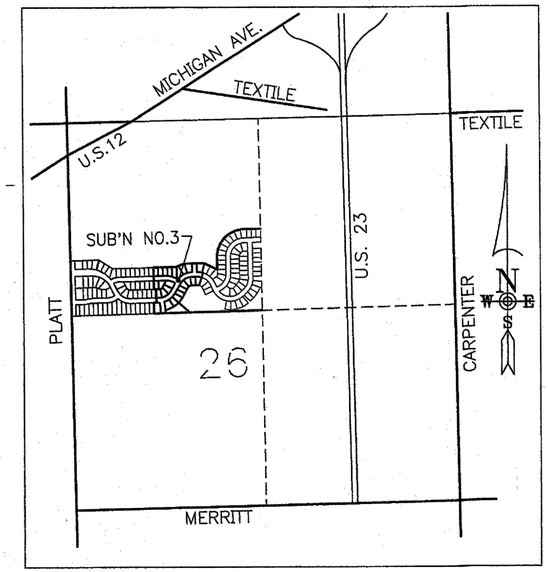
ROLLING MEADOW ESTATES SUBDIVISION NO. 3

PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

FINAL PRELIMINARY PLAT



VICINITY MAP

SCALE: 1" = 1000'

DESCRIPTION OF ROLLING MEADOW ESTATES SUB'N NO. 3

PART OF THE N.W. 1/4 OF SECTION 26, T. 3 S., R. 6 E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:

COMMENCING AT THE WEST 1/4 CORNER OF SECTION 26, TOWN 3 SOUTH, RANGE 6 EAST, THENCE N88°27'43"W, 1151.20 FEET ALONG THE EAST AND WEST 1/4 LINE OF SECTION 26 AND IN PART THE SOUTH LINE OF "ROLLING MEADOWS ESTATES SUBDIVISION NO. 1" (LIBER 28 OF PLATS, PAGES 92 – 94, WASHTENAW COUNTY RECORDS) AND "ROLLING MEADOWS ESTATES SUBDIVISION NO. 2" (LIBER 30 OF PLATS, PAGES 1 – 2, WASHTENAW COUNTY RECORDS) TO THE POINT OF BEGINNING; THENCE ALONG THE EAST LINE OF "ROLLING MEADOWS ESTATES SUBDIVISION NO. 2" (LIBER 30 OF PLATS, PAGES 1 – 2, WASHTENAW COUNTY RECORDS) THE FOLLOWING COURSES: N01°32'17"W, 150.72 FEET, AND N88°27'43"E, 37.31 FEET, AND N01°32'17"W, 186.00 FEET, AND S88°27'43"W, 28.31 FEET, AND N01°32'17"W, 306.00 FEET; THENCE N88°27'43"E, 313.51 FEET; THENCE N69°10'16"E, 124.45 FEET; THENCE N88°27'43"E, 280.00 FEET; THENCE S63°48'55"E, 7.09 FEET; THENCE S14°22'42"W, 131.94 FEET TO THE BEGINNING OF A NON–TANGENT CURVE CONCAVE TO THE SOUTH, HAVING A RADIUS OF 263.00 FEET, TO WHICH A RADIAL LINE BEARS N14°25'45"E; THENCE EASTERLY 54.54 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 11°52'58" (THE CHORD OF SAID CURVE BEARS S69°37'47"E, 54.45 FEET); THENCE S26°18'42"W, 187.84 FEET; THENCE N76°26'22"W, 40.49 FEET, THENCE S88°27'43"W, 78.09 FEET; THENCE S71°30'23"W, 42.98 FEET; THENCE S28°27'43"W, 185.14 FEET; THENCE S38°15'35"W, 86.50 FEET; THENCE S55°54'57"E, 237.81 FEET TO THE EAST AND WEST 1/4 LINE OF SECTION 26; THENCE ALONG SAID LINE S88°27'43"W, 539.78 FEET TO THE POINT OF BEGINNING, CONTAINING 8.1492 ACRES OF LAND.

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2. AREA WIDE MAP
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6. SANITARY & WATER MAIN PROFILES FOR INGLEWOOD DRIVE AND *CONIFER* DRIVE
7. ROAD & STORM PROFILES FOR ROLLING MEADOW LANE
8. SANITARY & WATER MAIN PROFILES FOR ROLLING MEADOW LANE
9. ROAD & STORM PROFILE AND INTERSECTION DETAIL FOR FOOTHILL DRIVE
10. SANITARY & WATER MAIN PROFILES FOR FOOTHILL DRIVE
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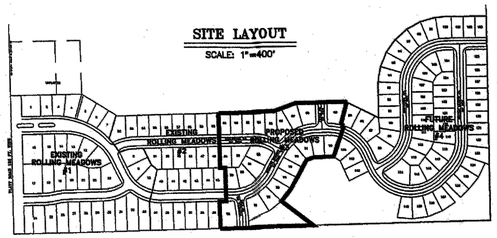
17. DETAILS
18. SPECIFICATIONS 1
19. SPECIFICATIONS 2

SITE LAYOUT

SCALE: 1"=400'



APPROVED BY WASHTENAW COUNTY ROAD COMMISSION ON 08/27/2002
APPROVED BY WASHTENAW COUNTY DRAIN COMMISSION ON 08/12/2002

SP #02-1

DATE: 07/11/01

REVISIONS: 8/14/01 PER INTERDEPTOR REVIEW
8/20/01 TWP REVIEW OF MODIFICATIONS OF 7/6/01
10/9/01 W.C.D.C.
10/10/01 PER ROCK REQ.
10/16/01 PER WCRC LTR OF 8/7/01
12/6/01 PER PITTSFIELD LTR OF 10/29/01
02/13/02 PER PITTSFIELD LTR OF 01/28/02
04/03/02 PER WCRC LTR OF 11/20/01
04/12/02 PER PITTSFIELD LTR OF 04/08/02
05/13/02 PER PITTSFIELD LTR OF 05/02/02
05/16/02 PER WCRC LTR OF 05/01/02
07/15/02 PER PITTSFIELD TOWNSHIP
07/26/02 PER PITTSFIELD LTR OF 7/18/02
08/12/02 W.C.D.C.
08/26/02 PER PITTSFIELD MEMOS OF 07/24/02 & 07/29/02
08/28/02 PER PITTSFIELD MEMOS OF 08/20/02 & 08/27/02
11/05/02 PER PITTSFIELD LETTER OF 10/03/02
12/20/02 PER PITTSFIELD MEMOS OF 12/19/02
02/03/03 PER PITTSFIELD MEMOS OF 01/09/03
03/06/03 PER PITTSFIELD MEMOS OF 03/04/03
AS BUILT:

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. – Canton, Michigan 48187
telephone no. (734) 459–8560 fax no. (734) 459–2585

JOB NO. 9525 TWP FILE NO. SP #02-1

NAME OF DEVELOPMENT: ROLLING MEADOW ESTATES SUB'N NO. 3

ROLLING MEADOW ESTATES SUB'N NO. 3

PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

SCALE: ONE INCH = 100 FEET

100 50 0 100 200 300

SCALE IN FEET

DESCRIPTION OF ROLLING MEADOW ESTATES SUB'N NO. 3

PART OF THE N.W. 1/4 OF SECTION 26, T. 3 S., R. 6 E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:

COMMENCING AT THE WEST 1/4 CORNER OF SECTION 26, TOWN 3 SOUTH, RANGE 6 EAST, THENCE N88°27'43"E, 1151.20 FEET ALONG THE EAST AND WEST 1/4 LINE OF SECTION 26 AND IN PART THE SOUTH LINE OF "ROLLING MEADOWS ESTATES SUBDIVISION NO. 1" (LIBER 28 OF PLATS, PAGES 92 – 94, WASHTENAW COUNTY RECORDS) AND "ROLLING MEADOWS ESTATES SUBDIVISION NO. 2" (LIBER 30 OF PLATS, PAGES 1 – 2, WASHTENAW COUNTY RECORDS) TO THE POINT OF BEGINNING; THENCE ALONG THE EAST LINE OF "ROLLING MEADOWS ESTATES SUBDIVISION NO. 2" (LIBER 30 OF PLATS, PAGES 1 – 2, WASHTENAW COUNTY RECORDS) THE FOLLOWING COURSES: N01°32'17"W, 150.72 FEET, AND N88°27'43"E, 37.31 FEET, AND N01°32'17"W, 186.00 FEET, AND S88°27'43"W, 28.31 FEET, AND N01°32'17"W, 306.00 FEET; THENCE N88°27'43"E, 313.51 FEET; THENCE N69°10'16"E, 124.45 FEET; THENCE N88°27'43"E, 280.00 FEET; THENCE S63°48'55"E, 7.09 FEET; THENCE S14°25'45"W, 131.94 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE TO THE SOUTH, HAVING A RADIUS OF 263.00 FEET, TO WHICH A RADIAL LINE BEARS N14°25'45"E; THENCE EASTERLY 54.54 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 11°52'58" (THE CHORD OF SAID CURVE BEARS S69°37'47"E, 54.45 FEET); THENCE S26°18'42"W, 187.84 FEET; THENCE N76°26'22"W, 40.49 FEET; THENCE S88°27'43"W, 78.09 FEET; THENCE S71°30'23"W, 42.98 FEET; THENCE S28°27'43"W, 185.14 FEET; THENCE S38°15'35"W, 86.50 FEET; THENCE S55°54'57"E, 237.81 FEET TO THE EAST AND WEST 1/4 LINE OF SECTION 26; THENCE ALONG SAID LINE S88°27'43"W, 539.78 FEET TO THE POINT OF BEGINNING, CONTAINING 8.1492 ACRES OF LAND.

DESCRIPTION OF ROLLING MEADOW ESTATES SUB'N NO. 4

PART OF THE N.W. 1/4 OF SECTION 26, T. 3 S., R. 6 E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:

COMMENCING AT THE WEST 1/4 CORNER OF SECTION 26, TOWN 3 SOUTH, RANGE 6 EAST; THENCE N88°27'43"E, 1690.97 FEET ALONG THE EAST AND WEST 1/4 LINE OF SAID SECTION 26, ALSO IN PART ALONG THE SOUTHERLY BOUNDARY OF "ROLLING MEADOW ESTATES SUB'N NO. 1" (LIBER 28, PAGE 92-94, WASHTENAW COUNTY RECORDS) AND ALSO IN PART ALONG THE SOUTHERLY BOUNDARY OF "ROLLING MEADOW ESTATES SUB'N NO. 2 (LIBER 30, PAGES 1 & 2, WASHTENAW COUNTY RECORDS) TO THE POINT OF BEGINNING; THENCE N55°54'57"W, 237.81 FEET; THENCE N38°15'35"E, 86.50 FEET; THENCE N28°27'43"E, 185.14 FEET; THENCE N71°30'23"E, 42.98 FEET; THENCE N88°27'43"E, 109.91 FEET; THENCE N18°20'13"E, 181.12 FEET TO THE BEGINNING OF A CURVE CONCAVE TO THE SOUTHWEST, HAVING A RADIUS OF 263.00 FEET; THENCE NORTHWESTERLY, 17.94 FEET ALONG THE ARC OF SAID CURVE, THROUGH A CENTRAL ANGLE OF 03°54'28" (THE CHORD OF SAID CURVE BEARS N73°37'01"W, 17.93 FEET); THENCE N14°25'45"E, 131.94 FEET; THENCE S63°48'55"E, 199.11 FEET; THENCE N00°55'49"W, 201.47 FEET; THENCE N09°59'51"E, 86.54 FEET; THENCE N22°22'49"E, 86.44 FEET; THENCE N35°20'21"E, 86.44 FEET; THENCE N48°17'53"E, 86.44 FEET; THENCE N61°15'25"E, 86.44 FEET; THENCE N74°12'57"E, 86.44 FEET; THENCE N86°08'01"E, 79.72 FEET; THENCE N89°04'11"E, 205.16 FEET TO THE NORTH AND SOUTH 1/4 LINE OF SAID SECTION 26; THENCE S00°55'49"E, 1140.01 FEET ALONG SAID LINE TO THE CENTER 1/4 CORNER OF SAID SECTION 26; THENCE S88°27'43"W, 968.51 FEET ALONG THE EAST AND WEST 1/4 LINE OF SAID SECTION 26 TO THE POINT OF BEGINNING. CONTAINING 20.5126 ACRES OF LAND.

ROLLING MEADOW EST. SUB'N NO.3 (LOTS 61-84) & SUB'N NO.4 (LOTS 85-143) LOT DATA

LOT	NO.	S.F.		ACREAGE	
LOT	61	7800	S.F.	0.1791	AC.
LOT	62	7800	S.F.	0.1791	AC.
LOT	63	7804	S.F.	0.1792	AC.
LOT	64	8176	S.F.	0.1877	AC.
LOT	65	9648	S.F.	0.2215	AC.
LOT	66	9667	S.F.	0.2219	AC.
LOT	67	10058	S.F.	0.2309	AC.
LOT	68	11160	S.F.	0.2562	AC.
LOT	69	11336	S.F.	0.2602	AC.
LOT	70	8579	S.F.	0.1970	AC.
LOT	71	8816	S.F.	0.2024	AC.
LOT	72	8475	S.F.	0.1946	AC.
LOT	73	7800	S.F.	0.1791	AC.
LOT	74	8022	S.F.	0.1842	AC.
LOT	75	8648	S.F.	0.1985	AC.
LOT	76	8626	S.F.	0.1980	AC.
LOT	77	11586	S.F.	0.2660	AC.
LOT	78	13496	S.F.	0.3098	AC.
LOT	79	8134	S.F.	0.1867	AC.
LOT	80	8820	S.F.	0.2025	AC.
LOT	81	8895	S.F.	0.2042	AC.
LOT	82	10834	S.F.	0.2487	AC.
LOT	83	8839	S.F.	0.2029	AC.
LOT	84	7800	S.F.	0.1791	AC.
LOT	85	9304	S.F.	0.2136	AC.
LOT	86	9470	S.F.	0.2174	AC.
LOT	87	8716	S.F.	0.2001	AC.
LOT	88	11867	S.F.	0.2724	AC.
LOT	89	8427	S.F.	0.1945	AC.
LOT	90	8054	S.F.	0.1849	AC.
LOT	91	7800	S.F.	0.1791	AC.
LOT	92	7800	S.F.	0.1791	AC.
LOT	93	8093	S.F.	0.1858	AC.
LOT	94	8663	S.F.	0.1989	AC.
LOT	95	8626	S.F.	0.1980	AC.
LOT	96	8626	S.F.	0.1980	AC.
LOT	97	8626	S.F.	0.1980	AC.
LOT	98	8626	S.F.	0.1980	AC.
LOT	99	8626	S.F.	0.1980	AC.
LOT	100	10738	S.F.	0.2465	AC.
LOT	101	14400	S.F.	0.3306	AC.
LOT	102	9969	S.F.	0.2289	AC.
LOT	103	8511	S.F.	0.1954	AC.
LOT	104	8533	S.F.	0.1959	AC.
LOT	105	8099	S.F.	0.1859	AC.
LOT	106	7800	S.F.	0.1791	AC.
LOT	107	7800	S.F.	0.1791	AC.
LOT	108	7800	S.F.	0.1791	AC.
LOT	109	8925	S.F.	0.2049	AC.
LOT	110	8579	S.F.	0.1969	AC.
LOT	111	8057	S.F.	0.1850	AC.
LOT	112	13461	S.F.	0.3090	AC.
LOT	113	7955	S.F.	0.1826	AC.
LOT	114	7848	S.F.	0.1802	AC.
LOT	115	7929	S.F.	0.1820	AC.
LOT	116	8635	S.F.	0.1982	AC.
LOT	117	7791	S.F.	0.1834	AC.
LOT	118	7800	S.F.	0.1791	AC.
LOT	119	7800	S.F.	0.1791	AC.
LOT	120	7800	S.F.	0.1791	AC.
LOT	121	7800	S.F.	0.1791	AC.
LOT	122	7800	S.F.	0.1791	AC.
LOT	123	10200	S.F.	0.2342	AC.
LOT	124	7800	S.F.	0.1791	AC.
LOT	125	7800	S.F.	0.1791	AC.
LOT	126	7800	S.F.	0.1791	AC.
LOT	127	7800	S.F.	0.1791	AC.
LOT	128	7800	S.F.	0.1791	AC.
LOT	129	7800	S.F.	0.1791	AC.
LOT	130	8402	S.F.	0.1929	AC.
LOT	131	8764	S.F.	0.2012	AC.
LOT	132	8626	S.F.	0.1980	AC.
LOT	133	9868	S.F.	0.2265	AC.
LOT	134	7800	S.F.	0.1791	AC.
LOT	135	8626	S.F.	0.1980	AC.
LOT	136	8626	S.F.	0.1980	AC.
LOT	137	8626	S.F.	0.1980	AC.
LOT	138	8626	S.F.	0.1980	AC.
LOT	139	8626	S.F.	0.1980	AC.
LOT	140	8626	S.F.	0.1980	AC.
LOT	141	8138	S.F.	0.1868	AC.
LOT	142	7995	S.F.	0.1835	AC.
LOT	143	8593	S.F.	0.1973	AC.

ROLLING MEADOW ESTATES SUB'N NO. 3 SITE DATA

SUB'N #3 = LOTS 61–84
PRESENT ZONING P.U.D.

GROSS AREA	8.1492 AC.	MINIMUM LOT AREA	7,800 SQ.FT.
AREA IN STREET R.O.W.	2.1878 AC.	MINIMUM LOT WIDTH	65 FT
NET RESIDENTIAL AREA	5.0693 AC.	MINIMUM CORNER LOT WIDTH	80 FT
PARK AREAS	3.33 AC.	FRONT YARD	25 FT
LOT DENSITY	0.8921 LOTS/ACRE	REAR YARD	30 FT
NUMBER OF LOTS	24 LOTS	MINIMUM SIDEYARD	5 FT (BOTH SIDES)
AVERAGE LOT AREA	9,195 SQ.FT.		

ROLLING MEADOW ESTATES SUB'N NO. 4 SITE DATA

SUB'N #4 = LOTS 85–143
PRESENT ZONING P.U.D.

TOTAL AREA	20.5126 AC.	MINIMUM LOT AREA	7,800 SQ.FT.
LOTS & R.O.W.	15.3685 AC.	MINIMUM LOT WIDTH	65 FT
PARK AREAS	5.1441 AC.	MINIMUM CORNER LOT WIDTH	80 FT
LOT DENSITY	2.86 LOTS/ACRE	FRONT YARD	25 FT
NUMBER OF LOTS	59	REAR YARD	30 FT
AVERAGE LOT AREA	8,651 SQ.FT.	MINIMUM SIDEYARD	5 FT (BOTH SIDES)

DETENTION POND CALCULATIONS

Detention Pond C Factor Calculation
Provided for in original pond design (by others):

	Area	C	A*C
Rolling Meadows #1 & #2:	18.64	0.35	6.52
Rolling Meadows #3:	3.40	0.35	1.19
Rosewood Village Condominiums:	5.00	0.55	2.75
Ponte Property:	1.70	0.35	0.60
Total:	28.74	0.38	11.06
Without Ponte Property:	27.04	0.39	10.46

Proposed to be provided for in expanded basin:

	Area	C	A*C
Rolling Meadows #3: Total area = 28.6618; 3.40 acres already provided for; Therefore 28.6618 – 3.40 =	25.2618	0.59	14.90
Plus, land acquired for expansion of existing detention pond =	0.9642	1.00	0.96
Total:	26.2260	0.59	15.87
Total:	53.2660	0.49	26.33

Volume Required:

1. Determine maximum allowable outflow, Qa, in CFS
   A 26.2260 ac X 0.15 cfs/ac (R.M. #3 & #4) = Qa 3.934 cfs
   27.04 0.20 cfs/ac (R.M. #1 & #2) = 5.408 cfs
   9.342
2. Calculate the allowable outflow, Qo = Qa/(acreage)(runoff coefficient)
   Qa 9.342 cfs / A 53.2660 ac X C 0.49 = 0.355 cfs/ac-imp
3. Calculate time for peak storage, T100
   T100 = –25+(10312.5/Qo)–1/2 = 145.495 min
4. Calculate the maximum storage volume per ac-imp, Vs
   Vs = 16500T/(T+25)–40QoT = 12,016 ft~3/ac-imp
5. Calculate the total volume of storage required, Vt
   Vt(100) = (Vs)(#ac)(runoff coefficient) = 316,411 ft~3
6. Calculate the first flush volume
   Vff = 1815*A*C = 47,794 ft~3
7. Calculate the volume required in the Sediment Forebay
   Vsf = 5% of 100 year volume = 15,821 ft~3
8. Calculate the volume of the bankfull flood
   V bf = 8170 A C = = 215,138 ft~3

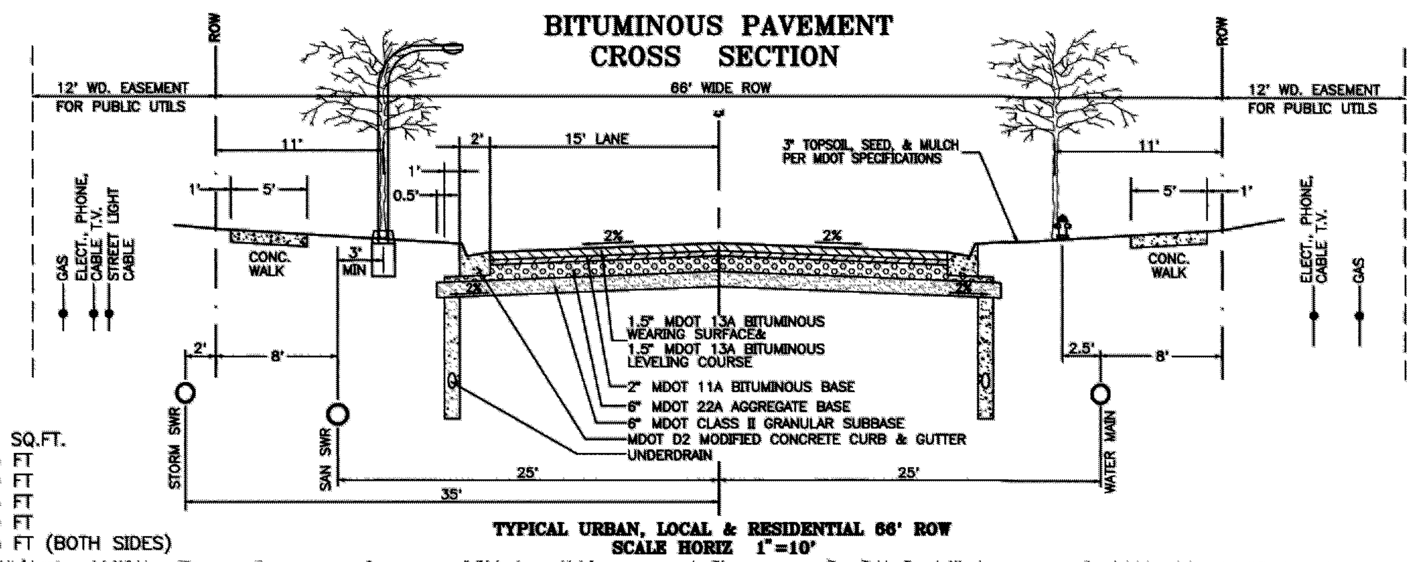
Volume Provided:

ELEV	AREA (ft~2)	h (ft)	(ft~3) VOLUME	VOLUME (ft~3)	REMARKS
SEDIMENT FOREBAY					
825.1	4,945			0	
		0.90	5,245		
826.00	6,711			5,245	Permanent Water
		1.00	7,818		
827.00	8,924			13,063	
		0.30	2,759		
827.30	9,640			15,821	5% of 100 Year Storm
		0.70	7,341		
828.00	11,328			23,162	
MAIN DETENTION BASIN					
825.1	69,972			0	Permanent Water
		0.67	47,794		
825.77	73,618			47,794	First Flush
		0.23	17,399		
826.00	74,901			65,193	
		1.00	77,733		
827.00	80,565			142,926	
		0.87	72,212		
827.87	85,657			215,138	Bankfull Volume
		0.13	11,284		
828.00	86,426			226,421	
		0.00	0		
828.00	98,421			226,421	
		0.88	89,990		
828.89	104,946			316,411	100 Year Volume
		0.12	12,118		
829.00	105,794			328,529	

SOILS

ON SITE SOIL CONSISTS OF APPROXIMATELY 70% ST. CLAIR LOAM@ < 4% SLOPES % APPROXIMATELY 30% BLOUNT LOAM @ < 4% SLOPES

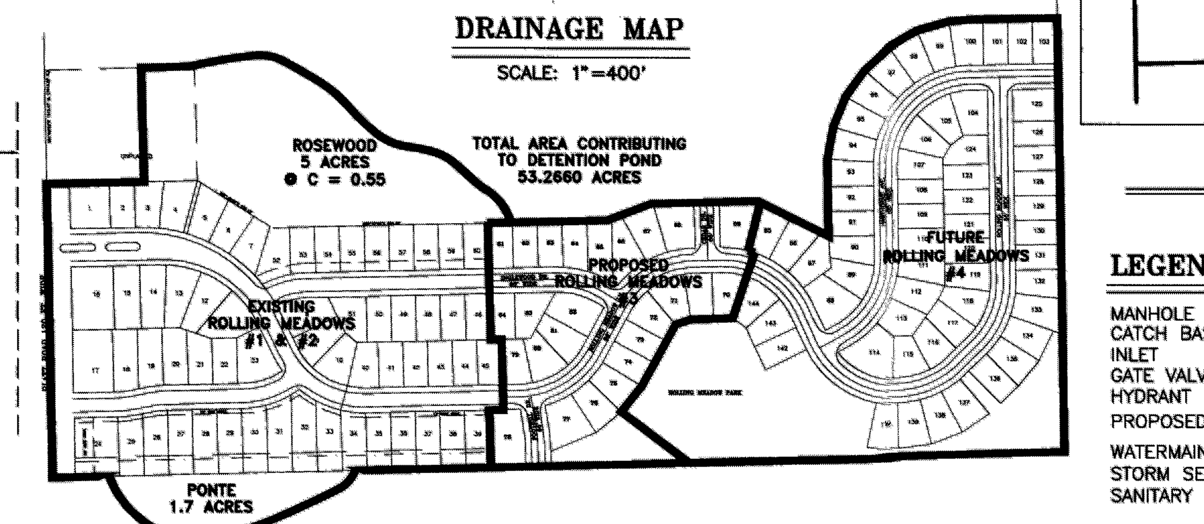
BITUMINOUS PAVEMENT CROSS SECTION

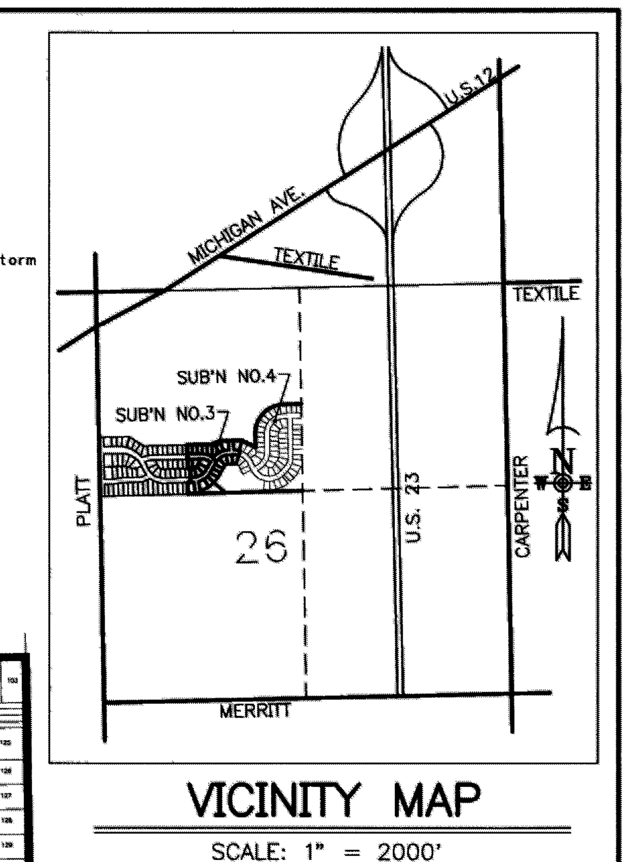


TYPICAL URBAN, LOCAL & RESIDENTIAL 66' ROW
SCALE HORIZ 1"=10'

DRAINAGE MAP

SCALE: 1"=400'



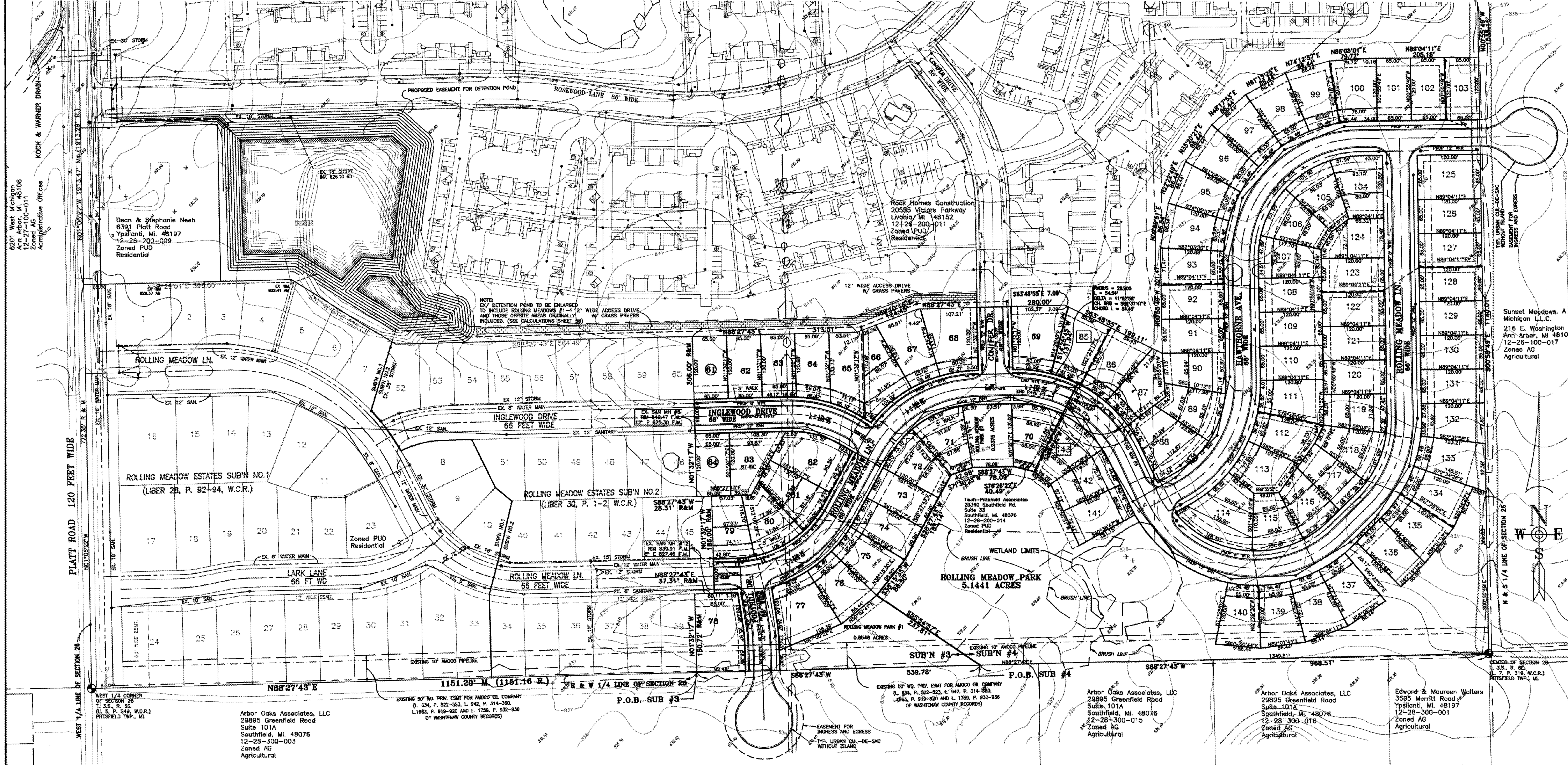


VICINITY MAP

SCALE: 1" = 2000'

LEGEND:

- MANHOLE
- CATCH BASIN
- INLET
- GATE VALVE & WELL
- HYDRANT
- PROPOSED LIGHT POLE
- WATERMAIN (EX.)
- STORM SEWER (EX.)
- SANITARY SEWER (EX.)
- WATERMAIN (PROP.)
- STORM SEWER (PROP.)
- SANITARY SEWER (PROP.)
- WETLAND LIMITS
- EX. TREE LINE
- EX. FENCE
- EX. ELEVATION 00.00



NOTE:
SUBDIVISION #3 AND SUBDIVISION #4 SHALL BE DEVELOPED INDEPENDENTLY

STATE OF MICHIGAN
EVAN M. PRIEST
ENGINEER
NO. 48550
Registered Professional Engineer

PROPRIETOR
PITTSFIELD MICHIGAN AVENUE ASSOCIATES
29350 SOUTHFIELD ROAD
SOUTHFIELD, MICHIGAN
48076

JOE BLOCH
PH: 248 559–7430
FAX: 248 559–8070

SP #02–1

PRELIMINARY PLAT

ROLLING MEADOW ESTATES SUB'N NO. 3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E.,
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. – Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

DATE: 05/24/02

REVISIONS: 06/20/02 PER WCDC LTR OF 05-21-02 & PITTSFIELD LTR OF 06/12/02
06/27/02 ADDED SHEET INDEX
07/12/02 PER PITTSFIELD TOWNSHIP
08/06/02 PER WCDC
08/15/02 PER PITTSFIELD MEMOS OF 07/24/02 & 07/26/02
09/18/02 PER PITTSFIELD MEMOS OF 08/30/02 & 09/17/02
11/05/02 PER PITTSFIELD MEMOS OF 10/03/02 & 09/17/02
12/10/02 PER PITTSFIELD MEMOS OF 12/4/02
02/07/03 PER PITTSFIELD MEMOS OF 01/09/03
03/06/03 PER PITTSFIELD MEMOS OF 03/04/03

AS BUILT:

SCALE: HORIZ. 1" = 100' VERT. 1 FOOT CONTOURS
DATUM U.S.C.& G.S.
JOB NO. 9525
N.B.
SHEET 1

9525\9525 Tue Nov 5 11:44:56 2002

KOCH-WARNER DRAIN

MICHIGAN AVE.

TEXTILE ROAD

PLATT ROAD

US-23

NW COR SEC 26

N 1/4 COR SEC 26

W 1/4 COR SEC 26

C 1/4 COR SEC 26

E/W 1/4 LINE SECTION 26

SEC 26

Ex 12" WTR

Ex 36" SAN

INV 36" 818.2

INV 18" S 820.0
36" E/W 818.8

Ex 18" SAN

Ex 16" WTR

Labor of Love Church
P.O. Box 7953
Ann Arbor, Mi. 48107
12-26-200-002
Zoned 1B
Church

Adam & Irene Ponte
533 Liberty Pointe Drive
Ann Arbor, Mi. 48103
12-26-200-006
Zoned AG
Residential & Woodland

J.A.Bloch Co.
Textile Road
29350 Southfield Rd.
Suite 33
Southfield, Mi. 48076
12-26-200-010
Zoned PUD
Agricultural

INV 832.0

Pittsfield Charter Township
6201 West Michigan
Ann Arbor, Mi. 48108
12-27-100-011
Zoned AG
Administrative Offices

PROPOSED, BY OTHERS,
ROSEWOOD VILLAGE
CONDOMINIUM

PROP 8" SAN

Dean & Stephanie Nabil
6351 Platt Road
Ypsilanti, Mi. 48197
12-26-200-009
Zoned PUD
Residential

PROPOSED
ROLLING MEADOW
ESTATES #3

PROPOSED
ROLLING MEADOW
ESTATES #4

EXISTING
ROLLING MEADOW
ESTATES #1

EXISTING
ROLLING MEADOW
ESTATES #2

EX 8" WTR

EX 12" SAN

PROP 12" SAN

PROP 12" WTR

EX 10" SAN

EX 18" SAN

INV 18" 822.4
10" 822.9

INV 828.0

INV 836.6

RIM 837.1

INV 831.9

Sunset Meadows, A Michigan L.L.C.
216 E. Washington
Ann Arbor, Mi 48104
12-26-100-017
Zoned AG
Agricultural

SOUTHERN LIMIT OF SANITARY
SEWER SERVICE AREA

Arbor Oaks Associates, LLC
29895 Greenfield Road
Suite 101A
Southfield, Mi. 48076
12-28-300-003
Zoned AG
Agricultural

Arbor Oaks Associates, LLC
29895 Greenfield Road
Suite 101A
Southfield, Mi. 48076
12-28-300-015
Zoned AG
Agricultural

Arbor Oaks Associates, LLC
29895 Greenfield Road
Suite 101A
Southfield, Mi. 48076
12-28-300-016
Zoned AG
Agricultural

Edward & Maureen Walters
3305 Merritt Road
Ypsilanti, Mi. 48197
12-28-300-001
Zoned AG
Agricultural

INV 823.3

PUMP
STATION

INV 807.5

INV 807.6 N
817.6 S

EX 15" SAN

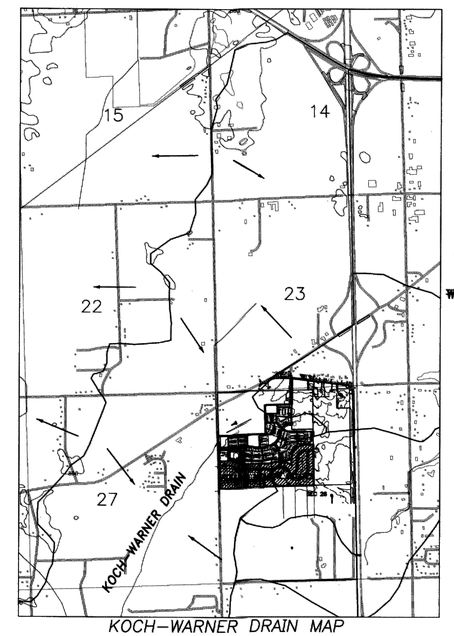
N

W E

S

200 100 0 200 400 600

SCALE: ONE INCH = 200 FEET



KOCH-WARNER DRAIN MAP

2000 1000 0 2000 4000 6000

SCALE: ONE INCH = 2000 FEET

LEGEND:

EXISTING RIDGE LINE

PROPOSED RIDGE LINE

SANITARY SEWER
(SEE LABELS FOR PROPOSED OR EXISTING)

SANITARY SEWER
SERVICE LIMIT

WATER MAIN

WETLAND

SP #02-1

AREA WIDE MAP

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40555 Koppernick Rd., Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

SHEET 2

JOB NO. 9325

N.S.

SCALE: HORIZ. 1" = 200'

VERT. 5 FOOT CONTOURS

DATUM: U.S.C.& G.S.

ROLLING MEADOW ESTATES #3 & #4
PART OF THE N.W. 1/4 OF SECTION 26 T.3.S., R.6.E.
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

DATE: 06/20/02

REVISIONS: 07/12/02 PER PITTSFIELD TOWNSHIP
08/01/02 PER PITTSFIELD TOWNSHIP
12/16/02 PER PITTSFIELD TOWNSHIP
03/10/03 PER PITTSFIELD TOWNSHIP
05/14/03 PER PITTSFIELD TOWNSHIP

AS BUILT:

Y:\9525\YPSI\WEST Tue Nov 5 17:32:55 2002

LOT INFORMATION FOR ROLLING MEADOWS SUBDIVISION

Lot 1
Bertha Aycock
4025 Rolling Meadow Lane
Ypsilanti, Mi. 48197
12-26-205-001

Lot 2
Roger & Jerlean Bethume
4037 Rolling Meadow Lane
Ypsilanti, Mi. 48197
12-26-205-002

Lot 3
James & Carol Gray
4047 Rolling Meadow Lane
Ypsilanti, Mi. 48197
12-26-205-003

Lot 4
Walter & Linda Harju
4055 Rolling Meadow Lane
Ypsilanti, Mi. 48197
12-26-205-004

Lot 5
Jerold & Mary Dowly
4063 Rolling Meadow Lane
Ypsilanti, Mi. 48197
12-26-205-005

Lot 6
Charles Solbrig
4071 Rolling Meadow Lane
Ypsilanti, Mi. 48197
12-26-205-006

Lot 7
Paul Schultz
4101 Rolling Meadow Lane
Ypsilanti, Mi. 48197
12-26-205-007

Lot 52
Platt & Michigan Income Part.
29350 Southfield Rd. Ste. 33
Southfield, Mi. 48078
12-26-205-052

Lot 53
Anthony Igwa & Priscilla Robinson
4131 Inglewood Drive
Ypsilanti, Mi. 48197
12-26-205-053

Lot 54
Ryan & Alyssa Hazel
4145 Inglewood Drive
Ypsilanti, Mi. 48197
12-26-205-054

Lot 55
Kieth & Mary Weigel
4157 Inglewood Drive
Ypsilanti, Mi. 48197
12-26-205-055

Lot 56
Platt & Michigan Income Part.
29350 Southfield Rd. Ste. 33
Southfield, Mi. 48078
12-26-205-056

Lot 57
Platt & Michigan Income Part.
29350 Southfield Rd. Ste. 33
Southfield, Mi. 48078
12-26-205-057

Lot 58
Platt & Michigan Income Part.
29350 Southfield Rd. Ste. 33
Southfield, Mi. 48078
12-26-205-058

Lot 59
Kieth & Jaqueline Hickman
4211 Inglewood Drive
Ypsilanti, Mi. 48197
12-26-205-059

Lot 60
Platt & Michigan Income Part.
29350 Southfield Rd. Ste. 33
Southfield, Mi. 48078
12-26-205-060

Adam & Irene Ponte
533 Liberty Pointe Drive
Ann Arbor, Mi. 48103
12-26-200-006
Zoned AG
Residential & Woodland

N.W. CORNER OF SECTION 26 T. 3.S., R. 6E. (L. 5, P. 318, W.C.R.) PITTSFIELD TWP., MI.

NORTH 1/4 CORNER OF SECTION 26 T. 3.S., R. 6E. (L. 7, P. 318, W.C.R.) PITTSFIELD TWP., MI.

PROPRIETOR
J.A. BLOCH & COMPANY
29350 SOUTHFIELD ROAD
SOUTHFIELD, MICHIGAN
48076

JOE BLOCH
PH: 248-559-7430
FAX: 248-559-8070

ENGINEER & LAND SURVEYOR
MICHAEL L. PRIEST & ASSOC.
40655 KOPPERNICK
CANTON, MICHIGAN
48187

MICHAEL L. PRIEST, P.E., P.S.
PH: 734 459-8560
FAX: 734 459-2585

J.A.Bloch Co.
Textile Road
29350 Southfield Rd.
Suite 33
Southfield, Mi. 48076
12-26-200-010
Zoned PUD
Agricultural

Pittsfield Charter Township
6201 West Michigan
Ann Arbor, Mi. 48108
12-27-100-011
Zoned AG
Administrative Offices

Dean & Stephanie Neeb
6391 Platt Road
Ypsilanti, Mi. 48197
12-26-200-009
Zoned PUD
Residential

Rock Homes Construction
20555 Victors Parkway
Livonia, Mi 48152
12-26-200-011
Zoned PUD
Residential

ROSEWOOD LANE — 66 FT. WD.

ROSE-WOOD LANE

CENTER DRIVE 66' WIDE

ROSEWOOD VILLAGE CONDOMINIUMS (BY OTHERS)

ROLLING MEADOW LN.

INGLEWOOD DRIVE 66 FEET WIDE

ROLLING MEADOW ESTATES SUB'N NO.1 (LIBER 28, P. 92-94, W.C.R.)

ROLLING MEADOW ESTATES SUB'N NO.2 (LIBER 30, P. 1-2, W.C.R.)

LARK LANE 66 FT WD

ROLLING MEADOW LN. 66 FEET WIDE

ROLLING MEADOW LN. 66' WIDE

ROLLING MEADOW PARK

HAWTHORNE AVE. 66' WIDE

FOOTHILL DR. 66' WIDE

PLATT ROAD 120 FT. WIDE

SUB'N #3 — SUB'N #4

Zoned PUD Residential

Tisch-Pittsfield Associates
29360 Southfield Rd.
Suite 33
Southfield, Mi. 48076
12-26-200-014
Zoned PUD
Residential

Sunset Meadows, A
Michigan L.L.C.
216 E. Washington
Ann Arbor, Mi 48104
12-26-100-017
Zoned AG
Agricultural

Arbor Oaks Associates, LLC
29895 Greenfield Road
Suite 101A
Southfield, Mi. 48076
12-28-300-015
Zoned AG
Agricultural

Arbor Oaks Associates, LLC
29895 Greenfield Road
Suite 101A
Southfield, Mi. 48076
12-28-300-016
Zoned AG
Agricultural

Edward & Maureen Walters
3505 Merritt Road
Ypsilanti, Mi. 48197
12-28-300-001
Zoned AG
Agricultural

Arbor Oaks Associates, LLC
29895 Greenfield Road
Suite 101A
Southfield, Mi. 48076
12-28-300-003
Zoned AG
Agricultural

WEST 1/4 CORNER OF SECTION 26 T. 3.S., R. 6E. (L. 5, P. 246, W.C.R.) PITTSFIELD TWP., MI.

CENTER OF SECTION 26 T. 3.S., R. 6E. (L. 7, P. 318, W.C.R.) PITTSFIELD TWP., MI.

N88°27'43"E 1151.20' M. (1151.16 R.) E & W 1/4 LINE OF SECTION 26

N & S 1/4 LINE OF SECTION 26

WEST 1/4 LINE OF SECTION 26

N01°06'22"W 1913.47' M. (1913.29' R.)

N00°55'48"W 1335.18'

S00°55'48"E 1140.01'

S88°27'43"W 539.78' 968.51'

AN EASEMENT FOR INGRESS AND EGRESS LOCATED IN PART OF THE SOUTHWEST 1/4 OF SECTION 26, TOWN 3 SOUTH, RANGE 6 EAST, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:
COMMENCING AT THE CENTER 1/4 CORNER OF SECTION 26, TOWN 3 SOUTH, RANGE 6 EAST, THENCE N00°55'48"W, 834.01 FEET ALONG THE NORTH AND SOUTH 1/4 LINE OF SECTION 26 TO THE POINT OF BEGINNING; THENCE CONTINUING N00°55'48"W, 66.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 50.00 FEET, TO WHICH POINT A RADIAL LINE BEARS S46°13'28"E; THENCE EASTERLY, 42.23 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 48°23'40" (THE CHORD OF SAID CURVE BEARS N64°32'21"E, 40.99 FEET) TO THE BEGINNING OF A REVERSE CURVE CONCAVE TO THE WEST, HAVING A RADIUS OF 75.00 FEET, TO WHICH POINT A RADIAL LINE BEARS S47°27'01"W; THENCE EASTERLY, SOUTHERLY, AND WESTERLY 382.32 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 276°47'19" (THE CHORD OF SAID CURVE BEARS S00°55'48"E, 99.60 FEET) TO THE BEGINNING OF A REVERSE CURVE CONCAVE TO THE SOUTHWEST, HAVING A RADIUS OF 50.00 FEET, TO WHICH POINT A RADIAL LINE BEARS N00°32'48"W; THENCE NORTHERLY 42.23 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 48°23'40" (THE CHORD OF SAID CURVE BEARS N66°43'39"W, 40.99 FEET) TO THE NORTH AND SOUTH 1/4 LINE OF SECTION 26 AND THE POINT OF BEGINNING.

AN EASEMENT FOR INGRESS AND EGRESS LOCATED IN PART OF THE SOUTHWEST 1/4 OF SECTION 26, TOWN 3 SOUTH, RANGE 6 EAST, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:
COMMENCING AT THE WEST 1/4 CORNER OF SECTION 26, TOWN 3 SOUTH, RANGE 6 EAST, THENCE N88°27'43"W, 1243.69 FEET ALONG THE EAST AND WEST 1/4 LINE OF SECTION 26 AND IN PART THE SOUTH LINE OF "ROLLING MEADOWS ESTATES SUBDIVISION NO. 1" (LIBER 28 OF PLATS, PAGES 92 - 94, WASHTENAW COUNTY RECORDED) AND "ROLLING MEADOWS ESTATES SUBDIVISION NO. 2" (LIBER 30 OF PLATS, PAGES 1 - 3, WASHTENAW COUNTY RECORDED) TO THE POINT OF BEGINNING; THENCE CONTINUING N88°27'43"E, 66.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 50.00 FEET, TO WHICH POINT A RADIAL LINE BEARS S88°27'43"W; THENCE SOUTHERLY 42.23 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 48°23'40" (THE CHORD OF SAID CURVE BEARS S35°44'07"E, 40.99 FEET) TO THE BEGINNING OF A REVERSE CURVE CONCAVE TO THE NORTH, HAVING A RADIUS OF 75.00 FEET, TO WHICH POINT A RADIAL LINE BEARS N42°04'33"E; THENCE SOUTHERLY, EASTERLY, AND NORTHERLY 382.32 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 276°47'19" (THE CHORD OF SAID CURVE BEARS S88°27'43"W, 99.60 FEET) TO THE BEGINNING OF A REVERSE CURVE CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 50.00 FEET, TO WHICH POINT A RADIAL LINE BEARS S43°08'37"E; THENCE NORTHERLY 42.23 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 48°23'40" (THE CHORD OF SAID CURVE BEARS N22°39'33"E, 40.99 FEET) TO THE EAST AND WEST 1/4 LINE OF SECTION 26 AND THE POINT OF BEGINNING.

EASEMENT FOR INGRESS AND EGRESS

TYP. URBAN CUL-DE-SAC WITHOUT ISLAND

SIGHT DISTANCE TABLE	
CEDAR DR. @ ROLLING MEADOW LN.	RIGHT TURN- 250 FT.
	LEFT TURN - 250 FT.
INGLEWOOD DR. @ ROLLING MEADOW LN.	RIGHT TURN- 250 FT.
	LEFT TURN - 250 FT.
FOOTHILL DR. @ ROLLING MEADOW LN.	RIGHT TURN- 250 FT.
	LEFT TURN - 250 FT.
HAWTHORNE AVE. @ ROLLING MEADOW LN.	RIGHT TURN- 250 FT.
	LEFT TURN - 250 FT.
ROLLING MEADOW LN. @ HAWTHORNE AVE.	RIGHT TURN- 250 FT.
	LEFT TURN - 250 FT.

CURVE DATA						
NO.	RADIUS	ARC	DELTA	CHORD	CHORD BRG	TANGENT
1	230.00	240.88	60°00'00"	230.00	N 88°27'43" E	132.79
2	230.00	131.58	32°46'42"	129.80	S 75°06'55" E	67.85
3	230.00	240.88	60°00'00"	230.00	N 58°27'43" E	132.79
4	230.00	287.40	68°39'46"	252.59	S 58°13'54" E	151.12
5	230.00	30.32	07°33'10"	30.30	S 05°16'52" E	15.18
6	230.00	440.92	109°50'18"	376.44	S 79°50'39" E	327.49
7	230.00	183.33	46°10'00"	169.33	N 22°09'11" E	96.00
8	230.00	246.51	61°24'27"	234.88	N 29°46'23" E	136.58
9	230.00	361.28	90°00'00"	325.27	N 44°04'11" E	230.00

SP #02-1

FINAL ROAD LAYOUT

ROLLING MEADOW ESTATES SUB'N #3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E.,
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

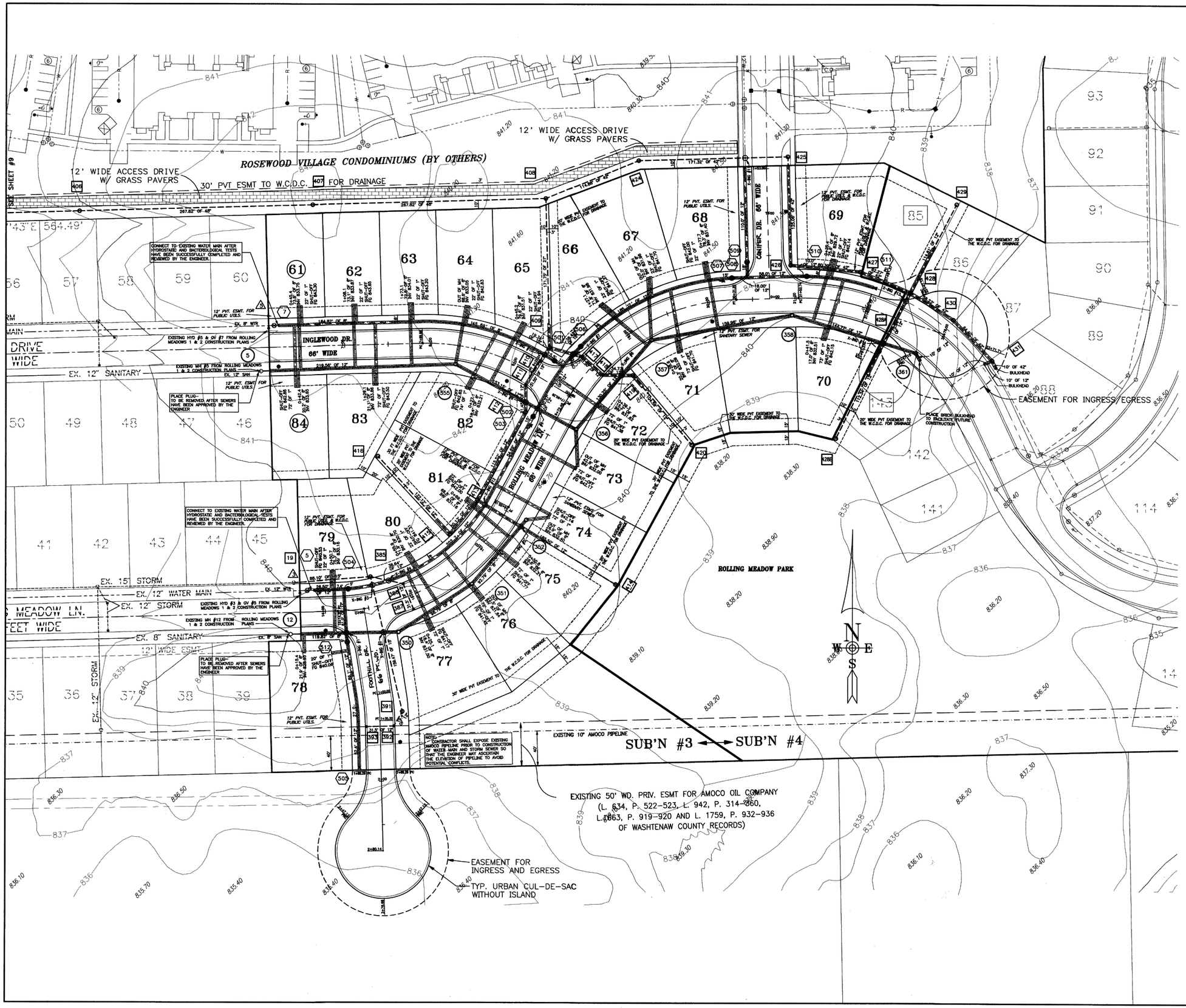
REVISIONS	DATE
PER PITTSFIELD TWP. REVIEW LTR. DT. 07-24-01	07/02/01
PER PITTSFIELD TWP. REVIEW LTR. DT. 12-13-01	12/13/01
PER PITTSFIELD TWP. REVIEW LTR. DT. 07-29-02	07/29/02
PER PITTSFIELD TWP. REVIEW LTR. DT. 08-29-02	08/29/02
PER PITTSFIELD TWP. REVIEW LTR. DT. 09-13-02	09/13/02

DATE: 07/02/01
DRAWN: S.E.C.A.C.S.
AS BUILT:
SCALE: HORZ. 1" = 100' VERT. 1" = 5'

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. - Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

JOB NO. 6525
FIL.
SHEET 3

D:\6525\6525 Wed Sep 25 09:35:50 2002 E.N.P.



ROLLING MEADOW ESTATES #3 QUANTITIES

SANITARY SEWER

ITEM	QUANTITY
1 12" PVC SDR 26	656 L.F.
2 12" PVC SDR 21	373 L.F.
3 8" PVC SDR 26	321 L.F.
4 6" LEAD	1324 L.F.
5 MANHOLE	9 EACH

STORM SEWER

ITEM	QUANTITY
1 48" C76 CL IV MGT RG	824 L.F.
2 42" C76 CL IV MGT RG	677 L.F.
3 21" C76 CL IV MGT RG	172 L.F.
4 21" C76 CL IV MGT RG	172 L.F.
5 15" C76 CL IV MGT RG	347 L.F.
6 12" C76 CL IV MGT RG	1148 L.F.
7 REAR YARD INLET	5 EACH
8 REAR YARD CATCH BASIN (7' DIA)	6 EACH
9 MANHOLE "A" (4' DIA)	8 EACH
10 MANHOLE "A" (6' DIA)	6 EACH
11 MANHOLE "A" (8' DIA)	6 EACH
12 STANDARD CATCH BASIN	6 EACH
13 STANDARD INLET	2 EACH

WATER MAIN

ITEM	QUANTITY
1 12" D.I. CL. 54 W.M.	1409 L.F.
2 12" G.V. & WELL	7 EACH
3 8" D.I. CL. 54 W.M.	338 L.F.
4 8" G.V. & WELL	1 EACH
5 HYDRANT	4 EACH

PAVING

ITEM	QUANTITY
1 6" COMPACTED MDOT CLASS II GRANULAR SUBBASE	8568 S.Y.
2 6" MDOT 22A AGGREGATE BASE	8368 S.Y.
3 1 1/2" MDOT 13A LEVELING COURSE	7287 S.Y.
4 1 1/2" MDOT 13A BITUMINOUS WEARING SURFACE	7287 S.Y.
5 MDOT D2 (MODIFIED) MOUNTABLE CONCRETE CURB & GUTTER	3121 L.F.

LEGEND:

- MANHOLE (PROP)
- CATCH BASIN (PROP)
- INLET (PROP)
- GATE VALVE & WELL (PROP)
- HYDRANT (PROP)
- STREET LIGHT
- FUTURE MANHOLE
- FUTURE CATCH BASIN
- FUTURE INLET
- FUTURE GATE VALVE & WELL
- FUTURE HYDRANT
- WATERMAIN (EX.)
- STORM SEWER (EX.)
- SANITARY SEWER (EX.)
- WATERMAIN (PROP.)
- STORM SEWER (PROP.)
- SANITARY SEWER (PROP.)
- SAND BACKFILL REQ'D
- WATERMAIN (FUTURE)
- STORM SEWER (FUTURE)
- SANITARY SEWER (FUTURE)
- EX. ELEVATION 60.00

NOTE:

- ALL SANITARY SEWER LEADS SHALL BE AT A MINIMUM 2% SLOPE
- ALL ROOF AND SUMP DRAINAGE MUST BE DIRECTED INTO THE STORM SYSTEM
- ALL UTILITIES LYING WITHIN ROAD RIGHT-OF-WAY CORRIDOR (EXISTING OR PROPOSED, FROM FRONT-OF-HOUSE TO FRONT-OF-HOUSE) SHALL BE BACKFILLED WITH MDOT CL. II GRANULAR MATERIAL COMPACTED TO 95% MAXIMUM UNIT WEIGHT

UTILITY CROSSING #1	
SANITARY & WATER	
BTM / 12" WTR	833.91
TOP / 8" SAN	828.44
CLEARANCE	5.47'

UTILITY CROSSING #2	
SANITARY & STORM	
BTM / 15" STM	831.84
TOP / 8" SAN	828.61
CLEARANCE	3.24'

UTILITY CROSSING #3	
STORM & WATER	
TOP / 15" STM	833.24
BTM / 12" WTR	834.49
CLEARANCE	1.25'

UTILITY CROSSING #4	
STORM & WATER	
TOP / 12" STM	833.26
BTM / 12" WTR	833.91
CLEARANCE	0.65'

UTILITY CROSSING #5	
SANITARY & STORM	
TOP / 8" SAN	829.61
BTM / 12" STM	831.78
CLEARANCE	2.17'

UTILITY CROSSING #6	
SANITARY & WATER	
TOP 12" SAN	827.12
BTM / 12" WTR	834.39
CLEARANCE	7.27'

UTILITY CROSSING #7	
STORM & WATER	
TOP / 15" STM	829.88
BTM / 12" WTR	831.03
CLEARANCE	1.15'

UTILITY CROSSING #8	
SANITARY & STORM	
BTM / 12" STM	831.85
TOP / 12" SAN	827.58
CLEARANCE	4.27'

UTILITY CROSSING #9	
STORM & SANITARY	
BTM / 12" STM	830.86
TOP / 12" SAN	827.17
CLEARANCE	3.69'

UTILITY CROSSING #10	
STORM & WATER	
BTM / 8" WTR	833.73
TOP / 12" STM	831.69
CLEARANCE	2.04'

UTILITY CROSSING #11	
STORM & WATER	
BTM / 12" WTR	833.72
TOP / 42" STM	830.27
CLEARANCE	3.45'

UTILITY CROSSING #12	
STORM & WATER	
BTM / 12" WTR	835.09
TOP / 12" STM	832.88
CLEARANCE	2.21'

UTILITY CROSSING #13	
STORM & WATER	
BTM / 12" WTR	833.45
TOP / 12" STM	831.95
CLEARANCE	1.50'

UTILITY CROSSING #14	
STORM & SANITARY	
BTM / 12" STM	831.43
TOP / 12" SAN	828.45
CLEARANCE	2.98'

BENCHMARKS

1. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #5 LOCATED AT END OF EX. INGLEWOOD DR. ELEV = 844.99
2. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #3 LOCATED AT END OF EX. ROLLING MEADOW LN. ELEV = 842.74

SP #02-1

GENERAL DEVELOPMENT PLAN

ROLLING MEADOW ESTATES SUB'N #3

PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

VERT. 1 FOOT CONTOURS

DATUM U.S.G.S. G.S.

SCALE: HORIZ. 1" = 50'

DATE: 07/11/01

REVISIONS: 8/13/01 PER DEPARTMENT REVIEW; 9/10/01 PER PITTSFIELD TOWNSHIP; 10/09/01 W.C.D.C. REVIEW; 10/26/01 PER WCWRC; 11/07/01 PER PITTSFIELD TOWNSHIP; 12/12/01 PER PITTSFIELD TOWNSHIP; 12/20/01 PER PITTSFIELD TOWNSHIP; 01/07/02 PER WCWRC; 01/09/02 PER PITTSFIELD TOWNSHIP; 02/04/02 PER PITTSFIELD TOWNSHIP; 02/13/02 PER PITTSFIELD TOWNSHIP; 03/11/02 PER WCWRC; 03/15/02 PER PITTSFIELD TOWNSHIP; 04/15/02 PER WCWRC; 05/13/02 PER PITTSFIELD TOWNSHIP; 06/14/02 PER WCWRC; 06/17/02 PER PITTSFIELD TOWNSHIP; 08/14/02 PER WCWRC; 08/19/02 PER WCWRC; 08/26/02 PER PITTSFIELD TOWNSHIP; 08/26/02 PER WCWRC; 09/17/02 PER PITTSFIELD TOWNSHIP; 09/23/02 PER WCWRC

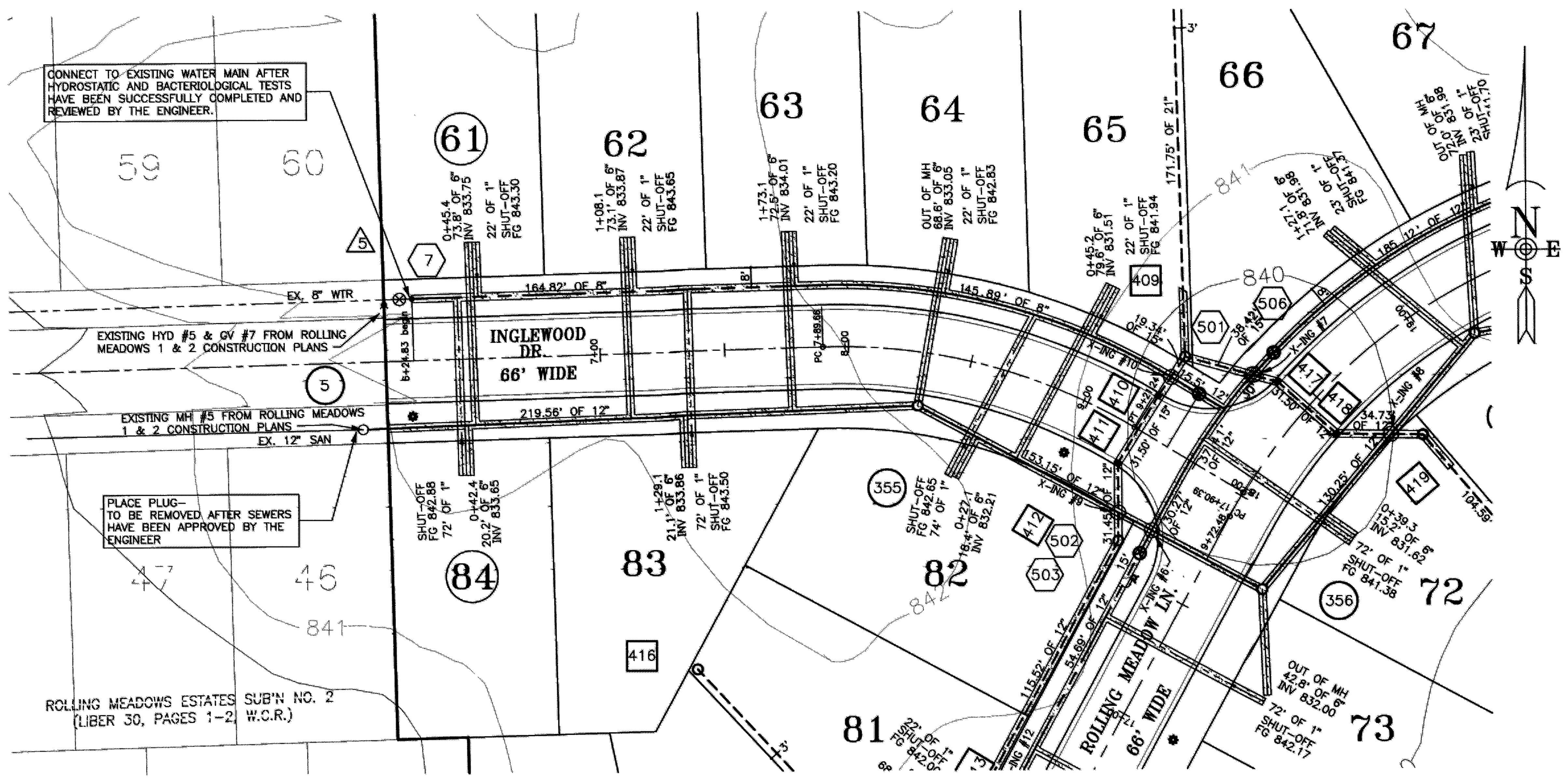
JOB NO. 9525

N.S.

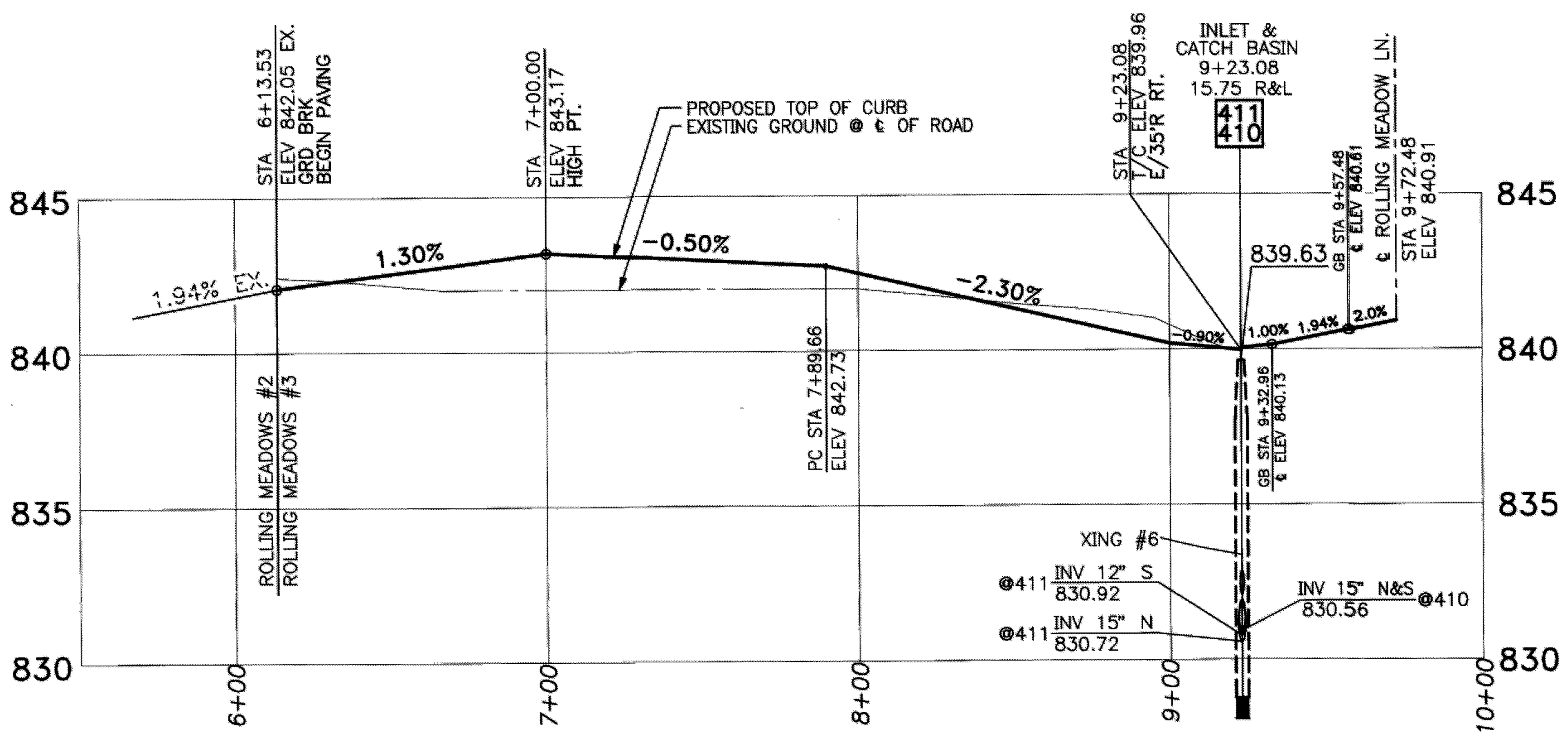
SHEET 4

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. - Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

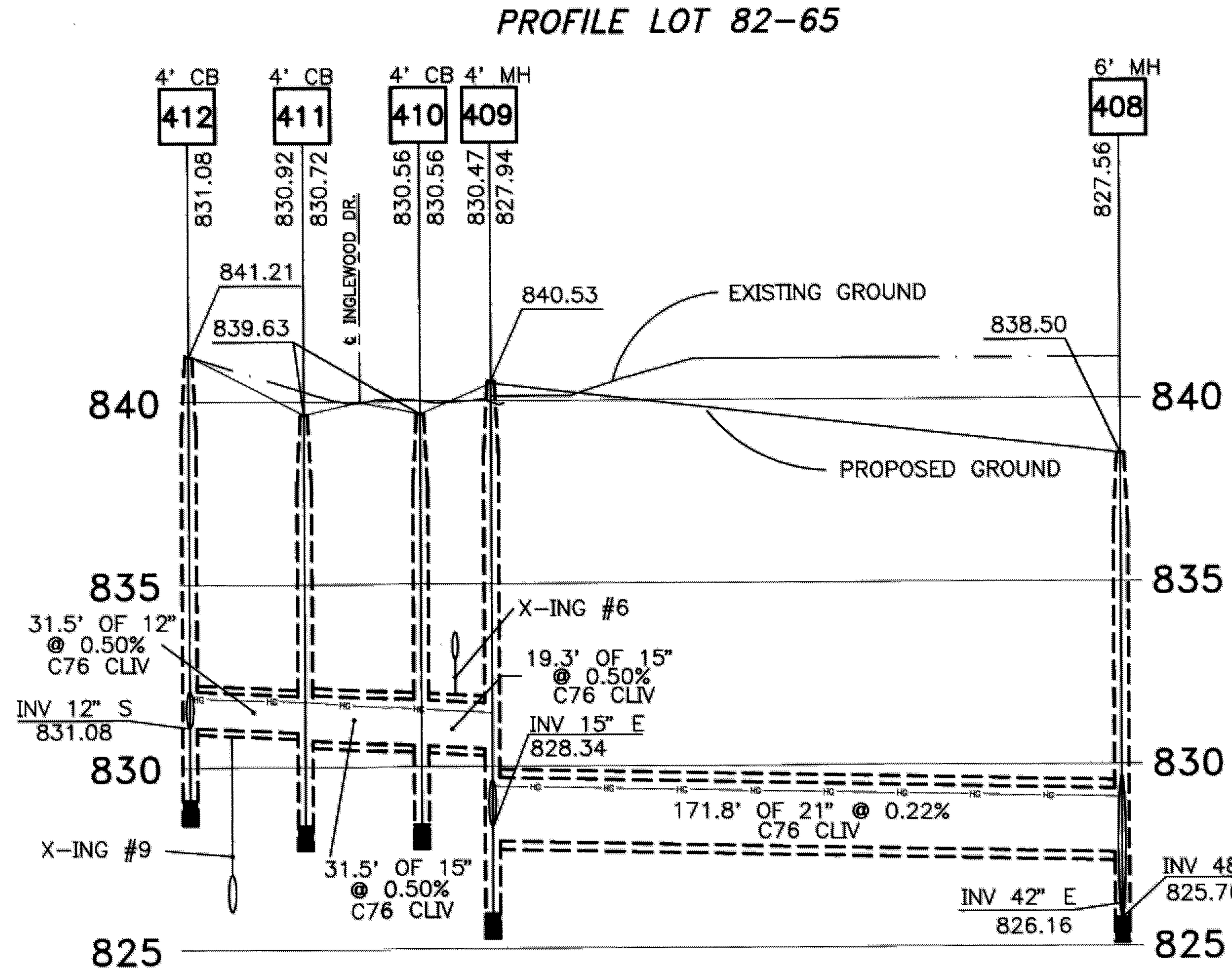
D:\9525\9525 Tue Nov 5 15:15:23 2002

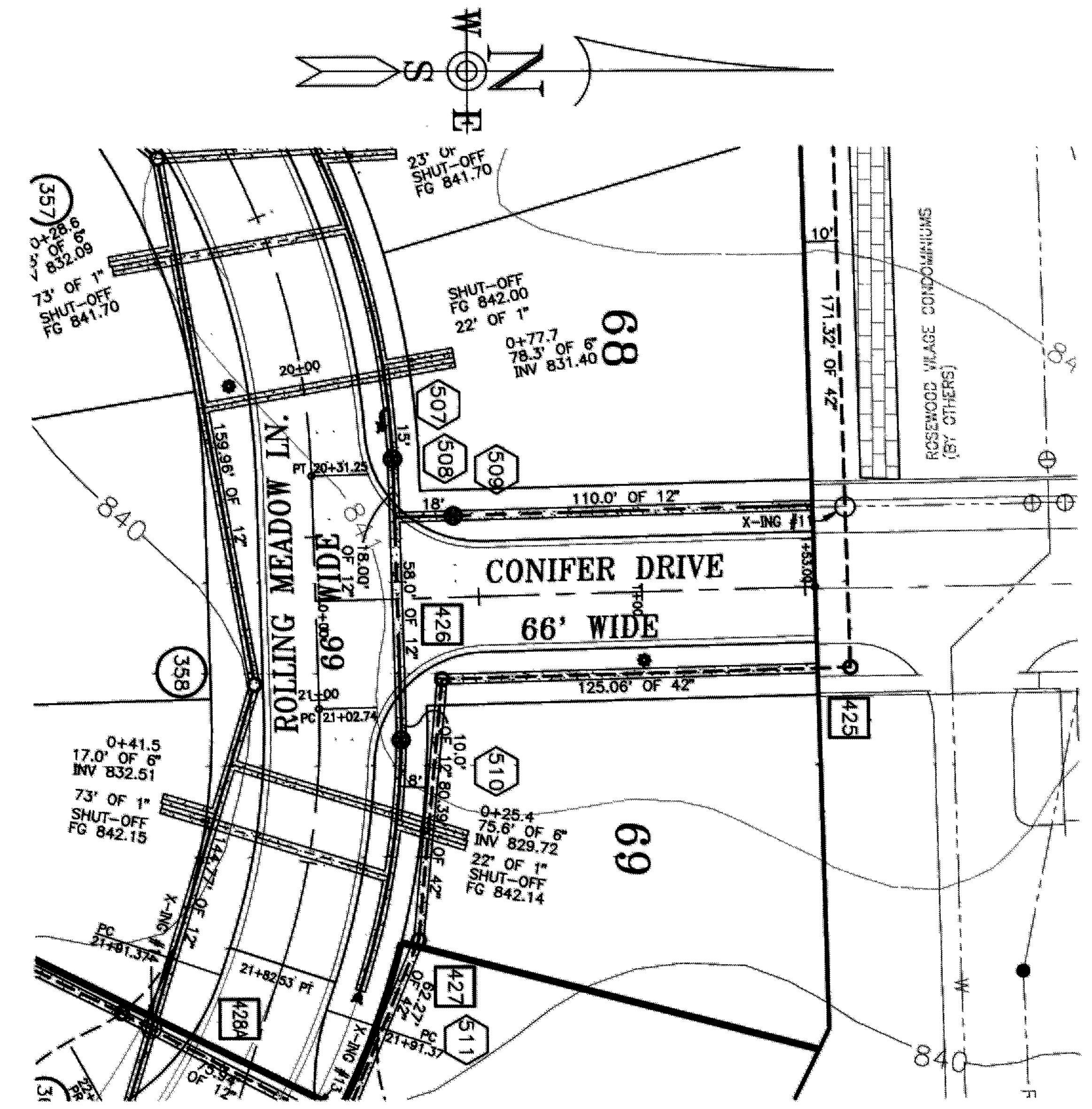


INGLEWOOD DRIVE

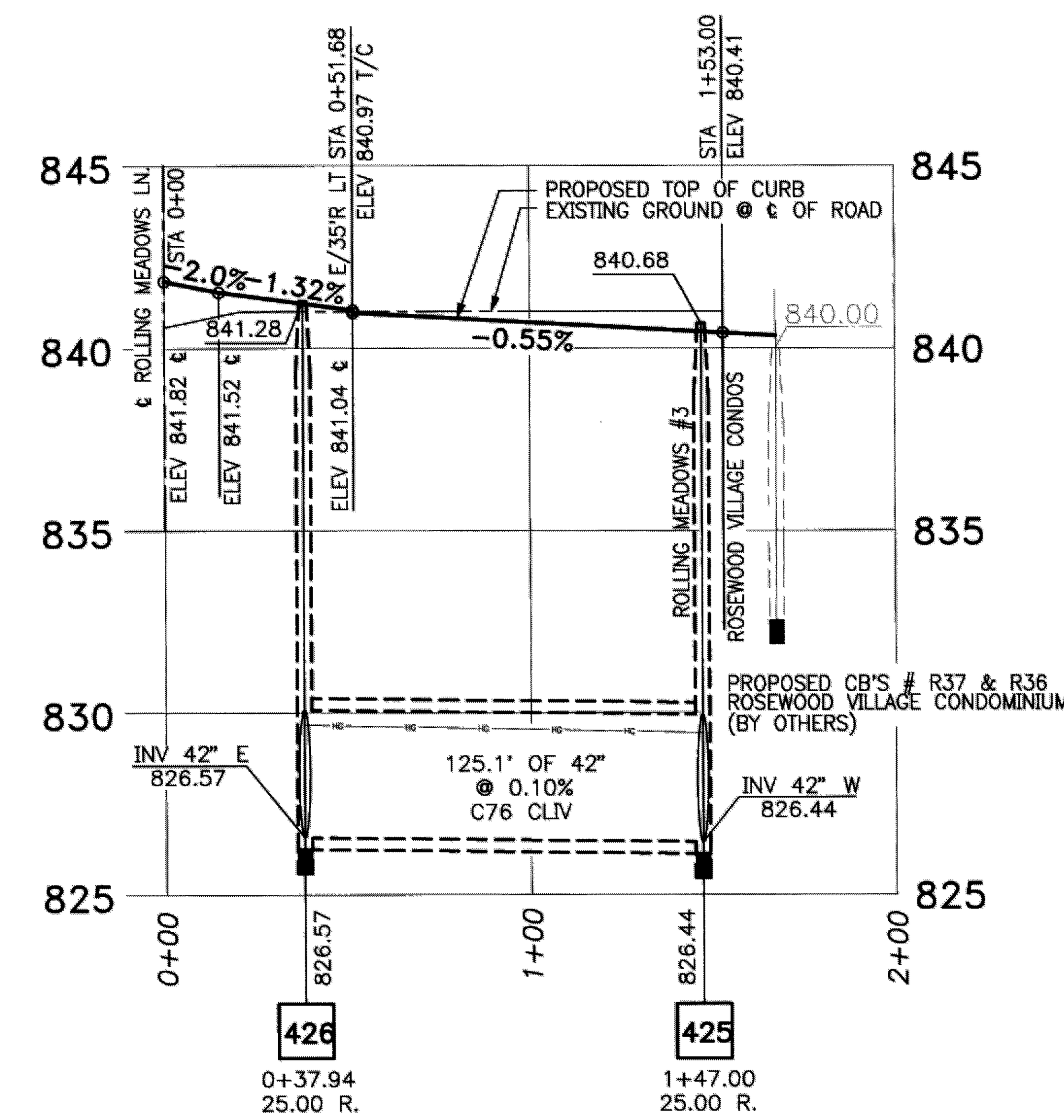


PROFILE LOT 82-65





CONIFER DRIVE



UTILITY CROSSING #1

SANITARY & WATER	
BTM / 12" WTR	833.91
TOP / 8" SAN	828.44
CLEARANCE	5.47'

UTILITY CROSSING #2

SANITARY & STORM	
BTM / 15" STM	831.84
TOP / 8" SAN	828.61
CLEARANCE	3.24'

UTILITY CROSSING #3

STORM & WATER	
TOP / 15" STM	833.24
BTM / 12" WTR	834.49
CLEARANCE	1.25'

UTILITY CROSSING #4

STORM & WATER	
TOP / 12" STM	833.26
BTM / 12" WTR	833.91
CLEARANCE	0.65'

UTILITY CROSSING #5

SANITARY & STORM	
TOP / 8" SAN	829.61
BTM / 12" STM	831.78
CLEARANCE	2.17'

UTILITY CROSSING #6

SANITARY & WATER	
TOP 12" SAN	827.12
BTM / 12" WTR	834.39
CLEARANCE	7.27'

UTILITY CROSSING #7

STORM & WATER	
TOP / 15" STM	829.88
BTM / 12" WTR	831.03
CLEARANCE	1.15'

UTILITY CROSSING #8

SANITARY & STORM	
BTM / 12" STM	831.85
TOP / 12" SAN	827.58
CLEARANCE	4.27'

UTILITY CROSSING #9

STORM & SANITARY	
BTM / 12" STM	830.86
TOP / 12" SAN	827.17
CLEARANCE	3.69'

UTILITY CROSSING #10

STORM & WATER	
BTM / 8" WTR	833.73
TOP / 12" STM	831.69
CLEARANCE	2.04'

UTILITY CROSSING #11

STORM & WATER	
BTM / 12" WTR	833.72
TOP / 42" STM	830.27
CLEARANCE	3.45'

UTILITY CROSSING #12

STORM & WATER	
BTM / 12" WTR	835.09
TOP / 12" STM	832.88
CLEARANCE	2.21'

UTILITY CROSSING #13

STORM & WATER	
BTM / 12" WTR	833.45
TOP / 12" STM	831.95
CLEARANCE	1.50'

UTILITY CROSSING #14

STORM & SANITARY	
BTM / 12" STM	831.43
TOP / 12" SAN	828.45
CLEARANCE	2.98'

LEGEND:

MANHOLE (PROP)
CATCH BASIN (PROP)
INLET (PROP)
GATE VALVE & WELL (PROP)
HYDRANT (PROP)
STREET LIGHT
FUTURE MANHOLE
FUTURE CATCH BASIN
FUTURE INLET
FUTURE GATE VALVE & WELL
FUTURE HYDRANT
WATERMAIN (EX.)
STORM SEWER (EX.)
SANITARY SEWER (EX.)
WATERMAIN (PROP.)
STORM SEWER (PROP.)
SANITARY SEWER (PROP.)
SAND BACKFILL REQ'D
WATERMAIN (FUTURE)
STORM SEWER (FUTURE)
SANITARY SEWER (FUTURE)
EX. ELEVATION 00.00

BENCHMARKS

1. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #5 LOCATED AT END OF EX. INGLEWOOD DR.
ELEV = 844.99
2. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #3 LOCATED AT END OF EX. ROLLING MEADOW LN.
ELEV = 842.74

NOTE:

-ALL UTILITIES LYING WITHIN ROAD RIGHT-OF-WAY CORRIDOR (EXISTING OR PROPOSED, FROM FRONT-OF-HOUSE TO FRONT-OF-HOUSE) SHALL BE BACKFILLED WITH MDOT CL II GRANULAR MATERIAL COMPACTED TO 95% MAXIMUM UNIT WEIGHT

SP #02-1

ROAD AND STORM SEWER PROFILES
INGLEWOOD DRIVE 6+13.53 - 9+72.48
CONIFER DRIVE 0+00 - 1+53.00

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. - Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

ROLLING MEADOW ESTATES SUB'N #3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

DATE: 07/11/01

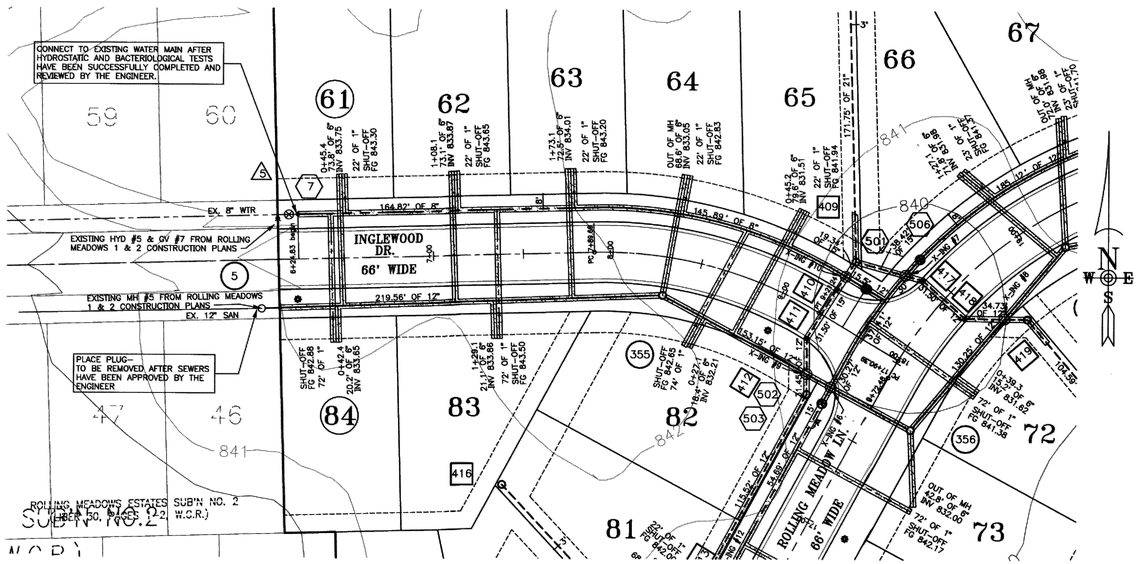
REVISIONS: 8/14/01 PER INTEROFFICE REVIEW; 8/30/01 TWP REVIEW OF ROSEWOOD OF 7/6/01; 10/10/01 PER ROCK REQ.; 10/15/01 PER WCRC LTR OF 8/7/01; 12/05/01 PER PITTSFIELD LTR OF 10/29/01; 12/05/01 PER PITTSFIELD LTR OF 10/29/01; 03/12/02 PER PITTSFIELD LTR OF 01/29/02; 04/03/02 PER WCRC LTR OF 11/02/01; 05/13/02 PER PITTSFIELD TWP LTR OF 04/09/02; 07/12/02 PER PITTSFIELD TOWNSHIP

06/13/02 PER PITTSFIELD LTR OF 05/01/02; 06/27/02 PER WCDC LTR OF 05/21/02; 07/30/02 PER PITTSFIELD LTR OF 07/19/02; 08/06/02 PER WCDC; 08/15/02 PER PITTSFIELD MEMOS OF 07/24/02 & 07/26/02; 09/17/02 PER PITTSFIELD MEMOS OF 08/30/02 & 09/17/02; 10/01/02 PER PITTSFIELD MEMO OF 09/25/02; 12/10/02 PER PITTSFIELD MEMOS OF 12/4/02; 02/07/03 PER PITTSFIELD MEMOS OF 01/09/03; 03/06/03 PER PITTSFIELD MEMOS OF 03/04/03

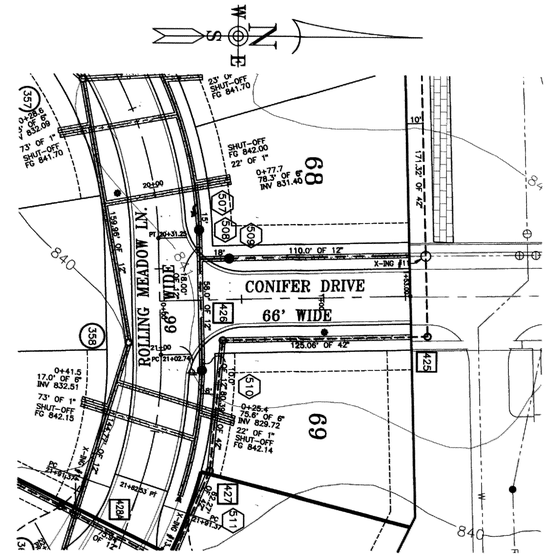
AS BUILT:

SCALE: HORIZ. 1" = 40' VERT. 1" = 4'
DATUM U.S.C.& G.S.
SHEET 5
JOB NO. 9525
N.B.

D:\199525\9525 Tue Dec 10 10:22:03 2002 DCF



INGLEWOOD DRIVE



CONIFER DRIVE

UTILITY CROSSING #1	
SANITARY & WATER	
BTM / 12" WTR	833.91
TOP / 8" SAN	828.44
CLEARANCE	5.47'

UTILITY CROSSING #2	
SANITARY & STORM	
BTM / 15" STM	831.84
TOP / 8" SAN	828.61
CLEARANCE	3.24'

UTILITY CROSSING #3	
STORM & WATER	
TOP / 15" STM	833.24
BTM / 12" WTR	834.49
CLEARANCE	1.25'

UTILITY CROSSING #4	
STORM & WATER	
TOP / 12" STM	833.26
BTM / 12" WTR	833.91
CLEARANCE	0.65'

UTILITY CROSSING #5	
SANITARY & STORM	
TOP / 8" SAN	829.61
BTM / 12" STM	832.07
CLEARANCE	2.47'

UTILITY CROSSING #6	
SANITARY & WATER	
TOP 12" SAN	827.12
BTM / 12" WTR	834.39
CLEARANCE	7.27'

UTILITY CROSSING #7	
STORM & WATER	
TOP / 15" STM	829.88
BTM / 12" WTR	831.03
CLEARANCE	1.15'

UTILITY CROSSING #8	
SANITARY & STORM	
BTM / 12" STM	831.85
TOP / 12" SAN	827.58
CLEARANCE	4.27'

UTILITY CROSSING #9	
STORM & SANITARY	
BTM / 12" STM	830.86
TOP / 12" SAN	827.17
CLEARANCE	3.69'

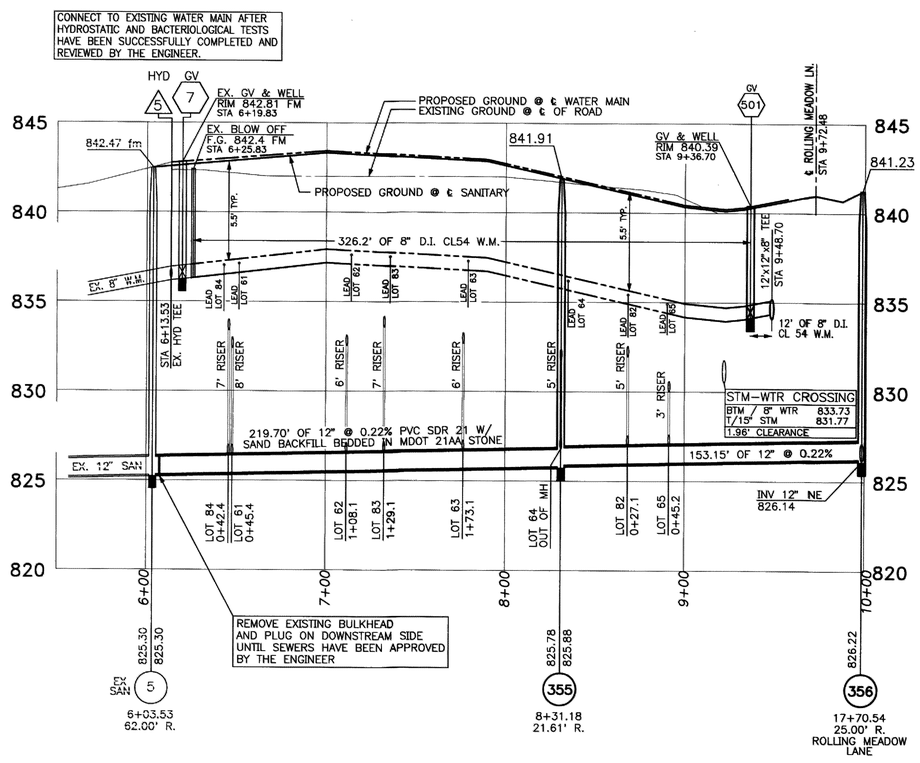
UTILITY CROSSING #10	
STORM & WATER	
BTM / 8" WTR	833.73
TOP / 12" SAN	831.69
CLEARANCE	2.04'

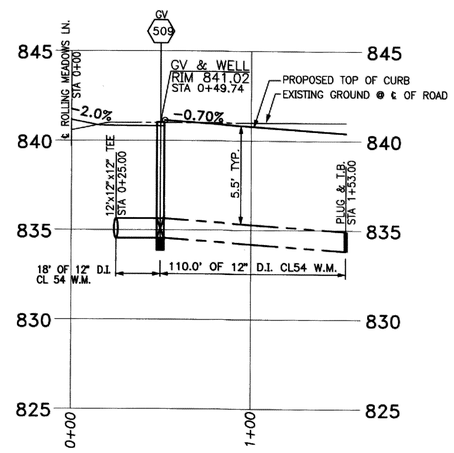
UTILITY CROSSING #11	
STORM & WATER	
BTM / 12" WTR	833.72
TOP / 42" STM	830.27
CLEARANCE	3.45'

UTILITY CROSSING #12	
STORM & WATER	
BTM / 12" WTR	835.09
TOP / 12" STM	832.93
CLEARANCE	2.16'

UTILITY CROSSING #13	
STORM & WATER	
BTM / 12" WTR	834.02
TOP / 12" STM	832.02
CLEARANCE	2.00'

UTILITY CROSSING #14	
STORM & SANITARY	
BTM / 12" STM	831.57
TOP / 12" SAN	828.41
CLEARANCE	3.16'





BENCHMARKS

1. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #5 LOCATED AT END OF EX. INGLEWOOD DR. ELEV = 844.99
2. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #3 LOCATED AT END OF EX. ROLLING MEADOW LN. ELEV = 842.74

NOTE:

-ALL UTILITIES LYING WITHIN ROAD RIGHT-OF-WAY CORRIDOR (EXISTING OR PROPOSED, FROM FRONT-OF-HOUSE TO FRONT-OF-HOUSE) SHALL BE BACKFILLED WITH MDOT CL II GRANULAR MATERIAL COMPACTED TO 95% MAXIMUM UNIT WEIGHT

LEGEND:

MANHOLE (PROP)
CATCH BASIN (PROP)
INLET (PROP)
GATE VALVE & WELL (PROP)
HYDRANT (PROP)
STREET LIGHT
FUTURE MANHOLE
FUTURE CATCH BASIN
FUTURE INLET
FUTURE GATE VALVE & WELL
FUTURE HYDRANT

WATERMAIN (EX.)
STORM SEWER (EX.)
SANITARY SEWER (EX.)
WATERMAIN (PROP.)
STORM SEWER (PROP.)
SANITARY SEWER (PROP.)
SAND BACKFILL REQ'D
WATERMAIN (FUTURE)
STORM SEWER (FUTURE)
SANITARY SEWER (FUTURE)

EX. ELEVATION 00.00

SP #02-1

SANITARY AND WATER MAIN PROFILES INGLEWOOD DRIVE 6+13.53 - 9+72.48 CONIFER DRIVE 0+00 - 1+53.00

ROLLING MEADOW ESTATES SUB'N #3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

DATE: 07/11/01

REVISIONS: 8/14/01 PER WATERTOWER REVIEW; 8/20/01 TWP REVIEW OF ROSEWOOD OF 7/9/01; 10/15/01 PER WCDC; 10/19/01 PER WCDC; 10/19/01 PER WCDC; 12/13/01 PER PITTSFIELD LTR OF 10/29/01; 12/13/01 PER PITTSFIELD LTR OF 10/29/01; 12/13/01 PER PITTSFIELD LTR OF 10/29/01; 04/02/02 PER WCDC LTR OF 8/7/01; 04/02/02 PER WCDC LTR OF 1/28/01; 06/13/02 PER PITTSFIELD TWP. LTR OF 04/09/02; 06/13/02 PER PITTSFIELD TWP. LTR OF 04/09/02; 06/13/02 PER PITTSFIELD TWP. LTR OF 04/30/02; 06/27/02 PER SUBN & WCDC LTR OF 06/21/02; 08/16/02 PER WCDC; 08/16/02 PER PITTSFIELD; MEMO OF 08/20/02 & 08/17/02; 09/13/02 PER WCDC; 09/13/02 PER PITTSFIELD; MEMO OF 09/12/02; 10/01/02 PER WCDC; 10/01/02 PER PITTSFIELD; MEMO OF 09/12/02; 11/01/02 PER WCDC; 11/01/02 PER PITTSFIELD; MEMO OF 10/29/02; 12/02/02 PER WCDC; 12/02/02 PER PITTSFIELD; MEMO OF 11/26/02; 04/30/03 PER WCDC; 04/30/03 PER PITTSFIELD; MEMO OF 04/28/03; 05/13/03 PER WCDC; 05/13/03 PER PITTSFIELD; MEMO OF 05/12/03; 06/13/03 PER WCDC; 06/13/03 PER PITTSFIELD; MEMO OF 06/12/03; 06/24/03 PER WCDC; 06/24/03 PER PITTSFIELD; MEMO OF 06/23/03; 07/15/03 PER WCDC; 07/15/03 PER PITTSFIELD; MEMO OF 07/14/03; 08/19/03 PER WCDC; 08/19/03 PER PITTSFIELD; MEMO OF 08/18/03; 09/16/03 PER WCDC; 09/16/03 PER PITTSFIELD; MEMO OF 09/15/03; 10/21/03 PER WCDC; 10/21/03 PER PITTSFIELD; MEMO OF 10/20/03; 11/18/03 PER WCDC; 11/18/03 PER PITTSFIELD; MEMO OF 11/17/03; 12/16/03 PER WCDC; 12/16/03 PER PITTSFIELD; MEMO OF 12/15/03; 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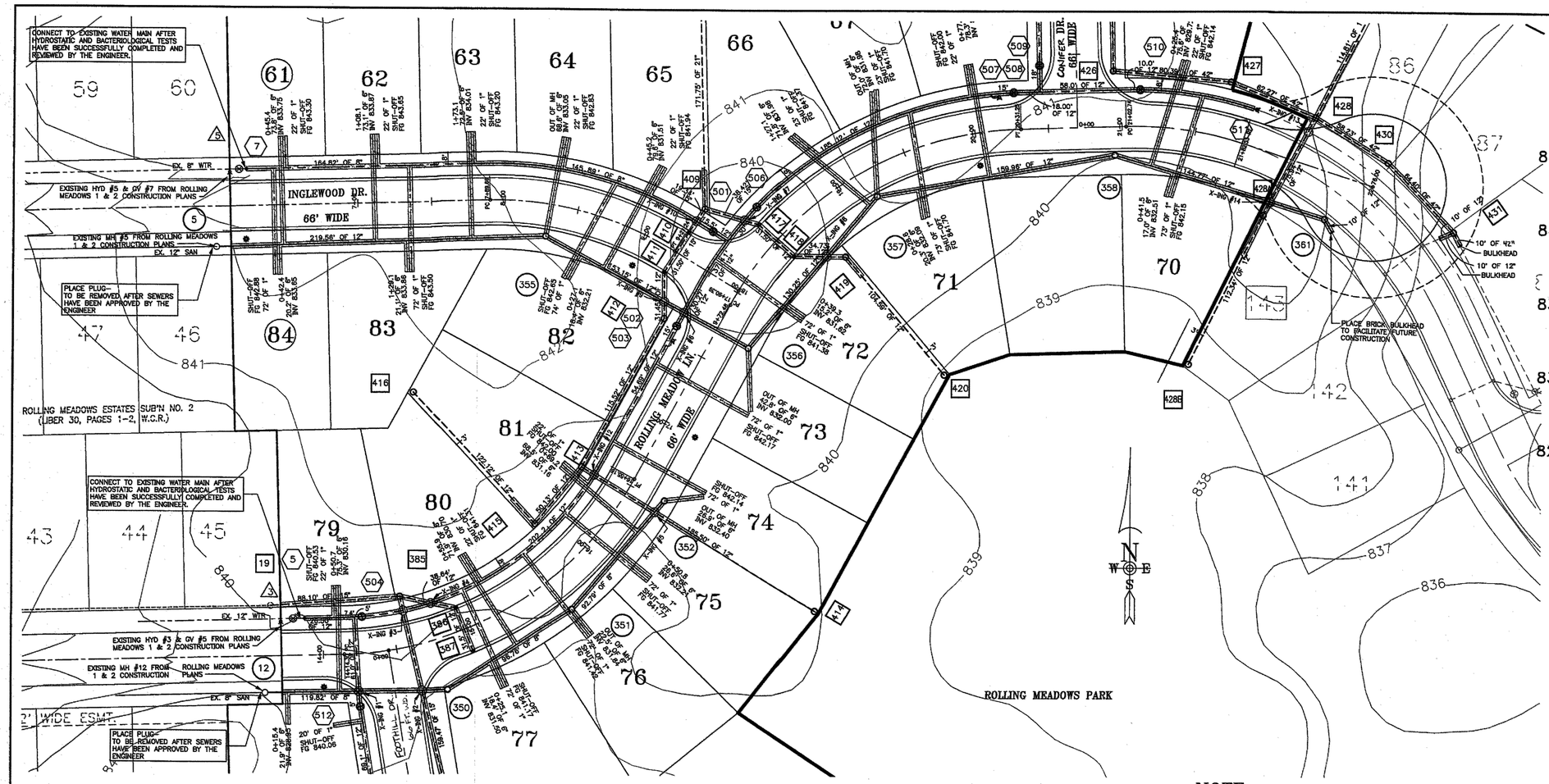
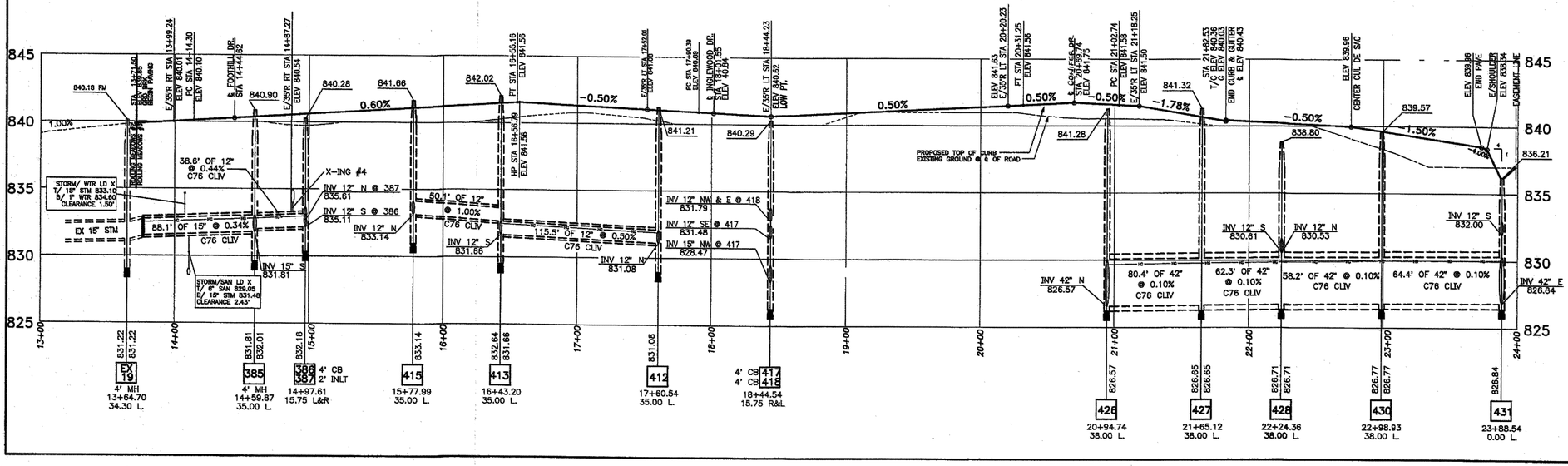
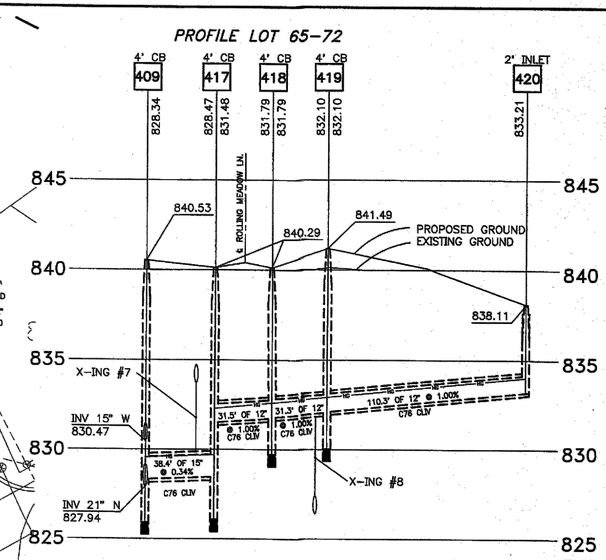
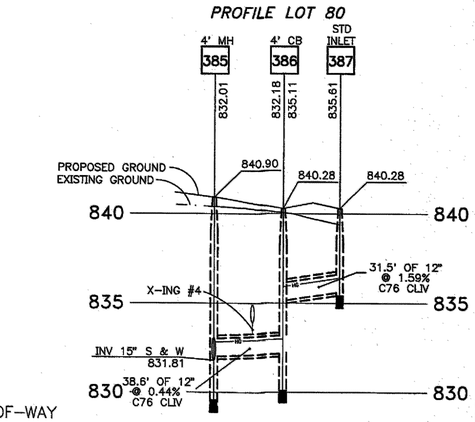


ROLLING MEADOW LANE







BENCHMARKS

1. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #5 LOCATED AT END OF EX. INGLEWOOD DR. ELEV = 844.99
2. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #3 LOCATED AT END OF EX. ROLLING MEADOW LN. ELEV = 842.74

NOTE:

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UTILITY CROSSING #1

SANITARY & WATER	
BTM / 12" WTR	833.91
TOP / 8" SAN	828.44
CLEARANCE	5.47'

UTILITY CROSSING #2

SANITARY & STORM	
BTM / 15" STM	831.84
TOP / 8" SAN	828.61
CLEARANCE	3.24'

UTILITY CROSSING #3

STORM & WATER	
TOP / 15" STM	833.24
BTM / 12" WTR	834.49
CLEARANCE	1.25'

UTILITY CROSSING #4

STORM & WATER	
TOP / 12" STM	833.26
BTM / 12" WTR	833.91
CLEARANCE	0.65'

UTILITY CROSSING #5

SANITARY & STORM	
TOP / 8" SAN	829.61
BTM / 12" STM	832.07
CLEARANCE	2.47'

UTILITY CROSSING #6

SANITARY & WATER	
TOP 12" SAN	827.12
BTM / 12" WTR	834.39
CLEARANCE	7.27'

UTILITY CROSSING #7

STORM & WATER	
TOP / 15" STM	829.88
BTM / 12" WTR	831.03
CLEARANCE	1.15'

UTILITY CROSSING #8

SANITARY & STORM	
BTM / 12" STM	831.85
TOP / 12" SAN	827.58
CLEARANCE	4.27'

UTILITY CROSSING #9

STORM & SANITARY	
BTM / 12" STM	830.86
TOP / 12" SAN	827.17
CLEARANCE	3.69'

UTILITY CROSSING #10

STORM & WATER	
BTM / 8" WTR	833.73
TOP / 12" SAN	831.69
CLEARANCE	2.04'

UTILITY CROSSING #11

STORM & WATER	
BTM / 12" WTR	833.72
TOP / 42" STM	830.27
CLEARANCE	3.45'

UTILITY CROSSING #12

STORM & WATER	
BTM / 12" WTR	835.09
TOP / 12" STM	832.93
CLEARANCE	2.16'

UTILITY CROSSING #13

STORM & WATER	
BTM / 12" WTR	834.02
TOP / 12" STM	832.02
CLEARANCE	2.00'

UTILITY CROSSING #14

STORM & SANITARY	
BTM / 12" STM	831.57
TOP / 12" SAN	828.41
CLEARANCE	3.16'

ROAD AND STORM SEWER PROFILES
ROLLING MEADOW LANE 13+71.50 - 25+25.00

ROLLING MEADOW ESTATES SUB'N #3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E.,
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. - Canton, Michigan 48187
Telephone no. (734) 459-8560 fax no. (734) 459-2585

DATE: 07/11/01

REVISIONS: 9/24/01 PER INTERCITIES REVIEW; 10/9/01 PER ROCK ELEV. OF 10/9/01; 10/16/01 PER ROCK ELEV. OF 10/16/01; 11/13/01 PER ROCK ELEV. OF 11/13/01; 12/12/01 PER ROCK ELEV. OF 12/12/01; 01/15/02 PER PITTSFIELD CHP. OF 01/15/02; 03/19/03 PER PITTSFIELD CHP. OF 03/19/03

JOB NO.

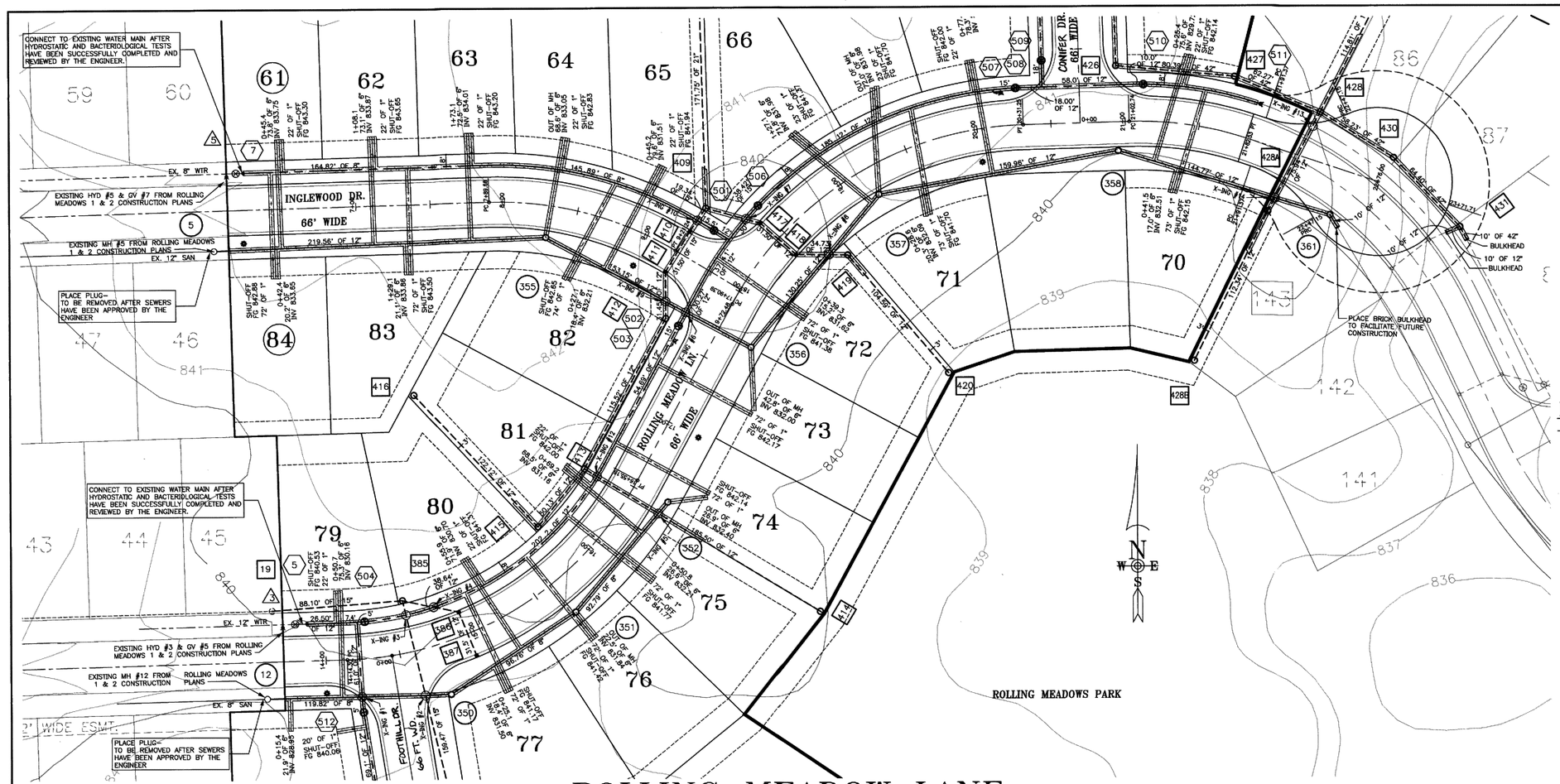
JOB NO. 95125

DRAWN BY: G.E.S.

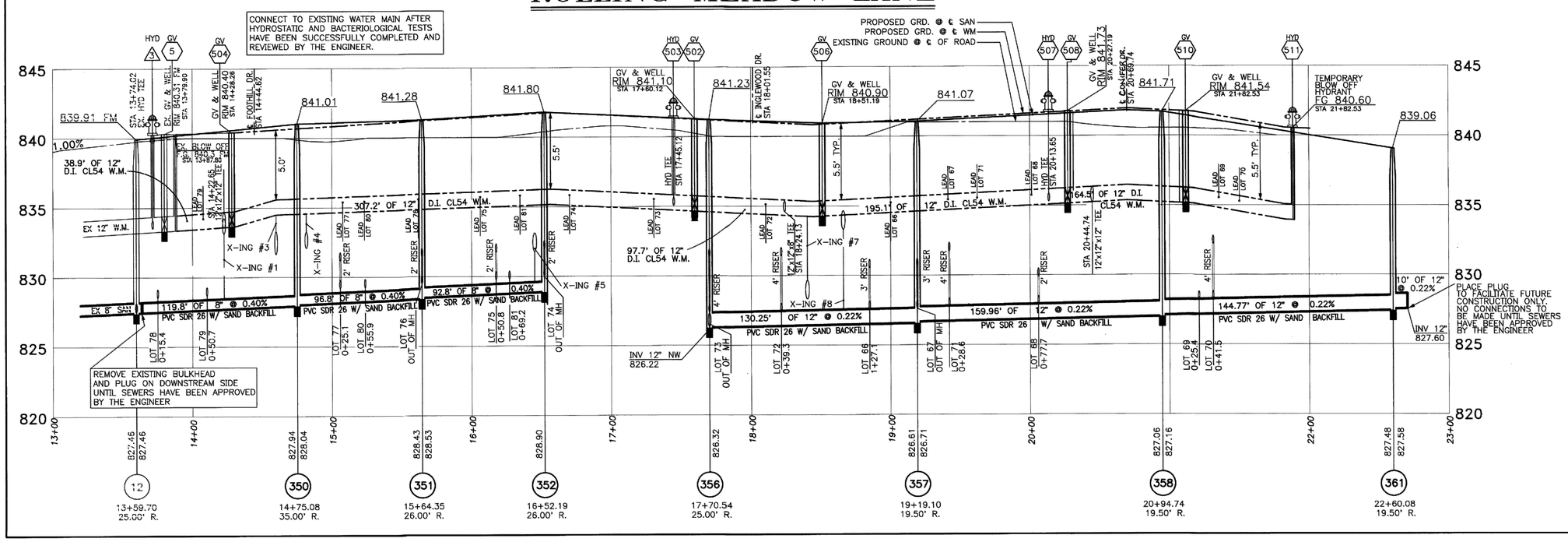
SCALE: HORIZ. 1" = 40' VERT. 1" = 4'

SHEET 7

SP #02-1



ROLLING MEADOW LANE



LEGEND:

- MANHOLE (PROP)
- CATCH BASIN (PROP)
- INLET (PROP)
- GATE VALVE & WELL (PROP)
- HYDRANT (PROP)
- STREET LIGHT
- FUTURE MANHOLE
- FUTURE CATCH BASIN
- FUTURE INLET
- FUTURE GATE VALVE & WELL
- FUTURE HYDRANT
- WATERMAIN (EX.)
- STORM SEWER (EX.)
- SANITARY SEWER (EX.)
- WATERMAIN (PROP.)
- STORM SEWER (PROP.)
- SANITARY SEWER (PROP.)
- SAND BACKFILL REQ'D
- WATERMAIN (FUTURE)
- STORM SEWER (FUTURE)
- SANITARY SEWER (FUTURE)
- EX. ELEVATION 00.00

NOTE:

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TOP / 8" SAN	828.44
CLEARANCE	5.47'

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SANITARY & STORM	
BTM / 15" STM	831.84
TOP / 8" SAN	828.61
CLEARANCE	3.24'

UTILITY CROSSING #3

STORM & WATER	
TOP / 15" STM	833.24
BTM / 12" WTR	834.49
CLEARANCE	1.25'

UTILITY CROSSING #4

STORM & WATER	
TOP / 12" STM	833.26
BTM / 12" WTR	833.91
CLEARANCE	0.65'

UTILITY CROSSING #5

SANITARY & STORM	
TOP / 8" SAN	829.61
BTM / 12" STM	832.07
CLEARANCE	2.47'

UTILITY CROSSING #6

SANITARY & WATER	
TOP 12" SAN	827.12
BTM / 12" WTR	834.39
CLEARANCE	7.27'

UTILITY CROSSING #7

STORM & WATER	
TOP / 15" STM	829.88
BTM / 12" WTR	831.03
CLEARANCE	1.15'

UTILITY CROSSING #8

SANITARY & STORM	
BTM / 12" STM	831.85
TOP / 12" SAN	827.58
CLEARANCE	4.27'

UTILITY CROSSING #9

STORM & SANITARY	
BTM / 12" STM	830.86
TOP / 12" SAN	827.17
CLEARANCE	3.69'

UTILITY CROSSING #10

STORM & WATER	
BTM / 8" WTR	833.73
TOP / 12" SAN	831.69
CLEARANCE	2.04'

UTILITY CROSSING #11

STORM & WATER	
BTM / 12" WTR	833.72
TOP / 42" STM	830.27
CLEARANCE	3.45'

UTILITY CROSSING #12

STORM & WATER	
BTM / 12" WTR	835.09
TOP / 12" STM	832.93
CLEARANCE	2.16'

UTILITY CROSSING #13

STORM & WATER	
BTM / 12" WTR	834.02
TOP / 12" STM	832.02
CLEARANCE	2.00'

UTILITY CROSSING #14

STORM & SANITARY	
BTM / 12" STM	831.57
TOP / 12" SAN	828.41
CLEARANCE	3.16'

SANITARY AND WATER MAIN PROFILES
ROLLING MEADOW LANE 13+71.50 – 25+25.00

DATE: 07/11/01

REVISIONS: 8/14/01 PER ROWDOS OF Y/N/R; 8/28/01 PER ROWDOS OF Y/N/R; 9/7/01 PER ROWDOS OF Y/N/R; 9/17/01 PER ROWDOS OF Y/N/R; 11/13/01 PER ROWDOS OF Y/N/R; 12/13/01 PER ROWDOS OF Y/N/R; 01/10/02 PER ROWDOS OF Y/N/R; 02/13/02 PER ROWDOS OF Y/N/R; 03/13/02 PER ROWDOS OF Y/N/R; 04/10/02 PER ROWDOS OF Y/N/R; 05/13/02 PER ROWDOS OF Y/N/R; 06/10/02 PER ROWDOS OF Y/N/R; 07/11/02 PER ROWDOS OF Y/N/R; 07/17/02 PER ROWDOS OF Y/N/R; 08/14/02 PER ROWDOS OF Y/N/R; 09/11/02 PER ROWDOS OF Y/N/R; 10/09/02 PER ROWDOS OF Y/N/R; 11/13/02 PER ROWDOS OF Y/N/R; 12/13/02 PER ROWDOS OF Y/N/R; 01/10/03 PER ROWDOS OF Y/N/R; 02/14/03 PER ROWDOS OF Y/N/R; 03/14/03 PER ROWDOS OF Y/N/R; 04/09/03 PER ROWDOS OF Y/N/R; 05/09/03 PER ROWDOS OF Y/N/R; 06/09/03 PER ROWDOS OF Y/N/R; 07/14/03 PER ROWDOS OF Y/N/R; 08/11/03 PER ROWDOS OF Y/N/R; 09/08/03 PER ROWDOS OF Y/N/R; 10/13/03 PER ROWDOS OF Y/N/R; 11/10/03 PER ROWDOS OF Y/N/R; 12/08/03 PER ROWDOS OF Y/N/R; 01/05/04 PER ROWDOS OF Y/N/R; 02/09/04 PER ROWDOS OF Y/N/R; 03/08/04 PER ROWDOS OF Y/N/R; 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08/11/32 PER ROWDOS OF Y/N/R; 09/08/32 PER ROWDOS OF Y/N/R; 10/13/32 PER ROWDOS OF Y/N/R; 11/10/32 PER ROWDOS OF Y/N/R; 12/08/32 PER ROWDOS OF Y/N/R; 01/12/33 PER ROWDOS OF Y/N/R; 02/09/33 PER ROWDOS OF Y/N/R; 03/13/33 PER ROWDOS OF Y/N/R; 04/10/33 PER ROWDOS OF Y/N/R; 05/08/33 PER ROWDOS OF Y/N/R; 06/12/33 PER ROWDOS OF Y/N/R; 07/10/33 PER ROWDOS OF Y/N/R; 08/14/33 PER ROWDOS OF Y/N/R; 09/11/33 PER ROWDOS OF Y/N/R; 10/09/33 PER ROWDOS OF Y/N/R; 11/13/33 PER ROWDOS OF Y/N/R; 12/11/33 PER ROWDOS OF Y/N/R; 01/08/34 PER ROWDOS OF Y/N/R; 02/12/34 PER ROWDOS OF Y/N/R; 03/12/34 PER ROWDOS OF Y/N/R; 04/09/34 PER ROWDOS OF Y/N/R; 05/14/34 PER ROWDOS OF Y/N/R; 06/11/34 PER ROWDOS OF Y/N/R; 07/09/34 PER ROWDOS OF Y/N/R; 08/13/34 PER ROWDOS OF Y/N/R; 09/10/34 PER ROWDOS OF Y/N/R; 10/08/34 PER ROWDOS OF Y/N/R; 11/12/34 PER ROWDOS OF Y/N/R; 12/10/34 PER ROWDOS OF Y/N/R; 01/14/35 PER ROWDOS OF Y/N/R; 02/11/35 PER ROWDOS OF Y/N/R; 03/10/35 PER ROWDOS OF Y/N/R; 04/14/35 PER ROWDOS OF Y/N/R; 05/12/35 PER ROWDOS OF Y/N/R; 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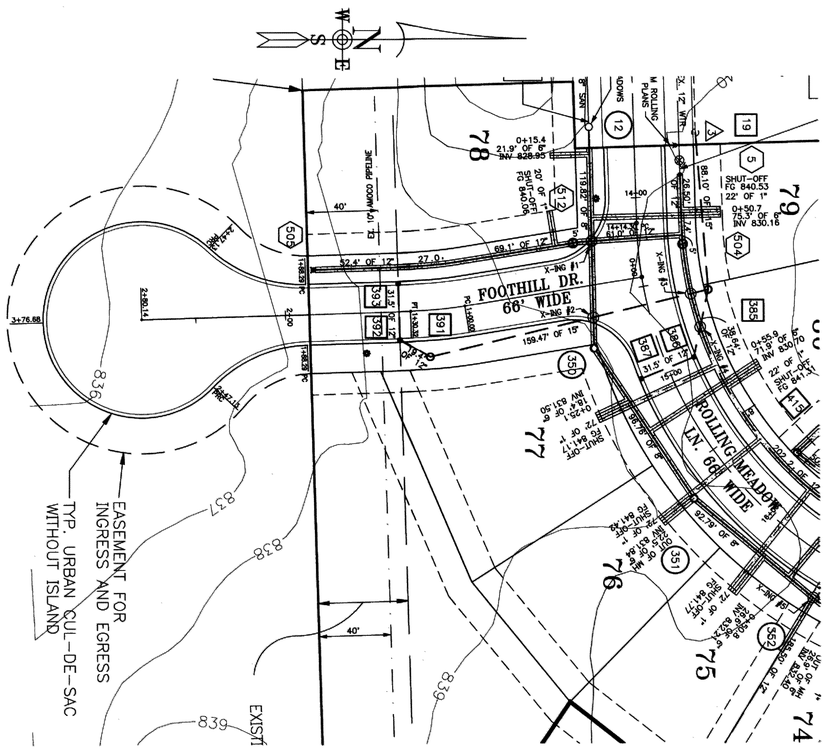
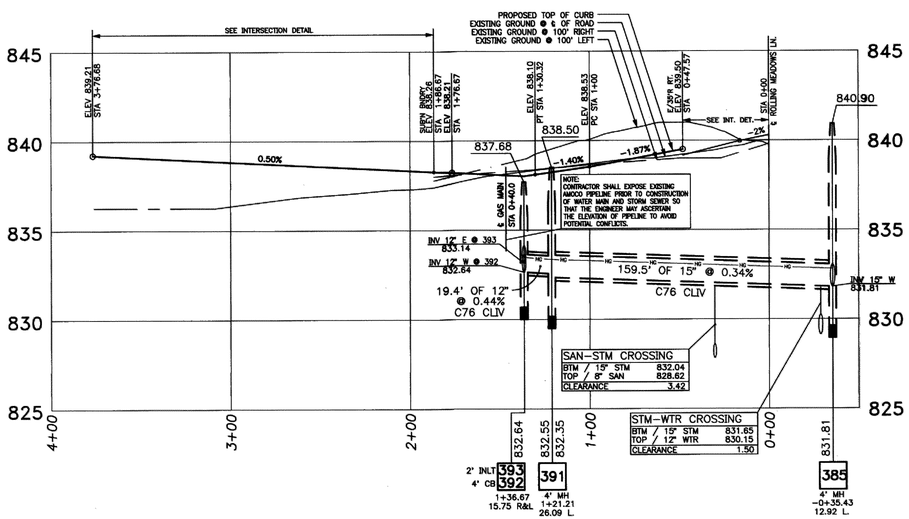
12/10/43 PER ROWDOS OF Y/N/R; 01/14/44 PER ROWDOS OF Y/N/R; 02/11/44 PER ROWDOS OF Y/N/R; 03/10/44 PER ROWDOS OF Y/N/R; 04/14/44 PER ROWDOS OF Y/N/R; 05/12/44 PER ROWDOS OF Y/N/R; 06/09/44 PER ROWDOS OF Y/N/R; 07/14/44 PER ROWDOS OF Y/N/R; 08/11/44 PER ROWDOS OF Y/N/R; 09/08/44 PER ROWDOS OF Y/N/R; 10/13/44 PER ROWDOS OF Y/N/R; 11/10/44 PER ROWDOS OF Y/N/R; 12/08/44 PER RO



FOOTHILL DRIVE



LEGEND:

- MANHOLE (PROP)
- CATCH BASIN (PROP)
- INLET (PROP)
- GATE VALVE & WELL (PROP)
- HYDRANT (PROP)
- STREET LIGHT
- FUTURE MANHOLE
- FUTURE CATCH BASIN
- FUTURE INLET
- FUTURE GATE VALVE & WELL
- FUTURE HYDRANT
- WATERMAIN (EX.)
- STORM SEWER (EX.)
- SANITARY SEWER (EX.)
- WATERMAIN (PROP.)
- STORM SEWER (PROP.)
- SANITARY SEWER (PROP.)
- SAND BACKFILL REQ'D
- WATERMAIN (FUTURE)
- STORM SEWER (FUTURE)
- SANITARY SEWER (FUTURE)
- EX. ELEVATION 00.00

NOTE:

-ALL UTILITIES LYING WITHIN ROAD RIGHT-OF-WAY CORRIDOR (EXISTING OR PROPOSED, FROM FRONT-OF-HOUSE TO FRONT-OF-HOUSE) SHALL BE BACKFILLED WITH MDOT CL II GRANULAR MATERIAL COMPACTED TO 95% MAXIMUM UNIT WEIGHT

BENCHMARKS

1. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #5 LOCATED AT END OF EX. INGLEWOOD DR. ELEV = 844.99
2. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #3 LOCATED AT END OF EX. ROLLING MEADOW LN. ELEV = 842.74

UTILITY CROSSING #1	
SANITARY & WATER	
BTM / 12" WTR	833.91
TOP / 8" SAN	828.44
CLEARANCE	5.47'

UTILITY CROSSING #2	
SANITARY & STORM	
BTM / 15" STM	831.84
TOP / 8" SAN	828.61
CLEARANCE	3.24'

UTILITY CROSSING #3	
STORM & WATER	
TOP / 15" STM	833.24
BTM / 12" WTR	834.49
CLEARANCE	1.25'

UTILITY CROSSING #4	
STORM & WATER	
TOP / 12" STM	833.26
BTM / 12" WTR	833.91
CLEARANCE	0.65'

UTILITY CROSSING #5	
SANITARY & STORM	
TOP / 8" SAN	829.61
BTM / 12" STM	831.78
CLEARANCE	2.17'

UTILITY CROSSING #6	
SANITARY & WATER	
TOP 12" SAN	827.12
BTM / 12" WTR	834.39
CLEARANCE	7.27'

UTILITY CROSSING #7	
STORM & WATER	
TOP / 15" STM	829.88
BTM / 12" WTR	831.03
CLEARANCE	1.15'

UTILITY CROSSING #8	
SANITARY & STORM	
BTM / 12" STM	831.85
TOP / 12" SAN	827.58
CLEARANCE	4.27'

UTILITY CROSSING #9	
STORM & SANITARY	
BTM / 12" STM	830.86
TOP / 12" SAN	827.17
CLEARANCE	3.69'

UTILITY CROSSING #10	
STORM & WATER	
BTM / 8" WTR	833.73
TOP / 12" STM	831.69
CLEARANCE	2.04'

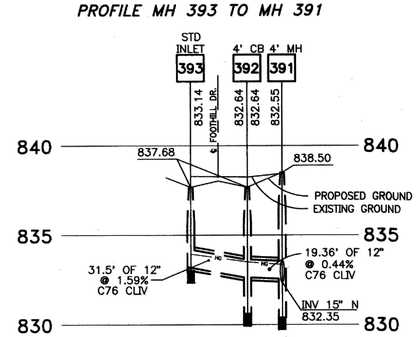
UTILITY CROSSING #11	
STORM & WATER	
BTM / 12" WTR	833.72
TOP / 42" STM	830.27
CLEARANCE	3.45'

UTILITY CROSSING #12	
STORM & WATER	
BTM / 12" WTR	835.09
TOP / 12" STM	832.88
CLEARANCE	2.21'

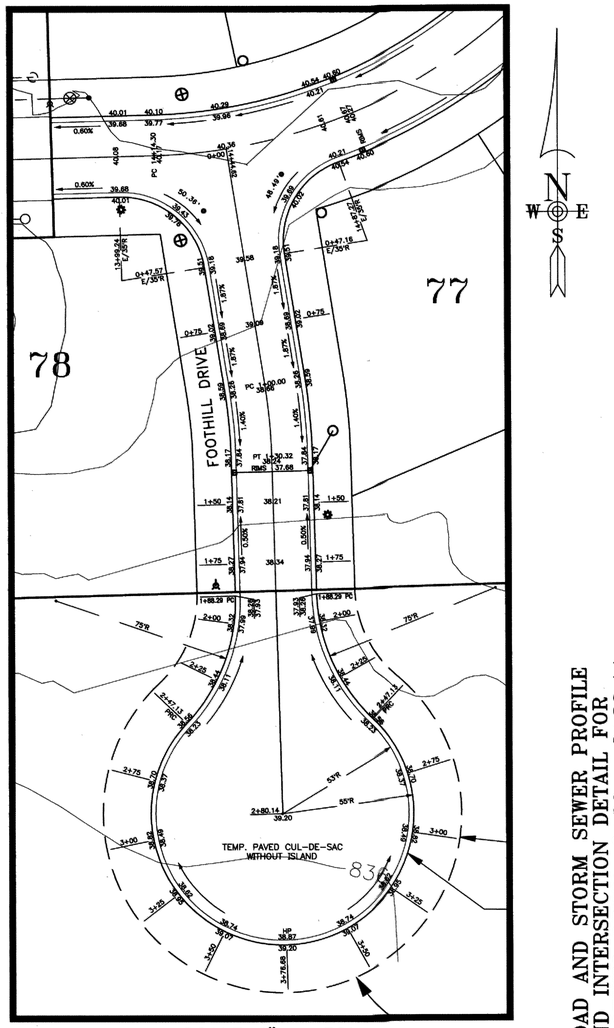
UTILITY CROSSING #13	
STORM & WATER	
BTM / 12" WTR	833.45
TOP / 12" STM	831.95
CLEARANCE	1.50'

UTILITY CROSSING #14	
STORM & SANITARY	
BTM / 12" STM	831.43
TOP / 12" SAN	828.45
CLEARANCE	2.98'

PROFILE MH 393 TO MH 391



FOOTHILL DRIVE-INTERSECTION DETAIL



SCALE 1" = 30'

ROAD AND STORM SEWER PROFILE AND INTERSECTION DETAIL FOR FOOTHILL DRIVE 0+00 - 2+80.14

ROLLING MEADOW ESTATES SUB'N #3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

DATE: 06/27/02
REVISIONS: 08/06/02 PER WCC; 08/14/02 PER PITTSFIELD MDOT OF 07/24/02 & 07/29/02; 08/15/02 PER PITTSFIELD MDOT OF 08/07/02; 10/02/02 PER PITTSFIELD MDOT OF 09/30/02; 10/10/02 PER PITTSFIELD MDOT OF 10/09/02; 12/04/02 PER PITTSFIELD TOWNS OF 11/04/02; 01/07/03 PER PITTSFIELD MDOT OF 01/06/03; 01/07/03 PER KYPSER-ALD MEMO OF 01/06/03; 02/03/03 PER WCC; 02/05/03 PER WCC

SCALE: HORZ. 1" = 40' VERT. 1" = 4'
DATUM: U.S.G.S. C.G.
JOB NO. 0525
FILE:

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. - Canton, Michigan 48187
telephone no. (734) 459-8860 fax no. (734) 459-2585

SHEET 9

SP #02-1

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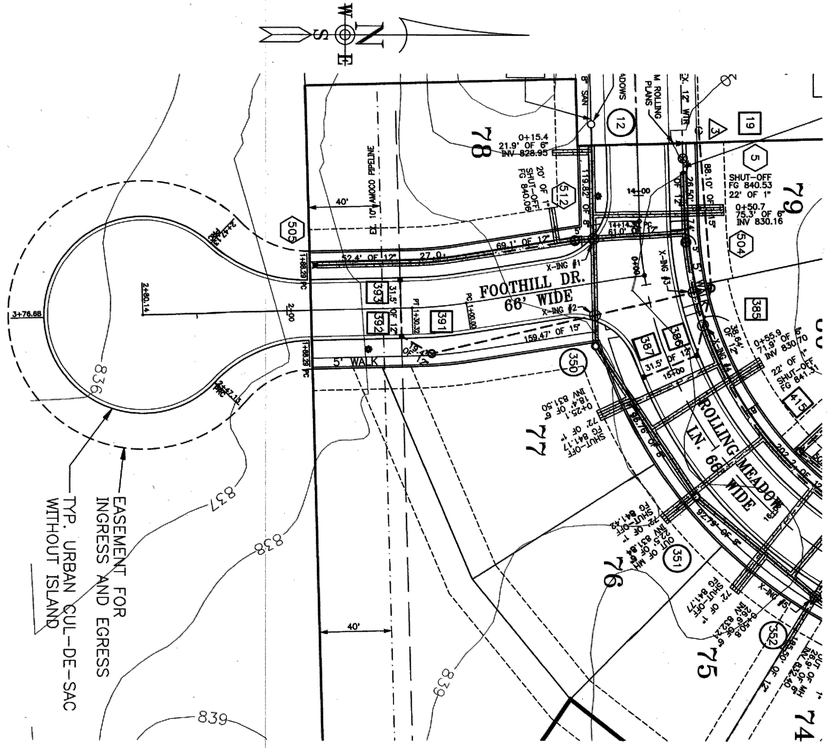
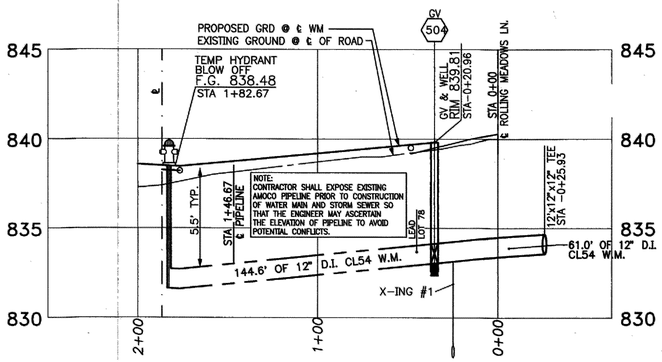


FOOTHILL DRIVE



LEGEND:

MANHOLE (PROP)
CATCH BASIN (PROP)
INLET (PROP)
GATE VALVE & WELL (PROP)
HYDRANT (PROP)

FUTURE MANHOLE
FUTURE CATCH BASIN
FUTURE INLET
FUTURE GATE VALVE & WELL
FUTURE HYDRANT

WATERMAIN (EX.)
STORM SEWER (EX.)
SANITARY SEWER (EX.)

WATERMAIN (PROP.)
STORM SEWER (PROP.)
SANITARY SEWER (PROP.)

WATERMAIN (FUTURE)
STORM SEWER (FUTURE)
SANITARY SEWER (FUTURE)

EX. ELEVATION 00.00

BENCHMARKS

1. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2
HYDRANT #5 LOCATED AT END OF EX. INGLEWOOD DR.
ELEV = 844.99
2. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2
HYDRANT #3 LOCATED AT END OF EX. ROLLING MEADOW LN.
ELEV = 842.74

NOTE:

-ALL UTILITIES LYING WITHIN ROAD RIGHT-OF-WAY CORRIDOR (EXISTING OR PROPOSED, FROM FRONT-OF-HOUSE TO FRONT-OF-HOUSE) SHALL BE BACKFILLED WITH MDOT CL II GRANULAR MATERIAL COMPACTED TO 95% MAXIMUM UNIT WEIGHT

UTILITY CROSSING #1

SANITARY & WATER	
BTM / 12" WTR	833.91
TOP / 8" SAN	828.44
CLEARANCE	5.47'

UTILITY CROSSING #2

SANITARY & STORM	
BTM / 15" STM	831.84
TOP / 8" SAN	828.61
CLEARANCE	3.24'

UTILITY CROSSING #3

STORM & WATER	
TOP / 15" STM	833.24
BTM / 12" WTR	834.49
CLEARANCE	1.25'

UTILITY CROSSING #4

STORM & WATER	
TOP / 12" STM	833.26
BTM / 12" WTR	833.91
CLEARANCE	0.65'

UTILITY CROSSING #5

SANITARY & STORM	
TOP / 8" SAN	829.61
BTM / 12" STM	832.07
CLEARANCE	2.47'

UTILITY CROSSING #6

SANITARY & WATER	
TOP 12" SAN	827.12
BTM / 12" WTR	834.39
CLEARANCE	7.27'

UTILITY CROSSING #7

STORM & WATER	
TOP / 15" STM	829.88
BTM / 12" WTR.	831.03
CLEARANCE	1.15'

UTILITY CROSSING #8

SANITARY & STORM	
BTM / 12" STM	831.85
TOP / 12" SAN	827.58
CLEARANCE	4.27'

UTILITY CROSSING #9

STORM & SANITARY	
BTM / 12" STM	830.88
TOP / 12" SAN	827.19
CLEARANCE	3.69'

UTILITY CROSSING #10

STORM & WATER	
BTM / 8" WTR	833.73
TOP / 12" SAN	831.69
CLEARANCE	2.04'

UTILITY CROSSING #11

STORM & WATER	
BTM / 12" WTR	833.72
TOP / 42" STM	830.27
CLEARANCE	3.45'

UTILITY CROSSING #12

STORM & WATER	
BTM / 12" WTR	835.09
TOP / 12" STM	832.93
CLEARANCE	2.16'

UTILITY CROSSING #13

STORM & WATER	
BTM / 12" WTR	834.02
TOP / 12" STM	832.02
CLEARANCE	2.00'

UTILITY CROSSING #14

STORM & SANITARY	
BTM / 12" STM	831.57
TOP / 12" SAN	828.41
CLEARANCE	3.16'

SANITARY AND WATER MAIN PROFILES
FOOTHILL DRIVE 0+00 - 2+80.14

ROLLING MEADOW ESTATES SUB'N #3

PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E.,
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

DATE: 06/27/02

REVISIONS: 08/06/02 PER WCDC
09/18/02 PER PITTSFIELD MEMO OF 08/30/02 & 09/17/02
10/02/02 PER PITTSFIELD MEMO OF 09/25/02
11/18/02 PER PITTSFIELD MEMO OF 10/10/02
12/10/02 PER PITTSFIELD MEMO OF 10/31/02
02/14/03 PER KITSFIELD MEMO OF 01/31/03
02/24/03 PER KITSFIELD MEMO OF 01/31/03

DATUM: U.S.C.& G.S.

VERT. 1" = 4'

SCALE: HORZ. 1" = 40'

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40855 Koppernick Rd. - Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

JOB NO. 9525

S.B.

SHEET 10

SP #02-1

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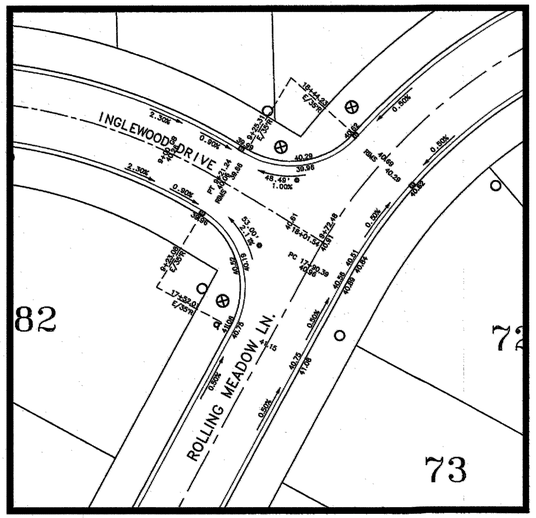
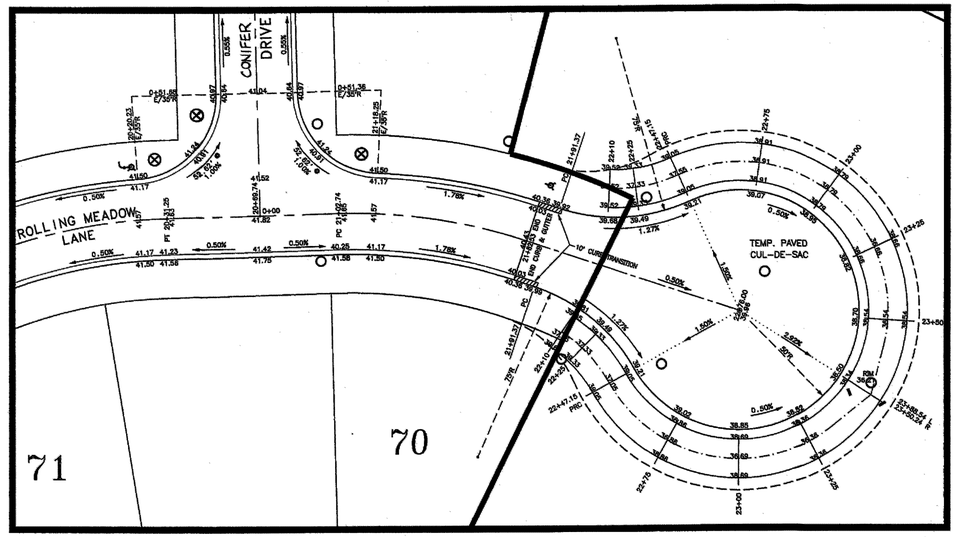


SCALE 1" = 30'



SCALE 1" = 30'

UTILITY CROSSING #1	
SANITARY & WATER	
BTM / 12" WTR	833.91
TOP / 8" SAN	828.44
CLEARANCE	5.47'

UTILITY CROSSING #2	
SANITARY & STORM	
BTM / 15" STM	831.84
TOP / 8" SAN	828.61
CLEARANCE	3.24'

UTILITY CROSSING #3	
STORM & WATER	
TOP / 15" STM	833.24
BTM / 12" WTR	834.49
CLEARANCE	1.25'

UTILITY CROSSING #4	
STORM & WATER	
TOP / 12" STM	833.26
BTM / 12" WTR	833.91
CLEARANCE	0.65'

UTILITY CROSSING #5	
SANITARY & STORM	
TOP / 8" SAN	829.61
BTM / 12" STM	832.07
CLEARANCE	2.47'

UTILITY CROSSING #6	
SANITARY & WATER	
TOP 12" SAN	827.12
BTM / 12" WTR	834.39
CLEARANCE	7.27'

UTILITY CROSSING #7	
STORM & WATER	
TOP / 15" STM	829.88
BTM / 12" WTR	831.03
CLEARANCE	1.15'

UTILITY CROSSING #8	
SANITARY & STORM	
BTM / 12" STM	831.85
TOP / 12" SAN	827.58
CLEARANCE	4.27'

UTILITY CROSSING #9	
STORM & SANITARY	
BTM / 12" STM	830.86
TOP / 12" SAN	827.17
CLEARANCE	3.69'

UTILITY CROSSING #10	
STORM & WATER	
BTM / 8" WTR	833.73
TOP / 12" SAN	831.69
CLEARANCE	2.04'

UTILITY CROSSING #11	
STORM & WATER	
BTM / 12" WTR	833.72
TOP / 42" STM	830.27
CLEARANCE	3.45'

UTILITY CROSSING #12	
STORM & WATER	
BTM / 12" WTR	835.09
TOP / 12" STM	832.93
CLEARANCE	2.16'

UTILITY CROSSING #13	
STORM & WATER	
BTM / 12" WTR	834.02
TOP / 12" STM	832.02
CLEARANCE	2.00'

UTILITY CROSSING #14	
STORM & SANITARY	
BTM / 12" STM	831.57
TOP / 12" SAN	828.41
CLEARANCE	3.16'

LEGEND:

- MANHOLE (PROP)
- CATCH BASIN (PROP)
- INLET (PROP)
- GATE VALVE & WELL (PROP)
- HYDRANT (PROP)
- STREET LIGHT
- FUTURE MANHOLE
- FUTURE CATCH BASIN
- FUTURE INLET
- FUTURE GATE VALVE & WELL
- FUTURE HYDRANT
- WATERMAIN (EX.)
- STORM SEWER (EX.)
- SANITARY SEWER (EX.)
- WATERMAIN (PROP.)
- STORM SEWER (PROP.)
- SANITARY SEWER (PROP.)
- SAND BACKFILL REQ'D
- WATERMAIN (FUTURE)
- STORM SEWER (FUTURE)
- SANITARY SEWER (FUTURE)
- EX. ELEVATION 00.00

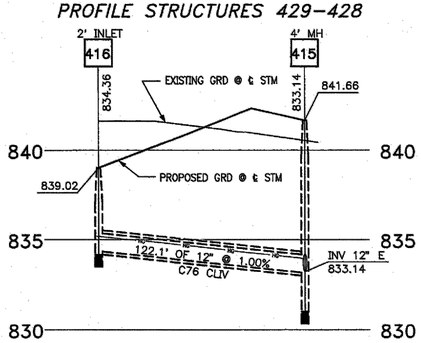
BENCHMARKS

1. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #5 LOCATED AT END OF EX. INGLEWOOD DR. ELEV = 844.99
2. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #3 LOCATED AT END OF EX. ROLLING MEADOW LN. ELEV = 842.74

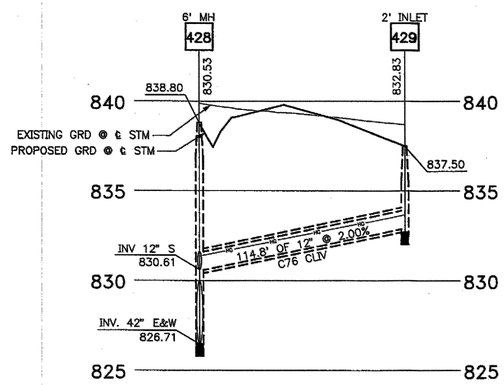
NOTE:

ALL UTILITIES LYING WITHIN ROAD RIGHT OF WAY CORRIDOR (EXISTING OR PROPOSED, FROM FRONT OF HOUSE TO FRONT OF HOUSE) SHALL BE BACKFILLED WITH MDOT CL II GRANULAR MATERIAL COMPACTED TO 95% MAXIMUM UNIT WEIGHT

PROFILE STRUCTURES 429–428



PROFILE STRUCTURES 429–428



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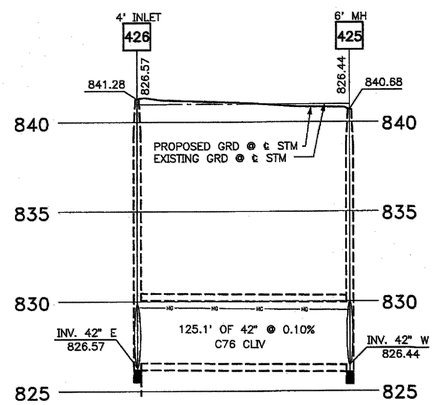
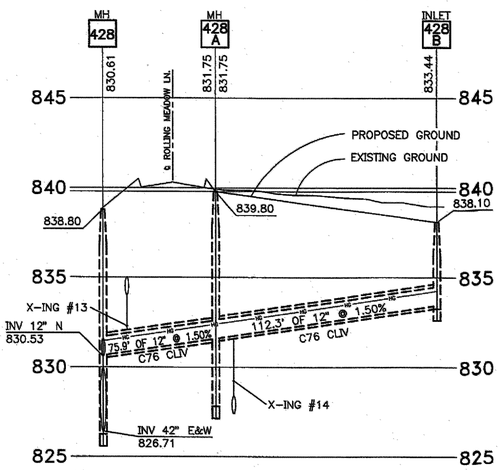
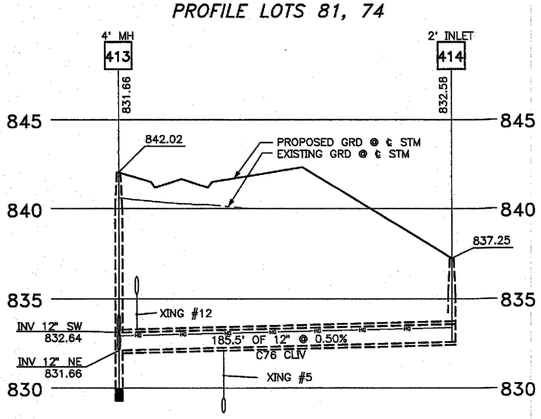


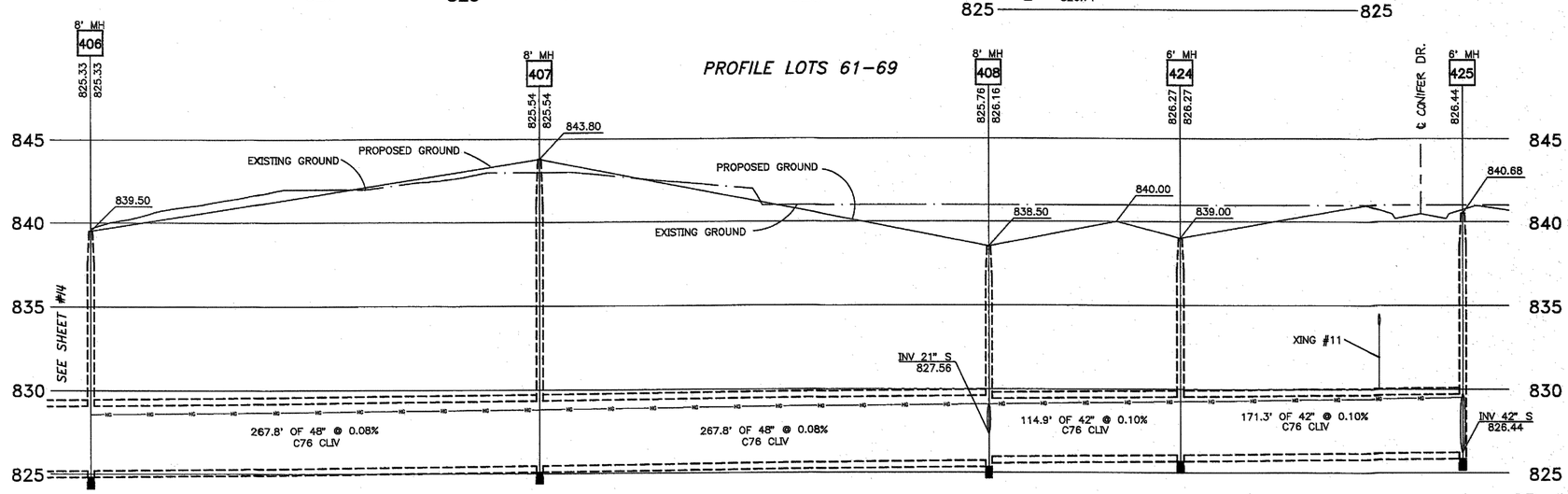
PROFILE MANHOLES 427–427B



PROFILE LOTS 81, 74



PROFILE LOTS 61–69



SP #02-1

INTERSECTION DETAILS & MISC. STORM SEWER PROFILES

ROLLING MEADOW ESTATES SUB'N #3

PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E.
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

DATE: 07/12/01

REVISIONS: 10/26/01 PER MDEQ; 11/06/01 PER MDEQ; 11/14/01 PER PITTSFIELD; 12/17/01 PER PITTSFIELD; 01/24/02 PER PITTSFIELD; 02/07/02 PER PITTSFIELD; 02/26/02 PER PITTSFIELD; 03/04/02 PER PITTSFIELD; 03/26/02 PER PITTSFIELD; 04/16/02 PER PITTSFIELD; 05/07/02 PER PITTSFIELD; 05/28/02 PER PITTSFIELD; 06/04/02 PER PITTSFIELD; 06/17/02 PER PITTSFIELD; 07/09/02 PER PITTSFIELD; 07/23/02 PER PITTSFIELD; 08/06/02 PER PITTSFIELD; 08/20/02 PER PITTSFIELD; 09/04/02 PER PITTSFIELD; 09/18/02 PER PITTSFIELD; 10/02/02 PER PITTSFIELD; 10/16/02 PER PITTSFIELD; 10/30/02 PER PITTSFIELD; 11/13/02 PER PITTSFIELD; 11/27/02 PER PITTSFIELD; 12/11/02 PER PITTSFIELD; 12/18/02 PER PITTSFIELD; 12/23/02 PER PITTSFIELD; 01/06/03 PER PITTSFIELD; 01/20/03 PER PITTSFIELD; 02/03/03 PER PITTSFIELD; 02/17/03 PER PITTSFIELD; 03/03/03 PER PITTSFIELD; 03/17/03 PER PITTSFIELD; 04/07/03 PER PITTSFIELD; 04/21/03 PER PITTSFIELD; 05/05/03 PER PITTSFIELD; 05/19/03 PER PITTSFIELD; 06/02/03 PER PITTSFIELD; 06/16/03 PER PITTSFIELD; 06/30/03 PER PITTSFIELD; 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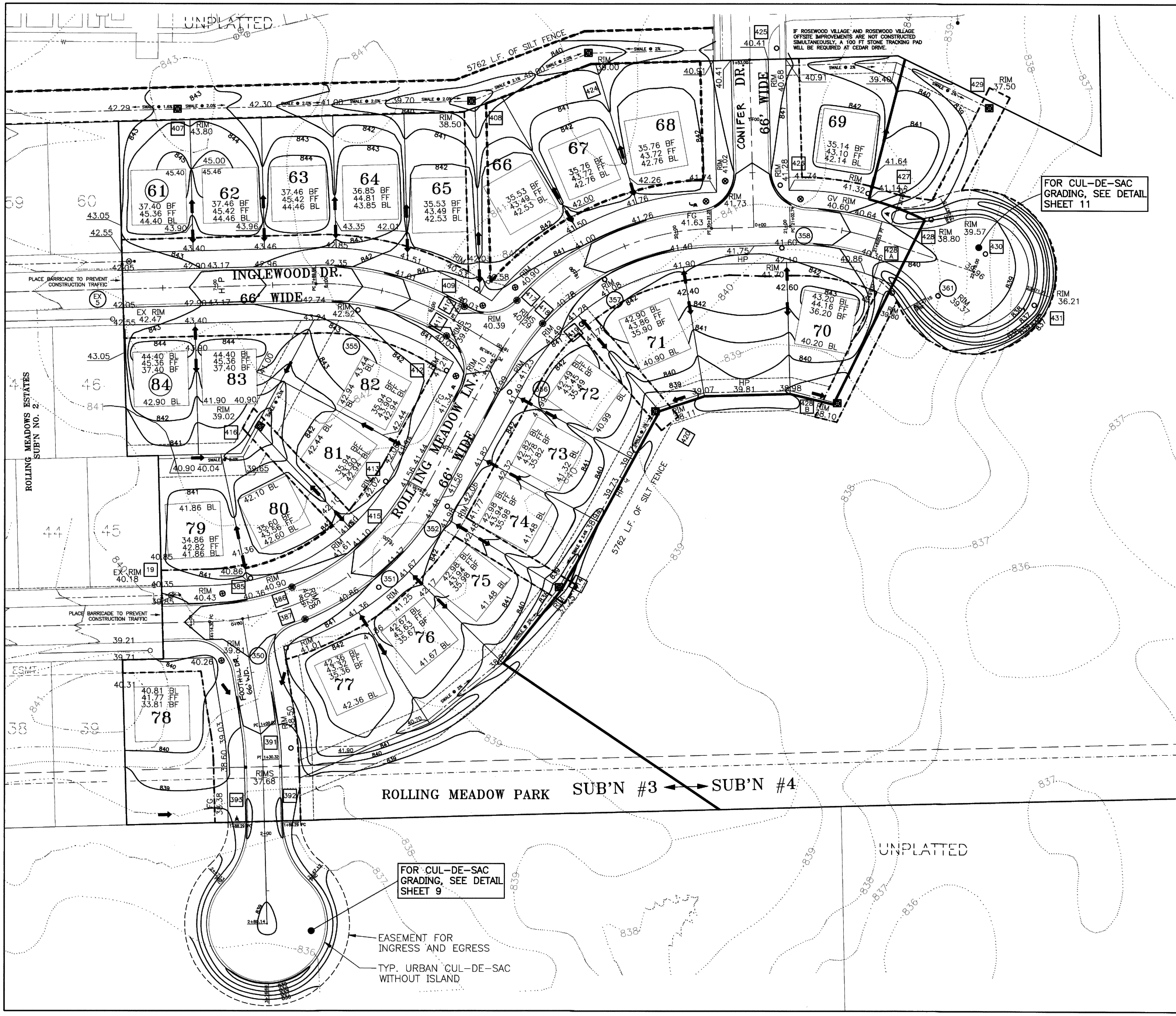
10/10/26 PER PITTSFIELD; 10/24/26 PER PITTSFIELD; 11/07/26 PER PITTSFIELD; 11/21/26 PER PITTSFIELD; 12/05/26 PER PITTSFIELD; 12/19/26 PER PITTSFIELD; 01/02/27 PER PITTSFIELD; 01/16/27 PER PITTSFIELD; 01/30/27 PER PITTSFIELD; 02/13/27 PER PITTSFIELD; 02/27/27 PER PITTSFIELD; 03/12/27 PER PITTSFIELD; 03/26/27 PER PITTSFIELD; 04/09/27 PER PITTSFIELD; 04/23/27 PER PITTSFIELD; 05/07/27 PER PITTSFIELD; 05/21/27 PER PITTSFIELD; 06/04/27 PER PITTSFIELD; 06/18/27 PER PITTSFIELD; 07/02/27 PER PITTSFIELD; 07/16/27 PER PITTSFIELD; 07/30/27 PER PITTSFIELD; 08/13/27 PER PITTSFIELD; 08/27/27 PER PITTSFIELD; 09/10/27 PER PITTSFIELD; 09/24/27 PER PITTSFIELD; 10/08/27 PER PITTSFIELD; 10/22/27 PER PITTSFIELD; 11/05/27 PER PITTSFIELD; 11/19/27 PER PITTSFIELD; 12/03/27 PER PITTSFIELD; 12/17/27 PER PITTSFIELD; 01/07/28 PER PITTSFIELD; 01/21/28 PER PITTSFIELD; 02/04/28 PER PITTSFIELD; 02/18/28 PER PITTSFIELD; 03/03/28 PER PITTSFIELD; 03/17/28 PER PITTSFIELD



LEGEND:

MANHOLE	
CATCH BASIN	
INLET	
GATE VALVE & WELL	
HYDRANT	
WATERMAIN (EX.)	
STORM SEWER (EX.)	
SANITARY SEWER (EX.)	
WATERMAIN (PROP.)	
STORM SEWER (PROP.)	
SANITARY SEWER (PROP.)	
EX. ELEVATION	00.00
SILT FENCE	
STONE TRACKING PAD	
DRAINAGE ARROW	
BL	DENOTES A BRICK LEDGE ELEVATION
BF	DENOTES A BASEMENT FLOOR ELEVATION
FF	DNEOTES A FINISH FLOOR ELEVATION
INLET FILTER	

BENCHMARKS (NAVD 88):

1. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #5 LOCATED AT END OF EX. INGLEWOOD DR. ELEV = 844.99
1. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #3 LOCATED AT END OF EX. ROLLING MEADOW LN. ELEV = 842.74

SOIL EROSION CONTROL SEQUENCE OF CONSTRUCTION

START DAY	END DAY	
1	3	1. INSTALL SILT FENCING AND PROTECTIVE FENCING.
4	8	2. STRIP AND STOCKPILE TOPSOIL
	8	3. PLACE STONE TRACKING PADS.
8	22	4. MASS GRADE SITE.
23	35	5. INSTALL UNDERGROUND UTILITIES. (I.E. SANITARY, STORM, AND WATER MAIN)
36	40	6. ESTABLISH VEGETATION FOR ALL DISTURBED AREAS
	40	7. PLACE INLET FILTERS.
40	48	8. INSTALL ALL PUBLIC UTILITIES COMPLETE (ELECTRIC, TELEPHONE, AND CABLE T.V.)
49	60	9. INSTALL PAVEMENT COMPLETE.

STREET CLEANING SCHEDULE:

1. ALL ADJACENT STREETS SHALL BE CLEANED WITH SWEEPER ONCE PER WEEK MINIMUM.
2. ALL ADJACENT STREETS SHALL BE SCRAPED AS NEEDED.

ACCESS DRIVE

ACCESS DRIVE SHALL BE 20' BY 100' MUD TRACKING ROAD, 6 INCHES DEEP, COMPOSED OF 2-3 INCHES OF CRUSHED LIMESTONE

BENCHMARKS

1. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #5 LOCATED AT END OF EX. INGLEWOOD DR. ELEV = 844.99
2. TOP OF S.W. FLANGE OF ROLLING MEADOWS #2 HYDRANT #3 LOCATED AT END OF EX. ROLLING MEADOW LN. ELEV = 842.74

SP #02-1

SITE GRADING & S.E.S.C.

ROLLING MEADOW ESTATES SUB'N #3

PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. - Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

DATE: 07/12/01

REVISIONS:
07/19/01 ADDED SESC DETAILS, NOTES
08/30/01 PER TWP REVIEW OF ROSEWOOD VILLAGE DATED 7/6/01
10/10/01 PER ROCK REQ.
10/15/01 PER WCRC LTR OF 8/7/01
12/05/01 PER PITTSFIELD LTR OF 10/29/01
03/12/02 PER PITTSFIELD LTR OF 01/29/02
04/03/02 PER WCRC LTR OF 11/02/01
05/13/02 PER PITTSFIELD TWP LTR OF 04/09/02
06/13/02 PER PITTSFIELD TWP LTR OF 05/01/02
06/27/02 PER SUB'N #3 AND WCDC LTR OF 05/21/02
07/12/02 PER PITTSFIELD TOWNSHIP
07/30/02 PER PITTSFIELD LTR OF 7/19/02
08/06/02 PER WCDC
08/13/02 PER PITTSFIELD MEMOS OF 07/24/02 & 07/26/02
09/18/02 PER PITTSFIELD MEMOS OF 08/30/02 & 09/17/02
10/01/02 PER PITTSFIELD MEMO OF 09/25/02
11/05/02 PER PITTSFIELD MEMO OF 10/03/02
12/10/02 PER PITTSFIELD MEMO OF 12/04/02
02/07/03 PER PITTSFIELD MEMO OF 01/09/03
03/06/03 PER PITTSFIELD MEMO OF 03/04/03

AS BUILT:

SCALE: HORIZ. 1" = 40' VERT. 1" = 5'

DATUM U.S.C.& G.S.

JOB NO. 9525

N.B.

SHEET 12

D:\9525\9525 Tue Nov 5 15:22:10 2002

Volume Required:

1. Determine maximum allowable outflow, Qa, in CFS

A			Qa
6.3866 ac X	0.15 cfs/ac (R.M. #3)	=	0.958 cfs
27.04	0.20 cfs/ac (R.M. #1 & #	=	5.408 cfs
			6.366

2. Calculate the allowable outflow, Qo = Qa/(acreage)(runoff coefficient)

Qa	A	C		
6.366 cfs /	33.4266 ac X	0.44	=	0.435 cfs/ac-imp

3. Calculate time for peak storage, T100

   T100 = -25+(10312.5/Qo)~1/2 = 128.933 min

4. Calculate the maximum storage volume per ac-imp, Vs

   Vs = 16500T/(T+25)-40QoT = 11,576 ft~3/ac-im

5. Calculate the total volume of storage required, Vt

   Vt(100) = (Vs)(#ac)(runoff coefficient) = 169,323 ft~3

6. Calculate the first flush volume
   Vff = 1815*A*C = 26,549 ft~3

7. Calculate the volume required in the Sediment Forebay
   Vsf = 5% of 100 year volume = 8,466 ft~3

8. Calculate the volume of the bankfull flood
   V bf = 8170 A C = = 119,506 ft~3

Detention Pond C Factor Calculation

Provided for in original pond design (by others):

	Area	C	A*C
Rolling Meadows #1 & #2:	18.64	0.35	6.52
Rolling Meadows #3:	3.40	0.35	1.19
Rosewood Village Condominiums:	5.00	0.55	2.75
Ponte Property:	1.70	0.35	0.60
Total:	28.74	0.38	11.06
Without Ponte Property:	27.04	0.39	10.46

Proposed to be provided for in expanded basin:

	Area	C	A*C
Rolling Meadows #3:			
Total area = 8.8224			
3.40 acres already provided for			
Therefore 8.8224 - 3.40 =	5.4224	0.59	3.20
Plus, land acquired for expansion of existing detention pond =	0.9642	1.00	0.96
Total:	6.3866	0.59	4.16
Total:	33.4266	0.44	14.63

Volume Provided:

ELEV	AREA (ft~2)	h (ft)	VOLUME (ft~3)	VOLUME (ft~3)	REMARKS
SEDIMENT FOREBAY					
825.1	4,945			0	
		0.90	5,245		
826.00	6,711			5,245	Permanent Water
		0.45	3,221		
826.45	7,700			8,466	5% of 100 Year Storm
		0.55	4,597		
827.00	8,924			13,063	
		1.00	10,100		
828.00	11,328			23,162	
MAIN DETENTION BASIN					
825.1	69,972			0	Permanent Water
		0.37	26,549		
825.47	72,020			26,549	First Flush
		0.53	38,644		
826.00	74,901			65,193	
		0.71	54,313		
826.71	78,901			119,506	Bankfull Volume
		0.29	23,420		
827.00	80,565			142,926	
		0.32	26,397		
827.32	82,463			169,323	100 Year Volume
		0.68	57,099		
828.00	86,426			226,421	

Outlet Control Structure Calculations:

First Flush of Runoff

Q ff = V / T 24
Q ff = 26549 cf / (24 hr * 3600 sec/hr) =
0.307 cfs

h avg = 2/3 (elev ff - elev bot)
h avg = 2/3 (825.47 - 825.10) =
0.25 ft

A = Qff / 0.62 * (2gh)~1/2
A = 0.307 cfs / 0.62 * (2*32.2*0.25)~1/2 =
0.124 sf

Use 2" diameter holes
A 2" = 0.0218 sf

= 0.124 / 0.0218
5.67 Use 5 2" holes @ 825.10

Detention time:
Q ff new = A ff new (0.62)*(2gh)~1/2
Q ff new = 5*0.0218*0.62*(2*32.2*0.25)~1/2
0.271 cfs

T ff new = V ff / Q ff new
T ff new = 26549 cf / (0.307 cfs*3600sec/hr)
27.2 hr

Bankfull Flood

H avg = 2/3 (elev bf - elev bot)
h avg = 2/3 (826.71 - 825.10) =
1.07 ft

Q bf = A (0.62)*(2gh)~1/2
Q bf = 5*0.0218*0.62*(2*32.2*1.07)~1/2
0.562 cfs

T = V bf / Q

T = 119506 cf / (0.562 cfs)*(3600sec/hr)
59.11 hr

V rem = Vbf - Vff
V rem = 119506-26549
92,957 cf

T rem = T tot - T ff new
T rem = 44 hr - 27.2 hr
16.8 hr

h ff ave = 2/3 (elev bf - elev ff) + (elev ff - elev bot)
h ff ave = 2/3 (826.71 - 825.47) + (825.47 - 825.10)
1.20 ft

Q1 = 0.62 A ff * (2gh)~1/2
Q1 = 0.62 (5*0.0218) * (2*32.2*1.20)~1/2
0.593 cfs

V1 = T rem Q1
V1 = 16.8*(3600sec/hr)*0.593
35,861 cf

V2 = Vrem - V1
57,096

Q2 = V2/Trem
0.945 cfs

H bf avg = 2/3 (elev bf - elev ff)
0.82 ft

A2 = Q2/(0.62(2gh)~1/2)
0.210 sf

= 0.210 / 0.0218
10 holes @ 825.47

100 Year Flood

Q a = 6.37 cfs

Q 100 = Qa-(Qff+Qbf)

Q ff = 0.62 A ff (2gh)~1/2
1.84 cfs

Q bf = 0.62 A bf (2gh)~1/2
1.42 cfs

Q 100 = 6.37 - (1.84 + 1.42
3.11 cfs

h 100 = 827.32 - 826.71
0.62 ft

A 100 = Q100 / 0.62*(2gh)~1
0.796 sf

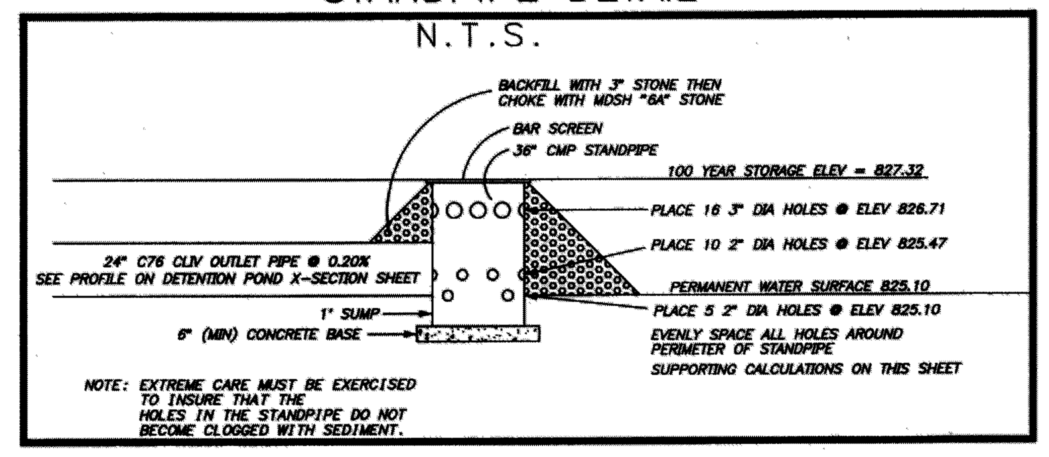
Use 3" diameter holes
A 3" = 0.0491 sf

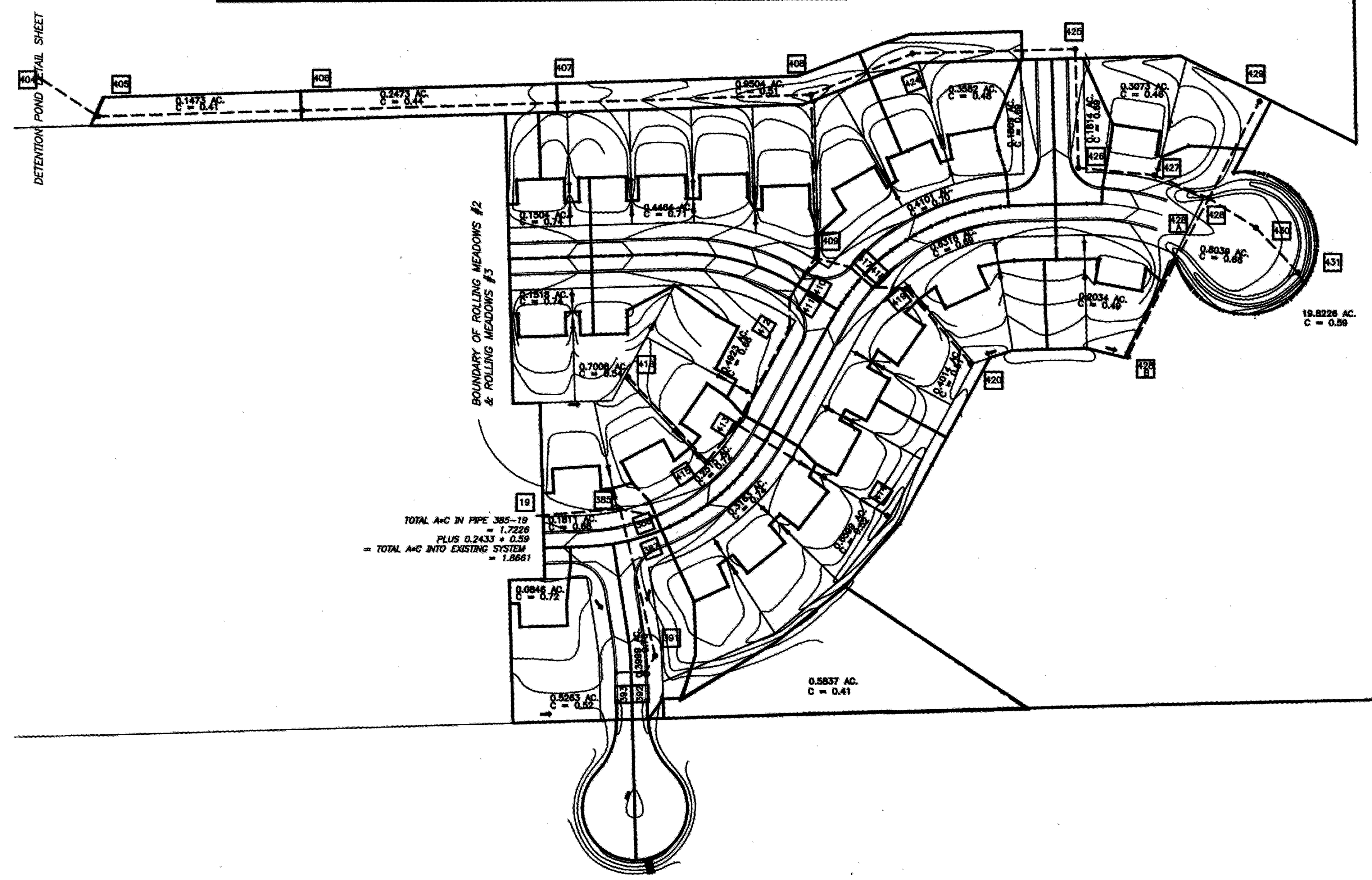
= 0.796 / 0.0491
16 holes @ 826.71

Q bf = 0.62 A bf (2gh)~1/2
3.07 cfs

STANDPIPE DETAIL

N.T.S.





FROM MH	TO MH	C	AREA Ac	TOTAL AREA	A*C	TOTAL A*C	T min	I in/hr	Q cfs	Q (cap) cfs	PIPE dia	RUN ft	HG SLOPE	FALL in HG	UPST HG ELEV	DWNST HG ELEV	V AVG fps	V (cap) fps	T to DS MH	PIPE SLOPE	UPST INV ELEV	DWNST INV ELEV	UPST RIM	UPST RIM TO INV	UPST CVR	DWNST CVR	RIM TO HG	CROWN OF PIPE	HG TO CROWN	DEPTH OF STRUCTURE
393	392	0.52	0.5263	0.5263	0.2737	0.2737	20.00	3.89	1.06	4.49	12	31.50	0.09%	0.03	833.94	833.50	1.36	5.72	0.39	1.59%	833.14	832.64	837.68	4.54	3.38	3.88	3.74	834.14	-0.20	4.58
		0.41	0.5837	PARK	0.2393	PARK																								
392	391	0.76	0.3999	1.5099	0.3039	0.8169	20.39	3.86	3.15	2.36	12	19.36	0.78%	0.15	833.50	833.35	4.01	3.01	0.08	0.44%	832.64	832.55	837.68	5.04	3.88	4.78	4.18	833.64	-0.13	7.04
391	385	0.59	0.0000	1.5099	0.0000	0.8169	20.47	3.85	3.14	3.77	15	159.47	0.24%	0.38	833.35	832.81	2.56	3.07	1.04	0.34%	832.35	831.81	838.50	6.15	4.71	7.65	5.15	833.60	-0.25	8.15
							21.51																							
387	386	0.74	0.3593	0.3593	0.2659	0.2659	20.00	3.89	1.03	4.49	12	31.50	0.08%	0.03	836.41	835.91	1.32	5.72	0.40	1.59%	835.61	835.11	840.28	4.67	3.50	4.00	3.87	836.61	-0.20	4.67
386	385	0.72	0.2515	0.6108	0.1811	0.4470	20.40	3.85	1.72	2.36	12	38.64	0.23%	0.09	832.98	832.81	2.19	3.01	0.29	0.44%	832.18	832.01	840.28	8.10	6.93	7.72	7.30	833.18	-0.20	10.10
							20.69																							
385	19	0.59	0.0000	2.1207	0.0000	1.2639	21.51	3.76	4.76	3.77	15	88.10	0.54%	0.48	832.81	832.51	3.88	3.07	0.38	0.34%	831.81	831.51	840.90	9.09	7.65	7.23	8.09	833.06	-0.25	11.09
							21.88																840.18							
		0.59		19.8226		11.6953																								
431	430	0.66	0.7984	20.6210	0.5269	12.2223	31.45	3.10	37.89	31.82	42	64.40	0.14%	0.09	830.05	829.96	3.94	3.31	0.27	0.10%	826.84	826.77	836.21	9.37	5.50	8.92	6.16	830.34	-0.29	9.37
430	428	0.59	0.0000	20.6210	0.0000	12.2223	31.72	3.09	37.71	31.82	42	58.23	0.14%	0.08	829.96	829.87	3.92	3.31	0.25	0.10%	826.77	826.71	839.57	12.80	8.92	8.21	9.61	830.27	-0.31	12.80
							31.97																							
429	428	0.46	0.3073	0.3073	0.1414	0.1414	20.00	3.89	0.55	5.04	12	114.81	0.02%	0.03	833.63	831.33	0.70	6.42	2.73	2.00%	832.83	830.53	837.50	4.67	3.50	7.10	3.87	833.83	-0.20	4.67
							22.73																							
428B	428A	0.49	0.2034	0.2034	0.0997	0.0997	20.00	3.89	0.39	4.36	12	112.34	0.01%	0.01	834.24	832.55	0.49	5.56	3.79	1.50%	833.44	831.75	838.10	4.66	3.50	6.88	3.86	834.44	-0.20	4.66
428A	428	0.59	0.0000	0.2034	0.0000	0.0997	23.79	3.59	0.36	4.36	12	75.94	0.01%	0.01	832.55	831.41	0.46	5.56	2.78	1.50%	831.75	830.61	839.80	8.05	6.88	7.02	7.25	832.75	-0.20	10.05
							26.57																							
428	427	0.59	0.0000	21.1317	0.0000	12.4633	31.97	3.07	38.28	31.82	42	62.27	0.14%	0.09	829.87	829.78	3.98	3.31	0.26	0.10%	826.71	826.65	838.80	12.09	8.21	10.79	8.93	830.21	-0.34	12.09
427	426	0.59	0.0000	21.1317	0.0000	12.4633	32.23	3.06	38.11	31.82	42	80.39	0.14%	0.12	829.78	829.67	3.96	3.31	0.34	0.10%	826.65	826.57	841.32	14.67	10.79	10.84	11.54	830.15	-0.37	14.67
426	425	0.59	0.0000	21.1317	0.0000	12.4633	32.57	3.04	37.89	31.82	42	125.06	0.14%	0.18	829.67	829.49	3.94	3.31	0.53	0.10%	826.57	826.44	841.28	14.71	10.84	10.36	11.61	830.07	-0.40	14.71
425	424	0.59	0.0000	21.1317	0.0000	12.4633	33.10	3.01	37.54	31.82	42	171.32	0.14%	0.24	829.49	829.25	3.90	3.31	0.73	0.10%	826.44	826.27	840.68	14.24	10.36	8.85	11.19	829.94	-0.45	14.24
424	408	0.48	0.3582	21.4899	0.1719	12.6352	33.83	2.97	37.59	31.82	42	114.88	0.14%	0.16	829.25	829.09	3.91	3.31	0.49	0.10%	826.27	826.16	839.00	12.73	8.85	8.47	9.75	829.77	-0.52	12.73
							34.32																							
420	419	0.51	0.4014	0.4014	0.2047	0.2047	20.00	3.89	0.80	3.56	12	110.29	0.05%	0.06	834.01	832.90	1.01	4.54	1.81	1.00%	833.21	832.10	838.11	4.90	3.74	8.22	4.10	834.21	-0.20	4.90
419	418	0.59	0.0000	0.4014	0.0000	0.2047	21.81	3.74	0.77	3.56	12	31.25	0.05%	0.01	832.90	832.59	0.97	4.54	0.53	1.00%	832.10	831.79	841.49	9.39	8.22	7.33	8.59	833.10	-0.20	11.39
418	417	0.69	0.6316	1.0330	0.4358	0.6405	22.35	3.70	2.37	3.56	12	31.50	0.44%	0.14	832.59	832.28	3.01	4.54	0.17	1.00%	831.79	831.48	840.29	8.50	7.33	7.65	7.70	832.79	-0.20	10.50
417	409	0.70	0.4101	1.4431	0.2871	0.9276	22.52	3.68	3.42	3.77	15	38.42	0.28%	0.11	829.68	829.57	2.78	3.07	0.23	0.34%	828.47	828.34	840.29	11.82	10.39	10.76	10.61	829.72	-0.03	13.82
							22.75																							
416	415	0.54	0.7008	0.7008	0.3784	0.3784	20.00	3.89	1.47	3.56	12	122.12	0.17%	0.21	835.16	833.94	1.87	4.54	1.09	1.00%	834.36	833.14	839.02	4.66	3.50	7.36	3.86	835.36	-0.20	4.66
415	413	0.00	0.0000	0.7008	0.0000	0.3784	21.09	3.80	1.44	3.56	12	50.13	0.16%	0.08	833.94	833.44	1.83	4.54	0.46	1.00%	833.14	832.64	841.66	8.52	7.36	8.22	7.72	834.14	-0.20	10.52
							21.54																							
414	413	0.52	0.6599	0.6599	0.3431	0.3431	20.00	3.89	1.33	2.52	12	185.50	0.14%	0.26	833.38	832.56	1.70	3.21	1.82	0.50%	832.58	831.66	837.25	4.67	3.50	9.20	3.87	833.58	-0.20	4.67
							21.82																							
413	412	0.59	0.0000	1.3607	0.0000	0.7216	21.82	3.74	2.70	2.52	12	115.52	0.57%	0.66	832.56	831.90	3.43	3.21	0.56	0.50%	831.66	831.08	842.02	10.36	9.20	8.97	9.46	832.66	-0.10	12.36
412	411	0.59	0.0000	1.3607	0.0000	0.7216	22.38	3.69	2.67	2.52	12	31.45	0.56%	0.18	831.90	831.72	3.39	3.21	0.15	0.50%	831.08	830.92	841.21	10.13	8.97	7.54	9.31	832.08	-0.18	12.13
411	410	0.66	0.4923	1.8530	0.3249	1.0465	22.53	3.68	3.85	4.57	15	31.50	0.36%	0.11	831.72	831.56	3.14	3.72	0.17	0.50%	830.72	830.56	839.63	8.91	7.47	7.63	7.91	831.97	-0.25	10.91
410	409	0.71	0.4464	2.2994	0.3169	1.3634	22.70	3.67	5.00	4.57	15	19.34	0.60%	0.12	831.56	831.47	4.08	3.72	0.08	0.50%	830.56	830.47	839.63	9.07	7.63	8.63	8.07	831.81	-0.25	11.07
							22.78																							
409	408	0.59	0.0000	3.7425	0.0000	2.2910	22.78	3.66	8.39	7.43	21	171.75	0.28%	0.48	829.57	829.09	3.49	3.09	0.82	0.22%	827.94	827.56	840.53	12.59	10.61	8.96	10.96	829.69	-0.11	14.59
							23.60																							
408	407	0.51	0.9504	26.1828	0.4847	15.4110	34.32	2.95	45.46	40.63	48	267.82	0.10%	0.27	829.09	828.83	3.62	3.23	1.23	0.08%	825.76	825.54	838.50	12.74	8.32	13.84	9.41	829.76	-0.67	12.74
407	406	0.59	0.0000	26.1828	0.0000	15.4110	35.55	2.89	44.54	40.63	48	267.82	0.10%	0.26	828.83	828.57	3.54	3.23	1.26	0.08%	825.54	825.33	843.80	18.26	13.84	9.75	14.97	829.54	-0.72	18.26
406	405	0.44	0.2473	26.4301	0.1088	15.5198	36.81	2.83	43.94	40.63	48	214.48	0.09%	0.20	828.57	828.37	3.50	3.23	1.02	0.08%	825.33	825.16	839.50	14.17	9.75	6.42	10.93	829.33	-0.76	14.17
405	404	0.41	0.1473	26.5774	0.0604	15.5802	37.84	2.79	43.39	40.63	48	73.27	0.09%	0.07	828.37	828.30	3.45	3.23	0.35	0.08%	825.16	825.10	836.00	10.84	6.42	na	7.63	829.16	-0.79	10.84
							38.19				48				828.30						825.10									

SP #02-1

DRAINAGE MAP, STORM SEWER & DETENTION CALCULATIONS

ROLLING MEADOW ESTATES SUB'N #3

PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. - Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

SCALE: HORIZ. 1" = 100' VERT. 1" = 5' DATUM U.S.C.& G.S.

JOB NO. 9525 N.B. SHEET 13

DATE: 07/02/01

REVISIONS: 08/14/01 INTEROFFICE REVIEW
10/09/01 PER W.C.D.C. REVIEW OF 09/18/01
10/10/01 PER ROCK RED.
10/15/01 PER WCRC LTR OF 8/7/01
12/05/01 PER PITTSFIELD LTR OF 10/29/01
03/12/02 PER PITTSFIELD LTR OF 01/28/02
04/03/02 PER WCRC LTR OF 11/02/01
05/13/02 PER PITTSFIELD TWP LTR OF 04/09/02
AS BUILT: 06/13/02 PER PITTSFIELD TWP LTR OF 05/01/02
06/27/02 PER SUB'N #3 AND WCDC LTR OF 05/21/02
08/06/02 PER WCDC
08/15/02 PER PITTSFIELD
09/17/02 PER PITTSFIELD MEMOS OF 08/30/02 & 09/17/02
10/02/02 PER PITTSFIELD MEMO OF 09/25/02
11/05/02 PER PITTSFIELD LTR OF 10/03/02
12/10/02 PER PITTSFIELD MEMO OF 12/04/02
02/07/03 PER PITTSFIELD MEMO OF 01/09/03
03/06/03 PER PITTSFIELD MEMO OF 03/04/03

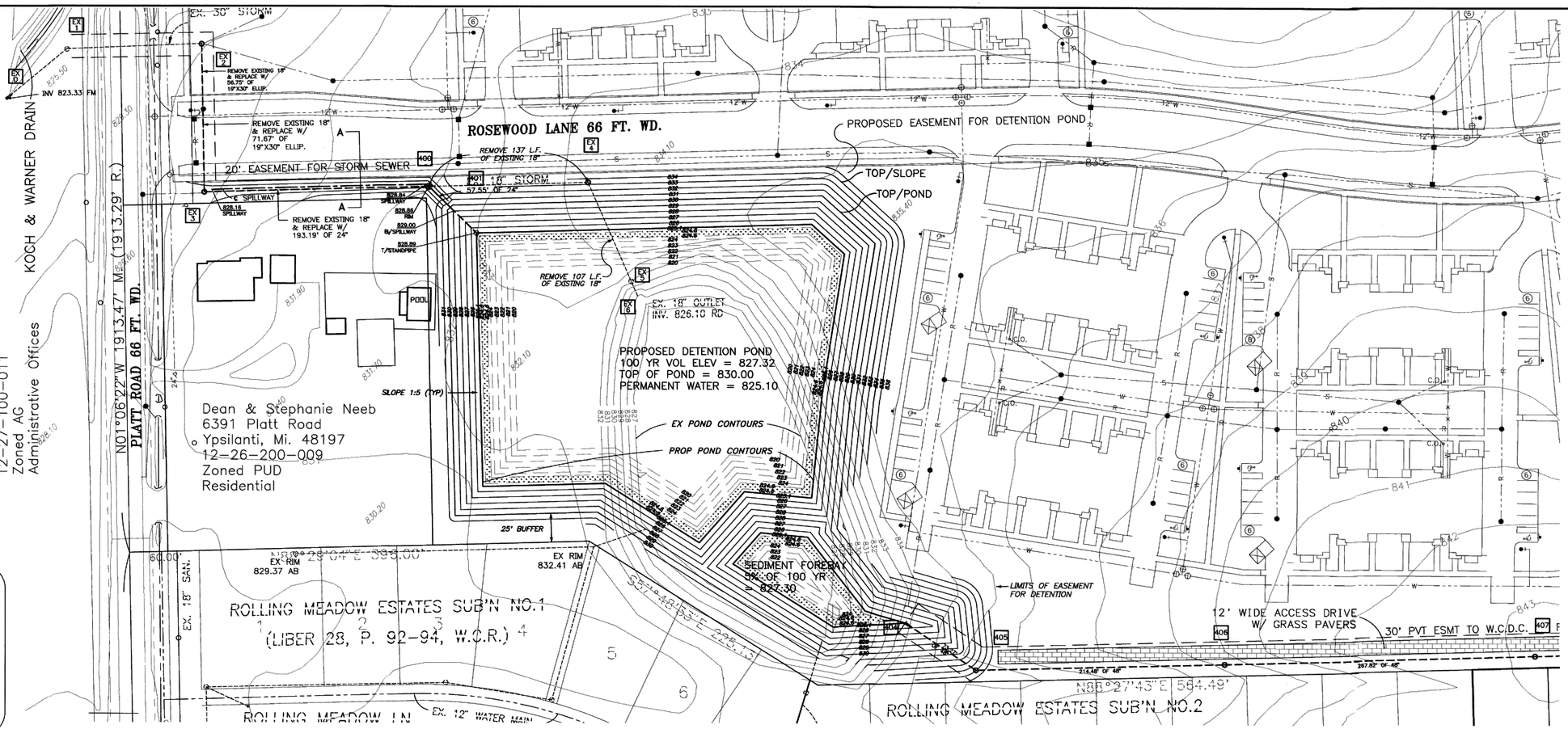
LEGEND:

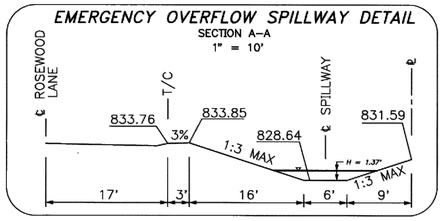
- MANHOLE
- CATCH BASIN
- INLET
- GATE VALVE & WELL
- HYDRANT
- WATERMAIN (EX.)
- STORM SEWER (EX.)
- SANITARY SEWER (EX.)
- WATERMAIN (PROP.)
- STORM SEWER (PROP.)
- SANITARY SEWER (PROP.)
- EX. ELEVATION 00.00

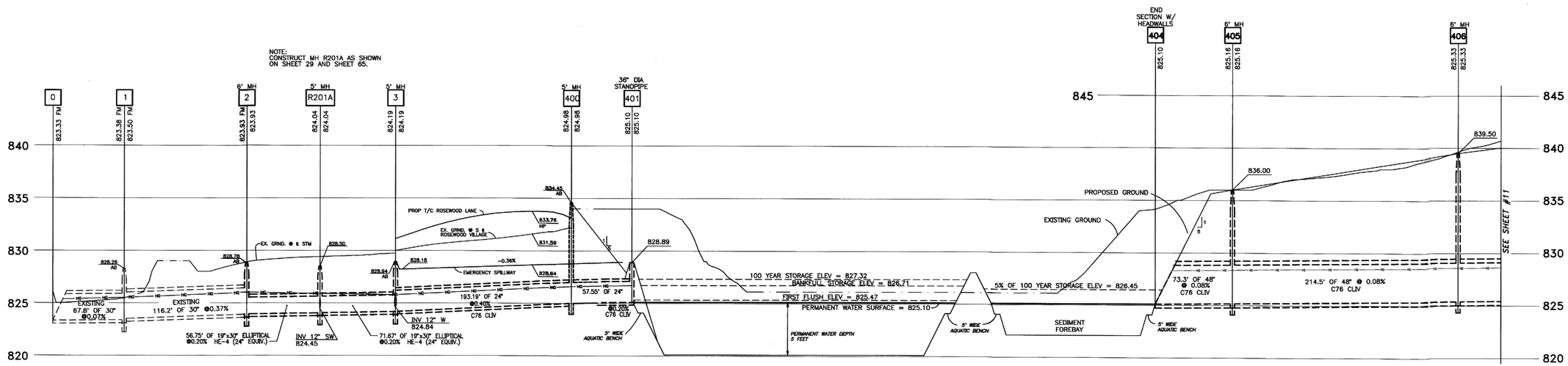
NOTE:

-ALL UTILITIES LYING WITHIN ROAD RIGHT-OF-WAY CORRIDOR (EXISTING OR PROPOSED, FROM FRONT-OF-HOUSE TO FRONT-OF-HOUSE) SHALL BE BACKFILLED WITH MDOT CL II GRANULAR MATERIAL COMPACTED TO 95% MAXIMUM UNIT WEIGHT

Pittsfield Charter Township
6201 West Michigan
Ann Arbor, Mi. 48108
12-27-100-011
Zoned AG
Administrative Offices







DETENTION POND X-SECTION & STORM SEWER PROFILES

ROLLING MEADOW ESTATES SUB'N #3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E., PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

SCALE: HORIZ. 1" = 50' VERT. 1" = 5'

DRAWN: U.S.C.& G.S.

DATE: 07/02/01

REVISIONS: 08/14/01 INTEGRATE ROSEWOOD 08/30/01 W.C.D.W. ELEV. ROSEWOOD IS 7'+/01 10/15/01 PER WCDC LTR OF 8/7/01 10/15/01 PER WCDC LTR OF 8/7/01 10/15/01 PER PITTSFIELD LTR OF 01/29/01 03/12/02 PER PITTSFIELD LTR OF 01/29/01 03/12/02 PER PITTSFIELD LTR OF 02/26/02 06/13/02 PER PITTSFIELD LTR OF 04/09/02 06/14/02 PER WCDC LTR OF 05/21/02 06/27/02 PER SABEN #3 AND WCDC LTR OF 05/21/02 08/06/02 PER WCDC 08/30/02 PER PITTSFIELD 09/16/02 PER PITTSFIELD MEMO. OF 08/30/02 & 09/17/02 09/23/02 PER PITTSFIELD 09/26/02 PER PITTSFIELD 09/26/02 PER PITTSFIELD 09/26/02 PER PITTSFIELD 09/26/02 PER PITTSFIELD 09/26/02 PER PITTSFIELD 09/26/02 PER PITTSFIELD 09/26/02 PER PITTSFIELD 09/26/02 PER PITTSFIELD

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Civil Engineering & Land Surveying
40855 Koppernick Rd. - Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

JOB NO. 9525
N.B.

SHEET 14

SP #02-1

D:\19952S\9525 Tue Dec 10 11:38:42 2002 DCF

FROM MH	PIPE dia	DIR	RIM	INVERT ELEV	TYPE OF STR.	STR. DIA.	SUMP DEPTH	COVER TYPE	DEPTH OF STRUCT.
STORM SEWER									
431	42	W	836.21	828.84	STD MH	6	NA	EJIW 1040 B	9.37
431	42	SE	836.21	828.84					
431	12	SW	836.21	832.00					
430	42	W	839.57	828.77	STD MH	6	NA	EJIW 1040 B	12.80
430	42	E	839.57	828.77					
429	12	S	837.50	832.83	STD INLET	2	NA	EJIW 7045	4.67
428	42	W	838.80	828.71	STD MH	6	NA	EJIW 1040 B	12.09
428	42	E	838.80	828.71					
428	12	N	838.80	830.53					
428	12	S	838.80	830.61					
428B	12	N	838.10	833.44	STD INLET	2	NA	EJIW 7045	4.66
428A	12	S	839.80	831.75	STD MH	4	2	EJIW 1040 B	10.05
428A	12	N	839.80	831.75					
427	42	W	841.32	828.65	STD MH	6	NA	EJIW 1040 B	14.67
427	42	E	841.32	828.65					
426	42	N	841.28	826.57	STD MH	6	NA	EJIW 1040 B	14.71
426	42	E	841.28	826.57					
425	42	W	840.68	826.44	STD MH	6	NA	EJIW 1040 B	14.24
425	42	S	840.68	826.44					
424	42	W	839.00	826.27	STD CB	6	NA	EJIW 1040 w/ TYPE 02 BEEHIVE GRATE	12.73
424	42	W	839.00	826.27					
420	12	NW	838.11	833.21	STD INLET	2	NA	EJIW 1040 w/ TYPE 02 BEEHIVE GRATE	4.90
419	12	SE	841.49	832.10	STD MH	4	2	EJIW 1040 B	11.39
419	12	SW	841.49	832.10					
418	12	NW	840.29	831.79	STD CB	4	2	EJIW 7045	10.50
418	12	SE	840.29	831.79					
417	12	SE	840.29	831.48	STD CB	4	2	EJIW 7045	13.82
417	15	W	840.29	828.47					
416	12	SE	839.02	834.36	STD INLET	2	NA	EJIW 1040 w/ TYPE 02 BEEHIVE GRATE	4.66
415	12	NW	841.66	833.14	STD MH	4	2	EJIW 1040 B	10.52
415	12	NE	841.66	833.14					
414	12	NW	837.25	832.58	STD INLET	2	NA	EJIW 1040 w/ TYPE 02 BEEHIVE GRATE	4.67
413	12	NE	842.02	832.64	STD MH	4	2	EJIW 1040 B	12.36
413	12	SE	842.02	831.66					
413	12	SW	842.02	831.66					
412	12	N	841.21	831.08	STD MH	4	2	EJIW 1040 B	12.13
412	12	SW	841.21	831.08					
411	15	NE	839.63	830.72	STD CB	4	2	EJIW 7045	10.91
411	12	S	839.63	830.92					
410	15	SW	839.63	830.56	STD CB	4	2	EJIW 7045	11.07
410	15	NE	839.63	830.56					
409	15	SW	840.53	830.47	STD MH	5	2	EJIW 1040 B	14.59
409	15	E	840.53	828.34					
409	21	N	840.53	827.94					
408	48	W	838.50	825.76	STD CB	8	NA	EJIW 1040 w/ TYPE 02 BEEHIVE GRATE	12.74
408	42	E	838.50	826.16					
408	21	S	838.50	827.56					
407	48	W	843.80	825.54	STD CB	8	NA	EJIW 1040 w/ TYPE 02 BEEHIVE GRATE	18.26
407	48	E	843.80	825.54					
406	48	W	839.50	825.33	STD CB	8	NA	EJIW 1040 w/ TYPE 02 BEEHIVE GRATE	14.17
406	48	E	839.50	825.33					
405	48	W	836.00	825.16	STD CB	8	NA	EJIW 1040 w/ TYPE 02 BEEHIVE GRATE	10.84
405	48	E	836.00	825.16					
404	48	W	NA	825.10	END SEC	NA	NA		
401	24	NW	828.89	825.10	STANDPIPE	3	NA		3.79
400	24	SE	834.45	824.98	STD MH	5	NA	EJIW 1040 B	9.47
	24	W	834.45	824.98					
3	24	E	828.94	824.19	STD MH	5	NA	EJIW 1040 B	4.75
	24	N	828.94	824.19					
2	24	S	828.78	823.93	STD MH	6	NA	EJIW 1040 B	4.85
	30	W	828.78	823.93					
393	12	E	837.68	833.14	STD INLET	2	NA	EJIW 7045	4.54
392	12	N	837.68	832.64	STD CB	4	2	EJIW 7045	7.04
392	12	W	837.68	832.64					
391	15	N	838.50	832.35	STD MH	4	2	EJIW 1040 B	8.15
391	12	S	838.50	832.55					
387	12	N	840.28	835.61	STD INLET	2	NA	EJIW 7045	4.67
386	12	W	840.28	832.18	STD CB	4	2	EJIW 7045	10.10
386	12	S	840.28	835.11					
385	15	W	840.90	831.81	STD MH	4	2	EJIW 1040 B	11.09
385	12	SE	840.90	832.01					
385	15	S	840.90	831.81					

Sanitary Sewer Lead Schedule

Lot #	Inv. of Main @ Lead	Dia.	Inv. of Lead @ Main	Riser (Ft.)	Length (L.F.)	Slope	Inv. @ End Lead	Dist from B/Lead to Bldg Env.	% S	Inv @ Bldg Env.	Brick Ledge	Btm/Bsmt Footing Grade
61	825.39	6"	826.39	6	73.8	2.00%	833.75	11	2.00%	833.97	844.40	836.23
62	825.53	6"	826.53	6	73.1	2.00%	833.87	11	2.00%	834.09	844.46	836.29
63	825.68	6"	826.68	6	72.5	2.00%	834.01	11	2.00%	834.23	844.46	836.29
64	825.78	6"	826.78	5	68.6	2.00%	833.05	15	2.00%	833.35	843.85	835.88
65	825.98	6"	826.98	3	79.6	2.00%	831.51	22	2.00%	831.95	842.53	834.36
66	826.60	6"	827.60	3	71.8	2.00%	831.98	12	2.00%	832.22	842.53	834.36
67	826.60	6"	827.60	3	72.0	2.00%	831.98	11	2.00%	832.20	842.76	834.59
68	826.87	6"	827.87	2	78.3	2.00%	831.40	11	2.00%	831.62	842.76	834.59
69	827.21	6"	828.21	NO	75.6	2.00%	829.72	11	2.00%	829.94	842.14	833.97
70	827.25	6"	828.25	4	17.0	2.00%	832.51	14	2.00%	832.79	843.20	835.03
71	826.76	6"	827.76	4	20.3	2.00%	832.09	13	2.00%	832.35	842.90	834.73
72	826.40	6"	827.40	4	15.2	2.00%	831.62	13	2.00%	831.88	842.49	834.32
73	826.22	6"	827.22	4	42.8	2.00%	832.00	11	2.00%	832.22	842.82	834.65
74	828.90	6"	829.90	2	26.9	2.00%	832.40	11	2.00%	832.62	842.98	834.81
75	828.72	6"	829.72	2	26.6	2.00%	832.21	11	2.00%	832.43	842.98	834.81
76	828.43	6"	829.43	2	22.5	2.00%	831.84	11	2.00%	832.06	842.67	834.50
77	828.17	6"	829.17	2	18.4	2.00%	831.50	11	2.00%	831.72	842.36	834.19
78	827.51	6"	828.51	NO	21.9	2.00%	828.95	11	2.00%	829.17	840.81	832.64
79	827.65	6"	828.65	NO	75.3	2.00%	830.16	12	2.00%	830.40	841.86	833.69
80	828.26	6"	829.26	NO	71.9	2.00%	830.70	13	2.00%	830.96	842.80	834.43
81	828.79	6"	829.79	NO	68.5	2.00%	831.16	13	2.00%	831.42	842.94	834.77
82	825.94	6"	826.94	5	18.4	2.00%	832.21	16	2.00%	832.53	842.94	834.77
83	825.58	6"	826.58	7	21.1	2.00%	833.86	11	2.00%	834.08	844.40	836.23
84	825.39	6"	826.39	7	20.2	2.00%	833.65	11	2.00%	833.87	844.40	836.23

Water Service Schedule

Lot #	Dia.	Length	Shutoff FG
61	1"	22	843.30
62	1"	22	843.65
63	1"	22	843.20
64	1"	22	842.83
65	1"	22	841.94
66	1"	23	841.37
67	1"	23	841.70
68	1"	22	842.00
69	1"	22	842.14
70	1"	73	842.15
71	1"	73	841.70
72	1"	72	841.38
73	1"	72	842.17
74	1"	72	842.14
75	1"	72	841.77
76	1"	72	841.42
77	1"	72	841.17
78	1"	20	840.06
79	1"	22	840.53
80	1"	22	841.31
81	1"	22	842.00
82	1"	74	842.65
83	1"	72	843.50
84	1"	72	842.88

FROM MH	PIPE dia	DIR	RIM	INVERT ELEV	TYPE OF STR.	STR. DIA.	COVER TYPE	DEPTH OF STRUCT.
SANITARY SEWER								
361	12	E	839.06	827.58	STD MH	4	EJIW 1040 C	11.58
		W		827.48				
358	12	E	841.71	827.16	STD MH	4	EJIW 1040 C	14.65
358	12	W		827.06				
357	12	SW	841.07	826.61	STD MH	4	EJIW 1040 C	14.46
357	12	E		826.71				
357	6	N		827.60				
356	12	NW	841.23	826.22	STD MH	4	EJIW 1040 C	15.01
356	12	NE		826.32				
356	6	S		827.22				
355	12	W	841.91	825.78	STD MH	4	EJIW 1040 C	16.13
355	12	SE		825.88				
352	8	SW	841.77	828.90	STD MH	4	EJIW 1040 C	12.87
352	6	E		829.90				
351	8	SW	841.28	828.43	STD MH	4	EJIW 1040 C	12.85
351	8	NE		828.53				
351	6	SE		829.43				
350	8	W	841.01	827.94	STD MH	4	EJIW 1040 C	13.07
350	8	NE		828.04				

SP #02-1

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Civil Engineering & Land Surveying
40655 Koppernick Rd. - Canton, Michigan 48187
telephone no. (734) 459-2580 fax no. (734) 459-2585

SHEET 15

JOB NO. 9525

ROLLING MEADOW ESTATES SUB'N NO. 3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E.,
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

DATE 05/13/02

REVISIONS 06/06/02 PER BCCC
06/24/02 PER PITTSFIELD
07/08/02 PER PITTSFIELD
11/14/02 PER PITTSFIELD
12/04/02 PER PITTSFIELD
12/26/02 PER PITTSFIELD
01/07/03 PER PITTSFIELD
01/28/03 PER PITTSFIELD
02/26/03 PER PITTSFIELD
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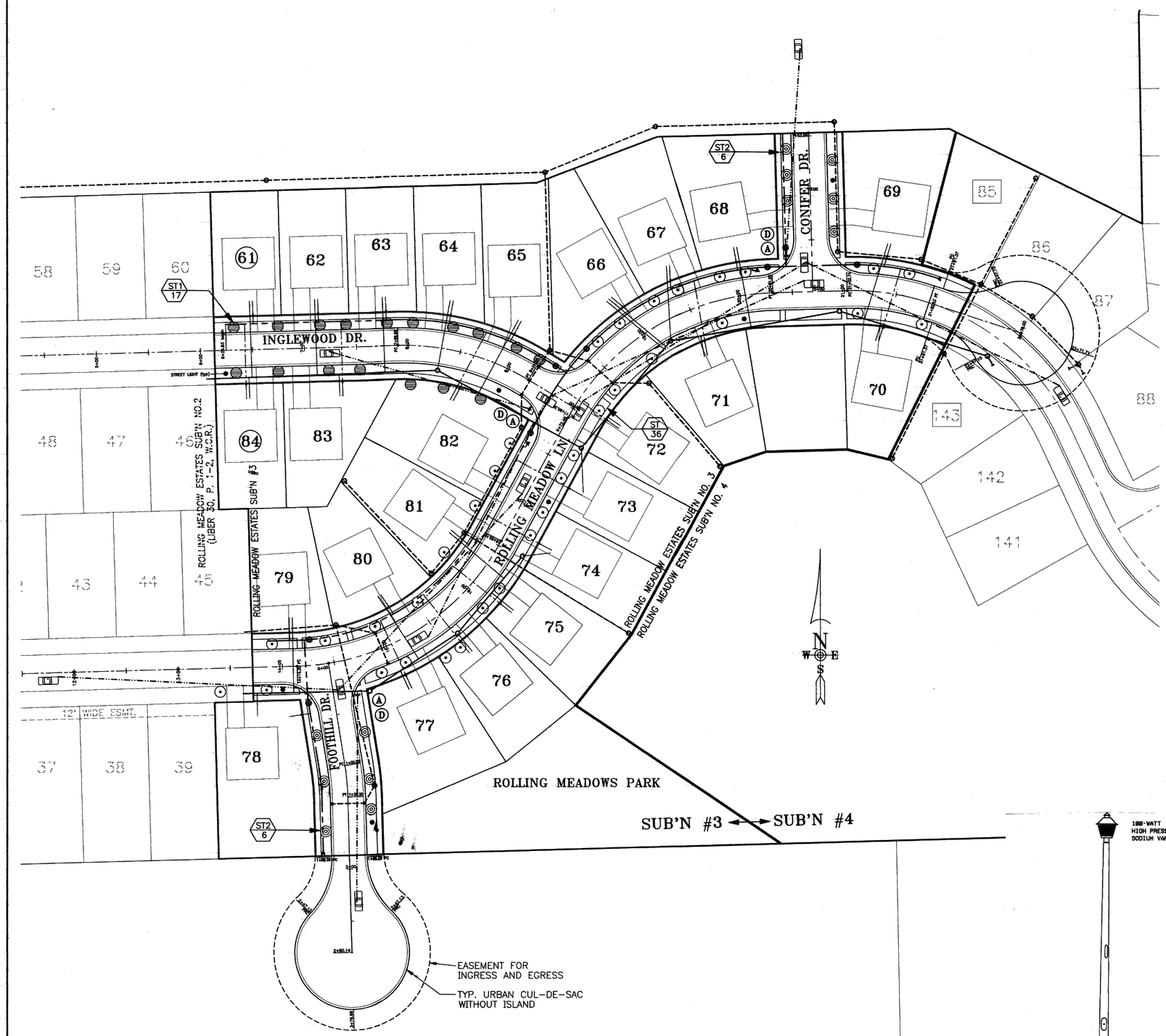
04/09/03 PER PITTSFIELD
05/05/03 PER PITTSFIELD
05/28/03 PER PITTSFIELD

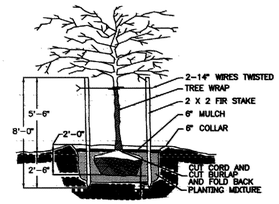
AS BUILT



plant material list

		STREET TREES	COMMON NAME	SIZE
ST	34	ACER SACCHARUM 'SUGAR'	SUGAR MAPLE	2 1/2" CAL B/B
ST1	17	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LYNDEN	2 1/2" "
ST2	12	LIQUIDAMBAR STYRACIFLUA 'AMERICAN'	AMERICAN SWEETGUM	2 1/2" "

LOT NUMBER	FRONTAGE	NO. OF TREES REQ'D
61	65.00'	2
62	65.00'	2
63	65.01'	2
64	66.47'	2
65	72.82'	2
66	101.82'	2
67	59.48'	2
68	73.77'	5
69	73.29'	5
70	91.46'	2
71	106.24'	2
72	93.35'	2
73	65.00'	2
74	63.71'	2
75	59.48'	2
76	59.48'	2
77	196.30'	5
78	233.09'	5
79	78.80'	2
80	106.24'	2
81	89.77'	2
82	214.30'	5
83	108.30'	2
84	65.00'	2



TREE PLANTING DETAIL
NO SCALE

landscape requirements:

1. THE WORK SHALL CONSIST OF PROVIDING ALL NECESSARY MATERIALS, LABOR, EQUIPMENT, TOOLS AND SUPERVISION REQUIRED FOR THE COMPLETION AS SHOWN ON THE DRAWINGS.
2. THE PLANT MATERIALS SHALL CONFORM TO TYPE STATED ON THE PLANT LIST. SIZES SHALL BE THE MINIMUM STATED ON THE PLANT LIST OR LARGER. ALL MEASUREMENTS SHALL BE IN ACCORDANCE WITH THE LATES EDITION OF THE "A.A.N. STANDARDS FOR NURSERY STOCK."
3. THE PLANT MATERIAL SHALL BE NURSERY GROWN AND INSPECTED BY THE OWNER'S REPRESENTATIVE BEFORE PLANTING. THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY PLANT MATERIAL AT ANY TIME.
4. PLANTS DESIGNATED "B & B" SHALL BE BAILED AND BURLAPPED WITH FIRM BALLS OF EARTH.
5. THE CONTRACTOR IS RESPONSIBLE FOR PLANTING THE MATERIALS AT THE CORRECT GRADES AND SPACING. THE PLANTS SHALL BE ORIENTED AS TO GIVE THE BEST APPEARANCE.
6. WHEN THE PLANT HAS BEEN PROPERLY SET, THE PIT SHALL BE BACKFILLED WITH A TOPSOIL MIXTURE, GRADUALLY FILLING, PATTING AND SETTLING WITH WATER.
7. ALL PLANT MATERIALS SHALL BE PRUNED AND INJURIES REPAIRED. THE AMOUNT OF PRUNING SHALL BE LIMITED TO THE REMOVAL OF DEAD OR INJURED TWIGS AND TO COMPENSATE FOR THE LOSS OF ROOTS FROM TRANSPLANTING. CUTS SHOULD BE FLUSH, LEAVING NO STUBS. CUTS OVER 3/4" SHALL BE PAINTED WITH TREE PAINT.
8. THE CONTRACTOR AGREES TO GUARANTEE ALL PLANT MATERIALS FOR THE PERIOD OF TWO YEARS. AT THAT TIME, THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT FOR A FINAL INSPECTION. PLANT MATERIAL WITH 25% DIE BACK, AS DETERMINED BY THE OWNER'S REPRESENTATIVE SHALL BE REPLACED. THIS GUARANTEE INCLUDES THE FURNISHING OF NEW PLANTS, LABOR AND MATERIALS. THESE NEW PLANTS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR.
9. TOPSOIL SHALL BE FRIABLE, FERTILE TOPSOIL OF CLAYLOAM CHARACTER CONTAINING AT LEAST 5% BUT NOT MORE THAN 20% BUY WEIGHT OF ORGANIC MATTER WITH A PH RANGE FROM 6.0 TO 7.0. SOIL SHALL BE FREE FROM CLAY LUMPS, COARSE SAND, PLANT ROOTS, STICKS AND OTHER FOREIGN MATERIALS.
10. TREES AND LANDSCAPING SHALL BE LOCATED A MINIMUM OF 5' BEHIND THE BACK OF CURB AND TO ALLOW ADEQUATE SIGHT DISTANCE FOR VEHICLES, SIGNS AND TRAFFIC CONTROL DEVICES. TREE LOCATIONS AND AND LANDSCAPING ARE SUBJECT TO A FIELD REVIEW AND APPROVAL BY THE W.C.R.C..

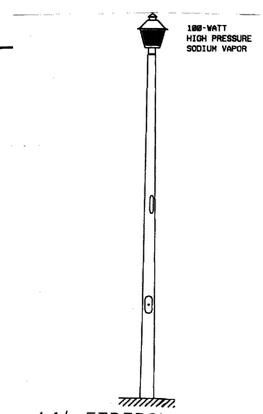
TRAFFIC SIGN SCHEDULE

SYMBOL	DESCRIPTION	QUANTITY
A	STOP (R1-1) 30" X 30"	3
D	STREET NAME ASSEMBLIES (D3-1) 6" X VARIABLE	6

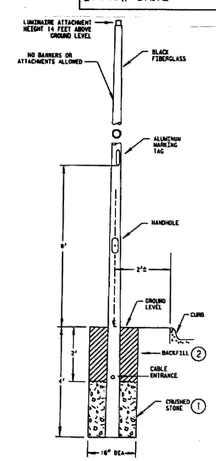
LEGEND
LINE OF SIGHT

SIGHT DISTANCES

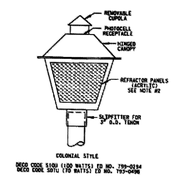
STREET	RIGHT	LEFT
INGLEWOOD DRIVE	260	260
FOOTHILL DRIVE	260	260
CONIFER DRIVE	260	260



14' FIBERGLASS POST



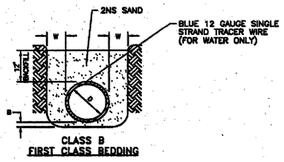
CODE 95 POST
(NEW INSTALLATIONS)



TYPICAL HORIZONTAL LUMINAIRE

LANDSCAPE & TRAFFIC SIGNAGE PLAN

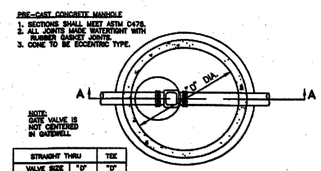
DATE: 10-17-01
REVISIONS: 06-03-02 PER PLAN REVIEW
06-26-02 PER PLAN REVIEW
07-17-02 PER PITTFIELD TOWNSHIP
07-24-02 PER PITTFIELD TOWNSHIP
08-06-02 PER PITTFIELD TOWNSHIP
02-07-03 PER PITTFIELD TOWNSHIP
03-03-03 PER PITTFIELD TOWNSHIP
03-06-03 PER PITTFIELD TOWNSHIP
03-06-03 PER PITTFIELD TOWNSHIP
03-06



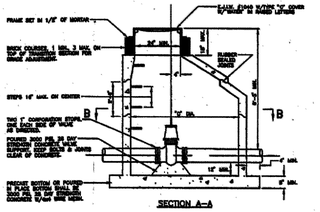
NOTES:
1. MINIMUM TRENCH WIDTH (SEE TABLE).
2. RECESS TRENCH TO RELIEVE THE BELL OFF ALL LOAD
3. GRANULAR BACKFILL TO DEPTH OF ONE FOOT ABOVE PIPE. TAMPED LAYERS NOT TO EXCEED 6" IN DEPTH
4. ALL PIPE TO BE PLACED AND JOINTED IN A DRY TRENCH AND LAID ACCURATELY TO LINE AND GRADE WITH BELLS UPHILL.
5. ALL CONCRETE ENCASEMENT AND CRADLING TO BE CLASS "A" CONCRETE.

PIPE	D	W	B
PVC	0"–12"	12" MIN. 18" MAX.	4"
A–C,V.C.P.	0"–12"	6" MIN. 12" MAX.	4"
DIP	0"–24"	6" MIN. 12" MAX.	4"
A–C,CONC.	0"–24"	6" MIN. 12" MAX.	4"
CONC. DIP	24" +	6" MIN. 12" MAX.	4"

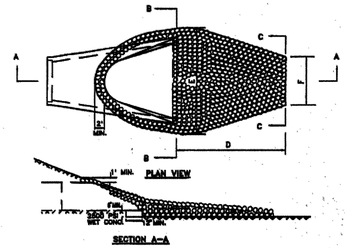
BEDDING
NO SCALE



STRAIGHT THRU	TEE	
VALVE SIZE	"D"	"O"
8"	5'–0"	6'–0"
12"	5'–0"	6'–0"
16"	5'–0"	6'–0"



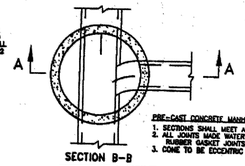
GATE VALVE IN WELL
NO SCALE

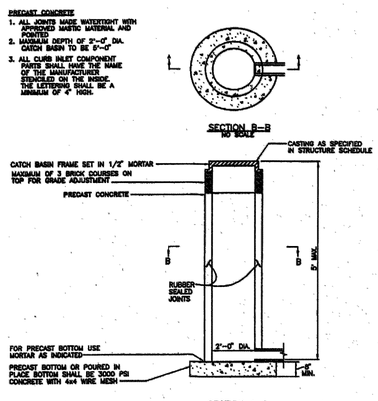


PIPE DIAM.	D	E	F	S.Y.
12"	5'–0"	6'–6"	3'–0"	4
15"	5'–0"	7'–0"	3'–0"	4
18"	5'–0"	7'–6"	3'–6"	4
21"	5'–6"	8'–0"	4'–0"	5
24"	6'–0"	8'–6"	4'–6"	6
27"	6'–6"	9'–0"	5'–0"	7
30"	7'–0"	9'–6"	5'–6"	8
36"	8'–0"	10'–6"	6'–0"	10
42"	9'–0"	11'–6"	6'–6"	12
48"	10'–0"	13'–0"	7'–0"	14

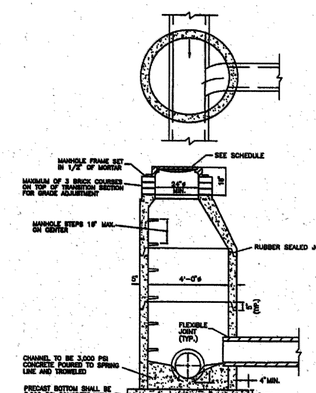
RIP-RAP BANK PROTECTION, WHERE CALLED FOR, SHALL BE GROUTED AND INSTALLED AS PROVIDED BY MDOT SPEC. 8.01.05. RIP-RAP MATERIAL SHALL MEET THE REQUIREMENTS OF MDOT SPEC. 9.19.02

GROUTED STONE RIP-RAP
NO SCALE

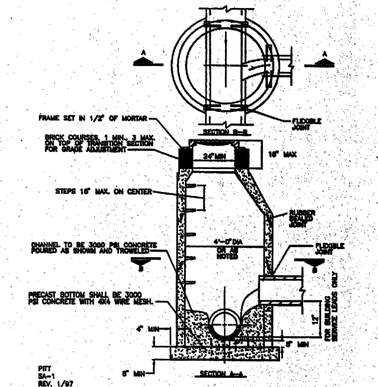




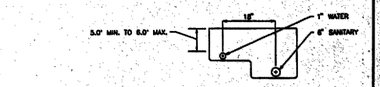
2' DIAMETER CATCH BASIN
NO SCALE



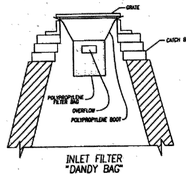
PRECAST CONCRETE SANITARY MANHOLE
NO SCALE



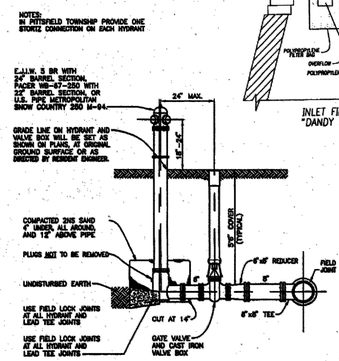
SANITARY MANHOLE W/LEAD
NO SCALE



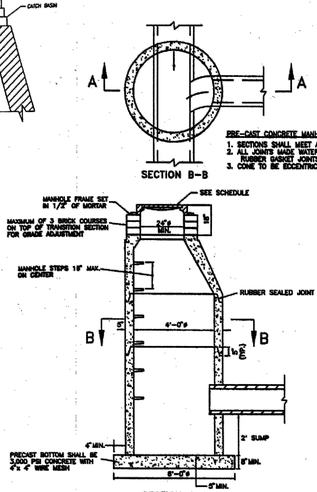
UTILITY LEAD TRENCH DETAIL
NO SCALE



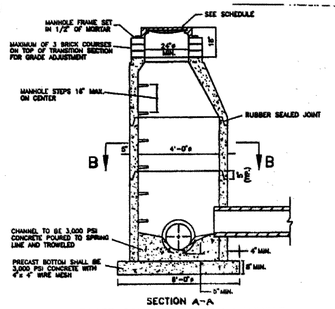
INLET FILTER
"DANDY BAG"



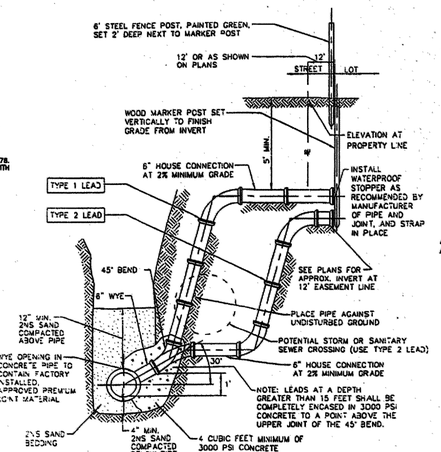
STANDARD FIRE HYDRANT
NO SCALE



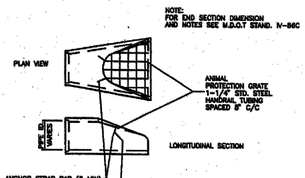
PRECAST CONCRETE STORM MANHOLE
NO SCALE



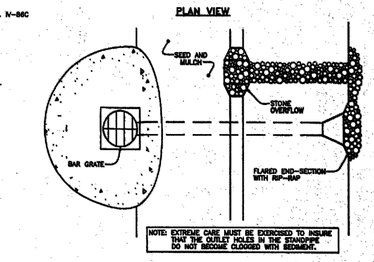
PRECAST CONCRETE STORM MANHOLE
NO SCALE

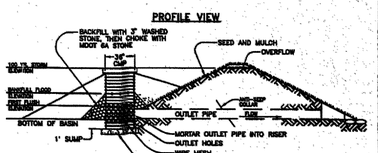


SANITARY SEWER SERVICE
& RISER CONNECTION DETAIL

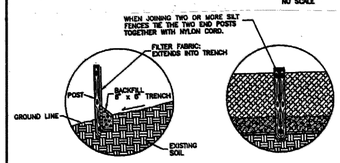


PRECAST CONCRETE END SECTION
WITH ANIMAL PROTECTION GRATE
NO SCALE



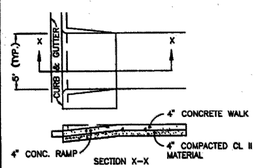


PERFORATED RISER
NO SCALE

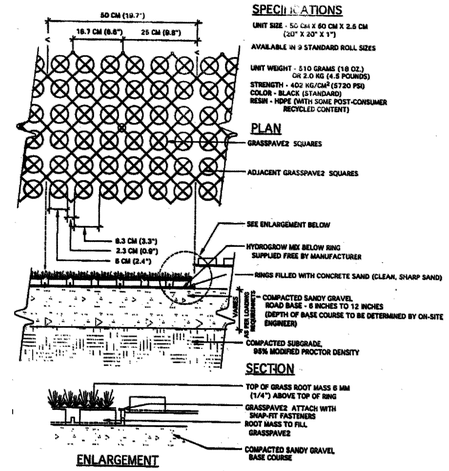


GEOTEXTILE SILT FENCE
NO SCALE

TYPICAL SIDEWALK DETAIL
NO SCALE



WHEEL CHAIR RAMP AND
TYPICAL SIDEWALK DETAIL
NO SCALE



SPECIFICATIONS
UNIT SIZE - 50 CM X 60 CM X 2.5 CM (20" X 20" X 1")
AVAILABLE IN 9 STANDARD ROLL SIZES
UNIT WEIGHT - 510 GRAMS (18 OZ.) OR 2.0 KG (4.5 POUNDS)
STRENGTH - 402 KG/CM² (5720 PSI)
COLOR - BLACK (STANDARD)
RESIN - HDPE (WITH SOME POST-CONSUMER RECYCLED CONTENT)

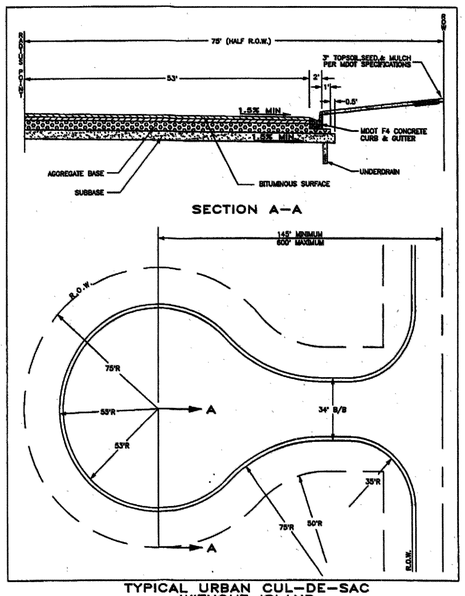
NOTE: GRASS/PLANT TYPES SHALL BE SPECIFIED BY A LANDSCAPE ARCHITECT OR LANDSCAPE DESIGNER.

TYPICAL GRASSPAVE2 DETAIL
1 / 1 OF 1

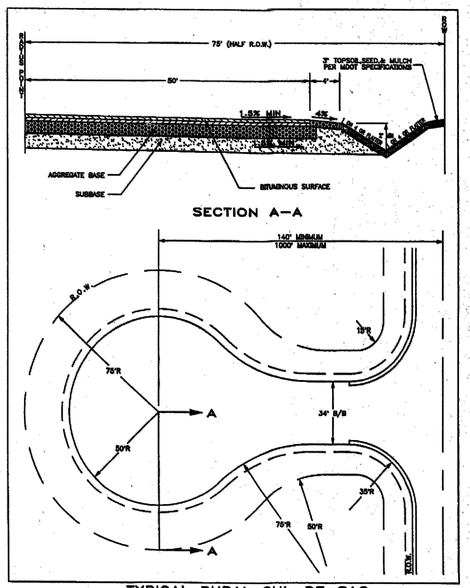
NOT TO SCALE
CHOOSE THIS PRODUCT FOR REINFORCING GRASS BEARING SURFACES

Invisible Structures, Inc.
GPDET.DWG

1697 COLE BLVD., SUITE 310
GOLDEN, COLORADO 80401
303-231-1310 FX 303-232-6561
800-233-0240
www.invisiblestructures.com
FX 89-92



TYPICAL URBAN CUL-DE-SAC
WITHOUT ISLAND



TYPICAL RURAL CUL-DE-SAC
WITHOUT ISLAND

3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
(TOLL FREE) for the location of underground utilities

NOTES:

1. ALL UTILITIES WITHIN ROAD RIGHT-OF-WAY CORRIDOR (EXISTING OR PROPOSED, FROM FRONT-OF-HOUSE TO FRONT-OF-HOUSE) SHALL BE BACKFILLED WITH MDOT CL II GRANULAR MATERIAL COMPACTED TO 95% MAXIMUM UNIT WEIGHT.
2. ALL UTILITIES SHALL BE INSTALLED WITH 2 NS SAND BEDDING OR BETTER.

DETAILS

ROLLING MEADOW ESTATES SUB'N NO.3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E.,
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. - Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

JOB NO. 98025
SCALE
SHEET 17

DATE: 07/02/01
REVISIONS: 08/05/02 PER PITTSFIELD REVIEW LETTER OF 8/30/02.
11/05/02 PER PITTSFIELD LTR OF 10/03/02.
12/11/02 PER HEK HEISLER MEMOS OF 12/6/02.
03/07/03 PER HEK HEISLER MEMOS OF 01/31/03
04/09/03 PER HEK HEISLER MEMOS OF 03/31/03
DRAWN: G.C.E.S.
CHKD. BY:
SEC.
T.
R.
FB NO.
PROJ. MGR.

Y: \98025\DET1 Thu Sep 5 10:53:01 2002

SECTION 2.10 SANITARY SEWERS AND MANHOLES [2.10]Page 1

1.00 GENERAL

1.01 Description

A. The CONTRACTOR shall furnish all labor, tools, equipment and materials to construct all sanitary sewers, manholes and necessary appurtenant work as herein specified. No sewers shall be accepted until the sewer system has passed the system acceptance tests.

1.02 Testing

A. General

1. The CONTRACTOR shall furnish all equipment and personnel to conduct system acceptance tests as specified herein on all completed sewers. All tests shall be conducted under the supervision of the ENGINEER. No acceptance tests shall be conducted until the entire sewer system is constructed and has been installed for not less than 30 days.

2. The CONTRACTOR may desire to make an air test prior to backfill for his own purposes but the line acceptance tests shall be conducted after backfilling or extensions.

3. All sewer lines shall be televised while running enough water through the line to be visible at the next downstream manhole.

4. All sewer lines shall be checked for alignment.

5. All manholes shall be tested for leakage. All PVC lines shall be tested for deflection.

6. Sewer pipe 30 inches and smaller shall be air tested. Sewer pipe larger than 30 inches shall be tested by either infiltration or exfiltration and shall be tested in lengths of 1600 feet or less.

6. Should the results of any test fail to meet the criteria established in this Specification, the CONTRACTOR shall, at his own expense, locate and repair rejected section and retest until it is within specified allowance.

B. Test for Leakage – Air Test

1. After a manhole-to-manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs inflated to 35 psig internal pressure. The design of the pneumatic plugs shall be such that they will hold against the line test pressure without requiring external blocking or bracing.

2. There shall be three (3) hose connections to the pneumatic plug. One hose shall be used only for inflation of the pneumatic plug. The second hose shall be used for continuously reading the air pressure rise in the sealed line. The third hose shall be used only for introducing low pressure air into the sealed line.

3. There shall be a 0–30 psig gauge for reading the internal pressure of the line being tested. Calibrations from the 1–10 psig range shall be in tenths of lbs (not ounces) and this 0–10 portion shall cover 90% of the complete dial range.

4. Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4.0 psig greater than the average back pressure of any ground water pressure that may be over the pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period, the third hose shall be disconnected.

5. The portion of line being tested shall be accepted if the portion under test meets the following conditions.

a. DI, and RCP Pipes

(1) The time requirement for the pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time given in the following table:

Pipe	Min. Holding Time Pipe Seconds/100 ft.
4-inch	18
6-inch	42
8-inch	72
10-inch	90
12-inch	108
15-inch	126
18-inch	144
21-inch	180
24-inch	216
27-inch	252
30-inch	288

(2) In areas where ground water is known to exist, the CONTRACTOR shall install a 1/2-inch diameter capped pipe nipple, approximately 10 inches long, through the manhole wall on top of one of the sewer lines entering the manhole. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the line acceptance test, the ground water level shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the pipe nipple. The hose shall be held vertically and a measurement of the height in feet of water shall be taken after the water stops rising in this plastic tube. The height in feet shall be divided by 2.3 to establish the lbs of pressure that will be added to all readings. For example, if the height of water is 11-1/2 ft, then the added pressure will be 5 psig. This makes the 3.5 psig to be 8.5 psig, and the 2.5 psig to be 7.5 psig. The 1 lb allowable drop and the timing remains the same.

b. PVC Pipe

(1) The time requirement for the pressure to decrease from 3.5 to 3.0 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than that shown in the following table:

50900-01 12/21/99

Sanitary Sewers and Manholes 2.10 Page 2

Pipe Size (inches)	Holding Time (seconds)	Minimum Holding Time (seconds)
4-inch	0.190xL	113
6-inch	0.427xL	170
8-inch	0.760xL	227
10-inch	1.187xL	283
12-inch	1.709xL	340
15-inch	2.671xL	425
18-inch	3.846xL	512

(2) If any section of the sewer fails to meet this requirement, the CONTRACTOR shall perform a television inspection of the faulty section and repair or replace at his own expense all defective materials and/or workmanship to the satisfaction of the ENGINEER. The test procedure shall be repeated until the results are acceptable.

C. Test for Infiltration

1. Sewer pipe over 18 inches shall be tested to measure the infiltration of ground water. If the measured leakage exceeds 200 gallons per inch diameter per mile of pipe per 24 hr period, the CONTRACTOR shall locate the points of excessive leakage and make the necessary repairs at his own expense.

2. In the event the line does not pass the infiltration test as stated above, the test shall be repeated after suitable repairs have been completed.

D. Test for Exfiltration

1. Where the ground water provides less than a 2 ft head on the sewer, an exfiltration test shall be conducted by filling the sewer with water to a 4 ft head or 4 ft above the ground water level, whichever is greater. The allowable water loss shall be 200 gal/in./mi/day as calculated above for infiltration.

2. After the sewer has been filled with water, 4 hrs time shall be allowed for water absorption by the pipe before exfiltration tests are initiated.

3. For the purpose of establishing the 4 ft test head, the head shall be measured from the center of the sewer pipe at the midpoint of the test section length. This procedure shall be used for both infiltration and exfiltration tests.

E. Test for Manhole Leakage

1. All manholes shall be tested for leakage by using plugs on inleting-outleting sewers, and filling the manholes with water to the top of the manhole. Four hours shall be allowed for water absorption by the manhole before testing is initiated. Allowable exfiltration for 48-inch diameter manholes shall be 2 gallons per foot of depth per day.

F. Test for Alignment

1. All sewers shall be laid accurately to the line and grade designed by the ENGINEER. The sewers will be tested for alignment by shining a light through the pipe at a manhole and viewing the light from an adjacent manhole. Any section of sewer in which a light cannot be seen from one manhole to the next shall be corrected to the satisfaction of the ENGINEER to pass this test.

G. Test for Deflection of PVC Pipe

1. PVC pipe sewers shall be installed in such a manner that the initial deflection of the conduit shall conform to the latest revision of ASTM D-3034.

2. Deflection of PVC pipe shall be tested by pulling a rigid pig or equivalent through the pipe. The pig shall be constructed in accordance with the following table of maximum outside diameters and shall be submitted to the ENGINEER for review before testing is initiated.

Pipe I.D.	Pig O.D.
6 inches	5.33 inches
8 inches	7.11 inches
10 inches	8.87 inches
12 inches	10.55 inches
15 inches	12.90 inches
18 inches	15.74 inches

3. The pig shall be drawn by hand through the pipe from manhole to manhole. Any portion of pipe through which the pig passes freely shall be deemed to have passed the deflection test. Sections of pipe through which the pig does not pass shall be located, uncovered and the pipe zone bedding improved and backfilled by the CONTRACTOR at his own expense. The pipe shall then be retested before acceptance is granted.

H. Material Tests

1. The CONTRACTOR shall have tests of pipe and strength made by an independent testing laboratory. Tests of up to 4 lengths of sewer pipe per hundred lengths may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturer's certificate of compliance to the Specifications.

I. Submittals

1. The CONTRACTOR shall submit shop drawings or data sheets for all pipe, manholes, manhole castings, pipe to manhole connections, and valves. The Contractor shall submit certification letter for all pipe proposed on the project. The letters shall contain the following: Contractor name, project name, township name, current date, certification of pipe provided and letterhead of the certifying company.

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Sanitary Sewers and Manholes 2.10 Page 3

2.00 PRODUCTS

2.01 Sewer Pipe

A. Pipe for sewer 24-inch diameter and smaller shall be polyvinyl chloride (PVC). Pipe for 30-inch diameter and larger shall be reinforced concrete. Ductile iron pipe shall be used as specified.

B. Pipe for service leads 4 though 8 inches in diameter shall be polyvinyl chloride (PVC).

C. Reinforced concrete pipe shall be no less than the latest revision of ASTM C76, with the class designation as shown on the Plans or in the Proposal.

D. PVC pipe 4 inches through 15 inches in diameter shall meet or exceed all of the requirements of the current ASTM D-3034 SDR-26 polyvinyl chloride sewer pipe and fittings. 18-inch diameter PVC pipe shall meet or exceed all the requirements of the current ASTM F-679 SDR 26 polyvinyl chloride sewer pipe and fittings. Samples of pipe and physical and chemical data sheets shall be submitted to the ENGINEER for review. Approval shall be obtained before pipe is purchased.

F. Ductile iron pipe shall meet or exceed all the requirements of ANSI A21.50 with a cement lining.

2.02 Sewer Pipe Fittings

A. Fittings shall be of the same material as the pipe, and in no case shall the walls be thinner than that of the pipe furnished.

B. Wye and tee fittings for PVC pipe shall be reviewed by the ENGINEER before purchasing.

C. The dry fit of all fittings must be snug. If the fit is such that it is loose, the pipe or fitting will be rejected as faulty and of improper size.

2.03 Sewer Pipe Joints

A. Concrete pipe joints shall be made of a resilient material conforming to the latest revision of ASTM Designation C443. Proper lubricant shall be furnished by the joint manufacturer.

B. Concrete pipe for use with rubber joints shall be smooth and precisely formed to provide a uniform annular space for joint materials.

C. PVC pipe shall be jointed with ring gusseted bell ends. Jointing materials shall be applied to the bell end of the pipe at the point of manufacture in such a manner that a tight uniform joint will be achieved and such that when the joint is made up in the field, the joint material will not roll or tear from the pipe. A proper joint lubricant shall be furnished by the pipe manufacturer.

2.04 Reinforced Concrete Manholes

A. Manholes and grade rings shall conform to the current ASTM specifications for precast reinforced concrete manhole sections, serial designation C478. Manhole section joints shall conform to ASTM C990-96. Cone sections shall be straight side type, with an offset step configuration. Adjustment rings or riser rings shall not be used for adjusting the height of the structure.

B. All manhole component parts shall have the name of the manufacturer stenciled on the inside. The lettering or logo shall be a minimum of 4-inches high.

2.05 Mortar for Manholes

A. Mortar for plastering manholes shall be made of one part Portland cement and two parts fine aggregate.

2.06 Manhole Frames and Covers

A. Manhole frames and covers shall weigh not less than 350 lbs. Each frame and cover shall have machined bearing surfaces and shall be suitably notched for convenient removal of the cover. Each cover shall be marked "Sanitary Sewer" with letters integrally cast into the cover.

B. Covers shall be of the "self-sealing" design having a continuous gasket glued in a machined groove and a concealed pickhole. Frames and covers shall be East Jordan 1040, with Type C cover.

C. All manhole frames and covers shall be coated by the manufacturer with coal tar pitch varnish or other asphaltum coating reviewed by the ENGINEER.

2.07 Manhole Steps

A. Steps shall be plastic coated steel. They shall be M.A. Industries PS1-PF or PS1-B, or approved equal.

2.08 Manhole Connections

A. Sewer pipe (6-inch to 24-inch) to manhole connections shall be through: 1) a flexible rubber boot which shall be securely clamped into a core-drilled pipe port. Pipe ports shall be core-drilled at the point of manhole manufacturer and shall be accurately located within 1/2-inch of proposed sewer centerline (Kor-N-Seal); or, 2) a self-adjusting mechanical pipe to manhole seal which provides a resilient flexible and infiltration-proof joint (Res-seal); or, 3) a flexible rubber wedge firmly rammed into a rubber gasket which is cast into the manhole (Press Wedge II), or equal.

B. Neoprene rubber for the manhole boot shall meet ASTM Specification C443 and shall have a minimum thickness of 3/8-inch. Pipe clamp bands shall be of corrosion-resistant steel.

C. Sewer pipe over 24 inches to manhole connections shall be in accordance with details shown on the Plan.

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Sanitary Sewers and Manholes [2.10]Page 4

3.00 EXECUTION

3.01 Excavation and Backfill

A. All excavation and backfill above a line 12 inches above the crown of the pipe shall conform to Section 2.04, Earthwork, of these Specifications.

3.02 Bedding

A. Ductile Iron, and concrete pipes shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 3 inches for 24-inch and smaller pipe and not less than 4 inches for pipe larger than 24-inch conforming to Class B bedding as shown on the Plans. Where shown on the Plans or required by the ENGINEER, concrete encasement or concrete cradle shall be used.

B. PVC pipe shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 4 inches conforming to Class B bedding as shown on the Plans. Where shown on the Plans, or where the pipe passes under a road with less than 4 ft of cover, the pipes shall be encased.

C. For all pipes, compacted granular material shall be placed at the sides of the pipe and cover not less than 12 inches above the crown of the pipe.

D. "Granular Material" shall be class 2NS sand, pea gravel or crushed stone conforming to ASTM C33 Size No. 67 placed in not more than 6-inch layers and compacted to not less than 95% standard density for PVC and 90% standard density for reinforced concrete.

E. Pea gravel or crushed stone used for bedding shall be separated from the sand backfill with a non-woven geotextile fabric. The fabric shall be Amoco 4551, or approved equal.

3.03 Pipe Installation

A. Installation of PVC pipe shall be in conformance with ASTM D2321-89.

B. All pipe shall be laid true to the required lines and grades. All trenches when pipe laying is in progress shall be kept dry; and all pipes and fittings shall be uniformly supported on a properly trimmed bedding with holes at each joint to receive bells. All pipe shall be laid with bells uphill.

C. All joints shall be made up in accordance with the manufacturer's instructions using materials and equipment especially prepared for the type of joint to be used.

D. The grade as shown on the profiles is that of the pipe invert and that to which the work must conform. The grade shall be kept by levels, laser or other tools which shall be furnished by the CONTRACTOR at his expense. Each pipe shall be laid accurately to the line and grade as shown on the Plans and in such manner as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the invert. The interior of sewers shall, as the work progresses, be cleaned of all dirt, cement, debris and other superfluous materials of every description. Bulkheads shall be used to keep foreign materials out of the open end of the sewer when work is not in progress.

E. The location of the piping as shown on the Plans has been determined to avoid, insofar as possible, interference with trees or structures or fixtures above ground and other underground mains, services, utilities, or structures. Any change in location or alignment of piping which may be found more feasible or practicable as the work progresses shall be made by the CONTRACTOR, as the ENGINEER may direct.

F. All pipe and fittings shall be carefully lowered and moved into position in trench or vault in a controlled manner such as will prevent damage to the pipe and any coatings or lining. An excessive amount of scratching on the surface of the PVC pipe will be considered cause for rejection.

G. All cutting of the pipe shall be done in a neat workmanlike manner with the least amount of waste and without damage to existing or new lines. A fine tooth saw, tubing cutter or similar tool may be used to cut PVC pipe. Cuts must be square. Ragged edges shall be removed with a cutting tool or file.

H. After cutting bell and spigot or socket pipe, a stop mark shall be made with a pencil or crayon using dimensions as shown by the manufacturer's instructions or by using another pipe in the field as a guide.

I. Breaks in pipe or joints shall be repaired to the satisfaction of the ENGINEER and at the expense of the CONTRACTOR.

3.04 Connections to Existing Manholes and Other Rigid Structures

A. When a sewer is connected to an existing manhole, a hole adequate to receive the new pipe shall be cut into the manhole.

B. If the existing manhole is of brick construction, a single rowlock of brick shall be turned over the new pipe and the existing manhole brick work shall be cleaned, pointed and given a 1/2-inch mortar coat on the outside surface.

C. For connections to existing precast reinforced concrete manholes, a hole shall be cored into the concrete manhole wall to receive the pipe. A Kor-N-Seal boot or engineer approved equal shall be clamped into the cored hole and used to make the connection.

D. For connections to existing fiberglass manholes, a hole shall be cored into the manhole wall to receive the pipe. A Kor-N-Seal boot or engineer approved equal shall be installed using fiberglass reinforced pipe stubout for Kor-N-Seal boot sealing surface.

3.05 Stream and River Crossing

A. Whenever a pipe is required to cross a stream or river, all work shall be in accordance with the provisions of Act 346, the Inland Lakes and Streams Act of 1962, and the rules and regulations promulgated thereunder. Stream crossings and all restoration required shall be completed within five days of the construction.

B. The CONTRACTOR shall utilize such construction methods as are feasible and practicable to divert or stop stream flow to lay the pipe in the dry. Pipe shall be ductile iron, mechanical joint, or compression gasket joint pipe with joints at transition to other types of sewer pipe encased with no less than 1 cu yd of concrete, placed at a minimum of 6 inches thickness around the pipe. After the sewer is properly laid, jointed and encased, the stream-channel shall be cleaned of dirt and debris resulting from the CONTRACTOR's operations.

C. After the crossing is made, heavy riprap and sodding shall be placed to protect the banks from corrosion as shown on the Plans.

END OF SECTION

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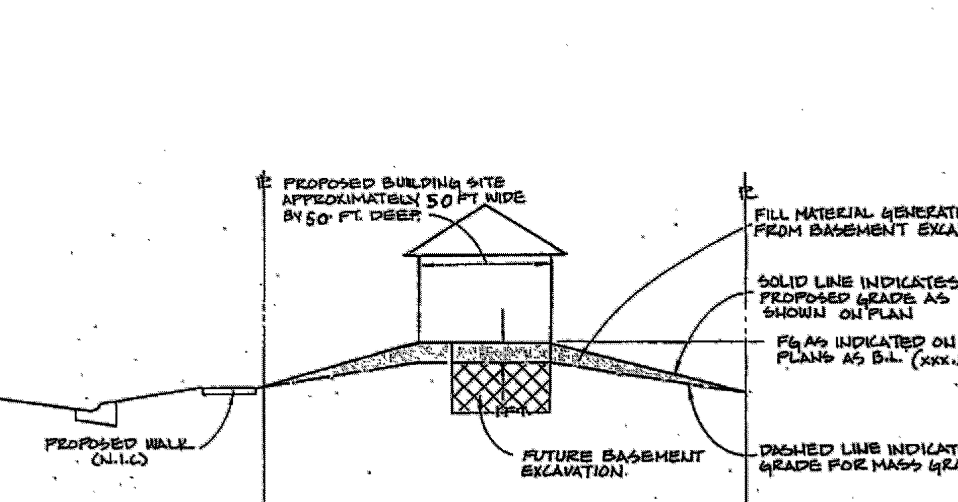
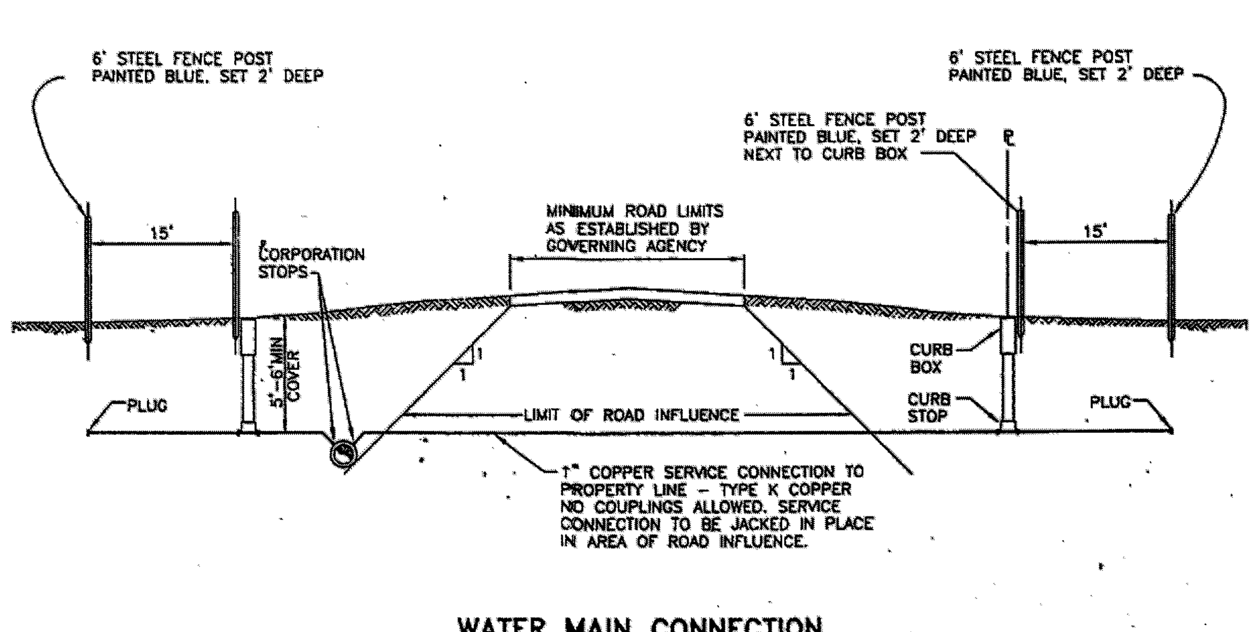


TYPICAL LOT PROFILE
(NOT TO SCALE)



WATER MAIN CONNECTION
NO SCALE

SECTION 2.11 STORM SEWER AND DRAINAGE STRUCTURES [2.11]Page 1

1.00 GENERAL

1.01 Description

A. Furnish all labor, tools, equipment and materials to construct all storm sewers, and drainage structures as herein specified. No sewers shall be accepted until the sewer system has passed the system acceptance tests.

1.02 Testing

A. General

1. The CONTRACTOR shall furnish all equipment and personnel to conduct system acceptance tests as specified herein on all completed sewers. All tests shall be conducted under the supervision of the ENGINEER. No acceptance tests shall be conducted until the entire sewer system is constructed or just prior to placing the line in service providing the sewer pipe has been installed for not less than 30 days.

B. Test for Alignment

1. All sewers shall be laid accurately to the line and grade designed by the ENGINEER. The sewers will be tested for alignment by shining a light through the pipe at a manhole and viewing the light from an adjacent manhole. Any section of sewer in which a light cannot be seen from one manhole to the next shall be corrected to the satisfaction of the ENGINEER to pass this test.

C. Material Tests

1. The CONTRACTOR shall have tests of pipe strength made by an independent testing laboratory. Tests of up to 4 lengths of sewer pipe per hundred lengths may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturer's certificate of compliance to the Specifications

D. Submittals

1. The CONTRACTOR shall submit shop drawings, or data sheets for all castings, steps and manholes.

2. The CONTRACTOR shall submit certification letters for all pipes. All letters must contain the following: Contractors's name, project name, township name, current date, certification of pipe provided and letterhead of the certifying company.

2.00 PRODUCTS

2.01 Pipe

A. Reinforced concrete pipe and manhole tees shall be no less than the latest revision of ASTM C76, with the class designation as shown on the Plans or in the Proposal.

B. Concrete pipe shall have tongue and groove gasketed premium joints.

C. Corrugated steel pipe shall meet the requirements of AASHO M-190 for coated pipe latest revision Minimum gage thickness shall be as shown on the Plans.

2.02 Reinforced Concrete Manholes

A. Manholes shall conform to the current ASTM Specifications for precast reinforced concrete Manhole Sections, serial designation C478. Manhole section joints shall conform to ASTM Designation C990. All cones shall be eccentric with an offset step configuration. Adjustment rings or riser rings shall not be used for adjusting the height of the structure.

B. All manhole component parts shall have the name of the manufacturer stenciled on the inside. The lettering or logo shall be a minimum of 4 inches high.

2.03 Mortar for Manholes

A. Mortar for plastering manholes and drainage structures shall be made of one part Portland cement and two parts fine aggregate.

2.04 Brick and Block

A. Brick for brick and mortar structures shall conform to the current ASTM Specification C32. Block for block and mortar structures shall conform to the current ASTM Specification C135.

B. The concrete block masonry used to construct manhole and catch basin walls shall be solid curved blocks with the inside and outside surfaces curved to the required radii. The blocks shall have tongue and groove or other approved type of joint at the ends so that the units interlock to form a strong, rigid structure. Curved blocks shall have the inside and outside surfaces parallel.

C. The block shall not exceed 18 inches in length or 8 inches in depth (height). No block shall be less than 6 inches in width (thickness). All blocks in one structure shall be of the same height dimension. The blocks shall be designed for length so that only full-length or half-length blocks are required to lay the circular wall of any one course.

D. Blocks intended for use in the cones or tops of manholes and catch basins shall have such shape as may be required to form the structure as shown on the Plans with inside and outside joint not to exceed 1/4-inch in thickness.

2.05 Structure Frames and Covers

A. Structures frames and covers shall weigh not less than 350 lbs. Each frame and cover shall have machined bearing surfaces and shall be suitably notched for convenient removal of the cover. Each solid manhole cover shall be marked "Storm Sewer" with letters integrally cast into the cover.

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Storm Sewers and Drainage Structures 2.11 Page 2

B. Covers shall be as follows:

1. For use on manholes: East Jordan 1040, with Type B cover, or equal.

2. For use on drainage structures in paved areas: East Jordan 1040, with Type M1 cover, or equal.

3. For use on drainage structures in curbed areas: East Jordan 7045 or 7065, or equal.

4. For use on drainage structures in landscaped areas: East Jordan 1040, with Type 02 Beehive grate, or equal.

C. All frames and covers shall be coated by the manufacturer with coal tar pitch varnish or other asphaltum coating reviewed by the ENGINEER.

2.06 Manhole Steps

A. Steps shall be plastic coated steel. They shall be M.A. Industries PS1-PF for precast manholes, PS1-B for block manholes, or equal.

2.07 Drainage Structures

A. All manholes and catch basins shall be precast unless otherwise specified.

B. Manhole and catch basin bottoms shall be concrete and top of slab shall have a troweled finish.

C. Upon approval by the ENGINEER, the manhole and catch basin walls may be constructed of concrete block masonry or concrete manhole pipe conforming to the requirements of the specifications previously listed. Construction shall be in accordance with the details for "Catch Basin" and "Storm Sewer Manhole" shown on the Plans.

D. A plaster coat of mortar 1/2-inch in thickness shall be applied to the inside and outside surface of all manholes and catch basins constructed with concrete block masonry or sewer brick. The inside coat of mortar shall be applied in a smooth, neat workmanlike manner.

E. Final adjustment of the top of manholes and catch basins, so that the manhole or catch basin cover is at finished elevations as shown on the Plans or meets the finished surface, may be accomplished with sewer brick conforming to the previously listed Specifications. The total height of brick for this purpose shall not exceed 9 inches. The total chimney height shall not exceed 18 inches.

F. All block and brick masonry units shall be laid in a full bed of mortar. The inside joints of the block masonry construction shall be tooled in a neat and workmanlike manner.

3.00 EXECUTION

3.01 Excavation and Backfill

A. All excavation and backfill 12 inches above the crown of pipe shall conform to Section 2.04, Earthwork of these specifications.

3.02 Bedding

A. Concrete pipe shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 4 inches. Where indicated on the Plans or required by the ENGINEER, concrete encasement or cradle shall be used.

B. For all pipes, compacted aggregate material shall be placed at the sides of the pipe and cover not less than 12 inches above the crown of the pipe.

C. "Granular Material" shall be MDOT class II, placed in not more than 6-inch layers and compacted to not less than 90% standard density.

3.03 Pipe Installation

A. All pipe shall be laid true to the required lines and grades. All trenches when pipe laying is in progress, shall be kept dry, and all pipes and fittings shall be uniformly supported on a properly trimmed bedding with holes at each joint to receive bells. All pipe shall be laid with bells uphill.

B. The grade as shown on the profiles is that of the pipe invert and that to which the work must conform. The grade shall be kept by laser or other tools which shall be furnished by the CONTRACTOR at his expense. Each pipe shall be laid accurately to the line and grade as shown on the Plans and in such manner as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the invert. The interior of sewers shall, as the work progresses, be cleaned of all dirt, cement, debris and other superfluous materials of every description Bulkheads shall be used to keep foreign materials out of the open end of the sewer when work is not in progress.

C. The location of the piping as shown on the Plans has been determined to avoid, insofar as possible, interference with trees or structures or fixtures above ground and other underground mains, services, utilities or structures. Any change in location or alignment of piping, which may be found more feasible or practicable as the work progresses, shall be made by the CONTRACTOR, as the ENGINEER may direct.

D. All pipe shall be carefully lowered and moved into position in trench or vault in a controlled manner such as will prevent damage to the pipe and any coatings or lining. An excessive amount of scratching on the surface of the concrete pipe will be considered cause for rejection.

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Storm Sewers and Drainage Structures 2.11 Page 3

E. All cutting of the pipe shall be done in a neat workmanlike manner with the least amount of waste and without damage to existing or new lines. A fine toothsaw, tubing cutter or similar tool may be used to cut concrete pipe. Cuts must be square. Ragged edges shall be removed with a cutting tool or file.

F. Breaks in pipe or joints shall be repaired to the satisfaction of the ENGINEER and at the expense of the CONTRACTOR.

3.04 Connections to Existing Manholes

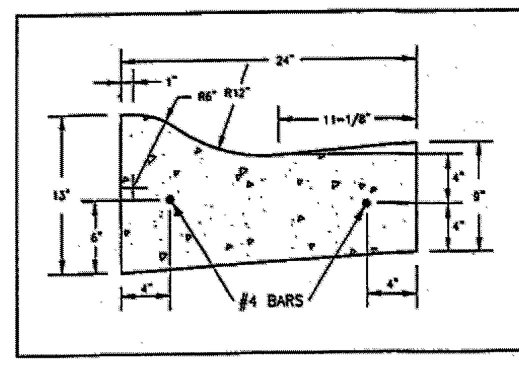
A. When a sewer is connected to an existing manhole, a hole adequate to receive the new pipe shall be cored into the manhole.

B. If the existing manhole is of brick construction, a single rowlock of brick shall be turned over the new pipe and the existing manhole brick work shall be cleaned, pointed and given a 1/2-inch mortar coat on the outside surface.

C. For connections to existing precast reinforced concrete manholes, a hole shall be cored into the concrete manhole wall to receive the pipe. Reinforcing steel shall not be cut out shall be bent and replaced in the area that is to be patched. A form shall be constructed over the area of pipe penetration. The formed area shall then be filled with concrete.

D. Closure of the manhole wall shall be made watertight using concrete.

END OF SECTION



MDOT D2 (MODIFIED)
MOUNTABLE
CONCRETE CURB &
GUTTER .
REQUIRES E.J.I.W.
7065 OR NEENAH
R-3034-B CASTING

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SECTION 2.09 WATER MAIN [2.09]Page 1

1.00 GENERAL

1.01 Description

A. The CONTRACTOR shall furnish all labor, materials, and equipment required to construct water main, and all necessary appurtenant work as herein specified. The water main shall be installed in the locations as shown on the Plans and shall meet the line acceptance tests.

1.02 Testing

A. General

1. Furnish all equipment and personnel to conduct system acceptance tests as specified herein. All tests shall be conducted under the supervision of the ENGINEER. No acceptance tests shall be conducted until the entire system is constructed or just prior to placing the system in service, providing the water main has been installed and backfilled for not less than 30 days.

2. All water mains, branches, and valves shall be tested for pressure, leakage and disinfection.

3. Should the results of any test fail to meet the criteria established in this Specification, the CONTRACTOR shall at his own expense, locate and repair rejected section and retest until it is within specified allowance.

4. Provide all labor, supervision, pumps, measuring devices, power and other materials and equipment necessary for conducting acceptance tests on all piping.

B. Preparation

1. After the pipe has been laid and backfilled as specified, the CONTRACTOR shall fill the line, or a valve section thereof, to be tested with water in such a manner as to expel all air from the pipe. This may be done through fire hydrants at the high points; or, if no hydrant is available at such point, the CONTRACTOR shall make the taps necessary to accomplish the expulsion of all air. At the close of the test, all taps shall be satisfactorily plugged with brass plugs.

2. Only Pittsfield Township personnel or the CONTRACTOR under direct supervision of Pittsfield Township personnel may fill or flush lines.

C. Sequence

1. All water mains connected to an existing water system shall be flushed, chlorinated and bac-teriologically tested prior to pressure testing. The sequence for acceptance testing shall be:

a. Flushing
b. Chlorination
c. Flushing
d. Bacteriological Testing
e. Pressure Testing

2. Where mains can be totally isolated from the existing water system with airgaps, pressure testing shall precede chlorination and bacteriological testing. The sequence for acceptance testing shall be:

a. Pressure Testing
b. Connect to System
c. Flushing
d. Chlorination
e. Flushing
f. Bacteriological Testing

D. Flushing

1. Mains shall be flushed with clean potable water until the water runs clear. When flushing mains prior to chlorination, all hydrant heads, operating stems and hydrant valve mechanisms shall be removed.

E. Chlorination

1. All new mains and pipe or any existing mains contaminated by the CONTRACTOR shall be chlorinated to a minimum residual chlorine concentration of fifty (50) parts per million with commercial liquid chlorine solution or approved equal. The chlorinated water shall be allowed to stand in the mains for 24 hours. The end of the 24-hour period the chlorinated water at all parts of the mains shall show a free available chlorine residual of not less than twenty-five (25) parts per million. If less than twenty-five (25) parts per million residual is shown at the end of the first 24 hours period, additional chlorine shall be added until a residual of not less than twenty-five (25) parts per million at all parts of the system is shown after a subsequent 24 hour period. The chlorinated water shall then be removed from the mains and the mains flushed with potable water for bacteriological testing.

F. Bacteriological Testing

1. The OWNER will take bacteriological samples of the water in the mains for analysis at two different times. The first samples will be taken 24 hours after the mains have been satisfactorily chlorinated, flushed and filled with potable water. The second sample will be taken 24 hours later. Each sample will be incubated for 48 hours.

2. The CONTRACTOR shall provide a sufficient number of corporation cocks and copper tubing for taking samples. Samples shall not be collected from hoses or fire hydrants.

3. Bacteriological testing will begin on Mondays to afford Pittsfield Township personnel and the testing laboratory a full work week to conduct the testing.

G. Pressure Testing

1. All pipe laid under this Contract shall be subjected to a hydrostatic pressure of 150 psi based on the elevation of the lowest point in the system. The main shall be maintained under the test pressure for a minimum continuous period of two (2) hours by pumping potable water into the line at frequent intervals. The

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Water Main 2.09 Page 2

volume of water so added shall be measured and considered to represent the leakage from the main. No pipeline installed will be accepted until the leakage measured over a 1 hour period is less than 0.092 gallon per inch diameter of the pipe per 1000 feet. All visible leaks must be corrected. The maximum length of water main to be tested at one time shall be 2000 feet.

2. In the event that the leakage exceeds the specified amount, the main shall be carefully inspected for leaks and repaired as necessary. Any cracked or defective pipe, fittings, valves or hydrants discovered shall be removed and replaced with sound material at the CONTRACTOR's expense and the test repeated to the satisfaction of the ENGINEER and OWNER.

3. If the CONTRACTOR chooses to pressure test against an existing valve he assumes the responsibility of meeting the leakage requirements. The CONTRACTOR may at his discretion provide a physical break and cutting in sleeve for pressure testing.

H. Material Tests

1. The CONTRACTOR shall have test of pipe and strength made by an independent testing laboratory. Tests of up to 4 lengths of sewer pipe per hundred lengths may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturer's certificate of compliance to the specifications.

I. Submittals

1. The CONTRACTOR shall submit shop drawings or data sheets for all pipe, manholes, manhole castings, pipe to manhole connections and valves. The Contractor shall submit certification letter for all pipe proposed on the project. The letters shall contain the following: Contractor name, project name, township name, current date, certification of pipe provided and letterhead of the certifying company.

2.00 PRODUCTS

2.01 Pipe and Fittings

A. Ductile iron pipe water main shall meet all the requirements of the latest revision of the American National Standards Institute Specifications, A21.51 and the American Water Works Association (AWWA) Specification C151. All joints excepting joints for valves and hydrants shall be "push on." Pipe shall be furnished in 18 or 20 ft lengths, unless otherwise required. The pipe shall meet the thickness class requirements shown in the table below.

Nominal Size Inside Diameter Inches	Thickness Class
4	54
6	54
8	54
10	54
12	54
14	54
16	54
18	54
20	54
24	54

B. Pipe shall withstand a working pressure of 125 psi plus a 100 psi surge pressure.

C. Pipe shall be double cement-lined and seal coated with an approved bituminous seal coat in accordance with ANSI Specification A21.4 (AWWA C-104).

D. Ductile iron or cast iron fittings shall meet all the requirements of the latest revision of the American National Standards Institute Specification A21.10 for a working pressure of 125 psi and be of the mechanical joint type. Plugs, where shown on the Plans, shall be solid mechanical joint plug type.

E. Mechanical joints, shall be in conformity with the requirements of the latest revision of the American National Standards Institute A21.11. The bolts shall be of high strength, low alloy steel type.

F. Push-on joints shall meet all the requirements of AWWA Specification C111. Push-on joints shall consist of a ductile iron bell provided with a recess to receive a circular molded rubber gasket to effect the joint seal. A rubber gasket and sufficient lubricant to assemble the joint shall be furnished with each joint. The lubricant shall have no deleterious effect upon the color, taste or odor of potable water and shall not be corrosive to either the pipe or gasket. Pipe furnished with push-on type joints shall be equal in strength and leak tightness to pipe furnished with mechanical joints as specified when installed under identical conditions, and shall meet all other requirements of these Specifications. In addition to the above requirements, the gasket and lubricant shall conform to the latest revision of the ANSI Specification A21.11.

2.02 Valves

A. All valves installed under this Specification shall conform to the applicable requirements of AWWA C500, C504, and C509 standards governing construction materials and workmanship. Each valve shall carry the name or trademark of the manufacturer All valves shall have operating nuts that turn to the right (clockwise) to open.

B. Resilient-Seated Gate Valves

1. Resilient seated gate valves shall have a cast or ductile iron body and bonnet. Valves shall have a minimum non-shock W.O.G. working pressure of 200 psi. The wedge shall be ductile iron encased in a bonded-in-place styrene-butadiene elastomer covering to form resilient seating surfaces. Stem shall be bronze of non-rising design with double o-ring packing.

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Water Main 2.09 Page 3

2. Resilient seated gate valves shall be used for all mains.

3. Resilient seated gate valves shall be manufactured by Waterous, American Flow Control or Clow.

C. Swing Check Valves

1. Valves shall have a cast or ductile iron body and bolted cap with a minimum non-shock W.O.G. working pressure of 150 psi. Seats shall be bronze and shall be screwed into the valve body. The disc shall be bronze or cast iron with permanently rolled in bronze faces. The disc hinge pin shall be aluminum bronze or stainless steel rid-ing in bronze busings, one on each side of the valve. Valves shall have ANSI 125 pound standard drill flat faced flanges unless otherwise specified or shown on the Plans. Valves shall have outside weighted arm.

D. Air Release Valves

1. Air release valves when specified shall be designed to operate under a maximum operating pressure of 300 psi and capable of venting 200 CFFAS (cubic feet of free air per second). Valves shall be cast iron with bronze internal parts and Type 304SS float.

E. Corporation Stops

1. One-inch corporation stops used for insertion into mains shall be Ford F600 or FB600, or equal. All stops shall have bronze cast bodies, keys, stem washers and nuts. Inlet threads shall conform to the latest revision of AWWA C800. The outlet connection shall be able to receive the flared end of the copper service pipe. All stops 1-1/2-inch and larger shall be of ball plug design.

F. Valve Boxes

1. Valve boxes 5-1/4" shall be of cast iron construction They shall be of three piece, screw type adjustment design. All valve boxes shall be installed flush with the top of the proposed site grade. Covers shall be designed to be removed easily to provide access to the valve. The base shall not rest upon the valve assembly. All valve boxes shall be Tyler Pipe 6860 Item D with a number 6 base or Bibby V620-D.

G. Gatewells

1. Brick for grade adjustment of gatewells shall meet the requirements for "medium brick" of the Standard Specifications for Clay Sewer Brick, ASTM Serial Designation C32-93.

2. Mortar for masonry or plastering outside of gatewells shall be made of one part of Portland Cement to two parts of sand. Mortar materials and mixing shall correspond, in general, to those for concrete.

3. Reinforced concrete gatewells shall conform to the latest revision of ASTM Specifications for Precast Reinforced Concrete Manhole Sections, Serial Designation C478, with rubber gasket joints.

4. All gatewell component parts shall have the name of the manufacturer stenciled on the inside. The lettering or logo shall be a minimum of 4-inches high.

5. Steps shall be plastic-coated steel. They shall be M.A. Industries PSI-PF, or equal.

6. Frames and covers shall be cast iron conforming to the Standard Specifications Castings, Serial Designation A48, or the latest revision thereof, East Jordan No. 1040 with type C cover, Neenah No. R-1642, with type C solid cover with two (2) 3/4-inch holes, or equal. They shall have machined bearing surfaces and suitable notches for convenient removal of the cover. Covers shall have the letters "Water System" cast integrally with the cover. All frames and covers shall be coated at the point of manufacturer with coal tar pitch varnish or other approved asphaltum coating.

2.03 Service Leads

A. Pipe for service leads 1-inch to 2-inch shall be soft annealed Type K copper.

B. Curb Stops: One-inch curb stops used for service connections shall be Ford Z22-444 or B-22-444 ball valve, or equal. Curb stops 1-1/2" shall be B-22-666, or equal. Two-inch curb stops shall be B-44-777, or equal. All parts shall be cast from bronze. They shall have an inverted key stop. Both inlet and outlet connections shall be able to receive the flared end of the copper service pipe for 1-inch and 1-1/2-inch. Compression fittings shall be used for 2 inch.

C. Curb Boxes: Curb boxes used for service connections shall be the "Buffalo" type. All curb boxes shall have a 2-1/2" I.D. screw type adjustment and shall be furnished complete with old style cover, with 7" diameter pentagon bolt. All curb boxes shall be coated inside and out with a tar base enamel. The minimum bury shall be 5'-6" (66") and the maximum 7' (84"). Enclosed base shall be used on 1-1/2" and 2" curb stops. All curb boxes shall be Tyler Pipe Model 6500 Series 95E with a #152, 16" extension or Bibby Laperle 100E 2-1/2" Service Box.

D. Couplings:

1. One-inch and 1-1/2-inch couplings used for service connections located outside the pavement or more than 10 feet from a building shall be Ford C22 or McDonald 4758, or equal. They shall have a three part union, and both inlet and outlet connections shall be able to receive the flared end of the copper service pipe for 1-inch and 1-1/2-inch. Two-inch couplings located outside the pavement or more than 10 feet from a building shall be Ford C44-77 or McDonald 4758-22, or equal, and be a compression fitting. All parts shall be cast from bronze.

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SP #02-1

SPECIFICATIONS 1 AND DETAILS

ROLLING MEADOW ESTATES SUB'N NO.3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E.,
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. – Canton, Michigan 48187
telephone no. (734) 459-8560 fax no. (734) 459-2585

DATE: 06/27/01
REVISIONS: 7/12/02 PER PITTSFIELD
9/5/02 PER PITTSFIELD REVIEW LTR OF 8/30/02
11/05/02 PER PITTSFIELD LTR OF 10/03/02
12/10/02 PER PITTSFIELD MEMO OF 12/04/02
02/07/03 PER PITTSFIELD MEMO OF 01/09/03
03/06/03 PER PITTSFIELD MEMO OF 03/04/03

JOB NO. 9525
SHEET 18
SCALE: HORIZ. VERT.
DATUM U.S.C.& G.S.
N.B.
AS BUILT:

Y:\9525\SPECS12 Thu Sep 5 11:16:29 2002

2. All service connections between two copper service pipes (two-inch or less in diameter) located under the pavement or within 10 feet of a building shall be connected using wrought copper, solder-sweat type couplings conforming to ASME B16.18 or ASME B16.22. Fittings shall bear made in USA labels. Joining of copper piping shall be a solder-sweat connection using lead free Silfos. The use of 95-5, Tin-Antimony or equivalent solders will not be allowed.

2.04 Hydrants

A. Fire hydrants shall comply with the latest revision of AWWA Standard, C502. Hydrants shall be compression type to open with the pressure. They shall have a 5-1/4" valve opening and 6" mechanical joint inlet. Hydrants shall have two 3-1/2" (4.05" O.D.) pumper connections with National Standard 7-1/2 threads per inch. All hydrants shall have City of Ann Arbor standard thread pattern.

B. Fire hydrants shall have inside barrel dimension of not less than 8-1/2" I.D. from top to bottom. The 1-1/8" pentagon operating nut shall open left (counter clockwise).

C. All nozzles shall be on a removable head with a flange so that they may be rotated by changing the position of the flange.

D. Hydrant shall be fully bronze mounted, including top of the operating stem where it passes through the double o-ring seal in the bronze packing gland. The forged operating stem in the base and the valve seat shall also be of bronze. The molded valve shall be of composition rubber and the cast iron valve clamps shall be packed with o-ring seals and held tight to the stem by a threaded bronze hex retainer ring and threaded bronze locknut, anchored with set screws.

E. Hydrant shall be designed for 150 psi working pressure and tested to 300 psi. Those portions of the hydrant above grade shall have two coats of red enamel. All unpainted surfaces shall have two coats of coal tar pitch varnish.

F. The hydrants shall be Waterous Pacer WB-67-250 or U.S. Pipe Metropolitan 250 M-94 with mechanical joint connections and break flange barrel.

G. All hydrants shall have a Hydro-Storz adapter. The adapters shall be constructed of a A-356 High Strength Aluminum Alloy. The storz sealing surface shall have a machined metal seat. The threads and metal seat area shall be Teflon coated. The adapters shall be equipped with a set of Type 302 stainless steel butterfly vanes designed to automatically open, by use of stainless steel torsion spring, with water flow and automatically close when flow is stopped. Each adapter shall also be equipped with a rubber gasket and thread set screw. The adapter shall be installed on the left side of the hydrant when facing the hydrant.

2.05 Tapping Sleeves and Valves

A. Tapping sleeves, when specified, shall be full length of heavy-duty stainless steel construction designed for use with the type of pipe to be tapped. Tapping sleeve body shall be 18-8 type 304 stainless steel. Flange shall be CF8 cast stainless steel. Bolts shall be 304 stainless steel. Gasket shall be full circumferential SBR compounded for water service. Tapping sleeve shall contain a test plug to assure seal prior to tapping. Tapping sleeve shall be JCM Industries, type 432; Romac Industries, type SST; or equal.

B. Tapping valves shall meet the specifications for gate valves except that the valve shall have a flange compatible with the tapping sleeve. Tapping valves shall be Waterous resilient wedge or equal.

C. The tapping sleeves and valves shall be subjected to a hydrostatic pressure of 200 psi. The sleeves and valves shall be maintained under the test pressure for a minimum continuous period of 5 minutes by pumping potable water into the sleeve. Upon any visual leakage observed by the ENGINEER, the tapping sleeve and valve shall be adjusted or removed and replaced and the test repeated at the CONTRACTOR's expense to the satisfaction of the ENGINEER.

2.06 Tracer Wire

A. Wire to be used for tracer purposes shall be #12 THHN solid single strand copper with blue insulation.

B. Connections shall be made using 3M DBR-09984 wire connectors, or equal.

2.07 Post Indicators and Valves

A. Post indicators, when specified, shall be American Flow Control series A240 or Clow series 2945A with aluminum plates indicating "OPEN" or "SHUT". Post indicators shall open left.

B. Post indicator valves shall be Waterous Series 500, American Flow Control Model 2500, or Clow model F-5120. All valves shall open left.

3.00 EXECUTION

3.01 Excavation and Backfill

A. All excavation and backfill 12 inches above the crown of the pipe shall conform to Section 2.04, Earthwork, of these specifications.

3.02 Bedding

A. Ductile iron pipes shall be laid on a compacted sand cushion, 4 inches thick. Sand shall conform to fine aggregate 2NS as defined in 1996 MDOT 902.08.

B. 2NS sand bedding material shall be placed around and above the main to a height of 12 inches above the main.

C. Sand shall be compacted on top of 12 inches above the pipe to not less than 95 percent of the maximum unit density as determined at optimum moisture content.

1.00 GENERAL

1.01 Description

A. The CONTRACTOR shall perform all excavation and backfilling necessary to complete the work. This shall include the excavation of earth and rock, the removal and disposal of unsuitable material, dewatering, placement of suitable fill and backfill material, pipe boring and jacking, all quality assurance testing, and the restoration and final grading for all earth surfaces.

1.02 Work Within Rights-of-Way

A. Where the governmental bodies having jurisdiction of the streets or rights-of-way have specific specifications relating to the requirements for work within their jurisdiction, such requirements must be met as a minimum requirement, and if these Specifications impose further limitation on the work, they shall also be met as the required work standard.

B. During all operations of the CONTRACTOR in the streets and roadways, the CONTRACTOR shall maintain barricades, lights, and warning signs as required by the agency having jurisdiction.

1.03 Work Within Easements

A. During construction within any easements, the CONTRACTOR shall confine himself to the limits shown on the Plans. He shall notify property owners in advance of moving equipment on easements and use of the access routes which will be designated by the OWNER. The OWNER will cooperate in working out the details of access. The topsoil over the trench shall be removed and carefully replaced upon completion of the work. The backfill of the trench in the easement may be left slightly high to provide for any slight residual settlement. Any trees, shrubs, or bushes removed shall be replaced to the satisfaction of the property owner.

1.04 Soil Borings

A. Soil boring results, if taken on a site, are appended to these Specifications with locations noted. Boring logs are shown to be generally representative of the site and to assist in the design and construction of the work.

2.00 PRODUCTS

2.01 Backfill Material

A. For areas not requiring "granular backfill" material, backfill shall be of the excavated material, with the exception that materials such as soft clay, topsoil, muck, cinders, vegetable matter, refuse, boulders and other objectionable and non-packing earth shall be excluded from the backfill and removed from the site. Stone larger than 3 inches in any dimension shall be excluded from the backfill and removed from the site by the CONTRACTOR.

B. Where "granular material" backfill is required as specified herein, backfill material shall be defined as a material meeting granular material Class II as defined in 1996 MDOT 902.08.

2.02 Encasing Pipe

A. Steel encasing pipe for boring and jacking shall conform to the requirements of either ASTM A53, Type E or S, Grade B or ASTM A139, Grade B.

B. Steel encasing pipe used under channels and highways shall meet the requirements of the governmental agency having jurisdiction and the following minimum requirements:

Nominal Diameter Inches	Minimum Wall Thickness
Under 13	0.188 inches
13-24	0.250 inches
25-36	0.312 inches
42	0.438 inches
48	0.500 inches
54	0.563 inches

C. Steel encasing pipe used under railroads shall meet the requirements of the railroad and the following minimum requirements:

Nominal Diameter Inches	Minimum Wall Thickness (inches) Coated or Cathodically Protected	Uncoated & Unprotected
Under 14	0.180	0.251
14-16	0.219	0.282
18	0.250	0.313
20	0.281	0.344
22	0.312	0.375
24	0.344	0.407
26	0.375	0.438
28-30	0.406	0.469
32	0.438	0.501
34-36	0.469	0.532
38-42	0.500	0.563
48	0.563	0.626

D. Casing pipe joints shall be welded to form a leakproof continuous casing.

E. The inside diameter of casing pipe shall be at least 2 inches greater than the largest outside diameter of the carrier pipe joints or couplings for carrier pipe less than 6 inches in diameter, and at least 4 inches greater than the largest outside diameter of the carrier pipe joints for carrier pipe 6 inches and over in diameter, unless otherwise shown on the Plans.

F. The steel casing pipe shall be of smooth interior and shall be placed accurately to line and grade, allowing for the encased pipe thickness and supports under each length of encased pipe.

2. Casing spacers for carrier pipes larger than 24" shall be a PVC fusion bonded coated (10-16 mils) steel shell (minimum 14 gauge steel) with a 90 mil PVC inner liner and 2" wide 30% glass reinforced polyester runners (minimum compressive strength = 18,000 psi) (polyethylene is not an acceptable runner material) attached by 3/8" coated steel studs welded to the steel shell. All bolts and nuts used to fasten the shell to the carrier pipe shall be cadmium plated steel. Where riser are required under the runners they shall be a minimum 10 gauge steel welded to the shell and coated as specified for the shell (epoxy is not an acceptable coating for the shell riser). The casing spacers shall be equal to the PSI Model C as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

E. Boring shall be performed by accepted and recognized methods which will provide adequate safety and protection at all times to workmen employed in the work and to inspectors and others involved in the construction.

F. If voids should develop around the outside of the encasing pipe, grouting or other methods approved by the ENGINEER shall be employed to fill such voids.

G. After the pipes are tested satisfactorily, the remaining space between the carrier pipe and the encasing pipe, shall be pressure grouted or otherwise filled with concrete. The carrier pipe shall be adequately braced to prevent floating or movement of the pipe.

3.07 Shoring, Sheeting and Bracing

A. Where sheet piling, shoring, sheeting, bracing, or other supports are necessary, they shall be furnished, placed, maintained, and except as shown or specified otherwise, removed by the CONTRACTOR.

B. All sheet piling, shoring, sheeting and bracing shall be designed by a professional engineer engaged by the CONTRACTOR with demonstrated competence and experience in such work. The sheeting system shall be designed to prevent bottom failure and hydrostatic uplift within the excavation. Provision shall also be made in the design for lateral pressures due to side slope and construction equipment or other surcharge loads, as applicable.

C. The CONTRACTOR shall provide to the ENGINEER for his review, design calculation and arrangement drawings of the sheeting system prior to ordering any materials for bracing, sheeting, etc., and prior to the commencement of the excavation.

D. All materials, except as otherwise specified, used for sheeting and sheet piling, lagging, braces, shores, and stringers, or waling strips shall be of approved quality and dimensions throughout.

E. Materials for sheeting systems shall be furnished and driven or set in place by the CONTRACTOR, where necessary or wherever ordered by the ENGINEER, whether the same is or is not considered necessary by the CONTRACTOR. If, in the opinion of the ENGINEER, the materials furnished by the CONTRACTOR are not of proper quality or sufficient size or not properly placed to

professional engineer. Sheet piling and timbers in trench excavations shall be withdrawn in a manner so as to prevent subsequent settlement of the pipe or additional backfill leadings which might overload the pipe. ensure the safety of the work or of adjacent structures and property, the CONTRACTOR shall, upon notice from the ENGINEER to that effect, forthwith procure, furnish and set in place or drive other and satisfactory materials, or place the material in a satisfactory manner; and if he shall fail or neglect to do so, the ENGINEER may order all or any part of the work to be stopped until such materials so used are furnished and placed; and the CONTRACTOR shall not be entitled to claim, demand, or receive any compensation for larger size or better quality or different disposal of materials ordered by the ENGINEER, nor any compensation for allowance of any kind whatsoever for or on account of any damage or delay resulting from such stoppage of work.

F. Steel sheet piling may be either new or used. It shall be of adequate strength, straight and properly braced. Steel sheet piling shall be of the interlocking type. Friction in the interlocks shall not be assumed to contribute to the strength of the sheet piling.

G. The design, planning, installation and removal, if required, of all sheet piling, shoring, sheeting, and bracing shall be accomplished in such a manner as to maintain the required excavation or trench section and to maintain the undisturbed state of the soils below and adjacent to the excavation.

H. Steel sheet piling for the excavation shall be driven straight and in-line. The piling shall be supported aboveground, before driving, by a guide frame at least 20 ft high which will keep the piling accurately in the required position and vertical. Each piece of piling shall be driven only a few feet at a time and driving shall proceed continuously around the perimeter so that the piles shall reach their full penetration together.

I. Walers and bracing shall be supplied and installed as required to complete the sheeting system. Walers and braces shall be of adequate strength for the load imposed. Splices in walers shall develop the full strength of the member in bending, shear, and axial compression.

J. If bracing members are to be removed during construction, the timing and procedure for removal shall not induce excessive stresses in the permanent structures or in steel sheet piling and bracing members.

K. If the construction sequence of structures requires the transfer of bracing to the completed portions of any structure, the CONTRACTOR shall se-cure written acceptance of the ENGINEER prior to the installation of such bracing.

L. In trenching operations the use of horizontal strutting below the barrel of pipe or the use of the pipe as support for trench bracing will not be permitted. The use of a traveling shield for sewer construction shall require that the device be approved for use by a a professional engineer. Sheet piling and timbers in trench excavations shall be withdrawn in a manner so as to prevent subsequent settlement of the pipe or additional backfill load-ings which might overload the pipe.

3.03 Pipe Installation

A. Any pipe damaged in transport or handling shall be rejected and removed from the site of the work.

B. In handling and placing ductile iron pipe and fittings, no metal shall be used in contact with the inside of the pipe to fit or support the pipe. The pipe shall be moved only through the use of belt slings or automatic release type pipe tongs. Care shall be taken not to injure the pipe or pipe coating, and no damaged or imperfect pipe shall be used in the work except that minor damage to pipe coating may be repaired subject to the review of the ENGINEER.

C. All pipe and fittings shall be carefully lowered and moved into position in the trench or vault in a controlled manner such as will prevent damage to the pipe and its coating and lining.

D. In assembly of push-on or shove type joints, the bell socket recess and the gasket shall be wiped clean and the gasket placed properly in position. A thin film of lubricant shall then be applied to the surface of the gasket to come into contact with the entering pipe. The plain end of the entering pipe shall be cleaned and then entered and forced home to the base of the socket. Where pipe is cut, the entering end shall be beveled before being inserted in the joint. Where time permits drying, the cut and beveled ends shall be coated with coal tar enamel.

E. To prevent trench water from entering the pipe, joints which for any reason may not be completed as the pipe is laid shall be thoroughly packed with approved material, in a manner to make them watertight. Open ends of fittings shall be tightly closed with approved plugs and well packed, as shall the end of the last pipe laid whenever work is not in progress.

F. Each pipe shall be laid accurately to the line and grade shown on the Plans. Whenever it is necessary to deflect pipe from a straight line, either in the horizontal or vertical plane, to avoid obstructions, or where long radius curves are permitted, the amount of deflection allowed shall not exceed that required for satisfactory jointing and shall be reviewed by the ENGINEER. In no case shall deflection of joints exceed the manufacturer's recommended maximum deflection.

G. The CONTRACTOR shall not be entitled to any additional compensation because depth is more than specified at certain locations or due to clearances at manholes, or due to unforeseen obstacles, or occasioned in order to avoid undue changes in grade.

H. The trench shall be backfilled closely behind the pipe laying. Unless otherwise directed or permitted by the ENGINEER, the backfilling shall follow and be completed to the top of the trench to within two lengths behind pipe laying.

I. Field lock joints designed to hold the pipe to proper line and grade against internal static and dynamic forces and external loads shall be provided at all tees, wyes and plugs, and wherever the pipe is deflected from a straight line and the resultant forces are not self-contained through the use of flanges, anchor ties and the like. Concrete thrust blocks or anchorage shall be 3000 PSI concrete.

J. Air release valve and manhole shall be constructed where shown on the Plans. All castings and manholes shall be as specified under gatewells. Gatewells shall be constructed in accordance with the details shown on the Plans.

K. Blow-off valves and manholes shall be constructed in accordance with the details shown on the Plans. All castings shall be as specified under gatewells.

3.04 Connection to Existing Mains

A. When making a dry connection to an existing main, the existing main to which a connection is to be made shall be isolated by the closing of the necessary existing valves, and the water from the existing main shall then be pumped out or removed by other means so the connection may be made in the dry. After the connection has been acceptably made, the portion of the new line to the nearest valve shall be satisfactorily tested and disinfected, along with the drained portion of the existing main, before the isolated existing main is placed back in service, except as the ENGINEER may otherwise direct. In as much as residents served by this isolated main will be temporarily out of water during this period, the work shall be prosecuted as rapidly as possible, and the time of, and the procedure in, making such connections shall be subject to the review of the ENGINEER. Such work may be required to be done at night in order to minimize inconvenience of water users. The CONTRACTOR shall not be entitled to any additional compensation because of night work or other special requirements in work under this Section.

B. The CONTRACTOR shall make particular effort, prior to bidding, to ascertain whether or not valves in the existing mains to be connected to the new mains are so located as to provide isolation. If valves are not found to be adequate, then the CONTRACTOR shall utilize other means to make the connections with a minimum of interruption to service.

C. When making a wet tap connection to an existing main, a tapping sleeve designed for the type of pipe being tapped shall be utilized and the tap shall be made in accordance with the manufacturer of the tapping equipment.

D. Wherever adapters are required to properly connect the pipe with existing pipe or other material or manufacturer, the nominal I.D. of adapters shall be the same size as the nominal diameter of pipe connected thereto. Adapters shall also be furnished and used as required by the manufacturer for connection to fittings.

3.05 Service Leads

A. Service leads shall be installed where shown on the Plans. All service taps shall be the "wet" method type and no tap shall be made until the acceptance test has been conducted and the line is under pressure.

3.00 EXECUTION

3.01 General Excavation

A. Excavation shall be performed by any practicable method consistent with the integrity and protection of the work and neighboring structures, workmen, and the public. Topsoil shall be separately removed and stockpiled for reuse.

B. All excavation, except where necessary to tunnel, bore or jack under roads, railroads, tree roots and other obstructions within the limits indicated on the Plans, may be open cut from the surface. Tunneling or boring under trees shall be considered as incidental to construction and will not be considered as cause for request for additional payment.

C. Foreign material or unsuitable foundation material encountered such as wood, boulders, etc., which obstruct the excavation, shall be removed. Such materials found at the bottom of the excavation shall be removed and the foundation restored with approved materials.

D. If excess excavation is made or the material becomes disturbed so as to require removal beyond the prescribed limits, the resulting space shall be filled with selected material solidly tamped into place, in not more than 6-inch layers to the satisfaction of the ENGINEER, before the construction work proceeds. At the direction of the ENGINEER, the excess excavation may be filled with 2000 psi concrete at the CONTRACTOR's expense.

E. The excavation shall be kept dry during the work. Where water is encountered in the excavation, it shall be removed by pumping or well points. All necessary precautions shall be taken to prevent damage to existing wells and to completed or partially completed structures. The CONTRACTOR shall be responsible for all damages caused by him due to inadequate or improper protection.

F. The CONTRACTOR shall take ample precautions to protect all trees and ornamental shrubbery not within the limits of the construction areas, or within the construction areas shown on the Plans to be retained from injury by workmen, equipment, or any other agencies connected with the work, including subcontractors. Such protection shall be provided during the progress of the excavation, grading, or other phases of the work as necessary. Such trees or shrubbery shall be surrounded by protective posts or fencing before construction begins, when in judgment of the ENGINEER, such precautionary measures are necessary. If, as a result of any phase of the work, trees are damaged or it is necessary to remove limbs in the way of construction, the repair of the damage and such limb removal shall be done by the CONTRACTOR as directed by the ENGINEER. All costs for the protective work shall be borne by the CONTRACTOR as incidental the Contract work.

3.02 Excavation for Sewers and Water Mains

A. Trenches shall be excavated to the depth required with allowance for bedding the pipe. The trench shall be cut wider and deeper at each pipe joint location to provide for properly completing the pipe joint and to relieve the joint of all loadings.

B. The width of the trench at the top of a rigid pipe shall be sufficient to allow the pipe to be laid and jointed properly and shall provide for a minimum net clearance of 6 inches and a maximum net clearance of 12 inches on each side of the barrel of the pipe and to allow the backfill to be placed and properly compacted.

C. The width of trench at the top of a flexible pipe backfill when using concrete bedding shall be sufficient to allow the pipe to be laid and jointed properly with the minimum net clearance of 12 inches and a maximum net clearance of 18 inches on each side of the barrel of the pipe.

D. Where the conditions of the ground require, or where the work is in close proximity of existing structures, the sides of excavation shall be securely held by bracing and/or sheeting which may be removed in units when the level of the backfill has reached a point where it is safe to pull the sheeting without disturbing the protected feature. No sheeting, bracing, or other timber shall be left in the excavation upon the completion of the main or other structures, except with the specific review and direction of the ENGINEER.

E. Other underground mains, sewers or structures encountered in the excavation shall be adequately supported during the CONTRACTOR's operations, and before backfilling, shall be given permanent support as directed by the ENGINEER to meet the standards or requirements of the owning utility or agency.

F. Water, sewer, gas and other utility services disturbed by the CONTRACTOR in his operations shall be repaired or replaced in a manner equal to the original condition by the CONTRACTOR at his own expense. Where these services are encountered and are undamaged, they shall be supported and/or protected by the CONTRACTOR at his expense against later settlement and/or damage after back-fill. The CONTRACTOR shall consult the agency or the utility firm having jurisdiction over any duct line, gas main, etc., which may cross the excavation to determine method of supporting such duct or pipe.

G. All excavated material shall be piled in a manner that will not endanger the work and that will avoid obstructing sidewalks and driveways. Hydrants under pressure, valve manhole covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the work is completed. Gutters shall be kept clean, or other satisfactory provisions made for street drainage, and natural water courses shall not be obstructed except as otherwise provided for herein on a temporary basis.

3.03 Excavation for Structures

A. Excavation for structures shall be extended sufficiently beyond the limits of the structure to provide ample room for form construction and for practicable construction methods to be followed.

B. Requirements for excavation of sewers and water mains shall also apply to this Section.

M. The neglect, failure, or refusal of the ENGINEER to order the use of sheeting, or sheet piling or steel, or to order the same to be left in place, or the giving or failure to give of any order or directions as to the manner or methods of driving or placing sheeting, sheet piling, bracing, shores, etc., shall not in any way relieve the CONTRACTOR of any or all obligations under this Contract. Sheeting left in place shall be cut off one (1) ft below existing grade.

N. The rules of the OSHA and the State Department of Labor with respect to excavation and construction shall at all times be strictly observed.

3.08 General Backfilling

A. For all areas, unless otherwise noted, backfilling shall consist of placing excavated material as defined in Paragraph 2.01.A. of this Section, in 12-inch lifts to finish grade. Compaction of backfill shall be such as to obtain 90% of the maximum density.

3.09 Backfilling for Sewers and Water Mains

A. Backfilling shall consist of placement of the prescribed materials from a level 12 inches above the crown of the pipe. Placement shall be as follows:

1. Under gravel driveways, gravel roads and shoulders, the backfill shall be granular material which shall be solidly compacted by mechanical tamps in layers of not more than 12 inches loose thickness with backfilling carried up to within 12 inches of finished grade. Compaction of backfill shall be such as to obtain 95% of the maximum unit density as determined at the optimum moisture content.

2. Under pavements, curb, paved driveways, and sidewalks, the backfill shall be granular material compacted in layers not to exceed 12 inches loose thickness with backfilling carried up to subgrade. Compaction of backfill shall be such as to obtain 95% of the maximum unit density as determined at the optimum moisture content. After a period of about 60 days or less, if the backfill compaction is satisfactory to the ENGINEER, to provide for any slight settlement, the CONTRACTOR shall retrim neatly any broken edges of pavement and replace the top surface of the backfill within the pavement area with pavement surface equal to that surface which was removed. The pavement shall be replaced in accordance with the standard specifications of the agency having jurisdiction.

3. Backfill around lift stations, or buried underground structures shall be granular material compacted in 12-inch lifts. Compaction of backfill shall be such as to obtain 95% of the maximum unit density as determined at the optimum moisture content.

4. For all other areas, backfilling shall consist of placing excavated material as defined in Paragraph 2.01.A. of this Section, in 12-inch lifts to finish grade. Compaction of backfill shall be such as to obtain 90% of the maximum unit density as determined at the optimum moisture content.

3.10 Filling and Backfilling for Structures

A. Embankments underlying structural footings, streets and drives, sidewalks and around structures shall be granular material meeting the requirements of the Michigan Department of Transportation for granular material compacted to 95% density.

B. In all other areas, material required for embankments and backfilling shall be soil or soil-rock mixture free of organic and other deleterious matter and shall contain no more than 15% rocks or lumps larger than 2-1/2 inches in the greatest dimension, compacted to 90% density.

C. Under all interior and exterior floor slabs, an 8-inch thick granular cushion shall be placed. This material shall be clean mineral aggregate meeting the following gradation requirements:

Passing the No. 4 Sieve 100%
Passing the No. 200 Sieve 0-3%

D. Where embankment material is placed to achieve a new surface elevation, the top 4 inches shall be approved topsoil either salvaged from the site or hauled in by the CONTRACTOR.

3.11 Filling and Backfilling for Paved Surfaces

A. Embankments, including sand cushions and granular fills, shall be placed in successive layers not more than 6 inches in depth the full width of the cross section, each layer to be thoroughly compacted by means of vibratory compactors or by an approved pneumatic-tired roller or combination there-of, as required by the ENGINEER. Each layer shall be compacted to not less than 95% of the maximum unit density as determined at the optimum moisture content. All parts of the embankment shall be uniformly compacted and the CONTRACTOR shall so direct all earth moving equipment used in the work so that the same shall be attained. Embankment or fill outside the limits of the subgrade where sand or gravel is not required shall be made with suitable material which is free from perishable organic matter, rubbish, stones, broken concrete, roots, or other foreign materials, at no additional compensation. Before any embankments are begin, the base shall be made firm and cleared of topsoil, sod or other perishable material. The sides of the embankment shall be neatly and evenly dressed to the slope shown on the Plans, or such other slope as the ENGINEER may direct.

B. Upon completion of the placing of the curbs, and after the concrete has cured sufficiently, forms shall be removed and the excavated space behind the curb shall be backfilled with a good quality of surface soil, free of rubbish, stone, broken concrete, roots or other foreign material. Where adequate acceptable material for backfill behind the curb is not available, granular fill conforming to 1990 MDOT 8.02.06, Class II, shall be used. Where the area behind the curb is in cut, it shall be trimmed from the top of the curb on the slope shown on the Plans. If the area is in embankment or fill, an earth

B. When crossing a paved street, the service lead shall be jacked under the pavement. Augering and/or jacking requirements on paved streets for the installation of pipe less than 2-1/2" outside diameter shall be made by a "compactor" type machine or similar method without removing existing soil, if soil conditions permit.

3.06 Hydrants

A. Fire hydrants shall be constructed in accordance with the details shown on the Plans. Finish grade level to center of nozzle caps shall measure between 18 and 24 inches. A maximum of one hydrant barrel extension and one operating stem extension may be used to accommodate changes in grade. Under no conditions shall extended hydrant have more than one coupling in the operating stem. Pumper connections shall point toward the street.

B. Fire hydrants shall be installed with barrel vertical and properly based. Concrete thrust blocks shall be placed behind the hydrant, tee, and every bend. Care should be taken to insure that the drain holes on the hydrant are not plugged by the thrust blocks. Hydrant shall be set in 1 yard of coarse gravel for drainage purposes. If ground water is encountered, the drain hole shall be plugged as directed by the manufacturer. The backfill shall be sand thoroughly tamped around the hydrant and valve box in 1 ft layers.

C. Fire hydrant and gate valve shall be set apart 14 inches. Gate valves and valve box shall be as specified under the valve paragraphs of this Section.

3.07 Tracer Wire

A. Tracer wire shall be installed along the top of all water mains at a height of not more than 6 inches above the pipe. Wire shall be extended to all hydrants, service leads, blowoffs, dead ends, buildings and post indicator valves. Tracer wire shall be brought to grade, leaving enough excess material to avoid loss or damage to wire during construction and subsequent activities. Wire shall be trimmed to finish grade following completion of the landscaping.

B. When tracer wire is to be run along short offsets (less than 20 feet), a loop of wire shall be utilized to loop to the end of the offset, bring the loop to grade and terminate it in an approved manner. For service leads and offsets of more than 20 feet in length, a splice may be utilized to make this connection at the main, following manufacturer's instructions. The tracer wire shall then be installed and terminated in an approved manner.

C. Tracer wire terminations shall be made by one of the following methods:

1. Tracer wire shall be terminated at hydrants by tying off the wire at the head flange, leaving excess material for future trimming following landscaping activities.

2. Terminations at valve/curb boxes, post indicators valves and blow-offs shall be made with 2 wraps of the wire at grade around the box or pipe, leaving excess material for future trimming following landscaping activities.

3. Gatewell terminations shall be made by running the tracer wire through the pipe opening in the wall, down to and across the floor to the steps, up the wall and secure to the top step leaving the stub accessible at the casting. Wire shall be run through the gatewell such that it does not create a hazard.

4. Terminations shall be made above grade at buildings near the water meter or as directed by the Pittsfield Township Utility Department.

D. When connections are made to existing water mains which do not have tracer wire. The following method most applicable to the field condition shall be used.

1. When connection is made at/near a valve or hydrant, the connection shall be made in the same manner as the termination at said structures in item C(2) above.

2. When connection takes place in a gatewell, the same procedure shall be used as in termination at a gatewell (see item C(3) above).

3. If no valve or hydrant is available, the upper section only of a valve box shall be set with the tracer wire stubbed up inside.

END OF SECTION

3.04 Excavation for Paved Surfaces

A. In excavating around manholes and catch basins or inlets, care shall be exercised to avoid removing the casings and pushing dirt into the structures. Dirt pushed into manholes, catch basins or inlets by the CONTRACTOR's operations shall be immediately removed so that the dirt will not be carried into the sewer by the flow of sewage or storm water.

B. The CONTRACTOR shall take ample precautions to protect all trees and ornamental shrubbery not within the limits of the construction area, or within the construction areas shown on the Plans to be retained from injury by workmen, equipment, or any other agencies connected with the work, including subcontractors. Such protection shall be provided during the progress of the excavation, grading, or other phases of the work as necessary. Such trees or shrubbery shall be surrounded by protective posts or fencing before construction begins, when in the judgment of the ENGINEER, such precautionary measures are necessary. If, as a result of any phase of the work, trees are damaged or it is necessary to remove limbs in the way of construction, the repair of the damage and such limb removal shall be done by the CONTRACTOR as directed by the ENGINEER. All costs for the protective work shall be borne by the CONTRACTOR as incidental to the Contract work.

3.05 Rock Excavation

A. Rock excavation shall consist of excavating igneous, metamorphic and sedimentary rock which cannot be excavated without continuous drilling and blasting or drilling and splitting to fracture the rock. Blasting shall be permitted only after it has been shown that other methods of excavation are impractical. All rock excavation shall be carried to a minimum depth of 8 inches below the pipe or manhole bottom and to the bottom of all footings. The width of the rock excavation shall not exceed the diameter of the pipe plus 12 inches on either side or the edge of the foundation footing.

B. When the use of explosives is necessary for the progression of the work, the CONTRACTOR shall comply with all laws, ordinances and applicable safety code requirements and regulations relative to the handling, storage and use of explosives and protection of life and property. A person competent and experienced in the use of explosives shall be employed to supervise the work. The CONTRACTOR shall schedule all blasting for a definite hour of the day and shall so notify all residents and businesses in the area as to the scheduled day and hour for such blasting operations. Explosive materials shall not be stockpiled and stored in residential areas. Explosives and initiating devices shall not be carried in the same vehicle.

C. Suitable weighted plank coverings or timber mats shall be provided to confine all materials lifted by blasting within the limits of the excavation of trench. Excessive blasting or overshooting shall not be permitted. Any material outside of the authorized excavation cross section which may be shattered or loosened shall be removed at the CONTRACTOR's expense. The CONTRACTOR shall be responsible for all damage resulting from the use of explosives.

3.06 Pipe Boring and Jacking

A. The CONTRACTOR shall obtain all necessary permits for jacking the encasing pipe under channels, highways and/or railroads and shall notify the governmental agency and/or company having jurisdiction 48 hrs before work at any crossing is started. The CONTRACTOR shall pay all costs for an inspector and/or flagman required by a railroad or governmental agency.

B. A suitable approach trench shall be opened, adjacent to the toe of the slope of the embankment. The approach trench shall be long enough to accommodate the length of pipe units to be jacked, and wide enough to provide sufficient working room. Guide timbers or rails for keeping the pipe on-line and grade shall be installed in the bottom of the trench and sturdy timber backstop supports installed at the rear of the trench to take the thrust of the jacks. A timber bearing a "pushing frame" shall be built and furnished to fit or match the end of the pipe to be jacked, so that the pressure of the jacks will be evenly distributed over the end of the pipe. Two (2) hydraulic jacks of sufficient power shall be used to apply pushing or jacking pressure. For firm ground, excavation shall be carried on from inside the pipe, not to exceed twelve (12) inches ahead of the lead pipe. For unstable ground, the lead pipe shall precede the auger. Excavation at the top and sides shall be accurately cut to line and grade. Adjoining sections of steel pipe shall be welded. Pipe shall be jacked on successive shifts until completed to guard against the "freezing of the line" due to settlement and compaction of surrounding soil.

C. The sheeting of pits along any road will be required if the leading edge of all work pits will be closer to the pavement edge than the shoulder point or ten (10) ft, which ever distance is greater, or on curb and gutter sections, at least five (5) ft from back of curb.

D. Upon completion of the installation of the steel pipe encasement, the contractor shall furnish and install a bolted style casing spacer as described below on the carrier pipe. Casing spacers shall be placed a maximum of seven (7) feet apart along the length of the carrier pipe with one casing spacer within 2-1/2 feet of each side of a pipe joint and the rest evenly spaced. Wood skids are not an acceptable method of supporting the carrier pipe.

1. Casing spacers for carrier pipes from 4" - 24" shall be made of a molded, segmented high density polyethylene plastic with 304 stainless steel connecting nuts and bolts. Minimum spacer width shall be 5.2" for carrier pipes from 4" - 12" and 7.0" for carrier pipes 14" - 24". Each casing spacer shall have at least six (6) integrally molded skids extending 1" beyond the bell or mechanical joint of the carrier pipe. The casing spacers shall be equal to the PSI Ranger as manufactured by Pipeline Seal and Insulator, Inc., Houston, TX.

berm shall be placed immediately adjacent to the top of the curb and then the embankment of fill shall be finished to the slope shown on the Plans. All trimming and finishing shall be done in a neat, workmanlike manner. All excess concrete and debris shall be removed from the excavation behind the curb line before backfilling begins.

C. In construction of non-rigid pavements, back-filling back of curb and gutter shall be completed before placement and compaction of the base course of the roadway.

3.12 Preparation of Subgrade for Roadway Surfaces

A. The bottom of the excavation for the pavement or top of the fill shall be known as the pavement subgrade and shall be smoothed, trimmed and compacted to the required line, grade and cross section to receive the road metal. It shall be thoroughly compacted by rolling with a roller of approved type weighing not less than 8 tons. The subgrade shall be compacted to at least 95% of the maximum density as designated by the test method AASHO T-180. Inaccessible areas, where rolling is not practical, shall be thoroughly compacted by mechanical tampers capable of striking a blow equivalent to at least 250 foot-pounds per square foot. The subgrade thus formed shall be maintained in a smooth and compacted condition until the pavement has been placed. No base course, surfacing, curb, or curb and gutter, shall be placed until the subgrade has been reviewed by the ENGINEER. The subgrade shall be finished in an acceptable condition at least one day in advance of the pavement construction at all times. Six inches of compacted depth of granular material shall be used where uncompactable soil is encountered. The granular fill shall conform to the 1996 MDOT 9.02.08., Class II, compacted to 95% of its density.

B. Immediately prior to placing the pavement, the subgrade shall be tested for conformity with the cross section shown on the Plans by means of an approved template riding on the curb and gutter sections or on side forms. If necessary, materials, shall be removed or added, as required, to bring all portions of the subgrade to the correct elevation. Corrected portions shall then be thoroughly compacted and again tested with the template. Pavement material shall not be placed at any portion of the subgrade which has not been tested for correct elevation.

C. The finished subgrade shall be maintained in a smooth and compacted condition until the pavement is placed. No storage piles of fine or coarse aggregate shall be placed directly upon the finished subgrade Should the subgrade become rutted or disturbed in any manner, it shall be reshaped and recompacted.

3.13 Grading

A. The CONTRACTOR shall grade the site to achieve the elevations as shown on the Plans. All disturbed areas beyond the grading limits shall be restored to prior condition.

B. Surplus excavated material not needed for embankment shall be disposed of by the CONTRACTOR. Headwalls, culverts, drains, sewers and appurtenances filled or damaged by the CONTRACTOR during the course of his operations shall be cleaned, repaired, or replaced at his expense.

C. All temporary earth changes shall be in conformance with the Soil and Erosion Control Act.

3.14 Restoration

A. Headwalls, culverts, and drainage systems filled or damaged by the CONTRACTOR during the course of his operations shall be cleaned, relaid or rebuilt with new materials to a condition equal to the original state, and of thickness equal to the original structure and to the original line and grade at the CONTRACTOR's expense.

B. Where the excavation is located beside a ditch and/or where an existing ditch is filled or disturbed in the CONTRACTOR's operations, the CONTRACTOR shall clean, repair, or replace the ditch with properly pitched bottom and side slopes and of section and capacity not less than the original section.

C. Where excavation has been through lawn areas, the CONTRACTOR shall restore the disturbed area by placing topsoil and seeding or sodding over the final backfill material.

D. The CONTRACTOR shall remove excess dirt and other construction material from the site of the work and leave the site in a condition equal to its original state.

E. The final condition of the streets and road-ways shall be subject to the approval of the governmental body having jurisdiction thereof, as well as review by the ENGINEER.

END OF SECTION

PITTSFIELD CHARTER TOWNSHIP SOIL EROSION AND SEDIMENTATION CONTROL NOTES GENERAL

1. The contractor shall implement and maintain the soil erosion control measures as shown on the plans at all times during construction on this project. Any modifications or additions to the soil erosion control measures due to construction or changed conditions, shall be complied with as required or directed by the owner, project engineer or Pittsfield Township.

2. All soil erosion and sedimentation control work shall conform to the permit requirements of Pittsfield Township and the laws of the State of Michigan.

3. A NPDES construction activity permit is required for all sites greater than 5 acres.

4. Daily inspections shall be made by the contractor. Periodic inspections may be made by the owner/project engineer/Township to determine the effectiveness of erosion and sedimentation control measures. Any necessary corrections shall be made without delay.

5. Erosion and sedimentation from work on the site shall be contained on the site and not be allowed to collect on any offset areas or in waterways.

6. All mud/dirt tracked onto roads from the site due to construction, shall be promptly removed by the contractor.

7. Restoration of all disturbed areas, including placement of topsoil, seed, fertilizer and mulch and/or sod shall be done within 15 days of the completion of final grade.

8. Construction operations shall be scheduled and performed so that preventative soil erosion control measures are in place prior to excavation in critical areas and temporary stabilization measures are in place immediately following backfilling operations.

9. Special precautions will be taken in the use of construction equipment to prevent situations that promote erosion.

10. Proper dust control shall be maintained during construction by use of water trucks and/or chloride as required.

11. The contractor shall be responsible for maintaining all temporary soil erosion control measures and removal of some upon authorized completion of project. Completion of project will not be authorized until all site work, home building, road work and utility construction is complete and all soils are stabilized.

SEQUENCE OF CONSTRUCTION

1. Install sediment fence prior to any grading operation.
2. Install mud tracking pad.
3. Construct temporary sediment/detention basin.
4. Place topsoil, fertilizer, seed and mulch over the entire detention basin area.
5. Rough grade site, stockpile topsoil and begin building construction.
6. Install storm drainage system including riprap and parking lot inlet filters and detention basin standpipe.
7. Maintain erosion and sedimentation control measures, as required.
8. Install sanitary sewer and water systems.
9. Bring pavement areas to sub-base grade, place sub-base and bituminous pavement.
10. Install franchised utilities.
11. Finish grade, redistribute topsoil, seed and mulch all disturbed areas.
12. Remove any accumulated sediment within the detention basin and replace clean washed stone around standpipe.
13. Complete construction of site.
14. Insure all soil is stabilized. Remove all temporary soil erosion control measures.

SEEDING/SOD

1. Seed or sod in accordance with project specifications.

2. All areas of disturbed earth which are not to be paved or sodded shall have 4 inches of topsoil, seed, fertilizer and mulch.

3. Immediately after seeding, mulch all seeded areas with unweathered small grain straw (preferably wheat) or hay spread. Spread uniformly at the rate of 1 2 to 2 tons or 100 pounds (2 to 3 bales) per 1,000 square feet. This mulch should be anchored with a disc-type mulch anchoring tool.

4. Any disturbed area not paved, seeded or mulched, sodded or built upon by November 15, is to be mulched in the manner as specified above, in order to provide soil erosion protection during the winter and early spring.

5. All erosion and sedimentation control prevention procedures and structures are to comply with the Standards and Specifications for soil erosion and sediment control of the Washtenaw County Soil Conservation District.

CATCH BASIN/MANHOLE PROTECTION

1. Protect storm sewer catch basins with Dandy Products Inc. or approved equivalent as follows:

a. Dandy Bag for 1040 storm covers.

b. Beaver Dam for all curb structures.

c. Dandy Sock over all detention pond outlet structures.

ROADS

1. During construction, all roads shall be protected from unvegetated areas washing onto road surfaces by placement of silt fence behind curb or a 10 foot wide straw mulch bank behind the curb or other approved method and/or as shown on the plans.

2. During construction of any portion of the project, roads shall be maintained free of dirt, silt and construction debris.

SP #02-1

SPECIFICATIONS 2

ROLLING MEADOW ESTATES SUB'N NO.3
PART OF THE N.W. 1/4 OF SECTION 26, T.3S., R.6E.,
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

MICHAEL L. PRIEST & ASSOCIATES, INC.
Civil Engineering & Land Surveying
40655 Koppernick Rd. — Canton, Michigan 48187
telephone no. (734) 459-6560 fax no. (734) 459-2585

DATE: 06/27/01

REVISIONS:
07/12/02 PER PITTSFIELD TOWNSHIP
09/04/02 PER PITTSFIELD TOWNSHIP
11/05/02 PER PITTSFIELD LETTER OF 10/03/02
12/10/02 PER PITTSFIELD MEMO OF 12/04/02
02/07/03 PER PITTSFIELD MEMO OF 01/09/03
03/06/03 PER PITTSFIELD MEMO OF 03/04/03

JOB NO. 9525 | N.B. | SCALE: HORIZ. | VERT. | DATUM U.S.C.&G.S. | AS BUILT

SHEET 19

D:\9525\SPECS12 Thu Aug 30 16:37:55 2001 E.M.P.