FINAL PUD PLANS
BEACHWOOD
SITE CONDOMINIUMS
CITY OF WALLED LAKE, OAKLAND COUNTY, MICHIGAN

LOCATION MAP
1" = 2000'

PERMIT & APPROVAL LIST

CITY:

PUD PRELIMINARY SITE PLAN	APPROVED 6/12/2018
PUD FINAL SITE PLAN	NOT APPROVED
SOIL EROSION CONTROL PERMIT	NOT APPROVED
DPW RIGHT-OF-WAY PERMIT FOR DECKER ROAD AND LEON ROAD	NOT APPROVED

COUNTY:

WATER SYSTEM	NOT APPROVED
WASTEWATER SYSTEM PERMIT	NOT APPROVED
WRC DRAINAGE DISTRICT AMENDMENT	NOT APPROVED

STATE:

MDEQ: ACT 399 WATER SYSTEM CONSTRUCTION PERMIT:	NOT APPROVED
PART 41 SANITARY SEWER SYTEM	NOT APPROVED
ACT 451 NOTICE TO COVERAGE: MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY	NOT APPROVED
MDEQ WETLAND PERMIT:	NOT REQUIRED

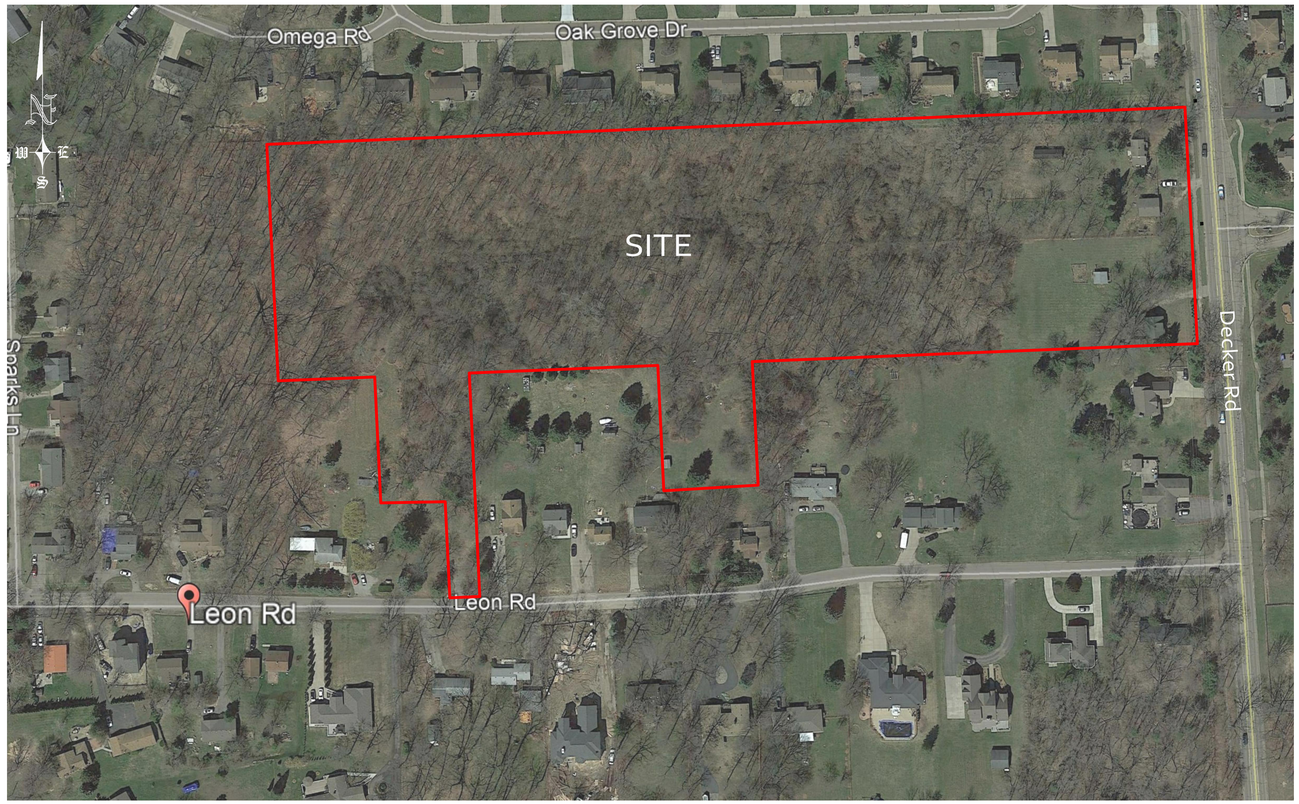
NOT REQUIRED PER LETTER FROM EGLE DATED 6/4/2019

ADDITIONAL PERMITS AND/OR APPROVALS MAY BE REQUIRED OTHER THAN WHAT HAS BEEN PREVIOUSLY LISTED.

VARIANCES\WAIVERS REQUESTED

PUD WAIVERS REQUESTED:

1. LOT SIZE: THE TYPICAL PROPOSED LOT IS 50' X 120' OR 6,000 SF. THE R1-A ORDINANCE REQUIRES MINIMUM 90' X 133' OR 12,000 SF.
2. SETBACKS: THE PROPOSED SIDE YARD SETBACKS ARE 5' EACH AND 10' COMBINED. THE R1-A ORDINANCE REQUIRES 10' MINIMUM AND 25' COMBINED.
3. TREE REPLACEMENTS: A PARTIAL WAIVER FROM THE TREE REPLACEMENT REQUIREMENTS IS REQUESTED. THE REPLACEMENT TREE CALCULATION IS PROPOSED TO BE CAPPED AT 184 REPLACEMENT TREES. THE SUM OF REPLACEMENT TREES PLANTED ON-SITE AND ANY REPLACEMENT TREE PAYMENTS MADE INTO THE TREE FUND WILL NOT EXCEED (184) 2.5" TREES. A MAJORITY OF THE LANDMARK TREES ON THE SITE WILL BE SAVED INCLUDING THE LARGEST AND OLDEST TREES IN PERIMETER BUFFERS.



SITE MAP
1" = 100'

SHEET LIST

1 – COVER
2 – EXISTING CONDITIONS
3 – TREE SURVEY/REMOVAL PLAN WEST
4 – TREE SURVEY/REMOVAL PLAN EAST
5 – TREE LIST
6 – TREE LIST
7 – TREE LIST & REPLACEMENT CALCULATIONS
8 – SUPERIMPOSED TREE SURVEY
9 – SITE PLAN
10 – EASEMENT PLAN
11 – SITE GRADING & SOIL EROSION CONTROL PLAN
12 – "DECKER ROAD ENTRANCE PLAN & DETAILS"
13 – ROAD, SANITARY, WATERMAIN PLAN & PROFILE
14 – "WM PLAN & PROFILE – EMERGENCY ACCESS DR."
15 – OVERALL STORMWATER MASTER PLAN
16 – SITE – STORMWATER MANAGEMENT PLAN
17 – STORMWATER TRIBUTARY AREA PLAN
18 – STORMSEWER PROFILES
19 – STORMSEWER PROFILES & CALCULATIONS
20 – STORMSEWER FORCE MAIN PLAN & PROFILE
21 – LEON RD RECONSTRUCTION REMOVAL PLAN
22 – LEON RD DITCH RECONSTRUCTION PLAN & PROFILE
23 – LEON RD DITCH RECONSTRUCTION PLAN & PROFILE
24 – WALLED LAKE ROAD DETAILS & CROSS SECTION – 1
25 – WALLED LAKE ROAD & MDOT CASTING DETAILS
26 – SOIL BORING REPORTS
27 – WALLED LAKE SOIL EROSION DETAILS
LS-1 GENERAL PLANTING DETAIL
LS-2 PLANT MATERIAL LIST, PLANTING DETAILS, AND LANDSCAPE NOTES
LS-3 ENTRY MONUMENT

(WRC)
D1 – OAKLAND COUNTY WATER DETAILS
D2 – OAKLAND COUNTY SANITARY DETAILS

Economic Impact Statement

The Walled Lake School district is experiencing declining enrollment. In the Walled Lake Consolidated School District--which covers Walled Lake, portions of West Bloomfield, Wixom and Commerce Township--the preliminary count was 14,426 students. Judy Evola, director of community relations and marketing, said since February 2015, numbers are down 137 students at the elementary level, 142 at the middle school level and 15 in the high schools.

STUDENT PROJECTIONS BASED ON 36 NEWLY CONSTRUCTED DETACHED HOMES

MAXIMUM NEW STUDENTS:	PROJECTED NEW STUDENTS BASED ON 50% NEW FAMILIES & 50% EMPTY NESTERS:
108 NEW STUDENTS	**54** NEW STUDENTS

CONCLUSION
This analysis concludes that the new housing proposed will not dramatically affect enrollment at: Hickory Woods, James Geisler, and Walled Lake Western.
Walled Lake School District statistics show that this development will not place a burden on the district.

LANDSCAPE NOTE:

THE APPLICANT WILL BE RESPONSIBLE FOR LANDSCAPE MAINTENANCE UNTIL THE HOMEOWNERS ASSOCIATION HAS BEEN TRANSFERRED, AT WHICH TIME THE HOA WILL BE RESPONSIBLE FOR MAINTENANCE.

GENERAL NOTES:

1. ALL REQUIRED EASEMENTS SHALL BE RECORDED PRIOR TO FINAL APPROVAL.
2. TRAFFIC CONTROL PLANS WILL BE PRIGHT-OF-WAY PERMIT PROVIDED WITH CITY RIGHT-OF-WAY SUBMITTAL PACKET.

EASEMENT REQUIRED

1. ONSITE WATER: SHOWN ON SHEET 10.
2. ONSITE SEWER: SHOWN ON SHEET 10.
3. ONSITE STORM: SHOWN ON SHEET 10.
4. OFFSITE WATER: IN PLACE (DECKER ROAD ROW)
5. OFFSITE SEWER: IN PLACE (DECKER ROAD ROW)
6. OFFSITE STORM: IN PLACE (LEON ROAD ROW)
7. DRAINAGE DISTRICT AMENDMENT: APPLICATION SUBMITTED TO OCWRC ON XX/XX/2019
8. ACCESS ROAD EASEMENT: SHOWN ON SHEET 10.
9. TEMP CONSTRUCTION EASEMENTS: NOT REQUIRED, ALL OFFSITE WORK WILL BE LIMITED TO EXISTING RIGHT OF WAY

SITE DATA TABLE

GROSS SITE AREA		11.63AC.
PROPOSED EXCEPTION AREA (OUTLOT A)	12,110 SQ FT	= 0.28AC.
PROPOSED EXCEPTION AREA (OUTLOT B)	17,358 SQ FT	= 0.40AC.
DECKER ROAD R.O.W. AREA		= 0.21AC.
NET SITE AREA		= 10.75
TOTAL UNITS		= 36
EXISTING ZONING		= R1-A
PROPOSED ZONING		= PUD (SINGLE FAMILY RESIDENTIAL)

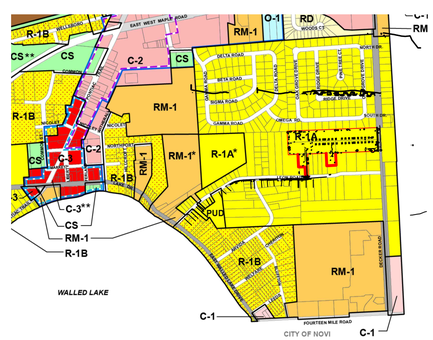
SETBACKS

FRONT	= 30' (FROM B/C)
SIDE	= 5' (10' COMBINED)
REAR	= 35'
BUILDING SEPARATION	= 10' MIN

OPEN SPACE	= 4.74AC.
OPEN SPACE % REQUIRED	= 10%
OPEN SPACE % PROVIDED	= 44.09%

STORM

REQUIRED STORM DETENTION	= 78,324 CF
PROPOSED STORM DETENTION	= 153,128 CF



ZONING MAP
1" = 1000'

Zoning Districts

- R-1A Single Family Residential District (12,000 sq. ft.)
- R-1B Single Family Residential District (9,600 sq. ft.)
- RM-1 Multiple Family Residential District
- RM-2 Multiple Family Residential District
- RM-3 Multiple Family Residential District
- MH Mobile Home District
- RD Two Family Residential District
- C-1 Neighborhood Commercial District
- C-2 General Commercial District
- C-3 Central Business District
- O-1 Office District
- CS Community Service District
- I-1 Limited Industrial District
- P-1 Vehicular Parking District
- Setbacks shall be measured from a line parallel to and 60 feet from the centerline of the road.
- Setbacks shall be measured from a line parallel to and 43 feet from the centerline of the road.
- Downtown Overlay District Boundaries
- Historic Downtown 0-5 Foot Front Setback
- Pontiac Trail & Maple Road 15 Foot Minimum Front Setback
- * Planned Unit Development Details Available @ City Hall
- ** Commercial Planned Development Details Available @ City Hall

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.

ALL WORK SHALL CONFORM TO THE CITY OF WALLED LAKE & OAKLAND COUNTY STANDARDS AND SPECIFICATIONS.

UTILITY WARNING
UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

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

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

SEAL
STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
22015457
PROFESSIONAL ENGINEER

OWNER\DEVELOPER
PULTE HOMES OF MICHIGAN, LLC
100 BLOOMFIELD HILLS PKWY, STE 150
BLOOMFIELD HILLS, MI 48304
PH:(248) 644-7300
CONTACT:PAUL SCHYCK
EMAIL:Paul.Schyck@PulteGroup.com

ENGINEER/SURVEYOR
Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

Wes Lee O. Umlor, P.E.

49287 West Road
Wixom, MI 48393
Phone: (248) 773-7656
Fax: (866) 690-4307
E-mail: wumlor@diffin-umlor.com Michigan
Web: www.diffin-umlor.com

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Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services
49287 WEST ROAD
WIXOM, MI 48393
(P): 248-437-7803
(F): 866-960-4307

REVISIONS
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REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 4/25/2019
REVISED PER CITY COMMENTS DATED 5/16/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

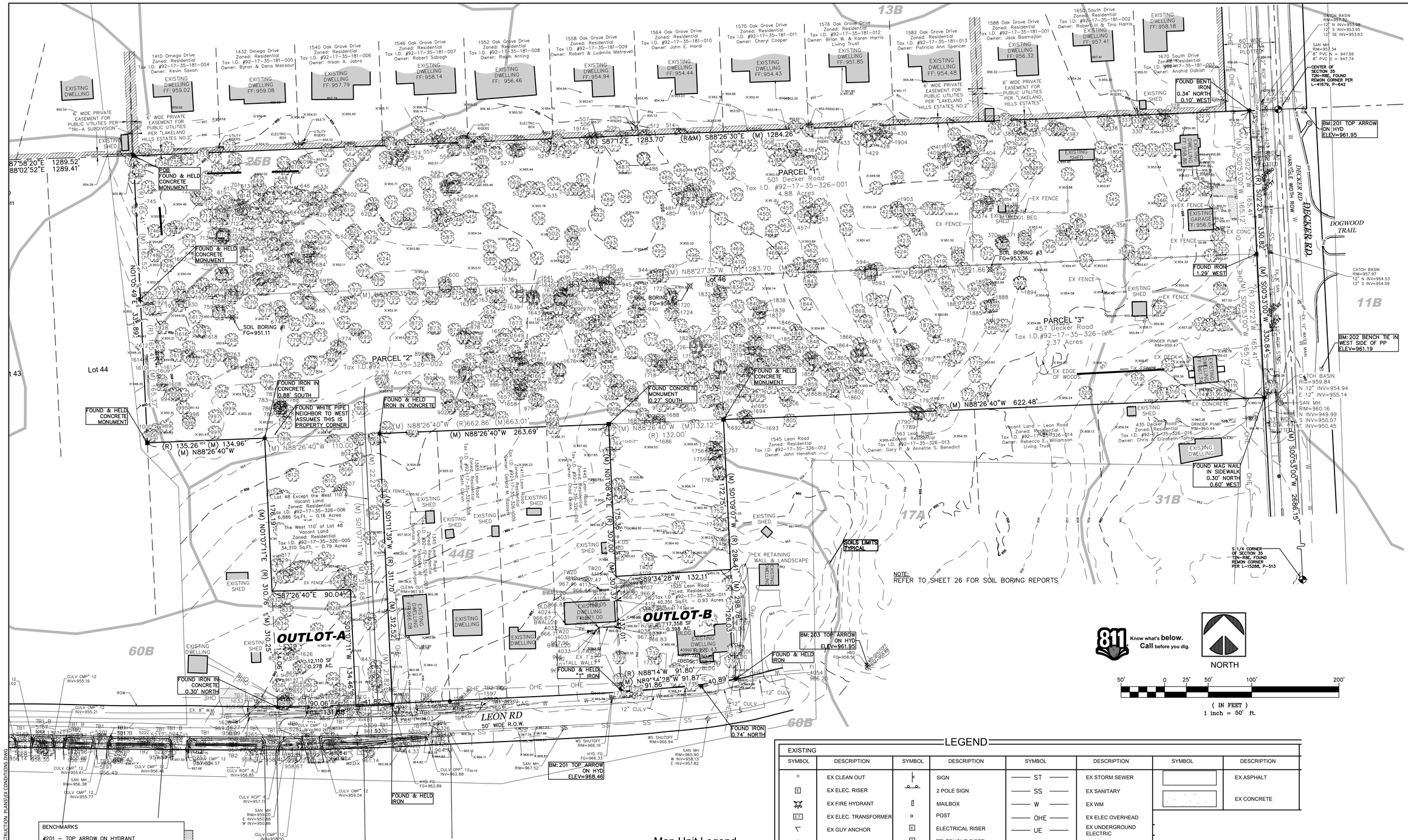
CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
COVER

These documents are instruments of service in respect of the project. They are not to be used without written verification or adaptation by Diffin -Umlor & Associates (DUA) for the specific purposes intended by the client or other persons. Any use which third parties make of these documents, without prior written adaptation will entitle DUA to further compensation at rates to be agreed upon by User and DUA.

SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
AS NOTED
Job No.: 180603
Sheet No.
1



NOTE:
REFER TO SHEET 26 FOR SOIL BORING REPORTS

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

NORTH

50' 0 25' 50' 100' 200'

(IN FEET)
1 inch = 50' ft.

BENCHMARKS

#201 – TOP ARROW ON HYDRANT
ELEVATION=961.95

#202 – BENCH TIE IN WEST SIDE OF POWER POLE
ELEVATION=961.19

#203 – TOP ARROW ON HYDRANT
LOCATED ±504' WEST OF ℄ TO DECKER RD.
±12' NORTH OF LEON RD.
ELEVATION=961.95

!! CAUTION !!
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FLOODPLAIN NOTE: ACCORDING TO THE NATIONAL FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 26125C0486F, DATED SEPTEMBER 29, 2006; THE SUBJECT PARCEL IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA, THE SUBJECT PROPERTY IS LOCATED IN ZONE "X" WHICH IS DEFINED AS AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD.

"BEACHWOOD SITE CONDOMINIUMS"

Lots 45 & 46, AND part of Lots 48 & 51 of "Clutz Lakeview Woodlands" as recorded in Liber 55, page 38, Oakland County Records, being more particularly described as: A parcel of land located in the Southwest 1/4 of Section 35, T2N-R9E, City of Walled Lake, Oakland County, Michigan: Commencing at the West 1/4 Corner of said Section 35; thence S88°02'52"E, along the East-West 1/4 line of said Section 35 as monumented and the South line of "Tri-A Subdivision" as recorded in Liber 76, page 4, Oakland County records, 1289.41 feet to the Northwest corner of said Lot 45 and the POINT OF BEGINNING; thence continuing along the East-West 1/4 line of said Section 35 as monumented, S88°26'30"E, along the South line of "Lakeland Hills Estates No. 2", as recorded in Liber 178, page 20 & "Lakeland Hills Estates" as recorded in Liber 177, page 2, Oakland County records & the North line of said "Clutz Lakeview Woodlands", 1284.26 feet to the NE corner of said Lot 45 and the Westerly right-of-way line of Decker Road (variable width); thence S00°53'00"W, along said Westerly right-of-way line of Decker Road, 330.84 feet to the SE corner of said Lot 46; thence N88°26'40"W, along the South line of said Lot 46, 622.48 feet to the Northeast corner of said Lot 51; thence S01°09'07"W, along the East line of said Lot 51, 172.75 feet; thence N89°34'28"W 132.11 feet to a point on the West line of said Lot 51; thence N01°08'42"E, along the West line of said Lot 51, 175.36 feet to the Northwest corner of said Lot 51; thence N88°26'40"W, along the South line of said Lot 46, 263.69 feet to the Northeast corner of said Lot 48; thence S01°11'39"W, along the East line of said Lot 48, 312.52 feet to the Southeast corner of said Lot 48 and the Northerly right-of-way line of Leon Road; thence along said Northerly right-of-way line of Leon Road along a curve to the right having a radius of 2267.00 feet, an arc length of 41.82 feet, a delta of 01°03'25" and a chord bearing and distance of N88°35'39"W 41.82 feet; thence N01°07'11"E 134.46 feet; thence N87°10'40"W 90.04 feet to a point on the West line of said Lot 48; thence N01°07'11"E, along the West line of said Lot 48, 176.19 feet to the Northwest corner of said Lot 48; thence N88°26'40"W, along the South line of said Lot 46, 134.96 feet to the Southwest corner of said Lot 46; thence N01°05'49"E along the West line of said Lots 45 & 46, 330.89 feet to the POINT OF BEGINNING. Said parcel contains 11.63 acres of land and is subject to any and all easements & right-of-ways which may or may not be of record.

Map Unit Legend (Decker Rd Soils)

Map Unit Symbol	Map Unit Name
11B	Capac sandy loam, 0 to 4 percent slopes
17A	Wasepi sandy loam, 0 to 3 percent slopes
31B	Metea loamy sand, 0 to 6 percent slopes
13B	Oshtemo-Boyer loamy sands, 0 to 6 percent slopes
44B	Riddles sandy loam, 1 to 6 percent slopes
60B	Urban land-Marlette complex, 0 to 8 percent slopes
25B	Owosso sandy loam, 1 to 6 percent slopes

LEGEND

EXISTING

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	EX CLEAN OUT		SIGN	ST	EX STORM SEWER		EX ASPHALT
E	EX ELEC. RISER		2 POLE SIGN	SS	EX SANITARY		EX CONCRETE
	EX FIRE HYDRANT		MAILBOX	W	EX WM		
E.T.	EX ELEC. TRANSFORMER		POST	OHE	EX ELEC OVERHEAD		
	EX GUY ANCHOR	E	ELECTRICAL RISER	UE	EX UNDERGROUND ELECTRIC		
	EX STM. MANHOLE	T	TELEPHONE RISER	GAS	EX GAS		
	EX SAN. MANHOLE	C	COMMUNICATIONS RISER		EX FENCE		
	EX VENT		ELECTRICAL METER	OHF	EX FIBER OHERHEAD		
	EX WATER STOP BOX		EXISTING FLAG POLE		EX FENCE		
W	EX GATE VALVE	GEN	EXISTING GENERATOR		EX GUARDRAIL		
	EX SPEAKER BOX		EXISTING SIGNAL POLE		EX PROPERTY LINE		
	EX POWER POLE	G	EXISTING GAS METER	955	EX CONTOUR MJR		
	EX SINGLE LIGHT POLE	(R)	RECORDED DISTANCE	954	EX CONTOUR MNR		
	EX DOUBLE LIGHT POLE	(M)	MEASURED DISTANCE	1365	REGULATED TREE/ TREE TO REMAIN		
	EX ROUND CATCH BASIN		SET IRON				
	EX SQUARE CATCH BASIN		FOUND IRON		EX GRAVEL		
			FOUND CONCRETE MONUMENT				

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#20104457
PROFESSIONAL ENGINEER

07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 50'
Job No.: 180603
Sheet No. 2

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services
49287 WEST ROAD
WIXOM, MI 48393
(P): 248-437-7803
(F): 866-960-4307

REVISIONS
REVISED PER CITY COMMENTS DATED 1/16/2019
REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
EXISTING CONDITIONS

SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

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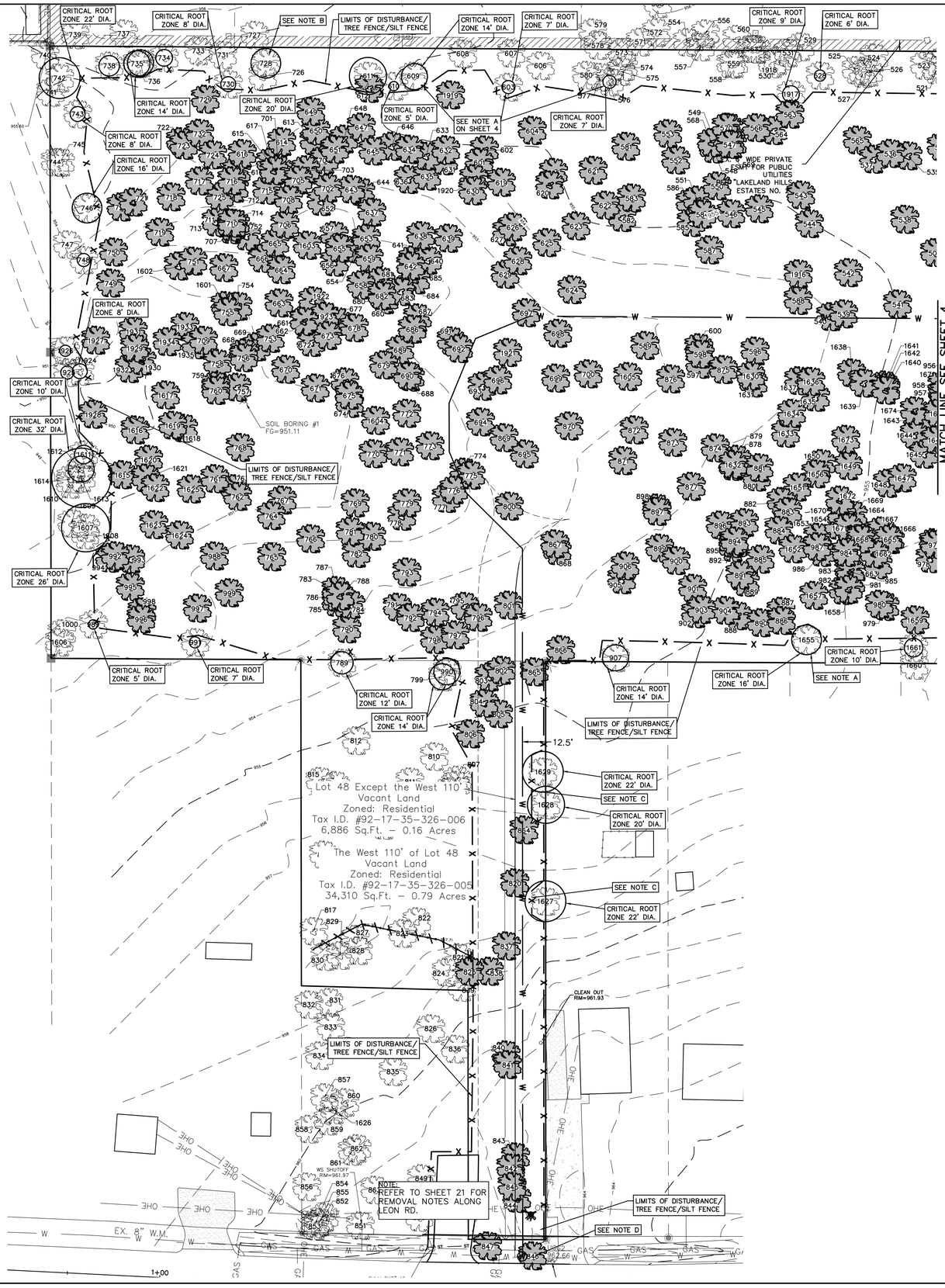

NORTH

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

LEGEND

EXISTING

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	EX CLEAN OUT		SIGN	ST ST	EX STORM SEWER		EX GRAVEL
E	EX ELEC. RISER		2 POLE SIGN	SS SS	EX SANITARY		EX ASPHALT
	EX FIRE HYDRANT		MAILBOX	W W	EX WM		EX CONCRETE
ET	EX ELEC. TRANSFORMER		POST	OHE OHE	EX ELEC OVERHEAD	PROPOSED / REMOVAL	
	EX GUY ANCHOR	E	ELECTRICAL RISER	UE UE	EX UNDERGROUND ELECTRIC	SYMBOL	DESCRIPTION
	EX STM. MANHOLE	T	TELEPHONE RISER	UG UG	EX GAS	X	PR SILT FENCE
	EX SAN. MANHOLE	C	COMMUNICATIONS RISER	OHF OHF	EX FIBER OVERHEAD	W	PR WATERMAIN
	EX VENT		ELECTRICAL METER		EX FENCE		REMOVE EXISTING FENCING
	EX WATER STOP BOX		EXISTING FLAG POLE		EX GUARDRAIL		REMOVE EXISTING STRUCTURE
	EX GATE VALVE	GEN	EXISTING GENERATOR		EX PROPERTY LINE		REMOVE EX CONC & ASPHLT
	EX SPEAKER BOX		EXISTING SIGNAL POLE	955	EX CONTOUR MJR		REMOVE EX GRAVEL
	EX POWER POLE	G	EXISTING GAS METER	954	EX CONTOUR MNR		REMOVE EXISTING TREE
	EX SINGLE LIGHT POLE	(R)	RECORDED DISTANCE	1360	REGULATED TREE/ TREE TO REMAIN		
	EX DOUBLE LIGHT POLE	(M)	MEASURED DISTANCE		PRIVATE UTILITY EASEMENT		
	EX ROUND CATCH BASIN		SET IRON				
	EX SQUARE CATCH BASIN		FOUND IRON				
			FOUND CONCRETE MONUMENT				

TREE REMOVAL NOTES:

A. CRITICAL ROOT ZONES ARE INDICATED WHERE LIMITS OF DISTURBANCE IMPACT TREES TO REMAIN. INSTALL TREE PROTECTION FENCE IMMEDIATELY ADJACENT TO SILT FENCE. TRENCH LIMITS OF DISTURBANCE LINE TO INSTALL SILT FENCE AND PRUNE FEEDER ROOTS. OVER 50% OF CRITICAL ROOT ZONE TO REMAIN. MONITOR TREE HEALTH.
B. TREES CALLED FOR REMOVAL OUTSIDE LIMITS OF DISTURBANCE ON THIS SHEET ARE DEAD (i.e. #728). TREE WILL BE FELLED BY CHAINSAW, CUT UP AND REMOVED. STUMP WILL BE LEFT IN PLACE SO AS NOT TO DISTURBED ENTANGLED ROOTS.
C. WATERMAIN ALONG EMERGENCY SERVICE DRIVE IS LOCATED 12.5' WEST OF PROPERTY LINE. TREES TO REMAIN (i.e. #1627–1629) STRADLE THE PROPERTY LINE. LOCATE SILT FENCE 7.5 FEET WEST OF PROPERTY LINE. INSTALL TREE PROTECTION FENCE IMMEDIATELY ADJACENT TO SILT FENCE. SILT FENCE TRENCHER WILL PRUNE FEEDER ROOTS. OVER 80 PERCENT OF CRITICAL ROOT ZONE WILL REMAIN UNDISTURBED. MONITOR TREE HEALTH.
D. TREE (#846) REMOVED FOR WATER TAP AND SITE DISTANCE.
E. TREE (#612) WILL BE CUT DOWN DUE TO THE CONDITION OF THE TREE, HOWEVER, THE STUMP WILL REMAIN.

WES LEE O. UMLOR, L.S. 56369

MIKE NOLES CERTIFIED ARBORIST – MI4450A

!! CAUTION !!
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SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
22015245
LICENSED PROFESSIONAL ENGINEER

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

49287 WEST ROAD
WIXOM, MI 48393

(P): 248-437-7803
(F): 866-960-4307

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REVISED PER CITY COMMENTS DATED 03/15/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT:
PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY., SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS

TREE SURVEY_ REMOVAL PLAN - WEST

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
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OAKLAND COUNTY

07-08-2019
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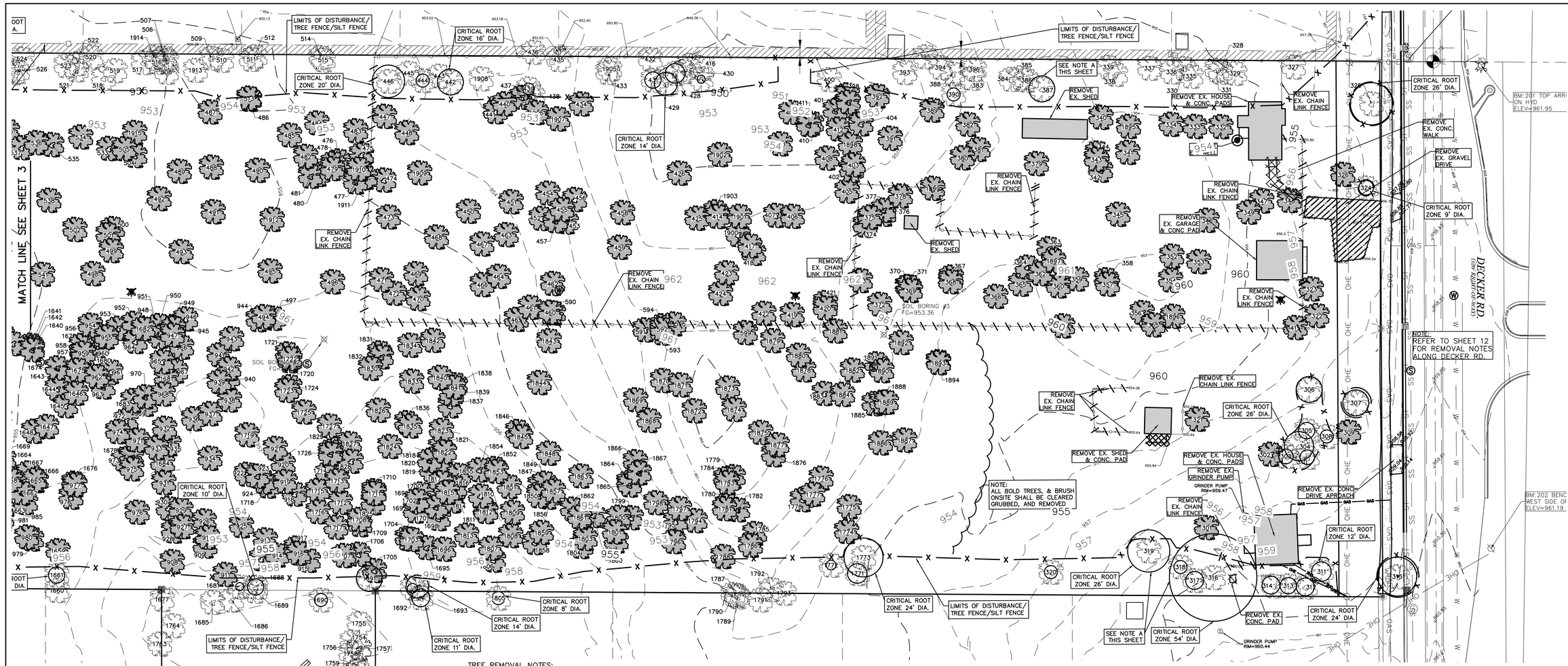
M:\DDC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\DEMO-TREE REMOVAL.DWG



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A. CRITICAL ROOT ZONES ARE INDICATED WHERE LIMITS OF DISTURBANCE IMPACT TREES TO REMAIN. INSTALL TREE PROTECTION FENCE IMMEDIATELY ADJACENT TO SILT FENCE. TRENCH LIMITS OF DISTURBANCE LINE TO INSTALL SILT FENCE AND PRUNE FEEDER ROOTS. OVER 50% OF CRITICAL ROOT ZONE TO REMAIN. MONITOR TREE HEALTH.

NOTE:
CONTRACTOR SHALL COORDINATE REMOVAL & ABANDONMENT OF ALL PRIVATE & PUBLIC UTILITIES TO EXISTING HOMES AT 501 & 457 DECKER RD. TO BE DEMOLISHED WITH THE PROPER UTILITY SERVICE COMPANY PER THEIR STANDARDS & DETAILS. (TYPICAL)

NORTH

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

WES LEE O. UMLOR, L.S. 56369

MIKE NOLES, CERTIFIED ARBORIST – MI4450A

LEGEND

EXISTING

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	EX CLEAN OUT		SIGN	ST ST	EX STORM SEWER		EX GRAVEL
E	EX ELEC. RISER		2 POLE SIGN	SS SS	EX SANITARY		EX CONCRETE
	EX FIRE HYDRANT		MAILBOX	W W	EX WM	PROPOSED / REMOVAL	
E.T	EX ELEC. TRANSFORMER		POST	OHE OHE	EX ELEC OVERHEAD	SYMBOL	DESCRIPTION
	EX GUY ANCHOR	E	ELECTRICAL RISER	UE UE	EX UNDERGROUND ELECTRIC	X	PR SILT FENCE
D	EX STM. MANHOLE	T	TELEPHONE RISER	UG UG	EX GAS	W	PR WATERMAIN
S	EX SAN. MANHOLE	C	COMMUNICATIONS RISER	OHF OHF	EX FIBER OVERHEAD		REMOVE EXISTING FENCING
	EX VENT	E	ELECTRICAL METER		EX FENCE		REMOVE EXISTING BUILDING
	EX WATER STOP BOX		EXISTING FLAG POLE		EX GUARDRAIL		REMOVE UTILITY STRUCTURE
W	EX GATE VALVE	GEN	EXISTING GENERATOR		EX PROPERTY LINE		REMOVE EX CONC & ASPHLT
	EX SPEAKER BOX		EXISTING SIGNAL POLE	955	EX CONTOUR MJR		REMOVE EX GRAVEL
	EX POWER POLE	G	EXISTING GAS METER	954	EX CONTOUR MNR		REMOVE EXISTING TREE
	EX SINGLE LIGHT POLE	(R)	RECORDED DISTANCE	1360	REGULATED TREE/ TREE TO REMAIN		
	EX DOUBLE LIGHT POLE	(M)	MEASURED DISTANCE		PRIVATE UTILITY EASEMENT		
	EX ROUND CATCH BASIN		SET IRON				
	EX SQUARE CATCH BASIN		FOUND IRON				
			FOUND CONCRETE MONUMENT				

!! CAUTION !!
DANGEROUS AND SENSITIVE UNDERGROUND FACILITIES MAY BE PRESENT THROUGHOUT THE PROJECT AREA THAT DO NOT APPEAR ON THIS DRAWING. ALL UNDERGROUND FACILITIES MUST BE LOCATED AND STAKED BY THE APPROPRIATE AGENCIES PRIOR TO EXCAVATION.

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

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#201054579
LICENSED PROFESSIONAL ENGINEER

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

49287 WEST ROAD
WIXOM, MI 48393

(P): 248-437-7803
(F): 866-960-4307

REVISIONS

REVISED PER CITY COMMENTS DATED 1/16/2019

REVISED PER CITY COMMENTS DATED 3/15/2019

REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS

TREE SURVEY_REMOVAL PLAN - EAST

These documents are instruments of service in respect of the project identified on the drawing and are the property of Diffin-Umlor & Associates (DUA) for the specific purposes intended will be at Users sole risk and without liability or legal exposure to DUA and Users shall indemnify and hold harmless DUA from all claims, damages, losses and expenses including attorneys' fees arising out of or resulting therefrom. Any such verification or adaption of the documents for other purposes, compensation or release to be agreed upon by User and DUA.

SECTION 35 | TOWN 2 NORTH, RANGE 8 EAST | CITY OF WALLED LAKE | OAKLAND COUNTY

07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 30'
Job No.: 180603
Sheet No. 4

M:\DDC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\DEMO-TREE-REMOVAL.DWG

Tag No.	Scientific Name	Common Name	DBH (Largest Stem for Multi-stem)	Save/ Remove	Landmark Threshold	Type of Replacement	Condition	Replacement Value
301	Acer saccharinum	Silver Maple	9.5	Remove	18	Regular	Good	1.00
302	Acer saccharinum	Silver Maple	18	Remove	18	Landmark	Good	1.50
303	Catalpa speciosa	Northern Catalpa	9	Save	NA	Regular	Good	0.00
304	Catalpa speciosa	Northern Catalpa	18	Save	NA	Regular	Good	0.00
305	Picea pungens	Blue Spruce	10	Save	18	Regular	Good	0.00
306	Carya glabra	Pignut Hickory	16	Save	18	Regular	Good	0.00
307	Malus	Apple	16	Save	NA	Regular	Good	0.00
308	Picea pungens	Blue Spruce	8	Save	18	Regular	Fair	0.00
309	Cedrus	Cedar	12	Remove	12	Landmark	Good	1.00
310	Catalpa speciosa	Northern Catalpa	9	Save	NA	Regular	Good	0.00
311	Cedrus	Cedar	12	Save	12	Landmark	Good	0.00
312	Cedrus	Cedar	11	Save	12	Regular	Fair	0.00
313	Cedrus	Cedar	10	Save	12	Regular	Fair	0.00
314	Cedrus	Cedar	11	Save	12	Regular	Fair	0.00
315	Quercus alba	White Oak	24	Save	16	Landmark	Good	0.00
316	Acer saccharum	Sugar Maple	54	Save	18	Landmark	Good	0.00
317	Malus	Apple	11	Save	NA	Regular	Good	0.00
318	Acer saccharum	Sugar Maple	20	Save	18	Landmark	Good	0.00
319	Acer saccharinum	Silver Maple	26	Save	18	Landmark	Good	0.00
320	Malus	Apple	8	Save	NA	Regular	Good	0.00
321	Malus	Apple	12	Remove	NA	Regular	Good	1.00
322	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
323	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
324	Juglans nigra	Black Walnut	9	Save	20	Regular	Good	0.00
325	Carya glabra	Pignut Hickory	26	Save	18	Landmark	Good	0.00
326	Picea pungens	Blue Spruce	28	Remove	18	Landmark	Good	2.33
327	Acer saccharinum	Silver Maple	20	Save	18	Landmark	Good	0.00
328	Prunus serotina	Black Cherry	26	Save	18	Landmark	Fair	0.00
329	Juglans nigra	Black Walnut	6	Save	20	Regular	Good	0.00
330	Cedrus	Cedar	11	Save	12	Regular	Poor	0.00
331	Juglans nigra	Black Walnut	9	Save	20	Regular	Good	0.00
332	Picea pungens	Blue Spruce	14	Remove	18	Regular	Good	1.00
333	Picea pungens	Blue Spruce	14	Remove	18	Regular	Good	1.00
334	Juglans nigra	Black Walnut	9	Remove	20	Regular	Good	1.00
335	Juglans nigra	Black Walnut	18	Save	20	Regular	Good	0.00
336	Juglans nigra	Black Walnut	15	Save	20	Regular	Good	0.00
337	Juglans nigra	Black Walnut	20	Save	20	Landmark	Good	0.00
338	Juglans nigra	Black Walnut	22	Save	20	Landmark	Good	0.00
339	Juglans nigra	Black Walnut	20	Save	20	Landmark	Good	0.00
340	Juglans nigra	Black Walnut	7	Remove	20	Regular	Good	1.00
341	Populus	Poplar	32	Remove	NA	Regular	Poor	0.00
342	Juglans nigra	Black Walnut	14	Remove	20	Regular	Good	1.00
343	Juglans nigra	Black Walnut	9	Remove	20	Regular	Good	1.00
344	Juglans nigra	Black Walnut	16	Remove	20	Regular	Good	1.00
345	Acer saccharinum	Silver Maple	14	Remove	18	Regular	Good	1.00
346	Cedrus	Cedar	12	Remove	12	Landmark	Fair	1.00
347	Picea pungens	Blue Spruce	11	Remove	18	Regular	Good	1.00
348	Catalpa speciosa	Northern Catalpa	12	Remove	NA	Regular	Good	1.00
349	Juglans nigra	Black Walnut	11	Remove	20	Regular	Good	1.00
350	Picea pungens	Blue Spruce	11	Remove	18	Regular	Good	1.00
351	Pinus nigra	Austrian Pine	13	Remove	NA	Regular	Fair	1.00
352	Pinus nigra	Austrian Pine	12	Remove	NA	Regular	Fair	1.00
353	Picea pungens	Blue Spruce	11	Remove	18	Regular	Good	1.00
354	Picea pungens	Blue Spruce	16	Remove	18	Regular	Good	1.00
355	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
356	Juglans nigra	Black Walnut	20	Remove	20	Landmark	Good	1.67
357	Juglans nigra	Black Walnut	22	Remove	20	Landmark	Good	1.83
358	Acer saccharinum	Silver Maple	12	Remove	18	Regular	Good	1.00
359	Acer Negundo	Box Elder	11	Remove	NA	Regular	Good	1.00
360	Acer saccharinum	Silver Maple	6	Remove	18	Regular	Good	1.00
361	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
362	Ulmus	Elm	24	Remove	NA	Regular	Fair	1.00
363	Juglans nigra	Black Walnut	14	Remove	20	Regular	Good	1.00
364	Juglans nigra	Black Walnut	10	Remove	20	Regular	Good	1.00
365	Morus	Mulberry	10	Remove	NA	Regular	Poor	0.00
366	Morus	Mulberry	16	Remove	NA	Regular	Fair	1.00
367	Acer Negundo	Box Elder	12	Remove	NA	Regular	Poor	0.00
368	Juglans nigra	Black Walnut	16	Remove	20	Regular	Good	1.00
369	Juglans nigra	Black Walnut	14	Remove	20	Regular	Good	1.00
370	Juglans nigra	Black Walnut	16	Remove	20	Regular	Good	1.00
371	Juglans nigra	Black Walnut	16	Remove	20	Regular	Good	1.00
372	Betula Alleghaniensis	Yellow Birch	16	Remove	18	Regular	Good	1.00
373	Acer negundo	Box Elder	9	Remove	NA	Regular	Good	1.00
374	Juglans nigra	Black Walnut	14	Remove	20	Regular	Good	1.00
375	Juglans nigra	Black Walnut	12	Remove	20	Regular	Good	1.00
376	Juglans nigra	Black Walnut	13	Remove	20	Regular	Good	1.00
377	Juglans nigra	Black Walnut	12	Remove	20	Regular	Good	1.00
378	Juglans nigra	Black Walnut	16	Remove	20	Regular	Good	1.00
379	Morus	Mulberry	9	Remove	NA	Regular	Fair	1.00
380	Juglans nigra	Black Walnut	7	Remove	20	Regular	Good	1.00
381	Juglans nigra	Black Walnut	9	Remove	20	Regular	Good	1.00
382	Acer saccharinum	Silver Maple	20	Remove	18	Landmark	Good	1.67
383	Carya glabra	Pignut Hickory	18	Save	18	Landmark	Good	0.00
384	Acer negundo	Box Elder	28	Save	NA	Regular	Good	0.00
385	Acer negundo	Box Elder	14	Save	NA	Regular	Good	0.00
386	Acer negundo	Box Elder	16	Save	NA	Regular	Good	0.00
387	Acer negundo	Box Elder	16	Save	NA	Regular	Good	0.00
388	Acer negundo	Box Elder	7	Save	NA	Regular	Good	0.00
389	Acer negundo	Box Elder	14	Remove	NA	Regular	Good	1.00
390	Acer negundo	Box Elder	8	Save	NA	Regular	Good	0.00
391	Ulmus	Elm	34	Remove	NA	Regular	Good	1.00
392	Ulmus	Elm	9	Remove	NA	Regular	Good	1.00
393	Acer negundo	Box Elder	22	Save	NA	Regular	Good	0.00
394	Prunus serotina	Black Cherry	26	Save	18	Landmark	Fair	0.00
395	Acer negundo	Box Elder	22	Save	NA	Regular	Good	0.00
396	Acer negundo	Box Elder	16	Save	NA	Regular	Good	0.00
397	Populus deltoids	Cottonwood	56	Remove	NA	Regular	Good	1.00
398	Ulmus	Elm	24	Remove	NA	Regular	Poor	0.00
399	Acer negundo	Box Elder	8	Remove	NA	Regular	Good	1.00
400	Acer negundo	Box Elder	14	Save	NA	Regular	Good	0.00
401	Acer negundo	Box Elder	16	Remove	NA	Regular	Good	1.00
402	Acer negundo	Box Elder	6	Remove	NA	Regular	Good	1.00
403	Acer negundo	Box Elder	7	Remove	NA	Regular	Good	1.00
404	Populus deltoids	Cottonwood	24	Remove	NA	Regular	Good	1.00
405	Acer negundo	Box Elder	7	Remove	NA	Regular	Fair	1.00
406	Juglans nigra	Black Walnut	11	Remove	20	Regular	Good	1.00
407	Juglans nigra	Black Walnut	10	Remove	20	Regular	Good	1.00
408	Acer negundo	Box Elder	16	Remove	NA	Regular	Good	1.00
409	Acer negundo	Box Elder	11	Remove	NA	Regular	Good	1.00
410	Acer negundo	Box Elder	6	Remove	NA	Regular	Good	1.00
411	Acer negundo	Box Elder	11	Remove	NA	Regular	Good	1.00
412	Acer negundo	Box Elder	6	Remove	NA	Regular	Good	1.00
413	Juglans nigra	Black Walnut	6	Remove	20	Regular	Good	1.00
414	Acer negundo	Box Elder	9	Remove	NA	Regular	Good	1.00
415	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
416	Acer negundo	Box Elder	14	Save	NA	Regular	Good	0.00
417	Acer negundo	Box Elder	6	Remove	NA	Regular	Good	1.00
418	Malus	Apple	7	Remove	NA	Regular	Good	1.00
419	Juglans nigra	Black Walnut	9	Remove	20	Regular	Good	1.00
420	Juglans nigra	Black Walnut	14	Remove	20	Regular	Good	1.00
421	Juglans nigra	Black Walnut	16	Remove	20	Regular	Good	1.00
422	Juglans nigra	Black Walnut	11	Remove	20	Regular	Good	1.00
423	Juglans nigra	Black Walnut	14	Remove	20	Regular	Good	1.00
424	Acer negundo	Box Elder	7	Remove	NA	Regular	Poor	0.00
425	Acer negundo	Box Elder	7	Remove	NA	Regular	Good	1.00
426	Malus	Apple	8	Remove	NA	Regular	Good	1.00
427	Acer negundo	Box Elder	8	Save	NA	Regular	Good	0.00
428	Acer negundo	Box Elder	12	Save	NA	Regular	Good	0.00
429	Acer negundo	Box Elder	14	Save	NA	Regular	Fair	0.00
430	Acer negundo	Box Elder	9	Save	NA	Regular	Good	0.00
431	Acer negundo	Box Elder	10	Save	NA	Regular	Good	0.00
432	Acer negundo	Box Elder	11	Save	NA	Regular	Good	0.00
433	Acer negundo	Box Elder	9	Save	NA	Regular	Good	0.00
434	Acer negundo	Box Elder	8	Remove	NA	Regular	Good	1.00
435	Carya glabra	Pignut Hickory	26	Save	18	Landmark	Good	0.00
436	Prunus serotina	Black Cherry	22	Save	18	Landmark	Good	0.00
437	Carya glabra	Pignut Hickory	8	Save	18	Regular	Good	0.00
438	Carya glabra	Pignut Hickory	12	Save	18	Regular	Good	0.00
439	Carya glabra	Pignut Hickory	7	Save	18	Regular	Good	0.00
440	Carya glabra	Pignut Hickory	7	Remove	18	Regular	Good	1.00
441	Ulmus	Elm	12	Remove	NA	Regular	Good	1.00
442	Acer negundo	Box Elder	16	Save	NA	Regular	Good	0.00
443	Carya glabra	Pignut Hickory	7	Save	18	Regular	Good	0.00
444	Carya glabra	Pignut Hickory	8	Save	18	Regular	Good	0.00
445	Carya glabra	Pignut Hickory	6	Save	18	Regular	Good	0.00
446	Quercus rubra	Red Oak	20	Save	16	Landmark	Good	0.00
447	Carya glabra	Pignut Hickory	10	Remove	18	Regular	Good	1.00
448	Malus	Apple	8	Remove	NA	Regular	Good	1.00
450	Malus	Apple	7	Remove	NA	Regular	Good	1.00
451	Malus	Apple	6	Remove	NA	Regular	Good	1.00
452	Acer negundo	Box Elder	8	Remove	NA	Regular	Good	1.00
453	Acer negundo	Box Elder	10	Remove	NA	Regular	Good	1.00
454	Acer negundo	Box Elder	20	Remove	NA	Regular	Good	1.00
455	Juglans nigra	Black Walnut	5	Remove	20	Exempt (DBH)	Good	0.00
456	Ulmus	Elm	26	Remove	NA	Regular	Poor	0.00
457	Acer negundo	Box Elder	6	Remove	NA	Regular	Good	1.00
458	Juglans nigra	Black Walnut	14	Remove	20	Regular	Good	1.00
459	Fraxinus	Ash	9	Remove	NA	Regular	Poor	0.00
460	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
461	Prunus serotina	Black Cherry	12	Remove	18	Regular	Good	1.00
462	Quercus rubra	Red Oak	26	Remove	16	Landmark	Good	2.17
463	Quercus rubra	Red Oak	22	Remove	16	Landmark	Fair	1.83
464	Malus	Apple	11	Remove	NA	Regular	Good	1.00
465	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
466	Quercus rubra	Red Oak	9	Remove	16	Regular	Fair	1.00
467	Malus	Apple	7	Remove	NA	Regular	Good	1.00
468	Quercus alba	White Oak	10	Remove	16	Regular	Good	1.00
469	Quercus rubra	Red Oak	14	Remove	16	Regular	Good	1.00
470	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
471	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
472	Acer negundo	Box Elder	11	Remove	NA	Regular	Good	1.00
473	Prunus serotina	Black Cherry	28	Remove	18	Landmark	Good	2.33
474	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
475	Quercus rubra	Red Oak	11	Remove	16	Regular	Good	1.00
476	Quercus alba	White Oak	7	Remove	16	Regular	Good	1.00
477	Quercus rubra	Red Oak	8	Remove	16	Regular	Good	1.00
478	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
479	Quercus rubra	Red Oak	7	Remove	16	Regular	Fair	1.00
480	Ulmus	Elm	8	Remove	NA	Regular	Fair	1.00
481	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
482	Ulmus	Elm	6	Remove	NA	Regular	Fair	1.00
483	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
484	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
485	Ulmus	Elm	7	Remove	NA	Regular	Fair	1.00
486	Carya glabra	Pignut Hickory	5	Remove	18	Exempt (DBH)	Good	0.00
487	Quercus rubra	Red Oak	7	Remove	16	Regular	Good	1.00
488	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
489	Acer saccharinum	Silver Maple	7	Remove	18	Regular	Good	1.00
490	Fraxinus	Ash	8	Remove	NA	Regular	Good	1.00
491	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
492	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
493	Fraxinus	Ash	7	Remove	NA	Regular	Good	1.00
494	Betula Alleghaniensis	Yellow Birch	6	Remove	18	Regular	Good	1.00
495	Malus	Apple	6	Remove	NA	Regular	Good	1.00
496	Acer negundo	Box Elder	8	Remove	NA	Regular	Good	1.00
497	Fraxinus	Ash	10	Remove	NA	Regular	Fair	1.00
498	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
499	Quercus rubra	Red Oak	8	Remove	16	Regular	Good	1.00
500	Quercus rubra	Red Oak	7	Remove	16	Regular	Good	1.00
501	Quercus rubra	Red Oak	7	Remove	16	Regular	Good	1.00
502	Ulmus	Elm	8	Remove	NA	Regular	Fair	1.00
504	Populus deltoids	Cottonwood	16	Remove	NA	Regular	Good	1.00
505	Populus deltoids	Cottonwood	10	Remove	NA	Regular	Good	1.00
506	Quercus rubra	Red Oak	36	Save	16	Landmark	Good	0.00
507	Quercus rubra	Red Oak	10	Save	16	Regular	Good	0.00
508	Prunus serotina	Black Cherry	22	Save	18	Landmark	Good	0.00
509	Carya glabra	Pignut Hickory	18	Save	18	Landmark	Good	0.00
510	Quercus rubra	Red Oak	14	Save	16	Regular	Good	0.00
511	Quercus rubra	Red Oak	20	Save	16	Landmark	Good	0.00
512	Quercus rubra	Red Oak	20	Save	16	Landmark	Good	0.00
513	Carya glabra	Pignut Hickory	5	Remove	18	Exempt (DBH)	Good	0.00
514	Carya glabra	Pignut Hickory	24	Save	18	Landmark	Good	0.00
515	Quercus rubra	Red Oak	26	Save	16	Landmark	Good	0.00
516	Quercus rubra	Red Oak	5	Save	16	Exempt (DBH)	Good	0.00
517	Quercus rubra	Red Oak	20	Save	16	Landmark	Good	0.00
518	Quercus alba	White Oak	30	Save	16	Landmark	Good	0.00
519	Quercus rubra	Red Oak	16	Save	16	Landmark	Good	0.00
520	Quercus rubra	Pignut Hickory	16	Save	18	Regular	Good	0.00
521	Lauraceae	Sassafrass	6	Save	15	Regular	Good	0.00
522	Quercus alba	White Oak	34	Save	16	Landmark	Good	0.00
523	Lauraceae	Sassafrass	6	Save	15	Regular	Good	0.00
524	Carya glabra	Pignut Hickory	9	Save	18	Regular	Good	0.00
525	Quercus alba	White Oak	32	Save	16	Landmark	Good	0.00
526	Lauraceae	Sassafrass	7	Save	15	Regular	Good	0.00
527	Prunus serotina	Black Cherry	5	Save	18	Exempt (DBH)	Good	0.00
528	Prunus serotina	Black Cherry	6	Save	18	Regular	Poor	0.00
529	Carya glabra	Pignut Hickory	18	Save	18	Landmark	Good	0.00
530	Carya glabra	Pignut Hickory	16	Save	18	Regular	Good	0.00
531	Quercus rubra	Red Oak	26	Save	16	Landmark	Fair	0.00
532	Quercus alba	White Oak	11	Save	16	Regular	Good	0.00
533	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
534	Quercus alba	White Oak	6	Remove	16	Regular	Good	1.00
535	Populus	Poplar	11	Remove	NA	Regular	Good	1.00
536	Populus	Poplar	8	Remove	NA	Regular	Good	1.00
537	Quercus rubra	Red Oak	18	Remove	16	Landmark	Good	1.50
538	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
539	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
540	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
541	Fraxinus	Ash	6	Remove	NA	Regular	Good	1.00
542	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
543	Prunus serotina	Black Cherry	10	Remove	18	Regular	Poor	0.00
544	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
545	Quercus rubra	Red Oak	12	Remove	16	Regular	Good	1.00
546	Acer saccharum	Sugar Maple	12	Remove	18	Regular	Good	1.00
547	Quercus rubra	Red Oak	5	Remove	16	Exempt (DBH)	Good	0.00
548	Populus	Poplar	7	Remove	NA	Regular	Dead	0.00
549	Populus	Poplar	5	Remove	NA	Exempt (DBH)	Dead	0.00
550	Quercus rubra	Red Oak	9	Remove	16	Regular	Fair	1.00
551	Acer saccharum	Sugar Maple	6	Remove	18	Regular	Good	1.00
552	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
554	Quercus alba	White Oak	18	Save	16	Landmark	Good	0.00
555	Carya glabra	Pignut Hickory	16	Save	18	Regular	Good	0.00
556	Quercus rubra	Red Oak	20	Save	16	Landmark	Fair	0.00
557	Carya glabra	Pignut Hickory	16	Save	18	Regular	Good	0.00
558	Quercus alba	White Oak	20	Save	16	Landmark	Good	0.00
559	Carya glabra	Pignut Hickory	12	Save	18	Regular	Good	0.00
560	Carya glabra	Pignut Hickory	12	Save	18	Regular	Good	0.00
561	Acer rubrum	Red Maple	12	Save	18	Regular	Good	0.00
563	Quercus rubra	Red Oak	11	Remove	16	Regular	Good	1.00
564	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
565	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
566	Quercus rubra	Red Oak	10	Remove	16	Regular	Good	1.00
567	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
568	Populus	Poplar	14	Remove	NA	Regular	Poor	0.00
569	Populus	Poplar	9	Remove	NA	Regular	Dead	0.00
570	Populus	Poplar	10	Remove	NA	Regular	Poor	0.00
571	Carya glabra	Pignut Hickory	14	Save	18	Regular	Good	0.00
572	Quercus alba	White Oak	18	Save	16	Landmark	Good	0.00
573	Prunus serotina	Black Cherry	5	Save	18	Exempt (DBH)	Good	0.00
574	Quercus rubra	Red Oak	24	Save	16	Landmark	Good	0.00
575	Prunus serotina	Black Cherry	7	Save	18	Regular	Good	0.00
576	Prunus serotina	Black Cherry	7	Save	18	Regular	Good	0.00
577	Prunus serotina	Black Cherry	7	Save	18	Regular	Good	0.00
578	Quercus rubra	Red Oak	26	Save	16	Landmark	Good	0.00
579	Lauraceae	Sassafrass	8	Save	15	Regular	Good	0.00
580	Prunus serotina	Black Cherry	6	Save	18	Regular	Good	0.00
581	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
582	Populus	Poplar	10	Remove	NA	Regular	Fair	1.00
583	Quercus alba	White Oak	6	Remove	16	Regular	Good	1.00
584	Prunus serotina	Black Cherry	12	Remove	18	Regular	Fair	1.00
585	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
586	Malus	Apple	6	Remove	NA	Regular	Good	1.00
587	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
588	Malus	Apple	8	Remove	NA	Regular	Good	1.00
589	Fraxinus	Ash	7	Remove	NA	Regular	Good	1.00
590	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
591	Lauraceae	Sassafrass	10	Remove	15	Regular	Good	1.00
592	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
593	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
594	Fagus	Beech	7	Remove	18	Regular	Fair	1.00
595	Prunus serotina	Black Cherry	13	Remove	18	Regular	Good	1.00
596	Fraxinus	Ash	6	Remove	NA	Regular	Good	1.00
597	Fraxinus	Ash	6	Remove	NA	Regular	Good	1.00
598	Fraxinus	Ash	6	Remove	NA	Regular	Good	1.00
599	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
600	Fraxinus	Ash	6	Remove	NA	Regular	Good	1.00
601	Quercus rubra	Red Oak	11	Remove	16	Regular	Good	1.00
602	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
603	Quercus rubra	Red Oak	7	Save	16	Regular	Good	0.00
604	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
605	Acer saccharinum	Silver Maple	5	Remove	18	Exempt (DBH)	Good	0.00
606	Quercus rubra	Red Oak	26	Save	16	Landmark	Good	0.00
607	Carya glabra	Pignut Hickory	14	Save	18	Regular	Good	0.00
608	Acer rubrum	Red Maple	14	Save	18	Regular	Good	0.00
609	Carya glabra	Pignut Hickory	14	Save	18	Regular	Good	0.00
610	Quercus rubra	Red Oak	5	Save	16	Exempt (DBH)	Good	0.00
611	Carya glabra	Pignut Hickory	20	Save	18	Landmark	Good	0.00
612	Quercus rubra	Red Oak	7	Remove	16	Regular	Dead	0.00
613	Quercus rubra	Red Oak	14	Remove	16	Regular	Good	1.00
614	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
615	Quercus rubra	Red Oak	12	Remove	16	Regular	Good	1.00
616	Quercus rubra	Red Oak	12	Remove	16	Regular	Good	1.00
617	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
618	Acer saccharinum	Silver Maple	9	Remove	18	Regular	Good	1.00
619	Quercus rubra	Red Oak	20	Remove	16	Landmark	Good	1.67
620	Quercus rubra	Red Oak	14	Remove	16	Regular	Good	1.00
621	Acer negundo	Box Elder	11	Remove	NA	Regular	Good	1.00
622	Acer saccharinum	Silver Maple	8	Remove	18	Regular	Good	1.00
623	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
624	Quercus rubra	Red Oak	7	Remove	16	Regular	Good	1.00
625	Quercus rubra	Red Oak	14	Remove	16	Regular	Good	1.00
626	Quercus rubra	Red Oak	8	Remove	16	Regular	Fair	1.00
627	Quercus rubra	Red Oak	9	Remove	16	Regular	Fair	1.00
628	Quercus rubra	Red Oak	9	Remove	16	Regular	Good	1.00
629	Acer saccharinum	Silver Maple	9	Remove	18	Regular	Good	1.00
630	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
631	Quercus alba	White Oak	6	Remove	16	Regular	Good	1.00
632	Quercus alba	White Oak	7	Remove	16	Regular	Good	1.00
633	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
634	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
635	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
636	Quercus rubra	Black Cherry	10	Remove	18	Regular	Good	1.00
637	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
638	Quercus rubra	Red Oak	10	Remove	16	Regular	Good	1.00
639	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
640	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
641	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
642	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
643	Acer rubrum	Red Maple	11	Remove	18	Regular	Good	1.00
644	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
645	Quercus rubra	Black Cherry	12	Remove	18	Regular	Good	1.00
647	Lauraceae	Sassafrass	8	Remove	15	Regular	Good	1.00
648	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
649	Quercus rubra	Red Oak	7	Remove	16	Regular	Good	1.00
650	Quercus rubra	Red Oak	10	Remove	16	Regular	Good	1.00
651	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
652	Quercus rubra	Red Oak	14	Remove	16	Regular	Good	1.00
653	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
654	Quercus rubra	Red Oak	14	Remove	16	Regular	Good	1.00
655	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
656	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
657	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
658	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
659	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
660	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
661	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
662	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
663	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
664	Prunus serotina	Black Cherry	12	Remove	18	Regular	Good	1.00
665	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
666	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
667	Acer rubrum	Red Maple	14	Remove	18	Regular	Good	1.00
668	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
669	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
670	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
671	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
672	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
673	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Fair	0.00
674	Quercus rubra	Red Oak	9	Remove	16	Regular	Good	1.00
675	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
676	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
677	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
678	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
679	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
680	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
681	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
682	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
683	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
684	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
685	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
686	Quercus rubra	Red Oak	10	Remove	16	Regular	Good	1.00
687	Quercus rubra	Red Oak	10	Remove	16	Regular	Good	1.00
688	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
689	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
690	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
691	Betula Alleghaniensis	Yellow Birch	7	Remove	18	Regular	Good	1.00
692	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
693	Quercus rubra	Red Oak	8	Remove	16	Regular	Good	1.00
694	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
695	Betula Alleghaniensis	Yellow Birch	9	Remove	18	Regular	Good	1.00
696	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
697	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
698	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
700	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
701	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
702	Quercus rubra	Red Oak	8	Remove	16	Regular	Good	1.00
703	Quercus rubra	Red Oak	14	Remove	16	Regular	Good	1.00
704	Quercus rubra	Red Oak	7	Remove	16	Regular	Good	1.00
705	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
706	Prunus serotina	Black Cherry	16	Remove	18	Regular	Good	1.00
707	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
708	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
709	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
710	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
711	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
712	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
713	Acer saccharinum	Silver Maple	8	Remove	18	Regular	Good	1.00
714	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
715	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
716	Quercus rubra	Red Oak	6	Remove	16	Regular	Good	1.00
717	Prunus serotina	Black Cherry	12	Remove	18	Regular	Good	1.00
718	Acer rubrum	Red Maple	14	Remove	18	Regular	Good	1.00
719	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
720	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
721	Prunus serotina	Black Cherry	16	Remove	18	Regular	Good	1.00
722	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
723	Quercus rubra	Red Oak	8	Remove	16	Regular	Good	1.00
724	Quercus rubra	Red Oak	12	Remove	16	Regular	Good	1.00
725	Quercus rubra	Red Oak	6	Remove	16	Regular	Dead	0.00
726	Lauraceae	Sassafrass	7	Save	15	Regular	Good	0.00
727	Quercus rubra	Red Oak	34	Save	16	Landmark	Good	0.00
728	Prunus serotina	Black Cherry	16	Save	18	Regular	Good	0.00
729	Prunus serotina	Black Cherry	30	Save	18	Landmark	Good	0.00
730	Carya glabra	Pignut Hickory	8	Save	18	Regular	Good	0.00
731	Lauraceae	Sassafrass	10	Save	15	Regular	Good	0.00
732	Acer saccharinum	Silver Maple	12	Remove	18	Regular	Good	1.00
733	Carya glabra	Pignut Hickory	9	Save	18	Regular	Good	0.00
734	Carya glabra	Pignut Hickory	9	Save	18	Regular	Good	0.00
735	Carya glabra	Pignut Hickory	14	Save	18	Regular	Good	0.00
736	Prunus serotina	Black Cherry	14	Save	18	Regular	Good	0.00
737	Quercus rubra	Red Oak	36	Save	16	Landmark	Good	0.00
738	Lauraceae	Sassafrass	11	Save	15	Regular	Good	0.00
739	Prunus serotina	Black Cherry	10	Save	18	Regular	Good	0.00
740	Prunus serotina	Black Cherry	9	Save	18	Regular	Good	0.00
741	Lauraceae	Sassafrass	11	Save	15	Regular	Good	0.00
742	Quercus rubra	Red Oak	22	Save	16	Landmark	Good	0.00
743	Acer rubrum	Red Maple	8	Save	18	Regular	Good	0.00
744	Acer rubrum	Red Maple	8	Save	18	Regular	Good	0.00
745	Ulmus	Elm	16	Save	NA	Regular	Good	0.00
746	Quercus rubra	Red Oak	16	Save	16	Landmark	Good	0.00
747	Carya glabra	Pignut Hickory	8	Save	18	Regular	Good	0.00
748	Carya glabra	Pignut Hickory	7	Save	18	Regular	Good	0.00
749	Ulmus	Elm	12	Remove	NA	Regular	Good	1.00
750	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
751	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
752	Acer rubrum	Red Maple	16	Remove	18	Regular	Good	1.00
753	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
754	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
755	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
756	Acer rubrum	Red Maple	16	Remove	18	Regular	Good	1.00
757	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
758	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
759	Quercus rubra	Red Oak	12	Remove	16	Regular	Good	1.00
760	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
761	Acer rubrum	Red Maple	12	Remove	18	Regular	Good	1.00
762	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
763	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
764	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
765	Acer rubrum	Red Maple	14	Remove	18	Regular	Good	1.00
766	Quercus rubra	Red Oak	12	Remove	16	Regular	Good	1.00
767	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
768	Acer negundo	Box Elder	7	Remove	NA	Regular	Good	1.00
769	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
770	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
771	Acer negundo	Box Elder	6	Remove	NA	Regular	Fair	1.00
772	Fraxinus	Ash	8	Remove	NA	Regular	Fair	1.00
773	Acer saccharinum	Silver Maple	14	Remove	18	Regular	Good	1.00
774	Fraxinus	Ash	5	Remove	NA	Exempt (DBH)	Poor	0.00
775	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
776	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
777	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
778	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
779	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
780	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
781	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
782	Acer rubrum	Red Maple	11	Remove	18	Regular	Good	1.00
783	Quercus rubra	Red Oak	11	Remove	16	Regular	Good	1.00
784	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
785	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
786	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
787	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
788	Prunus serotina	Black Cherry	20	Remove	18	Landmark	Good	1.67
789	Prunus serotina	Black Cherry	12	Save	18	Regular	Fair	0.00
790	Quercus alba	White Oak	6	Remove	16	Regular	Fair	1.00
791	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
792	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
793	Fraxinus	Ash	7	Remove	NA	Regular	Good	1.00
794	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
795	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
796	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
797	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
798	Populus deltoids	Cottonwood	14	Remove	NA	Regular	Good	1.00
799	Prunus serotina	Black Cherry	14	Save	18	Regular	Good	0.00
800	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
801	Malus	Apple	10	Remove	NA	Regular	Fair	1.00
802	Quercus alba	White Oak	7	Remove	16	Regular	Good	1.00
803	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
804	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
805	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
806	Quercus rubra	Red Oak	10	Remove	16	Regular	Good	1.00
807	Ulmus	Elm	7	Save	NA	Regular	Good	0.00
808	Acer negundo	Box Elder	7	Save	NA	Regular	Good	0.00
809	Acer negundo	Box Elder	10	Save	NA	Regular	Fair	0.00
810	Acer rubrum	Red Maple	14	Save	18	Regular	Good	0.00
811	Acer saccharum	Sugar Maple	10	Save	18	Regular	Good	0.00
812	Quercus rubra	Red Oak	7	Save	16	Regular	Good	0.00
813	Prunus serotina	Black Cherry	12	Save	18	Regular	Good	0.00
814	Carya glabra	Pignut Hickory	7	Save	18	Regular	Good	0.00
815	Prunus pensylvanica	Pin Cherry	5	Save	18	Exempt (DBH)	Good	0.00
816	Prunus pensylvanica	Pin Cherry	5	Save	18	Exempt (DBH)	Fair	0.00
817	Ulmus	Elm	6	Save	NA	Regular	Fair	0.00
818	Acer saccharinum	Silver Maple	6	Save	18	Regular	Good	0.00
819	Acer negundo	Box Elder	10	Save	NA	Regular	Good	0.00
820	Acer negundo	Box Elder	16	Remove	NA	Regular	Good	1.00
821	Acer saccharinum	Silver Maple	12	Save	18	Regular	Good	0.00
822	Acer rubrum	Red Maple	20	Save	18	Landmark	Poor	0.00
823	Acer saccharinum	Silver Maple	16	Save	18	Regular	Good	0.00
824	Picea pungens	Blue Spruce	14	Save	18	Regular	Fair	0.00
825	Picea pungens	Blue Spruce	12	Remove	18	Regular	Fair	1.00
826	Robinia pseudoacacia	Locust	18	Save	NA	Regular	Good	0.00
827	Acer negundo	Box Elder	14	Save	NA	Regular	Good	0.00
828	Acer negundo	Box Elder	6	Save	NA	Regular	Fair	0.00
829	Pinus strobus	White Pine	9	Save	18	Regular	Good	0.00
830	Quercus alba	White Oak	22	Save	16	Landmark	Good	0.00
831	Betula Alleghaniensis	Yellow Birch	7	Save	18	Regular	Good	0.00
832	Prunus serotina	Black Cherry	6	Save	18	Regular	Good	0.00
833	Betula Alleghaniensis	Yellow Birch	6	Save	18	Regular	Good	0.00
834	Ulmus	Elm	7	Save	NA	Regular	Poor	0.00
835	Malus	Apple	7	Save	NA	Regular	Good	0.00
836	Robinia pseudoacacia	Locust	16	Save	NA	Regular	Good	0.00
837	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
838	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
839	Picea pungens	Blue Spruce	14	Save	18	Regular	Good	0.00
840	Acer negundo	Box Elder	16	Remove	NA	Regular	Good	1.00
841	Acer negundo	Box Elder	16	Remove	NA	Regular	Good	1.00
842	Acer platanoides	Norway Maple	6	Remove	18	Regular	Good	1.00
843	Pinus nigra	Austrian Pine	9	Remove	NA	Regular	Poor	0.00
844	Acer platanoides	Norway Maple	16	Remove	18	Regular	Good	1.00
845	Picea pungens	Blue Spruce	14	Remove	18	Regular	Good	1.00
846	Quercus rubra	Red Oak	26	Remove	16	Landmark	Good	2.17
847	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
848	Malus	Apple	10	Save	NA	Regular	Good	0.00
849	Acer rubrum	Red Maple	16	Save	18	Regular	Good	0.00
850	Picea pungens	Blue Spruce	16	Save	18	Regular	Fair	0.00
851	Cedrus	Cedar	6	Save	12	Regular	Good	0.00
852	Picea pungens	Blue Spruce	14	Save	18	Regular	Fair	0.00
853	Betula Alleghaniensis	Yellow Birch	12	Save	18	Regular	Good	0.00
854	Picea pungens	Blue Spruce	9	Save	18	Regular	Fair	0.00
855	Picea pungens	Blue Spruce	11	Save	18	Regular	Poor	0.00
856	Prunus serotina	Black Cherry	11	Save	18	Regular	Good	0.00
857	Pinus strobus	White Pine	16	Save	18	Regular	Good	0.00
858	Pinus strobus	White Pine	16	Save	18	Regular	Good	0.00
859	Pinus strobus	White Pine	16	Save	18	Regular	Good	0.00
860	Pinus strobus	White Pine	16	Save	18	Regular	Good	0.00
861	Prunus serotina	Black Cherry	8	Save	18	Regular	Good	0.00
862	Robinia pseudoacacia	Locust	14	Save	NA	Regular	Good	0.00
863	Robinia pseudoacacia	Locust	14	Save	NA	Regular	Good	0.00
864	Ulmus	Elm	6	Remove	NA	Regular	Fair	1.00
865	Prunus serotina	Black Cherry	20	Remove	18	Landmark	Good	1.67
866	Ulmus	Elm	22	Remove	NA	Regular	Good	1.00
867	Acer rubrum	Red Maple	12	Remove	18	Regular	Good	1.00
868	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
869	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
870	Ulmus	Elm	9	Remove	NA	Regular	Good	1.00
871	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
872	Quercus rubra	Red Oak	14	Remove	16	Regular	Good	1.00
873	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
874	Quercus rubra	Red Oak	11	Remove	16	Regular	Good	1.00
875	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
876	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
877	Acer rubrum	Red Maple	11	Remove	18	Regular	Good	1.00
878	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00

MIKE NOLES CERTIFIED ARBORIST – MI4450A

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

49287 WEST ROAD
WIXOM, MI 48393

(P): 248-437-7803
(F): 866-960-4307

REVISIONS

REVISED PER CITY COMMENTS DATED 1/16/2019

REVISED PER CITY COMMENTS DATED 3/15/2019

REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT:
PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS

TREE LIST & REPLACEMENT CALCULATIONS

These documents are instruments of service in respect of the Project and any reuse without written verification or adaptation by Diffin-Umlor & Associates (DUA) for the specific purposes intended will be at Users sole risk and without liability or legal exposure to DUA and User shall indemnify and hold harmless DUA from all claims, damages, losses and expenses including attorneys' fees arising out of or resulting therefrom. Any such verification or adaptation will entitle DUA to further compensation at rates to be agreed upon by User and DUA.

SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
PROFESSIONAL ENGINEER

07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
NO SCALE
Job No.: 180603
Sheet No.
5

M:\DOC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\DEMO-TREE REMOVAL.DWG

Tag No.	Scientific Name	Common Name	DBH (Largest Stem for Multi-stem)	Save/ Remove	Landmark Threshold	Type of Replacement	Condition	Replacement Value
879	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
880	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
881	Populus	Poplar	8	Remove	NA	Regular	Good	1.00
882	Populus	Poplar	10	Remove	NA	Regular	Good	1.00
883	Populus	Poplar	7	Remove	NA	Regular	Good	1.00
884	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
885	Quercus rubra	Red Oak	7	Remove	16	Regular	Good	1.00
886	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
887	Ulmus	Elm	9	Remove	NA	Regular	Good	1.00
888	Prunus pensylvanica	Pin Cherry	6	Remove	18	Regular	Good	1.00
889	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
890	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
891	Ulmus	Elm	9	Remove	NA	Regular	Good	1.00
892	Acer rubrum	Red Maple	12	Remove	18	Regular	Good	1.00
893	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
894	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
895	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
896	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
897	Acer rubrum	Red Maple	12	Remove	18	Regular	Good	1.00
898	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
899	Acer rubrum	Red Maple	12	Remove	18	Regular	Good	1.00
900	Acer rubrum	Red Maple	12	Remove	18	Regular	Good	1.00
901	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
902	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
903	Acer rubrum	Red Maple	11	Remove	18	Regular	Good	1.00
904	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
905	Ulmus	Elm	13	Remove	NA	Regular	Good	1.00
906	Prunus serotina	Black Cherry	16	Remove	18	Regular	Good	1.00
907	Acer rubrum	Red Maple	14	Save	18	Regular	Good	0.00
908	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
909	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
910	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
911	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
912	Acer negundo	Box Elder	9	Remove	NA	Regular	Good	1.00
913	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
914	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
915	Carya glabra	Pignut Hickory	7	Remove	18	Regular	Good	1.00
916	Populus deltoids	Cottonwood	16	Remove	NA	Regular	Good	1.00
917	Carya glabra	Pignut Hickory	7	Remove	18	Regular	Good	1.00
918	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
919	Fagus	Beech	10	Remove	18	Regular	Good	1.00
920	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
921	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
922	Ulmus	Elm	9	Remove	NA	Regular	Good	1.00
923	Acer rubrum	Red Maple	12	Remove	18	Regular	Good	1.00
924	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
925	Acer rubrum	Red Maple	12	Remove	18	Regular	Good	1.00
926	Prunus serotina	Black Cherry	9	Remove	18	Regular	Fair	1.00
927	Prunus serotina	Black Cherry	16	Remove	18	Regular	Good	1.00
928	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
929	Carya glabra	Pignut Hickory	7	Remove	18	Regular	Good	1.00
930	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
931	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
932	Prunus serotina	Black Cherry	12	Remove	18	Regular	Good	1.00
933	Acer rubrum	Red Maple	16	Remove	18	Regular	Good	1.00
934	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
935	Prunus serotina	Black Cherry	14	Remove	18	Regular	Fair	1.00
936	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
937	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
938	Fagus	Beech	7	Remove	18	Regular	Good	1.00
939	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
940	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
941	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
942	Acer rubrum	Red Maple	11	Remove	18	Regular	Good	1.00
943	Ulmus	Elm	16	Remove	NA	Regular	Poor	0.00
944	Ulmus	Elm	6	Remove	NA	Regular	Fair	1.00
945	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
946	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
947	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
948	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00

Tag No.	Scientific Name	Common Name	DBH (Largest Stem for Multi-stem)	Save/ Remove	Landmark Threshold	Type of Replacement	Condition	Replacement Value
949	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
950	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
951	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
952	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
953	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
954	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
955	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
956	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
957	Prunus serotina	Black Cherry	7	Remove	18	Landmark	Poor	0.00
958	Prunus serotina	Black Cherry	12	Remove	18	Regular	Good	1.00
959	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
960	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
961	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
962	Acer rubrum	Red Maple	9	Remove	18	Regular	Good	1.00
963	Ulmus	Elm	8	Remove	NA	Regular	Fair	1.00
964	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
965	Prunus serotina	Black Cherry	11	Remove	18	Regular	Poor	0.00
966	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
967	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
968	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
969	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
970	Prunus serotina	Black Cherry	12	Remove	18	Regular	Good	1.00
971	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
972	Cedrus	Cedar	8	Remove	12	Regular	Fair	1.00
973	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
974	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
975	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
976	Acer rubrum	Red Maple	14	Remove	18	Regular	Good	1.00
977	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
978	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
979	Quercus rubra	Red Oak	18	Remove	16	Landmark	Fair	1.50
980	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
981	Populus	Poplar	7	Remove	NA	Regular	Good	1.00
982	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
983	Populus	Poplar	11	Remove	NA	Regular	Good	1.00
985	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
986	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
987	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
988	Acer rubrum	Red Maple	22	Remove	18	Landmark	Good	1.83
989	Ulmus	Elm	5	Save	NA	Exempt (DBH)	Good	0.00
990	Acer rubrum	Red Maple	14	Save	18	Regular	Good	0.00
991	Prunus serotina	Black Cherry	6	Save	18	Regular	Good	0.00
992	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
993	Ulmus	Elm	11	Remove	NA	Regular	Good	1.00
994	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
995	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
996	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
997	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
998	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
999	Populus deltoids	Cottonwood	20	Remove	NA	Regular	Good	1.00
1000	Quercus rubra	Red Oak	24	Save	16	Landmark	Good	0.00
1601	Acer rubrum	Red Maple	5	Remove	18	Exempt (DBH)	Good	0.00
1602	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
1603	Quercus rubra	Red Oak	5	Remove	16	Exempt (DBH)	Good	0.00
1604	Acer negundo	Box Elder	5	Remove	NA	Exempt (DBH)	Good	0.00
1605	Fraxinus	Ash	5	Remove	NA	Exempt (DBH)	Good	0.00
1606	Quercus rubra	Red Oak	11	Save	16	Regular	Good	0.00
1607	Quercus rubra	Red Oak	26	Save	16	Landmark	Good	0.00
1608	Acer negundo	Box Elder	5	Save	NA	Exempt (DBH)	Good	0.00
1609	Prunus serotina	Black Cherry	14	Save	18	Regular	Fair	0.00
1610	Prunus serotina	Black Cherry	14	Save	18	Regular	Poor	0.00
1611	Ulmus	Elm	10	Save	NA	Regular	Good	0.00
1612	Prunus serotina	Black Cherry	14	Save	18	Regular	Good	0.00
1613	Quercus rubra	Red Oak	32	Save	16	Landmark	Good	0.00
1614	Ulmus	Elm	7	Save	NA	Regular	Good	0.00
1615	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
1616	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
1617	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
1618	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
1619	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00

Tag No.	Scientific Name	Common Name	DBH (Largest Stem for Multi-stem)	Save/ Remove	Landmark Threshold	Type of Replacement	Condition	Replacement Value
1620	Acer rubrum	Red Maple	5	Remove	18	Exempt (DBH)	Good	0.00
1621	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1622	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
1623	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1624	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1625	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00
1626	Prunus serotina	Black Cherry	10	Save	18	Regular	Good	0.00
1627	Prunus serotina	Black Cherry	22	Save	18	Landmark	Good	0.00
1628	Prunus serotina	Black Cherry	20	Save	18	Landmark	Good	0.00
1629	Prunus serotina	Black Cherry	22	Save	18	Landmark	Good	0.00
1630	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1631	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1632	Quercus rubra	Red Oak	5	Remove	16	Exempt (DBH)	Good	0.00
1633	Fraxinus	Ash	6	Remove	NA	Regular	Good	1.00
1634	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1635	Malus	Apple	6	Remove	NA	Regular	Good	1.00
1636	Fraxinus	Ash	7	Remove	NA	Regular	Fair	1.00
1637	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
1638	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1639	Cedrus	Cedar	6	Remove	12	Regular	Fair	1.00
1640	Ulmus	Elm	7	Remove	NA	Regular	Fair	1.00
1641	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1642	Prunus serotina	Black Cherry	12	Remove	18	Regular	Good	1.00
1643	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
1644	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
1645	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
1646	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
1647	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1648	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1649	Populus	Poplar	5	Remove	NA	Exempt (DBH)	Good	0.00
1650	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1651	Populus	Poplar	10	Remove	NA	Regular	Good	1.00
1652	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1653	Populus	Poplar	11	Remove	NA	Regular	Good	1.00
1654	Populus	Poplar	6	Remove	NA	Regular	Good	1.00
1655	Prunus serotina	Black Cherry	16	Save	18	Regular	Good	0.00
1656	Populus	Poplar	7	Remove	NA	Regular	Good	1.00
1657	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1658	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Fair	0.00
1659	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1660	Prunus serotina	Black Cherry	12	Save	18	Regular	Fair	0.00
1661	Prunus serotina	Black Cherry	10	Save	18	Regular	Fair	0.00
1662	Populus	Poplar	5	Remove	NA	Exempt (DBH)	Good	0.00
1663	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1664	Populus	Poplar	10	Remove	NA	Regular	Good	1.00
1665	Ulmus	Elm	8	Remove	NA	Regular	Poor	0.00
1666	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1667	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1668	Populus	Poplar	9	Remove	NA	Regular	Fair	1.00
1669	Populus	Poplar	10	Remove	NA	Regular	Good	1.00
1670	Populus	Poplar	10	Remove	NA	Regular	Good	1.00
1671	Populus	Poplar	10	Remove	NA	Regular	Good	1.00
1672	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
1673	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
1674	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
1675	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1676	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1677	Prunus serotina	Black Cherry	18	Save	18	Landmark	Good	0.00
1678	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
1679	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
1680	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Poor	0.00
1681	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Fair	0.00
1682	Prunus serotina	Black Cherry	6	Remove	18	Regular	Poor	0.00
1683	Acer rubrum	Red Maple	5	Remove	18	Exempt (DBH)	Good	0.00
1684	Acer rubrum	Red Maple	5	Remove	18	Exempt (DBH)	Good	0.00
1685	Acer negundo	Box Elder	6	Save	NA	Regular	Good	0.00
1686	Acer negundo	Box Elder	8	Save	NA	Regular	Poor	0.00
1687	Acer rubrum	Red Maple	5	Save	18	Exempt (DBH)	Good	0.00
1688	Prunus serotina	Black Cherry	10	Save	18	Regular	Fair	0.00
1689	Prunus serotina	Black Cherry	10	Save	18	Regular	Good	0.00

Tag No.	Scientific Name	Common Name	DBH (Largest Stem for Multi-stem)	Save/ Remove	Landmark Threshold	Type of Replacement	Condition	Replacement Value
1690	Acer negundo	Box Elder	8	Save	NA	Regular	Fair	0.00
1691	Quercus rubra	Red Oak	16	Save	16	Landmark	Good	0.00
1692	Carya glabra	Pignut Hickory	6	Save	18	Regular	Good	0.00
1693	Quercus rubra	Red Oak	11	Save	16	Regular	Good	0.00
1694	Prunus serotina	Black Cherry	14	Save	18	Regular	Good	0.00
1695	Carya glabra	Pignut Hickory	8	Remove	18	Regular	Good	1.00
1696	Betula lenta	Black Birch	8	Remove	NA	Regular	Good	1.00
1697	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
1698	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1699	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
1700	Carya glabra	Pignut Hickory	10	Remove	18	Regular	Good	1.00
1701	Carya glabra	Pignut Hickory	12	Remove	18	Regular	Good	1.00
1702	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
1703	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
1704	Quercus rubra	Red Oak	26	Remove	16	Landmark	Good	2.17
1705	Prunus serotina	Black Cherry	14	Remove	18	Regular	Poor	0.00
1706	Carya glabra	Pignut Hickory	10	Remove	18	Regular	Good	1.00
1707	Carya glabra	Pignut Hickory	7	Remove	18	Regular	Good	1.00
1708	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
1709	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
1710	Prunus serotina	Black Cherry	6	Remove	18	Regular	Poor	0.00
1711	Carya glabra	Pignut Hickory	22	Remove	18	Landmark	Good	1.83
1712	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
1713	Quercus rubra	Red Oak	18	Remove	16	Landmark	Good	1.50
1714	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
1715	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
1716	Quercus rubra	Red Oak	11	Remove	16	Regular	Good	1.00
1717	Quercus rubra	Red Oak	18	Remove	16	Landmark	Good	1.50
1718	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
1719	Acer rubrum	Red Maple	10	Remove	18	Regular	Good	1.00
1720	Acer rubrum	Red Maple	11	Remove	18	Regular	Good	1.00
1721	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
1722	Acer rubrum	Red Maple	18	Remove	18	Landmark	Good	1.50
1723	Prunus serotina	Black Cherry	16	Remove	18	Regular	Good	1.00
1724	Fagus	Beech	6	Remove	18	Regular	Good	1.00
1725	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
1726	Quercus rubra	Red Oak	6	Remove	16	Regular	Good	1.00
1727	Fagus	Beech	6	Remove	18	Regular	Good	1.00
1728	Cedrus	Cedar	14	Save	12	Landmark	Fair	0.00
1729	Prunus pensylvanica	Pin Cherry	5	Save	18	Exempt (DBH)	Good	0.00
1730	Acer negundo	Box Elder	11	Save	NA	Regular	Poor	0.00
1731	Picea pungens	Blue Spruce	14	Save	18	Regular	Good	0.00
1732	Acer saccharum	Sugar Maple	42	Save	18	Landmark	Good	0.00
1733	Picea pungens	Blue Spruce	14	Save	18	Regular	Fair	0.00
1734	Cedrus	Cedar	12	Save	12	Landmark	Fair	0.00
1735	Picea pungens	Blue Spruce	14	Save	18	Regular	Good	0.00
1736	Picea pungens	Blue Spruce	14	Save	18	Regular	Good	0.00
1737	Acer negundo	Box Elder	16	Save	NA	Regular	Fair	0.00
1738	Prunus serotina	Black Cherry	7	Save	18	Regular	Good	0.00
1739	Prunus pensylvanica	Pin Cherry	5	Save	18	Exempt (DBH)	Good	0.00
1740	Acer platanoides	Norway Maple	30	Save	18	Landmark	Good	0.00
1741	Acer platanoides	Norway Maple	8	Save	18	Regular	Good	0.00
1742	Acer platanoides	Norway Maple	5	Save	18	Exempt (DBH)	Good	0.00
1743	Acer platanoides	Norway Maple	10	Save	18	Regular	Good	0.00
1744	Prunus serotina	Black Cherry	30	Save	18	Landmark	Fair	0.00
1745	Prunus serotina	Black Cherry	20	Save	18	Landmark	Good	0.00
1746	Prunus serotina	Black Cherry	28	Save	18	Landmark	Good	0.00
1747	Malus	Apple	16	Save	NA	Regular	Good	0.00
1748	Prunus serotina	Black Cherry	30	Save	18	Landmark	Fair	0.00
1749	Fagus	Beech	8	Save	18	Regular	Good	0.00
1750	Quercus rubra	Red Oak	18	Save	16	Landmark	Good	0.00
1751	Carya glabra	Pignut Hickory	14	Save	18	Regular	Good	0.00
1752	Quercus rubra	Red Oak	10	Save	16	Regular	Good	0.00
1753	Malus	Apple	10	Save	NA	Regular	Fair	0.00
1754	Acer negundo	Box Elder	10	Save	NA	Regular	Good	0.00
1755	Acer negundo	Box Elder	10	Save	NA	Regular	Good	0.00
1756	Ulmus	Elm	5	Save	NA	Exempt (DBH)	Good	0.00
1757	Acer negundo	Box Elder	5	Save	NA	Exempt (DBH)	Good	0.00
1758	Ulmus	Elm	5	Save	NA	Exempt (DBH)	Good	0.00
1759	Acer negundo	Box Elder	10	Save	NA	Regular	Fair	0.00

Tag No.	Scientific Name	Common Name	DBH (Largest Stem for Multi-stem)	Save/ Remove	Landmark Threshold	Type of Replacement	Condition	Replacement Value
1760	Acer negundo	Box Elder	9	Save	NA	Regular	Good	0.00
1761	Acer negundo	Box Elder	5	Save	NA	Exempt (DBH)	Fair	0.00
1762	Acer saccharinum	Silver Maple	7	Save	18	Regular	Good	0.00
1763	Prunus serotina	Black Cherry	30	Save	18	Landmark	Good	0.00
1764	Acer negundo	Box Elder	11	Save	NA	Regular	Good	0.00
1765	Acer negundo	Box Elder	16	Save	NA	Regular	Good	0.00
1766	Prunus serotina	Black Cherry	16	Save	18	Regular	Good	0.00
1767	Prunus serotina	Black Cherry	20	Save	18	Landmark	Good	0.00
1768	Pinus strobus	White Pine	18	Save	18	Landmark	Good	0.00
1769	Ulmus	Elm	26	Save	NA	Regular	Good	0.00
1770	Quercus rubra	Red Oak	30	Save	16	Landmark	Good	0.00
1771	Ulmus	Elm	12	Save	NA	Regular	Good	0.00
1772	Fraxinus	Ash	5	Save	NA	Exempt (DBH)	Good	0.00
1773	Prunus serotina	Black Cherry	24	Save	18	Landmark	Poor	0.00
1774	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
1775	Acer saccharum	Sugar Maple	18	Remove	18	Landmark	Good	1.50
1776	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1777	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1778	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
1779	Populus deltoids	Cottonwood	28	Remove	NA	Regular	Good	1.00
1780	Ulmus	Elm	9	Remove	NA	Regular	Good	1.00
1781	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1782	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1783	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1784	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1785	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
1786	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1787	Prunus serotina	Black Cherry	16	Save	18	Regular	Good	0.00
1788	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
1789	Ulmus	Elm	6	Save	NA	Regular	Fair	0.00
1790	Ulmus	Elm	16	Save	NA	Regular	Good	0.00
1791	Acer negundo	Box Elder	18	Save	NA	Regular	Good	0.00
1792	Juglans Nigra	Black Walnut	12	Save	20	Regular	Good	0.00
1793	Ulmus	Elm	5	Save	NA	Exempt (DBH)	Good	0.00
1794	Fagus	Beech	8	Remove	18	Regular	Good	1.00
1795	Ulmus	Elm	8	Remove	NA	Regular	Good	1.00
1796	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1797	Prunus serotina	Black Cherry	16	Remove	18	Regular	Good	1.00
1798	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1799	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
1800	Ulmus	Elm	11	Remove	NA	Regular	Good	1.00
1801	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
1802	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
1803	Ulmus	Elm	9	Remove	NA	Regular	Good	1.00
1804	Quercus rubra	Red Oak	12	Remove	16	Regular	Good	1.00
1805	Prunus serotina	Black Cherry	8	Save	18	Regular	Good	0.00
1806	Betula Alleghaniensis	Yellow Birch	11	Remove	18	Regular	Poor	0.00
1807	Betula Alleghaniensis	Yellow Birch	11	Remove	18	Regular	Fair	1.00
1808	Betula Alleghaniensis	Yellow Birch	12	Remove	18	Landmark	Poor	0.00
1809	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
1810	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
1811	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
1812	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1813	Betula Alleghaniensis	Yellow Birch	12	Remove	18	Regular	Good	1.00
1814	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
1815	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
1816	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
1817	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
1818	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
1819	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
1820	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
1821	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
1822	Prunus serotina	Black Cherry	12	Remove	18	Regular	Good	1.00
1823	Prunus serotina	Black Cherry	10	Remove	18	Regular	Good	1.00
1824	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
1825	Carya glabra	Pignut Hickory	6	Remove	18	Regular	Good	1.00
1826	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1827	Quercus rubra	Red Oak	11	Remove	16	Regular	Good	1.00
1828	Quercus rubra	Red Oak	6	Remove	16	Regular	Good	1.00
1829	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00

Tag No.	Scientific Name	Common Name	DBH (Largest Stem for Multi-stem)	Save/ Remove	Landmark Threshold	Type of Replacement	Condition	Replacement Value
1830	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
1831	Prunus serotina	Black Cherry	16	Remove	18	Regular	Good	1.00
1832	Malus	Apple	5	Remove	NA	Exempt (DBH)	Good	0.00
1833	Fagus	Beech	7	Remove	18	Regular	Good	1.00
1834	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
1835	Carya glabra	Pignut Hickory	10	Remove	18	Regular	Good	1.00
1836	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
1837	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
1838	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Good	0.00
1839	Prunus serotina	Black Cherry	7	Remove	18	Regular	Good	1.00
1840	Quercus rubra	Red Oak	26	Remove	16	Landmark	Fair	2.17
1841	Prunus serotina	Black Cherry	9	Remove	18	Regular	Good	1.00
1842	Ulmus	Elm	11	Remove	NA	Regular	Good	1.00
1843	Prunus serotina	Black Cherry	10	Remove	18	Regular	Fair	1.00
1844	Ulmus	Elm	12	Remove	NA	Regular	Good	1.00
1845	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
1846	Prunus serotina	Black Cherry	12	Remove	18	Regular	Fair	1.00
1847	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1848	Betula Alleghaniensis	Yellow Birch	10	Remove	18	Regular	Good	1.00
1849	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1850	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
1851	Betula Alleghaniensis	Yellow Birch	12	Remove	18	Regular	Fair	1.00
1852	Prunus serotina	Black Cherry	6	Remove	18	Regular	Good	1.00
1853	Prunus serotina	Black Cherry	11	Remove	18	Regular	Good	1.00
1854	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1855	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1856	Ulmus	Elm	5	Remove	NA	Exempt (DBH)	Good	0.00
1857	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1858	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
1859	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1860	Betula Alleghaniensis	Yellow Birch	5	Remove	18	Exempt (DBH)	Good	0.00
1861	Betula Alleghaniensis	Yellow Birch	5	Remove	18	Exempt (DBH)	Good	0.00
1862	Quercus rubra	Red Oak	18	Remove	16	Landmark	Good	1.50
1863	Prunus serotina	Black Cherry	14	Remove	18	Regular	Good	1.00
1864	Prunus serotina	Black Cherry	16	Remove	18	Regular	Good	1.00
1865	Ulmus	Elm	10	Remove	NA	Regular	Good	1.00
1866	Ulmus	Elm	8	Remove	NA	Regular	Fair	1.00
1867	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
1868	Prunus serotina	Black Cherry	14	Remove	18	Landmark	Poor	0.00
1869	Fraxinus	Ash	6	Remove	NA	Regular	Good	1.00
1870	Prunus serotina	Black Cherry	12	Remove	18	Regular	Good	1.00
1871	Prunus serotina	Black Cherry	6	Remove	18	Regular	Fair	1.00
1872	Fraxinus	Ash	6	Remove	NA	Regular	Fair	1.00
1873	Fraxinus	Ash	10	Remove	NA	Regular	Good	1.00
1874	Fraxinus	Ash	8	Remove	NA	Regular	Fair	1.00
1875	Acer saccharum	Sugar Maple	27	Remove	18	Landmark	Good	2.25
1876	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1877	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1878	Quercus rubra	Red Oak	10	Remove	16	Regular	Fair	1.00
1879	Juglans Nigra	Black Walnut	16	Remove	20	Regular	Good	1.00
1880	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Fair	0.00
1881	Tilia	Basswood	9	Remove	NA	Regular	Good	1.00
1882	Quercus rubra	Red Oak	20	Remove	16	Landmark	Fair	1.67
1883	Malus	Apple	8	Remove	NA	Regular	Fair	1.00
1884	Quercus rubra	Red Oak	24	Remove	16	Landmark	Good	2.00
1885	Prunus serotina	Black Cherry	16	Remove	18	Regular	Fair	1.00
1886	Malus	Apple	8	Remove	NA	Regular	Fair	1.00
1887	Prunus serotina	Black Cherry	20	Remove	18	Landmark	Good	1.67
1888	Quercus rubra	Red Oak	20	Remove	16	Landmark	Good	1.67
1889	Malus	Apple	5	Remove	NA	Exempt (DBH)	Good	0.00
1890	Malus	Apple	10	Remove	NA	Regular	Good	1.00
1891	Ulmus	Elm	7	Remove	NA	Regular	Good	1.00
1892	Populus	Poplar	6	Remove	NA	Regular	Good	1.00
1893	Populus	Poplar	9	Remove	NA	Regular	Poor	0.00
1894	Quercus rubra	Red Oak	5	Remove	16	Exempt (DBH)	Good	0.00
1895	Cedrus	Cedar	6	Remove	12	Landmark	Poor	0.00
1896	Carya glabra	Pignut Hickory	10	Remove	18	Regular	Good	1.00
1897	Juglans Nigra	Black Walnut	5	Remove	20	Exempt (DBH)	Good	0.00
1898	Acer negundo	Box Elder	6	Remove	NA	Regular	Good	1.00
1899	Prunus serotina	Black Cherry	5	Remove	18	Exempt (DBH)	Fair	0.00

MIKE NOLES CERTIFIED ARBORIST – MI4450A

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services
49287 WEST ROAD
WIXOM, MI 48393
(P): 248–437–7803
(F): 866–960–4307

REVISIONS
REVISED PER CITY COMMENTS DATED 1/16/2019
REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT:
PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
TREE LIST CONT'D

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

SEAL
STATE OF MICHIGAN
WES LEE O. UMLOR ENGINEER 6201054579
LICENSED PROFESSIONAL ENGINEER

07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
NO SCALE
Job No.: 180603
Sheet No.
6

M:\DOC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\DEMO-TREE REMOVAL.DWG

Tag No.	Scientific Name	Common Name	DBH (Largest Stem for Multi-stem)	Save/ Remove	Landmark Threshold	Type of Replacement	Condition	Replacement Value
1900	Acer negundo	Box Elder	6	Remove	NA	Regular	Good	1.00
1901	Acer negundo	Box Elder	5	Remove	NA	Exempt (DBH)	Good	0.00
1902	Acer negundo	Box Elder	6	Remove	NA	Regular	Good	1.00
1903	Acer negundo	Box Elder	6	Remove	NA	Regular	Good	1.00
1904	Acer negundo	Box Elder	5	Save	NA	Exempt (DBH)	Good	0.00
1905	Carya glabra	Pignut Hickory	5	Save	18	Exempt (DBH)	Good	0.00
1906	Malus	Apple	6	Remove	NA	Regular	Good	1.00
1907	Malus	Apple	6	Remove	NA	Regular	Good	1.00
1908	Carya glabra	Pignut Hickory	5	Save	18	Exempt (DBH)	Good	0.00
1909	Malus	Apple	5	Remove	NA	Exempt (DBH)	Fair	0.00
1910	Malus	Apple	6	Remove	NA	Regular	Good	1.00
1911	Ulmus	Elm	6	Remove	NA	Regular	Good	1.00
1912	Fraxinus	Ash	8	Remove	NA	Regular	Good	1.00
1913	Carya glabra	Pignut Hickory	5	Save	18	Exempt (DBH)	Good	0.00
1914	Quercus rubra	Red Oak	5	Save	16	Exempt (DBH)	Good	0.00
1915	Quercus rubra	Red Oak	5	Remove	16	Exempt (DBH)	Good	0.00
1916	Fraxinus	Ash	5	Remove	NA	Exempt (DBH)	Good	0.00
1917	Prunus serotina	Black Cherry	9	Save	18	Regular	Good	0.00
1918	Carya glabra	Pignut Hickory	16	Save	18	Regular	Good	0.00
1919	Carya glabra	Pignut Hickory	5	Remove	18	Exempt (DBH)	Good	0.00
1920	Malus	Apple	6	Remove	NA	Regular	Good	1.00
1921	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
1922	Acer rubrum	Red Maple	5	Remove	18	Exempt (DBH)	Good	0.00
1923	Acer rubrum	Red Maple	6	Remove	18	Regular	Good	1.00
1924	Acer rubrum	Red Maple	8	Save	18	Regular	Good	0.00
1925	Ulmus	Elm	7	Save	NA	Regular	Good	0.00
1926	Prunus serotina	Black Cherry	6	Save	18	Regular	Good	0.00
1927	Acer rubrum	Red Maple	18	Remove	18	Landmark	Good	1.50
1928	Prunus serotina	Black Cherry	16	Remove	18	Regular	Good	1.00
1929	Prunus serotina	Black Cherry	22	Remove	18	Landmark	Good	1.83
1930	Ulmus	Elm	9	Remove	NA	Regular	Good	1.00
1931	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
1932	Prunus serotina	Black Cherry	8	Remove	18	Regular	Good	1.00
1933	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
1934	Acer rubrum	Red Maple	8	Remove	18	Regular	Good	1.00
1935	Acer rubrum	Red Maple	7	Remove	18	Regular	Good	1.00

Natural Features Section 21-35(G)(2)

Tree Survey Summary

Total Trees Tagged 5" DBH and over	1028	
Total Trees Proposed for Removal 5" DBH and over	754	
Regular Trees Proposed for Removal	704	
Landmark Trees Proposed for Removal	50	

Exemption Summary

Total Tagged Trees Less than 6" DBH	85	
Total Tagged Trees in "Dead" Condition	5	
Total Tagged Trees in "Poor" Condition	34	

Regulated Tree Replacement Summary

Total Non-exempt Trees Tagged	907	
Regular Trees Saved	177	22%
Landmark Trees Saved	65	59%
Total Saved	242	
Regular Trees Removed	619	
Landmark Trees Removed	46	
Total Removed	665	

Tree Replacement Calculations

Regular Trees Replacements 1:1	619	
Regulated Landmarks Removed	46	
Sum of DBH	907	inches
25% of DBH	227	inches
3" Replacement Trees Required	76	Trees
Replacement Trees Required by Ordinance	695	
Proposed Replacement Trees**	184	

**Waiver Required

Saved trees with impact to critical root zone

Tag	Scientific Name	Common Name	DBH(s)	Multi Adjust	Condition	Status	Replacement Trees
307	Malus	Apple	16	16	Good	Save	1.33
315	Quercus alba	White Oak	24	24	Good	Save	2.00
316	Acer saccharum	Sugar Maple	54	54	Good	Save	4.50
319	Acer saccharinum	Silver Maple	26	26	Good	Save	2.17
325	Carya glabra	Pignut Hickory	26	26	Good	Save	2.17
442	Acer negundo	Box Elder	16	16	Good	Save	1.33
446	Quercus rubra	Red Oak	20	20	Good	Save	1.67
603	Quercus rubra	Red Oak	7	7	Good	Save	1.00
609	Carya glabra	Pignut Hickory	14	14	Good	Save	1.17
611	Carya glabra	Pignut Hickory	20	20	Good	Save	1.67
730	Carya glabra	Pignut Hickory	8	8	Good	Save	1.00
735	Carya glabra	Pignut Hickory	14	14	Good	Save	1.17
736	Prunus serotina	Black Cherry	14	14	Good	Save	1.17
743	Acer rubrum	Red Maple	8	8	Good	Save	1.00
746	Quercus rubra	Red Oak	16	16	Good	Save	1.33
789	Prunus serotina	Black Cherry	12	12	Fair	Save	1.00
907	Acer rubrum	Red Maple	14	14	Good	Save	1.17
924	Prunus serotina	Black Cherry	11	11	Good	Save	1.00
989	Ulmus	Elm	5	5	Good	Save	0
990	Acer rubrum	Red Maple	14	14	Good	Save	1.17
991	Prunus serotina	Black Cherry	6	6	Good	Save	1.00
1607	Quercus rubra	Red Oak	26	26	Good	Save	2.17
1611	Ulmus	Elm	10	10	Good	Save	1.00
1613	Quercus rubra	Red Oak	32	32	Good	Save	2.67
1627	Prunus serotina	Black Cherry	22	22	Good	Save	1.83
1628	Prunus serotina	Black Cherry	20	20	Good	Save	1.67
1629	Prunus serotina	Black Cherry	22	22	Good	Save	1.83
1655	Prunus serotina	Black Cherry	16	16	Good	Save	1.33
1661	Prunus serotina	Black Cherry	10	10	Fair	Save	1
1689	Prunus serotina	Black Cherry	10	10	Good	Save	1.00
1694	Prunus serotina	Black Cherry	14	14	Good	Save	1.17
1772	Fraxinus	Ash	5	5	Good	Save	0
1773	Prunus serotina	Black Cherry	24	24	Poor	Save	0
							46.00

Landmark Calculation Table

Tag No.	Scientific Name	Common Name	DBH	Save/ Remove	Landmark Threshold	Landmark	Condition	Replacement Value
302	Acer saccharinum	Silver Maple	18	Remove	18	Landmark	Good	1.50
309	Cedrus	Cedar	12	Remove	12	Landmark	Good	1.00
326	Picea pungens	Blue Spruce	28	Remove	18	Landmark	Good	2.33
346	Cedrus	Cedar	12	Remove	12	Landmark	Fair	1.00
356	Juglans nigra	Black Walnut	20	Remove	20	Landmark	Good	1.67
357	Juglans nigra	Black Walnut	22	Remove	20	Landmark	Good	1.83
382	Acer saccharinum	Silver Maple	20	Remove	18	Landmark	Good	1.67
462	Quercus rubra	Red Oak	26	Remove	16	Landmark	Good	2.17
463	Quercus rubra	Red Oak	22	Remove	16	Landmark	Fair	1.83
471	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
473	Prunus serotina	Black Cherry	28	Remove	18	Landmark	Good	2.33
537	Quercus rubra	Red Oak	18	Remove	16	Landmark	Good	1.50
552	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
564	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
602	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
619	Quercus rubra	Red Oak	20	Remove	16	Landmark	Good	1.67
648	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
751	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
788	Prunus serotina	Black Cherry	20	Remove	18	Landmark	Good	1.67
837	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
846	Quercus rubra	Red Oak	26	Remove	16	Landmark	Good	2.17
865	Prunus serotina	Black Cherry	20	Remove	18	Landmark	Good	1.67
914	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
920	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
930	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
979	Quercus rubra	Red Oak	18	Remove	16	Landmark	Fair	1.50
988	Acer rubrum	Red Maple	22	Remove	18	Landmark	Good	1.83
1704	Quercus rubra	Red Oak	26	Remove	16	Landmark	Good	2.17
1711	Carya glabra	Pignut Hickory	22	Remove	18	Landmark	Good	1.83
1713	Quercus rubra	Red Oak	18	Remove	16	Landmark	Good	1.50
1717	Quercus rubra	Red Oak	18	Remove	16	Landmark	Good	1.50
1722	Acer rubrum	Red Maple	18	Remove	18	Landmark	Good	1.50
1725	Quercus rubra	Red Oak	16	Remove	16	Landmark	Good	1.33
1775	Acer saccharum	Sugar Maple	18	Remove	18	Landmark	Good	1.50
1830	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
1840	Quercus rubra	Red Oak	26	Remove	16	Landmark	Fair	2.17
1850	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
1862	Quercus rubra	Red Oak	18	Remove	16	Landmark	Good	1.50
1867	Prunus serotina	Black Cherry	18	Remove	18	Landmark	Good	1.50
1875	Acer saccharum	Sugar Maple	27	Remove	18	Landmark	Good	2.25
1882	Quercus rubra	Red Oak	20	Remove	16	Landmark	Fair	1.67
1884	Quercus rubra	Red Oak	24	Remove	16	Landmark	Good	2.00
1887	Prunus serotina	Black Cherry	20	Remove	18	Landmark	Good	1.67
1888	Quercus rubra	Red Oak	20	Remove	16	Landmark	Good	1.67
1927	Acer rubrum	Red Maple	18	Remove	18	Landmark	Good	1.50
1929	Prunus serotina	Black Cherry	22	Remove	18	Landmark	Good	1.83

Regulated Landmarks Removed	46	
Sum of DBH	907	inches
25% of DBH	227	inches
3" Replacement Trees Required	76	Trees

MIKE NOLES CERTIFIED ARBORIST – MI4450A

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
LICENSED PROFESSIONAL ENGINEER

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

49287 WEST ROAD
WIXOM, MI 48393

(P): 248-437-7803
(F): 866-960-4307

REVISIONS
REVISED PER CITY COMMENTS DATED 1/16/2019
REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
TREE LIST CONT'D

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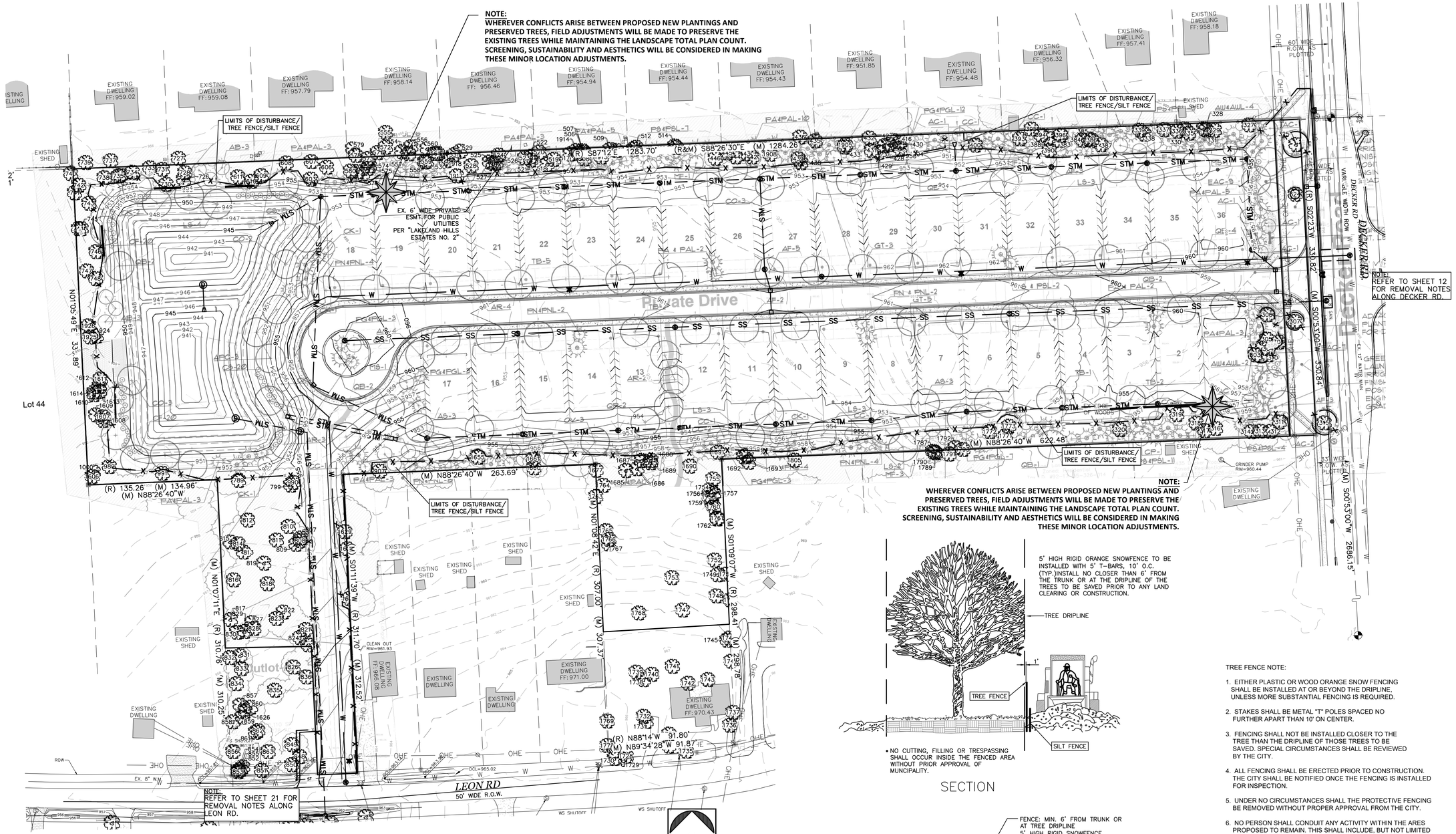
SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
NO SCALE
Job No.: 180603
Sheet No. 7

M:\DOC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\DEMO-TREE REMOVAL.DWG



TREE NOTES:

1. ALL TREES TO BE SAVED SHALL BE PROTECTED ON A PERMANENT BASIS USING TREE FENCING SHOWN. ON A CASE BY CASE BASIS TREES MAY BE PROTECTED USING TREE WELLS, PROTECTIVE BARRIERS, TUNNELING OR RETAINING WALLS AS DEEMED NECESSARY BY THE CITY.
2. ALL TREES T BE REMOVED SHALL BE MARKED IN THE FIELD WITH RED PAINT OR FLAGS AND INSPECTED BY THE PLANNING OFFICE PRIOR TO ANY TREES BEING REMOVED.
3. PRIOR TO THE CLEARING STAGE OF THE DEVELOPMENT AND BEFORE A TREE PERMIT WILL BE ISSUED, THE OWNER, DEVELOPER, OR AGENT SHALL DO THE FOLLOWING:

   •ALL TREES FOR WHICH APPLICATION IS BEING MADE FOR REMOVAL SHALL BE SO IDENTIFIED ON SITE BY FLUORESCENT ORANGE SPRAY PAINT (CHALK BASE) OR BY RED FLAGGING TAPE PRIOR TO FIELD INSPECTION BY THE DEPARTMENT.
   •ERECT BARRIERS OF FOUR–FOOT–HIGH WOODEN FENCING OR SIMILAR STURDY STOCK MATERIAL STAKED WITH METAL STAKES TEN FEET ON CENTER WHICH WILL SHIELD AND PROTECT TREES, NO CLOSER THAN SIX FEET FROM THE TRUNK OR AT THE DRIP LINE, WHICHEVER IS GREATER, OF ALL SUCH TREES OR GROUPS OF TREES.
   •KEEP CLEAR ALL DEBRIS OR FILL, EQUIPMENT, AND MATERIAL FROM WITHIN THE REQUIRED PROTECTIVE BARRIER.

4. DURING CONSTRUCTION, THE OWNER, DEVELOPER, OR AGENT SHALL NOT CAUSE OR PERMIT ANY ACTIVITY WITHIN THE DRIP LINE OF ANY PROTECTED TREE OR GROUP OF TREES INCLUDING, BUT NOT LIMITED TO, THE STORAGE OF EQUIPMENT, DUMPSTERS, BOULDERS, DIRT, AND EXCAVATED MATERIAL, BUILDING OR WASTE MATERIAL, OR ANY OTHER MATERIAL HARMFUL TO THE LIFE OF A TREE.
5. NO DAMAGING ATTACHMENT, WIRES (OTHER THAN CABLE WIRES FOR TREES), SIGNS, OR PERMITS MAY BE FASTENED TO ANY TREE PROTECTED BY THIS SECTION.
6. THE DEPARTMENT SHALL CONDUCT PERIODIC INSPECTIONS OF THE SITE DURING LAND CLEARING AND CONSTRUCTION IN ORDER TO ENSURE COMPLIANCE WITH THIS SECTION.

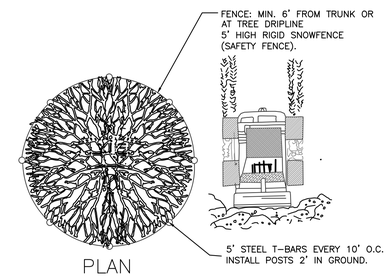
Know what's **below.**
Call before you dig.

WES LEE O. UMLOR, L.S. 56369

MIKE NOLES CERTIFIED ARBORIST – MI4450A

!! CAUTION !!
DANGEROUS AND SENSITIVE UNDERGROUND FACILITIES MAY BE PRESENT THROUGHOUT THE PROJECT AREA THAT DO NOT APPEAR ON THIS DRAWING. ALL UNDERGROUND FACILITIES MUST BE LOCATED AND STAKED BY THE APPROPRIATE AGENCIES PRIOR TO EXCAVATION.

SECTION



PLAN

TREE PROTECTION FENCE DETAIL

TREE FENCE NOTE:

1. EITHER PLASTIC OR WOOD ORANGE SNOW FENCING SHALL BE INSTALLED AT OR BEYOND THE DRIPLINE, UNLESS MORE SUBSTANTIAL FENCING IS REQUIRED.
2. STAKES SHALL BE METAL "T" POLES SPACED NO FURTHER APART THAN 10' ON CENTER.
3. FENCING SHALL NOT BE INSTALLED CLOSER TO THE TREE THAN THE DRIPLINE OF THOSE TREES TO BE SAVED. SPECIAL CIRCUMSTANCES SHALL BE REVIEWED BY THE CITY.
4. ALL FENCING SHALL BE ERECTED PRIOR TO CONSTRUCTION. THE CITY SHALL BE NOTIFIED ONCE THE FENCING IS INSTALLED FOR INSPECTION.
5. UNDER NO CIRCUMSTANCES SHALL THE PROTECTIVE FENCING BE REMOVED WITHOUT PROPER APPROVAL FROM THE CITY.
6. NO PERSON SHALL CONDUIT ANY ACTIVITY WITHIN THE ARES PROPOSED TO REMAIN. THIS SHALL INCLUDE, BUT NOT LIMITED TO: a) NOSOLVENTS OR CHEMICALS WITHIN PROTECTIVE AREA. b) NO BUILDING MATERIALS OR CONSTRUCTION EQUIPMENT WITHIN THE PROTECTED AREA. c) NO GRADE CHANGES, INCLUDING FILL, WITHIN PROTECTIVE AREA. d) NO REMOVAL OF VEGITATION FROM THE GROUND UP WITHOUT PERMISSION FROM THE PROPER REVEIWING AUTHORITY, INCLUDING THE WOODLANDS REVIEW BOARD. e) ANY REQUIRED SWALE ARE APPROVED THROUGH A PROTECTED AREAS. IN INSTANCES WHERE SWALES ARE APPROVED THROUGH THE PROTECTED AREA, THE SWALES NEED TO BE HAND DUG. MACHERNERY OF ANY KIND IS PROHIBITED.
7. REGULATED WOOLANDS OR REGULATED TREES ADJACENT TO THE PROPERTY ARE ALSO REQUIRED TO BE PROTECTED WHETHER OR NOT THEY ARE SHOWN ON THE PLAN.

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#201145575
LICENSED PROFESSIONAL ENGINEER

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services
49287 WEST ROAD
WIXOM, MI 48393
(P): 248–437–7803
(F): 866–960–4307

REVISIONS
REVISED PER CITY COMMENTS DATED 1/16/2019
REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
SUPERIMPOSED TREE SURVEY

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 50'
Job No.: 180603
Sheet No.
8

M:\DDC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\DEMO-TREE REMOVAL.DWG

ZONING CONDITIONS \ LEGEND		
R-1A	REQUIRED	PROPOSED
MIN. LOT AREA	12,000 SqFt	6,000 SqFt
MIN. LOT WIDTH	90 FT.	50 FT.
MIN. FRONT YARD SETBACK	30 FT.	30 FT.
MIN. LEAST SIDE SETBACK	10 FT.	5 FT.
MIN. SUM OF TWO SIDES	25 FT.	10 FT.
MIN. REAR YARD SETBACK	35 FT.	35 FT.
MAX. BLDG. HEIGHT	30 FT.	30 FT.
MAX. LOT COVERAGE	30%	
MIN. FLOOR AREA PER DWELLING UNIT	1,000 SqFt	
NATURAL OPEN SPACE		1.56 Ac. =14.51%
DEVELOPED OPEN SPACE		1.52 Ac. =14.14%
USEABLE OPEN SPACE	10%	1.65 Ac. =15.35%
SIDEWALK PATH		
WOOD CHIP PATH		
NEW ASPHALT PAVEMENT		
NEW GRAVEL PAVEMENT		

TYPICAL LOT

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services
49287 WEST ROAD
WIXOM, MI 48393
(P): 248-773-7656
(F): 866-960-4307

REVISIONS
REVISED PER WALLED LAKE COMMENT LETTERS DATED 01-16-2019
REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
SITE PLAN

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

SEAL
STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201044579
LICENSED PROFESSIONAL ENGINEER

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 50'
Job No.: 180603
Sheet No.
9

Know what's below. Call before you dig.

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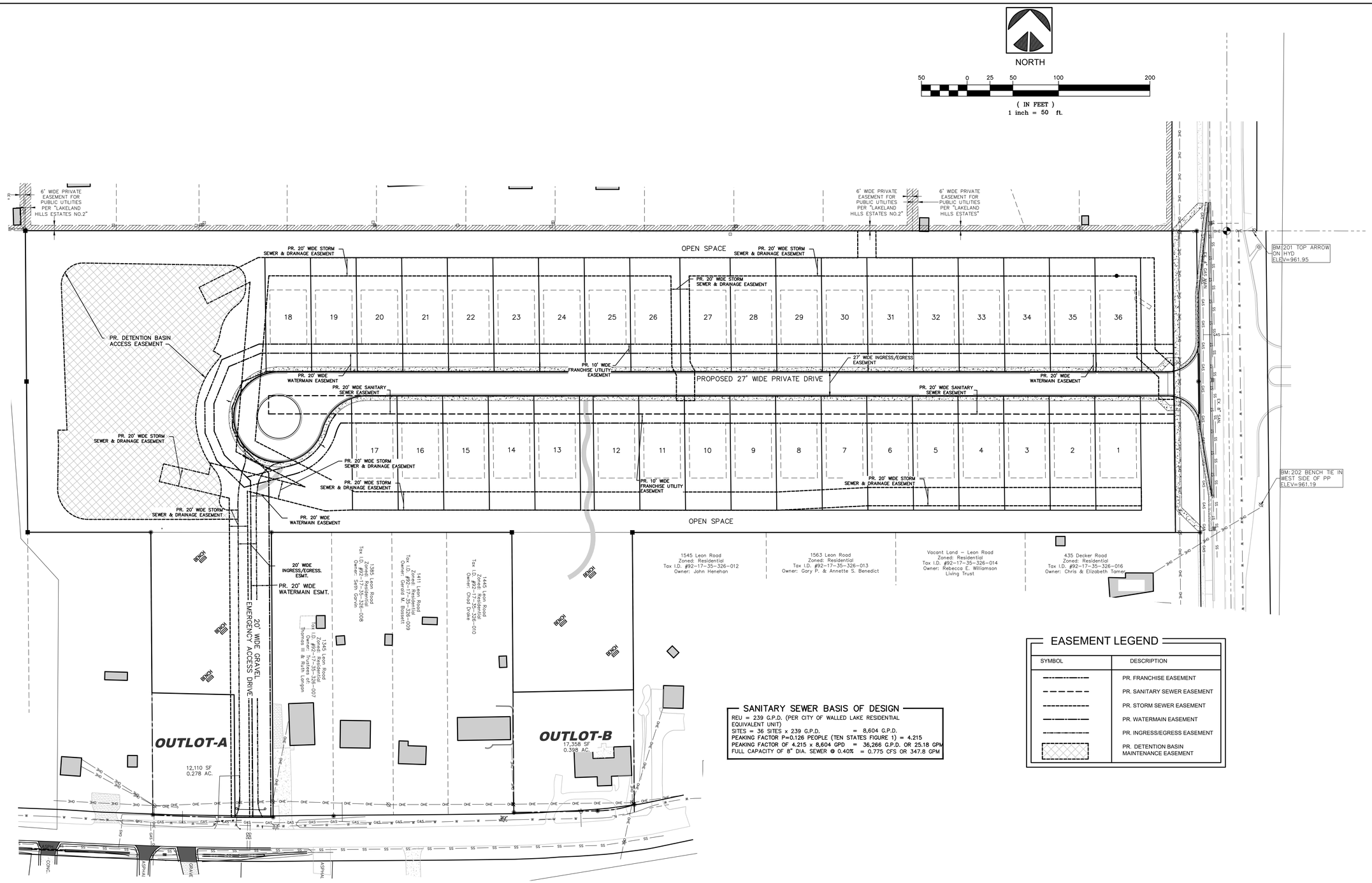

SANITARY SEWER BASIS OF DESIGN

REU = 239 G.P.D. (PER CITY OF WALLED LAKE RESIDENTIAL EQUIVALENT UNIT)
SITES = 36 SITES x 239 G.P.D. = 8,604 G.P.D.
PEAKING FACTOR P=0.126 PEOPLE (TEN STATES FIGURE 1) = 4.215
PEAKING FACTOR OF 4.215 x 8,604 GPD = 36,266 G.P.D. OR 25.18 GPM
FULL CAPACITY OF 8" DIA. SEWER @ 0.40% = 0.775 CFS OR 347.8 GPM

EASEMENT LEGEND

SYMBOL	DESCRIPTION
	PR. FRANCHISE EASEMENT
	PR. SANITARY SEWER EASEMENT
	PR. STORM SEWER EASEMENT
	PR. WATERMAIN EASEMENT
	PR. INGRESS/EGRESS EASEMENT
	PR. DETENTION BASIN MAINTENANCE EASEMENT

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201054457
LICENSED PROFESSIONAL ENGINEER

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

49287 WEST ROAD
WIXOM, MI 48393

(P): 248-773-7656
(F): 866-960-4307

REVISIONS

REVISED PER CITY COMMENTS DATED 3/15/2019

REVISED PER CITY COMMENTS DATED 4/25/2019

REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT:
PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS

EASEMENT PLAN

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 50'
Job No.: 180603
Sheet No.
10

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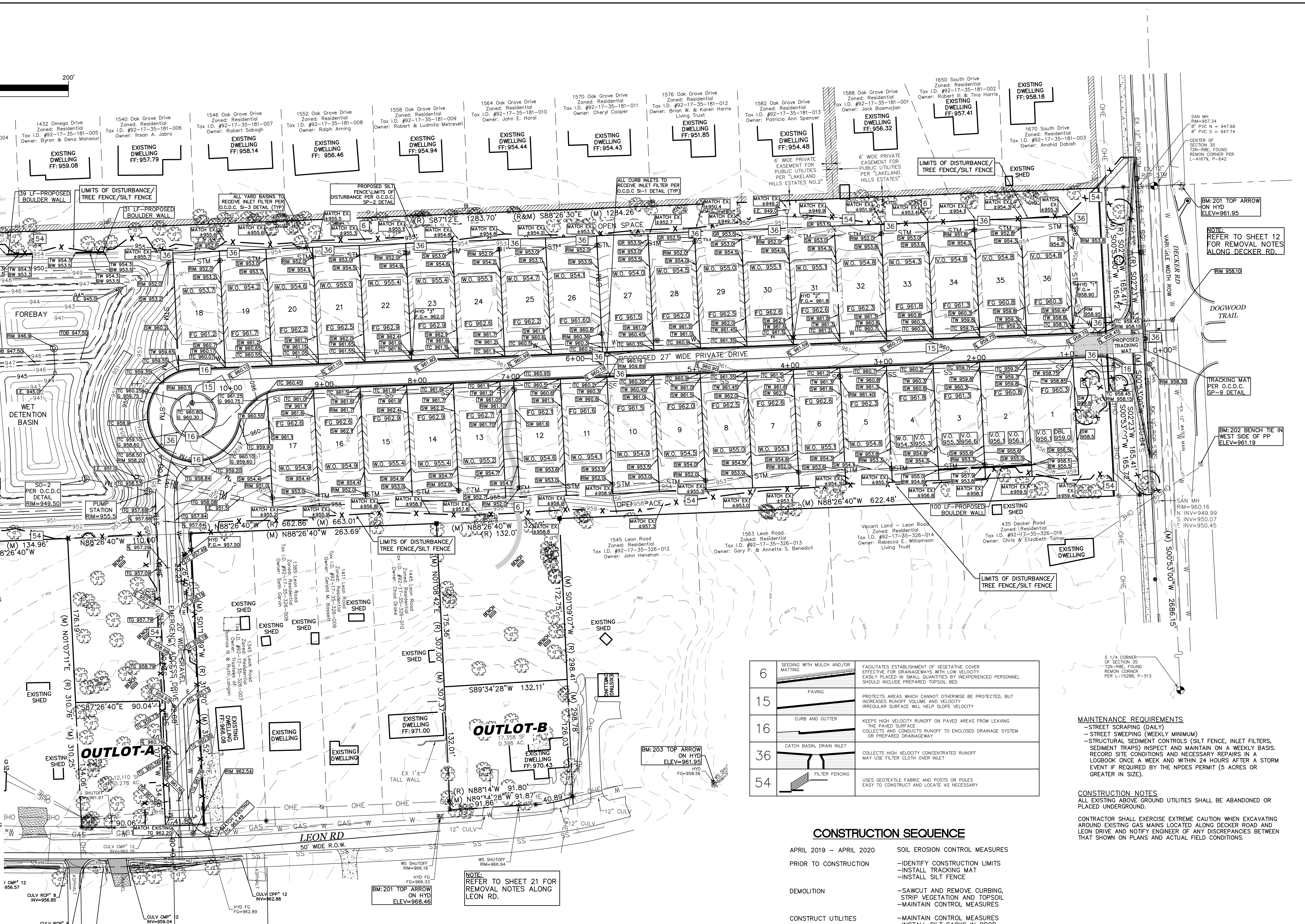

NOTES:

1. IF DEWATERING IS NECESSARY DURING CONSTRUCTION AND ENGINEERED DEWATERING PLAN MUST BE SUBMITTED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL. THE DEWATERING PLAN, IF NECESSARY SHALL CONSIDER MUNICIPAL REQUIREMENTS AND IMPACTS TO ADJACENT PROPERTIES. RELATED WORK SHALL NOT COMMENCE UNTIL PLAN APPROVALS HAVE BEEN GRANTED. IF DEWATERING IS NECESSARY, THE DEWATERING PLAN SHALL CONSIDER PREVIOUS REVIEW COMMENTS AND IMPACTS TO ADJACENT PROPERTIES. RELATED WORK SHALL NOT COMMENCE UNTIL PLAN APPROVALS HAVE BEEN GRANTED.
2. IT IS THE DEVELOPER'S RESPONSIBILITY TO GRADE AND STABILIZE DISTURBANCES DUE TO THE INSTALLATION OF PUBLIC UTILITIES.
3. CATCH BASIN INLET FILTERS SHALL BE INSTALLED ON EXISTING ROADWAYS ALONG CONSTRUCTION ROUTE FOR A REASONABLE DISTANCE FROM SITE.
4. STREET SWEEPING AND DUST CONTROL ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE DONE AS NEEDED OR DIRECTED BY THE ENGINEER AND\OR CITY STAFF.
5. DIVERSION BERMS OR TERRACING SHALL BE IMPLEMENTED WHERE NECESSARY OR DIRECTED BY THE ENGINEER AND\OR COUNTY STAFF.
6. CONTRACTOR SHALL OBTAIN SOIL EROSION PERMIT PRIOR TO ANY CONSTRUCTION.
7. ALL GRADING, EROSION, AND SEDIMENT CONTROL AND RELATED WORK UNDERTAKEN ON THIS SITE SHALL BE IN ACCORDANCE WITH LOCAL JURISDICTION.
8. CONTRACTOR SHALL MAINTAIN ALL SOIL EROSION CONTROL MEASURES. THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT. SURROUNDING PAVED AREAS SHALL BE POWER BROOMED AS NECESSARY TO REMOVE MUD TRACKING FROM THE SITE.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MATCHING EXISTING FACILITIES TO AVOID ANY ABRUPT OR APPARENT CHANGES IN GRADES OR CROSS SLOPES, LOW SPOTS, OR HAZARDOUS CONDITIONS.
10. GRADING AT THE BOUNDARIES SHALL BE DONE SO AS NOT TO OBSTRUCT THE RUNOFF OF STORM WATER FROM ADJACENT PROPERTIES.
11. SOD AND HYDROSEEDING SHALL BE DONE IN ACCORDANCE WITH THE LANDSCAPING PLAN. ALL OTHER DISTURBED AREAS SHALL BE TOPSOILED, HYDROSEEDED, FERTILIZED AND MULCHED.
12. THE CONTRACTOR IS REQUIRED TO HAVE A COPY OF THE CERTIFIED PLAN AT THE CONSTRUCTION SITE.
13. ALL SOIL EROSION CONTROL PRACTICES TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE AND MAINTAINED FOR ONE YEAR AFTER COMPLETION OF THE APPROVED PLAN OR UNTIL SUCH MEASURES ARE PERMANENTLY STABILIZED AS DETERMINED BY THE TOWNSHIP ENGINEER.
14. PERMANENT VEGETATION TO BE SEEDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING. MULCH TO BE USED AS NECESSARY FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
15. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E., STEEP SLOPES) WILL RECEIVE APPROPRIATE VEGETATIVE COVER AS STATED IN THE CONSTRUCTION SEQUENCE.
16. DURING CONSTRUCTION, ANY ADDITIONAL CONTROL MEASURES AS DEEMED NECESSARY TO PREVENT EROSION OR CONTROL SEDIMENT BEYOND THOSE MEASURES SHOWN ON THE APPROVED PLANS SHALL BE INSTALLED OR EMPLOYED AT THE DIRECTION OF THE ENGINEER.
17. PROPOSED 8" GRAVEL ACCESS DR. SHALL CONFORM TO O.C.R.C. RULE 5.5 "GRAVEL ROADS" AND SHALL BE SUFFICIENT POUNDS PER SQUARE FOOT TO SUPPORTS WALLED LAKE FIRE REQUIREMENT OF 75,000 POUNDS.

M:\DDC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\180603-GRADING PLAN.DWG

6	SEEDING WITH MULCH AND/OR MATTING	FACILITATES ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR DRAINAGEWAYS WITH LOW VELOCITY EASILY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL BED
15	PAVING	PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VOLUME AND VELOCITY IRREGULAR SURFACE WILL HELP SLOPE VELOCITY
16	CURB AND GUTTER	KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING THE PAVED SURFACE COLLECTS AND CONDUCTS RUNOFF TO ENCLOSED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAY
36	CATCH BASIN, DRAIN INLET	COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER CLOTH OVER INLET
54	FILTER FENCING	USES GEOTEXTILE FABRIC AND POSTS OR POLES EASY TO CONSTRUCT AND LOCATE AS NECESSARY

CONSTRUCTION SEQUENCE

APRIL 2019 – APRIL 2020	SOIL EROSION CONTROL MEASURES
PRIOR TO CONSTRUCTION	–IDENTIFY CONSTRUCTION LIMITS –INSTALL TRACKING MAT –INSTALL SILT FENCE
DEMOLITION	–SAWCUT AND REMOVE CURBING, STRIP VEGETATION AND TOPSOIL –MAINTAIN CONTROL MEASURES
CONSTRUCT UTILITIES	–MAINTAIN CONTROL MEASURES –INSTALL SILT SACKS IN PROP. STRUCTURES IMMEDIATELY FOLLOWING INSTALLATION
CONSTRUCT PARKING LOT	–REMOVE STONE ACCESS DRIVE –MAINTAIN OTHER CONTROL MEASURES
FINAL GRADING, INSTALL SIDEWALK	–MAINTAIN CONTROL MEASURES
SITE RESTORATION AND LANDSCAPING	–TOPSOIL AND SOD –INSTALL LANDSCAPING –MAINTAIN CONTROL MEASURES
AFTER DISTURBED AREAS HAVE STABILIZED	–REMOVE SILT FENCE –REMOVE INLET FILTERS ON CATCH BASINS

DISTURBED AREA ±8.96 ACRES

GRADING ABREVIATION LEGEND

TG	TOP OF GRAVEL ELEVATION
SW	PROPOSED SWALE ELEVATION
TW	TOP OF WALK ELEVATION
TC	TOP OF CURB ELEVATION
I.E.	INVERT ELEVATION
RIM	RIM ELEVATION
G	GUTTER ELEVATION
FG	FINISHED GRADE ELEVATION
W.O.	WALK OUT BASEMENT ELEVATION
V.O.	VIEW OUT BASEMENT ELEVATION
DBL	DROP BRICK LEDGE ELEVATION
GR	SPOT GRADE/TOP OF BERM GRADE

MAINTENANCE REQUIREMENTS

- –STREET SCRAPING (DAILY)
- – STREET SWEEPING (WEEKLY MINIMUM)
- –STRUCTURAL SEDIMENT CONTROLS (SILT FENCE, INLET FILTERS, SEDIMENT TRAPS) INSPECT AND MAINTAIN ON A WEEKLY BASIS. RECORD SITE CONDITIONS AND NECESSARY REPAIRS IN A LOGBOOK ONCE A WEEK AND WITHIN 24 HOURS AFTER A STORM EVENT IF REQUIRED BY THE NPDES PERMIT (5 ACRES OR GREATER IN SIZE).

CONSTRUCTION NOTES

ALL EXISTING ABOVE GROUND UTILITIES SHALL BE ABANDONED OR PLACED UNDERGROUND.

CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN EXCAVATING AROUND EXISTING GAS MAINS LOCATED ALONG DECKER ROAD AND LEON DRIVE AND NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THAT SHOWN ON PLANS AND ACTUAL FIELD CONDITIONS.

UTILITY WARNING

UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

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

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

SEAL

STATE OF MICHIGAN WES LEE O. UMLOR ENGINEER 6201054579 LICENSED PROFESSIONAL ENGINEER

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services
49287 WEST ROAD
WIXOM, MI 48393
(P): 248–773–7656
(F): 866–960–4307

REVISIONS

- REVISED PER CITY COMMENTS DATED 1/16/2019
- REVISED PER CITY COMMENTS DATED 3/15/2019
- REVISED PER CITY COMMENTS DATED 4/25/2019
- REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS

SITE GRADING & SOIL EROSION CONTROL PLAN

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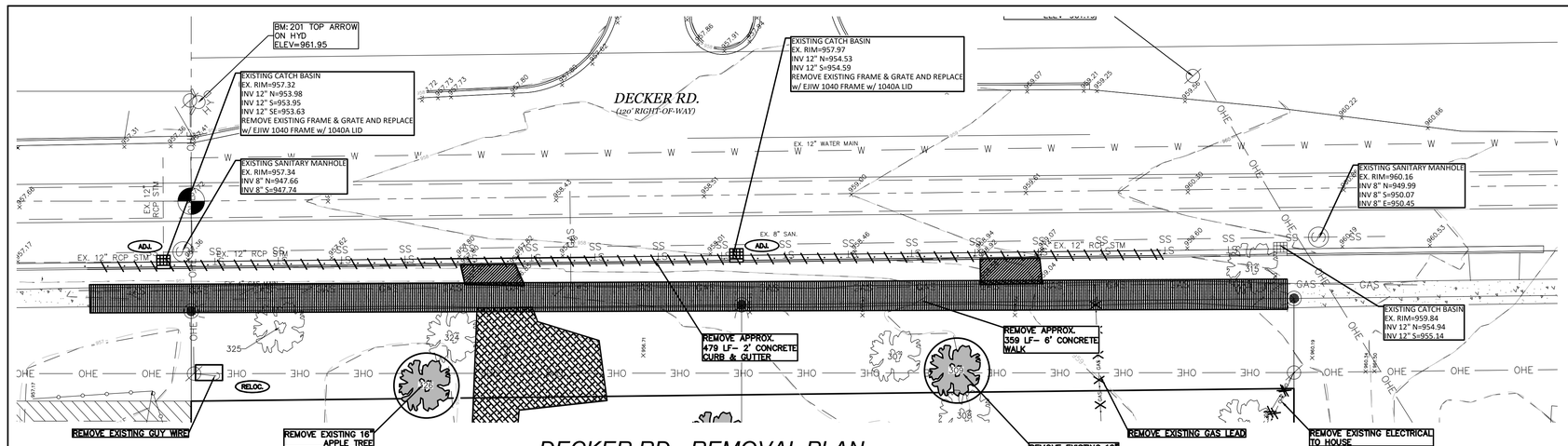
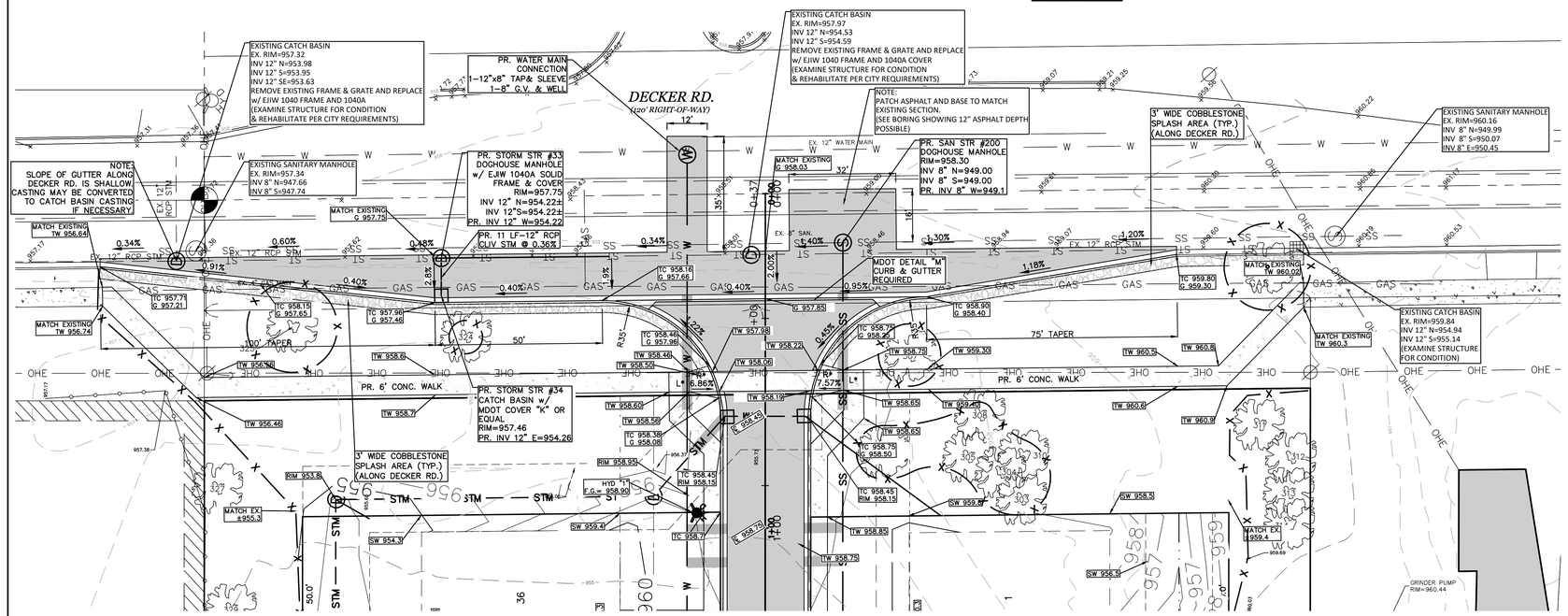
SECTION 35 | TOWN 2 NORTH, RANGE 8 EAST | CITY OF WALLED LAKE | OAKLAND COUNTY

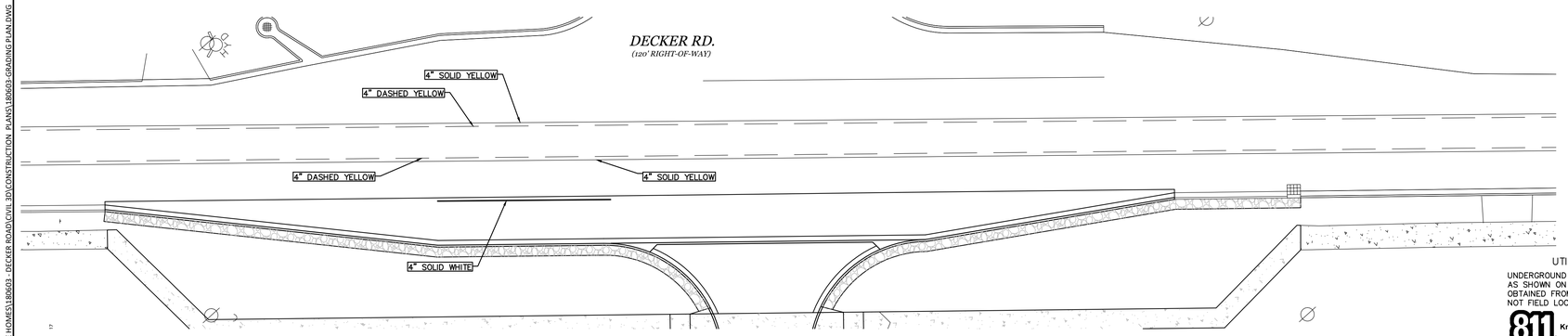
DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 50'
Job No.: 180603
Sheet No.



DECKER RD - REMOVAL PLAN



DECKER RD - WIDENING PLAN

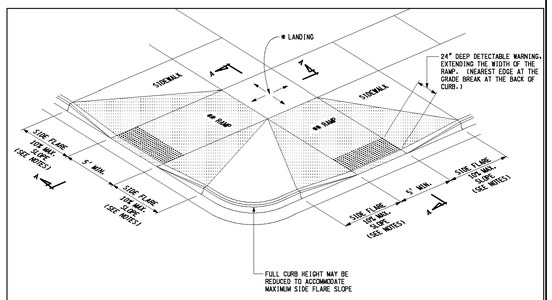


DECKER RD - SIGNAGE & STRIPING PLAN

NOTES:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN EXCAVATING AROUND EXISTING GAS MAINS LOCATED ALONG DECKER ROAD AND LEON DRIVE AND NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THAT SHOWN ON PLANS AND ACTUAL FIELD CONDITIONS.

(IN FEET)
1 inch = 20 ft.

NORTH

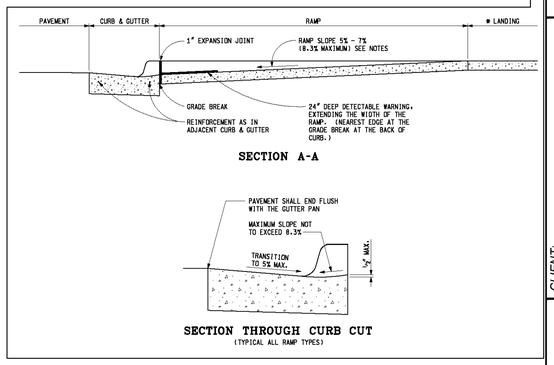


SIDEWALK RAMP TYPE F
(FLARED SIDES, TWO RAMPS SHOWN)

* MAXIMUM LANDING SLOPE IN ANY DIRECTION IS 2.0%. MINIMUM LANDING DIMENSIONS 5' x 5'.

** MAXIMUM CROSS SLOPE ON RAMP IS THE SAME AS THAT FOR SIDEWALK (2.0%). RUNNING SLOPE 5% – 7% (8.3% MAXIMUM) SEE NOTES.

NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN EXCAVATING AOUND EXISTING GAS MAINS LOCATED ALONG DECKER ROAD AND LEON DRIVE. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THAT SHOWN ON PLANS AND ACTUAL FIELD CONDITIONS.



SECTION A-A

SECTION THROUGH CURB CUT
(TYPICAL ALL RAMP TYPES)

LEGEND

TW	TOP OF WALK
RIM	RIM OF STRUCTURE
SW	SWALE ELEVATION
TC	TOP OF CURB
G	GUTTER
950	EXIST. MAJOR CONTOUR
	EXIST. MINOR CONTOUR
955	PROP. MAJOR CONTOUR
954	PROP. MINOR CONTOUR
*R	ADA RAMP TYPE "F" w/ DETECTABLE WARNING PLATES (SEE DETAIL THIS SHEET)
*L	ADA LANDING

LEGEND

PR. ASPHALT REMOVAL	
PR. CONCRETE REMOVAL	
PR. GRAVEL REMOVAL	
PR. PIPE REMOVAL	X X X X
PR. CURB REMOVAL	\ \ \ \ \
PR. OBJECT REMOVAL	○
PR. OBJECT TO BE RELOCATED	□
PR. STRUCTURE TO BE ADJUSTED	ADJ.
REMOVE	®
RELOCATE	RELOC.

UTILITY WARNING
UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

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

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

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Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services
49287 WEST ROAD
WIXOM, MI 48393
(P): 248–773–7656
(F): 866–960–4307

REVISIONS
REVISED PER CITY COMMENTS DATED 1/16/2019
REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 4/25/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
"DECKER ROAD ENTRANCE PLAN & DETAILS"

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1"=20'
Job No.: 180603
Sheet No.
12

M:\DDC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\180603-GRADING PLAN.DWG

UTILITY WARNING

UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

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WATER SERVICE NOTES

WATER SERVICES SHALL BE 1" 'K' COPPER WITH STOP BOXES PLACED 19' BEHIND BACK OF CURB TYPICAL AT THE OUTSIDE EDGE OF THE WATER AND\OR SANITARY SEWER EASEMENT. LONG SERVICES SHALL BE 67-LF AND SHORT SERVICES SHALL BE 20-LF INSTALLED PAST THE PROPOSED FRANCHISE UTILITY EASEMENT TO THE UNIT ENVELOPE.

WATER SERVICES SHALL BE INSTALL AT 5'-6" MIN. COVER. UNITS 12-17 DEFLECT LONG SERVICES UNDER SANITARY SEWER MAIN PROVIDE 18" MIN. VERTICAL SEPARATION.

CONSTRUCTION NOTES

ALL EXISTING ABOVE GROUND UTILITIES SHALL BE ABANDONED OR PLACED UNDERGROUND.

CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN EXCAVATING AROUND EXISTING GAS MAINS LOCATED ALONG DECKER ROAD AND LEON DRIVE AND NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THAT SHOWN ON PLANS AND ACTUAL FIELD CONDITIONS.

NOTES:

1. ALL PUBLIC WATER MAINS SHALL BE LOCATED WITHIN A 20' WIDE DEDICATED EASEMENT.
2. ALL PUBLIC SANITARY SEWERS SHALL BE LOCATED WITHIN A 20' WIDE DEDICATED EASEMENT.

SANITARY SEWER QUANTITIES

8" PVC TRUSS PIPE	1028 LF
6" SDR 23.5 PVC LEAD PIPE	1,615 LF
4'ø MANHOLES	4 EA
4'ø DOGHOUSE MH.	1 EA.

WATERMAIN QUANTITIES

8" D.I. CLIV CL54 WM.	1,068 LF
1" "K" COPPER WATER SERVICE LEADS	1519 LF
TAPPING SLEEVE, 8" GATE VALVE & WELL	1 EA
8" GATE VALVE & WELL	1 EA
FIRE HYDRANT & ASSEMBLY	3 EA
STOP BOX	36 EA

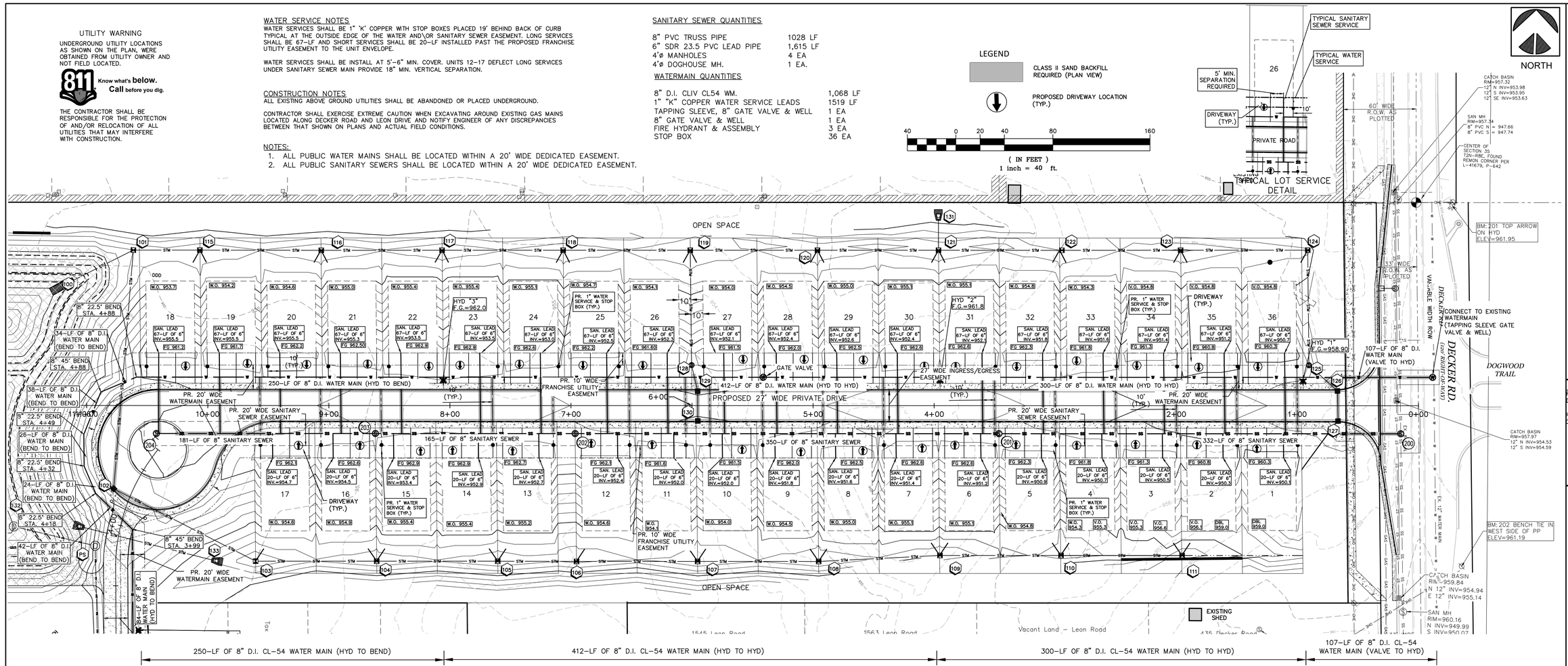
LEGEND

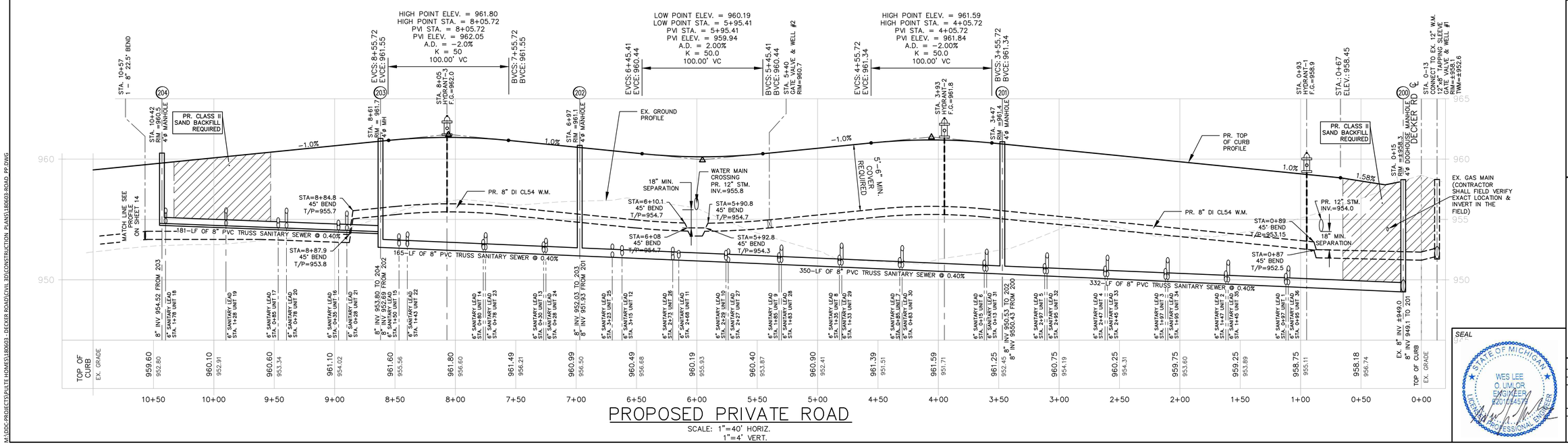
CLASS II SAND BACKFILL REQUIRED (PLAN VIEW)

PROPOSED DRIVEWAY LOCATION (TYP.)

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.





PROPOSED PRIVATE ROAD

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

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

49287 WEST ROAD
WIXOM, MI 48393

(P): 248-773-7656
(F): 866-960-4307

REVISIONS

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REVISED PER CITY COMMENTS DATED 4/25/2019

REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
ROAD, SANITARY, WATERMAIN PLAN & PROFILE

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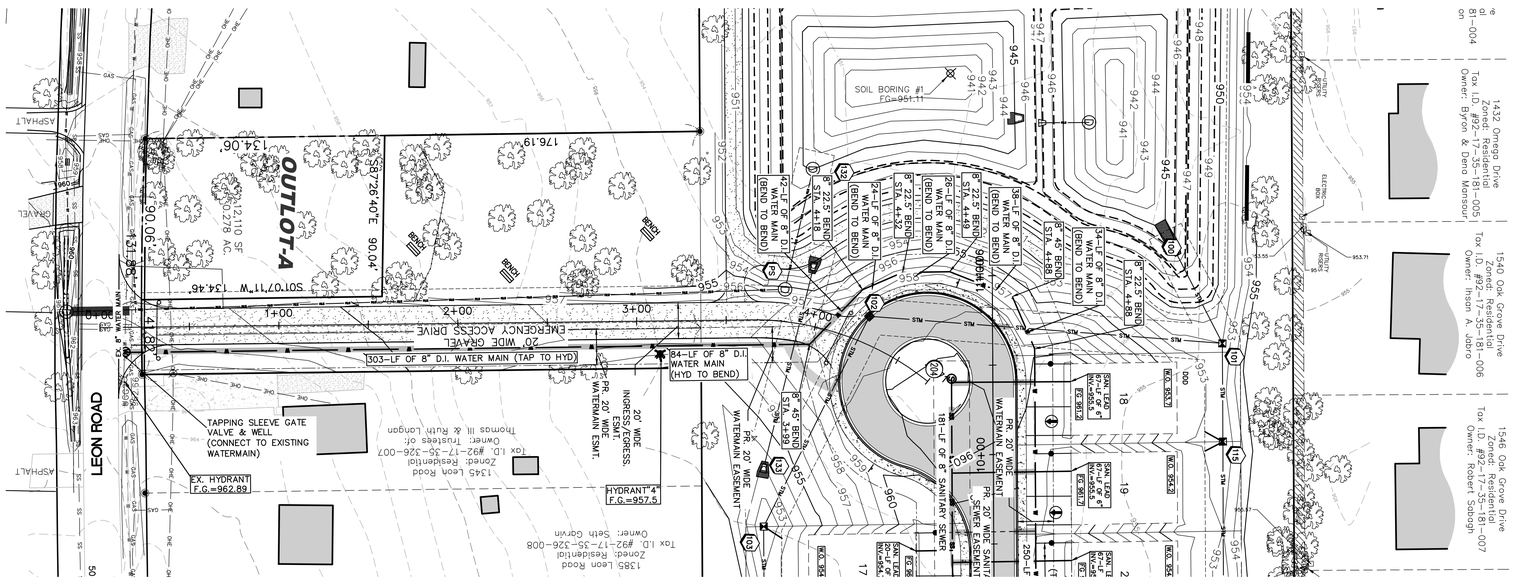
SECTION 35 | TOWN 2 NORTH, RANGE 8 EAST | CITY OF WALLED LAKE | OAKLAND COUNTY

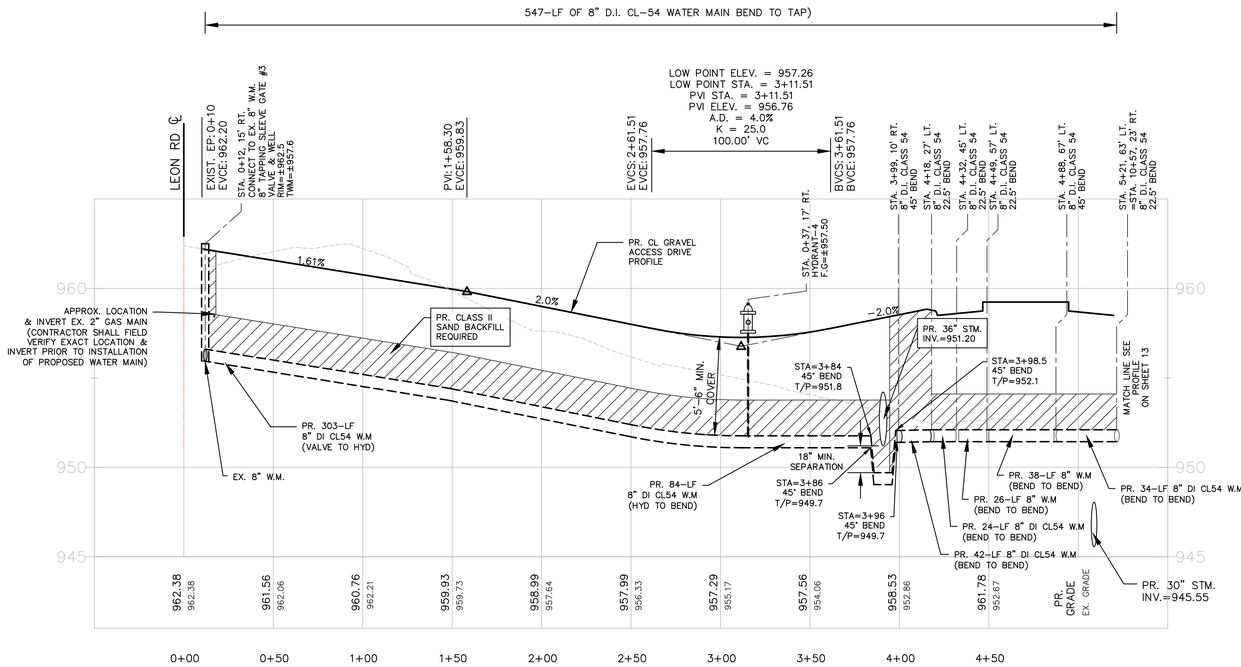
SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#2010054571
LICENSED PROFESSIONAL ENGINEER

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 40'
Job No.: 180603
Sheet No. 13

M:\DOC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\180603-ROAD-PP.DWG





PROPOSED WATERMAIN PROFILE ALONG EMERGENCY ACCESS DRIVE

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

LEGEND

CLASS II SAND BACKFILL REQUIRED

PROPOSED DRIVEWAY LOCATION (TYP.)

WATERMAIN QUANTITIES

8" D.I. CL54 WM.	547 LF
TAPPING SLEEVE G.V. & WELL	1 EA
HYDRANT ASSEMBLY	1 EA

NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN EXCAVATING AROUND EXISTING GAS MAINS LOCATED ALONG DECKER ROAD AND LEON DRIVE. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THAT SHOWN ON PLANS AND AND ACTUAL FIELD CONDITIONS.

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

UTILITY WARNING
UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

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SEAL
STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#2101045579
LICENSED PROFESSIONAL ENGINEER

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Civil Engineering • Surveying • Landscaping • Construction Services
49287 WEST ROAD
WIXOM, MI 48393
(P): 248-773-7656
(F): 866-960-4307

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CLIENT: PULTE HOMES OF MICHIGAN
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BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
WM PLAN & PROFILE - EMERGENCY ACCESS DR

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SECTION 35 | TOWN 2 NORTH, RANGE 8 EAST | CITY OF WALLED LAKE | OAKLAND COUNTY

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 40'
Job No.: 180603
Sheet No. 14

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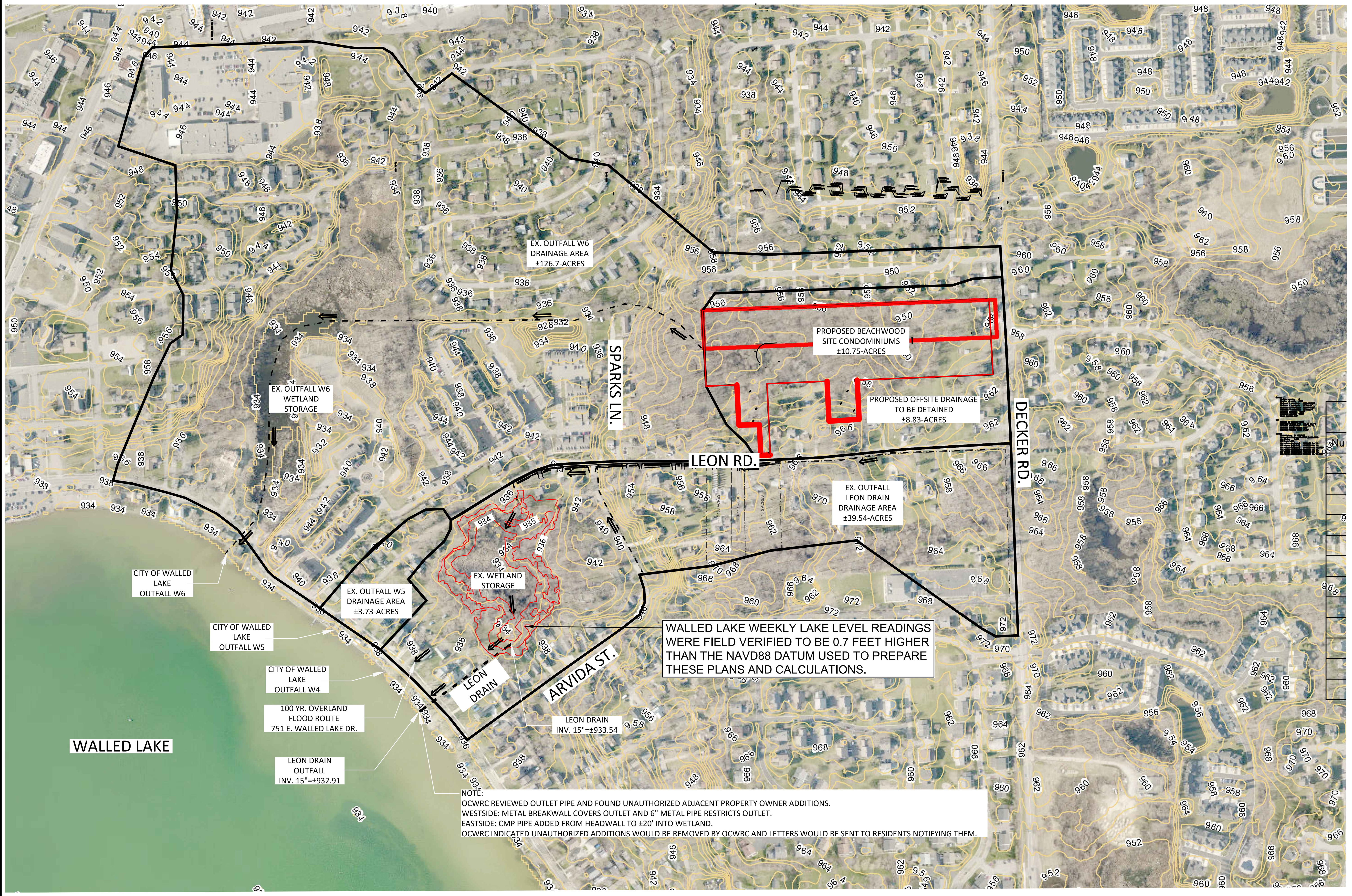
NORTH

BEACHWOOD SITE CONDOMINIUMS

SINGLE FAMILY RESIDENTIAL
STORM WATER MANAGEMENT PLAN
DECKER ROAD, CITY OF WALLED LAKE, OAKLAND COUNTY



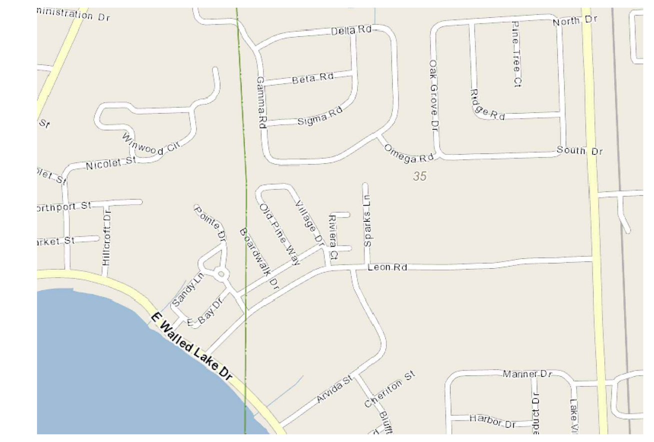
STORM WATER MANAGEMENT NOTES:

1. Storm water discharges shall not adversely impact the capacity of the wetland and adjacent properties near outfall at breakwall (*see Conclusion) Difference in elev 100 = 0.02ft
2. WRC drainage district amendment required (see WRC application)
3. The ditch system along Leon Rd. shall accommodate anticipated flow (*see calculations - subcritical results)
4. The storm water pump system and detention basin shall be sized adequately to accommodate storm water runoff (see sheet 13: volume provided) volume required
5. No adverse impact to adjacent properties shall occur at a result of the development. The SWM system is designed to capture, store, and discharge existing uncontrolled runoff

Leon Drain Pipe Calculations

Q=(1.49/n)(A)(R^2/3)(S^1/2)
R=A/P
n=0.013
S=0.0018 ft/ft

Flow Depth (ft)	Q (cfs)
0.1	0.02
0.2	0.11
0.3	0.25
0.4	0.45
0.5	0.71
0.6	1.02
0.7	1.36
0.8	1.72
0.9	2.09
1	2.44
1.1	2.73
1.2	2.74
1.25	2.75
1.3	2.77
1.4	2.8
1.5	3.1
1.6	3.4
1.7	3.6



VICINITY MAP

STORM WATER NARRATIVE:

The Beachwood Site Condominium development approximately 10.75 acres in size is proposing to provide 100 year storm water detention for approximately 19.58 acres of developed and offsite drainage area that currently overland flows Westerly to the City of Walled Lake Outfall W6 to Walled Lake. Beachwood is proposing to remove the 19.58 acre drainage area from the Outfall W6 tributary, detain the 100 year storm volume from this area, and discharge it via pumping over the course of approximately 3.78 days based on the 100 year event to the Southerly ditch along Leon Road. The Leon Road ditch drains Westerly to an existing wetland area that discharges into the existing Leon Drain under jurisdiction of Oakland County Water Resource Commissioner (O.C.W.R.C.) to Walled Lake South of Leon Road. Beachwood has submitted for review and approval to the O.C.W.R.C these plans and proposal to revise the drainage district boundaries for Outfalls LEON DRAIN, W5, & W6 as proposed. Beachwood is providing additional detention volume for approximately 8.83 acres of offsite drainage. City and County standards do not require that this offsite drainage be detained but by doing so will significantly slow the discharge of this water helping to control flooding downstream during large storm events. Beachwood is proposing to limit the discharge from the proposed detention basin to 0.0182-cfs/acre which is reduction of approximately 91% less then the undeveloped agricultural rate allowed by City and County standards. This limited discharge rate will ensure that there is an insignificant impacts to downstream homes, roadways, Drain, and the existing wetland storage area. Calculations provided show that the existing Leon Drain is adequately sized to handle the 100 year discharge from the existing and proposed drainage areas if properly cleaned and maintained. We have requested the O.C.W.R.C. office evaluate the existing condition of the Leon Drain. O.C.W.R.C. may need to clean and\or make repairs to the drain prior to construction and implementation of this proposal to ensure that there is no unforeseen issues that could be linked to this development. Storage calculations for the existing wetlands also show that the additional discharge from the Beachwood development will raise the surface water level in the existing wetlands only 0.02 feet or less than 1/4 inch during the 100 year event. Calculations also show that there is significant storage volume above the anticipated high water elevation in the existing wetlands. The proposed improvement along the Leon Road's Southerly ditch to be performed in conjunction with the Beachwood development include ditch cleaning, culvert cleaning and\or replacement, storm sewer cleaning, and enclosure of portions of the ditch will ensure water is properly routed to Walled Lake and will improve the drainage condition for all properties within this drainage district area. Downstream residences (i.e existing homes along within the Outfall W6 drainage tributary will see a significant reduction in overland runoff during large storm events due to the approximately 15.3% reduction of area discharging to this outfall. Sample calculations for the existing \ proposed ditch cross section and drive culverts along Leon Road shows that ditch cross section yields a full ditch capacity of approximately 17-cfs, but as with most road side ditches the individual drive culverts act to restrict flows ranging from 3.5 to 5.0-cfs along this route depending on pipe slope and length. Under the existing condition during large storm events water is detained within the upstream ditches slowing the storm surge effect on the downstream properties. Although this proposal will improve the drainage route which is currently in disrepair and not functioning along the Leon Road ditch it is not the intent of this proposal to significantly alter how this existing drainage systems functions. The Beachwood development is proposing to discharge it's storm water at a rate of 0.356-cfs which is only 10% of the capacity of the culvert flowing full at 3.5-cfs.

Beachwood Site Condominiums onsite storm water improvement: The front half of the home's roof drainage, driveways, front lawn areas, and street drainage are routed to the detention basin via curbs, gutters, and storm sewers long the proposed roadway. Rear roof drainage, sump leads, rear lawn areas, and offsite drainage shall inlet to rear yard basins and\or swales and routed to the detention basin. All sump leads to connect directly to the storm sewer. The detention basin is sized per Oakland County Drain Commissioner's "Engineering Design Standards for Storm Water Facilities" including being sized to detain the 100 year storm event, first flush treatment via forebay area, and all temporary and permanent soil erosion and sedimentation control requirements and best management practices.

Existing Leon Rd. Ditch Calculations:

Given Input Data:
- Shape .... Trapezoidal
- Solving for .... Flowrate
- Slope .... 0.0032 ft/ft
- Manning's n 0.0200
- Depth .... 2.0000 ft
- Height .... 2.0000 ft
- Bottom width .... 2.0000 ft
- Left slope .... 0.3330 ft/ft (V/H)
- Right slope .... 0.3330 ft/ft (V/H)

Computed Results:
- Flowrate .... **71.3742 cfs**
- Velocity .... 4.4575 fps
- Full Flowrate .... 71.3742 cfs
- Flow area 16.0120 ft2
- Flow perimeter .... 14.6605 ft
- Hydraulic radius .... 1.0922 ft
- Top width .... 14.0120 ft
- Area 16.0120 ft2
- Perimeter .... 14.6605 ft
- Percent full .... 100.0000 %

Critical Information
- Critical depth .... 1.7368 ft
- Critical slope .... 0.0062 ft/ft
- Critical velocity .... 5.6952 fps
- Critical area 12.5323 ft2
- Critical perimeter .... 12.9945 ft
- Critical hydraulic radius .... 0.9644 ft
- Critical top width .... 12.4314 ft
- Specific energy .... 2.3088 ft
- Minimum energy .... 2.6052 ft
- Froude number 0.7351
- *Flow condition .... Subcritical

12" Dia. Culvert Calculator

Entered Data:
- Shape .... Circular
- Number of Barrels 1
- Solving for .... Headwater
- Chart Number 1
- Scale Number 1
- Chart Description .... CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
- Scale Decsription .... SQUARE EDGE ENTRANCE WITH HEADWALL
- Overtopping .... Off
- Flowrate .... 3.5000 cfs
- Manning's n 0.0240
- Roadway Elevation .... 957.7000 ft
- Inlet Elevation .... 955.7000 ft
- Outlet Elevation .... 955.3500 ft
- Diameter .... 1.0000 ft
- Length .... 30.0000 ft
- Entrance Loss 0.0000
- Tailwater .... 1.0000 ft

Computed Results:
- Headwater .... 957.6406 ft Outlet Control
- Slope .... 0.0117 ft/ft
- Velocity .... 4.4563 fps

Messages:
- Outlet head > Inlet head.
- Computing Outlet Control headwater.
- Outlet submerged.
- Full flow.
- Headwater depth computed using FHWA equation.
- Headwater: 957.6406 ft

Leon Drain - 15" Storm Sewer Manning Pipe Calculator

iven Input Data:
- Shape .... Circular
- Solving for .... Flowrate
- Diameter .... 1.2500 ft
- Depth .... 1.2500 ft
- Slope .... 0.0018 ft/ft
- Manning's n 0.0130

Computed Results:
- Flowrate .... 2.7407 cfs
- Area 1.2272 ft2
- Wetted Area 1.2272 ft2
- Wetted Perimeter .... 3.9270 ft
- Perimeter .... 3.9270 ft
- Velocity .... 2.2333 fps
- Hydraulic Radius .... 0.3125 ft
- Percent Full .... 100.0000 %
- Full flow Flowrate .... 2.7407 cfs
- Full flow velocity .... 2.2333 fps

Critical Information
- Critical depth .... 0.8029 ft
- Critical slope .... 0.0064 ft/ft
- Critical velocity .... 4.6387 fps
- Critical area 0.8360 ft2
- Critical perimeter .... 2.3193 ft
- Critical hydraulic radius .... 0.3604 ft
- Critical top width .... 1.2500 ft
- Specific energy .... 1.3701 ft
- Minimum energy .... 1.2044 ft
- Froude number 0.4640
- Flow condition .... Subcritical

Existing 1 Year Flow Calculation

Q = CIA = (0.4)(1.6in/hr)(39.54 acres) = 25.31-cfs

Leon Drain existing 15" storm sewer flowing full for all storm events 1 year and above. Use flowrate = 2.74-cfs for LEON DRAIN discharge for calculations. Leon Drain inlet and outlet pipes were field surveyed to determine length, inverts, and slopes used to calculate flow rate shown. OCWRC to remove and replace existing home owner installed pipes at inlet and outlet.

Existing Condition Outfall LEON DRAIN
DU Job No. 180603
Walled Lake - O.C.W.R.C. Engineering Standards

Time of Concentration T(min) = 20
Existing Coefficient C = 0.40
Existing Area A(acres) = 39.54

Frequency of Storm	Rainfall Intensity "I" (In/Hr)	Allowable Outflow Qa(cfs) Ex. 15" Outfall	Maximum Outflow Qo(cfs/acre)	Storage Time Equation T(min)	Storage Volume Equation Vs(Ft3/(AxC))	Storage Volume V(FT3)
1 Year	1.60	2.75	0.17	76.75	2458	38874
5 Year	3.22	2.75	0.17	119.39	5948	94076
10 Year	3.89	2.75	0.17	133.62	7451	**117847**
25 Year	4.78	2.75	0.17	150.82	9492	150130
50 Year	5.44	2.75	0.17	162.69	11045	174683
100 Year	6.11	2.75	0.17	173.85	12612	**199470**

Storage Analysis - Wetland Volume

Elevation	Area (sf)	Ave. Area (sf)	Cumulative Volume (cft)	
933.6	22,500	0	0	
934	82,852	21,070	21,070	
935	163,779	123,316	144,386	
936	241,281	202,530	346,916	CFT

100 Year Volume
V100 = 199470 cft
Elev.100 = 935.27 ft

Proposed Condition Outfall LEON DRAIN
DU Job No. 180603
Walled Lake - O.C.W.R.C. Engineering Standards

Time of Concentration T(min) = 20
Proposed Coefficient C = 0.40
Existing Area A(acres) = 39.54

Frequency of Storm	Rainfall Intensity "I" (In/Hr)	Allowable Outflow Qa(cfs) Ex. 15" Outfall	Maximum Outflow Qo(cfs/acre)	Storage Time Equation T(min)	Storage Volume Equation Vs(Ft3/(AxC))	Storage Volume V(FT3)
1 Year	1.60	2.39	0.15	84.05	2566	40588
5 Year	3.22	2.39	0.15	129.75	6116	96733
10 Year	3.89	2.39	0.15	145.01	7639	**120818**
25 Year	4.78	2.39	0.15	163.44	9704	153482
50 Year	5.44	2.39	0.15	176.16	11273	178297
100 Year	6.11	2.39	0.15	188.12	12856	**203330**

Note: Assume 0.356-cfs from Beachwood reduces Outfall W4 Qa and increases detention within wetlands.

Storage Analysis - Wetland Volume

Elevation	Area (sf)	Ave. Area (sf)	Cumulative Volume (cft)	
933.6	22,500	0	0	
934	82,852	21,070	21,070	
935	163,779	123,316	144,386	
936	241,281	202,530	346,916	CFT

100 Year Volume
V100 = 203330 cft
Elev.100 = 935.29 ft

Conclusion:

***Based on the detention analysis for the existing wetlands the addition of the pump discharge to the Leon Drain storm sewer will have an insignificant difference in volume of water stored within the wetland and will not significantly raise the water level during the 100 year event. Existing wetlands was found to have approximately 143,586-cft of additional freeboard volume between 935.3 and 936 contours which equates 1.70 times the volume required to detain the 100 year event before the overland flood route condition would occur. Staged analysis of the 15" outlet pipe shows that the proposed pump discharge = 0.356-cfs of additional water the wetland will receive will maintain the low water level in the wetlands at an elevation of approximately 933.9 for a time interval of 0.87 to 3.78 days for the 1 to 100 year storm events above the existing condition storm surge.**

Diffin-Umlor & ASSOCIATES
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49287 WEST ROAD
WIXOM, MI 48393
(P): 248-437-7803
(F): 866-960-4307

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- REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
OVERALL STORMWATER MASTER PLAN

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

SEAL

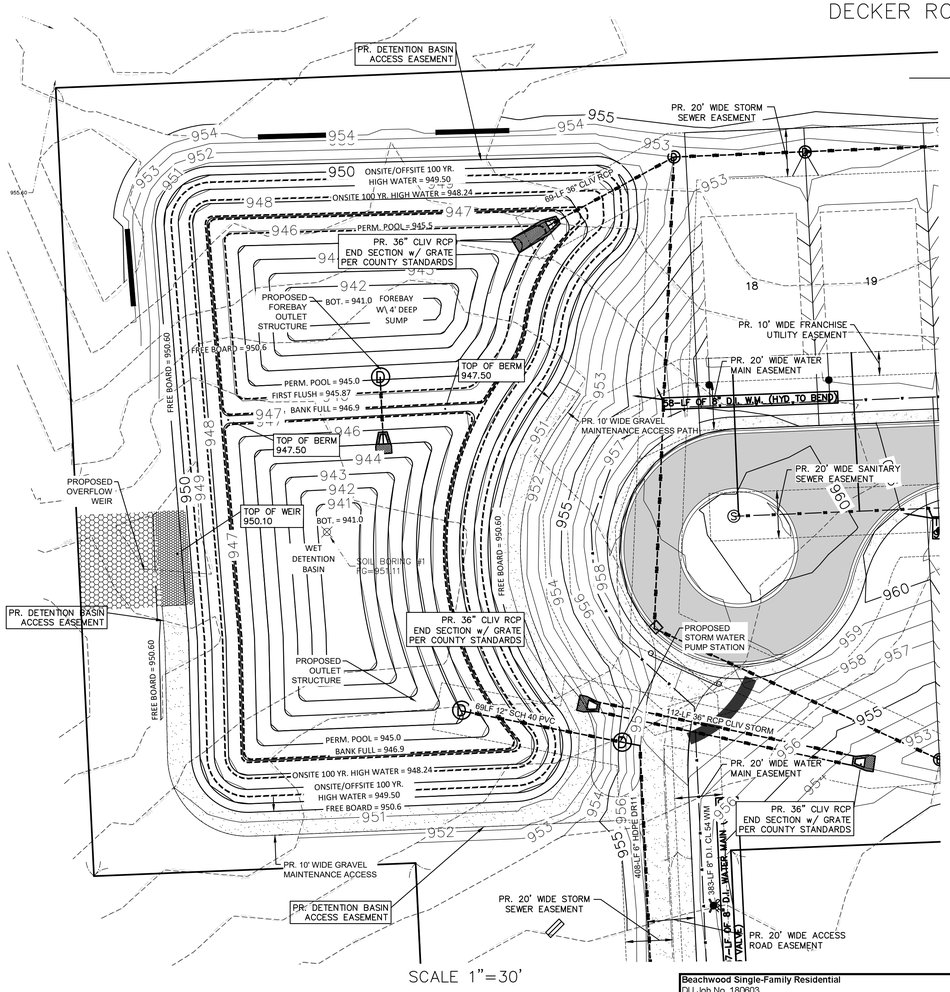
STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
PROFESSIONAL ENGINEER

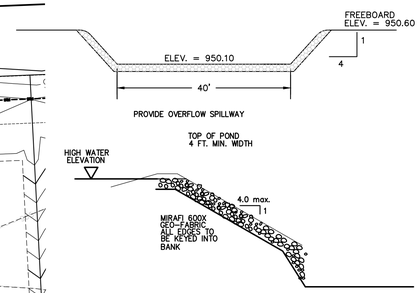
Date: 4-27-19
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1"=200'
Job No.: 180603
Sheet No.
15

BEACHWOOD SITE CONDOMINIUMS

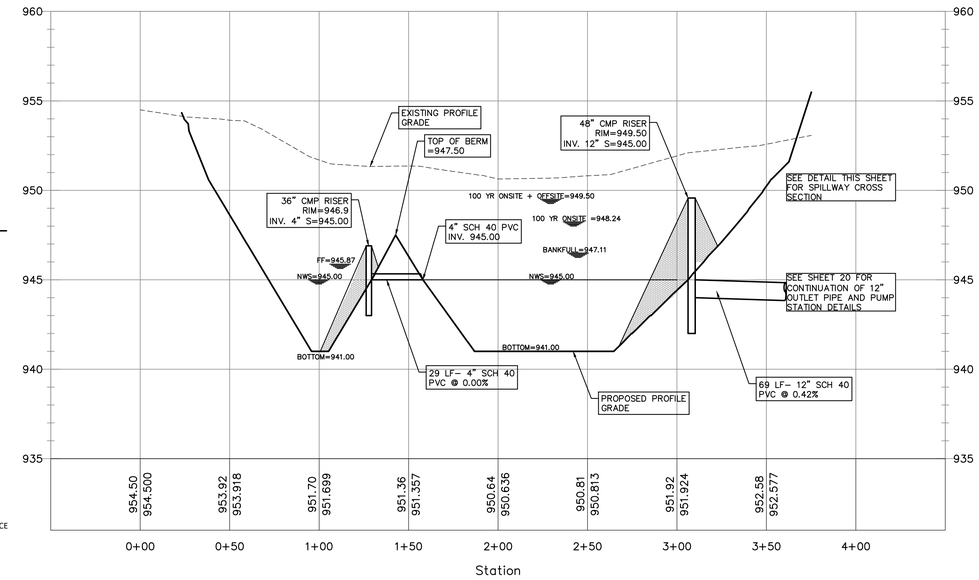
SINGLE FAMILY RESIDENTIAL
STORM WATER MANAGEMENT PLAN
DECKER ROAD, CITY OF WALLED LAKE, OAKLAND COUNTY

NORTH





TYPICAL POND OVERFLOW SPILLWAY



POND CROSS SECTION
1"=40' HORIZ.
1"=4" VERT.

36" Dia. Overflow Culvert Calculator

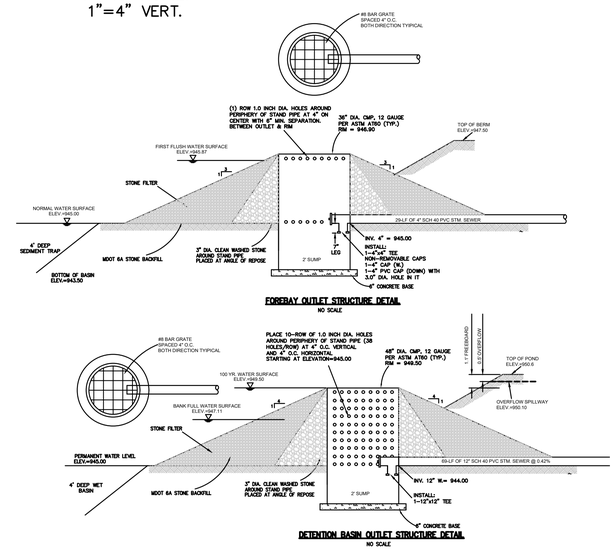
Area = 10.16 acres
Cw = 0.36
I100 = 6.11 in/hr

Q 100 = CIA = 22.35-cfs

Culvert Calculator
Entered Data:
Shape ..... Circular
Number of Barrels 1
Solving for ..... Headwater
Chart Number 1
Scale Number 1
Chart Description ..... CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
Scale Decsription ..... SQUARE EDGE ENTRANCE WITH HEADWALL
Overtopping ..... Off
Flowrate ..... 25.0000 cfs > 22.35-cfs OK
Manning's n 0.0130
Roadway Elevation ..... 959.0000 ft
Inlet Elevation ..... 951.5000 ft
Outlet Elevation ..... 951.0000 ft
Diameter ..... 3.0000 ft
Length ..... 131.0000 ft
Entrance Loss 0.0000
Tailwater ..... 2.5000 ft

Computed Results:
Headwater ..... 953.8774 ft Inlet Control
Slope ..... 0.0038 ft/ft
Velocity ..... 6.1018 fps

Messages:
Inlet head > Outlet head.
Computing Inlet Control headwater.
Solving Inlet Equation 26.
Solving Inlet Equation 28.
Headwater: 953.8774 ft < 954.0 OK



10 ROWS 1 INCH DIA. HOLES = 2 x3.14 x 2=
C=2πr = 12.56 FT = 150.72 IN/4= 38 HOLES/ ROW
10 x 38 x 0.0054 = 2.052 SQ. FT.

AREA OF 12" DIA PIPE = 0.785 SQ–FT.
CAPACITY OF 12" DIA. PIPE @ 0.42% =2.31 CFS > 0.356 CFS OR 160 GPM

Beachwood Single-Family Residential
DU Job No. 180603
Walled Lake - O.C.W.R.C. Engineering Standards
160 GPM Pump Oultet

Time of Concentration T(min) =	20
Existing Coefficient C =	0.25
Proposed Coefficient C =	0.48
Area A(acres) =	10.75

Beachwood Development Area Only

Frequency of Storm	Rainfall Intensity "I" (In/Hr)	Allowable Outflow Qa(cfs) 0.0331-cfs\acre	Maximum Outflow Qo(cfs/acre)	Storage Time Equation T(min)	Storage Volume Equation Vs(FT3/(AxC))	Storage Volume V(FT3)
1 Year	1.60	0.356	0.07	138.52	3088	15925
5 Year	3.22	0.356	0.07	204.22	6906	35634
10 Year	3.89	0.356	0.07	226.82	8519	**43956**
25 Year	4.78	0.356	0.07	254.12	10693	55174
50 Year	5.44	0.356	0.07	272.96	12337	63657
100 Year	6.11	0.356	0.07	290.67	13990	**72188**

Decker Rd Single-Family Residential
DU Job No. 180603
Walled Lake - O.C.W.R.C. Engineering Standards
160 GPM Pump Oultet

Time of Concentration T(min) =	20
Existing Coefficient C =	0.25
Proposed Coefficient C =	0.41
Area A(acres) =	19.58

Beachwood + Offsite Development Area

Frequency of Storm	Rainfall Intensity "I" (In/Hr)	Allowable Outflow Qa(cfs) 0.0182-cfs\acre	Maximum Outflow Qo(cfs/acre)	Storage Time Equation T(min)	Storage Volume Equation Vs(FT3/(AxC))	Storage Volume V(FT3)	Discharge Time (Days)
1 Year	1.60	0.356	0.04	178.47	3314	26607	0.87
5 Year	3.22	0.356	0.04	260.91	7245	58162	1.89
10 Year	3.89	0.356	0.04	289.10	8895	**71408**	2.32
25 Year	4.78	0.356	0.04	323.15	11114	89220	2.90
50 Year	5.44	0.356	0.04	346.64	12789	102668	3.34
100 Year	6.11	0.356	0.04	368.74	14471	**116172**	3.78

Storage Analysis - Forebay Basin

Elevation	Area (sf)	Ave. Area (sf)	Cumulative Volume (cft)
Forebay			
945	6,185	0	0
946	8,364	7,275	7,275
947	10,899	9,632	16,906

Storage Analysis - Detention Basin

Elevation	Area (sf)	Ave. Area (sf)	Cumulative Volume (cft)
Forebay + Detention			
945	14,354	0	0
946	19,106	16,730	16,730
947	24,576	21,841	38,571
948	29,544	27,060	65,631
949	34,403	31,974	97,605
950	39,487	36,945	134,550
951	44,695	21,046	155,595

Forebay
1 Year Volume 15925 cft
Elev.1 yr. = 946.90 ft

First Flush
Vff = 1815 x A x C = 14570 cft
Qff = Vff / T24 = 0.1686 cfs
Elev.bot = 945.00 ft
Elev.ff = 945.87 ft

Bankfull
Vbf = 5160 x A x C = 41423 cft
Elev.bot = 945.00 ft
Elev.bf = 947.11 ft

Onsite 100 Year Volume
V100 = 72188 cft
Elev.100 yr. = 948.24 ft

Overflow Weir
Q = C x B x H(3/2)
Q10 = C x I10 x A = 31.22 CFS
C = 3.4
H = 0.5 ft
B = 39.22 ft use 40.0 ft

Onsite & Offiste 100 Year Volume
V100 = 116172 cft
Elev.100 yr. = 949.50 ft

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WIXOM, MI 48393
(P): 248–437–7803
(F): 866–960–4307

REVISIONS
REVISED PER CITY COMMENTS DATED 1/16/2019
REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 4/25/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
SITE- STORMWATER MANAGEMENT PLAN

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

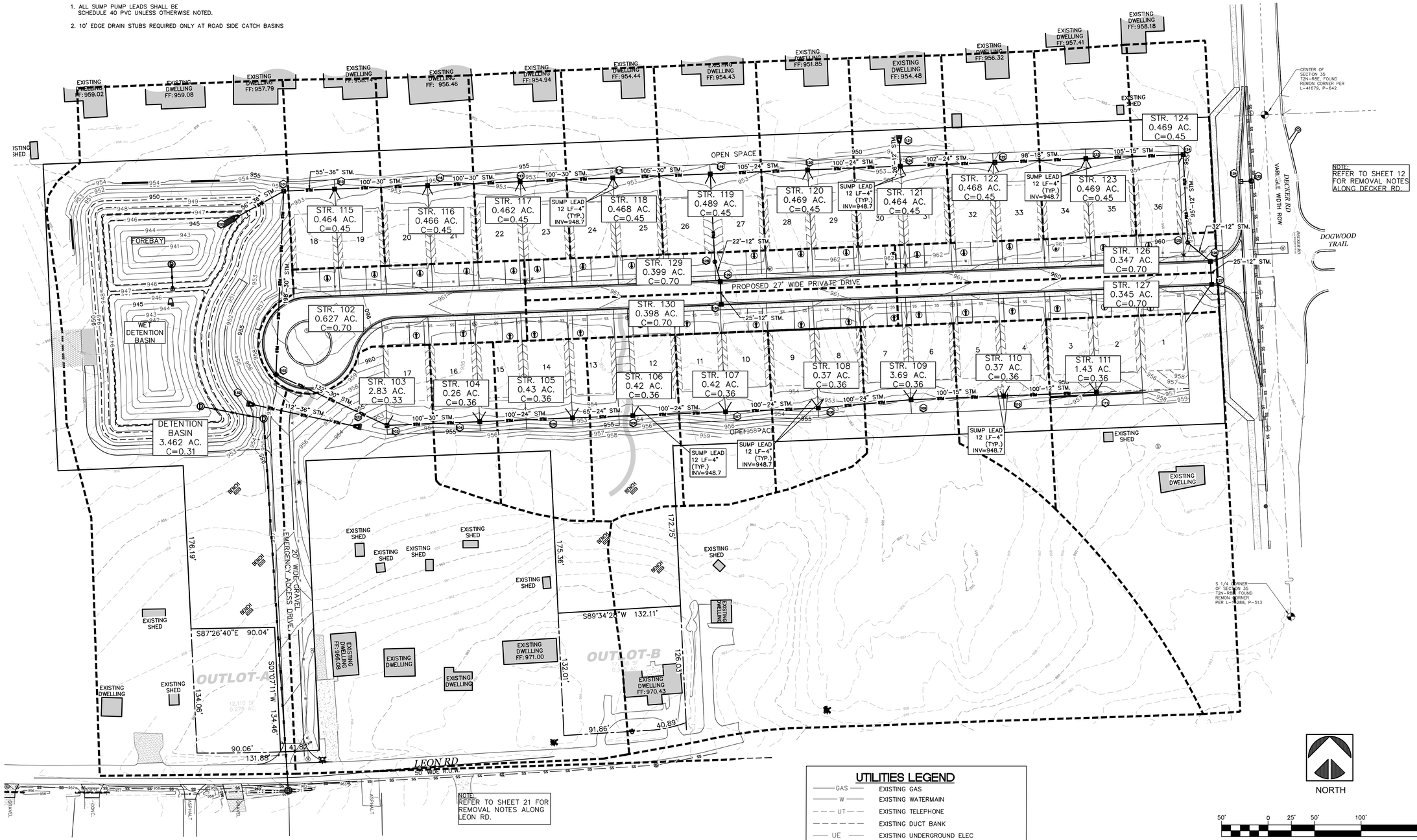
SEAL
STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201034575
LICENSED PROFESSIONAL ENGINEER

Date: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
AS NOTED
Job No.: 180603
Sheet No. 16

M:\DDC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\BASES\WWP.DWG

STORM WATER NOTES:

1. ALL SUMP PUMP LEADS SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE NOTED.
2. 10' EDGE DRAIN STUBS REQUIRED ONLY AT ROAD SIDE CATCH BASINS



UTILITIES LEGEND

GAS	EXISTING GAS
W	EXISTING WATERMAIN
UT	EXISTING TELEPHONE
	EXISTING DUCT BANK
UE	EXISTING UNDERGROUND ELEC
OHE	EXISTING OVERHEAD ELEC
SS	EXISTING SANITARY SEWER
ST	EXISTING STORM SEWER
SS	PROPOSED SANITARY SEWER
W	PROPOSED WATERMAIN
STM	PROPOSED STORM SEWER
	PROPOSED INLET BASIN AREA
3	PROPOSED SANITARY STRUCTURE NUMBER
102	PROPOSED STORM STRUCTURE NUMBER

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201014571
PROFESSIONAL ENGINEER

Diffin-Umlor & ASSOCIATES
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(P): 248-437-7803
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REVISIONS

REVISED PER CITY COMMENTS DATED 1/16/2019

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CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS

STORMWATER TRIBUTARY AREA PLAN

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SECTION 35 | TOWN 2 NORTH, RANGE 8 EAST | CITY OF WALLED LAKE | OAKLAND COUNTY

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 50'
Job No.: 180603
Sheet No. 17

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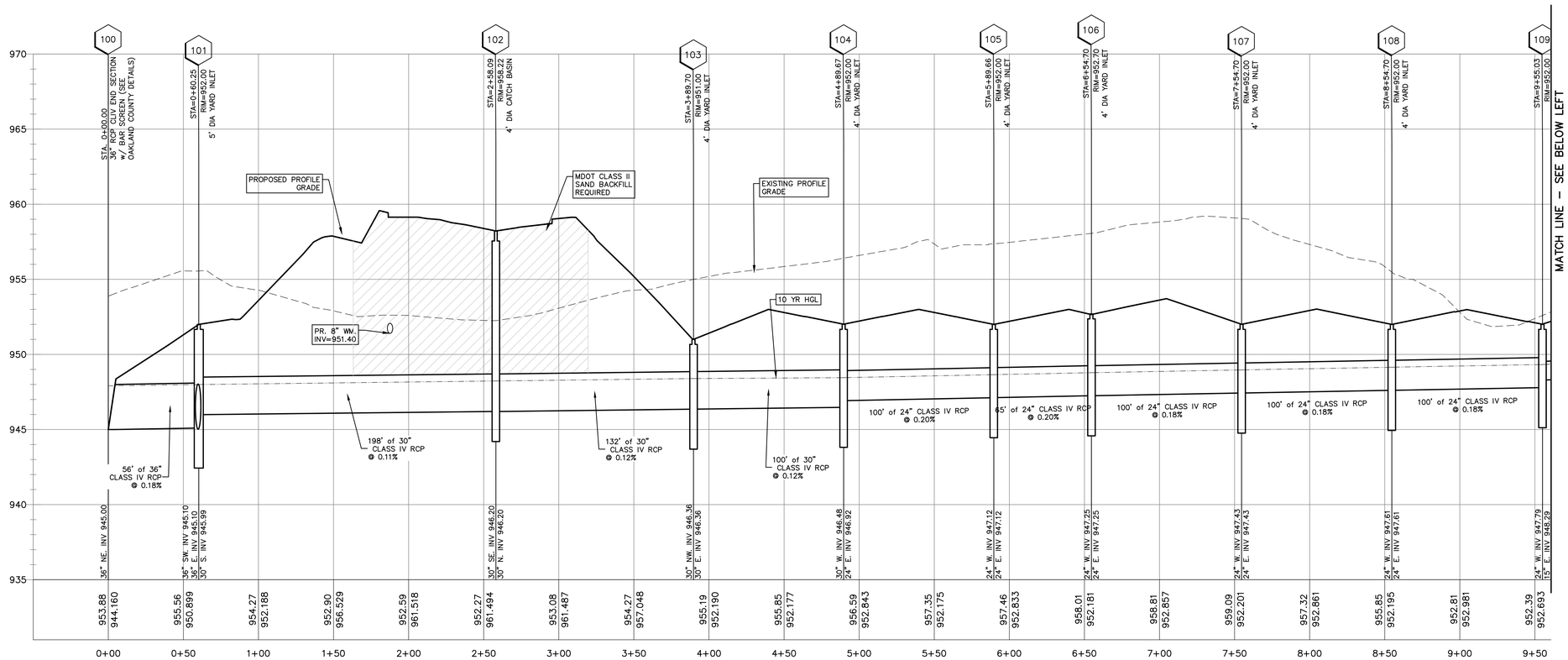
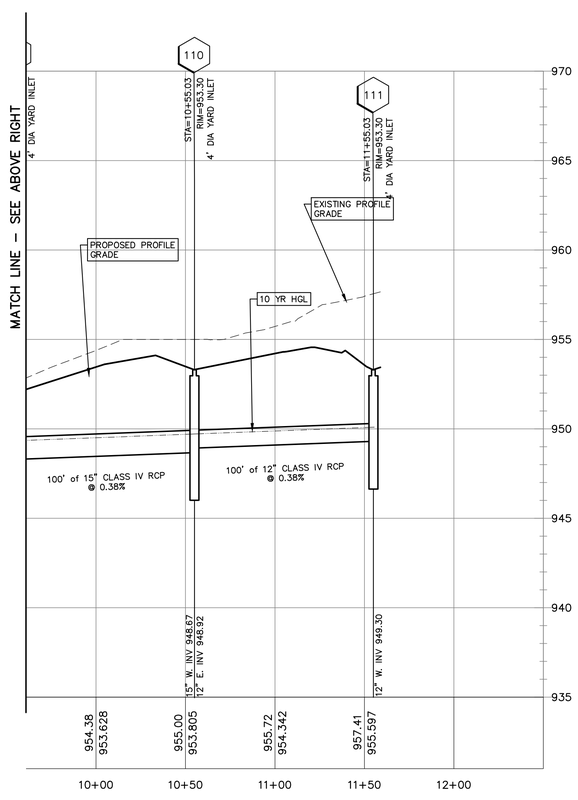
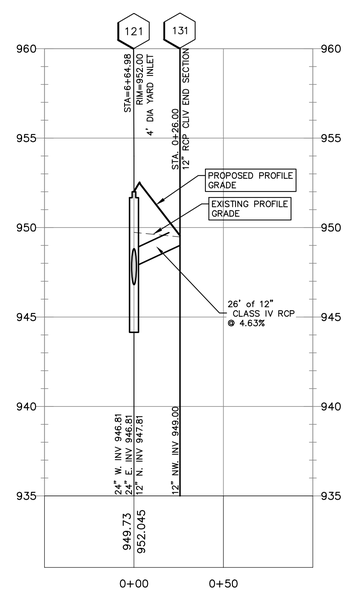


100–112
1"=40' HORIZ.
1"=4" VERT.





121–131
1"=40' HORIZ.
1"=4" VERT.

STORM SEWER QUANTITIES

36" C76 CLIV RCP PIPE	56 LF
30" C76 CLIV RCP PIPE	430 LF
24" C76 CLIV RCP PIPE	465 LF
15" C76 CLIV RCP PIPE	100 LF
12" C76 CLIV RCP PIPE	126 LF
36" C76 CLIV RCP END SECTION	1 EA
12" C76 CLIV RCP END SECTION	1 EA
4'ø YARD INLET	10 EA
4'ø CATCH BASIN	1 EA
5'ø YARD INLET	1 EA

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WIXOM, MI 48393

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REVISED PER CITY COMMENTS DATED 1/16/2019

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REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS

STORM SEWER PROFILES

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SECTION 35

TOWN 2 NORTH, RANGE 8 EAST

CITY OF WALLED LAKE

OAKLAND COUNTY

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#201054574
LICENSED PROFESSIONAL ENGINEER

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR

1" = 40'

Job No.: 180603

Sheet No. 18

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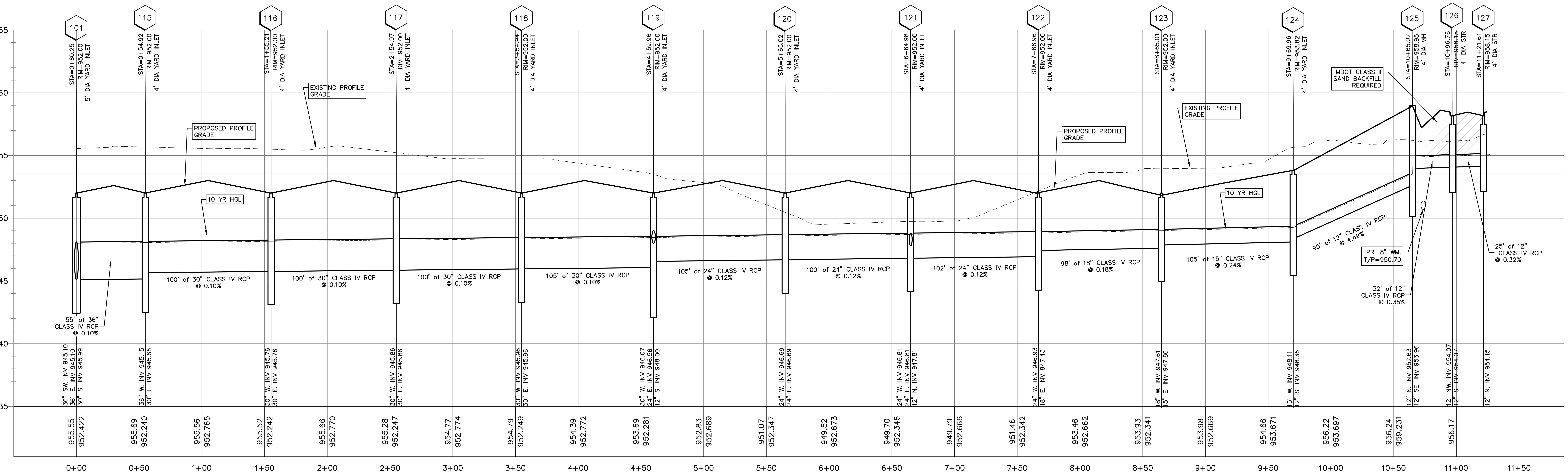
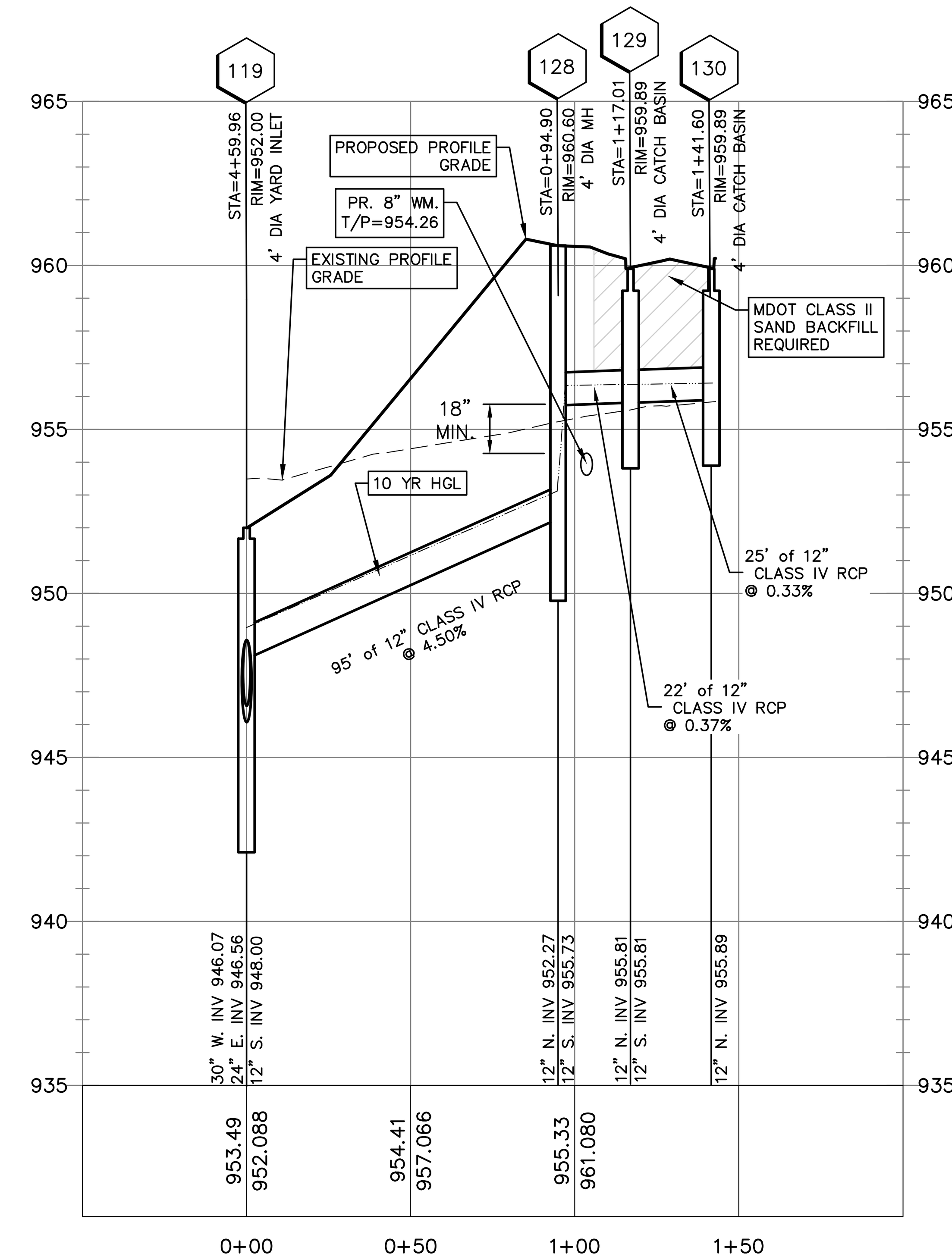


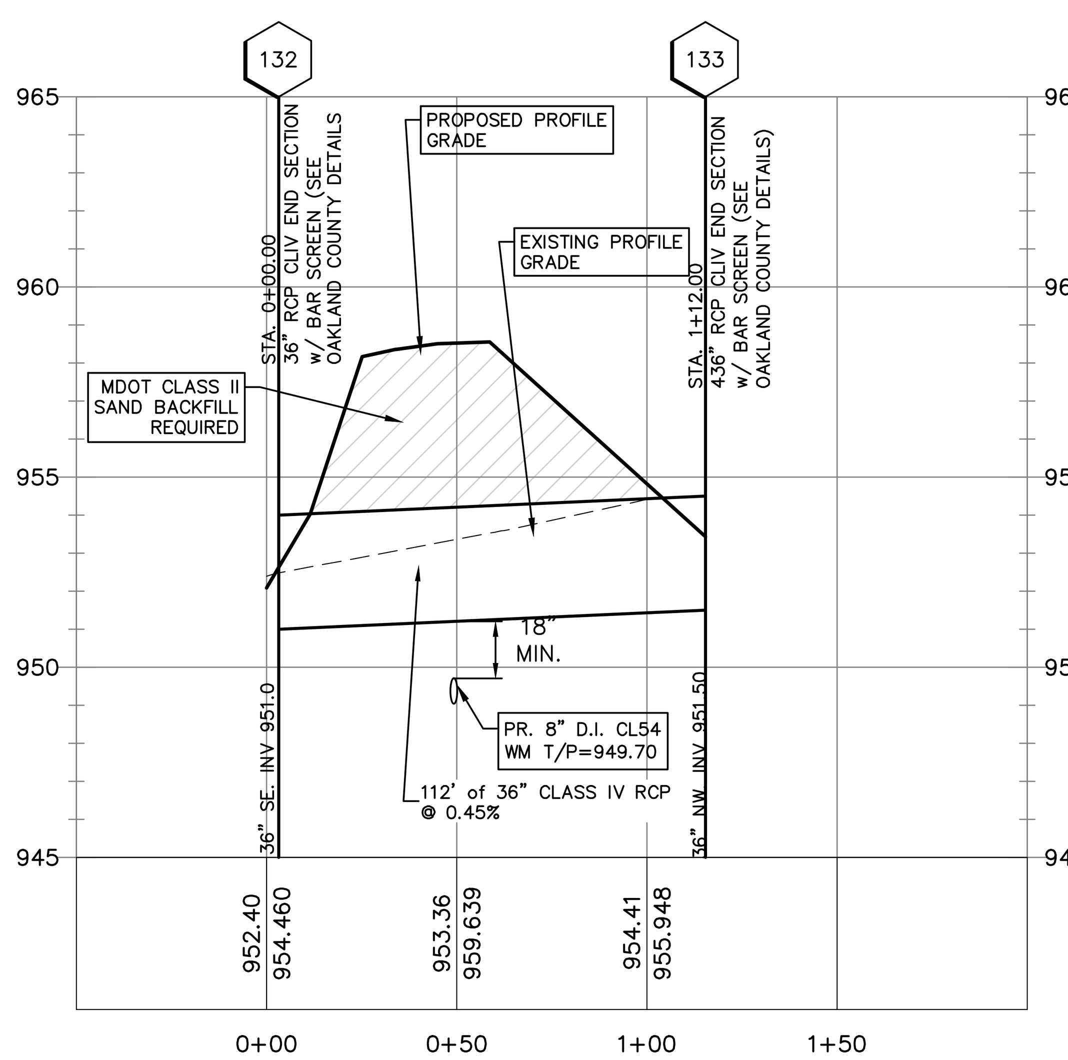
Station
101–127
1"=40' HORIZ.
1"=4" VERT.

STORM SEWER QUANTITIES

36" C76 CLIV RCP PIPE	167 LF
30" C76 CLIV RCP PIPE	405 LF
24" C76 CLIV RCP PIPE	307 LF
18" C76 CLIV RCP PIPE	98 LF
15" C76 CLIV RCP PIPE	105 LF
12" C76 CLIV RCP PIPE	294 LF
36" C76 CLIV RCP END SECTION	2 EA
4'ø YARD INLET	8 EA
4'ø CATCH BASIN	4 EA
4'ø PRECAST MANHOLES	2 EA



Station
119–130
1"=40' HORIZ.
1"=4" VERT.



Station
OVERLAND OVERFLOW
1"=40' HORIZ.
1"=4" VERT.

10 YEAR STORM SEWER DESIGN

From Structure	To Structure	Incremental Area (acres)	C Factor	Cumulative Area 100% CA (acres)	t Time (min)	I (in/hr)	Total Q=CIA (cfs)	Pipe Diam.	Slope (%)	Length (ft)	Mannings Full Velocity (ft/s)	Time of Flow (min)	Mannings Full Capacity of Sewer (cfs)	H.G. Elev. Upper End (ft)	Upper Invert Elev. (ft)	Lower Invert Elev. (ft)	Upper Structure Rim Elev. (ft)	Differential H.G. & Structure Rim
111	110	1.43	0.36	0.5148	20.00	3.80	1.96	12 inch	0.38	100	3.60	0.46	2.83	950.09	949.30	948.92	953.30	3.21
110	109	0.37	0.36	0.6480	20.46	3.76	2.44	15 inch	0.37	100	3.37	0.49	4.14	949.71	948.67	948.29	953.30	3.59
109	108	3.69	0.36	1.9764	20.96	3.72	7.34	24 inch	0.18	100	3.06	0.54	9.60	949.33	947.79	947.61	952.00	2.67
108	107	0.37	0.36	2.1096	21.50	3.67	7.73	24 inch	0.18	100	3.06	0.54	9.60	949.15	947.61	947.43	952.00	2.85
107	106	0.42	0.36	2.2608	22.05	3.62	8.18	24inch	0.18	100	3.06	0.54	9.60	948.97	947.43	947.25	952.00	3.03
106	105	0.42	0.36	2.4120	22.59	3.57	8.62	24 inch	0.20	65	3.22	0.34	10.12	948.79	947.25	947.12	952.00	3.21
105	104	0.43	0.36	2.5668	22.93	3.54	9.10	24 inch	0.20	100	3.22	0.52	10.12	948.66	947.12	946.92	952.00	3.34
104	103	0.26	0.36	2.6604	23.45	3.50	9.32	30 inch	0.12	55	2.89	0.32	14.20	948.46	946.42	946.36	952.00	3.54
103	102	2.83	0.33	3.5943	23.76	3.48	12.50	30 inch	0.12	132	2.89	0.76	14.20	948.40	946.36	946.20	951.00	2.60
102	101	0.627	0.7	4.0332	24.52	3.42	13.78	30 inch	0.12	199	2.89	0.10	14.20	948.24	946.19	945.96	958.20	9.96
127	126	0.345	0.7	0.2415	20.00	3.80	0.92	12inch	0.32	25	2.57	0.16	2.02	955.06	954.15	954.07	958.15	3.09
126	125	0.347	0.7	0.4844	20.16	3.79	1.84	12inch	0.32	32	2.57	0.21	2.02	954.98	954.07	953.96	958.15	3.17
125	124	0	0	0.4844	20.37	3.77	1.83	12 inch	4.50	95	9.62	0.16	7.56	953.53	952.62	948.36	958.95	5.42
124	123	0.469	0.45	0.6955	20.53	3.75	2.61	15 inch	0.24	105	2.63	0.67	3.23	949.26	948.11	947.86	954.00	4.74
123	122	0.469	0.45	0.9065	21.20	3.69	3.35	18 inch	0.18	100	2.52	0.66	4.46	949.01	947.61	947.43	952.00	2.99
122	121	0.468	0.45	1.1171	21.86	3.63	4.06	24 inch	0.12	100	2.49	0.67	7.84	948.83	946.93	946.81	952.00	3.17
121	120	0.464	0.45	1.3259	22.53	3.58	4.74	24 inch	0.12	100	2.49	0.67	7.84	948.71	946.81	946.69	952.00	3.29
120	119	0.469	0.45	1.5370	23.20	3.52	5.41	24 inch	0.12	105	2.49	0.70	7.84	948.59	946.69	946.56	952.00	3.41
130	129	0.398	0.7	0.2786	20.00	3.80	1.06	12 inch	0.33	25	2.60	0.16	2.05	956.41	955.89	955.81	959.89	3.48
129	128	0.3999	0.7	0.5585	20.16	3.79	2.12	12 inch	0.37	22	2.75	0.13	2.17	956.33	955.81	955.73	959.89	3.56
128	119	0	0	0.5585	20.29	3.78	2.11	12 inch	4.50	95	9.62	0.11	7.56	952.57	952.27	948.00	960.40	7.83
119	118	0.489	0.45	2.3155	23.90	3.47	8.02	30 inch	0.10	105	2.64	0.66	12.97	948.46	946.06	945.96	952.00	3.54
118	117	0.468	0.45	2.5261	24.57	3.41	8.62	30inch	0.10	100	2.64	0.63	12.97	948.36	945.96	945.86	952.00	3.64
117	116	0.462	0.45	2.7340	25.20	3.37	9.20	30 inch	0.10	100	2.64	0.63	12.97	948.26	945.86	945.76	952.00	3.75
116	115	0.466	0.45	2.9437	25.83	3.32	9.77	30 inch	0.10	100	2.64	0.63	12.97	948.16	945.76	945.66	952.00	3.85
115	101	0.464	0.45	3.1525	26.46	3.27	10.32	36 inch	0.10	55	2.98	0.31	21.09	948.06	945.16	945.10	952.00	3.95
101	100	0	0	7.1857	26.77	3.25	23.37	36 inch	0.18	56	4.00		28.29	948.00	945.10	945.00	953.00	5.00

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WIXOM, MI 48393
(P): 248-437-7803
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REVISIONS
REVISED PER CITY COMMENTS DATED 1/16/2019
REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 4/25/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT:
PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
STORM SEWER PROFILES & CALCULATIONS

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

SEAL
STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
LICENSED PROFESSIONAL ENGINEER

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
Job No.: 180603
Sheet No.
19

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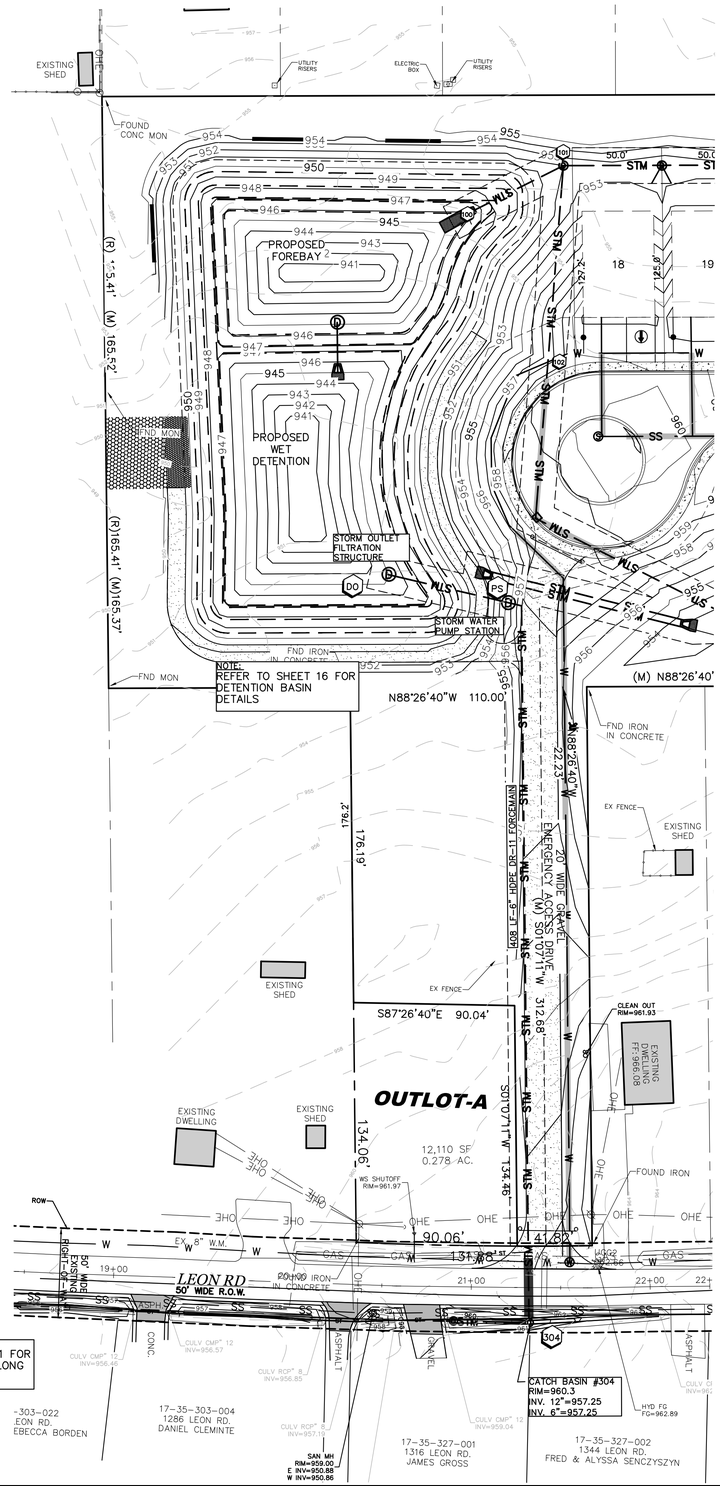
NORTH



NOTE: REFER TO SHEET 21 FOR REMOVAL NOTES ALONG LEON RD.

DUPLEX CAPSULE STORM WATER PUMP STATION CONTROL PANEL

Control panel shall consist of a weather proof enclosure (NEMA 3R) with a hinged dead front panel, locking hasp, motor starter with overload of sufficient size per pump, box lug terminals for field connections, ground terminals, auto-off-test switch, external and internal pump run/fault/alarm lights, lighting arrestor, time delay, alarm horn, alarm reset push button, alarm flasher, alarm contacts, elapsed time meter, GFI receptacle, pump alternator, control power circuit breaker, lockable/tag-out through-the-door disconnect levers for circuit breakers, control panel heater, conduit, etc., including provisions for future telemetering.

Power transformer, current monitor, voltage monitor, phase monitor shall be provided as required to provide good operation.

Liquid level switches, probe or non-mercury float type, shall be intrinsically safe and adjustable.

Pump power conductor cables and liquid level switch conductor cables shall be of sufficient length to reach from the control panel to the pump or switch without splicing.

All work shall be in accordance with applicable local and state codes, national electrical code, industry standards and manufacturer's recommendations.

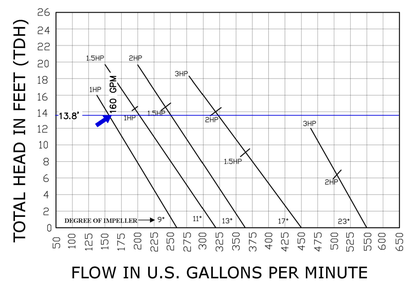
DUPLEX CAPSULE STORM WATER PUMP STATION (6-FT DIA) W/2 EACH 1.0 HP 160 GPM PUMPS AT TDH=30-FT SUBMERSIBLE PUMPS INCLUDING ELECTRICAL PANEL, CONTROLS, PIPING, VALVE, FITTINGS, ETC. COMPLETE AS MANUFACTURED BY CARRY MANUFACTURING, INC. PHONE (517) 659-3500

CONTRACTOR SHALL SUBMIT COMPLETE SHOP DRAWINGS OF THE STORM WATER PUMP STATION TO THE ENGINEER FOR REVIEW PRIOR TO ORDERING THE STATION. THE ENGINEER WILL NOTIFY THE CONTRACTOR WHEN THE REVIEW IS COMPLETED. CONTRACTOR TO DETERMINE ELECTRIC POWER REQUIREMENTS PRIOR TO ORDERING PUMPS.

LIQUID LEVEL CONTROL SETTINGS	
	LEAD PUMP
LWL ALARM	944.5
HWL ALARM	949.5
PUMP ON	945.1
ALL OFF	945.0
PUMP FAILURE ALARM	
PUMP OPERATION SHALL ALTERNATE WITH A MAXIMUM RUN TIME OF 2.5 HOURS	

CARRY PUMPS

CP04 PUMP CURVES

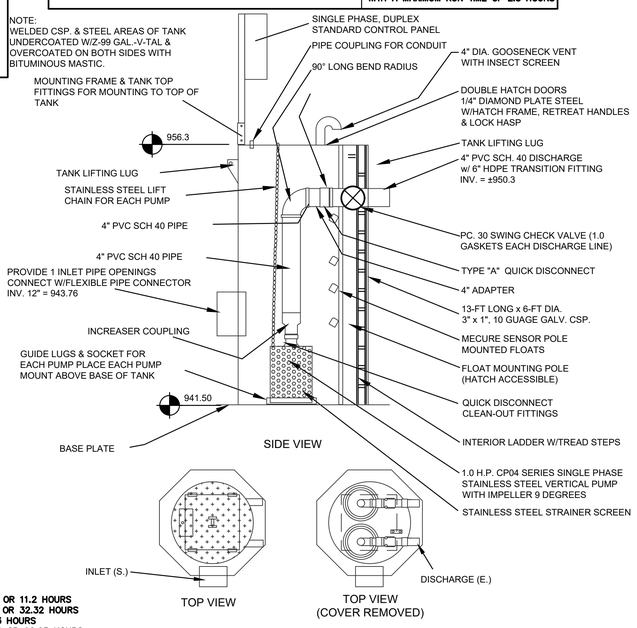


FORCEMAIN HEAD CALCULATION:
PUMP OFF ELEVATION = 945.0
DISCHARGE ELEVATION = 957.2
PUMP LIFT HEAD = 12.2 FT.
PR. 6" FORCEMAIN (I.D. = 5348) = 408-LFT
PRESSURE LOSS = 1.6 FT.
VELOCITY = 2.29 FT/S
TOTAL HEAD LOSS = 13.8 FT.

BASIN DISCHARGE & PUMP RUN TIME CALCULATION:
160-GPM = 0.356-CFS
ON & OFF SITE FIRST FLUSH = 14354-CFT / 0.356-CFS = 40320-SEC OR 11.2 HOURS
ON & OFF SITE BANK FULL = 41423-CFT / 0.356-CFS = 116,356-SEC OR 32.32 HOURS
ON SITE 100 YEAR = 72188-CFT / 0.356-CFS = 202,775-SEC OR 56.3 HOURS
ON & OFF SITE 100 YEAR = 116172-CFT / 0.356-CFS = 326,325-SEC OR 90.65 HOURS

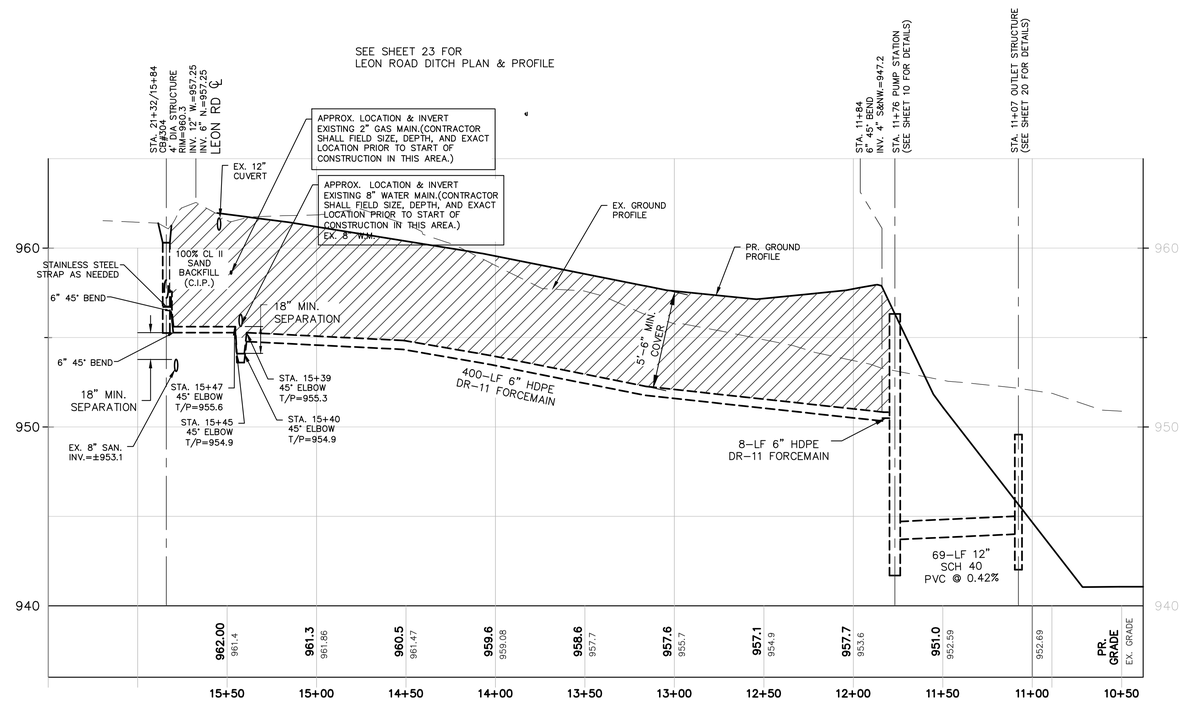
PUMP ON CALCULATION:
0.1" x14354-SQ-FT = 1435-CFT / 0.356-CFS = 4031-SEC OR 67.18 MIN.

NOTE:
WELDED CSP. & STEEL AREAS OF TANK UNDERCOATED W/Z-99 GAL.-V-TAL & OVERCOATED ON BOTH SIDES WITH BITUMINOUS MASTIC.



DUPLEX PUMP STATION PLAN

NO SCALE



PROPOSED STORMWATER FORCEMAIN

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

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services
49287 WEST ROAD
WIXOM, MI 48393
(P): 248-437-7803
(F): 866-960-4307

REVISIONS
REVISED PER CITY COMMENTS DATED 1/16/2019
REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 4/25/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

STORM SEWER FORCE MAIN PLAN & PROFILE

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

SEAL
STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
NO. 34575
PROFESSIONAL ENGINEER

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 40'
Job No.: 180603
Sheet No. 20

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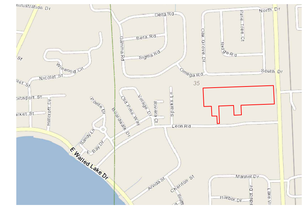
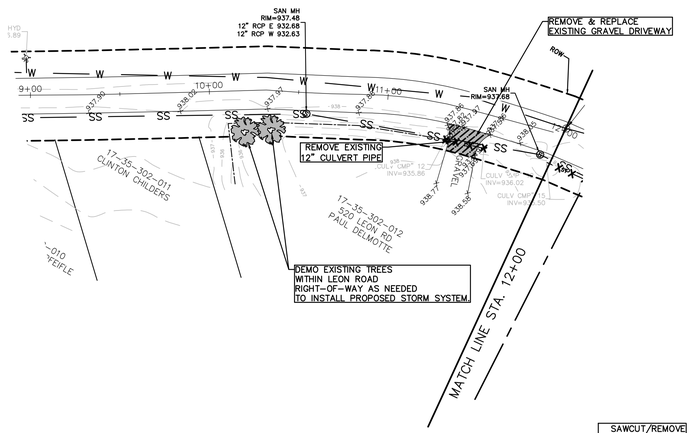
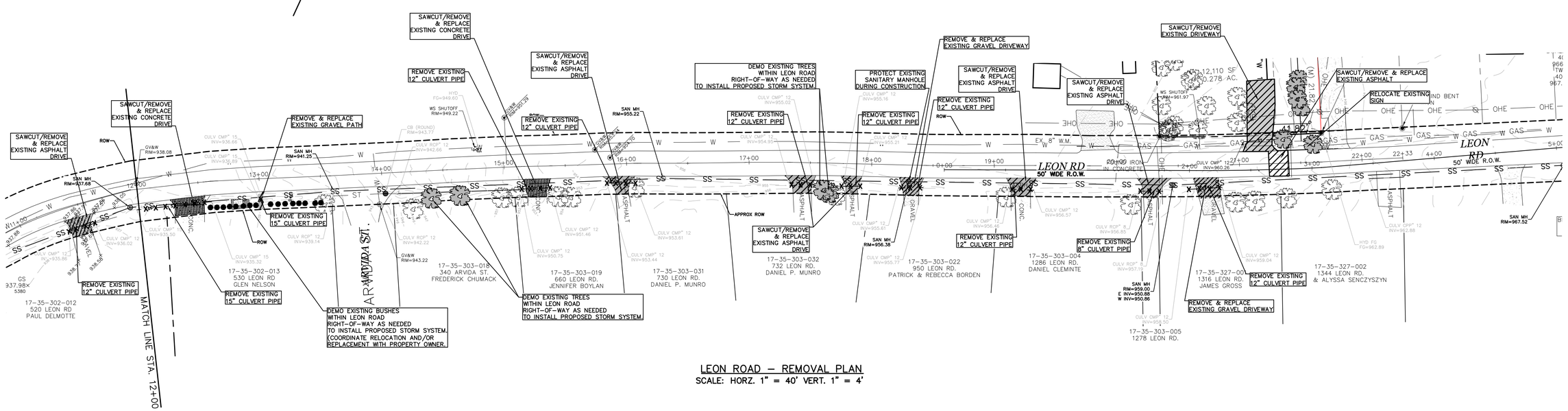
NORTH



VICINITY MAP





LEON ROAD – REMOVAL PLAN

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

LEGEND

PR. ASPHALT REMOVAL	
PR. GRAVEL REMOVAL	
PR. CONCRETE REMOVAL	
PR. PIPE REMOVAL	X X X X
PR. CURB REMOVAL	\ \ \ \ \
PR. OBJECT REMOVAL	○
PR. OBJECT TO BE RELOCATED	□
PR. STRUCTURE TO BE ADJUSTED	ADJ.
REMOVE	®
RELOCATE	RELOC.

DRIVEWAY REMOVAL QUANTITIES (THIS SHEET)

ITEM DESCRIPTION	UNIT	STA. 11+35 RT.	STA. 12+30 RT.	STA. 12+85 RT.	STA. 15+11 RT.	STA. 15+82 RT.	STA. 17+28 RT.	STA. 17+69 RT.	STA. 18+18 RT.	STA. 19+08 RT.	STA. 20+14 RT.	STA. 20+53 RT.			TOTALS
Asphalt Removal	Syd	–	18	–	–	25	30	20	–	30	30	–			153
Concrete Removal	Syd	–	20	–	30	–	–	–	–	–	–	–			50
Culvert Removal	Lft	24	61	3	24	24	20	14	20	20	20	27			257
Fencing Removal	Lft	–	–	–	–	–	–	–	–	–	–	–			–
Tree Removal	Ea	–	–	–	–	–	–	–	–	–	–	–			–
Structure Removal	Ea	–	–	–	–	–	–	–	–	–	–	–			–

*FOR INFORMATION ONLY

SEAL

STATE OF MICHIGAN
WES LEE
O. UMLOR
ENGINEER
#201054571
LICENSED PROFESSIONAL ENGINEER

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

49287 WEST ROAD
WIXOM, MI 48393

(P): 248-437-7803
(F): 866-960-4307

REVISIONS

REVISED PER CITY COMMENTS DATED 1/16/2019

REVISED PER CITY COMMENTS DATED 3/15/2019

REVISED PER CITY COMMENTS DATED 4/25/2019

REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
LEON RD. RECONSTRUCTION REMOVAL PLAN

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SECTION 35 | TOWN 2 NORTH, RANGE 8 EAST | CITY OF WALLED LAKE | OAKLAND COUNTY

DATE: 7-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 40'
Job No.: 180603
Sheet No. 21

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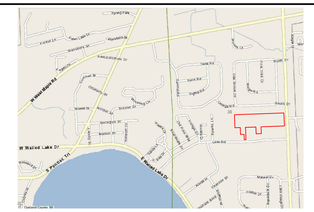
NORTH

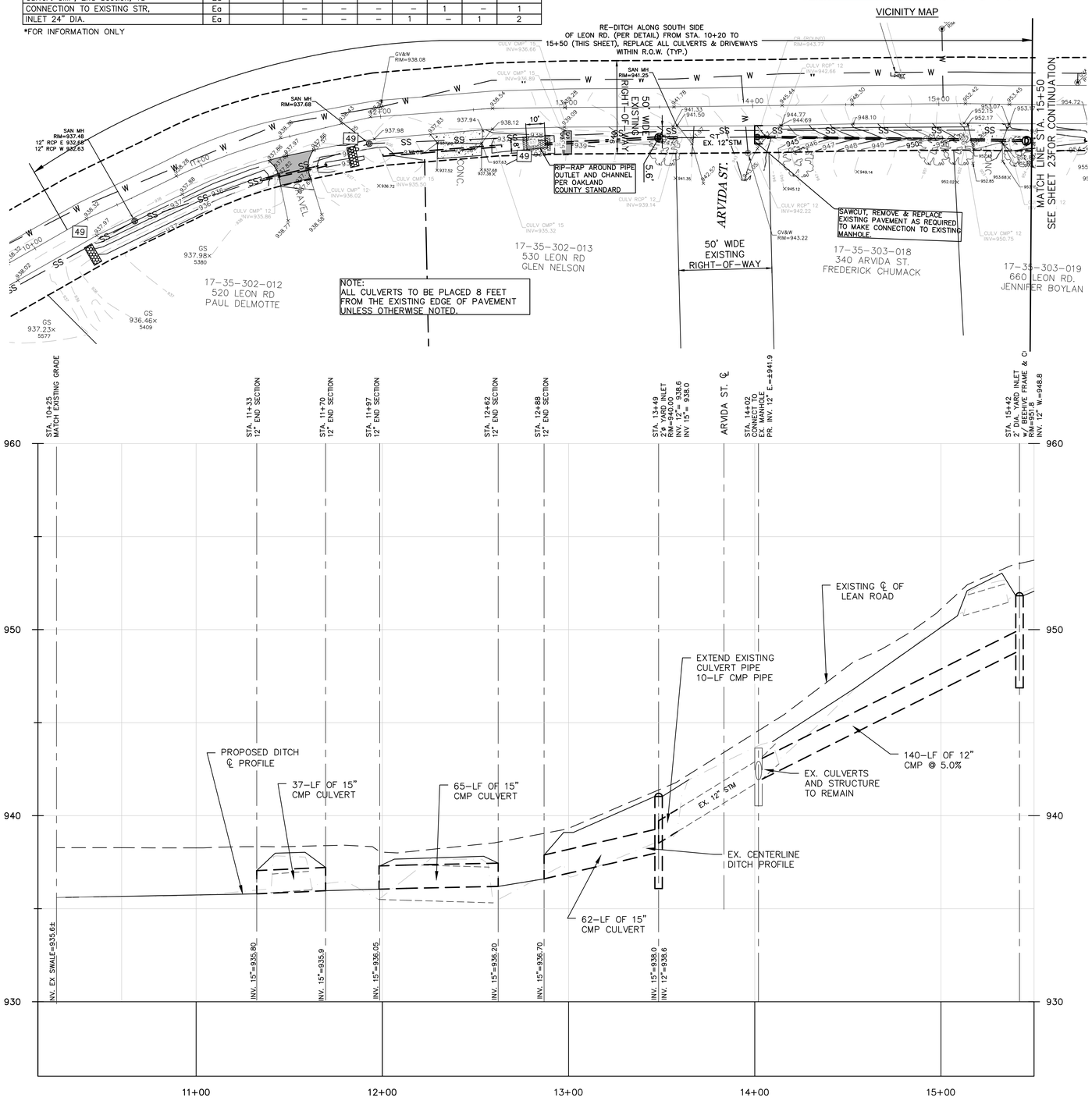
DRIVEWAY QUANTITIES (THIS SHEET)

ITEM DESCRIPTION	UNIT		STA. 11+33 RT.	STA. 11+97 RT.	STA. 12+88 RT.	STA. 13+49 RT.	STA. 14+02 RT.	STA. 15+06 RT.	TOTALS
Approach, 21AA, 6"	Syd		30	20	–	–	–	30	80
HMA Approach, 3"	Ton		5.45	–	–	–	–	–	5.45
Concrete Approach, 6"	Syd		–	20	–	–	–	30	50
Culvert CMP, 12"	Lft		–	–	–	10	140	36	186
Culvert CMP, End Section, 12"	Ea		–	–	–	–	–	1	1
Culvert CMP, 15"	Lft		37	65	62	–	–	–	164
Culvert CMP, End Section, 15"	Ea		2	2	1	–	–	–	5
Culvert CMP, 18"	Lft		–	–	–	–	–	–	–
Culvert CMP, End Section, 18"	Ea		–	–	–	–	–	–	–
CONNECTION TO EXISTING STR,	Ea		–	–	–	–	1	–	1
INLET 24" DIA.	Ea		–	–	–	1	–	1	2

*FOR INFORMATION ONLY

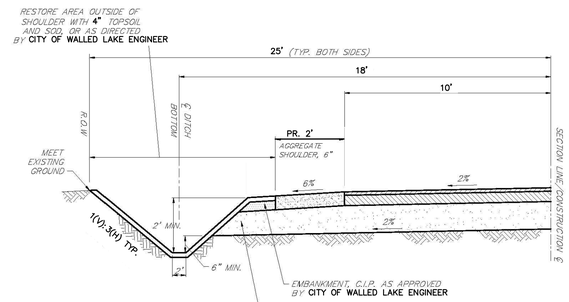


VICINITY MAP



From Sta.	To Sta.	Pipe Diam.	Slope (%)	Length (ft)	Road Elev. (ft)	Upper Invert Elev. (ft)	Lower Invert Elev. (ft)	Mannings Full Velocity (ft/s)	Mannings Full Capacity of Sewer (cfs)
21+32	20+48	12 inch	0.32	84	961.20	957.37	957.10	2.57	2.02
20+45	20+09	12 inch	0.42	36	960.00	957.00	956.85	2.94	2.30
19+37	19+05	12 inch	0.94	32	958.60	956.60	956.30	4.40	3.45
18+46	18+16	12 inch	1.17	30	957.70	955.70	955.35	4.46	3.50
17+96	17+70	12 inch	1.15	26	957.15	955.15	954.85	4.71	3.70
17+59	17+23	12 inch	0.56	36	956.75	954.75	954.55	4.52	3.55
16+13	15+77	12 inch	1.53	36	955.45	953.45	952.90	4.46	3.50
15+42	14+02	12 inch	4.93	140	943.77	948.80	941.90	10.07	7.91
13+59	13+49	12 inch	5.40	10	941.60	939.14	938.60	12.00	14.73
13+49	12+88	15 inch	2.10	62	940.00	938.00	936.70	7.63	9.36
12+62	11+97	15 inch	0.23	65	938.20	936.20	936.05	2.52	3.10
11+70	11+33	15 inch	0.27	37	937.90	935.90	935.80	2.74	3.36

CULVERT CALCULATION TABLE



TYPICAL DITCH RESTORATION CROSS SECTION

49	CHECK DAMS	REDUCES FLOW VELOCITY CATCHES SEDIMENT CAN BE CONSTRUCTED OF LOGS, HAY, ROCK, LUMBER, MASONRY OR SAND BAGS

SOIL EROSION NOTES:

1. INSTALL TEMPORARY CHECKDAM FEATURES PRIOR TO START OF CONSTRUCTION. REPLACE STONE AFTER MULCH BLANKET IS INSTALLED.
2. TOPSOIL, SEED, AND MULCH BLANKET ALL DITCH AREA IMMEDIATELY AFTER INSTALLATION.
3. INSTALL TEMPORARY GRAVEL DRIVE ACCESS IMMEDIATELY AFTER CULVERT INSTALLATION.

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201054571
LICENSED PROFESSIONAL ENGINEER

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

49287 WEST ROAD
WIXOM, MI 48393

(P): 248-437-7803
(F): 866-960-4307

REVISIONS

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REVISED PER CITY COMMENTS DATED 4/25/2019

REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

LEON RD. DITCH RECONSTRUCTION - PLAN & PROFILE

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SECTION 35 | TOWN 2 NORTH, RANGE 8 EAST | CITY OF WALLED LAKE | OAKLAND COUNTY

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 30'
Job No.: 180603
Sheet No.
22

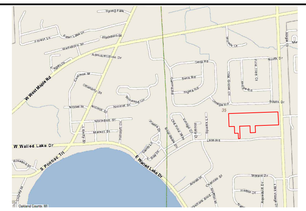
A:\DOC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\BASE\LEON STORM.DWG

NORTH

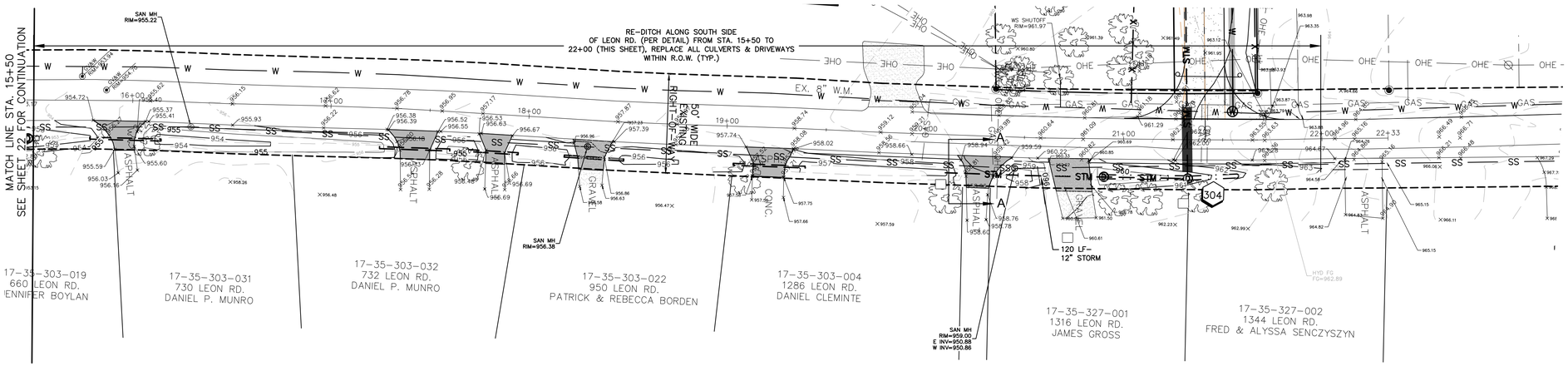
DRIVEWAY QUANTITIES (THIS SHEET)

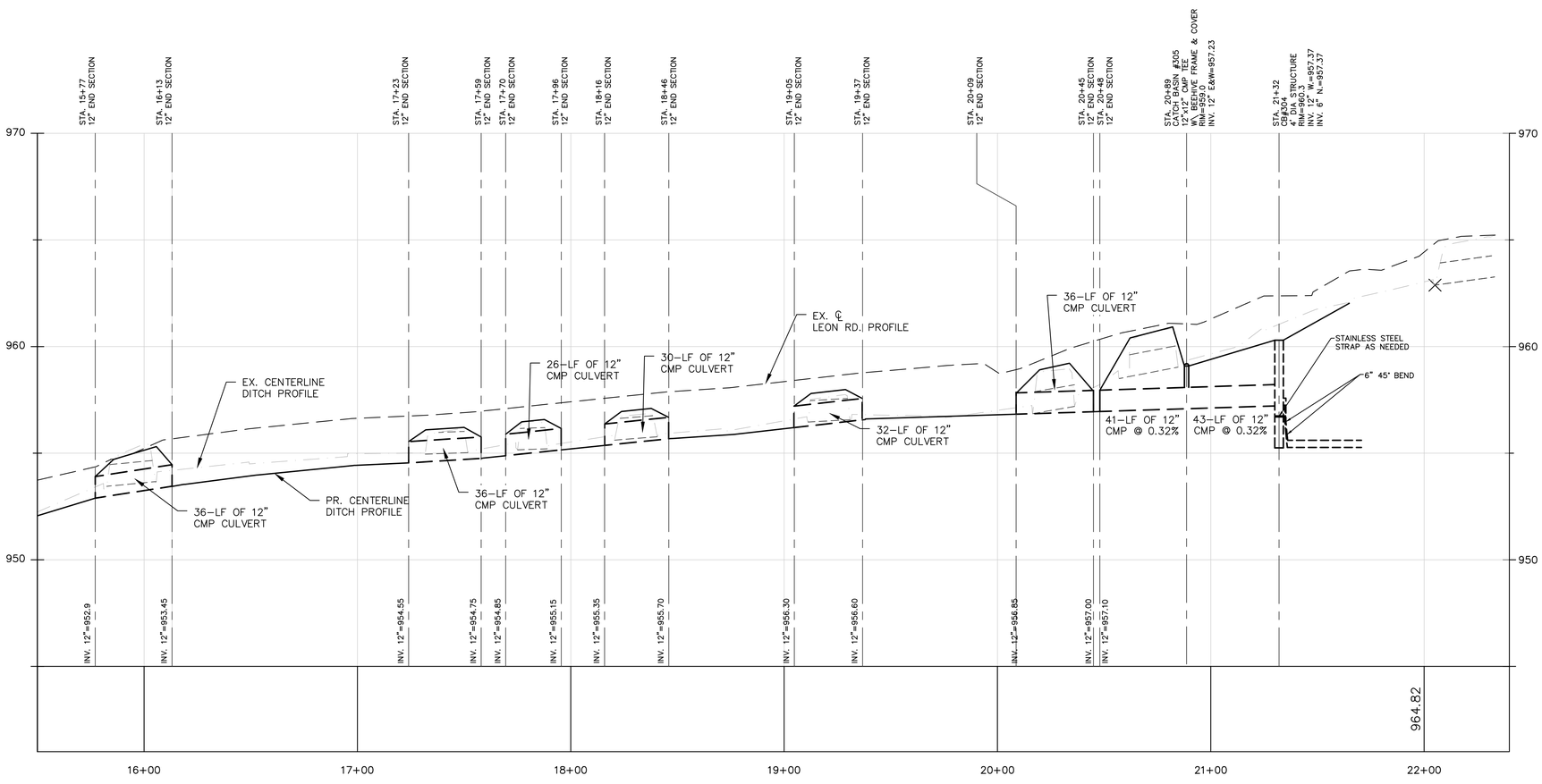
ITEM DESCRIPTION	UNIT	STA. 15+77 RT.	STA. 17+23 RT.	STA. 17+70 RT.	STA. 18+16 RT.	STA. 19+05 RT.	STA. 20+09 RT.	STA. 20+48 RT.		TOTALS
Approach, 21AA, 6"	Syd	25	30	20	25	30	30	35		195
HMA Approach, 3"	Ton	4.5	5.44	3.63	4.54	5.44	5.44	6.35		35.07
Concrete Approach, 6"	Syd	–	–	–	–	–	–	–		50
Culvert CMP, 12"	Lft	36	36	26	30	32	36	84		280
Culvert CMP, End Section, 12"	Ea	2	2	2	2	2	2	1		13
12x12 CMP TEE w/ BEEHIVE GRATE	Ea							1		1
DRAINAGE STR., 48" DIA.	Ea							1		1

*FOR INFORMATION ONLY



VICINITY MAP





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WIXOM, MI 48393

(P): 248-437-7803
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CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

LEON RD. DITCH RECONSTRUCTION - PLAN & PROFILE

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SECTION 35 | TOWN 2 NORTH, RANGE 8 EAST | CITY OF WALLED LAKE | OAKLAND COUNTY

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#2001044575
LICENSED PROFESSIONAL ENGINEER

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
1" = 30'
Job No.: 180603
Sheet No. 23

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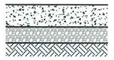
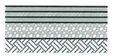
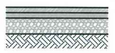


INDUSTRIAL – CONCRETE SECTION
(NO SCALE)



COLLECTOR ROAD – ASPHALT SECTION
(NO SCALE)

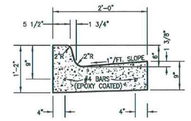


RESIDENTIAL ROAD – ASPHALT SECTION
(NO SCALE)

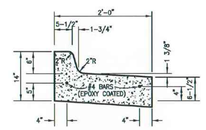
CITY OF WALLED LAKE

TITLE: ASPHALT & CONCRETE CROSS SECTIONS

DRAWN BY: ST
SCALE: NOT TO SCALE
DATE: 6/6/2016
SHEET NO. P–1



CONCRETE CURB & GUTTER
TYPE F
(NO SCALE)

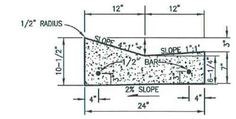


CONCRETE CURB & GUTTER
TYPE F – MODIFIED
(NO SCALE)

CITY OF WALLED LAKE

TITLE: F–4 CURB & GUTTER

DRAWN BY: ST
SCALE: NOT TO SCALE
DATE: 6/6/2016
SHEET NO. P–4

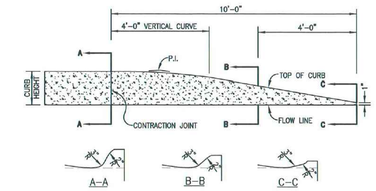


"VALLEY TYPE"
MOUNTABLE CURB & GUTTER DETAILS
(NO SCALE)

CITY OF WALLED LAKE

TITLE: MOUNTABLE CURB & GUTTER

DRAWN BY: ST
SCALE: NOT TO SCALE
DATE: 6/6/2016
SHEET NO. P–5



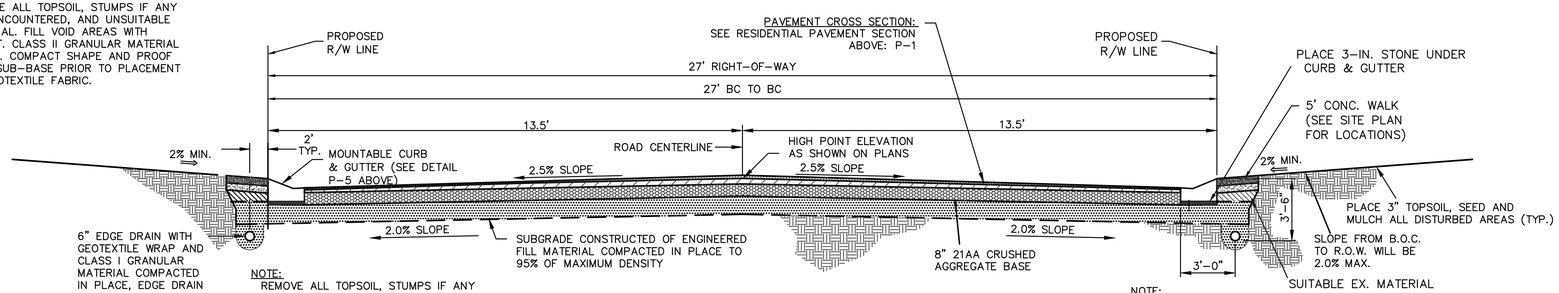
CONCRETE CURB AND GUTTER ENDINGS
(NO SCALE)

CITY OF WALLED LAKE

TITLE: CURB ENDING

DRAWN BY: ST
SCALE: NOT TO SCALE
DATE: 6/6/2016
SHEET NO. P–6

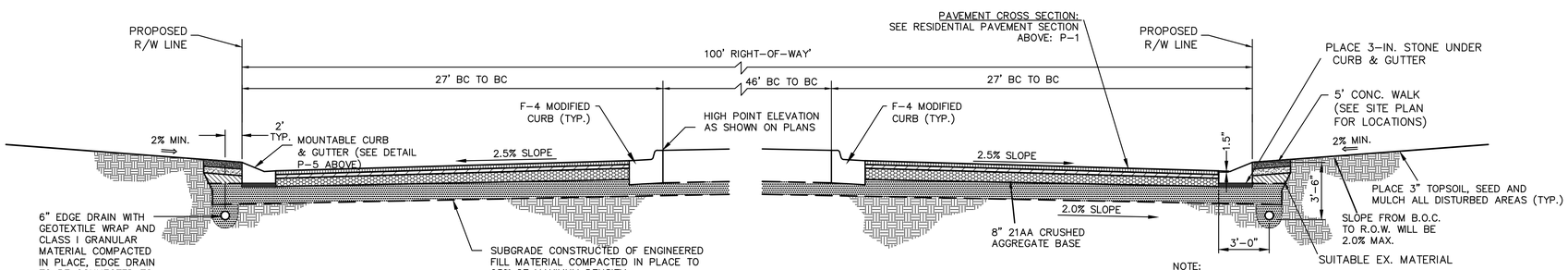
NOTE:
REMOVE ALL TOPSOIL, STUMPS IF ANY ARE ENCOUNTERED, AND UNSUITABLE MATERIAL. FILL VOID AREAS WITH M.D.O.T. CLASS II GRANULAR MATERIAL (C.I.P.). COMPACT SHAPE AND PROOF ROLL SUB–BASE PRIOR TO PLACEMENT OF GEOTEXTILE FABRIC.



NOTE:
REMOVE ALL TOPSOIL, STUMPS IF ANY ARE ENCOUNTERED, AND UNSUITABLE MATERIAL. FILL VOID AREAS WITH M.D.O.T. CLASS II GRANULAR MATERIAL (C.I.P.). COMPACT SHAPE AND PROOF ROLL SUB–BASE PRIOR TO PLACEMENT OF GEOTEXTILE FABRIC.

NOTE:
WEARING COURSE SHALL BE PLACED AFTER HOMES ARE INSTALLED

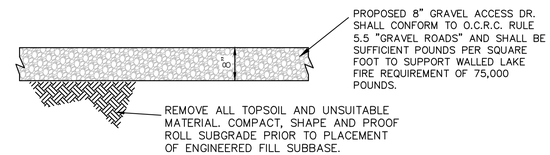
BITUMINOUS PAVEMENT W/ CONCRETE CURBS
(RESIDENTIAL CROSS SECTION)
NO SCALE



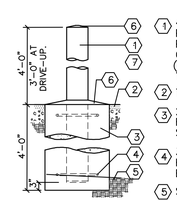
NOTE:
REMOVE ALL TOPSOIL, STUMPS IF ANY ARE ENCOUNTERED, AND UNSUITABLE MATERIAL. FILL VOID AREAS WITH M.D.O.T. CLASS II GRANULAR MATERIAL (C.I.P.). COMPACT SHAPE AND PROOF ROLL SUB–BASE PRIOR TO PLACEMENT OF GEOTEXTILE FABRIC.

NOTE:
WEARING COURSE SHALL BE PLACED AFTER HOMES ARE INSTALLED

CUL–DE–SAC W/ CONCRETE CURBS
(RESIDENTIAL CROSS SECTION)



EMERGENCY GRAVEL ACCESS DETAIL
NO SCALE



ELEVATION

KEYED NOTES

1. 4" DIAMETER STD. STL. PIPE CONCRETE FILLED. PROVIDE 1/4" WELDED CLOSURE PLATE AT BOTTOM. (PAINTED EXPOSED PIPE YELLOW).
2. TOP OF PAVEMENT.
3. 24" DIA. CONCRETE FOUNDATION. USE SONOTUBE FORM.
4. 3/8" DIAMETER WELDED HOOPS. 18" DIAMETER TOP, BOTTOM AND CENTER.
5. SOLID UNDISTURBED SOIL.
6. PROVIDE PITCH, SMOOTH CONCRETE FINISH.
7. 6" BOLLARDS BEHIND TRASH ENCLOSURE AND GATE POSTS.

TYPICAL PIPE BOLLARD DETAIL
NO SCALE

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#2010045757
LICENSED PROFESSIONAL ENGINEER

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

49287 WEST ROAD
WIXOM, MI 48393

(P): 248–773–7656
(F): 866–960–4307

REVISIONS

REVISED PER CITY COMMENTS DATED 1/16/2019
REVISED PER CITY COMMENTS DATED 3/15/2019
REVISED PER CITY COMMENTS DATED 4/25/2019
REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS

WALLED LAKE ROAD DETAILS AND CROSS SECTION

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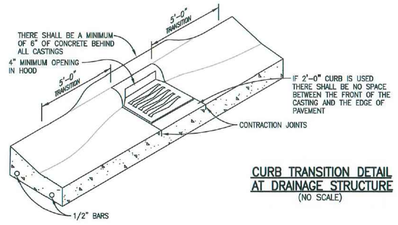
SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR

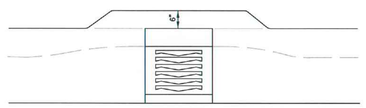
N/A

Job No.: 180603
Sheet No. 24

M:\DDC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\180603 SITE DETAILS.DWG

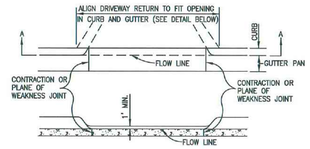


CURB TRANSITION DETAIL AT DRAINAGE STRUCTURE
(NO SCALE)

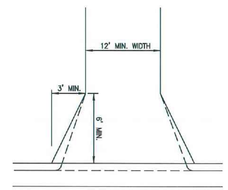


PLAN VIEW
(NO SCALE)

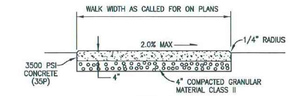
CITY OF WALLED LAKE	DRAWN BY: ST SCALE NOT TO SCALE DATE 6/6/2016	
TITLE CURB TRANSITION AT STRUCTURE	SHEET NO. P-7	



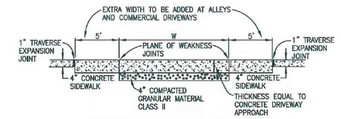
SECTION A-A



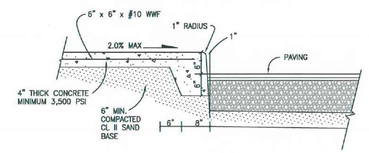
CITY OF WALLED LAKE	DRAWN BY: ST SCALE NOT TO SCALE DATE 6/6/2016	
TITLE SINGLE FAMILY RESIDENTIAL	SHEET NO. P-10	



4" CONCRETE SIDEWALK
(NO SCALE)

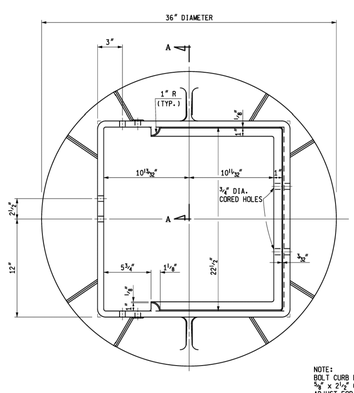


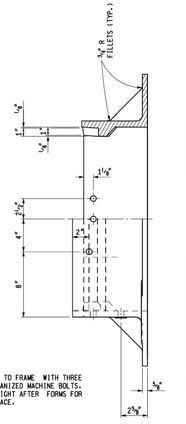
THICKENED CONCRETE SIDEWALK
(NO SCALE)



INTEGRAL CONCRETE WALK / CURB DETAIL
(NO SCALE)

CITY OF WALLED LAKE	DRAWN BY: ST SCALE NOT TO SCALE DATE 6/6/2016	
TITLE SIDEWALK & INTEGRAL CURB AND WALK	SHEET NO. P-3	



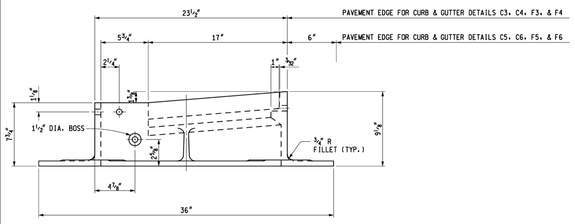


SECTION A - A OF FRAME

HALF FRONT ELEVATION OF FRAME

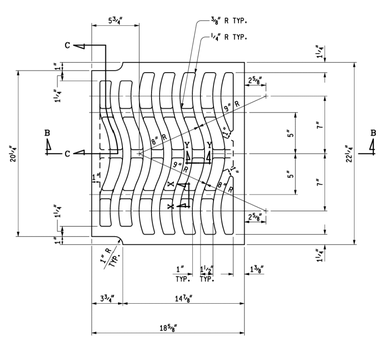
NOTE:
BOLT CURB BOX TO FRAME WITH THREE 5/8" x 2 1/2" GALVANIZED MACHINE BOLTS. ADJUST FOR HEIGHT AFTER FORMS FOR CURB ARE IN PLACE.

PLAN VIEW OF FRAME

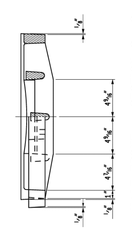


SIDE ELEVATION OF FRAME

MDOT Michigan Department of Transportation PREPARED BY DESIGN DIVISION DRAWN BY: B.L.T. CHECKED BY: W.K.P.	DEPARTMENT DIRECTOR Kirk T. Steudle APPROVED BY: Randy Van Ruthfield DIRECTOR, BUREAU OF FIELD SERVICES APPROVED BY: Paul A. Van Ruthfield DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR COVER K FOR USE WITH CONCRETE CURB & GUTTER DETAILS C, E & F	SHEET 1 OF 3
	9-30-2014 F.H.W.A. APPROVAL	4-8-2014 PLAN DATE	R-15-F

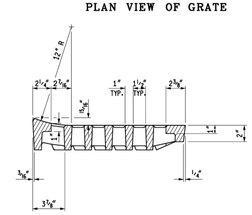


PLAN VIEW OF GRATE

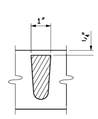


SECTION C - C OF GRATE

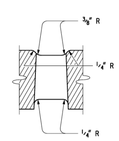
HALF FRONT ELEVATION OF GRATE



SECTION B - B

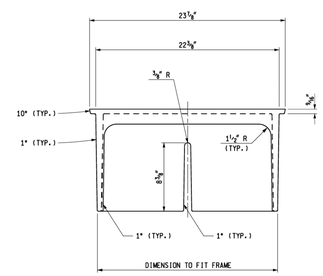


SECTION X - X

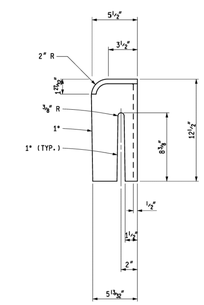


SECTION Y - Y

		MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR COVER K FOR USE WITH CONCRETE CURB & GUTTER DETAILS C, E & F	SHEET 2 OF 3
	9-30-2014 F.H.W.A. APPROVAL	4-8-2014 PLAN DATE	R-15-F



FRONT VIEW OF CURB BOX



SIDE VIEW

NOTES:

THE CASTINGS SHALL MEET THE REQUIREMENTS OF THE CURRENT STANDARD SPECIFICATION FOR GRAY IRON OR DUCTILE IRON CASTINGS.

ALL CASTINGS SHALL BE CLEANED BY CURRENT APPROVED BLASTING METHODS.

THE SEATING FACE OF THE GRATE AND THE SEAT FOR THE SAME ON THE FRAME SHALL BE GROUND OR MACHINED SO THAT THE GRATE WILL HAVE AN EVEN BEARING ON ITS SEAT TO PREVENT ROCKING OR TILTING.

THE CASTINGS SHALL BE FREE OF POURING FAULTS, BLOW HOLES, CRACKS AND OTHER IMPERFECTIONS. THEY SHALL BE SOUND, TRUE TO FORM AND THICKNESS, CLEAN AND NEATLY FINISHED, AND SHALL BE COATED WITH COAL TAR PITCH VARNISH.

THE CURB BOX AND FRAME SHALL BE SHIPPED ASSEMBLED.

THIS COVER IS DESIGNED TO FIT ON ANY INLET, CATCH BASIN OR ON ANY EXISTING SIMILAR STRUCTURE WHEN SO DESIGNATED ON THE PLANS.

		MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR COVER K FOR USE WITH CONCRETE CURB & GUTTER DETAILS C, E & F	SHEET 3 OF 3
	9-30-2014 F.H.W.A. APPROVAL	4-8-2014 PLAN DATE	R-15-F

SEAL

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49287 WEST ROAD
WIXOM, MI 48393

(P): 248-773-7656
(F): 866-960-4307

REVISIONS

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REVISED PER CITY COMMENTS DATED 3/15/2019

REVISED PER CITY COMMENTS DATED 4/25/2019

REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS

WALLED LAKE ROAD & MDOT CASTING DETAILS

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SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR

N/A

Job No.: 180603
Sheet No. 25

M:\DOC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\180603_SITE DETAILS.DWG

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: Soils Investigation - Approximate 11.41-Acre Subdivision
JOB NO. 18-196
LOCATION: Decker and Leon Roads
SURFACE ELEV. 951.1 DATE 6-19-18
Walled Lake, 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		Moist dark brown clayey TOPSOIL with traces of sand, pebbles and vegetation						
			1'3"						
A UL	2		Very stiff moist variegated silty CLAY with sand and pebbles	4					
				8	15.2				
	3			10			*	(5000)	
	4								
			4'6"						
B UL	5		Very compact wet brown SILT & SAND with trace of gravel and moist variegated silty clay seams	2					
				6	15.7	130			
	6			13					
			6'6"						
C UL	7		Very compact wet brown fine sandy SILT with trace of gravel and moist brown sandy clay seams	10					
				12	19.8	128			
	8			13			*	(6500)	
			8'6"						
	9								
D UL	10			8					
				13					
				17					
	11		Extremely stiff moist blue silty CLAY with sand and pebbles						
	12								
	13								
	14								
			14'0"						
E UL	15		Very compact wet brown SAND with traces of silt and gravel	15					
				15	11.7	136			
				10					
	16								
	17								
	18								
			18'0"						
	19								
F UL	20		Compact wet brown fine to medium SAND	5					
				7					
				7					
			20'6"						
	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 4 FT 6 INS.
G.W. ENCOUNTERED AT 14 FT 0 INS.
G.W. AFTER COMPLETION 14 FT 3 INS.
G.W. AFTER HRS. FT INS.
G.W. VOLUMES Heavy

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. 3
PROJECT: Soils Investigation - Approximate 11.41-Acre Subdivision
JOB NO. 18-196
LOCATION: Decker and Leon Roads
SURFACE ELEV. 953.4 DATE 6-19-18
Walled Lake, 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		0'8" Moist dark brown clayey TOPSOIL with vegetation						
A UL	2		Stiff moist brown silty CLAY with sand and pebbles	4					
				5	17.2	126			
	3			7			*	(3500)	
			3'6"						
	4								
B UL	5		Extremely stiff moist variegated silty CLAY with sand and pebbles and occasional stones	12					
				14	11.7	139			
	6			16			*	(8000)	
			6'6"						
C UL	7		Extremely compact wet brown fine SAND with trace of silt	18					
				22	10.5	140			
	8		7'6"	14 / 3"			*	(9000+)	
	9		Extremely stiff moist brown silty CLAY with sand and pebbles						
D UL	10			10					
			9'6"	14					
				21					
	11		Extremely stiff moist blue silty CLAY with sand and pebbles						
	12								
			12'6"						
	13								
	14								
E UL	15		Extremely compact moist brown fine to medium SAND with moist brown silty clay seams	20					
				15					
				17					
	16								
			16'6"						
	17								
	18								
	19								
F UL	20			10					
				14					
				14					
	21		Extremely compact moist brown fine to medium SAND with trace of gravel						
	22								
	23								
	24								
G UL	25			10					
				10					
				14					

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 6 FT 6 INS.
G.W. ENCOUNTERED AT FT INS.
G.W. AFTER COMPLETION 7 FT 3 INS.
G.W. AFTER HRS. FT INS.
G.W. VOLUMES Heavy

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. 2
PROJECT: Soils Investigation - Approximate 11.41-Acre Subdivision
JOB NO. 18-196
LOCATION: Decker and Leon Roads
SURFACE ELEV. 956.5 DATE 6-19-18
Walled Lake, 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" Moist dark brown clayey TOPSOIL with vegetation						
A UL	2		Stiff moist brown silty CLAY with sand and pebbles	4					
				5	19.7	125			
	3			6			*	(3500)	
	4								
			4'6"						
B UL	5		Slightly compact wet brown silty fine to medium SAND with moist variegated sandy clay seams	1					
				2	19.2	129			
	6			2					
			6'0"						
C UL	7		Compact wet brown silty fine SAND with trace of clay and moist brown silty clay seams	8					
				6	16.1	122			
	8			8					
			8'6"						
	9		Stiff moist brown silty CLAY						
D UL	10		9'6"	7					
				10	18.1	127			
				8			*	(5000)	
	11		Very stiff moist blue silty CLAY with sand and pebbles and wet gray silt and fine sand seams						
	12								
	13								
			13'6"						
	14								
E UL	15		Extremely stiff moist brown silty CLAY with moist brown fine to medium sand seams	15					
				23					
	16			10 / 3"					
			16'6"						
	17								
	18		Extremely compact moist brown fine SAND with trace of silt						
	19								
F UL	20			25					
				25					
			20'0"	---					
	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 4 FT 6 INS.
G.W. ENCOUNTERED AT 6 FT 6 INS.
G.W. AFTER COMPLETION 5 FT 0 INS.
G.W. AFTER HRS. FT INS.
G.W. VOLUMES Heavy Cave-in at 5'0"

McDOWELL & ASSOCIATES
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LOG OF SOIL BORING NO. 3 (continued)
PROJECT: Soils Investigation - Approximate 11.41-Acre Subdivision
JOB NO. 18-196
LOCATION: Decker and Leon Roads
SURFACE ELEV. 953.4 DATE 6-19-18
Walled Lake, 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. %
	26								
	27		Extremely compact moist brown fine to medium SAND with trace of gravel						
	28		28'0"						
	29		Extremely compact moist brown fine SAND						
H UL	30		29'9"	30					
				30 / 3"					
	31			---					
	32								
	33								
	34								
	35		Note: Installed 1½" diameter PVC piezometer in boring with screen bottom at 23' and 3' stick up						
	36								
	37								
	38								
	39								
	40								
	41								
	42								
	43								
	44								
	45								
	46								
	47								
	48								
	49								
	50								

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 6 FT. 6 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION 7 FT. 3 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Heavy

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REVISIONS
REVISED PER CITY COMMENTS DATED 3/15/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
SOIL BORING REPORTS

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LICENSED PROFESSIONAL ENGINEER

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CITY OF WALLED LAKE
OAKLAND COUNTY

DATE: 07-08-2019
Drawn By: SDT
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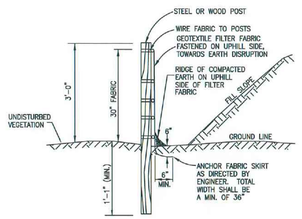
Sheet No. 26

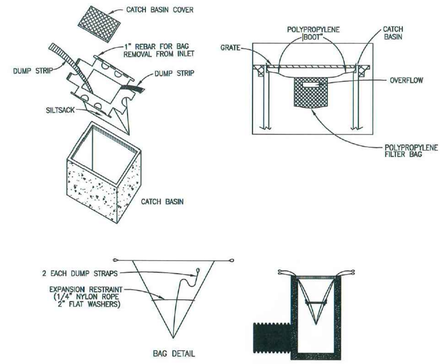
M:\DDC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\SOIL BORING REPORTS.DWG



SILT FENCE DETAIL

NO SCALE

CITY OF WALLED LAKE	DRAWN BY: ST
	SCALE NOT TO SCALE
	DATE 6/6/2016
TITLE SILT FENCE	SHEET NO. SE-1



NOTE:
TEMPORARY INLET SEDIMENT FILTER TO BE INSTALLED ON ALL PAVEMENT CATCH BASINS INLET FILTER TO BE SIMILAR TO "SILTSACK" AS MANUFACTURED BY BMP STORE (800-544-9203) OR "SILTSACK" AS MANUFACTURED BY ATLANTIC CONSTRUCTION FABRICS IN (800-448-3836). CLEAN FILTER AS NEEDED.

INLET SEDIMENT FILTER TEMPORARY

NO SCALE

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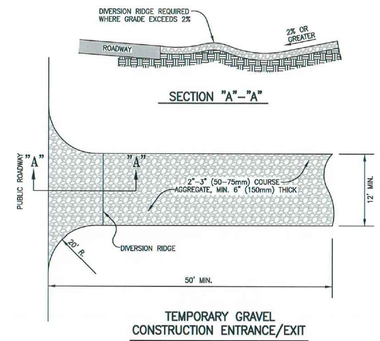
	SCALE NOT TO SCALE
	DATE 6/6/2016
TITLE SILT SACK	SHEET NO. SE-2



TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT

NO SCALE

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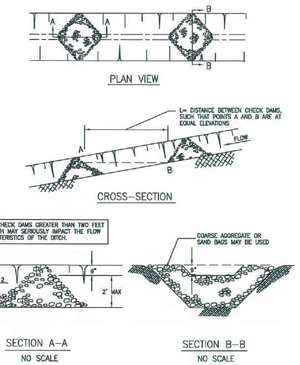
	SCALE NOT TO SCALE
	DATE 6/6/2016
TITLE TRACKING MAT	SHEET NO. SE-3



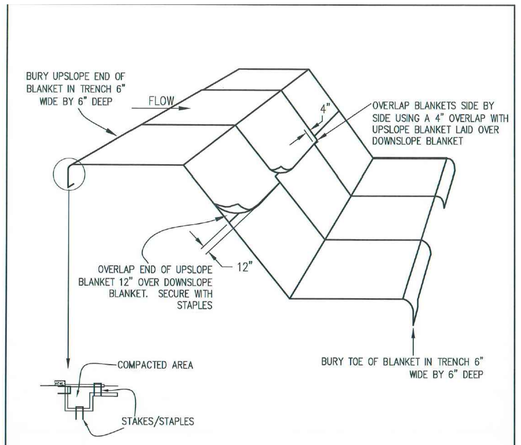
NO SCALE

NO SCALE

CHECK DAM DETAIL

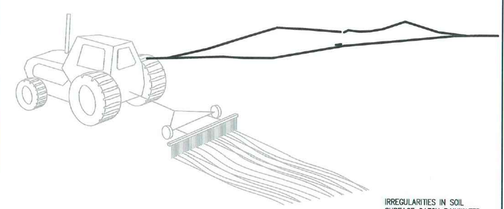
NO SCALE

CITY OF WALLED LAKE	DRAWN BY: ST
	SCALE NOT TO SCALE
	DATE 6/6/2016
TITLE CHECK DAM	SHEET NO. SE-4

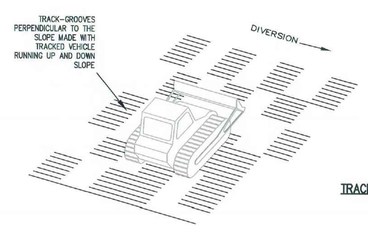


NOTES:
1. PLACE MULCH BLANKET PARALLEL TO FLOW AND ANCHOR SECURELY.
2. WHEN BLANKETS ARE USED IN FLOWING DITCH, BLANKETS SHOULD NOT OVERLAP IN DITCH CENTER PARALLEL TO FLOW.
3. STAPLES INSTALLED/SECURED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
4. WHERE POSSIBLE, CONSTRUCT WITH BIODEGRADABLE MATERIAL.

CITY OF WALLED LAKE	DRAWN BY: ST
	SCALE NOT TO SCALE
	DATE 6/6/2016
TITLE EROSION BLANKETS	SHEET NO. SE-5

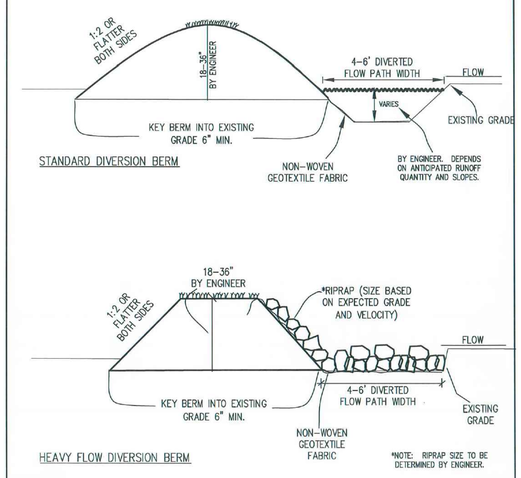


SCARIFICATION



TRACKING

CITY OF WALLED LAKE	DRAWN BY: ST
	SCALE NOT TO SCALE
	DATE 6/6/2016
TITLE SURFACE ROUGHENING	SHEET NO. SE-6



CITY OF WALLED LAKE	DRAWN BY: ST
	SCALE NOT TO SCALE
	DATE 6/6/2016
TITLE DIVERSION BERM	SHEET NO. SE-7

Diffin-Umlor & ASSOCIATES
Civil Engineering • Surveying • Landscaping • Construction Services

49287 WEST ROAD
WIXOM, MI 48393

(P): 248-773-7656
(F): 866-960-4307

REVISIONS

REVISED PER CITY COMMENTS DATED 3/15/2019

REVISED PER CITY COMMENTS DATED 7/08/2019

CLIENT: PULTE HOMES OF MICHIGAN
100 BLOOMFIELD HILLS PKY, SUITE 150
BLOOMFIELD HILLS, MICHIGAN

BEACHWOOD SITE CONDOMINIUMS
CITY OF WALLED LAKE SOIL EROSION DETAILS

These documents are instruments of service in respect of the project. They are not to be used without written verification or adaptation by Diffin-Umlor & Associates (DUA) for the specific purposes intended and will not be used by other parties. User shall indemnify and hold harmless DUA from all claims, damages, losses and expenses including attorneys' fees arising out of or resulting therefrom. Any such verification or adaptation will entitle DUA to further compensation at rates to be agreed upon by User and DUA.

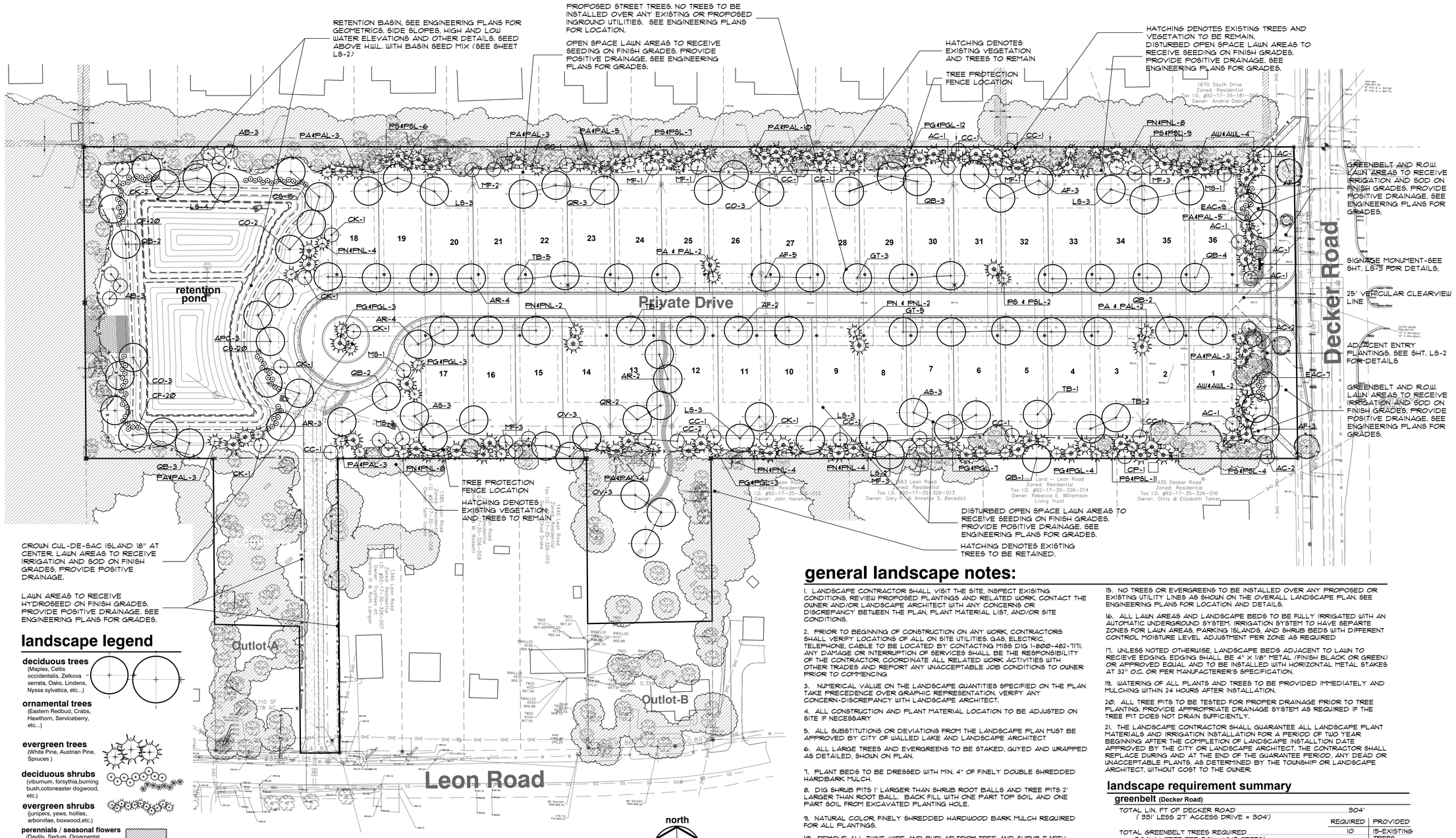
SECTION 35
TOWN 2 NORTH, RANGE 8 EAST
CITY OF WALLED LAKE
OAKLAND COUNTY

SEAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
LICENSED PROFESSIONAL ENGINEER

DATE: 07-08-2019
Drawn By: SDT
P.E.: WES LEE O. UMLOR
N/A
Job No.: 180603
Sheet No.
27

M:\DDC-PROJECTS\PULTE HOMES\180603 - DECKER ROAD\CIVIL 3D\CONSTRUCTION PLANS\180603-WATER DETAILS.DWG



landscape legend

deciduous trees
(Maples, Celtis occidentalis, Zelkova serrata, Oaks, Lindens, Nyssa sylvatica, etc...)

ornamental trees
(Eastern Redbud, Crabs, Hawthorn, Serviceberry, etc...)

evergreen trees
(White Pine, Austrian Pine, Spruces)

deciduous shrubs
(viburnum, forsythia,burning bush,cotoneaster dogwood, etc.)

evergreen shrubs
(junipera, yews, hollies, arborvitae, boxwood,etc.)

perennials / seasonal flowers
(Daylily, Sedum, Ornamental Grasses, Black Eyed Susan, etc...)

landscape plan for:

Beechwood - a planned residential community

City of Walled Lake, Michigan

scale: 0' 25' 50' 100' 150'
1" = 50'- 0"

general landscape notes:

1. LANDSCAPE CONTRACTOR SHALL VISIT THE SITE, INSPECT EXISITNG CONDITIONS, REVIEW PROPOSED PLANTINGS AND RELATED WORK. CONTACT THE OWNER AND/OR LANDSCAPE ARCHITECT WITH ANY CONCERNS OR DISCREPANCY BETWEEN THE PLAN, PLANT MATERIAL LIST, AND/OR SITE CONDITIONS.

2. PRIOR TO BEGINNING OF CONSTRUCTION ON ANY WORK, CONTRACTORS SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES. GAS, ELECTRIC, TELEPHONE, CABLE TO BE LOCATED BY CONTACTING MISS DIG 1-800-482-7171. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COORDINATE ALL RELATED WORK ACTIVITIES WITH OTHER TRADES AND REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER PRIOR TO COMMENCING

3. NUMERICAL VALUE ON THE LANDSCAPE QUANTITIES SPECIFIED ON THE PLAN TAKE PRECEDENCE OVER GRAPHIC REPRESENTATION. VERIFY ANY CONCERN-DISCREPANCY WITH LANDSCAPE ARCHITECT.

4. ALL CONSTRUCTION AND PLANT MATERIAL LOCATION TO BE ADJUSTED ON SITE IF NECESSARY

5. ALL SUBSTITUTIONS OR DEVIATIONS FROM THE LANDSCAPE PLAN MUST BE APPROVED BY CITY OF WALLED LAKE AND LANDSCAPE ARCHITECT

6. ALL LARGE TREES AND EVERGREENS TO BE STAKED, GUYED AND WRAPPED AS DETAILED, SHOWN ON PLAN.

7. PLANT BEDS TO BE DRESSED WITH MIN. 4" OF FINELY DOUBLE SHREDDED HARDBARK MULCH.

8. DIG SHRUB PITS 1' LARGER THAN SHRUB ROOT BALLS AND TREE PITS 2' LARGER THAN ROOT BALL. BACK FILL WITH ONE PART TOP SOIL AND ONE PART SOIL FROM EXCAVATED PLANTING HOLE.

9. NATURAL COLOR, FINELY SHREDDED HARDWOOD BARK MULCH REQUIRED FOR ALL PLANTINGS.

10. REMOVE ALL TWINE, WIRE AND BURLAP FROM TREE AND SHRUB EARTH BALLS, AND FROM TREE TRUNKS. 4" THICK BARK MULCH FOR TREES IN 4' DIA. CIRCLE WITH 3" PULLED AWAY FROM TRUNK . 4" THICK BARK MULCH FOR SHRUBS AND 4" THICK BARK MULCH FOR PERENNIALS.

11. PLANT MATERIAL QUALITY & INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN ASSOCIATION OF NURSERYMEN LANDSCAPE STANDARDS.

12. PROVIDE PEAT SOD FOR ALL NEW AND DISTURBED LAWN AREAS UNLESS NOTED OTHERWISE.

13. ALL PLANTING AREAS TO BE PREPARED WITH APPROPRIATE SOIL MIXTURES AND FERTILIZER BEFORE PLANT INSTALLATION.

14. PLANT TREES AND SHRUBS GENERALLY NO CLOSER THAN THE FOLLOWING DISTANCES FROM SIDEWALKS, CURBS AND PARKING STALLS:
   a). SHADE TREES_____ 5 FT.
   b). ORNAMENTAL AND EVERGREEN TREES (CRAB, PINE, SPRUCE, ETC.)_____ 10 FT.
   c). SHRUBS THAT ARE LESS THAN 1 FOOT TALL AND WIDE AT MATURITY_____ 2 FT.

15. NO TREES OR EVERGREENS TO BE INSTALLED OVER ANY PROPOSED OR EXISTING UTILITY LINES AS SHOWN ON THE OVERALL LANDSCAPE PLAN. SEE ENGINEERING PLANS FOR LOCATION AND DETAILS.

16. ALL LAWN AREAS AND LANDSCAPE BEDS TO BE FULLY IRRIGATED WITH AN AUTOMATIC UNDERGROUND SYSTEM. IRRIGATION SYSTEM TO HAVE SEPARTE ZONES FOR LAWN AREAS, PARKING ISLANDS, AND SHRUB BEDS WITH DIFFERENT CONTROL MOISTURE LEVEL ADJUSTMENT PER ZONE AS REQUIRED

17. UNLESS NOTED OTHERWISE, LANDSCAPE BEDS ADJACENT TO LAWN TO RECIEVE EDGING. EDGING SHALL BE 4" X 1/8" METAL (FINISH BLACK OR GREEN) OR APPROVED EQUAL AND TO BE INSTALLED WITH HORIZONTAL METAL STAKES AT 32" O.C. OR PER MANUFACTERER'S SPECIFICATION.

19. WATERING OF ALL PLANTS AND TREES TO BE PROVIDED IMMEDIATELY AND MULCHING WITHIN 24 HOURS AFTER INSTALLATION.

20. ALL TREE PITS TO BE TESTED FOR PROPER DRAINAGE PRIOR TO TREE PLANTING. PROVIDE APPROPRIATE DRAINAGE SYSTEM AS REQUIRED IF THE TREE PIT DOES NOT DRAIN SUFFICIENTLY.

21. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE PLANT MATERIALS AND IRRIGATION INSTALLATION FOR A PERIOD OF TWO YEAR BEGINNING AFTER THE COMPLETION OF LANDSCAPE INSTALLTION DATE APPROVED BY THE CITY OR LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE DURING AND AT THE END OF THE GUARANTEE PERIOD, ANY DEAD OR UNACCEPTABLE PLANTS, AS DETERMINED BY THE TOWNSHIP OR LANDSCAPE ARCHITECT, WITHOUT COST TO THE OWNER.

landscape requirement summary

greenbelt (Decker Road)

TOTAL LIN. FT OF DECKER ROAD _____ 304'
(331' LESS 27' ACCESS DRIVE = 304')

	REQUIRED	PROVIDED
TOTAL GREENBELT TREES REQUIRED (304' / 1-TREE PER 30' = 10.13 TREES)	10	15-EXISTING TREES

open space

TOTAL ACRES OF OPEN SPACE AREA PROVIDED _____ 206,460

	REQUIRED	PROVIDED
TOTAL NO. OF OPEN SPACE TREES REQUIRED (206,460 SQFT / 1-TREE PER 3,000 SQ.FT. = 68.82 TREES)	69	100+ EXISTING TREE SAVED

tree replacement provided

8" CANOPY TREE	105
10' EVERGREEN TREE PER	78
12' EVERGREEN TREE PER	71
TOTAL	254

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:

client:
PULTE HOMES
100 Bloomfiled Hills Parkway,Suite 150, Bloomfield Hills, Michigan 48304

project:
BEECHWOOD
A Planned Residential Site Condominium Community

project location:
Decker Road and Leon Road
Walled Lake, Michigan

sheet title:
GENERAL PLANTING DETAIL

job no./issue/revision date:
LS18.051.05 PRELIM 5-8-2018
LS18.051.06 PRELIM 6-1-2018
LS19.027.02 SPA 2-21-2019
LS19.027.04 SPA 4-12-2019

drawn by: **JP,**
checked by: **FP, OG**
date: **2-11-2019**

notice:
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Do Not scale drawings. Use figured dimensions only

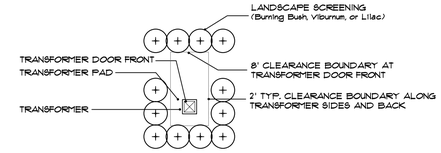
3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171
For free location of public utility lines
The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no: **LS19.027.02**

sheet no: **LS-1** of 3

plant material list

key	quant. LS-1	botanical name	common name	size	comments
		LARGE AND SMALL DECIDUOUS TREES			
LS	15	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	3" BB	
AF	13	ACER X FREEMANII 'JEFFERSRED'	AUTUMN BLAZE RED MAPLE	3" BB	
AS	6	ACER SACCHARUM	SUGAR MAPLE	3" BB	
QB	14	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	3" BB	
QR	8	QUERCUS RUBRA	RED OAK	3" BB	
CO	10	CELTIS OCCIDENTALIS	HACKBERRY	3" BB	
AR	13	ACER R. 'FRANKSRED'	RED SUNSET RED MAPLE	3" BB	
TB	9	TILIA AMERICANA 'BOULEVARD'	BOULEVARD LINDEN	3" BB	
APC	9	ACER PLATANOIDES 'CRIMSON KING'	CRIMSON KING MAPLE	3" BB	
OV	8	OSTRYA VIRGINIANA	AMERICAN HOPHORNBEAM	3" BB	
MS	7	MALUS 'SNOWDRIFT'	SNOWDRIFT CRABAPPLE	2" BB	
MF	12	MALUS FLORIBUNDA	JAPANESE FLOWERING CRABAPPLE	2" BB	
CK	2	CORNUS KOUSA	KOUSA DOGWOOD	2" BB	
AC	8	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	10' BB	(MULTI-STEM)
AB	6	AESCULUS X CARNEA 'BRIOTII'	RED HORSE CHESTNUT	2" BB	
CC	13	CERCIS CANADENSIS	EASTERN REDBUD (MULTI-STEM)	2" BB	
		SHRUBS			
CS	38	CORNUS STOLONIFERA	REDTWIG DOGWOOD	3' BB	60" O.C. SPACING
CF	40	CORNUS FLAVIRAMEA	YELLOWTWIG DOGWOOD	3' BB	60" O.C. SPACING
EAC	16	EUONYMUS ALATUB COMPACTA	DWARF WINGED BURNING BUSH	3' BB	60" O.C. SPACING
		LARGE AND SMALL EVERGREENS			
AW	7	ABIES CONCOLOR	CONCOLOR WHITE FIR	8' BB	
AWL	9	ABIES CONCOLOR	CONCOLOR WHITE FIR	10' BB O	
PA	20	PICEA ABIES	NORWAY SPRUCE	8' BB	
PAL	19	PICEA ABIES	NORWAY SPRUCE	10' BB O	
PS	16	PINUS STROBUS	WHITE PINE	8' BB	
PSL	15	PINUS STROBUS	WHITE PINE	10' BB O	
PG	17	PICEA GLAUCA	WHITE SPRUCE	8' BB	
PGL	14	PICEA GLAUCA	WHITE SPRUCE	10' BB O	
PN	17	PINUS NIGRA	AUSTRIAN PINE	8' BB	
PNL	15	PINUS NIGRA	AUSTRIAN PINE	10' BB O	



transformer pad planting detail

SCALE 1"=20'-0"

A MINIMUM OF 2' SEPARATION BETWEEN TRANSFORMER AND FULL GROUN SHRUBS AND TREES. GROUND COVERS ALLOWED UP TO TRANSFORMER PAD IF MAINTAINED BELOW 4" FULL GROWTH. IF TRANSFORMER FACES TOWARDS THE HOUSE, THEN THE SAME CONDITIONS EXIST. NO FULL GROWTH IN FRONT OF THE TRANSFORMER FOR AT LEAST A MINIMUM OF 8'. THERE ARE NO WAIVERS GRANTED TO THE ABOVE CONDITION. DETAIL PER THE DETROIT EDISON COMPANY-SERVICE PLANNING DEPARTMENT (9-11-98)

SEE ENGINEERING PLANS FOR PROPOSED LOCATIONS, TOTAL NUMBER OF TRANSFORMERS AND FINAL LOCATION PER DETROIT EDISON REQUIREMENTS.

landscape maintenance notes:

LANDSCAPE MAINTENANCE PROCEDURES AND FREQUENCIES TO BE FOLLOWED SHALL BE SPECIFIED ON THE LANDSCAPE PLAN, ALONG WITH THE MANNER IN WHICH THE EFFECTIVENESS, HEALTH AND INTENDED FUNCTIONS OF THE VARIOUS LANDSCAPE AREAS ON THE SITE WILL BE ENSURED.

1. LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE FROM DEBRIS AND REFUSE.

2. PRUNING SHALL BE MINIMAL AT THE TIME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED BRANCHES. SUBSEQUENT PRUNING SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE THEIR APPROVED PURPOSE.

3. ALL DEAD OR DISEASED PLANT MATERIAL SHALL BE REMOVED AND REPLACED WITHIN SIX (6) MONTHS AFTER IT DIES OR IN THE NEXT PLANTING SEASON, WHICHEVER OCCURS FIRST. THE PLANTING SEASON FOR DECIDUOUS PLANTS SHALL BE BETWEEN MARCH 15 AND NOVEMBER 15 OR UNTIL THE PREPARED SOIL BECOMES FROZEN. THE PLANTING SEASON FOR EVERGREEN PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1. PLANT MATERIAL INSTALLED TO REPLACE DEAD OR DISEASED MATERIAL SHALL BE AS CLOSE AS PRACTICAL TO THE SIZE OF THE MATERIAL IT IS INTENDED TO REPLACE.

4. THE APPROVED LANDSCAPE PLAN SHALL BE CONSIDERED A PERMANENT RECORD AND INTEGRAL PART OF THE SITE PLAN APPROVAL. UNLESS OTHERWISE APPROVED IN ACCORDANCE WITH THE AFOREMENTIONED PROCEDURES, ANY REVISIONS TO, OR REMOVAL OF, PLANT MATERIALS WILL PLACE THE PARCEL IN NON-CONFORMITY WITH THE APPROVED LANDSCAPE PLAN, AND SHALL BE VIEWED AS A VIOLATION OF THIS ORDINANCE AND THE AGREED UPON TERMS OF THE FINAL SITE PLAN APPROVAL.

detention basin seed mix:

Sedge Meadow Mix: *(Edge Zone)*
A mix of sedges, grasses and wildflowers recommended for soils that are saturated during most of the growing season. Use just above the normal waterline in the capillary zone in our Lake Edge Enhancement System.

Sedge Meadow Mix oz/acre

1	Carex comosa (Bristly Sedge)
1	Carex cristatella (Crested Sedge)
6	Carex frankii (Frank's Sedge)
2	Carex hystericina (Porcupine Sedge)
4	Carex lurida (Lurid Sedge)
2	Carex stipata (Awl-Fruited Sedge)
2	Carex tribuloides (Pointed Oval Sedge)
6	Carex vulpinoidea (Fox Sedge)
64	Elymus virginicus (Virginia Wild Rye)
6	Glyceria striata (Fowl Manna Grass)
8	Leersia oryzoides (Rice Cut Grass)
8	Panicum virgatum (Switchgrass)
2	Scirpus atrovirens (Dark Green Bulrush)
112	

Forbs oz/acre

	Alisma subcordatum (Water plantain)
	Angelica atropurpurea (Angelica)
	Aster novae-angliae (New England Aster)
1	Aster puniceus (Swamp Aster)
1	Aster umbellatus (Flat-topped Aster)
3	Cassia hebecarpa (Wild Senna)
2	Eupatorium maculatum (spotted Joe-Pye Weed)
2	Eupatorium perfoliatum (Boneset)
2	Helenium autumnale (Autumn Sneezeweed)
2	Liatris spicata (Dense Blazing Star)
1	Lobelia cardinalis (Cardinal Flower)
1	Lobelia siphilitica (Great Blue Lobelia)
2	Penstemon digitalis (Foxglove Beardtongue)
1	Pycnanthemum virginianum (Mountain Mint)
3	Rudbeckia fulgida speciosa (Showy Black-Eyed Susan)
4	Rudbeckia hirta (Black-Eyed Susan)
3	Rudbeckia subtomentosa (Sweet Black-Eyed Susan)
2	Silphium integrifolium (Rosinweed)
2	Silphium perfoliatum (Cupplant)
2	Silphium terebinthinaceum (Prairie Dock)
1	Solidago patula (Swamp Goldenrod)
2	Solidago riddellii (Riddell's Goldenrod)
2	Verbena hastata (Blue Vervain)
2	Vernonia fasciculata (Smooth Ironweed)
1	Veronicastrum virginicum (Culver's Root)
1	Zizia aurea (Golden Alexanders)
48	

Components per acre

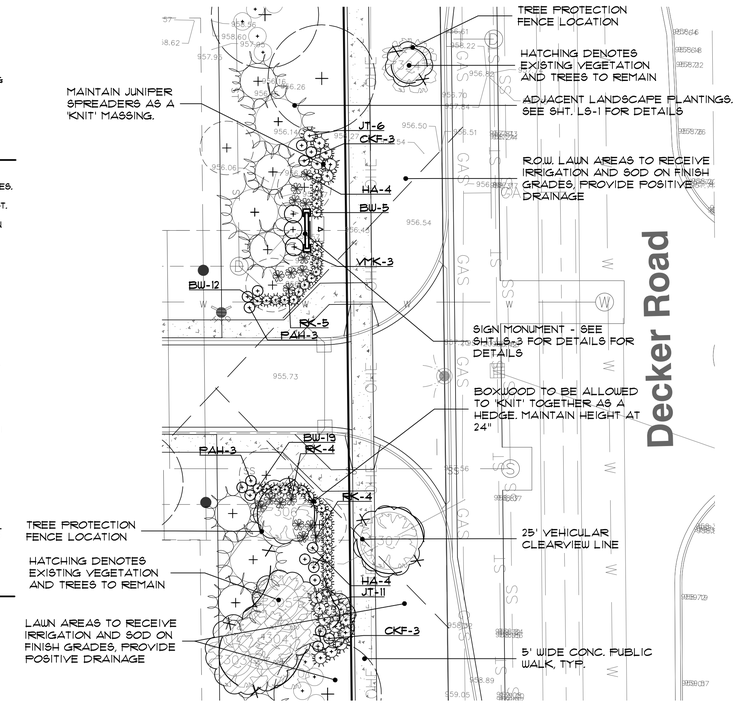
Sedge Meadow	8 lbs grasses and sedges, 3 lbs forbes

annual cover: *(Edge, Upland & Dry Upland Zones)*

50% Temporary Grasses: will contain two of the following species.

Seed Oats	*Avena sativa*
Annual Rye	*Lolium multiflorum*
Winter Wheat	*Triticum aestivum*
American Slough Grass	*Beckmannia syzigachne*

SOURCE:
NATIVESCAPE L.L.C
P.O. BOX 122
MANCHESTER, MICHIGAN 48158
ph: 517.456.9696
www.nativescape.net

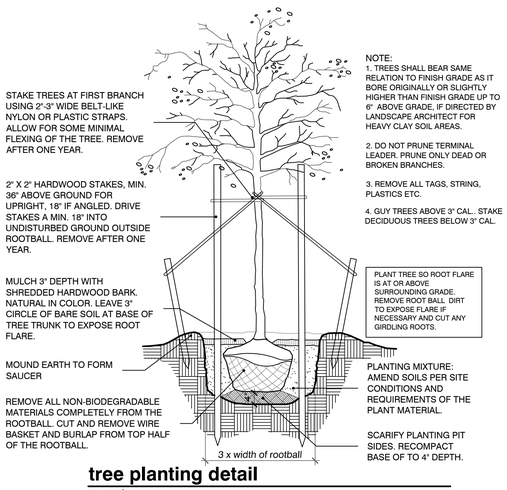


entrance landscape planting details

SCALE 1"=20'-0"

plant material list entry landscape

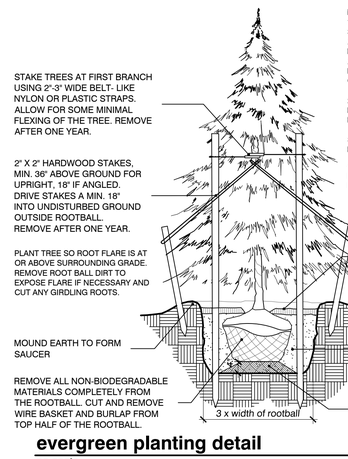
key	quant. LS-1	botanical name	common name	size	comments
		SHRUBS			
BW	36	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	18" BB	24" O.C. SPACING
RK	13	ROSA X. 'DOUBLE RED''	OSA EASY DOUBLE RED ROSE	#5 CONT	
HA	8	HYDRANGEA ANNEBELLE	ANNABELLE HYDRANGEA	#5 CONT	
JT	17	JUNIPERUS S. HUGHES	HUGHES JUNIPER	24" BB	
VMK	3	VIBURNUM X.B 'MOHAWK	MOHAWK VIBURNUM	3 1/2' B.B.	
		PERENNIALS AND GRASSES			
CKF	6	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	#3 CONT.	
PAH	6	PENNISETUM ALOPECUROIDES 'HAMELN'	DWARF FOUNTAIN GRASS	#3 CONT.	



NOTE:
1. TREES SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 6" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.
2. DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.
3. REMOVE ALL TAGS, STRING, PLASTICS ETC.
4. GUY TREES ABOVE 3" CAL.. STAKE DECIDUOUS TREES BELOW 3" CAL.

tree planting detail

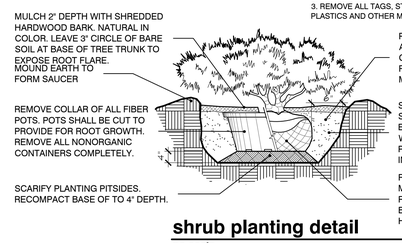
no scale



NOTE:
1.EVERGREEN TREE SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 6" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.
2. DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.
3. REMOVE ALL TAGS, STRING, PLASTICS ETC.
4. GUY EVERGREEN TREES ABOVE 12' HEIGHT. STAKE EVERGEEN TREE BELOW 12' HEIGHT.

evergreen planting detail

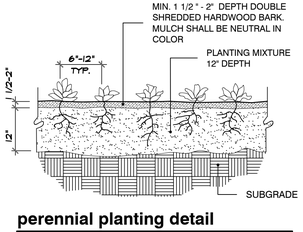
no scale



NOTE:
1. SHRUB SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 4" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.
2. PRUNE ONLY DEAD OR BROKEN BRANCHES.
3. REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS

shrub planting detail

no scale



perennial planting detail

no scale

Plant Material List, Planting Details and Notes

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:

client:
PULTE HOMES
100 Bloomfiled Hills Parkway,Suite 150,
Bloomfield Hills, Michigan 48304

project:
BEECHWOOD
A Planned Residential Site Condominium Community

project location:
Decker Road and Leon Road
Walled Lake, Michigan

sheet title:
plant material list, planting details and landscape notes

job no./issue/revision date:

LS18.051.05 PRELIM 5-8-2018
LS18.051.06 PRELIM 6-1-2018
LS19.027.02 SPA 2-21-2019
LS19.027.04 SPA 4-12-2019

drawn by:
JP,
checked by:
FP, OG
date:
2-11-2019
notice:

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For free location of public utility lines

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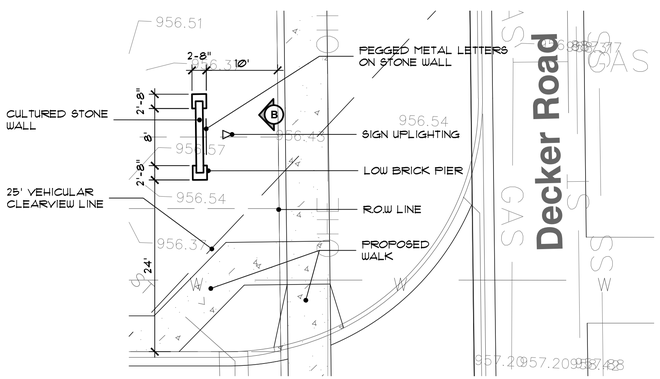
project no:
LS19.027.02

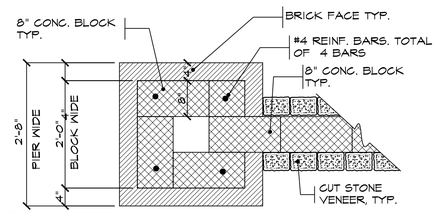
sheet no:
LS-2 of 3

entry wall monument / pier/ signage / notes:

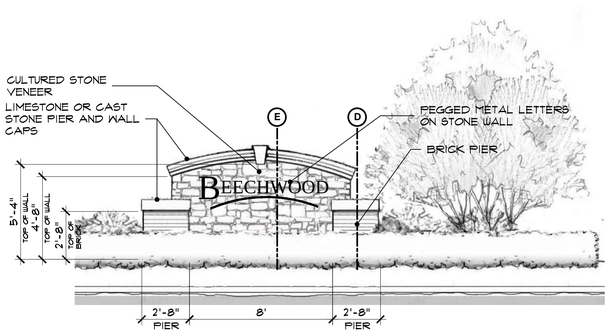
1. LOCATE AND STAKE ALL EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTION. COORDINATE ANY ADJUSTMENTS WITH ARCHITECT.
2. ALL ENTRY WALL LIGHTING SHALL BE CONTROLLED WITH A 'PHOTO-EYE' SWITCH. ALL LIGHTING SHALL BE SHIELDED FROM PUBLIC R.O.W.'S AND ADJACENT PROPERTIES.
3. SEE LANDSCAPE PLAN FOR PROPOSED PLANTINGS ADJACENT TO PROPOSED ENTRY SIGN MONUMENTS, PIERS & FENCES.
4. VERIFY SOIL BEARING CAPACITY PRIOR TO TO ENTRY SIGN MONUMENT & PIER CONSTRUCTION. IF SOIL BEARING CAPACITY FALLS BELOW STANDARD REQUIREMENTS, CONSULT STRUCTURAL ENGINEER FOR RECOMMENDATION OF FINAL ENTRY MONUMENT & PIER FOOTING DESIGN.
5. METAL SIGN TEXT AND LOGO DESIGN BY OTHER, PRIOR TO SIGN INSTALLATION, PERMITS TO BE OBTAINED PER CITY OF WIXOM. REQUIREMENTS AND APPROVALS.
6. ALL INFORMATION CONTAINED HEREIN IS SUBJECT TO APPROVAL, AND PERMITS PERMITS TO BE OBTAINED PRIOR TO CONSTRUCTION.
7. FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED SOIL WITH AN ASSUMED SAFE BEARING CAPACITY OF 2000 P.S.I. IF SOIL OF THIS CAPACITY IS NOT FOUND AT THE ELEVATIONS INDICATED, FOOTINGS SHALL BE ENLARGED OR LOWERED AT THE DIRECTION OF THE SOIL ENGINEER. VERIFY FOUNDATION SOIL BEARING PRESSURE IN FIELD BY SOILS ENGINEER.
8. MINIMUM CONCRETE STRENGTH TO BE 3000 P.S.I. @ 28 DAYS, U.O.N.: SLABS SHALL BE 3500 P.S.I. MIN. U.O.N.: EXPOSED CONCRETE SHALL BE 4000 P.S.I. WITH 6% ± 1% ENTRAINED AIR U.O.N.
9. ALL CONCRETE WORK AND PLACEMENT SHALL CONFORM TO THE LATEST RECOMMENDATIONS OF A.C.I.
10. PROVIDE MINIMUM 3" CONCRETE COVER FOR REINFORCEMENT BARS BELOW GRADE AND MINIMUM 2" CONCRETE COVER FOR REINFORCEMENT BARS ABOVE GRADE.



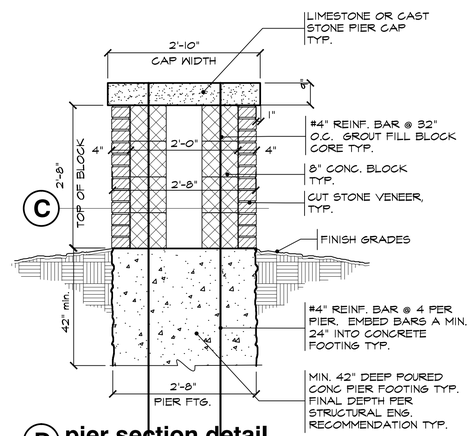
A entrance sign site plan
SCALE 1"=20'-0"



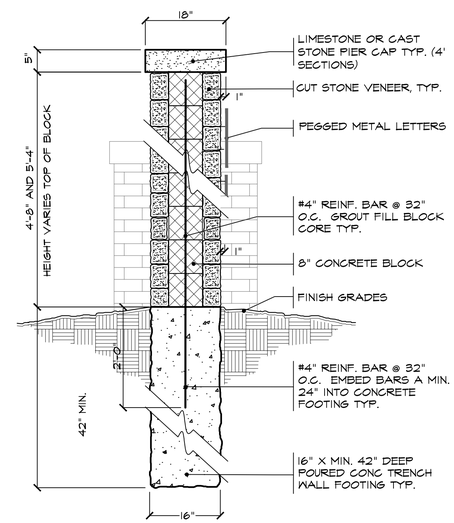
C pier section detail
SCALE: 3/4"= 1'-0"



B entrance sign elevation
SCALE 1"=20'-0"



D pier section detail
SCALE: 3/4"= 1'-0"



E wall section detail
SCALE: 3/4"= 1'-0"

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
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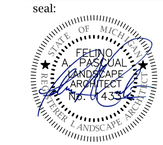
seal:



client:

PULTE HOMES

100 Bloomfiled Hills Parkway,Suite 150, Bloomfield Hills, Michigan 48304

project:

BEECHWOOD
A Planned Residential Site Condominium Community

project location:

Decker Road and Leon Road
Walled Lake, Michigan

sheet title:
ENTRY MONUMENT

job no./issue/revision date:

LS18.051.05	PRELIM 5-8-2018
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drawn by:
JP,

checked by:
FP, OG

date:
2-11-2019

notice:
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project no:
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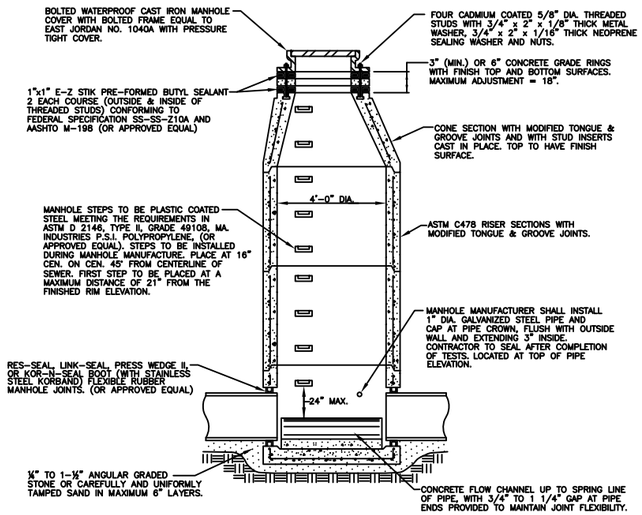
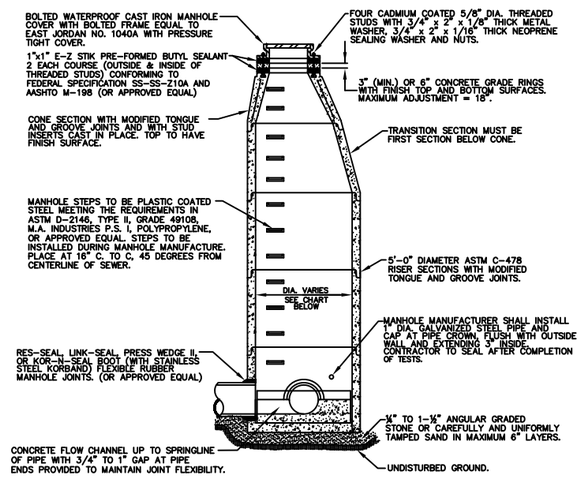
sheet no:
LS-3 of 3



STANDARD MANHOLE

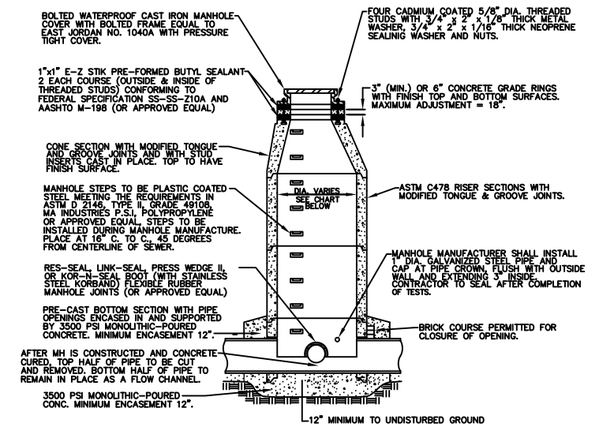
MAX. PIPE SIZE FOR STRAIGHT THRU INSTALLATION	MAX. PIPE SIZE FOR RIGHT ANGLE INSTALLATION
24"	18"



STANDARD OVERSIZED MANHOLE

MANHOLE SIZING CHART

MANHOLE DIAMETER	MAX. PIPE SIZE FOR STRAIGHT THRU INST.	MAX. PIPE SIZE FOR RIGHT ANGLE INST.
5'	36"	24"
6'	42"	36"
7'	60"	42"



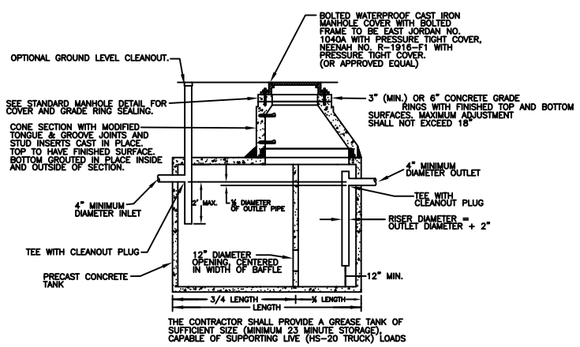
MANHOLE CONSTRUCTED OVER EXISTING SEWER

MANHOLE SIZING CHART

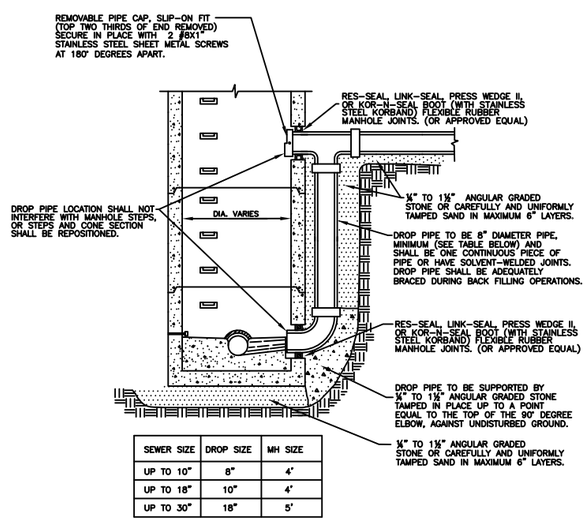
MANHOLE DIAMETER	MAX PIPE SIZE FOR STRAIGHT THRU INST.
4'	24"
5'	36"
6'	42"
7'	60"

SANITARY SEWER CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE LOCAL UNIT OF GOVERNMENT AND THE WATER RESOURCES COMMISSIONER (WRC). ALL SANITARY SEWER CONSTRUCTION SHALL HAVE FULL-TIME INSPECTION SUPERVISED BY A STATE OF MICHIGAN LICENSED PROFESSIONAL ENGINEER PROVIDED BY, OR CAUSED TO BE PROVIDED BY, THE LOCAL UNIT OF GOVERNMENT.
2. AT ALL CONNECTIONS TO WRC SEWERS OF EXTENSIONS, AND BEFORE START OF CONSTRUCTION, THE CONTRACTOR MUST OBTAIN A SEWER INSPECTION PERMIT ISSUED BY WRC. GRAVITY SEWER PERMIT CHANGES ARE $250 FOR EACH CONNECTION PLUS $25 FOR EACH MANHOLE CONSTRUCTED. PRESSURE SEWER PERMIT CHARGES ARE $250 PER 2,460 L.F. OF FORCE MAIN WITH A MINIMUM PERMIT FEE OF $250. FAILURE TO PASS ANY TEST SEGMENT WILL RESULT IN AN ADDITIONAL CHARGE TO THE CONTRACTOR FOR EACH RETEST, IN ACCORDANCE WITH THE ABOVE PRICE SCHEDULE. THE CONTRACTOR SHALL ALSO HAVE POSTED WITH WRC A $5,000 SURETY BOND AND $500 CASH DEPOSIT. THE CONTRACTOR SHALL NOTIFY THE LOCAL UNIT OF GOVERNMENT AND WRC (248-858-1105) 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. FINAL ACCEPTANCE TESTS MUST BE WITNESSED BY COUNTY PERSONNEL AND MUST BE SCHEDULED BY MUNICIPALITY OR IT'S CONSULTANT IN ADVANCE WITH 24 HOUR NOTICE AT 248-858-1105.
3. NO SEWER INSTALLATION SHALL HAVE AN INFILTRATION EXCEEDING 100 GALLONS PER INCH DIAMETER PER MILE OF PIPE IN A 24 HOUR PERIOD, AND NO SINGLE RUN OF SEWER BETWEEN MANHOLES SHALL EXCEED 100 GALLONS PER INCH DIAMETER PER MILE. AIR TESTS IN LIEU OF INFILTRATION TESTS SHALL BE AS SPECIFIED IN THE WATER RESOURCES COMMISSIONER STANDARDS. ONLY PIPE AND PIPE JOINTS APPROVED BY WRC MAY BE USED FOR SANITARY SEWER CONSTRUCTION.
4. LOCATED IN THE FIRST MANHOLE UPSTREAM FROM THE POINT OF ALL CONNECTIONS TO AN EXISTING WRC SEWER, OR EXTENSION THERETO, A TEMPORARY 12-INCH DEEP SUMP SHALL BE PROVIDED IN THE FIRST MANHOLE ABOVE THE CONNECTION WHICH WILL BE FILLED IN AFTER SUCCESSFUL COMPLETION OF ANY ACCEPTANCE TEST UP TO THE STANDARD FILLET PROVIDED FOR THE FLOW CHANNEL. A WATERTIGHT BULKHEAD SHALL BE PROVIDED ON THE DOWNSTREAM SIDE OF THE SUMP MANHOLE.
5. AT ALL TIMES WHEN LAYING OF NEW PIPE IS NOT ACTUALLY IN PROGRESS, THE UPSTREAM OPEN END OF THE PIPE SHALL BE CLOSED BY TEMPORARY WATERTIGHT PLUGS OR BY OTHER APPROVED MEANS. IF WATER IS IN THE TRENCH WHEN WORK IS RESUMED, THE PLUG SHALL NOT BE REMOVED UNTIL THE DANGER OF WATER ENTERING THE PIPE HAS PASSED.
6. ALL BUILDING LEADS AND RISERS SHALL BE SIX INCH SDR 23.5 ABS PIPE WITH CHEMICALLY FUSED JOINTS OR AN APPROVED EQUAL PIPE AND JOINT. BUILDING LEADS TO BE FURNISHED WITH REMOVABLE AIRTIGHT AND WATERTIGHT STOPPERS.
7. ALL RIGID SEWER PIPE SHALL BE INSTALLED IN CLASS "B" BEDDING OR BETTER. ALL FLEXIBLE, SEMI-FLEXIBLE, OR COMPOSITE SEWER PIPE SHALL BE INSTALLED IN CONFORMANCE TO WRC SPECIFICATIONS.
8. ALL NEW MANHOLES SHALL HAVE WRC APPROVED FLEXIBLE, WATERTIGHT SEALS WHERE PIPES PASS THROUGH WALLS. MANHOLES SHALL BE OF PRE CAST SECTIONS WITH MODIFIED GROOVE TONGUE AND RUBBER GASKET TYPE JOINTS. PRE CAST MANHOLE CONE SECTIONS SHALL BE WRC APPROVED MODIFIED ECCENTRIC CONE TYPE. ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATERTIGHT COVERS.
9. AT ALL CONNECTIONS TO MANHOLES ON WRC SEWERS, OR EXTENSIONS THERETO, DROP CONNECTIONS WILL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS 18 INCHES.
10. TAPS TO EXISTING MANHOLES SHALL BE MADE BY CORING. THE CONTRACTOR SHALL PLACE A KOR-N-SEAL BOOT (OR WRC APPROVED EQUAL) AFTER CORING IS COMPLETED. BLIND DRILLING WILL ONLY BE PERMITTED IN LIEU OF CORING WITH PRIOR WRC APPROVAL.
11. MANHOLES CONSTRUCTED DIRECTLY ON WRC SEWERS SHALL BE PROVIDED WITH COVERS READING "WATER RESOURCES COMMISSIONER-SANITARY" IN RAISED LETTERS.
12. NO GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWN SPOUT DRAINAGE OR WEEP TILE DRAINAGE SHALL BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.
13. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL TELEPHONE MISS DIG (800-482-7171) FOR THE LOCATION OF UNDERGROUND PIPELINE AND CABLE FACILITIES AND SHALL ALSO NOTIFY REPRESENTATIVES OF OTHER UTILITIES LOCATED IN THE VICINITY OF THE WORK.
14. AN 18 INCH MINIMUM VERTICAL SEPARATION AND A 10 FOOT MINIMUM HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN SANITARY SEWER AND WATER MAIN.
15. NEW MANHOLES BUILT OVER AN EXISTING SANITARY SEWER SHALL HAVE MONOLITHIC POURED BOTTOMS.
16. IF THE STRUCTURE FALLS WITHIN THE ROADBED OF A GRAVEL ROAD OR WITHIN THE UNPAVED SHOULDER OF A PAVED ROAD, THE COVER SHALL BE SIX (6") INCHES BELOW THE FINISHED GRAVEL SURFACE.



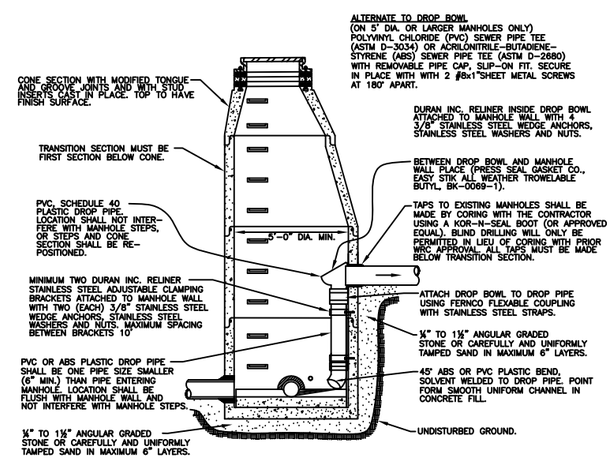
DOUBLE-COMPARTMENT GREASE INTERCEPTOR TANK FOR OUTLET PIPE BURIAL 42" AND DEEPER



SEWER SIZE	DROP SIZE	MH SIZE
UP TO 10"	8"	4'
UP TO 18"	10"	4'
UP TO 30"	18"	5'

EXTERIOR DROP CONNECTION

(REQUIRES ADVANCED APPROVAL BY WRC)



INTERIOR DROP CONNECTION

REVISION BLOCK

Parcel Base / Source Date: N/A

Rev. No.:	Rev. By:	Rev. Date:	Description:
1	JL	7-14-09	STANDARD COMMITTEE APPROVAL OF PROPOSED CHANGES
2	RRH	8-31-10	FIXED NOTES THAT HAD "GROOVE TONGUE" TO READ "TONGUE AND GROOVE"
3	DS	3-23-11	REMOVED STANDARD MONITORING MANHOLE
4	KB	6-21-18	ADDED NOTE "REQUIRES ADVANCED APPROVAL BY WRC" AND UPDATE PHONE # IN NOTE #2

SANITARY SEWER DETAILS AND NOTES

ORIG. DATE:	08/21/02
SCALE:	NO SCALE
DESIGNED BY:	WRC
DRAWN BY:	WRC Mapping

WRC WATER RESOURCES COMMISSIONER Jim Nash

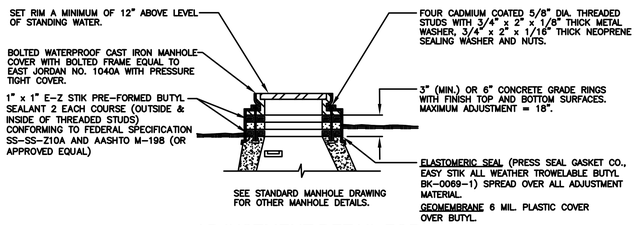
ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
WATERFORD, MICHIGAN
48328-1907

SHEET NO.: 1 of 2

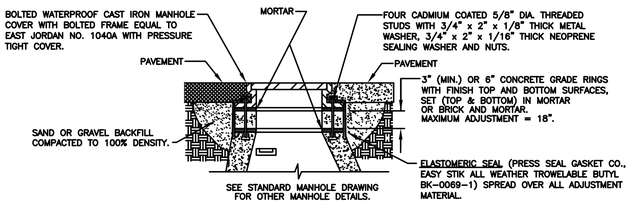
Plotter Name: GRDPrn.cfg
File Location: C:\Users\Public\Documents\Autodesk\Vault\WRC\DETAIL S-Sewer\Sanitary Sewer Details\Sanitary Sewer Details.dwg

MANHOLE RIM ADJUSTMENT CHART

MANHOLE LOCATION	SET RIM ELEVATION
DITCH	12" ABOVE FINISH GRADE
FLOOD PLAIN	12" ABOVE STANDING WATER
GRAVEL ROAD / SHOULDER	6" BELOW FINISH GRADE
PAVEMENT / GREENBELT	FLUSH WITH FINISH GRADE



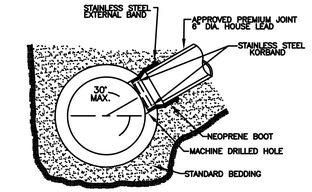
ADJUSTMENT DETAIL FOR
MANHOLE TOPS WITHIN FLOOD PRONE AREAS



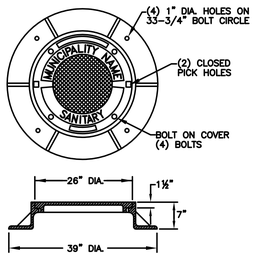
ADJUSTMENT DETAIL
MANHOLE TOPS WITHIN PAVEMENT AREAS

WATER RESOURCES COMMISSIONER
GRAVITY BUILDING LEAD REQUIREMENTS AND DETAILS

1. ALL BUILDING LEAD WORK MUST BE PERFORMED UNDER WATER RESOURCES COMMISSIONER (WRC) AND/OR LOCAL UNIT OF GOVERNMENT INSPECTION.
2. FOR ALL WRC-OPERATED SYSTEMS, CALL 248-858-1110 24-HOURS IN ADVANCE OR WORK TO SCHEDULE INSPECTION.
3. NO SANITARY SEWER MAY BE USED AS A CLEANOUT OF DEWATERING OUTLET.
4. WHERE AN EXISTING BUILDING LEAD IS BEING EXTENDED, DISSIMILAR TYPES AND SIZES OF PIPE SHALL BE JOINED USING AN WRC APPROVED ADAPTER.
5. APPROVED BUILDING LEAD PIPE FOR GRAVITY SEWER LEADS:
   A. ABS PLASTIC, ASTM D2751, SDR 23.5.
   B. PVC PLASTIC, ASTM D3034, SDR 23.5 OR ASTM D2665, SCHEDULE 40.
   C. DUCTILE IRON PIPE, AMERICAN WATER WORKS ASSOCIATION (AWWA) C-104/A21.4, CLASS 54. JOINTS SHALL BE SUPER BELL TITE, TYTON, TY-SEAL, MULTI-TITE, DUAL-TITE, OR VERI-TITE.
   D. ANY DEVIATIONS FROM SPECIFIED ABOVE REQUIRE APPROVAL BY WRC.
6. ALLOWABLE TYPES OF SEWER PIPE ADAPTERS:
   A. FERNCO ADAPTER/REDUCER DONUTS.
   B. FERNCO FLEXIBLE COUPLING.
   C. MISSION CLAY BAND-SEAL COUPLING.
   D. SMITH-BLAIR STAINLESS STEEL REPAIR CLAMP.
   E. HURON-CLINTON O-RING ADAPTER.
   F. HAMILTON-KENT GEAR GRIP ADAPTER.
   G. PLANT FABRICATED JOINT CONVERSION PIPE.

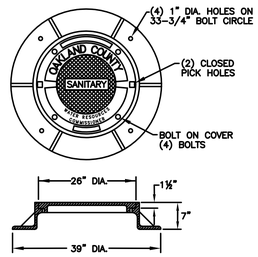


KOR-N-TEE TAP FOR CONCRETE PIPE



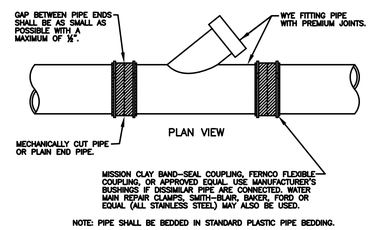
EAST JORDAN IRON WORKS
HEAVY DUTY MATERIAL ASTM A48 CL.35
COVER WT., 150 LBS., CATALOG NO. 1040A
PATTERN NO. 1040A, PRODUCT NO. 1040XX OAKCOSTD.
2" RAISED LETTERS, 1" RAISED LETTERS
ALL RECESSED FLUSH.

LOCAL MUNICIPALITIES MANHOLE COVER

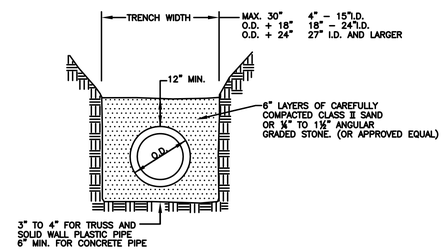


EAST JORDAN IRON WORKS
HEAVY DUTY MATERIAL ASTM A48 CL.35
COVER WT., 150 LBS., CATALOG NO. 1040APT
PATTERN NO. 1040A, PRODUCT NO. NCR09-1280 C
2" RAISED LETTERS, 1" RAISED LETTERS, 3/4" RAISED LETTERS
ALL RECESSED FLUSH.

W.R.C. LETTERED MANHOLE COVER

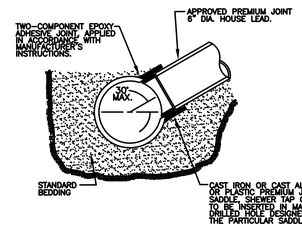


WYE PIPE INSERTION WITH FLEXIBLE COUPLINGS
(RIGID PIPE)



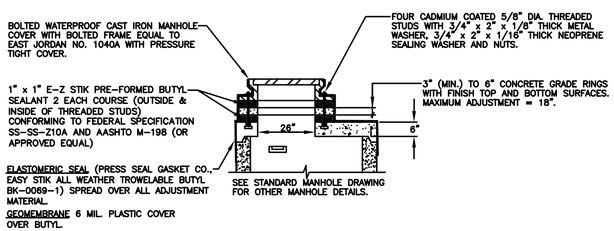
NOTE:
APPROVAL MAY BE GIVEN TO ALTERNATE MATERIALS AND METHODS TO ACHIEVE CLASS B BEDDING.

STANDARD BEDDING
(CLASS B)

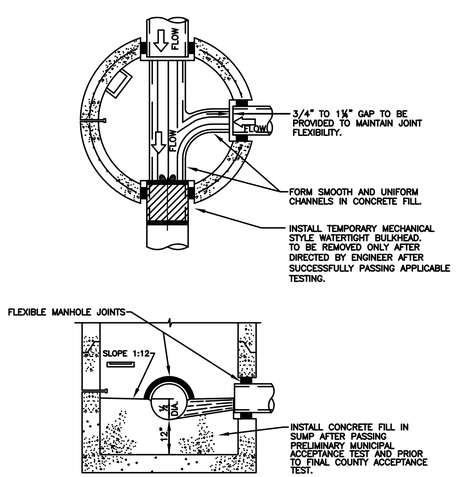


NOTE: SURFACE OF MAIN SEWER SHALL BE CLEANED WITH AN ABRASIVE GRINDER PRIOR TO EPOXY APPLICATION. DUE TO VARIATION OF SET-UP TIME OF EPOXY ADHESIVE WITH TEMPERATURE, ANCHOR STRAPS SHALL BE USED TO SECURE SADDLE IN POSITION IN COLD WEATHER OR WHENEVER WORK IS TO PROCEED PRIOR TO COMPLETE CURE OF EPOXY.

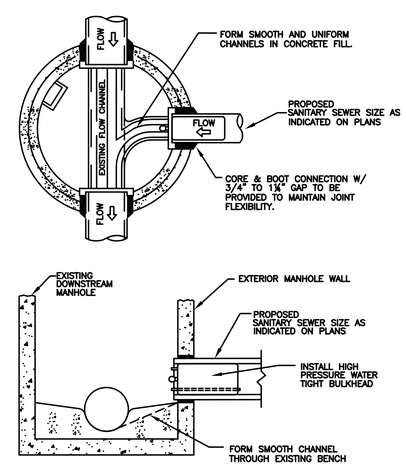
SEWER TAP-ALL SIZES OF MAIN SEWER PIPES
VITRIFIED CLAY



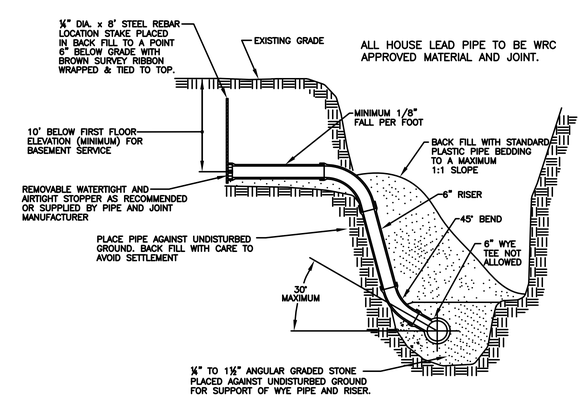
FLAT TOP MANHOLE



SUMP MANHOLE FOR TESTING,
CLEANING AND DEWATERING



TESTING BULKHEAD WITH PIPE TAP



HOUSE LEAD DETAIL

Profile Name: DWGOne.cfg
File Name: P:\Cad\Mapping\UNDSTTANDARDS\DETAILS\Sanitary Sewer Details\SSD-Sanitary.dwg

REVISION BLOCK
Parcel Base / Source Date: N/A

Rev. No.:	Rev. By:	Rev. Date:	Description:
1	DS	06/28/06	ADDED TESTING BULKHEAD WITH PIPE TAP DETAIL
2	tz	05/28/09	MOVED DETAILS FROM SHEET 1 ONTO SHEET 2
3	tz	07/14/09	STANDARDS COMMITTEE APPROVAL FOR DETAIL CHANGES
4	DS	02/03/14	REPLACE/UPDATE OCDC WITH WRC FOR THE MANHOLE COVER DETAIL

SANITARY SEWER DETAILS AND NOTES

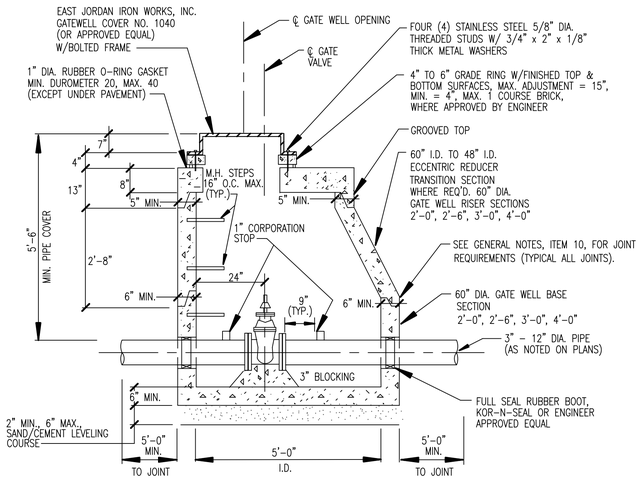
ORIG. DATE:	05-09-03
SCALE:	NO SCALE
DESIGNED BY:	MWD
DRAWN BY:	Mapping Staff

WRC
WATER RESOURCES COMMISSIONER
Jim Nash

ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
WATERFORD, MICHIGAN
48328-1907

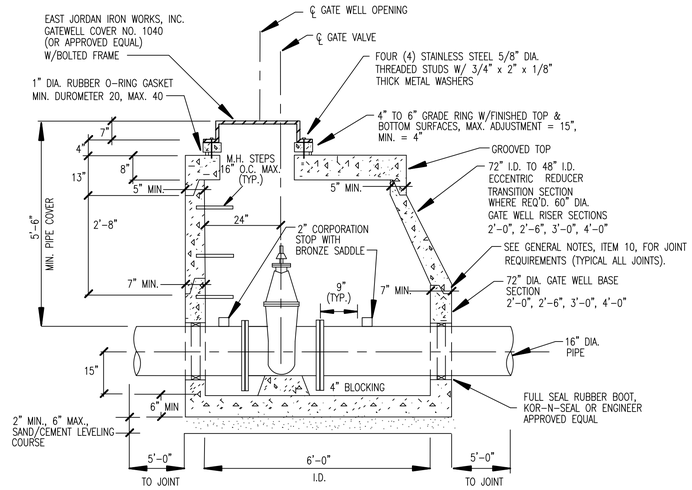
SHEET NO.:
2 of 2

GATE VALVE & WELL DETAILS



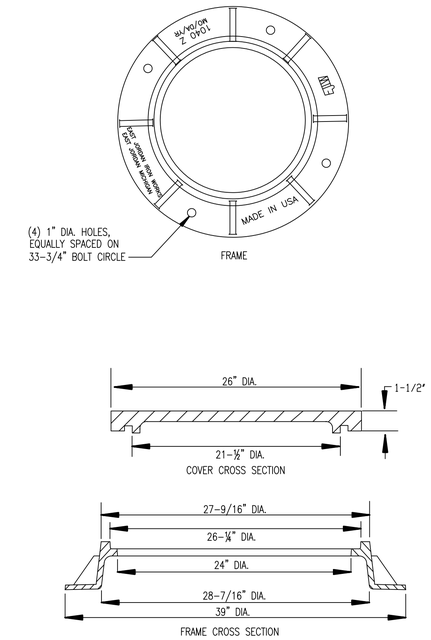
3" THRU 12" GATE WELL

SCALE 1"= 2'



16" GATE WELL

SCALE 1"= 2'



FRAME

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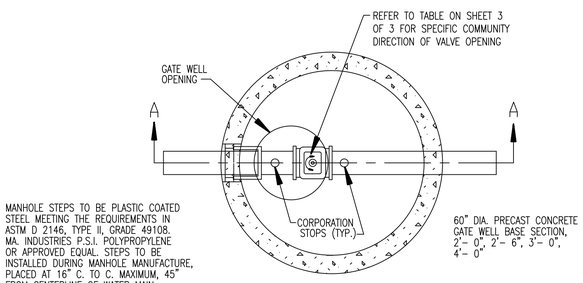
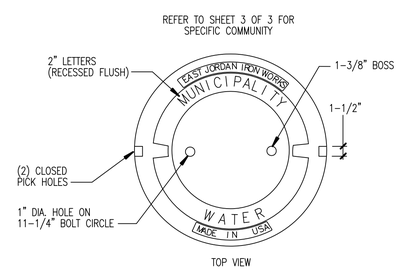


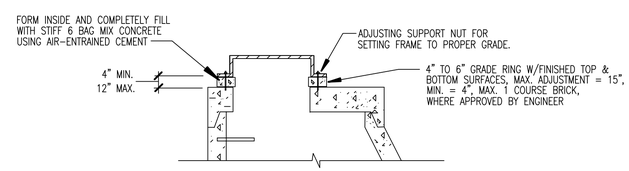
PLAN GATE WELL TYPICAL

SCALE 1"= 2'



LETTERING LAYOUT FOR GATEWELL COVERS

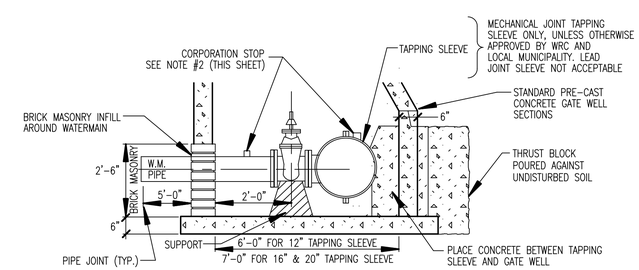
SCALE 1"= 6'



GATE WELL TOPS WITHIN PAVEMENT AREAS

SCALE 1"= 2'

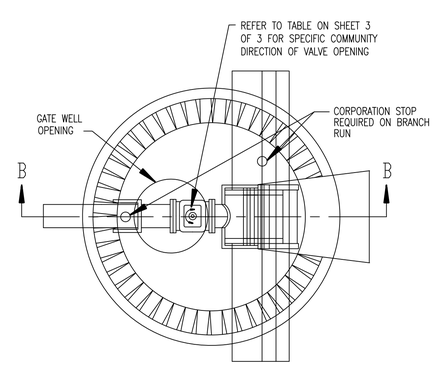
RUBBER O'RINGS SHALL
NOT BE USED IN PAVEMENT



20" x 12", 20" x 8", 16" x 12", 16" x 8", 12" x 8"
TAPPING SLEEVE, VALVE & WELL

SCALE 1"= 2'

NOTES:
1. REFER TO NOTE 7 OF "VALVE AND SLEEVE NOTES" ON SHEET 3 OF 3.
2. FOR PIPE SMALLER THAN 16" USE 1" CORPORATION STOP, FOR 16" PIPE OR LARGER USE 2" CORPORATION STOP WITH BRONZE SADDLE.
3. REFER TO NOTE 11 OF "GENERAL NOTES" ON SHEET 3 OF 3.
4. WRC DOES NOT RECOMMEND SIZE ON SIZE TAPPING.



PLAN TAPPING SLEEVE
VALVE & WELL (TYPICAL)

SCALE 1"= 2'

WATER MAIN
STANDARD DETAILS

REVISION BLOCK

Data Source / Source Date: N/A

Rev. No.:	Rev. By:	Rev. Date:	Description:
1	DS	03/15/13	UPDATE TITLEBLOCK AND ARROWS
2	DS	07/08/14	PROPOSED REVISIONS
3	DS	11/21/14	PROPOSED CHANGE TO DELETE HOLES FROM GATEWELL COVERS
4	KB	03/19/18	MARKUPS PER G. APPEL

ORIG. DATE:	01/01/01	WRC WATER RESOURCES COMMISSIONER Jim Nash	ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48328-1907
SCALE:	NONE		
DESIGNED BY:	WRC		SHEET NO.: 1 of 5
DRAWN BY:	WRC Mapping		

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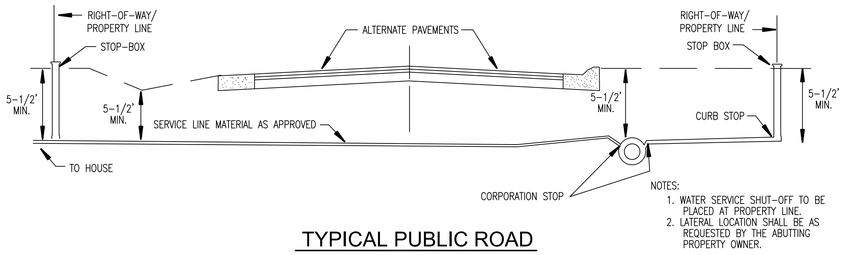
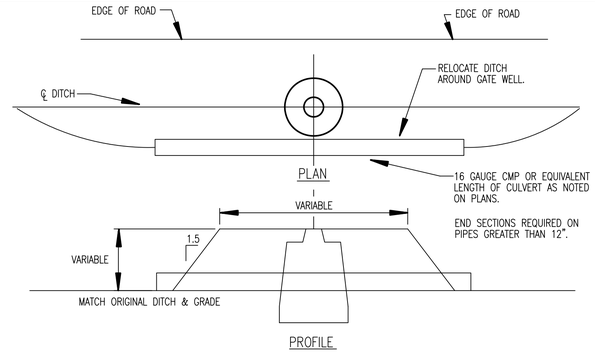


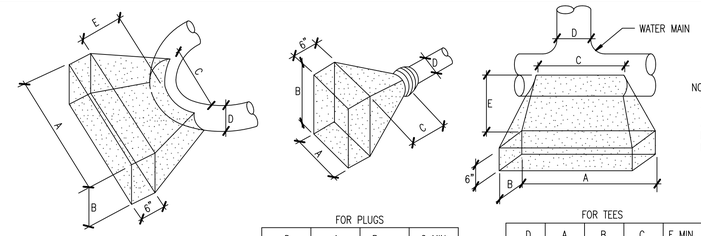
TYPICAL PUBLIC ROAD WATER SERVICE CONNECTION

NO SCALE



DITCH ENCLOSURE AT GATE WELL

NO SCALE



FOR 90° BENDS OR SMALLER

D	A	B	C	E MIN.
20"	8'	6.5'	3.5'	2.5'
16"	6'	4'	2.5'	2'
12"	4'	3'	2'	1.75'
10"	3'	3'	2'	1.75'
8"	3'	2'	2'	1.5'
6"	2'	1.5'	2'	1.25'

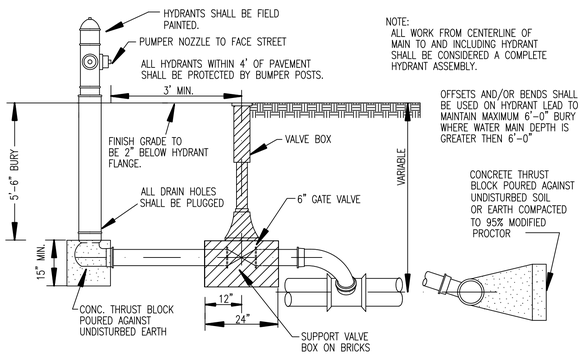
FOR PLUGS

D	A	B	C MIN.
20"	7'	5'	2.5'
16"	4'-10"	4'-10"	2'
12"	4'-4"	3'	1'-9"
10"	3'	2'	1'-6"
8"	2'-10"	2'-6"	1'-6"
6"	1'-6"	1'-6"	3'

FOR TEES

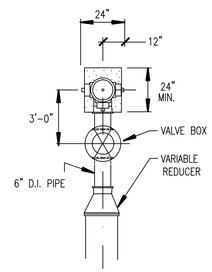
D	A	B	C	E MIN.
20"	6.5'	4.5'	3.5'	3'
16"	4'-8"	4'-8"	2.5'	2.75'
12"	4'	3'	2.5'	2.5'
10"	3'	2'	2'	2.25'
8"	2'-6"	2'	2'	2.25'
6"	2'	2'	2'	2.25'

THRUST BLOCK DETAILS



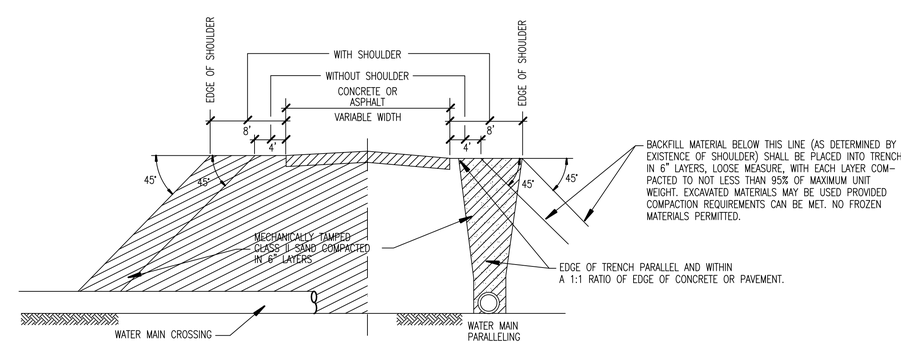
SECTION 6" HYDRANT SIDE OUTLET

SCALE 1"= 2'



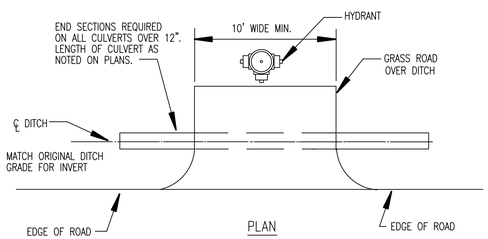
PLAN 6" HYDRANT WATER MAIN END

SCALE 1" = 1'



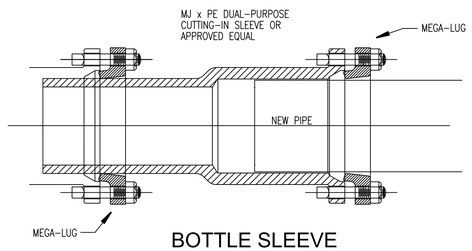
MINIMUM BACKFILL UNDER OR NEAR PAVEMENT

SCALE 1"= 6'

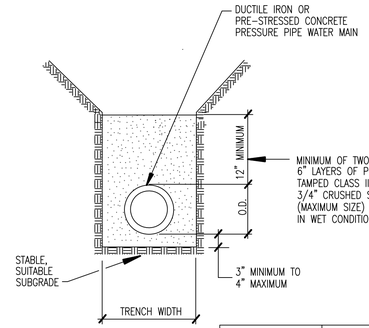


DITCH ENCLOSURE AT HYDRANT

NO SCALE



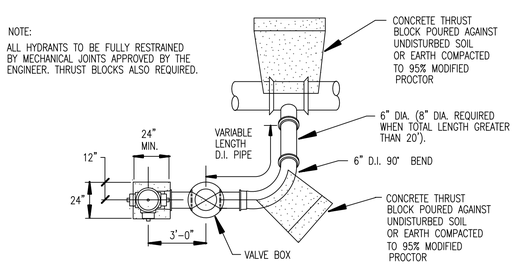
BOTTLE SLEEVE



PIPE INTERNAL DIAMETER	MAXIMUM TRENCH WIDTH
LESS THAN 18"	30"
18" TO 24"	PIPE O.D. PLUS 18"
GREATER THAN 24"	PIPE O.D. PLUS 24"

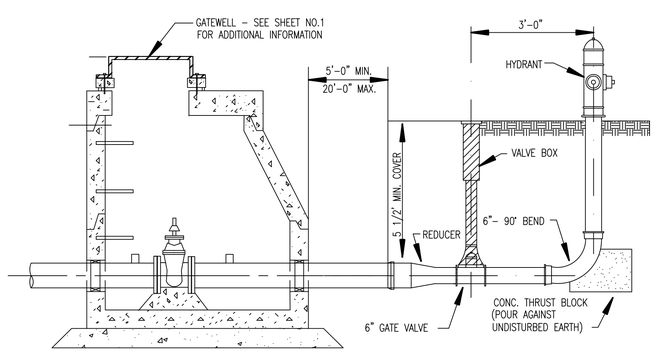
STANDARD BEDDING FOR WATER MAIN

SCALE 1" = 4'



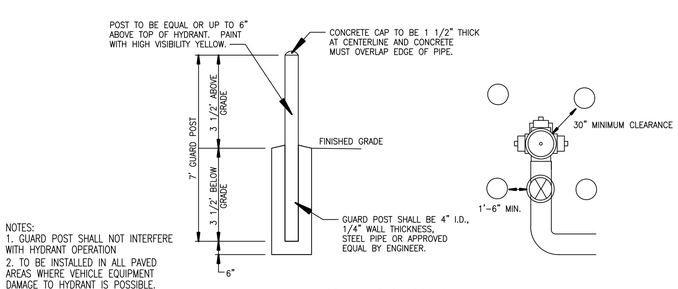
PLAN 6" HYDRANT SIDE OUTLET

SCALE 1" = 1'



DEAD END BLOWOFF CONNECTION

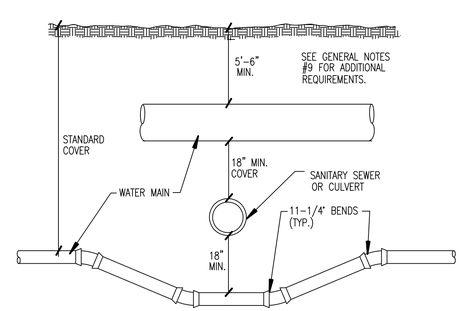
SCALE 1" = 1'



GUARD POST

SCALE 1"= 3'

HYDRANT & BLOWOFF DETAILS



SEWER OR CULVERT CROSSING

SCALE 1"= 2'

WATER MAIN STANDARD DETAILS

REVISION BLOCK

Data Source / Source Date: N/A

Rev. No.:	Rev. By:	Rev. Date:	Description:
1	DS	07/08/14	PROPOSED REVISIONS
2	DS	11/2/14	PROPOSED CHANGE TO DELETE REFERENCE TO BOTTLE SLEEVE MANUFACTURER
3	DL	03/23/14	FINAL CHANGE TO DELETE REFERENCE TO BOTTLE SLEEVE MANUFACTURER
4	KB	02/14/18	MARKUPS PER G. APPEL

ORIG. DATE:	01/01/01	WRC WATER RESOURCES COMMISSIONER Jim Nash	ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48328-1907
SCALE:	NONE		
DESIGNED BY:	WRC		SHEET NO.: 2 of 5
DRAWN BY:	WRC Mapping		

GENERAL NOTES

1. ALL CONSTRUCTION PROCEDURES AND MATERIALS SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE WATER RESOURCES COMMISSIONER AND/OR THE LOCAL MUNICIPALITY.
2. THE CONTRACTOR SHALL OBTAIN AN WATER RESOURCES COMMISSIONER WATER INSPECTION PERMIT PRIOR TO THE START OF CONSTRUCTION. SEE CORRESPONDING WATER MAIN CONSTRUCTION PERMIT REQUEST LETTER FOR COST OF THE PERMIT.
3. A PRE-CONSTRUCTION MEETING SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION AND SHALL BE SCHEDULED BY THE LOCAL MUNICIPAL ENGINEER. THOSE IN ATTENDANCE SHALL INCLUDE 1) LOCAL MUNICIPAL ENGINEER, 2) DESIGN ENGINEER, 3) OWNER/DEVELOPER, 4) ROAD COMMISSION FOR OAKLAND COUNTY, 5) OAKLAND COUNTY DRAIN COMMISSIONER (WATER, SEWER AND STORM DIVISIONS) AND 6) ALL UTILITY COMPANIES. CONTRACTOR SHALL PROVIDE MATERIALS LISTING FOR APPROVAL BY MUNICIPAL ENGINEER AND O.C.D.C.
4. CONTRACTOR MUST CONTACT MISS DIG (1-800-482-7171) THREE WORKING DAYS BEFORE THE START OF CONSTRUCTION FOR UNDERGROUND UTILITY LOCATIONS. ALL UTILITIES SHALL BE STAKED BEFORE CONSTRUCTION STARTS.
5. ALL NECESSARY EASEMENTS FOR WATER MAINS SHALL BE PROVIDED IN THE NAME OF THE OWNER OF THE WATER MAIN PRIOR TO CONSTRUCTION AND ACCEPTANCE OF THE WATER DISTRIBUTION SYSTEM FOR OPERATION.
6. ALL WATER MAINS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF FIVE AND ONE-HALF (5-1/2) FEET BELOW FINISHED GRADES INCLUDING OPEN DRAINAGE COURSES.
7. ALL TRENCHES UNDER OR WITHIN A 1:1 RATIO OF EXISTING OR PROPOSED PAVEMENT OR DRIVEWAYS SHALL BE BACKFILLED WITH THOROUGHLY COMPACTED CLASS II SAND TO GRADE (95% MAXIMUM UNIT DENSITY).
8. WHERE TWO UTILITIES CROSS, PROVIDE CLASS II BACKFILL MATERIAL IN TWELVE (12) INCH COMPACTED LAYERS TO THE UNDERSIDE OF THE HIGHER UTILITY.
9. WHERE WATER MAINS MUST DIP TO PASS UNDER OTHER UTILITIES, THE SECTIONS WHICH ARE DEEPER THAN NORMAL SHALL BE KEPT TO A MINIMUM LENGTH AND SHALL BE CONSTRUCTED WITH ELEVEN AND ONE-QUARTER (11-1/4) DEGREE VERTICAL BENDS, PROPERLY ANCHORED. BENDS GREATER THAN 11-1/2' MUST HAVE ROD RESTRAINTS.
10. ALL PRECAST CONCRETE GATE WELL SECTIONS SHALL BE MANUFACTURED TO CONFORM WITH A.S.T.M. C478, STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS, EXCEPT WALL THICKNESS SHALL BE AS SHOWN ON THESE DETAILS. ALL JOINTS FOR PRECAST CONCRETE GATE WELL SECTIONS SHALL BE "MODIFIED GROOVE TONGUE" WITH GASKET MANUFACTURED TO CONFORM WITH A.S.T.M. C 443, STANDARD SPECIFICATION FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKETS.
11. CONTRACTOR SHALL INSTALL VALVES, TAPPING SLEEVES AND GATE WELL STRUCTURES IN STRICT COMPLIANCE WITH MEASUREMENTS PROVIDED ON SHEET 1(i.e. 2'-0" BETWEEN GATE WELL WALL & CENTERLINE OF OPERATING NUT) TO ALLOW PROPER OPERATION OF VALVE THROUGH GATEWELL OPENING. FAILURE TO DO SO WILL REQUIRE CONTRACTOR TO CORRECT AT HIS EXPENSE.
12. ALL CROSS-CONNECTION CONTROL DEVICES SHALL BE INSTALLED AS REQUIRED BY THE LOCAL PLUMBING INSPECTOR AND IN ACCORDANCE WITH THE STANDARDS OF THE WATER RESOURCES COMMISSIONER OPERATION AND MAINTENANCE DIVISION AND THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF DRINKING WATER AND RADIOLOGICAL PROTECTION.
13. ALL WATER SERVICE CONNECTIONS TWO (2) INCHES AND SMALLER SHALL BE MADE BY THE WATER RESOURCES COMMISSIONER, OPERATIONS AND MAINTENANCE DIVISION AFTER WATER MAIN ACCEPTANCE AND APPLICABLE TAP PERMITS ARE OBTAINED.
14. ALL FITTINGS AND BENDS SHOULD BE BLOCKED IN ACCORDANCE WITH THRUST BLOCK DETAILS, UNLESS ALTERNATE THRUST RESTRAINT SYSTEM, AS INDICATED IN PLANS AND SPECIFICATIONS, IS APPROVED BY WATER RESOURCES COMMISSIONER AND THE LOCAL MUNICIPALITY.

WATER MAIN MATERIALS NOTES

1. TEMPORARY CONNECTIONS, WHICH MAY BE MADE FOR CHLORINATING AND FLUSHING PURPOSES, SHALL INCLUDE A TESTABLE DOUBLE CHECK VALVE BACKFLOW PREVENTER WITH CURRENT CERTIFICATION.
2. CORPORATION STOPS USED FOR INSERTION INTO MAINS SHALL BE MUELLER TYPE H-15000. ALL STOPS SHALL HAVE BRONZE CAST BODIES, KEYS, STEM WASHERS AND NUTS. INLET THREADS SHALL CONFORM TO THE LATEST VERSION OF AWWA C800.
3. ALL DUCTILE IRON PIPE (D.I.P.) WATER MAINS SHALL BE DESIGNED FOR 150 PSI MINIMUM WORKING PRESSURE.
4. THE DUCTILE IRON PIPE TO BE FURNISHED AND DELIVERED UNDER THIS SPECIFICATION SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT AWWA C151 (ANSI A21.5), EXCEPT AS OTHERWISE SPECIFIED HEREIN. PIPE SHALL BE DOUBLE CEMENT-LINED AND SEAL COATED WITH AN APPROVED BITUMINOUS SEAL COAT IN ACCORDANCE WITH AWWA C104 (ANSI A21.4).
5. DUCTILE IRON PIPE SHALL BE CLASS 54 FOR SIZES THREE (3) INCH THROUGH EIGHTEEN (18) INCH, CLASS 55 FOR TWENTY (20) INCH, AND CLASS 56 FOR TWENTY-FOUR (24) INCH AND LARGER. (ABBREVIATED "D.I." IN DETAILS AND ON THIS SHEET).
6. PIPES OF SIZES LARGER THAN TWENTY-FOUR (24) INCHES IN NOMINAL DIAMETER SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT AWWA C100 FOR DUCTILE IRON WATER PIPE.
7. MECHANICAL AND SLIP-ON JOINTS FOR DUCTILE IRON WATER MAIN SHALL BE IN ACCORDANCE WITH AWWA C111 (ANSI A21.11).
8. FLANGE JOINTS FOR DUCTILE IRON WATER MAIN SHALL BE IN ACCORDANCE WITH AWWA C110 (ANSI A21.10).
9. FITTINGS FOR DUCTILE IRON PIPE SHALL BE DUCTILE IRON OR CAST IRON AND SHALL MEET REQUIREMENTS OF AWWA C110 (ANSI A21.10) OR AWWA C153 (ANSI A21.53). DUCTILE IRON FITTINGS SHALL BE RATED FOR 350 PSI, PIPE SIZES TWENTY-FOUR (24) INCH DIAMETER AND LESS AND 250 PSI FOR PIPE SIZES OVER TWENTY-FOUR (24) INCH DIAMETER. DUCTILE IRON FLANGE FITTINGS SHALL BE RATED FOR 250 PSI FOR ALL PIPE DIAMETERS.
10. ALL BURIED BOLTS, NUTS, AND WASHERS SHALL BE CORTEN OR EQUIVALENT AND POLY-WRAPPED WHEN SPECIFIED.

VALVE AND SLEEVE NOTES

1. GATE VALVES, SIZES THREE (3) INCH THROUGH SIXTEEN (16) INCH AND TAPPING VALVES SHALL BE LOCAL MUNICIPAL STANDARD AS DETAILED WITH NON-RISING STEM.
2. ALL IN LINE GATE VALVES THREE (3) INCH AND LARGER SHALL BE IN WELLS AS DETAILED. SPECIFICATIONS SHALL INCLUDE THE DIRECTION OF OPERATION OF ALL VALVES.
3. ALL GATE WELL COVERS SHALL BE LOCAL MUNICIPAL STANDARD AS DETAILED.
4. ALL GATE VALVES WITH OPERATING NUTS AT A DISTANCE GREATER THAN FIVE (5) FEET BELOW GROUND SURFACE SHALL BE PROVIDED WITH AN EXTENSION STEM. THE LENGTH OF THE EXTENSION STEM SHALL REACH WITHIN FIVE (5) FEET FROM THE GROUND SURFACE. WHEN AN EXTENSION STEM IS USED, IT SHALL BE HELD IN PLACE BY AN EXTENSION STEM GUIDE SUITABLY FASTENED TO THE WALL OF THE GATE WELL. THE EXTENSION STEM SHALL BE MECHANICALLY ATTACHED TO THE OPERATING NUT. DETAILS OF THE EXTENSION SYSTEM AND THE METHOD OF INSTALLATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
5. BUTTERFLY VALVES MAY BE USED FOR VALVES GREATER THAN 16-INCH DIAMETER AND SHALL BE MODEL 2F11 AS MANUFACTURED BY HENRY PRATT COMPANY OR APPROVED EQUAL.
6. TAPPING VALVES SHALL BE C515 AS MANUFACTURED BY EAST JORDAN IRON WORKS WITH RESILIENT SEATED GATE VALVES AS APPROVED BY LOCAL MUNICIPALITY.
7. TAPPING SLEEVES SHALL BE MANUFACTURED BY ROMAC INDUSTRIES; JCM 432; SMITH-BLAIR OR APPROVED EQUAL AND APPROVED BY WATER RESOURCES COMMISSIONER.

HYDRANT REQUIREMENTS

1. ALL HYDRANTS SHALL BE CONSTRUCTED WITH A SIX (6) INCH COMPANION GATE VALVE IN A THREE (3) PIECE, ADJUSTABLE DUCTILE IRON VALVE BOX, WHICH SHALL INCLUDE A FIVE AND ONE-QUARTER (5-1/4) INCH SCREW SHAFT. VALVE BOXES SHALL BE SERIES 6860 AS MANUFACTURED BY TYLER PIPE OR APPROVED EQUAL.
2. ALL HYDRANTS SHALL BE EAST JORDAN IRON WORKS 5BR250 TRAFFIC MODEL, OR APPROVED EQUAL. SELF-DRAINING HYDRANTS SHALL NOT BE USED. ALL HYDRANTS SHALL BE LOCAL MUNICIPAL STANDARD AS DETAILED. HYDRANTS SHALL HAVE BREAKAWAY FLANGE.
3. ALL HYDRANTS SHALL BE PAINTED RED ABOVE GROUND AND BLACK BELOW GROUND WITH A FINISH COAT OF GLAMORTEX 501 ENAMEL, COLOR 314 VERMILLION OR APPROVED EQUAL. HYDRANT CAP SHALL BE PAINTED SAME COLOR AS THE HYDRANT. FOR PONTIAC: YELLOW RUST-OLEUM #7543 SAFETY YELLOW.
4. ALL FIRE HYDRANT JOINTS SHALL BE TOTALLY RESTRAINED BY THE USE OF MEG-A-LUGS OR OTHER RESTRAINED JOINT. THRUST BLOCKS ARE ALSO REQUIRED.

ACCEPTANCE OF NEW WATER MAINS

1. PRIOR TO WATER MAIN ACCEPTANCE THE FOLLOWING CONDITIONS MUST BE MET: 1) PRESSURE TESTING AND BACTERIA TESTING MUST BE COMPLETED IN ACCORDANCE WITH THE WATER RESOURCES COMMISSIONER'S REQUIREMENTS. 2) ALL EASEMENT AND RIGHT-OF-WAY ACQUISITION MUST BE ACCEPTED BY THE WATER RESOURCES COMMISSIONER, RIGHT-OF-WAY DIVISION 3) THE LOCAL MUNICIPALITY MUST BE PROVIDED WITH THE BILL OF SALE AND 4) ALL MYLAR "RECORD DRAWINGS" MUST BE ACCEPTED AND APPROVED BY THE WATER RESOURCES COMMISSIONER, OPERATIONS AND MAINTENANCE DIVISION. THE WATER RESOURCES COMMISSIONER AND LOCAL ENGINEER MUST WITNESS THE CONNECTION OF THE WATER MAIN TO THE EXISTING WATER MAIN, AFTER WHICH RESIDENTIAL AND COMMERCIAL TAPS WILL BE ALLOWED.
2. THE CONTRACTOR SHALL NOTIFY THE WATER RESOURCES COMMISSIONER, OPERATIONS AND MAINTENANCE DIVISION THROUGH THE LOCAL ENGINEER FOR NEW CONSTRUCTION TAP, PRESSURE TESTING, BACTERIOLOGICAL SAMPLING, CONNECTIONS TO EXISTING WATER MAIN AND FINAL FIELD REVIEW. A SEVENTY-TWO (72) HOUR ADVANCE NOTICE IS REQUIRED.
3. THE CONTRACTOR SHALL DISINFECT AND PRESSURE TEST ALL NEW WATER MAIN CONSTRUCTION PURSUANT TO THE CURRENT STANDARDS SPECIFIED BY THE WATER RESOURCES COMMISSIONER. THE WATER MAIN SHALL PASS A TEST OF 150 PSI FOR A TWO (2) HOUR PERIOD. WATER LOSS SHALL NOT EXCEED A RATE OF 11.65 U.S. GALLONS PER INCH DIAMETER PER MILE OF WATERLINE IN TWENTY-FOUR (24) HOURS.
4. WHERE CONTRACTOR SUPPLIED GAUGES ARE REQUIRED, MINIMUM SIZE SHALL BE 3½" DIAMETER OR LARGER GRADUATED IN ONE (1) OR TWO (2) POUND INCREMENTS FROM 1 TO 160 P.S.I. OR HIGHER.
5. PRESSURE TESTING AND BACTERIA TESTING MUST BE COMPLETED PRIOR TO CONNECTING TO THE EXISTING WATER MAIN.

WATER RESOURCES COMMISSIONER WATER SYSTEM STANDARDS - GATE VALVES

COMMUNITY	DIRECTION TO OPEN	VALVE TYPE STD. GATE VALVE	VALVE TYPE TAPPING VALVE
BINGHAM FARMS	RIGHT	C515	C515
BLOOMFIELD HILLS	RIGHT	C515	C515
COMMERCE TOWNSHIP	LEFT	C515	C515
FARMINGTON HILLS	RIGHT	C515	C515
HIGHLAND TOWNSHIP	LEFT	C515	C515
KEEGO HARBOR	RIGHT	C515	C515
LYON TOWNSHIP	LEFT	C515	C515
OAKLAND TOWNSHIP	LEFT	C515	C515
ORCHARD LAKE VILLAGE	LEFT	C515	C515
OXFORD TOWNSHIP	LEFT	C515	C515
PONTIAC	LEFT	C515	C515
ROYAL OAK TOWNSHIP	RIGHT	C515	C515
SPRINGFIELD TOWNSHIP	LEFT	C515	C515

1.) C515 RESILIENT SEATED GATE VALVE - MANUFACTURED BY U.S. PIPE, MUELLER, EAST JORDAN IRON WORKS, AMERICAN FLOW CONTROL OR APPROVED EQUAL.

FIRE HYDRANT NOZZLE SIZE AND THREAD SPECIFICATIONS

LOCATION	PUMPER NOZZLE	HOSE NOZZLE	OPERATING NUT	STYLE
BINGHAM FARMS	(1) - 3-3/4" - D.F.D.	(2) - 2-1/2" - D.F.D.	1-1/8"	5BR250
BLOOMFIELD HILLS	(1) - 3-3/4" - D.F.D.	(2) - 2-1/2" - D.F.D.	1-1/8"	5BR250
COMMERCE TWP/ WOLVERINE LAKE VILLAGE	(1) - 5" STORZ	(2) - 2-1/2" - N.S.T.	1-1/2"	5BR250
FARMINGTON HILLS	(1) - 3-3/4" - D.F.D.	(2) - 2-1/2" - N.S.T.	1-1/8"	5BR250
HIGHLAND TOWNSHIP	(1) - 5" STORZ	(2) - 2-1/2" - N.S.T.	1-1/2"	5BR250
KEEGO HARBOR	(1) - 3-3/4" - D.F.D.	(2) - 2-1/2" - D.F.D.	1-1/8"	5BR250
LYON TOWNSHIP	(2) - 5" - STORZ		1-1/2"	5BR250
OAKLAND TOWNSHIP	(1) - 4" - STORZ	(2) - 2-1/2" - D.F.D.	1-1/2"	5BR250
ORCHARD LAKE VILLAGE	(1) - 3-3/4" - D.F.D.	(2) - 2-1/2" - D.F.D.	1-1/8"	5BR250
OXFORD TOWNSHIP	(1) - 5" STORZ	(2) - 2-1/2" - N.S.T.	1-1/2"	5BR250
PONTIAC	(1) - 3-3/4" - D.F.D.	(2) - 2-1/2" - D.F.D.	1-1/2"	5BR250
ROYAL OAK TOWNSHIP	(1) - 3-3/4" - D.F.D.	(2) - 2-1/2" - D.F.D.	1-1/8"	5BR250
SPRINGFIELD TOWNSHIP	(1) - 4-1/2" - N.S.T.	(2) - 2-1/2" - N.S.T.	1-1/2"	5BR250

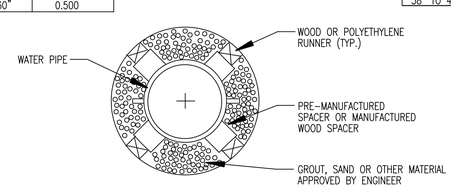
1. D.F.D. - DETROIT FIRE DEPARTMENT THREAD
2. N.S.T. - NATIONAL STANDARD THREAD
3. STORZ NOZZLES SHALL BE COMPATIBLE WITH STORZ COUPLED LARGE DIAMETER FIRE HOSE. NOZZLES SHOULD BE MADE OF "LEAD FREE" BRASS OR ALUMINUM, AS APPROVED BY LOCAL CITY, VILLAGE OR TOWNSHIP. THE NOZZLE SHALL BE AN INTEGRAL PART OF THE HYDRANT, RESISTANT TO TAMPER AND REMOVAL. ENGAGEMENT LUGS SHALL BE ON THE NOZZLE AND CAP TO PREVENT FAILURE UNDER HIGH PRESSURE. NOZZLE AND CAP SHALL MEET AWWA C502 SPECIFICATIONS. NOZZLE SHALL BE COMPATIBLE WITH HOSE LOCK TO PREVENT HOSE FROM DISCONNECTING WHILE IN USE.

UNLESS OTHERWISE SPECIFIED, MINIMUM CASING PIPE SHALL BE ASTM A-139 GRADE B, WALL THICKNESS AS FOLLOWS:

NOMINAL SIZE	MINIMUM WALL THICKNESS
8"- 42"	0.375
48"- 60"	0.500

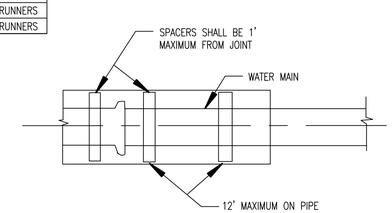
REQUIRED QUANTITY OF RUNNERS IN ACCORDANCE WITH SIZE

TO 14" DIA.	4 RUNNERS
16" TO 36" DIA	6 RUNNERS
38" TO 48" DIA.	8 RUNNERS



SUPPORT FOR WATER MAIN CONSTRUCTED IN CASING PIPE

SCALE 1"= 4'



WATER MAIN IN CASING SECTION

SCALE 1"= 2'

WATER MAIN IN CASING DETAILS

WATER RESOURCES COMMISSIONER OPERATIONS AND MAINTENANCE DIVISION WATER SYSTEMS RECORD DRAWING SPECIFICATIONS

IN AREAS WHERE WATER SYSTEMS ARE OPERATED AND MAINTAINED BY THE WATER RESOURCES COMMISSIONER, OPERATIONS AND MAINTENANCE DIVISION, FINAL ACCEPTANCE OF THE WATER SYSTEM MUST BE RENDERED BY THE WATER RESOURCES COMMISSIONER, OPERATIONS AND MAINTENANCE DIVISION, BEFORE THE SYSTEM CAN BE USED FOR THE SERVICE INTENDED.

ONE ITEM REQUIRED FOR FINAL ACCEPTANCE SHALL BE THE SUBMISSION OF RECORD DRAWINGS TO THE WATER RESOURCES COMMISSIONER, OPERATIONS AND MAINTENANCE DIVISION, BY THE DESIGN ENGINEER. RECORD DRAWINGS SHALL BE DEFINED AS AND CONTAIN THE FOLLOWING INFORMATION:

1. THE DESIGN ENGINEER SHALL FURNISH "RECORD DRAWINGS" WATER MAIN PLANS UPON JOB COMPLETION. "RECORD DRAWINGS" SHALL BE FORWARDED TO THE WATER RESOURCES COMMISSIONER BY THE LOCAL MUNICIPAL ENGINEER AFTER THEIR REVIEW AND APPROVAL.
2. RECORD DRAWINGS SHALL BE PROVIDED ON THREE (3) MIL. MYLAR. XEROX OR ANY HEAT PROCESS REPRODUCTIONS WILL NOT BE ACCEPTED.
3. ALONG WITH THE MYLAR PLAN SET, PROVIDE TWO (2) SETS OF BLUEPRINTS, PRODUCED FROM THE MYLARS AND THE PLANS ON ELECTRONIC MEDIA IN AUTOCAD FORMAT (LATEST VERSION).
4. EACH AND EVERY SHEET SHALL BE SEALED BY THE PROJECT DESIGN ENGINEER, ALONG WITH THE FOLLOWING CERTIFICATION STATEMENT ON THE COVER SHEET:

> I HEREBY CERTIFY THAT OUR FIRM HAS PREPARED THESE RECORD DRAWINGS OF THE IMPROVEMENTS AS CONSTRUCTED, AND THAT TO THE BEST OF MY KNOWLEDGE THOSE IMPROVEMENTS NOTED AS "RECORD DRAWINGS" WERE CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED CONSTRUCTION PLANS; AND ALSO THAT THE WATER MAIN AND STRUCTURES, AS CONSTRUCTED, LIE WITHIN THE EASEMENT DESCRIPTIONS REQUIRED BY THE WATER RESOURCES COMMISSIONER'S OFFICE.
>
> _____
> (COMPANY NAME)
>
> _____
> (ENGINEER'S SIGNATURE)
>
> PROFESSIONAL ENGINEER NO. _____
>
> ENGINEER SEAL

5. THE MINIMUM SCALE SHALL BE ONE (1) INCH EQUALS ONE HUNDRED (100) FEET.
6. THE SIZE, LENGTH, CLASS AND MANUFACTURER OF PIPE INSTALLED SHALL BE INDICATED.
7. THE SIZE, BRAND AND MODEL NUMBERS OF ALL VALVES AND HYDRANTS INSTALLED SHALL BE INDICATED.
8. A TOTAL RECORD DRAWING QUANTITY LIST SHALL BE INCLUDED, AS WELL AS A RECORD DRAWING QUANTITY LIST ON EACH INDIVIDUAL SHEET.
9. THE LOCATIONS SHALL BE SHOWN ON THE PLANS WITH AN ACCURACY OF ONE (1) FOOT.
10. THE OFFSET OF THE WATER MAIN FROM PROPERTY LINES SHALL BE INDICATED.
11. ALL GATE VALVE WELLS, HYDRANTS AND ALL WATER SYSTEM APPURTENANCES SHALL BE LOCATED FROM THE NEAREST PROPERTY CORNER.
12. ALL UNDERGROUND APPURTENANCES, SUCH AS GATE VALVE WELLS, METER PITS, PRESSURE REDUCING VALVE PITS, ETC. SHALL BE LOCATED FROM THE NEAREST HYDRANT THAT IS CONNECTED TO THE SAME WATER MAIN AS THE APPURTENANCE.
13. THE LOCATION, SIZE, BRAND AND MODEL NUMBER OF EVERY RESTRAINED JOINT SHALL BE NOTED.
14. THE ACCURATE LOCATION OF ALL UTILITY CROSSINGS WHERE THE RECOMMENDED SEPARATION, VERTICALLY OR HORIZONTALLY, IS LESS THAN THE TEN STATE STANDARDS SHALL BE NOTED.
15. WATER MAINS LARGER THAN 8" DIAMETER SHALL BE DRAWN ON PROFILE VIEW IN ADDITION TO PLAN VIEW ON THE CONSTRUCTION PLANS.

WATER MAIN STANDARD DETAILS

REVISION BLOCK

Data Source / Source Date: N/A

Rev. No.:	Rev. By:	Rev. Date:	Description:
1	DS	11/21/14	PROPOSED CHANGES TO GATE VALVE STANDARDS, HYDRANT SPECIFICATIONS AND PIPE CLASS UPDATES
2	DL	03/23/15	FINAL CHANGES TO GATE VALVE STANDARDS; HYDRANT SPECIFICATIONS AND PIPE CLASS UPDATES
3	DL	01/03/17	UPDATE "DIRECTION TO OPEN" COMMERCE TOWNSHIP FROM RIGHT TO LEFT
4	KB	02/14/18	MARKUPS PER G. APPEL

ORIG. DATE: 01/01/01

SCALE: NONE

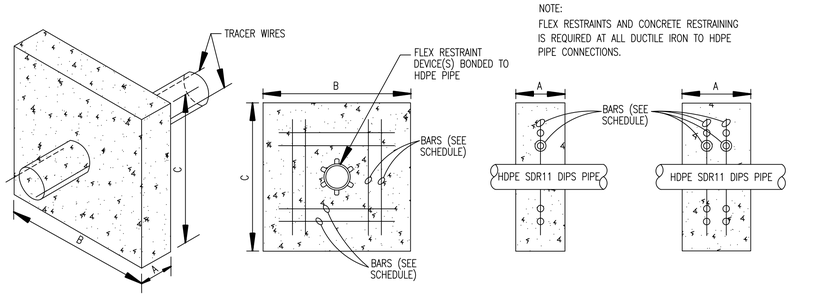
DESIGNED BY: WRC

DRAWN BY: WRC Mapping

WRC WATER RESOURCES COMMISSIONER Jim Nash

ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48328-1907

SHEET NO.: 3 of 5



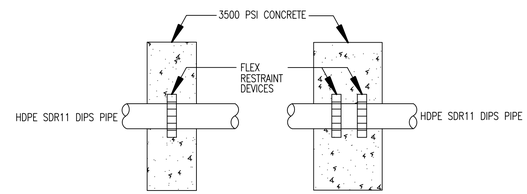
NOTE:
FLEX RESTRAINTS AND CONCRETE RESTRAINING IS REQUIRED AT ALL DUCTILE IRON TO HDPE PIPE CONNECTIONS.

RESTRAINING BLOCK DIMENSIONS

SINGLE FACE RESTEEL Ⓢ DOUBLE FACE RESTEEL Ⓓ

HDPE RESTRAINING RESTEEL

NOT TO SCALE

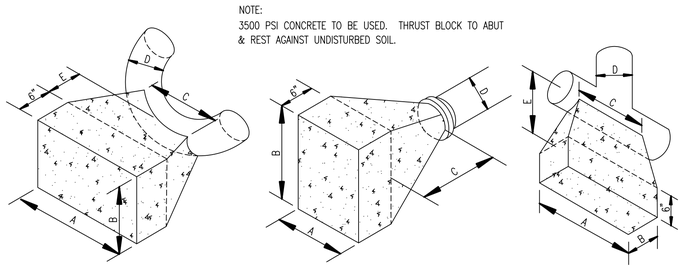


SINGLE Ⓢ DOUBLE Ⓓ

HDPE RESTRAINING BLOCK RESTRAINTS

NOT TO SCALE

NOTE:
3500 PSI CONCRETE TO BE USED. THRUST BLOCK TO ABUT & REST AGAINST UNDISTURBED SOIL.



FOR 90° BENDS OR SMALLER

D	A	B	C	E MIN
20"	8'	6.5'	3.5'	2.5'
16"	6'	4'	2.5'	2'
12"	4'	3'	2'	1.75'
10"	3'	3'	2'	1.75'
8"	3'	2'	2'	1.5'
6"	2'	1.5'	2'	1.25'

FOR PLUGS

D	A	B	C MIN
20"	7'	5'	2.5'
16"	4.8'	4.8'	2'
12"	4.3'	3'	1.75'
10"	3'	2'	1.5
8"	2.8'	2.5'	1.5'
6"	1.5'	1.5'	0.25'

FOR TEES

D	A	B	C	E MIN
20"	6.5'	4.5'	3.5'	3'
16"	4.7'	4.7'	2.5'	2.75'
12"	4'	3'	2.5'	2.5'
10"	3'	2'	2'	2.25'
8"	2.7'	2'	2'	2.25'
6"	2'	2'	2'	2.25'

HDPE THRUST BLOCK DETAILS

NOT TO SCALE

HDPE SDR11 DIPS RESTRAINING BLOCK SCHEDULE

HDPE SDR11 DIPS SIZE	A	B	C	EFFECTIVE AREA	# RESTRAINTS	REINFORCING
4"	1 FT	2 FT	2 FT	4.0 S.F.	1	4 #6 Ⓢ
6"	1 FT	3 FT	3 FT	9.0 S.F.	2	4 #6 Ⓢ
8"	1 FT	3.75 FT	3.75 FT	14.0 S.F.	2	4 #6 Ⓢ
10"	1 FT	4.75 FT	4.75 FT	22.6 S.F.	3	8 #4 Ⓢ
12"	1.5 FT	5.5 FT	5.5 FT	30.3 S.F.	4	8 #6 Ⓢ
14"	1.5 FT	6.33 FT	6.33 FT	40.0 S.F.	5	8 #6 Ⓢ
16"	2 FT	7.25 FT	7.25 FT	52.6 S.F.	6	16 #6 Ⓓ
18"	2 FT	8.1 FT	8.1 FT	65.6 S.F.	7	16 #6 Ⓓ
20"	2 FT	9 FT	9 FT	81.0 S.F.	9	16 #6 Ⓓ
24"	2 FT	10.75 FT	10.75 FT	115.6 S.F.	14 Ⓓ	16 #6 Ⓓ
30"	2.5 FT	13.25 FT	13.25 FT	175.6 S.F.	19 Ⓓ	16 #6 Ⓓ
36"	2.5 FT	15.9 FT	15.9 FT	252.8 S.F.	28 Ⓓ	16 #6 Ⓓ

1. Restraining blocks shall have a minimum of 3.0' of cover.
2. Restraining block dimensions "B" and "C" may be changed due to depth of cover limitations provided the effective area is maintained.

HDPE Watermain Notes

1. All HDPE watermain shall be D.I.P.S. SDR 11 manufactured from a PE 4710 resin. HDPE pipe shall be marked with a permanently co-extruded blue stripe.
2. All HDPE fittings shall be manufactured from a PE 4710 resin.
3. All HDPE water services shall be SDR 9.
4. Electrofusion equipment shall be calibrated and certified per the pipe manufacturer's requirements.
5. Concrete restraining blocks and thrust blocks shall be constructed of minimum 3,500 p.s.i. concrete.
6. All HDPE piping shall be installed with two tracer/locator wires insulated with high molecular weight polyethylene (HMWPE) specifically for use in direct burial applications.
7. Tracer wires shall be 6-gauge solid or stranded annealed or hard copper per UL83 (Thermoplastic Insulated Wires and Cables) and ASTM requirements including ASTM B1 (Standard Specification for Hard-Drawn Copper Wire), B3 (Standard Specification for Soft or Annealed Copper Wire), and B8 (Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft).
8. Tracer wire shall be insulated. Insulation shall be for 600-volt applications and shall be a minimum of 45 mils thick. The minimum thickness at any point shall not be less than 90% of the specified average thickness in compliance with UL 83. The tracer wire shall have the UL 83 specification shall be clearly marked on the wire insulation. The insulation shall be colored blue for watermain applications.
9. Two tracer wires shall be attached to the watermain pipe at five foot intervals or as approved by the Engineer. Attachment to pipe shall be made with plastic cable ties or equivalent. The use of tape is not approved. Tracer wires shall be checked for continuity prior to placing the watermain into service
10. HDPE pipe transitions to ductile iron pipe shall be performed using fused-on mechanical joint adapters or flange adapters. Mega-lugs or Mega-lugs combined with internal pipe stiffeners are not approved.
11. Hydrostatic testing shall be per AWWA standards (ASTM F2164). Testing shall be performed after the initial expansion phase and after the system has stabilized. Testing pressure shall be 150 p.s.i. held for 2 hours.

HDPE Watermain Allowable Losses for 2 Hour Test Period

Pipe Dia.	Pipe Length		Allowable Water Loss Per Ft.		Total Loss Allowed
3"	___	x	0.15	=	_____
4"	___	x	0.25	=	_____
6"	___	x	0.60	=	_____
8"	___	x	1.00	=	_____
10"	___	x	1.30	=	_____
12"	___	x	2.30	=	_____
14"	___	x	2.80	=	_____
16"	___	x	3.30	=	_____
18"	___	x	4.30	=	_____
20"	___	x	5.50	=	_____
24"	___	x	8.90	=	_____

HDPE WATER MAIN
STANDARD DETAILS

REVISION BLOCK
Data Source / Source Date: N/A

Rev. No.:	Rev. By:	Rev. Date:	Description:
1	KB	02/14/18	MARKUPS PER G. APPEL
2			
3			
4			

ORIG. DATE: 01/01/01
SCALE: NONE
DESIGNED BY: OCDC
DRAWN BY: OCDC Mapping

WRC WATER RESOURCES COMMISSIONER Jim Nash

ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
WATERFORD, MICHIGAN
48328-1907

SHEET NO.: 4 OF 5

Date Plotted: 2/14/2018
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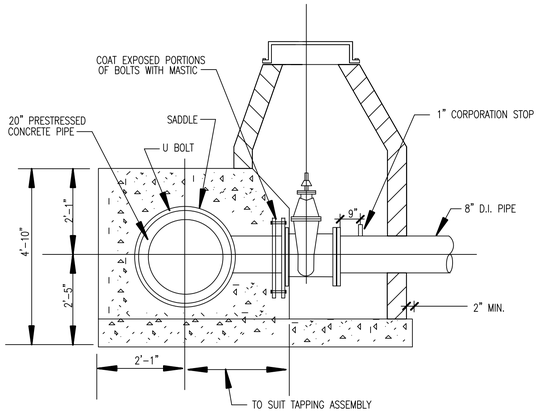
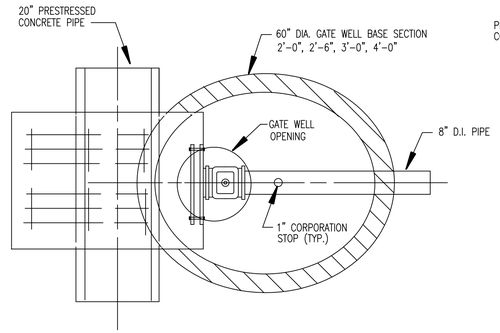


SECTION VIEW



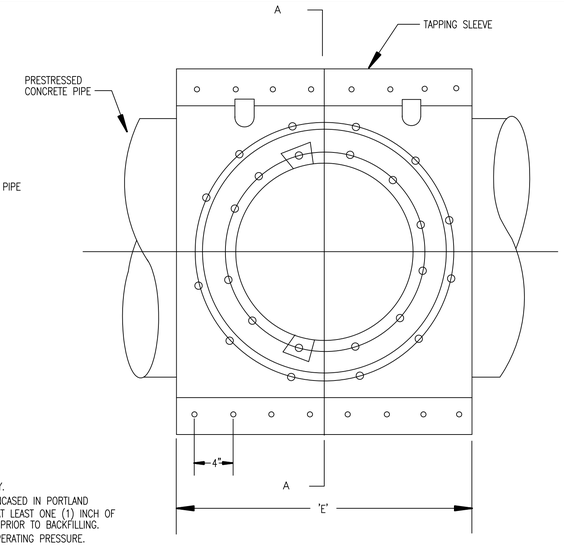
PLAN VIEW

20"x 8" CONCRETE PRESURE TAP VALVE & WELL ASSEMBLY W/ CONCRETE ENCASEMENT

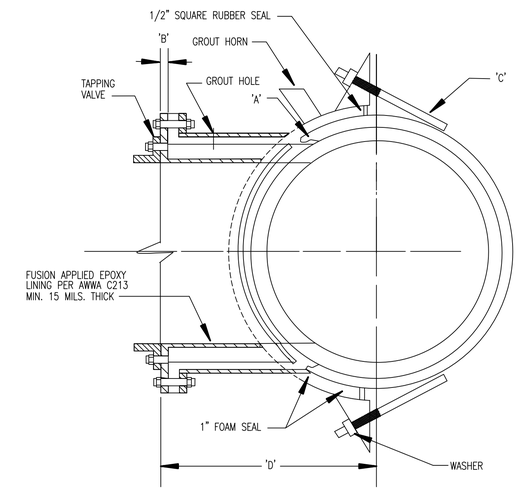
NOT TO SCALE

NOTES:

1) THESE DIMENSIONS ARE FOR REFERENCE ONLY.
2) ENTIRE SADDLE, INCLUDING STRAPS, TO BE ENCASED IN PORTLAND CEMENT MORTAR OR CONCRETE TO PROVIDE AT LEAST ONE (1) INCH OF THICKNESS OVER EXTERNAL STEEL SURFACES PRIOR TO BACKFILLING.
3) TAP SADDLES ARE DESIGNED FOR 150 PSI OPERATING PRESSURE.
4) FLANGE DRILLED AND TAPPED IN ACCORDANCE WITH AWWA C207 CLASS D, CENTERING RING CONFORMS TO MSS- SP 60.
5) GROUT SHALL SET A MINIMUM OF TWENTY-FOUR (24) HOURS PRIOR TO PRESSURE TESTING.



PLAN VIEW



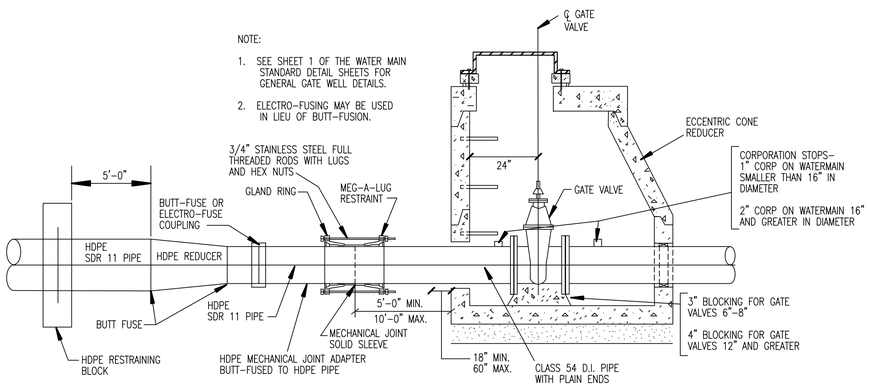
SECTION A-A

PIPE SIZE X TAP SIZE	A	B	C	D	E
16" X 4"	1/4"	7/8"	6	14-1/16 "	24"
16" X 6"	1/4"	1-1/8"	6	14-5/16 "	24"
16" X 8"	1/4"	1-1/8"	6	14-5/16 "	24"
16" X 10"	1/4"	1-3/8"	7	14-9/16 "	28"
16" X 12"	1/4"	1-3/8"	8	14-9/16 "	32"
18" X 4"	1/4"	7/8"	6	15-3/8 "	24"
18" X 6"	1/4"	1-1/8"	6	15-5/8 "	24"
18" X 8"	1/4"	1-1/8"	6	15-5/8 "	24"
18" X 10"	1/4"	1-3/8"	7	15-7/8 "	28"
18" X 12"	1/4"	1-3/8"	8	15-7/8 "	32"
20" X 4"	1/4"	7/8"	6	16-1/2 "	24"
20" X 6"	1/4"	1-1/8"	6	16-1/2 "	24"
20" X 8"	1/4"	1-1/8"	6	16-1/2 "	24"
20" X 10"	1/4"	1-3/8"	7	17"	28"
20" X 12"	1/4"	1-3/8"	8	17"	32"
24" X 4"	1/4"	7/8"	6	18-3/4"	24"
24" X 6"	1/4"	1-1/8"	6	19"	24"
24" X 8"	1/4"	1-1/8"	6	19"	24"
24" X 10"	1/4"	1-3/8"	7	19-1/4"	28"
24" X 12"	1/4"	1-3/8"	8	19-1/4"	32"
30" X 4"	1/4"	7/8"	6	22-1/8"	24"
30" X 6"	1/4"	1-1/8"	6	22-3/8"	24"
30" X 8"	1/4"	1-1/8"	6	22-3/8"	24"
30" X 10"	1/4"	1-3/8"	7	22-5/8"	28"
30" X 12"	1/4"	1-3/8"	8	22-5/8"	32"
36" X 4"	1/4"	7/8"	6	25-1/2 "	24"
36" X 6"	1/4"	1-1/8"	6	25-3/4 "	24"
36" X 8"	1/4"	1-1/8"	7	25-3/4 "	28"
36" X 10"	1/4"	1-3/8"	8	26"	32"
36" X 12"	1/4"	1-3/8"	9	26"	36"
42" X 4"	1/4"	7/8"	6	28-7/8"	24"
42" X 6"	1/4"	1-1/8"	7	29-1/8"	28"
42" X 8"	1/4"	1-1/8"	8	29-1/8"	32"
42" X 10"	3/8"	1-3/8"	9	29-3/8"	36"
42" X 12"	3/8"	1-3/8"	10	29-3/8"	40"
48" X 4"	3/8"	7/8"	7	32-1/4"	28"
48" X 6"	3/8"	1-1/8"	7	32-1/2"	28"
48" X 8"	3/8"	1-1/8"	7	32-1/2"	28"
48" X 10"	3/8"	1-3/8"	7	32-3/4"	28"
48" X 12"	3/8"	1-3/8"	9	32-3/4"	36"

CONCRETE TAPPING SLEEVE DETAILS

NOTE:

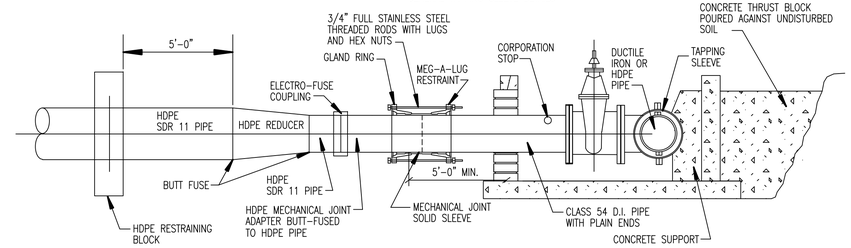
1. SEE SHEET 1 OF THE WATER MAIN STANDARD DETAIL SHEETS FOR GENERAL GATE WELL DETAILS.
2. ELECTRO-FUSING MAY BE USED IN LIEU OF BUTT-FUSION.



TYPICAL GATE VALVE CONNECTION TO HDPE

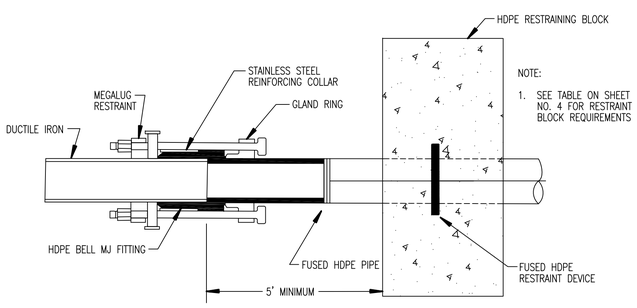
(SCALE 1"=2')

NOTE:
SEE SHEET 1 OF THE WATER MAIN STANDARD DETAIL SHEETS FOR GENERAL TAPPING SLEEVE DETAILS



HDPE TAPPING SLEEVE, VALVE & WELL

SCALE 1"= 2'

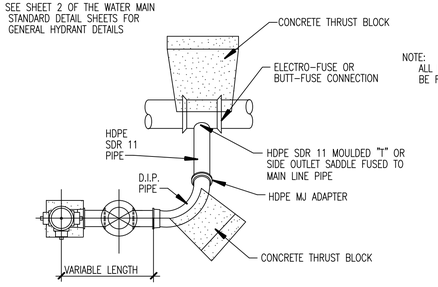


NOTE:
1. SEE TABLE ON SHEET NO. 4 FOR RESTRAINT BLOCK REQUIREMENTS

HDPE TO DUCTILE IRON TRANSITION

NOTES

1. SEE SHEET 2 OF THE WATER MAIN STANDARD DETAIL SHEETS FOR GENERAL HYDRANT DETAILS

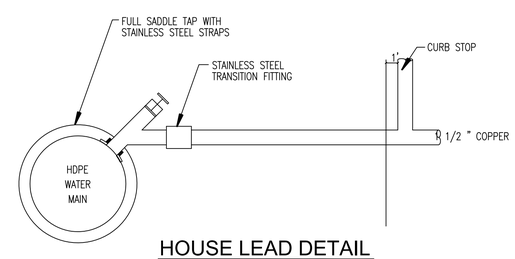


NOTE:
ALL HYDRANT LEADS TO BE FULLY RESTRAINED.

PLAN HYDRANT SIDE OUTLET

SCALE 1" = 1'

NOTE:
ALL BURIED BOLTS SHALL BE CORTEN OR LOW ALLOY AND POLY-WRAPPED.



HOUSE LEAD DETAIL HDPE TO COPPER

NO SCALE

DETAILS FOR HIGH DENSITY POLYETHYLENE PIPE (HDPE)

WATER MAIN SPECIAL DETAILS

REVISION BLOCK
Data Source / Source Date: N/A

Rev. No.:	Rev. By:	Rev. Date:	Description:
1	KB	03/19/18	MARKUPS PER G. APPEL
2			
3			
4			

ORIG. DATE: 01/01/01
SCALE: NONE
DESIGNED BY: OCDC
DRAWN BY: OCDC Mapping

WRC WATER RESOURCES COMMISSIONER Jim Nash

ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48328-1907

SHEET NO.: 5 OF 5