FINAL SITE PLAN

ARBOR RIDGE CROSSING PHASE 1 & 2

THE WOODLANDS

SECTION 13, T.3S., R.6E.

PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

DEVELOPER
DIVERSE REAL ESTATE LLC
12955 23 MILE ROAD
SHELBY TOWNSHIP, MI 48315
586-615-3036 (PHONE)
ATTN: CHRIS COUSINO

ENGINEER/SURVEYOR
ATWELL, LLC
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MICHIGAN 48076
248-447-2000 (PHONE)
ATTN: ERIC LORD, PE

SITE DATA

SITE AREA	107.33 ACRES
SITE ZONING PROPOSED USE:	R-1B SINGLE FAMILY RESIDENTIAL
EXISTING ARBOR RIDGE:	
SITE AREA	17.55 AC.
NUMBER OF UNITS	55
EXISTING WOODLANDS AT ARBOR RIDGE:	
SITE AREA	35.0 AC.
NUMBER OF UNITS	47
SINGLE FAMILY SUBURBAN RESIDENTIAL (PHASE 1 & 2)	
TOTAL PHASE 1 & 2 AREA	21.76 ACRES
TOTAL NUMBER UNITS SHOWN	67 UNITS
DENSITY	3.14 UNITS PER ACRE
FRONT YARD SETBACK	35 FT.
REAR YARD SETBACK	35 FT.
SIDE YARD SETBACK	5 FT. MIN./15 FT. TOTAL
MINIMUM LOT AREA	10,000 SQ. FT. MIN.
MINIMUM LOT WIDTH	70 FT. MINIMUM AT FRONT SETBACK
BUILDING HEIGHT	35'/2.5 STORIES, ALL NEW STRUCTURES
SINGLE FAMILY DEVELOPMENT AREA (PH.1&2)	948,027 SF
LOT COVERAGE (30% MAX)	21%
NET LOT COVERAGE (40% MAX)	29%
IMPERVIOUS SURFACE (INC. HOUSE, DRIVEWAY, WALK, ROADS)	300,985 S.F.
IMP. SURFACE TO NET LOT AREA	41%
UNIT COUNT:	
TOTAL PHASE 1 & 2 UNITS:	67
EXISTING ARBOR RIDGE UNITS:	55
EXISTING WOODLANDS AT ARBOR RIDGE UNITS:	47
EXISTING ENCLAVE AT ARBOR RIDGE UNITS:	70
TOTAL UNITS FUTURE PHASE 3	73
GRAND TOTAL:	312

NOTE
ALL ELEVATIONS SHOWN ARE IN THE NGVD29 DATUM.
SUBTRACT 0.40 FEET TO CONVERT TO NAVD 88 DATUM.

ON-SITE SOILS

Gf – Gilford sandy loam
Ho – Hoytville silty clay loam
NaB – Nappanee silty clay loam, 2 to 6% slopes
OsC – Oshtemo loamy sand, 6 to 12% slopes
Pe – Pewamo clay loam
SpB – Spinks loamy sand, 0 to 6% slopes
Stc – St. Clair clay loam, 6 to 12% slopes
ThA – Thetford loamy sand, 0 to 4% slopes

Note:
All soils information has been supplied by the
U.S. Dept. of Agriculture Soil Conservation Service.

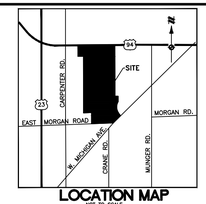
LEGAL DESCRIPTION

DESCRIPTION OF A 107.33 ACRE PARCEL OF LAND (PHASE 2 PLUS FUTURE PHASES) LOCATED IN SECTION 13, T3S, R6E, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

Commencing at the South ¼ corner of Section 13, T3S, R6E, Pittsfield Township, Washtenaw County, Michigan; thence N86°11'55"W 205.65 feet along the South line of said Section 13 and the centerline of Morgan Road (66.00 feet wide); thence N03°48'04"E 43.01 feet for a **PLACE OF BEGINNING;** thence N86°11'55"W 615.49 feet along the proposed Northerly right-of-way line of said Morgan Road; thence N01°42'03"E 656.97 feet; thence N86°11'55"W 500.07 feet (recorded as 500.00 feet); thence N01°41'32"E 1985.03 feet (recorded as N01°42'03"E 1984.97 feet) along the West line of the East ½ of the Southwest ¼ of said Section 13; thence N85°51'20"W 298.97 feet (recorded as N85°50'34"W 299.34 feet) along the East-West ¼ line of said Section 13; thence N01°47'32"E 385.25 feet (recorded as 385.23); thence S85°55'23"E 2123.39 feet along the South line of Interstate 94 (300.00 feet wide); thence S01°39'12"W 1692.64 feet to the Southerly line of Cloverlane Drive (66.00 feet wide); thence S88°19'23"E 202.07 feet along said Southerly right-of-way line to the Westerly line of Hunt Club Drive (66.00 feet wide); thence the following two courses along said Westerly line: S01°40'37"W 91.56 feet and 51.57 feet along the arc of a 416.87 foot radius, circular curve to the right, having a chord which bears S05°13'16"W 51.54 feet; thence the following eleven courses along the Northerly and Westerly line of Arbor Ridge Condominiums recorded in Liber 3127, page 722 of Washtenaw County Records: N88°19'23"W 546.79 feet, S01°40'37"W 130.00 feet, N88°19'23"W 28.94 feet, S01°40'37"W 196.98 feet, S18°03'54"W 202.34 feet, S64°39'00"W 169.84 feet, N86°11'55"W 85.46 feet, S48°48'05"W 100.65 feet, S03°48'05"W 321.65 feet, S86°11'56"E 52.33 feet, S03°48'04"W 170.08 feet to the Place of Beginning, containing 107.33 acres of land, more or less, being part of said Section 13, being subject to any easements or restrictions of record, if any.
Tax parcel number: 12-13-300-021, 12-13-300-022, 12-13-300-029, and 12-13-400-030.

NOTES

1. MAILBOXES WILL BE LOCATED AT EACH UNIT.
2. ENGINEERING PLANS HAVE BEEN SUBMITTED TO ALL OF THE FRANCHISED UTILITY COMPANIES. ONCE THEIR DESIGNS ARE RECEIVED, THEY WILL BE INCORPORATED INTO THE PLANS.
3. SUMP PUMP LEADS OR STORM SEWERS USED SOLELY TO DRAIN SUMP PUMPS SHALL NOT CONNECT TO ANY WCRC OWNED STRUCTURES.
4. DRIVEWAY APPROACHES WITHIN THE RIGHT OF WAY SHALL NOT HAVE A WIDTH GREATER THAN 20 FEET OR A VERTICAL PROFILE EXCEEDING ±10%.
5. PROPOSED OR EXISTING DRIVEWAYS SHALL BE NO CLOSER THAN 50 FEET FROM THE RIGHT OF WAY OF AN INTERSECTING ROAD.
6. NO HOME BUILDING CONSTRUCTION TRAFFIC SHALL BE ALLOWED ON THE NEW ROADS UNTIL BOTH HMA BASE AND HMA LEVELING COURSES ARE IN PLACE.
7. CONSTRUCTION TRAFFIC SHALL NOT USE THE STREETS WITHIN ARBOR RIDGE PHASE 1 TO ACCESS THE SITE. ALSO, CONSTRUCTION PARKING WILL NOT BE PERMITTED IN ARBOR RIDGE PHASE 1.
8. MAILBOXES LOCATED WITHIN THE R.O.W. SHALL BE IN ACCORDANCE WITH THE WCRC PROCEDURES FOR INSTALLATION OF MAILBOXES AND NEWSPAPER DELIVERY BOXES ALONG COUNTY ROADS.
9. NO LANDSCAPING BERMS, HEADWALLS, PRIVATE SIGNS OR PRIVATE UTILITIES SHALL BE LOCATED WITHIN THE R.O.W.
10. NO FEMA REGULATED FLOODPLAIN ARE LOCATED WITHIN PROJECT LIMITS.



LOCATION MAP
NOT TO SCALE

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Quantities in This Plan Set

SANITARY SEWER			
1	8" SDR 21-PVC Sanitary Sewer	2,765	L.F.
2	6" PVC SDR 21 House Lead	4,158	L.F.
3	4' Dia. Sanitary Manhole	15	EA.
WATER MAIN			
1	8" D.I. CL. 54 Water Main	2,605	L.F.
2	Hydrant Assembly	10	EA.
3	8" Gate Valve & Well Structure	7	EA.
STORM SEWER			
1	3" SUMP LEAD	1210	L.F.
2	8" PVC	0	L.F.
3	12" C-76 RCP Storm Sewer	4,730	L.F.
4	15" C-76 RCP Storm Sewer	210	L.F.
5	18" C-76 RCP Storm Sewer	2,345	L.F.
6	24" C-76 RCP Storm Sewer	1,489	L.F.
7	30" C-76 RCP Storm Sewer	615	L.F.
8	36" C-76 RCP Storm Sewer	750	L.F.
9	42" C-76 RCP Storm Sewer	225	L.F.
10	2' Dia. Inlet	24	EA.
11	4' Dia. Catch Basin	28	EA.
12	5' Dia. Catch Basin	2	EA.
13	6' Dia. Catch Basin	3	EA.
14	4' Dia. Manhole	35	EA.
15	5' Dia. Manhole	12	EA.
16	6' Dia. Manhole	3	EA.
17	Outlet Control Standpipe	2	EA.

ARBOR RIDGE C.S.P.A. #14-15
(PREVIOUSLY REVIEWED UNDER C.S.P.A. #04-23)
(PREVIOUSLY REVIEWED UNDER C.S.P.A. #95-4)

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

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DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
COVER SHEET

SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-01_CV
JOB #: 12001809
FILE CODE:
SHEET NO.
01

LEGEND

APPROXIMATE LIMITS OF PHASE 1 & 2 CONSTRUCTION

PHASE LINES

NOTES:

1. SANITARY SEWER MANHOLES AT THE BOUNDARY OF A PHASE LINE MUST INCLUDE A STUB THE LENGTH OF ONE STICK OF PIPE.

ARBOR RIDGE CROSSING

PHASE 1 – 29 LOTS
PHASE 2 – 37 LOTS (FUTURE)
PHASE 3 – 73 LOTS (FUTURE)
TOTAL – 139 LOTS

THE MEADOWS OF ARBOR RIDGE

PHASE 1 – 29 UNITS (FUTURE)
PHASE 2 – 42 UNITS (FUTURE)
TOTAL – 71 LOTS

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DIVERSE REAL ESTATE LLC

ARBOR RIDGE CROSSING, PHASES 1 & 2

FINAL SITE PLAN

CONSTRUCTION SEQUENCE PLAN

SECTION 13

TOWN 3 SOUTH, RANGE 6 EAST

PITTSFIELD TOWNSHIP

WASHTENAW COUNTY, MICHIGAN

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
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2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 75 150
1" = 150 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-01A-PH
JOB #: 12001809
FILE CODE:
SHEET NO. 1A

NOTE
ALL ELEVATIONS SHOWN ARE IN THE NGVD29 DATUM.
SUBTRACT 0.40 FEET TO CONVERT TO NAVD 88 DATUM.

I-94 EXF
(300.C

300.00'

S85°55'23"E 2123.39'

DESCRIPTION OF A 107.33 ACRE PARCEL OF LAND LOCATED IN SECTION 13, T3S, R6E, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

Commencing at the South ¼ corner of Section 13, T3S, R6E, Pittsfield Township, Washtenaw County, Michigan; thence N86°11'55"W 205.65 feet along the South line of said Section 13 and the centerline of Morgan Road (66.00 feet wide); thence N03°48'04"E 43.01 feet for a **PLACE OF BEGINNING;** thence N86°11'55"W 615.49 feet along the proposed Northerly right-of-way line of said Morgan Road; thence N01°42'03"E 656.97 feet; thence N86°11'55"W 500.07 feet (recorded as 500.00 feet); thence N01°41'32"E 1985.03 feet (recorded as N01°42'03"E 1984.97 feet) along the West line of the East ½ of the Southwest ¼ of said Section 13; thence N85°51'20"W 298.97 feet (recorded as N85°50'34"W 299.34 feet) along the East-West ¼ line of said Section 13; thence N01°47'32"E 385.25 feet (recorded as 385.23); thence S85°55'23"E 2123.39 feet along the South line of Interstate 94 (300.00 feet wide); thence S01°39'12"W 1692.64 feet to the Southerly line of Cloverlane Drive (66.00 feet wide); thence S88°19'23"E 202.07 feet along said Southerly right-of-way line to the Westerly line of Hunt Club Drive (66.00 feet wide); thence the following two courses along said Westerly line: S01°40'37"W 91.56 feet and 51.57 feet along the arc of a 416.87 foot radius, circular curve to the right, having a chord which bears S05°13'16"W 51.54 feet; thence the following eleven courses along the Northerly and Westerly line of Arbor Ridge Condominiums recorded in Liber 3127, page 722 of Washtenaw County Records: N88°19'23"W 546.79 feet, S01°40'37"W 130.00 feet, N88°19'23"W 28.94 feet, S01°40'37"W 196.98 feet, S18°03'54"W 202.34 feet, S64°39'00"W 169.84 feet, N86°11'55"W 85.46 feet, S48°48'05"W 100.65 feet, S03°48'05"W 321.65 feet, S86°11'56"E 52.33 feet, S03°48'04"W 170.08 feet to the Place of Beginning, containing 107.33 acres of land, more or less, being part of said Section 13, being subject to any easements or restrictions of record, if any.
Tax parcel number: 12-13-300-021, 12-13-300-022, 12-13-300-029, & 12-13-400-030.

N01°47'32"E 385.25 (M)
N01°47'32"E 385.23 (R)

WETLAND
1.13 ACRES

EXISTING REGULATED WETLAND BOUNDARY, TYP.

N85°51'20"W(M) 298.97'(M)
N85°50'34"W(R) 299.34'(R)

25' WETLAND BUFFER, TYP.

SB-1
EL. 837.90
GW. EL. 829.90

EX. PUBLIC ROAD
ESMT.
L.4603, P.795

ThA

NaB

SB-3
EL. 837.20
GW. EL. 830.12

EX. PUBLIC ROAD
ESMT.
L.4603, P.795

NaB

SB-4
EL. 841.50
GW. EL. 830.50

SEE SHEET 3 FOR CONTINUATION

SEE SHEET 5 FOR CONTINUATION

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LEGEND

EXIST. CONTOUR
PROP. CONTOUR
EXIST. SPOT ELEVATION
PROP. SPOT ELEVATION
GUTTER
EXIST. STORM SEWER
PROP. STORM SEWER
EXIST. MANHOLE
PROP. MANHOLE
PROP. EDGE DRAIN
EXIST. CATCH BASIN/INLET
PROP. CATCH BASIN/INLET
END SECTION
CULVERT
EXIST. SANITARY SEWER
PROP. SANITARY SEWER
EXIST. CLEANOUT
PROP. CLEANOUT
EXIST. WATER MAIN
PROP. WATER MAIN
EXIST. HYDRANT
PROP. HYDRANT
EXIST. SHUTOFF OR CURB BOX
EXIST. CURB AND GUTTER
PROP. CURB AND GUTTER
CENTERLINE OF DITCH OR EDGE OF WATER
EDGE OF WETLAND
EXISTING FENCE
PROPOSED FENCE
PROPERTY LINE
CENTERLINE
EXIST. SIGN
PROP. SIGN
SIDEWALK RAMP
F.F. FINISH FLOOR ELEV.
F.G. FINISH GRADE
V.O. VIEWOUT BASEMENT
W.O. WALKOUT BASEMENT
B.F. BASEMENT FLOOR
G.F. GARAGE FLOOR
SILT FENCE
PROP. SHUTOFF OR CURB BOX
EXIST. GATE VALVE IN BOX
PROP. GATE VALVE IN BOX
EXIST. GATE VALVE IN MANHOLE
PROP. GATE VALVE IN MANHOLE
EXIST. OVERHEAD ELECTRIC
PROP. OVERHEAD ELECTRIC
EXIST. UNDERGROUND ELECTRIC
PROP. UNDERGROUND ELECTRIC
EXIST. LIGHT POLE
PROP. LIGHT POLE
EXIST. UTILITY POLE
GUY WIRE
EXIST. OVERHEAD TELEPHONE
PROP. OVERHEAD TELEPHONE
EXIST. UNDERGROUND TELEPHONE
PROP. UNDERGROUND TELEPHONE
EXIST. GAS
PROP. GAS
EXIST. GAS RISER
EXIST. TELEPHONE RISER
CONTROL POINT
FOUND IRON PIPE
SET IRON PIPE
FOUND CONCRETE MONUMENT
SET CONCRETE MONUMENT
FOUND PK NAIL
SET PK NAIL
FOUND LEADED CHISEL HOLE
SET LEADED CHISEL HOLE
FOUND REROD
SOIL BORING
APPROX. LOCATION OF SOIL BORING
APPROX. LOCATION OF MONITORING WELL
TEST PIT
APPROX. LOCATION OF PENETRATION TEST
EXIST. DECIDUOUS TREE
EXIST. CONIFEROUS TREE
EXIST. TREE OR BRUSH LIMIT
EXIST. WETLAND
SECTION CORNER

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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
ORIGINAL TOPOGRAPHIC SURVEY

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
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2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

KEYMAP
NO SCALE

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02A-TP
JOB #: 12001809
FILE CODE:
SHEET NO. 2

NOTE
ALL ELEVATIONS SHOWN ARE IN THE NGVD29 DATUM.
SUBTRACT 0.40 FEET TO CONVERT TO NAVD 88 DATUM.

I-94 EXPRESSWAY
(300.0' WIDE)

S85°55'23"E 2123.39'

SOUTHERLY R.O.W. LINE,
I-94 EXPRESSWAY

SB-2
EL. 838.40
GW. EL. 832.32

CENTER OF SECTION
SECTION 13
T3S R6E
PITTSFIELD TWP.

SB-A
EL. 830.50
GW. EL. 821.00

ThA

NaB

Ho

EX. PUBLIC ROAD
ESMT.
L.4603, P.795

SEE SHEET 2 FOR CONTINUATION

SEE SHEET 6 FOR CONTINUATION

KEYMAP
NO SCALE

LEGEND

- EXIST. CONTOUR
- PROP. CONTOUR
- EXIST. SPOT ELEVATION
- PROP. SPOT ELEVATION
- GUTTER
- EXIST. STORM SEWER
- PROP. STORM SEWER
- EXIST. MANHOLE
- PROP. MANHOLE
- PROP. CATCH BASIN
- EXIST. CATCH BASIN/INLET
- PROP. CATCH BASIN/INLET
- END SECTION
- CULVERT
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. CLEANOUT
- PROP. CLEANOUT
- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. SHUTOFF OR CURB BOX
- EXIST. CURB AND GUTTER
- PROP. CURB AND GUTTER
- CENTERLINE OF DITCH OR EDGE OF WATER
- EDGE OF WETLAND
- EXISTING FENCE
- PROPOSED FENCE
- PROPERTY LINE
- CENTERLINE
- EXIST. SIGN
- PROP. SIGN
- SIDEWALK RAMP
- FINISH FLOOR ELEV.
- FINISH GRADE
- WALKOUT BASEMENT
- BASEMENT FLOOR
- GARAGE FLOOR
- SILT FENCE
- PROP. SHUTOFF OR CURB BOX
- EXIST. GATE VALVE IN BOX
- PROP. GATE VALVE IN BOX
- EXIST. GATE VALVE IN MANHOLE
- PROP. GATE VALVE IN MANHOLE
- EXIST. OVERHEAD ELECTRIC
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- GUY WIRE
- EXIST. OVERHEAD TELEPHONE
- PROP. OVERHEAD TELEPHONE
- EXIST. UNDERGROUND TELEPHONE
- PROP. UNDERGROUND TELEPHONE
- EXIST. GAS
- PROP. GAS
- EXIST. GAS RISER
- EXIST. TELEPHONE RISER
- CONTROL POINT
- FOUND IRON PIPE
- SET IRON PIPE
- FOUND CONCRETE MONUMENT
- SET CONCRETE MONUMENT
- FOUND PK NAIL
- SET PK NAIL
- FOUND LEADED CHISEL HOLE
- SET LEADED CHISEL HOLE
- FOUND REROD
- SOIL BORING
- APPROX. LOCATION OF SOIL BORING
- APPROX. LOCATION OF MONITORING WELL
- TEST PIT
- APPROX. LOCATION OF PENETRATION TEST
- EXIST. DECIDUOUS TREE
- EXIST. CONIFEROUS TREE
- EXIST. TREE OR BRUSH LINE
- EXIST. WETLAND
- SECTION CORNER

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

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DIVERSE REAL ESTATE LLC

ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
ORIGINAL TOPOGRAPHIC SURVEY

SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02A-TP
JOB #: 12001809
FILE CODE:
SHEET NO. 3

SEE SHEET 2 FOR CONTINUATION

ZONED R-1B
USE: DETENTION BASIN

WASHTENAW COUNTY ROAD COMMISSION
555 N ZEEB RD
ANN ARBOR, MI. 48103

SB-B
EL. 834.40
GW. EL. 817.40

SB-9
EL. 838.40
GW. EL. 831.90

SB-10
EL. 830.80
GW. EL. 819.55

EAST LINE OF THE WEST 1/2 OF THE SOUTHWEST 1/4 OF SECTION 13

1984.97'(R)
1985.03'(M)

3"E(R)
2"E(M)

25' WD. BUFFER AND MAINTENANCE EASE.

20' WD. PRIVATE EASE. FOR DRAINAGE AND STORM SEWER

EX. WATERMAIN ESMT.
L.4712, P.188

EX. DRAINAGE ESMT.
L.4712, P.188

EX. PUB. UTIL. ESMT.
L.4712, P.188

EX. SANITARY ESMT.
L.4712, P.188

EX. PUBLIC ROAD ESMT.
L.4603, P.795

EMENT FOR PUBLIC ROAD
UTILITIES PER ARPEE-DONNAN
OJECT# 95001LS REVISED (4-2-98)

WATER'S EDGE

ThA

NaB

SpB

Ho

22' WD. PRIVATE EASE. FOR DRAINAGE AND

10' WD. STORM EASE.
10' WD. PRIVATE EASE FOR PUBLIC UTILITIES

20' WD. PR
FOR STORM

PRESENTLY ZONED AG
PROPOSED ZONING:
P.U.D. (PLANNED UNIT DEVELOPEMENT)

53 52 29 28 20

SEE SHEET 6 FOR CONTINUATION

SEE SHEET 7 FOR CONTINUATION

NOTE
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EXIST. CURB AND GUTTER
PROP. CURB AND GUTTER
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EDGE OF WETLAND
EXISTING FENCE
PROPOSED FENCE
PROPERTY LINE
CENTERLINE
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PROP. SIGN
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FINISH FLOOR ELEV.
FINISH GRADE
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BASEMENT FLOOR
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PROP. UNDERGROUND TELEPHONE
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PROP. GAS
EXIST. GAS RISER
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DATE
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REVISIONS/SUBMITTALS
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2014-09-08 PER TWP.
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SCALE
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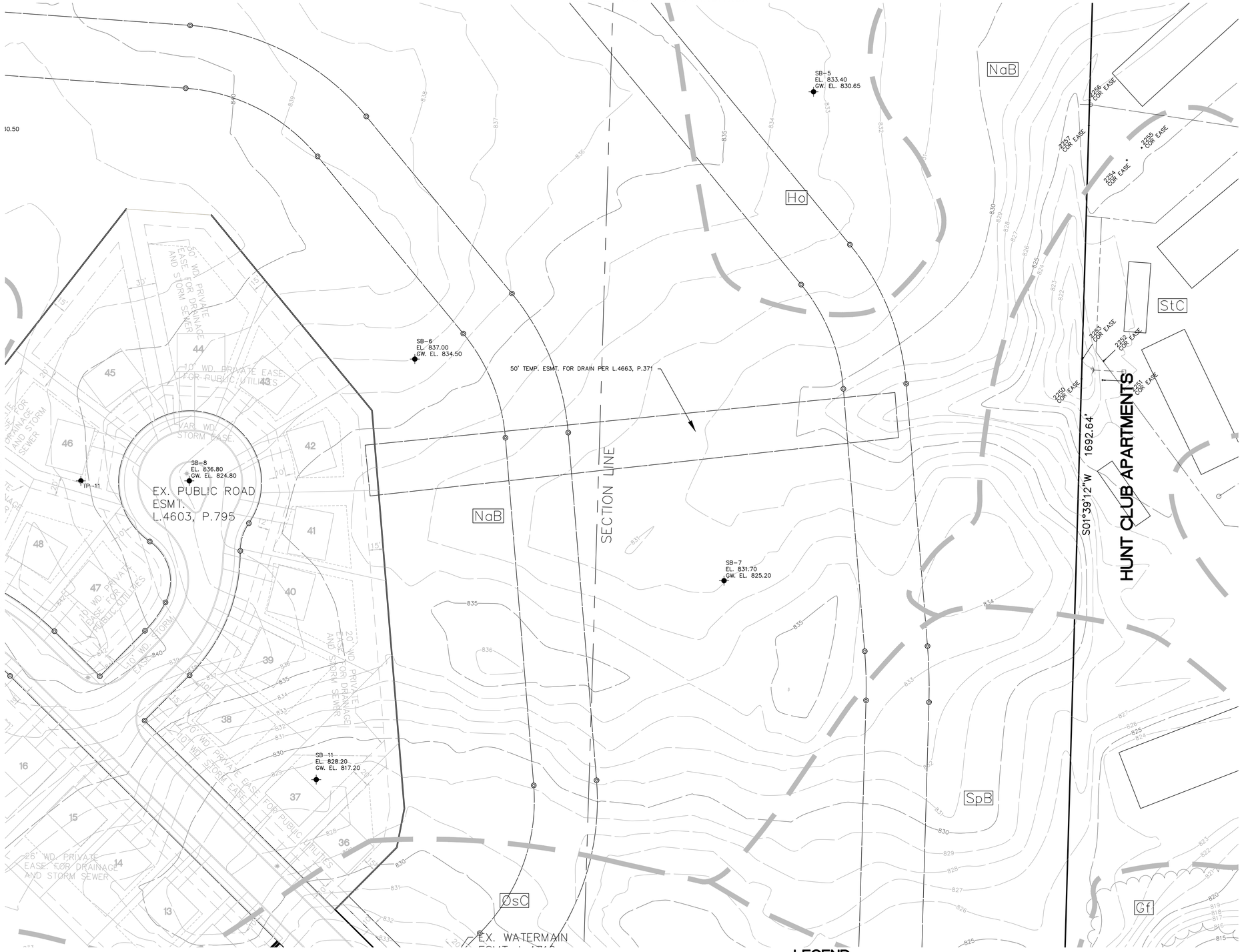
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02A-TP
JOB #: 12001809
FILE CODE:
SHEET NO. 5

SEE SHEET 3 FOR CONTINUATION

SEE SHEET 5 FOR CONTINUATION



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DIVERSE REAL ESTATE LLC

ARBOR RIDGE CROSSING, PHASES 1 & 2

FINAL SITE PLAN

ORIGINAL TOPOGRAPHIC SURVEY

SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
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KEYMAP
NO SCALE

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02A-TP
JOB #: 12001809
FILE CODE:
SHEET NO. 6

SEE SHEET 6 FOR CONTINUATION

SEE SHEET 7 FOR CONTINUATION

SEE SHEET 9 FOR CONTINUATION

EX. SANITARY ESMT. L.4712, P.188

EX. DRAINAGE ESMT. L.4712, P.188

EX. PUB. UTIL. ESMT. L.4712, P.188

EX. WATERMAIN ESMT. L.4712, P.188

EX. PUB. UTIL. ESMT. L.4712, P.188

EX. DRAINAGE ESMT. L.4712, P.188

EX. SANITARY ESMT. L.4712, P.188

EX. PUBLIC ROAD ESMT. L.4703, P.795

TP-12 EL. 830.60

SB-12 EL. 830.60

SpB

OsC

StC

ThA

Gf

TENNIS COURT

POOL

B-BALL

BENCHMARK #1:
ARROW ON HYDRANT AT NW CORNER OF HUNT CLUB & CLOVERLANE DRIVES
ELEVATION: 820.75' (USGS) RECORD
ELEVATION: 820.27' (NAVD 88)
(TOPO & SPOT CHECK IS ON USGS DATUM)

NOTE
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EX. HUNT CLUB 400 – 024

CLOVERLANE DRIVE

EX. HUNT CLUB 400 – 025

EXISTING HYDRANT TO BE REMOVED

S88°19'23"E 207.07'

N88°19'23"W 546.79'

S01°40'37"W 91.56'

R=416.87'
L=51.57'
Delta=7°05'18"
CH=S05°13'16"W
51.54'

CONNOR CT. (PRIVATE)

N88°19'23"W 28.94'

S01°40'37"W 196.99'

S18°03'54"W 202.34'

S88°19'23"E 169.84'

CHRISTINA WAY (PRIVATE)

SAWCUT AND REMOVE EX. TURN-AROUND.

TEMP. HYD. & THRUST BLOCK (TO BE REMOVED AT TIME OF EXTENSION)

HUNT CLUB
ZONED R-3
USE: RESIDENTIAL

ARBOR RIDGE PHASE 1
LIBER 3127, PG. 722

HAMPTONS OF CLOVERLA
5700 CROOKS RD, STE 4
TROY, MI 48098

R SAN & WM PER L.2368, P.535

EX. 10" SAN. SEWER

DETENTION "C" BASIN

KEYMAP

LEGEND

EXIST. CONTOUR
PROP. CONTOUR
EXIST. SPOT ELEVATION
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ORIGINAL TOPOGRAPHIC SURVEY & DEMOLITION PLAN

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DATE
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DRAWN BY: GMS
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PROJECT MANAGER: EL
CAD: 300819SF2-02A-TP
JOB #: 12001809
FILE CODE:
SHEET NO. 8

McDOWELL & ASSOCIATES
Geotechnical, Environmental, & Hydrogeologic Services
21355 Hatcher Avenue • Ferndale, MI 48220
Phone: (248) 399-2066 • Fax: (248) 399-2157

LOG OF SOIL BORING NO. 1
PROJECT Arbor Ridge Subdivision
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. 837.9 DATE 1/20/05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den. Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
			0'7" Frozen dark brown silty clayey TOPSOIL						
	1								
A	2		Very stiff moist variegated silty sandy CLAY with trace of pebbles	6					
UL	3			12	18.4	129			
			3'6"	12			*	(7000)	
	4								
B	5			17					
UL				18/3"					
	6			—					
	7		Extremely stiff moist variegated silty CLAY with trace of gravel	12					
C	8			23					
UL				—					
	9		9'0"						
D	10		Compact wet brown SAND with trace of silt	4					
UL			10'0"	6	15.9	113			
	11			8					
	12		Stiff moist brown silty sandy CLAY with trace of pebbles						
	13		12'6"						
	14		Extremely compact wet brown silty fine SAND with wet brown silt layers						
E	15			20					
UL			14'8"	15/2"					
	16			—					
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 9 FT. 0 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION 8 FT. 0 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Heavy

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LOG OF SOIL BORING NO. 2
PROJECT Arbor Ridge Subdivision
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. 838.4 DATE 1/20/05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den. Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
			0'6" Frozen dark brown silty fine sandy TOPSOIL with vegetation						
	1								
A	2		Stiff frozen to moist variegated silty sandy CLAY with vegetation	5					
UL	3		2'6"	6	23.5	124			
			Compact moist to wet brown fine SAND	5			*	(3000)	
	4		3'9"						
B	5			6					
UL			Compact wet brown silty fine SAND	5	17.2	125			
	6			6					
	7		6'6"	5					
C	8		Stiff moist brown silty sandy CLAY with pebbles	6	15.1	134			
UL			7'10"	10			*	(5000)	
	9								
D	10			9					
UL			Very stiff moist blue silty sandy CLAY with trace of gravel and moist gray fine to medium sand layer at 9'	10					
	11			14					
	12								
	13		13'0"						
	14		Extremely stiff moist brown silty CLAY with pebbles						
E	15		15'0"	15					
UL			Very stiff moist blue silty sandy CLAY with pebbles	15					
	16		16'0"	5/3"					
	17		Extremely compact wet brown fine SAND						
	18								
	19								
F	20			20					
UL			20'0"	21					
	21			—					
	22								
	23								
	24								
	25								

NOTES:
1) Installed 1¼" diameter PVC piezometer in boring with screen bottom at 9' and 4" stick up.
2) Water level in piezometer at 10 minutes after installation was 5.0' below top of casing.
3) Water level in piezometer at 1hour after completion at 7.98' below top of casing

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 2 FT. 0 INS.
G.W. ENCOUNTERED AT 10 FT. 0 INS.
G.W. AFTER COMPLETION 6 FT. 1 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Heavy

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LOG OF SOIL BORING NO. 3
PROJECT Arbor Ridge Subdivision
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. 837.2 DATE 1/19/05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den. Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
			0'5" Frozen to moist dark brown sandy TOPSOIL with vegetation						
	1								
A	2		Compact moist to wet brown silty fine SAND	3					
UL	3		2'9"	4	16.9	129			
				5					
	4		Stiff moist brown silty sandy CLAY with wet brown silty fine sand layers and wet brown fine to medium sand seams						
B	5			6					
UL				9	20.2	131			
	6			7			*	(4500)	
	7		6'6" Stiff to very stiff moist brown silty sandy CLAY with trace of gravel	6					
C	8			8	16.5	133			
UL			7'10"	9			*	(5000)	
	9								
D	10			8					
UL			Very stiff moist blue silty CLAY with trace of pebbles	10					
	11			14					
	12								
	13								
	14								
E	15			25					
UL			15'0"	18					
	16			—					
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

NOTES:
1) Installed 1¼" diameter PVC piezometer in boring with screen bottom at 9' and 4" stick up.
2) Water Level in piezometer at 24 hours after installation at 7.47' below top of casing.

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 1 FT. 0 INS.
G.W. ENCOUNTERED AT 3 FT. 6 INS.
G.W. AFTER COMPLETION 7 FT. 1 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Medium

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LOG OF SOIL BORING NO. 4
PROJECT Arbor Ridge Subdivision
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. 841.5 DATE 1/19/05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den. Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
			0'6" Frozen dark brown silty sandy clayey TOPSOIL						
	1								
A	2		Stiff frozen to moist brown silty sandy CLAY	5					
UL	3		2'9"	5	24.7	126			
				7			*	(3500)	
	4								
B	5			3					
UL				4	15.5	130			
	6		Compact moist to wet brown silty fine SAND with wet brown clayey sand layers						
C	7			6					
UL	8			7	18.2	132			
				7					
	9		9'0"						
D	10		Slightly compact wet brown fine to medium SAND with fine sand seams	1					
UL			10'1"	1	18.1	132			
	11			5					
	12								
	13		Compact wet brown SILT						
	14								
E	15			7					
UL				10					
	16		15'6"	16					
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

NOTES:
1) Installed 1¼" diameter PVC piezometer in boring with screen bottom at 10' and 3' stick up
2) Water level in piezometer at 24 hours after installation at 10.61' below top of casing

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 3 FT. 6 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION 11 FT. 0 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Medium

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LOG OF SOIL BORING NO. 5
PROJECT Arbor Ridge Subdivision
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. 833.4 DATE 1/20/05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den. Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
			0'7" Frozen dark brown silty clayey TOPSOIL with vegetation						
	1								
A	2		Stiff moist brown silty sandy CLAY with dark brown silty sandy clay seams	7					
UL	3		3'0"	6	18.4	173			
				6			*	(3500)	
	4		Stiff moist variegated silty sandy CLAY with trace of gravel						
B	5		4'6"	4					
UL				2	17.0	133			
	6		Slightly compact wet brown silty fine to medium SAND	2					
	7		6'0"	6					
C	8		Medium compact to compact wet brown fine to medium SAND with trace of silt	7	19.7	105			
UL			7'10"	12					
	9								
D	10			7					
UL			Very stiff to extremely stiff moist blue silty sandy CLAY with gravel	13					
	11			15					
	12								
	13		13'0"						
	14								
E	15		Extremely stiff moist blue silty sandy CLAY with trace of gravel	35					
UL			14'6"	—					
	16			—					
	17								
	18								
	19								
	20		NOTES:						
	21		1) Installed 1¼" diameter PVC piezometer in boring with screen bottom at 9' and 4' stick up						
	22		2) Water level in piezometer 1 hour after installation at 6.08' and 2 hours after installation at 5.80' below top of casing						
	23								
	24								
	25								
	26								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 4 FT. 6 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION 2 FT. 9 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Heavy

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LOG OF SOIL BORING NO. 6
PROJECT Arbor Ridge Subdivision
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. 837.0 DATE 1/19/05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den. Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
			0'9" Frozen dark brown silty sandy clayey TOPSOIL with trace of vegetation						
	1		1'6" Frozen to moist brown silty sandy CLAY with trace of vegetation	4					
A	2			2	12.2	128			
UL	3		Slightly compact to medium compact moist to wet brown silty fine SAND with trace of vegetation and black seam at 2'9"	2					
	4		3'6"						
B	5			1					
UL			Slightly compact wet brown fine to medium SAND with trace of silt	2	18.2	123			
	6		6'0"	2					
	7			4					
C	8		Compact wet brown SILT & SAND with wet brown silty fine to medium sand with trace of pebble layers	6	16.9				
UL			8'6"	4					
	9								
D	10		Extremely compact wet brown silty fine SAND	10					
UL				12	24.5				
	11		11'6"	13/6"					
	12								
	13		Very compact to extremely compact wet brown SILT with brown fine to medium sand seams and brown silty clay layers						
	14								
E	15		15'6"	7					
UL				13					
	16			17					
	17								
	18								
	19								
	20		NOTES:						
	21		1) Installed 1¼" diameter PVC piezometer in boring with screen bottom at 9' and 4' stick up						
	22		2) Water level in piezometer at 24 hours after installation at 7.34' below top of casing						
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 2 FT. 6 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION FT. INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Heavy

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LOG OF SOIL BORING NO. 7
PROJECT Arbor Ridge Subdivision
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. 831.7 DATE 1/20/05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den. Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
			1'0" Frozen dark brown silty sandy clayey TOPSOIL						
	1		Stiff moist brown silty sandy CLAY with dark brown silty sandy clay seams						
A	2		2'0"	6					
UL	3		Compact moist brown silty fine SAND	4	14.3	131			
			3'6"	5					
	4		Compact moist to wet brown silty fine to medium SAND						
B	5			4					
UL				4	16.9	130			
	6			4					
	7		6'6"						
C	8		Very stiff to extremely stiff moist variegated silty sandy CLAY with trace of gravel	5					
UL			8'8"	12	16.1	135			
	9			15			*	(7000)	
	10		Extremely stiff moist blue silty sandy CLAY with gravel						
	11			15					
	12			20/5"					
	13			—					
	14								
E	15		14'8"	20					
UL				15/3"					
	16			—					
	17								
	18								
	19								
	20		NOTES:						
	21		1) Installed 1¼" diameter PVC piezometer in boring with screen bottom at 7'6" and 3' stick up						
	22		2) Water levels in piezometer 10 minutes after installation at 7.75' and 3 hours after installation at 7.69' below top of casing						
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 4 FT. 0 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION 6 FT. 6 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Medium Heavy

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LOG OF SOIL BORING NO. 8
PROJECT Arbor Ridge Subdivision
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. 836.8 DATE 1/20/05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den. Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
			Frozen to moist dark brown silty sandy clayey TOPSOIL, possible fill						
	1		1'5" Stiff moist discolored brown silty sandy CLAY, possible fill						
A	2		2'0"	7					
UL	3		Compact moist dark brown silty fine to medium SAND, possible fill	4	11.2	133			
			3'6"	4					
	4		Slightly compact to medium compact moist to wet brown fine to medium SAND with trace of silt						
B	5			4					
UL				2	10.0	124			
	6		6'0"	2					
	7		Slightly compact wet brown gravelly SAND with moist brown silty sandy clay layers						
C	8			2					
UL				2	21.6	130			
	9		8'6"	2					
	10		Very compact to extremely compact wet brown silty fine SAND with wet brown silt layers	5					
D	11			14	20.6				
UL				16					
	12		11'3"						
	13		Extremely stiff moist blue silty sandy CLAY with trace of gravel						
	14								
E	15		14'8"	17					
UL				18/5"					
	16		Extremely compact wet gray SILT	—					
	17		17'4"						
	18		Extremely compact wet brown fine SAND						
	19								
F	20		18'10"	25					
UL				20/4"					
	21			—					
	22		NOTES:						
	23		1) Installed 1¼" diameter PVC piezometer in boring with screen bottom at 9' and 4' stick up						
	24		2) Water levels in piezometer 1 hour after completion at 10.87' below top of casing						
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 4 FT. 3 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION 12 FT. 0 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Medium

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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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
SOIL BORING INFORMATION

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02A-TP
JOB #: 12001809
FILE CODE:
SHEET NO. 10A

McDOWELL & ASSOCIATES
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LOG OF SOIL BORING NO. 9
PROJECT Arbor Ridge Subdivision
LOCATION Michigan Avenue and Morgan Road
Pittsfield Township, Michigan
JOB NO. 04-570
SURFACE ELEV. 838.4 DATE 1/19/05

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
	1		0'4" Frozen dark brown silty sandy TOPSOIL with vegetation, possible fill						
A UL	2		1'6" Medium compact moist brown silty fine SAND	3					
	3			3	6.6	124			
	4		3'0"	4					
B UL	5		Compact moist to wet brown fine to medium SAND with trace of silt	4					
	6			5	18.3	131		*	(5500)
C UL	7		6'0" Compact wet variegated clayey SILT with trace of sand	6					
	8		7'0" Medium compact wet brown silty fine SAND	3	20.7	127			
	9		8'8"	3					
D UL	10		Stiff to very stiff moist variegated silty sandy CLAY with trace of pebbles	6					
	11			8	17.6	131		*	3975 (5500)
	12		11'3"	10					
	13		Extremely stiff moist blue silty sandy CLAY with wet brown silt seams and wet brown silty fine sand layers						
	14								
E UL	15		15'0"	17					
	16			28					
	17			--					
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

NOTES:
1) Installed 1½" diameter PVC piezometer in boring with screen bottom at 9' and 4' stick up
2) Water level in piezometer 24 hours after completion at 8.82' below top of casing

TYPE OF SAMPLE: D. - DISTURBED; UL - UNDIST. LINER; ST. - SHELBY TUBE; SS. - SPLIT SPOON; RC. - ROCK CORE; ( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	4 FT.	8 INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	9 FT.	6 INS.
G.W. AFTER	HRS.	FT.	INS.
G.W. VOLUMES	Heavy		

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LOG OF SOIL BORING NO. 10
PROJECT Arbor Ridge Subdivision
LOCATION Michigan Avenue and Morgan Road
Pittsfield Township, Michigan
JOB NO. 04-570
SURFACE ELEV. 830.8 DATE 1/19/05

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
	1		Frozen to moist dark brown silty sandy clayey TOPSOIL with vegetation						
A UL	2		1'0" Stiff moist brown silty sandy CLAY with trace of pebbles and vegetation at 1'6"	3					
	3			4	19.7	129			
	4		3'6"	5				*	(2500)
B UL	5		Very stiff to extremely stiff moist brown silty sandy CLAY with pebbles						
	6		6'0"	11					
	7			15	15.0	138			
C UL	8			25				*	(9000+)
	9		Extremely stiff moist variegated silty sandy CLAY with trace of gravel						
	10		10'2"	13					
	11			24					
	12		Very compact to compact moist to wet brown silty fine SAND with moist brown silty sandy clay seams	15/5"					
	13								
	14		14'0"						
E UL	15		Compact wet brown SILT with wet brown fine sand seams	7					
	16		15'6"	4					
	17			6					
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE: D. - DISTURBED; UL - UNDIST. LINER; ST. - SHELBY TUBE; SS. - SPLIT SPOON; RC. - ROCK CORE; ( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	11 FT.	3 INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	11 FT.	3 INS.
G.W. AFTER	HRS.	FT.	INS.
G.W. VOLUMES	Medium Heavy		

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LOG OF SOIL BORING NO. 11
PROJECT Arbor Ridge Subdivision
LOCATION Michigan Avenue and Morgan Road
Pittsfield Township, Michigan
JOB NO. 04-570
SURFACE ELEV. 828.2 DATE 1/19/05

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
	1		0'6" ICE						
A UL	2		1'1" Moist dark brown silty sandy clayey TOPSOIL, possible fill	3					
	3			4	27.2	119			
	4		3'6" Stiff moist brown and dark brown silty sandy CLAY with trace of vegetation, possible fill	5				*	(2500)
B UL	5		Stiff to very stiff moist variegated silty CLAY						
	6		6'0"	6					
	7			8	32.2	114			2370
C UL	8			11				*	(2000)
	9		Stiff moist variegated silty sandy CLAY with moist grayish brown silty fine sand layers						
	10		8'8"	6					
	11			8	17.0	131		*	(5000)
	12		Very stiff to extremely stiff moist variegated silty CLAY with trace of pebbles						
	13		11'0"	10					
	14			15					
E UL	15		Compact wet brown silty fine SAND with wet brown fine sand seams	15					
	16		15'6"	5					
	17			7					
	18			4					
	19								
	20								
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE: D. - DISTURBED; UL - UNDIST. LINER; ST. - SHELBY TUBE; SS. - SPLIT SPOON; RC. - ROCK CORE; ( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	11 FT.	0 INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	11 FT.	0 INS.
G.W. AFTER	HRS.	FT.	INS.
G.W. VOLUMES	Heavy		

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LOG OF SOIL BORING NO. 12
PROJECT Arbor Ridge Subdivision
LOCATION Michigan Avenue and Morgan Road
Pittsfield Township, Michigan
JOB NO. 04-570
SURFACE ELEV. 830.6 DATE 1/20/05

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
	1		Frozen to moist dark brown silty sandy TOPSOIL, possible fill						
A UL	2		1'0" Compact moist brown silty fine to medium SAND with trace of gravel, possible fill	4					
	3			6	14.9				
	4		3'6"	5					
B UL	5		Medium compact moist grayish brown to dark brown silty fine to medium SAND with brown clayey sand layers, possible fill						
	6		6'0"	2					
	7			3	8.6				
C UL	8		Compact moist brown SAND with trace of gravel and silt	3					
	9		8'0"	5					
D UL	10		Very compact moist brown gravelly SAND	8	6.5				
	11		10'0"	8					
	12			12					
	13		Very compact moist brown silty fine SAND	10	9.3	104			
	14		13'0"	10					
E UL	15								
	16			20					
	17			15/9"					
	18			--					
	19								
F UL	20		Extremely compact moist brown silty fine SAND with moist brown fine sand layers	18					
	21		20'0"	24					
	22			--					
	23								
	24								
	25								

TYPE OF SAMPLE: D. - DISTURBED; UL - UNDIST. LINER; ST. - SHELBY TUBE; SS. - SPLIT SPOON; RC. - ROCK CORE; ( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	FT.	INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	None	FT.	INS.
G.W. AFTER	HRS.	FT.	INS.
G.W. VOLUMES			

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LOG OF SOIL BORING NO. 13
PROJECT Arbor Ridge Subdivision
LOCATION Michigan Avenue and Morgan Road
Pittsfield Township, Michigan
JOB NO. 04-570
SURFACE ELEV. 836.8 DATE 1/21/05

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
	1		0'4" Frozen dark brown silty sandy TOPSOIL with vegetation, possible fill						
A UL	2		Stiff frozen to moist dark brown silty sandy CLAY, possible fill	4					
	3			6	24.5	122			
	4		3'6"	7				*	(3000)
B UL	5		Slightly compact to medium compact moist dark brown SILT & fine SAND, possible fill	3					
	6		6'0"	2	21.7				
	7			2					
C UL	8		Compact to very compact moist brown fine to medium SAND with trace of silt	3					
	9			7	2.7	102			
D UL	10			9					
	11			6					
	12		11'6"	9	3.2				
	13		Compact moist brown fine SAND	9					
	14								
E UL	15			4					
	16		16'6"	7					
	17			7					
	18		Extremely compact wet brown SILT						
	19								
F UL	20		20'6"	12					
	21			9					
	22			17					
	23								
	24								
	25								

TYPE OF SAMPLE: D. - DISTURBED; UL - UNDIST. LINER; ST. - SHELBY TUBE; SS. - SPLIT SPOON; RC. - ROCK CORE; ( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	16 FT.	6 INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	Dry	FT.	INS.
G.W. AFTER	HRS.	FT.	INS.
G.W. VOLUMES	Light		

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LOG OF SOIL BORING NO. 14
PROJECT Arbor Ridge Subdivision
LOCATION Michigan Avenue and Morgan Road
Pittsfield Township, Michigan
JOB NO. 04-570
SURFACE ELEV. 828.5 DATE 1/20/05

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
	1		0'6" Frozen dark brown silty sandy clayey TOPSOIL, possible fill						
A UL	2		1'2" Moist dark brown silty fine SAND with trace of clay, possible fill	4					
	3			6	21.1	125			
	4		Stiff moist dark brown to brown silty sandy CLAY, possible fill	8				*	(4000)
B UL	5			5					
	6		5'9"	6	19.8	125			
	7		Compact moist brown SILT & fine SAND	8				*	(4500)
C UL	8			4					
	9		9'0"	5	14.5	124			
D UL	10		Medium compact wet brown fine SAND with trace of silt and clayey sand seams	5					
	11			3					
	12		12'0"	3	17.0	120			
	13		Compact extremely moist brown fine SAND with brown silty fine sand layers	4					
	14								
E UL	15		15'6"	3					
	16			5					
	17			6					
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE: D. - DISTURBED; UL - UNDIST. LINER; ST. - SHELBY TUBE; SS. - SPLIT SPOON; RC. - ROCK CORE; ( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	6 FT.	0 INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	Dry	FT.	INS.
G.W. AFTER	HRS.	FT.	INS.
G.W. VOLUMES	Light		

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LOG OF SOIL BORING NO. 15
PROJECT Arbor Ridge Subdivision
LOCATION Michigan Avenue and Morgan Road
Pittsfield Township, Michigan
JOB NO. 04-570
SURFACE ELEV. 827.7 DATE 1/21/05

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
	1		Frozen to moist dark brown silty sandy TOPSOIL						
A UL	2		1'3" Compact moist brown silty fine to medium SAND with trace of clay	3					
	3			7	12.4	130			
	4		3'6"	6					
B UL	5		Compact to very compact moist to wet brown fine to medium SAND with wet brown sandy clay layers	7					
	6			8	10.0	113			
	7		6'6"	9					
C UL	8		Compact moist brown fine SAND with trace of silt and moist brown silty fine sand layers	5					
	9			6	12.1	108			
D UL	10			5					
	11		9'8"	5					
	12		Medium compact wet brown silty fine SAND	3	22.2	123			
	13			4					
	14		14'0"						
E UL	15		Slightly compact moist brown SILT with moist brown fine sand layers	3					
	16		15'6"	1					
	17			3					
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

NOTES:
1) Installed 1¼" diameter PVC piezometer in boring with screen bottom at 10' and 3' stick up
2) No water in piezometer at 10 minutes after installation

TYPE OF SAMPLE: D. - DISTURBED; UL - UNDIST. LINER; ST. - SHELBY TUBE; SS. - SPLIT SPOON; RC. - ROCK CORE; ( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	4 FT.	3 INS.
G.W. ENCOUNTERED AT	9 FT.	9 INS.
G.W. AFTER COMPLETION	Dry	FT.	INS.
G.W. AFTER	HRS.	FT.	INS.
G.W. VOLUMES	Light		

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LOG OF SOIL BORING NO. 16
PROJECT Arbor Ridge Subdivision
LOCATION Michigan Avenue and Morgan Road
Pittsfield Township, Michigan
JOB NO. 04-570
SURFACE ELEV. 829.4 DATE 1/21/05

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF	Str. %
	1		0'6" Frozen dark brown silty sandy clayey TOPSOIL with vegetation						
A UL	2		Compact to very compact frozen to moist brown SILT & SAND with trace of gravel	3					
	3			6	9.9	142			
	4		3'9"	14					
B UL	5		Stiff moist brown silty sandy CLAY with trace of pebbles	6					
	6		5'0"	7	22.5	130			
	7		Medium compact to compact moist brown silty fine SAND	9				*	(5000)
C UL	8		6'6"	3					
	9		Medium compact moist to wet brown silty fine SAND with sandy clay seams	4	13.5	123			
D UL	10		8'6"	3					
	11		Medium compact moist brown silty fine SAND	3	8.1	103			
	12		10'6"	4					
	13		Compact to very compact moist brown fine SAND						
	14			5					
E UL	15		15'6"	10					
	16			14					
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

NOTES:
1) Installed 1¼" diameter PVC piezometer in boring with screen bottom at 10' and 3' stick up
2) No water in piezometer at 10 minutes after installation

TYPE OF SAMPLE: D. - DISTURBED; UL - UNDIST. LINER; ST. - SHELBY TUBE; SS. - SPLIT SPOON; RC. - ROCK CORE; ( ) - PENETROMETER

REMARKS: *Calibrated penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	9 FT.	6 INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	Dry	FT.	INS.
G.W. AFTER	HRS.	FT.	INS.
G.W. VOLUMES	Light		

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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SECTION 13
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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
SOIL BORING INFORMATION

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02A-TP
JOB #: 12001809
FILE CODE:
SHEET NO.
10B

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LOG OF SOIL BORING NO. A
PROJECT Soils Exploration
Proposed Retention/ Detention Ponds
Arbor Ridge Subdivision
LOCATION Morgan Road and Michigan Avenue
Pittsfield Township, Michigan
JOB NO. 04-495
SURFACE ELEV. 830.5 DATE 11-4-04

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
			0'7" Moist dark brown clayey sandy TOPSOIL with vegetation						
A UL	2		Compact moist brown clayey fine to medium SAND	5					
	3		2'6" Very stiff moist brown sandy CLAY with pebbles	7 14					
	4		3'6" Extremely compact moist brown clayey fine to medium SAND with gravel						
B UL	5			16					
	6		5'2"	25 26					
C UL	7		Extremely stiff moist brown sandy CLAY with pebbles	16					
	8			24 32					
	9								
D UL	10		9'6"	18 27					
	11		Extremely stiff moist brown silty sandy CLAY with pebbles and wet sand seams	38					
	12								
	13		12'6"						
E UL	14		Extremely compact moist brown sandy SILT	21					
	15			32					
	16								
	17		17'0"						
	18								
	19								
F UL	20			11					
	21		Extremely compact moist brown silty fine to medium SAND	20 20					
	22								
	23								
	24								
G UL	25			22					
			25'6"	24 32					

TYPE OF SAMPLE
D. - DISTURBED
UL. - UNDIST. LINER
ST. - SHELBY TUBE
SS. - SPLIT SPOON
RC. - ROCK CORE
( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1" With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 9 FT. 6 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION Dry FT. INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Light

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LOG OF SOIL BORING NO. B
PROJECT Soils Exploration
Proposed Retention/ Detention Ponds
Arbor Ridge Subdivision
LOCATION Morgan Road and Michigan Avenue
Pittsfield Township, Michigan
JOB NO. 04-495
SURFACE ELEV. 834.4 DATE 11-4-04

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
			0'7" Moist dark brown clayey sandy TOPSOIL with roots						
A UL	2		Compact to very compact moist brown clayey fine to medium SAND with occasional clay seams	7					
	3		2'5" Very stiff moist brown sandy CLAY	9 12					
	4		4'0"						
B UL	5		Extremely stiff moist brown sandy CLAY with trace of pebbles and occasional sand lenses	15 16 20					
	6								
C UL	7		7'5"	10 15					
	8			25					
	9		Extremely stiff moist variegated silty CLAY with pebbles	12					
D UL	10			14 18					
	11								
	12		12'0"						
	13		Very stiff moist blue silty CLAY with pebbles	5					
E UL	14			8 10					
	15								
	16								
	17		17'0"						
	18								
	19								
F UL	20		Stiff moist blue sandy silty CLAY with pebbles and wet gravelly sand layers	6 7 11					
	21								
	22								
	23		22'6"						
G UL	24		Compact wet gray SILT with wet sand layers	3 5 7					
	25		25'6"						

TYPE OF SAMPLE
D. - DISTURBED
UL. - UNDIST. LINER
ST. - SHELBY TUBE
SS. - SPLIT SPOON
RC. - ROCK CORE
( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1" With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 17 FT. 0 INS.
G.W. ENCOUNTERED AT 22 FT. 6 INS.
G.W. AFTER COMPLETION 23 FT. 6 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Light Cave-in at 23'6"

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LOG OF SOIL BORING NO. F
PROJECT Soils Exploration
Proposed Retention/ Detention Ponds
Arbor Ridge Subdivision
LOCATION Morgan Road and Michigan Avenue
Pittsfield Township, Michigan
JOB NO. 04-495
SURFACE ELEV. 830.6 DATE 11-4-04

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
			0'4" Moist brown clayey fine to medium SAND						
A UL	2		Stiff moist brown sandy CLAY with pebbles	3					
	3			6 6					
	4		3'6"						
B UL	5		Compact to very compact moist brown silty fine to medium SAND with occasional clay seams	7					
	6			8 10					
C UL	7		5'9" Compact moist brown silty fine SAND with silt layers	3					
	8			4 4					
	9		8'6"						
D UL	10		Medium compact moist brown silty fine to medium SAND	2 3 2					
	11								
	12								
	13		13'0"						
	14		Slightly compact wet brown fine to medium SAND with trace of gravel	1					
E UL	15			2 2					
	16								
	17								
	18		17'6"						
	19								
F UL	20		Compact wet brown silty fine to medium SAND with occasional silt layers	5 6 7					
	21								
	22								
	23		22'0"						
	24		Extremely compact wet brown silty fine to medium SAND						
G UL	25			19 19					
			25'6"	23					

TYPE OF SAMPLE
D. - DISTURBED
UL. - UNDIST. LINER
ST. - SHELBY TUBE
SS. - SPLIT SPOON
RC. - ROCK CORE
( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1" With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 13 FT. 0 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION 13 FT. 5 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Heavy Cave-in at 13'5"

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LOG OF TEST PIT NO. TP-1
PROJECT Soils Investigation
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		FROST						
	2		1'0" Moist brown silty CLAY with slight discoloration and vegetation, fill						
	3		1'9"						
	4		Moist brown silty fine SAND with trace of vegetation, fill						
	5								
	6		6'0"						
	7		Moist brown fine SAND						
	8		7'6"						
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Note:
Test pit excavated just outside of tree line.

TYPE OF SAMPLE
D. - DISTURBED
UL. - UNDIST. LINER
ST. - SHELBY TUBE
SS. - SPLIT SPOON
RC. - ROCK CORE
( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1" With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT FT. INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION Dry FT. INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES none

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LOG OF TEST PIT NO. TP-2
PROJECT Soils Investigation
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		FROST						
	2		0'10"						
	3		Moist brown silty CLAY with trace of pebbles						
	4								
	5		5'0" Moist brown silty fine SAND						
	6		6'0"						
	7								
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
UL. - UNDIST. LINER
ST. - SHELBY TUBE
SS. - SPLIT SPOON
RC. - ROCK CORE
( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1" With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT FT. INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION FT. INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES none

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Phone: (248) 399-2066 • Fax: (248) 399-2157

LOG OF TEST PIT NO. TP-3
PROJECT Soils Investigation
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		FROST						
	2		0'10" Moist brown silty CLAY with slight discoloration, fill						
	3		2'4"						
	4		Moist brown silty fine SAND						
	5								
	6								
	7		7'0"						
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Note:
Test Pit 3 midway between Test Pits 1 and 2.

TYPE OF SAMPLE
D. - DISTURBED
UL. - UNDIST. LINER
ST. - SHELBY TUBE
SS. - SPLIT SPOON
RC. - ROCK CORE
( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1" With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT FT. INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION FT. INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES none

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LOG OF TEST PIT NO. TP-4
PROJECT Soils Investigation
JOB NO. 04-570 LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05 Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		FROST						
	2		0'8" Moist brown silty fine SAND with oxidation, fill						
	3		2'5"						
	4		Moist brown silty fine SAND						
	5								
	6								
	7		7'0"						
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
UL. - UNDIST. LINER
ST. - SHELBY TUBE
SS. - SPLIT SPOON
RC. - ROCK CORE
( ) - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1" With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT FT. INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION FT. INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES none

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:
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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
SOIL BORING INFORMATION & TEST PIT INFORMATION

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02A-TP
JOB #: 12001809
FILE CODE:
SHEET NO. 10C

McDOWELL & ASSOCIATES
Geotechnical, Environmental, & Hydrogeologic Services
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LOG OF TEST PIT NO. TP-5
PROJECT Soils Investigation
JOB NO. 04-570
LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05
Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		FROST						
	2		1'9" Moist brown silty CLAY						
	3		2'5"						
	4		Moist brown fine SAND						
	5								
	6		6'0"						
	7								
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
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	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U/L - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	FT.	INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	FT.	INS.
G.W. AFTER HRS.	FT.	INS.
G.W. VOLUMES none		

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LOG OF TEST PIT NO. TP-6
PROJECT Soils Investigation
JOB NO. 04-570
LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. 828.5+ DATE 2-11-05
Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		FROST						
	2		0'10" Moist brown silty CLAY with oxidized streaks, fill						
	3		3'0" Moist black silty TOPSOIL						
	4		3'2"						
	5		Moist brown silty CLAY						
	6		5'7" Moist brown silty fine SAND						
	7		7'0"						
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Note:
At Soil Boring 14.

TYPE OF SAMPLE
D. - DISTURBED
U/L - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	FT.	INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	FT.	INS.
G.W. AFTER HRS.	FT.	INS.
G.W. VOLUMES none		

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LOG OF TEST PIT NO. TP-7
PROJECT Soils Investigation
JOB NO. 04-570
LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05
Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		0'4" FROST						
	2								
	3		Moist brown silty fine SAND with oxidized streaks						
	4								
	5								
	6								
	7		7'0"						
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Note:
South of Soil Boring 14.

TYPE OF SAMPLE
D. - DISTURBED
U/L - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	FT.	INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	FT.	INS.
G.W. AFTER HRS.	FT.	INS.
G.W. VOLUMES none		

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LOG OF TEST PIT NO. TP-8
PROJECT Soils Investigation
JOB NO. 04-570
LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05
Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		0'6" FROST						
	2		Moist dark brown silty CLAY, fill						
	3		3'0"						
	4		Moist brown sandy silty CLAY with trace of pebbles						
	5								
	6								
	7								
	8		8'0"						
	9								
	10								
	11								
	12								
	13								
	14								
	15								
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	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Note:
East of Soil Boring 14.

TYPE OF SAMPLE
D. - DISTURBED
U/L - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	FT.	INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	FT.	INS.
G.W. AFTER HRS.	FT.	INS.
G.W. VOLUMES none		

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LOG OF TEST PIT NO. TP-9
PROJECT Soils Investigation
JOB NO. 04-570
LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05
Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		0'10" FROST						
	2		Moist brown silty fine SAND						
	3		2'5"						
	4		Moist brown silty CLAY						
	5								
	6		6'0"						
	7								
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Note:
Test Pit 9 west of Soil Boring 14.

TYPE OF SAMPLE
D. - DISTURBED
U/L - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	FT.	INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	FT.	INS.
G.W. AFTER HRS.	FT.	INS.
G.W. VOLUMES none		

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LOG OF TEST PIT NO. TP-10
PROJECT Soils Investigation
JOB NO. 04-570
LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05
Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		0'10" FROST						
	2								
	3		Moist brown silty CLAY with occasional pebbles						
	4								
	5		5'0"						
	6								
	7								
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U/L - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	FT.	INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	FT.	INS.
G.W. AFTER HRS.	FT.	INS.
G.W. VOLUMES none		

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LOG OF TEST PIT NO. TP-11
PROJECT Soils Investigation
JOB NO. 04-570
LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05
Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		1'0" FROST						
	2								
	3		Moist brown silty CLAY with sandy seams and layers						
	4		4'6"						
	5		Moist to wet brown silty fine SAND						
	6								
	7		7'6"						
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Note:
Water Level = 11.08' from top of casing.
Stick Up = 3'11"

TYPE OF SAMPLE
D. - DISTURBED
U/L - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	7 FT.	0 INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	FT.	INS.
G.W. AFTER HRS.	FT.	INS.
G.W. VOLUMES medium		

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LOG OF TEST PIT NO. TP-12
PROJECT Soils Investigation
JOB NO. 04-570
LOCATION Michigan Avenue and Morgan Road
SURFACE ELEV. _____ DATE 2-11-05
Pittsfield Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		1'0" FROST						
	2		Moist brown silty fine SAND						
	3		2'3"						
	4		Moist brown fine SAND						
	5								
	6		6'0"						
	7								
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U/L - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	FT.	INS.
G.W. ENCOUNTERED AT	FT.	INS.
G.W. AFTER COMPLETION	FT.	INS.
G.W. AFTER HRS.	FT.	INS.
G.W. VOLUMES none		

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NOTICE:
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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
TEST PIT INFORMATION

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-09-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02A-TP
JOB #: 12001809
FILE CODE:
SHEET NO.
10D

TREE SCHEDULE

REMOVE	TAG	SIZE	COMMON NAME	BOTANICAL NAME	CONDITION	HERITAGE
Y	1	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
Y	2	9"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
Y	3	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
Y	4	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	GOOD	
Y	5	8" & 9"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
Y	6	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	7	12"	RED OAK	QUERCUS RUBRA	GOOD	
	8	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	9	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	10	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	11	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	12	42"	RED OAK	QUERCUS RUBRA	GOOD	Y
	13	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	14	18"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	15	8"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	16	9"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	17	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	18	10"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	19	8" & 10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	20	10"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
	21	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	22	33" & 33"	RED OAK	QUERCUS RUBRA	GOOD	Y
	23	9"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
	24	8"	RED OAK	QUERCUS RUBRA	POOR	
	25	20" & 22"	RED OAK	QUERCUS RUBRA	GOOD	Y
	26	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	VERY POOR	
	27	14"	~~BOX ELDER~~	~~ACER NEGUNDO~~	DEAD DISEASED	
	28	27"	PRAIRIE HAWTHORN	CRATAEGUS CRUSGALLI	FAIR	Y
	29	8"	SUGAR MAPLE	ACER SACCHARINUM	GOOD	
	30	8" & 13"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	31	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	32	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	33	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	POOR	
	34	9"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
	35	10"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
	36	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
	37	12" & 12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
	38	13"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
	39	12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
	40	9"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	41	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	42	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	43	8"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
	44	14"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	45	13"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
	46	11"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	47	13"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	48	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	49	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	POOR	
	50	14" & 17"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	51	13"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
	52	13"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
	53	11"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
	54	11"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	55	11"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	56	15"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	57	13"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	58	9"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	59	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	60	12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
	61	13"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	POOR	
	62	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	63	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	64	12"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	65	13"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	66	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	67	13"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	68	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	69	26"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	70	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	71	9"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	72	9"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	73	10"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	74	11"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	75	9", 12" & 13"	~~BOX ELDER~~	~~ACER NEGUNDO~~	NEAR DEAD	
	76	13"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	77	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	78	12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	79	12" & 17"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	POOR	
	80	12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
	81	16"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
	82	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	83	12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
	84	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	85	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
	86	8"	RED MULBERRY	MORUS RUBRA	POOR	
Y	87	10"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
Y	88	10"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
	89	9" & 12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
Y	90	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
Y	91	23"	RED OAK	QUERCUS RUBRA	FAIR	Y
Y	92	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	93	15"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
Y	94	14"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
Y	95	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
Y	96	14" & 16"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
Y	97	12"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
Y	98	10"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
Y	99	16"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
Y	100	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	FAIR	
Y	101	12"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
Y	102	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
Y	103	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
Y	104	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
Y	105	13"	~~WHITE POPLAR~~	~~POPULUS ALBA~~	FAIR	
Y	106	9"	~~BLACK LOCUST~~	~~ACER NEGUNDO~~	FAIR	
Y	107	27"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	108	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	109	27"	RED OAK	QUERCUS RUBRA	GOOD	Y
	110	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	111	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	112	8"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
Y	113	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	114	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	115	11"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	116	40"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	117	27"	RED OAK	QUERCUS RUBRA	GOOD	Y
	118	17"	RED OAK	QUERCUS RUBRA	GOOD	Y
	119	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	120	8" & 14"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	121	13"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	122	14"	~~BLACK WILLOW~~	~~JUGLANS NIGRA~~	POOR	
Y	123	13"	~~BLACK WILLOW~~	~~JUGLANS NIGRA~~	VERY POOR	
Y	124	11"	~~BLACK WILLOW~~	~~JUGLANS NIGRA~~	VERY POOR	
Y	125	15"	~~BLACK WILLOW~~	~~JUGLANS NIGRA~~	VERY POOR	
Y	126	12"	~~BLACK WILLOW~~	~~JUGLANS NIGRA~~	VERY POOR	
Y	127	10" & 14"	~~BLACK WILLOW~~	~~JUGLANS NIGRA~~	VERY POOR	
Y	128	8" & 10"	~~BLACK WILLOW~~	~~JUGLANS NIGRA~~	VERY POOR	
Y	129	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	130	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	131	26"	SWAMP OAK	QUERCUS BICOLOR	FAIR	Y
	132	30"	SWAMP OAK	QUERCUS BICOLOR	FAIR	Y
	133	32" & 18"	SWAMP OAK	QUERCUS BICOLOR	FAIR	Y
	134	8"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
	135	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	136	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	137	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	138	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	139	12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	POOR	
	140	25"	SWAMP OAK	QUERCUS BICOLOR	FAIR	Y
	141	15" & 33"	SWAMP OAK	QUERCUS BICOLOR	FAIR	Y
	142	13"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
	143	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	144	12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	145	19"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	146	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	147	15"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	148	14"	RED OAK	QUERCUS RUBRA	FAIR	
	149	11"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	150	40"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	151	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	152	12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	153	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	154	11"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	155	10"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	156	12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	157	12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	158	13"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	159	35"	SWAMP OAK	QUERCUS BICOLOR	GOOD	Y
	160	10"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	161	12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	162	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	163	18"	BLACK CHERRY	PRUNUS SEROSTINA	FAIR	Y
	164	10"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	165	10"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	POOR	
	166	8"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
	167	8"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	168	10", 11", 11", & 12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	169	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	170	9"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	171	26"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
	172	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	173	8"	RED OAK	QUERCUS RUBRA	GOOD	
	174	8"	WHITE OAK	QUERCUS ALBA	GOOD	
	175	9"	WHITE OAK	QUERCUS ALBA	GOOD	
	176	8"	COTTONWOOD	POPULUS DELTOIDES	FAIR	
	177	18"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	178	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	179	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	180	11"	RED OAK	QUERCUS RUBRA	GOOD	
	181	10"	SWAMP OAK	QUERCUS BICOLOR	GOOD	
	182	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	183	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	184	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	185	36"	SWAMP OAK	QUERCUS BICOLOR	GOOD	Y
	186	23"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	187	8"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	188	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	189	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	190	34"	SWAMP OAK	QUERCUS BICOLOR	GOOD	Y
	191	11"	RED OAK	QUERCUS RUBRA	GOOD	
	192	8"	RED OAK	QUERCUS RUBRA	FAIR	
	193	14"	RED OAK	QUERCUS RUBRA	FAIR	
	194	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	195	8"	RED OAK	QUERCUS RUBRA	GOOD	
	196	10"	RED OAK	QUERCUS RUBRA	GOOD	
	197	10"	RED OAK	QUERCUS RUBRA	GOOD	
	198	10"	RED OAK	QUERCUS RUBRA	GOOD	
	199	12"	RED OAK	QUERCUS RUBRA	GOOD	
	200	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	201	9"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	202	12"	RED OAK	QUERCUS RUBRA	GOOD	
	203	10"	RED OAK	QUERCUS RUBRA	GOOD	
	204	13"	RED OAK	QUERCUS RUBRA	GOOD	
	205	8"	RED OAK	QUERCUS RUBRA	POOR	
Y	206	8"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
	207	9"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	208	15"	RED OAK	QUERCUS RUBRA	GOOD	
	209	17"	RED OAK	QUERCUS RUBRA	GOOD	Y
	210	8"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	211	8"	RED OAK	QUERCUS RUBRA	GOOD	
	212	12"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	213	10"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
Y	214	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	215	8"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	216	15"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	217	8"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	218	13"	RED MAPLE	ACER RUBRA	GOOD	
	219	11"	RED MAPLE	ACER RUBRA	GOOD	
	220	10"	RED MAPLE	ACER RUBRA	GOOD	
	221	10"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	FAIR	
	222	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	DEAD DISEASED	
	223	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	224	13"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	FAIR	
	225	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	DEAD DISEASED	
	226	15"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
	227	16"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	FAIR	
	228	11"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	229	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	DEAD DISEASED	
Y	230	8" & 8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	231	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	232	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	233	13"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	234	13"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
Y	235	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
Y	236	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
Y	237	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
Y	238	9"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
Y	239	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	240	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	241	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	242	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	243	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	244	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	245	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	246	16" & 17"	RED OAK	QUERCUS RUBRA	FAIR	Y
Y	247	8" & 15"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	248	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	249	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	250	16"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
Y	251	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	252	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	253	22" & 14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	254	9"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	255	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	256	9"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	257	29"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	258	14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	259	15"	RED OAK	QUERCUS RUBRA	GOOD	
Y	260	14"	RED OAK	QUERCUS RUBRA	GOOD	
	261	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	262	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	263	20"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	264	36", 24" & 22"	RED OAK	QUERCUS RUBRA	FAIR	Y
Y	265	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	266	19"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	267	19"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	268	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	269	12"	RED OAK	QUERCUS RUBRA	GOOD	
	270	13"	RED OAK	QUERCUS RUBRA	GOOD	
	271	11"	RED OAK	QUERCUS RUBRA	GOOD	
	272	10"	RED OAK	QUERCUS RUBRA	GOOD	
	273	12"	RED OAK	QUERCUS RUBRA	GOOD	
	274	12"	RED OAK	QUERCUS RUBRA	GOOD	
	275	13"	RED OAK	QUERCUS RUBRA	GOOD	
	276	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	277	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
Y	278	8" & 11"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
	279	11"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
Y	280	26"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
Y	281	13"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
	282	15"	RED OAK	QUERCUS RUBRA	GOOD	
	283	23"	RED OAK	QUERCUS RUBRA	GOOD	Y
	284	19"	RED OAK	QUERCUS RUBRA	GOOD	Y
	285	24"	RED OAK	QUERCUS RUBRA	GOOD	Y
	286	11"	RED OAK	QUERCUS RUBRA	GOOD	
	287	12"	RED OAK	QUERCUS RUBRA	GOOD	
	288	13"	RED OAK	QUERCUS RUBRA	GOOD	
	289	10"	RED OAK	QUERCUS RUBRA	GOOD	
	290	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	291	23"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	292	10"	RED OAK	QUERCUS RUBRA	GOOD	
	293	12"	RED OAK	QUERCUS RUBRA	GOOD	
	294	13"	RED OAK	QUERCUS RUBRA	GOOD	
	295	12"	RED OAK	QUERCUS RUBRA	GOOD	
	296	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	297	29"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	298	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	299	23"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	300	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	301	14"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	302	14"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	303	20"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	Y
Y	304	12"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	305	8"	RED OAK	QUERCUS RUBRA	FAIR	
Y	306	14"	RED OAK	QUERCUS RUBRA	FAIR	
Y	307	8", 8", 9" & 10"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	308	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	309	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	310	8"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	311	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	312	10"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	313	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	314	13"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	315	15"	RED OAK	QUERCUS RUBRA	GOOD	
	316	23"	RED OAK	QUERCUS RUBRA	GOOD	Y
	317	18"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	318	26"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	319	8"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
Y	320	14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	321	8", 10" & 11"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	322	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	323	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	324	10" & 10"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	325	15"	BLACK CHERRY	PRUNUS SEROTINA	NEAR DEAD	
Y	326	12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
Y	327	8"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	328	9" & 9"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	329	9"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	330	14"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	331	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	332	9" & 9"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	333	10"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	334	10"	BLACK CHERRY	PRUNUS SEROTINA	NEAR DEAD	
Y	335	18"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	336	10"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	337	10" & 12"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	338	8" & 12"	DOMESTIC APPLE	MALUS SYLVESTRIS	VERY POOR	
	339	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	340	9" & 10"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
Y	341	10" & 12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
Y	342	8"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	343	8"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
Y	344	30"	COTTONWOOD	POPULUS DELTOIDES	GOOD	Y
Y	345	9"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
Y	346	9"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
Y	347	21"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	348	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	349	12", 13" & 16"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	350	13", 14", 15", 15"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
Y	351	15"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	352	12"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	353	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	354	16"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	355	8"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	356	8"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	357	10"	AMERICAN CRABAPPLE	PYRUS CORONARIS	POOR	
Y	358	8"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
	359	15"	RED OAK	QUERCUS RUBRA	GOOD	
	360	8" & 9"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	361	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	362	9"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	363	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	364	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	365	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	366	25"	RED MAPLE	QUERCUS RUBRA	FAIR	Y
	367	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	368	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	369	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	370	8"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
	371	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	372	11"	RED MAPLE	QUERCUS RUBRA	POOR	
Y	373	8" & 8"	RED MAPLE	QUERCUS RUBRA	FAIR	
Y	374	14"	RED MAPLE	QUERCUS RUBRA	FAIR	
Y	375	11"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	376	8"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	377	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	378	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	379	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	380	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	381	13"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	382	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	383	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	384	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	385	8"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	386	14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	387	8"	RED MAPLE	QUERCUS RUBRA	GOOD	
Y	388	8" & 14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	389	13"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	390	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	391	28"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	Y
Y	392	22"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	393	10" & 11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	394	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	395	26"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	Y
Y	396	17"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	397	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	398	14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	399	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	400	26"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	401	9"	RED OAK	QUERCUS RUBRA	FAIR	
	402	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	403	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	404	15"	RED OAK	QUERCUS RUBRA	GOOD	
Y	405	8"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	406	12"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	407	10"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	408	9"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	409	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	410	13"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	411	8"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	412	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	413	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	414	10"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	415	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	416	10" & 22"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	NEAR DEAD	
Y	417	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	418	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	419	8"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	420	20"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	421	20"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	422	9" & 10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	423	21"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	424	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	425	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	426	8"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	427	8"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	428	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	429	48"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	Y
Y	430	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	431	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	432	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	433	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	434	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	435	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	436	26"	BLACK CHERRY	PRUNUS SEROTINA	NEAR DEAD	Y
Y	437	15" & 15"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	438	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	439	16"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	440	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	441	24"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
Y	442	23"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
Y	443	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	444	33"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	445	18"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	446	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	447	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	448	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	449	50"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	Y
Y	450	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	451	12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	FAIR	
Y	452	19"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
Y	453	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	454	28"	SHAGBARK HICKORY	CARYA OVATA	FAIR	Y
Y	455	49"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
Y	456	26"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
Y	457	9"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
Y	458	47"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
Y	459	22"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	460	12" & 14"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	461	10" & 10"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	462	11"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	463	11"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	464	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	465	9"	AMERICAN CRABAPPLE	PYRUS CORONARIS	POOR	
Y	466	12"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	467	12"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	468	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	469	8"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	470	26"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	Y
Y	471	13" & 13"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	472	23"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	473	24"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	474	18"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
Y	475	32"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	476	13", 13", & 13"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
Y	477	26"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	478	15"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	479	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	480	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	481	9" & 12"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
Y	482	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	483	8", 10", 10"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	484	14"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	485	25"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
Y	486	26"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	487	13"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	488	13"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	489	17"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	490	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	491	18"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	492	17"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	493	16"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	494	13"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	495	11"	RED OAK	QUERCUS RUBRA	GOOD	
	496	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	497	8"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	498	9"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
	499	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	500	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	501	9"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
	502	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
	503	9"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
	504	10"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
	505	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	506	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	507	9"	~~BOX ELDER~~	~~QUERCUS RUBRA~~	POOR	
Y	508	10"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	509	10", 11", 12"	RED OAK	QUERCUS RUBRA	FAIR	
Y	510	13"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	511	10"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	512	10"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	513	20" & 15"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	514	13" & 14"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	515	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	POOR	
Y	516	10"	BLACK CHERRY	PRUNIS SEROTINA	FAIR	
Y	517	10"	BLACK CHERRY	PRUNIS SEROTINA	FAIR	
Y	518	8" & 8"	BLACK CHERRY	PRUNIS SEROTINA	FAIR	
Y	519	14"	BLACK CHERRY	PRUNIS SEROTINA	FAIR	
Y	520	8" & 8"	BLACK CHERRY	PRUNIS SEROTINA	FAIR	
Y	521	9"	BLACK CHERRY	PRUNIS SEROTINA	POOR	
Y	522	8"	BLACK CHERRY	PRUNIS SEROTINA	POOR	
Y	523	12"	BLACK CHERRY	PRUNIS SEROTINA	POOR	
Y	524	10"	BLACK CHERRY	PRUNIS SEROTINA	FAIR	
Y	525	11"	BLACK CHERRY	PRUNIS SEROTINA	FAIR	
Y	526	8"	BLACK CHERRY	PRUNIS SEROTINA	GOOD	
Y	527	8"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
Y	528	8"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	529	8"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	530	10"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	531	8"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	532	9"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
Y	533	14"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
Y	534	8"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	535	10"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	536	9"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	537	11"	~~BLACK LOCUST~~	~~ROBINIA PSEUDOACACIA~~	GOOD	
Y	538	8"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	539	8"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	540	10"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	541	10"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	542	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	543	8" & 9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	544	8"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	545	11"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
Y	546	20"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	547	15"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	548	8"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	549	13" & 15"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	550	17"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	551	18"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	552	12"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	553	11"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	554	13"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	555	18"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	556	12"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	557	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	558	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	559	8"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	560	13"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	561	8"	~~BOX ELDER~~	~~ACER NEGUNDO~~	VERY POOR	
Y	562	11"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	563	8"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	564	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	565	8" & 8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	566	12" & 13"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	567	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	568	12"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	569	11"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	570	13"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	571	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	572	14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	573	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	574	8"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	575	26"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	576	9"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	577	10" & 9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	578	14"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	579	12"	PRAIRIE HAWTHORN	CRATAEGUS CRUSGALLI	POOR	
Y	580	9"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
Y	581	9"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	582	8" & 9"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	583	15"	RED OAK	QUERCUS RUBRA	GOOD	
Y	584	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	585	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	586	10"	AMERICAN CRABAPPLE	PYRUS CORONARIS	NEAR DEAD	
Y	587	8", 9" & 10"	BLACK WALNUT	JUGLANS NIGRA	GOOD	
Y	588	13" & 14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	589	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	590	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	591	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	592	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	593	11", 11", 11", 12" & 14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	594	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	595	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	596	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	597	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	598	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	599	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	600	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	601	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	602	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	603	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	604	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	605	16"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	606	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	607	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	608	12" & 13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	609	36"	WHITE OAK	QUERCUS ALBA	FAIR	Y
Y	610	10"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
Y	611	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	612	14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	613	16"	RED OAK	QUERCUS RUBRA	FAIR	Y
Y	614	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	615	9"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
Y	616	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	617	12", 12" & 12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	618	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	619	11" & 12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	620	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	621	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	622	11", 11" & 12"	RED OAK	QUERCUS RUBRA	FAIR	
Y	623	11"	RED OAK	QUERCUS RUBRA	FAIR	
Y	624	27"	WHITE OAK	QUERCUS ALBA	FAIR	Y
Y	625	11"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
Y	626	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	627	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	628	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	629	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	630	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	631	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	632	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	633	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	634	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	635	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	636	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	637	8"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
Y	638	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	639	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	640	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	641	13", 13" & 14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	642	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	643	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	644	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	645	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	646	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	647	20" & 17"	RED OAK	QUERCUS RUBRA	FAIR	Y
	648	22" & 24"	RED OAK	QUERCUS RUBRA	FAIR	Y
	649	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	650	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	651	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	652	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	653	15"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	654	28"	WHITE OAK	QUERCUS ALBA	GOOD	Y
Y	655	8"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	656	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	657	9"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	658	11", 13" & 13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	659	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	660	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	

LEGEND

WOODLAND TREES TO BE REMOVED

1234 ~~INVASIVE SPECIES~~

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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
TREE SCHEDULE AND REMOVAL LIST

DATE: JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE: 0 — NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02B-TL
JOB #: 12001809
FILE CODE:
SHEET NO. 11

TREE SCHEDULE

LEGEND

(shaded)	WOODLAND TREES TO BE REMOVED
1234	~~INVASIVE SPECIES~~

REMOVE	TAG	SIZE	COMMON NAME	BOTANICAL NAME	CONDITION	HERITAGE
	661	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	662	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	663	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	664	12" & 12	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	665	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	666	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	667	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	668	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	669	15" & 17"	~~WHITE ASH~~	~~FRAXINUS AMERICANA~~	DEAD DISEASED	
	670	20"	RED OAK	QUERCUS RUBRA	GOOD	Y
	671	34"	RED OAK	QUERCUS RUBRA	GOOD	Y
	672	25"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	673	23"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	674	20"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	675	22"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	676	18"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	677	36"	RED OAK	QUERCUS RUBRA	FAIR	Y
	678	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	679	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	680	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	681	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	682	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	683	52"	WHITE OAK	QUERCUS ALBA	FAIR	Y
Y	684	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	685	21"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	686	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	687	9"	SUGAR MAPLE	ACER SACCHARUM	GOOD	
Y	688	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	689	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	690	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	691	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	692	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	693	29"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	694	24"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	695	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	696	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	697	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	698	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	699	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	700	13" & 16"	RED OAK	QUERCUS RUBRA	GOOD	Y
	701	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	702	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	703	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	704	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	705	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	706	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	707	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	708	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	709	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	710	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	711	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	712	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	713	23"	RED OAK	QUERCUS RUBRA	GOOD	Y
	714	38"	RED OAK	QUERCUS RUBRA	VERY POOR	Y
	715	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	716	15" & 24"	RED OAK	QUERCUS RUBRA	VERY POOR	Y
	717	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
	718	15", 16" & 26"	RED OAK	QUERCUS RUBRA	GOOD	Y
	719	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	720	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	721	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	722	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	723	23"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	724	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	725	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	726	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	727	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	728	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	729	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	730	30"	WHITE OAK	QUERCUS ALBA	GOOD	Y
Y	731	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	732	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	733	29"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	734	14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	735	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	736	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	737	9", 9" & 9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	738	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	739	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	740	27"	RED OAK	QUERCUS RUBRA	FAIR	Y
Y	741	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	742	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	743	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	744	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	745	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	746	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	747	7"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	748	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	749	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	750	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	751	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	752	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	753	17"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	754	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	755	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	756	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	757	14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	758	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	759	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	760	11"	SHAGBARK HICKORY	CARYA OVATA	POOR	
Y	761	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	762	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	763	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	764	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	765	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	766	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	767	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	768	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	769	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	770	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	771	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	772	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	773	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	774	17"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	775	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	776	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	777	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	778	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	779	10"	RED OAK	QUERCUS RUBRA	GOOD	
	780	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	781	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	782	20"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	783	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	784	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	785	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	786	9"	SHAGBARK HICKORY	CARYA OVATA	VERY POOR	
	787	13"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
	788	10"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
	789	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	790	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	791	14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	792	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	

REMOVE	TAG	SIZE	COMMON NAME	BOTANICAL NAME	CONDITION	HERITAGE
Y	793	11"	RED OAK	QUERCUS RUBRA	GOOD	
	794	9"	PIGNUT HICKORY	CARYA GLABRA	GOOD	
	795	14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	796	14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	797	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	798	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	799	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	800	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
	801	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	802	12"	RED OAK	QUERCUS RUBRA	GOOD	
	803	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	804	19"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	805	40"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
	806	16"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	807	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	808	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	809	19"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	810	15"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	811	14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	812	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	813	30"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	814	13"	SHAGBARK HICKORY	CARYA OVATA	POOR	
Y	815	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	816	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	817	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	818	15"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
	819	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
	820	24"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	821	9"	RED OAK	QUERCUS RUBRA	GOOD	
	822	37"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	823	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	824	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	825	22"	RED OAK	QUERCUS RUBRA	POOR	Y
	826	30"	SHAGBARK HICKORY	PRUNUS SEROTINA	POOR	Y
	827	28"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
	828	13"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
Y	829	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	830	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	831	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	832	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	833	36"	WHITE OAK	QUERCUS ALBA	GOOD	Y
	834	11"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
	835	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	836	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	837	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	838	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	839	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	840	14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	841	24"	SHAGBARK HICKORY	CARYA OVATA	FAIR	Y
Y	842	12"	RED OAK	QUERCUS RUBRA	FAIR	
Y	843	15"	RED OAK	QUERCUS RUBRA	POOR	
Y	844	8"	RED OAK	QUERCUS RUBRA	GOOD	
	845	14"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	846	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	847	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	848	8"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	849	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	850	12"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	851	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	852	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	853	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	854	15"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	855	10"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	856	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	857	14"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	858	9" & 15"	RED OAK	QUERCUS RUBRA	GOOD	
Y	859	8" & 9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	860	14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	861	11"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	862	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	863	16"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	864	12" & 20"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	865	11"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
Y	866	16"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	867	9", 9" & 11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	868	15"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	869	28"	WHITE OAK	QUERCUS ALBA	FAIR	Y
Y	870	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	871	12"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	872	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	873	20"	SHAGBARK HICKORY	CARYA OVATA	FAIR	Y
Y	874	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	875	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	876	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	877	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	878	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	879	13"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	880	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	881	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	882	14"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	883	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	884	16"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	885	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	886	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	887	18"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	888	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	889	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	890	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	891	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	892	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	893	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	894	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	895	24"	WHITE OAK	QUERCUS ALBA	FAIR	Y
Y	896	16"	WHITE OAK	QUERCUS ALBA	GOOD	Y
Y	897	15"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	898	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	899	24"	WHITE OAK	QUERCUS ALBA	GOOD	Y
Y	900	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	901	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	902	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	903	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	904	18"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	905	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	906	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	907	20"	WHITE OAK	QUERCUS ALBA	GOOD	Y
Y	908	18"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	909	20"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	910	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	911	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	912	15"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	913	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	914	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	915	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	916	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	917	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	918	13"	RED OAK	QUERCUS RUBRA	GOOD	
	919	48"	WHITE OAK	QUERCUS ALBA	GOOD	Y
Y	920	9" & 17"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	921	38"	RED OAK	QUERCUS RUBRA	VERY POOR	Y
Y	922	9"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	923	8" & 8"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	924	8"	PING CHERRY	PRUNUS PENSYLVANICA	GOOD	

REMOVE	TAG	SIZE	COMMON NAME	BOTANICAL NAME	CONDITION	HERITAGE
Y	925	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	926	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	927	30"	WHITE OAK	QUERCUS ALBA	GOOD	Y
	928	21"	WHITE OAK	QUERCUS ALBA	GOOD	Y
	929	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	930	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	931	28"	RED OAK	QUERCUS RUBRA	FAIR	Y
	932	20"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	933	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	934	8"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
	935	8"	RED OAK	QUERCUS RUBRA	FAIR	
	936	14"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
	937	15"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
	938	12"	PIGNUT HICKORY	CARYA GLABRA	GOOD	
	939	14" & 14"	RED OAK	QUERCUS RUBRA	GOOD	
	940	20" & 20"	RED OAK	QUERCUS RUBRA	GOOD	Y
	941	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	942	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	943	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	944	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	945	32"	WHITE OAK	QUERCUS ALBA	GOOD	Y
	946	27"	WHITE OAK	QUERCUS ALBA	GOOD	Y
Y	947	20"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	948	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	949	19"	RED OAK	QUERCUS RUBRA	GOOD	Y
	950	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	951	15"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	952	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	953	21"	RED OAK	QUERCUS RUBRA	POOR	Y
	954	13"	RED OAK	QUERCUS RUBRA	GOOD	
	955	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	956	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	957	14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	958	18"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
	959	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	960	16" & 18"	RED OAK	QUERCUS RUBRA	POOR	Y
	961	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	962	15"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	963	14"	RED OAK	QUERCUS RUBRA	GOOD	
	964	17"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	965	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	966	8"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	967	12"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	968	10"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	969	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	970	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	971	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	972	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	973	18"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	974	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	975	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	976	20"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	977	14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	978	9"	RED OAK	QUERCUS RUBRA	POOR	
Y	979	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	980	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	981	24"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	982	11"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
Y	983	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	984	8"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
Y	985	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	986	10"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	987	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	988	12"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	989	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	990	8"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
Y	991	10"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
Y	992	13"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	993	12"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	994	24"	SHAGBARK HICKORY	CARYA OVATA	POOR	Y
Y	995	12"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
	996	20"	PIGNUT HICKORY	CARYA GLABRA	FAIR	Y
Y	997	9"	PIGNUT HICKORY	CARYA GLABRA	FAIR	
Y	998	18"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	999	13"	PIGNUT HICKORY	CARYA GLABRA	POOR	
Y	1000	13"	~~SILVER MAPLE~~	~~ACER SACCHARUM~~	GOOD	
Y	3342	16"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	3343	17"	SUGAR MAPLE	ACER SACCHARUM	FAIR	Y
Y	3344	10"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
Y	3345	18"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	3346	9"	PIGNUT HICKORY	CARYA GLABRA	GOOD	
	3347	10"	PIGNUT HICKORY	CARYA GLABRA	GOOD	
	3348	11"	PIGNUT HICKORY	CARYA GLABRA	GOOD	
	3349	14"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3350	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3351	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3352	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	3353	28"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
Y	3354	12"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
Y	3355	19"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3356	11"	RED OAK	QUERCUS RUBRA	GOOD	
	3357	19"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3358	13"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
	3359	15"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
Y	3360	11"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	3361	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3362	22"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	POOR	
	3363	14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3364	23"	SHAGBARK HICKORY	CARYA OVATA	FAIR	Y
Y	3365	8"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
	3366	20"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	3367	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3368	24"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	3369	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3370	25"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	3371	16"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	3372	18"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	3373	13"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
	3374	12"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
	3375	9"	RED OAK	QUERCUS RUBRA	GOOD	
	3376	12"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
	3377	10"	SHAGBARK HICKORY	CARYA OVATA	FAIR	
	3378	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3379	12"	RED OAK	QUERCUS RUBRA	GOOD	
	3380	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3381	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3382	12"	RED OAK	QUERCUS RUBRA	GOOD	
	3383	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3384	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3385	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3386	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3387	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3388	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	3389	18"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3390	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3391	14"	BLACK CHERRY	PRUNUS SEROTINA	GOOD	
	3392	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	3393	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3394	11"	RED OAK	QUERCUS RUBRA	GOOD	
	3395	24"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3396	15"	RED OAK	QUERCUS RUBRA	GOOD	
	3397	10"	RED OAK	QUERCUS RUBRA	GOOD	

REMOVE	TAG	SIZE	COMMON NAME	BOTANICAL NAME	CONDITION	HERITAGE
	3398	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3399	14"	RED OAK	QUERCUS RUBRA	GOOD	
	3400	12"	RED OAK	QUERCUS RUBRA	GOOD	
	3401	22"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	3402	22", 11" & 10"	SHAGBARK HICKORY	CARYA OVATA	FAIR	Y
	3403	17"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
	3404	10"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
	3405	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3406	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3407	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3408	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	3409	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3410	12"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	
	3411	13"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
	3412	10"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3413	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3414	16"	RED OAK	PRUNUS SEROTINA	GOOD	Y
	3415	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	3416	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3417	9" & 10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3418	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3419	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3420	10"	PING CHERRY	PRUNUS PENSYLVANICA	FAIR	
	3421	8"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
	3422	8"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
	3423	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3424	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3425	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3426	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3427	15"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3428	12"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3429	39"	RED OAK	QUERCUS RUBRA	FAIR	Y
Y	3430	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3431	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3432	18"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3433	14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3434	15"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	3435	11"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	3436	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	3437	19"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	3438	25"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	3439	18"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3440	36"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	Y
	3441	27"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	Y
Y	3442	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3443	11" & 26"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3444	20"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	3445	19"	BLACK CHERRY	PRUNUS SEROTINA	POOR	Y
Y	3446	9"	BLACK CHERRY	PRUNUS SEROTINA	POOR	
Y	3447	15"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3448	26"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3449	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3450	30"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3451	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3452	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3453	8"	DOMESTIC APPLE	MALUS SYLVESTRIS	VERY POOR	
Y	3454	34" & 13"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3455	25"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3456	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	3457	10"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
Y	3458	27"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3459	24"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3460	15"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3461	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3462	39" & 20"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3463	27"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3464	12"	RED OAK	QUERCUS RUBRA	POOR	
Y	3465	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3466	8"	BLACK CHERRY	PRUNUS SEROTINA	VERY POOR	
	3467	18"	SHAGBARK HICKORY	CARYA OVATA	GOOD	Y
Y	3468	8", 9" & 10"	WHITE OAK	QUERCUS ALBA	GOOD	
Y	3469	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3470	18"	SUGAR MAPLE	ACER SACCHARUM	GOOD	Y
	3471	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3472	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
Y	3473	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	3474	8"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3475	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	3476	13"	COTTONWOOD	POPULUS DELTOIDES	POOR	
	3477	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	3478	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
Y	3479	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3480	28"	WHITE OAK	QUERCUS ALBA	GOOD	Y
Y	3481	27"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3482	18"	WHITE OAK	QUERCUS ALBA	GOOD	Y
	3483	37"	RED OAK	QUERCUS RUBRA	FAIR	Y
	3484	13"	SWAMP OAK	QUERCUS BICOLOR	GOOD	
	3485	12"	SWAMP OAK	QUERCUS BICOLOR	FAIR	
	3486	16"	COTTONWOOD	POPULUS DELTOIDES	FAIR	
	3487	15"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
	3488	12"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
	3489	13"	COTTONWOOD	POPULUS DELTOIDES	GOOD	
	3490	23"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3491	14"	COTTONWOOD	POPULUS DELTOIDES	FAIR	
Y	3492	11"	COTTONWOOD	POPULUS DELTOIDES	FAIR	
Y	3493	8", 13" & 15"	COTTONWOOD	POPULUS DELTOIDES	POOR	
	3494	14"	COTTONWOOD	POPULUS DELTOIDES	FAIR	
	3495	16"	COTTONWOOD	POPULUS DELTOIDES	FAIR	
Y	3496	19"	BLACK CHERRY	PRUNUS SEROTINA	FAIR	Y
	3497	9"	RED OAK	QUERCUS RUBRA	GOOD	
	3498	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3499	41"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3501	50"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3502	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3503	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3504	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3505	9"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3506	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
Y	3507	11"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3508	13"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3509	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
Y	3510	21"	RED OAK	QUERCUS RUBRA	GOOD	Y
Y	3511	10"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3512	10"	SWAMP OAK	QUERCUS BICOLOR	GOOD	
	3513	15"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3514	14"	RED OAK	QUERCUS RUBRA	GOOD	
Y	3515	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3516	31"	WHITE OAK	QUERCUS ALBA	GOOD	Y
Y	3517	19"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3518	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	3519	8"	RED OAK	QUERCUS RUBRA	FAIR	
	3520	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3521	10"	RED OAK	QUERCUS RUBRA	POOR	
	3522	22"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3523	10"	RED OAK	QUERCUS RUBRA	GOOD	
	3524	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3525	12"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3526	11"	RED OAK	QUERCUS RUBRA	GOOD	
	3527	12"	RED OAK	QUERCUS RUBRA	GOOD	
	3528	12"	RED OAK	QUERCUS RUBRA	GOOD	
	3529	10"	RED OAK	QUERCUS RUBRA	GOOD	
	3530	12"	RED OAK	QUERCUS RUBRA	GOOD	

REMOVE	TAG	SIZE	COMMON NAME	BOTANICAL NAME	CONDITION	HERITAGE
	3531	9"	RED OAK	QUERCUS RUBRA	GOOD	
	3532	9"	RED OAK	QUERCUS RUBRA	GOOD	
	3533	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3534	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3535	41"	SWAMP OAK	QUERCUS BICOLOR	FAIR	Y
	3536	22"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3537	15"	RED OAK	QUERCUS RUBRA	GOOD	
	3538	13"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3539	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3540	8" & 16"	RED OAK	QUERCUS RUBRA	GOOD	
	3541	11"	RED OAK	QUERCUS RUBRA	GOOD	
	3542	14"	RED OAK	QUERCUS RUBRA	GOOD	
	3543	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3544	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3545	11"	RED OAK	QUERCUS RUBRA	POOR	
	3546	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3547	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3548	8"	RED OAK	QUERCUS RUBRA	FAIR	
	3549	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3550	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3551	29"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3552	9"	WHITE OAK	QUERCUS ALBA	GOOD	
	3553	10"	RED OAK	QUERCUS RUBRA	GOOD	
	3554	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3555	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3556	14" & 17"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3557	14"	RED OAK	QUERCUS RUBRA	GOOD	
	3558	14"	WHITE OAK	QUERCUS ALBA	FAIR	
	3559	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3560	17"	SWAMP OAK	QUERCUS BICOLOR	GOOD	
	3561	11"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	3562	9"	RED OAK	QUERCUS RUBRA	FAIR	
	3563	9"	RED OAK	QUERCUS RUBRA	FAIR	
	3564	15"	RED OAK	QUERCUS RUBRA	GOOD	
	3565	33"	WHITE OAK	QUERCUS ALBA	GOOD	Y
	3566	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3567	9' & 10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3568	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3569	15" & 16"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3570	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3571	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3572	15"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3573	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3574	16"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	3575	12"	PIGNUT HICKORY	CARYA GLABRA	GOOD	
	3576	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3577	13"	SWAMP OAK	QUERCUS BICOLOR	GOOD	
	3578	23"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3579	12" & 16"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3580	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3581	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3582	9"	PIGNUT HICKORY	CARYA GLABRA	GOOD	
	3583	10"	PIGNUT HICKORY	CARYA GLABRA	GOOD	
	3584	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3585	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3586	8"	PIGNUT HICKORY	CARYA GLABRA	FAIR	
	3587	9"	RED OAK	QUERCUS RUBRA	FAIR	
	3588	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3589	8"	RED OAK	QUERCUS RUBRA	FAIR	
	3590	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3591	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3592	10"	SWAMP OAK	QUERCUS BICOLOR	FAIR	
	3593	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3594	10"	RED OAK	QUERCUS RUBRA	GOOD	
	3595	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3596	8" & 11"	RED OAK	QUERCUS RUBRA	GOOD	
	3597	10"	RED OAK	QUERCUS RUBRA	GOOD	
	3598	10"	DOMESTIC APPLE	MALUS SYLVESTRIS	POOR	
	3599	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3600	9"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3601	9"	RED OAK	QUERCUS RUBRA	GOOD	
	3602	14"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3603	11"	RED OAK	QUERCUS RUBRA	GOOD	
	3604	10"	WHITE OAK	QUERCUS ALBA	GOOD	
	3605	9"	RED OAK	QUERCUS RUBRA	GOOD	
	3606	11", 14" & 16"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3607	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3608	14"	SHAGBARK HICKORY	CARYA OVATA	POOR	
	3609	11", 12" & 13"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3610	10" & 10"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3611	13" & 8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3612	12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3613	17"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	FAIR	
	3614	13"	RED OAK	QUERCUS RUBRA	GOOD	
	3615	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3616	11"	RED OAK	QUERCUS RUBRA	GOOD	
	3617	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3618	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3619	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3620	8"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3621	13"	RED OAK	QUERCUS RUBRA	FAIR	
	3622	11" & 12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3623	8" & 10"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3624	8"	RED OAK	QUERCUS RUBRA	GOOD	
	3625	12" & 16"	SWAMP OAK	QUERCUS BICOLOR	FAIR	
	3626	8" & 11"	SWAMP OAK	QUERCUS BICOLOR	GOOD	
	3627	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3628	8"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3629	11", 11" & 12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3630	9" & 10"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	3631	16"	RED OAK	QUERCUS RUBRA	GOOD	Y
	3632	8" & 13"	RED OAK	QUERCUS RUBRA	FAIR	
	3633	11" & 12"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	FAIR	
	3634	9"	RED OAK	QUERCUS RUBRA	GOOD	
	3635	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3636	13"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3637	9", 10" & 11"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3638	11"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3639	9"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3640	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3641	8"	PIGNUT HICKORY	CARYA GLABRA	GOOD	
	3642	11"	SWAMP OAK	QUERCUS BICOLOR	FAIR	
	3643	19"	WHITE OAK	QUERCUS ALBA	GOOD	Y
	3644	10"	SWAMP OAK	QUERCUS BICOLOR	GOOD	
	3645	12"	RED OAK	QUERCUS RUBRA	GOOD	
	3646	10"	SWAMP OAK	QUERCUS BICOLOR	FAIR	
	3647	30"	SWAMP OAK	QUERCUS BICOLOR	FAIR	Y
	3648	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3649	9"	RED OAK	QUERCUS RUBRA	GOOD	
	3650	32"	RED OAK	QUERCUS RUBRA	FAIR	Y
	3651	8"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	POOR	
	3652	10"	~~CHINESE ELM~~	~~ULMUS PUMILA~~	GOOD	
	3653	13"	SWAMP OAK	QUERCUS BICOLOR	FAIR	
	3654	11"	SWAMP OAK	QUERCUS BICOLOR	FAIR	
	3655	14"	RED OAK	QUERCUS RUBRA	GOOD	
	3656	10"	RED OAK	QUERCUS RUBRA	GOOD	
	3657	14"	RED OAK	QUERCUS RUBRA	GOOD	
	3658	10"	SHAGBARK HICKORY	CARYA OVATA	GOOD	
	3659	14"	RED OAK	QUERCUS RUBRA	FAIR	
	3660	12" & 13"	~~SILVER MAPLE~~	~~ACER SACCHARINUM~~	GOOD	
	3661	14"	RED OAK	QUERCUS RUBRA	FAIR	
	3662	18"	RED OAK	QUERCUS RUBRA	FAIR	Y

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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
TREE SCHEDULE AND REMOVAL LIST

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02B-TL
JOB #: 12001809
FILE CODE:
SHEET NO.
12

PHASE 3

PHASE 3

PHASE 3

PHASE 2

PHASE 2

PHASE 1

PHASE 1

MILLIKEN PARK

MILLIKEN LANE (PRIVATE)

LILAC LANE (PRIVATE)

KEN LANE (PRIVATE)

TREE PROTECTION FENCE, TYPICAL

DETENTION BASIN 'A'
PREDEV VOL=204,853 @ 826.65
TOTAL VOL=223,271 CF @ 827.00
FOREBAY VOL=13,702 CF @ 825.00
OVERFLOW SPILLWAY ELEVATION: 827.50
100 YR ELEV=827.67
BTM ELEV=820.50

LEGEND

- SILT FENCE
- 779 TREE TO BE REMOVED
- 805 TREE TO REMAIN
- 805 HERITAGE TREE
- 805 HERITAGE TREE TO BE REMOVED
- CRITICAL ROOT ZONE
- EXIST. TREE OR BRUSH LIMIT
- 835 EXIST. CONTOUR
- 835 PROP. CONTOUR
- TREE PROTECTION FENCE
- PHASE 1 & 2 CONSTRUCTION LIMITS

KEYMAP

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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DIVERSE REAL ESTATE LLC
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FINAL SITE PLAN
TREE REMOVAL PLAN

DATE
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2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02B-TL
JOB #: 12001809
FILE CODE:
SHEET NO.
12A

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SECTION 13
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WASHTENAW COUNTY, MICHIGAN

DATE
JUNE 6, 2014

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2014-09-08 PER TWP.
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2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02B-TL
JOB #: 12001809
FILE CODE:
SHEET NO.
12B

LEGEND

- SILT FENCE
- 779 TREE TO BE REMOVED
- 805 TREE TO REMAIN
- 805 HERITAGE TREE
- 805 HERITAGE TREE TO BE REMOVED
- CRITICAL ROOT ZONE
- EXIST. TREE OR BRUSH LIMIT
- 835 EXIST. CONTOUR
- 835 PROP. CONTOUR
- TREE PROTECTION FENCE
- PHASE 1 & 2 CONSTRUCTION LIMITS

KEYMAP

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

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JUNE 6, 2014

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2014-08-05 WCRC COMMENTS
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2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-02B-TL
JOB #: 12001809
FILE CODE:
SHEET NO.
12D

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PHASE 1

PHASE 2

PHASE 2

PHASE 3

PHASE 3

LILAC LANE (PRIVATE)

MILLIKEN LANE (PRIVATE)

GLOVER LANE DRIVE (66' WD PUBLIC)

THE WOODLANDS AT ARBOR RIDGE

GLOVER LANE DRIVE (66' WD PUBLIC)

RAMNEY COURT (66' WD PUBLIC)

N BASIN 'F'
8,870 CF @ 830.70
RECEIVING BASIN
RECD=+11,994 CF
@ 831.50
EMA'T ELEVATION=831.20
BOTTOM ELEVATION=830.70
8.63

TENNIS COURT

KEYMAP

LEGEND

- SILT FENCE
- TREE TO BE REMOVED
- TREE TO REMAIN
- HERITAGE TREE TO BE REMOVED
- CRITICAL ROOT ZONE
- EXIST. TREE OR BRUSH LIMIT
- EXIST. CONTOUR
- PROP. CONTOUR
- TREE PROTECTION FENCE
- PHASE 1 & 2 CONSTRUCTION LIMITS

PAGE NO. 17

SCALE:	0 25 50 1" = 50 FEET
DRAWN BY:	GMS
CHECKED BY:	GMS
PROJECT MANAGER:	EL
CAD: 30081982-02B-TL	
JOB #: 12001809	
FILE CODE:	
SHEET NO.	12E

DATE	REVISIONS/SUBMITTALS
JUNE 6, 2014	
2014-08-08	PER TWP. COMMENTS
2014-09-29	PER TWP.
2014-10-29	PER TWP.
2014-11-13	PER TWP.
2015-01-13	PER TWP.

DIVERSE REAL ESTATE LLC

ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
TREE REMOVAL PLAN

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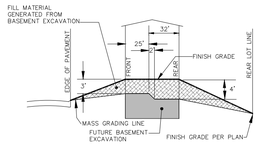
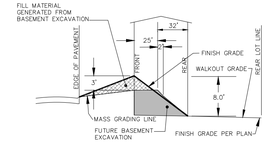
LEGEND

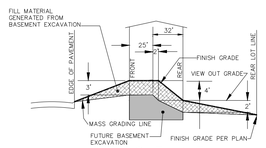
835	EXIST. CONTOUR
	PROP. CONTOUR
× 854.6	EXIST. SPOT ELEVATION
× 854.6 G	PROP. SPOT ELEVATION GUTTER
	EXIST. STORM SEWER
	PROP. STORM SEWER
	EXIST. MANHOLE
	PROP. MANHOLE
	PROP. EDGE DRAIN
	EXIST. CATCH BASIN/INLET
	PROP. CATCH BASIN/INLET
	END SECTION
	CULVERT
	EXIST. SANITARY SEWER
	PROP. SANITARY SEWER
⊙ C.O.	EXIST. CLEANOUT
● C.O.	PROP. CLEANOUT
	EXIST. WATER MAIN
	PROP. WATER MAIN
	EXIST. HYDRANT
	PROP. HYDRANT
	EXIST. SHUTOFF OR CURB BOX
	PROP. SHUTOFF OR CURB BOX
	EXIST. GATE VALVE IN BOX
	PROP. GATE VALVE IN BOX
	EXIST. GATE VALVE IN MANHOLE
	PROP. GATE VALVE IN MANHOLE
	EXIST. OVERHEAD ELECTRIC
	PROP. OVERHEAD ELECTRIC
	EXIST. UNDERGROUND ELECTRIC
	PROP. UNDERGROUND ELECTRIC
	EXIST. LIGHT POLE
	PROP. LIGHT POLE
U.P.	EXIST. UTILITY POLE
	GUY WIRE
	EXIST. OVERHEAD TELEPHONE
	PROP. OVERHEAD TELEPHONE
	EXIST. UNDERGROUND TELEPHONE
	PROP. UNDERGROUND TELEPHONE
	EXIST. GAS
	PROP. GAS
	EXIST. RISER
	EXIST. TELEPHONE RISER
	EXIST. CURB AND GUTTER
	PROP. CURB AND GUTTER
	CL OF DITCH OR EDGE OF WATER
	EDGE OF WETLAND
	EXISTING FENCE
	PROPOSED FENCE
	PROPERTY LINE
	CENTERLINE
	EXIST. SIGN
	PROP. SIGN
R	SIDEWALK RAMP
F.F.	FINISH FLOOR ELEV.
F.G.	FINISH GRADE
V.O.	VIEWOUT BASEMENT
W.O.	WALKOUT BASEMENT
B.F.	BASEMENT FLOOR
G.F.	GARAGE FLOOR
	SILT FENCE
	SECTION CORNER
	CONTROL POINT
○F	FOUND IRON PIPE
○S	SET IRON PIPE
◎F	FOUND CONCRETE MONUMENT
◎S	SET CONCRETE MONUMENT
×F	FOUND PK NAIL
×S	SET PK NAIL
⊠F	FOUND LEADED CHISEL HOLE
⊠S	SET LEADED CHISEL HOLE
○F–RR	FOUND REROD
	APPROX. LOCATION OF SOIL BORING
	APPROX. LOCATION OF MONITORING WELL
	APPROX. LOCATION OF PENETRATION TEST
	EXIST. DECIDUOUS TREE
	EXIST. CONIFEROUS TREE
	EXIST. TREE OR BRUSH LIMIT
	EXIST. WETLAND
	TREE PROTECTION FENCE
	SILT FENCE AND GRADING LIMITS
	PHASE 1 & 2 CONSTRUCTION LIMITS



STANDARD UNIT

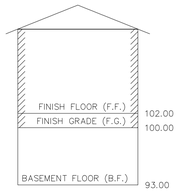


WALKOUT UNIT

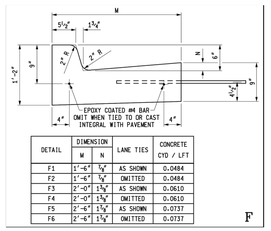


VIEW OUT UNIT

MASS GRADING DETAILS



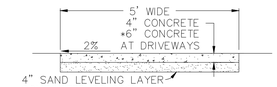
TYPICAL UNIT ELEVATION
NO SCALE



DETAIL	DIMENSION M	DIMENSION N	LANE TIES	CONCRETE CYD / LFT
F1	1'-6"	1/2"	AS SHOWN	0.0484
F2	1'-6"	1/2"	OMITTED	0.0484
F3	2'-0"	1 3/4"	AS SHOWN	0.0610
F4	2'-0"	1 3/4"	OMITTED	0.0610
F5	2'-6"	1 3/4"	AS SHOWN	0.0737
F6	2'-6"	1 3/4"	OMITTED	0.0737

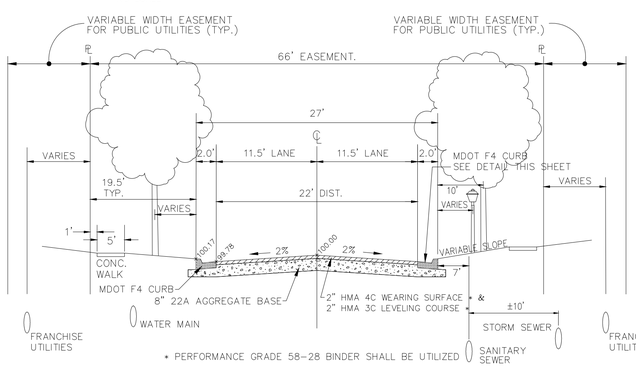
F

MDOT F4 CURB
NO SCALE



CONCRETE SIDEWALK DETAIL
NO SCALE

NOTE:
PROVIDE ADA COMPLIANT SIDEWALK RAMP AND DETECTABLE WARNING DETAILS IN ACCORDANCE WITH MDOT DETAIL R-28-H



* PERFORMANCE GRADE 58-28 BINDER SHALL BE UTILIZED

TYPICAL PRIVATE ROAD CROSS SECTION
NO SCALE

I-94 EXPRESSWAY
(300' R.O.W.)

NOTE:
WHERE PROPOSED GRADING MEETS A FUTURE PHASE, THE TRANSITION TO EXISTING GRADES MUST BE 1:4 OR FLATTER AND MUST BE GRADED TO DRAIN.

NOTE:
COMPACTION OF TRENCHES IS REQUIRED IN ROADWAY CORRIDORS (CLASS II GRANULAR BACKFILL AT 95% COMPACTION). ROADWAY CORRIDORS CONSTITUTE FRONT OF HOUSE TO FRONT OF HOUSE IN RESIDENTIAL DEVELOPMENTS.

NOTE:
1. ALL WATERMAIN TO BE CL-54 DUCTILE IRON PIPE.
2. ALL STORM SEWER TO BE C76 CLIV RCP.
3. ALL SANITARY SEWER AT A DEPTH LESS THAN 15' TO BE PVC SDR 26.
4. ALL SANITARY SEWER GREATER THAN 15' TO BE PVC SDR 21.
5. SEE EASEMENT PLANS ON SHEETS 77A AND 77B FOR MORE INFORMATION ON EASEMENTS

NOTE:
THE ENTIRE DETACHED CONDOMINIUM AREA WILL BE COMMON SPACE WITH THE EXCEPTION OF THE BUILDINGS.

SEE SHEET 14 FOR CONTINUATION

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DIVERSE REAL ESTATE LLC

ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
OVERALL UTILITY AND GRADING PLAN – NORTH

SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DATE
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SCALE
0 50 100
1" = 100 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-03A-G
JOB #: 12001809
FILE CODE:
SHEET NO. 13

PAGE NO. 18

SEE SHEET 18 FOR CONTINUATION

SEE SHEET 17 FOR CONTINUATION

SEE SHEET 15 FOR CONTINUATION

CLOVERLANE DRIVE (66' WD. PUBLIC)

ROMNEY CT. (66' WD. PUBLIC)

MILLKEN LANE (PRIVATE)

LILAC LANE (PRIVATE)

CONNOR DRIVE (PRIVATE)

HUNT CLUB DRIVE (PRIVATE)

CONDOMINIUM SPACE WITH BUILDINGS.

PROPOSED SILT FENCE & GRADING LIMITS TYP.

SEE INTERSECTION DETAIL ON SHEET 21

MATCH GRADE ±817.8

24" FES INV 824.60

STORM MH RIM: 829.55 INV: 30" 817.35 E&W INV: 12" 824.58 S

STORM CB RIM: 829.11 INV: 12" 824.86 N

STORM CB 439 RIM: 817.19 INV: 12" 813.79 N INV: 15" 813.64 E INV: 15" 814.29 S

STORM CB 440 RIM: 817.04 INV: 12" 813.94 S

CONNECT TO EX. SAN

EX. RIM 832.72 EX. INV 830.72 TO BE RIM=

821.91 BF

817.82 BF

815.4 BF

LEGEND

- EXIST. CONTOUR
- PROP. CONTOUR
- EXIST. SPOT ELEVATION
- PROP. SPOT ELEVATION
- GUTTER
- EXIST. STORM SEWER
- PROP. STORM SEWER
- EXIST. MANHOLE
- PROP. MANHOLE
- PROP. EDGE DRAIN
- EXIST. CATCH BASIN/INLET
- PROP. CATCH BASIN/INLET
- END SECTION
- CULVERT
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. CLEANOUT
- PROP. CLEANOUT
- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
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- PROP. OVERHEAD TELEPHONE
- EXIST. UNDERGROUND TELEPHONE
- PROP. UNDERGROUND TELEPHONE
- EXIST. GAS
- PROP. GAS
- EXIST. GAS RISER
- EXIST. TELEPHONE RISER
- EXIST. CURB AND GUTTER
- PROP. CURB AND GUTTER
- CL OF DITCH OR EDGE OF WATER
- EDGE OF WETLAND
- EXISTING FENCE
- PROPOSED FENCE
- PROPERTY LINE
- CENTERLINE
- EXIST. SIGN
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- SIDEWALK RAMP
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- F.G. FINISH GRADE
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- CONTROL POINT
- FOUND IRON PIPE
- SET IRON PIPE
- FOUND CONCRETE MONUMENT
- SET CONCRETE MONUMENT
- FOUND PK NAIL
- SET PK NAIL
- FOUND LEADED CHISEL HOLE
- SET LEADED CHISEL HOLE
- FOUND REROD
- APPROX. LOCATION OF SOIL BORING
- APPROX. LOCATION OF MONITORING WELL
- APPROX. LOCATION OF PENETRATION TEST
- EXIST. DECIDUOUS TREE
- EXIST. CONIFEROUS TREE
- EXIST. TREE OR BRUSH LIMIT
- EXIST. WETLAND
- TREE PROTECTION FENCE
- SILT FENCE AND GRADING LIMITS

GRADING LEGEND

- 800.00 WO / 807.50 FG — FINISH GRADE OF WALK-OUT / FINISH GRADE
- 803.50 VO / 807.50 FG — FINISH GRADE OF VIEW-OUT / FINISH GRADE

PV = PARTIAL VIEW-OUT
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DBL(X') = DROP BRICK LEDGE (DEPTH)
BF = MIN. BASEMENT FLOOR ELEV.

- DRAINAGE ARROW
- OVERLAND FLOW ROUTE

KEYMAP

PAGE NO. 19

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SCALE 0 25 50
1" = 50 FEET

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CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-03A-G
JOB #: 12001809
FILE CODE:
SHEET NO. 16

SEE SHEET 19 FOR CONTINUATION

SEE SHEET 18 FOR CONTINUATION

SEE SHEET 20 FOR CONTINUATION

SEE SHEET 16 FOR CONTINUATION

LEGEND

- EXIST. CONTOUR
- PROP. CONTOUR
- EXIST. SPOT ELEVATION
- PROP. SPOT ELEVATION
- GUTTER
- EXIST. STORM SEWER
- PROP. STORM SEWER
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KEYMAP
NO SCALE

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I-94 EXPRESSWAY
(300' R.O.W.)

PROPOSED BERM

SB-2
EL. 838.40
GW EL. 832.32

PHASE 3

PHASE 3

MILLIKEN PARK

OPEN SPACE

PHASE 1

100-YR WSEL=827.65

24" FES
INV 822.00

DETENTION BASIN 'A'
REQ'D VOL=204,853 @ 826.65
TOTAL VOL=223,271 CF @ 827.00
FOREBAY VOL=13,702 CF @ 825.00
OVERFLOW SPILLWAY ELEVATION 827.50
100 YR ELEV=827.67
RTM ELEV=820.50

SB-A
EL. 830.50
GW. EL. 821.00

BASIN A

42" FES
INV 822.00

SAN. CONNECTION NUMBER 2

MILLIKEN LANE (PRIVATE)

HUNT CLUB DRIVE

CONNECT TO EX. SAN.
EX. 10"S

CONNECT TO EX. WM
EX. 8"W

SANITARY SEWER STRUCTURE S-1 CAN BE ACCESSED FROM HUNT CLUB DRIVE IN THE HUNT CLUB (PHASE I) DEVELOPMENT

EX. TREES TO BE SAVED IN THIS AREA

TRANSFORMER LOCATION

UGTEC

SEE SHEET 19 FOR CONTINUATION

SEE SHEET 16 FOR CONTINUATION

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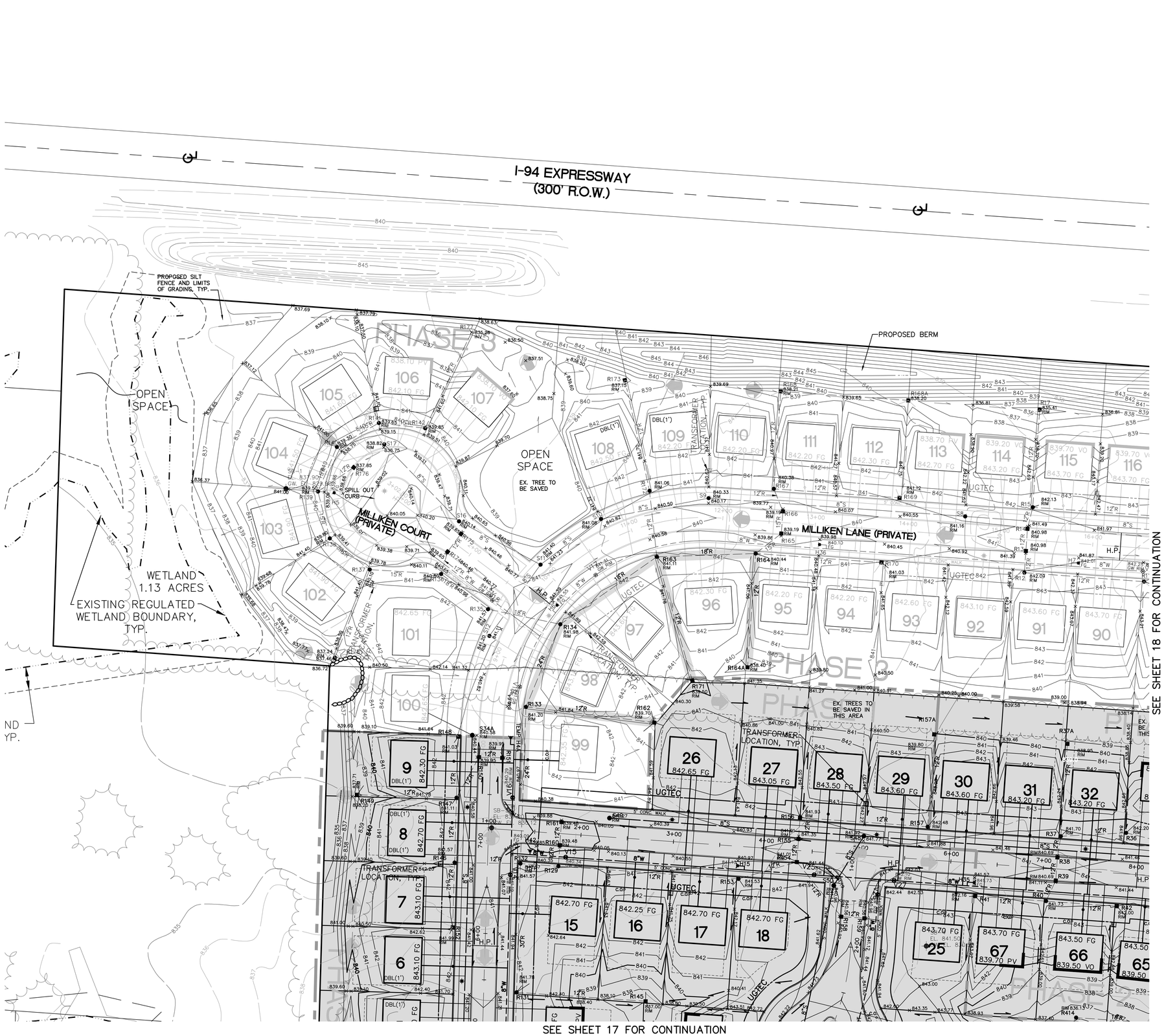

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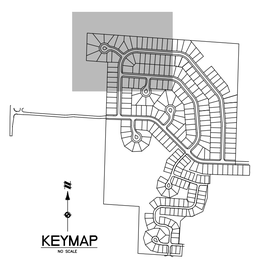

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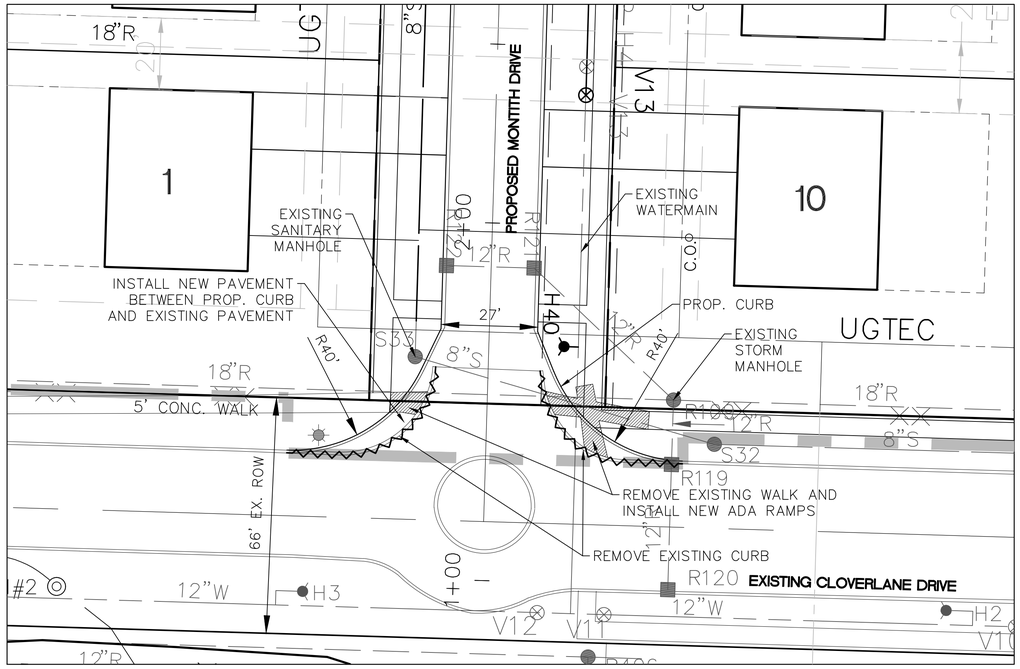
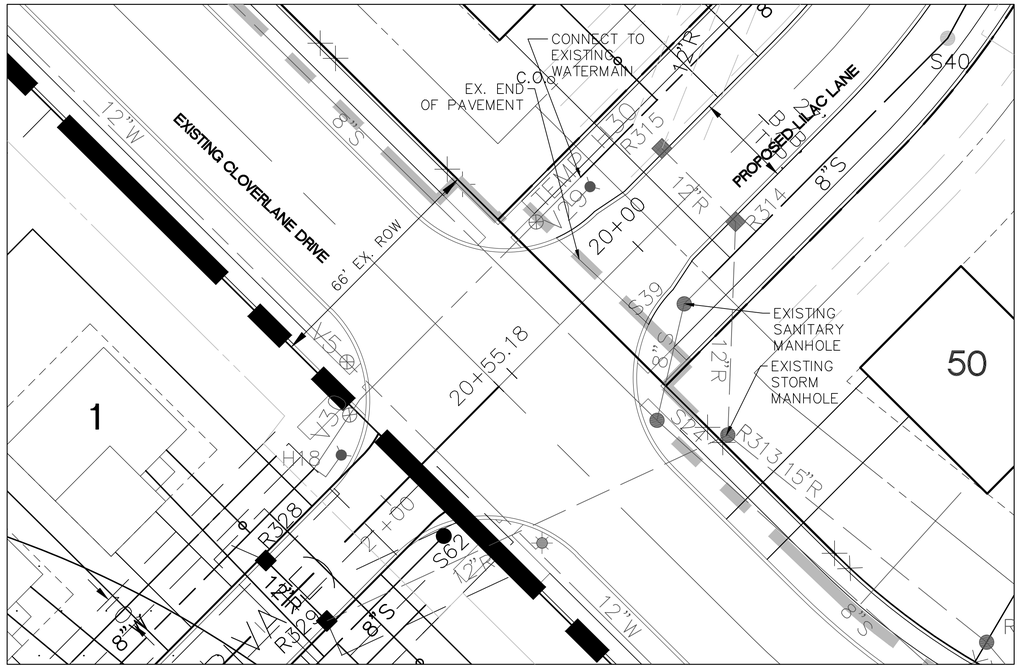
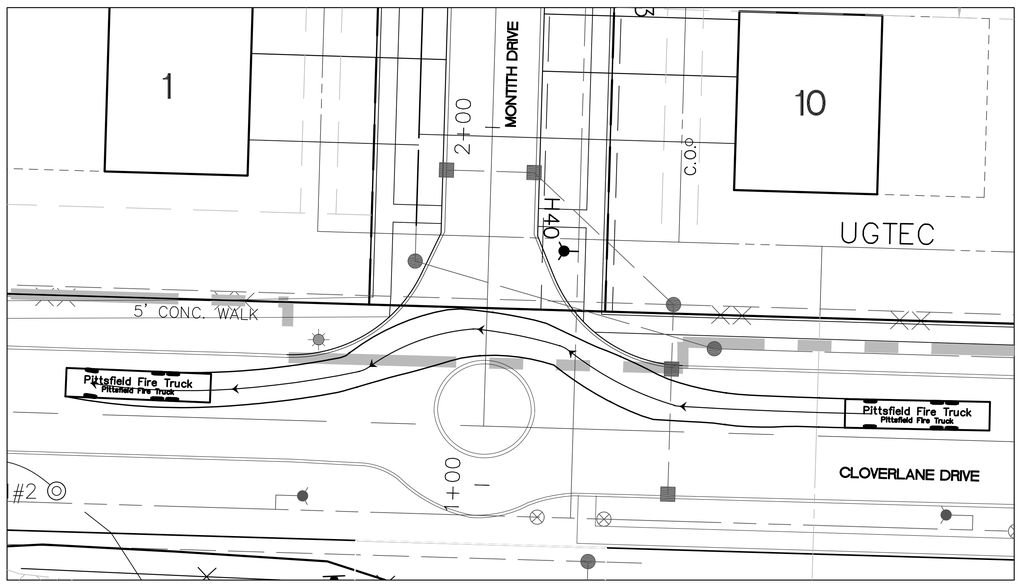


PROPOSED PAVEMENT MODIFICATIONS AT TRAFFIC CIRCLE

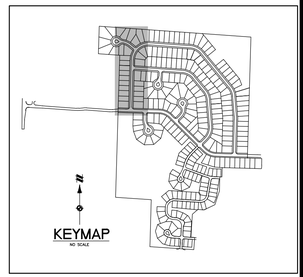


PROPOSED LILAC LANE CONNECTION AT CLOVERLANE DRIVE

NOTE: THERE IS NO PROPOSED WORK WITHIN THE PUBLIC R.O.W. AT THIS INTERSECTION. THE EXISTING PAVEMENT WAS INSTALLED BEYOND THE R.O.W. FOR FUTURE CONNECTION.



FIRE TRUCK MANEUVERING AT TRAFFIC CIRCLE



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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21A

SEQUENCE OF CONSTRUCTION FOR SOIL EROSION CONTROL

START DAY	END DAY	
09-24-14	09-26-14	1. INSTALL STONE TRACKING PAD/LAYDOWN AREA ATOP GEOTEXTILE LINER (MUD-MAT) AND SIGNAGE.
09-24-14	09-27-14	2. INSTALL SILT AND PROTECTIVE FENCING.
09-24-14	09-27-14	3. INSTALL INLET PROTECTION FILTERS.
09-29-14	10-01-14	4. PREPARE TEMPORARY PARKING & STORAGE AREAS.
09-27-14	10-40-14	5. STRIP AND STOCKPILE TOPSOIL.
09-27-14	10-04-14	6. EXCAVATE DETENTION SYSTEM, INSTALL APPROVED OUTLET BEFORE PAVING IS STARTED.
10-06-14	10-20-14	7. INSTALL UNDERGROUND UTILITIES (I.E. SANITARY, STORM, AND WATER MAIN.
10-15-14	10-18-14	8. DEWATER EXISTING RETENTION BASIN B PRIOR TO INSTALLING PROPOSED POND OUTLETS R421 AND R127. SEE DEWATERING NOTES (THIS SHEET).
10-20-14	10-21-14	9. PLACE ADDITIONAL INLET FILTERS.
10-20-14	10-27-14	10. INSTALL FRANCHISE UTILITIES (ELECTRIC, TELEPHONE, AND CABLE T.V.).
10-22-14	10-29-14	11. FINALIZE PAVEMENT SUB-GRADE PREPARATION
11-01-14	11-11-14	12. INSTALL CURB & GUTTER
11-04-14	11-11-14	13. PAVE SITE
11-11-14	11-11-14	14. FINALIZE BUILDING EXTERIOR & GRADING, ESTABLISH VEGETATION FOR ALL DISTURBED AREAS AND ROAD/ R.O.W.s
05-01-15	05-07-15	15. CLEAN OUT STORM SEWER SYSTEM.
05-01-15	05-07-15	16. REMOVE SILT FENCE AND CATCH BASIN FILTERS, REPAIR DISTURBED AREAS AS NECESSARY.
05-07-15	05-14-15	17. CLEAN PAVED AREAS AND COORDINATE FINAL INSPECTION FOR CLOSEOUT.

*SCHEDULE TO BE MAINTAINED BY CONTRACTOR.

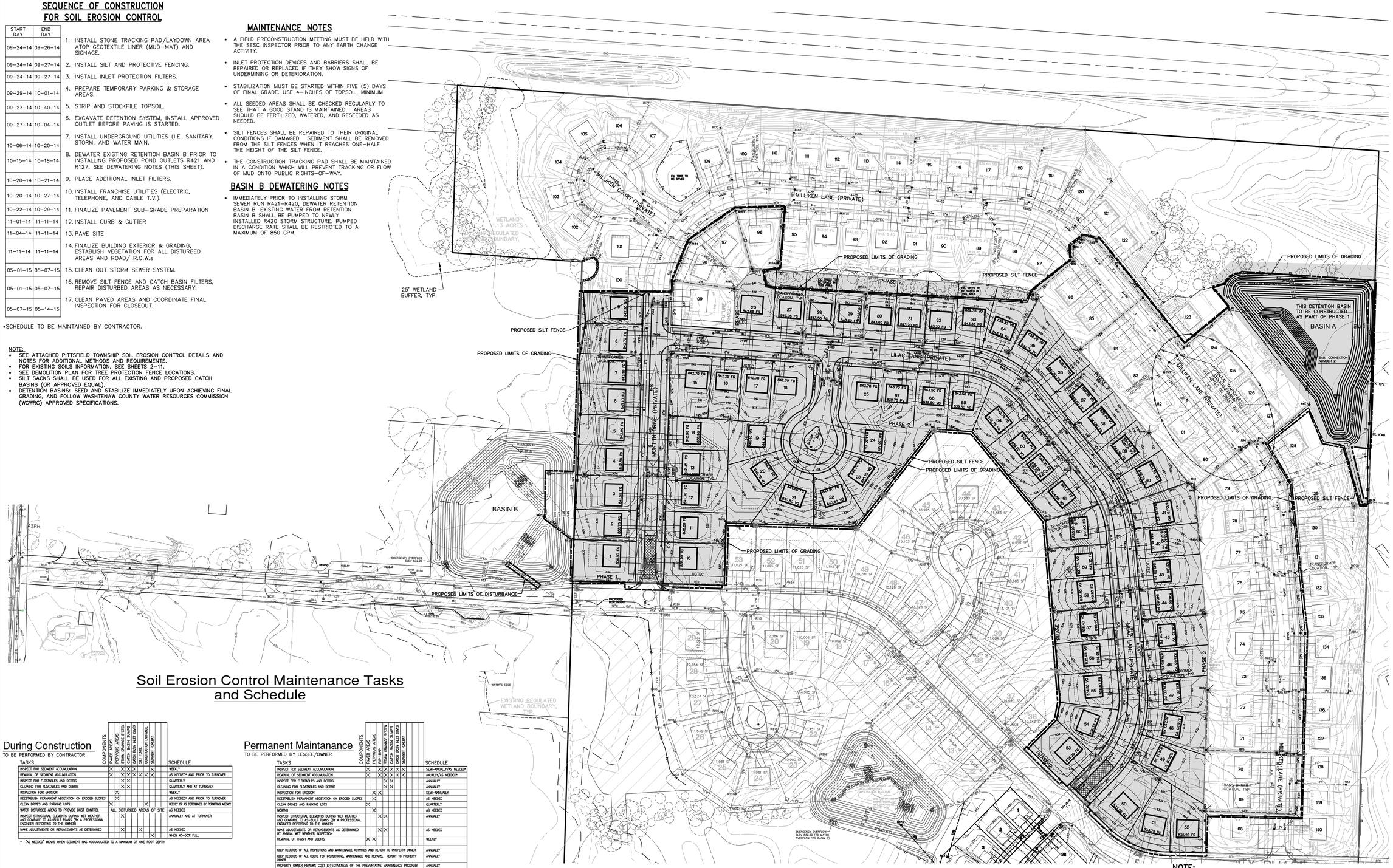
MAINTENANCE NOTES

- A FIELD PRECONSTRUCTION MEETING MUST BE HELD WITH THE SESC INSPECTOR PRIOR TO ANY EARTH CHANGE ACTIVITY.
- INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING OR DETERIORATION.
- STABILIZATION MUST BE STARTED WITHIN FIVE (5) DAYS OF FINAL GRADE, USE 4-INCHES OF TOPSOIL, MINIMUM.
- ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEEDED AS NEEDED.
- SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SILT FENCE.
- THE CONSTRUCTION TRACKING PAD SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY.

BASIN B DEWATERING NOTES

- IMMEDIATELY PRIOR TO INSTALLING STORM SEWER RUN R421-R420, DEWATER RETENTION BASIN B. EXISTING WATER FROM RETENTION BASIN B SHALL BE PUMPED TO NEWLY INSTALLED R420 STORM STRUCTURE. PUMPED DISCHARGE RATE SHALL BE RESTRICTED TO A MAXIMUM OF 850 GPM.

NOTE:
- SEE ATTACHED PITTSFIELD TOWNSHIP SOIL EROSION CONTROL DETAILS AND NOTES FOR ADDITIONAL METHODS AND REQUIREMENTS.
- FOR EXISTING SOILS INFORMATION, SEE SHEETS 2-11.
- SEE DEMOLITION PLAN FOR TREE PROTECTION FENCE LOCATIONS.
- SILT SACKS SHALL BE USED FOR ALL EXISTING AND PROPOSED CATCH BASINS (OR APPROVED EQUAL).
- DETENTION BASINS: SEED AND STABILIZE IMMEDIATELY UPON ACHIEVING FINAL GRADING, AND FOLLOW WASHTENAW COUNTY WATER RESOURCES COMMISSION (WCWRC) APPROVED SPECIFICATIONS.



Soil Erosion Control Maintenance Tasks and Schedule

During Construction

TO BE PERFORMED BY CONTRACTOR

TASKS	COMPONENTS: PAVED AREAS	PERVIOUS AREAS	STORM SYSTEM	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	SEDIMENT BASIN INLET COVER	SEDIMENT BASIN OUTLET	CONSTRUCTION ENTRANCE	SEDIMENT TRAPS/BF	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION	X		X	X	X				X	WEEKLY
REMOVAL OF SEDIMENT ACCUMULATION	X		X	X	X	X	X	X	X	AS NEEDED* AND PRIOR TO TURNOVER
INSPECT FOR FLOATABLES AND DEBRIS			X	X						QUARTERLY
CLEANING FOR FLOATABLES AND DEBRIS			X	X						QUARTERLY AND AT TURNOVER
INSPECTION FOR EROSION		X								WEEKLY
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES		X								AS NEEDED* AND PRIOR TO TURNOVER
CLEAN DRIVES AND PARKING LOTS	X							X		WEEKLY OR AS DETERMINED BY PERMITTING AGENCY
WATER DISTURBED AREAS TO PROVIDE DUST CONTROL	ALL DISTURBED AREAS OF SITE									AS NEEDED
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE OWNER)			X		X					ANNUALLY AND AT TURNOVER
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED			X			X				AS NEEDED
									X	WHEN 40-50% FULL

* "AS NEEDED" MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH

Permanent Maintanance

TO BE PERFORMED BY LESSEE/OWNER

TASKS	COMPONENTS: PAVED AREAS	PERVIOUS AREAS	STORM SYSTEM	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	SEDIMENT BASIN INLET COVER	SEDIMENT BASIN OUTLET	SEDIMENT TRAPS/BF	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION	X		X	X	X	X	X		SEMI-ANNUALLY/AS NEEDED*
REMOVAL OF SEDIMENT ACCUMULATION	X		X	X	X	X	X		ANNUALLY/AS NEEDED*
INSPECT FOR FLOATABLES AND DEBRIS			X	X					ANNUALLY
CLEANING FOR FLOATABLES AND DEBRIS			X	X					ANNUALLY
INSPECTION FOR EROSION		X	X						SEMI-ANNUALLY
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES		X							AS NEEDED
CLEAN DRIVES AND PARKING LOTS	X								QUARTERLY
MOWING		X							AS NEEDED
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE OWNER)			X	X					ANNUALLY
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION			X	X					AS NEEDED
REMOVAL OF TRASH AND DEBRIS	X	X							WEEKLY
KEEP RECORDS OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES AND REPORT TO PROPERTY OWNER									ANNUALLY
KEEP RECORDS OF ALL COSTS FOR INSPECTIONS, MAINTENANCE AND REPAIRS. REPORT TO PROPERTY OWNER									ANNUALLY
PROPERTY OWNER REVIEWS COST EFFECTIVENESS OF THE PREVENTATIVE MAINTENANCE PROGRAM AND MAKES NECESSARY ADJUSTMENTS									ANNUALLY
OWNER TO HAVE A PROFESSIONAL ENGINEER CARRY OUT EMERGENCY INSPECTIONS UPON IDENTIFICATION OF SEVERE PROBLEMS									AS NEEDED

NOTE:
SILT FENCE SHALL BE INSTALLED AND MAINTAINED AROUND PERIMETER OF STOCKPILE. IF STOCKPILE WILL BE LARGE AND IS EXPECTED TO BE ON SITE FOR A PERIOD OF TIME.

AREA OF DISTURBANCE = 27 ACRES

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FINAL SITE PLAN
PHASE 3 SOIL EROSION CONTROL PLAN OVERALL

SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DATE
JUNE 6, 2014

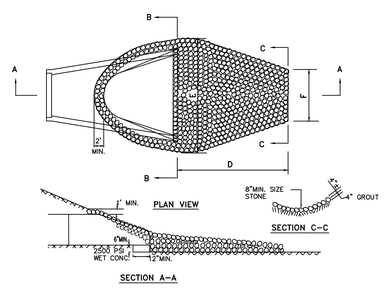
REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 50 100
1" = 100 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-05-SE
JOB #: 12001809
FILE CODE:
SHEET NO. 22

NOTE:
ALL REAR YARD CATCH BASINS, ONCE CONSTRUCTED AND GRADED TO, MUST BE SURROUNDED BY SILT FENCE. (TYP.)

REMOVE R408 AND APPROXIMATELY 75 L.F. OF 12" STM. SEE SHEET 71 FOR MORE INFORMATION . SEE SEQUENCE OF CONSTRUCTION AND DEWATERING NOTES ON SHEET 22. SEED AND MULCH IMMEDIATELY UPON ACHIEVING FINAL GRADING, AND FOLLOW WASHTENAW COUNTY WATER RESOURCES COMMISSION (WCWRC) APPROVED SPECIFICATIONS.



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 GROUTED AND INSTALLED AS PROVIDED BY MDOT SPEC. 6.01.08. RIP-RAP MATERIAL SHALL MEET THE REQUIREMENTS OF MDOT SPEC. 8.19.02

GROUTED STONE RIP-RAP
NO SCALE

ON-SITE SOILS

OSHTEMO-BOYER LOAMY SANDS, 0-6%, 6-12% AND 12-40% SLOPES
CAPAC SANDY LOAM, 0-4% SLOPES
FOX SANDY LOAM, 0-6% AND 6-12% SLOPES
HOUGHTON AND ADRIAN MUCKS
BROOKSTON AND COLWOOD LOAMS
SEBEWA LOAM
MERLET SANDY LOAM, 1-6% AND 6-12% SLOPES
RIDDLES SANDY LOAM, 6-12% SLOPES
MATHERTON SANDY LOAM, 0-3% SLOPES
SLOAN SILT LOAM

SOIL EROSION CONTROL LEGEND

- SILT FENCE
- LIMITS OF PHASE 1 & 2 GRADING
- SILT SACK
- RIP RAP
- TREE PROTECTION FENCE
- CONSTRUCTION MUD TRACKING SURFACE
- CRITICAL ROOT ZONE

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FINAL SITE PLAN
PHASE 3 SOIL EROSION CONTROL PLAN
NORTH

DATE
JUNE 6, 2014

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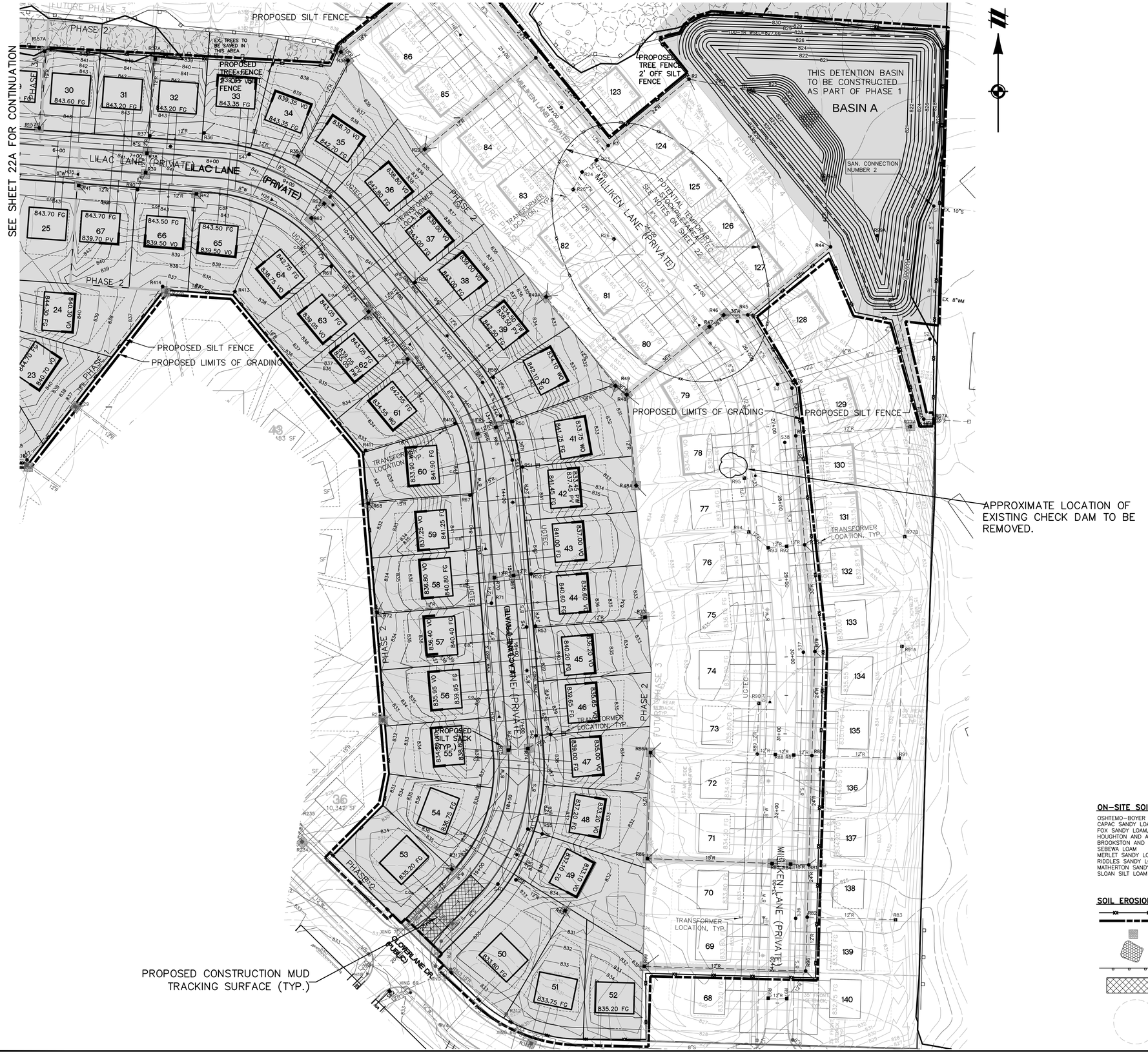
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 30 60
1" = 60 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-05-SE
JOB #: 12001809
FILE CODE:
SHEET NO.
22A



ON-SITE SOILS

OSHTEMO-BOYER LOAMY SANDS, 0-6%, 6-12% AND 12-40% SLOPES
CAPAC SANDY LOAM, 0-4% SLOPES
FOX SANDY LOAM, 0-6% AND 6-12% SLOPES
HOUGHTON AND ADRIAN MUCKS
BROOKSTON AND COLWOOD LOAMS
SEBEWA LOAM
MERLET SANDY LOAM, 1-6% AND 6-12% SLOPES
RIDDLES SANDY LOAM, 6-12% SLOPES
MATHERTON SANDY LOAM, 0-3% SLOPES
SLOAN SILT LOAM

SOIL EROSION CONTROL LEGEND

- SILT FENCE
- LIMITS OF PHASE 1 & 2 GRADING
- SILT SACK
- RIP RAP
- TREE PROTECTION FENCE
- CONSTRUCTION MUD TRACKING SURFACE
- CRITICAL ROOT ZONE

PAGE NO. 26

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ARBOR RIDGE CROSSING, PHASES 1 & 2
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PHASE 3 SOIL EROSION CONTROL PLAN SOUTH

DATE
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2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE 0 30 60
1" = 60 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-05-SE
JOB #: 12001809
FILE CODE:
SHEET NO. 22B

NOTE:

1. MDOT CLASS III GRANULAR MATERIAL, COMPACTED TO 95% MAXIMUM UNIT WEIGHT USING THE MDOT CONTROLLED DENSITY METHOD. THIS MATERIAL WILL BE USED TO BACKFILL ALL UTILITIES IN THE ROAD CORRIDOR. THE ROAD CORRIDOR IS FROM FRONT OF HOUSE TO FRONT OF HOUSE PER PITTSFIELD TOWNSHIP.

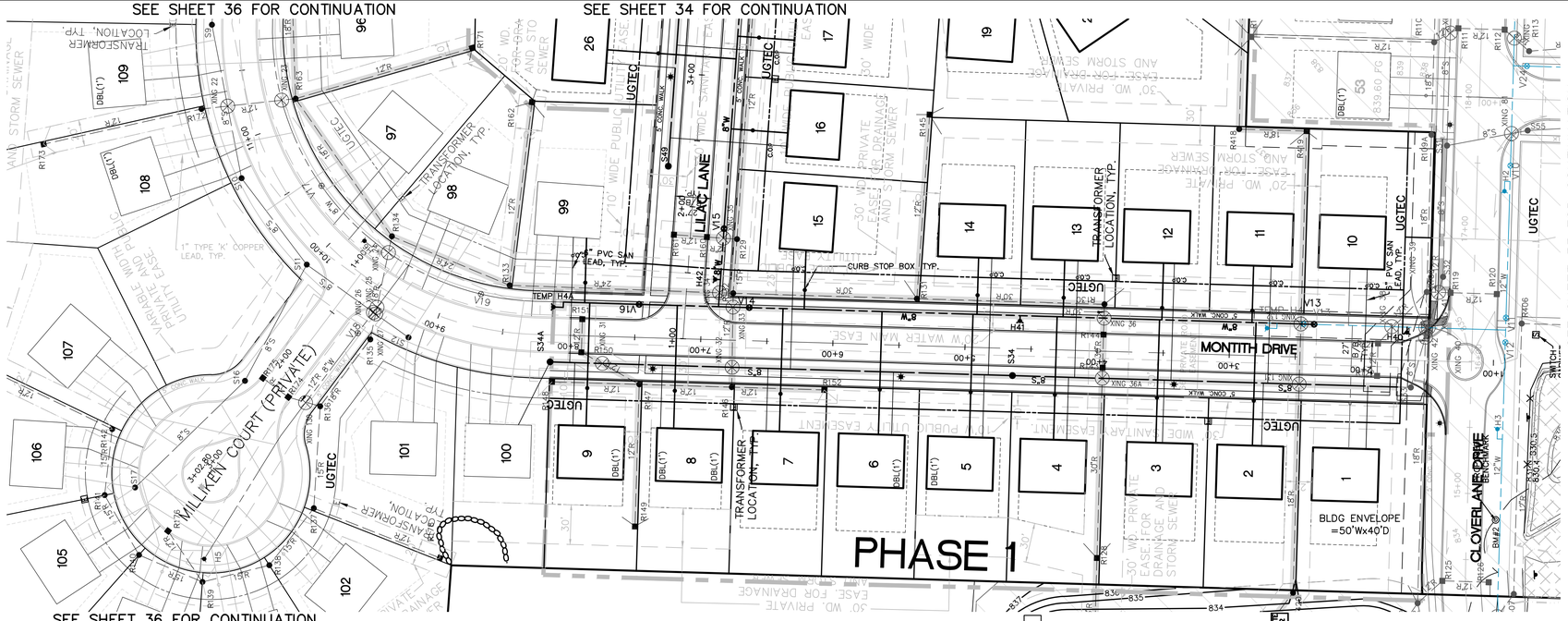
2. ALL UTILITY CROSSINGS MUST HAVE A MINIMUM 18 INCHES OF CLEARANCE BETWEEN PIPES.

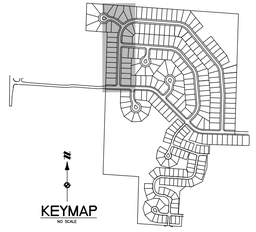
3. ANY UNDERMINING OF THE 16" ASBESTOS CONCRETE (AC) WATERMAIN ON CARPENTER ROAD MUST BE BACKFILLED WITH FLOWABLE FILL.

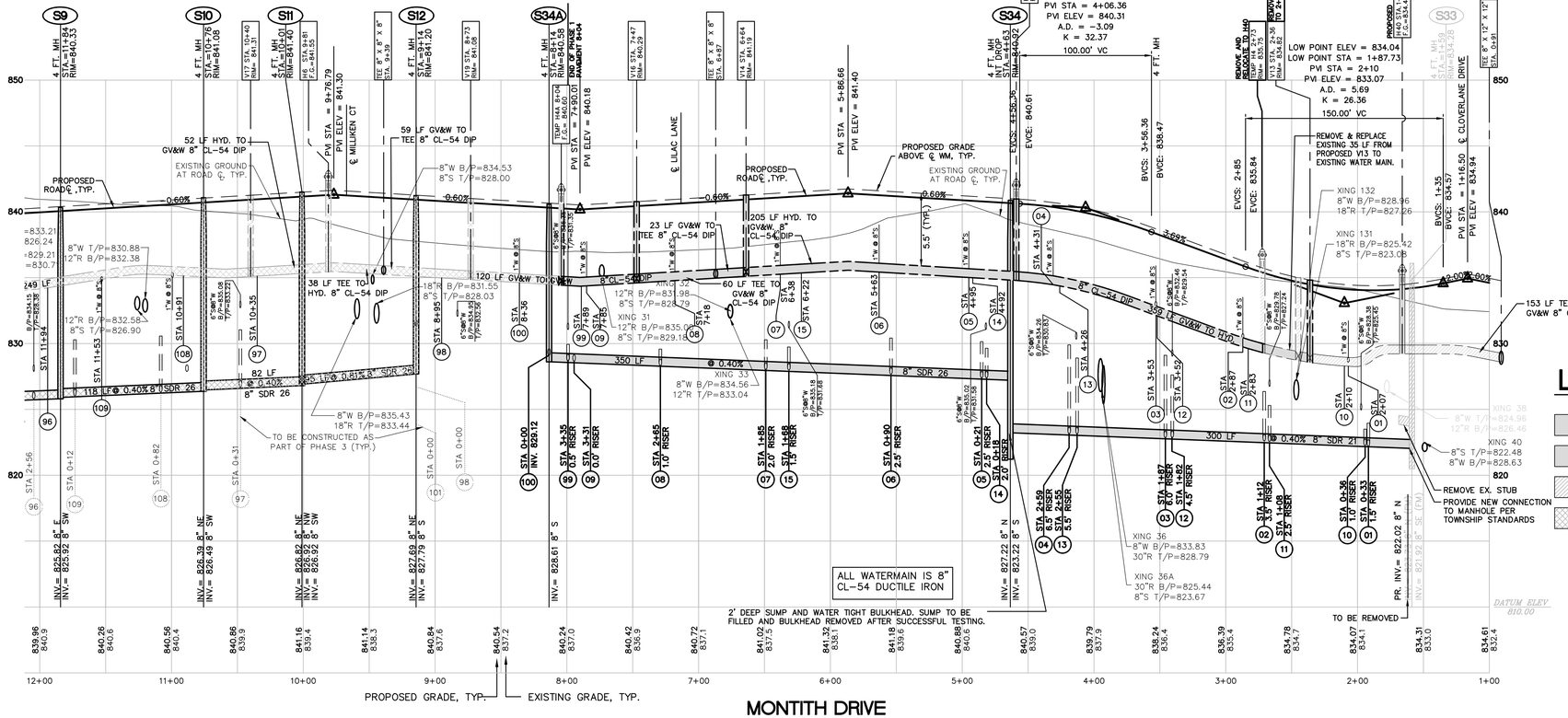
4. ALL WATER SERVICE BOXES SHALL BE PLACED ON THE RIGHT OF WAY LINE.

5. SERVICE LEADS SHALL BE BROUGHT TO WITHIN 10' OF THE BUILDINGS.

6. CLEANOUTS SHALL BE THE SAME SIZE AS THE SEWER LEAD, AND SHALL BE LOCATED AT ALL BENDS AND DISTANCES GREATER THAN 75 FEET.







LEGEND

- SANITARY TO BE BUILT IN PHASE 1
- WATERMAIN TO BE BUILT IN PHASE 1
- EX. UTILITY BUILT IN PREVIOUS PHASE
- FUTURE UTILITY TO BE BUILT IN PHASE 3

MONTITH DRIVE

SANITARY PROFILE S33 TO S34
SANITARY PROFILE S15 TO S09
WATERMAIN PROFILE TEE TO V17

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

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

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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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MONTITH DRIVE
ROAD, SANITARY, AND WATERMAIN
PLAN AND PROFILE

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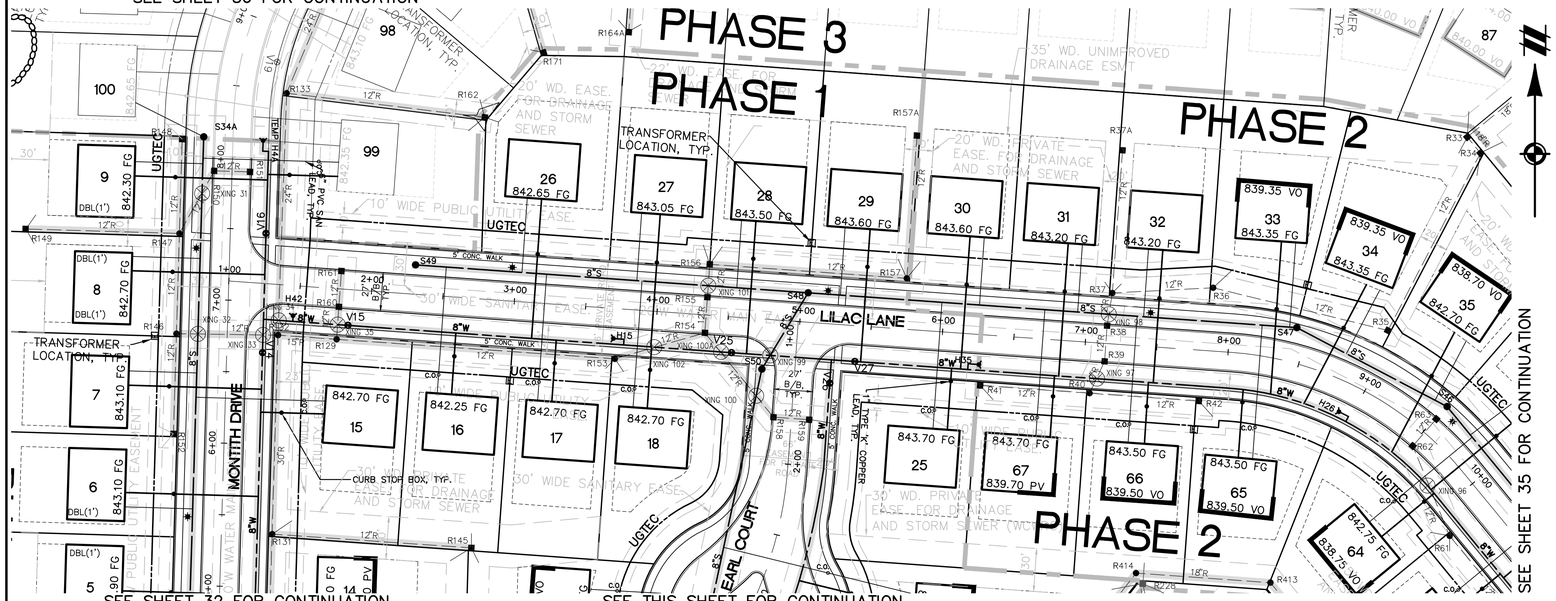
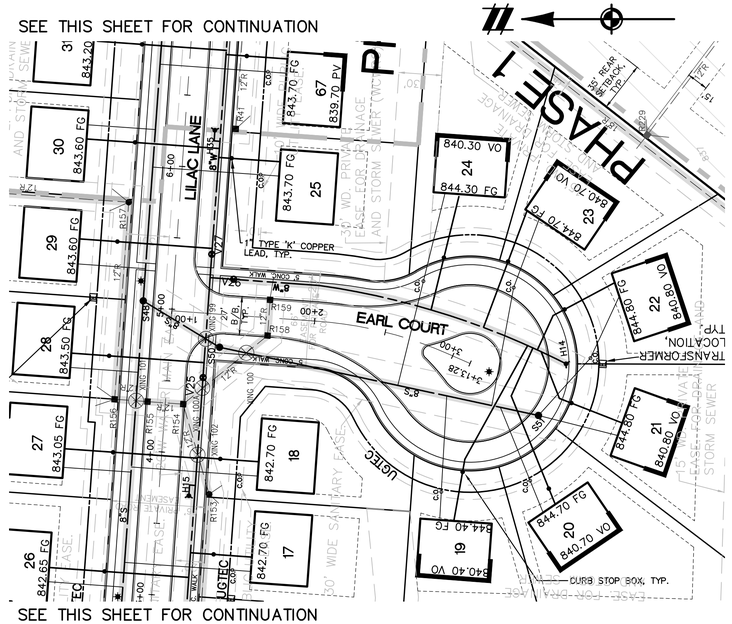
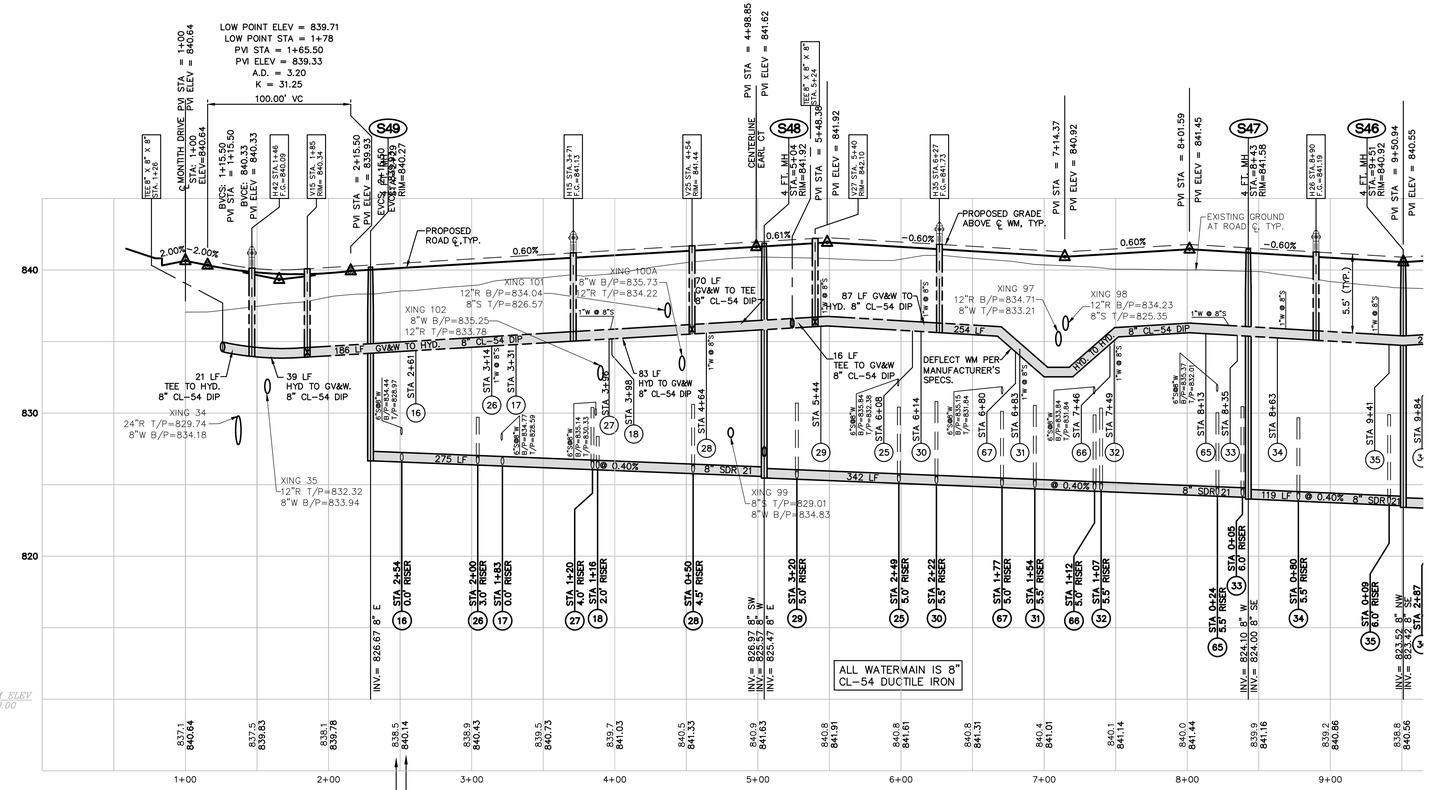
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

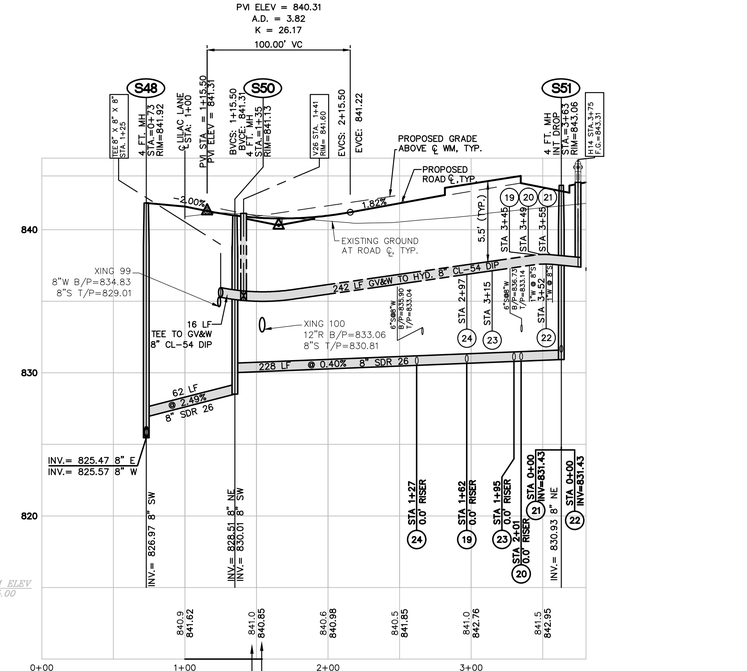
DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-06B-SWRS
JOB #: 12001809
FILE CODE:
SHEET NO.
32



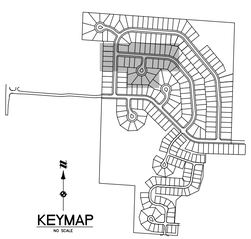




LILAC LANE - WEST
SANITARY PROFILE S49 TO S46
WATERMAIN PROFILE TEE TO H26
PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



EARL COURT
SANITARY PROFILE S48 TO S51
WATERMAIN PROFILE TEE TO H14
PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



NOTE:

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4. ALL WATER SERVICE BOXES SHALL BE PLACED ON THE RIGHT OF WAY LINE.

5. SERVICE LEADS SHALL BE BROUGHT TO WITHIN 10 FEET OF BUILDINGS.

6. CLEANOUTS SHALL BE THE SAME SIZE AS THE SERVICE LEAD, AND SHALL BE LOCATED AT ALL BENDS AND DISTANCES GREATER THAN 75 FEET.

LEGEND

- WATERMAIN TO BE BUILT IN PHASE 1
- SANITARY TO BE BUILT IN PHASE 1

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LILAC LANE-WEST & EARL COURT
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SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-06B-SWRS
JOB #: 12001809
FILE CODE:
SHEET NO. 34

SEE SHEET 31 FOR CONTINUATION

SEE SHEET 34 FOR CONTINUATION

SEE SHEET 30 FOR CONTINUATION

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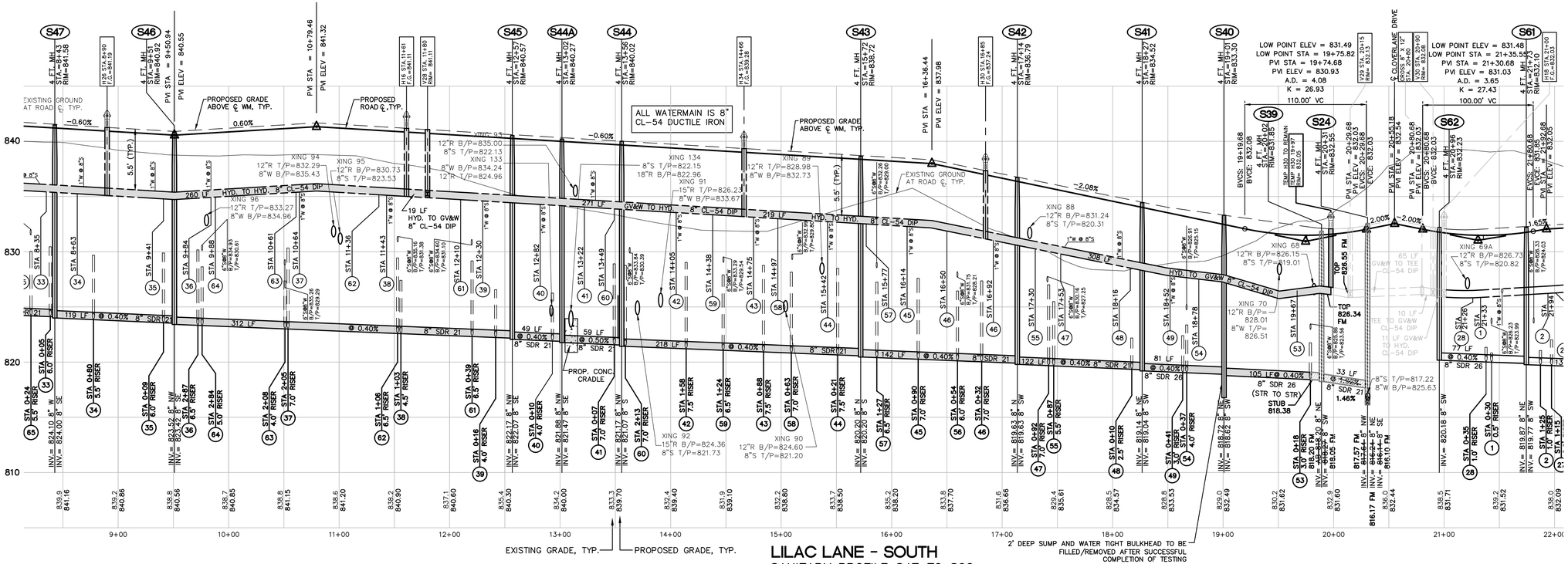
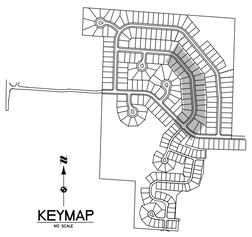
5. SERVICE LEADS SHALL BE BROUGHT TO WITHIN 10 FEET OF BUILDINGS.
6. CLEANOUTS SHALL BE THE SAME SIZE AS THE SEWER LEAD, AND LOCATED AT ALL BENDS AND DISTANCES GREATER THAN 75 FEET.



LEGEND

- SANITARY TO BE BUILT IN PHASE 1
- WATERMAIN TO BE BUILT IN PHASE 1
- EX. UTILITY BUILT IN PREVIOUS PHASE



LILAC LANE - SOUTH

SANITARY PROFILE S47 TO S62

WATERMAIN PROFILE H26 TO H18

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

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ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
LILAC LANE - SOUTH
ROAD, SANITARY, AND WATERMAIN
PLAN AND PROFILE

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
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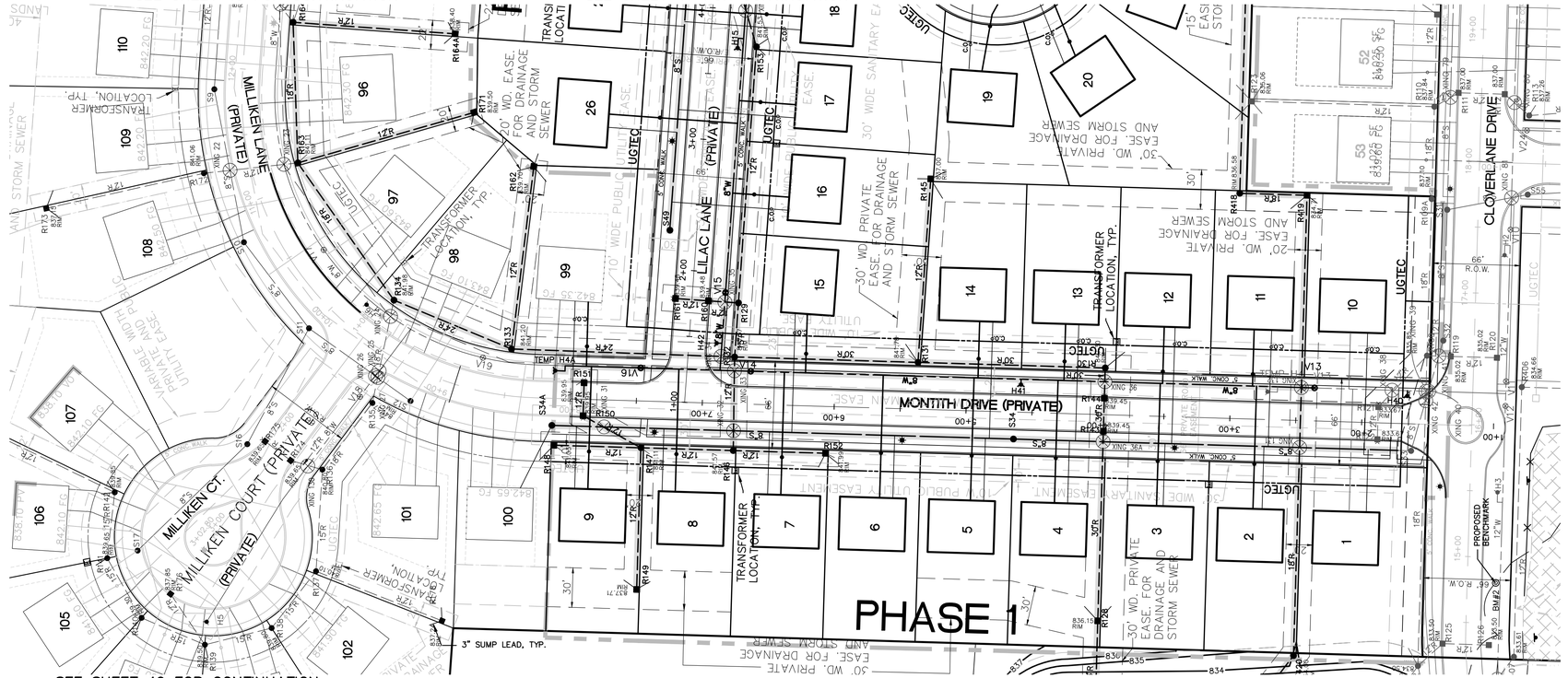
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-06B-SWRS
JOB #: 12001809
FILE CODE:
SHEET NO.
35



NOTES:

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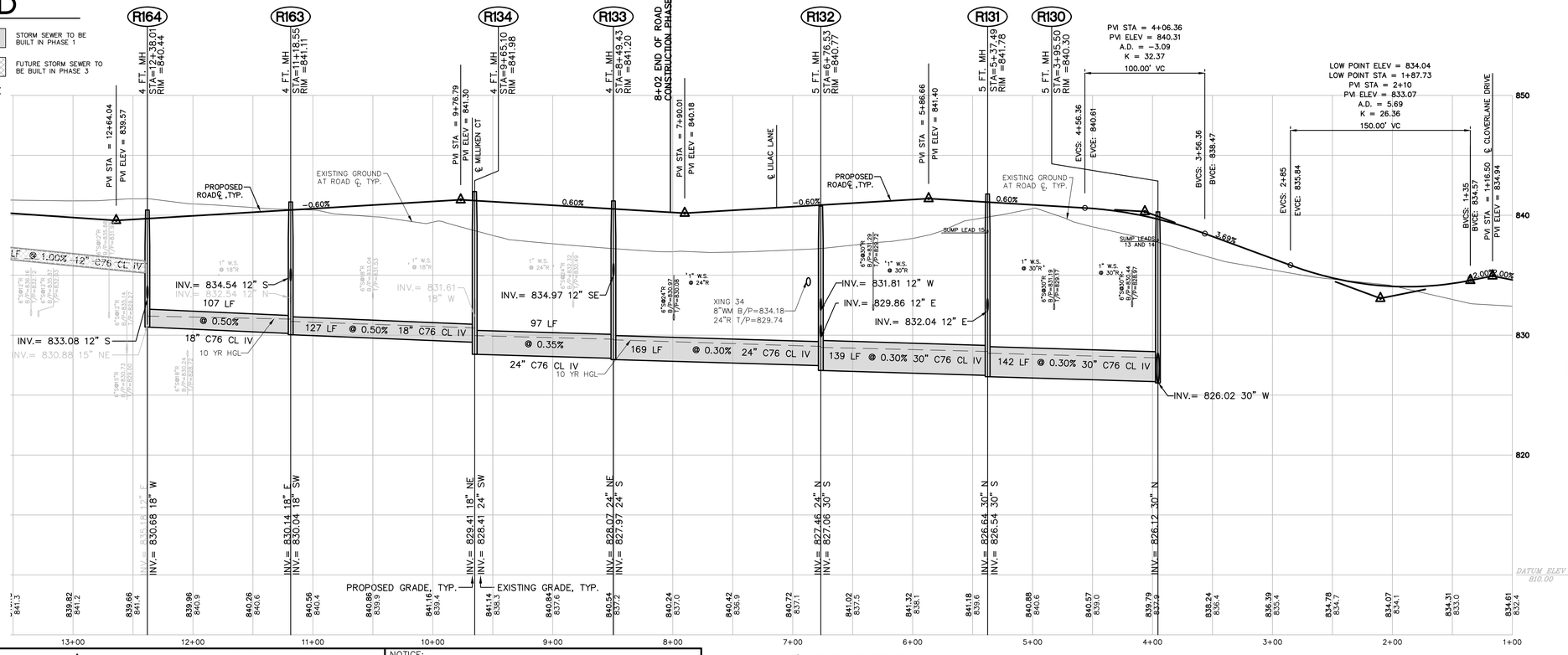
2. ALL UTILITY CROSSINGS MUST HAVE A MINIMUM 18 INCHES OF CLEARANCE BETWEEN PIPES.

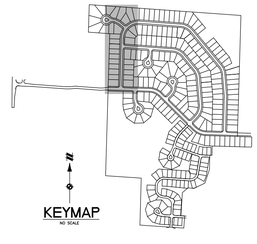
LEGEND

STORM SEWER TO BE BUILT IN PHASE 1

FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH





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MONTITH DRIVE
STORM SEWER R130 TO R163

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

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MONTITH DRIVE
ROAD AND STORM
PLAN AND PROFILE

DATE
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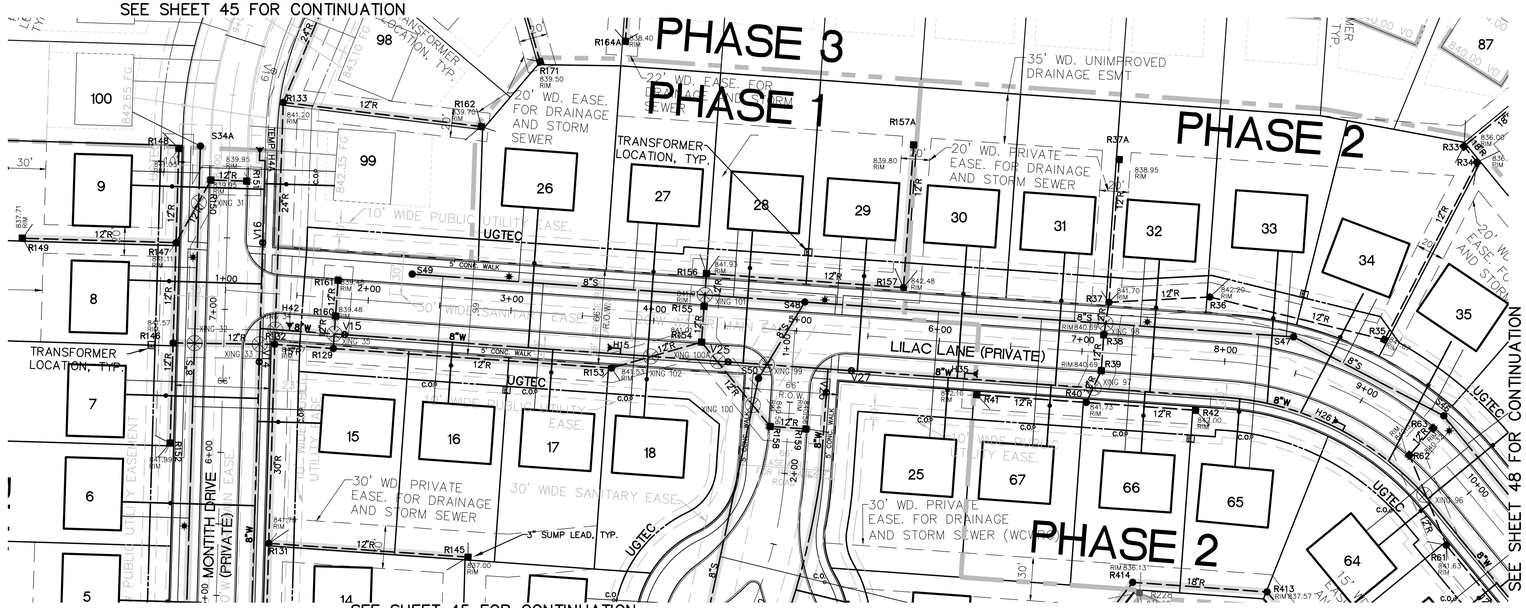
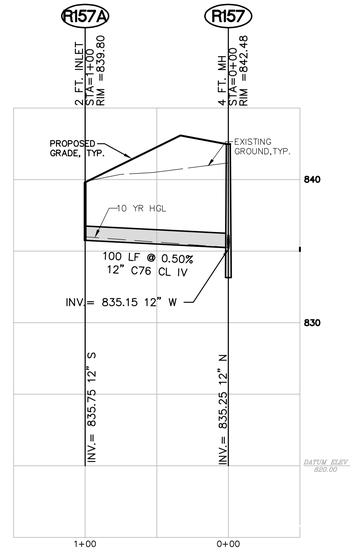
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

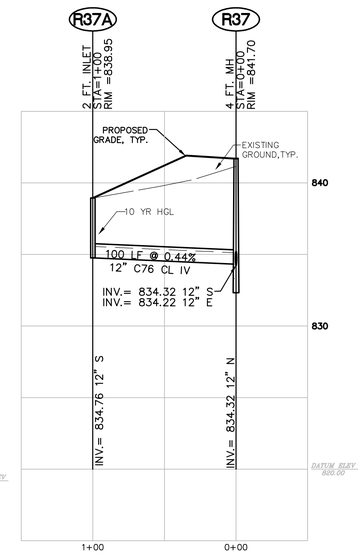
DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-07B-RS
JOB #: 12001809
FILE CODE:
SHEET NO. 45





STORM PROFILE R157A TO R157

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R37A TO R37

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

LEGEND

- STORM SEWER TO BE BUILT IN PHASE 1
- FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH

NOTES:

1. MDOT CLASS III GRANULAR MATERIAL, COMPACTED TO 95% MAXIMUM UNIT WEIGHT USING THE MDOT CONTROLLED DENSITY METHOD. THIS MATERIAL WILL BE USED TO BACKFILL ALL UTILITIES IN THE ROAD CORRIDOR. THE ROAD CORRIDOR IS FROM FRONT OF HOUSE TO FRONT OF HOUSE PER PITTSFIELD TOWNSHIP.

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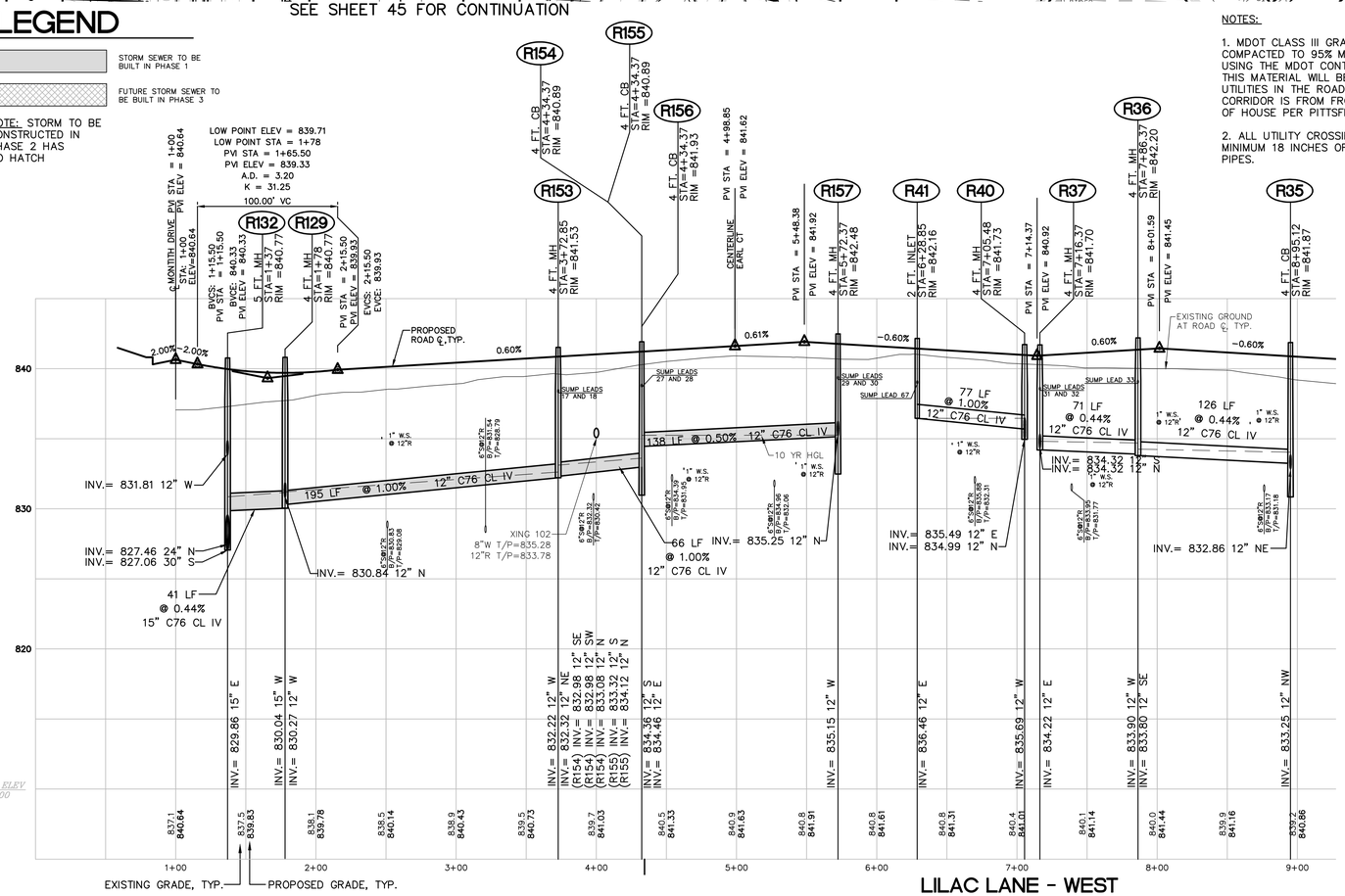
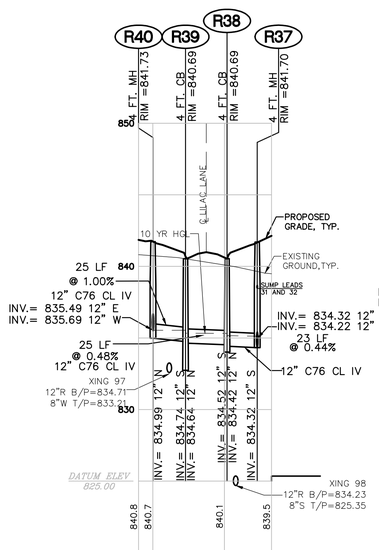


LILAC LANE - WEST

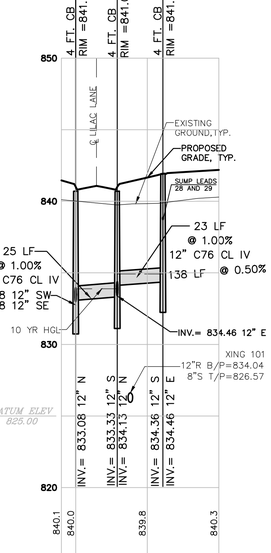
STORM SEWER R35 TO R41
STORM SEWER R132 TO R157

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



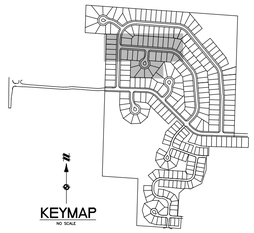
STORM PROFILE R40 TO R37

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R154 TO R157

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



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FINAL SITE PLAN
LILAC LANE AND EARL COURT
ROAD AND STORM
PLAN AND PROFILE

DATE
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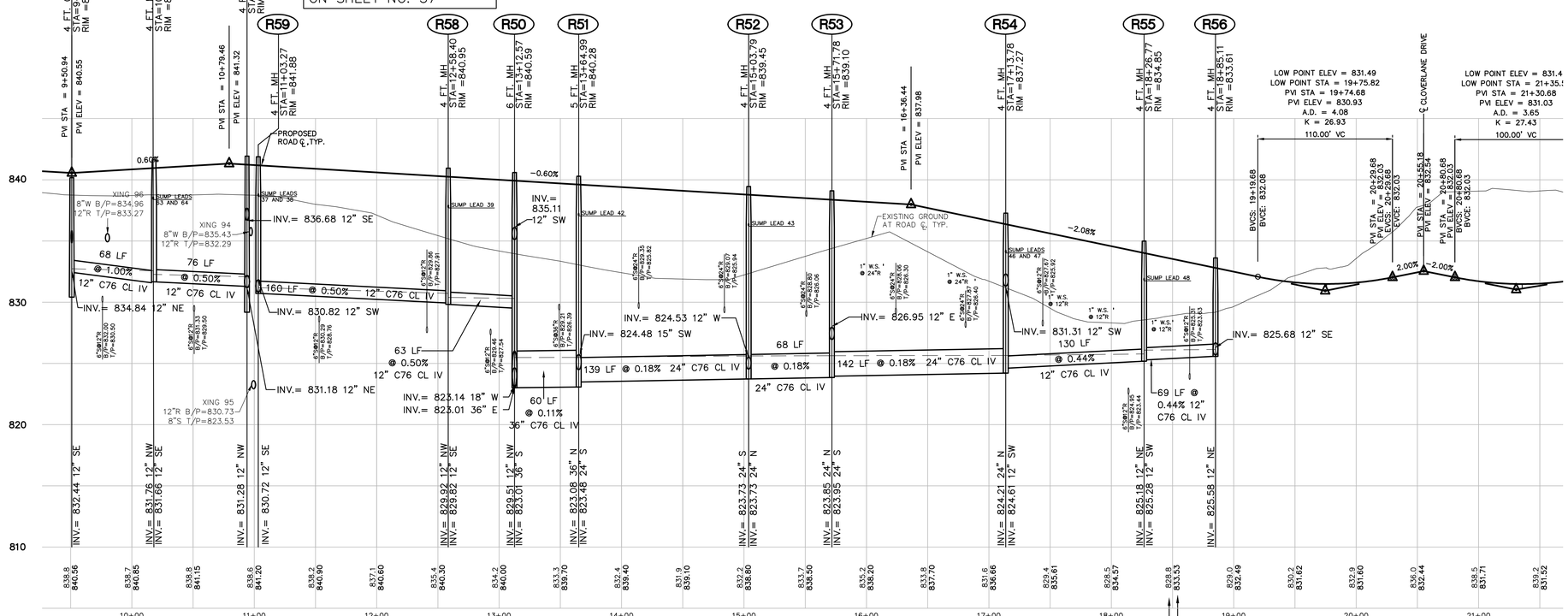
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-07B-RS
JOB #: 12001809
FILE CODE:
SHEET NO. 47

NOTE:
R60–R59 PROFILE FOUND ON SHEET NO. 57



NOTES:

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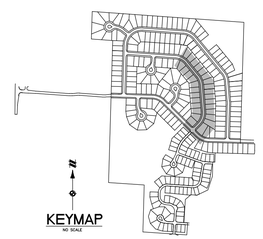
LEGEND

STORM SEWER TO BE BUILT IN PHASE 1

FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH



LILAC LANE - SOUTH
STORM SEWER R316 TO R317
STORM SEWER R56 TO R62

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

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FINAL SITE PLAN
LILAC LANE SOUTH ROAD AND STORM PLAN AND PROFILE

DATE
JUNE 6, 2014

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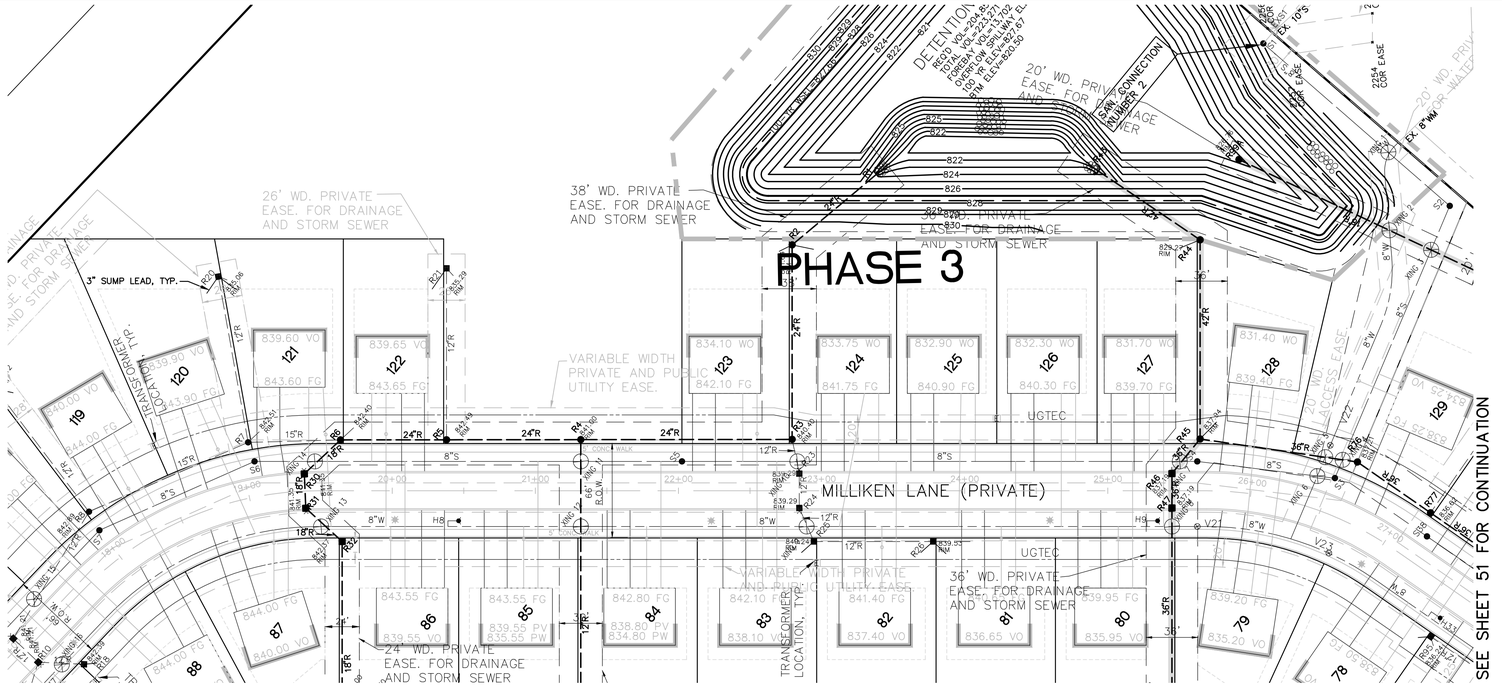
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-07B-RS
JOB #: 12001809
FILE CODE:
SHEET NO. 48



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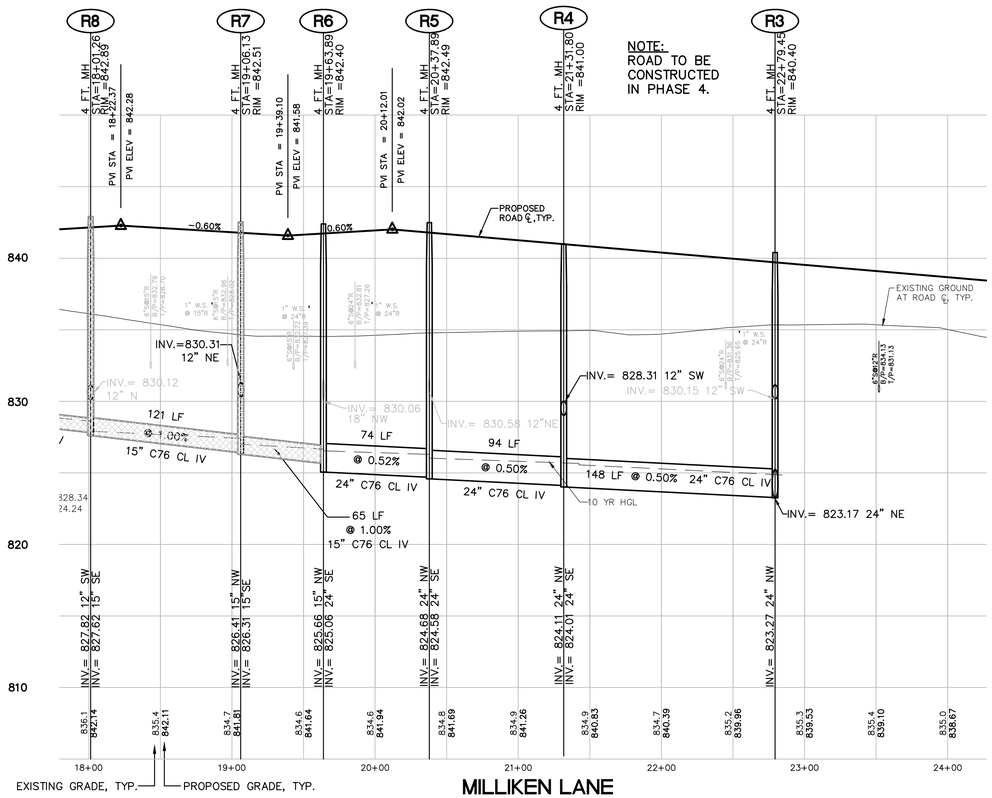
LEGEND

STORM SEWER TO BE BUILT IN PHASE 1

FUTURE STORM SEWER TO BE BUILT IN PHASE 3

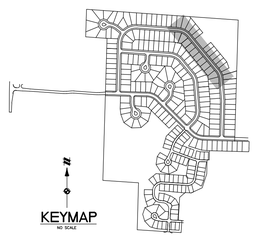
NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH



MILLIKEN LANE

STORM SEWER R45 TO R76
STORM SEWER R8 TO R22

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



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DATE
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2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-07B-RS
JOB #: 12001809
FILE CODE:
SHEET NO. 50

NOTES:

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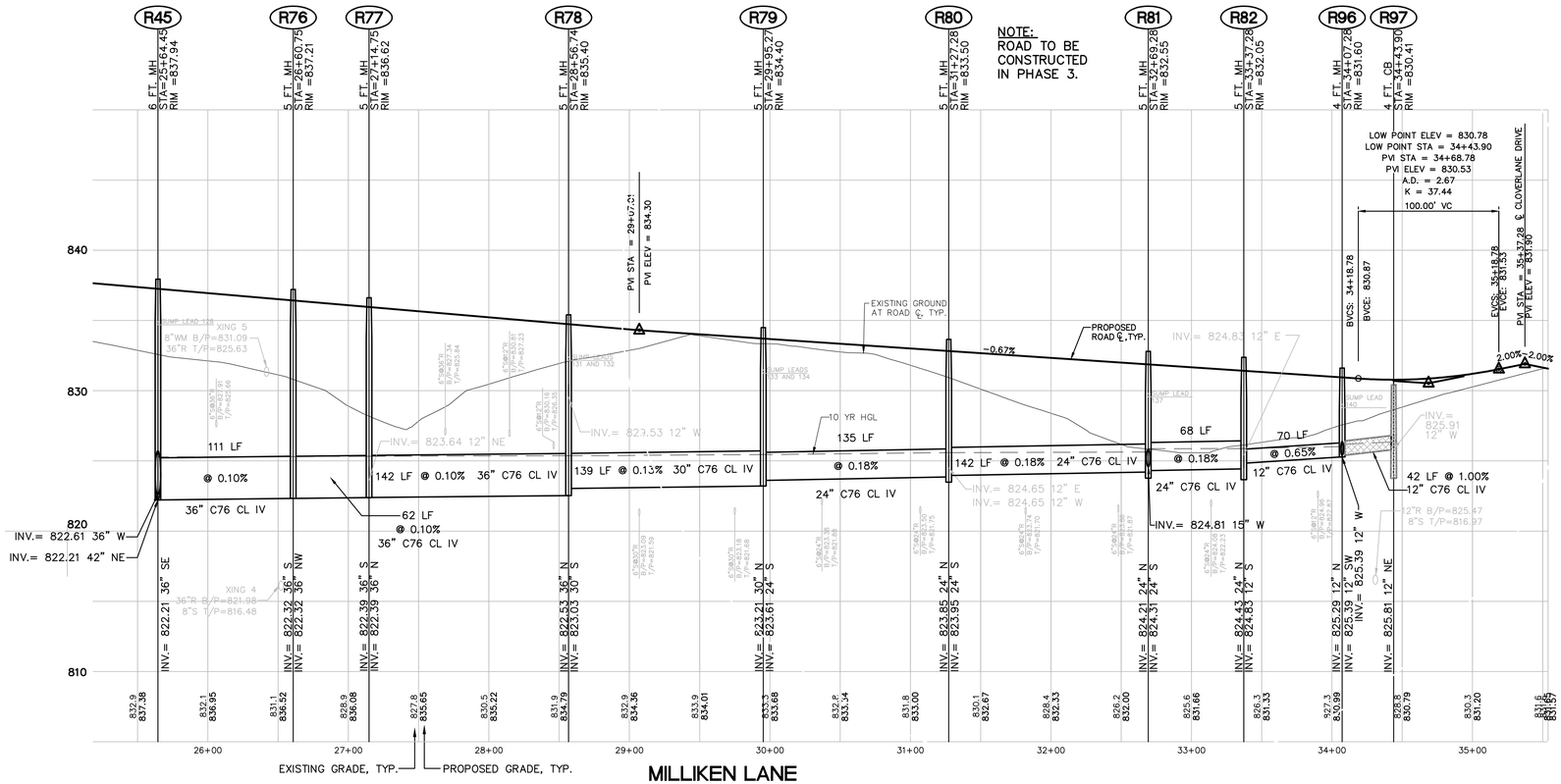
NOTE:
ROAD TO BE CONSTRUCTED IN PHASE 3.



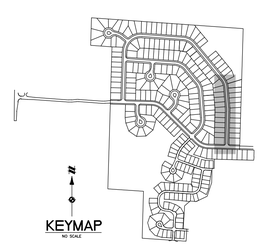
MILLIKEN LANE
STORM SEWER R45 TO R97

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

LEGEND

- STORM SEWER TO BE BUILT IN PHASE 1
- FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH



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FINAL SITE PLAN
MILLIKEN LANE
ROAD AND STORM
PLAN AND PROFILE

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2014-10-29 PER TWP.
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2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-07B-RS
JOB #: 12001809
FILE CODE:
SHEET NO. 51

LEGEND

- STORM SEWER TO BE BUILT IN PHASE 1
- FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH

STORM PROFILE R421 TO R50

PROFILE SCALE:
HORIZONTAL: 1"=60'
VERTICAL: 1"=6'

KEYMAP

NOTES:

1. MDOT CLASS III GRANULAR MATERIAL, COMPACTED TO 95% MAXIMUM UNIT WEIGHT USING THE MDOT CONTROLLED DENSITY METHOD. THIS MATERIAL WILL BE USED TO BACKFILL ALL UTILITIES IN THE ROAD CORRIDOR. THE ROAD CORRIDOR IS FROM FRONT OF HOUSE TO FRONT OF HOUSE PER PITTSFIELD TOWNSHIP.

2. ALL UTILITY CROSSINGS MUST HAVE A MINIMUM 18 INCHES OF CLEARANCE BETWEEN PIPES.

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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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
OFF ROAD STORM SEWER
PLAN & PROFILES

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-09-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 30 60
1" = 60 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-07B-RS
JOB #: 12001809
FILE CODE:
SHEET NO. 51A

SEE SHEET 65 FOR CONTINUATION

SEE SHEET 54 FOR CONTINUATION

NOTES:

1. MDOT CLASS III GRANULAR MATERIAL, COMPACTED TO 95% MAXIMUM UNIT WEIGHT USING THE MDOT CONTROLLED DENSITY METHOD. THIS MATERIAL WILL BE USED TO BACKFILL ALL UTILITIES IN THE ROAD CORRIDOR. THE ROAD CORRIDOR IS FROM FRONT OF HOUSE TO FRONT OF HOUSE PER PITTSFIELD TOWNSHIP.

2. ALL UTILITY CROSSINGS MUST HAVE A MINIMUM 18 INCHES OF CLEARANCE BETWEEN PIPES.

LEGEND

STORM SEWER TO BE BUILT IN PHASE 1

FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH

STORM PROFILE R86A TO R81
PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

STORM PROFILE R75 TO R54
PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

STORM PROFILE R317 TO R313
PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

STORM PROFILE R99 TO R96
PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

STORM PROFILE R56 TO R57
PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

KEYMAP
NO SCALE

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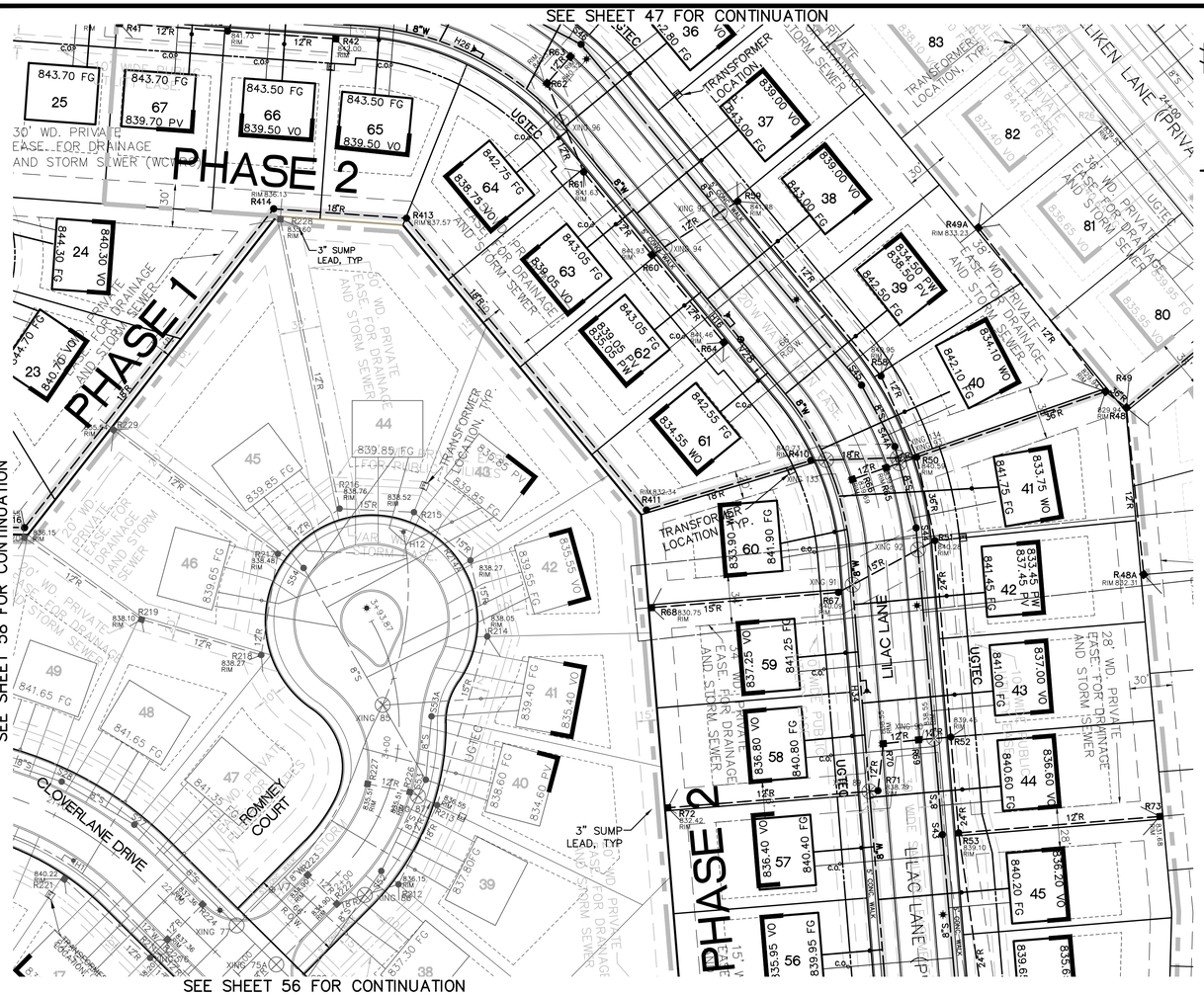
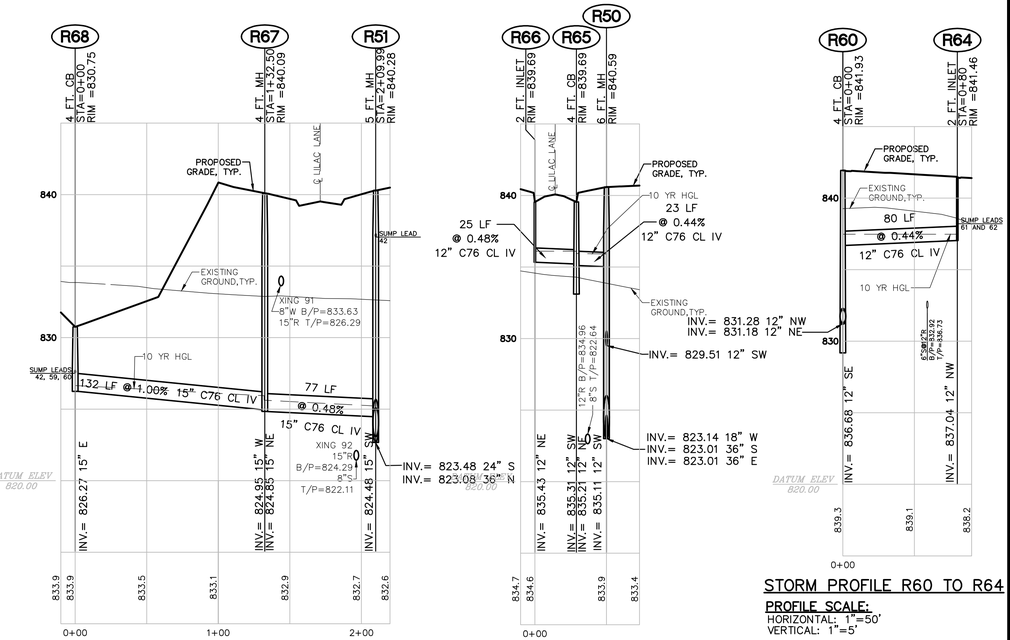
2015-01-13 PER TWP.

SCALE 0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-08-R
JOB #: 12001809
FILE CODE:
SHEET NO. 55





STORM PROFILE R68 TO R51

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

STORM PROFILE R66 TO R50

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

STORM PROFILE R60 TO R64

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

NOTES:

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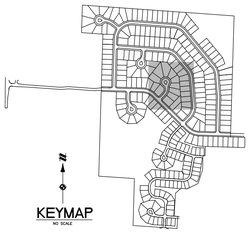
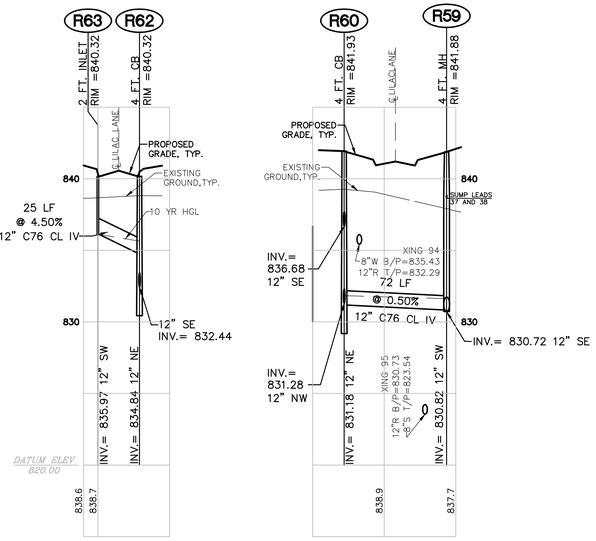
LEGEND

- STORM SEWER TO BE BUILT IN PHASE 1
- FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH



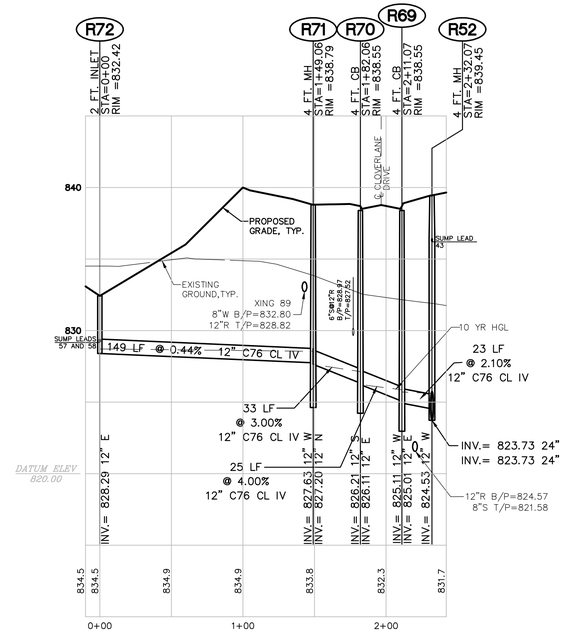


STORM PROFILE R63 TO R62

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

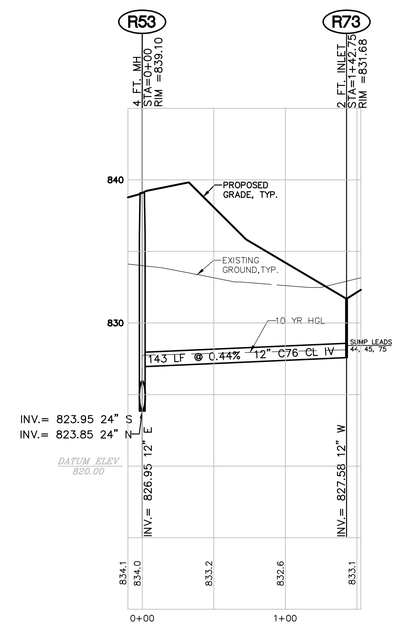
STORM PROFILE R60 TO R59

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R72 TO R52

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R53 TO R73

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

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FINAL SITE PLAN
OFF ROAD STORM SEWER
PLAN AND PROFILE

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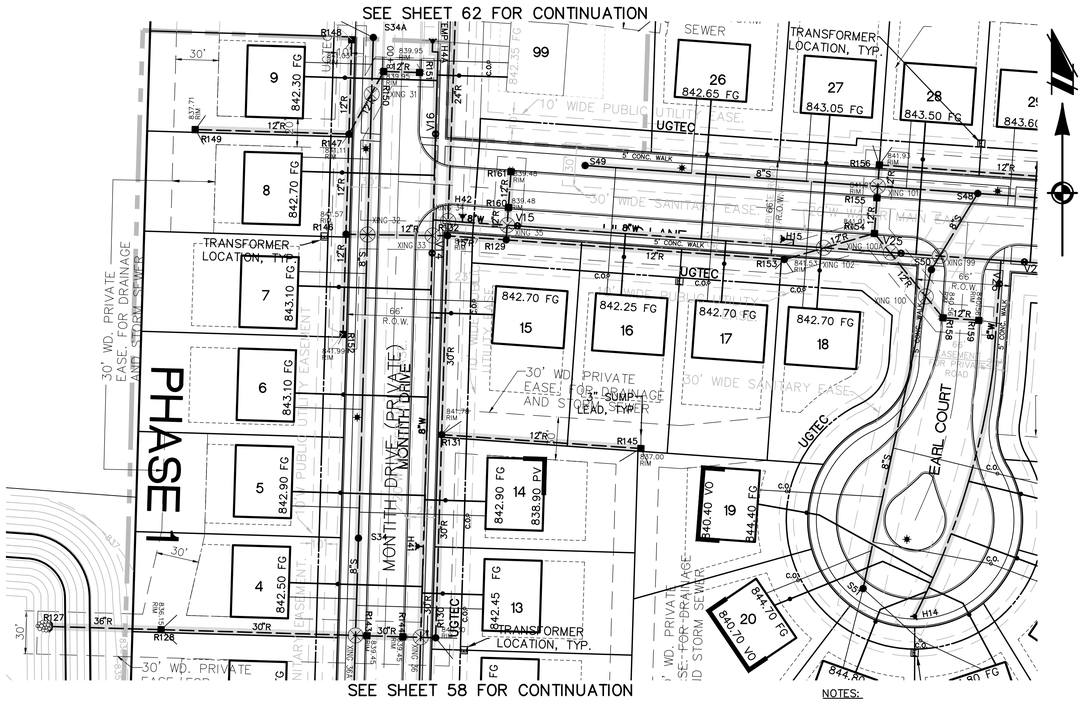
SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-08-R
JOB #: 12001809
FILE CODE:
SHEET NO.
57



LEGEND

STORM SEWER TO BE BUILT IN PHASE 1

FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH

NOTES:

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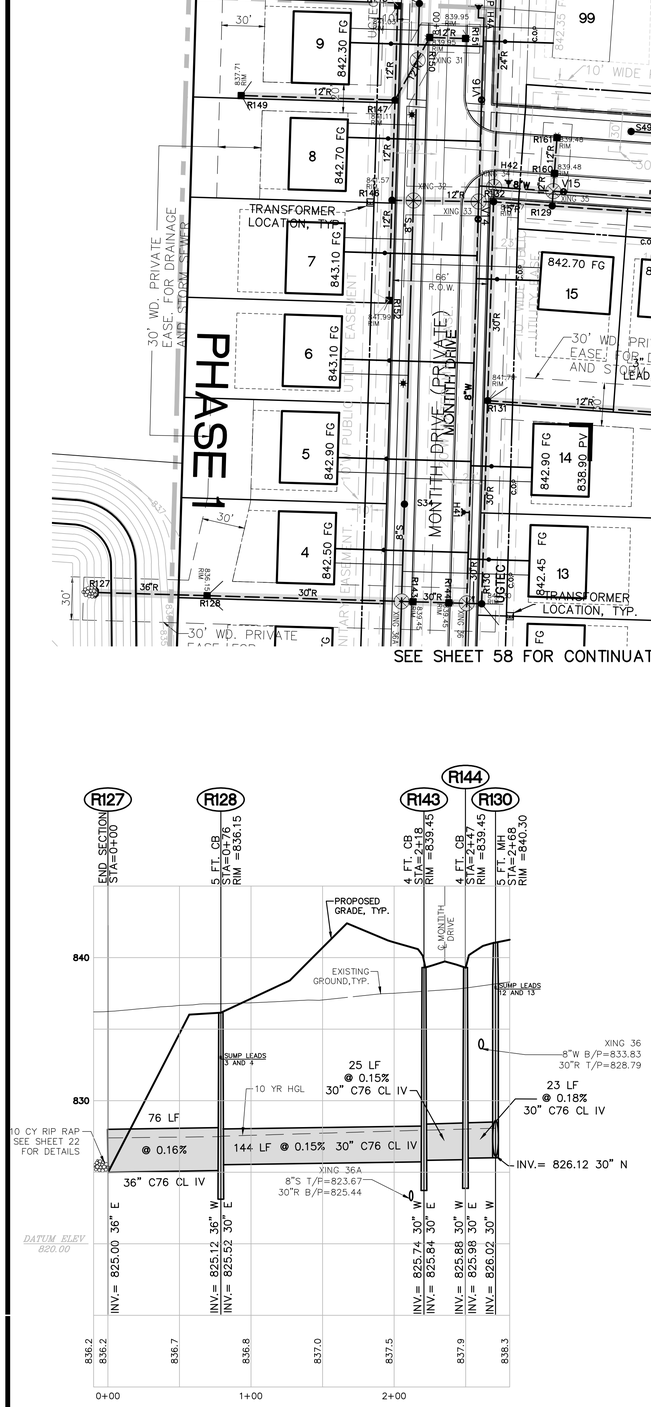
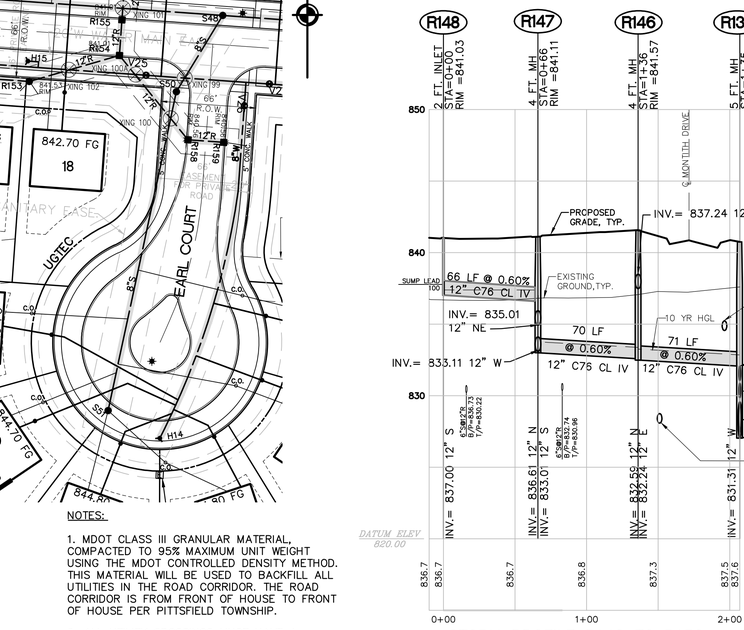


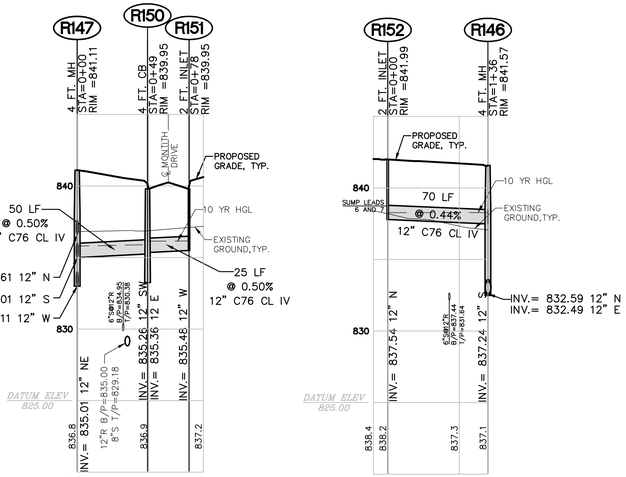
STORM PROFILE R127 TO R130

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R148 TO R132

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

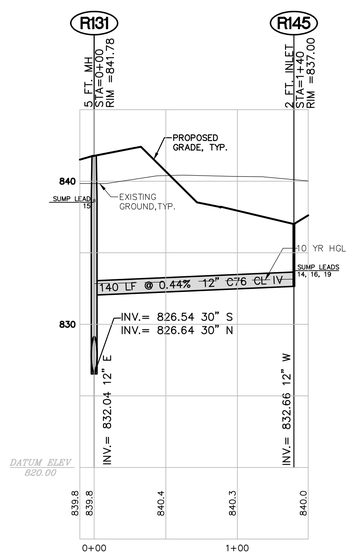


STORM PROFILE R147 TO R151

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

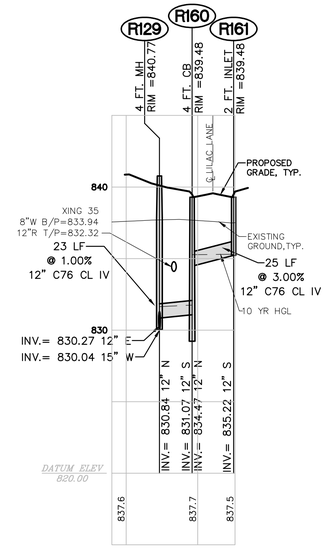
STORM PROFILE R152 TO R146

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



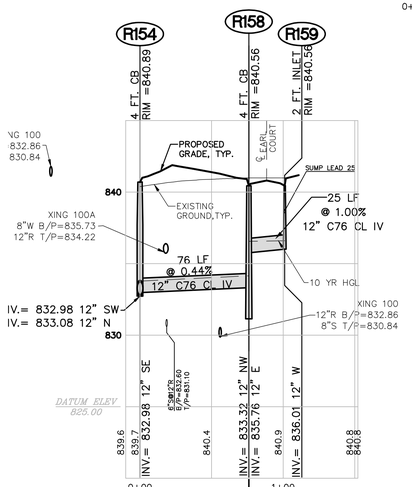
STORM PROFILE R131 TO R145

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



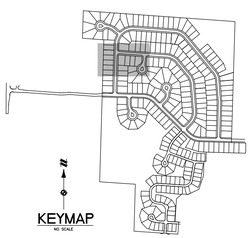
STORM PROFILE R161 TO R132

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R154 TO R159

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



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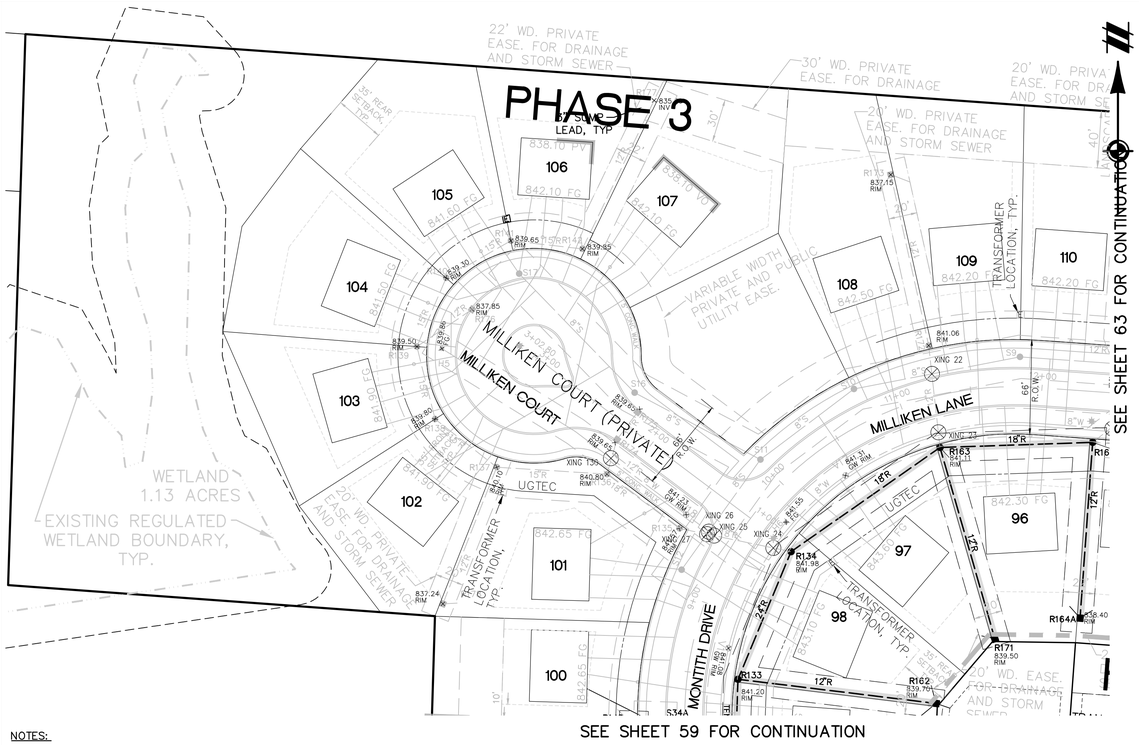
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-08-R
JOB #: 12001809
FILE CODE:
SHEET NO.
59



NOTES:

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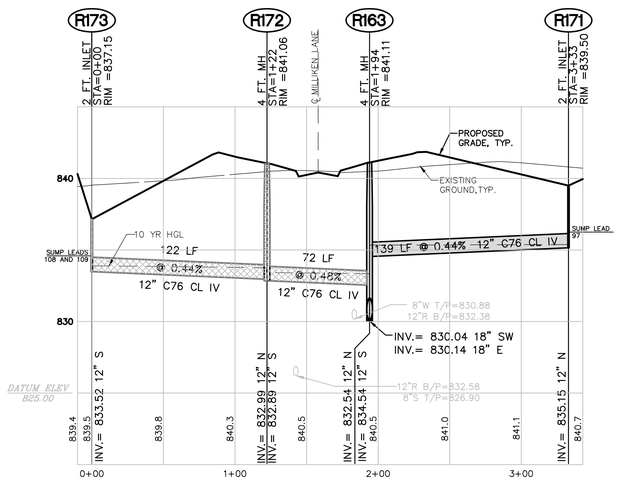


STORM PROFILE R173 TO R171

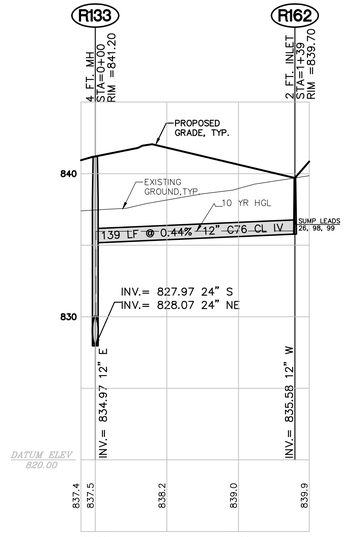
PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

LEGEND

STORM SEWER TO BE BUILT IN PHASE 1

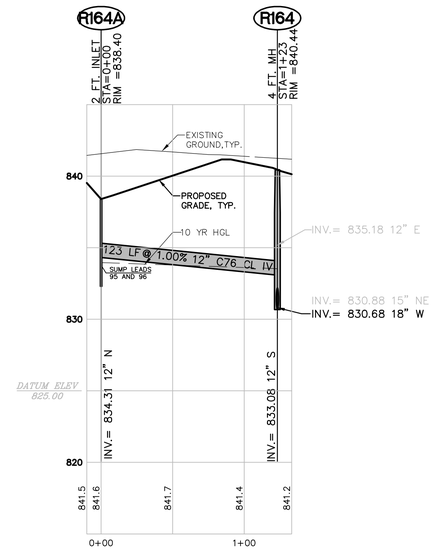
FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH



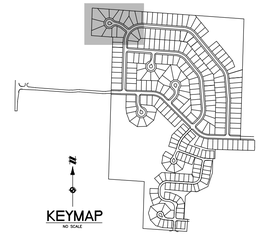
STORM PROFILE R133 TO R162

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R164A TO R164

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



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ARBOR RIDGE CROSSING, PHASES 1 & 2

FINAL SITE PLAN

MILLIKEN COURT ROAD AND STORM PLAN AND PROFILES

SECTION 13
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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

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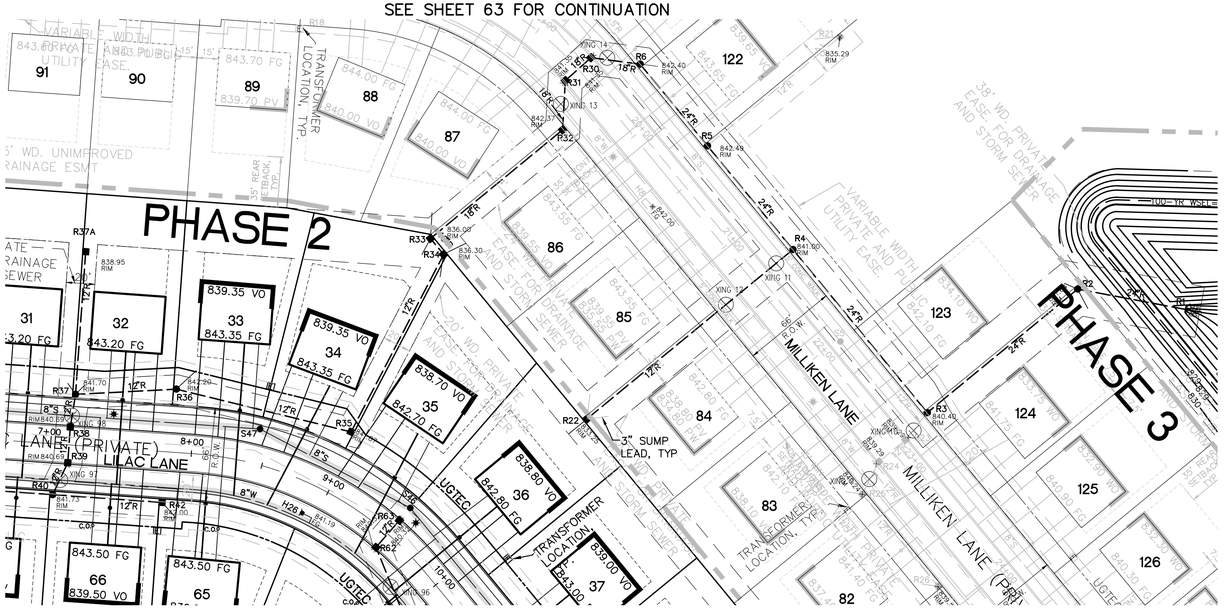
2015-01-13 PER TWP.

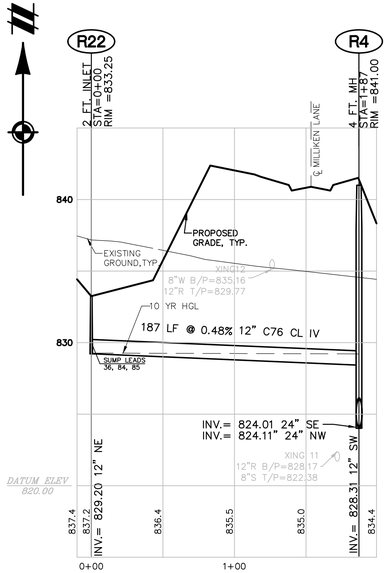
SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-09-R
JOB #: 12001809
FILE CODE:
SHEET NO.
62

SEE SHEET 63 FOR CONTINUATION

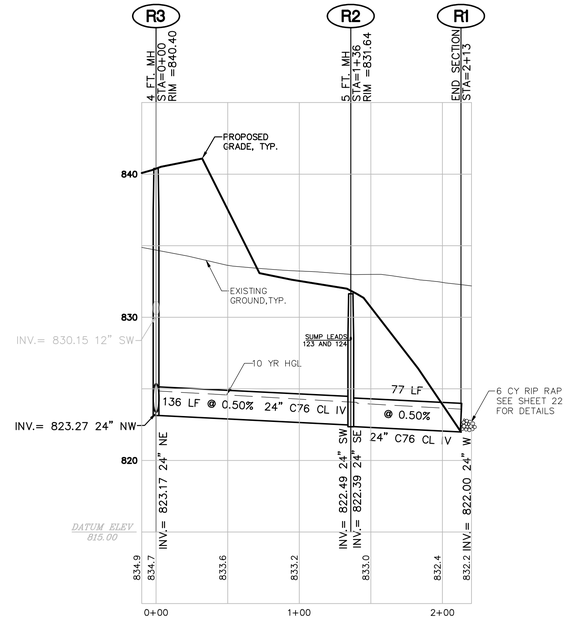


SEE SHEET 65 FOR CONTINUATION



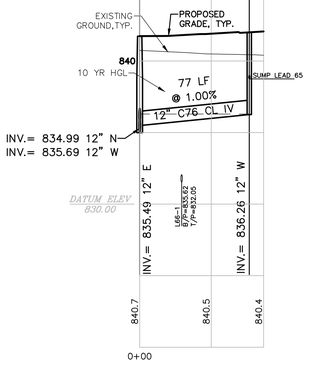
STORM PROFILE R22 TO R4

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



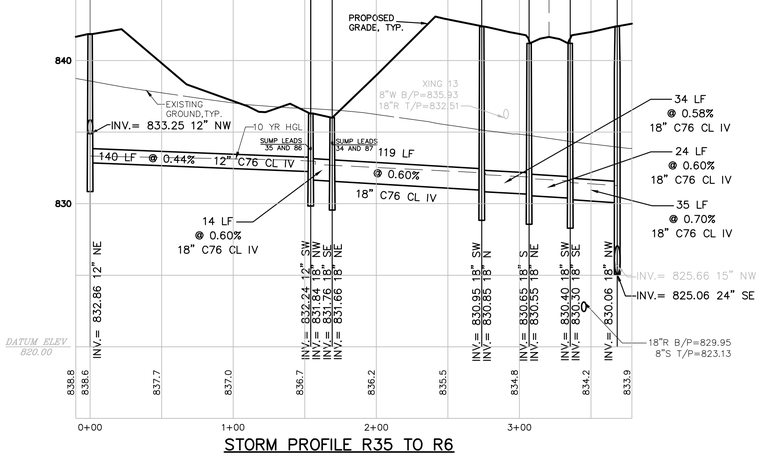
STORM PROFILE R3 TO R1

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R40 TO R42

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R35 TO R6

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

LEGEND

- STORM SEWER TO BE BUILT IN PHASE 1
- FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH

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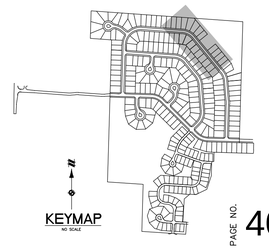

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ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
MILLIKEN LANE
ROAD AND STORM
PLAN AND PROFILES

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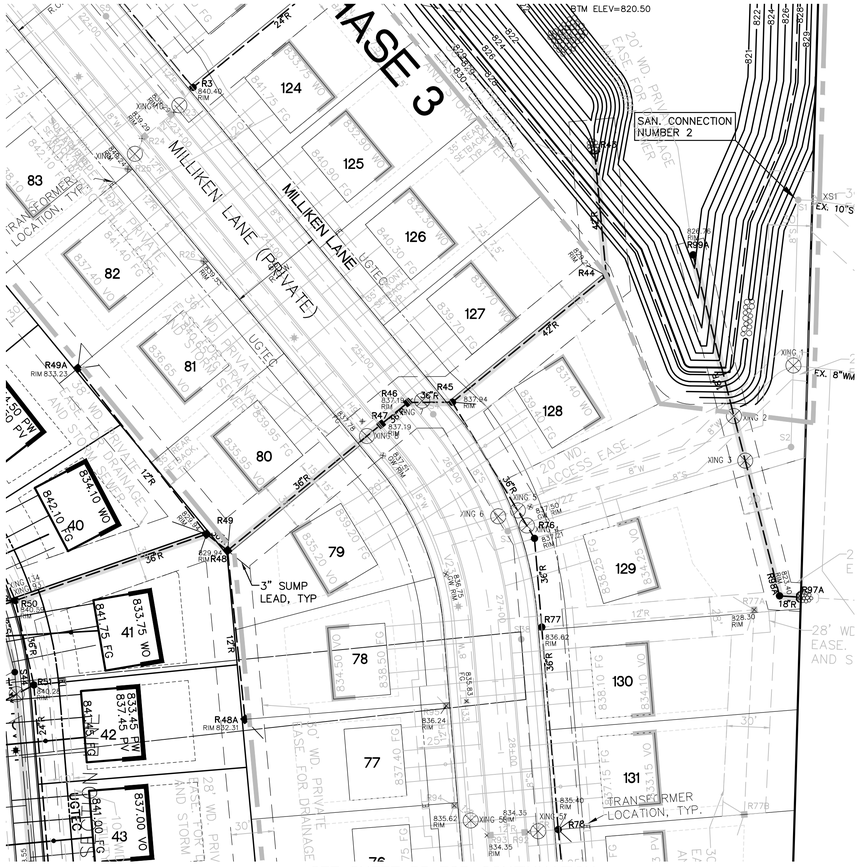
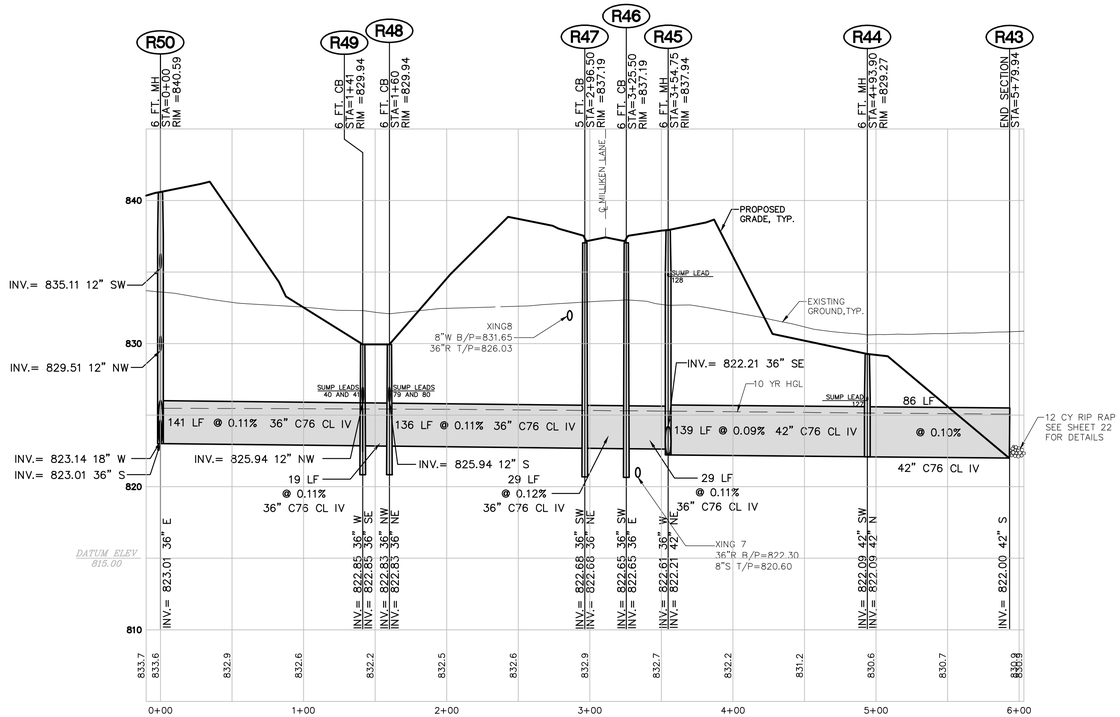
SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-09-R
JOB #: 12001809
FILE CODE:
SHEET NO.
64

SEE SHEET 64 FOR CONTINUATION

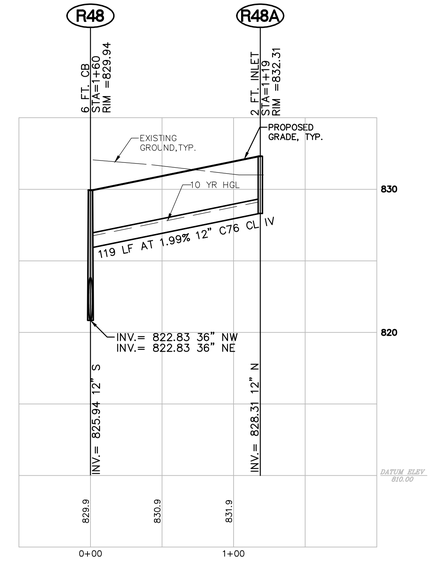


SEE SHEET 55 FOR CONTINUATION



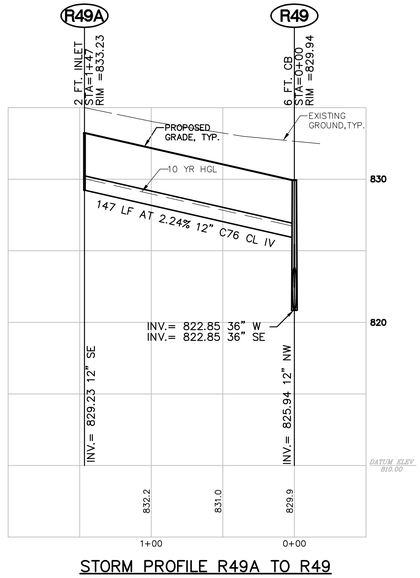
STORM PROFILE R50 TO R43

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



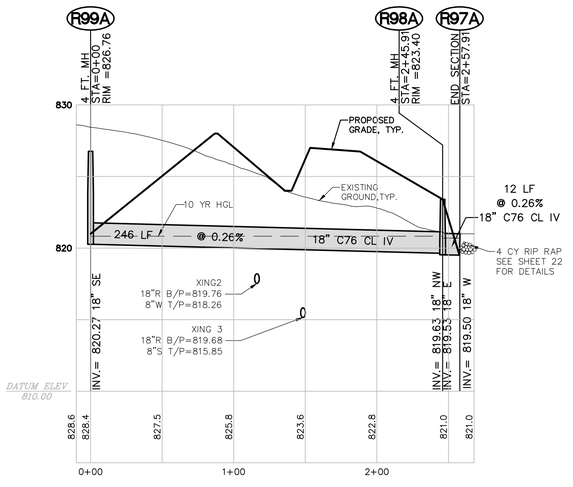
STORM PROFILE R48A TO R48

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R49A TO R49

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



STORM PROFILE R99A TO R97A

PROFILE SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

LEGEND

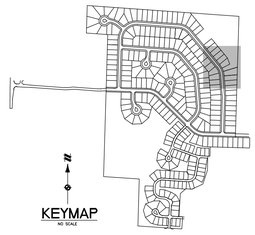
- STORM SEWER TO BE BUILT IN PHASE 1
- FUTURE STORM SEWER TO BE BUILT IN PHASE 3

NOTE: STORM TO BE CONSTRUCTED IN PHASE 2 HAS NO HATCH

NOTES:

1. MDOT CLASS III GRANULAR MATERIAL, COMPACTED TO 95% MAXIMUM UNIT WEIGHT USING THE MDOT CONTROLLED DENSITY METHOD. THIS MATERIAL WILL BE USED TO BACKFILL ALL UTILITIES IN THE ROAD CORRIDOR. THE ROAD CORRIDOR IS FROM FRONT OF HOUSE TO FRONT OF HOUSE PER PITTSFIELD TOWNSHIP.

2. ALL UTILITY CROSSINGS MUST HAVE A MINIMUM 18 INCHES OF CLEARANCE BETWEEN PIPES.



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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
MILLIKEN LANE
ROAD AND STORM
PLAN AND PROFILE

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-09-R
JOB #: 12001809
FILE CODE:
SHEET NO.
65

STORM SEWER STRUCTURE SCHEDULE

STORM SEWER STRUCTURE SCHEDULE

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:
R1	END SECTION		NO SUMP	BAR GRATE-	24" W. INV. 822.00		
R2	5 FT. MH	RIM 831.64	NO SUMP	EJIW 1040Z-B	24" SE. INV. 822.39	24" SW. INV. 822.49	
R3	4 FT. MH	RIM 840.40	NO SUMP	EJIW 1040Z-B	24" NE. INV. 823.17	12" SW. INV. 830.15	24" NW. INV. 823.27
R4	4 FT. MH	RIM 841.00	NO SUMP	EJIW 1040Z-B	24" SE. INV. 824.01	12" SW. INV. 828.31	24" NW. INV. 824.11
R5	4 FT. MH	RIM 842.49	NO SUMP	EJIW 1040Z-B	24" SE. INV. 824.58	12" NE. INV. 830.58	24" NW. INV. 824.68
R6	4 FT. MH	RIM 842.40	NO SUMP	EJIW 1040Z-B	24" SE. INV. 825.06	18" NW. INV. 830.06	15" NW. INV. 825.66
R7	4 FT. MH	RIM 842.51	NO SUMP	EJIW 1040Z-B	15" SE. INV. 826.31	12" NE. INV. 830.31	15" NW. INV. 826.41
R8	4 FT. MH	RIM 842.89	NO SUMP	EJIW 1040Z-B	15" SE. INV. 827.62	12" N. INV. 830.12	12" SW. INV. 827.82
R9	4 FT. CB	RIM 841.21	SUMP 826.85	EJIW 7045-M2	12" NE. INV. 828.85	12" S. INV. 828.95	
R10	4 FT. CB	RIM 841.21	SUMP 827.24	EJIW 7045-M2	12" N. INV. 829.24	12" SE. INV. 837.14	12" SW. INV. 829.34
R11	4 FT. MH	RIM 842.60	NO SUMP	EJIW 1040Z-B	12" NE. INV. 829.58	12" W. INV. 829.68	
R12	4 FT. MH	RIM 842.09	NO SUMP	EJIW 1040Z-B	12" E. INV. 830.25	12" N. INV. 830.35	
R13	4 FT. CB	RIM 840.98	SUMP 828.44	EJIW 7045-M2	12" S. INV. 830.44	12" N. INV. 830.54	
R14	4 FT. CB	RIM 840.98	SUMP 828.68	EJIW 7045-M2	12" S. INV. 830.68	12" N. INV. 830.77	
R15	4 FT. MH	RIM 842.13	NO SUMP	EJIW 1040Z-B	12" S. INV. 830.86	12" N. INV. 830.86	12" E. INV. 833.06
R16	2 FT. INLET	RIM 842.54	NO SUMP	EJIW 1040Z-02	12" W. INV. 838.50		
R17	2 FT. INLET	RIM 835.41	NO SUMP	EJIW 1040Z-02	12" S. INV. 831.33		
R18	2 FT. INLET	RIM 842.39	NO SUMP	EJIW 1040Z-02	12" NW. INV. 838.34		
R19	2 FT. INLET	RIM 835.12	NO SUMP	EJIW 1040Z-02	12" S. INV. 830.60		
R20	2 FT. INLET	RIM 835.16	NO SUMP	EJIW 1040Z-02	12" SW. INV. 830.83		

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:
R21	2 FT. INLET	RIM 835.29	NO SUMP	EJIW 1040Z-02	12" SW. INV. 831.10		
R22	2 FT. INLET	RIM 833.25	NO SUMP	EJIW 7045-M2	12" NE. INV. 829.20		
R23	4 FT. CB	RIM 839.29	SUMP 828.30	EJIW 7045-M2	12" NE. INV. 830.30	12" SW. INV. 830.40	
R24	4 FT. CB	RIM 839.29	SUMP 828.60	EJIW 1040Z-02	12" NE. INV. 830.60	12" SW. INV. 830.70	
R25	4 FT. CB	RIM 840.24	SUMP 828.86	EJIW 1040Z-02	12" NE. INV. 830.86	12" SE. INV. 832.06	
R26	2 FT. INLET	RIM 839.53	NO SUMP	EJIW 1040Z-02	12" NW. INV. 835.38		
R30	4 FT. CB	RIM 841.20	SUMP 828.30	EJIW 7045-M2	18" SE. INV. 830.30	18" SW. INV. 830.40	
R31	4 FT. CB	RIM 841.20	SUMP 828.55	EJIW 7045-M2	18" NE. INV. 830.55	18" S. INV. 830.65	
R32	4 FT. CB	RIM 842.37	SUMP 828.85	EJIW 1040Z-02	18" N. INV. 830.85	18" SW. INV. 830.95	
R33	4 FT. CB	RIM 836.00	SUMP 829.66	EJIW 1040Z-02	18" NE. INV. 831.66	18" SE. INV. 831.76	
R34	4 FT. CB	RIM 836.00	SUMP 829.84	EJIW 1040Z-02	18" NW. INV. 831.84	12" SW. INV. 832.24	
R35	4 FT. CB	RIM 841.87	SUMP 830.86	EJIW 1040Z-02	12" NE. INV. 832.86	12" NW. INV. 833.25	
R36	4 FT. MH	RIM 842.20	NO SUMP	EJIW 1040Z-B	12" SE. INV. 833.80	12" W. INV. 833.90	
R37	4 FT. MH	RIM 841.70	NO SUMP	EJIW 1040Z-B	12" E. INV. 834.22	12" S. INV. 834.32	
R38	4 FT. CB	RIM 840.54	SUMP 832.42	EJIW 7045-M2	12" N. INV. 834.42	12" S. INV. 834.52	
R39	4 FT. CB	RIM 840.54	SUMP 832.64	EJIW 7045-M2	12" N. INV. 834.64	12" S. INV. 834.74	
R40	4 FT. MH	RIM 841.73	NO SUMP	EJIW 1040Z-B	12" N. INV. 834.99	12" E. INV. 835.49	12" W. INV. 835.69
R41	2 FT. INLET	RIM 842.16	NO SUMP	EJIW 1040Z-02	12" E. INV. 836.46		
R42	2 FT. INLET	RIM 842.00	NO SUMP	EJIW 1040Z-02	12" W. INV. 836.26		
R43	END SECTION		NO SUMP	42" S. INV. 822.00			

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:	Pipe 3 In:	Pipe 4 In:
R44	6 FT. MH	RIM 829.27	NO SUMP	EJIW 1040Z-B	42" N. INV. 822.09	42" SW. INV. 822.09			
R45	6 FT. MH	RIM 837.94	NO SUMP	EJIW 1040Z-B	42" NE. INV. 822.21	36" SE. INV. 822.21	36" W. INV. 822.61		
R46	6 FT. CB	RIM 837.04	SUMP 820.65	EJIW 7045-M2	36" E. INV. 822.65	36" SW. INV. 822.65			
R47	5 FT. CB	RIM 837.04	SUMP 820.68	EJIW 7045-M2	36" NE. INV. 822.68	36" SW. INV. 822.68			
R48	6 FT. CB	RIM 829.94	SUMP 820.83	EJIW 1040Z-02	36" NE. INV. 822.83	36" NW. INV. 822.83			
R49	6 FT. CB	RIM 829.94	SUMP 820.85	EJIW 1040Z-02	36" SE. INV. 822.85	36" W. INV. 822.85			
R50	6 FT. MH	RIM 840.59	NO SUMP	EJIW 1040Z-B	36" E. INV. 823.01	12" SW. INV. 835.11	12" NW. INV. 829.51	36" S. INV. 823.01	18" W. INV. 823.14
R51	5 FT. MH	RIM 840.28	NO SUMP	EJIW 1040Z-B	36" N. INV. 823.08	15" SW. INV. 824.48	24" S. INV. 823.48		
R52	4 FT. MH	RIM 839.45	NO SUMP	EJIW 1040Z-B	24" N. INV. 823.73	12" W. INV. 824.53	24" S. INV. 823.73		
R53	4 FT. MH	RIM 839.10	NO SUMP	EJIW 1040Z-B	24" N. INV. 823.85	12" E. INV. 826.95	24" S. INV. 823.95		
R54	4 FT. MH	RIM 837.27	NO SUMP	EJIW 1040Z-B	24" N. INV. 824.21	12" SW. INV. 831.31	12" SW. INV. 824.61		
R55	4 FT. MH	RIM 834.85	NO SUMP	EJIW 1040Z-B	12" NE. INV. 825.18	12" SW. INV. 825.28			
R56	4 FT. MH	RIM 833.61	NO SUMP	EJIW 1040Z-B	12" NE. INV. 825.58	12" SE. INV. 825.68			
R57	2 FT. INLET	RIM 830.15	NO SUMP	EJIW 1040Z-02	12" NW. INV. 826.01				
R58	4 FT. MH	RIM 840.95	NO SUMP	EJIW 1040Z-B	12" SE. INV. 829.82	12" NW. INV. 829.92			
R59	4 FT. MH	RIM 841.88	NO SUMP	EJIW 1040Z-B	12" SE. INV. 830.72	12" SW. INV. 830.82			
R60	4 FT. CB	RIM 841.93	SUMP 829.18	EJIW 1040Z-02	12" NE. INV. 831.18	12" SE. INV. 836.68	12" NW. INV. 831.28		
R61	4 FT. MH	RIM 841.63	NO SUMP	EJIW 1040Z-B	12" SE. INV. 831.66	12" NW. INV. 831.76			
R62	4 FT. CB	RIM 840.17	SUMP 830.44	EJIW 7045-M2	12" SE. INV. 832.44	12" NE. INV. 834.84			
R63	2 FT. INLET	RIM 840.17	NO SUMP	EJIW 7045-M2	12" SW. INV. 835.97				

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:	Pipe 3 In:
R64	2 FT. INLET	RIM 841.46	NO SUMP	EJIW 1040Z-02	12" NW. INV. 837.04			
R65	4 FT. CB	RIM 839.54	SUMP 833.21	EJIW 7045-M2	12" NE. INV. 835.21	12" SW. INV. 835.31		
R66	2 FT. INLET	RIM 839.54	NO SUMP	EJIW 7045-M2	12" NE. INV. 835.43			
R67	4 FT. MH	RIM 840.09	NO SUMP	EJIW 1040Z-B	15" NE. INV. 824.85	15" W. INV. 824.95		
R68	4 FT. CB	RIM 830.75	SUMP 824.27	EJIW 1040Z-02	15" E. INV. 826.27			
R69	4 FT. CB	RIM 838.39	SUMP 823.01	EJIW 7045-M2	12" E. INV. 825.01	12" W. INV. 825.11		
R70	4 FT. CB	RIM 838.39	SUMP 824.11	EJIW 7045-M2	12" E. INV. 826.11	12" S. INV. 826.21		
R71	4 FT. MH	RIM 838.79	NO SUMP	EJIW 1040Z-B	12" N. INV. 827.20	12" W. INV. 827.63		
R72	2 FT. INLET	RIM 832.42	NO SUMP	EJIW 1040Z-02	12" E. INV. 828.28			
R73	2 FT. INLET	RIM 831.68	NO SUMP	EJIW 1040Z-02	12" W. INV. 827.58			
R74	4 FT. CB	RIM 835.72	SUMP 829.46	EJIW 7045-M2	12" NE. INV. 831.46	12" W. INV. 831.56		
R75	2 FT. INLET	RIM 835.72	NO SUMP	EJIW 7045-M2	12" E. INV. 831.68			
R76	5 FT. MH	RIM 837.21	NO SUMP	EJIW 1040Z-B	36" NW. INV. 822.32	36" S. INV. 822.32		
R77	5 FT. MH	RIM 836.62	NO SUMP	EJIW 1040Z-B	36" N. INV. 822.39	12" NE. INV. 823.64	36" S. INV. 822.39	
R77A	2 FT. INLET	RIM 828.30	NO SUMP	EJIW 1040Z-02	12" SW. INV. 824.29			
R78	5 FT. MH	RIM 835.40	NO SUMP	EJIW 1040Z-B	36" N. INV. 822.53	12" W. INV. 829.53	30" S. INV. 823.03	
R79	5 FT. MH	RIM 834.40	NO SUMP	EJIW 1040Z-B	30" N. INV. 823.21	24" S. INV. 823.61		
R80	5 FT. MH	RIM 833.50	NO SUMP	EJIW 1040Z-B	24" N. INV. 823.85	12" E. INV. 824.65	12" W. INV. 824.65	24" S. INV. 823.95
R81	5 FT. MH	RIM 832.55	NO SUMP	EJIW 1040Z-B	24" N. INV. 824.21	15" W. INV. 824.81	24" S. INV. 824.31	
R82	5 FT. MH	RIM 832.05	NO SUMP	EJIW 1040Z-B	24" N. INV. 824.43	12" S. INV. 824.83	12" E. INV. 824.83	

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:
R83	2 FT. INLET	RIM 829.35	NO SUMP	EJIW 1040Z-02	12" W. INV. 825.34		
R84	4 FT. CB	RIM 831.74	SUMP 822.89	EJIW 7045-M2	15" E. INV. 824.89	15" W. INV. 824.99	
R85	4 FT. CB	RIM 831.74	SUMP 823.08	EJIW 7045-M2	15" E. INV. 825.08	15" W. INV. 825.18	
R86	4 FT. CB	829.77	SUMP 823.76	EJIW 1040Z-02	15" E. INV. 825.76		
R87	4 FT. CB	RIM 832.60	SUMP 822.74	EJIW 7045-M2	12" E. INV. 824.74	12" W. INV. 824.84	
R88	4 FT. CB	RIM 832.60	SUMP 822.98	EJIW 7045-M2	12" E. INV. 824.98	12" W. INV. 825.08	
R89	4 FT. MH	RIM 833.65	NO SUMP	EJIW 1040Z-B	12" E. INV. 825.17	12" N. INV. 829.17	
R90	2 FT. INLET	RIM 834.08	NO SUMP	EJIW 1040Z-02	12" S. INV. 829.46		
R91	2 FT. INLET	RIM 829.50	NO SUMP	EJIW 1040Z-02	12" W. INV. 825.44		
R92	4 FT. CB	RIM 834.35	SUMP 827.74	EJIW 7045-M2	12" E. INV. 829.74	12" W. INV. 829.84	
R93	4 FT. CB	RIM 834.35	SUMP 828.13	EJIW 7045-M2	12" E. INV. 830.13	12" NW. INV. 830.23	
R94	4 FT. CB	RIM 835.62	SUMP 828.54	EJIW 1040Z-02	12" SE. INV. 830.54	12" N. INV. 830.64	
R95	2 FT. INLET	RIM 836.24	NO SUMP	EJIW 1040Z-02	12" S. INV. 832.04		
R96	4 FT. MH	RIM 831.60	NO SUMP	EJIW 1040Z-B	12" N. INV. 825.29	12" W. INV. 825.39	12" SW. INV. 825.39
R97	4 FT. CB	RIM 830.41	SUMP 823.81	EJIW 7045-M2	12" NE. INV. 825.81	12" W. INV. 825.91	
R97A	END SECTION		NO SUMP	BAR GRATE-	18" W. INV. 819.50		
R98	2 FT. INLET	RIM 830.41	NO SUMP	EJIW 7045-M2	12" E. INV. 826.20		
R98A	4 FT. MH	RIM 823.40	NO SUMP	EJIW 1040Z-B	18" E. INV. 819.53	18" NW. INV. 819.63	
R99	2 FT. INLET	RIM 830.35	NO SUMP	EJIW 1040Z-02	12" E. INV. 826.39		
R99A	4 FT. MH	RIM 827.67	NO SUMP	EJIW 1040Z-B	18" SE. INV. 820.27		

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:	Pipe 3 In:
R101	END SECTION		NO SUMP	BAR GRATE-	24" SE. INV. 824.00			
R102	4 FT. MH	RIM 834.50	NO SUMP	EJIW 1040Z-B	24" NW. INV. 824.09	12" SE. INV. 829.09	18" E. INV. 824.49	12" W. INV. 824.09
R103	4 FT. MH	RIM 834.75	NO SUMP	EJIW 1040Z-B	12" E. INV. 824.49	12" W. INV. 825.39		
R104	4 FT. MH	RIM 837.10	NO SUMP	EJIW 1040Z-B	12" E. INV. 827.21	12" W. INV. 827.31		
R107	4 FT. CB	RIM 836.22	SUMP 828.69	EJIW 7045-M2	12" E. INV. 830.69	12" S. INV. 830.79		
R108	2 FT. INLET	RIM 836.22	NO SUMP	EJIW 7045-M2	12" N. INV. 830.95			
R109	4 FT. MH	RIM 835.85	NO SUMP	EJIW 1040Z-B	18" W. INV. 826.14	12" NW. INV. 826.54	12" S. INV. 830.64	18" E. INV. 826.24
R109A	4 FT. MH	RIM 837.10	NO SUMP	EJIW 1040Z-B	18" W. INV. 827.07	18" E. INV. 827.17		
R110	4 FT. MH	RIM 837.84	NO SUMP	EJIW 1040Z-B	18" W. INV. 827.66	12" E. INV. 833.76	12" N. INV. 830.16	12" SE. INV. 828.06
R111	4 FT. CB	RIM 837.00	SUMP 826.21	EJIW 7045-M2	12" NW. INV. 828.21	12" S. INV. 828.31		
R112	4 FT. CB	RIM 837.00	SUMP 826.55	EJIW 7045-M2	12" N. INV. 828.55	12" SW. INV. 828.65		
R113	4 FT. MH	RIM 837.26	NO SUMP	EJIW 1040Z-B	12" NE. INV. 828.83	12" S. INV. 828.93		
R114	4 FT. MH	RIM 836.06	NO SUMP	EJIW 1040Z-B	12" N. INV. 829.81	12" E. INV. 829.91	12" SW. INV. 829.91	
R115	4 FT. CB	RIM 834.87	SUMP 828.08	EJIW 7045-M2	12" NE. INV. 830.08	12" SW. INV. 830.18		
R116	4 FT. CB	RIM 834.95	SUMP 828.41	EJIW 7045-M2	12" NE. INV. 830.41			
R117	2 FT. INLET	RIM 834.32	NO SUMP	EJIW 1040Z-02	12" W. INV. 830.25			
R118	#N/A	#N/A	#N/A	EJIW 1040Z-02	#N/A	#N/A		
R119	4 FT. CB	RIM 835.02	SUMP 828.72	EJIW 7045-M2	12" N. INV. 830.72	12" S. INV. 830.82		
R120	2 FT. INLET	RIM 835.02	NO SUMP	EJIW 7045-M2	12" N. INV. 830.98			
R121	4 FT. CB	RIM 833.67	SUMP 824.77	EJIW 7045-M2	12" SE. INV. 826.77	12" W. INV. 829.47		

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:	Pipe 3 In:	Pipe 4 In:
R122	2 FT. INLET	RIM 833.67	NO SUMP	EJIW 7045-M2	12" E. INV. 829.61				
R123	2 FT. INLET	RIM 835.06	NO SUMP	EJIW 1040Z-02	12" S. INV. 830.77				
R124	2 FT. INLET	RIM 838.49	NO SUMP	EJIW 1040Z-02	12" W. INV. 834.46				
R125	4 FT. CB	RIM 833.50	SUMP 827.20	EJIW 7045-M2	12" NW. INV. 829.20	12" S. INV. 829.30			
R126	2 FT. INLET	RIM 833.50	NO SUMP	EJIW 7045-M2	12" N. INV. 829.47				
R127	END SECTION		NO SUMP	BAR GRATE-	36" E. INV. 825.00				
R128	5 FT. CB	RIM 836.15	SUMP 823.12	EJIW 1040Z-02	36" W. INV. 825.12	30" E. INV. 825.52			
R130	5 FT. MH	RIM 840.30	NO SUMP	EJIW 1040Z-B	30" W. INV. 826.02	30" N. INV. 826.12			
R131	5 FT. MH	RIM 841.78	NO SUMP	EJIW 1040Z-B	30" S. INV. 826.54	12" E. INV. 832.04	30" N. INV. 826.64		
R132	5 FT. MH	RIM 840.77	NO SUMP	EJIW 1040Z-B	30" S. INV. 827.06	15" E. INV. 829.86	12" W. INV. 831.81	24" N. INV. 827.46	
R133	4 FT. MH	RIM 841.20	NO SUMP	EJIW 1040Z-B	24" S. INV. 827.97	12" E. INV. 834.97	24" NE. INV. 828.07		
R134	4 FT. MH	RIM 841.98	NO SUMP	EJIW 1040Z-B	24" SW. INV. 828.41	18" NE. INV. 829.41	18" W. INV. 831.61		
R135	4 FT. MH	RIM 841.57	NO SUMP	EJIW 1040Z-B	18" E. INV. 831.89	18" NW. INV. 831.99			
R136	4 FT. MH	RIM 840.80	NO SUMP	EJIW 1040Z-B	18" SE. INV. 832.21	12" NE. INV. 835.21	15" W. INV. 832.41		
R137	4 FT. MH	RIM 840.10	NO SUMP	EJIW 1040Z-B	15" E. INV. 832.79	12" SW. INV. 832.79	15" NW. INV. 832.89		
R138	4 FT. MH	RIM 839.80	NO SUMP	EJIW 1040Z-B	15" SE. INV. 833.28	15" NW. INV. 833.38			
R139	4 FT. MH	RIM 839.50	NO SUMP	EJIW 1040Z-B	15" SE. INV. 833.54	12" NE. INV. 833.64	15" NE. INV. 833.64		
R140	4 FT. MH	RIM 839.30	NO SUMP	EJIW 1040Z-B	15" SW. INV. 833.81	15" NE. INV. 833.91			
R141	4 FT. MH	RIM 839.65	NO SUMP	EJIW 1040Z-B	15" SW. INV. 834.08	15" E. INV. 834.18			
R142	4 FT. MH	RIM 839.85	NO SUMP	EJIW 1040Z-B	15" W. INV. 834.34	12" NE. INV. 834.54			

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:	Pipe 3 In:
R143	4 FT. CB	RIM 839.45	SUMP 823.74	EJIW 7045-M2	30" W. INV. 825.74	30" E. INV. 825.84		
R144	4 FT. CB	RIM 839.45	SUMP 823.88	EJIW 7045-M2	30" W. INV. 825.88	30" E. INV. 825.98		
R145	2 FT. INLET	RIM 837.00	NO SUMP	EJIW 1040Z-02	12" W. INV. 832.66			
R146	4 FT. MH	RIM 841.57	NO SUMP	EJIW 1040Z-B	12" E. INV. 832.24	12" S. INV. 837.24	12" N. INV. 832.59	
R147	4 FT. MH	RIM 841.11	NO SUMP	EJIW 1040Z-B	12" S. INV. 833.01	12" NE. INV. 835.01	12" W. INV. 833.11	12" N. INV. 836.61
R148	2 FT. INLET	RIM 841.03	NO SUMP	EJIW 1040Z-02	12" S. INV. 837.00			
R149	2 FT. INLET	RIM 837.71	NO SUMP	EJIW 1040Z-02	12" E. INV. 833.58			
R150	4 FT. CB	RIM 839.95	SUMP 833.26	EJIW 7045-M2	12" SW. INV. 835.26	12" E. INV. 835.36		
R151	2 FT. INLET	RIM 839.95	NO SUMP	EJIW 7045-M2	12" W. INV. 835.48			
R152	2 FT. INLET	RIM 841.99	NO SUMP	EJIW 1040Z-02	12" N. INV. 837.54			
R153	4 FT. MH	RIM 841.53	NO SUMP	EJIW 1040Z-B	12" W. INV. 832.22	12" NE. INV. 832.32		
R154	4 FT. CB	RIM 840.89	SUMP 830.98	EJIW 7045-M2	12" SW. INV. 832.98	12" SE. INV. 832.98	12" N. INV. 833.08	
R155	4 FT. CB	RIM 840.89	SUMP 831.33	EJIW 7045-M2	12" S. INV. 833.33	12" NE. INV. 834.13		
R156	4 FT. CB	RIM 841.93	SUMP 832.36	EJIW 1040Z-02	12" SW. INV. 834.36	12" SE. INV. 834.46		
R157	4 FT. MH	RIM 842.48	NO SUMP	EJIW 1040Z-02	12" NW. INV. 835.15			
R158	4 FT. CB	RIM 840.42	SUMP 831.32	EJIW 7045-M2	12" NW. INV. 833.32	12" E. INV. 835.76		
R159	2 FT. INLET	RIM 840.42	NO SUMP	EJIW 7045-M2	12" W. INV. 836.01			
R160	4 FT. INLET	RIM 839.34	NO SUMP	EJIW 7045-M2	12" S. INV. 831.07	12" N. INV. 834.47		
R161	2 FT. INLET	RIM 839.34	NO SUMP	EJIW 7045-M2	12" S. INV. 835.22			
R162	2 FT. INLET	RIM 839.70	NO SUMP	EJIW 1040Z-02	12" W. INV. 835.58			

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:	Pipe 3 In:
R163	4 FT. MH	RIM 841.11	NO SUMP	EJIW 1040Z-B	18" SW. INV. 830.04	12" S. INV. 834.54	12" N. INV. 832.54	18" E. INV. 830.14
R164	4 FT. MH	RIM 840.44	NO SUMP	EJIW 1040Z-B	18" W. INV. 830.68	12" S. INV. 833.08	12" E. INV. 835.18	15" NE. INV. 830.88
R164A	2 FT. INLET	RIM 838.40	NO SUMP	EJIW 1040Z-02	12" N. INV. 834.31			
R165	4 FT. CB	RIM 839.19	SUMP 829.04	EJIW 7045-M2	15" SW. INV. 831.04	15" N. INV. 833.04		
R166	4 FT. CB	RIM 839.19	SUMP 831.19	EJIW 7045-M2	15" S. INV. 833.19	12" NW. INV. 833.39		
R167	4 FT. MH	RIM 840.38	NO SUMP	EJIW 1040Z-B	12" SE. INV. 833.51	12" E. INV. 836.01	12" N. INV. 833.61	
R168	2 FT. INLET	RIM 838.21	NO SUMP	EJIW 1040Z-02	12" S. INV. 834.14			
R169	2 FT. INLET	RIM 841.12	NO SUMP	EJIW 1040Z-02	12" W. INV. 836.61			
R170	2 FT. INLET	RIM 841.03	NO SUMP	EJIW 1040Z-02	12" W. INV. 836.54			
R171	2 FT. INLET	RIM 839.50	NO SUMP	EJIW 1040Z-02	12" N. INV. 835.15			
R172	4 FT. MH	RIM 841.06	NO SUMP	EJIW 1040Z-B	12" S. INV. 832.89	12" N. INV. 832.99		
R173	2 FT. INLET	RIM 837.84	NO SUMP	EJIW 1040Z-02	12" S. INV. 833.52			
R174	4 FT. CB	RIM 839.65	SUMP 833.31	EJIW 7045-M2	12" SW. INV. 835.31	12" NE. INV. 835.41		
R175	2 FT. INLET	RIM 839.65	NO SUMP	EJIW 7045-M2	12" SW. INV. 835.55			
R176	2 FT. INLET	RIM 837.85	NO SUMP	EJIW 7045-M2	12" SW. INV. 833.85			
R177	END SECTION		NO SUMP	BAR GRATE-	12" SW. INV. 835.26			
R178	2 FT. INLET	RIM 837.24	NO SUMP	EJIW 1040Z-02	12" NE. INV. 833.25			
R180	4 FT. CB	RIM 835.21	SUMP 824.18	EJIW 7045-M2	12" E. INV. 826.18	12" S. INV. 830.98	12" W. INV. 826.28	
R181	2 FT. INLET	RIM 835.21	NO SUMP	EJIW 7045-M2	12" N. INV. 831.14			
R182	4 FT. CB	RIM 837.01	SUMP 825.70	EJIW 7045-M2	12" E. INV. 827.70	12" S. INV. 832.70	12" W. INV. 827.80	

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:
R183	2 FT. INLET	RIM 837.01	NO SUMP	EJIW 7045-M2	12" N. INV. 832.87		
R184	4 FT. CB	RIM 838.26	SUMP 827.52	EJIW 7045-M2	12" E. INV. 829.52	12" S. INV. 834.02	12" W. INV. 829.62
R185	2 FT. INLET	RIM 838.26	NO SUMP	EJIW 7045-M2	12" N. INV. 834.19		
R186	END SECTION		NO SUMP	BAR GRATE-	24" SE. INV. 831.50		
R187	END SECTION		NO SUMP	BAR GRATE-	24" SE. INV. 829.50		
R188	END SECTION		NO SUMP	BAR GRATE-	24" SE. INV. 831.50		
R189	END SECTION		NO SUMP	BAR GRATE-	24" SE. INV. 829.50		
R201	END SECTION		NO SUMP	BAR GRATE-	18" W. INV. 824.00		
R202	4 FT. CB	RIM 832.50	SUMP 822.18	EJIW 1040Z-02	18" E. INV. 824.18	18" NW. INV. 825.68	
R203	4 FT. CB	RIM 833.00	SUMP 823.99	EJIW 7045-M2	18" SE. INV. 825.99	12" SW. INV. 825.99	
R204	4 FT. MH	RIM 835.21	NO SUMP	EJIW 1040Z-B	12" NE. INV. 826.37	12" S. INV. 826.47	12" NW. INV. 826.47
R205	4 FT. MH	RIM 835.91	NO SUMP	EJIW 1040Z-B	12" SE. INV. 826.97	12" W. INV. 827.07	
R206	2 FT. INLET	RIM 831.60	NO SUMP	EJIW 1040Z-02	12" E. INV. 827.56		
R207	2 FT. INLET	RIM 831.60	NO SUMP	EJIW 1040Z-02	12" N. INV. 827.42		
R208	END SECTION		NO SUMP	BAR GRATE-	18" NE. INV. 825.00		
R209	4 FT. CB	RIM 832.40	SUMP 823.41	EJIW 1040Z-02	18" SW. INV. 825.41	18" NE. INV. 825.51	
R210	4 FT. MH	RIM 836.35	NO SUMP	EJIW 1040Z-B	18" SW. INV. 826.42	12" NW. INV. 831.92	18" NE. INV. 826.52
R211	4 FT. MH	RIM 838.20	NO SUMP	EJIW 1040Z-B	12" SE. INV. 832.21	12" NE. INV. 833.01	12" NW. INV. 833.71
R212	4 FT. MH	RIM 836.93	NO SUMP	EJIW 1040Z-B	18" SW. INV. 827.67	18" NE. INV. 827.77	
R213	4 FT. MH	RIM 836.55	NO SUMP	EJIW 1040Z-B	18" SW. INV. 828.17	12" NW. INV. 830.87	15" NE. INV. 828.37

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:
R214	4 FT. MH	RIM 838.05	NO SUMP	EJIW 1040Z-B	15" SW. INV. 828.99	15" NW. INV. 829.09	
R214A	4 FT. MH	RIM 838.27	NO SUMP	EJIW 1040Z-B	15" SE. INV. 829.37	15" NW. INV. 829.47	
R215	4 FT. MH	RIM 838.52	NO SUMP	EJIW 1040Z-B	15" SE. INV. 829.73	15" W. INV. 829.83	
R216	4 FT. MH	RIM 838.76	NO SUMP	EJIW 1040Z-B	15" E. INV. 830.09	12" NW. INV. 830.29	12" SW. INV. 830.29
R217	4 FT. MH	RIM 838.48	NO SUMP	EJIW 1040Z-B	12" NE. INV. 830.53	12" NW. INV. 830.63	12" S. INV. 830.63
R218	4 FT. MH	RIM 838.27	NO SUMP	EJIW 1040Z-B	12" N. INV. 830.95	12" NW. INV. 831.05	
R219	4 FT. CB	RIM 838.10	SUMP 829.43	EJIW 1040Z-02	12" SE. INV. 831.43	12" NW. INV. 831.53	
R220	2 FT. INLET	RIM 836.15	NO SUMP	EJIW 1040Z-02	12" SE. INV. 831.98		
R221	2 FT. INLET	RIM 840.22	NO SUMP	EJIW 1040Z-02	12" SE. INV. 835.76		
R222	4 FT. CB	RIM 834.90	SUMP 825.28	EJIW 7045-M2	18" SW. INV. 827.28	12" NW. INV. 830.28	18" NE. INV. 827.38
R223	2 FT. INLET	RIM 834.90	NO SUMP	EJIW 7045-M2	12" SE. INV. 830.42		
R224	2 FT. INLET	RIM 837.36	NO SUMP	EJIW 7045-M2	12" SW. INV. 833.35		
R225	4 FT. CB	RIM 837.36	SUMP 831.09	EJIW 7045-M2	12" SW. INV. 833.09	12" NE. INV. 833.19	
R226	4 FT. CB	RIM 835.51	SUMP 829.08	EJIW 7045-M2	12" SE. INV. 831.08	12" W. INV. 831.18	
R227	2 FT. INLET	RIM 835.51	NO SUMP	EJIW 7045-M2	12" E. INV. 831.48		
R228	2 FT. INLET	RIM 835.60	NO SUMP	EJIW 1040Z-02	12" SE. INV. 831.21		
R229	2 FT. INLET	RIM 835.54	NO SUMP	EJIW 1040Z-02	12" SE. INV. 831.27		
R230	END SECTION		NO SUMP	BAR GRATE-	24" NE. INV. 824.50		
R231	4 FT. CB	RIM 830.50	SUMP 822.63	EJIW 1040Z-02	24" SW. INV. 824.63	12" SW. INV. 825.43	18" NE. INV. 825.03
R232	4 FT. MH	RIM 832.15	NO SUMP	EJIW 1040Z-B	18" SW. INV. 825.35	18" NW. INV. 825.45	

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:	Pipe 3 In:
R233	4 FT. CB	RIM 831.00	SUMP 823.53	EJIW 7045-M2	18" SE. INV. 825.53	18" NE. INV. 825.63		
R234	4 FT. CB	RIM 831.00	SUMP 823.73	EJIW 7045-M2	18" SW. INV. 825.73	15" NW. INV. 825.92		
R235	4 FT. MH	RIM 832.03	NO SUMP	EJIW 1040Z-B	15" SE. INV. 826.06	15" NE. INV. 826.16		
R236	4 FT. CB	RIM 830.95	SUMP 824.71	EJIW 1040Z-02	15" SW. INV. 826.71			
R237	2 FT. INLET	RIM 832.58	NO SUMP	EJIW 1040Z-02	12" NE. INV. 828.01			
R301	4 FT. MH	RIM 823.69	NO SUMP	EJIW 1040Z-B	12" E. INV. 817.68	12" S. INV. 817.78	12" NW. INV. 817.78	
R302	4 FT. CB	RIM 822.65	SUMP 816.20	EJIW 7045-M2	12" SE. INV. 818.20	12" N. INV. 818.30		
R303	2 FT. INLET	RIM 822.65	NO SUMP	EJIW 7045-M2	12" S. INV. 818.47			
R304	2 FT. INLET	RIM 822.20	NO SUMP	EJIW 1040Z-02	12" N. INV. 818.27			
R305	5 FT. MH	RIM 830.00	NO SUMP	EJIW 1040Z-B	30" E. INV. 817.60	12" NW. INV. 825.50	12" SW. INV. 821.44	24" NW. INV. 819.60
R306	4 FT. MH	RIM 830.23	NO SUMP	EJIW 1040Z-B	24" SE. INV. 819.93	15" NW. INV. 820.53	12" SW. INV. 825.43	24" NE. INV. 820.03
R307	5 FT. CB	RIM 828.20	SUMP 818.80	EJIW 1040Z-02	24" SW. INV. 820.80	24" NW. INV. 820.90		
R308	5 FT. CB	RIM 828.60	SUMP 819.04	EJIW 1040Z-02	24" SE. INV. 821.04	18" NE. INV. 821.44		
R309	4 FT. MH	RIM 830.88	NO SUMP	EJIW 1040Z-B	18" SW. INV. 821.80	12" E. INV. 822.20	18" NE. INV. 821.90	
R310	4 FT. CB	RIM 829.91	SUMP 820.00	EJIW 7045-M2	18" SW. INV. 822.00	18" NE. INV. 822.10		
R311	4 FT. CB	RIM 829.91	SUMP 820.23	EJIW 7045-M2	18" SW. INV. 822.23	15" NW. INV. 822.43		
R312	4 FT. MH	RIM 831.22	NO SUMP	EJIW 1040Z-B	15" SE. INV. 822.59	15" NW. INV. 825.59		
R313	4 FT. MH	RIM 833.03	NO SUMP	EJIW 1040Z-B	15" SE. INV. 825.90	12" SW. INV. 826.40	12" N. INV. 826.10	
R314	4 FT. CB	RIM 831.12	SUMP 824.36	EJIW 7045-M2	12" S. INV. 826.36	12" NW. INV. 826.86		
R315	4 FT. CB	RIM 831.12	SUMP 825.00	EJIW 7045-M2	12" SE. INV. 827.00	12" NE. INV. 827.10		

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:
R317	2 FT. INLET	832.5	NO SUMP	EJIW 1040Z-02	12" SW. INV. 829.10		
R318	4 FT. CB	RIM 829.17	SUMP 819.57	EJIW 7045-M2	12" NE. INV. 821.57	12" SE. INV. 824.97	
R319	2 FT. INLET	RIM 829.17	NO SUMP	EJIW 7045-M2	12" NW. INV. 825.08		
R320	2 FT. INLET	RIM 829.71	NO SUMP	EJIW 1040Z-02	12" SE. INV. 825.62		
R320A	2 FT. INLET	RIM 829.95	NO SUMP	EJIW 7045-M2	12" NE. INV. 825.48		
R321	4 FT. CB	RIM 833.34	SUMP 821.53	EJIW 1040Z-02	12" W. INV. 823.53	12" E. INV. 823.63	
R322	4 FT. CB	RIM 833.33	SUMP 822.33	EJIW 1040Z-02	12" W. INV. 824.33	12" E. INV. 824.43	
R323	4 FT. MH	RIM 832.14	NO SUMP	EJIW 1040Z-B	12" W. INV. 824.80	12" E. INV. 825.80	12" NE. INV. 825.75
R324	4 FT. CB	RIM 830.61	SUMP 823.97	EJIW 7045-M2	12" SW. INV. 825.97	12" N. INV. 826.07	
R325	2 FT. INLET	RIM 830.61	NO SUMP	EJIW 7045-M2	12" S. INV. 826.25		
R326	2 FT. INLET	RIM 830.13	NO SUMP	EJIW 1040Z-02	12" W. INV. 826.09		
R328	2 FT. INLET	RIM 831.20	NO SUMP	EJIW 7045-M2	12" SE. INV. 827.10		
R329	4 FT. CB	RIM 831.20	SUMP 824.99	EJIW 7045-M2	12" NE. INV. 826.99	12" NW. INV. 826.99	
R330	4 FT. MH	RIM 831.13	NO SUMP	EJIW 1040Z-B	15" SE. INV. 820.99	12" SW. INV. 822.89	15" NW. INV. 821.09
R331	4 FT. MH	RIM 833.23	NO SUMP	EJIW 1040Z-B	15" SE. INV. 822.02	12" NE. INV. 827.52	15" NW. INV. 822.12
R332	4 FT. MH	RIM 832.06	NO SUMP	EJIW 1040Z-B	15" SE. INV. 822.42	12" NE. INV. 826.92	15" SW. INV. 822.52
R333	4 FT. CB	RIM 831.78	SUMP 820.58	EJIW 7045-M2	15" NE. INV. 822.58	15" SW. INV. 822.68	
R334	4 FT. CB	RIM 832.41	SUMP 820.87	EJIW 7045-M2	15" NE. INV. 822.87	12" NW. INV. 823.07	
R335	4 FT. CB	RIM 832.41	SUMP 821.25	EJIW 7045-M2	12" SE. INV. 823.25	12" NW. INV. 823.75	
R336	4 FT. CB	RIM 829.40	SUMP 822.39	EJIW 1040Z-02	12" SE. INV. 824.39	12" N. INV. 824.39	12" SW. INV. 825.29

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:	Pipe 3 In:
R337	2 FT. INLET	RIM 829.95	NO SUMP	EJIW 1040Z-02	12" NE. INV. 825.92			
R338	4 FT. CB	RIM 829.33	SUMP 821.46	EJIW 1040Z-02	12" NE. INV. 823.46	12" NW. INV. 824.96		
R338A	2 FT. INLET	RIM 831.28	NO SUMP	EJIW 1040Z-02	12" SE. INV. 826.90			
R339	2 FT. INLET	RIM 832.77	NO SUMP	EJIW 1040Z-02	12" SW. INV. 828.16			
R340	2 FT. INLET	RIM 831.78	NO SUMP	EJIW 7045-M2	12" SW. INV. 826.97			
R341	5 FT. MH	RIM 828.96	NO SUMP	EJIW 1040Z-B	24" SE. INV. 818.96	24" N. INV. 819.06		
R342	5 FT. MH	RIM 828.67	NO SUMP	EJIW 1040Z-B	24" S. INV. 819.09	12" NE. INV. 819.89	24" NW. INV. 819.19	
R343	4 FT. MH	RIM 827.46	NO SUMP	EJIW 1040Z-B	24" SE. INV. 819.40	12" S. INV. 822.40	12" N. INV. 822.40	12" NW. INV. 820.20
R344	4 FT. MH	RIM 827.83	NO SUMP	EJIW 1040Z-B	12" SE. INV. 820.96	12" S. INV. 821.96	12" N. INV. 821.77	12" SW. INV. 821.06
R345	4 FT. MH	RIM 828.42	NO SUMP	EJIW 1040Z-B	12" NE. INV. 821.48	12" NW. INV. 822.23	12" SW. INV. 821.58	
R346	4 FT. MH	RIM 829.42	NO SUMP	EJIW 1040Z-B	12" NE. INV. 822.28	12" SW. INV. 823.78		
R347	2 FT. INLET	RIM 828.50	NO SUMP	EJIW 1040Z-02	12" NE. INV. 824.29			
R348	2 FT. INLET	RIM 826.86	NO SUMP	EJIW 1040Z-02	12" SW. INV. 822.47			
R349	2 FT. INLET	RIM 827.18	NO SUMP	EJIW 7045-M2	12" S. INV. 822.52			
R350	2 FT. INLET	RIM 827.18	NO SUMP	EJIW 7045-M2	12" N. INV. 822.52			
R351	2 FT. INLET	RIM 826.60	NO SUMP	EJIW 1040Z-02	12" S. INV. 822.33			
R352	2 FT. INLET	RIM 827.33	NO SUMP	EJIW 1040Z-02	12" N. INV. 823.31			
R353	2 FT. INLET	RIM 827.55	NO SUMP	EJIW 1040Z-02	12" SE. INV. 823.45			
R354	4 FT. MH	RIM 826.36	NO SUMP	EJIW 1040Z-B	15" S. INV. 820.64	12" W. INV. 821.94	12" E. INV. 821.94	15" N. INV. 820.64
R355	4 FT. MH	RIM 826.88	NO SUMP	EJIW 1040Z-B	15" S. INV. 820.85	12" E. INV. 820.95	15" N. INV. 820.85	

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:
R356	4 FT. MH	RIM 827.38	NO SUMP	EJIW 1040Z-B	15" S. INV. 821.04	15" W. INV. 821.04	
R357	4 FT. CB	RIM 827.10	SUMP 819.08	EJIW 7045-M2	15" E. INV. 821.08	12" W. INV. 822.68	
R358	2 FT. INLET	RIM 827.00	NO SUMP	EJIW 1040Z-02	12" E. INV. 822.93		
R359	4 FT. CB	RIM 827.37	SUMP 820.69	EJIW 7045-M2	12" SE. INV. 822.69	12" S. INV. 822.79	12" SW. INV. 822.79
R359A	2 FT. INLET	RIM 827.37	NO SUMP	EJIW 7045-M2	12" N. INV. 822.90		
R360	4 FT. MH	RIM 828.53	NO SUMP	EJIW 1040Z-B	12" NE. INV. 823.09	12" NW. INV. 823.19	
R361	4 FT. MH	RIM 829.95	NO SUMP	EJIW 1040Z-B	12" SE. INV. 823.81	12" SW. INV. 823.91	12" NW. INV. 823.91
R362	2 FT. INLET	RIM 828.60	NO SUMP	EJIW 1040Z-02	12" SE. INV. 824.49		
R363	4 FT. MH	RIM 825.95	NO SUMP	EJIW 1040Z-B	12" N. INV. 821.08	12" W. INV. 821.08	12" E. INV. 821.08
R364	4 FT. CB	RIM 825.67	SUMP 819.14	EJIW 7045-M2	12" W. INV. 821.14	12" E. INV. 821.14	
R365	2 FT. INLET	RIM 825.50	NO SUMP	EJIW 1040Z-02	12" W. INV. 821.53		
R366	2 FT. INLET	RIM 826.08	NO SUMP	EJIW 7045-M2	12" W. INV. 822.06		
R367	2 FT. INLET	RIM 826.08	NO SUMP	EJIW 7045-M2	12" E. INV. 822.06		
R368	2 FT. INLET	RIM 825.50	NO SUMP	EJIW 1040Z-02	12" W. INV. 821.46		
R369	2 FT. INLET	RIM 829.35	NO SUMP	EJIW 1040Z-02	12" NE. INV. 825.27		
R370	4 FT. CB	RIM 825.67	SUMP 819.14	EJIW 7045-M2	12" E. INV. 821.14	12" W. INV. 821.14	
R371	2 FT. INLET	RIM 825.50	NO SUMP	EJIW 1040Z-02	12" E. INV. 821.49		
R401	END SECTION		NO SUMP	BAR GRATE-	12" NE. INV. 823.00		
R402	4 FT. MH	RIM 831.80	NO SUMP	EJIW 1040Z-B	12" NE. INV. 823.61	12" NW. INV. 823.61	
R403	4 FT. MH	RIM 832.00	NO SUMP	EJIW 1040Z-B	12" SE. INV. 823.96	12" NW. INV. 823.96	

Structure:	Type:	Rim:	Sump	Casting:	Pipe Out:	Pipe In:	Pipe 2 In:	Pipe 3 In:	Pipe 4 In:
R404	4 FT. MH	RIM 832.00	NO SUMP	EJIW 1040Z-B	12" SE. INV. 824.27	12" NW. INV. 824.27			
R405	4 FT. MH	RIM 832.00	NO SUMP	EJIW 1040Z-B	12" SE. INV. 824.48	12" N. INV. 824.48			
R406	4 FT. MH	RIM 834.66	NO SUMP	EJIW 1040Z-B	12" S. INV. 824.94	12" W. INV. 824.94			
R407	4 FT. MH	RIM 833.61	NO SUMP	EJIW 1040Z-B	12" E. INV. 825.48	12" NW. INV. 825.48			
R408	4 FT. MH	RIM 831.71	NO SUMP	EJIW 1040Z-B	12" SE. INV. 826.06				
R410	4 FT. MH	RIM 840.73	NO SUMP	EJIW 1040Z-B	18" E. INV. 823.28	18" SW. INV. 823.28			
R411	4 FT. MH	RIM 832.34	NO SUMP	EJIW 1040Z-B	18" NE. INV. 823.49	18" NW. INV. 823.49			
R413	4 FT. MH	RIM 837.57	NO SUMP	EJIW 1040Z-B	18" SE. INV. 823.97	18" W. INV. 823.97			
R414	4 FT. MH	RIM 836.13	NO SUMP	EJIW 1040Z-B	18" E. INV. 824.14	18" SW. INV. 824.14			
R416	4 FT. MH	RIM 836.55	NO SUMP	EJIW 1040Z-B	18" NE. INV. 824.66	18" W. INV. 824.66			
R418	4 FT. MH	RIM 836.58	NO SUMP	EJIW 1040Z-B	18" E. INV. 825.20	18" S. INV. 825.20			
R419	4 FT. CB	RIM 834.71	SUMP 823.29	EJIW 1040Z-02	18" N. INV. 825.29	18" W. INV. 825.29			
R420	4 FT. MH	RIM 834.00	NO SUMP	EJIW 1040Z-B	18" E. INV. 825.92	18" NW. INV. 825.92			
R421	4 FT. MH	RIM 832.5	NO SUMP	EJIW 1040Z-B	18" SE. INV. 826.06				
R37A	2 FT. INLET	838.95RIM	NO SUMP	EJIW 1040Z-02	12" S. INV. 834.76				
R86A	2 FT. INLET	RIM 832.31	NO SUMP	EJIW 1040Z-02	12" S. INV. 827.89				
R48A	2 FT. INLET	832.31	NO SUMP	EJIW 1040Z-02	12" N. INV. 828.31				
R49A	2 FT. INLET	RIM 833.23	NO SUMP	EJIW 1040Z-02	12" SE. INV. 829.23				
R157A	2 FT. INLET	RIM 839.8	NO SUMP	EJIW 1040Z-02	12" S. INV. 835.74				
R129	4 FT. MH	RIM 840.77	NO SUMP	EJIW 1040Z-B	15" W. INV. 830.04	12" N. INV. 830.84	12" E. INV. 830.27		

NOTE:
THIS FINAL SITE PLAN ONLY APPLIES TO PHASES 1 & 2. FINAL SITE PLAN APPROVAL FOR FUTURE PHASES SHALL BE OBTAINED FROM THE TOWNSHIP.

NOTE:
ANY HOLES IN PHASES 1 & 2 STORM SEWER MANHOLES THAT WILL RECEIVE PHASE 3 PIPES SHALL NOT BE INCLUDED IN PHASES 1 & 2 CONSTRUCTION AND SHALL BE CORED DURING PHASE 3 CONSTRUCTION.

NOTE:
PHASE 1 & 2 STRUCTURES ARE SHADED.

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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
STORM STRUCTURE SCHEDULE

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-09-R
JOB #: 12001809
FILE CODE:
SHEET NO.
65A

SANITARY SEWER STRUCTURE SCHEDULE

SANITARY SEWER STRUCTURE SCHEDULE

Structure:	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S16	S17	S18	S19	S20
Type:	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH
Rim:	RIM 825.30	RIM 823.80	RIM 836.90	RIM 837.53	RIM 840.59	RIM 842.15	RIM 842.50	RIM 841.16	RIM 840.33	RIM 841.08	RIM 841.40	RIM 841.20	RIM 840.14	RIM 838.82	RIM 818.45	RIM 818.85	RIM 818.00
Casting:	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS
Pipe Out:	10" E INV. 814.06	8" N INV. 814.89	8" NE INV. 815.81	8" SE INV. 819.73	8" SE INV. 821.27	8" SE INV. 822.56	8" SE INV. 823.14	8" E INV. 824.61	8" E INV. 825.82	8" NE INV. 826.39	8" NE INV. 826.82	8" NE INV. 827.69	8" SE INV. 827.32	8" SE INV. 827.88	8" S INV. 811.77	8" E INV. 812.02	8" S INV. 812.39
Pipe In:	8" S INV. 814.20	8" SW INV. 814.99	8" NW INV. 817.31	8" NW INV. 819.83	8" NW INV. 821.37	8" NW INV. 822.66	8" W INV. 823.24	8" W INV. 824.71	8" SW INV. 825.92	8" SW INV. 826.49	8" SW INV. 826.92 8" NW INV. 826.92	8" S INV. 827.79	8" NW INV. 827.42		8" W INV. 811.97	8" N INV. 812.12	8" W INV. 812.49

Structure:	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	34A	S35	S36	S37	S38	S39
Type:	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH
Rim:	RIM 830.85	RIM 831.65	RIM 830.90	RIM 832.55	RIM 831.75	RIM 835.38	RIM 839.81	RIM 840.04	RIM 839.53	RIM 838.94	RIM 836.74	RIM 835.74	RIM 834.28	RIM 840.92	RIM 840.58	RIM 831.03	RIM 831.97	RIM 834.09	RIM 836.16	RIM 831.85
Casting:	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS
Pipe Out:	8" E INV. 813.78	8" E INV. 815.04	8" SE INV. 815.59	8" SE INV. 816.14	8" SE INV. 817.02	8" SE INV. 818.23	8" SE INV. 818.99	8" SE INV. 819.33	8" SE INV. 819.67	8" SE INV. 820.01	8" E INV. 820.99	8" E INV. 821.49	8" SE INV. 821.94	8" S INV. 823.22	8" S INV. 828.61	8" SE INV. 815.88	8" S INV. 816.61	8" S INV. 818.10	8" SE INV. 819.29	8" S INV. 818.27
Pipe In:	8" W INV. 813.88 8" NW INV. 815.28	8" NW INV. 815.14	8" NW INV. 815.69	8" NW INV. 816.24 8" N INV. 817.64	8" NW INV. 817.12	8" NW INV. 818.33 8" NE INV. 819.73	8" NW INV. 819.09	8" NW INV. 819.43	8" NW INV. 819.77	8" W INV. 820.11 2' SUMP 818.01	8" W INV. 821.09 8" SE INV. 821.09	8" NW INV. 821.59	8" N INV. 822.02	8" N INV. 827.22 2' SUMP	INT. DROP	8" N INV. 815.98	8" N INV. 816.71	8" NW INV. 818.20		8" NE INV. 818.20

Structure:	S40	S41	S42	S43	S44	44A	S45	S46	S47	S48	S49	S50	S51	S52	S53	53A	S54	S55	S56	S57
Type:	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH
Rim:	RIM 833.30	RIM 834.52	RIM 836.79	RIM 838.72	RIM 840.02	RIM 840.27	RIM 840.57	RIM 840.92	RIM 841.58	RIM 841.92	RIM 840.27	RIM 841.13	RIM 843.06	RIM 836.58	RIM 836.28	RIM 836.63	RIM 838.03	RIM 836.73	RIM 835.67	RIM 834.61
Casting:	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS
Pipe Out:	8" SW INV. 818.62	8" SW INV. 819.04	8" SW INV. 819.63	8" S INV. 820.20	8" S INV. 821.07	8" SE INV. 821.41	8" SE INV. 822.08	8" SE INV. 823.42	8" SE INV. 824.00	8" E INV. 825.47	8" E INV. 826.67	8" NE INV. 828.51	8" NE INV. 830.93	8" SW INV. 822.23	8" SW INV. 822.61	8" S INV. 822.89	8" SE INV. 823.41	8" NW INV. 821.34	8" N INV. 822.05	8" NW INV. 822.76
Pipe In:	8" NE INV. 818.72 2' SUMP	8" NE INV. 819.14	8" N INV. 819.63	8" N INV. 820.20	8" NW INV. 821.17	8" NW INV. 821.88	8" NW INV. 822.18	8" NW INV. 823.52	8" W INV. 824.10	8" W INV. 825.57 8" SW INV. 826.97	8" SW INV. 830.01	8" SW INV. 830.01		8" NE INV. 822.33	8" N INV. 822.71 8" NW INV. 822.71			8" S INV. 821.44	8" SE INV. 822.15	

Structure:	S58	S59	S60	S61	S62	S63	S64	S65	65A	S66	S67	S68	S69	S70	S71	S72
Type:	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH
Rim:	RIM 830.77	RIM 832.82	RIM 833.08	RIM 832.20	RIM 832.13	RIM 833.29	RIM 834.34	RIM 832.65	RIM 831.54	RIM 830.97	RIM 827.62	RIM 828.80	RIM 829.80	RIM 829.40	RIM 830.00	RIM 830.31
Casting:	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS
Pipe Out:	8" SE INV. 814.18	8" SE INV. 818.58	8" SW INV. 819.14	8" SW INV. 819.77	8" SW INV. 820.18	8" NE INV. 819.18	8" NE INV. 819.74	8" SW INV. 818.13	8" S INV. 814.18	8" SW INV. 820.53	8" S INV. 817.23	8" SE INV. 817.82	8" SE INV. 818.45	8" SE INV. 818.97	8" E INV. 817.07	8" SE INV. 817.77
Pipe In:	8" NW INV. 815.68	8" NE INV. 818.68 8" SW INV. 818.68	8" NE INV. 819.24	8" NE INV. 819.87		8" SW INV. 819.28		8" NE INV. 819.63	8" NE INV. 815.68		8" NW INV. 817.33	8" NW INV. 817.92	8" NW INV. 818.55		8" NW INV. 817.51	

Structure:	EXS1	EXSTUB1	EXS-2	EXSTUB2	EXS-3	EXSTUB3	EXS-4	EXSTUB4	EXS-5	EXS-6	EXS7	EXS8	EXS19	EXS20
Type:	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH	4 FT. MH
Rim:	RIM 827.49	RIM 822.78	RIM 828.01	RIM 0.00	RIM 831.77	RIM 827.60	RIM 827.96	RIM 0.00	RIM 828.70	RIM 828.86	RIM 827.55	RIM 827.05	RIM 830.59	RIM 822.98
Casting:	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS	EJIW 1040-AGS
Pipe Out:	10" E INV. 813.98	8" S INV. 811.30	10" E INV. 811.51	8" E INV. 813.88	10" E INV. 812.42	8" S INV. 816.31	10" E INV. 813.38	8" E INV. 816.21	10" E INV. 814.24	10" E INV. 815.18	8" SW INV. 815.51	8" E INV. 816.17	8" E INV. 813.90	8" N INV. 811.16
Pipe In:	10" W INV. 814.02	8" N INV. 811.30	10" W INV. 811.51	8" NW INV. 813.88	8" N INV. 813.92 10" W INV. 812.51	8" N INV. 816.31	10" W INV. 813.38	8" W INV. 816.21	10" W INV. 814.28											

Structure:	EXS-2	EXS7
Type:	4 FT. MH	4 FT. MH
Rim:	RIM 828.01	RIM 827.55
Casting:	EJIW 1040-AGS	EJIW 1040-AGS
Pipe Out:	10" E INV. 811.51	8" SW INV. 815.51
Pipe In:	10" W INV. 811.51	8" W INV. 815.51

NOTE:
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NOTE:
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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
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DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
SANITARY STRUCTURE SCHEDULE

DATE
JUNE 6, 2014

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SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-09-R
JOB #: 12001809
FILE CODE:
SHEET NO.
65B

SANITARY LEAD SCHDULE

ARBOR RIDGE CROSSINGS, PHASES 1 & 2

Lot #	Lead Invert at Main	Lead Length to building (LF)	Lead Length to Stub (LF)	Lead Slope (%)	Lead Dia. (in)	Lot F.G. Elev.	Riser Height (FT)	Building Invert Elev.	Stub Invert Elev.
L1	822.98	47.5	37.5	2.00%	6	836.50	1.5	825.43	825.23
L2	823.30	47.5	37.5	2.00%	6	838.75	3.5	827.75	827.55
L3	823.60	47.5	37.5	2.00%	6	841.55	6.0	830.55	830.35
L4	823.89	47.5	37.5	2.00%	6	842.50	6.5	831.34	831.14
L5	828.13	47.5	37.5	2.00%	6	842.90	2.5	831.58	831.38
L6	828.41	47.5	37.5	2.00%	6	843.10	2.5	831.86	831.66
L7	828.79	47.5	37.5	2.00%	6	843.10	2.0	831.74	831.54
L8	829.11	47.5	37.5	2.00%	6	842.70	1.0	831.06	830.86
L9	829.37	47.5	37.5	2.00%	6	842.30	0.0	830.32	830.12
L10	822.99	88.5	78.5	2.00%	6	836.90	1.0	825.76	825.56
L11	823.28	88.5	78.5	2.00%	6	838.80	2.5	827.55	827.35
L12	823.58	88.5	78.5	2.00%	6	841.30	4.5	829.85	829.65
L13	823.87	88.5	78.5	2.00%	6	842.45	5.5	831.14	830.94
L14	828.12	88.5	78.5	2.00%	6	842.90	2.0	831.89	831.69
L15	828.72	90.0	80	2.00%	6	842.70	1.5	832.02	831.82
L16	827.41	88.5	78.5	2.00%	6	842.25	0.0	829.18	828.98
L17	827.13	88.5	78.5	2.00%	6	842.70	0.0	828.90	828.70
L18	826.87	88.5	78.5	2.00%	6	842.70	2.0	830.64	830.44
L19	831.49	85.6	75.6	2.00%	6	844.40	0.0	833.20	833.00
L20	831.64	79.3	69.3	2.00%	6	844.70	0.0	833.23	833.03
L21	831.43	57.1	47.1	3.50%	6	844.80	0.0	833.43	833.08
L22	831.43	101.8	91.8	2.00%	6	844.80	0.0	833.47	833.27
L23	831.62	131.5	121.5	2.00%	6	844.70	0.0	834.25	834.05
L24	831.35	138.3	128.3	2.00%	6	844.30	0.0	834.12	833.92
L25	825.92	88.5	78.5	2.00%	6	843.70	5.0	832.69	832.49
L26	827.20	52.3	42.3	2.00%	6	842.65	3.0	831.25	831.05
L27	826.88	47.5	37.5	2.00%	6	843.05	4.0	831.83	831.63
L28	826.60	47.5	37.5	2.00%	6	843.50	4.5	832.05	831.85
L29	826.21	47.5	37.5	2.00%	6	843.60	5.0	832.16	831.96
L30	825.82	47.5	37.5	2.00%	6	843.60	5.5	832.27	832.07
L31	825.54	47.5	37.5	2.00%	6	843.20	5.5	831.99	831.79
L32	825.36	47.5	37.5	2.00%	6	843.20	5.5	831.81	831.61
L33	824.95	58.8	48.8	2.00%	6	843.35	6.0	832.13	831.93
L34	824.67	54.6	44.6	2.00%	6	843.35	5.5	831.26	831.06
L35	824.39	51.5	41.5	2.00%	6	842.70	6.0	831.42	831.22
L36	824.15	47.8	37.8	2.00%	6	842.80	6.5	831.60	831.40
L37	823.82	47.7	37.7	2.00%	6	843.00	7.0	831.78	831.58
L38	823.41	47.5	37.5	2.00%	6	843.00	4.5	828.86	828.66
L39	823.07	47.5	37.5	2.00%	6	842.50	4.0	828.02	827.82
L40	822.75	59.0	49	2.00%	6	842.10	4.0	827.93	827.73
L41	822.04	63.2	53.2	2.00%	6	841.75	7.0	830.30	830.10
L42	821.66	44.7	34.7	2.00%	6	841.45	7.5	830.05	829.85
L43	821.38	44.4	34.4	2.00%	6	841.00	7.5	829.77	829.57
L44	821.11	44.2	34.2	2.00%	6	840.60	7.5	829.50	829.30
L45	820.82	43.9	33.9	2.00%	6	840.20	7.0	828.70	828.50
L46	820.59	43.6	33.6	2.00%	6	839.65	7.0	828.46	828.26
L47	820.34	49.1	39.1	2.00%	6	839.00	7.0	828.32	828.12
L48	820.01	54.5	44.5	2.00%	6	837.20	2.5	823.60	823.40
L49	819.71	57.7	47.7	2.00%	6	837.10	3.0	823.87	823.67
L50	816.63	46.8	36.8	2.00%	6	833.80	5.0	822.57	822.37
L51	816.15	39.9	29.9	2.00%	6	833.75	5.5	822.45	822.25
L52	815.60	44.5	34.5	2.00%	6	835.20	7.5	823.99	823.79
L53	819.10	88.5	78.5	2.00%	6	835.20	3.0	823.87	823.67
L54	819.70	92.0	82	2.00%	6	836.75	4.0	825.54	825.34
L55	820.32	90.4	80.4	2.00%	6	838.80	5.5	827.63	827.43
L56	820.68	92.2	82.2	2.00%	6	839.95	6.0	828.52	828.32
L57	820.97	91.9	81.9	2.00%	6	840.40	6.5	829.31	829.11
L58	821.28	91.5	81.5	2.00%	6	840.80	7.0	830.11	829.91
L59	821.53	91.3	81.3	2.00%	6	841.25	6.5	829.85	829.65
L60	821.88	97.2	87.2	2.00%	6	841.90	7.0	830.82	830.62
L61	823.16	88.8	78.8	2.00%	6	842.55	6.5	831.43	831.23
L62	823.42	88.5	78.5	2.00%	6	843.05	6.5	831.69	831.49
L63	823.83	88.5	78.5	2.00%	6	842.75	4.0	829.60	829.40
L64	824.14	93.2	83.2	2.00%	6	843.50	5.0	831.00	830.80
L65	825.03	93.4	83.4	2.00%	6	843.50	5.5	832.40	832.20
L66	825.38	88.5	78.5	2.00%	6	843.50	5.0	832.15	831.95
L67	825.64	88.5	78.5	2.00%	6	843.70	5.0	832.41	832.21
L99	829.39	94.7	84.7	2.00%	6	842.35	0.5	831.78	831.58

NOTES:

1. ALL SANITARY LEADS SHALL BE 6" DIA. PVC SDR 26.
2. SEE PITTSFIELD TOWNSHIP DETAIL SHEETS FOR ADDITIONAL INFORMATION ON RISER TYPES.
3. CONTRACTOR TO FIELD VERIFY SANITARY LEADS FOR LOTS 50,51,& 52 WERE INSTALLED DURING PREVIOUS PHASE

CROSSINGS TABLE

CROSSING	CROSSING PIPE 1				CROSSING PIPE 2				Clearance	NOTES
2	18 "	ST	B/P=	819.76	8 "	WM	T/P=	818.26	1.50	DIP WATER MAIN
3	18 "	ST	B/P=	819.68	8 "	SAN	T/P=	815.85	3.83	
4	8 "	SAN	T/P=	816.48	36 "	ST	B/P=	821.98	5.50	
5	36 "	ST	T/P=	825.63	8 "	WM	B/P=	831.09	5.46	
7	36 "	ST	B/P=	822.30	8 "	SAN	T/P=	820.60	1.70	
8	36 "	ST	T/P=	826.03	8 "	WM	B/P=	831.65	5.62	
31	12 "	ST	B/P=	835.00	8 "	SAN	T/P=	829.18	5.82	
32	12 "	ST	B/P=	831.98	8 "	SAN	T/P=	828.79	3.19	
33	12 "	ST	T/P=	833.04	8 "	WM	B/P=	834.56	1.52	
34	24 "	ST	T/P=	829.74	8 "	WM	B/P=	834.18	4.44	
35	12 "	ST	T/P=	832.11	8 "	WM	B/P=	834.11	2.00	
36	30 "	ST	T/P=	828.79	8 "	WM	B/P=	833.83	5.04	
36A	30 "	ST	B/P=	825.44	8 "	SAN	T/P=	823.67	1.76	
68	12 "	ST	B/P=	826.15	8 "	SAN	T/P=	819.01	7.15	
70	12 "	ST	B/P=	828.01	8 "	WM	T/P=	826.51	1.50	DIP WATER MAIN
88	12 "	ST	B/P=	831.24	8 "	SAN	T/P=	820.31	10.93	
89	12 "	ST	T/P=	828.82	8 "	WM	B/P=	832.80	3.98	
90	12 "	ST	B/P=	824.60	8 "	SAN	T/P=	821.20	3.40	
91	15 "	ST	T/P=	826.23	8 "	WM	B/P=	833.67	7.44	
92	15 "	ST	B/P=	824.36	8 "	SAN	T/P=	821.73	2.62	
93	12 "	ST	B/P=	835.00	8 "	SAN	T/P=	822.13	12.86	
94	12 "	ST	T/P=	832.29	8 "	WM	B/P=	835.43	3.14	
95	12 "	ST	B/P=	830.73	8 "	SAN	T/P=	823.53	7.20	
96	12 "	ST	T/P=	833.27	8 "	WM	B/P=	834.96	1.69	
97	12 "	ST	B/P=	834.71	8 "	WM	T/P=	833.21	1.50	DIP WATER MAIN
98	12 "	ST	B/P=	834.23	8 "	SAN	T/P=	825.35	8.88	
99	8 "	SAN	T/P=	829.01	8 "	WM	B/P=	835.68	5.83	
100	12 "	ST	B/P=	833.06	8 "	SAN	T/P=	830.81	2.25	
100A	12 "	ST	T/P=	834.22	8 "	WM	B/P=	835.73	1.51	
101	12 "	ST	B/P=	834.04	8 "	SAN	T/P=	826.57	7.47	
102	12 "	ST	T/P=	833.78	8 "	WM	B/P=	835.28	1.51	
131	8 "	SAN	T/P=	823.08	18 "	ST	B/P=	825.42	2.34	
132	8 "	WM	B/P=	828.96	18 "	ST	T/P=	827.26	1.71	
133	18 "	ST	T/P=	824.96	8 "	WM	B/P=	834.24	9.28	
134	18 "	ST	B/P=	822.96	8 "	SAN	T/P=	822.15	0.80	
L7	12 "	ST	B/P=	837.44	6 "	SAN	T/P=	831.64	5.80	
L8	12 "	ST	B/P=	832.74	6 "	SAN	T/P=	830.96	1.78	
L9	12 "	ST	B/P=	836.73	6 "	SAN	T/P=	830.22	6.51	
L10	8 "	WM	B/P=	828.38	6 "	SAN	T/P=	825.45	2.93	
L11	8 "	WM	B/P=	829.78	6 "	SAN	T/P=	827.24	2.54	
L12	8 "	WM	B/P=	832.46	6 "	SAN	T/P=	829.54	2.93	
L13-1	8 "	WM	B/P=	834.26	6 "	SAN	T/P=	830.83	3.44	
L13-2	30 "	ST	T/P=	828.97	6 "	SAN	B/P=	830.44	1.46	
L14-1	8 "	WM	B/P=	835.02	6 "	SAN	T/P=	831.58	3.44	
L14-2	30 "	ST	T/P=	829.17	6 "	SAN	B/P=	831.19	2.03	
L15-1	8 "	WM	B/P=	835.18	6 "	SAN	T/P=	831.68	3.50	
L15-2	30 "	ST	T/P=	829.72	6 "	SAN	B/P=	831.29	1.58	
L16-1	8 "	WM	B/P=	834.44	6 "	SAN	T/P=	828.87	5.57	
L16-2	12 "	ST	B/P=	830.83	6 "	SAN	T/P=	829.08	1.75	
L17-1	8 "	WM	B/P=	834.77	6 "	SAN	T/P=	828.59	6.18	
L17-2	12 "	ST	B/P=	831.54	6 "	SAN	T/P=	828.79	2.74	
L18-1	8 "	WM	B/P=	835.14	6 "	SAN	T/P=	830.33	4.82	
L18-2	12 "	ST	B/P=	832.32	6 "	SAN	T/P=	830.42	1.90	
L23	8 "	WM	B/P=	836.73	6 "	SAN	T/P=	833.14	3.59	
L24	8 "	WM	B/P=	835.90	6 "	SAN	T/P=	833.04	2.86	
L25	8 "	WM	B/P=	835.84	6 "	SAN	T/P=	832.38	3.46	
L28	12 "	ST	B/P=	834.39	6 "	SAN	T/P=	831.95	2.44	
L29	12 "	ST	B/P=	834.76	6 "	SAN	T/P=	832.06	2.70	
L32	12 "	ST	B/P=	833.95	6 "	SAN	T/P=	831.77	2.18	
L33	12 "	ST	B/P=	833.39	6 "	SAN	T/P=	831.78	1.60	
L34	12 "	ST	B/P=	833.17	6 "	SAN	T/P=	831.18	1.98	
L38	12 "	ST	B/P=	830.29	6 "	SAN	T/P=	828.76	1.53	
L39	12 "	ST	B/P=	829.86	6 "	SAN	T/P=	827.91	1.94	
L40	12 "	ST	B/P=	829.46	6 "	SAN	T/P=	827.54	1.92	
L41	36 "	ST	T/P=	826.39	6 "	SAN	B/P=	829.21	2.82	
L42	24 "	ST	T/P=	825.82	6 "	SAN	B/P=	829.35	3.54	
L43	24 "	ST	T/P=	825.94	6 "	SAN	B/P=	829.07	3.13	
L44	24 "	ST	T/P=	826.06	6 "	SAN	B/P=	828.80	2.73	
L45	24 "	ST	T/P=	826.30	6 "	SAN	B/P=	828.06	1.76	
L46	24 "	ST	T/P=	826.40	6 "	SAN	B/P=	827.89	1.49	
L47	12 "	ST	T/P=	825.92	6 "	SAN	B/P=	827.67	1.75	
L48	12 "	ST	B/P=	824.95	6 "	SAN	T/P=	823.44	1.50	
L49	12 "	ST	B/P=	825.31	6 "	SAN	T/P=	823.63	1.68	
L53	8 "	WM	B/P=	825.86	6 "	SAN	T/P=	823.56	2.30	
L54	8 "	WM	B/P=	826.91	6 "	SAN	T/P=	825.15	1.76	
L55	8 "	WM	B/P=	830.16	6 "	SAN	T/P=	827.25	2.91	
L56	8 "	WM	B/P=	831.75	6 "	SAN	T/P=	828.21	3.54	
L57	8 "	WM	B/P=	832.26	6 "	SAN	T/P=	829.00	3.27	
L58-1	8 "	WM	B/P=	832.99	6 "	SAN	T/P=	829.80	3.19	
L58-2	12 "	ST	T/P=	827.52	6 "	SAN	B/P=	828.97	1.45	
L59	8 "	WM	B/P=	833.29	6 "	SAN	T/P=	829.54	3.75	
L60	8 "	WM	B/P=	833.84	6 "	SAN	T/P=	830.39	3.45	
L61	8 "	WM	B/P=	834.60	6 "	SAN	T/P=	831.10	3.50	
L62-1	12 "	ST	B/P=	836.78	6 "	SAN	T/P=	831.59	5.18	
L62-2	8 "	WM	B/P=	835.16	6 "	SAN	T/P=	831.38	3.78	
L63-1	12 "	ST	B/P=	831.33	6 "	SAN	T/P=	829.50	1.83	
L63-2	8 "	WM	B/P=	835.26	6 "	SAN	T/P=	829.29	5.97	
L64-1	8 "	WM	B/P=	834.93	6 "	SAN	T/P=	830.61	4.33	
L64-2	12 "	ST	B/P=	832.05	6 "	SAN	T/P=	830.54	1.51	
L65	8 "	WM	B/P=	835.37	6 "	SAN	T/P=	832.01	3.37	
L66-1	12 "	ST	B/P=	835.62	6 "	SAN	T/P=	832.05	3.57	
L66-2	8 "	WM	B/P=	833.84	6 "	SAN	T/P=	831.84	3.44	
L67-1	12 "	ST	B/P=	835.88	6 "	SAN	T/P=	832.31	3.57	
L67-2	8 "	WM	B/P=	835.15	6 "	SAN	T/P=	831.84	3.52	
L99-1	8 "	WM	B/P=	835.35	6 "	SAN	T/P=	831.35	4.00	
L99-2	24 "	ST	T/P=	830.08	6 "	SAN	B/P=	830.97	0.90	
L131	36 "	ST	B/P=	822.18	6 "	SAN	T/P=	820.49	1.68	
L132	30 "	ST	B/P=	822.80	6 "	SAN	T/P=	821.22	1.58	

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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
SANITARY SEWER LEAD SCHEDULE
CROSSINGS TABLE

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-09-R
JOB #: 12001809
FILE CODE:
SHEET NO.
65C

WATER MAIN
STRUCTURE SCHEDULE

STR	DIA (FT)	FG/RIM	Casting
H14	-	843.31	-
H15	-	841.13	-
H16	-	841.11	-
H26	-	841.19	-
H30	-	837.24	-
H34	-	839.28	-
H35	-	841.73	-
H40	-	834.42	-
H41	-	840.91	-
H42	-	840.09	-
TEMP H4A	-	840.40	-
V13	5	835.00	1040-A w/ Pittsfield Logo
V14	5	841.19	1040-A w/ Pittsfield Logo
V15	5	840.34	1040-A w/ Pittsfield Logo
V16	5	840.29	1040-A w/ Pittsfield Logo
V25	5	841.44	1040-A w/ Pittsfield Logo
V26	5	841.60	1040-A w/ Pittsfield Logo
V27	5	842.10	1040-A w/ Pittsfield Logo
V28	5	841.11	1040-A w/ Pittsfield Logo

Arbor Ridge Crossing

UNIT #	WATER LEAD LENGTH IN FT.
1	93
2	93
3	96
4	93
5	93
6	93
7	93
8	93
9	93
10	43
11	43
12	43
13	43
14	43
15	44
16	43
17	43
18	43
19	134
20	119
21	82
22	75
23	86
24	88
25	43
26	98
27	93
28	93
29	93
30	93
31	93
32	93
33	107
34	98
35	99
36	93
37	93
38	93
39	93
40	106
41	113
42	93
43	93
44	93
45	93
46	93
47	95
48	101
49	103
50	100
51	95
52	94
53	43
54	44
55	46
56	43
57	43
58	43
59	43
60	49
61	43
62	43
63	43
64	48
65	48
66	43
67	43

NOTE:
1. CONTRACTOR TO FIELD VERIFY WATER LEADS FOR LOTS 1, 10, 50, 51, & 52 WERE INSTALLED DURING PREVIOUS PHASE.

NOTE:
THIS FINAL SITE PLAN ONLY APPLIES TO PHASES 1 & 2. FINAL SITE PLAN APPROVAL FOR FUTURE PHASES SHALL BE OBTAINED FROM THE TOWNSHIP.

NOTE:
PHASE 1 & 2 STRUCTURES ARE SHADED.

NOTE:

1. ALL WATER SERVICE LEADS SHALL BE 1" TYPE K COPPER PIPE.

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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

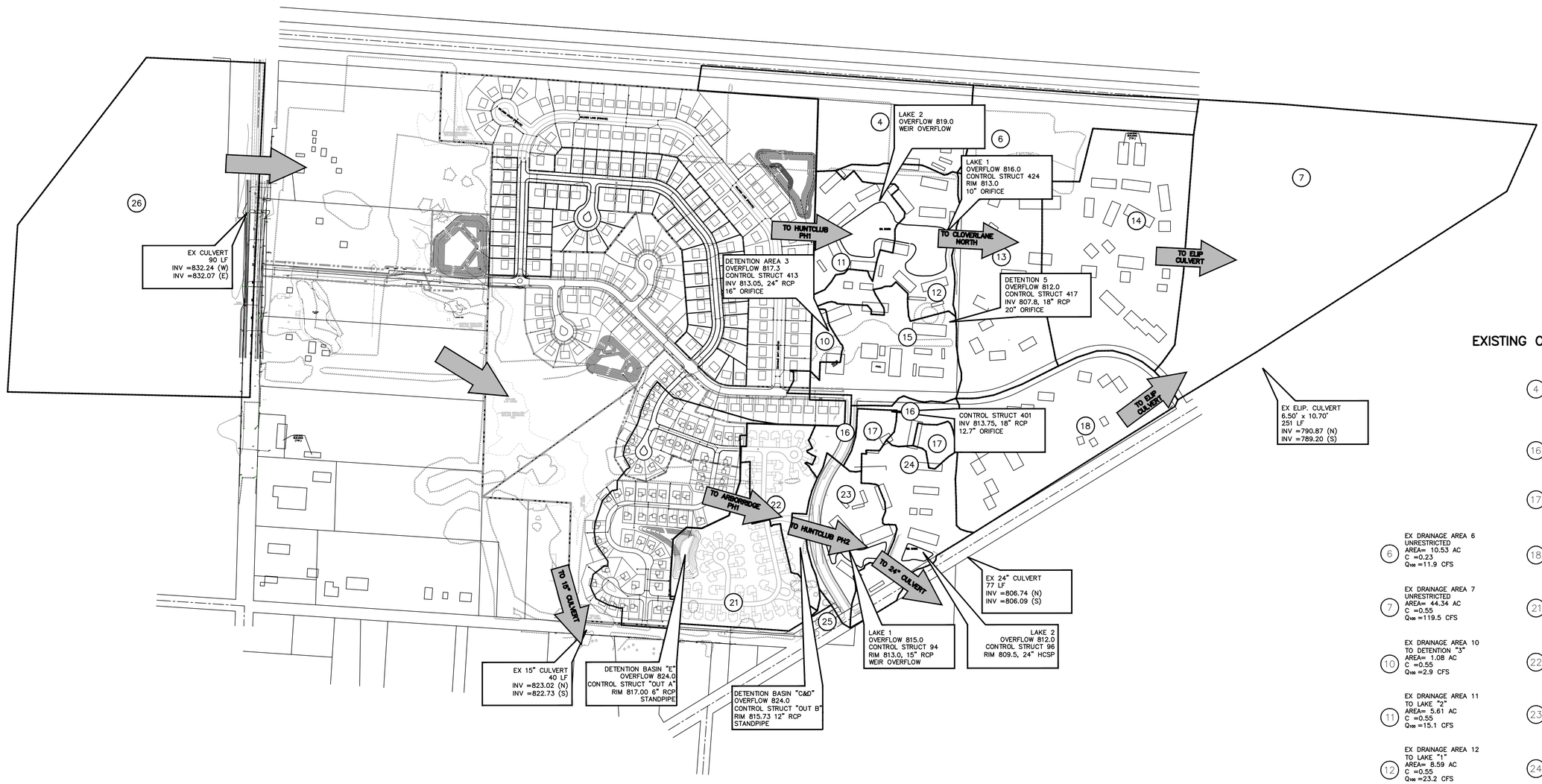
DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
WATER MAIN STRUCTURE AND LEAD LENGTH SCHEDULES

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-09-R
JOB #: 12001809
FILE CODE:
SHEET NO.
65D



EXISTING OFF-SITE DRAINAGE

(4) EX DRAINAGE AREA 4
TO DETENTION X
AREA= 11.88 AC
C =0.23
Q_{100} =13.4 CFS

(6) EX DRAINAGE AREA 6
UNRESTRICTED
AREA= 10.53 AC
C =0.23
Q_{100} =11.9 CFS

(7) EX DRAINAGE AREA 7
UNRESTRICTED
AREA= 44.34 AC
C =0.55
Q_{100} =119.5 CFS

(10) EX DRAINAGE AREA 10
TO DETENTION "3"
AREA= 1.08 AC
C =0.55
Q_{100} =2.9 CFS

(11) EX DRAINAGE AREA 11
TO LAKE "2"
AREA= 5.61 AC
C =0.55
Q_{100} =15.1 CFS

(12) EX DRAINAGE AREA 12
TO LAKE "1"
AREA= 8.59 AC
C =0.55
Q_{100} =23.2 CFS

(13) EX DRAINAGE AREA 13
TO LAKE "X1"
AREA= 13.67 AC
C =0.55
Q_{100} =36.8 CFS

(14) EX DRAINAGE AREA 14
TO LAKE "X2"
AREA= 21.52 AC
C =0.55
Q_{100} =58.0 CFS

(15) EX DRAINAGE AREA 15
TO DETENTION "5"
AREA= 9.02 AC
C =0.55
Q_{100} =24.3 CFS

(16) EX DRAINAGE AREA 16
UNRESTRICTED
AREA= 3.57 AC
C =0.55
I_{100} =4.9"
Q_{100} =9.6 CFS

(17) EX DRAINAGE AREAS 17
TO STRUCTURE 401
AREA= 2.28 AC
C =0.55
Q_{100} =6.1 CFS

(18) EX DRAINAGE AREA 18
TO LAKE "X3"
AREA= 15.94 AC
C =0.55
Q_{100} =43.0 CFS

(21) EX DRAINAGE AREA 21
TO BASIN "E"
AREA= 9.76 AC
C =0.55
Q_{100} =26.4 CFS

(22) EX DRAINAGE AREA 22
TO BASIN "C&D"
AREA= 5.63 AC
C =0.55
Q_{100} =15.2 CFS

(23) EX DRAINAGE AREA 23
TO LAKE "1"
AREA= 6.59 AC
C =0.55
Q_{100} =17.8 CFS

(24) EX DRAINAGE AREA 24
TO LAKE "2"
AREA= 7.90 AC
C =0.55
Q_{100} =21.3 CFS

(25) EX DRAINAGE AREA 25
UNRESTRICTED
AREA= 0.12 AC
C =0.55
Q_{100} =0.3 CFS

(26) EX DRAINAGE AREA 26
OFFSITE
AREA= 51.20 AC
C =0.23
Q_{100} =57.82 CFS

(27) EX DRAINAGE AREA 27
OFFSITE
AREA= 35.88 AC
C =0.23
Q_{100} =40.51 CFS

EXISTING CONDITIONS DRAINAGE

EX 15" CULVERT

DRAINAGE AREA	AREA (acres)	Q (cfs)
B	22.90	25.8
G	23.87	23.6
H	25.89	69.8
I	29.30	33.0
J	19.24	21.7
K	19.27	21.7
26	51.20	57.8
TOTAL	191.67	253.4

Q VALUES BASED ON A 100-YR INTENSITY OF 4.9"

EX 24" CULVERT
ARBOR RIDGE PHASE 1

DRAINAGE AREA	AREA (acres)	Q (cfs)	
C/D	5.88	6.6	
E	9.78	11.0	
DET C/D(22)	5.63	7.0	RESTRICTED RATE
DET E (21)	9.76	1.7	RESTRICTED RATE
HUNTCLUB PHASE 2			
16	3.57	9.6	
17	2.28	6.1	
23	6.59	17.8	
24	7.90	21.3	
25	0.12	0.3	
TOTAL	51.51	81.4	

EX 6.5'x11' CULVERT

DRAINAGE AREA	AREA (acres)	Q (cfs)
A	49.11	55.4
HUNTCLUB SUBDIVISION		
4	11.88	13.4
10	1.08	2.9
11	5.61	15.1
12	8.59	23.2
15	9.02	24.3
CLOVER N SUBDIVISION		
6	10.53	11.9
13	13.67	36.8
14	21.52	58.0
CLOVER S SUBDIVISION		
18	15.94	43.0
7	44.34	119.5
TOTAL	191.29	403.5

LEGEND

EXIST. CONTOUR
PROP. CONTOUR
EXIST. SPOT ELEVATION
PROP. SPOT ELEVATION
GUTTER
EXIST. STORM SEWER
PROP. STORM SEWER
EXIST. MANHOLE
PROP. MANHOLE
PROP. EDGE DRAIN
EXIST. CATCH BASIN/INLET
PROP. CATCH BASIN/INLET
END SECTION
CULVERT
EXIST. SANITARY SEWER
PROP. SANITARY SEWER
EXIST. CLEANOUT
PROP. CLEANOUT
EXIST. WATER MAIN
PROP. WATER MAIN
EXIST. HYDRANT
PROP. HYDRANT
EXIST. SHUTOFF OR CURB BOX
EXIST. CURB AND GUTTER
PROP. CURB AND GUTTER
CENTERLINE OF DITCH OR EDGE OF WATER
EDGE OF WETLAND
EXISTING FENCE
PROPOSED FENCE
PROPERTY LINE
CENTERLINE
EXIST. SIGN
PROP. SIGN
SIDEWALK RAMP
F.F. FINISH FLOOR ELEV.
F.G. FINISH GRADE
W.O. WALKOUT BASEMENT
B.F. BASEMENT FLOOR
G.F. GARAGE FLOOR
SILT FENCE
PROP. SHUTOFF OR CURB BOX
EXIST. GATE VALVE IN BOX
PROP. GATE VALVE IN BOX
EXIST. GATE VALVE IN MANHOLE
PROP. GATE VALVE IN MANHOLE
EXIST. OVERHEAD ELECTRIC
PROP. OVERHEAD ELECTRIC
EXIST. UNDERGROUND ELECTRIC
PROP. UNDERGROUND ELECTRIC
EXIST. LIGHT POLE
PROP. LIGHT POLE
EXIST. UTILITY POLE
GUY WIRE
EXIST. OVERHEAD TELEPHONE
PROP. OVERHEAD TELEPHONE
EXIST. UNDERGROUND TELEPHONE
PROP. UNDERGROUND TELEPHONE
EXIST. GAS
PROP. GAS
EXIST. GAS RISER
EXIST. TELEPHONE RISER
CONTROL POINT
FOUND IRON PIPE
SET IRON PIPE
FOUND CONCRETE MONUMENT
SET CONCRETE MONUMENT
FOUND PK NAIL
SET PK NAIL
FOUND LEADED CHISEL HOLE
SET LEADED CHISEL HOLE
FOUND REBOD
APPROX. LOCATION OF SOIL BORING
APPROX. LOCATION OF MONITORING WELL
APPROX. LOCATION OF PENETRATION TEST
EXIST. DECIDUOUS TREE
EXIST. CONIFEROUS TREE
EXIST. TREE OR BRUSH LIMIT

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WASHTENAW COUNTY, MICHIGAN

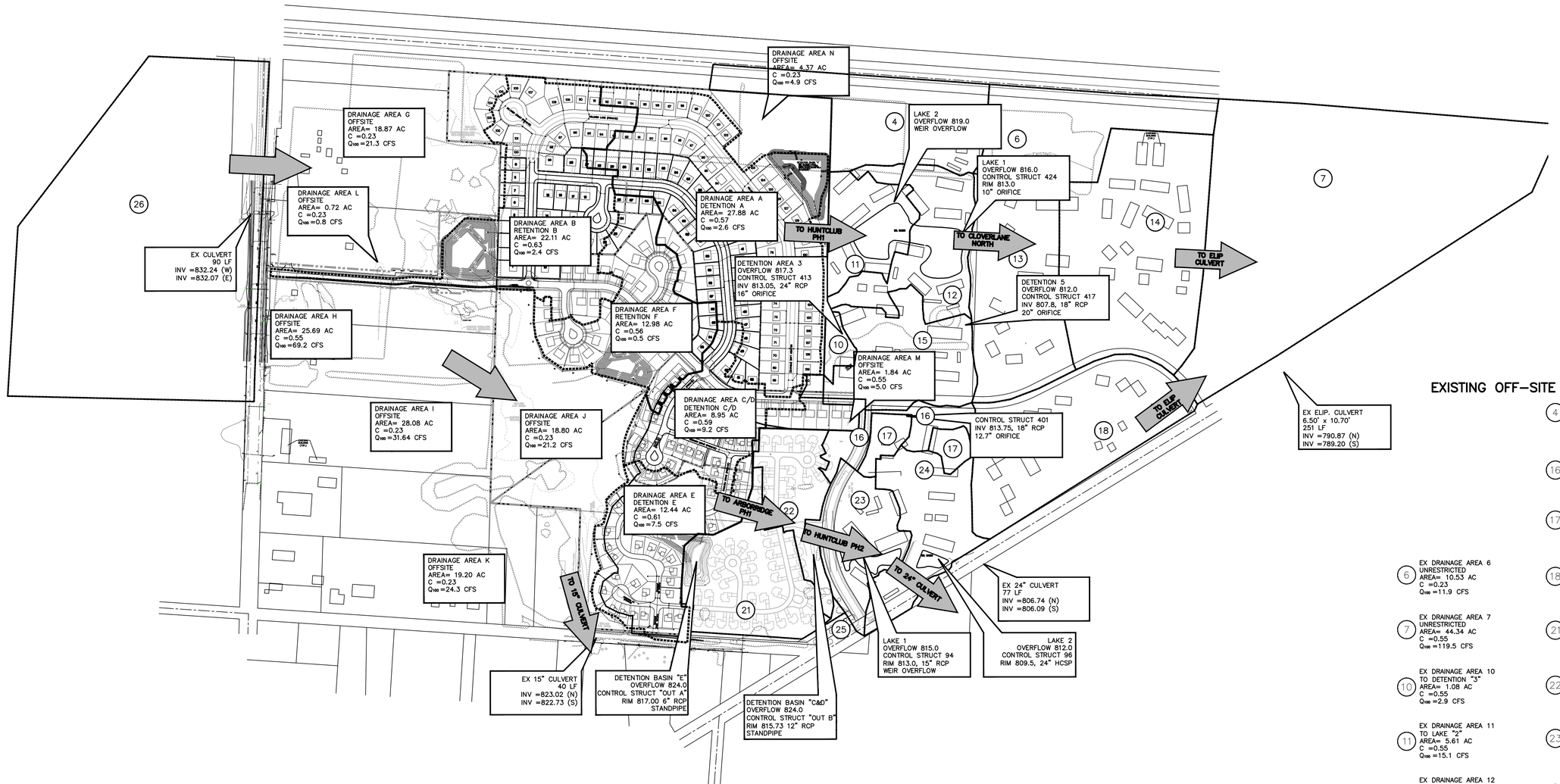
DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
OVERALL EXISTING DRAINAGE AREA MAP

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE 0 200 400
1" = 400 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-10-DA
JOB #: 12001809
FILE CODE:
SHEET NO. 66



EXISTING OFF-SITE DRAINAGE

(4) EX DRAINAGE AREA 4
TO DETENTION X
AREA= 11.88 AC
C =0.23
Q100 =13.4 CFS

(16) EX DRAINAGE AREA 16
UNRESTRICTED
AREA= 3.57 AC
C =0.55
I100 =4.9"
Q100 =9.6 CFS

(17) EX DRAINAGE AREAS 17
TO STRUCTURE 401
AREA= 2.28 AC
C =0.55
Q100 =6.1 CFS

(6) EX DRAINAGE AREA 6
UNRESTRICTED
AREA= 10.53 AC
C =0.23
Q100 =11.9 CFS

(18) EX DRAINAGE AREA 18
TO LAKE "X3"
AREA= 15.94 AC
C =0.55
Q100 =43.0 CFS

(7) EX DRAINAGE AREA 7
UNRESTRICTED
AREA= 44.34 AC
C =0.55
Q100 =119.5 CFS

(21) EX DRAINAGE AREA 21
TO BASIN "E"
AREA= 9.76 AC
C =0.55
Q100 =1.73 CFS
(RESTRICTED)

(10) EX DRAINAGE AREA 10
TO DETENTION "3"
AREA= 1.08 AC
C =0.55
Q100 =2.9 CFS

(22) EX DRAINAGE AREA 22
TO BASIN "C&D"
AREA= 5.63 AC
C =0.55
Q100 =7.0 CFS
(RESTRICTED)

(11) EX DRAINAGE AREA 11
TO LAKE "2"
AREA= 5.61 AC
C =0.55
Q100 =15.1 CFS

(23) EX DRAINAGE AREA 23
TO LAKE "1"
AREA= 6.59 AC
C =0.55
Q100 =17.8 CFS

(12) EX DRAINAGE AREA 12
TO LAKE "1"
AREA= 8.59 AC
C =0.55
Q100 =23.2 CFS

(24) EX DRAINAGE AREA 24
TO LAKE "2"
AREA= 7.90 AC
C =0.55
Q100 =21.3 CFS

(13) EX DRAINAGE AREA 13
TO LAKE "X1"
AREA= 13.67 AC
C =0.55
Q100 =36.8 CFS

(25) EX DRAINAGE AREA 25
UNRESTRICTED
AREA= 0.12 AC
C =0.55
Q100 =0.3 CFS

(14) EX DRAINAGE AREA 14
TO LAKE "X2"
AREA= 21.52 AC
C =0.55
Q100 =58.0 CFS

(26) EX DRAINAGE AREA 26
OFFSITE
AREA= 51.20 AC
C =0.23
Q100 =57.82 CFS

(15) EX DRAINAGE AREA 15
TO DETENTION "5"
AREA= 9.02 AC
C =0.55
Q100 =24.3 CFS

(27) EX DRAINAGE AREA 27
OFFSITE
AREA= 35.88 AC
C =0.23
Q100 =40.51 CFS

PROPOSED CONDITIONS DRAINAGE

EX 15" CULVERT

DRAINAGE AREA	AREA (acres)	Q (cfs)
F	12.98	0.0
G	18.87	21.3
H	25.89	69.8
I	28.08	31.6
J	18.80	21.2
K	19.20	24.3
26	51.20	57.8
TOTAL	199.20	226.0

Q VALUES BASED ON A 100-YR INTENSITY OF 4.9"

EX 24" CULVERT

ARBOR RIDGE PHASE 1&2

DRAINAGE AREA	AREA (acres)	Q (cfs)
C/D	8.95	– (TO DET C/D)
E	12.44	– (TO DET E)
DET C/D(22)	5.63	7.0 RESTRICTED RATE
DET E (21)	9.76	1.7 RESTRICTED RATE

HUNTCLUB PHASE 2

16	3.57	9.6
17	2.28	6.1
23	6.59	17.8
24	7.90	21.3
25	0.12	0.3
TOTAL	57.74	63.8

EX 6.5'x11' CULVERT

DRAINAGE AREA	AREA (acres)	Q (cfs)
A & B	49.99	2.8 (RESTRICTED)
N	4.37	4.9
HUNTCLUB SUBDIVISION		
M	1.84	5.0
4	11.88	13.4
10	1.08	2.9
11	5.61	15.1
12	8.59	23.2
CLOVER N SUBDIVISION		
6	10.53	11.9
13	13.67	36.8
14	21.52	58.0
CLOVER S SUBDIVISION		
18	15.94	43.0
7	44.34	119.5
TOTAL	168.72	338.1

LEGEND

EXIST. CONTOUR
PROP. CONTOUR
EXIST. SPOT ELEVATION
PROP. SPOT ELEVATION
GUTTER
EXIST. STORM SEWER
PROP. STORM SEWER
EXIST. MANHOLE
PROP. MANHOLE
PROP. EDGE DRAIN
EXIST. CATCH BASIN/INLET
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PROP. HYDRANT
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EXIST. CURB AND GUTTER
PROP. CURB AND GUTTER
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EDGE OF WETLAND
EXISTING FENCE
PROPOSED FENCE
PROPERTY LINE
CENTERLINE
EXIST. SIGN
PROP. SIGN
SIDEWALK RAMP
FINISH FLOOR ELEV.
FINISH GRADE
VIEWOUT BASEMENT
WALKOUT BASEMENT
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EXIST. OVERHEAD ELECTRIC
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CONTROL POINT
FOUND IRON PIPE
SET IRON PIPE
FOUND CONCRETE MONUMENT
SET CONCRETE MONUMENT
FOUND PK NAIL
SET PK NAIL
SET 1/2" RADED CHISEL HOLE
SET LEADED CHISEL HOLE
FOUND REROD
APPROX. LOCATION OF SOIL BORING
APPROX. LOCATION OF MONITORING WELL
APPROX. LOCATION OF PENETRATION TEST
EXIST. DECIDUOUS TREE
EXIST. COMFEROUS TREE
EXIST. TREE OR BRUSH LIMIT

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WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
OVERALL DRAINAGE AREA MAP

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 200 400
1" = 400 FEET

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CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-10-DA
JOB #: 12001809
FILE CODE:
SHEET NO.
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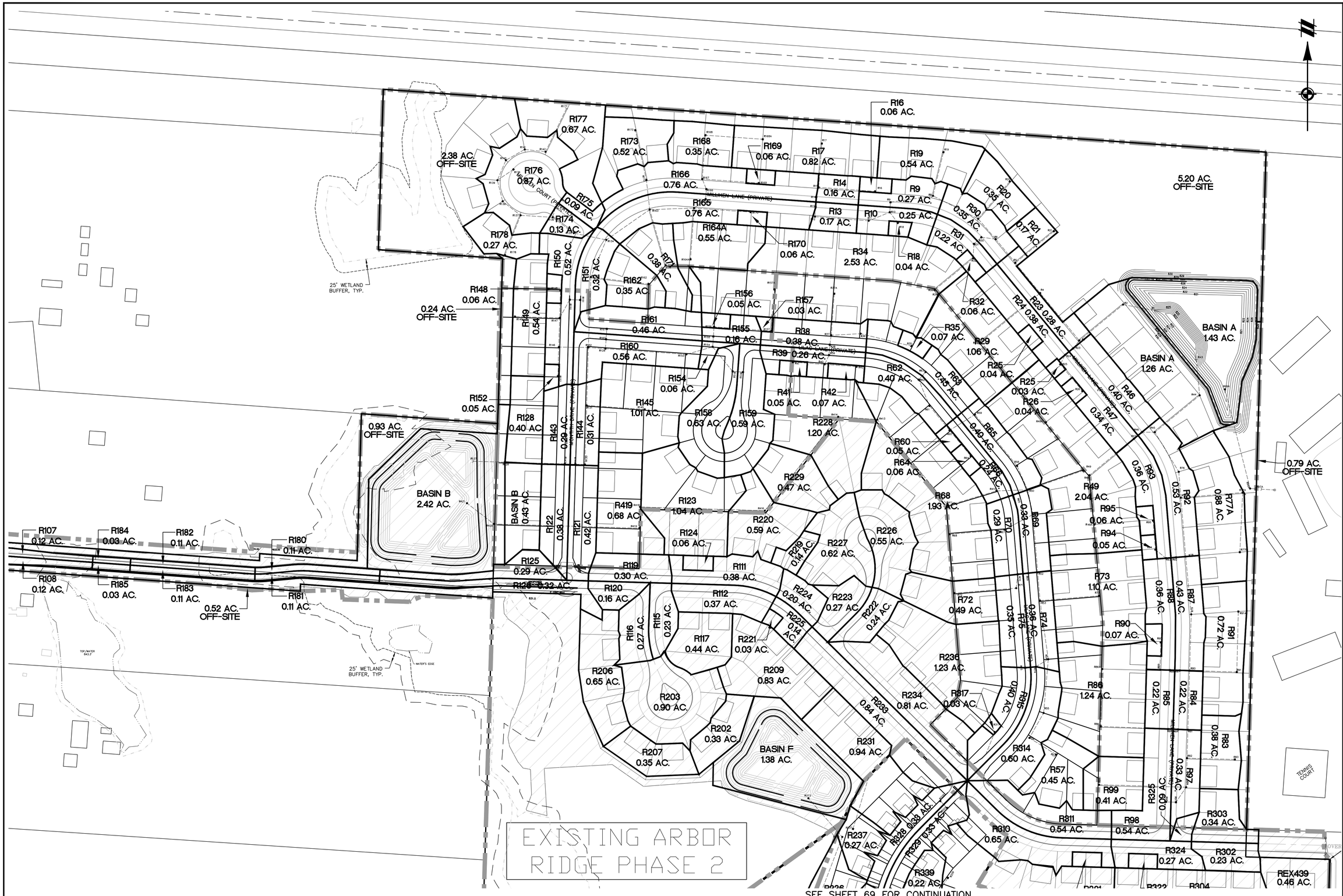

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WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC

ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
DRAINAGE AREA PLAN
NORTH

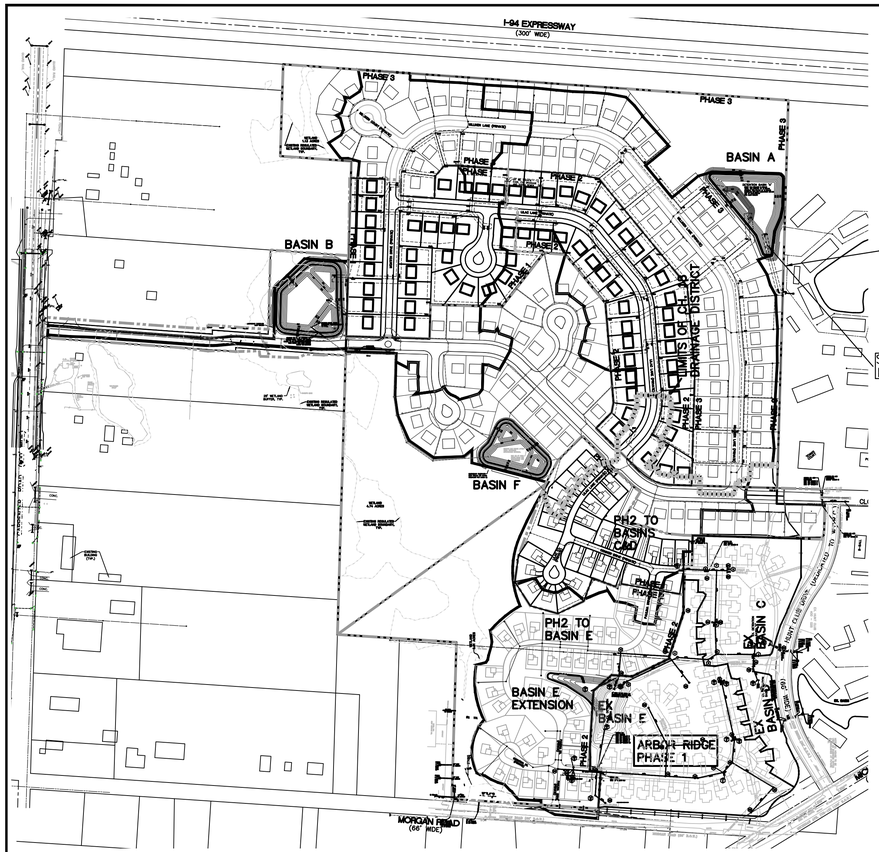
DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 50 100
1" = 100 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-11-DA
JOB #: 12001809
FILE CODE:
SHEET NO.
68

PAGE NO. 48

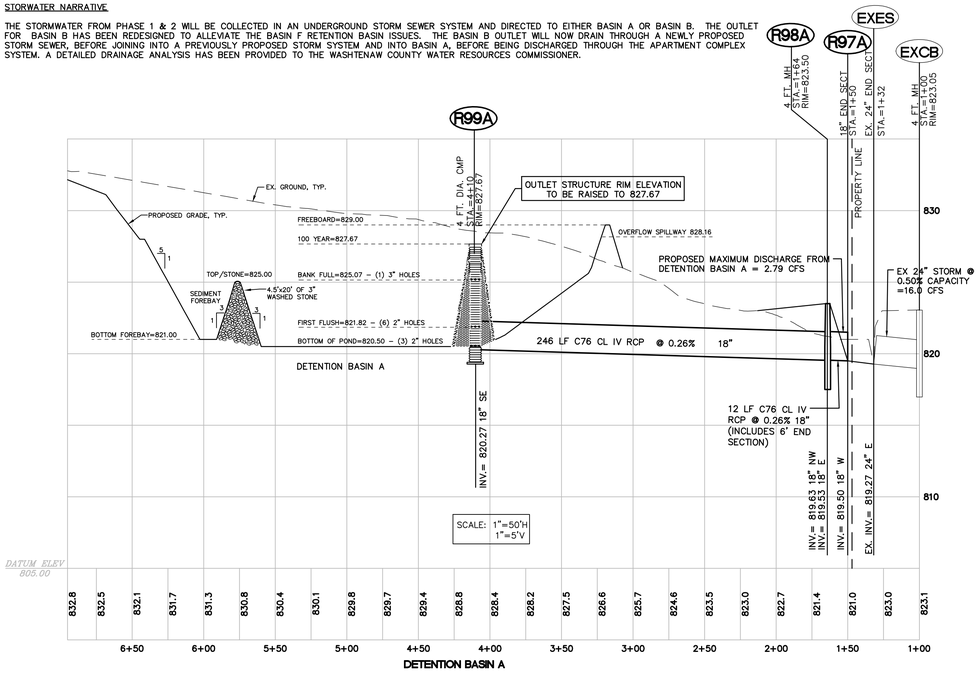


BASIN A OUTLET RATE WAS REDUCED TO 0.10 CFS/AC TO ACCOMODATE 0.79 AC. OF OFF-SITE DRAINAGE.

STORM PROFILE R99A TO EXCB

STORWATER NARRATIVE

THE STORMWATER FROM PHASE 1 & 2 WILL BE COLLECTED IN AN UNDERGROUND STORM SEWER SYSTEM AND DIRECTED TO EITHER BASIN A OR BASIN B. THE OUTLET FOR BASIN B HAS BEEN REDESIGNED TO ALLEVIATE THE BASIN F RETENTION BASIN ISSUES. THE BASIN B OUTLET WILL NOW DRAIN THROUGH A NEWLY PROPOSED STORM SEWER, BEFORE JOINING INTO A PREVIOUSLY PROPOSED STORM SYSTEM AND INTO BASIN A, BEFORE BEING DISCHARGED THROUGH THE APARTMENT COMPLEX SYSTEM. A DETAILED DRAINAGE ANALYSIS HAS BEEN PROVIDED TO THE WASHTENAW COUNTY WATER RESOURCES COMMISSIONER.



DETENTION BASIN A CALCULATIONS

Arbor Ridge
Pittsfield Township, MI
Washtenaw County Drain Commission Rational Method

I. Total Volume of Detention Area: 100 Year storm - Basin 'A' Proposed Conditions

Developed area contributing runoff, A = 27.88 acres

Surface	area (ac)	c factor	cxA
building/drive/walks	6.10	0.95	5.80
pavement	2.22	0.95	2.11
water	1.43	1	1.43
grass	18.13	0.36	6.53
	27.88		15.86

Developed Runoff Coefficient, C = 0.57

Allowable Release Rate, Q_a = 0.10 cfs x A = 2.79 cfs
****Allowable Release rate reduced to 0.10 cfs/ac to accommodate undetained offsite flow**

Max Outflow Per Acre Imp, $Q_o = Q_a / (AxC)$ = 0.18 cfs / ac-imp

Storage Time, T = -25 + (10312.5/Q_o)^(1/2) = 217.2 min

Storage per Acre Imp., V_s = (16500 x T)/(T + 25) - 40 x Q_o x T = 13269.7 cf / ac-imp

Total Storage Required, $V_t = V_s$ x A x C = 210468 cf

II. Bankfull, First Flush, and Forebay Volumes

Bankfull Flood Volume, V_{bf}
= 2.25" x 1'/12" x 43560sf/ac x A x C = 129543 cf

First Flush Volume, Vff
= 0.5" x 1'/12" x 43560sf/ac x A x C = 28787 cf

Forebay Volume = 0.05 * Vt = 10523 cf

III. Detention Basin Storage Provided

Elevation	Area	Avg Area	Depth (ft)	Volume	Cummulative Volume
828	60,665				
		57,948	1	57,948	281,218
827	55,230				
		52,585	1	52,585	223,271
826	49,940				
		44,017	1	44,017	170,686
825	38,093				
		35,741	1	35,741	126,669
824	33,388				
		31,147	1	31,147	90,929
823	28,905				
		26,837	1	26,837	59,782
822	24,769				
		22,884	1	22,884	32,945
821	20,998				
		20,123	0.5	10,062	10,062
820.5	19,248				

Storage Elevations

X_o = 820.50
X_{ff} = 821.82
X_{bf} = 825.07
X_{100} = 826.76

IV. Outlet Control Structure

First Flush
First Flush Average Discharge, $Q_{ff} = V_{ff} / T_{24}$ = 0.333 cfs

First Flush Elev. Head, $h_{ave} = 2/3$ x (X_{ff} - X_o) = 0.879 ft

First Flush Total Orifice Area, Aff
= Qff / 0.62 x (2 x g x h_{ave})^(1/2) = 0.071 sf

Enter First Flush Orifice Diameter = 2.00 inches

Orifice Area, $A_{ff\text{-}new}$ = 0.0218 sf

Number of First Flush Orifice Holes Required
(Rounded down to nearest whole number) = 3.0 holes at elev = 820.50

Revised First Flush Discharge, $Q_{ff\text{-}new}$
= $A_{ff\text{-}new}$ x #holes x 0.62 x (2 x g x h_{ave})^(1/2) = 0.305 cfs

First Flush Storage Time, $T_{ff\text{-}new}$
= Vff / $Q_{ff\text{-}new}$ / 3600 sec/hr = 26.2 hours

Bankfull Flood
The bankfull flood must be detained for 36-48 hours. Check the discharge through the first flush orifices to see if additional holes are necessary.

Head, h_{ave} = 2/3 x (X_{bf} - X_o) = 3.04 ft

Bankfull Flow thru First Flush Orifices, Q
= 0.62 x $A_{ff\text{-}new}$ x #holes x (2 x g x h_{ave})^(1/2) = 0.57 cfs

Bankfull Storage Time, T = V_{bf} / Q / 3600 sec/hr = 63.3 hours

Volume Remaining, $V_{rem} = V_{bf} - V_{ff}$ = 100756 cf

Target Detention Time, T_{tot} = 44 hours

Time Remaining, $T_{rem} = T_{tot} - T_{ff\text{-}new}$ = 17.8 hours

Head, $h_{ave\text{-}ff}$
= 2/3 x (Xbf - Xff) + (Xff-Xo) = 3.48 ft

$Q_1 = 0.62$ x $A_{ff\text{-}new}$ x #holes x (2x32.2x$h_{ave\text{-}ff}$)^(1/2) = 0.61 cfs

$V_1 = T_{rem}$ x Q_1 x 3600 sec/hr = 38958 cf

$V_2 = V_{rem} - V_1$ = 61797 cf

$Q_2 = V_2$ / Trem / 3600 sec/hr = 0.96 cfs

Head, $h_{ave\text{-}bf} = 2/3$ x (X_{bf} - X_{ff}) = 2.16 ft

Bankfull Orifice Area Required, A_O
= Q_2 / (0.62 x (2 x 32.2 x $h_{ave\text{-}bf}$)^(1/2)) = 0.132 sf

Enter Bankfull Orifice Diameter = 2.00 inches

Orifice Area, $A_{bf\text{-}new}$ = 0.0218 sf

Number of First Flush Orifice Holes Required
(Rounded down to nearest whole number) = 6.0 holes at elev = 821.82

100-Year Flood
Qa is a peak flow. Calculate the peak flow passing through first flush and bankfull orifices, using the total head, and subtract Qa to determine the orifice size to release the 100-year storm volume.

Q_a = 2.79 cfs

Head Total, $h_{tot} = X_{100} - X_o$ = 6.26 ft

Head Banfull Total, $h_{bf\text{-}tot}$ = X100 - Xff = 4.94 ft

$Q_{ff} + Q_{bf}$
= 0.62 x $A_{ff\text{-}new}$ x #holes x (2x32.2xh_{tot})^(1/2)
+ 0.62 x $A_{bf\text{-}new}$ x #holes x (2x32.2x$h_{bf\text{-}tot}$)^(1/2) = 2.26 cfs

Remaining 100-Yr Flow, $Q_{100} = Q_a$ - (Qff + Q_{bf}) = 0.53 cfs

Head, $h_{100} = X_{100} - X_{bf}$ = 1.69 ft

100-Yr Orifice Area Required, A_{100}
= Q100 / (0.62 x (2 x 32.2 x h_{100})^(1/2)) = 0.081 sf

Enter 100-Yr Orifice Diameter = 3.00 inches

Orifice Area, $A_{100\text{-}new}$ = 0.0491 sf

Number of First Flush Orifice Holes Required
(Rounded down to nearest whole number) = 1.0 holes at elev = 825.07

UNDETAINED OFF-SITE AREA ACCOMODATED IN BASIN A OUTLET

Existing Drainage Runoff
Intensity (1-hr, 100-year Event) 2.5

Existing Property Drainage to East
Undetained 100 Year storm runoff

1) Existing contributing area (a) = 0.79 acres

Runoff Coefficient (c) = 0.45 (Class D soil, 2% - 6%)

Estimated Runoff (Q)
Q = a * c * I = 0.89 cfs

CALCULATIONS FOR PERVIOUS AREA C-FACTOR

Soils	Hydrologic Group	Area (ac)	C	AxC
Gf – Gilford sandy loam	D/B	0.12	0.45	0.05
Ho – Hoytville silty clay loam	D/C	16.36	0.45	7.36
NgB – Nappanee silty clay loam, 2 to 6% slopes	D	37.02	0.50	18.51
OsC – Oshtemo loamy sand, 6 to 12% slopes	B	16.71	0.35	5.85
Pe – Pewamo clay loam	D/C	0.01	0.45	0.00
SpB – Spinks loamy sand, 0 to 6% slopes	A	23.05	0.15	3.46
StC – St. Clair clay loam, 6 to 12% slopes	D	2.25	0.55	1.24
ThA – Thetford loamy sand, 0 to 4% slopes	A	12.41	0.15	1.86
Total		107.93		38.33

Composite 'C' = 38.33/107.93 = 0.36

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NOTICE:
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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC

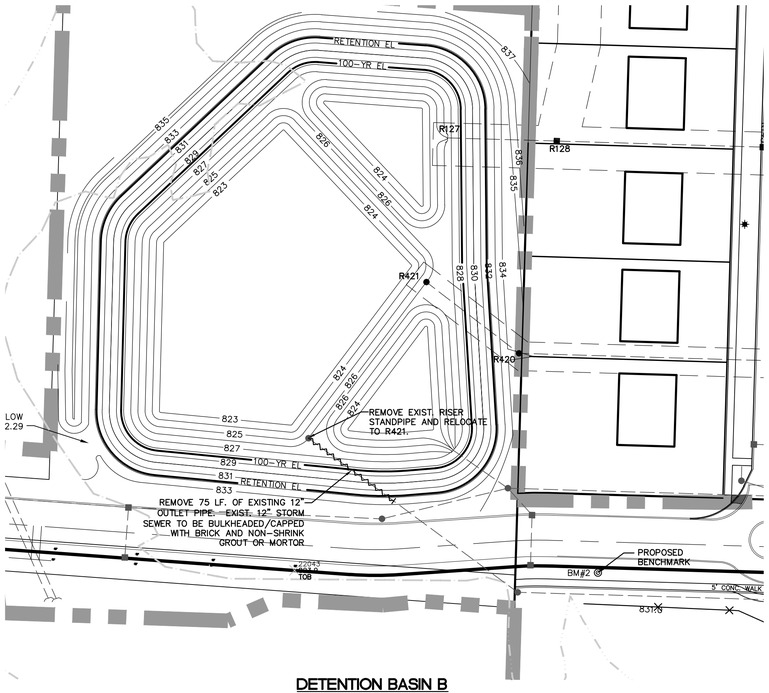
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
DETENTION BASIN A
PLAN, PROFILE AND CLACULATIONS

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 150 300
1" = 300 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-12-DETENTION
JOB #: 12001809
FILE CODE:
SHEET NO.
70



DETENTION BASIN B
SCALE: 1"=50'

RETENTION BASIN B

RETENTION BASIN B CALCULATIONS

TOTAL DRAINAGE AREA: 22.11 AC.
PERVIOUS AREA: 12.22 AC. (C=0.36)
IMPERVIOUS AREA: 7.73 AC. (C=0.95)
POND AREA: 2.16 AC. (C=1.0)
COMPSITE C-FACTOR: 0.63

VOLUME REQUIRED = 33,000(A)(C) = 33,000(22.11)(0.63) = 459,667 CF
VOLUME PROVIDED = 459,667 CF (EL. 831.79)
FOREBAY VOL REQ'D = 5%(V) = 0.05(459,667) = 22,983 CF
FOREBAY VOLUME PROV'D = 27,291 (EL. 823.0 TO 826.0)
100-YR VOL=16,500(A)(C) = 16,500(22.11)(0.63) = 229,833 CF @ 828.36
BANKFULL VOL = 8,170(A)(C) = 8,170(22.11)(0.63) = 113,802 CF @ 826.07
DISCHARGE RATE
(3) 4" DIA HOLES AT BANK FULL ELEV 826.03
@ 100-YR ELEV 828.31 = 1.90 CFS < 2.02 CFS, OK

ORIFICE CALCULATION

Q(Allowable) = 1.94 CFS
c = 0.60
h = 2.29 FT
A = Q/c(2gh)^0.5 = 0.27 SF

(3) 4" DIA HOLES = 0.087 SF x 3 = 0.26 SF
Q(Actual) = (0.26)(0.60)(2*32.2*2.27)^0.5 = 1.90 CFS

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CAD: 300819SF2-12-DETENTION
JOB #: 12001809
FILE CODE:
SHEET NO.
71

STORM SEWER CALCULATIONS

From STR	To STR	Trib. Area Label	Drainage Area A, Ac.	Runoff Coeff. C	Equiv. Area (AxC)	Add'l Laterals (AxC)	Sum of (AxC)	Time Conc. (min.)	Intensity I (in./hr)	Flow Q (cfs)	Min HG for Q (%)	Pipe Length (ft.)	Pipe Diam. (in.)	Pipe Slope (%)	Pipe Area (s.f.)	Pipe Cap. (cfs)	HG Slope (%)	Vel.@ Full (ft/sec)	Time of flow (min)	HGL Upper STR	HGL Lower STR	Invert Upper STR	Invert Lower STR	Upper Ground/ Rim
		HYDROLOGY									HYDRAULICS											ELEVATIONS		
R99A	R98A	-	0.00	0.63	0.000	0.000	0.000	20.00	3.89	0.00	0.000	246	18	0.26	1.77	5.36	0.00	3.0	1.35	820.83	820.83	820.27	819.63	827.67
R98A	R97A	-	0.00	0.43	0.000	0.000	0.000	21.35	3.78	0.00	0.000	12	18	0.26	1.77	5.36	0.00	3.0	0.07	820.70	820.70	819.53	819.50	823.40
R97A				0.43				21.42					18									819.50		0.00
R77A	R77	R77A	0.88	0.43	0.378	0.000	0.378	20.00	3.89	1.47	0.171	149	12	0.44	0.79	2.36	0.17	3.0	0.83	825.62	825.37	824.29	823.64	828.30
R99	R96	99	0.41	0.43	0.176	0.000	0.176	20.00	3.89	0.69	0.037	210	12	0.48	0.79	2.47	0.04	3.1	1.11	826.36	826.28	826.39	825.39	830.35
R98	R97	98	0.54	0.63	0.340	0.000	0.340	20.00	3.89	1.32	0.138	29	12	1.00	0.79	3.56	0.14	4.5	0.11	826.75	826.71	826.20	825.91	830.41
R97	R96	97	0.33	0.43	0.142	0.340	0.482	20.11	3.88	1.87	0.276	42	12	1.00	0.79	3.56	0.28	4.5	0.15	826.40	826.28	825.81	825.39	830.41
R96	R82	-	0.00	0.43	0.000	0.658	0.658	20.26	3.87	2.55	0.511	70	12	0.65	0.79	2.87	0.51	3.7	0.32	826.28	825.92	825.29	824.83	831.60
R95	R94	95	0.06	0.63	0.038	0.000	0.038	20.00	3.89	0.15	0.002	70	12	2.00	0.79	5.04	0.00	6.4	0.18	831.44	831.44	832.04	830.64	836.24
R94	R93	94	0.05	0.43	0.022	0.038	0.059	20.18	3.87	0.23	0.004	31	12	1.00	0.79	3.56	0.00	4.5	0.11	831.03	831.03	830.54	830.23	835.62
R93	R92	93	0.36	0.43	0.155	0.059	0.214	20.30	3.86	0.83	0.054	29	12	1.00	0.79	3.56	0.05	4.5	0.11	830.65	830.64	830.13	829.84	834.35
R92	R78	92	0.53	0.53	0.281	0.214	0.495	20.40	3.85	1.91	0.287	21	12	1.00	0.79	3.56	0.29	4.5	0.08	830.39	830.33	829.74	829.53	834.35
R91	R80	91	0.72	0.43	0.310	0.000	0.310	20.00	3.89	1.20	0.114	113	12	0.70	0.79	2.98	0.11	3.8	0.50	825.86	825.73	825.44	824.65	829.50
R90	R89	90	0.07	0.63	0.044	0.000	0.044	20.00	3.89	0.17	0.002	66	12	0.44	0.79	2.36	0.00	3.0	0.37	829.97	829.97	829.46	829.17	834.08
R89	R88	-	0.00	0.43	0.000	0.044	0.044	20.37	3.86	0.17	0.002	20	12	0.44	0.79	2.36	0.00	3.0	0.11	825.88	825.88	825.17	825.08	833.65
R88	R87	88	0.36	0.43	0.155	0.044	0.199	20.48	3.85	0.77	0.046	29	12	0.48	0.79	2.47	0.05	3.1	0.15	825.79	825.78	824.98	824.84	832.60
R87	R80	87	0.43	0.53	0.228	0.199	0.427	20.63	3.84	1.64	0.211	21	12	0.44	0.79	2.36	0.21	3.0	0.12	825.78	825.73	824.74	824.65	832.60
86A	R86		0.10	0.63	0.063	0.000	0.063	20.00	3.89	0.25	0.005	138	12	1.40	0.79	4.22	0.00	5.4	0.43	828.69	826.76	827.89	825.96	832.31
R86	R85	86	1.24	0.63	0.781	0.000	0.781	20.00	3.89	3.04	0.221	162	15	0.36	1.23	3.88	0.22	3.2	0.85	826.54	826.18	825.76	825.18	830.20
R85	R84	85	0.22	0.43	0.095	0.781	0.876	20.85	3.82	3.34	0.268	24	15	0.36	1.23	3.88	0.27	3.2	0.13	826.06	825.99	825.08	824.99	831.74
R84	R81	84	0.22	0.43	0.095	0.876	0.970	20.98	3.81	3.69	0.327	24	15	0.36	1.23	3.88	0.33	3.2	0.13	825.95	825.87	824.89	824.81	831.74
R83	R82	83	0.38	0.63	0.239	0.000	0.239	20.00	3.89	0.93	0.068	115	12	0.44	0.79	2.36	0.07	3.0	0.64	826.00	825.92	825.34	824.83	829.35
R82	R81	-	0.00	0.43	0.000	0.898	0.898	20.64	3.83	3.44	0.023	68	24	0.18	3.14	9.60	0.02	3.1	0.37	825.92	825.91	824.43	824.31	832.05
R81	R80	-	0.00	0.43	0.000	1.868	1.868	21.01	3.80	7.11	0.099	142	24	0.18	3.14	9.60	0.10	3.1	0.77	825.87	825.73	824.21	823.95	832.55
R80	R79	-	0.00	0.53	0.000	2.605	2.605	21.78	3.74	9.74	0.185	135	24	0.18	3.14	9.60	0.19	3.1	0.74	825.73	825.48	823.85	823.61	833.50
R79	R78	-	0.00	0.53	0.000	2.605	2.605	22.52	3.68	9.59	0.055	139	30	0.13	4.91	14.79	0.05	3.0	0.77	825.48	825.41	823.21	823.03	834.40
R78	R77	-	0.00	0.63	0.000	3.100	3.100	23.29	3.62	11.23	0.028	142	36	0.10	7.07	21.09	0.03	**3.0**	0.79	825.41	825.37	822.53	822.39	835.40
R77	R76	-	0.00	0.63	0.000	3.478	3.478	24.08	3.57	12.40	0.035	62	36	0.10	7.07	21.09	0.03	**3.0**	0.35	825.37	825.35	822.39	822.32	836.62
R76	R45	-	0.00	0.53	0.000	3.478	3.478	24.43	3.54	12.31	0.034	111	36	0.10	7.07	21.09	0.03	**3.0**	0.62	825.35	825.31	822.32	822.21	837.21
R75	R74	75	0.35	0.63	0.221	0.000	0.221	20.00	3.89	0.86	0.058	25	12	0.48	0.79	2.47	0.06	3.1	0.13	832.37	832.36	831.68	831.56	835.72
R74	R54	74	0.36	0.43	0.155	0.221	0.375	20.13	3.88	1.46	0.167	35	12	0.44	0.79	2.36	0.17	3.0	0.19	832.16	832.11	831.46	831.31	835.72
R73	R53	73	1.10	0.43	0.473	0.000	0.473	20.00	3.89	1.84	0.267	143	12	0.44	0.79	2.36	0.27	3.0	0.79	828.13	827.75	827.58	826.95	831.68
R72	R71	72	0.49	0.63	0.309	0.000	0.309	20.00	3.89	1.20	0.114	149	12	0.44	0.79	2.36	0.11	3.0	0.83	828.60	828.43	828.28	827.63	832.42
R71	R70	-	0.00	0.43	0.000	0.309	0.309	20.83	3.82	1.18	0.109	33	12	3.00	0.79	6.17	0.11	7.9	0.07	827.05	827.01	827.20	826.21	838.79
R70	R69	70	0.29	0.43	0.125	0.309	0.433	20.90	3.81	1.65	0.215	25	12	4.00	0.79	7.13	0.22	9.1	0.05	825.96	825.91	826.11	825.11	838.39
R69	R52	69	0.33	0.53	0.175	0.433	0.608	20.94	3.81	2.32	0.423	23	12	2.10	0.79	5.16	0.42	6.6	0.06	825.81	825.71	825.01	824.53	838.39
R68	R67	68	1.93	0.63	1.216	0.000	1.216	20.00	3.89	4.73	0.536	132	15	1.00	1.23	6.46	0.54	5.3	0.42	826.72	826.01	826.27	824.95	830.75
R67	R51	-	0.00	0.43	0.000	1.216	1.216	20.42	3.85	4.68	0.526	77	15	0.48	1.23	4.48	0.53	3.6	0.35	826.01	825.60	824.85	824.48	840.09
R66	R65	66	0.24	0.63	0.151	0.000	0.151	20.00	3.89	0.59	0.027	25	12	0.48	0.79	2.47	0.03	3.1	0.13	836.12	836.11	835.43	835.31	839.54
R65	R50	65	0.40	0.43	0.172	0.151	0.323	20.13	3.88	1.25	0.124	23	12	0.44	0.79	2.36	0.12	3.0	0.13	835.94	835.91	835.21	835.11	839.54
R64	R60	64	0.06	0.43	0.026	0.000	0.026	0.00	7.00	0.18	0.003	80	12	0.44	0.79	2.36	0.00	3.0	0.44	837.49	837.48	837.04	836.68	841.46
R63	R62	63	0.45	0.63	0.284	0.000	0.284	20.00	3.89	1.10	0.096	25	12	4.50	0.79	7.56	0.10	9.6	0.04	835.67	835.64	835.97	834.84	840.17
R62	R61	62	0.40	0.43	0.172	0.284	0.456	20.04	3.89	1.77	0.247	68	12	1.00	0.79	3.56	0.25	4.5	0.25	832.73	832.56	832.44	831.76	840.17
R61	R60	-	0.00	0.43	0.000	0.456	0.456	20.29	3.86	1.76	0.244	76	12	0.50	0.79	2.52	0.24	3.2	0.39	832.27	832.08	831.66	831.28	841.63
R60	R59	60	0.05	0.53	0.027	0.481	0.508	20.69	3.83	1.95	0.298	72	12	0.50	0.79	2.52	0.30	3.2	0.37	831.84	831.62	831.18	830.82	841.93
R59	R58	-	0.00	0.53	0.000	0.508	0.508	21.06	3.80	1.93	0.293	160	12	0.50	0.79	2.52	0.29	3.2	0.83	831.19	830.72	830.72	829.92	841.88
R58	R50	-	0.00	0.63	0.000	0.508	0.508	21.89	3.73	1.90	0.283	63	12	0.50	0.79	2.52	0.28	3.2	0.33	830.49	830.31	829.82	829.51	840.95
R49A	R49		0.10	0.63	0.063	0.000	0.063	20.00	3.89	0.25	0.100	147	12	2.24	0.79	5.33	0.10	6.8	0.36	825.74	825.59	829.23	825.94	833.23
R48A	R48		0.10	0.63	0.063	0.000	0.063	20.00	3.89	0.25	0.100	119	12	1.99	0.79	5.03	0.10	6.4	0.31	825.60	825.49	828.31	825.94	832.31
R57	R56	57	0.45	0.63	0.284	0.000	0.284	20.00	3.89	1.10	0.096	75	12	0.44	0.79	2.36	0.10	3.0	0.42	826.55	826.48	826.01	825.68	830.15
R56	R55	-	0.00	0.43	0.000	0.284	0.284	20.42	3.85	1.09	0.094	69	12	0.44	0.79	2.36	0.09	3.0	0.38	826.14	826.08	825.58	825.28	833.61
R55	R54	-	0.00	0.43	0.000	0.284	0.284	20.80	3.82	1.08	0.092	130	12	0.44	0.79	2.36	0.09	3.0	0.72	825.88	825.76	825.18	824.61	834.85
R54	R53	-	0.00	0.53	0.000	0.659	0.659	21.52	3.76	2.48	0.012	142	24	0.18	3.14	9.60	0.01	3.1	0.77	825.76	825.74	824.21	823.95	837.27
R53	R52	-	0.00	0.53	0.000	1.132	1.132	22.29	3.70	4.19	0.034	68	24	0.18	3.14	9.60	0.03	3.1	0.37	825.74	825.71	823.85	823.73	839.10
R52	R51	-	0.00	0.63	0.000	1.740	1.740	22.66	3.67	6.39	0.080	139	24	0.18	3.14	9.60	0.08	3.1	0.76	825.71	825.60	823.73	823.48	839.45
R51	R50	-	0.00	0.63	0.000	2.956	2.956	23.42	3.61	10.68	0.026	60	36	0.11	7.07	22.12	0.03	3.1	0.32	825.60	825.59	823.08	823.01	840.28
R50	R49	-	0.00	0.53	0.000	4.576	4.576	23.74	3.59	16.43	0.061	141	36	0.11	7.07	22.12	0.06	3.1	0.75	825.59	825.50	823.01	822.85	840.59
R49	R48	49	2.04	0.53	1.081	4.576	5.657	24.49	3.54	20.00	0.090	19	36	0.11	7.07	22.12	0.09	3.1	0.10	825.50	825.49	822.85	822.83	829.94
R48	R47	48	0.00	0.53	0.000	5.657	5.657	24.59	3.53	19.96	0.090	139	36	0.11	7.07	22.12	0.09	3.1	0.74	825.49	825.36	822.83	822.68	829.94
R47	R46	47	0.34	0.53	0.180	5.657	5.837	25.33	3.48	20.30	0.093	24	36	0.12	7.07	23.11	0.09	3.3	0.12	825.36	825.34	822.68	822.65	837.04
R46	R45	46	0.40	0.53	0.212	5.837	6.049	25.46	3.47	20.98	0.099	31	36	0.11	7.07	22.12	0.10	3.1	0.17	825.34	825.31	822.65	822.61	837.04
R45	R44	-	0.00	0.53	0.000	9.527	9.527	25.62	3.46	32.94	0.107	139	42	0.09	9.62	30.18	0.11	3.1	0.74	825.31	825.16	822.21	822.09	837.94
R44	R43	-	0.00	0.45	0.000	9.527	9.527	26.36	3.41	32.46	0.104	86	42	0.10	9.62	31.82	0.10	3.3	0.43	825.16	825.07	822.09	822.00	829.27
R43								26.79					42							825.07		822.00		0.00
R42	R40	42	0.07	0.43	0.030	0.000	0.030	20.00	3.89	0.12	0.001	77	12	1.00	0.79	3.56	0.00	4.5	0.28	836.29	836.29	836.26	835.49	842.00
R37A	R37		0.01	0.43	0.004	0.000	0.004	20.00	3.89	0.02	0.001	100	12	0.44	0.79	2.36	0.00	3.0	0.56	834.83	834.83	834.76	834.32	838.95
R41	R40	41	0.05	0.53	0.027	0.000	0.027	20.00	3.89	0.10	0.001	77	12	1.00	0.79	3.56	0.00	4.5	0.28	836.49	836.49	836.46	835.69	842.16
R40	R39	-	0.00	0.53	0.000	0.057	0.057	20.28	3.86	0.22	0.004	25	12	1.00	0.79	3.56	0.00	4.5	0.09	835.54	835.54	834.99	834.74	841.73
R39	R38	39	0.26	0.63	0.164	0.057	0.220	20.37	3.86	0.85	0.057	25	12	0.48	0.79	2.47	0.06	3.1	0.13	835.33	835.32	834.64	834.52	840.54
R38	R37	38	0.38	0.43	0.163	0.220	0.384	20.51	3.85	1.48	0.172	23	12	0.44	0.79	2.36	0.17	3.0	0.13	835.16	835.12	834.42	834.32	840.54
R37	R36	-	0.00	0.53	0.000	0.384	0.384	20.63	3.83	1.47	0.171	71	12	0.44	0.79	2.36	0.17	3.0	0.39	834.83	834.70	834.22	833.90	841.70
R36	R35	-	0.00	0.53	0.000	0.384	0.384	21.03	3.80	1.46	0.168	126	12	0.44	0.79	2.36	0.17	3.0	0.70	834.26	834.05	833.80	833.25	842.20
R35	R34	35	0.07	0.63	0.044	0.384	0.428	21.73	3.75	1.60	0.202	140	12	0.44	0.79	2.36	0.20	3.0	0.78	833.33	833.04	832.86	832.24	841.87
R34	R33	34	2.53	0.63	1.594	0.428	2.022	22.50	3.68	7.45	0.503	14	18	0.60	1.77	8.14	0.50	4.6	0.05	833.03	832.96	831.84	831.76	836.00
R33	R32	33	0.00	0.53	0.000	2.022	2.022	22.55	3.68	7.44	0.502	119	18	0.60	1.77	8.14	0.50	4.6	0.43	832.74	832.15	831.66	830.95	836.00
R32	R31	32	0.06	0.53	0.032	2.022	2.054	22.98	3.65	7.49	0.508	34	18	0.58	1.77	8.00	0.51	4.5	0.13	832.02	831.85	830.85	830.65	842.37
R31	R30	31	0.22	0.53	0.117	2.054	2.170	23.11	3.64	7.89	0.565	24	18	0.60	1.77	8.14	0.56	4.6	0.09	831.74	831.60	830.55	830.40	841.20
R30	R6	30	0.35	0.53	0.186	2.170	2.356	23.19	3.63	8.55	0.663	35	18	0.70	1.77	8.79	0.66	5.0	0.12	831.49	831.26	830.30	830.06	841.20
R22	R4	22	0.33	0.53	0.175	0.000	0.175	20.00	3.89	0.68	0.036	187	12	0.48	0.79	2.47	0.04	3.1	0.99	829.17	829.11	829.20	828.31	833.25
R26	R25	26	0.04	0.53	0.021	0.000	0.021	20.00	3.89	0.08	0.001	83	12	4.00	0.79	7.13	0.00	9.1	0.15	832.86	832.86	835.38	832.06	839.53
R25	R24	25	0.03	0.53	0.016	0.021	0.037	20.15	3.88	0.14	0.002	23	12	0.70	0.79	2.98	0.00	3.8	0.10	831.50	831.50	830.86	830.70	840.24
R24	R23	24	0.38	0.63	0.239	0.037	0.277	20.25	3.87	1.07	0.090	29	12	0.70	0.79	2.98	0.09	3.8	0.13	831.23	831.20	830.60	830.40	839.29
R23	R3	23	0.28	0.43	0.120	0.277	0.397	20.38	3.86	1.53	0.185	22	12	0.70	0.79	2.98	0.18	3.8	0.10	830.99	830.95	830.30	830.15	839.29
R21	R5	21	0.17	0.43	0.073	0.000	0.073	20.00	3.89	0.28	0.006	120	12	0.44	0.79	2.36	0.01	3.0	0.66	831.38	831.38	831.10	830.58	835.29
R20	R7	20	0.35	0.43	0.151	0.000	0.151	20.00	3.89	0.59	0.027	118	12	0.44	0.79	2.36	0.03	3.0	0.65	831.14	831.11	830.83	830.31	835.16
R19	R8	19	0.54	0.43	0.232	0.000	0.232	20.00	3.89	0.90	0.064	108	12	0.44	0.79	2.36	0.06	3.0	0.60	830.99	830.92	830.60	830.12	835.12
R18	R10	18	0.04	0.43	0.017	0.000	0.017	20.00	3.89	0.07	0.000	30	12	4.00	0.79	7.13	0.00	9.1	0.06	837.94	837.94	838.34	837.14	842.39

From STR	To STR	Trib. Area Label	Drainage Area A, Ac.	Runoff Coeff. C	Equiv. Area (AxC)	Add'l Laterals (AxC)	Sum of (AxC)	Time Conc. (min.)	Intensity I (in./hr)	Flow Q (cfs)	Min HG for Q (%)	Pipe Length (ft.)	Pipe Diam. (in.)	Pipe Slope (%)	Pipe Area (s.f.)	Pipe Cap. (cfs)	HG Slope (%)	Vel.@ Full (ft/sec)	Time of flow (min)	HGL Upper STR	HGL Lower STR	Invert Upper STR	Invert Lower STR	Upper Ground/ Rim
		HYDROLOGY									HYDRAULICS											ELEVATIONS		
R17	R15	17	0.82	0.43	0.353	0.000	0.353	20.00	3.89	1.37	0.148	106	12	0.44	0.79	2.36	0.15	3.0	0.59	831.82	831.66	831.33	830.86	835.41
R16	R15	16	0.06	0.53	0.032	0.000	0.032	20.00	3.89	0.12	0.001	136	12	4.00	0.79	7.13	0.00	9.1	0.25	833.86	833.86	838.50	833.06	842.54
R15	R14	-	0.00	0.53	0.000	0.384	0.384	20.25	3.87	1.49	0.174	21	12	0.44	0.79	2.36	0.17	3.0	0.12	831.60	831.57	830.86	830.77	842.13
R14	R13	14	0.16	0.63	0.101	0.384	0.485	20.37	3.86	1.87	0.276	29	12	0.48	0.79	2.47	0.28	3.1	0.15	831.42	831.34	830.68	830.54	840.98
R13	R12	13	0.17	0.43	0.073	0.485	0.558	20.52	3.84	2.15	0.363	21	12	0.44	0.79	2.36	0.36	3.0	0.12	831.22	831.15	830.44	830.35	840.98
R12	R11	-	0.00	0.53	0.000	0.558	0.558	20.64	3.83	2.14	0.361	129	12	0.44	0.79	2.36	0.36	3.0	0.71	830.94	830.48	830.25	829.68	842.09
R11	R10	-	0.00	0.53	0.000	0.558	0.558	21.35	3.78	2.11	0.350	54	12	0.44	0.79	2.36	0.35	3.0	0.30	830.33	830.14	829.58	829.34	842.60
R10	R9	10	0.25	0.63	0.158	0.576	0.733	21.65	3.75	2.75	0.596	29	12	1.00	0.79	3.56	0.60	4.5	0.11	829.92	829.75	829.24	828.95	841.21
R9	R8	9	0.27	0.63	0.170	0.733	0.903	21.76	3.74	3.38	0.900	103	12	1.00	0.79	3.56	0.90	4.5	0.38	829.55	828.62	828.85	827.82	841.21
R8	R7	-	0.00	0.53	0.000	1.135	1.135	22.13	3.71	4.22	0.426	121	15	1.00	1.23	6.46	0.43	5.3	0.38	827.92	827.41	827.62	826.41	842.89
R7	R6	-	0.00	0.53	0.000	1.286	1.286	22.52	3.68	4.74	0.537	65	15	1.00	1.23	6.46	0.54	5.3	0.21	827.01	826.66	826.31	825.66	842.51
R6	R5	-	0.00	0.53	0.000	3.642	3.642	22.72	3.67	13.35	0.348	74	24	0.52	3.14	16.31	0.35	5.2	0.24	826.53	826.28	825.06	824.68	842.40
R5	R4	-	0.00	0.53	0.000	3.715	3.715	22.96	3.65	13.55	0.359	94	24	0.50	3.14	16.00	0.36	5.1	0.31	826.04	825.71	824.58	824.11	842.49
R4	R3	-	0.00	0.53	0.000	3.890	3.890	23.27	3.63	14.10	0.389	148	24	0.50	3.14	16.00	0.39	5.1	0.48	825.44	824.87	824.01	823.27	841.00
R3	R2	-	0.00	0.53	0.000	4.286	4.286	23.75	3.59	15.39	0.463	136	24	0.50	3.14	16.00	0.46	5.1	0.45	824.71	824.09	823.17	822.49	840.40
R2	R1	-	0.00	0.45	0.000	4.286	4.286	24.20	3.56	15.25	0.454	77	24	0.50	3.14	16.00	0.45	5.1	0.25	823.95	823.60	822.39	822.00	831.64
R1								24.45					24									822.00		0.00
R186	R187	-	0.00	0.63	0.000	0.000	0.000	20.00	3.89	0.00	0.000	99	24	2.02	3.14	32.15	0.00	**10.2**	0.16	831.50	831.50	831.50	829.50	0.00
R187				0.63				20.16					24	2.02						831.50		829.50		0.00
R188	R189	-	0.00	0.63	0.000	0.000	0.000	20.00	3.89	0.00	0.000	99	24	2.02	3.14	32.15	0.00	**10.2**	0.16	831.50	831.50	831.50	829.50	0.00
R189				0.63				20.16					24	2.02						831.50		829.50		0.00
R185	R184	185	0.03	0.63	0.019	0.000	0.019	20.00	3.89	0.07	0.000	35	12	0.48	0.79	2.47	0.00	3.1	0.19	834.82	834.82	834.19	834.02	838.26
R183	R182	183	0.11	0.43	0.047	0.000	0.047	20.00	3.89	0.18	0.003	35	12	0.48	0.79	2.47	0.00	3.1	0.19	833.50	833.50	832.87	832.70	837.01
R181	R180	181	0.11	0.63	0.069	0.000	0.069	20.00	3.89	0.27	0.006	35	12	0.48	0.79	2.47	0.01	3.1	0.19	831.78	831.78	831.14	830.98	835.21
R178	R137	178	0.27	0.43	0.116	0.000	0.116	20.00	3.89	0.45	0.016	103	12	0.44	0.79	2.36	0.02	3.0	0.57	833.72	833.70	833.25	832.79	837.24
R176	R139	176	0.87	0.63	0.548	0.000	0.548	20.00	3.89	2.13	0.358	47	12	0.44	0.79	2.36	0.36	3.0	0.26	834.71	834.54	833.85	833.64	837.85
R175	R174	175	0.09	0.43	0.039	0.000	0.039	20.00	3.89	0.15	0.002	29	12	0.48	0.79	2.47	0.00	3.1	0.15	836.21	836.21	835.55	835.41	839.65
R174	R136	174	0.13	0.43	0.056	0.039	0.095	20.15	3.88	0.37	0.011	23	12	0.44	0.79	2.36	0.01	3.0	0.13	836.01	836.01	835.31	835.21	839.65
R171	R163	171	0.38	0.43	0.163	0.000	0.163	20.00	3.89	0.64	0.032	139	12	0.44	0.79	2.36	0.03	3.0	0.77	835.39	835.34	835.15	834.54	839.50
R173	R172	173	0.52	0.63	0.328	0.000	0.328	20.00	3.89	1.27	0.128	122	12	0.44	0.79	2.36	0.13	3.0	0.68	833.94	833.79	833.52	832.99	837.84
R172	R163	-	0.00	0.43	0.000	0.328	0.328	20.68	3.83	1.26	0.124	72	12	0.48	0.79	2.47	0.12	3.1	0.38	833.43	833.34	832.89	832.54	841.06
R164A	R164	R164A	0.55	0.43	0.237	0.000	0.237	20.00	3.89	0.92	0.067	123	12	1.00	0.79	3.56	0.07	4.5	0.45	833.96	833.88	834.31	833.08	838.40
R170	R164	170	0.06	0.43	0.026	0.000	0.026	20.00	3.89	0.10	0.001	136	12	1.00	0.79	3.56	0.00	4.5	0.50	835.98	835.98	836.54	835.18	841.03
R169	R167	169	0.06	0.43	0.026	0.000	0.026	20.00	3.89	0.10	0.001	136	12	0.44	0.79	2.36	0.00	3.0	0.75	836.81	836.81	836.61	836.01	841.12
R168	R167	168	0.35	0.60	0.210	0.000	0.210	20.00	3.89	0.82	0.053	106	12	0.50	0.79	2.52	0.05	3.2	0.55	834.46	834.41	834.14	833.61	838.21
R167	R166	-	0.00	0.60	0.000	0.236	0.236	20.55	3.84	0.91	0.065	24	12	0.50	0.79	2.52	0.06	3.2	0.12	834.20	834.19	833.51	833.39	840.38
R166	R165	166	0.76	0.63	0.479	0.236	0.715	20.68	3.83	2.74	0.180	29	15	0.50	1.23	4.57	0.18	3.7	0.13	834.09	834.04	833.19	833.04	839.19
R165	R164	165	0.76	0.43	0.327	0.715	1.041	20.81	3.82	3.98	0.379	33	15	0.50	1.23	4.57	0.38	3.7	0.15	832.00	831.88	831.04	830.88	839.19
R164	R163	-	0.00	0.60	0.000	1.304	1.304	20.95	3.81	4.96	0.223	107	18	0.50	1.77	7.43	0.22	4.2	0.42	831.58	831.34	830.68	830.14	840.44
R163	R134	-	0.00	0.60	0.000	1.795	1.795	21.38	3.77	6.77	0.416	127	18	0.50	1.77	7.43	0.42	4.2	0.50	831.13	830.61	830.04	829.41	841.11
R162	R133	162	0.35	0.43	0.151	0.000	0.151	20.00	3.89	0.59	0.027	139	12	0.44	0.79	2.36	0.03	3.0	0.77	835.81	835.77	835.58	834.97	839.70
R161	R160	161	0.46	0.63	0.290	0.000	0.290	20.00	3.89	1.13	0.100	25	12	3.00	0.79	6.17	0.10	7.9	0.05	835.30	835.27	835.22	834.47	839.34
R160	R129	160	0.56	0.60	0.336	0.290	0.626	20.05	3.88	2.43	0.465	23	12	1.00	0.79	3.56	0.47	4.5	0.08	831.75	831.64	831.07	830.84	839.34
R129	R132	-	0.00	0.43	0.000	1.447	1.447	20.05	3.88	5.62	0.757	41	15	0.44	1.23	4.28	0.76	3.5	0.20	831.17	830.86	830.04	829.86	840.77
R159	R158	159	0.59	0.63	0.372	0.000	0.372	20.00	3.89	1.45	0.165	25	12	1.00	0.79	3.56	0.16	4.5	0.09	836.60	836.56	836.01	835.76	840.42
R158	R154	158	0.63	0.43	0.271	0.372	0.643	20.09	3.88	2.49	0.490	76	12	0.44	0.79	2.36	0.49	3.0	0.42	834.15	833.78	833.32	832.98	840.42
R157A	R157		0.01	0.43	0.004	0.000	0.004	20.00	3.89	0.02	0.100	100	12	0.50	0.79	2.36	0.10	3.0	0.56	836.00	835.26	835.75	835.25	839.80
R157	R156	157	0.03	0.60	0.018	0.004	0.022	20.56	3.84	0.09	0.001	138	12	0.50	0.79	2.52	0.00	3.2	0.72	835.26	835.26	835.15	834.46	842.48
R156	R155	156	0.05	0.60	0.030	0.022	0.052	21.27	3.78	0.20	0.003	23	12	1.00	0.79	3.56	0.00	4.5	0.08	834.93	834.93	834.36	834.13	841.93
R155	R154	155	0.16	0.63	0.101	0.052	0.153	21.36	3.78	0.58	0.026	25	12	1.00	0.79	3.56	0.03	4.5	0.09	833.89	833.88	833.33	833.08	840.89
R154	R153	154	0.06	0.43	0.026	0.796	0.822	21.45	3.77	3.10	0.755	66	12	1.00	0.79	3.56	0.75	4.5	0.24	833.62	833.12	832.98	832.32	840.89
R153	R129	-	0.00	0.60	0.000	0.822	0.822	21.69	3.75	3.08	0.747	195	12	1.00	0.79	3.56	0.75	4.5	0.72	832.63	831.17	832.22	830.27	841.53
R152	R146	152	0.05	0.43	0.022	0.000	0.022	20.00	3.89	0.08	0.001	70	12	0.44	0.79	2.36	0.00	3.0	0.39	838.04	838.04	837.54	837.24	841.99
R151	R150	151	0.32	0.63	0.202	0.000	0.202	20.00	3.89	0.78	0.048	25	12	0.50	0.79	2.52	0.05	3.2	0.13	836.17	836.16	835.48	835.36	839.95
R150	R147	150	0.52	0.43	0.224	0.202	0.425	20.13	3.88	1.65	0.214	50	12	0.50	0.79	2.52	0.21	3.2	0.26	835.91	835.81	835.26	835.01	839.95
R149	R147	149	0.54	0.43	0.232	0.000	0.232	20.00	3.89	0.90	0.064	107	12	0.44	0.79	2.36	0.06	3.0	0.59	833.98	833.91	833.58	833.11	837.71
R148	R147	148	0.06	0.63	0.038	0.000	0.038	20.00	3.89	0.15	0.002	66	12	0.60	0.79	2.76	0.00	3.5	0.31	837.41	837.41	837.00	836.61	841.03
R147	R146	-	0.00	0.43	0.000	0.695	0.695	20.31	3.86	2.68	0.568	70	12	0.60	0.79	2.76	0.57	3.5	0.33	833.78	833.39	833.01	832.59	841.11
R146	R132	-	0.00	0.43	0.000	0.717	0.717	20.65	3.83	2.75	0.595	71	12	0.60	0.79	2.76	0.59	3.5	0.34	833.03	832.61	832.24	831.81	841.57
R145	R131	145	1.01	0.43	0.434	0.000	0.434	20.00	3.89	1.69	0.225	140	12	0.44	0.79	2.36	0.22	3.0	0.78	833.16	832.84	832.66	832.04	837.00
R177	R142	-	0.67	0.60	0.402	0.000	0.402	20.00	3.89	1.56	0.193	115	12	0.63	0.79	2.83	0.19	3.6	0.53	835.56	835.34	835.26	834.54	835.26
R142	R141	-	0.00	0.60	0.000	0.402	0.402	20.53	3.84	1.55	0.057	50	15	0.32	1.23	3.65	0.06	**3.0**	0.28	835.21	835.18	834.34	834.18	839.85
R141	R140	-	0.00	0.60	0.000	0.402	0.402	20.81	3.82	1.54	0.057	52	15	0.32	1.23	3.65	0.06	**3.0**	0.29	834.94	834.91	834.08	833.91	839.65
R140	R139	-	0.00	0.60	0.000	0.402	0.402	21.10	3.80	1.53	0.056	52	15	0.32	1.23	3.65	0.06	**3.0**	0.29	834.67	834.64	833.81	833.64	839.30
R139	R138	-	0.00	0.60	0.000	0.950	0.950	21.39	3.77	3.58	0.308	52	15	0.32	1.23	3.65	0.31	**3.0**	0.29	834.54	834.38	833.54	833.38	839.50
R138	R137	-	0.00	0.60	0.000	0.950	0.950	21.69	3.75	3.56	0.304	55	15	0.70	1.23	5.40	0.30	4.4	0.21	834.06	833.89	833.28	832.89	839.80
R137	R136	-	0.00	0.60	0.000	1.066	1.066	21.89	3.73	3.98	0.379	77	15	0.50	1.23	4.57	0.38	3.7	0.34	833.70	833.41	832.79	832.41	840.10
R136	R135	-	0.00	0.60	0.000	1.161	1.161	22.24	3.70	4.30	0.168	63	18	0.35	1.77	6.21	0.17	3.5	0.30	833.29	833.19	832.21	831.99	840.80
R135	R134	-	0.00	0.60	0.000	1.161	1.161	22.54	3.68	4.27	0.165	80	18	0.35	1.77	6.21	0.17	3.5	0.38	832.94	832.81	831.89	831.61	841.57
R134	R133	-	0.00	0.60	0.000	2.956	2.956	22.92	3.65	10.79	0.228	97	24	0.35	3.14	13.38	0.23	4.3	0.38	829.89	829.67	828.41	828.07	841.98
R133	R132	-	0.00	0.60	0.000	3.106	3.106	23.30	3.62	11.25	0.248	169	24	0.30	3.14	12.39	0.25	3.9	0.71	829.48	829.06	827.97	827.46	841.20
R132	R131	-	0.00	0.60	0.000	5.270	5.270	24.01	3.57	18.82	0.210	139	30	0.30	4.91	22.47	0.21	4.6	0.51	828.94	828.64	827.06	826.64	840.77
R131	R130	-	0.00	0.60	0.000	5.704	5.704	24.52	3.53	20.16	0.242	142	30	0.30	4.91	22.47	0.24	4.6	0.52	828.46	828.12	826.54	826.12	841.78
R130	R144	-	0.00	0.60	0.000	5.704	5.704	25.03	3.50	19.95	0.237	23	30	0.18	4.91	17.40	0.24	3.5	0.11	828.03	827.98	826.02	825.98	840.30
R144	R143	144	0.31	0.60	0.186	5.704	5.890	25.14	3.49	20.56	0.251	25	30	0.15	4.91	15.89	0.25	3.2	0.13	827.97	827.90	825.88	825.84	839.45
R143	R128	143	0.29	0.60	0.174	5.890	6.064	25.27	3.48	21.11	0.265	144	30	0.15	4.91	15.89	0.26	3.2	0.74	827.90	827.52	825.74	825.52	839.45
R128	R127	128	0.40	0.60	0.240	6.064	6.304	26.01	3.43	21.63	0.105	76	36	0.16	7.07	26.68	0.11	3.8	0.34	827.48	827.40	825.12	825.00	836.15
R421	R420	-	1.16	0.43	0.497	0.000	0.497	20.00	3.89	1.93	0.034	82	18	0.18	1.77	4.46	0.18	**2.5**	0.54	828.39	828.25	826.06	825.92	831.71
R420	R419	-	0.00	0.00	0.000	0.497	0.497	20.54	3.84	1.91	0.033	349	18	0.18	1.77	4.46	0.18	**2.5**	2.31	828.25	827.62	825.92	825.29	834.00
R419	R418	419	0.68	0.43	0.292	0.497	0.789	22.85	3.66	2.89	0.075	51	18	0.18	1.77	4.46	0.18	**2.5**	0.34	827.62	827.53	825.29	825.20	834.71
R418	R417	-	0.00	0.00	0.000	0.789	0.789	23.19	3.63	2.87	0.074	299	18	0.18	1.77	4.46	0.18	**2.5**	1.98	827.53	826.99	825.20	824.66	836.58
R416	R415	-	0.00	0.00	0.000	0.789	0.789	25.16	3.49	2.75	0.069	286	18	0.18	1.77	4.46	0.18	**2.5**	1.89	826.99	826.47	824.66	824.14	836.55
R414	R413	-	0.00	0.00	0.000	0.789	0.789	27.05	3.36	2.65	0.064	94	18	0.18	1.77	4.46	0.18	**2.5**	0.62	826.47	826.30	824.14	823.97	836.13
R413	R412	-	0.00	0.00	0.000	0.789	0.789	27.67	3.32	2.62	0.062	267	18	0.18	1.77	4.46	0.18	**2.5**	1.76	826.30	825.82	823.97	823.49	837.57
R411	R410	-	0.00	0.00	0.000	0.789	0.789	29.44	3.21	2.54	0.058	121	18	0.18	1.77	4.46	0.18	**2.5**	0.80	825.82	825.61	823.49	823.28	832.34
R410	R50	-	0.00	0.00	0.000	0.789	0.789	30.24	3.17	2.50	0.057	75	18	0.18	1.77	4.46	0.18	**2.5**	0.50	825.61	825.47	823.28	823.14	840.73

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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
STORM SEWER DESIGN CALCULATIONS

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-13-SC
JOB #: 12001809
FILE CODE:
SHEET NO.
73

LINE TABLE		
LINE	LENGTH	BEARING
L1	197.58	S03°47'27"W
L2	332.82	N86°12'33"W
L3	22.75	N40°25'24"W
L4	159.27	S03°47'27"W
L5	50.00	S83°42'33"E
L6	52.63	S01°43'13"W
L7	11.52	S49°49'18"W
L8	355.11	N86°11'54"W
L9	259.81	S09°51'46"W
L10	47.90	S88°21'06"E
L11	323.52	S69°50'27"E
L12	15.34	S02°08'42"W
L13	163.00	S44°46'07"W
L14	100.00	S45°13'53"E
L15	259.63	S88°20'27"E
L16	370.80	S88°20'27"E
L17	497.72	S01°39'33"W
L18	275.82	S04°39'24"E
L19	620.38	S39°25'23"E
L20	565.25	S85°55'23"E
L21	NOT USED	
L22	189.30	N53°07'40"W
L23	709.44	S01°41'53"W
L24	166.21	S88°18'07"E
L25	200.00	S88°18'07"E
L26	105.77	S01°41'53"W
L27	75.73	N23°54'13"W
L28	200.38	S88°18'07"E
L29	100.00	S45°13'53"E
L30	100.00	N44°46'07"E
L31	12.49	N27°21'39"W
L32	472.10	S45°13'53"E
L33	122.28	S44°46'07"W
L34	365.44	S04°39'24"E
L35	240.26	S39°25'23"E
L36	702.56	S85°55'23"E
L37	101.48	S04°04'37"W
L38	17.48	S23°43'38"W
L39	44.93	S88°22'38"E
L40	684.43	S85°51'00"E
L41	65.57	S84°42'27"W
L42	326.90	S85°51'00"W
L43	81.45	S86°02'11"W

CURVE TABLE					
CURVE	LENGTH	RADIUS	CH. BEARING	CHORD	DELTA
C1	95.89'	120.00'	S63°18'58"E	93.36'	45°47'09"
C2	152.72'	100.00'	N39°57'33"W	138.30'	87°30'00"
C3	94.46'	100.00'	S56°38'57"E	90.98'	54°07'12"
C4	54.68'	103.15'	S13°45'13"E	54.04'	30°22'16"
C5	83.95'	100.00'	S25°46'15"W	81.51'	48°06'04"
C6	76.76'	100.00'	S71°48'42"W	74.89'	43°58'49"
C7	146.50'	100.00'	N51°49'56"E	133.75'	83°56'21"
C8	47.60'	400.00'	S84°56'34"E	47.57'	6°49'03"
C9	81.30'	419.18'	S75°36'45"E	81.17'	11°06'44"
C10	87.72'	200.00'	S14°42'37"W	87.02'	25°07'51"
C11	107.26'	500.00'	N20°24'51"E	107.06'	12°17'29"
C12	186.31'	350.00'	S29°31'07"W	184.12'	30°30'00"
C13	173.05'	230.00'	S66°47'10"E	169.00'	43°06'34"
C14	55.12'	500.00'	N01°29'55"W	55.09'	6°18'57"
C15	139.56'	230.00'	N22°02'23"W	137.43'	34°45'59"
C16	186.66'	230.00'	N62°40'23"W	181.58'	46°30'00"
C17	102.77'	230.00'	N11°06'10"W	101.92'	25°36'06"
C18	172.90'	230.00'	N66°46'00"W	168.85'	43°04'14"
C19	193.87'	148.62'	N07°37'48"E	180.41'	74°44'23"
C20	198.41'	230.00'	N20°03'22"E	192.31'	49°25'31"
C21	139.56'	230.00'	N22°02'23"W	137.43'	34°45'59"
C22	186.66'	230.00'	N62°40'23"W	181.58'	46°30'00"
C23	94.31'	275.00'	N13°54'08"E	93.85'	19°39'01"
C24	10.14'	230.00'	S87°06'49"E	10.14'	2°31'38"
C25	37.90'	230.00'	S89°25'44"W	37.86'	9°26'23"
C26	37.90'	230.00'	N89°25'44"E	37.86'	9°26'33"
C27	32.57'	230.00'	N89°54'24"W	32.54'	8°06'49"
C28	22.73'	230.00'	N88°52'02"E	22.72'	5°39'42"
C29	370.83'	230.00'	N47°53'15"E	331.95'	92°22'44"

NOTE:
1. PROPOSED OR EXISTING DRIVEWAYS SHALL BE NO CLOSER THAN 50 FEET FROM THE RIGHT OF WAY OF AN INTERSECTING ROAD.

2. PARKING TO BE PROVIDED ON ONE SIDE OF THE STREET AND APPROPRIATE SIGNAGE TO BE PROVIDED.

PAGE NO. 52

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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
LAYOUT PLAN – NORTH

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 50 100
1" = 100 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-14-L
JOB #: 12001809
FILE CODE:
SHEET NO. 76

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

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
EASEMENT PLAN – NORTH

DATE
JUNE 6, 2014

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2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 40 80
1" = 80 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-14-L-EM
JOB #: 12001809
FILE CODE:
SHEET NO.
77A

LEGEND

STOP
R1–1
30"x30"

R8–3a

SPEED LIMIT 25
R2–1
24"x30"

LILAC LANE
D3–1

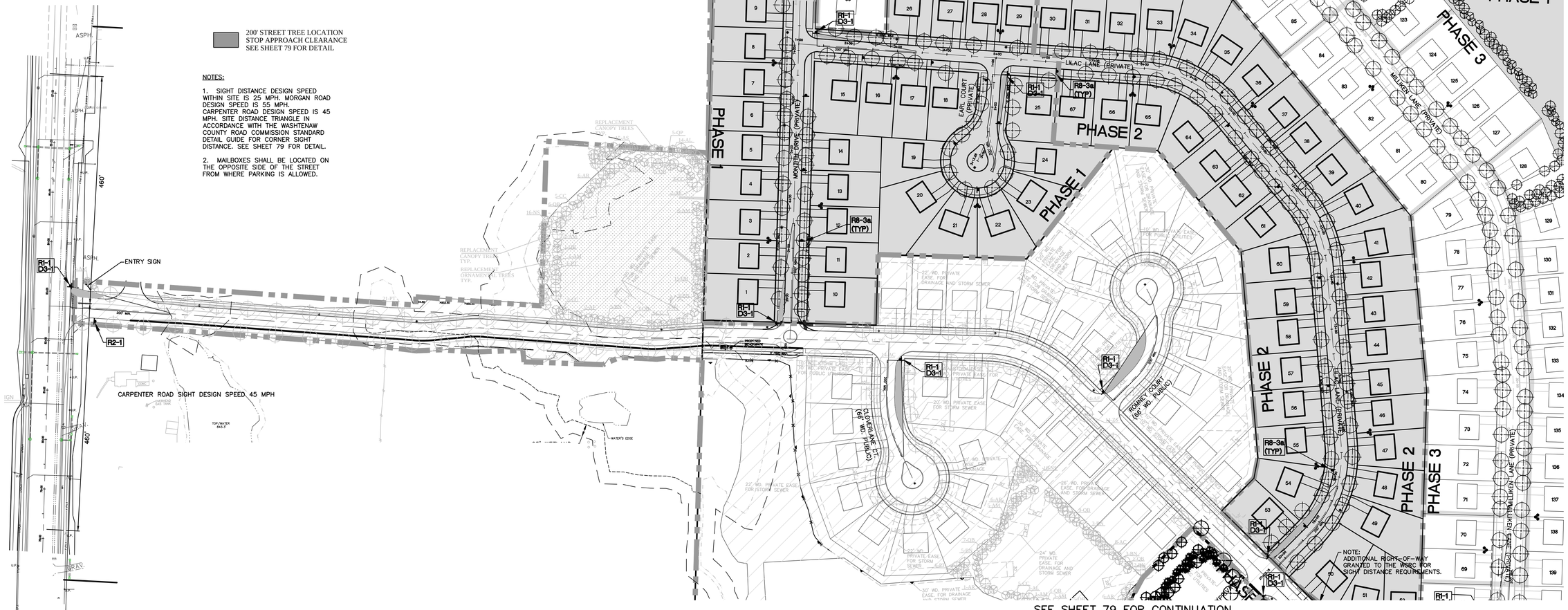
YIELD
R1–2

200' STREET TREE LOCATION
STOP APPROACH CLEARANCE
SEE SHEET 79 FOR DETAIL

NOTES:

1. SIGHT DISTANCE DESIGN SPEED WITHIN SITE IS 25 MPH. MORGAN ROAD DESIGN SPEED IS 55 MPH. CARPENTER ROAD DESIGN SPEED IS 45 MPH. SITE DISTANCE TRIANGLE IN ACCORDANCE WITH THE WASHTENAW COUNTY ROAD COMMISSION STANDARD DETAIL GUIDE FOR CORNER SIGHT DISTANCE. SEE SHEET 79 FOR DETAIL.

2. MAILBOXES SHALL BE LOCATED ON THE OPPOSITE SIDE OF THE STREET FROM WHERE PARKING IS ALLOWED.



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

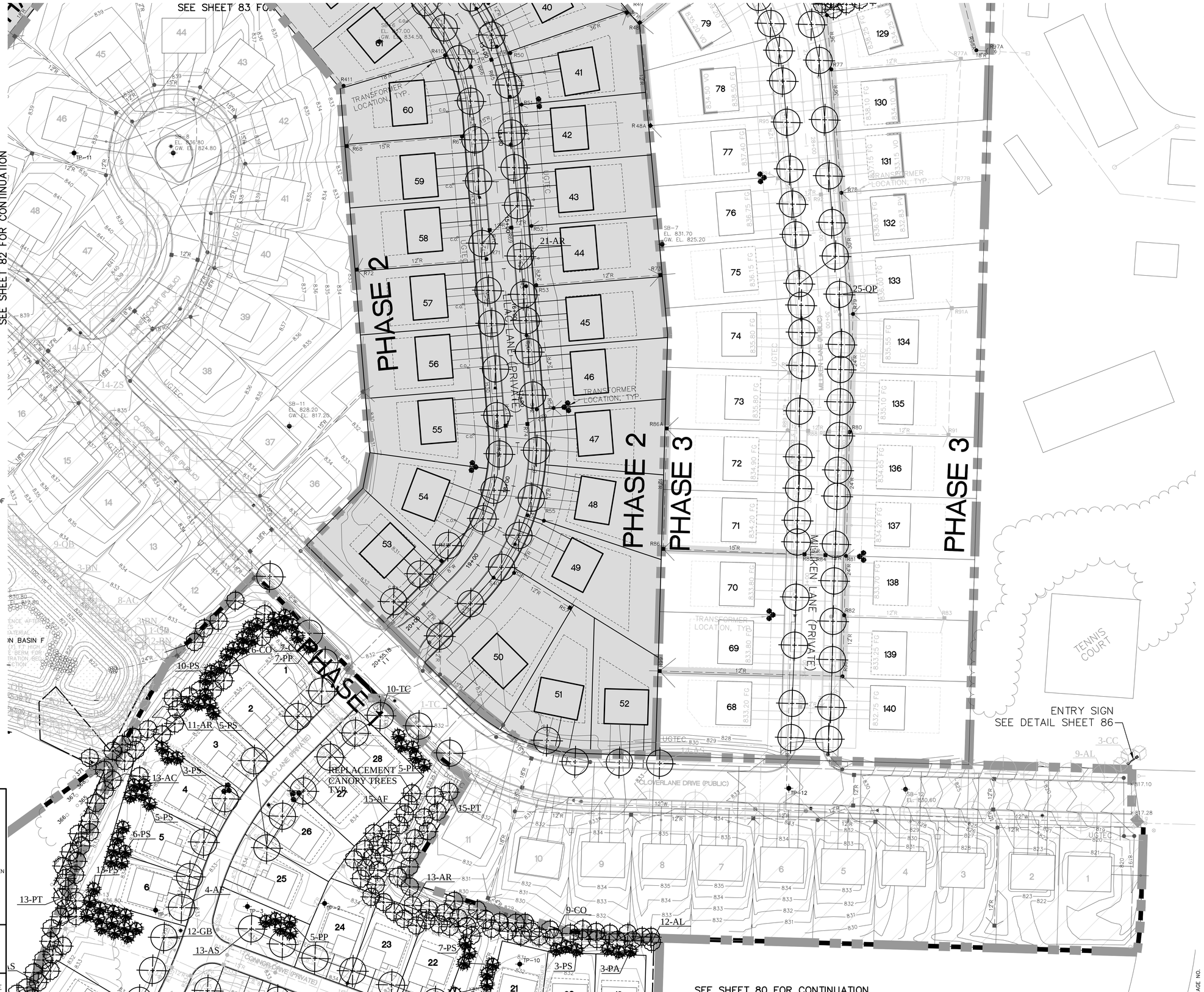
DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
TRAFFIC CONTROL AND SIGNING PLAN
NORTH

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 50 100
1" = 100 FEET

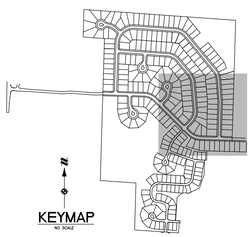
DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-15-TC
JOB #: 12001809
FILE CODE:
SHEET NO.
78



NOTE:
1. ALL TREES SHALL BE LOCATED OUTSIDE OF SIGHT TRIANGLES TO ACHIEVE 260 FEET OF INTERSECTION SIGHT DISTANCE AND 200 FEET OF STOP SIGN SIGHT DISTANCE.

2. TREES, ROCKS, LANDSCAPING, BERMS, HEADWALLS, PRIVATE SIGNS, SPRINKLERS, OR PRIVATELY OWNED UTILITIES SHALL NOT BE ALLOWED IN THE RIGHT-OF-WAY.

3. SEE SOIL EROSION CONTROL PLAN SHEETS FOR ADDITIONAL INFORMATION.



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

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 13
TOWN 3 SOUTH, RANGE 6 EAST
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WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
LANDSCAPE PLAN – EAST

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

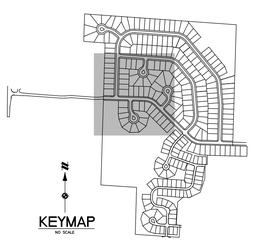
SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-16A-LS
JOB #: 12001809
FILE CODE:
SHEET NO. 81

NOTE:
1. ALL TREES SHALL BE LOCATED OUTSIDE OF SIGHT TRIANGLES TO ACHIEVE 260 FEET OF INTERSECTION SIGHT DISTANCE AND 200 FEET OF STOP SIGN SIGHT DISTANCE.

2. TREES, ROCKS, LANDSCAPING, BERMS, HEADWALLS, PRIVATE SIGNS, SPRINKLERS, OR PRIVATELY OWNED UTILITIES SHALL NOT BE ALLOWED IN THE RIGHT-OF-WAY.

3. SEE SOIL EROSION CONTROL PLAN SHEETS FOR ADDITIONAL INFORMATION.



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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 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
LANDSCAPE PLAN – WEST

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-16A-LS
JOB #: 12001809
FILE CODE:
SHEET NO.
82

NOTE:
1. ALL TREES SHALL BE LOCATED OUTSIDE OF SIGHT TRIANGLES TO ACHIEVE 260 FEET OF INTERSECTION SIGHT DISTANCE AND 200 FEET OF STOP SIGN SIGHT DISTANCE.

2. TREES, ROCKS, LANDSCAPING, BERMS, HEADWALLS, PRIVATE SIGNS, SPRINKLERS, OR PRIVATELY OWNED UTILITIES SHALL NOT BE ALLOWED IN THE RIGHT-OF-WAY.

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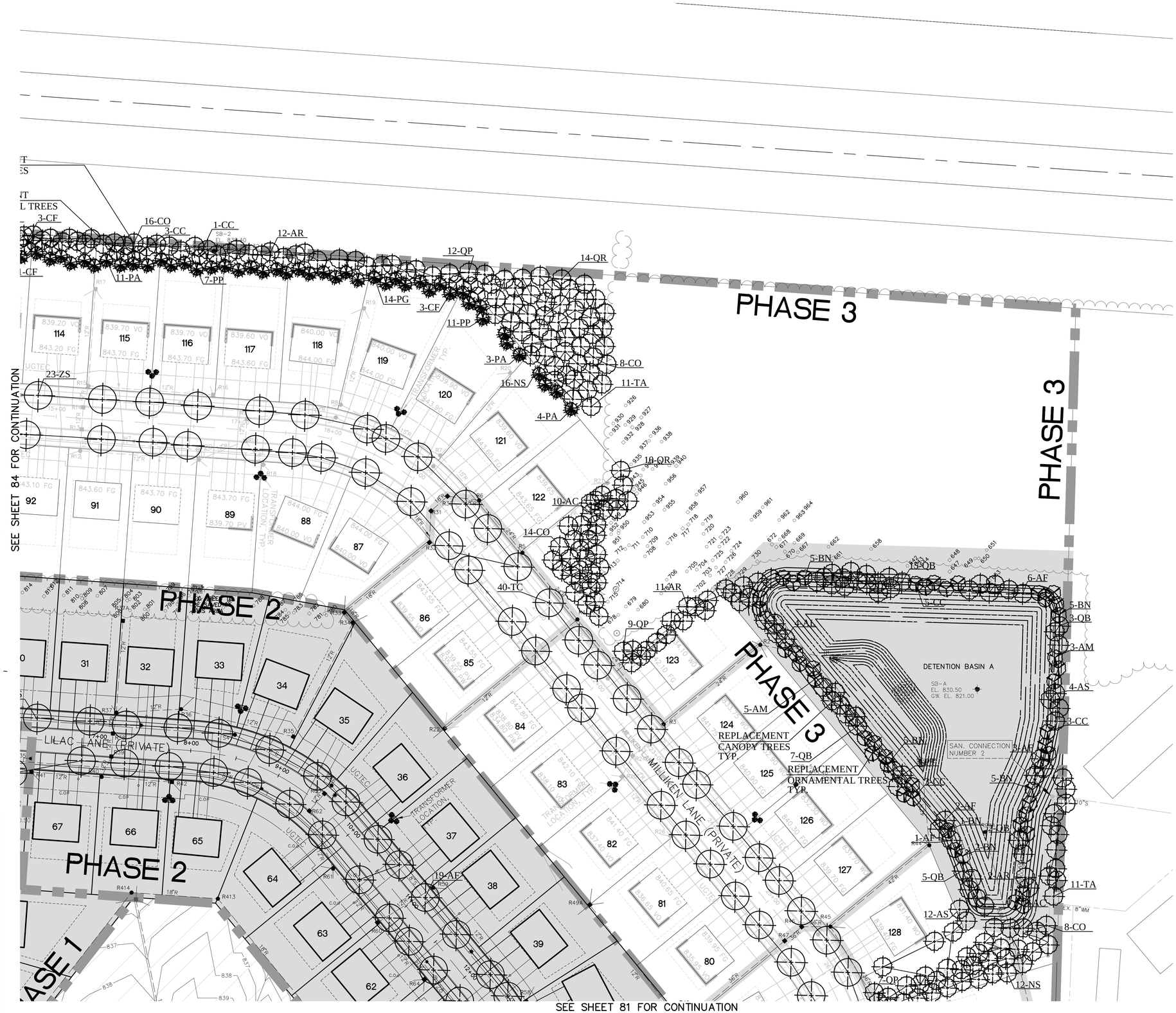

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TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

DIVERSE REAL ESTATE LLC

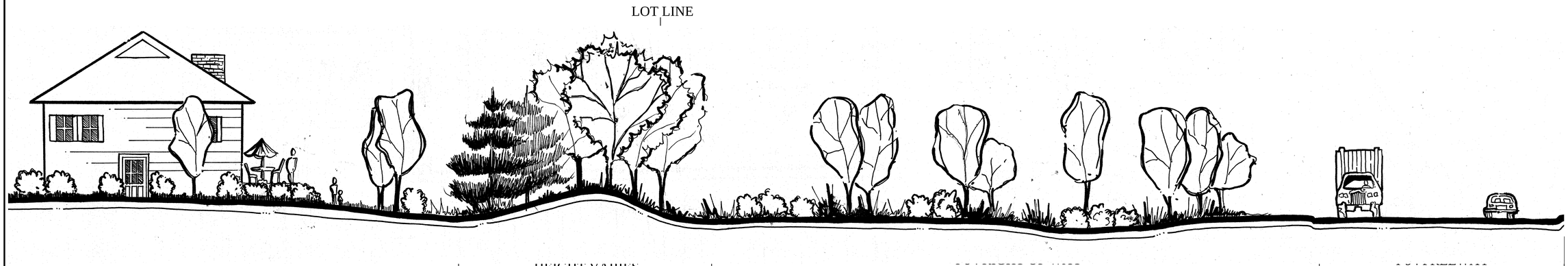
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
LANDSCAPE PLAN – NORTHEAST

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-16A-LS
JOB #: 12001809
FILE CODE:
SHEET NO.
83



TYPICAL BERM DETAIL

SCALE: 1" = 10'

NOTE:
1. ALL TREES SHALL BE LOCATED OUTSIDE OF SIGHT TRIANGLES TO ACHIEVE 260 FEET OF INTERSECTION SIGHT DISTANCE AND 200 FEET OF STOP SIGN SIGHT DISTANCE.

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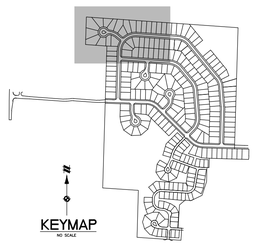
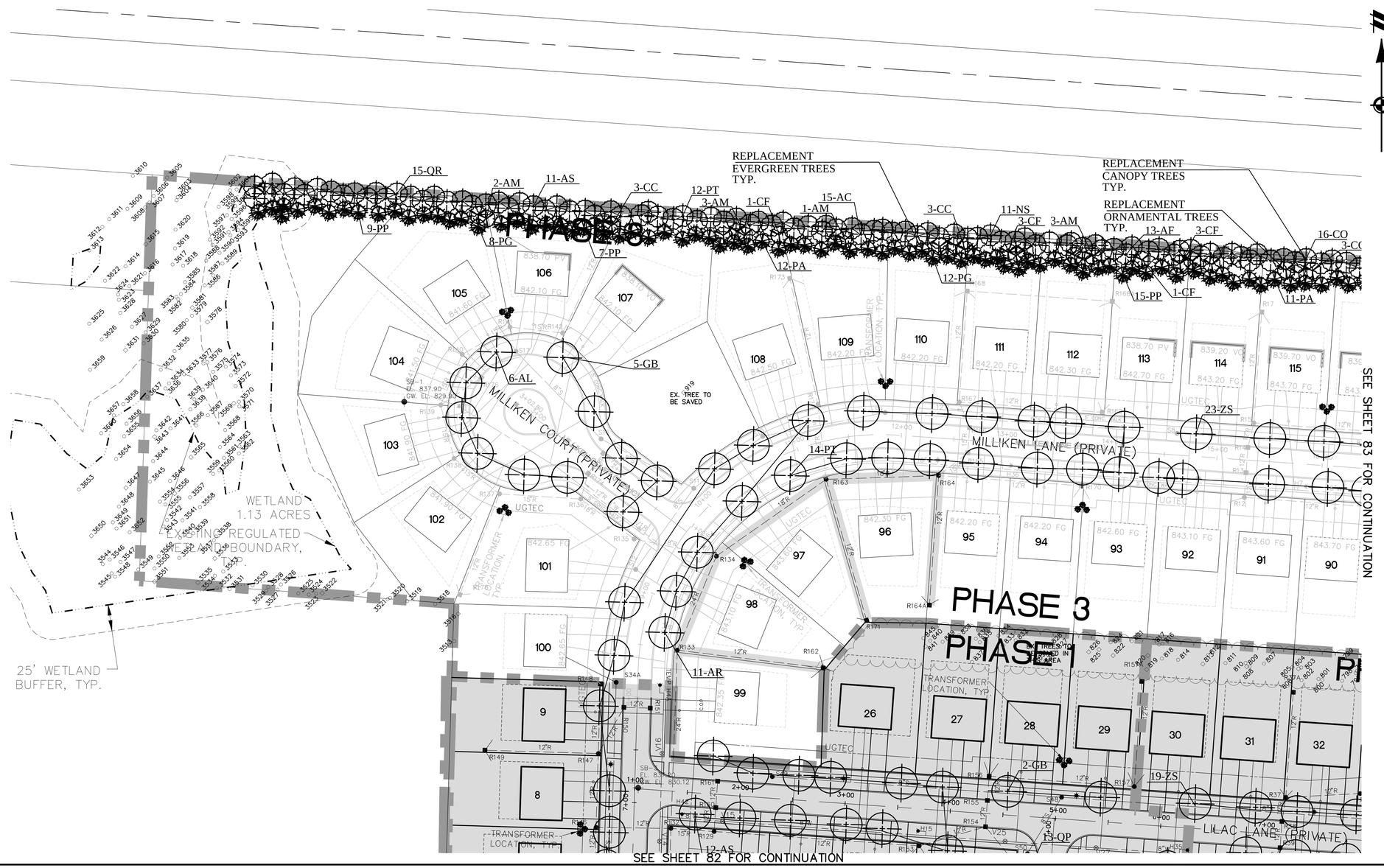
3. SEE SOI EROSION CONTROL PLAN SHEETS FOR ADDITIONAL INFORMATION.





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DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
LANDSCAPE PLAN – NORTHWEST

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
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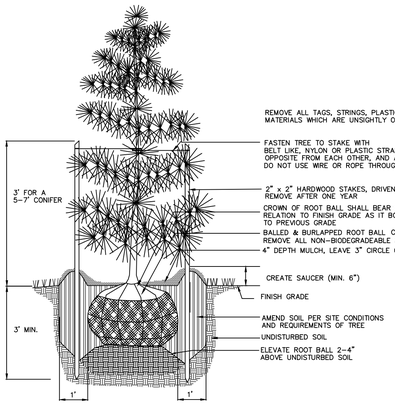
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-16A-LS
JOB #: 12001809
FILE CODE:
SHEET NO. 84



REMOVE ALL TAGS, STRINGS, PLASTICS, AND ANY OTHER MATERIALS WHICH ARE UNSIGHTLY OR COULD CAUSE GIRDLING.

FASTEN TREE TO STAKE WITH BELT LIKE, NYLON OR PLASTIC STRAPS (CONNECT FROM TREE TO STAKE OPPOSITE FROM EACH OTHER, AND ALLOW FOR SOME 'FLEXING') DO NOT USE WIRE OR ROPE THROUGH A HOSE. REMOVE AFTER ONE YEAR.

2" x 2" HARDWOOD STAKES, DRIVEN 6"-8" OUTSIDE OF ROOTBALL REMOVE AFTER ONE YEAR

CROWN OF ROOT BALL SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE TO PREVIOUS GRADE

BALLED & BURLAPPED ROOT BALL CUT AND REMOVE TOP 1/3 OF BURLAP REMOVE ALL NON-BIODEGRADEABLE MATERIAL FROM ROOTBALL

4" DEPTH MULCH, LEAVE 3" CIRCLE OF BARE SOIL AROUND TREE TRUNK

CREATE SAUCER (MIN. 6")

FINISH GRADE

AMEND SOIL PER SITE CONDITIONS AND REQUIREMENTS OF TREE

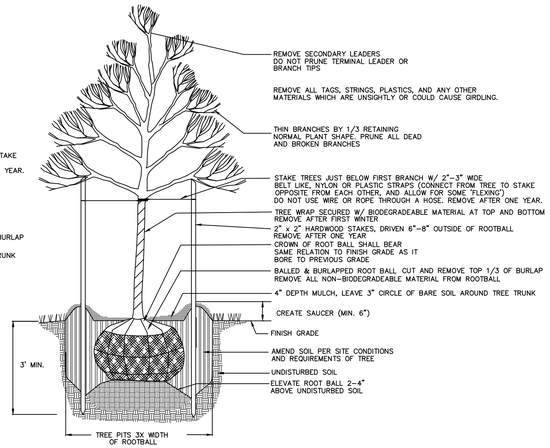
UNDISTURBED SOIL

ELEVATE ROOT BALL 2-4" ABOVE UNDISTURBED SOIL

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



REMOVE SECONDARY LEADERS DO NOT PRUNE TERMINAL LEADER OR BRANCH TIPS

REMOVE ALL TAGS, STRINGS, PLASTICS, AND ANY OTHER MATERIALS WHICH ARE UNSIGHTLY OR COULD CAUSE GIRDLING.

THIN BRANCHES BY 1/3 RETAINING NORMAL PLANT SHAPE. PRUNE ALL DEAD AND BROKEN BRANCHES

STAKE TREES JUST BELOW FIRST BRANCH W/ 2"-3" WIDE BELT LIKE, NYLON OR PLASTIC STRAPS (CONNECT FROM TREE TO STAKE OPPOSITE FROM EACH OTHER, AND ALLOW FOR SOME 'FLEXING') DO NOT USE WIRE OR ROPE THROUGH A HOSE. REMOVE AFTER ONE YEAR.

TREE WRAP SECURED W/ BIODEGRADEABLE MATERIAL AT TOP AND BOTTOM REMOVE AFTER FIRST WINTER

2" x 2" HARDWOOD STAKES, DRIVEN 6"-8" OUTSIDE OF ROOTBALL REMOVE AFTER ONE YEAR

CROWN OF ROOT BALL SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE TO PREVIOUS GRADE

BALLED & BURLAPPED ROOT BALL CUT AND REMOVE TOP 1/3 OF BURLAP REMOVE ALL NON-BIODEGRADEABLE MATERIAL FROM ROOTBALL

4" DEPTH MULCH, LEAVE 3" CIRCLE OF BARE SOIL AROUND TREE TRUNK

CREATE SAUCER (MIN. 6")

FINISH GRADE

AMEND SOIL PER SITE CONDITIONS AND REQUIREMENTS OF TREE

UNDISTURBED SOIL

ELEVATE ROOT BALL 2-4" ABOVE UNDISTURBED SOIL

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 TWO YEARS AFTER INSTALLATION
4. WATER TREE THOROUGHLY SUBSEQUENT TO INSTALLATION

DECIDUOUS TREE PLANTING DETAIL
BALLED AND BURLAPPED
NO SCALE

REPLACEMENT TREE PLANTING SCHEDULE

KEY	QTY.	SPECIES	SIZE	SPEC.
Canopy Trees				
AR	52	Acer rubrum 'October Glory' October Glory Red Maple	2 1/2" cal.	B&B
AF	49	Acer rubrum 'Franksred' Red Sunset Red Maple	2 1/2" cal.	B&B
AL	59	Acer saccharum "Legacy' Legacy Sugar Maple	2 1/2" cal.	B&B
AS	51	Acer saccharum "Green Mountain' Green Mountain Sugar Maple	2 1/2" cal.	B&B
AC	60	Acer saccharum "Commemoration' Commemoration Sugar Maple	2 1/2" cal.	B&B
CO	94	Celtis occidentalis Common Hackberry	2 1/2" cal.	B&B
PT	61	Platanus x acerifolia 'Columbia' Columbia London Plane Tree	2 1/2" cal.	B&B
QP	59	Quercus palustris Pin Oak	2 1/2" cal.	B&B
QR	88	Quercus rubra Red Oak	2 1/2" cal.	B&B
QB	32	Quercus bicolor Swamp Oak	2 1/2" cal.	B&B
TA	44	Tilia americana American Linden	2 1/2" cal.	B&B
NS	57	Nyssa sylvatica Black Tupelo	2 1/2" cal.	B&B
Evergreen Trees				
PA	47	Picea abies Norway Spruce	6' ht.	B&B
PG	60	Picea glauca White Spruce	6' ht.	B&B
PP	122	Picea pungens Colorado Spruce	6' ht.	B&B
PS	128	Pinus strobus White Pine	6' ht.	B&B
Ornamental Trees				
AM	20	Amelancier canadensis Shadblow Serviceberry	6'-8' ht.	B&B Multi-stem
BN	26	Betula nigra River Birch	6'-8' ht.	B&B Multi-stem
CC	24	Crataegus crusgalli Cockspur Hawthorn	6'-8' ht.	B&B Multi-stem
CF	17	Cornus florida White Flowering Dogwood	6'-8' ht.	B&B Multi-stem

LANDSCAPE NOTES

1. All plant materials shall be northern nursery grown No. 1 grade and installed according to accepted planting procedures. All plant materials shall meet current American Association of Nurserymen Standards.
2. Sizes specified are minimum sizes to which the plants are to be installed.
3. 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. Replacements shall meet all standards of the original installation.
4. 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. Trees shall be a min. of 15' from any overhead utility line.
5. Prior to any land clearing or construction, tree protection fencing is to be installed by the contractor. This fencing is to be installed at the dripline of all trees and shrubs to be saved as shown in the tree protection fence detail. 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.
6. All landscaped areas shall be maintained by pruning, trimming, weeding, clearing of undergrowth, fertilizing, and watering at intervals necessary to promote optimum growth and health.
7. No plant material is to be planted closer than 4 feet from any property line.
8. 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 1/4 of the root ball above the grade.
9. Remove all twine, wire, nursery tree guards, tags and inorganic material from root balls. Peal back the top 1/3 of burlap from earth balls and remove any burlap around tree trunks.
10. All landscape beds 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.
11. Backfill directly behind all curbs and along sidewalks and compact to top of curb or walk to support vehicle and pedestrian weight without settling.
12. All disturbed unpaved areas are to be spread with a minimum 4 inches of topsoil and hydroseeded or sodded with MDOT class A seed or sod as noted on the plan. Areas of individual trees and landscape beds are to be mulched with a minimum of 4 inches shredded hardwood bark. Lawn trees are to be mulched with a 4' diameter shredded bark ring. Bark is to be pulled away from the trunk of trees leaving a 3" clear area around the trunk. Mulch is to be of natural color, finely shredded hardwood bark.
13. All landscaped areas shall be provided with a readily available and acceptable water supply. Newly planted materials shall be regularly watered until established.
14. Detention Basin seed mix shall be J. F. New 'Detention Basin Seed Mix' to the 10 year storm elevation and J.F. New 'Economy Praire Seed Mix' from the 10 year storm event elevation to the top edges of the basin. Mixes as produced by J.F. New Native Plant Nursery, 128 Sunset drive, Walkerton, Indiana 46574. Seed per manufacturers recommendations.
15. All trees shall be located outside of sight triangles to achieve 260 feet of intersection sight distance and 200 feet of stop sign sight distance.
16. New trees in exisiting right-of-way, rocks, landscaping, berms, headwalls, private signs, sprinklers, or privately owned utilities shall not be allowed in the right-of-way.
17. All trees shall be a minimum of 10 feet from utility structures.
18. See Soil Erosion Control Plan sheets for additional information.

STREET TREE PLANTING SCHEDULE

KEY	QTY.	SPECIES	SIZE	SPEC.
Canopy Trees				
AR	32	Acer rubrum 'October Glory' October Glory Red Maple	2 1/2" cal.	B&B
AF	50	Acer rubrum 'Franksred' Red Sunset Red Maple	2 1/2" cal.	B&B
AL	6	Acer saccharum "Legacy' Legacy Sugar Maple	2 1/2" cal.	B&B
AS	53	Acer saccharum "Green Mountain' Green Mountain Sugar Maple	2 1/2" cal.	B&B
AC	12	Acer saccharum "Commemoration' Commemoration Sugar Maple	2 1/2" cal.	B&B
GB	19	Ginkgo biloba Maidenhair Tree	2 1/2" cal.	B&B
PT	14	Platanus x acerifolia 'Columbia' Columbia London Plane Tree	2 1/2" cal.	B&B
QP	56	Quercus palustris Pin Oak	2 1/2" cal.	B&B
TC	56	Tilia cordata 'Greenspire' Greenspire Littleleaf Linden	2 1/2" cal.	B&B
ZS	58	Zelkova serrata Japanese Zelkova	2 1/2" cal.	B&B

LANDSCAPE DATA

Street Trees (1/50lf.)

	Required	Provided
Trees (17,700 lf/50)	354	356

TREE REPLACEMENT CALC'S.

DBH of Woodland Tree Removal:	2,011"
Required Replacement - 2,011 x 100%	2,011"
DBH of Heritage Tree Removal:	1,719"
Required Replacement - 1,719" x 150%	2,579"
Total Replacement Caliper Inches Req'D:	4,590"
Total Replacement Caliper Inches Provided:	4,590"

NOTE: TREES IN VERY POOR, POOR, NEAR DEAD, OR DISEASED CONDITION ARE NOT INCLUDED IN TREE REPLACEMENT CALCULATIONS.

NOTE: THE FOLLOWING CALCULATIONS WERE USED IN DETERMINING REPLACEMENTS.

1 Canopy Tree (2 1/2" cal.) = 2.5" Cal. Inches of Replacement
1 Ornamental Tree (6'-8' ht.) = 2.5" Cal. Inches of Replacement
1 Evergreen Tree (6' ht.) = 2.5" Cal. Inches of Replacement

REPLACEMENTS PROVIDED

706 Canopy Trees @ 2.5" Cal. Inches = 1,765 cal. inches of replacement
87 Ornamental Trees @ 2.5" Cal. Inches = 217.5 cal. inches of replacement
313 Evergreen Trees (6' ht.) @ 2.5" Cal. Inches = 782.5 cal. inches of replacement
380 Wetland Mitigation Trees @ 2.5 Cal. Inches = 950 cal. inches of replacement
Two 2.5" caliper to be planted on each lot in phases 3 & 4 within the first 60 days of owner occupancy as specified in the condominium association restriction/covenants. (140 lots x 2 trees x 2.5 Cal. Inches = 700 cal. inches of replacement)
One 2.5" caliper to be planted on each lot in phase 5 within the first 60 days of owner occupancy as specified in the condominium association restriction/covenants. (70 lots x 1 tree x 2.5 Cal. Inches = 175 cal. inches of replacement)

Tree replacements are shown on the plan sheets per the symbols found in the Landscape Legend. Tree replacements will be a mix of the trees listed per thier catagory and plan symbol. Canopy trees to be 2 1/2" caliper, ornamental trees to be 6'-8' ht. multi-trunk trees, and evergreen trees to be 6' ht. All replacement trees shall meet Township Standards.

LANDSCAPE LEGEND

PROPOSED

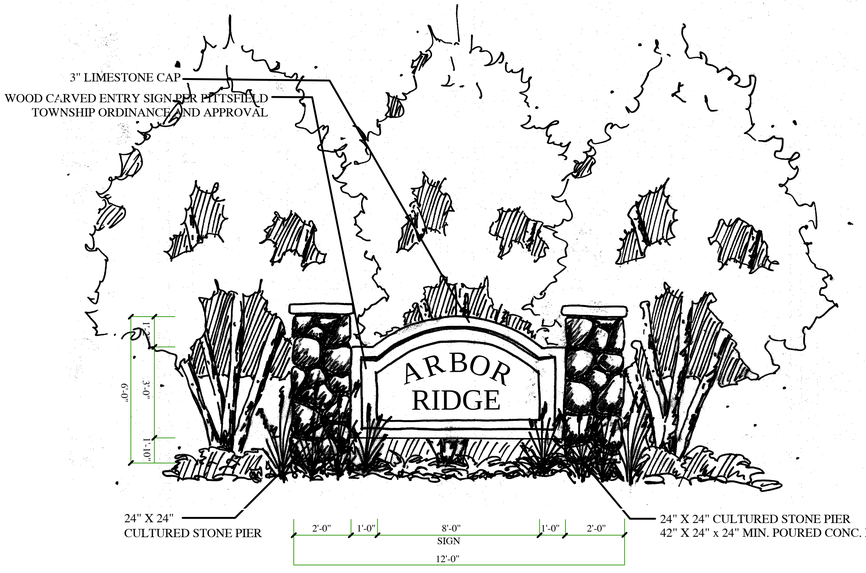
CANOPY TREE

RETENTION BASIN SEED MIX

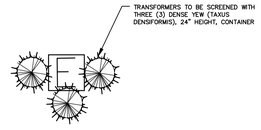
REPLACEMENT TREE (EVERGREEN)

REPLACEMENT TREE (CANOPY)
(See Wetland Mitigation Planting Plan)

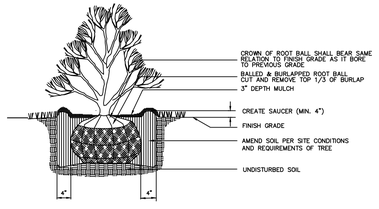
REPLACEMENT TREE (ORNAMENTAL)



Entry Sign Detail
Not to Scale

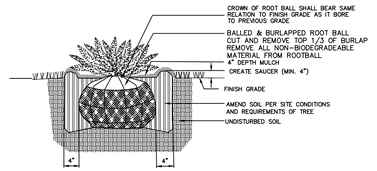


TRANSFORMER SCREENING DETAIL
NO SCALE



NOTES:
1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. WATER SHRUBS IMMEDIATELY AFTER INSTALLATION

DECIDUOUS SHRUB PLANTING DETAIL
BALLED & BURLAPPED
NO SCALE



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NOTES:
1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. WATER SHRUB THOROUGHLY SUBSEQUENT TO INSTALLATION

CONIFEROUS SHRUB PLANTING DETAIL
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FINAL SITE PLAN
LANDSCAPE NOTES AND DETAILS

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SCALE
0
NONE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-16A-LSDT
JOB #: 12001809
FILE CODE:
SHEET NO.
86

PACIFIC LIGHTING & STANDARDS CO

2831 Los Flores Blvd. Lynwood, CA 90262 Tel. 310.603.9344 Fax. 310.603.9421

IL

SERIES

The IL series is a Colonial-style Coach lantern, available in two different sizes for multiple wattage and lamp types. Its optics consist of lens panels, glass prismatic refractors, or roadway style specular upper reflectors for **dark sky** compliance.

TRADITIONAL

The housing is made of .188" minimum wall cast aluminum. Its components are welded together into a strong and durable, wet location rated assembly.

The IL series is manufactured with internal, decorative chimney-style insert and upper roadways reflectors Type 2, 3 and 5 light distribution.

Other options are asymmetrical and symmetrical distributions prismatic glass refractor with clear panels. Optional panels available are clear prismatic or white smooth.

All electrical components are UL listed with electromagnetic high power factor ballast for HID lamps in voltages of 120 to 480 or an electronic ballast for compact fluorescent lamp in 120 or 277 volts. Ballasts are mounted on a removable tray for easy maintenance.

Pacific Lighting & Standards Co.

UL LISTED FOR WET LOCATIONS

www.pacificlighting.com

PACIFIC LIGHTING & STANDARDS CO.

2831 Los Flores Blvd. Lynwood, CA 90262 Tel. 310.603.9344 Fax. 310.603.9421

IL

SERIES

Housing: Corrosion resistant, cast A356 aluminum alloy, .188" min. wall thickness.

Lens: Impact resistant acrylic.

Reflector: Segmented specular aluminum.

Electrical: All electrical components are UL approved.

Ballast: High power factor - 20°C starting temperature. The ballast is removable as a unit for easy maintenance.

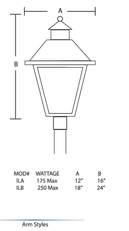
LED Engine: All LED light boards and drivers are separate and removable for easy maintenance and replacement

Finish: Polyester powder fuse coating is standard; other finishes are available upon request.

Ordering Information:

1. Model Number
2. Wattage
3. Lamp Type
   - H - Metal Halide
   - S - High Pressure Sodium
   - PS - Pulse Start
   - CF - Compact Fluorescent*
   - LED - Light-emitting diode
   - IND - Induction
4. Voltage
   - 120, 208, 240, 277, 480 and MT (Multi Tap) - 120, 208, 240, 277
5. Optics
   - PL - Prismatic Lens
   - WL - White Lens
   - GRS - Type 3 Glass Refractor
   - GC - Glass Chimney
   - RF3 - Type 3 Specular Reflector
   - RFS - Type 5 Specular Reflector
   - RF2 - Type 2 Specular Reflector
   - HLED - Horizontal LED
6. Mounting Style & Arm Style
7. Finish
   - BK - Black
   - WH - White
   - GR - Green
   - VG - Verde Green
   - (Other color upon request)
8. Options
   - HS - House Shield
   - FS - Fuse
   - PC - Photo Cell

1. Mod. #	2. Wattage 3. Lamp Type	4. Voltage	5. Optics	6. Mounting & Arm Style	7. Finish	8. Options



MOD#	WATTAGE	A	B
ILA	175 Max	12"	16"
ILB	250 Max	18"	24"

www.pacificlighting.com

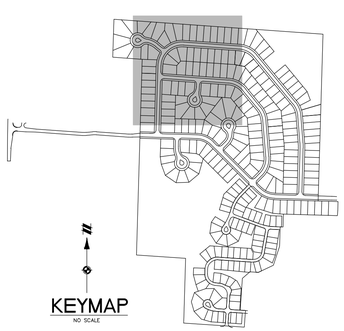
IL–100–HPS–MT–RF3–PT

mounting height= 15 ft

LIGHT READINGS ARE ESTIMATED LEVELS IN PRIME CONDITIONS AND SHOULD NOT BE TAKEN AS EXACT READINGS. LIGHT READINGS ARE 10 FT. APART

Target Point Set
2825 points at z=0, sp 10ft by 10ft HORIZONTAL FOOTCANDLES

Average	0.2
Maximum	11.4
Minimum	0.0
Avg: Min	N/A
Max: Min	N/A
Coef Var	4.15
UnifGrad	N/A



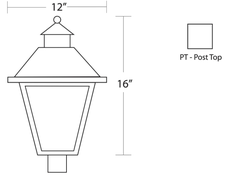
KEYMAP

NO SCALE

CATALOG NUMBER: ILA-100-HPS-MT-RF3-PT-XX

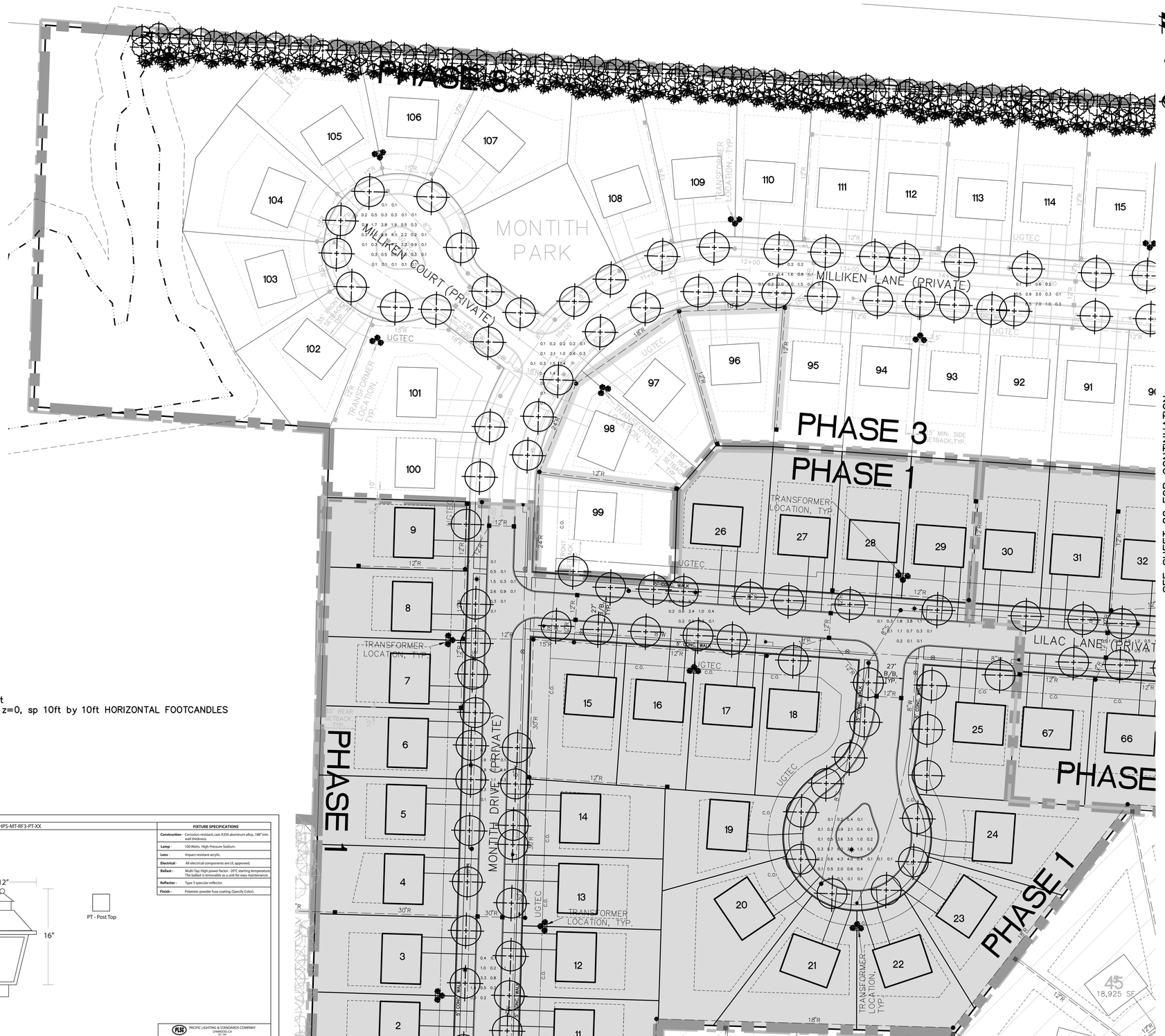
FIXTURE SPECIFICATIONS

Construction -	Corrosion resistant, cast A356 aluminum alloy, .188" min. wall thickness.
Lamp -	100 Watts. High Pressure Sodium.
Lens -	Impact resistant acrylic.
Electrical -	All electrical components are UL approved.
Ballast -	Multi-Tap, High power factor - 20°C starting temperature. The Ballast is removable as a unit for easy maintenance.
Reflector -	Type 3 specular reflector.
Finish -	Polyester powder fuse coating.(Specify Color).



PACIFIC LIGHTING & STANDARDS COMPANY
LYNWOOD, CA
562-1444

DESIGNED BY: CHARLES MUÑOZ		DATE: 9/18/14	CATALOG NUMBER: ILA-100-HPS-MT-RF3-PT-XX
DRAWN BY: JERRINCE S.M.			
CHECKED BY:			PROJECT NAME: ARBOR RIDGE
REVISIONS:			CUSTOMER: PROTECH LIGHTING; MARC
TITLE:	SCALE: NONE	PAGE 1 OF 1	



SEE SHEET 88 FOR CONTINUATION

SEE SHEET 88A FOR CONTINUATION

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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

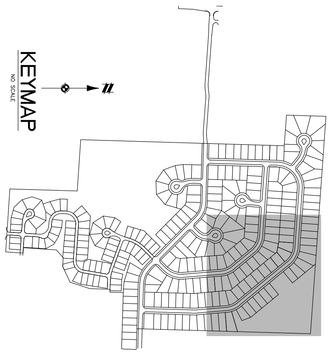
DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
PHOTOMETRIC PLAN – NORTH

DATE
JUNE 6, 2014

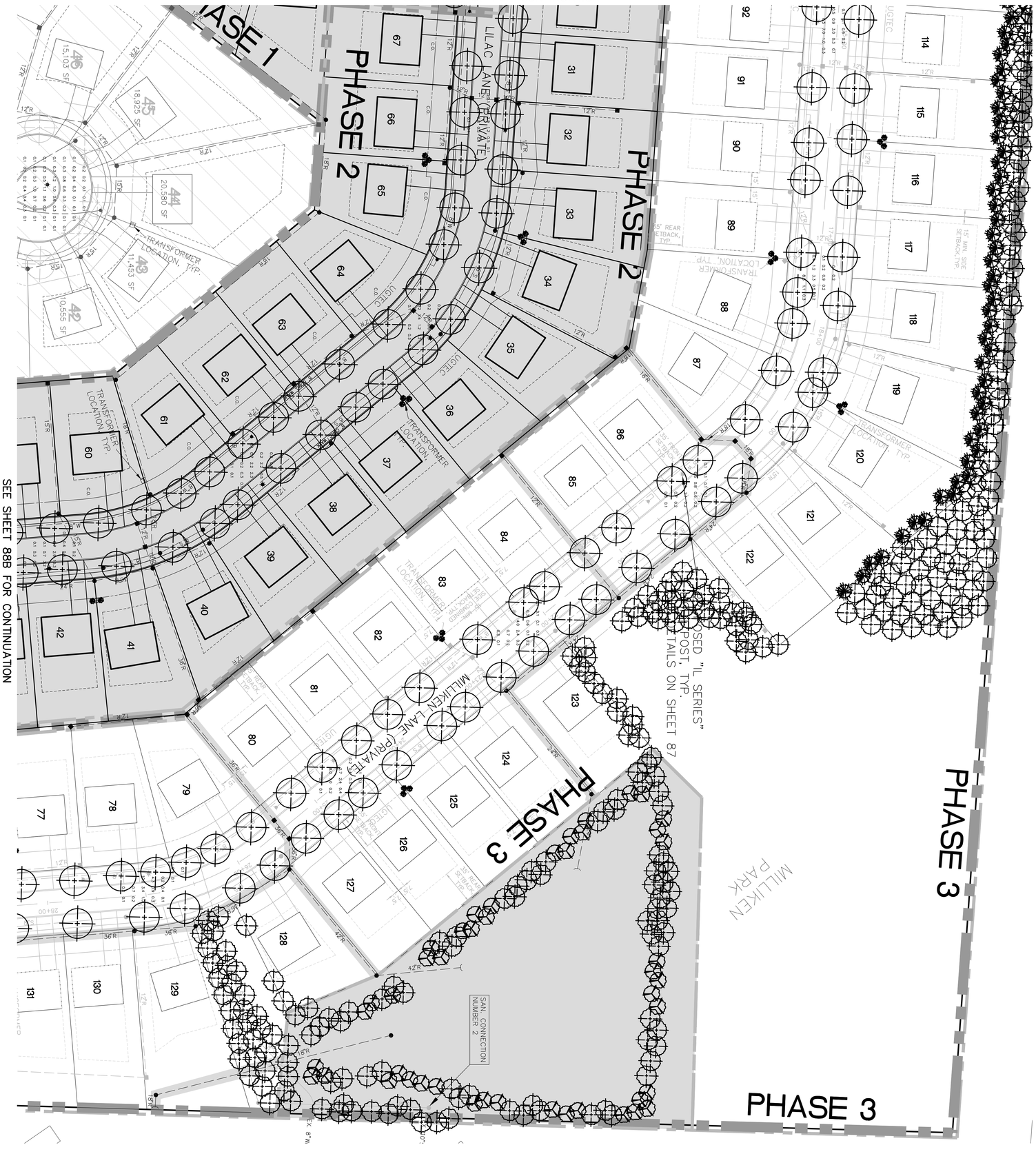
REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 25 50
1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-16B-LS
JOB #: 12001809
FILE CODE:
SHEET NO.
87



SEE SHEET 87 FOR CONTINUATION



SEE SHEET 88B FOR CONTINUATION

PAGE NO. 61

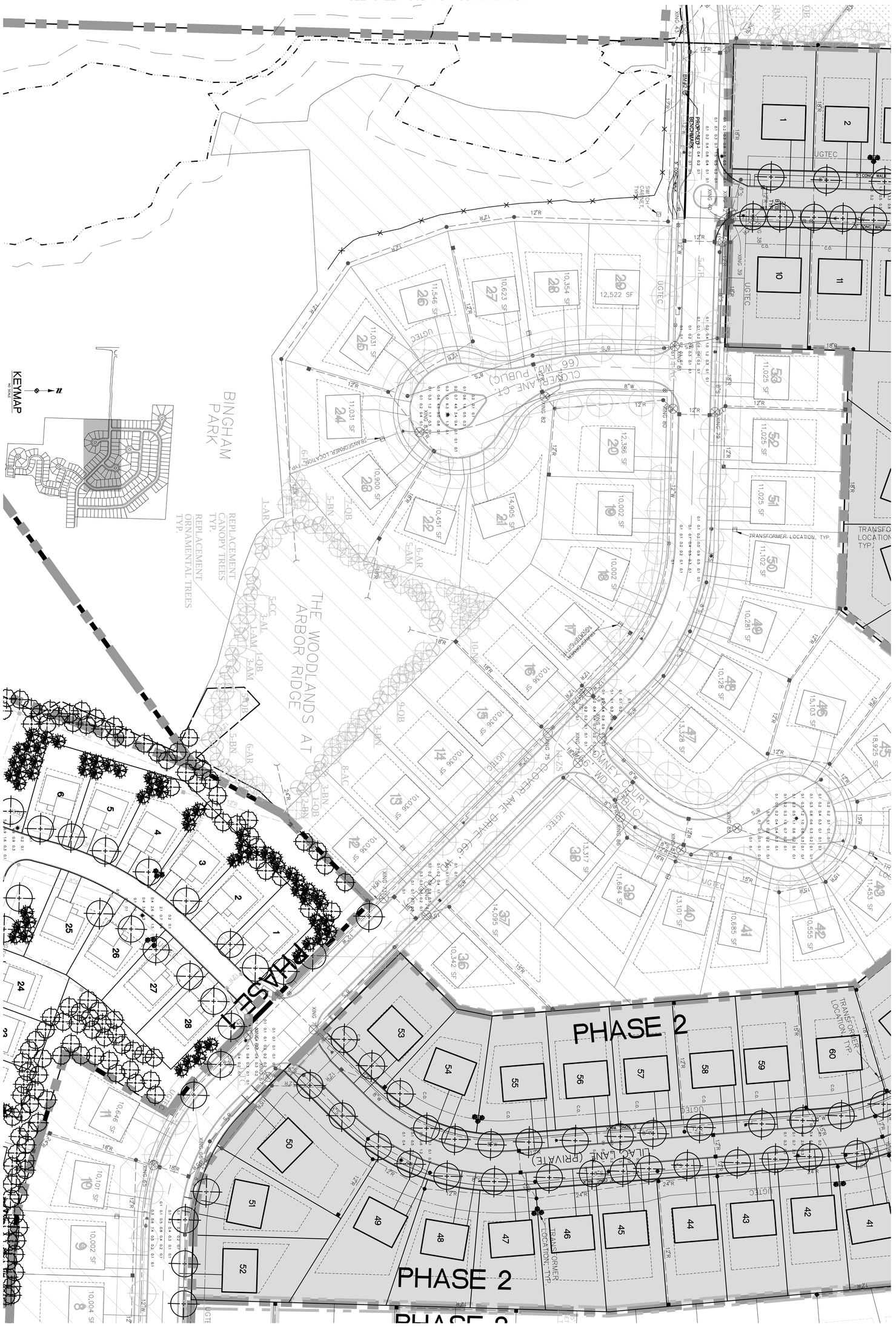
DIVERSE REAL ESTATE LLC	SECTION 13	ATWELL 866.850.4200 | www.atwell-group.com OFFICES IN NORTH AMERICA AND ASIA	Land Development & Real Estate Power & Energy Telecommunications Infrastructure & Transportation Environmental & Solid Waste Water & Natural Resources
ARBOR RIDGE CROSSING, PHASES 1 & 2 FINAL SITE PLAN PHOTOMETRIC PLAN – SOUTH	TOWN 3 SOUTH, RANGE 6 EAST PITTSFIELD TOWNSHIP WASHTENAW COUNTY, MICHIGAN		

DATE: JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WORC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE 1" = 50 FEET (0, 25, 50)

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-16B-LS
JOB #: 12001809
FILE CODE:
SHEET NO. 88



PAGE NO.
62

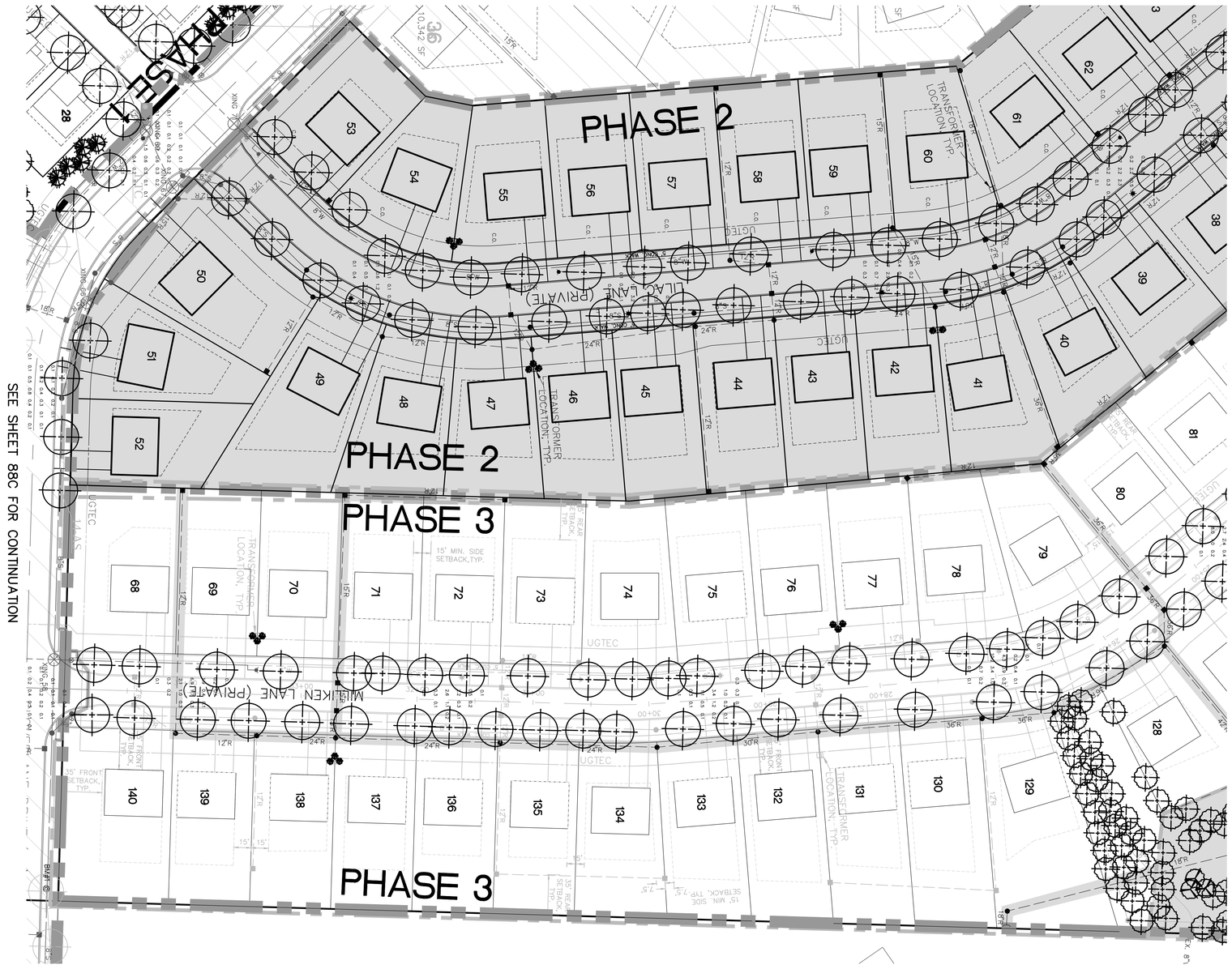
DIVERSE REAL ESTATE LLC	SECTION 13	ATWELL 866.850.4200 | www.atwell-group.com OFFICES IN NORTH AMERICA AND ASIA	Land Development & Real Estate Power & Energy Telecommunications Infrastructure & Transportation Environmental & Solid Waste Water & Natural Resources
ARBOR RIDGE CROSSING, PHASES 1 & 2 FINAL SITE PLAN PHOTOMETRIC PLAN	TOWN 3 SOUTH, RANGE 6 EAST PITTSFIELD TOWNSHIP WASHTENAW COUNTY, MICHIGAN		

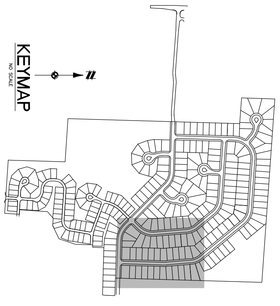
DATE: JUNE 6, 2014
REVISIONS/SUBMITTALS
2014-08-05 WORC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE 0 25 50 1" = 50 FEET
DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 30081992-168-LS
JOB #: 12001809
FILE CODE:
SHEET NO. 88A

SEE SHEET 88A FOR CONTINUATION

SEE SHEET 88C FOR CONTINUATION





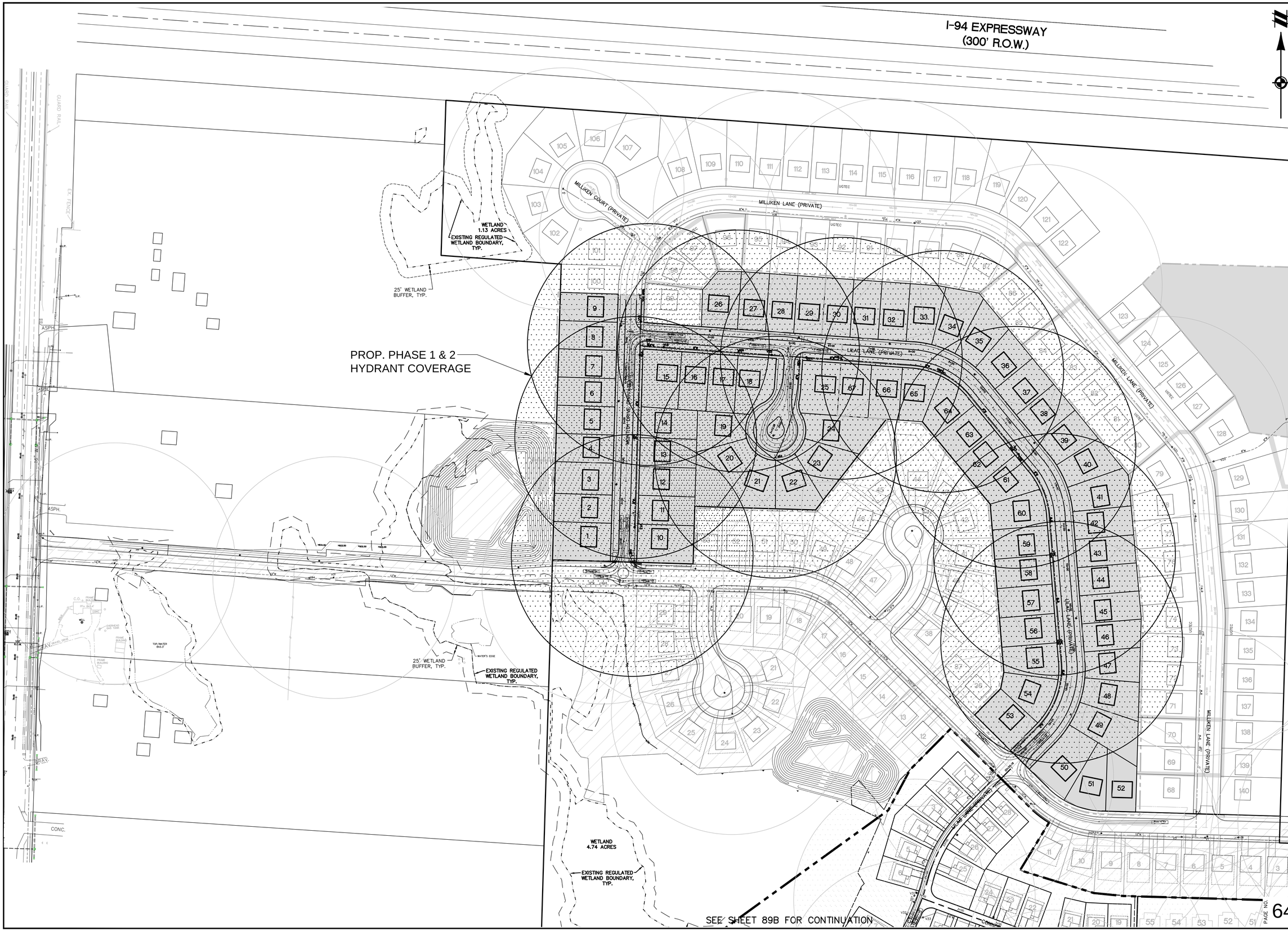
DIVERSE REAL ESTATE LLC	SECTION 13	ATWELL 866.850.4200 | www.atwell-group.com OFFICES IN NORTH AMERICA AND ASIA	Land Development & Real Estate Power & Energy Telecommunications Infrastructure & Transportation Environmental & Solid Waste Water & Natural Resources
ARBOR RIDGE CROSSING, PHASES 1 & 2 FINAL SITE PLAN PHOTOMETRIC PLAN	TOWN 3 SOUTH, RANGE 6 EAST PITTSFIELD TOWNSHIP WASHTENAW COUNTY, MICHIGAN		

DATE: JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WORC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE 1" = 50 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 30081992-168-LS
JOB #: 12001809
FILE CODE:
SHEET NO. 88B



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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

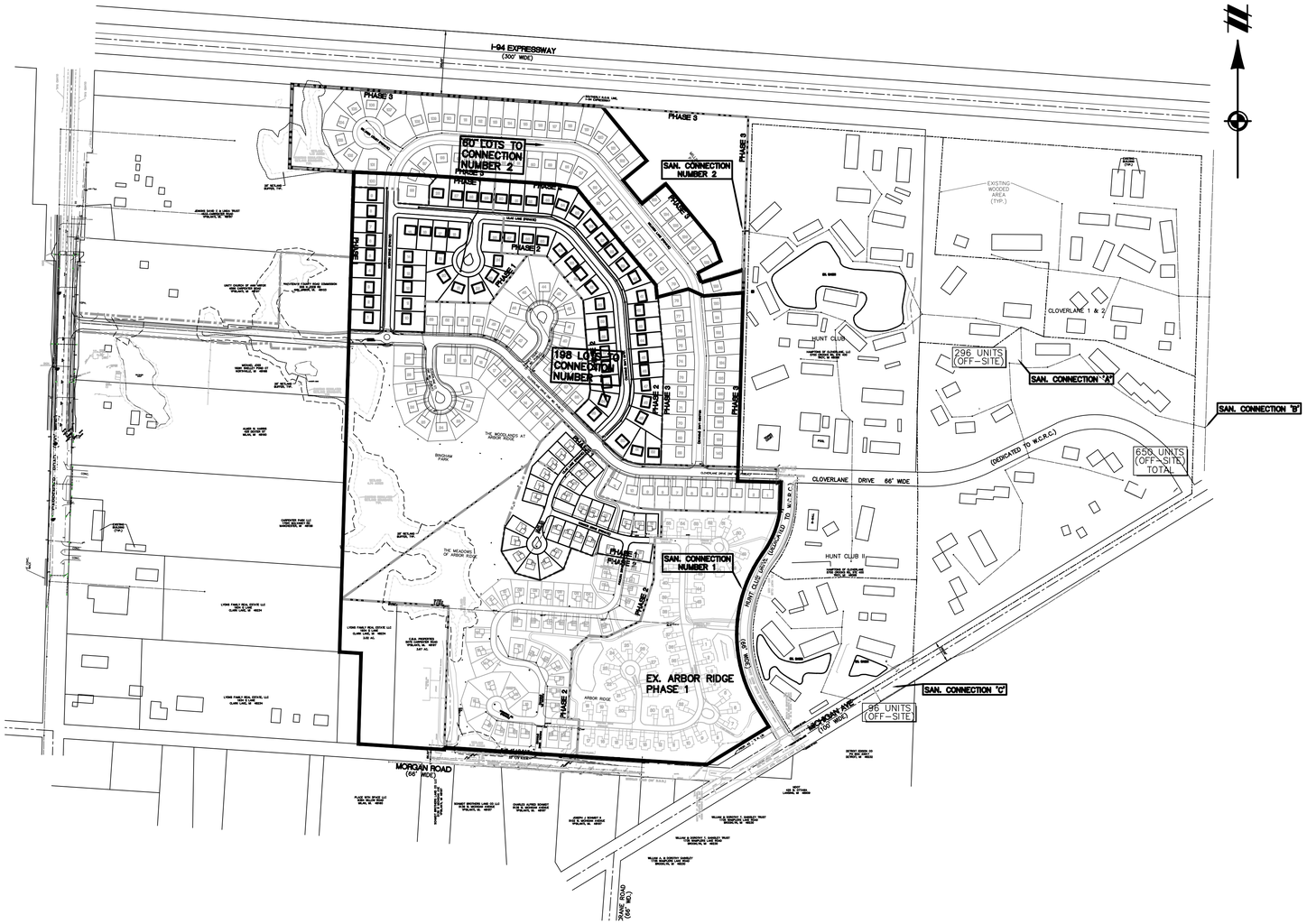
DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
FIRE PROTECTION PLAN – NORTH

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0 50 100
1" = 100 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-18B-FP
JOB #: 12001809
FILE CODE:
SHEET NO.
89A



Sanitary Sewer Basis of Design for Connection #1

Number of Single Family Lots:	208		
No. of Users per Lot:	3.5		
Total Expected Population Served:	728		
Average Daily Flow (per capita)	100 G.P.D.		
Peaking Factor: $\frac{18+\sqrt{(POP/1000)}}{4+\sqrt{(POP/1000)}}$ =	3.88		
Average Flow: POP * 100 =	72800 G.P.D.		
=	50.56 G.P.M.		
=	0.113 C.F.S.		
Peak Flow: 0.113 * 3.88 =	0.438 C.F.S.		
Pipe Capacity: 8 in. diameter		A=	0.349 sf
0.40% slope		R=	0.167 ft
0.013 Manning's 'n'			
Manning's Capacity =	0.766 C.F.S.		(> 0.438)
Velocity Flowing Full =	2.20 F.P.S.		

Sanitary Sewer Basis of Design for Connection #2

Number of Single Family Lots:	50		
No. of Users per Lot:	3.5		
Total Expected Population Served:	175		
Average Daily Flow (per capita)	100 G.P.D.		
Peaking Factor: $\frac{18+\sqrt{(POP/1000)}}{4+\sqrt{(POP/1000)}}$ =	4.17		
Average Flow: POP * 100 =	17500 G.P.D.		
=	12.15 G.P.M.		
=	0.027 C.F.S.		
Peak Flow: 0.027 * 4.17 =	0.113 C.F.S.		
Pipe Capacity: 8 in. diameter		A=	0.349 sf
0.40% slope		R=	0.167 ft
0.013 Manning's 'n'			
Manning's Capacity =	0.766 C.F.S.		(> 0.113)
Velocity Flowing Full =	2.20 F.P.S.		

Sanitary Sewer Basis of Design for Connection to Pipe 'C'

Number of Single Family Lots:	208		
No. of Users per Lot:	3.5		
Ex. CBM (acres):	8.03		
No. of Users per Acre:	12		
Ex Off-Site Units:	96		
No. of Users per Unit::	2.1		
Total Expected Population Served:	1026		
Average Daily Flow (per capita)	100 G.P.D.		
Peaking Factor: $\frac{18+\sqrt{(POP/1000)}}{4+\sqrt{(POP/1000)}}$ =	3.79		
Average Flow: POP * 100 =	102600 G.P.D.		
Add'l Offsite Flow (below) =	4683 G.P.D.		
=	74.50 G.P.M.		
=	0.166 C.F.S.		
Peak Flow: 0.166 * 3.79 =	0.630 C.F.S.		
Pipe Capacity: 10 in. diameter		A=	0.545 sf
0.50% slope		R=	0.208 ft
0.013 Manning's 'n'			
Manning's Capacity =	1.553 C.F.S.		(> 0.63)
Velocity Flowing Full =	2.85 F.P.S.		

	Total Ac.	Flow GPD/AC	Total Flow GPD
** Additional Flow from Commercial Properties (Rolland B. Lyons & C.B.M. Inc.)	6.69	700	4683

Sanitary Sewer Basis of Design for Connection to Pipe 'B'

Number of Single Family Lots:	50		
No. of Users per Lot:	3.5		
Ex Off-Site Units:	650		
No. of Users per Unit::	2.1		
Total Expected Population Served:	1540		
Average Daily Flow (per capita)	100 G.P.D.		
Peaking Factor: $\frac{18+\sqrt{(POP/1000)}}{4+\sqrt{(POP/1000)}}$ =	3.67		
Average Flow: POP * 100 =	154000 G.P.D.		
=	106.94 G.P.M.		
=	0.238 C.F.S.		
Peak Flow: 0.238 * 3.67 =	0.875 C.F.S.		
Pipe Capacity: 10 in. diameter		A=	0.545 sf
0.53% slope		R=	0.208 ft
0.013 Manning's 'n'			
Manning's Capacity =	1.599 C.F.S.		(> 0.875)
Velocity Flowing Full =	2.93 F.P.S.		

SANITARY SEWER BASIS OF DESIGN
PER SIEBER, KEAST AND ASSOCIATES
PLANS DATED 8-4-94

SANITARY SEWER BASIS OF DESIGN
(CONNECTION NO. 1)

POPULATION:
(HOUSES) 229.0 UNITS x 3.5 PEOPLE/UNIT = 801.5 PEOPLE
(+EX. CBM) 8.03 ACRES x 12.0 PEOPLE/ACRE = 96.4 PEOPLE
TOTAL POP. = 897.9 PEOPLE

AVERAGE FLOW:
897.9 PEOPLE x 100 GAL/CAP/DAY = 0.1389 CFS

PEAKING FACTOR:
IF POPULATION IS LESS THAN 500 PEOPLE, USE A PEAKING FACTOR OF 4.
SINCE POPULATION IS GREATER THAN 500 PEOPLE. THEREFORE, PEAKING FACTOR =
(18 + (SQRT) P/1000)/ (4 + (SQRT) P/ 3.83

PEAK FLOW:
PEAK FLOW = AVERAGE FLOW x PEAKING FACTOR
PEAK FLOW = 0.5319 CFS

PIPE CAPACITY: 10" diameter pipe at 0.28% has a capacity of 1.15 CFS. THEREFORE, PIPE CAPACITY IS SUFFICIENT

SANITARY SEWER BASIS OF DESIGN
(CONNECTION NO. 2)

POPULATION:
97.0 UNITS x 3.5 PEOPLE/UNIT = 339.5 PEOPLE

AVERAGE FLOW:
339.5 PEOPLE x 100 GAL/CAP/DAY = 0.0525 CFS

PEAKING FACTOR:
SINCE POPULATION IS LESS THAN 500 PEOPLE, USE A PEAKING FACTOR OF 4.

PEAK FLOW:
PEAK FLOW = AVERAGE FLOW x PEAKING FACTOR
PEAK FLOW = 0.2101 CFS

PIPE CAPACITY: 10" diameter pipe at 0.28% has a capacity of 1.15 CFS. THEREFORE, PIPE CAPACITY IS SUFFICIENT

SANITARY SEWER BASIS OF DESIGN
(FOR PIPE "A", 10" @ 0.28% SLOPE)

POPULATION:
(EX. OFF-SITE) 296.0 UNITS x 2.1 PEOPLE/UNIT = 621.6 PEOPLE
(TOTAL POPULATION FOR PROPOSED CONNECTION #2) = 339.5 PEOPLE
TOTAL POP. = 961.1 PEOPLE

AVERAGE FLOW:
961.1 PEOPLE x 100 GAL/CAP/DAY = 0.1487 CFS

PEAKING FACTOR:
IF POPULATION IS LESS THAN 500 PEOPLE, USE A PEAKING FACTOR OF 4.
SINCE POPULATION IS GREATER THAN 500 PEOPLE. THEREFORE, PEAKING FACTOR =
(18 + (SQRT) P/1000)/ (4 + (SQRT) P/ 3.81

PEAK FLOW:
PEAK FLOW = AVERAGE FLOW x PEAKING FACTOR
PEAK FLOW = 0.5666 CFS

PIPE CAPACITY: 10" diameter pipe at 0.28% has a capacity of 1.15 CFS. THEREFORE, PIPE CAPACITY IS SUFFICIENT

SANITARY SEWER BASIS OF DESIGN
(FOR PIPE "B", 10" @ 0.53% SLOPE)

POPULATION:
(EX. OFF-SITE) 650.0 UNITS x 2.1 PEOPLE/UNIT = 1365.0 PEOPLE
(TOTAL POPULATION FOR PROPOSED CONNECTION #2) = 339.5 PEOPLE
TOTAL POP. = 1704.5 PEOPLE

AVERAGE FLOW:
1704 PEOPLE x 100 GAL/CAP/DAY = 0.2637 CFS

PEAKING FACTOR:
IF POPULATION IS LESS THAN 500 PEOPLE, USE A PEAKING FACTOR OF 4.
SINCE POPULATION IS GREATER THAN 500 PEOPLE. THEREFORE, PEAKING FACTOR =
(18 + (SQRT) P/1000)/ (4 + (SQRT) P/ 3.64

PEAK FLOW:
PEAK FLOW = AVERAGE FLOW x PEAKING FACTOR
PEAK FLOW = 0.9594 CFS

PIPE CAPACITY: 10" diameter pipe at 0.53% has a capacity of 1.60 CFS. THEREFORE, PIPE CAPACITY IS SUFFICIENT

SANITARY SEWER BASIS OF DESIGN
(FOR PIPE "C", 10" @ 0.50% SLOPE)

POPULATION:
(EX. OFF-SITE) 96.0 UNITS x 2.1 PEOPLE/UNIT = 201.6 PEOPLE
(TOTAL POPULATION FOR PROPOSED CONNECTION #1) = 897.9 PEOPLE
TOTAL POP. = 1099.5 PEOPLE

AVERAGE FLOW:
1100 PEOPLE x 100 GAL/CAP/DAY = 0.1701 CFS

PEAKING FACTOR:
IF POPULATION IS LESS THAN 500 PEOPLE, USE A PEAKING FACTOR OF 4.
SINCE POPULATION IS GREATER THAN 500 PEOPLE. THEREFORE, PEAKING FACTOR =
(18 + (SQRT) P/1000)/ (4 + (SQRT) P/ 3.77

PEAK FLOW:
PEAK FLOW = AVERAGE FLOW x PEAKING FACTOR
PEAK FLOW = 0.6417 CFS

PIPE CAPACITY: 10" diameter pipe at 0.50% has a capacity of 1.55 CFS. THEREFORE, PIPE CAPACITY IS SUFFICIENT

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DIVERSE REAL ESTATE LLC

ARBOR RIDGE CROSSING, PHASES 1 & 2

FINAL SITE PLAN

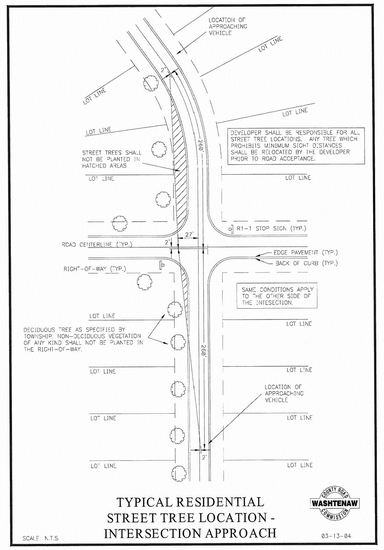
SANITARY SEWER DISTRICT MAP

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

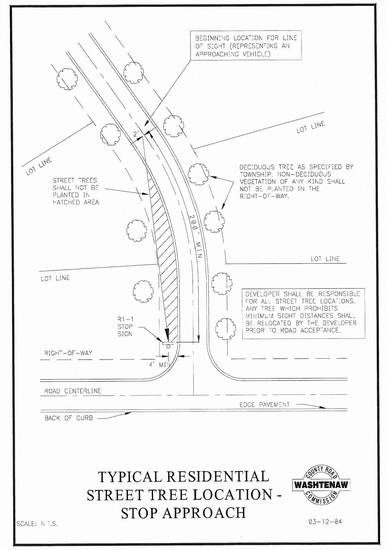
SCALE
0 150 300
1" = 300 FEET

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-19-SDIST
JOB #: 12001809
FILE CODE:
SHEET NO.
90



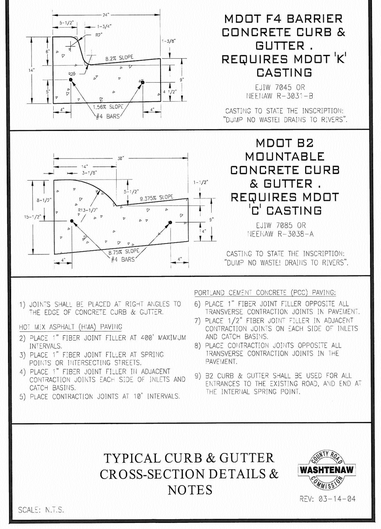
TYPICAL RESIDENTIAL STREET TREE LOCATION - INTERSECTION APPROACH

SCALE: N.T.S. 03-13-04



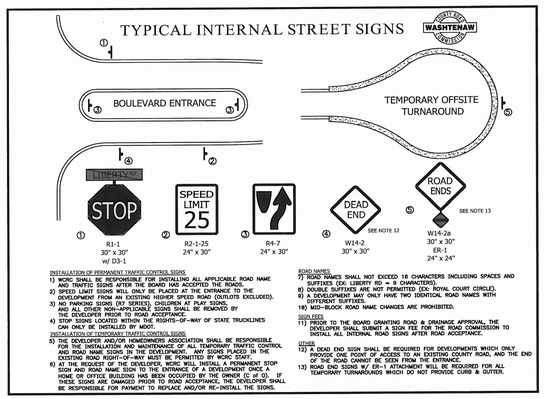
TYPICAL RESIDENTIAL STREET TREE LOCATION - STOP APPROACH

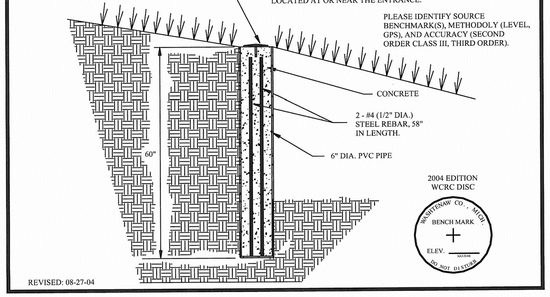
SCALE: N.T.S. 03-12-04

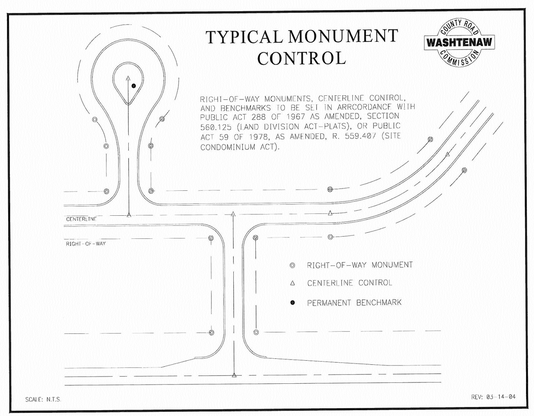


TYPICAL CURB & GUTTER CROSS-SECTION DETAILS & NOTES

SCALE: N.T.S. REV: 03-14-04







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SECTION 13
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

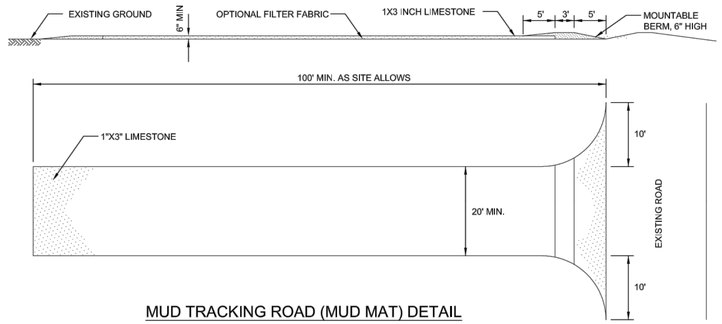
DIVERSE REAL ESTATE LLC
ARBOR RIDGE CROSSING, PHASES 1 & 2
FINAL SITE PLAN
WASHTENAW COUNTY ROAD COMMISSION & MISC. DETAILS

DATE
JUNE 6, 2014

REVISIONS/SUBMITTALS
2014-08-05 WCRC COMMENTS
2014-09-08 PER TWP.
2014-09-22 PER TWP.
2014-09-29 PER TWP.
2014-10-29 PER TWP.
2014-12-12 PER TWP.
2015-01-13 PER TWP.

SCALE
0
NO SCALE

DRAWN BY: GMS
CHECKED BY: GMS
PROJECT MANAGER: EL
CAD: 300819SF2-24-WCSP
JOB #: 12001809
FILE CODE:
SHEET NO.
106



MUD TRACKING ROAD (MUD MAT) DETAIL

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.

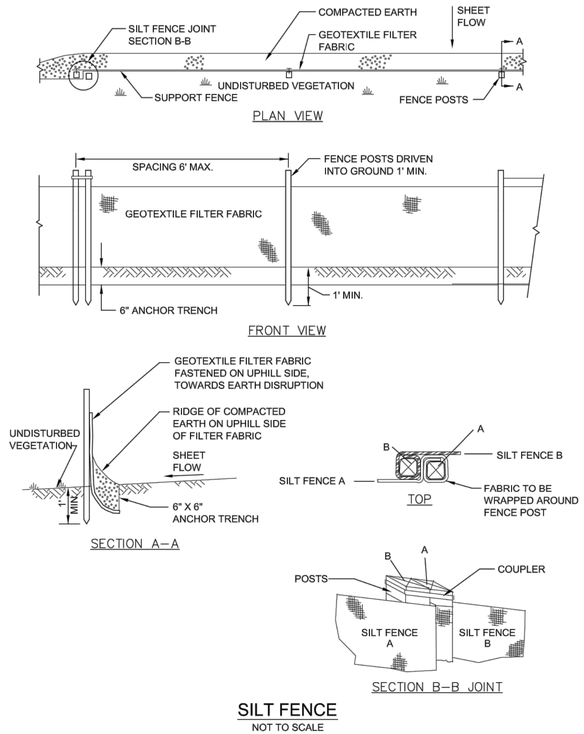
CATCH BASIN/MANHOLE PROTECTION

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

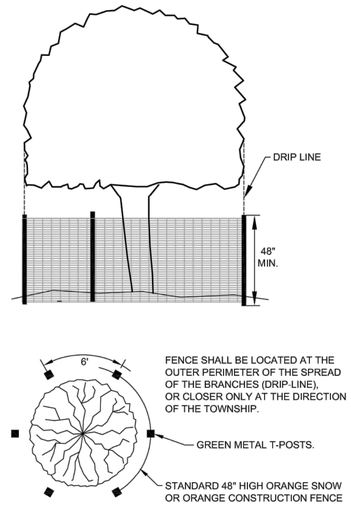
ROADS

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

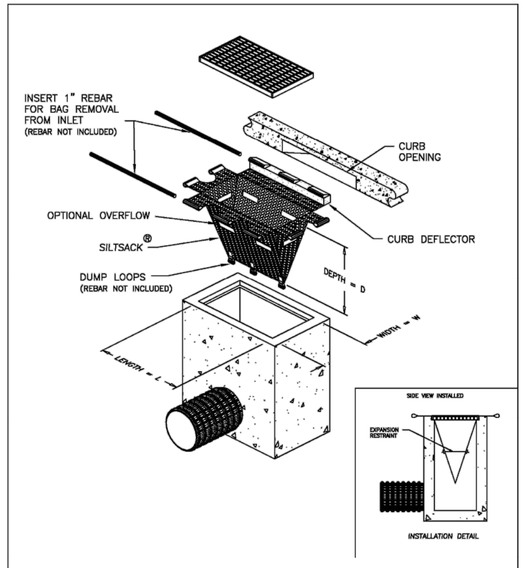


SILT FENCE
NOT TO SCALE



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



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

ACF Environmental
Your Complete Source for Geosynthetic Solutions

ACF Environmental, Inc.
2831 Cardwell Rd.
Richmond, Virginia 23234
(800) 448-3636

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		90 %
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
425 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

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
SILTSACK	BWA	DRW	12.01.03
TWP REV	BWA	DRW	11.04.27
UPDATES	TTN	DRW	10.01.20

Issued	By	Appd.	YY.MM.DD
File Name: SE-01	TTN	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

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 stenciled on the inside. The lettering or logo shall be a minimum of 4 inches high.

2.03 MORTAR FOR MANHOLES

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

2.04 BRICK AND BLOCK

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

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

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

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

2.05 STRUCTURE FRAMES AND COVERS

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

B. Frames and Covers shall be as follows:
1. For use on manholes: East Jordan 1040Z, with Type B cover lettered "STORM SEWER", or equal. Structures 24-inches in diameter shall have the 1045 Z frame.
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 1040 N 7", 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.

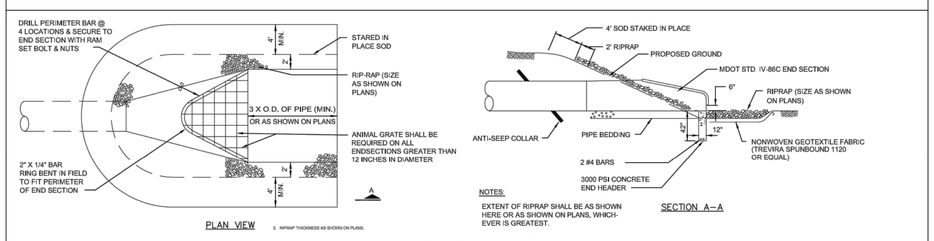
C. For connections to existing precast reinforced concrete manholes, a hole shall be cored into the concrete manhole wall to receive the pipe. Reinforcing steel shall not be cut out shall be bent and replaced in the area that is to be patched. A form shall be constructed over the area of pipe penetration.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

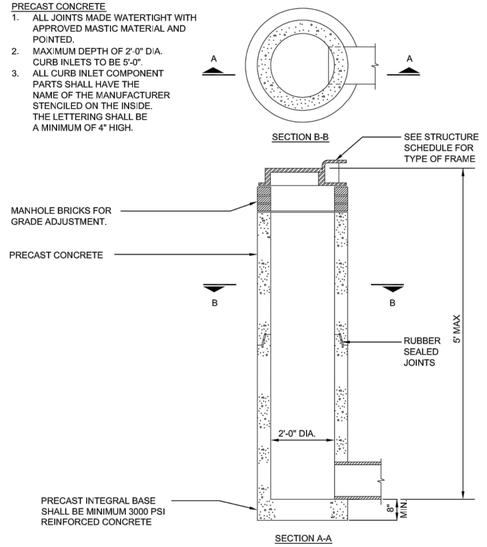
A. Animal grates shall be required on all endsections greater than 12-inch diameter.

PCT February 2008



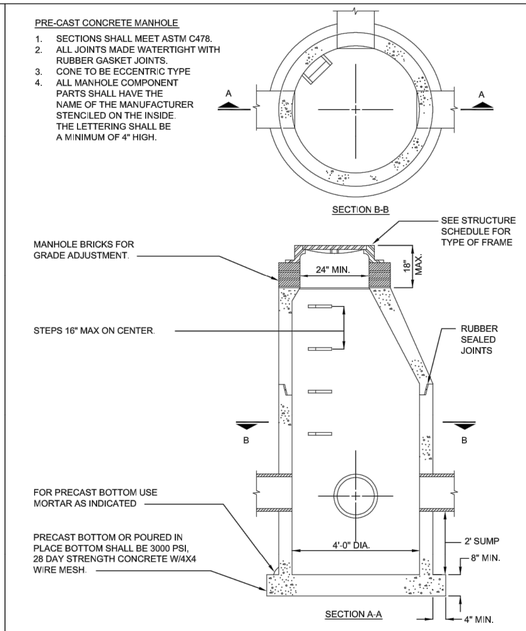
END SECTION AND RIPRAP DETAIL

PRECAST CONCRETE
1. ALL JOINTS MADE WATERTIGHT WITH APPROVED MASTIC MATERIAL AND POINTED.
2. MAXIMUM DEPTH OF 2'-0" DIA. CURB INLETS TO BE 5'-0"
3. ALL CURB INLET COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.



2' DIAMETER INLET

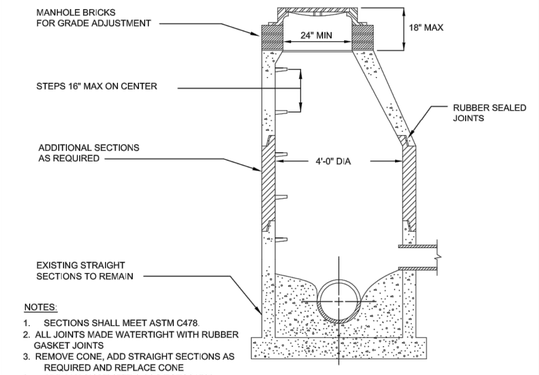
PRE-CAST CONCRETE MANHOLE
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS.
3. CONE TO BE ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.



4' DIAMETER CATCH BASIN

AFFIX TO SURFACE ON OR NEAR ALL DRAINAGE COVERS.

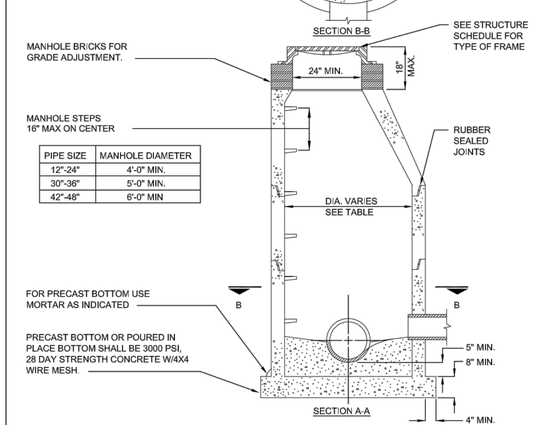
STORM DRAIN MARKER



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

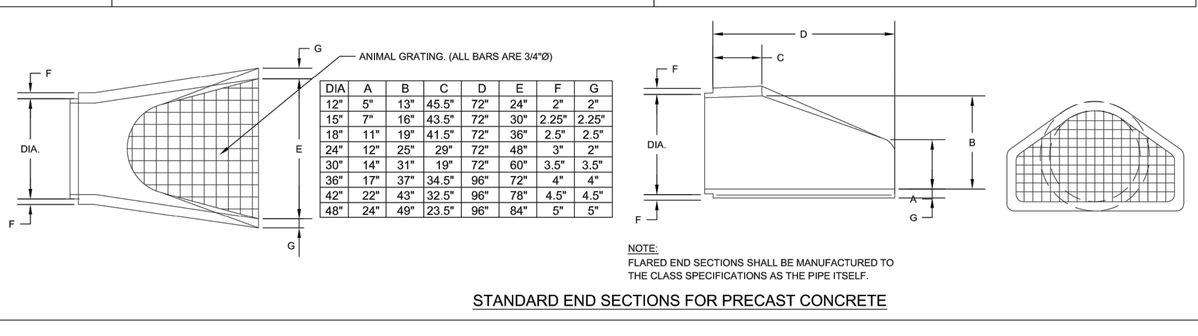
MANHOLE & CATCH BASIN RECONSTRUCTION DETAIL

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.



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

STORM SEWER MANHOLE



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

UPDATES	MRH	DRW	14.01.24
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

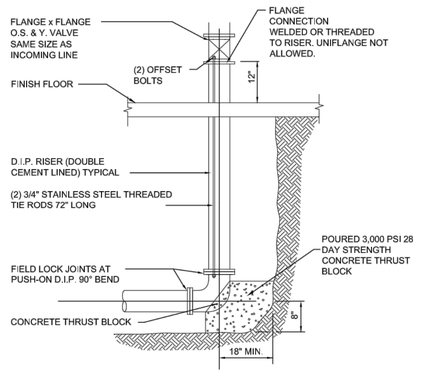
Project No.
2075001300

Scale
NOT TO SCALE

Revision

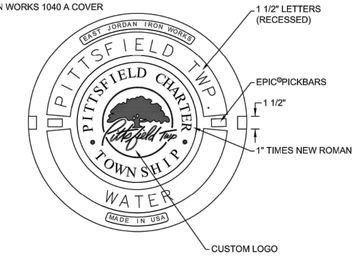
FIRST VALVE SHALL BE INSTALLED PRIOR TO FLUSHING

RISER TO BE A MAXIMUM 5 HORIZONTAL FEET FROM POINT WHERE PIPE ENTERS THE BUILDING.



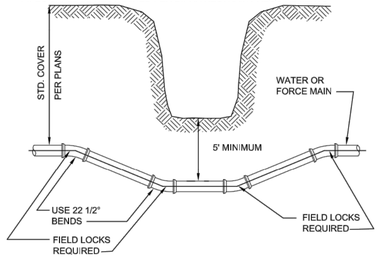
FIRE PROTECTION RISER DETAIL

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

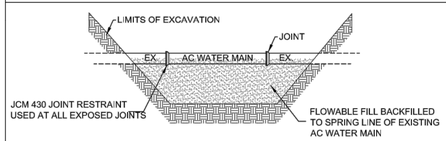


COVER DETAIL

PIPES SHALL BE RESTRAINED PER DIPRA RESTRAINT REQUIREMENTS



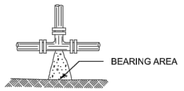
DITCH & STREAM CROSSING



ASBESTOS CEMENT (AC) WATER MAIN

ELBOWS

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

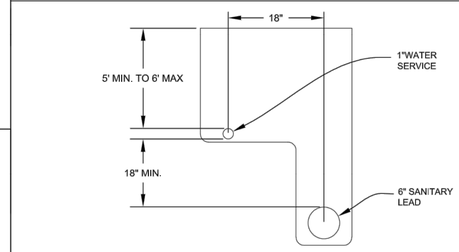
TEES, CROSSES & HYDRANTS		
PIPE DIA. INCHES		BEARING AREA SQUARE FEET
4		1.5
6		2.9
8		4.8
10		7.1
12		10.0
16		17.1
18		21.0
20		26.0

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.

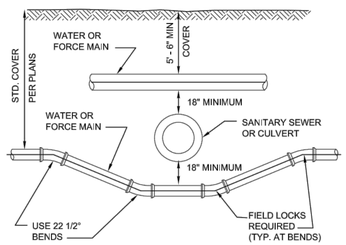
SOIL CHARACTERISTICS	FACTOR
(A) LOOSE COARSE OR MEDIUM SAND; COMPACT FINE SAND; COMPACT SAND-CLAY SOILS; STIFF CLAY	0.33
(B) FIRM FINE SAND; COMPACT INORGANIC SILT; FIRM SAND-CLAY SOILS; MEDIUM CLAY	0.50
(C) LOOSE FINE SAND; FIRM INORGANIC SILT	0.67
(D) LOOSE SAND-CLAY SOILS; LOOSE INORGANIC SILT SOFT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

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

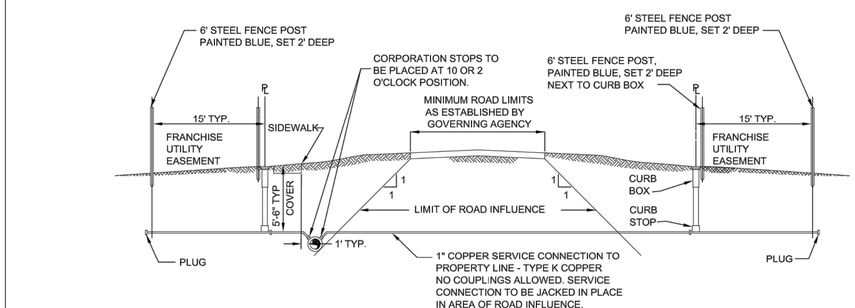
THRUST BLOCK



TYPICAL L TRENCH DETAIL HOUSE LEADS

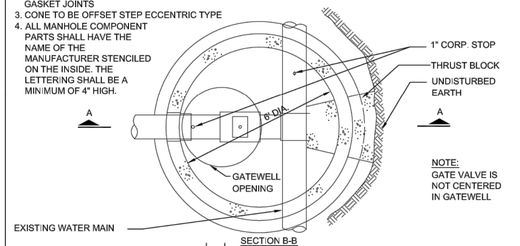


SEWER OR CULVERT CROSSING

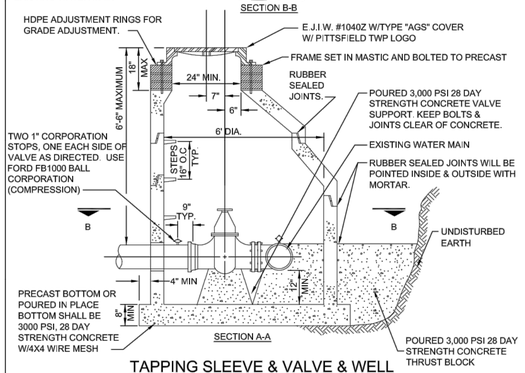


WATER MAIN CONNECTION

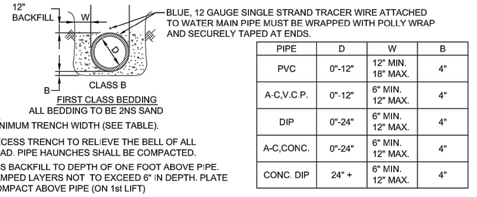
PRE-CAST CONCRETE MANHOLE
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. CONE TO BE OFFSET STEP ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.



NOTE:
GATE VALVE IS NOT CENTERED IN GATEWELL



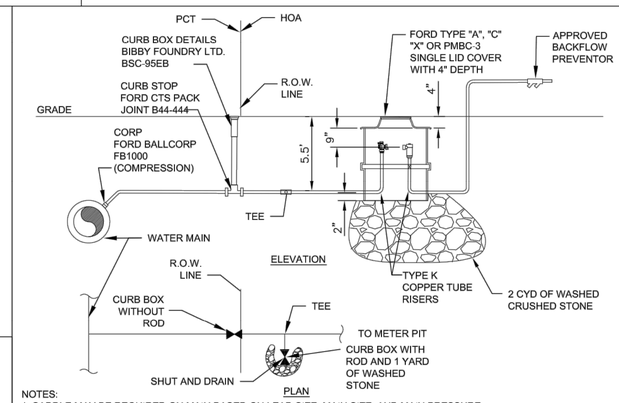
TAPPING SLEEVE & VALVE & WELL



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"

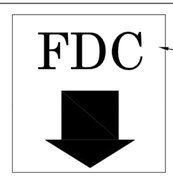
NOTES:
1. MINIMUM TRENCH WIDTH (SEE TABLE).
2. RECESS TRENCH TO RELIEVE THE BELL OF ALL LOAD. PIPE HAUNCHES SHALL BE COMPACTED.
3. 2NS BACKFILL TO DEPTH OF ONE FOOT ABOVE PIPE. TAMPED LAYERS NOT TO EXCEED 6" IN DEPTH. PLATE COMPACT ABOVE PIPE (ON 1st LIFT)
4. ALL PIPE TO BE PLACED AND JOINTED IN A DRY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

BEDDING



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.

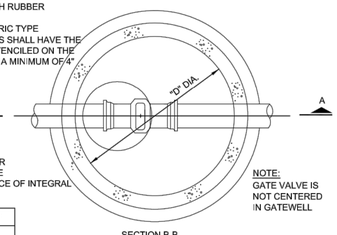
IRRIGATION METER PIT DETAIL



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

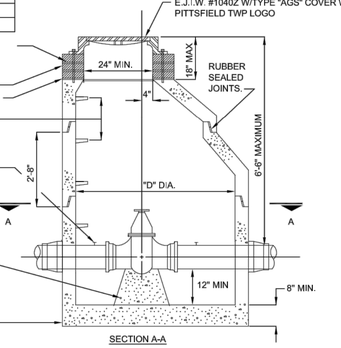
FIRE DEPARTMENT CONNECTION LABEL DETAIL

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.

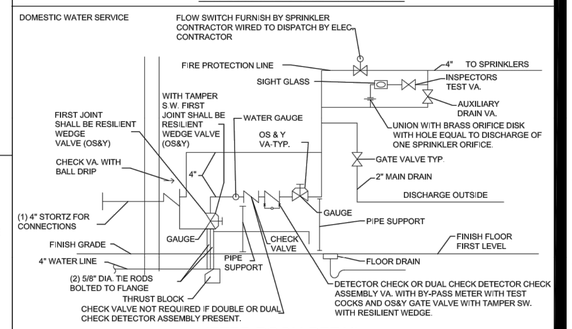


NOTE:
GATE VALVE IS NOT CENTERED IN GATEWELL

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



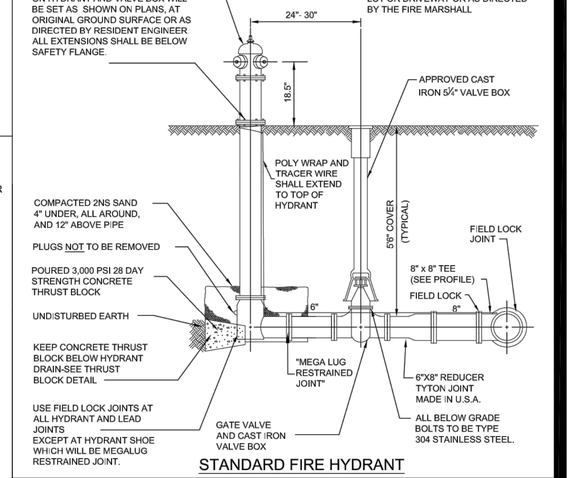
METER ROOM DETAIL

E.J.I.W. 5 BR-250 WITH 12" BARREL SECTION.

SAFETY FLANGE (GRADE LINE) + 3" ON HYDRANT AND VALVE BOX WILL BE SET AS SHOWN ON PLANS, AT ORIGINAL GROUND SURFACE OR AS DIRECTED BY RESIDENT ENGINEER ALL EXTENSIONS SHALL BE BELOW SAFETY FLANGE.

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
UPDATES	MRH	DRW	14.01.24
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
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

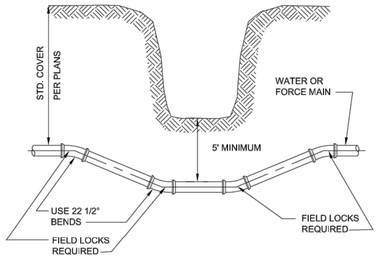
Pittsfield Township, Michigan

Title
WATER MAIN DETAILS

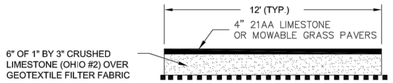
Project No.
2075001300

Scale
NOT TO SCALE

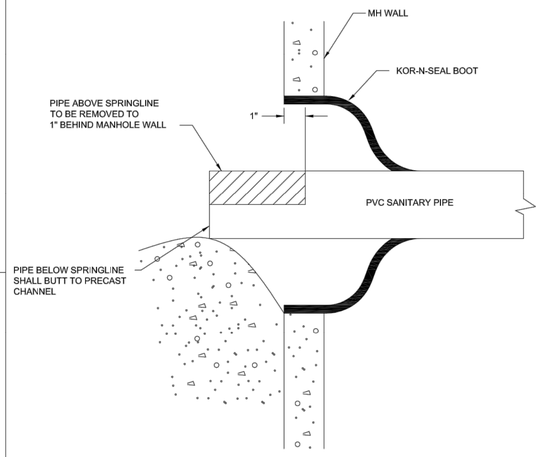
Revision



DITCH & STREAM CROSSING



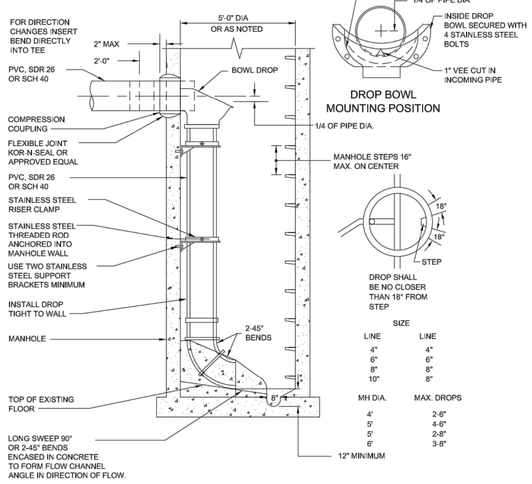
SANITARY SEWER ACCESS PATH



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.

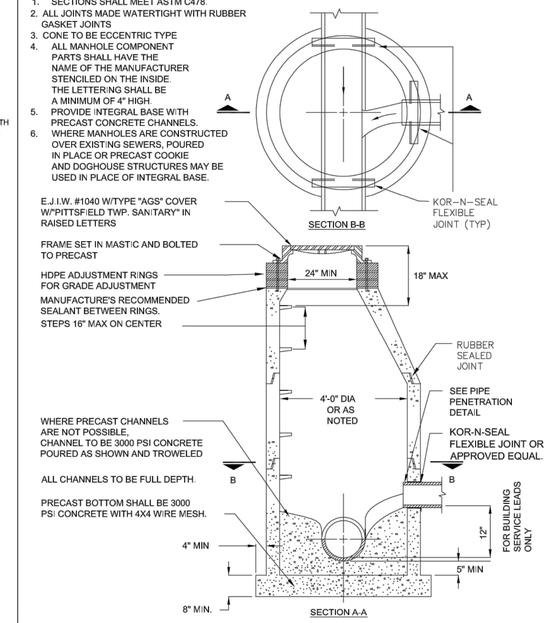


NO UTILITY STRUCTURES (ie. MANHOLES, CURB BOXES etc.) SHALL BE PLACED IN ANY DRIVEWAY OR SIDEWALK

INTERIOR DROP
SANITARY MANHOLE

PRE-CAST CONCRETE MANHOLE

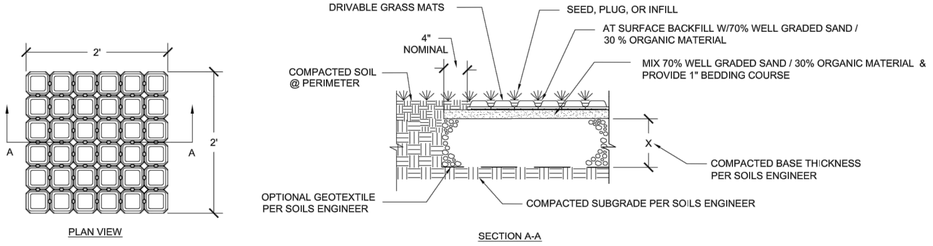
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. CONE TO BE ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.
5. PROVIDE INTEGRAL BASE WITH PRECAST CONCRETE 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.



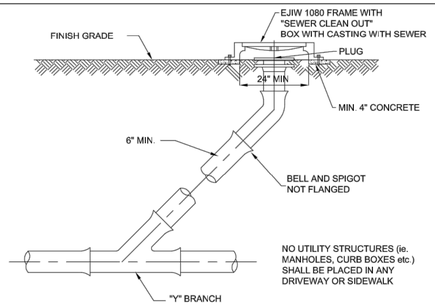
NO UTILITY STRUCTURES (ie. MANHOLES, CURB BOXES etc.) SHALL BE PLACED IN ANY DRIVEWAY OR SIDEWALK

SANITARY MANHOLE

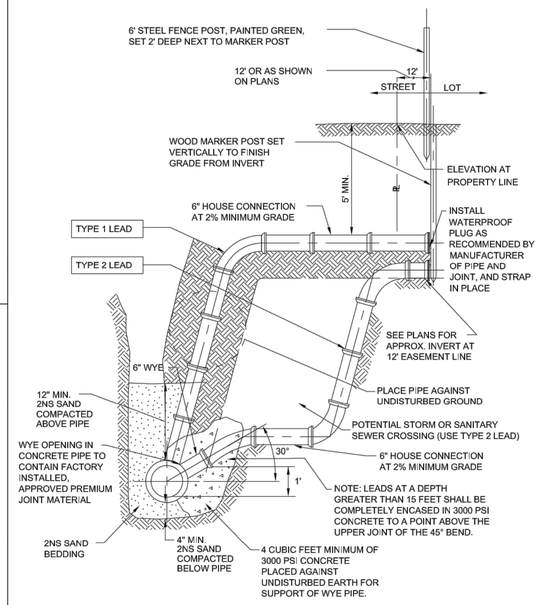
NOTE:
FOR STORMWATER MANAGEMENT APPLICATIONS INCLUDING STORAGE AND INFILTRATION, ALTERNATE INFILLS, BASE MATERIAL, AND DRAINAGE MAY BE REQUIRED



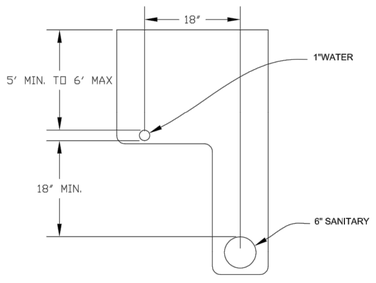
TYPICAL HEAVY TRAFFIC DRIVABLE GRASS DETAIL



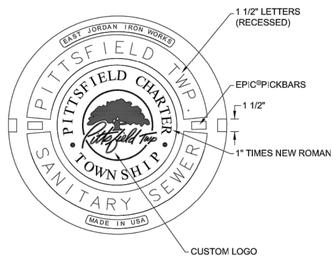
SANITARY SEWER CLEANOUT



SANITARY SEWER SERVICE
& RISER CONNECTION DETAIL

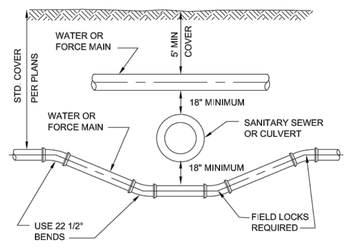


TYPICAL L TRENCH DETAIL
HOUSE LEADS



EAST JORDAN IRON WORKS 1040 Z BOLT DOWN FRAME
EAST JORDAN IRON WORKS 1040 AGS COVER

COVER DETAIL



SEWER OR CULVERT CROSSING

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
COVER DETAIL UPDATE	MRH	DRW	14.01.24
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.
2075001300

Scale
NOT TO SCALE

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	0.160	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 to 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 the judgment of the ENGINEER, such precautionary measures are necessary. If, as a result of any phase of the work, trees are damaged or it is necessary to remove limbs in the way of construction, the repair of the damage and such limb removal shall be done by the CONTRACTOR as directed by the ENGINEER. All costs for the protective work shall be borne by the CONTRACTOR as incidental to the Contract work.

3.05 ROCK EXCAVATION

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

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

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

3.06 PIPE BORING AND JACKING

A. The CONTRACTOR shall obtain all necessary permits for jacking the encasing pipe under channels, highways and/or railroads and shall notify the governmental agency and/or company having jurisdiction 48 hrs before work at any crossing is started. The CONTRACTOR shall pay all costs for an inspector and/or 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 belt 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. After the pipes are tested satisfactorily, the remaining space between the carrier pipe and the encasing pipe shall be pressure grouted or otherwise filled with concrete. The carrier pipe shall be adequately braced to prevent floating or movement of the pipe.

3.07 SHORING, SHEETING AND BRACING

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

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

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

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

E. Materials for sheeting systems shall be furnished and driven or set in place by the CONTRACTOR, where necessary or wherever ordered by the ENGINEER, whether the same is or is not considered necessary by the CONTRACTOR. If, in the opinion of the ENGINEER, the materials furnished by the CONTRACTOR are not of proper quality or sufficient size or not properly placed to 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 compaction is satisfactory to the ENGINEER, to provide for any slight settlement, the CONTRACTOR shall retrim neatly any broken edges of pavement and replace the top surface of the backfill within the pavement area with pavement surface equal to that surface which was removed. The pavement shall be replaced in accordance with the standard specifications of the agency having jurisdiction.

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

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

3.10 FILLING AND BACKFILLING FOR STRUCTURES

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

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

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

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

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

3.11 FILLING AND BACKFILLING FOR PAVED SURFACES

A. Embankments, including sand cushions and granular fills, shall be placed in successive layers not more than 6 inches in depth the full width of the cross section, each layer to be thoroughly compacted by means of vibratory compactors or by an approved pneumatic-tired roller or combination 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 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.

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PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title
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Project No.
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Scale
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Revision
1

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)	Hoilding 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, uni\-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 Proi-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

PITTSFIELD CHARTER TOWNSHIP

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Revision	By	Appd.	YY.MM.DD
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Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title
SANITARY SEWER SPECIFICATIONS

Project No.
2075001300

Scale
NOT TO SCALE

Revision
1

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 satisfacton 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 Pressure Class 350.

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 specificatons 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 no lead brass 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 1040 A 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 EJ/W 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 Pressure Class 350 Ductile Iron, Double cement lined.

B. Curb Stops

1. Curb stops used for service connections shall be ball valve type. All parts shall be no lead brass. 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 shall be the Bibby Screw Style V010 with S169 top, V201 bottom, V223 extention, and V240 water cover . 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"). 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 no lead brass..

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-6 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 undisturbed 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 materials, 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 5' - 6" 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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Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title
WATER MAIN SPECIFICATIONS

Project No.
2075001300

Scale

Revision