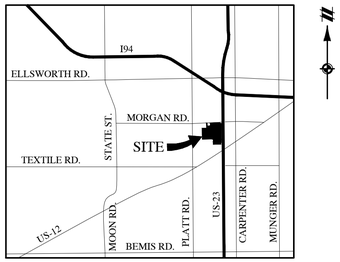
Fieldstone Park

Tax ID: L-12-23-200-032, L-12-23-100-013 (Sec. 23)

Pittsfield Township, Washtenaw County, Michigan

Single-Family Site Condominium - Final Site Plans



Vicinity Map

NOT TO SCALE

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Legal Description

Tax Parcel #'s 12-23-100-013 & 12-23-200-032 (By Others)

BEGINNING at the North ¼ corner of Section 23, T3S, R6E, Pittsfield Township, Washtenaw County, Michigan; thence N88°17'22"E 919.77 feet along the North line of said Section 23 and the centerline of Morgan Road (66.00 feet wide); thence S00°53'43"E 106.00 feet; thence N88°17'22"E 120.00 feet; thence along the West line of U.S. 23 Expressway the following three courses: S00°53'43"E 2035.04 feet, S02°21'17"W 261.71 feet, and 296.86 feet along the arc of a 1070.92 foot radius circular curve to the right, having a chord that bears N10°17'45"E 295.91 feet; thence S88°15'10"W 960.06 feet along the East-West ¼ line of said Section 23; thence N01°03'14"W 660.05 feet along the North-South ¼ line of said Section 23; thence S88°16'23"W 324.57 feet; thence S01°43'37"E 25.12 feet; thence S87°54'51"W 185.00 feet; thence N01°43'37"W 26.29 feet; thence S88°16'23"W 110.00 feet; thence N01°43'37"W 26.29 feet; thence S87°54'51"W 185.00 feet; thence S01°43'37"E 25.14 feet; thence S88°16'23"W 540.09 feet; thence N00°56'09"W 1382.47 feet along the West line of the East ½ of the Northwest ¼ of said Section 23; thence N88°17'18"E 550.00 feet; thence N00°56'09"W 650.00 feet; thence N88°17'18"E 111.55 feet along said North line of Section 23 and said centerline of Morgan Road (66.00 feet wide); thence S00°56'20"E 371.22 feet; thence N88°17'18"E 361.34 feet; thence N00°56'22"W 371.22 feet; thence N88°17'18"E 317.58 feet along said North line of Section 23 and said centerline of Morgan Road (66.00 feet wide) to the **Place of Beginning**, being part of the North ½ of Section 23, containing 114.78 acres of land, more or less, subject to the rights of the public over the Northerly 33.00 feet thereof as occupied by Morgan Road, and subject to all easements and restrictions of record, if any.

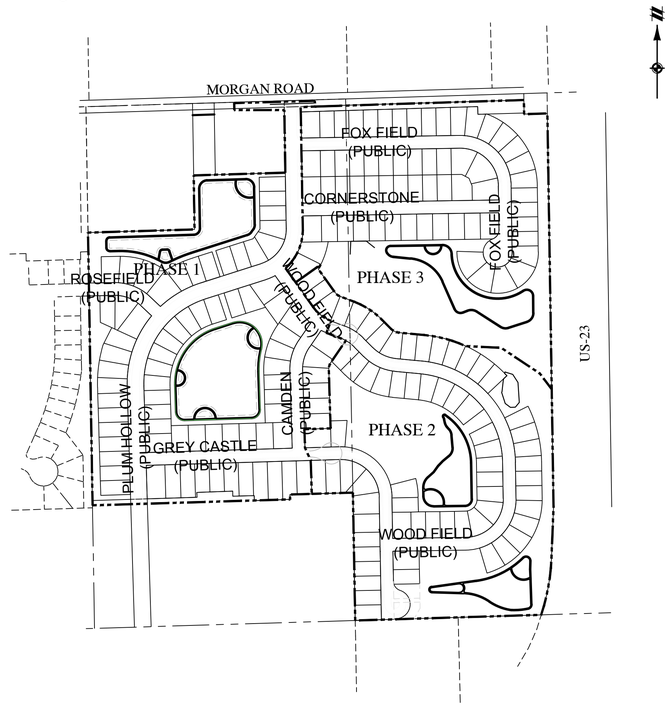
Site Notes

1. Soils based on Soils Survey of Washtenaw County and geotechnical report.
2. Trash removal will be by curbside pick-up.
3. Proposed roads will be public.
4. Site to be constructed in multiple phases.
5. Roof and sump drainage must be directly discharged to grade or storm sewer manhole where possible.
6. Open space areas will be general common elements
7. Topographic and Boundary Survey supplied by Zeimet Wozniak.
8. Wetlands delineated by Atwell.
9. Proposed or existing driveways shall be no closer than 50 feet from the right-of way of an intersecting road.
10. Approaches within the ROW shall not have a width greater than 20' and a vertical profile exceeding ±6%.
11. Wetlands are under the jurisdiction of the Township, with the exception of the wetland along the Koch-Warner Drain.
12. There is no proposed work in the MDOT ROW.
13. The public road improvements shown on these plans shall be constructed in accordance with the current MDOT standard specifications for construction.
14. Mailboxes will be located at each unit.

Sanitary and Water Main Quantities

SANITARY SEWER			
1	8" PVC SDR 26 Sanitary Sewer	10,408	L.F.
2	6" PVC SDR 23.5 House Lead	10,222	L.F.
3	4' Dia. Sanitary Manhole	54	EA.
	SUBTOTAL		
WATER MAIN			
1	1" Copper Water Service	10,425	L.F.
2	8" D.I. CL. 54 Water Main	8,200	L.F.
3	12" D.I. CL. 54 Water Main	2,982	L.F.
4	Hydrant Assembly	25	EA.
5	8" Gate Valve & Well	16	EA.
6	12" Gate Valve & Well	6	EA.
7	12" Tapping Sleeve Valve & Well	1	EA.

Permit or Approval Required	Plan Date	Submitted	Approved	Expiration
Township				
Engineering Approval				
Final Site Plan Approval				
Utility Construction Permit				
Soil Erosion Control Permit				
Stormwater Maintenance Agreement				
Wetland Fill and Mitigation				
Fire Department				
County				
WCWRC Engineering Approval				
WCWRC 433 Drainage District				
WCRC Entrance Approval				
WCRC Road Approval				
State				
NPDES Permit				
MDEQ Wetlands Permit				
MDEQ Act 399 Water Permit				
MDEQ Act 451 Sanitary Permit				



Overall Site Sketch

NOT TO SCALE

Site Data

	Required	Proposed (Total Site)
Site Zoning	R-1B	R-1B
Site Use	Single Family Suburban Residential	Single Family Suburban Residential
Site Area		
Gross	N/A	114.78 ac. (5,000,010 s.f.)
Existing R.O.W.	N/A	1.02 ac. (44,513 s.f.)
Wetlands	N/A	9.05 ac. (394,018 s.f.)
Easements	N/A	3.26 ac. (142,005 s.f.)
Proposed R.O.W.	N/A	17.96 ac. (782,365 s.f.)
Proposed Lot Split	N/A	0.86 ac. (37,654 s.f.)
Net	N/A	82.63 ac. (3,599,466 s.f.)
Lot Width	70 ft. min.	70 ft. min.
Lot Setbacks		
Front	35 ft. min.	35 ft. min.
Side	5 ft. min. / 15 ft. min. total	5 ft.. / 15 ft.
Rear	35 ft. min.	35 ft.
Lot Area	10,000 s.f. min.	10,000 s.f. min. / 0.23 ac. Min.
Overall Lot Area	N/A	53.43 ac.
Average Lot Area	N/A	0.26 ac.
Number of Lots	431 max.	206
Site Density (Net)	4 d.u. / ac. (allowed)	2.49 d.u. / ac.
Home Height	2.5 stories max. (35 ft.)	2.5 stories max. (35 ft.)
Lot Coverage (Net)	30% max.	30% max.
Impervious Surface Ratio	40% max.	40% max.
Open Space	N/A	29.2 ac. (35%)

Sanitary Sewer Basis of Design

Total No. of Units:	206	
No. of Users per Lot:	3.3	
Total Expected Population Served:	680	
Average Daily Flow (per capita)	100 G.P.D.	
Peaking Factor: $\frac{18+\sqrt{POP/1000}}{4+\sqrt{POP/1000}}$ =	3.90	
Average Flow : POP * 100 =	68000 G.P.D.	
=	47.22 G.P.M.	
=	0.105 C.F.S.	
Peak Flow : 0.105 * 3.9 =	0.411 C.F.S.	
Pipe Capacity: 8 in. diameter		A= 0.349 s f
0.40% slope		R= 0.167 ft
0.013 Manning's 'n'		
Manning's Capacity =	0.766 C.F.S.	(> 0.411)
Velocity Flow ing Full =	2.20 F.P.S.	

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Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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FIELDSTONE PARK
TWP. #CSPA 12-02

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SECTION 23
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
DIVERSE REAL ESTATE LLC
FIELDSTONE PARK
FINAL SITE PLANS
COVER SHEET

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0
NO SCALE

DR. JEC CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-01-CV
JOB 11000143
FILE CODE:
SHEET NO. CP-01

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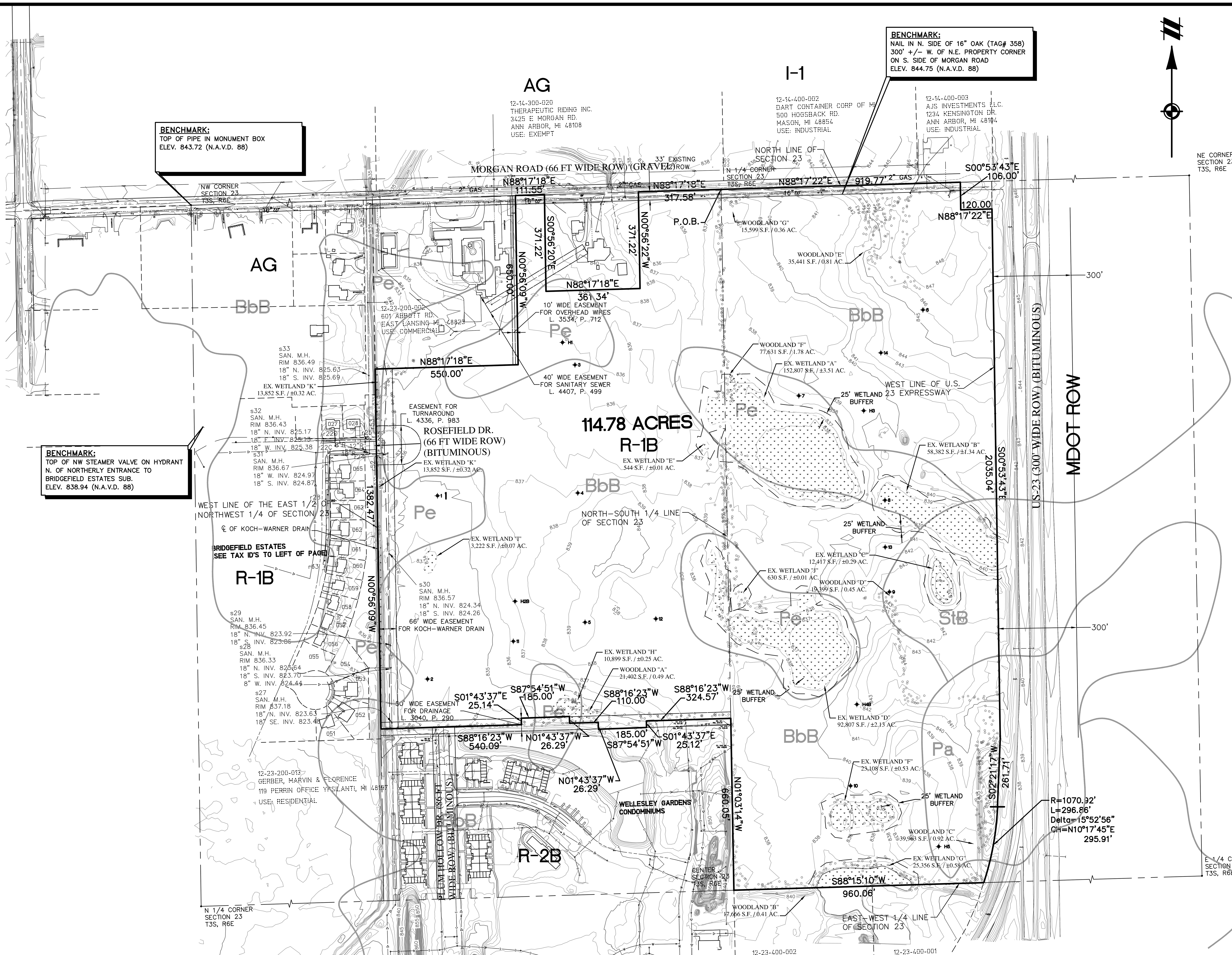
Bridgefield Estates

12-23-210-027 CYNDEE GRUDEN & LIZA MOCKERIDGE 3223 ROSEFIELD DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-028 SHABBIR & TAHIRA KHAN 3247 ROSEFIELD DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-051 ADAM WILLIAMS & NICOLE COLLINS 3228 BRIDGEFIELD DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-052 STEVEN WALL 3236 BRIDGEFIELD DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-053 JAMES WILLIAMS & ELIZABET COLE 3231 BRIDGEFIELD ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-054 MANRESA ALHAMBRA HOUSE INC 3227 BRIDGEFIELD DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-055 MOHANED ULLAH & SELIMA KHAN 5357 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-056 MARK & MICHELLE SZCZYPKA 5347 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-057 MICHAEL & DANA VESPREMI TRUST 5337 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-058 WENQING JIANG & YALI ZHAI 5325 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-059 STEVEN D STONE 5313 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-060 MIGUEL & LYNN BAHENA 5291 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-061 LAWRENCE J SANCHEZ 5279 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-062 MUHAMMAD & ZEBA SHAKEEL 5265 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-063 VAHAN & NATASHA BAGDASARIAN 5253 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-064 HUSAM SAMAHA 5237 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL
12-23-210-065 437 SOUTH FIFTH LLC 5221 FALLING LEAF DR ANN ARBOR, MI 48108 USE: RESIDENTIAL



Floodplain (FEMA Map Pittsfield Township, Washtenaw County # 260623 0020)

Per FEMA the portion of the Koch-Warner drain adjacent to the site indicates no regulated floodplain. The upstream contributing area is less than 2 square miles indicating no regulated floodplain.

Soils Legend

BbB - Blount Loam, 2 to 6 percent slopes
StB - St. Clair clay loam, 2 to 6 percent slopes
Pe - Pewamo Clay Loam
Pa - Palms Muck

Soils Table

SYMBOL	NAME	SLOPE	HYD. GROUP	% AREA	RC	WEIGHTED
BbB	Blount Loam	2%-6%	C	74.3	0.30	0.22
Pa	Palms Muck	<4%	D/A	4.0	0.30	0.01
Pe	Pewamo Clay Loam	<4%	D/C	17.2	0.30	0.05
StB	St. Clair Clay Loam	2%-6%	D	4.4	0.50	0.02
SUMMARY:					AVERAGE RUNOFF COEFFICIENT =	0.30

SOIL GROUP AND RUNOFF COEFFICIENT PER WCWRC STANDARDS.

Woodland Description

WOODLAND "A" - 21, 402 S.F. / 0.49 AC.
WOODLAND "B" - 17,666 S.F. / 0.41 AC.
WOODLAND "C" - 39,963 S.F. / 0.92 AC.
WOODLAND "D" - 19,399 S.F. / 0.45 AC.
WOODLAND "E" - 35,441 S.F. / 0.81 AC.
WOODLAND "F" - 77,631 S.F. / 1.78 AC.
WOODLAND "G" - 15,599 S.F. / 0.36 AC.

Wetland Description

WETLAND A	152,807 S.F. / 3.51 AC.	TWP
WETLAND B	58,382 S.F. / 1.34 AC.	TWP
WETLAND C	12,417 S.F. / 0.29 AC.	TWP
WETLAND D	92,807 S.F. / 2.13 AC.	TWP
WETLAND E	544 S.F. / 0.01 AC.	TWP
WETLAND F	23,108 S.F. / 0.53 AC.	TWP
WETLAND G	25,356 S.F. / 0.58 AC.	TWP
WETLAND H	10,899 S.F. / 0.25 AC.	TWP
WETLAND I	3,222 S.F. / 0.07 AC.	TWP/MDEQ
WETLAND J	630 S.F. / 0.01 AC.	TWP
WETLAND K	13,852 S.F. / 0.32 AC.	TWP/MDEQ

Groundwater Elevation Summary

Piezometer	7/12/2012	7/20/2012	8/20/2012
H1	18.17'	18.08'	18.46'
H2B	19.91'	19.96'	20.35'
H3	22.60'	22.65'	22.96'
H4B	25.33'	25.38'	25.78'
H5	21.32'	21.39'	21.80'

NOTE:
1. ALL WATER LEVELS ARE DEPTHS RELATIVE TO EXISTING GROUND SURFACE.
2. BORINGS WITH A SUFFIX OF "A" WERE RE-DRILLED ON 4-12-05.

Soil Boring Data (Provided by McDowell and Associates 08-13-03)

1/1A ELEV: 834.9
0'-0'7" TOPSOIL
0'7"-1'4" SANDY CLAY W/ PEBBLES
1'4"-7'6" SANDY CLAY W/ PEBBLES
7'6"-20' BLUE SILTY CLAY W/ PEBBLES

2 ELEV: 834.2
0'-0'8" SILTY CLAYEY TOPSOIL
0'8"-3'2" FIRM SILTY CLAY W/ SAND & PEBBLES
3'2"-5'6" STIFF SILTY CLAY W/ SAND & PEBBLES
5'6"-8'8" VERY STIFF BROWN CLAY
8'8"-15'6" VERY STIFF BLUE CLAY

3 ELEV: 835.7
0'-0'8" CLAYEY SANDY TOPSOIL
0'8"-3' STIFF SILTY CLAY W/ SAND & PEBBLES
3'-4'6" EXTREMELY STIFF SILTY CLAY W/ SAND & PEBBLES
4'6"-7'10" EXTREMELY STIFF BROWN SILTY CLAY
7'10"-10'3" EXTREMELY STIFF BLUE CLAY

4 ELEV: 837.2
0'-0'7" SILTY SANDY CLAY
0'7"-2' FIRM SILTY CLAY W/ SAND & PEBBLES
2'-3'2" STIFF SILTY CLAY W/ SAND & PEBBLES
3'2"-10'5" EXTREMELY STIFF BROWN CLAY
10'5"-15'3" EXTREMELY STIFF BLUE CLAY

5/5A ELEV: 839.2
0'-0'7" TOPSOIL
0'7"-7' SILTY CLAY W/ SNAD & PEBBLES
7'-12' SILTY CLAY W/ PEBBLES
12'-20' SILTY FINE TO MEDIUM SAND

6 ELEV: 846.0
0'-0'4" CLAYEY TOPSOIL
0'4"-1' MOIST SILTY CLAY
1'-6' EXTREMELY STIFF SILTY CLAY
6'-6'6" COMPACT BROWN SILT
6'6"-9' MEDIUM COMPACT SAND
9'-11'4" COMPACT SAND
11'4"-15' VERY TO EXTREMELY COMPACT SAND

7/7A ELEV: 838.8
0'-0'5" TOPSOIL
0'5"-4' CLAY
4'-8'6" CLAYEY SAND
8'6"-10' FINE SAND
10'-12' SILTY FINE SAND
12'-17'9" SILTY FINE SAND
17'9"-20' SAND W/ BLACK SHALE PIECES
WATER ENCOUNTERED AT 9' LIKELY PERCHED

8/8A ELEV: 838.1
0'-0'7" CLAYEY SANDY TOPSOIL
0'7"-3'9" MOIST CLAY W/ TRACE PEBBLES
3'9"-6'6" MOIST SILTY SAND
6'6"-18' MOIST SILTY SAND
18'-20' MOIST SILTY SAND W/ SILT
WATER ENCOUNTERED AT 18'

9 ELEV: 843.8
0'-0'4" CLAYEY TOPSOIL
0'4"-3'6" STIFF MOIST CLAY
5'-8'6" COMPACT MOIST FINE SAND
8'6"-10'6" COMPACT MOIST FINE SAND

10/10A ELEV: 839.6
0'-0'6" TOPSOIL
0'6"-9' CLAY W/ PEBBLES
9'-18' SILTY FINE SAND
18'-20' MEDIUM SAND
WATER ENCOUNTERED AT 7.5' LIKELY PERCHED

11 ELEV: 836.0
0'-0'6" SILTY SANDY CLAY
0'6"-2' FIRM MOIST CLAY W/ SAND
2'-3'6" STIFF MOIST SILTY SAND W/ SAND & PEBBLES
6'6"-8' EXTREMELY STIFF SILTY CLAY
8'-15'6" EXTREMELY COMPACT FINE SAND

12 ELEV: 838.3
0'-0'5" SILTY CLAY
0'5"-2' FIRM MOIST CLAY
2'-3'6" STIFF MOIST CLAY W/ SAND & PEBBLES
3'6"-12' EXTREMELY STIFF SILTY CLAY
12'-15'6" VERY STIFF SILTY CLAY W/ SAND & PEBBLES

13/13A ELEV: 841.2
0'-1' SILTY FINE SAND
1'-3'9" STIFF MOIST CLAY
3'9"-7'6" COMPACT EXTREMELY MOIST TO WET SAND
7'6"-9'6" COMPACT MOIST FINE SAND
9'6"-10'6" VERY COMPACT FINE SAND
WATER ENCOUNTERED AT 4'6"

14 ELEV: 842.6
0'-4" CLAYEY TOPSOIL
4"-3'8" STIFF MOIST CLAY
3'8"-6'6" COMPACT EXTREMELY MOIST SAND
6'6"-8'9" COMPACT MOIST FINE SAND
8'9"-10'6" VERY COMPACT FINE SAND

Provided by McDowell and Associates 09-24-2012

H1 ELEV: 835.0
0'-0'3" TOPSOIL
0'3"-2'6" FIRM SILTY CLAY W/ SAND & PEBBLES
2'6"-4'5" STIFF SILTY CLAY W/ SAND & PEBBLES
4'5"-7'10" EXTREMELY STIFF SILTY CLAY W/SAND & PEBBLES
7'10"-16'0" EXTREMELY STIFF MOIST SILTY CLAY W/SAND & PEBBLES
16'0"-21'0" VERY COMPACT MOIST SAND
21'0"-25'6" EXTREMELY COMPACT WET SAND
25'6"-30'6" EXTREMELY COMPACT WET SAND
WATER ENCOUNTERED AT 17'5"

H2B ELEV: 836.6
0'-0'4" TOPSOIL
0'4"-3'3" STIFF MOIST SILTY CLAY W/ SAND & PEBBLES
3'3"-9'-0" STIFF MOIST SILTY CLAY W/ SAND & PEBBLES
9'0"-12'6" VERY STIFF MOIST SILTY CLAY W/ PEBBLES
12'6"-25'3" EXTREMELY COMPACT MOIST FINE SAND
25'3"-30'6" EXTREMELY COMPACT WET GRAVELLY SAND
WATER ENCOUNTERED AT 19'9"

H3 ELEV: 839.0
0'-0'4" TOPSOIL
0'4"-3'5" STIFF MOIST SILTY CLAY W/ SAND & PEBBLES
3'5"-5'0" COMPACT MOIST SILTY CLAYEY FINE SAND
5'0"-6'0" COMPACT MOIST SILTY FINE SAND
6'0"-7'2" COMPACT MOIST FINE SAND
7'2"-7'11" VERY COMPACT WET FINE SANDY SILT
7'11"-9'4" VERY STIFF MOIST SILTY CLAY W/ WET SILT SEAMS
9'4"-22'0" VERY COMPACT MOIST WET FINE SAND W/ TRACE SILT
22'0"-30'6" EXTREMELY COMPACT WET FINE SAND W/ TRACE SILT
WATER ENCOUNTERED AT 7'2" (22'7" AT COMPLETION)

H4B ELEV: 833.2
0'-0'3" TOPSOIL
0'3"-3'6" STIFF MOIST SILTY CLAY W/ TRACES OF SAND & PEBBLES
3'6"-5'6" STIFF MOIST SILTY CLAY W/ SAND & PEBBLES
5'6"-8'6" MEDIUM COMPACT MOIST FINE SAND W/ TRACE SILT
8'6"-11'6" MEDIUM COMPACT MOIST SILTY FINE SAND
11'6"-14'6" VERY COMPACT MOIST FINE SAND
14'6"-15'6" VERY COMPACT WET SILTY FINE SAND
15'6"-25'6" EXTREMELY COMPACT MOIST FINE SAND W/ TRACE SILT
25'6"-29'6" EXTREMELY COMPACT WET SAND
29'6"-30'6" EXTREMELY COMPACT WET SAND W/ TRACE SILT
WATER ENCOUNTERED AT 14'6" (25'4" AT COMPLETION)

H5 ELEV: 833.2
0'-0'3" TOPSOIL
0'3"-3'4" STIFF MOIST SILTY CLAY W/ SAND & PEBBLES
3'4"-9'3" STIFF MOIST SILTY CLAY W/ TRACE SAND & PEBBLES
9'3"-16'6" EXTREMELY COMPACT MOIST FINE SAND W/ TRACE SILT
16'6"-20'3" EXTREMELY COMPACT MOIST TO WET SILTY FINE SAND
20'3"-27'0" EXTREMELY COMPACT WET FINE SAND
27'0"-30'6" EXTREMELY COMPACT WET SAND W/ TRACE GRAVEL
WATER ENCOUNTERED AT 19'10"

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- EASEMENT
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- EXISTING TREE
- EXISTING HERITAGE TREE
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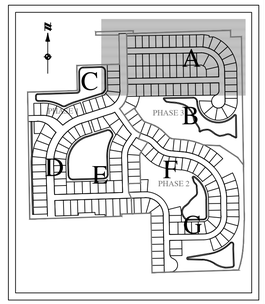

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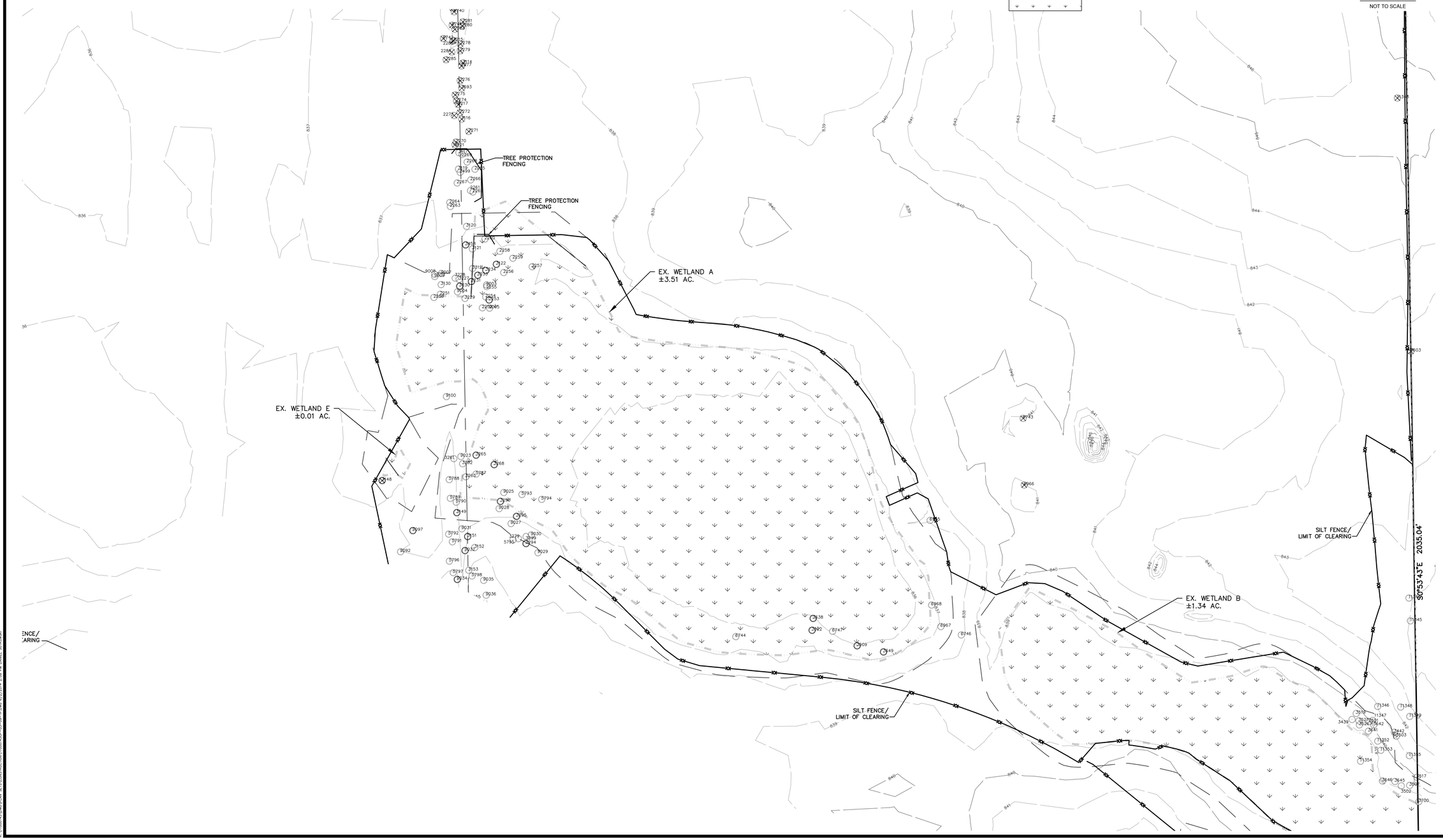

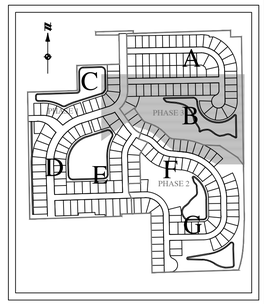

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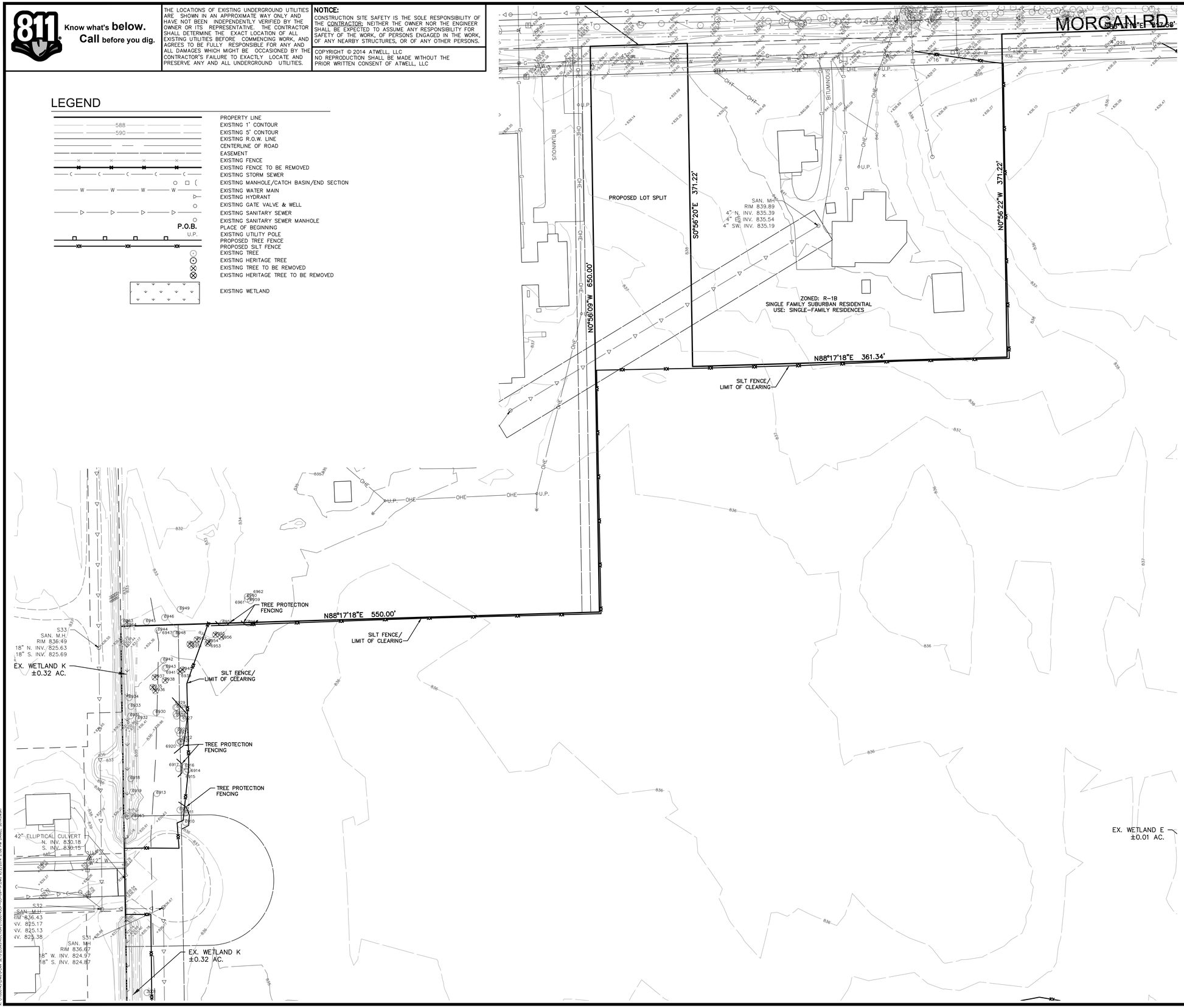

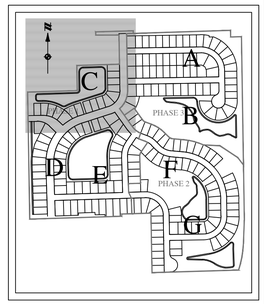

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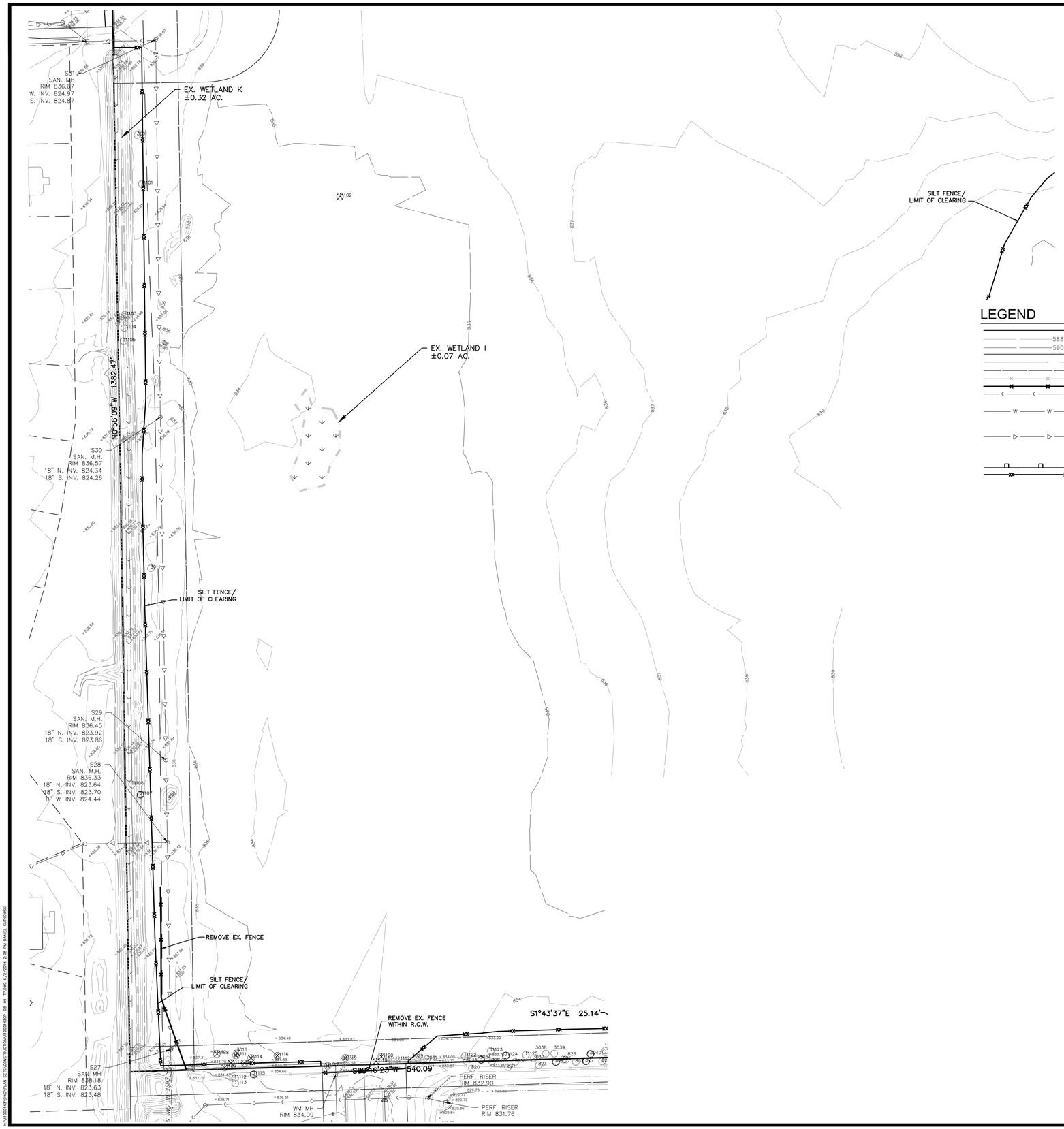

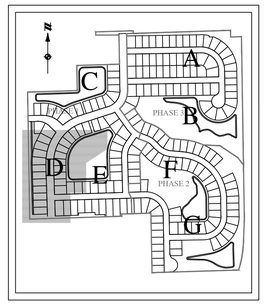

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	EXISTING R.O.W. LINE
	CENTERLINE OF ROAD
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	EXISTING HYDRANT
	EXISTING GATE VALVE & WELL
	EXISTING SANITARY SEWER
	EXISTING SANITARY SEWER MANHOLE
P.O.B.	PLACE OF BEGINNING
U.P.	EXISTING UTILITY POLE
	PROPOSED TREE FENCE
	PROPOSED SILT FENCE
	EXISTING TREE
	EXISTING HERITAGE TREE
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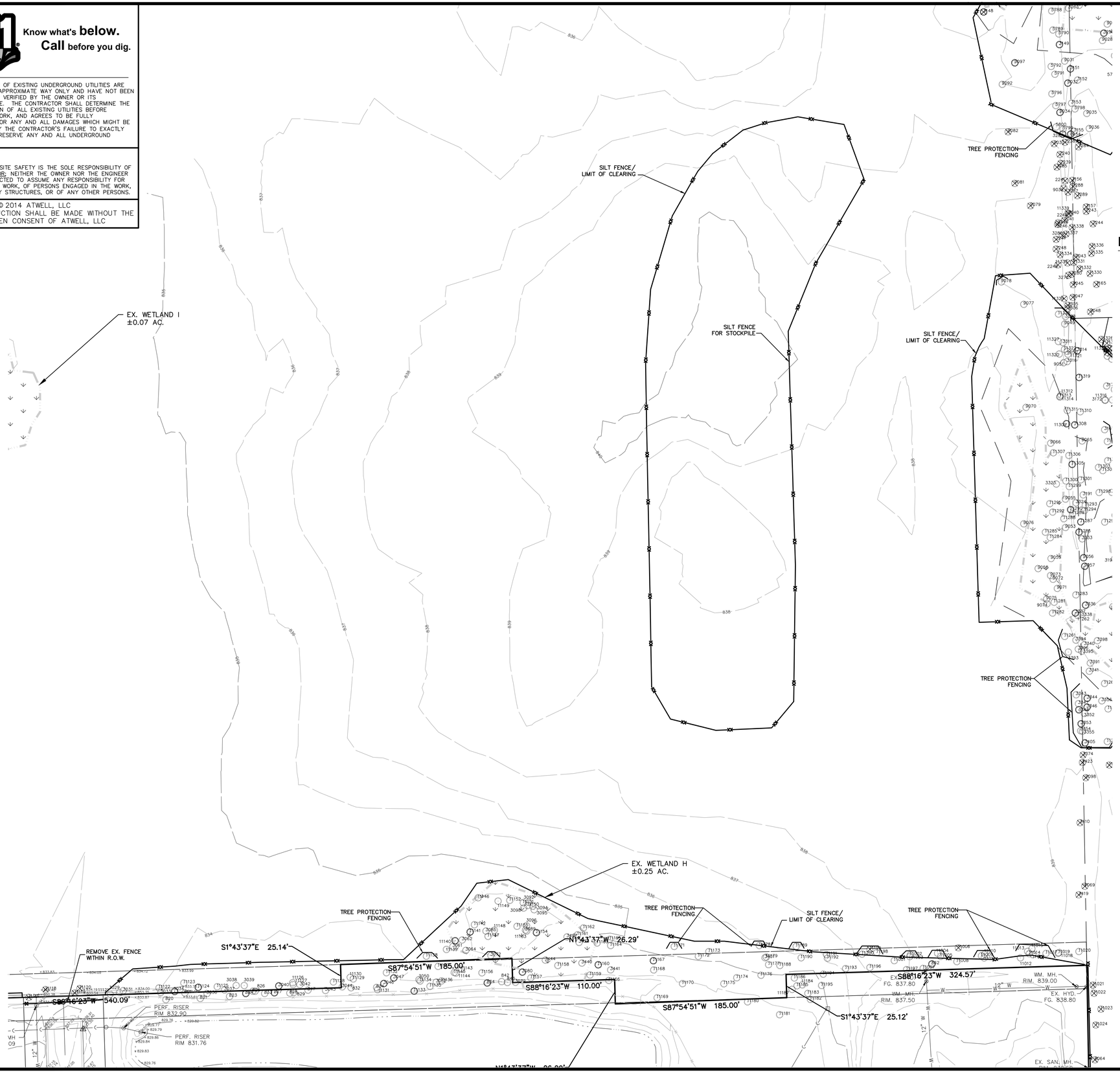

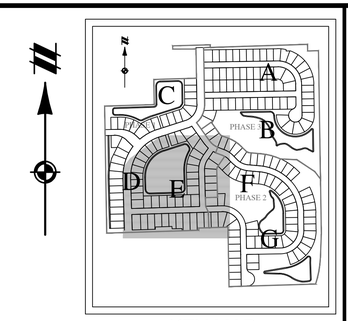

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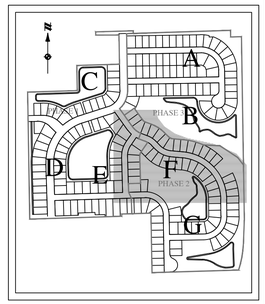

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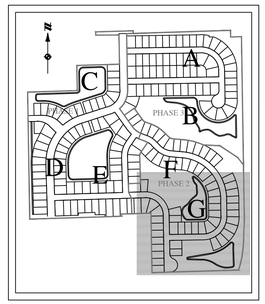

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SECTION 23
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WASHTENAW COUNTY, MICHIGAN

CLIENT
DIVERSE REAL ESTATE LLC

FIELDSTONE PARK FINAL SITE PLANS

TOPOGRAPHIC, TREE SURVEY AND DEMOLITION PLAN – AREA G

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-03-09-TP
JOB 11000143
FILE CODE:
SHEET NO. CP-09

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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Fieldstone Park Residential Development-Tree Survey List
Atwell Project No. 11000143

TAG NO.	SPECIES	SCIENTIFIC NAME	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
106	Black Cherry	Prunus serotina	30.5	Poor	YES	YES	*YES	
108	American Elm	Ulmus americana	25	Dead	YES	YES	*YES	
118	Black Cherry	Prunus serotina	32	Good	YES	YES	YES	
121	Black Walnut	Juglans nigra	11.5	Good	YES	NO	YES	
123	White Cedar	Thuja occidentalis	17.5	Good	NO	YES	NO	
124	Black Locust	Robinia pseudoacacia	11	Good	YES	NO	*YES	
125	Black Walnut	Juglans nigra	15	Good	NO	NO	NO	
128	Black Locust	Robinia pseudoacacia	20	Good	YES	NO	NO	Multi-trunk (MT); 10.0 DBH
129	Box-elder	Acer negundo	16.5	Fair	YES	NO	*YES	
130	Box-elder	Acer negundo	13	Good	YES	NO	*YES	
131	Box-elder	Acer negundo	14	Dead	YES	NO	*YES	
132	Box-elder	Acer negundo	12	Fair	YES	NO	*YES	
133	Black Walnut	Juglans nigra	58	Fair	YES	YES	YES	
134	Box-elder	Acer negundo	11.5	Good	YES	NO	*YES	
135	Box-elder	Acer negundo	8	Good	YES	NO	*YES	MT; 8.0+8.0
136	Box-elder	Acer negundo	9	Fair	YES	NO	*YES	
137	Black Walnut	Juglans nigra	24.5	Good	YES	YES	YES	
138	Black Walnut	Juglans nigra	9.5	Good	YES	NO	YES	
139	Basswood	Tilia americana	17	Good	YES	NO	NO	MT; 8.5
141	Box-elder	Acer negundo	11	Fair	YES	NO	*YES	
142	Black Walnut	Juglans nigra	13.5	Good	YES	NO	YES	
144	Black Walnut	Juglans nigra	8	Good	YES	NO	YES	
145	Black Walnut	Juglans nigra	19	Good	YES	YES	YES	
146	Black Walnut	Juglans nigra	14	Good	YES	NO	YES	
147	Box-elder	Acer negundo	24	Good	YES	NO	*YES	
148	Black Walnut	Juglans nigra	18	Good	YES	YES	YES	
150	Black Walnut	Juglans nigra	19	Good	YES	YES	YES	ALSO TAG #11479
151	Black Walnut	Juglans nigra	15	Good	YES	NO	YES	
152	Black Walnut	Juglans nigra	10	Good	YES	NO	YES	
153	Black Walnut	Juglans nigra	23	Good	YES	YES	YES	
154	Black Walnut	Juglans nigra	12	Fair	YES	NO	YES	
155	Box-elder	Acer negundo	7.5	Good	YES	NO	*YES	
156	Box-elder	Acer negundo	8	Good	YES	NO	*YES	
157	Box-elder	Acer negundo	10	Good	YES	NO	*YES	
158	Box-elder	Acer negundo	8.5	Good	YES	NO	*YES	
159	Box-elder	Acer negundo	14.5	Fair	YES	NO	*YES	
161	Black Walnut	Juglans nigra	13	Good	YES	NO	YES	
162	Box-elder	Acer negundo	17	Fair	YES	NO	*YES	
168	Box-elder	Acer negundo	16	Fair	YES	NO	*YES	
169	Box-elder	Acer negundo	10	Dead	YES	NO	*YES	
179	Black Cherry	Prunus serotina	14.2	Fair	NO	NO	YES	MT; 8.0
350	Black Walnut	Juglans nigra	45	Good	NO	YES	NO	
352	Black Locust	Robinia pseudoacacia	17.5	Good	NO	NO	NO	
353	Black Walnut	Juglans nigra	32	Good	NO	YES	NO	
357	Black Walnut	Juglans nigra	24	Good	NO	YES	NO	
358	Black Walnut	Juglans nigra	17.5	Good	NO	YES	NO	
359	Black Walnut	Juglans nigra	18.5	Good	NO	YES	NO	
360	Black Walnut	Juglans nigra	29	Good	NO	YES	NO	
361	Black Walnut	Juglans nigra	30.5	Good	NO	YES	NO	
362	Shagbark Hickory	Carya ovata	18.5	Good	NO	YES	NO	
363	Black Walnut	Juglans nigra	18.5	Good	NO	YES	NO	
364	Shagbark Hickory	Carya ovata	17	Good	NO	YES	NO	
366	Black Walnut	Juglans nigra	16.5	Good	NO	NO	NO	
367	Shagbark Hickory	Carya ovata	18	Good	NO	YES	NO	
370	Black Walnut	Juglans nigra	22.5	Good	NO	YES	NO	
372	Black Walnut	Juglans nigra	17	Good	NO	NO	NO	
373	Eastern Cottonwood	Populus deltoides	13	Good	YES	NO	*YES	MT; 7.5+7.5
374	Eastern Cottonwood	Populus deltoides	10.5	Good	NO	NO	NO	
375	Pin Oak	Quercus palustris	11	Good	YES	NO	YES	
376	Black Walnut	Juglans nigra	9	Good	NO	NO	NO	
378	American Elm	Ulmus americana	11	Good	NO	NO	NO	MT; 7.5+11.0+8.0
380	Swamp White Oak	Quercus bicolor	12	Good	YES	NO	YES	
381	Swamp White Oak	Quercus bicolor	13	Good	YES	NO	YES	
382	Swamp White Oak	Quercus bicolor	31	Good	YES	YES	YES	
383	Swamp White Oak	Quercus bicolor	11.5	Good	YES	YES	YES	MT; 16.0
385	Swamp White Oak	Quercus bicolor	15	Good	YES	NO	YES	
386	Box-elder	Acer negundo	8.5	Good	YES	NO	*YES	
389	Black Cherry	Prunus serotina	11	Good	YES	NO	YES	
391	Black Cherry	Prunus serotina	18	Good	YES	YES	YES	
394	Black Cherry	Prunus serotina	8	Good	YES	NO	YES	
395	Black Cherry	Prunus serotina	11.5	Good	YES	NO	YES	
398	Black Cherry	Prunus serotina	10.5	Fair	YES	NO	YES	
399	Black Cherry	Prunus serotina	10.5	Good	YES	NO	YES	MT; 10.0
400	Black Cherry	Prunus serotina	9.5	Good	YES	NO	YES	
814	Chinkapin Oak	Quercus muehlenbergii	15.2	Good	YES	NO	YES	
820	White Ash	Fraxinus americana	9.7	Dead	NO	NO	NO	
821	Eastern Cottonwood	Populus deltoides	8.3	Dead	NO	NO	NO	
823	American Elm	Ulmus americana	14.3	Fair	NO	NO	NO	
824	Pin Oak	Quercus palustris	19.1	Good	NO	YES	NO	
825	White Ash	Fraxinus americana	10.8	Poor	NO	NO	NO	
826	Pin Oak	Quercus palustris	14.1	Good	NO	NO	NO	
827	Black Walnut	Juglans nigra	33.8	Poor	NO	YES	NO	
828	White Ash	Fraxinus americana	11.8	Poor	NO	NO	NO	
829	White Ash	Fraxinus americana	15.2	Poor	NO	NO	NO	
831	White Ash	Fraxinus americana	10.1	Poor	NO	NO	NO	
832	White Ash	Fraxinus americana	11.8	Dead	NO	NO	NO	MT; 11.7+11.4+10.3
833	White Ash	Fraxinus americana	12.5	Poor	NO	NO	NO	MT; 11.5
834	White Ash	Fraxinus americana	10.4	Poor	NO	NO	NO	
842	Green Ash	Fraxinus pennsylvanica	10.7	Poor	NO	NO	NO	MT; 10.5
843	American Elm	Ulmus americana	11.2	Dead	NO	NO	NO	
847	Green Ash	Fraxinus pennsylvanica	15.8	Poor	NO	NO	NO	
854	White Ash	Fraxinus americana	45	Dead	NO	YES	NO	
862	Chinkapin Oak	Quercus muehlenbergii	22.1	Excellent	NO	YES	NO	
864	American Elm	Ulmus americana	21.8	Dead	NO	YES	*YES	
1407	Black Willow	Salix nigra	4.8	Good	NO	NO	NO	MT; 4.8+4.3+3.6+3.5+3.4
1408	Black Willow	Salix nigra	6.3	Good	NO	NO	NO	MT; 5.2+4.8+4.5
1409	Black Willow	Salix nigra	6.8	Good	NO	NO	NO	
1410	Black Willow	Salix nigra	4	Good	NO	NO	NO	MT; 3.6
1411	Black Willow	Salix nigra	3.4	Good	NO	NO	NO	MT; 3.0
1412	Eastern Cottonwood	Populus deltoides	6.6	Good	NO	NO	*YES	
1413	Eastern Cottonwood	Populus deltoides	6	Good	NO	NO	*YES	
1414	Eastern Cottonwood	Populus deltoides	4.8	Good	NO	NO	YES	MT; 3.0
1415	Common Buckthorn	Rhamnus cathartica	16.3	Fair	NO	NO	*YES	MT; 5.2+5.2
1416	Common Buckthorn	Rhamnus cathartica	7	Fair	YES	NO	*YES	
1417	Common Buckthorn	Rhamnus cathartica	6.7	Fair	YES	NO	*YES	MT; 8.6+6.5+6.1
1418	Black Cherry	Prunus serotina	15.5	Good	YES	NO	YES	
1419	Black Cherry	Prunus serotina	11.7	Excellent	YES	NO	YES	
1420	Common Buckthorn	Rhamnus cathartica	6.1	Good	YES	NO	*YES	MT; 6.4+4.3+3.6
1421	Black Cherry	Prunus serotina	21	Fair	YES	YES	YES	
1422	Black Cherry	Prunus serotina	8	Good	YES	NO	YES	
1423	Common Buckthorn	Rhamnus cathartica	12.1	Good	NO	NO	NO	Fused
1424	Box-elder	Acer negundo	10.3	Good	YES	NO	*YES	MT; 8.2+6.5
1425	Green ash	Fraxinus pennsylvanica	3.6	Dead	YES	NO	NO	MT; 3.7
1426	Common Buckthorn	Rhamnus cathartica	7.5	Good	YES	NO	NO	
1427	White Ash	Fraxinus americana	7	Excellent	YES	NO	NO	
1428	Common Buckthorn	Rhamnus cathartica	7	Fair	YES	NO	NO	
1429	Common Buckthorn	Rhamnus cathartica	4.9	Good	YES	NO	NO	MT; 4.9
1430	Common Buckthorn	Rhamnus cathartica	11.1	Good	YES	NO	*YES	
1431	Common Buckthorn	Rhamnus cathartica	6.7	Good	YES	NO	*YES	
1432	Black Cherry	Prunus serotina	9.8	Good	YES	NO	YES	
1433	Common Buckthorn	Rhamnus cathartica	5.7	Good	YES	NO	NO	MT; 5.7+3.9+3.4
1434	Common Buckthorn	Rhamnus cathartica	7.2	Good	YES	NO	*YES	
1435	Red Maple	Acer rubrum	7.3	Excellent	YES	NO	NO	
1436	Common Buckthorn	Rhamnus cathartica	3.3	Good	YES	NO	NO	MT; 5.7
1437	Common Buckthorn	Rhamnus cathartica	3.3	Good	YES	NO	NO	MT; 5.7
1438	Common Buckthorn	Rhamnus cathartica	3	Fair	NO	NO	NO	MT; 5.7
1439	Eastern Cottonwood	Populus deltoides	14.5	Good	NO	NO	NO	
1440	Eastern Cottonwood	Populus deltoides	13.5	Good	NO	NO	NO	
1441	Eastern Cottonwood	Populus deltoides	15.8	Fair	YES	NO	NO	

Fieldstone Park Residential Development-Tree Survey List
Atwell Project No. 11000143

TAG NO.	SPECIES	SCIENTIFIC NAME	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
1442	Eastern Cottonwood	Populus deltoides	6.7	Good	YES	NO	YES	
1443	Common Buckthorn	Rhamnus cathartica	9.2	Good	YES	NO	YES	
1444	American Elm	Ulmus americana	12	Excellent	YES	NO	YES	
1445	American Elm	Ulmus americana	15.7	Excellent	YES	NO	YES	
1446	Eastern Cottonwood	Populus deltoides	8.7	Fair	YES	NO	YES	
1447	Eastern Cottonwood	Populus deltoides	11	Good	NO	NO	NO	
1448	American Elm	Ulmus americana	14.1	Dead	NO	NO	NO	
1449	Common Buckthorn	Rhamnus cathartica	6.1	Good	NO	NO	NO	
1450	Common Buckthorn	Rhamnus cathartica	10	Fair	NO	NO	NO	
1451	Eastern Cottonwood	Populus deltoides	19.8	Poor	NO	NO	NO	
1452	American Elm	Ulmus americana	14.2	Good	NO	NO	NO	
1453	Common Buckthorn	Rhamnus cathartica	3.4	Good	NO	NO	NO	MT; 5.0
1454	Common Buckthorn	Rhamnus cathartica	4.2	Good	YES	NO	YES	MT; 5.0+3.4
1455	Black Cherry	Prunus serotina	12.9	Excellent	YES	NO	YES	
1456	Black Cherry	Prunus serotina	6.1	Good	YES	NO	YES	
1457	Black Cherry	Prunus serotina	9.6	Good	YES	NO	YES	
1458	Black Cherry	Prunus serotina	6.1	Good	YES	NO	YES	
1459	Eastern Cottonwood	Populus deltoides	11.4	Good	YES	NO	YES	
1460	Common Buckthorn	Rhamnus cathartica	5.9	Good	YES	NO	YES	MT; 4.2+4.1
1461	Eastern Cottonwood	Populus deltoides	11.2	Excellent	YES	NO	YES	
1462	Eastern Cottonwood	Populus deltoides	15.2	Good	YES	NO	YES	
1463	Eastern Cottonwood	Populus deltoides	22.6	Excellent	YES	NO	YES	
1464	American Elm	Ulmus americana	11	Excellent	YES	NO	YES	
1465	Eastern Cottonwood	Populus deltoides	9.6	Good	YES	NO	YES	
1466	American Elm	Ulmus americana	10	Good	NO	NO	NO	
1467	Black Cherry	Prunus serotina	9.5	Good	YES	NO	YES	
1468	American Elm	Ulmus americana	18	Good	YES	YES	YES	
1469	Eastern Cottonwood	Populus deltoides	16.4	Fair	YES	NO	YES	
1470	Common Buckthorn	Rhamnus cathartica	4.4	Good	YES	NO	YES	MT; 4.1
1471	Box-elder	Acer negundo	7.5	Good	NO	NO	NO	
1472	Box-elder	Acer negundo	7.5	Good	NO	NO	NO	
1473	Box-elder	Acer negundo	8	Good	NO	NO	NO	
1474	Common Buckthorn	Rhamnus cathartica	6.3	Fair	NO	NO	NO	
1475	Common Buckthorn	Rhamnus cathartica	9.6	Fair	YES	NO	YES	
1476	Black Cherry	Prunus serotina	12.4	Good	YES	NO	YES	
1477	Eastern Cottonwood	Populus deltoides	21.7	Good	NO	NO	NO	
1478	Common Buckthorn	Rhamnus cathartica	6	Poor	NO	NO	NO	
1479	Common Buckthorn	Rhamnus cathartica	9.5	Fair	NO	NO	NO	
1480	Eastern Cottonwood	Populus deltoides	15.8	Excellent	NO	NO	NO	
1481	Common Buckthorn	Rhamnus cathartica	5.6	Poor	NO	NO	NO	MT; 4.4
1482	Common Buckthorn	Rhamnus cathartica	8	Poor	NO	NO	NO	MT; 8.5
1483	Common Buckthorn	Rhamnus cathartica	4.4	Good	NO	NO	NO	MT; 6.6
1484	Eastern Cottonwood	Populus deltoides	14.6	Poor	NO	NO	NO	
1485	Black Cherry	Prunus serotina	16.3	Good	NO	NO	NO	
1486	American Elm	Ulmus americana	8.6	Good	YES	NO	YES	
1487	Black Cherry	Prunus serotina	6.2	Good	YES	NO	YES	
1488	Black Cherry	Prunus serotina	6	Good	NO	NO	NO	
1489	Box-elder	Acer negundo	12.1	Fair	NO	NO	NO	
1490	Eastern Cottonwood	Populus deltoides	20	Good	NO	NO	NO	
1491	Eastern Cottonwood	Populus deltoides	16.4	Good	NO	NO	NO	
1492	Box-elder	Acer negundo	8.4	Good	NO	NO	NO	
1493	Common Buckthorn	Rhamnus cathartica	5.4	Good	NO	NO	NO	
1494	Black Cherry	Prunus serotina	6.7	Good	NO	NO	NO	
1495	Box-elder	Acer negundo	9.4	Fair	NO	NO	NO	MT; 5.3
1496	Black Cherry	Prunus serotina	15.6	Good	NO	NO	NO	
1497	Eastern Cottonwood	Populus deltoides	8	Poor	NO	NO	NO	
1498	American Elm	Ulmus americana	9	dead	NO	NO	NO	
1499	Eastern Cottonwood	Populus deltoides	31	Fair	NO	NO	NO	
1500	Black Cherry	Prunus serotina	10.4	Fair	NO	NO	NO	
2238	Common Buckthorn	Rhamnus cathartica	3.6	Good	YES	NO	YES	MT; 5.5
2239	Common Buckthorn	Rhamnus cathartica	5.8	Fair	YES	NO	YES	MT; 3.5
2240	Black Cherry	Prunus serotina	10.4	Poor	YES	NO	YES	
2241	Black Cherry	Prunus serotina	6.4	Good	YES	NO	YES	
2242	Pignut Hickory	Carya glabra	6.9	Good	YES	NO	YES	
2243	American Elm	Ulmus americana	8	Good	YES	NO	YES	
2244	Pin Oak	Quercus palustris	7.6	Good	YES	NO	YES	
2245	Black Cherry	Prunus serotina	7	Fair	YES	NO	YES	
2246	Black Cherry	Prunus serotina	7.5	Fair	YES	NO	YES	
2247	Shagbark Hickory	Carya ovata	6	Good	YES	NO	YES	
2248	Black Cherry	Prunus serotina	6.1	Good	YES	NO	YES	
2249	Black Cherry	Prunus serotina	10	Good	YES	NO	YES	
2250	Peachleaf willow	salix amydgaloides	14.7	Good	NO	NO	NO	
2251	Pin Oak	Quercus palustris	7.7	Excellent	NO	NO	NO	
2252	Pignut Hickory	Carya glabra	6.4	Excellent	NO	NO	NO	
2253	Pin Oak	Quercus palustris	24	Excellent	NO	YES	NO	
2254	Pignut Hickory	Carya glabra	6.5	Good	NO	NO	NO	
2255	American Elm	Ulmus americana	6.1	Excellent	NO	NO	NO	
2256	Green ash	Fraxinus pennsylvanica	6.3	Fair, EAB	NO	NO	NO	MT; 3.6
2257	Box-elder	Acer negundo	7.3	Fair	NO	NO	NO	MT; 9.2+8.9+8.4
2258	American Elm	Ulmus americana	6.4	Good	NO	NO	NO	
2259	Pin Oak	Quercus palustris	8.1	Good	NO	NO	NO	
2260	Pin Oak	Quercus palustris	6.6	Good	NO	NO	NO	
2261	Pin Oak	Quercus palustris	7.9	Good	YES	NO	YES	
2262	Pin Oak	Quercus palustris	9	Excellent	YES	NO	YES	
2263	Pin Oak	Quercus palustris	6.1	Excellent	YES	NO	YES	
2264	Box-elder	Acer negundo	6.5	Excellent	YES	NO	YES	
2265	Black Walnut	Juglans nigra	8.5	Good	YES	NO	YES	
2266	Box-elder	Acer negundo	17.8	Excellent	YES	NO	YES	
2267	Black Cherry	Prunus serotina	11.5	Fair	YES	NO	YES	
2268	Common Buckthorn	Rhamnus cathartica	5.2	Good	YES	NO	YES	MT; 3.9
2269	Black Cherry	Prunus serotina	11.6		YES	NO	YES	MT; 11.1
2270	Black Cherry	Prunus serotina	15.5	Excellent	YES	NO	YES	
2271	Pin Oak	Quercus palustris	7.8	Excellent	YES	NO	YES	
2272	Black Cherry	Prunus serotina	14.2	Good	YES	NO	YES	MT; 7.0
2273	Black Cherry	Prunus serotina	12.1	Good	YES	NO	YES	
2274	Black Cherry	Prunus serotina	8.3	Good	YES	NO	YES	
2275	Black Cherry	Prunus serotina	10.5	Fair	YES	NO	YES	
2276	Common Buckthorn	Rhamnus cathartica	6	Good	YES	NO	YES	MT; 3.6
2277	Common Buckthorn	Rhamnus cathartica	3.8	Good	YES	NO	YES	MT; 3.9
2278	Box-elder	Acer negundo	6.7	Good	YES	NO	YES	MT; 5.2+5.6
2279	Box-elder	Acer negundo	14	Fair	YES	NO	YES	
2280	Box-elder	Acer negundo	7.5	Fair	YES	NO	YES	
2281	Box-elder	Acer negundo	6.3	Good	YES	NO	YES	
2282	Common Buckthorn	Rhamnus cathartica	4	Good	YES	NO	YES	MT; 4.5+4.0
2283	Black Cherry	Prunus serotina	11.8	Fair	YES	NO	YES	
2284	Black Cherry	Prunus serotina	12	Good	YES	NO	YES	
2285	Common Buckthorn	Acer negundo	7.2	Good	YES	NO	YES	
3001	Eastern Cottonwood	Populus deltoides	19	Excellent	NO	NO	NO	
3029	American Elm	Ulmus americana	6.6	Poor	NO	NO	NO	
3031	Silver Maple	Acer saccharinum	9.8	Excellent	NO	NO	NO	MT; 8.2+8.0
3033	American Elm	Ulmus americana	8.3	Good	NO	NO	NO	
3034	Red Oak	Quercus rubra	21.5	Excellent	NO	YES	NO	
3036	American Elm	Ulmus americana	7.9	Good	NO	NO	NO	
3037	White Ash	Fraxinus americana	10.1	Poor	NO	NO	NO	
3038	White Ash	Fraxinus americana	7.5	Poor	NO	NO	NO	MT; 6.2
3039	White Ash	Fraxinus americana	8.8	Poor	NO	NO	NO	
3040	Pin Oak	Quercus palustris	18.8	Excellent	NO	YES	NO	
3042	Pin Oak	Quercus palustris	8	Good	NO	NO	NO	
3043	White Ash	Fraxinus americana	16.1	Fair	NO	NO	NO	MT; 12.9+11.7+6.0+5.7+5.7
3044	White Ash	Fraxinus americana	6.5	Poor	NO	NO	NO	
3046	Silver Maple	Acer saccharinum	29.8	Excellent	NO	YES	NO	MT; 18.4+10.1+4.3
3047	White Ash	Fraxinus americana	20.2	Poor	NO	YES	NO	MT; 12.8+12.3+12.2
3050	White Ash	Fraxinus americana	10	Poor	NO	NO	NO	
3052	Silver Maple	Acer saccharinum	11.5	Good	NO	NO	NO	MT; 4.8
3061	Red Oak	Quercus rubra	11	Good	YES	NO	YES	
3062	White Ash	Fraxinus americana	8.7	Poor	YES	NO	YES	MT; 8.3
3064	American Elm	Ulmus americana	7.7	Fair	YES	NO	YES	MT; 7.3
3072	Green Ash	Fraxinus pennsylvanica	9.6	Poor	NO	NO	NO	
3079	American Elm	Ulmus americana	13.2	Dead	NO	NO	NO	
3080	Green Ash	Fraxinus pennsylvanica	34.7	Poor	NO	YES	NO	

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Atwell Project No. 11000143

TAG NO.	SPECIES	SCIENTIFIC NAME	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
3094	Silver Maple	Acer saccharinum	9.7	Excellent	YES	NO	YES	
3095	Silver Maple	Acer saccharinum	12.2	Excellent	YES	NO	YES	MT; 6.7
3096	Green Ash	Fraxinus pennsylvanica	9.7	Poor	YES	NO	YES	MT; 6.2
3098	Silver Maple	Acer saccharinum	12.9	Excellent	YES	NO	YES	MT; 8.7+5.6
3105	Eastern Cottonwood	Populus deltoides	7	Good	NO	NO	NO	
3106	Pin Oak	Quercus palustris	9.5	Good	YES	NO	YES	
3109	Hackberry	Celtis occidentalis	9.5	Good	NO	NO	YES	
3120	Pin Oak	Quercus palustris	14	Excellent	YES	NO	YES	
3121	Swamp White Oak	Quercus bicolor	8.8	Good	NO	NO	NO	
3122	Pin Oak	Quercus palustris	18.6	Excellent	NO	YES	NO	
3130	Black Cherry	Prunus serotina	6.7	Dead	NO	NO	NO	
3148	Shagbark Hickory	Carya ovata	31.2	Excellent	NO	YES	YES	
3149	American Elm	Ulmus americana	18.4	Dead	YES	YES	YES	
3151	Pignut Hickory	Carya glabra	27	Good	YES	YES	YES	
3152	Pignut Hickory	Carya glabra	11.2	Good	YES	NO	YES	
3153	Pin Oak	Quercus palustris	13.6	Good	YES	NO	YES	
3154	Pignut Hickory	Carya glabra	15.5	Fair	YES	YES	YES	
3155	Shagbark Hickory	Carya ovata	6.7	Good	YES	NO	YES	
3156	Pignut Hickory	Carya glabra	24.4	Fair	YES	YES	YES	
3157	American Elm	Ulmus americana	11.4	Good	YES	NO	YES	
3165	American Elm	Ulmus americana	11.4	Good	YES	NO	YES	MT; 7.0+5.5
3167	Swamp White Oak	Quercus bicolor	8.1	Fair	YES	NO	YES	
3168	Red Oak	Quercus rubra	12.5	Good	YES	NO	YES	
3169	Red Oak	Quercus rubra	13.3	Fair	YES	NO	YES	
3172	Red Oak	Quercus rubra	14.2	Good	YES	NO	YES	
3174	Swamp White Oak	Quercus bicolor	11	Poor	YES	NO	YES	
3184	Red Oak	Quercus rubra	12	Excellent	NO	NO	NO	
3187	Red Oak	Quercus bicolor	13.9	Excellent	NO	NO	NO	
3190	Red Oak	Quercus rubra	13	Excellent	NO	NO	NO	
3191	Shagbark Hickory	Carya ovata	8.5	Good	NO	NO	NO	
3195	Red Oak	Quercus bicolor	9.4	Good	NO	NO	NO	
3199	Red Oak	Quercus rubra	14.5	Excellent	NO	NO	NO	
3200	Green Ash	Fraxinus pennsylvanica	9.4	Poor	NO	NO	NO	
3201	Shagbark Hickory	Carya ovata	9	Good	YES	NO	YES	
3203	Black Cherry	Prunus serotina	7.5	Good	YES	NO	YES	
3215	Black Cherry	Prunus serotina	12.4	Good	YES	NO	YES	
3217	Black Cherry	Prunus serotina	14	Fair	YES	NO	YES	
3221	Black Cherry	Prunus serotina	12.5	Good	YES	NO	YES	
3227	Pin Oak	Quercus palustris	14.6	Excellent	NO	NO	NO	
3228	Pin Oak	Quercus palustris	8.4	Good	NO	NO	NO	
3229	Pin Oak	Quercus palustris	13.5	Good	NO	NO	NO	
3230	Swamp White Oak	Quercus bicolor	22	Excellent	NO	YES	NO	
3231	Swamp White Oak	Quercus bicolor	16.2	Excellent	NO	YES	NO	
3233	Pin Oak	Quercus palustris	21.4	Excellent	NO	YES	NO	
3234	Pin Oak	Quercus palustris	15.6	Good	NO	YES	NO	
3261	American Elm	Ulmus americana	16.1	Good	NO	NO	NO	MT; 9.5+4.9
3262	American Elm	Ulmus americana	9	Good	NO	NO	NO	
3263	American Elm	Ulmus americana	14.6	Good	NO	NO	NO	
3265	Pin Oak	Quercus palustris	29.2	Excellent	NO	YES	NO	
3268	Pin Oak	Quercus palustris	12.9	Good	NO	YES	NO	
3272	Shagbark Hickory	Carya ovata	9.7	Fair	YES	NO	YES	
3279	American Elm	Ulmus americana	10.11	dead	YES	NO	YES	
3280	Shagbark Hickory	Carya ovata	20	Good	YES	YES	YES	
3281	Shagbark Hickory	Carya ovata	16.5	Good	YES	YES	YES	
3284	Shagbark Hickory	Carya ovata	16.3	Good	YES	YES	YES	
3285	Apple species	Malus spp.	10.5	Good	YES	NO	YES	
3286	Shagbark Hickory	Carya ovata	12.2	Good	YES	NO	YES	
3287	Pignut Hickory	Carya glabra	12.8	Good	YES	NO	YES	MT; 6.7
3288	Black Cherry	Prunus serotina	12.7	Good	YES	NO	YES	MT; 12.8
3289	Pignut Hickory	Carya glabra	11.7	Fair	YES	NO	YES	MT; 8.2+7.0
3290	Pin Oak	Quercus palustris	21.4	Excellent	NO	YES	NO	
3294	Pin Oak	Quercus palustris	16.7	Excellent	YES	YES	YES	
3295	Bur Oak	Quercus macrocarpa	47.6	Excellent	NO	YES	NO	
3299	American Elm	Ulmus americana	10.9	Excellent	YES	NO	NO	
3302	American Elm	Ulmus americana	8.9	Poor	YES	NO	YES	
3305	Shagbark Hickory	Carya ovata	20	Good	YES	YES	YES	
3306	Shagbark Hickory	Carya ovata	9.5	Fair	YES	NO	YES	
3308	Shagbark Hickory	Carya ovata	8	Good	YES	NO	YES	
3311	Black Cherry	Prunus serotina	10.1	Poor	YES	NO	YES	
3312	Red Maple	Acer rubrum	15	Good	NO	NO	NO	
3314	White Oak	Quercus alba	27.8	Fair	YES	YES	YES	
3316	Shagbark Hickory	Carya ovata	12.8	Fair	YES	NO	YES	
3323	Red Oak	Quercus rubra	11.1	Excellent	NO	NO	NO	
3324	Green Ash	Fraxinus pennsylvanica	11.8	Poor	NO	NO	NO	
3333	Siberian Elm	Ulmus pumila	10	Good	NO	NO	NO	
3336	Red Oak	Quercus rubra	23.6	Good	NO	YES	NO	
3337	Swamp White Oak	Quercus bicolor	16	Excellent	NO	YES	NO	
3338	Swamp White Oak	Quercus bicolor	8.5	Good	NO	NO	NO	
3340	American Elm	Ulmus americana	9.2	Good	NO	NO	NO	
3341	Green Ash	Fraxinus pennsylvanica	9.1	Poor	NO	NO	NO	MT; 3.4
3343	American Elm	Ulmus americana	10	Fair	NO	NO	NO	
3344	Red Oak	Quercus rubra	22	Excellent	NO	YES	NO	ALSO TAG #3345
3346	Swamp White Oak	Quercus bicolor	17.1	Fair	NO	YES	NO	
3347	American Elm	Ulmus americana	8	Fair	NO	NO	NO	
3348	Swamp White Oak	Quercus bicolor	20	Fair	NO	YES	NO	
3351	Shagbark Hickory	Carya ovata	12.3	Good	NO	NO	YES	
3352	Swamp White Oak	Quercus bicolor	7	Dead	NO	NO	NO	
3353	Swamp White Oak	Quercus bicolor	16	Fair	NO	YES	NO	
3354	Swamp White Oak	Quercus bicolor	9.1	Fair	NO	NO	NO	
3355	Shagbark Hickory	Carya ovata	8.5	Good	NO	NO	NO	
3356	Red Oak	Quercus rubra	12.4	Good	NO	NO	NO	
3359	Green Ash	Fraxinus pennsylvanica	7.4	Dead	NO	NO	NO	
3361	Swamp White Oak	Quercus bicolor	6.1	Good	NO	NO	NO	
3362	Shagbark Hickory	Carya ovata	10.4	Excellent	NO	NO	YES	
3371	Shagbark Hickory	Carya ovata	20	Excellent	NO	YES	YES	
3374	Swamp White Oak	Quercus bicolor	11.5	Good	YES	NO	YES	
3375	Swamp White Oak	Quercus bicolor	7.5	Excellent	NO	NO	NO	
3378	Swamp White Oak	Quercus bicolor	9.7	Excellent	NO	NO	NO	
3380	Shagbark Hickory	Carya ovata	9	Good	NO	NO	YES	
3381	Green Ash	Fraxinus pennsylvanica	9	Dead	YES	NO	YES	
3386	Shagbark Hickory	Carya ovata	7.8	Good	YES	NO	YES	
3391	Green Ash	Fraxinus pennsylvanica	12.3	Poor	NO	NO	NO	MT; 5.5
3392	Shagbark Hickory	Carya ovata	7.9	Good	NO	NO	YES	
3393	Red Oak	Quercus rubra	10.6	Good	NO	NO	NO	
3394	Green Ash	Fraxinus pennsylvanica	11.1	Poor	NO	NO	NO	MT; 10.8
3395	Swamp White Oak	Quercus bicolor	6	Dead	NO	NO	NO	
3396	Swamp White Oak	Quercus bicolor	11.3	Good	NO	NO	NO	MT; 5.5
3398	Swamp White Oak	Quercus bicolor	15.3	Good	NO	NO	NO	
3401	American Elm	Ulmus americana	12.6	Poor	NO	NO	NO	
3402	Green Ash	Fraxinus pennsylvanica	6.5	Dead	NO	NO	NO	
3405	Swamp White Oak	Quercus bicolor	18	Good	NO	YES	NO	MT; 7.7
3407	Shagbark Hickory	Carya ovata	10	Excellent	NO	NO	NO	
3410	Sugar Maple	Acer saccharum	9.9	Excellent	NO	NO	YES	
3412	Green Ash	Fraxinus pennsylvanica	13.3	Poor	NO	NO	NO	
3414	Red Oak	Quercus rubra	13.3	Fair	NO	NO	NO	
3415	Green Ash	Fraxinus pennsylvanica	8.5	Poor	NO	NO	NO	MT; 7.6
3416	Shagbark Hickory	Carya ovata	7.3	Good	NO	NO	NO	
3419	Red Oak	Quercus rubra	9.8	Good	NO	NO	YES	
3422	Red Oak	Quercus rubra	13.4	Good	NO	NO	NO	
3423	Swamp White Oak	Quercus bicolor	16	Excellent	YES	YES	YES	
3424	American Elm	Ulmus americana	9.4	Poor	NO	NO	NO	
3425	Green Ash	Fraxinus pennsylvanica	7	Poor	NO	NO	NO	
3427	Green Ash	Fraxinus pennsylvanica	10.1	Poor	YES	NO	YES	MT; 9.1+6.1
3428	Silver Maple	Acer saccharinum	10.8	Excellent	YES	NO	YES	
3439	Silver Maple	Acer saccharinum	12.5	Good	NO	NO	NO	MT; 9.0
3440	Eastern Cottonwood	Populus deltoides	13.2	Good	NO	NO	NO	
3441	Green Ash	Fraxinus pennsylvanica	13.7	Poor	NO	NO	NO	MT; 9.6
3442	Silver Maple	Acer saccharinum	7.2	Good	NO	NO	NO	MT; 6.5, AISO TAG #11351
3444	Red Oak	Quercus rubra	13.3	Good	NO	NO	NO	
3445	Black Walnut	Juglans nigra	11.5	Good	NO	NO	NO	
3452	Shagbark Hickory	Carya ovata	8	Good	NO	NO	NO	
3458	Pin Oak	Quercus palustris	32.5	Good	NO	YES	NO	

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SECTION 23
TOWN 3 SOUTH, RANGE 6 EAST
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WASHTENAW COUNTY, MICHIGAN

CLIENT
DIVERSE REAL ESTATE LLC
FIELDSTONE PARK
FINAL SITE PLANS
TOPOGRAPHIC, TREE SURVEY AND DEMOLITION PLAN – AREA F

DATE 05/12/14
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REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET
DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-10-13-TP
JOB 11000143
FILE CODE:
SHEET NO. CP-10

K:\11000143\DWG\PLAN SETS\CONSTRUCTION\11000143CP-10-13-TP.DWG 6/2/2014 2:10 PM DANIEL SUTKOWSKI

Fieldstone Park Residential Development-Tree Survey List
Atwell Project No. 11000143

TAG NO.	SPECIES	*SCIENTIFIC NAME*	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
3459	Box-elder	*Acer negundo*	16	Dead	YES	NO	YES	
3468	Crab Apple	*Malus sp.*	7.5	Good	YES	NO	YES	
3499	Black Walnut	*Juglans nigra*	7.5	Good	YES	NO	YES	
3501	Silver Maple	*Acer saccharinum*	7.9	Good	NO	NO	NO	
3502	Silver Maple	*Acer saccharinum*	8.2	Good	NO	NO	NO	
3503	Silver Maple	*Acer saccharinum*	7.2	Good	NO	NO	NO	ALSO TAG #11350
3504	Eastern Cottonwood	*Populus deltoides*	24	Good	NO	NO	NO	
3507	Silver Maple	*Acer saccharinum*	10.5	Good	NO	NO	NO	
3508	Black Locust	*Robinia pseudoacacia*	11	Good	NO	NO	YES	
3509	Pin Oak	*Quercus palustris*	23	Good	NO	YES	NO	
3511	Red Maple	*Acer rubrum*	9	Excellent	YES	NO	YES	
3517	Silver Maple	*Acer saccharinum*	7	Good	NO	NO	NO	
3518	Black Locust	*Robinia pseudoacacia*	14	Good	NO	NO	YES	
3519	Silver Maple	*Acer saccharinum*	10	Good	NO	NO	NO	
3522	Pin Oak	*Quercus palustris*	32	Good	NO	YES	NO	
3524	Black Cherry	*Prunus serotina*	42.5	Fair	NO	YES	YES	
3526	Silver Maple	*Acer saccharinum*	9	Good	NO	NO	NO	
3527	Silver Maple	*Acer saccharinum*	7.5	Good	NO	NO	NO	
3528	Eastern Cottonwood	*Populus deltoides*	8.3	Good	YES	NO	YES	
3529	Eastern Cottonwood	*Populus deltoides*	17.3	Good	NO	NO	NO	
3532	Eastern Cottonwood	*Populus deltoides*	18.5	Good	NO	NO	NO	MT; 14.7
3534	Eastern Cottonwood	*Populus deltoides*	12.9	Fair	NO	NO	NO	
3535	Eastern Cottonwood	*Populus deltoides*	18.5	Excellent	NO	NO	NO	
3536	Eastern Cottonwood	*Populus deltoides*	16.7	Excellent	NO	NO	NO	
3537	Eastern Cottonwood	*Populus deltoides*	11.4	Good	NO	NO	NO	
3538	Eastern Cottonwood	*Populus deltoides*	8.4	Fair	NO	NO	NO	
3539	Eastern Cottonwood	*Populus deltoides*	7.5	Good	YES	NO	YES	
3539	Eastern Cottonwood	*Populus deltoides*	11	Good	YES	NO	YES	
3540	Eastern Cottonwood	*Populus deltoides*	16.6	Good	NO	NO	NO	
3542	Eastern Cottonwood	*Populus deltoides*	16.1	Good	NO	NO	NO	
3544	Eastern Cottonwood	*Populus deltoides*	25.8	Good	NO	NO	NO	
3545	Eastern Cottonwood	*Populus deltoides*	15	Excellent	YES	NO	YES	
3549	Eastern Cottonwood	*Populus deltoides*	24.5	Good	NO	NO	NO	
3551	Eastern Cottonwood	*Populus deltoides*	9.1	Good	NO	NO	NO	MT; 17.1+12.2+10.5
3553	Eastern Cottonwood	*Populus deltoides*	26	Good	NO	NO	NO	
3554	Eastern Cottonwood	*Populus deltoides*	16.4	Good	NO	NO	NO	
3556	Eastern Cottonwood	*Populus deltoides*	17.3	Good	NO	NO	NO	
3557	American Elm	*Ulmus americana*	18.8	Good	NO	YES	NO	
3559	Red Maple	*Acer rubrum*	11.5	Fair	NO	NO	NO	
3560	Shagbark Hickory	*Carya ovata*	9.4	Excellent	NO	NO	NO	
3562	Swamp White Oak	*Quercus bicolor*	17.6	Good	NO	YES	NO	
3563	Black Cherry	*Prunus serotina*	12.7	Good	NO	NO	NO	
3564	Shagbark Hickory	*Carya ovata*	7.4	Fair	NO	NO	NO	MT; 2.7
3566	Red Maple	*Acer rubrum*	10.4	Excellent	NO	NO	NO	
3567	Red Maple	*Acer rubrum*	10	Excellent	NO	NO	NO	
3568	Red Oak	*Quercus rubra*	9.2	Fair	NO	NO	NO	
3570	Eastern Cottonwood	*Populus deltoides*	13.2	Good	NO	NO	NO	
3572	Shagbark Hickory	*Carya ovata*	8.8	Good	NO	NO	NO	
3573	Box-elder	*Acer negundo*	10.9	Good	NO	NO	NO	
3574	Eastern Cottonwood	*Populus deltoides*	14	Good	NO	NO	NO	
3575	Eastern Cottonwood	*Populus deltoides*	11.4	Good	NO	NO	NO	
3577	Red Maple	*Acer rubrum*	9.4	Fair	NO	NO	NO	
3580	Shagbark Hickory	*Carya ovata*	7.2	Good	NO	NO	YES	
3582	Swamp White Oak	*Quercus bicolor*	15	Good	NO	NO	NO	
3583	Red Oak	*Quercus rubra*	16.5	Good	NO	YES	NO	
3584	American Elm	*Ulmus americana*	8.8	Poor	NO	NO	NO	MT; 5.8
3585	Eastern Cottonwood	*Populus deltoides*	23	Good	NO	NO	NO	
3587	Eastern Cottonwood	*Populus deltoides*	12.8	Good	NO	NO	NO	
3589	Red Oak	*Quercus rubra*	9.6	Good	NO	NO	NO	
3590	Shagbark Hickory	*Carya ovata*	7.1	Good	NO	NO	NO	
3591	Red Maple	*Acer rubrum*	7.4	Good	NO	NO	NO	
3592	American Elm	*Ulmus americana*	16.3	Good	NO	NO	NO	
3593	Red Oak	*Quercus rubra*	10.5	Excellent	NO	NO	NO	
3594	Eastern Cottonwood	*Populus deltoides*	13.6	Good	NO	NO	NO	
3595	Box-elder	*Acer negundo*	9.2	Good	NO	NO	NO	
3597	Box-elder	*Acer negundo*	10.7	Good	NO	NO	NO	
3598	Eastern Cottonwood	*Populus deltoides*	28	Good	NO	NO	NO	
3600	Eastern Cottonwood	*Populus deltoides*	17.9	Fair	NO	NO	NO	
3603	Swamp White Oak	*Quercus bicolor*	34	Dead	NO	YES	YES	
3606	Eastern Cottonwood	*Populus deltoides*	17.5	Good	YES	NO	YES	
3608	Eastern Cottonwood	*Populus deltoides*	23	Fair	YES	NO	YES	
3610	Eastern Cottonwood	*Populus deltoides*	9.7	Good	YES	NO	YES	
3611	Eastern Cottonwood	*Populus deltoides*	10	Excellent	YES	NO	YES	
3612	Eastern Cottonwood	*Populus deltoides*	22.8	Good	YES	NO	YES	
3618	Black Cherry	*Prunus serotina*	10.7	Excellent	YES	NO	YES	
3620	Eastern Cottonwood	*Populus deltoides*	13.5	Good	YES	NO	YES	
3622	Eastern Cottonwood	*Populus deltoides*	15.2	Good	YES	NO	YES	
3623	Eastern Cottonwood	*Populus deltoides*	14.8	Good	YES	NO	YES	
3625	Eastern Cottonwood	*Populus deltoides*	24.3	Good	YES	NO	YES	MT; 8.2
3626	Eastern Cottonwood	*Populus deltoides*	12	Good	YES	NO	YES	
3627	Eastern Cottonwood	*Populus deltoides*	11.6	Excellent	YES	NO	YES	
3628	Eastern Cottonwood	*Populus deltoides*	22.2	Good	YES	NO	YES	MT; 9.3
3630	Eastern Cottonwood	*Populus deltoides*	10.4	Excellent	YES	NO	YES	
3631	Eastern Cottonwood	*Populus deltoides*	21.9	Excellent	YES	NO	YES	
3632	Eastern Cottonwood	*Populus deltoides*	20.7	Good	YES	NO	YES	
3633	Black Cherry	*Prunus serotina*	23.3	Poor	NO	YES	YES	Fused
3634	Black Cherry	*Prunus serotina*	13.7	Good	NO	NO	YES	MT; 13.0+11.4
3636	Eastern Cottonwood	*Populus deltoides*	11.5	Good	YES	NO	YES	
3638	Pin Oak	*Quercus palustris*	30	Good	NO	YES	NO	
3641	Black Cherry	*Prunus serotina*	7	Good	NO	NO	NO	
3642	Silver Maple	*Acer saccharinum*	14	Good	NO	NO	NO	
3645	Silver Maple	*Acer saccharinum*	7.5	Good	NO	NO	NO	
3646	Silver Maple	*Acer saccharinum*	17.5	Good	NO	NO	NO	MT; 13.5
3649	Pin Oak	*Quercus palustris*	27	Good	NO	YES	NO	MT; 23.5+22.0
3651	Eastern Cottonwood	*Populus deltoides*	20	Good	NO	NO	NO	
3652	Eastern Cottonwood	*Populus deltoides*	12	Good	NO	NO	NO	
3656	Eastern Cottonwood	*Populus deltoides*	12.6	Good	NO	NO	NO	
3657	Eastern Cottonwood	*Populus deltoides*	12	Fair	NO	NO	NO	
3658	Eastern Cottonwood	*Populus deltoides*	10.5	Good	NO	NO	NO	
3659	Eastern Cottonwood	*Populus deltoides*	25.2	Good	NO	NO	NO	
3663	Eastern Cottonwood	*Populus deltoides*	20.6	Good	NO	NO	NO	
3666	Eastern Cottonwood	*Populus deltoides*	14.7	Fair	NO	NO	NO	
3669	Box-elder	*Acer negundo*	10.4	Good	NO	NO	NO	
3670	Eastern Cottonwood	*Populus deltoides*	16.2	Good	NO	NO	NO	
3671	Eastern Cottonwood	*Populus deltoides*	17.9	Good	NO	NO	NO	
3672	Eastern Cottonwood	*Populus deltoides*	14.9	Good	NO	NO	NO	
3673	Eastern Cottonwood	*Populus deltoides*	20.6	Fair	NO	NO	NO	
3674	Eastern Cottonwood	*Populus deltoides*	15.1	Good	NO	NO	NO	
3676	Eastern Cottonwood	*Populus deltoides*	17.4	Excellent	NO	NO	NO	
3679	Eastern Cottonwood	*Populus deltoides*	23.5	Excellent	NO	NO	NO	
3680	Eastern Cottonwood	*Populus deltoides*	16.7	Excellent	NO	NO	NO	
3681	Eastern Cottonwood	*Populus deltoides*	20.1	Good	NO	NO	NO	
3684	Eastern Cottonwood	*Populus deltoides*	21.4	Good	YES	NO	YES	
3689	Eastern Cottonwood	*Populus deltoides*	16.5	Good	YES	NO	YES	
3691	Eastern Cottonwood	*Populus deltoides*	24.2	Good	YES	NO	YES	
3693	Black Cherry	*Prunus serotina*	8	Dead	YES	NO	YES	
3700	Silver Maple	*Acer saccharinum*	15.5	Good	NO	NO	NO	
3702	Red Oak	*Quercus rubra*	11	Good	YES	NO	YES	
3704	Red Oak	*Quercus rubra*	7.4	Good	YES	NO	YES	
3706	Red Oak	*Quercus rubra*	29.4	Excellent	YES	YES	YES	
3708	Shagbark Hickory	*Carya ovata*	18.2	Poor	YES	YES	NO	
3710	Green Ash	*Fraxinus pennsylvanica*	9.3	Good	YES	NO	YES	
3715	Black Cherry	*Prunus serotina*	34.7	Fair	YES	YES	YES	
3721	Red Maple	*Acer rubrum*	9.3	Good	YES	NO	YES	
3724	Red Oak	*Quercus rubra*	10.8	Excellent	NO	NO	YES	
3726	Red Oak	*Quercus rubra*	9.4	Good	YES	NO	YES	
3727	Red Oak	*Quercus rubra*	17	Good	YES	YES	YES	
3729	Red Oak	*Quercus rubra*	11.2	Excellent	YES	NO	YES	
3734	Black Cherry	*Prunus serotina*	8	Good	YES	NO	YES	
3741	Black Cherry	*Prunus serotina*	13.5	Good	NO	NO	YES	MT; 11.6

Fieldstone Park Residential Development-Tree Survey List
Atwell Project No. 11000143

TAG NO.	SPECIES	*SCIENTIFIC NAME*	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
3749	Red Oak	*Quercus rubra*	10	Poor	NO	NO	NO	
3750	Green Ash	*Fraxinus pennsylvanica*	10.6	Poor	NO	NO	NO	
3751	Shagbark Hickory	*Carya ovata*	9.8	Excellent	YES	NO	NO	
3756	Black Cherry	*Prunus serotina*	16.7	Good	NO	NO	NO	
3757	Red Oak	*Quercus rubra*	28.9	Good	NO	YES	NO	MT; 28.1+27.1
3760	American Elm	*Ulmus americana*	11.6	Good	YES	NO	NO	
3761	Black Cherry	*Prunus serotina*	19	Fair	NO	YES	NO	
3765	White Oak	*Quercus alba*	11.8	Good	YES	NO	YES	
3767	Red Oak	*Quercus rubra*	11.4	Good	YES	NO	NO	
3768	Shagbark Hickory	*Carya ovata*	9	Excellent	YES	NO	NO	
3769	Red Oak	*Quercus rubra*	27.3	Good	NO	YES	NO	
3770	Shagbark Hickory	*Carya ovata*	6.7	Excellent	YES	NO	NO	
3772	Shagbark Hickory	*Carya ovata*	7	Excellent	YES	NO	NO	
3778	Willow	*Salix sp.*	14.7	Dead	NO	NO	NO	MT; 10.0
3779	Red Oak	*Quercus rubra*	13.7	Good	NO	NO	NO	
3780	Willow	*Salix sp.*	20	Poor	NO	NO	NO	MT; 14.0+12.6
3781	Red Oak	*Quercus rubra*	24.6	Good	NO	YES	NO	
3783	Red Oak	*Quercus rubra*	7.8	Good	NO	NO	NO	
3784	Red Oak	*Quercus rubra*	13.3	Excellent	NO	NO	NO	
3785	Shagbark Hickory	*Carya ovata*	7	Excellent	YES	NO	NO	
3786	Red Oak	*Quercus rubra*	11.4	Excellent	NO	NO	NO	
3788	Red Oak	*Quercus rubra*	16	Good	NO	YES	NO	
3789	Red Oak	*Quercus rubra*	9.2	Good	NO	NO	NO	
3790	Shagbark Hickory	*Carya ovata*	34.1	Good	YES	YES	NO	
3795	Red Oak	*Quercus rubra*	32	Good	NO	YES	NO	
3798	Shagbark Hickory	*Carya ovata*	8	Excellent	YES	NO	NO	
3799	Willow	*Salix sp.*	10	Fair	NO	NO	NO	
3848	Red Oak	*Quercus rubra*	19.5	Fair	NO	YES	NO	MT; 9.4
3851	Red Oak	*Quercus rubra*	20.9	Fair	NO	YES	NO	
3852	Red Oak	*Quercus rubra*	15.2	Good	YES	NO	NO	
3853	Red Oak	*Quercus rubra*	8.2	Fair	NO	NO	NO	
3857	Red Maple	*Acer rubrum*	18.5	Good	NO	YES	NO	
3863	Red Oak	*Quercus rubra*	17.3	Good	NO	YES	NO	
3864	American Elm	*Ulmus americana*	8.4	Fair	YES	NO	*YES	
3866	American Elm	*Ulmus americana*	9.2	Dead	NO	NO	NO	
3868	American Elm	*Ulmus americana*	18	Good	YES	YES	*YES	
3872	Red Maple	*Acer rubrum*	10	Good	NO	NO	NO	
3874	American Elm	*Ulmus americana*	8.8	Fair	YES	NO	*YES	
3876	Shagbark Hickory	*Carya ovata*	19	Excellent	NO	YES	NO	MT; 8.7
3877	Swamp White Oak	*Quercus bicolor*	7.1	Poor	NO	NO	NO	
3878	Red Oak	*Quercus rubra*	14.8	Excellent	NO	NO	NO	
3879	Black Cherry	*Prunus serotina*	14.2	Poor	NO	NO	NO	MT; 8.7
3880	Swamp White Oak	*Quercus bicolor*	8.6	Good	NO	NO	NO	
3881	White Oak	*Quercus alba*	15.5	Good	NO	YES	NO	
3883	Shagbark Hickory	*Carya ovata*	9.3	Good	NO	NO	NO	
3884	Swamp White Oak	*Quercus bicolor*	43.6	Fair	NO	YES	NO	
3885	Swamp White Oak	*Quercus bicolor*	23.4	Excellent	NO	YES	NO	
3886	Red Oak	*Quercus rubra*	24	Good	NO	YES	NO	
3889	Swamp White Oak	*Quercus bicolor*	21.1	Good	NO	YES	NO	
3890	Black Cherry	*Prunus serotina*	6.9	Good	NO	NO	YES	MT; 10.0
3892	Shagbark Hickory	*Carya ovata*	19.5	Good	NO	YES	NO	
3894	Red Maple	*Acer rubrum*	9.5	Good	NO	NO	NO	MT; 6.0+3.3
3895	Shagbark Hickory	*Carya ovata*	19.3	Excellent	NO	YES	NO	
3896	Shagbark Hickory	*Carya ovata*	8.5	Good	NO	NO	NO	
3897	Swamp White Oak	*Quercus bicolor*	11.6	Good	NO	NO	NO	MT; 8.2
3898	Red Maple	*Acer rubrum*	23.4	Excellent	NO	YES	NO	
3899	Red Oak	*Quercus rubra*	12.8	Fair	NO	NO	NO	MT; 4.6
5764	Eastern Cottonwood	*Populus deltoides*	11	Good	NO	NO	NO	
5765	Eastern Cottonwood	*Populus deltoides*	13.5	Fair	NO	NO	NO	
5766	Box-elder	*Acer negundo*	10	Good	NO	NO	NO	
5767	Box-elder	*Acer negundo*	10.3	Good	NO	NO	NO	
5768	Box-elder	*Acer negundo*	9.8	Poor	NO	NO	NO	
5769	Silver Maple	*Acer saccharinum*	22.5	Good	NO	YES	NO	
5770	Eastern Cottonwood	*Populus deltoides*	14.5	Good	NO	NO	NO	
5772	Black Cherry	*Prunus serotina*	12.4	Good	NO	NO	NO	
5773	Black Cherry	*Prunus serotina*	6.8	Good	NO	NO	NO	MT; 4.5
5774	Eastern Cottonwood	*Populus deltoides*	21	Good	NO	NO	NO	
5775	Red Cedar	*Juniperus virginiana*	6	Good	NO	NO	NO	
5776	Black Cherry	*Prunus serotina*	6.1	Good	NO	NO	NO	
5777	Pignut Hickory	*Carya glabra*	6.7	Excellent	NO	NO	NO	
5778	Pignut Hickory	*Carya glabra*	6.9	Excellent	NO	NO	NO	
5779	Black Oak	*Quercus velutina*	6	Excellent	NO	NO	NO	
5780	Pignut Hickory	*Carya glabra*	6	Excellent	NO	NO	NO	
5781	Shagbark Hickory	*Carya ovata*	6.7	Good	NO	NO	NO	
5782	Shagbark Hickory	*Carya ovata*	6.1	Excellent	NO	NO	YES	
5783	Black Willow	*Salix nigra*	10.7	Good	NO	NO	NO	
5784	Black Willow	*Salix nigra*	12.7	Good	NO	NO	NO	
5785	Black Willow	*Salix nigra*	6.8	Good	NO	NO	NO	MT; 4.7
5786	Black Willow	*Salix nigra*	7.2	Good	NO	NO	NO	
5787	Pin Oak	*Quercus palustris*	6.3	Excellent	NO	NO	NO	
5788	Pin Oak	*Quercus palustris*	9.3	Excellent	NO	NO	NO	
5789	Common Buckthorn	*Rhamnus cathartica*	6	Good	YES	NO	NO	
5790	Common Buckthorn	*Rhamnus cathartica*	7	Good	YES	NO	NO	
5791	Common Buckthorn	*Rhamnus cathartica*	4.9	Good	YES	NO	NO	MT; 4.9+3.9
5792	Sweet cherry	*Prunus avium*	6	Good	YES	NO	NO	
5793	Pin Oak	*Quercus palustris*	8.2	Excellent	NO	NO	NO	
5794	White Ash	*Fraxinus americana*	10.4	Fair	NO	NO	NO	
5795	American Elm	*Ulmus americana*	6.5	dead	YES	NO	NO	
5796	American Elm	*Ulmus americana*	6.3	Good	YES	NO	NO	
5797	American Elm	*Ulmus americana*	12.5	Good	YES	NO	NO	
5798	Common Buckthorn	*Rhamnus cathartica*	4.3	Good	YES	NO	NO	MT; 3.6
5799	Common Buckthorn	*Rhamnus cathartica*	7.2	Good	YES	NO	NO	MT; 6.8
5800	Black Cherry	*Prunus serotina*	6.6	Good	YES	NO	NO	
6701	Black Walnut	*Juglans nigra*	12	Good	NO	NO	NO	
6702	Box-elder	*Acer negundo*	10	Poor	NO	NO	NO	
6703	American Elm	*Ulmus americana*	6.5	Good	YES	NO	*YES	
6704	Box-elder	*Acer negundo*	7	Good	YES	NO	*YES	
6705	Swamp White Oak	*Quercus bicolor*	18	Good	YES	YES	YES	
6706	Black Walnut	*Juglans nigra*	12	Good	YES	NO	YES	
6707	Swamp White Oak	*Quercus bicolor*	8	Good	YES	NO	YES	
6708	Black Cherry	*Prunus serotina*	6	Good	YES	NO	YES	
6709	Black Cherry	*Prunus serotina*	8.5	Fair	YES	NO	YES	
6710	Box-elder	*Acer negundo*	7	Fair	YES	NO	*YES	MT; 6.5
6711	Swamp White Oak	*Quercus bicolor*	17.5	Good	YES	YES	YES	
6712	Sweet cherry	*Prunus avium*	8.5	Fair	YES	NO	YES	
6713	Sweet cherry	*Prunus avium*	11	Fair	YES	NO	YES	
6714	Sweet cherry	*Prunus avium*	6		YES	NO	YES	MT; 8.0
6715	Sweet cherry	*Prunus avium*	7.5	Good	YES	NO	YES	
6716	Box-elder	*Acer negundo*	6.5	Good	YES	NO	*YES	
6717	American Elm	*Ulmus americana*	6.5	Good	YES	NO	*YES	
6718	Black Cherry	*Prunus serotina*	8	Good	YES	NO	YES	
6719	Black Cherry	*Prunus serotina*	6.5	Good	YES	NO	YES	
6720	Box-elder	*Acer negundo*	6.5	Good	YES	NO	*YES	
6721	Box-elder	*Acer negundo*	6.5	Good	YES	NO	*YES	MT; 6.5
6722	Box-elder	*Acer negundo*	11	Good	YES	NO	*YES	MT 9.0+6.5
6723	Black Cherry	*Prunus serotina*	10	Good	YES	NO	YES	
6724	Pin Oak	*Quercus palustris*	12.5	Good	YES	NO	YES	
6725	Pin Oak	*Quercus palustris*	7.5	Good	YES	NO	YES	
6726	Black Cherry	*Prunus serotina*	8	Good	YES	NO	YES	
6727	Black Cherry	*Prunus serotina*	7	Good	YES	NO	YES	
6728	Box-elder	*Acer negundo*	8	Good	YES	NO	*YES	
6729	Black Cherry	*Prunus serotina*	9	dead	YES	NO	*YES	
6730	Siberian elm	*Ulmus pumila*	8	Good	YES	NO	*YES	
6731	Black Cherry	*Prunus serotina*	11	Good	NO	NO	YES	
6732	Black Cherry	*Prunus serotina*	12	Good	NO	NO	YES	
6733	Black Cherry	*Prunus serotina*	12	Good	NO	NO	YES	
6734	Black Cherry	*Prunus serotina*	10	Good	NO	NO	YES	
6735	Pin Oak	*Quercus palustris*	7.5	Good	NO	NO	YES	
6736	Black Cherry	*Prunus serotina*	10	Good	NO	NO	YES	
6737	Black Cherry	*Prunus serotina*	7	Good	NO	NO	YES	
6738	Black Cherry	*Prunus serotina*	9.5	Good	NO	NO	YES	

Fieldstone Park Residential Development-Tree Survey List
Atwell Project No. 11000143

TAG NO.	SPECIES	*SCIENTIFIC NAME*	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
6739	Black Cherry	*Prunus serotina*	13.5	Good	NO	NO	YES	
6740	Black Cherry	*Prunus serotina*	8.5	Fair	NO	NO	YES	MT; 9.0
6741	Black Cherry	*Prunus serotina*	10	Good	YES	NO	YES	
6742	Box-elder	*Acer negundo*	14	Good	YES	NO	*YES	
6743	Pin Oak	*Quercus palustris*	12.5	Good	NO	NO	YES	
6744	Nannyberry	*Viburnum lentago*	6.5	Fair	NO	NO	NO	
6745	Box-elder	*Acer negundo*	6	Good	NO	NO	NO	
6746	Choke Cherry	*Prunus virginiana*	6.8	Fair	NO	NO	NO	
6747	Pin Oak	*Quercus palustris*	28.1	Good	NO	NO	NO	
6910	Eastern Eastern Cottonwood	*Populus deltoides*	6.5	Good	NO	NO	*YES	
6911	Eastern Eastern Cottonwood	*Populus deltoides*	6.5	Good	NO	NO	*YES	
6912	Eastern Eastern Cottonwood	*Populus deltoides*	6.8	Good	NO	NO	NO	
6913	Eastern Eastern Cottonwood	*Populus deltoides*	6	Good	NO	NO	NO	
6914	Eastern Eastern Cottonwood	*Populus deltoides*	8.5	Good	YES	NO	NO	MT; 7.0
6915	Eastern Eastern Cottonwood	*Populus deltoides*	8.5	Fair	YES	NO	NO	
6916	Eastern Eastern Cottonwood	*Populus deltoides*	10.5	Excellent	YES	NO	NO	
6917	Eastern Eastern Cottonwood	*Populus deltoides*	6.4	Good	NO	NO	NO	
6918	American Elm	*Ulmus americana*	6.2	Fair	NO	NO	NO	
6919	Box-elder	*Acer negundo*	9	Good	NO	NO	NO	
6920	Eastern Eastern Cottonwood	*Populus deltoides*	7	Good	NO	NO	NO	
6921	Eastern Eastern Cottonwood	*Populus deltoides*	7.2	Good	NO	NO	NO	
6922	Eastern Eastern Cottonwood	*Populus deltoides*	6.5	Good	NO	NO	NO	
6923	Eastern Eastern Cottonwood	*Populus deltoides*	7	Good	NO	NO	NO	
6924	Eastern Eastern Cottonwood	*Populus deltoides*	6.2	Good	NO	NO	NO	
6925	Eastern Eastern Cottonwood	*Populus deltoides*	6.5	Good	NO	NO	NO	
6926	Eastern Eastern Cottonwood	*Populus deltoides*	7.5	Good	NO	NO	NO	
6927	Eastern Eastern Cottonwood	*Populus deltoides*	6.2	Good	NO	NO	NO	
6928	Eastern Eastern Cottonwood	*Populus deltoides*	10.5	Good	NO	NO	NO	
6929	Eastern Eastern Cottonwood	*Populus deltoides*	6.5	Good	NO	NO	NO	
6930	Eastern Eastern Cottonwood	*Populus deltoides*	6.2	Good	NO	NO	NO	
6931	Eastern Eastern Cottonwood	*Populus deltoides*	17.4	Excellent	NO	NO	NO	
6932	Shagbark Hickory	*Carya ovata*	6	Good	NO	NO	NO	
6933	Shagbark Hickory	*Carya ovata*	6.2	Good	NO	NO	NO	
6934	Shagbark Hickory	*Carya ovata*	6.2	Good	NO	NO	NO	
6935	White oak	*Quercus alba*	8	Excellent	NO	NO	YES	
6936	Eastern Eastern Cottonwood	*Populus deltoides*	6.5	Good	NO	NO	*YES	
6937	Eastern Eastern Cottonwood	*Populus deltoides*	7	Good	NO	NO	*YES	
6938	Eastern Eastern Cottonwood	*Populus deltoides*	7.5	Good	NO	NO	*YES	
6939	Box-elder	*Acer negundo*	6	Fair	YES	NO	*YES	MT; 4.5
6940	Eastern Eastern Cottonwood	*Populus deltoides*	7.2	Good	YES	NO	*YES	
6941	Eastern Eastern Cottonwood	*Populus deltoides*	7	Good	NO	NO	NO	
6942	Eastern Eastern Cottonwood	*Populus deltoides*	6.5	Good	NO	NO	NO	
6943	Eastern Eastern Cottonwood	*Populus deltoides*	6.5	Good	NO	NO	NO	
6944	Box-elder	*Acer negundo*	8.1	Fair	NO	NO	NO	
6945	Box-elder	*Acer negundo*	11	Fair	NO	NO	NO	
6946	Box-elder	*Acer negundo*	16	Fair	NO	NO	NO	
6947	Box-elder	*Acer negundo*	6.1	Fair	NO	NO	NO	
6948	Box-elder	*Acer negundo*	6.1	Fair	NO	NO	NO	
6949	Box-elder	*Acer negundo*	14	Fair	NO	NO	NO	
6950	Box-elder	*Acer negundo*	7.5	Good	YES	NO	*YES	
6951	Box-elder	*Acer negundo*	7	Good	YES	NO	*YES	
6952	Box-elder	*Acer negundo*	6.5	Fair	YES	NO	*YES	
6953	Box-elder	*Acer negundo*	7	Fair	YES	NO	*YES	
6955	Box-elder	*Acer negundo*	7.2	Fair	YES	NO	*YES	
6956	Eastern Eastern Cottonwood	*Populus deltoides*	8.5	Good	YES	NO	YES	
6957	Eastern Eastern Cottonwood	*Populus deltoides*	13.5	Fair	NO	NO	*YES	
6958	Box-elder	*Acer negundo*	16.5	Poor	NO	NO	*YES	
6959	Box-elder	*Acer negundo*	9.2	Poor	NO	NO	NO	
6960	Box-elder	*Acer negundo*	7	Poor	NO	NO	NO	
6961	Box-elder	*Acer negundo*	6.5	Poor	NO	NO	NO	
6962	Box-elder	*Acer negundo*	12	Poor	NO	NO	NO	
6963	Black Cherry	*Prunus serotina*	6.5	Good	NO	NO	NO	MT; 1.0 to 3.0 DBH (>8 small trunks.)
6964	Black Cherry	*Prunus serotina*	6	Fair	NO	NO	NO	
6965	Apple	*Malus ssp.*	8.2	Good	NO	NO	NO	MT; 4.5,4.0,3.0
6966	American Elm	*Ulmus americana*	8	Fair	NO	NO	*YES	
6967	Eastern Eastern Cottonwood	*Populus deltoides*	7	Good	NO	NO	NO	
6968	Pin Oak	*Quercus palustris*	6.2	Good	NO	NO	NO	
8064	American Elm	*Ulmus americana*	7.7	Good	NO	NO	*YES	
9001	American Elm	*Ulmus americana*	14.7	Dead	NO	NO	*YES	
9003	American Elm	*Ulmus americana*	7.4	Excellent	NO	NO	NO	
9004	Black Cherry	*Prunus serotina*	12.2	dead	NO	NO	NO	
9005	American Elm	*Ulmus americana*	12.5	Fair	NO	NO	NO	
9007	Pin Oak	*Quercus palustris*	7.3	Excellent	NO	NO	NO	
9008	Swamp White Oak	*Quercus bicolor*	7.4	Excellent	NO	NO	NO	
9009	Pin Oak	*Quercus palustris*	7.4	Good	NO	NO	NO	
9023	Black Cherry	*Prunus serotina*	6.8	dead	NO	NO	NO	
9025	Swamp White Oak	*Quercus bicolor*	8.5	Good	NO	NO	NO	
9026	American Elm	*Ulmus americana*	7.6	Good	NO	NO	*YES	
9027	Black Cherry	*Prunus serotina*	7	Excellent	NO	NO	NO	
9028	Black Cherry	*Prunus serotina*	9.4	Good	NO	NO	NO	
9029	Black Cherry	*Prunus serotina*	13	Good	YES	NO	NO	
9030	Black Cherry	*Prunus serotina*	6.8	Good	YES	NO	NO	
9031	Black Cherry	*Prunus serotina*	9.3	Fair	YES	NO	NO	
9032	Shagbark Hickory	*Carya ovata*	17.3	Good	YES	YES	NO	
9034	Pignut Hickory	*Carya glabra*	18.6	Good	YES	YES	NO	
9035	American Elm	*Ulmus americana*	7.5	Good	YES	NO	NO	
9036	American Elm	*Ulmus americana*	8.4	Good	YES	NO	NO	
9037	Pignut Hickory	*Carya glabra*	21.9	Good	YES	YES	YES	
9039	American Elm	*Ulmus americana*	9.1	Poor	YES	NO	*YES	
9040	Shagbark Hickory	*Carya ovata*	11.4	Good	YES	NO	YES	MT; 5.8
9041	Shagbark Hickory	*Carya ovata*	15.8	Good	YES	YES	YES	ALSO TAG #3273
9043	Shagbark Hickory	*Carya ovata*	14	Excellent	YES	NO	YES	MT; 11.3
9045	Shagbark Hickory	*Carya ovata*	17	Excellent	YES	YES	YES	
9047	Red Oak	*Quercus rubra*	22.8	Good	YES	YES	YES	
9048	White Oak	*Quercus alba*	7	Good	YES	NO	YES	
9049	Black Cherry	*Prunus serotina*	12	Fair	YES	NO	NO	
9050	Shagbark Hickory	*Carya ovata*	6.6	Good	YES	NO	NO	
9051	Common Buckthorn	*Rhamnus cathartica*	6.3	Fair	YES	NO	NO	
9053	Black Cherry	*Prunus serotina*	8.3	Poor	NO	NO	NO	
9055	Red Oak	*Quercus rubra*	8.1	Good	NO	NO	NO	
9056	Swamp White Oak	*Quercus bicolor*	36.5	Good	NO	YES	NO	
9057	Shagbark Hickory	*Carya ovata*	26.8	Excellent	NO	YES	NO	
9058	Red Oak	*Quercus rubra*	9.3	Good	NO	NO	NO	
9059	Red Oak	*Quercus rubra*	12.4	Excellent	NO	NO	NO	
9061	Red Oak	*Quercus bicolor*	7.4	Good	NO	NO	NO	MT; 2.8
9062	Shagbark Hickory	*Carya ovata*	7	Excellent	NO	NO	NO	
9063	Black Cherry	*Prunus serotina*	6.2	Fair	NO	NO	NO	
9065	Red Oak	*Quercus rubra*	7.6	Good	NO	NO	NO	
9066	Swamp White Oak	*Quercus bicolor*	13.7	Good	NO	NO	NO	
9067	Swamp White Oak	*Quercus bicolor*	6.7	Good	NO	NO	NO	
9068	Swamp White Oak	*Quercus bicolor*	14.5	Fair	NO	NO	NO	
9069	Red Maple	*Acer rubrum*	19	Excellent	NO	YES	YES	MT; 17.0+13.5+11.4, ALSO TAG #3370
9070	American Elm	*Ulmus americana*	9.7	Good	NO	NO	NO	
9071	Swamp White Oak	*Quercus bicolor*	7.5	Good	NO	NO	NO	
9072	Swamp White Oak	*Quercus bicolor*	8.4	Good	NO	NO	NO	
9073	Red Oak	*Quercus rubra*	8	Good	NO	NO	NO	
9074	Swamp White Oak	*Quercus bicolor*	8.7	Good	NO	NO	NO	
9075	Swamp White Oak	*Quercus bicolor*	10.4	Excellent	NO	NO	NO	
9076	Red Oak	*Quercus rubra*	9.1	Excellent	NO	NO	NO	
9077	Swamp White Oak	*Quercus bicolor*	7.8	Excellent	YES	NO	NO	
9078	Swamp White Oak	*Quercus bicolor*	20	Excellent	YES	YES	NO	
9079	Red Oak	*Quercus rubra*	6.5	Good	YES	NO	YES	
9081	Red Oak	*Quercus rubra*	7.1	Good	YES	NO	YES	
9082	Swamp White Oak	*Quercus bicolor*	23.2	Excellent	YES	YES	YES	MT; 16.3
9092	Black Cherry	*Prunus serotina*	9.4	Fair	YES	NO	NO	MT; 9.0+5.0
9097	Swamp White Oak	*Quercus bicolor*	32.4	Good	YES	YES	NO	
9098	Black Cherry	*Prunus serotina*	10.7	Fair	YES	NO	YES	MT; 9.8+9.6+6.6
9100	Red Oak	*Quercus rubra*	6.9	Good	NO	NO	NO	
11001	Common Buckthorn	*Rhamnus cathartica*	6.6	Dead	NO	NO	NO	MT; 4.9
11002	Common Buckthorn	*Rhamnus cathartica*	8	Good	NO	NO	NO	MT; 6.4

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TOPOGRAPHIC, TREE SURVEY
AND DEMOLITION PLAN – AREA F

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1" = 50 FEET
DR. JEC | CH. TP
P.M. E. LORD
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CAD FILE: 11000143CP-10-13-TP
JOB 11000143
FILE CODE:
SHEET NO. CP-11

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Fieldstone Park Residential Development-Tree Survey List
Atwell Project No. 11000143

TAG NO.	SPECIES	*SCIENTIFIC NAME*	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
11003	Common Buckthorn	*Rhamnus cathartica*	6.4	Poor	NO	NO	NO	
11004	American Elm	*Ulmus americana*	7.1	Poor	NO	NO	NO	
11005	Chinkapin Oak	*Quercus muehlenbergii*	11.5	Fair	NO	NO	NO	
11006	Red Oak	*Quercus rubra*	6.7	Excellent	YES	NO	YES	
11007	Red Oak	*Quercus rubra*	8.3	Excellent	NO	NO	NO	
11008	Common Buckthorn	*Rhamnus cathartica*	5.7	Good	NO	NO	NO	MT; 3.2
11009	Crab Apple	*Malus sp.*	8.2	Good	NO	NO	NO	
11010	Crab Apple	*Malus sp.*	4.4	Good	NO	NO	NO	MT; 2.9+2.4
11011	Common Buckthorn	*Rhamnus cathartica*	7.3	Good	NO	NO	NO	MT; 4.6+3.6+2.9
11012	American Elm	*Ulmus americana*	7.6	Good	NO	NO	NO	
11013	Common Buckthorn	*Rhamnus cathartica*	4.4	Good	NO	NO	NO	MT; 2.5
11014	Crab Apple	*Malus sp.*	3.6	Fair	NO	NO	NO	MT; 3.0+2.9+2.9+2.7
11015	Common Buckthorn	*Rhamnus cathartica*	8.8	Good	NO	NO	NO	MT; 2.2
11016	Common Buckthorn	*Rhamnus cathartica*	12.3	Good	NO	NO	NO	
11017	Crab Apple	*Malus sp.*	4.1	Good	NO	NO	NO	MT; 4.0+4.0+3.9
11018	Crab Apple	*Malus sp.*	3.8	Good	YES	NO	YES	MT; 3.8+2.3+2.1
11019	Crab Apple	*Malus sp.*	4.5	Excellent	YES	NO	YES	MT; 4.0+3.7+2.7+2.7+2.6+2.3
11020	Crab Apple	*Malus sp.*	6	Good	YES	NO	YES	MT; 6.0+5.7
11021	Common Buckthorn	*Rhamnus cathartica*	12.4	Poor	NO	NO	YES	
11022	American Elm	*Ulmus americana*	13.4	Poor	NO	NO	YES	
11023	Common Buckthorn	*Rhamnus cathartica*	5.6	Good	NO	NO	YES	MT; 4.0+2.0
11024	Crab Apple	*Malus sp.*	5.3	Excellent	NO	NO	YES	MT; 4.8+3.7+2.8+2.0
11025	Common Buckthorn	*Rhamnus cathartica*	4.3	Good	NO	NO	YES	MT; 3.3+3.0+2.9+2.6
11026	Crab Apple	*Malus sp.*	9.1	Good	NO	NO	YES	MT; 3.4+ 3.3+2.7
11027	Common Buckthorn	*Rhamnus cathartica*	6.5	Good	NO	NO	YES	
11028	Crab Apple	*Malus sp.*	11.5	Good	NO	YES	YES	
11029	Common Buckthorn	*Rhamnus cathartica*	6.7	Good	NO	NO	YES	
11030	Crab Apple	*Malus sp.*	4.2	Excellent	NO	NO	YES	MT; 3.4+3.0+2.5
11031	Red Oak	*Quercus rubra*	7.8	Excellent	NO	NO	YES	
11032	Common Buckthorn	*Rhamnus cathartica*	4.8	Excellent	NO	NO	YES	MT; 2.3
11033	Shagbark Hickory	*Carya ovata*	6	Excellent	NO	NO	YES	
11034	Common Buckthorn	*Rhamnus cathartica*	8	Excellent	NO	NO	YES	MT; 3.4+3.0
11035	Common Buckthorn	*Rhamnus cathartica*	6	Excellent	NO	NO	YES	MT; 3.5
11036	Common Buckthorn	*Rhamnus cathartica*	5.4	Good	NO	NO	YES	MT; 3.3
11037	Green Ash	*Fraxinus pennsylvanica*	6.8	Poor	NO	NO	YES	
11038	American Elm	*Ulmus americana*	12	Good	NO	NO	YES	
11039	Shagbark Hickory	*Carya ovata*	6.4	Good	NO	NO	YES	
11040	Common Buckthorn	*Rhamnus cathartica*	6.3	Fair	NO	NO	YES	MT; 4.5
11041	Green Ash	*Fraxinus pennsylvanica*	12	Dead	NO	NO	NO	
11042	Shagbark Hickory	*Carya ovata*	23.5	Good	YES	YES	YES	
11043	American Elm	*Ulmus americana*	6.3	Good	YES	NO	YES	
11044	Shagbark Hickory	*Carya ovata*	6.7	Fair	YES	NO	YES	
11045	Shagbark Hickory	*Carya ovata*	8	Good	YES	NO	YES	
11046	American Elm	*Ulmus americana*	6.6	Fair	YES	NO	YES	
11047	Shagbark Hickory	*Carya ovata*	6.8	Good	YES	NO	YES	
11048	Shagbark Hickory	*Carya ovata*	6.3	Good	YES	NO	YES	
11049	Red Oak	*Quercus rubra*	8	Excellent	YES	NO	YES	
11050	Red Oak	*Quercus rubra*	7.2	Excellent	YES	NO	YES	
11051	Shagbark Hickory	*Carya ovata*	6	Good	YES	NO	YES	
11052	Red Oak	*Quercus rubra*	6.4	Excellent	YES	NO	YES	
11053	Shagbark Hickory	*Carya ovata*	20.9	Excellent	YES	YES	YES	
11054	Green Ash	*Fraxinus pennsylvanica*	7.1	Dead	YES	NO	YES	
11055	Shagbark Hickory	*Carya ovata*	19.5	Fair	YES	YES	YES	
11056	Black Cherry	*Prunus serotina*	15.3	Fair	YES	NO	YES	
11057	Shagbark Hickory	*Carya ovata*	6.8	Good	YES	NO	YES	
11058	Black Cherry	*Prunus serotina*	11.4	Good	YES	NO	YES	
11059	Shagbark Hickory	*Carya ovata*	6.4	Good	YES	NO	YES	
11060	Common Buckthorn	*Rhamnus cathartica*	9	Poor	YES	NO	YES	
11061	American Elm	*Ulmus americana*	15.5	Fair	YES	NO	YES	
11062	Common Buckthorn	*Rhamnus cathartica*	8.9	Fair	NO	NO	NO	
11063	Shagbark Hickory	*Carya ovata*	25.2	Excellent	YES	YES	YES	
11064	Common Buckthorn	*Rhamnus cathartica*	8	Good	YES	NO	YES	
11065	Black Walnut	*Juglans nigra*	37.2	Good	YES	YES	YES	
11066	Red Oak	*Quercus rubra*	31	Good	YES	YES	YES	
11067	American Elm	*Ulmus americana*	11.3	Good	YES	NO	YES	MT; 5.0
11068	American Elm	*Ulmus americana*	15.1	Good	YES	NO	YES	
11069	Common Buckthorn	*Rhamnus cathartica*	6.9	Good	YES	NO	YES	
11070	Shagbark Hickory	*Carya ovata*	39.5	Good	NO	YES	NO	
11071	Red Oak	*Quercus rubra*	7.5	Good	YES	NO	YES	
11072	Shagbark Hickory	*Carya ovata*	17.8	Fair	NO	YES	NO	MT; 11.0+6.3
11073	Shagbark Hickory	*Carya ovata*	8.5	Fair	NO	NO	NO	
11074	American Elm	*Ulmus americana*	10.3	Dead	NO	NO	NO	
11075	Green Ash	*Fraxinus pennsylvanica*	30	Poor	NO	YES	NO	
11076	Common Buckthorn	*Rhamnus cathartica*	8.5	Fair	NO	NO	NO	
11077	Shagbark Hickory	*Carya ovata*	12.9	Excellent	NO	NO	NO	
11078	Common Buckthorn	*Rhamnus cathartica*	5.7	Excellent	NO	NO	NO	MT; 3.6
11079	Common Buckthorn	*Rhamnus cathartica*	12	Poor	NO	NO	NO	
11080	Common Buckthorn	*Rhamnus cathartica*	12	Poor	NO	NO	NO	
11081	Common Buckthorn	*Rhamnus cathartica*	10.3	Fair	NO	NO	NO	
11082	Swamp White Oak	*Quercus bicolor*	10.9	Poor	NO	NO	NO	
11083	Red Maple	*Acer rubrum*	6.8	Fair	NO	NO	NO	
11084	Swamp White Oak	*Quercus bicolor*	8	Fair	NO	NO	NO	
11085	Swamp White Oak	*Quercus bicolor*	6.8	Good	NO	NO	NO	
11086	Swamp White Oak	*Quercus bicolor*	8	Fair	NO	NO	NO	MT; 6.0+5.0
11087	Swamp White Oak	*Quercus bicolor*	15.5	Good	NO	YES	NO	
11088	Swamp White Oak	*Quercus bicolor*	11.7	Good	NO	NO	NO	
11089	Red Oak	*Quercus rubra*	12.5	Good	NO	NO	NO	
11090	Red Maple	*Acer rubrum*	6.6	Poor	NO	NO	NO	MT; 5.9+4.2+3.0
11091	White Oak	*Quercus alba*	42.9	Fair	NO	YES	NO	
11092	Swamp White Oak	*Quercus bicolor*	13.3	Poor	NO	NO	NO	MT; 7.2+6.0
11093	Swamp White Oak	*Quercus bicolor*	13.6	Fair	NO	NO	NO	
11094	Swamp White Oak	*Quercus bicolor*	9.4	Fair	NO	NO	NO	MT; 7.6
11095	Red Maple	*Acer rubrum*	6.7	Fair	NO	NO	NO	
11096	Red Maple	*Acer rubrum*	6.5	Good	NO	NO	NO	
11097	Red Maple	*Acer rubrum*	6.7	Good	NO	NO	NO	
11098	Red Maple	*Acer rubrum*	6.7	Good	NO	NO	NO	
11099	Red Maple	*Acer rubrum*	7	Good	NO	NO	NO	
11100	Swamp White Oak	*Quercus bicolor*	7.7	Excellent	NO	NO	YES	MT; 6.7
11101	Eastern Cottonwood	*Populus deltoides*	19.5	Excellent	NO	NO	NO	
11102	Chinkapin Oak	*Quercus muehlenbergii*	51	Good	NO	YES	YES	
11103	Eastern Cottonwood	*Populus deltoides*	20.5	Excellent	NO	NO	NO	
11104	Eastern Cottonwood	*Populus deltoides*	21.5	Excellent	NO	NO	NO	
11105	Eastern Cottonwood	*Populus deltoides*	22.6	Excellent	NO	NO	NO	
11106	Black Willow	*Salix nigra*	12	Fair	NO	NO	NO	
11107	Black Willow	*Salix nigra*	25.6	Excellent	NO	YES	NO	
11108	Eastern Cottonwood	*Populus deltoides*	12.2	Excellent	YES	NO	YES	
11109	American Elm	*Ulmus americana*	7.9	Fair	YES	NO	YES	MT; 6.6
11110	Eastern Cottonwood	*Populus deltoides*	6	Good	YES	NO	YES	
11111	Eastern Cottonwood	*Populus deltoides*	6.9	Good	YES	NO	YES	
11112	Eastern Cottonwood	*Populus deltoides*	10	Excellent	NO	NO	NO	
11113	Chinkapin Oak	*Quercus muehlenbergii*	6.4	Poor	NO	NO	NO	
11114	Chinkapin Oak	*Quercus muehlenbergii*	19.8	Good	YES	YES	YES	
11115	Black Walnut	*Juglans nigra*	17.7	Good	NO	YES	NO	MT; 15.8
11116	Eastern Cottonwood	*Populus deltoides*	10.3	Excellent	YES	NO	YES	
11117	American Elm	*Ulmus americana*	6.6	Poor	NO	NO	YES	
11118	Eastern Cottonwood	*Populus deltoides*	10.7	Fair	NO	NO	YES	
11119	White Oak	*Quercus alba*	15.3	Poor	NO	NO	YES	MT; 15.2
11120	Eastern Cottonwood	*Populus deltoides*	13.2	Fair	NO	NO	YES	
11121	American Elm	*Ulmus americana*	8.8	Dead	NO	NO	NO	
11122	White Ash	*Fraxinus americana*	15.8	Dead	NO	NO	NO	
11123	American Elm	*Ulmus americana*	7.4	Good	NO	NO	NO	
11124	Pin Oak	*Quercus palustris*	26.3	Good	NO	YES	NO	
11125	American Elm	*Ulmus americana*	8.2	Dead	NO	NO	NO	
11126	American Elm	*Ulmus americana*	6.5	Good	NO	NO	NO	
11127	White Ash	*Fraxinus americana*	8.9	Poor	NO	NO	NO	
11128	Silver Maple	*Acer saccharinum*	6.7	Good	NO	NO	NO	
11129	Pin Oak	*Quercus palustris*	8	Good	NO	NO	NO	
11130	White Ash	*Fraxinus americana*	6.4	Poor	NO	NO	NO	
11131	White Ash	*Fraxinus americana*	6.7	Poor	NO	NO	NO	
11132	White Ash	*Fraxinus americana*	7.4	Poor	NO	NO	NO	

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TAG NO.	SPECIES	*SCIENTIFIC NAME*	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
11133	Swamp White Oak	*Quercus bicolor*	16	Fair	NO	YES	NO	
11134	White Ash	*Fraxinus americana*	12.5	Poor	NO	NO	NO	
11135	Common Buckthorn	*Rhamnus cathartica*	8	Fair	NO	NO	NO	
11136	White Ash	*Fraxinus americana*	8	Poor	NO	NO	NO	
11137	Silver Maple	*Acer saccharinum*	6.5	Good	NO	NO	NO	
11138	Common Buckthorn	*Rhamnus cathartica*	5.5	Good	NO	NO	NO	MT; 5.0+3.7+2.6
11139	Red Oak	*Quercus rubra*	6.3	Good	YES	NO	NO	
11140	Silver Maple	*Acer saccharinum*	39	Fair	YES	YES	NO	MT; 7.0
11141	White Ash	*Fraxinus americana*	27	Dead	YES	YES	NO	
11142	Red Oak	*Quercus rubra*	6.8	Good	YES	NO	NO	
11143	Black Cherry	*Prunus serotina*	10	Fair	NO	NO	NO	
11144	Black Cherry	*Prunus serotina*	14.1	Poor	NO	NO	NO	
11145	White Ash	*Fraxinus americana*	12.3	Poor	NO	NO	NO	
11146	White Ash	*Fraxinus americana*	8.7	Dead	YES	NO	NO	
11147	Swamp White Oak	*Quercus bicolor*	14	Good	YES	NO	NO	
11148	Red Oak	*Quercus rubra*	7.9	Good	YES	NO	NO	
11149	Green Ash	*Fraxinus pennsylvanica*	7.8	Fair	YES	NO	NO	MT; 6.5+6.2
11150	Silver Maple	*Acer saccharinum*	6.5	Excellent	YES	NO	NO	
11151	Silver Maple	*Acer saccharinum*	9	Good	YES	NO	NO	
11152	Green Ash	*Fraxinus pennsylvanica*	6.3	Good	YES	NO	NO	
11153	Green Ash	*Fraxinus pennsylvanica*	8.7	Poor	YES	NO	NO	
11154	Red Maple	*Acer rubrum*	28	Excellent	YES	YES	NO	
11155	American Elm	*Ulmus americana*	7	Good	YES	NO	NO	MT; 6.7
11156	Black Cherry	*Prunus serotina*	16.1	Fair	NO	NO	NO	
11157	American Elm	*Ulmus americana*	6.7	Dead	NO	NO	NO	
11158	Green Ash	*Fraxinus pennsylvanica*	10.8	Poor	NO	NO	NO	
11159	Eastern Cottonwood	*Populus deltoides*	6.6	Good	NO	NO	NO	
11160	Green Ash	*Fraxinus pennsylvanica*	20.6	Poor	NO	YES	NO	
11161	Silver Maple	*Acer saccharinum*	9.4	Excellent	YES	NO	NO	
11162	Silver Maple	*Acer saccharinum*	6.9	Good	YES	NO	NO	
11163	Common Buckthorn	*Rhamnus cathartica*	10	Fair	YES	NO	NO	MT; 2.7+2.3
11164	Common Buckthorn	*Rhamnus cathartica*	7.7	Good	YES	NO	NO	MT; 6.2
11165	Red Maple	*Acer rubrum*	7.9	Excellent	YES	NO	NO	
11166	Red Oak	*Quercus rubra*	8.6	Excellent	NO	NO	NO	
11167	Green Ash	*Fraxinus pennsylvanica*	21.3	Poor	NO	YES	NO	
11168	American Elm	*Ulmus americana*	7.6	Fair	NO	NO	NO	
11169	Red Oak	*Quercus rubra*	11.7	Good	NO	NO	NO	
11170	Red Oak	*Quercus rubra*	12.3	Excellent	NO	NO	NO	
11171	American Elm	*Ulmus americana*	12.5	Poor	NO	NO	NO	
11172	American Elm	*Ulmus americana*	8.7	Good	NO	NO	NO	
11173	American Elm	*Ulmus americana*	6.4	Fair	NO	NO	NO	
11174	Hackberry	*Celtis occidentalis*	7	Good	NO	NO	NO	
11175	Red Oak	*Quercus rubra*	12.2	Good	NO	NO	NO	
11176	American Elm	*Ulmus americana*	8.8	Good	NO	NO	NO	
11177	Black Cherry	*Prunus serotina*	6.4	Good	NO	NO	NO	
11178	American Elm	*Ulmus americana*	9	Dead	NO	NO	NO	
11179	American Elm	*Ulmus americana*	12	Poor	NO	NO	NO	
11180	American Elm	*Ulmus americana*	13.6	Fair	NO	NO	NO	
11181	American Elm	*Ulmus americana*	9.2	Fair	NO	NO	NO	
11182	American Elm	*Ulmus americana*	9.4	Good	NO	NO	NO	
11183	American Elm	*Ulmus americana*	7.2	Poor	NO	NO	NO	
11184	American Elm	*Ulmus americana*	7.1	Poor	NO	NO	NO	
11185	American Elm	*Ulmus americana*	6.3	Poor	NO	NO	NO	
11186	American Elm	*Ulmus americana*	8.6	Fair	NO	NO	NO	
11187	Red Maple	*Acer rubrum*	13.7	Excellent	NO	NO	NO	
11188	American Elm	*Ulmus americana*	7.4	Fair	NO	NO	NO	
11189	Common Buckthorn	*Rhamnus cathartica*	7.3	Good	NO	NO	NO	MT; 6.3+3.3
11190	Common Buckthorn	*Rhamnus cathartica*	7.2	Good	NO	NO	NO	MT; 7.2
11191	American Elm	*Ulmus americana*	6.2	Dead	NO	NO	NO	
11192	American Elm	*Ulmus americana*	6.1	Fair	NO	NO	NO	
11193	Red Oak	*Quercus rubra*	9.7	Excellent	NO	NO	NO	
11194	American Elm	*Ulmus americana*	6.1	Poor	NO	NO	NO	
11195	Common Buckthorn	*Rhamnus cathartica*	11.2	Fair	NO	NO	NO	MT; 9.1+5.5+4.1
11196	Common Buckthorn	*Rhamnus cathartica*	4.5	Good	NO	NO	NO	MT; 4.2+3.5+2.7+2.6
11197	Red Oak	*Quercus rubra*	9.7	Excellent	NO	NO	NO	
11198	Red Oak	*Quercus rubra*	10.6	Excellent	NO	NO	NO	
11199	Red Oak	*Quercus rubra*	7.2	Good	NO	NO	YES	
11200	Common Buckthorn	*Rhamnus cathartica*	8.5	Good	NO	NO	NO	MT; 6.0+5.8+25
11201	Red Oak	*Quercus rubra*	12.3	Good	NO	NO	NO	
11202	Swamp White Oak	*Quercus bicolor*	7.5	Good	NO	NO	NO	MT; 2.0
11203	Red Oak	*Quercus rubra*	20.3	Excellent	NO	YES	NO	MT; 10.8
11204	Red Maple	*Acer rubrum*	10.8	Good	NO	NO	NO	
11205	American Elm	*Ulmus americana*	11.4	Poor	NO	NO	NO	
11206	Red Maple	*Acer rubrum*	8	Good	NO	NO	NO	
11207	American Elm	*Ulmus americana*	6	Poor	NO	NO	NO	
11208	Shagbark Hickory	*Carya ovata*	8.5	Excellent	NO	NO	NO	
11209	Red Maple	*Acer rubrum*	7.4	Good	NO	NO	NO	
11210	Red Maple	*Acer rubrum*	11	Fair	NO	NO	NO	MT; 7.6+5.6
11211	American Elm	*Ulmus americana*	7.8	Fair	NO	NO	NO	
11212	Red Maple	*Acer rubrum*	7.8	Poor	NO	NO	NO	
11213	Black Cherry	*Prunus serotina*	10.5	Poor	NO	NO	NO	
11214	Shagbark Hickory	*Carya ovata*	6.4	Excellent	NO	NO	NO	
11215	Shagbark Hickory	*Carya ovata*	6.5	Good	NO	NO	NO	
11216	Shagbark Hickory	*Carya ovata*	22.8	Good	NO	YES	NO	
11217	Shagbark Hickory	*Carya ovata*	7.5	Excellent	NO	NO	NO	
11218	Shagbark Hickory	*Carya ovata*	19	Good	YES	YES	NO	
11219	Red Oak	*Quercus rubra*	16	Good	NO	YES	NO	
11220	American Elm	*Ulmus americana*	11.1	Good	NO	NO	NO	
11221	Shagbark Hickory	*Carya ovata*	7.1	Good	NO	NO	NO	MT; 4.3+2.7
11222	Shagbark Hickory	*Carya ovata*	6.4	Good	NO	NO	NO	
11223	American Elm	*Ulmus americana*	7.1	Fair	NO	NO	NO	
11224	Swamp White Oak	*Quercus bicolor*	8.7	Excellent	NO	NO	NO	
11225	Shagbark Hickory	*Carya ovata*	6.7	Good	NO	NO	NO	
11226	Red Oak	*Quercus rubra*	12.3	Good	NO	NO	NO	
11227	Red Oak	*Quercus rubra*	13.9	Good	NO	NO	NO	
11228	Shagbark Hickory	*Carya ovata*	8.5	Good	NO	NO	NO	
11229	Black Cherry	*Prunus serotina*	9.9	Fair	NO	NO	NO	MT; 7.0
11230	Shagbark Hickory	*Carya ovata*	6	Good	NO	NO	NO	MT; 6.0
11231	Shagbark Hickory	*Carya ovata*	7.3	Good	NO	NO	NO	
11232	Common Buckthorn	*Rhamnus cathartica*	5.5	Good	NO	NO	NO	MT; 2.8
11233	Common Buckthorn	*Rhamnus cathartica*	6	Good	NO	NO	NO	
11234	Black Cherry	*Prunus serotina*	8.1	Good	NO	NO	NO	
11235	Willow	*Salix sp.*	11.3	Dead	NO	NO	NO	
11236	Common Buckthorn	*Rhamnus cathartica*	7.4	Fair	NO	NO	NO	
11237	Red Oak	*Quercus rubra*	18.5	Poor	NO	YES	NO	MT; 16.0
11238	Red Oak	*Quercus rubra*	10.8	Good	NO	NO	YES	
11239	Red Oak	*Quercus rubra*	7.7	Good	YES	NO	YES	
11240	Swamp White Oak	*Quercus bicolor*	10.8	Fair	YES	NO	NO	
11241	Swamp White Oak	*Quercus bicolor*	25	Poor	YES	YES	YES	
11242	Willow	*Salix sp.*	44.6	Fair	NO	NO	NO	
11243	Red Oak	*Quercus rubra*	6.7	Good	NO	NO	NO	
11244	Swamp White Oak	*Quercus bicolor*	6.8	Good	NO	NO	NO	
11245	Black Cherry	*Prunus serotina*	10.4	Poor	NO	NO	NO	
11246	Red Oak	*Quercus rubra*	12.8	Good	NO	NO	NO	
11247	Green Ash	*Fraxinus pennsylvanica*	8.5	Fair	NO	NO	NO	
11248	Green Ash	*Fraxinus pennsylvanica*	7.2	Fair	NO	NO	NO	
11249	Crab Apple	*Malus sp.*	5	Good	NO	NO	NO	MT; 4.5+4.0+3.9+3.1+2.5
11250	Black Cherry	*Prunus serotina*	9.2	Fair	NO	NO	NO	
11251	American Elm	*Ulmus americana*	6.3	Fair	NO	NO	NO	
11252	American Elm	*Ulmus americana*	8.5	Fair	NO	NO	NO	
11253	Common Buckthorn	*Rhamnus cathartica*	7.3	Good	NO	NO	NO	
11254	Green Ash	*Fraxinus pennsylvanica*	9.6	Poor	NO	NO	NO	
11255	Black Cherry	*Prunus serotina*	6.3	Good	NO	NO	NO	MT; 5.0+4.6+3.4
11256	Red Oak	*Quercus rubra*	6.2	Good	YES	NO	YES	
11257	Red Oak	*Quercus rubra*	6.3	Good	NO	NO	NO	
11258	Shagbark Hickory	*Carya ovata*	6	Excellent	NO	NO	NO	
11259	Red Oak	*Quercus rubra*	18	Good	NO	YES	NO	
11260	American Elm	*Ulmus americana*	7.7	Fair	NO	NO	NO	
11261	Red Oak	*Quercus rubra*	8.4	Good	NO	NO	NO	
11262	Green Ash	*Fraxinus pennsylvanica*	10.1	Poor	NO	NO	NO	

Fieldstone Park Residential Development-Tree Survey List
Atwell Project No. 11000143

TAG NO.	SPECIES	*SCIENTIFIC NAME*	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
11263	Swamp White Oak	*Quercus bicolor*	6.6	Fair	NO	NO	NO	
11264	Red Maple	*Acer rubrum*	9.5	Excellent	NO	NO	NO	MT; 7.7
11265	Red Maple	*Acer rubrum*	10.5	Excellent	NO	NO	NO	
11266	Green Ash	*Fraxinus pennsylvanica*	8.5	Dead	NO	NO	NO	
11267	Green Ash	*Fraxinus pennsylvanica*	10	Dead	NO	NO	NO	MT; 8.4+7.9
11268	American Elm	*Ulmus americana*	7	Good	NO	NO	NO	
11269	American Elm	*Ulmus americana*	8.4	Fair	NO	NO	NO	
11270	Silver Maple	*Acer saccharinum*	6	Good	NO	NO	NO	
11271	Swamp White Oak	*Quercus bicolor*	6.2	Good	NO	NO	NO	MT; 3.0
11272	American Elm	*Ulmus americana*	11.7	Fair	NO	NO	NO	MT; 10.5
11273	Silver Maple	*Acer saccharinum*	11.7	Excellent	NO	NO	NO	
11274	Green Ash	*Fraxinus pennsylvanica*	24	Poor	NO	YES	NO	
11275	Red Oak	*Quercus rubra*	7.8	Good	NO	NO	NO	
11276	Black Cherry	*Prunus serotina*	11.5	Poor	NO	NO	NO	
11277	Red Oak	*Quercus rubra*	11.5	Good	NO	NO	NO	MT; 10.0+5.0
11278	Red Oak	*Quercus rubra*	11.8	Excellent	NO	NO	NO	MT; 5.5
11279	Red Oak	*Quercus rubra*	22.3	Excellent	NO	YES	NO	
11280	Silver Maple	*Acer saccharinum*	10	Excellent	NO	NO	NO	
11281	Red Oak	*Quercus rubra*	6	Excellent	NO	NO	NO	
11282	Swamp White Oak	*Quercus bicolor*	7.7	Excellent	NO	NO	NO	
11283	Swamp White Oak	*Quercus bicolor*	6.1	Good	NO	NO	NO	
11284	Swamp White Oak	*Quercus bicolor*	8.9	Excellent	NO	NO	NO	
11285	Red Oak	*Quercus rubra*	9.5	Excellent	NO	NO	NO	
11286	Shagbark Hickory	*Carya ovata*	32.8	Excellent	NO	YES	NO	
11287	Red Oak	*Quercus rubra*	18	Excellent	NO	YES	NO	
11288	American Elm	*Ulmus americana*	16.3	Good	NO	NO	NO	
11289	Red Oak	*Quercus rubra*	8.4	Good	NO	NO	NO	
11290	Swamp White Oak	*Quercus bicolor*	21.7	Good	NO	YES	NO	
11291	Red Oak	*Quercus rubra*	8	Excellent	NO	NO	NO	
11292	Red Oak	*Quercus rubra*	6.8	Excellent	NO	NO	NO	
11293	Green Ash	*Fraxinus pennsylvanica*	12.5	Poor	NO	NO	NO	
11294	Red Oak	*Quercus bicolor*	6.5	Good	NO	NO	NO	
11295	Red Oak	*Quercus bicolor*	10.8	Excellent	NO	NO	NO	
11296	Shagbark Hickory	*Carya ovata*	6.1	Good	NO	NO	NO	
11297	Red Oak	*Quercus rubra*	6	Good	NO	NO	NO	
11298	American Elm	*Ulmus americana*	7.9	Poor	NO	NO	NO	
11299	Shagbark Hickory	*Carya ovata*	9.5	Excellent	NO	NO	NO	
11300	Green Ash	*Fraxinus pennsylvanica*	8	Poor	NO	NO	NO	
11301	Green Ash	*Fraxinus pennsylvanica*	10	Poor	NO	NO	NO	
11302	Red Oak	*Quercus rubra*	12.7	Excellent	NO	NO	NO	
11303	Red Oak	*Quercus rubra*	9.7	Excellent	NO	NO	NO	
11304	Red Oak	*Quercus rubra*	11.1	Good	NO	NO	NO	MT; 3.3
11305	Red Oak	*Quercus rubra*	18.2	Excellent	NO	YES	NO	
11306	American Elm	*Ulmus americana*	6.9	Poor	NO	NO	NO	
11307	Red Oak	*Quercus rubra*	6.7	Excellent	NO	NO	NO	
11308	Shagbark Hickory	*Carya ovata*	24.3	Excellent	YES	YES	NO	
11309	Red Oak	*Quercus rubra*	16.6	Good	YES	YES	NO	
11310	Black Cherry	*Prunus serotina*	9.5	Good	YES	NO	YES	
11311	American Elm	*Ulmus americana*	8.2	Fair	YES	NO	YES	
11312	Shagbark Hickory	*Carya ovata*	6.3	Fair	YES	NO	YES	
11313	Swamp White Oak	*Quercus bicolor*	13	Excellent	YES	NO	YES	
11314	Swamp White Oak	*Quercus bicolor*	10.5	Fair	YES	NO	YES	
11315	Green Ash	*Fraxinus pennsylvanica*	8.6	Poor	YES	NO	YES	
11316	Shagbark Hickory	*Carya ovata*	7.4	Good	YES	NO	YES	
11317	Red Oak	*Quercus rubra*	6.6	Fair	YES	NO	YES	
11318	Swamp White Oak	*Quercus bicolor*	7.6	Fair	YES	NO	YES	
11319	Swamp White Oak	*Quercus bicolor*	47.5	Good	YES	YES	YES	
11320	Common Buckthorn	*Rhamnus cathartica*	6.4	Good	YES	NO	YES	MT; 6.4
11321	American Elm	*Ulmus americana*	12	Good	YES	NO	YES	
11322	White Oak	*Quercus alba*	6	Fair	YES	NO	YES	
11323	American Elm	*Ulmus americana*	11.3	Poor	YES	NO	YES	
11324	American Elm	*Ulmus americana*	6.7	Poor	YES	NO	YES	
11325	Red Oak	*Quercus rubra*	6	Fair	YES	NO	YES	
11326	American Elm	*Ulmus americana*	7.1	Poor	YES	NO	YES	
11327	Shagbark Hickory	*Carya ovata*	9	Good	YES	NO	YES	
11328	Common Buckthorn	*Rhamnus cathartica*	7.8	Good	YES	NO	YES	MT; 3.2
11329	Swamp White Oak	*Quercus bicolor*	20	Good	YES	YES	YES	MT; 6.3+4.6
11330	American Elm	*Ulmus americana*	7.4	Poor	YES	NO	YES	
11331	Black Cherry	*Prunus serotina*	10.3	Fair	YES	NO	YES	
11332	Shagbark Hickory	*Carya ovata*	6.7	Good	YES	NO	YES	
11333	Shagbark Hickory	*Carya ovata*	9	Good	YES	NO	YES	MT; 6.7
11334	Shagbark Hickory	*Carya ovata*	12.8	Excellent	YES	NO	YES	
11335	Shagbark Hickory	*Carya ovata*	17.5	Good	YES	YES	YES	MT; 17.4+3.0
11336	White Oak	*Quercus alba*	12.5	Good	YES	NO	YES	
11337	Black Cherry	*Prunus serotina*	9.3	Good	YES	NO	YES	
11338	Shagbark Hickory	*Carya ovata*	17.5	Fair	YES	YES	YES	MT; 15.8
11339	Pignut Hickory	*Carya glabra*	11.9	Good	YES	NO	YES	MT; 6.0
11340	American Elm	*Ulmus americana*	15	Good	NO	NO	YES	
11341	Eastern Cottonwood	*Populus deltoides*	8	Good	NO	NO	YES	
11342	Common Buckthorn	*Rhamnus cathartica*	7.3	Good	NO	NO	YES	MT; 6.0+5.5+2.5
11343	Green Ash	*Fraxinus pennsylvanica*	11.7	Dead	NO	NO	YES	MT; 6.4
11344	Common Buckthorn	*Rhamnus cathartica*	6.4	Good	NO	NO	NO	MT; 5.7
11345	Common Buckthorn	*Rhamnus cathartica*	6.4	Good	NO	NO	NO	
11346	Black Cherry	*Prunus serotina*	8.6	Good	NO	NO	YES	
11347	Silver Maple	*Acer saccharinum*	6	Good	NO	NO	NO	
11348	Silver Maple	*Acer saccharinum*	6.2	Good	NO	NO	NO	
11349	Silver Maple	*Acer saccharinum*	6.2	Good	NO	NO	NO	MT; 6.0+5.5
11352	Silver Maple	*Acer saccharinum*	11	Good	NO	NO	NO	
11353	Silver Maple	*Acer saccharinum*	10	Good	NO	NO	NO	
11354	Silver Maple	*Acer saccharinum*	14.5	Good	NO	NO	NO	
11355	Silver Maple	*Acer saccharinum*	7.5	Good	NO	NO	NO	
11356	Black Cherry	*Prunus serotina*	8.5	Good	NO	NO	NO	
11357	Common Buckthorn	*Rhamnus cathartica*	5.7	Good	NO	NO	NO	MT; 5.0+4.0
11358	Black Cherry	*Prunus serotina*	10	Good	NO	NO	NO	
11359	Common Buckthorn	*Rhamnus cathartica*	6.3	Good	NO	NO	YES	
11360	Red Oak	*Quercus rubra*	9.5	Good	NO	NO	YES	
11361	Basswood	*Tilia americana*	6	Good	NO	NO	YES	
11362	Basswood	*Tilia americana*	7	Good	NO	NO	YES	
11363	Basswood	*Tilia americana*	7	Good	NO	NO	YES	
11364	Eastern Cottonwood	*Populus deltoides*	7	Good	NO	NO	YES	
11365	Eastern Cottonwood	*Populus deltoides*	9	Good	NO	NO	YES	
11366	Black Cherry	*Prunus serotina*	13.5	Good	NO	NO	YES	
11367	Black Cherry	*Prunus serotina*	8	Good	NO	NO	YES	
11368	Red Oak	*Quercus rubra*	7	Good	NO	NO	YES	
11369	Black Cherry	*Prunus serotina*	7.2	Good	NO	NO	YES	MT; 4.0
11370	American Elm	*Ulmus americana*	8.2	Good	NO	NO	YES	
11371	American Elm	*Ulmus americana*	6.7	Good	NO	NO	YES	
11372	Black Cherry	*Prunus serotina*	17.2	Poor	NO	NO	YES	MT; 16.7
11373	Green Ash	*Fraxinus pennsylvanica*	12.2	Dead	YES	NO	YES	
11374	Black Cherry	*Prunus serotina*	13.5	Good	YES	NO	YES	MT; 12.5
11375	American Elm	*Ulmus americana*	21.5	Good	YES	YES	YES	MT; 14.2+10.2
11376	American Elm	*Ulmus americana*	6.2	Fair	YES	NO	YES	
11377	Black Cherry	*Prunus serotina*	34.6	Poor	YES	YES	YES	
11378	Red Oak	*Quercus rubra*	7	Dead	YES	NO	YES	
11379	American Elm	*Ulmus americana*	14.1	Good	YES	NO	YES	MT; 7.0
11380	Black Cherry	*Prunus serotina*	7	Fair	YES	NO	YES	
11381	Black Cherry	*Prunus serotina*	9	Good	YES	NO	YES	
11382	Black Cherry	*Prunus serotina*	21	Good	YES	YES	YES	
11383	Black Cherry	*Prunus serotina*	17	Good	YES	NO	YES	
11384	American Elm	*Ulmus americana*	15.5	Good	YES	NO	YES	
11385	Common Buckthorn	*Rhamnus cathartica*	7.5	Good	YES	NO	YES	
11386	Black Cherry	*Prunus serotina*	12.6	Good	YES	NO	YES	
11387	Black Cherry	*Prunus serotina*	20	Good	YES	NO	YES	
11388	Red Oak	*Quercus rubra*	6	Good	YES	NO	YES	
11389	Black Cherry	*Prunus serotina*	10.5	Good	YES	NO	YES	
11390	Black Cherry	*Prunus serotina*	10.7	Good	YES	NO	YES	
11391	Red Oak	*Quercus rubra*	16.2	Excellent	YES	YES	YES	
11392	Black Cherry	*Prunus serotina*	8.7	Good	YES	NO	YES	
11393	Black Cherry	*Prunus serotina*	33.7	Fair	YES	YES	YES	

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FIELDSTONE PARK
FINAL SITE PLANS

TOPOGRAPHIC, TREE SURVEY
AND DEMOLITION PLAN – AREA F

DATE 05/12/14
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REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-10-13-TP
JOB 11000143
FILE CODE:
SHEET NO. CP-12

Fieldstone Park Residential Development-Tree Survey List								
Atwell Project No. 11000143								
TAG NO.	SPECIES	*SCIENTIFIC NAME*	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
11394	Black Cherry	*Prunus serotina*	13.6	Good	YES	NO	NO	MT; 6.6
11395	Black Cherry	*Prunus serotina*	15	Good	YES	NO	NO	
11396	Black Cherry	*Prunus serotina*	14	Good	YES	NO	NO	
11397	American Elm	*Ulmus americana*	9.3	Good	YES	NO	NO	
11398	Black Cherry	*Prunus serotina*	13.2	Good	NO	NO	NO	
11399	Red Oak	*Quercus rubra*	7.1	Excellent	NO	NO	NO	
11400	Black Cherry	*Prunus serotina*	13.6	Fair	NO	NO	NO	MT; 11.3
11401	Black Locust	*Robinia pseudoacacia*	10.5	Good	NO	NO	NO	
11402	Black Locust	*Robinia pseudoacacia*	9.5	Good	NO	NO	NO	
11403	Black Locust	*Robinia pseudoacacia*	7	Good	NO	NO	NO	
11404	Black Locust	*Robinia pseudoacacia*	8.5	Good	NO	NO	NO	
11405	Black Walnut	*Juglans nigra*	7	Good	NO	NO	NO	
11406	Black Locust	*Robinia pseudoacacia*	6	Good	NO	NO	NO	
11407	Black Walnut	*Juglans nigra*	8.5	Good	NO	NO	NO	
11408	Black Walnut	*Juglans nigra*	28	Good	NO	YES	NO	
11409	Black Walnut	*Juglans nigra*	8	Good	NO	NO	NO	
11410	Black Walnut	*Juglans nigra*	14	Good	NO	NO	NO	
11411	Black Walnut	*Juglans nigra*	6.5	Good	NO	NO	NO	
11412	Black Walnut	*Juglans nigra*	10.5	Good	NO	NO	NO	
11413	Black Walnut	*Juglans nigra*	9	Good	NO	NO	NO	
11414	Black Walnut	*Juglans nigra*	7	Good	NO	NO	NO	
11415	Black Walnut	*Juglans nigra*	9	Good	NO	NO	NO	
11416	Black Walnut	*Juglans nigra*	6	Good	NO	NO	NO	
11417	Black Walnut	*Juglans nigra*	8	Good	NO	NO	NO	
11418	Black Walnut	*Juglans nigra*	7	Good	NO	NO	NO	
11419	Black Walnut	*Juglans nigra*	6	Good	YES	NO	NO	
11420	Black Walnut	*Juglans nigra*	6.5	Good	YES	NO	NO	
11421	Black Walnut	*Juglans nigra*	7.5	Good	YES	NO	YES	MT; 8.8+7.5
11422	Black Walnut	*Juglans nigra*	12	Good	YES	NO	YES	
11423	Black Walnut	*Juglans nigra*	10.5	Good	YES	NO	YES	
11424	Black Walnut	*Juglans nigra*	7.5	Good	YES	NO	YES	
11425	Box-elder	*Acer negundo*	30	Good	YES	NO	*YES	MT; 11.0
11426	Black Walnut	*Juglans nigra*	7.5	Good	YES	NO	YES	
11429	Black Walnut	*Juglans nigra*	7	Good	YES	NO	YES	
11430	Black Walnut	*Juglans nigra*	7	Good	YES	NO	YES	
11431	Black Walnut	*Juglans nigra*	12	Good	YES	NO	YES	
11433	Box-elder	*Acer negundo*	30	Good	YES	NO	*YES	
11434	Black Walnut	*Juglans nigra*	22	Good	YES	YES	YES	
11435	Black Walnut	*Juglans nigra*	9	Good	YES	NO	YES	
11436	Black Walnut	*Juglans nigra*	14	Good	YES	NO	YES	
11437	Black Walnut	*Juglans nigra*	18	Good	YES	YES	YES	
11438	Black Walnut	*Juglans nigra*	11	Good	YES	NO	YES	
11439	Box-elder	*Acer negundo*	20	Good	NO	NO	NO	MT; 13.0, ALSO TAG #11440
11441	Box-elder	*Acer negundo*	6.5	Poor	YES	NO	*YES	
11442	Box-elder	*Acer negundo*	13	Fair	YES	NO	*YES	
11443	Box-elder	*Acer negundo*	18.6	Good	YES	NO	*YES	MT; 13.0+5.5
11444	Crab Apple	*Malus sp.*	7.5	Good	YES	NO	YES	
11445	Crab Apple	*Malus sp.*	7	Good	YES	NO	YES	
11446	Box-elder	*Acer negundo*	13.5	Good	YES	NO	*YES	
11447	American Elm	*Ulmus americana*	25.5	Dead	YES	YES	*YES	
11448	Black Walnut	*Juglans nigra*	6	Good	YES	NO	YES	MT; 6.0
11449	Black Walnut	*Juglans nigra*	8	Good	YES	NO	YES	
11450	Black Walnut	*Juglans nigra*	17.5	Good	YES	YES	YES	MT; 16.0+16.0
11451	Black Locust	*Robinia pseudoacacia*	6	Dead	NO	NO	NO	
11452	Black Locust	*Robinia pseudoacacia*	8	Good	NO	NO	NO	
11453	Black Locust	*Robinia pseudoacacia*	6	Good	NO	NO	NO	
11454	Black Walnut	*Juglans nigra*	7	Good	NO	NO	NO	
11455	Black Walnut	*Juglans nigra*	9	Good	NO	NO	NO	
11456	Black Locust	*Robinia pseudoacacia*	8	Good	NO	NO	NO	
11457	Black Locust	*Robinia pseudoacacia*	7	Good	YES	NO	NO	
11458	Black Locust	*Robinia pseudoacacia*	7	Good	YES	NO	NO	MT; 6.0
11459	Black Walnut	*Juglans nigra*	25	Good	YES	YES	YES	
11460	Black Walnut	*Juglans nigra*	12	Good	YES	NO	YES	
11461	Box-elder	*Acer negundo*	15	Good	YES	NO	*YES	MT; 14.0+6.0
11462	Box-elder	*Acer negundo*	15	Good	YES	NO	*YES	MT; 8.0
11463	Black Walnut	*Juglans nigra*	15	Good	YES	NO	YES	
11464	Black Walnut	*Juglans nigra*	13	Good	YES	NO	YES	
11465	Black Walnut	*Juglans nigra*	7	Good	YES	NO	YES	
11466	Black Walnut	*Juglans nigra*	7	Good	YES	NO	YES	
11467	Black Walnut	*Juglans nigra*	7	Good	YES	NO	YES	MT; 4.0
11468	Black Walnut	*Juglans nigra*	9	Good	YES	NO	YES	
11469	Black Walnut	*Juglans nigra*	10	Good	YES	NO	YES	
11470	Black Walnut	*Juglans nigra*	8	Good	YES	NO	YES	
11471	Box-elder	*Acer negundo*	8	Good	YES	NO	*YES	MT; 5.0+3.0
11472	Black Walnut	*Juglans nigra*	15	Good	YES	NO	YES	
11473	Black Walnut	*Juglans nigra*	8	Good	YES	NO	YES	
11474	Black Walnut	*Juglans nigra*	8.5	Good	YES	NO	YES	
11475	Black Walnut	*Juglans nigra*	6	Good	YES	NO	YES	
11476	Box-elder	*Acer negundo*	18	Poor	YES	NO	*YES	MT; 18.0
11477	Black Walnut	*Juglans nigra*	22	Good	YES	YES	YES	MT; 8.0
11478	Black Walnut	*Juglans nigra*	11	Good	YES	NO	YES	
11480	Black Walnut	*Juglans nigra*	11	Good	YES	NO	YES	
11481	Black Walnut	*Juglans nigra*	17	Good	YES	NO	YES	
11482	Box-elder	*Acer negundo*	12.5	Good	YES	NO	*YES	
11483	Black Walnut	*Juglans nigra*	15.5	Good	YES	NO	YES	
11484	Black Walnut	*Juglans nigra*	17	Good	YES	NO	YES	
11485	Box-elder	*Acer negundo*	8.5	Fair	YES	NO	*YES	
11486	Box-elder	*Acer negundo*	7	Fair	YES	NO	*YES	
11487	Box-elder	*Acer negundo*	7	Good	YES	NO	*YES	
11488	Black Walnut	*Juglans nigra*	6.5	Good	YES	NO	YES	
11489	Black Walnut	*Juglans nigra*	18.5	Good	YES	YES	YES	
11490	American Elm	*Ulmus americana*	11	Fair	NO	NO	NO	
11491	Black Walnut	*Juglans nigra*	7	Good	NO	NO	NO	
11492	Black Walnut	*Juglans nigra*	11	Good	YES	NO	NO	
11493	Black Walnut	*Juglans nigra*	9	Good	YES	NO	NO	
11494	Box-elder	*Acer negundo*	8.5	Good	YES	NO	*YES	
11495	Black Walnut	*Juglans nigra*	10.5	Good	YES	NO	NO	
11496	Black Walnut	*Juglans nigra*	11.5	Good	NO	NO	NO	
11497	Black Walnut	*Juglans nigra*	11	Good	NO	NO	NO	
11498	Black Walnut	*Juglans nigra*	14	Good	NO	NO	NO	
11499	Yellow Birch	*Betula alleghaniensis*	9	Good	NO	NO	NO	
11500	Black Walnut	*Juglans nigra*	9	Good	NO	NO	NO	
11549	Black Walnut	*Juglans nigra*	15.5	Good	NO	NO	NO	
11550	Black Walnut	*Juglans nigra*	34	Good	NO	YES	NO	
11551	Black Walnut	*Juglans nigra*	9	Good	NO	NO	NO	
11552	Black Walnut	*Juglans nigra*	7.5	Good	NO	NO	NO	
11553	Shagbark Hickory	*Carya ovata*	6.5	Good	NO	NO	NO	
11554	Shagbark Hickory	*Carya ovata*	8.5	Good	NO	NO	NO	
11555	Shagbark Hickory	*Carya ovata*	8.5	Good	NO	NO	NO	
11556	Shagbark Hickory	*Carya ovata*	10	Good	NO	NO	NO	
11557	Shagbark Hickory	*Carya ovata*	8	Good	NO	NO	NO	MT; 6.0
11558	Box-elder	*Acer negundo*	13	Good	NO	NO	NO	
11559	Pin Oak	*Quercus palustris*	7	Good	NO	NO	NO	
11560	Shagbark Hickory	*Carya ovata*	6.5	Good	NO	NO	NO	
11561	Swamp White Oak	*Quercus bicolor*	7	Good	NO	NO	NO	
11562	Box-elder	*Acer negundo*	6.5	Good	NO	NO	NO	
11563	Black Walnut	*Juglans nigra*	13.5	Good	NO	NO	NO	
11564	Pin Oak	*Quercus palustris*	6.5	Good	NO	NO	NO	
11565	Pin Oak	*Quercus palustris*	6.5	Good	NO	NO	NO	
11566	Pin Oak	*Quercus palustris*	8	Good	YES	NO	YES	
11567	Pin Oak	*Quercus palustris*	7.5	Good	YES	NO	YES	
11568	Pin Oak	*Quercus palustris*	6.5	Good	NO	NO	NO	
11569	White Oak	*Quercus alba*	65	Fair	NO	YES	NO	
11702	Black Cherry	*Prunus serotina*	27.3	Good	NO	YES	NO	
11703	Shagbark Hickory	*Carya ovata*	14.6	Excellent	NO	NO	NO	
11704	Shagbark Hickory	*Carya ovata*	9.7	Good	NO	NO	NO	
11705	Black Cherry	*Prunus serotina*	35.7	Good	YES	YES	NO	
11706	American Elm	*Ulmus americana*	12.2	Good	YES	NO	NO	
11707	American Elm	*Ulmus americana*	15.2	Dead	YES	NO	NO	

Fieldstone Park Residential Development-Tree Survey List								
Atwell Project No. 11000143								
TAG NO.	SPECIES	*SCIENTIFIC NAME*	DBH (in)	CONDITION	WOODLAND	HERITAGE	REMOVE?	COMMENTS
11708	Black Cherry	*Prunus serotina*	14	Good	YES	NO	NO	
11709	Shagbark Hickory	*Carya ovata*	7.5	Excellent	YES	NO	NO	
11710	Black Cherry	*Prunus serotina*	15	Good	YES	NO	NO	
11711	Black Cherry	*Prunus serotina*	13	Good	YES	NO	NO	
11712	Black Cherry	*Prunus serotina*	10.2	Good	YES	NO	NO	MT; 8.5
11713	Shagbark Hickory	*Carya ovata*	9.8	Excellent	YES	NO	NO	
11715	White Oak	*Quercus alba*	12.5	Excellent	YES	NO	YES	

* ASTERISK INDICATES TREES THAT ARE BEING REMOVED BUT WILL NOT REQUIRE REPLACEMENT TREE MITIGATION BASED ON ORDINANCE REQUIREMENTS FOR ONE OF THE FOLLOWING REASONS:

- THE TREE IS DISEASED, DEAD, WEAK OR IN POOR CONDITION
- THE TREE IS CONTAINED ON THE PROHIBITED WEEDS AND INVASIVE PLANT LIST

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TOPOGRAPHIC, TREE SURVEY
AND DEMOLITION PLAN – AREA F

DATE 05/12/14

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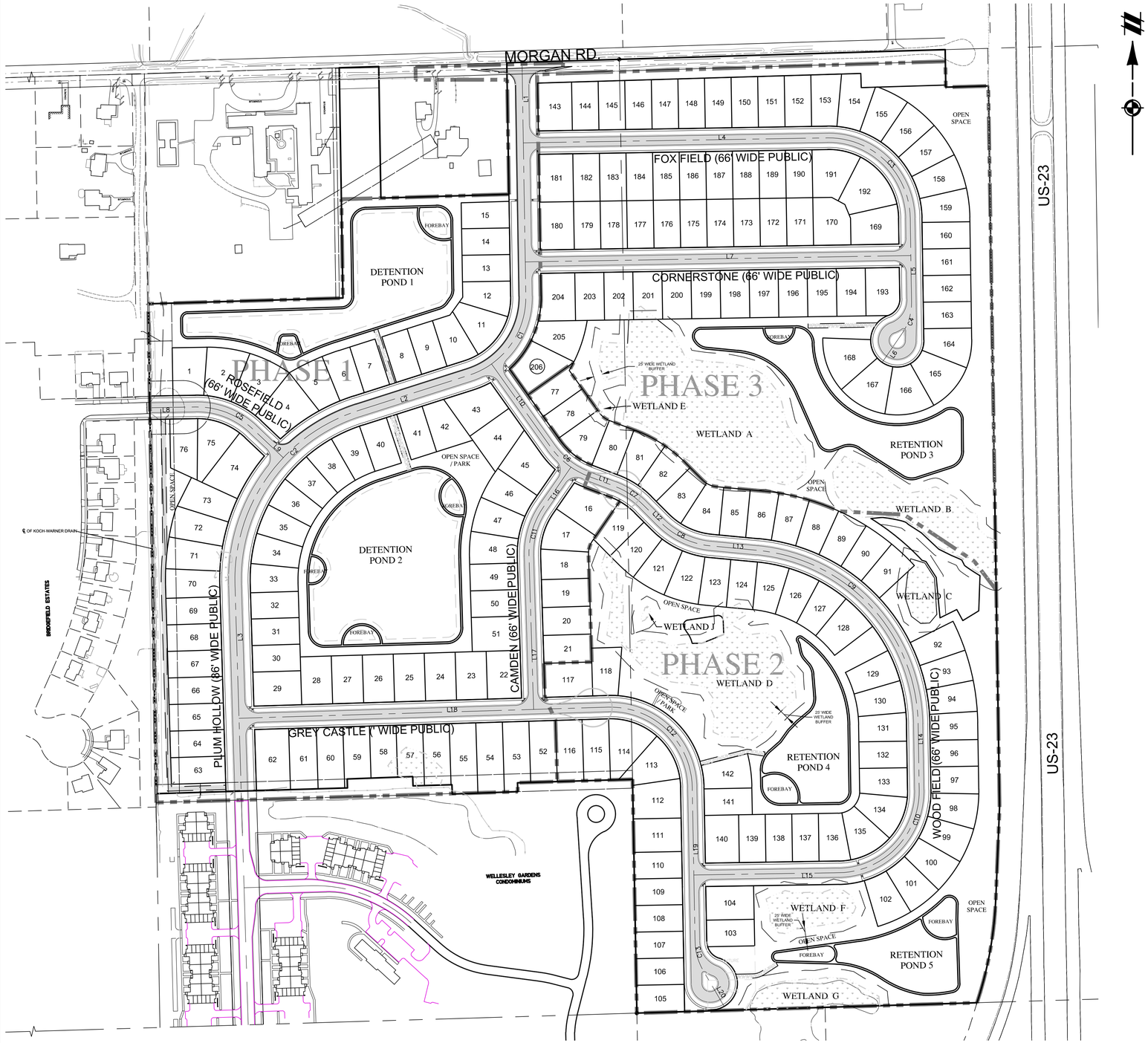

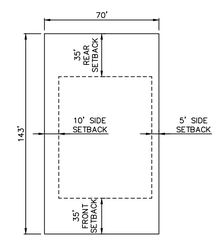

Typical Lot Detail
No Scale

PLUM HOLLOW DRIVE

LINE #	LENGTH	DIRECTION
L1	660.32'	S0° 56' 21.67"E
L2	328.22'	S72° 18' 08.15"W
L3	700.91'	S1° 43' 37.00"E

CURVE #	RADUIS	LENGTH	DELTA	CHD. BEARING	CHORD
C1	230.00'	294.01'	73°14'30"	S35°40'53"W	274.40'
C2	500.00'	646.03'	74°01'45"	S35°17'16"W	602.02'

FOX FIELD

LINE #	LENGTH	DIRECTION
L4	857.86'	N89° 03' 38.33"E
L5	237.87'	S0° 53' 43.00"E
L6	99.55'	S34° 31' 51.63"W

CURVE #	RADUIS	LENGTH	DELTA	CHD. BEARING	CHORD
C3	230.00'	361.46'	90°02'39"	S45°55'02"E	325.39'
C4	150.00'	92.75'	35°25'35"	S16°49'04"W	91.28'

CORNERSTONE

LINE #	LENGTH	DIRECTION
L7	1087.78'	N89° 03' 38.24"E

ROSEFIELD

LINE #	LENGTH	DIRECTION
L8	129.71'	N89° 04' 06.00"E
L9	117.22'	S46° 38' 25.45"E

CURVE #	RADUIS	LENGTH	DELTA	CHD. BEARING	CHORD
C5	230.00'	177.80'	44°17'29"	S68°47'10"E	173.40'

WOODFIELD

LINE #	LENGTH	DIRECTION
L10	288.49'	S35° 25' 24.05"E
L11	78.52'	S69° 11' 39.34"E
L12	69.76'	S44° 52' 58.30"E
L13	132.92'	S84° 35' 56.49"E
L14	186.30'	S0° 53' 43.00"E
L15	409.29'	S89° 06' 17.00"W

CURVE #	RADUIS	LENGTH	DELTA	CHD. BEARING	CHORD
C6	230.00'	135.57'	33°46'15"	S52°18'32"E	133.61'
C7	230.00'	97.59'	24°18'41"	S57°02'19"E	96.86'
C8	230.00'	159.43'	39°42'58"	S64°44'27"E	156.26'
C9	500.00'	730.45'	83°42'13"	S42°44'50"E	667.21'
C10	230.00'	361.28'	90°00'00"	S44°06'17"W	325.27'

CAMDEN

LINE #	LENGTH	DIRECTION
L16	137.27'	S34° 35' 52.35"W
L17	433.46'	S1° 43' 36.98"E

CURVE #	RADUIS	LENGTH	DELTA	CHD. BEARING	CHORD
C11	230.00'	145.82'	36°19'29"	S16°26'08"W	143.39'

GREY CASTLE

LINE #	LENGTH	DIRECTION
L18	1042.15'	N88° 16' 22.88"E
L19	436.89'	S1° 03' 13.73"E
L20	117.91'	S30° 18' 05.25"E

CURVE #	RADUIS	LENGTH	DELTA	CHD. BEARING	CHORD
C12	230.00'	363.99'	90°40'23"	S46°23'25"E	327.17'
C13	165.00'	84.23'	29°14'52"	S15°40'39"E	83.32'

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OVERALL LAYOUT PLAN

DATE 05/12/14

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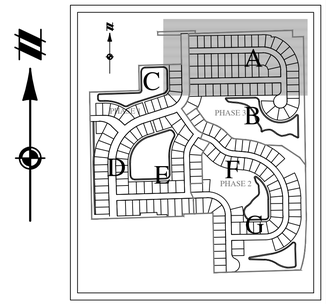

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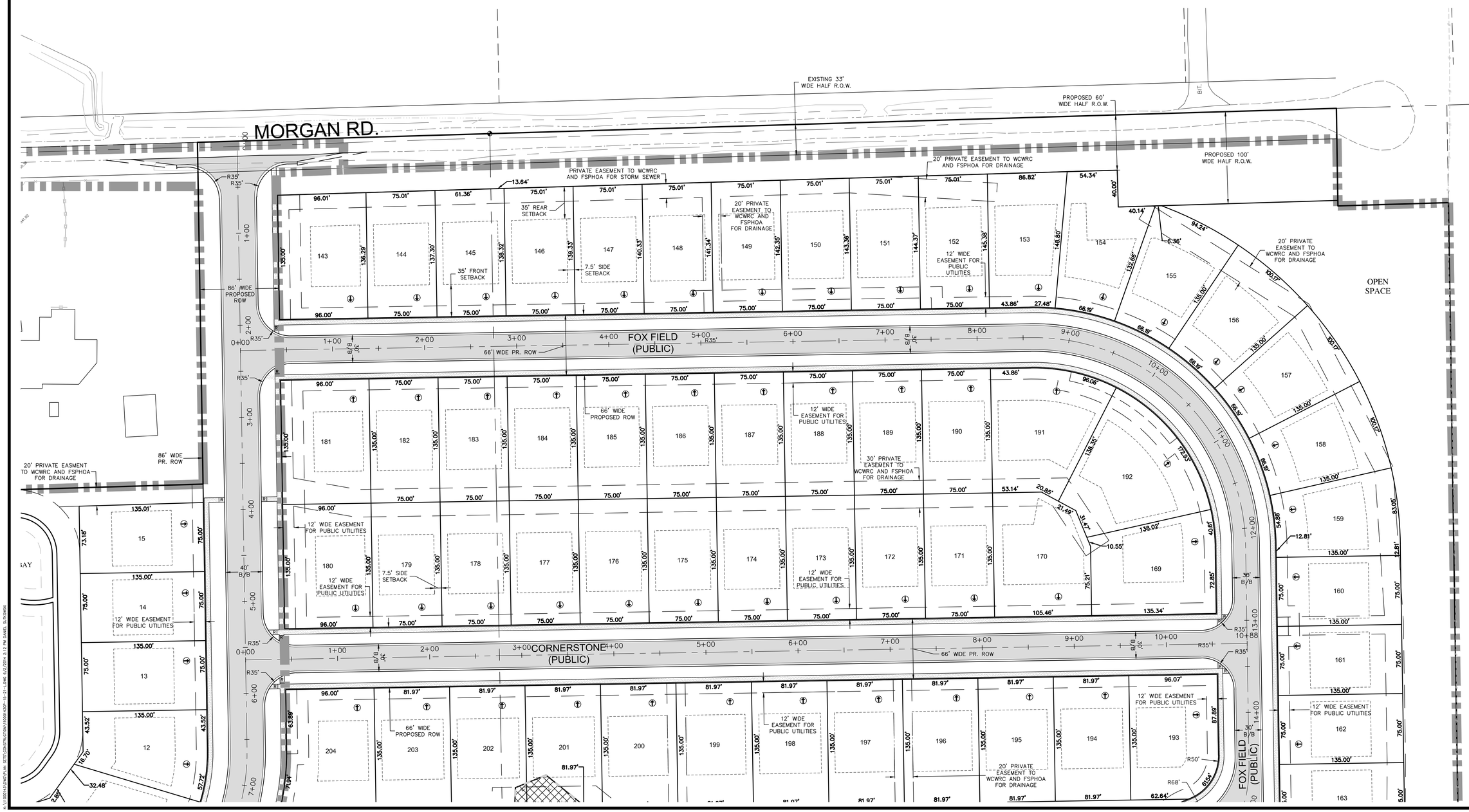

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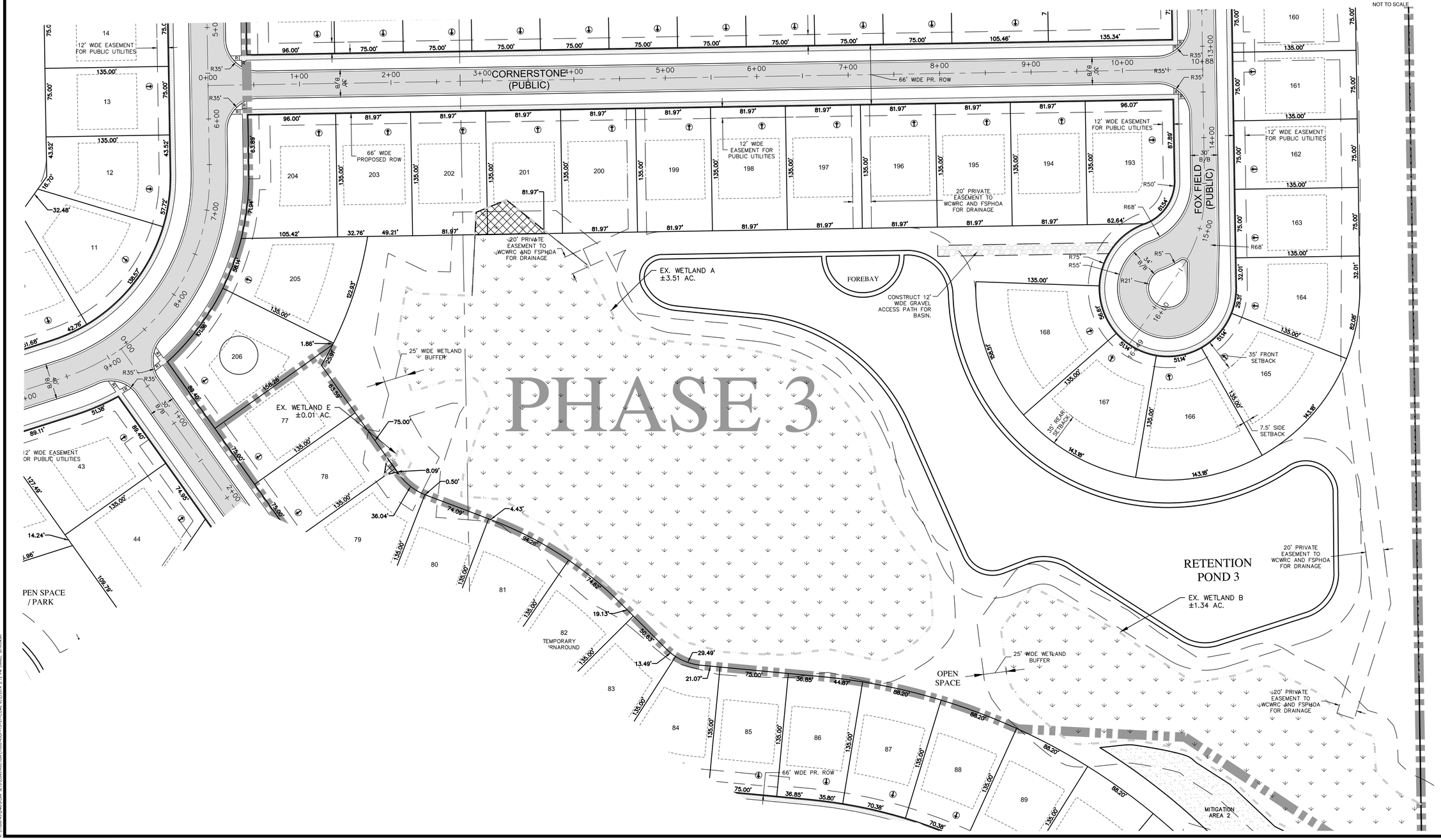

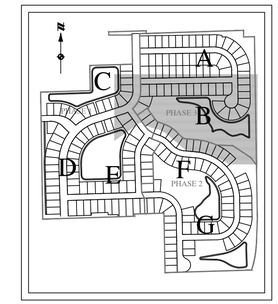

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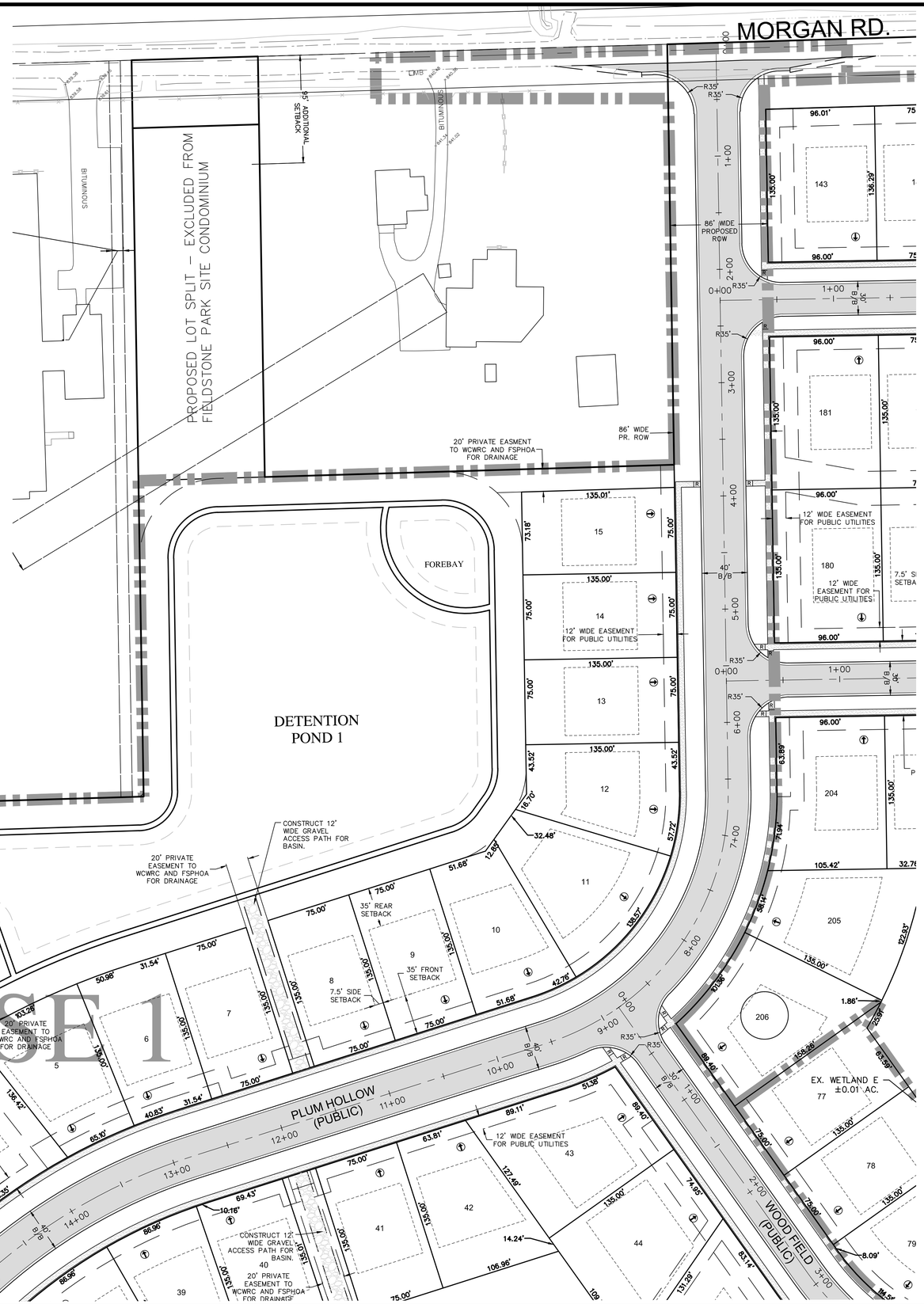

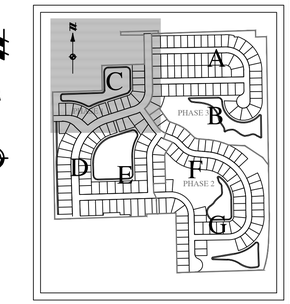

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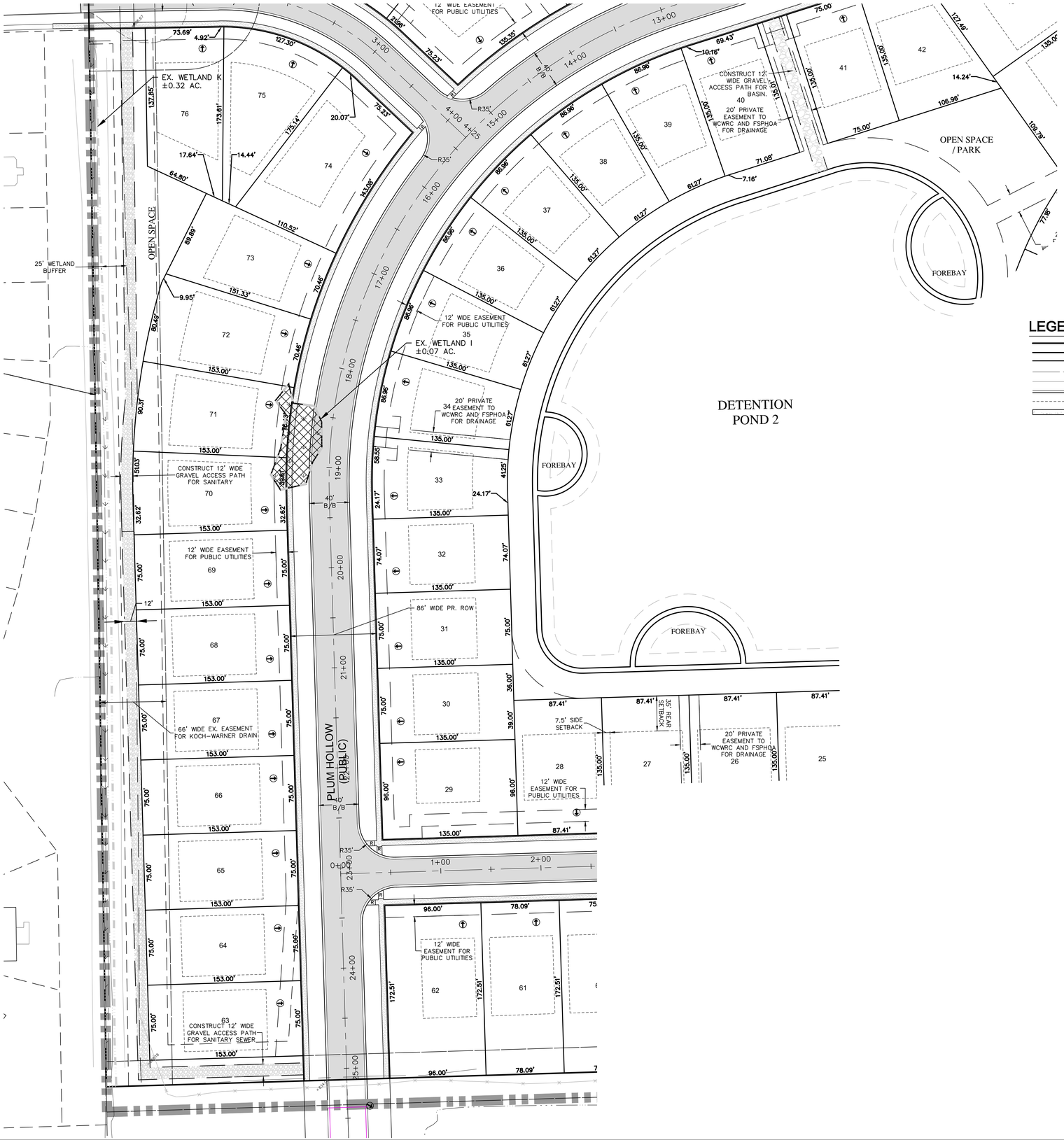

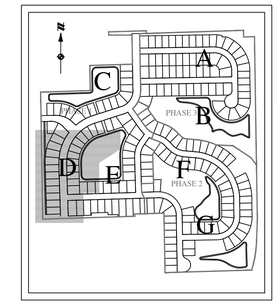

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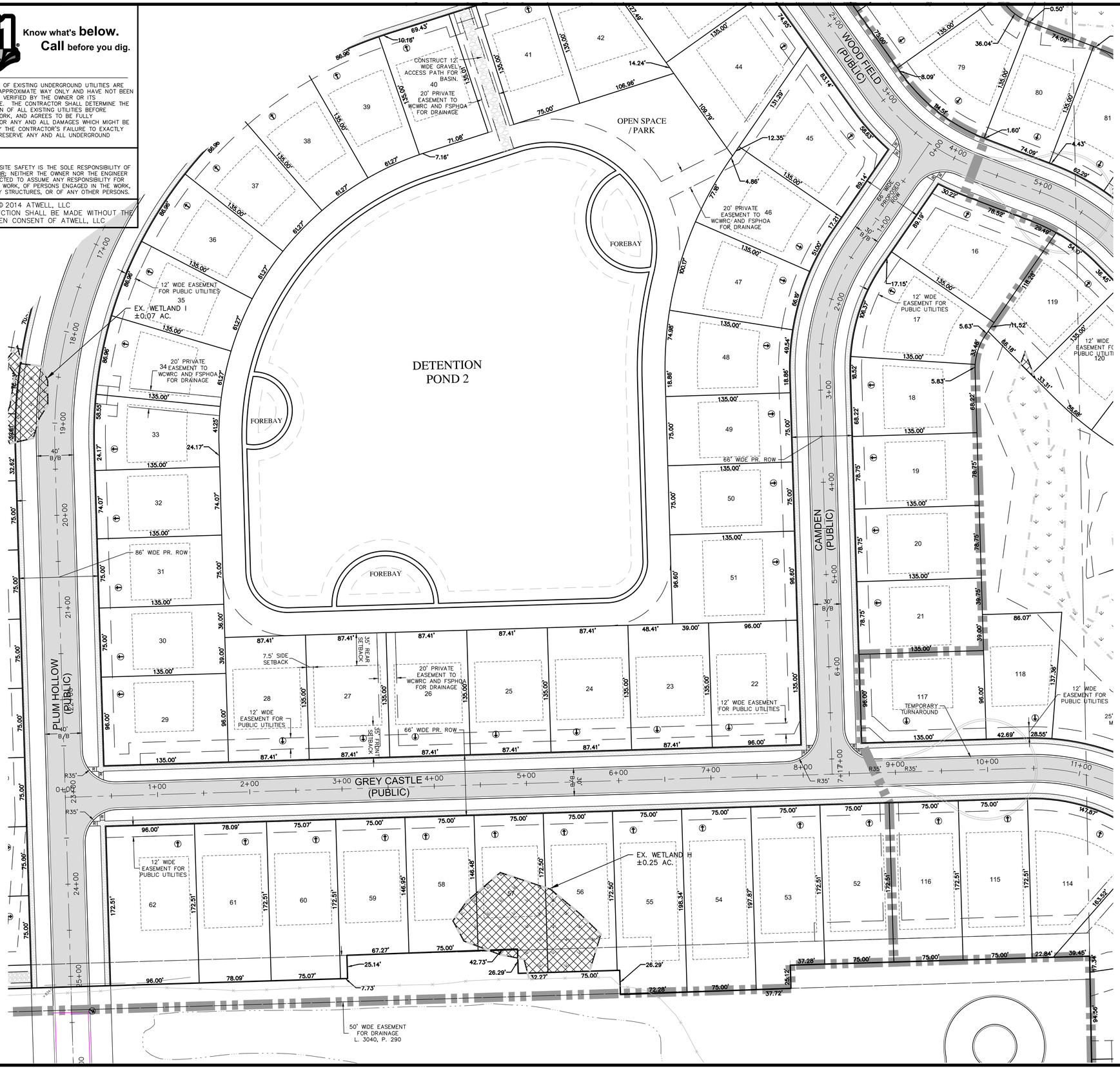

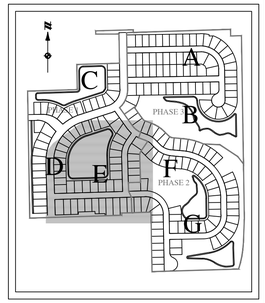

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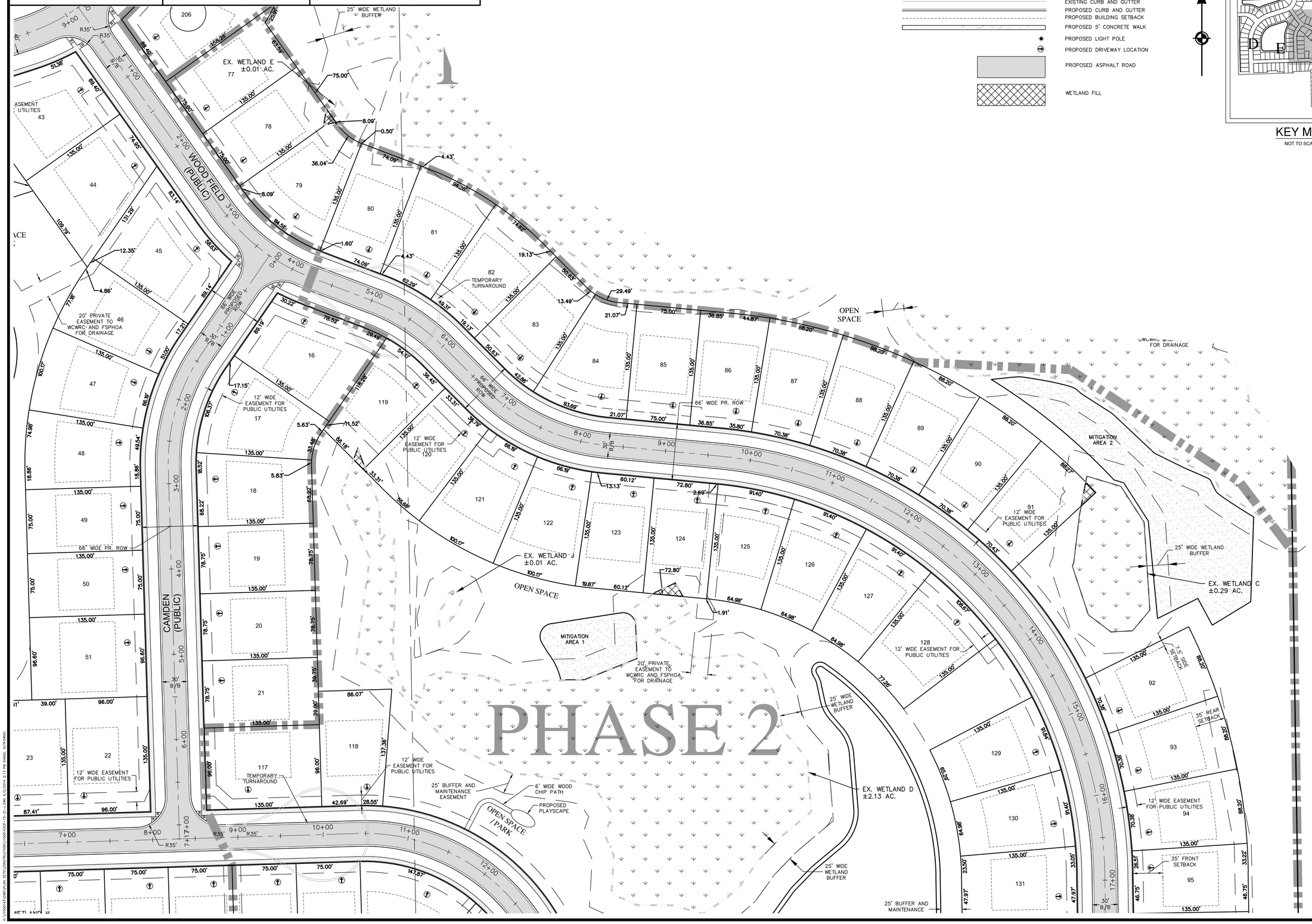

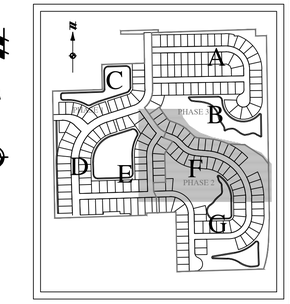

KEY MAP
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FIELDSTONE PARK FINAL SITE PLANS

LAYOUT PLAN
AREA F

DATE 05/12/14

REVISIONS

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SCALE 0 25 50
1" = 50 FEET

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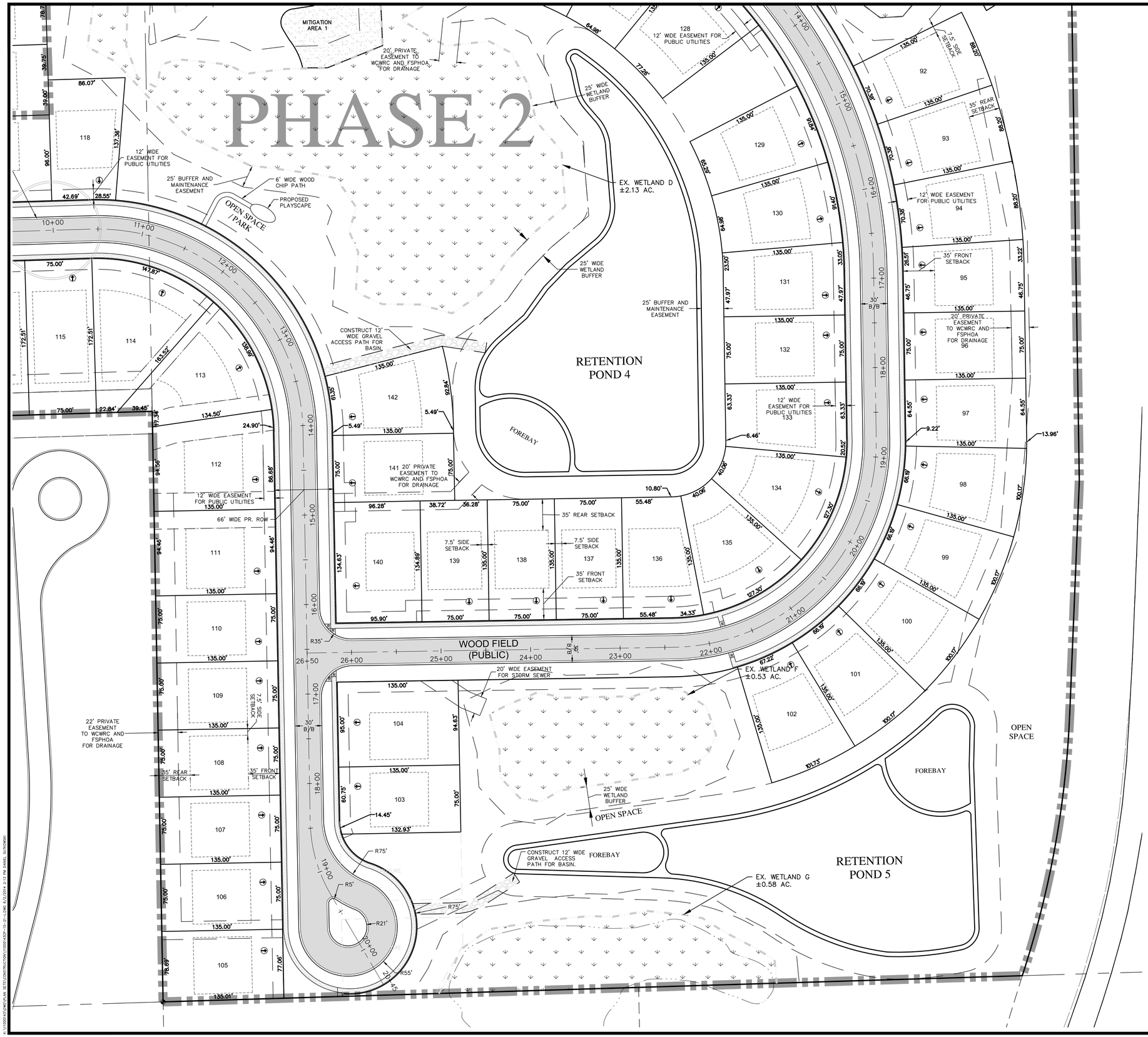
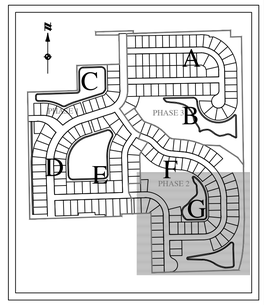
P.M. E. LORD	
BOOK 1148	
CAD FILE: 11000143CP-15-21-L	
JOB 11000143	
FILE CODE:	
SHEET NO. CP-20	





KEY MAP

NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED ROW
- PROPOSED LOT LINE
- PROPOSED CENTERLINE OF ROAD
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPOSED BUILDING SETBACK
- PROPOSED 5' CONCRETE WALK
- PROPOSED LIGHT POLE
- PROPOSED DRIVEWAY LOCATION
- PROPOSED ASPHALT ROAD
- WETLAND FILL

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LAYOUT PLAN
AREA G

DATE 05/12/14

REVISIONS

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SCALE 0 25 50
1" = 50 FEET

DR. JEC CH. TP
P.M. E. LORD
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CAD FILE: 11000143CP-15-21-L
JOB 11000143
FILE CODE:
SHEET NO. CP-21

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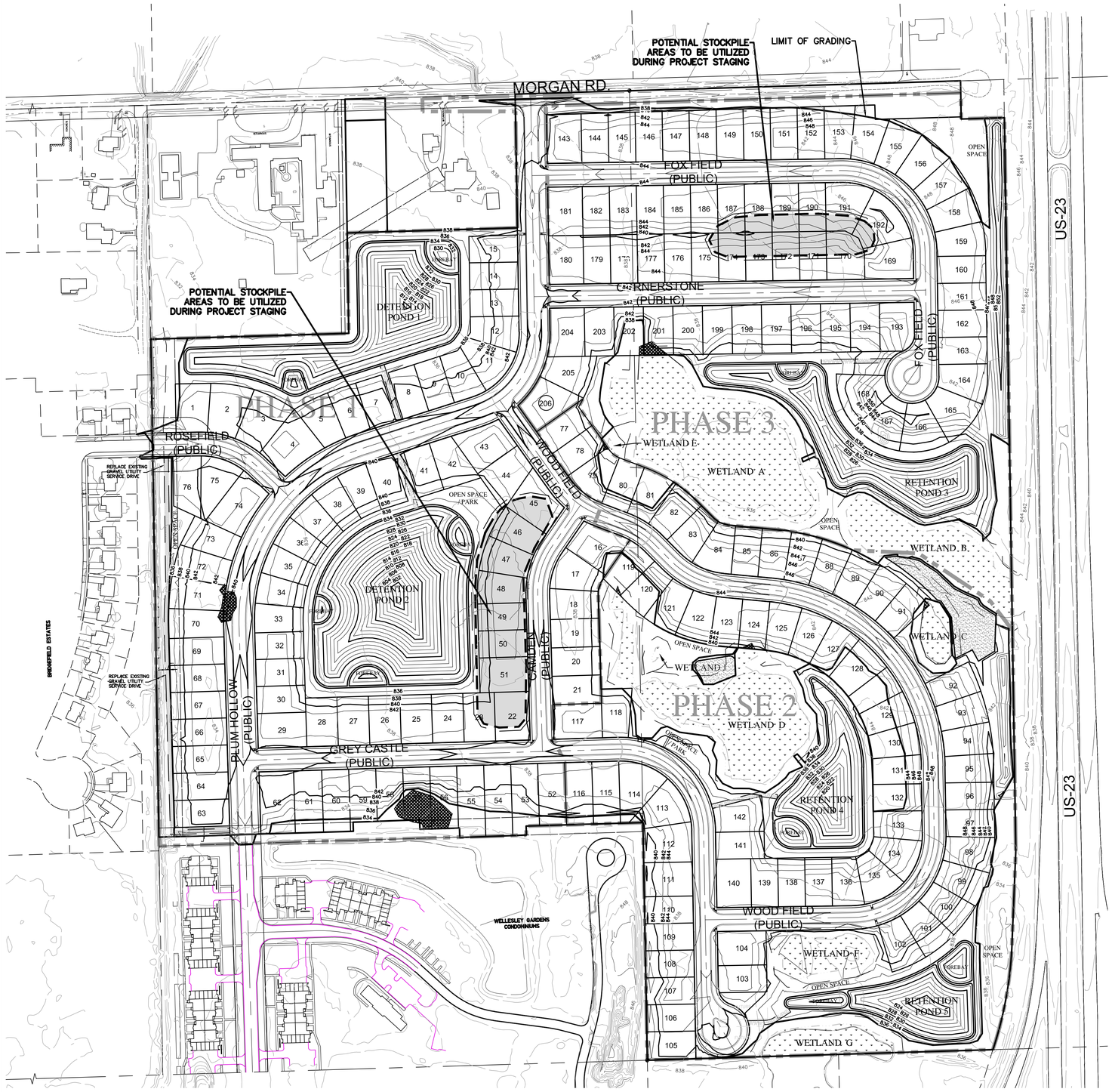

LEGEND

588	PROPOSED 1' CONTOUR
590	PROPOSED 5' CONTOUR
588	EXISTING 1' CONTOUR
590	EXISTING 5' CONTOUR
	PROPERTY LINE
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	CENTERLINE OF SWALE
	LIMITS OF GRADING
	EXISTING MANHOLE / CATCH BASIN
	PROPOSED MANHOLE / CATCH BASIN
	EXISTING HYDRANT
	PROPOSED HYDRANT
	EXISTING GATE VALVE & WELL
	PROPOSED GATE VALVE & WELL
	EXISTING WATER MAIN MANHOLE
	PROPOSED SANITARY SEWER MANHOLE
	EXISTING SANITARY SEWER MANHOLE
	EXISTING WETLAND
	OVERLAND OVERFLOW ROUTE

NOTE:
REFER TO EROSION CONTROL NOTES AND DETAILS

REFER TO TOPOGRAPHIC TREE SURVEY/DEMOLITION PLAN FOR CLEARING LIMITS, MASS GRADING LIMITS, AND SILT FENCE LOCATION

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DATE 05/12/14

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SCALE 0 75 150
1" = 150 FEET

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P.M. E. LORD	
BOOK 1148	
CAD FILE: 11000143CP-22-OG	
JOB 11000143	
FILE CODE:	
SHEET NO. CP-22	

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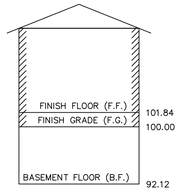
2. GRADES AT EDGE OF PAVEMENT ARE BACK OF CURB UNLESS OTHERWISE NOTED.



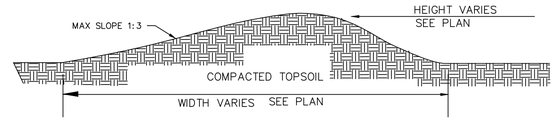
TYPICAL UNIT ELEVATION
NO SCALE

800.00 WO — FINISH GRADE OF WALK-OUT
808.00 FG — FINISH GRADE
802.50 VO — FINISH GRADE OF VIEW-OUT
807.00 FG — FINISH GRADE

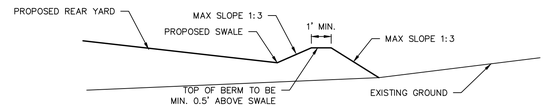
DRAINAGE ARROW

LEGEND

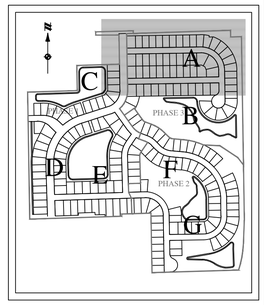
- 588 — PROPOSED 1' CONTOUR
- 590 — PROPOSED 5' CONTOUR
- 588 — EXISTING 1' CONTOUR
- 590 — EXISTING 5' CONTOUR
- PROPERTY LINE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- LIMITS OF GRADING
- CENTERLINE OF SWALE
- PROPOSED SILT FENCE
- EXISTING MANHOLE / CATCH BASIN
- PROPOSED MANHOLE / CATCH BASIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING WATER MAIN MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED RIP-RAP
- EXISTING WETLAND
- OVERLAND OVERFLOW ROUTE



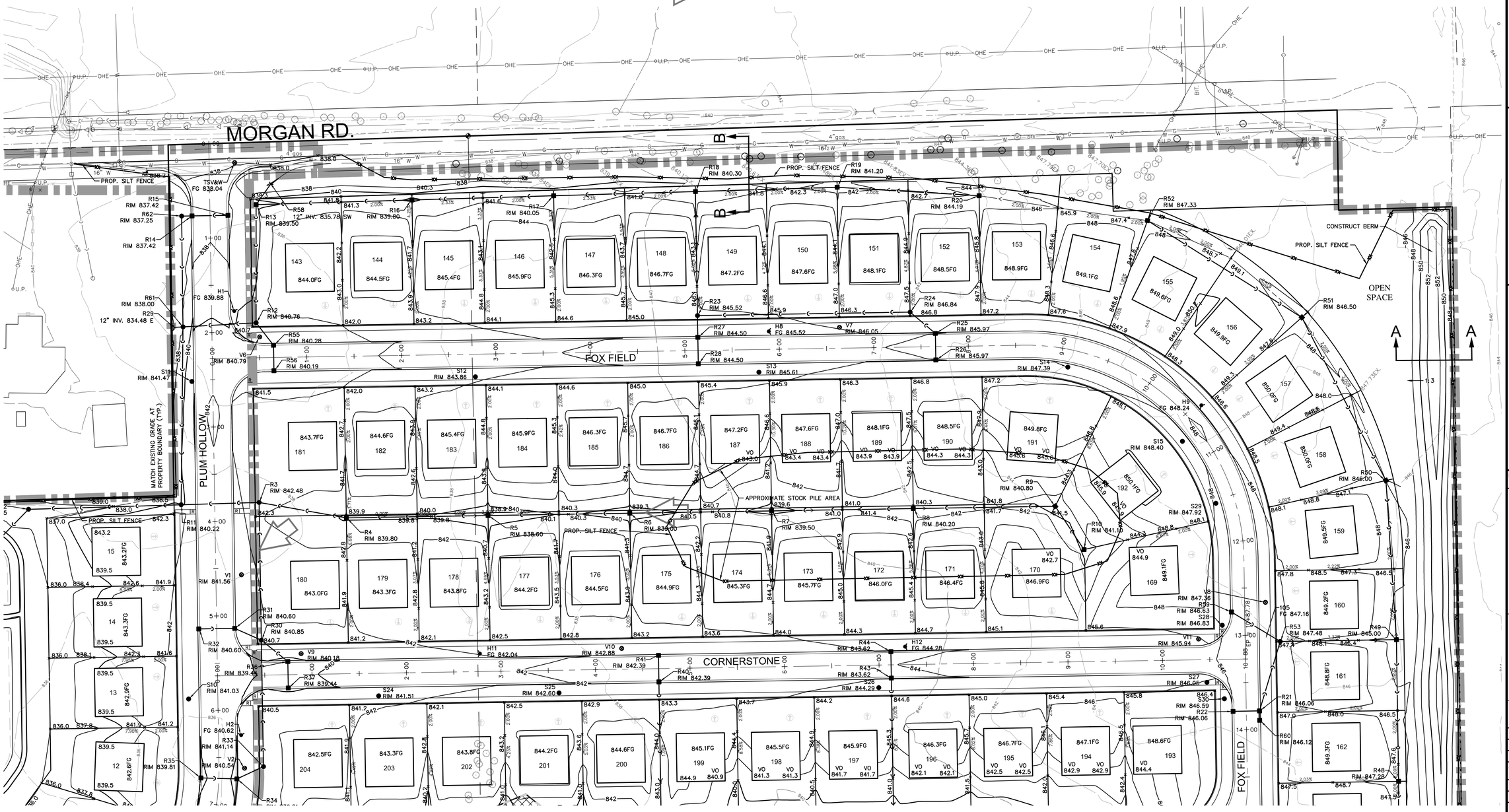
SECTION A-A
TYPICAL BERM DETAIL



SECTION B-B
TYPICAL REAR-YARD SWALE DETAIL



KEY MAP
NOT TO SCALE



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FINAL GRADING PLAN AREA A

DATE 05/12/14

REVISIONS

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SCALE 0 25 50
1" = 50 FEET

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P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-23-29-G
JOB 11000143
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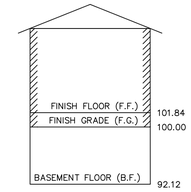
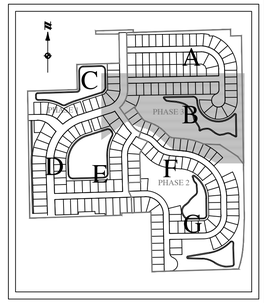


TYPICAL UNIT ELEVATION
NO SCALE

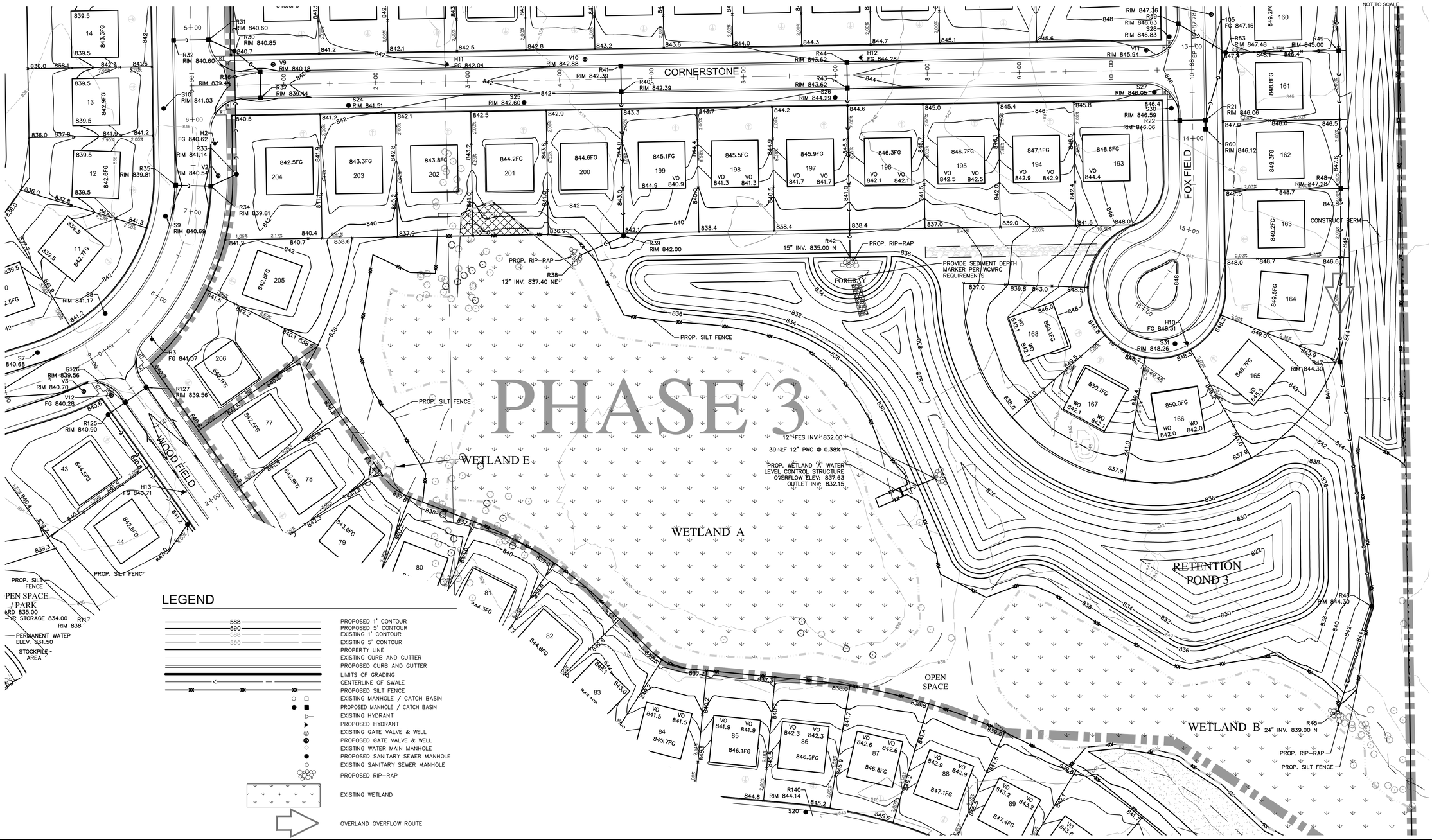
800.00 WO — FINISH GRADE OF WALK-OUT
808.00 FG — FINISH GRADE

802.50 VO — FINISH GRADE OF VIEW-OUT
807.00 FG — FINISH GRADE

DRAINAGE ARROW



KEY MAP
NOT TO SCALE



LEGEND

588	PROPOSED 1' CONTOUR
590	PROPOSED 5' CONTOUR
588	EXISTING 1' CONTOUR
590	EXISTING 5' CONTOUR
	PROPERTY LINE
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	LIMITS OF GRADING
	CENTERLINE OF SWALE
	PROPOSED SILT FENCE
	EXISTING MANHOLE / CATCH BASIN
	PROPOSED MANHOLE / CATCH BASIN
	EXISTING HYDRANT
	PROPOSED HYDRANT
	EXISTING GATE VALVE & WELL
	PROPOSED GATE VALVE & WELL
	EXISTING WATER MAIN MANHOLE
	PROPOSED SANITARY SEWER MANHOLE
	EXISTING SANITARY SEWER MANHOLE
	PROPOSED RIP-RAP
	EXISTING WETLAND
	OVERLAND OVERFLOW ROUTE

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FINAL GRADING PLAN AREA B

DATE 05/12/14

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SCALE 0 25 50
1" = 50 FEET

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JOB 11000143	
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LEGEND

- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPERTY LINE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- LIMITS OF GRADING
- CENTERLINE OF SWALE
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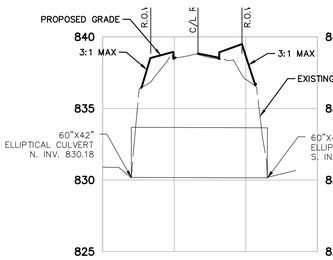
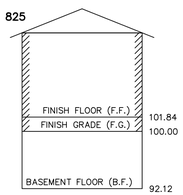
- EXISTING WATER MAIN MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED RIP-RAP
- EXISTING WETLAND
- OVERLAND OVERFLOW ROUTE
- 800.00 WO — FINISH GRADE OF WALK-OUT
- 808.00 FG — FINISH GRADE
- 802.50 VO — FINISH GRADE OF VIEW-OUT
- 807.00 FG — FINISH GRADE
- DRAINAGE ARROW



SECTION C-C
VERT: 1"=5'
HORZ: 1"=50'



TYPICAL UNIT ELEVATION
NO SCALE

NOTES:

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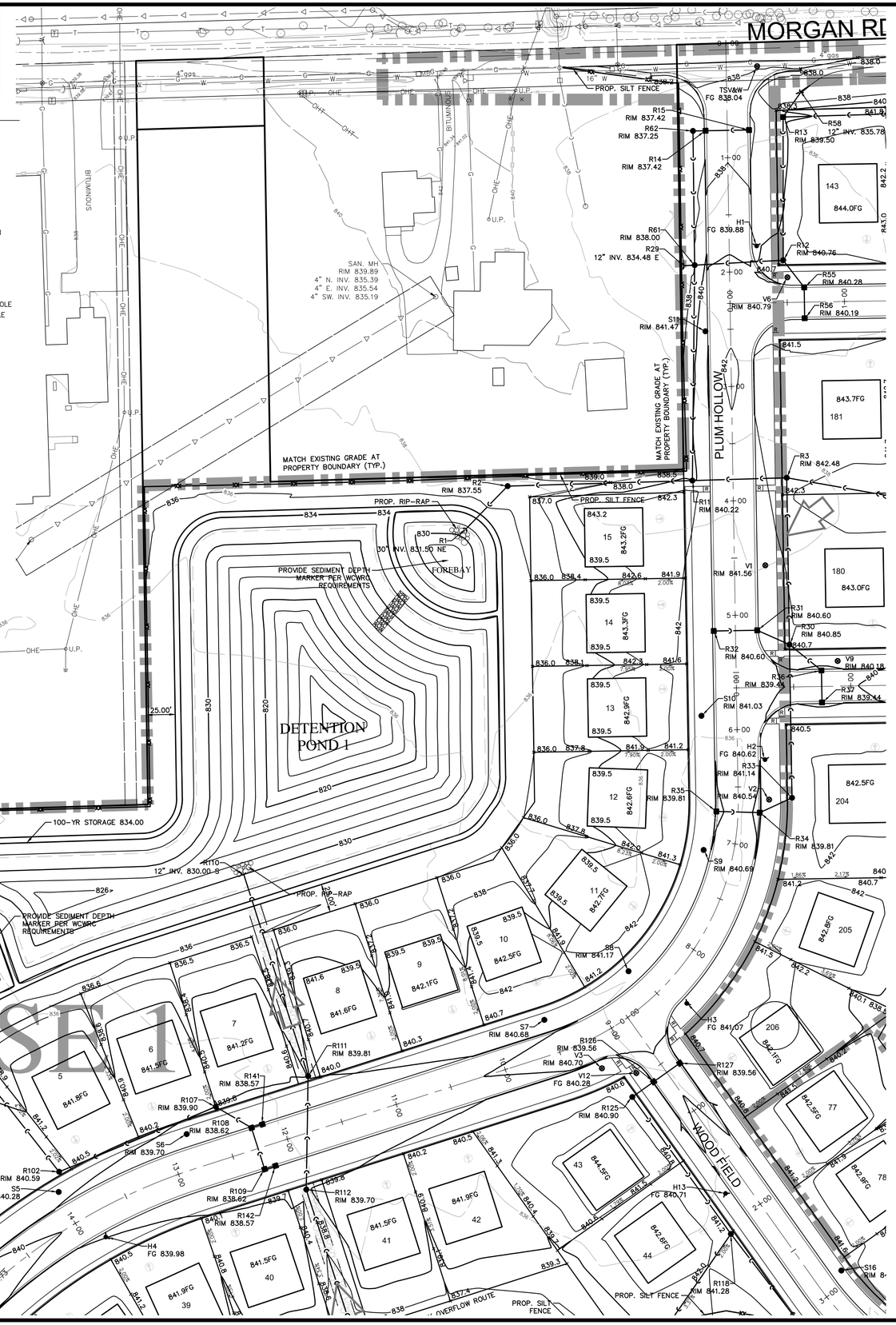

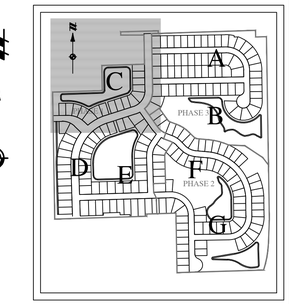

KEY MAP
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FINAL GRADING PLAN AREA C

DATE
05/12/14

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SCALE 0 25 50
1" = 50 FEET

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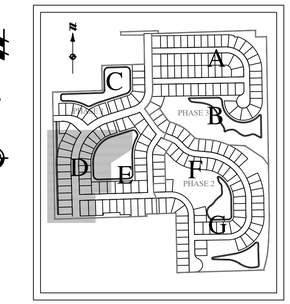
BOOK 1148
CAD FILE: 11000143CP-23-29-G
JOB 11000143
FILE CODE:
SHEET NO.
CP-25



KEY MAP

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LEGEND

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- 590 — PROPOSED 5' CONTOUR
- 588 — EXISTING 1' CONTOUR
- 590 — EXISTING 5' CONTOUR
- PROPERTY LINE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- LIMITS OF GRADING
- CENTERLINE OF SWALE
- PROPOSED SILT FENCE
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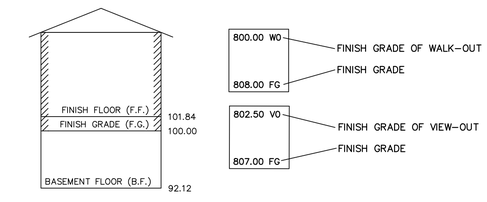
- PROPOSED MANHOLE / CATCH BASIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING WATER MAIN MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED RIP-RAP
- EXISTING WETLAND
- OVERLAND OVERFLOW ROUTE

NOTES:

1. DRIVEWAY APPROACHES WITHIN THE RIGHT OF WAY SHALL NOT HAVE A WIDTH GREATER THAN 20 FEET OR A VERTICAL PROFILE EXCEEDING + OR − 10%.

2. GRADES AT EDGE OF PAVEMENT ARE BACK OF CURB UNLESS OTHERWISE NOTED.



TYPICAL UNIT ELEVATION

NO SCALE

DRAINAGE ARROW

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FIELDSTONE PARK
FINAL SITE PLANS

FINAL GRADING PLAN AREA D

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-23-29-G
JOB 11000143
FILE CODE:
SHEET NO. CP-26

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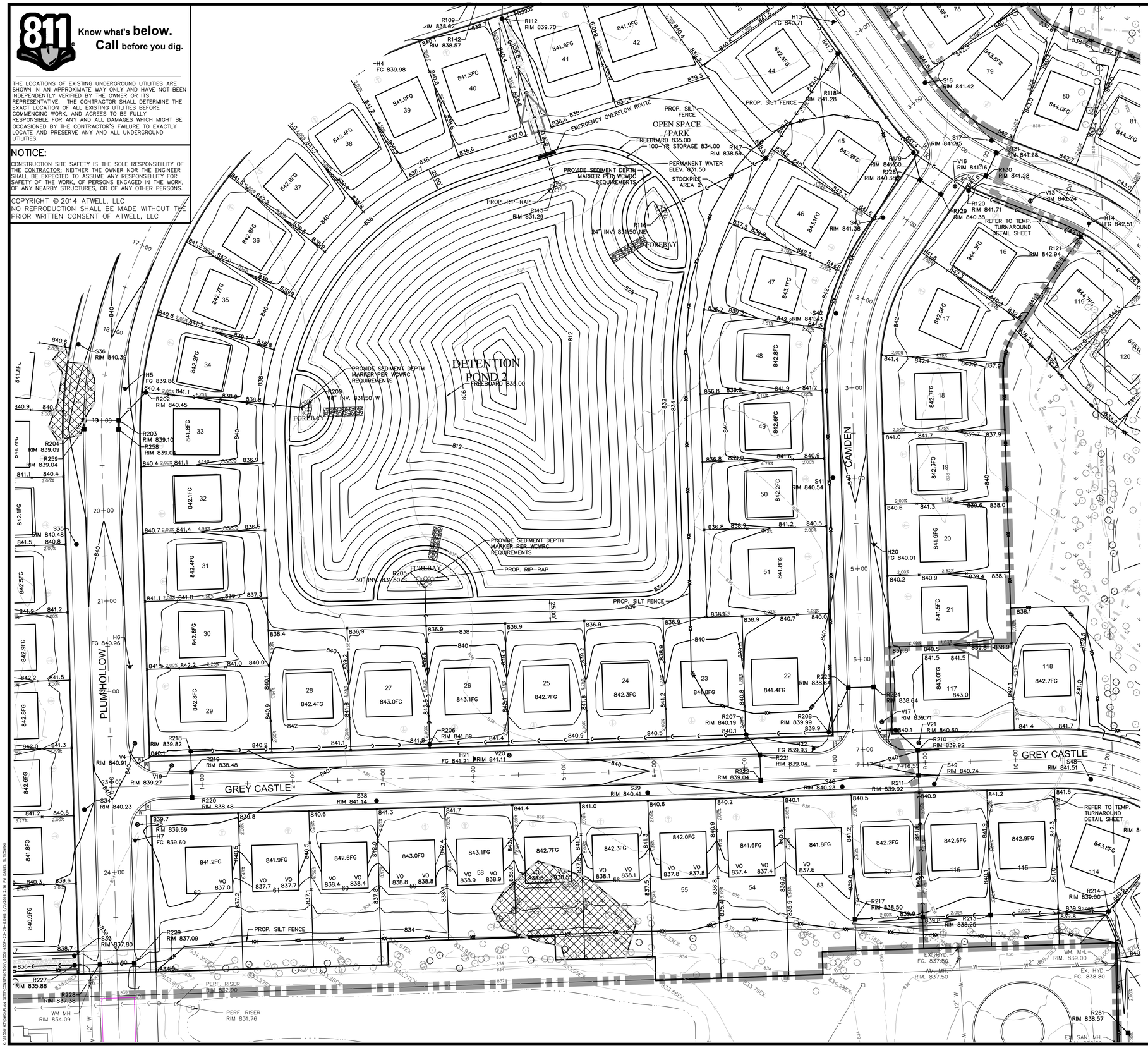
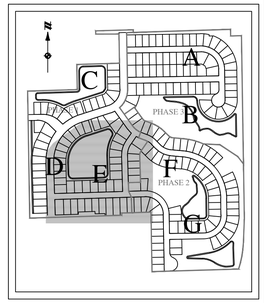


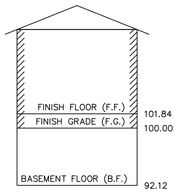


KEY MAP

NOT TO SCALE

LEGEND

- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPERTY LINE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- LIMITS OF GRADING
- CENTERLINE OF SWALE
- PROPOSED SILT FENCE
- EXISTING MANHOLE / CATCH BASIN
- PROPOSED MANHOLE / CATCH BASIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING WATER MAIN MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED RIP-RAP
- EXISTING WETLAND
- OVERLAND OVERFLOW ROUTE



TYPICAL UNIT ELEVATION

NO SCALE

- 800.00 WO — FINISH GRADE OF WALK-OUT
- 808.00 FG — FINISH GRADE
- 802.50 VO — FINISH GRADE OF VIEW-OUT
- 807.00 FG — FINISH GRADE

DRAINAGE ARROW

NOTES:

1. DRIVEWAY APPROACHES WITHIN THE RIGHT OF WAY SHALL NOT HAVE A WIDTH GREATER THAN 20 FEET OR A VERTICAL PROFILE EXCEEDING + OR – 10%.

2. GRADES AT EDGE OF PAVEMENT ARE BACK OF CURB UNLESS OTHERWISE NOTED.

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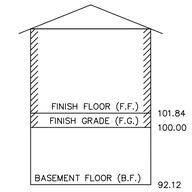
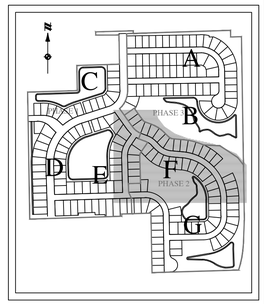


TYPICAL UNIT ELEVATION
NO SCALE

LEGEND

- 800.00 WO — FINISH GRADE OF WALK-OUT
- 808.00 FG — FINISH GRADE
- 802.50 VO — FINISH GRADE OF VIEW-OUT
- 807.00 FG — FINISH GRADE
- DRAINAGE ARROW
- 588 — PROPOSED 1' CONTOUR
- 590 — PROPOSED 5' CONTOUR
- 588 — EXISTING 1' CONTOUR
- 590 — EXISTING 5' CONTOUR
- PROPERTY LINE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- LIMITS OF GRADING
- CENTERLINE OF SWALE
- PROPOSED SILT FENCE
- EXISTING MANHOLE / CATCH BASIN
- PROPOSED MANHOLE / CATCH BASIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING WATER MAIN MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED RIP-RAP
- EXISTING WETLAND
- OVERLAND OVERFLOW ROUTE



KEY MAP
NOT TO SCALE

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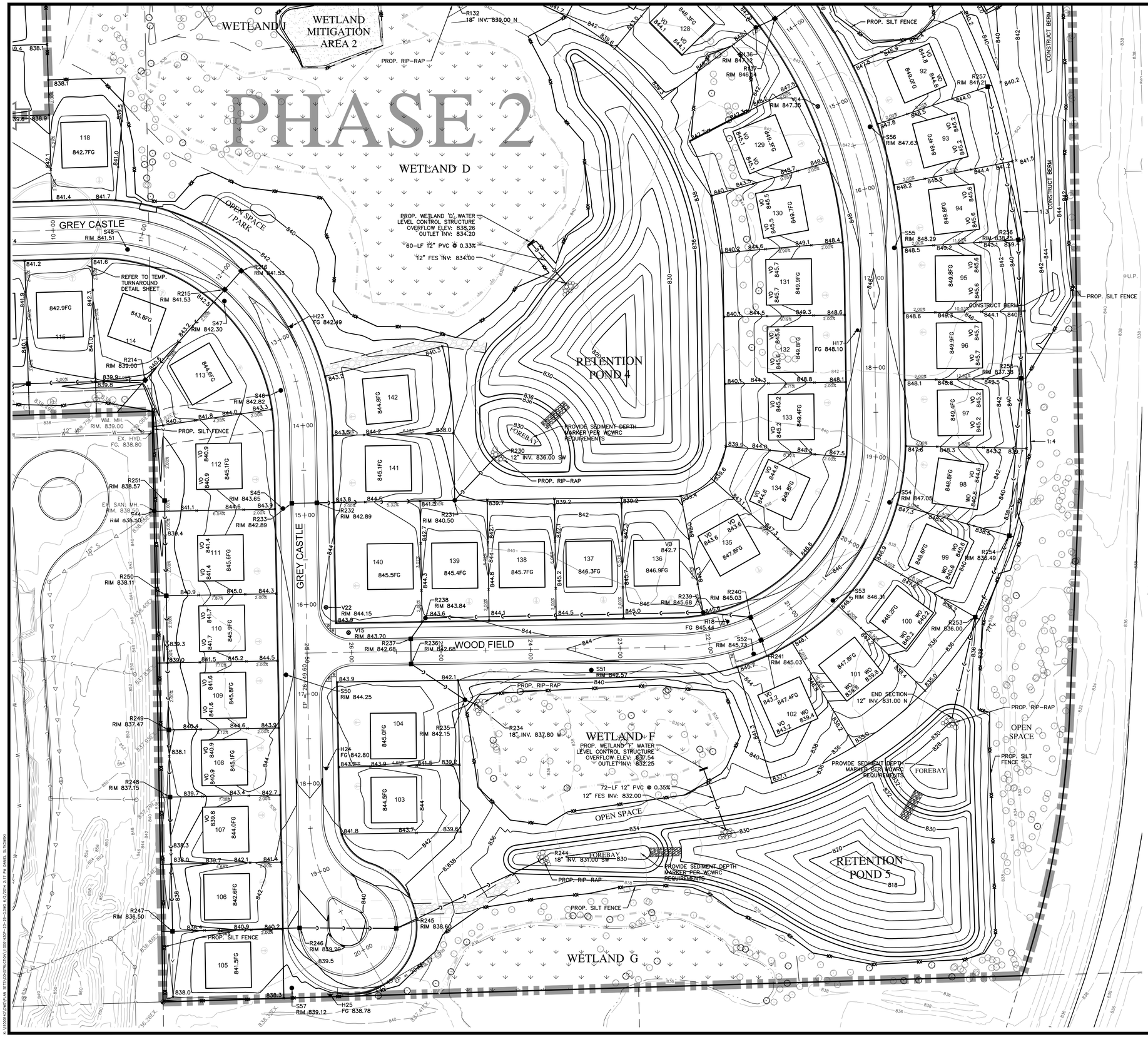

LEGEND

- PROPOSED 1' CONTOUR
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- PROPOSED CURB AND GUTTER
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- PROPOSED HYDRANT
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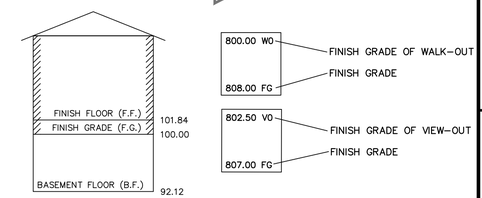

TYPICAL UNIT ELEVATION
NO SCALE

DRAINAGE ARROW

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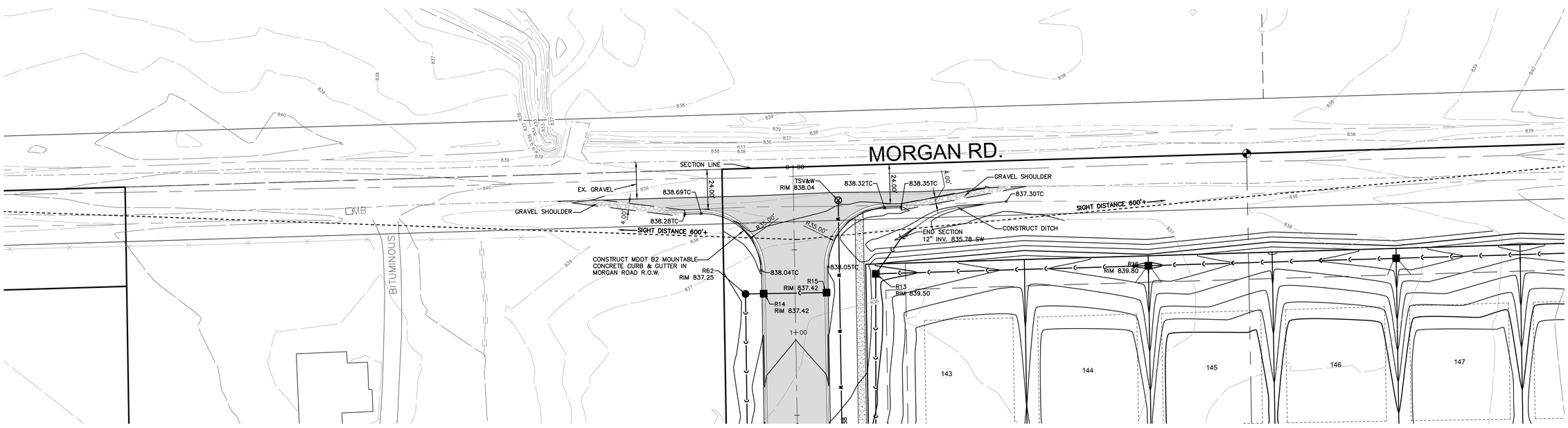

MORGAN RD. ENTRANCE PLAN

SCALE: 1"=30'

LEGEND

588	PROPOSED 1' CONTOUR
590	PROPOSED 5' CONTOUR
588	EXISTING 1' CONTOUR
590	EXISTING 5' CONTOUR
	PROPERTY LINE
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	CENTERLINE OF SWALE
●	PROPOSED MANHOLE / CATCH BASIN
■	PROPOSED HYDRANT
⊗	PROPOSED GATE VALVE & WELL
●	PROPOSED SANITARY SEWER MANHOLE

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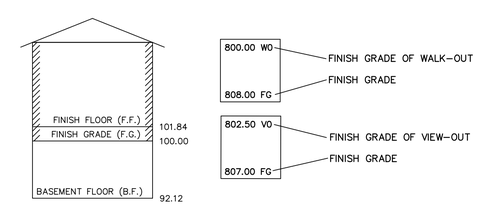
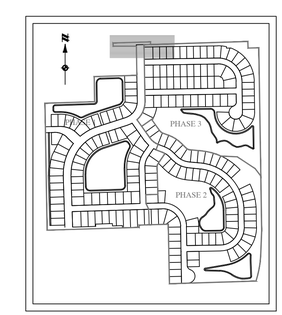


TYPICAL UNIT ELEVATION

NO SCALE

DRAINAGE ARROW



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FINAL SITE PLANS
MORGAN ROAD
ENTRANCE PLAN

DATE 05/12/14

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SCALE 0 15 30
1" = 30 FEET

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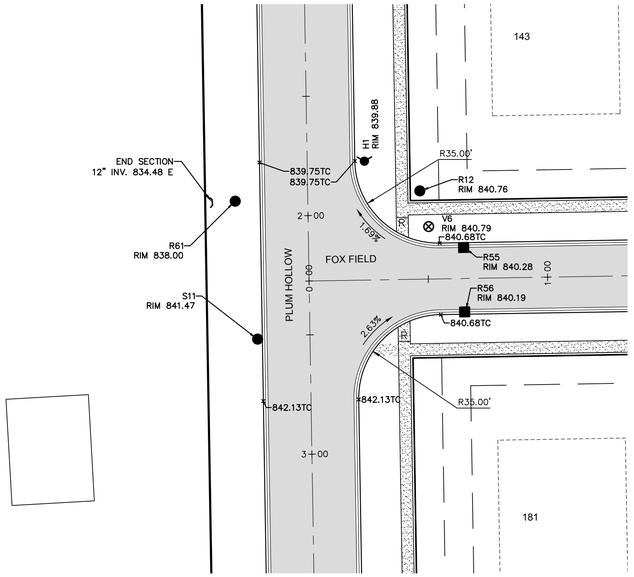
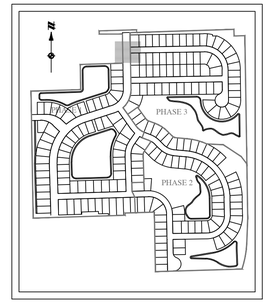


PLUM HOLLOW & FOX FIELD

SCALE: 1"=30'



KEY MAP

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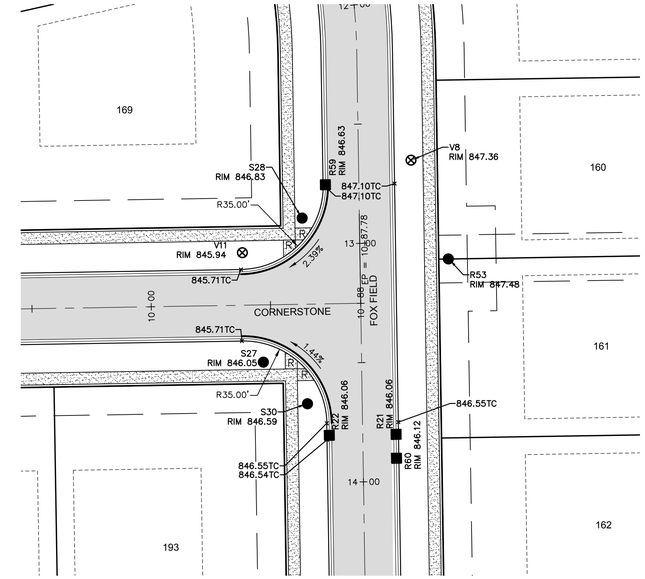
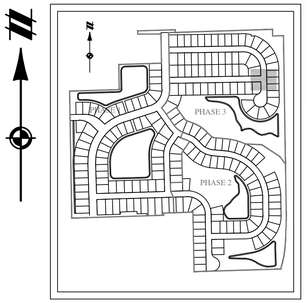


PLUM HOLLOW & CORNERSTONE

SCALE: 1"=30'



KEY MAP

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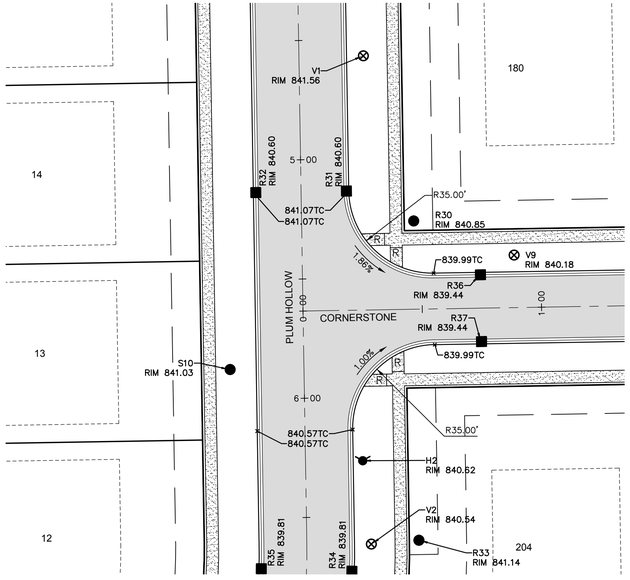
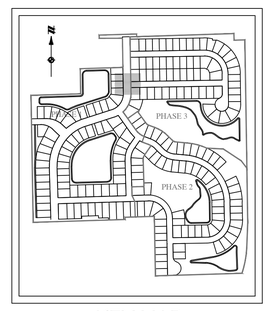


CORNERSTONE & FOX FIELD

SCALE: 1"=30'



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LEGEND

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590	PROPOSED 5' CONTOUR
588	EXISTING 1' CONTOUR
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	PROPOSED CURB AND GUTTER
	CENTERLINE OF SWALE
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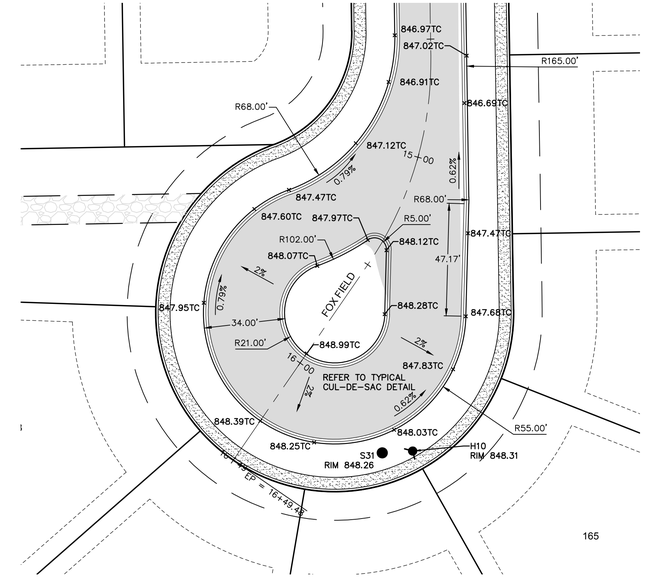
	PROPOSED GATE VALVE & WELL
	PROPOSED SANITARY SEWER MANHOLE



FOX FIELD

SCALE: 1"=30'

KEY MAP

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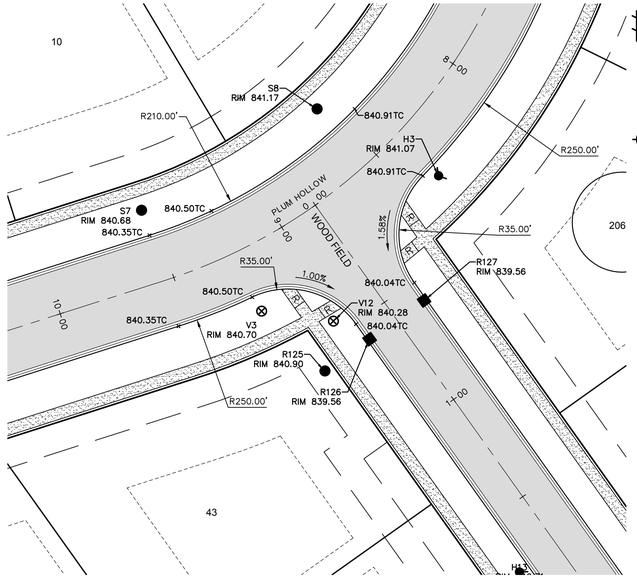
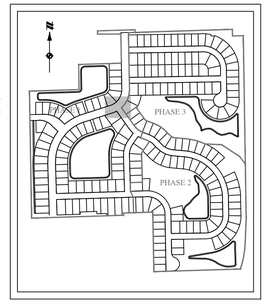
X:\11000143\DWG\PLAN SETS\CONSTRUCTION\11000143CP-31-34-INT.DWG 6/2/2014 2:21 PM JONES, SCHONOPSI



PLUM HOLLOW & WOOD FIELD

SCALE: 1"=30'



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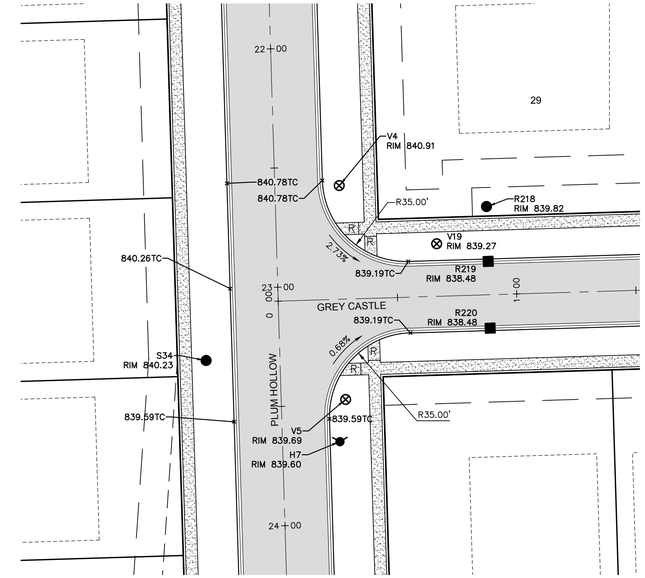
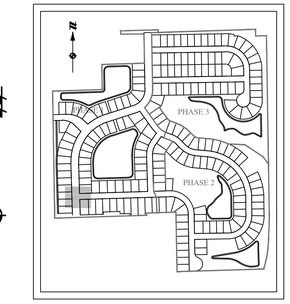


PLUM HOLLOW & GREY CASTLE

SCALE: 1"=30'



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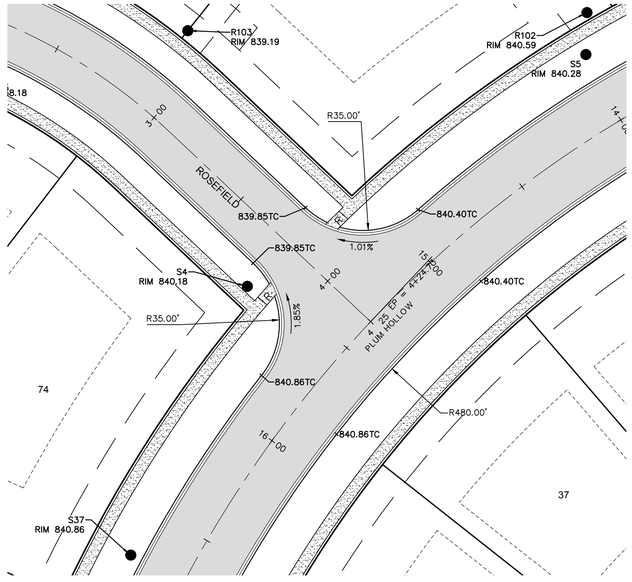
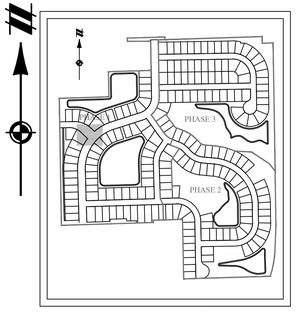


PLUM HOLLOW & ROSEFIELD

SCALE: 1"=30'



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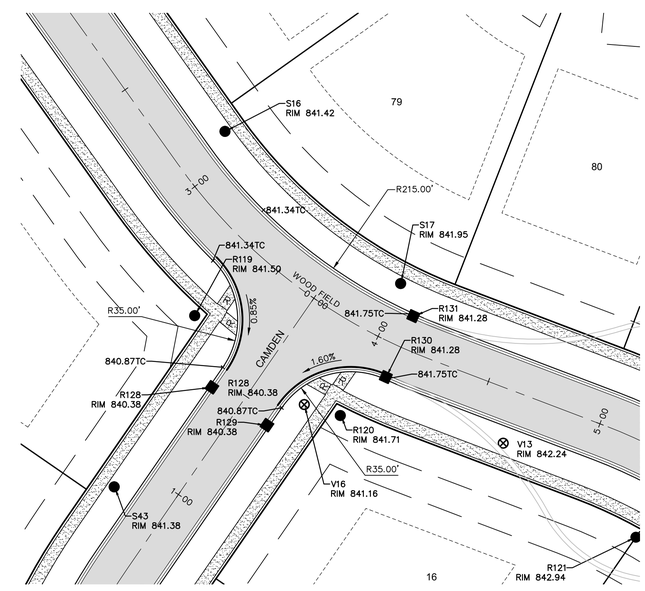
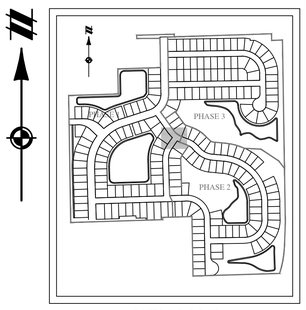


WOOD FIELD & CAMDEN

SCALE: 1"=30'



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	PROPOSED HYDRANT
	PROPOSED GATE VALVE & WELL
	PROPOSED SANITARY SEWER MANHOLE

NOTES:

1. DRIVEWAY APPROACHES WITHIN THE RIGHT OF WAY SHALL NOT HAVE A WIDTH GREATER THAN 20 FEET OR A VERTICAL PROFILE EXCEEDING + OR − 10%.

2. GRADES AT EDGE OF PAVEMENT ARE BACK OF CURB UNLESS OTHERWISE NOTED.

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DIVERSE REAL ESTATE LLC

FIELDSTONE PARK
FINAL SITE PLANS

INTERSECTION & CULDESAC DETAILS

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 15 30
1" = 30 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-31-34-INT
JOB 11000143
FILE CODE:
SHEET NO. CP-32

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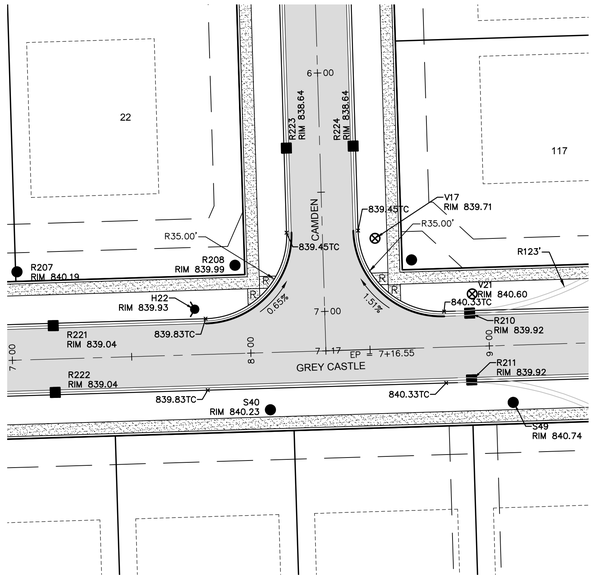
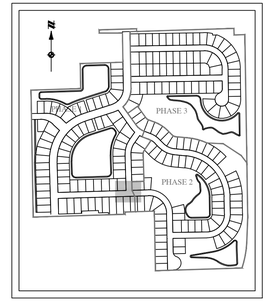
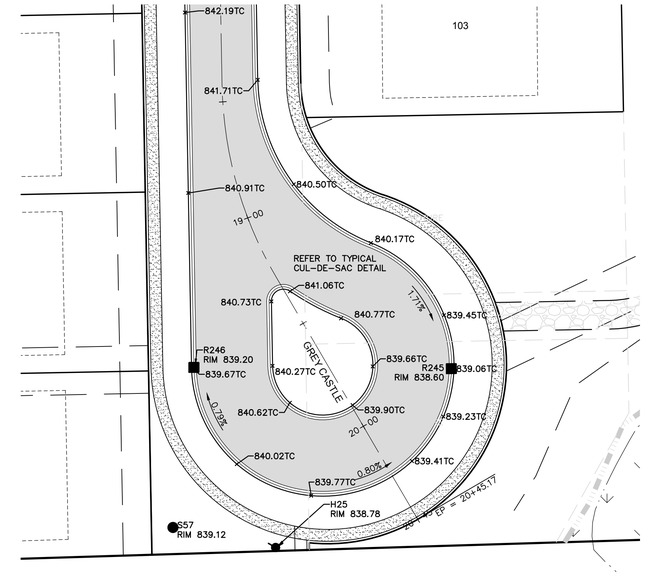


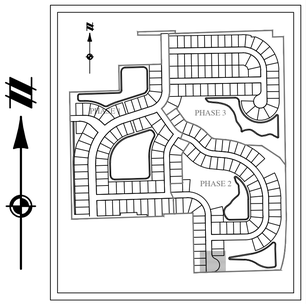
CAMDEN & GREY CASTLE
SCALE: 1"=30'



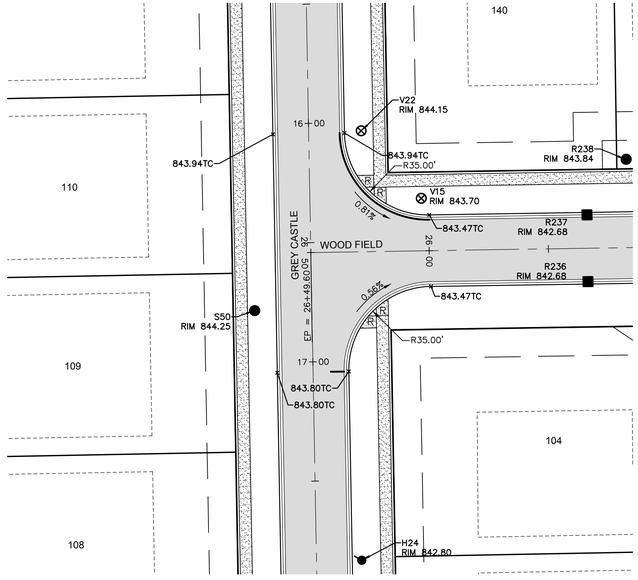
KEY MAP
NOT TO SCALE



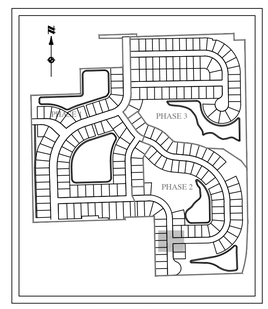
GREY CASTLE
SCALE: 1"=30'



KEY MAP
NOT TO SCALE



WOODFIELD & GREY CASTLE
SCALE: 1"=30'



KEY MAP
NOT TO SCALE

NOTES:

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2. GRADES AT EDGE OF PAVEMENT ARE BACK OF CURB UNLESS OTHERWISE NOTED.

LEGEND

588	PROPOSED 1' CONTOUR
590	PROPOSED 5' CONTOUR
588	EXISTING 1' CONTOUR
590	EXISTING 5' CONTOUR
	PROPERTY LINE
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	CENTERLINE OF SWALE
	PROPOSED MANHOLE / CATCH BASIN
	PROPOSED HYDRANT
	PROPOSED GATE VALVE & WELL
	PROPOSED SANITARY SEWER MANHOLE

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INTERSECTION & CULDESAC DETAILS

DATE 05/12/14

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SCALE 0 15 30
1" = 30 FEET

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P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-31-34-INT
JOB 11000143
FILE CODE:
SHEET NO. CP-33

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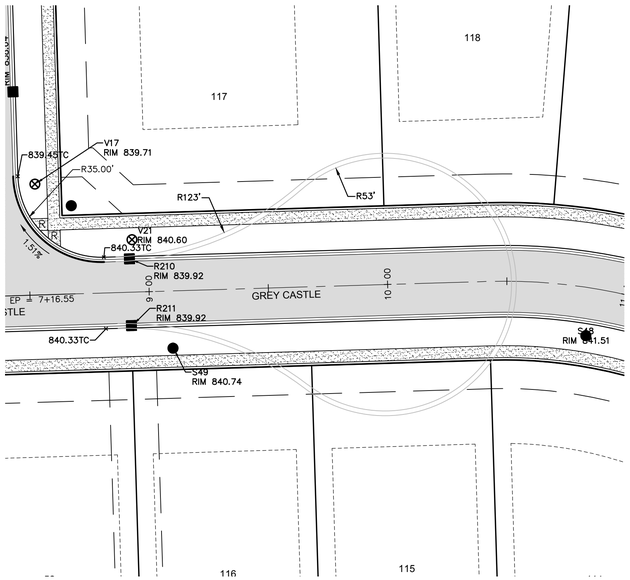
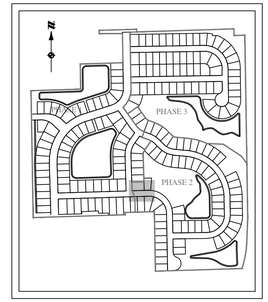


GREY CASTLE
TEMPORARY TURNAROUND
SCALE: 1"=30'

REFER TO W.C.R.C. TEMPORARY TURNAROUND DETAIL



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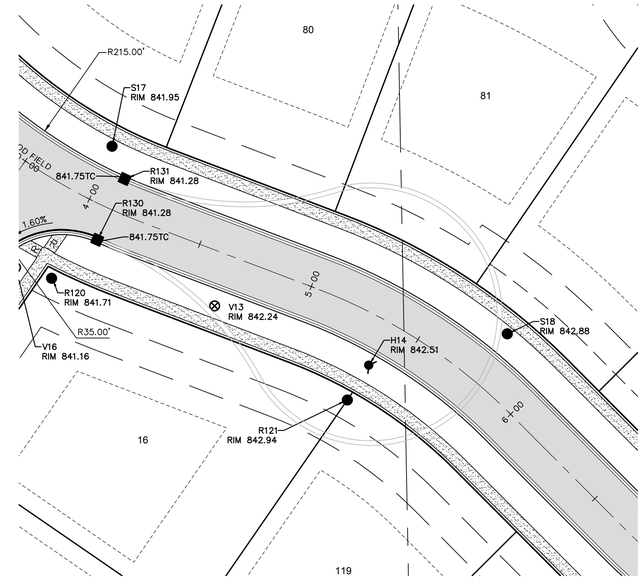
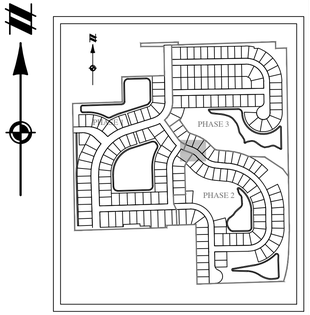
LEGEND

588	PROPOSED 1' CONTOUR
590	PROPOSED 5' CONTOUR
588	EXISTING 1' CONTOUR
590	EXISTING 5' CONTOUR
	PROPERTY LINE
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	CENTERLINE OF SWALE
	PROPOSED MANHOLE / CATCH BASIN
	PROPOSED HYDRANT
	PROPOSED GATE VALVE & WELL
	PROPOSED SANITARY SEWER MANHOLE



WOOD FIELD
TEMPORARY TURNAROUND
SCALE: 1"=30'

REFER TO W.C.R.C. TEMPORARY TURNAROUND DETAIL



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FINAL SITE PLANS

TEMPORARY TURNAROUND DETAILS

DATE 05/12/14

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SCALE 0 15 30
1" = 30 FEET

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CAD FILE: 11000143CP-31-34-INT
JOB 11000143
FILE CODE:
SHEET NO.
CP-34

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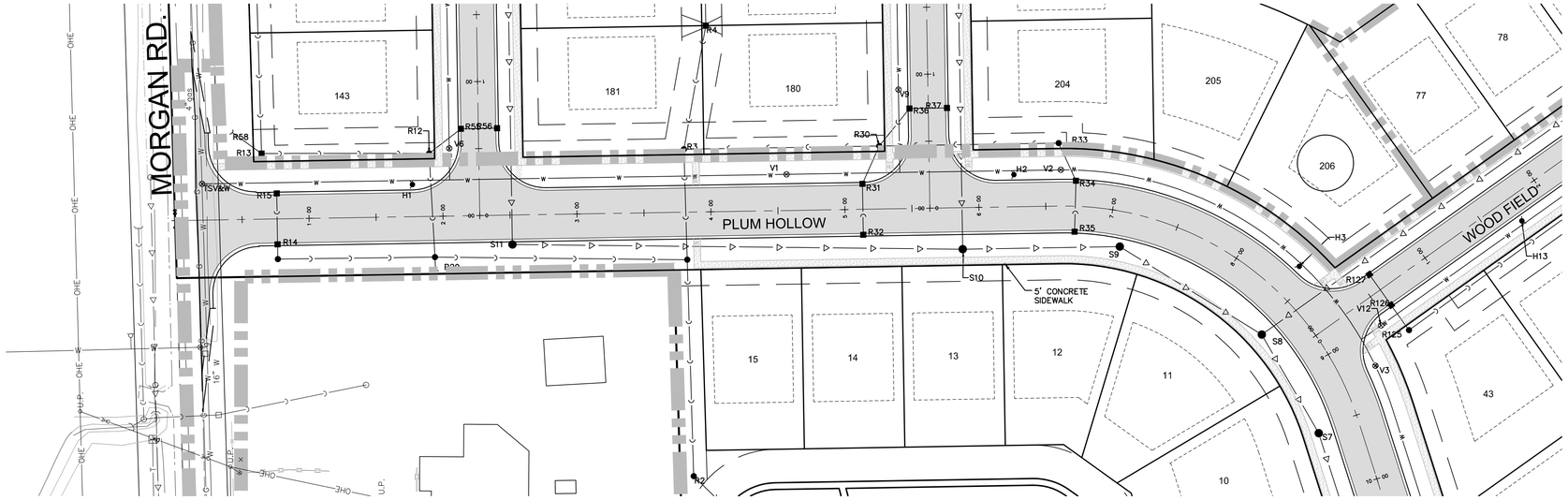
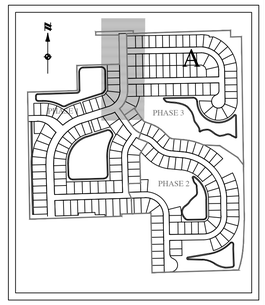




KEY MAP

NOT TO SCALE

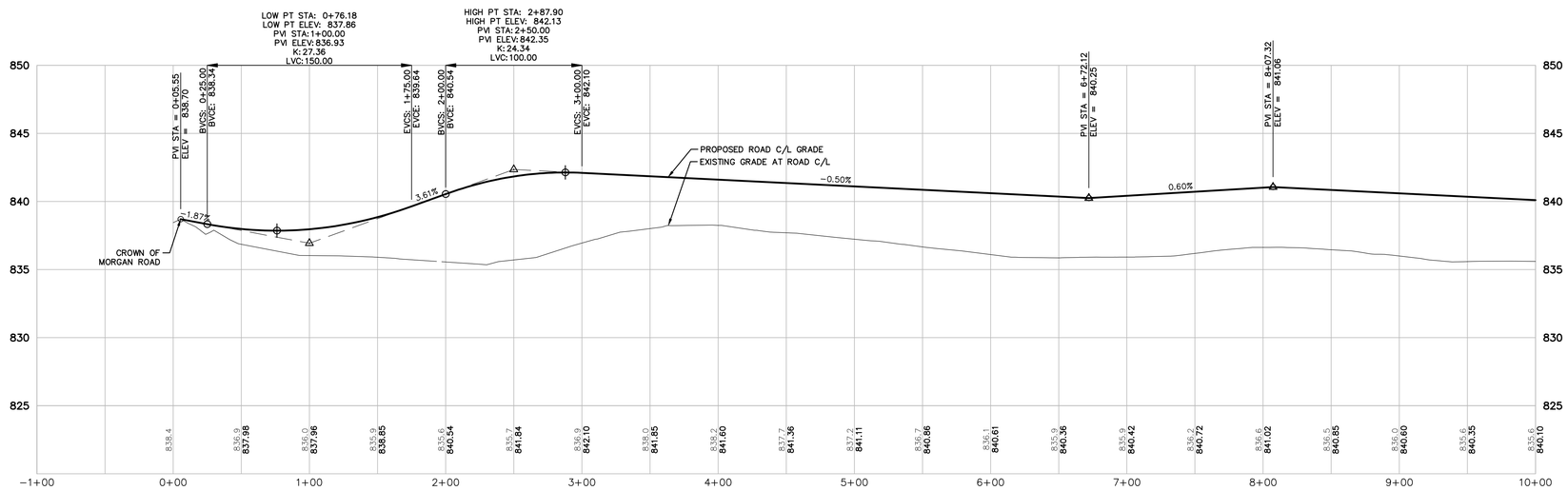
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850.0 — PROPOSED GRADE AT C/L OF ROAD

17+00 — ROAD STATION



PLUM HOLLOW
VERT: 1"=5'
HORZ: 1"=50'

REFER TO PLUM HOLLOW CROSS-SECTION - 86' ROW

ADD 0.03' TO C/L GRADE TO OBTAIN PLUM HOLLOW T/CURB ELEVATION

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FINAL SITE PLANS

ROAD – PLAN AND PROFILE
PLUM HOLLOW STA: 0+00 – 10+00

DATE 05/12/14

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SCALE 0 25 50
1" = 50 FEET

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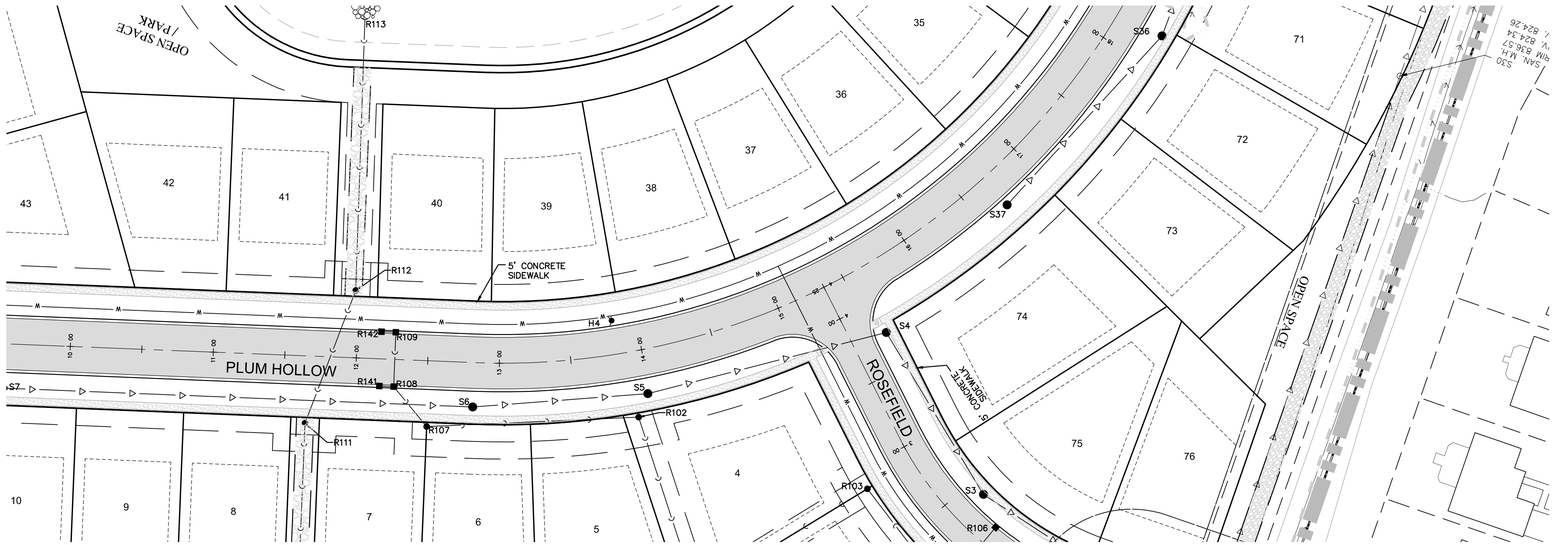
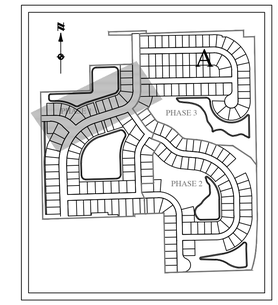
JOB 11000143
FILE CODE:
SHEET NO.
CP-35





KEY MAP

NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
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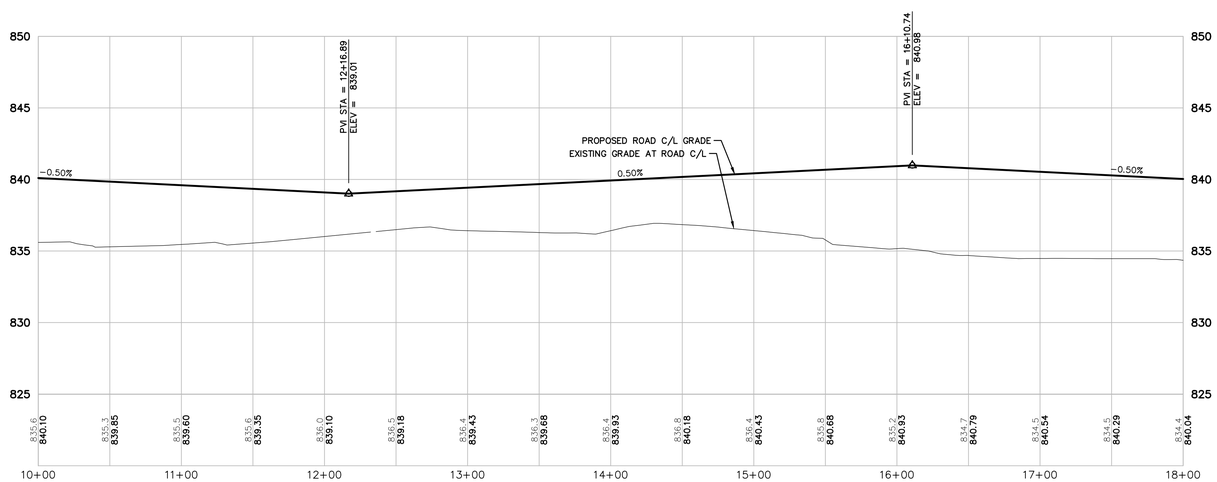
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850.00 — PROPOSED GRADE AT C/L OF ROAD

17+00 — ROAD STATION



PLUM HOLLOW
VERT: 1"=5'
HORZ: 1"=50'

REFER TO PLUM HOLLOW CROSS-SECTION - 86' ROW

ADD 0.03' TO C/L GRADE TO OBTAIN PLUM HOLLOW T/CURB ELEVATION

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FINAL SITE PLANS

ROAD – PLAN AND PROFILE
PLUM HOLLOW STA: 10+00 – 18+00

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

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P.M. E. LORD
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JOB 11000143
FILE CODE:
SHEET NO.
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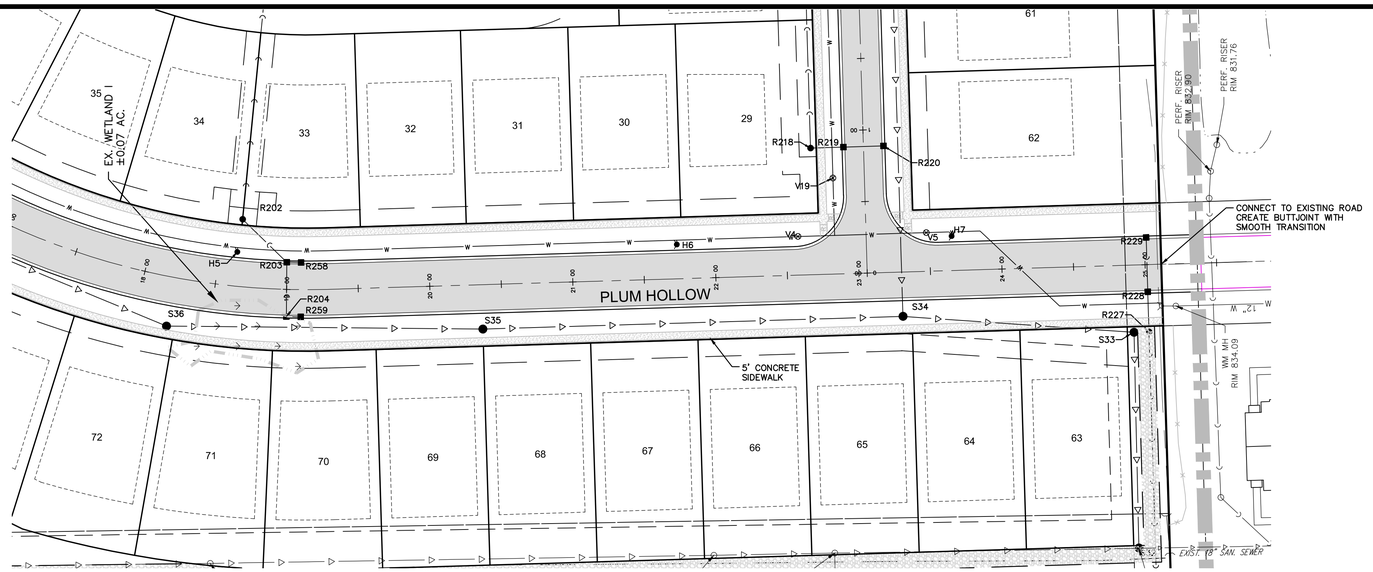

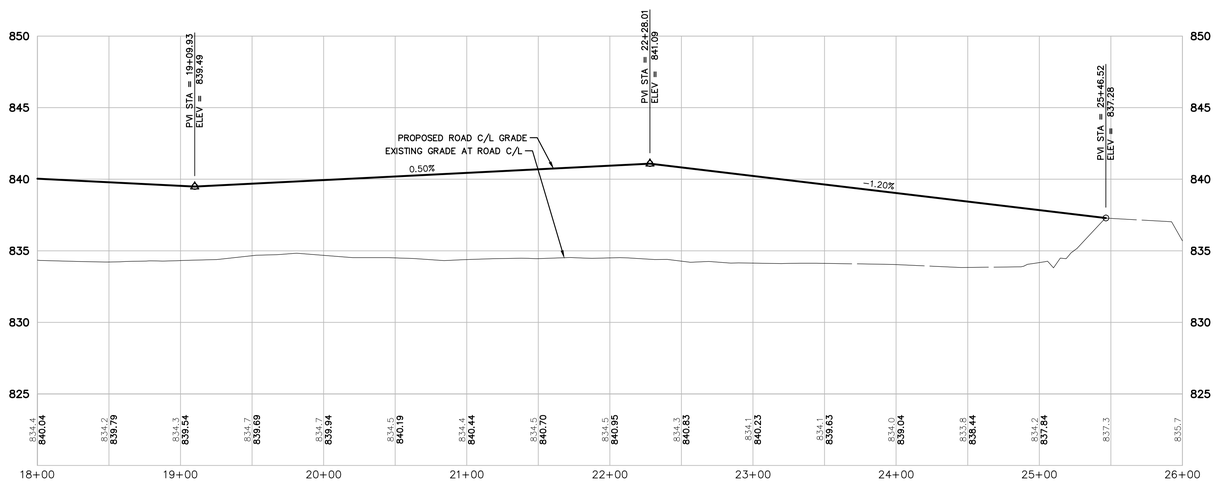

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VERT: 1"=5'
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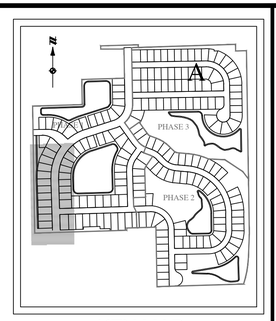
ADD 0.03' TO C/L GRADE TO OBTAIN PLUM HOLLOW T/CURB ELEVATION



KEY MAP

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LEGEND

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- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850.0 / 850.00 — PROPOSED GRADE AT C/L OF ROAD

17+00 — ROAD STATION

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FINAL SITE PLANS

ROAD – PLAN AND PROFILE
PLUM HOLLOW STA: 18+00 – 25+11.34

DATE 05/12/14

REVISIONS

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SCALE 0 25 50
1" = 50 FEET

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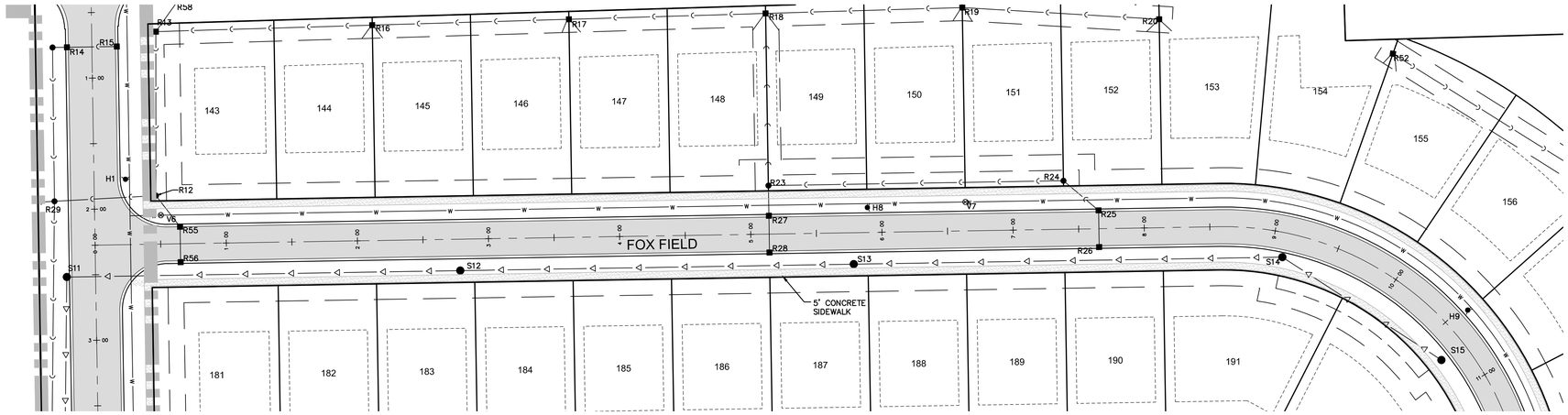
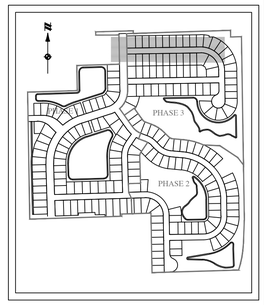
JOB 11000143
FILE CODE:
SHEET NO. CP-37





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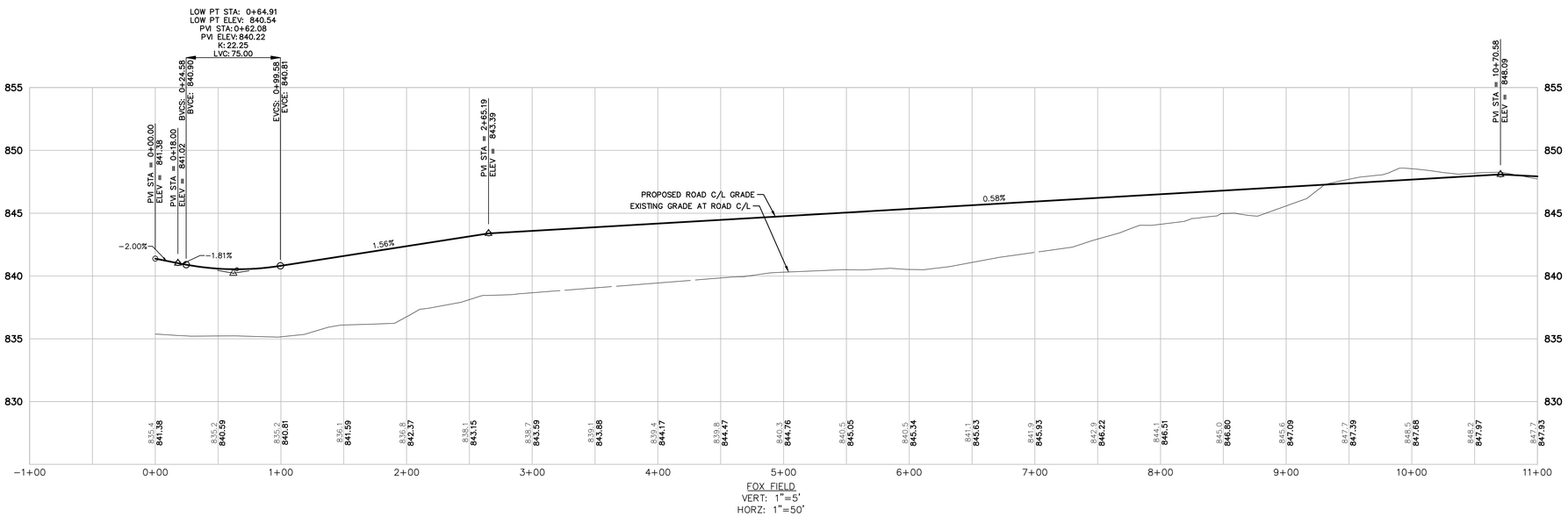
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850 / 850.00 — PROPOSED GRADE AT C/L OF ROAD

17+00 — ROAD STATION



FOX FIELD
VERT: 1"=5'
HORZ: 1"=50'

REFER TO TYPICAL ROAD CROSS-SECTION - 66' ROW

ADD 0.13' TO C/L GRADE TO OBTAIN T/CURB ELEVATION

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FIELDSTONE PARK
FINAL SITE PLANS

ROAD – PLAN AND PROFILE
FOX FIELD STA: 0+00 – 11+00

DATE 05/12/14

REVISIONS

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SCALE 0 25 50
1" = 50 FEET

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P.M. E. LORD
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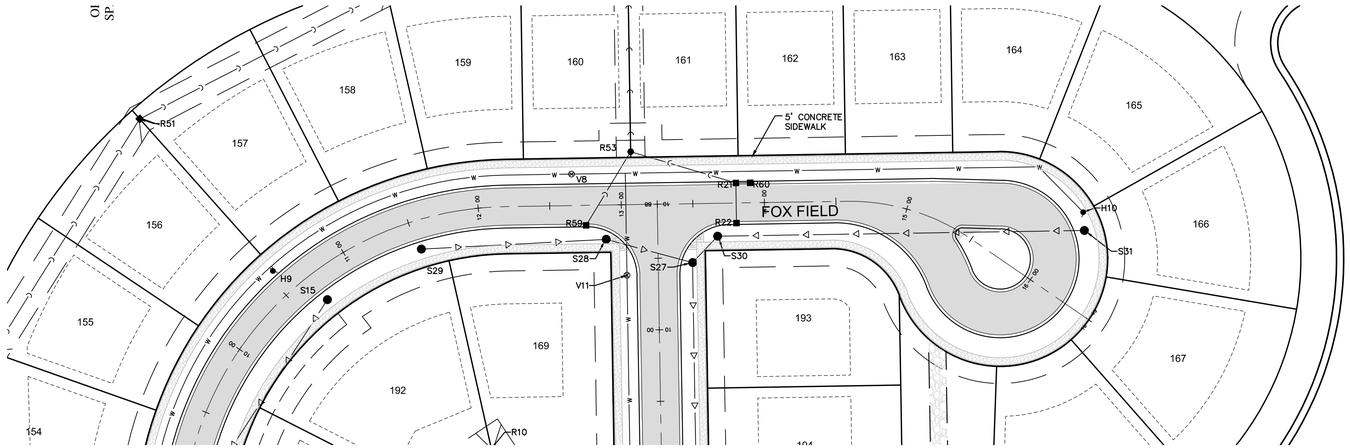
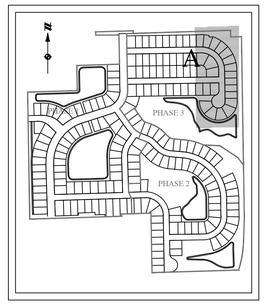
FILE CODE:
SHEET NO. CP-38





KEY MAP

NOT TO SCALE

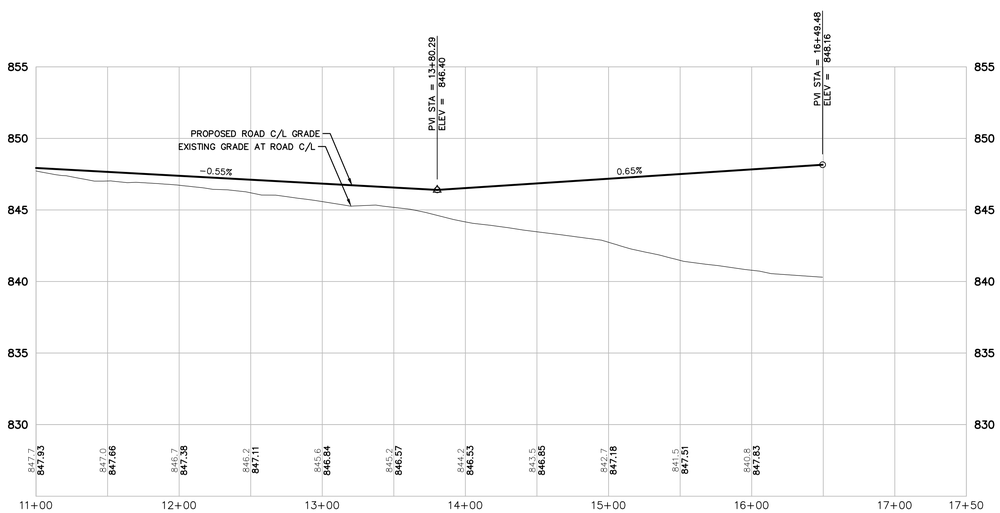
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850.0 — 850.00 — PROPOSED GRADE AT C/L OF ROAD

17+00 — ROAD STATION



FOX FIELD
VERT: 1"=5'
HORZ: 1"=50'

REFER TO TYPICAL ROAD CROSS-SECTION - 66' ROW

ADD 0.13' TO C/L GRADE TO OBTAIN T/CURB ELEVATION

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WASHTENAW COUNTY, MICHIGAN

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FIELDSTONE PARK
FINAL SITE PLANS

ROAD – PLAN AND PROFILE
FOX FIELD STA: 11+00 – 16+49.48

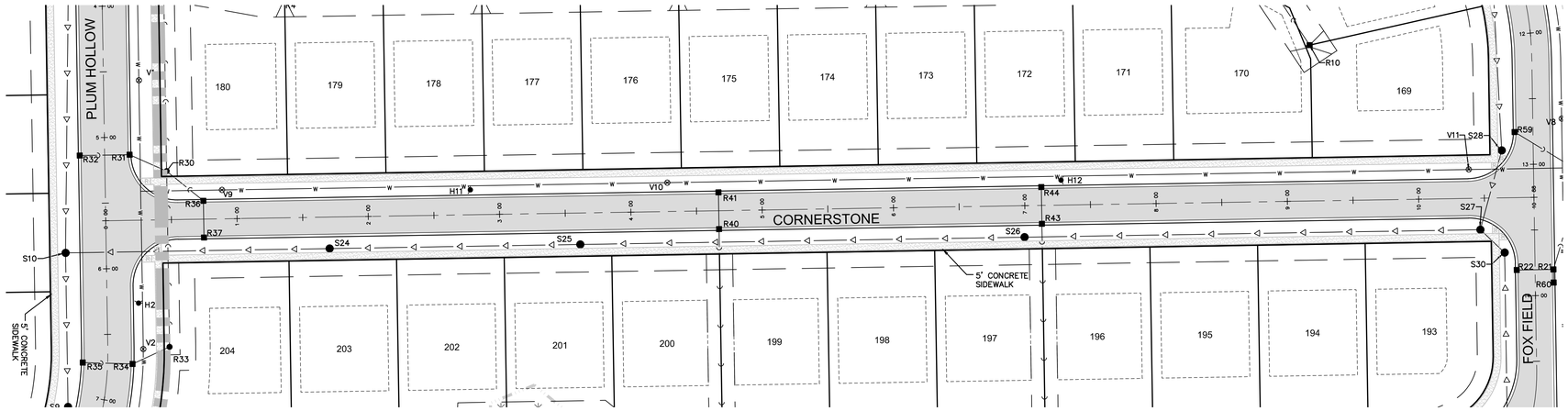
DATE 05/12/14

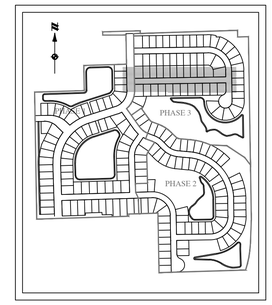
REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-35-47-RD
JOB 11000143
FILE CODE:
SHEET NO.
CP-39





KEY MAP

NOT TO SCALE

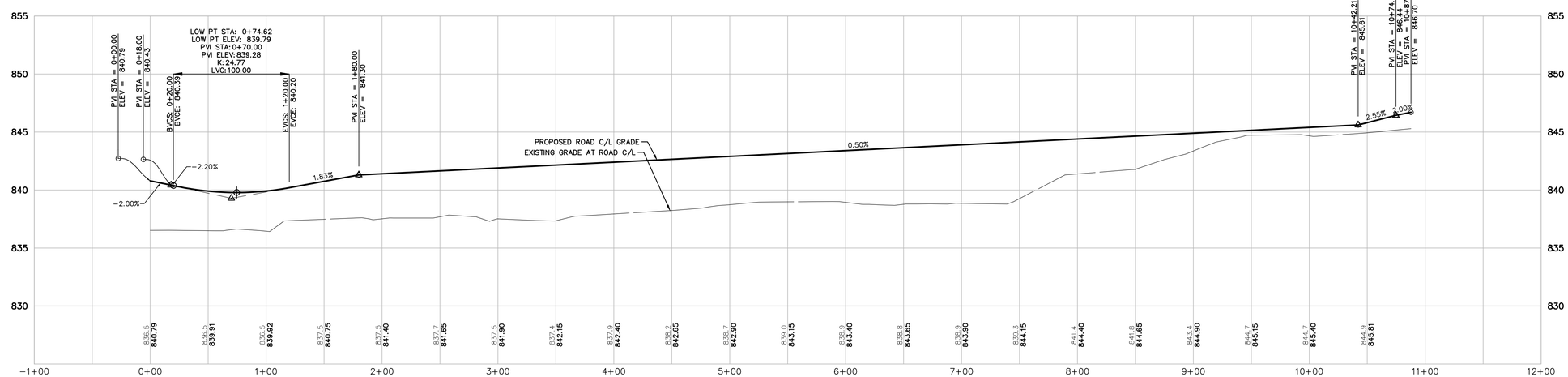
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850.0 / 850.00 — PROPOSED GRADE AT C/L OF ROAD

17+00 — ROAD STATION



CORNERSTONE
VERT: 1"=5'
HORZ: 1"=50'

REFER TO TYPICAL ROAD CROSS-SECTION - 66' ROW

ADD 0.13' TO C/L GRADE TO OBTAIN T/CURB ELEVATION

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FIELDSTONE PARK
FINAL SITE PLANS

ROAD – PLAN AND PROFILE
CORNERSTONE STA: 0+00 – 10+87.78

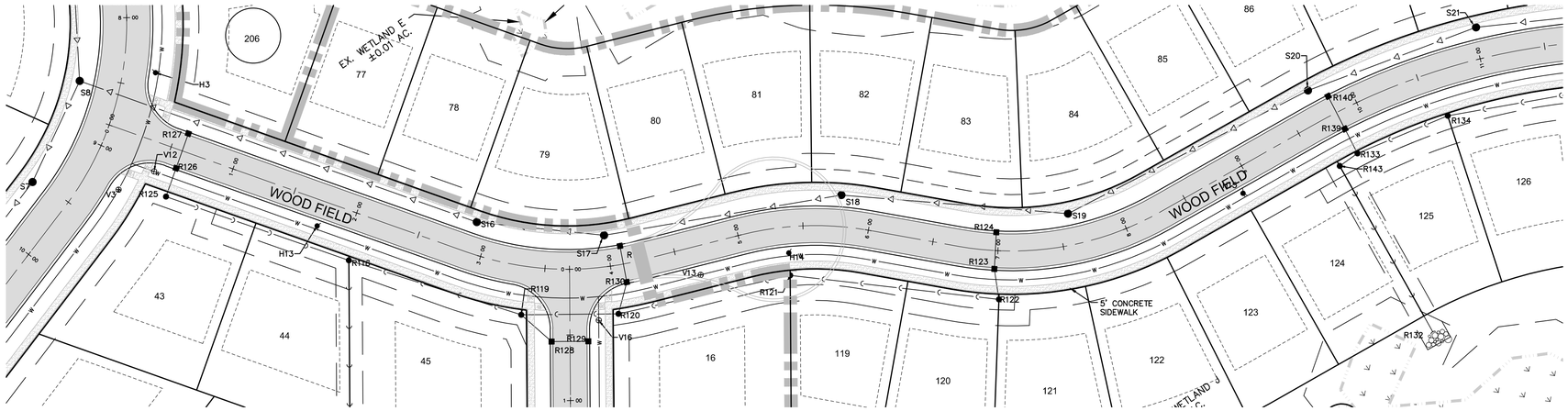
DATE 05/12/14

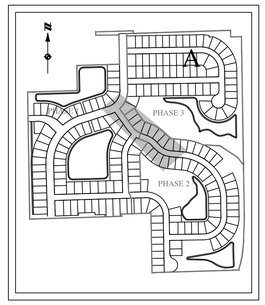
REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-35-47-RD
JOB 11000143
FILE CODE:
SHEET NO.
CP-40





KEY MAP

NOT TO SCALE

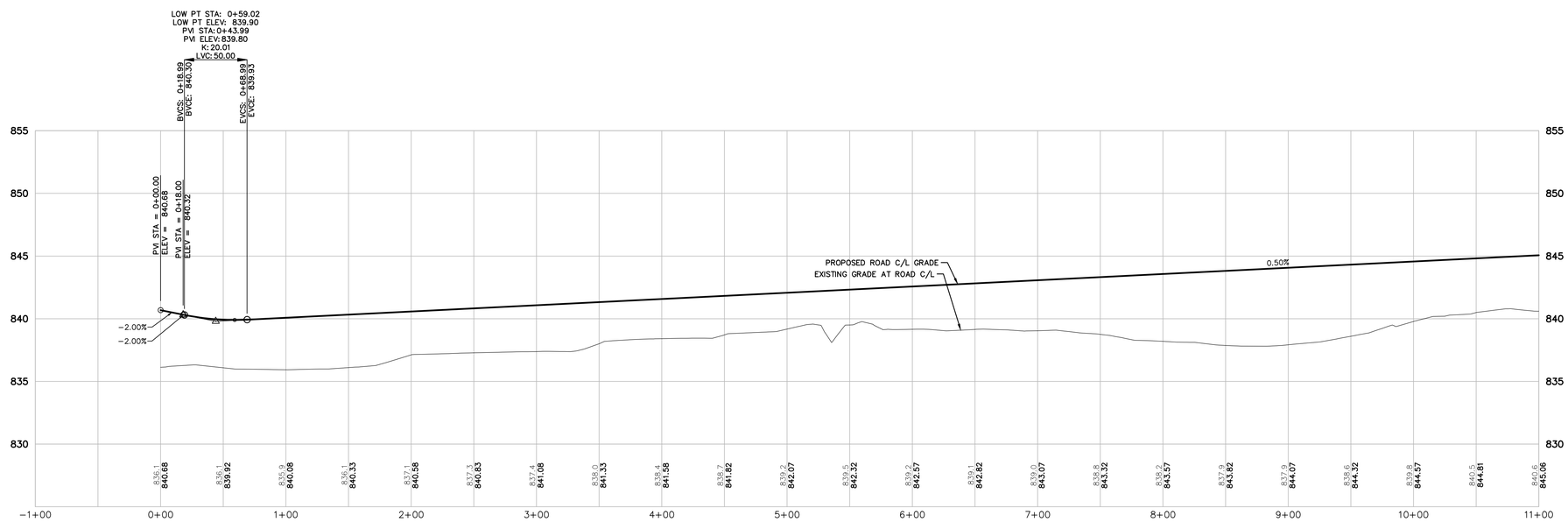
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850.0 — 850.00 — PROPOSED GRADE AT C/L OF ROAD

17+00 — ROAD STATION



WOOD FIELD
VERT: 1"=5'
HORZ: 1"=50'

REFER TO TYPICAL ROAD CROSS-SECTION - 66' ROW

ADD 0.13' TO C/L GRADE TO OBTAIN T/CURB ELEVATION

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FIELDSTONE PARK
FINAL SITE PLANS

ROAD – PLAN AND PROFILE
WOOD FIELD STA: 0+00 – 11+00

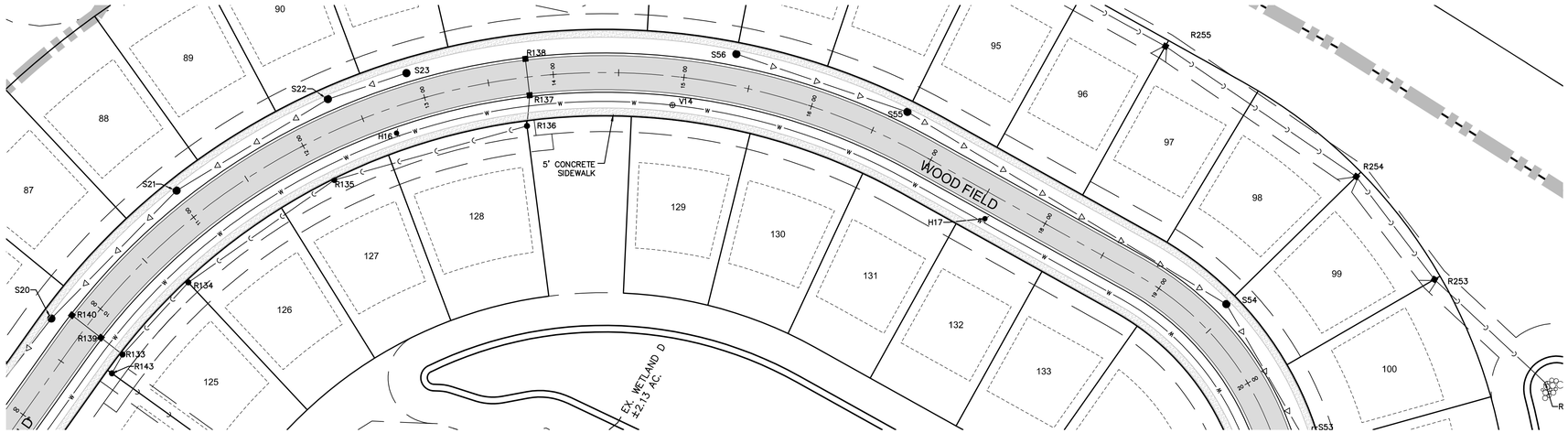
DATE 05/12/14

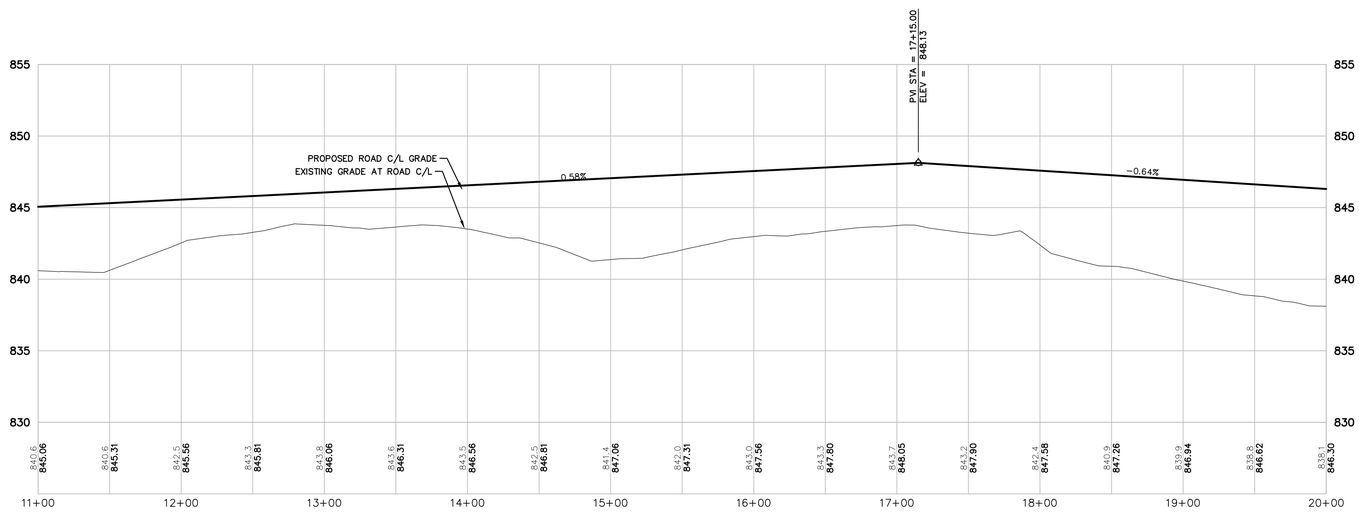
REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-35-47-RD
JOB 11000143
FILE CODE:
SHEET NO.
CP-41

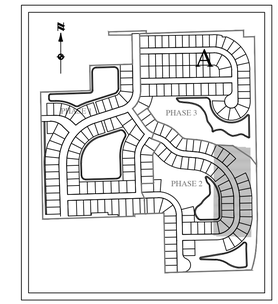




WOOD FIELD
VERT: 1"=5'
HORZ: 1"=50'

REFER TO TYPICAL ROAD CROSS-SECTION - 66' ROW

ADD 0.13' TO C/L GRADE TO OBTAIN T/CURB ELEVATION



KEY MAP
NOT TO SCALE

LEGEND

- PROPERTY LINE
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- PROPOSED MANHOLE/CATCH BASIN/END SECTION
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- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION
EXISTING GRADE — 850.0 — PROPOSED GRADE AT C/L OF ROAD
17+00 — ROAD STATION

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ROAD – PLAN AND PROFILE
WOOD FIELD STA: 11+00 – 20+00

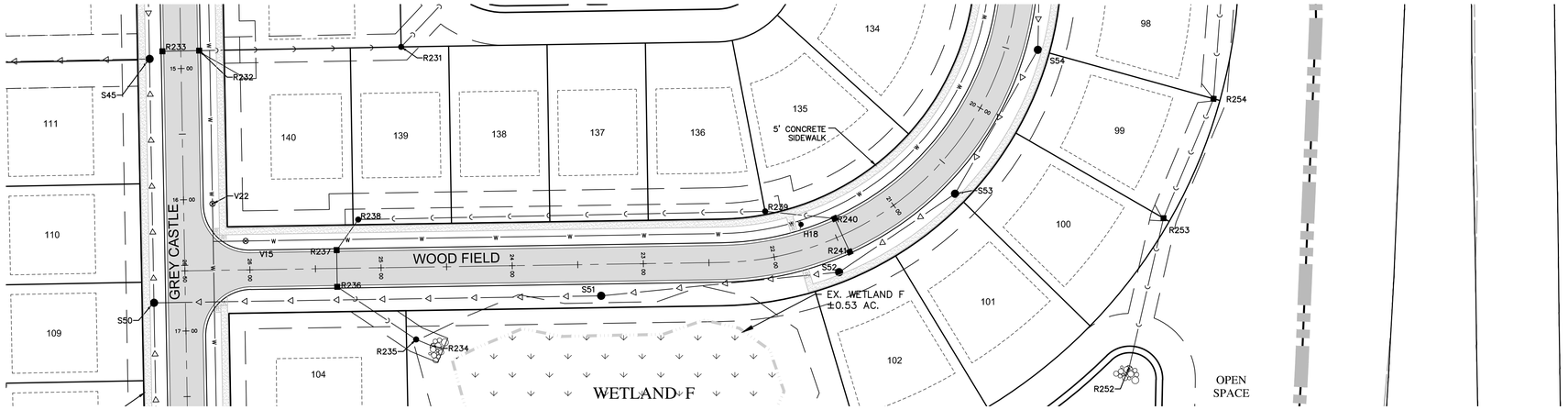
DATE 05/12/14

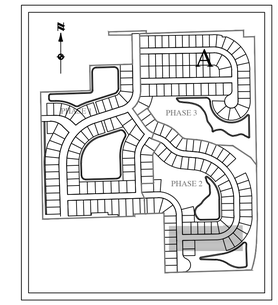
REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-35-47-RD
JOB 11000143
FILE CODE:
SHEET NO. CP-42





KEY MAP

NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
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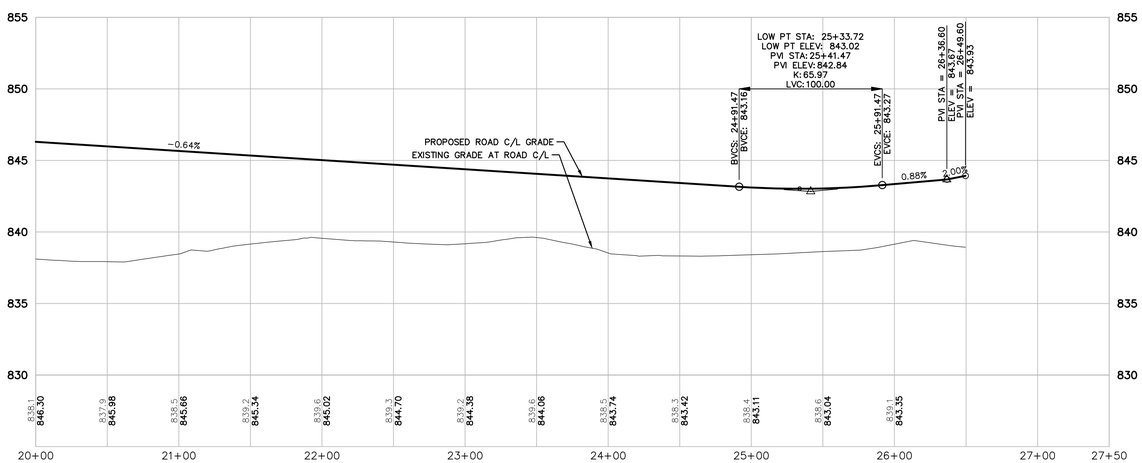
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850.0 — 850.00 — PROPOSED GRADE AT C/L OF ROAD

17+00 — ROAD STATION



WOOD FIELD
VERT: 1"=5'
HORZ: 1"=50'

REFER TO TYPICAL ROAD CROSS-SECTION - 66' ROW

ADD 0.13' TO C/L GRADE TO OBTAIN T/CURB ELEVATION

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FINAL SITE PLANS

ROAD – PLAN AND PROFILE
WOOD FIELD STA: 20+00 – 26+49.60

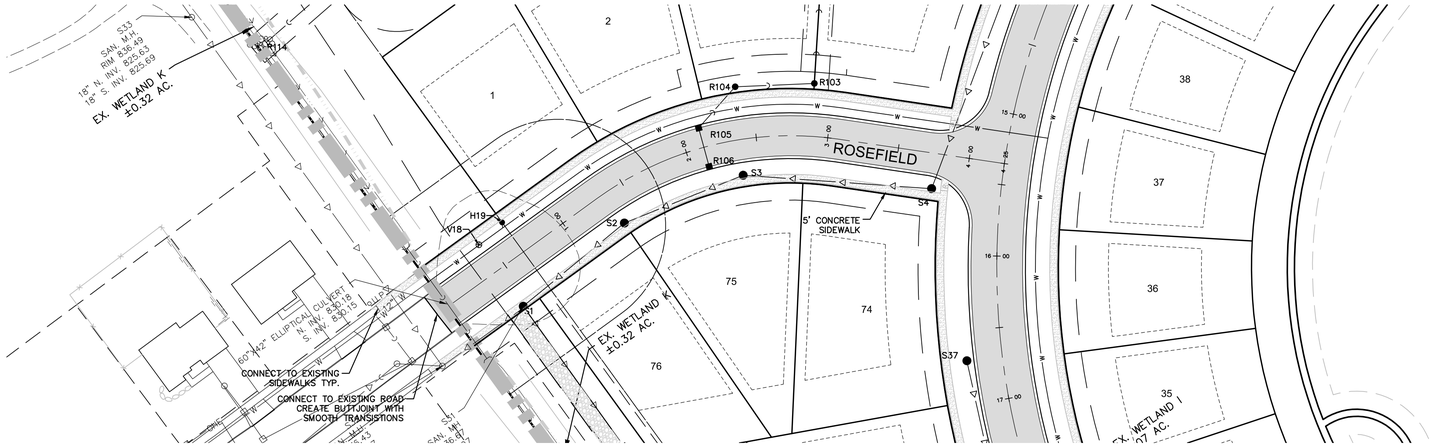
DATE 05/12/14

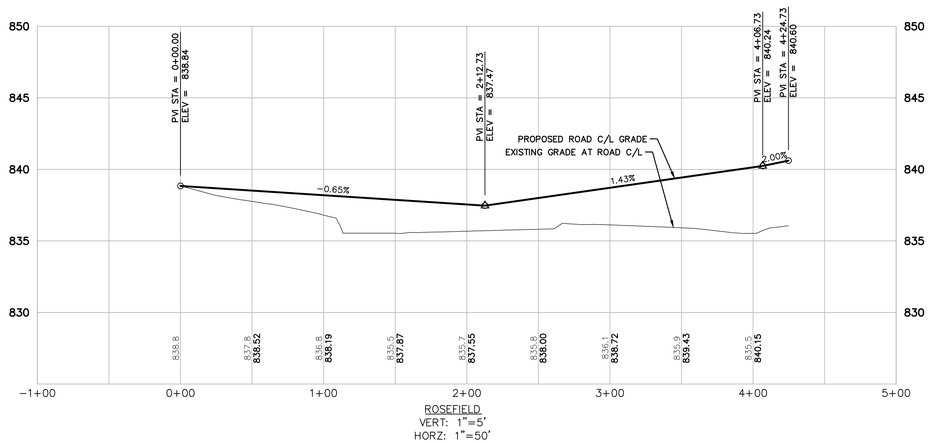
REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

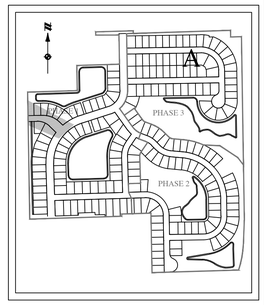
DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-35-47-RD
JOB 11000143
FILE CODE:
SHEET NO. CP-43





REFER TO TYPICAL ROAD CROSS-SECTION - 66' ROW

ADD 0.13' TO C/L GRADE TO OBTAIN T/CURB ELEVATION



KEY MAP

NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850.00 / 850.00 — PROPOSED GRADE AT C/L OF ROAD

17+00 — ROAD STATION

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DIVERSE REAL ESTATE LLC

FIELDSTONE PARK
FINAL SITE PLANS

ROAD – PLAN AND PROFILE
ROSEFIELD STA: 0+00 – 4+24.73

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-35-47-RD
JOB 11000143
FILE CODE:
SHEET NO.
CP-44

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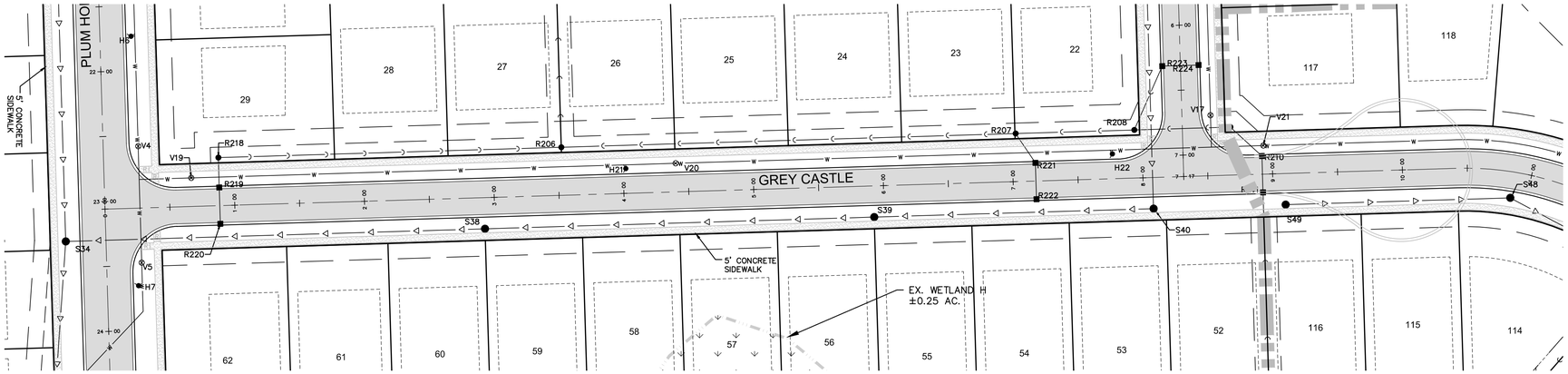

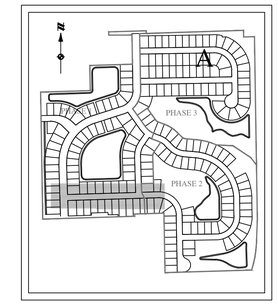

KEY MAP

NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
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- PROPOSED BUILDING SETBACK
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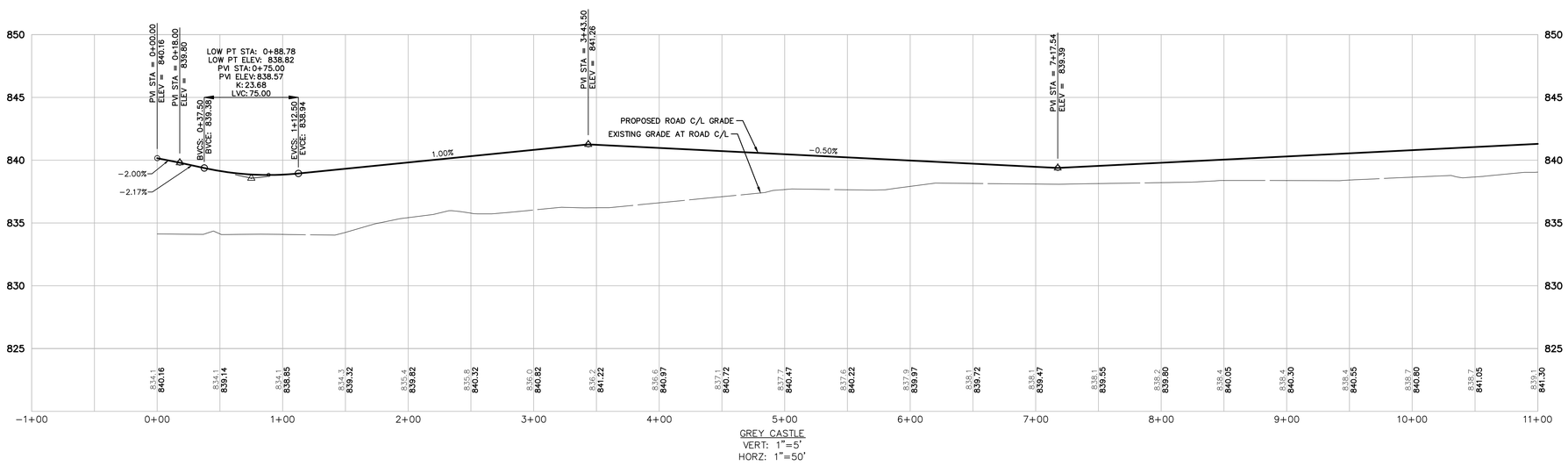
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION
EXISTING GRADE — 850.0
PROPOSED GRADE AT C/L OF ROAD — 850.00
17+00 — ROAD STATION



GREY CASTLE
VERT: 1"=5'
HORZ: 1"=50'

REFER TO TYPICAL ROAD CROSS-SECTION - 66' ROW

ADD 0.13' TO C/L GRADE TO OBTAIN T/CURB ELEVATION

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WASHTENAW COUNTY, MICHIGAN

CLIENT
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FIELDSTONE PARK
FINAL SITE PLANS

ROAD – PLAN AND PROFILE
GREY CASTLE STA: 0+00 – 11+00

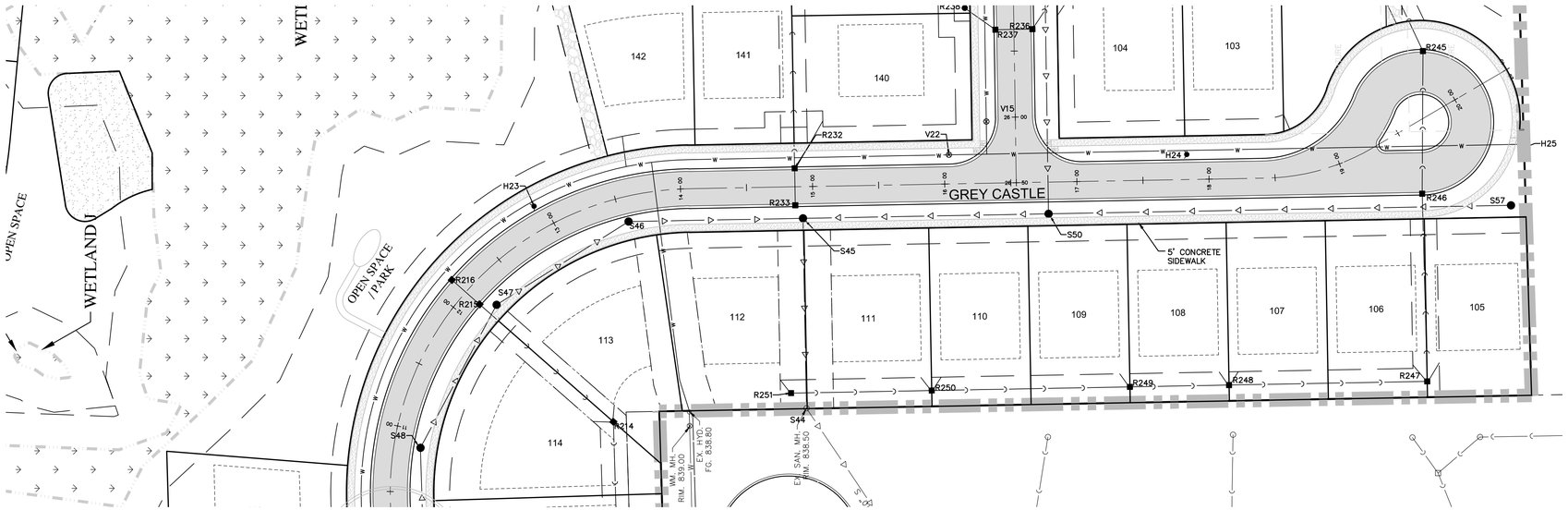
DATE 05/12/14

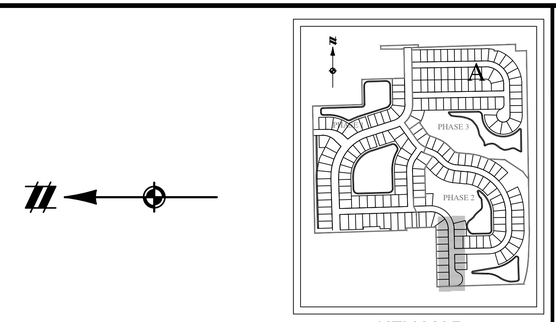
REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-35-47-RD
JOB 11000143
FILE CODE:
SHEET NO. CP-45





KEY MAP

NOT TO SCALE

LEGEND

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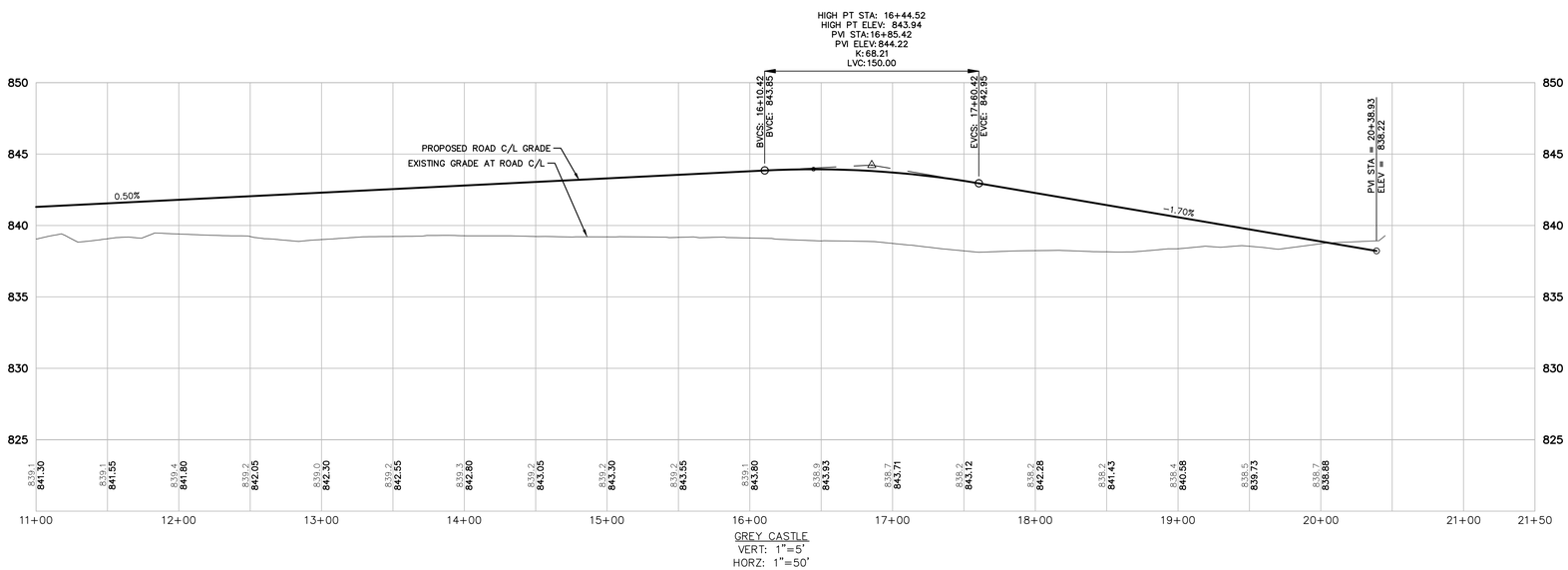
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850.0 — PROPOSED GRADE AT C/L OF ROAD

850.00

17+00 — ROAD STATION



GREY CASTLE
VERT: 1"=5'
HORZ: 1"=50'

REFER TO TYPICAL ROAD CROSS-SECTION - 66' ROW

ADD 0.13' TO C/L GRADE TO OBTAIN T/CURB ELEVATION

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FIELDSTONE PARK
FINAL SITE PLANS

ROAD – PLAN AND PROFILE
GREY CASTLE STA: 11+00 – 20+45.17

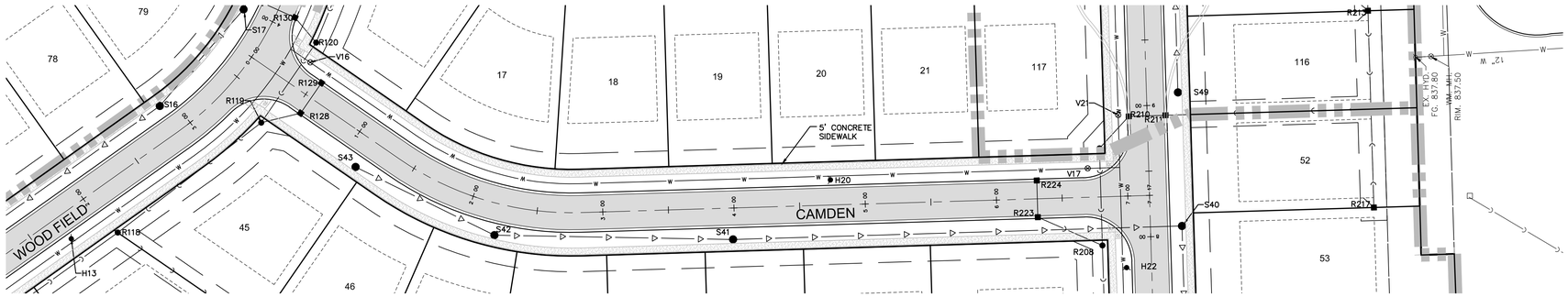
DATE 05/12/14

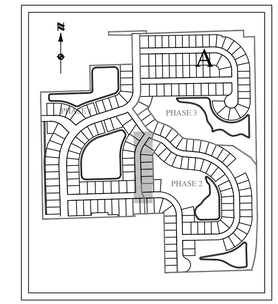
REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-35-47-RD
JOB 11000143
FILE CODE:
SHEET NO.
CP-46





KEY MAP

NOT TO SCALE

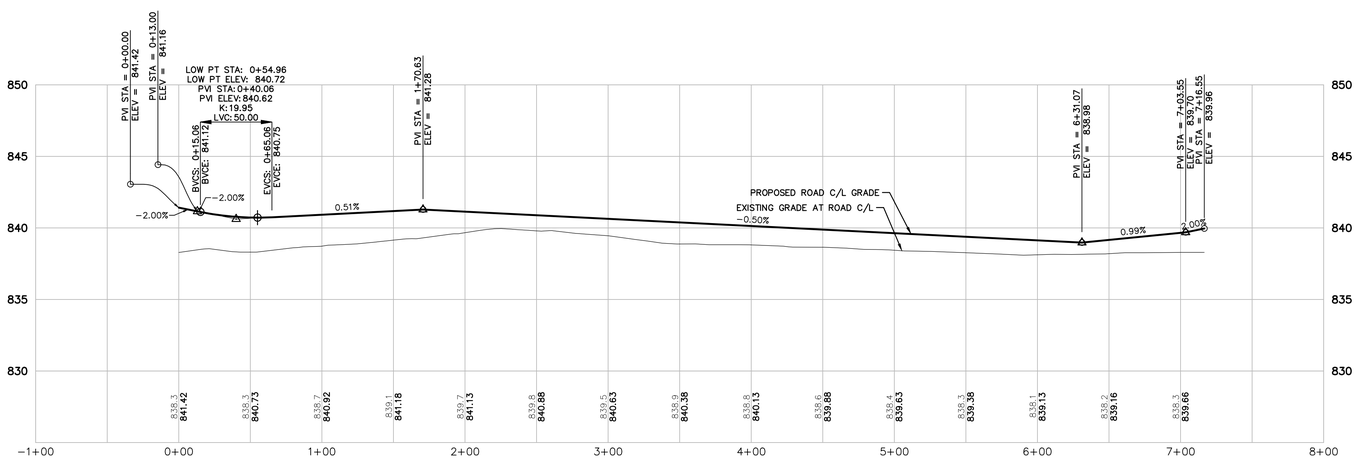
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED ASPHALT ROAD

850 — PROFILE GRID ELEVATION

EXISTING GRADE — 850.00 — PROPOSED GRADE AT C/L OF ROAD

17+00 — ROAD STATION



CAMDEN
VERT: 1"=5'
HORZ: 1"=50'

REFER TO TYPICAL ROAD CROSS-SECTION - 66' ROW

ADD 0.13' TO C/L GRADE TO OBTAIN T/CURB ELEVATION

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FIELDSTONE PARK
FINAL SITE PLANS

ROAD – PLAN AND PROFILE
CAMDEN STA: 0+00 – 7+16.55

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-35-47-RD
JOB 11000143
FILE CODE:
SHEET NO. CP-47

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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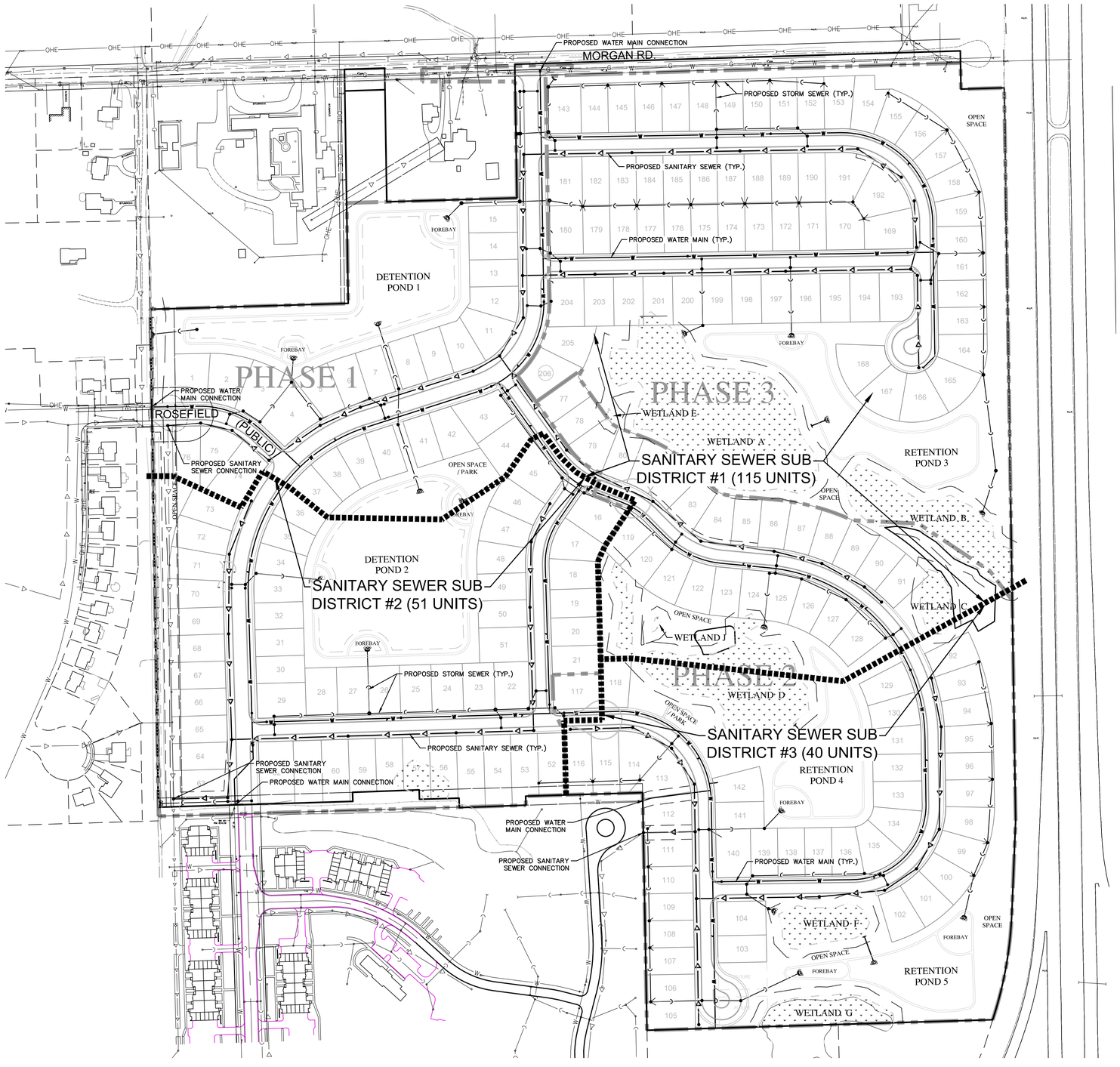

LEGEND

- PROPERTY LINE
- EASEMENT
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING WETLAND

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FIELDSTONE PARK
FINAL SITE PLANS

OVERALL UTILITY PLAN

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 75 150
1" = 150 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-48-OU
JOB 11000143
FILE CODE:
SHEET NO. CP-48

811 Know what's **below.** **Call** before you dig.

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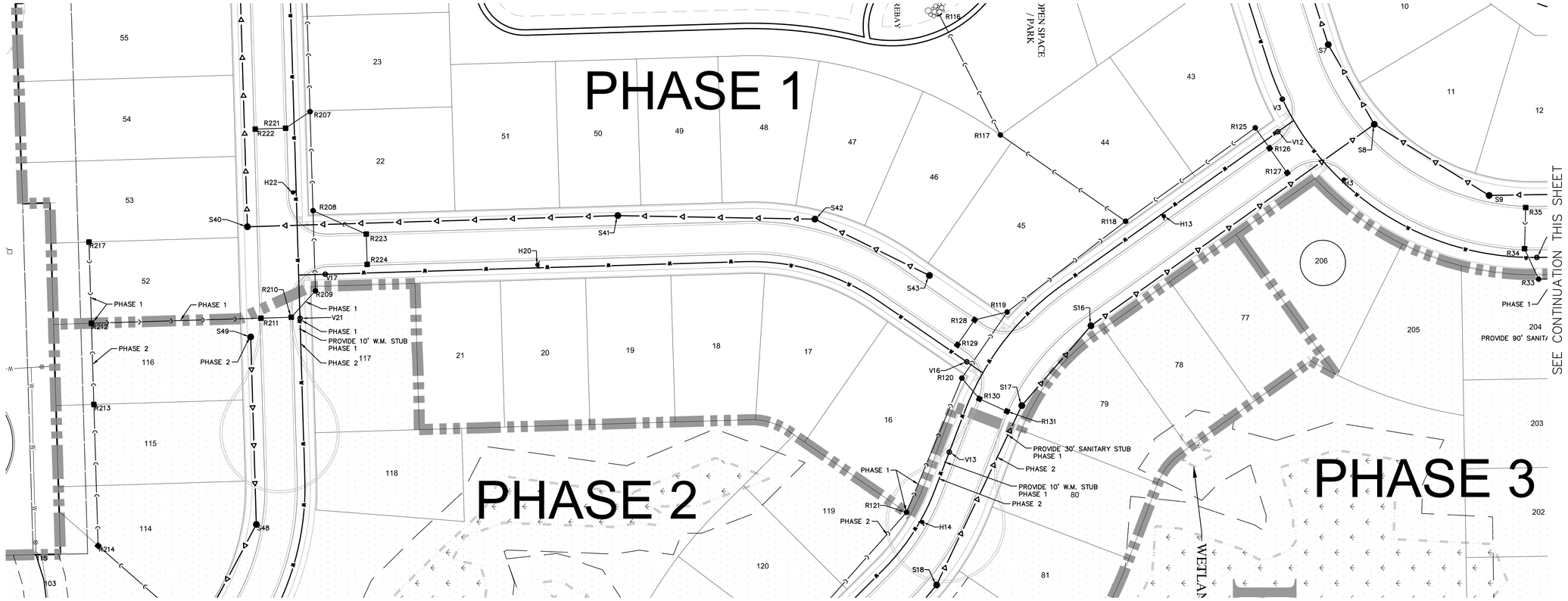

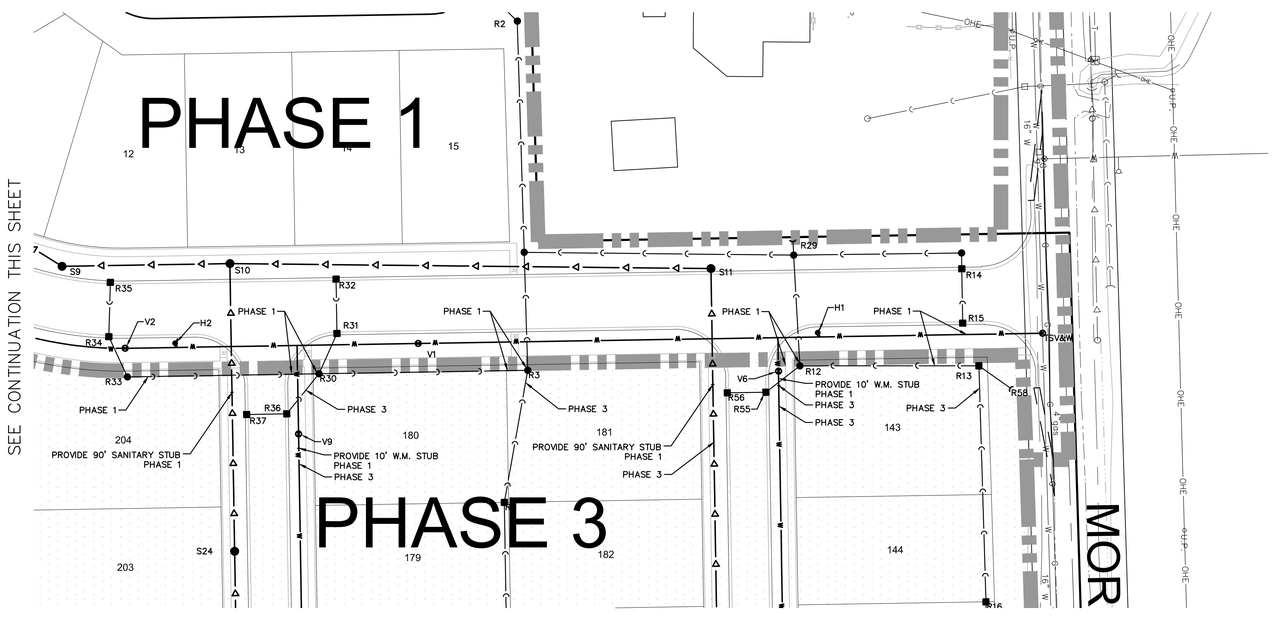

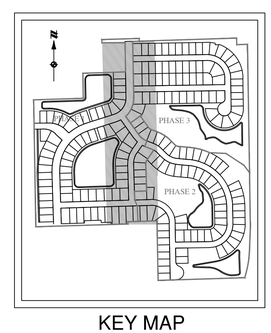

KEY MAP
NOT TO SCALE

LEGEND

- PROPERTY LINE
- EASEMENT
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING WETLAND

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FIELDSTONE PARK
FINAL SITE PLANS

PHASE LINE CONSTRUCTION DETAIL
PHASING UTILITIY LIMITS

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

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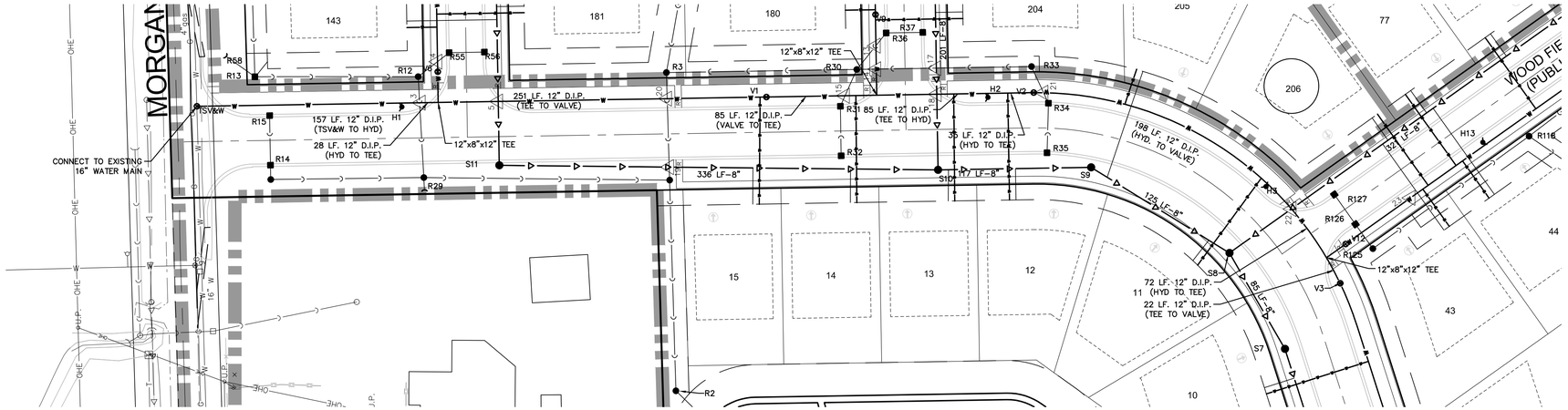
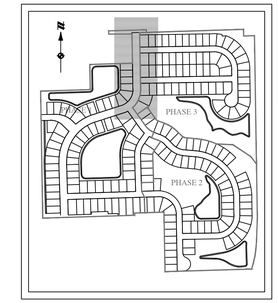
CAD FILE: 11000143CP-49-PH
JOB 11000143
FILE CODE:
SHEET NO.
CP-49





KEY MAP

NOT TO SCALE

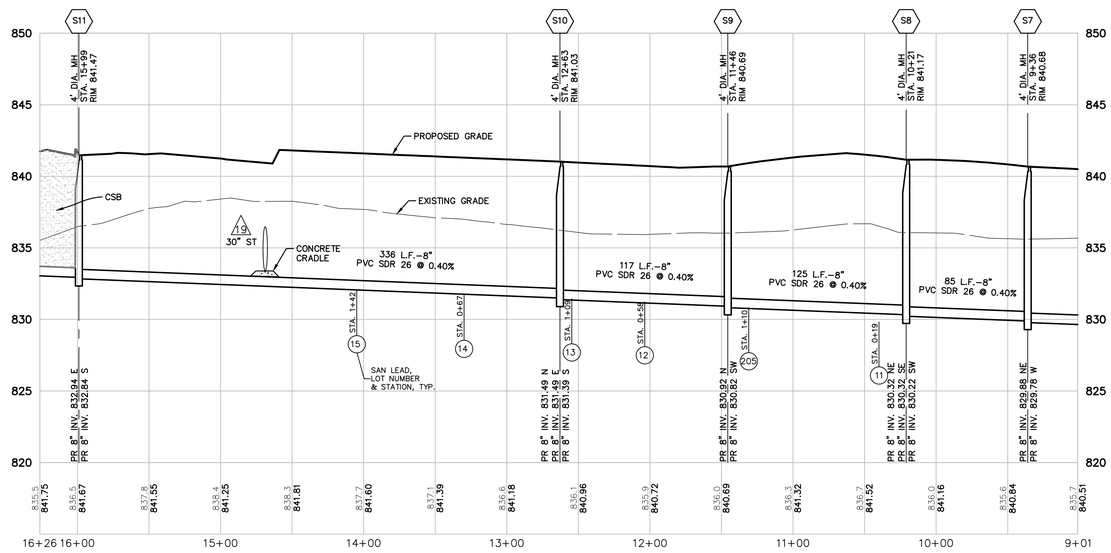
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

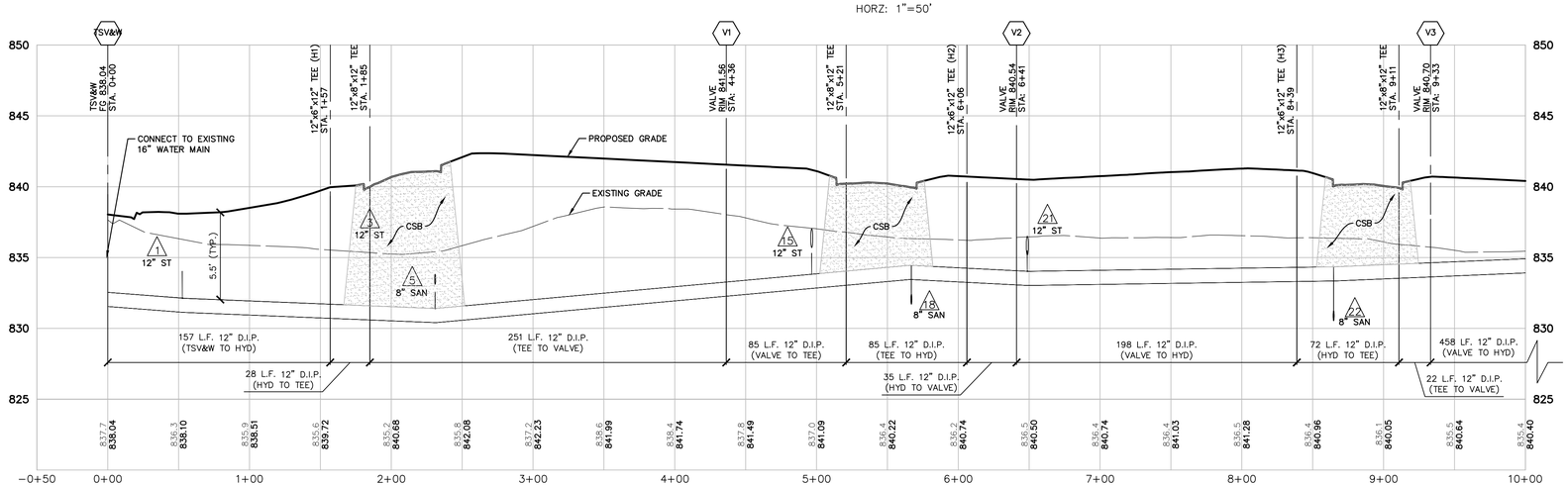
SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE



SAN S15–S1
VERT: 1"=5'
HORZ: 1"=50'



WATER – PLUM HOLLOW
VERT: 1"=5'
HORZ: 1"=50'

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FIELDSTONE PARK
FINAL SITE PLANS

SANITARY SEWER AND WATER MAIN PLAN

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

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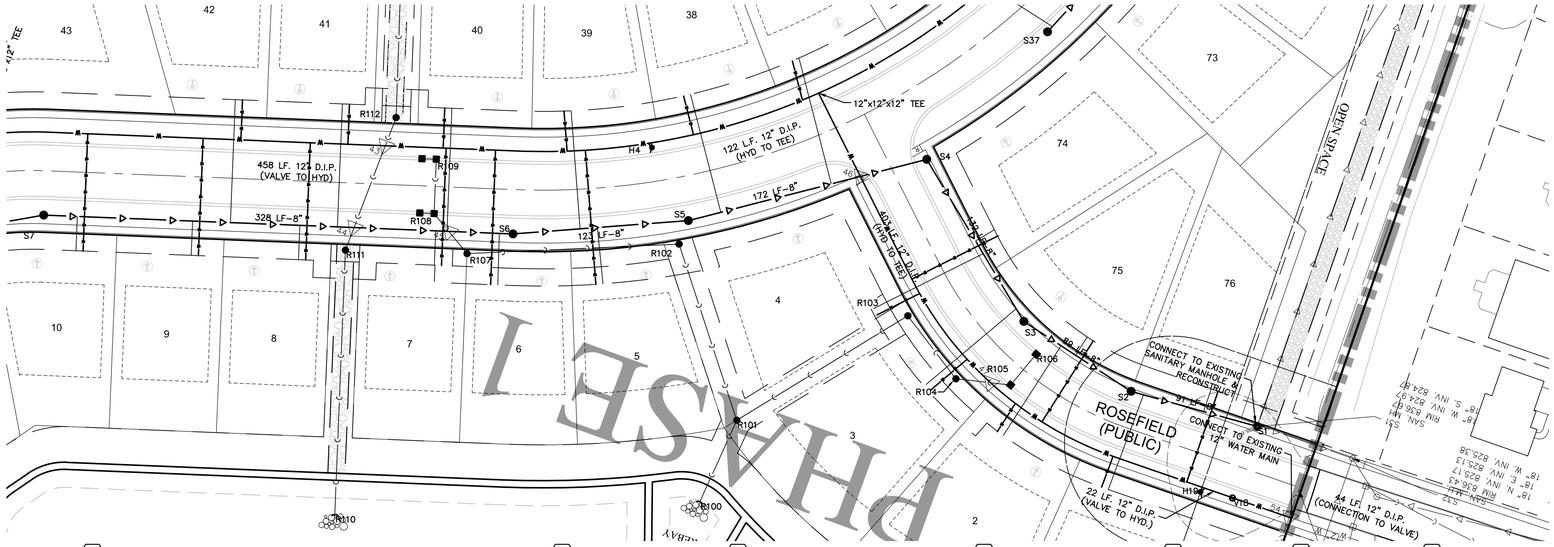
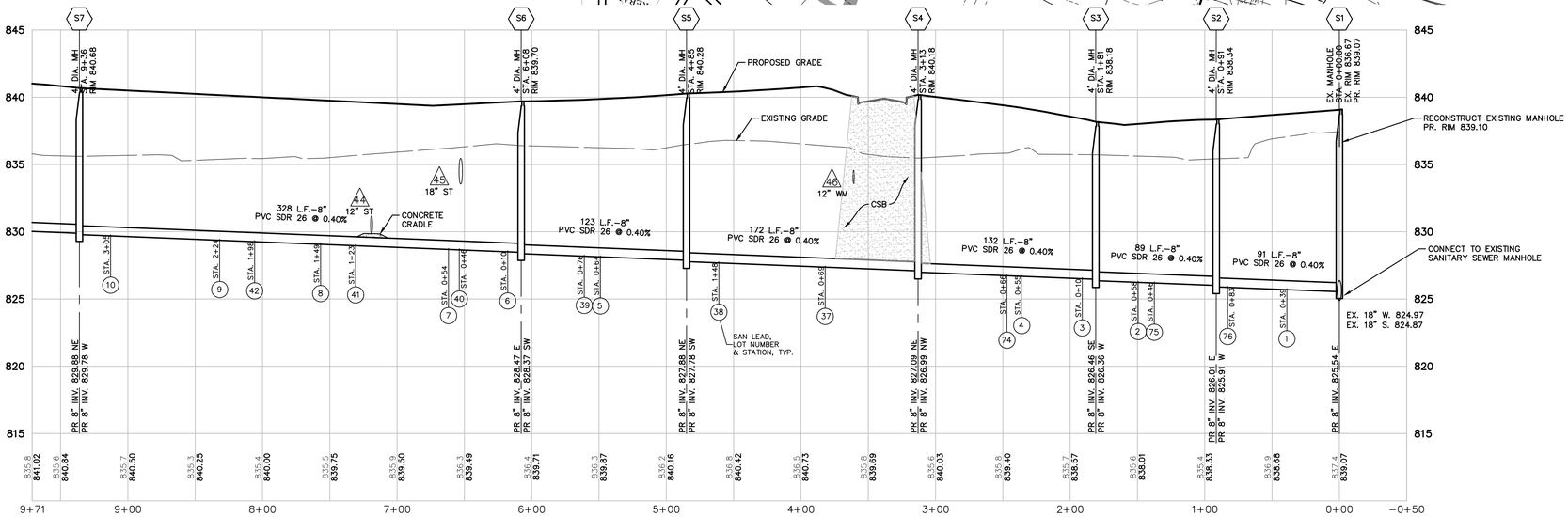
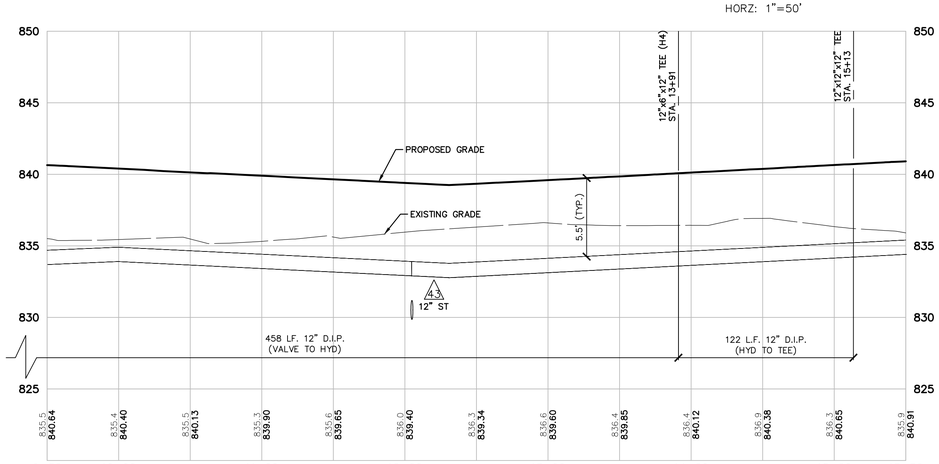
BOOK 1148
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-50

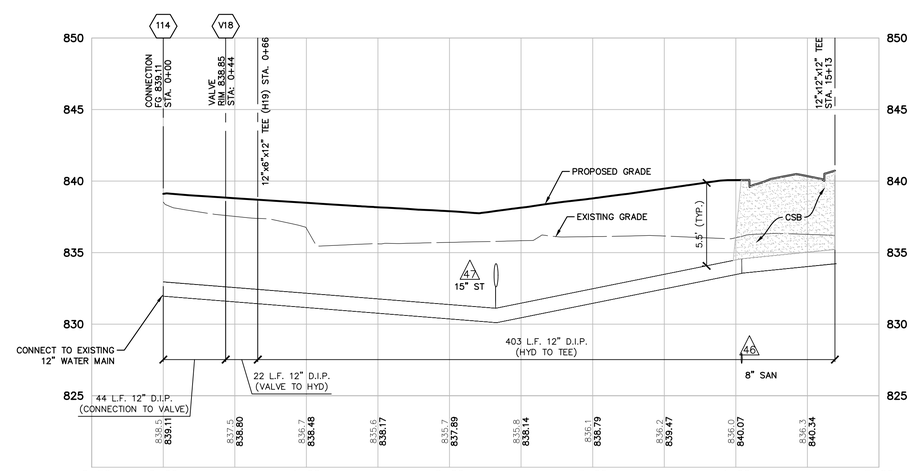




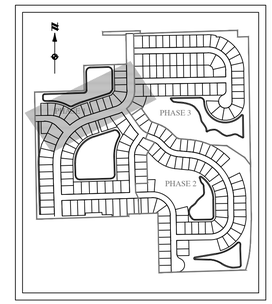
SAN S15–S1
VERT: 1"=5'
HORZ: 1"=50'



WATER – PLUM HOLLOW
VERT: 1"=5'
HORZ: 1"=50'



WATER – ROSEFIELD
VERT: 1"=5'
HORZ: 1"=50'



KEY MAP
NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE

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FIELDSTONE PARK FINAL SITE PLANS

SANITARY SEWER AND WATER MAIN PLAN

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

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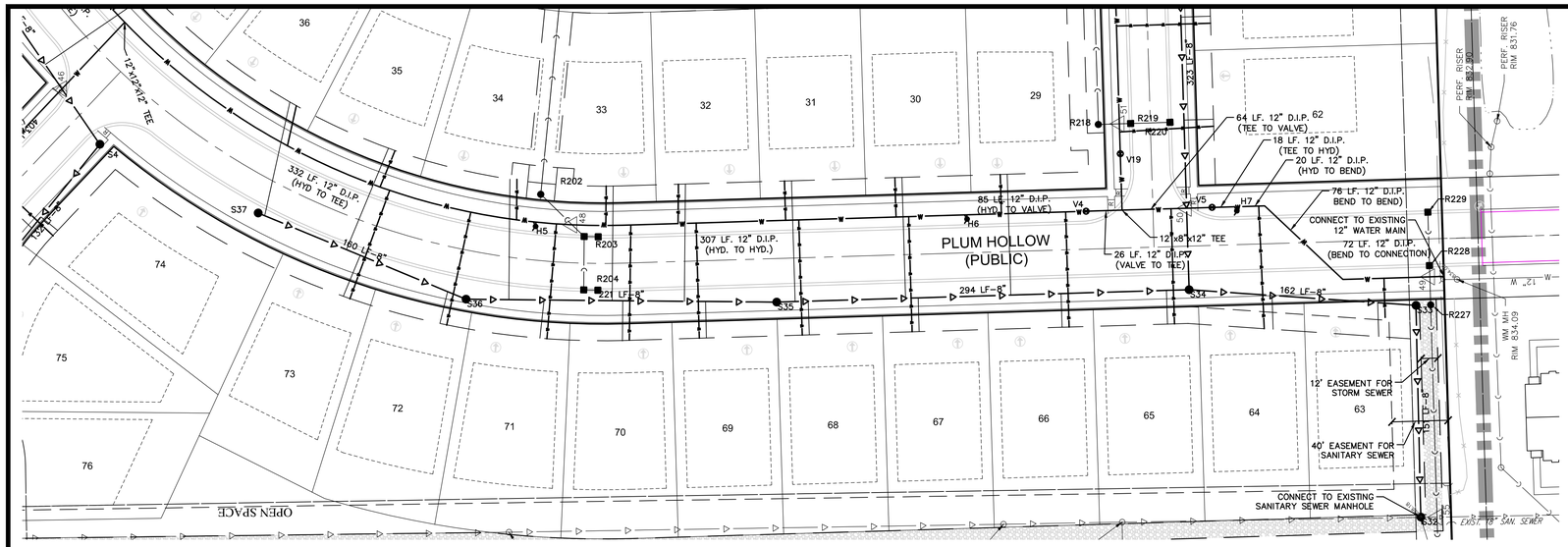
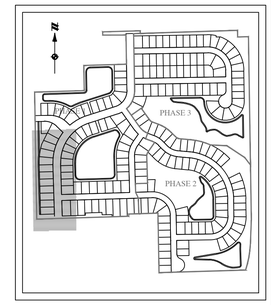
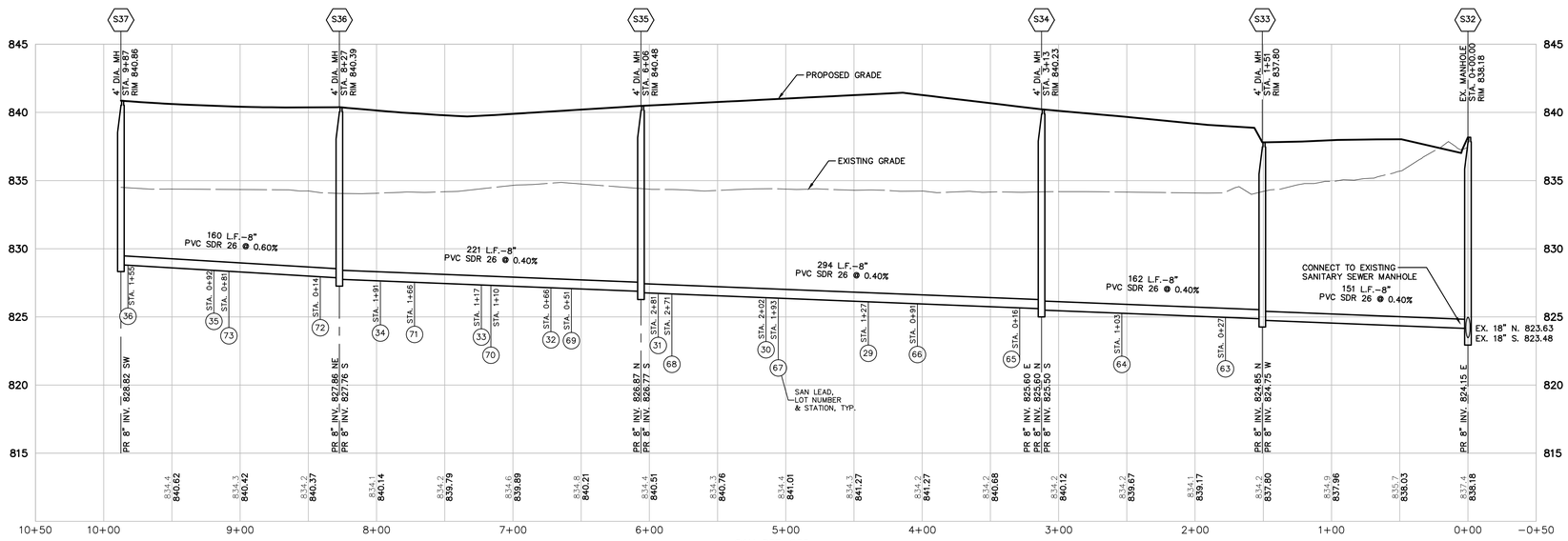
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-51



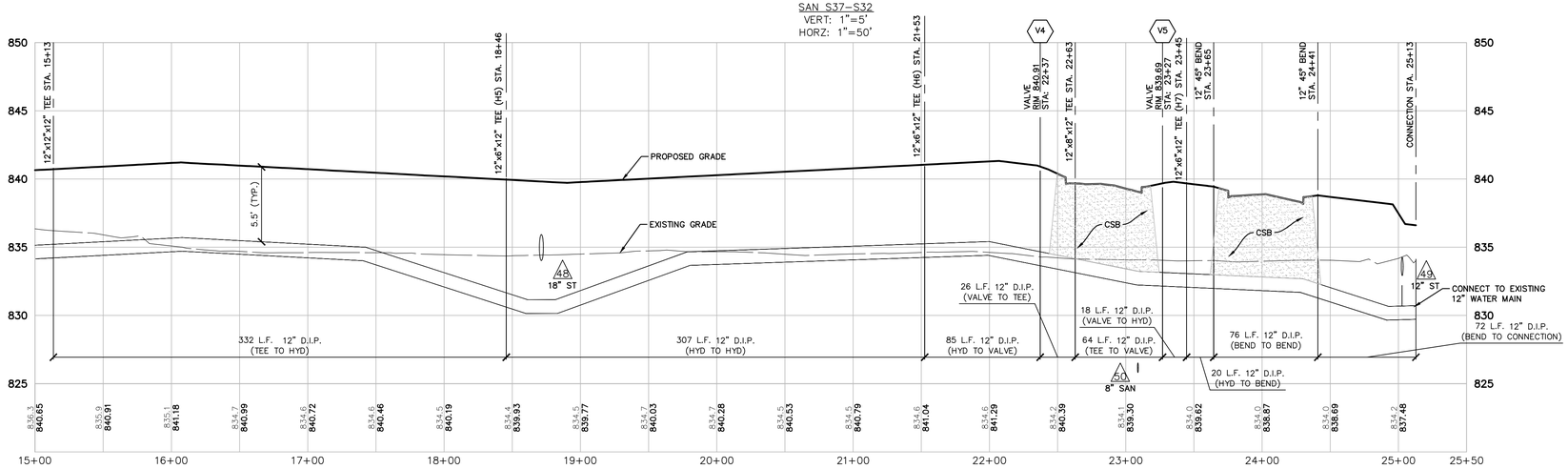


KEY MAP

NOT TO SCALE



SAN S37-S32
VERT: 1"=5'
HORZ: 1"=50'



WATER - PLUM HOLLOW
VERT: 1"=5'
HORZ: 1"=50'

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE

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FIELDSTONE PARK
FINAL SITE PLANS

SANITARY SEWER AND
WATER MAIN PLAN

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

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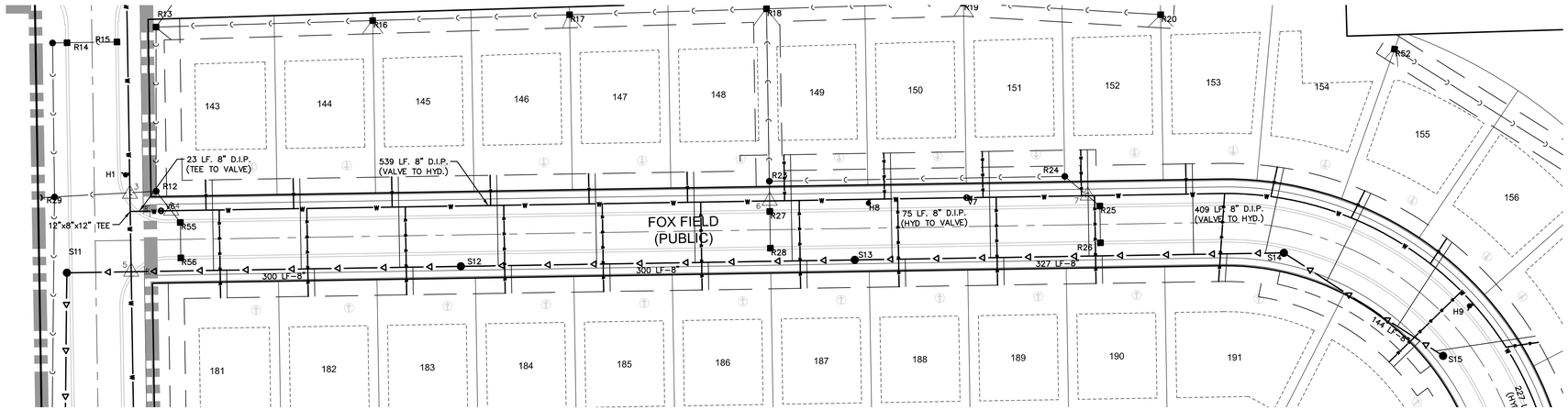
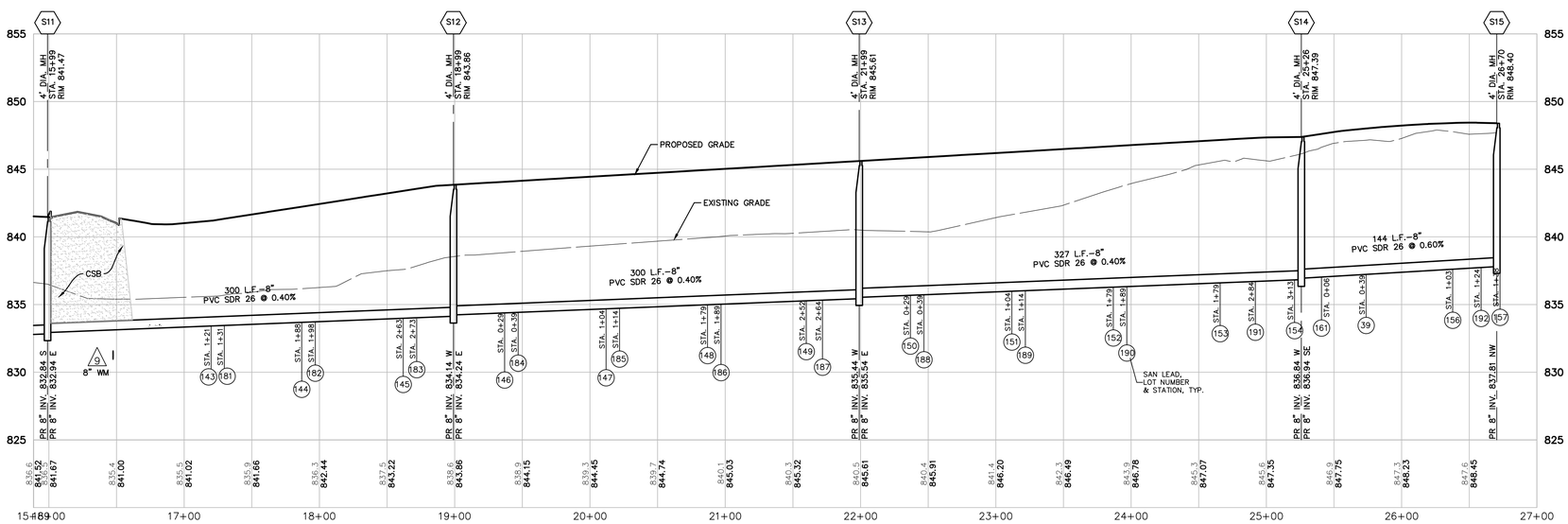
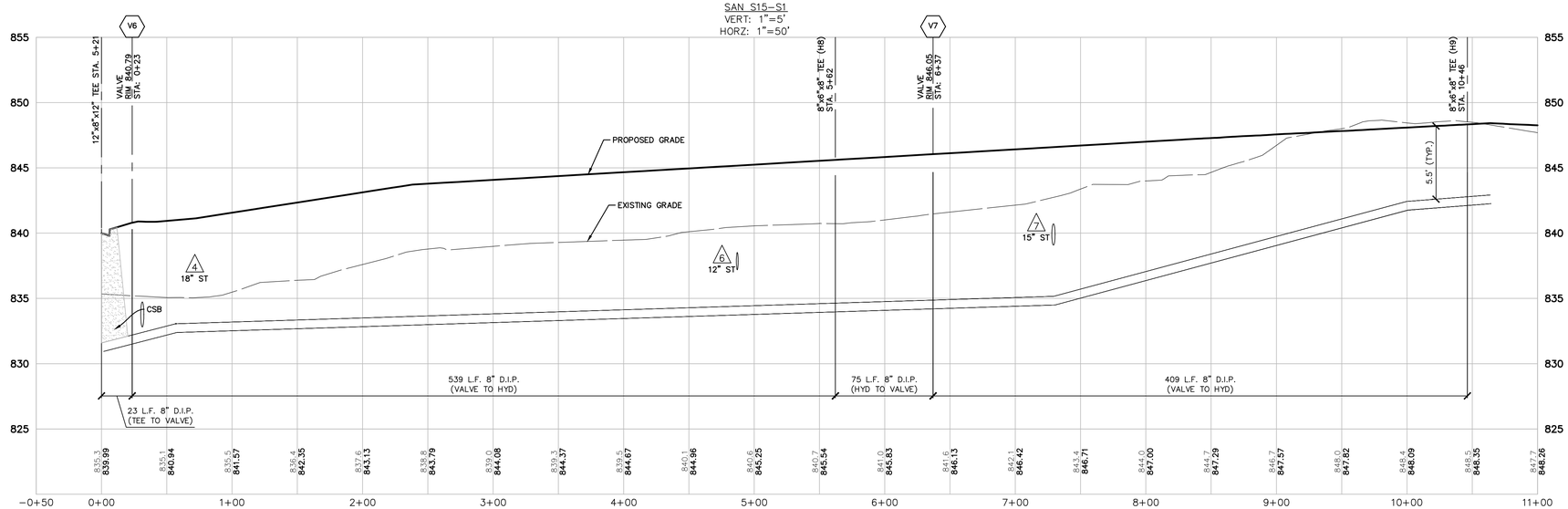
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-52

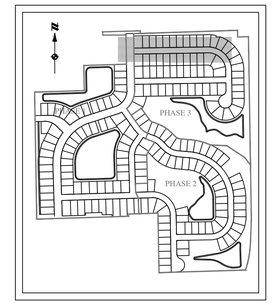




SAN S15-S1
VERT: 1"=5'
HORZ: 1"=50'



WATER - FOX FIELD
VERT: 1"=5'
HORZ: 1"=50'



KEY MAP
NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
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- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

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WASHTENAW COUNTY, MICHIGAN

CLIENT
DIVERSE REAL ESTATE LLC
FIELDSTONE PARK
FINAL SITE PLANS
SANITARY SEWER AND WATER MAIN PLAN

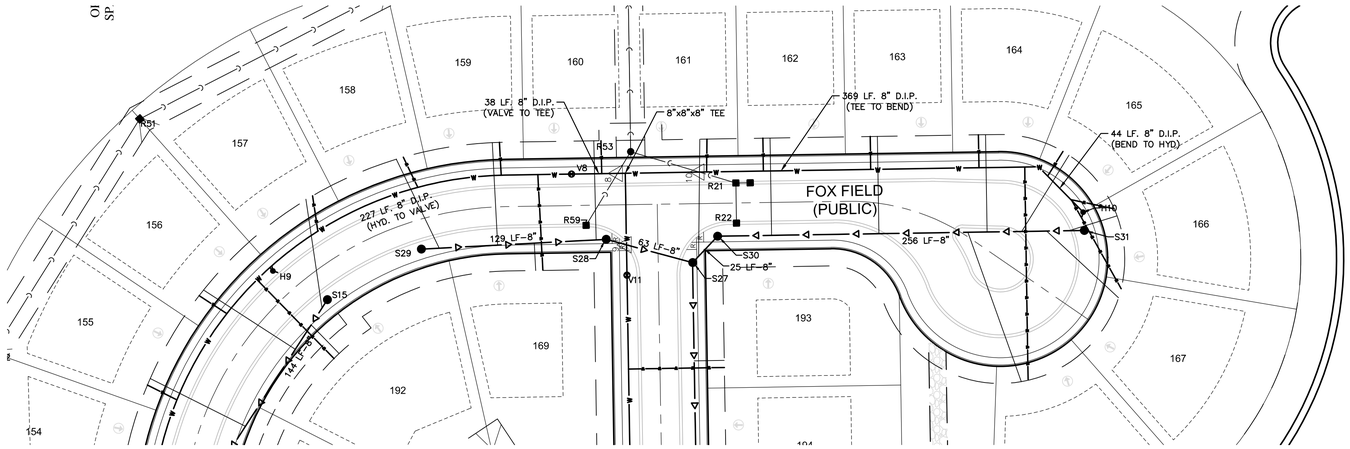
DATE 05/12/14

REVISIONS

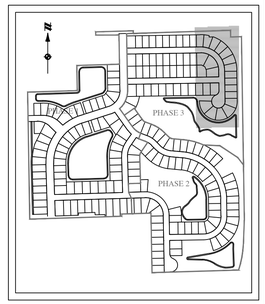
ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-53



RETENTION POND 3



KEY MAP

NOT TO SCALE

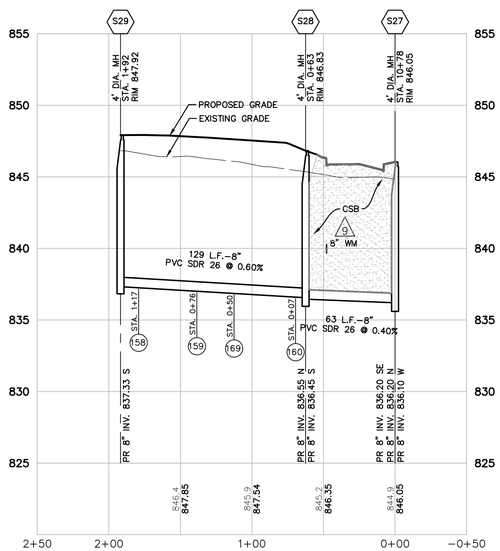
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

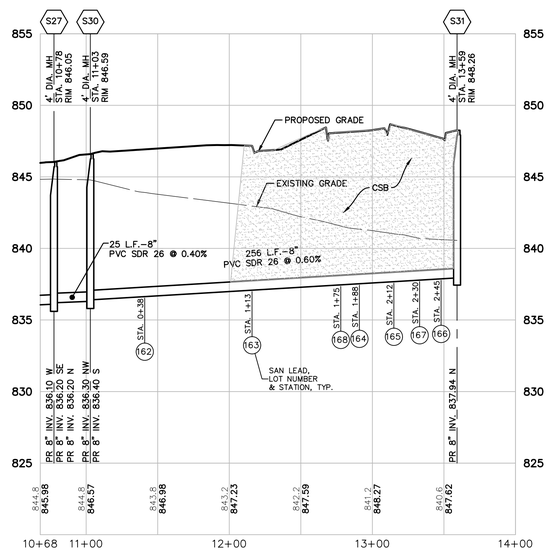
SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

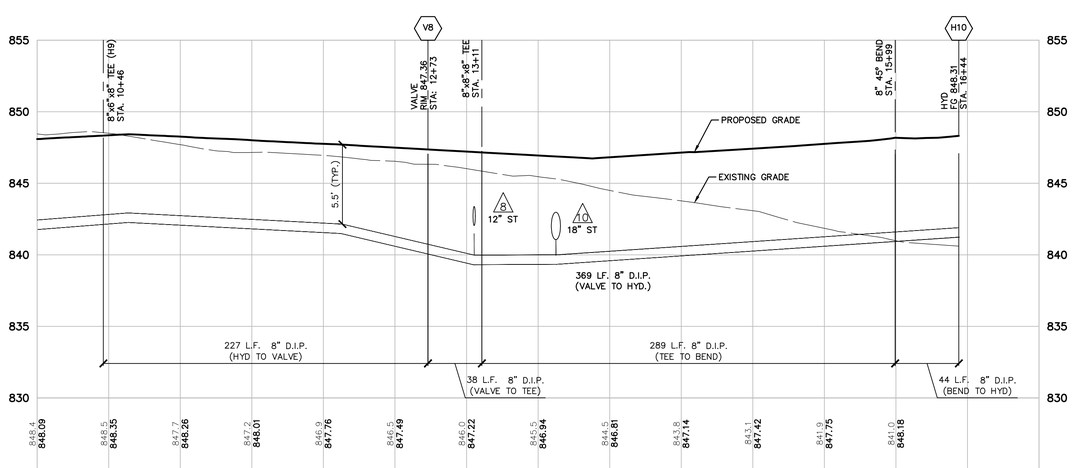
SEE SHEET CP-75 FOR STORM STRUCTURE TABLE



SAN S29-S27
VERT: 1"=5'
HORZ: 1"=50'



SAN S31-S10
VERT: 1"=5'
HORZ: 1"=50'



WATER – FOX FIELD
VERT: 1"=5'
HORZ: 1"=50'

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SANITARY SEWER AND WATER MAIN PLAN

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

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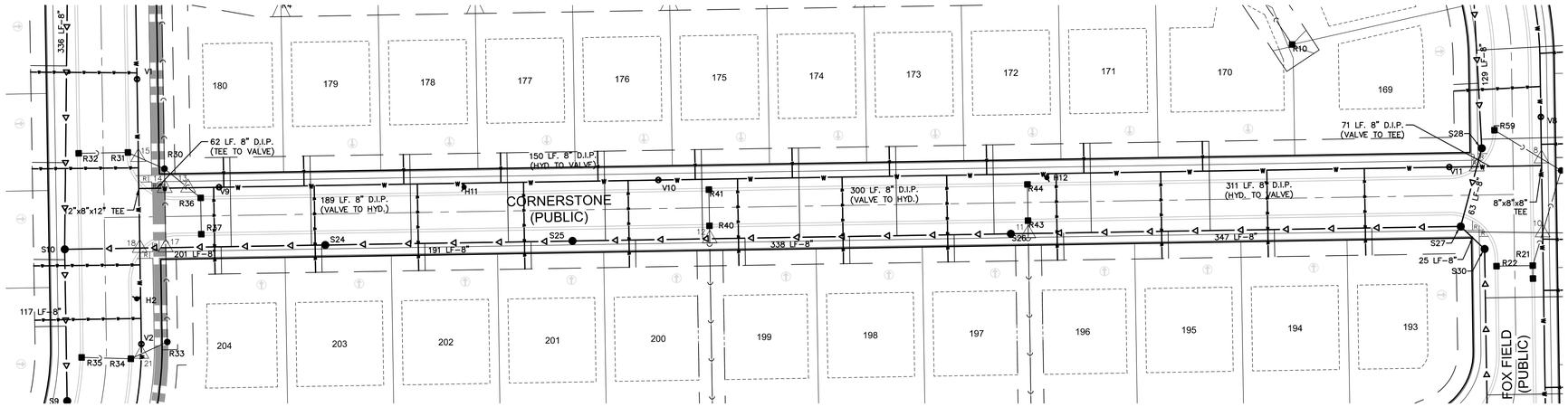
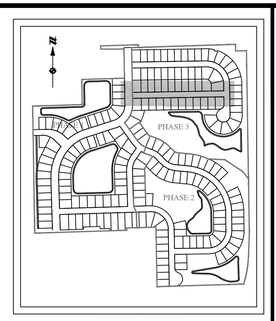
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO.
CP-54





KEY MAP

NOT TO SCALE

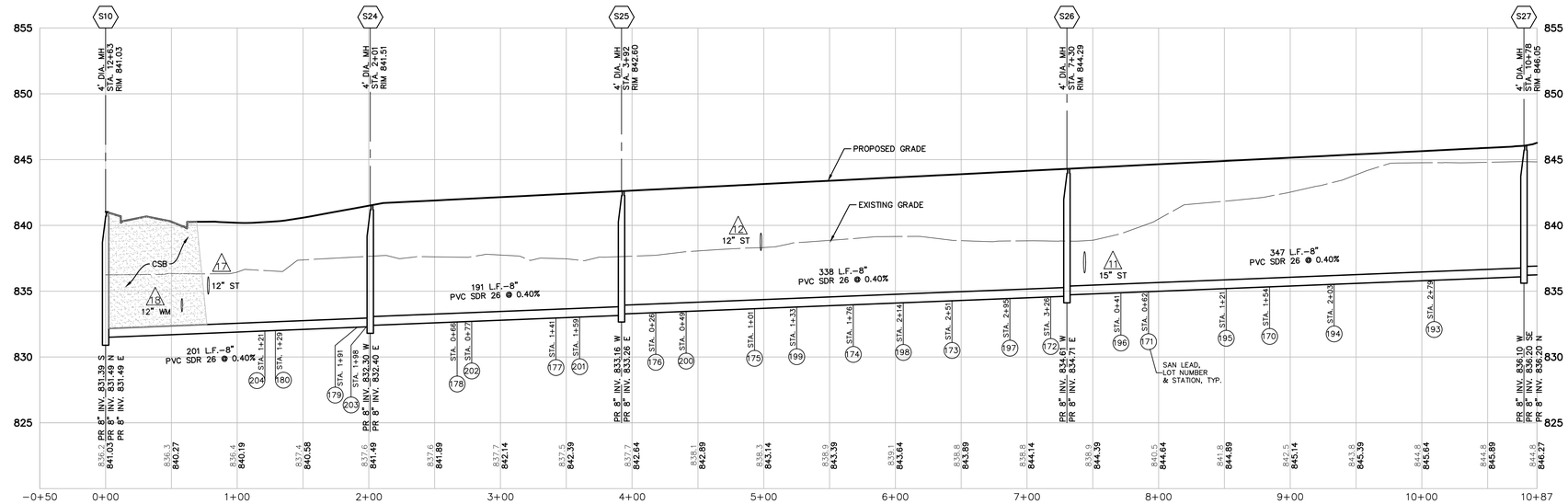
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

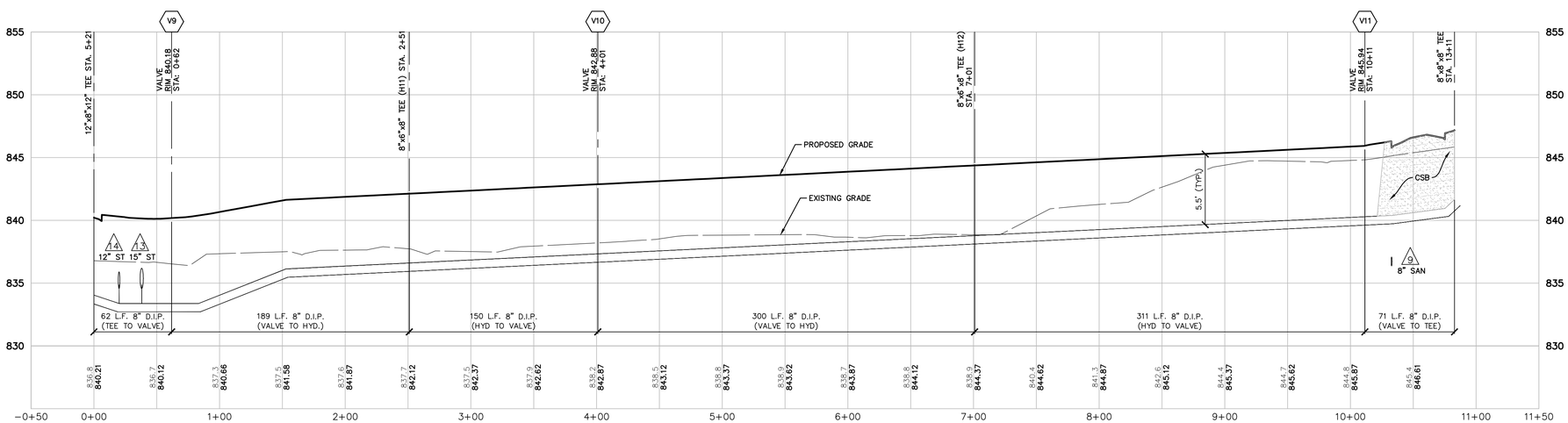
SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE



SAN S31-S10
VERT: 1"=5'
HORZ: 1"=50'



WATER - CORNERSTONE
VERT: 1"=5'
HORZ: 1"=50'

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DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

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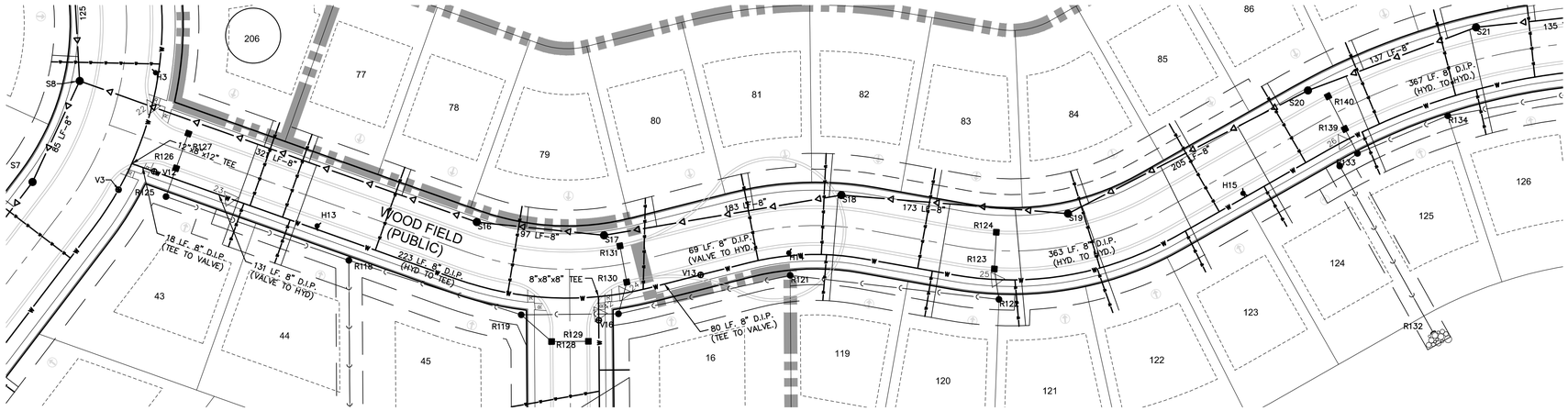
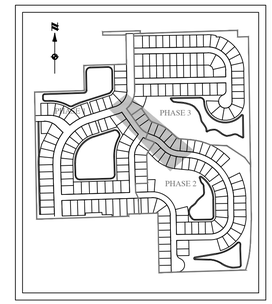
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-55





KEY MAP

NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
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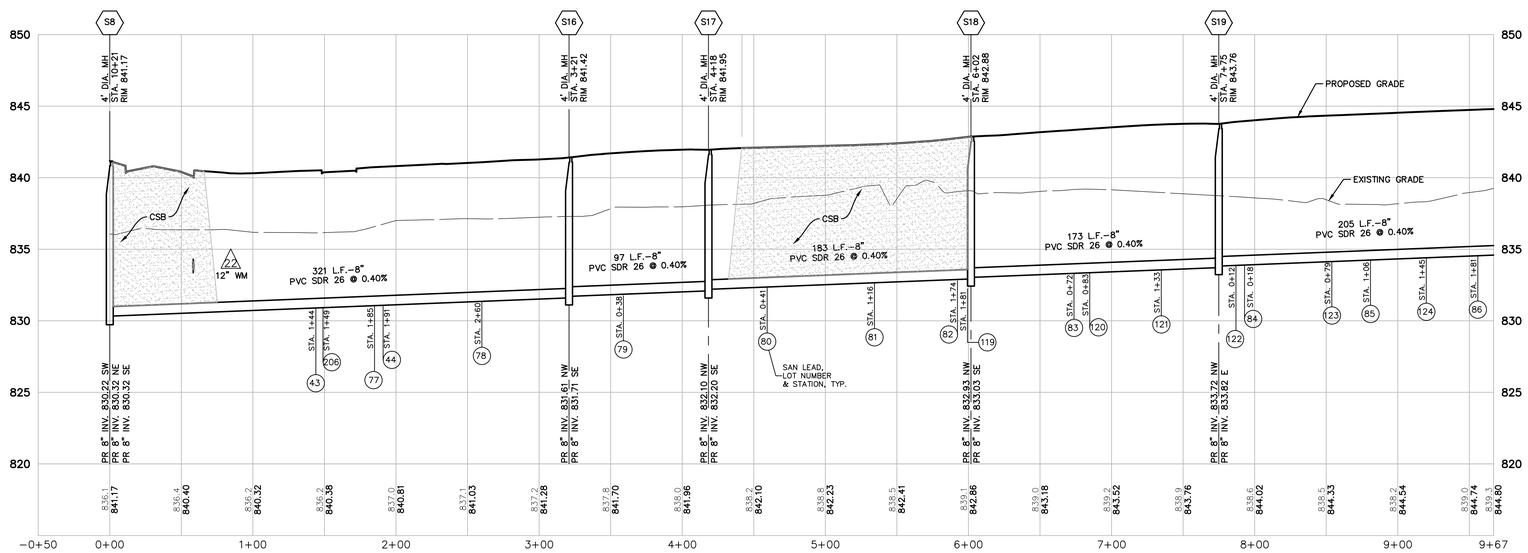
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

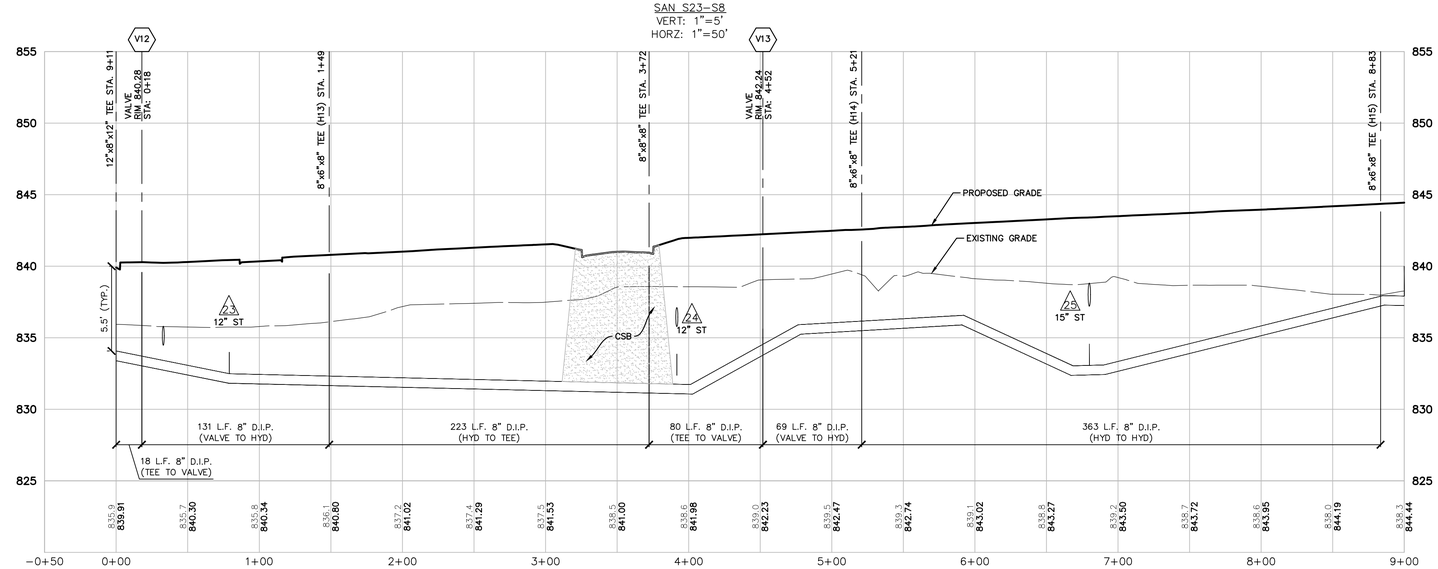
SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE



SAN S23-S8
VERT: 1"=5'
HORZ: 1"=50'



WATER – WOOD FIELD
VERT: 1"=5'
HORZ: 1"=50'

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ATWELL

SCALE 0 25 50
1" = 50 FEET

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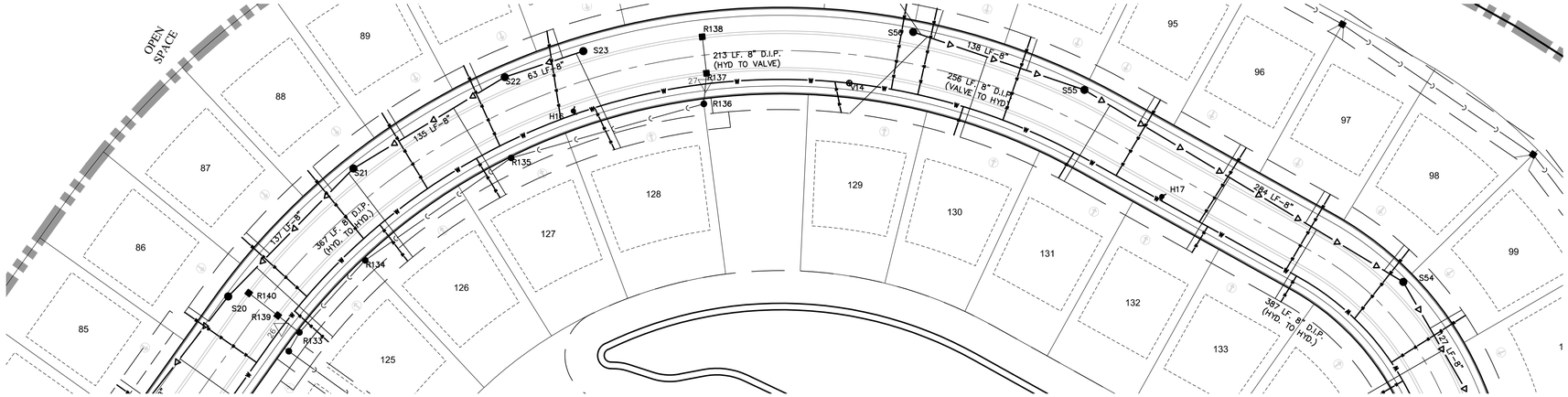
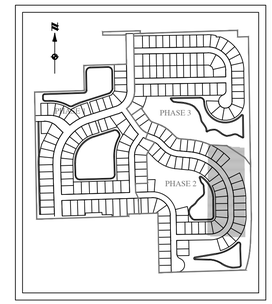
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO.
CP-56





KEY MAP

NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
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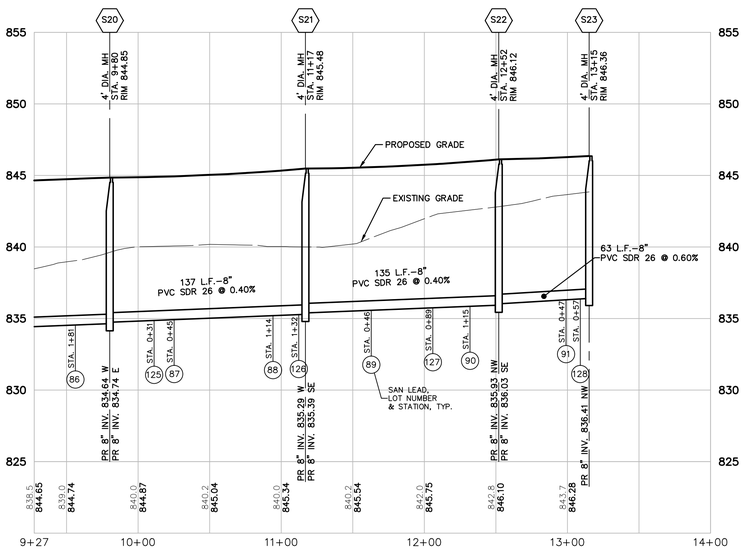
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

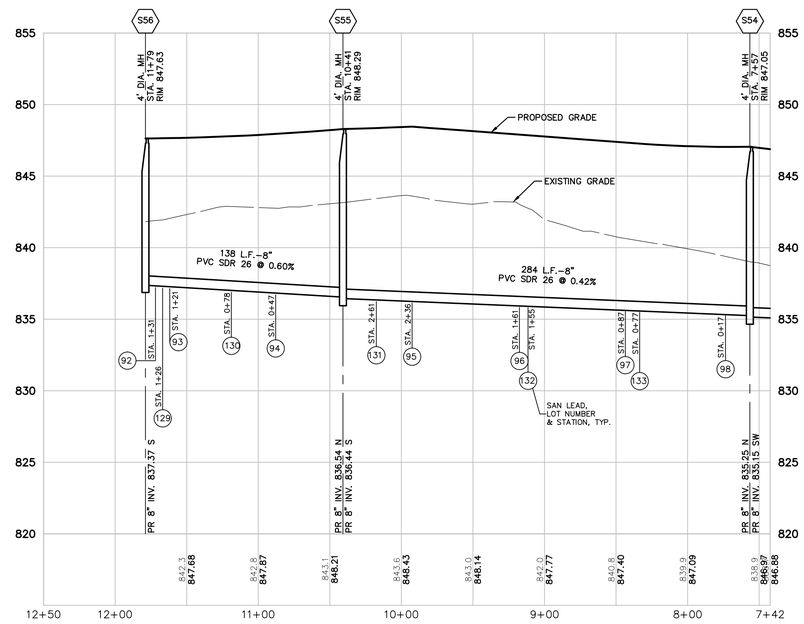
SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

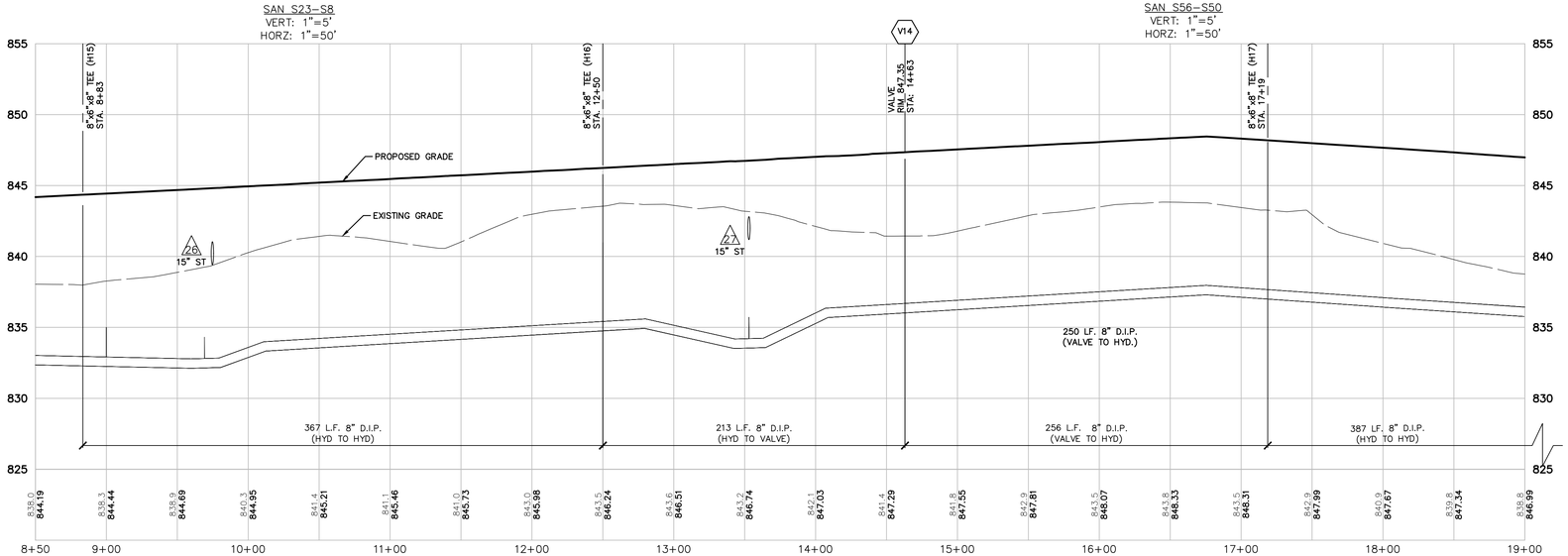
SEE SHEET CP-75 FOR STORM STRUCTURE TABLE



SAN S23-S8
VERT: 1"=5'
HORZ: 1"=50'



SAN S56-S50
VERT: 1"=5'
HORZ: 1"=50'



WATER WOOD FIELD

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SANITARY SEWER AND WATER MAIN PLAN

DATE 05/12/14

REVISIONS

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SCALE 0 25 50
1" = 50 FEET

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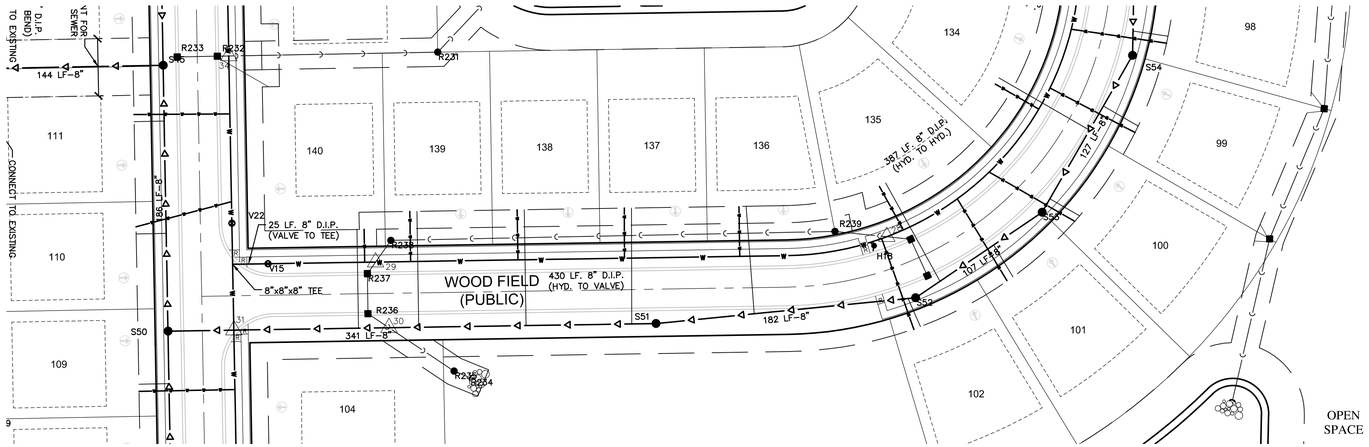
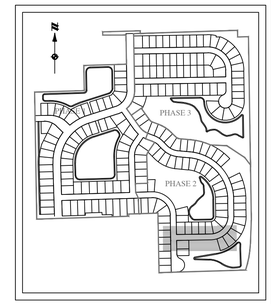
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-57





KEY MAP

NOT TO SCALE

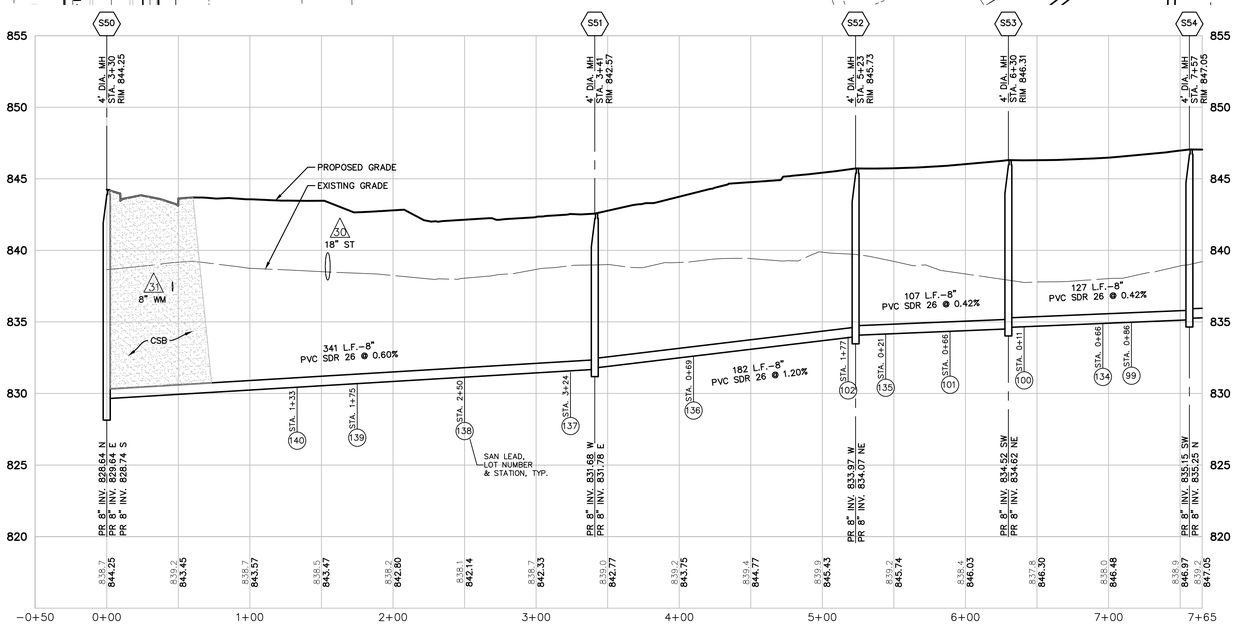
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

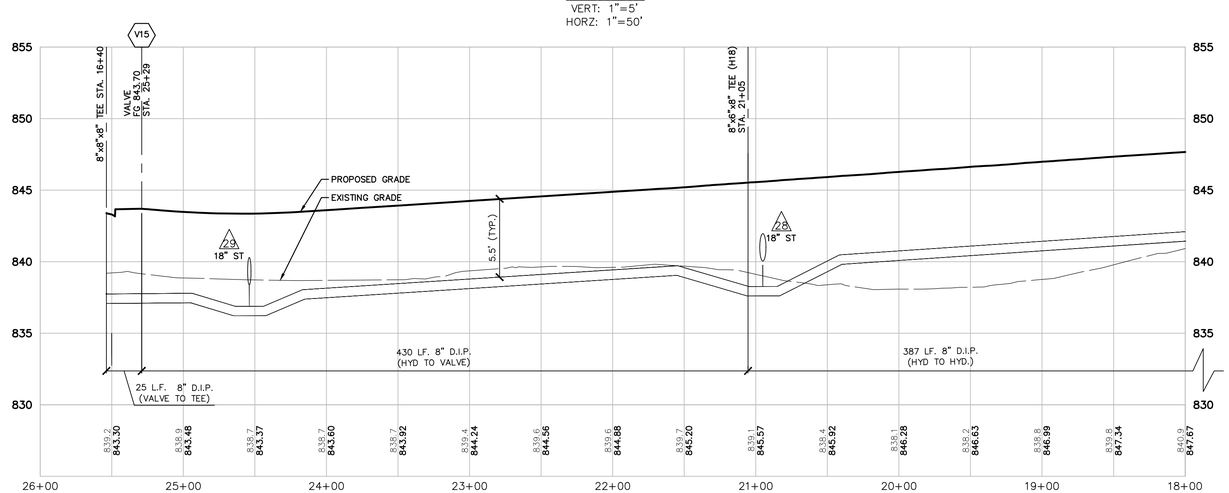
SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE



SAN S56–S50
VERT: 1"=5'
HORZ: 1"=50'



WATER – WOOD FIELD
VERT: 1"=5'
HORZ: 1"=50'

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SANITARY SEWER AND WATER MAIN PLAN

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

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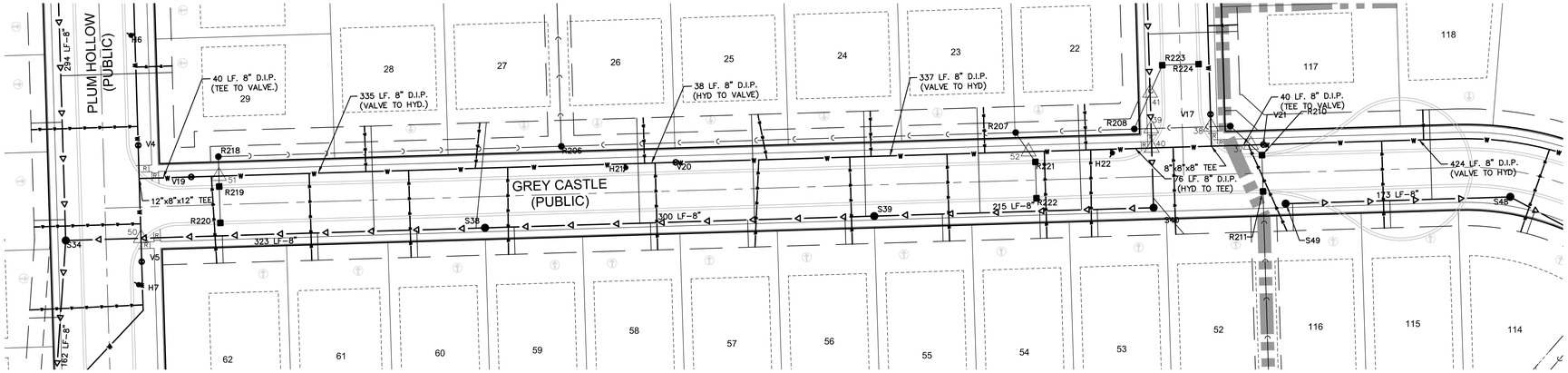
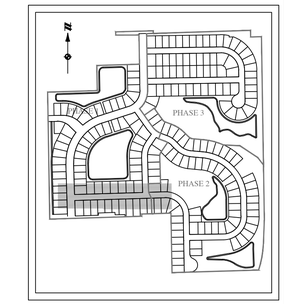
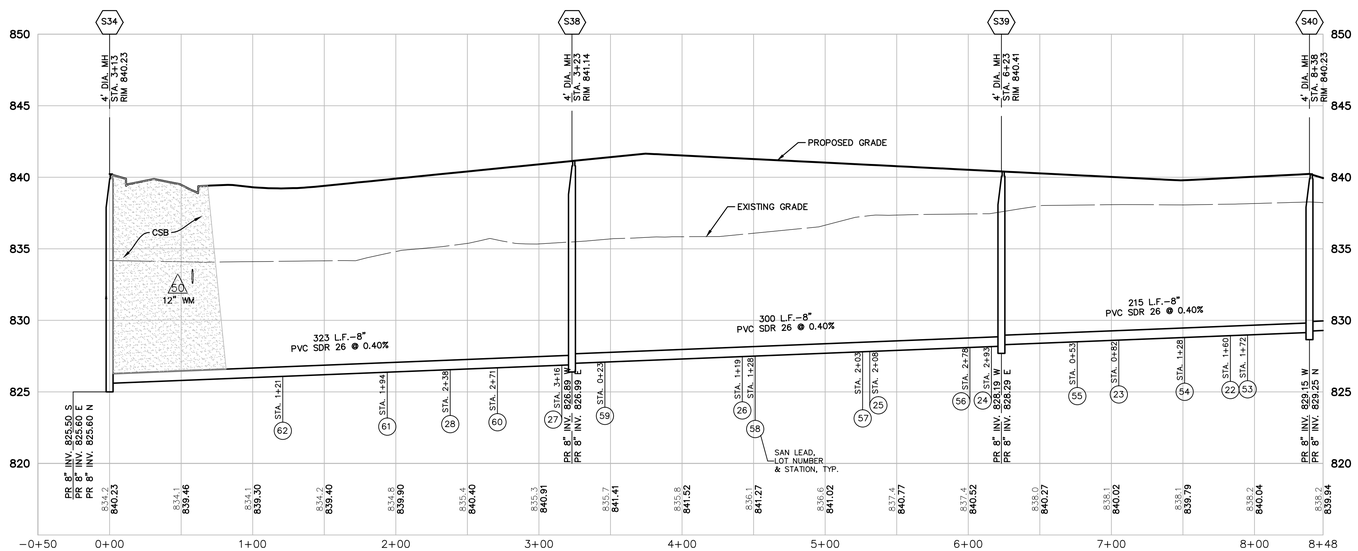
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-58



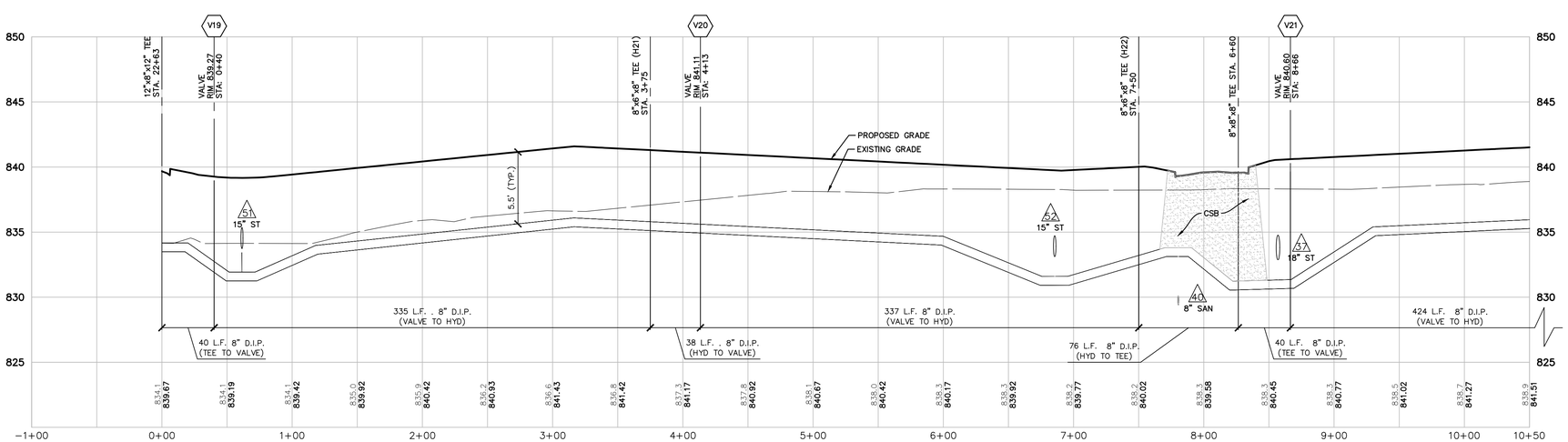


KEY MAP

NOT TO SCALE



SAN S43-S34
VERT: 1"=5'
HORZ: 1"=50'



WATER - GREY CASTLE
VERT: 1"=5'
HORZ: 1"=50'

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE

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SANITARY SEWER AND WATER MAIN PLAN

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

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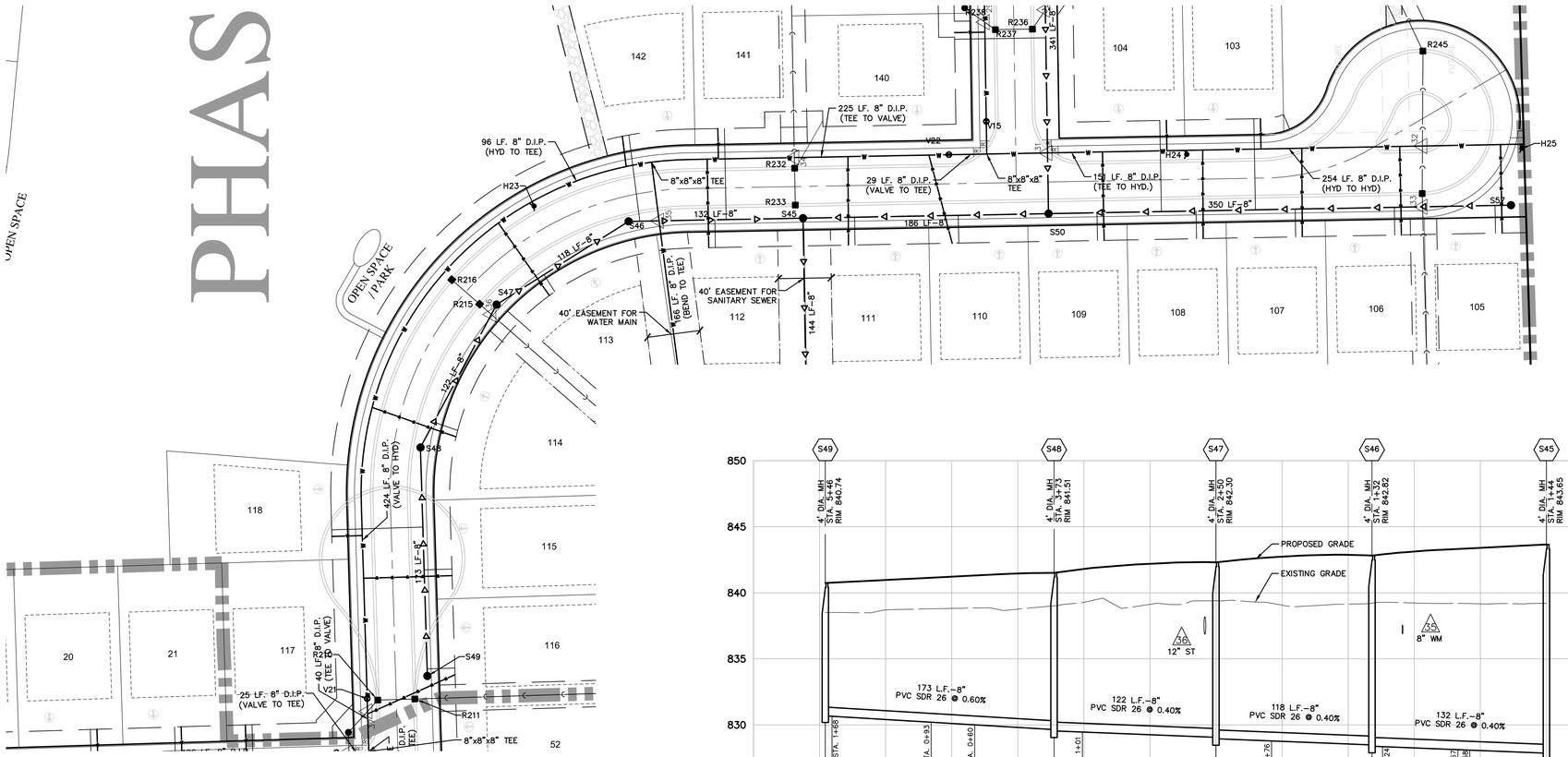
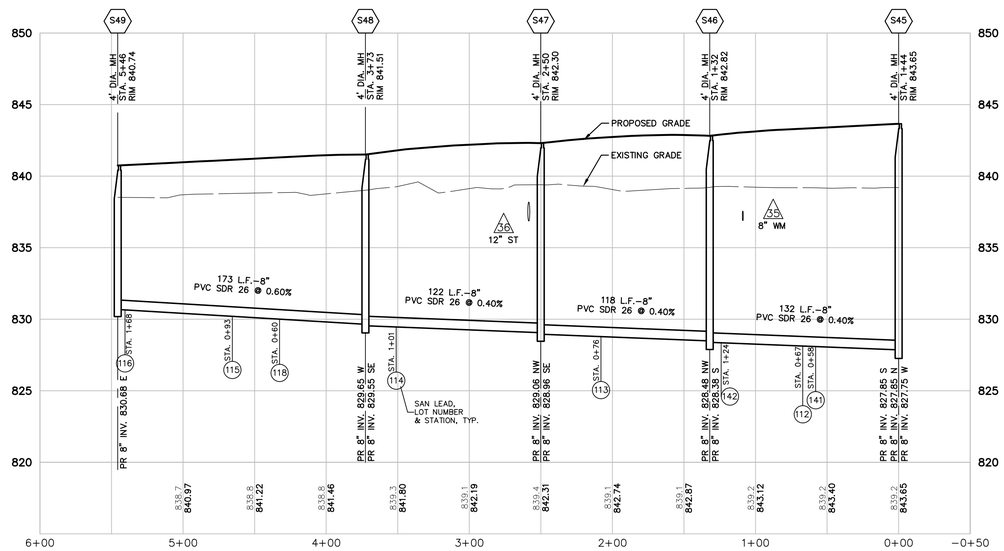
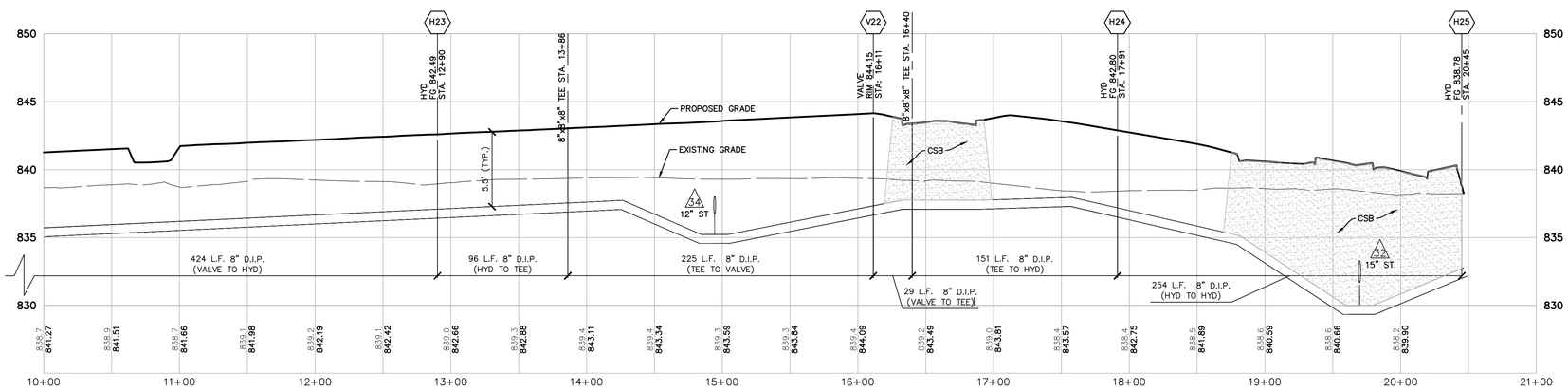
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-59

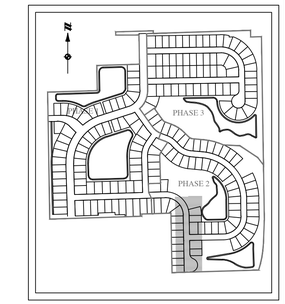




SAN S49–S45
VERT: 1"=5'
HORZ: 1"=50'



WATER – GREY CASTLE
VERT: 1"=5'
HORZ: 1"=50'



KEY MAP

NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE

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SECTION 23
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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
DIVERSE REAL ESTATE LLC

FIELDSTONE PARK FINAL SITE PLANS

SANITARY SEWER AND WATER MAIN PLAN

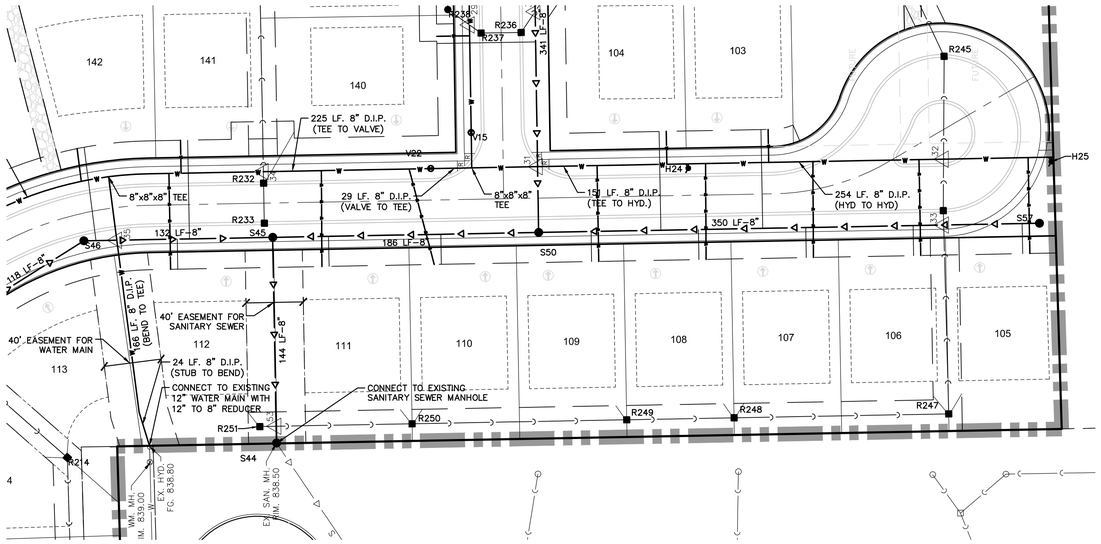
DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-60



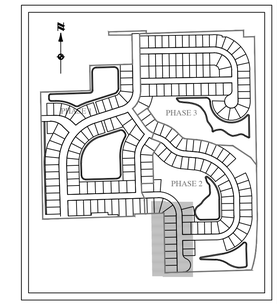
LEGEND

	PROPERTY LINE
	PROPOSED R.O.W. LINE
	PROPOSED CENTERLINE OF ROAD
	EASEMENT
	PROPOSED BUILDING SETBACK
	EXISTING STORM SEWER
	PROPOSED STORM SEWER
	EXISTING MANHOLE/CATCH BASIN/END SECTION
	PROPOSED MANHOLE/CATCH BASIN/END SECTION
	EXISTING WATER MAIN
	PROPOSED WATER MAIN
	EXISTING HYDRANT
	PROPOSED HYDRANT
	EXISTING GATE VALVE & WELL
	PROPOSED GATE VALVE & WELL
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER
	EXISTING SANITARY SEWER MANHOLE
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
	UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

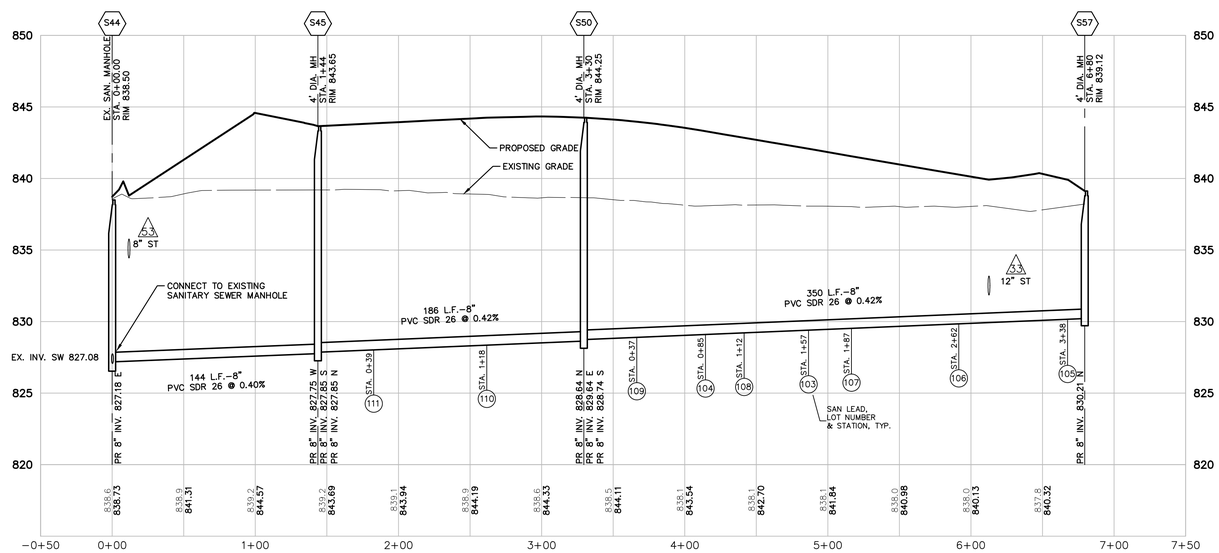
SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE

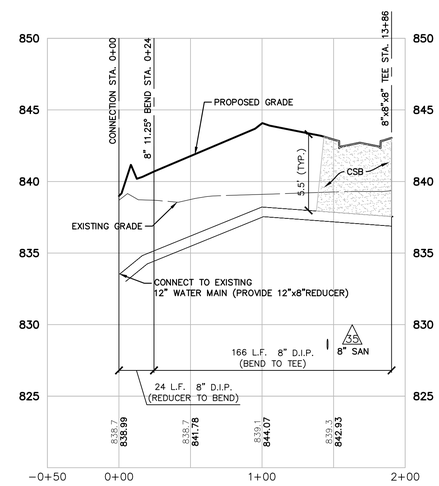


KEY MAP

NOT TO SCALE



SAN S57–S44
VERT: 1"=5'
HORZ: 1"=50'



WATER – CONNECTION TO TEE
VERT: 1"=5'
HORZ: 1"=50'

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SANITARY SEWER AND WATER MAIN PLAN

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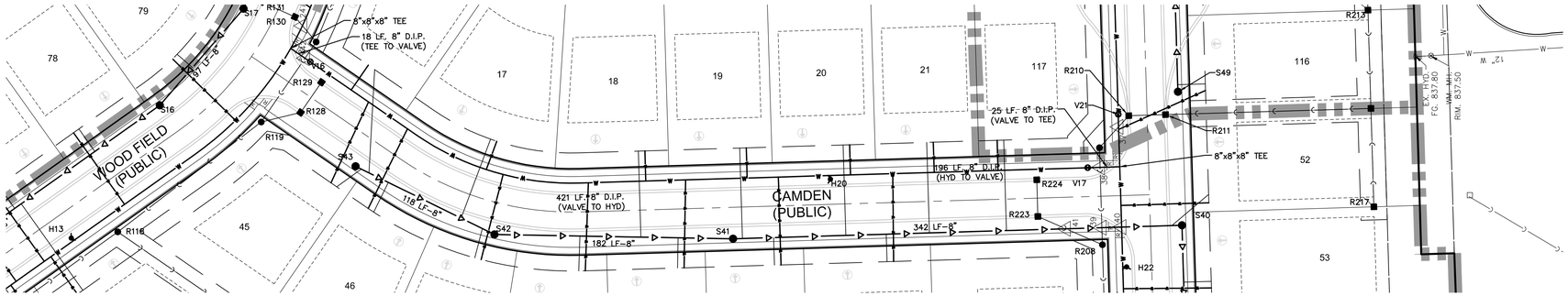
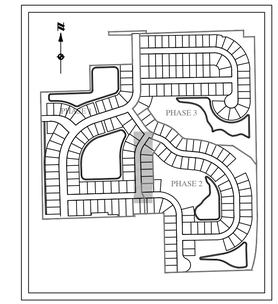
SCALE 0 25 50
1" = 50 FEET

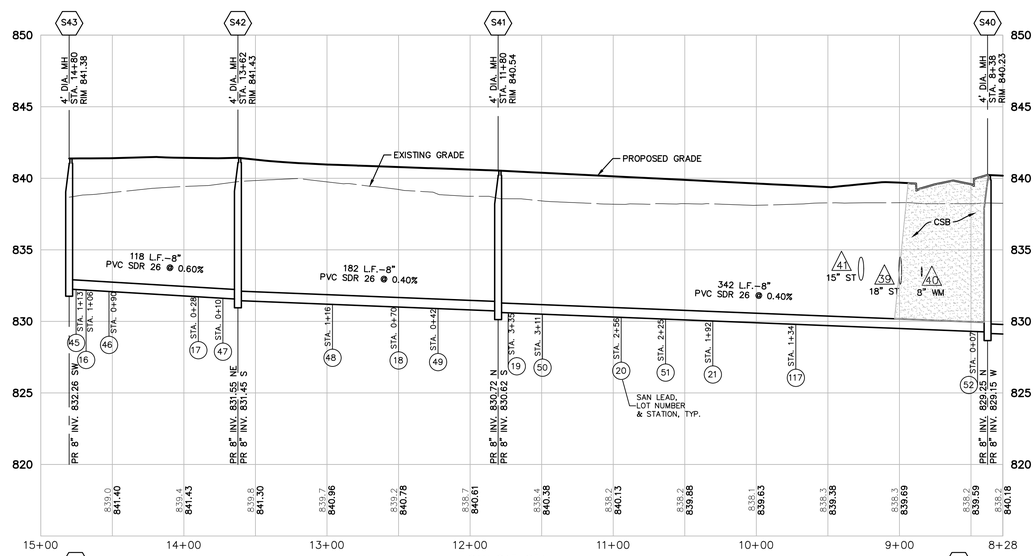
DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-61



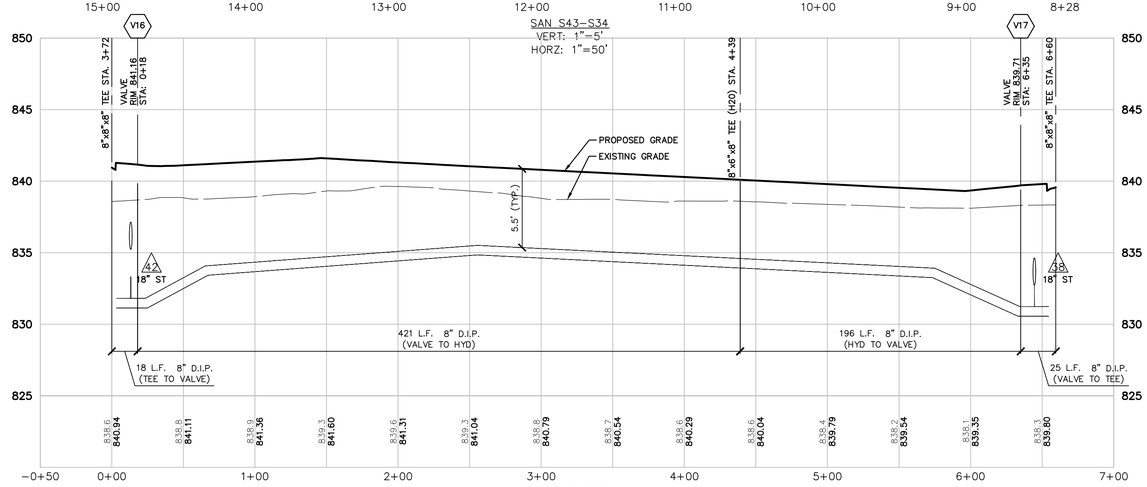


KEY MAP

NOT TO SCALE



SAN S43-S34
VERT: 1"=5'
HORZ: 1"=50'



WATER - CAMDEN
VERT: 1"=5'
HORZ: 1"=50'

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
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- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE

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P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-50-62-S
JOB 11000143
FILE CODE:
SHEET NO. CP-62

SANITARY SEWER LEAD TABLE

Lot #	U/S MH	Lead Distance from D/S MH (FT)	Lead Invert at Main	Lead Length (LF)	Lead Slope (%)	Lot F.G. Elev.	Bsmt Floor Elev.	Riser Height (FT)	Stub Invert Elev.
L1	S2	83	826.54	71	1.04%	839.75	831.75	0.0	827.28
L2	S3	58	826.91	75	1.04%	839.75	831.75	1.0	828.69
L3	S4	10	827.17	82	1.04%	840.51	832.51	2.0	830.03
L4	S4	55	827.35	85	1.04%	842.02	834.02	2.0	830.24
L5	S6	64	828.81	40	1.04%	841.83	833.83	2.0	831.22
L6	S7	10	829.18	36	1.04%	841.53	833.53	1.0	830.56
L7	S7	54	829.36	24	1.04%	841.24	833.24	1.0	830.61
L8	S7	149	829.74	24	1.04%	841.61	833.61	1.0	830.99
L9	S7	224	830.04	24	1.04%	842.07	834.07	1.0	831.29
L10	S7	305	830.36	24	1.04%	842.54	834.54	1.0	831.61
L11	S9	19	831.07	20	1.04%	842.66	834.66	0.0	831.28
L12	S10	58	831.82	24	1.04%	842.64	834.64	0.0	832.07
L13	S10	109	832.03	24	1.04%	842.89	834.89	0.0	832.28
L14	S11	67	832.43	24	1.04%	843.26	835.26	0.0	832.68
L15	S11	142	832.73	24	1.04%	843.16	835.16	0.0	832.98
L16	S43	106	832.86	79	1.04%	844.26	836.26	0.0	833.68
L17	S43	28	832.39	64	1.04%	842.85	834.85	0.0	833.05
L18	S42	70	831.67	66	1.04%	842.66	834.66	0.0	832.36
L19	S41	335	831.26	69	1.04%	842.32	834.32	0.0	831.98
L20	S41	256	830.95	69	1.04%	841.93	833.93	0.0	831.67
L21	S41	192	830.69	69	1.04%	841.55	833.55	0.0	831.41
L22	S40	160	829.60	81	1.04%	841.41	833.41	0.0	830.45
L23	S40	82	829.29	81	1.04%	841.83	833.83	1.0	831.13
L24	S39	293	828.83	81	1.04%	842.26	834.26	1.0	830.68
L25	S39	208	828.49	81	1.04%	842.69	834.69	1.0	830.34
L26	S39	119	828.14	81	1.04%	843.12	835.12	1.0	829.98
L27	S38	316	827.53	82	1.04%	842.99	834.99	4.0	832.39
L28	S38	238	827.22	81	1.04%	842.35	834.35	3.0	831.06
L29	S35	127	826.78	86	1.04%	842.96	834.96	4.0	831.67
L30	S35	202	827.08	86	1.04%	842.84	834.84	4.0	831.97
L31	S35	281	827.39	86	1.04%	842.44	834.44	3.0	831.29
L32	S36	66	827.81	84	1.04%	842.07	834.07	2.0	830.68
L33	S36	117	828.01	82	1.04%	841.78	833.78	2.0	830.87
L34	S36	191	828.31	86	1.04%	842.19	834.19	2.0	831.20
L35	S37	92	829.08	78	1.04%	842.66	834.66	2.0	831.89
L36	S37	155	829.46	83	1.04%	842.89	834.89	2.0	832.32
L37	S5	69	828.04	91	1.04%	842.83	834.83	3.0	831.98
L38	S5	148	828.35	85	1.04%	842.36	834.36	2.0	831.24
L39	S6	76	828.85	83	1.04%	841.89	833.89	1.0	830.72
L40	S7	46	829.33	86	1.04%	841.49	833.49	0.0	830.22
L41	S7	123	829.63	86	1.04%	841.46	833.46	0.0	830.53
L42	S7	198	829.93	86	1.04%	841.94	833.94	0.0	830.83
L43	S16	144	831.57	81	1.04%	844.50	836.50	0.0	832.41
L44	S16	191	831.76	81	1.04%	842.65	834.65	0.0	832.60
L45	S43	113	832.90	23	1.04%	842.87	834.87	0.0	833.14
L46	S43	90	832.76	25	1.04%	843.05	835.05	0.0	833.02
L47	S43	10	832.28	23	1.04%	843.10	835.10	0.0	832.52
L48	S42	116	831.86	27	1.04%	842.80	834.80	0.0	832.14
L49	S42	42	831.56	23	1.04%	842.57	834.57	0.0	831.80
L50	S41	311	831.17	21	1.04%	842.20	834.20	0.0	831.39
L51	S41	225	830.82	21	1.04%	841.80	833.80	0.0	831.04
L52	S41	7	829.95	37	1.04%	842.25	834.25	1.0	831.34
L53	S40	172	829.65	21	1.04%	841.83	833.83	1.0	830.87
L54	S40	128	829.47	21	1.04%	841.62	833.62	1.0	830.69
L55	S40	53	829.17	21	1.04%	841.95	833.95	2.0	831.39
L56	S39	278	828.77	21	1.04%	842.31	834.31	2.0	830.99
L57	S39	203	828.47	21	1.04%	842.68	834.68	3.0	831.69
L58	S39	128	828.17	21	1.04%	843.06	835.06	4.0	832.39
L59	S39	23	827.75	21	1.04%	843.01	835.01	4.0	831.97
L60	S38	271	827.35	21	1.04%	842.65	834.65	4.0	831.57
L61	S38	194	827.05	21	1.04%	841.88	833.88	4.0	831.26
L62	S38	121	826.75	21	1.04%	841.17	833.17	3.0	829.97
L63	S34	27	825.63	24	1.04%	840.92	832.92	4.0	829.88
L64	S34	103	825.93	24	1.04%	841.77	833.77	5.0	831.18
L65	S35	16	826.33	24	1.04%	842.63	834.63	5.0	831.58
L66	S35	91	826.63	24	1.04%	842.83	834.83	5.0	831.88
L67	S35	193	827.04	24	1.04%	842.87	834.87	5.0	832.29
L68	S35	271	827.35	24	1.04%	842.50	834.50	4.0	831.60
L69	S36	51	827.75	26	1.04%	842.13	834.13	3.0	831.02
L70	S36	110	827.98	29	1.04%	841.74	833.74	3.0	831.29
L71	S36	166	828.21	27	1.04%	841.84	833.84	2.0	830.49
L72	S37	14	828.61	23	1.04%	842.19	834.19	2.0	830.85
L73	S37	81	829.02	32	1.04%	842.56	834.56	2.0	831.35
L74	S4	66	827.40	15	1.04%	842.70	834.70	4.0	831.55
L75	S3	46	826.86	15	1.04%	840.58	832.58	3.0	830.02
L76	S2	39	826.37	17	1.04%	839.97	831.97	3.0	829.54
L77	S16	185	831.73	21	1.04%	842.50	834.50	0.0	831.95
L78	S16	260	832.03	21	1.04%	842.93	834.93	0.0	832.25
L79	S17	38	832.53	16	1.04%	843.65	835.65	0.0	832.70
L80	S18	41	833.03	23	1.04%	844.02	836.02	0.0	833.27
L81	S18	116	833.33	29	1.04%	844.28	836.28	0.0	833.63
L82	S18	174	833.56	33	1.04%	844.57	836.57	0.0	833.91
L83	S19	72	833.99	25	1.04%	845.09	837.09	0.0	834.25
L84	S20	18	834.57	27	1.04%	845.72	837.72	0.0	834.85
L85	S20	106	834.92	26	1.04%	846.11	838.11	0.0	835.19
L86	S20	181	835.22	19	1.04%	846.53	838.53	0.0	835.41
L87	S21	45	835.59	24	1.04%	846.81	838.81	0.0	835.84
L88	S21	114	835.87	23	1.04%	847.08	839.08	0.0	836.11
L89	S22	46	836.25	25	1.04%	847.44	839.44	0.0	836.51
L90	S22	115	836.52	23	1.04%	847.79	839.79	0.0	836.76
L91	S23	47	836.98	23	1.04%	847.81	839.81	0.0	837.22
L92	S56	131	838.00	62	1.04%	848.95	840.95	0.0	838.64
L93	S56	121	837.94	23	1.04%	849.44	841.44	0.0	838.18
L94	S56	47	837.49	25	1.04%	849.78	841.78	0.0	837.75
L95	S55	236	836.91	23	1.04%	849.77	841.77	0.0	837.15
L96	S55	161	836.59	26	1.04%	849.92	841.92	0.0	836.86
L97	S55	87	836.28	28	1.04%	849.36	841.36	0.0	836.57
L98	S55	17	835.99	25	1.04%	848.84	840.84	0.0	836.25
L99	S54	86	835.65	28	1.04%	848.56	840.56	0.0	835.94
L100	S54	11	835.33	24	1.04%	848.25	840.25	0.0	835.58
L101	S53	66	835.02	26	1.04%	847.80	839.80	0.0	835.29

Lot #	U/S MH	Lead Distance from D/S MH (FT)	Lead Invert at Main	Lead Length (LF)	Lead Slope (%)	Lot F.G. Elev.	Bsmt Floor Elev.	Riser Height (FT)	Stub Invert Elev.
L102	S52	177	834.58	21	1.04%	847.39	839.39	0.0	834.79
L103	S57	157	830.06	69	1.04%	844.54	836.54	0.0	830.78
L104	S57	85	829.76	69	1.04%	845.03	837.03	0.0	830.48
L105	S57	338	830.82	21	1.04%	841.53	833.53	0.0	831.04
L106	S57	262	830.51	21	1.04%	842.57	834.57	1.0	831.72
L107	S57	187	830.19	21	1.04%	844.01	836.01	3.0	833.41
L108	S57	112	829.88	21	1.04%	845.09	837.09	4.0	834.09
L109	S57	37	829.56	21	1.04%	845.80	837.80	5.0	834.78
L110	S50	118	829.02	21	1.04%	845.87	837.87	6.0	835.24
L111	S50	39	828.69	21	1.04%	845.65	837.65	6.0	834.91
L112	S46	67	828.79	21	1.04%	845.14	837.14	5.0	834.01
L113	S47	76	829.46	15	1.04%	844.55	836.55	4.0	833.61
L114	S48	101	830.13	19	1.04%	843.75	835.75	3.0	833.33
L115	S49	93	830.87	21	1.04%	842.89	834.89	1.0	832.09
L116	S49	168	831.32	21	1.04%	842.61	834.61	0.0	831.54
L117	S41	134	830.46	69	1.04%	843.02	835.02	1.0	832.18
L118	S49	60	830.68	69	1.04%	842.65	834.65	0.0	831.39
L119	S18	181	833.59	80	1.04%	844.67	836.67	0.0	834.42
L120	S19	83	834.03	88	1.04%	844.96	836.96	0.0	834.95
L121	S19	133	834.23	89	1.04%	845.32	837.32	0.0	835.16
L122	S20	12	834.54	84	1.04%	845.55	837.55	0.0	835.41
L123	S20	79	834.81	87	1.04%	845.91	837.91	0.0	835.71
L124	S20	145	835.07	84	1.04%	846.33	838.33	0.0	835.95
L125	S21	31	835.54	79	1.04%	846.82	838.82	0.0	836.36
L126	S21	132	835.94	80	1.04%	847.28	839.28	0.0	836.77
L127	S22	89	836.42	77	1.04%	847.84	839.84	0.0	837.22
L128	S23	57	837.04	80	1.04%	848.28	840.28	0.0	837.88
L129	S56	126	837.97	83	1.04%	849.25	841.25	0.0	838.83
L130	S56	78	837.68	65	1.04%	849.74	841.74	0.0	838.36
L131	S55	261	837.01	68	1.04%	849.88	841.88	0.0	837.72
L132	S55	155	836.57	64	1.04%	849.83	841.83	0.0	837.23
L133	S55	77	836.24	61	1.04%	849.40	841.40	0.0	836.88
L134	S54	66	835.56	73	1.04%	848.76	840.76	0.0	836.32
L135	S53	21	834.83	78	1.04%	847.82	839.82	0.0	835.64
L136	S52	69	833.28	75	1.04%	846.92	838.92	0.0	834.06
L137	S51	324	832.25	81	1.04%	846.27	838.27	0.0	833.09
L138	S51	250	831.81	81	1.04%	845.73	837.73	0.0	832.65
L139	S51	175	831.36	81	1.04%	845.40	837.40	0.0	832.20
L140	S51	133	831.10	69	1.04%	845.46	837.46	0.0	831.82
L141	S46	58	828.76	69	1.04%	845.11	837.11	0.0	829.47
L142	S46	124	829.02	66	1.04%	844.83	836.83	0.0	829.71
L143	S12	121	834.09	69	1.04%	843.96	835.96	0.0	834.81
L144	S12	188	834.36	69	1.04%	844.66	836.66	0.0	835.08
L145	S12	263	834.66	69	1.04%	845.47	837.47	0.0	835.38
L146	S13	29	835.02	69	1.04%	845.02	837.02	0.0	835.74
L147	S13	104	835.32	69	1.04%	846.33	838.33	0.0	836.04
L148	S13	179	835.62	69	1.04%	846.66	838.66	0.0	836.34
L149	S13	252	835.91	81	1.04%	847.20	839.20	0.0	836.76
L150	S14	29	836.32	81	1.04%	847.64	839.64	0.0	837.16
L151	S14	104	836.62	81	1.04%	848.09	840.09	0.0	837.46
L152	S14	179	836.92	81	1.04%	848.74	840.74	0.0	837.76
L153	S14	258	837.24	69	1.04%	848.90	840.90	0.0	837.96
L154	S14	313	837.46	67	1.04%	849.23	841.23	0.0	838.15
L155	S15	39	837.85	75	1.04%	849.65	841.65	0.0	838.63
L156	S15	103	838.23	76	1.04%	849.93	841.93	0.0	839.02
L157	S15	138	838.44	77	1.04%	849.97	841.97	0.0	839.24
L158	S29	117	837.92	69	1.04%	850.00	842.00	0.0	838.64
L159	S29	76	837.68	72	1.04%	849.50	841.50	0.0	838.43
L160	S29	7	837.26	69	1.04%	849.18	841.18	0.0	837.98
L161	S15	6	837.65	111	1.04%	848.78	840.78	0.0	838.80
L162	S31	38	837.30	68	1.04%	849.27	841.27	0.0	838.01
L163	S31	113	837.75	68	1.04%	849.21	841.21	0.0	838.46
L164	S31	188	838.20	68	1.04%	849.45	841.45	0.0	838.91
L165	S31	212	838.35	63	1.04%	849.71	841.71	0.0	839.00
L166	S31	245	838.54	35	1.04%	850.03	842.03	0.0	838.91
L167	S31	230	838.45	69	1.04%	850.12	842.12	0.0	839.17
L168	S31	175	838.12	135	1.04%	850.10	842.10	0.0	839.53
L169	S29	50	837.52	19	1.04%	849.13	841.13	1.0	838.72
L170	S27	154	836.00	69	1.04%	846.86	838.86	0.0	836.72
L171	S27	62	835.63	69	1.04%	846.42	838.42	0.0	836.35
L172	S26	326	835.23	69	1.04%	846.04	838.04	0.0	835.95
L173	S26	251	834.93	69	1.04%	845.67	837.67	0.0	835.65
L174	S26	176	834.63	69	1.04%	845.30	837.30	0.0	835.35
L175	S26	101	834.33	69	1.04%	844.92	836.92	0.0	835.05
L176	S26	26	834.03	69	1.04%	844.55	836.55	0.0	834.75
L177	S25	141	833.63	69	1.04%	844.17	836.17	0.0	834.35
L178	S25	66	833.33	69	1.04%	843.80	835.80	0.0	834.05
L179	S24	191	832.93	69	1.04%	843.34	835.34	0.0	833.64
L180	S24	129	832.68	69	1.04%	843.00	835.00	0.0	833.40
L181	S12	130	834.13	21	1.04%	843.66	835.66	0.0	834.34
L182	S12	198	834.40	21	1.04%	844.64	836.64	0.0	834.62
L183	S12	273	834.70	21	1.04%	845.38	837.38	0.0	834.92
L184	S13	39	835.06	21	1.04%	845.90	837.90	0.0	835.28
L185	S13	114	835.36	21	1.04%	846.35	838.35	0.0	835.58
L186	S13	189	835.66	21	1.04%	846.67	838.67	0.0	835.88
L187	S13	264	835.96	21	1.04%	847.21	839.21	0.0	836.18
L188	S14	39	836.36	21	1.04%	847.63	839.63	0.0	836.58
L189	S14	114	836.66	21	1.04%	848.08	840.08	0.0	836.88
L190	S14	189	836.96	21	1.04%	848.50	840.50	0.0	837.18
L191	S14	284	837.34	21	1.04%	849.84	841.84	1.0	838.56
L192	S15	124	838.36	28	1.04%	850.12	842.12	1.0	839.65
L193	S27	279	836.50	21	1.04%	848.58	840.58	1.0	837.72
L194	S27	203	836.19	21	1.04%	847.14	839.14	0.0	836.41
L195	S27	121	835.87	21	1.04%	846.73	838.73	0.0	836.09
L196	S27	41	835.55	21	1.04%	846.30	838.30	0.0	835.77
L197	S26	295	835.11	21	1.04%	845.87	837.87	0.0	835.33
L198	S26	214	834.79	21	1.04%	845.46	837.46	0.0	835.00
L199	S26	133	834.46	21	1.04%	845.08	837.08	0.0	834.68
L200	S26	49	834.13	21	1.04%	844.64	836.64	0.0	834.34
L201	S25	159	833.70	21	1.04%	844.24	836.24	0.0	833.92
L202	S25	77	833.37	21	1.04%	843.83	835.83	0.0	833.59
L203	S24	198	832.95	21	1.04%	843.35	835.35	0.0	833.17
L204	S24	121	832.65	21	1.04%	842.53	834.53	0.0	832.86
L205	S9	110	831.43	86	1.04%	842.82	834.82	0.0	832.33
L206	S16	149	831.59	21	1.04%	842.13	834.13	0.0	831.81

WATER MAIN STRUCTURE TABLE

STRUCTURE TABLE

STRUCTURE:	DETAILS:
H1	HYD GRADE = 839.87
H2	HYD GRADE = 840.62
H3	HYD GRADE = 841.07
H4	HYD GRADE = 839.98
H5	HYD GRADE = 839.86
H6	HYD GRADE = 840.96
H7	HYD GRADE = 839.60
H8	HYD GRADE = 844.25
H9	HYD GRADE = 848.19
H10	HYD GRADE = 847.40
H11	HYD GRADE = 842.04
H12	HYD GRADE = 844.28
H13	HYD GRADE = 839.52
H14	HYD GRADE = 841.60
H15	HYD GRADE = 843.62
H16	HYD GRADE = 845.82
H17	HYD GRADE = 848.10
H18	HYD GRADE = 845.44
H19	HYD GRADE = 838.85
H20	HYD GRADE = 840.01
H21	HYD GRADE = 841.21
H22	HYD GRADE = 839.93
H23	HYD GRADE = 842.49
H24	HYD GRADE = 842.80
H25	HYD GRADE = 838.93

STRUCTURE TABLE

STRUCTURE:	DETAILS:
TSV&W	TSV&W GRADE = 838.04
V1	VALVE GRADE = 841.56
V2	VALVE GRADE = 840.54
V3	VALVE GRADE = 840.69
V4	VALVE GRADE = 840.91
V5	VALVE GRADE = 839.69
V6	VALVE GRADE = 840.60
V7	VALVE GRADE = 844.98
V8	VALVE GRADE = 847.36
V9	VALVE GRADE = 840.18
V10	VALVE GRADE = 842.88
V11	VALVE GRADE = 845.94
V12	VALVE GRADE = 839.89
V13	VALVE GRADE = 841.27
V14	VALVE GRADE = 847.18
V15	VALVE GRADE = 843.70
V16	VALVE GRADE = 840.15
V17	VALVE GRADE = 839.71
V18	VALVE GRADE = 838.90
V19	VALVE GRADE = 839.27
V20	VALVE GRADE = 841.11
V21	VALVE GRADE = 840.60
V22	VALVE GRADE = 844.15

SANITARY SEWER STRUCTURE TABLE

STRUCTURE TABLE

STRUCTURE:	DETAILS:
S1	RIM = 839.07 4' DIA. 8" E. INV. 825.54
S2	RIM = 838.34 4' DIA. 8" E. INV. 826.01 8" W. INV. 825.91
S3	RIM = 838.18 4' DIA. 8" SE. INV. 826.46 8" W. INV. 826.36
S4	RIM = 840.18 4' DIA. 8" NE. INV. 827.09 8" NW. INV. 826.99
S5	RIM = 840.28 4' DIA. 8" NE. INV. 827.88 8" SW. INV. 827.78
S6	RIM = 839.70 4' DIA. 8" E. INV. 828.47 8" SW. INV. 828.37
S7	RIM = 840.68 4' DIA. 8" NE. INV. 829.88 8" W. INV. 829.78
S8	RIM = 841.17 4' DIA. 8" NE. INV. 830.32 8" SE. INV. 830.32 8" SW. INV. 830.22
S9	RIM = 840.69 4' DIA. 8" N. INV. 830.92 8" SW. INV. 830.82
S10	RIM = 841.03 4' DIA. 8" N. INV. 831.49 8" E. INV. 831.49 8" S. INV. 831.39
S11	RIM = 841.47 4' DIA. 8" E. INV. 832.94 8" S. INV. 832.84
S12	RIM = 843.86 4' DIA. 8" E. INV. 834.24 8" W. INV. 834.14
S13	RIM = 845.61 4' DIA. 8" E. INV. 835.54 8" W. INV. 835.44
S14	RIM = 847.39 4' DIA. 8" SE. INV. 836.94 8" W. INV. 836.84
S15	RIM = 848.40 4' DIA. 8" NW. INV. 837.81
S16	RIM = 841.42 4' DIA. 8" SE. INV. 831.71 8" NW. INV. 831.61
S17	RIM = 841.95 4' DIA. 8" SE. INV. 832.20 8" NW. INV. 832.10
S18	RIM = 842.88 4' DIA. 8" SE. INV. 833.03 8" NW. INV. 832.93
S19	RIM = 843.76 4' DIA. 8" E. INV. 833.82 8" NW. INV. 833.72
S20	RIM = 844.85 4' DIA. 8" E. INV. 834.74 8" W. INV. 834.64

STRUCTURE TABLE

STRUCTURE:	DETAILS:
S21	RIM = 845.48 4' DIA. 8" SE. INV. 835.39 8" W. INV. 835.29
S22	RIM = 846.12 4' DIA. 8" SE. INV. 836.03 8" NW. INV. 835.93
S23	RIM = 846.36 4' DIA. 8" NW. INV. 836.41
S24	RIM = 841.51 4' DIA. 8" E. INV. 832.40 8" W. INV. 832.30
S25	RIM = 842.60 4' DIA. 8" E. INV. 833.26 8" W. INV. 833.16
S26	RIM = 844.29 4' DIA. 8" E. INV. 834.71 8" W. INV. 834.61
S27	RIM = 846.05 4' DIA. 8" SE. INV. 836.20 8" N. INV. 836.20 8" W. INV. 836.10
S28	RIM = 846.83 4' DIA. 8" N. INV. 836.55 8" S. INV. 836.45
S29	RIM = 847.92 4' DIA. 8" S. INV. 837.33
S30	RIM = 846.59 4' DIA. 8" S. INV. 836.40 8" NW. INV. 836.30
S31	RIM = 848.27 4' DIA. 8" N. INV. 837.94
S32	RIM = 838.18 4' DIA. 8" E. INV. 824.15
S33	RIM = 837.80 4' DIA. 8" N. INV. 824.85 8" W. INV. 824.75
S34	RIM = 840.23 4' DIA. 8" E. INV. 825.60 8" N. INV. 825.60 8" S. INV. 825.50
S35	RIM = 840.48 4' DIA. 8" N. INV. 826.87 8" S. INV. 826.77
S36	RIM = 840.39 4' DIA. 8" NE. INV. 827.86 8" S. INV. 827.76
S37	RIM = 840.86 4' DIA. 8" SW. INV. 828.82
S38	RIM = 841.14 4' DIA. 8" E. INV. 826.99 8" W. INV. 826.89
S39	RIM = 840.41 4' DIA. 8" E. INV. 828.29 8" W. INV. 828.19
S40	RIM = 840.23 4' DIA. 8" N. INV. 829.25 8" W. INV. 829.15

STRUCTURE TABLE

STRUCTURE:	DETAILS:
S41	RIM = 840.54 4' DIA. 8" N. INV. 830.72 8" S. INV. 830.62
S42	RIM = 841.43 4' DIA. 8" NE. INV. 831.55 8" S. INV. 831.45
S43	RIM = 841.38 4' DIA. 8" SW. INV. 832.26
S44	RIM = 838.50 4' DIA. 8" E. INV. 827.18
S45	RIM = 843.65 4' DIA. 8" S. INV. 827.85 8" N. INV. 827.85 8" W. INV. 827.75
S46	RIM = 842.82 4' DIA. 8" NW. INV. 828.48 8" S. INV. 828.38
S47	RIM = 842.30 4' DIA. 8" NW. INV. 829.06 8" SE. INV. 828.96
S48	RIM = 841.51 4' DIA. 8" W. INV. 829.65 8" SE. INV. 829.55
S49	RIM = 840.74 4' DIA. 8" E. INV. 830.68
S50	RIM = 844.25 4' DIA. 8" E. INV. 829.64 8" S. INV. 828.74 8" N. INV. 828.64
S51	RIM = 842.57 4' DIA. 8" E. INV. 831.78 8" W. INV. 831.68
S52	RIM = 845.74 4' DIA. 8" NE. INV. 834.07 8" W. INV. 833.97
S53	RIM = 846.31 4' DIA. 8" NE. INV. 834.62 8" SW. INV. 834.52
S54	RIM = 847.05 4' DIA. 8" N. INV. 835.25 8" SW. INV. 835.15
S55	RIM = 848.29 4' DIA. 8" N. INV. 836.54 8" S. INV. 836.44
S56	RIM = 847.63 4' DIA. 8" S. INV. 837.37
S57	RIM = 839.03 4' DIA. 8" N. INV. 830.21

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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K:\11000143\DWG\PLAN SETS\CONSTRUCTION\11000143CP-63-STBL.DWG 6/2/2014 2:35 PM DANIEL SUTKOWSKI

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

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DIVERSE REAL ESTATE LLC

FIELDSTONE PARK
FINAL SITE PLANS

SANITARY SEWER AND WATERMAIN STRUCTURE TABLE

DATE 05/12/14

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REVISIONS

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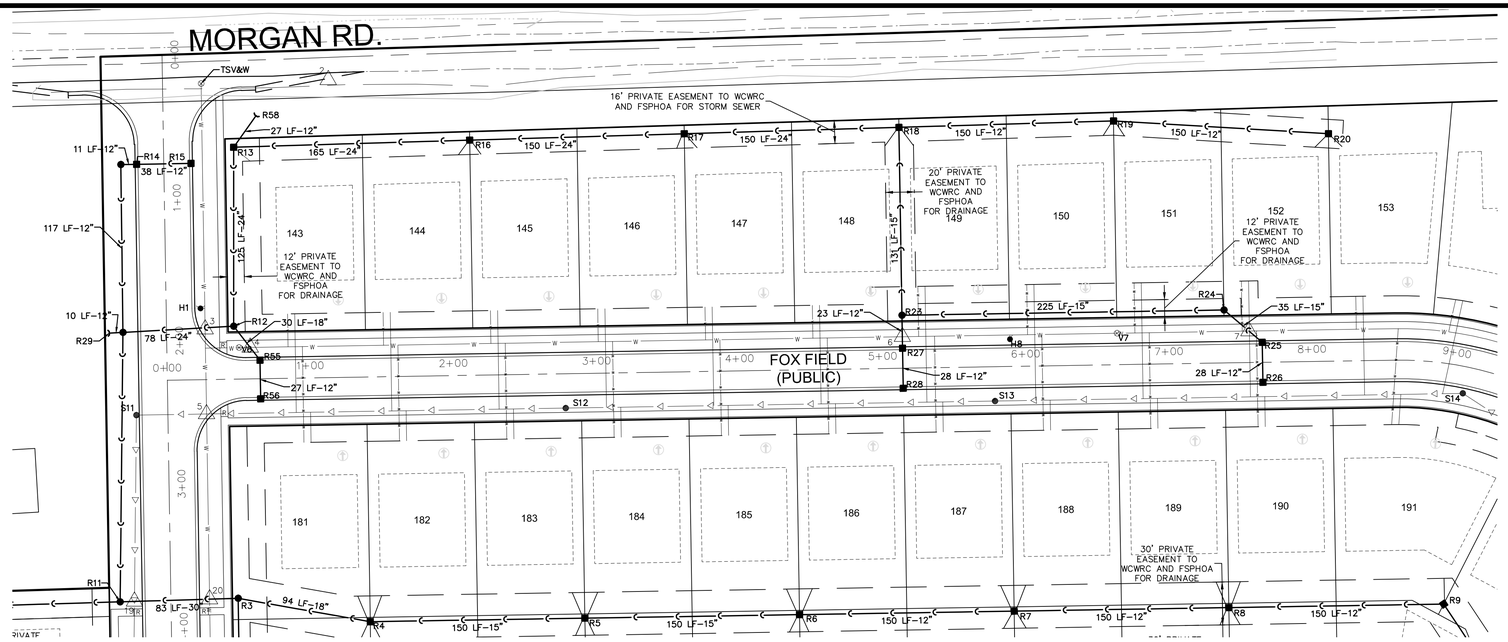
SCALE 0 NA NA
1" = NA FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-63-STBL
JOB 11000143
FILE CODE:
SHEET NO. CP-63



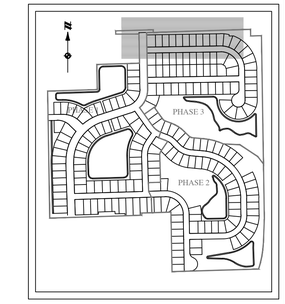
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

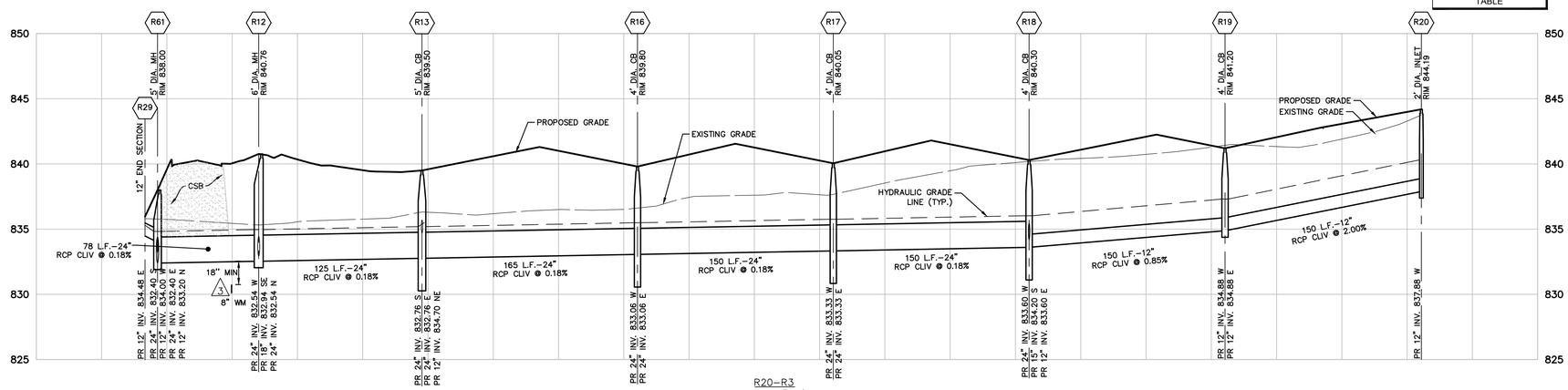
SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE

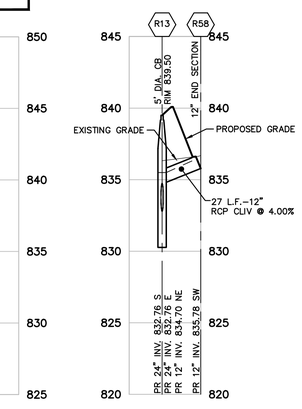


KEY MAP

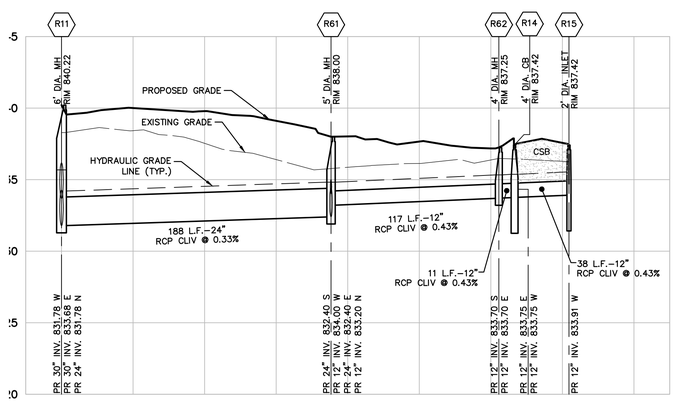
NOT TO SCALE



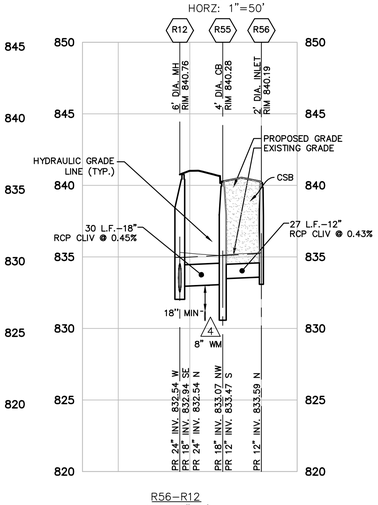
R20–R3
VERT: 1"=5'
HORZ: 1"=50'



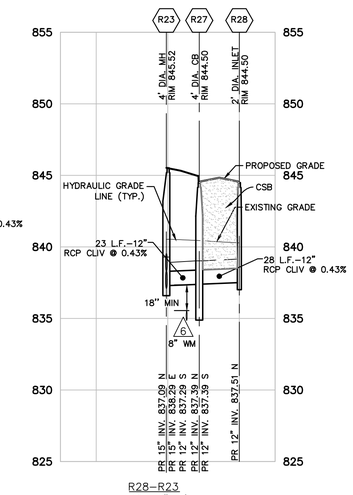
R58–R13
VERT: 1"=5'
HORZ: 1"=50'



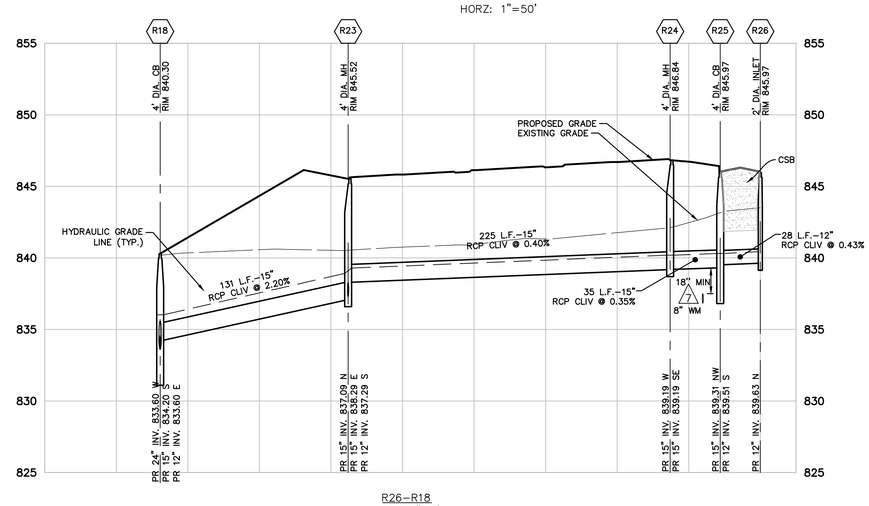
R15–R58
VERT: 1"=5'
HORZ: 1"=50'



R56–R12
VERT: 1"=5'
HORZ: 1"=50'



R28–R23
VERT: 1"=5'
HORZ: 1"=50'



R26–R18
VERT: 1"=5'
HORZ: 1"=50'

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1" = 50 FEET

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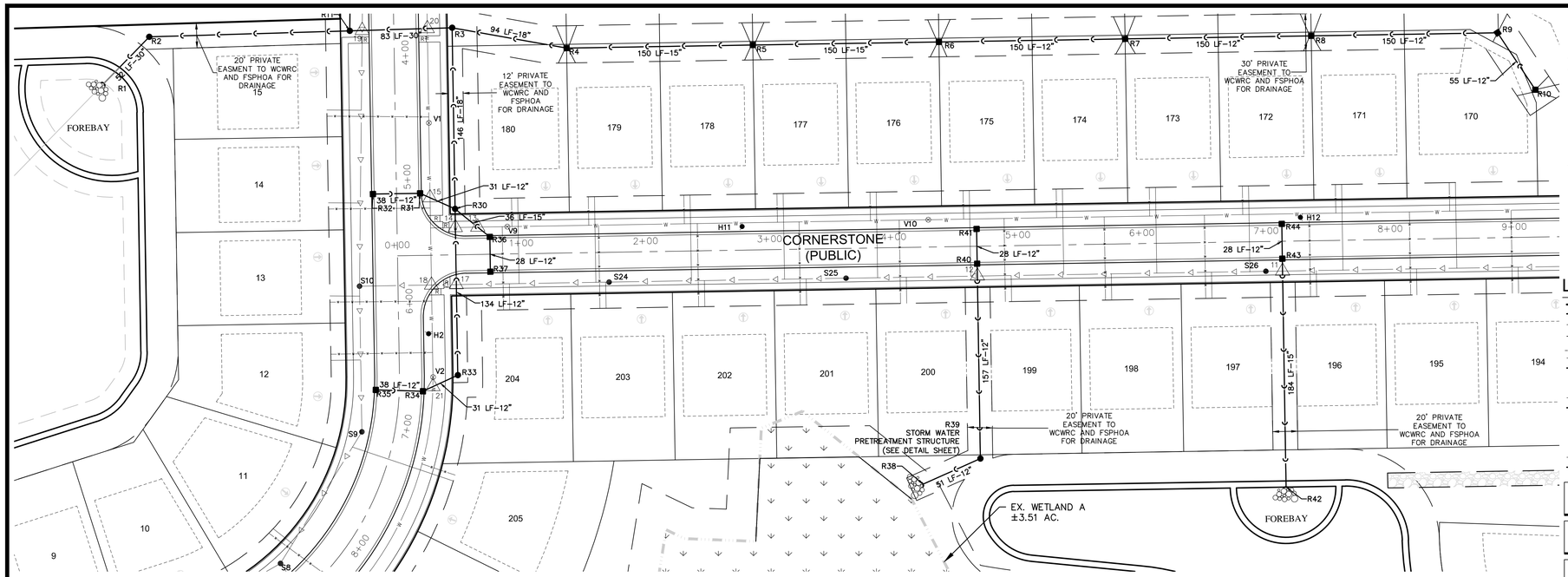
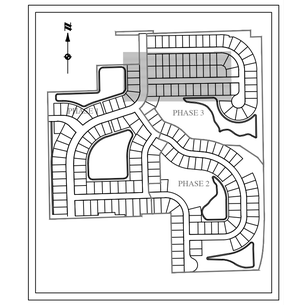
JOB 11000143
FILE CODE:
SHEET NO. CP-64





KEY MAP

LEGEND

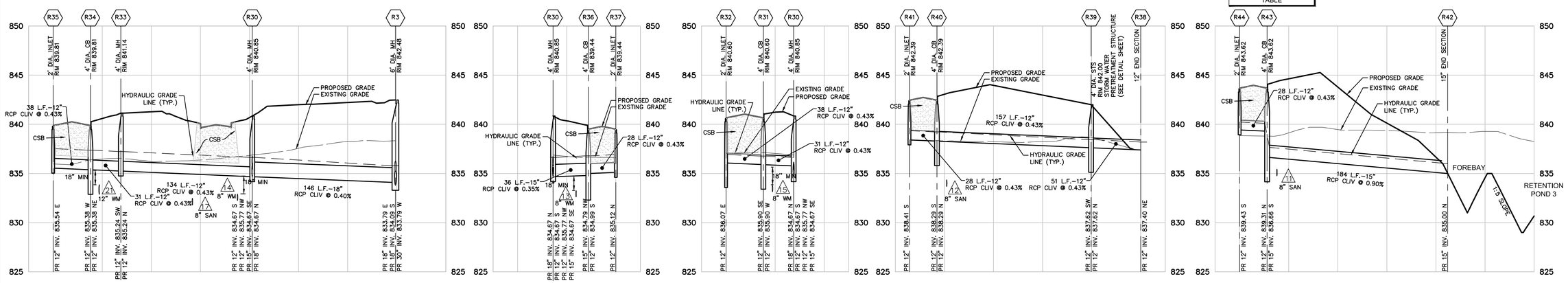
NOT TO SCALE

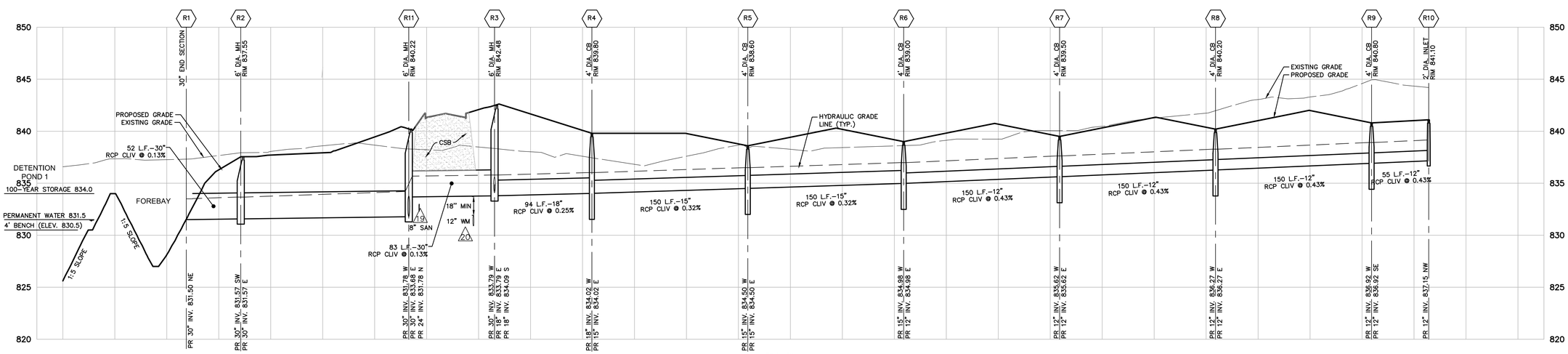
- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE





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STORM SEWER PLAN AND PROFILE

DATE 05/12/14

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SCALE 0 25 50
1" = 50 FEET

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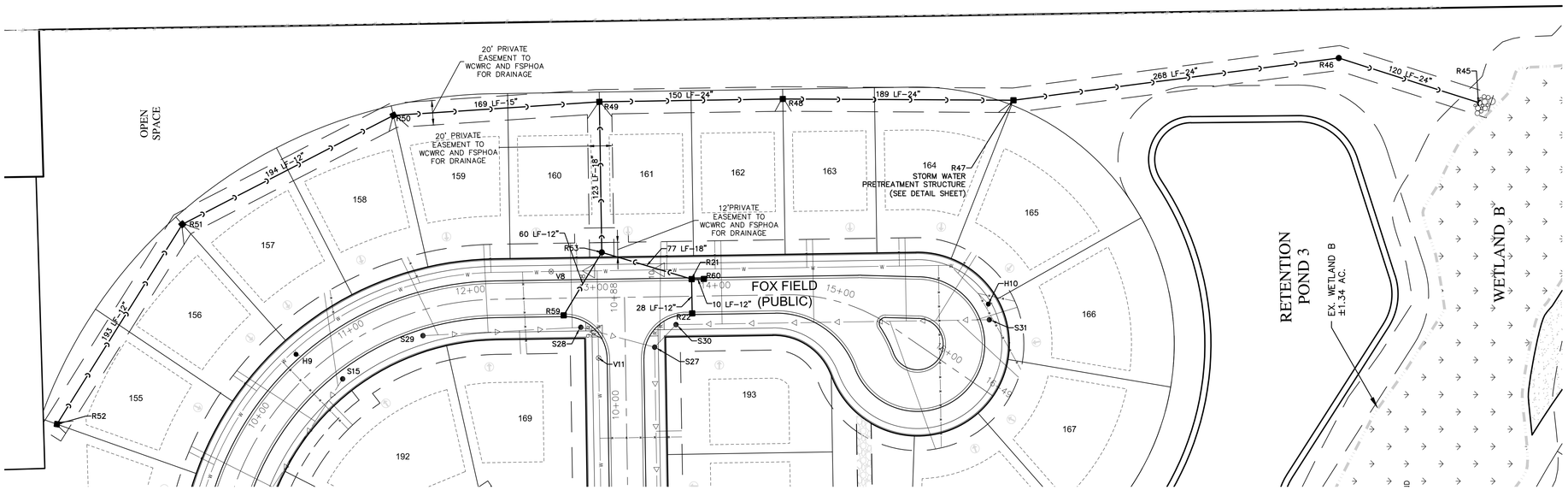
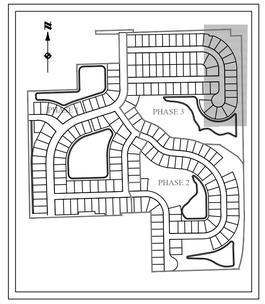
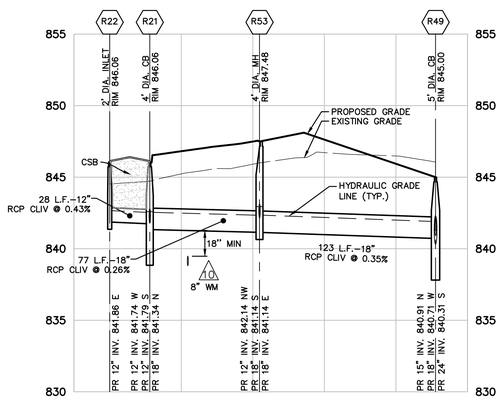
BOOK 1148
CAD FILE: 11000143CP-64-72-R
JOB 11000143
FILE CODE:
SHEET NO. CP-65



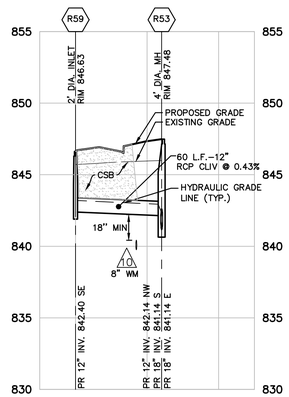


KEY MAP

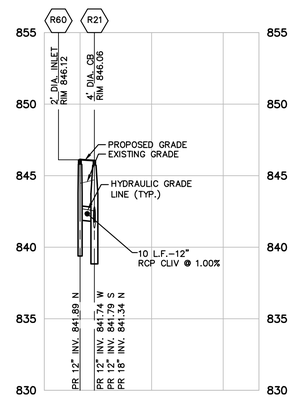
NOT TO SCALE



R22–R49
VERT: 1"=5'
HORZ: 1"=50'



R59–R53
VERT: 1"=5'
HORZ: 1"=50'



R60–R21
VERT: 1"=5'
HORZ: 1"=50'

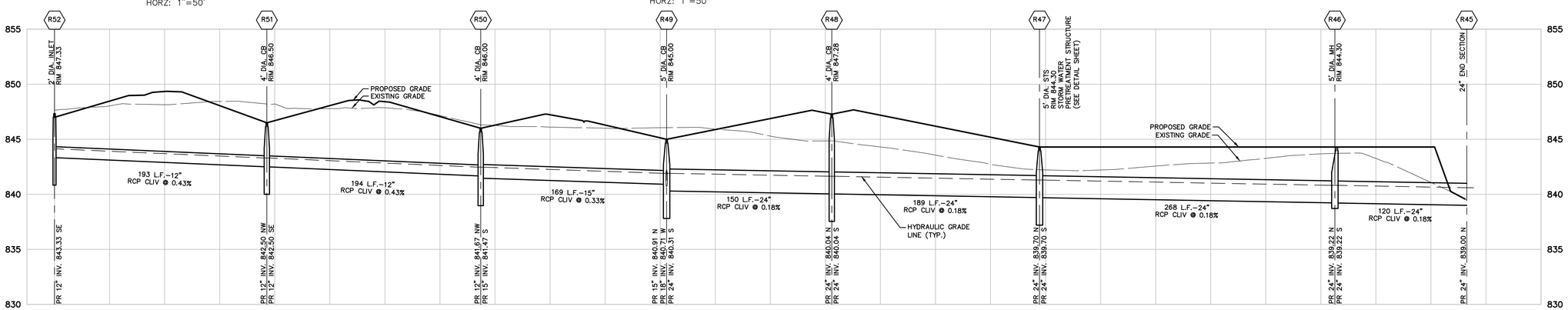
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE



R52–R45
VERT: 1"=5'
HORZ: 1"=50'

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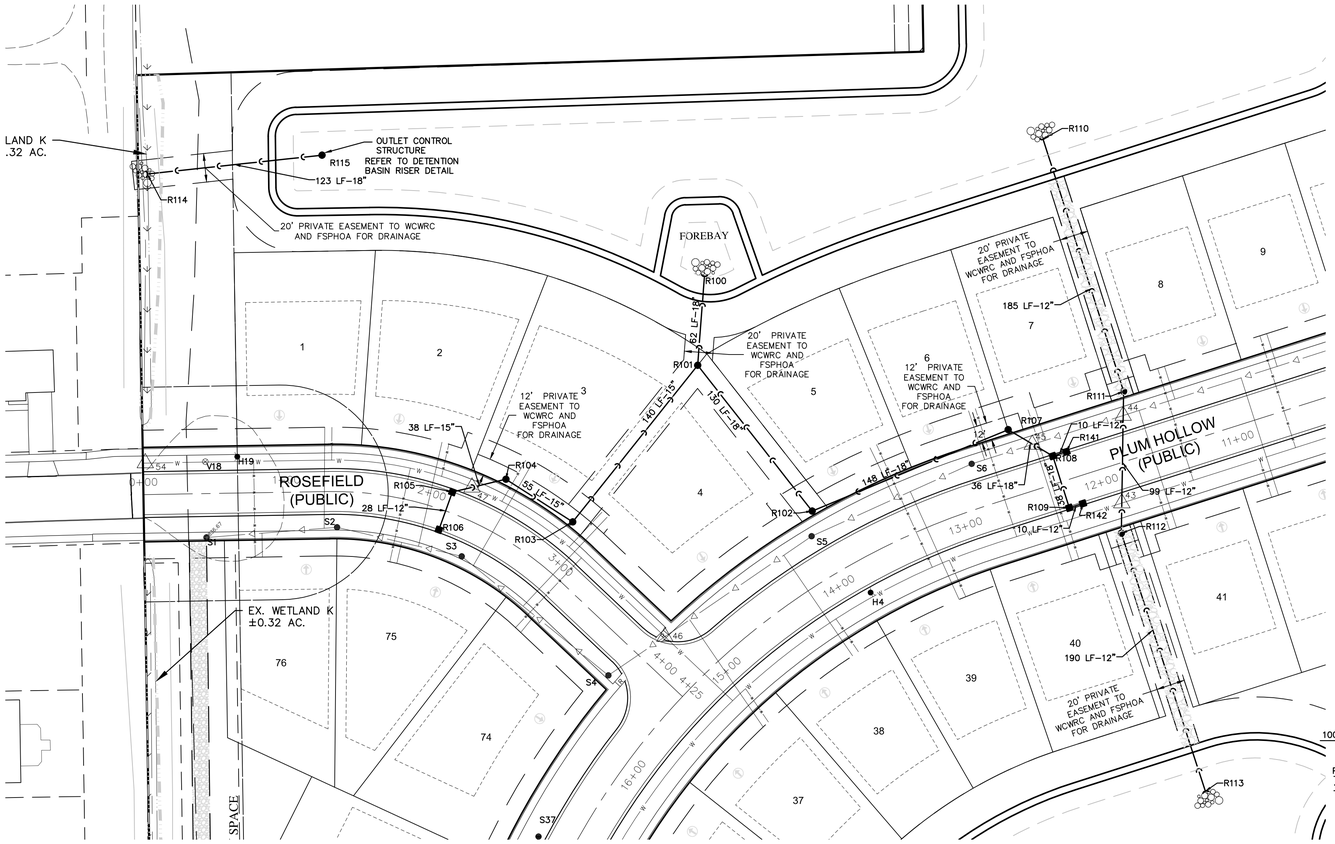
JOB 11000143
FILE CODE:
SHEET NO. CP-66



LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
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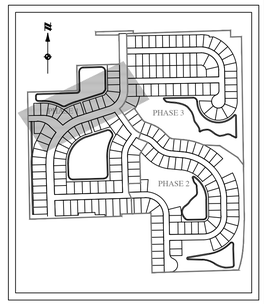
SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

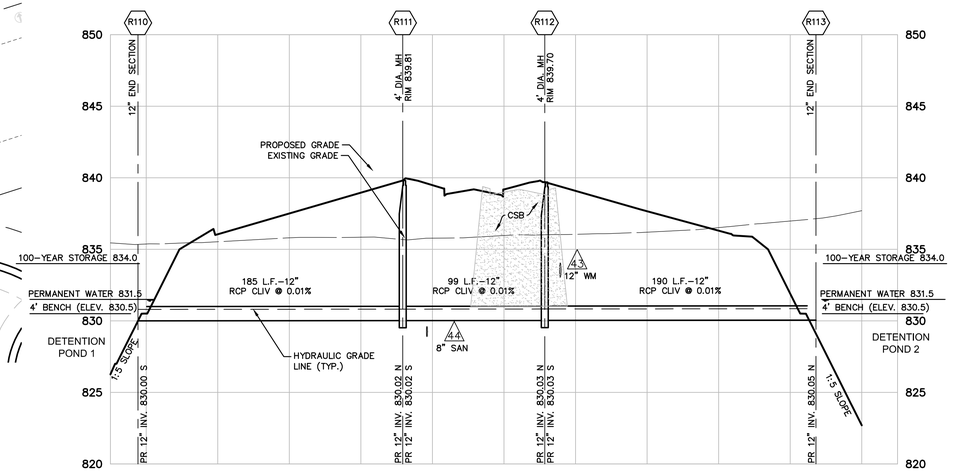
SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE

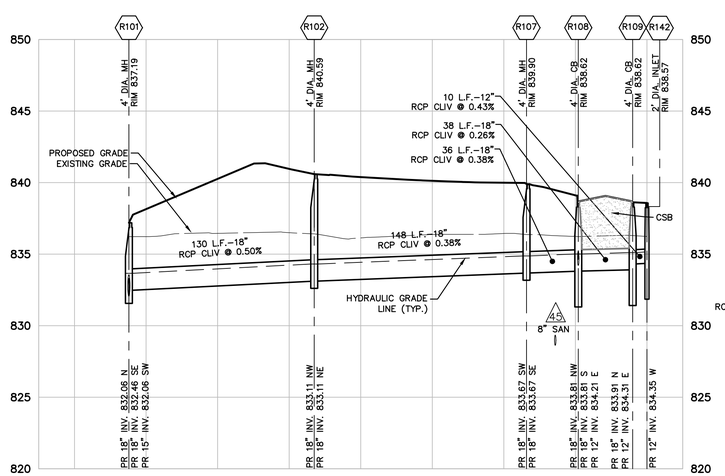


KEY MAP

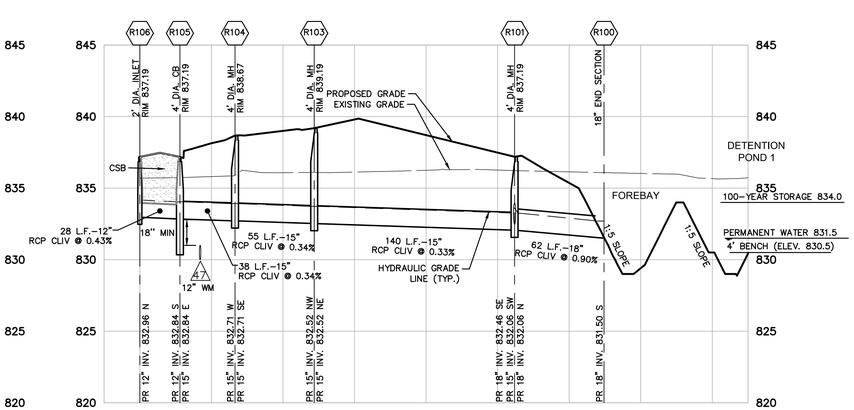
NOT TO SCALE



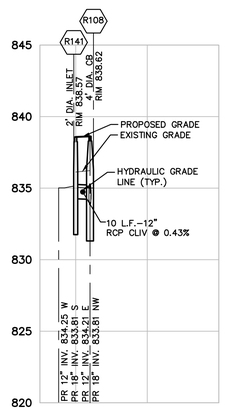
R113–R110
VERT: 1"=5'
HORZ: 1"=50'
DETENTION EQUALIZATION PIPE



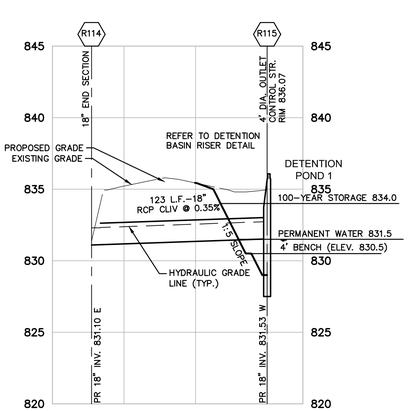
R142–R101
VERT: 1"=5'
HORZ: 1"=50'



R106–R100
VERT: 1"=5'
HORZ: 1"=50'



R141–R108
VERT: 1"=5'
HORZ: 1"=50'



R115–R114
VERT: 1"=5'
HORZ: 1"=50'

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1" = 50 FEET

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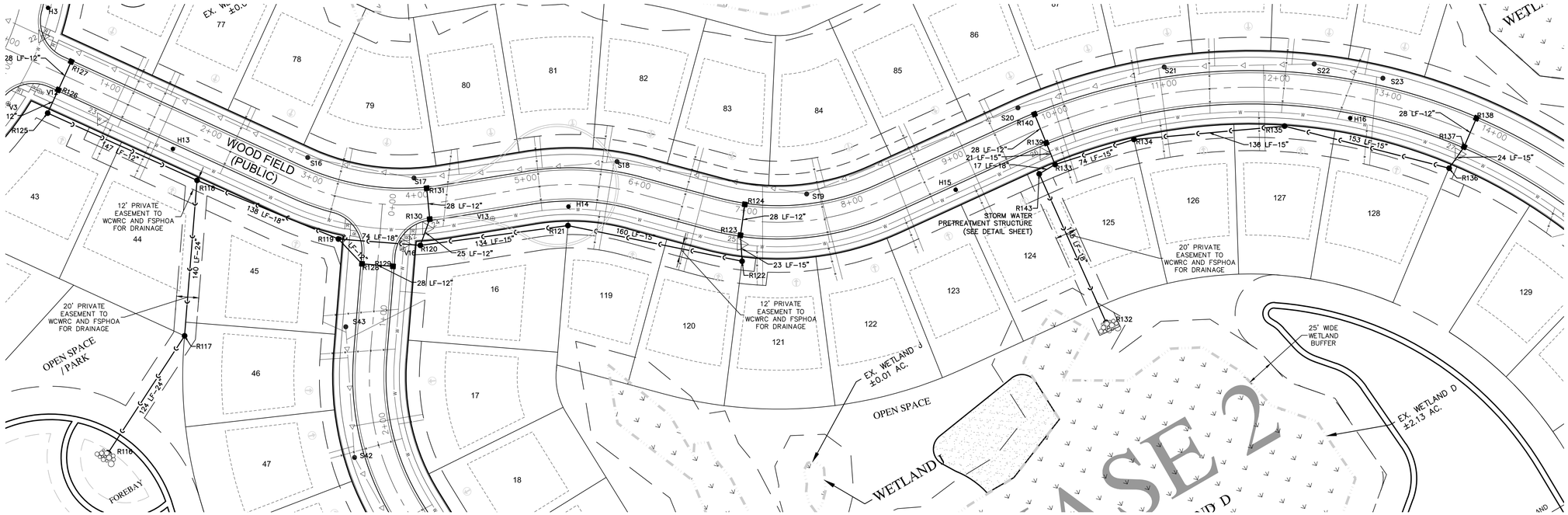
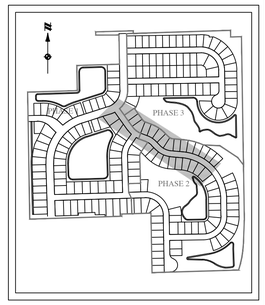
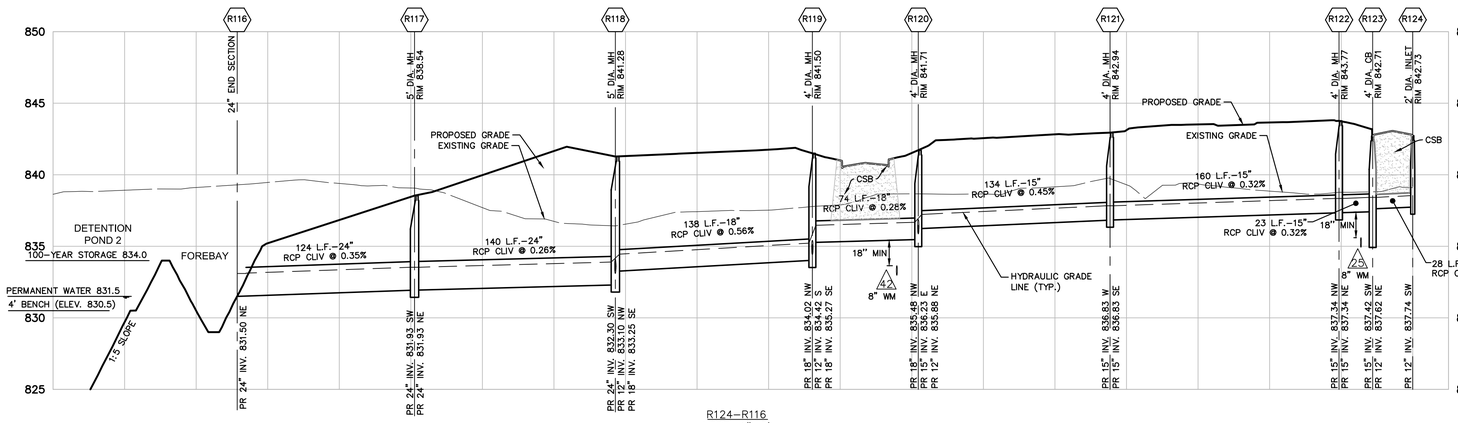
CAD FILE: 11000143CP-64-72-R
JOB 11000143
FILE CODE:
SHEET NO.
CP-67



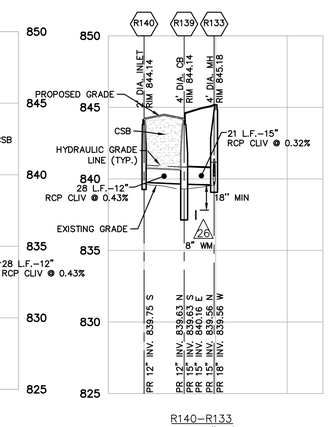


KEY MAP

NOT TO SCALE



R124–R116
VERT: 1"=5'
HORZ: 1"=50'



R140–R133
VERT: 1"=5'
HORZ: 1"=50'

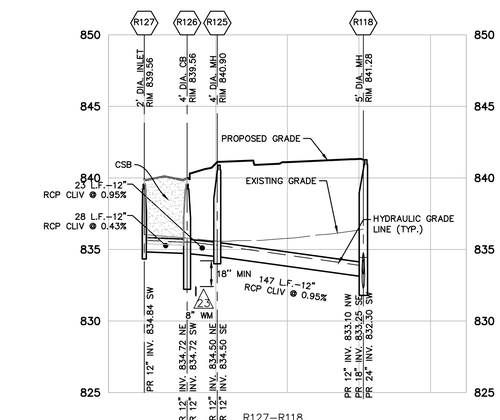
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

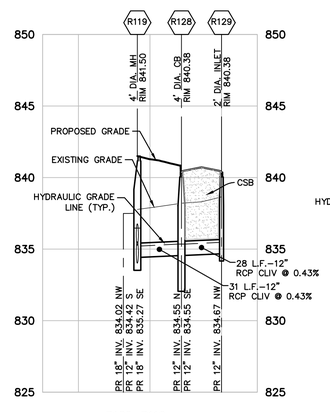
SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

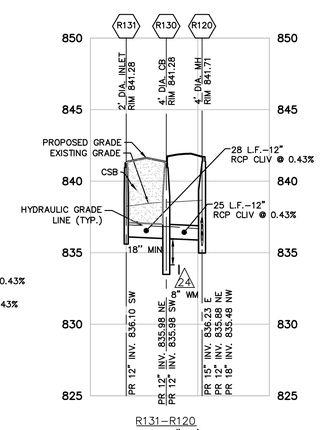
SEE SHEET CP-75 FOR STORM STRUCTURE TABLE



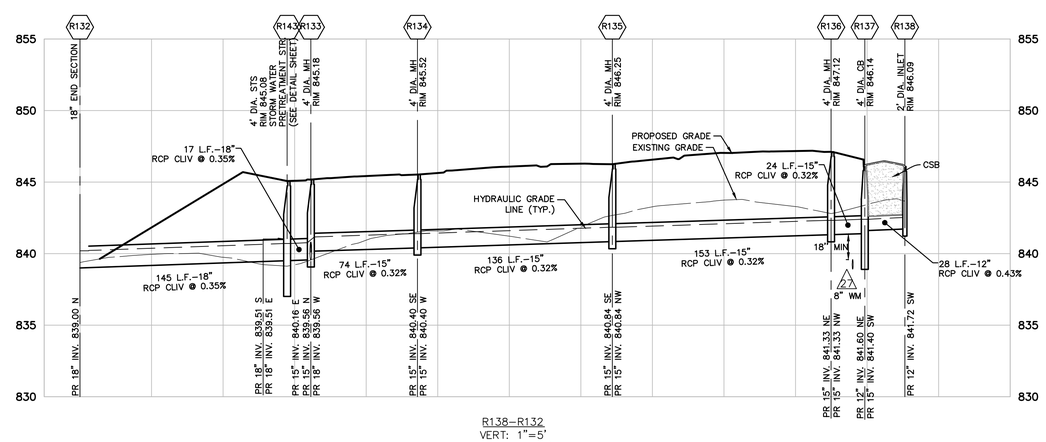
R127–R118
VERT: 1"=5'
HORZ: 1"=50'



R129–R119
VERT: 1"=5'
HORZ: 1"=50'



R131–R120
VERT: 1"=5'
HORZ: 1"=50'



R138–R132
VERT: 1"=5'
HORZ: 1"=50'

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1" = 50 FEET

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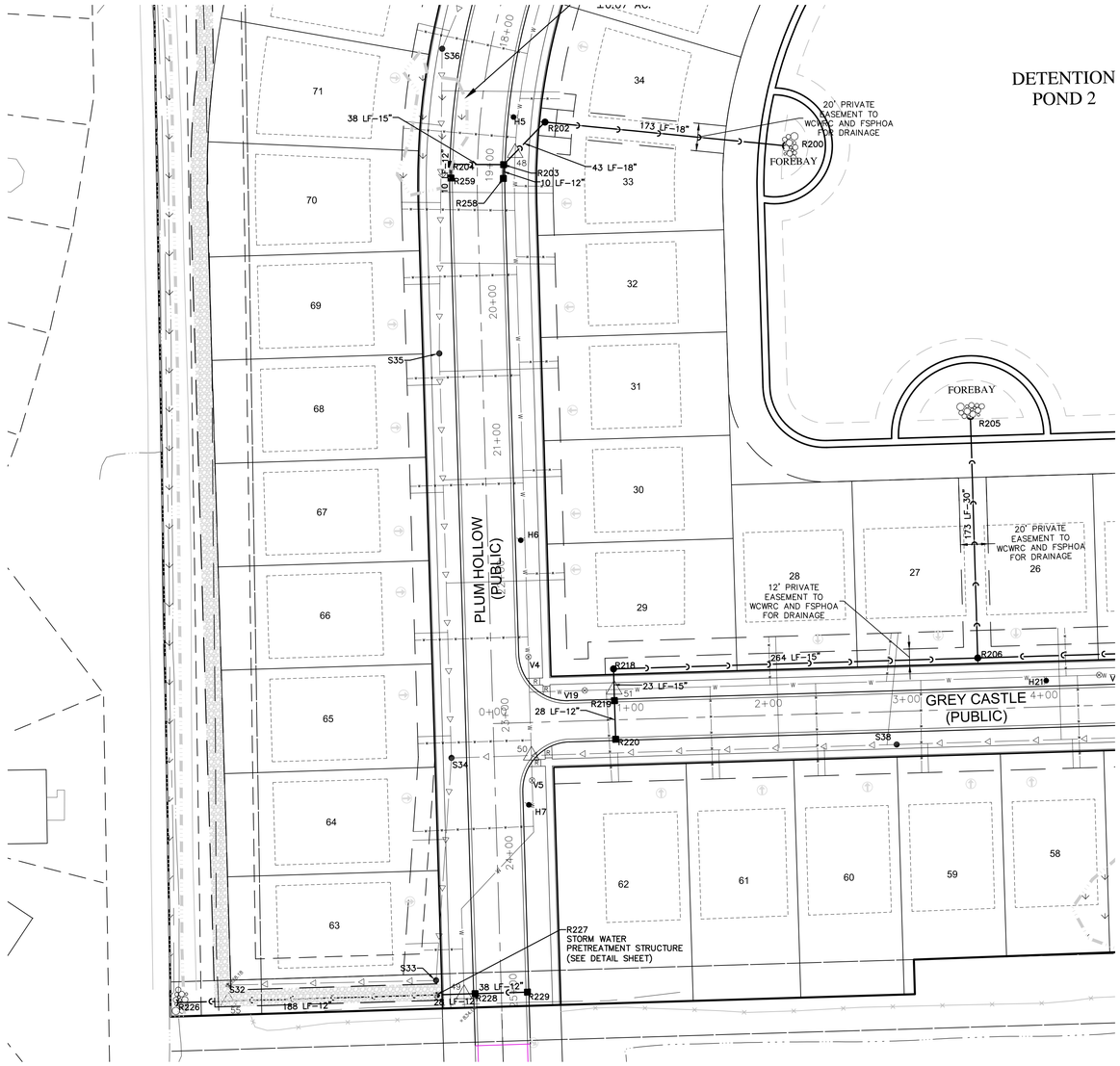
JOB 11000143
FILE CODE:
SHEET NO. CP-68



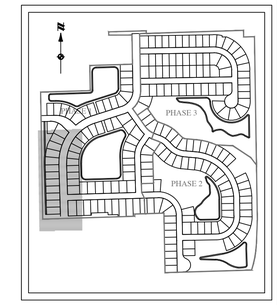
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

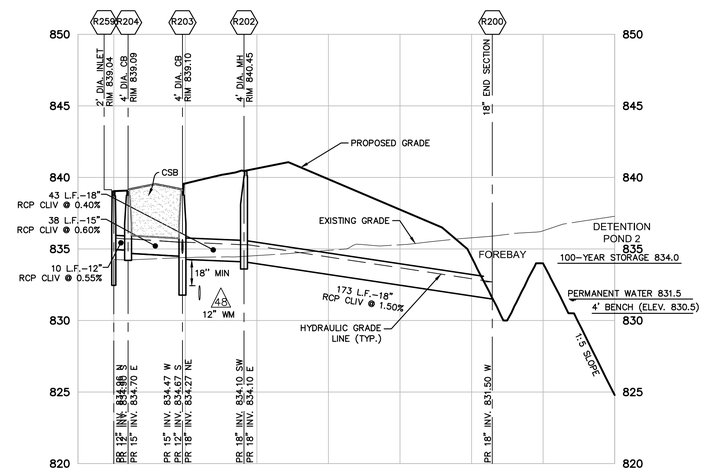
SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE

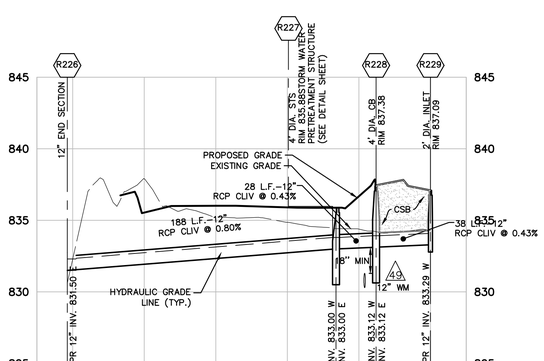


KEY MAP

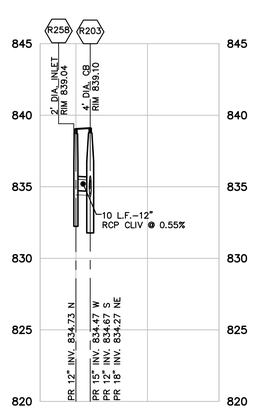
NOT TO SCALE



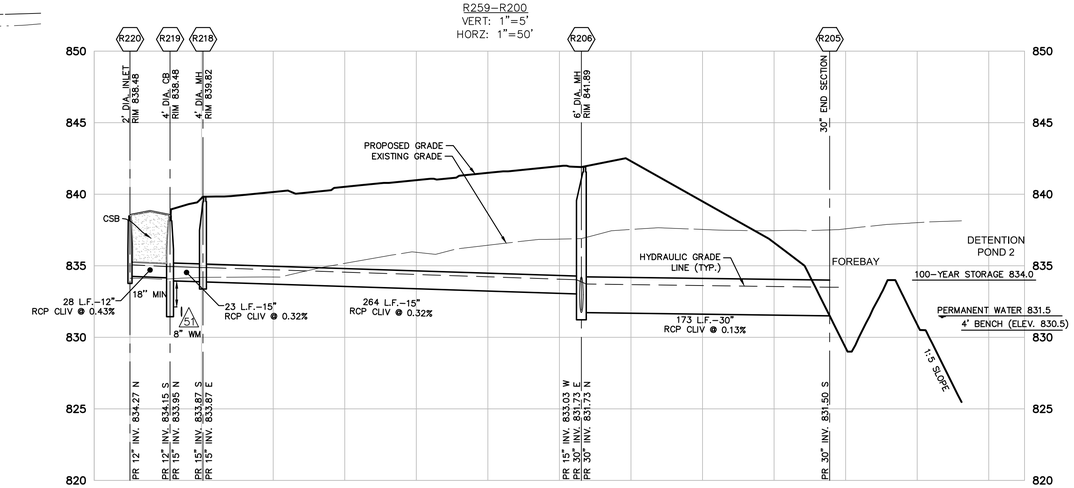
R259–R200
VERT: 1"=5'
HORZ: 1"=50'



R229–206
VERT: 1"=5'
HORZ: 1"=50'



R258–R203
VERT: 1"=5'
HORZ: 1"=50'



R220–R205
VERT: 1"=5'
HORZ: 1"=50'

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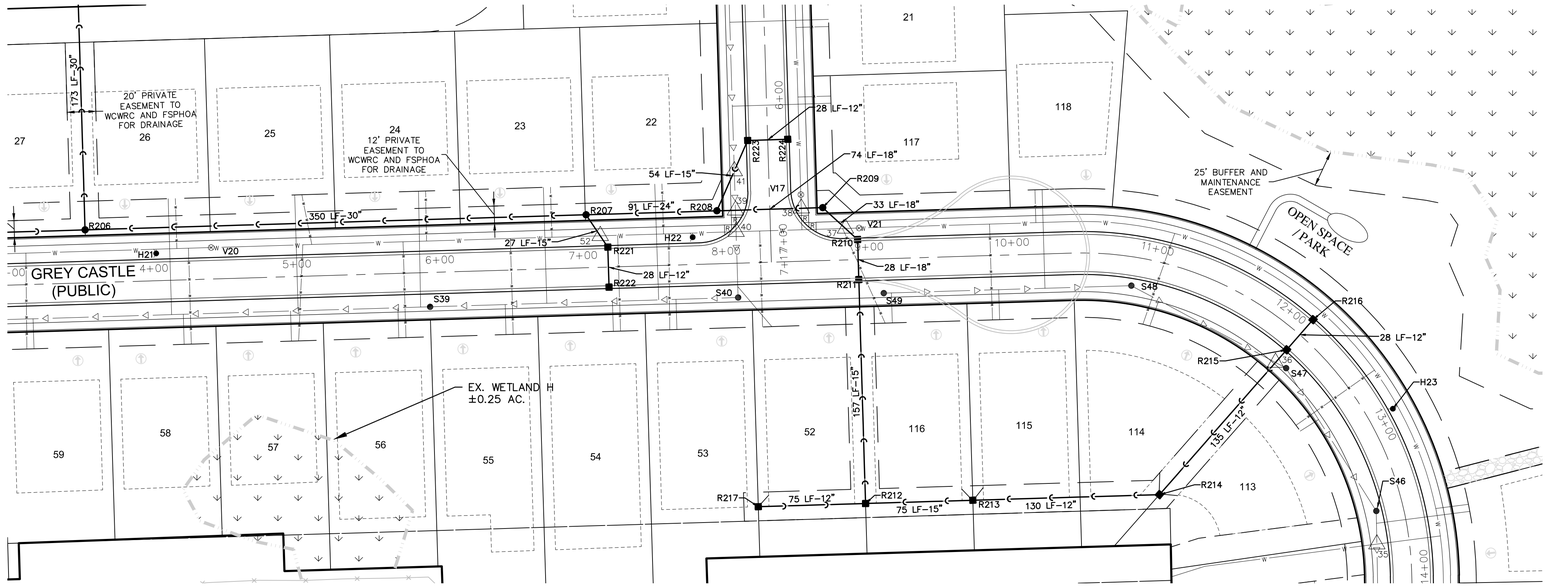
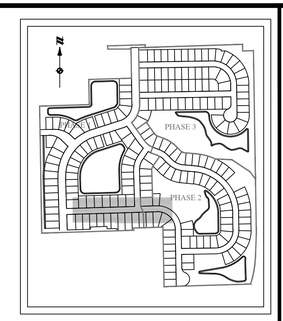
FILE CODE:
SHEET NO. CP-69





KEY MAP

NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
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- PROPOSED BUILDING SETBACK
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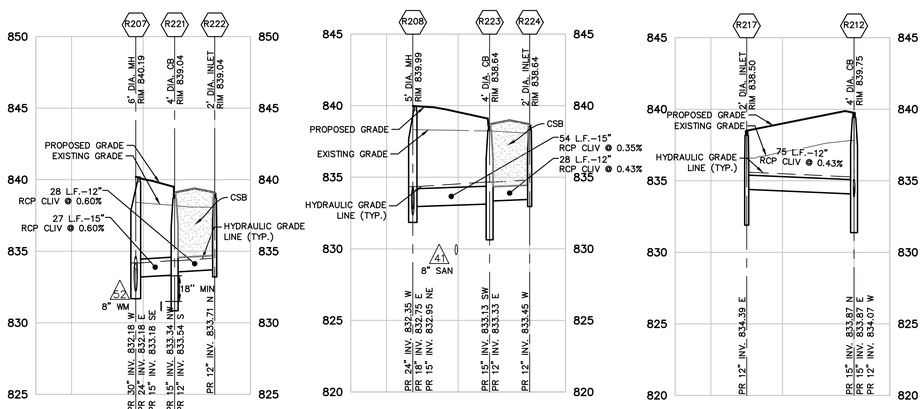
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

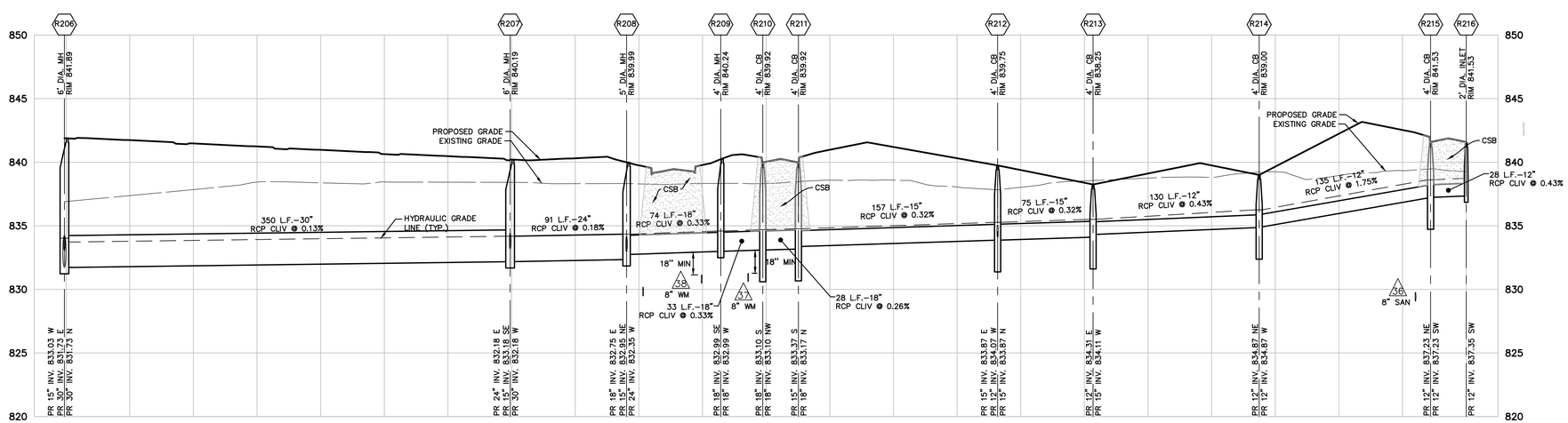
SEE SHEET CP-75 FOR STORM STRUCTURE TABLE



R222-R207
VERT: 1"=5'
HORZ: 1"=50'

R224-R208
VERT: 1"=5'
HORZ: 1"=50'

R217-212
VERT: 1"=5'
HORZ: 1"=50'



R216-R206
VERT: 1"=5'
HORZ: 1"=50'

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FIELDSTONE PARK
FINAL SITE PLANS

STORM SEWER PLAN AND PROFILE

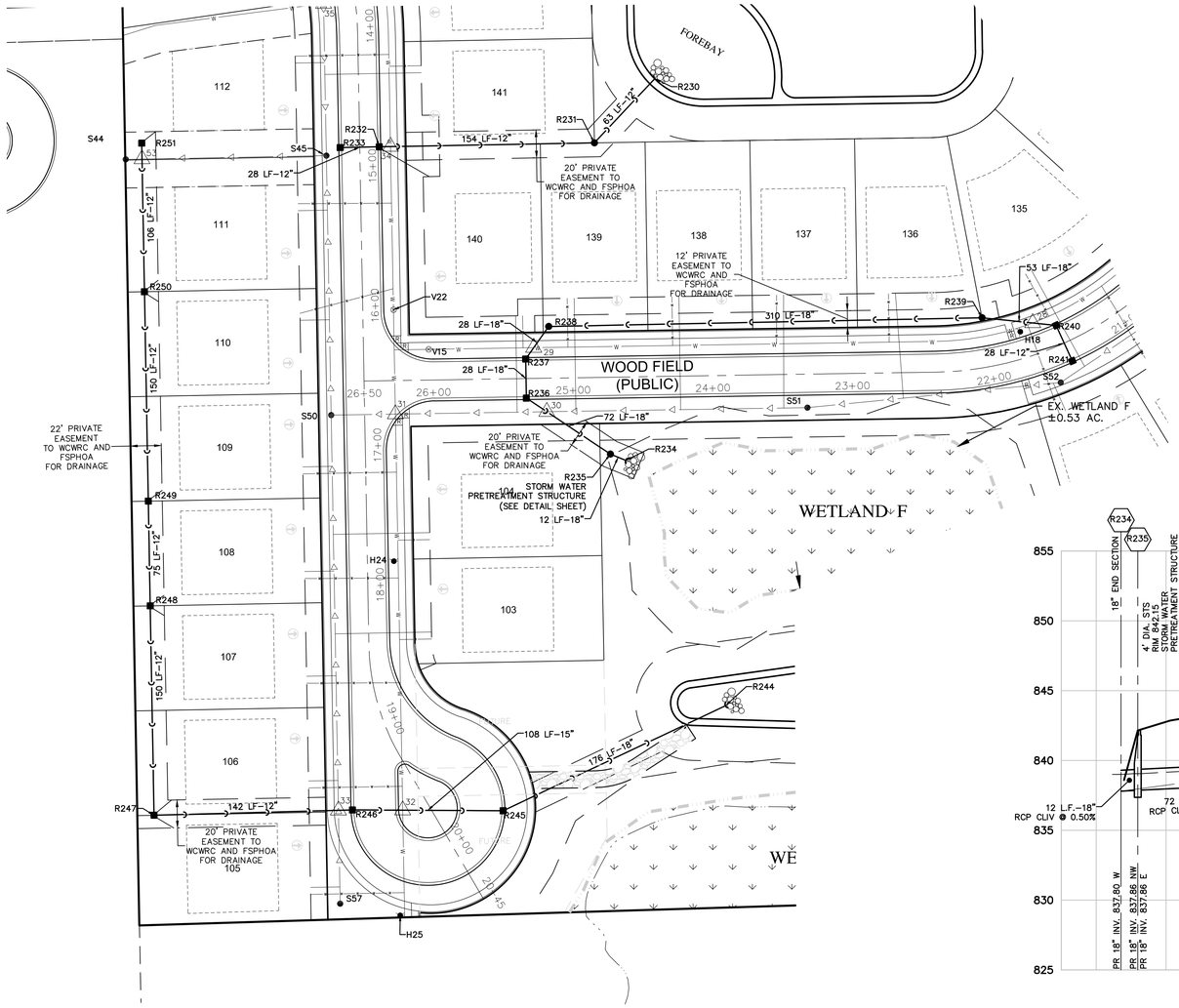
DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-64-72-R
JOB 11000143
FILE CODE:
SHEET NO.
CP-70



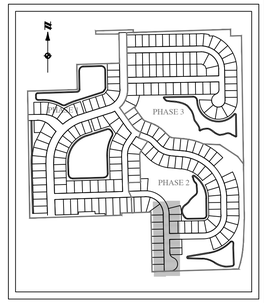
LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
- PROPOSED CENTERLINE OF ROAD
- EASEMENT
- PROPOSED BUILDING SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

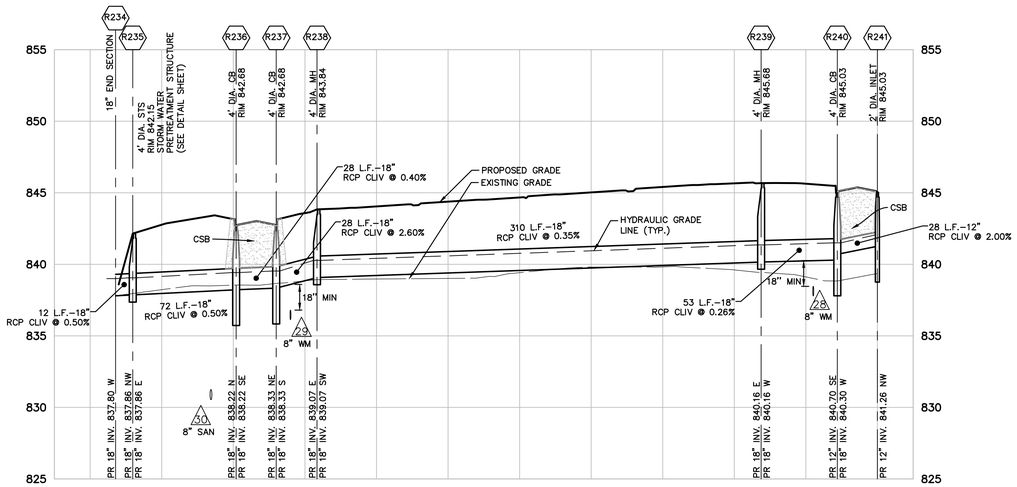
SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE

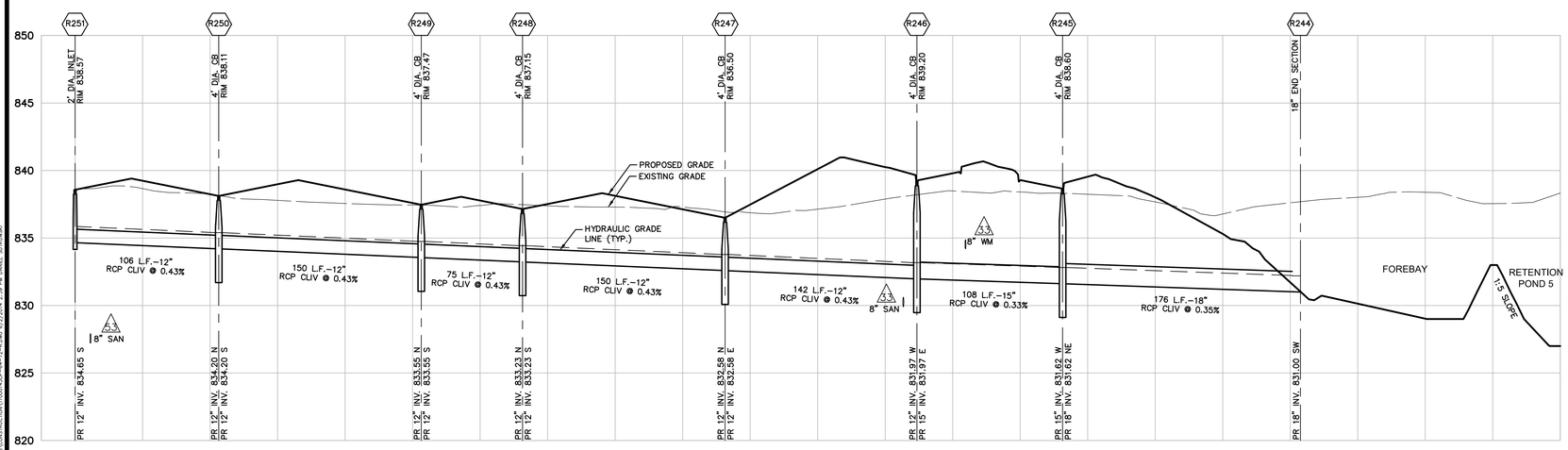


KEY MAP

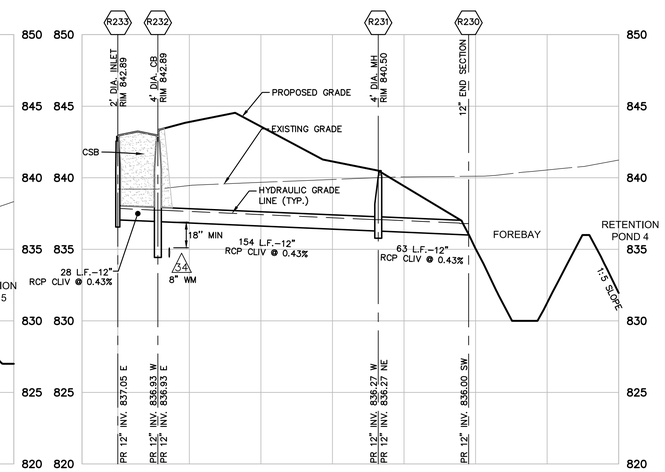
NOT TO SCALE



R241–R234
VERT: 1"=5'
HORZ: 1"=50'



R251–R244
VERT: 1"=5'
HORZ: 1"=50'



R233–R230
VERT: 1"=5'
HORZ: 1"=50'

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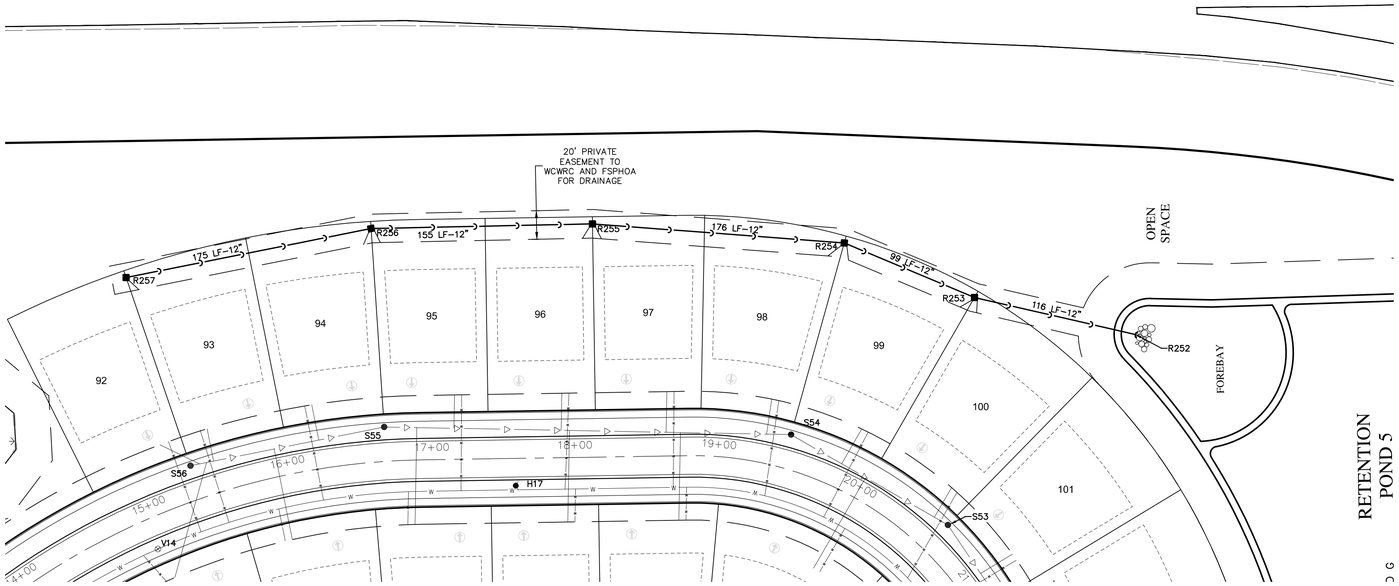
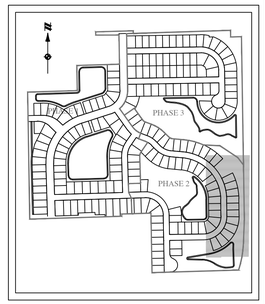
ATWELL

SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-64-72-R
JOB 11000143
FILE CODE:
SHEET NO.
CP-71





KEY MAP

NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W. LINE
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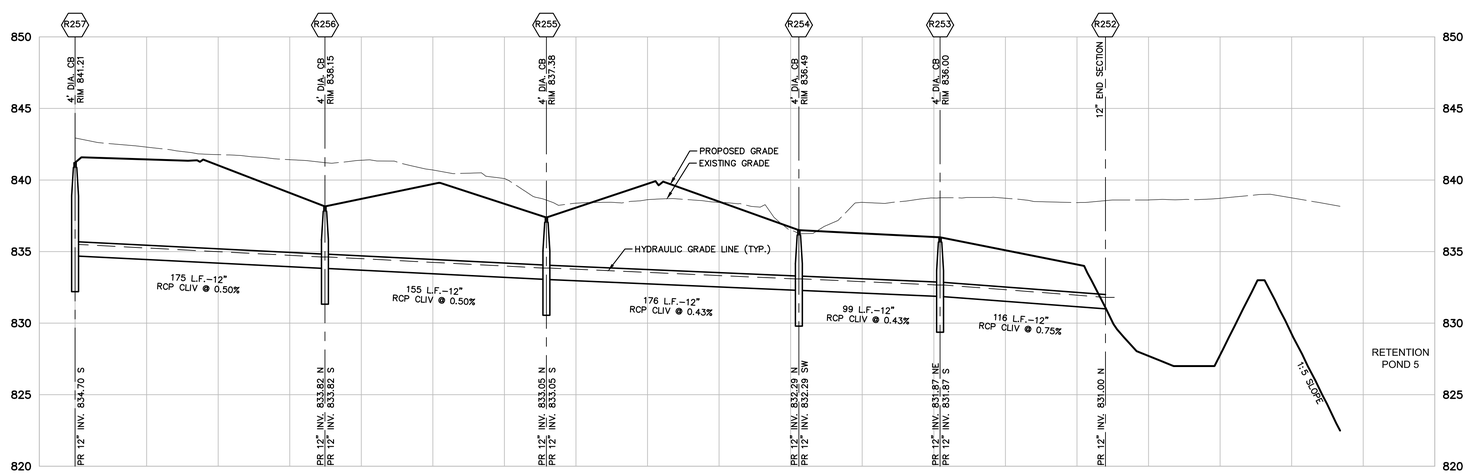
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED COMPACTED GRANULAR MATERIAL (C.G.M)
- UTILITY CROSSING REFER TO TABLE ON SHEET 75

SEE SHEET CP-63 FOR WATER & SANITARY STRUCTURE TABLE

SEE SHEET CP-63 FOR SANITARY LEAD TABLE

SEE SHEET CP-75 FOR STORM STRUCTURE TABLE



R257-R252
VERT: 1"=5'
HORZ: 1"=50'

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SCALE 0 25 50
1" = 50 FEET

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P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-64-72-R
JOB 11000143
FILE CODE:
SHEET NO. CP-72

PROJECT: **Fieldstone Park**

ON-SITE STORM

Storm Event Design = 10 Year

Intensity Equation (I) = 175/(T+25)

T (Initial)= 20 MIN

FROM STR	TO STR	INCREMENT DRAINAGE AREA (A)	C RUNOFF COEF.	EQUIV. AREA (CxA) ACRES IMPERVIOUS	INLET FLOW PER CB (Qi) (cfs)	SUM OF EQUIVALENT AREAS SUMCxA	Lat 1	Lat 2	I RAINFALL INTENSITY (in/hr)	TIME OF CONC. T (min)	Q=CIA C.F.S. FLOW	LENGTH OF LINE (ft)	DIA. OF PIPE (IN.)	PIPE ROUGH COEF (n)	MIN HG BASED ON "Q" (%)	DESIGN SLOPE OF PIPE (%)	VELOCITY IN PIPE FLOWING FULL (fps)	TIME OF FLOW (min)	CAPACITY OF SEWER (cfs)	HYDRAULIC GRADE UP STREAM	HYDRAULIC GRADE DOWN STREAM	GROUND ELEV UPPER END	GROUND ELEV LOWER END	INVERT ELEVATION UPPER END	INVERT ELEVATION LOWER END
R10	R9	0.06 ac	0.50	0.03 ac-imp	0.10 cfs	0.03 ac-imp			3.89 in/hr	20.00 min	0.11 cfs	55 ft	12 in	0.013	0.00%	0.43%	3.0 ft/s	0.31 min	2.34 cfs	839.15	838.92	841.10	840.80	837.15	836.92
R9	R8	0.16 ac	0.40	0.07 ac-imp	0.25 cfs	0.09 ac-imp			3.86 in/hr	20.31 min	0.36 cfs	150 ft	12 in	0.013	0.01%	0.43%	3.0 ft/s	0.84 min	2.34 cfs	838.92	838.27	840.80	840.20	836.92	836.27
R8	R7	0.56 ac	0.42	0.23 ac-imp	0.89 cfs	0.33 ac-imp			3.79 in/hr	21.15 min	1.24 cfs	150 ft	12 in	0.013	0.12%	0.43%	3.0 ft/s	0.84 min	2.34 cfs	838.27	837.62	840.20	839.50	836.27	835.62
R7	R6	0.51 ac	0.43	0.22 ac-imp	0.84 cfs	0.55 ac-imp			3.72 in/hr	21.99 min	2.03 cfs	150 ft	12 in	0.013	0.32%	0.43%	3.0 ft/s	0.84 min	2.34 cfs	837.62	836.98	839.50	839.00	835.62	834.98
R6	R5	0.52 ac	0.43	0.22 ac-imp	0.84 cfs	0.77 ac-imp			3.66 in/hr	22.83 min	2.80 cfs	150 ft	15 in	0.013	0.19%	0.32%	3.0 ft/s	0.84 min	3.65 cfs	836.98	836.50	839.00	838.60	834.98	834.50
R5	R4	0.52 ac	0.43	0.22 ac-imp	0.84 cfs	0.99 ac-imp			3.60 in/hr	23.67 min	3.55 cfs	150 ft	15 in	0.013	0.30%	0.32%	3.0 ft/s	0.84 min	3.65 cfs	836.50	836.02	838.60	839.80	834.50	834.02
R4	R3	0.76 ac	0.43	0.33 ac-imp	1.24 cfs	1.31 ac-imp			3.53 in/hr	24.51 min	4.64 cfs	94 ft	18 in	0.013	0.19%	0.25%	3.0 ft/s	0.53 min	5.25 cfs	836.02	835.79	839.80	842.48	834.02	833.79
R3	R11	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	3.43 ac-imp	R30		3.50 in/hr	25.03 min	12.01 cfs	83 ft	30 in	0.013	0.09%	0.13%	3.0 ft/s	0.46 min	14.79 cfs	835.79	835.68	842.48	840.22	833.79	833.68
R11	R2	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	6.83 ac-imp	R61		3.47 in/hr	25.49 min	23.66 cfs	162 ft	30 in	0.013	0.33%	0.13%	3.0 ft/s	0.89 min	14.79 cfs	834.20	833.67	840.22	837.55	831.78	831.57
R2	R1	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	6.83 ac-imp			3.41 in/hr	26.38 min	23.25 cfs	52 ft	30 in	0.013	0.32%	0.13%	3.0 ft/s	0.29 min	14.79 cfs	833.67	833.50	837.55	834.38	831.57	831.50
R15	R14	0.21 ac	0.70	0.15 ac-imp	0.56 cfs	0.15 ac-imp			3.89 in/hr	20.00 min	0.57 cfs	38 ft	12 in	0.013	0.03%	0.43%	3.0 ft/s	0.21 min	2.34 cfs	835.54	835.38	837.42	837.42	833.91	833.75
R14	R62	0.15 ac	0.73	0.11 ac-imp	0.41 cfs	0.25 ac-imp			3.87 in/hr	20.21 min	0.98 cfs	11 ft	12 in	0.013	0.08%	0.43%	3.0 ft/s	0.06 min	2.34 cfs	835.38	835.33	837.42	837.25	833.75	833.70
R62	R61	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.25 ac-imp			3.87 in/hr	20.27 min	0.98 cfs	117 ft	12 in	0.013	0.08%	0.43%	3.0 ft/s	0.66 min	2.34 cfs	835.33	834.82	837.25	838.00	833.70	833.20
R61	R11	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	3.39 ac-imp	R29	R12	3.81 in/hr	20.93 min	12.93 cfs	188 ft	24 in	0.013	0.32%	0.33%	4.1 ft/s	0.76 min	13.00 cfs	834.82	834.20	838.00	840.22	832.40	831.78
													30 in							834.20				831.78	
R29	R61	1.25 ac	0.32	0.40 ac-imp	1.51 cfs	0.40 ac-imp			3.89 in/hr	20.00 min	1.54 cfs	10 ft	12 in	0.013	0.19%	5.00%	10.1 ft/s	0.02 min	7.97 cfs	835.30	834.82	837.09	838.00	834.48	834.00
													24 in							834.82				832.40	
R20	R19	0.42 ac	0.38	0.16 ac-imp	0.60 cfs	0.16 ac-imp			3.89 in/hr	20.00 min	0.62 cfs	150 ft	12 in	0.013	0.03%	2.00%	6.4 ft/s	0.39 min	5.04 cfs	840.31	837.31	844.19	841.20	837.88	834.88
R19	R18	0.38 ac	0.39	0.15 ac-imp	0.56 cfs	0.31 ac-imp			3.86 in/hr	20.39 min	1.18 cfs	150 ft	12 in	0.013	0.11%	0.85%	4.2 ft/s	0.60 min	3.28 cfs	837.31	836.03	841.20	840.30	834.88	833.60
R18	R17	0.56 ac	0.39	0.22 ac-imp	0.83 cfs	2.05 ac-imp	R23		3.81 in/hr	20.99 min	7.82 cfs	150 ft	24 in	0.013	0.12%	0.18%	3.1 ft/s	0.82 min	9.60 cfs	836.03	835.76	840.30	840.05	833.60	833.33
R17	R16	0.29 ac	0.41	0.12 ac-imp	0.46 cfs	2.17 ac-imp			3.74 in/hr	21.81 min	8.13 cfs	150 ft	24 in	0.013	0.13%	0.18%	3.1 ft/s	0.82 min	9.60 cfs	835.76	835.49	840.05	839.80	833.33	833.06
R16	R13	0.27 ac	0.42	0.11 ac-imp	0.43 cfs	2.29 ac-imp			3.67 in/hr	22.62 min	8.40 cfs	165 ft	24 in	0.013	0.14%	0.18%	3.1 ft/s	0.90 min	9.60 cfs	835.49	835.19	839.80	839.50	833.06	832.76
R13	R12	0.15 ac	0.41	0.06 ac-imp	0.23 cfs	2.35 ac-imp			3.61 in/hr	23.52 min	8.47 cfs	125 ft	24 in	0.013	0.14%	0.18%	3.1 ft/s	0.68 min	9.60 cfs	835.19	834.97	839.50	840.76	832.76	832.54
R12	R61	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	2.74 ac-imp	R29		3.56 in/hr	24.21 min	9.76 cfs	78 ft	24 in	0.013	0.19%	0.18%	3.1 ft/s	0.42 min	9.60 cfs	834.97	834.82	840.76	838.00	832.54	832.40
													24 in							834.82				832.40	
R56	R55	1.06 ac	0.61	0.64 ac-imp	2.43 cfs	0.64 ac-imp			3.89 in/hr	20.00 min	2.49 cfs	27 ft	12 in	0.013	0.49%	0.43%	3.0 ft/s	0.15 min	2.34 cfs	835.23	835.10	840.19	840.28	833.59	833.47
R55	R12	1.03 ac	0.61	0.63 ac-imp	2.41 cfs	1.27 ac-imp			3.88 in/hr	20.15 min	4.93 cfs	30 ft	18 in	0.013	0.22%	0.45%	4.0 ft/s	0.13 min	7.05 cfs	835.10	834.97	840.28	840.76	833.07	832.94
													24 in							834.97				832.54	
R26	R25	0.56 ac	0.62	0.35 ac-imp	1.32 cfs	0.35 ac-imp			3.89 in/hr	20.00 min	1.35 cfs	28 ft	12 in	0.013	0.14%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	840.43	840.31	845.97	845.97	839.63	839.51
R25	R24	0.74 ac	0.73	0.54 ac-imp	2.06 cfs	0.89 ac-imp			3.88 in/hr	20.16 min	3.44 cfs	35 ft	15 in	0.013	0.28%	0.35%	3.1 ft/s	0.19 min	3.82 cfs	840.31	840.19	845.97	846.84	839.31	839.19
R24	R23	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.89 ac-imp			3.86 in/hr	20.34 min	3.43 cfs	225 ft	15 in	0.013	0.28%	0.40%	3.3 ft/s	1.13 min	4.09 cfs	840.19	839.29	846.84	845.52	839.19	838.29
R23	R18	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.53 ac-imp	R27		3.77 in/hr	21.47 min	5.76 cfs	131 ft	15 in	0.013	0.79%	2.20%	7.8 ft/s	0.28 min	9.58 cfs	838.92	836.03	845.52	840.30	837.09	834.20
													24 in							836.03				833.60	
R28	R27	0.54 ac	0.60	0.32 ac-imp	1.22 cfs	0.32 ac-imp			3.89 in/hr	20.00 min	1.25 cfs	28 ft	12 in	0.013	0.12%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	839.15	839.03	844.50	844.50	837.51	837.39
R27	R23	0.54 ac	0.60	0.32 ac-imp	1.22 cfs	0.64 ac-imp			3.88 in/hr	20.16 min	2.49 cfs	23 ft	12 in	0.013	0.48%	0.43%	3.0 ft/s	0.13 min	2.34 cfs	839.03	838.92	844.50	845.52	837.39	837.29
													15 in							838.92				837.09	
R35	R34	0.62 ac	0.58	0.36 ac-imp	1.36 cfs	0.36 ac-imp			3.89 in/hr	20.00 min	1.39 cfs	38 ft	12 in	0.013	0.15%	0.43%	3.0 ft/s	0.21 min	2.34 cfs	837.53	837.37	839.81	839.81	835.54	835.38
R34	R33	0.49 ac	0.53	0.26 ac-imp	0.99 cfs	0.62 ac-imp			3.87 in/hr	20.21 min	2.39 cfs	31 ft	12 in	0.013	0.45%	0.43%	3.0 ft/s	0.17 min	2.34 cfs	837.37	837.23	839.81	841.14	835.38	835.24
R33	R30	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.62 ac-imp			3.86 in/hr	20.39 min	2.38 cfs	134 ft	12 in	0.013	0.44%	0.43%	3.0 ft/s	0.75 min	2.34 cfs	837.23	836.64	841.14	840.85	835.24	834.67
R30	R3	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	2.12 ac-imp	R36	R31	3.79 in/hr	21.14 min	8.04 cfs	146 ft	18 in	0.013	0.58%	0.40%	3.8 ft/s	0.65 min	6.64 cfs	836.64	835.79	840.85	842.48	834.67	834.09
													30 in							835.79				833.79	
R37	R36	0.91 ac	0.61	0.55 ac-imp	2.09 cfs	0.55 ac-imp			3.89 in/hr	20.00 min	2.14 cfs	28 ft	12 in	0.013	0.36%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	836.92	836.80	839.44	839.44	835.12	834.99
R36	R30	0.95 ac	0.60	0.56 ac-imp	2.15 cfs	1.11 ac-imp			3.88 in/hr	20.16 min	4.32 cfs	36 ft	15 in	0.013	0.44%	0.35%	3.1 ft/s	0.19 min	3.82 cfs	836.80	836.64	839.44	840.85	834.79	834.67
																				836.64				834.67	
R41	R40	0.53 ac	0.63	0.33 ac-imp	1.27 cfs	0.33 ac-imp			3.89 in/hr	20.00 min	1.30 cfs	28 ft	12 in	0.013	0.13%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	839.35	839.23	842.39	842.39	838.41	838.29
R40	R39	0.53 ac	0.60	0.32 ac-imp	1.21 cfs	0.65 ac-imp			3.88 in/hr	20.16 min	2.52 cfs	157 ft	12 in	0.013	0.50%	0.43%	3.0 ft/s	0.88 min	2.34 cfs	839.23	838.44	842.39	842.00	838.29	837.62
R39	R38	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.65 ac-imp			3.80 in/hr	21.04 min	2.47 cfs	51 ft	12 in	0.013	0.48%	0.43%	3.0 ft/s	0.28 min	2.34 cfs	838.44	838.20	842.00	834.06	837.62	837.40
R44	R43	0.75 ac	0.60	0.46 ac-imp	1.73 cfs	0.46 ac-imp			3.89 in/hr	20.00 min	1.77 cfs	28 ft	12 in	0.013	0.25%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	840.23	840.11	843.62	843.62	839.43	839.31
R43	R42	0.75 ac	0.60	0.45 ac-imp	1.71 cfs	0.91 ac-imp			3.88 in/hr	20.16 min	3.51 cfs	184 ft	15 in	0.013	0.29%	0.90%	5.0 ft/s	0.61 min	6.13 cfs	837.66	836.00	843.62	836.52	836.66	835.00
R52	R51	0.43 ac	0.34	0.15 ac-imp	0.55 cfs	0.15 ac-imp			3.89 in/hr	20.00 min	0.57 cfs	193 ft	12 in	0.013	0.03%	0.43%	3.0 ft/s	1.08 min	2.34 cfs	844.13	843.30	847.33	846.50	843.33	842.50
R51	R50	0.91 ac	0.34	0.31 ac-imp	1.17 cfs	0.45 ac-imp			3.80 in/hr	21.08 min	1.72 cfs	194 ft	12 in	0.013	0.23%	0.43%	3.0 ft/s	1.09 min	2.34 cfs	843.30	842.47	846.50	846.00	842.50	841.67
R50	R49	0.57 ac	0.36	0.20 ac-imp	0.77 cfs	0.66 ac-imp			3.71 in/hr	22.17 min	2.43 cfs	169 ft	15 in	0.013	0.14%	0.33%	3.0 ft/s	0.93 min	3.71 cfs	842.47	841.91	846.00	845.00	841.47	840.91
R49	R48	0.45 ac	0.37	0.17 ac-imp	0.63 cfs	2.35 ac-imp	R53		3.64 in/hr	23.10 min	8.57 cfs	150 ft	24 in	0.013	0.14%	0.18%	3.1 ft/s	0.82 min	9.60 cfs	841.91	841.64	845.00	847.28	840.31	840.04
R48	R47	0.19 ac	0.39	0.07 ac-imp	0.28 cfs	2.43 ac-imp			3.58 in/hr	23.92 min	8.69 cfs	189 ft	24 in	0.013	0.15%	0.18%	3.1 ft/s	1.03 min	9.60 cfs	841.64	841.30	847.28	844.30	840.04	839.70
R47	R46	0.44 ac	0.38	0.16 ac-imp	0.62 cfs	2.59 ac-imp			3.50 in/hr	24.94 min	9.08 cfs	268 ft	24 in	0.013	0.16%	0.18%	3.1 ft/s	1.46 min	9.60 cfs	841.30	840.82	844.30	844.30	839.70	839.22
R46	R45	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	2.59 ac-imp			3.40 in/hr	26.41 min	8.82 cfs	120 ft	24 in	0.013	0.15%	0.18%	3.1 ft/s	0.65 min	9.60 cfs	840.82	840.60	844.30	841.33	839.22	839.00
R22	R21	0.71 ac	0.54	0.38 ac-imp	1.44 cfs	0.38 ac-imp			3.89 in/hr	20.00 min	1.47 cfs	28 ft	12 in	0.013	0.17%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	842.66	842.54	846.06	846.06	841.86	841.74
R21	R53	0.73 ac	0.63	0.46 ac-imp	1.73 cfs	1.33 ac-imp	R60		3.88 in/hr	20.16 min	5.16 cfs	77 ft	18 in	0.013	0.24%	0.26%	3.0 ft/s	0.42 min	5.36 cfs	842.54	842.34	846.06	847.48	841.34	841.14
R53	R49	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.53 ac-imp	R59		3.84 in/hr	20.58 min	5.89 cfs	123 ft	18 in	0.013	0.31%	0.35%	3.5 ft/s	0.58 min	6.21 cfs	842.34	841.91	847.48	845.00	841.14	840.71
													24 in							841.91				840.31	
R59	R53	0.34 ac	0.60	0.20 ac-imp	0.77 cfs	0.20 ac-imp			3.89 in/hr	20.00 min	0.78 cfs	60 ft	12 in	0.013	0.05%	0.43%	3.0 ft/s	0.34 min	2.34 cfs	843.20	842.94	846.63	847.48	842.40	842.14
													18 in							842.34				841.14	
R58	R13	0.85 ac	0.63	0.54 ac-imp	2.05 cfs	0.54 ac-imp			3.89 in/hr	20.00 min	2.10 cfs	27 ft	12 in	0.013	0.35%	4.00%	9.1 ft/s	0.05 min	7.13 cfs	836.58	835.50	837.03	839.50	835.78	834.70
													24 in							835.19				832.76	
R60	R21	0.88 ac	0.56	0.50 ac-imp	1.89 cfs	0.50 ac-imp			3.89 in/hr	20.00 min	1.93 cfs	10 ft	12 in	0.013	0.29%	1.00%	4.5 ft/s	0.04 min	3.56 cfs	842.69	842.59	846.12	846.06	841.89	841.79
																				842.54				841.34	
R32	R31	0.36 ac	0.62	0.22 ac-imp	0.85 cfs	0.22 ac-imp			3.89 in/hr	20.00 min	0.87 cfs	38 ft	12 in	0.013	0.06%	0.43%	3.0 ft/s	0.21 min	2.34 cfs	836.93	836.77	840.60	840.60	836.07	835.90
R31	R30	0.33 ac	0.50	0.17 ac-imp	0.63 cfs	0.39 ac-imp			3.87 in/hr	20.21 min	1.51 cfs	31 ft	12 in	0.013	0.18%	0.43%	3.0 ft/s	0.17 min	2.34 cfs	836.77	836.64	840.60	840.85	835.90	835.77
													18 in							836.64				834.67	

NORTH

Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 23
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
DIVERSE REAL ESTATE LLC

FIELDSTONE PARK
FINAL SITE PLANS

STORM SEWER CALCULATIONS

DATE 05/12/14

REVISIONS

ATWELL

SCALE 0 NA NA
1" = NA FEET
DR. JEC CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-73-75-RTBL
JOB 11000143
FILE CODE:
SHEET NO. CP-73

PROJECT: Fieldstone Park

ON-SITE STORM

Storm Event Design = 10 Year

Intensity Equation (i) = 175/(T+25)

T (Initial)= 20 MIN

FROM STR	TO STR	INCRE-MENT DRAINAGE AREA (A)	C RUNOFF COEF.	EQUIV. AREA (CxA) ACRES IMPERVIOUS	INLET FLOW PER CB (Qi) (cfs)	SUM OF EQUIVALENT AREAS SUM CxA	Lat 1	Lat 2	I RAINFALL INTENSITY (in/hr)	TIME OF CONC. T (min)	Q=CIA C.F.S. FLOW	LENGTH OF LINE (ft)	DIA. OF PIPE (IN.)	PIPE ROUGH COEF (n)	MIN HG BASED ON "Q" (%)	DESIGN SLOPE OF PIPE (%)	VELOCITY IN PIPE FLOWING FULL (fps)	TIME OF FLOW (min)	CAPAC-ITY OF SEWER (cfs)	HYDRAULIC GRADE UP STREAM	HYDRAULIC GRADE DOWN STREAM	GROUND ELEV UPPER END	GROUND ELEV LOWER END	INVERT ELEVATION UPPER END	INVERT ELEVATION LOWER END
R106	R105	0.72 ac	0.60	0.43 ac-imp	1.63 cfs	0.43 ac-imp			3.89 in/hr	20.00 min	1.67 cfs	28 ft	12 in	0.013	0.22%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	834.16	834.04	837.12	837.12	832.96	832.84
R105	R104	0.97 ac	0.55	0.53 ac-imp	2.03 cfs	0.96 ac-imp			3.88 in/hr	20.16 min	3.73 cfs	38 ft	15 in	0.013	0.33%	0.34%	3.1 ft/s	0.21 min	3.77 cfs	834.04	833.91	837.12	838.72	832.84	832.71
R104	R103	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.96 ac-imp			3.86 in/hr	20.37 min	3.71 cfs	55 ft	15 in	0.013	0.33%	0.34%	3.1 ft/s	0.30 min	3.77 cfs	833.91	833.72	838.72	839.23	832.71	832.52
R103	R101	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.96 ac-imp			3.83 in/hr	20.67 min	3.69 cfs	140 ft	15 in	0.013	0.32%	0.33%	3.0 ft/s	0.77 min	3.71 cfs	833.72	833.26	839.23	837.19	832.52	832.06
R101	R100	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	2.62 ac-imp	R102		3.77 in/hr	21.44 min	9.89 cfs	62 ft	18 in	0.013	0.88%	0.90%	5.6 ft/s	0.18 min	9.96 cfs	833.26	832.70	837.19	833.29	832.06	831.50
R142	R109	0.67 ac	0.53	0.35 ac-imp	1.34 cfs	0.35 ac-imp			3.89 in/hr	20.00 min	1.37 cfs	10 ft	12 in	0.013	0.15%	0.43%	3.0 ft/s	0.06 min	2.34 cfs	835.15	835.11	838.57	838.62	834.35	834.31
R109	R108	0.84 ac	0.57	0.48 ac-imp	1.82 cfs	1.34 ac-imp	R141		3.88 in/hr	20.06 min	5.22 cfs	38 ft	18 in	0.013	0.25%	0.26%	3.0 ft/s	0.21 min	5.36 cfs	835.11	835.01	838.62	838.62	833.91	833.81
R108	R107	0.59 ac	0.54	0.32 ac-imp	1.21 cfs	1.66 ac-imp			3.87 in/hr	20.26 min	6.43 cfs	36 ft	18 in	0.013	0.37%	0.38%	3.7 ft/s	0.16 min	6.48 cfs	835.01	834.87	838.62	839.90	833.81	833.67
R107	R102	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.66 ac-imp			3.85 in/hr	20.43 min	6.40 cfs	148 ft	18 in	0.013	0.37%	0.38%	3.7 ft/s	0.67 min	6.48 cfs	834.87	834.31	839.90	840.59	833.67	833.11
R102	R101	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.66 ac-imp			3.80 in/hr	21.10 min	6.31 cfs	130 ft	18 in	0.013	0.36%	0.50%	4.2 ft/s	0.51 min	7.43 cfs	834.31	833.66	840.59	837.19	833.11	832.46
													18 in							833.26				832.06	
R141	R108	0.90 ac	0.57	0.51 ac-imp	1.95 cfs	0.51 ac-imp			3.89 in/hr	20.00 min	1.99 cfs	10 ft	12 in	0.013	0.31%	0.43%	3.0 ft/s	0.06 min	2.34 cfs	835.05	835.01	838.57	838.62	834.25	834.21
													18 in							835.01				833.81	
R113	R112	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.00 ac-imp			3.89 in/hr	20.00 min	0.00 cfs	190 ft	12 in	0.013	0.00%	0.01%	0.5 ft/s	6.96 min	0.36 cfs	830.85	830.83	831.29	839.70	830.05	830.03
R112	R111	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.00 ac-imp			3.37 in/hr	26.96 min	0.00 cfs	99 ft	12 in	0.013	0.00%	0.01%	0.5 ft/s	3.64 min	0.36 cfs	830.83	830.82	839.70	839.81	830.03	830.02
R111	R110	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.00 ac-imp			3.15 in/hr	30.60 min	0.00 cfs	185 ft	12 in	0.013	0.00%	0.01%	0.5 ft/s	6.79 min	0.36 cfs	830.82	830.80	839.81	831.25	830.02	830.00
R115	R114	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.00 ac-imp			3.89 in/hr	20.00 min	0.00 cfs	123 ft	18 in	0.013	0.00%	0.35%	3.5 ft/s	0.58 min	6.21 cfs	832.73	832.30	836.07	832.89	831.53	831.10
R124	R123	0.56 ac	0.61	0.34 ac-imp	1.31 cfs	0.34 ac-imp			3.89 in/hr	20.00 min	1.34 cfs	28 ft	12 in	0.013	0.14%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	838.54	838.42	842.73	842.71	837.74	837.62
R123	R122	0.66 ac	0.61	0.40 ac-imp	1.53 cfs	0.75 ac-imp			3.88 in/hr	20.16 min	2.89 cfs	23 ft	15 in	0.013	0.20%	0.32%	3.0 ft/s	0.13 min	3.65 cfs	838.42	838.34	842.71	843.77	837.42	837.34
R122	R121	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.75 ac-imp			3.86 in/hr	20.29 min	2.88 cfs	160 ft	15 in	0.013	0.20%	0.32%	3.0 ft/s	0.90 min	3.65 cfs	838.34	837.83	843.77	842.94	837.34	836.83
R121	R120	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.75 ac-imp			3.79 in/hr	21.18 min	2.83 cfs	134 ft	15 in	0.013	0.19%	0.45%	3.5 ft/s	0.63 min	4.33 cfs	837.83	837.23	842.94	841.71	836.83	836.23
R120	R119	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.46 ac-imp	R130		3.74 in/hr	21.82 min	5.47 cfs	74 ft	18 in	0.013	0.27%	0.28%	3.1 ft/s	0.39 min	5.56 cfs	836.68	836.47	841.71	841.50	835.48	835.27
R119	R118	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.83 ac-imp	R128		3.71 in/hr	22.21 min	6.78 cfs	138 ft	18 in	0.013	0.41%	0.56%	4.5 ft/s	0.52 min	7.86 cfs	835.22	834.45	841.50	841.28	834.02	833.25
R118	R117	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	2.72 ac-imp	R125		3.67 in/hr	22.72 min	9.98 cfs	140 ft	24 in	0.013	0.19%	0.26%	3.7 ft/s	0.64 min	11.53 cfs	833.90	833.53	841.28	838.54	832.30	831.93
R117	R116	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	2.72 ac-imp			3.62 in/hr	23.36 min	9.85 cfs	124 ft	24 in	0.013	0.19%	0.35%	4.3 ft/s	0.48 min	13.38 cfs	833.53	833.10	838.54	833.83	831.93	831.50
R127	R126	0.83 ac	0.60	0.50 ac-imp	1.90 cfs	0.50 ac-imp			3.89 in/hr	20.00 min	1.94 cfs	28 ft	12 in	0.013	0.30%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	835.64	835.52	839.56	839.56	834.84	834.72
R126	R125	0.68 ac	0.58	0.39 ac-imp	1.50 cfs	0.89 ac-imp			3.88 in/hr	20.16 min	3.46 cfs	23 ft	12 in	0.013	0.94%	0.95%	4.4 ft/s	0.09 min	3.47 cfs	835.52	835.30	839.56	840.90	834.72	834.50
R125	R118	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.89 ac-imp			3.87 in/hr	20.24 min	3.45 cfs	147 ft	12 in	0.013	0.93%	0.95%	4.4 ft/s	0.56 min	3.47 cfs	835.30	833.90	840.90	841.28	834.50	833.10
													24 in											832.30	
R131	R130	0.63 ac	0.61	0.39 ac-imp	1.47 cfs	0.39 ac-imp			3.89 in/hr	20.00 min	1.51 cfs	28 ft	12 in	0.013	0.18%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	836.95	836.83	841.28	841.28	836.10	835.98
R130	R120	0.56 ac	0.58	0.33 ac-imp	1.25 cfs	0.72 ac-imp			3.88 in/hr	20.16 min	2.78 cfs	25 ft	12 in	0.013	0.61%	0.43%	3.0 ft/s	0.14 min	**2.34 cfs**	836.83	836.68	841.28	841.71	835.98	835.88
													18 in							836.68				835.48	
R138	R137	0.58 ac	0.66	0.39 ac-imp	1.47 cfs	0.39 ac-imp			3.89 in/hr	20.00 min	1.50 cfs	28 ft	12 in	0.013	0.18%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	842.52	842.40	846.09	846.14	841.72	841.60
R137	R136	0.62 ac	0.56	0.34 ac-imp	1.31 cfs	0.73 ac-imp			3.88 in/hr	20.16 min	2.82 cfs	24 ft	15 in	0.013	0.19%	0.32%	3.0 ft/s	0.13 min	3.65 cfs	842.40	842.33	846.14	847.12	841.40	841.33
R136	R135	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.73 ac-imp			3.86 in/hr	20.29 min	2.82 cfs	153 ft	15 in	0.013	0.19%	0.32%	3.0 ft/s	0.86 min	3.65 cfs	842.33	841.84	847.12	846.25	841.33	840.84
R135	R134	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.73 ac-imp			3.79 in/hr	21.14 min	2.76 cfs	136 ft	15 in	0.013	0.18%	0.32%	3.0 ft/s	0.76 min	3.65 cfs	841.84	841.40	846.25	845.52	840.84	840.40
R134	R133	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.73 ac-imp			3.73 in/hr	21.91 min	2.72 cfs	74 ft	15 in	0.013	0.18%	0.32%	3.0 ft/s	0.42 min	3.65 cfs	841.40	841.16	845.52	845.18	840.40	840.16
R133	R143	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.67 ac-imp	R139		3.70 in/hr	22.32 min	6.16 cfs	17 ft	18 in	0.013	0.34%	0.35%	3.5 ft/s	0.08 min	6.21 cfs	840.76	840.71	845.18	845.08	839.56	839.51
R143	R132	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.67 ac-imp			3.69 in/hr	22.40 min	6.15 cfs	145 ft	18 in	0.013	0.34%	0.35%	3.5 ft/s	0.69 min	6.21 cfs	840.71	840.20	845.08	840.79	839.51	839.00
R140	R139	0.78 ac	0.61	0.47 ac-imp	1.80 cfs	0.47 ac-imp			3.89 in/hr	20.00 min	1.84 cfs	28 ft	12 in	0.013	0.27%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	840.95	840.83	844.14	844.14	839.75	839.63
R139	R133	0.77 ac	0.60	0.46 ac-imp	1.76 cfs	0.94 ac-imp			3.88 in/hr	20.16 min	3.63 cfs	21 ft	15 in	0.013	0.31%	0.32%	3.0 ft/s	0.12 min	3.65 cfs	840.83	840.76	844.14	845.18	839.63	839.56
																				840.76				839.56	
R129	R128	0.29 ac	0.59	0.17 ac-imp	0.66 cfs	0.17 ac-imp			3.89 in/hr	20.00 min	0.67 cfs	28 ft	12 in	0.013	0.04%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	835.47	835.35	840.38	840.38	834.67	834.55
R128	R119	0.29 ac	0.67	0.19 ac-imp	0.73 cfs	0.37 ac-imp			3.88 in/hr	20.16 min	1.42 cfs	31 ft	12 in	0.013	0.16%	0.43%	3.0 ft/s	0.17 min	2.34 cfs	835.35	835.22	840.38	841.50	834.55	834.42
													18 in							835.22				834.02	

CENTRAL

PROJECT: Fieldstone Park

JOB NUMBER:

COMMUNITY:

COUNTY:

ON-SITE STORM

Storm Event Design = 10 Year

Intensity Equation (i) = 175/(T+25)

T (Initial)= 20 MIN

Fieldstone Park

FROM STR	TO STR	INCRE-MENT DRAINAGE AREA (A)	C RUNOFF COEF.	EQUIV. AREA (CxA) ACRES IMPERVIOUS	INLET FLOW PER CB (Qi) (cfs)	SUM OF EQUIVALENT AREAS SUM CxA	Lat 1	Lat 2	I RAINFALL INTENSITY (in/hr)	TIME OF CONC. T (min)	Q=CIA C.F.S. FLOW	LENGTH OF LINE (ft)	DIA. OF PIPE (IN.)	PIPE ROUGH COEF (n)	MIN HG BASED ON "Q" (%)	DESIGN SLOPE OF PIPE (%)	VELOCITY IN PIPE FLOWING FULL (fps)	TIME OF FLOW (min)	CAPAC-ITY OF SEWER (cfs)	HYDRAULIC GRADE UP STREAM	HYDRAULIC GRADE DOWN STREAM	GROUND ELEV UPPER END	GROUND ELEV LOWER END	INVERT ELEVATION UPPER END	INVERT ELEVATION LOWER END
R259	R204	0.77 ac	0.60	0.46 ac-imp	1.75 cfs	0.46 ac-imp			3.89 in/hr	20.00 min	1.79 cfs	10 ft	12 in	0.013	0.25%	0.55%	3.4 ft/s	0.05 min	2.64 cfs	835.76	835.70	839.04	839.09	834.96	834.90
R204	R203	0.77 ac	0.53	0.41 ac-imp	1.56 cfs	0.87 ac-imp			3.88 in/hr	20.05 min	3.38 cfs	38 ft	15 in	0.013	0.27%	0.60%	4.1 ft/s	0.16 min	5.00 cfs	835.70	835.47	839.09	839.10	834.70	834.47
R203	R202	0.62 ac	0.56	0.35 ac-imp	1.32 cfs	1.66 ac-imp	R258		3.87 in/hr	20.20 min	6.45 cfs	43 ft	18 in	0.013	0.37%	0.40%	3.8 ft/s	0.19 min	6.64 cfs	835.47	835.30	839.10	840.45	834.27	834.10
R202	R200	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.66 ac-imp			3.86 in/hr	20.40 min	6.42 cfs	173 ft	18 in	0.013	0.37%	1.50%	7.3 ft/s	0.40 min	12.86 cfs	835.30	832.70	840.45	833.98	834.10	831.50
R216	R215	0.54 ac	0.55	0.30 ac-imp	1.14 cfs	0.30 ac-imp			3.89 in/hr	20.00 min	1.17 cfs	28 ft	12 in	0.013	0.11%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	838.74	838.62	841.53	841.53	837.35	837.23
R215	R214	0.50 ac	0.58	0.29 ac-imp	1.09 cfs	0.59 ac-imp			3.88 in/hr	20.16 min	2.27 cfs	135 ft	12 in	0.013	0.41%	1.75%	6.0 ft/s	0.37 min	4.71 cfs	838.62	836.26	841.53	839.00	837.23	834.87
R214	R213	0.28 ac	0.42	0.12 ac-imp	0.44 cfs	0.70 ac-imp			3.84 in/hr	20.53 min	2.71 cfs	130 ft	12 in	0.013	0.57%	0.43%	3.0 ft/s	0.73 min	**2.34 cfs**	836.26	835.51	839.00	838.25	834.87	834.31
R213	R212	0.36 ac	0.39	0.14 ac-imp	0.53 cfs	0.84 ac-imp			3.78 in/hr	21.26 min	3.19 cfs	75 ft	15 in	0.013	0.24%	0.32%	3.0 ft/s	0.42 min	3.65 cfs	835.51	835.27	838.25	839.75	834.11	833.87
R212	R211	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.91 ac-imp	R217		3.75 in/hr	21.68 min	3.40 cfs	157 ft	15 in	0.013	0.27%	0.32%	3.0 ft/s	0.88 min	3.65 cfs	835.27	834.77	839.75	839.92	833.87	833.37
R211	R210	0.64 ac	0.60	0.38 ac-imp	1.45 cfs	1.29 ac-imp			3.68 in/hr	22.56 min	4.73 cfs	28 ft	18 in	0.013	0.20%	0.26%	3.0 ft/s	0.15 min	5.36 cfs	834.77	834.70	839.92	839.92	833.17	833.10
R210	R209	0.58 ac	0.58	0.33 ac-imp	1.27 cfs	1.62 ac-imp			3.67 in/hr	22.71 min	5.94 cfs	33 ft	18 in	0.013	0.32%	0.33%	3.4 ft/s	0.16 min	6.03 cfs	834.70	834.59	839.92	840.24	833.10	832.99
R209	R208	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.62 ac-imp			3.66 in/hr	22.87 min	5.92 cfs	74 ft	18 in	0.013	0.32%	0.33%	3.4 ft/s	0.36 min	6.03 cfs	834.59	834.35	840.24	839.99	832.99	832.75
R208	R207	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	2.32 ac-imp	R222		3.63 in/hr	23.23 min	8.43 cfs	91 ft	24 in	0.013	0.14%	0.18%	3.1 ft/s	0.50 min	9.60 cfs	834.35	834.18	839.99	840.19	832.35	832.18
R207	R206	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	3.59 ac-imp	R221		3.59 in/hr	23.73 min	12.88 cfs	350 ft	30 in	0.013	0.10%	0.13%	3.0 ft/s	1.94 min	14.79 cfs	834.18	833.73	840.19	841.89	832.18	831.73
R206	R205	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	3.59 ac-imp			3.45 in/hr	25.67 min	12.39 cfs	173 ft	30 in	0.013	0.09%	0.13%	3.0 ft/s	0.96 min	14.79 cfs	833.73	833.50	841.89	834.38	831.73	831.50
R220	R219	0.62 ac	0.63	0.39 ac-imp	1.49 cfs	0.39 ac-imp			3.89 in/hr	20.00 min	1.52 cfs	28 ft	12 in	0.013	0.18%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	835.07	834.95	838.48	838.48	834.27	834.15
R219	R218	0.71 ac	0.55	0.39 ac-imp	1.48 cfs	0.78 ac-imp			3.88 in/hr	20.16 min	3.03 cfs	23 ft	15 in	0.013	0.22%	0.32%	3.0 ft/s	0.13 min	3.65 cfs	834.95	834.87	838.48	839.82	833.95	833.87
R218	R206	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.78 ac-imp			3.86 in/hr	20.29 min	3.02 cfs	264 ft	15 in	0.013	0.22%	0.32%	3.0 ft/s	1.48 min	3.65 cfs	834.87	834.03	839.82	841.89	833.87	833.03
													30 in							833.73				831.73	
R222	R221	1.15 ac	0.61	0.70 ac-imp	2.68 cfs	0.70 ac-imp			3.89 in/hr	20.00 min	2.74 cfs	28 ft	12 in	0.013	0.59%	0.60%	3.5 ft/s	0.13 min	2.76 cfs	834.51	834.34	839.04	839.04	833.71	833.54
R221	R207	0.94 ac	0.59	0.56 ac-imp	2.13 cfs	1.26 ac-imp			3.88 in/hr	20.13 min	4.90 cfs	27 ft	15 in	0.013	0.57%	0.60%	4.1 ft/s	0.11 min	5.00 cfs	834.34	834.18	839.04	840.19	833.34	833.18
													30 in							834.18				832.18	
R224	R223	1.06 ac	0.60	0.64 ac-imp	2.43 cfs	0.64 ac-imp			3.89 in/hr	20.00 min	2.48 cfs	28 ft	12 in	0.013	0.48%	0.43%	3.0 ft/s	0.16 min	**2.34 cfs**	834.80	834.67	838.64	838.64	833.45	833.33
R223	R208	1.11 ac	0.59	0.65 ac-imp	2.48 cfs	1.29 ac-imp			3.88 in/hr	20.16 min	5.00 cfs	54 ft	15 in	0.013	0.60%	0.35%	3.1 ft/s	0.29 min	**3.82 cfs**	834.67	834.35	838.64	839.99	833.13	832.95
													24 in							834.35				832.35	
R217	R212	0.15 ac	0.41	0.06 ac-imp	0.24 cfs	0.06 ac-imp			3.89 in/hr	20.00 min	0.24 cfs	75 ft	12 in	0.013	0.00%	0.43%	3.0 ft/s	0.42 min	2.34 cfs	835.59	835.27	838.50	839.75	834.39	834.07
													15 in							835.27				833.87	
R233	R232	0.36 ac	0.60	0.21 ac-imp	0.81 cfs	0.21 ac-imp			3.89 in/hr	20.00 min	0.83 cfs	28 ft	12 in	0.013	0.05%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	837.85	837.73	842.89	842.89	837.05	836.93
R232	R231	0.23 ac	0.55	0.13 ac-imp	0.48 cfs	0.34 ac-imp			3.88 in/hr	20.16 min	1.32 cfs	154 ft	12 in	0.013	0.14%	0.43%	3.0 ft/s	0.86 min	2.34 cfs	837.73	837.07	842.89	840.50	836.93	836.27
R231	R230	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.34 ac-imp			3.80 in/hr	21.02 min	1.30 cfs	63 ft	12 in	0.013	0.13%	0.43%	3.0 ft/s	0.35 min	2.34 cfs	837.07	836.80	840.50	837.25	836.27	836.00
R241	R240	1.05 ac	0.61	0.64 ac-imp	2.43 cfs	0.64 ac-imp			3.89 in/hr	20.00 min	2.49 cfs	28 ft	12 in	0.013	0.48%	2.00%	6.4 ft/s	0.07 min	5.04 cfs	842.06	841.50	845.50	845.07	841.26	840.70
R240	R239	0.84 ac	0.62	0.52 ac-imp	1.99 cfs	1.16 ac-imp			3.88 in/hr	20.07 min	4.52 cfs	53 ft	18 in	0.013	0.18%	0.26%	3.0 ft/s	0.29 min	5.36 cfs	841.50	841.36	845.07	845.68	840.30	840.16
R239	R238	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.16 ac-imp			3.86 in/hr	20.37 min	4.49 cfs	310 ft	18 in	0.013	0.18%	0.35%	3.5 ft/s	1.47 min	6.21 cfs	841.36	840.27	845.68	843.84	840.16	839.07
R238	R237	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	1.16 ac-imp			3.74 in/hr	21.84 min	4.35 cfs	28 ft	18 in	0.013	0.17%	2.60%	9.6 ft/s	0.05 min	16.94 cfs	840.27	839.53	843.84	842.68	839.07	838.33
R237	R236	0.96 ac	0.59	0.57 ac-imp	2.17 cfs	1.73 ac-imp			3.73 in/hr	21.88 min	6.47 cfs	28 ft	18 in	0.013	0.38%	0.40%	3.8 ft/s	0.12 min	6.64 cfs	839.53	839.42	842.68	842.68	838.33	838.22
R236	R235	0.31 ac	0.84	0.26 ac-imp	1.00 cfs	2.00 ac-imp			3.72 in/hr	22.01 min	7.43 cfs	72 ft	18 in	0.013	0.50%	0.50%	4.2 ft/s	0.29 min	**7.43 cfs**	839.42	839.06	842.68	842.15	838.22	837.86
R235	R234	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	2.00 ac-imp			3.70 in/hr	22.30 min	7.39 cfs	12 ft	18 in	0.013	0.49%	0.50%	4.2 ft/s	0.05 min	7.43 cfs	839.06	839.00	842.15	835.06	837.86	837.80
R251	R250	0.22 ac	0.37	0.08 ac-imp	0.31 cfs	0.08 ac-imp			3.89 in/hr	20.00 min	0.32 cfs	106 ft	12 in	0.013	0.01%	0.43%	3.0 ft/s	0.60 min	2.34 cfs	835.85	835.40	838.57	838.11	834.65	834.20
R250	R249	0.24 ac	0.44	0.11 ac-imp	0.40 cfs	0.19 ac-imp			3.84 in/hr	20.60 min	0.72 cfs	150 ft	12 in	0.013	0.04%	0.43%	3.0 ft/s	0.84 min	2.34 cfs	835.40	834.75	838.11	837.47	834.20	833.55
R249	R248	0.19 ac	0.43	0.08 ac-imp	0.31 cfs	0.27 ac-imp			3.77 in/hr	21.44 min	1.02 cfs	75 ft	12 in	0.013	0.08%	0.43%	3.0 ft/s	0.42 min	2.34 cfs	834.75	834.43	837.47	837.15	833.55	833.23
R248	R247	0.19 ac	0.43	0.08 ac-imp	0.31 cfs	0.35 ac-imp			3.73 in/hr	21.86 min	1.32 cfs	150 ft	12 in	0.013	0.14%	0.43%	3.0 ft/s	0.84 min	2.34 cfs	834.43	833.78	837.15	836.50	833.23	832.58
R247	R246	0.26 ac	0.43	0.11 ac-imp	0.42 cfs	0.46 ac-imp			3.67 in/hr	22.70 min	1.70 cfs	142 ft	12 in	0.013	0.23%	0.43%	3.0 ft/s	0.80 min	2.34 cfs	833.78	833.17	836.50	839.20	832.58	831.97
R246	R245	0.87 ac	0.58	0.51 ac-imp	1.92 cfs	0.97 ac-imp			3.61 in/hr	23.49 min	3.50 cfs	108 ft	15 in	0.013	0.29%	0.33%	3.0 ft/s	0.59 min	3.71 cfs	833.17	832.82	839.20	838.60	831.97	831.62
R245	R244	0.80 ac	0.53	0.42 ac-imp	1.61 cfs	1.39 ac-imp			3.57 in/hr	24.09 min	4.96 cfs	176 ft	18 in	0.013	0.22%	0.35%	3.5 ft/s	0.83 min	6.21 cfs	832.82	832.20	838.60	832.79	831.62	831.00
R257	R256	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.00 ac-imp			3.89 in/hr	20.00 min	0.00 cfs	175 ft	12 in	0.013	0.00%	0.50%	3.2 ft/s	0.91 min	2.52 cfs	835.50	834.62	841.21	838.15	834.70	833.82
R256	R255	0.40 ac	0.38	0.15 ac-imp	0.58 cfs	0.15 ac-imp			3.81 in/hr	20.91 min	0.58 cfs	155 ft	12 in	0.013	0.03%	0.50%	3.2 ft/s	0.80 min	2.52 cfs	834.62	833.85	838.15	837.38	833.82	833.05
R255	R254	0.37 ac	0.39	0.14 ac-imp	0.54 cfs	0.30 ac-imp			3.75 in/hr	21.71 min	1.11 cfs	176 ft	12 in	0.013	0.10%	0.43%	3.0 ft/s	0.99 min	2.34 cfs	833.85	833.09	837.38	836.49	833.05	832.29
R254	R253	0.28 ac	0.37	0.10 ac-imp	0.39 cfs	0.40 ac-imp			3.67 in/hr	22.70 min	1.46 cfs	99 ft	12 in	0.013	0.17%	0.43%	3.0 ft/s	0.55 min	2.34 cfs	833.09	832.67	836.49	836.00	832.29	831.87
R253	R252	0.20 ac	0.40	0.08 ac-imp	0.30 cfs	0.48 ac-imp			3.63 in/hr	23.25 min	1.73 cfs	116 ft	12 in	0.013	0.23%	0.75%	3.9 ft/s	0.49 min	3.09 cfs	832.67	831.80	836.00	832.25	831.87	831.00
R229	R228	0.30 ac	0.52	0.15 ac-imp	0.59 cfs	0.15 ac-imp			3.89 in/hr	20.00 min	0.60 cfs	38 ft	12 in	0.013	0.03%	0.43%	3.0 ft/s	0.21 min	2.34 cfs	834.09	833.92	837.09	837.38	833.29	833.12
R228	R227	0.67 ac	0.57	0.38 ac-imp	1.44 cfs	0.53 ac-imp			3.87 in/hr	20.21 min	2.07 cfs	28 ft	12 in	0.013	0.33%	0.43%	3.0 ft/s	0.16 min	2.34 cfs	833.92	833.80	837.38	835.88	833.12	833.00
R227	R226	0.00 ac	0.00	0.00 ac-imp	0.00 cfs	0.53 ac-imp			3.86 in/hr	20.37 min	2.06 cfs	188 ft	12 in	0.013	0.33%	0.80%	4.1 ft/s	0.77 min	3.19 cfs	833.80	832.30	835.88	832.75	833.00	831.50
R258	R203	0.75 ac	0.60	0.45 ac-imp	1.70 cfs	0.45 ac-imp			3.89 in/hr	20.00 min	1.74 cfs	10 ft	12 in	0.013	0.24%	0.55%	3.4 ft/s	0.05 min	2.64 cfs	835.53	835.47	839.04	839.10	834.73	834.67
													18 in							835.47				834.27	

SOUTH

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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K:\11000143\DWG\PLAN SETS\CONSTRUCTION\11000143CP-73-75-RTBL.DWG 6/2/2014 2:40 PM DANIEL SUTKOWSKI

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
DIVERSE REAL ESTATE LLC

FIELDSTONE PARK
FINAL SITE PLANS

STORM SEWER CALCULATIONS

DATE 05/12/14

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REVISIONS

ATWELL

SCALE 0 NA NA
1" = NA FEET

DR. JEC | CH. TP

P.M. E. LORD

BOOK 1148

CAD FILE: 11000143CP-73-75-RTBL

JOB 11000143

FILE CODE:

SHEET NO. CP-74

STRUCTURE TABLE

STRUCTURE:	DETAILS:
R1	RIM = 834.38 30" END SECTION 30" NE. INV. 831.50
R2	RIM = 837.55 6' DIA. 30" E. INV. 831.57 30" SW. INV. 831.57
R3	RIM = 842.48 6' DIA. 18" E. INV. 833.79 18" S. INV. 834.09 30" W. INV. 833.79
R4	RIM = 839.80 4' DIA. 15" E. INV. 834.02 18" W. INV. 834.02
R5	RIM = 838.60 4' DIA. 15" E. INV. 834.50 15" W. INV. 834.50
R6	RIM = 839.00 4' DIA. 12" E. INV. 834.98 15" W. INV. 834.98
R7	RIM = 839.50 4' DIA. 12" E. INV. 835.62 12" W. INV. 835.62
R8	RIM = 840.20 4' DIA. 12" E. INV. 836.27 12" W. INV. 836.27
R9	RIM = 840.80 4' DIA. 12" SE. INV. 836.92 12" W. INV. 836.92
R10	RIM = 841.10 2' DIA. 12" NW. INV. 837.15
R11	RIM = 840.22 6' DIA. 30" E. INV. 833.68 24" N. INV. 831.78 30" W. INV. 831.78
R12	RIM = 840.76 6' DIA. 18" SE. INV. 832.94 24" N. INV. 832.54 24" W. INV. 832.54
R13	RIM = 839.50 5' DIA. 24" E. INV. 832.76 12" NE. INV. 834.70 24" S. INV. 832.76
R14	RIM = 837.42 4' DIA. 12" E. INV. 833.75 12" W. INV. 833.75
R15	RIM = 837.42 2' DIA. 12" W. INV. 833.91
R16	RIM = 839.80 4' DIA. 24" E. INV. 833.06 24" W. INV. 833.06
R17	RIM = 840.05 4' DIA. 24" E. INV. 833.33 24" W. INV. 833.33
R18	RIM = 840.30 4' DIA. 15" S. INV. 834.20 12" E. INV. 833.60 24" W. INV. 833.60

STRUCTURE TABLE

STRUCTURE:	DETAILS:
R19	RIM = 841.20 4' DIA. 12" E. INV. 834.88 12" W. INV. 834.88
R20	RIM = 844.19 2' DIA. 12" W. INV. 837.88
R21	RIM = 846.06 4' DIA. 12" W. INV. 841.74 12" S. INV. 841.79 18" N. INV. 841.34
R22	RIM = 846.06 2' DIA. 12" E. INV. 841.86
R23	RIM = 845.52 4' DIA. 15" E. INV. 838.29 12" S. INV. 837.29 15" N. INV. 837.09
R24	RIM = 846.84 4' DIA. 15" SE. INV. 839.19 15" W. INV. 839.19
R25	RIM = 845.97 4' DIA. 12" S. INV. 839.51 15" NW. INV. 839.31
R26	RIM = 845.97 2' DIA. 12" N. INV. 839.63
R27	RIM = 844.50 4' DIA. 12" S. INV. 837.39 12" N. INV. 837.39
R28	RIM = 844.50 2' DIA. 12" N. INV. 837.51
R29	RIM = 837.09 12" END SECTION 12" E. INV. 834.48
R30	RIM = 840.85 4' DIA. 12" S. INV. 834.67 12" NW. INV. 835.77 15" SE. INV. 834.67 18" N. INV. 834.67
R31	RIM = 840.60 4' DIA. 12" W. INV. 835.90 12" SE. INV. 835.90
R32	RIM = 840.60 2' DIA. 12" E. INV. 836.07
R33	RIM = 841.14 4' DIA. 12" SW. INV. 835.24 12" N. INV. 835.24
R34	RIM = 839.81 4' DIA. 12" W. INV. 835.38 12" NE. INV. 835.38
R35	RIM = 839.81 2' DIA. 12" E. INV. 835.54
R36	RIM = 839.44 4' DIA. 12" S. INV. 834.99 15" NW. INV. 834.79

STRUCTURE TABLE

STRUCTURE:	DETAILS:
R37	RIM = 839.44 2' DIA. 12" N. INV. 835.12
R38	RIM = 834.06 12" END SECTION 12" NE. INV. 837.40
R39	RIM = 842.00 4' DIA. 12" N. INV. 837.62 12" SW. INV. 837.62
R40	RIM = 842.39 4' DIA. 12" N. INV. 838.29 12" S. INV. 838.29
R41	RIM = 842.39 2' DIA. 12" S. INV. 838.41
R42	RIM = 836.52 15" END SECTION 15" N. INV. 835.00
R43	RIM = 843.62 4' DIA. 12" N. INV. 839.31 15" S. INV. 836.66
R44	RIM = 843.62 2' DIA. 12" S. INV. 839.43
R45	RIM = 841.33 15" END SECTION 24" N. INV. 839.00
R46	RIM = 844.30 5' DIA. 24" N. INV. 839.22 24" S. INV. 839.22
R47	RIM = 844.30 5' DIA. 24" N. INV. 839.70 24" S. INV. 839.70
R48	RIM = 847.28 4' DIA. 24" N. INV. 840.04 24" S. INV. 840.04
R49	RIM = 845.00 5' DIA. 15" N. INV. 840.91 18" W. INV. 840.71 24" S. INV. 840.31
R50	RIM = 846.00 4' DIA. 12" NW. INV. 841.67 15" S. INV. 841.47
R51	RIM = 846.50 4' DIA. 12" NW. INV. 842.50 12" SE. INV. 842.50
R52	RIM = 847.33 2' DIA. 12" SE. INV. 843.33
R53	RIM = 847.48 4' DIA. 12" NW. INV. 842.14 18" S. INV. 841.14 18" E. INV. 841.14
R55	RIM = 840.28 4' DIA. 12" S. INV. 833.47 18" NW. INV. 833.07

STRUCTURE TABLE

STRUCTURE:	DETAILS:
R56	RIM = 840.19 2' DIA. 12" N. INV. 833.59
R58	RIM = 837.03 12" END SECTION 12" SW. INV. 835.78
R59	RIM = 846.63 2' DIA. 12" SE. INV. 842.40
R60	RIM = 846.12 2' DIA. 12" N. INV. 841.89
R61	RIM = 838.00 5' DIA. 12" W. INV. 834.00 24" E. INV. 832.40 12" N. INV. 833.20 24" S. INV. 832.40
R62	RIM = 837.25 4' DIA. 12" E. INV. 833.70 12" S. INV. 833.70
R100	RIM = 833.29 18" END SECTION 18" S. INV. 831.50
R101	RIM = 837.19 4' DIA. 18" SE. INV. 832.46 15" SW. INV. 832.06 18" N. INV. 832.06
R102	RIM = 840.59 4' DIA. 18" NE. INV. 833.11 18" NW. INV. 833.11
R103	RIM = 839.19 4' DIA. 15" NW. INV. 832.52 15" NE. INV. 832.52
R104	RIM = 838.67 4' DIA. 15" W. INV. 832.71 15" SE. INV. 832.71
R105	RIM = 837.19 4' DIA. 12" S. INV. 832.84 15" E. INV. 832.84
R106	RIM = 837.19 2' DIA. 12" N. INV. 832.96
R107	RIM = 839.90 4' DIA. 18" SE. INV. 833.67 18" SW. INV. 833.67
R108	RIM = 838.62 4' DIA. 18" S. INV. 833.81 12" E. INV. 834.21 18" NW. INV. 833.81
R109	RIM = 838.62 4' DIA. 12" E. INV. 834.31 18" N. INV. 833.91
R110	RIM = 831.25 12" END SECTION 12" S. INV. 830.00
R111	RIM = 839.81 4' DIA. 12" S. INV. 830.02 12" N. INV. 830.02

STRUCTURE TABLE

STRUCTURE:	DETAILS:
R112	RIM = 839.70 4' DIA. 12" S. INV. 830.03 12" N. INV. 830.03
R113	RIM = 831.29 12" END SECTION 12" N. INV. 830.05
R114	RIM = 832.89 18" END SECTION 18" E. INV. 831.10
R115	RIM = 836.07 4' DIA. 18" W. INV. 831.53
R116	RIM = 833.83 24" END SECTION 24" NE. INV. 831.50
R117	RIM = 838.54 5' DIA. 24" NE. INV. 831.93 24" SW. INV. 831.93
R118	RIM = 841.28 5' DIA. 12" NW. INV. 833.10 18" SE. INV. 833.25 24" SW. INV. 832.30
R119	RIM = 841.50 4' DIA. 12" S. INV. 834.42 18" SE. INV. 835.27 18" NW. INV. 834.02
R120	RIM = 841.71 4' DIA. 15" E. INV. 836.23 12" NE. INV. 835.88 18" NW. INV. 835.48
R121	RIM = 842.94 4' DIA. 15" SE. INV. 836.83 15" W. INV. 836.83
R122	RIM = 843.77 4' DIA. 15" NE. INV. 837.34 15" NW. INV. 837.34
R123	RIM = 842.71 4' DIA. 12" NE. INV. 837.62 15" SW. INV. 837.42
R124	RIM = 842.73 2' DIA. 12" SW. INV. 837.74
R125	RIM = 840.90 4' DIA. 12" NE. INV. 834.50 12" SE. INV. 834.50
R126	RIM = 839.56 4' DIA. 12" NE. INV. 834.72 12" SW. INV. 834.72
R127	RIM = 839.56 2' DIA. 12" SW. INV. 834.84
R128	RIM = 840.38 4' DIA. 12" SE. INV. 834.55 12" N. INV. 834.55
R129	RIM = 840.38 2' DIA. 12" NW. INV. 834.67

STRUCTURE TABLE

STRUCTURE:	DETAILS:
R130	RIM = 841.28 4' DIA. 12" NE. INV. 835.98 12" SW. INV. 835.98
R131	RIM = 841.28 2' DIA. 12" SW. INV. 836.10
R132	RIM = 840.79 18" END SECTION 18" N. INV. 839.00
R133	RIM = 845.18 4' DIA. 15" E. INV. 840.16 15" N. INV. 839.56 18" W. INV. 839.56
R134	RIM = 845.52 4' DIA. 15" SE. INV. 840.40 15" W. INV. 840.40
R135	RIM = 846.25 4' DIA. 15" SE. INV. 840.84 15" NW. INV. 840.84
R136	RIM = 847.12 4' DIA. 15" NE. INV. 841.33 15" NW. INV. 841.33
R137	RIM = 846.14 4' DIA. 12" NE. INV. 841.60 15" SW. INV. 841.40
R138	RIM = 846.09 2' DIA. 12" SW. INV. 841.72
R139	RIM = 844.14 4' DIA. 12" N. INV. 839.63 15" S. INV. 839.63
R140	RIM = 844.14 2' DIA. 12" S. INV. 839.75
R141	RIM = 838.57 2' DIA. 12" W. INV. 834.25
R142	RIM = 838.57 2' DIA. 12" W. INV. 834.35
R143	RIM = 845.08 4' DIA. 18" E. INV. 839.51 18" S. INV. 839.51
R200	RIM = 833.98 18" END SECTION 18" W. INV. 831.50
R202	RIM = 840.45 4' DIA. 18" SW. INV. 834.10 18" E. INV. 834.10
R203	RIM = 839.10 4' DIA. 15" W. INV. 834.47 12" S. INV. 834.67 18" NE. INV. 834.27
R204	RIM = 839.09 4' DIA. 12" S. INV. 834.90 15" E. INV. 834.70

STRUCTURE TABLE

STRUCTURE:	DETAILS:
R205	RIM = 834.38 30" END SECTION 30" S. INV. 831.50
R206	RIM = 841.89 6' DIA. 15" W. INV. 833.03 30" E. INV. 831.73 30" N. INV. 831.73
R207	RIM = 840.19 6' DIA. 24" E. INV. 832.18 15" SE. INV. 833.18 30" W. INV. 832.18
R208	RIM = 839.99 5' DIA. 18" E. INV. 832.75 15" NE. INV. 832.95 24" W. INV. 832.35
R209	RIM = 840.24 4' DIA. 18" SE. INV. 832.99 18" W. INV. 832.99
R210	RIM = 839.92 4' DIA. 18" S. INV. 833.10 18" NW. INV. 833.10
R211	RIM = 839.92 4' DIA. 15" S. INV. 833.37 18" N. INV. 833.17
R212	RIM = 839.75 4' DIA. 15" E. INV. 833.87 12" W. INV. 834.07 15" N. INV. 833.87
R213	RIM = 838.25 4' DIA. 12" E. INV. 834.31 15" W. INV. 834.11
R214	RIM = 839.00 4' DIA. 12" NE. INV. 834.87 12" W. INV. 834.87
R215	RIM = 841.53 4' DIA. 12" NE. INV. 837.23 12" SW. INV. 837.23
R216	RIM = 841.53 2' DIA. 12" SW. INV. 837.35
R217	RIM = 838.50 2' DIA. 12" E. INV. 834.39
R218	RIM = 839.82 4' DIA. 15" S. INV. 833.87 15" E. INV. 833.87
R219	RIM = 838.48 4' DIA. 12" S. INV. 834.15 15" N. INV. 833.95
R220	RIM = 838.48 2' DIA. 12" N. INV. 834.27
R221	RIM = 839.04 4' DIA. 12" S. INV. 833.54 15" NW. INV. 833.34
R222	RIM = 839.04 2' DIA. 12" N. INV. 833.71

STRUCTURE TABLE

STRUCTURE:	DETAILS:
R223	RIM = 838.64 4' DIA. 12" E. INV. 833.33 15" SW. INV. 833.13
R224	RIM = 838.64 2' DIA. 12" W. INV. 833.45
R226	RIM = 832.75 12" END SECTION 12" E. INV. 831.50
R227	RIM = 835.88 4' DIA. 12" E. INV. 833.00 12" W. INV. 833.00
R228	RIM = 837.38 4' DIA. 12" E. INV. 833.12 12" W. INV. 833.12
R229	RIM = 837.09 2' DIA. 12" W. INV. 833.29
R230	RIM = 837.25 12" END SECTION 12" SW. INV. 836.00
R231	RIM = 840.50 4' DIA. 12" W. INV. 836.27 12" NE. INV. 836.27
R232	RIM = 842.89 4' DIA. 12" W. INV. 836.93 12" E. INV. 836.93
R233	RIM = 842.89 2' DIA. 12" E. INV. 837.05
R234	RIM = 835.06 18" END SECTION 18" W. INV. 837.80
R235	RIM = 842.15 4' DIA. 18" NW. INV. 837.86 18" E. INV. 837.86
R236	RIM = 842.68 4' DIA. 18" N. INV. 838.22 18" SE. INV. 838.22
R237	RIM = 842.68 4' DIA. 18" NE. INV. 838.33 18" S. INV. 838.33
R238	RIM = 843.84 4' DIA. 18" E. INV. 839.07 18" SW. INV. 839.07
R239	RIM = 845.68 4' DIA. 18" E. INV. 840.16 18" W. INV. 840.16
R240	RIM = 845.03 4' DIA. 12" SE. INV. 840.70 18" W. INV. 840.30
R241	RIM = 845.03 2' DIA. 12" NW. INV. 841.26

STRUCTURE TABLE

STRUCTURE:	DETAILS:
R244	RIM = 832.79 18" END SECTION 18" SW. INV. 831.00
R245	RIM = 838.60 4' DIA. 15" W. INV. 831.62 18" NE. INV. 831.62
R246	RIM = 839.20 4' DIA. 12" W. INV. 831.97 15" E. INV. 831.97
R247	RIM = 836.50 4' DIA. 12" N. INV. 832.58 12" E. INV. 832.58
R248	RIM = 837.15 4' DIA. 12" N. INV. 833.23 12" S. INV. 833.23
R249	RIM = 837.47 4' DIA. 12" N. INV. 833.55 12" S. INV. 833.55
R250	RIM = 838.11 4' DIA. 12" N. INV. 834.20 12" S. INV. 834.20
R251	RIM = 838.57 2' DIA. 12" S. INV. 834.65
R252	RIM = 832.25 12" END SECTION 12" N. INV. 831.00
R253	RIM = 836.00 4' DIA. 12" NE. INV. 831.87 12" S. INV. 831.87
R254	RIM = 836.49 4' DIA. 12" N. INV. 832.29 12" SW. INV. 832.29
R255	RIM = 837.38 4' DIA. 12" N. INV. 833.05 12" S. INV. 833.05
R256	RIM = 838.15 4' DIA. 12" N. INV. 833.82 12" S. INV. 833.82
R257	RIM = 841.21 4' DIA. 12" S. INV. 834.70
R258	RIM = 839.04 2' DIA. 12" N. INV. 834.73
R259	RIM = 839.04 2' DIA. 12" N. INV. 834.96

CROSSING	CROSSING PIPE 1				CROSSING PIPE 2				Clearance	NOTES
2	12 "	ST	B/P=	836.21	16 "	EX-W	T/P=	832.10	4.11	CONTRACTOR TO VERIFY
3	24 "	ST	B/P=	832.27	12 "	WM	T/P=	830.77	1.50	DIP WATER MAIN
4	18 "	ST	B/P=	832.91	8 "	WM	T/P=	831.41	1.50	DIP WATER MAIN
5	8 "	SAN	B/P=	833.11	12 "	WM	T/P=	831.61	1.50	DIP WATER MAIN
6	12 "	ST	B/P=	837.19	8 "	WM	T/P=	835.69	1.50	DIP WATER MAIN
7	15 "	ST	B/P=	839.08	8 "	WM	T/P=	837.58	1.50	DIP WATER MAIN
8	12 "	ST	B/P=	842.05	8 "	WM	T/P=	840.55	1.50	DIP WATER MAIN
9	8 "	SAN	T/P=	837.12	8 "	WM	B/P=	839.64	2.52	
10	18 "	ST	B/P=	841.06	8 "	WM	T/P=	839.56	1.50	DIP WATER MAIN
11	8 "	SAN	T/P=	835.49	15 "	ST	B/P=	836.38	0.88	
12	8 "	SAN	T/P=	834.40	12 "	ST	B/P=	838.09	3.68	
13	15 "	ST	B/P=	834.56	8 "	WM	T/P=	833.06	1.50	DIP WATER MAIN
14	12 "	ST	B/P=	834.57	8 "	WM	T/P=	833.07	1.50	DIP WATER MAIN
15	12 "	ST	B/P=	835.70	12 "	WM	T/P=	834.20	1.50	DIP WATER MAIN
17	12 "	ST	B/P=	834.77	8 "	SAN	T/P=	832.53	2.24	
18	8 "	SAN	B/P=	831.67	12 "	WM	T/P=	830.17	1.50	DIP WATER MAIN
19	30 "	ST	B/P=	833.40	8 "	SAN	T/P=	833.04	0.36	
20	30 "	ST	B/P=	833.68	12 "	WM	T/P=	832.18	1.50	DIP WATER MAIN
21	12 "	ST	B/P=	835.17	12 "	WM	T/P=	833.67	1.50	DIP WATER MAIN
22	8 "	SAN	T/P=	831.28	12 "	WM	B/P=	833.34	2.06	
23	12 "	ST	B/P=	834.48	8 "	WM	T/P=	832.98	1.50	DIP WATER MAIN
24	12 "	ST	B/P=	835.78	8 "	WM	T/P=	834.28	1.50	DIP WATER MAIN
25	15 "	ST	B/P=	837.20	8 "	WM	T/P=	835.70	1.50	DIP WATER MAIN
26	15 "	ST	B/P=	839.44	8 "	WM	T/P=	837.94	1.50	DIP WATER MAIN
27	15 "	ST	B/P=	841.19	8 "	WM	T/P=	839.69	1.50	DIP WATER MAIN
28	18 "	ST	B/P=	840.04	8 "	WM	T/P=	838.54	1.50	DIP WATER MAIN
29	18 "	ST	B/P=	838.39	8 "	WM	T/P=	836.89	1.50	DIP WATER MAIN
30	18 "	ST	B/P=	837.93	8 "	SAN	T/P=	831.28	6.64	
31	8 "	SAN	T/P=	830.64	8 "	WM	B/P=	837.14	6.50	
32	15 "	ST	B/P=	831.67	8 "	WM	T/P=	830.17	1.50	DIP WATER MAIN
33	12 "	ST	B/P=	831.85	8 "	SAN	T/P=	830.65	1.20	
34	12 "	ST	B/P=	836.73	8 "	WM	T/P=	835.23	1.50	DIP WATER MAIN
35	8 "	SAN	T/P=	829.02	8 "	WM	B/P=	836.89	7.87	
36	12 "	ST	B/P=	836.86	8 "	SAN	T/P=	829.82	7.04	
37	18 "	ST	B/P=	832.85	8 "	WM	T/P=	831.35	1.50	DIP WATER MAIN
38	18 "	ST	B/P=	832.73	8 "	WM	T/P=	831.23	1.50	DIP WATER MAIN
39	18 "	ST	B/P=	832.58	8 "	SAN	T/P=	830.22	2.36	
40	8 "	SAN	T/P=	830.16	8 "	WM	B/P=	833.14	2.98	
41	15 "	ST	B/P=	832.86	8 "	SAN	T/P=	830.33	2.53	
42	18 "	ST	B/P=	835.23	8 "	WM	T/P=	833.73	1.50	DIP WATER MAIN
43	12 "	ST	T/P=	831.19	12 "	WM	B/P=	832.88	1.68	
44	12 "	ST	B/P=	829.85	8 "	SAN	T/P=	829.64	0.21	
45	18 "	ST	B/P=	833.54	8 "	SAN	T/P=	829.38	4.16	
46	8 "	SAN	T/P=	828.01	12 "	WM	B/P=	833.57	5.56	
47	15 "	ST	B/P=	832.61	12 "	WM	T/P=	831.11	1.50	DIP WATER MAIN
48	18 "	ST	B/P=	834.02	12 "	WM	T/P=	832.52	1.50	DIP WATER MAIN
49	12 "	ST	B/P=	832.92	12 "	WM	T/P=	831.42	1.50	DIP WATER MAIN
50	8 "	SAN	T/P=	826.55	12 "	WM	B/P=	832.57	6.01	
51	15 "	ST	B/P=	833.73	8 "	WM	T/P=	832.23	1.50	DIP WATER MAIN
52	15 "	ST	B/P=	833.10	8 "	WM	T/P=	831.60	1.50	DIP WATER MAIN
53	12 "	ST	B/P=	834.43	8 "	SAN	T/P=	827.95	6.48	
54	42 "	ST	B/P=	829.79	12 "	WM	T/P=	828.29	1.50	DIP WATER MAIN
55	12 "	ST	B/P=	831.63	18 "	SAN	T/P=	824.94	6.69	

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
DIVERSE REAL ESTATE LLC

FIELDSTONE PARK
FINAL SITE PLANS

STORM SEWER STRUCTURE AND CROSSING TABLE

DATE 05/12/14
--

REVISIONS

ATWELL

SCALE 0 NA NA
1" = NA FEET

DR. JEC CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-73-75-RTBL
JOB 11000143
FILE CODE:
SHEET NO. CP-75

Storm Water Detention & Retention Calculations

Fieldstone Park - Combined Detention Basin 1 and 2

(Equalization pipe enables ponds to function as 1 basin)

Design Basis: Use the Washtenaw County Drain Commission standards, including "first flush", bankfull & 100 year storm event design measures.

I. Total Volume of Detention Area: 100 Year storm

1) Developed Area contributing runoff (a) = 54.49 acres

Surface	Area	C Factor	Weighted C
Pond (High Water)	364,035	1.00	0.15
Buildings,Drives, Pavement & Sidewalks	785,224	0.95	0.30
Pervious Surface	1,303,496	0.30	0.16
	2,452,755		0.61

Developed Runoff Coefficient (c) = **0.61**

2) Maximum Allowable Outflow, Qa. =
Q_a = a x 0.15 cfs/acre = 8.17 cfs

3) Calculate Q_o = Q_a / (a x c) = 0.25 cfs/acre imperv.
(max. outflow per acre impervious)

4) Max. Storage Time, T = -25+sqrt(10312.5/Q_o) = 180.12 minutes

5) Max. Storage Required, V_s = ((16,500 x T) / (T+25)) - 40Q_oT = 12,723 cf / acre imperv.

6) Total Storage Required, V_t = V_s x a x c = 424,276 cf

7) Total Storage Required *(Zero Outlet)*, V_t = 16,500 x a x c = **550,226 cf**

II. Storage Volume to Detain "First Flush" Runoff
Volume of 0.5 inches of runoff over entire watershed.
Volume = 1,815 x acreage x relative imperv. factor = **60,525 cf**

III. Storage Volume to Control "Bankfull" Flood (1.5 year storm/24 hr. event)
Volume = 8,170 x acreage x relative imperv. factor (c) = **272,445 cf**

V. Storage Volume Provided

Total Basin Volume Provided (Basin 1 and 2 Combined)

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
831.5	241,947	0.0	0	0
832.0	251,328	0.5	125,664	125,664
833.0	270,432	1.0	270,432	396,096
834.0	290,003	1.0	290,003	**686,099**

Total Volume 686,099 cf

Storage Elevations X_O = 831.5 X_{TF} = 831.7
X_{bf} = 832.5 X_{100} = 833.5

Fieldstone Park - Detention Basin 1 Volumes

Required Forebay Volume
North Forebay Tributary: 14.87 AC @ c = 0.60
Store 5% of the 100-year storm = 16,500 x c x A x 5% = 7,361 cf
South Forebay Tributary: 3.19 AC @ c = 0.60
Store 5% of the 100-year storm = 16,500 x c x A x 5% = 1,579 cf

Storage Volume Provided

North Forebay

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
831.5	3,366	N/A	N/A	0
832.0	3,945	0.5	1,828	1,828
833.0	5,231	1.0	4,588	6,415
834.0	6,686	1.0	5,958	**12,374**

South Forebay

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
831.5	1,053	N/A	N/A	0
832.0	1,390	0.5	611	611
833.0	2,194	1.0	1,792	2,403
834.0	3,169	1.0	2,682	**5,084**

Total Basin Volume Provided

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
831.5	92,957	N/A	N/A	0
832.0	98,109	0.5	47,766	47,766
833.0	108,575	1.0	103,342	151,108
834.0	119,265	1.0	113,920	**265,028**

Fieldstone Park - Detention Basin 2 Volumes

Required Forebay Volume
North Forebay Tributary: 6.94 AC @ c = 0.60
Store 5% of the 100-year storm = 16,500 x c x A x 5% = 3,435 cf
West Forebay Tributary: 3.2 AC @ c = 0.60
Store 5% of the 100-year storm = 16,500 x c x A x 5% = 1,584 cf
South Forebay Tributary: 8.35 AC @ c = 0.60
Store 5% of the 100-year storm = 16,500 x c x A x 5% = 4,133 cf

Storage Volume Provided

North Forebay

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
831.5	2,038	N/A	N/A	0
832.0	2,516	0.5	1,139	1,139
833.0	3,602	1.0	3,059	4,197
834.0	4,854	1.0	4,228	**8,425**

West Forebay

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
831.5	646	N/A	N/A	0
832.0	961	0.5	402	402
833.0	1,736	1.0	1,349	1,751
834.0	2,693	1.0	2,214	**3,965**

South Forebay

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
831.5	1,599	N/A	N/A	0
832.0	2,072	0.5	918	918
833.0	3,160	1.0	2,616	3,533
834.0	4,431	1.0	3,795	**7,329**

Total Basin Volume Provided

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
831.5	148,990	N/A	N/A	0
832.0	153,220	0.5	75,552	75,552
833.0	161,857	1.0	157,538	233,091
834.0	170,738	1.0	166,297	**399,388**

VI. Outlet Control Structure
1. Outlet pipe sizing: (10 year un-restricted)
Use 12-inch pipe at min. slope

2. Standpipe outlet holes sizing - "first flush" runoff
Q_{ff} = V_{ff} / 24 hrs / 3600 sec — Q_{ff} = 0.701 cfs
h_{ave} = $^2/_3$ x (X_{ff} - X_O) — h_{ave} = 0.133 ft
A = Q_{ff} / .62 x sqrt(2 x 32.2 x h_{ave}) — A = 0.386 sf
The Area of an orifice with diameter(in) = 2 — 0.0218 sf
Number of orifice holes = 17 holes at elev 831.50
Q_{ff} design = 0.674 cfs
Time to Discharge = 24.95 hours

3. Standpipe outlet holes sizing - "Bankfull flood" discharge
Bankfull should discharge within 36 to 48 hours
h_{ave} = $^2/_3$ x (X_{bf} - X_O) — h_{ave} = 0.667 ft
Release from first flush holes only
Q=a x .62 x sqrt(2 x 32.2 x $^2/_3$ h_{ave}) = — Q = 1.507 cfs
T_{bf} with first flush holes only = 50 hrs
Add holes to decrease storage time
The first flush volume will discharge in 25.0 hrs
The volume between the Bankfull elevation and the First Flush Elevation
V_{rem} = V_{bf} - V_{ff} = 211,920 cf
T_{rem} = 42 hr - T_{ff} 17.0 hrs
h^{ff}_{ave} = $^2/_3$ x (X_{bf} - X_O) + (X_{ff} - X_O) 0.73 ft
Q_1 =a x .62 x sqrt(2 x 32.2 x $^2/_3$ h^{ff}_{ave}) = — Q_1 = 1.580 cfs
V_1 = T_{rem} x Q_1 = — V_1 = 96,992 cf
V_2 = V_{rem} - V_1 = — V_2 = 114,928 cf
Q_2 =V_2 / T_{rem} — Q_2 = 1.87 cfs
h^{bf}_{ave} = $^2/_3$ x (X_{bf} - X_{ff}) — h^{bf}_{ave} = 0.53 ft
A_O = Q_2 / .62 x sqrt(2 x 32.2 x h^{bf}_{ave}) — A_O = 0.515 sf
The Area of an orifice with diameter(in) = 2 — 0.0218 sf
Number of orifice holes = 25 holes at elev 831.70
Bankfull storage time check = 41 hrs

4. Standpipe outlet holes sizing - "100-yr flood" discharge
Peak Flow, Q_a = — Q_a = 8.17 cfs
Release from above holes
h_{bf} = (X_{100} - X_O) — h_{bf} = 2.00 ft
h^{bf}_{tot} = (X_{100} - X_{ff}) — h^{bf}_{tot} = 1.80 ft
Release from above holes
Q_{ff} + Q_{bf} =a x.62 x sqrt(2 x 32.2 x h_{bf})+a x .62 x sqrt(2 x 32.2 x h^{bf}_{tot})= — Q_{ff} + Q_{bf} = 6.250 cfs
Q_{100}=Q_a-(Q_{ff}-Q_{bf}) = — Q_{100} = 1.923 cfs
A_{100} = Q_{100} /(.62 x sqrt(2 x 32.2 x h_{100})) — A_{100} = 0.386 sf
The Area of an orifice with diameter(in) = 2 — 0.0218 sf
Number of orifice holes = 13 holes at elev 832.50
Q_{100} = A_{100} x (.62 x sqrt(2 x 32.2 x h_{100})) = 1.41 cfs

Fieldstone Park - Retention Basin 3

Design Basis: Use the Washtenaw County Drain Commission standards, including "first flush", bankfull & 100 year storm event design measures.

I. Total Volume of Detention Area: 100 Year storm

1) Developed Area contributing runoff (a) = 25.26 acres

Surface	Area	C Factor	Weighted C
Pond (High Water)	113,794	1.00	0.10
Buildings,Drives, Pavement & Sidewalks	164,795	0.95	0.14
Pervious Surface	855,487	0.30	0.23
	1,134,076		0.46

Developed Runoff Coefficient (c) = **0.46**

2) Volume of two consecutive 100-yr. storms
Volume = 33,000 x acreage x relative imperv. factor = **387,357 cf**

II. Storage Volume to Control "Bankfull" Flood (1.5 year storm/24 hr. event)
Volume = 8,170 x acreage x relative imperv. factor (c) = **95,900 cf**

III. Required Forebay Volume
North Forebay Tributary: 2.76 AC @ c = 0.60
Store 5% of the 100-year storm = 16,500 x c x A x 5% = 1,366 cf

IV. Storage Volume Provided

Forebay

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
832.0	314	N/A	N/A	0
833.0	881	1.0	597	597
834.0	1,638	1.0	1,259	1,856
835.0	2,603	1.0	2,120	**3,977**

Total Basin Volume Provided

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
821.0	487	N/A	N/A	0
822.0	1,451	1.0	969	969
823.0	2,893	1.0	2,172	3,141
824.0	4,331	1.0	3,612	6,753
825.0	7,195	1.0	5,763	12,516
826.0	10,202	1.0	8,698	21,214
827.0	14,725	1.0	12,463	33,678
828.0	21,637	1.0	18,181	51,859
829.0	29,187	1.0	25,412	77,271
830.0	37,202	1.0	33,194	110,465
831.0	46,497	1.0	41,850	152,315
832.0	56,633	1.0	51,565	203,880
833.0	66,527	1.0	61,580	265,460
834.0	76,533	1.0	71,530	336,990
835.0	86,804	1.0	81,668	**418,658**

Total Volume 418,658

Storage Elevations X_O = 821.0
X_{bf} = 829.6 $X_{2\times100}$ = 834.6

Fieldstone Park - Retention Basin 4

Design Basis: Use the Washtenaw County Drain Commission standards, including "first flush", bankfull & 100 year storm event design measures.

I. Total Volume of Detention Area: 100 Year storm

1) Developed Area contributing runoff (a) = 15.81 acres

Surface	Area	C Factor	Weighted C
Pond (High Water)	82,409	1.00	0.11
Buildings,Drives, Pavement & Sidewalks	142,376	0.95	0.19
Pervious Surface	496,014	0.30	0.21
	720,799		0.51

Developed Runoff Coefficient (c) = **0.51**

2) Volume of two consecutive 100-yr. storms
Volume = 33,000 x acreage x relative imperv. factor = **265,259 cf**

II. Storage Volume to Control "Bankfull" Flood (1.5 year storm/24 hr. event)
Volume = 8,170 x acreage x relative imperv. factor (c) = **65,672 cf**

III. Required Forebay Volume
North Forebay Tributary: 1.49 AC @ c = 0.60
Store 5% of the 100-year storm = 16,500 x c x A x 5% = 738 cf

IV. Storage Volume Provided

Forebay

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
830.0	569	N/A	N/A	0
831.0	1,159	1.0	864	864
832.0	1,930	1.0	1,544	2,408
833.0	2,876	1.0	2,403	**4,811**

Total Basin Volume Provided

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
819.0	690	N/A	N/A	0
820.0	1,493	1.0	1,092	1,092
821.0	2,632	1.0	2,063	3,154
822.0	4,054	1.0	3,343	6,497
823.0	5,708	1.0	4,881	11,378
824.0	7,603	1.0	6,655	18,034
825.0	9,756	1.0	8,679	26,713
826.0	12,189	1.0	10,973	37,686
827.0	14,926	1.0	13,557	51,243
828.0	18,007	1.0	16,466	67,709
829.0	21,525	1.0	19,766	87,475
830.0	25,495	1.0	23,510	110,985
831.0	29,835	1.0	27,665	138,650
832.0	34,543	1.0	32,189	170,839
833.0	39,902	1.0	37,222	208,061
834.0	45,583	1.0	42,742	250,803
835.0	51,524	1.0	48,553	299,356
836.0	57,682	1.0	54,603	**353,960**

Total Volume 353,960 cf

Storage Elevations X_O = 819.0
X_{bf} = 827.9 $X_{2\times100}$ = 834.3

Fieldstone Park - Retention Basin 5

Design Basis: Use the Washtenaw County Drain Commission standards, including "first flush", bankfull & 100 year storm event design measures.

I. Total Volume of Detention Area: 100 Year storm

1) Developed Area contributing runoff (a) = 11.20 acres

Surface	Area	C Factor	Weighted C
Pond (High Water)	466	1.00	0.00
Buildings,Drives, Pavement & Sidewalks	146,113	0.95	0.30
Pervious Surface	317,794	0.30	0.21
	464,373		0.51

Developed Runoff Coefficient (c) = **0.51**

2) Volume of two consecutive 100-yr. storms
Volume = 33,000 x acreage x relative imperv. factor = **186,730 cf**

II. Storage Volume to Control "Bankfull" Flood (1.5 year storm/24 hr. event)
Volume = 8,170 x acreage x relative imperv. factor (c) = **46,230 cf**

III. Required Forebay Volume
East Forebay Tributary: 1.53 AC @ c = 0.60
Store 5% of the 100-year storm = 16,500 x c x A x 5% = 757 cf
West Forebay Tributary: 3.43 AC @ c = 0.60
Store 5% of the 100-year storm = 16,500 x c x A x 5% = 1,698 cf

IV. Storage Volume Provided

East Forebay

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
830.0	3,502	N/A	N/A	0
831.0	4,800	1.0	4,151	4,151
832.0	6,261	1.0	5,531	9,682
833.0	7,886	1.0	7,073	**16,755**

West Forebay

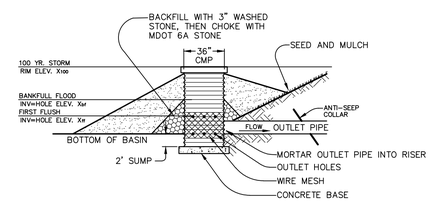
Elev.	Area	Depth	Incremental Volume	Cumulative Volume
830.0	812	1.0	457	457
831.0	2,192	1.0	1,502	1,959
832.0	3,895	1.0	3,043	5,002
833.0	5,755	1.0	4,825	**9,827**

Total Basin Volume Provided

Elev.	Area	Depth	Incremental Volume	Cumulative Volume
817.0	466	N/A	N/A	0
818.0	1,314	1.0	890	890
819.0	2,390	1.0	1,852	2,742
820.0	3,687	1.0	3,039	5,781
821.0	5,210	1.0	4,448	10,229
822.0	6,966	1.0	6,088	16,317
823.0	8,963	1.0	7,964	24,281
824.0	11,216	1.0	10,090	34,371
825.0	13,742	1.0	12,479	46,850
826.0	16,570	1.0	15,156	62,007
827.0	19,749	1.0	18,160	80,166
828.0	23,285	1.0	21,517	101,683
829.0	27,038	1.0	25,161	126,844
830.0	31,002	1.0	29,020	155,864
831.0	35,186	1.0	33,094	188,958
832.0	39,604	1.0	37,395	226,353
833.0	44,217	1.0	41,911	**268,264**

Total Volume 268,264 cf

Storage Elevations X_O = 817.0
X_{bf} = 825.0 $X_{2\times100}$ = 830.9



DETENTION BASIN RISER DETAIL
NO SCALE

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TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

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FIELDSTONE PARK
FINAL SITE PLANS
DETENTION & RETENTION CALCULATIONS

DATE 05/12/14

REVISIONS

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SCALE 0 NA NA
NO SCALE
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P.M. E. LORD
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CAD FILE: 11000143CP-76-RCALCS
JOB 11000143
FILE CODE:
SHEET NO. CP-76

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FIELDSTONE PARK
FINAL SITE PLANS
EXISTING DRAINAGE PLAN

DATE 05/12/14

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SCALE 0 75 150
1" = 150 FEET

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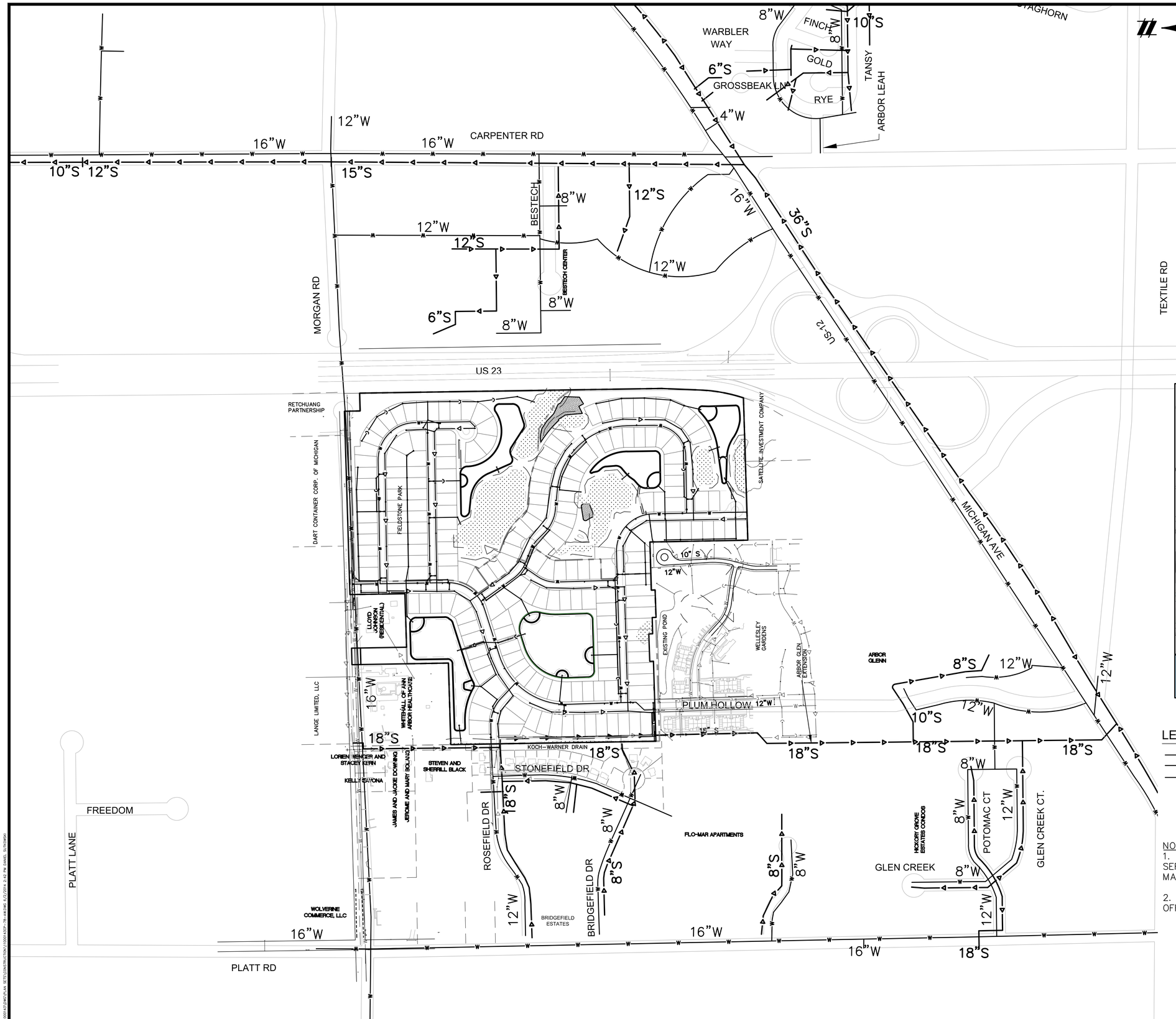

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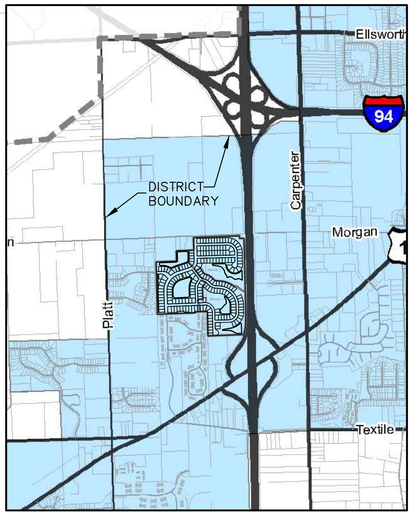

SANITARY SEWER DISTRICT MAP

LEGEND

- STORM SEWER
- WATER MAIN
- SANITARY SEWER
- EXISTING WETLAND

NOTES:

1. FIELDSTONE PARK IS PART OF THE YCUA SEWER SERVICE DISTRICT PER THE PITTSFIELD CHARTER MASTER PLAN.
2. FIELDSTONE PARK RECEIVES NO APPRECIABLE OFFSITE STORM RUNOFF.

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FINAL SITE PLANS
AREA WIDE UTILITY MAP

DATE 05/12/14

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SCALE 0 150 300
1" = 300 FEET

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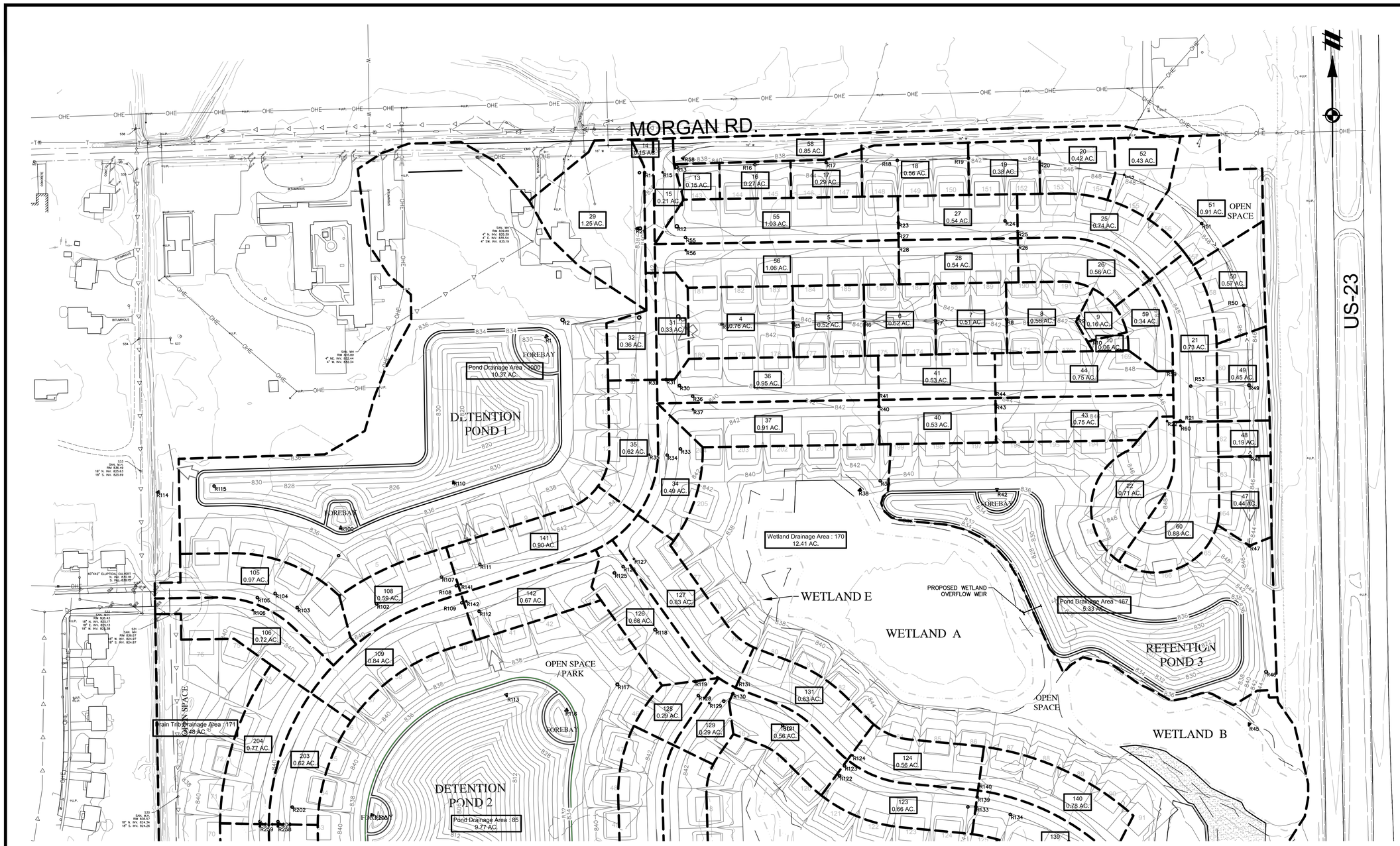

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FIELDSTONE PARK FINAL SITE PLANS

DRAINAGE AREA MAP

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1" = 100 FEET

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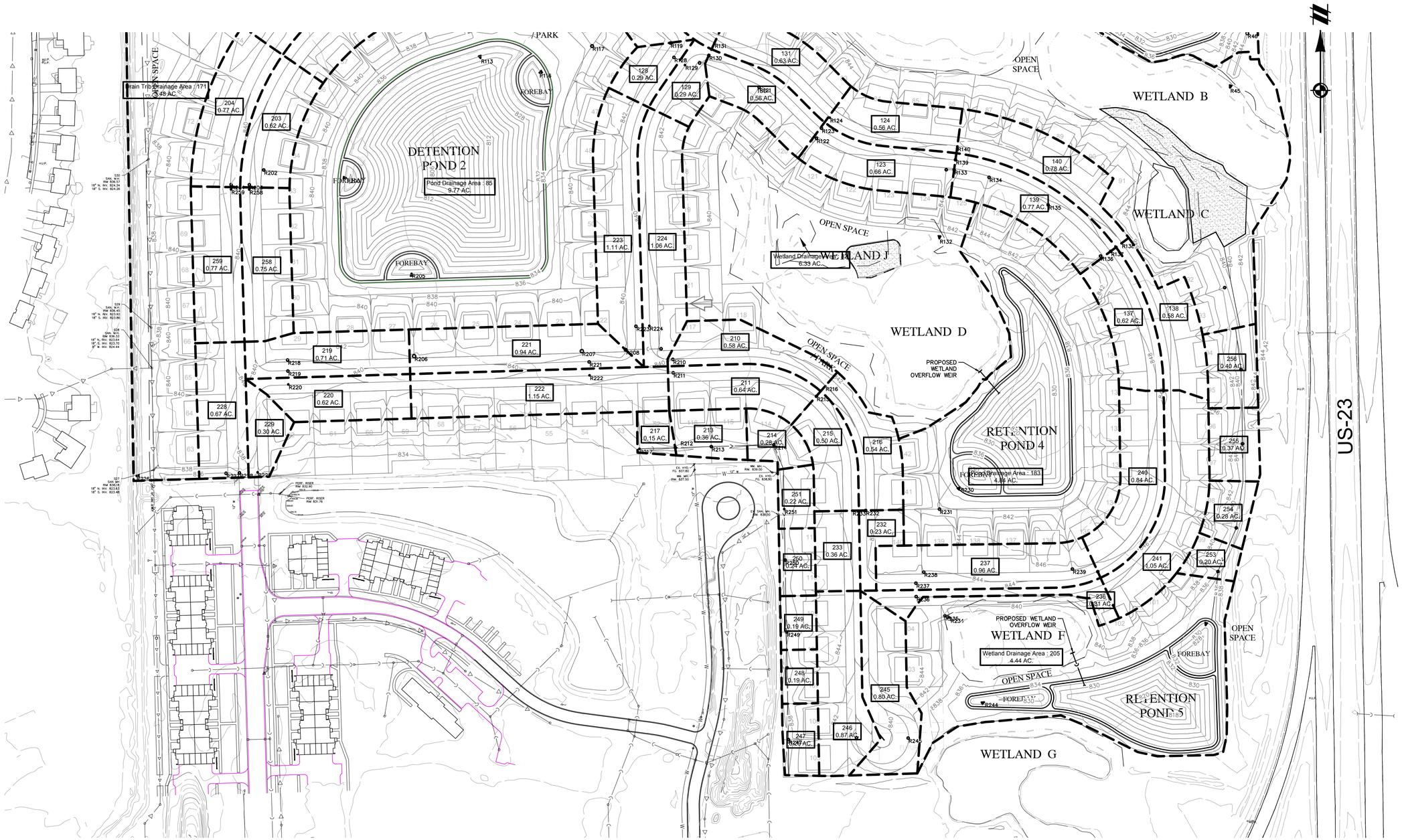

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FIELDSTONE PARK FINAL SITE PLANS

DRAINAGE AREA MAP

DATE 05/12/14

REVISIONS

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SCALE 0 50 100
1" = 100 FEET

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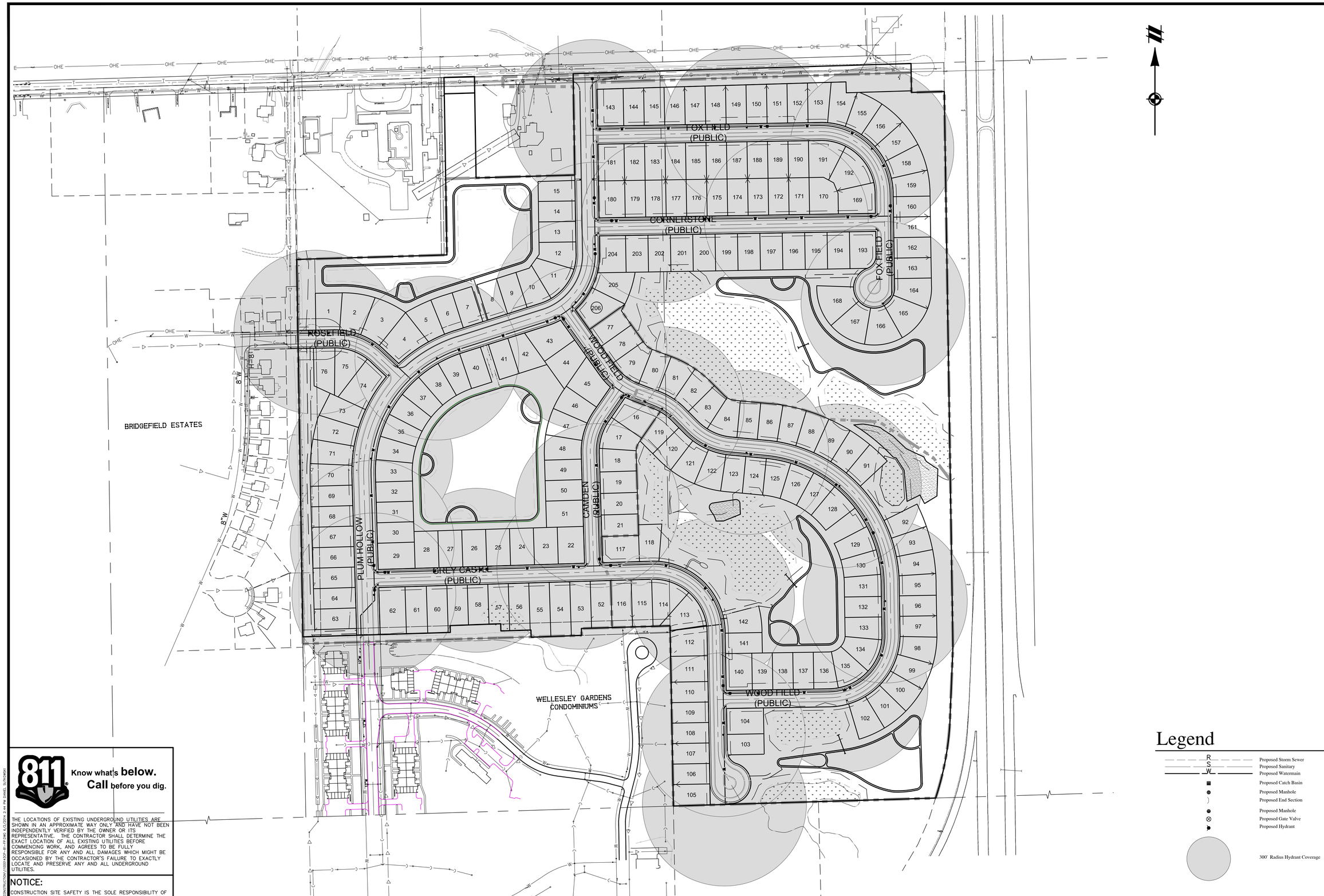
JOB 11000143
FILE CODE:
SHEET NO. CP-80



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FIELDSTONE PARK FINAL SITE PLANS

FIRE PROTECTION PLAN

DATE 05/12/14

REVISIONS

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SCALE 0 75 150
1" = 150 FEET

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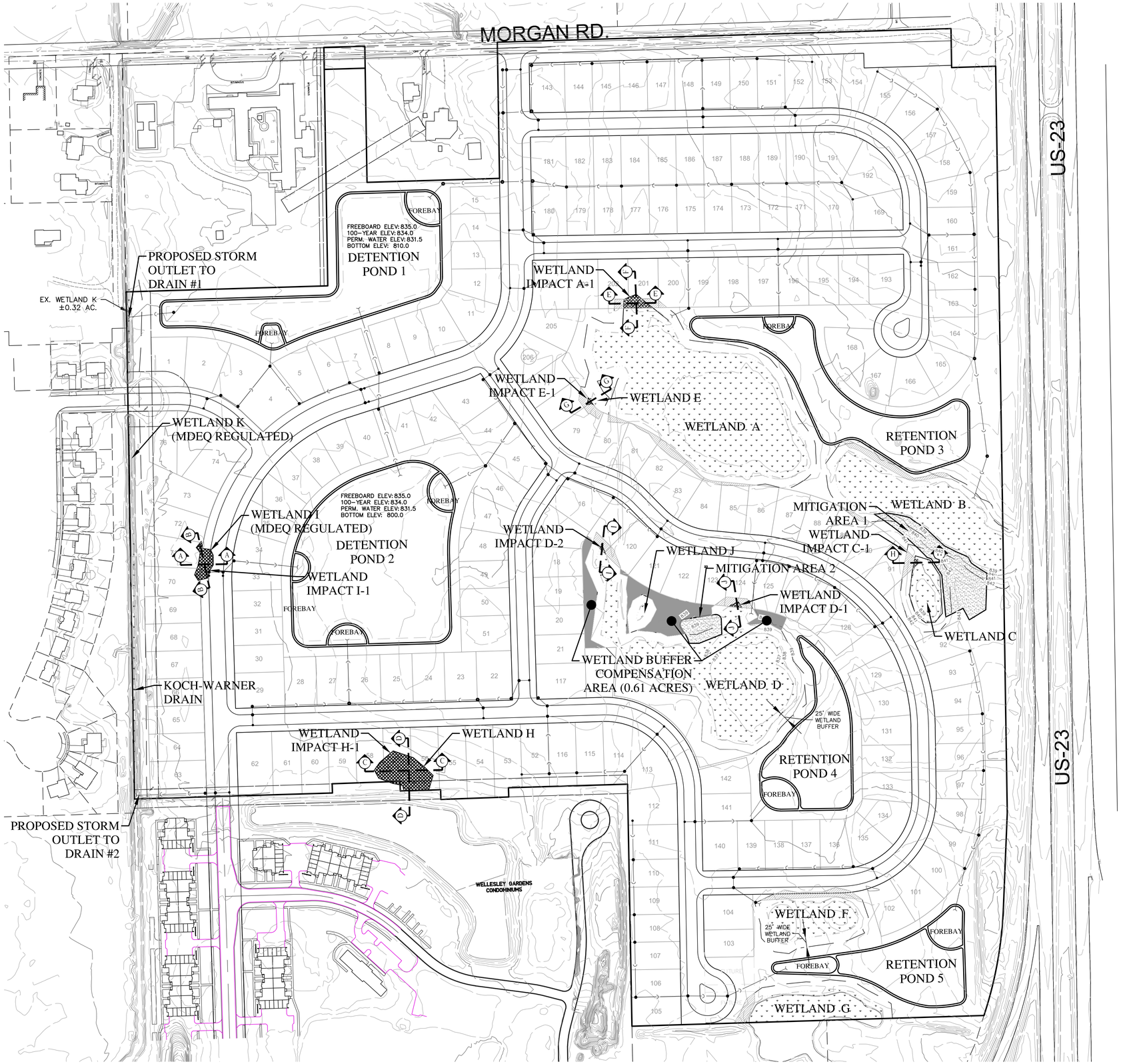
BOOK 1148
CAD FILE: 11000143CP-81-FP
JOB 11000143
FILE CODE:
SHEET NO. CP-81



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WETLAND FILL

Wetland Impact	Jurisdiction	Wetland Type	Impact Area (SF)	Impact Area (Ac.)	Wetland Mitgation Area Required (Ac.)	Fill Volume (CY)
A1	TWP.	Forested	1,893	0.043	0.087	120
C1	TWP.	Emergent	195	0.004	0.007	0
D1	TWP.	Emergent	270	0.006	0.009	6
D2	TWP.	Forested	138	0.003	0.006	2
E1	TWP.	Forested	544	0.012	0.025	10
H1	TWP.	Forested	10,899	0.250	0.500	1,050
I1	MDEQ/TWP.	Emergent	3,222	0.074	0.111	700
Total			**17,161**	**0.394**	**0.746**	**1,888**

Total Forested Mitigation Required **0.619 AC.**
Total Emergent/SS Mitigation Required **0.127 AC.**

PITTSFIELD TWP. WETLAND MITIGATION

MITIGATION AREA	Mitigation Area (SF)	Mitigation Area (Ac.)	Mitigation Type
1	27,656	0.635	Forested
2	6,672	0.153	Emergent/SS
Total	**34,328**	**0.788**	

BUFFER COMPENSATION

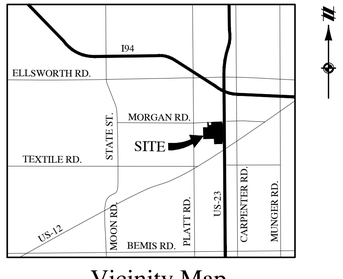
Wetland Buffer within Units or Grading Limits: 0.61 Ac.
Proposed Buffer Compensation Area: 0.61 Ac.

WETLAND DESCRIPTIONS

WETLAND NAME	Area (SF)	Area (Ac.)	Jurisdiction	Description
WETLAND A	152,807	3.51	TWP.	Forested w/ emergent & Shrub-shrub (SS) components.
WETLAND B	58,382	1.34	TWP.	Emergent
WETLAND C	12,417	0.29	TWP.	Scrub-shrub
WETLAND D	92,807	2.13	TWP.	Emergent with SS components
WETLAND E	544	0.01	TWP.	Forested
WETLAND F	23,108	0.53	TWP.	Forested with SS components
WETLAND G	25,356	0.58	TWP.	Scrub-shrub
WETLAND H	10,899	0.25	TWP.	Forested
WETLAND I	3,222	0.07	TWP./MDEQ	Emergent
WETLAND J	630	0.01	TWP.	Forested with SS components
WETLAND K	13,852	0.32	TWP./MDEQ	Emergent
Total	**394,024**	**9.05**		

LEGEND

- EXISTING WETLAND
- WETLAND IMPACT
- WETLAND MITIGATION AREA
- WETLAND BUFFER COMPENSATION AREA
- WETLAND BUFFER IMPACT / LOT OVERLAP



Vicinity Map
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FINAL SITE PLANS
OVERALL WETLAND MAP

DATE 05/12/14
REVISIONS

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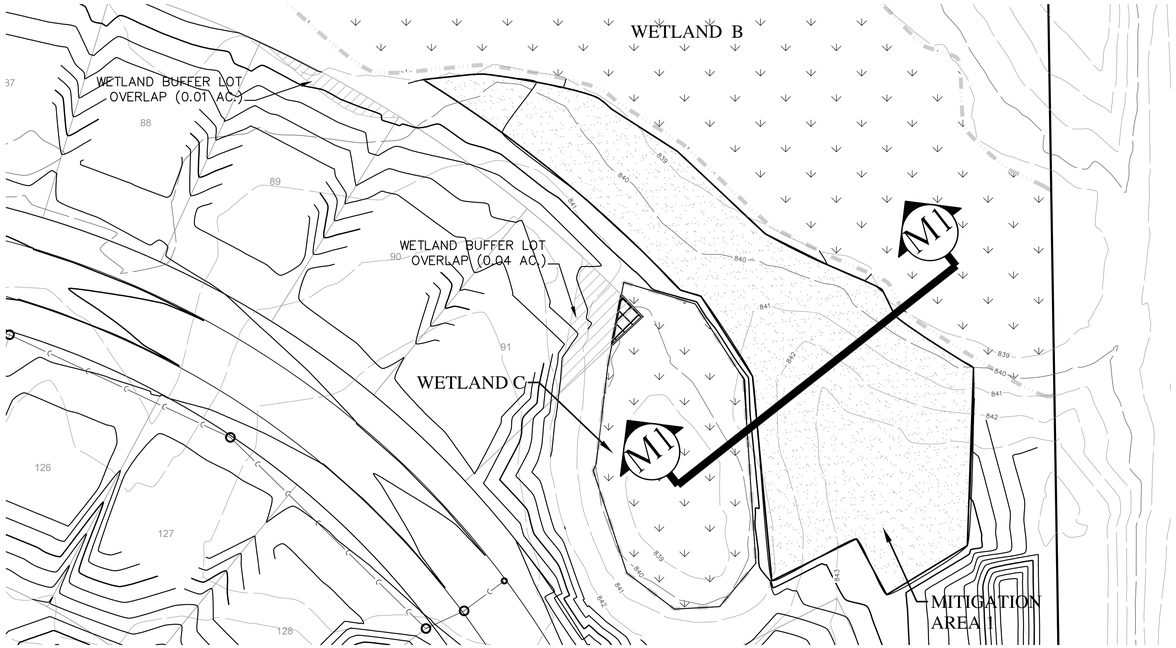
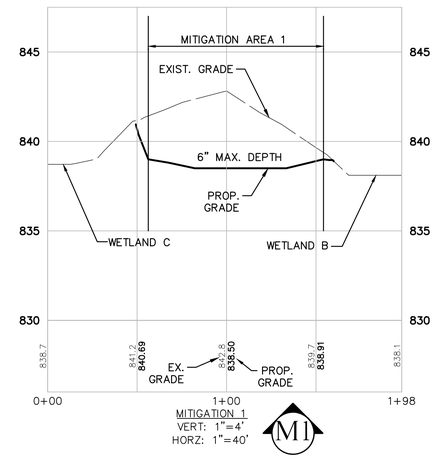
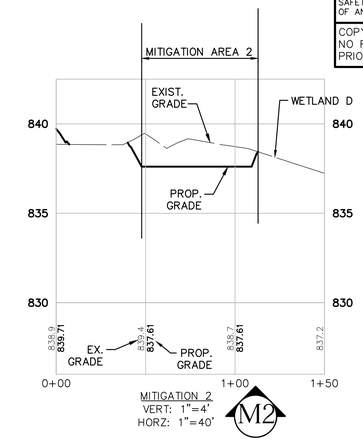
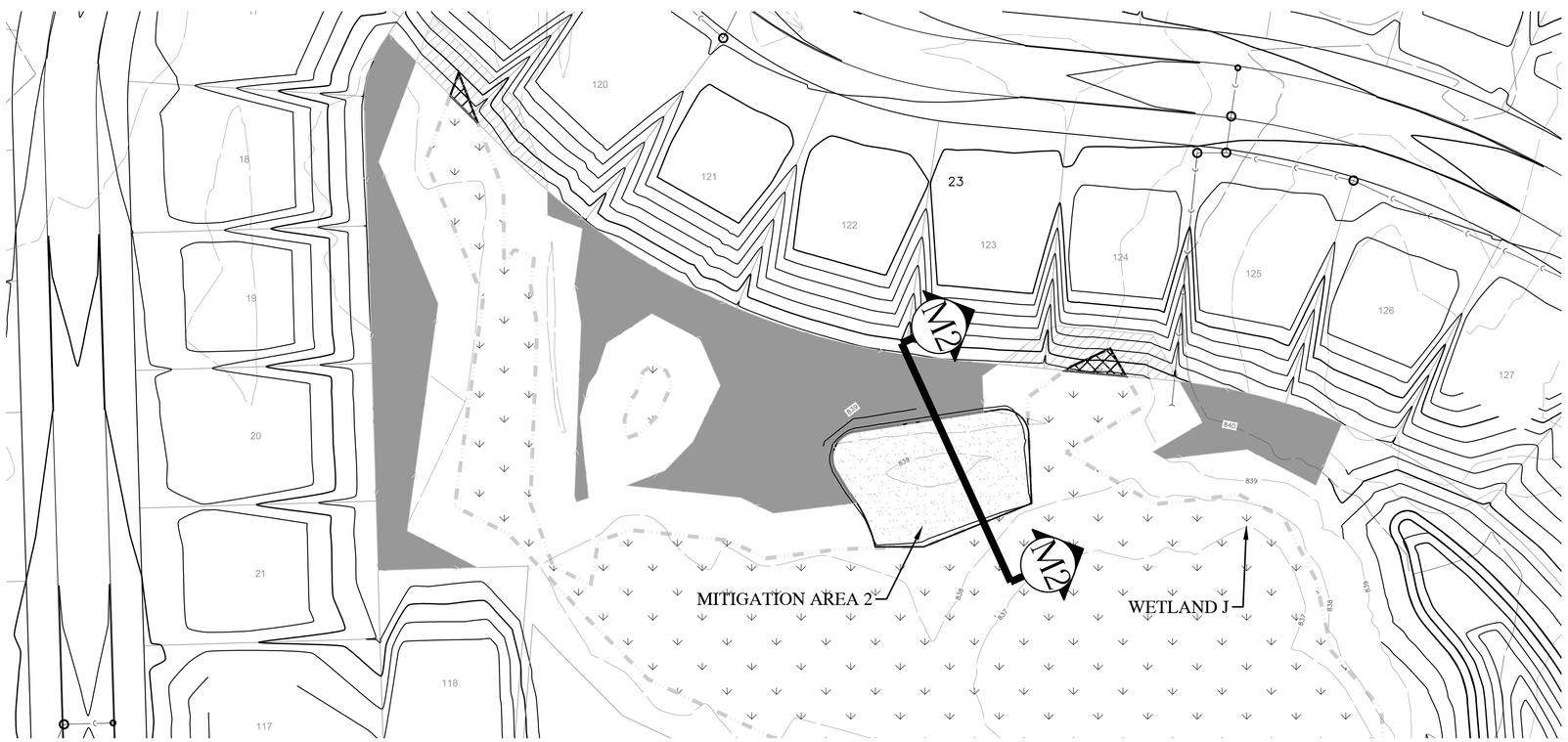
CAD FILE: 11000143CP-82-86-WL
JOB 11000143
FILE CODE:
SHEET NO. CP-82



MITIGATION AREA 1 (FORESTED WETLAND CREATION)







MITIGAITON AREA 2 (EMERGENT WETLAND CREATION)

PITTSFIELD TWP. WETLAND MITIGATION

MITIGATION AREA	Mitigation Area (SF)	Mitigation Area (Ac.)	Mitigation Type
1	27,656	0.635	Forested
2	6,672	0.153	Emergent/SS
Total	**34,328**	**0.788**	

NOTE: MITIGATION SOILS TO BE STOCKPILED WETLAND (OR UPLAND) TOPSOILS.

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WETLAND MITIGATION PLAN

DATE 05/12/14

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SCALE 0 20 40
1" = 40 FEET

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FILE CODE:
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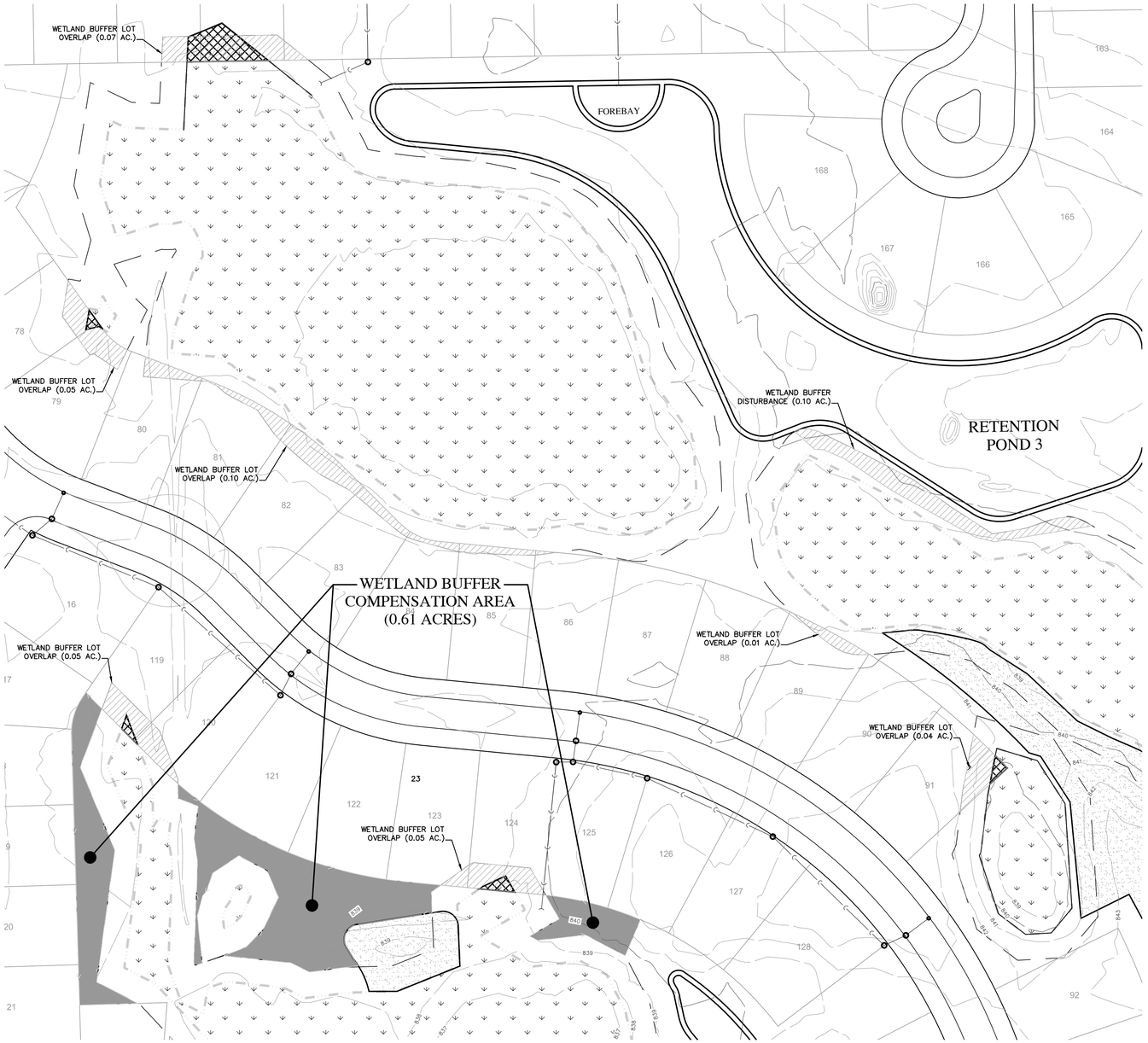

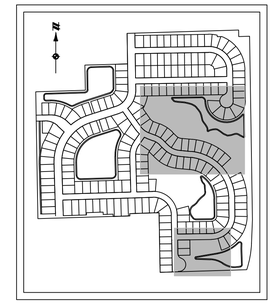

KEY MAP

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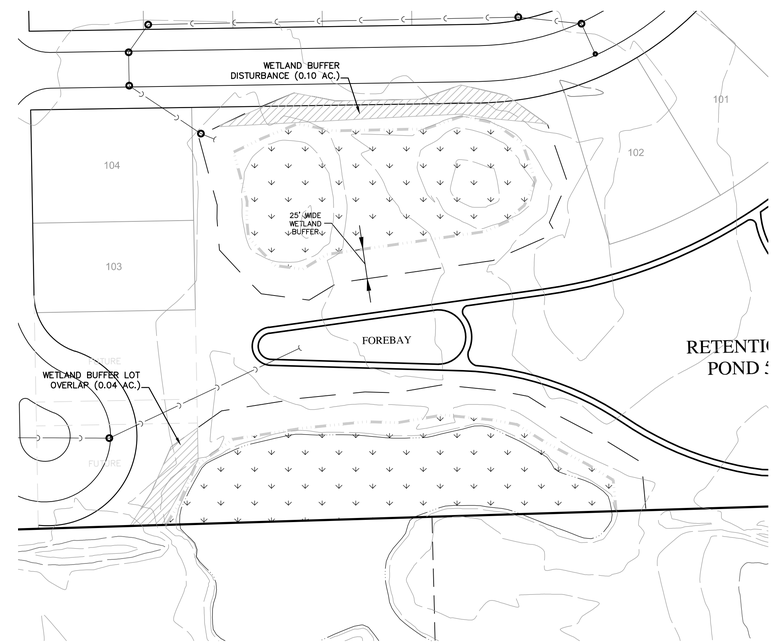

BUFFER COMPENSATION

Wetland Buffer within Units or Grading Limits:	0.61 Ac.
Proposed Buffer Compensation Area:	0.61 Ac.

LEGEND

WETLAND BUFFER DISTURBANCE OR LOT OVERLAP BUFFER

COMPENSATION AREA

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FIELDSTONE PARK
FINAL SITE PLANS

WETLAND BUFFER COMPENSATION PLAN

DATE 05/12/14

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SCALE 0 30 60
1" = 60 FEET

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P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-82-86-WL
JOB 11000143
FILE CODE:
SHEET NO. CP-84

General Notes

1. CONTRACTOR shall furnish all labor, materials, equipment, transportation, services and necessary appurtenant work required to complete work as shown on the Drawings and/or as specified herein.

All work shall comply with all applicable permits. In general the work includes:

Site Construction
Clearing and grubbing; erosion control; earthwork; wetland and upland seeding; and, supply and installation of trees.

2. Conduct site clearing operations to insure minimum interference with roads, streets, walks and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, and other adjacent occupied or used facilities without permission from authorities having jurisdiction.
3. Limits of work are established on the Drawings and shall be verified with the Wetland Consultant prior to any construction activities. No vehicle activity shall occur outside the limit of construction area.
4. Contractor is responsible for procuring and complying with any additional permits that may be required by any governing agency for the completion of this project, including, but not limited to, soil erosion control permits and county drain permits.
5. Disposal of excess excavated soil material and materials not acceptable for use as fill shall be place at an upland location on-site. Stockpiled excess material shall be graded and stabilized with seed to prevent erosion into any existing wetland or watercourse. Contractor shall not remove and/or fill excess soil material without prior approval of Wetland Consultant and Contractor shall submit cost to transport excess soil material to OWNER prior to removal.

Utilities

1. Locations of existing underground utilities are shown using the best information available, but with no guarantee that indicated locations are accurate or that lines other than those shown may or may not be present.
2. Contractor and those subcontractors affected by site conditions shall be fully responsible for any deductions or conclusions made on the basis of this information and that of any additional site inspections, if made.
3. "MISS DIG" shall be contacted by Contractor for location of underground utilities prior to start of work. It should be understood that MISS DIG will not locate private lines, only utility company lines and the Contractor will be responsible for verifying all locations.
4. Conflicts between utilities and proposed work shall be reported to Wetland Consultant prior to construction.

Layout

1. Contractor shall establish and maintain grades, benchmarks, and all other significant reference line or points including mitigation area lines and guaranteeing that adequate acreages are distributed to each wetland mitigation area as shown on the drawings. Layout of elevations and alignments shall be performed by a Licensed Surveyor. Wetland Consultant shall review the layout of all grades/contours and the acreage of the wetland mitigation areas prior to construction and after the establishment of sub-grades.
2. The Contractor shall designate a full-time Project Supervisor, who is authorized to act as his/her agent and to be responsible for all subcontractors. The Project Supervisor shall be designated by name prior to commencement of the work and shall be available for proper supervision of the project for the duration of the MDEQ permit and/or contract.

Sequence of Construction

1. Hold a pre-construction meeting with all parties involved. Examine the site to ascertain the state and conditions under which the work is to be done.
2. Install erosion control measures and tree protection to the limits shown on the drawings.
3. Clear and grub woody vegetation within the limits of the wetland mitigation areas.
4. Survey and stake proposed layout for site construction. Wetland Consultant to review contour staking for excavations and fills and review the staking for the mitigation and/or restoration areas.
5. Strip topsoil, stockpile and stabilize for later use.
6. Excavate and fill within the limits of work to the required sub-grade elevations.
7. Survey and stake site for sub-grade elevations/contours and mitigation and/or restoration areas. Wetland Consultant to review and approve the created area of mitigation prior to the placement of topsoil. Any adjustments to the acreage of mitigation shall be decided at this time.
8. Remove any water which may have accumulated in the mitigation areas to prevent soil changes detrimental to the stability of the sub-grade.
9. Place and spread stockpiled topsoil. Finished grades in wetland mitigation and enhancement areas are subject to written approval from the Wetland Consultant.
10. Immediately following fine grading, the Wetland Consultant and Contractor shall meet on-site to jointly examine current site conditions under which the work is to be completed.
11. Stake limits of seeding and provide submittals to Wetland Consultant prior to seed placement. Wetland Consultant to approve seed mix and limits of seeding.
12. Immediately following seed staking, install trees in the wetland mitigation and upland buffer areas according to specifications and plan details. Wetland Consultant may stake the location of all or some of the plant material.
13. Upon completion of tree and planting, restore to finish grades any disturbed areas during the planting activities.
14. Immediately following planting, seed the wetland mitigation and enhancement areas and any disturbed upland areas.
15. Provide straw mulch over seeding areas and apply erosion control blanket on slopes adjacent to existing wetland, wetland mitigation areas and wetland buffers.
16. Contractor to provide as-built drawings to the Wetland Consultant and/or Owner.
17. Meet with Wetland Consultant to review the newly created mitigation and enhancement efforts.
18. Remove tree protection and soil erosion control measures if approved by Wetland Consultant and provide site clean-up.

Grading Specifications

General Notes

1. Upon issuance, all work shall comply with all applicable permits.

2. The contractor is responsible for supplying all materials, labor, equipment, transportation, all all services incidental to clearing, grading, seeding, soil stabilization, and clean up of the mitigation and enhancement areas.

3. Erosion controls are to be installed to the limits indicated on the plan and to the detail provided. Any damage to the existing wetlands not indicated on the plans shall be repaired immediately, with these areas being restored to their original character at the contractor's own expense. All pre-erosion control measures shall be removed after final acceptance of work, unless suggested by the Wetland Consultant to remain in place. Care shall be taken during removal to minimize the loss of the accumulated sediment. If necessary, all silt and sedimentation is to be immediately removed from adjacent wetland or water courses.

4. All trash and debris shall be removed from the site and legally disposed of upon completion of grading activities. Repair to their original character areas outside the work limits damaged by operating under the contract. Repair shall include finish grading and seeding as required to match existing grade and conditions, and maintenance of repaired areas.

Earthwork

1. Sub-grades in created wetland shall be six inches lower than proposed finished grade contours and spot elevations to allow for the placement of topsoil. Topsoil shall be salvaged wetland soil from impact area or from an approved source.

1. Unless indicated otherwise, grade uniformly between points and contours or between such points or contours and existing grades. Wetland Consultant may adjust grades in-field based on site conditions to accomodate the intent of the wetland creation and enhancement. Care shall be taken not to excavate below the depths indicated. Contractor shall be responsible for any unauthorized excavation and/or fill operations. Notify Wetland Consultant, minimum three business days, for sub-grade verification.

2. Remove water accumulation in excavation area (if required) to prevent soil changes detrimental to the stability of the sub-grade. Provide and maintain erosion control measures and sufficient dewatering devices such as pumps, hoses, strainers and other appurtenance required to convey the water from excavations Water shall be discharged at an upland location a sufficient distance from the excavations to prevent backflow. Care shall be taken to prevent water borne silt from dewatering operations from entering existing wetlands and watercourses.

3. Surplus excavated material or material unsuitable for filling or grading operations (including all wetland excavation material) shall be disposed of in an upland location on the Owner's property as designated by the Owner's Representative. Stockpiled excess material shall be graded and stabilized to prevent erosion into any existing wetland or watercourse.

4. Place and spread the topsoil at a minimum depth of six inches over the entire wetland mitigation area. Topsoil compaction during spreading operations shall occur only to the degree that shall prevent settlement beyond the specified grade tolerance. Avoid over compacting beyond that provided by the spreading equipment. Over compacted topsoil shall be thoroughly loosened by scarifying or plowing to a depth of six inches. Notify Wetland Consultant, minimum three business days, for final acceptance of the finished grades.

Planting and Seed Specifications

General Notes

1. Plants shall comply with the recommendations and requirements of ANSI Z60.1, "American Standard for Nursery Stock". Plants shall be healthy, vigorous stock, grown in a recognized nursery in accordance with good horticultural practice and free of disease, insects, eggs, larvae and defects such as knots, sunscald, injuries, abrasions, or disfigurement.

2. Planting shall be done by a single Contractor specializing and experienced in landscape work.

3. Tree delivery shall be the same day as planting. No plants shall be stored at the site without permission of the Owner's Representative. Plants shall be carefully loaded and unloaded so as not to damage branching or root mass. Dropping of material will not be allowed. Plants in full leaf shall be thoroughly wetted down and completely covered with a wet tarp during transportation. All plant roots must be kept in a moist condition.

4. Plant material shall be the size and true native genus and species shown and scheduled on the drawings. No hybrids or cultivars will be accepted.

5. All plants shall be labeled with securely attached waterproof tag bearing legible designation of botanical and common name. See submittals for requirements of native seed.

6. Mulch shall be shredded hardwood bark mulch free from deleterious materials, sticks, twigs, etc., and suitable for top dressing of trees, shrubs, and planting beds.

7. Warranty Period shall be at the end of the first full growing season. A full growing season is defined as the beginning of May through the end of October of the same year. If installation occurs after June 15, the warranty period shall be extended through the end of October of the next year so as to achieve a full growing season.

Planting

1. Contractor shall notify Wetland Consultant, minimum of three business days, prior to planting to assist in the layout of the woody plant material and provide a copy of plant material order and receipt.

2. Complete all woody plantings between March 1 - June 15 or October 1 - November 30 or when plants are dormant or soil is not frozen. All oaks to be planted in spring only.

3. All trees and shrubs to be planted as shown on details.

4. Warranty shall include a 95% survival rate for each species. Replace all plants in accordance with specifications.

5. Plant maintenance shall be begin immediately after each plant is installed and shall continue as required until the end of the warranty period. Maintenance will include watering and cultivation.

Seeding

1. Stake limits of seeding and provide seed mix submittals to Wetland Consultant for approval.

2. Approval of Wetland Consultant must be obtained for seed bed preparation and staking prior to seeding.

3. Install seed immediately following tree planting.

4. If seeding occurs between June 15 through October 1, the Contractor is responsible to adequately water the mitigation sites on a consistent basis for seed germination and establishment. Contractor shall notify the Wetland Consultant for the timing of seed installation.

5. Uniformly broadcast specified seed over the specified areas at the specified rates. Provide a carrier (silica sand or other approved material) to ensure uniform distribution of seed.

6. Immediately following seeding, apply straw mulch at the rate of 1.5 tons per acre over all seeded areas.

7. Warranty shall be:
   Wetland seed mix 95% cover of seeded areas at the end of the first growing season.
   Upland seed mix 70% cover at the end of the first season.

Submittals

1. Contractor shall provide to the Wetland Consultant the following submittals:
a. Wetland Seed Mix
b. Upalnd Seed Mix
c. Woody Plant Material order and receipt.

Wetland Trees:

SPECIES	COMMON NAME
Acer saccharinum	Silver Maple
Quercus bicolor	Swamp White Oak
Quercus palustris	Pin Oak

NOTES:
*Depending upon availability Carya coridformis (Bitternut Hickory) and/or Acer rubrum (Red Maple) may be substituted.
All trees to be 2" caliper balled and burlaped and planted in the locations shown on the drawings

Seed Mixes

WETLAND SEED MIX:

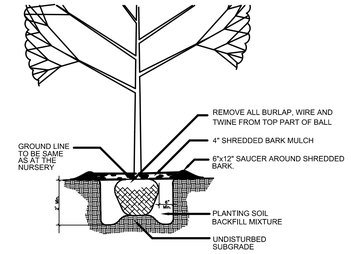
SPECIES	COMMON NAME
Alisma plantago-aquatica	WATER PLANTAINA
sclepias incarnata	SWAMP MILKWEED
Aster lanceolatus	EASTERN LINED ASTERA
ster novae-angliae	NEW ENGLAND ASTER
Bidens cernuus	NODDING BUR MARIGOLD
Bidens connatus	PURPLE STEMMED TICKSEED
Epilobium coloratum	CINNAMON WILLOW HERB
Eupatorium maculatum	JOE PYE WEED
Eupatorium perfoliatum	COMMON BONESET
Helenium autumnale	SNEEZEWEED
Iris virginica	SOUTHERN BLUE FLAG
Juncus effusus	SOFT STEMMED RUSH
Lobelia siphilitica	GREAT BLUE LOBELIA
Ludwigia palustris	WATER PURSLANE
Lycopus americanus	COMMON WATER HOREHOUND
Lysimachia ciliata	FRINGED LOOSESTRIFE
Mimulus ringens	MONKEY FLOWER
Onoclea sensibilis	SENSITIVE FERN
Penthorum sedoides	DITCH STONECROP
Solidago riddellii	RIDDELL'S GOLDENROD
Solidago rugosa	ROUGH GOLDENROD
Sparganium eurycarpum	COMMON BUR REED
Verbena hastata	BLUE VERVAIN
Vernonia missurica	MISSOURI IRONWEED
Elymus virginicus	VIRGINIA WILD RYE
Glyceria striata	FOWL MANNA GRAS
SLeersia oryzoides	CUT GRASS
Panicum virgatum	SWITCH GRASS
Carex comosa	SEDGE
Carex grayi	SEDGE
Carex lupulina	SEDGE
Carex scoparia	SEDGE
Carex stipata	SEDGE
Carex vulpinoidea	SEDGE
Schoenoplectus acutus	HARDSTEM BULRUSH
Scirpus atrovirens	BULRUSH
Scirpus cyperinus	WOOL GRASS
Scirpus pendulus	BULRUSH

NOTES:
*At least 25 of the above species shall be planted, quantities depending upon availability.

UPLAND SEED MIX:

SPECIES	COMMON NAME	RATE (PLS LBS./AC.)
Andropogon gerardii	Big Blue Stem	1.0
Sorghastrum nutans	Indian Grass	2.5
Elymus canadensis	Canada Wild-Rye	5.0
Panicum virgatum	Prairie Switch Grass	5.0
Lolium multiflorum	Annual Rye	20.0
	TOTAL	33.5

NOTES:
Seed mix to be covered with North American Green C125bn erosion control blanket or equivalent installed in compliance with manufacturer's specifications.



B&B Tree Planting Detail
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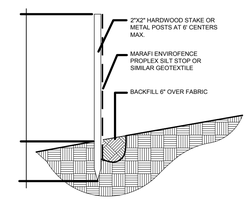

Silt Fence Installation
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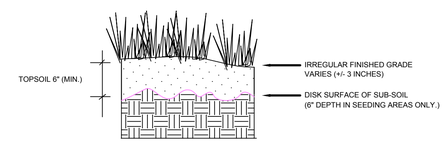

Grading Detail
SCALE : NOT TO SCALE

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FINAL SITE PLANS
WETLAND MITIGATION PLAN
DETAILS AND SPECIFICATIONS

DATE 05/12/14
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REVISIONS

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1" = NA FEET
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BOOK 1148
CAD FILE: 11000143CP-82-86-WL
JOB 11000143
FILE CODE:
SHEET NO.
CP-85

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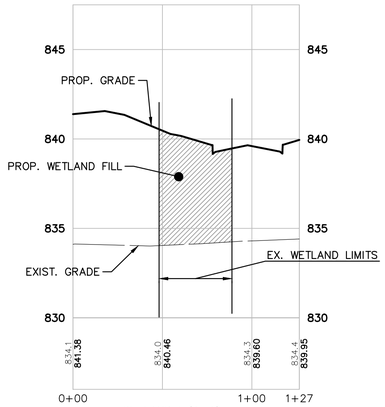
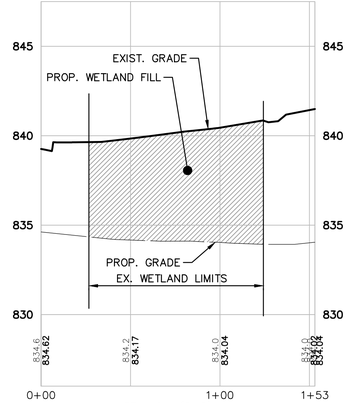
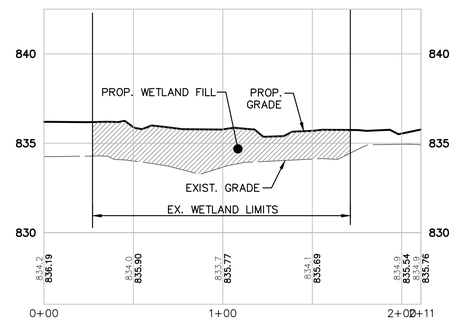


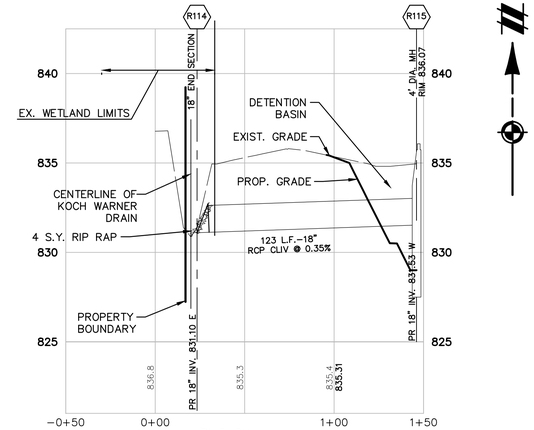
WETLAND I (A–A)
VERT: 1"=4'
HORZ: 1"=40'



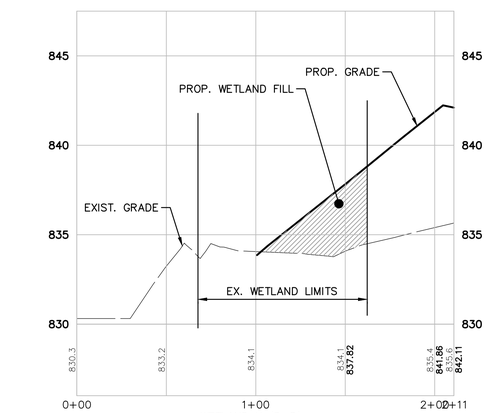
WETLAND I (B–B)
VERT: 1"=4'
HORZ: 1"=40'



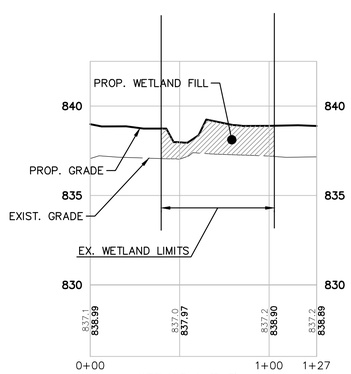
WETLAND H (C–C)
VERT: 1"=4'
HORZ: 1"=40'



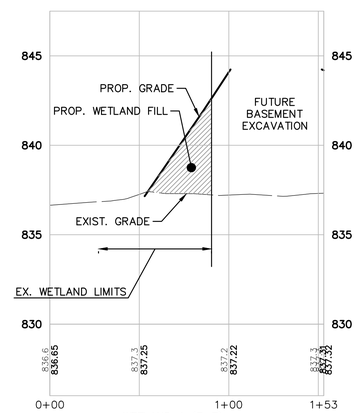
R115–R114
VERT: 1"=4'
HORZ: 1"=40'



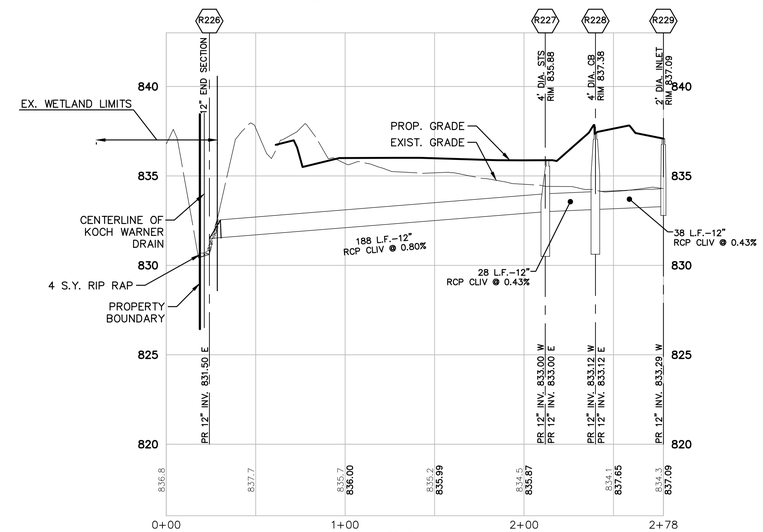
WETLAND H (D–D)
VERT: 1"=4'
HORZ: 1"=40'



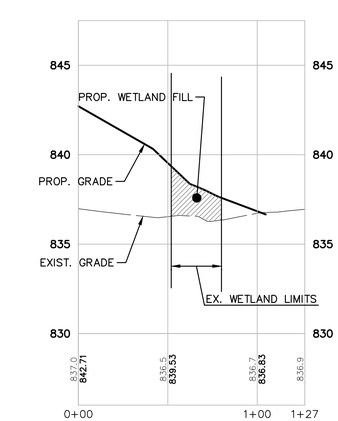
WETLAND A (E–E)
VERT: 1"=4'
HORZ: 1"=40'



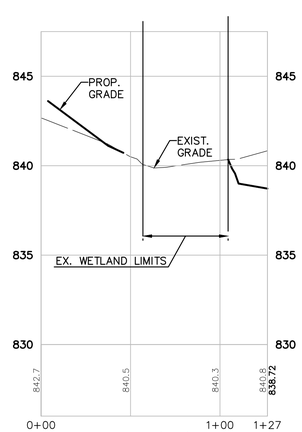
WETLAND A (F–F)
VERT: 1"=4'
HORZ: 1"=40'



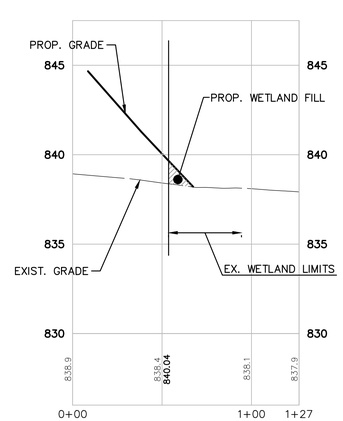
ST–2
VERT: 1"=4'
HORZ: 1"=40'



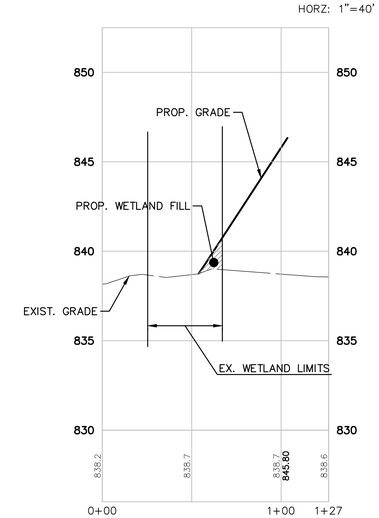
WETLAND F (G–G)
VERT: 1"=4'
HORZ: 1"=40'



WETLAND C (H–H)
VERT: 1"=4'
HORZ: 1"=40'



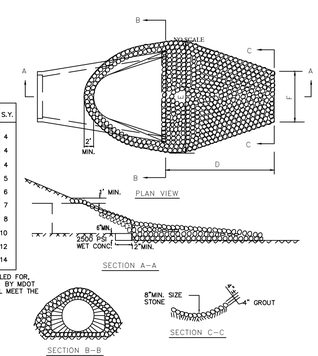
WETLAND D (I–I)
VERT: 1"=4'
HORZ: 1"=40'



WETLAND D (J–J)
VERT: 1"=4'
HORZ: 1"=40'

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'–9"	5'–6"	8
36"	8'–0"	10'–9"	6'–0"	10
42"	9'–0"	11'–9"	6'–6"	12
48"	10'–0"	13'–0"	7'–0"	14

RIP–RAP BANK PROTECTION, WHERE CALLED FOR, SHALL BE AND INSTALLED AS PROVIDED BY MDOT SPEC. 6.01.08. RIP–RAP MATERIAL SHALL MEET THE REQUIREMENTS OF MDOT SPEC. 8.19.02



Stone Rip-rap
NO SCALE

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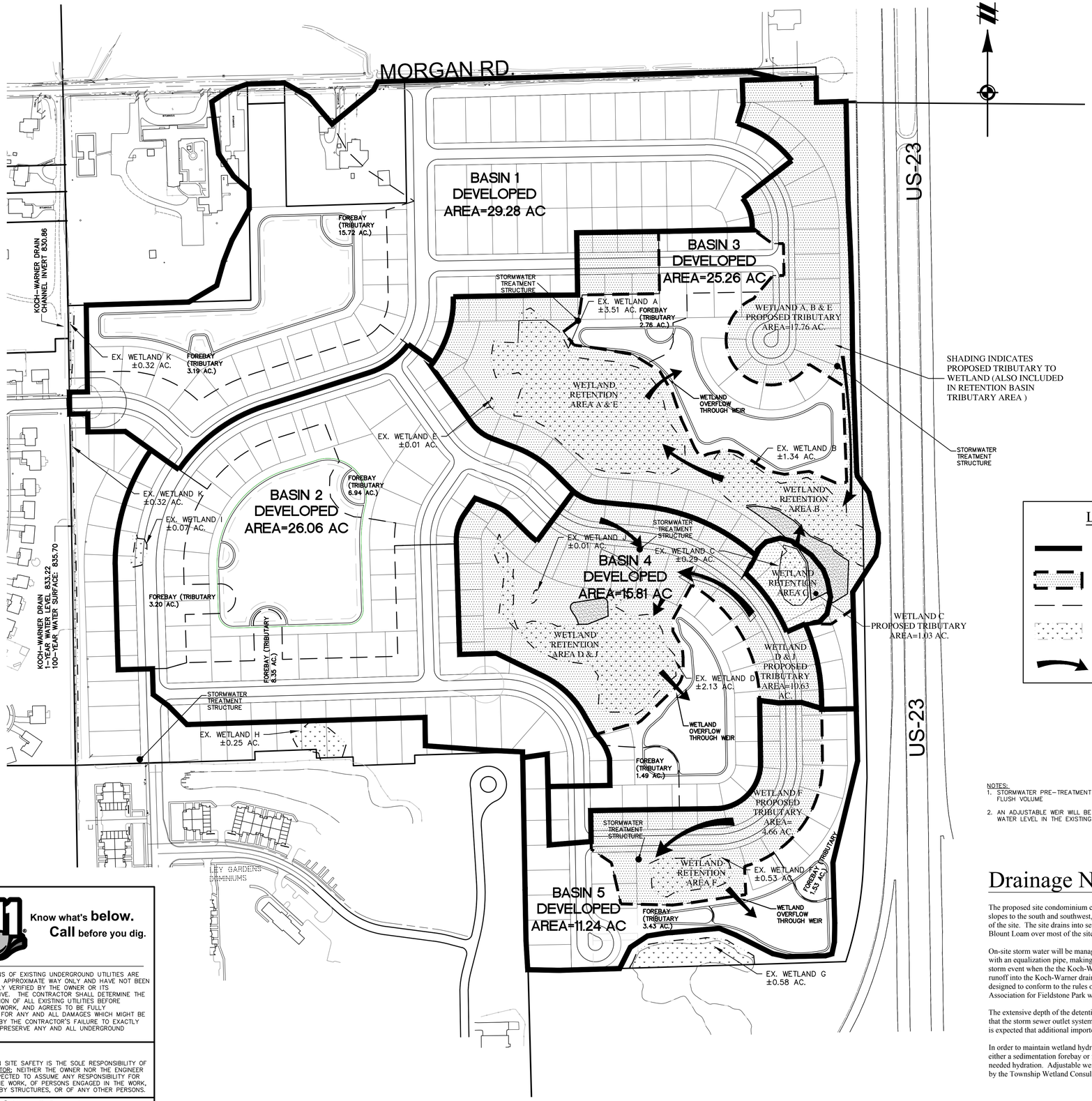

Wetland Hydrology Calculations

As indicated in the table below, a portion of the site storm water runoff will be directed towards existing wetlands to maintain wetland hydrology. Storm water point source discharges to wetlands will enter pre-treatment structures prior to discharge to wetlands.

	Existing Condition				Proposed Condition			
	Tributary Area (ac.)	Runoff Coef (C)	C*A		Tributary Area (ac.)	Runoff Coef (C)	C*A	Proposed storm runoff (% of existing runoff)
Wetland A								
Wetland B								
Wetland E								
Combined	33.8	0.30	10.14		17.8	0.52	9.24	91%
Additional runoff from Wetlands A, B & E will overflow into the Retention Pond 3.								
Wetland C	1.1	0.30	0.33		1.0	0.35	0.36	109%
Note: Additional runoff from Wetland C will overflow into wetland B								
Wetland D								
Wetland J								
Combined	16.3	0.30	4.89		10.6	0.59	6.27	128%
Additional runoff from Wetlands D & J will overflow into the Retention Pond 4.								
Wetland F	3.6	0.30	1.08		4.7	0.51	2.38	220%
Additional runoff from Wetland F will overflow into the Retention Pond 5.								
Wetland G	2.3	0.30	0.69					
Wetland H	1.9	0.30	0.57					
Wetland I	9.3	0.30	2.79					
Note: Wetlands are not used for storage of the proposed storm water. Storm water storage will be provided in the retention and detention basins								

Approximate Proposed Wetland Water Elevations

Wetland A, B, & E		Storm Event	Rainfall Intensity (in/hr)	Volume (cf)	Approx. Water Elevation
Total Area (ac) =	17.8	5 yr	2.90	80,346	837.33
Runoff Coef. =	0.52	10 yr	3.50	96,970	837.40
Time (min) =	25	100 yr	5.50	152,381	837.63

Wetland C		Storm Event	Rainfall Intensity (in/hr)	Volume (cf)	Approx. Water Elevation
Total Area (ac) =	1.0	5 yr	2.90	3,136	839.46
Runoff Coef. =	0.35	10 yr	3.50	3,785	839.55
Time (min) =	25	100 yr	5.50	5,948	839.87

Wetland D & J		Storm Event	Rainfall Intensity (in/hr)	Volume (cf)	Approx. Water Elevation
Total Area (ac) =	10.6	5 yr	2.90	54,564	837.83
Runoff Coef. =	0.59	10 yr	3.50	65,853	838.00
Time (min) =	25	100 yr	5.50	103,483	838.26

Wetland F		Storm Event	Rainfall Intensity (in/hr)	Volume (cf)	Approx. Water Elevation
Total Area (ac) =	4.7	5 yr	2.90	20,676	837.23
Runoff Coef. =	0.51	10 yr	3.50	24,954	837.30
Time (min) =	25	100 yr	5.50	39,214	837.54

NOTES:
1. STORMWATER PRE-TREATMENT STRUCTURE TREATS FIRST FLUSH VOLUME
2. AN ADJUSTABLE WEIR WILL BE UTILIZED TO CONTROL THE WATER LEVEL IN THE EXISTING WETLANDS.

Drainage Narrative

The proposed site condominium consists of approximately 114.78 acres in Pittsfield Township, located on the south side of Morgan Road, east of Platt Road. The site generally slopes to the south and southwest, changing elevation from approximately 848 (Datum - NGVD 88) in the northeast corner to about 834 in the southwest and 837 southeast sections of the site. The site drains into several wetland pockets and the Koch-Warner drain which traverses along the site's west property line to the south. The soils are predominantly Blount Loam over most of the site, with some St. Clair clay loam, Pewamo clay loam, and Palms muck.

On-site storm water will be managed in five (5) pond systems (2 detention and 3 retention) and seven (7) wetland areas. Ponds 1 and 2 (detention) are linked together hydraulically with an equalization pipe, making them act as a single pond unit. The design detention volume assumes a "zero outlet" condition which means that the pond will hold a 100-year storm event when the the Koch-Warner drain is assumed to be flowing high enough that no water will be able to outlet from the basins. Ponds 1 and 2 will discharge their detained runoff into the Koch-Warner drain channel. Ponds 3, 4 and 5 are proposed as retention ponds sized to hold a minimum of two consecutive 100-year storm events. All ponds will be designed to conform to the rules of the Washtenaw County Water Resource Commissioner (WCWRC). Soil boring information is included on Sheet 02. The Homeowners Association for Fieldstone Park will be responsible for the maintenance of the ponds.

The extensive depth of the detention and retention basins is proposed in order to generate fill soils for the remainder of the site. This artificial raising of the site is necessary to ensure that the storm sewer outlet system and sanitary sewer system function by gravity with respect to the relatively shallow depths of the Koch Drain and existing sanitary sewer main. It is expected that additional imported fill soils will be necessary to achieve the final site grade.

In order to maintain wetland hydrology, a portion of the storm water runoff will be directed to existing on-site wetland areas. All point source storm water runoff shall pass through either a sedimentation forebay or mechanical sedimentation unit to provide water quality treatment. Treated water will be discharged into each group of wetlands, providing the needed hydration. Adjustable weir structures will be utilized to control the water surface elevation in each group of wetlands. The water elevations shall be monitored and adjusted by the Township Wetland Consultant to ensure wetland viability. All additional runoff will spill over the weir and discharge into one of the on-site retention ponds.

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FINAL SITE PLANS
DETENTION/RETENTION & WETLAND HYDROLOGY MANAGEMENT PLAN

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1" = 150 FEET

DR. JEC CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-87-WL
JOB 11000143
FILE CODE:
SHEET NO. CP-87

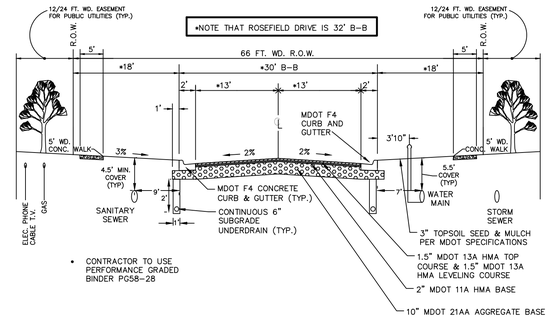
Soil Erosion Control Notes:

1. DRAINAGE DITCHES AND SLOPES STEEPER THAN 1:4 (25%) SHALL BE STABILIZED WITH EROSION CONTROL BLANKET.
2. STEEP SLOPES THAT DO NOT TAKE UPON INITIAL SEEDING MUST BE RE-SEEDED AND STABILIZED WITH EROSION CONTROL BLANKETS.
3. TEMPORARY STOCKPILES THAT REMAIN UNDISTURBED FOR A PERIOD OF TIME, GREATER THAN 14 DAYS, SHALL REQUIRE SILT FENCE TO BE INSTALLED AROUND THE PERIMETER OF THE STOCKPILE.
4. STABILIZATION MUST BE STARTED WITHIN 5 DAYS OF FINAL GRADE. USE 3"-4" OF TOPSOIL MINIMUM.
5. WHERE EXCAVATION HAS BEEN THROUGH LAWN AREAS, THE CONTRACTOR SHALL RESTORE THE DISTURBED AREA BY PLACING TOPSOIL AND SEEDING OR SODDING OVER THE FINAL BACK FILL MATERIAL.
6. DUST CONTROL SHALL BE PROVIDED AS NEEDED OR AS DETERMINED BY TOWNSHIP ENGINEER DURING CONSTRUCTION.
7. A FIELD CONSTRUCTION MEETING MUST BE HELD PRIOR TO ANY EARTH CHANGE ACTIVITY.
8. SEED AND STABILIZE DETENTION BASINS IMMEDIATELY UPON ACHIEVING FINAL GRADE AND FOLLOW WCWRC APPROVAL SPECS.
9. INSPECT SWRL CHAMBER WEEKLY FOR SEDIMENT ACCUMULATION UNTIL SITE IS STABILIZED. CLEAN AS REQUIRED.

Storm Water Management System Maintenance Schedule

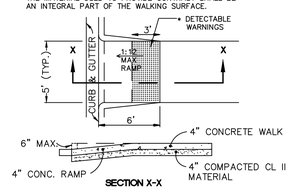
Tasks	Components	Annual Cost
Annual		
Inspect for sediment accumulation	Storm Sewer System Catch Basin Sumps Outflow Control Structures Wetlands	$500.00
Inspect for floatables and debris & Cleaning of floatables and debris	Storm Sewer System Catch Basin Sumps Catch Basin Inlet Castings Channels Outflow Control Structures Storm Detention Areas Wetlands Emergency Overflow	$200.00 $300.00
Inspection for erosion	Channels Outflow Control Structures Rip-Rap Storm Detention Areas Wetlands Emergency Overflow	$200.00
Inspect structural elements during wet weather and compare as-built plans (by a professional engineer reporting to the condominium association)	Outflow Control Structures	$400.00
Keep records of all inspections and maintenance activities and report to condominium association	Storm Sewer System Channels Outflow Control Structures Rip-Rap Storm Detention Areas Wetlands Emergency Overflow	
Keep records of all costs for inspections, maintenance and repairs. Report to condominium association & Condominium association reviews cost effectiveness of the preventative maintenance program and makes necessary adjustments	Storm Sewer System Catch Basin Sumps Catch Basin Inlet Castings Channels Outflow Control Structures Rip-Rap Storm Detention Areas Wetlands Emergency Overflow	
Semi-annually		
Clean streets	Streets	$400.00
Every 3-5 yrs as needed		
Replacement of gravel jackets	Outflow Control Structures	$500.00

Tasks	Components	Annual Cost
Every 5-10 yrs as needed		
Removal of sediment accumulation	Storm Sewer System Catch Basin Sumps Outflow Control Structures Storm Detention Areas Wetlands	$1,000.00
As needed		
Reestablish permanent vegetation on eroded slopes	Channels Storm Detention Areas Wetlands Emergency Overflow	$500.00
Make adjustments or replacements as determined by wet weather inspection	Storm Sewer System Channels Outflow Control Structures Rip-Rap Storm Detention Areas Wetlands Emergency Overflow	$500.00
Condominium association to have a professional engineer carry out emergency inspections upon identification of severe problems.	Storm Sewer System Catch Basin Sumps Catch Basin Inlet Castings Channels Outflow Control Structures Rip-Rap Storm Detention Areas Wetlands Emergency Overflow	$500.00



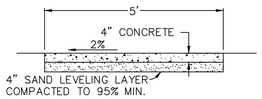
Typical Road Cross Section - 66' ROW

NO SCALE



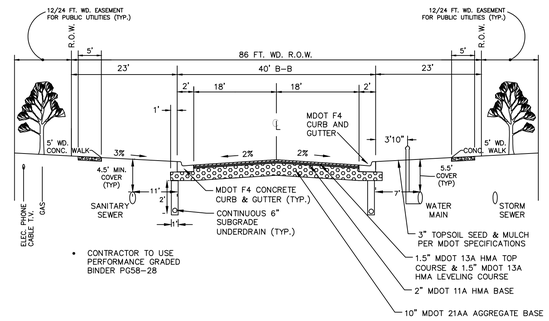
Curb Ramp And Typical Sidewalk Detail

NO SCALE



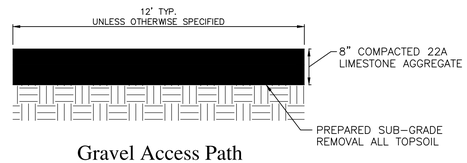
Concrete Sidewalk Detail

NO SCALE



Plum Hollow Cross Section - 86' ROW

NO SCALE



Gravel Access Path

NO SCALE

SEQUENCE OF CONSTRUCTION

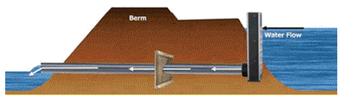
1. Install sediment fence and tree protection fencing prior to any grading operation.
2. Install mud tracking pad.
3. Construct temporary sediment/detention basin.
4. Place topsoil, fertilizer, seed and mulch over the entire detention basin area.
5. Rough grade site, stockpile topsoil and begin building 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.

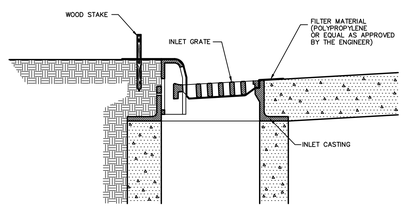
Agri Drain CORPORATION **Inlet Water Level Control Structure™**

- Rugged 1/2" PVC structure.
- Stainless steel screws and custom anodized aluminum corner extrusions are used for strength and durability.
- 5" & 7" stoplogs for adjustability.
- Flexible couplers allow PVC, plastic pipe, or other materials to be easily attached. *(Please specify type of pipe when ordering)*
- 5-Year Warranty on all parts
- Please allow up to 2 weeks for shipment.

TYPICAL INSTALLATION

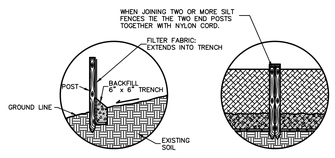
Inlet Water Level Control Structure





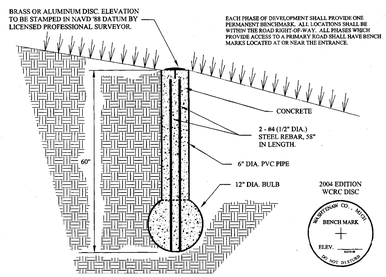
Inlet Filter

NO SCALE



Geotextile Silt Fence

NO SCALE



Subdivision Benchmark Detail

NO SCALE

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NOTICE:
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FINAL SITE PLANS
STANDARD DETAIL SHEET 1

DATE 05/12/14

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1" = 50 FEET

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P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-88-91-DT
JOB 11000143
FILE CODE:
SHEET NO. CP-88

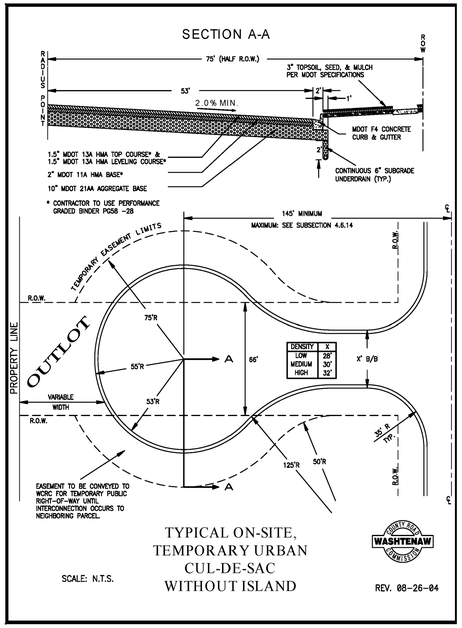

Figure 19: Typical HMA Temporary, Urban Onsite Cul-de-sac Pavement Cross Section

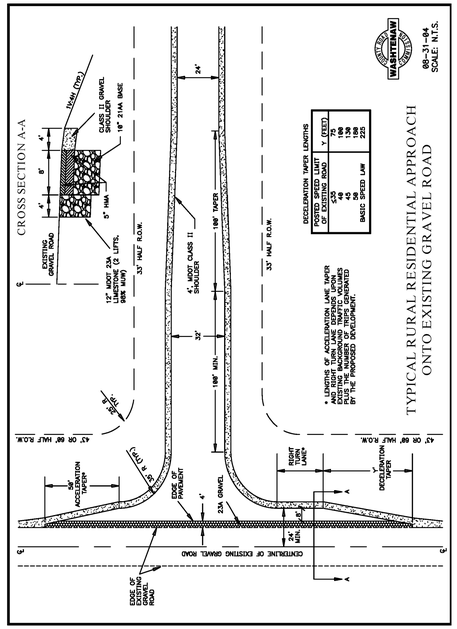

Figure 27: Typical Rural Residential Approach Onto Existing Gravel Road

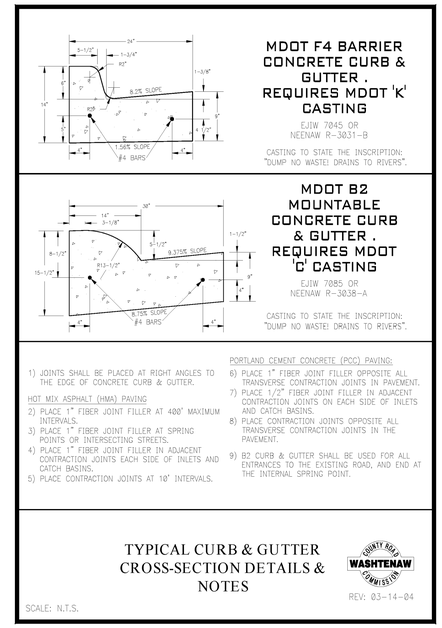

Figure 30: Typical Curb & Gutter Cross Section Details & Notes

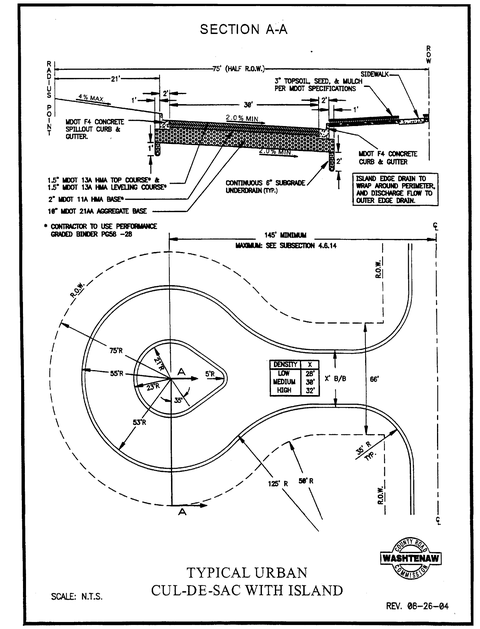

Figure 15: Typical HMA Urban Cul-de-sac w/Island Pavement Cross Section

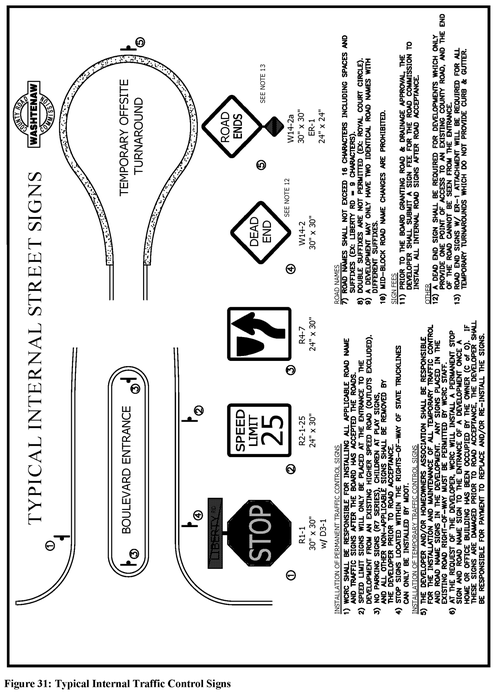

Figure 31: Typical Internal Traffic Control Signs

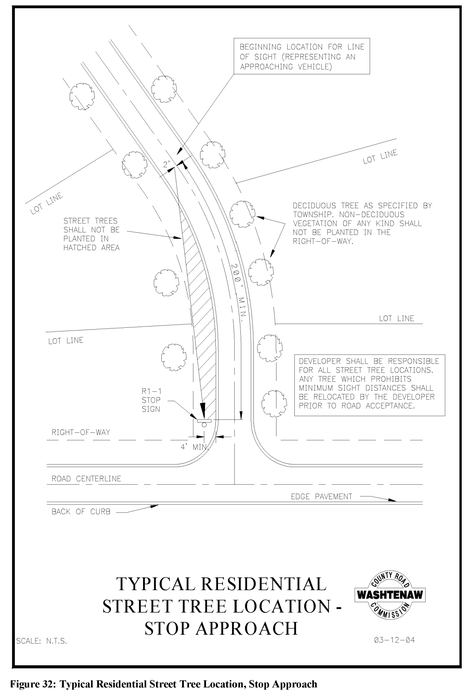

Figure 32: Typical Residential Street Tree Location, Stop Approach

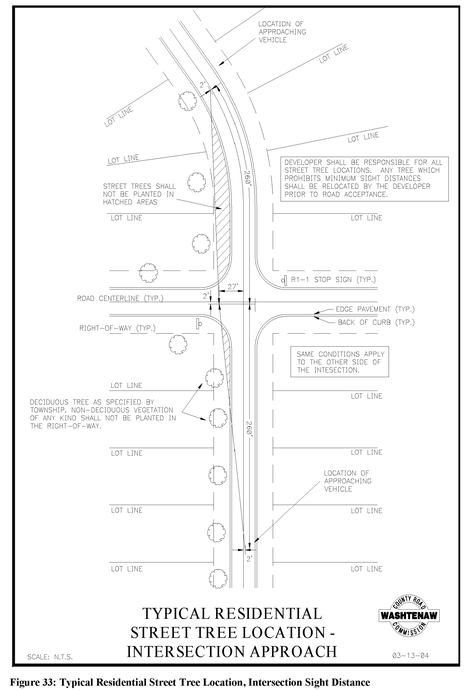

Figure 33: Typical Residential Street Tree Location, Intersection Sight Distance

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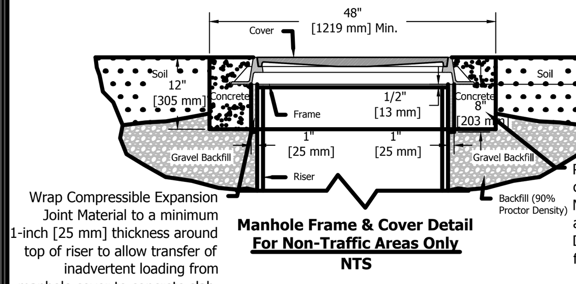
Aqua-Swirl Polymer Coated Steel (PCS)
Stormwater Treatment System

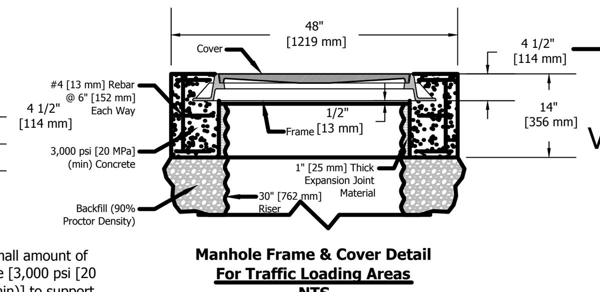
If traffic loading (H-20) is required or anticipated, a 4-foot [1.22 m] diameter, 14-inch [356 mm] thick reinforced concrete pad must be placed over the Stormwater Treatment System Riser to support and level the manhole frame, as shown. The top of riser pipe must be wrapped with compressible expansion joint material to a minimum 1-inch [25 mm] thickness to allow transfer of wheel loads from manhole cover to concrete slab. Manhole cover shall bear on concrete slab and not on riser pipe. The concrete slab shall have a minimum strength of 3,000 psi [20 MPa] and be reinforced with #4 [13 mm] reinforcing steel as shown. Minimum cover over reinforcing steel shall be 1-inch [25 mm]. Top of manhole cover and concrete slab shall be level with finish grade.

Unless other traffic barriers are present, bollards shall be placed around access riser(s) in non-traffic areas to prevent inadvertent loading by maintenance vehicles.

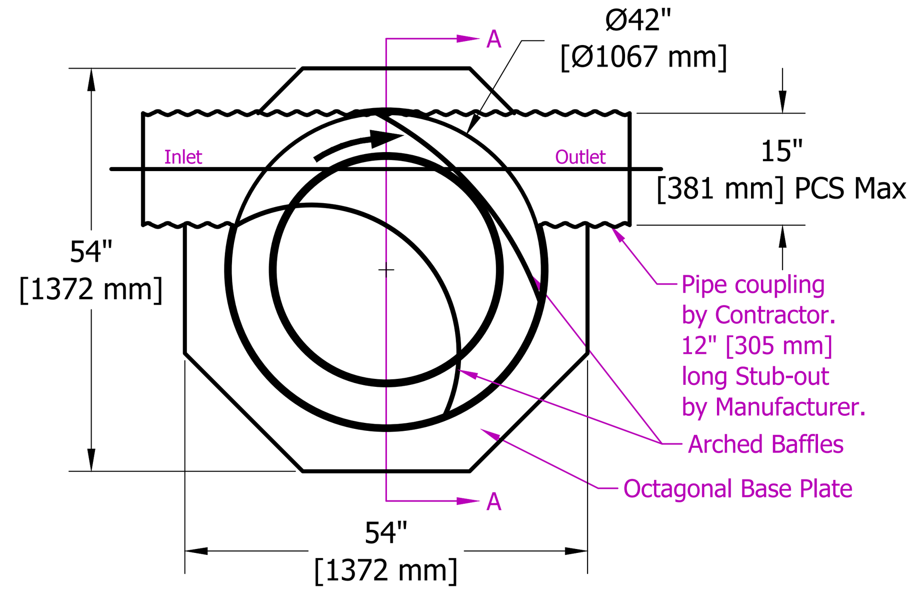
* **Please see accompanied Aqua-Swirl specification notes.**
* **See Site Plan for actual system orientation.**



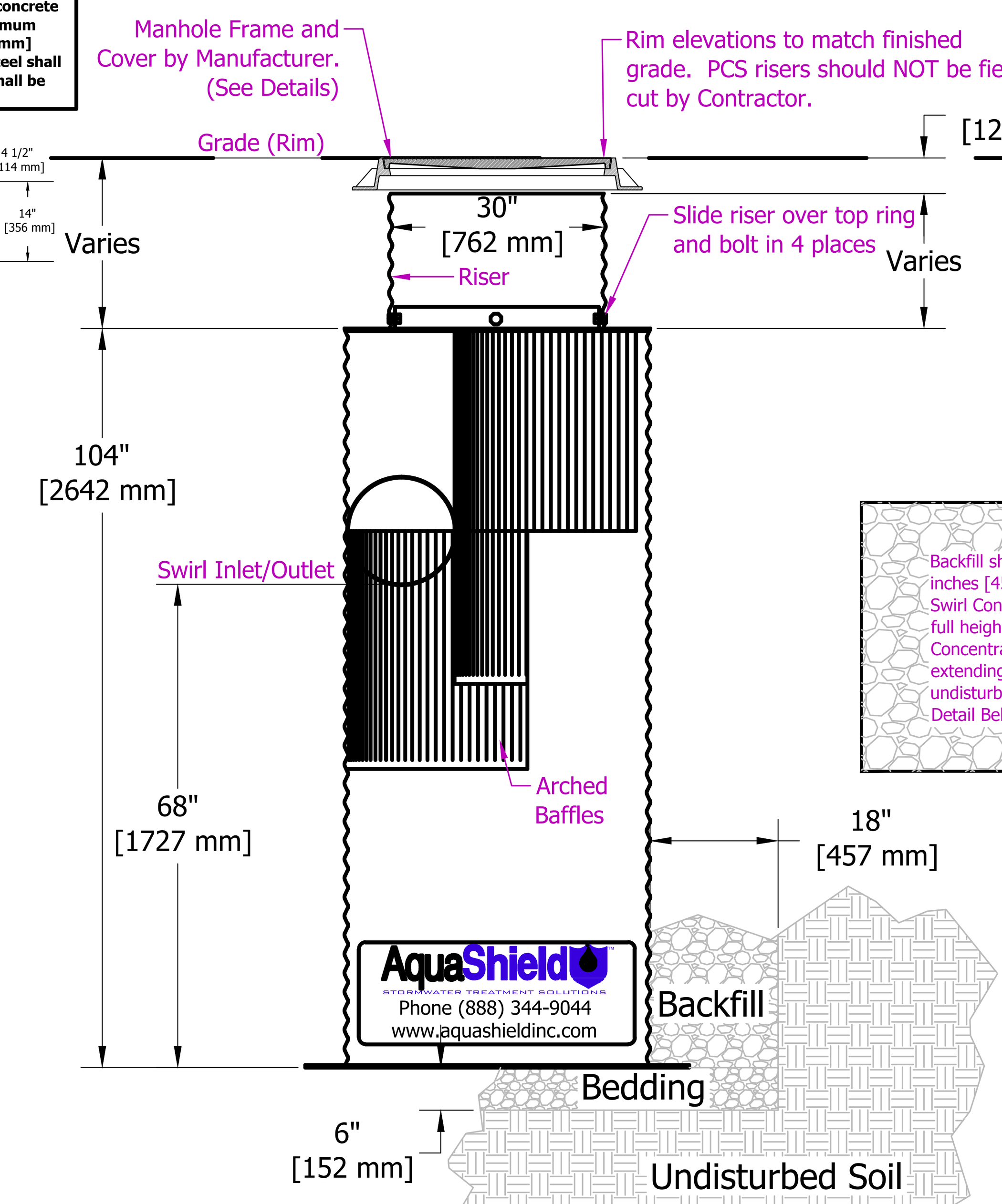
Manhole Frame & Cover Detail
For Non-Traffic Areas Only
NTS



Manhole Frame & Cover Detail
For Traffic Loading Areas
NTS



Plan View



Backfill shall extend at least 18 inches [457 mm] outward from Swirl Concentrator and for the full height of the Swirl Concentrator (including riser) extending laterally to undisturbed soils. (See MH Detail Below)

Section A-A

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www.aquashieldinc.com

Document:	AS-3 PCS STD
Drawn By:	JCW
Scale:	1:20
Date:	01/20/11

U.S. Patent No. 6524473 and other Patent Pending

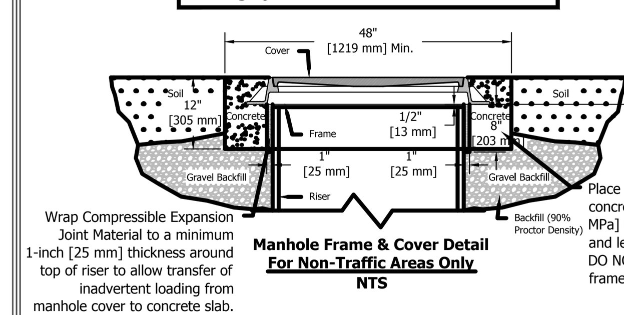
Aqua-Swirl Concentrator Model AS-3 CFD PCS Standard Detail

Aqua-Swirl Polymer Coated Steel (PCS)
Stormwater Treatment System

If traffic loading (H-20) is required or anticipated, a 4-foot [1.22 m] diameter, 14-inch [356 mm] thick reinforced concrete pad must be placed over the Stormwater Treatment System Riser to support and level the manhole frame, as shown. The top of riser pipe must be wrapped with compressible expansion joint material to a minimum 1-inch [25 mm] thickness to allow transfer of wheel loads from manhole cover to concrete slab. Manhole cover shall bear on concrete slab and not on riser pipe. The concrete slab shall have a minimum strength of 3,000 psi [20 MPa] and be reinforced with #4 [13 mm] reinforcing steel as shown. Minimum cover over reinforcing steel shall be 1-inch [25 mm]. Top of manhole cover and concrete slab shall be level with finish grade.

Unless other traffic barriers are present, bollards shall be placed around access riser(s) in non-traffic areas to prevent inadvertent loading by maintenance vehicles.

* **Please see accompanied Aqua-Swirl specification notes.**
* **See Site Plan for actual system orientation.**



Manhole Frame & Cover Detail
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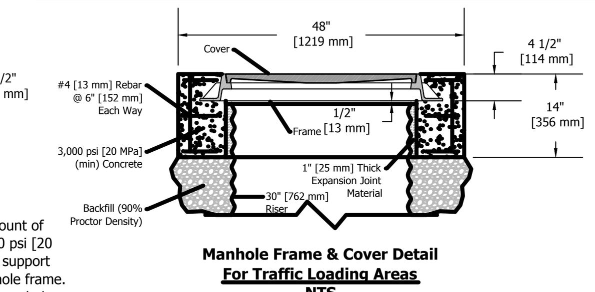
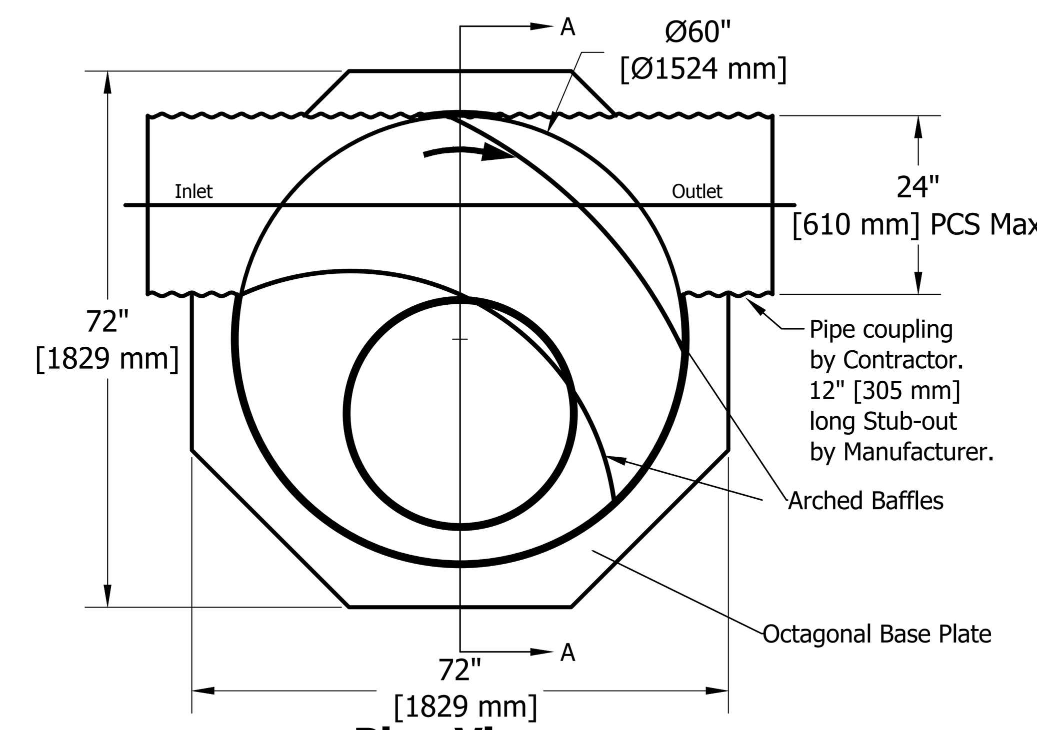
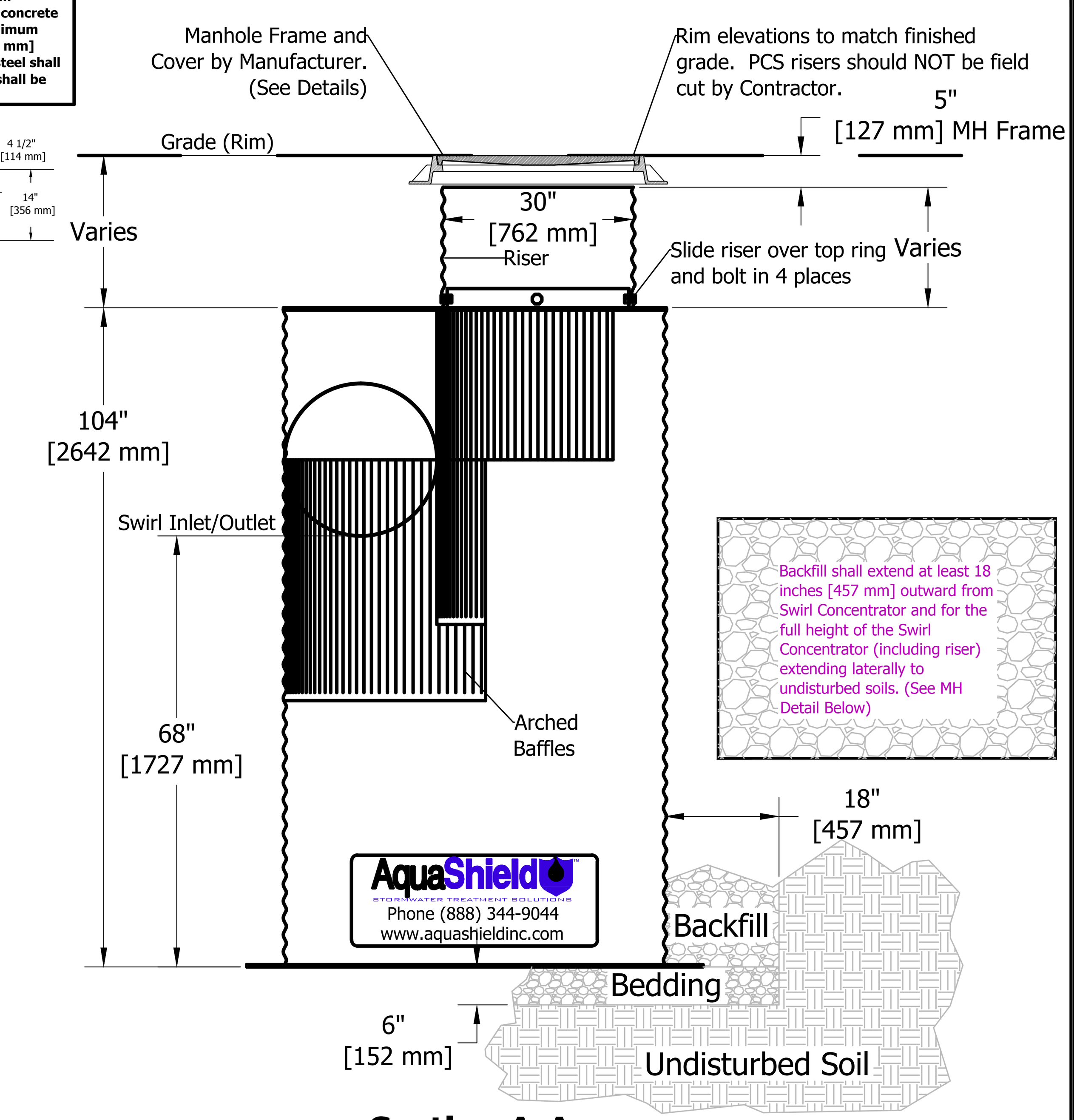
NTS



Manhole Frame & Cover Detail
For Traffic Loading Areas
NTS



Plan View



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Section A-A

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U.S. Patent No. 6524473 and other Patent Pending

Aqua-Swirl Concentrator Model AS-5 CFD PCS Standard Detail

AQUA-SWIRL™ PCS SPECIFICATION NOTES

03-19-13

Manufacturer shall be responsible for complete sembly of Swirl Concentrator.

Polymer Coated Steel (PCS) Swirl Concentrator all be fabricated from polymer pre-coated steel eet for corrugated steel pipe, and shall comply th ASTM A 760 and ASTM A 742.

Stub outs and internal components shall be pplied by manufacturer and MIG welded using cepted welding practices.

Manufacturer shall supply direct access to Swirl ncentrator via 30-inch ID riser(s). Riser should t be field cut by Contractor, Riser should aintain its finish cut length as supplied by anufacturer to match final grade per approved e elevations (as indicated on approved shop awing). If necessary to extend riser, Contractor ould use adjusting rings to bring top of structure grade.

Contractor shall supply pipe couplings to and m Swirl Concentrator, which shall be Mar-Mac, rnco, or Mission style flexible boot with stainless el tension bands and shear guard. Mar-Mac uplings should be used for connections to rrugated plastic pipe and are recommended for e with larger diameter pipe (e.g. 24" ID and ger). A concrete cradle is recommended neath Mar Mac's to prevent joint movement.

Contractor shall prepare excavation and off-d Swirl Concentrator. Contractor is responsible bedding and backfill around Swirl Concentrator detailed on site plan. (see notes 11 and 12)

Manufacturer shall supply standard manhole me(s) and cover(s). (Traffic rated H20)

Where traffic loading (H-20) is required or ticipated, a 4-foot diameter, 14-inch thick nforced concrete pad must be placed over the irl Concentrator to support and level the anhole frame. The top of riser pipe must be apped with compressible expansion joint aterial to a minimum 1-inch thickness to allow nsfer of wheel loads from manhole cover to ncrete slab. Manhole cover shall bear on ncrete slab and not on riser pipe. The concrete b shall have a minimum strength of 3,000 psi d be reinforced with #4 reinforcing steel (per awing). Minimum cover over reinforcing steel all be 1-inch. Top of manhole cover and ncrete slab shall be level with finish grade.

9. Unless other traffic barriers are present, bollards shall be placed around access risers in non-traffic areas to prevent inadvertent loading by maintenance vehicles. Sample of typical bollard installation detail and recommended locations of bollards around the Swirl Concentrator can be provided upon request.

10. Where high groundwater elevations are present or anticipated, Contractor shall supply concrete anti-floatation pad underneath and poured over the octagonal base plate of the swirl (see Anti-Floatation Base Detail) to prevent buoyancy and base plate deflection (details, if necessary, available upon request).

11. Excavation and Bedding - The trench and trench bottom shall be constructed in accordance with ASTM A 798 Section 5, Trench Excavation, Section 6, Foundation, and Section 7, Bedding. The PCS Swirl Concentrator shall be installed on a stable base consisting of at least 6-inches of fine, readily compacted soil or granular fill material, and compacted to 95% proctor density. Bedding shall not contain stones retained on a 3-inch ring, frozen lumps, highly plastic clay, organic material, corrosive material, or other deleterious foreign materials. All required safety precautions for Swirl Concentrator installation are the responsibility of the Contractor and shall be per OSHA approved methods.

12. Backfill Requirements - Backfill materials shall be fine, readily compacted soil or granular fill material, and compacted to 90% proctor density. Processed granular materials with excellent structural characteristics are preferred. Coarse grained soils of USCS Groups GW, GP, GM, GC, SW, and SP as described in ASTM D 2487 are generally acceptable materials when compacted to 90% proctor density. Backfill shall not contain stones retained on a 3-inch ring, frozen lumps, highly plastic clay, organic material, corrosive material, or other deleterious foreign materials. Backfilling shall conform to ASTM A 798, Section 10, Structural Backfill Placement. Backfill shall be placed in 6 to 12 inch layers or "lifts" and compacted before adding the next lift. Backfill shall extend at least 18 inches outward from Swirl Concentrator and for the full height of the Swirl Concentrator (including riser(s)) extending laterally to undisturbed soils.

Structure	AquaSwirl Sizing Result	Pipe Diameter	Recommended AquaSwirl
R39	AS-2	12"	AS-2 CFD
R47	AS-3	24"	AS-5 CFD
R133	AS-3	18"	AS-3 CFD
R227	AS-2	12"	AS-2 CFD
R235	AS-3	18"	AS-3 CFD

Aqua-Swirl Polymer Coated Steel (PCS)
Stormwater Treatment System

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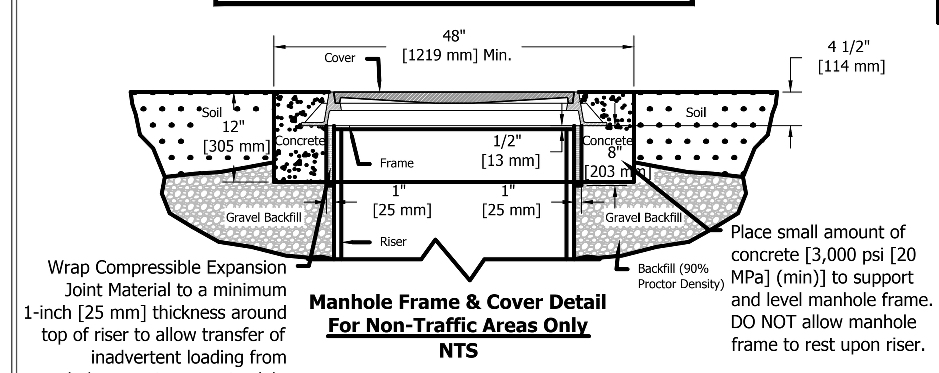
* **Please see accompanied Aqua-Swirl specification notes.**
* **See Site Plan for actual system orientation.**



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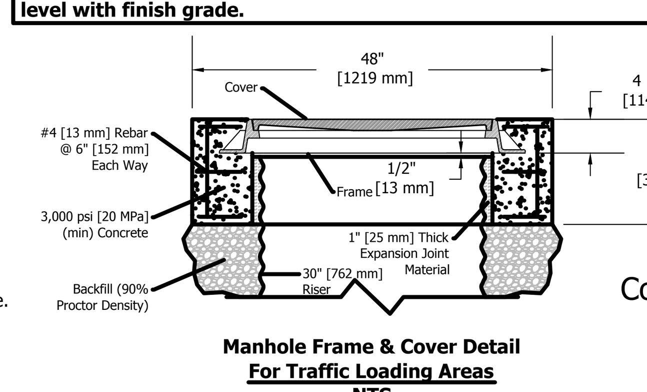
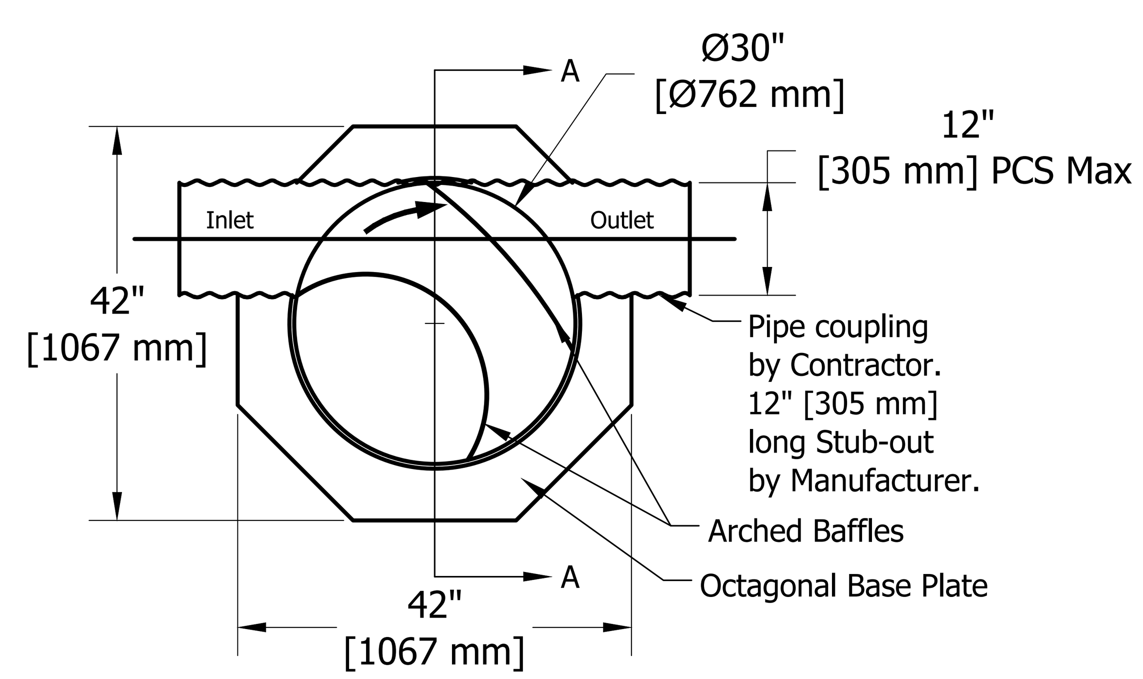
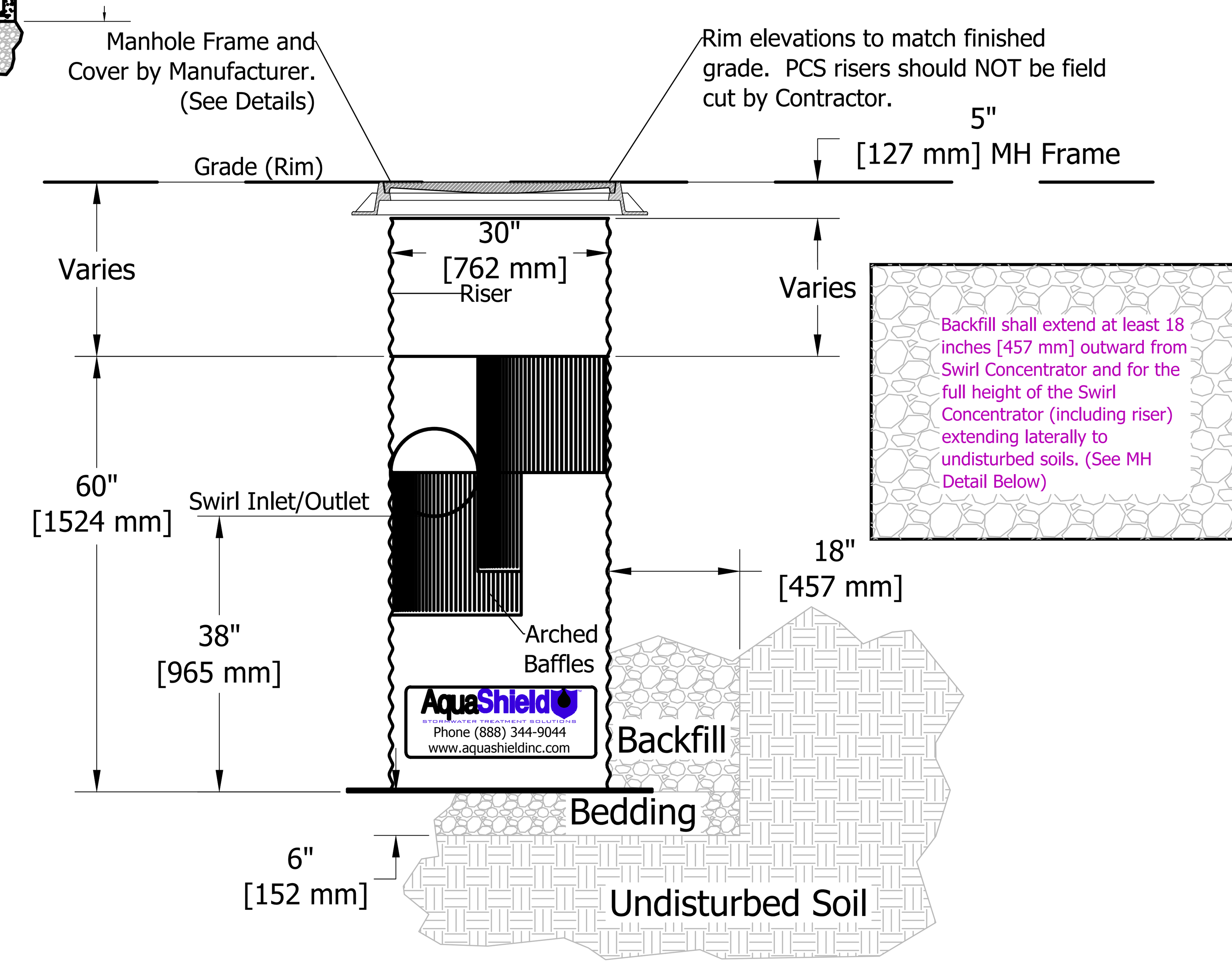


Manhole Frame & Cover Detail
For Traffic Loading Areas
NTS



Plan View



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Section A-A

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Aqua-Swirl Concentrator Model AS-2 CFD PCS Standard Detail

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FINAL SITE PLANS
STORMWATER TREATMENT STRUCTURE DETAILS

DATE 05/12/14
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P.M. E. LORD	
BOOK 1148	
CAD FILE: 11000143CP-88-91-DT	
JOB 11000143	
FILE CODE:	
SHEET NO. CP-90	

R39

AquaShield™ STORMWATER TREATMENT SOLUTIONS — **Sizing Report**

2719 Kanasita Drive • Chattanooga, TN 37343 • Phone: (423) 870-8888 • Fax: (423) 826-2112 • www.aquashieldinc.com

Site Information

Project Name: Fieldstone Park
Site Area (acres): 1.06
Unit Label: R39
Runoff Coeff. : .61
Unit Location: Washtenaw County, MI
Target Removal Efficiency(%): 80 %

Product Recommendation

Aqua-Swirl™ Model	Net Annual TSS Removal Efficiency	Chamber Diameter	Maximum Stub-Out Pipe Outer Diameter		Oil/Debris Storage Capacity	Sediment Storage Capacity
			Offline	CFD[1]		
AS-2	92.59 %	2.5 ft.	8 in.	12 in.	37 gal	10 ft[3]

Rainfall Information

NCDC Station[1]: ANN ARBOR UNIV OF MICH, MI
Data Range: 5913 days (~16.20 yrs within 55 yr span)[2]

Rainfall Event Range (in./hr)	Rainfall Interval Point (in./hr)	Operating Rate (gpm/ft^2)	Total Rainfall (%)	Removal Efficiency (%)[1]	Relative Efficiency(%)
0.08 - 0.10	0.090	6.13	69.14	95.59	66.03
0.10 - 0.12	0.110	7.49	3.62	94.79	3.43
0.12 - 0.14	0.130	8.86	2.47	94.03	2.32
0.14 - 0.16	0.150	10.22	2.47	93.21	2.30
0.16 - 0.18	0.170	11.58	1.54	92.35	1.42
0.18 - 0.20	0.190	12.94	8.90	91.43	8.14
0.20 - 0.25	0.225	15.33	2.19	89.70	1.96
0.25 - 0.35	0.300	20.44	4.34	85.47	3.71
0.35 - 0.45	0.400	27.25	2.13	78.71	1.68
0.45 - 0.55	0.500	34.06	1.07	70.67	0.76
0.55 - 0.65	0.600	40.87	0.63	61.34	0.39
0.65 - 0.75	0.700	47.68	0.47	50.74	0.24
0.75 - 1.00	0.825	56.20	0.59	35.88	0.21
		Total Cumulative Rainfall %:	99.56[1]	Net Annual %:	92.59

Sales Agent Information

Agent Name: Joe OBrien
Phone: (734) 657-3839
Company Name: Entel Service & Technology
Fax: (734) 944-7754
Address: 5782 Katz Farm Court
E-mail: josephobrienpg@gmail.com
City, State Zip: Saline, MI 48176

R47

AquaShield™ STORMWATER TREATMENT SOLUTIONS — **Sizing Report**

2719 Kanasita Drive • Chattanooga, TN 37343 • Phone: (423) 870-8888 • Fax: (423) 826-2112 • www.aquashieldinc.com

Site Information

Project Name: Fieldstone Park
Site Area (acres): 5.63
Unit Label: R47
Runoff Coeff. : .46
Unit Location: Washtenaw County, MI
Target Removal Efficiency(%): 80 %

Product Recommendation

Aqua-Swirl™ Model	Net Annual TSS Removal Efficiency	Chamber Diameter	Maximum Stub-Out Pipe Outer Diameter		Oil/Debris Storage Capacity	Sediment Storage Capacity
			Offline	CFD[1]		
AS-3	84.24 %	3.25 ft.	10 in.	16 in.	110 gal	20 ft[3]

Rainfall Information

NCDC Station[1]: ANN ARBOR UNIV OF MICH, MI
Data Range: 5913 days (~16.20 yrs within 55 yr span)[2]

Rainfall Event Range (in./hr)	Rainfall Interval Point (in./hr)	Operating Rate (gpm/ft^2)	Total Rainfall (%)	Removal Efficiency (%)[1]	Relative Efficiency(%)
0.08 - 0.10	0.090	12.62	69.14	91.65	63.37
0.10 - 0.12	0.110	15.43	3.62	89.63	3.24
0.12 - 0.14	0.130	18.23	2.47	87.39	2.16
0.14 - 0.16	0.150	21.04	2.47	84.92	2.10
0.16 - 0.18	0.170	23.84	1.54	82.25	1.27
0.18 - 0.20	0.190	26.65	8.90	79.35	7.06
0.20 - 0.25	0.225	31.55	2.19	73.78	1.62
0.25 - 0.35	0.300	42.07	4.34	59.57	2.59
0.35 - 0.45	0.400	56.10	2.13	35.87	0.76
0.45 - 0.55	0.500	70.12	1.07	6.75	0.07
		Total Cumulative Rainfall %:	97.87[1]	Net Annual %:	84.24

Sales Agent Information

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City, State Zip: Saline, MI 48176

R143

AquaShield™ STORMWATER TREATMENT SOLUTIONS — **Sizing Report**

2719 Kanasita Drive • Chattanooga, TN 37343 • Phone: (423) 870-8888 • Fax: (423) 826-2112 • www.aquashieldinc.com

Site Information

Project Name: Fieldstone Park
Site Area (acres): 2.75
Unit Label: ~~R100~~ R143
Runoff Coeff. : .61
Unit Location: Washtenaw County, MI
Target Removal Efficiency(%): 80 %

Product Recommendation

Aqua-Swirl™ Model	Net Annual TSS Removal Efficiency	Chamber Diameter	Maximum Stub-Out Pipe Outer Diameter		Oil/Debris Storage Capacity	Sediment Storage Capacity
			Offline	CFD[1]		
AS-3	90.07 %	3.25 ft.	10 in.	16 in.	110 gal	20 ft[3]

Rainfall Information

NCDC Station[1]: ANN ARBOR UNIV OF MICH, MI
Data Range: 5913 days (~16.20 yrs within 55 yr span)[2]

Rainfall Event Range (in./hr)	Rainfall Interval Point (in./hr)	Operating Rate (gpm/ft^2)	Total Rainfall (%)	Removal Efficiency (%)[1]	Relative Efficiency(%)
0.08 - 0.10	0.090	8.18	69.14	94.41	65.28
0.10 - 0.12	0.110	9.99	3.62	93.35	3.38
0.12 - 0.14	0.130	11.81	2.47	92.20	2.28
0.14 - 0.16	0.150	13.63	2.47	90.95	2.25
0.16 - 0.18	0.170	15.44	1.54	89.62	1.38
0.18 - 0.20	0.190	17.26	8.90	88.19	7.85
0.20 - 0.25	0.225	20.44	2.19	85.47	1.87
0.25 - 0.35	0.300	27.25	4.34	78.71	3.42
0.35 - 0.45	0.400	36.34	2.13	67.69	1.44
0.45 - 0.55	0.500	45.42	1.07	54.40	0.58
0.55 - 0.65	0.600	54.50	0.63	38.84	0.24
0.65 - 0.75	0.700	63.59	0.47	20.99	0.10
		Total Cumulative Rainfall %:	98.97[1]	Net Annual %:	90.07

Sales Agent Information

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R227

AquaShield™ STORMWATER TREATMENT SOLUTIONS — **Sizing Report**

2719 Kanasita Drive • Chattanooga, TN 37343 • Phone: (423) 870-8888 • Fax: (423) 826-2112 • www.aquashieldinc.com

Site Information

Project Name: Fieldstone Park
Site Area (acres): 0.97
Unit Label: R227
Runoff Coeff. : .55
Unit Location: Washtenaw County, MI
Target Removal Efficiency(%): 80 %

Product Recommendation

Aqua-Swirl™ Model	Net Annual TSS Removal Efficiency	Chamber Diameter	Maximum Stub-Out Pipe Outer Diameter		Oil/Debris Storage Capacity	Sediment Storage Capacity
			Offline	CFD[1]		
AS-2	93.81 %	2.5 ft.	8 in.	12 in.	37 gal	10 ft[3]

Rainfall Information

NCDC Station[1]: ANN ARBOR UNIV OF MICH, MI
Data Range: 5913 days (~16.20 yrs within 55 yr span)[2]

Rainfall Event Range (in./hr)	Rainfall Interval Point (in./hr)	Operating Rate (gpm/ft^2)	Total Rainfall (%)	Removal Efficiency (%)[1]	Relative Efficiency(%)
0.08 - 0.10	0.090	5.06	69.14	96.03	66.40
0.10 - 0.12	0.110	6.18	3.62	95.48	3.46
0.12 - 0.14	0.130	7.31	2.47	94.89	2.34
0.14 - 0.16	0.150	8.43	2.47	94.27	2.33
0.16 - 0.18	0.170	9.56	1.54	93.61	1.44
0.18 - 0.20	0.190	10.68	8.90	92.93	8.27
0.20 - 0.25	0.225	12.65	2.19	91.83	2.01
0.25 - 0.35	0.300	16.86	4.34	88.51	3.84
0.35 - 0.45	0.400	22.48	2.13	83.58	1.78
0.45 - 0.55	0.500	28.11	1.07	77.76	0.83
0.55 - 0.65	0.600	33.73	0.63	71.09	0.45
0.65 - 0.75	0.700	39.35	0.47	63.54	0.30
0.75 - 1.00	0.825	46.37	0.59	52.88	0.31
1.00 - 1.25	1.125	63.24	0.23	21.72	0.05
		Total Cumulative Rainfall %:	99.79[1]	Net Annual %:	93.81

Sales Agent Information

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R235

AquaShield™ STORMWATER TREATMENT SOLUTIONS — **Sizing Report**

2719 Kanasita Drive • Chattanooga, TN 37343 • Phone: (423) 870-8888 • Fax: (423) 826-2112 • www.aquashieldinc.com

Site Information

Project Name: Fieldstone Park
Site Area (acres): 3.17
Unit Label: R235
Runoff Coeff. : .63
Unit Location: Washtenaw County, MI
Target Removal Efficiency(%): 80 %

Product Recommendation

Aqua-Swirl™ Model	Net Annual TSS Removal Efficiency	Chamber Diameter	Maximum Stub-Out Pipe Outer Diameter		Oil/Debris Storage Capacity	Sediment Storage Capacity
			Offline	CFD[1]		
AS-3	88.07 %	3.25 ft.	10 in.	16 in.	110 gal	20 ft[3]

Rainfall Information

NCDC Station[1]: ANN ARBOR UNIV OF MICH, MI
Data Range: 5913 days (~16.20 yrs within 55 yr span)[2]

Rainfall Event Range (in./hr)	Rainfall Interval Point (in./hr)	Operating Rate (gpm/ft^2)	Total Rainfall (%)	Removal Efficiency (%)[1]	Relative Efficiency(%)
0.08 - 0.10	0.090	9.73	69.14	93.51	64.65
0.10 - 0.12	0.110	11.90	3.62	92.14	3.34
0.12 - 0.14	0.130	14.06	2.47	90.64	2.24
0.14 - 0.16	0.150	16.22	2.47	89.02	2.20
0.16 - 0.18	0.170	18.39	1.54	87.25	1.34
0.18 - 0.20	0.190	20.55	8.90	85.37	7.60
0.20 - 0.25	0.225	24.33	2.19	81.76	1.79
0.25 - 0.35	0.300	32.45	4.34	72.68	3.15
0.35 - 0.45	0.400	43.26	2.13	57.77	1.23
0.45 - 0.55	0.500	54.08	1.07	39.61	0.42
0.55 - 0.65	0.600	64.89	0.63	18.25	0.11
		Total Cumulative Rainfall %:	98.5[1]	Net Annual %:	88.07

Sales Agent Information

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City, State Zip: Saline, MI 48176

Know what's **below.** Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 23
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
DIVERSE REAL ESTATE LLC
FIELDSTONE PARK
FINAL SITE PLANS
STORMWATER TREATMENT STRUCTURE CALCULATIONS

DATE 05/12/14
REVISIONS

ATWELL
SCALE 0 NO SCALE
DR. JEC CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-88-91-DT
JOB 11000143
FILE CODE:
SHEET NO. CP-91

STORM SEWER AND DRAINAGE STRUCTURES

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 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. Concrete 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 stencilled 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.

B. Covers shall be as follows:

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

2. For use on drainage structures in paved areas: East Jordan 1040Z, with Type M1 cover, with "DUMP NO WASTE" lettering and trout logo.

3. For use on drainage structures in curbed areas: East Jordan 7045 or 7065, with "DUMP NO WASTE" lettering and trout logo.

4. For use on drainage structures in landscaped areas: East Jordan 1040Z, with Type 02 Beehive grate, with "DUMP NO WASTE" lettering and trout logo.

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

D. All covers for drainage structures shall have storm drain markers affixed to the nearest available flat surface. The storm drain markers shall be manufactured by Das Manufacturing and shall be #SDR "No Dumping. Drains to River." The storm drain markers shall be installed per the manufacturer's recommendations.

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.

B. 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 within four pipe lengths behind pipe laying.

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 in 12-inch lifts 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.

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.

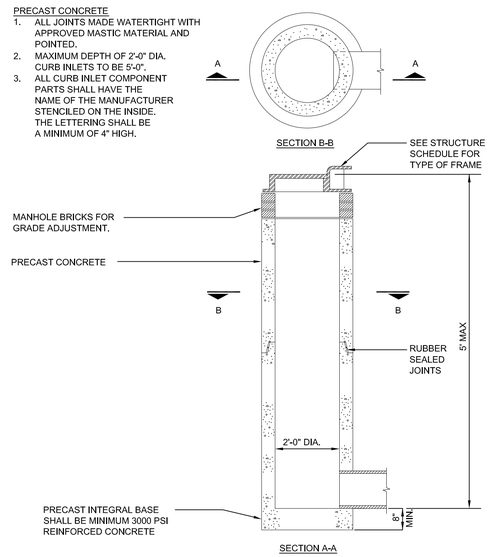
C. For connections to existing precast reinforced concrete manholes, a hole shall be cored into the concrete manhole wall to receive the pipe. Reinforcing steel shall not be cut out shall be bent and replaced in the area that is to be patched. A form shall be constructed over the area of pipe penetration.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

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

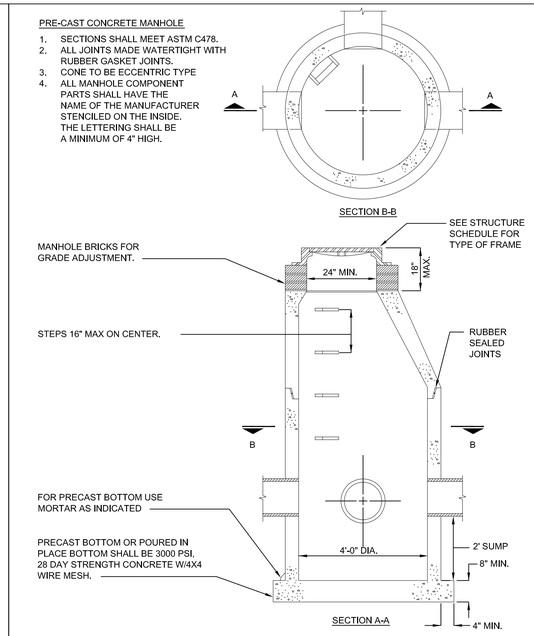
3.05 ANIMAL GRATES

A. Animal grates shall be required on all endsections greater than 12-inch diameter.

PCT February 2008



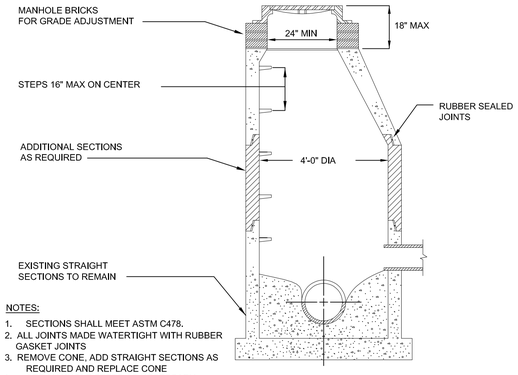
2' DIAMETER INLET



4' DIAMETER CATCH BASIN

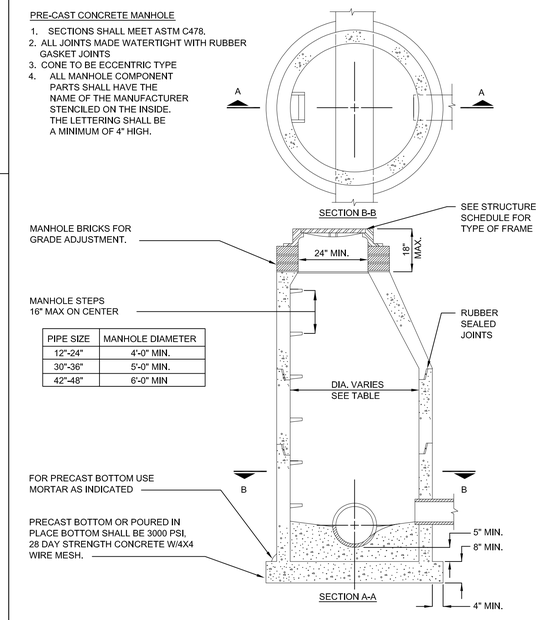
AFFIX TO SURFACE ON OR NEAR ALL DRAINAGE COVERS.

STORM DRAIN MARKER



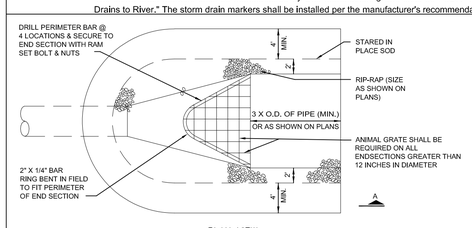
NOTES:
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. REMOVE CONE, ADD STRAIGHT SECTIONS AS REQUIRED AND REPLACE CONE
4. ADD MANHOLE STEPS AS NECESSARY
5. ADD ADJUSTMENT RINGS FOR RIM GRADE ADJUSTMENT

MANHOLE & CATCH BASIN RECONSTRUCTION DETAIL



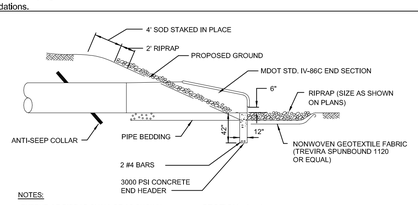
PIPE SIZE	MANHOLE DIAMETER
12"-24"	4'-0" MIN.
30"-36"	5'-0" MIN.
42"-48"	6'-0" MIN

STORM SEWER MANHOLE



PLAN VIEW

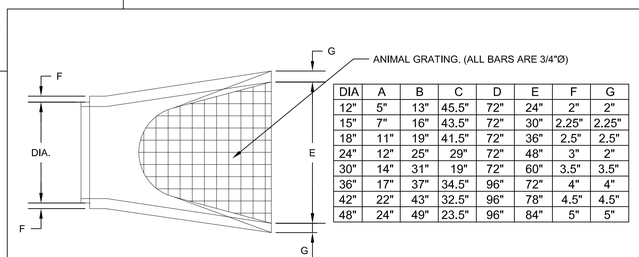
1. RIPRAP THICKNESS AS SHOWN ON PLANS



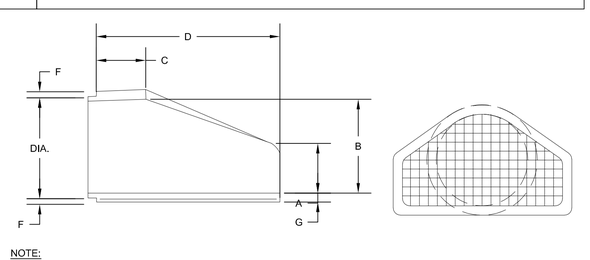
NOTES:
EXTENT OF RIPRAP SHALL BE AS SHOWN HERE OR AS SHOWN ON PLANS, WHICHEVER IS GREATEST.

SECTION A–A

END SECTION AND RIPRAP DETAIL



DIA	A	B	C	D	E	F	G
12"	5"	13"	45.5"	72"	24"	2"	2"
15"	7"	16"	43.5"	72"	30"	2.25"	2.25"
18"	11"	19"	41.5"	72"	36"	2.5"	2.5"
24"	12"	25"	29"	72"	48"	3"	2"
30"	14"	31"	19"	72"	60"	3.5"	3.5"
36"	17"	37"	34.5"	96"	72"	4"	4"
42"	22"	43"	32.5"	96"	78"	4.5"	4.5"
48"	24"	49"	23.5"	96"	84"	5"	5"



NOTE:
FLARED END SECTIONS SHALL BE MANUFACTURED TO THE CLASS SPECIFICATIONS AS THE PIPE ITSELF.

STANDARD END SECTIONS FOR PRECAST CONCRETE

Pittsfield Charter Township
6201 W. Michigan Ave.
Ann Arbor, MI 48108–9721
48108–9721
Tel. 734.822.3101
www.pittsfield-mi.gov

TWP REV	BWA	DRW	12.08.09
TWP REV	BWA	DRW	11.04.27
UPDATES	BWA	DRW	10.10.25
UPDATES	TTN	DRW	10.01.20
Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
File Name: ST–01	TTN	DRW	07.10.01
	Dwn.	Chkd.	Dsgn. YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

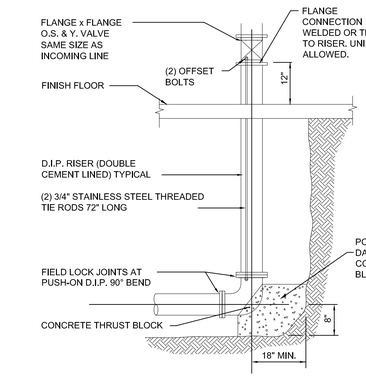
Pittsfield Township, Michigan

Title
STORM SEWER DETAILS AND SPECIFICATIONS

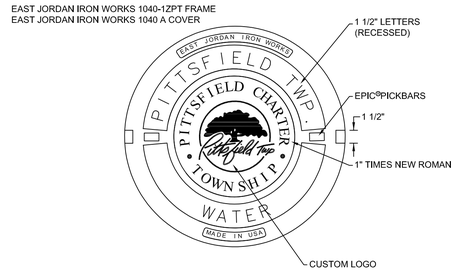
Project No. 2075001300

Scale NOT TO SCALE

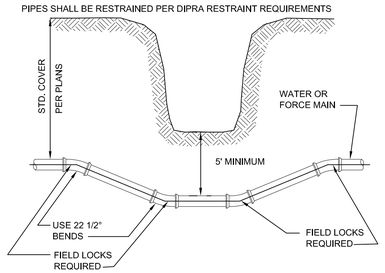
Revision



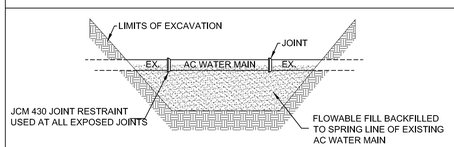
FIRE PROTECTION RISER DETAIL



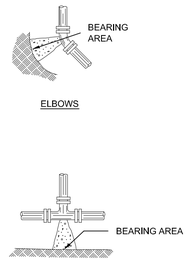
COVER DETAIL



DITCH & STREAM CROSSING



ASBESTOS CEMENT (AC) WATER MAIN



ELBOWS					
PIPE DIA. INCHES		BEARING AREA SQUARE FEET			
		90°	45°	22 1/2°	11 1/4°
4		2.1	1.1	0.6	0.3
6		4.1	2.2	1.1	0.6
8		6.8	3.7	1.9	0.9
10		10.1	5.5	2.8	1.4
12		14.1	7.6	3.9	2.0
16		24.2	13.0	6.7	3.3
18		30.0	16.3	8.3	4.2
20		36.8	19.9	10.1	5.1

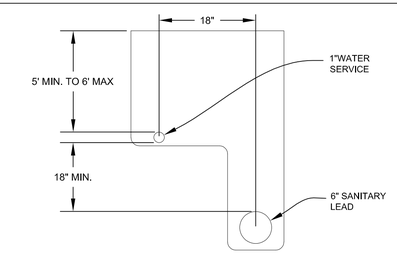
TEES, CROSSES & HYDRANTS		
PIPE DIA. INCHES		BEARING AREA SQUARE FEET
4		1.5
6		2.9
8		4.8
10		7.1
12		10.0
16		17.1
18		21.0
20		26.0

NOTES:
1. CONCRETE FOR ALL THRUST BLOCKS SHALL BE 3000 PSI, 28 DAY STRENGTH MIN.
2. ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH
3. BOLTS, FITTINGS & JOINTS SHALL BE KEPT CLEAR OF CONCRETE
4. A BEARING CAPACITY OF 2000# PER FOOT WAS USED IN DETERMINING THE MINIMUM "BEARING AREAS" IN THE ABOVE TABLE
5. THE CROSS SECTION OF THE THRUST BLOCKS SHALL BE SQUARE
6. IN ADDITION TO THRUST BLOCKS, ALL PIPE JOINTS SHALL BE RESTRAINED WITH LOCKING GASKETS PER DIPRA'S STANDARDS.

SOIL CHARACTERISTICS	FACTOR
(A) LOOSE COARSE OR MEDIUM SAND; COMPACT FINE SAND; COMPACT SAND-CLAY SOILS; STIFF CLAY	0.33
(B) FIRM FINE SAND; COMPACT INORGANIC SILT; FIRM SAND-CLAY SOILS; MEDIUM CLAY	0.50
(C) LOOSE FINE SAND; FIRM INORGANIC SILT	0.67
(D) LOOSE SAND-CLAY SOILS; LOOSE INORGANIC SILT SOFT CLAY	1.00

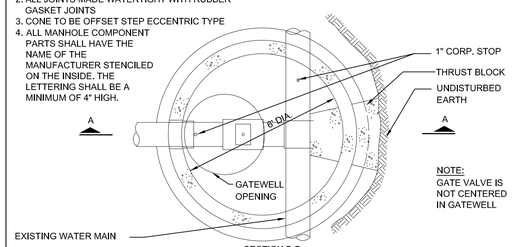
"BEARING AREA" x FACTOR = ACTUAL BEARING AREA
2.1 x .5 = 1.05 SQ. FT.
BASED UPON 150# TEST PRESSURE

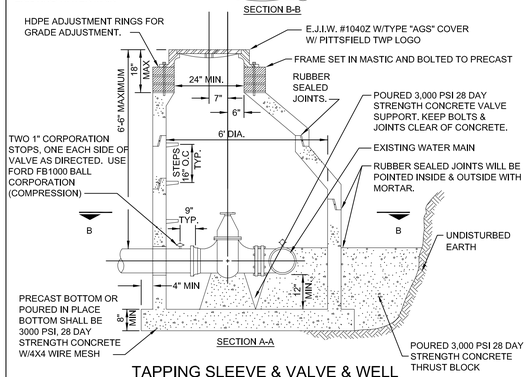
THRUST BLOCK



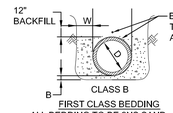
TYPICAL L TRENCH DETAIL HOUSE LEADS

PRE-CAST CONCRETE MANHOLE
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. CONE TO BE OFFSET STEP ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.





TAPPING SLEEVE & VALVE & WELL



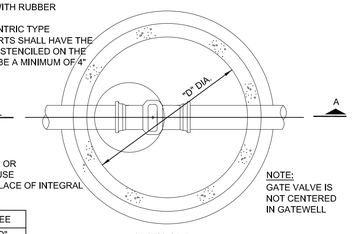
BLUE, 12 GAUGE SINGLE STRAND TRACER WIRE ATTACHED TO WATER MAIN PIPE MUST BE WRAPPED WITH POLLY WRAP AND SECURELY TAPED AT ENDS.

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"

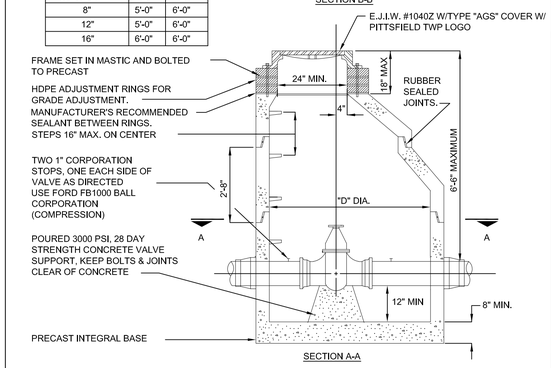
NOTES:
1. MINIMUM TRENCH WIDTH (SEE TABLE).
2. RECESS TRENCH TO RELIEVE THE BELL OF ALL LOAD. PIPE HAUNCHES SHALL BE COMPACTED.
3. 2NS BACKFILL TO DEPTH OF ONE FOOT ABOVE PIPE. TAMPED LAYERS NOT TO EXCEED 6" IN DEPTH. PLATE COMPACT ABOVE PIPE (ON 1st LIFT)
4. ALL PIPE TO BE PLACED AND JOINTED IN A DRY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

BEDDING

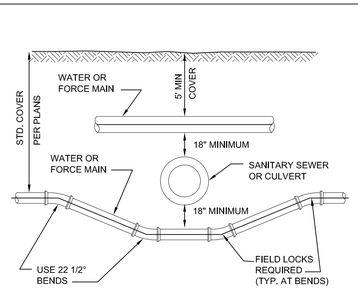
PRE-CAST CONCRETE MANHOLE
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. CONE TO BE OFFSET STEP ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.
5. PROVIDE INTEGRAL BASE.
6. KOR-N-SEAL BOOTS OR APPROVED EQUAL TO BE INSTALLED AT PIPE PENETRATIONS.
7. WHERE GATE WELLS ARE CONSTRUCTED OVER EXISTING WATERMAIN, POURED IN PLACE OR PRECAST COOKIE AND DOGHOUSE STRUCTURES MY BE USED IN PLACE OF INTEGRAL BASE.



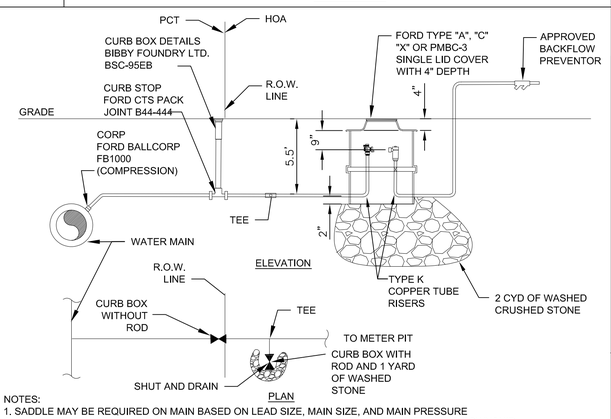
STRAIGHT THRU		TEE
VALVE SIZE	"D"	"D"
8"	5'-0"	6'-0"
12"	5'-0"	6'-0"
16"	6'-0"	6'-0"



STANDARD GATE VALVE & WELL

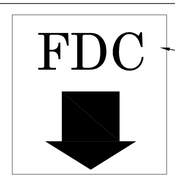


SEWER OR CULVERT CROSSING



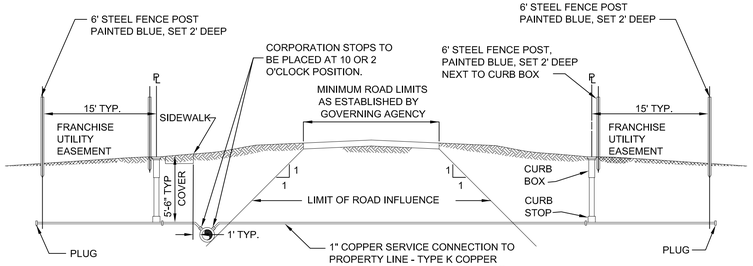
NOTES:
1. SADDLE MAY BE REQUIRED ON MAIN BASED ON LEAD SIZE, MAIN SIZE, AND MAIN PRESSURE
2. ALL WATER MAIN TAPS AND COMPONENT PARTS SHALL BE APPROVED BY THE PITTSFIELD TOWNSHIP UTILITIES DEPARTMENT PRIOR TO INSTALLATION.
3. INSTALLATION SHALL BE INSPECTED AND APPROVED BY THE PITTSFIELD TOWNSHIP UTILITIES DEPARTMENT.

IRRIGATION METER PIT DETAIL

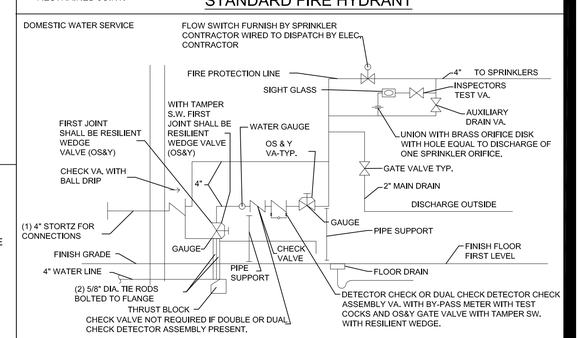


RED "REFLECTIVE" LETTERS WITH WHITE "REFLECTIVE" BACKGROUND. LETTERS WILL BE A MINIMUM OF 8" TALL BY 4" WIDE WITH 2" GIRTH, WITH AN 8" TALL 4" WIDE RED ARROW UNDER LETTERS POINTING DIRECTLY AT THE CONNECTION. TALLER BUILDINGS MAY REQUIRE LARGER LETTERING. SIGN SIZE AND LOCATION DETERMINED BY FIRE MARSHALL

FIRE DEPARTMENT CONNECTION LABEL DETAIL

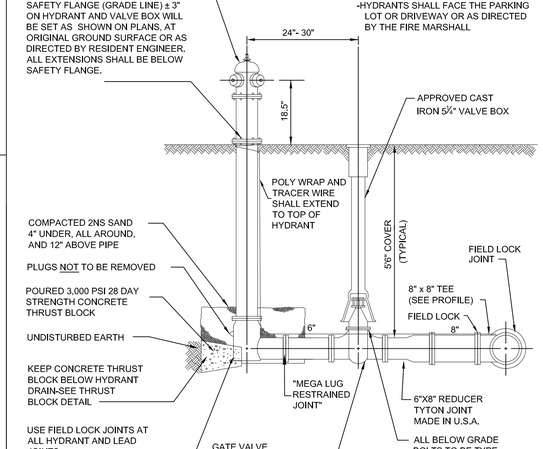


WATER MAIN CONNECTION



METER ROOM DETAIL

NOTES:
-PROVIDE ONE 4-INCH STORZ CONNECTION ON EACH HYDRANT ON THE LEFT NOZZLE WHEN FACING THE HYDRANT
-HYDRANTS SHALL FACE THE PARKING LOT OR DRIVEWAY OR AS DIRECTED BY THE FIRE MARSHALL



STANDARD FIRE HYDRANT

Pittsfield Charter Township
6201 W. Michigan Ave.
Ann Arbor, MI 48108-9721
48108-9721
Tel. 734.822.3101
www.pittsfield-mi.gov

Revision	By	Appd.	YY.MM.DD
FDC UPDATE	BWA	DRW	11.09.13
TWP REV	BWA	DRW	11.04.27
HYDRANT, MANHOLE UPDATE	BWA	DRW	10.10.25
UPDATES	TTN	DRW	10.01.20

Issued	By	Appd.	YY.MM.DD
File Name: W-01	BWA	DRW	07.10.01
Permit-Seal	Dwn.	Chkd.	Dsgn. YY.MM.DD

Client/Project
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title
WATER MAIN DETAILS

Project No. 2075001300
Scale NOT TO SCALE
Revision

1.00 GENERAL

1.01 DESCRIPTION

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

1.02 NOTIFICATION

A. CONTRACTOR shall notify the ENGINEER and the Pittsfield Township Utilities Department at (734) 882-2110, 24 hours prior to flushing or chlorination of the water main.

B. CONTRACTOR shall schedule bacteriological testing with the ENGINEER 48 hours prior.

C. CONTRACTOR shall notify the ENGINEER and the Pittsfield Township Utilities Department 48 hours prior to connecting to an existing water main.

1.03 SUBMITTALS

A. The CONTRACTOR shall submit shop drawings or data sheets for all pipe, manholes, manhole castings, pipe to manhole connections, valves, hydrants and the B-1 Poly Pig. The Contractor shall submit a 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.

1.04 TESTING

A. General

1. CONTRACTOR shall furnish all equipment and personnel to conduct system acceptance tests as specified herein. All tests shall be conducted under the supervision of the ENGINEER. All water mains, branches and valves shall be subject to cleaning with a poly-pig, hydrostatic pressure testing, disinfection and bacteriological testing. No acceptance tests shall be conducted until the water main has been installed and backfilled for not less than 30 days. A copy of all test results shall be furnished to the ENGINEER.

2. Hydrostatic pressure testing must be performed in accordance with ANSI/AWWA C600, Disinfection and bacteriological testing must be performed in accordance with ANSI/AWWA C651.

3. CONTRACTOR shall furnish all material and labor to provide for an acceptable full size blow-off to flush the poly-pigs out of the main at the far end of the project not connected to the existing system.

4. 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 the rejected section and retest until it is within the specified allowance.

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

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.

C. Sequence

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

   a. Flushing with approved B-1 Poly-Pig
   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 with approved B-1 Poly Pig
   d. Chlorination
   e. Flushing
   f. Bacteriological Testing

3. If a hydrostatic pressure test fails, the chlorination and flushing process must be repeated after repairs to the system are completed.

D. Flushing

1. All flushing will be conducted by the TOWNSHIP with clean potable water until the water runs clear.

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. No flushing shall take place between the two required bacteriological testing.

F. Bacteriological Testing

1. The Pittsfield Township Utilities Department 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. No flushing shall be done during or between tests, unless supervised and approved by ENGINEER. Two sets of safe consecutive bacteriological samples, collected at least 24 hours apart, must be obtained before placing the water main in service.

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 must begin on Mondays to allow Pittsfield Township personnel and the testing laboratory a full work week to conduct the testing.

G. Hydrostatic Pressure Testing

1. The CONTRACTOR shall pressure test sections of water main as sections of 2,000 feet or less unless otherwise authorized by the ENGINEER. When permitted to test lengths in excess of 2,000 feet, only the allowable leakage for 2,000 feet will be permitted.

2. All water mains 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 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 is less than 0.092 gallons per inch diameter of the pipe per 1 hour per 1,000 feet.

3. 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 and the test repeated to the satisfaction of the ENGINEER.

4. 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.

5. Temporary connections (jumpers) between existing water mains and the newly constructed system for testing purposes, shall include a reduced zone backflow preventer to prevent backflow and possible contamination of the public water.

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 water main per hundred lengths may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturers certificate of compliance to the specifications.

2.00 PRODUCTS

A. All products shall be consistent with the current component part submittal sheet posted on the Township website.

2.01 PIPE AND FITTINGS

A. Ductile-iron pipe water main shall meet all the requirements of the latest revision of ANSI/AWWA C151/A21.51. Pipe shall be furnished in eighteen-foot or twenty-foot lengths, unless otherwise required. All joints, to include joints for fittings, valves and hydrants, must be of the push on joint type and compatible tyton joint gaskets. Ductile iron pipe must be designed in accordance with the latest revision of ANSI/AWWA C150/A21.50 to meet requirements for Thickness Class 54.

B. Ductile iron pipe and fittings shall be double-cement lined with an approved bituminous seal coat in accordance with ANSI/AWWA C104/A21.4.

C. Ductile iron fittings shall meet all the requirements of the latest revision of ANSI/AWWA C110/A21.10 for full body fittings and ANSI/AWWA C153/A21.53 for compact fittings for a minimum working pressure of 250 psi and be of the push-on joint type. Plugs, where shown on the plans, shall be solid mechanical joint plug type.

D. Restrained mechanical joints of the wedge action type shall use a follower gland and shall include a restraining mechanism which, when activated, impart multiple wedging action against the pipe, increasing its resistance as the pressure increases. Twist off nuts shall be used to insure proper actuating of the restraining device. Restrained mechanical joints for ductile iron pipe shall be Megalug, Series 1100, or approved equal. Mechanical joints shall be in conformity with the requirements of the latest revision of the ANSI AWWA C111/A21.11. Bolts and nuts must be type 304 stainless steel.

E. Push-on joints shall meet all requirements of ANSI/AWWA C111/A21.11. Push-on joints shall consist of a ductile-iron bell provided with a recess to receive a circular molder 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 ANSI/AWWA C111/A21.11. When it is necessary to utilize a locking mechanism for a push-on joint upstream or downstream of a restrained mechanical joint, field-lok gaskets or equal shall be utilized and shall be used in conformance with DIPRA Standards for restraint distance from a restrained mechanical joint fitting.

F. All pipe and fittings shall be manufactured in the United States of America.

G. The ENGINEER shall witness the delivery and unloading of all pipe and collect the appropriate manufacturer's certificate of compliance per Section 1.04 of this Specification.

2.02 VALVES

A. All valves installed under this Specification shall conform to the applicable requirements of ANSI/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 conform to the applicable requirements of ANSI/AWWA C515. Valves shall have a minimum working pressure of 250 psi. The gate shall be ductile iron encased in a bonded synthetic rubber to form resilient seating surfaces. Stem shall be bronze with a non-rising design and double o-ring packing. Joints shall be push-on type.

2. Resilient Seated Gate Valves shall be manufactured by American Flow Control or Clow.

C. Tapping Sleeves and Valves

1. Tapping sleeves shall be full length of heavy-duty stainless steel construction designed for use with the type of pipe to be tapped. Tapping sleeve flange and body shall be type 304 stainless steel. Bolts and nuts 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 432; Romac Industries SST; Ford FAST, Powerseal 3490AS; Dresser 630 or equal.

2. Tapping valves shall meet the specifications for gate valves except that the valve shall have a flange compatible with the tapping sleeve.

3. The tapping sleeves and valves shall be subjected to a hydrostatic pressure of 200 psi. The sleeves and valves shall be maintained under 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 removed and replaced, and the test repeated at the CONTRACTOR's expense to the satisfaction of the ENGINEER.

D. Corporation Stops

1. Corporation stops used for insertion into mains shall be ball valve type. 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 of the compression type to receive copper service pipe.

E. Valve Boxes

1. Valves boxes shall be 5-1/4-inch and 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. Cover shall be designed to be removed easily to provide access to the valve. The base shall not rest upon the valve assembly. Valve boxes shall be Tyler 6860 Item DD with number 6 base, or equal.

F. Valve Extensions

1. All gate valves with operating nuts at a distance greater than 6.5 feet below ground surface shall be provided with an extension stem. The length of the extension stem shall reach within 6.5 feet of the ground surface. Details of the extension system and method of installation shall be approved by the ENGINEER prior to installation.

G. Post Indicators and Valves

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

2. Post indicator valves shall be American Flow Control Model 2500 or Clow model F-6120. All valves shall open left.

3. Post indicators and their corresponding valves must be made by the same manufacturer.

4. Bollards must be placed to protect post indicators, except as specified by the ENGINEER.

5. Bollards shall be 4-inch diameter galvanized schedule 40 steel posts 36 to 48 inches high with minimum depth of 24 inches. The posts shall be set in and filled with 3000 psi concrete. Bollards protecting hydrants and PIVs shall be painted red.

2.03 GATEWELLS

A. Gatewells shall conform to the latest revision of ASTM C478 for Precast Reinforced Concrete Manhole Sections. Section joints shall be rubber gasketed and shall conform to ASTM C990. Cone sections shall be eccentric, with an offset step configuration.

B. All gatewell components shall have the name of the manufacturer stenciled on the inside. The lettering shall be a minimum of 4-inches high.

C. Gatewells constructed over an existing water main shall have a doghouse mudded to an 8-inch thick cookie. All other gatewells shall have precast integral base sections.

D. Mortar for masonry or plastering outside of gatewells shall be made of one part of Portland Cement to two parts fine aggregate. Mortar materials and mixing shall correspond, in general, to those for concrete. All openings in gate wells shall be closed with brick and mortar in a manner that will make them watertight.

E. Gatewell steps shall be reinforced polypropylene coated steel. They shall be M.A. Industries models PS1-PF or PS1-B, or approved equal.

2.04 GATEWELL FRAMES AND COVERS

A. Gatewell frames and covers shall weigh not less than 350 lbs. Each frame and cover shall have machined bearing surfaces and shall be suitable notched for convenient removal of the cover.

B. Frames and covers shall be East Jordan Iron Works Model 1040Z frame with Type AGS cover. Each cover shall have the Pittsfield Township logo and the letters "PITTSFIELD TWP WATER" cast integrally into the cover.

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

2.05 GATEWELL CONNECTIONS

A. Water pipe to gate well connections shall be through a watertight flexible pipe-to-manhole connector, which shall be securely clamped into a core-drilled port. Pipe ports shall be core-drilled at the point of manufacturer and shall be accurately located within 1/2-inch of the proposed water main centerline. Flexible pipe-to-manhole connectors shall meet the requirements of ASTM C923 and shall be NPC, Kor-N-Seal, or equal.

B. All non-rubber components including wedges, bands and pipe clamps shall be stainless steel.

2.06 GATEWELL ADJUSTMENTS

A. All final grade adjustment of gatewell cover and frame assemblies shall be completed utilizing injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by Ladtech, Inc., or approved equal. The adjustment rings shall be manufactured from polyethylene plastic meeting the requirements of ASTM D4976. Brick adjustments are not acceptable.

B. All adjustment for matching road grade shall be made utilizing a molded indexed slope ring.

C. Each adjustment ring shall be sealed with a 3/16 to 1/4-inch bead of butyl rubber sealant per the manufacturer's instructions. Sealant shall meet the requirements of ASTM C990.

D. All castings and adjustment rings shall be securely fastened to the cone of the structure with four 3/8-inch threaded rods. The rods shall be galvanized or stainless steel anchored to the structure with Redhead Trubolt concrete anchors, or equal. Stainless steel or galvanized nuts and washers shall be used to attach the casting.

E. When the depth of the gate well requires an adjustment greater than the maximum allowed, the CONTRACTOR shall provide additional pre-cast gate well barrel sections required to maintain acceptable chimney heights.

2.07 HYDRANTS

A. Fire hydrants shall comply with the latest revision of ANSI/AWWA 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 an inside barrel dimension of not less than 7.375" 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 EJIW WaterMaster 5BR-250 with mechanical joint connections and break flange barrel with standard head.

G. Hydrant bolts located below grade shall be type 304 stainless steel

H. All hydrants shall have a 4" Harrington Integral Hydra-Storz (HIHS) adaptor. The HIHS shall meet the requirements of AWWA C502 regarding material and pressure testing. Stortz nozzle shall have a brass metal face and hard anodized ramps and lugs. The aluminum finish shall be hardcoat anodized to MIl-A-8625f, type 3 dark gray. The adapter shall be made from forged or extruded 6061-T6 aluminum.

I. The blind cap shall have hard anodized aluminum Storz ramps and lugs, made of forged or extruded 6061-T6 aluminum, the cap shall be equipped with suction seal. The cap shall be connected to the adapter or the hydrant with 0.125 vinyl coated aircraft cable.

J. Fire hydrant extensions shall be manufactured by the hydrant manufacturer for use with the model hydrant being installed.

K. Hydrants adjacent to truck routes on commercial developments shall be protected by bollards.

2.08 SERVICE LEADS

A. Pipe for service leads 1-inch to 2-inch shall be soft annealed Type K copper. Service leads 4-inch to 8-inch shall be Class 54 Ductile Iron, Double cement lined.

B. Curb Stops

1. Curb stops used for service connections shall be ball valve type. All parts shall be cast from bronze. Both the inlet and outlet connections shall be of the compression type to receive copper service pipe. Curb stops shall be consistent with the most current shop drawing checklist posted on the Township website.

C. Curb Boxes

1. Curb boxes used for service connections shall be the "Arch" type. All curb boxes shall have an I.D. screw type adjustment and shall be furnished complete with cover, rod, and 27/32" point to flat pentagon bolt(s). All curb boxes shall be coated inside and out with a tar base enamel. The minimum bury shall be 5'-0" (60") and the maximum 6' (72"). All curb boxes shall be Ford model EA 1-60-40-54R or McDonald model 5601 or 5603. Curb boxes shall be consistent with the most current shop drawing checklist posted on the Township website.

D. Couplings

1. Couplings used for service connections shall be located outside the pavement and more than 10 feet from any building wherever possible. They shall have a three part union, and both connections shall be of the compression type to receive copper service pipe. All parts shall be cast from bronze.

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.

2.09 TRACER WIRE

A. Tracer wire to be used on open cut pipe shall be AWG #12 single strand copper with blue 30 mil HDPE insulation. Connections shall be made using 3M DBR-09964 wire connectors, or equal.

2.10 POLYETHYLENE ENCASEMENT

A. All ductile iron pipe and fittings must be polyethylene encased. In addition, the initial 24-inches of copper service lead must be encased from the corporation stop. Polyethylene encasement must be manufactured in accordance with the requirements of the latest revision of ANSI/AWWA C105/A21.5.

B. Polyethylene Encasement shall be black linear low-density polyethylene with a minimum thickness of 8 mils.

C. The wrap shall overlap the joint by 12 inches to either side and be secured to the pipe with polyethylene adhesive tape.

3.00 EXECUTION

3.01 EXCAVATION AND BACKFILL

A. All excavation and backfill shall conform to the Earthwork specification.

3.02 PIPE INSTALLATION

A. The installation of ductile iron water main must conform to the requirements of ANSI/AWWA C600.

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

C. Before lowering in the trench, and while suspended, each pipe and fitting shall be inspected for defects. Defective, damaged or unsound pipe shall immediately be removed from the construction site. The interior of each pipe shall be inspected for cleanness and cleared of all dirt and foreign matter before being lowered into the trench.

D. 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.

E. Unless otherwise directed, pipe shall be laid with bell ends facing in the direction of laying. After a length of pipe is placed in the trench, the spigot shall be centered in the bell of the adjacent pipe; the pipe shoved into position and brought to a true alignment. It will then be secured with sand backfill tamped under and on each side of the pipe, except at bell holes. No earth or other foreign matter shall be allowed to enter the joint space.

F. All excavation and backfill above the pipe shall conform to specifications under Earthwork and as shown on the Drawings.

G. A minimum of 18-inches vertical clearance shall be provided between the water main and any existing underground facility, unless otherwise approved by the ENGINEER. Whenever a main is installed under any existing utility line such as gas, buried electric power, telephone line, sewer or water, provisions shall be made to properly support or distribute any concentrated load to avoid settlement and possible failure of either main. Such provisions shall consist of concrete bedding of the main, complete concrete encasement, or some other method as shown on the plans. Water mains passing under sewers, in addition, shall be protected by providing:

1. A vertical separation of at least 18-inches between the bottom of the sewer and the top of the water main.

2. Adequate structural support for the sewer to prevent excessive deflection of joints and settlement of the sewer about the water main; i.e., a concrete saddle under the pipe with a span length extending to undistributed earth bearing.

H. Water mains shall be installed at least 10 feet horizontally from any existing or proposed gravity sanitary or storm sewer, septic tank, or subsoil treatment system. The distance shall be measured edge to edge.

I. 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.

J. Where necessary to cut pipe, cutting shall be done with approved tools and cut ends of pipe shall be square and regular. Cutting shall be done in a manner to avoid damage to lining and coating. Minor damage may be repaired subject to review of the ENGINEER.

K. 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.

L. Each pipe shall be laid accurately to the line and grade shown on the Plans. Wherever deflections at joints are required by changes in grade or alignment or to plumb valve stems, the deflection at any bell and spigot joint shall not exceed that which will cause the spigot end of pipe to be away from home in the bell of the adjacent pipe a distance of 1/4 inch at the point of greatest opening.

M. The deflection at any mechanical joint shall not exceed three-quarters of the maximum deflection recommended by the manufacturer or 3 degrees, whichever is more conservative of the joint used.

N. 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.

O. Pipe shall be laid at depths to provide minimum cover of 6'-0" over the top of the pipe unless otherwise noted on the Drawings or elsewhere in these specifications.

3.03 GATE VALVES AND WELLS

A. All pre-cast section joints and lift holes shall be pointed and plugged, inside and outside, with mortar.

B. Gate valves shall be of the size and installed at the location as shown on the plans. They shall be set square with the line of the main, and unless otherwise directed by the Township ENGINEER, all gate valves shall be set with stems plumb. At each side of gate valve, the CONTRACTOR shall furnish and install a 1-inch corporation stop on the main as shown on the Standard Details.

C. All gate valves with operating nuts at a distance greater than 6.5 feet below ground surface shall be provided with an extension stem.

3.04 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 24 and 30 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 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 24 inches. Gate valves and valve box shall be as specified under the valve paragraphs of this section.

D. Hydrant leads shall have a minimum of 5.5 feet of cover in all areas, including crossings through ditch sections.

E. Hydrants shall be carefully plumbed, braced and backfilled so they remain plumb.

F. All grade, facing, and vertical alignment adjustment of hydrants shall be completed prior to pressure testing and charging of the hydrants.

G. All hydrants shall be cleaned and painted with a rust inhibitive, oil base paint such as "rustoleum" or approved equal to the Township's color code prior to acceptance.

H. The lubricant reservoirs in all hydrants having such construction shall be filled with a lubricant acceptable to the Michigan Department of Environmental Quality and recommended by the hydrant manufacturer.

I. Backfilling around fire hydrants shall be carefully tamped sand in 12-inch layers from the centerline of the lead main to a height of 1-foot below finished grade.

J. CONTRACTOR shall place burlap sack or equivalent material over the hydrant nozzles after installation.

K. Fire hydrant nozzles shall be aligned as required by the Township Fire Marshal.

L. Fire hydrant extensions shall be provided as necessary so that the safety flange is located at or above surface grade.

3.05 TRACER WIRE

A. Tracer wire shall be installed along the top of all water mains. For directional drilling, the tracer wire shall be installed at the same time as the pipe. For open cut construction, the tracer wire shall be installed at a height of not more than 6 inches above the main line pipe or service leads. Wire shall be extended to all hydrants, blow-offs, dead ends, service leads and post indicator valves. Tracer wire shall be brought to grade, leaving enough excess material to avoid loss or damage to the 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, or installed by directional drilling method, a splice may be utilized to make the connection at the main. 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 landscape activities.

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

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 at existing water mains without tracer wire shall be made at the nearest hydrant or gate well as outlined above. If no hydrant or gatewell is available, an upper section of valve box shall be installed with the tracer wire stubbed up inside

D. When connections are made to existing water mains which do not have tracer wire, the following method most applicable to field conditions 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.

3.06 POLYETHYLENE ENCASEMENT

A. The polyethylene encasement must be installed in accordance with the specifications and requirements of ANSI/AWWA C105/A21.5. For open cut applications a single wrap is required, and for directional drill applications a double wrap is required.

B. The polyethylene encasement must be taped and overlapped at pipe joints and must be taped in a spiral configuration along the length of the pipe.

3.07 CONNECTION TO EXISTING MAINS

A. All connections to existing water mains shall be made at the locations as shown on the plans.

B. All valves shall be operated by the Pittsfield Township Utilities Department.

C. Prior to beginning construction of the final connections, the CONTRACTOR shall provide sequence of all final connections to the existing system and coordinate a meeting between the ENGINEER, OWNER and CONTRACTOR in the field to review the procedure.

D. 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 water 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 executed 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.

E. 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.

F. 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.

G. 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.

3.08 BEDDING

A. Ductile iron pipes shall be fully enclosed in polywrap and laid on a compacted sand cushion. 4 inches thick. Sand shall conform to fine aggregate 2NS as defined in 2003 MDOT, Section 902.

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 the 12-inches of sand above the pipe to not less than 95 percent of the maximum unit density as determined at optimum moisture content.

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Revision	By	Appd.	YY.MM.DD
TWP REV	BWA	DRW	11.04.27
SPEC. UPDATES	BWA	DRW	10.10.25
SPEC. UPDATES	TTN	DRW	10.01.19

Issued	By	Appd.	YY.MM.DD
File Name: W-02	BWA	DRW	07.10.01
Permit-Seal	Dwn.	Chkd.	Dsgn. YY.MM.DD

Client/Project
PITTSFIELD TOWNSHIP

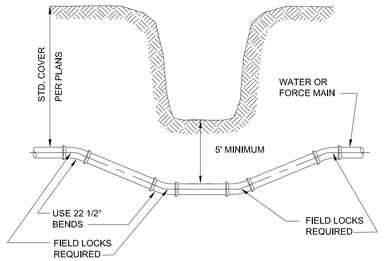
Pittsfield Township, Michigan

Title
WATER MAIN SPECIFICATIONS

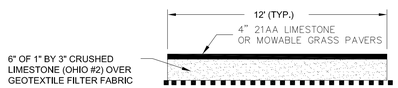
Project No.
2075001300

Scale

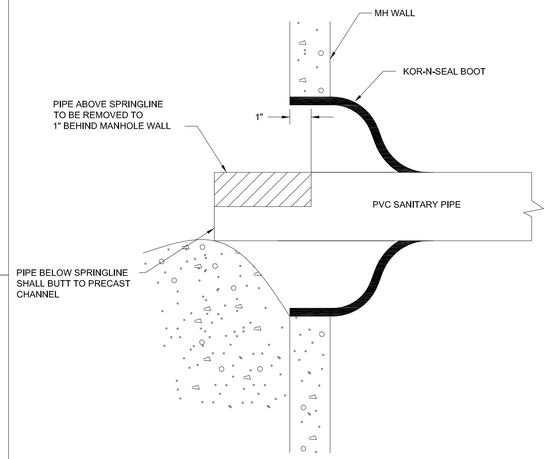
Revision



DITCH & STREAM CROSSING



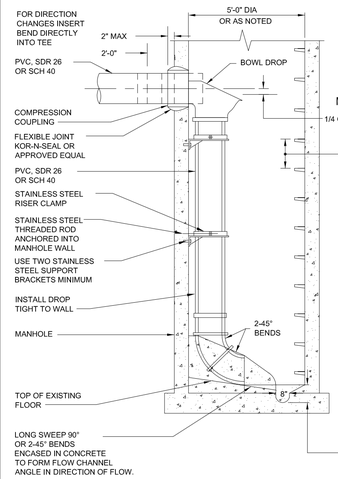
SANITARY SEWER ACCESS PATH

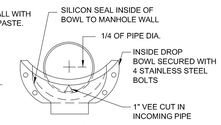


SANITARY PIPE PENETRATION

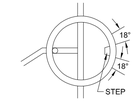
NOTES:

1. SECURE DROP PIPE TO MANHOLE WALL WITH RELINER-DURAN, INC STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS OR EQUAL.
2. ATTACH THE DROP BOWL & EACH CLAMPING BRACKET TO THE MANHOLE WALL WITH 3/8" x 3 3/4" RAMSET/RED HEAD BOLTS HELD INPLACE WITH 2 STAGE EPOXY PASTE.





DROP BOWL
MOUNTING POSITION



DROP SHALL
BE NO CLOSER
THAN 18" FROM
STEP

SIZE

LINE	LINE
4"	4"
6"	6"
8"	8"
10"	8"

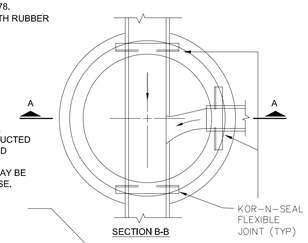
MH DIA.	MAX. DROPS
4'	2-6"
5'	4-6"
5'	2-8"
6'	3-8"

NO UTILITY STRUCTURES (ie. MANHOLES, CURB BOXES etc.) SHALL BE PLACED IN ANY DRIVEWAY OR SIDEWALK

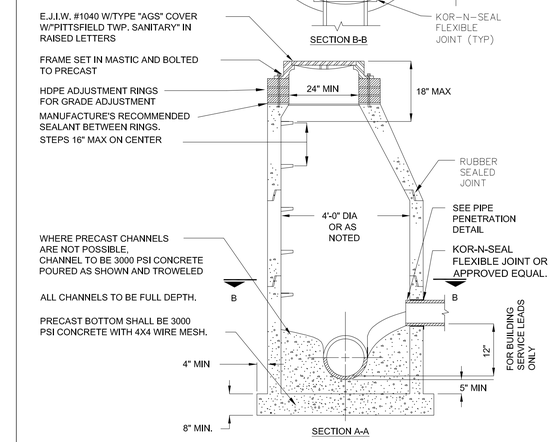
INTERIOR DROP SANITARY MANHOLE

PRE-CAST CONCRETE MANHOLE

1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. CONE TO BE ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.
5. PROVIDE INTEGRAL BASE WITH PRECAST CONCRETE CHANNELS.
6. WHERE MANHOLES ARE CONSTRUCTED OVER EXISTING SEWERS, POURED IN PLACE OR PRECAST COOKIE AND DOGHOUSE STRUCTURES MAY BE USED IN PLACE OF INTEGRAL BASE.



SECTION B-B



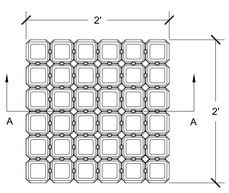
SECTION A-A

NO UTILITY STRUCTURES (ie. MANHOLES, CURB BOXES etc.) SHALL BE PLACED IN ANY DRIVEWAY OR SIDEWALK

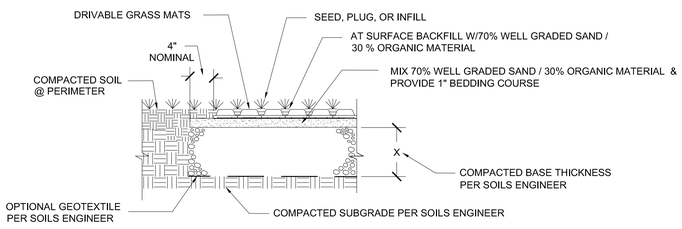
SANITARY MANHOLE

NOTE:

FOR STORMWATER MANAGEMENT APPLICATIONS INCLUDING STORAGE AND INFILTRATION, ALTERNATE INFILLS, BASE MATERIAL, AND DRAINAGE MAY BE REQUIRED

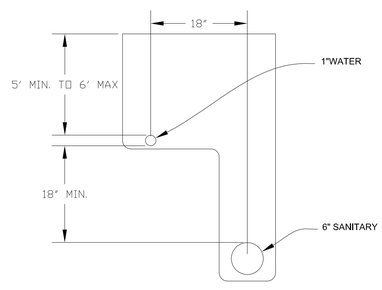


PLAN VIEW

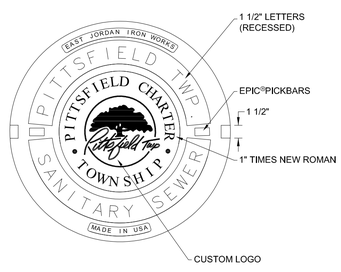


SECTION A-A

TYPICAL HEAVY TRAFFIC DRIVABLE GRASS DETAIL

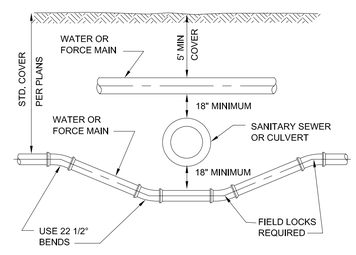


TYPICAL L TRENCH DETAIL
HOUSE LEADS

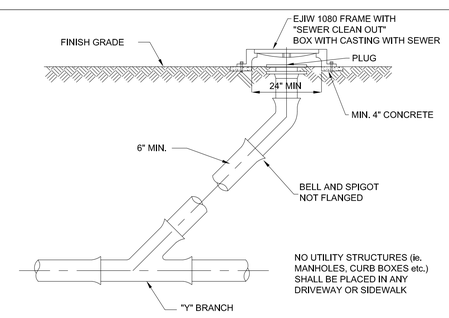


EAST JORDAN IRON WORKS 1040-1ZPT FRAME
EAST JORDAN IRON WORKS 1040 AGS COVER

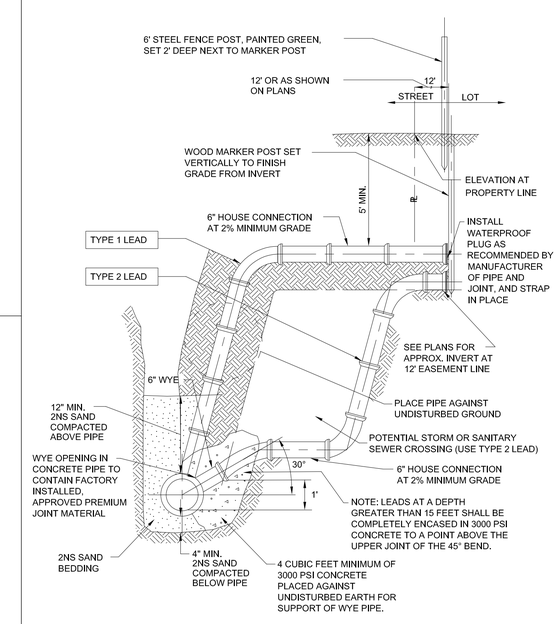
COVER DETAIL



SEWER OR CULVERT CROSSING



SANITARY SEWER CLEANOUT



SANITARY SEWER SERVICE
& RISER CONNECTION DETAIL

Pittsfield Charter Township
6201 W. Michigan Ave.
Ann Arbor, MI 48108-9721
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Revision	By	Appd.	YY.MM.DD
TWP REV	BWA	DRW	11.04.27
MANHOLE UPDATES	BWA	DRW	10.10.25
UPDATES	TTN	DRW	10.01.20

Issued	By	Appd.	YY.MM.DD
File Name: SS-01	BWA	DRW	07.10.01
	Dwn.	Chkd.	Dsgn. YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title
SANITARY SEWER DETAILS

Project No.
207501300

Scale
NOT TO SCALE

Revision

SANITARY SEWER AND MANHOLES

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 equip\-ment 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.

7. 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. Section 33-95 (pg 30-6) 2004-Ten State Standards.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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 Seconds/100 ft. Pipe
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.

a. PVC Pipe

(1) The time requirement for the pressure to decrease from 3.5 to 3.O 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:

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 100 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 100 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 man\-hole. 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, un\-covered 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.

1.03 SUBMITTALS

A. 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 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 PVC truss pipe. Ductile iron pipe and reinforced concrete pipe shall be used as specified by the ENGINEER.

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 Pro\-posal.

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-794 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.

E. If the sewer pipe is greater than 15 feet deep PVC pipe shall be SDR 21.

F. Truss pipe shall meet or exceed all of the requirements of the current ASTM D2680.

G. 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. (ASTM-D3212) 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 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.

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.

C. Manholes constructed over an existing sewer line shall have a doghouse mudded to an 8-inch thick cookie. The bottom of the existing pipe shall be the channel. All other manholes shall have precast integral base sections with pre-formed concrete channels.

D. All channels shall be constructed to the full flow depth of the pipe.

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 with the Pittsfield Township logo and the letters, PITTSFIELD TWP SANITARY SEWER 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 1040Z, with Type AGS 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. All flexible pipe to manhole connections shall be installed per the manufacturers specifications.

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.

2.09 SANITARY MANHOLE ADJUSTMENTS

A. All final grade adjustment of manhole covers and frame assemblies shall be completed utilizing injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by LADTECH, INC. or approved equal. The adjustment rings shall be manufactured from polyethylene plastic as identified in ASTM Designation D 1248.

B. All adjustment for matching road grade shall be made utilizing a molded indexed slope ring.

C. Each adjustment ring shall be sealed with a 3/16 to ¼ inch bead of butyl rubber sealant per the manufacturer's instructions. Sealant shall meet ASTM specification C-990.

D. All castings and adjustment rings shall be securely fastened to the cone of the structure with four 3/8-inch threaded rods. The rods shall be galvanized or stainless steel anchored to the structure with Redhead concrete anchors or equal. Stainless steel or galvanized nuts and washers shall be used to attach the casting.

2.10 MANHOLE DROPS

A. Manhole drop connections shall be interior drops using the drop bowl as produced by Reliner-Duran Inc. or approved equal.

B. Drop bowl model A-4" shall be used for all lines up through full 6-inch inlets. Drop bowl model A-6" shall be used for all 8-inch inlets. Drop bowl model B-8" shall be used for all 10-inch inlets. Lines larger than 10 inches shall be as directed by the ENGINEER.

C. The force line hood shall be attached on models A-4" and A-6" when the incoming line is from a force main or the slope is 3 percent or greater.

D. The drop pipe shall be secured to the manhole wall with Reliner-Duran, Inc. stainless steel adjustable clamping brackets or approved equal.

E. The drop bowl and each clamping bracket shall be attached to the manhole wall with 3/8-inch x 3 3/4-inch bolts.

F. The incoming pipe shall be trimmed such that it protrudes 2 inches into the manhole .

G. A 1-inch V shaped notch shall be cut into the bottom edge of the incoming pipe.

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. Reference Section 33.83a of 10 State Standards.

B. Reference Section 33.83b of 10 State Standards.

C. 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.

D. 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.

E. 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.

F. "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 com\-pacted to not less than 95% standard density for PVC and 90% standard density for reinforced concrete.

G. 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 confor\-mance 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. 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 within two pipe lengths behind pipe laying.

H. 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.

I. 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.

J. 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 con\-struction 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.

PCT July 2008

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Consultants

Legend

Notes

Revision	By	Appd.	YY.MM.DD
UPDATES	BWA	DRW	10.10.25
UPDATES	TTN	DRW	10.01.20

Issued	By	Appd.	YY.MM.DD
File Name: SS-02	BWA	DRW	DRW	07.10.01
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title
SANITARY SEWER SPECIFICATIONS

Project No. 2075001300
Scale NOT TO SCALE
Drawing No. SS-02
Sheet
Revision

Earthwork

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 2003 MDOT 902.08.

C. All utilities within road right-of-way corridor (existing or proposed) shall be backfilled with MDOT CL II granular material compacted to 95% maximum unit weight.

D. All utilities shall be installed with 2 NS sand bedding or better.

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)	Maximum 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:

	Minimum Wall Thickness (inches)	
Nominal Diameter (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 leak-proof 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.

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.

G. Any excavation not backfilled at the end of each day must be clearly marked and surrounded by appropriate safety fencing as directed by the ENGINEER. If directed by the ENGINEER, the CONTRACTOR shall cover the open excavation with a steel plate and light the excavated area.

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 backfill. 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.

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 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 flagmen 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 placed, 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 heavy 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.

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. Each end of the casing shall be bullheaded to a water tight condition.

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 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 above ground, 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 secure 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 racing will not be permitted. The use of a traveling shield for sewer construction shall require that the device be approved for use by 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 loadings which might overload the pipe.

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.

B. Under pavements, curb, paved driveways, and sidewalks, and where pipe is within a one on one influence of pavement, compaction testing shall be performed by an independent testing laboratory. Testing shall be performed at intervals of one test per lift per 50 feet of trench or as determined necessary by the ENGINEER.

C. In residential developments, all backfill within the road corridor 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 as such to obtain 95% of the maximum unit density as determined at the optimum moisture content. For purposes of this section, the road corridor is defined as front of house to front of house, including right-of-way and adjacent easements and setbacks.

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 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 thereof, 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 earthmoving 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 2003 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 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, backfilling 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 AASHTO 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 2003 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 roadways shall be subject to the approval of the governmental body having jurisdiction thereof, as well as review by the ENGINEER.

PITTSFIELD CHARTER TOWNSHIP

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TWP REV	BWA	DRW	11.04.27
UPDATES	TTN	DRW	10.01.20
Revision	By	Appd.	YY.MM.DD
Issued	By	Appd.	YY.MM.DD
File Name: SE-02	TTN	DRW	DRW	07.10.01
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

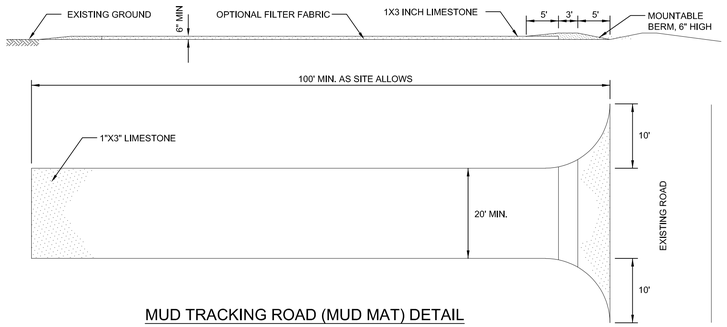
Pittsfield Township, Michigan

Title
EARTHWORK SPECIFICATIONS

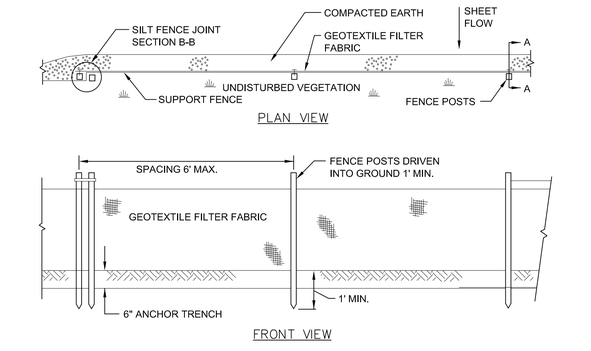
Project No.
2075001300

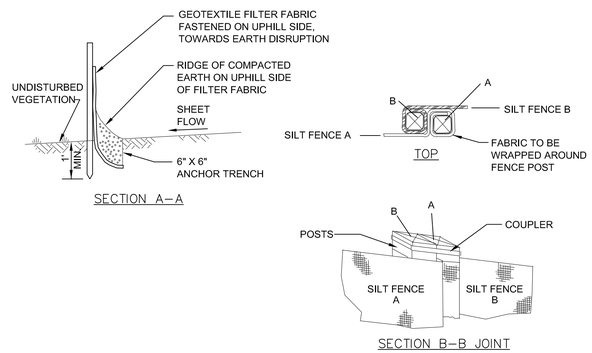
Scale
NOT TO SCALE

Revision



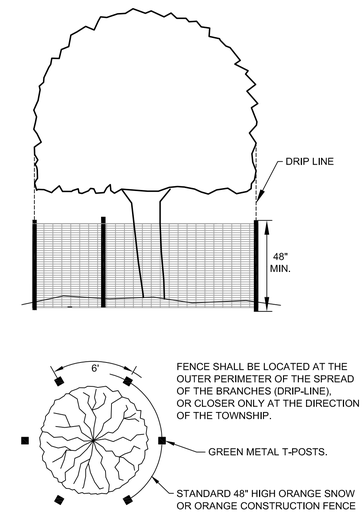
MUD TRACKING ROAD (MUD MAT) DETAIL





SILT FENCE

NOT TO SCALE



NOTES:
1. ALL TREES TO BE REMOVED WILL BE IDENTIFIED BY RED FLAGGING.
2. TREE PROTECTION FENCING IS TO BE ERECTED PRIOR TO ANY EARTHWORK OR CONSTRUCTION AND IS TO REMAIN IN PLACE UNTIL CONSTRUCTION AND GRADING IS COMPLETE.
3. ALL DEBRIS, FILL, EQUIPMENT OR MATERIAL IS TO BE KEPT CLEAR OF AREA WITHIN PROTECTIVE FENCE. NO CLEANING OF EQUIPMENT OR MATERIAL OR STORAGE OR DISPOSAL OF ANY MATERIAL WITHIN THE DRIP LINE OF ANY TREES TO BE SAVED.

TREE PROTECTION FENCE DETAIL

NOT TO SCALE

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 off-site 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 5 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.
12. The contractor shall not grade in existing wetland or conservation areas to be protected. Silt fence shall be installed and maintained adjacent to existing wetland and conservation areas to prevent grading, erosion and sedimentation into them.
13. Tree protection fencing must remain intact until restoration of the site is complete.

SEQUENCE OF CONSTRUCTION

1. Install sediment fence and tree protection fencing 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 that 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 ½ to 2 tons or 100 pounds (2 to 3 bales) per 1,000 square foot. 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.
6. Drainage ditches and slopes steeper than 1:4 (25%) shall be stabilized with erosion control blankets.
7. Steep slopes that do not take upon initial seeding must be re-seeded and stabilized with erosion control blankets.
8. 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.

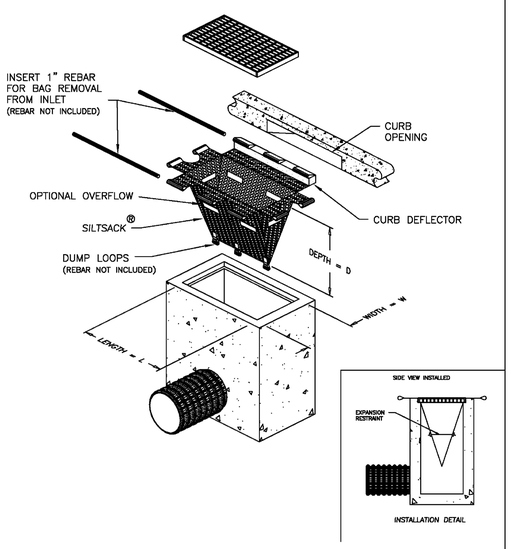
CATCH BASIN/MANHOLE PROTECTION

1. Protect storm sewer catch basins with Siltsack. or approved equivalent as follows:

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.

Pittsfield SEC 9/22/2009



DETAIL OF INLET SEDIMENT CONTROL DEVICE
TYPE B – WITH CURB DEFLECTOR

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Richmond, Virginia 23234
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SILTSACK®
SPECIFICATIONS

NOTE: THE SILTSACK® WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS.

REGULAR FLOW SILTSACK®
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

* HI-FLOW SILTSACK®
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

OIL-ABSORBANT SILTSACK®
(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK ®WITH A WOVEN PILLOW INSERT.

SILTSACK DISTRIBUTORS:
PRICE & COMPANY
(www.priceandcompany.com)

METRO GRAND RAPIDS, MI
426 36TH STREET SW
WYOMING, MI 49548-2108
1-800-248-8230

METRO DETROIT, MI
29165 WALL STREET
WIXOM, MI 48393-3525
1-866-960-4300

(* HI-FLOW SILT SACK SHALL BE USED FOR ALL APPLICATIONS WITHIN PITTSFIELD TOWNSHIP)

SILTSACK

NOT TO SCALE

Pittsfield Charter Township
6201 W. Michigan Ave.
Ann Arbor, MI 48108–9721
48108–9721
Tel. 734.822.3101
www.pittsfield-mi.gov

SILTSACK	BWA	DRW	12.01.03
TWP REV	BWA	DRW	11.04.27
UPDATES	TTN	DRW	10.01.20
Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: SE–01	TTN	DRW	DRW	07.10.01
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

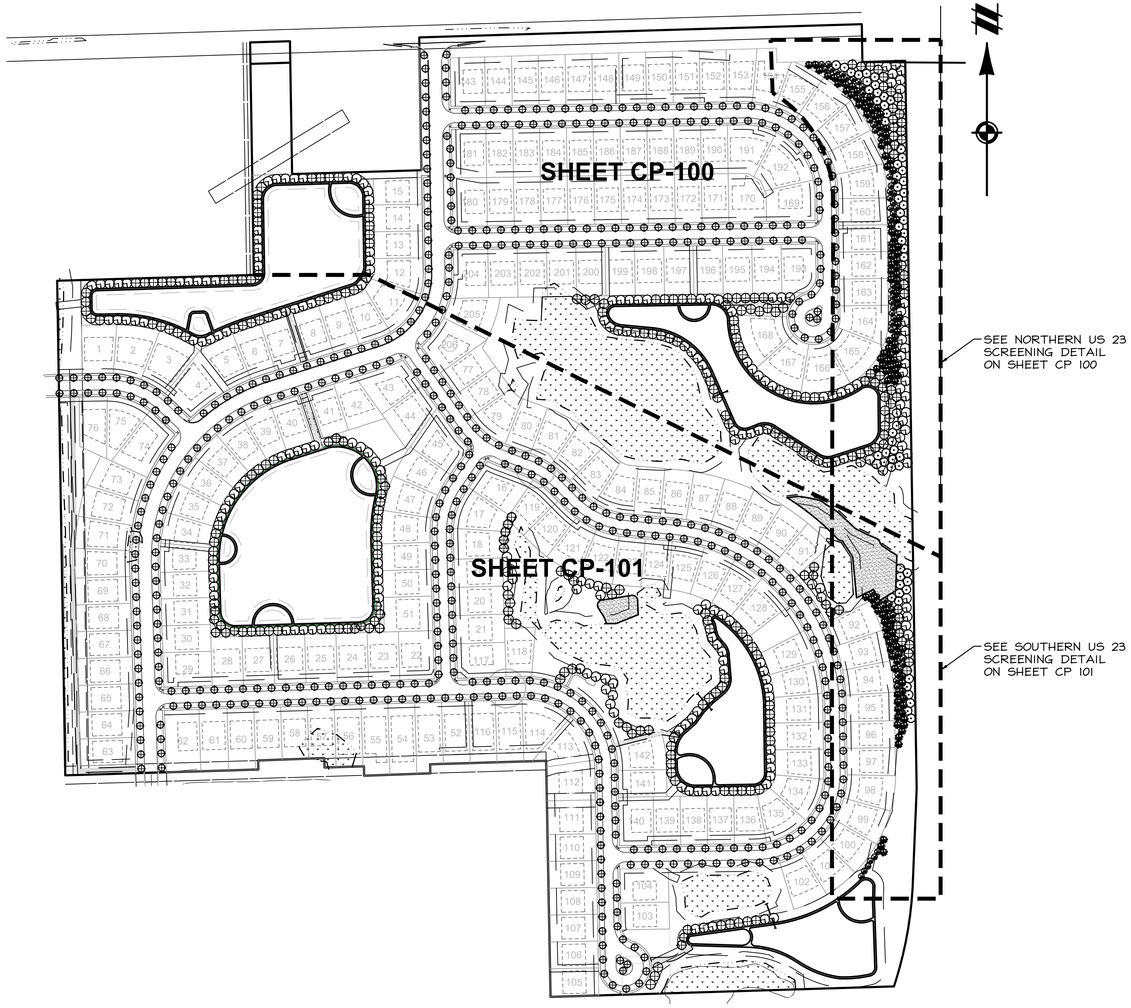
Pittsfield Township, Michigan

Title
SOIL EROSION DETAILS AND NOTES

Project No. 2075001300

Scale **NOT TO SCALE**

Revision 1



LANDSCAPE PLAN - OVERALL

SCALE: 1" = 200'

LANDSCAPE CALCULATIONS

STREET TREES

1 STREET TREE PER 50' FOR INTERNAL STREETS
REQUIRED: 21270 LF OF LOT SIDE CURB PROPOSED. 21270/50 = 426.57 = 427 TREES

PROPOSED: 514 TREES (ADDITIONAL 87 TREE COUNT TOWARDS REPLACEMENT TREE REQUIREMENTS)

REPLACEMENT TREES

HERITAGE TREES - SHALL BE MITIGATED BY INSTALLATION OF REPLACEMENT TREES EQUAL TO A MINIMUM OF ONE HUNDRED & FIFTY PERCENT (150%) OF THE ORIGINAL DBH REMOVED.

WOODLAND TREES - 6 INCHES OR LARGER DBH SHALL BE MITIGATED BY INSTALLATION OF REPLACEMENT TREES EQUAL TO A MINIMUM OF ONE HUNDRED PERCENT (100%) OF THE ORIGINAL DBH REMOVED.

REQUIRED: 156 WOODLAND TREES TO BE REMOVED (1694 TOTAL DBH)
1694/3 = 565 REPLACEMENT TREES REQUIRED

48 HERITAGE TREES TO BE REMOVED (1292 TOTAL DBH)
1292 x 1.5 = 1938/3 = 646 REPLACEMENT TREES REQUIRED

PROPOSED: 87 STREET TREES ABOVE MINIMUM REQUIREMENT SHALL BE COUNTED TOWARDS TREE REPLACEMENT CALCULATIONS.

TWO-3" CALIPER LANDSCAPE TREES TO BE PLANTED ON EACH LOT WITHIN THE FIRST 60 DAYS OF OWNER OCCUPANCY AS SPECIFIED IN THE CONDOMINIUM ASSOCIATION RESTRICTION/COVENANTS.
(206 LOTS x 2 = 412 TREES)

1139 OPEN SPACE REPLACEMENT TREES (3" CAL.)

PLANT LIST

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE
STREET TREE PLANTING				
AR	57	*Acer rubrum* 'Autumn Blaze'	Autumn Blaze red Maple	3" cal. B&B
AS	62	*Acer saccharum* 'Legacy'	Legacy Sugar Maple	3" cal. B&B
LS	54	*Liquidambar styraciflua*	American Sweetgum	3" cal. B&B
LT	50	*Liriodendron tulipifera*	Tuliptree	3" cal. B&B
NS	57	Nyssa sylvatica	Blackgum	3" cal. B&B
PC	6	*Pyrus Calleryana* 'Chanticleer'	Chanticleer Pear	3" cal. B&B
QP	64	*Quercus palustris*	Pin Oak	3" cal. B&B
QR	64	*Quercus rubra*	Red Oak	3" cal. B&B
TC	49	*Tilia cordata* 'Greensplre'	Greenspire Linden	3" cal. B&B
ZS	62	*Zelkova serrata*	Japanese Zelkova	3" cal. B&B
REPLACEMENT TREES				
AR	174	*Acer rubrum* 'Autumn Blaze'	Autumn Blaze red Maple	3" cal. B&B
AS	60	*Acer Saccharum 'Legacy'*	Legacy Sugar Maple	3" cal. B&B
LS	80	*Liquidambar styraciflua*	American Sweetgum	3" cal. B&B
QR	212	*Quercus rubra*	Red Oak	3" cal. B&B
PA	68	*Picea abies*	Norway Spruce	10' ht. B&B
PG	56	*Picea glauca*	White Spruce	8' ht. B&B
PP	51	*Picea pungens*	Colorado Green Spruce	8' ht. B&B

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NOTICE:

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
DIVERSE REAL ESTATE LLC
FIELDSTONE PARK
FINAL SITE PLANS
OVERALL LANDSCAPE PLAN

DATE 05/12/14
--

REVISIONS

ATWELL

SCALE 0 100 200
1" = 200 FEET
DR. JEC CH. TP
P.M. E. LORD
BOOK 1148
CAD FILE: 11000143CP-99-LS
JOB 11000143
FILE CODE:
SHEET NO. CP-99

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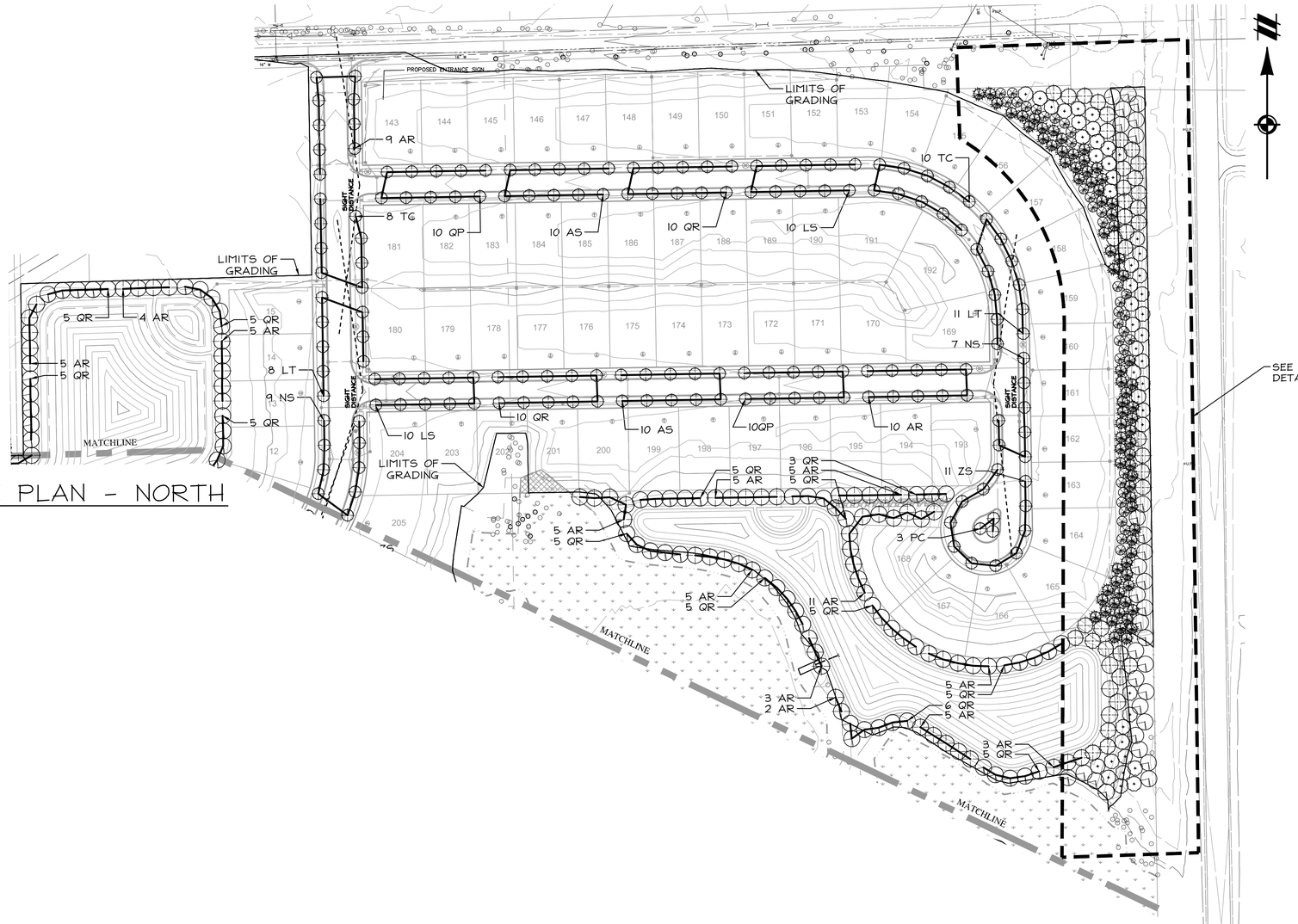
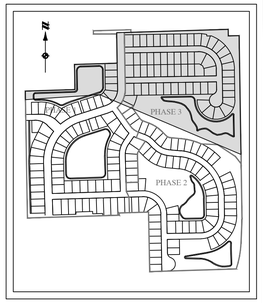


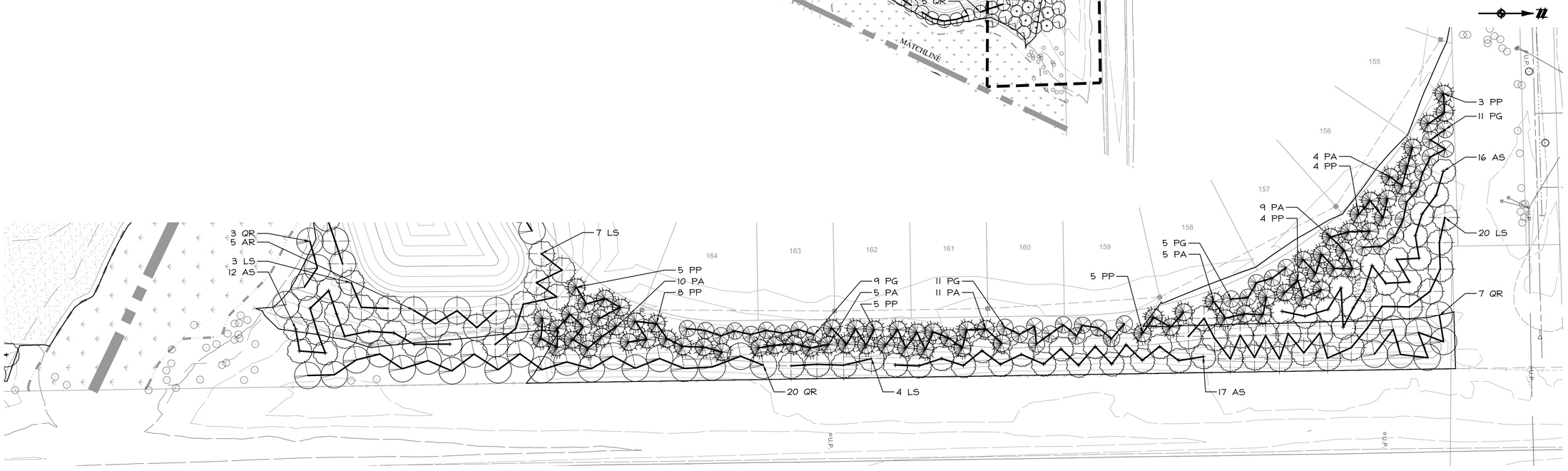
LANDSCAPE PLAN - NORTH

SCALE: 1" = 100'



KEY MAP

NOT TO SCALE



US 23 SCREENING - NORTH

SCALE: 1" = 50'

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CLIENT
DIVERSE REAL ESTATE LLC
FIELDSTONE PARK
FINAL SITE PLANS
LANDSCAPE PLAN
NORTH

DATE 05/12/14

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SCALE 0 50 100
1" = 100 FEET

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P.M. E. LORD
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CAD FILE: 11000143CP-100-101-LS
JOB 11000143
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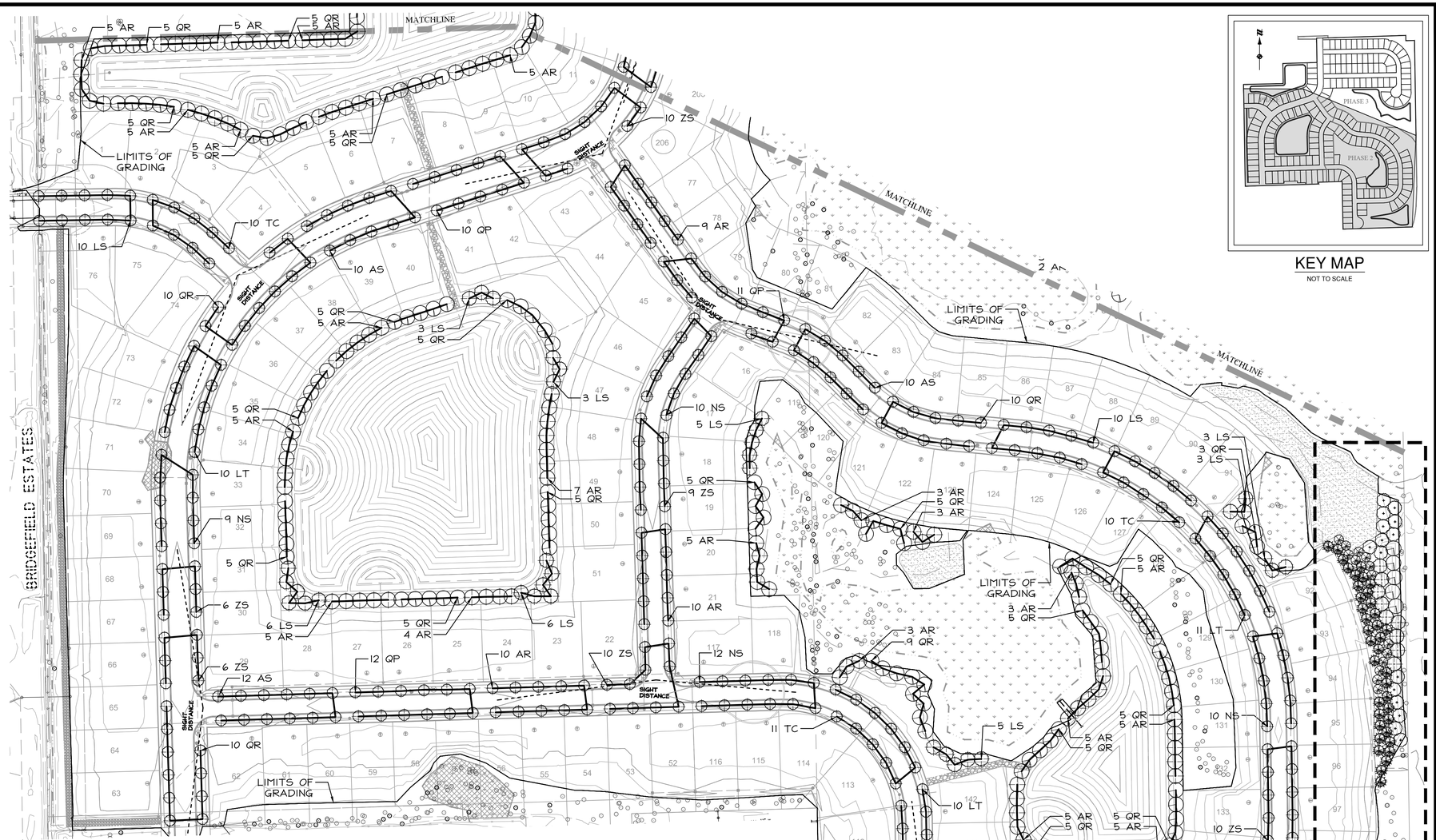
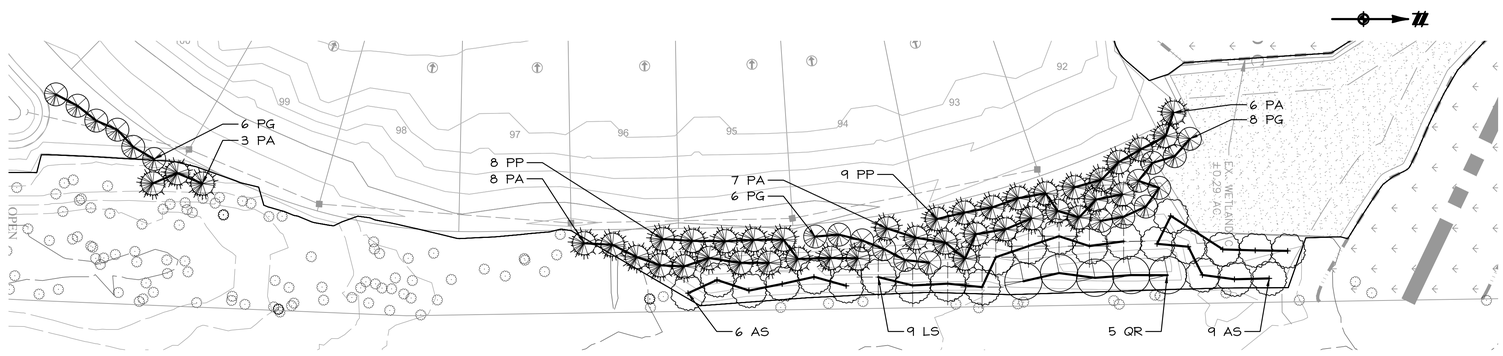


LANDSCAPE PLAN - SOUTH

SCALE: 1" = 100'

KEY MAP

NOT TO SCALE



US 23 SCREENING - SOUTH

SCALE: 1" = 50'

SEE US 23 SCREENING - SOUTH DETAIL THIS SHEET

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DATE 05/12/14

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1" = 100 FEET

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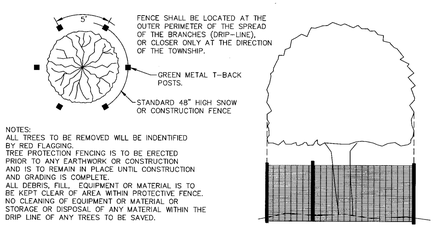
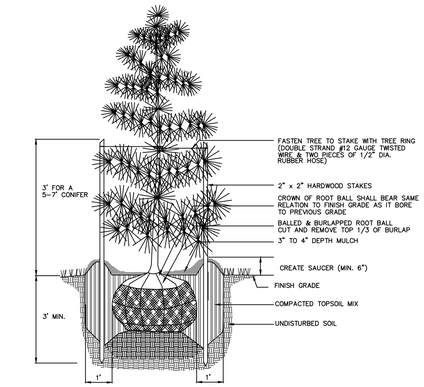


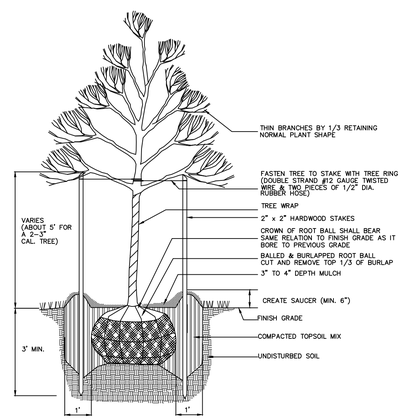
NOTES:
1. ALL TREES TO BE REMOVED WILL BE INDENTIFIED BY RED FLAGGING.
2. TREE PROTECTION FENCING IS TO BE ERECTED PRIOR TO ANY EARTHWORK OR CONSTRUCTION AND IS TO REMAIN IN PLACE UNTIL CONSTRUCTION AND GRADING IS COMPLETE.
3. ALL DEBRIS, FILL, EQUIPMENT OR MATERIAL IS TO BE KEPT CLEAR OF AREA WITHIN PROTECTIVE FENCE. NO CLEANING OF EQUIPMENT OR MATERIAL OR STORAGE OR DISPOSAL OF ANY MATERIAL WITHIN THE DRIP LINE OF ANY TREES TO BE SAVED.

TREE PROTECTION FENCE
NO SCALE



NOTES: 1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING TREE STAKE
3. REMOVE TREE RINGS AND STAKES TWO YEARS AFTER INSTALLATION
4. WATER TREE THOROUGHLY SUBSEQUENT TO INSTALLATION

CONIFEROUS TREE PLANTING DETAIL BALLED AND BURLAPPED
NO SCALE



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1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING TREE STAKE
3. REMOVE TREE RINGS, TREE WRAP AND STAKES TWO YEARS AFTER INSTALLATION
4. WATER TREE THOROUGHLY SUBSEQUENT TO INSTALLATION

DECIDUOUS TREE PLANTING DETAIL BALLED AND BURLAPPED
NO SCALE

STORMWATER SEED MIX
(RATE AND LOCATION TO BE PROVIDED IN FINAL SITE PLANS)

Or equal with prior approval from designer.

Permanent Grasses/Sedges/Rushes: 32.5 PLS pounds/acre

Botanical Name	Common Name
Carex cristatella	Crested Oval Sedge
Carex lurida	Bottlebrush Sedge
Carex vulpinoidea	Brown Fox Grass
Elymus virginicus	Virginia Wild Rye
Glyceria striata	Fowl Manna Grass
Juncus effusus	Common Rush
Juncus torreyi	Torrey's Rush
Leersia oryzoides	Rice Cut Grass
Panicum virgatum	Switch Grass
Scirpus atrovirens	Dark Green Rush
Scirpus cyperinus	Wool Grass
Scirpus fluviatillis	River Bulrush
Scirpus validus	Great Bulrush

Forbs: 32.5 PLS pounds/acre

Botanical Name	Common Name
Alisma plantago-aquatica	Water Plantain
Asclepias incarnata	Swamp Milkweed
Bidens aristosus	Tickseed Sunflower
Helenium autumnale	Sneezeweed
Lycopus americanus	Common Water Horehound
Mimulus ringens	Monkey Flower
Penthorum sedoides	Ditch Stonecrop
Polygonum pensylvanicum	Pinkweed
Rudbeckia subtomentosa	Sweet Black-Eyed Susan
Sagittaria latifolia	Common Arrowhead
Senna hebecarpa	Wild Senna
Thalictrum dasycarpum	Purple Meadow Rue

Temporary Cover: 32.5 PLS pounds/acre

Botanical Name	Common Name
Avena sativa	Common Oat
Lolium multiflorum	Annual Rye

*SOURCE - JFNEW NATIVE PLANT NURSERY
(574) 586-2412

LANDSCAPE NOTES

1. Sizes specified are minimum sizes to which the plants are to be installed.

2. All landscaping shall be installed and maintained in accordance with Pittsfield Township standards and in accordance with current industry standards in a neat, healthy and weed free condition. Any dead, diseased or damaged plant material is to be replaced within one year, or the next appropriate planting period, whichever comes first.

3. The landscape contractor shall be responsible for verification of all underground and overhead utilities. Plant material is to be located such that it will not interfere with any underground or overhead utilities. Canopy and evergreen trees shall not be planted within 10 feet of any underground or overhead utilities.

4. Prior to any land clearing or construction, tree protection fencing is to be installed by the contractor. As shown in the tree protection fence detail. Fencing is to be installed at the dripline of trees and shrubs to be saved. Such fencing shall be maintained as approved for the duration of the project. No cutting, dumping, filling or trespassing shall occur inside the fenced area.

5. No plant material is to be planted closer than 4 feet from any property line.

6. Plant trees and shrubs at the same grade level at which they were grown at the nursery. If heavy clay soils are evident, plant trees and shrubs higher, approximately 1/3 of the root ball above the grade.

7. Remove all twine, wire, nursery tree guards, tags and inorganic material from root balls.

8. Peel back the top 1/3 of burlap from earth balls and remove any burlap around tree trunks.

9. All landscape areas shall be excavated of all building/construction material and poor soils to a depth of 18-24" and backfilled with good, medium textured planting soil.

10. Backfill directly behind all curbs and along sidewalks and compact to top of curb or walk to support vehicle and pedestrian weight without settling.

11. Any plant substitutions shall have prior Township approval.

12. Ground mounted mechanical equipment shall be screened where visible from the public right of way with living plant material.

13. Trees should be located a minimum of 10 feet from utilities.

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WASHTENAW COUNTY, MICHIGAN

CLIENT
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FIELDSTONE PARK
FINAL SITE PLANS

LANDSCAPE DETAIL SHEET

DATE 05/12/14

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SCALE 0 25 50
1" = 50 FEET

DR. JEC | CH. TP
P.M. E. LORD
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CAD FILE: 11000143CP-102-DT
JOB 11000143
FILE CODE:
SHEET NO. CP-102

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