION B-B



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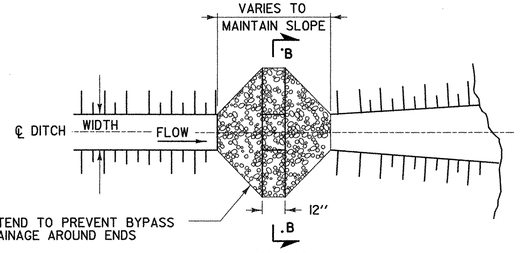
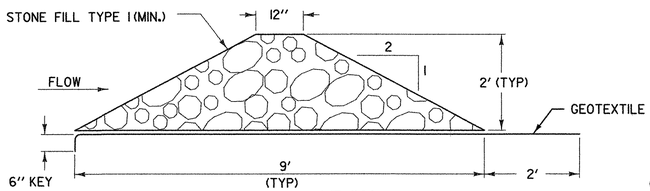


PLAN



CROSS SECTION

TEMPORARY STONE CHECK DAM

NOT TO SCALE

STONE CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL ••
1%	200 FT
2 %	100 FT
3 %	65 FT
4 %	50 FT
5 %	40 FT
6 %	30 FT
8 %	25 FT
10 %	20 FT

•• BASED ON 2' TYPICAL HEIGHT

CHECK DAMS

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF A CHECK DAM IS TO REDUCE EROSION IN A CHANNEL BY REDUCING FLOW VELOCITY.

B. CHECK DAMS WILL CAPTURE SEDIMENT THAT FALLS OUT OF SUSPENSION BEHIND THE CHECK DAM DUE TO DECREASED VELOCITY.

C. CHECK DAMS ARE NOT INTENDED TO FILTER SEDIMENT FROM TURBID WATER.

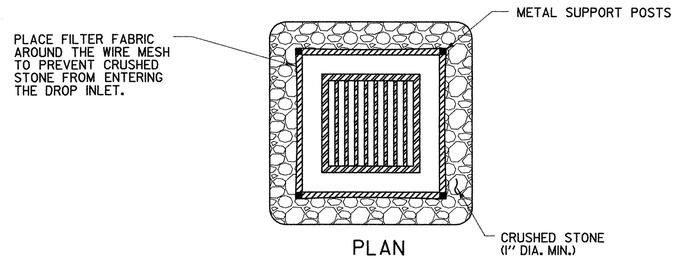
D. DETAILS SHOWN SHALL BE USED FOR TEMPORARY INSTALLATION ONLY.

E. PREFABRICATED DAMS ARE NOT TO BE USED ON SLOPES GREATER THAN 5% OR PER MANUFACTURER'S SPECIFICATIONS.

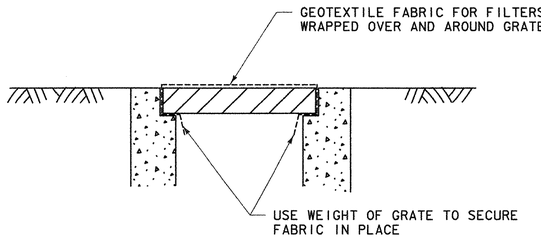
F. PREFABRICATED DAM SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

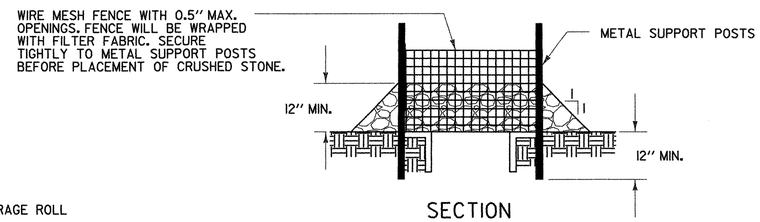
GENERAL NOTES:

1. GEOTEXTILE SHALL BE INSTALLED UNDER STONE FILL. IT SHALL BE KEYED IN ON THE UP HILL END AND SHALL EXTEND 2 FEET BEYOND THE STONE ON THE DOWN HILL END.
2. CORE MATERIAL FOR THE STONE CHECK DAM SHALL MEET THE GRADATION REQUIREMENTS OF STONE FILL TYPE I (MIN.). STONE SIZE SHOULD BE INCREASED WITH INCREASED SLOPE AND VELOCITY.
3. THE UPHILL END OF THE APRON FOR THE PREFABRICATED CHECK DAM SHALL BE STAPLED AND BURIED AS SHOWN IN DETAIL "A" OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.
4. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
5. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
6. AT TIME OF REMOVAL OF THE CHECK DAMS, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
7. PAYMENT FOR INSTALLATION AND REMOVAL OF CHECK DAMS SHALL BE MADE UNDER STONE FILL, TYPE I (MOD. - CHECK DAM).
8. PAYMENT FOR MONITORING CHECK DAMS SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
9. PAYMENT FOR MAINTAINING CHECK DAMS SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



PLAN





SECTION

NOTE:

1) GEOTEXTILE FABRIC FOR FILTERS SHALL HAVE THE FOLLOWING MINIMUM AVERAGE ROLL VALUES:
   - A) GRAB TENSILE STRENGTH PER ASTM D 4632 SHALL BE 90 LBS.
   - B) BURST STRENGTH PER ASTM D 3786 SHALL BE 175 PSI.
   - C) PUNCTURE PER ASTM D 4833 SHALL BE 55 LBS.
   - D) TRAPEZOIDAL TEAR STRENGTH PER ASTM D 4533 SHALL BE 40 LBS.
   - E) APPARENT OPENING SIZE PER ASTM D 4751 SHALL BE 0.25 mm.
   - F) PERMITTIVITY PER ASTM D 4491 SHALL BE 2.0 L/SEC.
   - G) PERMEABILITY PER ASTM D 4491 SHALL BE ≥ 0.20 CM/SEC.
   - H) FLOW RATE PER ASTM D 4491 SHALL BE ≥ 145 GAL/MIN./SQFT.
   - I) UV RESISTANCE PER ASTM D 4355 SHALL BE 70 @ 500 HOURS (% STRENGTH RETAINED).
2) ELONGATION CORRESPONDS TO MAXIMUM GRAB TENSILE STRENGTH AS MEASURED IN ACCORDANCE WITH ASTM D 4632. GEOTEXTILE FABRIC FOR FILTERS SHALL BE INERT TO BIOLOGICAL DEGRADATION AND RESIST NORMALLY ENCOUNTERED PETROLEUM MATERIAL, CHEMICALS, ALKALIS, AND ACIDS.

TYPICAL FILTER FABRIC INSTALLATION FOR INLET PROTECTION IN AREAS SUBJECT TO VEHICULAR TRAFFIC

ROCK BARRIER INLET PROTECTION FOR AREAS NOT SUBJECT TO VEHICULAR TRAFFIC

DROP INLET PROTECTION

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF DRAINAGE STRUCTURE INLET PROTECTION IS TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM BY PONDING WATER WHICH ALLOWS SEDIMENT TO FALL OUT OF SUSPENSION.

B. THESE EXAMPLES OF DROP INLET PROTECTION ARE NOT INTENDED FOR USE ON GRADES. ON GRADE THEY MAY CAUSE WATER TO BYPASS THE STRUCTURE, CREATING ADDITIONAL EROSION OR FLOODING.

C. POSSIBLE MODIFICATIONS FOR USE ON GRADE INCLUDE ADDING A BERM DOWNSTREAM OF THE INLET TO CREATE PONDING. CHECK DAMS MAY ALSO BE USED UPSTREAM OF THE INLET TO SLOW VELOCITIES.

D. PREFABRICATED DROP INLET PROTECTION MAY BE ALLOWED AT THE DISCRETION OF THE RESIDENT ENGINEER. SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

GENERAL NOTES:

1. THE TOP OF THE INLET PROTECTION SHALL BE SET AT THE MAXIMUM DESIRED WATER LEVEL, BASED ON FIELD LOCATION AND CONDITIONS.
2. SILT FENCE GEOTEXTILE SHALL BE A SINGLE CONTINUOUS PIECE TO ELIMINATE JOINTS.
3. SPACE SILT FENCE POSTS EVENLY AROUND INLET WITH A MAXIMUM SPACING OF 3 FEET. DRIVE POSTS A MINIMUM OF 18 INCHES INTO GROUND. WIRE MESH MAY BE REQUIRED BEHIND GEOTEXTILE TO PROVIDE SUPPORT.
4. SILT FENCE GEOTEXTILE SHALL BE EMBEDDED A MINIMUM OF 6 INCHES AND BACKFILLED. GEOTEXTILE SHALL BE SECURELY FASTENED TO POSTS AND FRAME.
5. SECURE THE ENDS OF THE APRON FOR THE PREFABRICATED DRAINAGE STRUCTURE INLET PROTECTION WITH STAPLES AS DETAILED IN THE PLAN VIEW OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.
6. INLET PROTECTION MEASURES FOR AREAS SUBJECT TO VEHICULAR TRAFFIC SHALL BE INSPECTED DAILY. INLET PROTECTION MEASURES FOR AREAS NOT SUBJECT TO VEHICULAR TRAFFIC SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS. BOTH MEASURES SHALL BE INSPECTED WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
7. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED, SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE CONSIDERED AS UNSUITABLE MATERIAL AND SHALL BE DISPOSED ACCORDING TO THE SPECIFICATIONS. NO MATERIAL SHALL BE DISPOSED INTO INLETS.
8. PAYMENT FOR INSTALLATION AND REMOVAL OF INLET PROTECTION IN AREAS SUBJECT TO VEHICULAR TRAFFIC SHALL BE MADE UNDER THE GEOTEXTILE FABRIC FOR FILTERS ITEM; INLET PROTECTION FOR AREAS NOT SUBJECT TO VEHICULAR TRAFFIC SHALL BE PAID UNDER THE STONE FILL, TYPE I (MOD. - INLET PROTECTION) ITEM.
9. PAYMENT FOR MONITORING INLET PROTECTION SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
10. PAYMENT FOR MAINTAINING INLET PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.
11. DROP INLET PROTECTION WITH AN ELEVATED BERM NOT TO BE USED IN AREAS WHERE VEHICULAR TRAFFIC IS EXPECTED.

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027erosdet.DGN	
IPARM FILE NAME:	PLOT DATE: 2/28/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 121 OF 239

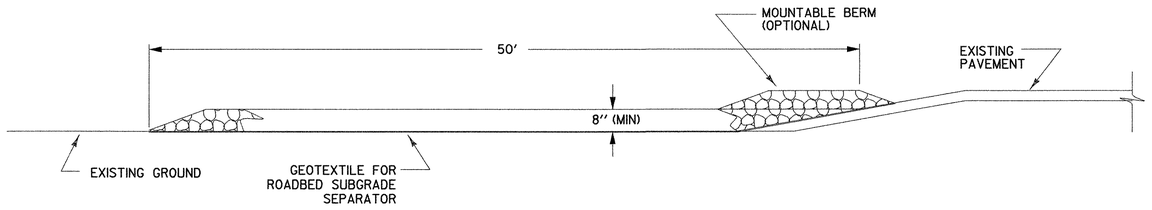
STABILIZED CONSTRUCTION ENTRANCE

APPLICATION NOTES:

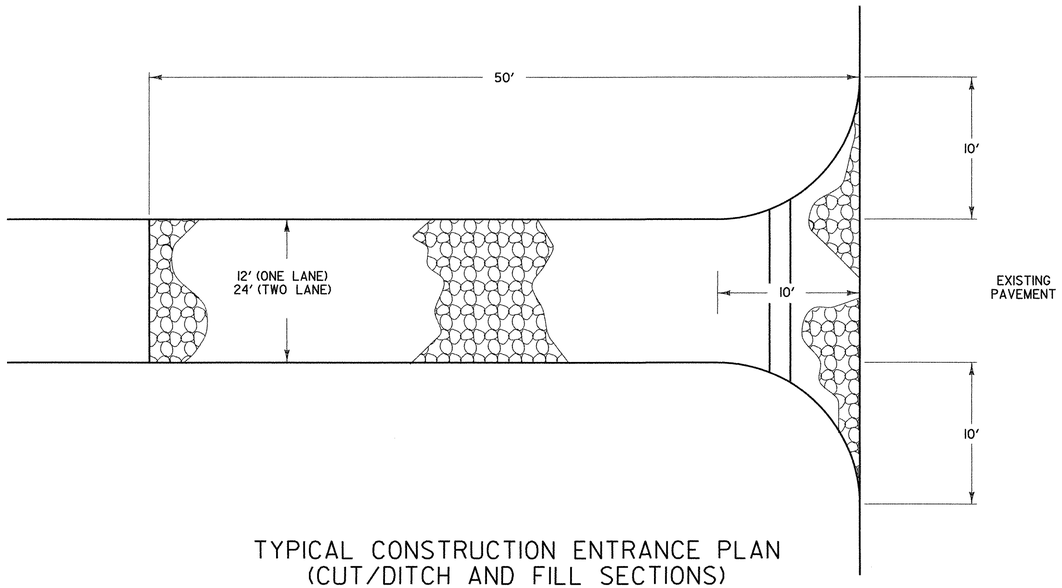
A. THE PURPOSE OF A STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY OR STREETS.

GENERAL NOTES:

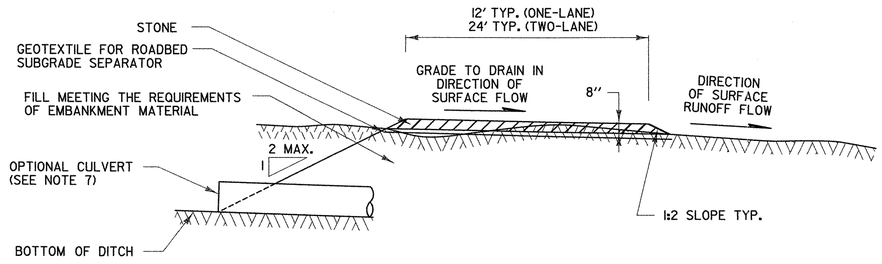
1. STONE SIZE - USE CLEAN STONE WITH GRADATION BETWEEN 2 INCHES AND 4 INCHES .
2. LENGTH - 50 FEET (MIN)
3. THICKNESS - 8 INCHES (MIN)
4. WIDTH - 12 FEET (MIN)
5. GEOTEXTILE FOR ROADBED SUBGRADE SEPARATOR SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE AS DIRECTED BY THE ENGINEER. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. PROPOSED DRAINAGE PIPES SHALL BE SIZED WITH SUFFICIENT CAPACITY TO CARRY DITCH FLOWS. ALTERNATIVE WAYS OF TRANSPORTING DITCH DRAINAGE ACROSS CONSTRUCTION ENTRANCES MAY BE PROPOSED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.
8. WHEN WASHING OF VEHICLE IS NECESSARY, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
10. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
11. AT THE TIME OF REMOVAL OF THE STABILIZED CONSTRUCTION ENTRANCE THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
12. PAYMENT FOR INSTALLATION AND REMOVAL OF THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE MADE UNDER THE STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE) ITEM.
13. PAYMENT FOR MONITORING STABILIZED CONSTRUCTION ENTRANCES SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
14. PAYMENT FOR MAINTAINING THE CONSTRUCTION ENTRANCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



TYPICAL CONSTRUCTION ENTRANCE PROFILE
(CUT AND DITCH SECTIONS)



TYPICAL CONSTRUCTION ENTRANCE PLAN
(CUT/DITCH AND FILL SECTIONS)



TYPICAL CONSTRUCTION ENTRANCE SECTION

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027erosdet.DGN	
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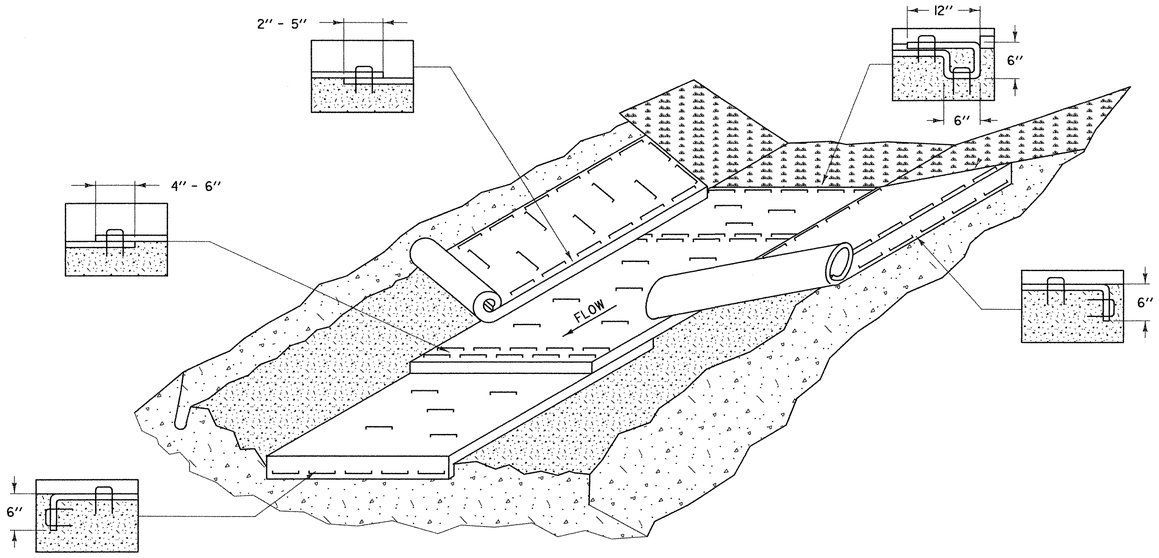
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 122 OF 239



EROSION PROTECTION FOR DITCHES

APPLICATION NOTES:

A. THE PURPOSE OF LINING THE DITCH WITH EROSION MATTING IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION AT LOW VELOCITIES.

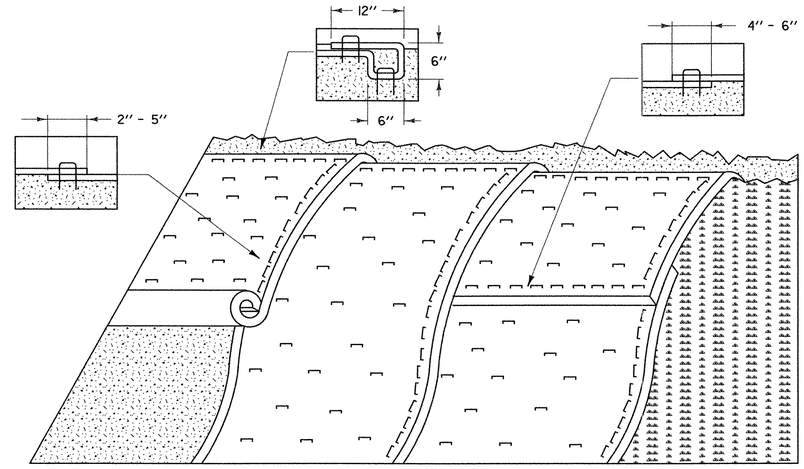
B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

DITCH AND CHANNEL PROTECTION	
SLOPE	LINING
< 1%	GRASS
1% TO 4 %	EROSION MATTING
4 % TO 10 %	STONE FILL, TYPE I
> 10 %	STONE FILL, TYPE II

STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	1 FT
TYPE II	2 FT

GENERAL NOTES:

1. WATER MAY NEED TO BE DIVERTED TO ALLOW PROPER MATTING INSTALLATION.
2. GRADE AND SMOOTH CHANNEL TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
3. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
4. INSTALL MATTING IN THE CENTER OF THE CHANNEL, IN THE DIRECTION OF THE WATER FLOW.
5. INSTALL MATTING ON THE SIDE SLOPES OF THE CHANNEL, OVERLAPPING THE CENTER MAT.
6. ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.
9. PAYMENT FOR INSTALLATION OF MATTING SHALL BE MADE UNDER THE EROSION CONTROL WITH MATTING ITEM.
10. PAYMENT FOR MONITORING EROSION CONTROL MATTING SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
11. PAYMENT FOR MAINTAINING DITCH PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



EROSION PREVENTION FOR SIDE SLOPES

APPLICATION NOTES:

A. THE PURPOSE OF MATTING ON SIDE SLOPES IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION

B. EROSION CONTROL MATTING SHALL BE USED FOR THE FOLLOWING REASONS:

- SIDE SLOPES > 3:1 (H:V)
- AREAS WHERE SEED AND MULCH WILL NOT STAY IN PLACE ALONE
- WHERE SEEDING IS OUTSIDE THE GROWING SEASON.

GENERAL NOTES:

1. GRADE AND SMOOTH THE SLOPE TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
2. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
3. ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
4. UNROLL MATTING VERTICALLY DOWN SLOPE IN THE DIRECTION OF WATER FLOW.
5. OVERLAP UPPER MATTING OVER LOWER MATTING AS SHOWN.
6. OVERLAP ADJACENT MATTING AS SHOWN.
7. CUT EXCESS MATTING AT END OF SLOPE AND ANCHOR THE END.
8. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
9. MATTING SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.
10. PAYMENT FOR INSTALLATION OF MATTING SHALL BE MADE UNDER THE EROSION MATTING ITEM.
11. PAYMENT FOR MONITORING EROSION CONTROL MATTING SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
12. PAYMENT FOR MAINTAINING SLOPE PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
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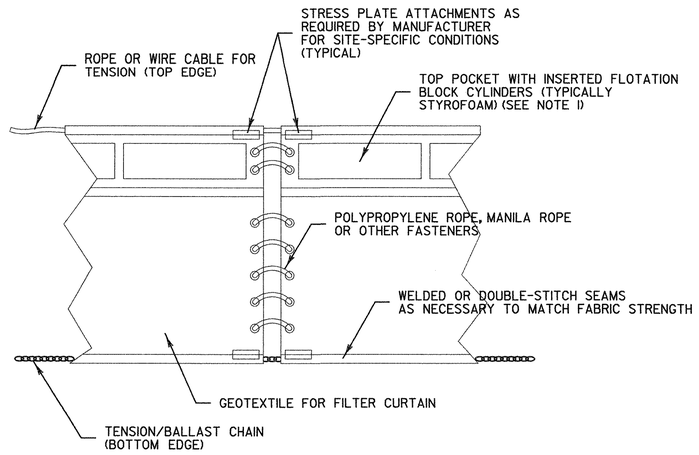
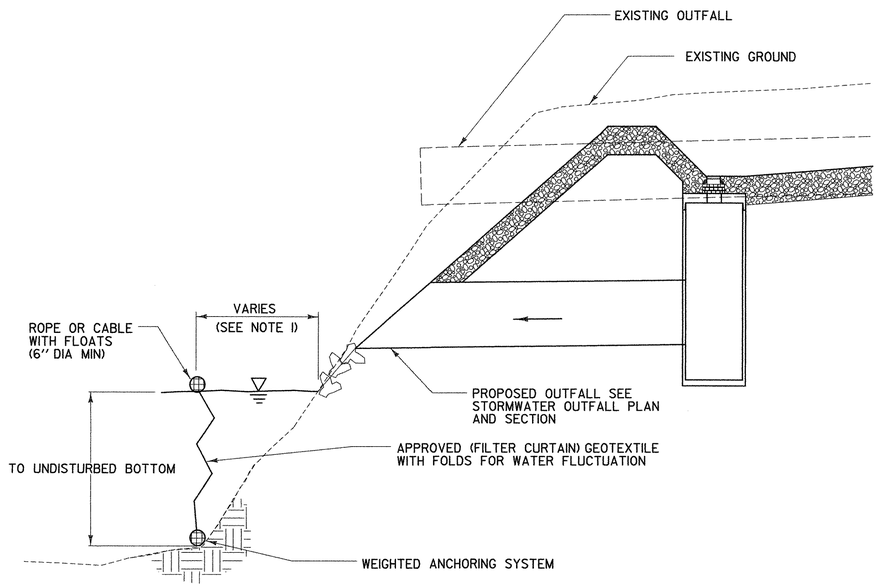
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 123 OF 239



FILTER CURTAIN ELEVATION



FILTER CURTAIN APPLICATION DETAIL

APPLICATION NOTES:

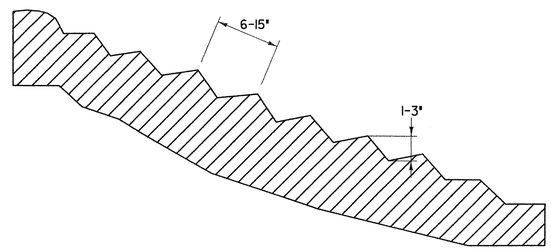
A. THE PURPOSE OF A FILTER CURTAIN IS TO SEPARATE WORK AREAS IN OR ADJACENT TO WATERS, TO PREVENT SEDIMENT FROM ENTERING THE WATERS.

B. FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FT/SEC.

C. FILTER CURTAIN SHALL NOT BE PLACED AT THE OUTLET OF A CULVERT OR DITCH UNLESS THE VELOCITY DOES NOT EXCEED 1.5 FT/SEC.

GENERAL NOTES:

1. THE FILTER CURTAIN SHALL BE PLACED AS CLOSE TO THE WORK AS POSSIBLE WITHOUT INTERFERING WITH CONSTRUCTION OPERATIONS.
2. THE FILTER CURTAIN SHALL BE A MAXIMUM OF 100 FEET LONG BETWEEN ANCHORS. LAST SECTION SHALL TERMINATE A MINIMUM OF 10 FEET BEYOND THE LIMIT OF DISTURBANCE.
3. THE CONTRACTOR SHALL MONITOR THE FILTER CURTAIN, TAKING INTO ACCOUNT WEATHER PATTERNS AND PREVAILING WIND DIRECTIONS THAT MAY AFFECT WATER LEVELS, VELOCITY AND MOVEMENT OF THE FILTER CURTAIN.
4. THE FILTER CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE TO MINIMIZE ESCAPE OF SEDIMENTS INTO THE WATERWAY.
5. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE THAT ALLOWS THE CURTAIN TO CONFORM TO THE CONTOUR ON THE BOTTOM OF THE WATERWAY.
6. STYROFOAM BLOCK SIZE AND BUOYANCY REQUIREMENTS SHALL BE AS MANDATED BY MANUFACTURER'S REQUIREMENTS BASED ON WEIGHT AND LENGTH OF CURTAIN.
7. ATTACH STRESS PLATES TO FABRIC AND CABLE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS BASED ON SITE-SPECIFIC CONDITIONS.
8. STAKE/ANCHOR FLOATING SILT CURTAIN AT CORNERS AND AT SPACINGS IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
9. ANCHOR FLOATING SILT CURTAIN ON LAND AT LOCATIONS UPSTREAM AND DOWNSTREAM OF CONSTRUCTION AREAS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
10. PAYMENT FOR INSTALLATION AND REMOVAL OF FILTER CURTAIN SHALL BE MADE UNDER THE GEOTEXTILE FOR FILTER CURTAIN ITEM.
11. PAYMENT FOR MONITORING FILTER CURTAIN SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
12. PAYMENT FOR MAINTAINING FILTER CURTAIN SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



1. THE CONTRACTOR SHALL IMMEDIATELY ROUGHEN ALL DISTURBED SOIL SURFACES TO THE SATISFACTION OF THE ENGINEER BY THE USE OF TRACK DRIVEN BULLDOZERS, SHEEPSFOOT ROLLERS OR OTHER APPROVED METHODS. THE ROUGHENED GROOVES SHALL BE PARALLEL TO THE CONTOURS.
2. THE CONTRACTOR SHALL APPLY DUST CONTROL MEASURES OVER EXPOSED SURFACES NOT INTENDED TO BE VEGETATED. HAY MULCH SHALL BE APPLIED OVER THOSE SURFACES INTENDED BE VEGETATED.

SURFACE ROUGHENING DETAILS

DATUM

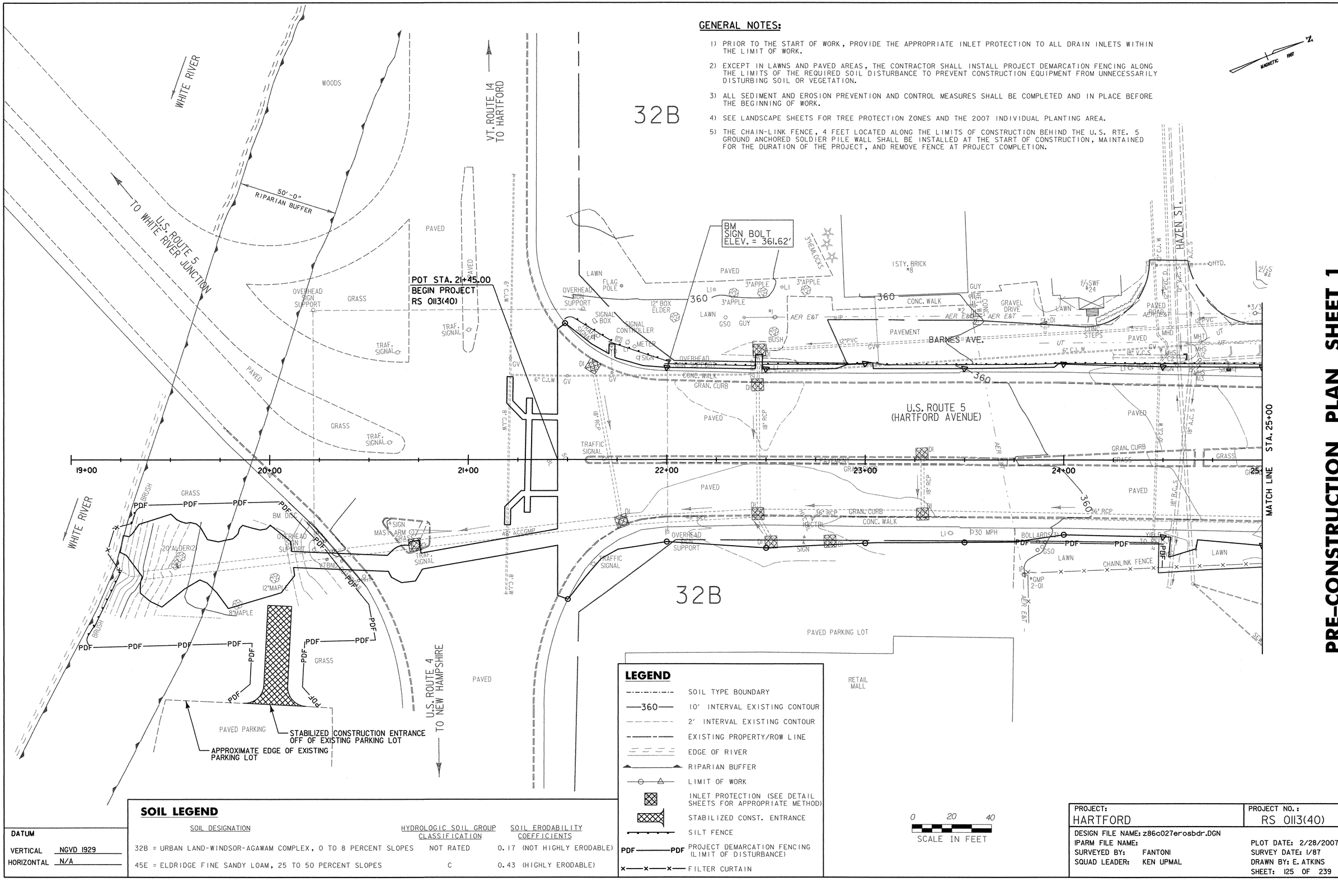
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027erosdet.DGN	
IPARM FILE NAME:	PLOT DATE: 1/16/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 124 OF 239

PRE-CONSTRUCTION PLAN SHEET 1

GENERAL NOTES:

1) PRIOR TO THE START OF WORK, PROVIDE THE APPROPRIATE INLET PROTECTION TO ALL DRAIN INLETS WITHIN THE LIMIT OF WORK.
2) EXCEPT IN LAWNS AND PAVED AREAS, THE CONTRACTOR SHALL INSTALL PROJECT DEMARCATION FENCING ALONG THE LIMITS OF THE REQUIRED SOIL DISTURBANCE TO PREVENT CONSTRUCTION EQUIPMENT FROM UNNECESSARILY DISTURBING SOIL OR VEGETATION.
3) ALL SEDIMENT AND EROSION PREVENTION AND CONTROL MEASURES SHALL BE COMPLETED AND IN PLACE BEFORE THE BEGINNING OF WORK.
4) SEE LANDSCAPE SHEETS FOR TREE PROTECTION ZONES AND THE 2007 INDIVIDUAL PLANTING AREA.
5) THE CHAIN-LINK FENCE, 4 FEET LOCATED ALONG THE LIMITS OF CONSTRUCTION BEHIND THE U.S. RTE. 5 GROUND ANCHORED SOLDIER PILE WALL SHALL BE INSTALLED AT THE START OF CONSTRUCTION, MAINTAINED FOR THE DURATION OF THE PROJECT, AND REMOVE FENCE AT PROJECT COMPLETION.



SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODABILITY COEFFICIENTS
32B = URBAN LAND-WINDSOR-AGAWAM COMPLEX, 0 TO 8 PERCENT SLOPES	NOT RATED	0.17 (NOT HIGHLY ERODABLE)
45E = ELDRIDGE FINE SANDY LOAM, 25 TO 50 PERCENT SLOPES	C	0.43 (HIGHLY ERODABLE)

LEGEND

- SOIL TYPE BOUNDARY
- 360 — 10' INTERVAL EXISTING CONTOUR
- 2' INTERVAL EXISTING CONTOUR
- EXISTING PROPERTY/ROW LINE
- EDGE OF RIVER
- RIPARIAN BUFFER
- LIMIT OF WORK
- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF ——— PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

0 20 40
SCALE IN FEET

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027erosbdr.DGN
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SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 2/28/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
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PRE-CONSTRUCTION PLAN SHEET 2

32B

45E

MATCH LINE STA. 25+00

MATCH LINE STA. 30+00

BARNES AVENUE

U.S. ROUTE 5
(HARTFORD AVENUE)

BM
CHISELED SQUARE
ON RET. WALL
ELEV. = 395.53'

26+00 27+00 28+00 29+00

32B

ELEMENTARY SCHOOL

CHAIN-LINK FENCE, 4 FEET SHALL BE INSTALLED AT THE START OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. INSTALL FENCE 5' BEYOND (TYP.) THE LIMIT OF SLOPE WORK. LOCATION OF THE FENCE SHALL BE FIELD ADJUSTED TO AVOID CUTTING OR REMOVING OF TREES. REMOVE FENCE AT PROJECT COMPLETION

45E

LEGEND

- SOIL TYPE BOUNDARY
- 360 — 10' INTERVAL EXISTING CONTOUR
- 2' INTERVAL EXISTING CONTOUR
- EXISTING PROPERTY/ROW LINE
- EDGE OF RIVER
- RIPARIAN BUFFER
- LIMIT OF WORK
- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF PDF — PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

SOIL LEGEND

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45E = ELDRIDGE FINE SANDY LOAM, 25 TO 50 PERCENT SLOPES	C	0.43 (HIGHLY ERODABLE)

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

0 20 40

SCALE IN FEET

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SQUAD LEADER: KEN UPMAL

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SURVEY DATE: 1/87

DRAWN BY: E. ATKINS

SHEET: 126 OF 239

PRE-CONSTRUCTION PLAN SHEET 3

LEGEND

- SOIL TYPE BOUNDARY
- 360 — 10' INTERVAL EXISTING CONTOUR
- 2' INTERVAL EXISTING CONTOUR
- EXISTING PROPERTY/ROW LINE
- EDGE OF RIVER
- RIPARIAN BUFFER
- LIMIT OF WORK
- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF — PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODABILITY COEFFICIENTS
32B = URBAN LAND-WINDSOR-AGAWAM COMPLEX, 0 TO 8 PERCENT SLOPES	NOT RATED	0.17 (NOT HIGHLY ERODABLE)
45E = ELDRIDGE FINE SANDY LOAM, 25 TO 50 PERCENT SLOPES	C	0.43 (HIGHLY ERODABLE)

32B

45E

U.S. ROUTE 5
(HARTFORD AVENUE)

HIGHLAND AVE.

BM #10A
SPIKE IN 18"PINE
ELEV. = 460.84'

SQUARE WALL
395.53'

MATCH LINE STA. 30+00

MATCH LINE STA. 35+00

CHAIN-LINK FENCE, 4 FEET SHALL BE INSTALLED AT THE START OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. INSTALL FENCE 5' BEYOND (TYP.) THE LIMIT OF SLOPE WORK. LOCATION OF THE FENCE SHALL BE FIELD ADJUSTED TO AVOID CUTTING OR REMOVING OF TREES. REMOVE FENCE AT PROJECT COMPLETION

SCALE IN FEET
0 20 40

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027erosbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 2/28/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 127 OF 239

PRE-CONSTRUCTION PLAN SHEET 4

SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODABILITY COEFFICIENTS
32B = URBAN LAND-WINDSOR-AGAWAM COMPLEX, 0 TO 8 PERCENT SLOPES	NOT RATED	0.17 (NOT HIGHLY ERODABLE)
45E = ELDRIDGE FINE SANDY LOAM, 25 TO 50 PERCENT SLOPES	C	0.43 (HIGHLY ERODABLE)

HIGHLAND AVE. STA. 11+55.78 = SCHOOL ENTRANCE STA. 15+00.00

STA. 15+95.00 END APPROACH SCHOOL DRIVEWAY

STA. 21+40.00 END APPROACH HEBARD AVE.

US 5 STA. 38+47.18 = RELOCATED WORCESTER AVE. STA. 3+66.89 HIGHLAND ST. STA. 10+00.00

STA. 14+00.00 END APPROACH HIGHLAND ST.

U.S. 5 STA. 36+29.61 = RELOCATED WORCESTER AVE. STA. 0+00.00

RELOCATED WORCESTER AVE. STA. 1+46.00 = WORCESTER AVE. STA. 5+00.00

U.S. 5 STA. 39+81.37 = HEBARD AVE STA. 20+00.00

CHAIN-LINK FENCE, 4 FEET SHALL BE INSTALLED AT THE START OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. INSTALL FENCE 5' BEYOND (TYP.) THE LIMIT OF SLOPE WORK. LOCATION OF THE FENCE SHALL BE FIELD ADJUSTED TO AVOID CUTTING OR REMOVING OF TREES. REMOVE FENCE AT PROJECT COMPLETION

PC Sta. 5+45.09

PI Sta. 5+64.18

STA. 5+85.00 END APPROACH WORCESTER AVE.

TBM BOUND ELEV. = 490.87'

MATCH LINE STA. 35+00

MATCH LINE STA. 40+00

LEGEND

- SOIL TYPE BOUNDARY
- 360 — 10' INTERVAL EXISTING CONTOUR
- 2' INTERVAL EXISTING CONTOUR
- EXISTING PROPERTY/ROW LINE
- EDGE OF RIVER
- RIPARIAN BUFFER
- LIMIT OF WORK
- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF — PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

SCALE IN FEET: 0 20 40

DATUM

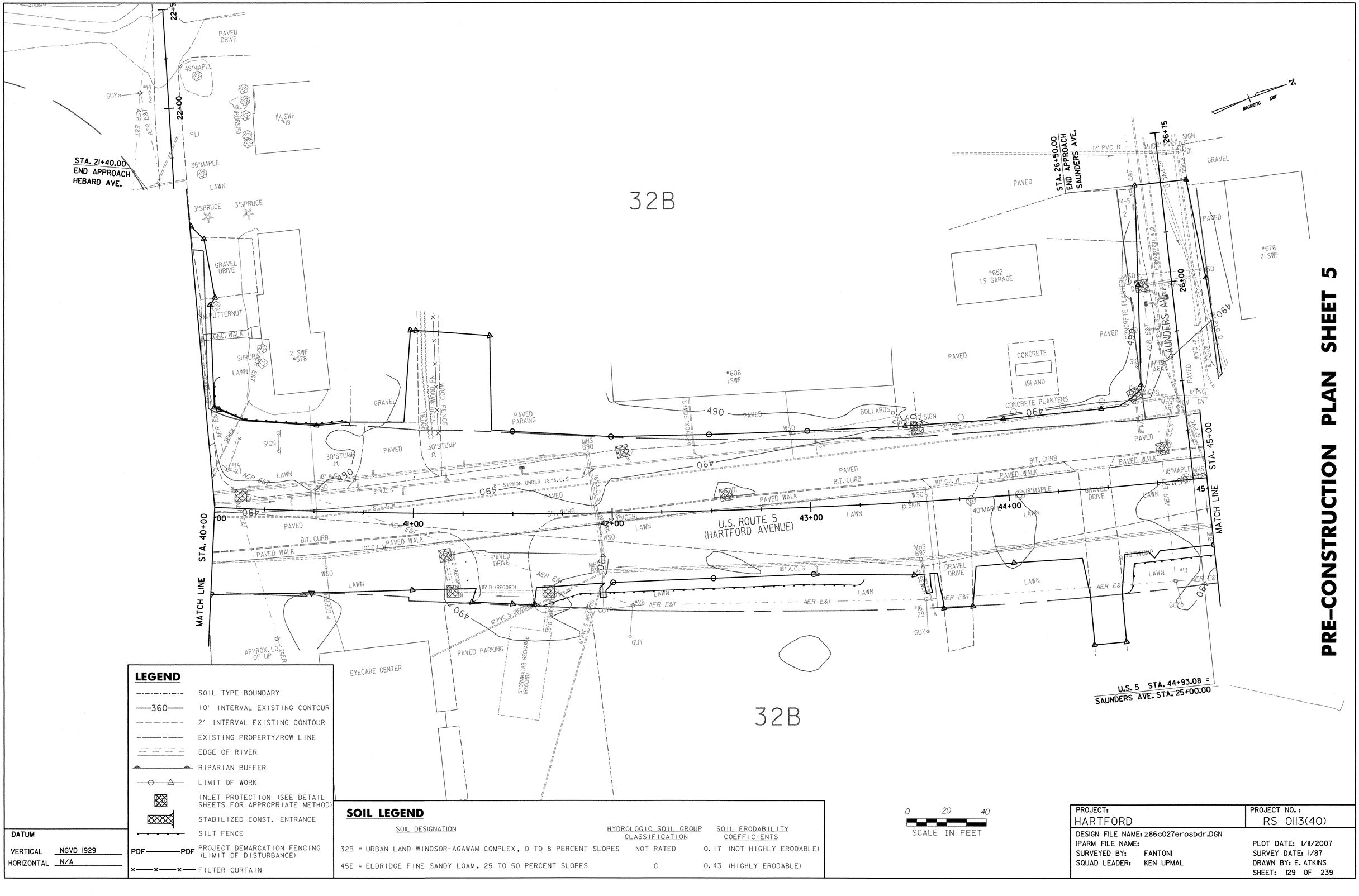
VERTICAL NGVD 1929

HORIZONTAL N/A

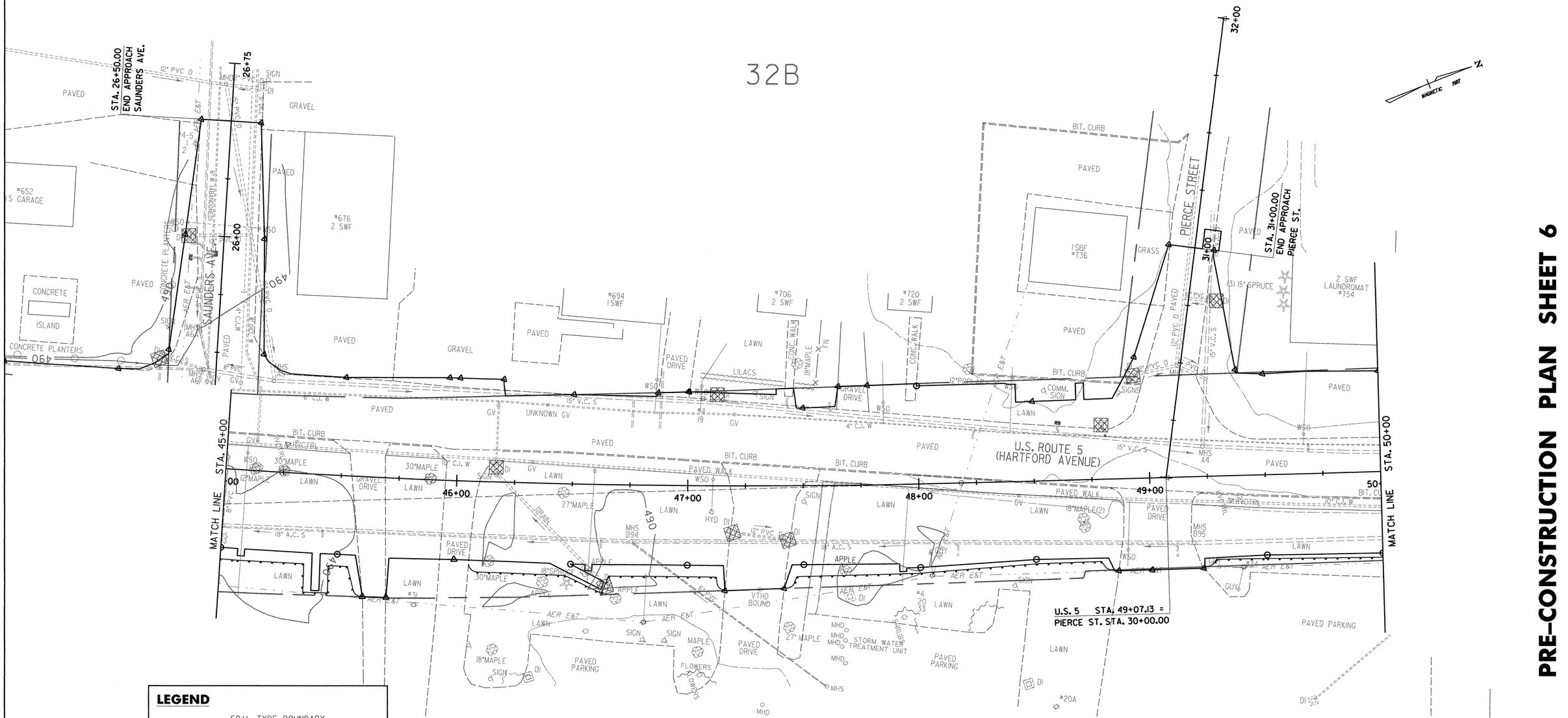
PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027erosbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 2/28/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 128 OF 239

PRE-CONSTRUCTION PLAN SHEET 5



PRE-CONSTRUCTION PLAN SHEET 6



LEGEND

- SOIL TYPE BOUNDARY
- 360 — 10' INTERVAL EXISTING CONTOUR
- 2' INTERVAL EXISTING CONTOUR
- EXISTING PROPERTY/ROW LINE
- EDGE OF RIVER
- RIPARIAN BUFFER
- LIMIT OF WORK
- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF——PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODABILITY COEFFICIENTS
32B = URBAN LAND-WINDSOR-AGAWAM COMPLEX, 0 TO 8 PERCENT SLOPES	NOT RATED	0.17 (NOT HIGHLY ERODABLE)
45E = ELDRIDGE FINE SANDY LOAM, 25 TO 50 PERCENT SLOPES	C	0.43 (HIGHLY ERODABLE)

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027erosbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/15/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 130 OF 239

PRE-CONSTRUCTION PLAN SHEET 7

32B

BM #12A
BLDG. COR. BLOCK
ELEV. = 492.03'

U.S. 5 STA. 52+15.57 =
GOUDREAU ST. STA. 35+00.00

U.S. 5 STA. 54+88.35 =
DEVIN ST. STA. 40+00.00

MATCH LINE STA. 50+00

MATCH LINE STA. 55+00

U.S. ROUTE 5
(HARTFORD AVENUE)

PIERCE STREET

STA. 31+00.00
END APPROACH
PIERCE ST.

GOUDREAU STREET

STA. 36+00.00
END APPROACH
GOUDREAU ST.

DEVIN STREET

STA. 41+00.00
END APPROACH
DEVIN ST.

EXISTING
SIGHT
EASEMENT (P)

2 SWF
LAW OFFICES
#780

IS BLOCK
STORE
#788

2 SWF
HEALTH CENTER
#826

1½ SWF
MEDICAL
OFFICES
#842

1 SWF
COMPUTER
CONNECTION, INC.
#860

ISBF
CHURCH
#749

#803
2 SWF

32B

LEGEND

- SOIL TYPE BOUNDARY
- 360 — 10' INTERVAL EXISTING CONTOUR
- 2' INTERVAL EXISTING CONTOUR
- EXISTING PROPERTY/ROW LINE
- EDGE OF RIVER
- RIPARIAN BUFFER
- LIMIT OF WORK
- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODABILITY COEFFICIENTS
32B = URBAN LAND-WINDSOR-AGAWAM COMPLEX, 0 TO 8 PERCENT SLOPES	NOT RATED	0.17 (NOT HIGHLY ERODABLE)
45E = ELDRIDGE FINE SANDY LOAM, 25 TO 50 PERCENT SLOPES	C	0.43 (HIGHLY ERODABLE)

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

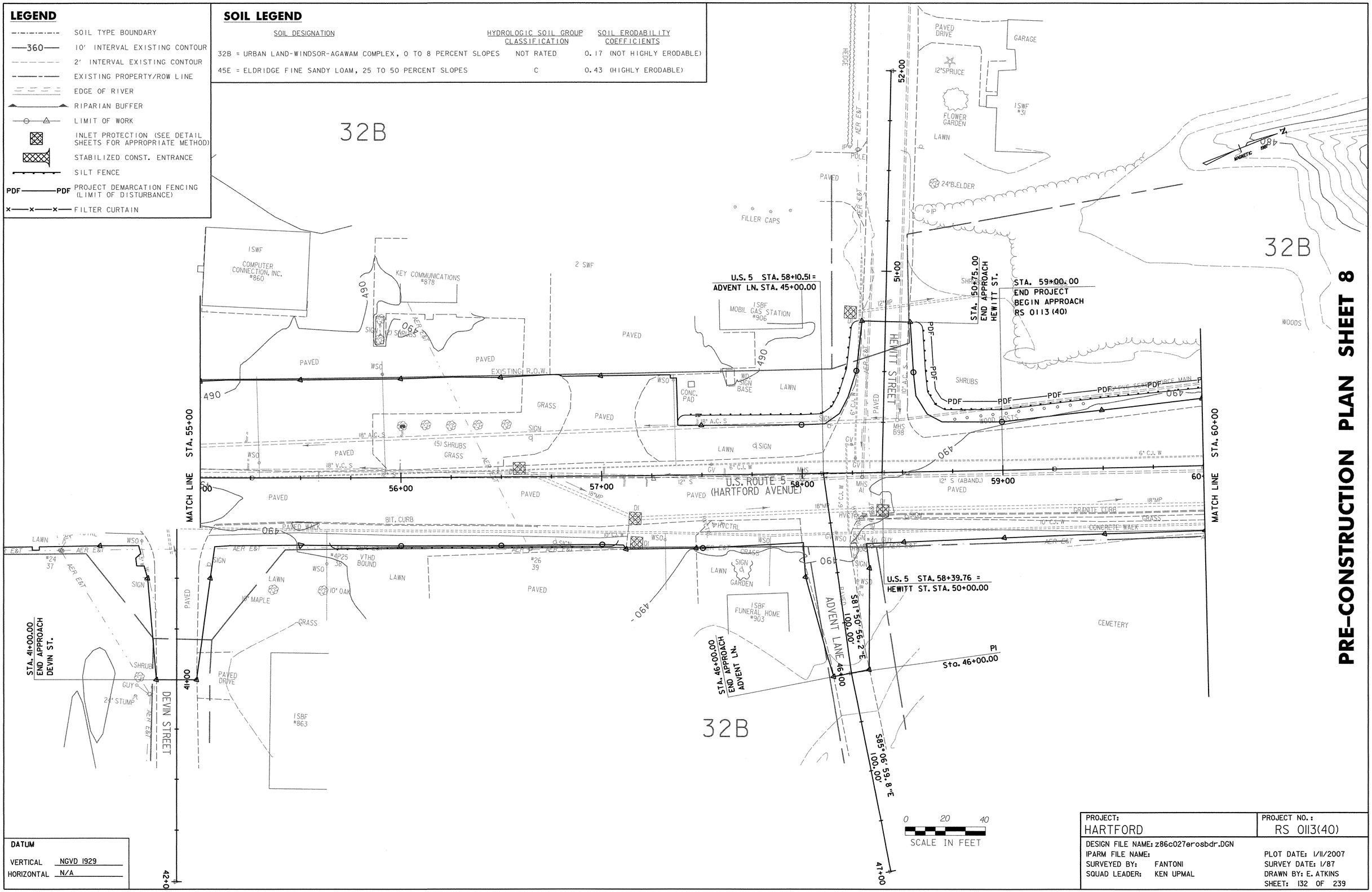
PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027erosbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/11/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 131 OF 239

LEGEND

- SOIL TYPE BOUNDARY
- 360 — 10' INTERVAL EXISTING CONTOUR
- 2' INTERVAL EXISTING CONTOUR
- EXISTING PROPERTY/ROW LINE
- EDGE OF RIVER
- RIPARIAN BUFFER
- LIMIT OF WORK
- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF — PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODABILITY COEFFICIENTS
32B = URBAN LAND-WINDSOR-AGAWAM COMPLEX, 0 TO 8 PERCENT SLOPES	NOT RATED	0.17 (NOT HIGHLY ERODABLE)
45E = ELDRIDGE FINE SANDY LOAM, 25 TO 50 PERCENT SLOPES	C	0.43 (HIGHLY ERODABLE)

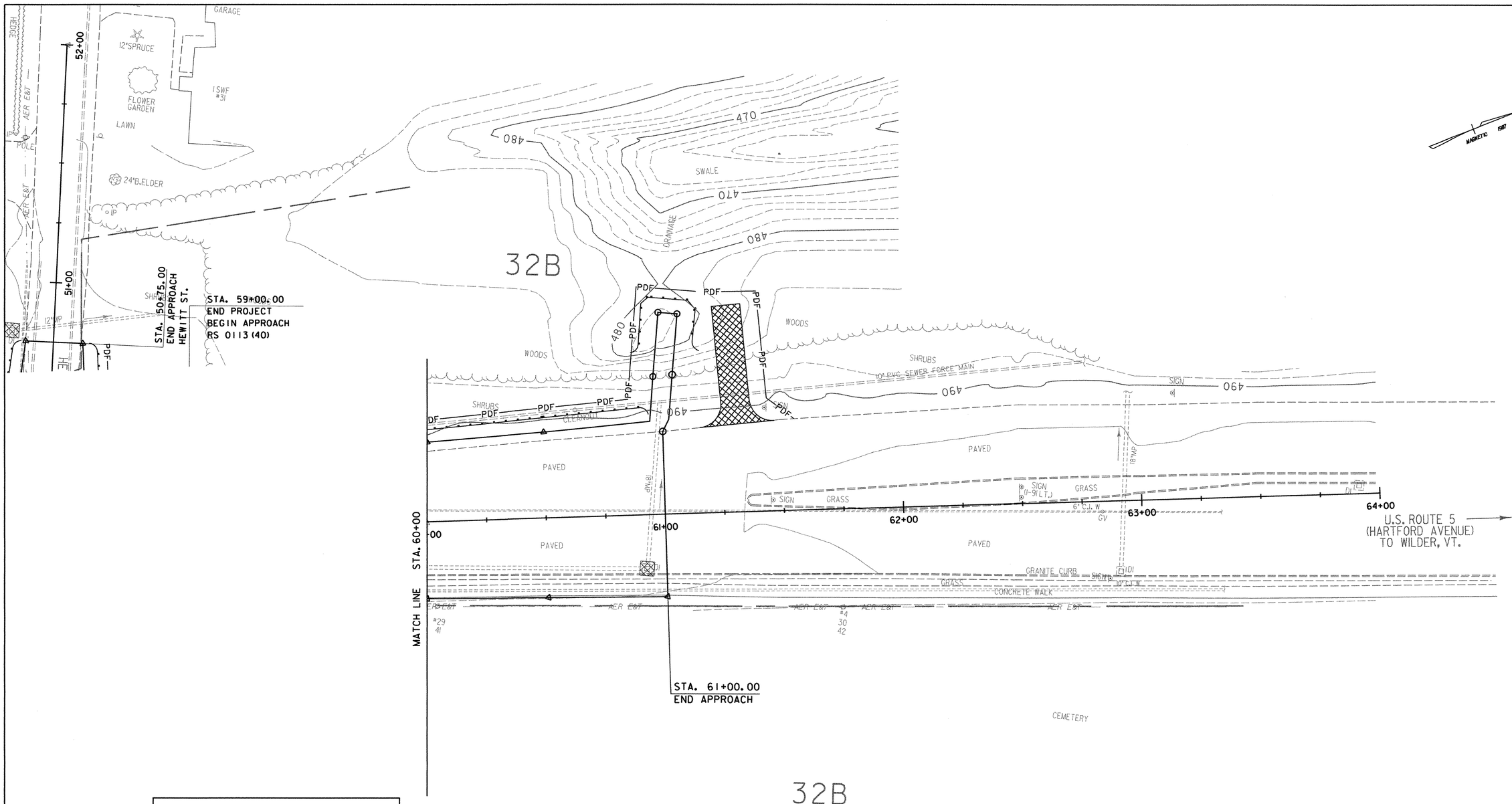


PRE-CONSTRUCTION PLAN SHEET 8

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027erosbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/11/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 132 OF 239

PRE-CONSTRUCTION PLAN SHEET 9



32B

LEGEND

- SOIL TYPE BOUNDARY
- 360 — 10' INTERVAL EXISTING CONTOUR
- 2' INTERVAL EXISTING CONTOUR
- EXISTING PROPERTY/ROW LINE
- EDGE OF RIVER
- RIPARIAN BUFFER
- LIMIT OF WORK
- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF——PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODABILITY COEFFICIENTS
32B = URBAN LAND-WINDSOR-AGAWAM COMPLEX, 0 TO 8 PERCENT SLOPES	NOT RATED	0.17 (NOT HIGHLY ERODABLE)
45E = ELDRIDGE FINE SANDY LOAM, 25 TO 50 PERCENT SLOPES	C	0.43 (HIGHLY ERODABLE)

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027erosbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/11/2007
DRAWN BY: E. ATKINS
SHEET: 133 OF 239

CONSTRUCTION & STABILIZATION PLAN SHEET 1

ON-SITE PLAN COORDINATOR

NAME	TITLE	PHONE #

STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)
20+03 RT (STABILIZED CONSTRUCTION ENTRANCE)

STONE FILL, TYPE I (MOD. - INLET PROTECTION)
PROP. CB @ 19+80.0 RT

SNOW FENCE (MOD. - PDF)
19+03 ~ 20+53 RT
23+75 ~ 24+50 RT

GEOTEXTILE FABRIC FOR FILTERS
EXIST. DI @ 20+73.2 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 21+62.8 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 21+63.1 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 21+76.8 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 21+77.4 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 22+45.8 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 22+46.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 22+46.1 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 22+46.1 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 22+46.6 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 22+52.5 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 22+82.3 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 23+28.7 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 23+28.9 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 24+20.0 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 24+20.0 RT (9 S.F. INLET PROTECTION)

GEOTEXTILE FOR SILT FENCE
19+08 ~ 19+36 RT
21+50 ~ 25+00 LT

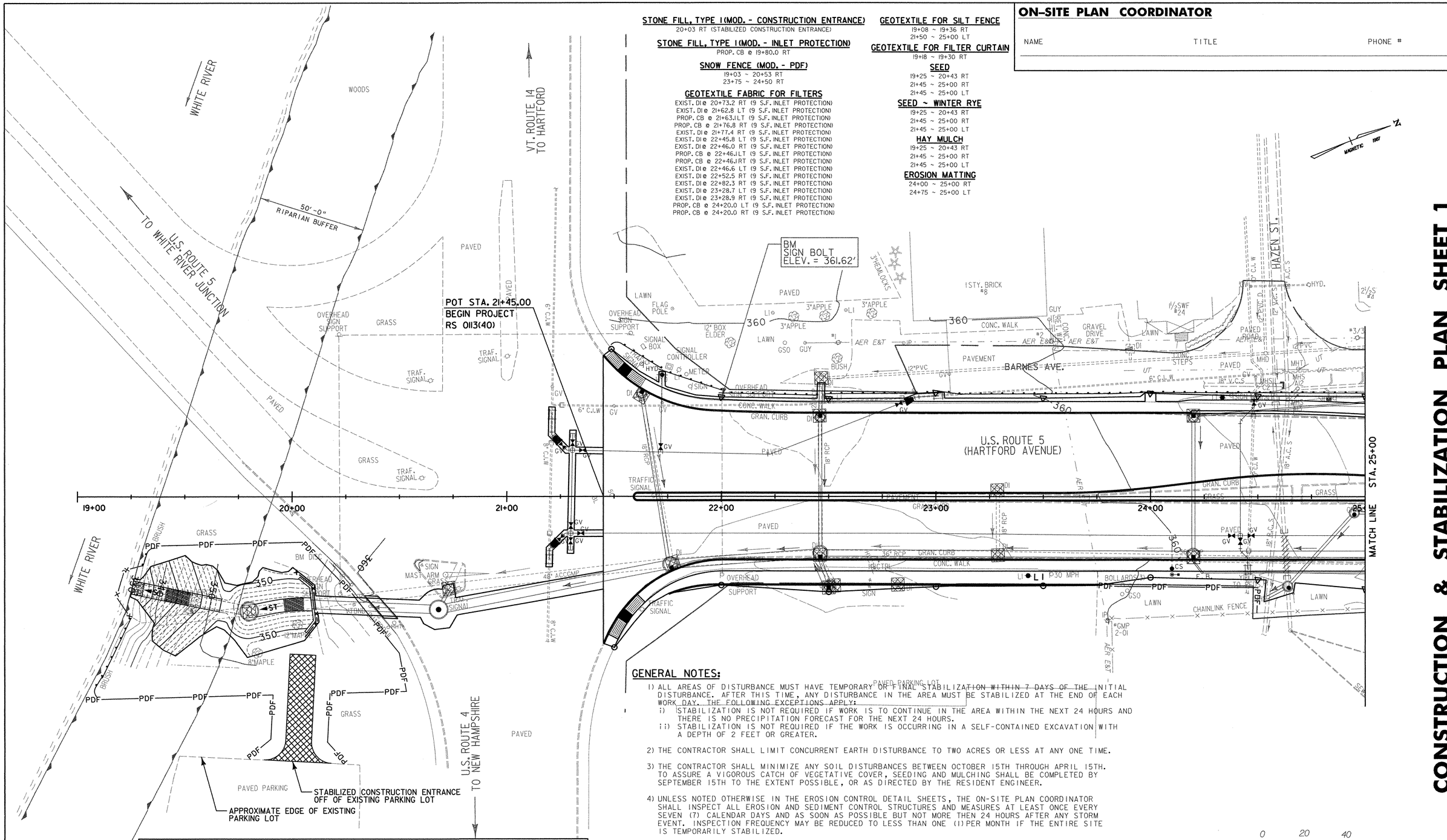
GEOTEXTILE FOR FILTER CURTAIN
19+18 ~ 19+30 RT

SEED
19+25 ~ 20+43 RT
21+45 ~ 25+00 RT
21+45 ~ 25+00 LT

SEED ~ WINTER RYE
19+25 ~ 20+43 RT
21+45 ~ 25+00 RT
21+45 ~ 25+00 LT

HAY MULCH
19+25 ~ 20+43 RT
21+45 ~ 25+00 RT
21+45 ~ 25+00 LT

EROSION MATTING
24+00 ~ 25+00 RT
24+75 ~ 25+00 LT



GENERAL NOTES:

1) ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY OR FINAL STABILIZATION WITHIN 7 DAYS OF THE INITIAL DISTURBANCE. AFTER THIS TIME, ANY DISTURBANCE IN THE AREA MUST BE STABILIZED AT THE END OF EACH WORK DAY. THE FOLLOWING EXCEPTIONS APPLY:
   i) STABILIZATION IS NOT REQUIRED IF WORK IS TO CONTINUE IN THE AREA WITHIN THE NEXT 24 HOURS AND THERE IS NO PRECIPITATION FORECAST FOR THE NEXT 24 HOURS.
   ii) STABILIZATION IS NOT REQUIRED IF THE WORK IS OCCURRING IN A SELF-CONTAINED EXCAVATION WITH A DEPTH OF 2 FEET OR GREATER.

2) THE CONTRACTOR SHALL LIMIT CONCURRENT EARTH DISTURBANCE TO TWO ACRES OR LESS AT ANY ONE TIME.

3) THE CONTRACTOR SHALL MINIMIZE ANY SOIL DISTURBANCES BETWEEN OCTOBER 15TH THROUGH APRIL 15TH. TO ASSURE A VIGOROUS CATCH OF VEGETATIVE COVER, SEEDING AND MULCHING SHALL BE COMPLETED BY SEPTEMBER 15TH TO THE EXTENT POSSIBLE, OR AS DIRECTED BY THE RESIDENT ENGINEER.

4) UNLESS NOTED OTHERWISE IN THE EROSION CONTROL DETAIL SHEETS, THE ON-SITE PLAN COORDINATOR SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL STRUCTURES AND MEASURES AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND AS SOON AS POSSIBLE BUT NOT MORE THEN 24 HOURS AFTER ANY STORM EVENT. INSPECTION FREQUENCY MAY BE REDUCED TO LESS THAN ONE (1) PER MONTH IF THE ENTIRE SITE IS TEMPORARILY STABILIZED.

5) THE CONTRACTOR SHALL IMMEDIATELY ROUGHEN ALL DISTURBED SOIL SURFACES TO THE SATISFACTION OF THE RESIDENT ENGINEER BY THE USE OF TRACK DRIVEN BULLDOZERS, SHEEPSFOOT ROLLERS OR OTHER APPROVED METHODS.

6) THE CONTRACTOR SHALL APPLY DUST CONTROL MEASURES OVER EXPOSED SURFACES NOT INTENDED TO BE VEGETATED.

7) REFER TO LANDSCAPE PLANS FOR PLANTING PLANS.

8) THE CHAIN-LINK FENCE, 4 FEET LOCATED ALONG THE LIMITS OF CONSTRUCTION BEHIND THE U.S. RTE. 5 GROUND ANCHORED SOLDIER PILE WALL SHALL BE INSTALLED AT THE START OF CONSTRUCTION, MAINTAINED FOR THE DURATION OF THE PROJECT, AND REMOVED AT PROJECT COMPLETION.

EROSION CONTROL LEGEND

- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- TEMPORARY STONE CHECK DAM
- ST — STONE DITCH
- 350 — PROPOSED 5' INTERVAL CONTOUR
- PROPOSED 1' INTERVAL CONTOUR
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF——PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- x—x—x—x FILTER CURTAIN

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027erosbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 2/28/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 134 OF 239

CONSTRUCTION & STABILIZATION PLAN SHEET 2

STONE FILL, TYPE I (MOD. - CHECK DAM)
29+94 RT

STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)
29+36 RT (STABILIZED CONSTRUCTION ENTRANCE)

STONE FILL, TYPE I (MOD. - INLET PROTECTION)
EXIST. DI @ 25+23.3 LT
EXIST. DI @ 27+69.5 RT
EXIST. DI @ 28+66.4 RT
PROP. CB @ 29+20.0 LT
EXIST. DI @ 29+22.2 RT
PROP. CB @ 29+50.0 RT
EXIST. DI @ 29+60.6 LT

SNOW FENCE (MOD. - PDF)
28+90 ~ 30+00 LT

GEOTEXTILE FABRIC FOR FILTERS
EXIST. DI @ 25+21.5 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 25+22.2 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 25+22.4 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 26+70.0 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 26+70.0 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 27+06.7 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 29+20.0 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 29+20.0 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 29+80.2 RT (9 S.F. INLET PROTECTION)

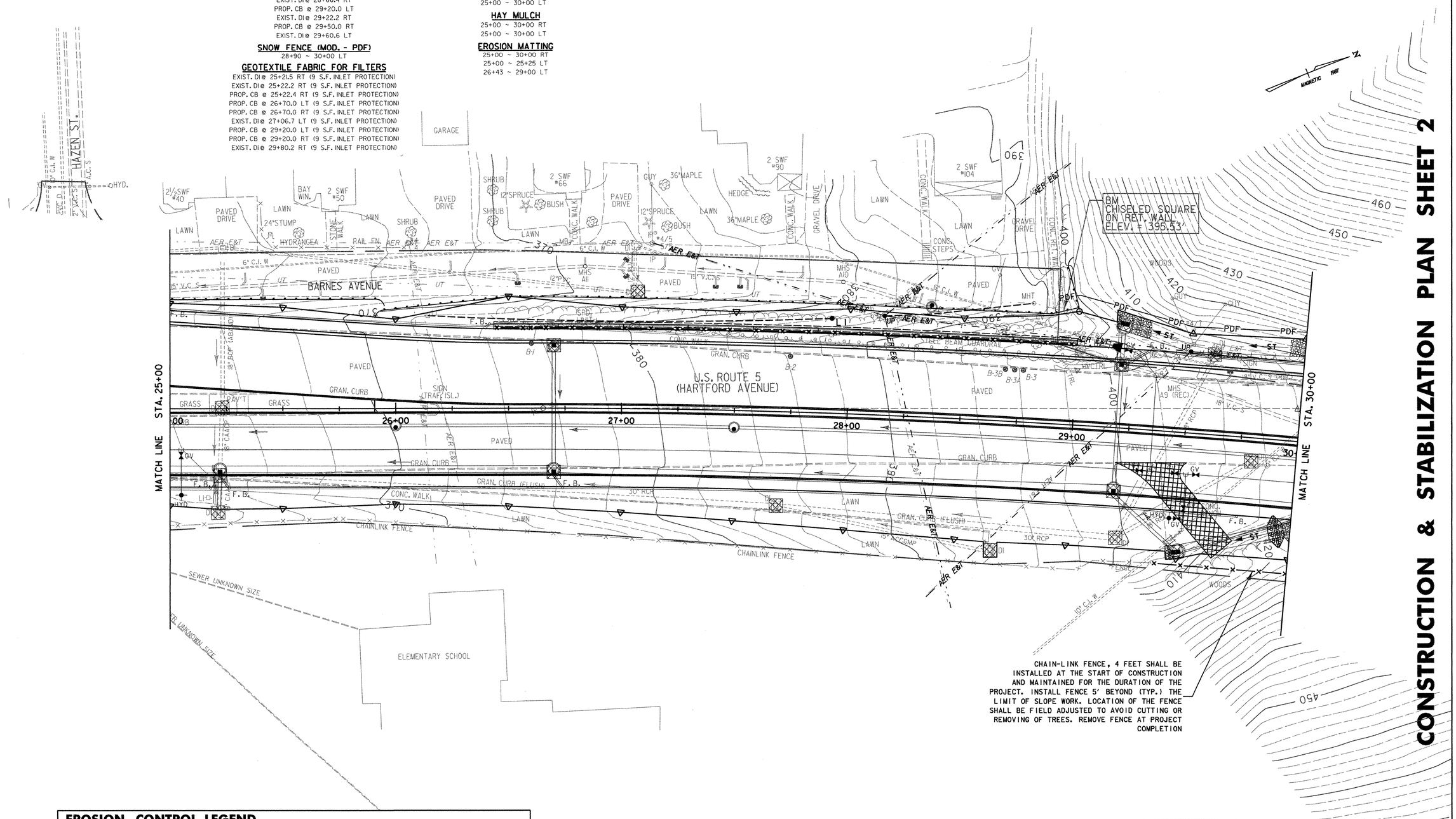
GEOTEXTILE FOR SILT FENCE
25+00 ~ 29+00 LT

SEED
25+00 ~ 30+00 RT
25+00 ~ 30+00 LT

SEED ~ WINTER RYE
25+00 ~ 30+00 RT
25+00 ~ 30+00 LT

HAY MULCH
25+00 ~ 30+00 RT
25+00 ~ 30+00 LT

EROSION MATTING
25+00 ~ 30+00 RT
25+00 ~ 25+25 LT
26+43 ~ 29+00 LT



EROSION CONTROL LEGEND

- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- TEMPORARY STONE CHECK DAM
- ST — STONE DITCH
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF——PDF — PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027erosbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 2/28/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 135 OF 239

CONSTRUCTION & STABILIZATION PLAN SHEET 3

STONE FILL, TYPE I (MOD. - CHECK DAM)
30+20 RT ~ 32+50 RT SPACED EVERY 10' - 23 EACH (TEMPORARY)
33+50 RT (TEMPORARY)
34+50 RT (TEMPORARY)

STONE FILL, TYPE I (MOD. - INLET PROTECTION)
PROP. CB @ 31+70.0 RT
PROP. CB @ 31+70.0 LT
PROP. CB @ 34+20.0 RT
PROP. CB @ 34+20.0 LT

SNOW FENCE (MOD. - PDF)
30+00 ~ 35+00 LT

GEOTEXTILE FABRIC FOR FILTERS
PROP. CB 31+70.0 RT (9 S.Y. INLET PROTECTION)
PROP. CB 31+70.0 LT (9 S.Y. INLET PROTECTION)
EXIST. DI 31+99.7 LT (9 S.Y. INLET PROTECTION)
EXIST. DI 33+28.2 LT (9 S.Y. INLET PROTECTION)
PROP. CB 34+20.0 RT (9 S.Y. INLET PROTECTION)
PROP. CB 34+20.0 LT (9 S.Y. INLET PROTECTION)

SEED
30+00 ~ 35+00 RT
30+00 ~ 35+00 LT

SEED ~ WINTER RYE
30+00 ~ 35+00 RT
30+00 ~ 35+00 LT

HAY MULCH
30+00 ~ 35+00 RT
30+00 ~ 35+00 LT

EROSION MATTING
30+00 ~ 35+00 RT

STA. 30+00

STA. 35+00

MATCH LINE

MATCH LINE

STA. 30+20 RT TO 32+50 RT INSTALL AND MAINTAIN 23 TEMPORARY STONE CHECK DAMS SPACED EVERY 10'

CHAIN-LINK FENCE, 4 FEET SHALL BE INSTALLED AT THE START OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. INSTALL FENCE 5' BEYOND (TYP.) THE LIMIT OF SLOPE WORK. LOCATION OF THE FENCE SHALL BE FIELD ADJUSTED TO AVOID CUTTING OR REMOVING OF TREES. REMOVE FENCE AT PROJECT COMPLETION

BM #10A
SPIKE IN 18"PINE
ELEV. = 460.84'

U.S. ROUTE 5
(HARTFORD AVENUE)

HIGHLAND AVE.

SQUARE WALL 395.53'

EROSION CONTROL LEGEND

- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- TEMPORARY STONE CHECK DAM
- STONE DITCH
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF——PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

SCALE IN FEET 0 20 40

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

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PLOT DATE: 2/28/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 136 OF 239

CONSTRUCTION & STABILIZATION PLAN SHEET 4

EROSION CONTROL LEGEND

- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- TEMPORARY STONE CHECK DAM
- ST — STONE DITCH
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF——PDF — PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- ×—×—× — FILTER CURTAIN

STONE FILL, TYPE I (MOD. - CHECK DAM)
35+50 RT (TEMPORARY)
36+00 RT (TEMPORARY)

STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)
10+90 RT (HIGHLAND AVE) (STABILIZED CONSTRUCTION ENTRANCE)
5+75 RT (WORCESTER AVE) (STABILIZED CONSTRUCTION ENTRANCE)

STONE FILL, TYPE I (MOD. - INLET PROTECTION)
PROP. CB @ 36+27.0 LT

SNOW FENCE (MOD. - PDF)
35+00 LT (HARTFORD AVE) ~ 14+00 LT (HIGHLAND AVE)
15+95 RT (SCHOOL DRIVEWAY) ~ 21+40 LT (HEBARD AVE)
1+65 ~ 2+43 RT (RELOCATED WORCESTER AVE)

GEOTEXTILE FOR SILT FENCE
37+10 LT (HARTFORD AVE) ~ 14+00 LT (HIGHLAND AVE)

SEED
35+00 ~ 40+00 RT
35+00 ~ 40+00 LT

SEED ~ WINTER RYE
35+00 ~ 40+00 RT
35+00 ~ 40+00 LT

HAY MULCH
35+00 ~ 40+00 RT
35+00 ~ 40+00 LT

EROSION MATTING
35+00 ~ 36+27 RT
39+00 ~ 40+00 RT
37+00 ~ 37+86 LT
11+00 ~ 12+00 RT (HIGHLAND AVE)
13+25 ~ 13+75 LT (HIGHLAND AVE)
0+75 ~ 1+30 RT (WORCESTER AVE)

MAGNETIC EAST

HIGHLAND AVE. STA. 11+55.78 = SCHOOL ENTRANCE STA. 15+00.00

STA. 15+95.00 END APPROACH SCHOOL DRIVEWAY

STA. 21+40.00 END APPROACH HEBARD AVE.

US 5 STA. 38+47.18 = RELOCATED WORCESTER AVE. STA. 3+66.89 HIGHLAND ST. STA. 10+00.00

STA. 14+00.00 END APPROACH HIGHLAND ST.

U.S. 5 STA. 36+29.61 = RELOCATED WORCESTER AVE. STA. 0+00.00

RELOCATED WORCESTER AVE. STA. 1+46.00 = WORCESTER AVE. STA. 5+00.00

U.S. 5 STA. 39+81.37 = HEBARD AVE STA. 20+00.00

STA. 5+85.00 END APPROACH WORCESTER AVE.

CHAIN-LINK FENCE, 4 FEET SHALL BE INSTALLED AT THE START OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. INSTALL FENCE 5' BEYOND (TYP.) THE LIMIT OF SLOPE WORK. LOCATION OF THE FENCE SHALL BE FIELD ADJUSTED TO AVOID CUTTING OR REMOVING OF TREES. REMOVE FENCE AT PROJECT COMPLETION

MATCH LINE STA. 35+00

MATCH LINE STA. 40+00

GEOTEXTILE FABRIC FOR FILTERS

EXIST. DI @ 35+83.8 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 36+09.7 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 36+27.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 36+27.0 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 36+75.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 37+95.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 38+85.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 10+41.9 RT (HIGHLAND AVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 10+65.57 LT (HIGHLAND AVE) (9 S.F. INLET PROTECTION)
EXIST. DI @ 11+24.3 RT (HIGHLAND AVE) (9 S.F. INLET PROTECTION)
EXIST. DI @ 11+86.4 LT (HIGHLAND AVE) (9 S.F. INLET PROTECTION)
EXIST. DI @ 13+42.1 RT (HIGHLAND AVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 5+53.6 LT (WORCESTER AVE) (9 S.F. INLET PROTECTION)
EXIST. DI @ 5+61.2 RT (WORCESTER AVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 5+61.6 RT (WORCESTER AVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 3+20.57 RT (RELOC. WORCESTER AVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 3+20.57 LT (RELOC. WORCESTER AVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 15+29.9 LT (SCHOOL DRIVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 15+74.0 RT (SCHOOL DRIVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 15+74.0 LT (SCHOOL DRIVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 20+49.62 LT (HEBARD AVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 20+49.62 RT (HEBARD AVE) (18 S.F. INLET PROTECTION)

TBM BOUND ELEV. = 490.78

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027erosbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 2/28/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 137 OF 239

CONSTRUCTION & STABILIZATION PLAN SHEET 5

STONE FILL, TYPE I (MOD. - INLET PROTECTION)

EXIST. DI @ 41+16.4 RT
EXIST. DI @ 41+20.3 RT
EXIST. DI @ 41+68.0 RT
PROP. CB @ 43+50.0 RT

GEOTEXTILE FABRIC FOR FILTERS

PROP. CB @ 40+10.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 40+10.0 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 40+13.0 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 42+05.7 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 42+57.8 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 43+50.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 43+50.0 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 43+55.0 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 43+56.0 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 44+00.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 44+00.0 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 44+67.7 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 44+79.0 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 25+44.1 LT (SAUNDERS AVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 25+45.7 LT (SAUNDERS AVE) (9 S.F. INLET PROTECTION)

GEOTEXTILE FOR SILT FENCE

40+00 ~ 40+67 LT
41+62 ~ 43+25 RT
44+54 ~ 45+00 RT

SEED

40+00 ~ 45+00 RT
40+00 ~ 45+00 LT

SEED ~ WINTER RYE

40+00 ~ 45+00 RT
40+00 ~ 45+00 LT

HAY MULCH

40+00 ~ 45+00 RT
40+00 ~ 45+00 LT

EROSION MATTING

40+00 ~ 40+25 RT
40+00 ~ 41+00 LT

STA. 21+40.00
END APPROACH
HEBARD AVE.

STA. 26+50.00
END APPROACH
SAUNDERS AVE.

MATCH LINE STA. 40+00

MATCH LINE STA. 45+00

U.S. ROUTE 5
(HARTFORD AVENUE)

U.S. 5 STA. 44+93.08 =
SAUNDERS AVE. STA. 25+00.00

EROSION CONTROL LEGEND

- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- TEMPORARY STONE CHECK DAM
- STONE DITCH
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

SCALE IN FEET: 0 20 40

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027erosbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/31/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 138 OF 239

CONSTRUCTION & STABILIZATION PLAN SHEET 6

STONE FILL, TYPE I (MOD. - INLET PROTECTION)
EXIST. DI @ 46+17.0 LT
EXIST. DI @ 46+65.0 RT
EXIST. DI @ 47+12.7 LT
EXIST. DI @ 48+79.6 LT

GEOTEXTILE FABRIC FOR FILTERS
PROP. CB @ 45+10 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 45+50 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 46+15 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 47+10 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 47+10 IT (9 S.F. INLET PROTECTION)
EXIST. DI @ 47+19.3 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 47+43.2 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 49+40 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 49+40 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 25+44.1 RT (SAUNDERS AVE) (9 S.F. INLET PROTECTION)
EXIST. DI @ 25+99.6 LT (SAUNDERS AVE) (9 S.F. INLET PROTECTION)
PROP. CB @ 30+34.6 LT (PIERCE ST) (9 S.F. INLET PROTECTION)
PROP. CB @ 30+40.1 RT (PIERCE ST) (9 S.F. INLET PROTECTION)
EXIST. DI @ 30+41.9 LT (PIERCE ST) (9 S.F. INLET PROTECTION)
EXIST. DI @ 30+78.5 RT (PIERCE ST) (9 S.F. INLET PROTECTION)

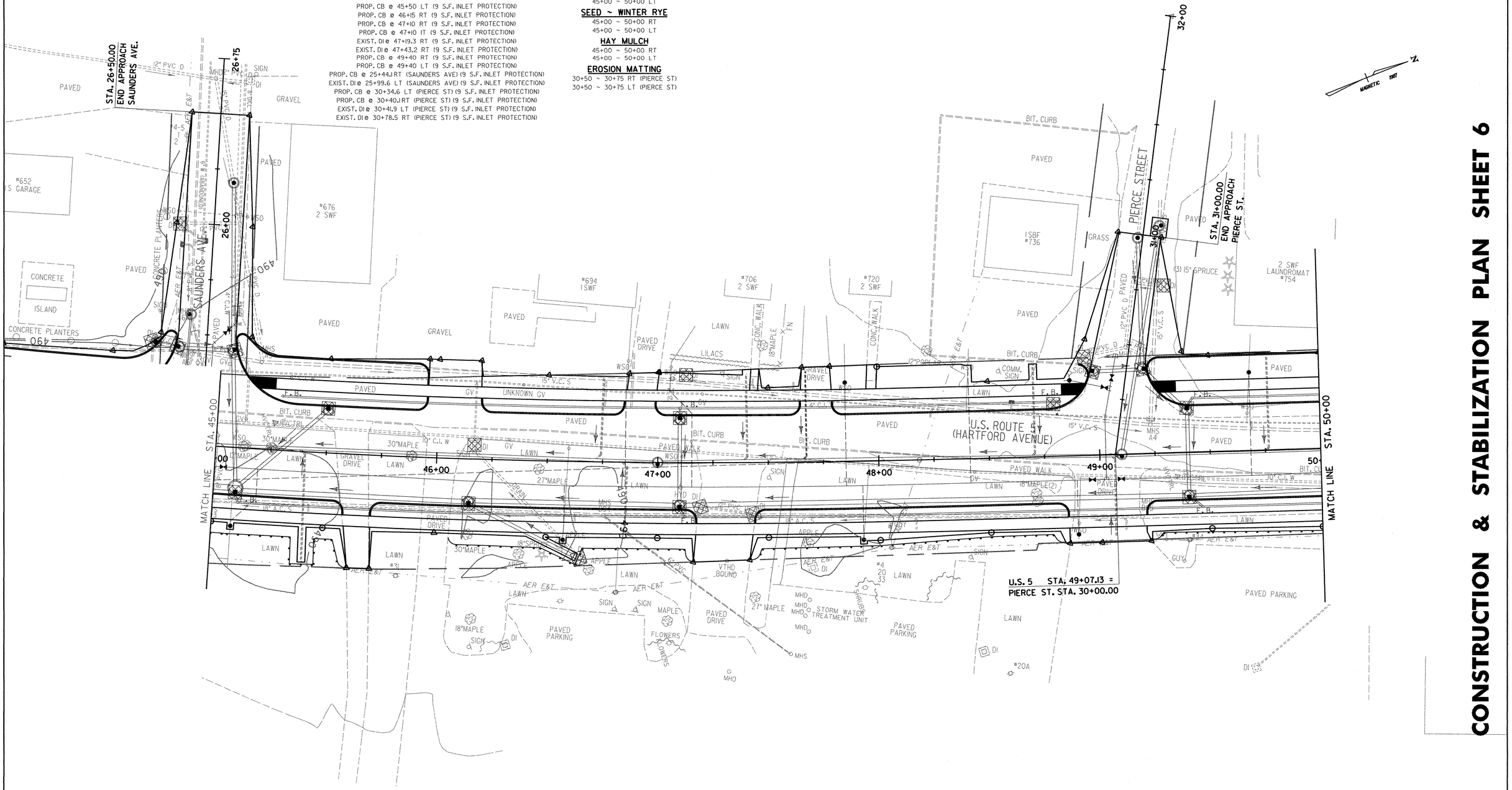
GEOTEXTILE FOR SILT FENCE
45+00 ~ 45+61 RT
46+06 ~ 47+16 RT
47+42 ~ 48+84 RT
49+23 ~ 50+00 RT

SEED
45+00 ~ 50+00 RT
45+00 ~ 50+00 LT

SEED ~ WINTER RYE
45+00 ~ 50+00 RT
45+00 ~ 50+00 LT

HAY MULCH
45+00 ~ 50+00 RT
45+00 ~ 50+00 LT

EROSION MATTING
30+50 ~ 30+75 RT (PIERCE ST)
30+50 ~ 30+75 LT (PIERCE ST)



EROSION CONTROL LEGEND

- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- TEMPORARY STONE CHECK DAM
- STONE DITCH
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF——PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

SCALE IN FEET: 0 20 40

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027erosbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI — PLOT DATE: 1/31/2007
SQUAD LEADER: KEN UPMAL — SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 139 OF 239

CONSTRUCTION & STABILIZATION PLAN SHEET 7

STONE FILL, TYPE I (MOD. - INLET PROTECTION)
EXIST. DI @ 50+59.8 RT
EXIST. DI @ 54+74.8 LT

GEOTEXTILE FABRIC FOR FILTERS
PROP. CB @ 50+44.0 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 50+58.6 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 50+59.2 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 52+11.4 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 52+43.2 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 52+43.8 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 54+00.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 54+00.0 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 54+83.2 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 35+34.5 LT (GOUDREAU ST) (9 S.F. INLET PROTECTION)
PROP. CB @ 35+38.1 RT (GOUDREAU ST) (9 S.F. INLET PROTECTION)
PROP. CB @ 40+36.06 RT (DEVIN ST) (9 S.F. INLET PROTECTION)
PROP. CB @ 40+36.06 LT (DEVIN ST) (9 S.F. INLET PROTECTION)

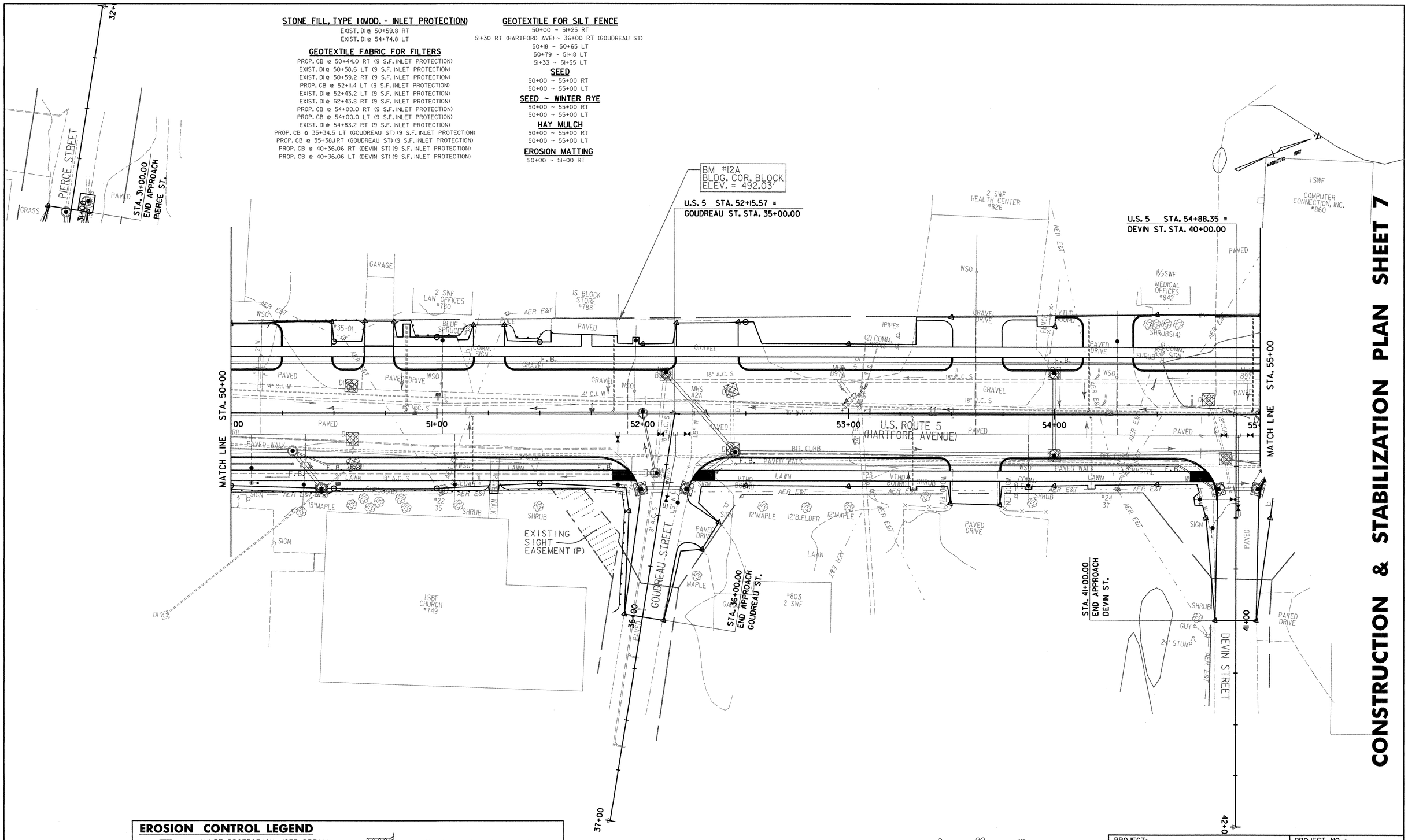
GEOTEXTILE FOR SILT FENCE
50+00 ~ 51+25 RT
51+30 RT (HARTFORD AVE) ~ 36+00 RT (GOUDREAU ST)
50+18 ~ 50+65 LT
50+79 ~ 51+18 LT
51+33 ~ 51+55 LT

SEED
50+00 ~ 55+00 RT
50+00 ~ 55+00 LT

SEED ~ WINTER RYE
50+00 ~ 55+00 RT
50+00 ~ 55+00 LT

HAY MULCH
50+00 ~ 55+00 RT
50+00 ~ 55+00 LT

EROSION MATTING
50+00 ~ 51+00 RT



EROSION CONTROL LEGEND

- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- TEMPORARY STONE CHECK DAM
- STONE DITCH
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027erosbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/31/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 140 OF 239

CONSTRUCTION & STABILIZATION PLAN SHEET 8

SNOW FENCE (MOD.- PDF)
50+72 RT (HEWETT ST) ~ 60+00 LT (HARTFORD AVE)

GEOTEXTILE FABRIC FOR FILTERS
PROP. CB @ 55+12.0 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 56+00.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 56+00.0 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 56+59.0 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 56+77.66 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 56+77.66 LT (9 S.F. INLET PROTECTION)
EXIST. DI @ 57+16.5 RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 57+17.1RT (9 S.F. INLET PROTECTION)
EXIST. DI @ 58+39.9 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 58+40.0 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 58+65.0 LT (9 S.F. INLET PROTECTION)
PROP. CB @ 45+34.83 RT (ADVENT LN) (9 S.F. INLET PROTECTION)
PROP. CB @ 45+37.25 LT (ADVENT LN) (9 S.F. INLET PROTECTION)
EXIST. DI @ 50+79.2 LT (HEWITT ST) (9 S.F. INLET PROTECTION)

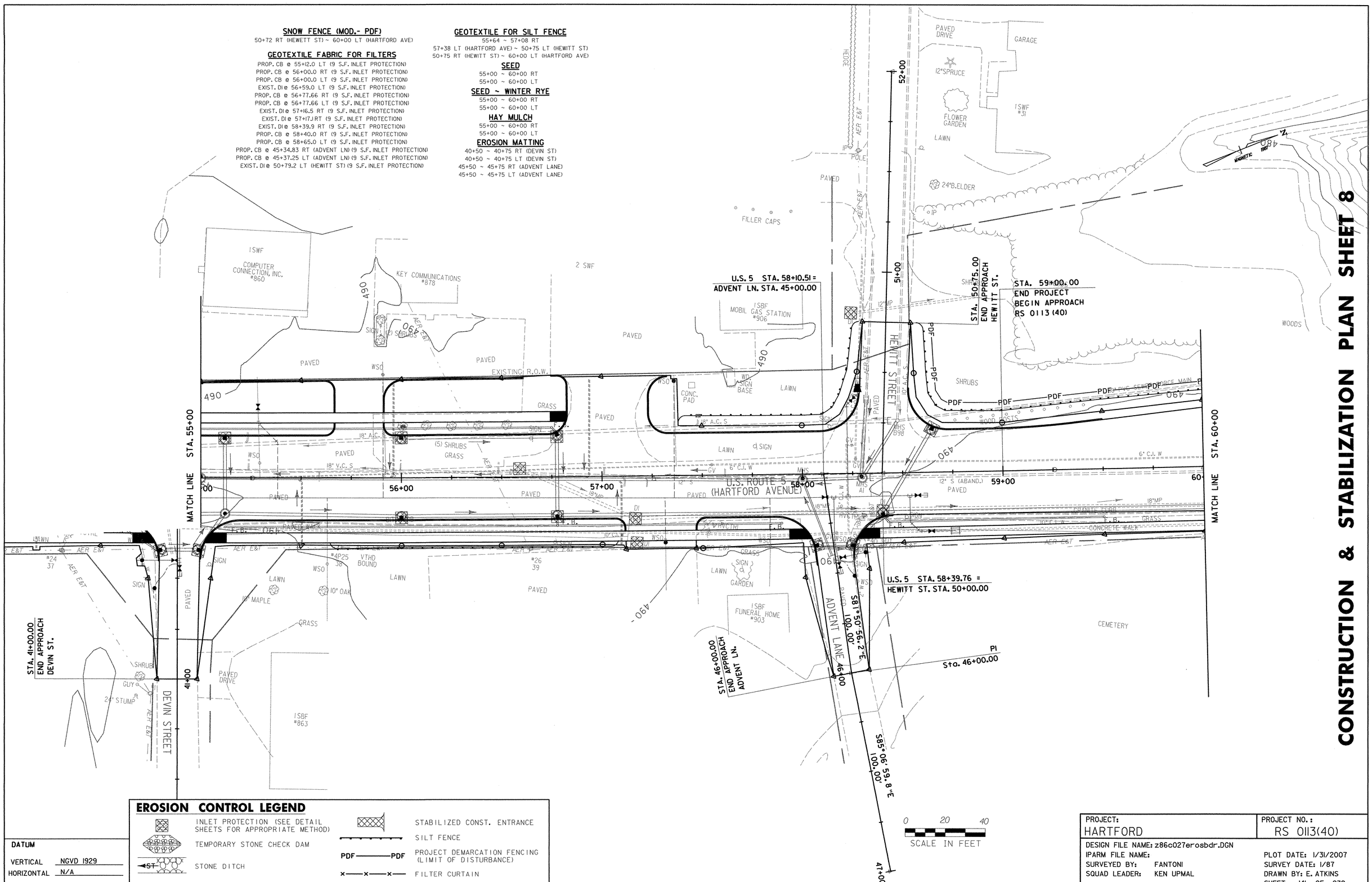
GEOTEXTILE FOR SILT FENCE
55+64 ~ 57+08 RT
57+38 LT (HARTFORD AVE) ~ 50+75 LT (HEWITT ST)
50+75 RT (HEWITT ST) ~ 60+00 LT (HARTFORD AVE)

SEED
55+00 ~ 60+00 RT
55+00 ~ 60+00 LT

SEED ~ WINTER RYE
55+00 ~ 60+00 RT
55+00 ~ 60+00 LT

HAY MULCH
55+00 ~ 60+00 RT
55+00 ~ 60+00 LT

EROSION MATTING
40+50 ~ 40+75 RT (DEVIN ST)
40+50 ~ 40+75 LT (DEVIN ST)
45+50 ~ 45+75 RT (ADVENT LANE)
45+50 ~ 45+75 LT (ADVENT LANE)



EROSION CONTROL LEGEND

- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- TEMPORARY STONE CHECK DAM
- ST — STONE DITCH
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF ——— PDF — PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- FILTER CURTAIN

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027erosbdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/31/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 141 OF 239

CONSTRUCTION & STABILIZATION PLAN SHEET 9

STONE FILL, TYPE I (MOD. - CHECK DAM)
61+03 LT

STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)
61+31 LT (STABILIZED CONSTRUCTION ENTRANCE)

SNOW FENCE (MOD. - PDF)
60+00 LT ~ 61+55 LT

GEOTEXTILE FABRIC FOR FILTERS
EXIST. DI @ 60+91.7 RT (9 S.F. INLET PROTECTION)
PROP. CB @ 60+91.7 RT (9 S.F. INLET PROTECTION)

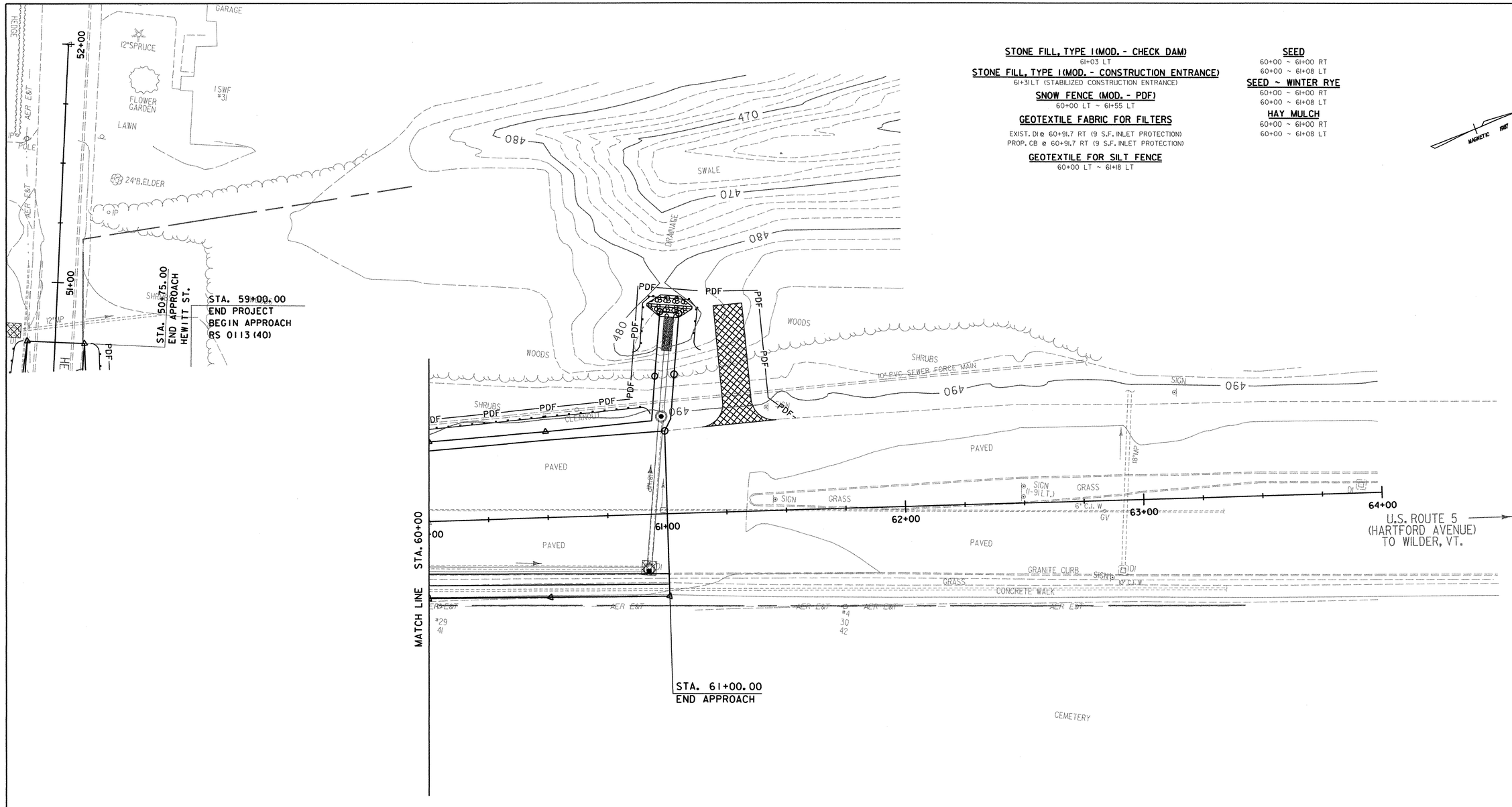
GEOTEXTILE FOR SILT FENCE
60+00 LT ~ 61+18 LT

SEED
60+00 ~ 61+00 RT
60+00 ~ 61+08 LT

SEED ~ WINTER RYE
60+00 ~ 61+00 RT
60+00 ~ 61+08 LT

HAY MULCH
60+00 ~ 61+00 RT
60+00 ~ 61+08 LT

MAGNETIC 150°



EROSION CONTROL LEGEND

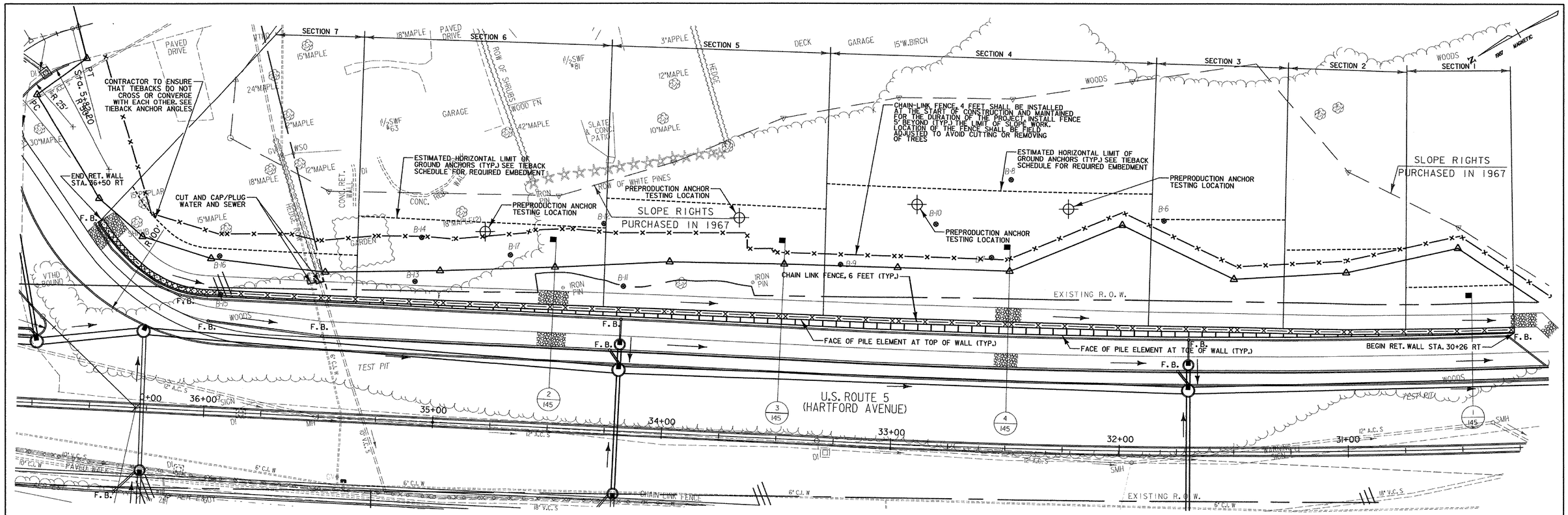
- INLET PROTECTION (SEE DETAIL SHEETS FOR APPROPRIATE METHOD)
- TEMPORARY STONE CHECK DAM
- ST — STONE DITCH
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- PDF——PDF PROJECT DEMARCATION FENCING (LIMIT OF DISTURBANCE)
- ×—×—× FILTER CURTAIN

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z86c027erosbdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/31/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 142 OF 239

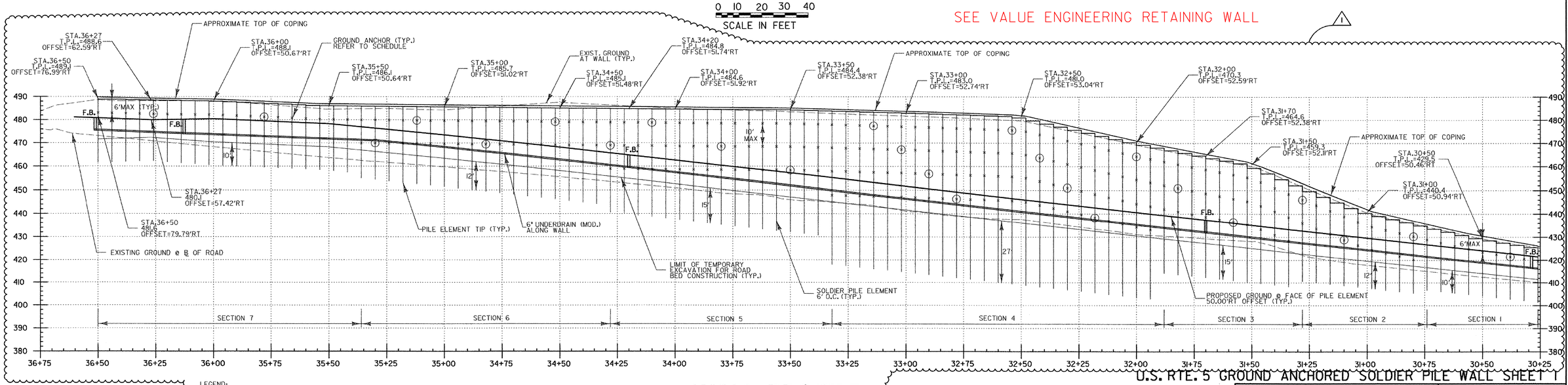


PLAN VIEW - GROUND ANCHORED SOLDIER PILE WALL

NOTE: PROPOSED WATER AND SEWER LAYOUT NOT SHOWN.

0 10 20 30 40
SCALE IN FEET

SEE VALUE ENGINEERING RETAINING WALL



WALL PROFILE

SCALE: 1"=20' HORIZ.
1"=20' VERT.

LEGEND:
⊗ - INDICATES LOCATION OF PERFORMANCE ANCHOR TEST
⊕ - PREPRODUCTION ANCHOR TESTING LOCATION
T.P.L. - TOP OF PILE/LAGGING
NOTE: ALL WALL OFFSETS ARE MEASURED FROM ROADWAY CENTERLINE TO FACE OF PILE ELEMENT.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

1 ADDENDUM #1: REVISED APRIL 18, 2007

U.S. RTE. 5 GROUND ANCHORED SOLDIER PILE WALL SHEET 1

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z86c027walldet.dgn	
IPARM FILE NAME:	PLOT DATE: 4/18/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 143 OF 239

U.S. RTE. 5
GROUND ANCHORED SOLDIER PILE WALL
PILE AND TIEBACK SCHEDULES

SOLDIER PILE SCHEDULES

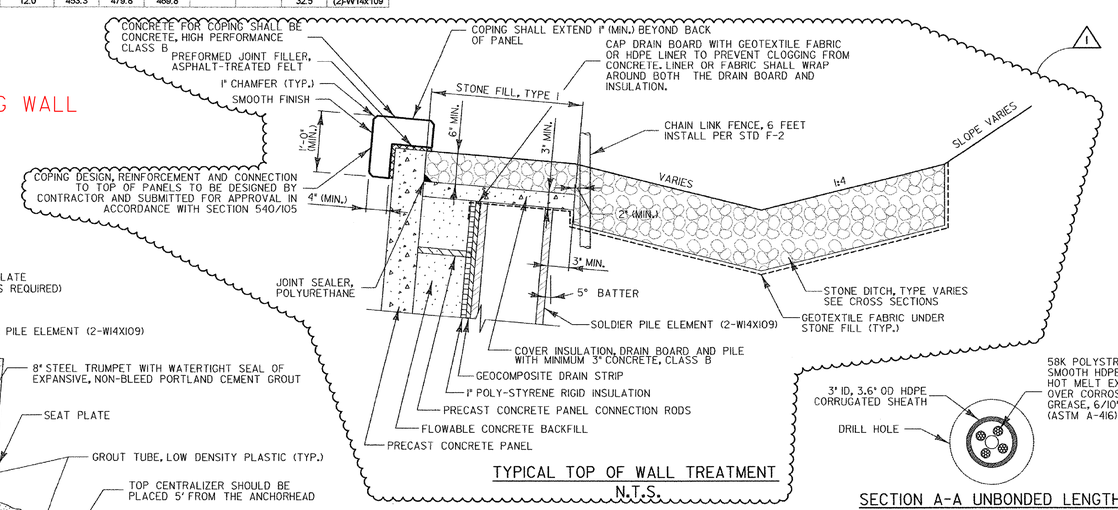
Pile Number	Wall Station	Top of Pile/Lagging	Bottom of Exposed Wall Elevation	Bottom of Temporary Excavation	Final Embedment Depth (ft)	Bottom Pile Tip Elevation	Tieback Elevations				Length of Pile	Double Soldier Pile Size
							Tier 1 Elevation	Tier 2 Elevation	Tier 3 Elevation	Tier 4 Elevation		
101	30+26	425.5	421.6	411.6	10.0	401.6	419.5				24.0	(2)-W14x109
102	30+32	426.5	422.2	412.2	10.0	402.2	420.5				24.3	(2)-W14x109
103	30+38	427.5	422.9	412.9	10.0	402.9	421.5				24.6	(2)-W14x109
104	30+44	428.5	423.5	413.5	10.0	403.5	422.5				25.0	(2)-W14x109
105	30+50	429.5	424.2	414.2	10.0	404.2	423.5				25.3	(2)-W14x109
106	30+56	430.9	424.9	414.9	10.0	404.9	424.9				26.0	(2)-W14x109
107	30+62	432.2	425.5	415.5	10.0	405.5	426.2				26.7	(2)-W14x109
108	30+68	433.6	426.2	416.2	10.0	406.2	427.6				27.4	(2)-W14x109
109	30+74	435.0	426.8	416.8	10.0	406.8	429.0				28.1	(2)-W14x109
201	30+80	436.3	427.5	417.5	12.0	405.5	430.3	420.3			30.8	(2)-W14x109
202	30+86	437.7	428.2	418.2	12.0	406.2	431.7	421.7			31.5	(2)-W14x109
203	30+92	439.1	428.8	418.8	12.0	406.8	433.1	423.1			32.2	(2)-W14x109
204	30+98	440.4	429.5	419.5	12.0	407.5	434.4	424.4			32.9	(2)-W14x109
205	31+04	442.5	430.1	420.1	12.0	408.1	436.5	426.5			34.3	(2)-W14x109
206	31+10	444.9	430.8	420.8	12.0	408.8	438.9	428.9			36.1	(2)-W14x109
207	31+16	447.3	431.5	421.5	12.0	409.5	441.3	431.3			37.8	(2)-W14x109
208	31+22	449.7	432.1	422.1	12.0	410.1	443.7	433.7			39.6	(2)-W14x109
209	31+28	452.1	432.8	422.8	12.0	410.8	446.1	436.1			41.3	(2)-W14x109
301	31+34	454.5	433.4	423.4	15.0	408.4	448.5	438.5	428.5		46.1	(2)-W14x109
302	31+40	456.9	434.1	424.1	15.0	409.1	450.9	440.9	430.9		47.8	(2)-W14x109
303	31+46	459.3	434.8	424.8	15.0	409.8	453.3	443.3	433.3		49.6	(2)-W14x109
304	31+52	461.3	435.4	425.4	15.0	410.4	455.3	445.3	435.3		50.9	(2)-W14x109
305	31+58	462.4	436.1	426.1	15.0	411.1	456.4	446.4	436.4		51.3	(2)-W14x109
306	31+64	463.5	436.7	426.7	15.0	411.7	457.5	447.5	437.5		51.8	(2)-W14x109
307	31+70	464.6	437.4	427.4	15.0	412.4	458.6	448.6	438.6		52.2	(2)-W14x109
308	31+76	465.8	438.1	428.1	15.0	413.1	459.8	449.8	439.8		52.7	(2)-W14x109
309	31+82	466.9	438.7	428.7	15.0	413.7	460.9	450.9	440.9		53.2	(2)-W14x109
310	31+88	467.9	439.4	429.4	15.0	414.4	461.9	451.9	441.9		53.5	(2)-W14x109
401	31+94	469.2	440.0	430.0	27.0	403.0	463.2	453.2	443.2	433.2	66.2	(2)-W14x109
402	32+00	470.3	440.7	430.7	27.0	403.7	464.3	454.3	444.3	434.3	66.6	(2)-W14x109
403	32+06	471.7	441.4	431.4	27.0	404.4	465.7	455.7	445.7	435.7	67.3	(2)-W14x109
404	32+12	473.0	442.0	432.0	27.0	405.0	467.0	457.0	447.0	437.0	68.0	(2)-W14x109
405	32+18	474.4	442.7	432.7	27.0	405.7	468.4	458.4	448.4	438.4	68.7	(2)-W14x109
406	32+24	475.7	443.3	433.3	27.0	406.3	469.7	459.7	449.7	439.7	69.4	(2)-W14x109
407	32+30	477.0	444.0	434.0	27.0	407.0	471.0	461.0	451.0	441.0	70.0	(2)-W14x109
408	32+36	478.4	444.7	434.7	27.0	407.7	472.4	462.4	452.4	442.4	70.7	(2)-W14x109
409	32+42	479.7	445.3	435.3	27.0	408.3	473.7	463.7	453.7	443.7	71.4	(2)-W14x109
410	32+48	481.0	446.0	436.0	27.0	409.0	475.0	465.0	455.0	445.0	72.1	(2)-W14x109
411	32+54	481.6	446.6	436.6	27.0	409.6	475.6	465.6	455.6	445.6	72.0	(2)-W14x109
412	32+60	481.8	447.3	437.3	27.0	410.3	475.8	465.8	455.8	445.8	71.5	(2)-W14x109
413	32+66	482.0	448.0	438.0	27.0	411.0	476.0	466.0	456.0	446.0	71.0	(2)-W14x109
414	32+72	482.2	448.6	438.6	27.0	411.6	476.2	466.2	456.2	446.2	70.6	(2)-W14x109
415	32+78	482.4	449.3	439.3	27.0	412.3	476.4	466.4	456.4	446.4	70.1	(2)-W14x109
416	32+84	482.6	449.9	439.9	27.0	412.9	476.6	466.6	456.6	446.6	69.6	(2)-W14x109
417	32+90	482.8	450.6	440.6	27.0	413.6	476.8	466.8	456.8	446.8	69.2	(2)-W14x109
418	32+96	483.0	451.3	441.3	27.0	414.3	477.0	467.0	457.0	447.0	68.7	(2)-W14x109
419	33+02	483.1	451.9	441.9	27.0	414.9	477.1	467.1	457.1	447.1	68.2	(2)-W14x109
420	33+08	483.3	452.6	442.6	27.0	415.6	477.3	467.3	457.3	447.3	67.7	(2)-W14x109
421	33+14	483.4	453.2	443.2	27.0	416.2	477.4	467.4	457.4	447.4	67.2	(2)-W14x109
422	33+20	483.6	453.9	443.9	27.0	416.9	477.6	467.6	457.6	447.6	66.7	(2)-W14x109
423	33+26	483.8	454.6	444.6	27.0	417.6	477.8	467.8	457.8	447.8	66.2	(2)-W14x109
424	33+32	483.9	455.2	445.2	27.0	418.2	477.9	467.9	457.9	447.9	65.7	(2)-W14x109
501	33+38	484.1	455.9	445.9	15.0	430.9	478.1	468.1	458.1		53.2	(2)-W14x109
502	33+44	484.2	456.5	446.5	15.0	431.5	478.2	468.2	458.2		52.7	(2)-W14x109
503	33+50	484.4	457.2	447.2	15.0	432.2	478.4	468.4	458.4		52.2	(2)-W14x109
504	33+56	484.4	457.9	447.9	15.0	432.9	478.4	468.4	458.4		51.6	(2)-W14x109
505	33+62	484.4	458.5	448.5	15.0	433.5	478.4	468.4	458.4		50.9	(2)-W14x109
506	33+68	484.5	459.2	449.2	15.0	434.2	478.5	468.5	458.5		50.3	(2)-W14x109
507	33+74	484.5	459.8	449.8	15.0	434.8	478.5	468.5	458.5		49.7	(2)-W14x109
508	33+80	484.5	460.5	450.5	15.0	435.5	478.5	468.5	458.5		49.0	(2)-W14x109
509	33+86	484.6	461.2	451.2	15.0	436.2	478.6	468.6	458.6		48.4	(2)-W14x109
510	33+92	484.6	461.8	451.8	15.0	436.8	478.6	468.6	458.6		47.8	(2)-W14x109
511	33+98	484.6	462.5	452.5	15.0	437.5	478.6	468.6	458.6		47.2	(2)-W14x109
512	34+04	484.7	463.1	453.1	15.0	438.1	478.7	468.7	458.7		46.6	(2)-W14x109
513	34+10	484.8	463.8	453.8	15.0	438.8	478.8	468.8	458.8		46.0	(2)-W14x109
514	34+16	484.8	464.5	454.5	15.0	439.5	478.8	468.8	458.8		45.4	(2)-W14x109
515	34+22	484.9	465.1	455.1	15.0	440.1	478.9	468.9	458.9		44.8	(2)-W14x109
516	34+28	484.9	465.8	455.8	15.0	440.8	478.9	468.9	458.9		44.2	(2)-W14x109
601	34+34	485.0	466.4	456.4	12.0	444.4	479.0	469.0			40.6	(2)-W14x109
602	34+40	485.1	467.1	457.1	12.0	445.1	479.1	469.1			40.0	(2)-W14x109
603	34+46	485.1	467.8	457.8	12.0	445.8	479.1	469.1			39.4	(2)-W14x109
604	34+52	485.2	468.4	458.4	12.0	446.4	479.2	469.2			38.8	(2)-W14x109
605	34+58	485.2	469.1	459.1	12.0	447.1	479.2	469.2			38.2	(2)-W14x109
606	34+64	485.3	469.7	459.7	12.0	447.7	479.3	469.3			37.6	(2)-W14x109
607	34+70	485.4	470.4	460.4	12.0	448.4	479.4	469.4			37.0	(2)-W14x109
608	34+76	485.4	471.0	461.0	12.0	449.0	479.4	469.4			36.4	(2)-W14x109
609	34+82	485.5	471.6	461.6	12.0	449.6	479.5	469.5			35.8	(2)-W14x109
610	34+88	485.6	472.3	462.3	12.0	450.3	479.6	469.6			35.3	(2)-W14x109
611	34+94	485.6	472.9	462.9	12.0	450.9	479.6	469.6			34.7	(2)-W14x109
612	35+00	485.7	473.6	463.6	12.0	451.6	479.7	469.7			34.1	(2)-W14x109
613	35+06	485.7	474.2	464.2	12.0	452.2	479.7	469.7			33.6	(2)-W14x109
614	35+12	485.8	474.7	464.7	12.0	452.7	479.8	469.8			33.1	(2)-W14x109
615	35+18	485.8	475.3	465.3	12.0	453.3	479.8	469.8			32.5	(2)-W14x109
616	35+24	485.9	475.9	465.9	12.0	453.9	479.9	469.9			32.0	(2)-W14x109
617	35+30	486.0	476.5	466.5	12.0	454.5	480.0	470.0			31.5	(2)-W14x109
618	35+36	486.0	477.0	467.0	12.0	455.0	480.0	470.0			31.0	(2)-W14x109
701	35+42	486.1	477.6	467.6	10.0	457.6	480.1				28.5	(2)-W14x109
702	35+48	486.1	478.2	468.2	10.0	458.2	480.1				28.0	(2)-W14x109
703	35+54	486.3	478.5	468.5	10.0	458.5	480.3				27.8	(2)-W14x109
704	35+60	486.6	478.8	468.8	10.0	458.8	480.6				27.8	(2)-W14x109
705	35+66	486.8	479.0	469.0	10.0	459.0	480.8				27.8	(2)-W14x109
706	35+72	487.1	479.3	469.3	10.0	459.3	481.1				27.8	(2)-W14x109
707	35+78	487.3	479.6	469.6	10.0	459.6	481.3				27.8	(2)-W14x109
708	35+84	487.6	479.8	469.8	10.0	459.8	481.6				27.8	(2)-W14x109
709	35+90	487.8	480.1	470.1	10.0	460.1	481.8				27.7	(2)-W14x109
710	35+96	488.1	480.3	470.3	10.0	460.3	482.1				27.7	(2)-W14x109
711	36+02	488.2	480.6	470.6	10.0	460.6	482.2				27.6	(2)-W14x109
712	36+08	488.3	481.1	471.1	10.0	461.1	482.3				27.3	(2)-W14x109
713	36+14	488.4	481.5	471.5	10.0	461.5	482.4				26.9	(2)-W14x109
714	36+20	488.5	481.9	471.9	10.0	461.9	482.5				26.6	(2)-W14x109
715	36+26	488.6	482.3	472.3	10.0	462.3	482.6				26.2	(2)-W14x109
716	36+32	488.7	482.2	472.2	10.0	462.2	482.7				26.5	(2)-W14x109
717	36+38	488.8	482.0	472.0	10.0	462.0	482.8				26.8	(2)-W14x109
718	36+44	489.0	481.8	471.8	10.0	461.8	483.0				27.1	(2)-W14x109
719	36+50	489.1	481.6	471.6	10.0	461.6	483.1				27.5	(2)-W14x109

SEE VALUE ENGINEERING RETAINING WALL

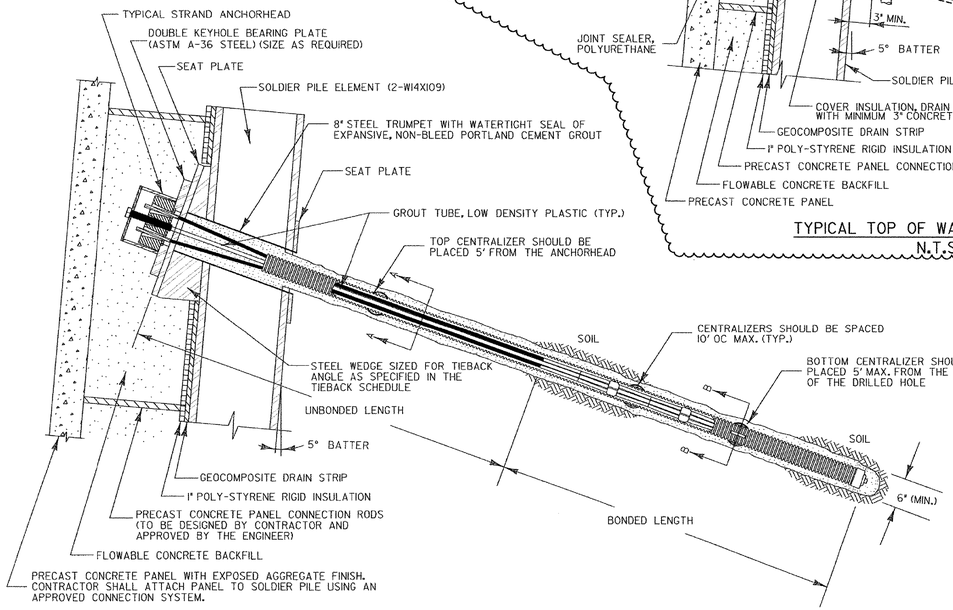
TIEBACK SCHEDULE

Section #	Wall Stations	Pile Designations	Tieback Row Level	Number of Strands	Depth below T.O.W. (ft.)	Down Angle from Wall Face (deg.)	Axial Load (kips)	Test Load (kips)	Lock-Off Load (kips) @ 80%	Minimum Unbonded Length (ft.)	Estimated Bonded Length (ft.)	Estimated Total Length (ft.)
Section 1	30+50 to 30+74	101 - 109	1	2	6	15	34.4	45.8	27.5	14	8	22
Section 2	30+74 to 31+28	201-209	1	2	6	15	65.6	87.3	52.5	24	15	39
			2	2	16	15	68.4	91.0	54.7	17	16	32
Section 3	31+28 to 31+88	301-310	1	3	6	15	90.4	120.2	72.3	32	20	52
			2	3	16	15	76.2	101.3	61.0	25	17	42
			3	3	26	15	92.5	123.0	74.0	17	21	38
Section 4	31+94 to 33+32	401-424	1	4	6	15	107.6	143.1	86.1	39	24	63
			2	3	16	15	91.9	122.2	73.5	31	21	52
			3	3	26	15	86.2	114.6	69.0	24	19	43
			4	3	36	15	102.2	135.9	81.8	16	23	39
Section 5	33+32 to 34+28	501-516	1	3	6	15	90.4	120.2	72.3	32	20	52
			2	3	16	15	76.2	101.3	61.0	25	17	42
			3	3	26	15	92.5	123.0	74.0	17	21	38
Section 6	34+28 to 35+36	601-618	1	2	6	15	65.6	87.3	52.5	24	15	39
			2	2	16	15	68.4	91.0	54.7	17	16	32
Section 7	35+36 to 35+90	701-709	1	2	6	15	34.4	45.8	27.5	14	8	22
	35+96	710	1	2	6	22	34.4	45.8	27.5	14	8	22
	36+02	711	1	2	6	30	34.4	45.8	27.5	14	8	22
	36+08	712	1	2	6	37	34.4	45.8	27.5	14	8	22
	36+14	713	1	2	6	45	34.4	45.8	27.5	14	8	22
	36+20 to 36+50	714-719	1	2	6	15	34.4	45.8	27.5	14	8	22

NOTE: ESTIMATED BONDED LENGTH IS BASED ON AN ESTIMATED SOIL/GROUT BOND STRENGTH OF 20 PSI AND SHOULD BE VERIFIED BY PRE-PRODUCTION ANCHOR TESTING.

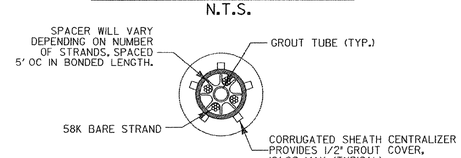


TYPICAL TOP OF WALL TREATMENT
N.T.S.



TYPICAL 4-STRAND GROUND ANCHOR (TIEBACK) DETAIL (1/144)
N.T.S.

SECTION A-A UNBONDED LENGTH
N.T.S.

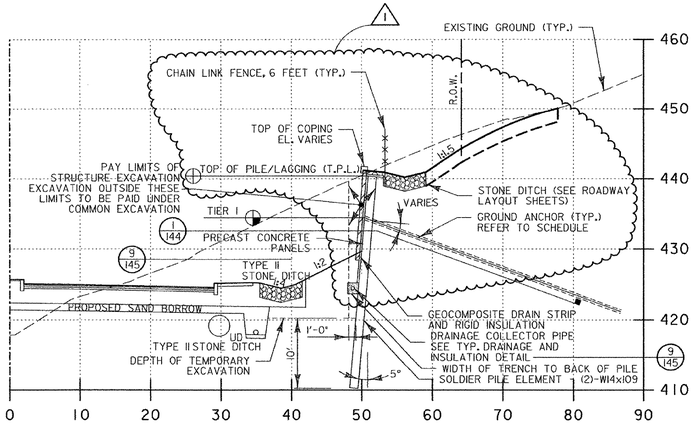


SECTION B-B BONDED LENGTH
N.T.S.

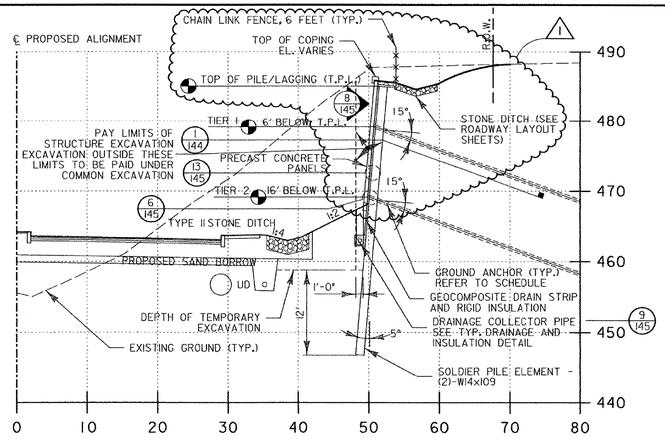
1 ADDENDUM #1: REVISED APRIL 18, 2007

U.S. RTE. 5 GROUND ANCHORED SOLDIER PILE WALL SHEET 2

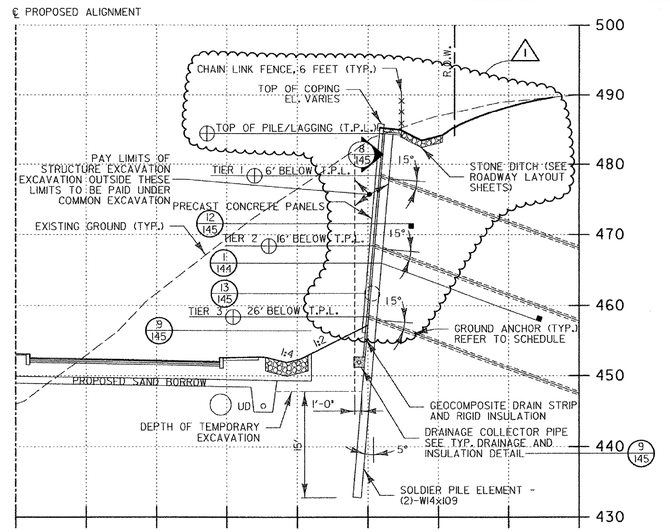
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027walldet.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	J. HODKINSON
PLOT DATE:	4/18/2007
DRAWN BY:	P. MILEWSKI
CHECKED BY:	J. HODKINSON
SHEET 144	OF 239



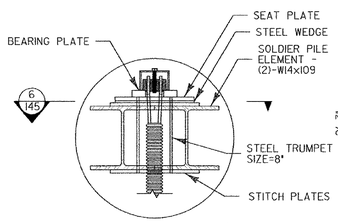
TYPICAL 1 TIER RETAINING WALL SECTION (1/145)
SCALE: 1"=10'



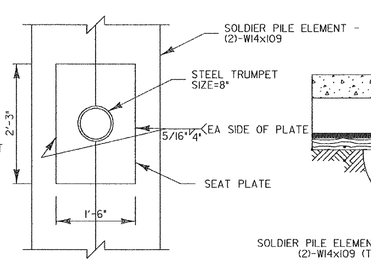
TYPICAL 2 TIER RETAINING WALL SECTION (2/145)
SCALE: 1"=10' (STA. 34+50 SHOWN)



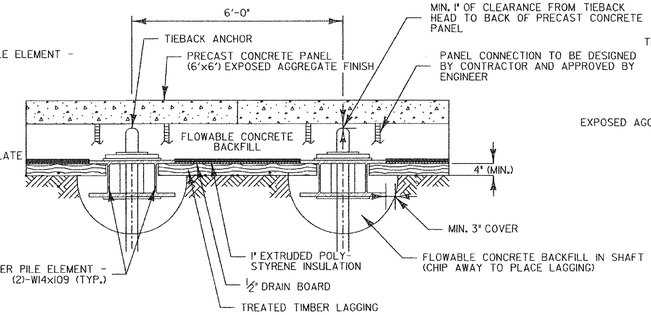
TYPICAL 3 TIER RETAINING WALL SECTION (3/145)
SCALE: 1"=10' (STA. 33+50 SHOWN)



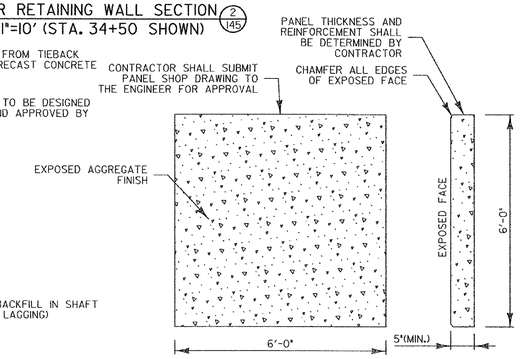
PLAN OF SOLDIER PILE ELEMENT AT TIEBACK (5/145)
N.T.S.



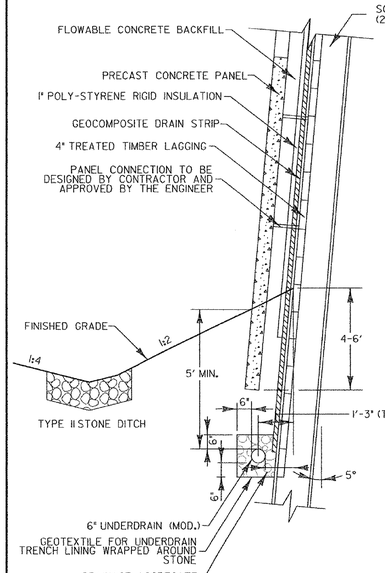
TYPICAL ELEVATION OF SOLDIER PILE ELEMENT AT TIEBACK (6/145)
SCALE: 3/4"=1'



TYPICAL PLAN DETAIL AT PILE BETWEEN TIEBACKS (7/145)
SCALE: 1/2"=1'

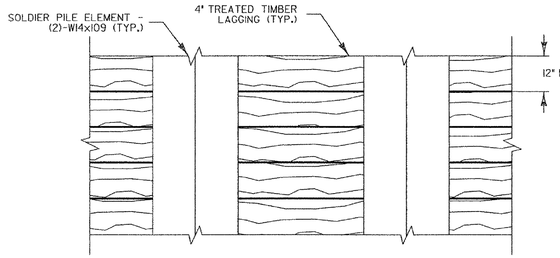


TYPICAL PRECAST CONCRETE PANEL DETAIL (8/145)
SCALE: 1/2"=1'

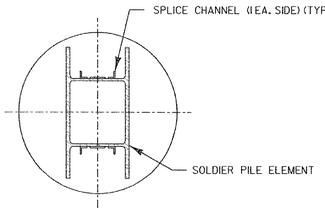


TYPICAL DRAINAGE AND INSULATION DETAIL (9/145)
N.T.S.

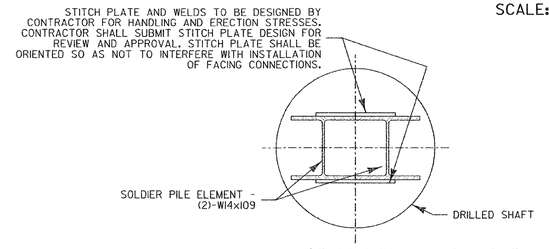
SEE VALUE ENGINEERING RETAINING WALL



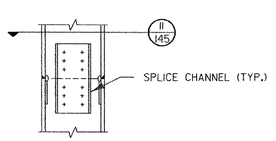
TYPICAL ELEVATION VIEW FACING NOT SHOWN FOR CLARITY (10/145)
SCALE: 1/2"=1'



SECTION: TYPICAL SOLDIER PILE ELEMENT SPLICE PLAN DETAIL (11/145)
N.T.S.



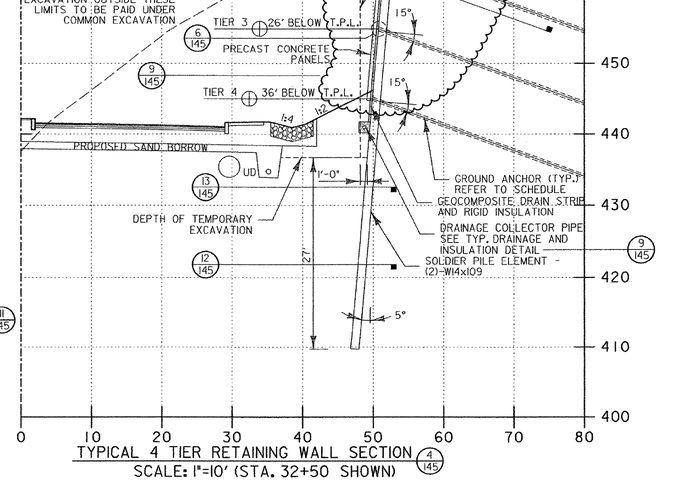
TYPICAL SECTION OF SOLDIER PILE ELEMENT (12/145)
N.T.S.



NOTES:

1. CONTRACTOR TO DETERMINE LOCATION OF THE SOLDIER PILE ELEMENT SPLICE. MAX. ONE SPLICE PER PILE.
2. CONTRACTOR SHALL DESIGN SOLDIER PILE ELEMENT SPLICE DETAIL TO FULLY DEVELOP SECTION PROPERTIES AT THE SPLICE LOCATION. CONTRACTOR SHALL SUBMIT PROPOSED SPLICE DETAIL FOR REVIEW & APPROVAL BY THE ENGINEER.

TYPICAL SOLDIER PILE ELEMENT SPLICE (13/145)
N.T.S.

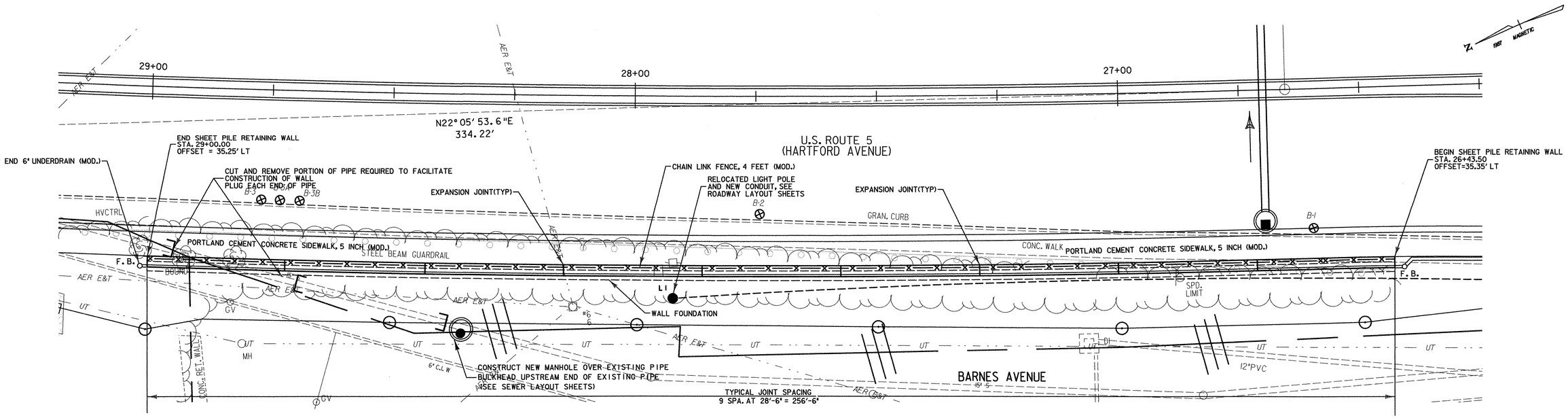


TYPICAL 4 TIER RETAINING WALL SECTION (4/145)
SCALE: 1"=10' (STA. 32+50 SHOWN)

U.S. RTE. 5 GROUND ANCHORED SOLDIER PILE WALL SHEET 3

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027walldet.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	J. HODKINSON
PLOT DATE:	4/18/2007
DRAWN BY:	P. MILEWSKI
CHECKED BY:	K. ISHIKURA
SHEET 145	OF 239

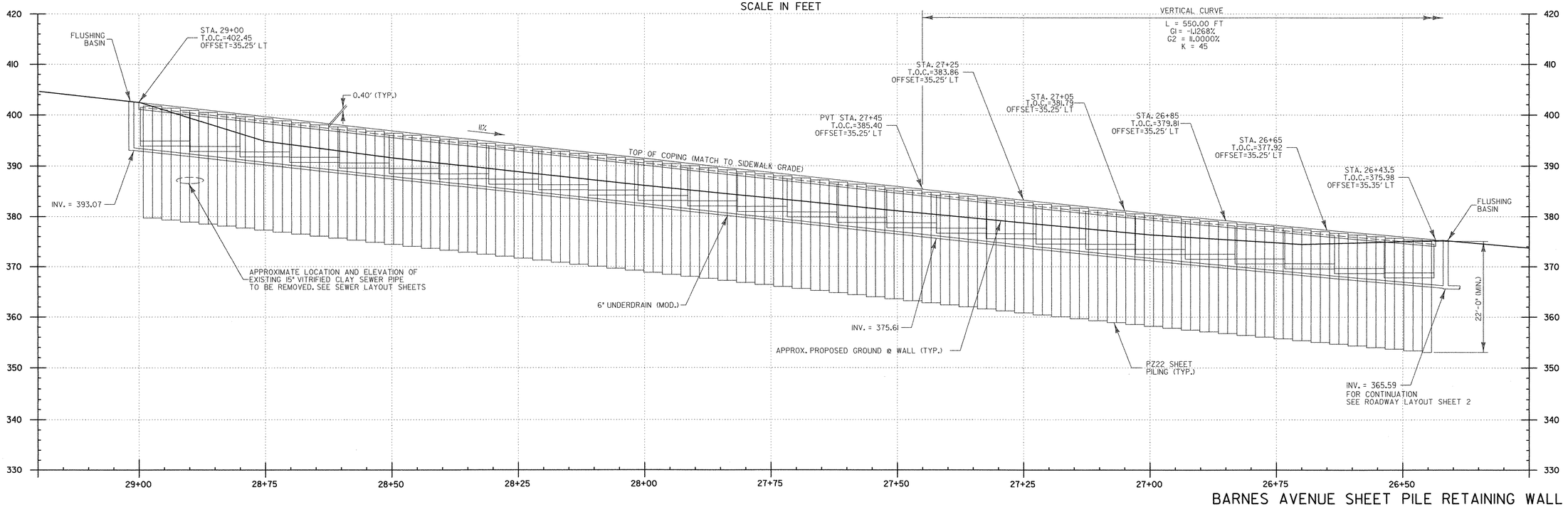
1 ADDENDUM #1: REVISED APRIL 18, 2007



WALL PLAN

0 5 10 15 20

SCALE IN FEET



T.O.C. = TOP OF COPING

WALL PROFILE

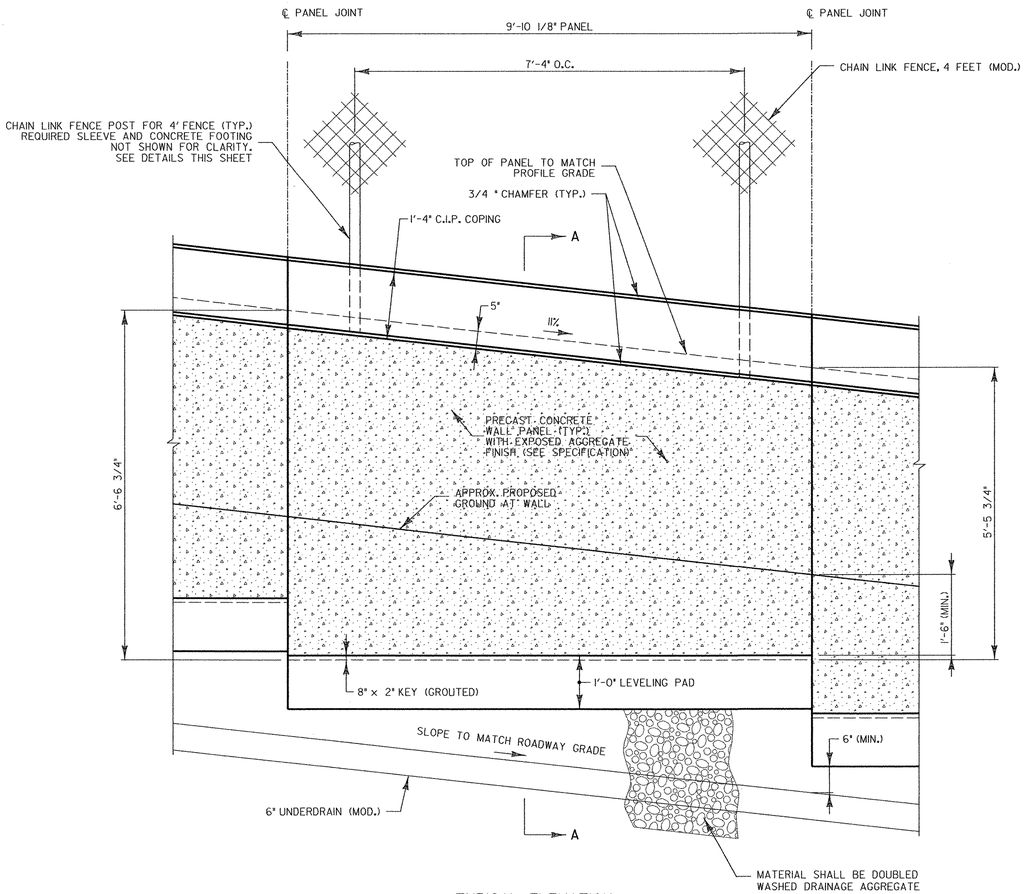
SCALE: 1"=10' HORIZ.
1"=10' VERT.

BARNES AVENUE SHEET PILE RETAINING WALL SHEET 1

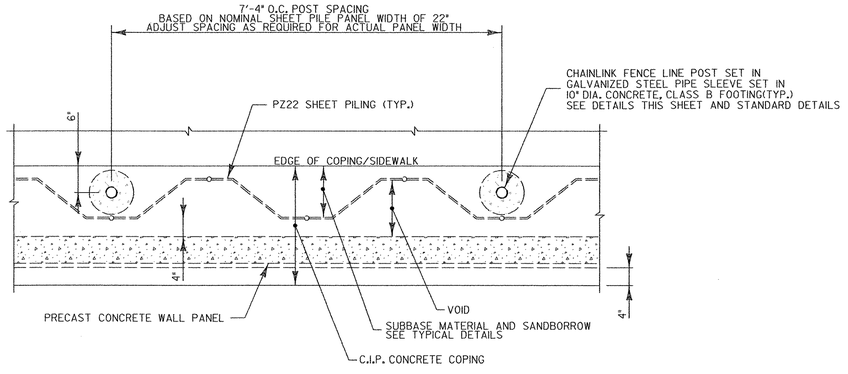
DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

SEE BARNES AVENUE SHEET PILE RETAINING WALL SHEET 2
SEE ROADWAY LAYOUT SHEETS
SEE CROSS SECTIONS

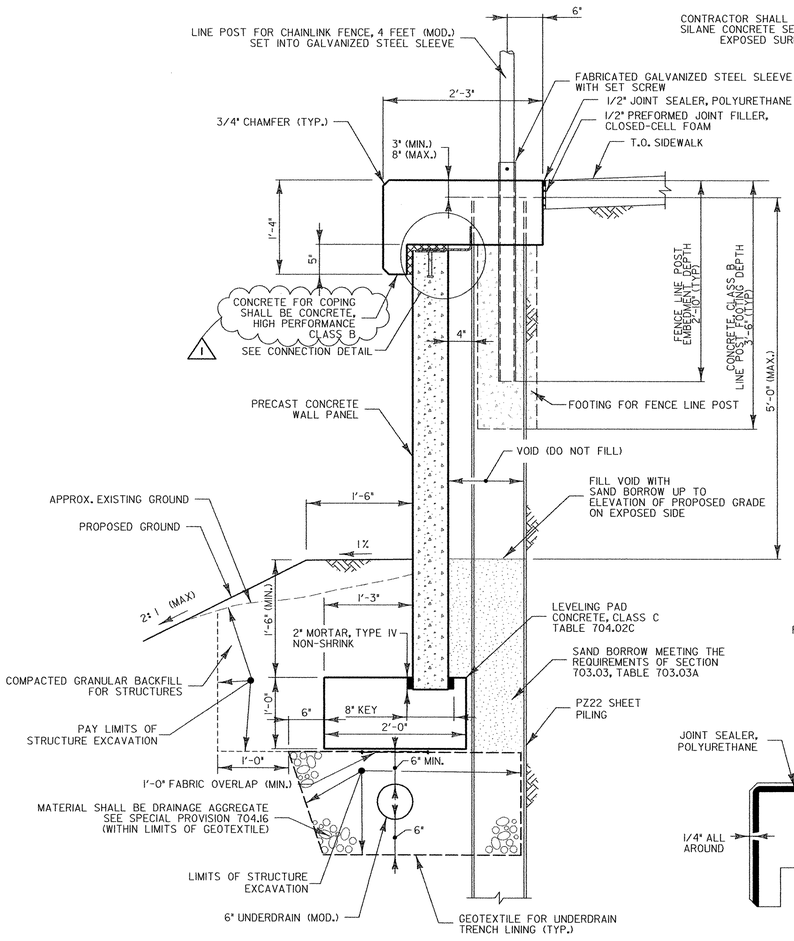
PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z86c027wallde1.dgn	
IPARM FILE NAME:	PLOT DATE: 2/27/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 146 OF 239



TYPICAL ELEVATION
SCALE: 3/4" = 1'



TYPICAL TOP OF COPING PLAN
SCALE: 3/4" = 1'

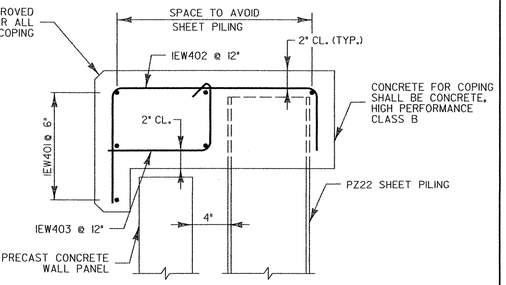


NOTE: REINFORCING STEEL IN COPING NOT SHOWN FOR CLARITY

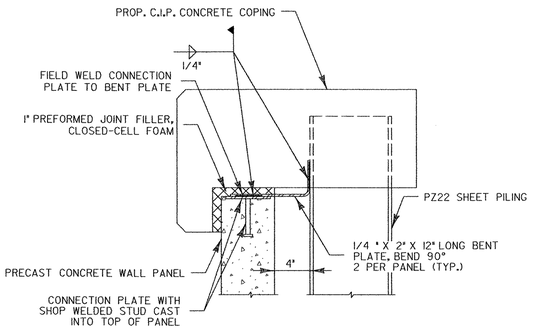
SECTION A-A
SCALE: 1" = 1'

GALVANIZED SLEEVE DETAIL
N.T.S.

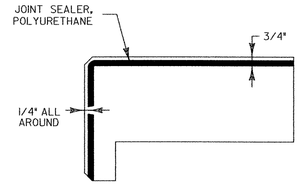
CONTRACTOR SHALL APPLY APPROVED SILANE CONCRETE SEALANT OVER ALL EXPOSED SURFACES OF COPING



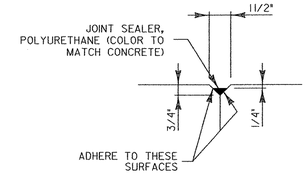
COPING REINFORCING DETAIL
SCALE: 11/2" = 1'



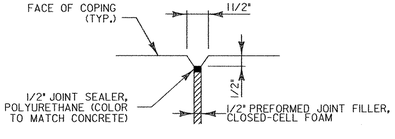
CONNECTION DETAIL
SCALE: 11/2" = 1'



TYPICAL CONSTRUCTION JOINT DETAIL
N.T.S.



CONSTRUCTION JOINT SEAL DETAIL
N.T.S.



TYPICAL EXPANSION JOINT DETAIL
N.T.S.

1 ADDENDUM #1: REVISED APRIL 18, 2007

BARNES AVENUE SHEET PILE RETAINING WALL SHEET 2

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027walldet.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, C. MATTHEWS
PLOT DATE:	4/18/2007
DRAWN BY:	W.WONG
CHECKED BY:	K. ISHIKURA
SHEET 147	OF 239

SOIL CLASSIFICATION

AASHTO

A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

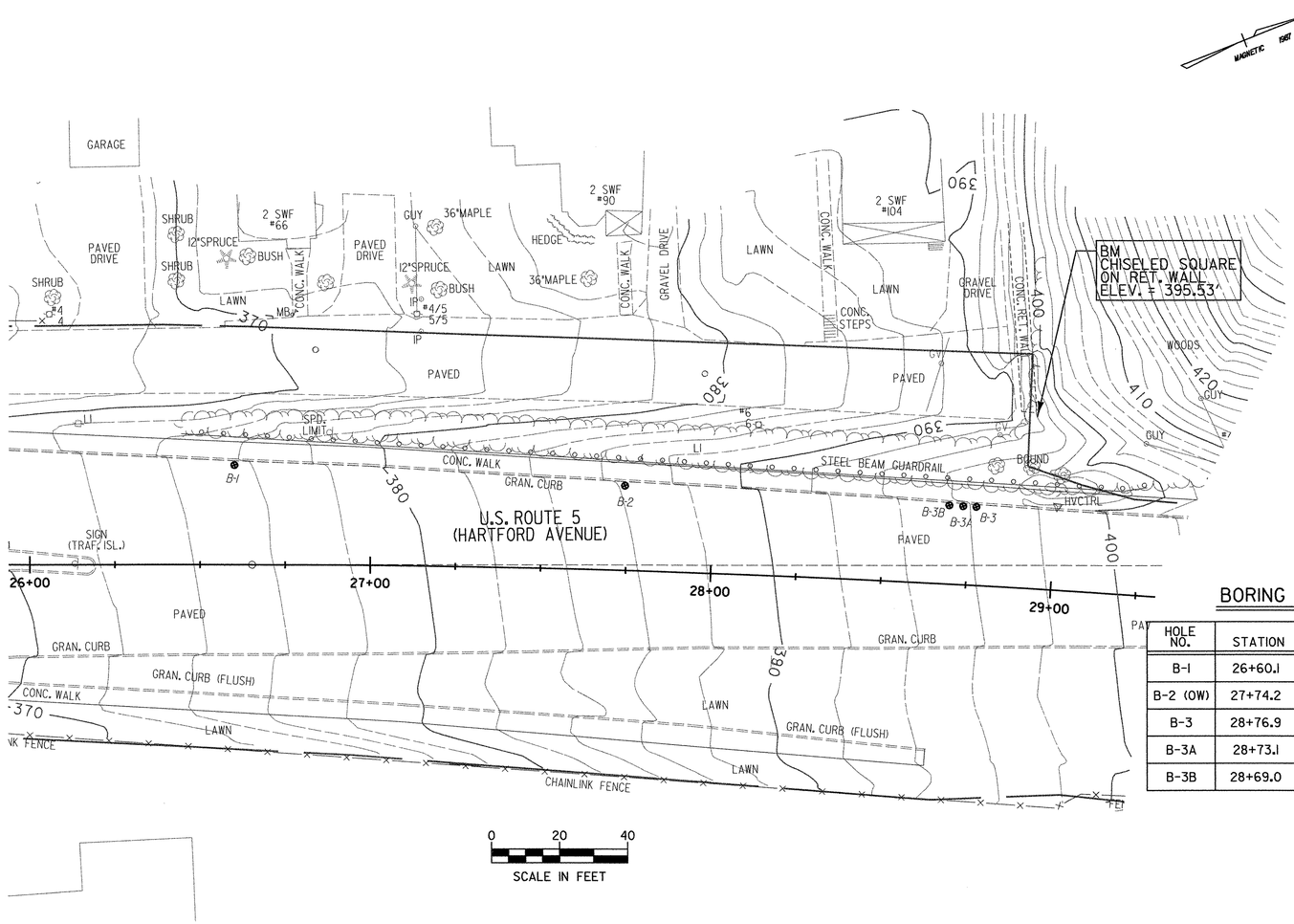
DENSITY (GRANULAR SOILS) N	DESCRIPTIVE TERM	CONSISTENCY (COHESIVE SOILS) N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
◆	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	To Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)

COLOR

blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		



BORING CHART

HOLE NO.	STATION	OFFSET (FT)	GROUND ELEV.
B-1	26+60.1	-29.0	375.5
B-2 (OW)	27+74.2	-24.6	386.0
B-3	28+76.9	-22.9	396.0
B-3A	28+73.1	-22.9	395.6
B-3B	28+69.0	-22.9	395.2

BORING LAYOUT SHEET 1

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.

BOULDER - A rock fragment with an average dimension > 12 inches.

COBBLE - Rock fragments with an average dimension between 3 and 12 inches.

GRAVEL - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

SILT - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

VARVED - Alternate layers of silt and clay.

HARDPAN - Extremely dense soil, cemented layer, not softened when wet.

MUCK - Soft organic soil (containing > 10% organic material.

MOISTURE CONTENT - Weight of water divided by dry weight of soil.

FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.

DIP - Inclination of bed with a horizontal plane.

GENERAL NOTES

1. All test borings and test pits were drilled by New Hampshire Boring between the period from 3/18/02 through 4/8/02 and were observed and logged by GZA personnel.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTFORD	Bridge No.
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.

BORING INFORMATION SHEET

Designed By	Drawn By P.G.M.
Checked By E.C.A. Date 9/21/2006	Bridge Design Supervisor Date
PROJECT HARTFORD	PROJECT NO. RS 0113(40)
I.G.C. Info.	
Bridge Sheet No.	Sheet 148 of 239

SOIL CLASSIFICATION

	AASHTO
A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
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SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
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250-500	Soft
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CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
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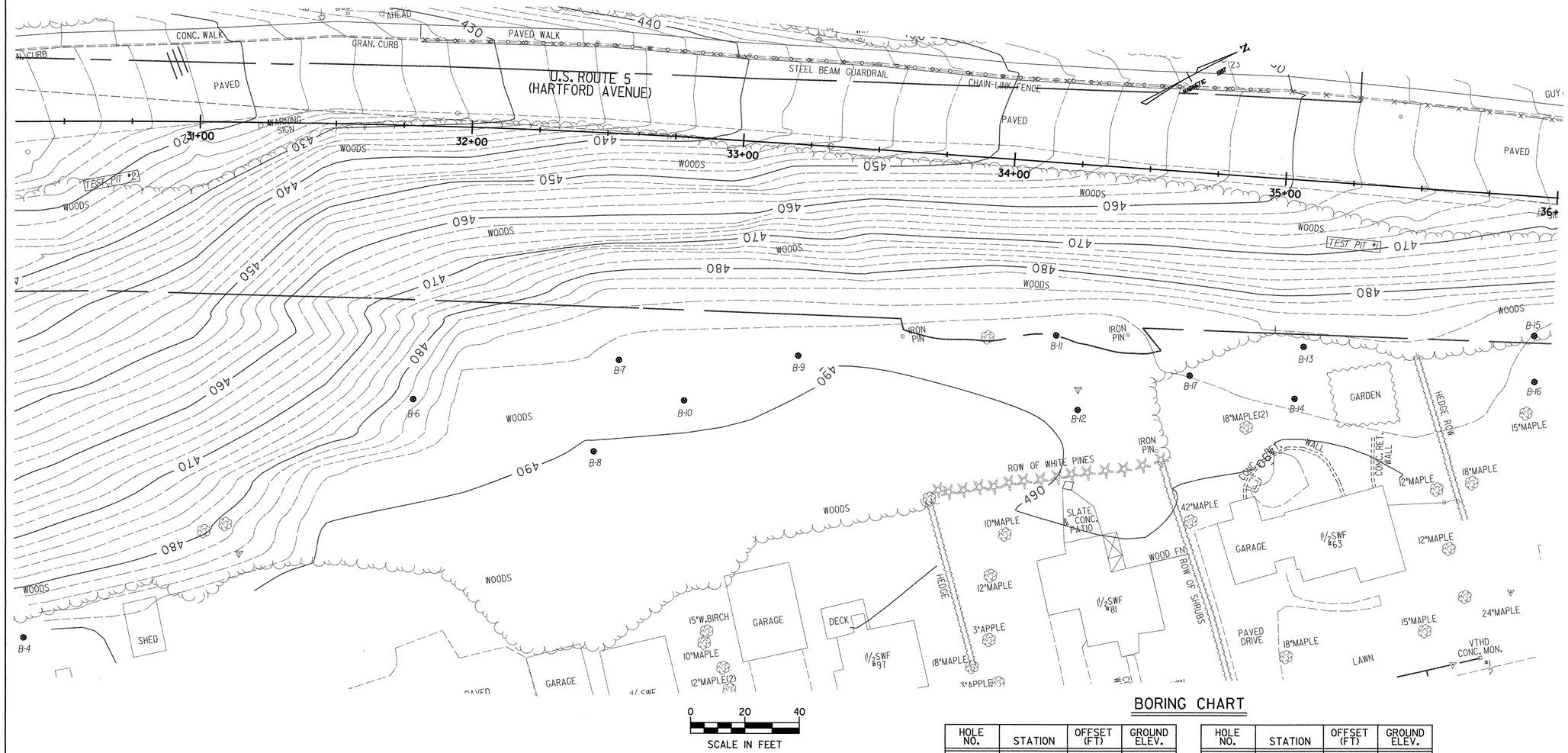
		31-60	Hard
		>60	Very Hard

SEE PREVIOUS SHEET FOR LIST OF COMMONLY USED SYMBOLS



BORING CHART

HOLE NO.	STATION	OFFSET (FT)	GROUND ELEV.
TP-1	35+25.0	22.0	468.26
TP-2	30+68.0	22.0	420.73
B-4	30+33.4	189.4	490.1
B-6 (OW)	31+81.3	100.4	488.1
B-7	32+58.2	82.9	488.0
B-8 (OW)	32+50.4	117.0	489.9
B-9 (OW)	33+25.3	77.0	489.5
B-10	32+83.5	96.5	488.7

HOLE NO.	STATION	OFFSET (FT)	GROUND ELEV.
B-11	34+19.6	63.1	488.4
B-12 (OW)	34+29.5	89.9	489.2
B-13 (OW)	35+10.8	60.9	486.2
B-14	35+08.7	80.2	487.2
B-15 (OW)	35+95.1	50.9	488.0
B-16	35+96.3	67.8	488.2
B-17	34+69.7	74.4	488.2

BORING LAYOUT SHEET 2

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.

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SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTFORD	Bridge No.
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.

BORING INFORMATION SHEET

Designed By	Drawn By P.G.M.
Checked By E.C.A. Date 9/21/2006	Bridge Design Supervisor Date
PROJECT HARTFORD	PROJECT NO. RS 0113(40)
I.G.C. Info.	
Bridge Sheet No.	Sheet 149 of 239

SOIL CLASSIFICATION

AASHTO	
A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
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<250	Very Soft
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>4000	Hard

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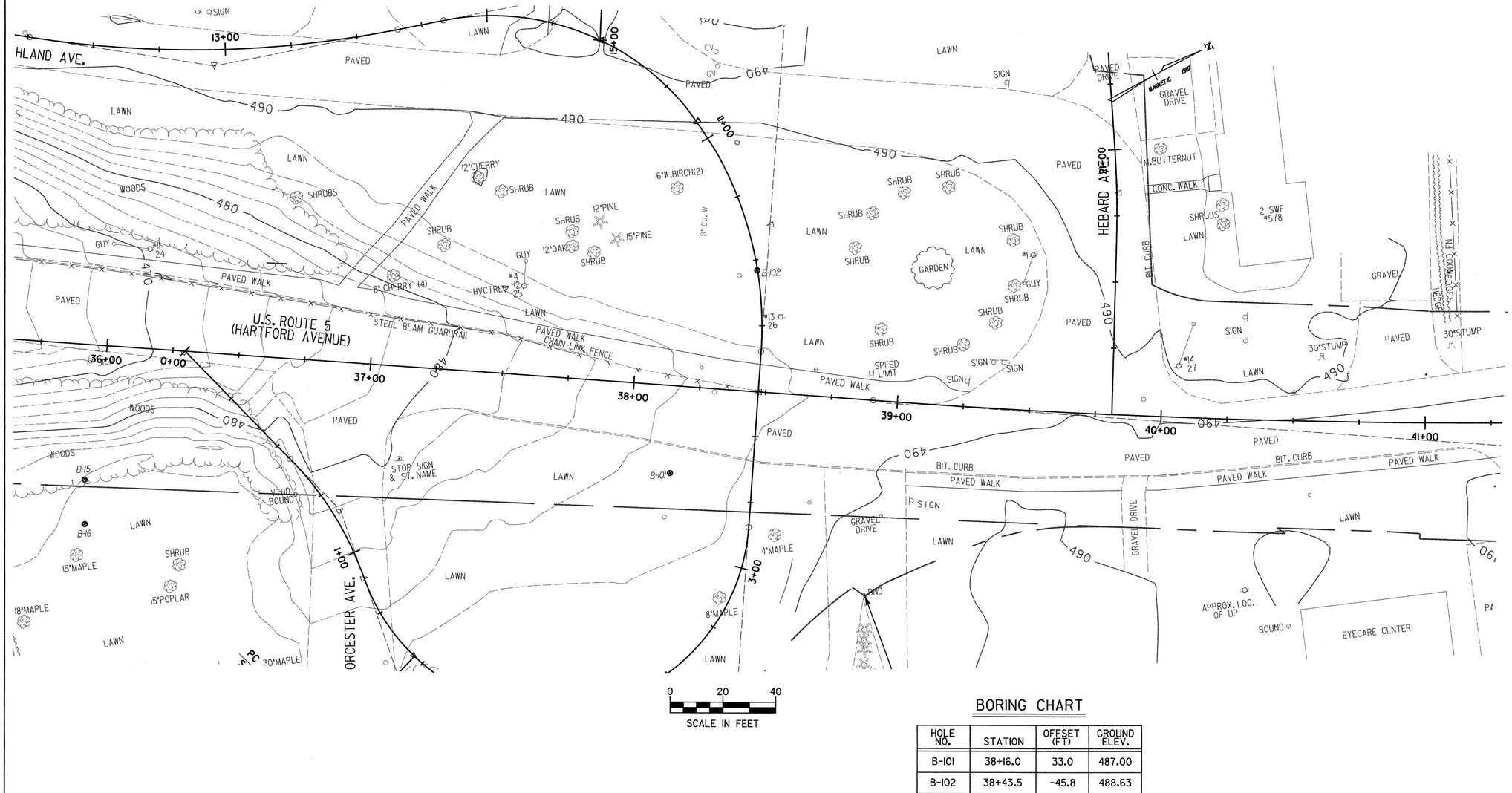
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

SEE PREVIOUS SHEET FOR LIST OF COMMONLY USED SYMBOLS



BORING CHART

HOLE NO.	STATION	OFFSET (FT)	GROUND ELEV.
B-101	38+16.0	33.0	487.00
B-102	38+43.5	-45.8	488.63

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.

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COBBLE - Rock fragments with an average dimension between 3 and 12 inches.

GRAVEL - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

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FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.

DIP - Inclination of bed with a horizontal plane.

GENERAL NOTES

1. All test borings and test pits were drilled by VTRANS between the period from 10/16/06 through 10/18/06 and were observed and logged by VTRANS personnel.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
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BORING LAYOUT SHEET 3

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTFORD	Bridge No.
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.

BORING INFORMATION SHEET

Designed By	Drawn By P.G.M.
Checked By E.C.A. Date 11/21/2006	Bridge Design Supervisor Date
PROJECT HARTFORD	PROJECT NO. RS 0113(40)
I.G.C. Info.	
Bridge Sheet No.	Sheet 150 of 239

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-1
Page: 1 of 1
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: Seth Currier
Date Start/Finish: 4-4-02 / 4-4-02
Boring Location: 26+60.1, 29.0 ft. LT
GS Elev.: 375.5 ft Datum: NGVD 1929

Auger/ Casing Type: HSA I.D.: 4-1/4"
Sampler Type: SS I.D.: 1-3/8" Hammer Wt.: 140# Hammer Fall: 30" Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0	S-1	24/ 11	0.4- 2.4	13-14 9-8	23	Medium dense, brown, fine to medium SAND, little Silt, trace Gravel. (A-2-4)		1	No Equipment Installed
5	S-2	24/ 14	5.0- 7.0	3-2 3-3	5	Loose, brown, fine to medium SAND, little Silt. (A-2-4)	SAND		
10	S-3	24/ 14	10.0- 12.0	3-5 5-7	10	Stiff, gray, CLAY & SILT. (A-4)	10.5 ft SILT AND CLAY		
15	S-4	24/ 18	15.0- 17.0	3-3 2-4	5	S-4A: 15-16': Medium stiff, gray, CLAY & SILT. (A-4) S-4B: 16-17': Loose, brown, fine to medium SAND, trace Silt. (A-1-b)	16.5 ft SAND		
20	S-5	24/ 20	20.0- 22.0	2-3 2-2	5	Medium stiff, gray, CLAY & SILT, trace Organics with layers of fine Sand. (A-4)	20.5 ft SILT AND CLAY 22.0 ft		
25	S-6	24/ 19	25.0- 27.0	2-3 4-4	7	Loose, brown, fine SAND, some Silt. (A-3)	SAND		
						Bottom of boring at 27 feet below ground surface. No refusal.	27.5 ft		

REMARKS
1. Laboratory sieve analysis performed on S-1.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-1

SOIL & WELL LOGS.GPJ GZA_NA.GDT 1/15/06

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-2 (OW)
Page: 1 of 1
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 4-4-02 / 4-4-02
Boring Location: 27+74.2, 24.6 ft. LT
GS Elev.: 386.0 ft Datum: NGVD 1929

Auger/ Casing Type: HSA I.D.: 4-1/4"
Sampler Type: SS I.D.: 1-3/8" Hammer Wt.: 140# Hammer Fall: 30" Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
NOT ENCOUNTERED				

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0	S-1	24/ 4	0.4- 2.4	18-19 8-8	27	Medium dense, brown, GRAVEL, some fine to medium Sand, little Silt. (A-2-4)			ROADWAY BOX CONCRETE SEAL 1'
5	S-2	24/ 15	5.0- 7.0	6-6 2-3	8	Loose, gray, SILT, some fine Sand, trace Organics. (A-4)	FILL	1	AUGER CUTTINGS 2" ID Solid Sch 40 PVC Well Riser 10'
10	S-3	24/ 15	10.0- 12.0	2-6 4-4	10	Loose, brown, fine to medium SAND, little Silt, trace Gravel, trace concrete fragments. (A-2-4)		2	BENTONITE SEAL 12'
15	S-4	24/ 20	15.0- 17.0	4-5 5-6	10	Medium stiff, gray, CLAY & SILT. (A-4)	15.0 ft SILT AND CLAY 17.0 ft		15' FILTER SAND
20	S-5	24/ 20	20.0- 22.0	4-6 4-6	10	Loose, brown, fine to medium SAND, trace Silt. (A-1-b)	SAND		2" ID Slotted Sch 40 PVC Well Screen (0.01" Slot)
25	S-6A-B	24/ 18	25.0- 27.0	3-2 1-3	3	S-6A: 25'-25.7': Loose, brown, fine to medium SAND, trace Silt. (A-1-b) S-6B: 25.7'-27': Soft, gray, CLAY & SILT. (A-4)	25.7 ft SILT AND CLAY		25'
						Bottom of boring at 27 feet below ground surface. No refusal.	27.0 ft		

REMARKS
1. Laboratory corrosivity testing performed on S-2.
2. Laboratory sieve analysis performed on S-3.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-2 (OW)

SOIL & WELL LOGS.GPJ GZA_NA.GDT 1/15/06

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-3
Page: 1 of 1
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 4-4-02 / 4-4-02
Boring Location: 28+76.9, 22.9 ft. LT
GS Elev.: 396.0 ft Datum: NGVD 1929

Auger/ Casing Type: HSA I.D.: 4-1/4"
Sampler Type: SS I.D.: 1-3/8" Hammer Wt.: 140# Hammer Fall: 30" Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0	S-1	24/ 5	0.6- 2.6	17-16 13-11	29	ASPHALT from 0 to 0.6'. Medium dense, gray, fine to medium SAND, little Gravel, little Silt. (A-2-4)	0.6 ft ASPHALT FILL		No Equipment Installed
5						Bottom of boring at 4 feet below ground surface. Auger refusal.	4.0 ft	1	

REMARKS
1. Due to shallow refusal, moved approximately 5 feet south. See boring log B-3A.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-3

SOIL & WELL LOGS.GPJ GZA_NA.GDT 1/15/06

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-3A
Page: 1 of 1
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 4-4-02 / 4-4-02
Boring Location: 28+73.1, 22.9 ft. LT
GS Elev.: 395.6 ft Datum: NGVD 1929

Auger/ Casing Type: HSA I.D.: 4-1/4"
Sampler Type: SS I.D.: 1-3/8" Hammer Wt.: 140# Hammer Fall: 30" Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0						ASPHALT from 0 to 0.6'. No samples obtained. See B-3 for soil descriptions.	0.6 ft ASPHALT		No Equipment Installed
5						Bottom of boring at 4 feet below ground surface. Auger refusal.		1	

REMARKS
1. Due to shallow refusal, moved approximately 5 feet south. See boring log B-3B.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-3A

SOIL & WELL LOGS.GPJ GZA_NA.GDT 1/15/06

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-3B
Page: 1 of 1
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 4-4-02 / 4-4-02
Boring Location: 28+69.0, 22.9 ft. LT
GS Elev.: 395.2 ft Datum: NGVD 1929

Auger/ Casing Type: HSA I.D.: 4-1/4"
Sampler Type: SS I.D.: 1-3/8" Hammer Wt.: 140# Hammer Fall: 30" Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0						ASPHALT from 0 to 0.6'.	0.6 ft ASPHALT		No Equipment Installed
5	S-1	24/ 6	5.0- 7.0	22-8 10-29	18	Medium dense, brown, fine to medium SAND with concrete fragments. (A-1-b)	FILL		
10	S-2	24/ 19	10.0- 12.0	6-4 4-5	8	Stiff, gray, CLAY & SILT, trace fine Sand, trace Silt. (A-4)	10.0 ft SILT AND CLAY	1	
15	S-3	24/ 16	15.0- 17.0	3-5 5-5	10	Stiff, gray, CLAY & SILT, trace fine Sand. (A-4)			
20	S-4	24/ 17	20.0- 22.0	3-4 7-9	11	Loose, light brown, SILT, trace fine Sand. (A-4)			
25	S-5	24/ 18	25.0- 27.0	4-11 12-15	23	Medium dense, light brown, SILT, trace fine Sand. (A-4)			
						Bottom of boring at 27 feet below ground surface. No refusal.	27.0 ft		

REMARKS
1. Laboratory sieve analysis, hydrometer testing and Atterberg limit testing performed on S-2.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-3B

SOIL & WELL LOGS.GPJ GZA_NA.GDT 1/15/06

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-4
Page: 1 of 2
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 3-27-02 / 3-28-02
Boring Location: 30+33.4, 189.4 ft. RT
GS Elev.: 490.1 ft Datum: NGVD 1929

Auger/ Casing Type: HSA I.D.: 4-1/4"
Sampler Type: SS I.D.: 1-3/8" Hammer Wt.: 140# Hammer Fall: 30" Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0	S-1	24/ 21	0.0- 2.0	2-2 2-2	4	Very loose, brown, fine SAND, little Silt, trace organics and roots. (A-3)	0.5 ft TOPSOIL SILT		No Equipment Installed
5	S-2	24/ 20	5.0- 7.0	4-4 6-5	10	Stiff, gray, SILT, trace fine Sand, trace Clay. (A-4)	5.0 ft	1	
10	S-3	24/ 17	10.0- 12.0	3-5 7-7	12	Stiff, gray, SILT, trace fine Sand, trace Clay. (A-4)			
15	S-4	24/ 20	15.0- 17.0	3-5 5-6	10	Stiff, gray, SILT, trace fine Sand, trace Clay. (A-4)	SILT AND CLAY		
20	S-5	24/ 21	20.0- 22.0	3-4 6-6	10	Stiff, gray, SILT, trace fine Sand, trace Clay. (A-4)			
25	S-6	24/ 24	25.0- 27.0	3-3 4-4	7	Medium stiff, gray, Clayey SILT, trace fine Sand. (A-4)			

REMARKS
1. Laboratory sieve analysis, hydrometer testing and Atterberg limit testing performed on S-2.
2. Obtained an undisturbed shelby tube sample.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-4

SOIL & WELL LOGS.GPJ GZA_NA.GDT 1/15/06

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-4
Page: 2 of 2
File No.: 22721.5
Check: TAD

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
30	U-1	29/ 29	30.0- 32.4	PUSH		Gray, Clayey SILT. (A-4)		2	
35	S-7	24/ 24	35.0- 37.0	4-5 5-6	10	Stiff, gray, Clayey SILT, trace fine Sand, trace Clay. (A-4)			
40	S-8	24/ 24	40.0- 42.0	3-5 6-6	11	Stiff, gray, SILT & CLAY. (A-4)	SILT AND CLAY		
45	S-9	24/ 21	45.0- 47.0	3-4 6-7	10	Stiff, gray, SILT & CLAY. (A-4)			
50	S-10	24/ 23	50.0- 52.0	3-4 5-5	9	Stiff, gray, SILT & CLAY. (A-4)			
55	S-11	24/ 16	55.0- 57.0	12-15 17-20	32	Dense, brown, fine SAND, little Silt. (A-3)	55.0 ft SAND		
60						Bottom of boring at 57 feet below ground surface. No refusal.	57.0 ft		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-4

SOIL & WELL LOGS.GPJ GZA_NA.GDT 1/15/06

BORING LOG SHEET 1

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027borlog.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K.ISHIKURA/E.ATKINS

PLOT DATE: 1/6/2007
DRAWN BY: P. MILEWSKI
CHECKED BY: K. ISHIKURA
SHEET 151 OF 239

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)

Hartford, Vermont

Boring No.: B-6 (OW)
Page: 1 of 2
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 3-27-02 / 3-27-02
Boring Location: 31+81.3, 100.4 ft. RT
GS Elev.: Datum: NGVD 1929

Auger/Casing Type: HSA; I.D.: 4-1/4"
Sampler Type: SS; 1-3/8"; 140#; 30"
Hammer Wt.:
Hammer Fall:
Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
NOT ENCOUNTERED				

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0	S-1	24/19	0.0-2.0	1-1 1-1	2	Very loose, brown, fine SAND, some Silt, trace organics and roots. (A-3)	0.2 ft TOPSOIL		PROTECTIVE CASING; CONCRETE SEAL 1'
							SAND		
5	S-2	24/23	5.0-7.0	3-4 6-6	10	Stiff, gray, SILT, little fine Sand, trace Clay. (A-4)	5.0 ft		
10	S-3	24/21	10.0-12.0	2-4 5-4	9	Stiff, gray, SILT, little fine Sand, trace Clay. (A-4)			2" ID Solid Sch 40 PVC Well Riser
15	S-4	24/22	15.0-17.0	2-3 4-5	7	Medium stiff, gray, SILT, little fine Sand, trace Clay. (A-4)			
							SILT AND CLAY		
20	S-5	24/23	20.0-22.0	3-3 5-5	8	Stiff, gray, SILT, little fine Sand, trace Clay. (A-4)			
									AUGER CUTTINGS
25	S-6	24/23	25.0-27.0	3-4 6-6	10	Stiff, gray, Clayey SILT, trace fine Sand. (A-4)			

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual.
Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-6 (OW)

SOIL BL WELL LOGS.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)

Hartford, Vermont

Boring No.: B-6 (OW)
Page: 2 of 2
File No.: 22721.5
Check: TAD

Sample Information

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-7	24/24	30.0-32.0	3-4 3-5	7	Medium stiff, gray, Clayey SILT. (A-4)			
35	S-8	24/23	35.0-37.0	3-4 5-6	9	Stiff, gray, Clayey SILT. (A-4)			
40	S-9	24/20	40.0-42.0	4-4 8-9	12	Stiff, gray, Clayey SILT. (A-4)			
45	S-10	24/23	45.0-47.0	3-6 8-10	14	Stiff, gray, Clayey SILT. (A-4)	SILT AND CLAY		2" ID Solid Sch 40 PVC Well Riser; 45'; BENTONITE SEAL 47.5'
50	S-11	24/24	50.0-52.0	3-5 6-6	11	Stiff, gray, SILT & CLAY. (A-4)			50'; FILTER SAND
55	S-12	24/18	55.0-57.0	3-8 10-8	18	Very stiff, SILT & CLAY. (A-4)	57.0 ft		2" ID Slotted Sch 40 PVC Well Screen (0.01" Slot)
60	S-13	24/14	60.0-62.0	7-13 13-14	26	Very stiff, gray, fine SAND and Silt. (A-3)	SAND		60'
						Bottom of boring at 62 feet below ground surface. No refusal.	62.0 ft		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual.
Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-6 (OW)

SOIL BL WELL LOGS.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)

Hartford, Vermont

Boring No.: B-7
Page: 1 of 3
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 3-26-02 / 3-26-02
Boring Location: 32+50.2, 82.8 ft. RT
GS Elev.: 488.0 ft Datum: NGVD 1929

Auger/Casing Type: HSA/HW; I.D.: 4-1/4"/4"
Sampler Type: SS; 1-3/8"; 140#; 30"
Hammer Wt.: -/300#
Hammer Fall: -/24"
Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0	S-1	24/13	0.0-2.0	1-1 1-3	2	Very loose, brown, SILT, some fine Sand, trace organics and roots. (A-4)	0.3 ft TOPSOIL		No Equipment Installed
5	S-2	24/22	5.0-7.0	4-6 7-8	13	Stiff, gray, Clayey SILT, little fine Sand. (A-4)			
10	S-3	24/19	10.0-12.0	7-8 8-7	16	Very stiff, gray, Clayey SILT, trace fine Sand, trace Clay. (A-4)			
15	S-4	24/17	15.0-17.0	3-3 5-7	8	Stiff, gray, Clayey SILT, trace Sand, trace Clay. (A-4)	SILT AND CLAY		
20	S-5	24/19	20.0-22.0	4-5 7-7	12	Stiff, gray, Clayey SILT, trace fine Sand. (A-4)		1	
25	S-6	24/19	25.0-27.0	4-5 7-7	12	Stiff, gray, Clayey SILT, trace fine Sand. (A-4)		2	

1. Laboratory corrosivity testing performed on S-5.
2. Laboratory sieve analysis, hydrometer testing, and Atterberg limit testing performed on S-6 and S-9.

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual.
Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-7

SOIL BL WELL LOGS.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)

Hartford, Vermont

Boring No.: B-7
Page: 2 of 3
File No.: 22721.5
Check: TAD

Sample Information

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-7	24/21	30.0-32.0	2-4 5-5	9	Stiff, gray, CLAY & SILT. (A-4)			
35	S-8	24/21	35.0-37.0	4-4 6-9	10	Stiff, gray, CLAY & SILT. (A-4)			
40	U-1	28/27	40.0-42.3	PUSH		Gray, Clayey SILT. (A-4)	SILT AND CLAY	3	
45	S-9	24/20	45.0-47.0	4-6 7-10	13	Stiff, gray, CLAY & SILT. (A-4)			
50	S-10	24/23	50.0-52.0	4-5 5-7	10	Stiff, gray, CLAY & SILT. (A-4)			
55	S-11	24/19	55.0-57.0	4-4 10-11	14	Stiff, gray, CLAY & SILT. (A-4)	57.8 ft		
60	S-12	24/17	60.0-62.0	8-12 14-19	26	Very stiff, gray, SILT, little fine Sand. (A-4)	SILT AND CLAY		

3. Obtained an undisturbed shelby tube sample. Performed sieve analysis, hydrometer testing, Atterberg limit testing, and undrained shear strength testing.

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual.
Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-7

SOIL BL WELL LOGS.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)

Hartford, Vermont

Boring No.: B-7
Page: 3 of 3
File No.: 22721.5
Check: TAD

Sample Information

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-13	24/17	65.0-67.0	15-15 20-19	35	Hard, gray, SILT, little fine to medium SAND. (A-4)			
70	S-14	24/13	70.0-72.0	13-20 24-23	44	Hard, gray, SILT, little fine Sand. (A-4)	SILT AND CLAY		
75	S-15	24/24	75.0-77.0	7-8 7-10	15	Stiff, gray, Clayey SILT, trace fine Sand. (A-4)			
80	S-16	24/20	80.0-82.0	9-12 13-15	25	Very stiff, gray, Clayey SILT, trace fine Sand. (A-4)			
						Bottom of boring at 82 feet below ground surface. No refusal.	82.0 ft		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual.
Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-7

SOIL BL WELL LOGS.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)

Hartford, Vermont

Boring No.: B-8 (OW)
Page: 1 of 3
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 3-25-02 / 3-25-02
Boring Location: 32+50.4, 116.9 ft. RT
GS Elev.: 489.9 ft Datum: NGVD 1929

Auger/Casing Type: HSA/HW; I.D.: 4-1/4"/4"
Sampler Type: SS; 1-3/8"; 140#; 30"
Hammer Wt.: -/300#
Hammer Fall: -/24"
Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
4/3/02	12:50	61.9 ft	PVC	9 days
4/10/02	08:41	60.2 ft	PVC	15 days

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0	S-1	24/3	0.0-2.0	1-1 1-2	2	Very loose, brown, fine SAND, some Silt, trace organics and roots. (A-3)	SAND		PROTECTIVE CASING; CONCRETE SEAL 1'
5	S-2	24/20	5.0-7.0	5-5 7-6	12	Medium dense, gray, Clayey SILT, trace fine Sand. (A-4)	5.0 ft		
10	S-3	24/15	10.0-12.0	4-6 6-7	12	Stiff, gray, SILT & CLAY. (A-4)			AUGER CUTTINGS
15	S-4	24/16	15.0-17.0	2-4 4-5	8	Stiff, gray, SILT & CLAY. (A-4)	SILT AND CLAY		
20	S-5	24/17	20.0-22.0	4-4 6-7	10	Stiff, gray, SILT & CLAY. (A-4)			
25	S-6	24/21	25.0-27.0	2-5 4-4	9	Stiff, gray, SILT & CLAY. (A-4)		1	2" ID Solid Sch 40 PVC Well Riser

1. Laboratory sieve analysis, hydrometer testing and Atterberg limit testing performed on S-6.

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual.
Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-8 (OW)

SOIL BL WELL LOGS.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)

Hartford, Vermont

Boring No.: B-8 (OW)
Page: 2 of 3
File No.: 22721.5
Check: TAD

Sample Information

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-7	24/18	30.0-32.0	4-4 7-10	11	Stiff, gray, CLAY & SILT. (A-4)			
35	S-8	24/22	35.0-37.0	3-5 6-6	11	Stiff, gray, CLAY & SILT. (A-4)			
40	S-9	24/22	40.0-42.0	6-6 9-9	15	Stiff, gray, CLAY & SILT. (A-4)			
45	S-10	24/24	45.0-47.0	4-4 6-7	10	Stiff, gray, CLAY & SILT. (A-4)	SILT AND CLAY		AUGER CUTTINGS
50	S-11	24/24	50.0-52.0	4-5 6-12	11	Stiff, gray, CLAY & SILT. (A-4)			
55	S-12	24/17	55.0-57.0	4-7 14-19	21	Very stiff, gray, CLAY & SILT, trace fine Sand. (A-4)			
60	S-13	24/17	60.0-62.0	21-26 26-20	52	Very dense, gray, fine SAND, some Silt. (A-3)	60.0 ft SAND		2" ID Slotted Sch 40 PVC Well Screen (0.01" Slot)

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual.
Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-8 (OW)

SOIL BL WELL LOGS.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)

Hartford, Vermont

Boring No.: B-8 (OW)
Page: 3 of 3
File No.: 22721.5
Check: TAD

Sample Information

Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-14	24/20	65.0-67.0	7-12 15-19	27	Very stiff, gray, SILT, trace fine Sand, trace Clay. (A-4)	65.0 ft SILT		65'; BENTONITE SEAL 67'
70	S-15	24/12	70.0-72.0	15-19 23-23	42	Dense, gray-brown, fine to coarse SAND, little Silt. (A-2-4)	69.0 ft		FILTER SAND 70'
75	S-16	24/13	75.0-77.0	30-27 28-27	53	Very dense, gray-brown, fine to coarse SAND, little Gravel, little Silt. (A-2-4)	SAND		2" ID Slotted Sch 40 PVC Well Screen (0.01" Slot)
80	S-17	24/18	80.0-82.0	15-15 18-20	33	Dense, gray-brown, fine to coarse SAND, little Silt. (A-2-4)			80'
						Bottom of boring at 82 feet below ground surface. No refusal.	82.0 ft		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual.
Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-8 (OW)

SOIL BL WELL LOGS.GPJ GZA_MA.GDT 1/10/06

BORING LOG SHEET 2

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027borlog.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K.ISHIKURA/E.ATKINS

PLOT DATE: 1/6/2007
DRAWN BY: P. MILEWSKI
CHECKED BY: K. ISHIKURA
SHEET 152 OF 239

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-9 (OW)
Page: 1 of 3
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 3-21-02 / 3-21-02
Boring Location: 33+25.5, 77.0 ft, RT
GS Elev.: 489.5 ft Datum: NGVD 1929

Auger/Casing Type: HSA/HW; I.D.: 4-1/4"/4"
Hammer Wt.: ~/300# Hammer Fall: ~/24"
Rig Type: CME 550 ATV

Sampler Type: SS; I.D.: 1-3/8"; 140# Wt.; 30" Fall

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
4/10/02	08:39	68.0 ft	PVC	20 days

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0	S-1	24/7	0.0–2.0	1-1 1-1	2	Very loose, dark brown, fine SAND, trace organics and roots. (A-3)	TOPSOIL 0.5 ft		PROTECTIVE CASING; CONCRETE SEAL 2'
5	S-2	24/20	5.0–7.0	6-8 8-9	16	Very stiff, gray, SILT, trace fine Sand. (A-4)			AUGER CUTTINGS
10	S-3	24/16	10.0–12.0	7-7 8-7	15	SHff, gray, SILT, trace Clay, trace fine Sand. (A-4)			
15	S-4	24/19	15.0–17.0	8-7 7-9	14	SHff, gray, SILT, trace Clay, trace fine Sand. (A-4)	SILT AND CLAY		
20	S-5	24/16	20.0–22.0	4-5 6-5	11	SHff, gray, Clayey SILT. (A-4)			2" ID Solid Sch 40 PVC Well Riser
25	S-6	24/15	25.0–27.0	4-5 6-9	11	SHff, gray, Clayey SILT. (A-4)			

REMARKS

1. Laboratory sieve analysis, hydrometer testing and Atterberg limit testing performed on S-6.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-9 (OW)

SOIL BL WELL L005.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-9 (OW)
Page: 2 of 3
File No.: 22721.5
Check: TAD

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
30	S-7	24/19	30.0–32.0	3-6 6-7	12	SHff, gray, Clayey SILT. (A-4)			AUGER CUTTINGS
35	S-8	24/20	35.0–37.0	3-5 5-7	10	SHff, gray, SILT & CLAY, trace fine Sand. (A-4)			
40	S-9	24/18	40.0–42.0	3-5 6-6	11	SRff, gray, CLAY & SILT. (A-4)			
45	S-10	24/16	45.0–47.0	4-4 5-6	9	SHff, gray, CLAY & SILT. (A-4)	SILT AND CLAY		2" ID Slotted Sch 40 PVC Well Screen (0.01" Slot)
50	S-11	24/20	50.0–52.0	4-5 6-6	11	SHff, gray, CLAY & SILT. (A-4)			53'
55	S-12	24/21	55.0–57.0	5-6 6-10	12	SRff, gray, CLAY & SILT, trace fine Sand. (A-4)			BENTONITE SEAL; 57'; FILTER SAND
60	S-13	24/18	60.0–62.0	5-7 13-17	20	Very stiff, gray, SILT, trace fine Sand. (A-4)			2" ID Solid Sch 40 PVC Well Riser

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-9 (OW)

SOIL BL WELL L005.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-9 (OW)
Page: 3 of 3
File No.: 22721.5
Check: TAD

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
70	S-14	24/11	65.0–67.0	15-20 30-32	50	Very dense, gray, fine SAND and Silt. (A-3)	65.0 ft SAND		2" ID Solid Sch 40 PVC Well Riser
70	S-15	24/5	70.0–72.0	13-17 24-28	41	Hard, gray, Clayey SILT, little fine Sand. (A-4)	70.0 ft SILT AND CLAY		70'
						Bottom of boring at 72 feet below ground surface. No refusal.	72.0 ft		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-9 (OW)

SOIL BL WELL L005.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-10
Page: 1 of 4
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 3-29-02 / 4-2-02
Boring Location: 32+63.5, 98.5 ft, RT
GS Elev.: 488.7 ft Datum: NGVD 1929

Auger/Casing Type: HSA/HW; I.D.: 4-1/4"/4"
Hammer Wt.: ~/300# Hammer Fall: ~/24"
Rig Type: CME 550 ATV

Sampler Type: SS; I.D.: 1-3/8"; 140# Wt.; 30" Fall

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
0	S-1	24/14	0.0–2.0	2-2 2-2	4	Very loose, brown, fine SAND, some Silt, trace organics and roots. (A-3)	SAND		No Equipment Installed
5	S-2	24/18	5.0–7.0	4-5 8-8	13	SHff, gray, SILT, little fine Sand, trace Clay. (A-4)	5.5 ft		
10	S-3	24/14	10.0–12.0	7-8 8-8	16	Very stiff, SILT, trace Clay. (A-4)			
15	S-4	24/17	15.0–17.0	2-4 5-7	9	SHff, gray, SILT, trace Clay. (A-4)	SILT AND CLAY		
20	S-5	24/14	20.0–22.0	4-5 7-8	12	SRff, gray, SILT, trace Clay. (A-4)			
25	S-6	24/20	25.0–27.0	4-3 7-6	10	SHff, gray, Clayey SILT. (A-4)			

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-10

SOIL BL WELL L005.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-10
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File No.: 22721.5
Check: TAD

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
30	S-7	24/20	30.0–32.0	4-5 8-8	13	SHff, gray, Clayey SILT. (A-4)			
35	S-8	24/23	35.0–37.0	3-4 6-5	10	SHff, gray, Clayey SILT. (A-4)			
40	S-9	24/17	40.0–42.0	4-6 9-9	15	SHff, gray, SILT & CLAY. (A-4)			
45	S-10	24/23	45.0–47.0	4-5 6-6	11	SHff, gray, SILT & CLAY. (A-4)	SILT AND CLAY		
50	S-11	24/22	50.0–52.0	5-6 6-7	12	SHff, gray, SILT & CLAY. (A-4)			
55	S-12A-B	24/18	55.0–57.0	3-5 10-12	15	S-12A: 55'–56.3': SHff, gray, SILT & CLAY. (A-4) S-12B: 56.3'–57': SHff, gray, SILT, trace fine Sand. (A-4)			
60	S-13	24/14	60.0–62.0	19-27 26-26	53	Very dense, brown, fine SAND, some Silt. (A-5)	60.0 ft SAND		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-10

SOIL BL WELL L005.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-10
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File No.: 22721.5
Check: TAD

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
70	S-14	24/16	65.0–67.0	8-12 15-24	27	Medium dense, gray, SILT, trace fine Sand, trace Clay. (A-4)	65.0 ft		
70	S-15	24/14	70.0–72.0	12-13 16-14	29	Dense, gray, Clayey SILT, trace fine to medium Sand, trace Gravel. (A-4)	SILT AND CLAY		
75	S-16	24/9	75.0–77.0	26-37 35-44	72	Very dense, brown, fine to medium SAND, little Silt, trace Gravel. (A-2-4)	75.0 ft		
80	S-17	24/16	80.0–82.0	22-22 27-31	49	Dense, brown, fine to coarse SAND, little Gravel, little Silt. (A-2-4)			
85	S-18	24/13	85.0–87.0	25-32 32-40	64	Very dense, brown, fine to coarse SAND, some Gravel, some Silt. (A-2-4)	SAND		
90	S-19	24/9	90.0–92.0	24-29 29-33	58	Very dense, brown, fine to coarse SAND, some Gravel, some Silt. (A-2-4)			
95	S-20	24/17	95.0–97.0	23-27 29-31	56	Very dense, brown, fine to coarse SAND, some Gravel, some Silt. (A-2-4)			

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-10

SOIL BL WELL L005.GPJ GZA_MA.GDT 1/10/06

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-10
Page: 4 of 4
File No.: 22721.5
Check: TAD

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
100	S-21	24/15	100.0–102.0	17-22 28-24	50	Very dense, brown, fine to coarse SAND, little Silt, trace Gravel. (A-2-4)			
105	S-22	24/11	105.0–107.0	24-40 40-33	80	Very dense, brown, fine to coarse SAND, little Silt, trace Gravel. (A-2-4)	SAND		
110	S-23	24/15	110.0–112.0	18-22 27-26	49	Dense, brown, fine to medium SAND, little Silt. (A-2-4)			
						Bottom of boring at 112 feet below ground surface. No refusal.	112.0 ft		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-10

SOIL BL WELL L005.GPJ GZA_MA.GDT 1/10/06

BORING LOG SHEET 3

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027borlog.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K.ISHIKURA/E.ATKINS

PLOT DATE: 1/6/2007
DRAWN BY: P. MILEWSKI
CHECKED BY: K. ISHIKURA

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-11
Page: 1 of 2
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 3-20-02 / 3-20-02
Boring Location: 34+19.6, 63.1 ft. RT
GS Elev.: 488.4 ft Datum: NGVD 1929

Auger/Casing — Type: HSA; I.D.: 4-1/4"
Sampler — SS; 1-3/8"; 140#; 30"
Hammer Wt.:
Hammer Fall:
Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-1	24/11	0.0-2.0	1-1 1-1	2	Very loose, dark brown, fine SAND, little Silt. (A-3)	TOPSOIL 0.5 ft		No Equipment Installed
5	S-2	24/12	5.0-7.0	2-2 2-2	4	Loose, brown, fine to medium SAND, trace Silt. (A-1-b)	SAND	1	
10	S-3	24/15	10.0-12.0	2-2 2-3	4	Loose, brown, fine to medium SAND, trace Silt. (A-1-b)		2	
15	S-4	24/19	15.0-17.0	3-3 5-6	8	Stiff, gray, SILT, seams of Clayey Silt, trace fine Sand. (A-4)	15.0 ft		
20	S-5	24/18	20.0-22.0	4-4 6-6	10	Stiff, gray, SILT, seams of Clayey Silt, trace fine Sand. (A-4)	SILT AND CLAY		
25	S-6	24/21	25.0-27.0	4-5 4-5	9	Stiff, gray, SILT & CLAY. (A-4)			

1. Laboratory corrosivity testing performed on S-2.
2. Laboratory sieve analysis performed on S-3.

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-11

SOIL BL MISC LOGS.GPJ GZA_NA.GDT 1/10/08

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-11
Page: 2 of 2
File No.: 22721.5
Check: TAD

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-7	24/20	30.0-32.0	3-4 4-6	8	Stiff, gray, SILT & CLAY. (A-4)			
35	S-8	24/21	35.0-37.0	2-5 4-5	9	Stiff, gray, SILT, trace Clay, trace fine Sand. (A-4)			
40	S-9	24/21	40.0-42.0	3-5 6-7	11	Stiff, gray, Clayey SILT, trace fine Sand. (A-4)			
45	S-10	24/24	45.0-47.0	4-6 7-8	13	Stiff, gray, CLAY & SILT, trace fine Sand. (A-4)	SILT AND CLAY		
50	S-11	24/24	50.0-52.0	6-7 9-9	16	Very stiff, gray, CLAY & SILT. (A-4)			
55	S-12	24/24	55.0-57.0	8-9 11-13	20	Very stiff, gray, CLAY & SILT. (A-4)			
60						Bottom of boring at 57 feet below ground surface. No refusal.	57.0 ft		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-11

SOIL BL MISC LOGS.GPJ GZA_NA.GDT 1/10/08

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-12 (OW)
Page: 1 of 2
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 3-19-02 / 3-20-02
Boring Location: 34+28.5, 89.9 ft. RT
GS Elev.: 489.2 ft Datum: NGVD 1929

Auger/Casing — Type: HSA; I.D.: 4-1/4"
Sampler — SS; 1-3/8"; 140#; 30"
Hammer Wt.: -/300#
Hammer Fall: -/24"
Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
4/10/02	08:45	54.7 ft	PVC	21 days

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-1	24/12	0.0-2.0	1-1 2-2	3	Very loose, dark brown, fine to medium SAND, little Silt, trace organics and roots. (A-2-4)	TOPSOIL 0.4 ft		PROTECTIVE CASING
5	S-2	24/22	5.0-7.0	6-6 6-6	12	Medium dense, gray, Clayey SILT. (A-4)	SAND 5.0 ft		CONCRETE SEAL 2' AUGER CUTTINGS
10	S-3	24/10	10.0-12.0	4-5 6-6	11	Stiff, gray, Clayey SILT. (A-4)			
15	S-4	24/18	15.0-17.0	5-4 7-7	11	Stiff, gray, Clayey SILT. (A-4)	SILT AND CLAY		2" ID Solid Sch 40 PVC Well Riser
20	U-1	24/17	20.0-22.0	PUSH		Gray, Clayey SILT. (A-4)		1	
25	S-5	24/19	25.0-27.0	4-4 4-4	8	Stiff, gray, Clayey SILT. (A-4)			24' BENTONITE SEAL

1. Obtained an undisturbed shelby tube sample. Performed sieve analysis, hydrometer testing, Atterberg limit testing, and undrained shear strength testing.

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-12 (OW)

SOIL BL MISC LOGS.GPJ GZA_NA.GDT 1/10/08

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-12 (OW)
Page: 2 of 2
File No.: 22721.5
Check: TAD

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-6	24/20	30.0-32.0	3-4 4-5	8	Stiff, gray, SILT & CLAY. (A-4)			BENTONITE SEAL
35	S-7	24/18	35.0-37.0	3-5 6-8	11	Stiff, gray, SILT & CLAY. (A-4)			
40	S-8	24/14	40.0-42.0	6-10 12-13	22	Very stiff, gray, SILT. (A-4)	SILT AND CLAY		42.5'
45	S-9A-B	24/18	45.0-47.0	9-8 8-10	16	S-10A: 45'-45.5': Very stiff, gray, SILT. (A-4) S-10B: 45.5'-47': Very stiff, gray, Clayey SILT, trace fine Sand. (A-4)			45' FILTER SAND
50	S-10	24/13	50.0-52.0	13-15 17-22	32	Dense, brown, fine to coarse SAND, little Silt, trace Gravel. (A-2-4)	50.0 ft SAND		2" ID Slotted Sch 40 PVC Well Screen (0.01" Slot)
55	S-11	24/11	55.0-57.0	22-28 27-20	55	Very dense, brown, fine to coarse SAND, little Silt, trace Gravel. (A-2-4)			55'
60						Bottom of boring at 57 feet below ground surface. No refusal.	57.0 ft		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-12 (OW)

SOIL BL MISC LOGS.GPJ GZA_NA.GDT 1/10/08

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-13 (OW)
Page: 1 of 2
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 3-19-02 / 3-19-02
Boring Location: 35+10.8, 60.9 ft. RT
GS Elev.: 486.2 ft Datum: NGVD 1929

Auger/Casing — Type: HSA; I.D.: 2-1/4"
Sampler — SS; 1-3/8"; 140#; 30"
Hammer Wt.:
Hammer Fall:
Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
NOT ENCOUNTERED				

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-1	24/12	0.0-2.0	2-1 1-1	2	Very loose, dark brown, fine SAND, some Silt, trace organics and roots. (A-3)	TOPSOIL 2.0 ft		PROTECTIVE CASING CONCRETE SEAL 1'
5	S-2	24/14	5.0-7.0	1-1 1-2	2	Very loose, brown, fine to medium SAND, trace Gravel, trace Silt. (A-1-b)			AUGER CUTTINGS
10	S-3	24/15	10.0-12.0	2-3 2-4	5	Loose, brown, fine SAND, trace Silt. (A-2-4)	SAND	1	
15	S-4	24/17	15.0-17.0	2-2 3-3	5	Loose, gray, fine SAND, trace Silt. (A-3)			2" ID Solid Sch 40 PVC Well Riser
20	S-5	24/18	20.0-22.0	4-4 5-5	9	Loose, gray, fine to medium SAND, trace Gravel, trace Silt. (A-1-b)			21' BENTONITE SEAL 23'
25	S-6	24/20	25.0-27.0	4-3 4-5	7	Loose, brown, fine SAND with seams of Silt. (A-3)			FILTER SAND 27' 2" ID Solid Sch 40 PVC Well Riser

1. Laboratory sieve analysis performed on S-3.

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-13 (OW)

SOIL BL MISC LOGS.GPJ GZA_NA.GDT 1/10/08

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-13 (OW)
Page: 2 of 2
File No.: 22721.5
Check: TAD

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-7	24/16	30.0-32.0	5-5 6-6	11	Medium dense, brown, fine to medium SAND, trace Gravel, trace Silt. (A-1-b)	SAND		FILTER SAND
35	S-8	24/17	35.0-37.0	4-5 8-9	13	Medium dense, brown, fine to medium SAND, trace Gravel, trace Silt. (A-1-b)			2" ID Solid Sch 40 PVC Well Riser 37'
40						Bottom of boring at 37 feet below ground surface. No refusal.	37.0 ft		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-13 (OW)

SOIL BL MISC LOGS.GPJ GZA_NA.GDT 1/10/08

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-14
Page: 1 of 2
File No.: 22721.5
Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: J. Hodkinson
Date Start/Finish: 3-18-02 / 3-18-02
Boring Location: 35+08.7, 80.2 ft. RT
GS Elev.: 487.2 ft Datum: NGVD 1929

Auger/Casing — Type: HSA; I.D.: 2-1/4"
Sampler — SS; 1-3/8"; 140#; 30"
Hammer Wt.:
Hammer Fall:
Rig Type: CME 550 ATV

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-1	24/3	0.0-2.0	3-5 6-4	11	Medium dense, light brown, fine SAND, some Silt with organics and roots. Stone in tip of spoon. (A-3)	TOPSOIL 0.5 ft		No Equipment Installed
5	S-2	24/18	5.0-7.0	2-2 2-2	4	Very loose, brown, fine to medium SAND, trace Gravel, trace Silt. (A-1-b)	SAND		
10	S-3	24/13	10.0-12.0	2-2 2-2	4	Very loose, brown, fine SAND, trace Silt. (A-3)			
15	S-4	24/13	15.0-17.0	2-3 4-4	7	Loose, brown, fine SAND and Silt with alternating layers of CLAY & SILT. (A-3)			
20	S-5	24/18	20.0-22.0	1-3 5-4	8	Medium stiff, brown, CLAY & SILT with fine Sand and Silt seams. (A-4)	20.0 ft		
25	S-6	24/13	25.0-27.0	1-2 3-3	5	Medium stiff, gray, Clayey SILT. (A-4)	SILT AND CLAY		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-14

SOIL BL MISC LOGS.GPJ GZA_NA.GDT 1/10/08

GZA GeoEnvironmental, Inc. Engineers and Scientists

Harford RS 0113(40)
Hartford, Vermont

Boring No.: B-14
Page: 2 of 2
File No.: 22721.5
Check: TAD

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-7	24/24	30.0-32.0	2-3 4-5	7	Medium stiff, gray, Clayey SILT with fine Sand seams. (A-4)	SILT AND CLAY		
35	S-8	24/24	35.0-37.0	1-4 6-6	10	Stiff, gray, Clayey SILT with fine Sand seams. (A-4)			
40						Bottom of boring at 37 feet below ground surface. No refusal.	37.0 ft		

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-14

SOIL BL MISC LOGS.GPJ GZA_NA.GDT 1/10/08

BORING LOG SHEET 4

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027borlog.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K.ISHIKURA/E.ATKINS

PLOT DATE: 1/6/2007
DRAWN BY: P. MILEWSKI
CHECKED BY: K. ISHIKURA
SHEET 154 OF 239

GZA GeoEnvironmental, Inc. — Engineers and Scientists

Harford RS 0113(40) — Hartford, Vermont

Boring No.: B-15 (OW) | Page: 1 of 1 | File No.: 22721.5 | Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: J. Hodkinson
Date Start/Finish: 3-18-02 / 3-18-02
Boring Location: 35+95.1, 50.9 ft. RT
GS Elev.: 488.0 ft Datum: NGVD 1929

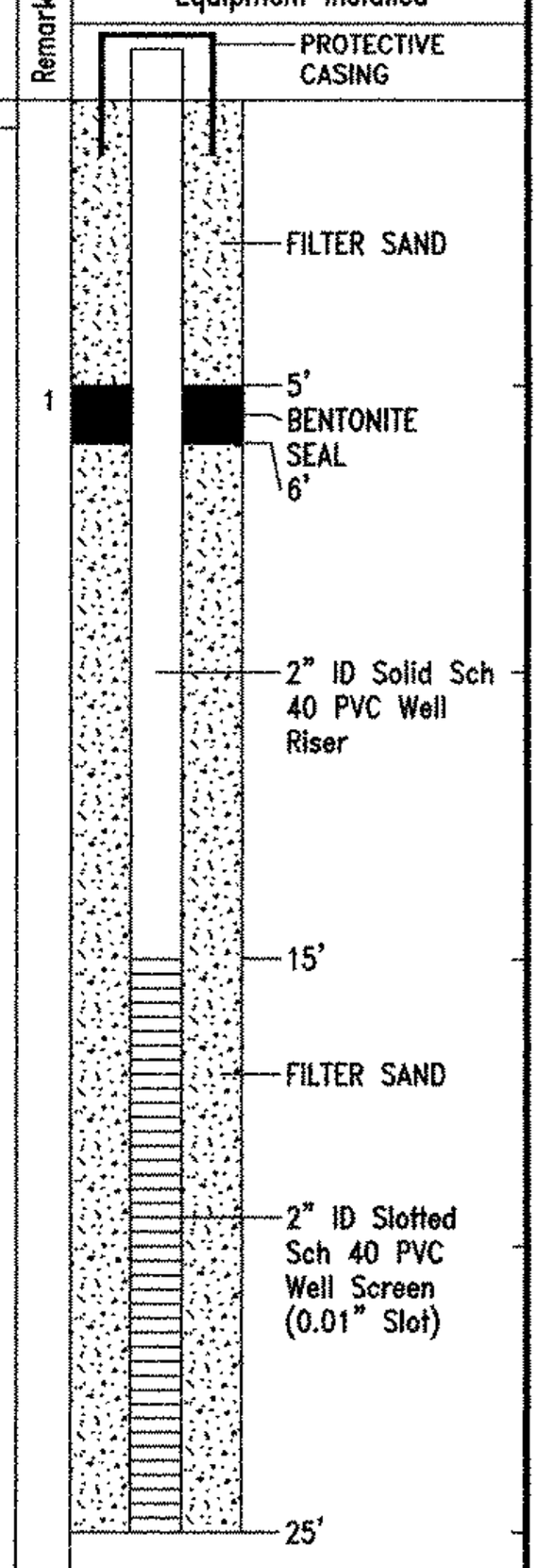
	Auger/Casing	Sampler
Type:	HSA	SS
I.D.:	4-1/4"	1-3/8"
Hammer Wt.:		140#
Hammer Fall:		30"
Rig Type:	CME 550 ATV	

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
	NOT ENCOUNTERED			

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks
	S-1A-B	24/14	0.0-2.0	1-2 2-2	4	S-1A: 0'-0.5': Very loose, dark brown, fine SAND, some Silt with organics and roots. (A-3) S-1B: 0.5'-2': Very loose, brown, fine to medium SAND, trace Gravel, trace Silt. (A-1-b)	TOPSOIL 0.5 ft	
5	S-2	24/21	5.0-7.0	1-1 2-2	3	Very loose, light brown, fine SAND, trace Gravel, trace Silt. (A-3)	SAND	1
10	S-3	24/20	10.0-12.0	1-2 3-2	5	Loose, light brown, fine to medium SAND, trace Gravel, trace Silt. (A-1-b)		
15	S-4	24/16	15.0-17.0	2-4 3-4	7	Loose, light brown, fine SAND, trace Silt. (A-3)		
20	S-5	24/19	20.0-22.0	4-5 5-2	10	Loose, light brown, fine to coarse SAND, little Gravel, trace Silt. (A-1-b)		
25	S-6	24/20	25.0-27.0	5-8 10-10	18	Medium dense, light brown, fine SAND, trace Silt. (A-3)		
						Bottom of boring at 27 feet below ground surface. No refusal.	27.0 ft	

Equipment Installed:



REMARKS: 1. Laboratory sieve analysis performed on S-2.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. Boring No.: B-15 (OW)

SOIL BL WELL LOGS.GPJ GZA_NH.GDT 1/10/06

GZA GeoEnvironmental, Inc. — Engineers and Scientists

Harford RS 0113(40) — Hartford, Vermont

Boring No.: B-16 | Page: 1 of 1 | File No.: 22721.5 | Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: J. Hodkinson
Date Start/Finish: 3-18-02 / 3-18-02
Boring Location: 35+96.3, 67.8 ft. RT
GS Elev.: 488.2 ft Datum: NGVD 1929

	Auger/Casing	Sampler
Type:	HSA	SS
I.D.:	2-1/4"	1-3/8"
Hammer Wt.:		140#
Hammer Fall:		30"
Rig Type:	CME 550 ATV	

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-1A-B	24/18	0.0-2.0	1-1 2-3	3	S-1A: 0'-0.5': Very loose, dark brown, fine SAND, some Silt with organics. (A-3) S-1B: 0.5'-2': Very loose, brown, fine to medium SAND, little Gravel, little Silt. (A-2-4)	TOPSOIL 0.5 ft		No Equipment Installed
5	S-2	24/20	5.0-7.0	3-2 3-2	5	Loose, brown, fine SAND, trace Gravel, trace Silt. (A-3)			
10	S-3	24/19	10.0-12.0	1-2 3-2	5	Loose, brown, fine to medium SAND, trace Silt. (A-1-b)	SAND		
15	S-4	24/16	15.0-17.0	2-4 3-5	7	Loose, light brown, fine SAND, trace Silt with alternating layers of fine Sand and Silt. (A-3)			
20	S-5	24/15	20.0-22.0	2-3 3-4	6	Loose, brown, fine SAND, trace Silt. (A-3)			
						Bottom of boring at 22 feet below ground surface. No refusal.	22.0 ft		

REMARKS:

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. Boring No.: B-16

SOIL BL WELL LOGS.GPJ GZA_NH.GDT 1/10/06

GZA GeoEnvironmental, Inc. — Engineers and Scientists

Harford RS 0113(40) — Hartford, Vermont

Boring No.: B-17 | Page: 1 of 2 | File No.: 22721.5 | Check: TAD

Contractor: New Hampshire Boring
Foreman: Bob Thompson
Logged by: S. Currier
Date Start/Finish: 4-8-02 / 4-8-02
Boring Location: 34+69.7, 74.4 ft. RT
GS Elev.: 488.2 ft Datum: NGVD 1929

	Auger/Casing	Sampler
Type:	HSA	SS
I.D.:	4-1/4"	1-3/8"
Hammer Wt.:		140#
Hammer Fall:		30"
Rig Type:	CME 550 ATV	

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-1	24/20	0.0-2.0	2-1 2-1	3	Very loose, brown, fine SAND, little Silt, trace organics and roots. (A-3)	TOPSOIL 0.3 ft		No Equipment Installed
5	S-2	24/16	5.0-7.0	2-1 2-2	3	Very loose, brown, fine to medium SAND, trace Gravel, trace Silt. (A-1-b)	SAND		
10	S-3	24/15	10.0-12.0	2-2 2-2	4	Very loose, brown, fine to medium SAND, trace coarse Sand, trace Gravel, trace Silt. (A-1-b)			
15	S-4A-B	24/20	15.0-17.0	2-3 3-4	6	S-4A: 15'-16': Loose, brown, fine SAND, little Silt. (A-3) S-4B: 16'-17': Medium stiff, gray, SILT, little fine Sand. (A-4)	16.0 ft		
20	S-5	24/22	20.0-22.0	3-4 6-5	10	Stiff, gray, SILT, little Clay. (A-4)	SILT AND CLAY		
25	S-6	24/21	25.0-27.0	2-4 4-5	8	Stiff, gray, SILT, some Clay. (A-4)			

REMARKS:

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. Boring No.: B-17

SOIL BL WELL LOGS.GPJ GZA_NH.GDT 1/10/06

GZA GeoEnvironmental, Inc. — Engineers and Scientists

Harford RS 0113(40) — Hartford, Vermont

Boring No.: B-17 | Page: 2 of 2 | File No.: 22721.5 | Check: TAD

Depth (ft)	No.	Pen./Rec. (in)	Depth (ft)	Blows (/6")	N Value	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	S-7	24/24	30.0-32.0	2-3 3-4	6	Medium stiff, gray, Clayey SILT. (A-4)			
35	S-8	24/23	35.0-37.0	2-4 4-5	8	Stiff, gray, Clayey SILT. (A-4)	SILT AND CLAY		
40	S-9	24/24	40.0-42.0	2-3 5-7	8	Stiff, gray, Clayey SILT. (A-4)			
45	S-10A-B	24/21	45.0-47.0	4-7 13-13	20	S-10A: 45'-46': Very stiff, gray, Clayey SILT. (A-4) S-10B: 46'-47': Very stiff, gray, SILT, some fine Sand. (A-4)			
						Bottom of boring at 47 feet below ground surface. No refusal.	47.0 ft		
50									
55									
60									

REMARKS:

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. Boring No.: B-17

SOIL BL WELL LOGS.GPJ GZA_NH.GDT 1/10/06

GZA GeoEnvironmental, Inc.
Engineers/Scientists
380 Harvey Road
Manchester, New Hampshire 03103

Hartford RS 0113(40)
Hartford, Vermont

Test Pit No.: TP-1 | Page No.: 1 of 1 | File No.: 22721.50 | Checked By: DGL

GZA Rep.: Trey Dykstra
Weather: Cloudy 50's

Excavation Equipment
Contractor: VTrans
Operator: Lenny
Make: John Deere Model: 110
Capacity: 0.25 cy Reach: 25 ft.

Date: 4/8/2002
Ground Elev.: 468.26
Time Started: 8:00
Time Completed: 8:30

Depth	Soil Description	Sample No.	PID Reading (ppm)	Excav. Effort	Boulders: Count/Class	Note No.
0	FOREST MAT					
1'	Brown, fine to medium SAND, little Silt with roots. FILL	1		E	0	
2'–3'	Light brown, fine to medium SAND, trace Silt. Topsoil					
4'–6'	Light brown, fine to medium SAND, trace Silt. Brown, fine to medium SAND, little Silt.					
6'	Bottom of test pit at 6 feet below ground surface.					

Notes:
1. At 2 to 3 feet below ground surface, 3-inch layer of topsoil.
2. Location = 35+25.0, 22.0 ft. RT.

Test Pit Plan: 20' × 17'; NORTH; Volume = 38 cu. yd.

Boulder Class Letter Designation	Size Range Classification
A	6" - 17"
B	18" - 36"
C	36" and Larger

Excavation Effort: E-----Easy; M-----Moderate; D-----Difficult

Proportions Used	
TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

Abbreviations: F = Fine; M = Medium; C = Coarse; V = Very; F/M = Fine to medium; F/C = Fine to coarse; GR = Gray; BN = Brown; YEL = Yellow

GROUNDWATER: ( ) Encountered; (X) Not Encountered

Elapsed Time to Reading (Hours)	Depth to Ground-water

GZA GeoEnvironmental, Inc. 22721.5 /tps/tp1-2.xls

GZA GeoEnvironmental, Inc.
Engineers/Scientists
380 Harvey Road
Manchester, New Hampshire 03103

Hartford RS 0113(40)
Hartford, Vermont

Test Pit No.: TP-2 | Page No.: 1 of 1 | File No.: 22721.50 | Checked By: DGL

GZA Rep.: Trey Dykstra
Weather: Cloudy 50's

Excavation Equipment
Contractor: VTrans
Operator: Lenny
Make: John Deere Model: 110
Capacity: 0.25 cy Reach: 25 ft.

Date: 4/8/2002
Ground Elev.: 420.73
Time Started: 8:45
Time Completed: 9:30

Depth	Soil Description	Sample No.	PID Reading (ppm)	Excav. Effort	Boulders: Count/Class	Note No.
0	FOREST MAT					
1'–6'	Gray, stiff, Clayey SILT, layers of fine Sand at 1.5', 3.0' and 4.5' below ground surface approximately 2" thick.			E	0	
6'	Bottom of test pit at 6 feet below ground surface.					

Notes:
1. Location: 30+68.0, 22.0 ft. RT

Test Pit Plan: 20' × 6'; NORTH; Volume = 13 cu. yd.

Boulder Class Letter Designation	Size Range Classification
A	6" - 17"
B	18" - 36"
C	36" and Larger

Excavation Effort: E-----Easy; M-----Moderate; D-----Difficult

Proportions Used	
TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

Abbreviations: F = Fine; M = Medium; C = Coarse; V = Very; F/M = Fine to medium; F/C = Fine to coarse; GR = Gray; BN = Brown; YEL = Yellow

GROUNDWATER: ( ) Encountered; (X) Not Encountered

Elapsed Time to Reading (Hours)	Depth to Ground-water

GZA GeoEnvironmental, Inc. 22721.5 /tps/tp1-2.xls

BORING LOG SHEET 5

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027borlog.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K.ISHIKURA/E.ATKINS
PLOT DATE: 1/6/2007
DRAWN BY: P. MILEWSKI
CHECKED BY: K. ISHIKURA

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING NUMBER: B-101
SHEET 1 of 1
DATE STARTED: 10/17/06
DATE COMPLETED: 10/18/06

PROJECT NAME: HARTFORD
SITE NAME: US-5
STATION: 38+16.00
OFFSET: 33.00
VTSPG: N 421451.96 ft E 1689016.32 ft

PROJECT NUMBER: RS 0113(40)
SITE NUMBER: POLE BASES
GROUND ELEVATION: 487.0 ft
GROUNDWATER DEPTH: No Water Found
PROJECT PIN NUMBER: 86C027

BORING CREW
CREW CHIEF: GARROW
DRILLER: GARROW
LOGGER: WERNER

BORING RIG: LARGE SKID RIG w/AUTO HAMMER
BORING TYPE: HOLLOW STEM AUGER
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: CCB

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
		A-2-4, Sa, brn, Moist, Rec. = 1.7 ft, There was Asphalt from 0.6'-0.8' that was removed before testing.	15	9.2	11.2	73.6	15.2
		A-2-4, Sa, brn, Moist, Rec. = 1.0 ft	19	6.7	13.3	74.7	12.0
5		A-3, Sa, brn, Moist, Rec. = 1.4 ft	6	7.4	16.4	74.4	9.2
		A-1-b, Sa, brn, Moist, Rec. = 1.3 ft	4	8.4	15.4	76.1	8.5
		A-3, Sa, brn, Moist, Rec. = 1.5 ft	3	8.3	11.7	80.2	8.1
10		A-3, Sa, brn, Moist, Rec. = 1.4 ft	2	8.3	12.6	77.9	9.5
15		A-2-4, Sa, brn, Moist, Rec. = 1.5 ft	9	4.4	0.2	87.6	12.2
20		A-3, Sa, brn, Moist, Rec. = 1.7 ft	10	4.6	0.0	93.5	6.5
25		A-2-4, SlSa, brn, Moist, Rec. = 1.7 ft	14	8.4	0.1	71.9	28.0
30		A-3, Sa, brn, Moist, Rec. = 1.8 ft	27	4.1	0.1	92.0	7.9
		Hole stopped @ 32.0 ft					
35							

LOG OF BORING HARTFORD RS 0113(40).GPJ VT ADT.GDT 1/8/07

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING NUMBER: B-102
SHEET 1 of 1
DATE STARTED: 10/16/06
DATE COMPLETED: 10/17/06

PROJECT NAME: HARTFORD
SITE NAME: US-5
STATION: 38+43.50
OFFSET: -45.80
VTSPG: N 421514.57 ft E 1688957.79 ft

PROJECT NUMBER: RS 0113(40)
SITE NUMBER: POLE BASES
GROUND ELEVATION: 488.63 ft
GROUNDWATER DEPTH: No Water Found
PROJECT PIN NUMBER: 86C027

BORING CREW
CREW CHIEF: GARROW
DRILLER: GARROW
LOGGER: SINGLETON

BORING RIG: LARGE SKID RIG w/AUTO HAMMER
BORING TYPE: HOLLOW STEM AUGER
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: CCB

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
		A-1-b, Sa, brn, Moist, Rec. = 1.5 ft	20	8.6	16.0	71.2	12.8
		A-1-b, Sa, brn, Moist, Rec. = 1.5 ft	4	7.5	17.7	73.9	8.4
5		A-1-b, Sa, brn, Moist, Rec. = 1.5 ft	2	9.1	14.2	76.3	9.5
		A-1-b, Sa, brn, Moist, Rec. = 1.0 ft	2	7.1	15.0	77.6	7.4
		A-1-b, Sa, brn, Moist, Rec. = 1.4 ft	2	7.4	15.0	77.2	7.8
10		A-1-b, Sa, brn, Moist, Rec. = 1.4 ft	2	8.1	14.1	79.0	6.9
15		A-1-b, Sa, brn, Moist, Rec. = 1.7 ft	3	7.5	9.7	85.1	5.2
20		A-3, Sa, brn, Moist, Rec. = 1.5 ft	46	5.4	5.6	88.9	5.5
25		A-3, Sa, brn, Moist, Rec. = 1.8 ft	25	3.8	0.1	93.7	6.2
30		A-2-4, Sa, brn, Moist, Rec. = 2.0 ft	18	7.5	0.0	89.1	10.9
		Hole stopped @ 32.0 ft					
35							

LOG OF BORING HARTFORD RS 0113(40).GPJ VT ADT.GDT 1/8/07

BORING LOG SHEET 6

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027borlog.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K.ISHIKURA/E.ATKINS

PLOT DATE: 1/9/2007
DRAWN BY: P. MILEWSKI
CHECKED BY: K. ISHIKURA
SHEET 156 OF 239

PVMT MARKINGS AND SIGNS LAYOUT SHEET 1

DURABLE 4" WHITE LINE
21+62 ~ 21+99 LT EDGE LINE SOLID (RADIUS)
21+99 ~ 24+43 EDGE LINE SOLID (35' LT)
24+43 ~ 25+00 EDGE LINE SOLID (35' - 25' LT)
21+62 ~ 23+55 LANE LINE SOLID (24' LT)
23+55 ~ 24+43 LANE LINE DASHED (24' LT)
24+43 ~ 25+00 LANE LINE DASHED (24' - 14' LT)
21+62 ~ 23+55 LANE LINE SOLID (13' LT)
21+59 ~ 25+00 LANE LINE DASHED (14' RT)
21+59 ~ 21+98 EDGE LINE SOLID (RADIUS)
21+98 ~ 25+00 EDGE LINE SOLID (25' RT)

DURABLE 4" YELLOW LINE
21+59 ~ 25+00 EDGE LINE SOLID (3' LT)
21+59 ~ 25+00 EDGE LINE SOLID (3' RT)

DURABLE 24" STOP BAR
21+62 LT - 49'

DURABLE LETTER OR SYMBOL
21+66 ~ 21+74 LT ARROWS (2 EACH)
22+10 ~ 22+18 LT ONLY (8 EACH)
22+55 ~ 22+63 LT ARROWS (2 EACH)
23+00 ~ 23+08 LT ONLY (8 EACH)
23+44 ~ 23+53 LT ARROWS (2 EACH)

DURABLE CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
20+54 RT ~ 21+50 RT - 100 LF
21+54 LT~RT - 110 LF

TEMPORARY 4" WHITE LINE
(SAME AS DURABLE)

TEMPORARY 4" YELLOW LINE
(SAME AS DURABLE)

TEMPORARY 24" STOP BAR
(SAME AS DURABLE)

TEMPORARY LETTERS OR SYMBOLS
(SAME AS DURABLE)

TEMPORARY CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
(SAME AS DURABLE)

REMOVING SIGNS
12 EACH

ERECTING SALVAGED SIGNS
1EACH

MAGNETIC VAR 15.0°W

WHITE RIVER
WOODS
VT. ROUTE 14 TO HARTFORD
TO WHITE RIVER JUNCTION
U.S. ROUTE 5
PAVED
GRASS
OVERHEAD SIGN SUPPORT
TRAF. SIGNAL
POT STA. 21+45.00
BEGIN PROJECT
RS 0113(40)
6" C.I.W.
BRUSH
BM DISC
12"MAPLE
8"MAPLE
GUARDRAIL
U.S. ROUTE 4 TO NEW HAMPSHIRE
PAVED PARKING
BM SIGN BOLT ELEV. = 361.62'
3"THERMOLOCKS
1STY. BRICK #8
LAWN
FLAG POLE
12" BOX ELDER
3"APPLE
CSO
GUY
SIGNAL BOX
SIGNAL CONTROLLER
METER
HYD
SIGN
CONC. WALK
GRAN. CURB
12"PVC
GV
BUSH
PAVEMENT
BARNES AVE.
CONC. STEPS
GRAVEL DRIVE
#1 #2 #3
AER E&T
UT
MH
MHT
MHS
SIGN
HAZEN ST.
12"V.C.S.
8"A.C.S.
18"A.C.S.
18"R.C.S.
18" RCP
36" RCP
HYCTRL
DI
CONC. WALK
CHAINLINK FENCE
BOLLARDS(3)
F.B.
YIELD TO PEDS.
30 MPH
*GMP 2-01
MATCH LINE STA. 25+00

19+00 20+00 21+00 22+00 23+00 24+00 25+

21+65LT NO TURN ON RED R
21+65LT NO TURN ON RED N
21+85LT NO TURN ON RED R
24+38LT ONLY ONLY R
24+38LT ONLY ONLY N
24+57LT BARNES AVE R + S
RELOCATE TO SAME LOCATION
24+86LT R

21+60 MOUNTED ON SIGNAL POST
LEFT TURN YIELD ON GREEN — RET
RET

21+69
LEFT TURN YIELD ON GREEN
LEFT LANE MUST TURN LEFT
R B-B
R B-B

21+69
LEFT TURN YIELD ON GREEN
LEFT LANE MUST TURN LEFT
N B-B
N B-B

22+00
EAST 4 | SOUTH 5 WEST 4 | NORTH VERMONT 14
PAVED PARKING LOT
RET

22+69RT R
R

23+54RT
SPEED LIMIT 30 R

24+00RT
SPEED LIMIT 30 N

24+54RT R

BUS STOP, S
BUS STOP, R & S

SIGN LEGEND

= EXISTING SIGN
= NEW SIGN
R = REMOVE EXISTING SIGN AND POST
R+S = SALVAGE SIGN AND RELOCATE TO NOTED LOCATION WITH NEW SIGN POST. REMOVE AND DISPOSE EXISTING SIGN POST
N = NEW
RET = RETAIN AT EXISTING LOCATION
B-B = BACK TO BACK

NOTE: ALL NEW SIGNS SHALL USE TYPE III HIGH INTENSITY REFLECTIVE SHEETING

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z027bdr.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/10/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 157 OF 239

DURABLE 4" WHITE LINE
25+00 ~ 26+58 EDGE LINE SOLID (35' - 25' LT)
26+58 ~ 30+00 EDGE LINE SOLID (25' LT)
25+00 ~ 26+58 LANE LINE DASHED (24' - 14' LT)
25+00 ~ 30+00 LANE LINE DASHED (14' LT)
25+00 ~ 30+00 LANE LINE DASHED (14' RT)
25+00 ~ 30+00 EDGE LINE SOLID (25' RT)

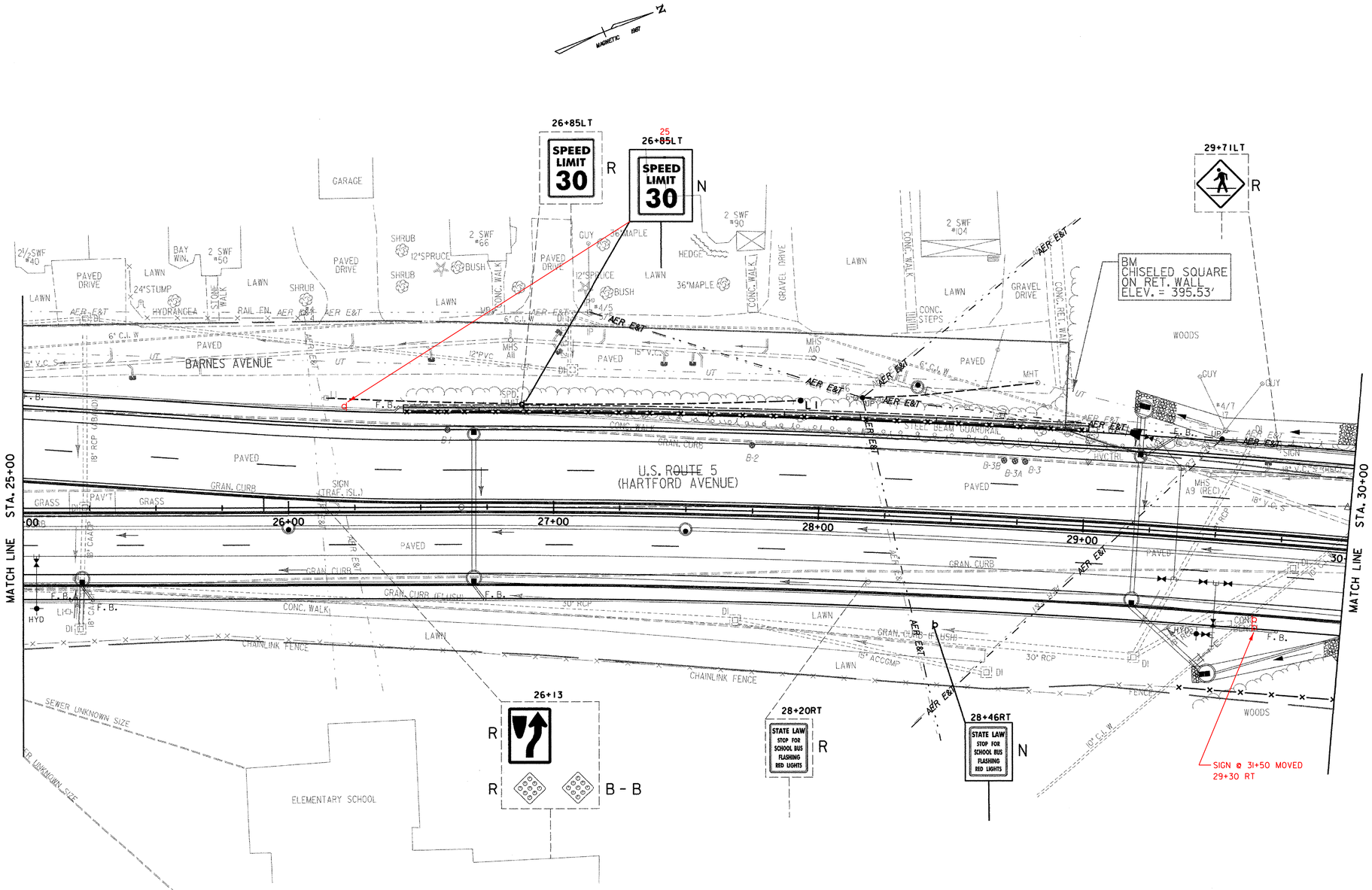
DURABLE 4" YELLOW LINE
25+00 ~ 30+00 EDGE LINE SOLID (3' LT)
25+00 ~ 30+00 EDGE LINE SOLID (3' RT)

TEMPORARY 4" WHITE LINE
(SAME AS DURABLE)

TEMPORARY 4" YELLOW LINE
(SAME AS DURABLE)

REMOVING SIGNS
6 EACH

PVMT MARKINGS AND SIGNS LAYOUT SHEET 2



SIGN LEGEND

	= EXISTING SIGN
	= NEW SIGN
R	= REMOVE EXISTING SIGN AND POST
R+S	= SALVAGE SIGN AND RELOCATE TO NOTED LOCATION WITH NEW SIGN POST. REMOVE AND DISPOSE EXISTING SIGN POST
N	= NEW
RET	= RETAIN AT EXISTING LOCATION
B-B	= BACK TO BACK

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

NOTE: ALL NEW SIGNS SHALL USE TYPE III HIGH INTENSITY REFLECTIVE SHEETING

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 2/27/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 158 OF 239

DURABLE 4" WHITE LINE
30+00 ~ 35+00 EDGE LINE SOLID (25' LT)
30+00 ~ 35+00 LANE LINE DASHED (14' LT)
30+00 ~ 35+00 LANE LINE DASHED (14' RT)
30+00 ~ 35+00 EDGE LINE SOLID (25' RT)

DURABLE 4" YELLOW LINE
30+00 ~ 35+00 EDGE LINE SOLID (3' LT)
30+00 ~ 35+00 EDGE LINE SOLID (3' RT)

DURABLE LETTER OR SYMBOL
34+95 ~ 35+00 RT SCHOOL (6 EACH)

TEMPORARY 4" WHITE LINE
(SAME AS DURABLE)

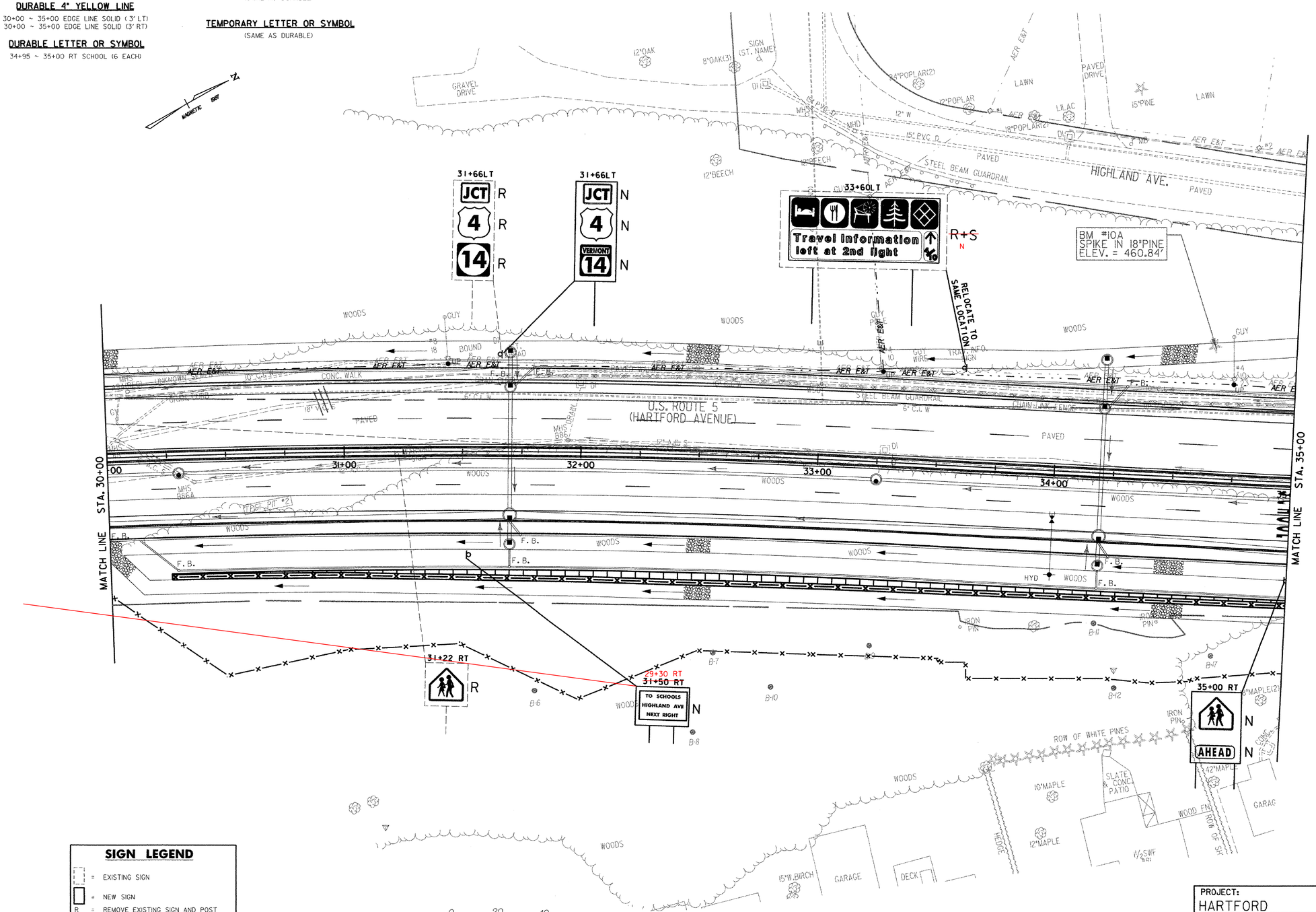
TEMPORARY 4" YELLOW LINE
(SAME AS DURABLE)

TEMPORARY LETTER OR SYMBOL
(SAME AS DURABLE)

REMOVING SIGNS
4 EACH

ERECTING SALVAGED SIGNS
1 EACH

PVMT MARKINGS AND SIGNS LAYOUT SHEET 3



SIGN LEGEND

[ ]	= EXISTING SIGN
[ ]	= NEW SIGN
R	= REMOVE EXISTING SIGN AND POST
R+S	= SALVAGE SIGN AND RELOCATE TO NOTED LOCATION WITH NEW SIGN POST, REMOVE AND DISPOSE EXISTING SIGN POST
N	= NEW
RET	= RETAIN AT EXISTING LOCATION
B-B	= BACK TO BACK

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTE: ALL NEW SIGNS SHALL USE TYPE III HIGH INTENSITY REFLECTIVE SHEETING

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z027bdr.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI — SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL — DRAWN BY: E. ATKINS
PLOT DATE: 2/27/2007
SHEET: 159 OF 239

DURABLE 4" WHITE LINE

35+00 ~ 37+70 EDGE LINE SOLID (25' LT)
37+70 ~ 37+93 LT EDGE LINE SOLID (RADIUS)
39+04 ~ 39+15 LT EDGE LINE SOLID (RADIUS)
39+15 ~ 39+50 EDGE LINE SOLID (31' LT)
39+50 ~ 39+67 LT EDGE LINE SOLID (RADIUS)
39+93 ~ 40+00 LT EDGE LINE SOLID (RADIUS)
35+00 ~ 38+00 LANE LINE DASHED (14' LT)
39+04 ~ 39+88 LANE LINE SOLID (20' LT)
39+04 ~ 39+88 LANE LINE SOLID (9' LT)
35+00 ~ 37+88 LANE LINE DASHED (14' RT)
38+98 ~ 40+00 LANE LINE DASHED (14' RT)
35+00 ~ 35+95 EDGE LINE SOLID (25' RT)
35+95 ~ 1+33 RT (WORCESTER AVE) EDGE LINE SOLID (RADIUS)
36+77 ~ 38+20 EDGE LINE SOLID (25' RT)
38+84 ~ 38+90 EDGE LINE SOLID (25' RT)
38+99 ~ 40+00 EDGE LINE SOLID (25' RT)
0+55 RT ~ 3+43 LT (WORCESTER AVE) EDGE LINE SOLID (RADIUS)
1+60 ~ 3+43 RT (WORCESTER AVE) EDGE LINE SOLID (RADIUS)
5+35 ~ 5+82 RT (WORCESTER AVE) EDGE LINE SOLID (RADIUS)
5+34 ~ 5+82 LT (WORCESTER AVE) EDGE LINE SOLID (RADIUS)
10+64 ~ 11+95 LT (HIGHLAND AVE) EDGE LINE SOLID (RADIUS)
10+55 ~ 11+33 LT (HIGHLAND AVE) LANE LINE SOLID (RADIUS)
10+37 ~ 11+33 RT (HIGHLAND AVE) EDGE LINE SOLID (RADIUS)
10+55 ~ 11+33 RT (HIGHLAND AVE) LANE LINE SOLID (RADIUS)

DURABLE 4" YELLOW LINE

35+00 ~ 38+00 EDGE LINE SOLID (3' LT)
35+00 ~ 38+00 EDGE LINE SOLID (3' RT)
39+04 ~ 40+00 DOUBLE LINE SOLID (2.5' RT)
1+90 ~ 3+23 ℄ (WORCESTER AVE) DOUBLE LINE SOLID
5+39 ~ 5+82 ℄ (WORCESTER AVE) DOUBLE LINE SOLID
10+50 ~ 11+37 LT (HIGHLAND AVE) EDGE LINE SOLID (RADIUS)
10+43 ~ 11+57 RT (HIGHLAND AVE) EDGE LINE SOLID (RADIUS)
12+08 ~ 14+00 ℄ (HIGHLAND AVE) DOUBLE LINE SOLID
15+47 ~ 15+78 LT (SCHOOL ST) DOUBLE LINE SOLID

DURABLE 8" WHITE LINE

36+45 ~ 36+77 RT (GORE MARKINGS)

DURABLE 24" STOP BAR

37+88 RT ~ 22'
39+03 LT ~ 39'
1+90 LT ~ 15' (WORCESTER AVE)
3+25 RT ~ 15' (WORCESTER AVE)
5+38 LT ~ 16' (WORCESTER AVE)
10+49 LT ~ 42' (HIGHLAND AVE)
11+33 RT ~ 30' (HIGHLAND AVE)
12+08 LT ~ 20' (HIGHLAND AVE)
15+46 LT ~ 18' (SCHOOL ST)
20+52 LT ~ 10' (HEBARD AVE)

DURABLE LETTER OR SYMBOL

35+00 ~ 35+05 RT SCHOOL (6 EACH)
39+06 ~ 39+14 LT ARROWS (3 EACH)
39+43 ~ 39+51LT ONLY (8 EACH)
39+80 ~ 39+88 LT ARROWS (3 EACH)
10+56 ~ 10+63 RT ARROW (1EACH) (HIGHLAND AVE)
10+89 ~ 10+95 RT ONLY (4 EACH) (HIGHLAND AVE)
11+21 ~ 11+28 RT ARROW (1EACH) (HIGHLAND AVE)
10+63 ~ 10+74 LT ARROW (1EACH) (HIGHLAND AVE)
10+94 ~ 11+03 LT ONLY (4 EACH) (HIGHLAND AVE)
11+23 ~ 11+34 LT ARROW (1EACH) (HIGHLAND AVE)
5+43 ~ 5+51LT STOP (4 EACH) (WORCESTER AVE)
20+56 ~ 20+64 LT STOP (4 EACH) (HEBARD AVE)

TEMPORARY 4" WHITE LINE
(SAME AS DURABLE)

TEMPORARY 4" YELLOW LINE
(SAME AS DURABLE)

TEMPORARY 24" STOP BAR
(SAME AS DURABLE)

DURABLE CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)

38+94 LT ~ RT ~ 69 LF
5+30 LT ~ RT ~ 41LF (WORCESTER AVE)
10+40 LT ~ LT ~ 48 LF (HIGHLAND AVE)
10+40 RT ~ RT ~ 44 LF (HIGHLAND AVE)
12+00 LT ~ RT ~ 39 LF (HIGHLAND AVE)
15+41LT ~ 15+34 RT ~ 45 LF (SCHOOL ST)
20+44 LT ~ RT ~ 25 LF (HEBARD AVE)

TEMPORARY LETTERS OR SYMBOLS
(SAME AS DURABLE)

TEMPORARY CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
(SAME AS DURABLE)

REMOVING SIGNS
15 EACH

ERECTING SALVAGED SIGNS
6 EACH

PLACED ON STOP SIGN 20+52 LT

PVMT MARKINGS AND SIGNS LAYOUT SHEET 4

MATCH LINE STA. 35+00

MATCH LINE STA. 40+00

US ROUTE 5 (HARTFORD AVENUE)

HIGHLAND AVE.

WORCESTER AVE

HEBARD AVE

RELOCATE TO STA. 11+34RT

RELOCATE TO STA. 38+85LT

39+37LT (HARTFORD AVE) RELOCATE TO STA. 20+52LT

RELOCATE TO STA 5+37LT

PC Sta. 5+45.09

PT Sta. 5+68.18

SIGN FROM 40+65 RT MOVED TO 39+23 RT

ON TOP OF STOP SIGN 5+37 LT

HEBARD

TBM BOUND ELEV. = 490.87'

SCALE IN FEET 0 20 40

NOTE: ALL NEW SIGNS SHALL USE TYPE III HIGH INTENSITY REFLECTIVE SHEETING

SIGN LEGEND

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= NEW SIGN
R = REMOVE EXISTING SIGN AND POST
R+S = SALVAGE SIGN AND RELOCATE TO NOTED LOCATION WITH NEW SIGN POST. REMOVE AND DISPOSE EXISTING SIGN POST
N = NEW
RET = RETAIN AT EXISTING LOCATION
B-B = BACK TO BACK

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 2/27/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 160 OF 239

DURABLE 4" WHITE LINE
40+00 ~ 40+12 LT EDGE LINE SOLID (RADIUS)
40+12 ~ 41+69 EDGE LINE SOLID (31' - 28' LT)
41+69 ~ 43+00 EDGE LINE SOLID (RADIUS)
43+00 ~ 44+55 EDGE LINE SOLID (17' RT)
44+55 ~ 44+73 LT EDGE LINE SOLID (RADIUS)
25+38 ~ 26+50 LT (SAUNDERS AVE) EDGE LINE SOLID
40+00 ~ 40+15 LANE LINE DASHED (14' RT)
40+00 ~ 40+45 EDGE LINE SOLID (25' RT)
40+45 ~ 43+01 EDGE LINE SOLID (25' - 17' RT)
43+01 ~ 45+00 EDGE LINE SOLID (17' RT)

DURABLE 4" YELLOW LINE
40+00 ~ 40+25 DOUBLE LINE SOLID (2.5' RT)
40+25 ~ 40+70 DOUBLE LINE SOLID (2.5' - 5' RT)
40+50 ~ 41+50 LT LANE LINES SOLID & DASHED (VARIES)
41+50 ~ 44+75 LANE LINES SOLID & DASHED (6' LT)
40+70 ~ 41+50 RT LANE LINES SOLID & DASHED (VARIES)
41+50 ~ 44+75 LANE LINES SOLID & DASHED (6' RT)
25+37 ~ 26+50 ℄ (SAUNDERS AVE) DOUBLE LINE SOLID

DURABLE 24" STOP BAR
25+37 LT - 18' (SAUNDERS AVE)

DURABLE LETTER OR SYMBOL
42+04 ~ 45+00 ARROWS (4 EACH)
43+35 ~ 43+45 LT SCHOOL (6 EACH)
25+41 ~ 25+49 LT STOP (4 EACH) (SAUNDERS AVE)

DURABLE CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
25+29 LT ~ RT - 47 LF (SAUNDERS AVE)

TEMPORARY 4" WHITE LINE
(SAME AS DURABLE)

TEMPORARY 4" YELLOW LINE
(SAME AS DURABLE)

TEMPORARY 24" STOP BAR
(SAME AS DURABLE)

TEMPORARY LETTERS OR SYMBOLS
(SAME AS DURABLE)

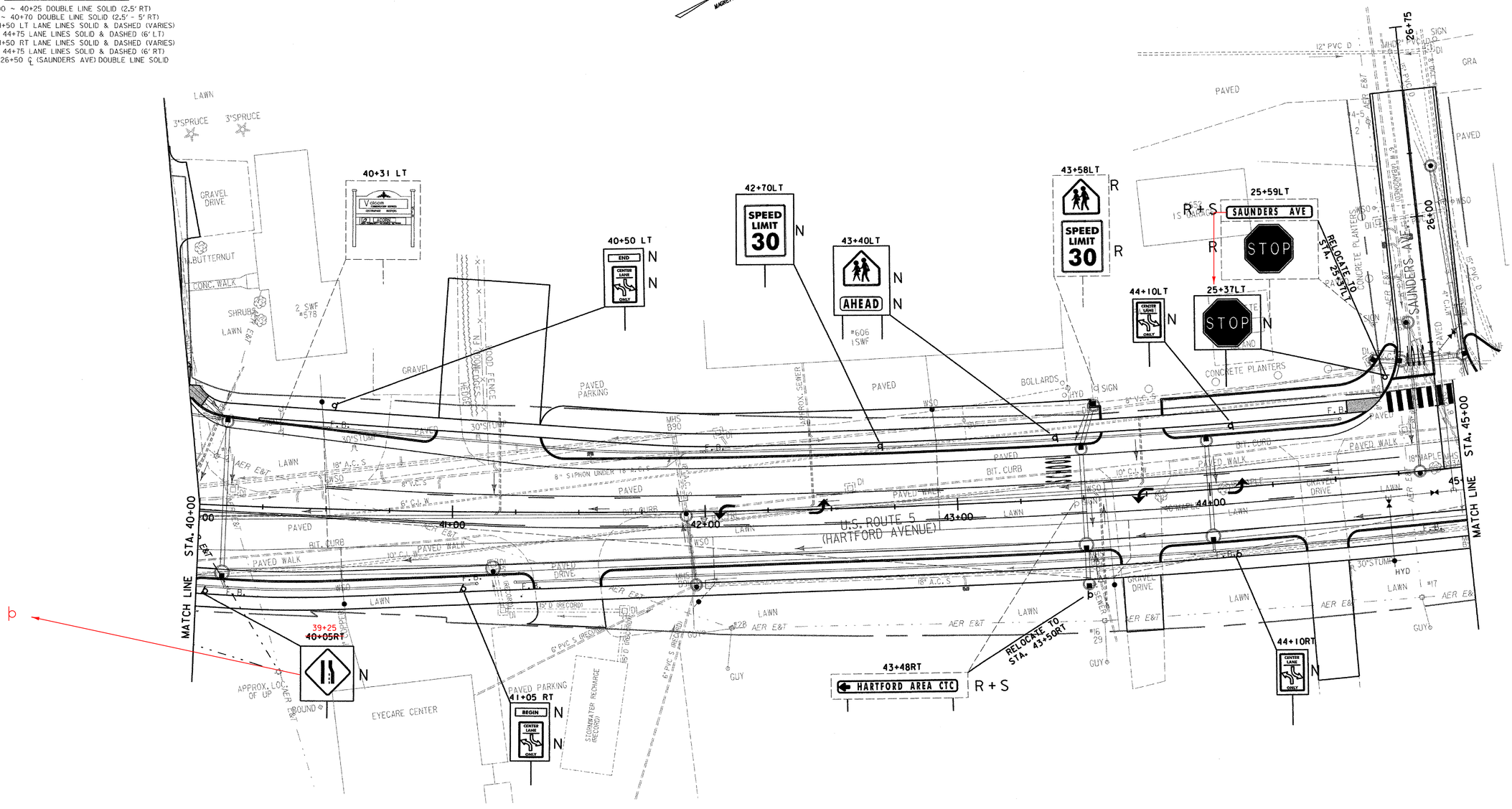
TEMPORARY CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
(SAME AS DURABLE)

REMOVING SIGNS
3 EACH

ERECTING SALVAGED SIGNS
2 EACH

MAGNETIC EAST

PVMT MARKINGS AND SIGNS LAYOUT SHEET 5



SIGN LEGEND

- [ ] = EXISTING SIGN
- [ ] = NEW SIGN
- R = REMOVE EXISTING SIGN AND POST
- R+S = SALVAGE SIGN AND RELOCATE TO NOTED LOCATION WITH NEW SIGN POST. REMOVE AND DISPOSE EXISTING SIGN POST
- N = NEW
- RET = RETAIN AT EXISTING LOCATION
- B-B = BACK TO BACK

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTE: ALL NEW SIGNS SHALL USE TYPE III HIGH INTENSITY REFLECTIVE SHEETING

0 20 40
SCALE IN FEET

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 1/10/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 161 OF 239

DURABLE 4" WHITE LINE
25+34 ~ 25+40 RT (SAUNDERS AVE) EDGE LINE SOLID (RADIUS)
25+40 ~ 26+50 LT (SAUNDERS AVE) EDGE LINE SOLID
45+12 ~ 48+76 EDGE LINE SOLID (17' LT)
48+76 ~ 48+92 LT EDGE LINE SOLID (RADIUS)
49+27 ~ 49+44 EDGE LINE SOLID (RADIUS)
49+44 ~ 50+00 EDGE LINE SOLID (17' LT)
45+00 ~ 50+00 EDGE LINE SOLID (17' RT)

DURABLE 4" YELLOW LINE
45+16 ~ 48+78 LANE LINES SOLID & DASHED (6' LT)
49+38 ~ 50+00 LANE LINES SOLID & DASHED (6' LT)
45+16 ~ 48+78 LANE LINES SOLID & DASHED (6' RT)
49+38 ~ 50+00 LANE LINES SOLID & DASHED (6' RT)
30+38 ~ 31+00 LT (PIERCE ST) DOUBLE LINE SOLID (VARIES)

DURABLE 24" STOP BAR
30+36 ~ 30+38 LT ~ 11LF (PIERCE ST)

DURABLE LETTER OR SYMBOL
45+00 ~ 50+00 ARROWS (4 EACH)
30+42 ~ 30+50 LT STOP (4 EACH) (PIERCE ST)

DURABLE CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
25+29 LT ~ RT (SAUNDERS AVE) 47 LF
30+33 LT ~ 30+32 RT (PIERCE ST) 31LF

TEMPORARY 4" WHITE LINE
(SAME AS DURABLE)

TEMPORARY 4" YELLOW LINE
(SAME AS DURABLE)

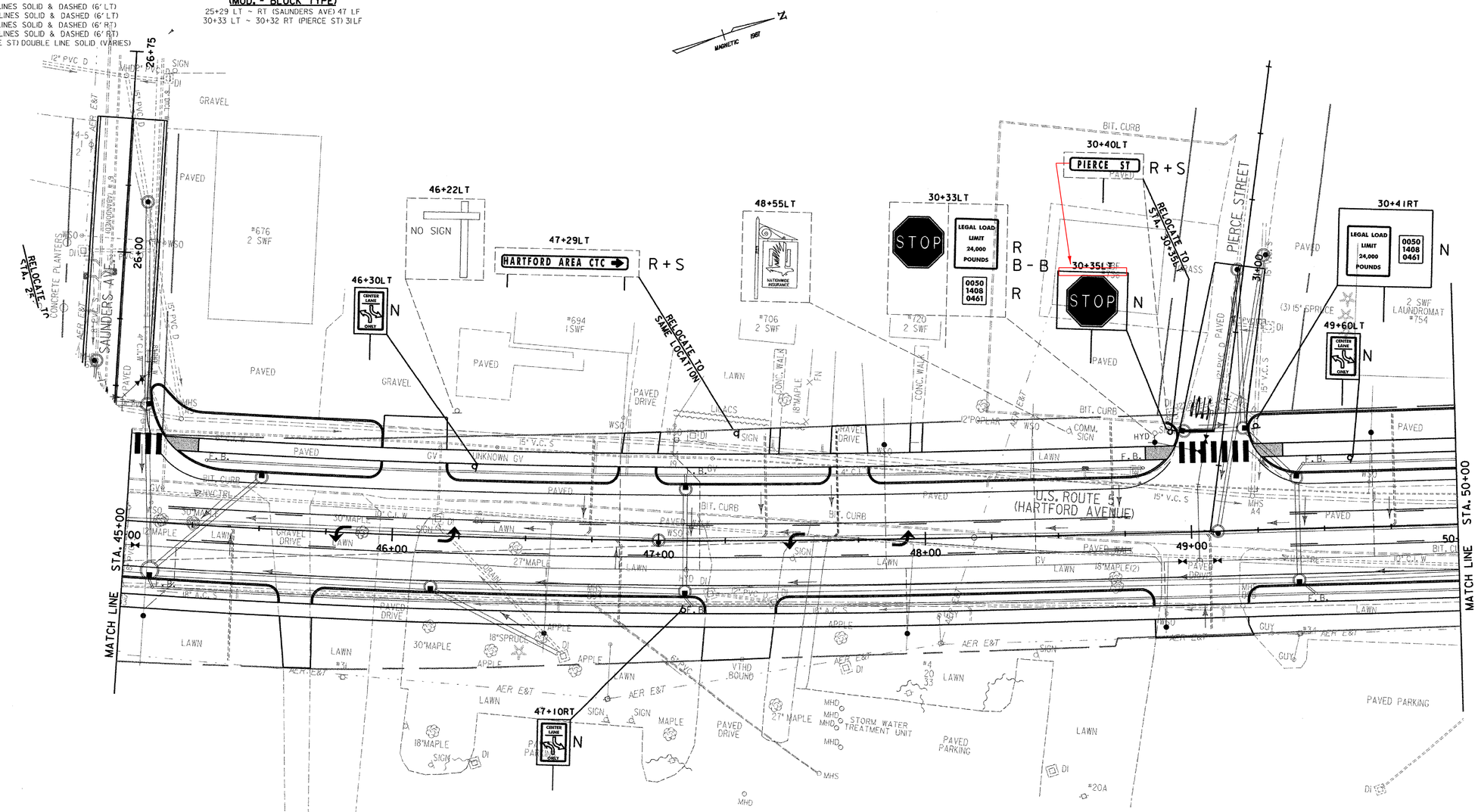
TEMPORARY 24" STOP BAR
(SAME AS DURABLE)

TEMPORARY LETTERS OR SYMBOLS
(SAME AS DURABLE)

TEMPORARY CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
(SAME AS DURABLE)

REMOVING SIGNS
3 EACH

ERECTING SALVAGED SIGNS
2 EACH



PVMT MARKINGS AND SIGNS LAYOUT SHEET 6

SIGN LEGEND

[ ]	= EXISTING SIGN
[ ]	= NEW SIGN
R	= REMOVE EXISTING SIGN AND POST
R+S	= SALVAGE SIGN AND RELOCATE TO NOTED LOCATION WITH NEW SIGN POST, REMOVE AND DISPOSE EXISTING SIGN POST
N	= NEW
RET	= RETAIN AT EXISTING LOCATION
B-B	= BACK TO BACK

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

NOTE: ALL NEW SIGNS SHALL USE TYPE III HIGH INTENSITY REFLECTIVE SHEETING

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z027bdr.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/10/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 162 OF 239

DURABLE 4" WHITE LINE
50+00 ~ 58+10 EDGE LINE SOLID (17' LT)
50+00 ~ 51+77 EDGE LINE SOLID (17' RT)
51+77 ~ 51+96 RT EDGE LINE SOLID (RADIUS)
52+26 ~ 52+44 RT EDGE LINE SOLID (RADIUS)
52+44 ~ 52+68 EDGE LINE SOLID (17' RT)

DURABLE 4" YELLOW LINE
50+00 ~ 51+96 LANE LINES SOLID & DASHED (6' LT)
52+36 ~ 54+68 LANE LINES SOLID & DASHED (6' LT)
50+00 ~ 51+96 LANE LINES SOLID & DASHED (6' RT)
52+36 ~ 54+68 LANE LINES SOLID & DASHED (6' RT)

DURABLE 24" STOP BAR
35+36 ~ 35+38 LT ~ 11' (GOUDREAU ST)
40+38 LT ~ 10' (DEVIN ST)

DURABLE LETTER OR SYMBOL
50+00 ~ 55+00 ARROWS (4 EACH)
35+42 ~ 35+50 LT STOP (4 EACH) (GOUDREAU ST)
40+42 ~ 40+50 LT STOP (4 EACH) (DEVIN ST)

DURABLE CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
35+32 LT ~ 35+29 RT - 29 LF (GOUDREAU ST)
40+30 LT ~ RT - 26 LF (DEVIN ST)

TEMPORARY 4" WHITE LINE
(SAME AS DURABLE)

TEMPORARY 4" YELLOW LINE
(SAME AS DURABLE)

TEMPORARY 24" STOP BAR
(SAME AS DURABLE)

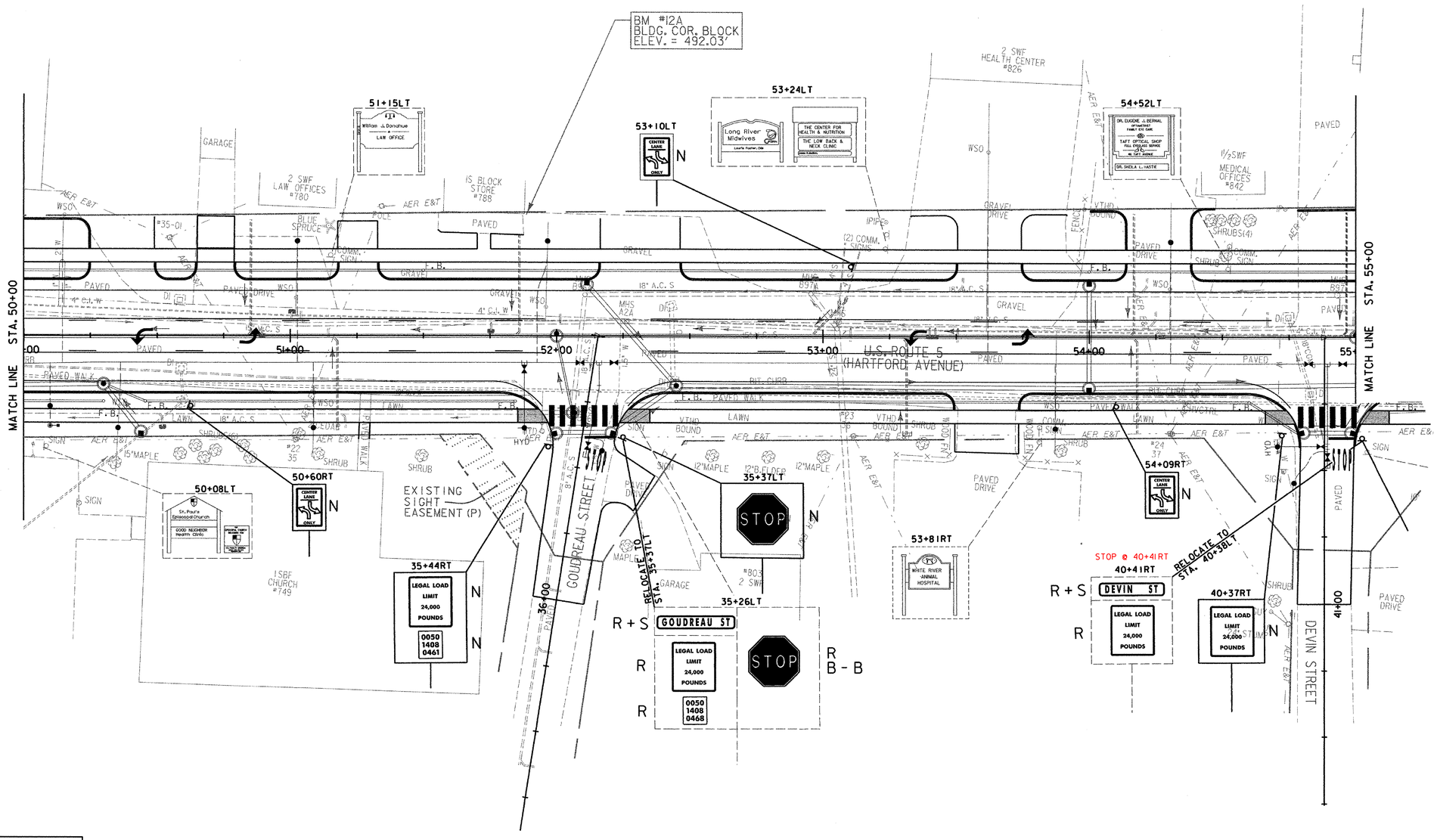
TEMPORARY LETTERS OR SYMBOLS
(SAME AS DURABLE)

TEMPORARY CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
(SAME AS DURABLE)

REMOVING SIGNS
4 EACH

ERECTING SALVAGED SIGNS
2 EACH

PVMT MARKINGS AND SIGNS LAYOUT SHEET 7



SIGN LEGEND

[ ]	= EXISTING SIGN
[ ]	= NEW SIGN
R	= REMOVE EXISTING SIGN AND POST
R+S	= SALVAGE SIGN AND RELOCATE TO NOTED LOCATION WITH NEW SIGN POST. REMOVE AND DISPOSE EXISTING SIGN POST
N	= NEW
RET	= RETAIN AT EXISTING LOCATION
B-B	= BACK TO BACK

0 20 40
SCALE IN FEET

NOTE: ALL NEW SIGNS SHALL USE TYPE III HIGH INTENSITY REFLECTIVE SHEETING

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	
SURVEYED BY: FANTONI	PLOT DATE: 1/10/2007
SQUAD LEADER: KEN UPMAL	SURVEY DATE: 1/87
	DRAWN BY: E. ATKINS
	SHEET: 163 OF 239

PVMT MARKINGS AND SIGNS LAYOUT SHEET 8

DURABLE 4" WHITE LINE
55+00 ~ 58+10 EDGE LINE SOLID (17' LT)
58+10 ~ 58+30 LT EDGE LINE SOLID (RADIUS)
58+52 ~ 58+75 LT EDGE LINE SOLID (RADIUS)
58+75 ~ 60+00 EDGE LINE SOLID (17' LT)
58+59 ~ 59+20 LANE LINE SOLID (6' LT)
55+04 ~ 55+20 RT EDGE LINE SOLID (RADIUS)
55+20 ~ 57+80 EDGE LINE SOLID (17' RT)
57+15 ~ 57+98 LANE LINE SOLID (6' RT)
57+80 ~ 57+99 RT EDGE LINE SOLID (RADIUS)
58+26 ~ 58+44 RT EDGE LINE SOLID (RADIUS)
58+44 ~ 60+00 EDGE LINE SOLID (17' RT)

DURABLE 4" YELLOW LINE
55+08 ~ 57+15 LANE LINES SOLID & DASHED (6' LT)
57+15 ~ 57+98 DOUBLE LINE SOLID (6' LT)
55+08 ~ 56+55 LANE LINES SOLID & DASHED (6' RT)
58+60 ~ 60+00 DOUBLE LINE SOLID (6' RT)

DURABLE 24" STOP BAR
45+38 LT - 9' (ADVENT LN)
50+35 LT - 13' (HEWITT ST)

DURABLE LETTER OR SYMBOL
55+00 ~ 56+00 ARROWS (2 EACH)
57+15 ~ 57+23 LT&RT ARROW (1EACH)
57+50 ~ 57+58 LT&RT ONLY (4 EACH)
57+85 ~ 57+93 LT&RT ARROWS (1EACH)
58+63 ~ 58+71LT&RT ARROWS (1EACH)
58+88 ~ 58+94 LT&RT ONLY (4 EACH)
59+12 ~ 59+20 LT&RT ARROWS (1EACH)
45+43 ~ 45+51LT STOP (4 EACH) (ADVENT LN)
50+40 ~ 50+48 LT STOP (4 EACH) (HEWITT ST)

DURABLE CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
45+30 LT ~ 45+35 RT - 26 LF (ADVENT LN)

TEMPORARY 4" WHITE LINE
(SAME AS DURABLE)

TEMPORARY 4" YELLOW LINE
(SAME AS DURABLE)

TEMPORARY 24" STOP BAR
(SAME AS DURABLE)

TEMPORARY LETTERS OR SYMBOLS
(SAME AS DURABLE)

TEMPORARY CROSSWALK W/ DIAGONAL LINES (MOD. - BLOCK TYPE)
(SAME AS DURABLE)

REMOVING SIGNS
8 EACH

ERECTING SALVAGED SIGNS
3 EACH

MAGNETIC 1987

STA. 55+00 — MATCH LINE — STA. 60+00

56+65LT R + S — VETERAN'S ADMINISTRATION HOSPITAL TUESDAY 12-15 — BUS STOP — KEY COMMUNICATIONS #578

1SWF COMPUTER CONNECTION, INC. #860

56+60LT BEGIN CENTER LANE ONLY N N — (2) SHRUBS — AER E&T

57+77LT SPEED LIMIT 30 R — 57+75LT SPEED LIMIT 30 N

50+34LT STOP N S S

2 SWF — PAVED — EXISTING R.O.W. — GRASS — WSO — CONC. PAD — WD. SIGN BASE — LAWN — 18" A.C.S — 15" SHRUBS — 18" A.C.P — 18" W.C.S — F.B. — SIGN — 6" C.I. W — MHS — CV — DI — 12" S (ABAND) — 18" M.P — HYDRANT — 12" W — 6" C.I. W — CONCRETE WALK — GRASS

U.S. ROUTE 5 (HARTFORD AVENUE)

56+00 — 57+00 — 58+00 — 59+00 — 60+00

300TH AVE E&T — POLE — 52+00 — 51+00 — 12"SPRUCE — FLOWER GARDEN — LAWN — 1SWF #31 — 24"B.ELDER — IP — 51+62RT SPEED LIMIT 25 RET

50+22LT HARTFORD AVE HEWITT ST R + S @ 50+34LT — R + S — SHRUBS — STOP — LEGAL LOAD LIMIT 24,000 POUNDS R B-B — 12"MP — HEWITT STREET — 50+34RT LEGAL LOAD LIMIT 24,000 POUNDS N — RELOCATE TO STA. 50+34LT — 59+25LT ONLY N — 10" PVC SEW. FORCE MAIN — WOOD POSTS

PAVED — PAVED DRIVE — 15" MAPLE — 40+43LT STOP R — 40+38LT STOP N — ISBF #863 — 4"P25 38 VTHD BOUND — #26 39 — 56+55RT END CENTER LANE ONLY N N — 56+76RT R — 57+05RT ONLY N — 57+69LT KNIGHT FUNERAL HOME — ISBF FUNERAL HOME #903 — 45+34RT LEGAL LOAD LIMIT 24,000 POUNDS N — 45+37LT LEGAL LOAD LIMIT 24,000 POUNDS STOP R B-B — GARDEN — CEMETERY

45+40LT STOP N S — 58+50RT SPEED LIMIT 30 N — 58+52RT SPEED LIMIT 30 R

ADVENT LANE 46+00 — S81°50'56.2"E 100.00' — RELOCATE TO STA. 45+40LT — PI Sta. 46+00.00 — S85°06'59.8"E 100.00' — 45+44LT TOP OF STOP SIGN — ADVENT LANE R + S

0 20 40
SCALE IN FEET

SIGN LEGEND

[ ]	= EXISTING SIGN
[ ]	= NEW SIGN
R	= REMOVE EXISTING SIGN AND POST
R+S	= SALVAGE SIGN AND RELOCATE TO NOTED LOCATION WITH NEW SIGN POST. REMOVE AND DISPOSE EXISTING SIGN POST
N	= NEW
RET	= RETAIN AT EXISTING LOCATION
B-B	= BACK TO BACK

NOTE: ALL NEW SIGNS SHALL USE TYPE III HIGH INTENSITY REFLECTIVE SHEETING

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 1/10/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 164 OF 239

DURABLE 4" WHITE LINE

60+00 ~ 61+00 EDGE LINE SOLID (17' - 32' LT) - MATCH TO EXISTING
60+00 ~ 61+00 LANE LINE DASHED (10' - 20' LT) - MATCH TO EXISTING
60+00 ~ 61+00 EDGE LINE SOLID (17' - 22' RT) - MATCH TO EXISTING

DURABLE 4" YELLOW LINE

60+00 RT ~ 61+00 LT DOUBLE LINE SOLID - MATCH TO EXISTING
60+00 ~ 61+00 RT DOUBLE LINE SOLID - MATCH TO EXISTING

DURABLE 8" YELLOW LINE

60+00 ~ 61+00 (CORE MARKINGS) - MATCH TO EXISTING

TEMPORARY 4" WHITE LINE

(SAME AS DURABLE)

TEMPORARY 4" YELLOW LINE

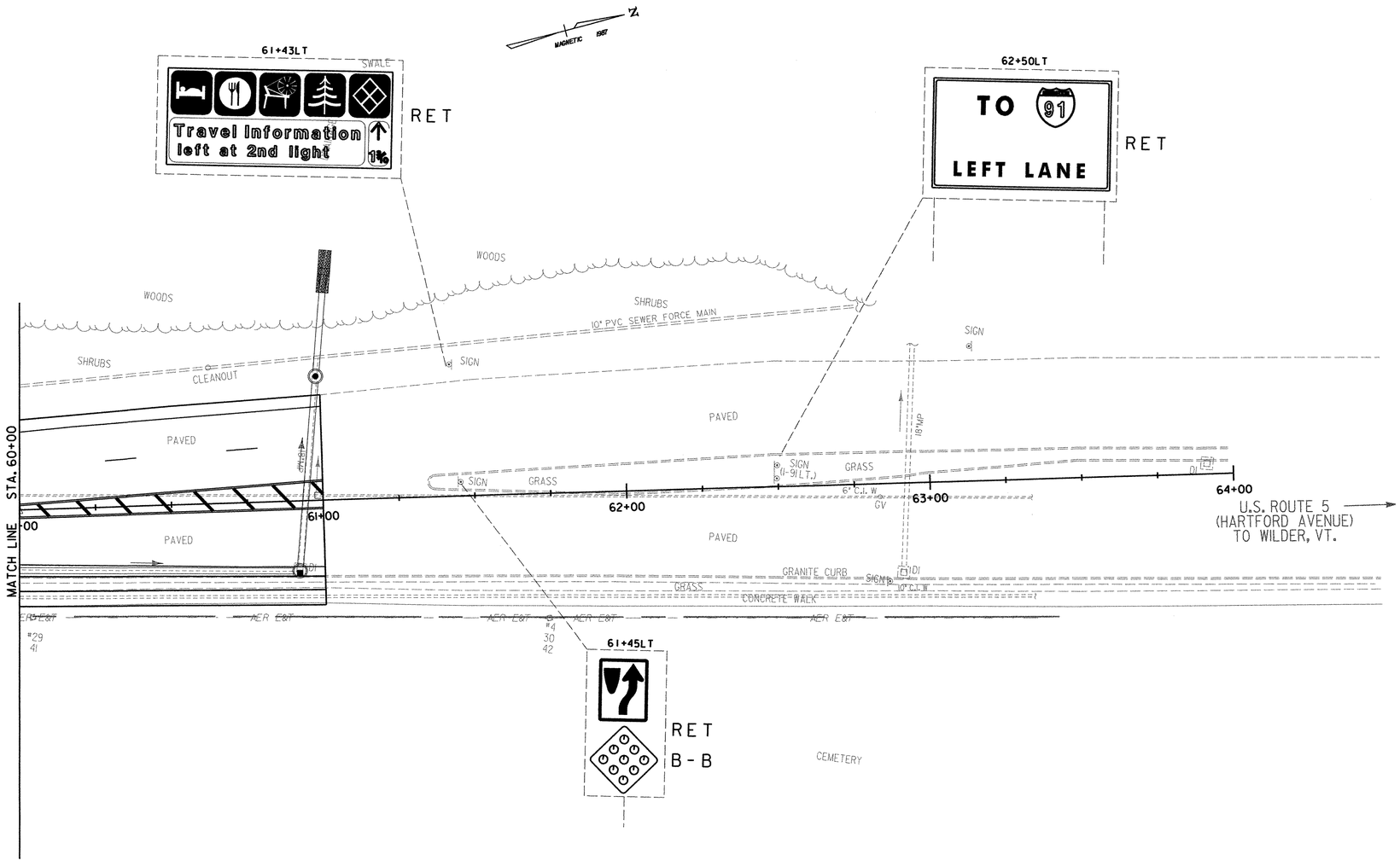
(SAME AS DURABLE)

TEMPORARY 8" YELLOW LINE

(SAME AS DURABLE)

TEMPORARY LETTERS OR SYMBOLS

(SAME AS DURABLE)



PVMT MARKINGS AND SIGNS LAYOUT SHEET 9

SIGN LEGEND

[ ]	=	EXISTING SIGN
[ ]	=	NEW SIGN
R	=	REMOVE EXISTING SIGN AND POST
R+S	=	SALVAGE SIGN AND RELOCATE TO NOTED LOCATION WITH NEW SIGN POST. REMOVE AND DISPOSE EXISTING SIGN POST
N	=	NEW
RET	=	RETAIN AT EXISTING LOCATION
B-B	=	BACK TO BACK

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE IN FEET

NOTE: ALL NEW SIGNS SHALL USE TYPE III HIGH INTENSITY REFLECTIVE SHEETING

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 1/10/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 165 OF 239

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (In)	HEIGHT (In)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (In) lb/ft 1.75 1.88	2.0 2.16	2.5 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (In) lb/ft 3.0 1.3	4.0 1.7	4.0 MOD 1.7	TUBULAR STEEL Ø (In) FOUNDATION	lb/ft 3.0 7.6	3.5 9.0	4.0 10.8	5.0 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS																									
21+65 LT	NO TURN ON RED	1	24	30	5.00																												RIO- IIA (MOUNT ON SIGNAL POST) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
21+69	LEFT TURN YIELD ON GREEN	1	24	30	5.00																												RIO - 12 (MOUNT ON SIGNAL POST) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
	LEFT LANE MUST TURN LEFT	1	30	30	6.25																												R3 - 7L (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
	B-B	1	18 18	18 18	2.25 2.25																												OM 1-1 (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 150
24+00 RT	SPEED LIMIT 30 BUS STOP	1	24	30	5.00						1			X		X		1															R2 - 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 142
24+38 LT	ONLY ONLY	1	48	30	10.00						2			X		X		2															VR- 932 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 145B
24+57 LT	BARNES AVE						1				1		X			X		1															SALVAGED TO NEW POST		E - 123
26+~~85~~ 25 LT	SPEED LIMIT 30	1	24	30	5.00						1			X		X		1															R2 - 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 142
28+46 RT	STATE LAW STOP FOR SCHOOL BUS FLASHING RED LIGHTS	1	24	30	5.00						1			X		X		1															VR - 048 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 144
29+20 RT ~~31+50~~ RT	TO SCHOOLS HIGHLAND AVE NEXT RIGHT	1	60	32		13.33					2			X		X		2															6" C LETTERING, 4" SPACING REDUCE SPACING OF TEXT AS APPROPRIATE TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 131
31+66 LT	JCT	1	21	15	2.19						1			X			X	1															M2 - 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 136C
	4	1	24	24	4.00																												M1 - 4 (MOUNT W/ PREVIOUS SIGN)] TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 136A
	VERMONT 14	1	24	24	4.00																												M16AD - 4 (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 136B
TOTALS		SF 53.69			SF 13.33		EA. 1		SF			FT 116.57			FT 130.07				EA	LB			EA.	LB				EA.		EA.		LB			

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FT 11.00 FT 105.57 — FT 115.32 FT 14.75 — EA — LB LB LB — LB LB LB LB

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027tssum.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: E. ATKINS
PLOT DATE: 1/10/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 166 OF 239

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (In)	HEIGHT (In)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	FLANGED CHANNEL lb/ft 2.0	FLANGED CHANNEL lb/ft 3.0	SQUARE STEEL (In) lb/ft 1.75 lb/ft 1.88	SQUARE STEEL (In) lb/ft 2.0 lb/ft 2.16	SQUARE STEEL (In) lb/ft 2.5 lb/ft 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (In) lb/ft 3.0 lb/ft 1.3	TUBULAR ALUMINUM Ø (In) lb/ft 4.0 lb/ft 1.7	TUBULAR ALUMINUM Ø (In) lb/ft 4.0 MOD lb/ft 1.7	TUBULAR STEEL Ø (In) FOUNDATION	TUBULAR STEEL Ø (In) lb/ft 3.0 lb/ft 7.6	TUBULAR STEEL Ø (In) lb/ft 3.5 lb/ft 9.0	TUBULAR STEEL Ø (In) lb/ft 4.0 lb/ft 10.8	TUBULAR STEEL Ø (In) lb/ft 5.0 lb/ft 14.6	W-SHAPE STEEL FTG. SIZE 24"	W-SHAPE STEEL FTG. SIZE 30"	W-SHAPE STEEL WEIGHT	W-SHAPE STEEL POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
33+60 LT	Travel Information left at 2nd light		26	72	13.0		1				2					X		2																	NON-GOVERNMENT PARTICIPATING TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 125
35+00 RT		1	36	36	6.75						2			x		x		2															SI-1 TYPE IX FLUORESCENT YELLOW-GREEN BACKGROUND RETRO-REFLECTIVE SHEETING		E - 153
	AHEAD	1	~~36~~ ~~24~~	12	2.00																												W16-9p (MOUNT WITH PREVIOUS SIGN) TYPE IX FLUORESCENT YELLOW-GREEN BACKGROUND RETRO-REFLECTIVE SHEETING		MUTCD
0+68 LT WORCESTER AVE	ONE WAY	1	36	12	3.00						1		X			x		1															R6 - 1R TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 142
0+94 LT WORCESTER AVE	WRONG WAY		36	24	6.00						1			X		x		1															R5 - 1A TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
0+94 RT WORCESTER AVE	WRONG WAY	1	36	24	6.00						1			X		x		1															R5 - 1A TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
1+20 RT WORCESTER AVE	DO NOT ENTER	1	30	30	6.25						1			X		x		1															R5 - 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
1+25 LT WORCESTER AVE	DO NOT ENTER	1	30	30	6.25						1			X		x		1															R5 - 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
1+79 ~~1+66~~ LT WORCESTER AVE		1	24	24	4.00						1			X		x		1															R3 - 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
1+79 LT WORCESTER AVE	STOP	1	30	30	4.86						+			~~X~~		~~X~~		+															R1 - 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
5+37 LT WORCESTER AVE	WORCESTER AVE						1				1			X		X	~~X~~	1															SALVAGED		E - 123
	STOP	1	30	30	~~6.25~~ 4.86																												R1 - 1 (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
		1	24	24	4.00																												R3 - 2 (MOUNT WITH PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
2+75 RT WORCESTER AVE	DO NOT BLOCK DRIVEWAY		24	30	5.00						1			X																					
3+20 RT WORCESTER AVE	NO TURN ON RED		24	30	5.00						1			X																					
1+70 RT WORCESTER	SCHOOL HIGHLAND WORCESTER		32	60	13.25						2					X		2																	
												FT	FT	FT	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB								
													10.00	115.00			164.50	14.00																	
	TOTALS		SF 53.97	SF	EA. 2	SF						FT 125.00				FT 178.50				LB			EA.	LB				EA.	EA.	LB					

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PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027tssum.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: E. ATKINS
PLOT DATE: 1/15/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 167 OF 239

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (In)	HEIGHT (In)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (In) 1.75	2.0	2.5 lb/ft 1.88	2.16	3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (In) 3.0	4.0	4.0 MOD lb/ft 1.3	1.7	1.7	TUBULAR STEEL Ø (In) FOUNDATION	3.0	3.5	4.0	5.0 lb/ft 7.6	9.0	10.8	14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN REQUIRED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS																															
5+40 RT WORCESTER AVE	LEGAL LOAD LIMIT 24,000 POUNDS / DEAD END	1	24 30	30 30	5.00 6.25						1			X		X			1																					VR - 017 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 141
36+80 RT	TO SCHOOLS HIGHLAND AVE →	1	60	~~32~~ 36		~~13.33~~ 15.0					2			x		x			2																					6" C LETTERING, 4" SPACING, STD. 9"x15" ARROW REDUCE SPACING OF TEXT AS APPROPRIATE TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 131
	0050 1408 0439	1	6	10	0.42																																			MILEMARKER (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 138
36+70 LT	SPEED LIMIT 30	1	24	30	5.00						1			X		X			1																					R2- 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 142
37+95		1	24	30	5.00						1			X			X		1	1																				R4 - 7 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 144
		1	24	24	4.00																																			R3 - 4 (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
	B-B	2	18 18	18 18	4.50																																			OM 1-1 (MOUNT W/PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 150
38+16 RT	NO TURN ON RED	1	24	30	5.00																																			R10 - 11A (MOUNT ON MAST POLE) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
38+16 RT	MAST ARMS LIGHTED	1	24	24	4.00																																			R3 - 2 (MOUNT ON MAST ARM) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
38+22 RT	WORCESTER AVE	1	30	6	1.25						1			X		X			1																					STREET NAME SIGN TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 123
	LEGAL LOAD LIMIT 24,000 POUNDS	1	24	30	5.00																																			VR - 017 (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 141
38+50 LT	ONLY MAST ARM	1	30	36	7.50																																			R3 - 5L (MOUNT ON MAST ARM) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 144
38+55 LT	SIGNAL ONLY MAST ARM	1	30	36	7.50																																			R3 - 5R (MOUNT ON MAST ARM) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 144
10+46 LT HIGHLAND AVE	PUSH BUTTON FOR WALK SIGNAL MAST ARM	1	9	12	0.75																																			R10 - 4 (MOUNT ON MAST ARM) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
10+75 RT HIGHLAND AVE	HIGHLAND AVE						1				1			X		X			1																					SALVAGED TO NEW POST TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 123
38+45 LT	YIELD TO ONCOMING TRAFFIC MAST ARM		30	36	7.5																																			MOUNT ON MAST ARM		
												FT	FT	FT 88.32	FT	FT 84.32	FT 14.50		EA		LB	LB	LB			LB	LB	LB	LB									
	TOTALS				SF 54.92	SF 13.33	EA. 1	SF				FT 88.32			FT 98.82						LB			EA.		LB				EA.	EA.	LB								

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PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027tssum.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: E. ATKINS
PLOT DATE: 1/10/2007
DRAWN BY: E. ATKINS
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SHEET 168 OF 239

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW & SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS																						SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL	
		EA	WIDTH (In)	HEIGHT (In)	"A"	"B"	SALV SIGN	SALV TIS	RETAIN	SALVAGE	NO. OF POSTS	FLANGED CHANNEL lb/ft			SQUARE STEEL (In) lb/ft			ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (In) lb/ft			FOUNDATION	TUBULAR STEEL Ø (In) lb/ft				W-SHAPE STEEL FTG. SIZE		WEIGHT	POST SIZE			DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												1.12	2.0	3.0	1.75	2.0	2.5			3.0	4.0	4.0 MOD		3.0	3.5	4.0	5.0	24"	30"						
														OPTION ITEMS	1.88	2.16	3.35			1.3	1.7	1.7		7.6	9.0	10.8	14.6								
10+54 RT HIGHLAND AVE	↑ ONLY	1	30	30	6.25						1			X		X		1																	E - 145A
11+31 RT HIGHLAND AVE	HARTFORD HIGH SCHOOL →						1				1			X			X	1																	
	HARTFORD MEMORIAL SCHOOL ←						1																											SALVAGED (MOUNT W/ PREVIOUS SIGN)		
	HARTFORD MUNICIPAL ARENA ←						1																											SALVAGED (MOUNT W/ PREVIOUS SIGN)		
11+37 LT HIGHLAND AVE	↑ ONLY	1	36	30	7.50						1			X		X		1																	E - 145A
11+98 LT HIGHLAND AVE	NO TURN ON RED	1	24	30	5.00																													R10 - 11A (MOUNT ON MAST POLE) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
13+00 RT HIGHLAND AVE	SPEED LIMIT 25	1	24	30	5.00						1			X		X		1																	R2 - 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 142
38+89 LT	NO TURN ON RED	1	24	30	5.00																													R10 - 11A (MOUNT ON PEDESTAL POST) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
~~37+50 LT~~ 39+25 RT	RIGHT LANE ENDS	1	30	30	6.25						1			X		X		1																	W9 - 1R TYPE III HIGH INTENSITY REFLECTIVE SHEETING INSTALLED @ 39+25 THEN MOVED TO 37+50 RT		MUTCD
39+50 LT	ONLY ↑ ONLY	1	48	30	10.00						2			X		X		2																	VR - 932 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 145B
20+52 RT HEBARD AVE	LEGAL LOAD LIMIT 24,000 POUNDS	1	24	30	5.00						1			X		X		1																	VR - 017 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 141
	0050 1408 0443	1	6	10	0.42																													MILEMARKER (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 138
20+52 LT HEBARD AVE	HEBARD AVE						1				1			X		X		1																	SALVAGED TO NEW POST		E - 123
	STOP	1	30	30	~~6.25~~ 4.86																													RI - 1 (MOUNT WITH PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
~~39+25 RT~~ 40+05 RT		1	36	36	9.00						2			X		X		2																	W4 - 2R TYPE III HIGH INTENSITY REFLECTIVE SHEETING INSTALLED @ 40+05 THEN MOVED TO 39+25 RT		E - 151
												FT	FT	FT	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB								
														143.75			146.25	14.00																	
TOTALS		SF	SF	EA.	SF							FT			FT					LB			EA.	LB				EA.	EA.	LB				
		64.28		4								143.75			160.25																			

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PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027tssum.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: E. ATKINS

PLOT DATE: 1/15/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 169 OF 239

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW & SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS																		REMARKS	SIGN DETAIL	
		EA	WIDTH (In)	HEIGHT (In)	"A"	"B"	SALV SIGN	SALV TIS	RETAIN	SALVAGE	NO. OF POSTS	FLANGED CHANNEL lb/ft			SQUARE STEEL (In) lb/ft			ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (In) lb/ft			FOUNDATION	TUBULAR STEEL Ø (In) lb/ft				W-SHAPE STEEL FTG. SIZE		WEIGHT	POST SIZE	SIGN FRAME REQUIRED		DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												1.12	2.0	3.0	1.75	2.0	2.5			3.0	4.0	4.0 MOD		3.0	3.5	4.0	5.0	24"	30"						
															1.88	2.16	3.35			1.3	1.7	1.7		7.6	9.0	10.8	14.6								
														OPTION ITEMS																						
40+50 LT	END	1	24	12	2.00						1			X		X		1															M4 - 6 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
	CENTER LANE ONLY	1	24	36	6.00																												R3 - 9B (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
41+05 RT	BEGIN	1	24	12	2.00						1			X		X		1															M4 - 11 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
	CENTER LANE ONLY	1	24	36	6.00																												R3 - 9B (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
42+70 LT	SPEED LIMIT 30	1	24	30	5.00						1			X		X		1															R2-1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 142
43+40 LT		1	36	36	6.75						2			X		X		2															S1-1 TYPE IX FLUORESCENT YELLOW-GREEN BACKGROUND RETRO-REFLECTIVE SHEETING		E - 153
	AHEAD	1	24	12	2.00																												W16-9p (MOUNT WITH PREVIOUS SIGN) TYPE IX FLUORESCENT YELLOW-GREEN BACKGROUND RETRO-REFLECTIVE SHEETING		MUTCD
43+50 RT	← HARTFORD AREA CTC						1				2			X		X		2															SALVAGED TO NEW POSTS		
44+10 LT	CENTER LANE ONLY	1	24	36	6.00						1			X		X		1															R3 - 9B TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
44+10 RT	CENTER LANE ONLY	1	24	36	6.00						1			X		X		1															R3 - 9B TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
25+37 LT SAUNDERS AVE	SAUNDERS AVE						1				1			X		X		1															SALVAGED TO NEW POSTS		E - 123
	STOP	1	30	30	6.25 ~~4.86~~																												R1 - 1 (MOUNT WITH PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
46+30 LT	CENTER LANE ONLY	1	24	36	6.00						1			X		X		1															R3 - 9B TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
47+10 RT	CENTER LANE ONLY	1	24	36	6.00						1			X		X		1															R3 - 9B TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
47+29 LT	HARTFORD AREA CTC →						1				2			X		X		2															SALVAGED TO NEW POSTS TYPE III HIGH INTENSITY REFLECTIVE SHEETING		
												FT	FT	FT	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB								
														158.50			179.50																		
TOTALS		SF 58.61	SF	EA. 3	SF							FT 158.50			FT 179.50					LB			EA.	LB				EA.	EA.	LB					

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PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027tssum.DGN
PROJECT LEADER: KEN UPMAL
DESIGNED BY: E. ATKINS
PLOT DATE: 1/15/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 170 OF 239

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (In)	HEIGHT (In)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (In) lb/ft 1.75	2.0	2.5	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (In) lb/ft 3.0	4.0	4.0 MOD	FOUNDATION	TUBULAR STEEL Ø (In) lb/ft 3.0	3.5	4.0	5.0	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												1.12	2.0	3.0	1.88	2.16	3.35			1.3	1.7	1.7		7.6	9.0	10.8	14.6								
												OPTION ITEMS																							
30+35 LT PIERCE ST	PIERCE ST						1				1			X		X		1															SALVAGED TO NEW POST		E - 123
	STOP	1	30	30	6.25 ~~4.86~~																											RI - 1 (MOUNT WITH PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
30+41 RT PIERCE ST	LEGAL LOAD LIMIT 24,000 POUNDS	1	24	30	5.00						1			X		X		1															VR - 017 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 141
	0050 1408 0461	1	6	10	0.42																											MILEMARKER (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 138
49+60 LT	CENTER LANE ONLY	1	24	36	6.00						1			X		X		1															R3- 9B TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
50+60 RT	CENTER LANE ONLY	1	24	36	6.00						1			X		X		1															R3- 9B TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
35+37 LT GOUDREAU ST	GOUDREAU ST						1				1			X		X		1															SALVAGED TO NEW POST		E - 123
	STOP	1	30	30	6.25 ~~4.86~~																											RI - 1 (MOUNT WITH PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
35+44 RT GOUDREAU ST	LEGAL LOAD LIMIT 24,000 POUNDS	1	24	30	5.00						1			X		X		1															VR - 017 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 141
	0050 1408 0468	1	6	10	0.42																											MILEMARKER (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 138
53+10 LT	CENTER LANE ONLY	1	24	36	6.00						1			X		X		1															R3 - 9B TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
54+09 RT	CENTER LANE ONLY	1	24	36	6.00						1			X		X		1															R3 - 9B TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
40+37 RT DEVIN ST	LEGAL LOAD LIMIT 24,000 POUNDS	1	24	30	5.00						1			X		X		1															VR - 017 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 141
40+38 LT DEVIN ST	DEVIN ST						1				1			X		X		1															SALVAGED TO NEW POST		E - 123
	STOP	1	30	30	6.25 ~~4.86~~																											RI - 1 (MOUNT WITH PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
												FT	FT	FT 132.75	FT	FT 147.75	FT		EA	LB	LB	LB		LB	LB	LB	LB								
TOTALS		SF 54.42	SF	EA. 3	SF							FT 132.75			FT 147.75					LB			EA.	LB				EA.	EA.	LB					

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PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027tssum.DGN
PROJECT LEADER: KEN UPMAL
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PLOT DATE: 1/10/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 171 OF 239

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AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW & SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS																		REMARKS	SIGN DETAIL	
		EA	WIDTH (In)	HEIGHT (In)	"A"	"B"	SALV SIGN	SALV TIS	RETAIN	SALVAGE	NO. OF POSTS	FLANGED CHANNEL lb/ft			SQUARE STEEL (In) lb/ft			ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (In) lb/ft			FOUNDATION	TUBULAR STEEL Ø (In) lb/ft				W-SHAPE STEEL FTG. SIZE		WEIGHT	POST SIZE	SIGN FRAME REQUIRED		DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												1.12	2.0	3.0	1.75	2.0	2.5			3.0	4.0	4.0 MOD		3.0	3.5	4.0	5.0	24"	30"						
														OPTION ITEMS	1.88	2.16	3.35			1.3	1.7	1.7		7.6	9.0	10.8	14.6								
56+55 RT	END	1	24	12	2.00						1			X		X		1																M4 - 6 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
	CENTER LANE ONLY	1	24	36	6.00																													R3 - 9B (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
56+60 LT	BEGIN	1	24	12	2.00						1			X		X		1																M4 - 11 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
	CENTER LANE ONLY	1	24	36	6.00																													R3 - 9B (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 140
57+05 RT	ONLY	1	36	30	7.50						1			X		X		1																VR - 943 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 145A
57+75 LT	SPEED LIMIT 30	1	24	30	5.00						1			X		X		1																R2 - 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 142
45+40 LT ADVENT LN	ADVENT LN						1				1			X		X		1																SALVAGED TO NEW POST		E - 123
	STOP	1	30	30	~~6.25~~ 4.86						1			X		X		1																RI - 1 (MOUNT W/ PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
45+34 RT ADVENT LN	LEGAL LOAD LIMIT 24,000 POUNDS	1	24	30	5.00						1			X		X		1																VR - 017 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 141
50+34 LT HEWITT ST	HARTFORD AVE						1				1			X		X		1																SALVAGED TO NEW POST		E - 123
	HEWITT ST						1																											SALVAGED TO NEW POST (MOUNT W/ PREVIOUS SIGN)		E - 123
	STOP	1	30	30	~~6.25~~ 4.86																													RI - 1 (MOUNT WITH PREVIOUS SIGN) TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 143
50+34 RT HEWITT ST	LEGAL LOAD LIMIT 24,000 POUNDS	1	24	30	5.00						1			X		X		1																VR - 017 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 141
58+50 RT	SPEED LIMIT 30	1	24	30	5.00						1			X		X		1																R2 - 1 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 142
59+25 LT	ONLY	1	36	30	7.50						1			X		X		1																VR - 943 TYPE III HIGH INTENSITY REFLECTIVE SHEETING		E - 145A
												FT	FT	FT	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB								
														132.67			147.67																		
TOTALS		SF	SF	EA.	SF							FT			FT					LB			EA.	LB				EA.	EA.	LB					
		60.72		3								132.67			147.67																				

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CHECKED BY: K. ISHIKURA
SHEET 172 OF 239

TRAFFIC SIGNAL NOTES

A. NEW EQUIPMENT

1. ALL SIGNALS MOUNTED ON CANTILEVERED MAST ARMS SHALL BE RIGIDLY MOUNTED. ALL SIGNAL HEADS SHALL BE POLYCARBONATE. ALL NEW TRAFFIC AND PEDESTRIAN SIGNAL LENSES SHALL BE LED TO BE OPTICALLY PROGRAMMED. ALL SIGNAL HEADS SHALL INCLUDE DISCONNECT HANGERS (WHERE NEEDED), AND BACKPLATES SHALL BE INCLUDED AS SPECIFIED ON THE PLANS.

2. ALL CONTROLLERS SHALL BE ECONOLITE BRAND, MODEL ASC/2S-2100 (TS-2 TYPE 2). MASTER CONTROLLERS SHALL BE MODEL ASC/2M-1000. AND ALL GROUND MOUNTED CABINETS SHALL BE TYPE P.

3. A DISCONNECT BREAKER FOR EACH CIRCUIT SHALL BE INSTALLED IN A RAINPROOF (NEMA 3R), LOCKED CABINET ON A STANCHION OR ON THE SIDE OF THE STRAIN POLE NEXT TO OR BELOW THE METER SOCKET (SEE STD E-175). WHEN A TELEPHONE DROP IS USED ON THE PROJECT, THE TELEPHONE FUSE BOX SHALL BE INSTALLED ON THE STANCHION. A SEPARATE CIRCUIT BREAKER SHALL BE INSTALLED FOR ROADWAY LIGHTING, IF APPLICABLE.

4. PUSHBUTTONS AND PEDESTRIAN SIGNS SHALL BE PROVIDED WITH ALL PROPOSED PEDESTRIAN SIGNALS.

5. SIDE MOUNTED PEDESTRIAN SIGNALS, PUSHBUTTONS, SIGNS, AND CONTROLLERS SHALL BE MOUNTED TO THE POLE ON THE SIDES SHOWN IN THE MAST ARM CROSS SECTION SHEETS.

6. PEDESTRIAN PEDESTAL POSTS SHALL BE LOCATED 1.0 FEET BEHIND SIDEWALK UNLESS OTHERWISE SPECIFIED ON THE PLANS.

7. FOR THE SIGNAL AT THE SCHOOL ENTRANCE, THE CONTRACTOR SHALL PROVIDE A MALFUNCTION MANAGEMENT UNIT (MMU) TESTER, A LOOP DETECTOR TESTER AND A BUS INTERFACE UNIT (BIU) TESTER TO THE TOWN OF HARTFORD AS PART OF THIS PROJECT. COST TO BE INCLUDED UNDER ITEM 678.15 - TRAFFIC CONTROL SIGNAL SYSTEM - INTERSECTION (HIGHLAND @ SCHOOL).

8. ALL PEDESTRIAN PUSHBUTTONS SHALL COMPLY WITH ADA STANDARDS AND THE SPECIFICATIONS.

B. SIGNAL OPERATION

1. SWITCH-OVER FROM EXISTING TO REPLACEMENT SIGNALS SHALL NOT BE DONE DURING PEAK TRAFFIC PERIODS. UNIFORMED TRAFFIC OFFICERS SHALL CONTROL TRAFFIC DURING SWITCH-OVER.

C. PULL BOXES AND JUNCTION BOXES

1. PULL BOXES/JUNCTION BOXES ARE DETAILED ON STD E-173.

2. THE LOGO ON THE PULL BOXES/JUNCTION BOXES SHALL BE "SIGNAL".

D. TRAFFIC SIGNAL CONDUIT

1. ALL TRAFFIC SIGNAL CONDUIT SHALL BE PVC UNLESS OTHERWISE SPECIFIED.

2. MINIMUM CONDUIT SIZES SHALL BE:
   A) 1 1/2 " FOR INTERCONNECT CABLE AND LOOP WIRE.
   B) 2" FOR SHIELDED LEAD-IN CABLE, SIGNAL CABLE, POWER CABLE AND ALL OTHERS, UNLESS SPECIFIED OTHERWISE ON THE PLANS.
   SEE CHART ON STD E-172 FOR DESIGN VALUES.

3. WHEN CONDUIT IS PLACED BELOW THE ROADWAY OR ACROSS SIDE ROADS, IT SHALL BE PLACED IN A PVC ELECTRICAL CONDUIT SLEEVE. SIZE AS SHOWN ON THE PLANS.

4. EXISTING CONDUIT MAY BE PRESENT AT THE INTERSECTION OF U.S. ROUTE 5, U.S. ROUTE 4 AND VT 14. INFORMATION ON SIZE AND LOCATION IS UNAVAILABLE AT THIS TIME. THE CONTRACTOR MAY UTILIZE EXISTING CONDUIT FOR WIRE RUNS IN LIEU OF INSTALLING NEW CONDUIT PROVIDED THE CONTRACTOR LOCATES THE EXISTING CONDUIT DURING CONSTRUCTION AND IT IS IN GOOD CONDITION AND OF ADEQUATE SIZE FOR THE REQUIRED WIRING. ALL EXISTING CONDUITS TO BE REUSED UNDER THIS PROJECT SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. THE INSTALLATION OF SIGNAL WIRING IN EXISTING CONDUIT SHALL BE PAID FOR UNDER ITEM 678.24 - ELECTRICAL WIRING.

E. VEHICLE LOOP DETECTORS - SEE STD E-172.

1. LOOPS SHALL EXTEND 5' AHEAD OF STOP BAR UNLESS OTHERWISE NOTED ON THE PLANS.

F. REMOVAL OF EXISTING OR REUSE OF SALVAGED EQUIPMENT

1. REMOVED AND NOT REUSED EQUIPMENT SHALL BE DELIVERED TO THE VTRANS DISTRICT GARAGE. UNWANTED EQUIPMENT MUST BE DISPOSED OF BY THE CONTRACTOR. REMOVAL OF EQUIPMENT SHALL INCLUDE REMOVAL OF CONCRETE BASES OR CUTTING BASES 1FT BELOW GRADE, AND BACKFILL OF THE HOLES. ANY EQUIPMENT THAT IS DAMAGED OR LOST BY THE CONTRACTOR DURING REMOVAL SHALL BE REPAIRED OR REPLACED, TO THE SATISFACTION OF VTRANS AT THE CONTRACTOR'S EXPENSE.

2. ALL SALVAGED OR REUSED EQUIPMENT SHALL BE THOROUGHLY CLEANED AND PAINTED AS REQUIRED, BEFORE REUSE.

3. IT IS ASSUMED THAT ALL EXISTING LOOPS AND SIGNAL CABLE WHICH ARE TO BE USED IN THE PROPOSED SIGNAL DESIGN ARE IN GOOD CONDITION AND WORKING PROPERLY. ANY LOOPS OR CABLES FOUND NOT TO BE IN GOOD WORKING ORDER SHALL BE REPLACED BY THE CONTRACTOR. PAYMENT FOR THIS WORK SHALL BE PAID AT THE UNIT PRICE BID FOR THAT ITEM.

G. GENERAL

1. THE CONTRACTOR SHALL ACQUIRE ALL NECESSARY LOCAL PERMITS AND MAKE ALL NECESSARY ARRANGEMENTS WITH THE UTILITY COMPANY TO PROVIDE A PERMANENT POWER SUPPLY TO THE SIGNAL AND STREET LIGHTING EQUIPMENT, IF APPLICABLE. THE ROUTING OF POWER TO THE INTERSECTION SHALL BE SUCH THAT VTRANS HAS FULL RESPONSIBILITY FROM THE TRANSFORMER THROUGH THE SIGNAL. NO INTERVENING OWNERSHIP/RESPONSIBILITY SHALL BE ALLOWED.

2. A METAL PLAQUE LISTING OWNERSHIP AND EMERGENCY PHONE NUMBERS SHALL BE ATTACHED TO THE OUTSIDE OF THE CONTROLLER CABINET. CONTACT THE VTRANS DISTRICT OFFICE TO VERIFY APPROPRIATE PHONE NUMBERS.

H. COORDINATION, ETC.

1. A WIRELESS SPREAD SPECTRUM RADIO ASSEMBLY SHALL BE USED FOR THE SIGNAL COORDINATION BETWEEN THE INTERSECTION OF U.S. ROUTE 5, U.S. ROUTE 14 AND VT 14 AND THE INTERSECTION OF U.S. ROUTE 5, HIGHLAND AVENUE, AND WORCESTER AVENUE. UNDERGROUND INTERCONNECT CABLE SHALL BE USED FOR SIGNAL COORDINATION BETWEEN THE INTERSECTION OF U.S. ROUTE 5, HIGHLAND AVENUE, AND WORCESTER AVENUE AND THE INTERSECTION OF HIGHLAND AVENUE AND HIGH SCHOOL DRIVE.

2. THE INTERCONNECT CABLE SHIELD MUST BE GROUNDED AT EACH LOCATION OR WHERE EVER THE OUTSIDE INSULATION IS BROKEN.

3. THE CONTRACTOR SHALL COORDINATE WITH THE TELEPHONE COMPANY TO PROVIDE PHONE DROPS AT EACH MASTER CONTROLLER LOCATION. COST OF PHONE DROP HOOKUP TO BE COVERED UNDER ITEM 678.15 FOR EACH INTERSECTION WITH A MASTER CONTROLLER.

TRAFFIC CONTROL NOTES

1. TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES. AT THE DISCRETION OF THE ENGINEER (OR OTHER DESIGNATED AGENCY REPRESENTATIVE), UNIFORMED TRAFFIC CONTROL OFFICERS OR TRAINED FLAGPERSONS SHALL DIRECT TRAFFIC, WHENEVER REQUIRED.

2. TRAFFIC CONTROL SIGNING AND CHANNELIZING DEVICES SHALL BE IN ACCORDANCE E-107, E-110, E-111.

3. AFTER SIGNAL INSTALLATION, ALL HEADS MUST BE COVERED (TURNING SHALL NOT BE ALLOWED) UNTIL TURN ON. THE METHOD OF COVERING SHALL BE AS FOLLOWS:

   ALL NEW TRAFFIC AND PEDESTRIAN SIGNAL HEADS WHICH HAVE BEEN INSTALLED BUT NOT PLACED IN EITHER FLASHING OR FULL OPERATION SHALL BE COVERED. EXISTING SIGNAL HEADS WHICH ARE PLACED OUT OF SERVICE IN ORDER TO PERFORM WORK ON THE SIGNAL SYSTEM SHALL ALSO BE COVERED, EXCEPT WHEN SUCH WORK CAN BE COMPLETED IN A RELATIVELY SHORT PERIOD OF TIME (SEVERAL HOURS) AND TRAFFIC CONTROL HAS BEEN PROVIDED FOR.

   THE SIGNAL COVERS SHALL CONSIST OF A ONE PIECE PLASTIC BAG HAVING A MINIMUM THICKNESS OF 4 MIL. THE BAG SHALL BE OPAQUE. THE COVER SHALL SLIP OVER THE ENTIRE SIGNAL HEAD AND SHALL BE SECURELY TIED AT THE OPENING WITH A ROPE OF SUFFICIENT SIZE AND STRENGTH TO SECURE THE COVER. AN INTERMEDIATE ROPE OF THE SAME MATERIAL SHALL BE DRAWN AROUND THE CENTER OF THE COVER TO PREVENT EXCESS FLAPPING IN THE WIND.

   A DRAIN HOLE SHALL BE MADE AT THE BOTTOM OF THE BAG TO ALLOW THE ESCAPE OF MOISTURE. NO TAPE OR ADHESIVE WILL BE ALLOWED TO BE ATTACHED TO ANY SURFACE OF THE SIGNAL HOUSING OR LENSES. ALL COVERS SHALL BE PLACED IN A NEAT WORKMANLIKE MANNER. ANY COVER WHICH IS TORN OR MISSING SHALL BE IMMEDIATELY REPLACED. PAYMENT FOR THE COVERS, THEIR PLACEMENT, AND REMOVAL AND ALL INCIDENTALS FOR COMPLETION OF THE WORK SHALL BE CONSIDERED SUBSIDIARY TO THE INSTALLATION OF THE TRAFFIC SIGNAL.

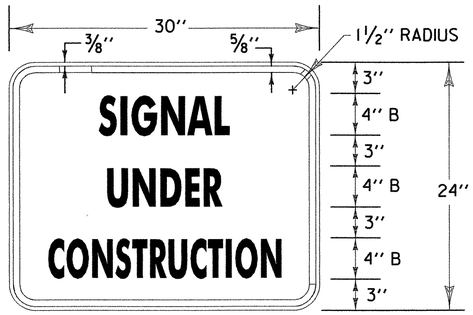
4. WHERE TWO-WAY TRAFFIC IS MAINTAINED DURING CONSTRUCTION, THE SIGN PACKAGE SHOWN ON STD E-110 SHOULD BE USED. APPROACH CONSTRUCTION SIGNING SHALL REMAIN IN PLACE DURING THE ENTIRE CONSTRUCTION PERIOD. OTHER SIGNING SHALL BE REMOVED OR COVERED WHEN NOT APPLICABLE.

5. VARIATIONS IN THE SIGNING PACKAGES MAY BE DICTATED BY UNIQUE GEOMETRY AND/OR TRAFFIC CONDITIONS.

6. THE CONTRACTOR SHALL NOT WORK WITHIN THE HIGHWAY ROW WITHOUT THE APPROPRIATE CONSTRUCTION SIGNING IN PLACE AS SHOWN ON STD E-100.

7. AT LOCATIONS WHERE SIGNALS CURRENTLY EXIST, A WORKING SIGNAL SYSTEM SHALL BE IN PLACE AT THE END OF EACH DAY. IF THE SIGNAL SYSTEM IS NOT WORKING AT THE END OF THE DAY, THE CONTRACTOR SHALL PROVIDE UNIFORMED TRAFFIC OFFICERS TO CONTROL TRAFFIC UNTIL SUCH TIME THAT THE EXISTING OR NEW SIGNAL IS IN OPERATION AT NO COST TO THE STATE.

8. SIGNAL UNDER CONSTRUCTION" SIGN PANELS SHALL BE MOUNTED UNDER "ROAD CONSTRUCTION AHEAD" SIGNS ANYTIME SIGNAL SYSTEM WORK IS BEING PERFORMED (SEE SIGN DETAIL THIS SHEET).



MATERIALS: SEE STD. E-144M
COLORS: TEXT & BORDER - BLACK
BACKGROUND - ORANGE (REFL. ENCAPSULATED LENS)

CONSTRUCTION SIGN DETAIL

NOT TO SCALE

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

PROJECT: HARTFORD

PROJECT NO.: RS 0113(40)

DESIGN FILE NAME: z027bdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL

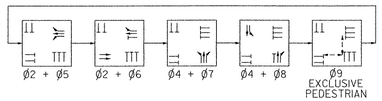
PLOT DATE: 2/27/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 173 OF 239

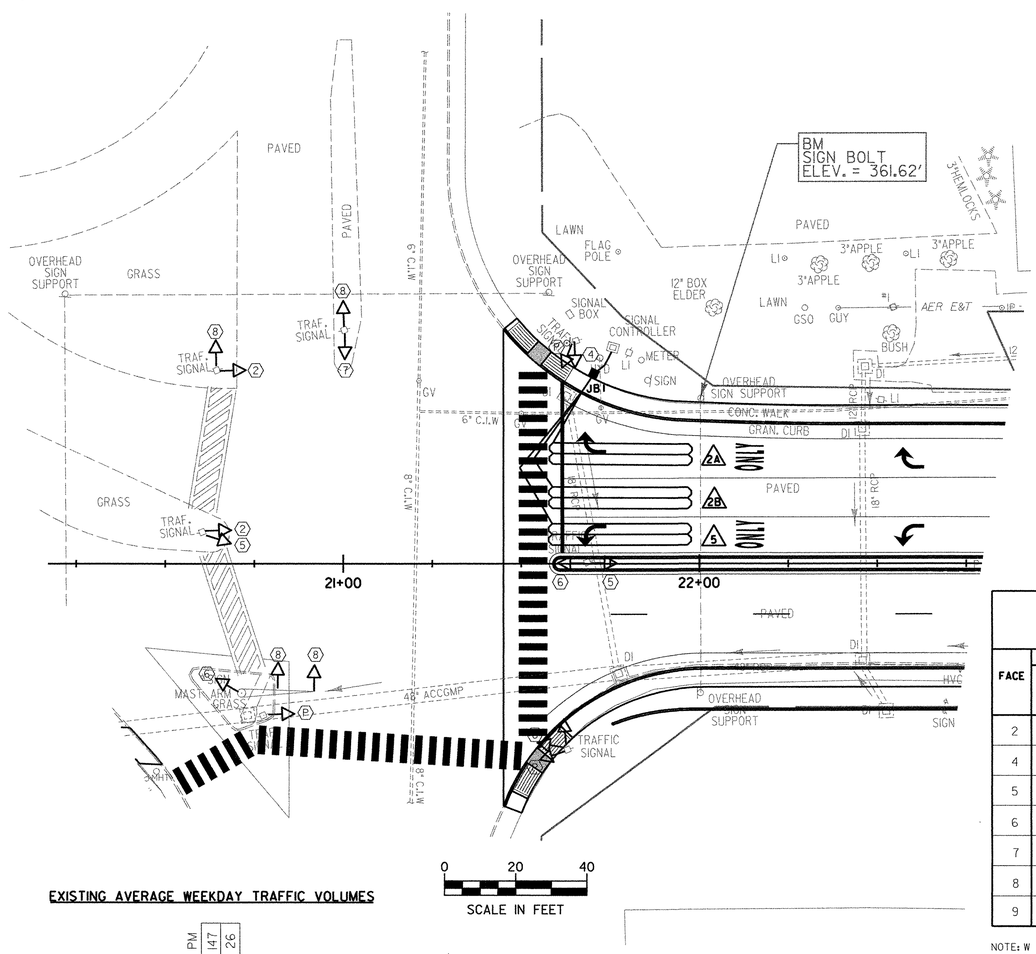
TRAFFIC SIGNAL SHEET 1

SEE SHEET PAVEMENT MARKINGS AND SIGNS LAYOUT SHEETS

SEE TRAFFIC SIGNAL SHEET 4 FOR SIGNAL COORDINATION CHART

PHASING DIAGRAM





TEST RESULTS

INDUCTANCE (μH)		RESISTANCE @ 77°F		
CALCULATED	MEASURED	CALCULATED	MEASURED	LEAKAGE TO GROUND
126		0.41		
130		0.47		
133		0.51		

ALL CALCULATED VALUES ARE AT THE CONTROLLER.
MEASURED VALUES MUST BE FILLED IN PRIOR TO TEST PERIOD.

VEHICLE LOOP DETECTOR

LANE	LOOP NO.	SIZE	TYPE	NO. TURNS	CALL Ø	MODE	AMP.
SB RT	2A	6'x40'	QUAD	2	Ø 2	PRESENCE	NON-DELAY
SB TH	2B	6'x40'	QUAD	2	Ø 2	PRESENCE	NON-DELAY
SB LT	5	6'x40'	QUAD	2	Ø 5	PRESENCE	NON-DELAY

CONTROLLER TIMING CHART

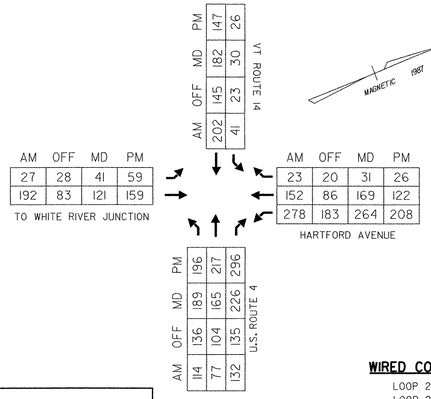
LOCAL PROGRAMING	PHASE								
	1	2	3	4	5	6	7	8	9
MINIMUM GREEN		8		8	8	6	8	8	-
EXTENSION		2.0		2.0	2.0	2.0	2.0	2.0	-
YELLOW CLEARANCE		4.0		4.0	4.0	4.0	3.0	4.0	-
ALL RED CLEARANCE		2.0		2.0	2.0	2.0	2.0	2.0	-
MAXIMUM GREEN I-75 SEC		32		31	17	9	14	11	
MAXIMUM GREEN II-75 SEC 6:00 AM - 9:00 AM		36		27	22	8	8	13	
MAXIMUM GREEN III-75 SEC 2:00 PM - 4:00 PM		32		31	19	7	14	11	
MAXIMUM GREEN IV-75 SEC 4:00 PM - 6:00 PM		24		39	11	7	10	23	
WALK		-	-	-	-	-	-	-	9
FLASHING DON'T WALK		-	-	-	-	-	-	-	23
RECALL		OFF		MAX	OFF	OFF	OFF	MAX	OFF
MEMORY		N/L		N/L	N/L	N/L	N/L	N/L	-

TABLE OF CHANGE SEQUENCE

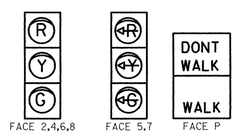
FACE	Ø2 + Ø5 R/W	Ø2 + Ø5 CLEAR TO Ø2 + Ø6	Ø2 + Ø5 CLEAR TO ALL OTHER PHASES			Ø2 + Ø6 R/W	Ø2 + Ø6 CLEAR TO Ø2 + Ø5	Ø2 + Ø6 CLEAR TO ALL OTHER PHASES			Ø4 + Ø7 R/W	Ø4 + Ø7 CLEAR TO Ø4 + Ø8	Ø4 + Ø7 CLEAR TO ALL OTHER PHASES			Ø4 + Ø8 R/W	Ø4 + Ø8 CLEAR TO Ø4 + Ø7	Ø4 + Ø8 CLEAR TO ALL OTHER PHASES			Ø9 R/W	Ø9 CLEAR TO ALL OTHER PHASES			FLASHING OPERATION
2	G	G	G	Y	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	FR
4	R	R	R	R	R	R	R	R	R	R	G	G	G	Y	R	G	G	G	Y	R	R	R	R	FY
5	~~G~~	~~Y~~	~~R~~	~~Y~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	B
6	R	R	R	R	R	G	Y	R	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	FR
7	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~G~~	~~Y~~	~~R~~	~~Y~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	B
8	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	Y	R	R	R	R	FY
9	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	B

NOTE: W = WALK, FD = FLASHING DON'T WALK
DW = DON'T WALK, B = BLANK

EXISTING AVERAGE WEEKDAY TRAFFIC VOLUMES



SIGNAL FACE ARRANGEMENT (EXISTING) 12" LENSES



WIRED CONDUIT(2")(PVC)
LOOP 2A TO JBI - 6'
LOOP 2B TO JBI - 6'
LOOP 5 TO JBI - 6'

WIRED CONDUIT(1 1/2")(PVC)
JBI TO CONTROLLER - 8'

MAJOR EQUIPMENT LIST

EQUIPMENT ITEM NO. 678.15	U.S. ROUTE 5 VT ROUTE 14
CANTILEVER POLES W/MAST ARMS	-
PEDESTAL POSTS	-
NEW 12" TRAFFIC SIGNAL HEADS W/ TUNNEL VISORS, DISCONNECT HANGERS, BACKPLATES AND MOUNTING HARDWARE	
ONE-WAY, 3-SECTION	-
ONE-WAY, 5-SECTION	-
TWO-WAY, 3-SECTION	-
12" FIBER OPTIC INTERNATIONAL SYMBOL PEDESTRIAN HEAD W/VISOR AND MOUNTING HARDWARE	
SIDE MOUNTED	-
POST TOP MOUNTED	-
CONTROLLER/CABINET	1
POWER DROP STANCHION	-
SPREAD SPECTRUM RADIO ASSEMBLY	1

EQUIPMENT	ITEM NO.	UNIT	U.S. ROUTE 5 VT ROUTE 14
VEHICLE LOOP DETECTOR	678.22	LF	483
WIRED CONDUIT (1½" PVC)	678.23	LF	8
WIRED CONDUIT (2" PVC)	678.23	LF	18
JUNCTION BOX	678.26	EA	1

** THE QUANTITIES LISTED ARE FOR SAW CUTTING ONLY, LEAD-IN WIRES AND/OR SHIELDED CABLE QUANTITIES FROM THE EDGE OF PAVEMENT OR CURB ARE NOT INCLUDED IN THE TOTAL. SEE STANDARD SPECIFICATION.

THE QUANTITY LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY. MISCELLANEOUS (UNLISTED) WIRE, CABLE, HARDWARE ETC., ARE REQUIRED TO PROVIDE FOR A FUNCTIONING TRAFFIC SIGNAL SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF THE NUMBER OF ITEMS AND THE TYPES OF EQUIPMENT REQUIRED.

EXISTING	NEW	LEGEND
		MAST ARM POLE (MP)
		STRAIN POLE (SP)
		CONTROLLER CABINET
		PULLBOX (PB)/ JUNCTION BOX (JB)
		SIGNAL HEAD
		CONDUIT
		VEHICLE LOOPS
		PEDESTAL POST (PP)
		MAST ARM MOUNTED SIGN
		STANCHION

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

TRAFFIC SIGNAL SHEET 2

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/15/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 174 OF 239

SEE TRAFFIC SIGNAL SHEET 6 FOR MAST ARM CROSS SECTIONS

SEE PAVEMENT MARKINGS AND SIGNS LAYOUT SHEETS

SEE TRAFFIC SIGNAL SHEET 4 FOR SIGNAL COORDINATION CHART

SEE TRAFFIC SIGNAL SHEET 4 FOR CONTROLLER TIMING & LOOP DETECTOR TABLES

HIGHLAND AVE & HIGH SCHOOL DRIVEWAY

ELECTRICAL CONDUIT SLEEVE (6") (PVC)

HIGHLAND AVE WESTBOUND CROSSING - 34'
HIGH SCHOOL DRIVEWAY CROSSING - ~~54'~~ 52'
HIGHLAND AVE. EASTBOUND CROSSING - ~~48'~~ 49'

WIRED CONDUIT (2") (PVC)

PPIIA TO JB1 - ~~36'~~ 40'
JB1 TO PPIIB - ~~14'~~ 15'
PPIIB TO PPIIC - ~~58'~~ 64'
PPIIC TO PPIID - ~~24'~~ 20'
PPIID TO JB3 - ~~50'~~ 55'
PPIIE TO JB3 - 4'
JB3 TO CONTROLLER - ~~10'~~ 32'
PPIIF TO CONTROLLER - ~~14'~~ 17'

WIRED CONDUIT (1½") (PVC)

LOOP 8A TO JB1 - 4'
LOOP 8B TO JB1 - 4'
JB1 TO PPIIB - ~~14'~~ 18'
PPIIB TO PPIIC - ~~58'~~ 64'
LOOP 6 TO JB2 - 4'
JB2 TO PPIIC - ~~10'~~ 8'
PPIIC TO PPIID - ~~24'~~ 20'
PPIID TO JB3 - ~~50'~~ 55'
LOOP 4 TO JB 3 - 4'
~~JB3 TO CONTROLLER - 10'~~

SIGNAL FACE ARRANGEMENT 12" LENSES

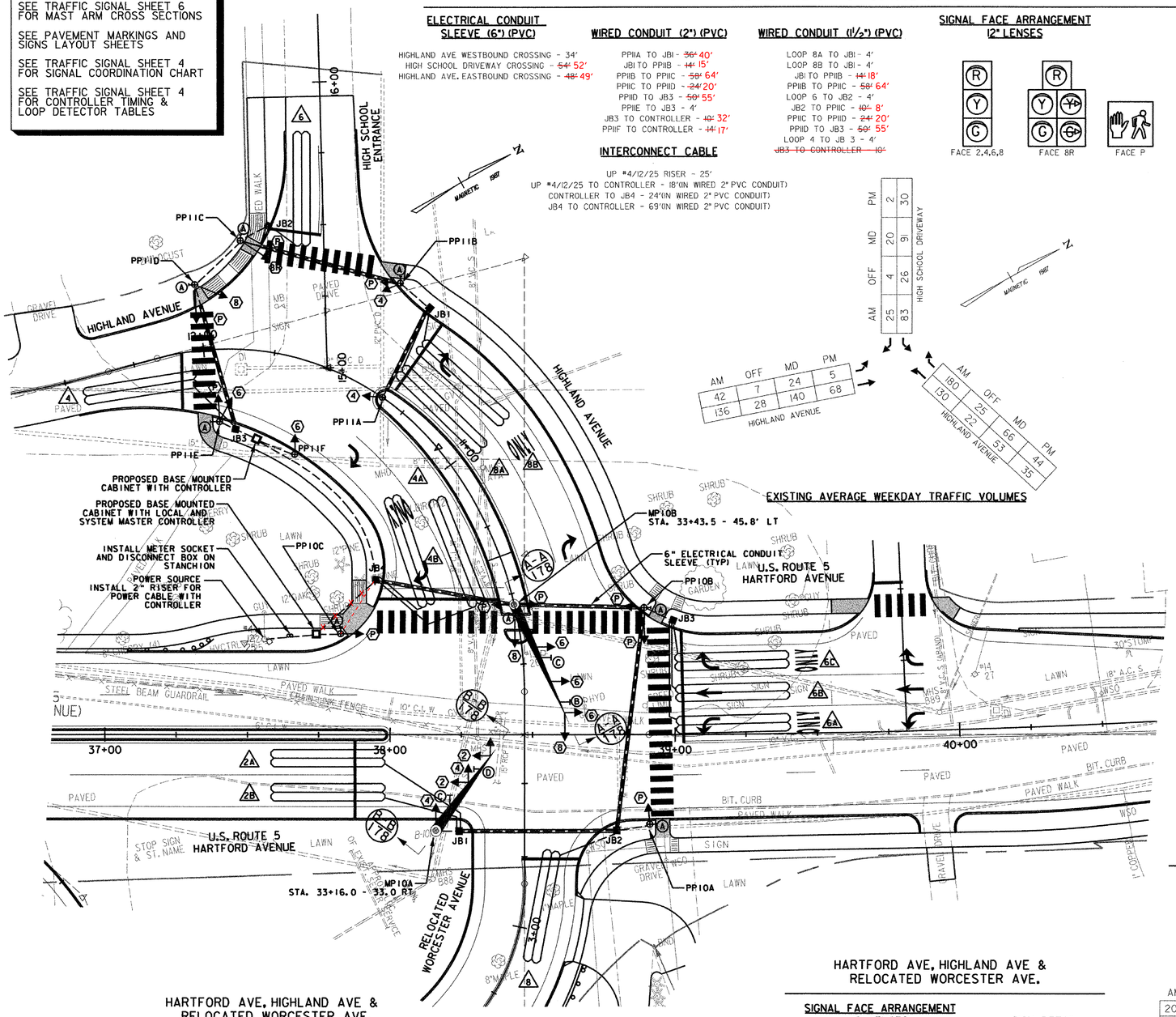
FACE 2,4,6,8 | FACE 8R | FACE P

SIGN DETAIL

R10-4 9"x12" (A)

INTERCONNECT CABLE

UP #4/12/25 RISER - 25'
UP #4/12/25 TO CONTROLLER - 18'(IN WIRED 2" PVC CONDUIT)
CONTROLLER TO JB4 - 24'(IN WIRED 2" PVC CONDUIT)
JB4 TO CONTROLLER - 69'(IN WIRED 2" PVC CONDUIT)



EXISTING AVERAGE WEEKDAY TRAFFIC VOLUMES

AM	OFF	MD	PM
42	7	24	5
136	28	140	68

HIGHLAND AVENUE

AM	OFF	MD	PM
25	4	20	2
83	26	91	30

HIGH SCHOOL DRIVEWAY

AM	OFF	MD	PM
180	35	66	44
130	22	53	35

HIGHLAND AVENUE

HARTFORD AVE, HIGHLAND AVE & RELOCATED WORCESTER AVE.

ELECTRICAL CONDUIT SLEEVE (6") (PVC)

RELOCATED WORCESTER AVE. CROSSING - 50'
U.S. ROUTE 5 CROSSING - ~~78'~~ 75'
HIGHLAND AVE. DEPARTURE LANES CROSSING - 44'
HIGHLAND AVE. APPROACH LANES CROSSING - 46'

WIRED CONDUIT (2") (PVC)

MP10A TO JB1 - ~~8'~~ 6'
JB1 TO JB2 - 58'
PP10A TO JB2 - ~~58'~~ 12'
JB2 TO PP10B - 80'
JB3 TO PP10B - ~~12'~~ 10'
PP10B TO MP10B - ~~46'~~ 44'
MP10B TO JB4 - ~~50'~~ 46'
PP10C JB4 TO ~~CONTROLLER~~ - ~~28'~~ 20'
PP10C TO CONTROLLER - 10'
UT*4/12/25 RISER - 25'
UT*4/12/25 TO STANCHION - ~~10'~~ 16'
STANCHION TO CONTROLLER - ~~10'~~ 8'
~~JB3 CONTROLLER~~ TO JB4 - ~~28'~~ 46'
JB4 TO CONTROLLER (HIGHLAND AVE) - ~~70'~~ 87'

WIRED CONDUIT (1½") (PVC)

LOOP 2A TO JB1 - 4'
LOOP 2B TO JB1 - 4'
JB1 TO JB2 - 58'
LOOP 8 TO JB2 - 10'
LOOP 6A TO JB3 - 4'
LOOP 6B TO JB3 - 4'
LOOP 6C TO JB3 - 4'
JB2 TO PP10B - 80'
PP10B TO MP10B - ~~46'~~ 44'
MP10B TO JB4 - ~~50'~~ 46'
LOOP 4B TO JB4 - 4'
~~JB4 TO CONTROLLER - 28'~~

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

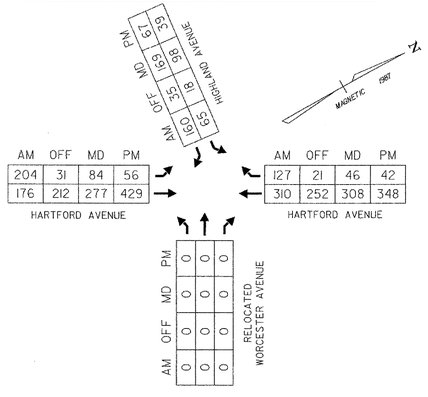
HARTFORD AVE, HIGHLAND AVE & RELOCATED WORCESTER AVE.

SIGNAL FACE ARRANGEMENT 12" LENSES

FACE 4,6,8 | FACE 2 | FACE P

SIGN DETAIL

R10-4 9"x12" (A) | R3-5L 30"x36" (B) | R3-5R 30"x36" (C) | R3-2 24"x24" (D)



AM	OFF	MD	PM
204	31	84	56
176	212	277	429

HARTFORD AVENUE

AM	OFF	MD	PM
127	21	46	42
310	252	308	348

HARTFORD AVENUE

AM	OFF	MD	PM
65	60	55	53
55	18	58	65

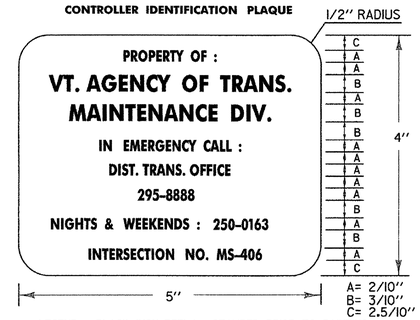
HIGHLAND AVENUE

AM	OFF	MD	PM
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

RELOCATED WORCESTER AVENUE

EXISTING AVERAGE WEEKDAY TRAFFIC VOLUMES

CONTROLLER IDENTIFICATION PLAQUE



LEGEND: - BLACK (NON-REFL.) - STAMPED PRIOR TO PAINTING
BACKGROUND: NATURAL ALUMINUM OR BRASS SURFACE

NOTES:
1.) THE PLAQUE SHALL BE MOUNTED ON ALL TRAFFIC SIGNAL CONTROLLER CABINETS. IT SHALL BE FASTENED TO THE CONTROLLER CABINET IN SUCH A MANNER AS TO BE NOT EASILY REMOVED, SUCH AS WELDED, RIVETED OR BOLTED WITH VANDAL PROOF BOLTS.
2.) THE LETTERS SHALL BE PUNCHED OR STAMPED, SUCH STAMPING SHALL PENETRATE AT LEAST ½ THE BASE MATERIAL THICKNESS.
3.) THE BASE MATERIAL FOR THE PLAQUE SHALL BE BRASS OR ALUMINUM WITH A MINIMUM THICKNESS OF 0.100 INCHES.

MAJOR EQUIPMENT LIST

EQUIPMENT ITEM NO. 678.15	US ROUTE 5 Rel. WORCESTER AVE. HIGHLAND AVE.	HIGHLAND AVE HIGH SCHOOL DRIVE
CANTILEVER POLES W/MAST ARMS	2	-
PEDESTAL POSTS	3	6
NEW 12" TRAFFIC SIGNAL HEADS W/ TUNNEL VISORS, DISCONNECT HANGERS, BACKPLATES AND MOUNTING HARDWARE		
ONE-WAY, 3-SECTION	4	5
ONE-WAY, 5-SECTION	-	1
TWO-WAY, 3-SECTION	3	-
12" FIBER OPTIC INTERNATIONAL SYMBOL PEDESTRIAN HEAD W/VISOR AND MOUNTING HARDWARE		
SIDE MOUNTED	2	4
POST TOP MOUNTED	4	-
CONTROLLER/CABINET *MS-406	1*	1
POWER DROP STANCHION	1	-
MALFUNCTION MANAGEMENT UNIT (MMU) TESTER	-	1
LOOP DETECTOR TESTER	-	1
BUS INTERFACE UNIT (BIU) TESTER	-	1
SPREAD SPECTRUM RADIO ASSEMBLY	1	-

* MASTER AND LOCAL CONTROLLERS

EQUIPMENT	ITEM NO.	UNIT	US ROUTE 5 REL. WORCESTER AVE. HIGHLAND AVE.	HIGHLAND AVE HIGH SCHOOL DRIVE
INTERCONNECT CABLE	678.20	LF	136	-
VEHICLE LOOP DETECTOR **	678.22	LF	1240	590
WIRED CONDUIT (1½") (PVC)	678.23	LF	296	182
WIRED CONDUIT (2") (PVC)	678.23	LF	493	210
JUNCTION BOX	678.26	EA	4	3
ELECTRICAL CONDUIT SLEEVE (6") (PVC)	678.30	LF	218	136

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THE QUANTITY LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY. MISCELLANEOUS (UNLISTED) WIRE, CABLE, HARDWARE ETC., ARE REQUIRED TO PROVIDE FOR A FUNCTIONING TRAFFIC SIGNAL SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF THE NUMBER OF ITEMS AND THE TYPES OF EQUIPMENT REQUIRED.

EXISTING	NEW	LEGEND
		MAST ARM POLE (MP)
		STRAIN POLE (SP)
		CONTROLLER CABINET
		PULL BOX (PB)/ JUNCTION BOX (JB)
		SIGNAL HEAD
		CONDUIT
		VEHICLE LOOPS
		PEDESTAL POST (PP)
		MAST ARM MOUNTED SIGN
		STANCHION

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)

DESIGN FILE NAME: z027bdr.DGN
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PLOT DATE: 1/15/2007
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DRAWN BY: E. ATKINS
SHEET: 175 OF 239

TRAFFIC SIGNAL SHEET 3

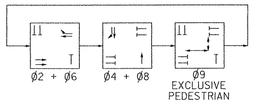
US ROUTE 5 AT HIGHLAND AVE./WORCESTER AVE.

CONTROLLER TIMING CHART

LOCAL PROGRAMING	PHASE								
	1	2	3	4	5	6	7	8	9
MINIMUM GREEN		12		6		12		6	-
EXTENSION		2.0		2.0		2.0		2.0	-
YELLOW CLEARANCE		4.0		4.0		4.0		4.0	-
ALL RED CLEARANCE		2.0		2.0		2.0		2.0	-
MAXIMUM GREEN I-75 SEC		32		31		32		31	
MAXIMUM GREEN II-75 SEC 6:00 AM - 9:00 AM		35		28		35		28	
MAXIMUM GREEN III-75 SEC 2:00 PM - 4:00 PM		34		29		34		29	
MAXIMUM GREEN IV-75 SEC 4:00 PM - 6:00 PM		33		30		33		30	
WALK		-	-	-	-	-	-	-	8
FLASHING DON'T WALK		-	-	-	-	-	-	-	25
RECALL		MAX		OFF		MAX		OFF	OFF
MEMORY		N/L		N/L		N/L		N/L	-

PHASING DIAGRAM

HARTFORD AVE. AT HIGHLAND AVE/WORCESTER AVE



TEST RESULTS

INDUCTANCE (μH)		RESISTANCE @ 77° F		
CALCULATED	MEASURED	CALCULATED	MEASURED	LEAKAGE TO GROUND
192		1.27		
189		1.23		
134		0.52		
129		0.45		
160		0.85		
157		0.81		
154		0.77		
173		1.02		

ALL CALCULATED VALUES ARE AT THE CONTROLLER.
MEASURED VALUES MUST BE FILLED IN PRIOR TO TEST PERIOD.

VEHICLE LOOP DETECTOR

LANE	LOOP NO.	SIZE	TYPE	NO. TURNS	CALL Ø	MODE	AMP.
NB TH	2A	6'x40'	QUAD	2	Ø 2	PRESENCE	NON-DELAY
NB TH	2B	6'x40'	QUAD	2	Ø 2	PRESENCE	NON-DELAY
EB TH/LT	4A	6'x40'	QUAD	2	Ø 4	PRESENCE	NON-DELAY
EB RT	4B	6'x40'	QUAD	2	Ø 4	PRESENCE	NON-DELAY
SB LT	6A	6'x40'	QUAD	2	Ø 6	PRESENCE	NON-DELAY
SB TH	6B	6'x40'	QUAD	2	Ø 6	PRESENCE	NON-DELAY
SB RT	6C	6'x40'	QUAD	2	Ø 6	PRESENCE	DELAY-5 SEC.
WB TH/LT/RT	8	6'x40'	QUAD	2	Ø 8	PRESENCE	NON-DELAY

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

HIGH SCHOOL DRIVEWAY AT HIGHLAND AVENUE

CONTROLLER TIMING CHART

LOCAL PROGRAMING	PHASE								
	1	2	3	4	5	6	7	8	9
MINIMUM GREEN				6		6		6	-
EXTENSION				2.0		2.0		2.0	-
YELLOW CLEARANCE				4.0		4.0		4.0	-
ALL RED CLEARANCE				2.0		2.0		2.0	-
MAXIMUM GREEN I-75 SEC				32		32		32	
MAXIMUM GREEN II-75 SEC 2:00 PM - 4:00 PM				30		33		30	
MAXIMUM GREEN III-75 SEC 2:00 PM - 4:00 PM				30		33		30	
MAXIMUM GREEN IV-75 SEC 4:00 PM - 6:00 PM				32		31		32	
WALK		-	-	-	-	-	-	-	8
FLASHING DON'T WALK		-	-	-	-	-	-	-	15
RECALL				MAX		OFF		MAX	OFF
MEMORY				N/L		N/L		N/L	-

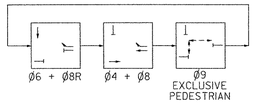
TABLE OF CHANGE SEQUENCE

FACE	Ø6 + Ø8R			Ø4 + Ø8			Ø9			FLASHING OPERATION
	R/W	CLEAR TO ALL OTHER PHASES		R/W	CLEAR TO ALL OTHER PHASES		R/W	CLEAR TO ALL OTHER PHASES		
4	R	R	R	G	Y	R	R	R	R	FY
6	G	Y	R	R	R	R	R	R	R	FR
8	R	R	R	G	Y	R	R	R	R	FY
8R	G	Y	R	G	Y	R	R	R	R	FR
PI	DW	DW	DW	DW	DW	DW	W	FD	DW	B

NOTE: W = WALK, FD = FLASHING DON'T WALK
DW = DON'T WALK, B = BLANK

PHASING DIAGRAM

HIGH SCHOOL DRIVEWAY AT HIGHLAND AVE



TEST RESULTS

INDUCTANCE (μH)		RESISTANCE @ 77° F		
CALCULATED	MEASURED	CALCULATED	MEASURED	LEAKAGE TO GROUND
126		0.41		
145		0.65		
159		0.84		
156		0.81		

ALL CALCULATED VALUES ARE AT THE CONTROLLER.
MEASURED VALUES MUST BE FILLED IN PRIOR TO TEST PERIOD.

VEHICLE LOOP DETECTOR

LANE	LOOP NO.	SIZE	TYPE	NO. TURNS	CALL Ø	MODE	AMP.
NB TH/LT	4	6'x40'	QUAD	2	Ø 4	PRESENCE	NON-DELAY
EB LT/RT	6	6'x40'	QUAD	2	Ø 6	PRESENCE	DELAY-5 SEC.
SB TH	8A	6'x40'	QUAD	2	Ø 8	PRESENCE	NON-DELAY
SB RT	8B	6'x40'	QUAD	2	Ø 8R	PRESENCE	NON-DELAY

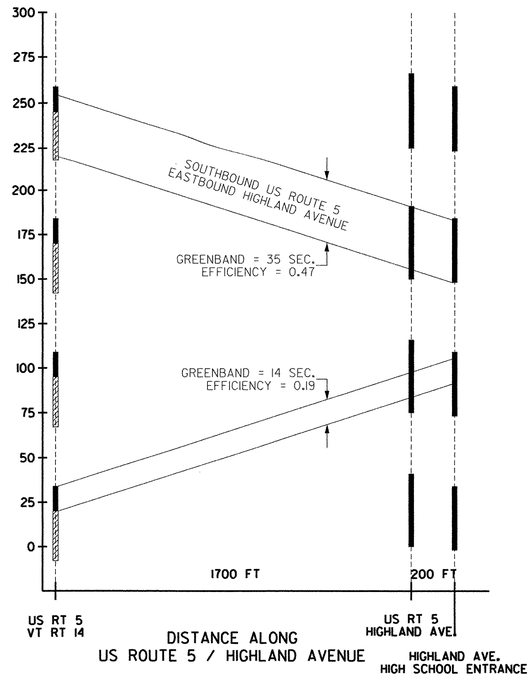
TRAFFIC SIGNAL SHEET 4

TRAFFIC SIGNAL LAYOUT

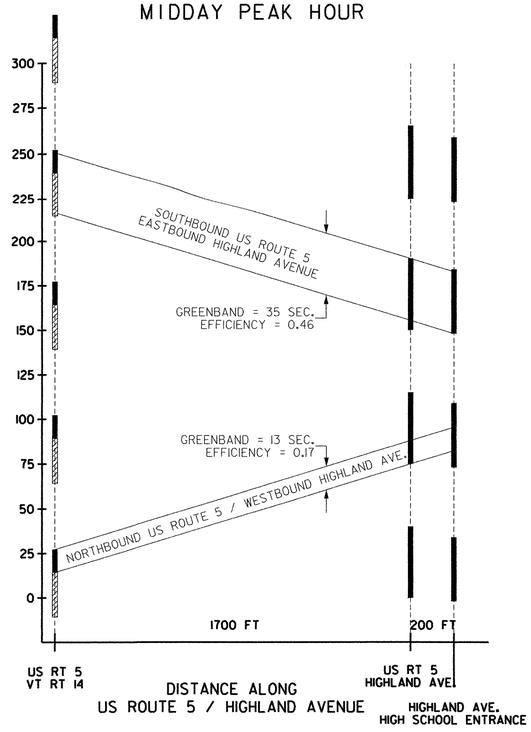
PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.DGN
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/15/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 176 OF 239

TRAFFIC SIGNAL SHEET 5

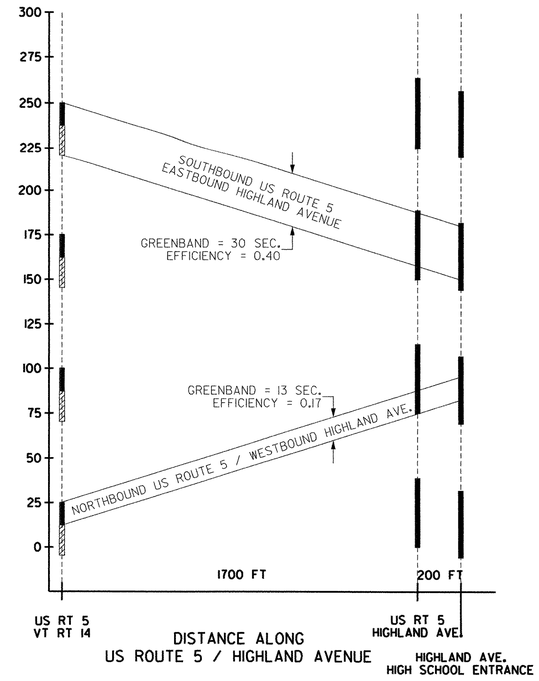
AM PEAK HOUR



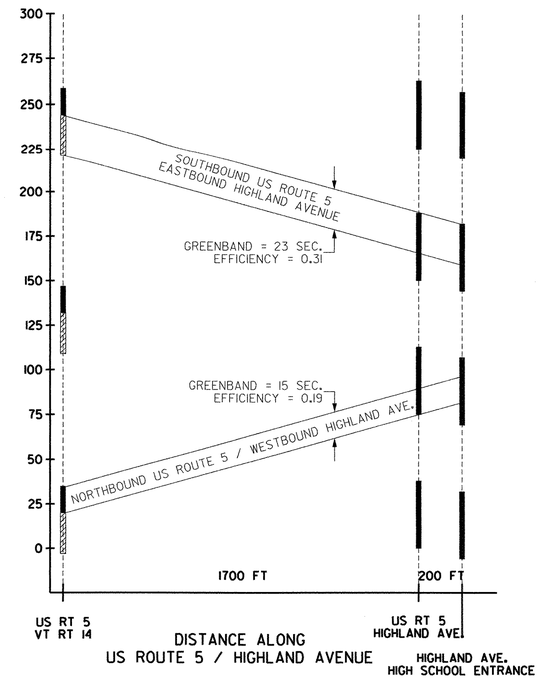
MIDDAY PEAK HOUR



PM PEAK HOUR



OFF PEAK HOUR



AM PEAK HOUR

INTERSECTION	SPLITS									
	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	OFFSET
US RTE 5 @ VT RTE 14		42		33	28	14	14	19		20
US RTE 5 @ HIGHLAND AVE.		41		34		41		34		0
HIGHLAND AVE. @ HIGH SCHOOL ENTRANCE				36		39		36		73

MIDDAY PEAK HOUR

INTERSECTION	SPLITS									
	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	OFFSET
US RTE 5 @ VT RTE 14		38		37	25	13	20	17		14
US RTE 5 @ HIGHLAND AVE.		40		35		40		35		0
HIGHLAND AVE. @ HIGH SCHOOL ENTRANCE				36		39		36		73

PM PEAK HOUR

INTERSECTION	SPLITS									
	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	OFFSET
US RTE 5 @ VT RTE 14		30		45	17	13	16	29		12
US RTE 5 @ HIGHLAND AVE.		39		36		39		36		0
HIGHLAND AVE. @ HIGH SCHOOL ENTRANCE				38		37		38		69

OFF PEAK HOUR

INTERSECTION	SPLITS									
	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	OFFSET
US RTE 5 @ VT RTE 14		38		37	23	15	20	17		6
US RTE 5 @ HIGHLAND AVE.		38		37		38		37		0
HIGHLAND AVE. @ HIGH SCHOOL ENTRANCE				38		38		38		69

LEGEND

= SIMULTANEOUS GREEN TIME
NORTHBOUND & SOUTHBOUND US RTE 5
EASTBOUND & WESTBOUND HIGHLAND AVE.

= GREENTIME SOUTHBOUND ONLY
US RTE 5

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES:

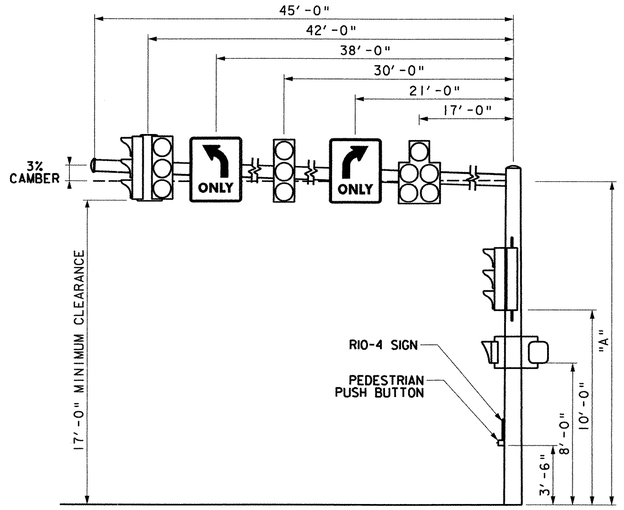
1. SEE TRAFFIC SIGNAL SHEET 2 FOR US RTE 5/VTI4 PHASING DIAGRAM AND TRAFFIC SIGNAL SHEET 3 FOR HIGHLAND AVE AND HIGH SCHOOL ENTRANCE PHASE DIAGRAMS.
2. Ø9 SHALL BE USED AS AN EXCLUSIVE PEDESTRIAN PHASE AS REQUIRED.
3. OFFSETS ARE REFERENCED TO THE BEGINNING OF PHASES 2 AND 6 AT HARTFORD AVE AND HIGHLAND AVE.
4. SPLITS AND OFFSETS ARE SHOWN IN SECONDS.

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/11/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 177 OF 239

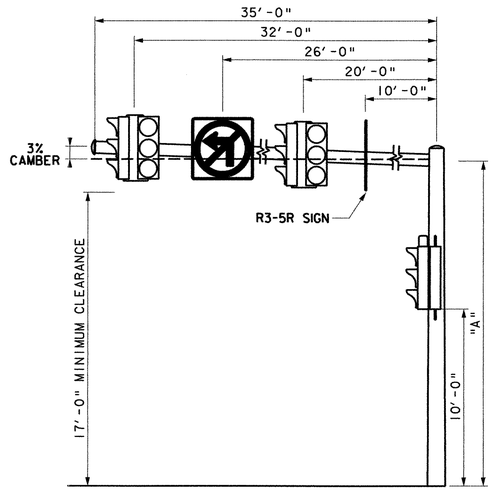
CANTILEVER SIGNAL SUPPORT NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR CONSTRUCTION", DATED 2001, WITH CURRENT MODIFICATIONS.
2. OVERHEAD SIGN/SIGNAL SUPPORTS SHALL CONFORM TO AASHTO'S PUBLICATION ENTITLED "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS", 4TH EDITION, DATED 2001, OR ITS LATEST REVISIONS.
3. ADDITIONAL DESIGN CRITERIA ARE AS FOLLOWS:
   CONCRETE FC = 1400 PSI F'C = 3 500 PSI, CLASS B
   REINFORCING FS = 24 000 PSI (GRADE 60)
   SEE MATERIAL AND RESEARCH SECTION MEMORANDUM ENTITLED "HARTFORD RS 0113(40) - MAST ARM FOUNDATION EVALUATION" AND DATED DECEMBER 13, 2006 FOR ADDITIONAL SOIL DATA AND FOOTING REQUIREMENTS.
   WIND LOAD AND ICE LOAD PER AASHTO "STANDARD SPECIFICATIONS"
4. ANCHOR BOLTS
   FOUR STAINLESS STEEL ANCHOR BOLTS WITH TWO HEXAGON NUTS, ONE WASHER AND ONE LOCK WASHER PER BOLT SHALL BE FURNISHED WITH EACH HOLE. SEE SUBSECTION 714.09.
5. FLANGE BOLTS
   ALL FLANGE BOLTS AND HEX NUTS SHALL BE HIGH STRENGTH STEEL AND SHALL CONFORM TO AASHTO M 164, TYPE 1 BOLTS, GALVANIZED PER AASHTO M 232 SPECIFICATION. THE FLANGE BOLTS SHALL BE CAPABLE OF RESISTING 133% OF THE FULL DESIGN STRESS OF THE TUBE AT ITS YIELD STRENGTH STRESS.
6. HORIZONTAL AND VERTICAL MEASURES
   STEEL TUBES SHALL BE FORMED AND WELDED WITH ONE CONTINUOUS LONGITUDINAL WELD ONLY. AFTER FORMING AND WELDING THEY SHALL BE COLD ROLLED TO ENSURE UNIFORMITY OF SIZE AND SMOOTHNESS OF WELD. THEY SHALL HAVE A MINIMUM YIELD STRENGTH OF 48 KSI. THERE SHALL BE NO TRANSVERSE WELDING EXCEPT AT THE FLANGE CONNECTIONS AND POLE BASE PLATES, WHERE THE TUBES SHALL TELESCOPE THE FLANGES AND PLATES AND BE CONTINUOUSLY WELDED BOTH SIDES INSIDE AND OUT TO WITHSTAND THE FULL TRANSFER OF THE BENDING STRENGTH TO THE BOLTS. OPTIONALLY, THE MEMBERS MAY BE A SERIES OF TWO OR THREE DIFFERENT DIAMETER PIPES WELDED TOGETHER.
7. GALVANIZING
   ALL STEEL COMPONENTS, EXCEPT CONCRETE REINFORCING AND STAINLESS STEEL HARDWARE AND FLANGE FASTENERS, ARE TO BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M 111 AFTER FABRICATION. THE ASSEMBLIES SHALL BE DESIGNED AND FABRICATED TO PERMIT GALLON ALL INTERIOR AND EXTERIOR SURFACES AND SHALL BE FREE OF POCKETS AND OTHER STRUCTURAL OBSTRUCTIONS THAT WILL NOT PERMIT PROPER DEPOSITION OF ZINC COATING.
8. WELDING
   A. ALL DESIGN DETAILS, WORKMANSHIP, PROCEDURES AND INSPECTION SHALL CONFORM WITH SUBSECTION 506.10.
   B. ALL WELDS SHALL BE AT LEAST AS STRONG AS THE MATERIAL(S) BEING WELDED.
9. FOOTINGS
   A. FOOTINGS SHALL BE DESIGNED IN ACCORDANCE WITH THE MATERIAL AND RESEARCH SECTION MEMORANDUM ENTITLED "HARTFORD RS 0113(40) - MAST ARM FOUNDATION EVALUATION" AND DATED DECEMBER 13, 2006.
   B. TWO TYPES OF FOUNDATIONS SHALL BE ALLOWED (SEE MATERIAL AND RESEARCH SECTION MEMORANDUM ENTITLED "HARTFORD RS 0113(40) - MAST ARM FOUNDATION EVALUATION" AND DATED DECEMBER 13, 2006)
      1. DRILLED SHAFTS
      2. SPREAD FOOTINGS
   C. DRILLED SHAFT FOOTINGS SHALL BE POURED IN DRILLED SHAFTS IN ACCORDANCE WITH THE MATERIAL AND RESEARCH SECTION MEMORANDUM ENTITLED "HARTFORD RS 0113(40) - MAST ARM FOUNDATION EVALUATION" AND DATED DECEMBER 13, 2006.
   D. AS AN ALTERNATIVE TO THE DRILLED HOLES, FOOTINGS MAY BE POURED IN EXCAVATED HOLES USING THE PROPER FORMS, WHICH MUST BE REMOVED. THE EXCAVATED HOLES SHALL BE AT LEAST 2' CLEAR OF THE FOOTING. THE BACKFILL MATERIAL SHALL BE COMPACTED AS DESCRIBED IN SUBSECTION 204.12.
   E. WHEN THE DESIGN DEPTH OF A FOOTING CANNOT BE OBTAINED DUE TO UNFORESEEN FIELD CONDITIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND SUBMIT A REVISED FOOTING DETAIL TO THE ENGINEER FOR APPROVAL.
   F. ANY BACKFILL PLACED ADJACENT TO THE FOOTING SHALL BE GRANULAR MATERIAL MEETING THE REQUIREMENTS FOR GRANULAR BACKFILL FOR STRUCTURES, SUBSECTION 704.08. CONCRETE FOR FOOTING SHALL CONFORM TO THE REQUIREMENTS OF CONCRETE, CLASS B, SECTION 501. STRUCTURAL CONCRETE. GROUT MATERIAL SHALL BE NON-SHRINKING MORTAR CONFORMING TO SUBSECTION 707.03 (MORTAR TYPE IV).
   G. SIGNALS/SIGNS SHALL BE MOUNTED AND LEVELED AND POLES SHALL BE PLUMB PRIOR TO PLACING GROUT UNDER POLE BASE.
10. SHOP DRAWINGS (6 COPIES OF EACH) SHALL BE SUBMITTED TO THE STATE OF VERMONT, AGENCY OF TRANSPORTATION, PROJECT MANAGER FOR APPROVAL, PRIOR TO FABRICATION. THE SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING INFORMATION:
    A. DETAILED DRAWING OF EACH COMPONENT OF THE STRUCTURE.
    B. MATERIAL SPECIFICATIONS FOR EACH COMPONENT OF THE STRUCTURE, EITHER BY COMPLETE SPECIFICATION OR REFERENCE TO APPLICABLE ASTM STANDARDS.
    C. NOTATION OF PROJECT NAME, PROJECT NUMBER, ROUTE NUMBER AND POLE NUMBER TO BE INCLUDED ON EACH SHEET.
    D. DETAILS FOR LOCATION OF SIGNS/SIGNALS AND ATTACHMENT HARDWARE FOR THE SUPPORT STRUCTURE.

10. (CONTINUED)
    E. ALL ELEVATIONS AND DIMENSIONS NECESSARY TO PROVIDE A COMPLETE SET OF RECORD PLANS.
    F. DEAD LOAD DEFLECTION AND CAMBER INFORMATION.
    G. WELDING DETAILS AND PROCEDURES ARE REQUIRED FOR ALL WELDS. PROCEDURES SHALL BE SUBMITTED FOR APPROVAL WITH REFERENCE TO EACH WELD IDENTIFIED ON THE SHOP DRAWINGS (SEE SUBSECTION 506.10).
11. EACH OVERHEAD TRAFFIC SIGNAL/SIGN SUPPORT SHALL BE GROUNDED. THE GROUND SHALL CONSIST OF:
    A. AN INTERNAL GROUND LUG OPPOSITE THE HAND HOLE.
    B. A 6 AWG (MIN.) SOFT DRAWN COPPER GROUNDING ELECTRODE CONDUCTOR.
    C. A ⅝
    THE RESISTANCE TO GROUND SHALL BE 25 OHMS OR LESS. ADDITIONAL GROUNDING ELECTRODES MAY BE REQUIRED (MINIMUM SPACING SHALL BE 6 FT). WHEN A POWER SERVICE, METER AND DISCONNECT ARE ATTACHED TO A POLE, THERE SHALL BE A CONTINUOUS GROUND WIRE FROM THE METER AND DISCONNECT WHICH MAY RUN INTERNAL TO THE UPRIGHT, THROUGH THE ½ INCH FLEXIBLE TUBING IN THE CONCRETE BASE TO THE REQUIRED GROUNDING ELECTRODE(S). THE GROUND WIRE FROM THE POLE GROUNDING LUG, CONTROLLER CABINET AND/OR LUMINAIRE MAY ATTACH TO THIS CONTINUOUS CABINET AND/OR LUMINAIRE MAY ATTACH TO THIS CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE SERVICE METER AND DISCONNECT. THE CONTRACTOR SHALL PERFORM A RESISTANCE TO GROUND TEST ON THE CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE SERVICE METER AND DISCONNECT AND PROVIDE A WRITTEN STATEMENT TO THE AREA ELECTRICAL INSPECTOR THAT THE GROUNDING ELECTRODE CONDUCTOR IS CONTINUOUS FROM THE SERVICE METER AND DISCONNECT AND THE RESISTANCE TO GROUND IS 25 OHMS OR LESS.
12. THE COST OF OVERHEAD TRAFFIC SIGN SUPPORTS, INCLUDING ALL HARDWARE, SIGN BRACKETS, AND FOOTING, SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 677.12. THE COST OF TRAFFIC CONTROL SIGNAL SYSTEMS INCLUDING ALL HARDWARE, BRACKETS, FOOTINGS, LUMINAIRE AND LUMINAIRE ARMS SHALL BE INCLUDED IN ITEM 678.15. THE COMPONENTS SHALL CONFORM TO ALL APPLICABLE PROVISION OF SECTION 677, 678, AND 679.
13. HORIZONTAL MEMBERS SHALL BE CAMBERED AND THE VERTICAL POLES BACKRAKED (WHERE APPLICABLE) TO THE ANTICIPATED DEAD LOAD DEFLECTION PLUS THE CAMBER, IF ANY, SPECIFIED ON THE PLANS.
14. AN EQUIVALENT ALTERNATE DESIGN MAY BE SUBSTITUTED FOR THE DETAILS AND MATERIALS SHOWN.
15. THE DETAILS OF DESIGN FOR THE STRUCTURE AND FOOTINGS ARE TO BE SUPPLIED BY THE CONTRACTOR AND/OR BY THE MANUFACTURER. THE STRUCTURE SHALL BE DESIGNED TO RESIST THE MAXIMUM LOADING AS OUTLINED IN THE AASHTO STANDARD SPECIFICATIONS (SEE NOTE 2). ALL DETAILS OF THE STRUCTURE AND THE FOOTING SHALL BE CHECKED AND STAMPED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF VERMONT PRIOR TO SUBMITTAL OF THE SHOP DRAWINGS TO THE VERMONT AGENCY OF TRANSPORTATION, PROJECT MANAGER.
16. IN ADDITION TO THE SHOP DRAWINGS OUTLINED IN NOTE 10, THE CONTRACTOR SHALL SUBMIT ALL DESIGN CALCULATIONS TO THE VERMONT AGENCY OF TRANSPORTATION, STRUCTURES DIVISION, SHOWING THE FOLLOWING INFORMATION FOR EACH OF THE VERTICAL AND HORIZONTAL COMPONENTS OF THE STRUCTURE AND FOOTING.
    A. THE DESIGN AXIAL AND SHEAR FORCES AND BENDING AND TORSIONAL MOMENTS.
    B. THE DESIGN AXIAL, BENDING AND SHEAR STRESSES AND THE COMBINED STRESS RATIO.
    C. VIBRATION AND FATIGUE CALCULATIONS AS SET FORTH IN SECTION 9 OF THE AASHTO PUBLICATION REFERENCED IN NOTE 2.
    D. THE ALLOWABLE AXIAL, BENDING, AND SHEAR STRESSES.
    E. ITEMS A, B, D - SHALL BE SHOWN FOR EACH OF THE GROUP LOADINGS (I, II, III) AND FOR THE BASIC WIND LOAD APPLIED TO THE TWO CASES OUTLINED IN THE AASHTO STANDARD SPECIFICATIONS (SEE NOTE 2) SECTION 1.2.5.
    F. FAILURE TO SUPPLY THE PROPER DESIGN INFORMATION SHALL BE CAUSE FOR REJECTION OF THE STRUCTURE.
    G. A MINIMUM OF FOUR (4) WEEKS SHALL BE REQUIRED FOR REVIEW BY THE VERMONT AGENCY OF TRANSPORTATION, STRUCTURES DIVISION.
17. THE CONTRACTOR/MANUFACTURER SHALL BE RESPONSIBLE FOR DETERMINING THE "A" DIMENSION ON THE ADJACENT DETAIL AND DETERMINING THE REQUIRED FOOTING SIZES FOR EACH MAST ARM AND TRAFFIC SIGNAL POST IN ACCORDANCE WITH THE REQUIREMENTS AND RECOMMENDATIONS SET FORTH IN THE VTRANS MATERIALS AND RESEARCH SECTION GEOTECHNICAL MEMORANDUM ENTITLED "HARTFORD RS 0113(40) - MAST ARM FOUNDATION EVALUATION" DATED DECEMBER 13, 2006. THE STANDARD SPECIFICATIONS AND STANDARD DETAILS E-170, E-171A, E-171B AND E-171C.
18. FOR INSTALLATIONS WHERE BOTH "EXISTING" AND "FUTURE" CONDITIONS ARE SHOWN, THE SUPPORTS SHALL BE DESIGNED FOR THE MORE SEVERE OF THE TWO LOADING CONDITIONS. THE INFORMATION OUTLINED IN NOTE 16 ABOVE SHALL BE PROVIDED FOR BOTH THE LOADING CONDITIONS.
19. THE TRAFFIC SIGNALS SHALL BE MOUNTED TO THE ARM OR POLE USING A FIXED MOUNT SYSTEM AS SHOWN ON STANDARD E-171B, UNLESS OTHERWISE NOTED ON THE CROSS SECTION SHEET.
20. BASE PLATES SHALL BE STAMPED WITH THE VERTICAL POLE DIAMETER, HEIGHT, YIELD STRENGTH, GAUGE AND THE HORIZONTAL MEMBER DIAMETER, LENGTH, YIELD STRENGTH, GAUGE. ALTERNATELY, THE INFORMATION MAY BE STAMPED ON A METAL TAG RIVETED TO THE POLE NEAR THE HANDHOLE.
21. SEE STANDARD E-171A FOR ADDITIONAL NOTES.
22. SEE BORING LAYOUT SHEETS AND BORING LOGS FOR LOCATIONS AND LOGS OF THE BORINGS TO BE USED FOR SIZING THE SIGNAL SUPPORT FOUNDATIONS.



SECTION A-A 175

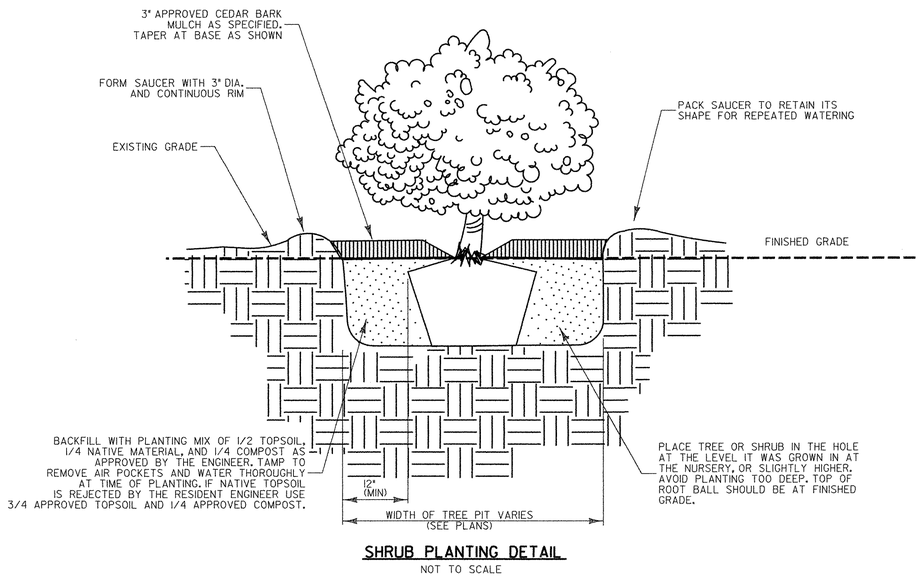


SECTION B-B 175

TRAFFIC SIGNAL SHEET 6

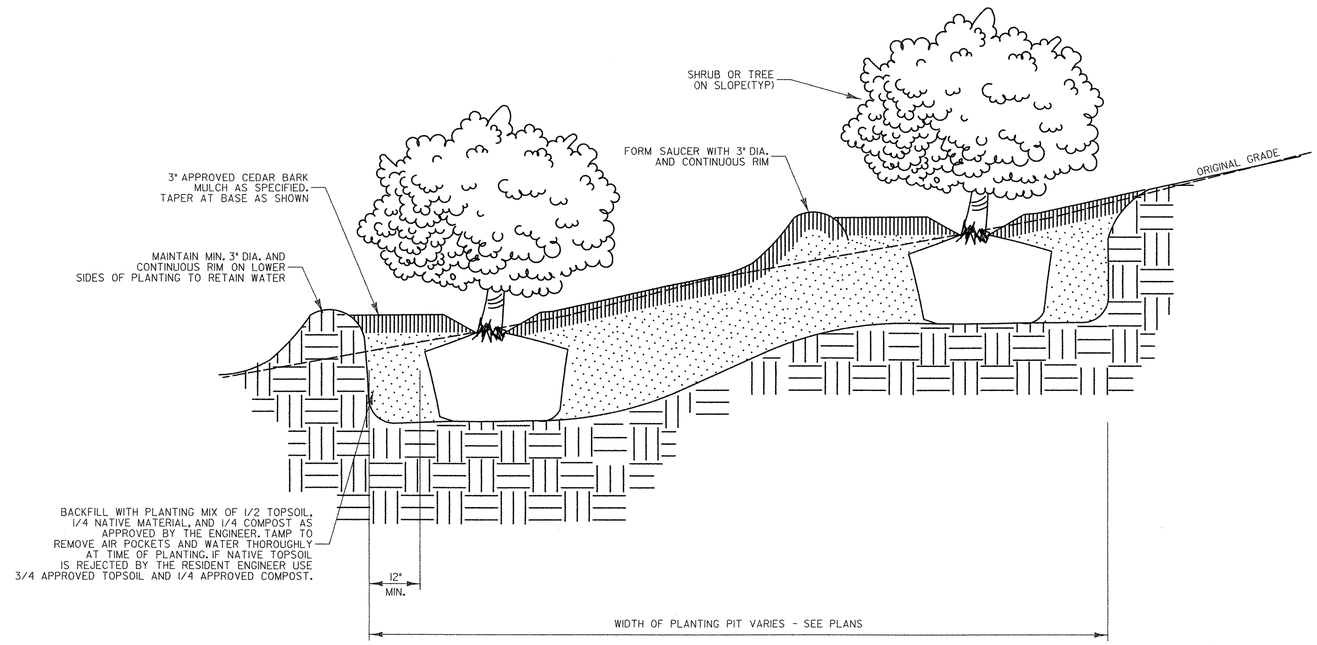
DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.DGN	
IPARM FILE NAME:	PLOT DATE: 1/15/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 178 OF 239



SHRUB PLANTING DETAIL

NOT TO SCALE



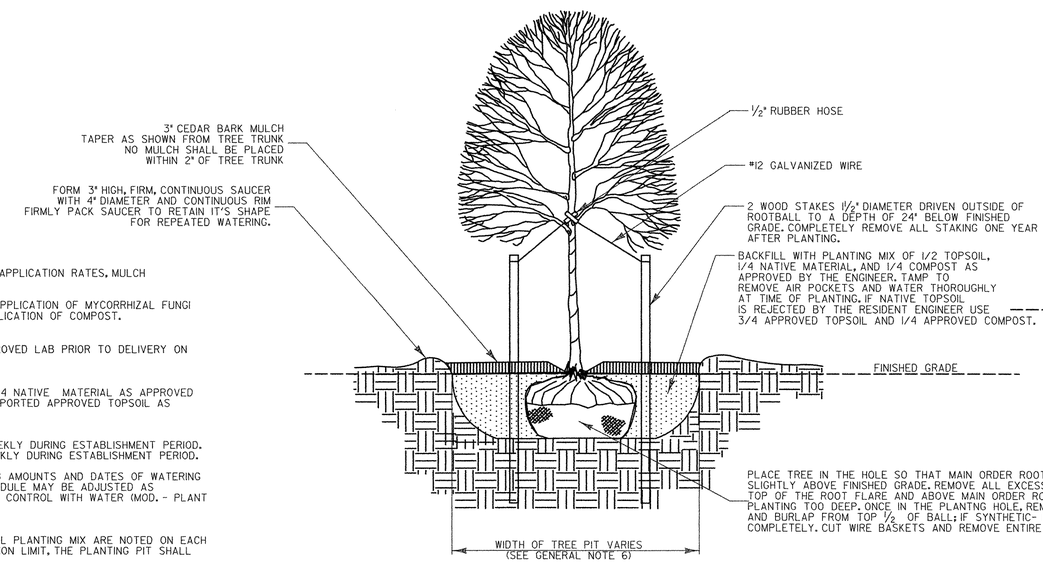
TREE AND SHRUB PLANTING ON SLOPES DETAIL

NOT TO SCALE

GENERAL LANDSCAPE NOTES:

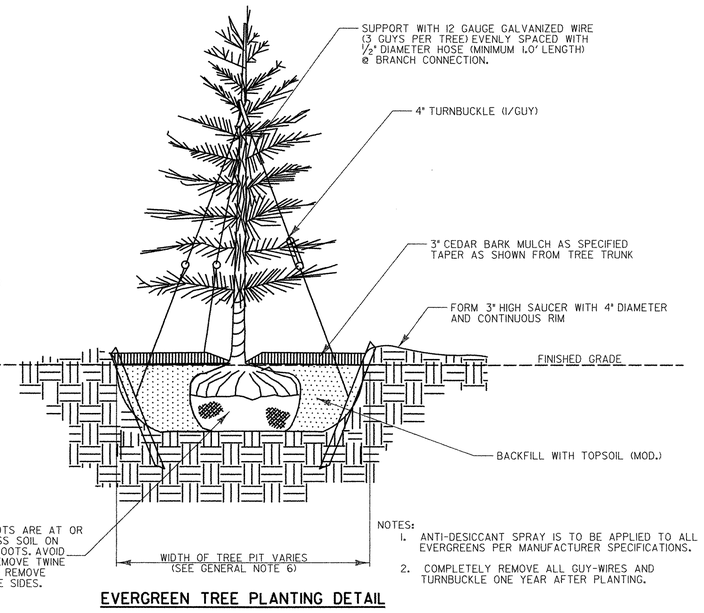
1. SEE ROADWAY TYPICAL SECTION SHEETS FOR SEEDING FORMULAS, FERTILIZER APPLICATION RATES, MULCH REQUIREMENTS ETC...
2. SEE SPECIAL PROVISIONS FOR 651.18 FERTILIZER (MOD. - MYCORRHIZAL), THE APPLICATION OF MYCORRHIZAL FUNGI PER MANUFACTURER'S RECOMMENDATIONS AND 651.35 TOPSOIL (MOD), THE APPLICATION OF COMPOST.
3. ORGANIC MATERIAL
   TOPSOIL, COMPOST AND NATIVE EXISTING SOIL SHALL BE TESTED AT AN APPROVED LAB PRIOR TO DELIVERY ON SITE AND INSTALLATION. ORGANIC MATTER SHALL BE A MINIMUM OF 5%.
4. TOPSOIL (MOD.)
   BACKFILL WITH PLANTING MIX OF 1/2 SCREENED TOPSOIL, 1/4 COMPOST AND 1/4 NATIVE MATERIAL AS APPROVED BY THE ENGINEER. UNSUITABLE NATIVE MATERIAL SHALL BE REPLACED WITH IMPORTED APPROVED TOPSOIL AS DIRECTED BY ENGINEER.
5. WATERING
   SHRUBS TO RECEIVE A MINIMUM OF 5 GALLONS AT EACH WATERING, TWICE WEEKLY DURING ESTABLISHMENT PERIOD. TREES TO RECEIVE A MINIMUM OF 10 GALLONS AT EACH WATERING, TWICE WEEKLY DURING ESTABLISHMENT PERIOD.

   CONTRACTOR SHALL MAINTAIN AND PROVIDE A LOG TO THE ENGINEER SHOWING AMOUNTS AND DATES OF WATERING FOR ALL PLANTINGS AND NOTING NATURAL RAINFALL EVENTS. WATERING SCHEDULE MAY BE ADJUSTED AS APPROVED BY THE ENGINEER. SEE SPECIAL PROVISIONS FOR ITEM 609.10 DUST CONTROL WITH WATER (MOD. - PLANT WATERING).
6. TREE PIT WIDTH
   FOR TREES WITHIN PROJECT CONSTRUCTION LIMIT, THE DIMENSIONS OF BACKFILL PLANTING MIX ARE NOTED ON EACH PLAN SHEET. FOR ALL TREES TO BE PLANTED OUTSIDE PROJECT CONSTRUCTION LIMIT, THE PLANTING PIT SHALL BE THREE TIMES THE WIDTH OF THE ROOTBALL.
7. TEMPORARY STORAGE OF ALL PLANTS SHALL BE LIMITED TO 45 DAYS FROM THE TIME OF DELIVERY UNTIL PLANTING.
8. TREES DESIGNATED TO BE PROTECTED SHALL BE WATERED AT THE SAME RATE AND SCHEDULE AS NEW PLANTINGS.
9. POOR NATIVE MATERIAL
   IN THE EVENT THAT THE NATIVE MATERIAL IS DEEMED UNACCEPTABLE BY THE ENGINEER, THE CONTRACTOR SHALL REPLACE THE UNSUITABLE NATIVE MATERIAL WITH A HOMOGENEOUS MIXTURE COMPRISING OF 75% TOPSOIL AND 25% COMPOST.



TYPICAL DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE



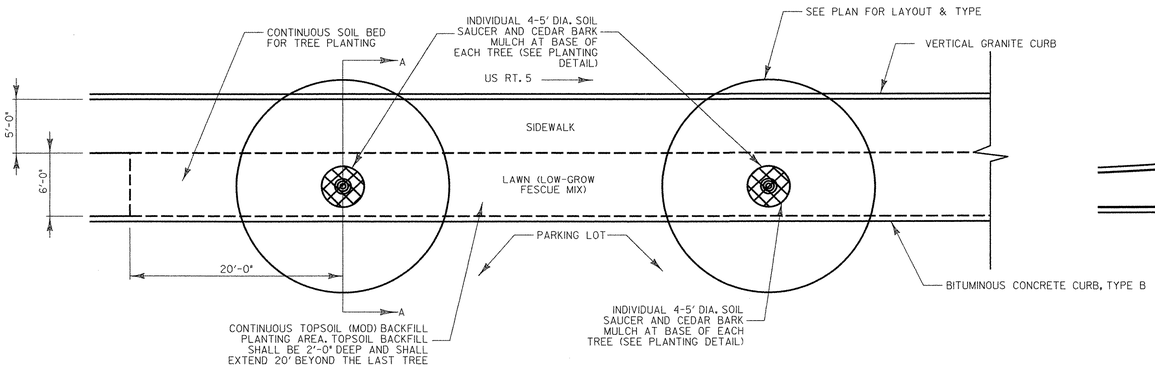
NOTES:
1. ANTI-DESICCANT SPRAY IS TO BE APPLIED TO ALL EVERGREENS PER MANUFACTURER SPECIFICATIONS.
2. COMPLETELY REMOVE ALL GUY-WIRES AND TURNBUCKLE ONE YEAR AFTER PLANTING.

EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

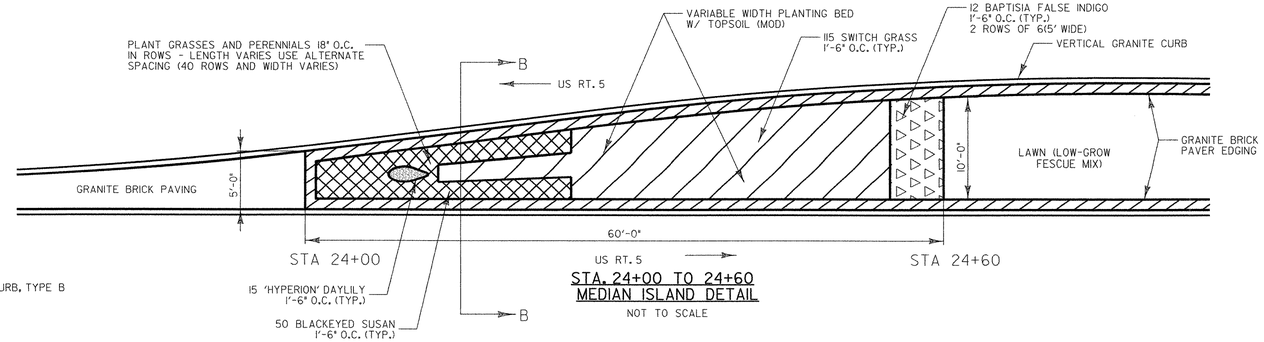
PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027landdet.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: JANE BROWN
PLOT DATE: 2/28/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA



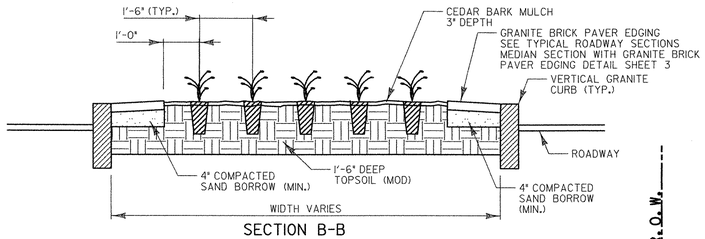
TOPSOIL BACKFILL BETWEEN SIDEWALK AND PARKING AREA STA. 22+05 TO 23+80 RT

NOT TO SCALE



STA. 24+00 TO 24+60 MEDIAN ISLAND DETAIL

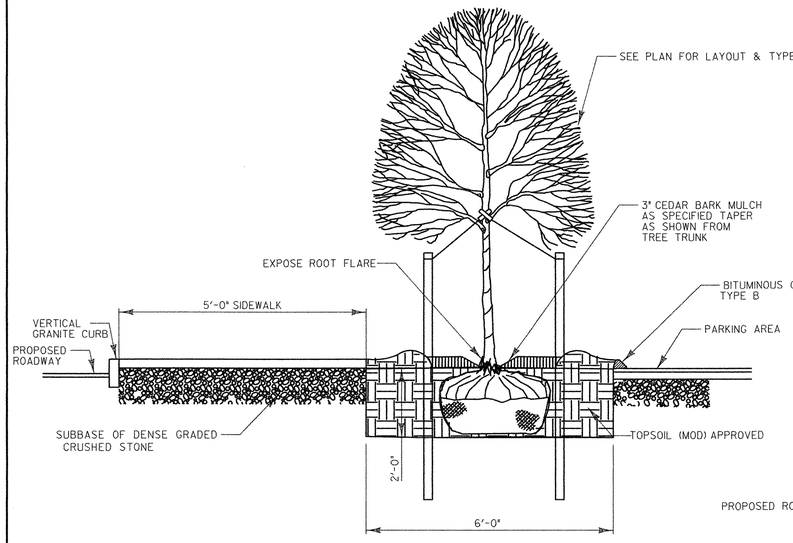
NOT TO SCALE



SECTION B-B

STA. 24+00 TO 24+60 TYPICAL MEDIAN ISLAND CROSS SECTION

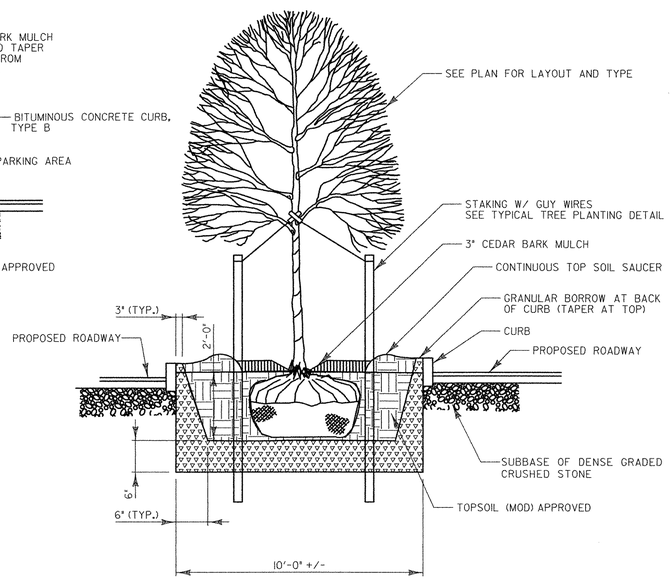
NOT TO SCALE



SECTION A-A

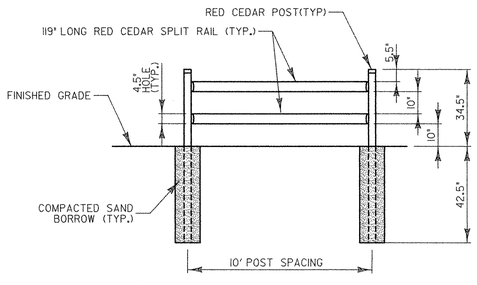
TOPSOIL BACKFILL BETWEEN SIDEWALK AND PARKING CROSS-SECTION - STA. 22+05 TO 23+80 RT

NOT TO SCALE



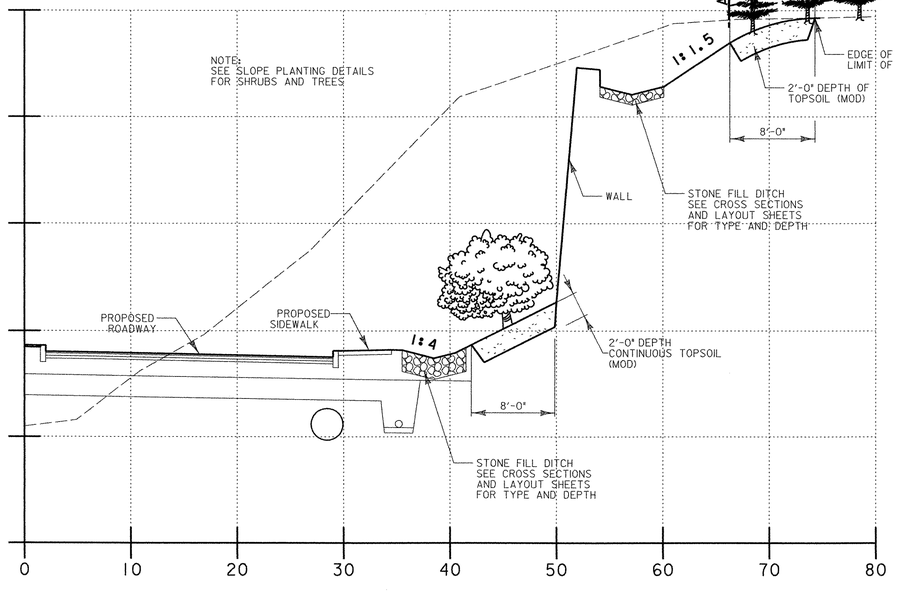
TYPICAL MEDIAN ISLAND - HIGH SCHOOL ENTRANCE

NOT TO SCALE



TYPICAL WOOD POST AND RAIL FENCE DETAIL

NOT TO SCALE



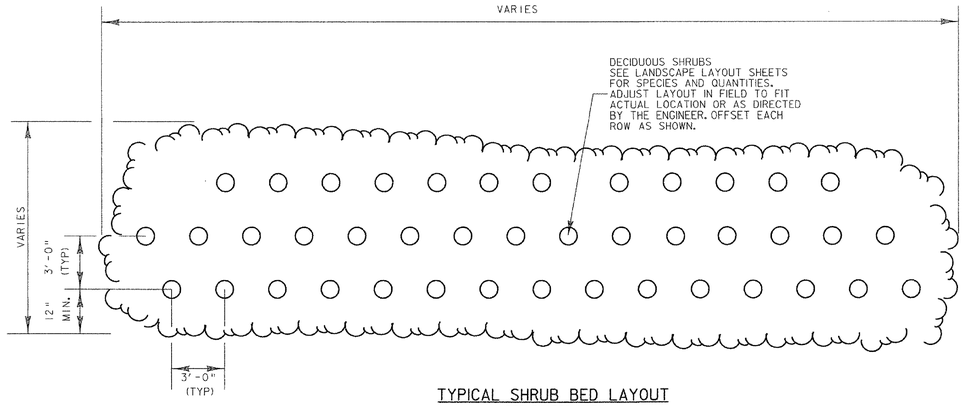
CONTINUOUS BACKFILL TOPSOIL MIX TYPICAL CROSS SECTION (STA 34+00 SHOWN)

NOT TO SCALE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

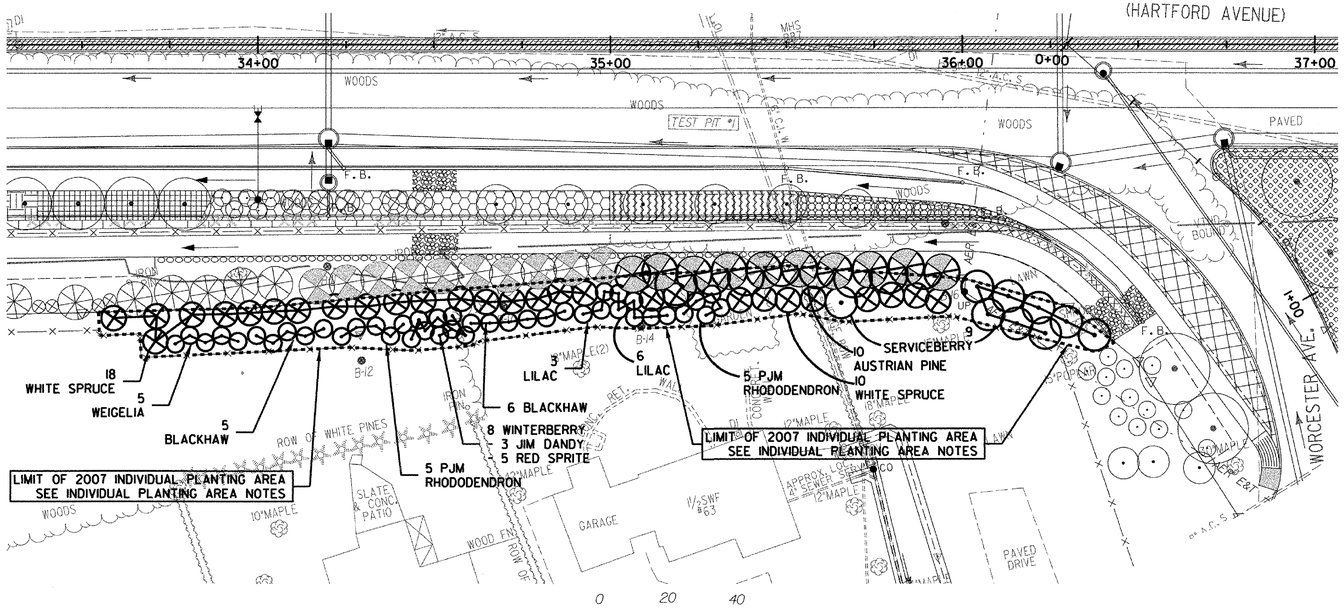
FILE NAME: z86c027landdet.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: JANE BROWN

PLOT DATE: 2/27/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 180 OF 239



TYPICAL SHRUB BED LAYOUT

BED SHAPES VARY
NOT TO SCALE



2007 INDIVIDUAL PLANTING AREA OUTSIDE OF CONSTRUCTION LIMITS AND WITHIN PROJECT DEMARCATION FENCE

NOTES:

1) IN ACCORDANCE WITH PROPERTY OWNER AGREEMENTS, THE PLANTINGS WITHIN THE OUTLINED AREA DESIGNATED AS THE 2007 INDIVIDUAL PLANTING AREA SHALL BE COMPLETED AND INSTALLED IN ADVANCE OF THE CONSTRUCTION OF THE WALL TO PROVIDE A SCREEN FOR ABUTTING HOMEOWNERS.

2) PRIOR TO PLANTING, THE ENGINEER SHALL COORDINATE WITH THE HOMEOWNERS AND THE AGENCY TO APPROVE FINAL PLANTING LAYOUT.

3) PLANTING MUST BE DONE BETWEEN MAY 1ST, 2007 AND JUNE 15TH, 2007 IN ACCORDANCE WITH THE SPECIFICATIONS.

4) THE LIMITS OF CUT AND FILL SHALL BE THE WESTERLY LIMITS OF THE 2007 INDIVIDUAL PLANTING AREA.

5) SEE LANDSCAPING LAYOUT SHEETS FOR COMPLETE PROJECT PLANTING LAYOUT.

6) PLANTING SHALL OCCUR IN UNCOMPACTED, NATIVE SOIL WITHIN THE 2007 INDIVIDUAL PLANTING AREA. IN ORDER TO PREVENT COMPACTION TO SOILS, NO HEAVY EQUIPMENT SHALL BE STORED IN THIS AREA. IF SOILS ARE HEAVILY COMPACTED, SOIL SHALL BE LOOSENED OR TILLED AND TOPSOIL (MOD.) MAY BE ADDED TO REPLACE EXISTING SOILS AT THE DIRECTION OF THE ENGINEER.

7) PLANTINGS SHALL BE WATERED AT TIME OF PLANTING AND DURING THE ESTABLISHMENT PERIOD. SEE SPECIAL PROVISIONS FOR ITEM 609.10 DUST CONTROL WITH WATER (MOD. - PLANT WATERING) AND THE VTRANS STANDARD SPECIFICATIONS.

PROJECT PLANT LIST

QTY	SCIENTIFIC NAME	COMMON NAME	Size	Container /Comments
	DECIDUOUS TREES 656.30			
4	ACER SACCHARUM 'GREEN MOUNTAIN'	GREEN MOUNTAIN' SUGAR MAPLE	2 1/2 - 3" CALIPER	B & B
16 ~~15~~	ACER X FREEMANII 'AUTUMN BLAZE'	ARMSTRONG' FREEMAN MAPLE	2 1/2 - 3" CALIPER	B & B
8	ACER X FREEMANII 'CELEBRATION'	'CELEBRATION' FREEMAN MAPLE	2 1/2 - 3" CALIPER	B & B
19 ~~35~~	AMELANCHIER GRANDIFLORA	SERVICEBERRY	1" - 1 1/2" CALIPER	B & B MULTISTEM
0 ~~13~~	BETULA NIGRA 'HERITAGE'	'HERITAGE' RIVER BIRCH	2 1/2 - 3" CALIPER	B & B 2 STEM
0 ~~2~~	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2 - 3" CALIPER	B & B
1	CATALPA SPECIOSA	NORTHERN CATALPA	2" - 2 1/2" CALIPER	B & B
9 ~~11~~	CELTIS OCCIDENTALIS	COMMON HACKBERRY	2 1/2 - 3" CALIPER	B & B
1	CLADRASTIS KENTUCKEA	YELLOWOOD	2" - 2 1/2" CALIPER	B & B
8	FRAXINUS PENNSYLVANICA 'CIMMARON'	CIMMARON GREEN ASH	2" - 2 1/2" CALIPER	B & B
2	FRAXINUS PENNSYLVANICA PATMORE	PATMORE SEEDLESS ASH	2" - 2 1/2" CALIPER	B & B
6	GINKGO BILOBA 'AUTUMN GOLD'	'AUTUMN GOLD' GINKGO	2 1/2 - 3" CALIPER	B & B
2 ~~10~~	GINKGO BILOBA 'PRINCETON SENTRY'	'PRINCETON SENTRY' GINKGO	2 1/2 - 3" CALIPER	B & B
10 ~~14~~	GLEDITSIA TRIACANTHOS 'SHADEMASTER'	SHADEMASTER' HONEY LOCUST	2 1/2 - 3" CALIPER	B & B
10	MALUS 'ADIRONDACK'	ADIRONDACK' CRABAPPLE	1 1/2" CALIPER	B & B
4	MALUS BACCATA COLUMNARIS	COLUMNAR SIBERIAN CRABAPPLE	1 1/2" CALIPER	B & B
16	MALUS 'HARVEST GOLD'	HARVEST GOLD' CRABAPPLE	1 1/2" CALIPER	B & B
13 ~~7~~	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2 - 3" CALIPER	B & B Branch Height to 5'
24 ~~21~~	SYRINGA RETICULATA 'IVORY SILK'	'IVORY SILK' JAPANESE TREE LILAC	1 1/2" - 2" CALIPER	B & B
1	TILIA AMERICANA 'REDMOND'	REDMOND' AMERICAN BASSWOOD	2 1/2 - 3" CALIPER	B & B
2	ULMUS AMERICANA 'PRINCETON'	'PRINCETON' AMERICAN ELM	2 1/2 - 3" CALIPER	B & B Branch Height to 5'
17 ~~10~~	ULMUS AMERICANA'VALLEY FORGE'	VALLEY FORGE 'AMERICAN ELM'	2 1/2 - 3"CALIPER	B & B Branch Height to 5'
4	ZELKOVA SERRATA 'GREEN VASE'	'GREEN VASE' ZELKOVA	2 1/2 - 3" CALIPER	B & B
	EVERGREEN TREES 656.20			
2 ~~3~~	PICEA ABIES	NORWAY SPRUCE	5 - 6' HEIGHT	B & B
36 ~~51~~	PICEA GLAUCA	WHITE SPRUCE	5 - 6' HEIGHT	B & B
5 ~~20~~	PINUS NIGRA	AUSTRIAN PINE	5 - 6' HEIGHT	B & B
0 ~~10~~	PINUS STROBUS LARGE	LARGE WHITE PINE	5 - 6' HEIGHT	B & B
0 ~~60~~	PINUS STROBUS - SMALL	SMALL WHITE PINE	3 - 4' HEIGHT	CONTAINER
0 ~~83~~	THUJA OCCIDENTALIS	ARBORVITAE/NORTHERN WHITE CEDAR	5 - 6' HEIGHT	B & B
6	PICEA GLAUCA - LARGE	WHITE SPRUCE	8-10' HEIGHT	B+B
	EVERGREEN SHRUBS 656.25			
50	JUNIPEROUS CHINENSIS 'PFITZERIANA COMPACTA'	COMPACT PFITZER JUNIPER	24-30" HEIGHT	CONTAINER
14	JUNIPERUS CHINENSIS 'SEA GREEN'	SEAGREEN' JUNIPER	24-30" HEIGHT	CONTAINER
138 ~~254~~	MICROBIOTA DECUSSATA	SIBERIAN CYPRESS	24" WIDTH	CONTAINER
	DECIDUOUS SHRUBS 656.35			
12 ~~11~~	AESCULUS PARVIFLORA	BOTTLE BRUSH BUCKEYE	24-30" HEIGHT	CONTAINER
22 ~~33~~	ILEX VERTICILLATA 'JIM DANDY'	WINTERBERRY 'JIM DANDY'	30-36" HEIGHT	CONTAINER
91 ~~95~~	ILEX VERTICILLATA 'RED SPRITE'	WINTERBERRY 'RED SPRITE'	30-36" HEIGHT	CONTAINER
20 ~~36~~	PHYSOCARPUS OPULIFOLIIUS 'COPPERTINA'	NINEBARK 'COPPERTINA"	30-36" HEIGHT	CONTAINER
282 ~~285~~	PHYSOCARPUS OPULIFOLIIUS 'NUGGET'	NINEBARK 'NUGGET'	30-36" HEIGHT	CONTAINER
14 ~~15~~	RHODODENDRON PJM	PJM RHODODENDRON	30-36" HEIGHT	CONTAINER
85 ~~119~~	RHUS AROMATICA 'GROW LOW'	'GROW LOW' SUMAC	18-24" WIDTH	B & B HEAVY
120	SPIREA x BUMALDA 'ANTHONY WATERER'	SPIREA 'ANTHONY WATERER'	24-30" HEIGHT	CONTAINER
8 ~~9~~	SYRINGA VULGARIS	COMMON LILAC	5 - 6' HEIGHT	B & B HEAVY
10	VIBURNUM LENTAGO	NANNYBERRY VIBURNUM	4 - 5" HEIGHT	CONTAINER
14 ~~89~~	VIBURNUM PRUNIFOLIUM	BLACKHAW VIBURNUM	3 - 4' HEIGHT	CONTAINER
5	WEIGELA FLORIDA	WEIGELA	30-36" HEIGHT	CONTAINER
	GROUNDCOVERS AND VINES 656.40			
12	BAPTISIA AUSTRALIS	FALSE INDIGO	2 GALLON	CONTAINER
60	CALAMAGROSTIS X ACUTIFLORA	FEATHER REED GRASS	2 GALLON	CONTAINER
15	HEMEROCALLIS 'HYPERION'	'HYPERION' DAYLILY	2 GALLON	CONTAINER
115	~~PANICUM VIRGATUM~~ HELLOTOTTUCHON SAPHIRE	~~SWITCH GRASS~~ BLUE OATS GRASS	2 GALLON	CONTAINER
0 ~~75~~	PARTHENOCISSUS TRICUSPIDATA	BOSTON IVY	2 GALLON	CONTAINER
80	RUDBECKIA 'FULGIDA GOLDSTURM'	BLACK EYED SUSAN	2 GALLON	CONTAINER
30	SEDUM 'AUTUMN JOY'	AUTUMN JOY' SEDUM	2 GALLON	CONTAINER

2007 INDIVIDUAL PLANTING AREA PLANT LIST

QTY	SCIENTIFIC NAME	COMMON NAME	Size	Container /Comments
	DECIDUOUS TREES 656.30			
9	AMELANCHIER GRANDIFLORA	SERVICEBERRY	1" - 1 1/2" CALIPER	B & B MULTISTEM
	EVERGREEN TREES 656.20			
28	PICEA GLAUCA	WHITE SPRUCE	5 - 6' HEIGHT	B & B
10	PINUS NIGRA	AUSTRIAN PINE	5 - 6' HEIGHT	B & B
	DECIDUOUS SHRUBS 656.35			
3	ILEX VERTICILLATA 'JIM DANDY'	WINTERBERRY 'JIM DANDY'	30-36" HEIGHT	CONTAINER
5	ILEX VERTICILLATA 'RED SPRITE'	WINTERBERRY 'RED SPRITE'	30-36" HEIGHT	CONTAINER
10	RHODODENDRON PJM	PJM RHODODENDRON	30-36" HEIGHT	CONTAINER
9	SYRINGA VULGARIS	COMMON LILAC	5 - 6' HEIGHT	B & B HEAVY
11	VIBURNUM PRUNIFOLIUM	BLACKHAW VIBURNUM	3 - 4' HEIGHT	CONTAINER
5	WEIGELA FLORIDA	WEIGELA	30-36" HEIGHT	CONTAINER

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027landdet.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: JANE BROWN

PLOT DATE: 2/27/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 181 OF 239

LAYOUT SHEET 1

LANDSCAPING LAYOUT SHEET 1

TOPSOIL (MOD.)
10
22+~~05~~ ~ 23+80 RT (~~375'~~ LENGTH x ~~4'~~ WIDE x 2' DEEP)
170
24+00 ~ 25+00 6'
(MEDIAN ISLAND - 100' LENGTH x VARIABLE WIDTH x 2' DEEP)
24+~~25~~ ~ 25+00 RT (75' LENGTH x VARIABLE WIDTH x 2' DEEP)
79
~~SNOW FENCE (MOD. - ARCH)~~
~~21+75 ~ 22+25 LT - 48' LF~~

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPECIFICATIONS
ACER X FREEMANII 'AUTUMN BLAZE'	'ARMSTRONG' FREEMAN MAPLE	2.5"-3" CAL.	3	B&B
BAPTISIA AUSTRALIS	FALSE INDIGO	2 GALLON	12	CONTAINER 18" O.C.
HEMEROCALLIS HYPERION	'HYPERION' DAYLILY	2 GALLON	15	CONTAINER 18" O.C.
~~HELLOTOTTCHUM SAPHIRE~~ ~~PANICUM VIRGATUM~~	BLUE OATS GRASS ~~SWITCH GRASS~~	2 GALLON	115	CONTAINER 18" O.C.
RUDBECKIA 'FULGIDA GOLDSTURM'	BLACKEYED SUSAN	2 GALLON	50	CONTAINER 18" O.C.
ULMUS AMERICANA 'VALLEY FORGE'	VALLEY FORGE 'AMERICAN ELM'	2.5"-3" CAL.	~~4~~ 5	B&B BRANCH HEIGHT TO 5'
	SPIREA ANTHONY WATERER		40	

MAGNETIC EAST

BM
SIGN BOLT
ELEV. = 361.62'

APPROXIMATE CANOPY OF EXISTING BOX ELDER

SNOW FENCE (MOD. - ARCH)

GRANITE BRICK PAVERS

115 ~~SWITCH GRASS~~
1'-6" O.C. (TYP.)

15 "HYPERION" DAYLILY
1'-6" O.C. (TYP.)

50 BLACKEYED SUSAN
1'-6" O.C. (TYP.)

12 BAPTISIA FALSE INDIGO
1'-6" O.C. (TYP.)
2 ROWS OF 6

1' GRANITE BRICK PAVER EDGING

TOPSOIL (MOD.)

54
AMERICAN ELM 'VALLEY FORGE'
AT 30' O.C. (TYP)
JANEBROWN ADDED I"VALLY FORGE"

40 SPIREA
ANTHANY WATERER

3
FREEMAN MAPLE
'AUTUMN BLAZE'

MATCH LINE STA. 25+00

U.S. ROUTE 5
(HARTFORD AVENUE)

BARNES AVE.

HAZEN ST.

U.S. ROUTE 5
TO WHITE RIVER JUNCTION

VT. ROUTE 14
TO HARTFORD

U.S. ROUTE 4
TO NEW HAMPSHIRE

WHITE RIVER

WOODS

GRASS

PAVED

PAVED PARKING

PAVED PARKING LOT

RETAIL MALL

BRUSH

19+00 20+00 21+00 22+00 23+00 24+00 25+00

LANDSCAPE LEGEND

- PROPOSED CONIFEROUS TREE/SHRUB
- PROPOSED DECIDUOUS TREE/SHRUB
- SNOW FENCE (MOD. - ARCH)
- BRICK PAVING
- TOPSOIL (MOD.)
- LILAC
- "GROW LOW" SUMAC
- NINEBARK 'DIABLO'
- COMPACT PHITZER JUNIPER
- WINTERBERRY
- 'HYPERION' DAYLILY
- NANNYBERRY
- BOSTON IVY
- ARBORVITAE
- EXISTING EVERGREEN TREE/SHRUB
- EXISTING DECIDUOUS TREE/SHRUB
- PDF — PROJECT DEMARCATION FENCE

0 20 40
SCALE IN FEET

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES: 1.) REFER TO TYPICAL ROADWAY SECTION SHEETS FOR SEEDING FORMULAS AND LANSCAPING DETAIL SHEETS FOR PLANTING DETAILS.

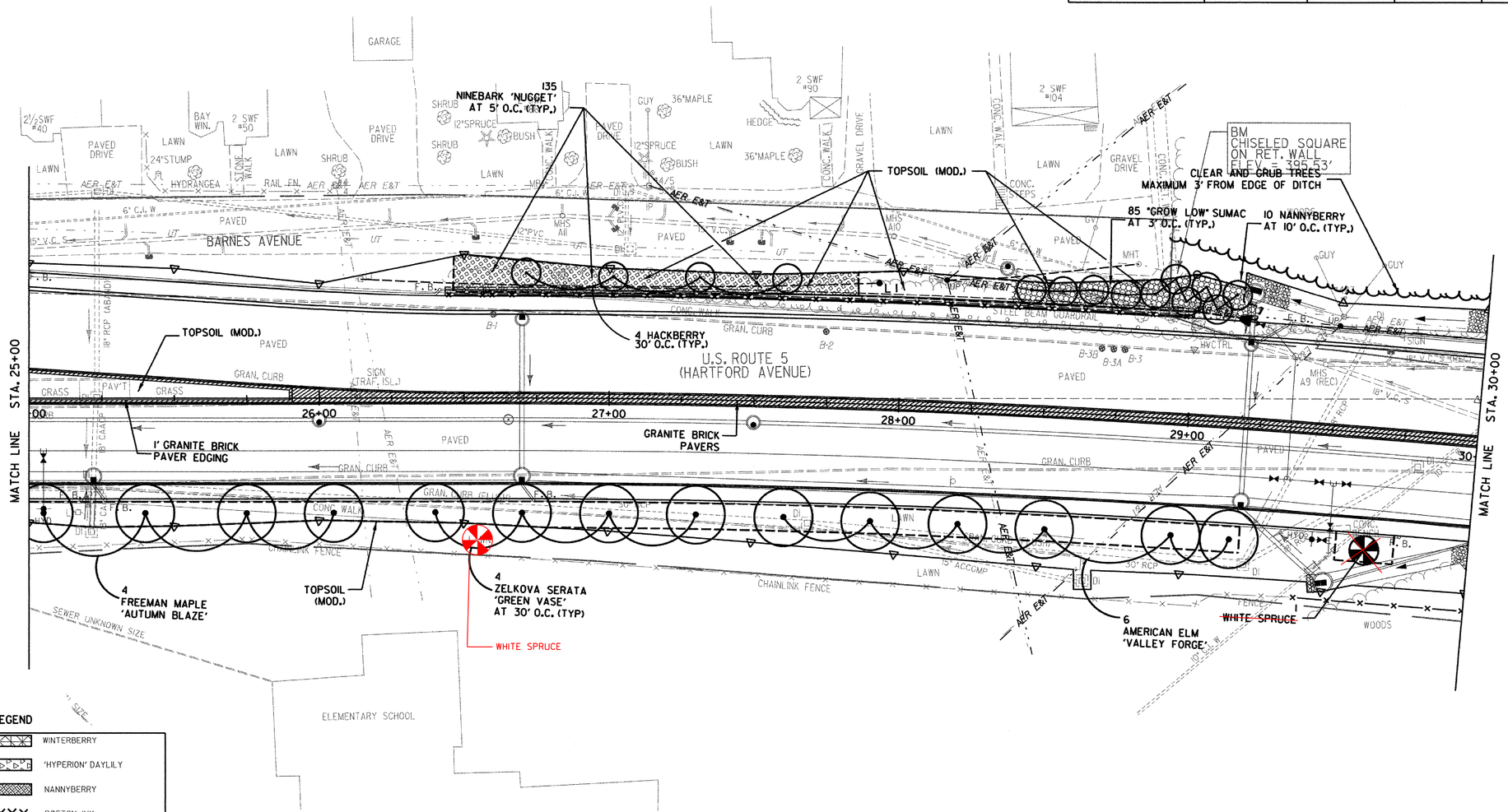
PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 1/15/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 182 OF 239

LANDSCAPING LAYOUT SHEET 2

TOPSOIL (MOD.)

45 29+00 275'
26+~~50~~ ~ ~~28+90~~ LT (~~245'~~ LENGTH x 12' WIDE x 2' DEEP)
~~28+90 ~ 29+25 LT (35' LENGTH x 15' WIDE(TYP) x 2' DEEP)~~
28+96 25+00 ~ ~~29+20~~ RT (420' LENGTH x VARIABLE WIDTH x 2' DEEP)
25+00 ~ 25+90 (MEDIAN ISLAND - 90' LENGTH x VARIABLE WIDTH x 2' DEEP)
29+54 ~ 29+74 RT (20' LENGTH x 10' WIDE x 2' DEEP)

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPECIFICATIONS
ACER X FREEMANII 'AUTUMN BLAZE'	'ARMSTRONG' FREEMAN MAPLE	2.5"-3" CAL.	4	B&B
CELTIS OCCIDENTALIS	COMMON HACKBERRY	2.5-3" CAL.	4	B&B
PHYSOCARPUS OPULIFOLIIUS 'NUGGET'	NINEBARK 'NUGGET'	30-36" HT	135	CONTAINER 3' O.C.
PICEA GLAUCA	WHITE SPRUCE	5-6' HT	1 26+55	B&B
RHUS AROMATICA 'GROW LOW'	'GROW LOW' SUMAC	18-24" WIDTH	85	B&B HEAVY 3' O.C.
ULMUS AMERICANA 'VALLEY FORGE'	VALLEY FORGE 'AMERICAN ELM'	2.5"-3" CAL.	6	B&B BRANCH HEIGHT TO 5'
VIBURNUM LENTAGO	NANNYBERRY VIBURNUM	4-5" HT	10	CONTAINER 3' O.C.
ZELKOVA SERRATA 'GREEN VASE'	'GREEN VASE' ZELKOVA	2.5"-3" CAL.	4	B&B



LANDSCAPE LEGEND

- PROPOSED CONIFEROUS TREE/SHRUB
- PROPOSED DECIDUOUS TREE/SHRUB
- BRICK PAVING
- TOPSOIL (MOD.)
- LILAC
- 'GROW LOW' SUMAC
- NINEBARK 'DIABLO'
- COMPACT PHITZER JUNIPER
- WINTERBERRY
- 'HYPERION' DAYLILY
- NANNYBERRY
- BOSTON IVY
- ARBORVITAE
- EXISTING EVERGREEN TREE/SHRUB
- EXISTING DECIDUOUS TREE/SHRUB
- PDF — PROJECT DEMARCATION FENCE
- SNOW FENCE (MOD. - ARCH)

0 20 40
SCALE IN FEET

DATUM	
VERTICAL	NGVD 1929
HORIZONTAL	N/A

NOTES: 1.)REFER TO TYPICAL ROADWAY SECTION SHEETS FOR SEEDING FORMULAS AND LANSCAPING DETAIL SHEETS FOR PLANTING DETAILS.

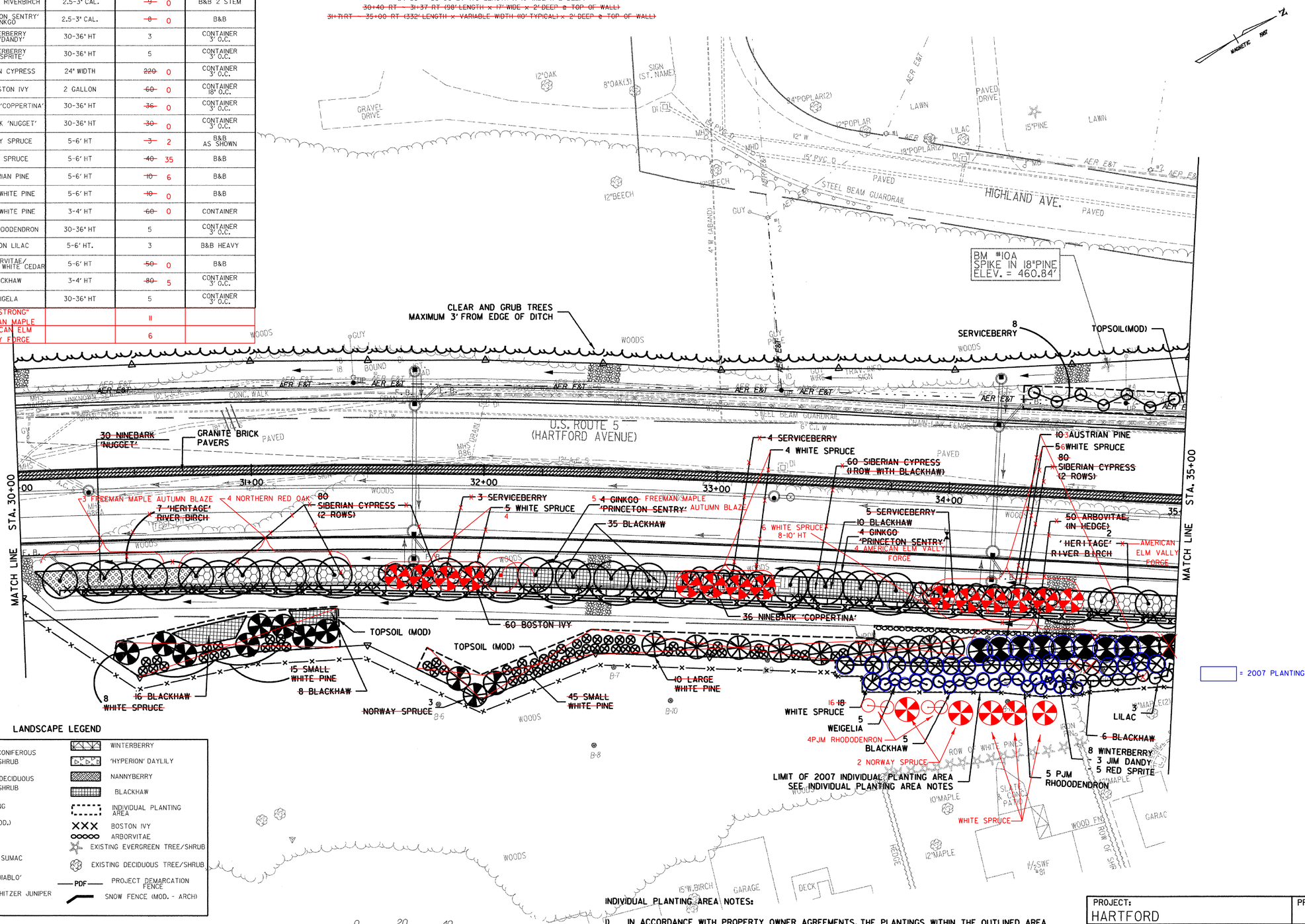
PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 2/27/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 183 OF 239

PILEA GRAULA	WHITE SPRUCE	8'-10" HT	6	B+B
RUERCUS	NORTHERNRED OAK		4	

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPECIFICATIONS
AMELANCHIER GRANDIFLORA	SERVICEBERRY	1-1.5" CAL.	~~20~~ 0	B&B MULTISTEM
BETULA NIGRA 'HERITAGE'	HERITAGE RIVERBIRCH	2.5-3" CAL.	~~9~~ 0	B&B 2 STEM
GINKGO BILOBA 'PRINCETON SENTRY'	'PRINCETON SENTRY' GINKGO	2.5-3" CAL.	~~8~~ 0	B&B
ILEX VERTICILLATA 'JIM DANDY'	WINTERBERRY JIM 'DANDY'	30-36" HT	3	CONTAINER 3' O.C.
ILEX VERTICILLATA 'REDSPRITE'	WINTERBERRY 'REDSPRITE'	30-36" HT	5	CONTAINER 3' O.C.
MICROBIOTA DECUSSATA	SIBERIAN CYPRESS	24" WIDTH	~~220~~ 0	CONTAINER 3' O.C.
PARTHENOCISSUS TRICUSPIDATA	BOSTON IVY	2 GALLON	~~60~~ 0	CONTAINER 18' O.C.
PHYSOCARPUS OPULIFOLIUS 'COPPERTINA'	NINEBARK 'COPPERTINA'	30-36" HT	~~36~~ 0	CONTAINER 3' O.C.
PHYSOCARPUS OPULIFOLIUS 'NUGGET'	NINEBARK 'NUGGET'	30-36" HT	~~30~~ 0	CONTAINER 3' O.C.
PICEA ABIES	NORWAY SPRUCE	5-6' HT	~~3~~ 2	B&B AS SHOWN
PICEA GLAUCA	WHITE SPRUCE	5-6' HT	~~40~~ 35	B&B
PINUS NIGRA	AUSTRIAN PINE	5-6' HT	~~10~~ 6	B&B
PINUS STROBUS LARGE	LARGE WHITE PINE	5-6' HT	~~10~~ 0	B&B
PINUS STROBUS - SMALL	SMALL WHITE PINE	3-4' HT	~~60~~ 0	CONTAINER
RHODODENDRON PJM	PJM RHODODENDRON	30-36" HT	5	CONTAINER 3' O.C.
SYRINGA VULGARIS	COMMON LILAC	5-6' HT.	3	B&B HEAVY
THUJA OCCIDENTALIS	ARBORVITAE/ NORTHERN WHITE CEDAR	5-6' HT	~~50~~ 0	B&B
VIBURNUM PRUNIFOLIUM	BLACKHAW	3-4' HT	~~80~~ 5	CONTAINER 3' O.C.
WEIGELA FLORIDA	WEIGELA	30-36" HT	5	CONTAINER 3' O.C.
AUTUMN BLAZE	"ARMSTRONG" FREEMAN MAPLE		11	
ULMUS AMERICIANA VALLY FORGE	AMERICAN ELM VALLY FORGE		6	

TOPSOIL (MOD.)

30+~~05~~ 25 ~ 35+00 RT (495' LENGTH x ~~7~~8' WIDE x 2' DEEP @ TOE OF WALL)
34+30 ~ 35+00 LT (70' LENGTH x 10' WIDE x 2' DEEP)
~~30+40 RT ~ 31+37 RT (98' LENGTH x 17' WIDE x 2' DEEP @ TOP OF WALL)~~
~~31+71RT ~ 35+00 RT (332' LENGTH x VARIABLE WIDTH (10' TYPICAL) x 2' DEEP @ TOP OF WALL)~~



LANDSCAPE LEGEND

- PROPOSED CONIFEROUS TREE/SHRUB
- PROPOSED DECIDUOUS TREE/SHRUB
- BRICK PAVING
- TOPSOIL (MOD.)
- LILAC
- 'GROW LOW' SUMAC
- NINEBARK 'DIABLO'
- COMPACT PHITZER JUNIPER
- WINTERBERRY
- 'HYPERION' DAYLILY
- NANNYBERRY
- BLACKHAW
- INDIVIDUAL PLANTING AREA
- BOSTON IVY
- ARBORVITAE
- EXISTING EVERGREEN TREE/SHRUB
- EXISTING DECIDUOUS TREE/SHRUB
- PDF — PROJECT DEMARCATION FENCE
- SNOW FENCE (MOD. - ARCH)

0 20 40
SCALE IN FEET

INDIVIDUAL PLANTING AREA NOTES:

1) IN ACCORDANCE WITH PROPERTY OWNER AGREEMENTS, THE PLANTINGS WITHIN THE OUTLINED AREA DESIGNATED AS THE INDIVIDUAL PLANTING AREA SHALL BE COMPLETED AND INSTALLED IN ADVANCE OF THE CONSTRUCTION OF THE WALL TO PROVIDE A SCREEN FOR ABUTTING HOMEOWNERS.
2) SEE LANDSCAPE DETAIL SHEET 181 FOR THE 2007 INDIVIDUAL PLANTING AREA DETAIL AND PLANT LIST.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES: 1.)REFER TO TYPICAL ROADWAY SECTION SHEETS FOR SEEDING FORMULAS AND LANSCAPING DETAIL SHEETS FOR PLANTING DETAILS.

PROJECT: HARTFORD
PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn
IPARM FILE NAME:
SURVEYED BY: FANTONI
SQUAD LEADER: KEN UPMAL
PLOT DATE: 2/27/2007
SURVEY DATE: 1/87
DRAWN BY: E. ATKINS
SHEET: 184 OF 239

LANDSCAPING LAYOUT SHEET 3

LANDSCAPING LAYOUT SHEET 4

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPECIFICATIONS
ACER X FREEMANII 'AUTUMN BLAZE'	ARMSTRONG 'FREEMAN MAPLE'	2.5-3" CAL.	2	B&B
ACER SACCHARUM 'GREEN MOUNTAIN'	'GREEN MOUNTAIN' SUGAR MAPLE	2.5-3" CAL.	4	B&B AS SHOWN
AESCULUS PARVIFLORA	BOTTLE BRUSH BUCKEYE	24-30" HT	~~11~~ 12	CONTAINER 3' O.C.
AMELANCHIER GRANDIFLORA	SERVICEBERRY	1-1.5" CAL.	~~15~~ 11	B&B MULTISTEM
BETULA NIGRA 'HERITAGE'	'HERITAGE' RIVER BIRCH	2.5-3" CAL.	~~4~~ 0	B&B 2 STEM
CALAMAGROSTIS X ACUTIFLORA	FEATHER REED GRASS	2 GALLON	60	CONTAINER 18" O.C.
CATALPA SPECIOSA	NORTHERN CATALPA	2-2.5" CAL.	1	B&B
CELTIS OCCIDENTALIS	COMMON HACKBERRY	2.5-3" CAL.	~~7~~ 5	B&B
CLADRASTIS KENTUCKEA	YELLOWOOD	2-2.5" CAL.	1	B&B
FRAXINUS PENNSYLVANICA 'CIMMARON'	CIMMARON GREEN ASH	2"-2.5" CAL.	8	B&B
FRAXINUS PENNSYLVANICA PATMORE	PATMORE SEEDLESS ASH	2-2.5" CAL.	2	B&B

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPECIFICATIONS
GINKGO BILOBA 'AUTUMN GOLD'	'AUTUMN GOLD' GINKGO	2.5-3" CAL.	6	B&B
ILEX VERTICILLATA 'JIM DANDY'	WINTERBERRY 'JIM DANDY'	30-36" HT	~~30~~ 19	CONTAINER 3' O.C.
ILEX VERTICILLATA 'RED SPRITE'	WINTERBERRY 'RED SPRITE'	30-36" HT	~~90~~ 86	CONTAINER 3' O.C.
JUNIPERUS CHINENSIS 'PFITZERIANA COMPACTA'	COMPACT PHITZER JUNIPER	24-30" HT	50	CONTAINER 3' O.C.
MALUS 'ADIRONDACK'	'ADIRONDACK' CRABAPPLE	1.5" CAL.	10	B&B
MALUS BACCATA COLUMNARIS	COLUMNAR SIBERIAN CRABAPPLE	1.5" CAL.	4	B&B
MALUS 'HARVEST GOLD'	'HARVEST GOLD' CRABAPPLE	1.5" CAL.	9	B&B
MICROBIOTA DECUSSATA	SIBERIAN CYPRESS	24" WIDTH	~~34~~ 36	CONTAINER 3' O.C.

SNOW FENCE (MOD. - ARCH)

1+80 ~ 2+00 RT (WORCESTER AVE) - 48 FT
6+59 ~ 6+60 RT (WORCESTER AVE) - 37 FT
38+90 ~ 39+02 RT ~ 34 FT
37+25 ~ 37+50 LT - 75 FT

TOPSOIL (MOD.)

~~36+27~~
~~35+73~~ ~ 1+33 RT (WORCESTER AVE.)
101~~162~~' LENGTH x VARIABLE WIDTH x 2' DEEP)
36+71 ~ 38+27 RT (ENTIRE ISLAND 2' DEEP)
10+43 ~ 11+35 (HIGHLAND AVE) (ENTIRE ISLAND 2' DEEP)
35+00 ~ 36+52 LT (152' LENGTH x 10' WIDE X 2' DEEP)
~~12+08 ~ 12+51LT (HIGHLAND AVE.)~~
~~(41' LENGTH x 10' WIDE x 2' DEEP)~~
36+99 LT (HARTFORD AVE.) ~ ~~12+12~~ 15+05 LT (HIGHLAND AVE.)
128~~144~~' LENGTH x 15' WIDE x 2' DEEP)
~~35+00 RT ~ 36+42 RT TOP OF WALL~~
~~(145' LENGTH x WIDTH VARIES x 2' DEEP)~~
93 0+~~87~~ ~ 1+25 (WORCESTER AVE.)
32'~~36'~~ LENGTH x 10' WIDE x ~~2'~~ DEEP) 1.5'
35+50 35+00 ~ ~~36+25~~ RT TOE OF WALL
~~127~~' LENGTH x ~~10'~~ WIDE x ~~2'~~ DEEP)
50' 7' 1'

10+75 HIGHLAND AVE - 39+50 LT
77'X 11' X 1'

LANDSCAPE LEGEND

- PROPOSED CONIFEROUS TREE/SHRUB
- PROPOSED DECIDUOUS TREE/SHRUB
- BRICK PAVING
- TOPSOIL (MOD.)
- INDIVIDUAL PLANTING AREA
- LILAC
- 'GROW LOW' SUMAC
- NINEBARK 'DIABLO'
- COMPACT PHITZER JUNIPER
- WINTERBERRY
- 'HYPERION' DAYLILY
- NANNYBERRY
- BOSTON IVY
- ARBORVITAE
- EXISTING EVERGREEN TREE/SHRUB
- EXISTING DECIDUOUS TREE/SHRUB
- PDF PROJECT DEMARCATION FENCE
- SNOW FENCE (MOD. - ARCH)

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

INDIVIDUAL PLANTING AREA NOTES:

1) IN ACCORDANCE WITH PROPERTY OWNER AGREEMENTS, THE PLANTINGS WITHIN THE OUTLINED AREA DESIGNATED AS THE 2007 INDIVIDUAL PLANTING AREA SHALL BE COMPLETED AND INSTALLED IN ADVANCE OF THE CONSTRUCTION OF THE WALL TO PROVIDE A SCREEN FOR ABUTTING HOMEOWNERS.
2) SEE LANDSCAPE DETAIL SHEET 181 FOR THE 2007 INDIVIDUAL PLANTING AREA DETAIL AND PLANT LIST.

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPECIFICATIONS
PARTHENOCISSUS TRICUSPIDATA	BOSTON IVY	2 GALLON	~~15~~ 0	CONTAINER 18" O.C.
PHYSOCARPUS OPULIFOLIUS 'NUGGET'	NINEBARK 'NUGGET'	30-36" HT	~~120~~ 150	CONTAINER 3' O.C.
PICEA GLAUCA	WHITE SPRUCE	5-6' HT	~~10~~ 2	B&B
PINUS NIGRA	AUSTRIAN PINE	5-6' HT	~~10~~ 3	B&B
QUERCUS RUBRA	NORTHERN RED OAK	2.5-3" CAL.	~~7~~ 9	B&B BRANCH HEIGHT TO 5'
RHODODENDRON PJM	PJM RHODODENDRON	30-36" HT	5	CONTAINER 3' O.C.
RHUS AROMATICA 'GLOW LOW'	'GROW LOW' SUMAC	18-24" HT	~~34~~ 0	B&B HEAVY 3' O.C.
RUDBECKIA 'FULGIDA GOLDSTURM'	BLACK EYED SUSAN	2 GALLON	30	CONTAINER 18" O.C.
SEDUM AUTUMN JOY	AUTUMN JOY SEDUM	2 GALLON	30	CONTAINER 18" O.C.
SPIREA x BUMALDA 'ANTHONY WATERER'	SPIREA 'ANTHONY WATERER'	24"-30" HT	~~120~~ 80	CONTAINER 3' O.C.
SYRINGA VULGARIS	COMMON LILAC	5-6' HT	~~6~~ 3	B&B HEAVY
THUJA OCCIDENTALIS	ARBORVITAE	5-6' HT	~~33~~ 0	B&B
VIBURNUM PRUNIFOLIUM	BLACKHAW VIBURNUM	3-4' HT	9	CONTAINER 3' O.C.
	NINEBARK "COPPERTINA"		20 EA	
	SIBERIAN CYPRESS		19 EA	

NOTES: 1.)REFER TO TYPICAL ROADWAY SECTION SHEETS FOR SEEDING FORMULAS AND LANSCAPING DETAIL SHEETS FOR PLANTING DETAILS.

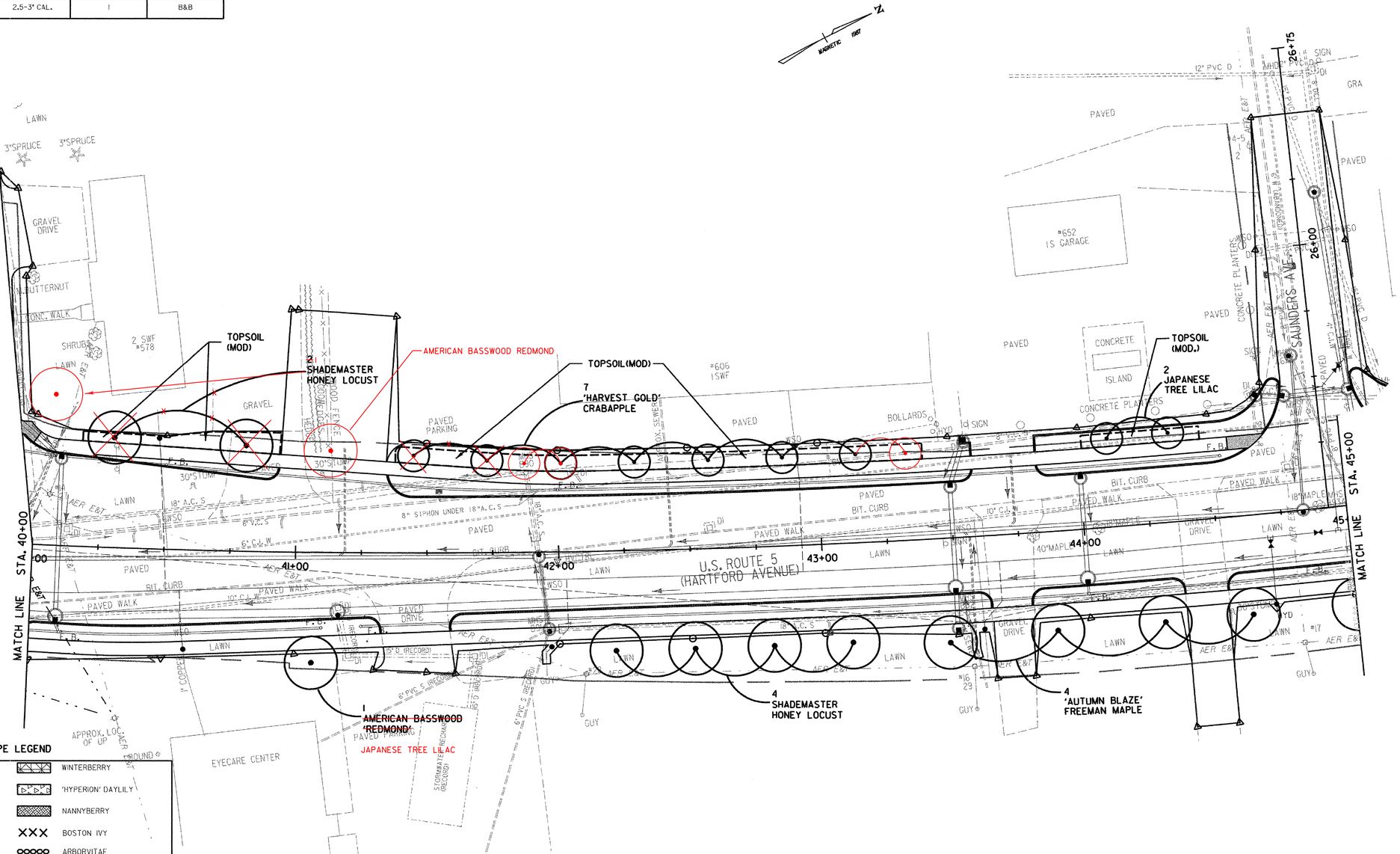
SCALE IN FEET 0 20 40

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 2/27/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 185 OF 239

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPECIFICATIONS
ACER X FREEMANII 'AUTUMN BLAZE'	'ARMSTRONG' FREEMAN MAPLE	2.5"-3" CAL.	4	B&B
GLEDITSIA TRIACANTHOS 'SHADEMASTER'	'SHADEMASTER' HONEY LOCUST	2.5"-3" CAL.	~~6~~ 5	B&B
MALUS 'HARVEST GOLD'	'HARVEST GOLD' CRABAPPLE	1.5" CAL.	7	B&B
SYRINGA RETICULATA 'IVORY SILK'	'IVORY SILK' JAPANESE TREE LILAC	1.5"-2" CAL.	~~2~~ 3	B&B
TILIA AMERICANA 'REDMOND'	REDMOND AMERICAN BASSWOOD	2.5"-3" CAL.	1	B&B

TOPSOIL (MOD.)

~~84~~
41+~~38~~ ~ 43+40 LT (~~200'~~ ~~155'~~ LENGTH x~~56'~~ WIDE X 2' DEEP)
~~80'~~
44+01 ~ 44+47 LT (~~45'~~ LENGTH x~~85'~~ WIDE X 2' DEEP)
~~40+18~~ ~ ~~40+93~~ LT (75' LENGTH x VARIABLE WIDTH X 2' DEEP)
40+94 41+31



LANDSCAPE LEGEND

PROPOSED CONIFEROUS TREE/SHRUB	WINTERBERRY
PROPOSED DECIDUOUS TREE/SHRUB	'HYPERION' DAYLILY
BRICK PAVING	NANNYBERRY
TOPSOIL (MOD.)	BOSTON IVY
LILAC	ARBORVITAE
"GROW LOW" SUMAC	EXISTING EVERGREEN TREE/SHRUB
NINEBARK 'DIABLO'	EXISTING DECIDUOUS TREE/SHRUB
COMPACT PHITZER JUNIPER	PROJECT DEMARCATION FENCE (PDF)
	SNOW FENCE (MOD. - ARCH)

0 20 40
SCALE IN FEET

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES: 1.) REFER TO TYPICAL ROADWAY SECTION SHEETS FOR SEEDING FORMULAS AND LANSCAPING DETAIL SHEETS FOR PLANTING DETAILS.

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 1/15/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 186 OF 239

LANDSCAPING LAYOUT SHEET 5

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPECIFICATIONS
ACER X FREEMANII 'CELEBRATION'	FREEMAN MAPLE 'CELEBRATION'	2.5"-3" CAL.	2	B&B
GINKGO BILOBA 'PRINCETON SENTRY'	PRINCETON SENTRY GINKGO	2.5-3" CAL.	2	B&B
GLEDITSIA TRIACANTHOS 'SHADEMASTER'	'SHADEMASTER' HONEY LOCUST	2.5-3" CAL	~~5~~ 3	B&B
SYRINGA RETICULATA 'IVORY SILK'	'IVORY SILK' JAPANESE TREE LILAC	1.5-2" CAL	8	B&B
ULMUS AMERICANA 'PRINCETON'	'PRINCETON' AMERICAN ELM	2.5-3" CAL.	~~2~~	B&B BRANCH HEIGHT TO 5'
	SIBERIAN CYPRESS		102	
	COMMON LILAC		2	

SNOW FENCE (MOD. - ARCH)

46+07 ~ 46+74 RT - 89'

47+05 ~ 47+35 LT HEDGE PROTECTION - 60'

TOPSOIL (MOD.)

45+~~40~~ 36 ~ 45+~~95~~ 85 LT (~~55~~ 49' LENGTH x 8' WIDE x 2' DEEP)

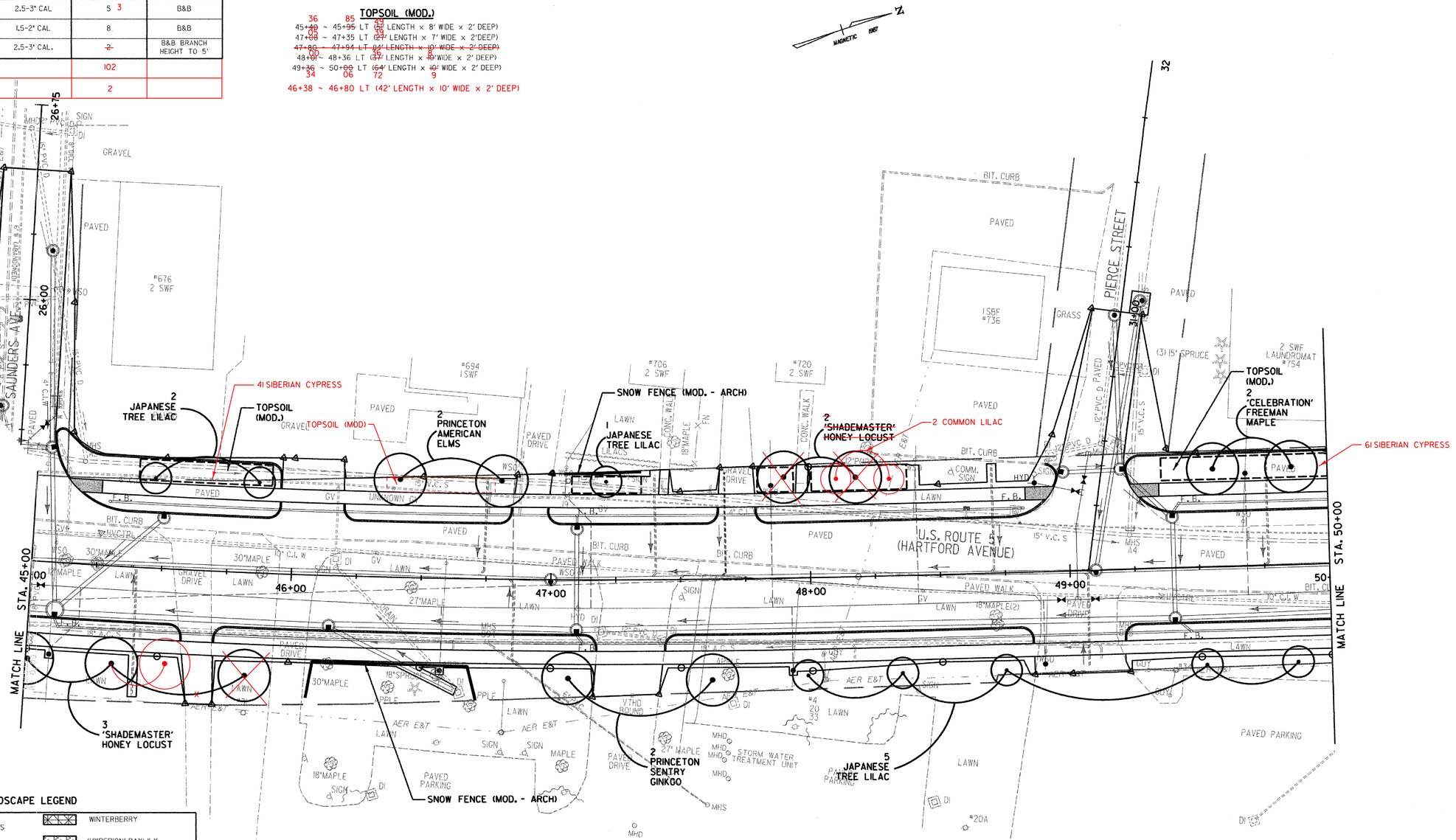
47+~~00~~ 03 ~ 47+35 LT (~~35~~ 32' LENGTH x 7' WIDE x 2'DEEP)

~~47+80 - 47+94 LT (14' LENGTH x 10' WIDE x 2' DEEP)~~

48+~~01~~ 36 ~ 48+36 LT (~~37~~ 37' LENGTH x ~~10~~ 8'WIDE x 2' DEEP)

49+~~36~~ 34 ~ 50+~~00~~ 06 LT (~~64~~ 72' LENGTH x ~~10~~ 9' WIDE x 2' DEEP)

46+38 ~ 46+80 LT (42' LENGTH x 10' WIDE x 2' DEEP)



LANDSCAPE LEGEND

- PROPOSED CONIFEROUS TREE/SHRUB
- PROPOSED DECIDUOUS TREE/SHRUB
- BRICK PAVING
- TOPSOIL (MOD.)
- LILAC
- "GROW LOW" SUMAC
- NINEBARK 'DIABLO'
- COMPACT PHITZER JUNIPER
- WINTERBERRY
- 'HYPERION' DAYLILY
- NANNYBERRY
- BOSTON IVY
- ARBORVITAE
- EXISTING EVERGREEN TREE/SHRUB
- EXISTING DECIDUOUS TREE/SHRUB
- PDF — PROJECT DEMARCATION FENCE
- SNOW FENCE (MOD. - ARCH)

0 20 40

SCALE IN FEET

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

NOTES: 1.) REFER TO TYPICAL ROADWAY SECTION SHEETS FOR SEEDING FORMULAS AND LANSCAPING DETAIL SHEETS FOR PLANTING DETAILS.

LANDSCAPING LAYOUT SHEET 6

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: z027bdr.dgn

IPARM FILE NAME:

SURVEYED BY: FANTONI — PLOT DATE: 1/15/2007

SQUAD LEADER: KEN UPMAL — SURVEY DATE: 1/87

DRAWN BY: E. ATKINS

SHEET: 187 OF 239

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPECIFICATIONS
ACER X FREEMANII 'AUTUMN BLAZE'	'ARMSTRONG' FREEMAN MAPLE	2.5-3" CAL.	2	B&B
ACER X FREEMANII 'CELEBRATION'	'CELEBRATION' FREEMAN MAPLE	2.5-3" CAL.	2	B&B
CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2.5-3" CAL.	~~2~~ 0	B&B
GLEDITSIA TRIACANTHOS 'SHADEMASTER'	'SHADEMASTER' HONEY LOCUST	2.5-3" CAL.	~~3~~ 2	B&B
SYRINGA RETICULATA 'IVORY SILK'	'IVORY SILK' JAPANESE TREE LILAC	1.5-2" CAL.	~~6~~ 8	B&B

TOPSOIL (MOD.)

53+~~75~~ 76 ~ 54+~~14~~ 10 LT (~~38~~ 34' LENGTH x 10' WIDE x 2' DEEP)

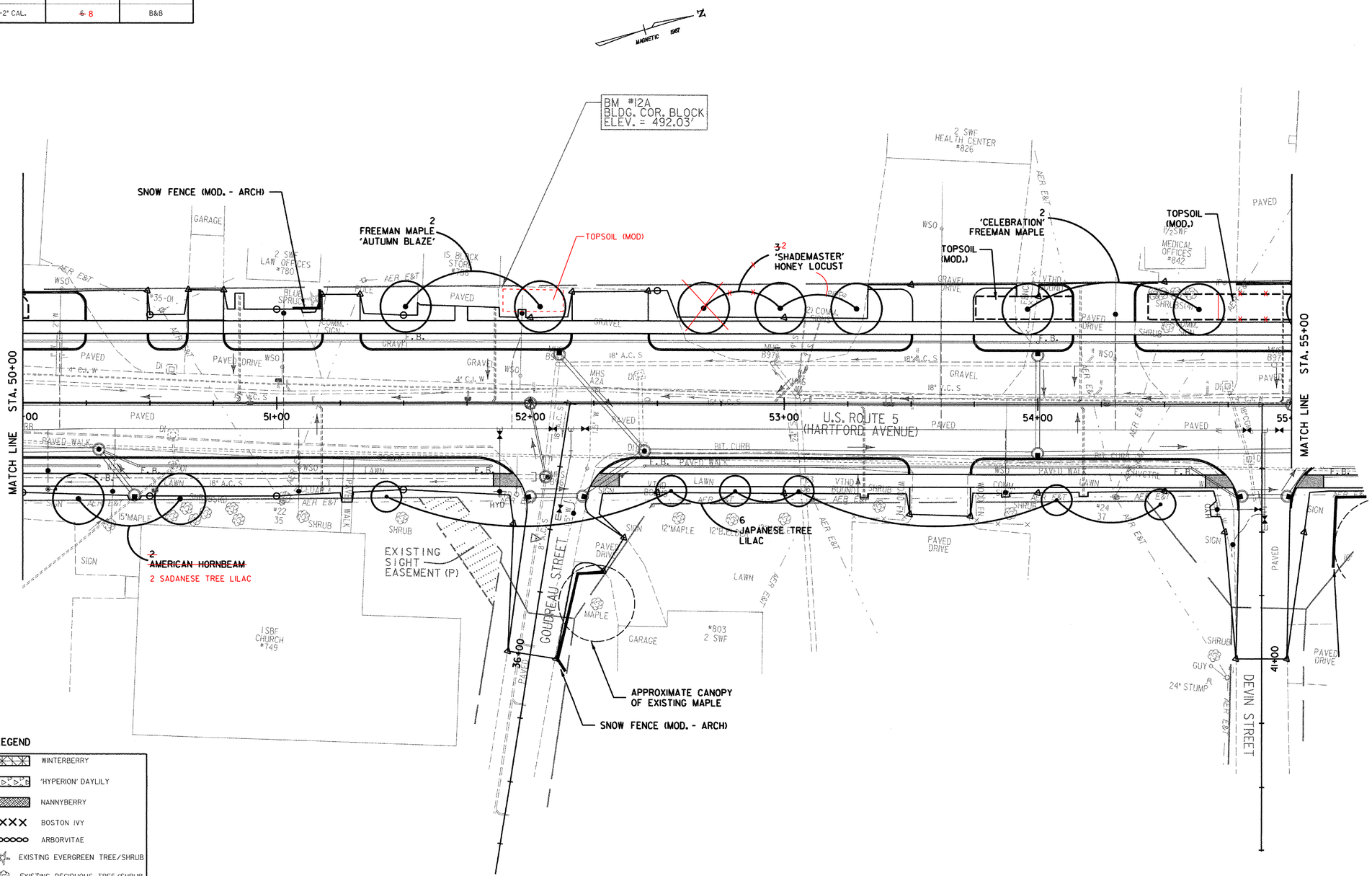
54+44 ~ ~~55+00~~ 54+67 LT (~~56~~ 21' LENGTH x 10' WIDE x 2' DEEP)

51+91~52+10 LT (20' LENGTH X 10' WIDE X 2' DEEP)

SNOW FENCE (MOD. - ARCH)

51+06 ~ 51+17 LT - 18 FT

35+63 ~ 36+00 LT (GOUDREAU ST) - 51FT



LANDSCAPE LEGEND

- PROPOSED CONIFEROUS TREE/SHRUB
- PROPOSED DECIDUOUS TREE/SHRUB
- BRICK PAVING
- TOPSOIL (MOD.)
- LILAC
- 'GROW LOW' SUMAC
- NINEBARK 'DIABLO'
- COMPACT PHITZER JUNIPER
- WINTERBERRY
- 'HYPERION' DAYLILY
- NANNYBERRY
- BOSTON IVY
- ARBORVITAE
- EXISTING EVERGREEN TREE/SHRUB
- EXISTING DECIDUOUS TREE/SHRUB
- PDF — PROJECT DEMARCATION FENCE
- SNOW FENCE (MOD. - ARCH)

0 20 40

SCALE IN FEET

DATUM

VERTICAL NGVD 1929

HORIZONTAL N/A

NOTES: 1.) REFER TO TYPICAL ROADWAY SECTION SHEETS FOR SEEDING FORMULAS AND LANSCAPING DETAIL SHEETS FOR PLANTING DETAILS.

LANDSCAPING LAYOUT SHEET 7

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	
SURVEYED BY: FANTONI	PLOT DATE: 1/15/2007
SQUAD LEADER: KEN UPMAL	SURVEY DATE: 1/87
	DRAWN BY: E. ATKINS
	SHEET: 188 OF 239

BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPECIFICATIONS
ACER X FREEMANII 'CELEBRATION'	'CELEBRATION' FREEMAN MAPLE	2.5"-3" CAL.	4	B&B
JUNIPERUS CHINENSIS 'SEAGREEN'	'SEAGREEN' JUNIPER	24"-30" HT	14	CONTAINER 3' O.C.
RHODODENDRON PJM	PJM RHODODENDRON	30"-36" HT	5	CONTAINER 3' O.C.
SYRINGA RETICULATA 'IVORY SILK'	'IVORY SILK' JAPANESE TREE LILAC	1.5-2" CAL.	5	B&B

TOPSOIL (MOD.)

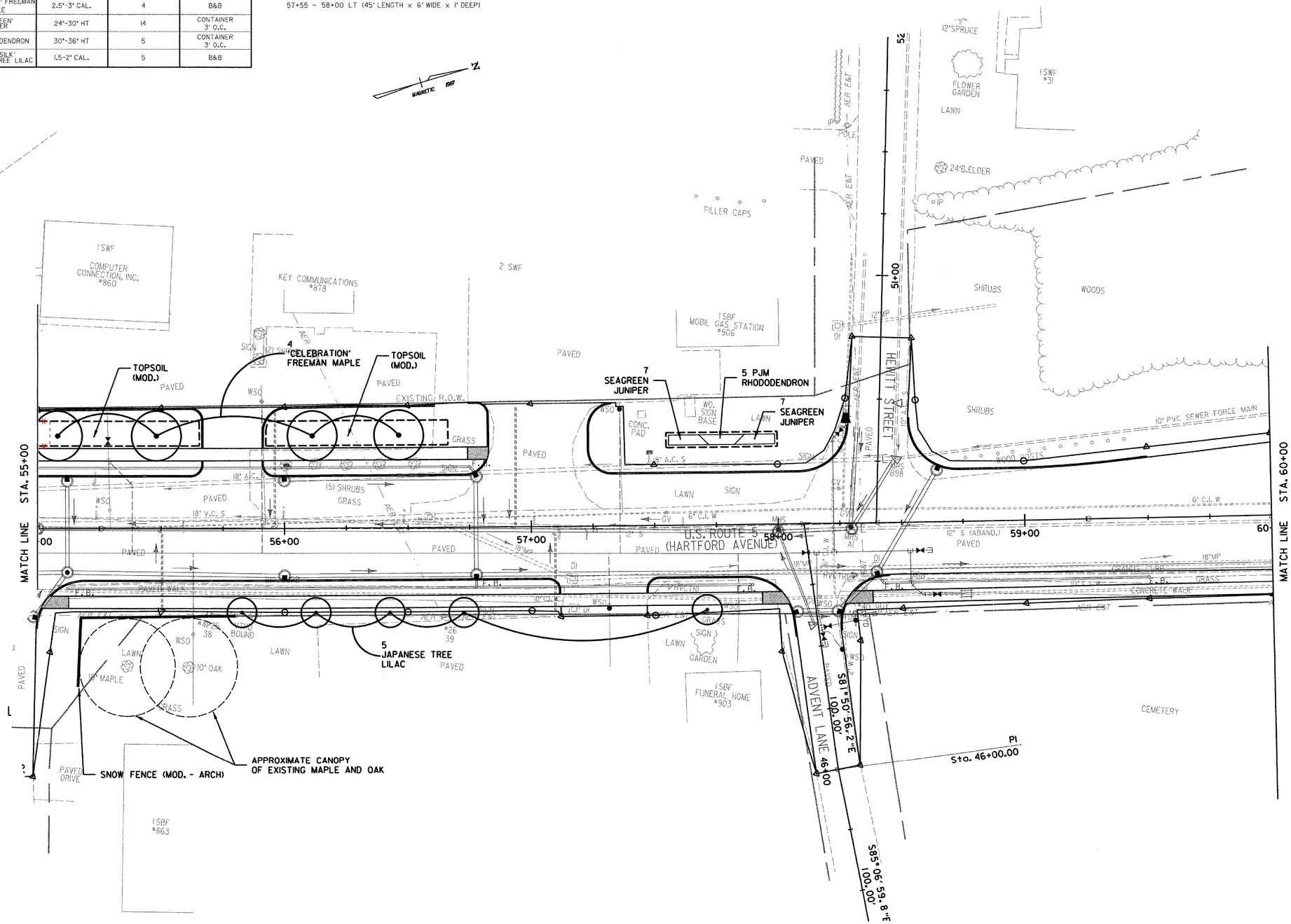
55+~~00~~ ~ 55+~~65~~ 56 LT (~~65~~ 49 LENGTH x 10' WIDE x 2' DEEP)

56+00 ~~55+92~~ ~ 56+~~66~~ LT (~~74~~ 07 LENGTH x 10' WIDE x 2' DEEP)

57+55 ~ 58+00 LT (45' LENGTH x 6' WIDE x 1' DEEP)

SNOW FENCE (MOD. - ARCH)

40+64 LT (DEVINS ST.) ~ 55+80 RT - 90 FT



LANDSCAPE LEGEND

- PROPOSED CONIFEROUS TREE/SHRUB
- PROPOSED DECIDUOUS TREE/SHRUB
- BRICK PAVING
- TOPSOIL (MOD.)
- LILAC
- "GROW LOW" SUMAC
- NINEBARK 'DIABLO'
- COMPACT PHITZER JUNIPER
- WINTERBERRY
- 'HYPERION' DAYLILY
- NANNYBERRY
- BOSTON IVY
- ARBORVITAE
- EXISTING EVERGREEN TREE/SHRUB
- EXISTING DECIDUOUS TREE/SHRUB
- PDF PROJECT DEMARCATION FENCE
- SNOW FENCE (MOD. - ARCH)

0 20 40

SCALE IN FEET

DATUM

VERTICAL NGVD 1929

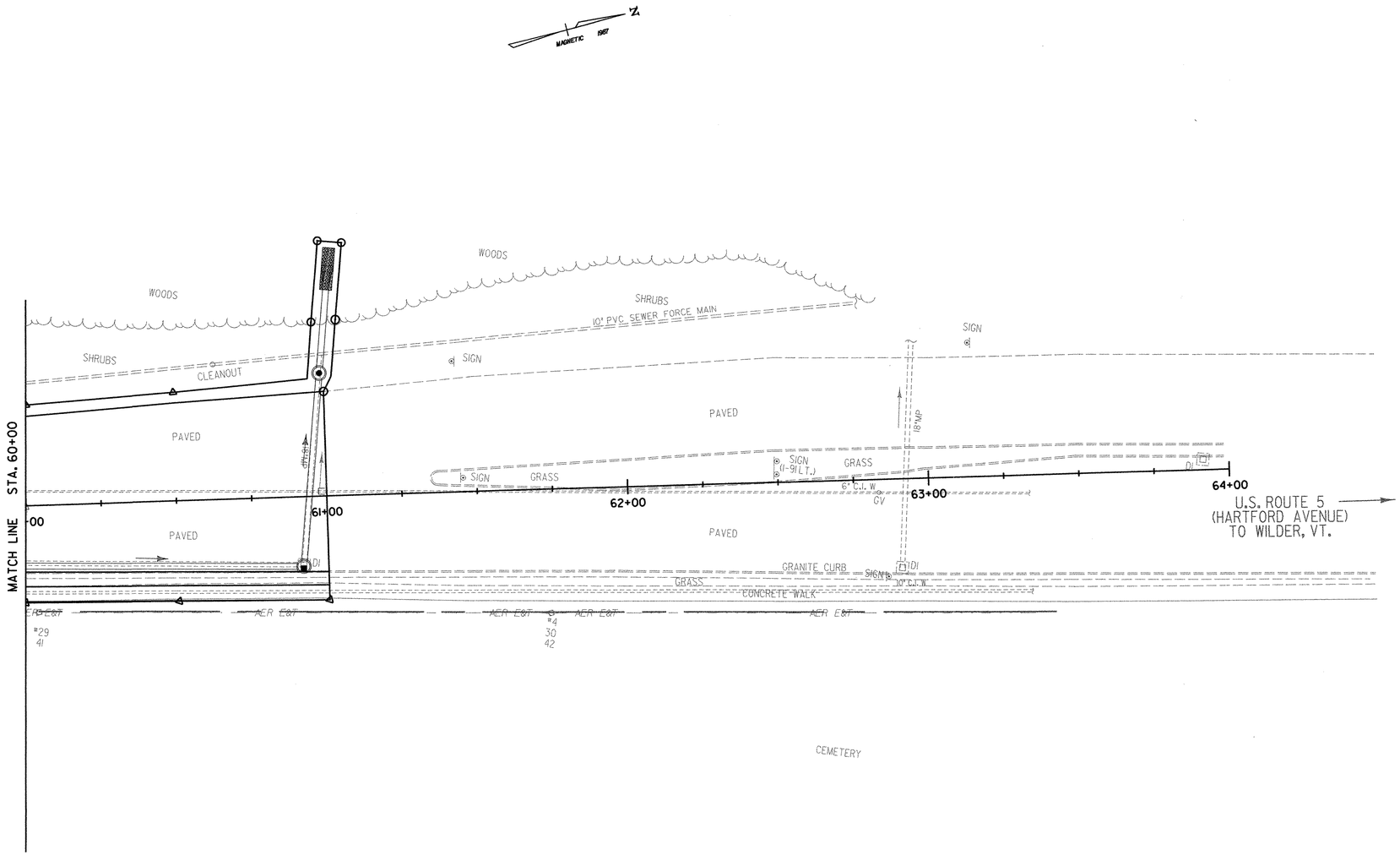
HORIZONTAL N/A

NOTES: 1.) REFER TO TYPICAL ROADWAY SECTION SHEETS FOR SEEDING FORMULAS AND LANSCAPING DETAIL SHEETS FOR PLANTING DETAILS.

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	
SURVEYED BY: FANTONI	PLOT DATE: 1/15/2007
SQUAD LEADER: KEN UPMAL	SURVEY DATE: 1/87
	DRAWN BY: E. ATKINS
	SHEET: 189 OF 239

LANDSCAPING LAYOUT SHEET 8

LANDSCAPING LAYOUT SHEET 9



LANDSCAPE LEGEND

- PROPOSED CONIFEROUS TREE/SHRUB
- PROPOSED DECIDUOUS TREE/SHRUB
- BRICK PAVING
- TOPSOIL (MOD.)
- LILAC
- "GROW LOW" SUMAC
- NINEBARK 'DIABLO'
- COMPACT PHITZER JUNIPER
- WINTERBERRY
- 'HYPERION' DAYLILY
- NANNYBERRY
- BOSTON IVY
- ARBORVITAE
- EXISTING EVERGREEN TREE/SHRUB
- EXISTING DECIDUOUS TREE/SHRUB
- PDF — PROJECT DEMARCATION FENCE
- SNOW FENCE (MOD. - ARCH)

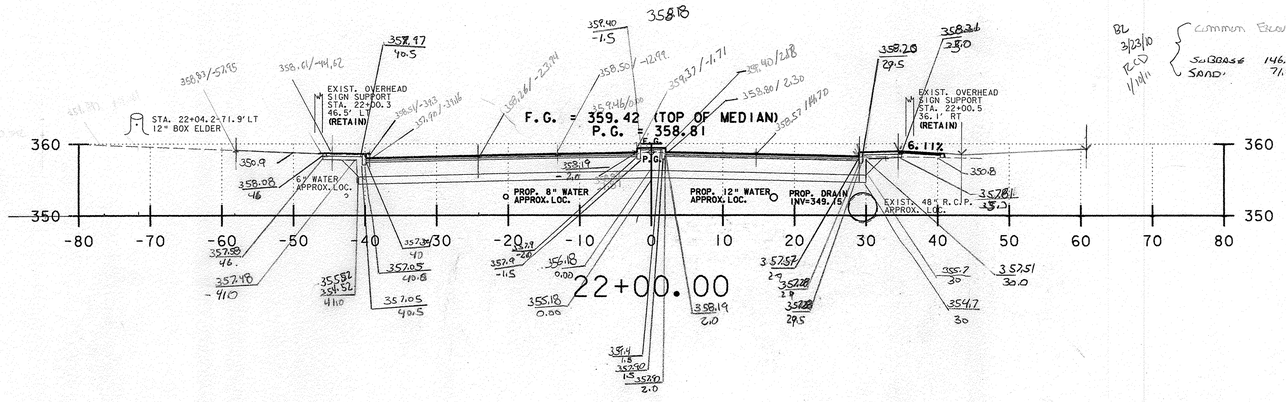
DATUM

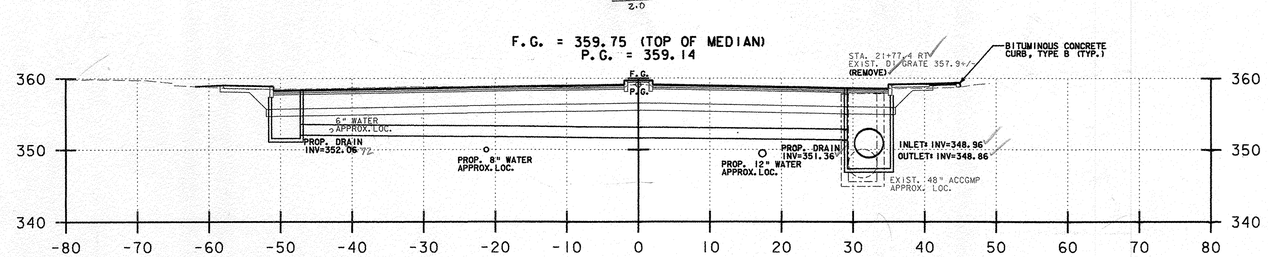
VERTICAL NGVD 1929
HORIZONTAL N/A

NOTES: 1.) REFER TO TYPICAL ROADWAY SECTION SHEETS FOR SEEDING FORMULAS AND LANSCAPING DETAIL SHEETS FOR PLANTING DETAILS.

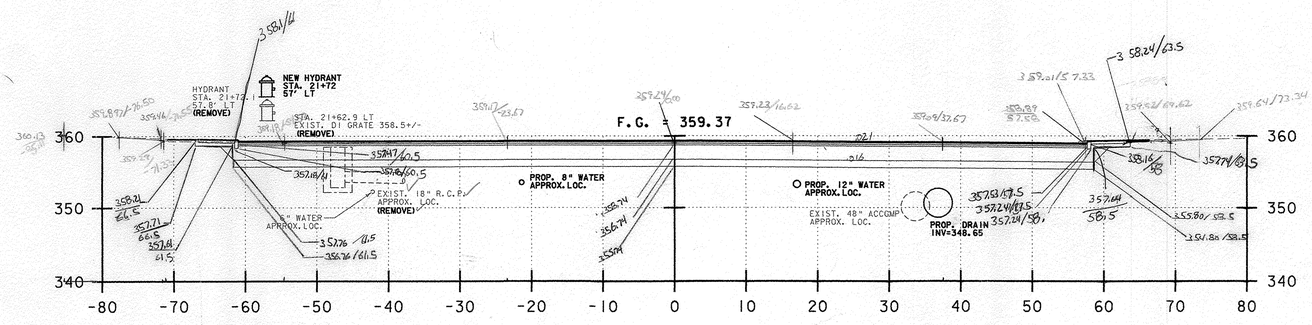
0 20 40
SCALE IN FEET

PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)
DESIGN FILE NAME: z027bdr.dgn	
IPARM FILE NAME:	PLOT DATE: 1/10/2007
SURVEYED BY: FANTONI	SURVEY DATE: 1/87
SQUAD LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
	SHEET: 190 OF 239



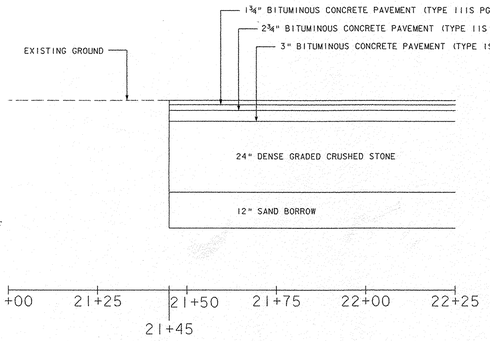


21+70.60
ASKEW 9° 1' 1.9" LT



21+50.00

STA. 21+45
ELEV. = 359.42
BEGIN PROJECT
RS 0113(40)



MATERIAL TRANSITION DETAIL

NOT TO SCALE

NOTES:

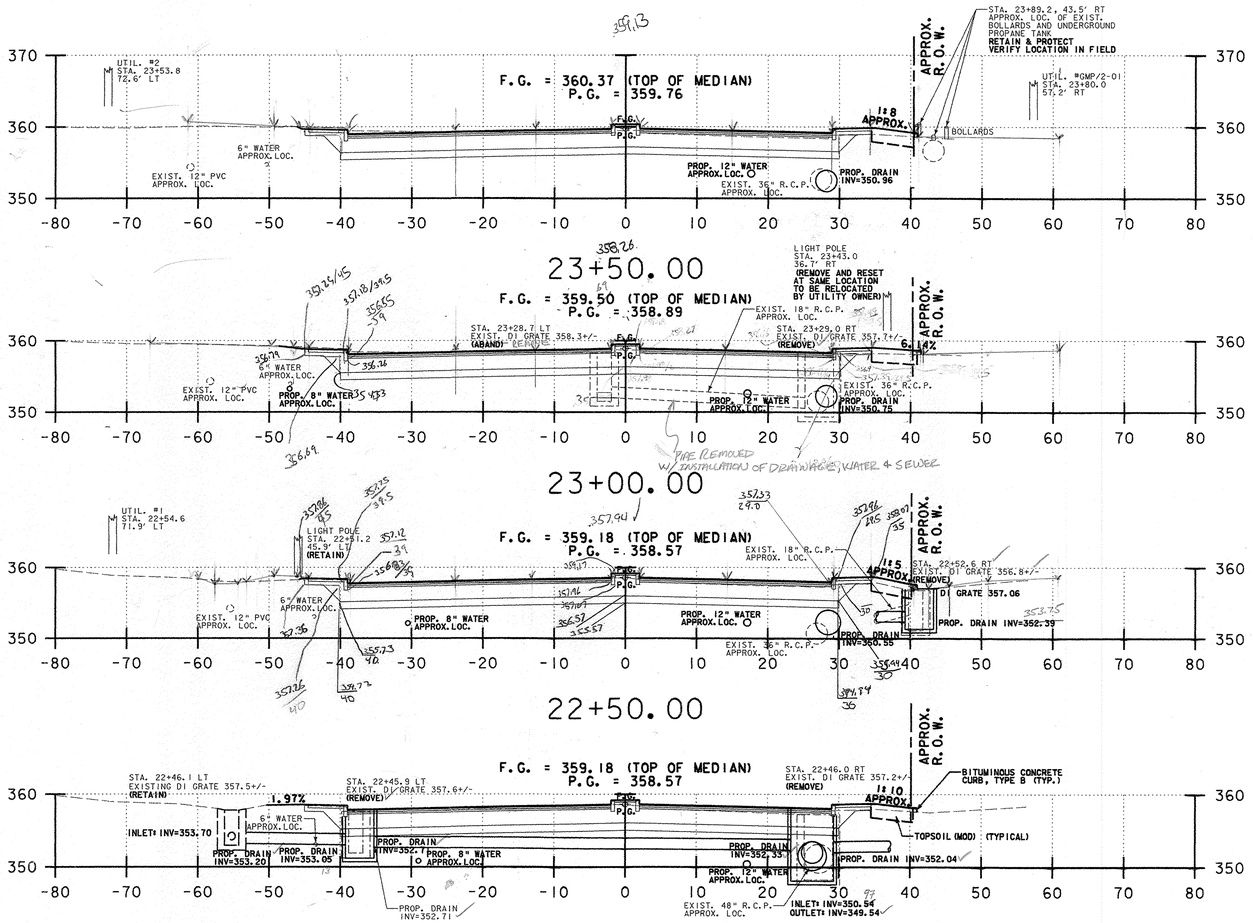
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
2) REFER TO STORMWATER OUTFALL DETAIL PLAN AND PROFILE SHEET FOR PROFILE OF PROPOSED DRAIN FROM STA. 21+76.83 RT TO OUTFALL.

LEGEND:

F.G. FINISHED GRADE
P.G. PROFILE GRADE

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027xsl.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	1/11/2007
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET 191	OF 239



SAND 70.00SF ✓
SUBBASE 143,865F ✓
ROADWAY COMMON 152/155/158 = 155 x 155 = 240.25 SF ✓
LANDSCAPE COMMON. 4/3/4 = 4 x 155 = 6.25F ✓
BL 3/23/10
RCD 1/10/11

SAND 70.00 SF ✓
SUBBASE 14415 ✓
COMMON EXCAVATION ROADWAY 147/153/154 = 148 = 224 SF ✓
LANDSCAPING 6/4/5 = 5 x 155 = 7.75SF ✓
BL 3/23/10
RCD 1/10/11

SAND BORROW 70.00 SF ✓
SUBBASE 144.15 SF
COMMON 148/154/149 = 231 SF ROADWAY
LANDSCAPE 6x155 = 5.75 SF
6.6
BL 3/23/10
RCD 1/10/11

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

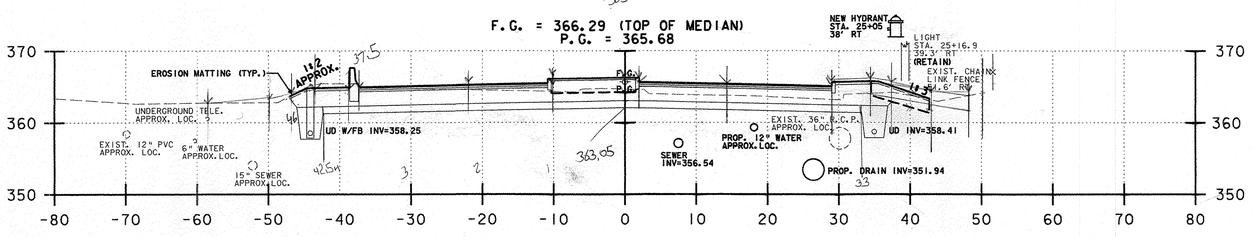
NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

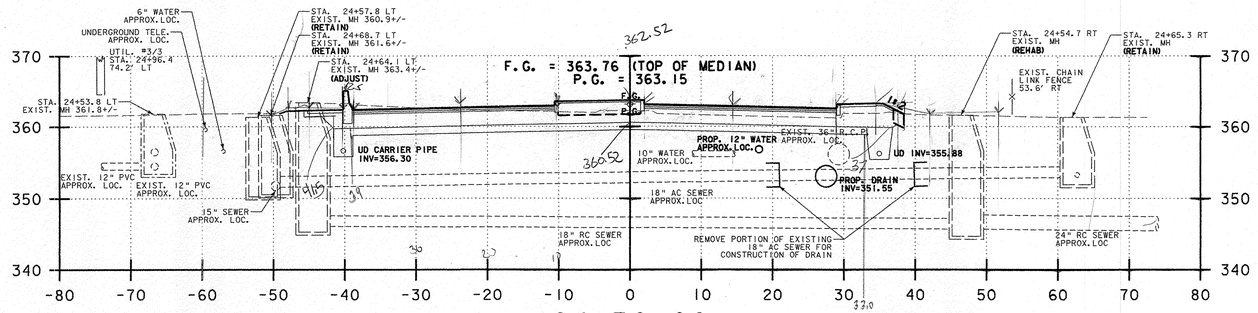
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

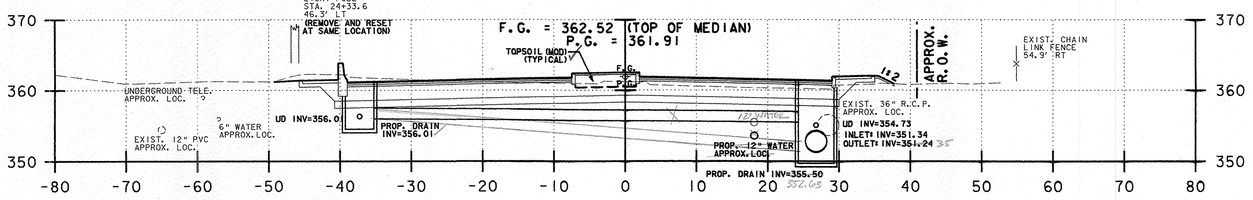
FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA, E. ATKINS
PLOT DATE: 1/31/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 192 OF 239



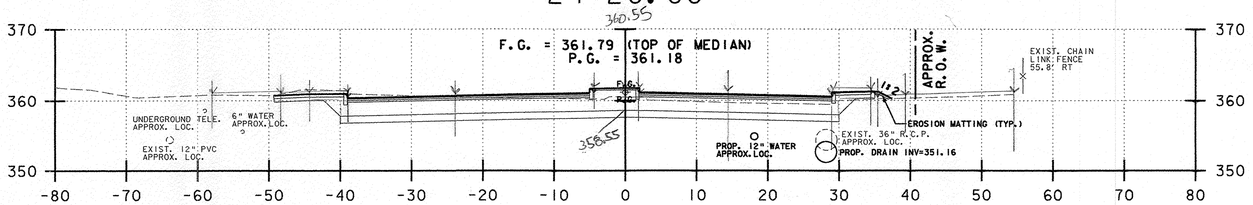
25+00.00



24+50.00



24+20.00



24+00.00

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

LEGEND:

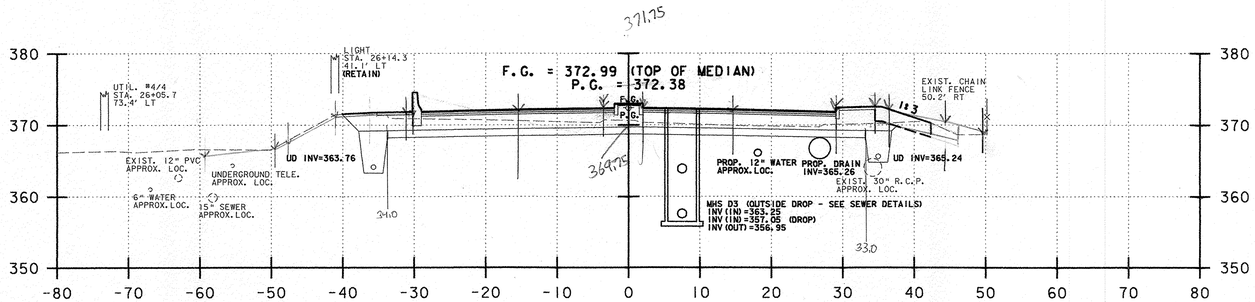
F.G. FINISHED GRADE

P.G. PROFILE GRADE

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 193 OF 239

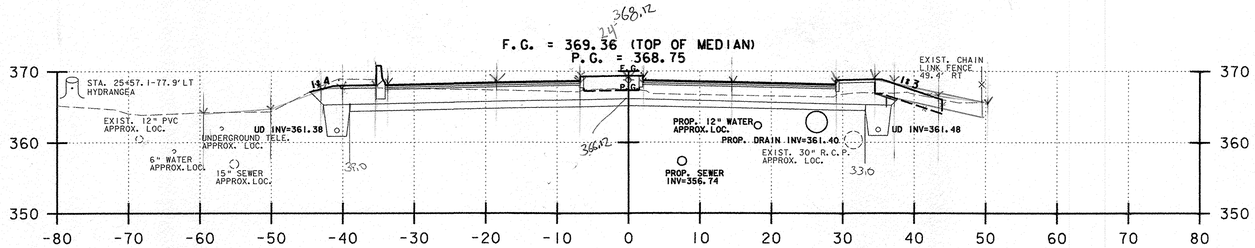
158/137



26+00.00

common excavation roadway 7.6x1.55 = ~~118.5 sf~~ 146.6 sf
landscaping 5x1.55 = 7.75 sf } BL 3/23/10 RCD 1/10/11

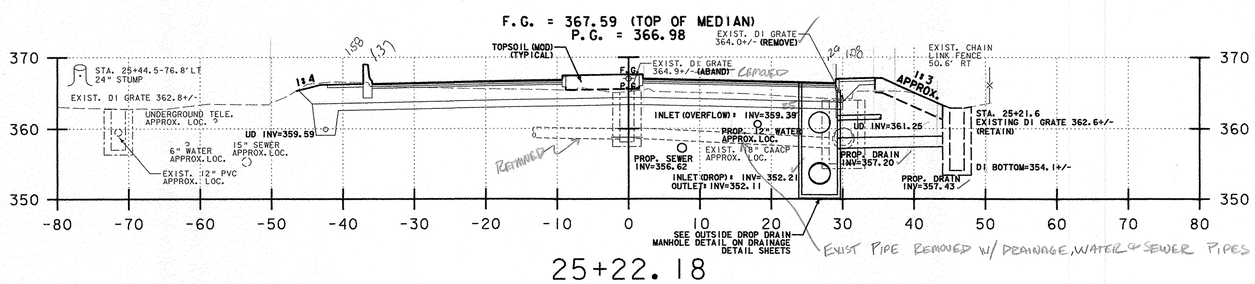
SAND 67.00 sf
SUBBASE ~~154.03 sf~~ } BL 3/23/10
~~BACK = 148.7 sf @ 25+90~~ CGB 01/10/11
AHEAD = 159.7 sf
F.G. = 74' RCD 1/25/11



25+50.00

common excavation roadway 12.2/12.0/20 = 121 x 1.55 = 187.55 sf } BL 3/23/10
landscape 4 x 1.55 = 6.2 sf.

SAND 72.06 sf } BL 3/23/10
SUBBASE 165.56 } RCD 1/10/11
F.G. 79' CGB 01/29/11
RCD 1/25/11



25+22.18

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

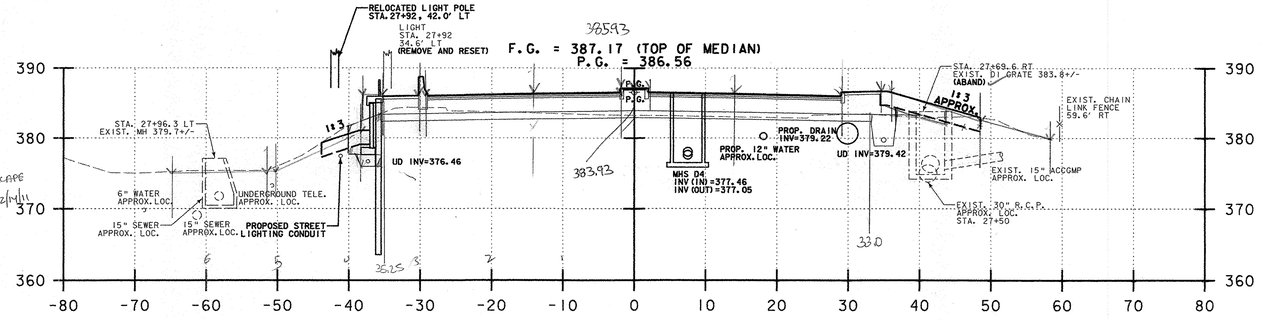
U.S. ROUTE 5
HARTFORD AVENUE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/31/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 194 OF 239

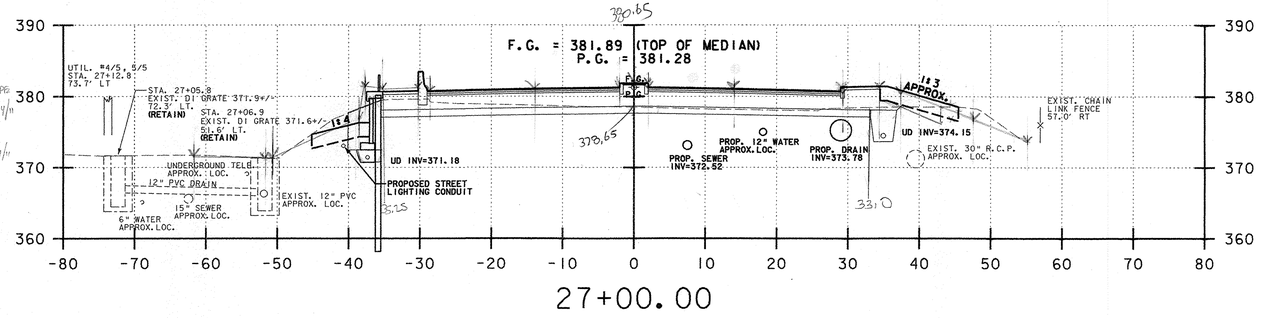
1.58/1.37



STRUCTURE EXCAVATION
4.5' × (4.0 + 6.0)/2 = 22.5 SF
+ 1.5' × (3.0 + 3.5)/2 = 4.88 SF LANDSCAPE
21.38 SF RCD 2/14/11

COMMON EXCAVATION ROADWAY 33/35/31 SY × 1.55 = 53.0
LANDSCAPE LEFT 12 AVG = 18.6 SF
LANDSCAPE RIGHT 2 × 1.55 = 3.1 S.F.
BL 3/23/10 RCD 1/10/11

SAND 68.25
SUBBASE 145.61
BL 3/23/10 RCD 1/10/11
F.G. = 72' CLB 01/24/11 RCD 1/25/11

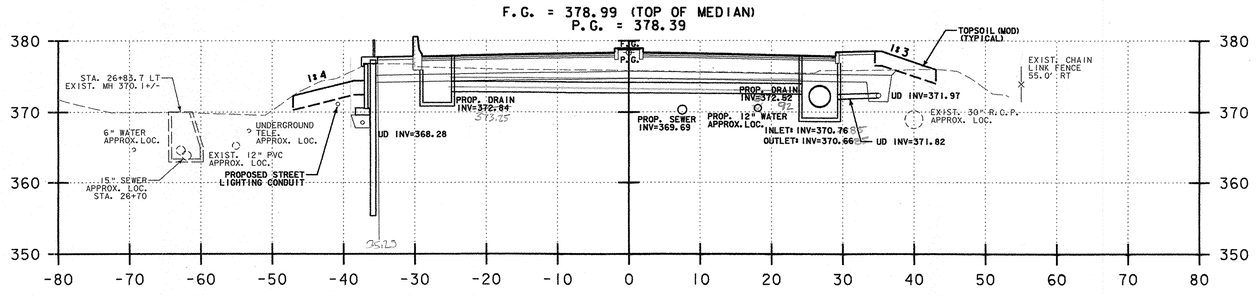


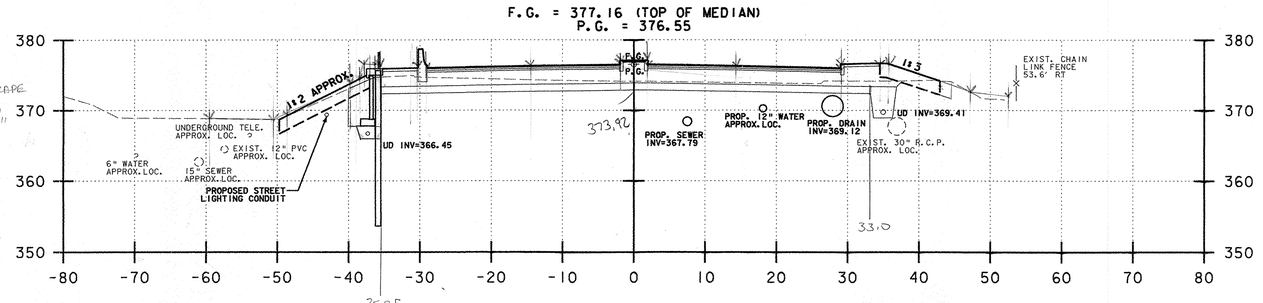
STRUCTURE EXCAVATION
4.5' × (5.25 + 7.0)/2 = 27.56 SF
1.5' × (3.0 + 3.5)/2 = 4.88 SF
−6.10 SF LANDSCAPE
26.44 SF RCD 2/14/11

DIGITAL PLANIMETER = 26.33 RCD 2/14/11

COMMON EXCAVATION ROADWAY 55/57/59 SY × 1.55 = 87.5 S.F.
LANDSCAPE LEFT 16 × 1.55 = 24.8 S.F.
LANDSCAPE RIGHT 7 × 1.55 = 10.85 S.F.
BL 3/23/10 RCD 1/10/11

SAND 68.25
SUBBASE 144.29
BL 3/23/10 RCD 1/10/11
F.G. = 72' CLB 01/24/11 RCD 1/25/11





STRUCTURE EXCAVATION
4.5' × (5.25 + 7.0)/2 = 27.56 SF
1.5' × (3.0 + 3.5)/2 = 4.88 SF
−3.0 SF LANDSCAPE
29.44 SF RCD 2/14/11

COMMON EXCAVATION ROADWAY 77/73/75 SY × 1.55 = 116.5 S.F.
LANDSCAPE LEFT = 15/17/19 × 1.55 = 26.35 S.F.
RIGHT = 4 × 1.55 = 6.2 S.F.
BL 3/23/10 RCD 1/10/11

SAND 68.25
SUBBASE 147.53 S.F.
BL 3/23/10 RCD 1/10/11
F.G. = 72' CLB 01/24/11 RCD 1/25/11

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

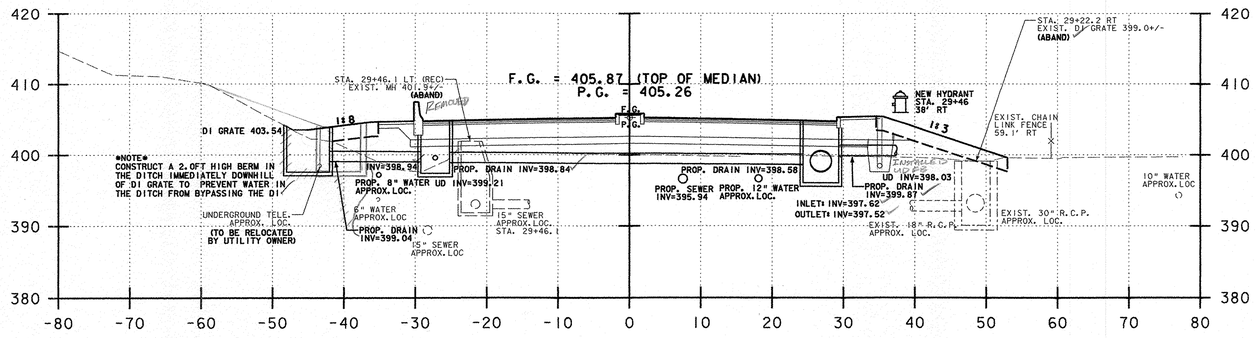
LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027xsl.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	1/11/2007
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET	195 OF 239



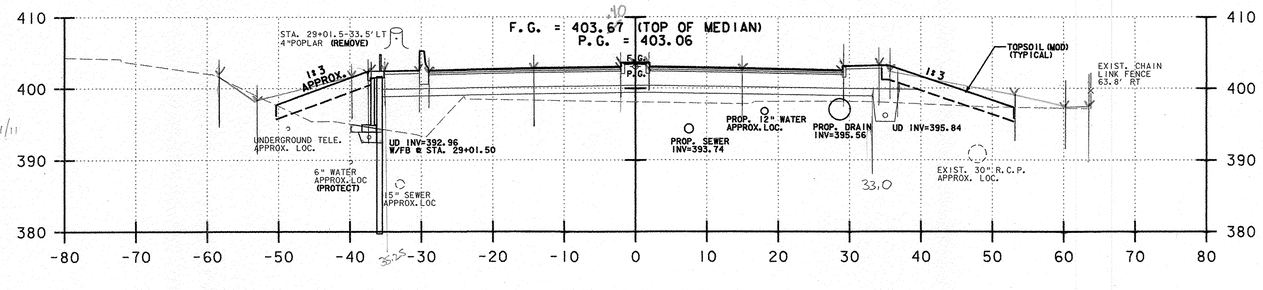
29+20.00

STRUCTURE EXCAVATION

$4.5' \times \left(\frac{1.0' + 0.5'}{2}\right) = 3.38$ SF

$1.5' \times \left(\frac{3.0' + 3.5'}{2}\right) = 4.88$ SF

8.26 SF RCD 2/14/11



29+00.00

SAND 68.25 / SUBBASE 144.77 } BL 3/23/10 RCD 1/10/11

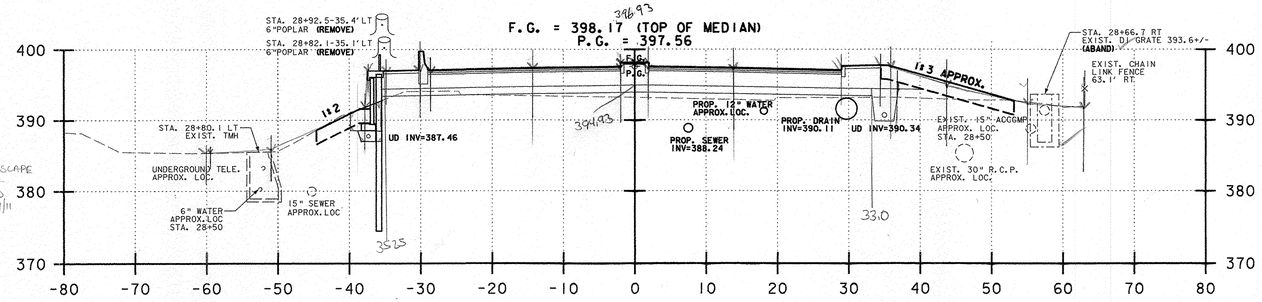
COMMON EXCAVATION ROADWAY = 0

LANDSCAPE LT = 2X2.5/2 = 2.5 S.F.

LANDSCAPE RT = 6X2/2 = 6 S.F.

F.G. = 72' RCD 1/25/11

BL 3/23/10 RCD 1/10/11



28+50.00

STRUCTURE EXCAVATION

$4.5' \times \left(\frac{2.5' + 4.25'}{2}\right) = 15.19$ SF

$1.5' \times \left(\frac{3.0' + 3.5'}{2}\right) = 4.88$ SF

-6.0 SF LANDSCAPE

14.07 SF RCD 2/14/11

SAND 68.25 / SUBBASE 144.77 } BL 3/23/10 RCD 1/10/11.

COMMON EXCAVATION ROADWAY: 2x1.55 = ~~12.75~~ 6.6 S.F.

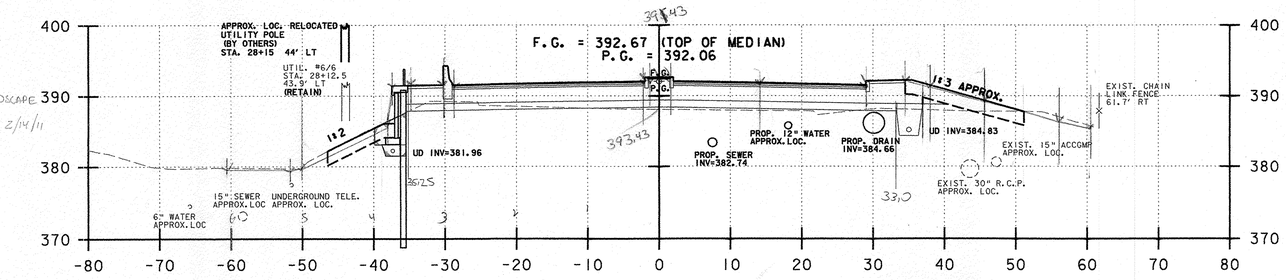
LANDSCAPE LEFT = 8x1.55 = 12.4 S.F.

LANDSCAPE RT 5x1.55 = 7.75

} BL 3/23/10 RCD 1/10/11

6B3 01/10/11

F6. = 72' RCD 1/25/11



28+00.00

SAND 68.25 / SUBBASE 144.77 } BL 3/23/10 RCD 1/10/11

COMMON EXCAVATION ROADWAY = ~~12.42 = 142.55 = 27.75~~ 16.1 S.F.

LANDSCAPE LT = 16 S.F.

LANDSCAPE RT = 6.2

F.G. = 72' RCD 1/25/11

6B3 01/10/11

} BL 3/23/10 RCD 1/10/11

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

LEGEND:

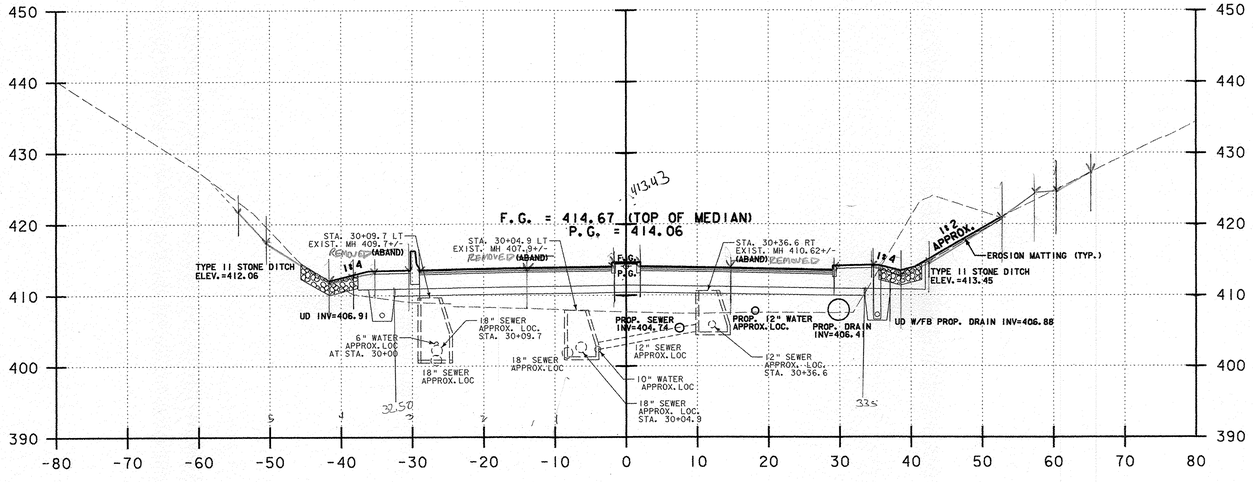
F.G. FINISHED GRADE

P.G. PROFILE GRADE

U.S. ROUTE 5
HARTFORD AVENUE

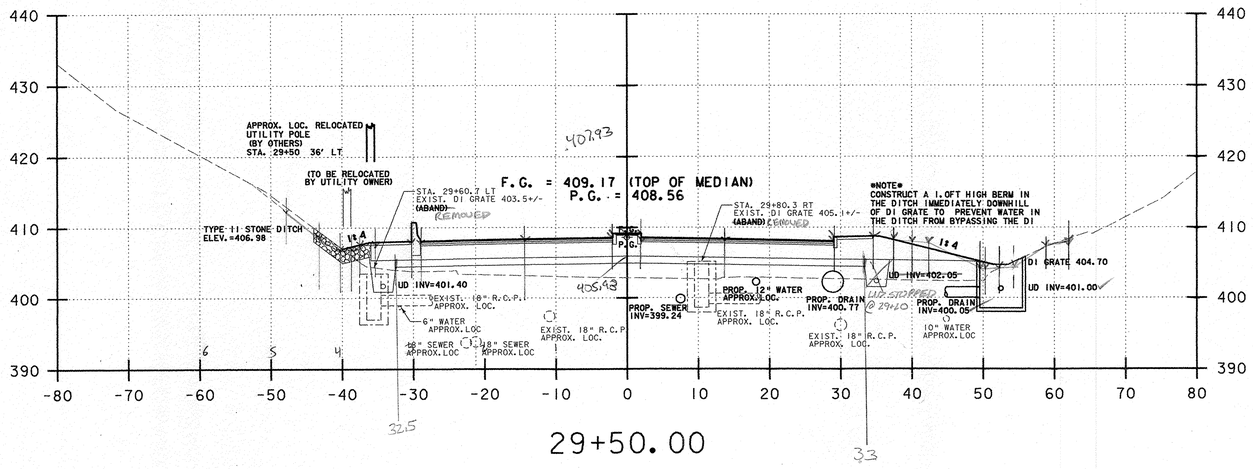
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027xsl.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	1/11/2007
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET	196 OF 239

1.58 / 1.37
1.08 .29



30+00.00

SAND 66 s.f
SUBBASE 169.58
COMMON EXCAVATION
ROADWAY 68x1.55 = 105.4 s.f
STONE DITCH LT 8/1.55 = 12.4 s.f
117.8 SF
BL 3/23/10
RCD 1/10/11
F.G. = 79 LGB 01/10/11
RCD 1/25/11



29+50.00

SUBBASE 164.24 s.f
SAND - 65.50 s.f
COMMON EXCAVATION ROADWAY - 0
LANDSCAPE - 0
STONE DITCH LT. 8x1.55 = 12.4 s.f
BL 3/23/10
RCD 1/10/11
F.G. = 83 LGB 01/10/11
RCD 1/25/11

LEGEND:

F.G. FINISHED GRADE

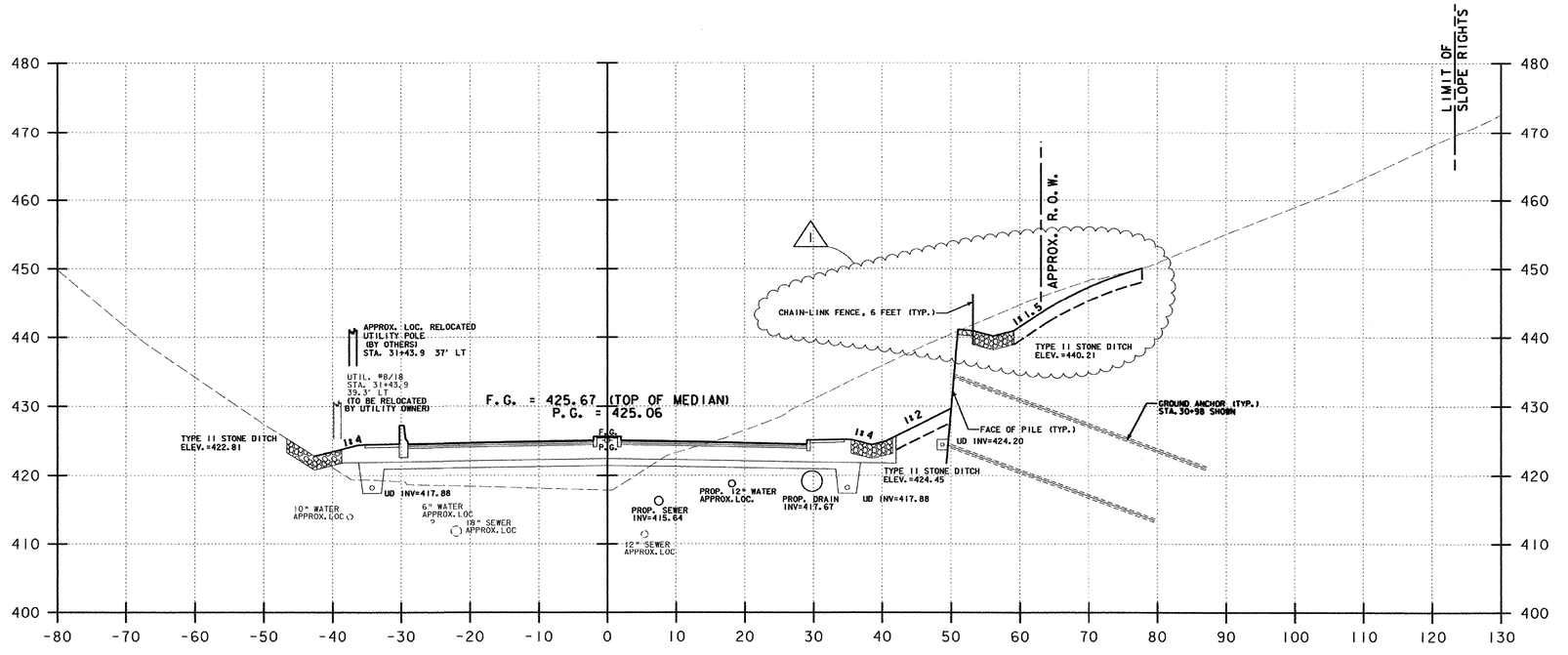
P.G. PROFILE GRADE

U.S. ROUTE 5
HARTFORD AVENUE

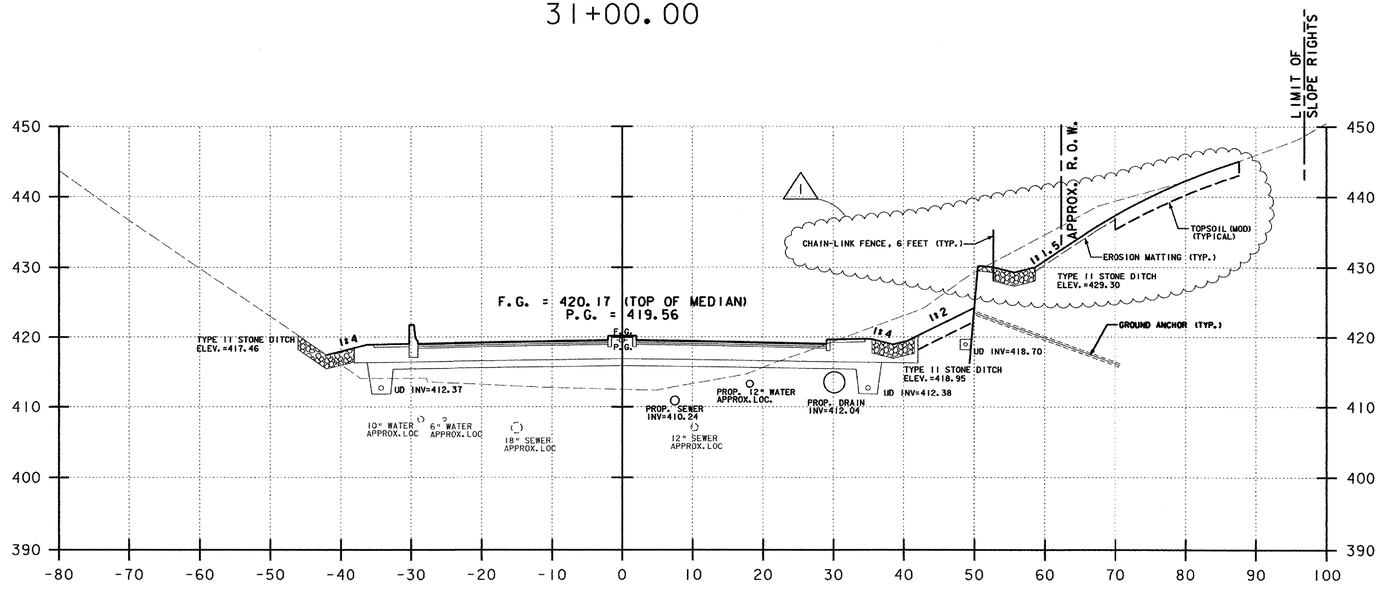
NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/31/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 197 OF 239



31+00.00



30+50.00

SEE VALUE ENGINEERING RETAINING WALL

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

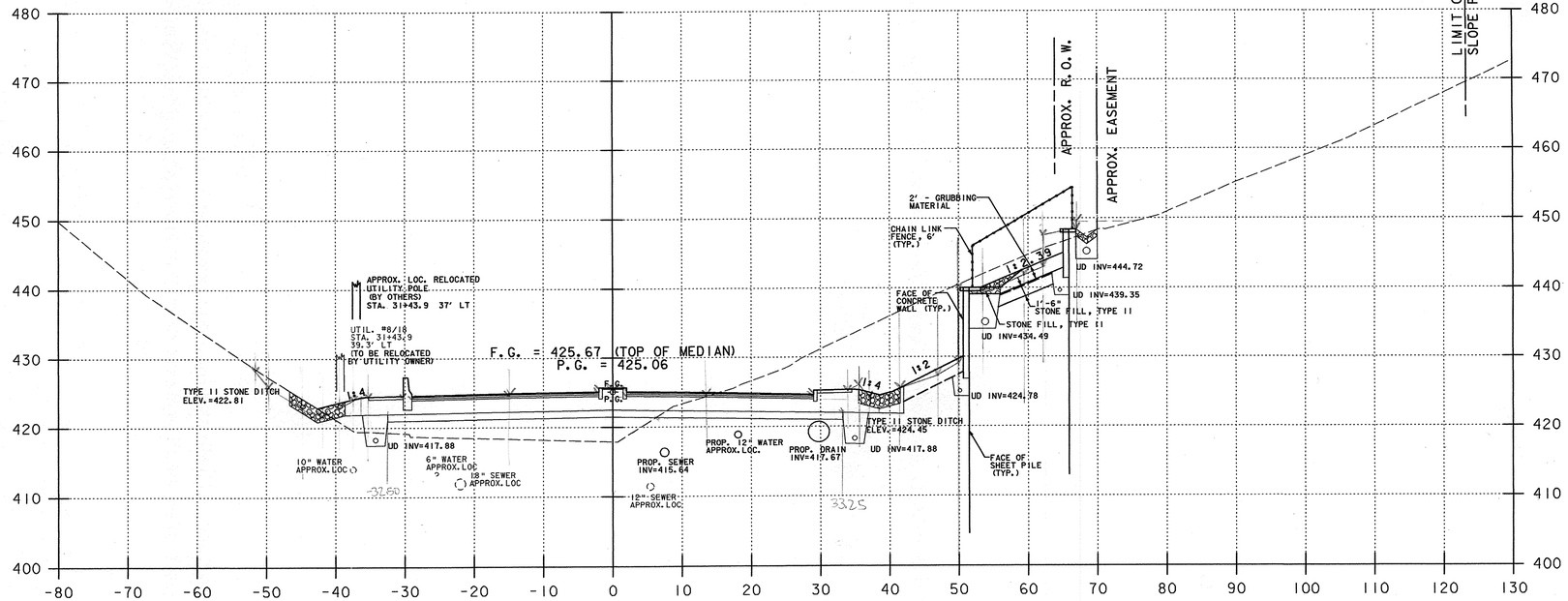
U.S. ROUTE 5
HARTFORD AVENUE

NOTES:

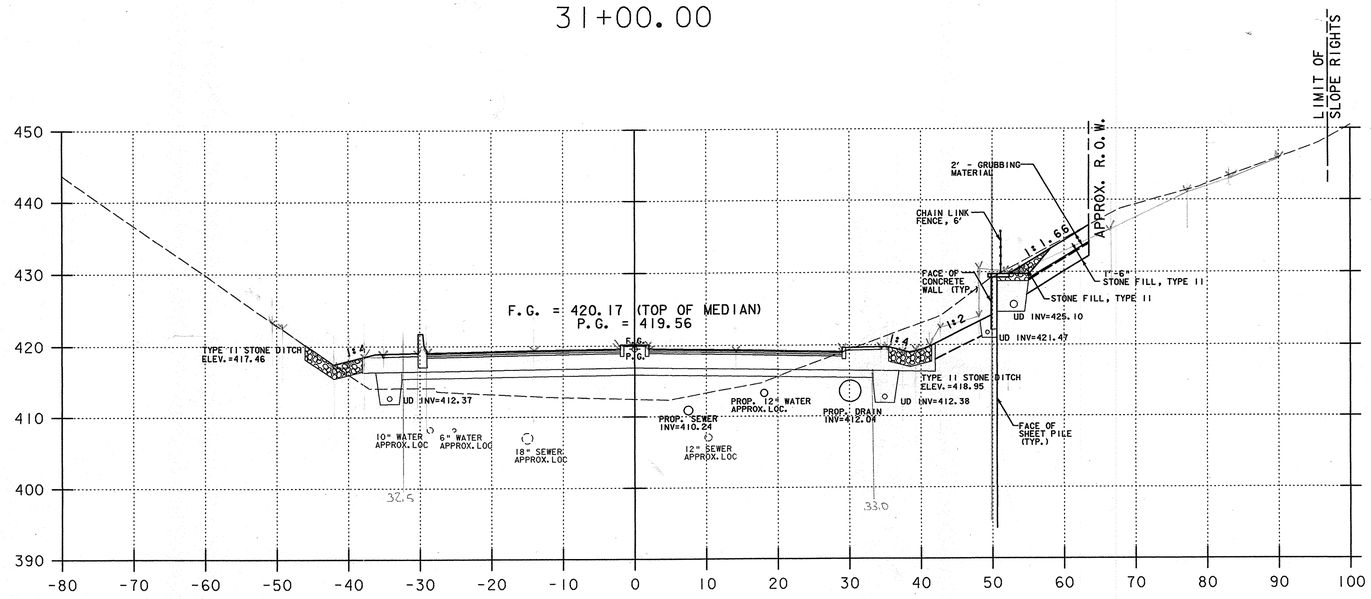
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
2) THE WALL SHOWN ON THE SECTIONS IS FOR PRESENTATION ONLY. SEE U.S. RTE. 5 GROUND ANCHORED SOLIDER PILE WALL PLAN AND PROFILE SHEET AND DETAIL SHEETS FOR CONSTRUCTION REQUIREMENTS.

1 ADDENDUM #1: REVISED APRIL 18, 2007

PROJECT NAME:	HARTFORD		
PROJECT NUMBER:	RS 0113(40)		
FILE NAME:	z86c027xsl.dgn	PLOT DATE:	4/18/2007
PROJECT LEADER:	KEN UPMAL	DRAWN BY:	E. ATKINS
DESIGNED BY:	K. ISHIKURA E. ATKINS	CHECKED BY:	K. ISHIKURA
		SHEET 198	OF 239



31+00.00



30+50.00

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
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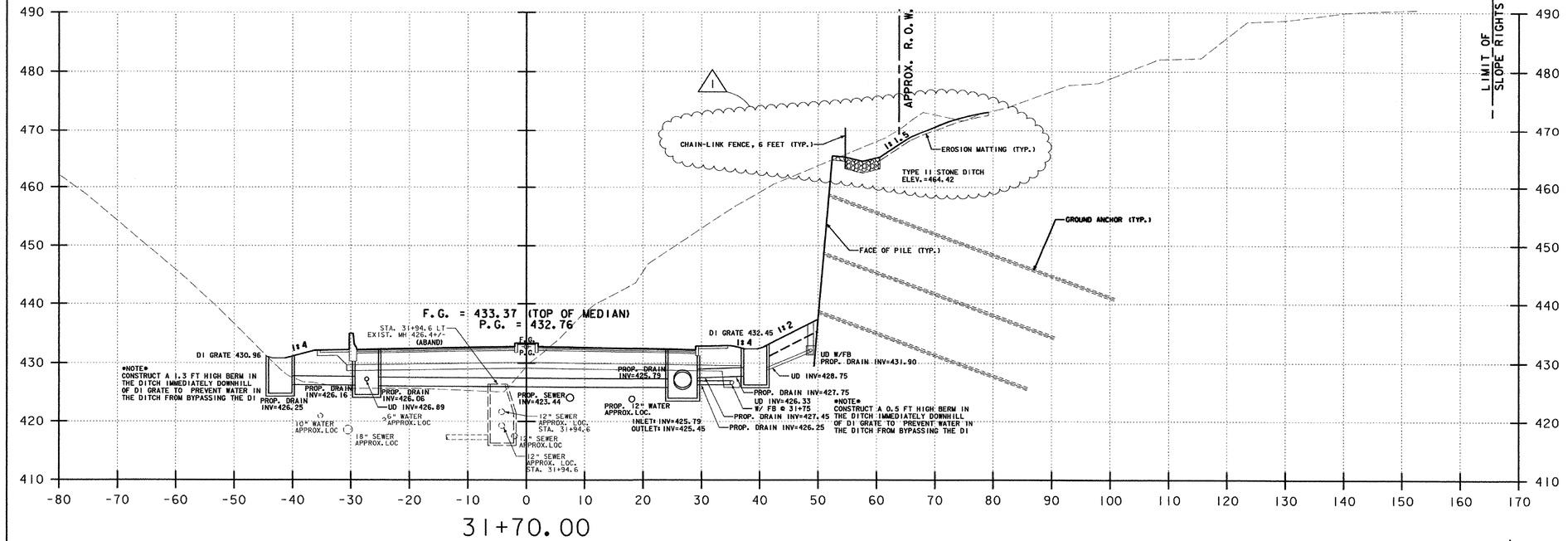
LEGEND:

F.G. FINISHED GRADE
P.G. PROFILE GRADE

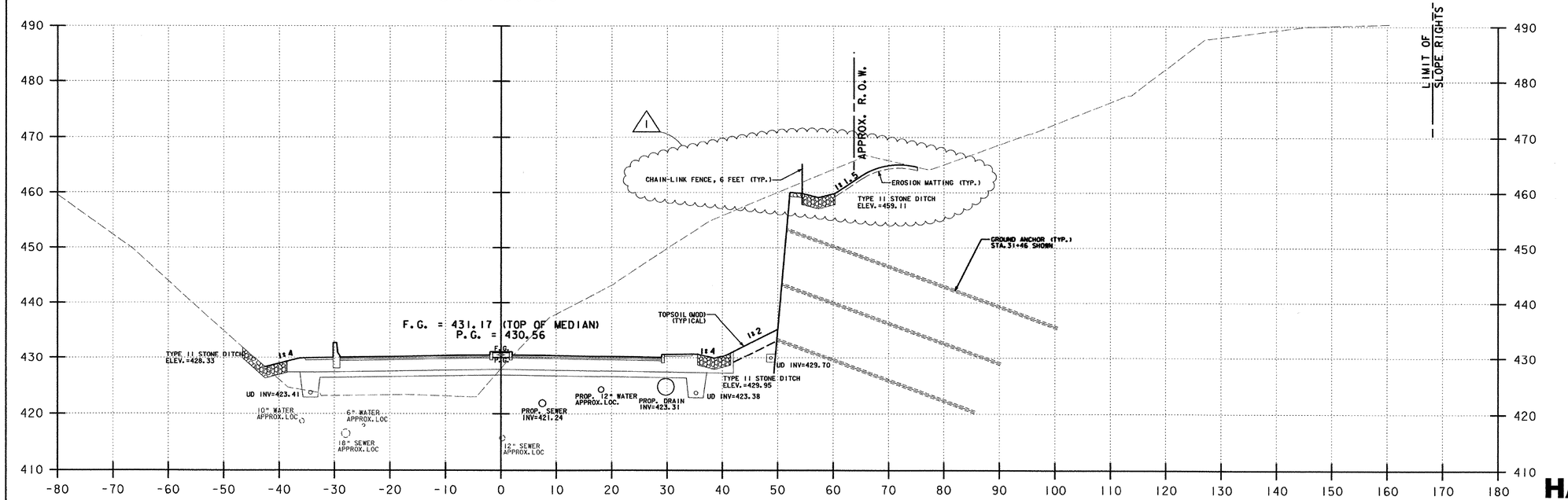
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	...Z86c027xsl.DGN
PROJECT LEADER:	
DESIGNED BY:	D. HOWEY
PLOT DATE:	3/13/2008
DRAWN BY:	T. DUGUAY
CHECKED BY:	D. WOTRING
SHEET	4 OF 14

REVISED 198 OF 239



SEE VALUE ENGINEERING RETAINING WALL



LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

U.S. ROUTE 5
HARTFORD AVENUE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
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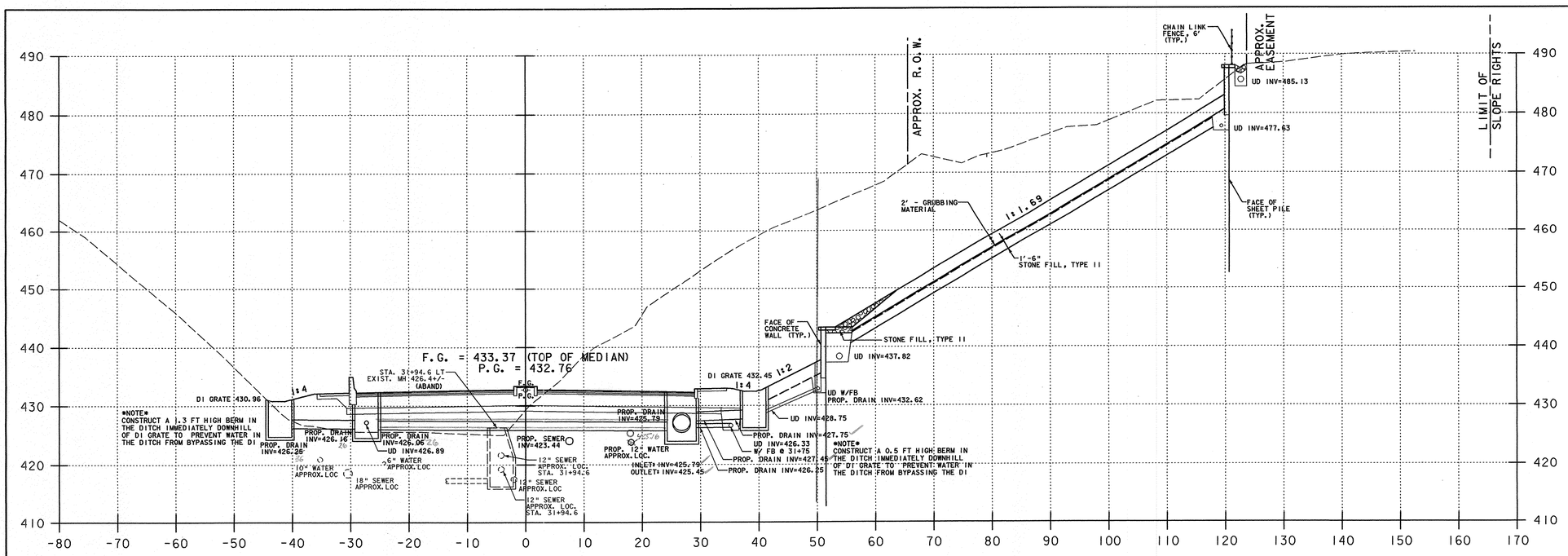
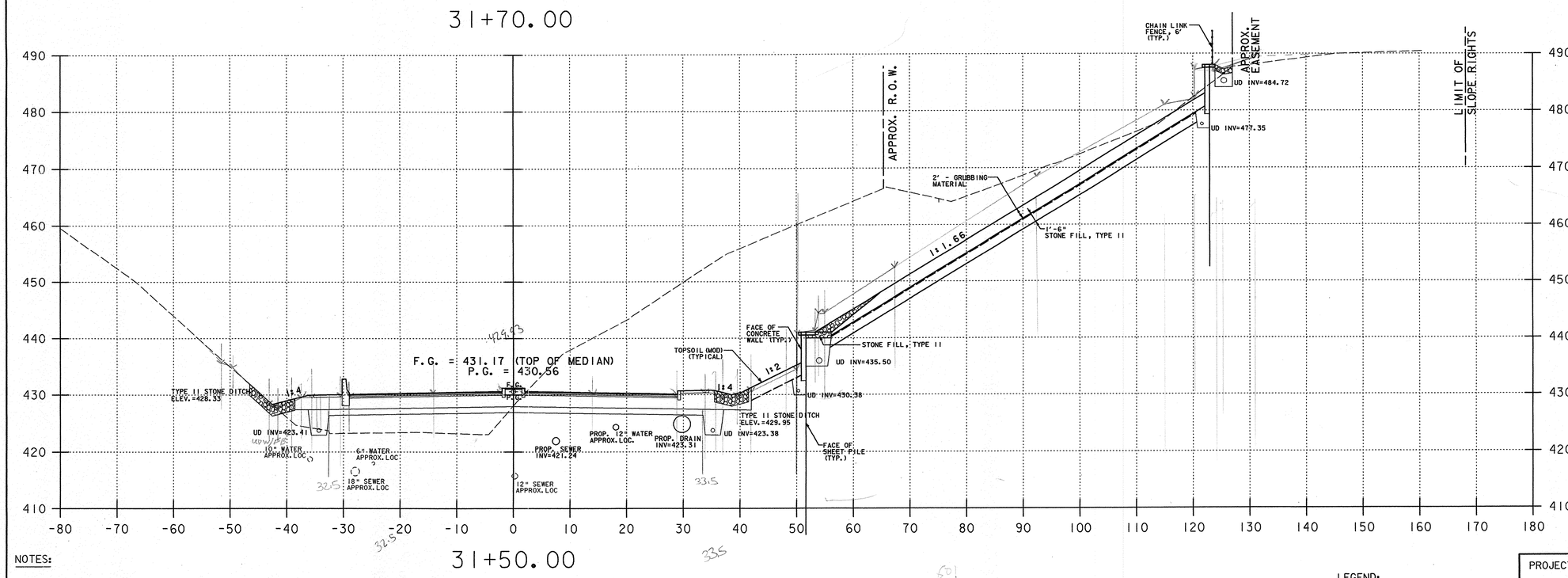
1 ADDENDUM #1: REVISED APRIL 18, 2007

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 4/18/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 199 OF 239





common Excavation
Roadway 595x1.55= 922.25 s.f.
Ditch LT 8'x2=16 s.f.
Landscape RT 11x1.55=17.05 s.f.
BL 3/23/10
RCD 1/10/11
common = 938.25

SAND 66.0 s.f. BL 3/23/10
SUBBASE ~~173.32~~ 157.6 RCD 1/10/11
CGB 01/10/11
F.G.=80.5 LF RCD 1/24/11
CGB 01/25/11

U.S. ROUTE 5
HARTFORD AVENUE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
2) THE WALL SHOWN ON THE SECTIONS IS FOR PRESENTATION ONLY. SEE U.S. RTE. 5 SHEET PILE WALL PLAN AND PROFILE SHEETS AND DETAIL SHEETS FOR CONSTRUCTION REQUIREMENTS.

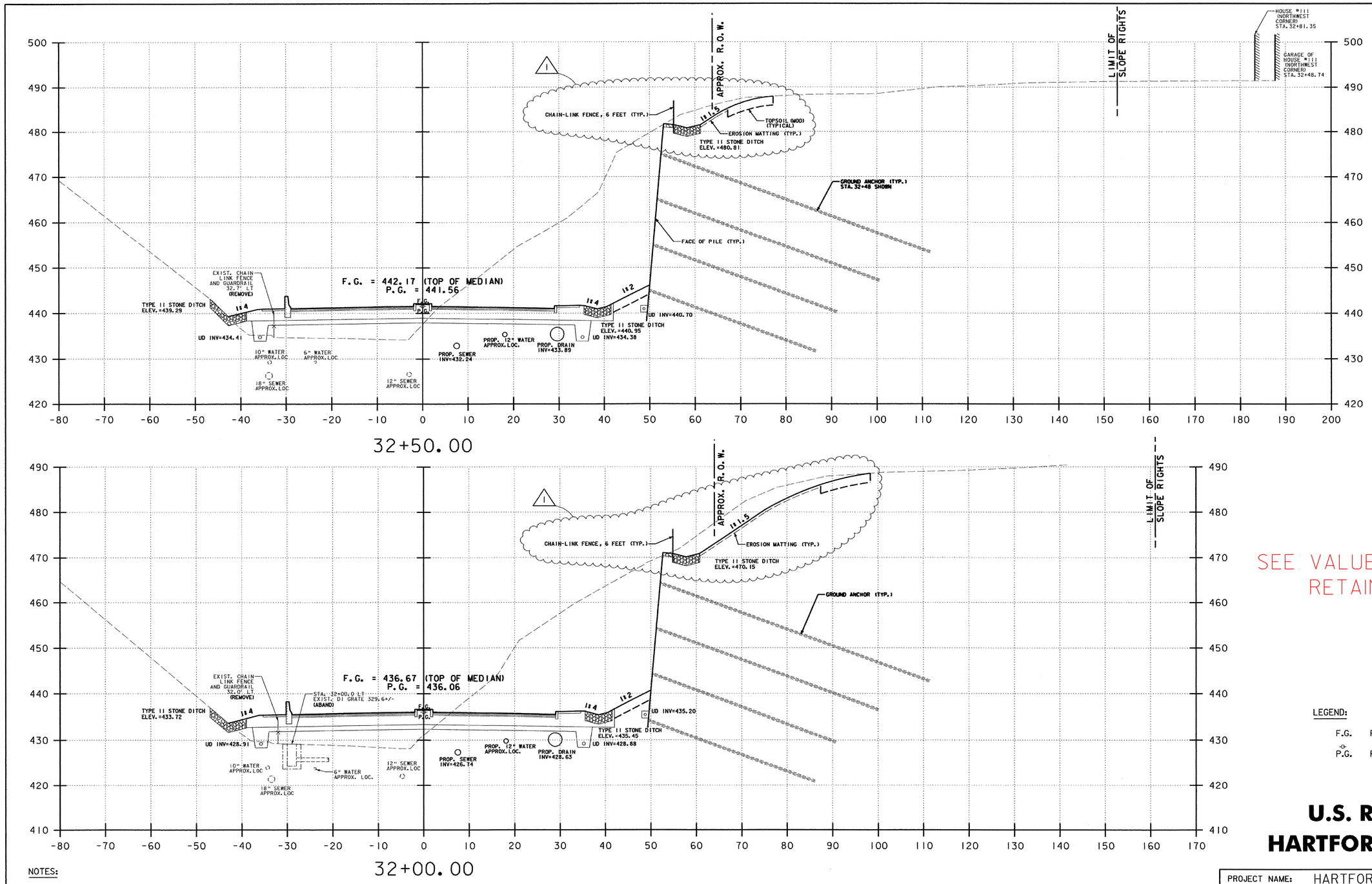
LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: ...z86c027xsl.DGN	PLOT DATE: 3/13/2008
PROJECT LEADER:	DRAWN BY: T. DUGUAY
DESIGNED BY: D. HOWEY	CHECKED BY: D. WOTRING
	SHEET 5 OF 14

REVISED 199 OF 239



SEE VALUE ENGINEERING RETAINING WALL

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

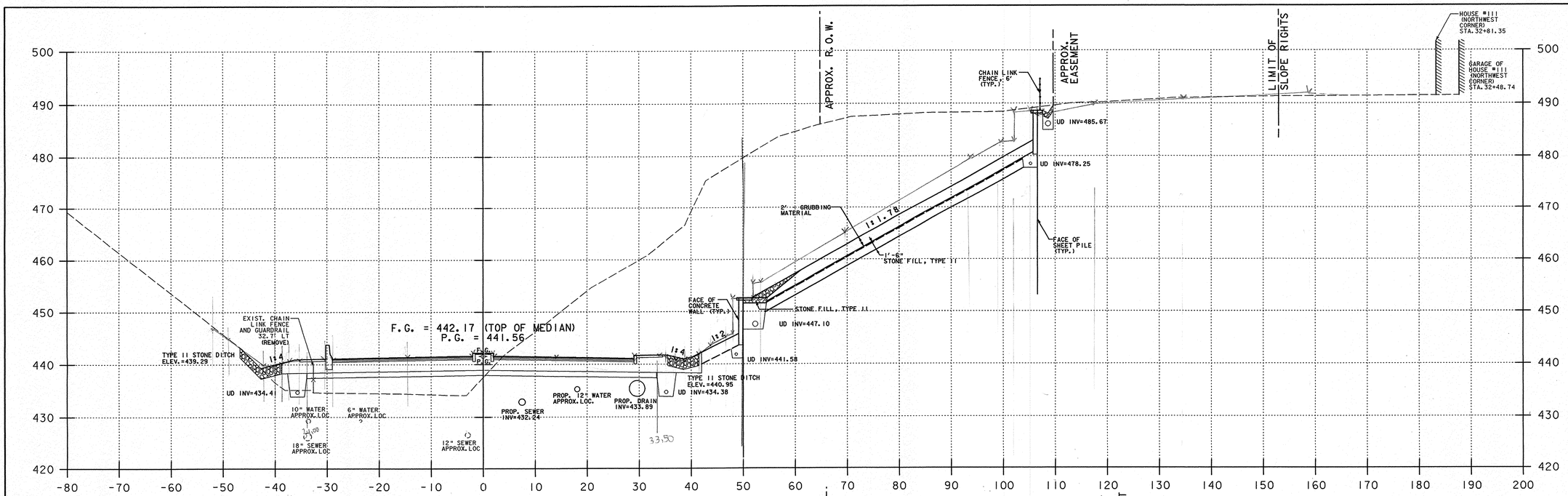
U.S. ROUTE 5
HARTFORD AVENUE

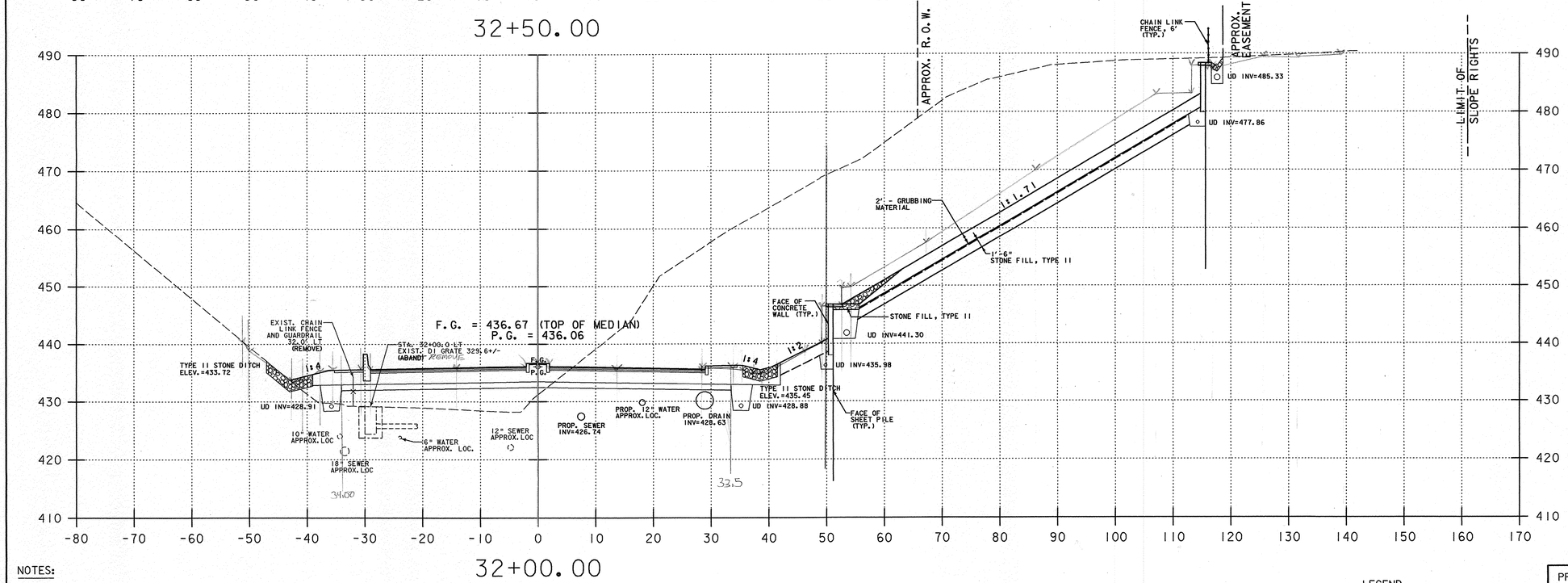
NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
2) THE WALL SHOWN ON THE SECTIONS IS FOR PRESENTATION ONLY. SEE U.S. RTE. 5 GROUND ANCHORED SOLIDER PILE WALL PLAN AND PROFILE SHEET AND DETAIL SHEETS FOR CONSTRUCTION REQUIREMENTS.

1 ADDENDUM #1: REVISED APRIL 18, 2007

PROJECT NAME:	HARTFORD		
PROJECT NUMBER:	RS 0113(40)		
FILE NAME:	z86c027xsl.dgn	PLOT DATE:	4/18/2007
PROJECT LEADER:	KEN UPMAL	DRAWN BY:	E. ATKINS
DESIGNED BY:	K. ISHIKURA E. ATKINS	CHECKED BY:	K. ISHIKURA
		SHEET	200 OF 239





COMMON EXCAVATION
DITCH LT = 8x1.5 = 12 s.f.
ROADWAY 607x1.55 = 940.85 s.f.
LANDSCAPE RT = 8x2 = 16 s.f.
COMMON = 952.85 SF
CWB 01/25/11
BL 3/23/10
RCD 1/10/11

SAND 67.5
SUBBASE ~~173.32 SF~~ 160.1 SF
BL 3/23/10
RCD 1/10/11
CWB 01/10/11
F.G. = 80.50 LF RCD 1/24/11
CWB 01/

COMMON EXCAVATION
ROADWAY = 604/604x1.55 = 936.2 s.f.
DITCH LT = 6x1.55 = 9.3 s.f.
LANDSCAPE RT = 17.75 s.f.
COMMON = 945.5 SF
CWB 01/25/11
BL 3/23/10
RCD 1/11/10

SAND 67.5 s.f.
SUBBASE ~~173.32 SF~~ 157.3
BL 3/23/10
RCD 1/10/11
CWB 01/10/11
F.G. = 81.0 LF
RCD 1/24/11 CWB 01/25/11

U.S. ROUTE 5
HARTFORD AVENUE

NOTES:

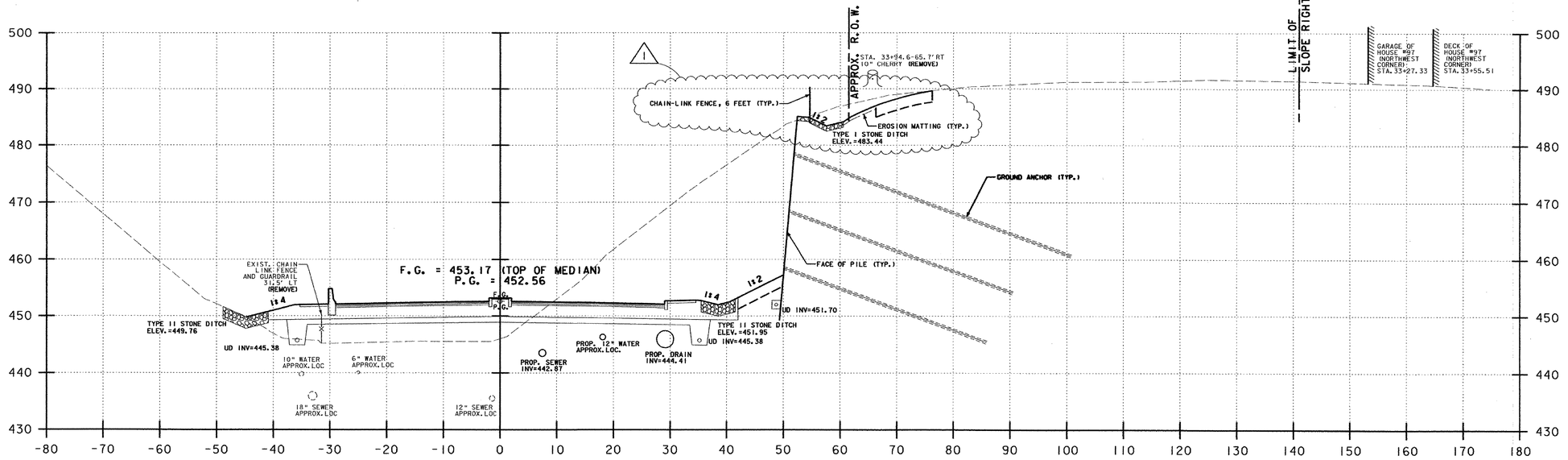
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
2) THE WALL SHOWN ON THE SECTIONS IS FOR PRESENTATION ONLY. SEE U.S. RTE. 5 SHEET PILE WALL PLAN AND PROFILE SHEETS AND DETAIL SHEETS FOR CONSTRUCTION REQUIREMENTS.

LEGEND:

F.G. FINISHED GRADE
P.G. PROFILE GRADE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: ...z86c027xsl.DGN	PLOT DATE: 3/13/2008
PROJECT LEADER:	DRAWN BY: T. DUGUAY
DESIGNED BY: D. HOWEY	CHECKED BY: D. WOTRING
	SHEET 6 OF 14

REVISED 200 OF 239



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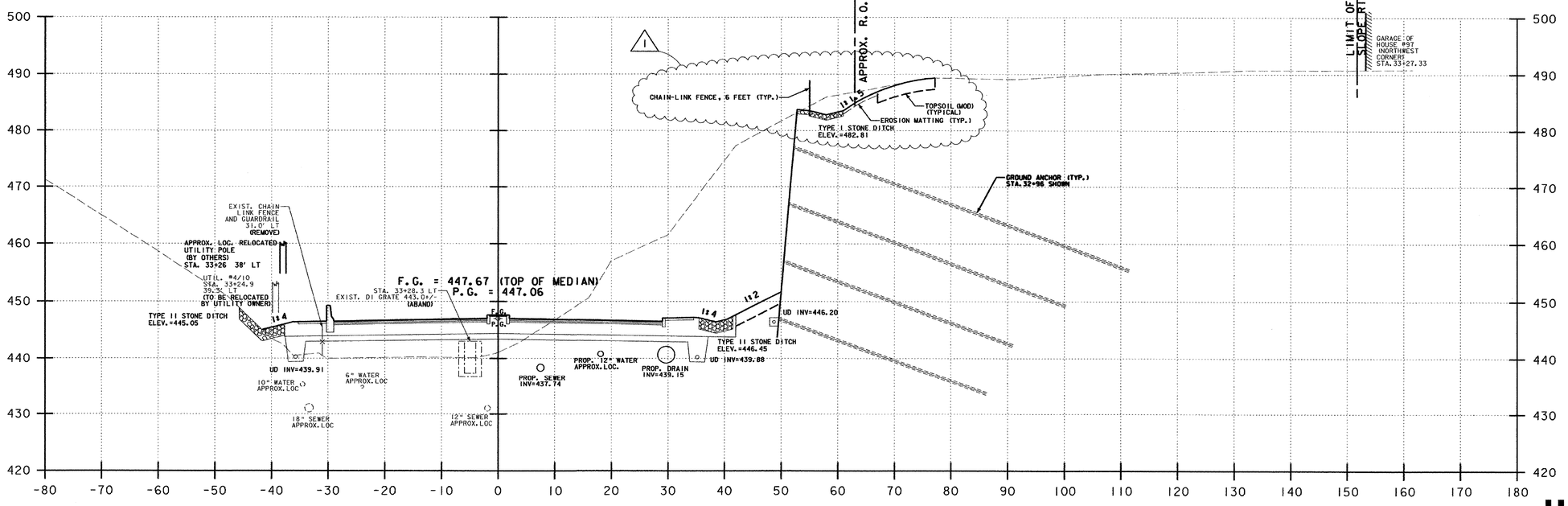


33+00.00

SEE VALUE ENGINEERING RETAINING WALL

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

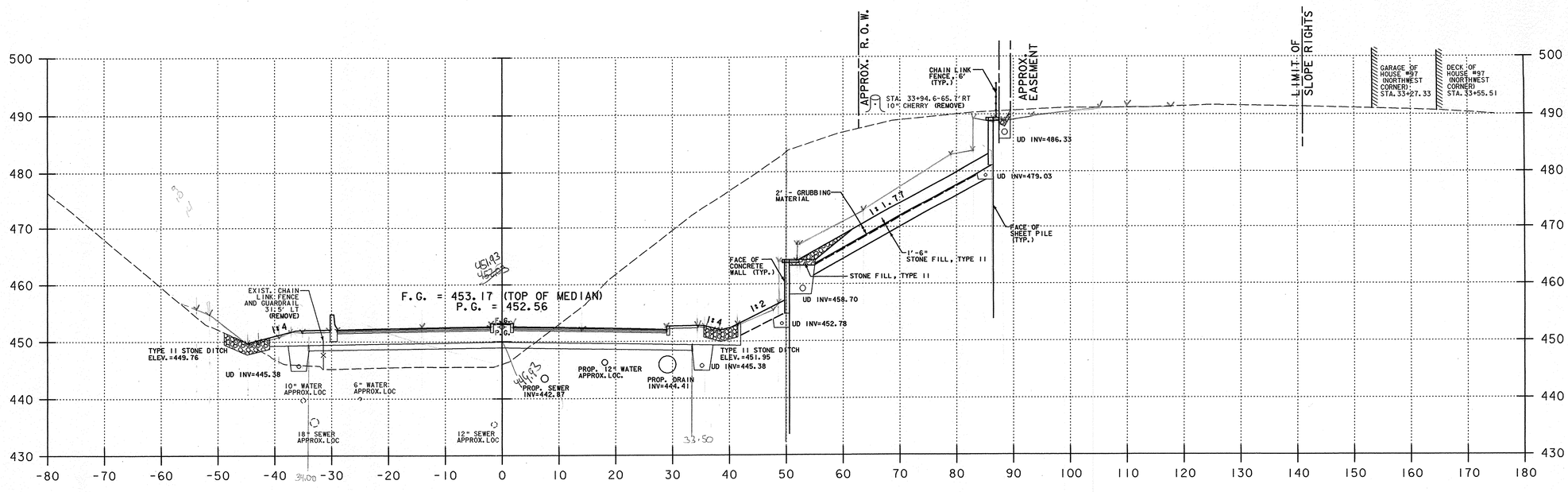
U.S. ROUTE 5
HARTFORD AVENUE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
2) THE WALL SHOWN ON THE SECTIONS IS FOR PRESENTATION ONLY. SEE U.S. RTE. 5 GROUND ANCHORED SOLIDER PILE WALL PLAN AND PROFILE SHEET AND DETAIL SHEETS FOR CONSTRUCTION REQUIREMENTS.

1 ADDENDUM #1: REVISED APRIL 18, 2007

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 4/18/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 201 OF 239



NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
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LEGEND:

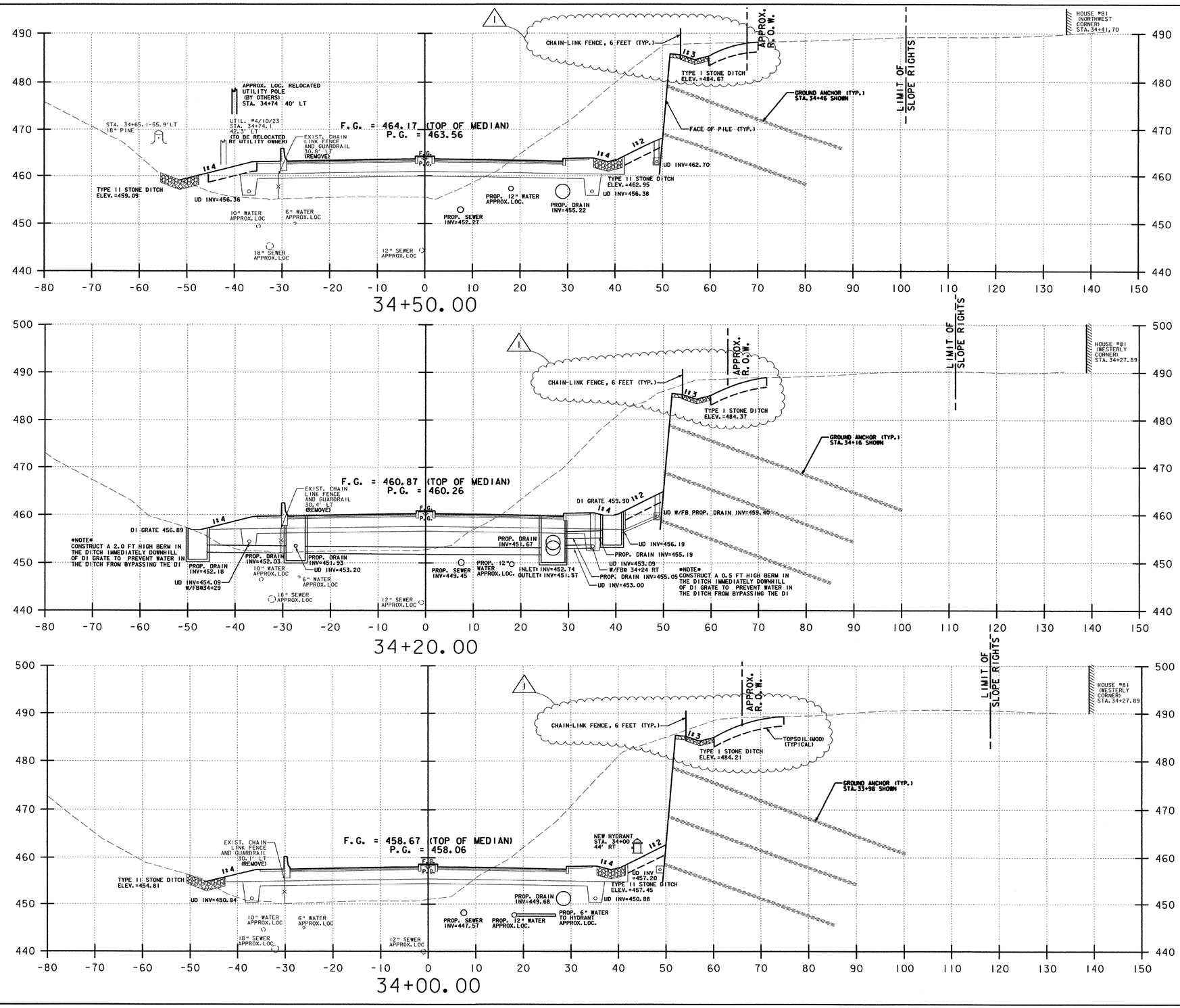
F.G. FINISHED GRADE

P.G. PROFILE GRADE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	...z86c027xsl.DGN
PROJECT LEADER:	
DESIGNED BY:	D. HOWEY
PLOT DATE:	3/13/2008
DRAWN BY:	T. DUGUAY
CHECKED BY:	D. WOTRING
SHEET	7 OF 14

U.S. ROUTE 5
HARTFORD AVENUE

REVISED 201 OF 239



SEE VALUE ENGINEERING RETAINING WALL

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
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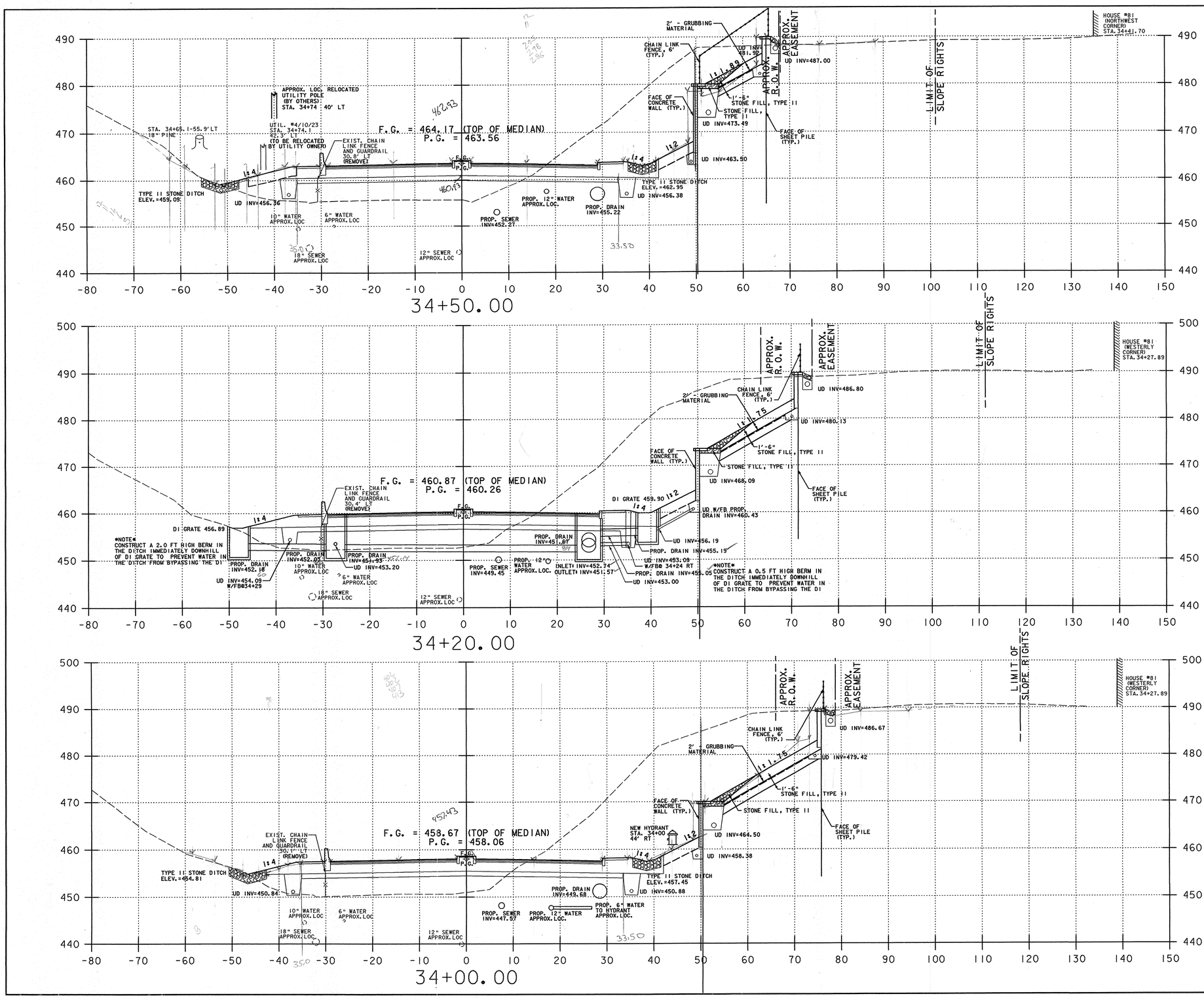
1 ADDENDUM #1: REVISED APRIL 18, 2007

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA, E. ATKINS
PLOT DATE: 4/18/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 202 OF 239



Common Excavation
Ditch LT = 12.5 s.f.
Roadway 286x1.55 = 443.3 s.f.
Landscape RT = 17 s.f.
Landscape LT 0 s.f.
Common = 455.8
BL 3/23/10
RCD 1/10/11
CGB 01/25/11

BL 3/23/10
SAND -68.50
SUBBASE 168.01
149.6 SF
CGB 01/10/11
F.G. = 80.0 LF RCD 1/24/11
CGB 01/25/11

Common Excavation
Ditch LT ~~8.5x2=12.4 s.f.~~ 5x2 = 10 s.f.
Roadway 402x1.55 623.1 ID
Landscape RT. 8.5x2 = 17 s.f.
Common = 633.1 s.f.
BL 3/23/10
CGB 01/10/11
CGB 01/25/11

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

NOTES:

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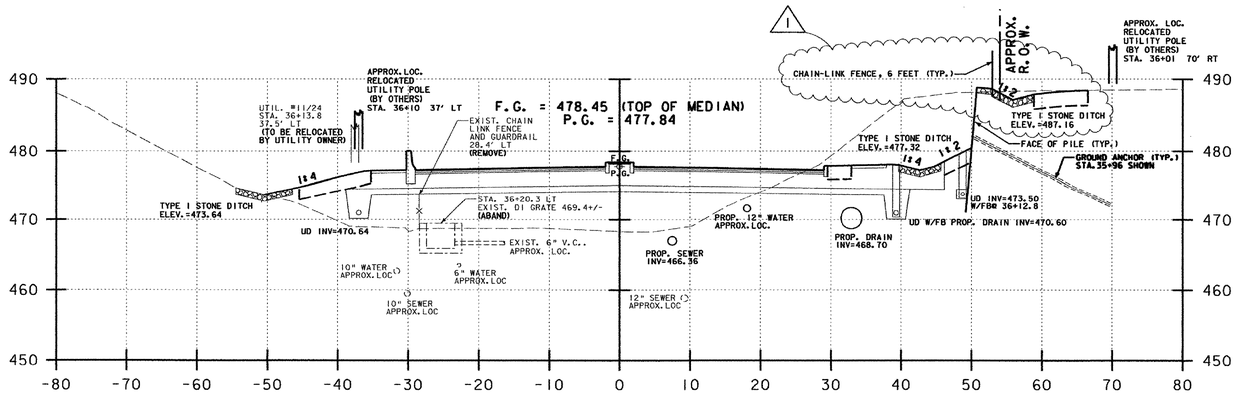
BL 3/23/10
SAND 68.5 s.f.
SUBBASE ~~180.80~~ 161.8
F.G. = 84.5 LF RCD 1/24/11
CGB 01/25/11
RCD 1/10/11
CGB 01/10/11

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: ...z86c027xsl.DGN	PLOT DATE: 3/13/2008
PROJECT LEADER:	DRAWN BY: T. DUGUAY
DESIGNED BY: D. HOWEY	CHECKED BY: D. WOTRING
	SHEET 8 OF 14

REVISED 202 OF 239



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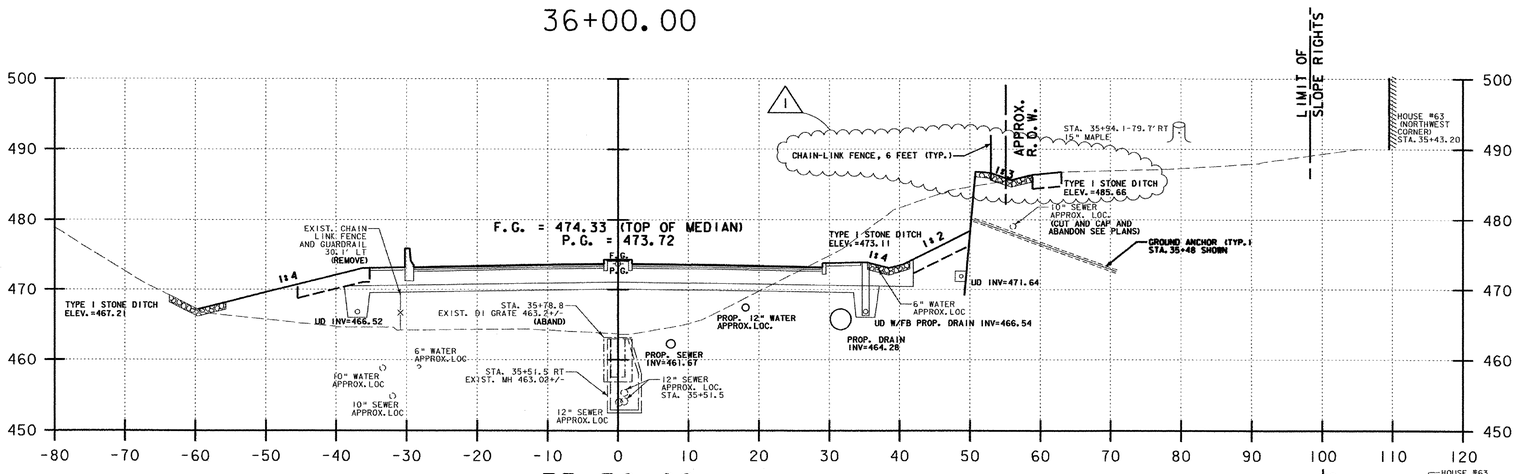
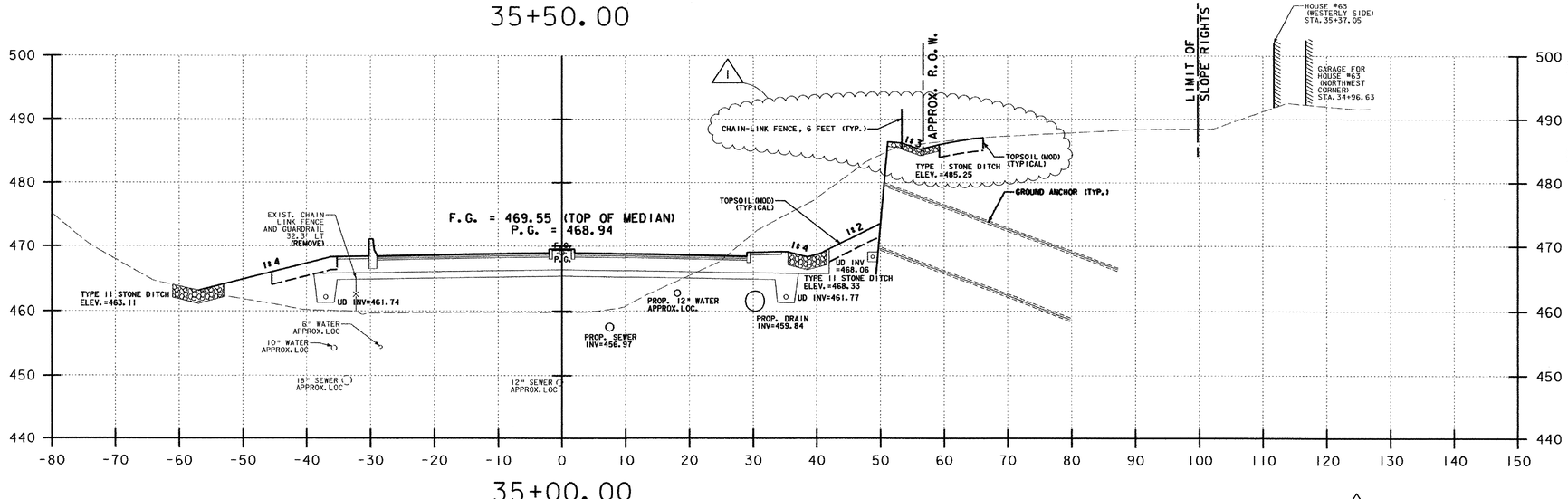


35+50.00



35+00.00

SEE VALUE ENGINEERING RETAINING WALL

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
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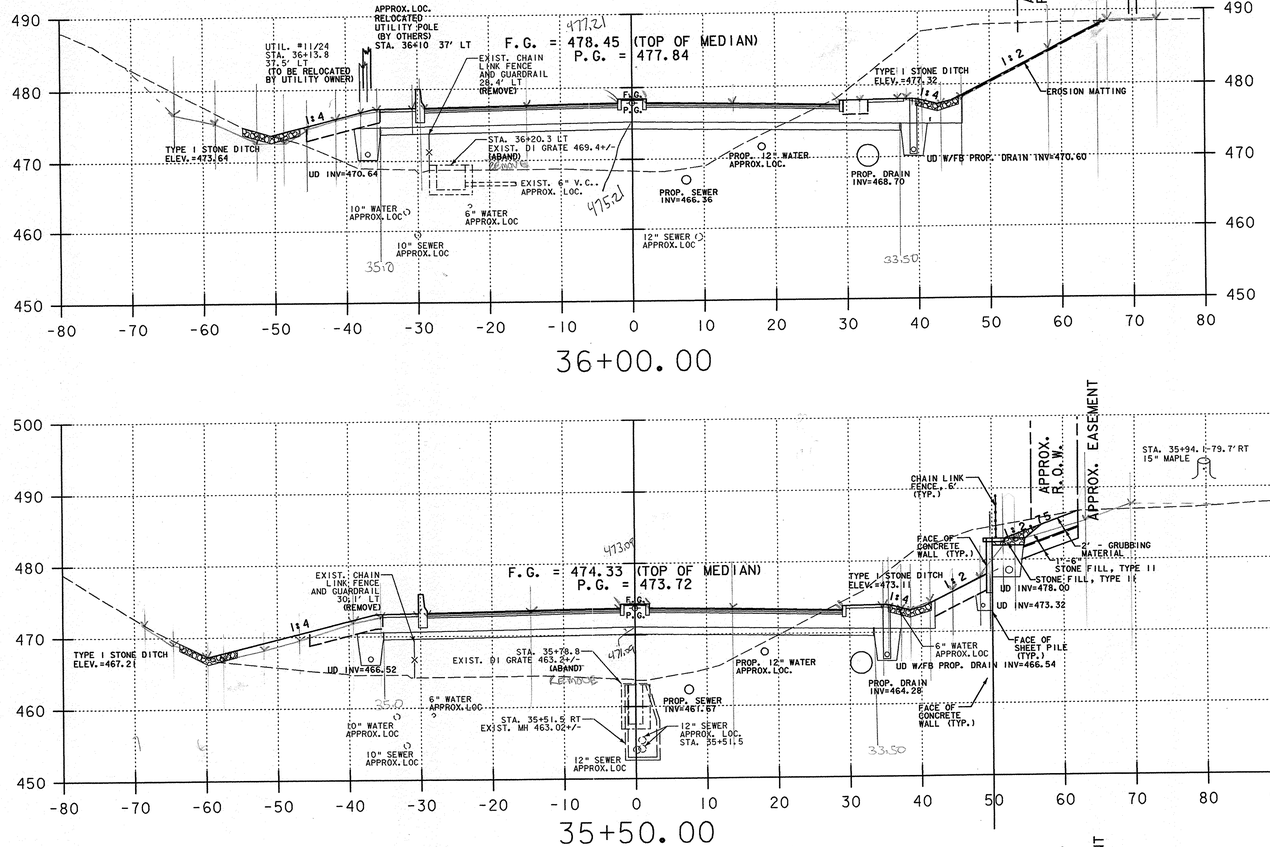
1 ADDENDUM #1: REVISED APRIL 18, 2007

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA, E. ATKINS
PLOT DATE: 4/18/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 203 OF 239



LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

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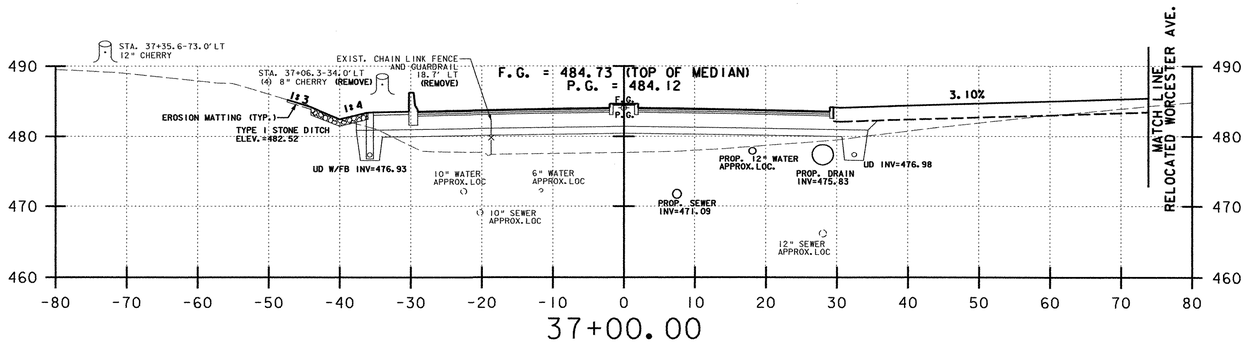
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: ...z86c027xsl.DGN	PLOT DATE: 3/13/2008
PROJECT LEADER:	DRAWN BY: T. DUGUAY
DESIGNED BY: D. HOWEY	CHECKED BY: D. WOTRING
	SHEET 9 OF 14

REVISED 203 OF 239



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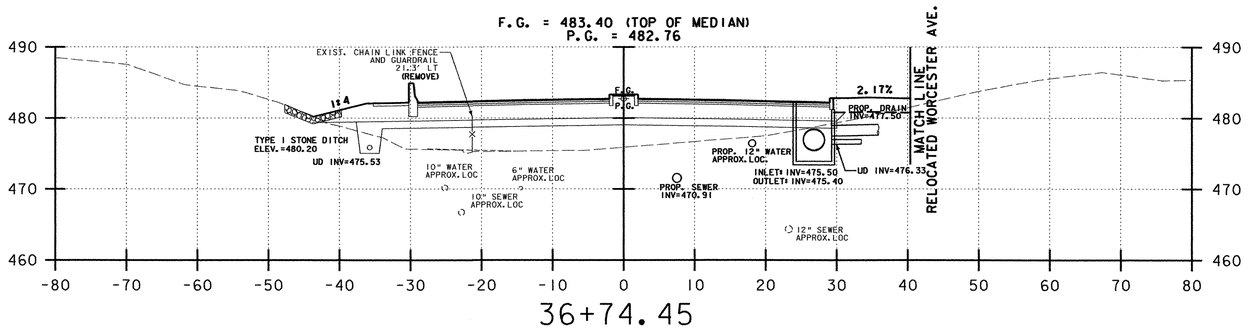

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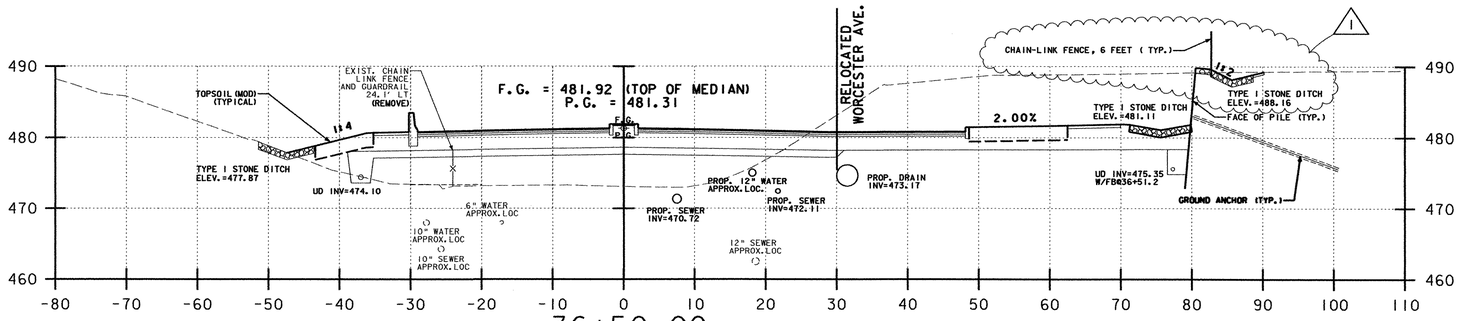

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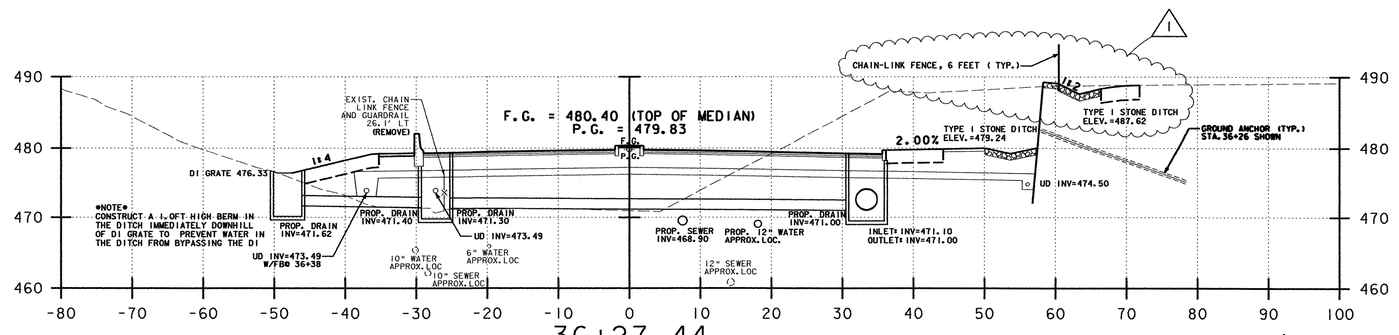

36+27.44

1 ADDENDUM #1: REVISED APRIL 18, 2007

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
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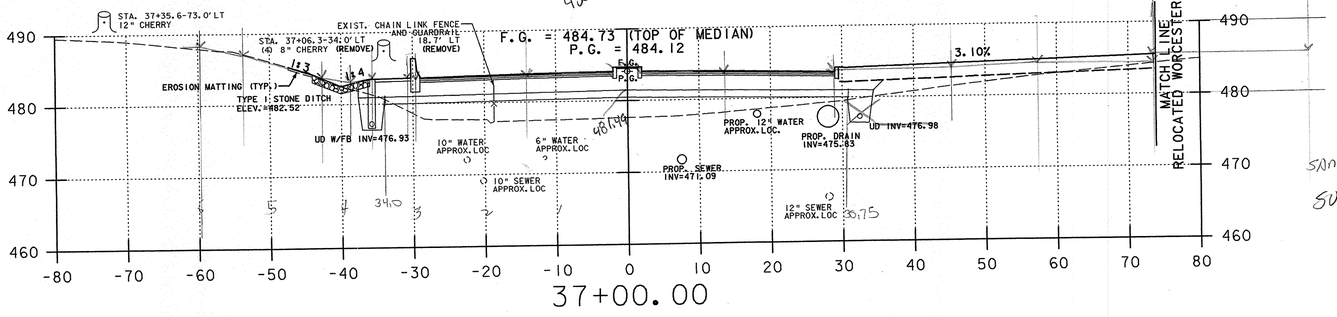
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 4/18/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 204 OF 239



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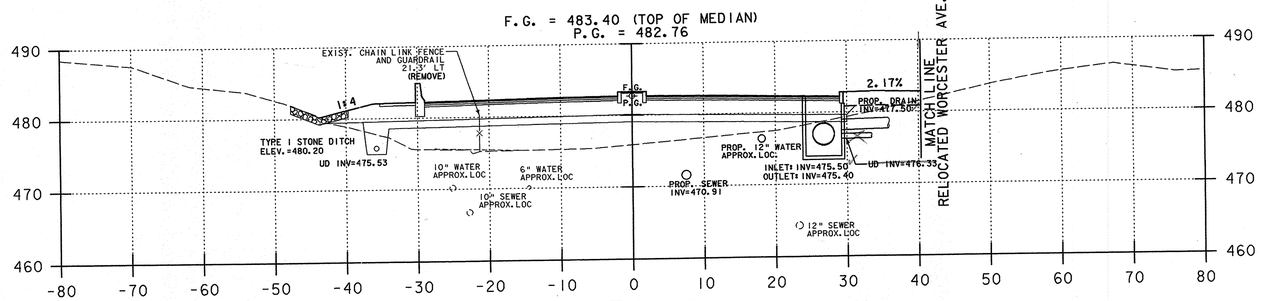

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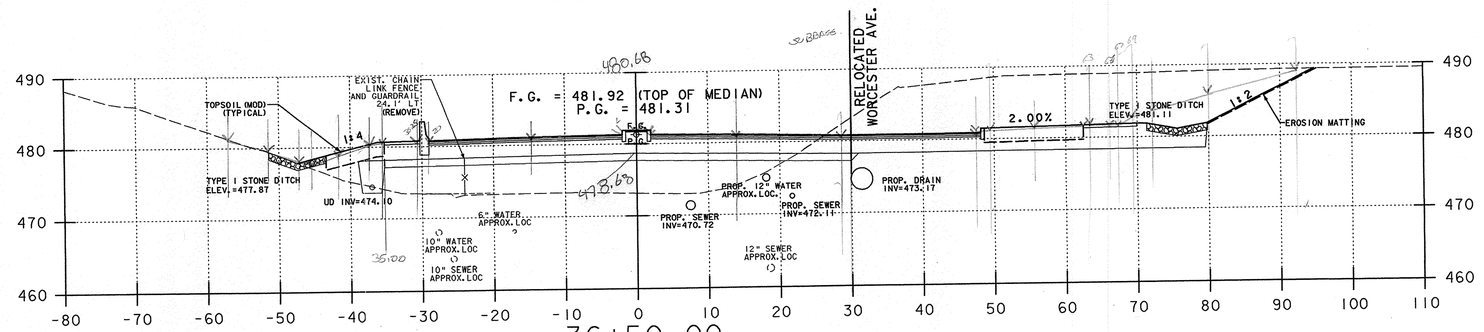

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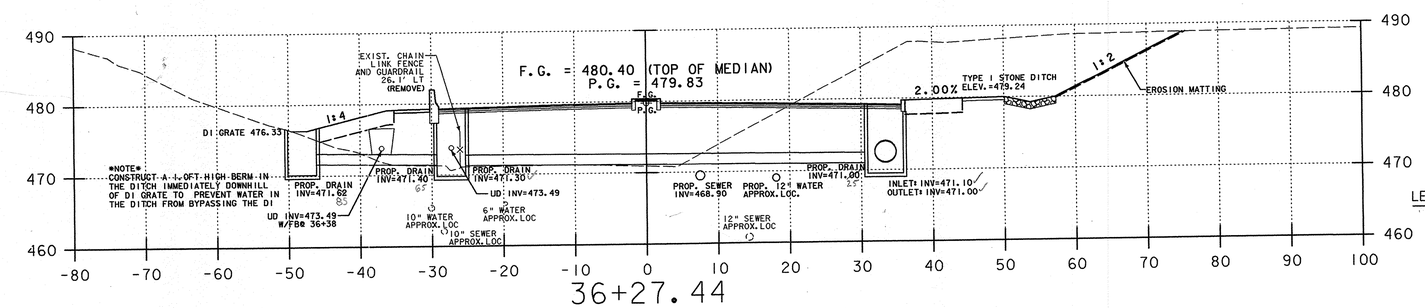

36+27.44

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
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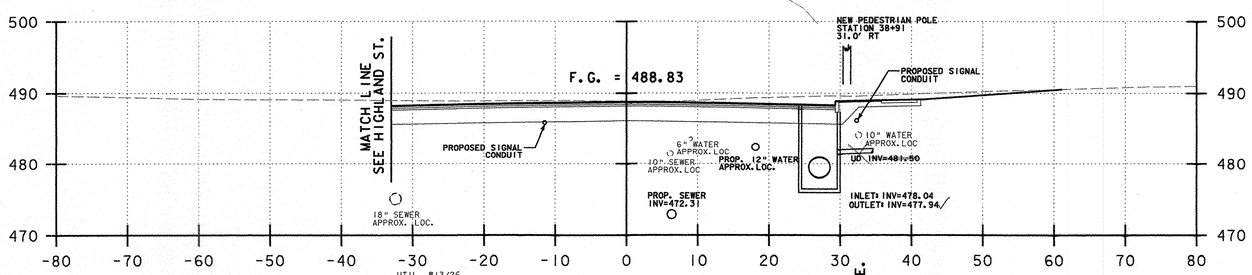
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: ...z86c027xsl.DGN
PROJECT LEADER:
DESIGNED BY: D. HOWEY

PLOT DATE: 3/13/2008
DRAWN BY: T. DUGUAY
CHECKED BY: D. WOTRING
SHEET 10 OF 14

REVISED 204 OF 239



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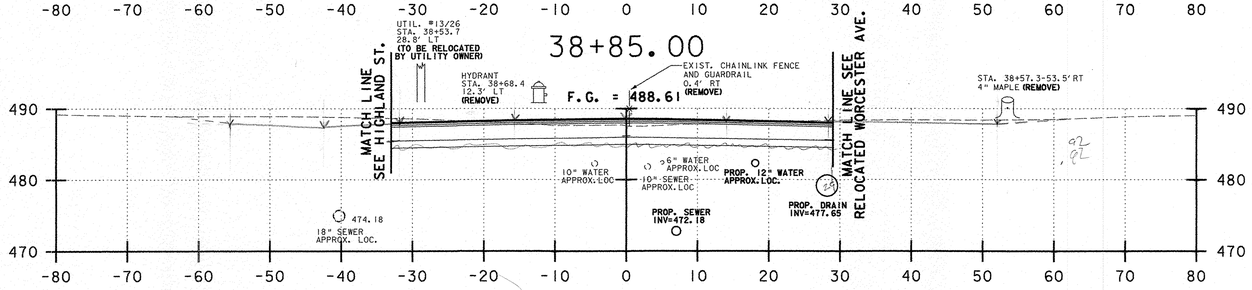

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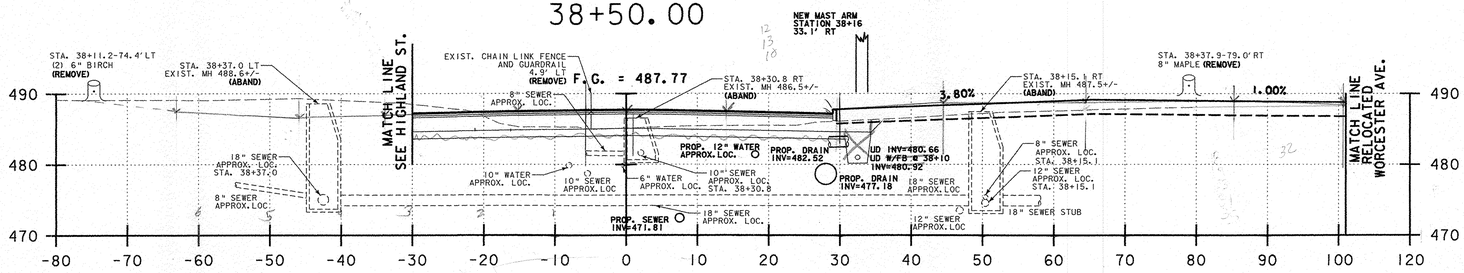

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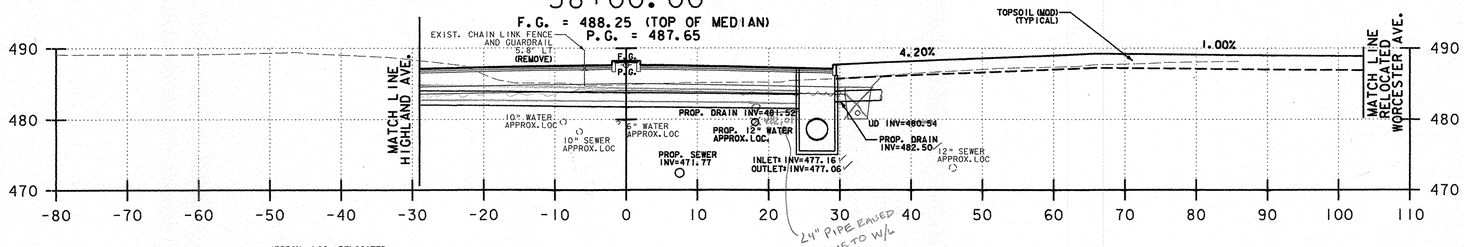

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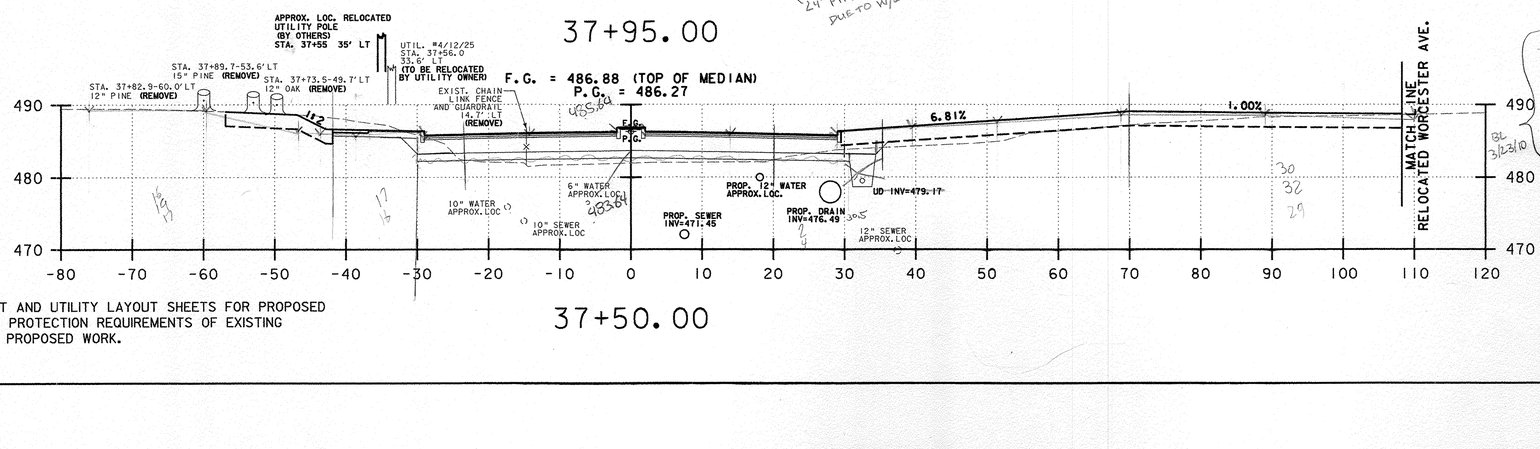


37+50.00

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

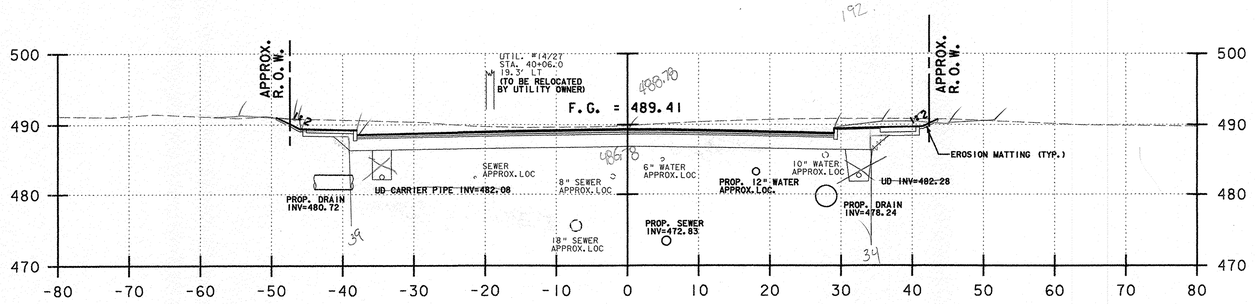
LEGEND:

F.G. FINISHED GRADE

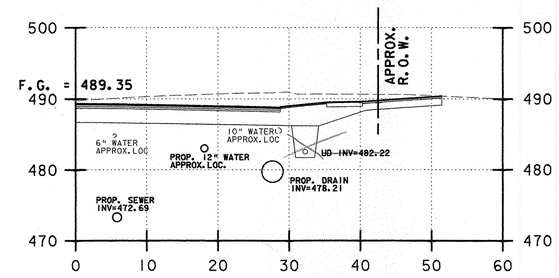
P.G. PROFILE GRADE

U.S. ROUTE 5
HARTFORD AVENUE

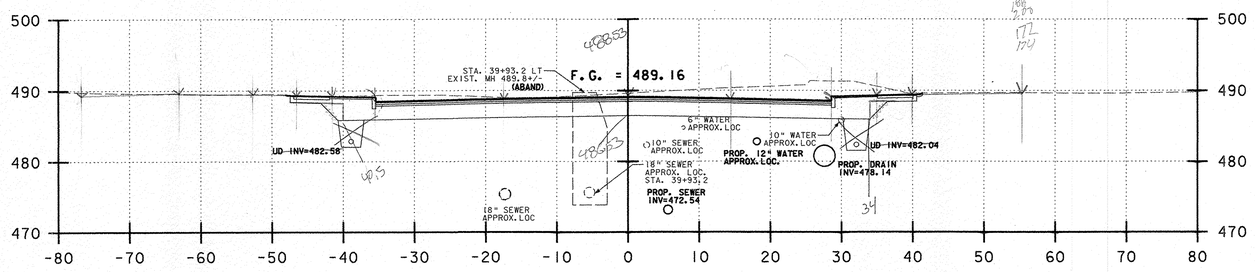
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027xsl.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	1/11/2007
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET 205	OF 239



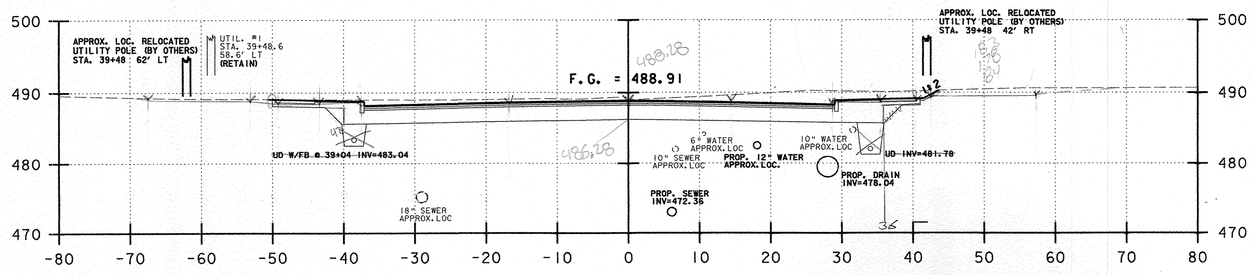
40+00.00



39+88.68 DRIVEWAY
ASKEW 4°34'2.4" RT



39+50.00



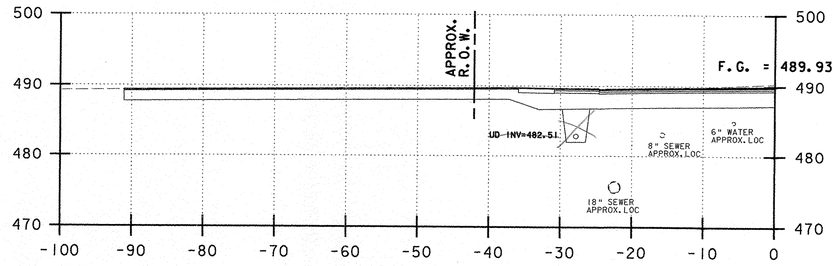
39+00.00

NOTES:

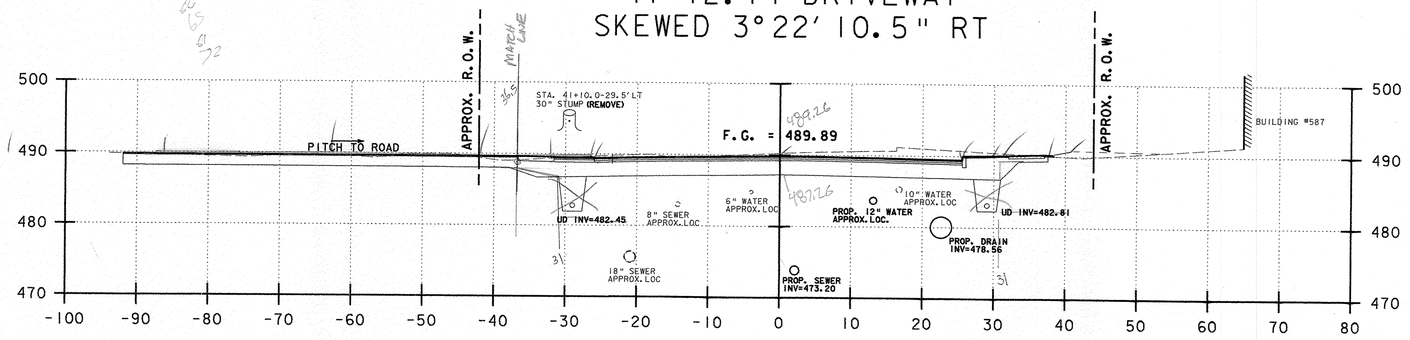
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

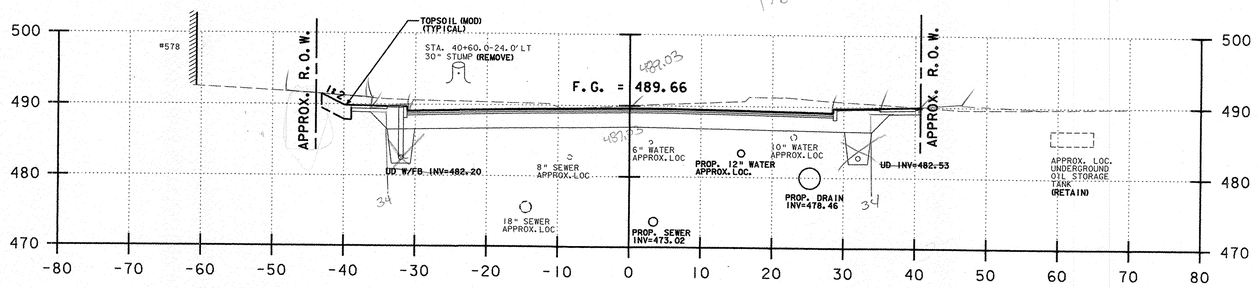
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 206 OF 239



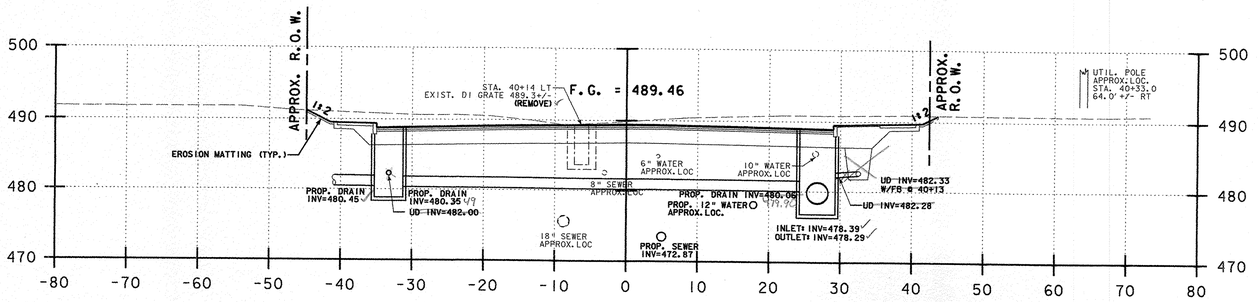
41+12.14 DRIVEWAY
SKEWED 3°22'10.5" RT



41+00.00



40+50.00



40+10.00

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

COMMON EXCAVATION ROADWAY 1374.55 = 212 S.F. BC 3/19/10
DRIVEWAY LEFT CON.SD = 98 S.F. RCD 1/11/11

SUBBASE - 142.94 BC 3/23/10 RCD 1/11/11

F.G. = 62.0 LF RCD 1/24/11

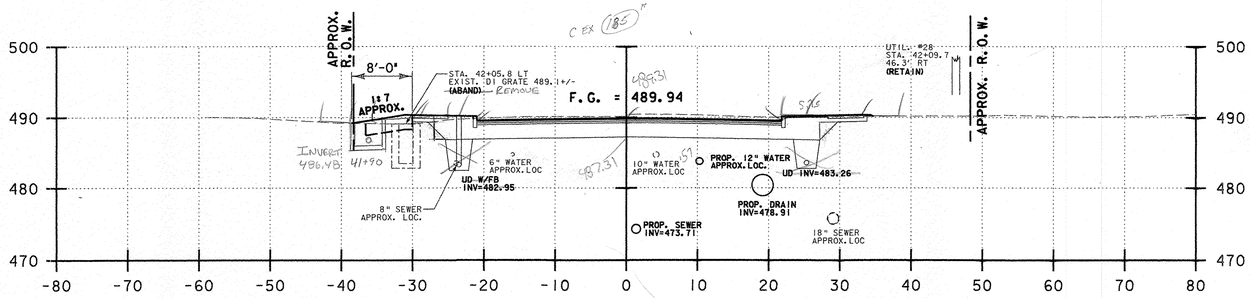
SUBBASE - 148.94 BC 3/23/10 RCD 1/11/11

COMMON EXCAVATION ROADWAY = 180 X 1.55 = 279.0 S.F. } BC 3/23/10
LANDSCAPE ☐ = 4.5 X 2 = 9 S.F. } RCD 1/11/11

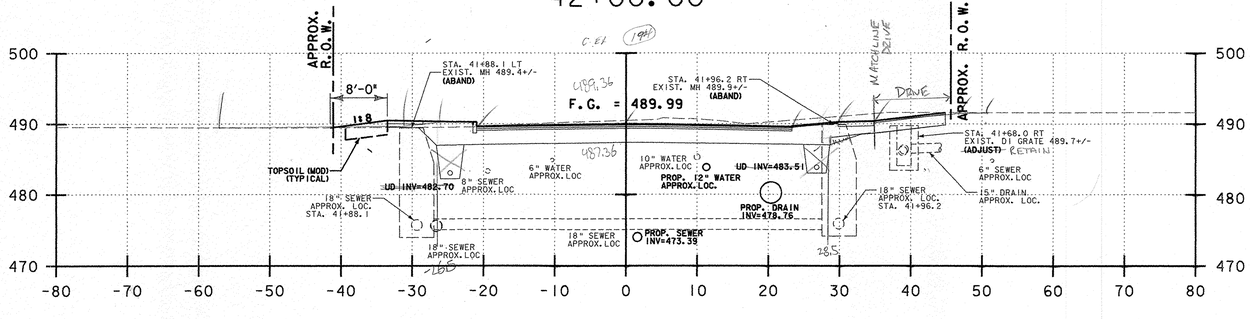
F.G. = 68.0 LF RCD 1/24/11

U.S. ROUTE 5
HARTFORD AVENUE

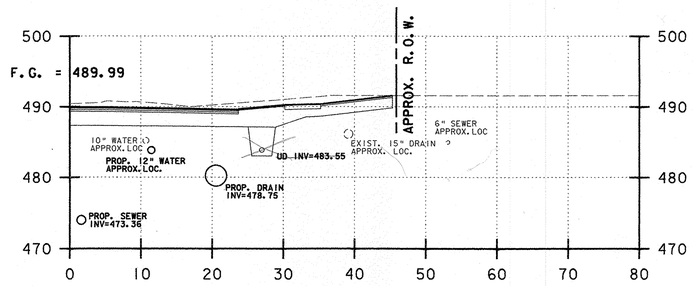
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027xsl.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	1/11/2007
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET	207 OF 239



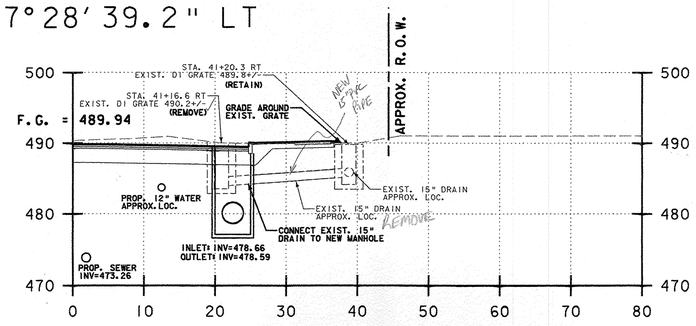
42+00.00



41+50.00



41+41.83 DRIVEWAY
ASKEW 7°28'39.2" LT



41+16.36

NOTES:

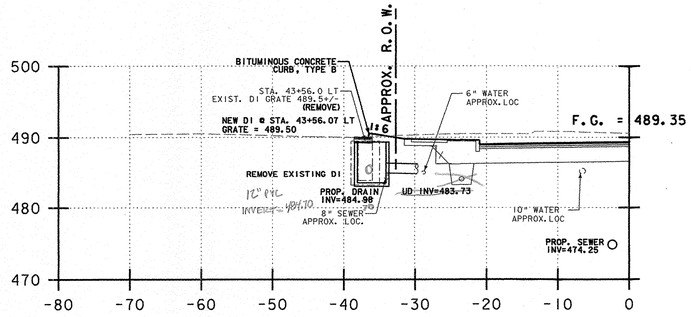
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

27'
SUBBASE 122.29 SF ✓ BL 3/23/10
COMMON = 170.0 SF ✓ RCD 1/11/11
F.G. = 54.0 LF ✓ CGB 01/11/11
RCD 1/24/11

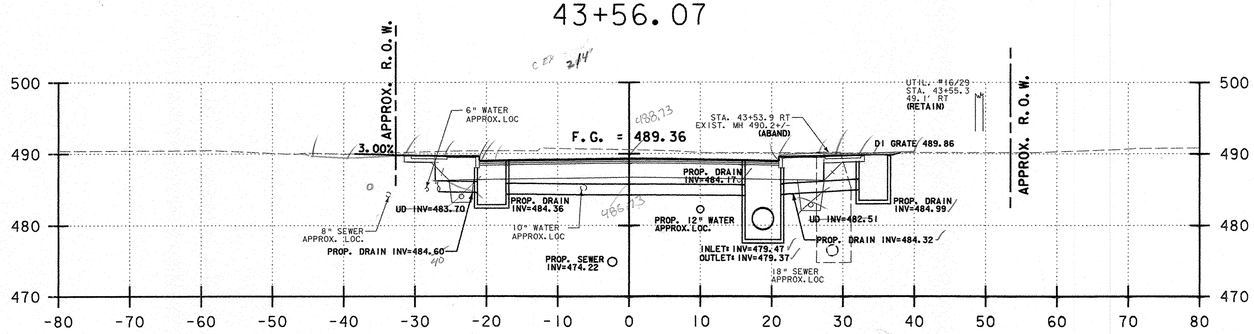
SUBBASE 130.81 SF ✓ BL 3/23/10 CGB 01/11/11
COMMON = 188.7 SF ✓ RCD 1/11/11
F.G. = 55.0 LF ✓ RCD 1/24/11

U.S. ROUTE 5
HARTFORD AVENUE

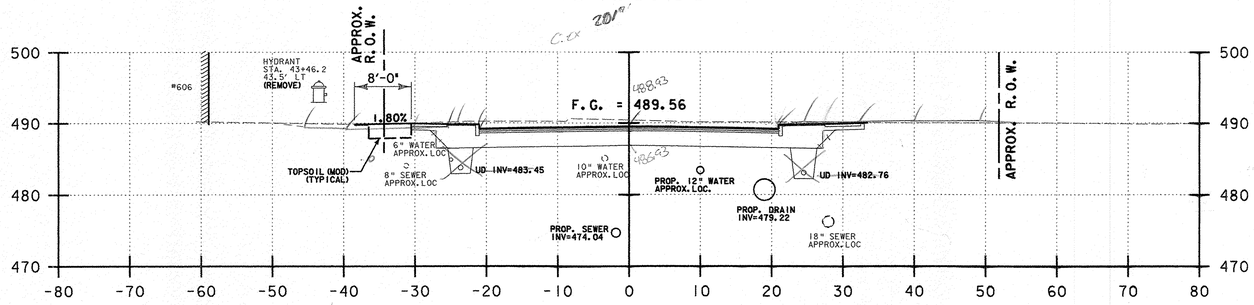
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027xsl.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	1/11/2007
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET	208 OF 239



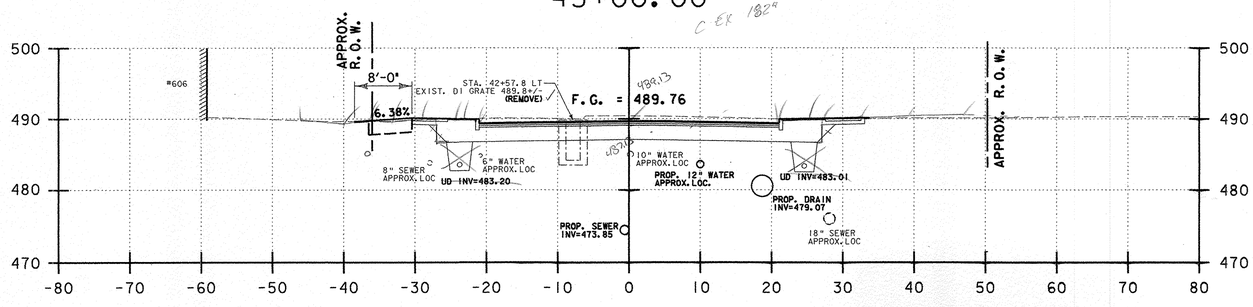
43+56.07



43+50.00



43+00.00



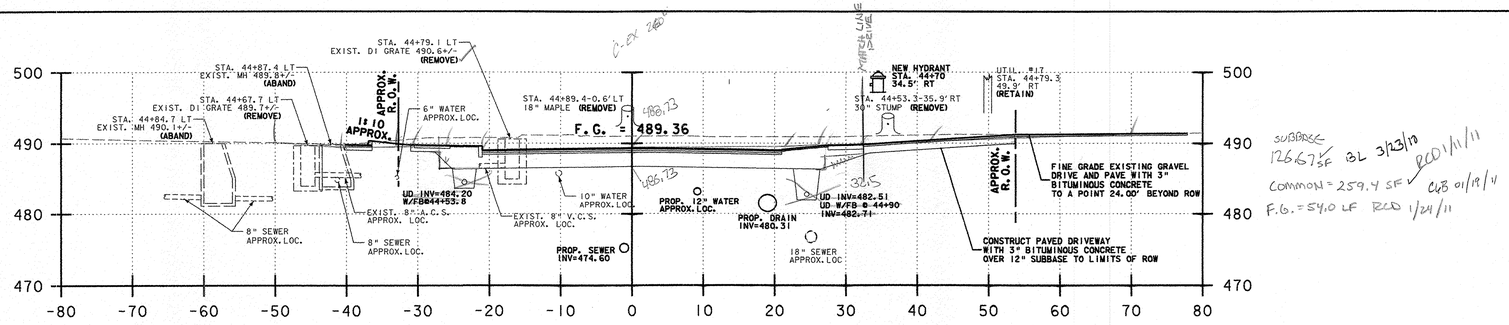
42+50.00

NOTES:

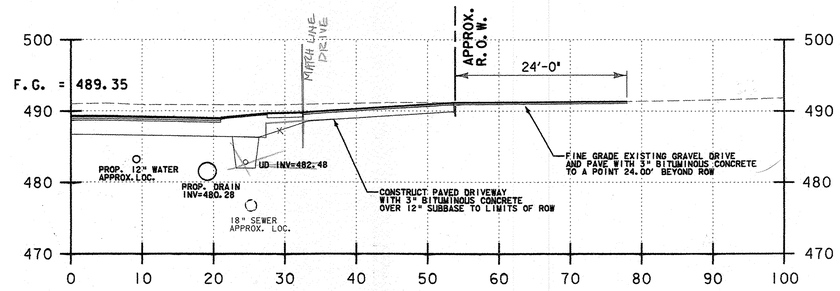
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

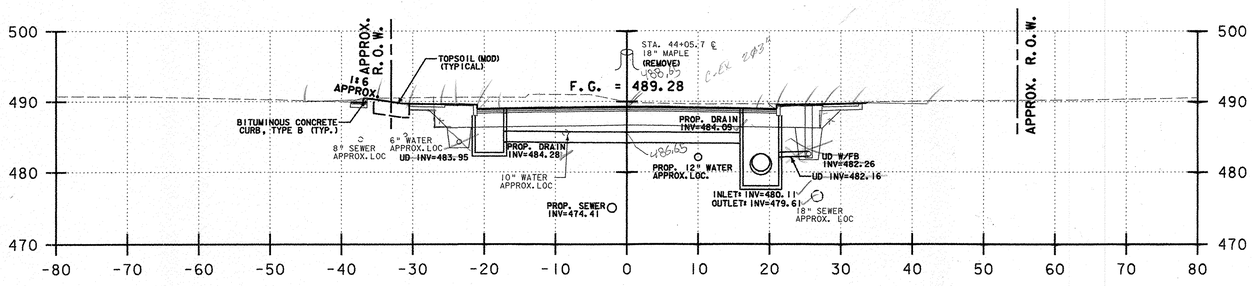
PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 209 OF 239



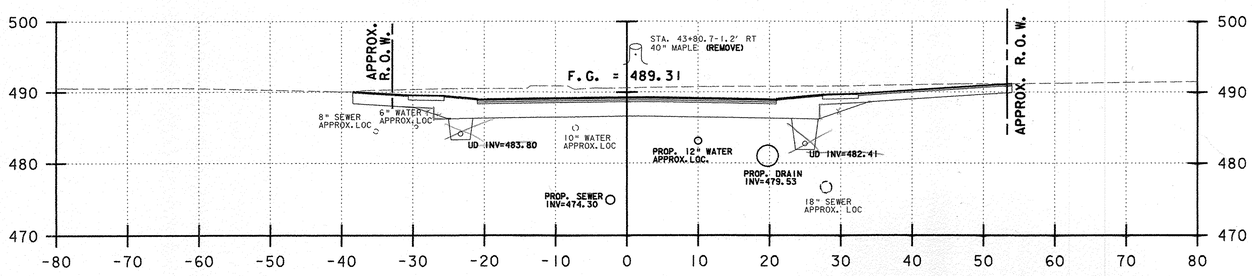
44+50.00



44+44.44
DRIVEWAY



44+00.00
SAG



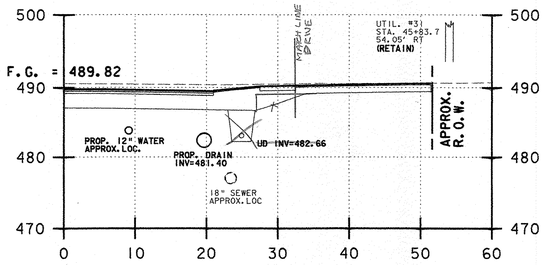
43+70.85
DRIVEWAY

NOTES:

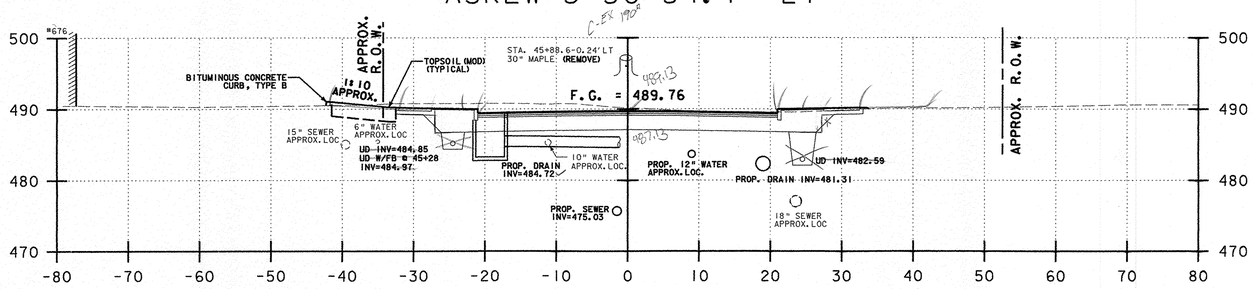
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 210 OF 239

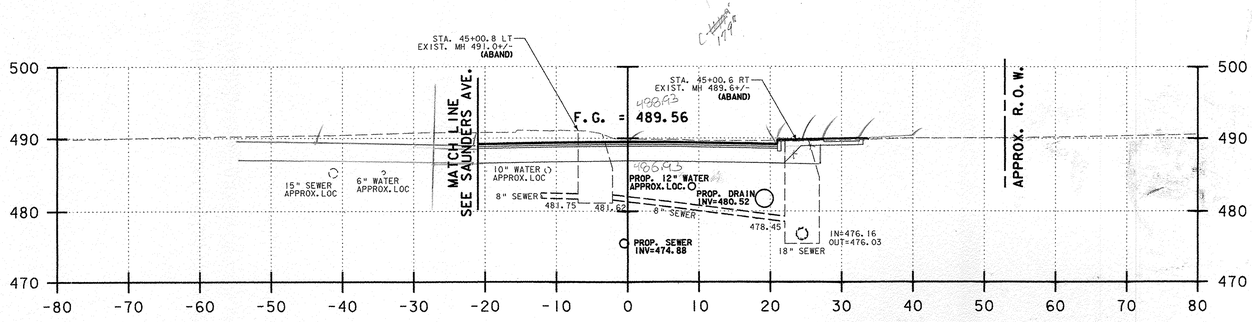


45+63.17 DRIVEWAY
ASKEW 3°50'54.1" LT



45+50.00

45+10.00



45+00.00

NOTES:

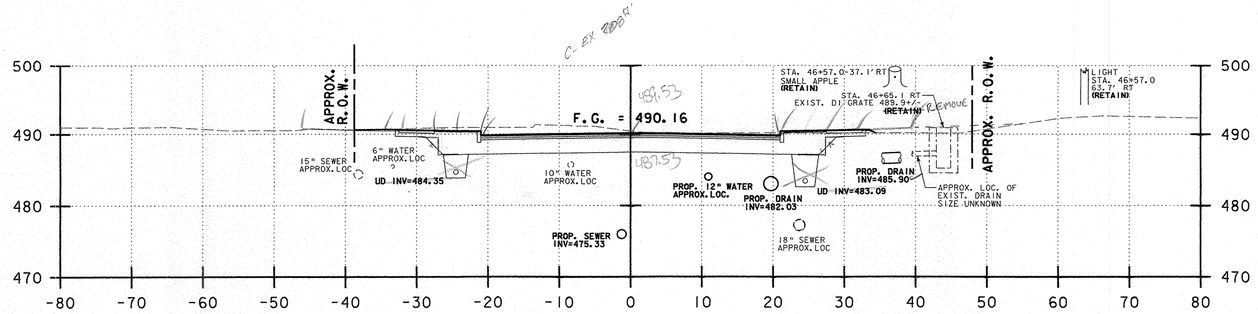
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

SUBBASE = 126.73 ✓ BL 3/23/10
COMMON = 192.7 RCD 1/12/11
F.G. = 54.0 LF RCD 1/24/11
CB 01/12/11

SUBBASE 116.52 ✓ BL 3/23/10 CB 01/12/11
COMMON = 201.7 ✓ RCD 1/12/11
F.G. = 54.0 LF RCD 1/24/11

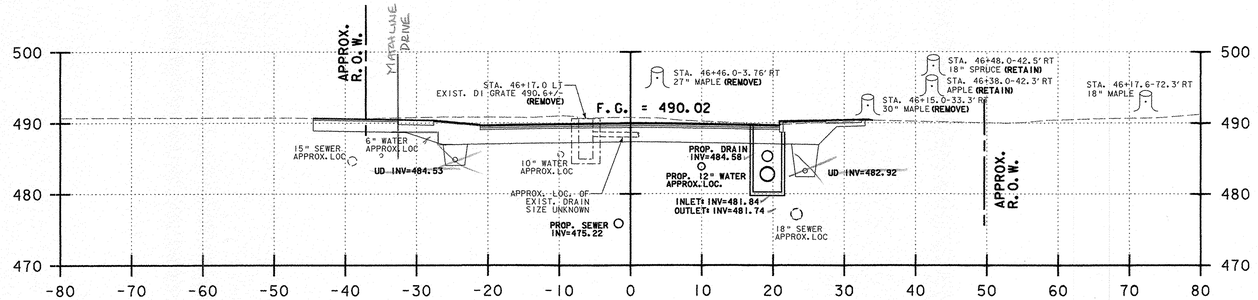
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 211 OF 239

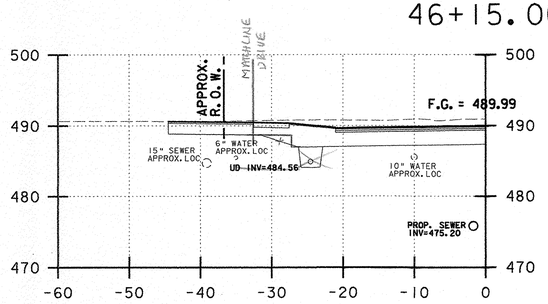


46+50.00

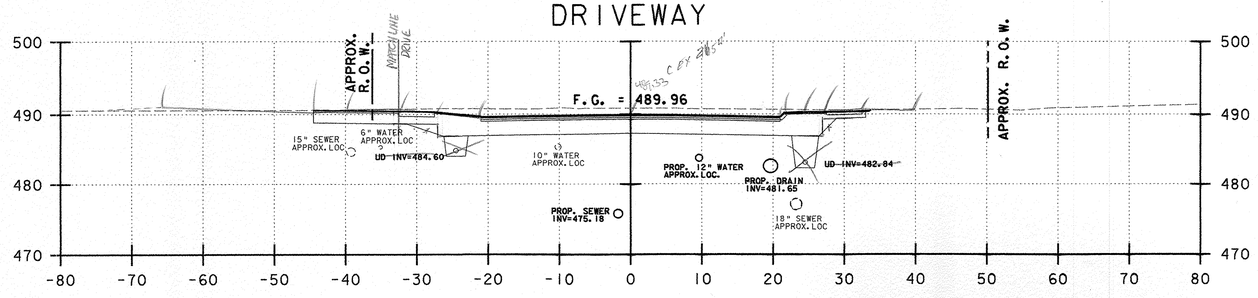
SUBBASE 126.1 SF ✓ BL 3/23/10
COMMON = 189.0 SF ✓ RCD 1/12/11 LCB 01/12/11
F.G. = 54.0 LF RCD 1/24/11



46+15.00



46+07.36
DRIVEWAY



46+00.00

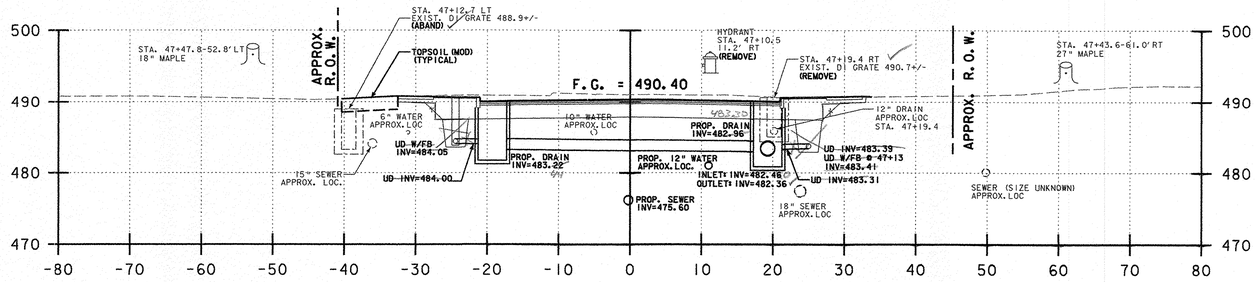
SUBBASE 123.8 SF ✓ BL 3/23/10
COMMON = 218.0 SF ✓ RCD 1/12/11 LCB 01/12/11
F.G. = 54.0 LF RCD 1/24/11

NOTES:

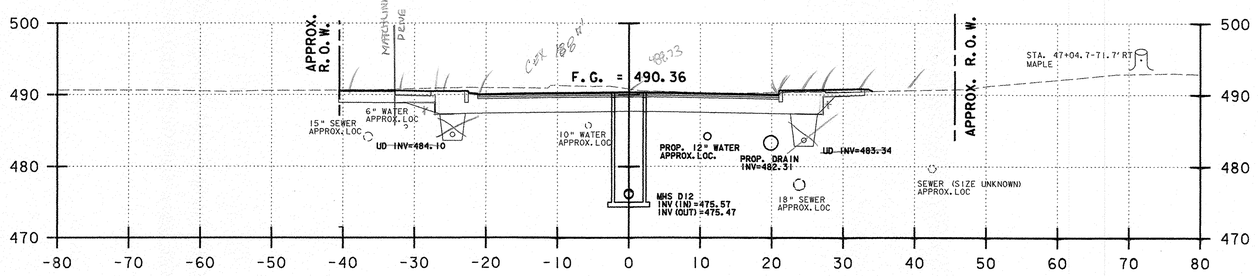
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

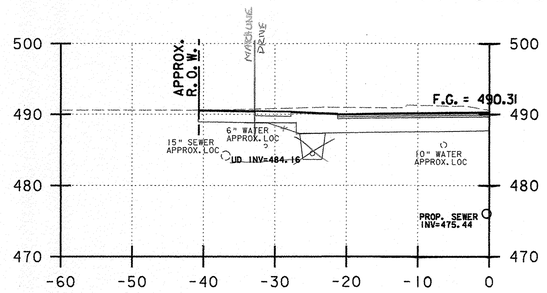
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 212 OF 239



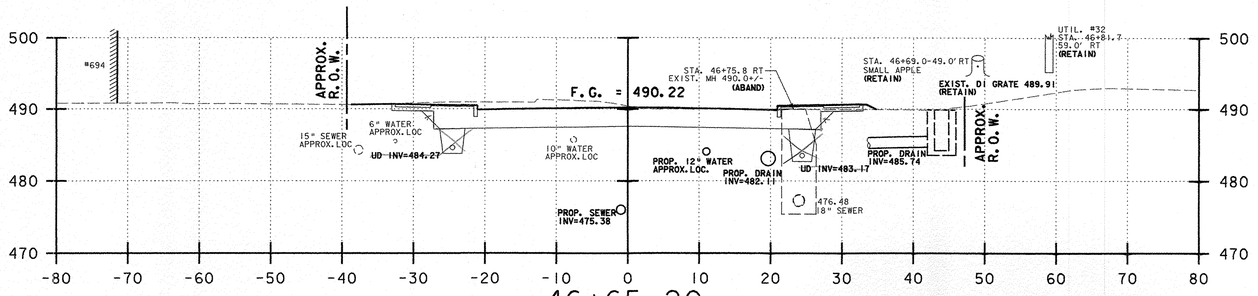
47+10.00



47+00.00



46+88.02 DRIVEWAY
ASKEW 7°50'49.7" RT



46+65.20

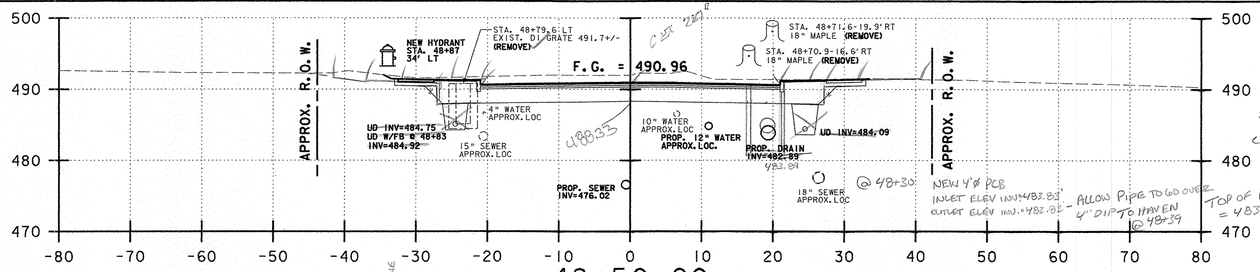
SUBBASE=1232 SF BL 3/23/11
COMMON = 188.7 SF RLD 1/12/11
CB 11/12/11
F.G.= 541.0 LF RLD 1/24/11

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

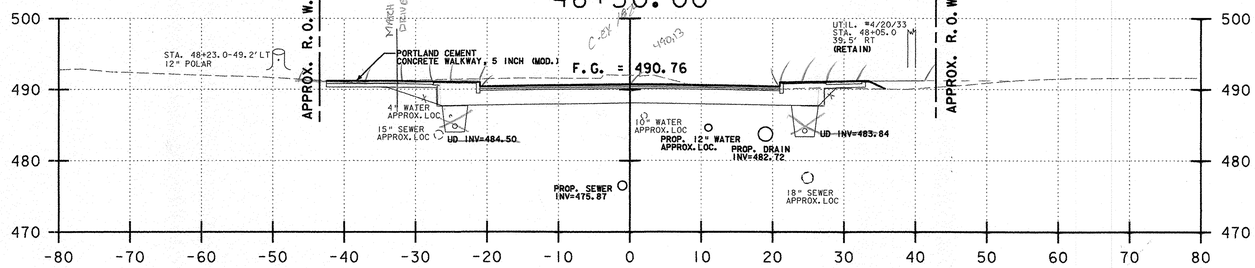
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 213 OF 239



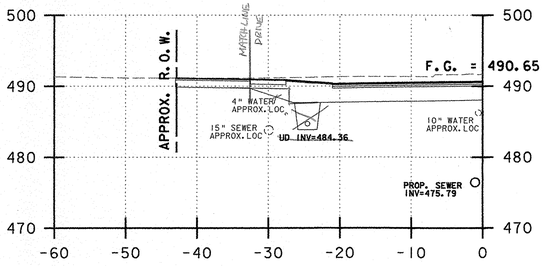
48+50.00

SUBBASE = 125.38 SF ✓ BL 3/23/10
COMMON = 214.3 SF ✓ RCD 1/12/11 CGB 01/12/11
F.G. = 54.0 LF RCD 1/24/11

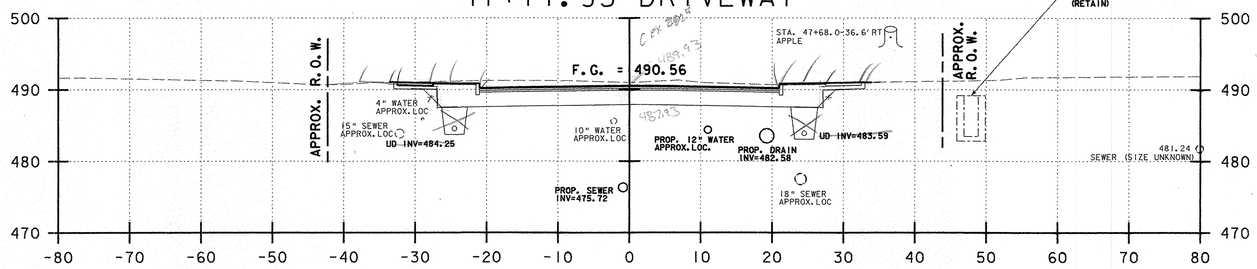


48+00.00

SUBBASE 124.75 SF ✓ BL 3/23/10
COMMON = 181.2 SF ✓ RCD 1/12/11 CGB 01/12/11
F.G. = 54.0 LF RCD 1/24/11

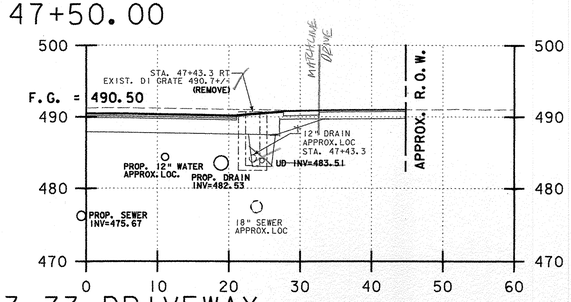


47+71.95 DRIVEWAY



47+50.00

SUBBASE 125.38 SF ✓ BL 3/23/10
RCD 1/12/11 CGB 01/12/11
COMMON = 195.8 SF ✓
F.G. = 54.0 LF RCD 1/24/11



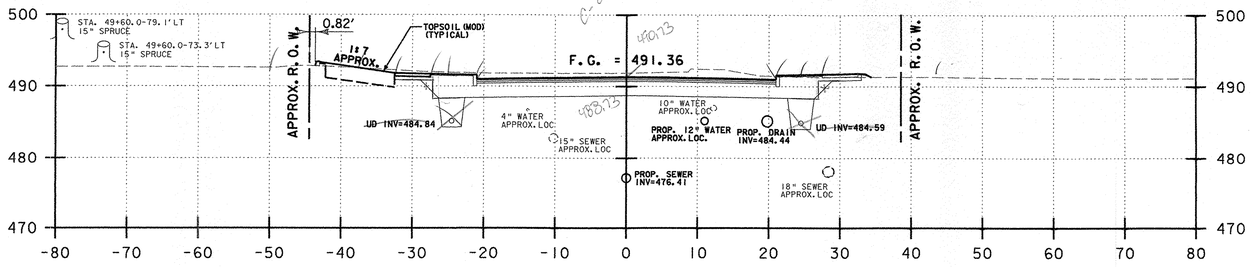
47+33.73 DRIVEWAY
ASKEW 6°24'44.4" LT

NOTES:

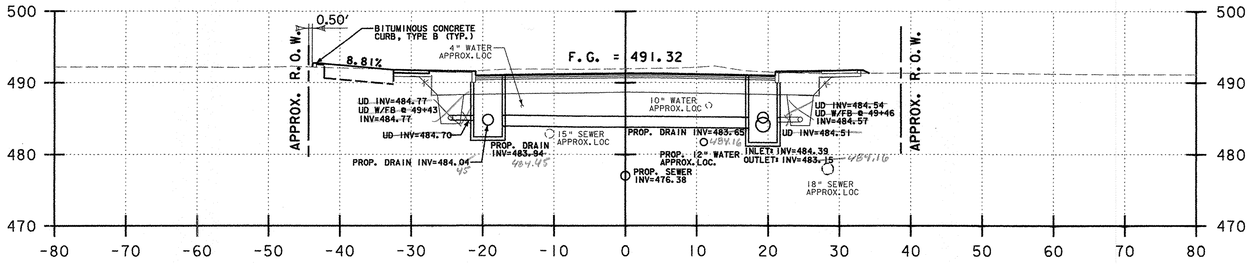
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

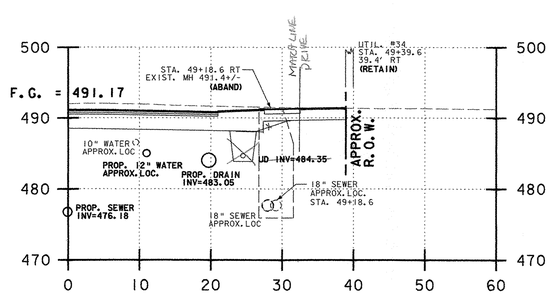
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 214 OF 239



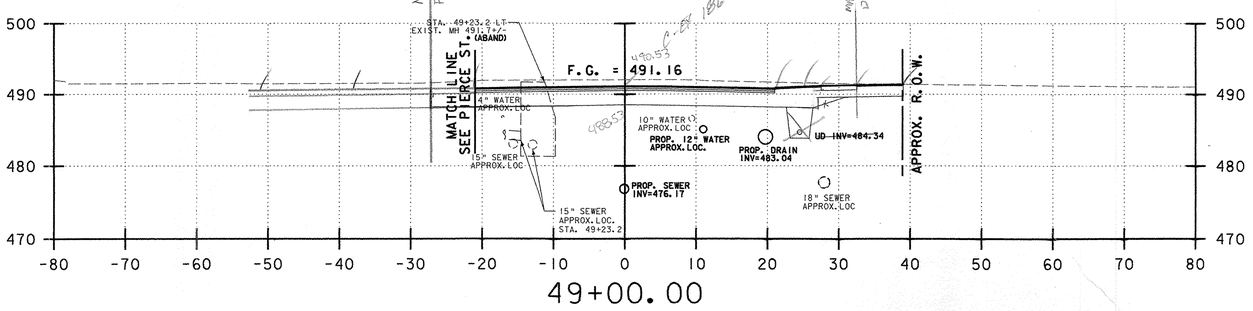
49+50.00



49+40.00



49+03.03
DRIVEWAY



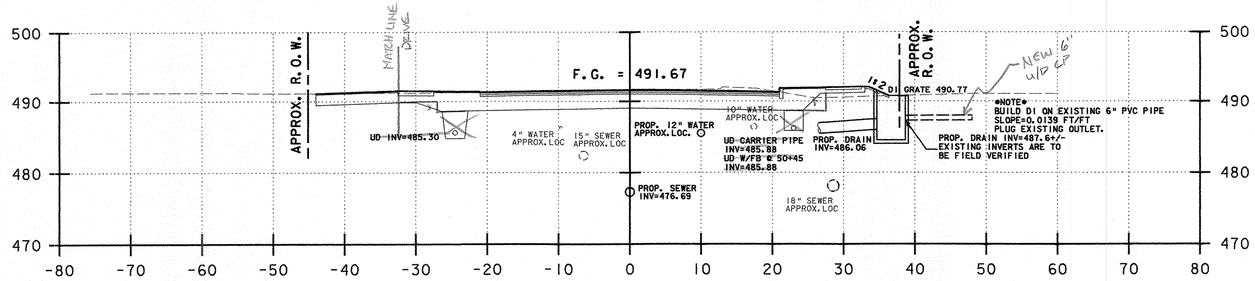
49+00.00

NOTES:

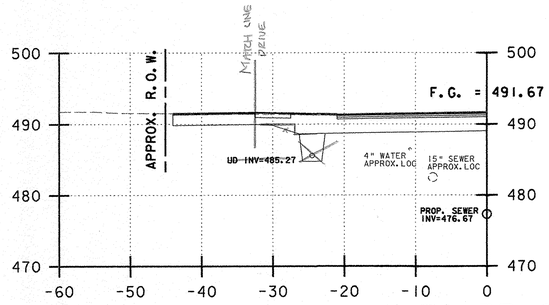
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

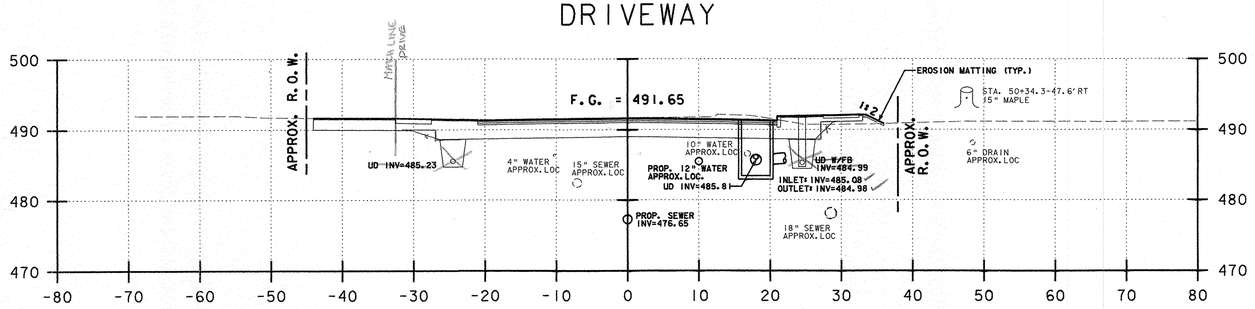
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 215 OF 239



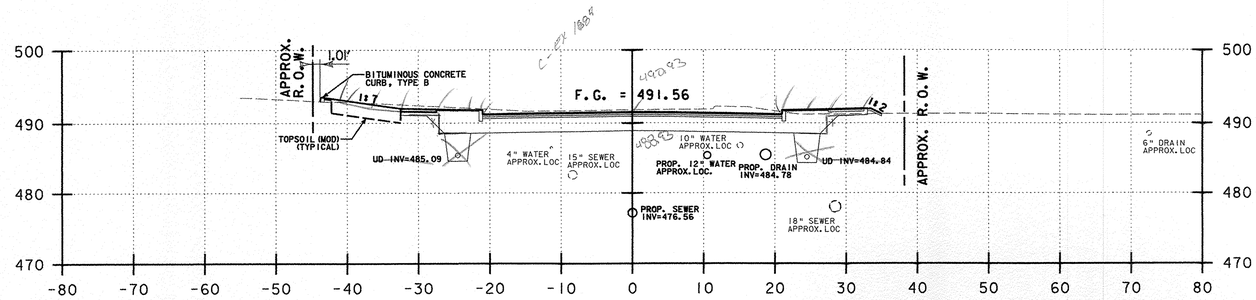
50+44.00



50+37.00
DRIVEWAY



50+30.00



50+00.00

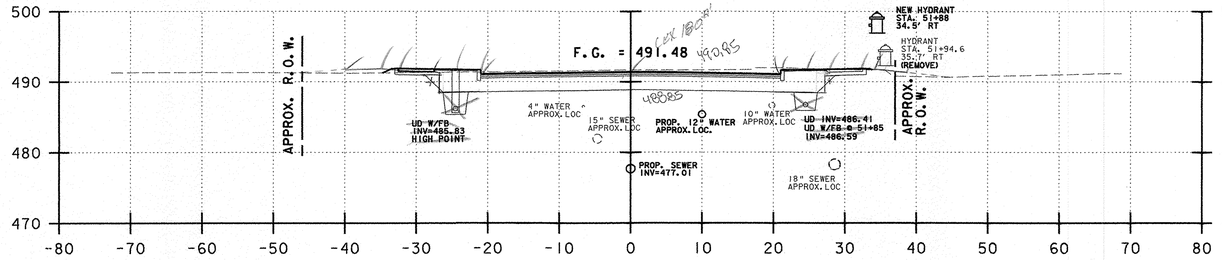
SUBBASE 124.92 SF BL 3/23/10 CWS 01/12/11
COMMON = 180.1 SF RCD 1/12/11
F.G. = 54.00 LF RCD 1/25/11

NOTES:

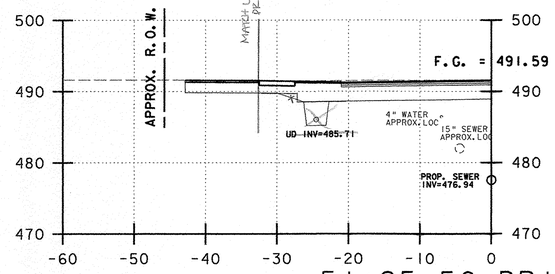
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

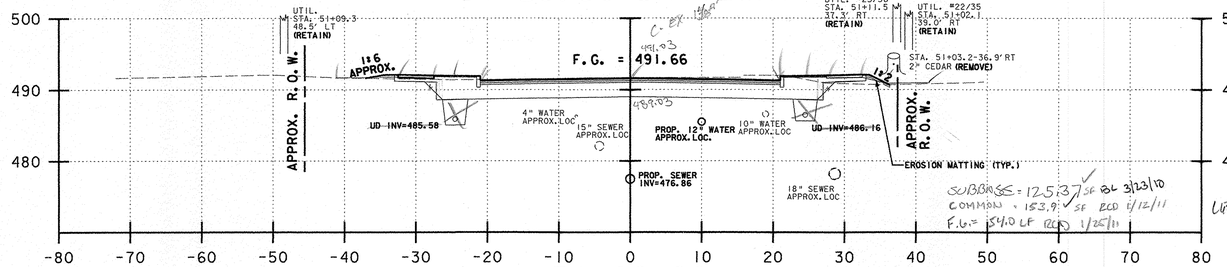
PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 216 OF 239



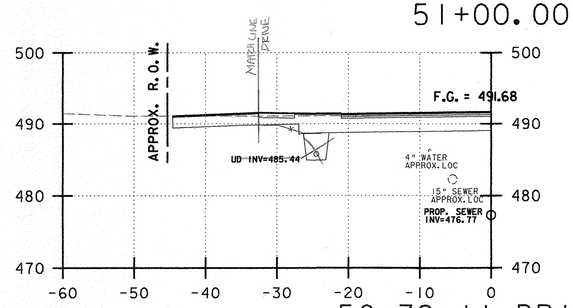
51+50.00



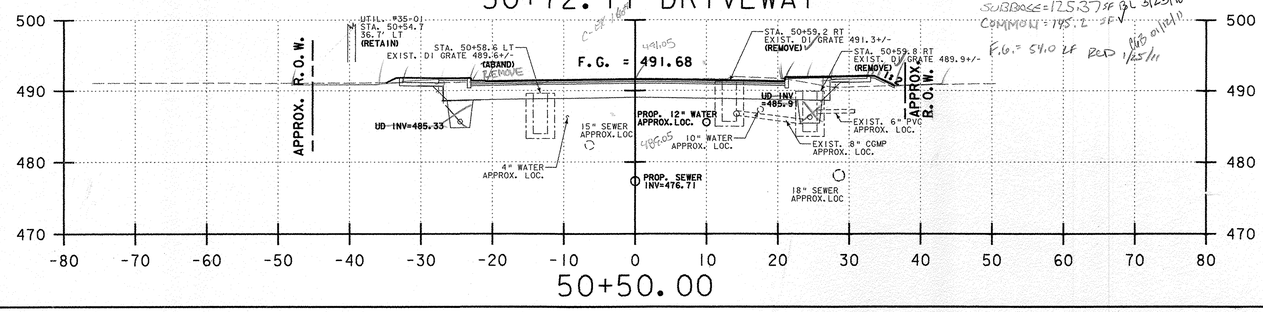
51+25.50 DRIVEWAY



51+00.00



50+72.11 DRIVEWAY



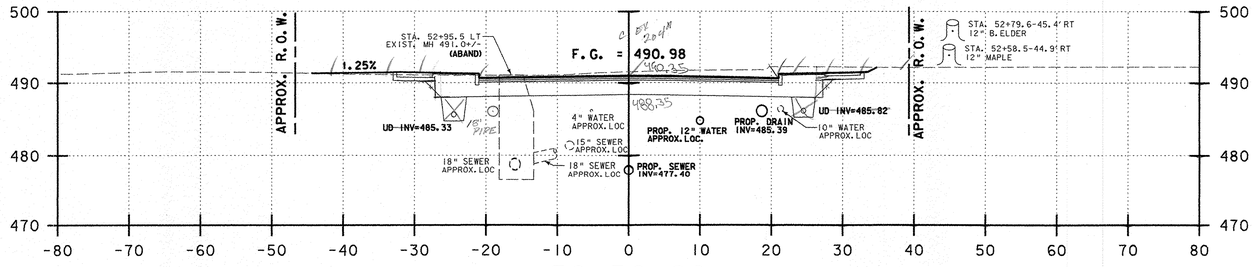
50+50.00

NOTES:

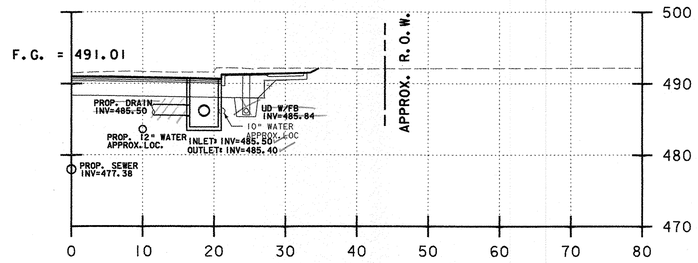
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

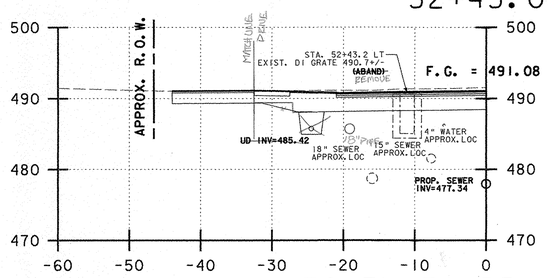
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/17/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 217 OF 239



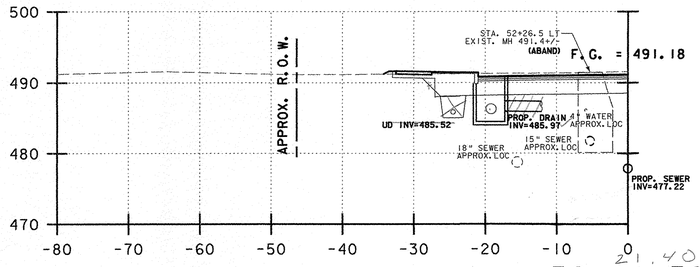
52+50.00



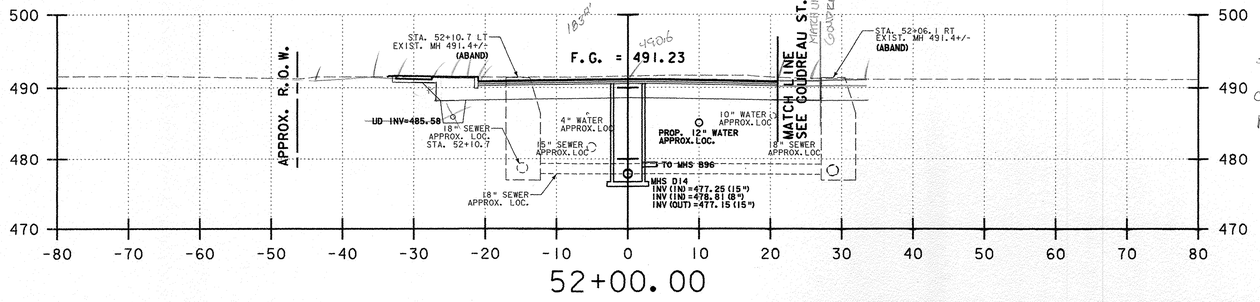
52+45.00



52+31.38 DRIVEWAY



52+11.38



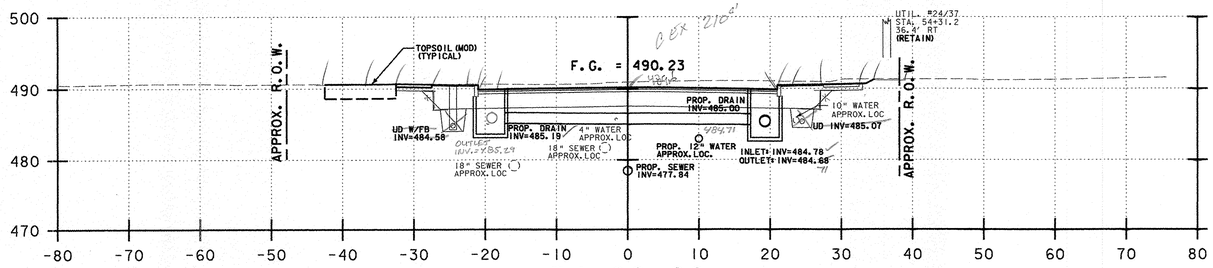
52+00.00

NOTES:

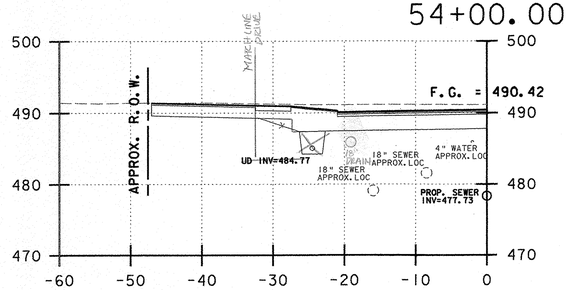
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

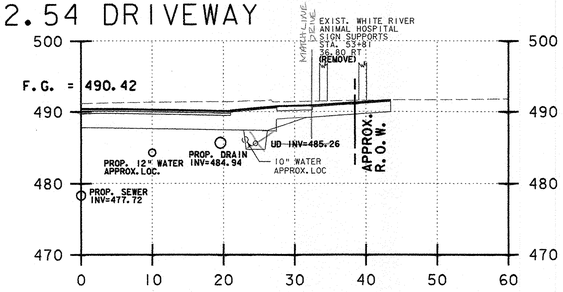
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 218 OF 239



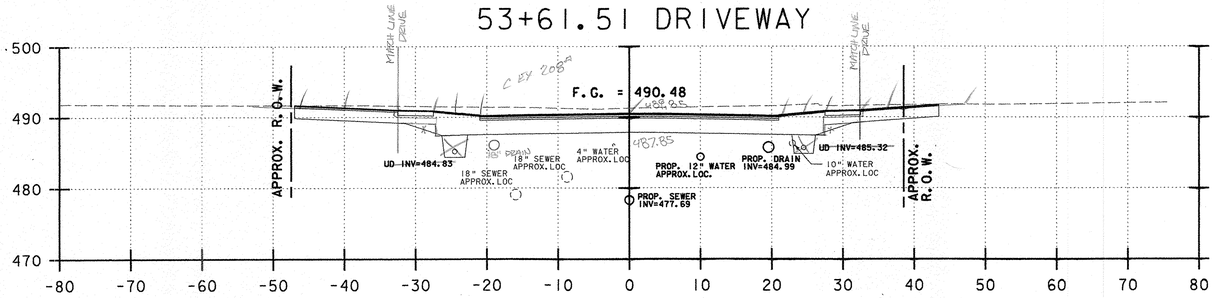
54+00.00



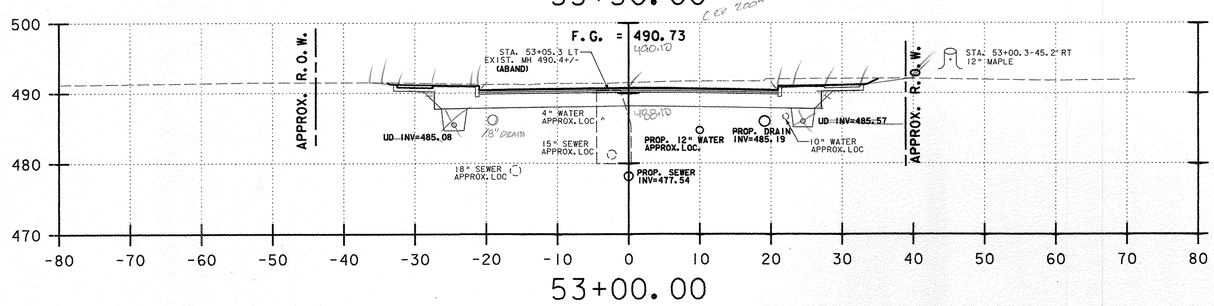
53+62.54 DRIVEWAY



53+61.51 DRIVEWAY



53+50.00



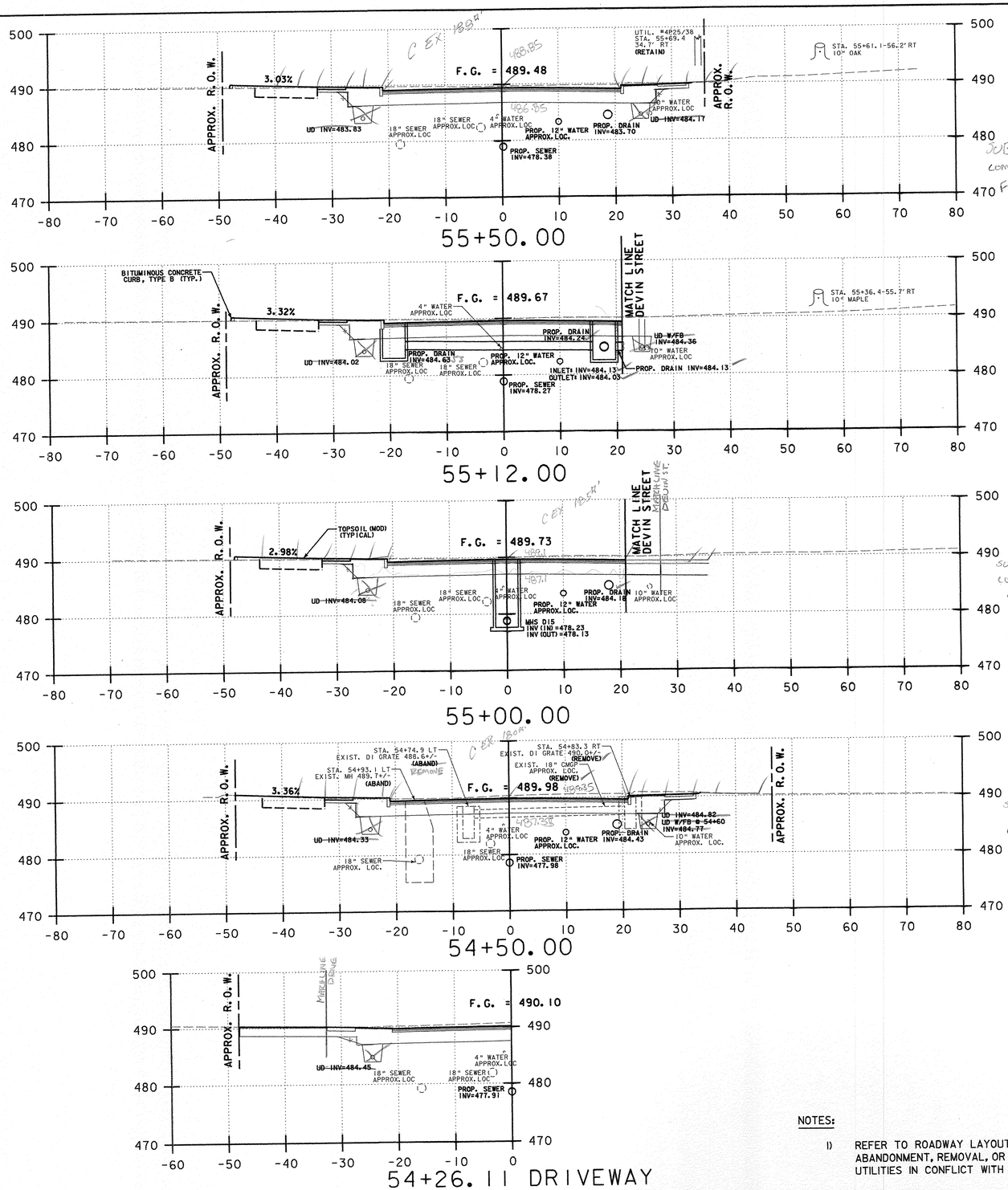
53+00.00

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027xsl.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	1/11/2007
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET	219 OF 239



SUBBASE = 125.2 SF ✓ BL 3/23/10
COMMON = 182.7 SF ✓ RCD 1/13/11
F.G. = 54.0 LF RCD 1/25/11
CEB 01/19/11

SUBBASE = 116.23 SY ✓ BL 3/23/10
COMMON = 176.1 SF RCD 1/13/11
F.G. = 54.0 LF RCD 1/25/11
CEB 01/19/11

SUBBASE = 124.9 SY ✓ BL 3/23/10
COMMON = 186.3 SF ✓ RCD 1/13/11
F.G. = 54.0 LF RCD 1/25/11
CEB 01/19/11

NOTES:

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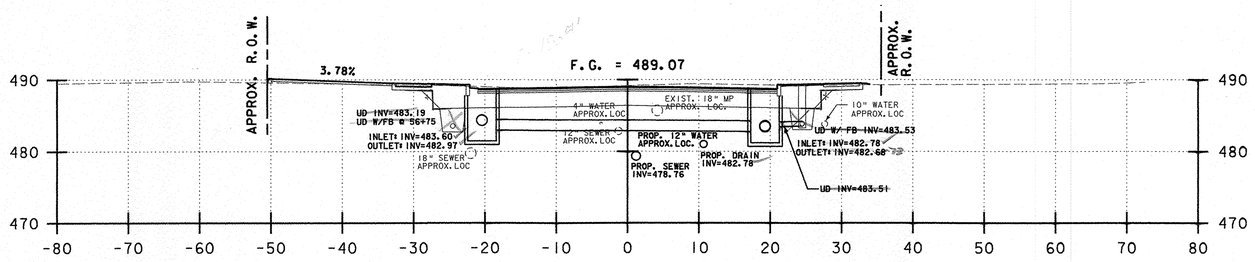
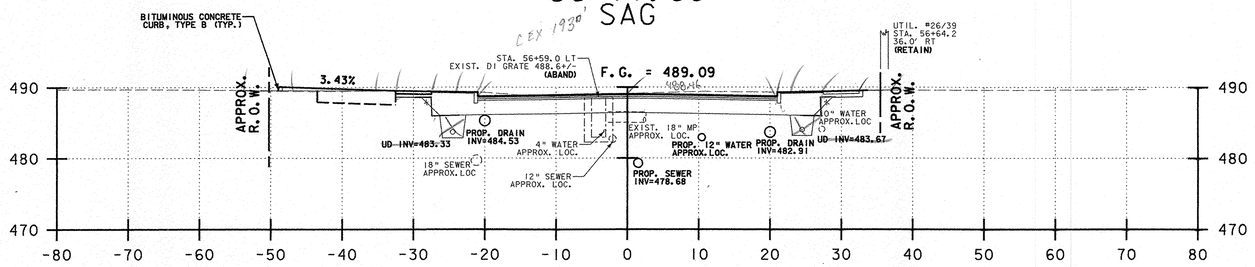
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

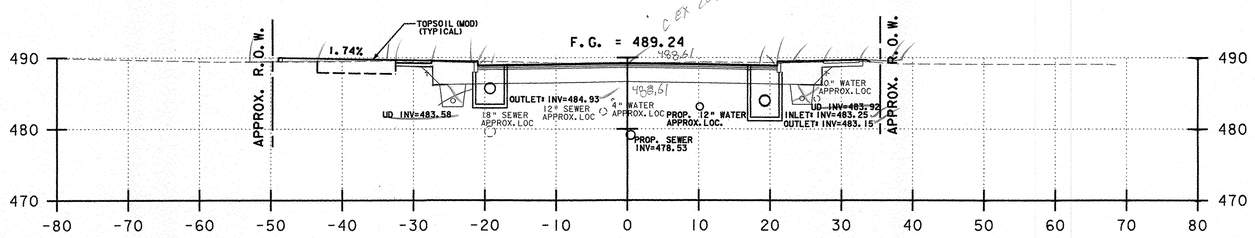
FILE NAME: z86c027xsl.dgn
PROJECT LEADER: KEN UPMAL
DESIGNED BY: K. ISHIKURA, E. ATKINS
PLOT DATE: 1/11/2007
DRAWN BY: E. ATKINS
CHECKED BY: K. ISHIKURA
SHEET 220 OF 239



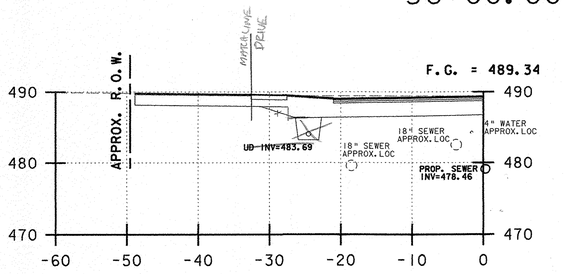
56+77.66
SAG



56+50.00



56+00.00



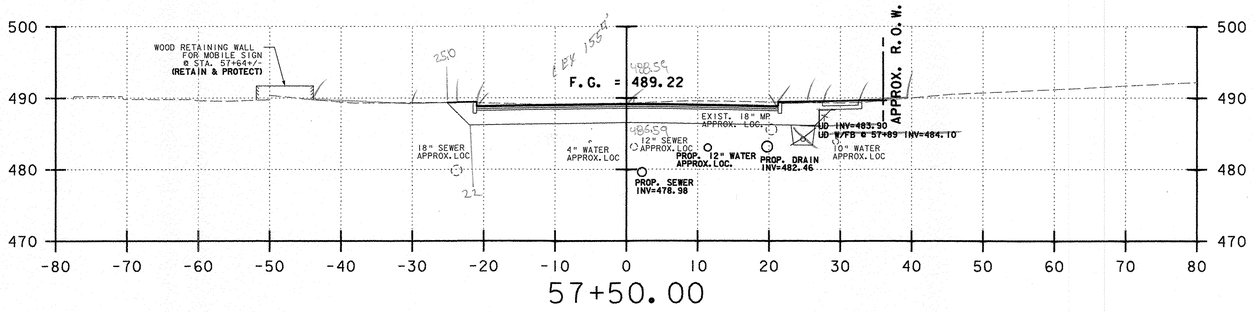
55+78.91
DRIVEWAY

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

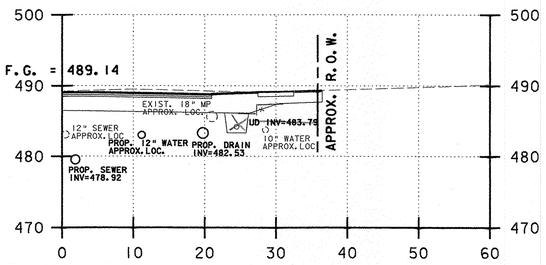
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 221 OF 239

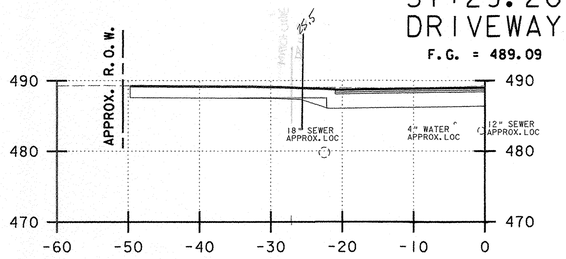


57+50.00

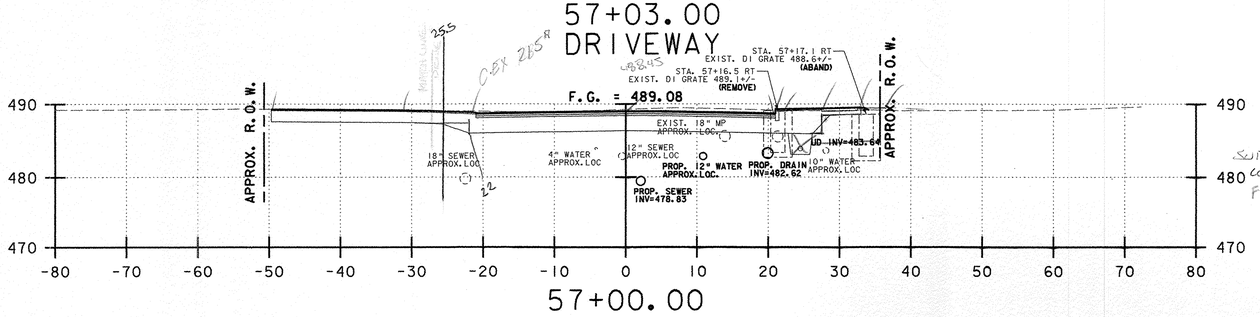
SUBBASE = 1147 SF ✓ BL 3/23/10 CKB 01/19/11
COMMON = 157.3 SF RCD 1/13/11
F.G. = ~~51.0~~ 49.0 LF ✓ CKB 01/19/11 RCD 1/25/11



57+29.20
DRIVEWAY



57+03.00
DRIVEWAY



57+00.00

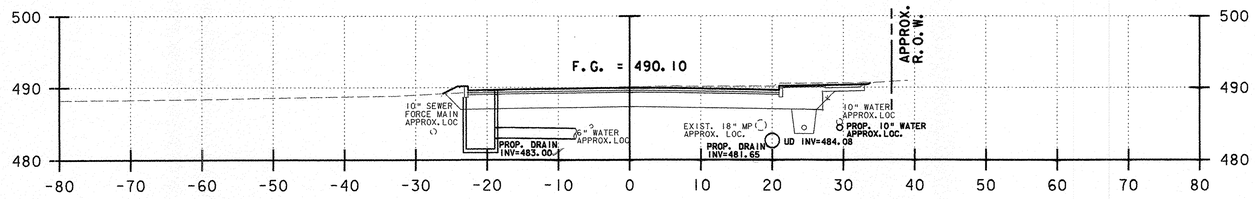
SUBBASE 116.0 SF ✓ BL 3/23/10 CKB 01/19/11
COMMON = 157.2 SF RCD 1/13/11
F.G. = 49.0 LF ✓ RCD 1/25/11
CKB 01/25/11

NOTES:

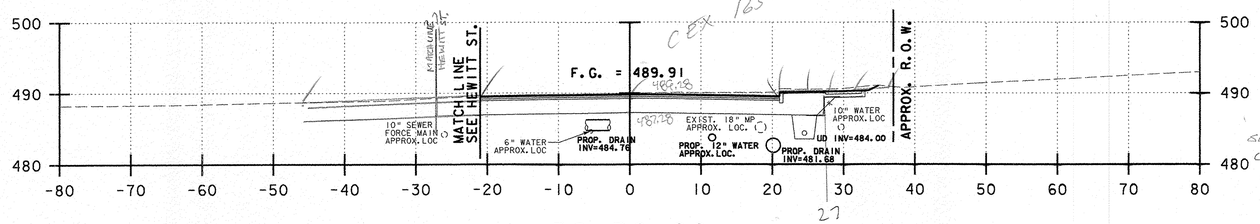
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

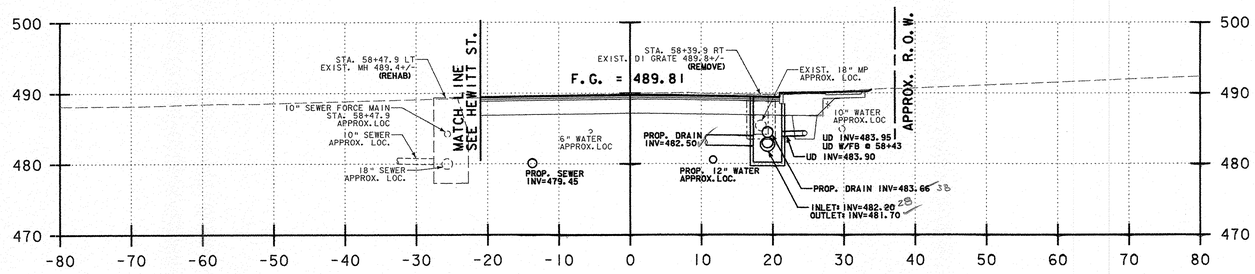
PROJECT NAME:	HARTFORD		
PROJECT NUMBER:	RS 0113(40)		
FILE NAME:	z86c027xsl.dgn	PLOT DATE:	1/11/2007
PROJECT LEADER:	KEN UPMAL	DRAWN BY:	E. ATKINS
DESIGNED BY:	K. ISHIKURA E. ATKINS	CHECKED BY:	K. ISHIKURA
		SHEET	222 OF 239



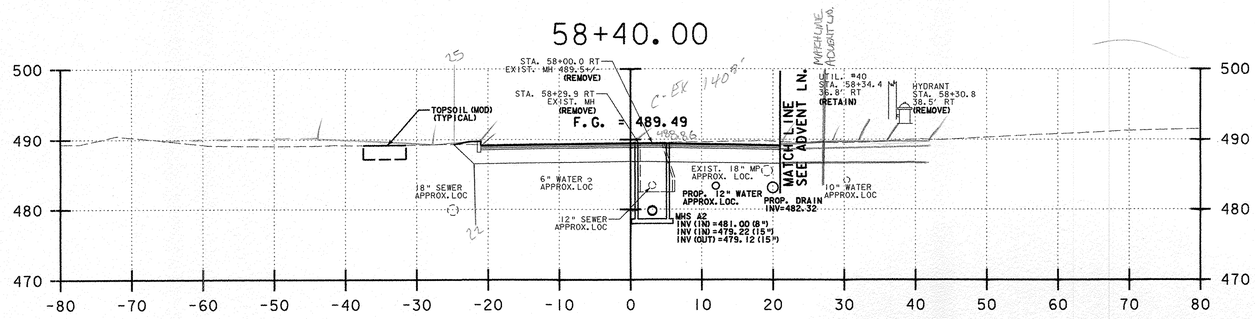
58+65.00



58+50.00



58+40.00



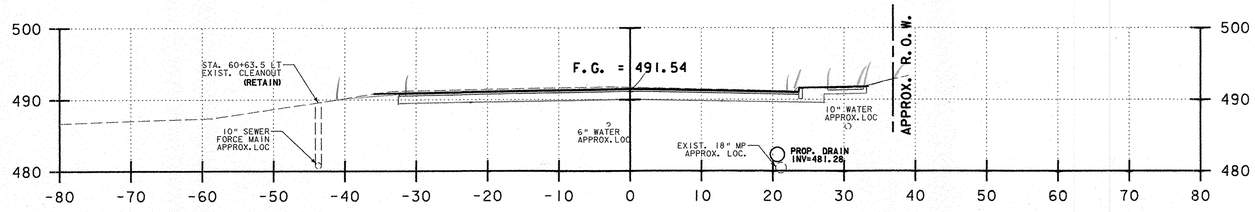
58+00.00

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

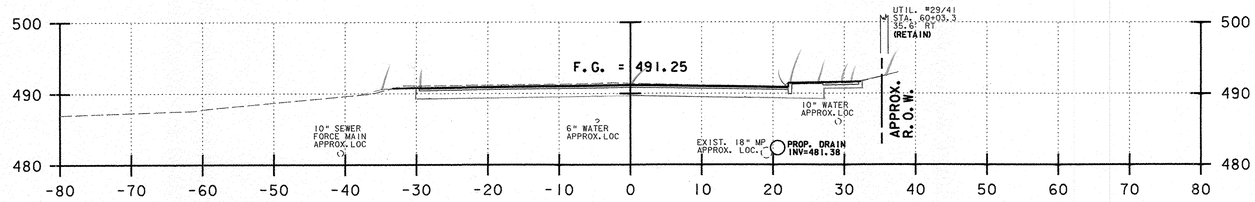
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027xsl.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	1/11/2007
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET	223 OF 239



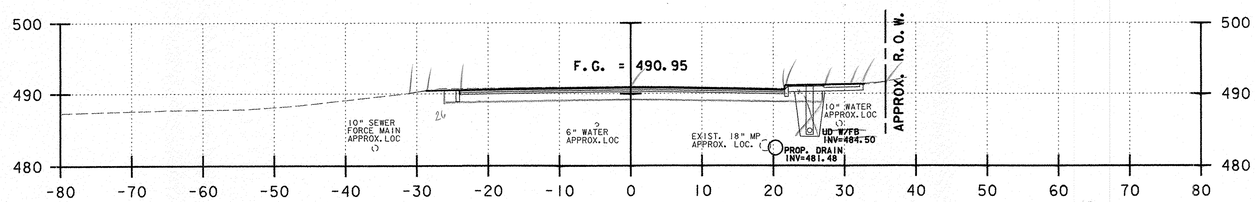
60+50.00

12" SUBBASE + PUMP
SUBBASE = 74.1 SF ✓ RCD 1/13/11 LWB 01/20/11
COMMON = 109.5 SF ✓
F.G. = 59.5 LF ✓ RCD 1/25/11
LWB 01/25/11



60+00.00

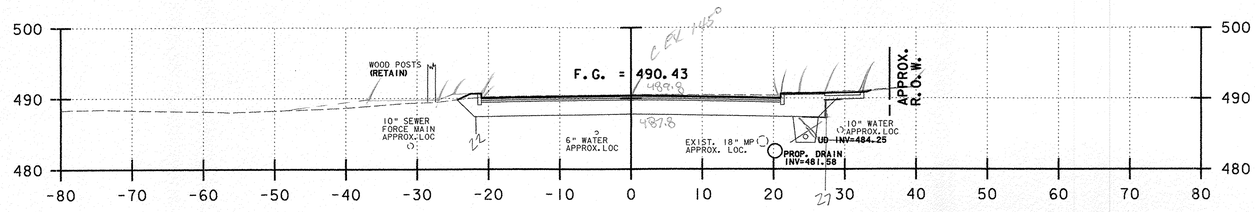
12" SUBBASE + PUMP
SUBBASE = 69.6 SF ✓ RCD 1/13/11 LWB 01/20/11
COMMON = 105.7 SF ✓
F.G. = 57.0 LF ✓ RCD 1/25/11
LWB 01/25/11



59+50.00

12" SUBBASE
SUBBASE = 63.5 SF ✓ RCD 1/13/11 LWB 01/20/11
COMMON = 108.3 SF ✓
F.G. = 53.0 LF ✓ RCD 1/25/11
LWB 01/25/11

59+25 SUBBASE 12" DEPTH



59+00.00
END PROJECT
BEGIN APPROACH

2' SUBBASE
SUBBASE = 110.7 SF ✓ RCD 1/13/11 LWB 01/19/11
COMMON = 148.8 SF ✓
F.G. = 49.0 LF ✓ RCD 1/25/11
LWB 01/25/11

NOTES:

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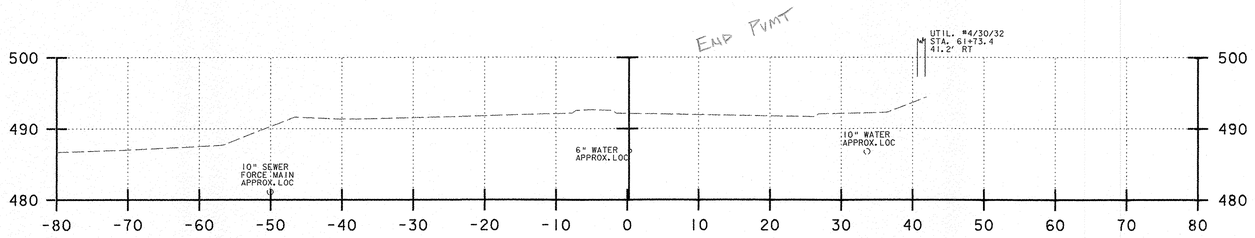
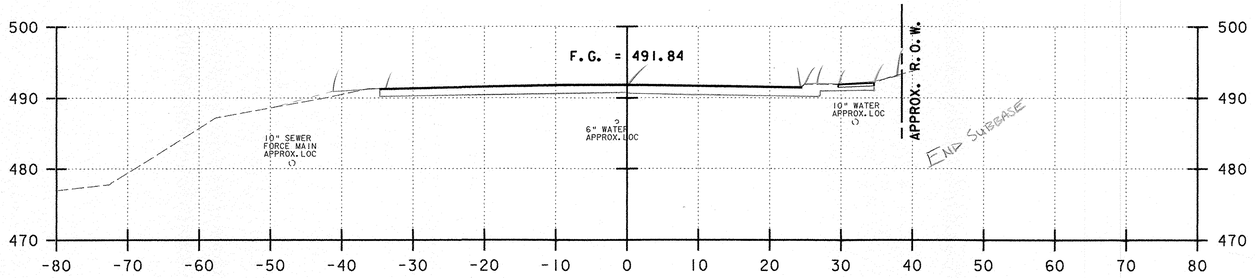
U.S. ROUTE 5
HARTFORD AVENUE

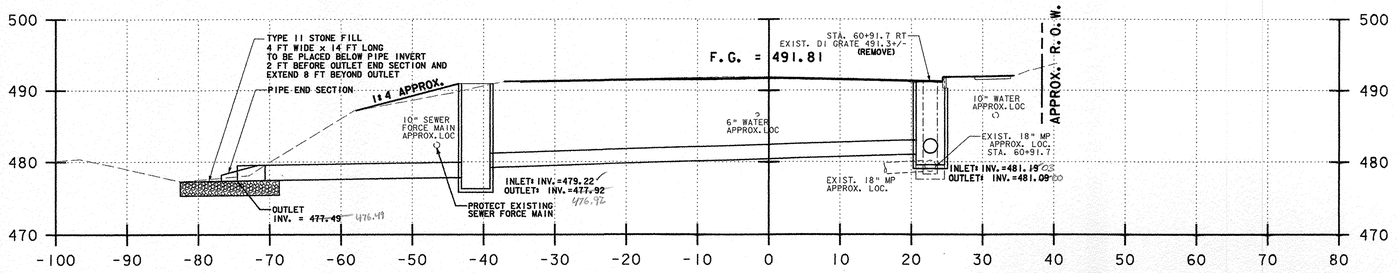
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 224 OF 239



61+50.00



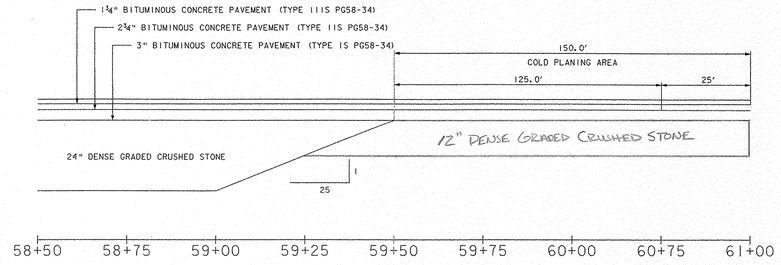
61+00.00
END APPROACH
MATCH EXISTING BCP



60+94.24
ASKEW 6° 17' 58.2" RT

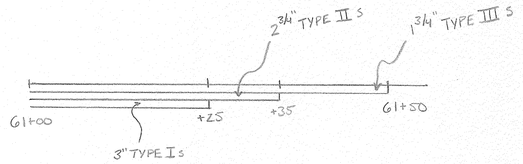
NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.



MATERIAL TRANSITION DETAIL

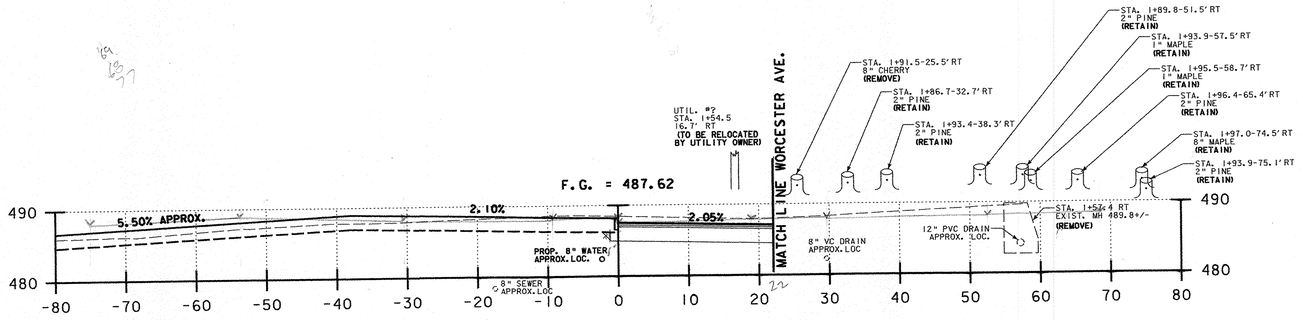
NOT TO SCALE



12" SUBBASE + PVMT
SUBBASE = 65.1 SF ✓
COMMON = 84.9 SF ✓ RCD 1/13/11 CGB 01/20/11
F.G. = 61.5 LF RCD 1/25/11
CGB 01/25/11

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/11/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 225 OF 239



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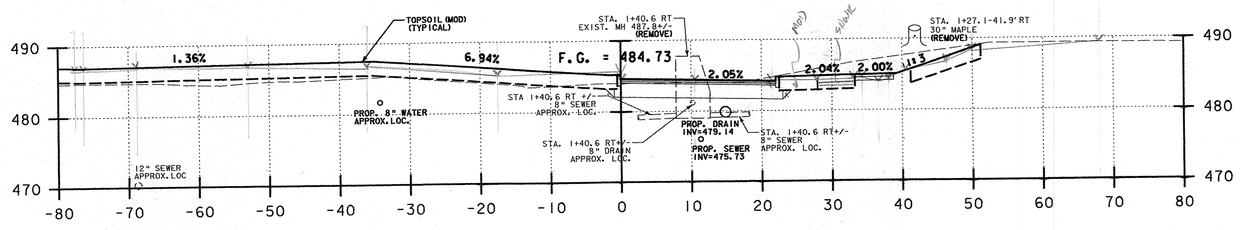

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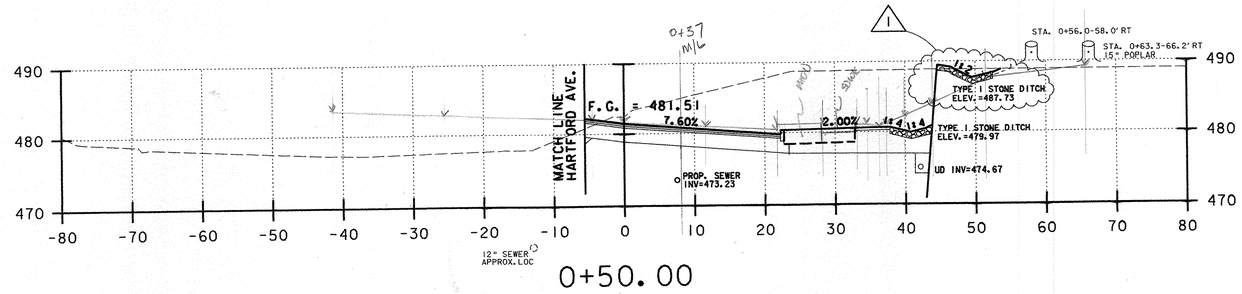


0+50.00

COMMON EXCAVATION REDUCTION 51x1.55 = 79.05 SF
LANDSCAPING = 69x1.55 = 106.95 SF
BL 3/23/10
RCD 1/13/11

SUBBASE = 44.8 SF RCD 1/13/11
CGB 01/26/11

F.G = 23' CGB 01/29/11
RCD 1/25/11

SUBBASE = 45.49 SF. BL 3/23/10 RCD 1/13/11
COMMON = 104.7 SF RCD 1/13/11
CGB 01/21/11
RCD 1/25/11

FG = 24'

Common = 372.3 SF
SUBBASE = 62.9 SF
F.G. = 29
CGB 01/24/11
RCD 1/24/11

0+37
Comm 316.1 SF
SUBBASE = 35.9 SF
F.G. = 15.5 SF
CGB 01/24/11
RCD 1/24/11

0+05
COMMON = 0

0+22
F.G. = 0
SUBBASE = 0
CGB 01/24/11

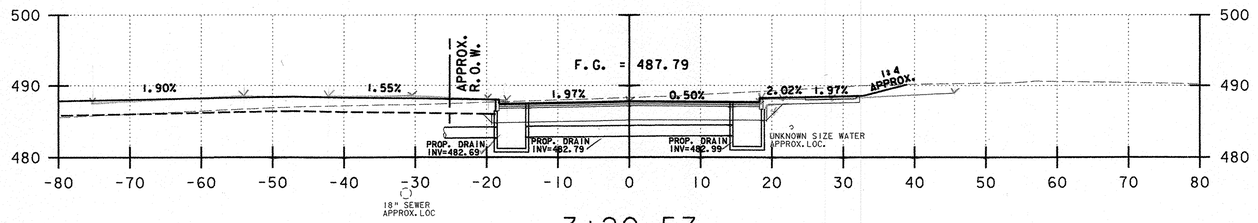
RELOCATED WORCESTER AVE.

NOTES:

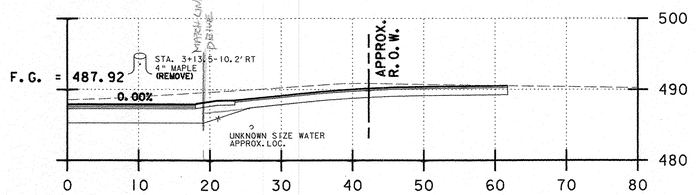
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
2) THE WALL SHOWN ON THE SECTIONS IS FOR PRESENTATION ONLY. SEE US ROUTE 5 GROUND ANCHORED SOLIDER PILE WALL PLAN AND PROFILE SHEET AND DETAIL SHEETS FOR CONSTRUCTION REQUIREMENTS.

1 ADDENDUM #1: REVISED APRIL 18, 2007

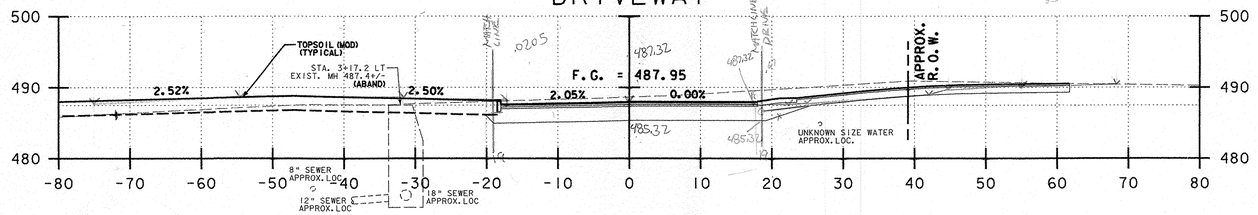
PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 4/18/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 226 OF 239



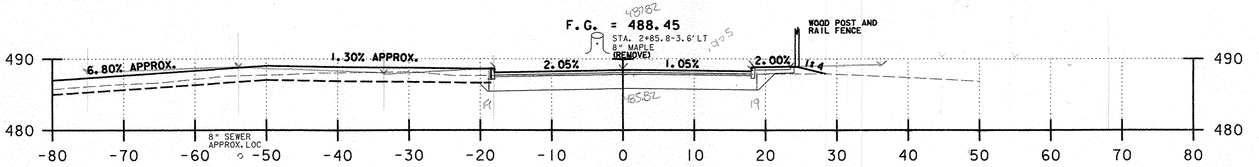
3+20.57
SAG



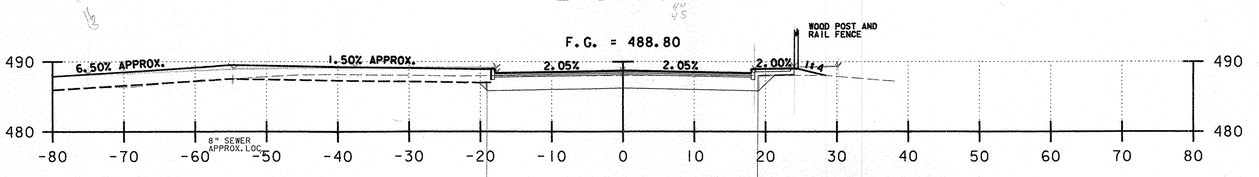
3+02.62
DRIVEWAY



3+00.00



2+50.00



2+00.00

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

3+39
3+34 CURB-CURB WIDTH = 44' } 8'
3+20.57 CURB-CURB WIDTH = 36'
DEPTH OF COMMON @ ℄ = 3'
COMMON = (8'x3') + 155.16 = 179.16 BL 01/24/11
SUBBASE = (8'x21') + 81.12 = 97.12 RCD 1/24/11
F.G. = 38+8' = 46'

COMMON = 155.16 SF
SUBBASE = 81.12 SF
F.G. = 38' CLB 01/24/11
RCD 1/24/11

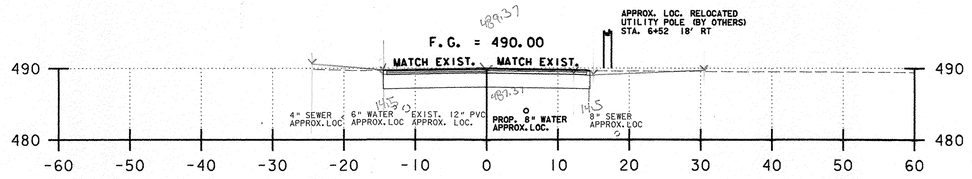
ROADWAY:
SUBBASE 75.69
COMMON EXCAVATION ROADWAY 83x1.55=128.65 SY
LANDSCAPE 29x1.55=44.95
DRIVEWAY 54 LES 83.7 SY } BL 3/23/10 RCD 1/13/11
F.G. = 38' CLB 01/24/11 RCD 1/24/11

SUBBASE 76.88
COMMON EXCAVATION ROADWAY: 50x1.55=77.5 SY
LANDSCAPE: 36x1.55=55.8 } BL 3/23/10 RCD 1/13/11
F.G. = 38' CLB 01/24/11 RCD 1/24/11

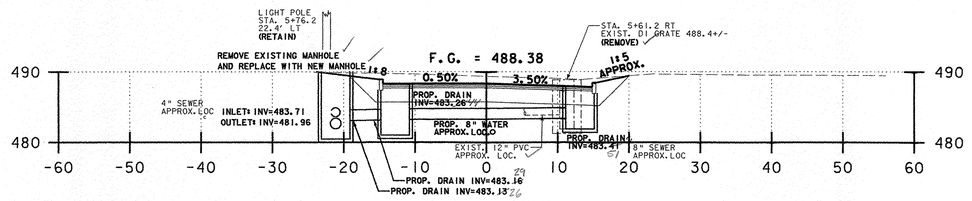
SUBBASE 74.73
COMMON EXCAVATION ROADWAY 45x1.55=69.75 SY
LANDSCAPE 15x1.55=23.25 SY } BL 3/23/10 RCD 1/13/11
F.G. = 38' CLB 01/24/11 RCD 1/24/11

RELOCATED WORCESTER AVE.

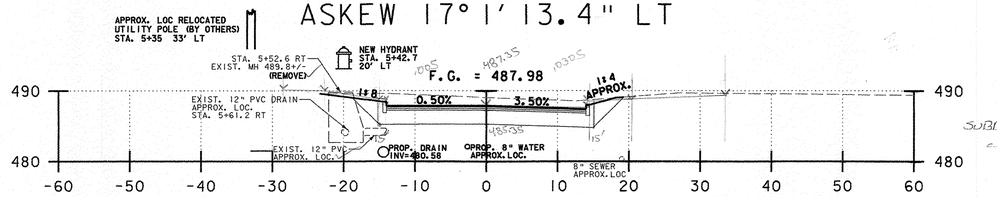
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/15/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 227 OF 239



5+85.00
END APPROACH
MATCH EXISTING BCP



5+57.00
ASKEW 17° 1' 13.4" LT



5+50.00

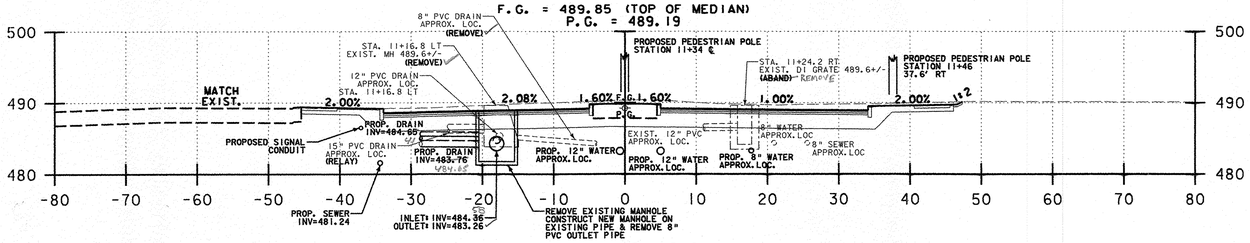
NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

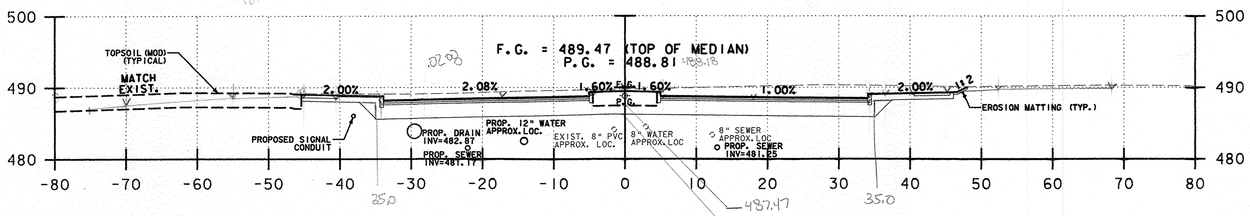
WORCESTER AVE.

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)

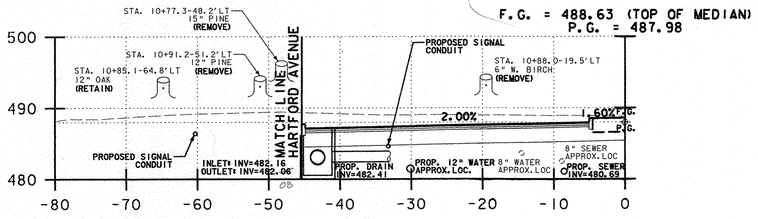
FILE NAME:	z86c027xsl.dgn	PLOT DATE:	1/11/2007
PROJECT LEADER:	KEN UPMAL	DRAWN BY:	E. ATKINS
DESIGNED BY:	K. ISHIKURA	CHECKED BY:	K. ISHIKURA
	E. ATKINS	SHEET	228 OF 239



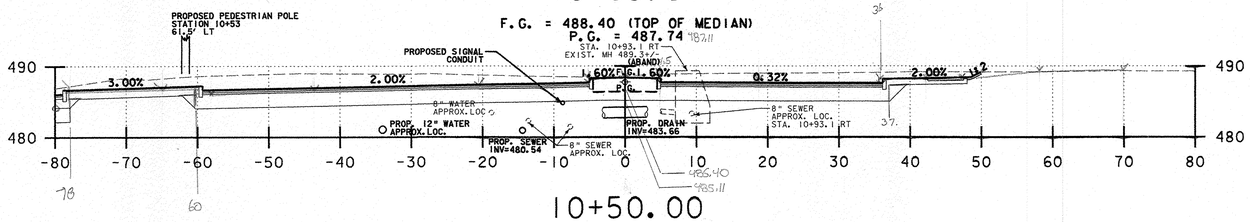
11+16.90



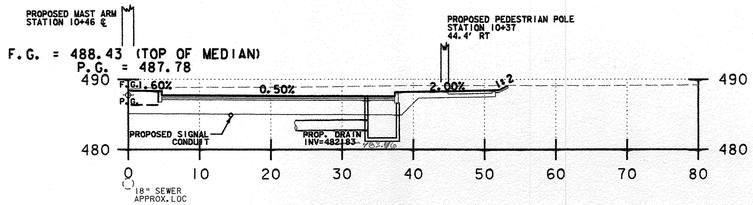
11+00.00



10+65.57



10+50.00



10+42.77

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

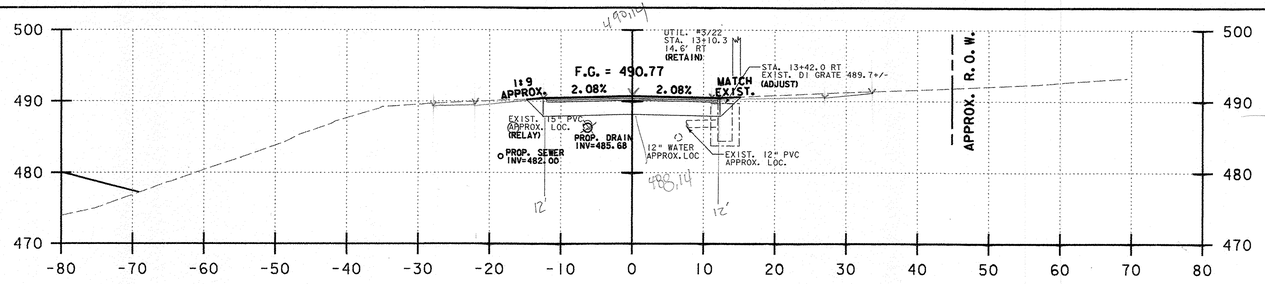
LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

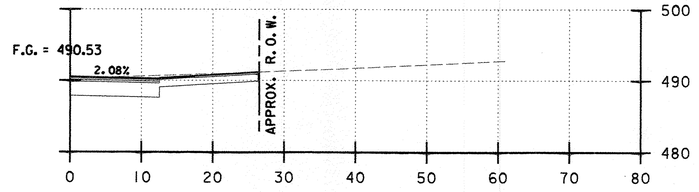
HIGHLAND AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/15/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 229 OF 239

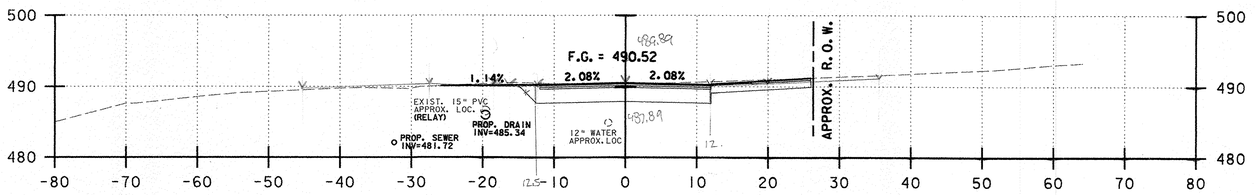


13+00.00

Common Excavation 42x1.55 = 65.1
SUBBASE of CRUSHED GRAVEL = 48.31
F.G = 25' CGB 01/29/11 RCD 1/25/11
BL 3/23/10 RCD 1/13/11

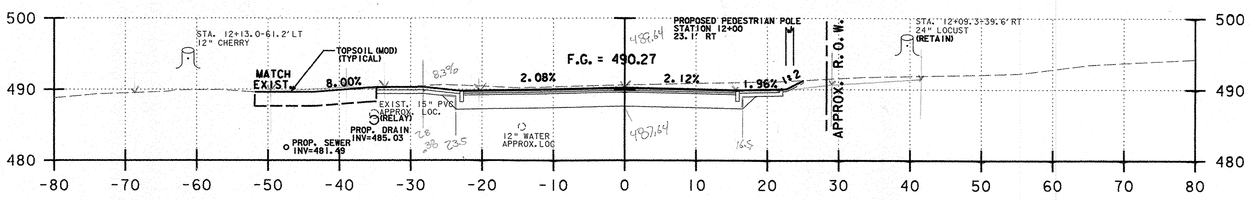


12+51.98
DRIVEWAY



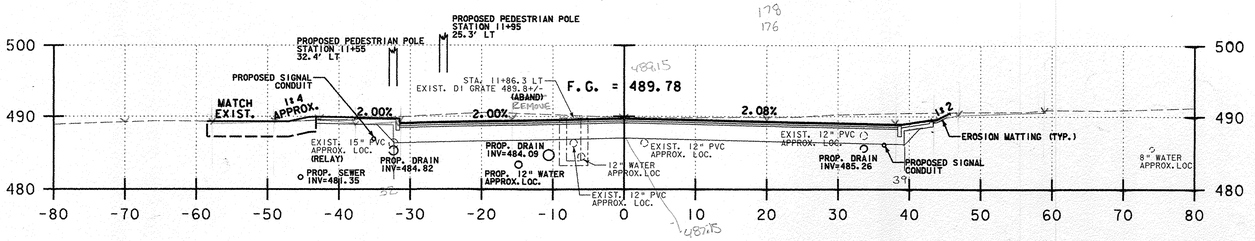
12+50.00

Common Excavation
Roadway 40x1.55 = 62.0 s.f.
Driveway 12x1.55 = 18.6 s.f.
Subbase Roadway = 49.31 s.f.
F.G = 29.5' CGB 01/29/11 RCD 1/25/11
CGB 01/20/11
BL 3/23/10 RCD 1/13/11



12+00.00

Common Excavation
Roadway 98x1.55 = 151.9 s.f.
Landscape LT 22x1.55 = 34.1 s.f.
Subbase 89.88
F.G = 40' CGB 01/29/11 RCD 1/25/11
BL 3/23/10 RCD 1/13/11



11+50.00

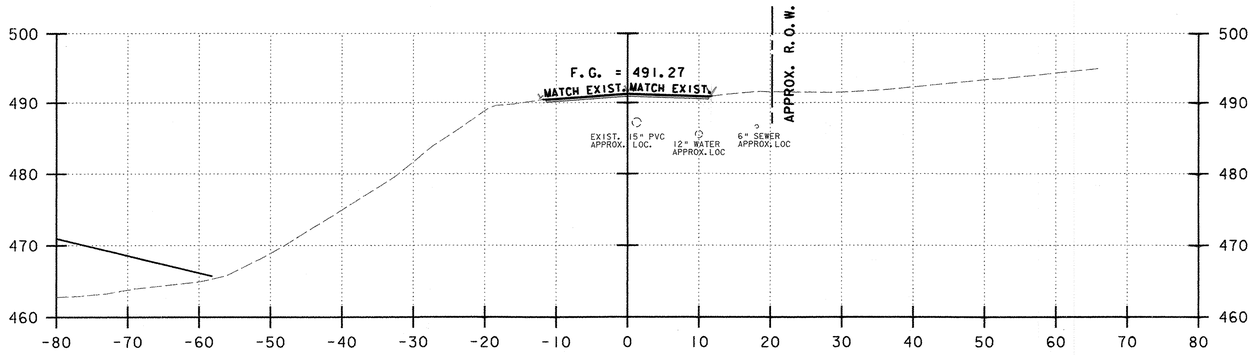
Common Excavation
Roadway = 178x1.55 = 275.9
Landscape LT = 20x1.55 = 31.0
Subbase = 150.34 s.f.
F.G = 71' CGB 01/29/11 RCD 1/25/11
BL 3/23/10 RCD 1/13/11

NOTES:

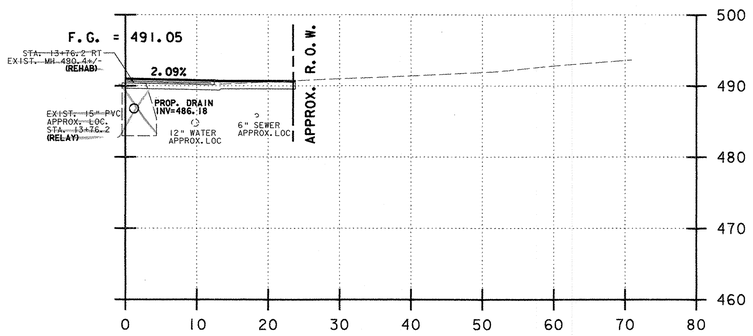
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

HIGHLAND AVENUE

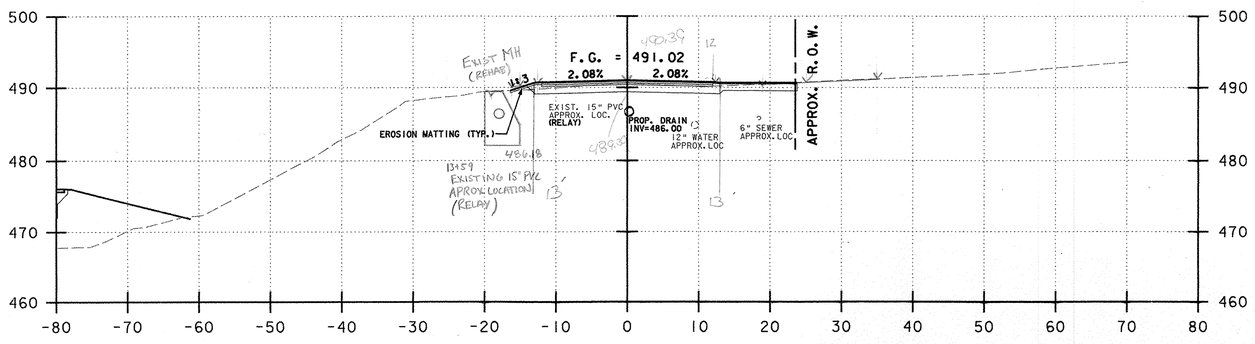
PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/15/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 230 OF 239



14+00.00
END APPROACH
MATCH EXISTING BCP



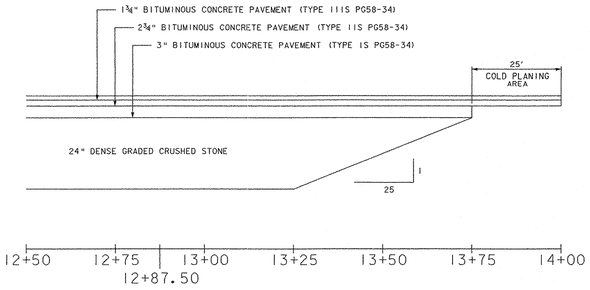
13+56.20 DRIVEWAY
ASKEW 8° 15' 30.5" LT



13+50.00

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.



MATERIAL TRANSITION DETAIL

NOT TO SCALE

13+75 - USE 14+00 SECTION
F.G. = 23' ✓
COMMON = $23 \times \frac{7\frac{1}{2}}{12} = 14.4$ SF ✓

CLB 01/25/11
RCD 1/25/11

COMMON EXCAVATION
ROADWAY 16X1.65=26.8 S.F. ✓
DRIVEWAY 5X1.55=7.75 S.F. ✓
SUBBASE ROAD WAY = 26.52 ✓

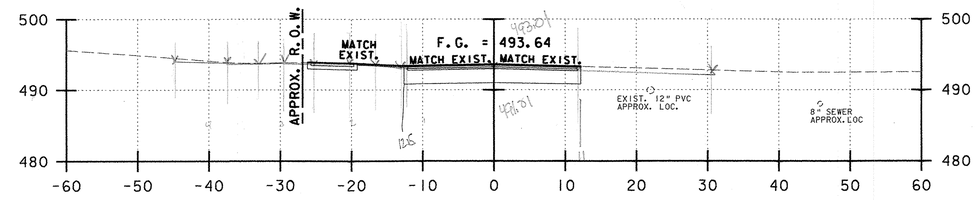
BL 3/23/10
RCD 1/13/11

F6 = 26'
CLB 01/24/11

HIGHLAND AVENUE

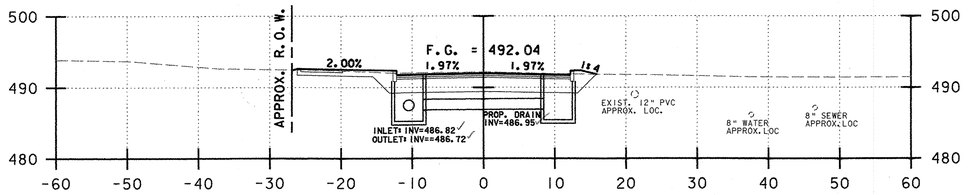
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)

FILE NAME:	z86c027xsl.dgn	PLOT DATE:	1/11/2007
PROJECT LEADER:	KEN UPMAL	DRAWN BY:	E. ATKINS
DESIGNED BY:	K. ISHIKURA E. ATKINS	CHECKED BY:	K. ISHIKURA
		SHEET	231 OF 239

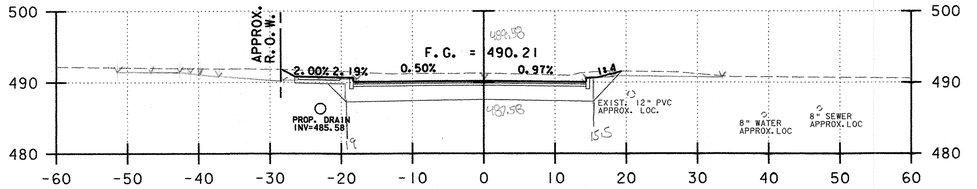


15+95.00
END APPROACH
MATCH EXISTING BCP

common Excavation 41x1.55=63.55 s.f.
SUBBASE 53.88
F.G.= 25.0 LF RCD 1/25/11
BL 3/23/10
RCD 1/13/11

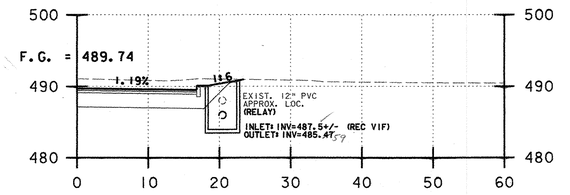


15+74.00

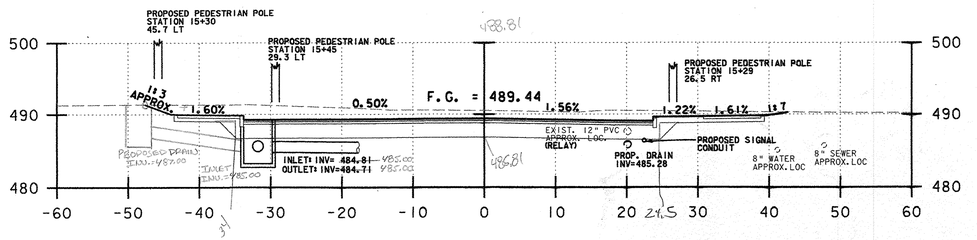


15+50.00

common Excavation = 92x1.55 = 142.60 s.f.
SUBASE 74.68
F.G.= 35.0 LF RCD 1/25/11
BL 3/23/10
RCD 1/13/11



15+42.48



15+29.94
SAG

common Excavation Roadway 180x1.55 = 279 s.f.
SUBBASE 141.69
= 131.3 SF CWB 01/20/11
RCD 1/13/11
BL 3/23/10

F.G.= 59.0 LF RCD 1/25/11

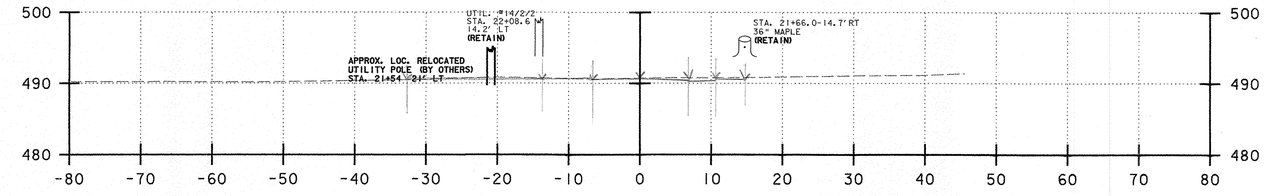
15+00 = 11+55.78 = 39' RT

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

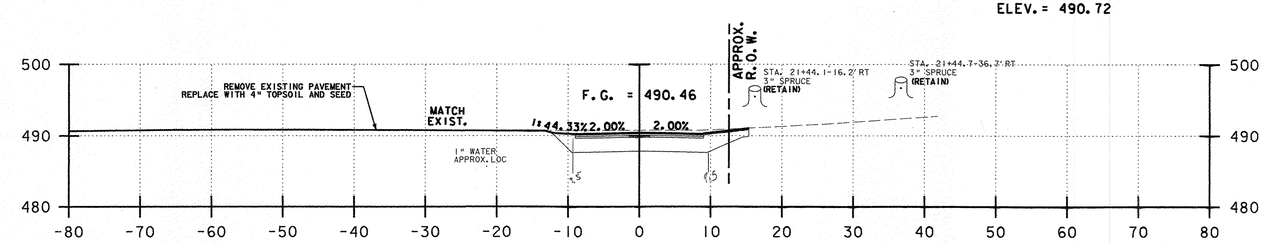
SCHOOL ENTRANCE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/15/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 232 OF 239

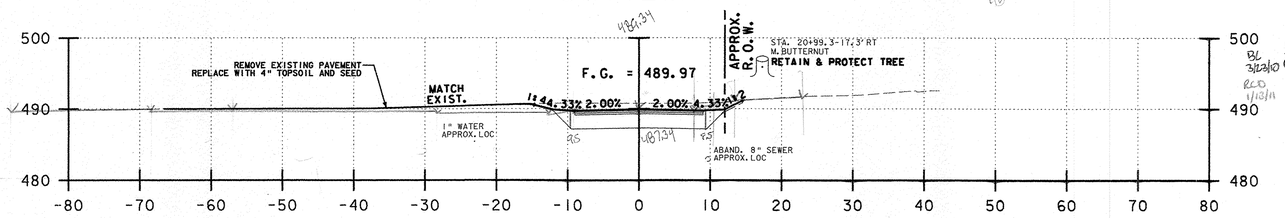


21+50.00

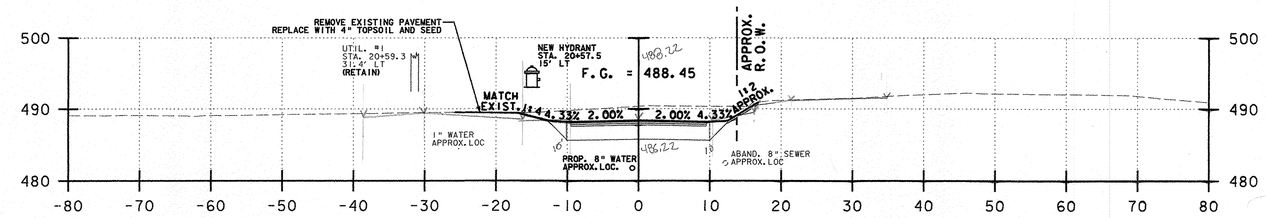
END APPROACH
STA. 21+40.00
ELEV. = 490.72



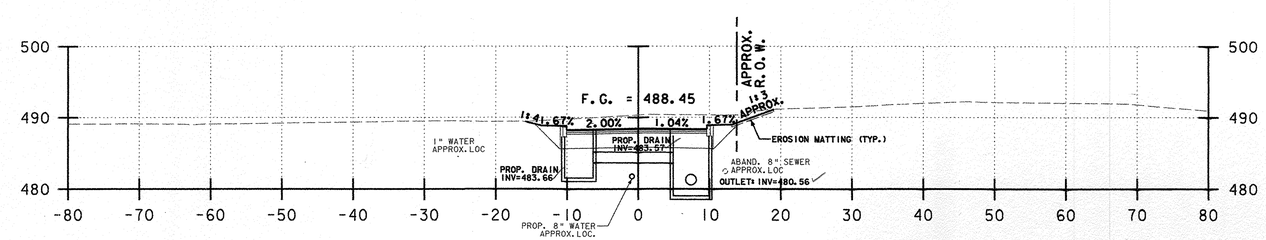
21+18.00
DRIVEWAY



21+00.00



20+50.00



20+49.62
SAG

END 2+40

21+40 COMMON = $\frac{7\frac{1}{2}}{12} \times 18 = 11.3$ SF
SUBBASE = 0
F.G. = 18'
CLB 01/21/11
RCD 1/21/11

BL 3/23/10 RCD 1/13/11 { COMMON EXCAVATION 4.5x1.55 = 69.75 S.F.
SUBBASE 38.63 S.F.
F.G = 19 LF CLB 01/21/11 RCD 1/21/11

BL 3/23/10 RCD 1/13/11 { COMMON EXCAVATION 71x1.55 = 110.05 S.F.
SUBBASE OF DENSE GRADED = 40.63
F.G = 20 LF CLB 01/21/11 RCD 1/21/11

STA 20+39
DEPTH OF COMMON @ ℄ = 4.8'
CURB TO CURB WIDTH = 34' 19.5 } = 14.5' DIFF.
COMMON = 109.1 + (34-19.5)(4.8) = 178.7 SF
SUBBASE = 42.2 + (14.5 x 2) = 71.2 SF
~~F.G = 19.5 + 14.5' = 34'~~
F.G = 21.5 + 14.5 = 36'
CLB 01/21/11 RCD 1/21/11

COMMON = 109.1 SF
SUBBASE = 42.2 SF CLB 01/21/10
CURB TO CURB = 19.5' RCD 1/21/11
F.G. = 21.5 LF RCD 1/25/11
CLB 01/25/11

HEBARD AVENUE

NOTES:

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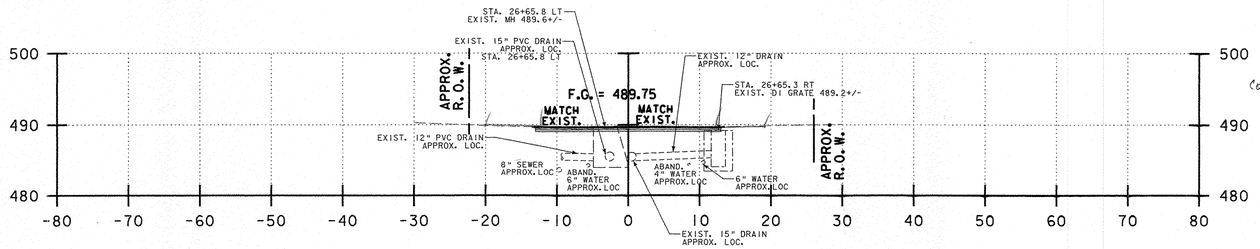
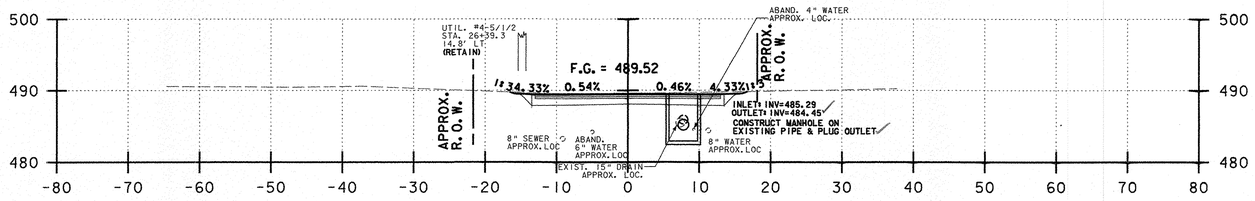
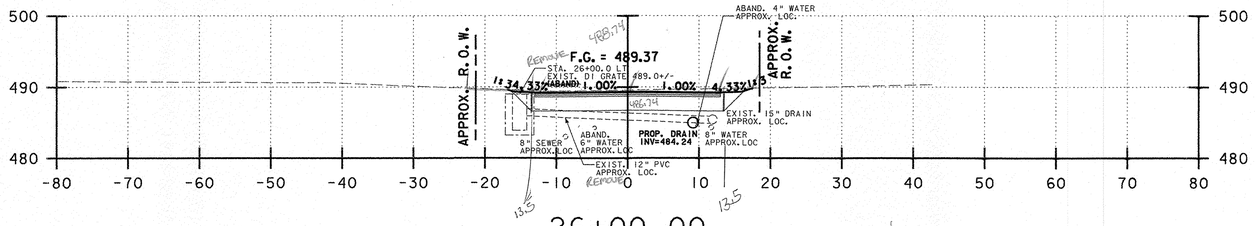
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/15/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 233 OF 239



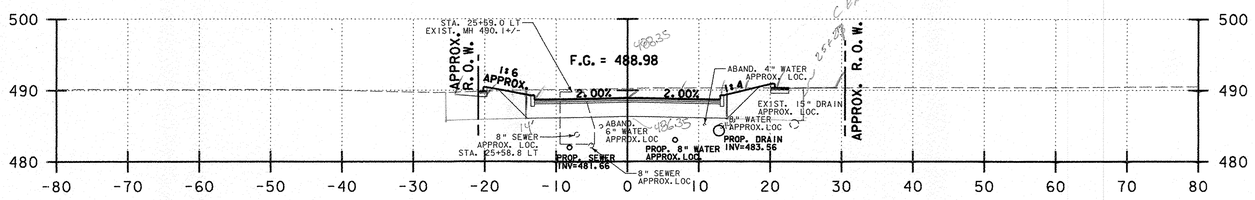
26+50.00
END APPROACH
MATCH EXISTING BCP



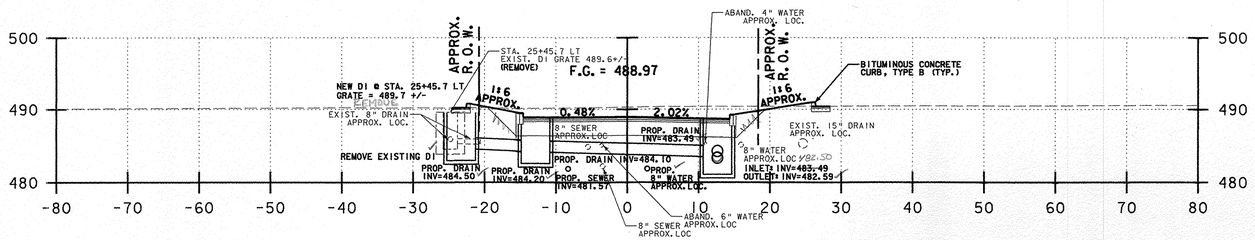
26+19.70



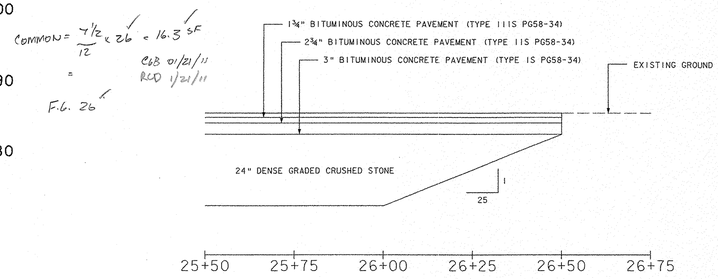
26+00.00



25+50.00



25+44.06
SAG



MATERIAL TRANSITION DETAIL

NOT TO SCALE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

SAUNDERS AVENUE

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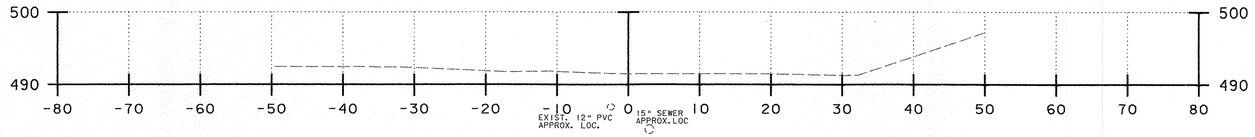
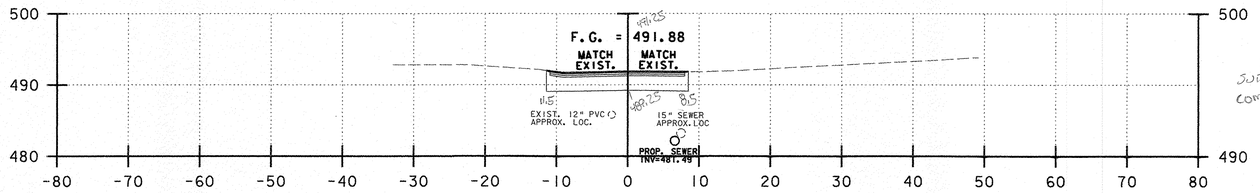
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	z86c027xsl.dgn
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	1/15/2007
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET	234 OF 239



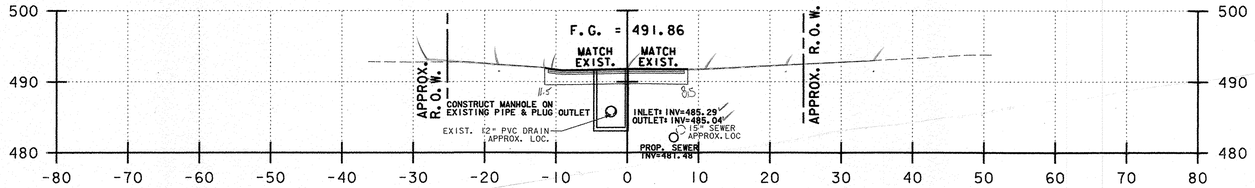
31+50.00



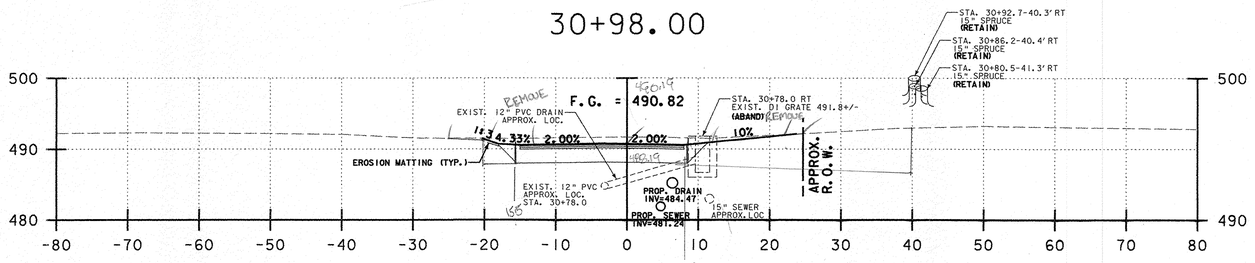
BL 3/18/10
SUBBASE = 40.53 SF ✓
COMMON = 55.72 SF ✓
F.G.= 20' ✓

RCD 1/13/11
CWB 01/21/11
RCD 1/21/11

31+00.00
END APPROACH
MATCH EXISTING BCP

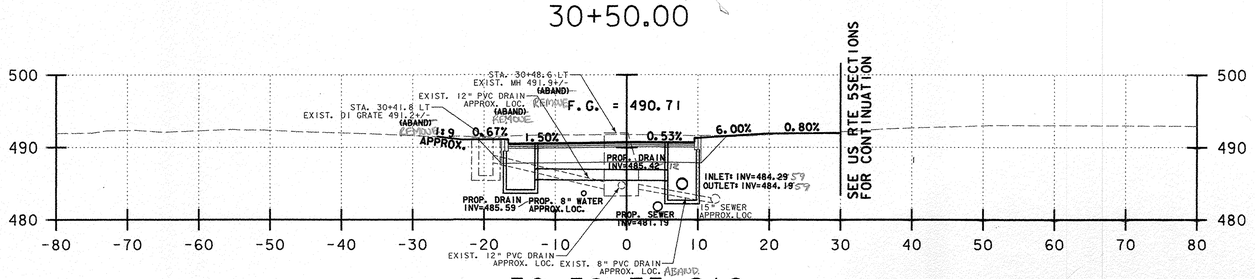


30+98.00



SUBBASE=48.63 SF ✓ BL 3/18/10
COMMON = 92.4 SF ✓ RCD 1/13/11
F.G.=24' ✓ CWB 01/21/11
RCD 1/21/11

30+50.00



COMMON = 111.0 SF ✓
SUBBASE = 58.1 SF ✓
F.G. = 28' ✓

CWB 01/21/11
RCD 1/21/11

@ 30+27
CURB-CURB WIDTH = 35' ✓ DIFF = 9' ✓
@ 30+39 CURB-CURB = 26' ✓ COMMON DEPTH @ E = 3.9' ✓
COMMON = 111.0 + (3.9+9) = 146.1 SF ✓
SUBBASE = 58.1 + (2+9) = 76.1 SF ✓
F.G. = 28+9 = 37' ✓

CWB 01/21/11
RCD 1/21/11

30+38.73 SAG
ASKEW 9°34'0.8" LT

NOTES:

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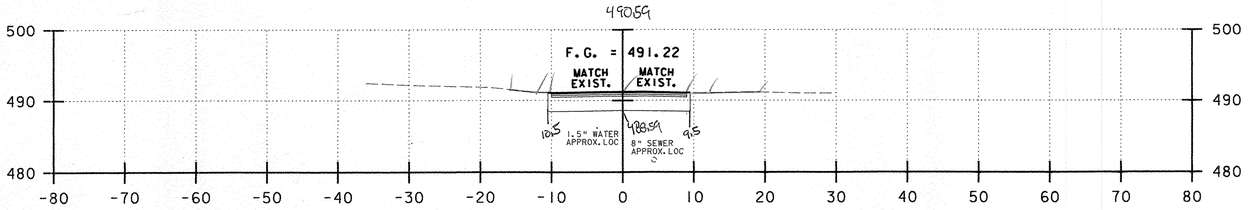
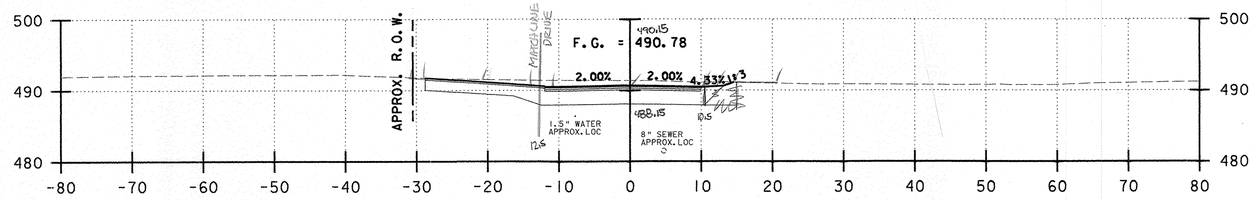
PIERCE STREET

PROJECT NAME:	HARTFORD		
PROJECT NUMBER:	RS 0113(40)		
FILE NAME:	z86c027xsl.dgn	PLOT DATE:	1/15/2007
PROJECT LEADER:	KEN UPMAL	DRAWN BY:	E. ATKINS
DESIGNED BY:	K. ISHIKURA E. ATKINS	CHECKED BY:	K. ISHIKURA
		SHEET	235 OF 239



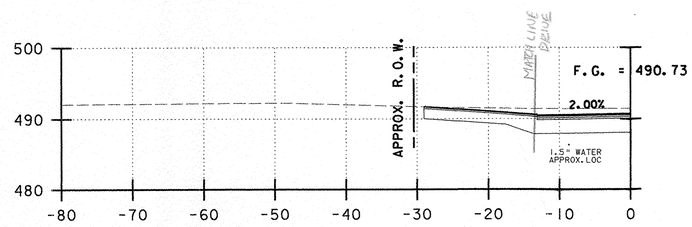
SUBBASE = 40.63 SF RL 3/19/10
COMMON = 53.25 SF RCD 1/13/11
F.L. = 20' ✓ LCB 1/21/11

36+00.00
END APPROACH
MATCH EXISTING BCP



SUBBASE = 46.63 SF RL 3/19/10
COMMON = 78.65 SF RCD 1/13/11
F.L. = 23' ✓ LCB 01/21/11
RCD 1/21/11

35+50.00

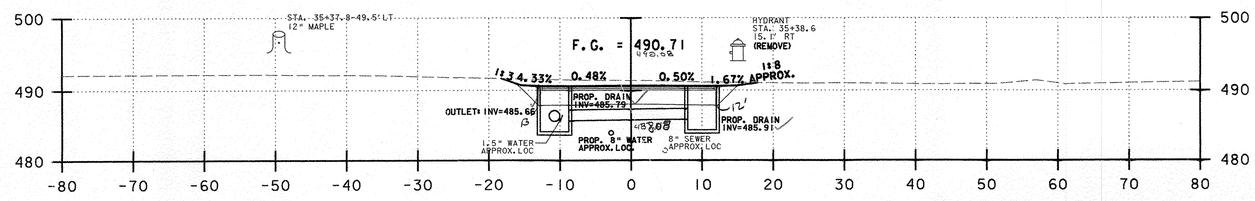


35+43.66 DRIVEWAY
ASKEW 24° 39' 14.5" RT

35+27

@ 35+27 CURB-CURB WIDTH = 34' ✓
@ 35+37 CURB-CURB WIDTH = 25' ✓
& DEPTH @ 35+37 = 3.2' ✓
COMMON = 90.5 + (3.2x9) = 119.3 SF ✓
SUBBASE = 50.6 + (2x9) = 68.6 SF ✓
F.L. = 25+9 = 34' ✓

LCB 01/21/11
RCD 1/21/11



SUBBASE = 50.60 SF RL 3/19/10
COMMON = 90.5 SF RCD 1/13/11
F.L. = 25' ✓ LCB 01/21/11
RCD 1/21/11

35+37.08 SAG
ASKEW 9° 16' 25.3" LT

GOUDREAU STREET

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

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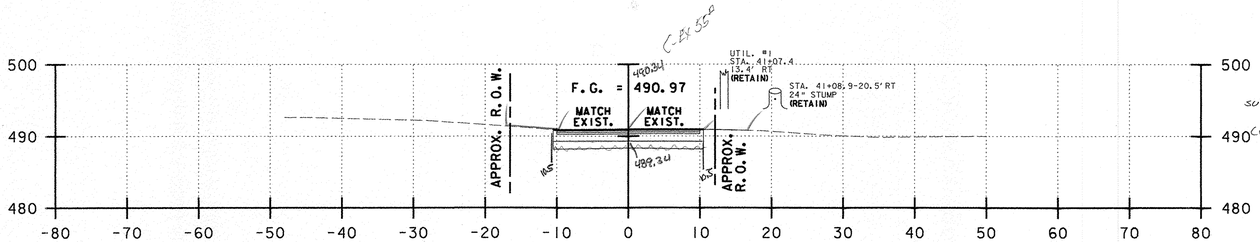
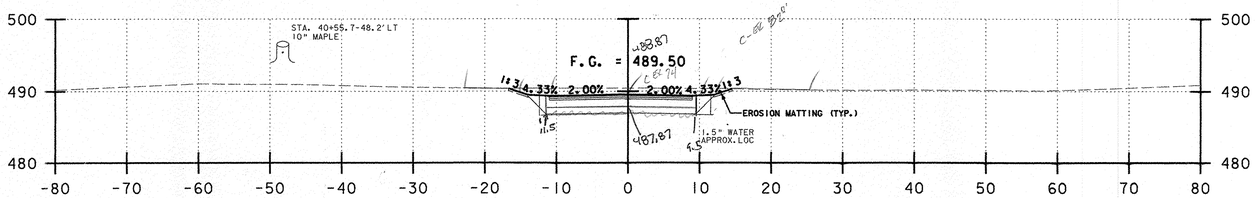
PROJECT NUMBER: RS 0113(40)	
FILE NAME: z86c027xsl.dgn	PLOT DATE: 1/15/2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 236 OF 239



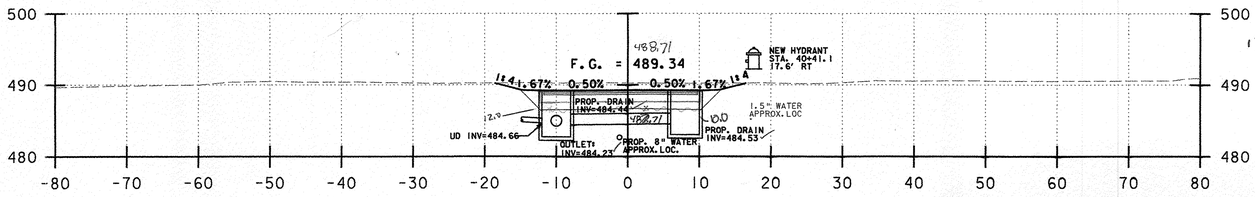
SUBBASE = 21.63 ✓
BL 3/19/10 ✓
COMMON = 35.35 SF RCD 1/13/11
F.G. = 21' ✓ CGB 01/21/11 RCD 1/21/11

41+00.00
END APPROACH
MATCH EXISTING BCP



SUBBASE 21.63 SF BL 3/19/10
COMMON = 63.1 SF ✓ RCD 1/13/11
F.G. = 21' ✓ CGB 01/21/11 RCD 1/21/11

40+50.00



1' SUBBASE = 22.60 SF. BL 3/19/10
COMMON = 68.6 SF RCD 1/13/11
F.G. = 23' ✓ CGB 01/21/11 RCD 1/21/11

40+36.06
SAG

@ 40+27
@40+27 CURB-CURB WIDTH = 31' } 8' DIFF
@40+37 CURB-CURB WIDTH = 23'
COMMON DEPTH @ ℄ = 2.6'
COMMON = 68.6 + (2.6 × 8') = 89.4 SF CGB 01/21/11
SUBBASE = 22.6 + (8 × 1) = 30.6 SF RCD 1/21/11
F.G. = 23 + 8 = 31' ✓

DEVIN STREET

NOTES:

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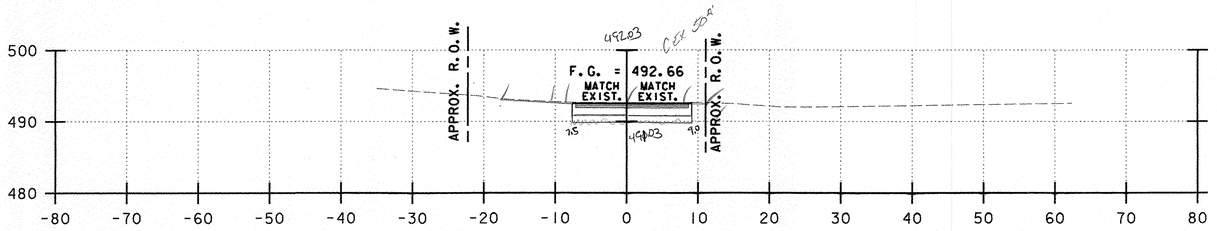
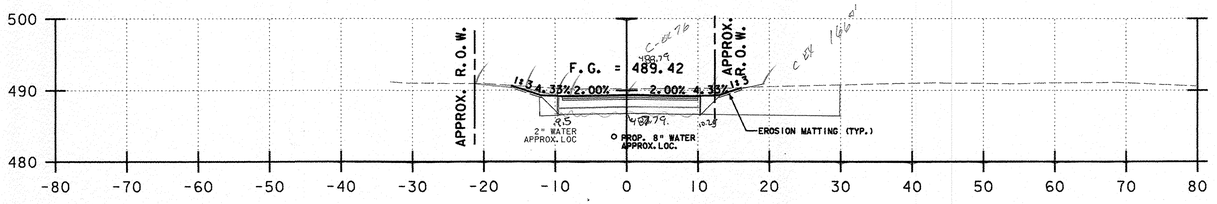
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 237 OF 239



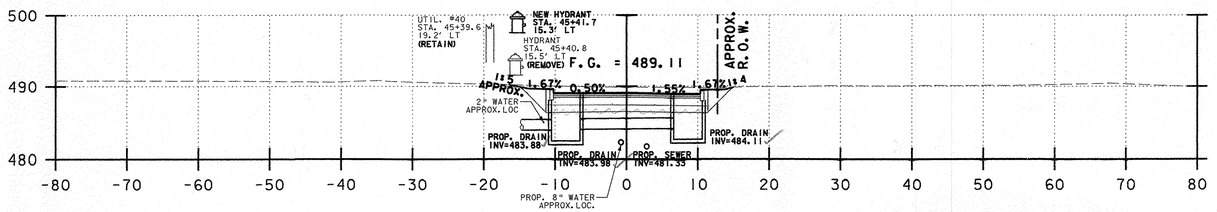
1' SUBBASE = 17.13 /BL 3/23/10
COMMON = 28.8 RCD 1/14/11
F.G. = 17' ✓ CB 01/21/11
RCD 1/21/11

46+00.00
END APPROACH
MATCH EXISTING BCP



1' SUBBASE 19.31 /BL 3/23/10
COMMON = 59.8 RCD 1/14/11 CB 01/21/11
F.G. = 20' ✓ RCD 1/21/11

45+50.00



@ 45+27

45+27 CURB-CURB WIDTH = 29' ✓ > 8' DIFF
45+37 CURB-CURB WIDTH = 21' ✓
45+37 COMMON DEPTH @ ℄ = 2.6' ✓
COMMON = 61.5 + (8 x 2.6) = 82.3' ✓ CB 01/21/11
SUBBASE = 25.2 + (8 x 1) = 33.2' ✓ RCD 1/21/11
F.G. = 23' + 8' = 31' ✓

COMMON = 61.5 ✓
SUBBASE = 25.2 ✓
F.G. = 23' ✓ RCD 1/21/11

45+36.14 SAG
ASKEW 6°51'28.7" RT

ADVENT LANE

NOTES:

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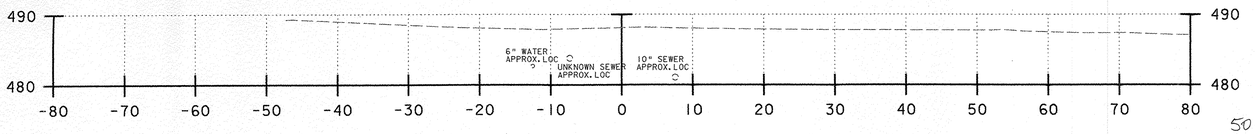
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 238 OF 239

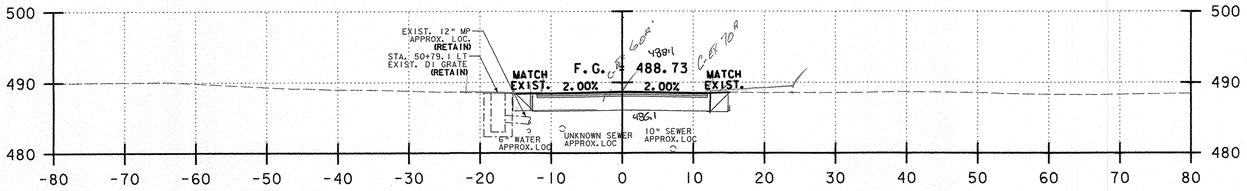


51+00.00

END APPROACH
STA. 50+75.00
ELEV. = 488.19

50+75 F6 = 24 ✓1
COMMON = 24 x 7 1/2 / 12 = 15 SF ✓

CWB 01/21/11
RCD 1/21/11



50+50.00

F.6. = 25' ✓
SUBBASE = 50.64 SF ✓
COMMON = 64.4 SF
~~SUBBASE 50+27 60.63 3/23/10 BL~~

CWB 01/21/11
RCD 1/21/11
3/23/10 BL
RCD 1/14/11

50+27 CURB WIDTH: 35' ✓1 > 10' ✓1
50+50 CURB-CURB = 25' ✓
COMMON DEPTH = 2.6' ✓
SUBBASE = 50.64 + (2.0 x 10) = 70.64 SF ✓
COMMON = 64.4 + (2.6 x 10) = 90.4 SF ✓
F.6. = 25' + 10' = 35' ✓

CWB 01/21/11
RCD 1/21/11

NOTES:

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HEWITT STREET

PROJECT NAME:	HARTFORD
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DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	1/15/2007
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET	239 OF 239

DS #3

Existing DI @ STA 204+42 L

-204.20 Trench Excavation of Earth

$\frac{(8)\left(\frac{5.8+6.25+6.25}{3}\right)(3.75)}{27} = 1.83 FE^3$

$\frac{1.83 FE^3}{27 FE^3/YD^3} = 6.78 YD^3$

$(8)\left(\left(\frac{5.8+6.25+6.25}{3}\right)-(5)\right)(3.75)(.5) = 16.5 FE^3$

$\frac{16.5 FE^3}{27 FE^3/YD^3} = .61 YD^3$

$6.78 YD^3 + .61 YD^3 = 7.39 YD^3$ Calc By RPD

-204.30 Granular Backfill For Structures

$(8)(3.75)(1.25) = \frac{37.5 FE^3}{27 FE^3/YD^3} = 1.39 YD^3$

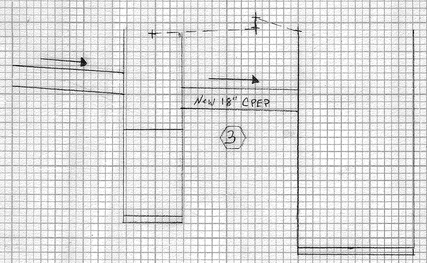
$\frac{\pi r^2 (8)}{2}$

$\frac{\pi (.688^2)(8)}{2} = 9.73 FE^3$

$\frac{9.73 FE^3}{27 FE^3/YD^3} = .36 YD^3$

$1.39 YD^3 - .36 YD^3 = 1.03 YD^3$ Calc By RPD

SEE INSP DAILY 09/17/07 TBG



DR#1

-204.20 Trench Excavation of Earth

- DS#1 to outlet of existing Pipe (18")

$38' \times 4.1' \times 6.8' = 1061.00 FE^3$

$1061 FE^3 - ((\pi)(.65^2)(38)$

$1061.00 FE^3 - 477.32 = 583.48 FE^3$

$\frac{583.48 FE^3}{27 FE^3/YD^3} = 21.61 YD^3$ Calc By RPD

-204.25 Structure Excavation

- CB 1

$(13.5)(\pi r^2) =$

$(13.5)((\pi)(4.5^2)) = 1282.95 FE^3$

$\frac{1282.95 FE^3}{27 FE^3/YD^3} = 47.52 YD^3$

- From DS 1 To RiverBank (under Stone Fill)

- Area 1 $\frac{(9.75+13.5)}{2}(5.0)(4.6) = 267.38 FE^3$

$\frac{267.38 FE^3}{27 FE^3/YD^3} = 9.90 YD^3$

- Area 2 $(14)(18)(4.6) = 515.20 FE^3$

$\frac{515.20 FE^3}{27 FE^3/YD^3} = 19.08 YD^3$

- Area 3 $(19)(4.5)(4.6) = 393.30 FE^3$

$\frac{393.30 FE^3}{27 FE^3/YD^3} = 14.57 YD^3$

- Area 4 $\frac{1}{2}bh(4.6)$

$(.5)(19)(9.25)(4.6) = 404.23 FE^3$

$\frac{404.23 FE^3}{27 FE^3/YD^3} = 14.97 YD^3$ Calc By RPD

$47.52 + 49.90 + 19.08 + 14.57 + 14.97 = 106.4 YD^3$

-204.30 Granular Backfill For Structures

- Under 54" DCP SD

$(2.75)(6.5)(46) = 822.25$

$(822.25) - \frac{(\pi)(2.75^2)(46)}{2} = 456.45$

$\frac{456.45 FE^3}{27 FE^3/YD^3} = 16.91$ Calc By RPD

-209.25 Structure Excavation

- From DS1 to River Bank (under stone fill)

- AREA 1 (AREA OF NEW PIPE)

$\left(\frac{35'+42'}{2}\right) * 5.5' = (214.5 ft^2)(41.44+43.43') = 2273.7 ft^3$

- AREA 2 (AREA ABOVE PIPE)

$\left(\frac{32'+21'}{2}\right) * 5.0' = (132.5 ft^2)(41.44+43.43') = 1404.5 ft^3$

- AREA 3

$\left(\frac{21'+7'}{2}\right) * 3.0' = (45.0 ft^2)(41.44+43.43') = 477.0 ft^3$

TOTAL = $4135.2 ft^3 / 27 = 153.2$ cuyd

+ STRUCTURE (47.52 cuyd)

-204.30 GRANULAR BACKFILL FOR STRUCTURES = 201.92 cuyd CALC BY TBG

- 6" MINUS PIPE = 71.6" ATTACH / 71.0 OD PIPE

$(66)(41.43+43.43') = 5536.6 ft^2$

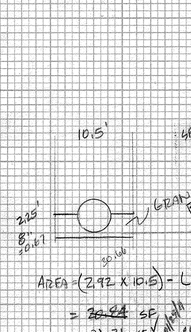
$-\pi(2.96)^2 = 42.78 ft^2 * 53' = 2266.53 ft^3 / 27 = 83.94$ cuyd

200.80

- UNDER DI (1' DEPTH)

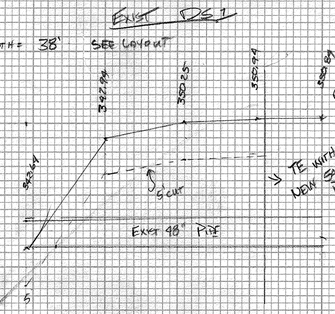
$\pi(6.92)^2 = 55.03 ft^2 * 1' = 55.03 ft^3 / 27 = 3.52$ cuyd

TOTAL GRANULAR BACKFILL = 87.92 cuyd



EXIST DS 1

LENGTH = 38' SEE LAYOUT



$\angle 5.0' - \frac{(9.25)}{2} + (5 \times .29) \times 6.0 = 930$ ✓

$\angle 5 - \left[\frac{(10+7)}{2} + 11(11) + (12.2 \times 11)\right] \times 6.0 \times 1.5 = 2611.8$

3541.8 / 27 = 131.17 CY

1.05 / 10 / 11

1.01 / 10 / 11

DR#2

204.20 Trench Excavation of Earth

- STA 201+35.82 To STA 201+46.82 (DS@STA 201+41.32) 204.20

- Area of Structure

πr^2

$\pi(4.5)^2 = 63.62 FE^2$

- Area of Structure plus 1' around

πr^2

$\pi(4.5+1)^2 = 95.03 FE^2$

$-95.03 FE^2 (15.53) = 1475.82 FE^3$

$\frac{1475.82 FE^3}{27 FE^3/YD^3} = 54.66 YD^3$

$\frac{95.03 FE^2 ((15.53)(.5))(.5) = 500.33 FE^3}{27 FE^3/YD^3} = 18.53 YD^3$

- STA 200+83 To STA 201+35.82 (48" pipe)

$\left(\frac{7.75+12.75+13.5}{3}\right)(6.1)(52.82) = 3651.62 FE^3$

$\frac{3651.62 FE^3}{27 FE^3/YD^3} = 135.25 YD^3$

$\left(\left(\frac{7.75+12.75+13.5}{3}\right)-(5)\right)(6.1)(52.82)(.5) = 1020.31 FE^3$

$\frac{1020.31 FE^3}{27 FE^3/YD^3} = 37.79 YD^3$

$54.66 YD^3 + 18.53 YD^3 + 135.25 YD^3 + 37.79 YD^3 = 246.23 YD^3$

Calc By RPD

204.30 Granular Backfill For Structures

$(54.82)(6.1)(2.55) = 31.58 YD^3$

$\pi r^2 (54.82) =$

$\frac{\pi(6.05^2)(54.82) = 361.88 FE^3}{2}$

$\frac{361.88 FE^3}{27 FE^3/YD^3} = 13.40 YD^3$

$31.58 YD^3 - 13.40 YD^3 = 18.18 YD^3$ Calc By RPD

SEE SHEET # 2

DR#4

Trench Excavation of Earth

- STA 201+46.82 To STA 202+19.61 (48" pipe)

$(72.79)\left(\frac{12.5+12.5+9.0}{3}\right)(6.1) = \frac{5032.20 FE^3}{27 FE^3/YD^3} = 186.38 YD^3$

$(72.79)\left(\left(\frac{12.5+12.5+9.0}{3}\right)-(5.0)\right)(6.1)(.50) = \frac{1406.06 FE^3}{27 FE^3/YD^3} = 52.08 YD^3$

- STA 202+19.61 To STA 202+46.61 (48" pipe)

$(27')\left(\frac{8.62'+7.37'}{2}\right)(6.1) = \frac{1316.78 FE^3}{27 FE^3/YD^3} = 48.77 YD^3$

$(27')\left(\left(\frac{8.62+7.37}{2}\right)-(5')\right)(6.1)(.5) = \frac{247.05 FE^3}{27 FE^3/YD^3} = 9.15 YD^3$

- STA 202+51.11 (DS#4 48" RCP)

$4'4.42' + 4.42 = 8.84'$

πr^2

$\pi(3.42)^2 = 18.40 FE^2$

$4.84' + 2 = 6.84'$

πr^2

$\pi(3.42^2) = 36.75 FE^2$

DS#4

$18.40 FE^2 \times 11.13' = 204.79 FE^3$

$\frac{204.79 FE}{27 FE^3/YD^3} = 7.58 YD^3$

$186.38 + 52.08 + 48.77 + 9.15 + 7.58 = 303.96 YD^3$ Calc By RPD

204.30 Granular Backfill (48" Pipe)

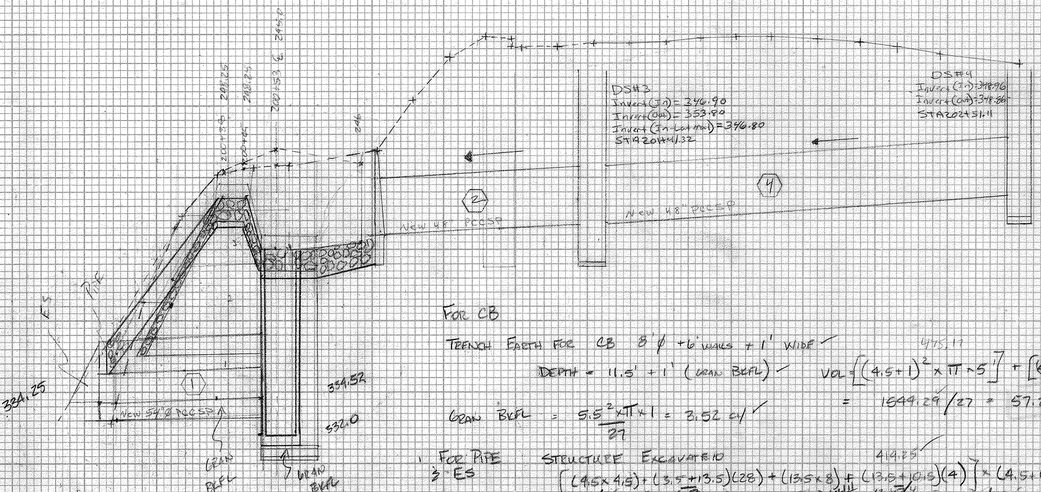
$(2.5')(6.1)(101.79) = \frac{1552.30}{27 FE^3/YD^3} = 57.49 YD^3$

$\frac{\pi r^2 (101.79)}{2}$

$\frac{\pi(2.05^2)(101.79)}{2} = \frac{671.94}{27 FE^3/YD^3} = 24.89 YD^3$

$57.49 YD^3 - 24.89 YD^3 = 32.60 YD^3$ Calc By RPD

SEE SHEET # 2



FOR CB

TRENCH EARTH FOR CB 8' ℓ + 6' WIDTH + 1' WIDE

DEPTH = 11.5' + 1' (GRAN BKFL)

GRAN BKFL = $\frac{5.5^2 \times \pi \times 1}{27} = 3.52$ CY

VOL = $\left[(4.5+1)^2 \times \pi \times 5'\right] + \left[(9.5+1)^2 \times \pi \times 7.5 \times 1.5\right]$

$= 1649.29 / 27 = 57.20$ CY

4/5.11 10/6/11

FOR PIPE STRUCTURE EXCAVATION

$\frac{[(4.5 \times 4.5) + (13.5+13.5)(28) + (13.5 \times 8) + (13.5+10.5)(4)] \times (4.5+6)}{27} = 161.10$ CY

22.71 CY 95 CY 37.85 CY

GRAN BKFL = $\frac{22.71 \times 95}{27} + 3.52 = \frac{3443 CY}{27} + 3.52 = 37.85$ CY

$\frac{37.85 CY}{27 CY/YD^3} = 1.40 YD^3$

$161.10 + 1.40 = 162.50$ CY

10/6/11 10/6/11 10/6/11

Sheet 1

DATE
BY
FINAL SURVEY
SURVEYED
PLOTTED
NOTE BOOK
TEMPLATE
NO.
AREAS
AREAS CHECKED
ORIGINAL SURVEY
SURVEYED
PLOTTED
NOTE BOOK
TEMPLATE
NO.
AREAS
AREAS CHECKED

10 ft. Outlet 3 Curb Point 0 Inlet

199+60 200+00 200+20 200+40 200+60 200+80 201+00 201+20 201+40 201+60 201+80 202+00 202+20 202+40 202+60 202+80 203+00

PLATE 3-FULL CROSS SECTION-FULL LINE FEDERAL 1-99160 NATIONAL PRINTING PRINTED IN U.S.A.

PLATE 3-FULL CROSS SECTION-FULL LINE
HIGHWAY RESEARCH AD SHEET
NATIONAL PRINTWAY
PRINTED IN U.S.A.

203.13 Common Excavation

200+09
6'x2' = 12Ft²

200+25
½bh (.5)(6)(13) = 39
½bh (.5)(6)(13) = 39
(6.0)(6.0) = 36Ft²
39+39+36 = 114Ft²

200+38
½bh (.5)(4)(8) = 16
½bh (.5)(4)(8) = 16
(4)(6) = 24
24+16+16 = 56Ft²

200+45
½bh (.5)(4.75)(8.5) = 20.19
½bh (.5)(4.75)(8.5) = 20.19
(4.75)(6) = 28.5Ft²
20.19+20.19+28.5 = 68.88

200+53
½bh (.5)(8.75)(16) = 70
½bh (.5)(7)(14) = 49
(7.9)(6) = 47.4
70+49+47.4 = 166.4

200+77
½bh (.5)(7)(14) = 49
½bh (.5)(7)(14) = 49
(7)(6) = 42
49+49+42 = 140Ft²

STA 200+09 To STA 200+25
$\frac{(12+114)}{2}(16) = 1008\ Ft^3$
$\frac{1008\ Ft^3}{27Ft^3/YD^3} = 37.33\ YD^3$

STA 200+25 To STA 200+38
$\frac{(114+56)}{2}(13) = 1105$
$\frac{1105\ Ft^3}{27Ft^3/YD^3} = 40.93\ YD^3$

STA 200+38 To STA 200+45
$\frac{(56+68.88)}{2}(7) = 437.08$
$\frac{437.08\ Ft^3}{27Ft^3/YD^3} = 16.19\ YD^3$

STA 200+45 To STA 200+53
$\frac{68.88+166.4}{2}(7) = 823.48\ Ft^3$
$\frac{823.48\ Ft^3}{27Ft^3/YD^3} = 30.50\ YD^3$

STA 200+53 To STA 200+77
$\frac{166.4+140.0}{2}(24) = 3676.8\ Ft^3$
$\frac{3676.8\ Ft^3}{27Ft^3/YD^3} = 136.18\ YD^3$

$37.33YD^3 + 40.93YD^3 + 16.19YD^3 + 30.50YD^3 + 136.18YD^3 = 261.13\ YD^3$

STA 200+09

Stone Fill, Type II
63.75+15.11+10.07+19.09+15.54 = 123.56 Calc By RPD

NEW HEADWALL STA 0+31 ON SHEET #2
= DITCH -0.009 SEE LAYOUT
DRAINAGE

200+09 = DUTT ?
200+25
$\frac{12+52.24}{2} \times 16 = 513.92\ CF$
$513.92 \div 27 = 19.03\ CY$
WRS 6-11-10

0+19
Type II Stone Ditch
6'x2' = 12Ft²
$12Ft^2 + 407.44Ft^2 (16') = 419.55\ Ft^2$
$\frac{419.55\ Ft^3}{27Ft^3/YD^3} = 15.54\ YD^3$

0+58
STA 200+25

0+45
STA 200+38

0+38
200+45

Type II Stone Ditch
$a^2+b^2=c^2$
$4.5+5.5^2 = 50.5$
$\sqrt{50.5} = 7.11$
$7.11+6.0+7.11 = 20.22$
$20.22\ (2) = 40.44\ Ft^2$
$\frac{40.44+38.84}{2}(13) = 515.32$
$\frac{515.32\ Ft^3}{27Ft^3/YD^3} = 19.09\ YD^3$

Type II Stone Ditch
$a^2+b^2=c^2$
$3^2+6^2 = 45$
$\sqrt{45} = 6.71$
$6.71+6.0+6.71 = 19.42$
$19.42\ (2) = 38.84$
$\frac{38.84+38.84}{2}(7) = 271.88$
$\frac{271.88\ Ft^3}{27Ft^3/YD^3} = 10.07\ YD^3$
WRS 6-11-10

Type II Stone Ditch
$a^2+b^2=c^2$
$3^2+6^2 = 45$
$\sqrt{45} = 6.71$
$6.71+6.0+6.71 = 19.42$
$19.42\ (2) = 38.84\ Ft^2$
$38.84+38.84\ (7) = 271.88$
$\frac{40.81\ Ft^3}{27Ft^3/YD^3} = 15.11\ YD^3$
WRS 6-11-10

$9^2+4.5^2 = 101.25$
$\sqrt{101.25} = 10.06$
$10.06+6+10.06 = 26.12$
$26.12 \times 2 = 52.24\ Ft^2$
$\frac{52.24+38.84}{2} \times 13 = 592.02\ Ft^3$
$592.02/27 = 21.93\ CY$
WRS 6-11-10

Stone ditch From Headwall @ STA 200+77 To CB @ STA 200+53

0+30
200+53

0+00
200+77

Type II Stone Ditch
$a^2+b^2=c^2$
$7.75+4.5^2 = 270.31$
$\sqrt{270.31} = 16.44$
$16.44+6.00+16.44 = 38.88$
$38.88\ (2') = 77.76\ Ft^2$

INV. @ Grate 345.00
$a^2+b^2=c^2$
$7.75+4.5^2 = 270.31$
$\sqrt{270.31} = 16.44$
$\frac{77.76\ Ft^2 + 65.68Ft^2}{2}(24) = 1721.28\ Ft^3$
$\frac{172.28\ Ft^3}{27Ft^3/YD^3} = 63.75\ YD^3$
127.50 YD
WRS 6-11-10

Type II Stone Ditch
$a^2+b^2=c^2$
$6^2+12.5^2 = 192.25$
$\sqrt{192.25} = 13.87$
$13.87+6.0+12.97 = 32.84$
$32.84\ (2') = 65.68\ Ft^2$

INV. @ Headwall 346.00
$a^2+b^2=c^2$
$6^2+11.5^2 = 168.25$
$\sqrt{168.25} = 12.97$

ORIGINAL SURVEY
SURVEYED
PLOTTED
NOTE BOOK
PAGE
AREAS
AREAS CHECKED
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DATE
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SHEET 1A

HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
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DS #3 SEE LAYOUTS FOR LENGTH

DEPTH @ EXISTING DI = 359.40 - 354.0 = 5.4' +1' WIDTH 3.75' DIST
DEPTH @ NEW CB = 359.00 - 350.0 = 9.0 + 1' 34'
DEPTH @ HEADWALL = 358.00 - 346.0 = 7.0 +1' 25'

TRENCH EARTH = $\left[\left(\frac{5+5.9}{2}\right)+\left(\frac{0.4+4}{2}\right)(34)(1.5)+\left(\frac{4+7}{2}\right)(25)(1.5)\right](3.75)\times 1/27$ = 72.18 CY

GRAN BKFL = $\left[(1+0.875)(3.75)-\left(\frac{0.875^2\times\pi}{2}\right)\right]\times 59\times 1/27$ = 12.79 CY
(UNDERCUT 1 1/2 WP TO SPRING LINE)

CB 02/02/10
BCD 1/25/11

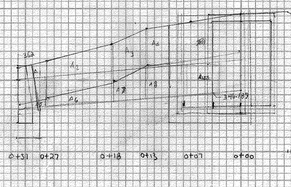
NEW STA 20+45 ± 99 ± 26 ± 25 RT 70.1 FT RT

CONCRETE HEADWALL

204.30 = 4.44 CY SEE INSP DAILY TBG 08/28/07

TRENCH EARTH

204.20 = 42.22 SEE INSP DAILY
+ - 6.01
36.21 CY CB 08/02/10
BCD 1/25/11



& COMMON EXCAVATION FOR DITCH IN FRONT OF HEADWALL + WINGWALLS

1' IN FRONT OF HDWL = (110 SF x 1) /27 = 4.07
INFRONT OF WINGWALLS = $\left[\left(\frac{2'+5'}{2}\right)\times 7.5\times 1\right]\times 2/27$ = 1.94
6.01 CY CB 02/03/10
BCD 1/25/11

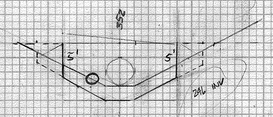
STA	COMMON EXC A	COMMON EXC VOL	STONE FILL A	STONE FILL VOL
-0+009	110	550	32	160
-0+004	142	580	46	196
0+000	148	908.75	52	1470
0+030	131.25	2045.37	46	774
0+048	96	2592	40	1036
0+085	32		16	

$S = \frac{9518}{27}$ = 352.52 CY
863.49 CY

$\frac{3475}{27}$ = 128.70 CY

1946, 93 CY

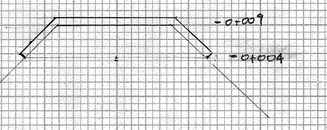
CB 02/02/10
BCD 1/25/11



SEE INSP DAILY QH 09/27/08 FOR FM STONE WIDTH
-0+009 - 0+000
-0+009 = 16'
-0+004 = 23'
0+000 = 26'

STAD 0+030 = DITCH -0+009

SEE INSP DAILY TBG 07/30/09
SF @ COMMON EXC @ 0+030 - 0+085
0+030 SF = 23'
0+048 SF = 20'
0+085 SF = 16'



BCD 1/25/11

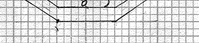
-0+009 : COMMON EXC = $(8\times 4')+\left(\frac{(5+8)}{2}\times 6\times 2\right)$ = 110 SF
S.F = 16+2 = 32 SF

-0+004 COMMON EXC = $(6\times 4)+\left(\frac{6+17}{2}\times 2\right)+(23\times 2)$ = 142 SF
SF = 23+2 = 46 SF

0+000 COMMON = $(6\times 4)+\left(\frac{6\times 12}{2}\times 2\right)+(26\times 2)$ = 148 SF
SF = 26+2 = 52 SF

0+030 = 201+53 @ CB
COMMON EXC = $(8\times 7.5)+\left[\left(\frac{7.5+2}{2}\right)\times 7.5\times 2\right]$ = 131.25
SF = 23+2 = 46SF

0+048 USE 4' DEEP DITCH & 20' WIDTH @ TOP & 8' WIDE @ BOTTOM
COMMON EXC = $(8'\times 6')+\left[\left(\frac{6+2}{2}\right)\times 6\times 2\right]$ = 96 SF
SF = 20+2 = 40



0+085
COMMON & SF = 16+2 = 32 SF

BCD 1/25/11

DS-2

TRENCH EARTH FOR PIPE ∠ 5'd

$A_1 = 5'\times 4'\times 6.1' = 122\,ft^3$
$A_2 = 5'\times 5.5'\times 6.1' = 280.6\,ft^3$
$A_3 = 5'\times 5'\times 6.1' = 152.5\,ft^3$
$A_4 = 5'\times 3.1'\times 6.1' = 94.55\,ft^3$
TOTAL = 649.65 ft^3

TRENCH EARTH FOR PIPE > 5'd

$A_5 = \left[\left(\frac{0.3'+8.8'}{2}\right)\times\left(\frac{3.5+3.2'}{2}\right)+6.1'\right]\times 5 = 19.78\,ft^2$
$A_6 = \left[\left(\frac{0.3+2.5'}{2}\right)\times\left(\frac{3.5+3.2'}{2}\right)\times 6.1'\right]\times 5 = 149.33\,ft^3$
$A_7 = \left[\left(\frac{1.5'+4.1'}{2}\right)\times 9.2'\times 6.1'\right]\times 5 = 86.62\,ft^3$
$A_8 = \left[\left(\frac{4.1'+8.5'}{2}\right)\times 6.1'\right]\times 5 = 120.48\,ft^3$
TOTAL = 385.38 ft^3
GRAND TOTAL T.E. FOR PIPE = $1035.03\,ft^3/27$ = 38.33 CY

TRENCH EARTH FOR STRUCTURE ∠ 5'd
$A = 5'\times 8'\times 6.5' = 475.17\,ft^3$

TRENCH EARTH FOR STRUCTURE > 5'd (+1 FOR UNDERCUT)
$A = \left(\frac{8'^2\times\pi}{2}\right)(3.5')^2\times 5 = 1140.40\,ft^3$
TOT FOR STRUCTURE = $1615.57\,ft^3/27$ = 59.84 CY

GRAND TOTAL T.E. = 38.33 CY + 59.84 CY = 98.17 CY

GRANULAR BACKFILL UNDER STRUCTURE
$= \pi(3.5')^2\times 1'$ UNDERCUT = $35.03\,ft^3/27$ = 1.52 CY
CB 02/02/10

CB 01/25/08
TBG 1/25/08

CPH 01/07/08

SEE INSP DAILY QH 09/27/08 FOR FM STONE WIDTH
-0+009 - 0+000
-0+009 = 16'
-0+004 = 23'
0+000 = 26'

SEE INSP DAILY TBG 07/30/09
SF @ COMMON EXC @ 0+030 - 0+085
0+030 SF = 23'
0+048 SF = 20'
0+085 SF = 16'

BCD 1/25/11

DS #4

REMOVAL OF EXISTING DI
FM 6'x6' x 10' + 6'x6'x2' BASE
203.16 SOLID ROCK = 3.64 x 6 x 6 / 27 = 4.85 CY
209.21 TRENCH ROCK = $[(6\times 5\times 6)+(12-3.64-5)\times 1.5\times 6\times 6]\times 1/27$
= 13.39 CY
TRENCH EXC FOR NEW CB

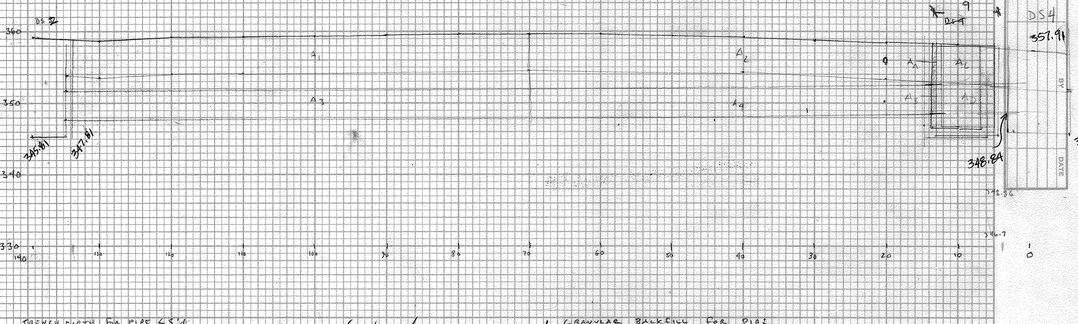
CB 01/25/08
TBG 1/25/08

REMOVAL OF EXISTING PIPE
AUG LENGTH OF PIPE ~~TO~~ TO BE REMOVE IN TRENCH
L = 25'
DEPTH BELOW NEW PIPE @ INLET
D = 3'
VOL = $\frac{1.5\times 3\times 25\times 4.1}{27}$ = 17.08 CY

CB 01/25/08
TBG 1/25/08

6'ϕ DI = 4.5 OUTSIDE RADIUS
359.19 - 3.64 - (0.02 x 31.4) = 354.84
CB DEPTH = 354.84 - 346.84 = 8.0 + 1' UNDERCUT
VOL = $\frac{(5\times\pi\times 4.5^2)+(1.5\times 9\times\pi\times 4.5^2)}{27}$ = 699.79 / 27 = 25.92 CY
EXIST DI - 13.39
12.53 CY

CB 01/25/08
TBG 1/25/08



HIGHWAY FEDERAL AID SHEET
NEBRASKA PRINTOUT
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PLATE 3-FULL CROSS SECTION-FULL LINE

ORIGINAL SURVEY
SURVEYED
PLOTTED
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AREAS
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NOTE BOOK
NO.
BY
DATE

FINAL SURVEY
SURVEYED
PLOTTED
TRACED
AREAS
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

118
79
44

44

74

476.92
476.07
.85 ÷ 118 = .0072
.0072 x 66 = .48

480

475

(476.55)

S = .0072 (.005)

(.OR)

INV IN 476.07

476.44
(476.59)

.56 CLEAR OVER
1 BLUE BOARD

475.88 TOP 4" BLUE BOARD

INV OUT 476.92

37 +95

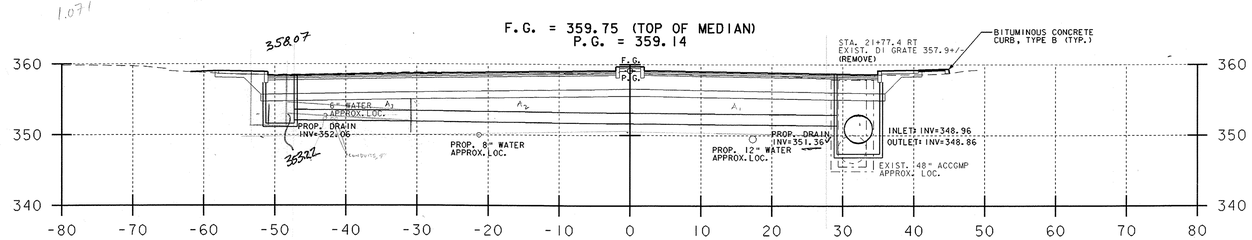
36 +74.5

37+00

+50

38+00

37



21+70.60
ASKEW 9° 1' 1.9" LT

TRENCH EXC. FOR PIPE <5'

$A_1 = \frac{(3.9'+3.7')}{2} * 27.5' * (1.6'+1'+1') = 376.2\ ft^3$ 3.75 391.88

$A_2 = \frac{(3'+3.9')}{2} * 38.5' * 3.6' = 378.81\ ft^3$ 3.75 394.59

$A_3 = \frac{(3'+1.8')}{2} * 17.4' * 3.6' = 150.14\ ft^3$ 1.83 3.75 137.68

TOT. FOR PIPE = 915.35 ft³/27 = 33.53 CY
924.14 = 34.23 CY
TBG 1/25/8

TRENCH EXC. FOR STRUCT. <5'

$\pi(3.48)^2 * \frac{(3.5'+5.8')}{2} = 173.01\ ft^3/27 = 6.41\ CY$ 5.9

GRANULAR BACKFILL GB-1' OVER PIPE

L PIPE = 77'

$77' * 3.6' * 2.6' = 720.72\ ft^3$ 3.75 750.75

$-\pi(1.8')^2 * 77' = 565.98\ ft^3/27 = 20.96\ CY$ 1.83 3.75 185.11

20.95 CY

SOLID ROCK EXC.

$= (3.64' * 4' * 4')/27 = 2.16\ CY$

T.R.

$= 3.5' * 4' * 4'/27 = 2.07\ CY$

CP
TBG 1/25/08

5.9
6.41 CY (T.E.)
− 2.07 CY (T.R.)
4.34 CY
3.83 CY
34.23
38.06 CY

TBG 1/24/08

CP 1/25/08
TBG 1/25/08

DS-5
8/21/07

LEGEND:

F.G. FINISHED GRADE
P.G. PROFILE GRADE

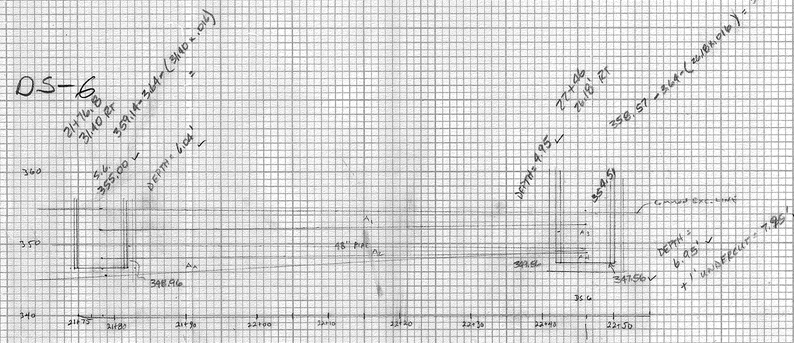
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 12-JUN-2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 191 OF 239

SHEET #3

3.625 Common dy.

DS-6



TRENCH EXC. FOR PIPE <5'

$A_1 = \pi \times 58.2' \times (1.1'/12)^2 / 27 = 65.92 cy$ ✓

TRENCH EXC. FOR PIPE >5'

$A_2 = \left[\frac{(\text{Top} + \text{Bot})}{2} \times 58.2' \times 6.1'\right] 1.5 =$ 10.16 ✓

TRENCH EXC. FOR STRUCTURE <5'

$A_3 = 5' \times \pi (4.58')^2 / 27 = 325.19 ft^3$ 11.78 ✓

TRENCH EXC. FOR STRUCTURE >5'

$A_4 \left[\frac{(\text{Top} + \text{Bot})}{2} + \pi (4.58')^2\right] 1.5 = 307.31 ft^3$ 6.95 / 10.43 ✓

TOTAL TRENCH EXC. = 342 ft³/27 = 12.67 cy

TOTAL = 65.92 + 10.16 + 11.78 + 6.95 + 10.43 + 76.51 = 5.81

= 182.74 cy

118.57 cy ✓

TBG 01/25/08

TBG 8.22.07

REMOVE EXISTING PIPE <5'

$A_5 = \left[\frac{(\text{Top} + \text{Bot})}{2} \times 58.2' \times 6.1'\right] 1.5 =$ 715.86/27 = 26.51 cy ✓

REMOVE EXISTING PIPE >5'

$A_6 = \left[\frac{(\text{Top} + \text{Bot})}{2} \times 58.2' \times 6.1'\right] 1.5 =$ 554.17 ft³

REMOVE EXISTING STRUCTURE <5' 6'W x 6'L

5'H x 6'W x 6'L = 180 ft³

REMOVE EXISTING STRUCTURE >5'

1.5 [7'H x 6'W x 6'L] = 1162 ft³

EXISTING DI FOR REMOVAL 6'W x 6'L

263.16 = 3.64 x 6 x 6 x 1/27 = 4.85 cy ✓

264.21 = (8'-3.64') x 6 x 6 x 1/27 = 5.81 cy ✓

GRANULAR BACKFILL

PIPE

$\pi (2.9')^2 \times 58.2' = 1538.58 ft^3$

$- \pi (2.65')^2 \times 58.2' = 1283.39 ft^3$

$255.19 ft^3 / 27 = 9.45 cy$ ✓

STRUCT.

$\pi (4.58')^2 \times 1' \text{ undercut} = 65.94 ft^3 / 27 = 2.44 cy$ ✓

TOTAL = 752.23 ft³/27 = 27.86 cy

BACKFILL TO TOP OF PIPE

2413 cy

2736 cy ✓

TBG 01/09/07

TBG 01/25/08

HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
NATIONAL PRINTWAY
PRINTED IN U.S.A.

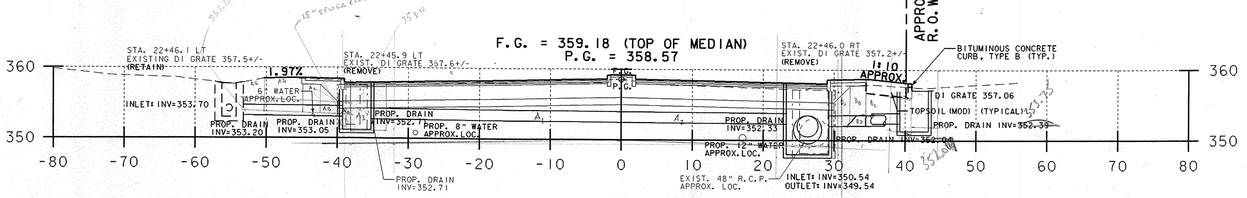
SHEET #1

FINAL SURVEY — NOTE BOOK — NO. — SURVEYED — PLOTTED — TEMPLATE — AREAS — AREAS CHECKED — BY — DATE

ORIGINAL SURVEY — NOTE BOOK — NO. — SURVEYED — PLOTTED — TEMPLATE — AREAS — AREAS CHECKED — BY — DATE

DS-7 DS-8 DS-9

22+50.00



22+46.11 SAG

DI REMOVE TAKEN FROM CROSS SECTIONS 1/25/08
PAY AS T.R, 4'x4'x6' = 96/27 = 3.56 cy CPH

DR #7

PIPE TRENCH EARTH ∠5'

$A_A = \frac{(0.8'+0.6')}{2} \times 1.9' \times 3.6' = 4.79\ ft^3$

$A_B = \frac{(2.9'+2')}{2} \times 2.5' \times 3.6' = 26.55\ ft^3$

$A_C = 2.9' \times 2.6' \times 2.6' = 36.50\ ft^3$

$A_D = \frac{(4.5'+4.7')}{2} \times 5.5' \times 2.6' = 91.08\ ft^3$

$A_E = \frac{(3.7'+4.3')}{2} \times 3' \times 3.6' = 44.28\ ft^3$

TOTAL T.E.: 203.2 ft³/27 = 7.53 cy

PIPE USED: 18' (18" CPEP)

GRANULAR BACKFILL

$14.3' \times 3.6' \times 0.8' = 41.91\ ft^3$

$- \pi\left(\frac{0.8\ ft}{2}\right)^2 \times 14.3' = 14.98\ ft^3$

$26.93\ ft^3/27 = 1.03\ cy$

1/25/08 CPH

DR #8 (8-11-07)

PIPE TRENCH EARTH ∠5'

$A_1 = \frac{(2.5'+1.6')}{2} \times 31.8' \times 3.75' = 234.68\ ft^3$ (LEVITT)

$A_2 = \frac{(2.5'+2.1')}{2} \times 21.9' \times 3.75' = 184.33\ ft^3$

$= 419.01\ ft^3/27 = 15.51\ cy$

1605 cy

1/25/08 CPH

STRUCTURE TRENCH EARTH ∠5' (6" INVERT FOR GRANULAR)

$A_3 = \frac{(3.7'+5.5')}{2} \times \pi(3.45\ ft)^2 = 174.61\ ft^3/27 = 4.99\ cy$

F.M. TBG 08/106 4'x4'x5'

-REMOVAL OF EXIST. 4'x4' DI

$3.1' \times 4' \times \frac{(2.9'+2')}{2} = 26.38\ ft^3/27 = 1.35\ cy$

TOT. STRUCT. EX.: 36.4 cy

T.R. 4'x4'x6' (minus 6" slab) = 24 ft³/27 = 0.89 cy EXISTING DI Removal

SOLID ROCK EXC.: 3.5'x4'x4' = 56 ft³/27 = 2.07 cy S,ROCK 3.63 x 4'x4' = 58/27 = 2.07cy

GRANULAR BACKFILL FOR PIPE

$56' \times 3.6' \times 0.8' - \left(\frac{(2.0 \times 0.8')}{2} \times 56'\right) = 104.98\ ft^3/27 = 3.89\ cy$ (5-3.63)

T.ROCK 2.8 x 4'x4' = 36.8 = 1.36cy 0.81 cy

GRANULAR BACKFILL FOR STRUCT.

$\pi(3.45\ ft)^2 \times 0.5' = 18.70\ ft^3/27 = 0.69\ cy$

DR#9

PIPE TRENCH EARTH ∠5'

$B_A = \frac{(3.8'+5')}{2} \times 1.7' \times 36' = 26.93\ ft^3$

$B_B = \frac{(5'+9')}{2} \times 2.1' \times 36' = 34.02\ ft^3$

$B_C = \frac{4.5'+3.8'}{2} \times 3.5' \times 36' = 52.29\ ft^3$

PIPE TRENCH > 5'

$B_D = \left[\frac{1.5' \times (2.2'+1.5')}{2} \times 36'\right] 1.5 = 141.39\ ft^3$

TOTAL PIPE T.E.: 138.23 ft³/27 = 4.75 cy

STRUCT. EX. ∠5'

$5' \times \pi(3.45')^2 = 186.36\ ft^3$

STRUCT. T.E. > 5': $\left[\frac{(0.5+3.1')}{2} \times \pi(3.45')^2\right] = 44.87\ ft^3$

TOTAL T.E. = 231.23 ft³/27 = 8.59 cy T.E. STRUCT

TE 8.59 cy
- 3.56 cy
TE, STRUCT. 5.03 cy
T.E PIPE 4.75 cy
9.78 cy

1/25/08 CPH

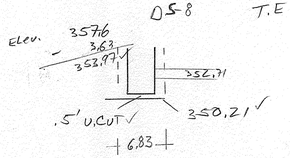
2.15 cy

GRANULAR BACKFILL
$3.1' \times 3.6' \times 0.8' = 26.21\ ft^3$
$- \pi\left(\frac{0.8\ ft}{2}\right)^2 \times 3.1 = 9.15\ ft^3$
$= 17.06\ ft^3/27 = .63\ cy$

18" PIPE USED = 11.5' CPEP
12'

CPH 1/25/08

DS-8 T.E STRUCTURE



$3.76' \left(\pi\ 3.42^2\right) = 138.10/27 = 5.11$

~~3.07~~ ~~5.11~~

- 1.36 0.81 T. ROCK

4.3 1.68 cy

16.05 cy

~~17.73~~ cy = TOTAL T.E

20.35 cy

CPH 1/25/08

TBG 1/25/08

CPH 1/25/08

60' (18") CPEP USED

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

CPH 1/25/08

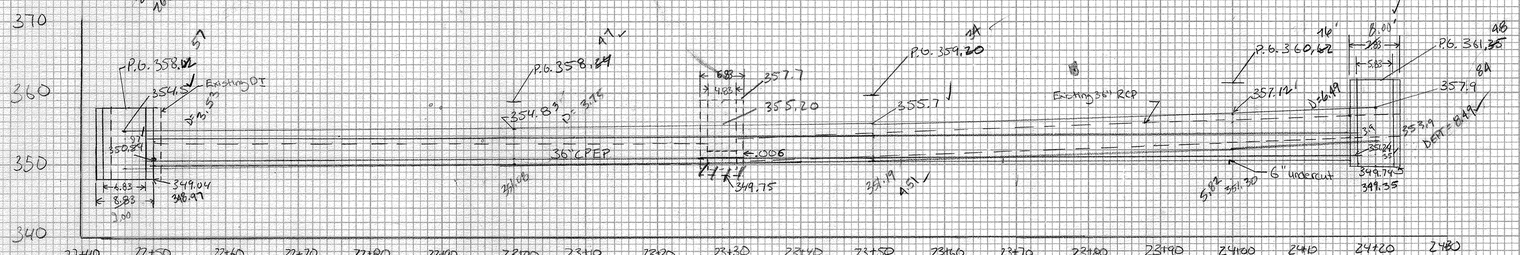
U.S. ROUTE 5
HARTFORD AVENUE

~~PROJECT NAME:~~ HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 12-JUN-2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 192 OF 239

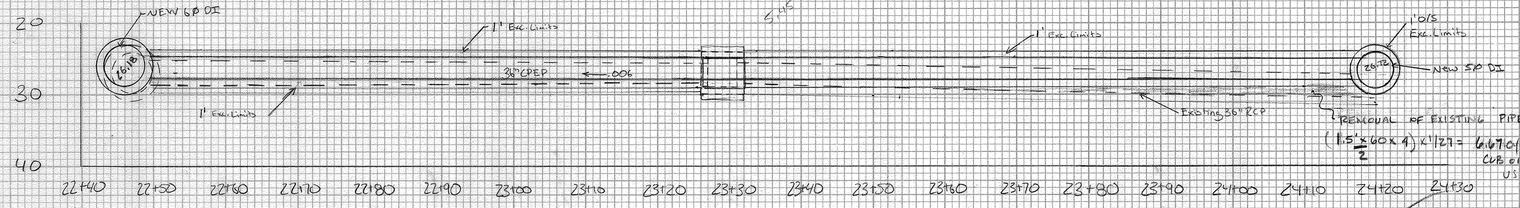
SHEET #5

HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
NATIONAL PRINTSHOP
PRINTED IN U.S.A.

DR # ⑩ 24+20 RT – 22+46.1 RT 36" CPEP



36" CPEP =



TRENCH EARTH

PIPE =		DEPTH	AVG	VOL	
	22+50	3.53	3.69	(3.69 x 50)	182.
	23+00	3.75	4.13	(4.13 x 50)	206.5
	23+50	4.51	5.17	(5 + (0.17 x 1.5)) x 50	262.75
	24+00	5.82	6.16	(5 + (1.16 x 1.5)) x 16.5	111.21
	24+16.5	6.49			762.46

762.46 SF x 5.5 x 1/27 = 155.32 cy

EXIST DI DEDUCT = - 3.88 cy
151.44 cy
CUB 01/25/08
TBG 1/25/08

NEW DI = [5 + (1.9 x 3.49)] (4²)(CTF) = 19.05 cy
27

EXIST PIPE VOL = 6.67
= 177.16 cy · TBG 1/25/08

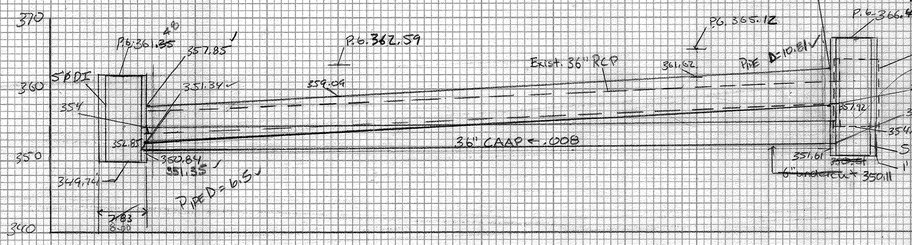
EXIST DI @ 23+29 RT FIL TBG 08/27/06 6' x 4' x 8'

202.16 SOLID ROCK = 3.69 x 6 x 4 / 27 = 3.29 cy
209.21 TRENCH ROCK = (8 - 3.69) x 6 x 4 / 27 = 3.88 cy

Granular Backfill

5:1 1:1.5
5.9' x 2.75' x 169.8' = 2748.80 1335.95
(3.14 x 1.75²)/2 (169.8) = - 815.75 637.76
1933.05
1933.05 / 27 = 47.53 cy RD 6/14/07
698.69 / 27 = 25.87 cy
+ STRUCTURE = [3.14(4²) x 0.5'] / 27 = 0.93 cy
TOT = 26.8 cy
TBG 1.12.08

DR # ⑫ 25+22.2 RT – 24+20.0 RT 36" CAAP



Pipe trench Exc @ outlet Area = (7.76 x 2.5) = 18.00
@ inlet Area = (5' x 7.76) + (2.5 x 5.8 x 1.5) = 55.15 73.91
VOL = ((18.00 + 55.15)/2) x 168' x 1/27 = 244.47 cy (must subtract portion of 31 Exist 42" in trench) = (4.5' x 4' x 6') / 27 = 4 cy
Pipe trench total = 244.47 cy + A cy + 17.67 cy + 7.67 cy = 299.80 cy
201.50 LF

Existing Pipe = ((26 + 5)/2)(44.64) x 4 x 1/27 = 37.12 cy

DI @ 24+20 RT (3.14 x 3.92²) = 48.25 50.24
Area 4.00

Exist DI @ 23+29 RT (6.83² x .5)/27 = 8.64 cy
(6.83² x .95 x .5)/27 = 11.17 cy
Rock Exc. 9.8 cy

Solid rock = 3.5' x 6' x 4' = 84' / 27 = 3.11 cy
T.R. 1.5' = 4.5' x 6' x 4' = 108 ft³ / 27 = 4 cy

VOL = 48.25 x 5' x 1/27 = 8.94 cy 9.30 cy
VOL = 48.25 x 3.16 x 1.5 x 1/27 = 8.47 cy 8.87 cy
total for DI 17.41 cy 17.67 cy

Pipe trench Exc @ outlet Area = (5' x 5.1) + (2.01 x 5.1 x 1.5) = 40.88 55.95
@ inlet Area = (2' x 5.1) + (5.31 x 5.1 x 1.5) = 73.77 96.05
5.31
VOL = ((40.88 + 73.77)/2) x 92.4 x 1/27 = 195.69 cy + 10.95 cy + 25.85 cy + 25.32 cy = 247.35 cy
TBG 1.10.08

Existing Pipe = (3.85 x 2.4) = 9.24
(5.0 x 4.0) = 20.0 14.75
DI @ 25+22.7 Area

Removal of Exist DI 7.83 vol (6.31 x 5) + (6.31 x 3.67 x 1.5) = 23.85 cy
Trench Exc. for New DI (3.14 x 3.92²) = (6.83 x 5) + (48.25 x 7.31 x 1.5) = 220.31 ft³
- 86.70 for Exist DI 11.7
(283.61/27) = 25.32 cy
25.85 cy
TBG 9.9.07

Granular Backfill
EXIST
96.0' 1.5:1 (no scale)
97.3' x 5.1 x 2.05 = 1016.23 Ft³ 783.36
96' (97.2) (3.14 x 1.55²)/2 = -366.63 Ft³ 385.84
644.60 / 27 = 24.06 cy RD 6/14/07
STRUCTURE = 44.42 cy
= 68.48 cy 141.72 cy TBG 1.9.08

36" CAAP used 97.75 LF

FINAL SURVEY — SURVEYED, PLOTTED, AREA, AREAS CHECKED, NOTE BOOK NO., BY, DATE

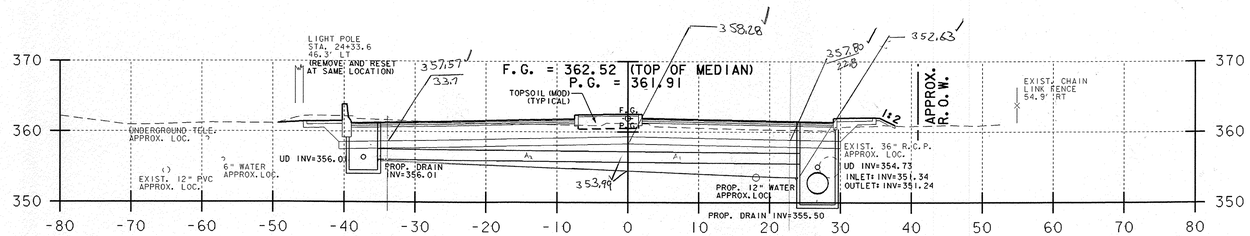
TRENCH EARTH
PIPE = [(5 x 99 x 5.1) + (1.5 x (1.5 x 5.81)/2 x 5 x 99)] / 27 = 186.12 cy
CB [(5 x π x 4²) + (1.5 x (12.81 - 5) x 4²)] x 1/27 = 16.25 cy
EXIST PIPE = (1.5/2 + 2.7) x 100 x [((4.9 + 5)/2) + (1.5 x 0.5)] x 1/27 = 37.92 cy
DEDUCT FOR EXISTING DI = 10.67 / 2 = 5.33 cy
TOTAL TE = 239.96 cy CUB 01/29/08 TBG 1/24/08

FROM X-SECTIONS
EXISTING PIPE DEPTH
@ 24+20 D = 4'
@ 25+22 D = 5.6'

EXISTING DI FIL TBG 04/05/07
6'x6'x7'
No Solid Rock
209.21 TRENCH ROCK = (6 x 6 x 5)/27 + (6 x 6 x (2 x 1.5))/27 = 10.67 cy
TBG 1/24/08

RD 6/14/07
TBG 1.12.08

SHEET #6



24+20.00

SLOPE = .0563

DS-11

PIPE T.E. < 5'

$A_1 = \frac{(2.2'+2.6')}{2} \times 22.8' \times (1.6+1+1) = 196.99\ ft^3$ (3.75) 205.2

$A_2 = \frac{(2.6'+1.5')}{2} \times 33.7' \times 3.6' = 248.71\ ft^3$ (3.75) 259.02

TOTAL = 445.70 ft³/27 = ~~16.51~~ CY 17.20 CY

FT PIPE = 60' 18" CPEP

STRUCTURE EXC. T.E. < 5'

$\pi(3.46ft)^2 \times (3.4'+3.6') = 131.63\ ft^3/27 = 4.88$ CY

Item # 204.20 — 17.2 CY, 4.88 CY

TOT.E = 22.08 CY

GRANULAR BACKFILL 190.96

$58.2' \times 0.8' \times 3.6' = 167.62\ ft^3$ (.875) 3.75 69.96

$-\frac{\pi(0.8ft)^2}{2} \times 58.2' = 58.51\ ft^3$

= 109.11 ft³/27 = 4.04 CY

121 = 4.48 CY

1/25/08

CP 11

TBG 1/25/08

357.57 − 356.01 = 1.56
358.28 − 353.99 = 4.29 → 2.925 × 33.7 × 3.75 × 1/27 = 13.69

4.29
357.8 − 325.63 = 5.17 → 4.73 × 22.8 × 3.75 × 1/27 = 14.98

28.67 CY BL 6/9/08

CLB 02/03/10

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD	
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DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 193 OF 239

SHEET #7

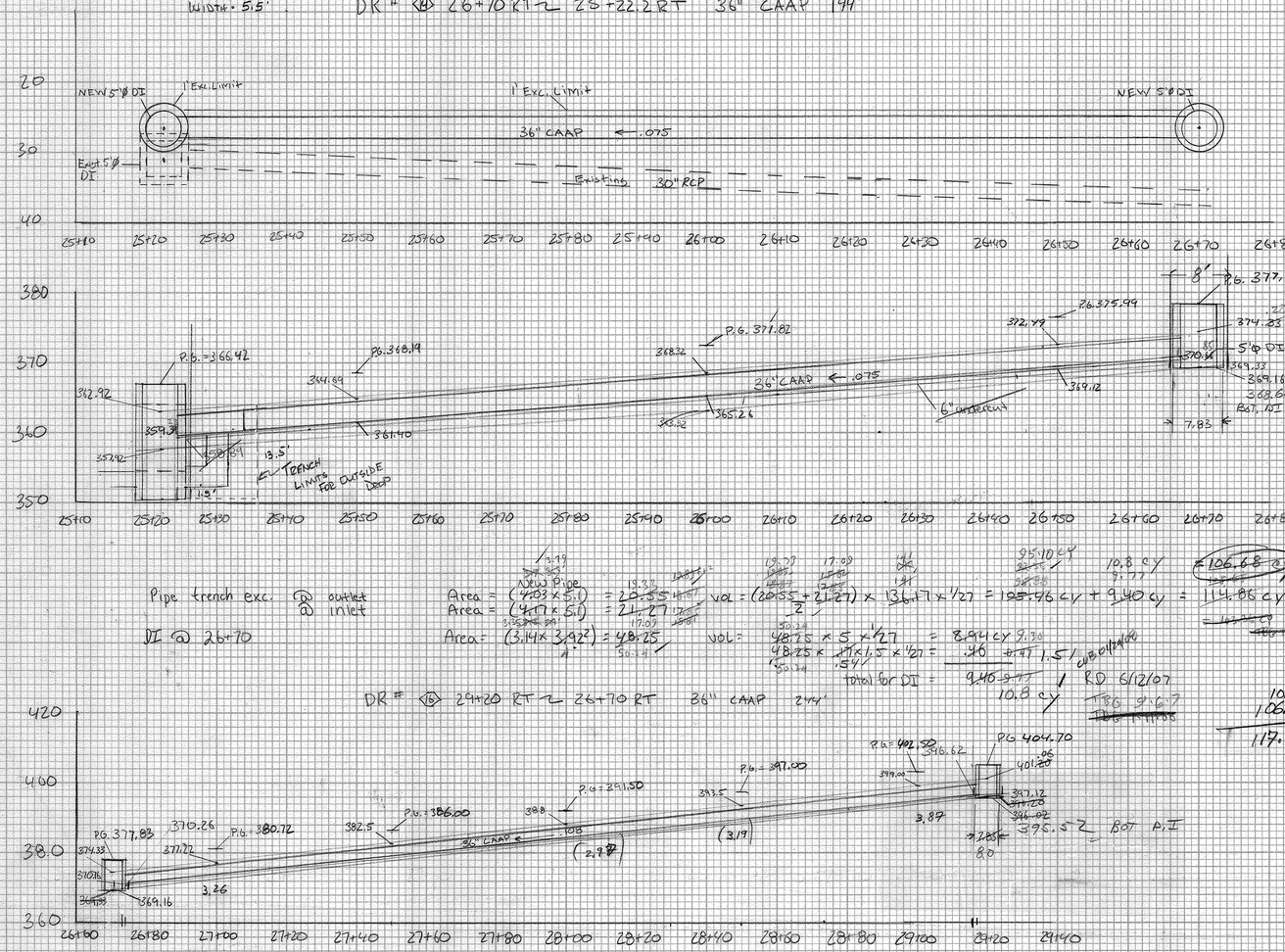
CONCRETE CLASS B TO FILL IN BOTTOM HOLE OF OUTSIDE DROP = $\frac{4' \times 4' \times 2'}{27}$ = 1.19 cy 09/06/07

TRENCH ROCK TO REMOVE CONCRETE = 1.19 cy 07/17/07

TRENCH EARTH TO INSTALL OUTSIDE DROP = VOL: $\frac{(5 \times 10 \times 5.5) + (\frac{1}{3} \times 5 \times 10 \times 5.5 \times 1.5)}{27} = \frac{955.63}{27} = 35.39$ + 1.19 = 34.2 cy

AVG DEPTH: 13.25'
LENGTH = 10'
WIDTH = 5.5'

DR # ⑭ 26+70 RT ~ 25+22.2 RT 36" CAAP 144'



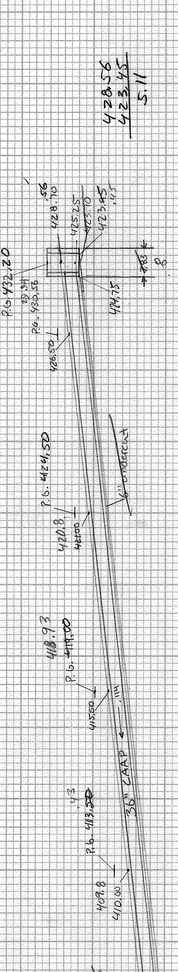
FLD MSE TBG
OLD D.I REMOVED

144 LF USED

Granular Backfill
142.4' x 2 x 10.5 x 5.1 = 1488.19 FT³
142.4' x 3.14 x 1.5² = 987.12 FT³
2
2475.31 FT³ / 27 = 91.67 / 27
56.25 CY RD 6/14/07

OK
CMB 01/24/08
TBG 12/7/07

36" CAAP



VOL: $\frac{(20.81 + 20.15)}{2} \times 236.17 \times 1/27 = 179.4$ CY + 8.59 CY = 187.85 CY RD 6/13/07

VOL: $\frac{(48.25 + 50.24)}{2} \times 5.1 \times 1/27 = 8.94$ CY RD 6/13/07

10.8 CY

Pipe trench exc. ⑳ outlet inlet

VI @ 26+70

Area = (4.03 x 5.1) = 20.55 SQ FT
Area = (4.17 x 5.1) = 21.27 SQ FT
Area = (3.14 x 3.92²) = 48.25 SQ FT

VOL: $\frac{(20.55 + 21.27)}{2} \times 136.17 \times 1/27 = 195.96$ CY + 9.40 CY = 114.86 CY RD 6/12/07

$\frac{48.25 \times 5 \times 1/27}{.96} = 8.94$ CY 9.70
$\frac{48.25 \times .77 \times 1.5 \times 11/27}{.54} = 1.5$ / 01/04/08
Total for DI = 9.40 / RD 6/12/07
10.8 CY

= 106.68 CY

10.8
106.68 cy
117.48 cy

DR # ⑮ 29+20 RT ~ 26+70 RT 36" CAAP 244'

Pipe trench exc. ㉑ outlet inlet

DI @ 29+20

Area = (4.07 x 5.1) = 20.76 SQ FT
Area = (4.58 x 5.1) = 23.36 SQ FT

VOL: $\frac{(20.76 + 23.36)}{2} \times 284.17 \times 1/27 = 192.96$ cy + 9.42 cy = 202.38 cy RD 6/13/07

Area = (3.14 x 3.92²) = 48.25 SQ FT

VOL: $\frac{48.25 \times 5 \times 1/27}{.54} = 8.94$ CY 9.30
$\frac{48.25 \times .77 \times 1.5 \times 1/27}{.54} = 1.57$
Total for DI = 9.42 cy RD 6/13/07

10.81 cy
190.19
201.0 cy

Granular Backfill
244.0 x 5.1 x 2.05 = 2557.02 FT³
- 244.0 x 3.14 x 1.6² / 2 = 1230.67 FT³
1326.35 FT³ / 27 = 60.40 cy RD 6/20/07
10.10.36 / 27
37.42 cy

T.E

12/21/07

1.9.8

DR # ⑯ 31+70 RT ~ 29+20 RT 36" CAAP

Area = (4.08 x 5.1) = 20.81 SQ FT
Area = (3.95 x 5.1) = 20.15 SQ FT

Area = (3.14 x 3.92²) = 48.25 SQ FT

-3.63' com EX DI @ 31+70

Pipe trench exc. ㉒ outlet inlet

DI @ 31+70

Granular Backfill
244.0 x 5.1 x 2.05 = 2557.02 FT³
- 244.0 x 3.14 x 1.5² / 2 = 1726.30 FT³
830.72 FT³ / 27 = 60.40 cy RD 6/20/07
10.10.36 / 27
37.42 cy

STA
29+20
29+50
30+00
30+50
31+00
31+50
31+70

PIPE
11/04/08
TBG 1/23/08
24.6 LF

DI
1/04/08
CMH
154.38 cy
9.6 cy
164.65 cy

41.88.35 / 27

4173.00

FINAL SURVEY — SURVEYED, PLOTTED, TEMPLATE, AREAS CHECKED, NOTE BOOK, NO. — BY, DATE

ORIGINAL SURVEY — SURVEYED, PLOTTED, TEMPLATE, AREAS CHECKED, NOTE BOOK, NO. — BY, DATE

HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
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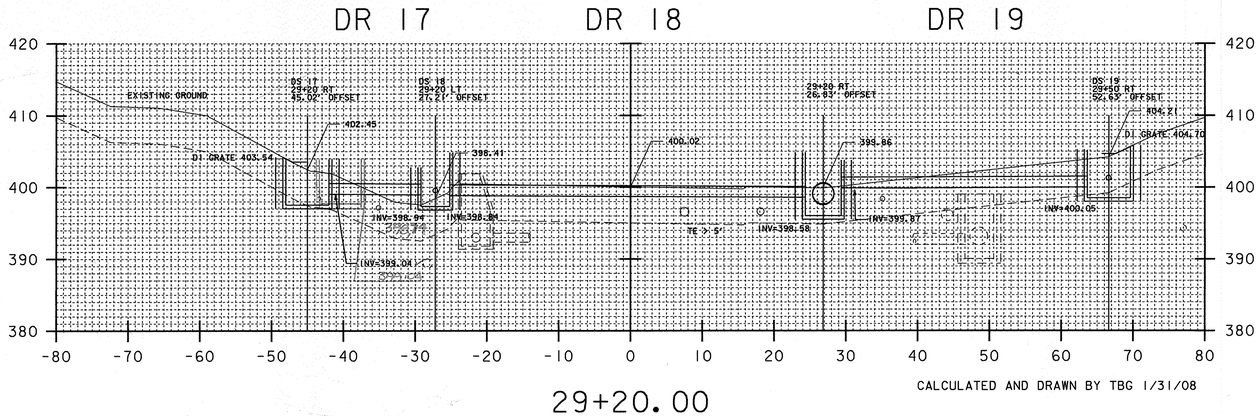
SHEET #8



29+20.00

CALCULATED AND DRAWN BY TBG 1/31/08

DR #19

ITEM	QUANTITY	DATE PAID
601.2615	34LF	10/8 (INSTALLED 10/3)
204.20	38.79CY	" RJT
204.30	2.59	"
604.20 (6')	.75	"

DR 17

PIPE T.E. < 5'
AREA (FROM CADD) = 6.48 SF * 3.75'=24.30 CF/27 = ~~0.9~~ 0.4 CY

DS 17

STRUCTURE T.E. < 5' 28.63
5' * PI(4.50')² = ~~318.09~~ CF/27 = ~~11.78~~ CY 10.60
AVG DEPTH = 4.5' 4.5 x π(4.5)²/27
STRUCTURE T.E. > 5'
1.5[((2.69' + 0.41')/2) * PI(4.50')²] = 98.61 CF/27 = ~~3.65~~ 0.4 CY
TOT= 15.43 CY

DR 19 GRANULAR BACKFILL
(3.75' * .88' * ~~12.0'~~ 8')-[((PI(.88')²/2) * ~~12.0'~~ 8')] = ~~25.00~~ 16.67 CF/27 = ~~0.93~~ 0.62 CY

DR 17

ITEM	QUANTITY	DATE PAID
601.2615	10LF	
204.20	3CY ESTIMATED	03/04/09
204.30	1CY ESTIMATED	
604.20(0210)	.75 EA	

02/25/08 CPH

DR 18

PIPE T.E. < 5'
AREA (FROM CADD) = 64.09 SF * 3.75'=240.34 CF/27 = 8.90 CY

DS 18

STRUCTURE T.E. < 5'
(.83+.66+2.35+4.07+3.81)/5 * PI(3.42')² = 86.13 CF/27 = 3.19 CY

DR 19 GRANULAR BACKFILL
(3.75' * .88' * 48.7')-[((PI(.88')²/2) * 48.7')] = 101.47 CF/27 = 3.76 CY

DR 18

ITEM	QUANTITY	DATE PAID
601.2615	20LF	10/3/08 RJT
204.20	6CY	" RJT
204.30	1CY	" RJT
601.2615	30LF	10/27/08 "
TE 204.20	6.09	" "
OBFS 204.30	2.76	" "
SEW 604.20	.75	" "

CPH 02/25/08

DR 19

PIPE T.E. < 5'
AREA (FROM CADD) = 65.34 SF * 3.75'=245.03 CF/27 = 9.08 CY

9.08
11.78
~~17.93~~ 6.15
~~38.79~~ 27.01

DS 19

STRUCTURE T.E. < 5'
5' * PI(4.50')² = 318.09 CF/27 = 11.78 CY

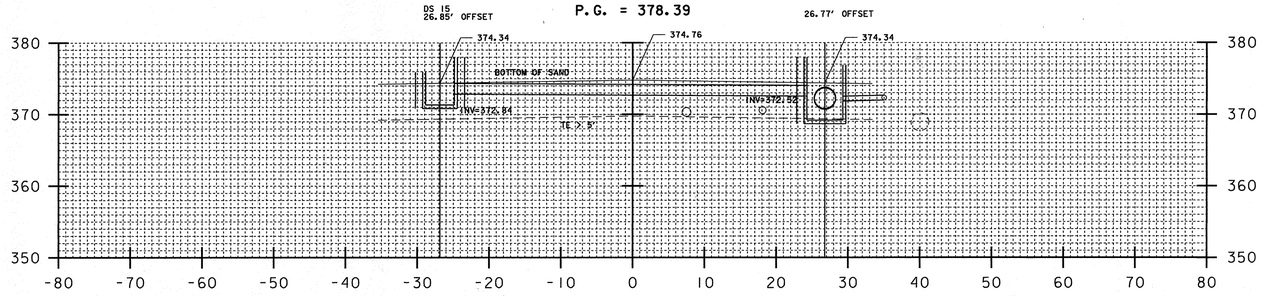
STRUCTURE T.E. > 5' 1.73
1.5[((0.72' + 1.21'+3.29')/3) * PI(4.50')²] = 166.04 CF/27 = 6.15 CY
TOT= 17.93 CY

DR 19 GRANULAR BACKFILL 40.73
(3.75' * .88' * 33.5')-[((PI(.88')²/2) * 33.5')] = 69.80 CF/27 = 2.59 CY

CPH 02/25/08

DR 15

P.G. = 378.39



26+70.00

CALCULATED AND DRAWN BY TBG 1/28/08

DR 15

ITEM	QUANTITY	DATE PAID
601.2615	20LF	10/7/08 RJT
204.20	6CY	10/7/08 RJT
204.30	1.5	10/7/08 RJT
601.2615	31LF	10/27/08 RJT
TE 204.20	11.18CY	" "
204.30	2.23	" "
604.20	.75	

DR 15

PIPE T.E. < 5'
AREA (FROM CADD) = 87.84 SF * 3.75'=329.40 CF/27 = 12.42 CY

DS 15

STRUCTURE T.E. < 5'
3.50' * PI(3.42')² = 128.61 CF/27 = 4.76 CY

DR 15 GRANULAR BACKFILL
(3.75' * .88' * 48.30)-[((PI(.88')²/2) * 48.30)] = 100.64CF/27 = 3.73 CY

CPH 02/25/08

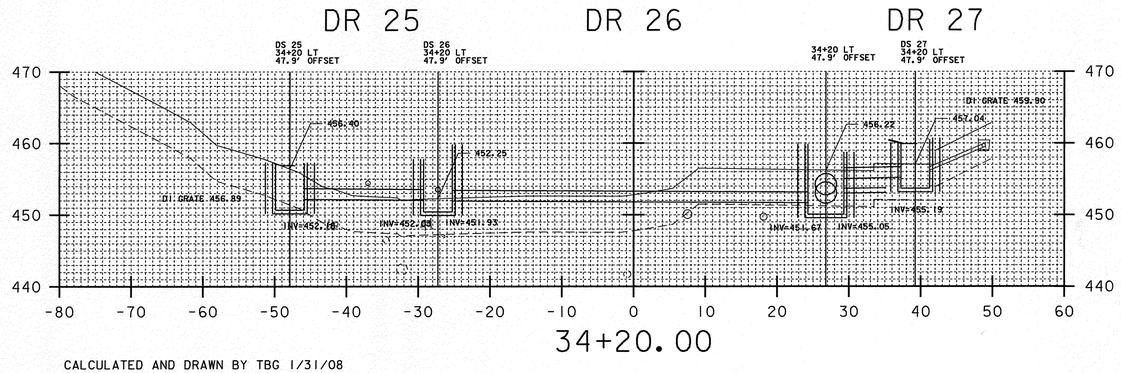
SHEET #9

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 01-FEB-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 220 OF 239

DR 25	PAID	
601.2615	16LF	10/30/08 RJT
204.20	9.38cy	10/30/08
204.30	1.22	
604.20	.75	

DR 26	ITEM	PAID	DATE
18" CPEP	601.2615	20LF	10/1/08 RJT
T.E.	204.20	14.4 CY	10/1/08
GRAN BKFL	204.30	1.1 CY	10/1/08
	601.2615	32LF	10/29/08 RJT
	204.20	3.14CY	"
	204.30	2.86CY	"
	604.20	.75 EA	

DR 27	ITEM	PAID	DATE
18" CPEP	601.2615	8LF	10/7/08
T.E	204.20	6.79cy	"
GRAN BKFL	204.30	.55	"
4'DI	604.20	.75	"



CALCULATED AND DRAWN BY TBG 1/31/08

DR 25

PIPE T.E. < 5'
AREA (FROM CADD) = 9.81 SF * 3.75'=36.79 CF/27 = 1.36 CY

DS 25

STRUCTURE T.E. < 5'
(5'+4.5')/2 * PI(3.42')² = 174.54 CF/27 = 6.46 CY

STRUCTURE T.E. > 5'
1.5[((2.53' + 0.00')/2) * PI(3.42')²] = ~~20.39~~ 69.73 CF/27 = ~~0.76~~ 2.58 CY
TOT= 7.22 CY

DR 25 GRANULAR BACKFILL
(3.75' * .88' * 15.8')-[((PI(.88')²/2) * 15.8')]= 32.92 CF/27 = 1.22 CY

10.80 CY CAB 02/25/10

CPH 02/25/08

DR 26

PIPE T.E. < 5'
AREA (FROM CADD) = 101.11 SF * 3.75'=379.16 CF/27 = 14.04 CY

DS 26

STRUCTURE T.E. < 5'
(2.20'+2.42')/2 * PI(3.42')² = 84.88 CF/27 = 3.14 CY

DR 25 GRANULAR BACKFILL
(3.75' * .88' * 48.7')-[((PI(.88')²/2) * 48.7')]= 101.47 CF/27 = 3.76 CY

17.18 CY

CPH 02/25/08

DR 27

PIPE T.E. < 5'
AREA (FROM CADD) = 7.51 SF * 3.75'=28.16 CF/27 = 1.04 CY

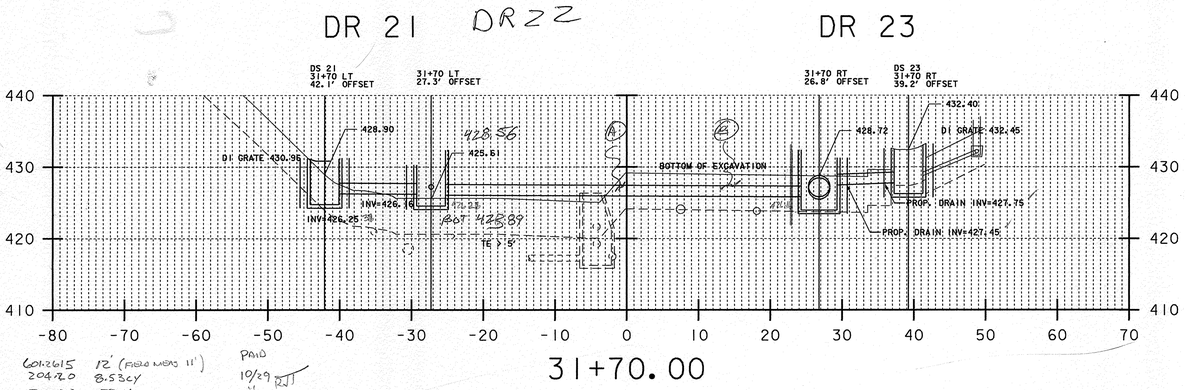
DS 26

STRUCTURE T.E. < 5'
(3.89'+3.79'+5')/3 * PI(3.42') = 155.31 CF/27 = 5.75 CY

DR 25 GRANULAR BACKFILL
(3.75' * .88' * 7.1')-[((PI(.88')²/2) * 7.1')]= 14.79 CF/27 = 0.55 CY

23.43

CPH 02/25/08



DR #21 601.2615 12" (FIELD MEAS 11') PAID 10/29 RJT
204.20 8.53CY " "
204.30 .77CY " "
604.20 .75 " "

CALCULATED AND DRAWN BY TBG 1/31/08

DR 21

PIPE T.E. < 5'
AREA (FROM CADD) = 1.63 SF * 3.75'=6.11 CF/27 = 0.23 CY

DS 21

STRUCTURE T.E. < 5'
(5'+2.7')/2 * PI(3.42')² = 141.47 CF/27 = 5.24 CY

STRUCTURE T.E. > 5'
1.5[((3.00' + 0.00')/2) * PI(3.42')²] = 82.68 CF/27 = 3.06 CY
TOT= 8.30 CY

DR 21 GRANULAR BACKFILL
(3.75' * .88' * 10.0')-[((PI(.88')²/2) * 10.0')]= 20.84 CF/27 = 0.77 CY

CPH 02/25/08

CALCULATED AND DRAWN BY TBG 1/31/08

DR 23

PIPE T.E. < 5'
AREA (FROM CADD) = 7.46 SF * 3.75'=27.98 CF/27 = 1.04 CY

DS 23

STRUCTURE T.E. < 5'
5' * PI(3.42')² = 183.73 CF/27 = 6.80 CY

STRUCTURE T.E. > 5'
1.5[((1.82' + 1.65 + 2.')/3) * PI(3.42')²] = ~~109.13~~ 100.72 CF/27 = ~~4.04~~ 3.71 CY
TOT= ~~10.84~~ 10.51 CY

DR 23 GRANULAR BACKFILL
(3.75' * .88' * 7.1')-[((PI(.88')²/2) * 7.1')]= 14.79 CF/27 = 0.55 CY

11.55 CY CAB 02/24/10

BL 9/16/08

CPH 02/25/08

.75 3.75 1.61SF

.75x3.75 - (3.14 x .375²/2) x 19' ÷ 27 =
2.81 - 1.20
1.61 x 19 ÷ 27 = 1.1CY

1.1 ÷ 19 = .0579 CY/LF
.0579 x 30 = 1.74

DR 22	ITEM	PAID	DATE
18" CPEP	601.2615	20LF	10/1/08 RJT
(PIPE) GRAN BKF	204.30	1.1CY	10/1/08 RJT
TRENCH EARTH	204.20	9.9CY	10/1/08 RJT
	601.2615	30LF	10/28 VI
	204.30	1.74	10/28 VI
	604.20	.75EA	10/28 "

425.8
423.89
1.91

0.6

DR 22
CPH
2/28/08

STRUCTURE (± 6H) 1.91/(P.I · 3.42²) = 70.15/27 = 2.60 CY

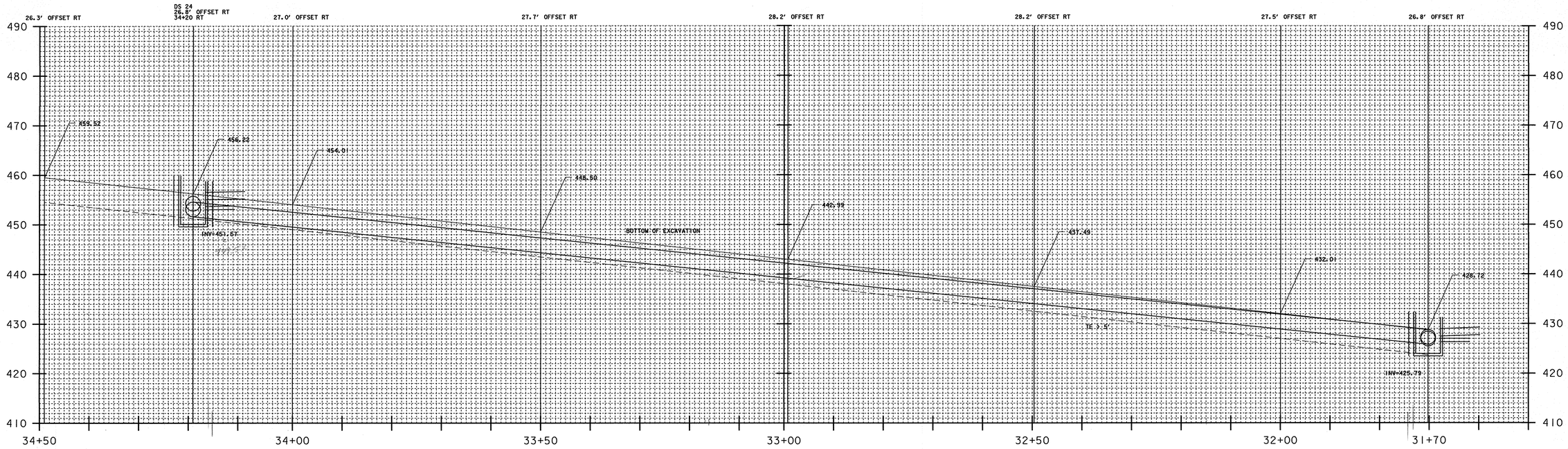
T.E PIPE AREA
(A) 3 · 3.3 / 2 x 3.75 /27 = .69 CY
(B) (3.33 + 2.87/2) x 3.75 x 23'/27 = 9.9 CY
10.59 CY
13.19 CY CAB 02/24/10

GRAN BKFL
(3.75 x 0.88 x 49') - (π(0.88²/4) x 49) / 27
= 3.78 CY

SHEET # 10

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: $$$$FILENAME$$$$	PLOT DATE: 01-FEB-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 220 OF 239

DR 24



CALCULATED AND DRAWN BY TBG 2/05/08

DR 24

PIPE T.E. < 5'
AREA (FROM CADD) = 914.71 SF * ~~5.10'~~ 5.5 =4665.02 CF/27 = ~~172.78~~ 186.33 CY

DS 24

STRUCTURE T.E. < 5'
5' * PI(4.00')² = 251.33 CF/27 = 9.31 CY

STRUCTURE T.E. > 5'
1.5[((2.08' + 1.22')/2) * PI(4.00')²] = 124.41 CF/27 = 4.61 CY
TOT= 13.92 CY

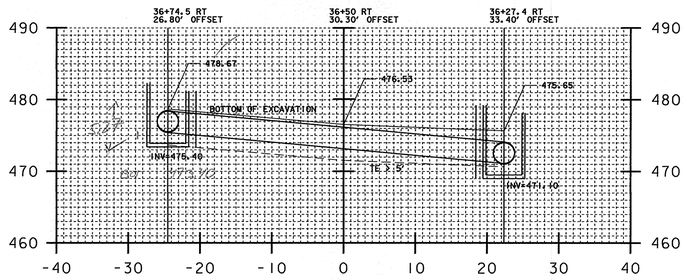
DR 24 GRANULAR BACKFILL
~~5.10'~~ * ~~1.55'~~ * 243.0') -[((PI(1.55')²/2) *243.0')]= 1003.87 CF/27 = 37.18 CY

02/21/08

SHEET #11

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 06-FEB-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 220 OF 239

DR 31



CALCULATED AND DRAWN BY TBG 2/05/08

DR 31

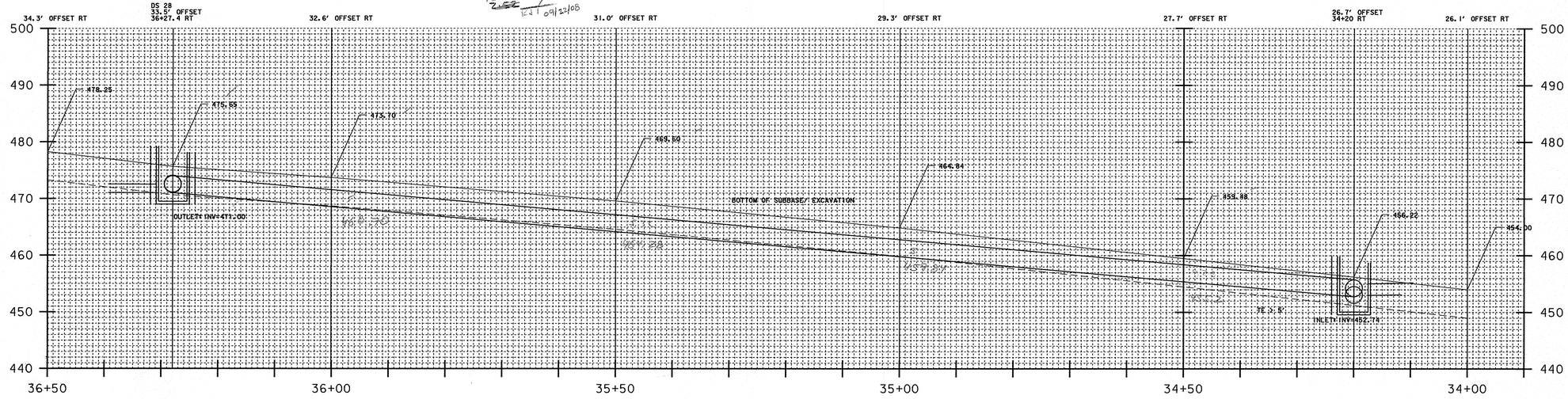
PIPE T.E. < 5'
AREA (FROM CADD) = 139.72 SF * 5.1' =712.57 CF/27 = 26.39 CY

DR 31 GRANULAR BACKFILL
(5.1' * 1.55' * 41.0')-[((PI(1.55')²/2) *41.0')]= 169.38 CF/27 = 6.27 CY

DR 31 BEDDING 41'LX5.1'X.5 ÷27 = 3.87cy

PAY ITEM		
601.0246	0095	41LF
204.20	0035	28.91cy
204.30	0050	3.87cy

DR 28



DR 28

PIPE T.E. < 5'
AREA (FROM CADD) = 945.79 SF * 5.10' =4823.53 CF/27 = 178.65 CY

PIPE T.E. > 5'
AREA (FROM CADD) =1.5 (25.88 SF * 5.10') =197.98 CF/27 = 7.33 CY

TOT= 185.98 CY

DS 28

STRUCTURE T.E. < 5'
5' * PI (4.00')² = 251.33 CF/27 = 9.31 CY

STRUCTURE T.E. > 5'
1.5[((2.11' + 1.65' + 1.37')/3) * PI (4.00')²] = 128.93 CF/27 = 4.78 CY

TOT=14.09 CY
DR 28 GRANULAR BACKFILL
(5.10' * 1.55' * 202.2')-[((PI (1.55')²/2) *202.2')]= 835.32 CF/27 = 30.94 CY

200.07 cy

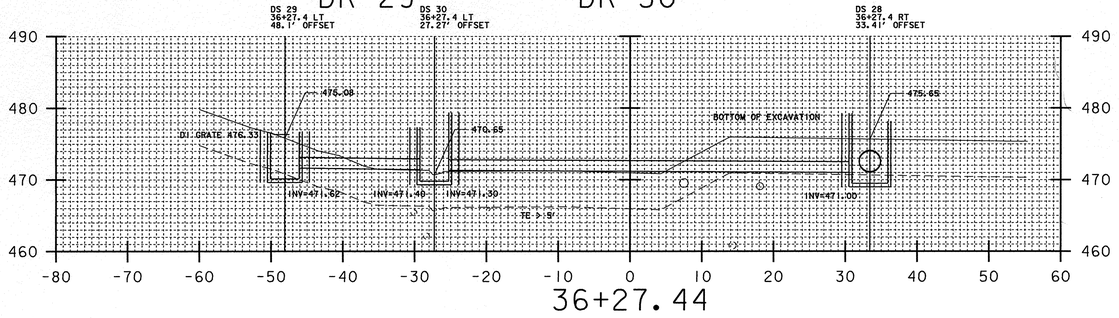
PAY ITEM	LINE	AMOUNT	
601.0246	0095	204LF	9/18/08
604.20	0205	.15EA	9/18/08
204.20	0035	200 CY	9/18/08
204.30	0050	31 CY	9/19/08

RJT

SHEET #12

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: $$$$FILENAME$$$$	PLOT DATE: 05-FEB-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 220 OF 239

DR 29 DR 30



36+27.44

CALCULATED AND DRAWN BY TBG 1/30/08

DR 29

PIPE T.E. < 5'
AREA (FROM CADD) = 13.55 SF * 3.75' =50.81 CF/27 = 1.88 CY

DS 29

STRUCTURE T.E. < 5'
5' * PI (3.42')² = 183.73 CF/27 = 6.80 CY

STRUCTURE T.E. > 5'
1.5[((2.28' + 0.25') /2) * PI (3.42')²] = 69.72 CF/27 = 2.58 CY
TOT= 9.38 CY

DR 29 GRANULAR BACKFILL
(3.75' * .88' * 16.0') -[((PI (.88')²/2) *16.0')]= 33.34 CF/27 = 1.23 CY

TOTAL TRENCH BL 11.26 cy

DR#29	ITEM	QUAN	DATE
	601.2615	18LF	10/30/08
	204.20	9.38	"
	204.30	1.23	"
	604.20	.75	"

CPM 02/25/08

CALCULATED AND DRAWN BY TBG 1/30/08

DR 30

PIPE T.E. < 5'
AREA (FROM CADD) = 96.36 SF * 3.75' =361.35 CF/27 = 13.38 CY

DS 30

STRUCTURE T.E. < 5'
(2.03+1.99+1.34+1.83+1.84) /5 * PI (3.42')² = 66.36 CF/27 = 2.46 CY

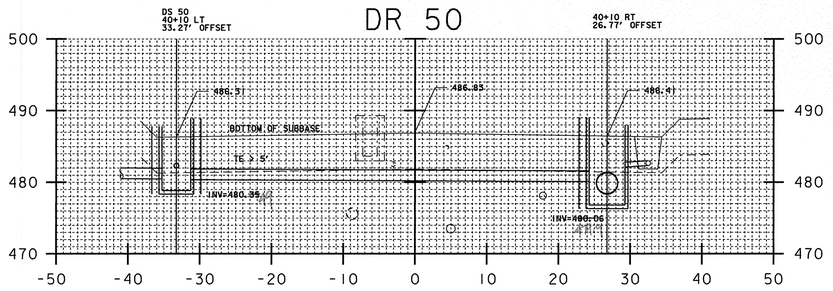
DR 30 GRANULAR BACKFILL
(3.75' * .88' * 55.4') -[((PI (.88')²/2) *55.4')]= 115.43 CF/27 = 4.28 CY

15.84

CPM 02/25/08

DR30	ITEM	QUAN	DATE
18" CMP	601.2615	20LF	10/10/08
T.E.	204.20	13.38CY	"
GRAN BKF.	204.30	1.5 CY	"
	601.2615	38 LF	10/19/08
	204.20	2.46CY	"
	204.30	2.78CY	"
	604.20	.75EA	"

DR 50



40+10.00

CALCULATED AND DRAWN BY TBG 1/30/08

DR 50

PIPE T.E. < 5'
AREA (FROM CADD) = 263.58 SF * 3.75' =988.43 CF/27 = 36.61 CY

PIPE T.E. > 5'
AREA (FROM CADD) =1.5 (74.49 SF * 3.75') =419.01 CF/27 = 15.52 CY

REMOVE EXIST
S.R. = (10.32 SF*4') /27= 1.53 CY
T.R. = (15.01 SF*4') /27= 2.22 CY
TOT=48.38 CY

FIELD MEASURE 3.3×3.6×4.5 10/31/07
S.R 3.3×3.6×2.63 × 1/27 = 1.16 cy
T.R 3.3×3.6×1.87 × 1/27 = .82 cy

2.63
3.8

CB 02/04/10
BL 2/25/09

DS 50

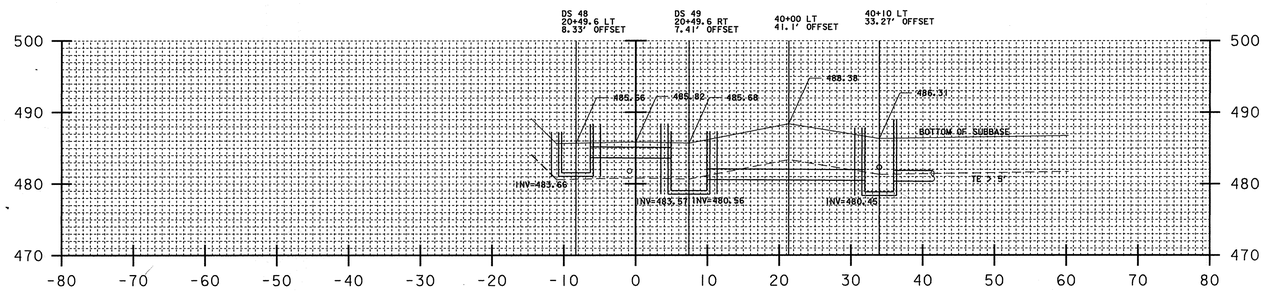
STRUCTURE T.E. < 5'
5' * PI (3.42')² = 183.73 CF/27 = 6.80 CY

STRUCTURE T.E. > 5'
1.5[((3.62' + 2.92' + 3.01') /3) * PI (3.42')²] = 175.46 CF/27 = 6.50 CY
TOT= 13.30 CY

DR 50 GRANULAR BACKFILL
(3.75' * .88' * 54.7') -[((PI (.88')²/2) *54.7')]= 113.97 CF/27 = 4.22 CY

CPM 02/25/08

DR 48 DR 49



20+49.62
SAG

CALCULATED AND DRAWN BY TBG 1/30/08

DR 48

PIPE T.E. < 5'
AREA (FROM CADD) = 18.22 SF * 3.75' =68.33 CF/27 = 2.53 CY

DS 48

STRUCTURE T.E. < 5'
(5' +4.54' +4.66') /3 * PI (3.42')² = 173.93 CF/27 = 6.44 CY

DR 48 GRANULAR BACKFILL
(3.75' * .88' * 9.41') -[((PI (.88')²/2) *9.41')]= 19.61 CF/27 = 0.73 CY

CPM 02/25/08

CALCULATED AND DRAWN BY TBG 1/30/08

DR 49

PIPE T.E. < 5'
AREA (FROM CADD) = 95.95 SF * 3.75' =359.81 CF/27 = 13.33 CY

PIPE T.E. > 5'
AREA (FROM CADD) =1.5 (38.21 SF * 3.75') =214.93 CF/27 = 7.96 CY

TOT=21.29 CY

DS 49

STRUCTURE T.E. < 5'
5' * PI (4.00')² = 251.33 CF/27 = 9.31 CY

STRUCTURE T.E. > 5'
1.5[((2.19' + 2.12' + 2.88') /3) * PI (4.00')²] = 180.70 CF/27 = 6.69 CY
TOT= 16.00 CY

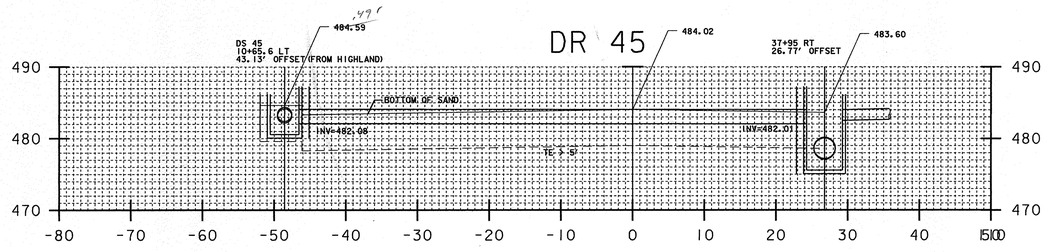
DR 49 GRANULAR BACKFILL
(3.75' * .88' * 21.2') -[((PI (.88')²/2) *21.2')]= 44.17 CF/27 = 1.64 CY

25.98

CPM 02/25/08

SHEET # 13

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 01-FEB-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 220 OF 239



37+95.00

CALCULATED AND DRAWN BY TBG 10/18/07
✓ CPM 01/11/08
✓ TBG 01/22/08

DR 45

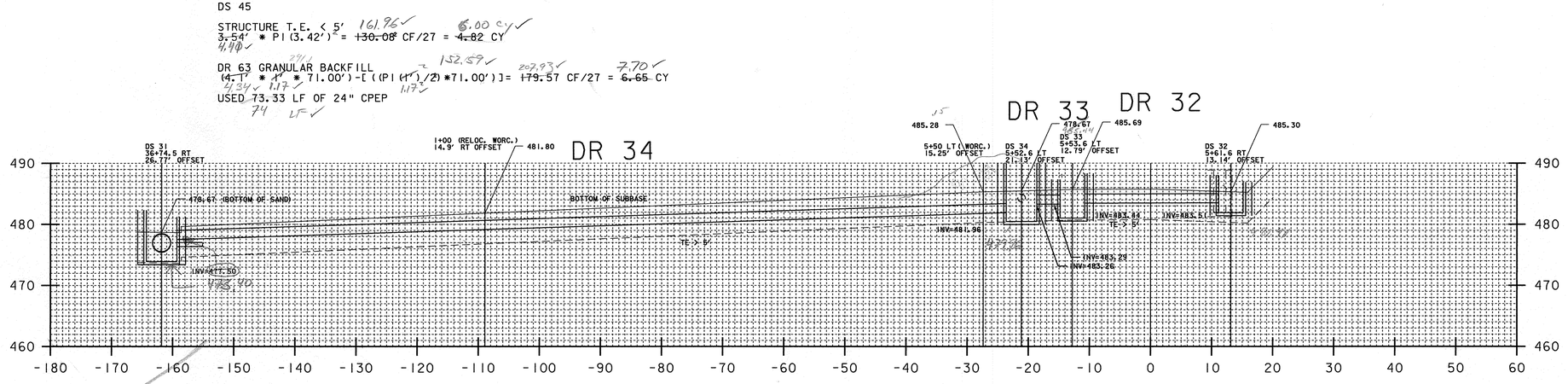
PIPE T.E. < 5'
AREA (FROM CADD) = 97.85 SF * ~~4.1'~~ =401.17 CF/27 = ~~14.86~~ CY

DS 45

STRUCTURE T.E. < 5'
3.54' * PI(3.42')² = ~~30.08~~ CF/27 = ~~4.82~~ CY

DR 63 GRANULAR BACKFILL
(~~4.1'~~ * 1' * 71.00') - [((PI (1')²/2) * 71.00')] = ~~179.57~~ CF/27 = ~~6.65~~ CY

USED 73.33 LF OF 24" CPEP



5+53.6 (WORC. AVE)

CALCULATED BY RR 10/3/07 DRAWN BY TBG 1/4/08
CPM 1/11/08
TBG 1.22.8

DS 31

STRUCTURE T.E. > 5'
1.5[(.33' + .22' + 1.22')/3 * PI (3.92')²] = 42.72 CF/27 = ~~1.58~~ CY

STRUCTURE T.E. < 5'
5' * PI (3.92')² = 241.37 CF/27 = ~~8.94~~ CY

TOT= ~~10.52~~ CY

VOID
SEE SHEET # 12

CALCULATED AND DRAWN BY TBG 1/8/08
CPM 1/11/08

DR 34

PIPE T.E. < 5'
AREA (FROM CADD) = 377.72 SF * ~~3.6'~~ =1359.79 CF/27 = 50.36 CY

DS 34

STRUCTURE T.E. < 5'
5.00' * PI (3.92')² = 241.37 CF/27 = ~~8.94~~ CY
- 2.91 CY (EXIST REM.) = 6.03 CY

STRUCTURE T.E. > 5'
1.5[(.32' + .65')/2 * PI (3.92')² = 35.12 CF/27 = ~~1.30~~ CY
TOT= 7.33 CY

DR 34 GRANULAR BACKFILL
(3.6' * .8' * 136.00') - [((PI (.8')²/2) * 136.00')] = 254.96 CF/27 = 9.44 CY

USED 138.00 LF OF 18" CPEP

SOLID rock EXC. (EXIST 5' dia DI @ DR34)
= 2.63 * PI * (2.5')² = 51.61 ft³/27 = 1.91 CY

T.R. (EXIST)
= 1.37 * PI * (2.5')² = 26.89 ft³/27 = 1.00 CY

10/16/07 TBG
1/25/08 TBG 1/25/8
CPM 1/11/08

CALCULATED AND DRAWN BY TBG 10/16/07
CPM 01/11/08
TBG 1/22/08

DR 33

PIPE T.E. < 5'
AREA (FROM CADD) = ~~0.99~~ SF * ~~3.6'~~ =3.56 CF/27 = ~~0.13~~ CY

DS 33

STRUCTURE T.E. < 5'
5.00' * PI (3.42')² = 183.73 CF/27 = 6.80 CY

STRUCTURE T.E. > 5'
1.5[(.14' + .17' + .30)/3 * PI (3.42')² = ~~11.21~~ CF/27 = 0.42 CY
TOT=7.22 CY

DR 33 GRANULAR BACKFILL
(~~3.6'~~ * .8' * 4.00') - [((PI (.8')²/2) * 4.00')] = 4.02 CF/27 = 0.15 CY

USED 6.50 LF OF 18" CPEP
8.0 LF

CALCULATED AND DRAWN BY TBG 10/17/07
CPM 01/11/08
TBG 1.22.08

DR 32

PIPE T.E. < 5'
AREA (FROM CADD) = 44.42 SF * ~~3.6'~~ =159.91 CF/27 = ~~5.92~~ CY

DS 32

STRUCTURE T.E. < 5'
(4.01' + 3.79' + 4.46')/3 * PI (3.42')² = 150.17 CF/27 = 5.56 CY
-3.17 CY (EXIST REM.) = 2.39 CY

DR 32 GRANULAR BACKFILL
(~~3.6'~~ * .8' * 21.00') - [((PI (.8')²/2) * 21.00')] = ~~39.37~~ CF/27 = ~~1.46~~ CY

USED 23.00 LF OF 18" CPEP

10/17/07 TBG
FLO MSE
4.68 dia x 5'
T.R. 3.14 (2.34²) x 5' = 3.18 cy

TBG 1/25/8

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 08-JAN-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET ~~285~~ OF 239

SHEET #14

FINAL SURVEY — ORIGINAL SURVEY — NOTE BOOK — STATION — PAGE — CHECKED — PLOTTED — STRUCTURE — DRAWN — TRACED — DESIGNED — CHECKED — NO. — DATE — BY

PLATE 3-1 "LOW CHORD SECTION" LINE
PRINTED IN U.S.A.
NATIONAL PRESTO INDUSTRIES, INC.
HIGHWAY LEGEND 100 SHEET

DS-31 STRUCTURE

8.24.07

482.76 − 1.50 = 481.26 − 3.63 = 478.63

482.76 − 1.50 = 481.26 − 3.63 = 478.51

8' 6'

5.23 5.11

AVG. DEPTH 5.17

473.40 ✓

GRADING REFIT 175'

T.E. STRUCTURE 5.17 (π 4²) = 25.97 / 27 = 9.6 cy

TIME ½ .17 (π 4²) = 8.5 / 27 = .32

9.92 cy T.E

DS-35 T.E PIPE 116' ✓ × 5.5 ✓ × (7.275 ✓ + 7.115 ✓ / 2 − 9.48) = 48.54 ✓ / 27 = 172.38 ✓ cy T&V 11/20/07

TIME ½ (.5) 116 × 5.5 × 2.275 = 732.8 ✓ / 27 = 27.12 ✓ cy

179.50 cy T.E

DS-35 PIPE & STRUCTURE

487.65 − .48 − 2.63 = 484.54

487.65 − .65 − 2.63 = 484.37

8" 4' 4' 9.48 DS 35

7.31

AVG DEPTH 9.395 ft

475.06

.013 ℄

118 ft of 36" CPEP (SL)

TRENCH WIDTH 5.5 FT

← 20 SCALE

T.E STRUCTURE (9.48 + 7.315 ✓ / 2) (π 4²) = 472 / 27 = 17.48 ✓ cy

TIME ½ .5 (4.395) π (4²) = 118.4 ✓ / 27 = 4.09 cy ✓

21.56 cy ✓ T.E

T&V 11/25/08

5.5 GRANULAR BACKFILL

5.5 × 1.75 × 116 = 1116.5 ✓ / 27 = 41.35 ✓ cy

½ PIPE − π r² 3.14 (1.75²) / 2 = 4.80 × 116 = 557.7 ✓ / 27 = −20.66 ✓ cy

20.69 ✓ T&V 11/26/07 6.A

DS-57

STA 444+00 LT − 444+00 RT

NEW 18" × 34' of CPEP (SL)

DS-56 END STRUCTURE ℄ EX

℄

F6 487.28 − .36 − 2.63 = 484.29 ✓ − 16 × .021

F6 487.28 − .33 − 2.63 = 484.32 − 16 × .021

34' of 18" CPEP

INVERT 484.28

INVERT 484.09

482.28

6.83

T.E. STRUCTURE DS-57

486.29 − 482.28 = 4.01 ✓ × 3.14 (3.415²) / 27 = 146.8 ✓ / 27 = 5.44 ✓ cy

PIPE EX (486.29 ✓ + 484.28 ✓ / 2 − 2.01 ✓) + (486.32 + 484.09 / 2 − 2.23 ✓) / 2 = 2.12 × 30.5 × 3.83 = 247.86 / 27 = 9.172 ✓

14.612 ✓ cy T.E.

6B

− 6.8 PIPE

32.5 × (½ pipe depth) .92 × 3.83 = 114.5 / 27 = 4.23 cy

32.5 × 3.14 (.92)² / 2 = 43.13 / 27 = − 1.60 cy

2.63 / 2.64 cy 6.B

T&V 12/4/07 ✓ 12/05/08

DS-55

STA 43+50 LT − 43+50 RT

NEW 18" × 34' of CPEP (SL)

F.6 489.36 − 2.63 = 486.73 − 16 × .021 − .36 = 486.37

END PIPE

℄

END STRUCTURE DS-52

484.36

484.17

482.36

6.93

T.E STRUCTURE 486.37 − 482.36 = 4.01 ✓ × (3.14) (3.46²) / 27 = 146.84 / 27 = 5.43 ✓ cy

T.E PIPE AVG DEPTH (486.37 + 484.36 / 2 − 2.01) + (486.39 + 484.17 / 2 − 2.22) / 2 = 2.12 ✓ × 3.83 × 30.8 = 250.303 / 27 = 9.27 ✓ cy

14.70 ✓ cy T.E

6.B 32.5 × 3.83 × .92 (½ pipe depth) = 114.5 ✓ = 4.24 cy

− pipe 6.B = 32.5 × 3.14 (.92)² / 2 = 43.13 / 27 = 1.60 cy

6.B 2.64 cy

T&V 12/4/07 ✓ 12/05/08

DS 89

STA 45+35.2 RT ~ 45+37.3 LT

INVERT LANE

487.11 − .03 ℄ − 2.63 = 486.45 ✓ F.6

F.6 489.11 − 2.63 − .093 ℄ BUILDING = 486.387

10.5' T.E PIPE

30.9' ℄ 12" CPEP IS

483.88' ELEV

482.11 487.11

6.83 ∅ π R²

T.E STRUCTURE 486.45 − 482.11 = (4.34') 3.14 (3.415)² = 158.93 / 27 = 5.88 cy

T.E PIPE (486.387 + 483.88 / 2 − 2.507 ✓) + (486.45 + 484.11 / 2 − 2.344 ✓) / 2 = (2.424 ✓ × 10.5 × 3.84) = 3.6 cy

9.5 cy T.E.

6.B 12.5 × 3.83 × (½ pipe depth .92) = 44.07 / 27 = 1.63 cy

− 6.B ½ PIPE − 12.5 × π r² 3.14 (.92)² / 2 = 16.6 / 27 = .61

1.02 cy 6.B

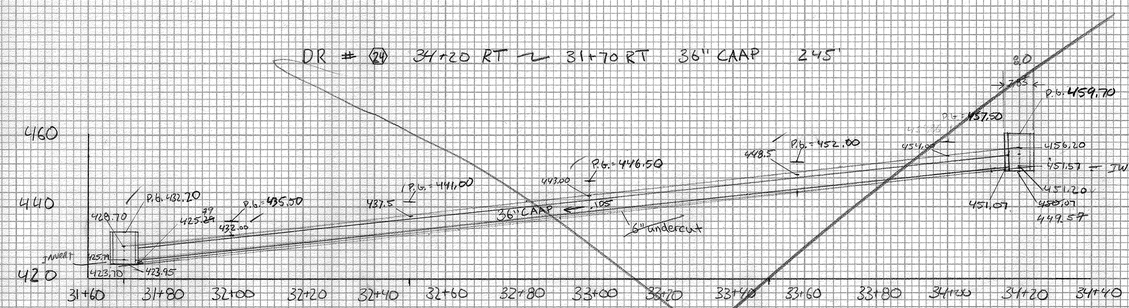
T&V 12/4/07 ✓ 12/05/08

HARTFORD R50113 (40)
DRAINAGE

SHEET #15

206.8

DR # 24 34+20 RT ~ 31+70 RT 36" CAAP 245'



VOID

SEE SHEET #3

Pipe trench exc. @ outlet

Area = (3.41 × 5.5) = 17.39
Area = (5 × 5.5) = 25.5

vol = ((17.39 + 25.5)/2) × 237.17 × 1/27 = 188.37 cy
vol = ((.13 + 0)/2) × 58 × 1.5 × 1/27 = .21 cy
total for Pipe 188.58 cy + 11.97 cy = 200.55 cy RD 6/13/07

DI @ 34+20

Area = (3.14 × 3.92²) = 48.25

vol = (48.25 × 5) 1/27 = 9.30 cy
(48.25 × 1.5 × 1.5) 1/27 = 4.19 cy
total for DI = 13.49 cy RD 6/13/07

TBG 1-23-08

Granular Backfill

5.5 × 1.75 = 2352.35
244.4 × 2.1 × 2.05 = 2555.20 FT³
244.4 (3.14 × 1.75²)/2 = −921.86 FT³
−1175.10
1633.34/27 = 60.49 CY RD 6/20/07
43.60

CPH 12/10/07
TBG 1/22/08

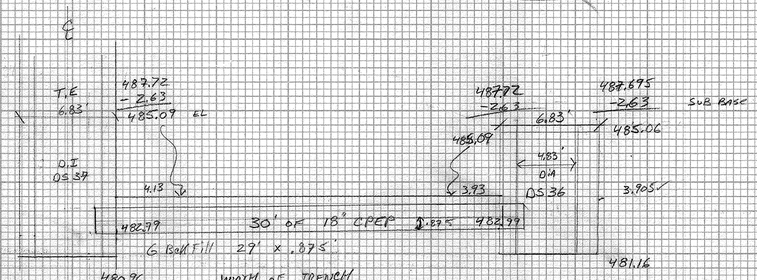
DS 36

DS 37

DR 24	Depth	Avg Depth
STA 31+70	2.91	
32+00	4.1	3.505 × 30 = 105.15
33+00	4.5	4.3 × 100 = 430.0
34+00	4.0 4.7	4.25 × 100 = 425 460
34+20	4.5	4.25 × 20 = 85 92

1045.15 × 5.5/27 = 212.90 cy
1087.15 width 221.46
+ 13.49 cy
226.39 cy

CPH 12/10/07



WIDTH OF TRENCH
1.75 + 2 = 3.75'

3 + 20.6 RT 16.5 FT

50 scale

204.20 T.E DI (3.93 + 3.905)/2 × π 3.415² = 143.45/27 = 5.31 cy
T.E Pipe
27 FT × ((4.13 + 3.93)/2) × 3.75' × 1/27 = 15.11 cy
20.42 cy

CPH 8/23/07

204.30 GRAN BCK FILL .875 × 29' × 3.75 = 95.16/27 = 3.52 cy

— Pipe (0.8 / 1.75)
AREA π r² .875² = 2.4 □'/2 = 1.2 □' × 29 = 34.8/27 = −1.29 cy
2.23 cy

TBG 12.6.9

40 Scale



Trench Exc for CB 37 (4.08 + 3.86)/2 (π × 3.42²) = 144.41 FT³/27 = 5.35 cy
Trench Exc for pipe (1.96 + 2.08)/2 × 3.75 × 32.17 = 243.69 FT³/27 = 9.03 cy
Granular Backfill (1.75/2) × 3.75 × 34.17 = 112.76 FT³/27 = 4.18 cy
(.883 × 3.14)/2 × 34.17 = 41.54 FT³/27 = 1.54 cy
2.64 cy
2.70 cy

Total Trench

RCD 8/27/07

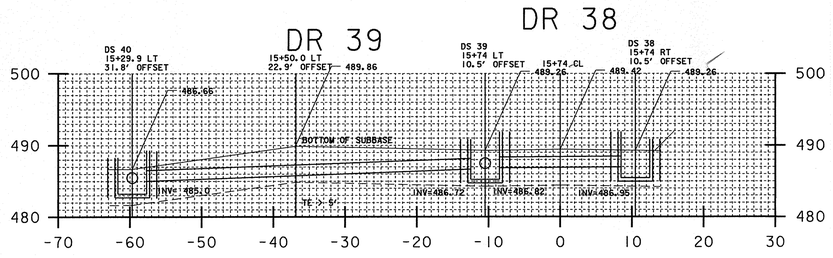
CPH 12/10/07
TBG 1/23/08

FINAL SURVEY — SURVEYED, PLOTTED, TEMPLATE, AREAS, AREAS CHECKED — NOTE BOOK NO. — BY — DATE

ORIGINAL SURVEY — SURVEYED, PLOTTED, TEMPLATE, AREAS, AREAS CHECKED — NOTE BOOK NO. — BY — DATE

HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
NATIONAL PRINTFAST
PRINTED IN U.S.A.

SHEET #16



15+74.00

CALCULATED AND DRAWN BY TBG 10/19/07
CPM 11/16/08
TBG 1/22/08

DS 40

STRUCTURE T.E. < 5'
(3.93' +3.96' +4.43')/3 * PI (3.42')² = 150.90 CF/27 = 5.59 CY
CALCS UPDATED 1/7/08

DR 39

PIPE T.E. < 5'
AREA (FROM CADD) = 92.04 SF * 3.6' =331.34 CF/27 = ~~12.27~~ CY

DS 39

STRUCTURE T.E. < 5'
(4.34' +4.71')/2 * PI (3.42')² = 166.27 CF/27 = 6.16 CY

DR 39 GRANULAR BACKFILL
(~~3.6'~~ * .8' * 44.00') -[((PI (.8')²/2) *44.00')]= 82.49 CF/27 = ~~3.06~~ CY
USED 46.33 LF OF 18" CPEP
TBG 1/22/8

CALCULATED AND DRAWN BY TBG 11/7/07
CPM 1/10/08

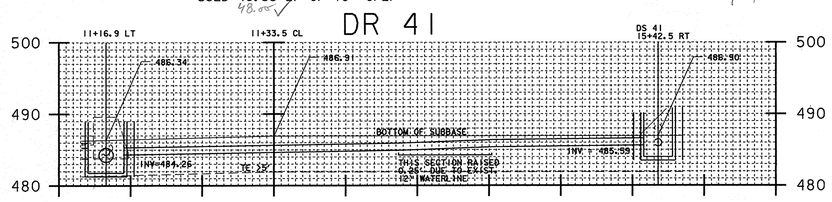
DR 38

PIPE T.E. < 5'
AREA (FROM CADD) = 34.93 SF * ~~3.6'~~ = ~~125.75~~ CF/27 = 4.66 CY

DS 38

STRUCTURE T.E. < 5'
(4.35' +4.25')/2 * PI (3.42')² = 158.00 CF/27 = 5.85 CY

DR 38 GRANULAR BACKFILL
(~~3.6'~~ * .8' * 16.00') -[((PI (.8')²/2) *16.00')]= 30.00 CF/27 = ~~1.11~~ CY
USED 18.00 LF OF 18" CPEP
TBG 1/22/8



CALCULATED AND DRAWN BY TBG 11/9/07
CPM 1/10/08
TBG 1/22/08

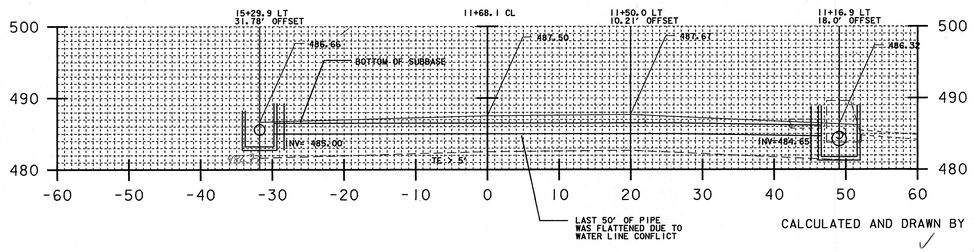
DR 41

PIPE T.E. < 5'
AREA (FROM CADD) = 120.47 SF * 3.0' =361.41 CF/27 = 13.39 CY

DS 41

STRUCTURE T.E. < 5'
(3.42' +3.37')/2 * PI (3.42')² = 124.75 CF/27 = 4.62 CY

DR 41 GRANULAR BACKFILL
(3.0' * .5' * 71.70') -[((PI (.5')²/2) *71.70')]= 79.39 CF/27 = 2.94 CY
USED ~~72.67~~ LF OF 12" PVC (RELAY)



CALCULATED AND DRAWN BY TBG 1/7/08
CPM 1/10/08

DR 40

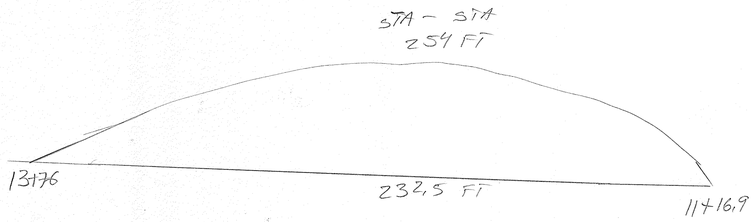
PIPE T.E. < 5'
AREA (FROM CADD) = 167.26 SF * ~~3.6'~~ = 602.14 CF/27 = ~~22.30~~ CY

DR 40 GRANULAR BACKFILL
(~~3.6'~~ * .8' * 75.50') -[((PI (.8')²/2) *75.50')]= 141.54 CF/27 = ~~5.24~~ CY
USED ~~78.58~~ LF OF 18" PVC (RELAY)

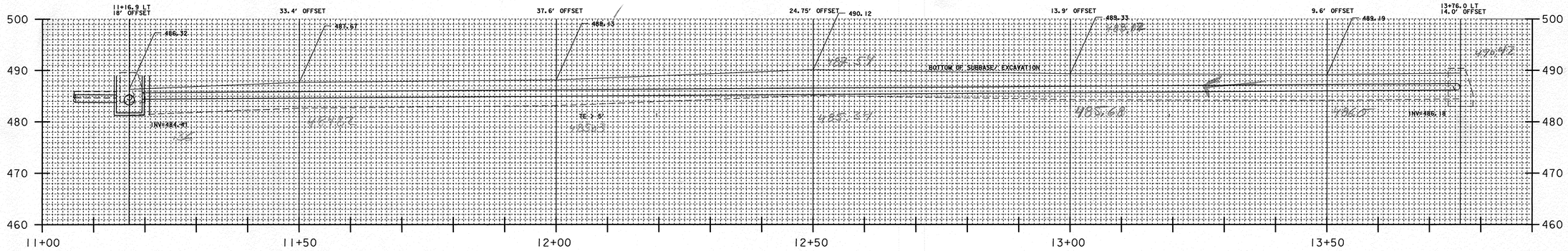
SCHOOL ENTRANCE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 08-JAN-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET ~~232~~ OF 239

SHEET #17



DR 42



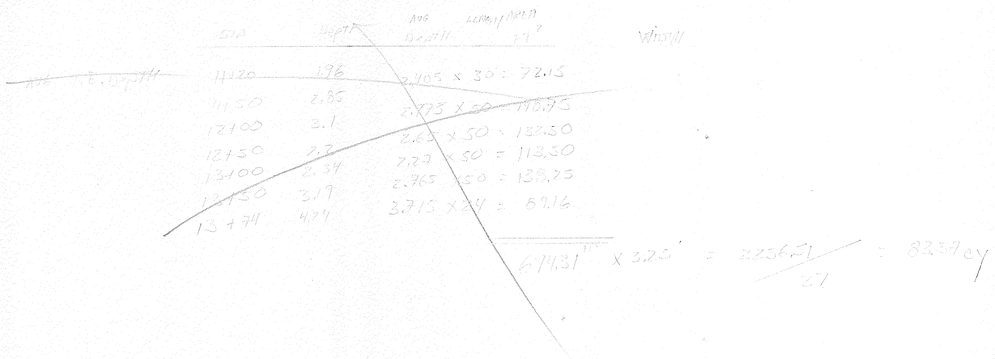
CALCULATED AND DRAWN BY TBG 11/16/07
✓ CPK 01/14/08

DR 42 (RELAY) Pipe STATION ON CURVE

PIPE T.E. < 5'
AREA (FROM CADD) = 450.93 SF * 3.25' = 1465.52 CF/27 = 54.28 CY

DR 42 GRANULAR BACKFILL
(3.25' * .63' * 232.8') - [((PI (.63')/2) * ~~232.8'~~ 144.90)] = 331.52 CF/27 = 12.28 CY (EXISTING PVC @13+76 LT, WHY PIPE LENGTH DIFFERS FROM GRANULAR LENGTH)

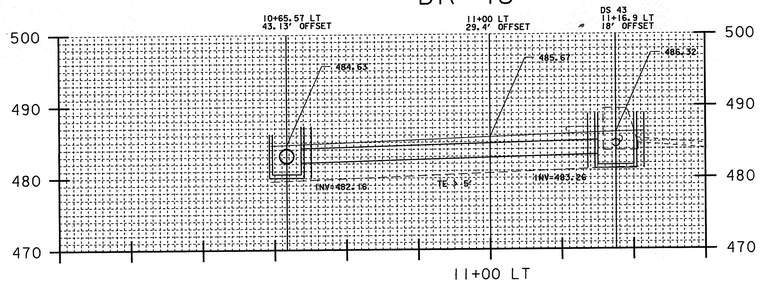
USED 206.63 LF OF 15" PVC RELAY PIPE



PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 03-JAN-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET ~~23~~ OF 239

SHEET #18

DR 43



CALCULATED AND DRAWN BY TBG 10/18/07
CPH 01/08/08
TBG 1/22/08

DR 43

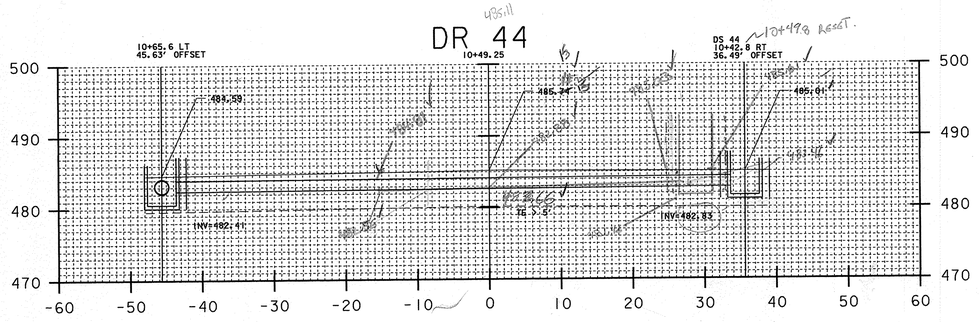
PIPE T.E. < 5'
AREA (FROM CADD) = 106.59 SF * ~~4.1'~~ 4.33 =~~437.01~~ 461.53 CF/27 = ~~16.19~~ 17.10 CY

DS 43

STRUCTURE T.E. < 5'
5' * PI(~~4.42'~~ 4.0)² = ~~306.88~~ CF/27 = ~~11.37~~ 9.30 CY

DR 43 GRANULAR BACKFILL
(~~4.1'~~ 4.33 * ~~1.0'~~ 1.17 * 40.50')-[((PI(~~1.0'~~ 1.17)²/2)*40.50')]= 102.43 CF/27 = ~~3.79 CY~~ ~~4.42 CY~~ 4.37 CY
USED 43.67 LF OF 24" CPEP
44.0 LF

DR 44



CALCULATED AND DRAWN BY TBG 11/8/07
CPH 01/09/08
TBG 1/22/08

DR 44

PIPE T.E. < 5'
AREA (FROM CADD) = 183.58 SF * ~~3.6'~~ 3.75 =660.89 CF/27 = 24.48 CY 25.50 CY

DS 44

STRUCTURE T.E. < 5'
(~~3.87'~~ 4.18 +~~3.84'~~ 153.32)/~~2~~ * PI(3.42')² = 141.65 CF/27 = 5.25 CY 5.68 CY

DR 44 GRANULAR BACKFILL
(~~3.6'~~ 3.75 * ~~.8'~~ .875 * 76.50')-[((PI(~~.8'~~ .875)²/2)*76.50')]= ~~143.41~~ 159.06 CF/27 = ~~5.31 CY~~ 5.89 CY
USED 79.25 LF OF 18" CPEP
80
SLOPE = .0053

31.18 CY

RELAY 42 LF
INVERT OUT 483.46

EXCAVATION TO REMOVE DI & PIPE ALREADY PLACED

DI = 5.68 CY

PIPE = 2.25
485.15 - 482.66 = 2.47
485.01 - 482.83 = 2.18
2.36 x 15 x 3.75 x 1/27 = 4.92
2.33 x 32 x 3.75 x 1/27 = 10.36
15.28 CY
+ 5.68 DI
20.96 CY
CGB 02/04/10

DS 44

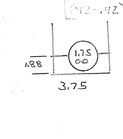
42 - 1' - .42 = 40.58 + 1' FOR TRENCH = 41.58
NEW SLOPE = .021

TRENCH EXCAVATION OF EARTH.
484.81 - 482.56 = 2.25
485.11 - 482.88 = 2.23
2.24 x 15 x 3.75 x 1/27 = 4.67 CY
485.03 - 483.46 = 1.57
2.23
1.9' x 3.75 x 26.58 x 1/27 = 7.01 CY
11.68

EXCAVATION TO RESET DS 44.
485.01 - 481.46 = 3.54 x (7/2)² π x 1/27 = 5.05 CY

TOTAL TRENCH TO RELOCATE DUE TO SIGNAL FOUNDATION 5.05 + 11.68 CY = ~~16.73 CY~~ BL 7/25/08
+ 20.96 = 37.69 CY CGB 02/04/10
+ 31.18 CY
68.87 CY RCD 1/19/11

GRANULAR BACKFILL FOR STRUCTURE
[(42-.42) x 3.75] - [(42-.42)]



3.75 x 1.8 = 6.75
(1.75/2)² x π / 2 = -1.20
5.55 SF x (42-.42) x 1/27 = 8.55 CY
+ 5.89 CY
14.44 CY RCD 1/19/11
BL 7/25/08
CGB 02/04/10

WORK DONE 7/24/08

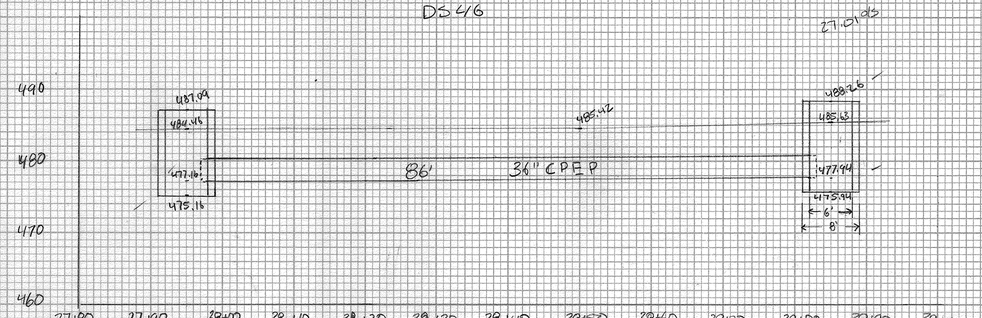
HIGHLAND AVENUE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 04-JAN-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET ~~229~~ OF 239

SHEET #19

36"=42"

DS 46



Trench Excavation for CB46

8'

485.72 − 475.94 = 9.78   485.55 − 475.94 = 9.61

$(\pi \times 4^2)\left(\frac{4.78+4.61}{2}\right) \times 1.5 = 353.99$

$(\pi \times 4^2) \times 5 = +251.33$

$605.32\ ft^3/27 = 22.42\ cy$

Trench Excavation for pipe

7.69 / 7.3

$5.5 \times 5 = 27.50$

$5.5 \times 2.69 \times 1.5 = +22.19$

49.69

$5.5 \times 5 = 27.50$

$5.5 \times 2.3 \times 1.5 = +18.98$

46.48

$\left(\frac{49.69+46.48}{2}\right) \times 82 = 3942.97\ ft^3/27 = 146.04\ cy + 22.42\ cy = 168.46\ cy$ Total Trench

Granular Backfill

$1.75 \times 5.5 = 9.63$

$\frac{1.75^2 \times \pi}{2} = -4.81$

4.82

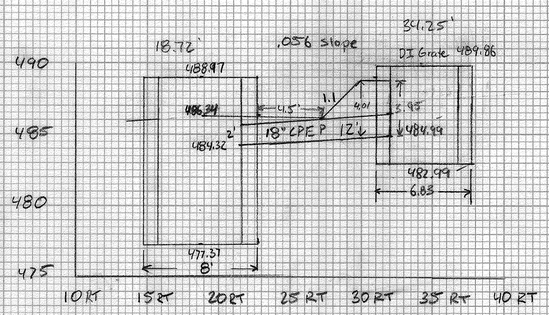
$4.82 \times 84 = 404.88/27 = 15.00\ cy$

RCD 8/27/07

CPH 12/07/07

DS 53

50 scale



Trench exc. for CB 53

6.87

$(\pi \times 3.42^2) \times 5 = 183.73$

$(\pi \times 3.42^2) \times 1.5 \times 1.87 = +103.07$

$286.80/27 = 10.62\ cy$

Trench for Pipe

$\left(\frac{2'+1.75}{2}\right) \times 4.5 \times 3.75 = 31.64$

$3.98 \times 1 \times 3.75 = 14.93$

$\left(\frac{4.01+1.75}{2}\right) \times 3 \times 3.75 = +32.40$

$78.97/27 = 2.92\ cy + 10.62\ cy = 13.54\ cy$ Total Trench

RCD 8/28/07

CPH 12/10/07

Granular Backfill

.92

$.88 \times 3.75 = 3.3$

$\frac{.88^2 \times \pi}{2} = -1.22$

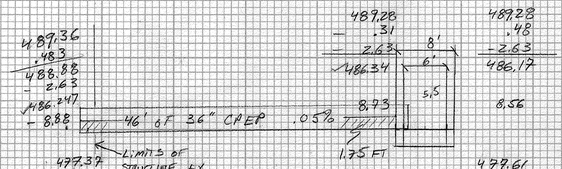
2.08

$2.08 \times 10.17 = 21.15/27 = .78\ cy$

DS 56

STA 44+00.0 RT ~ STA 43+50 RT

NEW 36" X 46' CPEP (SL)



T.E. STRUCTURE

AVG Depth 8.645

$\left(\frac{8.73+8.56}{2}\right) \times \pi\ 4^2 = \frac{434.32}{27} = 16.08\ cy$

$.5\ (3.645) \times \pi\ 4^2 = \frac{91.56}{27} = 3.39\ cy$

$19.47\ cy$

8/28/07

CPH

T.E. 36" CPEP

WIDTH   8.805 8.85

$42' \times 5.5 \times \left(\frac{8.88+8.73}{2}\right) = \frac{2044.35}{27} = 75.72\ cy$

2033.96

$1\frac{1}{2}\ (.5)\ 42' \times 5.5 \times 3.85 = \frac{444.625}{27} = 16.47\ cy$

~~92.19~~ cy

91.8 cy

12/07/07

CPH

GRANULAR BCK FILL

1.75   5.5 FT

$1.75\ FT \times 5.5 \times 42' = \frac{404.25}{27} = 14.97\ cy$

$\frac{\pi r^2}{2}$ $\frac{3.14 \times 1.75^2}{2} = 4.80 \times 42 = \frac{201.94}{27} = -7.48\ cy$

$7.49\ cy$

TBG 12.6.7

FINAL SURVEY NOTE BOOK NO. SURVEYED PLOTTED TEMPLATE AREAS AREAS CHECKED BY DATE

ORIGINAL SURVEY NOTE BOOK NO. SURVEYED PLOTTED TEMPLATE AREAS AREAS CHECKED BY DATE

HIGHWAY FEDERAL AID SHEET
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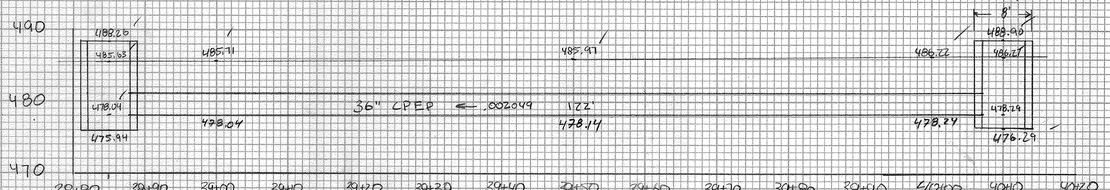
DS 47



100 scale

	Depth	Avg Depth	Width			
38+89	7.59	5.63	x 5.5 x 11	= 461.62	FT³	3.02.5
39+00	7.67	5.75	x 5.5 x 50	= 2131.25	FT³	1375
39+50	7.82	5.90	x 5.5 x 50	= 2172.50	FT³	1375
40+00	7.97	5.98	x 5.5 x 6.5	= 284.22	FT³	178.75

5049.59 FT³ / 27 = 187.02 cy + 23.22 cy = 210.24 cy

5958.74 FT³ / 27 = 220.69 cy

1.5 × (2.63 × 5.5 × 11 = 238.67; 2.75 × 5.5 × 50 = 1134.38; 2.87 × 5.5 × 50 = 1196.25; 2.95 × 5.5 × 6.5 = 158.19) = 2727.49

TOTAL T.E = 210.24 cy + 23.22 cy = 233.46 cy

243.91 cy

1/04/08

GPH

TBG 1/24/08

CB 01/24/08

Trench Excavation for CB 47

(π × 4²) × 5 = 251.33 FT³

(π × 4²) × 4.98 × 1.5 = + 375.48 FT³

626.81 FT³ / 27 = 23.22 cy

Trench Excavation for Pipe

outlet: 5 × 5.5 × 1.5 = 27.50; 2.54 × 5.5 × 1.5 = + 21.37; 48.87 FT²

Inlet: 5 × 5.5 × 1.5 = 27.50; 2.98 × 5.5 × 1.5 = + 24.59; 52.09 FT²

125 LF pipe

((48.87 + 52.09) / 2) × 118 = 5956.64 FT³ / 27 = 220.62 cy + 23.22 cy = 243.84 cy Total Trench Exc.

Granular Backfill



1.75 × 5.5 = 9.63 FT²

(π × 1.75²) / 2 = + 4.81 FT²

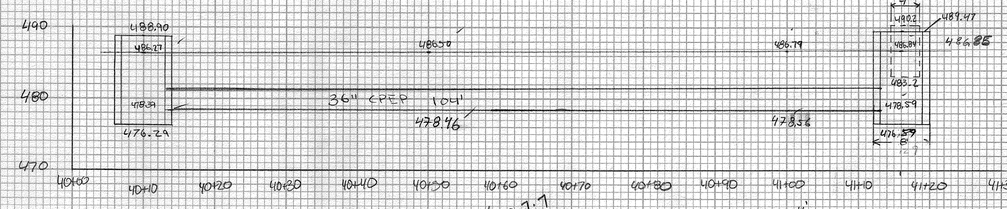
4.82 FT²

4.82 × 120 = 578.4 = 21.42 cy

RCD 08/29/07

GPH 1/04/08

DS 51



Existing DI 3 FH 3 8'6.3' DSH 08/07/07

100 scale

Solid Rock = (2.63 × 3 × 3) / 27 = 0.88 cy

Trench Rock = 0.37 × 3 × 3 / 27 = 0.12 cy

CB 02/09/10

DRD 1/12/10

Trench Rock Excavation FLO MSE DAILY GPH 9.7.7

T.R = 5 × 4² × .364 = 381.2 FT³ / 27 = 2.16 cy

TR = 0.37 × 3' × 3' × 3' / 27 = 0.12 cy

Item 203.21

Solid Rock Excavation

4 × 4 × 3.26 = 52.16 FT³

2 × 2 × 3.26 = + 13.44 FT³

40.26 FT³ / 27 = 1.49 cy

SR = 2.63 × 3' × 3' / 27 = 0.88 cy

Item 203.16

1.99 cy

TBG 1/24/08

Trench Exc. for CB 51

5 × 4² × 4.44 = 231.33 FT³

5.75 × 4² × 4.44 × 1.5 = + 395.84 FT³

647.17 FT³ / 27 = 23.97 cy

FLO MSE GPH

Trench Rock Sta 41+16

3' × 3' × 3' / 27 = 1.0 cy

GPH 9/07/07

CB 01/24/08

Trench Exc Pipe

(5 × 5.5) + (3.25 × 5.5 × 1.5) = 54.32 FT²

(5 × 5.5) + (2.88 × 5.5 × 1.5) = 51.26 FT²

((54.32 + 51.26) / 2) × 100 = 5279.00 FT³ / 27 = 195.52 cy Pipe

+ 23.97 cy Structure

219.49 cy Total Trench for DS 51

Granular Backfill



5.5 × 1.75 = 9.63

(1.75² × π) / 2 = + 4.81

4.82 FT²

4.82 × 102' = 491.64 FT³ / 27 = 18.21 cy

RCD 08/30/07

GPH 01/04/08

DS 51 + DS 51A PAIN AS NEW DS 51

T.E DS 51 219.49 cy

DS 51A 6.89 cy

226.38 cy

G.B DS 51 18.21 cy

DS 51A 1.00 cy

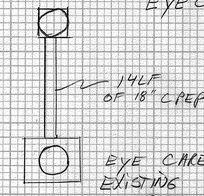
19.21 cy

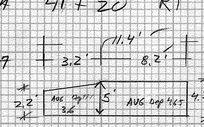
RCD 1/14/08

DS-51A STRUCTURE

Additional DRAINAGE @ EYE CARE STA 41 + 20 RT

FLO MSE GPH 9/14/07





T.E 4.65 × 8.2 × 3.75 / 27 = 5.29 cy

T.E 3.6 × 3.2 × 3.75 / 27 = 1.60 cy

6.89 cy

16³ 09/26/08

		L	W	D		
G.B		13'	X 3.75	X .875	= 1.58	cy
-pipe	G.B	13	x (3.14 .875²)	/ 27	= .58	cy
					1.0	cy

GPH 9/14/07

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DR 52 STA 41+16 RT – 43+50 RT

	Depth	Avg Depth		
STA 41+19	8.08	8.225	5 x 31 = 155	3.225 x 31 x 1.5 = 149.963
STA 41+50	8.37	8.185	5 x 50 = 250	3.185 x 50 x 1.5 = 238.875
STA 42+00	8.0	7.83	5 x 50 = 250	2.83 x 50 x 1.5 = 212.25
STA 42+50	7.66	7.485	5 x 50 = 250	2.485 x 50 x 1.5 = 186.375
STA 43+00	7.31	7.135	5 x ~~36~~ 4 = ~~180~~ 230	2.135 x ~~36~~ 4 x 1.5 = ~~115.29~~ 147.315
STA 43+~~36~~ 4	6.96			

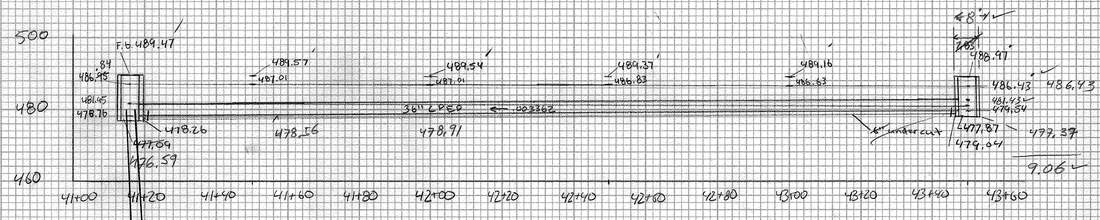
~~1085~~ 1135 + ~~962.753~~ 934.778

5.5 x ~~1987.75~~ 2069.78 ft² / 27 = ~~404.91~~ 421.62

= ~~404.91~~ 421.62 cy

CPH 1/23/08 TBG 1/23/08 CPH 12/13/07

DR # 42 43+50.0 RT ∠ 41+16.4 RT 36" CPEP 232'



9.06 ✓

DS-52A

Ex. Trench Earth From Pipe

Area outlet (5×5.5✓) + (3.69×5.5×1.5) = 57.94
inlet (5×5.5✓) + (2.39×5.5×1.5) = 47.27

DI @ 43+50

Area (3.14 × 3.5✓²) = 48.25

Granular Backfill
spring line of pipe 1.75✓

5.5 × 2.25 × 227 = 2809.13 ✓ FT³
(3.14 × 1.75² × 227) / 2 = 1091.44 ✓ FT³
1717.69/27 = 63.62 cy RD 6/26/07
1093.44✓/27 = 40.50✓

421.62✓

Vol. (57.94+47.27)/2 × 227 × 1/27 = 442.05 cy

Vol. (48.25×5✓)/27 + (48.25×3.56×1.5)/27 = 18.48 cy ✓

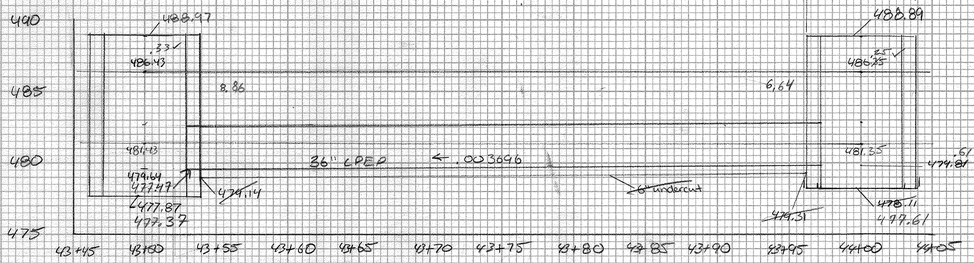
+ 20.64 cy ✓

Total Exc = ~~410.54 cy~~ 442.26 cy ✓ RD 6/26/07
CWB 01/24/07

CPH 12/13/07

TBG 1/23/08

DR # 43 44+00.0 RT ∠ 43+50.0 RT 36" CPEP 46'



Ex. Trench Earth from Pipe

Area Outlet (5×5.5) + (2.29×5.5×1.5) = 57.35 ✓
Inlet (5×5.5) + (2.09×5.5×1.5) = ~~54.33~~ 54.83 ✓
41.03 ✓

DI @ 44+00

Area (3.14 × 3.5✓²) = ~~48.25~~ 50.24 ✓

Granular Backfill

5.5 × 2.25 × 42.4 = ~~524.70 FT³~~ 408.10 ✓
(3.14 × 1.75² × 42.4) / 2 = ~~203.86 FT³~~ - 203.86 FT³
320.84 /27 = 11.88 cy RD 6/26/07
204.24✓/27 = 7.56 ✓

Vol. (57.35 + 41.03)/2 × 42.4 × 1/27 = ~~78.82~~ 71.23 cy ✓

Vol. (50.24×5)/27 + (50.24×3.64✓×1.5)/27 = 19.46 cy ✓
~~(48.25×5) + (48.25×3.29×1.5)~~ = ~~17.62 cy~~

TOTAL ~~88.85 cy~~ 98.28 cy ✓ RD 6/26/07

✳ SEE SHEET # 20

CPH 12/13/07

TBG 1-22-08

EYE CARE
ADDED - DS-52A T.E
FIO MSE
CPH 9/14/07

14 LF of 18" CPEP

4.65 × 8.2 × 3.75/27 = 5.29 ✓
3.6 × 3.2 × 3.75/27 = 1.60 ✓
6.89 cy ✓

GB 13' x .875 x 3.75/27 = 1.58 cy

13 x π (.875²)/2 /27 = .58 cy ✓
1.00 cy ✓

TBG

VOID SEE SHEET #21

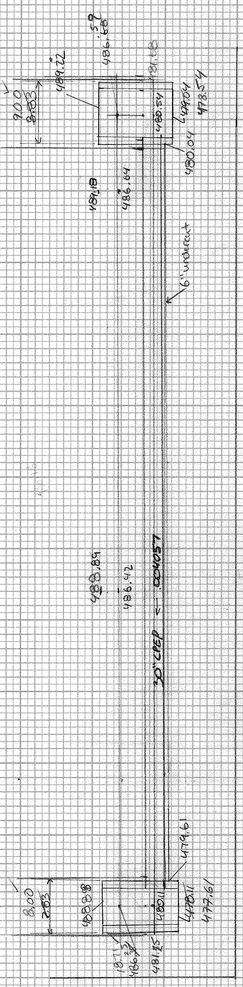
106 LF 24" RCP Installed 9/17/07 12/18/07 CPH

T.E Pipe (6.14+6.02+6.05)/3 = 6.07✓
5 × 5.5 × 101.5 = 2537.5 ✓
11.5 × 10.7 × 101.5 = 8114.54 ✓
10352.04 / 27
= 124.15 cy
TBG 1/23/08

146.70 cy ∠ RD 11/11/11
124.15 cy
22.55 cy

O.J
P.D
T.E
T.E

DR # 44 45+10.8 RT ∠ 44+00.0 RT 30" CPEP 106'



Vol. (38.05 + 37.30)/2 × 103.2 × 1/27 = 144.00 cy ✓ 20.36 cy ✓ RD 6/27/07

Vol. (63.59✓ + (6.45×2.65×1.5)) 3.05✓ / 27 = 20.36 cy ✓

(39.95 + 38.25)/27 = 22.55 cy ✓ CPH 12/18/07

6' - DI @ 45+08

Area (3.14 × 4.5✓²) = 63.59 ✓

Granular Backfill

5' × 2.25 × 227 = 2565.75 FT³
(3.14 × 1.75² × 227) / 2 = 1094.00 FT³
1471.75 FT³ / 27 = 54.51 cy
780.0 ✓
1052.00 FT³
- 1094.00
- 41.85 ✓
688.15 ✓ / 27 = 24.92 cy RD 6/27/07
25.49 cy ✓ CPH 12/19/07
TBG 1/22/08

5'		
Pipe Depth	488.88	488.22
	- 2.63	- 2.63
DI	486.25	485.59
	478.11	480.54
	8.14	5.05

4'		
Pipe Depth	488.96	488.22
	- 2.63	- 2.63
DI	486.33	485.59
	480.31	480.54
	6.02	5.05

5'	
Pipe Depth	488.88
	- 2.63
DI	486.25
	478.11
	8.14

4'	
Pipe Depth	488.96
	- 2.63
DI	486.33
	480.31
	6.02

6'	
Pipe Depth	488.96
	- 2.63
DI	486.33
	478.11
	8.05

Ex. Trench Earth from Pipe

Area Outlet (5×5) + (1.74×5×1.5) = 38.05
Inlet (5×5) + (1.64×5×1.5) = 37.80
4.5✓
(3.14 × 4.5✓²) = 63.59 ✓

6' - DI @ 45+08

Granular Backfill

5' × 2.25 × 227 = 2565.75 FT³
(3.14 × 1.75² × 227) / 2 = 1094.00 FT³
1471.75 FT³ / 27 = 54.51 cy
780.0 ✓
1052.00 FT³
- 1094.00
- 41.85 ✓
688.15 ✓ / 27 = 24.92 cy RD 6/27/07
25.49 cy ✓ CPH 12/19/07
TBG 1/22/08

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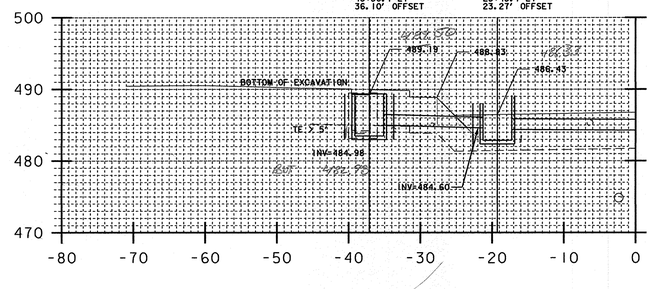
Sheet #22

DR 54



43+50.00

CALCULATED AND DRAWN BY TBG 2/5/08

DR 54

PIPE T.E. < 5'
AREA (FROM CADD) = 37.56 SF * 3.75' = 140.85 CF/27 = 5.21 CY

DS 54

STRUCTURE T.E. < 5'
5' * PI (3.42')² = 183.73 CF/27 = 6.80 CY

STRUCTURE T.E. > 5'
1.5[((2.05' + 2.03' + 1.28' + 1.21' + 1.96' + 1.88')/6) * PI (3.42')²] = 95.63 CF/27 = 3.54 CY

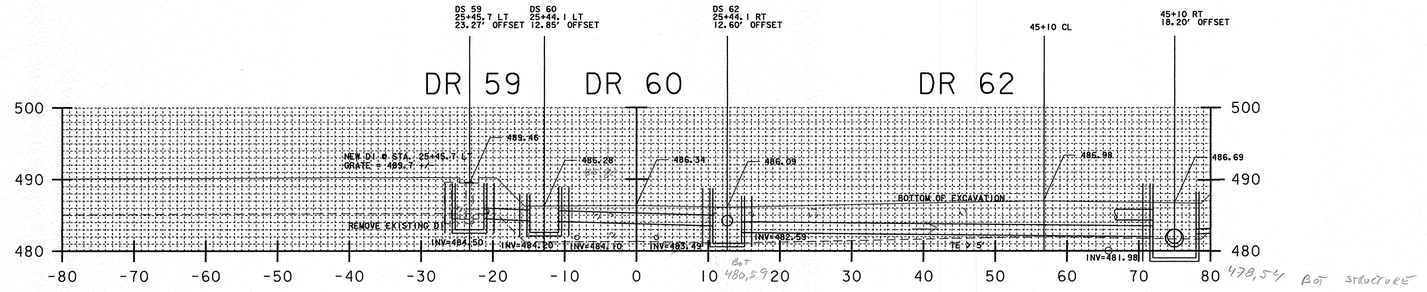
REM. EXIST (F.M. CPH 10/26/07) =[3.67' *3.67' *5' + 1.5 (3.67' *3.67' *.6')]/27 = 2.94 CY

TOT= 10.34 CY-2.94 CY = 7.4 CY

DR 54 GRANULAR BACKFILL
(3.75' * .88' * 13.0')-[((PI (.88')²/2) *13.0')]= 27.09 CF/27 = 1.00 CY

SHEET #23

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 05-FEB-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 220 OF 239



25+44.06
SAG

CALCULATED AND DRAWN BY TBG 2/1/08

DR 59

PIPE T.E. < 5'
AREA (FROM CADD) = 15.12 SF * 3.75'=56.70 CF/27 = 2.10 CY

PIPE T.E. > 5'
AREA (FROM CADD) =1.5(0.59 SF * 3.75')=3.32 CF/27 = 0.12 CY

TOT= 2.22 CY

DS 59

STRUCTURE T.E. < 5'
5' * PI(3.42')² = 183.73 CF/27 = 6.80 CY

STRUCTURE T.E. > 5'
1.5[((2.71' + 1.96')/2)* PI(3.42')²] = 128.70 CF/27 = 6.50 CY

REMOVE EXIST
T.R. = (18.95 SF*4')/27+1.5(4.11 SF*4')/27=3.72 CY
TOT=6.50 CY+6.80 CY-3.72 CY = 9.58 CY

DR 59 GRANULAR BACKFILL
(3.75' * .88' * 5.6')-[((PI(.88')²/2)*5.6')]= 11.67 CF/27 = 0.43 CY

T.R.
4'X4'X5 = 80
4'X4 X.8 (1.5) = 19.2
99.2/27 = 3.67 CY

DR 60

PIPE T.E. < 5'
AREA (FROM CADD) = 46.45 SF * 3.75'=174.19 CF/27 = 6.45 CY

DS 60

STRUCTURE T.E. < 5'
(4.85'+4.16'+4.19')/3 * PI(3.42')² = 161.68 CF/27 = 5.99 CY

DR 60 GRANULAR BACKFILL
(3.75' * .88' * 20.7')-[((PI(.88')²/2)*20.7')]= 43.13 CF/27 = 1.60 CY

CPH
02/22/08

DR 62

PIPE T.E. < 5'
AREA (FROM CADD) = 237.95 SF * 3.75'=892.31 CF/27 = 33.05 CY

DS 62

STRUCTURE T.E. < 5'
5' * PI(3.42')² = 183.73 CF/27 = 6.80 CY

STRUCTURE T.E. > 5'
1.5[((0.57' + 0.50' + 0.57')/3)* PI(3.42')²] = 30.13 CF/27 = 1.12 CY
TOT= 7.92 CY

DR 62 GRANULAR BACKFILL
(3.75' * .88' * 56.5')-[((PI(.88')²/2)*56.5')]= 117.72 CF/27 = 4.36 CY

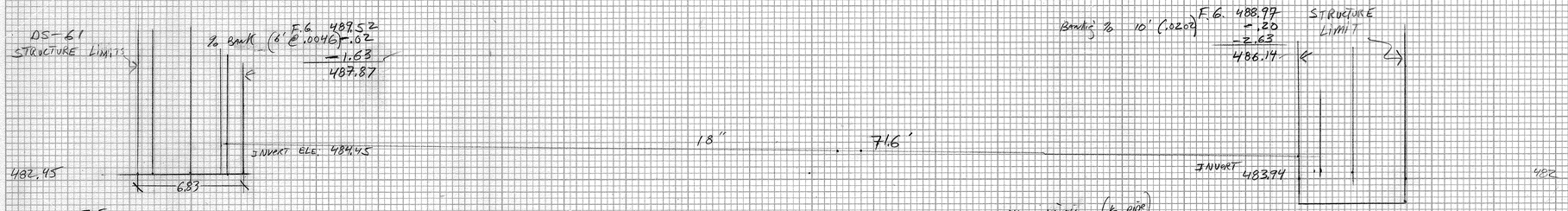
CPH
02/22/08

SHEET # 29

CPH
02/22/08

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 01-FEB-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 220 OF 239

DS-61 SAUNDER AVE
STA 25+44 ~ 26+19 RT
NEW 18" X 72' OF CPEP (SL)



DS-61 T.E STRUCTURE 487.87 / 482.45 = 5.42 × 3.14 (3.42)² = 199.06

½ 0.5 [.42 × 3.14 (3.42)²] = 15.43 (7.71) / 214.49 (206.77) / 27 = 7.94 cy (7.66 cy) CPH

T.E pipe 68.5 FT 487.87 − 484.45 = 3.42' + 486.14 − 483.94 = 2.20 = 5.62 / 2 = 2.81' (AVG DEPTH) × 68.5 (LENGTH) × 3.83 (WIDTH) = 737.86 (21) / 27 = 27.30 cy

TBG 12.6.07
CPH 12/07/07

6.B 71.6 (LENGTH) × 3.83 (WIDTH) × .92 (½ pipe DEPTH) = 252.28 / 27 = 9.34

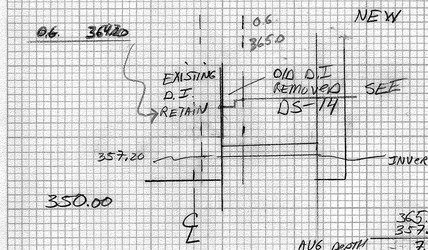
−6B pipe 71.6 × 3.14 (.92)² / 2 = 95.15 / 27 = −3.52

5.82 cy

CPH
12/06/07

DS-13 25+21.6 RT ~ 25+22.2 RT
NEW 18" X 14' CPEP S.L.

CPH
02/28/08



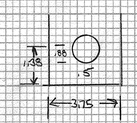
365.0 / 357.2 / 7.8 (AVG DEPTH) + 365.00 / 357.43 / 7.57 / 2 = 7.69 AVG DEPTH

Pipe T.E

5' × 3.75 × 10 = 187.5 (151.3)
1.5 × 2.69 × 3.75 × 10 = 100.88 / 27 = 10.68 cy (12.55) cy

CLB 02/03/10
RED 1/19/11

GRANULAR BACKFILL FOR STRUCTURES.
18" CPEP (SL) 21" OD = 1.75 USE 14.16 LENGTH



CLB 02/03/10

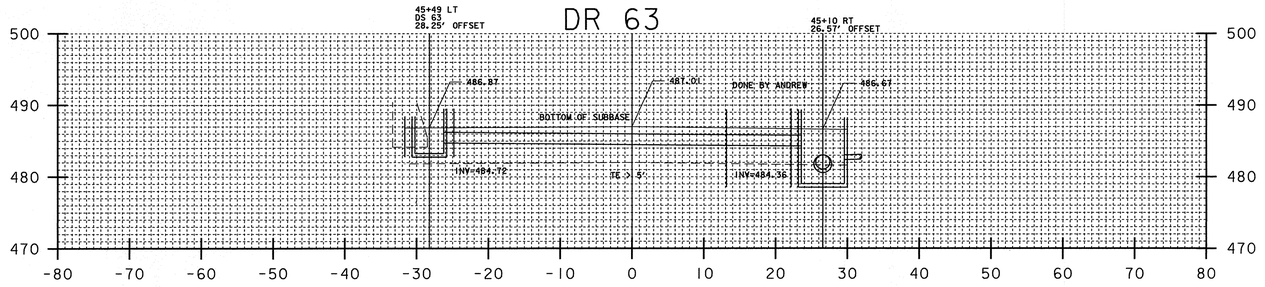
1.38 × 3.75 = 5.18 SF

(.88)² × π / 2 = −1.22 / 3.96 SF PIPE DEFLECTION.

3.96 × 14.16 LF × 1/27 = 2.08 cy BL 6/30/08

HARTFORD RS 0113 (40)

SHEET #25



45+29.3 CL

CALCULATED AND DRAWN BY TBG 10/2/07

✓ CPH 01/14/08

✓ TBG 01/22/08

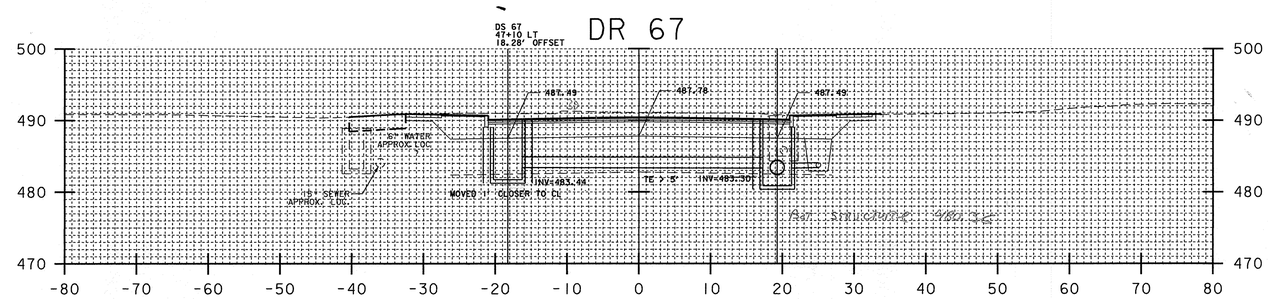
DR 63

PIPE T.E. < 5'
AREA (FROM CADD) = 112.69 SF * ~~3.6'~~ 3.75 ✓ =405.68 CF/27 = ~~15.01~~ 15.65 ✓ CY (UPDATED 1/3/7)

DS 63

STRUCTURE T.E. < 5'
(4.02+ 4.13)/2 * PI(3.46')² = 153.26 CF/27 = 5.68 CY ✓
40.8 37.60

DR 63 GRANULAR BACKFILL
(~~3.6'~~ 3.75 ✓ * .8' .875 ✓ * 48.97')-[((PI(.8')²/2) .875 ✓ *48.97')]= 91.80 CF/27 = ~~3.40~~ 3.77 ✓ CY (UPDATED 1/3/7)
USED 51.33 LF OF 18" CPEP (58.80) ✓
52 ✓



47+10.00

CALCULATED AND DRAWN BY TBG 10/2/07

✓ CPH 01/17/08

DR 67

PIPE T.E. < 5'
AREA (FROM CADD) = 132.23 SF * ~~3.6'~~ 3.75 ✓ =476.03 CF/27 = ~~17.63~~ 18.37 ✓ CY (UPDATED 1/3/07)

DS 67

STRUCTURE T.E. < 5'
5' * PI(3.46')² = 188.05 CF/27 = 6.96 CY ✓

STRUCTURE T.E. > 5'
1.5[((~~1.20'~~ 1.97 + ~~1.31'~~ 1.97)/2) * PI(3.46')²] = ~~70.80~~ 112.21 CF/27 = ~~2.62~~ 4.16 CY
TOT= ~~9.58~~ 11.12 CY 0.95 = 8.94 CY 37.61 53.57 1.98

DR 67 GRANULAR BACKFILL
(~~3.6'~~ 3.75 ✓ * ~~.8'~~ .875 ✓ * 32.72')-[((PI(~~.8'~~ .875)²/2) *32.72')]= 61.34 CF/27 = 2.27 CY ✓ (UPDATED 1/3/07)
USED 35.00 LF OF 18" CPEP

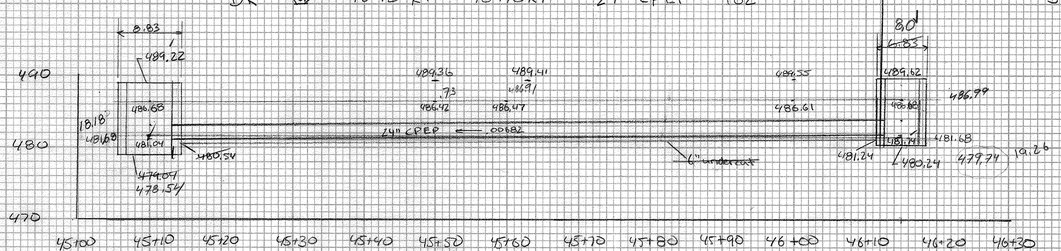
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 03-JAN-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 211 OF 239

SHEET #26

FINAL SURVEY — SURVEYED — PLOTTED — TEMPLATE — AREAS — AREAS CHECKED — NOTE BOOK — NO. — BY — DATE

DR # (60) 46+15 RT ~ 45+10 RT 24" CPEP 102'



Ex. Trench Earth from Pipe Area Outlet (5 x 4.33) + (1.14 x 4.33 x 1.5) = 29.05
Inlet (5 x 4.33) + (.44 x 4.33 x 1.5) = 24.51

Vol. (29.05 + 24.51)/2 x 97 x 1/27 = 96.21 cy + 9.74 cy = 105.95 cy RD 6/28/07

DI @ 46+15 Area (3.14 x 3.42²) = 36.73

Vol. (36.73 x 5) + (36.73 x 1.14 x 1.5) 1/27 = 9.79 cy
= 15.58 cy + 14.72 cy
94.64 cy + 8.5 T.E Pipe
110.22 cy
103.25 cy

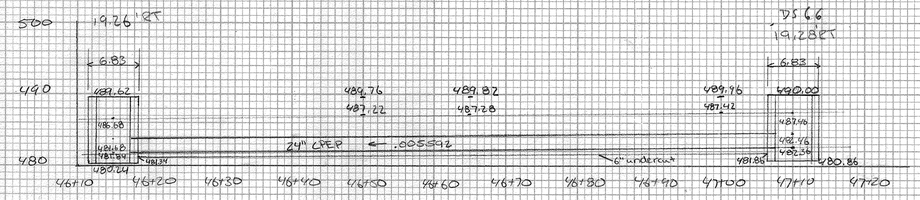
TBG 1/24/08
gpH 1/07/08
gpH 1/07/08

Granular Backfill

(4.33 x 1.67 x 97) = 701.42 ft³
(3.14 x 1.17² / 2 x 97) = 208.47 ft³
910.89 ft³

910.89/27 = 33.73 cy RD 6/28/07
33.73 cy gpH 9/24/07

DR # (60) 47+10 RT ~ 46+15 RT 24" CPEP 93'



Ex. Trench Earth from Pipe Area Outlet (5 x 4.33) + (1.29 x 4.33 x 1.5) = 23.86
Inlet (5 x 4.33) + (1.10 x 4.33 x 1.5) = 28.55

Vol. (23.86 + 28.55)/2 x 88 x 1/27 = 80.52 cy + 1.30 cy = 82.12 cy RD 6/29/07

DI @ 47+10 Area (3.14 x 3.42²) = 36.73

Vol. (36.73 x 5) + (36.73 x 1.51 x 1.5) 1/27 = 10.07 cy
9.88 cy

TBG 1/24/08

Granular Backfill

(4.33 x 1.67 x 88) = 636.34 ft³
(3.14 x 1.17² / 2 x 88) = 189.13 ft³
825.47 ft³

825.47/27 = 30.57 cy RD 6/29/07
255.69/27 = 9.45 cy
256.60/27 = 9.51 cy TBG 12/6/07

gpH 9/25/07

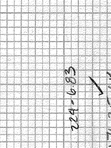
TOTAL T.E 82.12 + 9.88 = 92.00 cy RD 1/24/08

STA Depth Avg Depth
45+13 5.55 5.485 x 37 x 4.33 = 878.75 ft³
+50 5.42 5.34 x 50 x 4.33 = 1156.11 ft³
46+00 5.26 5.26 x 12 x 4.33 = 273.31 ft³
46+12 5.25
0.5 x .485 x 37 x 4.33 = 116.55 ft³
0.5 x .34 x 50 x 4.33 = 110.42 ft³
0.5 x .26 x 12 x 4.33 = 20.26 ft³
2556.40 ft³ / 27 = 94.64 cy
2330.28 / 27 = 83.53 cy

T.E Pipe

P=60

5' I.D. M.H. STRUCTURE USED



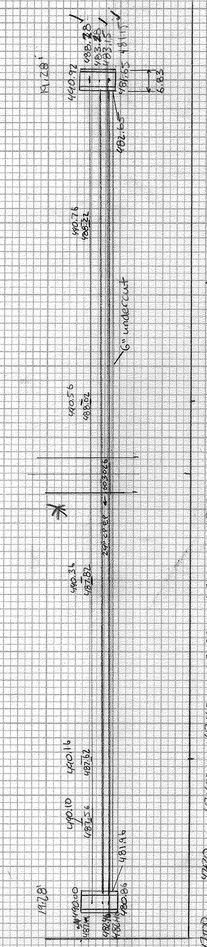
T.E = 3.415
6.83 / 7.02
5 x 3.14 (3.415²) / 27 = 2.44 cy each
1.5 (.667 x 3.14 (3.415²) / 27) = 1.63 cy each
10.47 cy
9.27 cy
10.84

DB 01/24/08

* MH STRUCTURE on DS68
490.46
STA 48+30
OFF 9'2.8 Rt
470.46 - 483.63 = 6.83
6.83 / 7.02
5 x 3.14 (3.415²) / 27 = 2.44 cy
1.5 (.667 x 3.14 (3.415²) / 27) = 1.63 cy
10.47 cy
9.27 cy
10.84

RD 7/2/07

DR # (60) 49+10 RT ~ 47+10 RT 24" CPEP 228'



Ex. Trench Earth from pipe Area Outlet (3.41 x 4.33) + (2.44 x 4.33) = 24.59
Inlet (5 x 4.33) + (2.44 x 4.33) = 32.34

Vol. (24.59 + 32.34)/2 x 100 x 1/27 = 106.33 cy + 10.33 cy = 223.09 cy

DI @ 49+10 Area (3.14 x 3.42²) = 36.73

Vol. (36.73 x 5) + (36.73 x 1.23 x 1.5) 1/27 = 10.23 cy

TBG 1/24/08

Granular Backfill

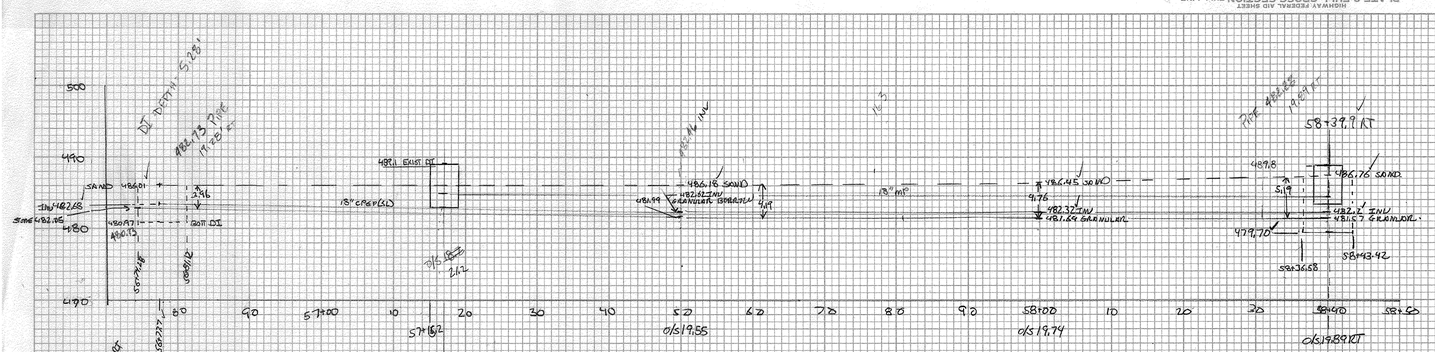
(4.33 x 1.67 x 100) = 723.11 ft³
(3.14 x 1.17² / 2 x 100) = 214.79 ft³
937.90 ft³

937.90/27 = 34.73 cy RD 7/2/07
34.73 cy gpH 9/24/07

gpH 9/29/07

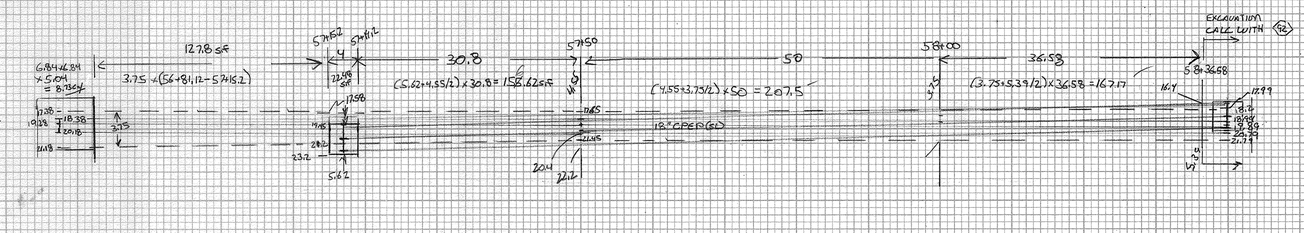
HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
NATIONAL PRINTWAY
PRINTED IN U.S.A.

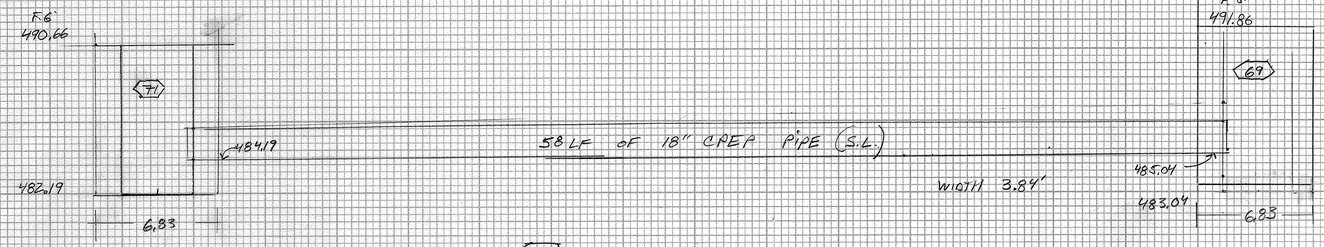
PLATTE 3-FULL CROSS SECTION-FULL LINE
NEBRASKA PROPERTY
MINUTES IN U.S.A.
HIGHWAY PROPOSAL AD SHEET



(88) 56+77.7 0/S 19.28 RT TO 58+40 0/S 19.89 RT 18" CPEP(SL) x 158' LF.

(61) 57+16 TO 58+40 RT EXISTING DI AND PIPE REMOVE.





DRAINAGE RUN 69 STA 30+40.1 RT — STA 30+98.6 PIERCE STREET

STA 30+98 LT of &

CPN 11/06/07

EXCAVATION D.I

		DEPTH			
		5'	$3.14\left(\frac{3.415}{2}\right)^2$	= 183.10 FT³/27	= 6.78 cy
1.5	1.5	3.82	$3.14\left(\frac{3.415}{2}\right)^2$	= 209.83 FT³/27	= 7.77 cy

T.E Pipe 54.8LF • $\left(\frac{\text{AVG depth}}{2}\right)$ $\left(\frac{6.47' + 6.82'}{2} = 6.645'\right)$ x 3.84 FT² = 1398.32 FT³/27 = 51.79 cy

1.5 .5 x 54.8 x 1.645 x 3.84 = 173.08 FT³/27 6.41 cy

72.75 cy

TBG 12-6-07

1.83' Pipe O.D

Granular Back Fill

54.8' x .92 x 3.84 = 193.60 ✓ 192.89 FT³

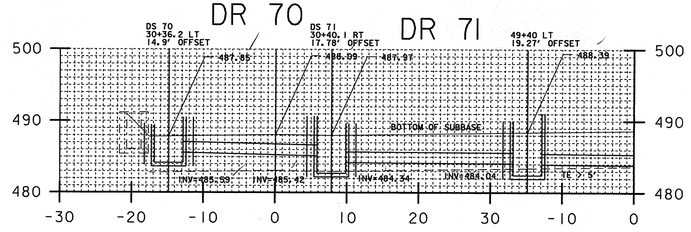
54.8 x $\frac{3.14 \times (.917)^2}{2}$ = − 72.32 FT³

120.57 FT³

121.28 FT³ /27 = 4.46 cy / 4.49 cy ACD 1/19/11

FINAL SURVEY — SURVEYED, PLOTTED, TEMPLATE, AREAS, AREAS CHECKED, NOTE BOOK, NO., BY, DATE

ORIGINAL SURVEY — SURVEYED, PLOTTED, TEMPLATE, AREAS, AREAS CHECKED, NOTE BOOK, NO., BY, DATE



30+38.73 SAG
ASKEW 9°34'0.8" LT

49+40 CL

CALCULATED AND DRAWN BY TBG 10/30/07
✓ CPH 01/08/08
TBG 01/22/08

DR 70

PIPE T.E. < 5'
AREA (FROM CADD) = 42.05 SF * ~~3.6'~~ = 151.38 CF/27 = 5.61 CY

DS 70

STRUCTURE T.E. < 5'
(4.14+ 4.24)/2 * PI(3.42')² = 153.96 CF/27 = 5.70 CY

DR 70 GRANULAR BACKFILL
~~(3.6' * .8' * 18.0') - [((PI(.8')²/2) * 18.0')]~~ = 12.91 CF/27 = ~~0.48 CY~~
USED 22.33 LF OF 18" CPEP

PAY 24 LF ✓

DR 71

PIPE T.E. < 5'
AREA (FROM CADD) = 83.15 SF * ~~3.6'~~ = 299.35 CF/27 = 11.09 CY

DS 71

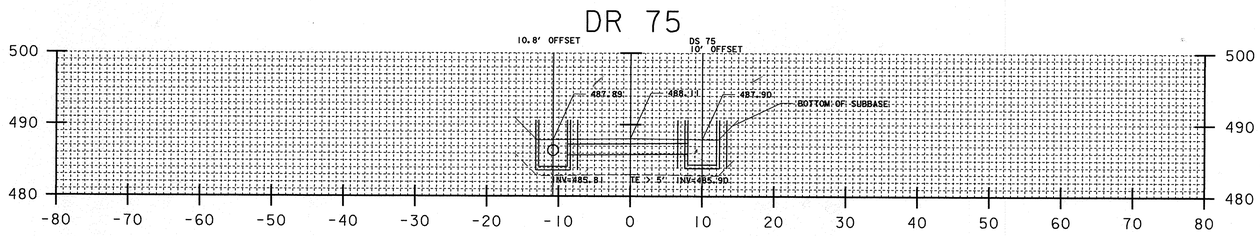
STRUCTURE T.E. < 5'
5' * PI(3.42')² = 183.73 CF/27 = 6.80 CY

STRUCTURE T.E. > 5'
1.5[((0.53' + .73')/2) * PI(3.42')²] = ~~42.99~~ CF/27 = ~~1.59~~ CY
TOT= 8.39 CY

DR 71 GRANULAR BACKFILL (UPDATED 1/4/08)
~~(3.6' * .8' * 22.5') - [((PI(.8')²/2) * 22.5')]~~ = 42.18 CF/27 = 1.56 CY
USED 24.00 LF OF 18" CPEP

1.74 CY

CPH



35+37.08 SAG
ASKEW 9°16'25.3" LT

CALCULATED AND DRAWN BY TBG 10/26/07
✓ CPH 01/08/08
TBG 01/22/08

DR 75

PIPE T.E. < 5'
AREA (FROM CADD) = 30.29 SF * ~~3.6'~~ = ~~109.04~~ CF/27 = ~~4.04~~ CY

DS 75

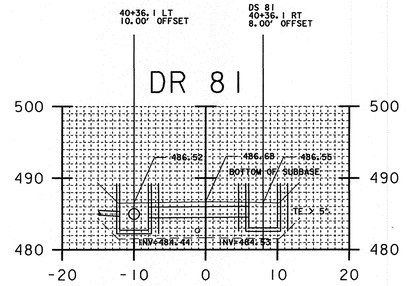
STRUCTURE T.E. < 5'
(4.05+ 5.00)/2 * PI(3.42')² = 166.27 CF/27 = 6.16 CY

DR 75 GRANULAR BACKFILL
~~(3.6' * .8' * 16.0') - [((PI(.8')²/2) * 16.0')]~~ = 30.00 CF/27 = 1.11 CY (UPDATED 1/4/08)
USED 18.00 LF OF 18" CPEP

1.24 CY

PROJECT NAME:	HARTFORD		
PROJECT NUMBER:	RS 0113(40)		
FILE NAME:	$$$$FILENAME$$$	PLOT DATE:	04-JAN-2008
PROJECT LEADER:	KEN UPMAL	DRAWN BY:	E. ATKINS
DESIGNED BY:	K. ISHIKURA E. ATKINS	CHECKED BY:	K. ISHIKURA
		SHEET 235	OF 239

SHEET #30



40+36.06
SAG

CALCULATED AND DRAWN BY TBG 2/04/08

DR 81

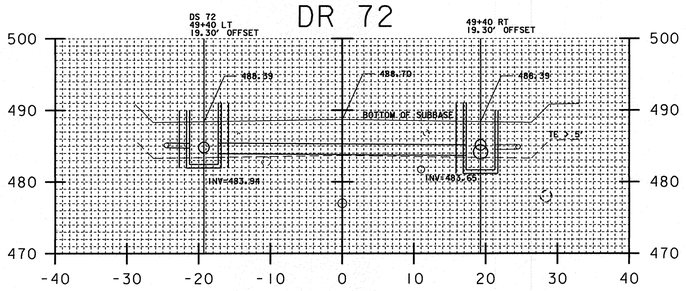
PIPE T.E. < 5'
AREA (FROM CADD) = 23.96 SF * 3.75'=89.85 CF/27 = 3.33 CY

DS 81

STRUCTURE T.E. < 5'
(4.07+3.98+5.00)/3 * PI(3.42')² = 159.84 CF/27 = 5.92 CY

DR 81 GRANULAR BACKFILL
(3.75' * .88' * 13.2')-[((PI(.88')²/2)*13.2')]= 27.50 CF/27 = 1.02 CY

CPH 02/26/08



49+40.00

CALCULATED AND DRAWN BY TBG 2/04/08
CPH 02/26/08

DR 72

PIPE T.E. < 5'
AREA (FROM CADD) = 151.48 SF * 3.75'=568.05 CF/27 = 21.04 CY

DS 72

STRUCTURE T.E. < 5'
5' * PI(3.42')² = 183.73 CF/27 = 6.80 CY

STRUCTURE T.E. > 5'
1.5[((1.41' + 1.51')/2)* PI(3.42')²] = 80.47 CF/27 = 2.98 CY
TOT= 9.78 CY

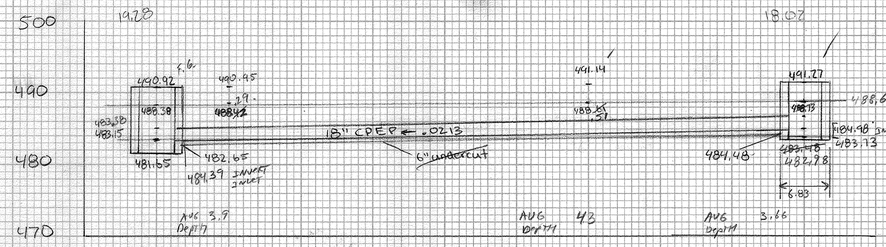
DR 72 GRANULAR BACKFILL
(3.75' * .88' * 33.7')-[((PI(.88')²/2)*33.7')]= 70.22 CF/27 = 2.60 CY

PROJECT NAME:	HARTFORD		
PROJECT NUMBER:	RS 0113(40)		
FILE NAME:	$$$$FILENAME$$$	PLOT DATE:	05-FEB-2008
PROJECT LEADER:	KEN UPMAL	DRAWN BY:	E. ATKINS
DESIGNED BY:	K. ISHIKURA E. ATKINS	CHECKED BY:	K. ISHIKURA
		SHEET	220 OF 239

SHEET #31

HIGHWAY FEDERAL AID SHEET
PLATE 3-PULL CROSS SECTION-PULL LINE
NATIONAL PRINTWAY
PRINTED IN U.S.A.

DR# (73) 50+30 RT ~ 49+40 RT 18" CPEP 86'



49+30 49+40 49+50 49+60 49+70 49+80 49+90 50+00 50+10 50+20 50+30 50+40

$\left(3.75 \times \left(\frac{4.1+4.3}{2}\right) \times 58\right) + \left(3.75 \times \left(\frac{4.3+3.66}{2}\right) \times 27\right) = 1294.75 \checkmark \div 27 = 47.96 \checkmark$ cy TE

Exc. Trench earth from pipe Area outlet $(6.5 \times 3.75) + (.73 \times 1.5 \times 3.75) = 22.86$ Inlet $(4.25 \times 3.75) = 15.44$ Vol. $\frac{(15.44+22.86)}{2} \times 83.4 \times 1/27 = 59.92$ cy × 7.31 cy/y = 67.23 RD 7/3/07

56.10 cy ✓ TOTAL TE

DI @ 50+30 Area $(3.14 \times 3.42^2) = 36.73 \checkmark$ Vol. $\frac{(36.73 \times 5) + (36.73 \times .66 \times 1.5)}{27} = 8.15$ cy ✓

Granular Backfill

~~3.03~~ 0.88 ~~3.75~~ 1.38 × 83.4 = 431.60 ft³ 270.85

3.14 × 1.88² × 83.4 = 925.25 ft³ 102.74

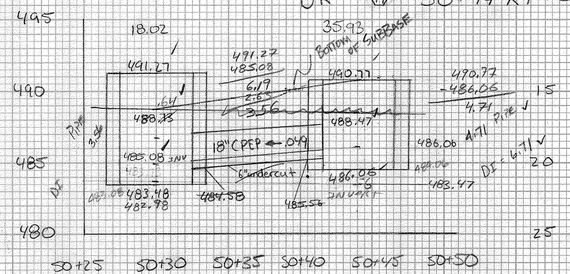
331.35 / 27 = 12.27 cy RD 7/3/07

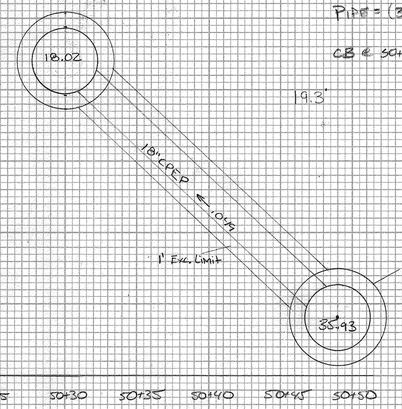
184.52 / 27 = 6.85 cy ✓ OK ADD 0.1144.10

176.11/27 = 6.52 cy

PAY 88 LF ✓ 12/11/07 TBG 1/24/08

DR # (74) 50+44 RT ~ 50+30 RT 18" CPEP 20'





TRENCH EXC OF EARTH

PIPE = $\frac{(3.56+4.71)}{2} \times 3.75 \times \frac{19.3}{27} = 11.08$ cy ✓

CB @ SCH 49 = $\frac{(5 \times \pi \times 3.42^2) + (1.7 \times 1.5 \times \pi \times 3.42^2)}{27} = 10.30$ cy ✓

$\Sigma =$ 21.38 cy ✓ ADD 0.1144.08 TBG 1/24/08

Exc Trench earth from pipe Area outlet $(4.15 \times 3.75) = 15.56$ Inlet $(2.44 \times 3.75) = 9.15$ ✓ $= 24.71$ ~~18.63~~

Vol $(15.56 + 10.24) \times 19.3 \times 1/27 = 9.76$ cy

$(18.63 + 24.71) \times 19.3 \times \frac{1}{2} \times \frac{1}{27} = 8.32$ cy

$= 14.78$ cy RD 07/06/07

$= 11.22$ cy

DI @ 50+44 Area $(3.14 \times 3.42^2) = 36.73$ Vol $\frac{(36.73 \times 3.511)}{27} = 5.32$ cy

$\frac{36.73 \times 1.5}{27} = 6.8$ cy

$\frac{36.73 \times 1.71 \times 1.5}{27} = 3.49$ cy

$= 10.27$ cy

Granular Backfill 0.88

~~3.03~~ ~~3.75~~ 1.38 × 19.3 = 491.88 ft³

3.14 × (.88)² × 19.3 = −73.77 ft³

3.14 × .88² = 2.43 ft²

= 55.65

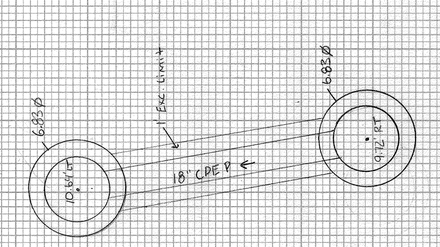
76.91 / 27 = 2.83 cy ✓ RD 07/06/07

~~42.41~~ = 1.57 cy ✓ OK ADD 0.1144.08

~~= 14.49~~ = 1.49 cy

IBG 1/24/08

12/11/07



35+35.2 LT (Cadreau St.) 18" CPEP 18'

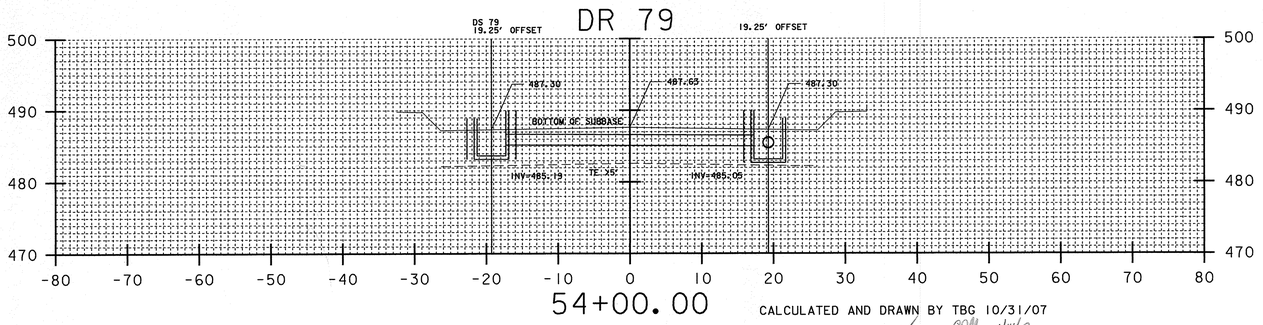
*SEE 7 1/2 ER CADD Sheet 15

50 Scale

SHEET #30

SHEET #32

ORIGINAL SURVEY
FINAL SURVEY
NOTE BOOK
PLOTTED
INITIATE
AREAS
AREAS CHECKED
NO.
BY
DATE
SURVEYED



CALCULATED AND DRAWN BY TBG 10/31/07

✓ QPM 1/17/08

✓ TBG 1/22/08

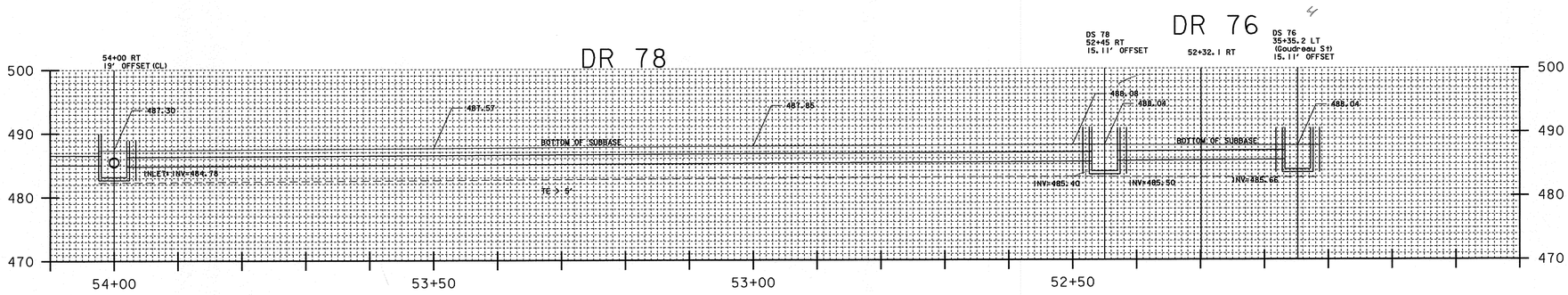
DR 79

PIPE T.E. < 5'
AREA (FROM CADD) = 75.64 SF * ~~3.6'~~ 3.75 ✓ =272.30 CF/27 = ~~10.09~~ 10.50 ✓ CY

DS 79

STRUCTURE T.E. < 5'
(4.06+ 4.17)/2 * PI(3.42')² = 151.21 CF/27 = 5.60 CY ✓ 36.73

DR 79 GRANULAR BACKFILL
~~(3.6' * .8' * 33.75')~~-[((PI(.8')²/2) *33.75')]= 63.27 CF/27 = ~~2.34~~ 2.60 ✓ CY
3.75 ✓ .875 ✓ .875 ✓ (40.57) ✓
USED ~~37.25~~ 38.00 LF OF 18" CPEP ✓



CALCULATED AND DRAWN BY TBG 9/27/07

✓ QPM 1/14/08

✓ TBG 1.22-08

DR 78

PIPE T.E. < 5'
AREA (FROM CADD) = 387.00 SF * ~~3.6'~~ 3.75 ✓ =1393.21 CF/27 = ~~51.60~~ 53.75 ✓ CY

DS 78

STRUCTURE T.E. < 5'
(4.75+ 4.58)/2 * PI(3.45')² = 174.44 CF/27 = 6.46 CY ✓ ✓

DR 78 GRANULAR BACKFILL
~~(3.6' * .8' * 150.17')~~-[((PI(.8')²/2) *150.17')]= 281.52 CF/27 = ~~10.43~~ 11.56 ✓ CY
3.75 ✓ .875 ✓ .875 ✓ (180.51) ✓
UPDATED 1/3/07 (DAILY INCORRECT)

USED 152.25 LF OF 18" CPEP
~~152~~ 157 LF

DR 76

PIPE T.E. < 5'
AREA (FROM CADD) = 55.12 SF * ~~3.6'~~ 3.75 ✓ =198.43 CF/27 = ~~7.35~~ 7.66 ✓ CY

DS 76

STRUCTURE T.E. < 5'
~~(4.21+ 4.28)/2~~ 4.38 ✓ * PI(3.42')² = 158.92 CF/27 = ~~5.89~~ 5.96 ✓ CY

DR 76 GRANULAR BACKFILL
3.75 ✓ .875 ✓ .875 ✓ ~~53.96~~ ✓ 2.00 ✓
(3.6' * .8' * 25.95')-[((PI(.8')²/2) *25.95')]= ~~48.65~~ CF/27 = ~~1.80~~ CY
UPDATED 1/3/07 (DAILY INCORRECT) (31.19) ✓

USED 27.00 LF OF 18" CPEP

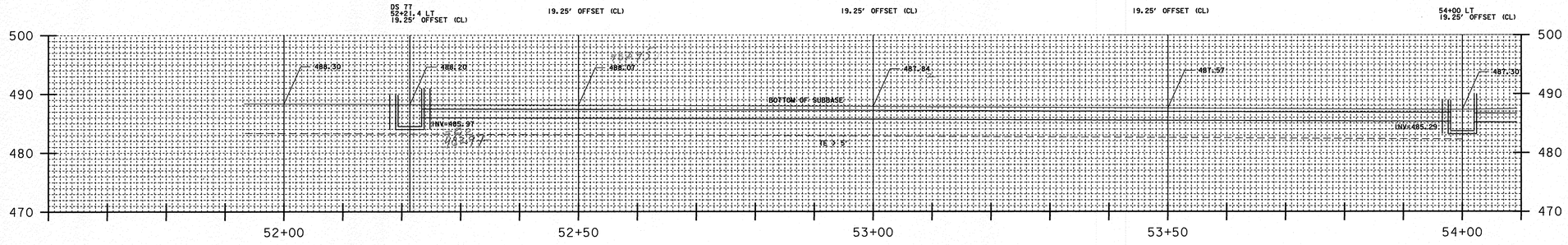
PAY 76.00 LF

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	$$$$FILENAME$$$
PROJECT LEADER:	KEN UPMAL
DESIGNED BY:	K. ISHIKURA, E. ATKINS
PLOT DATE:	03-JAN-2008
DRAWN BY:	E. ATKINS
CHECKED BY:	K. ISHIKURA
SHEET	217 OF 239

SHEET #33

REDESIGN DR 77



CALCULATED AND DRAWN BY TBG 11/2/07

✓ CAH 01/14/08

✓ TBG 01/22/08

DR 77

PIPE T.E. < 5'
AREA (FROM CADD) = 374.15 SF * ~~3.6'~~ = 1346.94 CF/27 = ~~49.89~~ CY

DS 77

STRUCTURE T.E. < 5'
~~(4.36+ 4.21)~~ /2 * PI (3.42')² = 157.45 CF/27 = 5.83 CY

DR 77 GRANULAR BACKFILL
~~(3.6'~~ * .8' * 176.2') - [((PI (.8')²/2) * 176.2')] = 330.32 CF/27 = ~~12.23~~ CY

USED 178.5 LF OF 18" CPEP

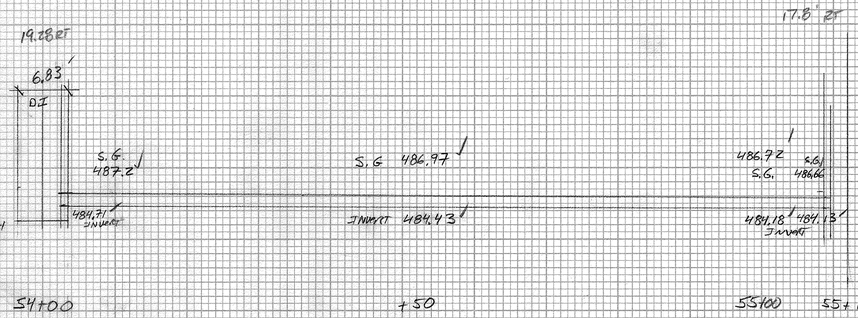
PROJECT NAME:	HARTFORD		
PROJECT NUMBER:	RS 0113(40)		
FILE NAME:	$$$$FILENAME$$$	PLOT DATE:	03-JAN-2008
PROJECT LEADER:	KEN UPMAL	DRAWN BY:	E. ATKINS
DESIGNED BY:	K. ISHIKURA	CHECKED BY:	K. ISHIKURA
	E. ATKINS	SHEET	219 OF 239

SHEET #34

HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
NATIONAL PRINTOUT
PRINTED IN U.S.A.

DS 80

STA 54+00 RT ~ 55+12.0 RT 18" X 108' CPEP (SL)



T. E. STRUCTURE $\frac{487.2' - 482.71'}{4.49'} \times \left(3.14 \times 3.42^2\right) / 27 = 6.11$ cy

T. E Pipe 104.3 FT

STA		DEPTH	AVG DEPTH	WIDTH	
54+3.42					
54+50	46.58'	2.49' (X)	2.515' X	3.75'	= 439.30 FT³
55+00	50.00'	2.54' (X)	2.54' X	3.75'	= 476.25 FT³
55+08.58	8.58'	2.54' (X) 2.53'	2.535'	3.75'	= 81.56 FT³
					997.12 / 27 = 36.93 cy

CPH 1/28/08

G.B $107.3' \times 3.75' \times (.875') = 352.08' / 27 = 13.04$ cy

$- 107.3' \times \frac{(3.14 \times (.875')^2)}{2} = 128.98' / 27 = -4.78$ cy

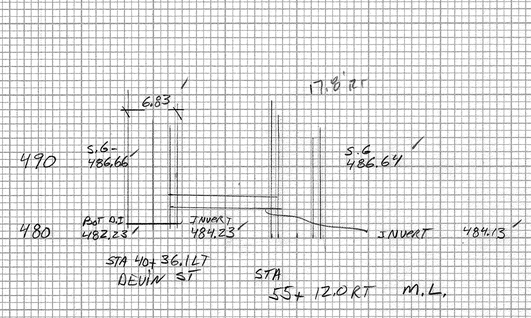
8.26 cy

LEB 01/28/08

DS-82

DEVIN ST

STA 40+36.1 LT ~ 55+12.0 RT 18" X 20' CPEP S.L



T.E STRUCTURE $\frac{486.66' - 482.23'}{4.43'} \times \left(3.14 \left(3.42^2\right)\right) / 27 = 6.02$ cy

T.E Pipe $13' \left(\frac{2.43 + 2.51}{2}\right) \times 3.75 = 120.41 / 27 = 4.46$ cy

G.B. Pipe $15' \times .875 \left(3.75\right) = 49.22 / 27 = 1.82$ cy

$-$ Pipe $15' \times \frac{3.14 \left(.875^2\right)}{2} = 18.03 / 27 = -.68$ cy

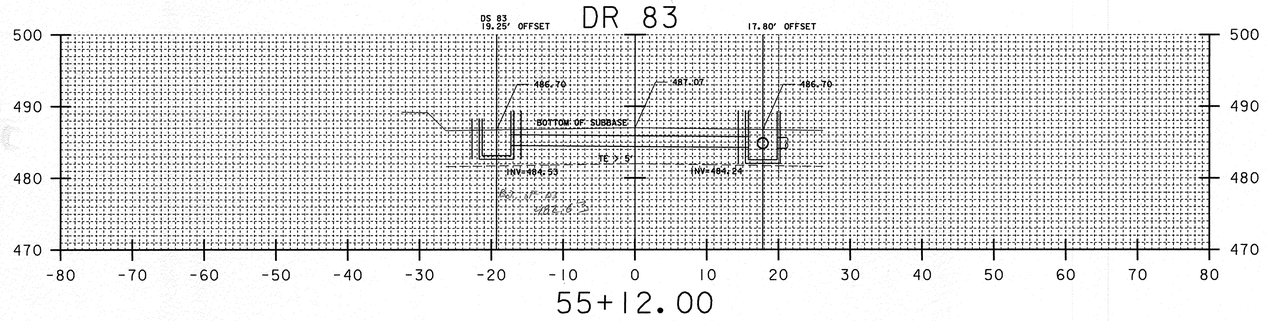
1.14 cy

LEB 01/26/06 CPH 1/28/07

SHEET #35

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED
PLOTTED
TRACED
AREAS
AREAS CHECKED
BY
DATE

FINAL SURVEY
NOTE BOOK
NO.
SURVEYED
PLOTTED
TRACED
AREAS
AREAS CHECKED
BY
DATE



55+12.00

CALCULATED AND DRAWN BY TBG 10/31/07

✓ GHK 01/17/08

✓ TBG 01/24/08

DR 83

PIPE T.E. < 5'
AREA (FROM CADD) = 73.95 SF * ~~3.6'~~ 3.75 =266.22 CF/27 = ~~9.86~~ 10.27 CY

DS 83

STRUCTURE T.E. < 5'
(4.01+ 4.12)/2 * PI(3.42')² = 149.39 CF/27 = 5.53 CY

DR 83 GRANULAR BACKFILL
(~~3.6'~~ 3.75 * .8' * 32.25)-[((PI(.8')²/2)*32.25')]= 60.46 CF/27 = 2.24 CY ~~38.72~~ ~~2.48~~

USED 34.58 LF OF 18" CPEP

~~36~~ 40 LF

NOTES:

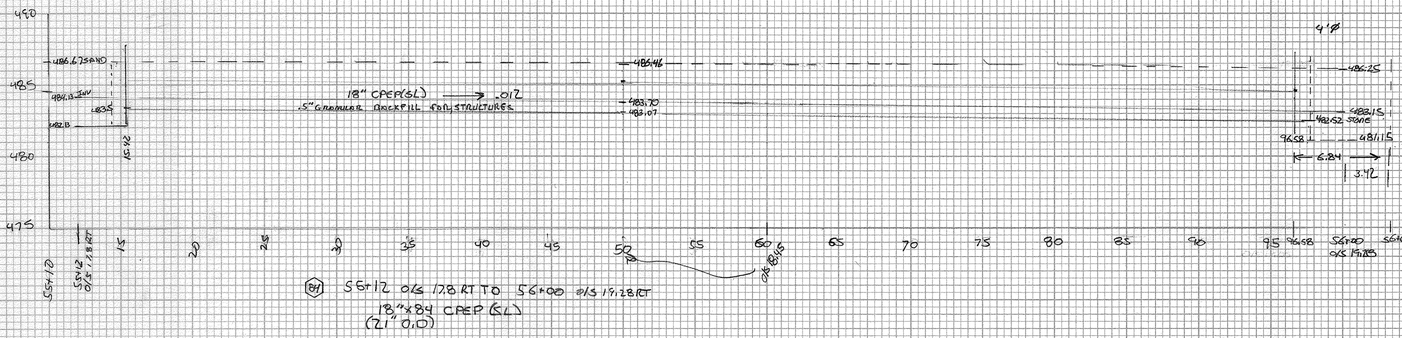
1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.

U.S. ROUTE 5
HARTFORD AVENUE

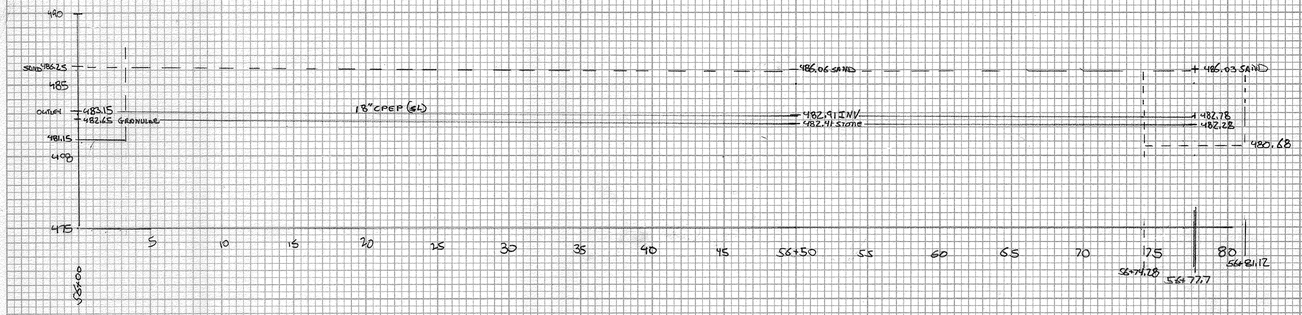
PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 03-JAN-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 220 OF 239

SHEET #36

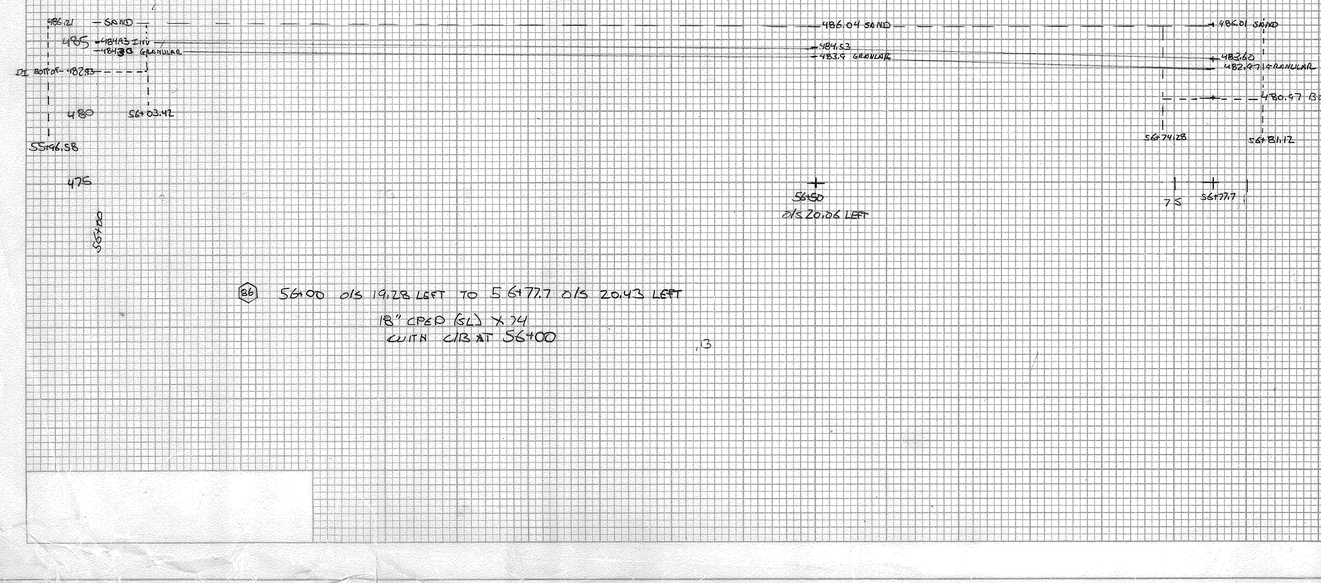
PLATE 3-FULL CROSS SECTION-PULL LINE
NATIONAL PRIMEWAY
HIGHWAY FEDERAL AID SHEET
PRINTED IN U.S.A.



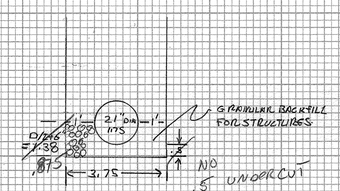
(84) SS+12 O/S 1.78 RT TO SS+00 O/S 19.28 RT
18"x84 CPEP (SL)
(71" O.D)



(85) SS+00 O/S 19.28 RT TO SS+77.7 O/S 19.28 RT
18" x 74' CPEP(SL)



(86) SS+00 O/S 19.28 LEFT TO SS+77.7 O/S 20.43 LEFT
18" CPEP (SL) x 74
C/W C/B AT SS+00



ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	NT	AVG NT	LENGTH	WIDTH	C.Y
SS+15.92	3.17				
		3.28	34.58	3.75	15.75
SS+50	3.39				
		3.56	46.58	3.75	23.02
SS+96.58	3.73				

Excavation of DI at SS+00 $\frac{5.0' \text{ NT} \times [(6.84/2)^2 \times \pi]}{27} \times 6.80$ c.y

OVER 5' $.1 \times (6.84/2)^2 \times \pi \times 1/27 \times 150\% = .20$

45.78 c.y ✓ BL 6/4/07

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES. Pipe
(SS+96.58 - SS+15.92) + 2' x 3.75 x 1.38 x 1/27 = 15.99 c.y BL 6/4/07
DS x 0.875 x 3.75 .875 = 10.33'
3.78
8.5' x 0.8' x 3.6'
$\frac{\pi(0.8')^2}{2} \times 85 = 159.35 \text{ ft}^3/27 = 5.90 \text{ c.y}$
.875
6.55 c.y ✓ LB 01/28/08

1/24/08

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	NT	AVG NT	LENGTH	WIDTH	C.Y
SS+03.42	3.6				
		3.63	46.58	3.75	23.48
SS+50	3.65				
		3.70	24.28	3.75	12.48
SS+74.28	3.75				

+ PIPE THICKNESS
.13 x 70.86 x 3.75 x 1/27 = 1.28 c.y

Excavation at DI at SS+77.7
$\frac{[(6.84/2)^2 \times \pi] \times 5.88}{27} = 6.80 \text{ c.y}$

OVER 5' $\frac{[(6.84/2)^2 \times \pi] \times 1.35}{27} \times 150\% = .71 \text{ c.y}$

44.75 c.y ✓ BL 6/4/07
43.97 c.y

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES
(70.86+2) x 3.75 x 1.38 x 1/27 = 13.76 c.y BL 6/4/07
.875
8.85 ✓

- pipe $72.86' \times 3.14 (.875^2) \div 2 / 27 = -3.24$ c.y ✓

8.85 c.y ✓
- 3.24 c.y ✓
5.61 c.y ✓ 6.8

CB 01/24/08

1/24/08

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	NT	AVG NT	LENGTH	WIDTH	C.Y
SS+03.42	1.91				
		2.03	46.58	3.75	13.13
SS+50	2.14				
		2.59	24.28	3.75	8.73
SS+74.28	3.04				

Excavation of DI at SS+00
328 NT x $[(6.84/2)^2 \times \pi]$ x 1/27 = 4.46 c.y
26.32 c.y BL 6/4/06

SEE DRAINAGE SHEET # 180

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES
(70.86+2) x 3.75 x 1.38 x 1/27 = 13.76 c.y BL 6/4/06
.875
8.85

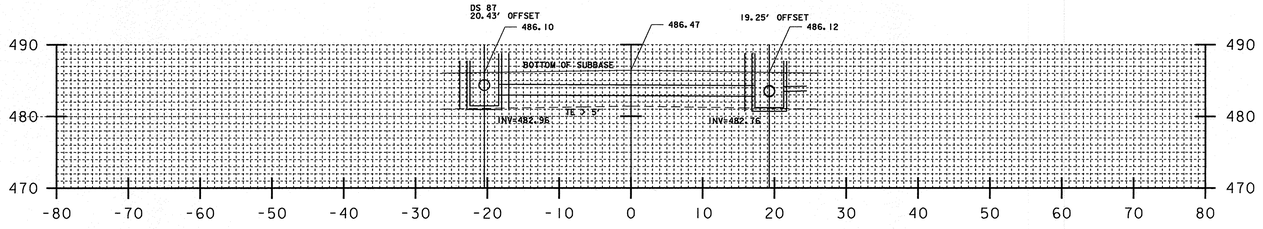
- pipe 72.86' x 3.14 $(.875^2) \div 2 / 27 = -3.24$ cy
5.61 cy 6.8

1/24/08

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED
PLOTTED
AREAS
AREAS CHECKED
BY
DATE

FINAL SURVEY
NOTE BOOK
NO.
SURVEYED
PLOTTED
AREAS
AREAS CHECKED
BY
DATE

DR 87



56+77.66 SAG

CALCULATED AND DRAWN BY TBG 11/1/07
GPA 1/23/08

DR 87

PIPE T.E. < 5'
AREA (FROM CADD) = 112.26 SF * ~~3.6'~~ 3.75 =404.14 CF/27 = ~~14.97~~ 15.59 CY

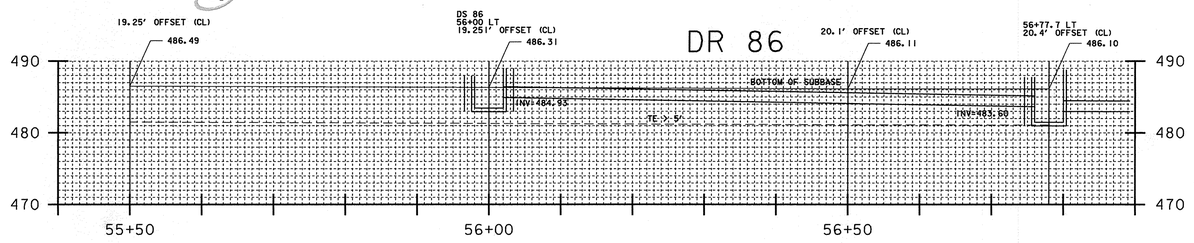
DS 87

STRUCTURE T.E. < 5'
5' * PI(3.42')² = 183.63 CF/27 = 6.80 CY (DAILY WAS INCORRECT) ½ = 7.80 CY

STRUCTURE T.E. > 5'
1.5[((0.80' + .18')/2) * PI(3.42')²] = 26.99 CF/27 = 1.00 CY
TOT= 7.80 CY (UPDATED 1/3/7) (7.44)

DR 87 GRANULAR BACKFILL
(~~3.6'~~ 3.75 * ~~.8'~~ .875 * 33.0') - [((PI (~~.8'~~ .875)²/2) * 33.0')] = 61.86 CF/27 = ~~2.29~~ 2.54 CY (39.67)

USED ~~35.50~~ 38 LF OF 18" CPEP



CALCULATED AND DRAWN BY TBG 11/1/07
GPA 01/23/08

DR 86

PIPE T.E. < 5'
AREA (FROM CADD) = 138.29 SF * ~~3.6'~~ 3.75 =497.84 CF/27 = ~~18.44~~ 19.21 CY

DS 86

STRUCTURE T.E. < 5'
(3.40+ 3.38)/2 * PI(3.42')² = 124.57 CF/27 = 4.61 CY

DR 86 GRANULAR BACKFILL
(~~3.6'~~ 3.75 * ~~.8'~~ .875 * 73.00) - [((PI (~~.8'~~ .875)²/2) * 73.00')] = 136.85 CF/27 = ~~5.07~~ 5.62 CY (87.75)

USED ~~75.50~~ 76.0 LF OF 18" CPEP

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)

FILE NAME: $$$$FILENAME$$$	PLOT DATE: 03-JAN-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 221 OF 239

SHEET #38

Pipe

ROAD TRANSITION

CAMPAD

	58+43.42	58+50	59+00	59+25	59+50	60+00	60+50	60+87.7
E FG	489.81 ✓	489.91 ✓	490.43	490.69 ✓	490.95 ✓	491.25 ✓	491.54 ✓	491.77 ✓
	489.4 ✓	− .42	− .42	− .42	− .42	− .42	− .42	− .42
	− 2.63	489.49 ✓	490.41	490.27	490.53	490.83	491.12	491.35
		− 2.63	− 2.63	1.63	1.63	− 1.63	− 1.63	− 1.63
	486.77 ✓	486.86 ✓	487.38	488.64	488.90 ✓	489.20	489.49	489.72
	− 481.70 ✓	481.68	481.48 58	481.33	481.48 ✓	481.38 ✓	481.28 ✓	481.21 ✓
T.E @ Depth	5.07 ✓	5.18 ✓	~~5.9~~ 5.8	7.11 ✓	7.42 ✓	7.82 ✓	8.21 ✓	8.51 ✓

DS-92 T.E 24" CPP

STA.	L	T.E DEPTH	W/D TH	FT³
58+43.42		5.07		
	6.58	5.125 AVG ✓	4.34	= 146.3 ✓
58+50		5.18		
	50	5.54 AVG ✓	4.34	= 1202.18 ✓
59+00		5.90		
	25	6.305 AVG ✓	4.34	= 705.79 ✓
59+25		7.11 =		
	25	7.265 AVG ✓	4.34	= 788.25 ✓
59+50		7.42 =		
	50	7.62 AVG ✓	4.34	= 1653.54 ✓
60+00		7.82		
	50	8.015 AVG ✓	4.34	= 1739.26 ✓
60+50		8.21 =		
	37.7	8.36 AVG ✓	4.34	= 1367.85 ✓
60+87.7		8.51		

7603.17 ✓ FT³

GRAVEL TRANSITION

COMPAD

DS-92 | ½ Times | 24" CPEP

STA	L		FT³
58+43.42		.07 ✓	
	6.58	.125 ✓ x 4.34 x .5 = 1.78 ✓	
58+50		.18 ✓	
	50	.54 ✓ x 4.34 x .5 = 58.59 ✓	
59+00		.90 ✓	
	25	1.505 ✓ x 4.34 x .5 = 81.65 ✓	
59+25		2.11 ✓	
	25	2.265 ✓ x 4.34 x .5 = 122.88 ✓	
59+50		2.42 ✓	
	50	2.62 ✓ x 4.34 x .5 = 284.27 ✓	
60+00		2.82 ✓	
	50	3.015 ✓ x 4.34 x .5 = 329.12 ✓	
60+50		3.21 ✓	
	37.7	3.36 ✓ x 4.34 x .5 = 274.88 ✓	
60+87.7		3.51 ✓	

1151.17 FT³ ✓

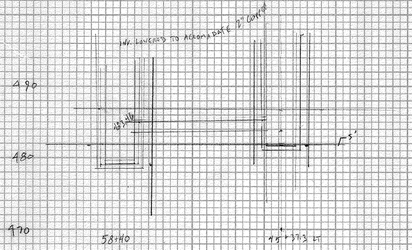
7603.17 + 1151.17 = 8754.34 ✓ FT³ / 27

T.E. DS-92 1/24/08 CP ff = 324.23 CY ✓

TBG 1/24/08

HIGHWAY PLOTTING AID SHEET
PLATE 3-PULL CROSS SECTION-PULL LINE
NATIONAL PRINTOUT
PRINTED IN U.S.A.

DR 90 (ASSUMED STA 45+37.3 LT – US 5 STA 58+10



PIPE 90 L5'd TRENCH EXCAVATION

$A_1 = \frac{7.11' + 20'}{2} \times 14.1' = 192.78$ ft²/27 = 5.68 cy

3.75 ✓

5.88 cy ✓

DR 90 TRENCH EXC. 25' (@ STRUCT.)

3.75' ✓ 4.45 163.11 = 605 cy ✓

$\pi(12)(25ft)^2 \times 5' = 124.39$ ft³ = 4.61 cy

25' depth

$\frac{5' + 7.11'}{2} \times \left[\frac{5' + 7.11'}{2} \times \pi(12)(25ft)^2\right] = 26.21$ ft³/27 = 0.97 cy

TOT = 5.58 cy

6.05 cy ✓

CRUSHER RUN BACKFILL

3.75' x .975 ✓

$= 3.67' \times .08' \times 146.6' = 2.01$ ✓

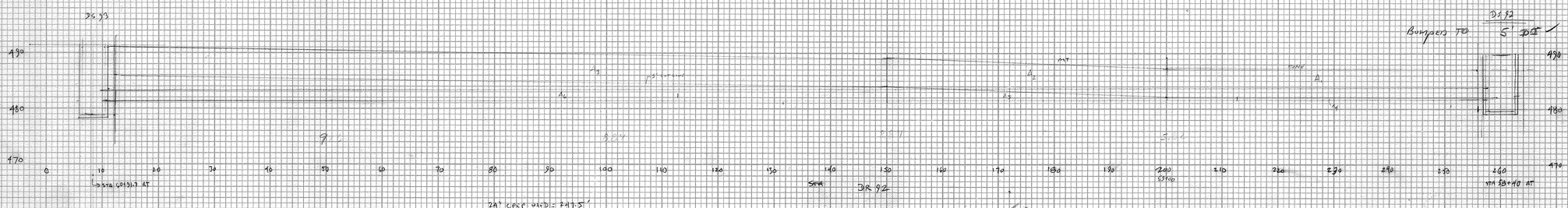
$- \frac{\pi(4.83')^2}{2} \times 16.6' = 16.69$ ft³/27 = 0.62 cy

1.27 cy ✓

BJM 1/24/08

TBG 1/24/08

ORIGINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
DRAWN
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE



DR 92

PIPE T.E. 25'd

$A_1 = 5' \times 55.9' \times 4.1' = 1145.95$ ft³ = 42.13.03

$A_2 = 5' \times 50.1' \times 4.1' = 1027.05$ ft³ = 1087.17

$A_3 = 5' \times 188.8' \times 4.1' = 2845.4$ ft³ = 3011.96

PIPE T.E. 25'd

$A_4 = 1.5 \times \left[\frac{(0.5' \times 4.1')}{2} \times 55.9' \times 4.1'\right] = 154.70$ ft³

$A_5 = 1.5 \times \left[\frac{(0.5' \times 4.5')}{2} \times 50.1' \times 4.1'\right] = 462.17$ ft³

$A_6 = 1.5 \times \left[\frac{(4.5' \times 4.1')}{2} \times 188.8' \times 4.1'\right] = 3430.35$ ft³

TOT = 8665.62 ft³/27 = 320.95 cy

SEE CALCS ATTACHED

24" CORE USED = 247.5'

STRUCT. 92 T.E. 25'd

$= \pi\left(\frac{4.00}{2}\right)^2 \times 5' = 251.02$ ✓

STRUCT. 92 T.E. 25'd (

$1.5\left[\pi\left(\frac{4.00}{2}\right)^2 \times \square\right] = 1200.98$ ft³

$\frac{1200.98}{2.08} = 1156.75$

TOTAL = 1465.66 ft³/27 = 17.25 cy

$\frac{15.46}{2} = 7.73$ cy = 12.82 cy

CRANULAR BACKFILL 11.34'

$= 1.05 \times 145.5' \times 3.67' = 7.88.82$ ✓

$- \pi\left(\frac{4.10'}{2}\right)^2 \times 145.5' = 374.40$ ft³/27 = 13.87 cy

$- \frac{\pi(4.10')^2}{2} \times 16.6' = -312.70$ ✓

426.12/27

15.78 cy ✓

G.B

TBG 1/24/08

GPH 1/25/08

Bumpers TO DR 92

EM EXIST 31 @ 58+40 RT = 6.5' x 4' x 4' (EM 09.05.07 BL)

S.R. = (6.63 x 4 x 4)/27 = 3.93 cy

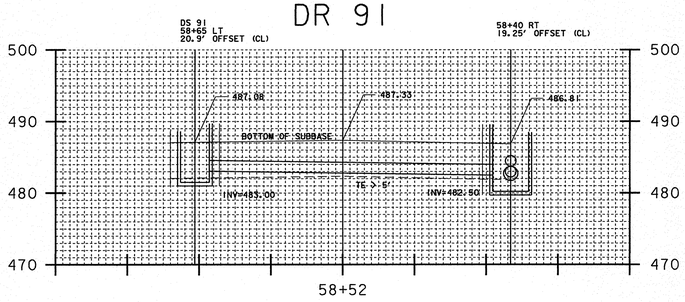
T.R. = (6.5 x 2.63)(4 x 4)/27 = 2.49 cy

TRENCH EXC. = 324.23 + 12.82 = 337.05 cy ✓ 163 06/05/10 REV 1/20/11

BJM 1/24/08

FINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
DRAWN
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

DR 91



CALCULATED AND DRAWN BY TBG 10/1/07

✓ CPH 01/23/08

TBG 1/24/08

DR 91

PIPE T.E. < 5'
AREA (FROM CADD) = 160.92 SF * ~~3.6'~~ 3.75 =579.53 CF/27 = ~~21.46~~ 22.35 CY

DS 91

STRUCTURE T.E. < 5'
5' * PI(3.46')² = 188.05 CF/27 = 6.96 CY

STRUCTURE T.E. > 5' 1.25
1.5[((11.68' + .99' + 1.08')/3) * PI(3.46')²] = 70.52 CF/27 = 2.61 CY
TOT= 9.57 CY

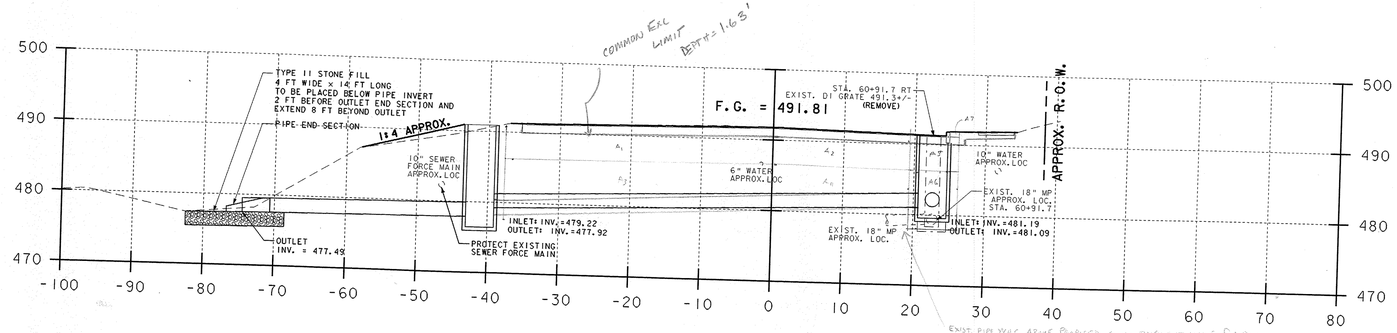
DR 91 GRANULAR BACKFILL
(3.6' * .8' * 39.2') - [((PI(.8')²/2) * 39.2')] = 73.45 CF/27 = ~~2.72~~ 3.02 CY
3.75 .875 .875
USED ~~43.58~~ 44.00 LF OF 18" CPEP

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 03-JAN-2008
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA	CHECKED BY: K. ISHIKURA
E. ATKINS	SHEET 223 OF 239

SHEET #40

DS #93



EXIST. PIPE WAS ABOVE PROPOSED, SO NO PAYMENT MADE FOR EXC.

- PAY SAME DEPTH FOR EXISTING DI & NEW CB
DEPTH = 12'

60+94.24
ASKEW 6° 17' 58.2" RT

- TRENCH EXC. OF EARTH
FOR PIPE/EXC. < 5' DEPTH
A_1 = 5' * 37.3' * 4.1' = 764.65 ft²
A_2 = 5' * 19.1' * 4.1' = 391.55 ft²
FOR PIPE EXC. > 5' DEPTH
A_3 = [(8' + 6.5')/2 * (37.3' + 37.1')/2 * 4.1'] 1.5 = 1635.78 ft²
A_4 = [(6.5' + 5')/2 * 19' * 4.1'] 1.5 = 671.89 ft³
TOTAL FOR PIPE = 3463.87 ft³
* - COMMON EXC = (19+35) x (1.63) x 1.5/27 x 4.1 = 20.05 cy
- TRENCH FOR CATCH BASIN < 5'
A_5 = 5' * π 2.925² = 134.39 ft²
A_7 = 0.7' * 1.4' * 6.85 ft = 6.713 ft³
- TRENCH FOR C.B. > 5'
A_6 = [8.1' * π 2.925²] 1.5 = 326.57 ft³
* - COMMON EXC (1.63 x π/27 x 2.925²) x 1.5 = 2.43 cy
TOTAL = 467.67 ft³
GRAND TOTAL = 3931.54 ft³/27 = 145.61 cy
CALC BY TBG 8.8.7
- COMMON EXC = 20.05 + 2.43 = 22.48 cy
- TRENCH ROCK = 6.14 cy
28.62 cy
TOTAL = 117.84 cy CGB 02/09/10 RCD 1/20/11

1658.66
3486.75
CGB 08/15/07
CGB 02/09/10
3954.42
146.46
V'ed by TBG 8.15.07

TYPE I STONE FOR FRENCH DRAIN (FIELD MEASURED)
6'W x 9'L x 6'd = 324 ft³/27 = 12 cy

GRANULAR BACKFILL (1' UNDER STRUCTURE)
= 1' * π 2.925² = 16.55 ft³/27 = 0.61 cy
1.00 cy

SUBBASE DENSE CRUSHED STONE (TRAFFIC)
STRUCT. = π(2.925²)² * 6"d = 8.28 ft³
PIPE = 4.1' * 0.5"d * 56 = 114.8 ft³
TOTAL = 123.08 ft³/27 = 4.56 cy
FM ON TRENCH WIDTH

24" CORR. PLASTIC PIPE = 59.4 ft
1 ea 4' CONC. C.B. SAY = 60.0 LF

SOLID ROCK = 1.63 x 4 x 4/27 = 0.96 cy
TRENCH ROCK = 5 x 4 x 4/27 = 2.96 cy
> 5' = (12 - 5 - 1.63)/27 x 4 x 4 = 3.18 cy
6.14 cy
CGB 02/09/10
RCD 1/20/11

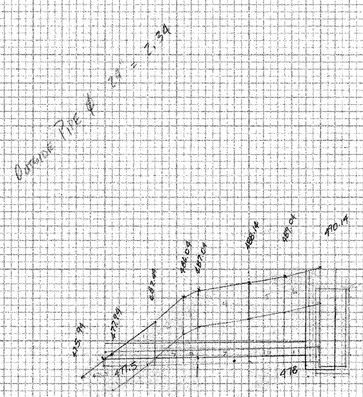
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: $$$$FILENAME$$$	PLOT DATE: 12-JUN-2007
PROJECT LEADER: KEN UPMAL	DRAWN BY: E. ATKINS
DESIGNED BY: K. ISHIKURA, E. ATKINS	CHECKED BY: K. ISHIKURA
	SHEET 224 OF 239

SHEET #41

PLATE 3-FULL CROSS SECTION-PULL LINE
HISTORICAL PRESERVATION
PERMITTED IN N.R.A.

NEVADA DEPARTMENT OF TRANSPORTATION
RIGHT OF WAY DIVISION
SURVEY
ORIGINAL
SURVEYED
PLOTTED
DRAWN
CHECKED
DESIGNED
CHECKED
APPROVED
DATE



TRENCH EARTH FOR RELAYING PIPE (LAST 20')
AT ORIGINAL DESIGN
INVERT = 477.82
OUTLET = 477.49
≤5 5x 20 x 4.11 = 410
≥5 [(3.5xA)x(4x2)+(5xA)] x 4.1 x 1.5 = 367.5
777.5/27 = 28.57 cy

TOTAL TRENCH EARTH FOR DS94
NEW PIPE & NEW CB VOL= 76.99 CY
EXPLORATORY TO LOCATE SEWER PIPE VOL= 10 CY
TEMP EXC FOR NEW CB VOL= 19.11 CY
RELAYING OF LAST 20' PIPE VOL= 28.57 CY
Σ = 134.67 CY
CB 02/04/10
DS 1/20/11

DS-94 24" CPSP SL

204.20 TRENCH EARTH FOR PIPE 60+94.24 LT
EXC 2.5' S.T. B Y.B.V 12.1 yd²
-AREA 1 = ((5+5.7)/2)x((2.5+5.0)/2) x 4.39 = 114.86 ft²
-AREA 2 = ((5+5.0)/2)x((2.5+5.0)/2) x 4.39 = 107.02 ft²
-AREA 3 = 5'x 21' x 4.39' = 461.55 ft² 45.57
-AREA 4 = 7'x 4.3'x 4.39' = 132.13 ft² = 143.86
-AREA 5 = 5'x((5'+5')/2)x 4.39' = 109.75 ft² 108.58
-AREA 6 = 28'x 4.3'x 4.39' = 26.38 ft² 74.43
TOTAL = 580 ft³
÷ 27 = 21.49
6" UNDERCUT EXC GRANULAR BACKFILL
0.5'x((28'+21')/2)x4.39' = 15.19
TOTAL EXC 45°: 539.71 ft³
EXC 2.5'
-AREA 7 = [((11'+5')/2)x((4+5.0')/2)x4.39']x1.5 = 72.11 ft³ = 76.26
-AREA 8 = [((8'+5')/2)x((4+5.0')/2)x4.39']x1.5 = 59.20 ft³ = 62.96
-AREA 9 = [((17'+11')/2)x((5.0'+6')/2)x4.39']x1.5 = 248.17 ft³ 263.25
-AREA 10 = [((14'+17')/2)x((6'+5.0')/2)x4.39']x1.5 = 195.88 ft³ = 207.34
-AREA 11 = [((17'+17')/2)x((5.0'+5.0')/2)x4.39']x1.5 = 164.99 ft³ = 174.64
TOTAL = 791.68 ft³ = 792.27
6" UNDERCUT EXC GRANULAR BACKFILL
0.5'x((28'+21')/2)x4.39' = 71.61
TOTAL EXC >5': 864.33 ft³
÷ 27 = 32.01
TOTAL = 856.68

204.20 TRENCH EARTH FOR STRUCTURES
EXC 2.5' π(3.42)² x 5' = 184.80 ft³
EXC >5' [π(3.42)²+7.8²]x1.5 = 543.32 ft³
TOTAL TRENCH EXC. = 184.80 ft³ + 543.32 ft³ + 540.71 ft³ + 856.68 ft³ = 2125.51 ft³
÷ 27 = 78.72 cy
2078.84
81.99 cy

204.30 GRANULAR BACKFILL
= 48.11 ft³ + 45.11 ft³ = 93.31 ft³/27 = 3.46 cy
13.73 + 47.29 = 61.02
½ (π x 3.42²) x 32.5 = 596.55 ft³
-½(π x 3.42²) x 32.5 = 596.55 ft³ = 596.55/27 = 22.09
69.85 = 70.15/27 = 3.53
TOTAL BACKFILL = 5.81 cy
5.81 cy

(32.5 x 4.39 x 0.5)/2 = 2.61 cy
[(32.5 x 1.17 x 4.39) + ((17'x1.17')/2)(32.5)] x 1/27 = 3.52
Σ = 6.13 = 6.11

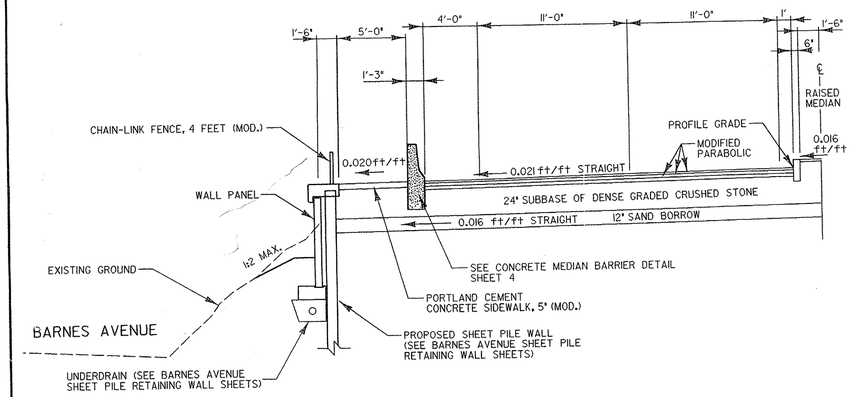
OK

SHEET 42

TYPICAL SECTIONS
US ROUTE 5

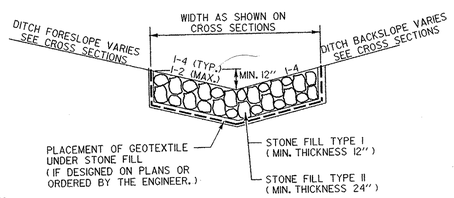
MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT (TOTAL DEPTH ALL LAYERS)	+/- 1/4"
SUBBASE	+/- 1"
GRANULAR BORROW	+/- 1"
SAND BORROW	+/- 1"

1¾" BITUMINOUS CONCRETE PAVEMENT IN ONE LIFT (TYPE IIIS PG58-34)
2¾" BITUMINOUS CONCRETE PAVEMENT IN ONE LIFT (TYPE IIS PG58-34)
3" BITUMINOUS CONCRETE PAVEMENT IN ONE LIFT (TYPE IS PG58-34)
24" SUBBASE OF DENSE GRADED CRUSHED STONE
12" SAND BORROW (STA. 21+45 - 38+50)



NORMAL SECTION WITH RAISED MEDIAN AND SHEET PILE RETAINING WALL ALONG BARNES AVENUE

NOT TO SCALE



NOTES:

1) EXCAVATION PAID FOR AS COMMON EXCAVATION.
2) ALL SLOPES ARE TYPICAL UNLESS OTHERWISE INDICATED ON CROSS SECTIONS.

TYPICAL STONE LINED DITCH (NEXT TO SIDEWALK)

NOT TO SCALE

SEEDING FORMULA
LOW GROW /FINE FESCUE SEEDING MIX

% WT.	LBS./A.	NAME	PUR %	GERM %
38.0	45.6	CREEPING RED FESCUE	98	85
29.0	34.8	SPARTEN HARD FESCUE	95	90
15.0	18.0	AZAY SHEEPS FESCUE	85	90
15.0	18.0	ANNUAL RYE GRASS	95	85
3.0	3.6	INERTS		
100.00	120.0			

GENERAL NOTES

SEED MIXTURE: SHALL BE APPLIED AT A RATE OF 120 LB/ACRE AND SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.

SEED: PERCENT OF SEED, CROP, WEED OR INERT MAY VARY +/- 2%. VARIETIES OF GRASSES MAY BE SUBSTITUTED ONLY WITH APPROVAL FROM RESIDENT ENGINEER.

FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 LBS./ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

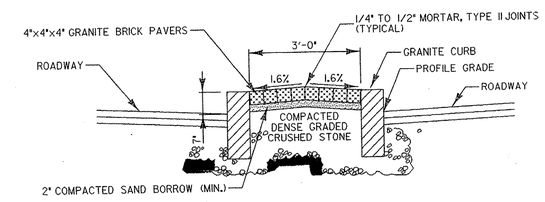
MOWING: RECOMMENDED EARLY MOWING ONCE OR TWICE WHEN GRASS REACHES 6" HEIGHT MAXIMUM TO PREVENT BROADLEAF WEED COMPETITION DURING ESTABLISHMENT PERIOD.

TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

MARKER POSTS: TO BE PLACED AS INDICATED OR AS DIRECTED BY THE ENGINEER.

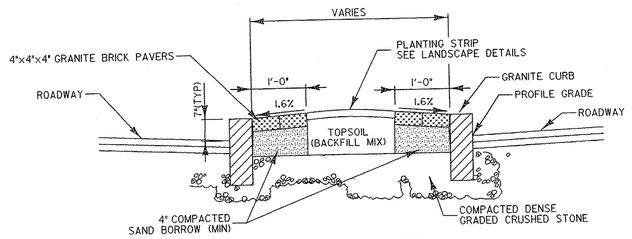
SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B - 5.

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.015 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.



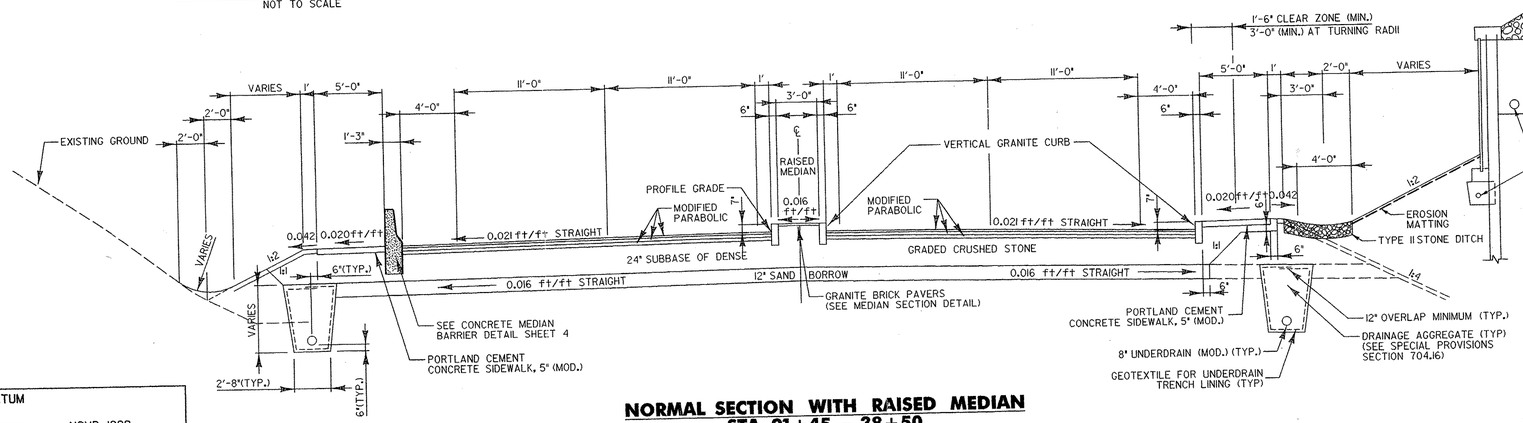
TYPICAL MEDIAN SECTION WITH FULL BRICK PAVING

NOT TO SCALE

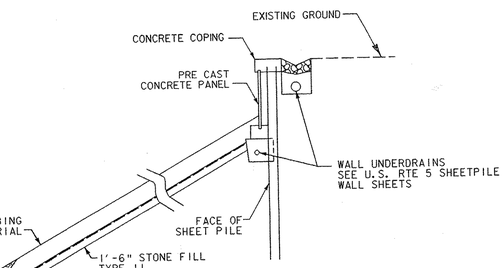


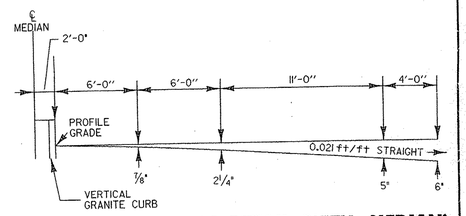
TYPICAL MEDIAN SECTION WITH BRICK PAVING EDGING

NOT TO SCALE



NORMAL SECTION WITH RAISED MEDIAN
STA. 21+45 - 38+50





MODIFIED PARABOLIC DETAIL (WITH MEDIAN)

NOT TO SCALE

NOTE: FINISHED GRADE ON CROSS SECTIONS INDICATES PROPOSED CENTERLINE ELEVATION (TOP OF MEDIAN WHERE APPLICABLE)

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

STATE OF VERMONT · DONALD CRAIG WORTH · NO. 6087 Civil · LICENSED PROFESSIONAL ENGINEER · 3/17/08

PROJECT: HARTFORD	PROJECT NO.: RS 0113(40)
DESIGN FILE NAME: ... z86c027typdet.DGN IPARM FILE NAME: MODIFIED FROM ORIGINAL PLAN SET	PLOT DATE: 3/13/2008 SURVEY DATE: 1/87 DRAWN BY: G. BARRETT SHEET: 1 OF 14

CONSTRUCTION SEQUENCE

1.) EXCAVATE / CONSTRUCT A WORKING PAD APPROXIMATELY 30 FEET WIDE IN FRONT OF (i.e. TO THE WEST OF) AND ALONG THE ALIGNMENT OF THE PLANNED UPPER RETAINING WALL. DRIVE TEMPORARY H-PILES ON UNEXCAVATED SLOPE AS EXCAVATION PROGRESSES ALONG SLOPE USING A 50-TON CRANE THAT WILL MOVE ALONG THE WORKING PAD.

2.) USING THE SAME 50-TON CRANE THAT WILL MOVE ALONG THE WORKING PAD FROM STEP ONE, INSTALL THE UPPER RETAINING WALL AND DRAINAGE COMPONENTS ASSOCIATED WITH THE UPPER RETAINING WALL.

3.) EXCAVATE TO BOTTOM OF STONE FILL GRADE FROM THE UPPER RETAINING WALL DOWN TO THE ELEVATION OF THE TOP OF THE LOWER WALL IN APPROXIMATELY 25-FOOT SECTIONS. CREATE A WORKING PAD AT THE ELEVATION OF THE TOP OF THE LOWER RETAINING WALL, WHICH WILL RESULT IN A BERM IN FRONT OF THE LOWER RETAINING WALL ALIGNMENT. THIS BERM WILL BE LEFT IN PLACE UNTIL AFTER STEP 7 IS COMPLETED.

A. INSTALL DRAINAGE COMPONENTS BEHIND ALIGNMENT OF LOWER RETAINING WALL.

B. FILL IN 25-FOOT CUT SECTION WITH TYPE II ROCK FILL.

4.) INSTALL LOWER RETAINING WALL.

5.) CREATE TYPE II ROCKFILL WORKING PAD MID-SLOPE BETWEEN THE UPPER AND LOWER RETAINING WALLS.

6.) INSTALL THE PRE-CAST CONCRETE PANELS ON THE UPPER RETAINING WALL USING 50-TON CRANE MOVING ALONG WORKING PAD. CONSTRUCT CAST-IN-PLACE CONCRETE COPING ON TOP OF WALL.

7.) INSTALL GRUBBING AND REMOVE THE ROCKFILL WORKING PAD AS GRUBBING IS PLACED.

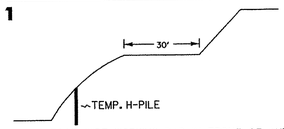
8.) EXCAVATE IN FRONT OF (i.e. TO THE WEST OF) THE LOWER RETAINING WALL AND REMOVE TEMPORARY PILES.

9.) INSTALL DRAINAGE COMPONENTS IN FRONT OF THE LOWER RETAINING WALL.

10.) INSTALL THE PRE-CAST CONCRETE PANELS ON THE LOWER RETAINING WALL. CONSTRUCT CAST-IN-PLACE CONCRETE COPING ON TOP OF WALL.

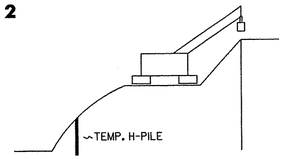
IN GENERAL, FOR ANY AND ALL EXCAVATION THAT IS REQUIRED IN FRONT OF WALLS, THE CONTRACTOR SHOULD EXCAVATE AND BACK FILL IN SECTIONS NOT GREATER THAN 25 FEET WIDE. WHERE REQUIRED BY OSHA, OR AS OTHERWISE STATED (e.g. IN FRONT OF THE LOWER WALL), TRENCH BOXES MUST BE USED WHEN EXCAVATING.

STEP 1



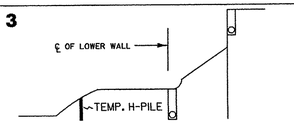
- EXCAVATE 30-FOOT WIDE WORKING PAD IN FRONT OF AND ALONG ALIGNMENT OF THE PLANNED UPPER WALL.
- DRIVE TEMPORARY H-PILE ON EXCAVATED SLOPE AS EXCAVATION PROGRESSES ALONG SLOPE USING 50-TON CRANE.

STEP 2



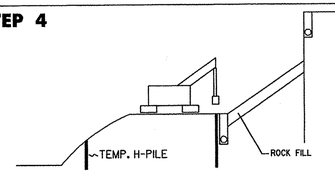
- USING 50-TON CRANE, INSTALL THE UPPER WALL AND DRAINAGE COMPONENTS ASSOCIATED WITH THE UPPER WALL.

STEP 3



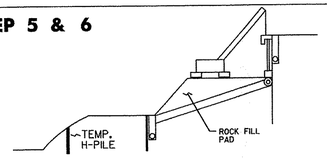
- EXCAVATE TO BOTTOM OF STONE FILL GRADE DOWN TO ELEVATION OF LOWER WALL IN 25-FOOT SECTIONS. CREATE WORKING PAD / BERM AT ELEVATION OF LOWER WALL.
- INSTALL DRAINAGE BEHIND LOWER WALL ALIGNMENT AND FILL CUT SECTION WITH TYPE II ROCKFILL.

STEP 4



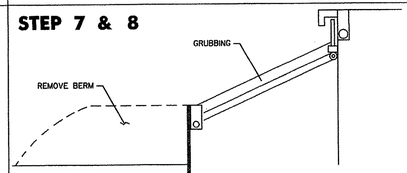
- INSTALL LOWER WALL.

STEP 5 & 6



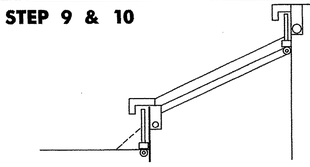
- CREATE TYPE II ROCKFILL WORKING PAD MID-SLOPE BETWEEN UPPER AND LOWER WALLS.
- INSTALL THE PRE-CAST CONCRETE PANELS ON THE UPPER WALL USING 50-TON CRANE MOVING ALONG PAD.
- CONSTRUCT CAST-IN-PLACE COPING ON TOP OF UPPER WALL.

STEP 7 & 8

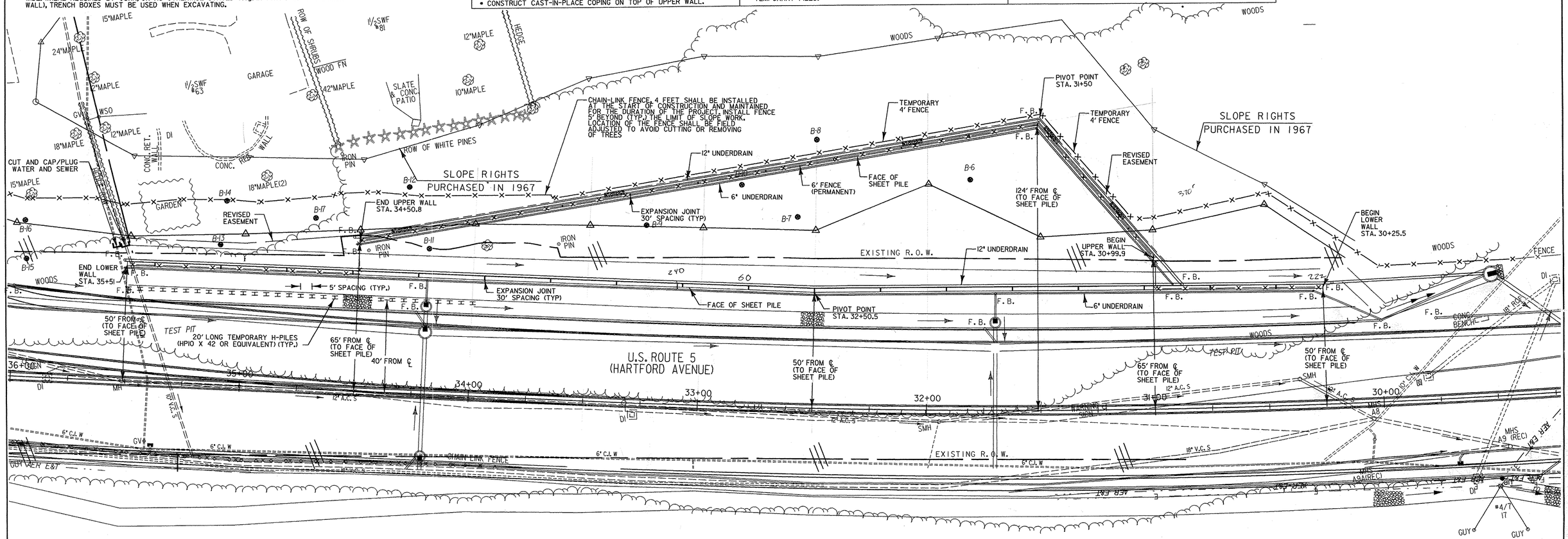


- INSTALL GRUBBING AND REMOVE ROCKFILL PAD AS GRUBBING IS REPLACED.
- EXCAVATE IN FRONT OF LOWER WALL AND REMOVE TEMPORARY PILES.

STEP 9 & 10



- INSTALL DRAINAGE COMPONENTS IN FRONT OF LOWER RETAINING WALL.
- INSTALL PRE-CAST PANELS ON LOWER WALL AND CONSTRUCT CAST-IN-PLACE COPING ON TOP OF WALL.



PLAN VIEW - SHEET PILE WALL

NOTE:
1. PROPOSED WATER AND SEWER LAYOUT NOT SHOWN.
2. WALL OFFSETS TO FACE OF SHEET PILE.

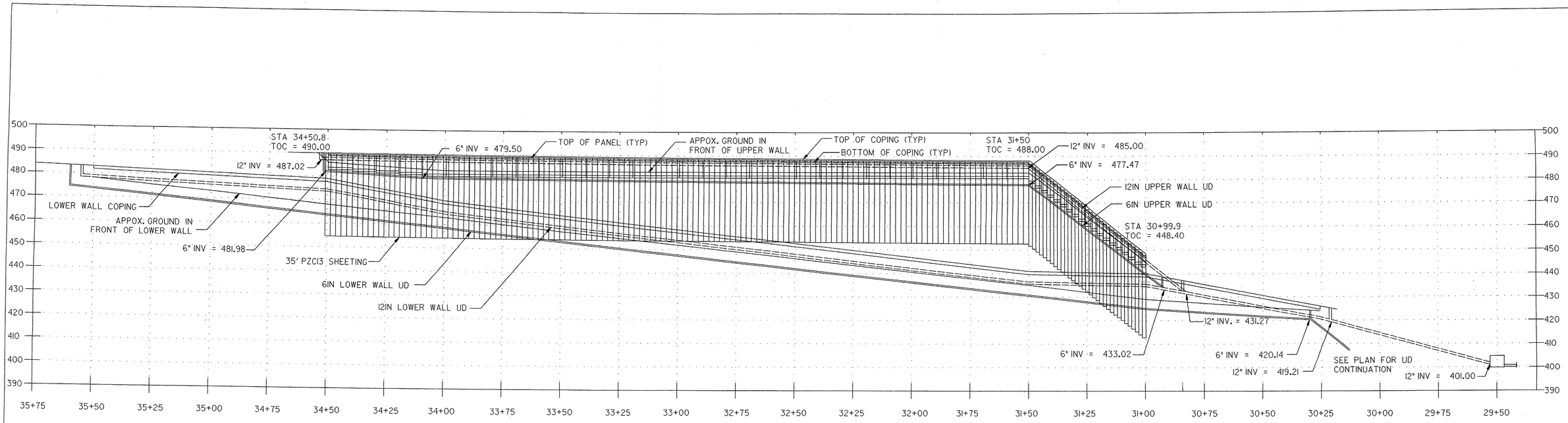
DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

0 20 40
SCALE

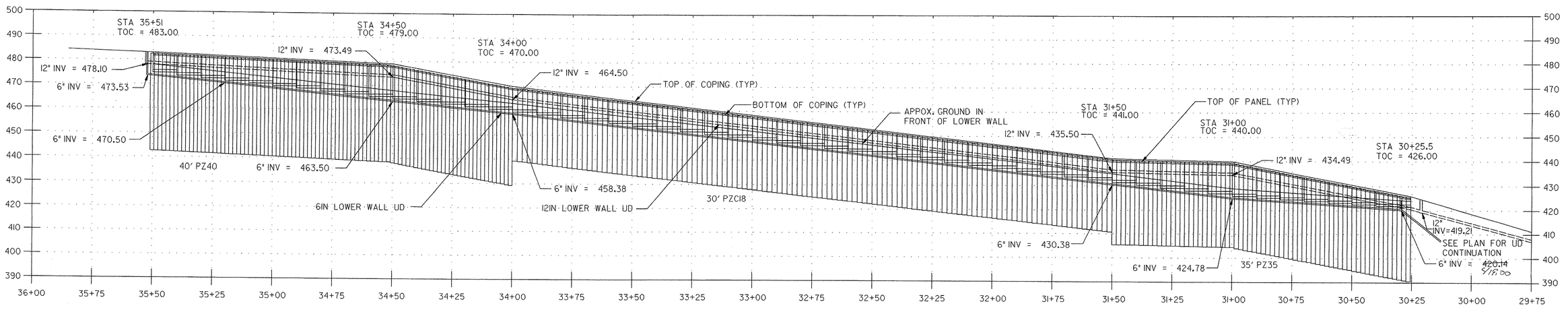
PROJECT:	PROJECT NO.:
HARTFORD	RS 0113(40)

DESIGN FILE NAME: ...z86c027walldet.DGN
IPARM FILE NAME:
MODIFIED FROM ORIGINAL PLAN SET.

PLOT DATE: 3/13/2008
SURVEY DATE: 1/87
DRAWN BY: G. BARRETT
SHEET: 2 OF 14



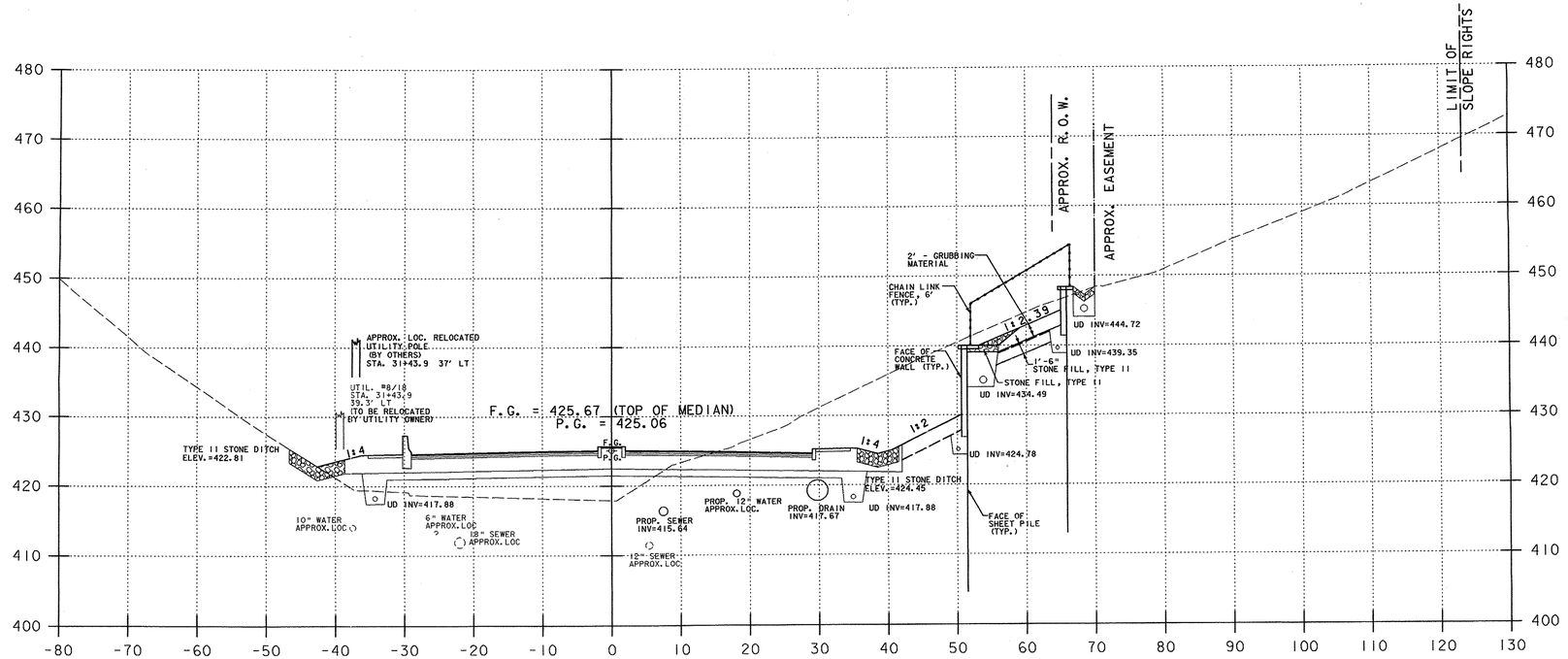
UPPER WALL PROFILE



LOWER WALL PROFILE

0 20 40
SCALE

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: .lower wall elevation view.dgn	PLOT DATE: 3/13/2008
PROJECT LEADER:	DRAWN BY: G. BARRETT
DESIGNED BY: D. HOWEY	CHECKED BY: D. WOTRING
	SHEET 3 OF 14



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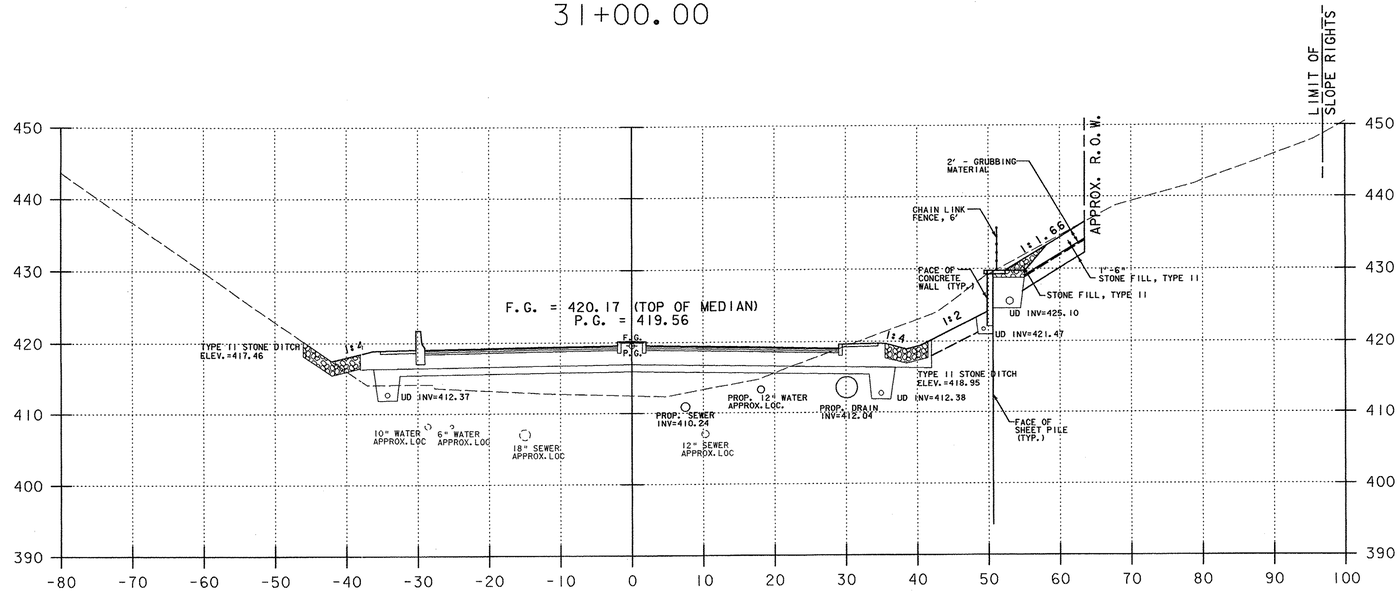


30+50.00

U.S. ROUTE 5
HARTFORD AVENUE

NOTES:

1) REFER TO ROADWAY LAYOUT AND UTILITY LAYOUT SHEETS FOR PROPOSED ABANDONMENT, REMOVAL, OR PROTECTION REQUIREMENTS OF EXISTING UTILITIES IN CONFLICT WITH PROPOSED WORK.
2) THE WALL SHOWN ON THE SECTIONS IS FOR PRESENTATION ONLY. SEE U.S. RTE. 5 SHEET PILE WALL PLAN AND PROFILE SHEETS AND DETAIL SHEETS FOR CONSTRUCTION REQUIREMENTS.

LEGEND:

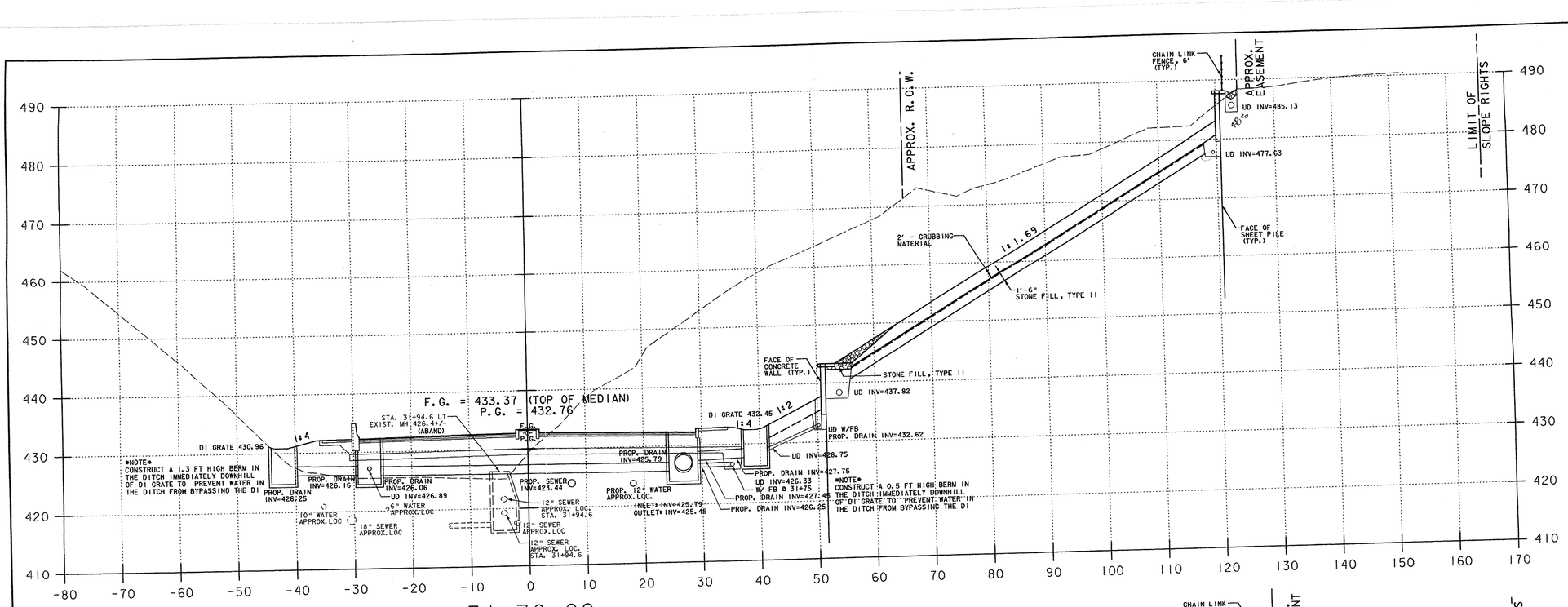
F.G. FINISHED GRADE

P.G. PROFILE GRADE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: ...z86c027xsl.DGN
PROJECT LEADER:
DESIGNED BY: D. HOWEY

PLOT DATE: 3/13/2008
DRAWN BY: T. DUGUAY
CHECKED BY: D. WOTRING
SHEET 4 OF 14



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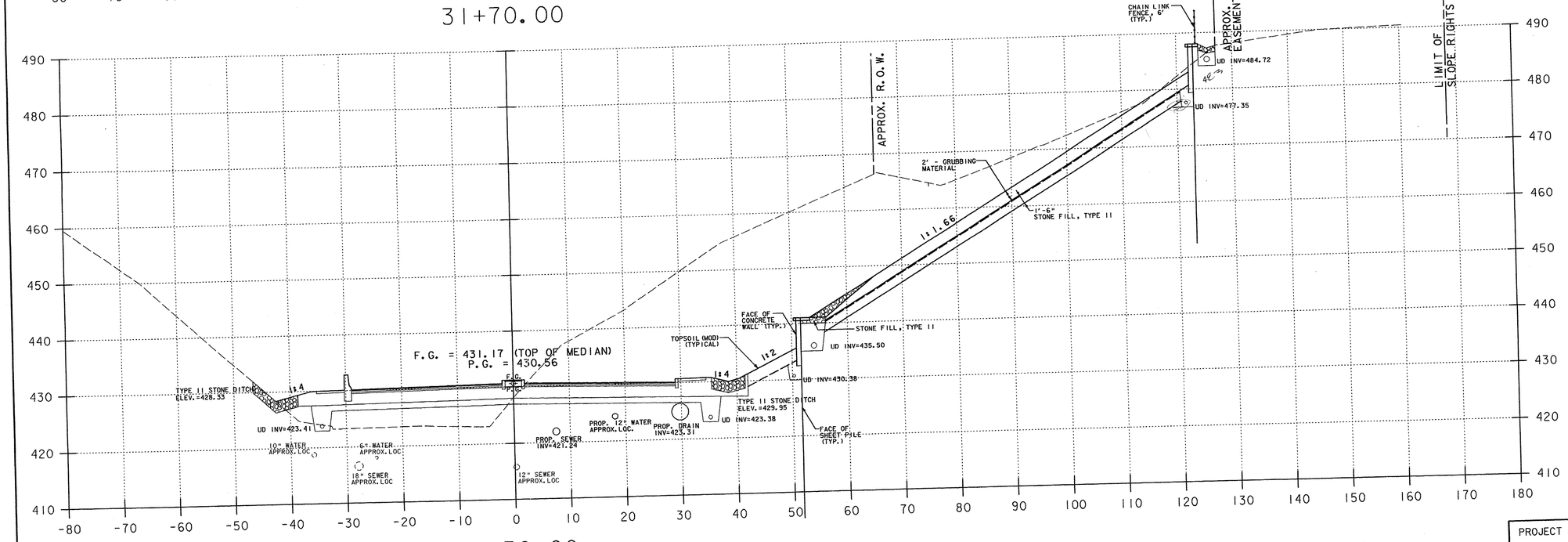

31+50.00

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LEGEND:

F.G. FINISHED GRADE

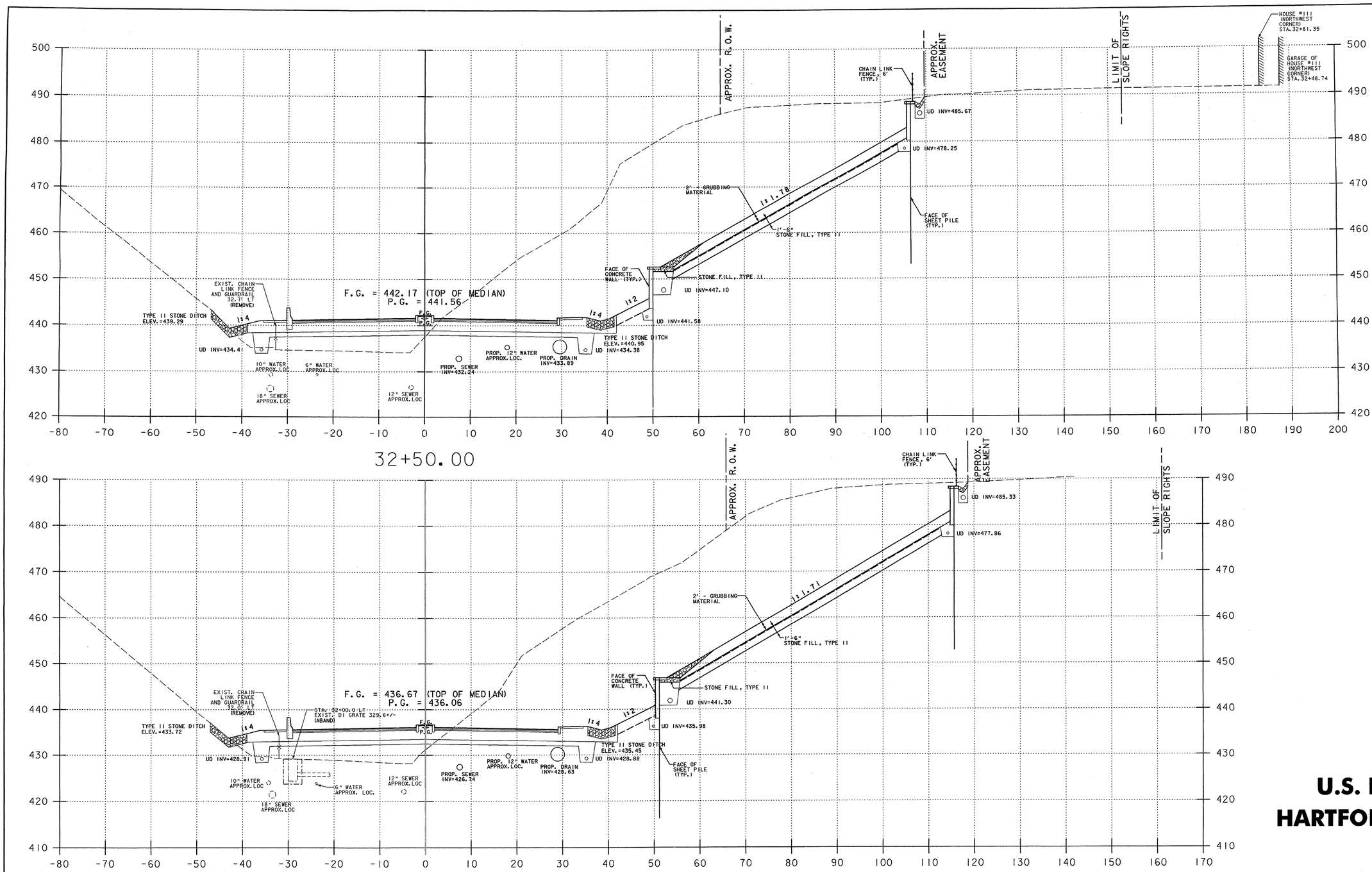
P.G. PROFILE GRADE

U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: ...z86c027xsl.DGN
PROJECT LEADER:
DESIGNED BY: D. HOWEY

PLOT DATE: 3/13/2008
DRAWN BY: T. DUGUAY
CHECKED BY: D. WOTRING
SHEET 5 OF 14



U.S. ROUTE 5
HARTFORD AVENUE

NOTES:

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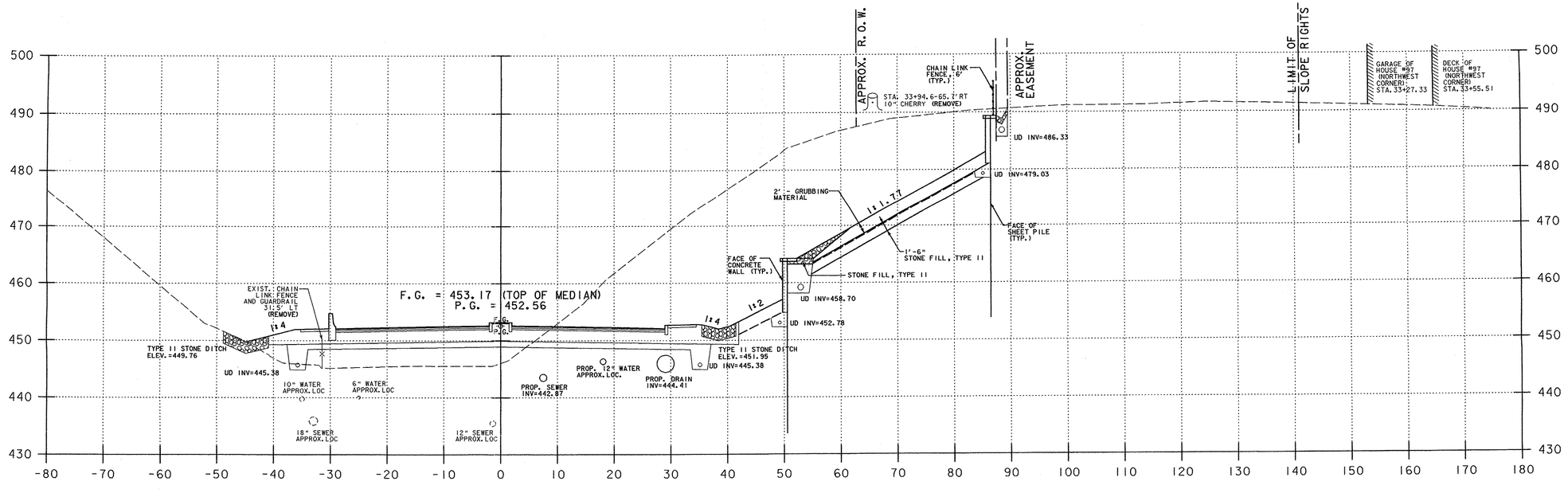
LEGEND:

F.G. FINISHED GRADE
P.G. PROFILE GRADE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: ...z86c027xsl.DGN
PROJECT LEADER:
DESIGNED BY: D. HOWEY
PLOT DATE: 3/13/2008
DRAWN BY: T. DUGUAY
CHECKED BY: D. WOTRING
SHEET 6 OF 14



U.S. ROUTE 5
HARTFORD AVENUE

NOTES:

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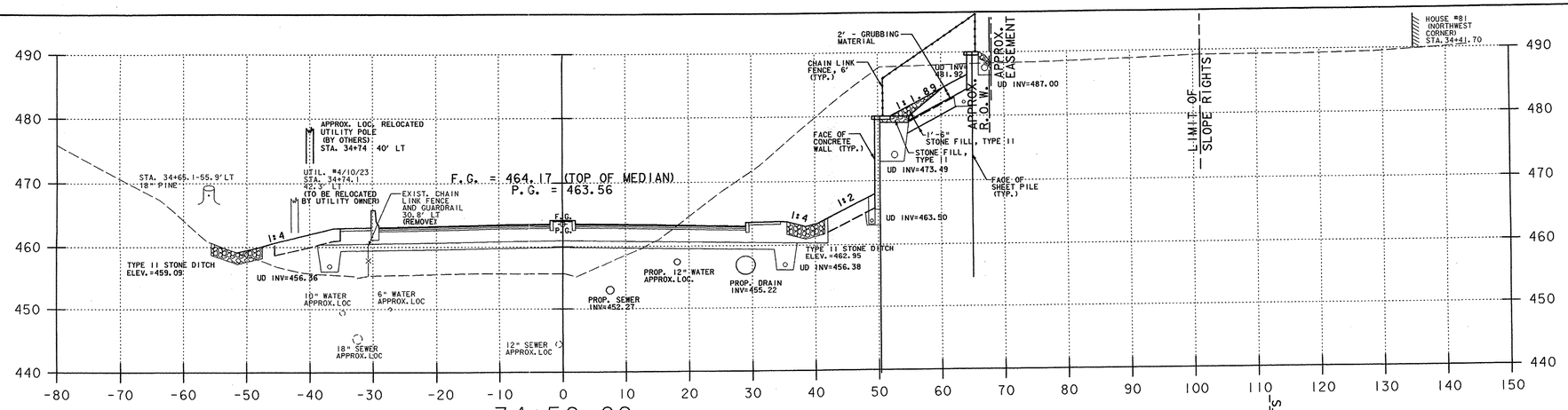
LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: ...z86c027xsl.DGN
PROJECT LEADER:
DESIGNED BY: D. HOWEY
PLOT DATE: 3/13/2008
DRAWN BY: T. DUGUAY
CHECKED BY: D. WOTRING
SHEET 7 OF 14



LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

NOTES:

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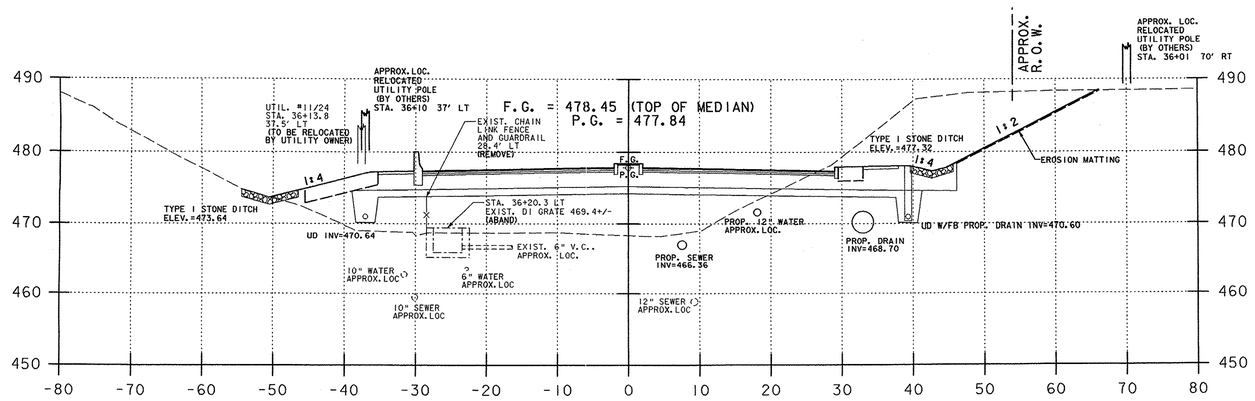
U.S. ROUTE 5
HARTFORD AVENUE

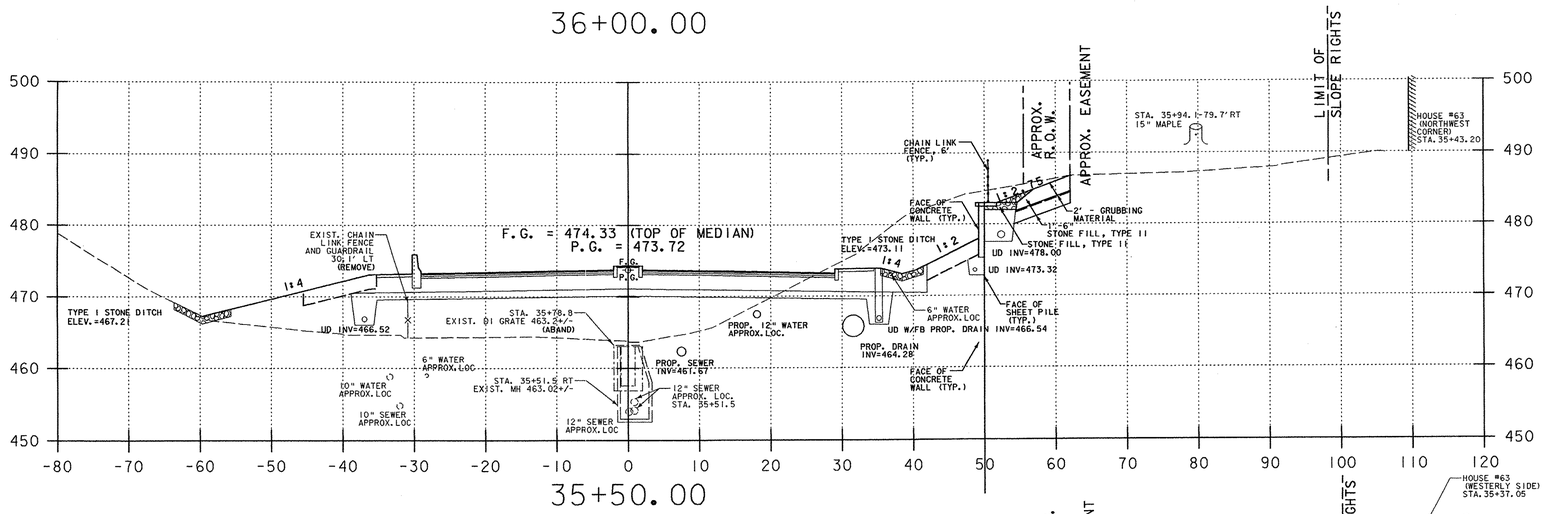
PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: ...z86c027xsl.DGN
PROJECT LEADER:
DESIGNED BY: D. HOWEY

PLOT DATE: 3/13/2008
DRAWN BY: T. DUGUAY
CHECKED BY: D. WOTRING
SHEET 8 OF 14



36+00.00



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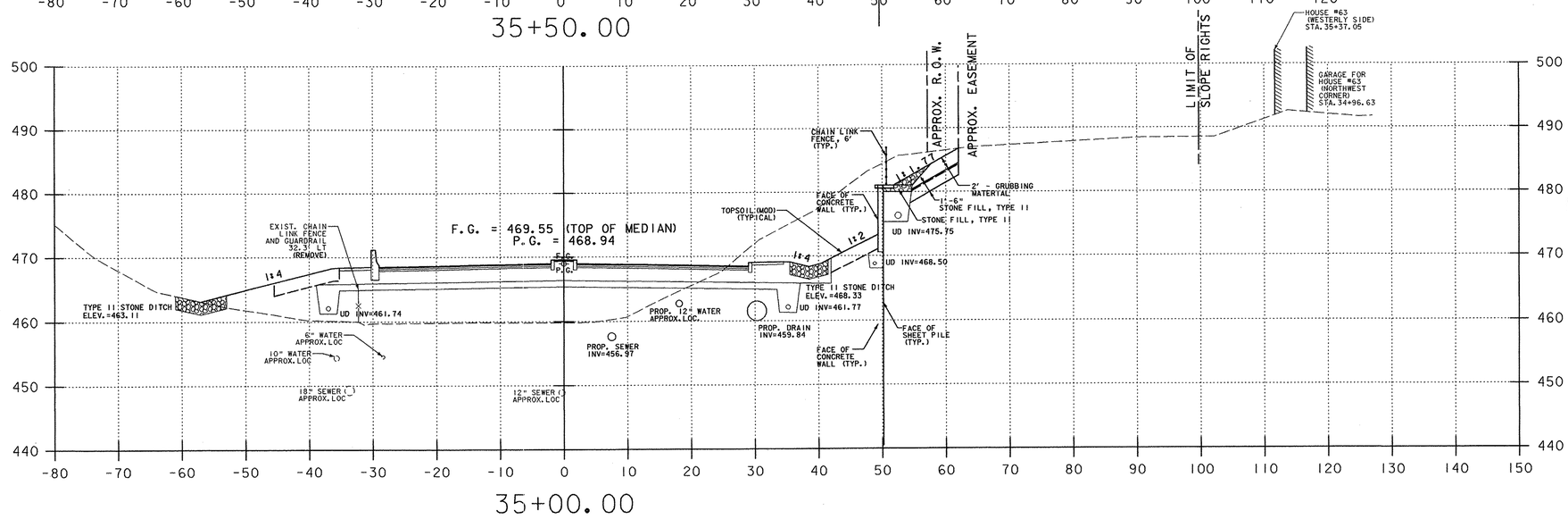

35+00.00

LEGEND:

F.G. FINISHED GRADE

P.G. PROFILE GRADE

NOTES:

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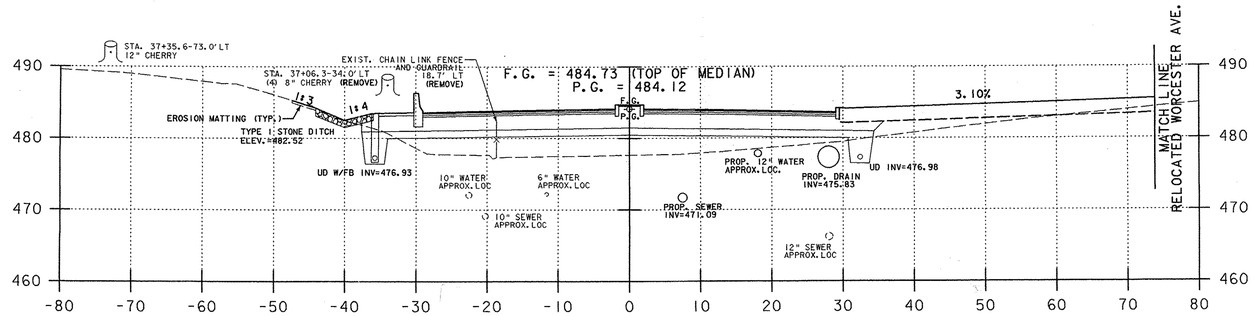
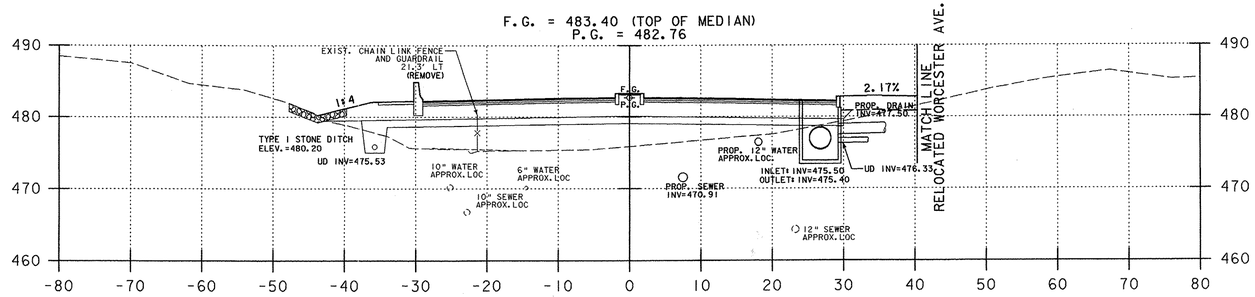
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

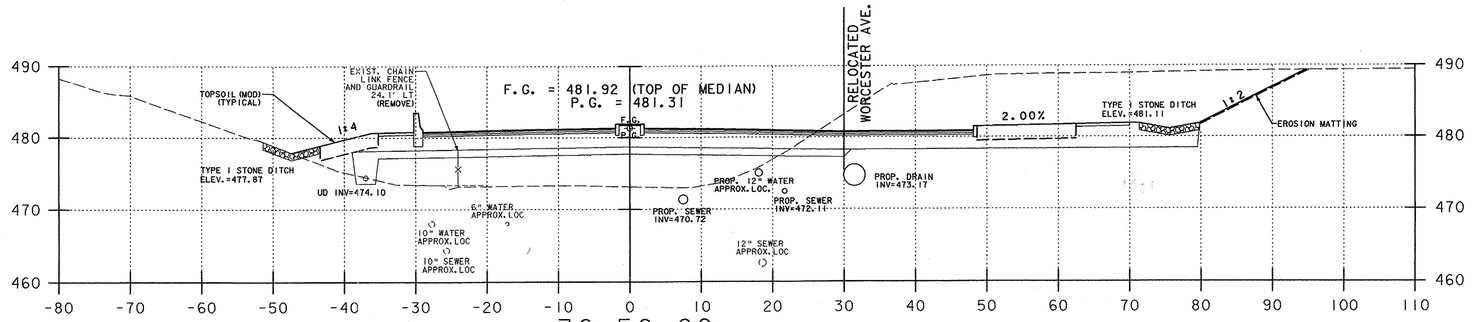
FILE NAME: ...z86c027xsl.DGN
PROJECT LEADER:
DESIGNED BY: D. HOWEY
PLOT DATE: 3/13/2008
DRAWN BY: T. DUGUAY
CHECKED BY: D. WOTRING
SHEET 9 OF 14



37+00.00



36+74.45



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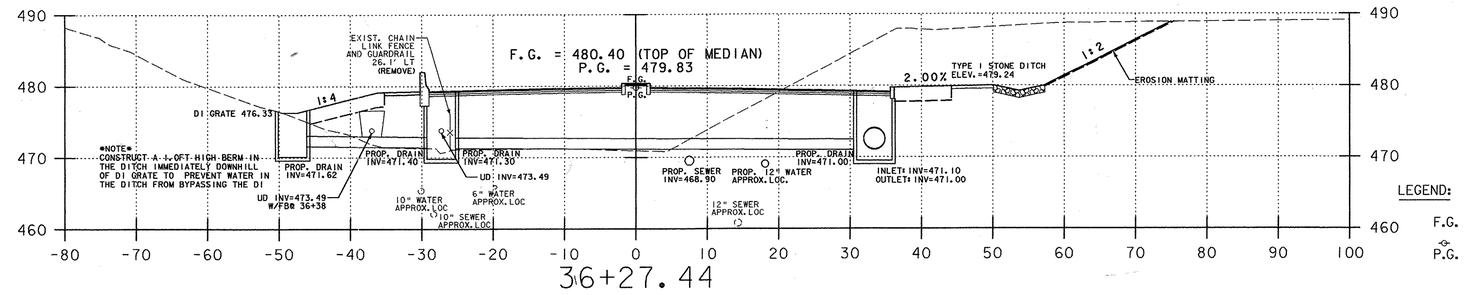

36+27.44

36+29 = 0+00 WORCESTER AVE.

NOTES:

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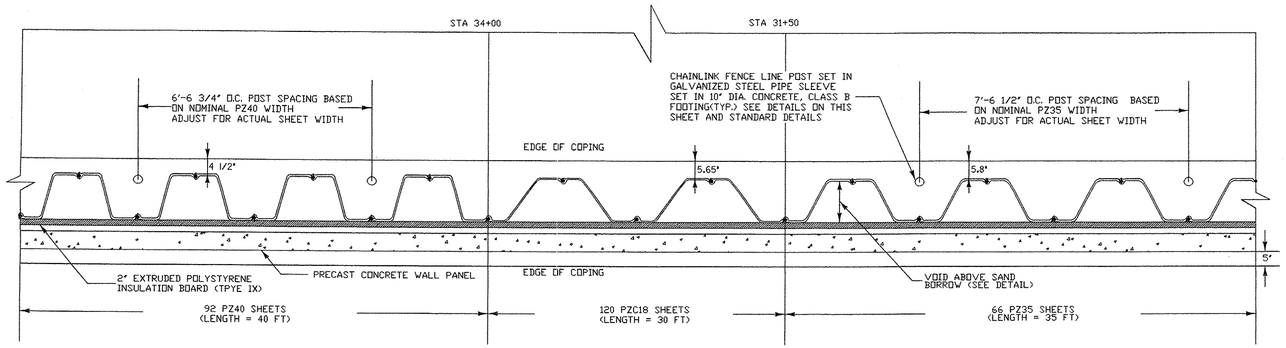
LEGEND:

F.G. FINISHED GRADE
P.G. PROFILE GRADE

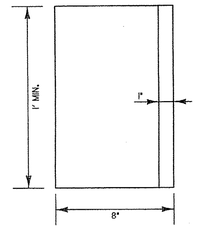
U.S. ROUTE 5
HARTFORD AVENUE

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

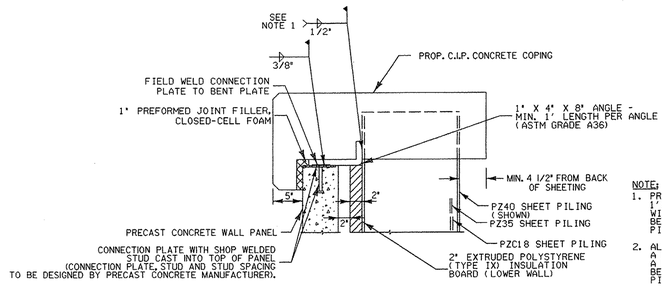
FILE NAME: ...z86c027xsl.DGN
PROJECT LEADER:
DESIGNED BY: D. HOWEY
PLOT DATE: 3/13/2008
DRAWN BY: T. DUGUAY
CHECKED BY: D. WOTRING
SHEET 10 OF 14



TYPICAL TOP OF COPING PLAN
SCALE: 1/2" = 1'



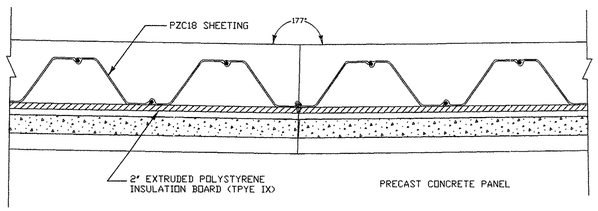
TOP OF ANGLE DETAIL
N.T.S.



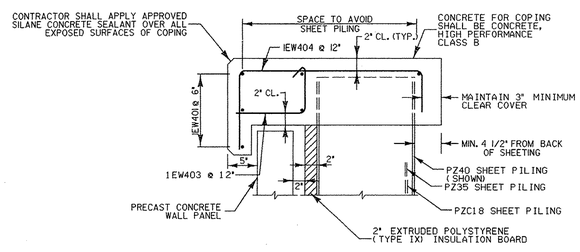
CONNECTION DETAIL WITH ANGLE (LOWER WALL)
SCALE: 1"= 1'

NOTE:
1. PROVIDE A MINIMUM OF FOUR 1' ANGLES PER CONCRETE PANEL WITH A MINIMUM OF 8" OF WELD BETWEEN ANGLE AND SHEET PILING, PER ANGLE.
2. ALTERNATIVELY, ONE ANGLE A MINIMUM OF 4' LONG WITH A MINIMUM OF 32" OF WELD BETWEEN THE ANGLE AND SHEET PILING MAY BE USED.
3. PRECAST PANELS TO BE DESIGNED BY MANUFACTURER.

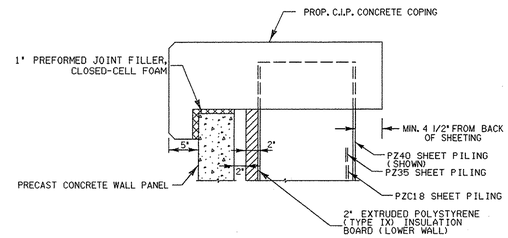
LOWER WALL COPING REINFORCEMENT TABLE									
EA.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	J
108	4	30'-0"	IEW401	STR					
528	4	2'-2"	IEW403	21	0'-7"	0'-8"	1'-0"		0'-5"
528	4	4'-4"	IEW404	17		0'-7"	2'-7 1/8"	1'-1"	
MINIMUM LAP SPLICE LENGTH SHALL BE 45 INCHES FOR COPING REINFORCING STEEL.									



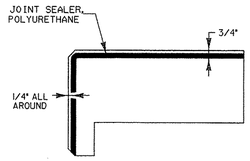
LOWER WALL PIVOT DETAIL
N.T.S.



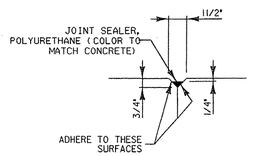
COPING REINFORCING DETAIL (LOWER WALL)
SCALE: 1"= 1'



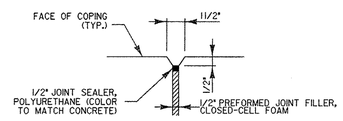
CONNECTION DETAIL BETWEEN ANGLES (LOWER WALL)
SCALE: 1"= 1'



LOWER WALL
TYPICAL CONSTRUCTION JOINT DETAIL
N.T.S.

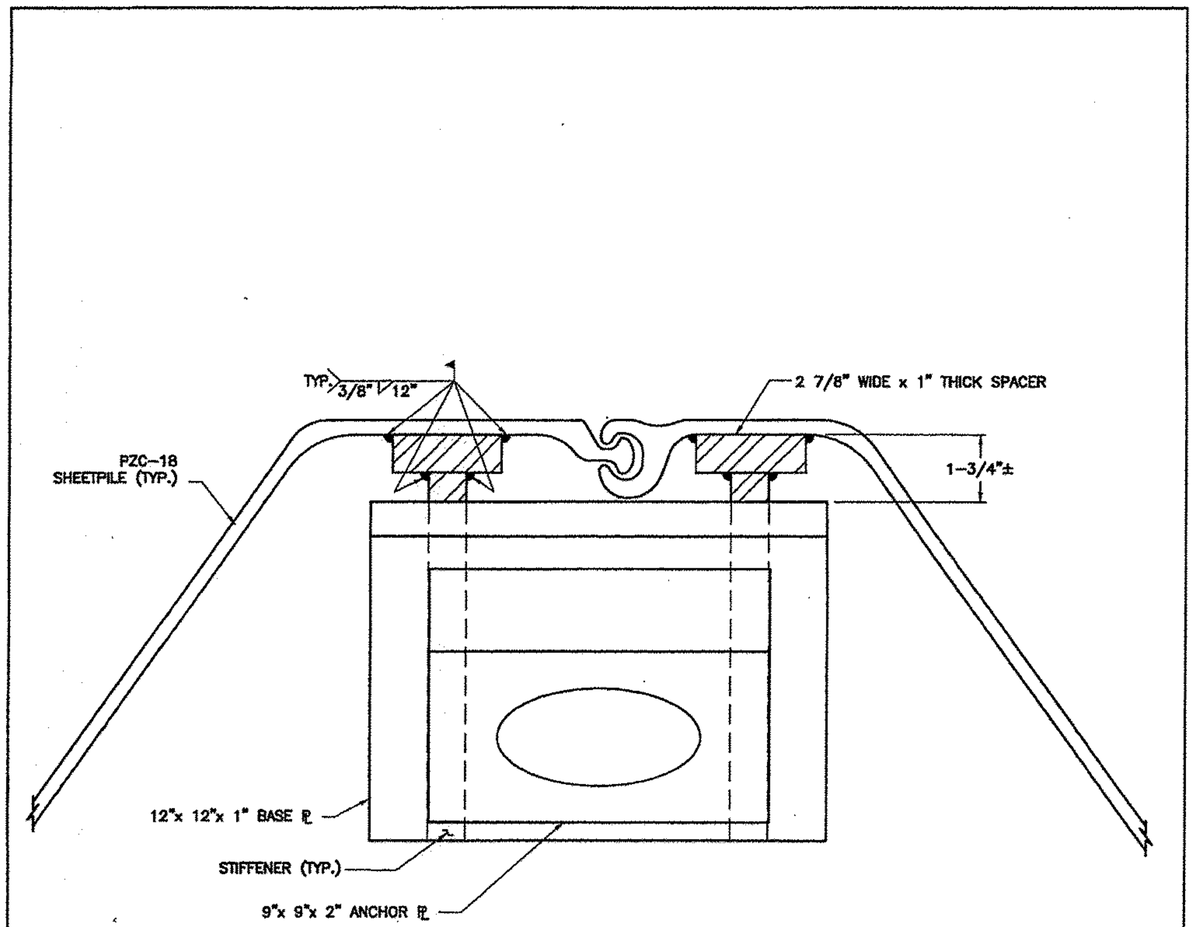


CONSTRUCTION JOINT SEAL DETAIL
N.T.S.



TYPICAL EXPANSION JOINT DETAIL
N.T.S.

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME:	...z86c027wallde1.DGN
PROJECT LEADER:	
DESIGNED BY:	D. HOWEY
PLOT DATE:	3/13/2008
DRAWN BY:	G. BARRETT
CHECKED BY:	D. WOTRING
SHEET	11 OF 14



PLAN VIEW

GEODESIGN
INCORPORATED
GEOTECHNICAL ENGINEERS • ENVIRONMENTAL CONSULTANTS
984 SOUTHFORD ROAD • MIDDLEBURY CONNECTICUT 06762
TELEPHONE: (203)758-8836 FACSIMILE: (203)758-8842

DRAWN BY: SMC | REVIEWED BY: WJF

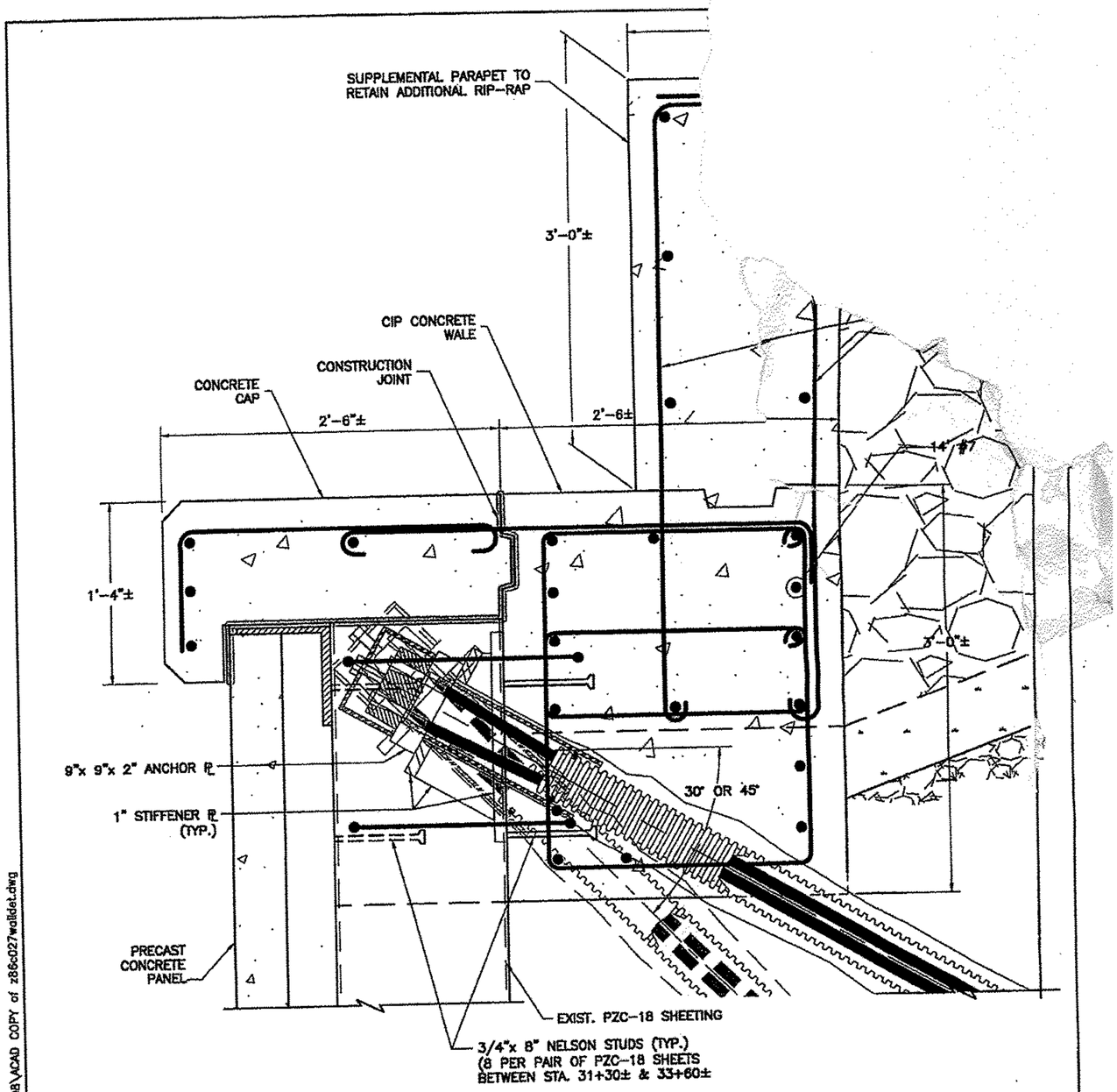
US ROUTE 5
HARTFORD, VERMONT
STATE PROJECT NO. RS 0113(40)

SHEETPILE TO TIEBACK
BASEPLATE CONNECTION SKETCH

SCALE 1/4" =1"
4' 3' 2' 1' 0 4'

PROJECT NO. 1070-01.5
DATE: 12/11/08
FIGURE NO. SK-1

c-08\COMPLETED FILES 3-13-08\ACAD COPY of z86c027walldet.dwg



TYPICAL SECTION A-A

GEODESIGN INCORPORATED
GEOTECHNICAL ENGINEERS • ENVIRONMENTAL CONSULTANTS
984 SOUTHFORD ROAD • MIDDLEBURY CONNECTICUT 06762
TELEPHONE: (203)758-8836 FACSIMILE: (203)758-8842

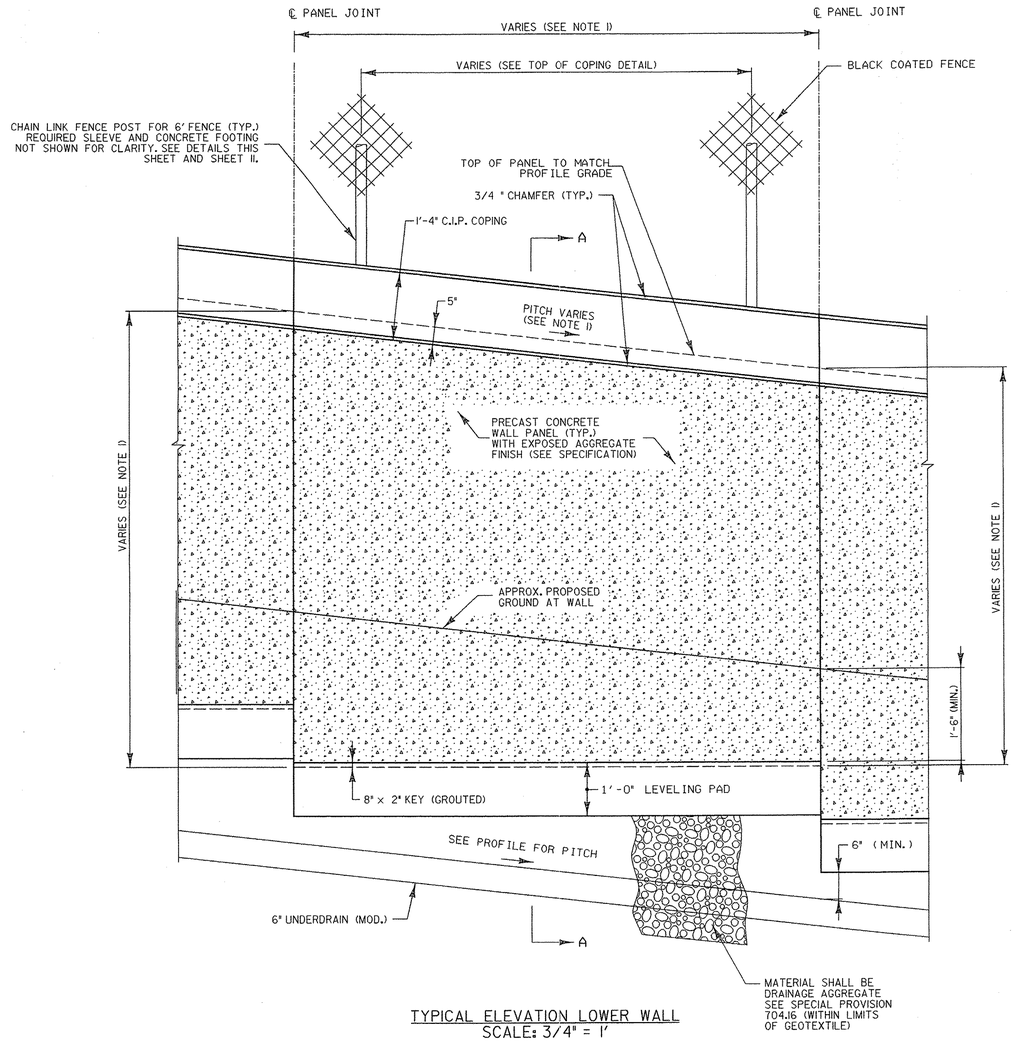
US ROUTE 5
HARTFORD, VERMONT
STATE PROJECT NO. RS 0113(40)

TIEBACK DETAIL SKETCH

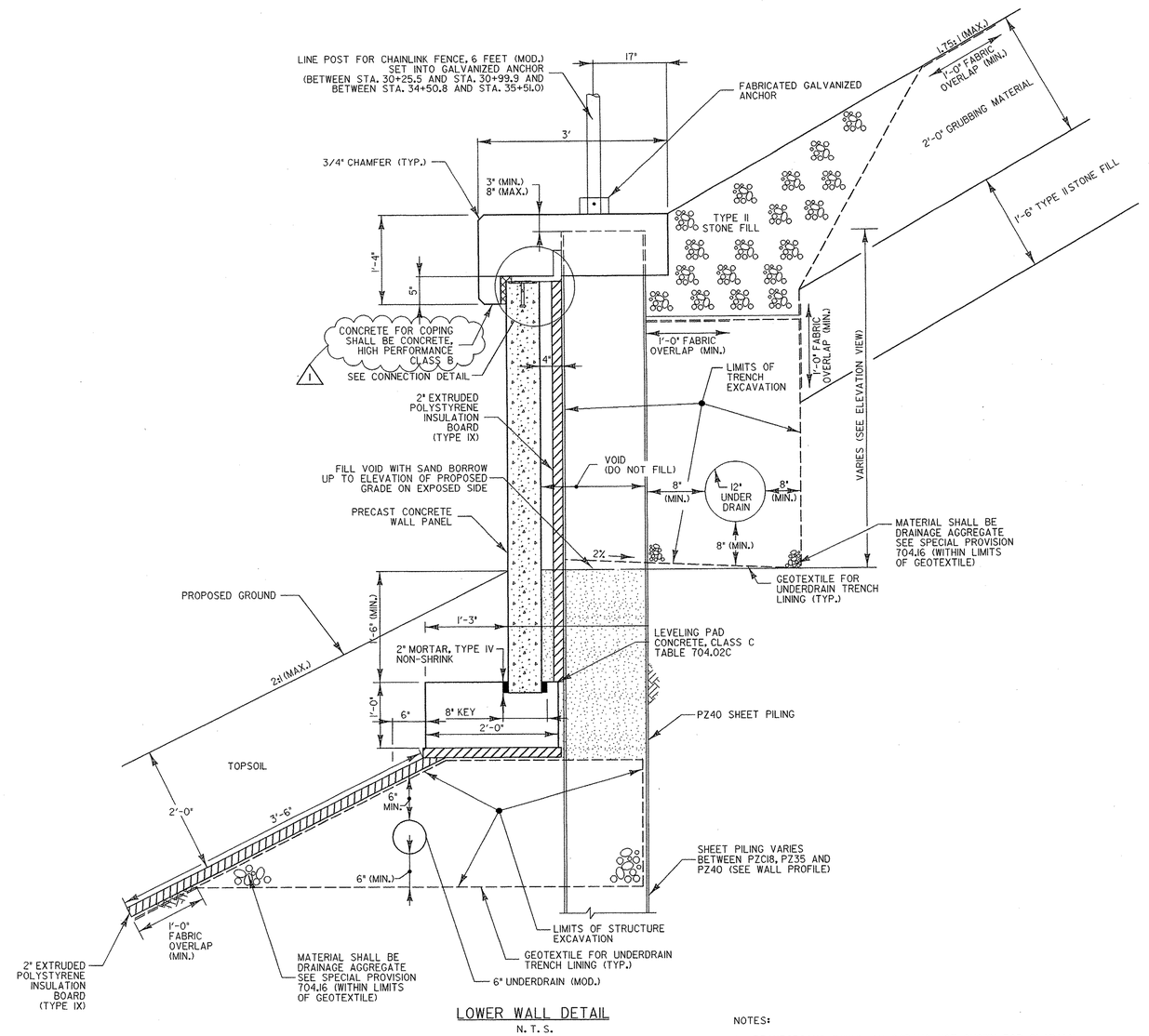
SCALE 1" = 1'
1' 6" 0 1'

PROJECT NO.	1070-01.5
DATE:	12/11/08
FIGURE NO.	SK-2
DRAWN BY: SMC	REVIEWED BY: WJF

M:\CL\1070\12-2-08\COMPLETED FILES 3-13-08\ACAD COPY of z86c027walldet.dwg



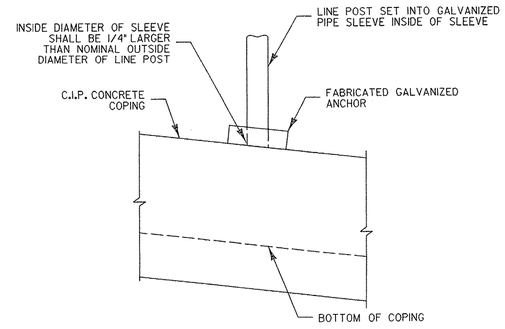
TYPICAL ELEVATION LOWER WALL
SCALE: 3/4" = 1'



LOWER WALL DETAIL
N.T.S.

NOTES:

1. PRE-CAST PANEL DIMENSIONS TO BE DETERMINED BY PRECASTER. DIMENSIONS SHOULD ALLOW FOR GAP IN BETWEEN PANELS TO ALLOW FOR THERMAL EXPANSION. IT IS RECOMMENDED THAT AS BUILT PLANS BE USED FOR PANEL SIZING IF AVAILABLE.
2. REQUIRED REINFORCEMENT IN PRECAST LEVELING PADS TO BE DETERMINED BY PRECASTER.

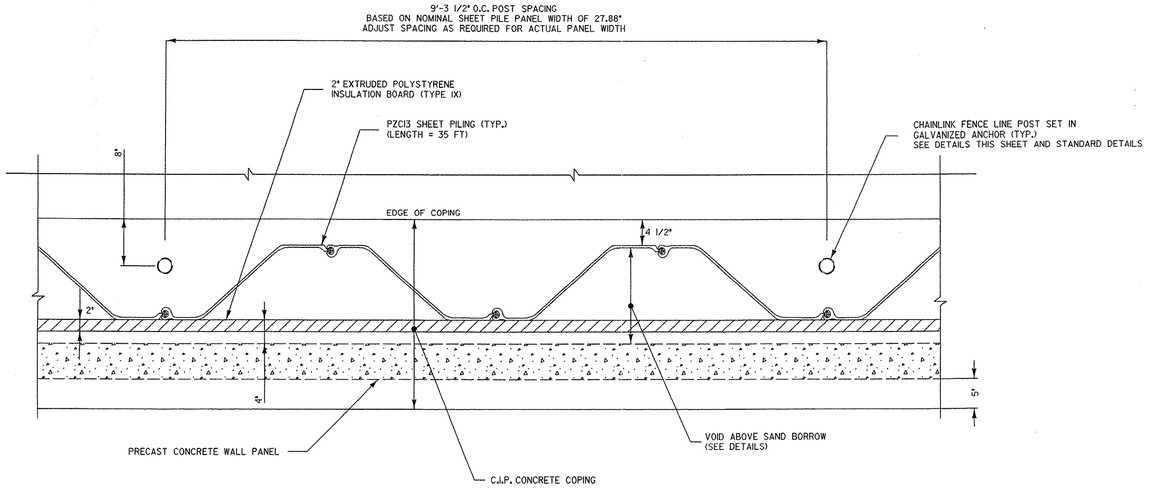


GALVANIZED SLEEVE DETAIL
N.T.S.

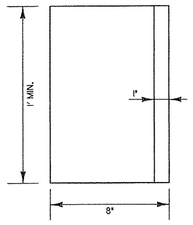
NOTES:

1. REINFORCING STEEL IN COPING NOT SHOWN FOR CLARITY.
2. GRUBBING AND ROCK FILL DETAILS LIKELY TO CHANGE AND POSSIBLY NEED SUPPORTING MEASURES SUCH AS GEOCELLS. FINAL DESIGN BY LANDSCAPE ARCHITECT IN COORDINATION WITH PIKE AND GEODESIGN.
3. 1/4" CORK MATERIAL CONFORMING TO 707.08 OF THE STANDARD SPECIFICATIONS SHALL BE USED ON EVERY JOINT OF THE PRECAST CONCRETE PANELS. THE CORK SHALL BE SEALED WITH A POLYURETHANE MATERIAL CONFORMING TO 707.05 OF THE STANDARD SPECIFICATIONS, THAT SHALL BE OF THE SAME COLOR AS THE PRECAST CONCRETE PANELS.

PROJECT NAME: HARTFORD	
PROJECT NUMBER: RS 0113(40)	
FILE NAME: ...z86c027wallde1.DGN	PLOT DATE: 3/13/2008
PROJECT LEADER:	DRAWN BY: G. BARRETT
DESIGNED BY: D. HOWEY	CHECKED BY: D. WOTRING
	SHEET 12 OF 14

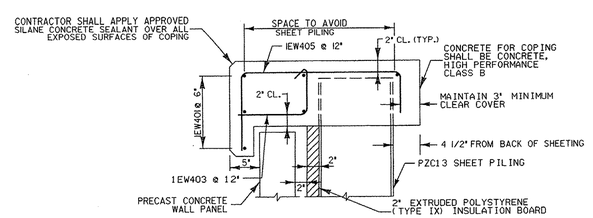


TYPICAL TOP OF COPING PLAN - UPPER WALL
SCALE: 1" = 1'

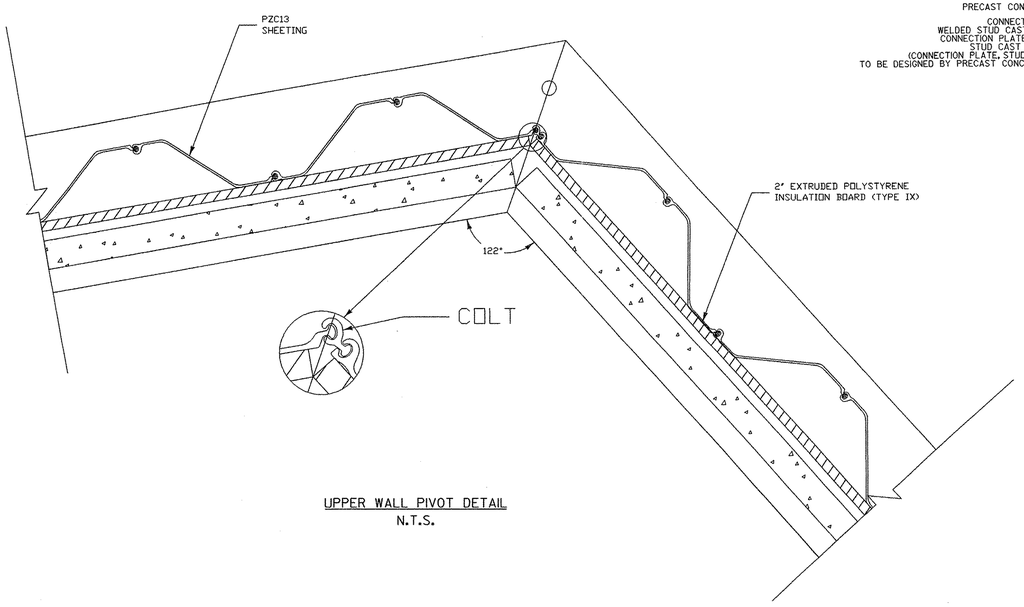


TOP OF ANGLE DETAIL
N.T.S.

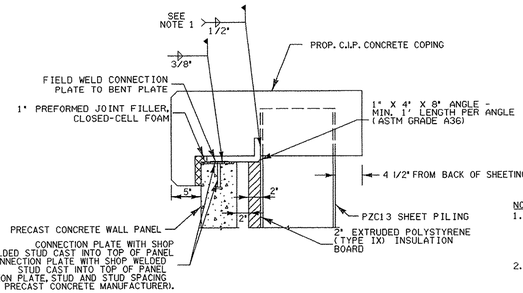
UPPER WALL COPING REINFORCEMENT TABLE									
EA.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	J
78	4	30'-0"	IEW401	STR					
380	4	2'-2"	IEW403	21	0'-7"	0'-8"	1'-0"		0'-5"
380	4	3'-10 1/2"	IEW405	17		0'-7"	2'-3 3/8"	1'-1"	
MINIMUM LAP SPLICE LENGTH SHALL BE 45 INCHES FOR COPING REINFORCING STEEL.									



COPING REINFORCING DETAIL (UPPER WALL)
SCALE: 1"= 1'

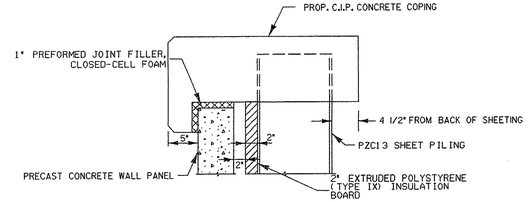


UPPER WALL PIVOT DETAIL
N.T.S.

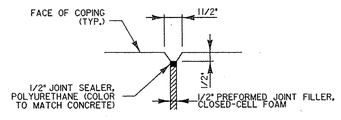


CONNECTION DETAIL WITH ANGLE (UPPER WALL)
SCALE: 1"= 1'

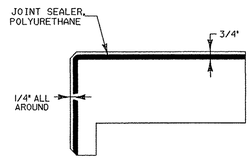
NOTE:
1. PROVIDE A MINIMUM OF FOUR 1' ANGLES PER CONCRETE PANEL WITH A MINIMUM OF 8" OF WELD BETWEEN ANGLE AND SHEET PILING, PER ANGLE.
2. ALTERNATIVELY, ONE ANGLE A MINIMUM OF 4' LONG WITH A MINIMUM OF 32" OF WELD BETWEEN THE ANGLE AND SHEET PILING MAY BE USED.
3. PRECAST PANELS TO BE DESIGNED BY MANUFACTURER.



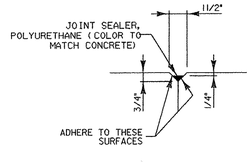
CONNECTION DETAIL BETWEEN ANGLE (UPPER WALL)
SCALE: 1"= 1'



TYPICAL EXPANSION JOINT DETAIL
N.T.S.

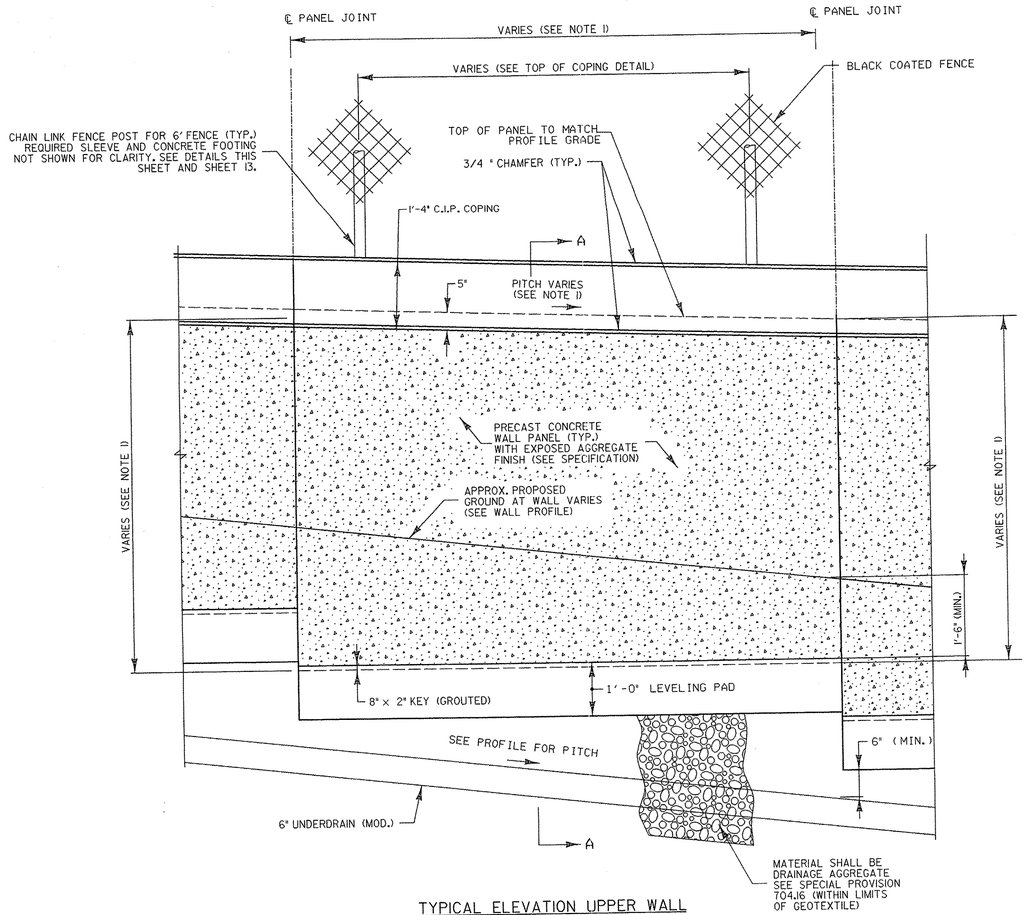


TYPICAL CONSTRUCTION JOINT DETAIL
N.T.S.

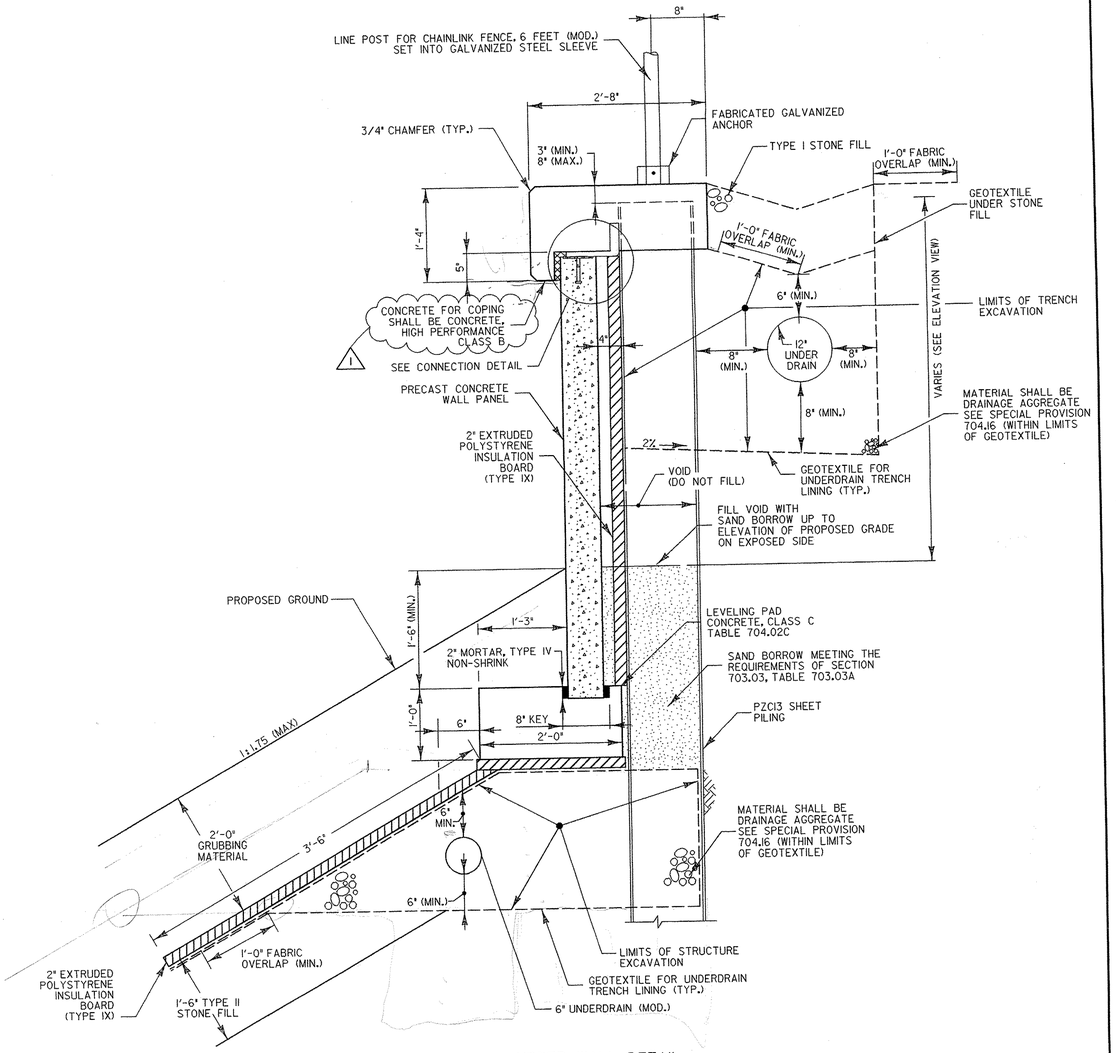


CONSTRUCTION JOINT SEAL DETAIL
N.T.S.

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	RS 0113(40)
FILE NAME: ...z86c027walldet.DGN	PLOT DATE: 3/13/2008
PROJECT LEADER:	DRAWN BY: G. BARRETT
DESIGNED BY: D. HOWEY	CHECKED BY: D. WOTRING
	SHEET 13 OF 14



TYPICAL ELEVATION UPPER WALL
SCALE: 3/4" = 1'

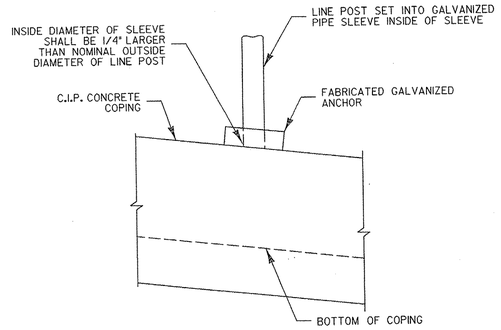


UPPER WALL DETAIL
N. T. S.

NOTES:

1. PRE-CAST PANEL DIMENSIONS TO BE DETERMINED BY PRECASTER. DIMENSIONS SHOULD ALLOW FOR GAP IN BETWEEN PANELS TO ALLOW FOR THERMAL EXPANSION. IT IS RECOMMENDED THAT AS BUILT PLANS BE USED FOR PANEL SIZING IF AVAILABLE.

2. REQUIRED REINFORCEMENT IN PRECAST LEVELING PADS TO BE DETERMINED BY PRECASTER.



GALVANIZED SLEEVE DETAIL
N.T.S.

NOTES:

1. REINFORCING STEEL IN COPING NOT SHOWN FOR CLARITY.

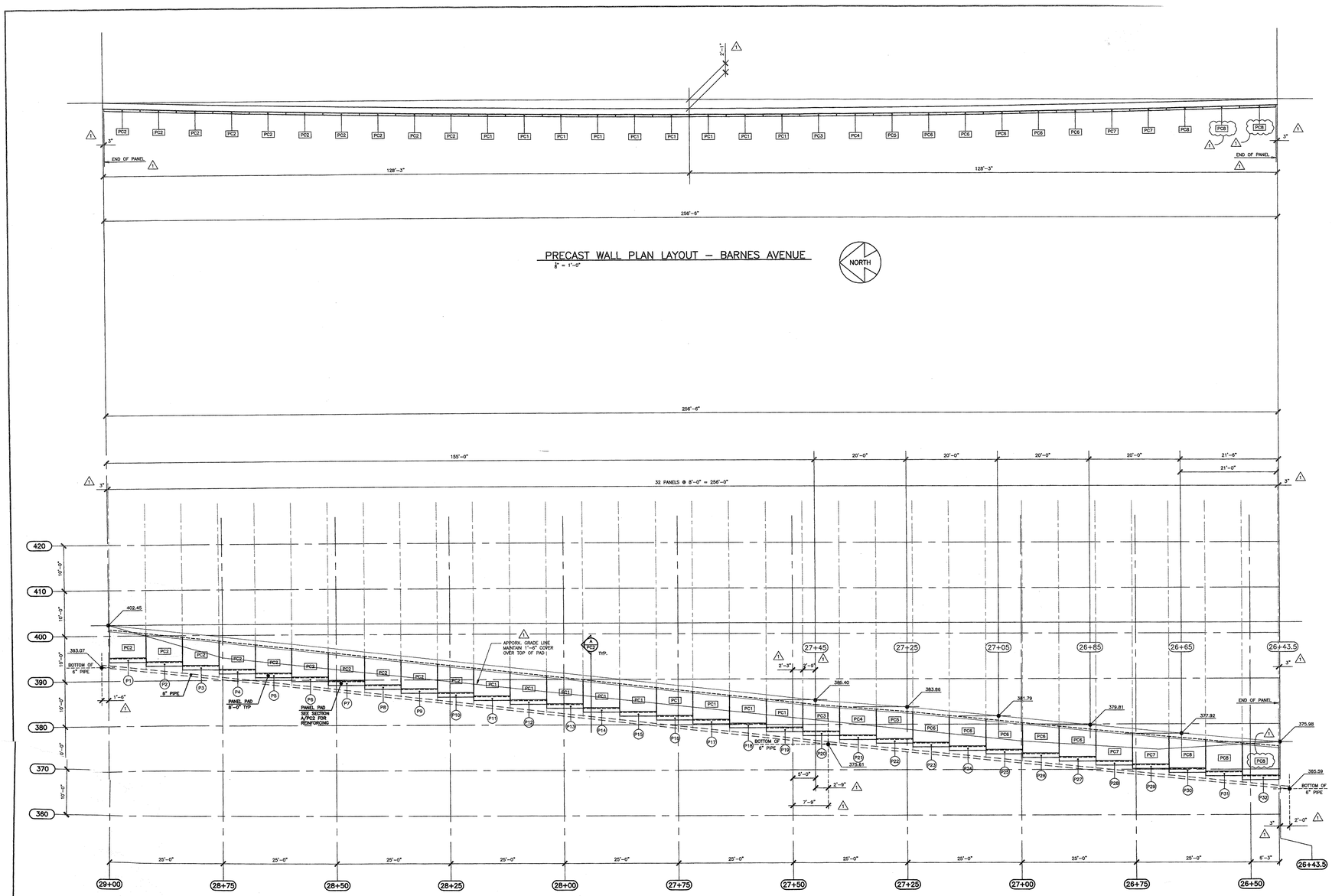
2. GRUBBING AND ROCK FILL DETAILS LIKELY TO CHANGE AND POSSIBLY NEED SUPPORTING MEASURES SUCH AS GEOCELLS. FINAL DESIGN BY LANDSCAPE ARCHITECT IN COORDINATION WITH PIKE AND GEODESIGN.

3. 1/4" CORK MATERIAL CONFORMING TO 707.08 OF THE STANDARD SPECIFICATIONS SHALL BE USED ON EVERY JOINT OF THE PRECAST CONCRETE PANELS. THE CORK SHALL BE SEALED WITH A POLYURETHANE MATERIAL CONFORMING TO 707.05 OF THE STANDARD SPECIFICATIONS, THAT SHALL BE OF THE SAME COLOR AS THE PRECAST CONCRETE PANELS.

PROJECT NAME: HARTFORD
PROJECT NUMBER: RS 0113(40)

FILE NAME: ...z86c027walldet.DGN
PROJECT LEADER:
DESIGNED BY: D. HOWEY

PLOT DATE: 3/13/2008
DRAWN BY: G. BARRETT
CHECKED BY: D. WOTRING
SHEET 14 OF 14



PRECAST WALL PLAN LAYOUT – BARNES AVENUE
3/8" = 1'-0"

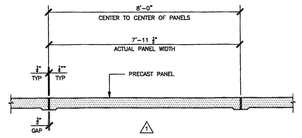
NORTH

ELEVATION OF PRECAST WALL PANELS – BARNES AVENUE
3/8" = 1'-0"

* NOT REVIEWED

ELEVATIONS FOR PAD AT PRECAST CONCRETE PANELS							
PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD
P1	395.21	P9	388.17	P17	381.24	P25	374.43
P2	394.33	P10	387.29	P18	380.36	P26	373.65
P3	393.45	P11	386.52	P19	379.48	P27	372.86
P4	392.57	P12	385.64	P20	378.60	P28	372.19
P5	391.69	P13	384.76	P21	377.73	P29	371.44
P6	390.81	P14	383.88	P22	376.85	P30	370.94
P7	389.93	P15	383.00	P23	376.03	P31	370.33
P8	389.05	P16	382.12	P24	375.20	P32	369.52

NOTE: PAD ELEVATIONS ADJUSTED TO PROVIDE PROPER COVER OVER UNDER-DRAIN PIPE



TYP. PANEL JOINT DETAIL (PC1)
1/2" = 1'-0"

S.T. Griswold & Co. Inc.
150 Industrial Ave
PO Box 847
Windsor, VT 05089
Ph: 802-456-0021
Fax: 802-456-8888
Architectural Precast Division

NPCA CERTIFIED PLANT

NOTE:

This shop drawing represents ST Griswold's interpretation of the contract documents, plans and specifications and our contract requirements for this project.

Prior to manufacture of product from this drawing, all dimensions, method of construction, and existing conditions must be checked, revised and approved by ST Griswold client.

GENERAL NOTES:

1) All mortar and control joints are assumed to be 3/8".
2) All angles are 90° unless noted otherwise.
3) All heights stated to be verified in field by others.
   -Not responsibility of ST Griswold
4) All box anchorage to be supplied by others:
   -Not responsibility of ST Griswold

Approval Stamp:

The undersigned has reviewed this drawing and is returning it to ST Griswold with the following approval for fabrication and shipment.

- ☐ Approved
- ☐ Approved as Noted
- ☐ Approved as Noted (Resubmit for record)
- ☐ Review and Resubmit

By: _____ Date: _____
(Signature)

By: _____
(Please Print)

Company: _____

* Please make note that revisions may effect pitching and lead times

No.	DATE	REVISION
1	6/3	REVISED PER APPROVAL NOTATIONS

McFarland Johnson
40 FARRELL STREET SOUTH BURLINGTON, VT 05403
Tel: (802) 862-9381 Fax: (802) 862-7450

TOWN OF HART FORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
HARTFORD VERMONT

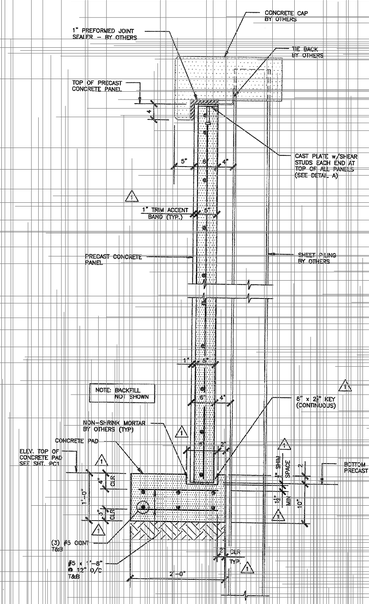
PRECAST WALL PANELS – BARRIER

DRAWN	APPROVED	PROJ. No.
GAB		17185.00
CHECKED	SCALE	DATE
RED	AS NOTED	4/28/08

PC-1

COPYRIGHT © 2008 McFarland-Johnson, Inc.

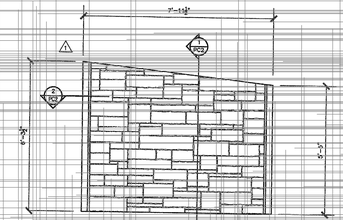
C:\Documents and Settings\Administrator\Desktop\Barnes\171850 Harlow 5" Barrier WALLING PC-1.dwg, 6/3/2008 12:01:13 AM



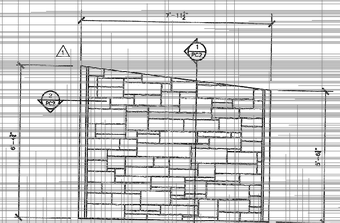
SECTION
1" = 1'-0"

1) ASSUME EQUAL FILL BOTH SIDES OF PANEL SEE REF. SECTION A-A SHT. 147 BY VTRANS

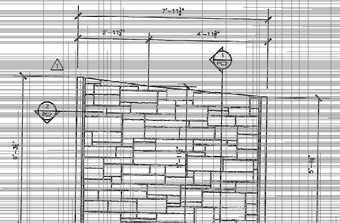
2) FOOTING SIZE GIVEN ON SHT. 147, CONCRETE FOOTING SHALL BE C/2500 (4ksi). FOOTING REINFORCING DESIGN BASED ON: MIN f'c = 1500 psi
f'c = 3,000 psi
fy = 60,000 psi



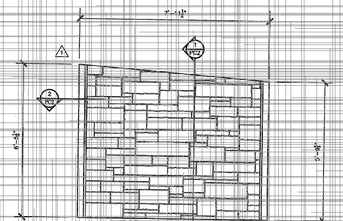
ELEVATION PC1 (9 pcs)
1" = 1'-0"



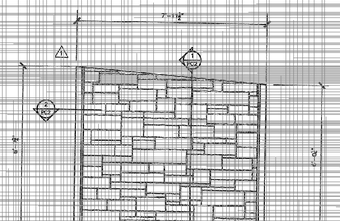
ELEVATION PC2 (10 pcs)
1" = 1'-0"



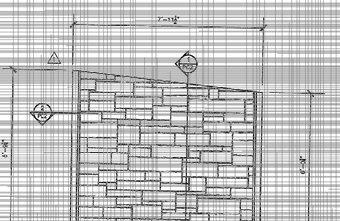
ELEVATION PC3 (1 pc)
1" = 1'-0"



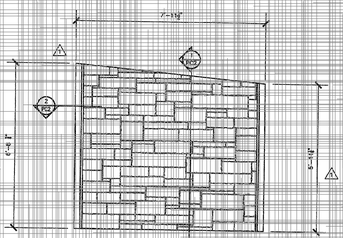
ELEVATION PC4 (1 pc)
1" = 1'-0"



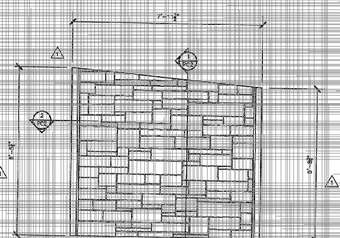
ELEVATION PC5 (1 pc)
1" = 1'-0"



ELEVATION PC6 (5 pcs)
1" = 1'-0"

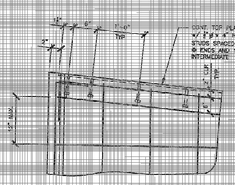


ELEVATION PC7 (2 pcs)
1" = 1'-0"



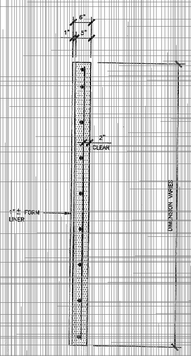
ELEVATION PC8 (3 pcs)
1" = 1'-0"

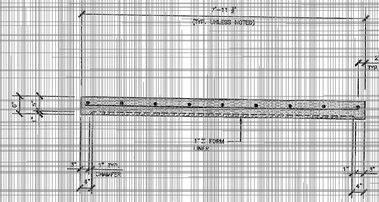
PIECE MARK PC9 — NOT USED



DETAIL A
1" = 1'-0"

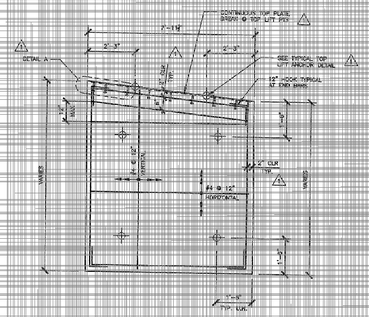
ALL PRECAST PANELS TYPICAL REINFORCING UNLESS NOTED OTHERWISE
#4 @ 12" VERTICAL
#4 @ 12" HORIZONTAL





SECTION
3" = 1'-0"

SECTION
3" = 1'-0"



TYPICAL PRECAST PLANK REINFORCING ELEVATION
N.T.S.

ROBOTEX LIFT INSERT LOCATIONS

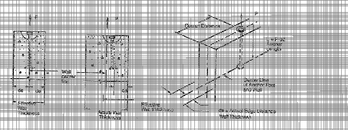
1) ALL CAST CONCRETE 28-DAY f'c = 5000 psi
REINFORCING STEEL fy = 60,000 psi

Swift Lift System

DAYTON SUPERIOR

P-52 Swift Lift Anchor in Thin Walls

This P-52 Swift Lift Anchor, listed below, must be used for the maximum loadable safe working capacity with the specified load being applied at distances of not more than the dimension noted from the surface of the concrete. Contact the anchor manufacturer for anchors with greater capacities or for anchors to be used at greater distances from the surface of the concrete. Anchors must be embedded at the center line of the hole for the full effective embedment depth as noted in the table below and be perpendicular to the surface. To maximize the safe working load of the Pipe Swift Lift Anchor, the material forming between two anchors is ALL holes the anchor length.



TYPICAL TOP LIFT ANCHOR DETAIL

* Our review of shop drawings was limited to work within our scope of responsibility as noted on our stamp. Verify all dimensions and quantities.

S.T. Griswold & Co. Inc.
140 Industrial Park
Williston, VT 05495
Ph: 802-862-3221
Fax: 802-862-2522

GRISWOLD
Architectural Precast Division
NPCA CERTIFIED PLANT

NOTE:

This shop drawing represents an interpretation of the architectural plans and specifications and our contract requirements for this project.

Prior to manufacture of precast units this drawing, all structural material or construction, and existing conditions shall be checked, noted and approved by all others as applicable.

GENERAL NOTES:

1) All dimensions and concrete cover are described to the 5/16".
2) All lengths shown are actual lengths.
3) All weights shown to be verified by field for effects.
4) All loss inadvertently to be completed by others.
— Not responsible for GF Shapes

Approval Stamp:

All items noted have been reviewed this drawing and is returned to the contractor for limited marked. Contractor is responsible for confirming approval for fabrication and

- [ ] Approved
- [x] Approved as Noted
- [ ] Approved as Noted (Resubmit for record)
- [ ] Please see Remarks

By: (Review) Date: 5/13/08
For: (Please Print)
Company:

* Please allow only five revisions may affect pricing and lead times.

No.	DATE	REVISION
1	6/13	REVISED PER APPROVAL NOTATIONS

McFarland Johnson
40 FAIRFIELD STREET SOUTH BURLINGTON, VT 05403
ph: (802) 862-9300 Fax: (802) 862-7450

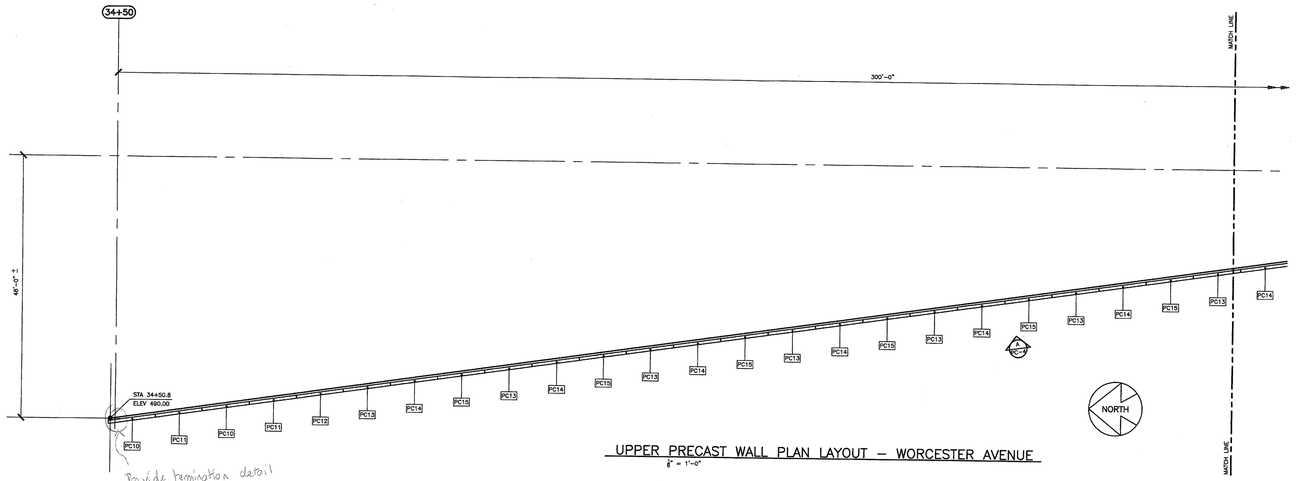
TOWN OF HART FORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
VERMONT
HARTFORD

PRECAST ELEVATIONS & SECTIONS

DRAWN	CHECKED	SCALE	DATE
GAB	RED	AS NOTED	4/28/08

PROJ. No. 12185.00

PC-2

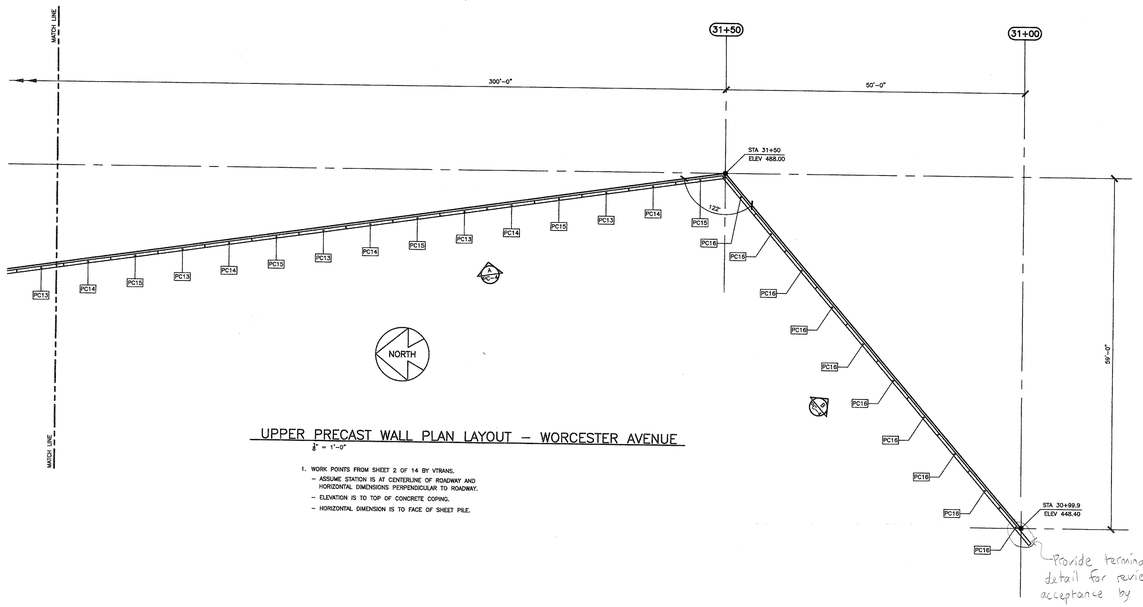


Provide termination detail for review and acceptance by VTRANS.

UPPER PRECAST WALL PLAN LAYOUT – WORCESTER AVENUE

3/8" = 1'-0"

1. WORK POINTS FROM SHEET 2 OF 14 BY VTRANS.
   - ASSUME STATION IS AT CENTERLINE OF ROADWAY AND HORIZONTAL DIMENSIONS PERPENDICULAR TO ROADWAY.
   - ELEVATION IS TO TOP OF CONCRETE COPING.
   - HORIZONTAL DIMENSION IS TO FACE OF SHEET PILE.

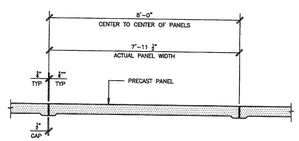


Provide termination detail for review and acceptance by VTRANS.

UPPER PRECAST WALL PLAN LAYOUT – WORCESTER AVENUE

3/8" = 1'-0"

1. WORK POINTS FROM SHEET 2 OF 14 BY VTRANS.
   - ASSUME STATION IS AT CENTERLINE OF ROADWAY AND HORIZONTAL DIMENSIONS PERPENDICULAR TO ROADWAY.
   - ELEVATION IS TO TOP OF CONCRETE COPING.
   - HORIZONTAL DIMENSION IS TO FACE OF SHEET PILE.



TYP. PANEL JOINT DETAIL

1/2" = 1'-0"

S.T. Griswold & Co. Inc.
183 Industrial Ave
PO Box 549
Williston, VT 05495
Ph: 802-872-0600
Fax: 802-658-0868
Architectural Precast Division

NPCA CERTIFIED PLANT

NOTE:

This shop drawing represents ST Griswold's interpretation of the architectural plans and specifications and our contract requirements for this project.

Prior to manufacture of product from this drawing, all dimensions, method of construction, and existing conditions must be checked, revised and approved by ST Griswold& client.

GENERAL NOTES:

1) All reveal and control joints are assumed to be 3/8".
2) All tie-backs, blockouts and cast-ins are:
   -Not responsibility of ST Griswold
3) All lengths stated as nominal are field by others:
   -Not responsibility of ST Griswold
4) All loss anchorages to be supplied by others:
   -Not responsibility of ST Griswold

Approval Stamp:

The undersigned has reviewed this drawing and is returning it to ST Griswold with the following approval for fabrication and shipment.

- ☐ Approved
- ☒ Approved as Noted
- ☐ Approved as Noted (Resubmit for record)
- ☐ Review and Resubmit

By: _____ (Signature) Date: 7/2/08

By: Daniel Mosley (Please Print)

Company: GeoDesign Team

* Please make note that revisions may affect pricing and lead times

No.	DATE	REVISION

McFarland Johnson
40 FARRELL STREET SOUTH BURLINGTON, VT 05403
Tel: (802) 862-9381 Fax: (802) 862-7450

TOWN OF HART FORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
HARTFORD VERMONT

PRECAST WALL PANELS – BARRIER

DRAWN	APPROVED	PROJ. No.
GAB		17185.00
CHECKED	SCALE	DATE
RED	AS NOTED	6/03/08

PC-3

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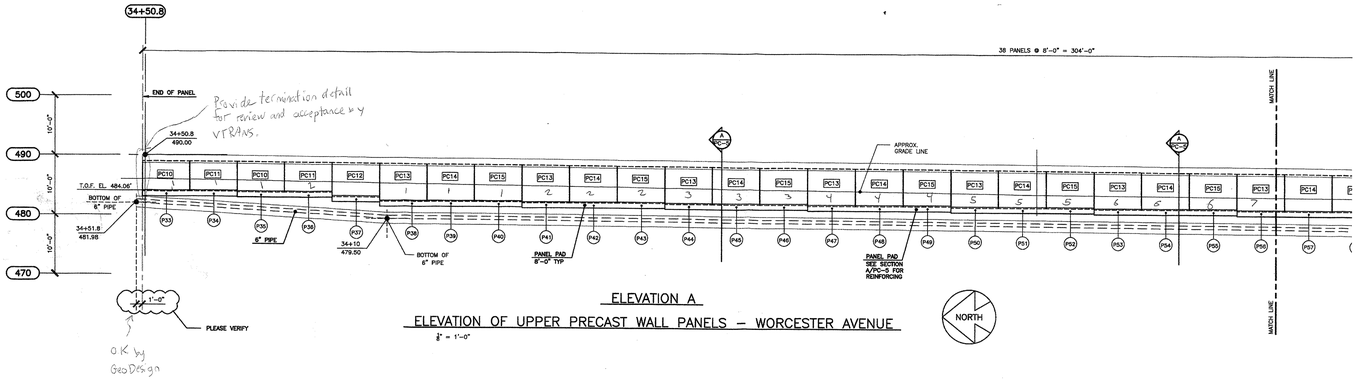
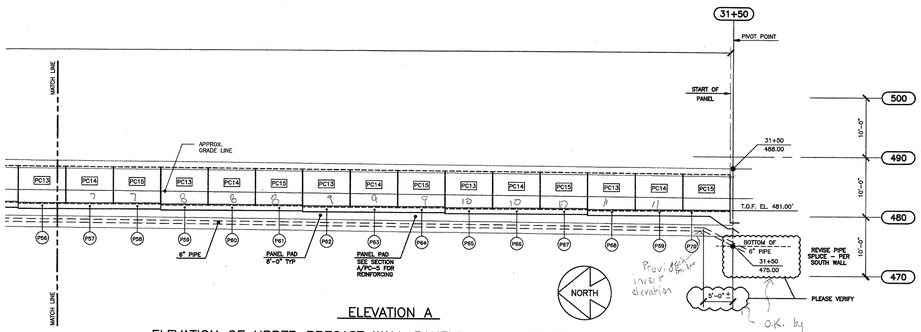
K:\Dwg\Schmidt\17185\00 Hartford 9" Retaining Wall\Mkr PC-3.dwg, 6/3/2008 11:09:58 AM



ELEVATION A

ELEVATION OF UPPER PRECAST WALL PANELS – WORCESTER AVENUE

$\frac{1}{8}$" = 1'-0"

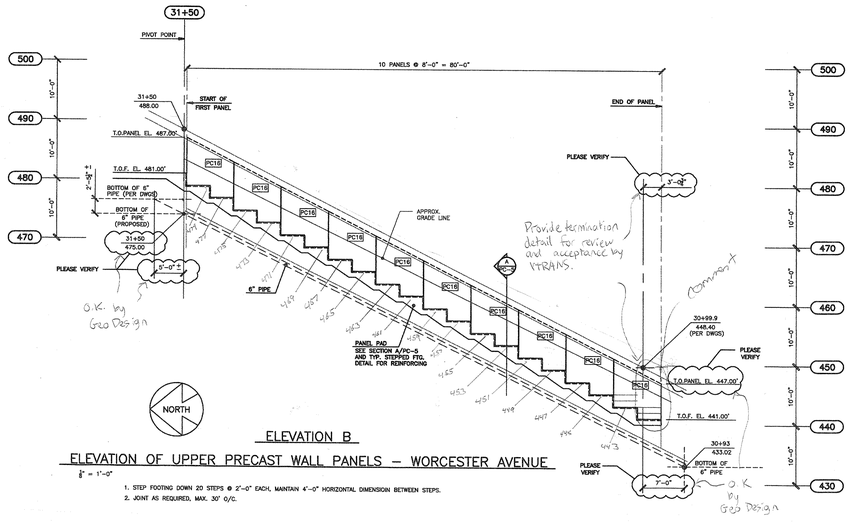


ELEVATION A

ELEVATION OF UPPER PRECAST WALL PANELS – WORCESTER AVENUE

$\frac{1}{8}$" = 1'-0"

ELEVATIONS FOR PAD AT PRECAST CONCRETE PANELS									
PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD
P33	484.06	P41	482.41	P49	482.09	P57	481.62	P65	481.16
P34	484.06	P42	482.41	P50	481.93	P58	481.62	P66	481.16
P35	483.96	P43	482.41	P51	481.93	P59	481.47	P67	481.16
P36	483.96	P44	482.25	P52	481.93	P60	481.47	P68	481.00
P37	483.25	P45	482.25	P53	481.78	P61	481.47	P69	481.00
P38	482.56	P46	482.25	P54	481.78	P62	481.31	P70	481.00
P39	482.56	P47	482.09	P55	481.78	P63	481.31		
P40	482.56	P48	482.09	P56	481.62	P64	481.31		

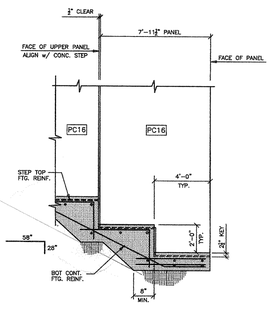


ELEVATION B

ELEVATION OF UPPER PRECAST WALL PANELS – WORCESTER AVENUE

$\frac{1}{8}$" = 1'-0"

1. STEP FOOTING DOWN 20 STEPS @ 2'-0" EACH, MAINTAIN 4'-0" HORIZONTAL DIMENSION BETWEEN STEPS.
2. JOINT AS REQUIRED, MAX. 30' O/C.



TYPICAL REINFORCING STEPPED FOOTING DETAIL

NTS

S.T. Griswold & Co. Inc.
153 Industrial Ave
PO Box 349
Williston, VT 05495
Tel: 800-451-4466
Fax: 800-486-4866
Architectural Precast Division

NPCA CERTIFIED PLANT

NOTE:

This shop drawing represents ST Griswold's interpretation of the contractand plans and specifications and our contract requirements for this project.

Prior to manufacture of product from this drawing, all dimensions, method of construction, and existing conditions must be checked, revised and approved by ST Griswold client.

GENERAL NOTES:

1) All mortar and control joints are assumed to be 3/4".
2) All lengths stated are actual lengths.
3) All lengths shown are to be verified field by others: –Not responsibility of ST Griswold.
4) All base underpage to be supplied by others: –Not responsibility of ST Griswold.

Approval Stamp:

The undersigned has reviewed this drawing and is returning it to you approved with the following approval for fabrication and shipment:

- ☐ Approved
- ☒ Approved as Noted
- ☐ Approved as Noted (Resubmit for record)
- ☐ Review and Resubmit

By: [signature] (Signature) Date: 7/21/08

By: Daniel Hurley (Please Print)

Company: GeoDesign Inc.

* Please make note that revisions may effect pricing and lead times

No.	DATE	REVISION

McFarland Johnson

40 FARRELL STREET SOUTH BURLINGTON, VT 05403
Tel: (802) 862-8381 Fax: (802) 862-7450

TOWN OF HART FORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
HARTFORD VERMONT

PRECAST WALL PANELS – BARRIER

DRAWN	APPROVED	PROJ. No.
GAB		17185.00
CHECKED	SCALE	DATE
RED	AS NOTED	6/03/08

PC-4

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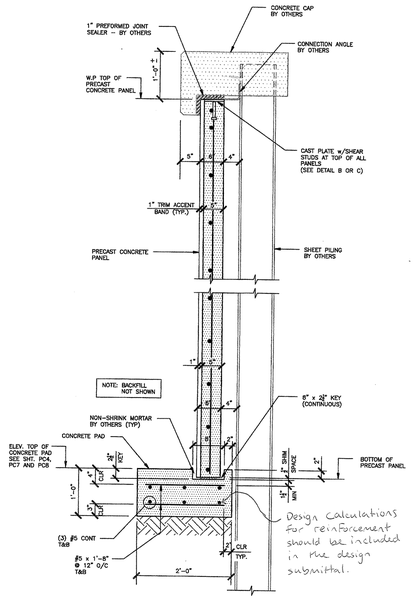
E:\Dwg\Submit\17185B Hartford 5" Barrier 6x8\PC-5.dwg, 6/3/2008 11:11:15 AM



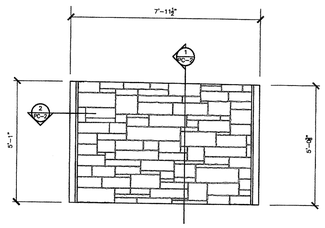
SECTION
1"= 1'-0"

1) SEE REF. LOWER WALL DETAIL ON SHT 12 OF 14 AND UPPER WALL DETAIL ON SHT 14 OF 14 BY VTRANS.

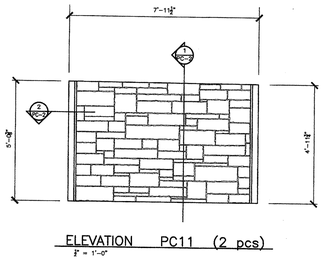
2) ASSUME EQUAL FILL BOTH SIDES OF PANEL

3) CONCRETE FOOTING SHALL BE CLASS 541.30. FOOTING SIZE GIVEN ON DETAILS BY VTRANS. FOOTING REINFORCING DESIGN BASED ON: Min f_p = 1500 psf
f'_c = 3,000 psi
f_y = 60,000 psi

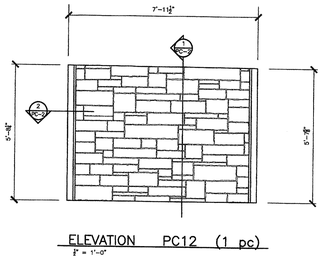
Design Calculations for reinforcement should be included in the design submittal.



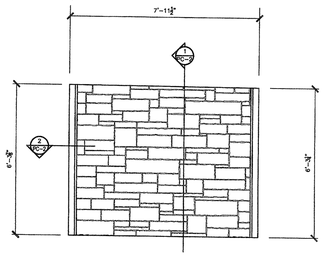
ELEVATION PC10 (2 pcs)
3/8" = 1'-0"



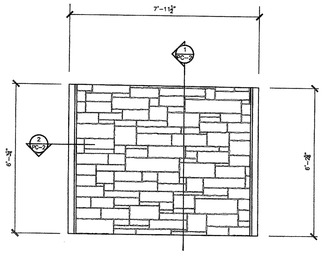
ELEVATION PC11 (2 pcs)
3/8" = 1'-0"



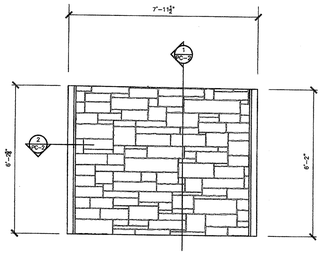
ELEVATION PC12 (1 pc)
3/8" = 1'-0"



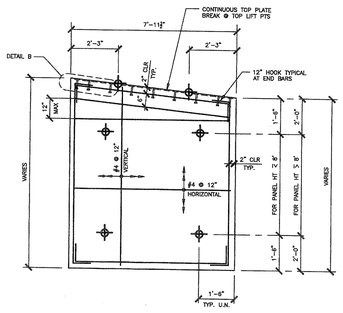
ELEVATION PC13 (11 pcs)
3/8" = 1'-0"



ELEVATION PC14 (11 pcs)
3/8" = 1'-0"



ELEVATION PC15 (11 pcs)
3/8" = 1'-0"

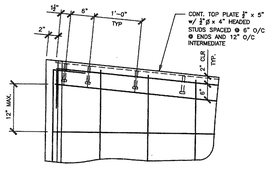


TYPICAL PRECAST PLANK REINFORCING ELEVATION
N.T.S.

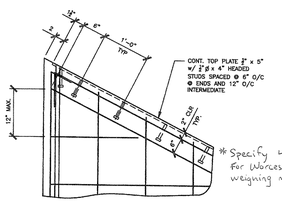
⊕ INDICATES LIFT INSERT LOCATIONS

1) ALL PANEL CONCRETE 28-DAY f'_c = 5,000 psi REINFORCING STEEL f_y = 60,000 psi

2) SEE SHEET PC-2 FOR TOP LIFT ANCHOR DETAIL

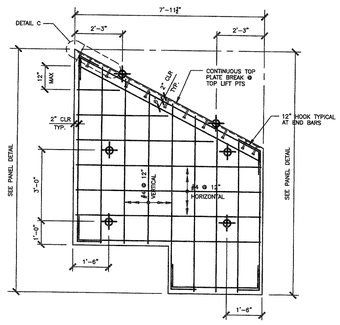


DETAIL B
1" = 1'-0"



DETAIL C
1" = 1'-0"

* Specify 4-ton inserts for Worcester Ave. Panels weighing more than 5,700 lbs.

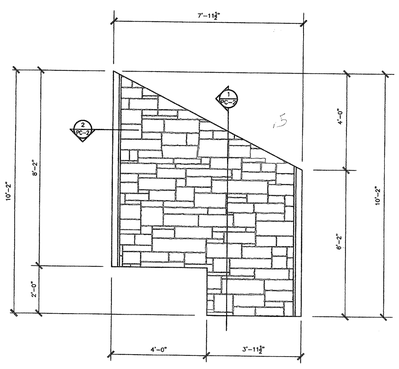


PC16 REINFORCING ELEVATION
N.T.S.

⊕ INDICATES LIFT INSERT LOCATIONS

1) ALL PANEL CONCRETE 28-DAY f'_c = 5,000 psi REINFORCING STEEL f_y = 60,000 psi

2) SEE SHEET PC-2 FOR TOP LIFT ANCHOR DETAIL.



ELEVATION PC16 (10 pcs)
3/8" = 1'-0"

S.T. Griswold & Co. Inc.
183 Industrial Ave
PO Box 849
Williston, VT 05495
Ph: 802-878-5533
Fax: 802-658-5569
Architectural Precast Division

NPCA CERTIFIED PLANT

NOTE:

This shop drawing represents ST Griswold's interpretation of the architectural plans and specifications and our contract requirements for this project.

Prior to manufacture of product from this drawing, all dimensions, method of construction, and existing conditions must be checked, revised and approved by ST Griswold client.

GENERAL NOTES:

1) All mortar and control joints are assumed to be 3/8".
2) All lengths stated to be nominal width.
3) All blockouts and openings to be field by others:
   -Not responsibility of ST Griswold.
4) All bore anchorage to be supplied by others:
   -Not responsibility of ST Griswold.

Approval Stamp:

The undersigned has reviewed this drawing and is returning it to ST Griswold with the following approval for fabrication and shipment.

- ☐ Approved
- ☒ Approved as Noted
- ☐ Approved as Noted (Resubmit for record)
- ☐ Revise and Resubmit

By: DJH (Signature) Date: 7/21/08

By: Daniel Hanley (Please Print)

Company: GeoDesign, Inc.

* Please make note that revisions may affect pricing and lead times

No.	DATE	REVISION

McFarland Johnson
40 FARRELL STREET SOUTH BURLINGTON, VT 05403
Tel: (802) 862-9381 Fax: (802) 862-7450

TOWN OF HARTFORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
VERMONT
HARTFORD

PRECAST ELEVATIONS & SECTIONS

DRAWN	APPROVED	PROJ. No.
GAB		17185.00
CHECKED	SCALE	DATE
RED	AS NOTED	6/03/08

PC-5

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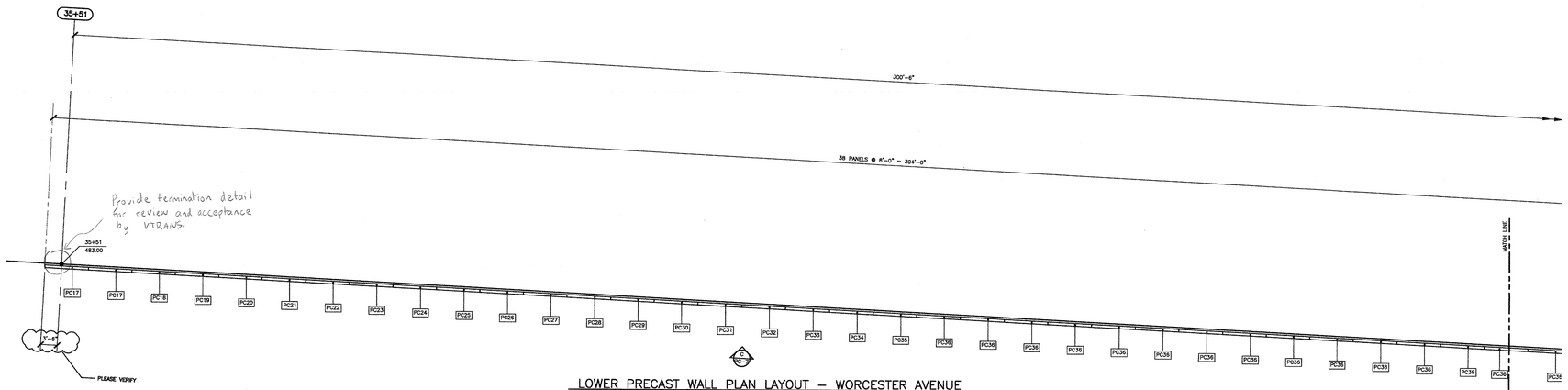


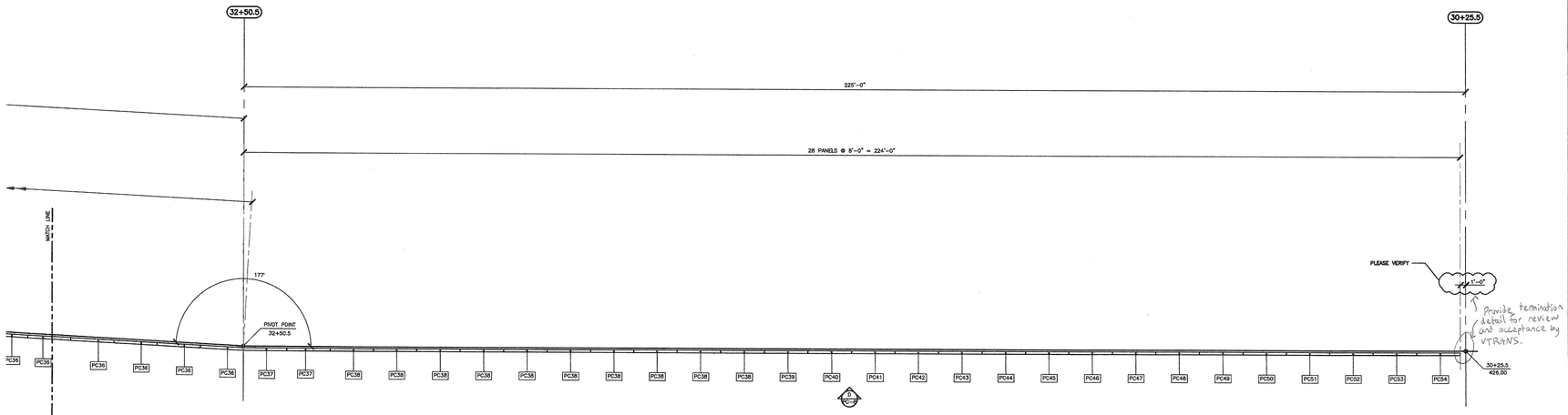
LOWER PRECAST WALL PLAN LAYOUT – WORCESTER AVENUE

1/8" = 1'-0"

1. WORK POINTS FROM SHEET 2 OF 14 BY VTRANS.
   - ASSUME STATION IS AT CENTERLINE OF ROADWAY AND HORIZONTAL DIMENSIONS PERPENDICULAR TO ROADWAY.
   - ELEVATION IS TO TOP OF CONCRETE COPING.
   - HORIZONTAL DIMENSION IS TO FACE OF SHEET PILE.

TYP. PANEL JOINT DETAIL (A / PC-6)

1/2" = 1'-0"



LOWER PRECAST WALL PLAN LAYOUT – WORCESTER AVENUE

1/8" = 1'-0"

1. WORK POINTS FROM SHEET 2 OF 14 BY VTRANS.
   - ASSUME STATION IS AT CENTERLINE OF ROADWAY AND HORIZONTAL DIMENSIONS PERPENDICULAR TO ROADWAY.
   - ELEVATION IS TO TOP OF CONCRETE COPING.
   - HORIZONTAL DIMENSION IS TO FACE OF SHEET PILE.

GRISWOLD
S.T. Griswold & Co. Inc.
153 Industrial Ave
PO Box 849
Williston, VT 05495
Ph: 802-658-0231
Fax: 802-658-0859
Architectural Precast Division

PCA CERTIFIED PLANT

NOTE:

This shop drawing represents ST Griswold's interpretation of the architectural plans and specifications and our contract requirements for this project.

Prior to manufacture of product from this drawing, all dimensions, method of construction, and existing conditions must be checked, revised and approved by ST Griswold's client.

GENERAL NOTES:

1) All mortar and control joints are assumed to be 3/8".
2) All lengths stated are actual lengths.
3) All lengths stated to be verified in field by others:
   - Not responsibility of ST Griswold.
4) All lines unchanged to be supplied by others:
   - Not responsibility of ST Griswold.

Approval Stamp:

The undersigned has reviewed this drawing and is returning it to ST Griswold with the following approval for fabrication and shipment.

- [ ] Approved
- [x] Approved as Noted
- [ ] Approved as Noted (Resubmit for record)
- [ ] Revise and Resubmit

By: [signature] (Signature) Date: 7/21/08

By: Daniel Howey (Please Print)

Company: GeoDesign, Inc.

* Please make note that revisions may affect pricing and lead times

No.	DATE	REVISION

McFarland Johnson
40 FARRELL STREET SOUTH BURLINGTON, VT 05403
Tel: (802) 862-9381 Fax: (802) 862-7450

TOWN OF HART FORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
HARTFORD VERMONT

PRECAST WALL PANELS – BARRIER

DRAWN	APPROVED	PROJ. No.
GAB		17185.00
CHECKED	SCALE	DATE
RED	AS NOTED	6/03/08

PC-6

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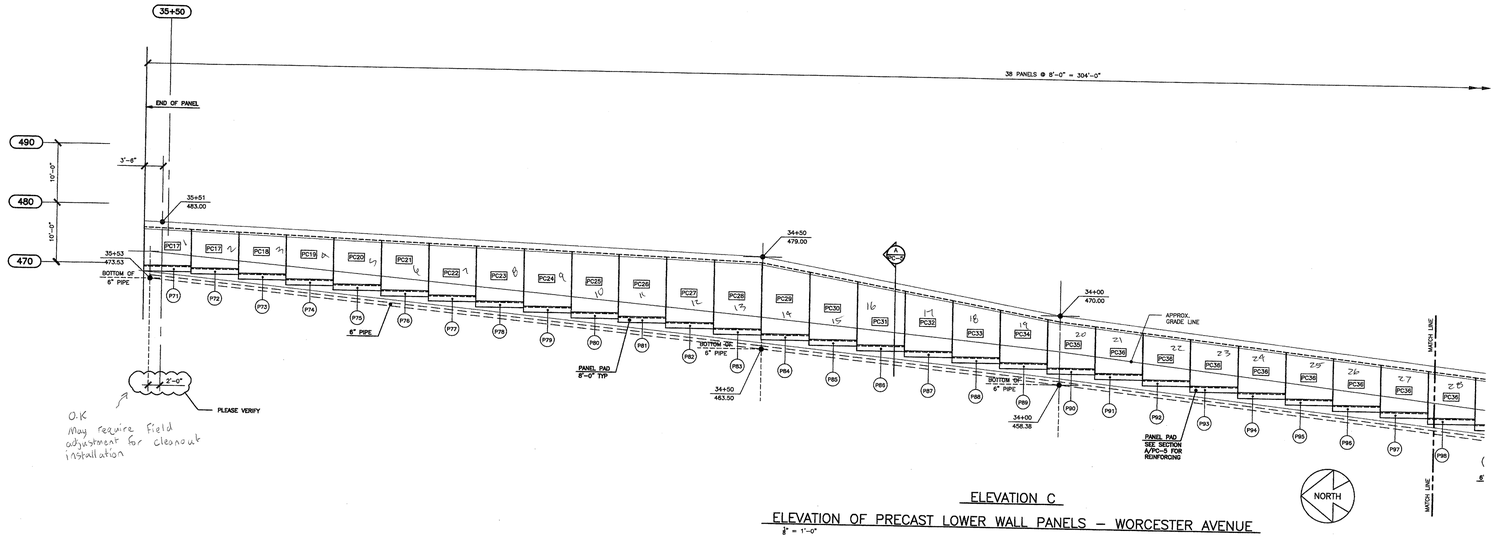
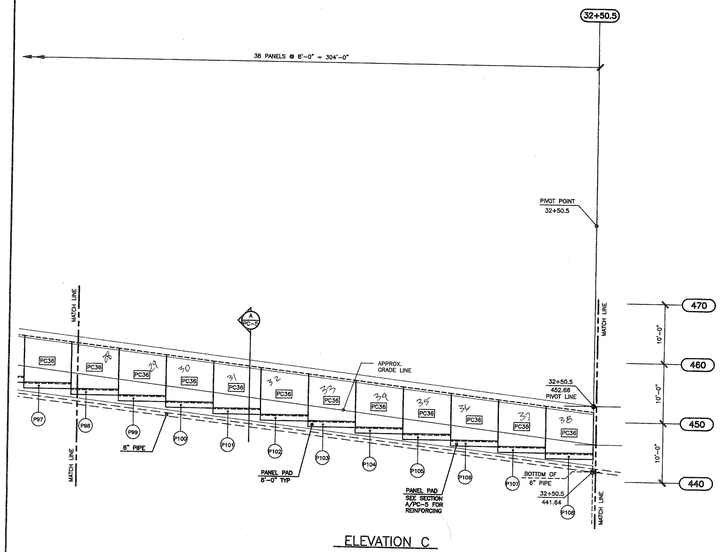


O.K
May require field adjustment for cleanout installation

ELEVATION C

ELEVATION OF PRECAST LOWER WALL PANELS – WORCESTER AVENUE

1/8" = 1'-0"



ELEVATION C

ELEVATION OF PRECAST LOWER WALL PANELS – WORCESTER AVENUE

1/8" = 1'-0"

ELEVATIONS FOR PAD AT PRECAST CONCRETE PANELS

PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD
1 P71	475.68	P79 9	469.96	P87 17	463.67	P95 25	456.77	P103 33	449.37
2 P72	475.36	P80 10	469.13	P88 18	462.81	P96 26	455.85	P104 34	448.45
3 P73	474.61	P81 11	468.54	P89 19	461.98	P97 27	454.92	P105 35	447.52
4 P74	473.81	P82 12	467.77	P90 20	461.23	P98 28	453.99	P106 36	446.59
5 P75	473.10	P83 13	466.86	P91 21	460.47	P99 29	453.07	P107 37	445.67
6 P76	472.24	P84 14	466.08	P92 22	459.55	P100 30	452.15	P108 38	444.74
7 P77	471.55	P85 15	465.31	P93 23	458.63	P101 31	451.22		
8 P78	470.69	P86 16	464.54	P94 24	457.70	P102 32	450.30		

S.T. Griswold & Co. Inc.
103 Industrial Ave
PO Box 187
Griswold, IA 51535
Ph: 800-456-0201
Fax: 800-456-0888
Architectural Precast Division

NPCA CERTIFIED PLANT

NOTE:

This shop drawing represents ST Griswold's interpretation of the architectural plans and specifications and our contract requirement for this project.

Prior to manufacture of product from this drawing, all dimensions, method of construction, and existing conditions must be checked, revised and approved by ST Griswold, Client.

GENERAL NOTES:

1) All mortar and sealer joints are assumed to be 3/8".
2) All angles are assumed to be 90 degrees.
3) All lengths stated, to be verified in field by others.
4) All field responsibility of ST Griswold.
   All field responsibility of others by others:
   -Not responsibility of ST Griswold.

Approval Stamp:

The undersigned has reviewed this drawing and is returning it to you approved with the following approval for fabrication and shipment:

- [ ] Approved
- [x] Approved as Noted
- [ ] Approved as Noted (Resubmit for record)
- [ ] Review and Resubmit

By: _____ Date: 7/21/08
Signature
By: Daniel Hovey
Please Print
Company: Geo Design Inc.

* Please make note that revisions may affect pricing and lead times

No.	DATE	REVISION

McFarland Johnson
40 FARRELL STREET SOUTH BURLINGTON, VT 05403
Tel: (802) 862-8381 Fax: (802) 862-7450

TOWN OF HART FORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
HARTFORD VERMONT

PRECAST WALL PANELS – BARRIER

DRAWN	APPROVED	PROJ. No.
GAB		17185.00
CHECKED	SCALE	DATE
RED	AS NOTED	6/03/08

PC-7

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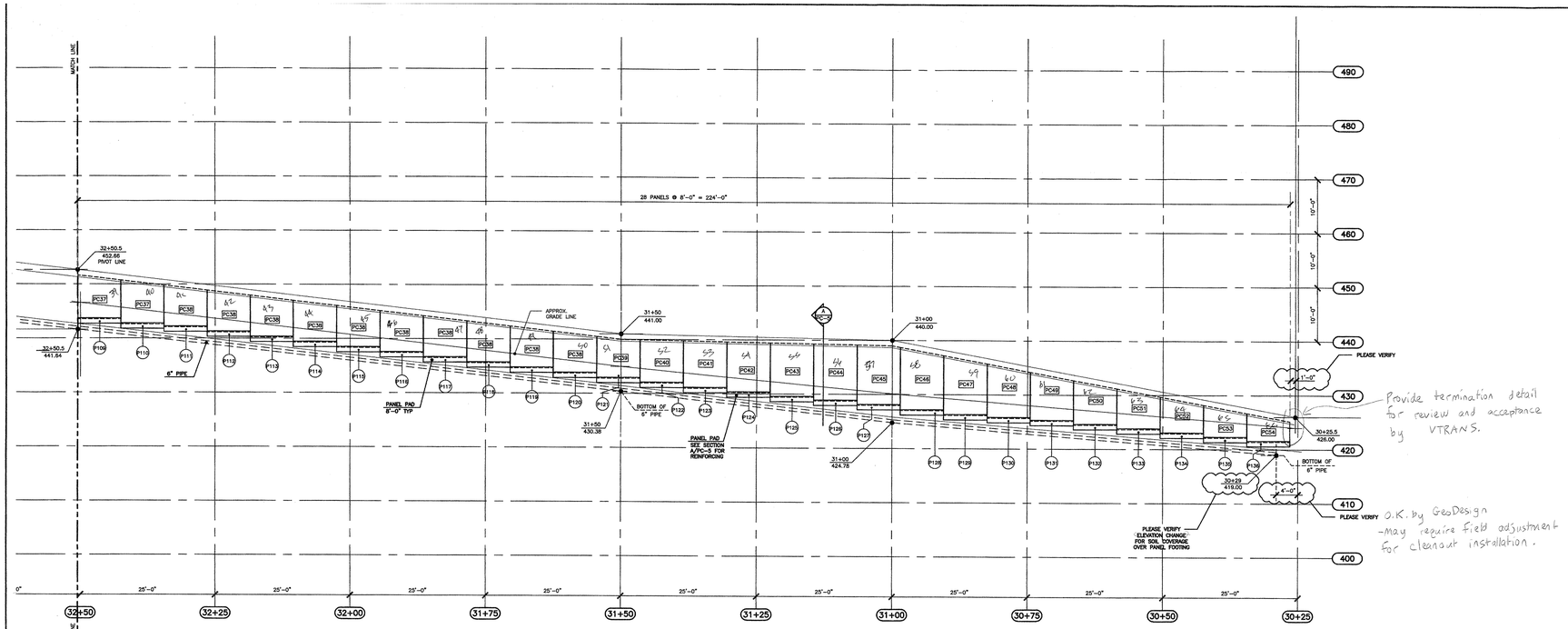

Provide termination detail for review and acceptance by VTRANS.

O.K. by GeoDesign -may require field adjustment for cleanout installation.

ELEVATION D

ELEVATION OF PRECAST LOWER WALL PANELS – WORCESTER AVENUE

3/4" = 1'-0"

NORTH

ELEVATIONS FOR PAD AT PRECAST CONCRETE PANELS							
PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD	PAD MARK	ELEV. TOP OF PAD
P109	443.90	P117	436.64	P125	429.59	P133	423.84
P110	442.98	P118	435.73	P126	428.93	P134	423.09
P111	442.14	P119	434.81	P127	428.16	P135	422.34
P112	441.23	P120	433.89	P128	427.21	P136	421.58
P113	440.31	P121	432.97	P129	426.58		
P114	439.39	P122	432.12	P130	425.96		
P115	438.48	P123	431.20	P131	425.34		
P116	437.56	P124	430.40	P132	424.58		

224
304
528

S.T. Griswold & Co. Inc.
183 Industrial Ave
PO Box 849
Williston, VT 05495
Ph: 802-658-0220
Fax: 802-658-6669
Architectural Precast Division

NPCA CERTIFIED PLANT

NOTE:

This shop drawing represents ST Griswold's interpretation of the architectural plans and specifications and our contract requirements for this project.

Prior to manufacture of product from this drawing, all dimensions, method of construction, and existing conditions must be checked, revised and approved by ST Griswold& client.

GENERAL NOTES:

1) All mortar and control joints are assumed to be 3/8".
2) All lengths stated are actual lengths.
3) All heights stated to be verified in field by others:
   -Not responsibility of ST Griswold.
4) All box anchorage to be supplied by others:
   -Not responsibility of ST Griswold.

Approval Stamp:

The undersigned has reviewed this drawing and is returning it to ST Griswold with the following approval for fabrication and shipment.

- [ ] Approved
- [X] Approved as Noted
- [ ] Approved as Noted (Resubmit for record)
- [ ] Revise and Resubmit

By: _____ (Signature) Date: 7/21/08

By: Daniel Hawley (Please Print)

Company: GeoDesign, Inc.

* Please make note that revisions may effect pricing and lead times

No.	DATE	REVISION

McFarland Johnson

40 FARRELL STREET SOUTH BURLINGTON, VT 05403
Tel: (802) 862-9381 Fax: (802) 862-7450

TOWN OF HART FORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
HARTFORD VERMONT

PRECAST WALL PANELS – BARRIER

DRAWN	APPROVED	PROJ. No.
GAB		17185.00
CHECKED	SCALE	DATE
RED	AS NOTED	6/03/08

PC-8

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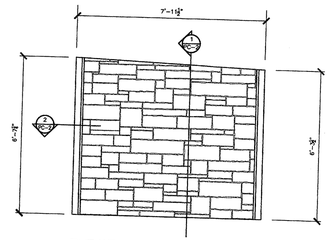
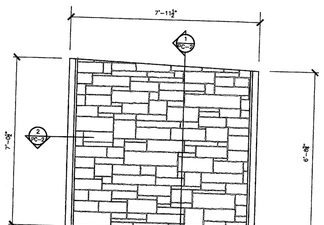
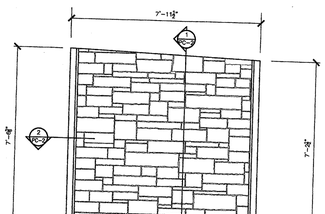
W:\Drawings\17185\00 Barrier\4 Drawing Sheets\PC-8-Ele.dwg, 6/3/2008 11:09:11 AM



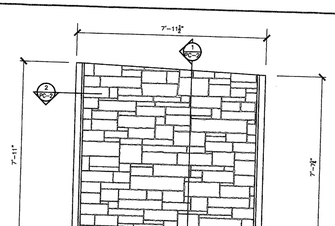
ELEVATION PC17 (2 pcs)
1" = 1'-0"



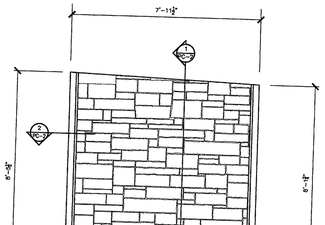
ELEVATION PC18 (1 pc)
1" = 1'-0"



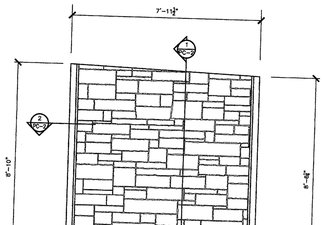
ELEVATION PC19 (1 pc)
1" = 1'-0"



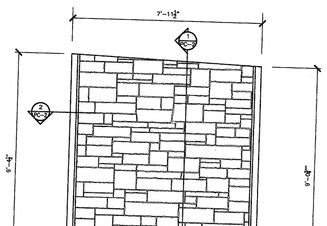
ELEVATION PC20 (1 pc)
1" = 1'-0"



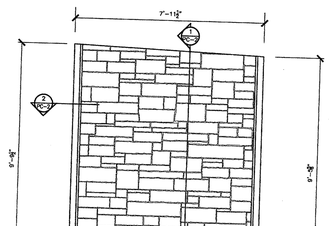
ELEVATION PC21 (1 pc)
1" = 1'-0"



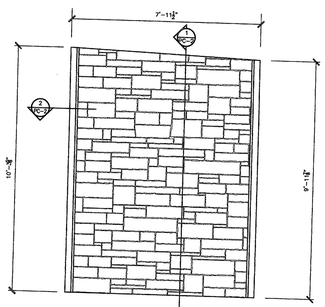
ELEVATION PC22 (1 pc)
1" = 1'-0"



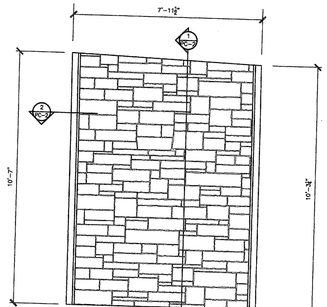
ELEVATION PC23 (1 pc)
1" = 1'-0"



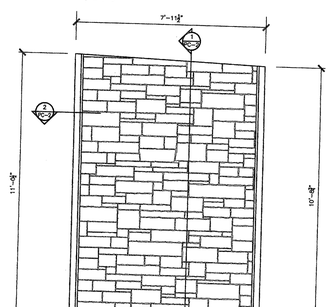
ELEVATION PC24 (1 pc)
1" = 1'-0"



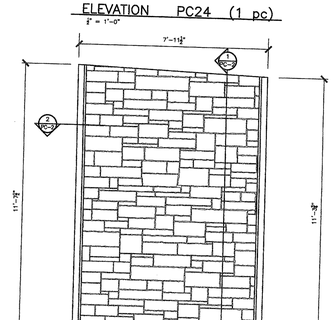
ELEVATION PC25 (1 pc)
1" = 1'-0"



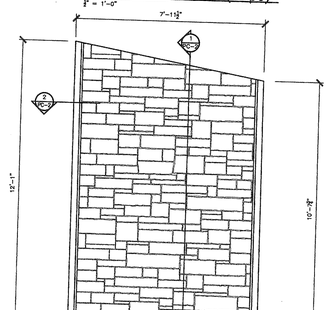
ELEVATION PC26 (1 pc)
1" = 1'-0"



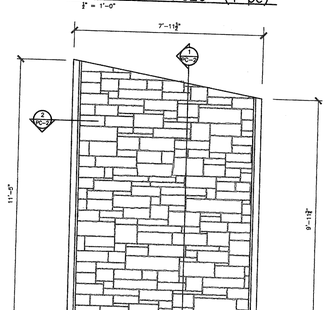
ELEVATION PC27 (1 pc)
1" = 1'-0"



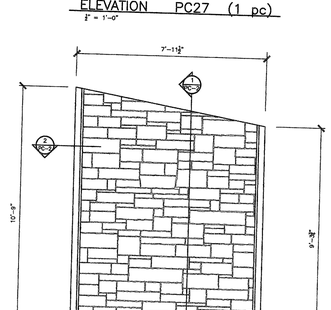
ELEVATION PC28 (1 pc)
1" = 1'-0"



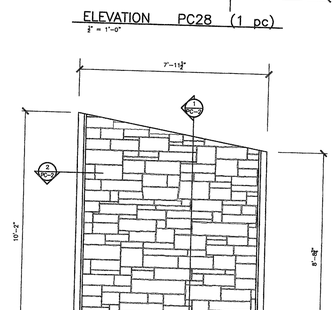
ELEVATION PC29 (1 pc)
1" = 1'-0"



ELEVATION PC30 (1 pc)
1" = 1'-0"



ELEVATION PC31 (1 pc)
1" = 1'-0"



ELEVATION PC32 (1 pc)
1" = 1'-0"

* contractor to verify dimensions

NOTE:
SEE SHEET PC-5 FOR PANEL REINFORCING, DETAILS AND NOTES.

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S.T. Griswold & Co. Inc.
163 Industrial Ave
PO Box 127
Windsor, VT 05089
Ph: 802-674-5000
Fax: 802-674-5009
Architectural Precast Division

NPCA CERTIFIED PLANT

NOTE:

This shop drawing represents ST Griswold's interpretation of the architectural plans and specifications and our contract requirements for this project.

Prior to manufacture of product from this drawing, all dimension method of construction, and erection procedure must be checked, revised and approved by ST Griswold's chief.

GENERAL NOTES:

1) All reveal and control joints are assumed to be 3/8".
2) All lengths stated are actual lengths.
3) All lengths stated to be verified in field by others:
   -Not responsibility of ST Griswold.
4) All load conditions to be determined by others.
   -Not responsibility of ST Griswold.

Approval Stamp:

The undersigned has reviewed this drawing and is returning it to ST Griswold with the following approval for fabrication and shipment.

- [ ] Approved
- [X] Approved as Noted
- [ ] Approved as Noted (Resubmit for record)
- [ ] Review and Resubmit

By: _____ Date: 7/21/08
Signature

By: Daniel Hruby
Please Print

Company: GEO Design, LLC

* Please make note that revisions may affect pricing and lead times

No.	DATE	REVISION

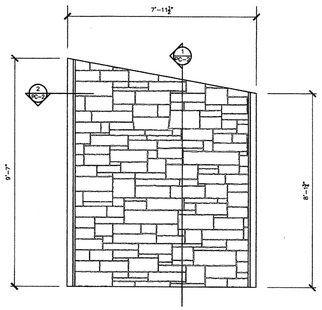
McFarland Johnson
40 FARRELL STREET SOUTH BURLINGTON, VT 05403
Tel: (802) 862-9381 Fax: (802) 862-7450

TOWN OF HART FORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
HARTFORD VERSHCOMT

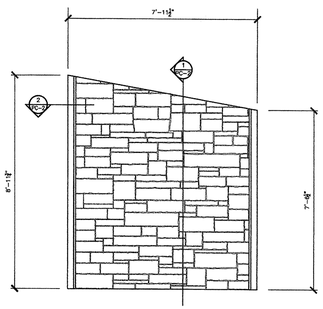
PRECAST ELEVATIONS

DRAWN	APPROVED	PROJ. No.
GAB		17185.00
CHECKED	SCALE	DATE
RED	AS NOTED	6/03/08

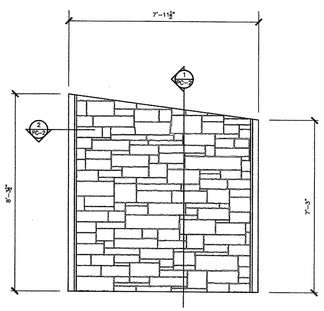
PC-9



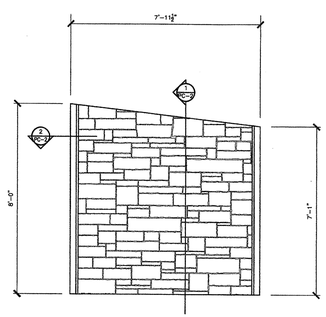
ELEVATION PC33 (1 pc)
3/4" = 1'-0"



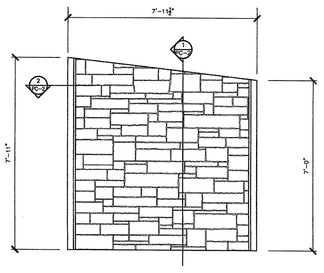
ELEVATION PC34 (1 pc)
3/4" = 1'-0"



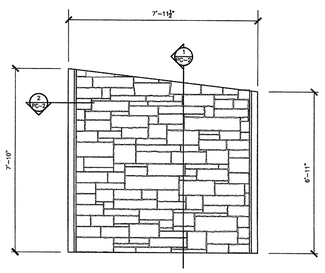
ELEVATION PC35 (1 pc)
3/4" = 1'-0"



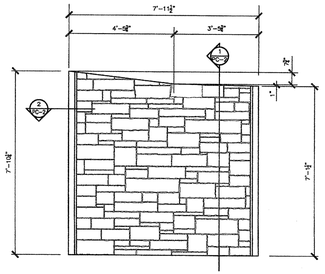
ELEVATION PC36 (18 pcs)
3/4" = 1'-0"



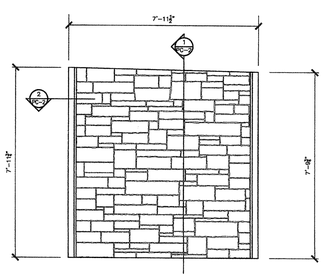
ELEVATION PC37 (2 pcs)
3/4" = 1'-0"



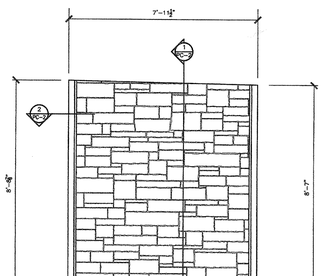
ELEVATION PC38 (10 pcs)
3/4" = 1'-0"



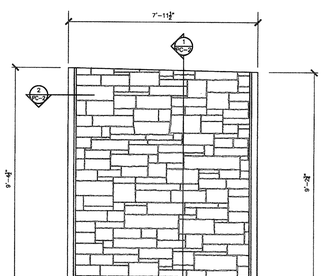
ELEVATION PC39 (1 pc)
3/4" = 1'-0"



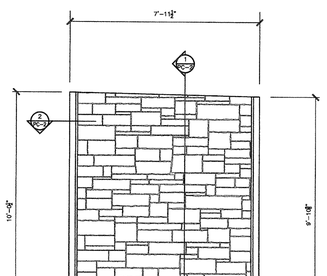
ELEVATION PC40 (1 pc)
3/4" = 1'-0"



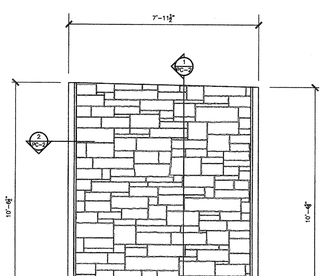
ELEVATION PC41 (1 pc)
3/4" = 1'-0"



ELEVATION PC42 (1 pc)
3/4" = 1'-0"



ELEVATION PC43 (1 pc)
3/4" = 1'-0"



ELEVATION PC44 (1 pc)
3/4" = 1'-0"

* contractor to verify dimensions

NOTE:
SEE SHEET PC-5 FOR PANEL REINFORCING, DETAILS AND NOTES.

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GRISWOLD
S.T. Griswold & Co. Inc.
153 Industrial Ave
PO Box 187
Hartford, VT 05001
Ph: 802-295-3021
Fax: 802-295-5889
Architectural Precast Division
NPCA CERTIFIED PLANT

NOTE:

This shop drawing represents ST Griswold's interpretation of the architectural plans and specifications and our contract requirements for this project.

Prior to manufacture of product from this drawing, all dimensions, notes and details shown on this shop drawing must be checked, revised and approved by ST Griswold client.

GENERAL NOTES:

1) All monitor and control joints are assumed to be 3/8".
2) All lengths stated are actual lengths.
3) All lengths stated to be verified in field by others:
-total responsibility of ST Griswold.
4) All face anchorage to be provided by others:
-total responsibility of ST Griswold.

Approval Stamp:

The undersigned has reviewed this drawing and is returning it to ST Griswold with the following approval for fabrication and shipment.

- ☐ Approved
- ☒ Approved as Noted
- ☐ Approved as Noted (Resubmit for record)
- ☐ Revise and Resubmit

By: _____ Date: 7/21/08
(Signature)
By: Daniel Howley
(Please Print)
Company: Geo Design Inc.

* Please make note that revisions may affect pricing and lead times

No.	DATE	REVISION

McFarland Johnson
40 FARRELL STREET SOUTH BURLINGTON, VT 05403
Tel: (802) 862-8381 Fax: (802) 862-7450

TOWN OF HART FORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
HARTFORD VERMONT

PRECAST ELEVATIONS

DRAWN	APPROVED	PROJ. No.
GAB		17185.00
CHECKED	SCALE	DATE
RED	AS NOTED	6/03/08

PC-10

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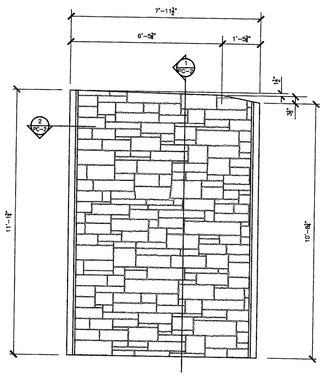
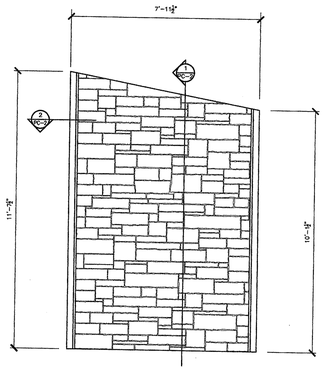
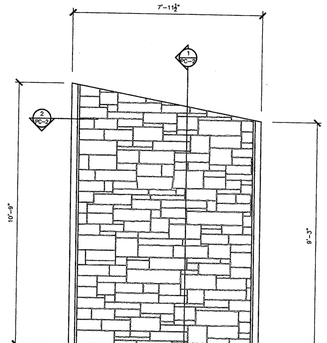


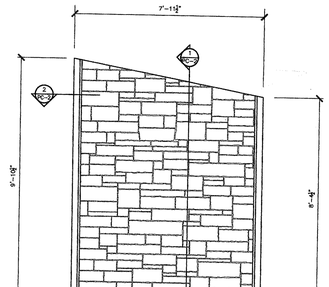
ELEVATION PC45 (1 pc)
½" = 1'-0"



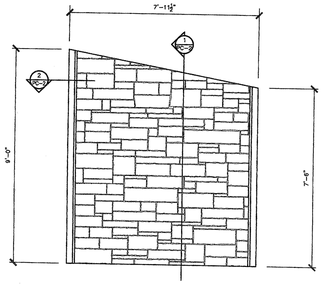
ELEVATION PC46 (1 pc)
½" = 1'-0"



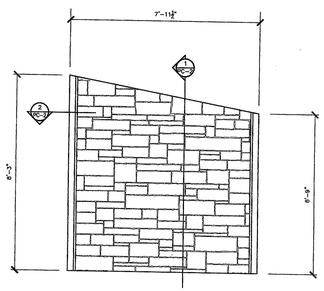
ELEVATION PC47 (1 pc)
½" = 1'-0"



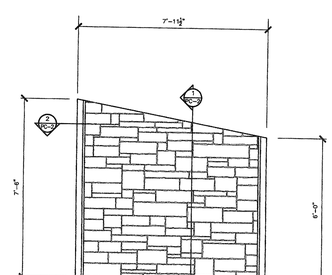
ELEVATION PC48 (1 pc)
½" = 1'-0"



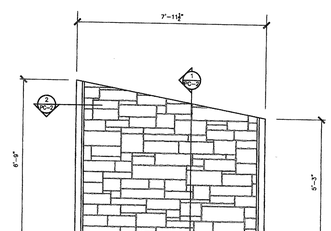
ELEVATION PC49 (1 pc)
½" = 1'-0"



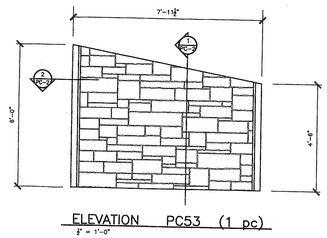
ELEVATION PC50 (1 pc)
½" = 1'-0"



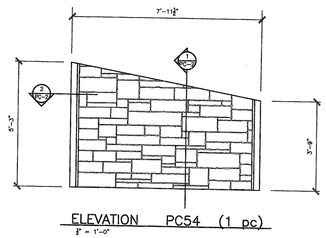
ELEVATION PC51 (1 pc)
½" = 1'-0"



ELEVATION PC52 (1 pc)
½" = 1'-0"



ELEVATION PC53 (1 pc)
½" = 1'-0"



ELEVATION PC54 (1 pc)
½" = 1'-0"

* contractor to verify dimensions

NOTE:
SEE SHEET PC-5 FOR PANEL REINFORCING, DETAILS AND NOTES.

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GRISWOLD

NPC CERTIFIED P

NOTE:

This shop drawing represents ST Griswol and Contract plans and specifications an for this project.

Prior to manufacture of product from th method of construction, and existing co reviewed and approved by ST Griswold or

GENERAL NOTES:

1) All mortar and control joints are dem
2) All heights shown are actual heights.
3) All dimensions are nominal unless no
4) All base preparation to be supplied by
=Not responsibility of ST Griswold.

Approval Stamp:

The undersigned has reviewed this drawin ST Griswold with the following approval to shipment.

- ☐ Approved
- ☒ Approved as Noted
- ☐ Approved as Noted (Resubmit for record)
- ☐ Revise and Resubmit

By: _____ Date: _____
(Signature)

By: David Howe
(Please Print)

Company: Gra Design, Inc

* Please make note that revisions may at times

No.	DATE	REVISION

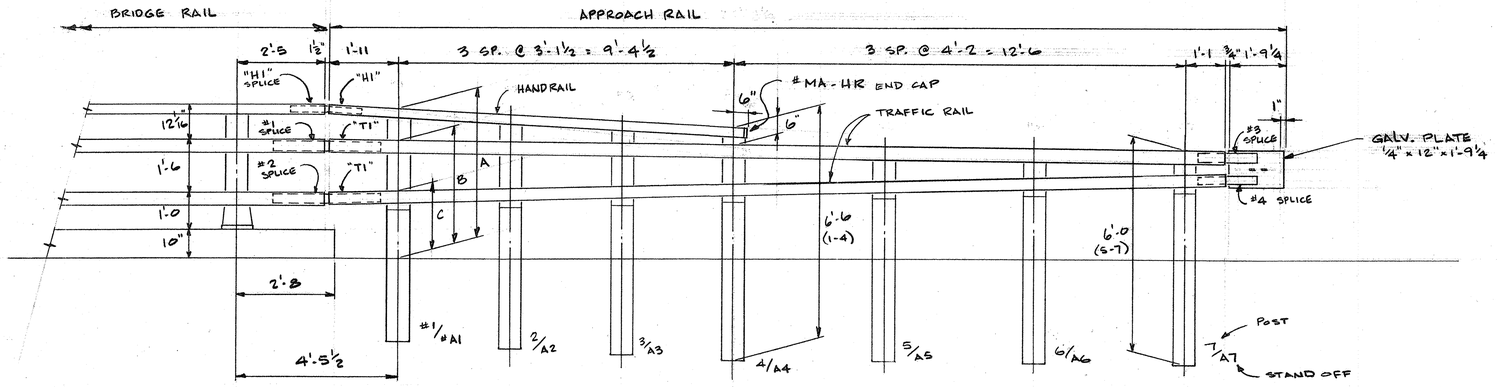
McFarland Johnson

40 FARRELL STREET SUITE 201 SOUTH BURLINGTON, VT 05403

TOWN OF HART FORD
COUNTY OF WINDSOR
U.S. ROUTE 5 (MAJOR COLLECTOR)
VERMONT
HARTFORD

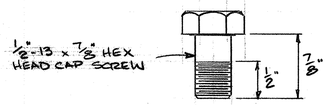
DRAWN: GAB	APPROVED:
CHECKED: RED	SCALE: AS NOTED

PC

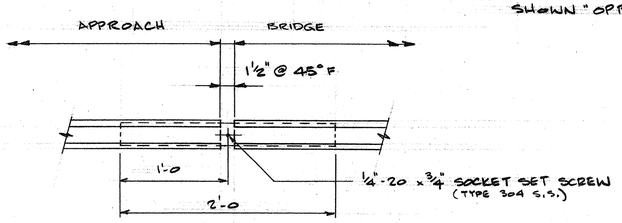


INBOARD ELEVATION - APPROACH RAIL
SHOWN "OPPOSITE HAND"

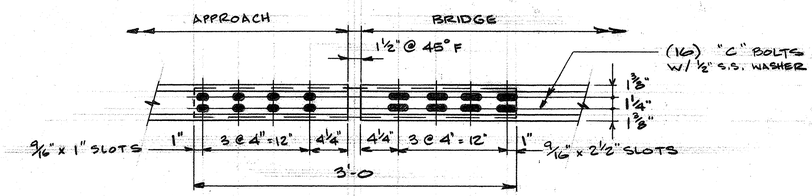
Post No.	Rail Height Dimensions		
	A	B	C
1	4'-2 1¹¹/₁₆"	3'-3 ¾"	1'-10 ⁹/₁₆"
2	4'-0 ⅝"	3'-3 ⁵/₁₆"	1'-11 ⁷/₁₆"
3	3'-10 ⁹/₁₆"	3'-2 ⅞"	2'-0 ⁵/₁₆"
4	3'-8 ½"	3'-2 ½"	2'-1 ¼"
5		3'-1 ¹⁵/₁₆"	2'-2 ⅜"
6		3'-1 ⅜"	2'-3 ⁹/₁₆"
7		3'-0 ¹³/₁₆"	2'-4 ¾"



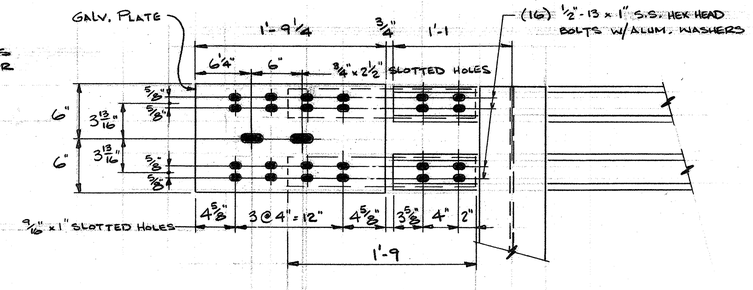
"C" BOLT (32) REQ'D.
TYPE 304 S.S.



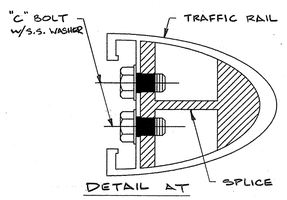
HANDRAIL SPLICE - "OUTBOARD VIEW"



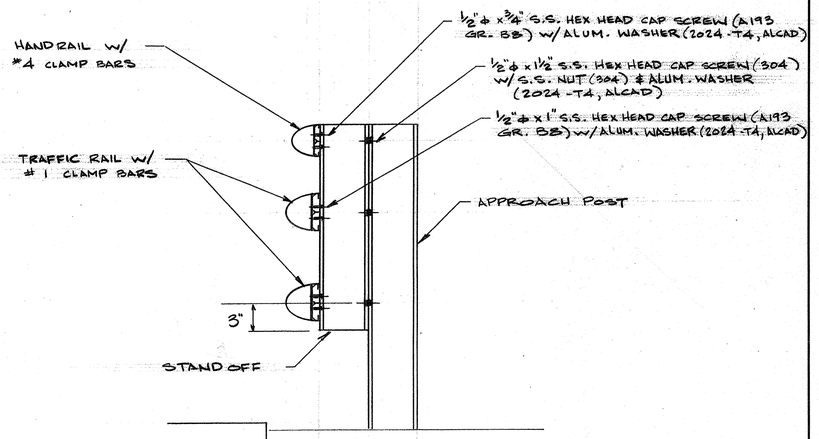
TRAFFIC RAIL SPLICE - "OUTBOARD VIEW"



APPROACH RAIL - GUARDRAIL TRANSITION



DETAIL AT TRAFFIC RAIL SPLICE



DETAIL AT APPROACH POST w/ STAND OFF

JOB # AB97049

QTY.	Pc. Mk.	DESCRIPTION
1	1	APPROACH POST
1	2	
1	3	
1	4	
1	5	
1	6	
1	7	↓
1	A1	STAND OFF
1	A2	
1	A3	
1	A4	
1	A5	
1	A6	
1	A7	↓
28	#1	CLAMP BARS
8	#4	CLAMP BARS
1		#MA-HR CAP

4" x 3½" HANDRAIL

QTY.	Pc. Mk.	LENGTH
1	H1	11'-8

4¾" x 4" TRAFFIC RAIL

QTY.	Pc. Mk.	LENGTH
2	T1	24'-10 5/8

QTY.	Pc. Mk.	DESCRIPTION
1	H1	HANDRAIL SPLICE
1	#1	TRAFFIC RAIL SPLICE
1	#2	TRAFFIC RAIL SPLICE
1	#3	TRAFFIC RAIL SPLICE
1	#4	TRAFFIC RAIL SPLICE
1		GALV. PLATE
32		"C" BOLT
32		½" FLAT WASHER 304 S.S.
16		½"ø x ¾" S.S. BOLT
72		½"ø x 1" S.S. BOLT
36		½"ø x 1½" S.S. BOLT
36		½" S.S. HEX NUTS
124		½" AL. WASHERS

ISSUE	DATE	DESCRIPTION	BY
1	6-19-09	FOR APPROVAL	TD

AUCIELLO IRON WORKS INC
560 MAIN ST. HUDSON, MA (978) 568-8382

VERMONT AGENCY OF TRANSPORTATION
HARTFORD, VT
#RF 0113(40)

ALUMINUM APPROACH RAIL

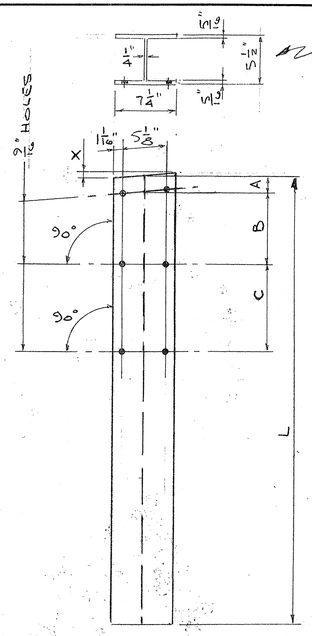
SURFACE PREP: NONE
FINISH: MILL FINISH

FOR: VT. RECREATIONAL SURFACING

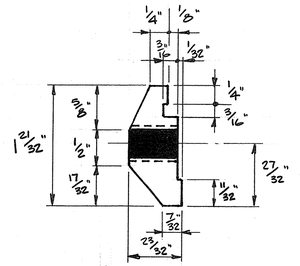
DR: KPP 6-13-09
CHK: VM 6-19-09
DWG. NO. BR-2960
JOB NO. AB97049-1001
SHEET 1 OF 2

BL MARSPACE INC. 10/6/16

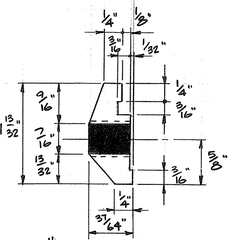
DIM'S TYPICAL AT APPROACH POSTS & STANDOFFS ALLOY 6061-T6(TYP.)



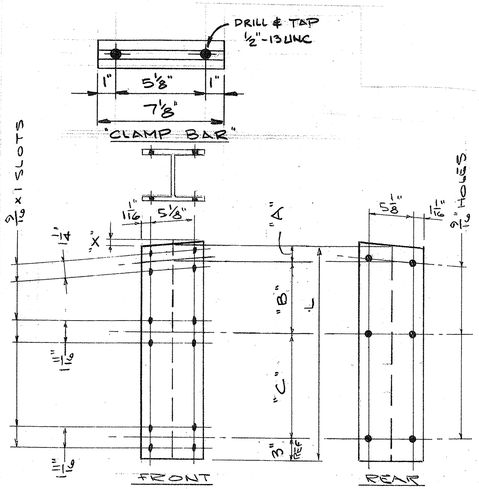
MK	QUAN	X	L	A	B	C
1	1	5/8"	6'-6	1 9/16"	11 7/16"	1'-5 1/8
2	1				9 3/4"	1'-3 7/8
3	1				8 1/8"	1'-2 9/16
4	1	↓	↓	↓	6 7/16"	1'-1 1/4
5	1	5/16"	6'-0	2"	–	11 9/16"
6	1				–	9 13/16"
7	1	↓	↓	↓	–	8 1/16"



#1 CLAMP BAR (28 REQ'D.)

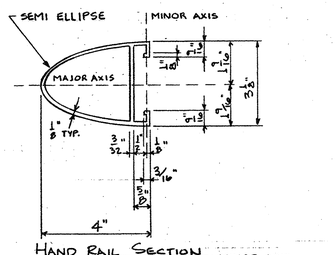


#4 CLAMP BAR (8 REQ'D.)

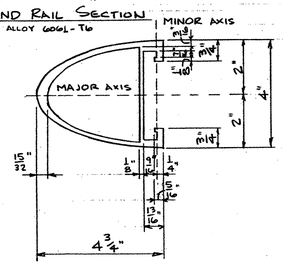


STANDOFF ALLOY 6061-T6

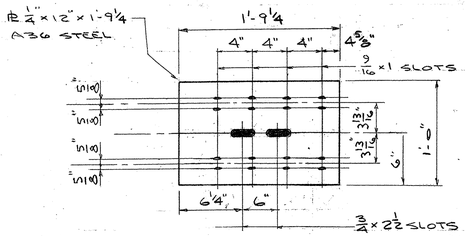
MK	QUAN	L	A	B	C	X
A1	1	2'-9 1/8	1 9/16"	11 7/16"	1'-5 1/8	5/8"
A2	1	2'-6 3/16		9 3/4"	1'-3 7/8	
A3	1	2'-3 1/4		8 1/8"	1'-2 9/16	
A4	1	2'-0 1/4	↓	6 7/16"	1'-1 1/4	↓
A5	1	1'-4 9/16	2"	–	11 9/16"	5/16"
A6	1	1'-2 13/16		–	9 13/16"	
A7	1	1'-1 1/16	↓	–	8 1/16"	↓



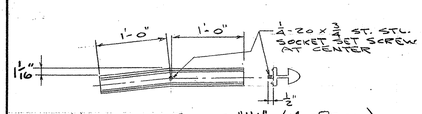
HAND RAIL SECTION ALLOY 6061-T6



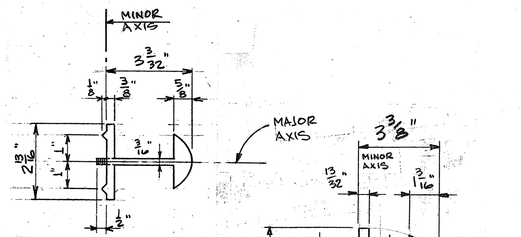
TRAFFIC RAIL SECTION ALLOY 6061-T6



GALV. PLATE (1 -REQD) (ASTM A36)

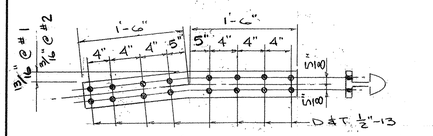


HANDRAIL SPLICE "H1" (1 -REQD)



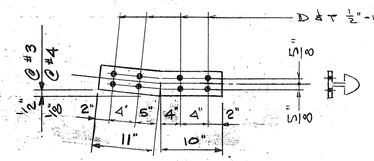
HANDRAIL SPLICE ALLOY 6061-T6

TRAFFIC RAIL SPLICE ALLOY 6061-T6



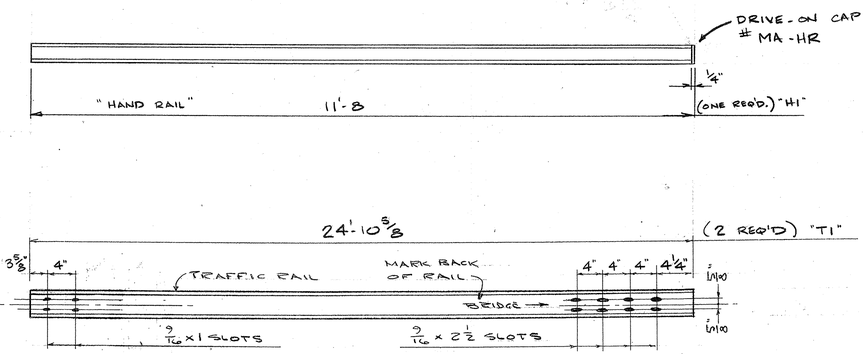
TRAF. RAIL SPLICE #1 (1 -REQD)

TRAF. RAIL SPLICE #2 (1 -REQD)



TRAF. RAIL SPLICE #3 (1 -REQD)

TRAF. RAIL SPLICE #4 (1 -REQD)



ISSUE	DATE	DESCRIPTION	BY
1	6-19-09	FOR APPROVAL	

AUCIELLO IRON WORKS INC
560 MAIN ST. HUDSON, MA (978) 568-8382

VERMONT AGENCY OF TRANSPORTATION
HARTFORD, VT
RF 0113(40)

ALUMINUM APPROACH RAIL

SURFACE PREP:	FINISH:
NONE	MILL

FOR: VERMONT RECREATIONAL

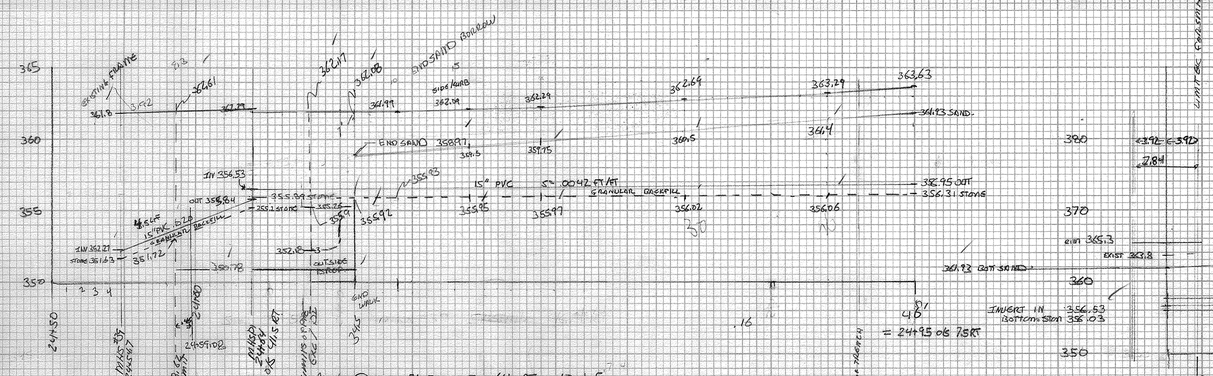
DR: KM 6-13-09	DWG. NO.
CHK: LM 6-19-09	BR-2960
JOB NO: AB97049-1001	SHEET 2 OF 2

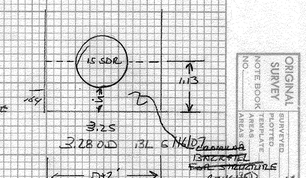
MAKEPEACE

SANITARY SEWER — BARNES AVE.

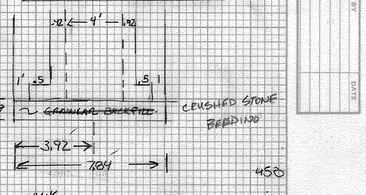
PLATE 3-FULL CROSS SECTION-FULL LINE
NATIONAL PRINTING
PRINTED IN U.S.A.

ROADWAY FINISH AS SHEET PAVING AND PATCHING





(TYP) MAN HOLE EXCAVATION LIMITS



① 24+54.7 TO 24+64 RT 10 LF

② 24+64 TO 24+95 RT 46 LF.

ITEM 204.20 TRENCH EXCAVATION EXCLUDING MANHOLES

① (361.8-351.63) = 10.18 / 2 = 10.52 — 5 x .646 x 3.28 x 1/27 = 5 x .52 x 1.64 x 3.28 x 1/27 x 150% = 1.87 → 2.36 CY
(362.61-351.72) = 10.89 / 2 = 10.52 — MHSD-1 STRUCTURE 11/CY RT — 5 x (7.84/2)² FT x 1/27 = 5 x 3.84 x 1.64 x 1/27 x 150% = 1.46 CY

6.27 6.16 AVG = 6.22

② (362.17-359) + (362.08-355.92) /2 x 3.28 x 3.08 x 1/27 = 1.22 x 3.28 x 3.08 x 1/27 x 150% = 8.94 CY
(356.97-355.92) + (359.5-355.95) /2 x 3.28 x 8 x 1/27 =
(359.5-355.95) + (359.75-355.97) /2 x 3.28 x 5 x 1/27 =
(359.75-355.97) + (360.5-356.02) /2 x 3.28 x 10 x 1/27 =
(360.5-356.02) + (361.4-356.06) /2 x 3.28 x 12.08 x 1/27 =

② @ 1.5 — .5 (1.27 + 1.16 / 2) x 3.28 x 3.08 x 1/27 = .14 CY (INCLUDED W/ CALL ABOVE) CPH 1/29/08

22.52 + .14 = 22.66 CY

7.58
22.26 C.Y BL 6/8/06
(PAID 2.36 CY OF 22.6 CM 8/8/07) BL
20.22 CY BL 3/13/08
- 2.751 MHSD D3 5/13/07
47.73 ISY 3/13/08
668 05/06/10

47.31 SEWER #2 TOTAL
- 2.36 6/28/08
- 28.41 5/28/08
16.96 PAID 5/2/08

NEW SEWER #2
204.20

MHSD-1 VOL = 26.4 CY + 1.11 CY = 27.51 CY
PIPE 24+64 - 24+95 RT VOL = 20.22 CY
S = 47.73 CY CAB 05/06/10
RLD 1/27/11

④ 26+00 RT — 27+50 RT 150'

ITEM 204.20 TRENCH EXCAVATION → EXCLUDING MANHOLES → DEPTH TO BE DETERMINED BY SHOP DRAWINGS

(5.88+6.26/2) x 3.25 x 142.16 x 1/27 = 103.87 CY BL 5/9/07 RD 5/15/07
6 x 3.28 x 142.16 x 1/27 = 86.25 5116107 CAB 05/06/10
1.5 x 1107 x 3.28 x 142.16 x 1/27 = 27.71 CPH 1/29/08
111.09 CY BL 5/9/07
19.74 CY
89.93 CW BELOW RD 5/15/07

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES
3.25 x 1.13 x (142.16 + 97.04 + 97.16) x 1/27 = 3.28 = 145.2 cy BL 5/9/07 RD 5/15/07
BASE OF MHS D3 = 1.20 C.Y.

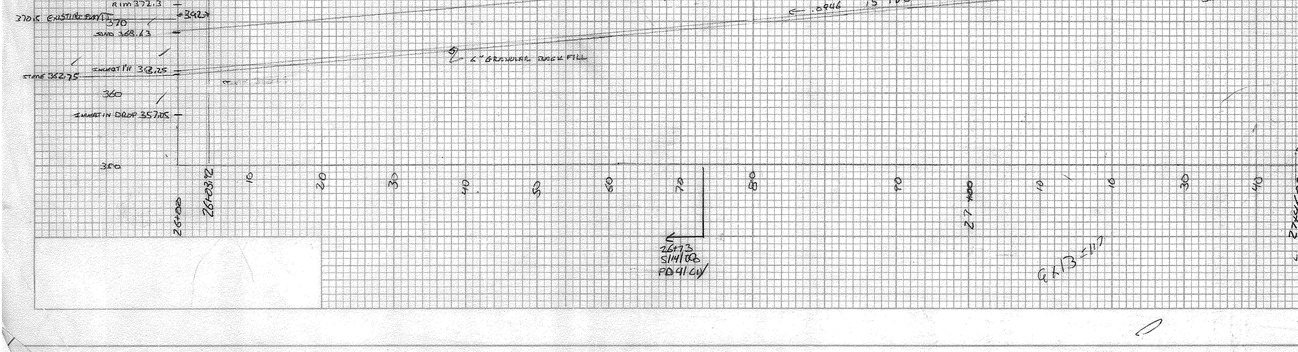
PLOTTED BY BL 5/9/07

PD 41 CY TRENCH 5/14/08
PD 71.07 CY TRENCH 5/19/08

1/27/08 CPH

NEW SEWER #4 204.20

MHS D-3 VOL = 35.79 CY SEE CALL BINDER
PIPE 26+00 - 27+50 VOL = 114.07 CY
S = 149.86 CAB 05/06/10 RLD 1/31/11



③ 24+95 - 26+00 RT

ITEM 204.20 TRENCH EXCAVATION → EXCLUDING MANHOLES

(5.9 + 12.18/2) x 3.28 x 97.16 x 1/27 = 185.77 CY BL 5/9/07
10670 CY BL 5116107 RD 5/15/07

EXC FOR D2 BASED ON SHOP DRAWING DEPTH

BAD 51.1108

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES

PIPE BEDDING 3.25 x 1.13 x (97.16 + .5 + 1.0 + .5 + 1.0) x 1/27 = 13.62 CY BL 5/9/07 RD 5/15/07
3.28
BELOW STRUCTURE D2 24+95 - 7.5 RT — 13.75 CY BL 5116107
8.84 DIA X .67 BASE = 1.52 CY
1T-2 = 1.20 C.Y. RD 5/15/07
7.44

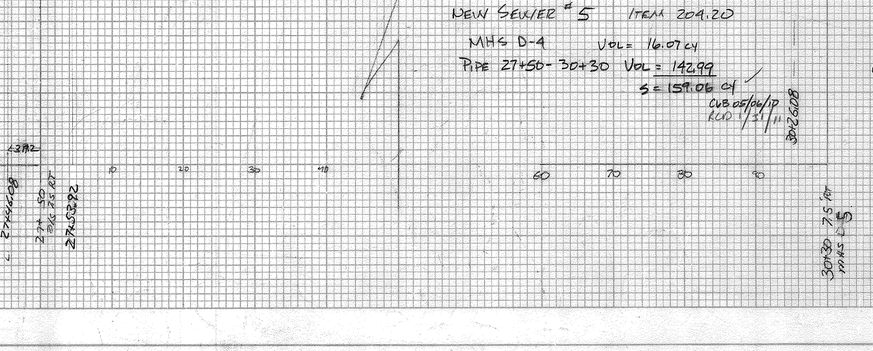
NEW SEWER #3 204.20
MHS D-2 VOL = 4.81 CY
PIPE 24+95 26+00 VOL = 106.70 CY
S = 111.51 CY CAB 05/06/10
RLD 1/27/11

⑤ 27+50 TO 30+30 RT

Item 204.20 TRENCH EXC.

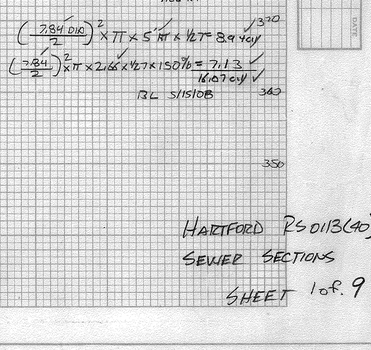
(5.85+2.8/2) x 3.25 x 272.16 x 1/27 = 141.59 CY BL 5/9/07 RD 5/15/07 — 142.99 CY BL 5/12/07
3.28
Exc FOR D4 DEPTH BASED ON SHOP DRAWING

ITEM 204.30 GRANULAR BACKFILL
(272.16+.5+1.0+.5) x 3.25 x 1.13 x 1/27 = 37.78 CY RD 5/15/07
3.28
3277 CY BL 5116107
BELOW STRUCTURE 1.52 CY
1.20 C.Y. RD 5/15/07



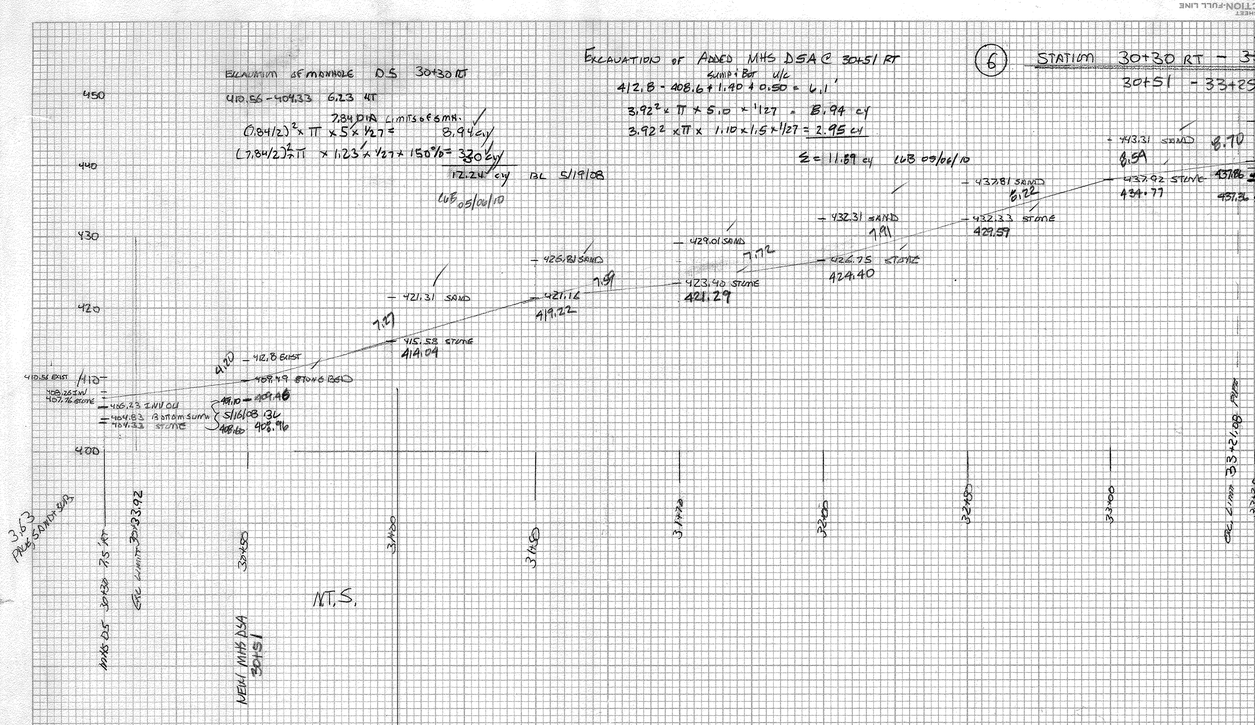
NEW SEWER #5 ITEM 204.20

MHS D-4 VOL = 16.07 CY
PIPE 27+50 - 30+30 VOL = 142.99 CY
S = 159.06 CY CAB 05/06/10 RLD 1/31/11



HARTFORD RS 0113(40)
SEWER SECTIONS
SHEET 1 of 9

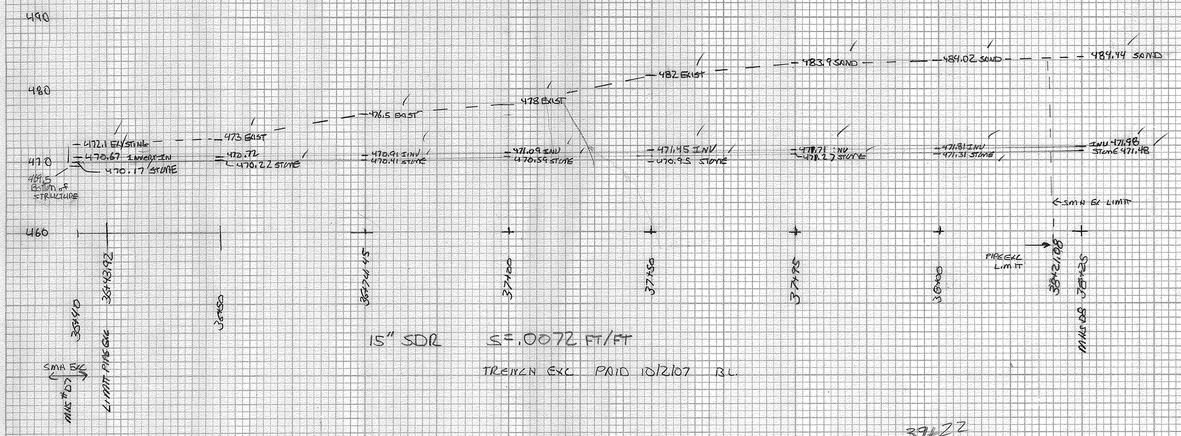
HARTFORD AVE — SANITARY SEWER — NTS


EXCAVATION OF MANHOLE D5 30+30 RT
410.56 - 404.33 6.23 FT
7.84 DIA LIMITS OF EXCAVATION
(0.84/2)² x π x 5 x 1/27 = 8.99 CY
(7.84/2)² x π x 1.23 x 1/27 x 150% = 33.05 CY
112.24 CY BL 5/19/08
LWB 05/06/10
EXCAVATION OF ADDED MHS D5A @ 30+51 RT
SUMP BOT 1/6
412.8 - 408.6 + 1.40 + 0.50 = 6.1'
3.92² x π x 5.10 x 1/27 = 8.94 CY
3.92² x π x 1.10 x 1.5 x 1/27 = 2.95 CY
Σ = 11.89 CY LWB 05/06/10
STATION 30+30 RT - 33+25 RT 0/S 7.5'
30+51 - 33+25
SAND 446.06
410.56 EXIST
408.79 STONE BSD
406.23 INVERT OUT
404.83 BOTTOM SUMP
404.33 STONE
408.10 → 407.96
5/16/08 BL
408.66 408.96
428.01 SAND
423.40 STONE 421.29
426.81 SAND
421.74 419.22
421.31 SAND
415.58 STONE 414.09
432.31 SAND 1.91
426.75 STONE 424.40
432.81 SAND 6.22
432.33 STONE 424.57
437.31 SAND 8.59
437.92 STONE 434.77
440.27 INVERT OUT
437.26 STONE
8.70
7.72
7.59
7.27
4.20
6.22
1.91
MHS D5 SLOPE 7.5' RT
3+92
3+00
3+50
3+25
3+75
3+00
3+25
3+50
3+00
3+25
3+50
3+00
3+25
3+50

SANITARY SEWER HARTFORD AVE

PLATE 3-FULL CROSS SECTION-PULL LINE
HIGHWAY PUBLICITY METHODS BUREAU
NATIONAL PAINTWAY
PRINTED IN U.S.A.

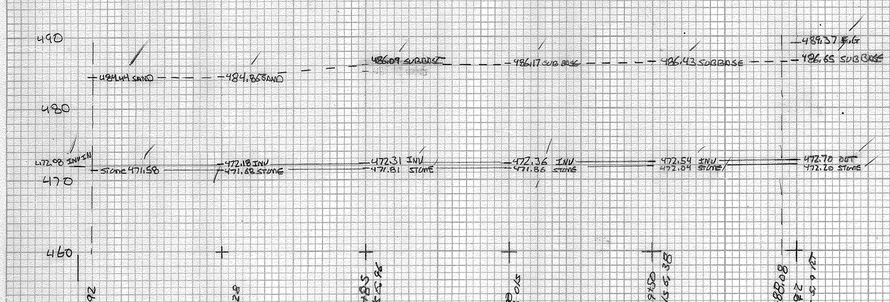
(8) STATION 36+40 0/S 7.5 RT TO 38+25 0/S 7.5 RT
MHS D7 ⟶ SMH-D8 mod-out side drop



15" SDR S=.0072 FT/FT

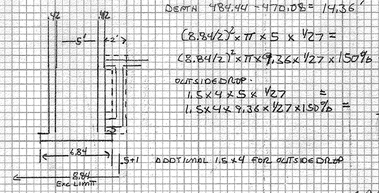
TRENCH EXC PAID 10/2/07 BL

(9) STATION 38+25 0/S 7.5 RT TO 39+92 0/S 5.9' RT 167 LF
MHS D8 MHS D9



TRENCH EXCAVATION 10/2/07
SMH 8 (NOTE 5'Ø STRUCTURE INST'D)
INVERT OUT 471.98 - 1.4 (BASE) = 1.5 STONE = 470.98
DEPTH 484.40 - 470.08 = 14.36'

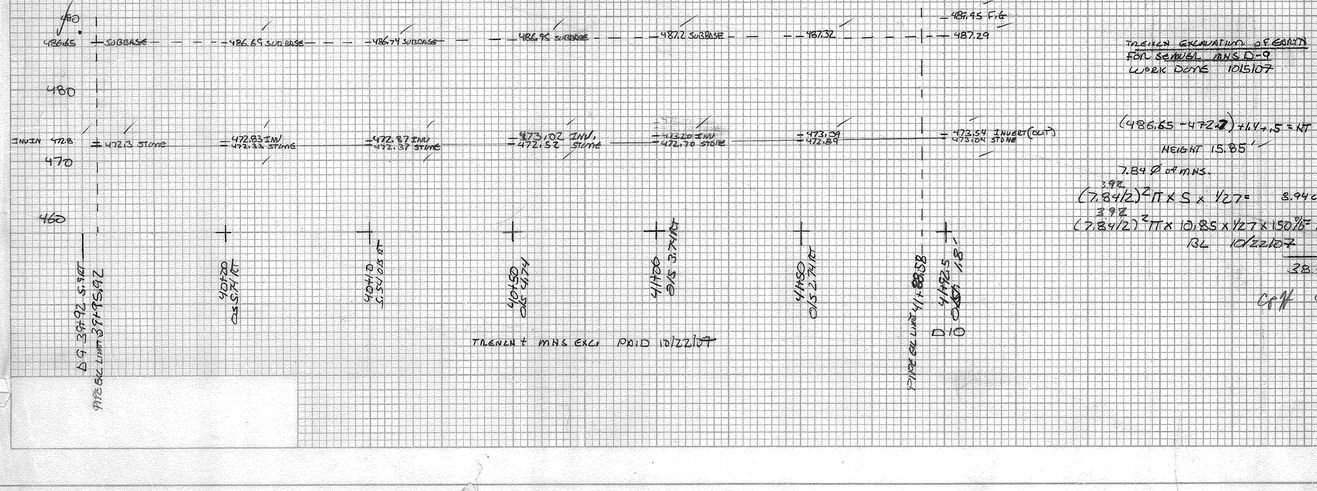
(8.84/2)²×π×5 × 1/27 = 11.37
(8.84/2)²×π×9.36×1/27×150% = 3.92 cy
OUTSIDE DROP: 1.5×4×5×1/27 = 1.11 cy
1.5×4×9.36×1/27×150% = 3.12 cy
4.7.52 c.y
BL 10/3/07



CPM 01/30/08

(10) 39+92 0/S 5.9 RT TO 41+92.5 0/S 1.8' RT 200.5 LF
MHS 9 MHS 10

TRENCH



TRENCH + MHS EXC. PAID 10/22/07

TRENCH EXCAVATION OF EARTH FOR SEWER, MHS D-9 WORK DONE 10/5/07

(486.65 - 472.7) + 1.4 + .5 = HT
HEIGHT 15.85'
2.84 Ø OF MHS.
3.28
(7.84/2)²π×5 × 1/27 = 8.94 cy
3.28
(7.84/2)²π×10.85×1/27×150% = 29.1 cy
BL 10/22/07
38.04 cy

CPM 01/30/08

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤5	+5	WIDTH	LENGTH	C.Y		C.Y	150%
36+43.92	1.93									
		2.36	2.36		3.28	6.08	1.73 c.y		1.74	
36+50	2.78				3.28					
		4.44	4.44		3.28	24.45	13.07		13.19	
36+74.45	6.09									
		6.75	5.0		3.28	25.55	15.38		15.52	
37+00	7.41			1.75	3.28	25.55	8.07	150%	8.15	
		9.23	5.0		3.28	50	30.09		30.37	
37+50	11.05			4.23	3.28	50	38.19	150%	38.54	
		11.84	5.0		3.28	45	27.89		27.33	
37+95	12.63			6.84	3.28	45	55.58	150%	56.09	
		12.67	5.0		3.28	5	3.01		3.04	
38+00	12.71			7.67	3.28	5	6.92	150%	7.00	
		12.84	5.00		3.28	21.08	12.68		12.80	
38+21.08	12.96			7.84	3.28	21.08	29.84	150%	30.12	

~~242.44 c.y~~ BL 5/10/07
~~241.65 c.y~~ RD 5/16/07

TOTAL 103.97 + 137.9 = 243.89 cy
BL 5/17/07 PAID 10/2/07 BL
CORRECTED FOR O.D

EXCAVATION OF SMH 7 TO BE BASED ON SHOP DRAWING
(472.1 - 468.5)(7.83/2)² × π × 1.27 = 4.84 cy BL 9/27/06
2.6

ITEM 204.30 GRANULAR BACK FILL FOR STRUCTURES
[177.16 + 1.5 + 1.5 + 1) × 3.25 × 1.13 × 1/27 = ~~24.50 cy~~ 1.20 cy 24.73 cy BL 5/17/07
UNDER MHS D7 3.28

G.B. = 25.93 cy CPM 01/30/08

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤5'	+5'	WIDTH	LENGTH	C.Y	150%	C.Y	150%
38+28.92	12.86				3.28					
		13.02	5.0		3.28	21.08	12.69		12.80	
38+50	13.18			8.02	3.28	21.08		30.53		30.81
		13.73	5.0		3.28	35.00	21.06		21.26	
38+85	14.28			8.73	3.28	25.00		55.17		55.68
		14.30	5.0		3.28	15.00	9.03		9.11	
39+00	14.31			9.3	3.28	15.00		25.19		25.42
		14.35	5.0		3.28	50.00	30.09		30.37	
39+50	14.39			9.35	3.28	50.00		84.41		85.19
		14.42	5.0		3.28	38.08	22.92		23.13	
39+88.08	14.45			9.42	3.28	38.08		64.76		65.37
							~~95.79~~	~~260.06~~	96.67	262.47

TOTAL 359.14 cy BL 5/10/07 BL 10/4/07 → 355.85 cy

EXCAVATION OF SMH 8 TO BE BASED ON SHOP DWG

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES
OK (159.16 + 1.5 + 1.5 + 1) × ~~3.25~~ 3.28 × 1.13 × 1/27 = ~~22.06 cy~~ 1.20 cy 22.26 cy BL 5/17/06
UNDER SMH #8

G.B. 23.46 cy CPM 01/30/08

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤5'	+5	WIDTH	LENGTH	C.Y	150%	C.Y	150%
39+95.92	14.35									
		14.355	5		3.28	4.08	2.96		2.98	6.96
40+00	14.36			9.355	3.28	4.08		6.89		
		14.365	5		3.28	10	6.07		6.07	17.07
40+10	14.37			9.365	3.28	10		16.91		
		14.4	5		3.28	40	24.07		24.30	68.52
40+50	14.43			9.4	3.28	40		67.89		
		14.47	5		3.28	50	30.09		30.37	86.28
41+00	14.50			9.47	3.28	50		85.49		
		14.47	5		3.28	50	30.09		30.37	86.28
41+50	14.43			9.47	3.28	50		85.49		
		14.34	5		3.28	38.58	23.22		23.43	65.66
41+88.58	14.25			9.34	3.28	38.58		65.06		
							~~115.75~~	~~327.73 cy~~	117.02	330.77

BL 5/10/07 443.68 c.y

TOTAL 447.79 c.y RD 10/22/07
BL 5/17/07

EXCAVATION OF SMH 9 TO BE BASED ON SHOP DWG

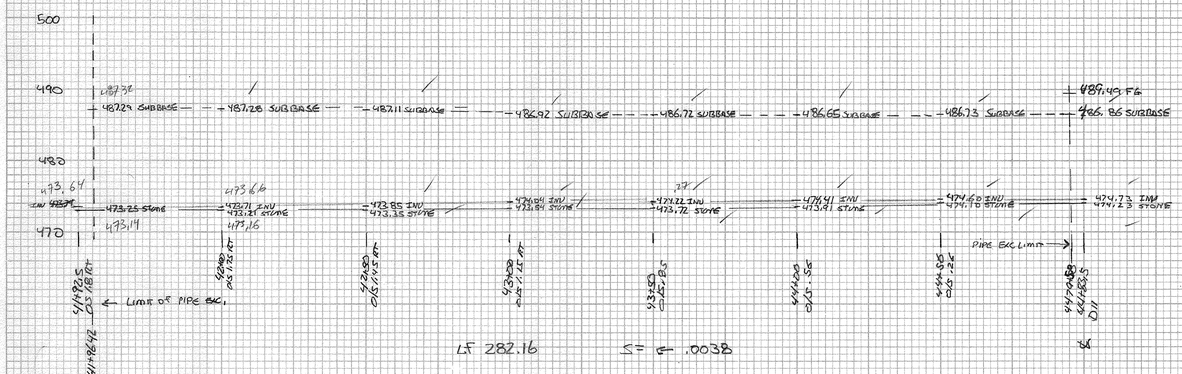
ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES.
(197.66 LF + 1.5 + 1.5 + 1) × ~~3.25~~ 3.28 × 1.13 × 1/27 = ~~26.61 cy~~ 1.20 c.y 26.86 c.y BL 5/17/07
UNDER SMH #9

G.B. 28.05 cy CPM 01/30/08

HARTFORD RS0113(69)
SEWER SECTIONS
SHEET #3 of 9

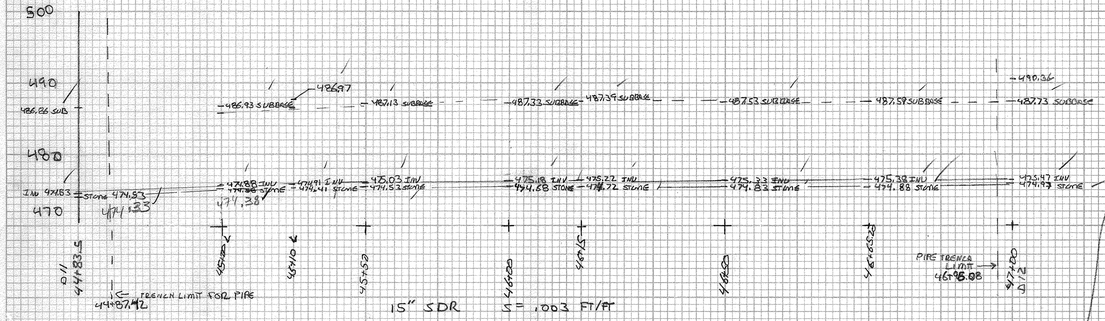
PLATE 3-FULL CROSS SECTION-PULL LINE
NATIONAL PRINTSHOP
PRINTED IN U.S.A.

(20) STATION 41+92.5 O/S 7.8 RT TO 44+83.5 ℄ 291 LF
MHS 10 MHS D11 (MOD - OUTSIDE DROP)



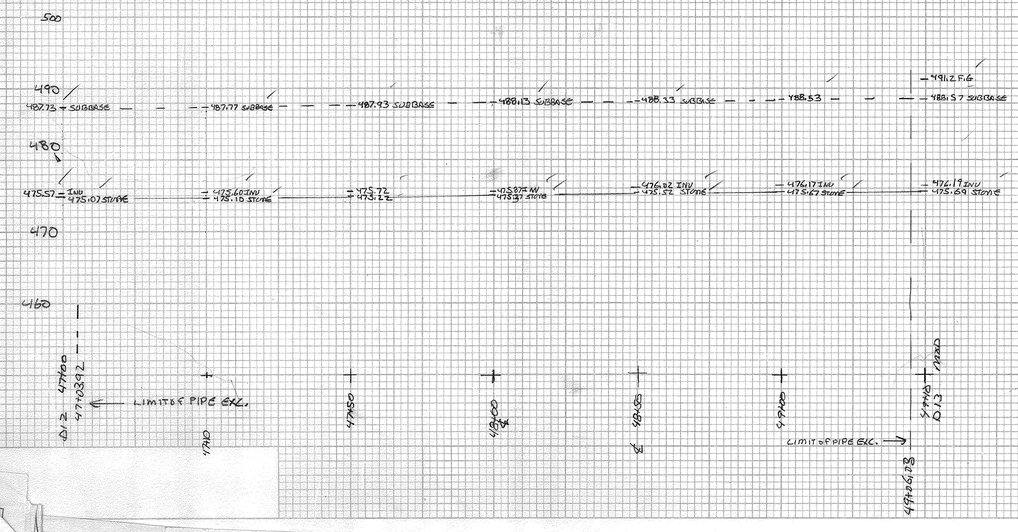
LF 282.16 S= @ .0038

(21) 44+83.5 ℄ TO 47+00 ℄ 216 LF
(MHS D11 MOD-OUTSIDE) MHS D12



15" SDR n = .1003 FT/FT

(27) 47+00 ℄ TO 49+10 ℄ (210 LF)
(MHS D12) MHS D13 (MOD) OUTSIDE DROP



D12 STRUCTURE Bottom .85 BELOW INVERT
488.73
473.47
12.26 + .85 + 1.85 STONE = 12.818
5 x (7.83/2)² π x 1/27 = 8.92
8.61 x (7.83/2)² π x 1/27 x 150 = 23.03 c.y
31.95 c.y
BL 8/22/07

MHS D12 SEWER #27

CAM 01/31/08

c/o UNDERCUT
Ht = 486.86 - 474.83 + .85 = 12.88 Ht

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤5'	+5'	WIDTH	LENGTH	C.Y	150%
41+96.42	14.04				3.28			
		14.06	5		3.25	3.58	2.15	
42+00	14.07			9.06	3.25	3.58		5.86 c.y
		13.92	5		3.28	50	30.09	
42+50	13.76			8.92	3.28	50		80.53 c.y
		13.57	5		3.28	50	30.09	
43+00	13.38			8.57	3.28	50		5.58
		13.19	5		3.28	50	30.09	
43+50	13.00			8.19	3.28	50		73.99 c.y
		12.87	5.0		3.28	50	30.09	
44+00	12.74			7.87	3.28	50		71.05 c.y
		12.69	5		3.28	50	30.09	
44+50	12.63			7.69	3.28	50		69.42
		12.63	5		3.28	29.58	17.80	
44+79.58	12.63			7.63	3.28	29.58		40.75
							170.94 c.y	393.13 c.y

STATION	C.Y	150%
	2.19	
	2.15	
		5.91
	30.37	
		81.27
	30.37	
		79.08
	30.37	
		74.62
	30.37	
		71.70
	30.37	
		70.06
	17.97	
	41.13 c.y	

563.53 c.y ✓ BL 5/16/07
RD 5/15/07

PD 7/18/07 BL
7/23/07 PD

EXCAVATION OF MHS 10 TO BE BASED ON SNDP DWG

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES 39.28 BL 5/16/07
(283.16+5+1) x 3.28 x 1.13 x 1/27 = 38.97 c.y ✓ RD 5/15/07
UNDER MHS D10 = 1.52 c.y
1.20 c.y RD 5/15/07

EXCAVATION OF MHS D10 Bottom of structure .85 below invert out
5' x (7.83/2)² π x 1/27 = 8.92 c.y
9.4 x (7.83/2)² π x 1/27 x 150% = 25.15 c.y
34.07 BL 7/16/07 40.48 c.y

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤5'	+5'	WIDTH	LENGTH	C.Y	150%
44+87.42	12.33 ✓				3.28		7.64	17.28 ✓
		12.35 ✓	5		3.28	12.58	7.57	16.87
45+00	12.35 ✓			7.39 ✓	3.28	12.58	6.07	13.72 ✓
	.55	12.46 ✓	5	.55 ✓	3.28	10.0	6.02	13.59
		12.55 ✓		7.46	3.28	10.0		13.47
45+10	12.56						24.29	
		12.58	5		3.28	40	24.07	55.25
45+50	12.60			7.58	3.28	40		54.74
		12.63	5		3.28	50	30.37	69.52
46+00	12.65			7.63	3.28	50	30.09	68.88
		12.67	5		3.28	15	9.11	20.96
46+15	12.67			7.67	3.28	15	9.03	20.77
		12.68	5		3.28	35	21.26	48.98
46+50	12.70			7.68	3.28	35	21.06	48.53
		12.70	5		3.28	15.2	9.23	21.27
46+65.20	12.71			7.68	3.28	15.2	9.15	21.08
		12.73	5		3.28	30.88	19.76	43.50
46+96.08	12.76			7.73	3.28	30.88	18.59	43.10
							175.52	287.27
							176.73	289.89
								290.53

410.85 c.y ✓ BL 5/16/07
416.62 c.y RD 5/15/07
417.26 c.y ✓ CAM 01/31/08 BL 2/26/07
TOTAL = 417.26 + 31.34 = 448.60 CAB 05/06/10 RD 1/31/11

EXCAVATION OF MHS D11 TO BE BASED ON SNDP DWG
Fin BASE OF .85 BELOW INVERT OUT
5.28 x (7.83/2)² π x 1/27 = 8.92 c.y
7.88 x (7.83/2)² π x 1/27 x 150% = 21.08 c.y
30 c.y BL 7/16/07 PLUS 6" UNDERCUT (7.83/2) x π x 5 DEPTH x 1/27 x 150% = 1.34 c.y → 31.34 c.y BL 7/24/07

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤5'	+5'	WIDTH	LENGTH	C.Y	150%
47+03.92	12.66				3.28			
		12.665	5		3.28	6.08	3.69	
47+10	12.67			7.665	3.28	6.08		8.49
		12.69	5	7.69	3.28	40	24.37	
47+50	12.71				3.28	40		56.05
		12.735	5	7.735	3.28	50	30.37	70.47 ✓
48+00	12.76			7.77	3.28	50		70.06
		12.785	5	7.785	3.28	50	30.37	70.93
48+50	12.81							
		12.83	5		3.28	50	30.37	
49+00	12.86			7.83	3.28	50		71.34
		12.87	5		3.28	6.08	3.69	8.72
49+06.08	12.88			7.87	3.28	6.08		8.69
							122.79	285.46
								286.0

408.79 c.y ✓ BL 5/16/07 CAB 05/06/10
+ 31.95 BL 7/25/08 MHS D#12
= 440.79 CAB 05/06/10 RD 1/31/11

EXCAVATION OF MHS D12 TO BE BASED ON SNDP DWGS.

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES
(202.16 LF + .5 + 1 + .5 + 1) x 3.28 x 1.13 x 1/27 = 28.11 8 c.y BL 5/16/07
32 UNDER MHS D12 = 1.20 c.y
29.36 c.y

ITEM 204.30 GRANULAR BACKFILL
(207.66 LF + .5 + 1 + .5 + 1) x 3.28 x 1.13 x 1/27
UNDER MHS D11 = 28.65 c.y + 1.52 c.y = 30.17 c.y
1.20 c.y
RD 5/15/07

29.74 c.y BL 5/16/07

ORIGINAL SURVEY — SURVEYED: PLOTTED: NOTE BOOK: AREAS: AREAS CHECKED: DATE

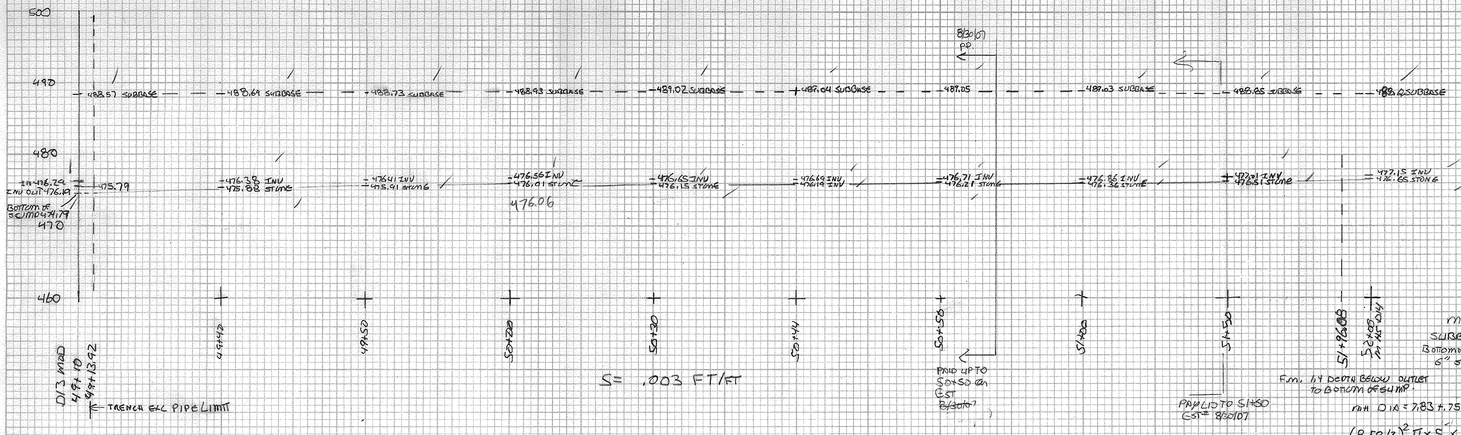
FINAL SURVEY — SURVEYED: PLOTTED: NOTE BOOK: AREAS: AREAS CHECKED: DATE

HARTFORD RS 0113(90)
SEWER SECTION
SHEET 4 of 9

NTS

PLATE 3-FULL CROSS SECTION-PULL LINE
HIGHWAY PHOTO-LITHO SHEET
NATIONAL PRINTWAY
PRINTED IN U.S.A.

(28) STATION 49+10 ℄ TO 52+00 ℄ (290 LF)
D13 (MOD DROP) MHS D14



MHS D13
SURFACE 488.57
BOTTOM OF SUMP 474.79
6" STONE +.5
14.28' HT

F.M. HT DEPTH BELOW OUTLET TO BOTTOM OF SUMP.
MH D IA = 7.83 ± .75 OUTSIDE DROP = 8.58 ℄

$(8.58/2)^2 \pi \times 5 \times 1.27 = 10.70$ c.y.
$9.28 \times (8.58/2)^2 \pi \times 1.27 \times 150\% = 29.81$ c.y.
40.52 c.y.
BL 8/23/07

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤5'	+5'	WIDTH	LENGTH	C.Y.	150%
49+13.92	12.78				3.28			
		12.79	5		3.28	26.08	15.84	
				7.79	3.28	26.08		37.02
49+40	12.81							
		12.815	5		3.28	10	6.07	
				7.815	3.28	10		14.24
49+50	12.82							
		12.87	5		3.28	50	30.37	
				7.87	3.28	50		71.70
50+00	12.92							
		12.90	5		3.28	30	18.22	43.19
				7.90	3.28	30		41.19
50+30	12.87							
		12.86	5		3.28	14	8.58	
				7.86	3.28	14		20.05
50+44	12.85							
		12.845	5		3.28	6	3.64	
				7.845	3.28	6		8.58
50+50	12.84							
		12.76	5		3.28	50	30.37	
				7.76	3.28	50		70.70
51+00	12.67							
		12.505	5		3.28	50	30.37	
				7.50	3.28	50		68.33
51+50	12.34							
		12.175	5		3.28	46.08	28.00	
				7.175	3.28	46.08		65.08
51+96.08	12.21						171.38	396.89
								60.08
								336.89

EXCAVATION OF MNS D13(MOD) TO BE BASED ON SNDP DWG

565.27 BL 2/25/08
568.27 c.y. BL 5/16/07
-40.52 FOR MNS D13
608.79
605.76 c.y.
BL 3/13/08

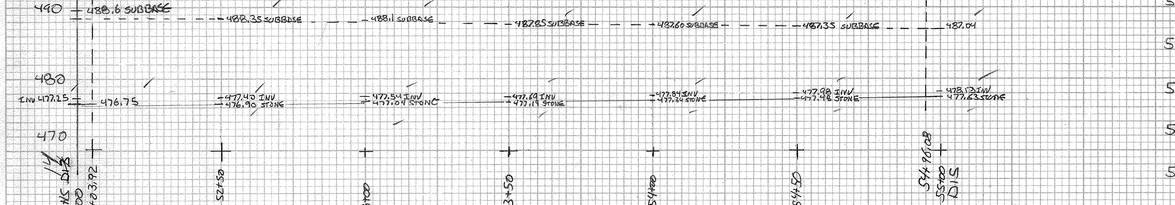
ITEM 209.30 GRANULAR BACKFILL FOR STRUCTURES
328 x (297.16 LF. +.5+1+.5+1) x 1.13 x 1/27 = 39.15 c.y.
= 1.20 c.y.
UNDER MNS D13
40.35 c.y.

CPH 11/31/08

ITEM 209.30 GRANULAR BACKFILL FOR STRUCTURES
(297.16+.5+1+.5) x 3.28 x 1.13 x 1/27 = 40.51 c.y.
UNDER MNS D15 = 1.20 c.y.

(38) STATION 52+00 TO 55+00 ℄ (300 LF)
(MNS D14) (MNS D15)

S= .003 FT/FT



ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG. HT	≤5'	+5'	WIDTH	LENGTH	C.Y.	150%
52+03.92	11.85							
		11.65	5		3.28	46.08	27.99	
				6.65	3.28	46.08		55.83
52+50	11.45							
		11.25	5		3.28	50	30.37	
				6.25	3.28	50		56.94
53+00	11.06							
		10.86	5		3.28	50	30.37	
				5.86	3.28	50		53.39
53+50	10.66							
		10.46	5		3.28	50	30.37	49.75
				5.46	3.28	50		49.29
54+00	10.26							
		10.06	5		3.28	50	30.37	
				5.06	3.28	50		46.10
54+50	9.87							
		9.64	5		3.28	46.08	27.99	
				4.64	3.28	46.08		38.96
54+96.08	9.41						177.46	300.51
								300.77

EXCAVATION OF MNS D14
477.15 - 1.4 = 475.75 - .5 STONE = 475.25
480.3 - 475.25 = 13.35 c.y.
$(7.83/2)^2 \times \pi \times 5 \times 1/27 = 8.92$ c.y.
$(7.83/2)^2 \times \pi \times 8.35 \times 1/27 \times 150\% = 22.34$ c.y.
31.26 c.y. BL 9/23/07

EXCAVATION OF MNS D15 TO BE BASE ON SNDP DWG
EXCAVATION OF MNS D15
(487.67 - 478.13) + 1.44 + .5 = HT = 10.77.
$5 \times (7.83/2)^2 \times \pi \times 1/27 = 8.92$ c.y.
$(10.77 - 5.77) \times (7.83/2)^2 \pi \times 1/27 \times 150\% = 15.44$ c.y.
24.36 c.y. BL 10/23/07

EXCAVATION PD 10/23/07

209.20 TRENCH EXC.
PIPE = 478.43
MHS DIA = 31.26 cy
Σ = 509.69 cy
CAB 05/11/10
RCD 11/31/11

478.43
477.97 c.y.
BL 5/16/07
BL 2/25/08

CPH 1/31/08

ITEM 204.30 GRANULAR BACKFILL
(297.16 LF+.5+1+1+.5) x 1.13 x 3.28 x 1/27 = 40.52 c.y.
UNDER MNS D12 = 1.20 c.y.

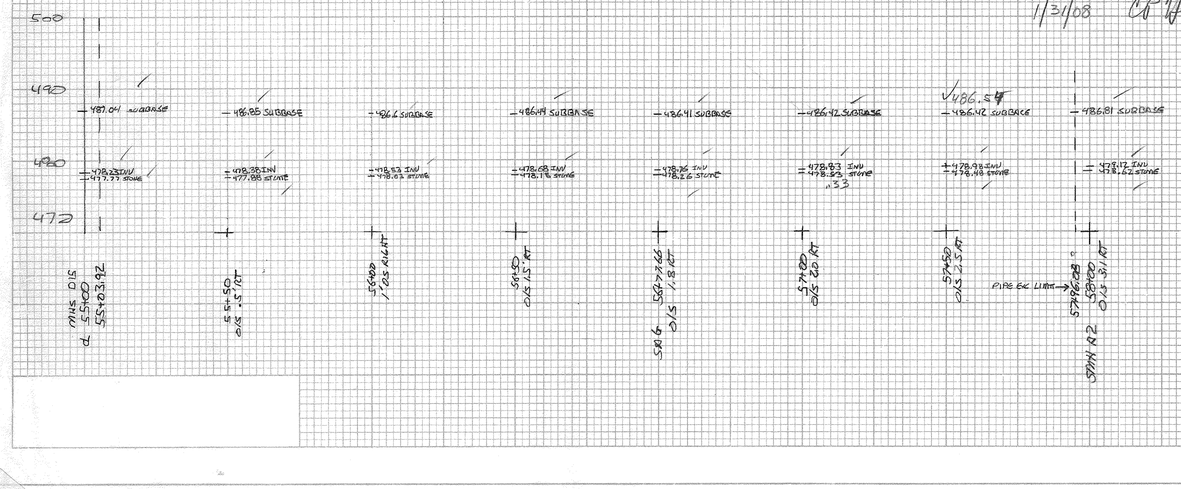
EXCAVATION PD 10/23/07

24.36 - MNS # 13
360.56
384.92 TOTAL
CAB 05/12/10

360.56 BL 2/25/08
358.09 c.y. BL 5/16/07

(48) STATION 55+00 ℄ TO 58+00 ℄ (300 LF)
(SMH D15) SMH A2

S=.003 FT/FT



EXCAVATION OF MNS A2 TO BE BASED ON SNDP DWG
NT = (486.81 - 479.12) + 1.44 + .5 = 9.59
$5 \times (7.83/2)^2 \times \pi \times 1/27 = 8.92$ c.y.
$4.59 \times (7.83/2)^2 \pi \times 1/27 \times 150\% = 12.28$ c.y.
21.2 c.y. BL 10/23/07

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG. HT	≤5'	+5'	WIDTH	LENGTH	C.Y.	150%
55+03.92	9.27				3.28			
		9.12	5		3.28	46.08	27.99	
				4.12	3.28	46.08		34.59
55+50	8.97							
		8.77	5		3.28	50	30.37	
				3.77	3.28	50		34.35
56+00	8.57							
		8.415	5		3.28	50	30.37	
				3.41	3.28	50		31.07
56+50	8.26							
		8.20	5		3.28	27.66	16.80	
				3.2	3.28	27.66		16.13
SAG 56+77.46	8.15							
	8.09	8.02	5		3.28	22.34	13.57	12.70
				3.02	3.28	22.34		12.29
57+00	7.89	8.075						
	8.06	7.97	5		3.28	50.0	30.37	28.02
				2.97	3.28	50		26.51
57+50	7.99	8.125						
	8.08	8.08	5		3.28	46.08	27.99	26.24
				3.08	3.28	46.08		25.69
57+96.08	8.19						177.46	180.63
				3.125				183.10

CPH 01/31/08

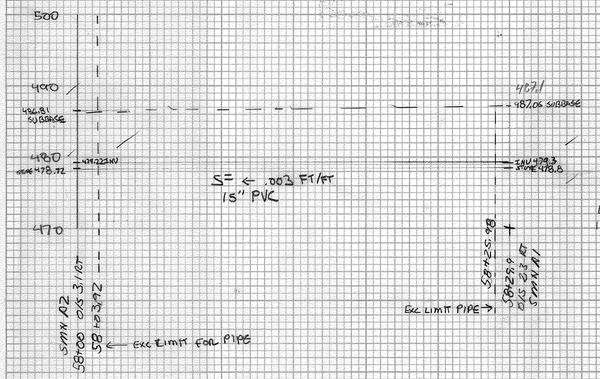
HARTFORD RS 0113(40)
SEWER SECTIONS
5 of 9

NEW SEWER # 49 SHEET # 6

ORIGINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

FINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

(49) 58+00 RT OS 3.1 RT TO 58+29.9 RT O/S 2.3 RT (30 LF)
SMH A2 SMH A1



EXC PAID 10/22/07

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤5'	+5'	WIDTH	LENGTH	C.Y	150%
58+03.92	8.09							
		8.18	5		3.28	22.06	13.140	
				3.18	3.28	22.06	12.78 C.Y	
58+25.98	8.26						13.140	12.78

→ 26.18 C.Y BL 5/15/07 PD 10/23/07

EXCAVATION OF MNS A1 TO BE BASED ON SNOP DWG.

ITEM 204.30 GRANULAR BACK FILL FOR STRUCTURE
(27.06+.5+1.5+1) x 3.28 x 1.13 x 1/27 = 3.44 C.Y
UNDER MNS A1 = 1.20 C.Y
4.64 C.Y

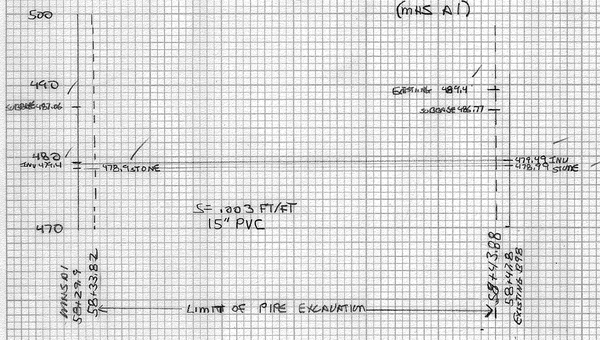
SEWER MNS A1
HEIGHT (487.06 - 479.3) + 1.2 INVERT TO BOTTOM OF SUMP + .5 STONE = 9.46'
5' DIA STRUCTURE F.M PIM. 18 CP + STUBS 5' + 1.5 + .8 = 7.6 RADIUS 2 = 5.6 DIA RAD = 4.8
5' x (4.8)² π x 1/27 = 13.4 C.Y
4.96 x (4.8)² π x 1/27 x 150% = 19.15 C.Y
4.46 23.35 C.Y
31.33 C.Y RL 9/23/05

CPH ✓ BL 2/25/08

2.12 C.Y FOR MASA-2 SEE SHEET 5 EXCAVATION
SUBTOTAL 47.38 C.Y - 1.73 = 45.64 CB 05/12/10 RCD 1/31/11
1.73 C.Y TRENCH ROCK REMOVAL EXISTING STRUCTURES MHS A-1 10/18/07
2.31 C.Y SOLID ROCK 12/18/07 NOT INCLUDED IN TRENCH EARTH AREA
~~47.38~~ 43.34 C.Y 3/17/08

CPH 1/31/08

(50) STATION 58+29.9 RT O/S 2.3 RT TO 58+47.8 LT (34 LF) USE 26.16 LF *
(MNS A1) (MNS B98)



STATION	HEIGHT	AVG HT	≤5'	+5'	WIDTH	LENGTH	C.Y	150%
58+33.82	8.16							
		7.97	5		3.28	* 26.16	15.89	
				2.97	3.28	* 26.16	14.16	
58+43.88	7.78						15.89	14.16

→ 30.05 C.Y BL 5/1/07

PAID 10/26/07

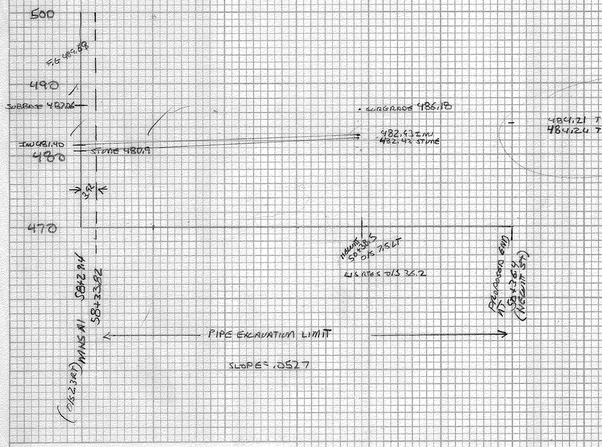
MNS B98 - EXISTING - NO EXCAVATION

ITEM 204.30 GRANULAR BACK FILL FOR STRUCTURES
(26.16 + .5 + (7.5+1)) x 1.13 x 3.28 x 1/27 = 4.00 C.Y

30.05 TRENCH
+ 3.33 MANHOLE EXC.
33.38 C.Y BL 3/17/08
~~1.91~~ REMOVAL OF A-1 ROCK 10/22/07 SOLID ROCK NOT INCL IN TRENCH EARTH AREA
1.72 TRENCH 10/22/07
57.75
59.66 C.Y CB 05/12/10
RCD 1/31/11

CPH 2/01/08

(56) STATION 58+29.4 RT TO 50+36.4 LT (HEWITT ST) 40 LF
(MHS A1) CONNECT TO EXISTING 10" V.C.P. PIPE



53+27.4 487.06 - 480.9 = 6.16
50+38.5 486.18 - 482.43 = 3.75
= 4.96 x (38.5 - 1.92 + 1) x 3.28 x 1/27 = 22.64 C.Y
BL 12/18/07

1.92' FROM EXCAVATION OF STRUCTURE .42 WALL .5 SLAB 1' SUITABLE LIMIT = 1.92

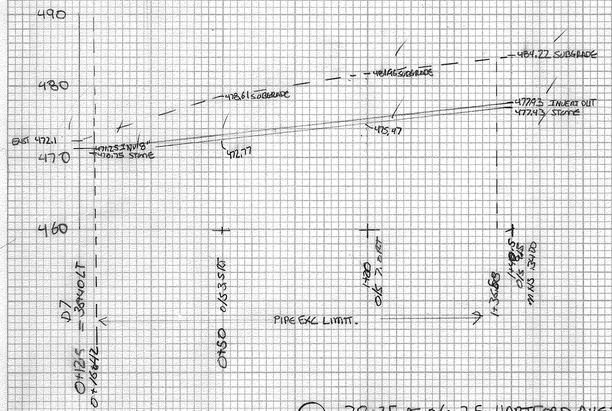
CPH 2/01/08

HARTFORD RS 0113(40)
SEWER SECTIONS

SANITARY SEWER SIDE STREETS NTS.

PLATE 3-FULL CROSS SECTION-FULL LINE
NATIONAL PRINTOUT
PRINTED IN U.S.A.

(11) STATION (10+25 WORCESTER AVE) 36+40 LT (HARTFORD AVE TO 1+40.5 RT WORCESTER AVE = 128 LF.
MHS D7 8"PVC S=.0539 FT/FT (MHS B400 9.5 RT)
EXCAVATION LENGTH 119.16



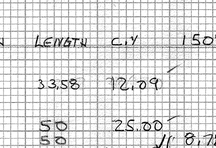
ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤ 5	+5	WIDTH	LENGTH	C.Y	150%
0+16.42	1.35							
		2.6	3.6		2.7	33.58	72.09	
0+50	5.84							
		6.17	5		2.7	50	25.00	
				1.17	2.7	50	8.78	
1+00	6.49						18.27	
		6.64	5		2.7	36.58	18.04	
1+36.58	6.79			1.64	2.7	36.58	7.00	
							2.88	
							55.13	17.66
							55.38	17.78

EXCAVATION FOR MHS B400 TO BE BASED ON SHOP DRWGS

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES
(120.16+1.5+1.5+D) X 2.7 X .835 X 1/27 = 10.28 C.Y.
UNDER MHS B400 = 1.20 C.Y.
PIPE 123.16 (π r²/2 = 3.14(.70²)/2 = 123.16/27) = 3.57 C.Y.
11.77 C.Y.

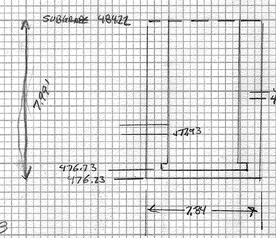
D/2+.5 = .835



73.16 C.Y. → 72.79 / BL 5/18/07
LCB 05/06/10

NEW SEWER #11 ITEM 204.20
MHS B400 VOL= 14.84 C.Y.
PIPE VOL= 73.16 C.Y.
$ = 88.00 C.Y.
CUB 05/06/10
RCO 1/31/11
CPH 02/04/08

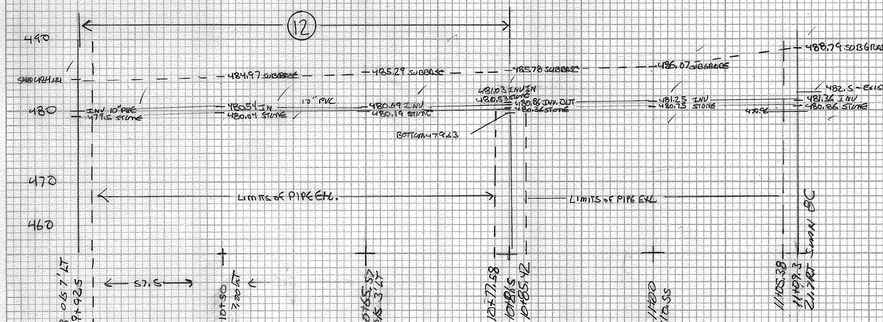
TRENCH EXCAVATION of B400



(7.84/2)² x π x 5 x 1/27 = 8.194 C.Y. 8.01
(7.84/2)² x π x 2.99 x 1/27 x 150% = 5.812 C.Y. 5.12
10.93 / BC 5/15/08
TIE III PIPE = 4.98 EA @ 1.01 = 5.03 EA
(484.22 - 478.60) = 5.62
5 x 2.7 x 5.62 x 1/27 = 2.81 C.Y.
.62 x 2.7 x 5.62 x 1/27 x 150% = 1.82 C.Y.
2.81 + 1.82 = 4.63 C.Y.
3.01 C.Y.
10.93 + 3.93 = 14.86 C.Y.
11.83 + 3.01 = 14.84 C.Y.
11.83
BL 2/25/09
LCB 05/06/10

SOLID/TRENCH ROCK FOR REMOVAL OF EXISTING STRUCTURE
5' Ø x 9' HT
SOLID ROCK 2.63 x (5/2)² x π x 1/27 = 1.91 C.Y.
TRENCH ROCK (7.84-2.63) x (5/2)² x π x 1/27 = 3.63 C.Y.
1.5 [1.37 x (5/2)² π x 1/27] = 1.49 C.Y.
5.12 C.Y. BL 2/25/09
LCB 05/06/10

(12) 38+25 AT 0&7.5 HARTFORD AVE = 9+92.5 TO 10+81.5 ℄ HIGHLAND AVE (D8A)
(D8) 86 LF of SDR 10" S=.0104 FT/FT



(13) HIGHLAND AVE 10+81.5 ℄ TO 11+09.13 RT
MHS D8A TO MHS B6 2.17 RT
8"SDR (38LF) S=.0100 FT/FT USE 30.16*

(12) ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤ 5'	+5'	WIDTH	LENGTH	C.Y.	150%
9+96.42	4.94							
		4.935	4.935		2.875	53.58	28.16	
10+50	4.93							
		5.02	5.02		2.875	15.57	8.32	
10+65.57	5.10				2.875	12.01	6.39	
		5.26	5.0	.26	2.875	12.01	.50	
10+77.58	5.42						42.87	.50
								→ 43.37 C.Y. BL 5/16/07

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES
(81.16 LF + .5 + 1 + .5) x 2.875 x .835 x 1/27 = 7.48 C.Y.

10" PIPE = 10.50 OD = .875 + EXC LIMITS = 2.875

EXCAVATION OF MHS D8A
495.78 - 479.63 = 6.15 HT + .5 STONE
5' x (7.84/2)² x π x 1/27 = 8.94
150% 1.65 (7.84/2)² π x 1/27 = 4.43
13.37 C.Y. BL 5/16/07

(13) ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤ 5	+5	WIDTH	LENGTH	CY	150%
10+85.42	5.25							
		5.29	5.0	.29	2.7	15.0	7.5	.65
11+00	5.32							
		6.63	5.0	1.63	2.7	15.16	7.58	3.71
11+05.38	7.73						15.08	4.36
							TOTAL	19.44 C.Y. BL 5/16/07

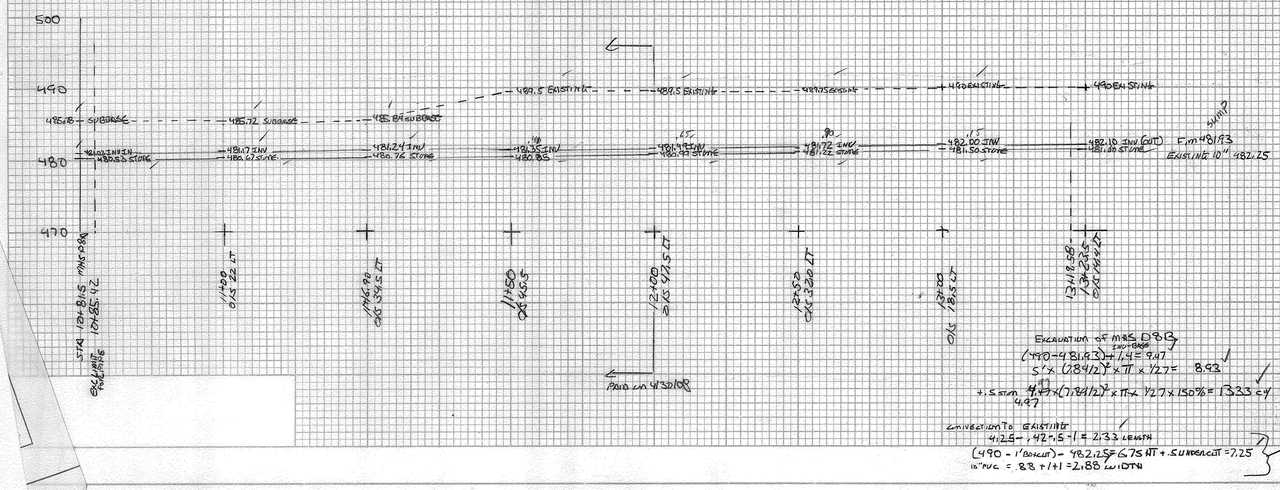
ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES
(30.16+1+.5+1+.5) X 2.7 X .835 X 1/27 = 2.77 C.Y.
UNDER MHS D8A = 1.2
UNDER MHS D8C = 1.2

STRUCTURE HT 488.79 - 479.95 = 8.83 - .5 = 8.33
5' x (7.84/2)² π x 1/27 = 8.94
4.33 x (7.84/2)² π x 1/27 x 150% = 11.61
20.55 16.68 C.Y. BL 11/6/07
CUB 05/06/10

SERVICES 488.79 - 482.5 = 6.29
8"PVC (42 LF - 1.5 - 1) x 2.7 x 5' = 2.54 C.Y.
5.08 x 2.7 x 1/27 x 150% = .78
6"PVC 5.08 x 2.52 x 5' x 1/27 = 2.37
5.08 x 2.52 x 1.29 x 1/27 x 150% = .92
6.81 C.Y. BL 11/6/07

TOTAL SEWER #12 = 46.80 C.Y.
CPH 02/08/08
CUB 05/06/10
RCO 1/31/11

(14) HIGHLAND AVE 10+81.5 ℄ TO 13+23.5 ℄/S 14.4 LEFT
MHS D8A MHS D8B 218 LF USE 210.16 FOR EXCAVATION.
8"SDR S=.0050 FT/FT



EXCAVATION OF MHS D8B
(490 - 481.83) + 1.4 = 9.47
5' x (7.84/2)² x π x 1/27 = 8.93
+.5 STONE 4.97 x (7.84/2)² x π x 1/27 x 150% = 13.33 C.Y.
CONNECTION TO EXISTING
4.25 + .42 + .5 + 1 = 2.33 LENGTH
(490 - 1 BOTTOM) - 488.25 = 6.75 HT + .5 SURFACE CUT = 7.25
10" PVC = .88 + 1 + 1 = 2.88 WIDTH

ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤ 5	+5	WIDTH	LENGTH	CY	150%
10+85.42	5.25							
		5.14	5.0	.14	2.7	31.48	15.71	.66
11+00	5.08				2.7	31.48		
11+16.9	5.08							
		6.87	5.0	1.87	2.7	33.1	16.65	9.28
11+50	8.85				2.7	33.1		
	AVG 7.68							
12+00	8.51					169.58	84.79	
		8.52	5.0	3.52	2.7	145.58	72.79	87.54
12+50	8.63				2.7	145.58		76.87
13+00	8.5					169.58	105.08	86.81
13+49.58	8.4						117.08	99.48

→ 191.89 C.Y. BL 5/18/07
216.56 C.Y. CPH 02/08/08 BL 2/25/08

EXCAVATION FOR MHS D8B TO BE BASED ON SHOP DRAWING

ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES
(210.16+.5+1+.5+1) x 2.7 x .835 x 1/27 = 17.80 C.Y.
UNDER MHS D8B = 1.20 C.Y.

25 AT 6'
26.85 TS DEPTH
69.00 C.Y. PAID ON 4/30/08

26.56
- 69.00
147.48 C.Y. PD 5/7/08

NEW SEWER #14 204.20
MHS D8B = 29.34
PIPE = 216.56
$ = 240.90 C.Y.
CUB 05/06/10
RCO 1/31/11

5 x 2.33 x 2.88 x 1/27 = 1.24
2.25 x 2.33 x 2.88 x 1/27 x 150% = 1.84
MANHOLE EXCAVATION + TIE IN = 8.43 + 13.33 + 1.24 + .84 = 24.34 C.Y. BL 5/12/08

CPH 02/11/08

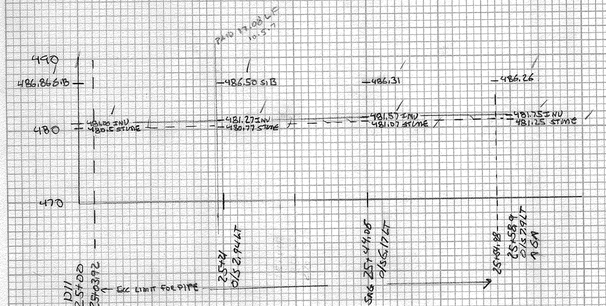
HARTFORD RS0113(40)
SEWER SECTIONS

SHEET 7 OF 9

ORIGINAL SURVEY
FINAL SURVEY
NOTE BOOK
PAGE
PLOTTED
TRACED
CHECKED
AREAS CHECKED
NO. DATE BY

HIGHWAY PIPE/OVAL AR SHEET
NATIONWIDE PREMIERE
PRINTED IN U.S.A.
PLATE 3-PIPE CROSS SECTION-PULL LINE

(22) 44+83.5 ℄ HARTFORD AVE = 25+00 SAUNDERS AVE TO 25+58.9 LT SAUNDERS AVE (58 LF)
MAS D11 ℄ 8" SDR
S= .013 FT/FT
SMH A6A 7.9' LT



ITEM 204.20 TRENCH EXCAVATION OF EARTH

STATION	HEIGHT	AVG HT	≤ 5	+5	WIDTH	LENGTH	C.Y	150%
25+03.92	6.35							
		6.04	5		2.7	17.08	8.54	
				1.04	2.7	17.08		2.66
25+21	5.73							
		5.49	5		2.7	23.06	11.53	
				.49	2.7	23.06		1.69
25+44.06	5.24							
		5.13	5		2.7	14.84	7.42	
				.13	2.7	14.84		.29
25+58.9	5.01						27.49	4.64 → 32.13 C.Y

BL 5/18/07

EXCAVATION FOR MNS A6A TO BE BASED ON SHOP DRAWINGS
ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES
(54.98+.5+1+.5+1) x 2.7 x .85 x 1/27 = 4.93 C.Y
UNDER MNS A6A = 1.20 C.Y

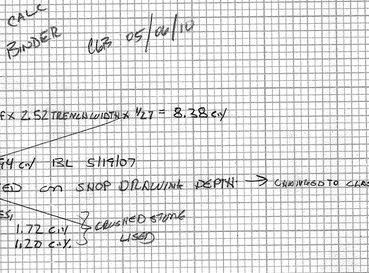
EXCAVATION OF MNS A6A
SUBBASE 486.26
INV 481.75
4.51 ÷ 1.4+.5 = 2.41
5' x (.784/2)² π x 1/27 = 8.94 C.Y
1.41 x (.784/2)² π x 1/27 x 150% = 3.78 C.Y
12.72 C.Y 10/30/07
12.72 − 3.18 = 9.54 C.Y
3.2.13 C.Y TRENCH + 9.54 C.Y = 91.67 C.Y

REMOVAL EXISTING STRUCTURE 10/29/07
F.M. S1Ø x 7.5 RT
2.63 x (5/12)² π x 1/27 = SOLID ROCK 1.91 C.Y.
C.S. 5 + 2.63 x (5/12)² π x 1/27 = TRENCH ROCK 3.18 C.Y.
4.37

PAID 10/29/07

GP 02/11/08

(51) ADVENT LAW STATION 45+00
SB+00 HARTFORD AVE TO 45+41.1 RT (41 L.F.) 8" SDR.
MNSA2 OS 3.1 RT (ADVENT LANE)



TRENCH LENGTH = 40 − 3.92 + 1 = 37.08

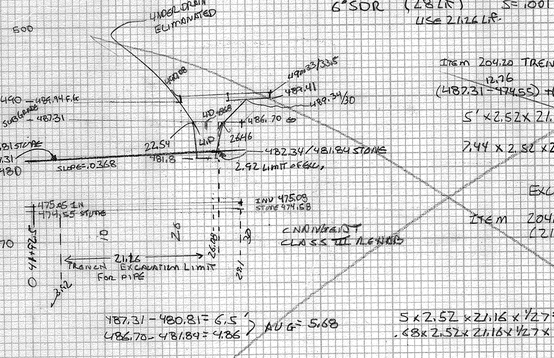
ITEM 204.20 TRENCH EXCAVATION OF EARTH
(486.81 − 480.5) − (486.56 − 480.9) / 2 = AVG HT OF 5.99
37.08 x 5.00 x 2.7 x 1/27 = 18.54 C.Y.
37.08 x .99 x 2.7 x 1/27 x 150% = 5.51 C.Y.
24.05 C.Y BL 5/18/07

END IS CAP NO MANHOLE.

ITEM 204.30 GRANULAR BACK FILL FOR STRUCTURES
(37.08+.5+1+1) x 2.7 x .85 x 1/27 = 3.36 C.Y.

ORIGINAL SURVEY
SURVEYED
PLOTTED
NOTE BOOK TEMPLATE
AREAS
AREAS CHECKED
BY
DATE

(19) HARTFORD AVE 41+97.5 RT O/S 1.8 TO 41+96.1 O/S 29.1 RT
D10 B91
6" SDR (28 LF) S= .001
USE 2.126 LF.


500
490
480
470
UNDERDRAIN ELIMINATED
482.29 SUBGRADE
482.79 S.B.
482.34 INV
482.04 STONE
482.41 INV
482.11 STONE
482.34 INV
482.04 STONE
480.31 STONE
480.81 INV
480.31 STONE
480.81 INV
480.31 STONE
480.81 INV

SEWER 1A 21+28 O/S 34' LT TO 24+54.8 CT O/S 52.2

T&B OF LIMITS OF MINERS 1/27 = 3.92

PLAN VIEW.

EXISTING

21+31.92 T&B OF LIMITS OF MINERS

21+28

24+54.8 O/S 52.2 LT

O/S 47

O/S 42.5

O/S 37.75

O/S 33

LIMIT OF MINERS 21+80

BEGIN CURVE

PROFILE

| | | |