PRELIMINARY SITE PLAN FOR
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

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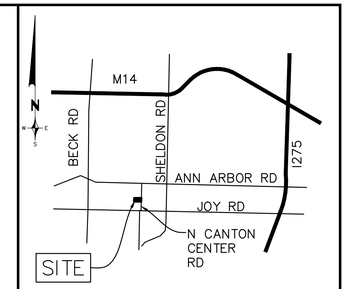
W E
S
SCALE: 1" = 100'



LOCATION MAP
NOT TO SCALE

SHEET INDEX:

CIVIL PLANS:

PLYMOUTH TOWNSHIP STANDARD DETAILS:

LANDSCAPE PLANS:

ARCHITECTURE PLANS:

Land Use Summary-
FOR THE PROPOSED ACTIVITIES AND FUTURE LOT DEVELOPMENT

	Characteristic	Existing Conditions	Proposed Conditions
	Total Development Area (ac)	6.33	6.33
	Impervious Area (ac)	0	2.09
	Total Pervious Area (ac)	6.33	4.24
	Pervious Area Breakdown by Cover Type		
Pervious Area Land Use Data	*Meadow/fallow/natural area (non-cultivated)*	0 acres	0 acres
	Predominant NRCS Soil Type (A, B, C, or D)	A/B	A/B
	Improved areas (turf grass, landscape, row crops)	5.07 acres	5.86 acres
	Predominant NRCS Soil Type (A, B, C, or D)	A/B	A/B
	Wooded Areas	1.26 acres	0.47 acres
	Predominant NRCS Soil Type (A, B, C, or D)	A/B	A/B
	Calculated CPVC Volume (cubic feet)		11719
	CPVC Volume ***Provided*** (cubic feet)		6936
	CPRC Volume Provided (cubic feet)		22266

The Professional Engineer who signs and seals this site plan certifies that the values in this table reflect the Wayne County stormwater calculations required for this development. The geotechnical investigations were performed to provide conclusive documentation that demostrates whether infiltration (i.e., CPVC Volume Control) is practicable.

NOTE:

THESE PLANS ARE THE PROPERTY OF ZEIMET–WOZNIAK & ASSOCIATES, INC. NO CONSTRUCTION STAKING OR CONSTRUCTION INSPECTION OR CONSTRUCTIVE USE OF THESE PLANS SHALL BE MADE BY ANYONE WITHOUT THE WRITTEN AUTHORIZATION BELOW.

AUTHORIZATION BY:_____

ZEIMET–WOZNIAK & ASSOCIATES, INC. SHALL NOT BE RESPONSIBLE FOR MEANS, METHODS, PROCEDURES, TECHNIQUES, OR SEQUENCES OF CONSTRUCTION, NOR FOR SAFETY ON THE JOB SITE, NOR SHALL ZEIMET–WOZNIAK & ASSOCIATES, INC. BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

THE CONTRACTOR SHALL INDEMNIFY AND SAVE HARMLESS THE OWNER AND ENGINEER FROM ALL LIABILITIES FOR INJURY TO PERSONS, OR DAMAGE TO OR LOSS OF PROPERTY, OR ANY OTHER LOSS, COST OR EXPENSE, AS A RESULT OF THE ACTIONS OF THE CONTRACTOR, HIS EMPLOYEES, AGENTS, OR SUBCONTRACTORS.

ALL CONTRACTORS SHALL NAME ZEIMET–WOZNIAK & ASSOCIATES, INC. AS ADDITIONALLY INSURED ON ALL INSURANCE POLICIES.

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND ELEVATION OF EXISTING UTILITIES AND PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
CHO SUBMITTAL	5/16/24								
CHO RESUBMITTAL	7/15/24								
CHO RESUBMITTAL	10/16/24								
PSP SUBMITTAL	1/31/25								

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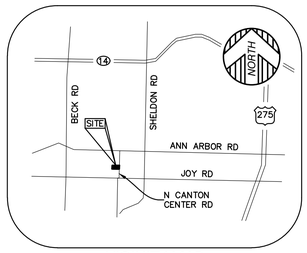
PROJECT SPONSOR:
CRS–COMMERICIAL REAL ESTATE
10741 FELLOWS HILL DRIVE
PLYMOUTH, MI 48170

COVER SHEET
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = 100' VER: 1" = N/A	
DESIGNED BY SRB	JOB NO.	24104	
DRAWN BY SRB	SHEET	SP–1	



VICINITY MAP

(NOT TO SCALE)

PARCEL AREA

EXISTING PARCEL 1:
43,560± SQUARE FEET = 1.00± ACRE

EXISTING PARCEL 2:
286,731± SQUARE FEET = 6.58± ACRES

PARCEL A:
282,888± SQUARE FEET = 6.49± ACRES

PARCEL B:
23,805± SQUARE FEET = 0.55± ACRES

PARCEL C:
23,598± SQUARE FEET = 0.54± ACRES

BASIS OF BEARING

NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST, BEING THE EAST LINE OF SECTION 33, AS DESCRIBED.

BENCHMARK

SITE BENCHMARK #1
MAG NAIL ON SOUTHEAST SIDE OF 40" TREE 52' WEST OF THE SOUTHEAST CORNER OF HOUSE #9133.
ELEVATION = 721.04' (NAVD 88)

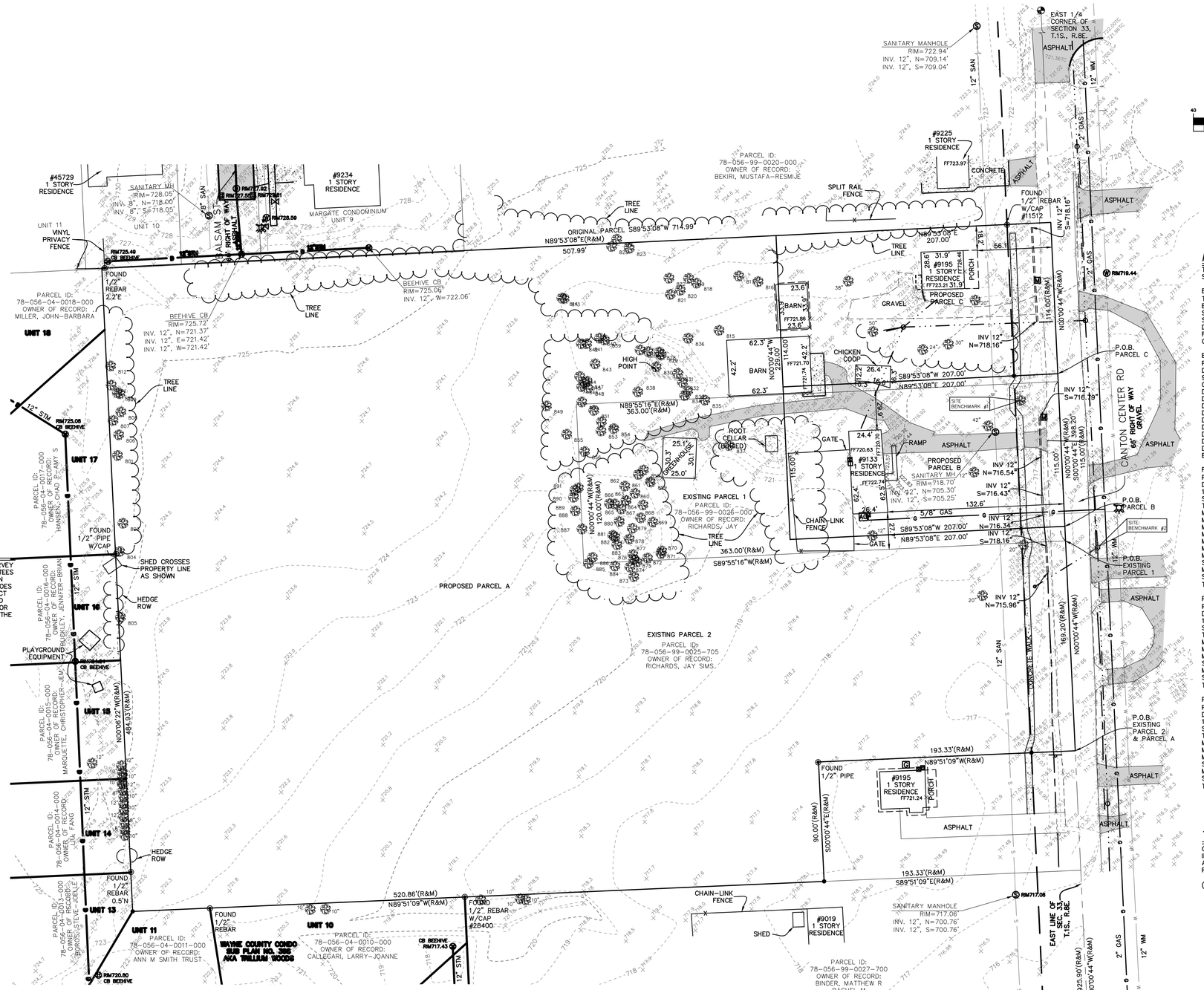
SITE BENCHMARK #2
MAG NAIL ON WEST SIDE OF POWER POLE EAST SIDE OF CANTON CENTER RD IN FRONT OF HOUSE #9070.
ELEVATION = 718.87' (NAVD 88)

SURVEYOR'S NOTE

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES OTHER THAN THE STRUCTURE INVENTORY SHOWN HEREON.

LEGEND

- SET 1/2" REBAR WITH CAP P.S. 47976
- FOUND MONUMENT (AS NOTED)
- FOUND SECTION CORNER (AS NOTED)
- (R&M) RECORD AND MEASURED DIMENSION
- (R) RECORD DIMENSION
- (M) MEASURED DIMENSION
- 0.00 GROUND ELEVATION
- ELECTRIC METER
- ELECTRIC PANEL
- GENERATOR
- UTILITY POLE
- GAS METER
- SANITARY MANHOLE
- ROUND CATCH BASIN
- FIRE HYDRANT
- WATER GATE MANHOLE
- WATER VALVE
- AIR CONDITIONING UNIT
- MAIL BOX
- SINGLE POST SIGN
- DECIDUOUS TREE (AS NOTED)
- PARCEL BOUNDARY LINE
- PLATTED LOT LINE
- ADJOINER PARCEL LINE
- SECTION LINE
- BUILDING
- BUILDING OVERHANG
- CENTERLINE DITCH
- CENTERLINE ROAD
- RAISED CONCRETE
- EDGE OF CONCRETE (CONC.)
- EDGE OF ASPHALT (ASPH.)
- EDGE OF GRAVEL
- FENCE (AS NOTED)
- TREE / BRUSH LINE (AS NOTED)
- OVERHEAD UTILITY LINE
- GAS LINE
- SANITARY LINE
- WATER LINE
- STORM LINE
- MINOR CONTOUR LINE
- MAJOR CONTOUR LINE
- BUILDING AREA
- ASPHALT
- CONCRETE



TREES

SEE SHEET SP-3 FOR TREE INVENTORY LIST AND LP-3 FOR TREE REMOVALS AND PROTECTION.

PROPERTY DESCRIPTION

THE LAND SITUATED IN THE TOWNSHIP OF PLYMOUTH, COUNTY OF WAYNE, STATE OF MICHIGAN, IS DESCRIBED AS FOLLOWS:

EXISTING PARCEL 1:
THAT PART OF THE SOUTHEAST 1/4 OF SECTION 33 TOWN 1 SOUTH RANGE 8 EAST DESCRIBED AS BEGINNING AT A POINT ON THE EAST LINE OF SAID SECTION DISTANT NORTH 1084.10 FEET FROM THE SOUTHEAST CORNER OF SECTION 33 AND PROCEEDING THENCE NORTH 120 FEET; THENCE SOUTH 89 DEGREES 58 MINUTES 00 SECONDS WEST 363 FEET; THENCE DUE SOUTH 120 FEET; THENCE NORTH 89 DEGREES 56 MINUTES EAST 363 FEET TO THE POINT OF BEGINNING.

EXISTING PARCEL 2:
PART OF THE SOUTHEAST 1/4 OF SECTION 33 TOWN 1 SOUTH RANGE 8 EAST DESCRIBED AS BEGINNING NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST 925.90 FEET FROM THE SOUTHEAST CORNER OF SECTION 33; THENCE NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST 158.20 FEET; THENCE SOUTH 89 DEGREES 55 MINUTES 16 SECONDS WEST 363 FEET; THENCE NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST 120 FEET; THENCE NORTH 89 DEGREES 55 MINUTES 16 SECONDS EAST 363 FEET; THENCE NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST 120 FEET; THENCE SOUTH 89 DEGREES 53 MINUTES 08 SECONDS WEST 714.99 FEET; THENCE SOUTH 00 DEGREES 06 MINUTES 22 SECONDS EAST 484.93 FEET; THENCE SOUTH 89 DEGREES 51 MINUTES 09 SECONDS EAST 520.86 FEET; THENCE NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST 90 FEET; THENCE SOUTH 89 DEGREES 51 MINUTES 09 SECONDS EAST 193.33 FEET TO THE POINT OF BEGINNING.

PROPOSED PARCEL A:
PART OF THE SOUTHEAST 1/4 OF SECTION 33 TOWN 1 SOUTH RANGE 8 EAST DESCRIBED AS COMMENCING AT THE SOUTHEAST CORNER OF SECTION 33 TOWN 1 SOUTH, RANGE 8 EAST; RUNNING THENCE ALONG THE EAST LINE OF SAID SECTION NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST 925.90 FEET TO THE POINT OF BEGINNING; PROCEEDING THENCE NORTH 89 DEGREES 51 MINUTES 09 SECONDS WEST 193.33 FEET; THENCE SOUTH 00 DEGREES 00 MINUTES 44 SECONDS EAST 90.00 FEET; THENCE NORTH 89 DEGREES 51 MINUTES 09 SECONDS WEST 520.86 FEET; THENCE NORTH 00 DEGREES 06 MINUTES 22 SECONDS WEST 484.93 FEET; THENCE NORTH 89 DEGREES 53 MINUTES 08 SECONDS EAST 507.99 FEET; THENCE SOUTH 00 DEGREES 00 MINUTES 44 SECONDS EAST 229.00 FEET; THENCE NORTH 89 DEGREES 53 MINUTES 08 SECONDS EAST 207.00 FEET TO A POINT ON THE EAST LINE OF SAID SECTION; THENCE ALONG SAID SECTION LINE, SOUTH 00 DEGREES 00 MINUTES 44 SECONDS EAST 169.20 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THE EASTERLY 33 FEET THEREOF FOR ROAD PURPOSES (CANTON CENTER ROAD).

PROPOSED PARCEL B:
PART OF THE SOUTHEAST 1/4 OF SECTION 33 TOWN 1 SOUTH RANGE 8 EAST DESCRIBED AS COMMENCING AT THE SOUTHEAST CORNER OF SECTION 33 TOWN 1 SOUTH, RANGE 8 EAST; RUNNING THENCE ALONG THE EAST LINE OF SAID SECTION, NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST 1095.10 FEET TO THE POINT OF BEGINNING; PROCEEDING THENCE SOUTH 89 DEGREES 53 MINUTES 08 SECONDS WEST 207.00 FEET; THENCE NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST 115.00 FEET; THENCE NORTH 89 DEGREES 53 MINUTES 08 SECONDS EAST 207.00 FEET TO A POINT ON THE EAST LINE OF SAID SECTION; THENCE ALONG SAID SECTION LINE, SOUTH 00 DEGREES 00 MINUTES 44 SECONDS EAST 115.00 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THE EASTERLY 33 FEET THEREOF FOR ROAD PURPOSES (CANTON CENTER ROAD).

PROPOSED PARCEL C:
PART OF THE SOUTHEAST 1/4 OF SECTION 33 TOWN 1 SOUTH RANGE 8 EAST DESCRIBED AS COMMENCING AT THE SOUTHEAST CORNER OF SECTION 33 TOWN 1 SOUTH, RANGE 8 EAST; RUNNING THENCE ALONG THE EAST LINE OF SAID SECTION, NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST 1210.10 FEET TO THE POINT OF BEGINNING; PROCEEDING THENCE SOUTH 89 DEGREES 53 MINUTES 08 SECONDS WEST 207.00 FEET; THENCE NORTH 00 DEGREES 00 MINUTES 44 SECONDS WEST 114.00 FEET; THENCE NORTH 89 DEGREES 53 MINUTES 08 SECONDS EAST 207.00 FEET TO A POINT ON THE EAST LINE OF SAID SECTION; THENCE ALONG SAID SECTION LINE, SOUTH 00 DEGREES 00 MINUTES 44 SECONDS EAST 114.00 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THE EASTERLY 33 FEET THEREOF FOR ROAD PURPOSES (CANTON CENTER ROAD).

TITLE REPORT NOTE

ONLY THOSE EXCEPTIONS CONTAINED WITHIN THE FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT NO. TC82133, DATED SEPTEMBER 12, 2023, AND RELISTED BELOW WERE CONSIDERED FOR THIS SURVEY. NO OTHER RECORDS RESEARCH WAS PERFORMED BY THE CERTIFYING SURVEYOR.

(NO SPECIFIC EASEMENTS LISTED)

SURVEYOR'S CERTIFICATION

TO PHOENIX MANAGEMENT HOLDINGS II LLC, A MICHIGAN LIMITED LIABILITY CO., FIRST AMERICAN TITLE INSURANCE COMPANY, TRY-COUNTY TITLE AGENCY, INC.,:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 4, 5, 7A, 8, 9, 11A, AND 11B OF TABLE A, THEREOF. THE FIELD WORK WAS COMPLETED ON 11/10/23.

DATE OF PLAT OR MAP: 11/10/23

ANTHONY T. SYCKO, JR., P.S.
PROFESSIONAL SURVEYOR
MICHIGAN LICENSE NO. 47976
22556 GRATIOT AVE., EASTPOINTE, MI 48021
TSycko@kemtec-survey.com

NORTH

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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ALTA / NSPS LAND TITLE SURVEY

PREPARED FOR: PHOENIX MANAGEMENT HOLDINGS II LLC
9133 + LOT CANTON CENTER ROAD, PLYMOUTH TOWNSHIP, MICHIGAN,
PART OF SECTION 33,
TOWN 1 SOUTH, RANGE 8 EAST

NO.	DATE	BY	DESCRIPTION
4	05/15/24	JDM	REVISED PROPOSED PARCELS
3	05/14/24	JO	ADDITIONAL TOPO
2	02/28/24	MRJ	ADDED TREES
1	11/21/23	JDM	ADD SPLIT

DRAWN BY: PK 11/15/23
CHECKED BY: ATS 11/10/23
DATE: NOVEMBER 15, 2023
SCALE: 1" = 40'
PROJECT NO. 23-02245-SPLIT

SP-2
1 OF 1 SHEETS

9313 Canton Center Road Tree Inventory List

Tree No.	Size (dia. breast ht.)	Tree Type Scientific Name	Tree Type Common Name	Condition	Comments
801	27"	*Platanus occidentalis*	American Sycamore	Fair	Slight L
802	13"	*Morus sp.*	Mulberry	Poor	DL, OS, Weeping at wound on trunk
803	9"	*Morus sp.*	Mulberry	Poor	M, OS, Weeping, Vines Gr
804	10"	*Juglans nigra*	Black Walnut	Fair/Poor	OS
805	7",7",7"	*Acer negundo*	Box Elder	Fair/Poor	OS
806	4",5"	*Acer saccharum*	Sugar Maple	Fair/Poor	DL
807	7"	*Fraxinus pennsylvanica*	Green Ash	Dead	
808	6"	*Acer negundo*	Box Elder	Poor	BD, DL, Sev. L
809	5"	*Juglans nigra*	Black Walnut	Fair/Poor	Growing into can-opy of Sycamore
810	26"	*Platanus occidentalis*	American Sycamore	Fair	
811	7"	*Acer saccharum*	Sugar Maple	Fair	
812	7",10",11",15"	*Morus sp.*	Mulberry	Poor	BD, DL, SS
813	14"	*Populus deltoides*	Cottonwood	Fair	
814	6"	*Fraxinus pennsylvanica*	Green Ash	Fair/Poor	M
815	8"	*Acer saccharinum*	Silver Maple	Fair/Poor	Vines Gr
816	37"	*Acer negundo*	Box Elder	Fair/Poor	DL
817	48",58"	*Acer negundo*	Box Elder	Poor	BD, DL, Lg. Stem LV
818	19"	*Acer negundo*	Box Elder	Very Poor	Maj. BD, Sev. L
819	23",28"	*Acer negundo*	Box Elder	Poor	BD, DL, SS
820	15"	*Acer negundo*	Box Elder	Very Poor	Maj. BR
821	32"	*Acer negundo*	Box Elder	Dead	Stem only
822	16"	*Acer negundo*	Box Elder	Poor	L, Vines OrBit Gr
823	14",16",19"	*Acer negundo*	Box Elder	Poor	BR, DL, L
824	7"	*Juglans nigra*	Black Walnut	Fair	
825	10", 14",19", 22"	*Acer negundo*	Box Elder	Very Poor	10" stem dead, 22" stem toppled, VC Gr
826	14",17"	*Acer negundo*	Box Elder	Poor	BD, DL
827	12"	*Acer negundo*	Box Elder	Poor	DL, NC
828	15"	*Acer negundo*	Box Elder	Fair/ Poor	Sl. L
829	8",15"	*Acer negundo*	Box Elder	Poor	DL, M, NC
830	6", 12"	*Acer negundo*	Box Elder	Poor	Many DL
831	14",18",20"	*Acer saccharinum*	Silver Maple	Fair	
832	10",14",15"	*Acer negundo*	Box Elder	Poor	Many DL, L
833	38"	*Populus deltoides*	Cottonwood	Fair	
834	18"	*Acer negundo*	Box Elder	Poor	Sev. L, DL
835	15",18"	*Acer negundo*	Box Elder	Poor	BD, DL
836	7"	*Fraxinus pennsylvanica*	Green Ash	Poor	BD, VC Gr
837	14"	*Populus deltoides*	Cottonwood	Fair/Poor	L
838	28"	*Acer negundo*	Box Elder	Poor	BD, DL, L, Vines Gr
839	6"	*Acer negundo*	Box Elder	Very Poor	Totally VC Gr, M
840	8"	*Acer negundo*	Box Elder	Dead	
841	14"	*Acer negundo*	Box Elder	Very Poor	Maj. DL, L Vines Gr
842	6",13",20"	*Acer negundo*	Box Elder	Poor	Totally VC Gr, DL
843	8"	*Acer negundo*	Box Elder	Very Poor	Maj. BD, DL, M
844	8",10"	*Acer negundo*	Box Elder	Very Poor	Totally VC Gr
845	8"	*Acer negundo*	Box Elder	Poor	OS, VC Gr
846	3",7"	*Acer negundo*	Box Elder	Poor	DL, L, OS
847	10"	*Acer negundo*	Box Elder	Poor	OS, Vines Gr
848	3",8"	*Acer negundo*	Box Elder	Fair	
849	3",7"	*Populus deltoides*	Cottonwood	Fair	
850	10"	*Acer negundo*	Box Elder	Poor	BR, L, Vines Gr
851	15", 17"	*Ulmus pumila*	Siberian Elm	Poor	Many DL, Vines Gr
852	6"	*Prunus serotina*	Black Cherry	Fair/Poor	NC
853	12"	*Acer negundo*	Box Elder	Very Poor	Sev. L, DL, OS
854	15",23"	*Acer negundo*	Box Elder	Fair/Poor	DL
855	6"	*Juglans nigra*	Black Walnut	Fair	
856	11"	*Morus sp.*	Mulberry	Poor	DL, OS, Vines Gr
857	15"	*Acer negundo*	Box Elder	Poor	Major DL, BD, DL
858	13"	*Acer negundo*	Box Elder	Fair/Poor	Sl. L
859	12",17"	*Acer negundo*	Box Elder	Poor	BD, DL, L
860	9",17"	*Ulmus pumila*	Siberian Elm	Very Poor	Many DL
861	16"	*Morus sp.*	Mulberry	Poor	Many DL, BD
862	3",15"	*Acer negundo*	Box Elder	Poor	3" stem dead, DL, L
863	17"	*Acer negundo*	Box Elder	Fair/Poor	L
864	11",11"	*Acer negundo*	Box Elder	Poor	DL, L
865	12"	*Acer negundo*	Box Elder	Poor	Sev. L, OS
866	9"	*Acer negundo*	Box Elder	Very Poor	Extremely L, DL, OS
867	8"	*Acer negundo*	Box Elder	Poor	DL, NC
868	3",7"	*Ulmus pumila*	Siberian Elm	Very Poor	BD, NC
869	12"	*Ulmus pumila*	Siberian Elm	Very Poor	Maj. BD, DL, OS
870	6",8"	*Ulmus pumila*	Siberian Elm	Poor	DL, OS
871	4",6"	*Ulmus pumila*	Siberian Elm	Poor	DL, L, OS
872	5",7"	*Ulmus pumila*	Siberian Elm	Poor	BD, NC
873	6",9"	*Ulmus pumila*	Siberian Elm	Poor	Many DL, L
874	11"	*Ulmus pumila*	Siberian Elm	Poor	BD, DL
875	10"	*Ulmus pumila*	Siberian Elm	Very Poor	Maj. BD, DL, L
876	10"	*Ulmus pumila*	Siberian Elm	Poor	BD, DL
877	7"	*Acer negundo*	Box Elder	Poor	DL, OS, Sl. L
878	21"	*Ulmus pumila*	Siberian Elm	Fair/Poor	Sl. L
879	12"	*Ulmus pumila*	Siberian Elm	Poor	DL, NC
880	4",8"	*Acer negundo*	Box Elder	Poor	BD, DL
881	24"	*Ulmus pumila*	Siberian Elm	Poor	Split in upper trunk, DL
882	25"	*Ulmus pumila*	Siberian Elm	Poor	Many DL
883	21"	*Ulmus pumila*	Siberian Elm	Poor	BD, DL
884	21"	*Acer negundo*	Box Elder	Very Poor	Extremely L, DL
885	4",7"	*Ulmus pumila*	Siberian Elm	Poor	DL, M, SS
886	7"	*Ulmus pumila*	Siberian Elm	Poor	DL, OS
887	7",9"	*Ulmus pumila*	Siberian Elm	Poor	BD, DL
888	5",6"	*Ulmus pumila*	Siberian Elm	Poor	DL, NC
889	24"	*Populus deltoides*	Cottonwood	Fair	
890	8"	*Ulmus pumila*	Siberian Elm	Poor	BD, DL
891	7"	*Ulmus pumila*	Siberian Elm	Poor	DL, M, OS

ABBREVIATIONS: BD – Bark damage; BR – Trunk rot at base; DL - Dead limbs; LV – Lacks vigor; Maj. – Major; M – Misshapened; NC – Narrow crown; OS – One-sided growth; Sev. – Severely; Sl. – Slight; SS – Stem split; V – Vines; VC - Vine covered: Gr - Grapevine, OrBit – Oriental Bittersweet.

DEFINITIONS OF RATINGS:

Good: The tree appears to be in a healthy and satisfactory condition with an overall sound stem structure and with a full and balanced crown; the growth habit appears normal; there is no indication of pests or diseases present; and the life expectancy is judged to be greater than twenty-five (25) years. The rating based on the health / condition chart ranges from 30 to 24.

Fair: The tree appears to be in a healthy and satisfactory condition with a minimum of structural problems and with minor crown imbalance or thin crown; the growth habit appears normal; there is no indication of pests or diseases present; and the life expectancy is judged to be greater than twenty (20) years. The rating based on the health / condition chart ranges from 23 to 16.

Poor: The tree appears to be in an unhealthy condition with structural problems and with major crown imbalance, dead or dying limbs, or growth only in the top quarter of the tree; the growth habit is misshapen and askew; there is evidence of pests or diseases present; and the life expectancy is judged to be less than ten (10) years. The rating based on the health / condition chart ranges from 15 to 7.

Very Poor: The tree appears to be in an unhealthy condition with major structural problems and with major crown imbalance and several dead limbs and/or peeling bark; the growth habit is severely misshapen and askew; there is evidence of pests or diseases present; and the life expectancy is judged to be less than five (5) years. The rating based on the health / condition chart ranges from 6 to 1.

Dead: The tree has no live branches, is topped, or fallen. The rating based on the health / condition chart is 0.

TREE HEALTH/ CONDITION FACTORS & RATINGS:

Values	Best 5	4	3	2	1	0 Worst
1 Trunk	Sound & solid		Sections of bark missing		Extensive decay & hollow	
2 Growth rate	> 6" twig elongation		2" – 6" twig elongation		< 2" twig elongation	
3 Structure	Sound		One major or several minor limbs dead		Two or more major limbs dead	
4 Insects & Diseases	No pests present		One pest present		Two or more pests present	
5 Crown Development	Full & balanced		Full but unbalanced		Unbalanced and lacking a full crown	
6 Life Expectancy	> 30 years		15 years to 20 years		< 5 years	

NOTES:

SEE SHEET LP–3 FOR TREE REMOVALS AND PROTECTION.
SEE SHEET SP–2 FOR LOCATIONS.

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
CHO SUBMITTAL	5/16/24								
CHO RESUBMITTAL	7/15/24								
CHO RESUBMITTAL	10/16/24								
PSP SUBMITTAL	1/31/25								

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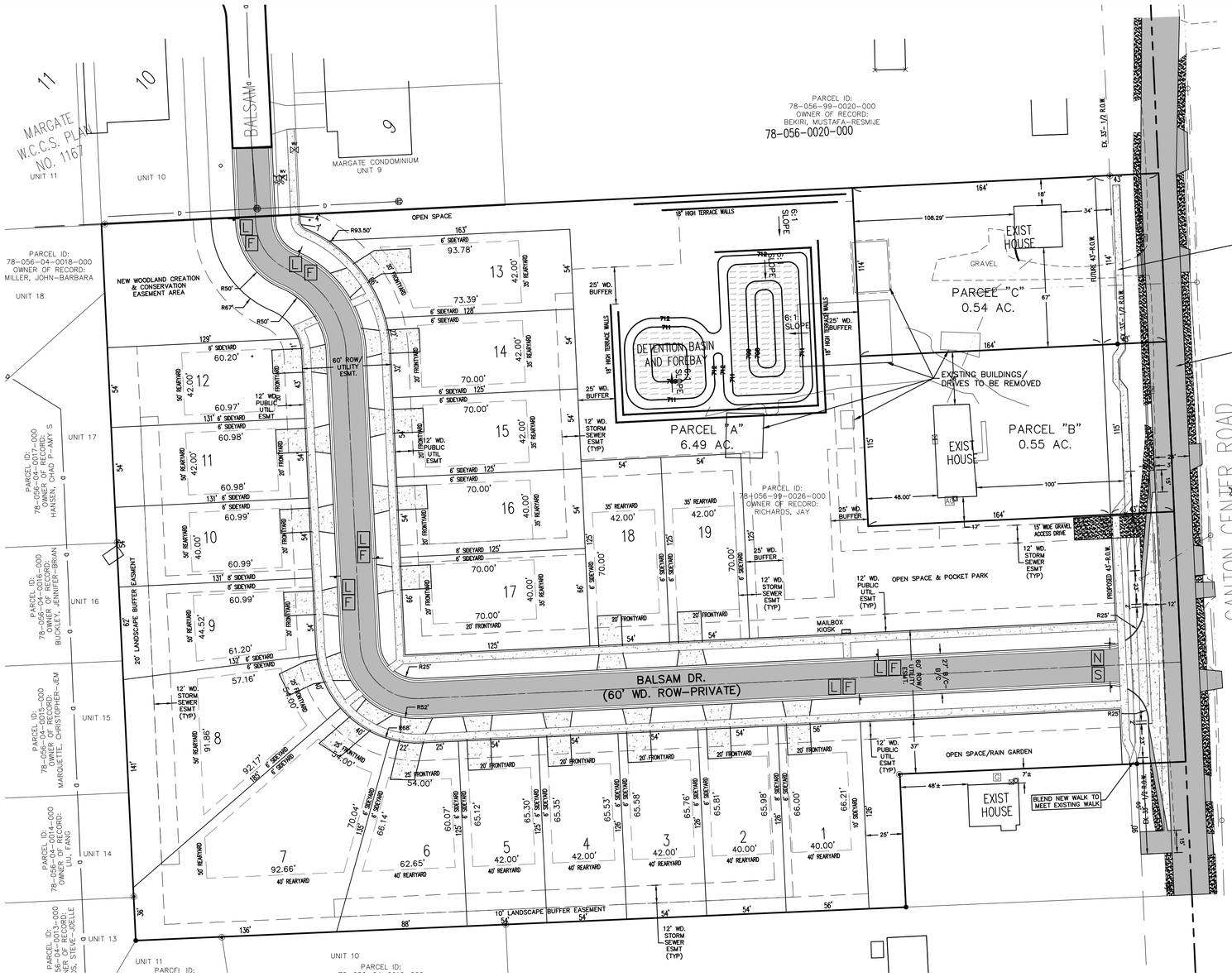
PLYMOUTH, MI 48170

TREE INVENTORY LIST
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24 | SCALE HOR: 1" = N/A VER: 1" = N/A
DESIGNED BY SRB | JOB NO. 24104
DRAWN BY SRB | SHEET SP–3



SCALE: 1" = 40'

PAVEMENT LEGEND

(ALL PAVEMENT MIXES SHALL MEET THE CURRENT STANDARDS AND SPECIFICATIONS OF PLYMOUTH TOWNSHIP, WAYNE COUNTY, AND MDOT PER THE AGENCY HAVING JURISDICTION). SEE SHEET SP-13 FOR SPECIFICATIONS.

PROPOSED HMA

PROPOSED CONCRETE DRIVEWAY/SIDEWALK

PROPOSED AGGREGATE DRIVE/SHOULDER

SITE DATA

SITE AREA:

GROSS (TO CENTERLINE OF ROAD)	6.49 AC.	
R.O.W. (FUTURE 43')	0.17 AC.	
NET	6.32 AC.	

ZONING:

EXISTING	R-1-S
PROPOSED- SINGLE FAMILY CLUSTER HOUSING OPTION	

SITE USAGE:

BUILDING FOOTPRINT	1.12 AC.	17.72%
DRIVES, WALKS, AND ROAD	0.79 AC.	12.50%
GREEN SPACE	2.67 AC.	42.25%
STORMWATER MANAGEMENT	0.67 AC.	10.60%
SHARED OPEN SPACE	1.07AC.	16.93%
	6.33 AC.	100.00%

SETBACKS:

	REQUIRED	PROVIDED
FRONT	25'	20' (25' UNITS 6-8)
SIDE	10' TOTAL	12' MIN. TOTAL
REAR	35'	40'-50'
SIDE ABUTTING A STREET	25'	20'
REAR ABUTTING A SIDE	30'	40'

BUILDINGS:

MAXIMUM HEIGHT	2.5 STORY (35')	2 STORY (35')
MINIMUM LOT AREA	12,000 SF	6,750 SF
MINIMUM LOT WIDTH	90'	54'

DENSITY: 3.05 UNIT/AC. 3.00 UNIT/AC.

PARKING: FOUR PARKING SPACES WILL BE PROVIDED PER UNIT (2 GARAGE, 2 DRIVEWAY) 76 TOTAL. ADDITIONAL GUEST PARKING WILL BE PROVIDED ON THE SIDE OF THE STREET (NON-FIRE LANE SIDE)

UNIT SIZE: ASSUMED BUILDING FOOTPRINT IS 40' X 61' FOR UNITS 1-6, 8-12, AND 16-17 AND 41' X 70' FOR UNITS 7, 13-15, AND 18-19.

MAILBOX NOTE

A CENTRALIZED MAILBOX KIOSK SHALL BE INSTALLED AS DEPICTED ON THE PLAN.

SIGNAGE TABLE:

SYMBOL	TYPE	MMUTCD CODE	DESCRIPTION
S	STOP SIGN	R1-1	30"X30" OCTAGON WITH WHITE LEGEND & BORDER ON RED BACKGROUND.
L	SPEED LIMIT	R2-1(25)	24"X30" BLACK LEGEND & BORDER ON WHITE BACKGROUND.
N	STREET SIGN	D3-1	8" HIGH SIGN WITH 4.5" HIGH INITIAL UPPERCASE LETTERS & FOLLOWED W/LOWERCASE LETTERS & BORDERS ON GREEN BACKGROUND.
F	NO PARKING SIGN	R8-3	12"X12" BLACK LEGEND & BORDER WITH RED CIRCLE AND SLASH ON WHITE BACKGROUND.

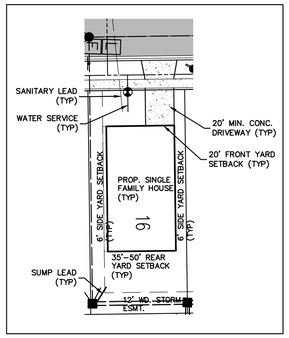
NOTE: ADDITIONAL FIRE LANE SIGNAGE MAY BE REQUIRED AS DIRECTED BY THE FIRE INSPECTOR.

SIGN NOTES:

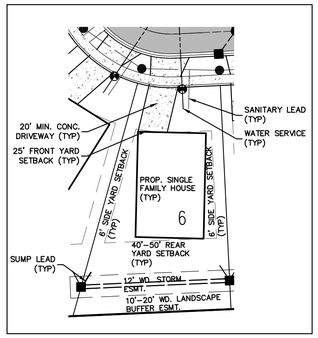
1. ALL SIGNAGE SHALL COMPLY WITH THE LATEST EDITION OF MMUTCD.
2. POSTS SUPPORTING RIGHT OF WAY CONTROL (STOP OR YIELD) SIGNS END STREET NAME SIGNS SHALL BE LOCATED 4 FEET IN ADVANCE OF THE ACTUAL OR IMPLIED CROSSWALKS (IE, SIDEWALK STUBS).
3. ALL SIGNAGE SHALL COMPLY WITH THE WAYNE COUNTY TRAFFIC CONTROL SIGN STANDARDS.
4. SIGNS 12'' X 18'' OR SMALLER SHALL BE MOUNTED ON A GALVANIZED 2 LB. U-CHANNEL POST.
5. SIGNS GREATER THAN 12'' X 18'' SHALL BE MOUNTED ON A GALVANIZED 3 LB. OR GREATER U-CHANNEL POST.
6. SIGN BOTTOM HEIGHT SHALL BE 7' FROM FINAL GRADE.
7. SIGNING SHALL BE PLACED 2' FROM FACE/CURB OR SIDEWALK.
8. FHWA STANDARD ALPHABET SERIES USED FOR ALL SIGN LANGUAGE.
9. TRAFFIC CONTROL SIGNS SHALL HAVE HIGH INTENSITY PRISMATIC (HIP) SHEETING TO MEET FHWA RETRO-REFLECTIVITY REQUIREMENTS.

CAUTIONARY NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AS DISCLOSED BY AVAILABLE UTILITY COMPANY RECORDS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE COMPANY. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. 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. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF A CONFLICT IS APPARENT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTMENT OF ALL STRUCTURES, KNOWN OR UNKNOWN, SHOWN OR UNSHOWN, LOCATED WITHIN THE LIMITS OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE IF ANY SUCH STRUCTURES ARE IDENTIFIED. ALL COSTS ASSOCIATED WITH LOCATING AND ADJUSTING THESE STRUCTURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. DESIGN PROFESSIONAL AND CLIENT WARRANT THAT IN TRANSMITTING INSTRUMENTS OF SERVICE, OR ANY OTHER INFORMATION, THE TRANSMITTING PARTY IS THE COPYRIGHT OWNER OF SUCH INFORMATION OR HAS PERMISSION FROM THE COPYRIGHT OWNER TO TRANSIT SUCH INFORMATION FOR ITS USE OF THE PROJECT. IF THE CLIENT AND DESIGN PROFESSIONAL INTEND TO TRANSMIT INSTRUMENTS OF SERVICE OR ANY OTHER INFORMATION OR DOCUMENTATION IN DIGITAL FORM, THEY SHALL ENDEAVOR TO ESTABLISH NECESSARY PROTOCOLS GOVERNING SUCH TRANSMISSIONS.



TYPICAL UNITS (1-5 AND 9-19)
NOT TO SCALE



TYPICAL UNITS (6-8)
NOT TO SCALE

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CHO SUBMITTAL	5/16/24								
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PLYMOUTH, MI 48170

OVERALL SITE PLAN
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = 40' VER: 1" = N/A	
DESIGNED BY SRB	JOB NO.	24104	
DRAWN BY SRB	SHEET	SP-4	

T/WALL 723.50
B/WALL 722.00

T/WALL 721.00
B/WALL 719.50

T/WALL 716.00
B/WALL 714.50

T/WALL 714.00
B/WALL 712.50

18" HIGH TERRACE WALLS

EXISTING ROOT CELLAR & SPOIL PILE TO BE REMOVED AND GRADED FOR POSITIVE DRAINAGE

RAIN GARDEN
TOP 717.00
BOTTOM 716.00

CANTON CENTER ROAD
PROP. 43' R.O.W.

BALSAM DR.
(60' WIDE, ROW)

N
W E
S

SCALE: 1" = 30'

LEGEND

EXISTING

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- UTILITY POLE
- GUY ANCHOR
- LIGHT POLE
- SIGN
- TREE
- TREE LINE
- SANITARY SEWER
- STORM SEWER
- WATER MAIN
- GAS MAIN
- ELECTRIC CABLE
- CONTOUR MAJOR
- CONTOUR MINOR
- +100.00 SPOT ELEVATION

PROPOSED

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- TREE REMOVAL
- SANITARY SEWER
- STORM SEWER
- PERF. STORM SEWER
- WATER MAIN
- ℄ DITCH
- CONTOUR MAJOR
- CONTOUR MINOR
- x99.0 PROPOSED GRADE
- T/C = TOP OF CURB
- T/W = TOP OF WALK
- T/P = TOP OF PAVEMENT
- T/B = TOP OF BANK
- G = GROUND
- D = DITCH
- GU = GUTTER
- FG = FINISH GRADE
- FF = FINISH FLOOR
- BF = BASEMENT FLOOR
- BL = BRICK LEDGE

NOTE: SEE PLYMOUTH TOWNSHIP STADARD DETAIL SHEET 'GDS' FOR TYPICAL GRADING NOTES AND DETAILS.

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GRADING AND DRAINAGE PLAN
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE HOR: 1" = 30' VER: 1" = N/A
DESIGNED BY SRB	JOB NO. 24104
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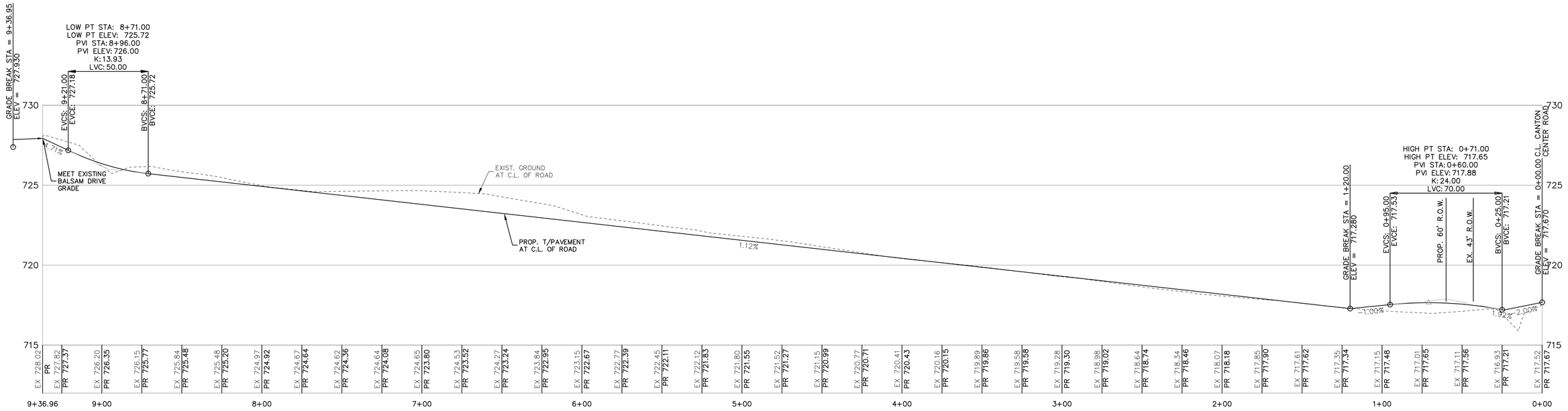

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BALSAM DRIVE PROFILE
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = 30' VER: 1" = 3'	
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STANDARD DITCH REQUIRED WHEN CONSTRUCTING NEW DITCH

STANDARD DITCH
1' MINIMUM DEPTH
2 1/2' MAXIMUM DEPTH
2' DITCH BOTTOM
1:3 MAXIMUM SIDE SLOPES
12" MIN. COVER OVER DRIVE CULVERTS.

NOTES:

THIS TYPICAL CROSS SECTION IS TO BE USED FOR SPECIAL ASSESSMENT DISTRICT (SAD) LOCAL ROAD PROJECTS ONLY.

THE THICKNESS OF THE PROPOSED AGGREGATE BASE WILL BE AS DETERMINED BY THE WAYNE COUNTY ENGINEER.

IF NEW AGGREGATE BASE COURSE IS UTILIZED, THEN SUBGRADE UNDERDRAIN ON BOTH SIDES OF THE ROADWAY WILL BE REQUIRED OR EXTEND AGGREGATE SUBGRADE TO FACE OF DITCH AS DETERMINED BY THE WAYNE COUNTY ENGINEER.

RIGHT-OF-WAY RESTORATION SHALL CONSIST OF EITHER SEED MIX THM AND MULCH OVER 3" OF TOPSOIL OR SOD OVER 2" OF TOPSOIL.

DITCH MAY BE ENCLOSED AS DIRECTED BY THE WAYNE COUNTY ENGINEER

USE BOND COAT SS-1h BETWEEN EACH HMA LIFT AT A RATE OF 0.05 GAL/SYD

WORK THIS SHEET WITH THE GENERAL NOTES ON RS-1.

REVISION DATE: 08/01/07

DIRECTOR OF ENGINEERING

DIVISION PERMIT ENGINEER

WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION/PERMIT OFFICE
PERMIT STANDARDS

TYPICAL (SAD) HMA LOCAL ROAD OVER EXISTING AGGREGATE
OPEN SHOULDER

SCALE
NOT TO SCALE
L-2
SHEET
1 OF 1

NOTE: THIS IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL SIGNED COPY FOR PUBLICATION IS KEPT ON FILE AT THE WAYNE COUNTY ENGINEERING OFFICES.

A	B
75'	15'
150'	30'
300'	60'

NOTES:

CONSTRUCT TAPER WITH NON-REINFORCED CONCRETE OR NON-REINFORCED CONCRETE BASE COURSE WITH 1 ½" HMA TOP. TAPER CROSS-SECTION IS DEPENDING ON EXISTING ABUTTING ROAD CROSS-SECTION AND AS DIRECTED BY WAYNE COUNTY ENGINEER.

CONSTRUCT PAVED SHOULDER WITH 1 ½" HMA TOP (F) AND 4 ½" HMA BASE TWO (2) LIFTS, OR 1 ½" HMA TOP (F) AND NON-REINFORCED CONCRETE BASE, OR NON-REINFORCED CONCRETE.

CONSTRUCT AGGREGATE SHOULDER WITH 6" OF 22X OR 23A.

PLACE LANE TIES AS SHOWN ON RS-2 OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

MATCH EXISTING JOINTS LOCATION AND TYPE AS DIRECTED BY WAYNE COUNTY ENGINEER.

WORK THIS SHEET WITH THE GENERAL NOTES ON RS-1.

REVISION DATE: 08/01/07

DIRECTOR OF ENGINEERING

DIVISION PERMIT ENGINEER

WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION/PERMIT OFFICE
PERMIT STANDARDS

TYPICAL CONCRETE TAPER

SCALE
NOT TO SCALE
P-2
SHEET
1 OF 1

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LEGEND

EXISTING

○	MANHOLE
□	CATCH BASIN
⧄	INLET
⊙	CLEANOUT
◁	END SECTION
◇	ROOF DRAIN
⊗	GATE VALVE
	HYDRANT
	WATER SHUT-OFF
⌀	UTILITY POLE
^	GUY ANCHOR
✳	LIGHT POLE
	SIGN
	TREE
	TREE LINE
	SANITARY SEWER
	STORM SEWER
	WATER MAIN
	GAS MAIN
	ELECTRIC CABLE
000	CONTOUR MAJOR
000	CONTOUR MINOR
+100.00	SPOT ELEVATION

PROPOSED

●	MANHOLE
■	CATCH BASIN
◪	INLET
⊙	CLEANOUT
◀	END SECTION
◆	ROOF DRAIN
⊗	GATE VALVE
	HYDRANT
	WATER SHUT-OFF
	TREE REMOVAL
	SANITARY SEWER
	STORM SEWER
	PERF. STORM SEWER
	WATER MAIN
	℄ DITCH
000	CONTOUR MAJOR
000	CONTOUR MINOR
x99.0	PROPOSED GRADE

T/C = TOP OF CURB
T/W = TOP OF WALK
T/P = TOP OF PAVEMENT
T/B = TOP OF BANK
G = GROUND
D = DITCH
GU = GUTTER
FG = FINISH GRADE
FF = FINISH FLOOR
BF = BASEMENT FLOOR
BL = BRICK LEDGE

NOTE: ALL WORK WITHIN THE NORTH CANTON CENTER ROAD RIGHT-OF-WAY SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES.

WCDPS REVIEW NO.: R

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
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PSP SUBMITTAL	1/31/25								

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PLYMOUTH, MI 48170

CANTON CENTER ROAD PLAN
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24
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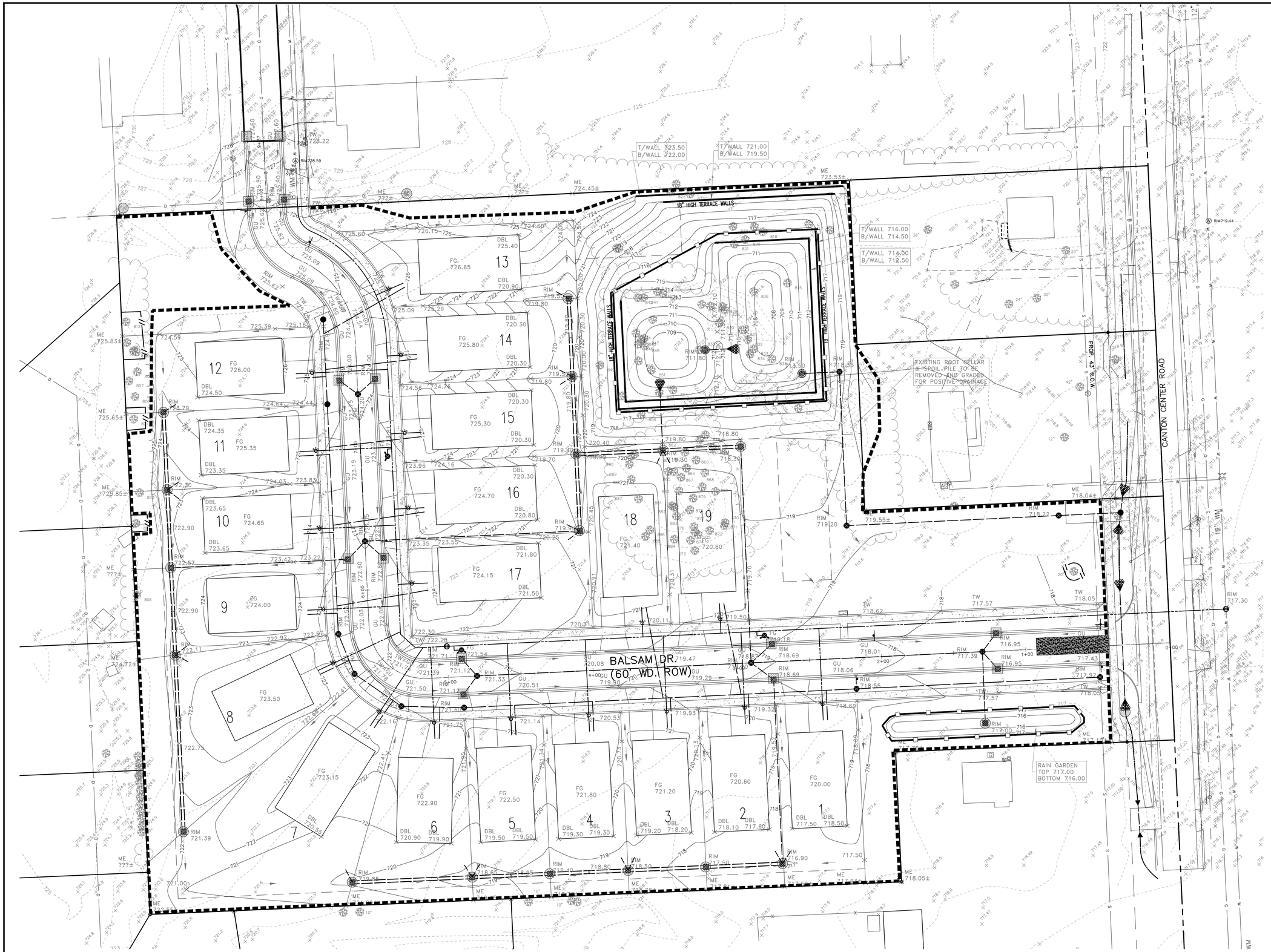

N

W E

S

SCALE: 1" = 30'

EROSION CONTROL LEGEND

- GEOTEXTILE SILT FENCE (PRE-GRADING)
- GEOTEXTILE SILT FENCE (POST-GRADING)
- ORANGE TREE FENCE
- GRAVEL MUD TRACKING MAT
- "SILT-SACK" INLET FILTER
- REAR YARD INLET FILTER
- STANDPIPE OUTLET FILTER

NOTE: SEE THE EROSION CONTROL NOTES AND DETAILS PLAN SHEET FOR DETAILS AND SPECIFICATIONS.

NOTE:
THIS PLAN ILLUSTRATES THE MINIMUM EROSION CONTROLS NEEDED TO PREVENT SILTS FROM LEAVING THE SITE AND IS SUBJECT TO CHANGE AS CONDITIONS IN THE FIELD WARRANT.

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
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EROSION CONTROL PLAN
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = 30' VER: 1" = N/A	
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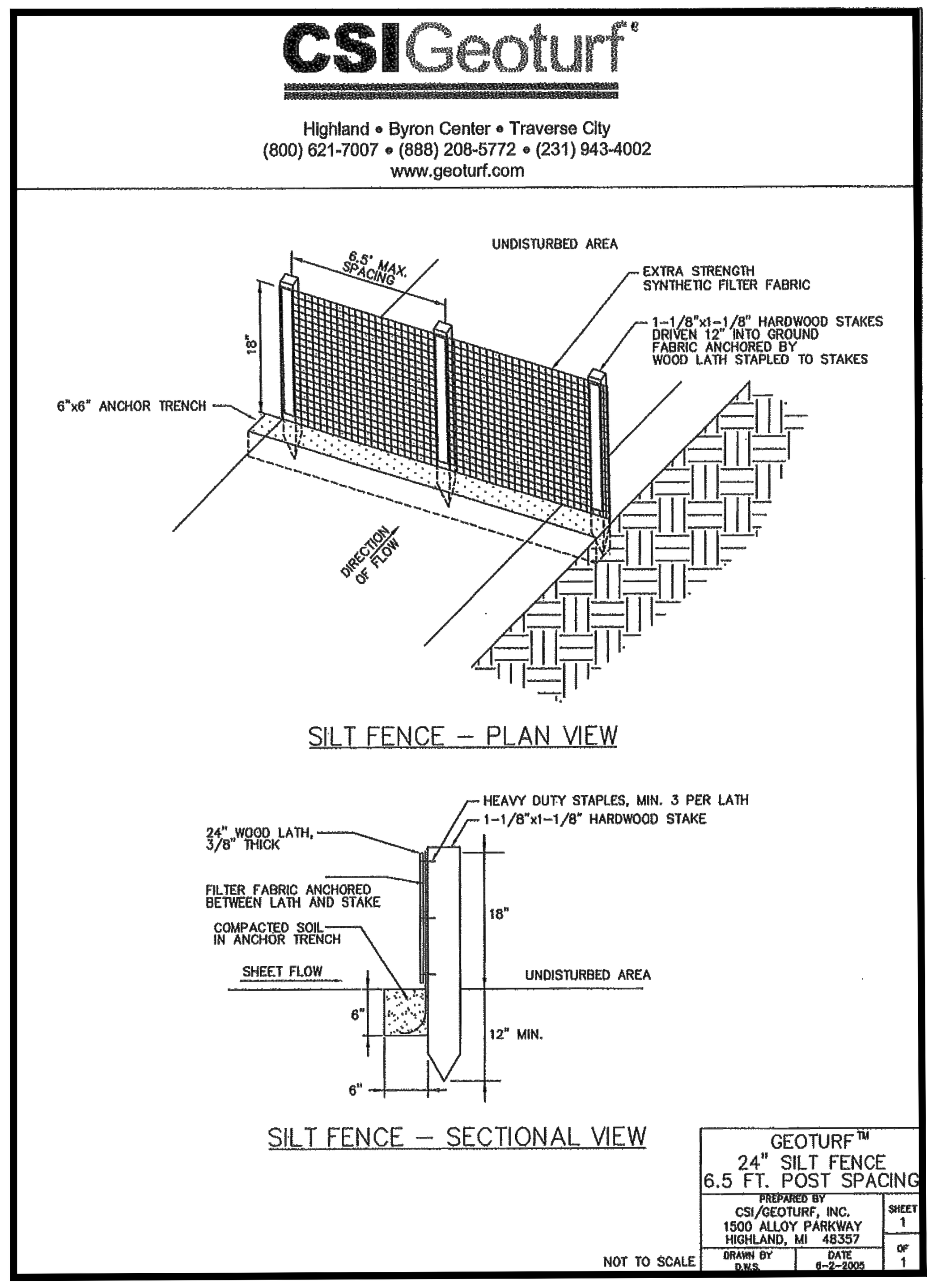
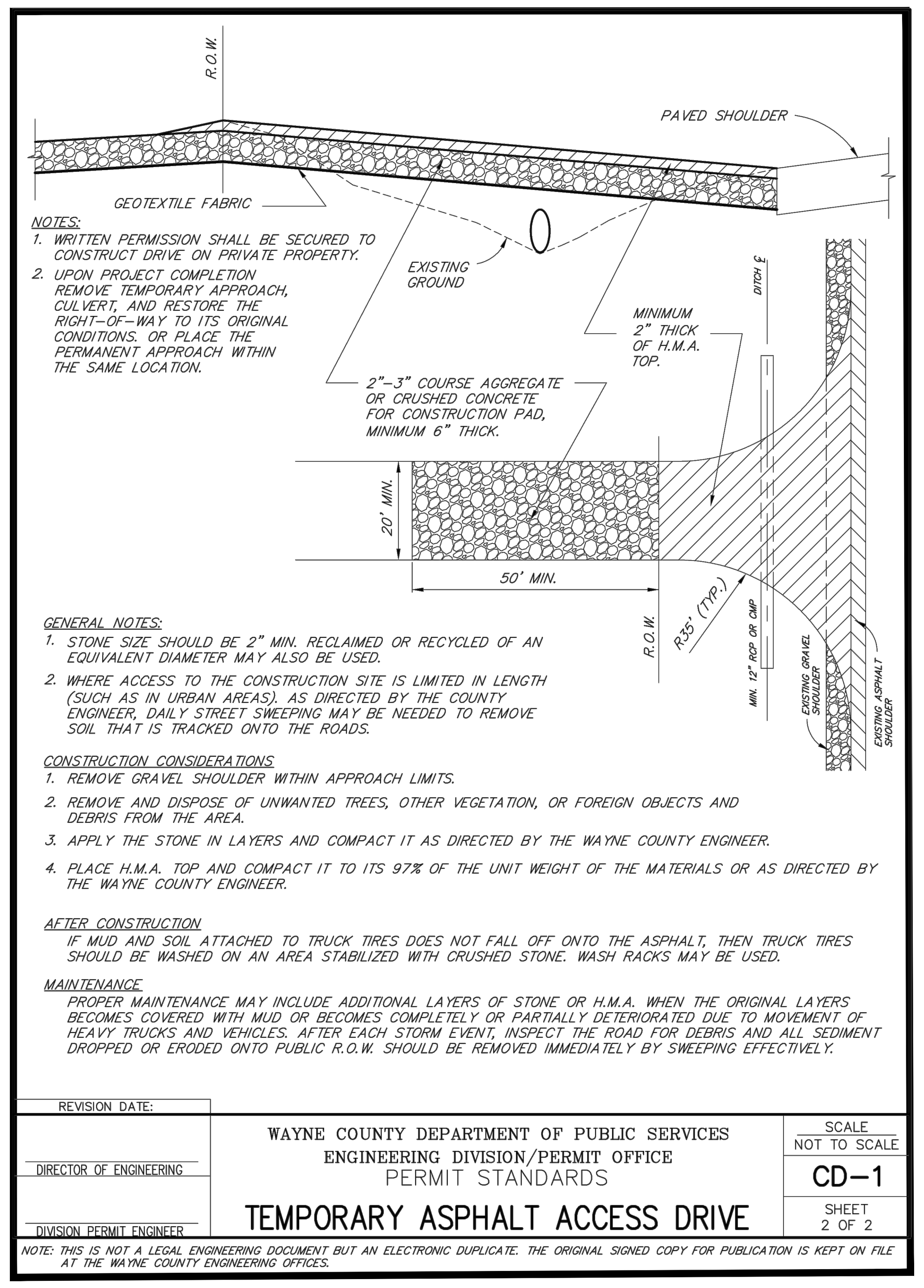
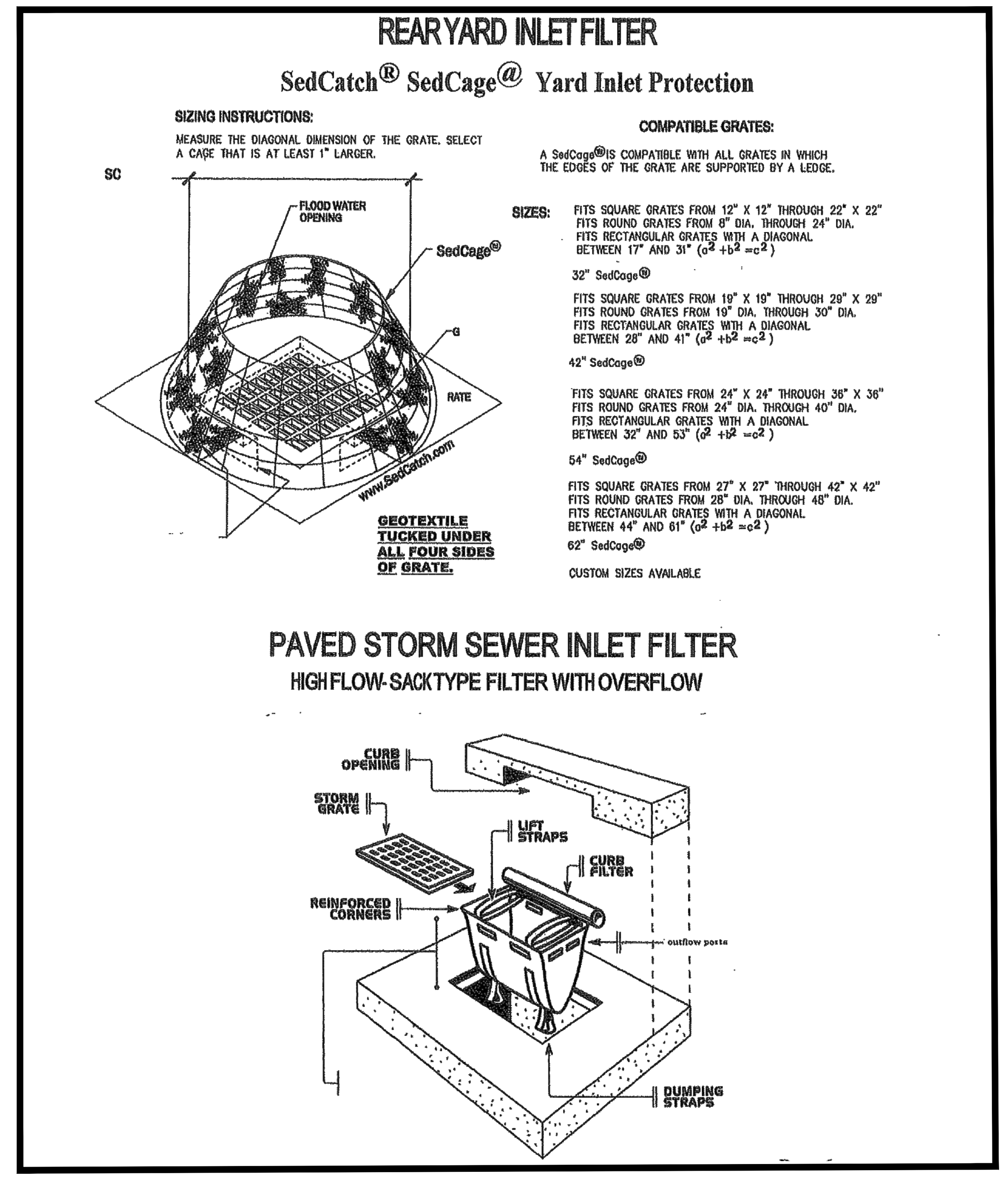






Temporary Construction Maintenance Task and Schedule
(To be performed by Contractor)

Maintenance Activities	Catch Basins, Inlets & Storm Sewers	Channels & Vegetated Swales	Open Detention Basins & Retention Basins	Flow Restrictors, Overflow Structures & Outlet Pipes	Emergency Spillways	Riprap	Buffer Strip	Frequency
Monitoring/Inspection								
• Inspect for sediment accumulation**/clogging of stone filter	X	X	X	X	X			Annually
• Inspect for floatables, dead vegetation and debris	X	X	X		X	X	X	Annually and after major events
• Inspect for erosion and integrity of banks and berms		X	X		X	X	X	Annually and after major events
• Inspect all components during wet weather and compare to as-built plans	X	X	X	X	X	X	X	Annually
• Ensure means of access for maintenance remain clear/open	X	X	X	X	X	X	X	Annually
Preventative Maintenance								
• Mowing		X	X		X		X	Up to 2 times/year, select areas only*
• Remove accumulated sediment	X	X	X	X				As needed **
• Remove floatables, dead vegetation and debris	X	X	X	X	X			As needed
• Replace or wash/reuse stone riser filters				X	X	X		Every 3 years; more frequently as needed***
• Remove invasive plant species		X	X				X	Annually
Remedial Actions								
• Repair/stabilize areas of erosion		X	X		X	X	X	As needed
• Replace dead plantings, bushes, trees		X	X				X	As needed
• Reseed bare areas		X	X		X		X	As needed
• Structural repairs	X			X	X	X		As needed
• Make adjustments/repairs to ensure proper functioning	X	X	X	X	X	X	X	As needed

Not to exceed the length allowed by local community ordinance.
Forebays, open detention basins, and retention basins to be cleaned whenever sediment accumulates to a depth of 6-12 inches of sediment resuspension is observed.
Replace stone if it cannot be adequately cleaned.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROLS SHALL BE INSTALLED AND MAINTAINED PER THE CURRENT STANDARDS AND SPECIFICATIONS OF WAYNE COUNTY AND PLYMOUTH TOWNSHIP.
2. FOREBAY AND DETENTION BASIN OUTLETS SHALL HAVE A PERFORATED RISER PIPE WITH STONE FILTER.
3. A TEMPORARY CRUSHED ROCK TRACKING PAD SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE AND EXIT. THE PAD SHALL BE MAINTAINED WITH FRESH STONE AS NEEDED. CONSTRUCTION TRAFFIC MUST BE LIMITED TO THE DESIGNATED ENTRANCE/EXIT.
4. STREET SCRAPING AND SWEEPING IS REQUIRED AND SHALL FOLLOW THE SCHEDULE SHOWN.
5. ALL EXPOSED EARTH SHALL BE STABILIZED WITH SEED AND MULCH OR SOD WITHIN 5 DAYS OF FINAL GRADE. DETENTION BASINS SHALL BE STABILIZED WITH SEED AND STRAW MULCH BLANKETS. STRAW MULCH BLANKETS SHALL BE STAKED INTO THE GROUND 5 DAYS AFTER CONSTRUCTION OF THE BASIN.
6. AN UNDISTURBED, VEGETATIVE BUFFER STRIP OF AT LEAST 25 FEET SHALL BE RETAINED AROUND RIVERS, CREEKS, STREAMS, WETLANDS, DRAINS, AND OTHER SENSITIVE AREAS.
7. STRAW MULCH BLANKETS SHALL BE USED ON 3:1 SLOPES OR GREATER (3-FOOT HORIZONTAL, 1-FOOT VERTICAL).
8. DITCHES, SWALES, AND OTHER AREAS THAT WILL CHANNEL CONCENTRATED RUNOFF MUST BE STABILIZED WITHIN 15 DAYS OF CONSTRUCTION. TEMPORARY ROCK CHECK DAMS WILL BE REQUIRED TO SLOW WATER TO NON-EROSIVE VELOCITIES IN AREAS OF CONCENTRATED FLOW.
9. ROAD RIGHT-OF-WAYS MUST BE STABILIZED WITH SEED AND MULCH WITHIN 5 DAYS OF COMPLETING UTILITY WORK IN THE RIGHT-OF-WAY.
10. AREAS OF EARTH CHANGE THAT ARE DISTURBED BEYOND THE FALL SEEDING DEADLINE (NOV. 1) MUST BE TEMPORARILY STABILIZED WITH A MINIMUM OF STRAW MULCH SECURELY CRIMPED TO THE GROUND.
11. RIP-RAP SHALL BE PLACED IMMEDIATELY FOLLOWING INSTALLATION OF POND OUTLETS AND CULVERTS.
12. CONTRACTOR TO NOTIFY WAYNE COUNTY SOIL EROSION OFFICE 48 HOURS BEFORE WORK IS TO BEGIN (734) 326-3936.

PROPOSED SEQUENCE OF ACTIVITIES:

1. INSTALL GRAVEL MUD TRACKING MAT ATOP GEOTEXTILE LINER AT CONSTRUCTION ENTRANCE. (SEPTEMBER 2025)
2. INSTALL PERIMETER SILT FENCE, AND CATCH BASIN INLET FILTERS ON EXISTING STRUCTURES PRIOR TO START OF CONSTRUCTION OPERATIONS. (SEPTEMBER 2025)
3. REMOVE TREES AND GRUB SITE. (SEPTEMBER 2025)
4. MASS GRADE SITE, INCLUDING DETENTION BASIN AND FOREBAY. ADD POST-CONSTRUCTION SILT FENCE TO TOP OF DETENTION BASIN AFTER GRADING TO PREVENT SILTATION OF BOTTOM. (OCTOBER 2025)
5. CONSTRUCT STORM SEWER, SANITARY SEWER, AND WATER MAIN. (NOVEMBER 2025-MARCH 2026)
6. INSTALL CATCH BASIN INLET FILTERS ON ALL NEW DRAINAGE STRUCTURES. (NOVEMBER 2025)
7. INSTALL ALL FRANCHISED UTILITIES (PHONE, ELECTRIC, GAS, CABLE). (APRIL 2026)
8. BRING ROAD PAVEMENT AREA TO SUB-BASE GRADE. PLACE SUB-BASE. (APRIL 2026)
9. INSTALL PAVEMENT COMPLETE. REPAIR OR REPLACE INLET FILTERS AS REQUIRED. (MAY 2026)
10. FINISH GRADE AND REDISTRIBUTE TOPSOIL. SEED AND MULCH OR SOD ALL DISTURBED AREAS AS DIRECTED ON APPROVED LANDSCAPE PLANS. USE MULCH BLANKETS WHERE SLOPES EXCEED 4:1. (JUNE 2026)
11. COMPLETE LANDSCAPING TREES AND PLANTINGS AND INSURE ALL DENUDED AREAS ARE VEGETATED. (JUNE-JULY 2026)
12. FLUSH AND CLEAN PAVEMENT AND STORM DRAINAGE SYSTEM OF ACCUMULATE SEDIMENT AND DEBRIS. (JULY 2026)
13. REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING WCDPS APPROVAL – CALL FOR FINAL INSPECTION. (AUGUST 2026)

SOILS NOTE:

ACCORDING TO THE USDA-SCS SOIL SURVEY FOR WAYNE COUNTY, THE PREDOMINANT EXISTING SOILS ON THIS SITE ARE:

Gf: GILFORD SANDY LOAM (K_{SAT} = 1.98–5.95 IN/HR)
Pc: PELLA SILT LOAM, 0%–3% SLOPES (K_{SAT} = 0.57–1.98 IN/HR)
SeA: SELFRIDGE LOAMY SAND, 0%–3% SLOPES (K_{SAT} = 0.01–1.42 IN/HR)
WaA: WASEPI LOAMY SAND, 0%–2% SLOPES (K_{SAT} = 1.98–5.95 IN/HR)

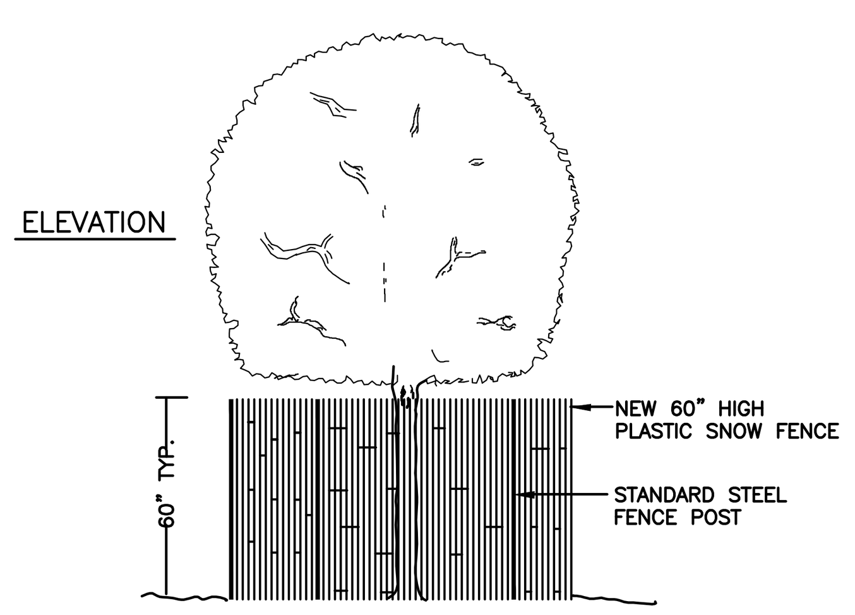
RESTORATION NOTES:

PRIOR TO FINAL INSPECTION THE FOLLOWING ITEMS ALONG WITH ALL EROSION CONTROL ITEMS SHOWN ON THESE PLANS MUST BE FULFILLED;

1. ALL DISTURBED EARTH IS PERMANENTLY STABILIZED WITH VEGETATION OR HARD SURFACE.
2. ALL ACCUMULATED SEDIMENT IS REMOVED FROM THE ENTIRE STORM SEWER SYSTEM.
3. ALL ACCUMULATED SEDIMENT IS REMOVED FROM THE FOREBAY AND DETENTION BASIN.
4. THE FOREBAY AND DETENTION BASIN ARE RESTORED TO ITS DESIGN STANDARD.
5. ALL TEMPORARY EROSION CONTROLS ARE REMOVED AFTER APPROVAL BY THE WAYNE COUNTY SOIL EROSION INSPECTOR.

INSPECTION NOTE:

CONTRACTOR TO NOTIFY THE WAYNE COUNTY SOIL EROSION OFFICE 48 HOURS BEFORE STARTING WORK AT (734) 326-3936.



NOTES:
1. TREE PROTECTION FENCING IS TO BE ERECTED PRIOR TO ANY EARTHWORK OR CONSTRUCTION AND IS TO REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.
2. FENCE SHALL BE LOCATED AT THE OUTER PERIMETER OF THE SPREAD OF THE BRANCHES OR CLOSER ONLY AT THE DIRECTION THE LANDSCAPE ARCHITECT.
3. ALL DEBRIS, FILL, EQUIPMENT OR MATERIAL IS TO BE KEPT CLEAR OF AREA WITHIN PROTECTIVE FENCE. NO CLEANING OF EQUIPMENT, OR MATERIAL OR STORAGE OR DISPOSAL OF ANY MATERIAL WITHIN THE DRIP LINE OF ANY TREES TO BE SAVED.

TREE PROTECTION DETAIL
NOT TO SCALE

EROSION CONTROL MEASURES MAINTANCE

A. INLET FILTERS

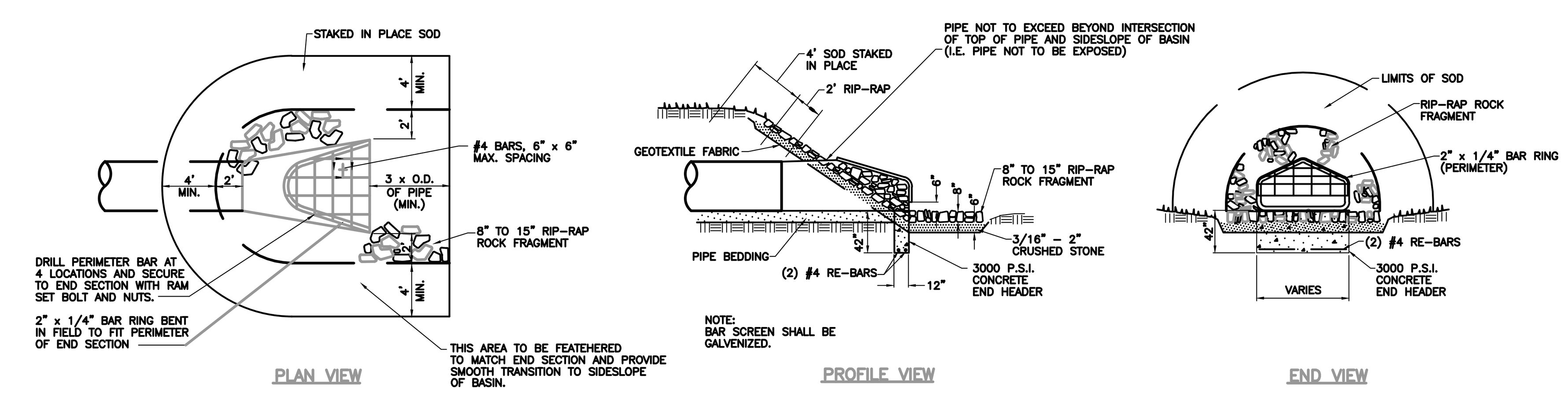
EFFECTIVE FILTERS WILL COLLECT SEDIMENT, PARTICULARLY WHEN THE SOIL IS SANDY. THESE FILTERS MUST BE CLEANED PERIODICALLY, SO THEY DON'T BECOME CLOGGED AND CAUSE FLOODING CONDITIONS, PIPING, OR OVER-TOPPING OF THE CONTROL STRUCTURES. MAINTENANCE OF THESE ITEMS REQUIRES INSPECTION WEEKLY OR AFTER EACH RAIN EVENT.

B. SILT FENCE

SILT FENCES SHOULD BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND SEVERAL TIMES DURING PROLONGED RAINFALLS. IF THE FENCE IS SAGGING OR THE SOIL HAS REACHED ONE HALF THE HEIGHT OF THE FABRIC, THE SOIL BEHIND THE FABRIC MUST BE REMOVED AND DISPOSED OF IN A STABLE UPLAND SITE. THE SOIL CAN BE ADDED TO THE SPOIL PILE. IF THE FABRIC IS BEING UNDERCUT (I.E. IF THE WATER IS SEEPING UNDER THE FENCE), THE FENCE SHOULD BE REMOVED AND REINSTALLED FOLLOWING THE GIVEN PROCEDURES. FABRIC WHICH DECOMPOSES OR OTHERWISE BECOMES INEFFECTIVE SHOULD BE REMOVED AND REPLACED WITH NEW FILTER FABRIC IMMEDIATELY. FILTER FENCES SHOULD BE REMOVED ONCE VEGETATION IS WELL ESTABLISHED AND THE UP-SLOPE AREA IS FULLY STABILIZED OR UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

C. GRAVEL MUD TRACKING MAT

PROPER MAINTENANCE MAY INCLUDE ADDING ADDITIONAL LAYERS OF STONE WHEN THE ORIGINAL STONE BECOMES COVERED WITH MUD. AFTER EACH STORM EVENT, INSPECT THE ROAD FOR EROSION AND MAKE ANY NECESSARY REPAIRS. ALL SEDIMENT DROPPED OR ERODED OFFSITE SHOULD BE REMOVED IMMEDIATELY BY SWEEPING.



END SECTION & RIP-RAP DETAIL-DRAIN TAP DETAIL
NOT TO SCALE

STREET CLEANING SCHEDULE							
	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
SCRAPE STREETS		X	X	X	X	X	X
SWEEP STREETS				X			

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
CHO SUBMITTAL	5/16/24								
CHO RESUBMITTAL	7/15/24								
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PSP SUBMITTAL	1/31/25								

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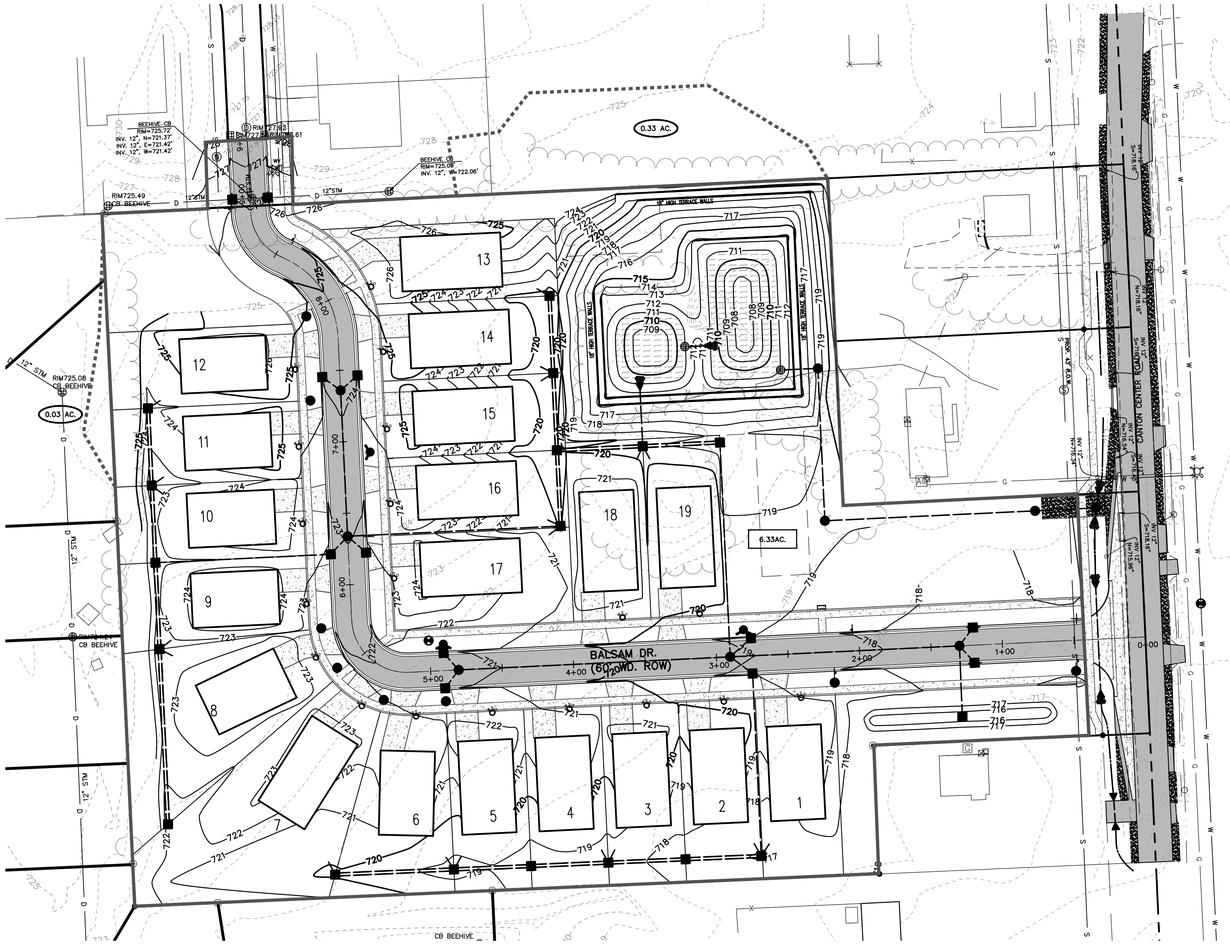
EROSION CONTROL NOTES AND DETAILS
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24 | SCALE HOR: 1" = N/A VER: 1" = N/A
DESIGNED BY SRB | JOB NO. 24104
DRAWN BY SRB | SHEET SP-5.4



NOTE:
THIS IS A DRAINAGE DISTRIBUTION PLAN. IT IS FOR REVIEW PURPOSES ONLY. IT SHALL NOT BE USED FOR CONSTRUCTION OR FIELD WORK.

LEGEND

▬	CONTRIBUTING ON–SITE DRAINAGE AREA (TO BE DETAINED)
■ ■ ■ ■	OFF–SITE DRAINAGE AREA (TO BE PASSED THROUGH)
00.0 AC.	ON–SITE DRAINAGE AREA
0.00 AC.	OFF–SITE DRAINAGE AREA

STORMWATER MANAGEMENT CALCULATIONS

STORMWATER MANAGEMENT DESIGN AND CALCULATIONS SHALL FOLLOW THE CURRENT EDITION THE WAYNE COUNTY STORMWATER CONTROL PROGRAM MANUAL- SEPTEMBER 2021. THE RUNOFF SHALL BE COLLECTED AND ROUTED THRHOUGH A SERIES OF STORM SEWER STRUCTURES AND PIPES TO THE PROPOSED STORMWATER BASIN. THE RUNOFF SHALL FIRST ENTER INTO THE FOREBAY TO TREAT THE FIRST FLUSH RUNOFF AND THEN BE RELEASED OVER 24-HOURS INTO THE DETENTION BASIN WHERE IT WILL BE STORED UP TO 48-HOURS. THE TREATED STORMWATER SHALL THEN DISCHARGE THROUGH A STORM PIPE FROM THE STORMWATER BASIN AT A RESTRICTED RATE TO A LIFT STATION THAT DISCHARGES VIA A FORCEMAIN TO THE NORTH CANTON CENTER ROAD DITCH, WHICH IS THE ULTIMATE OUTLET FOR THIS SITE.

- CONTRIBUTING SITE AREA = 6.33 ACRES
- RUNOFF COEFFICIENT:

IMPERVIOUS AREAS (PAVEMENT/ROOF) =	1.91 AC. x 0.95 =	1.81
POND/WATER =	0.14 AC. x 1.00 =	0.14
OPEN SPACE/LAWN =	4.28 AC. x 0.30 =	1.28
	6.33 AC.	3.23

  C_{PROP} = 3.23/6.33 = **0.51**

- ALLOWABLE DISCHARGE (Q_A):
  $Q_A = 1.1055 - 0.207\ln(A)$ FOR SITES LESS THAN 100 ACRES
  $Q_A = 1.1055 - 0.207\ln(6.33) = 0.72$ CFS/ACRE
- TOTAL SITE ALLOWABLE DISCHARGE (Q_O):
  $Q_O = Q_A \times A = 0.72 \times 6.33 = 4.58$ CFS
- FIRST FLUSH STORAGE (FOREBAY VOLUME):
  $V_{FF} = 545 \times A \times C = 545 \times 6.33 \times 0.51 =$ **1,759 CF**
- CHANNEL PROTECTION VOLUME (CPVC):
  $V_{CPVC} = A \times C \times 3{,}630 = 6.33 \times 0.51 \times 3{,}630 =$ **11,719 CF**
- CHANNEL PROTECTION RATE CONTROL (CPRC):
  $V_{CPRC} = A \times C \times 6{,}897 = 6.33 \times 0.51 \times 6{,}897 =$ **22,266 CF**
- 100-YEAR STORAGE VOLUME (V_S):
  $V_S = V_r \times [0.206 - 0.15\ln(Q_O/Q_I)]$
  $V_r = A \times C \times 18{,}900 = 6.33 \times 0.51 \times 18{,}900 = 61{,}015$ CF

  $Q_I = C \times I \times A$
  $I = 101/(12.33 + T_C)^{0.84}$
  T_C = 19.9 MINUTES (FROM STORM SEWER DESIGN CALCULATIONS)
  $I = 101/(12.33 + 19.9)^{0.84} = 5.59$
  $Q_I = 0.51 \times 5.59 \times 6.33 = 18.05$ CFS

  $V_S = 22{,}266 \times [0.206 - 0.15\ln(4.58/18.05)] =$ **25,121 CF**

THE PREDOMINENT SOILS FOR THIS SITE AS DEFINED ON THE USDA-NRCS WEBSITE SURVEY ARE: GILFORD SANDY LOAM, PELLA SILT LOAM, SELFRIDGE LOAMY SAND (0-3% SLOPE), AND WASEPI LOAMY SAND (0-2% SLOPE). THESE SOILS TRADITIONALLY HAVE A HYDRAULIC SOIL GROUP OF A AND B WHICH LEND TO A HIGHER INFILTRATION POTENTIAL. BASED ON THIS IT IS ASSUMED THAT INFILTRATION IS POSSIBLE FOR THIS SITE UNLESS INFILTRATION TESTS DETERMINE OTHERWISE.

THE CPVC VOLUME IS TO BE INFILTRATED TO THE MAXIMUM EXTENT POSSIBLE. THIS SHALL BE DONE USING PERFORATED HDPE PIPES IN STONE-LINED TRENCHES IN THE REAR YARDS OF THE UNITS. USING A STONE TRENCH THAT IS 12" ON EACH SIDE AND ABOVE THE PIPE AND 6" BELOW THE PIPE WITH 30% VOID RATIO PROVIDES APPROXIMATELY 2,644 CF OF INFILTRATION VOLUME. A 12" DEEP RAIN GARDEN SHALL BE CONSTRUCTED NEAR THE SITE ENTRANCE WITH A VOLUME OF 1,406 CF. THIS GIVES A TOTAL INFILTRATION VOLUME OF 4,050 CF WHICH CAN BE SUBTRACTED FROM THE REQUIRED 100-YEAR VOLUME.

$V_s = 25{,}121 - 4{,}050 = 21{,}071$ CF
SINCE THE ADJUSTED FLOOD CONTROL VOLUME IS LESS THAT THE CPRC VOLUME, THE CPRC VOLUME SHALL DICTATE THE DETENTION (FLOOD CONTROL) VOLUME. USE **22,266 CF**.

- FOREBAY VOLUME AVAILABLE (FIRST FLUSH):

ELEV.	AREA(SF)	AVG. AREA(SF)	DEPTH(FT)	VOLUME(CF)
711	4,036			
		2,780	1.0	2,780
712	3,353			
				2,780

  AT ELEV. **711.80** A VOLUME OF 2,224 CF (26% EXCESS) CAN BE PROVIDED. THE EXCESS VOLUME IS FOR CONSTRUCTION TOLERANCES

- DETENTION VOLUME AVAILABLE:

ELEV.	AREA(SF)	AVG. AREA(SF)	DEPTH(FT)	VOLUME(CF)
710.8	4,036			
		4,199	0.2	840
711.0	4,361			
		5,070	0.8	4,056
711.8 (POND ONLY)	5,778			
711.8 (OVERALL)	8,002	8,986	0.2	1,797
712.0	9,969			
		10,926	0.5	5,463
712.5	11,883			
		12,228	0.5	6,114
713.0	12,573			
		12,616	0.5	6,308
713.5	12,660			
				24,578

  AT ELEV. **713.50** A VOLUME OF 24,578 CF (10.0% EXCESS) CAN BE PROVIDED. THE EXCESS VOLUME IS TO ACCOUNT FOR CONSTRUCTION TOLERANCES.

PERMANENT WATER ELEV. =	710.80
CPRC STORAGE ELEV. =	713.50
100-YEAR STORAGE ELEV. =	713.50
FREEBOARD ELEV. =	714.50

- FOREBAY OUTLET:
  THE OUTLET FOR THE FOREBAY SHALL BE DESIGNED TO RELEASE THE FIRST FLUSH VOLUME OVER A 24-HOUR PERIOD.
  V_{FF} = 1,759 CF
  $Q_{AVG\ FF} = V_{FF}/86{,}400 = 1{,}759/86{,}400 = 0.020$ CFS

  OUTLET PIPE SIZING:
    ASSUME 4" DIAMETER = 0.33'
    Z_{OUT} = PERM. POOL ELEV. + PIPE = 711.00 + 0.33 = 711.33
    $H_{AVE} = Z_{FF} - Z_{OUT} = 711.80 - 711.33 = 0.47'$
  CALCULATE AREA OF HOLE IN CAP OF OUTLET PIPE:
    $A_{OUT} = Q_{AVG\text{-}FF} / 0.62 \sqrt{64.4 \times H_{AVE}} = 0.020/0.62 \sqrt{(64.4 \times 0.47)} = 0.0059$ SF
    $D_{OUT} = 0.0432' = 0.51"$
    D_O = 1.00" HOLE IN CAP OF 4" OUTLET PIPE (1" IS THE MINIMUM ALLOWABLE HOLE)

  CALCULATE ACTUAL RELEASE RATE OF FOREBAY:
    $A_O = \Pi \times (D_O/2)^2 = 0.0055$ SF
    $Q_{ACT} = 0.62 \times 0.0055 \sqrt{(64.4 \times 0.47)} = 0.019$ CFS

  ACTUAL HOLDING TIME:
    $T_{FF} = V_{FF}/(Q_{ACT} \times 3600) = 25.7$ HOURS > 24 HOURS → OK

  OUTLET PIPE SLOPE:
    $R = D_{OUT}/4 = 0.33'/4 = 0.083'$
    $A_{4"} = 0.087$ SF
    $SLOPE = [(Q_{AVG\text{-}FF} \times n)/(1.486 \times A_{OUT} \times R^{2/3})]^2 = [(0.019 \times 0.012)/(1.486 \times 0.087 \times 0.083^{2/3})]^2$
    $= 0.000086$ FT/FT = 0.009%

    USE A 4" DIA. PVC PIPE AT 1.00%

    CHECK VELOCITY:
    $V = Q_{AVG\text{-}FF}/A_{OUT} = 0.019/0.087 = 0.22$ FPS < 8 FPS → OK

- DETENTION BASIN OUTLET:
  THE OUTLET SHALL BE DESIGNED TO RELEASE THE CPRC AND 100-YEAR VOLUME OVER A 48-HOUR PERIOD.

  $Q_{AVG\text{-}CPRC} = V_{CPRC}/144{,}000 = 22{,}266/144{,}000 = 0.155$ CFS
  $H_{AVG} = 2/3\ (Z_{CPRC} - Z_{OUT}) = 2/3\ (713.50 - 710.80) = 1.80'$
  $A_O = Q_{AVG\text{-}CPRC} / (0.62 \times \sqrt{(64.4 \times H_{AVG})}) = 0.155/(0.62 \times \sqrt{(64.4 \times 1.80)}) = 0.0232$ SF
  $D_{O1"} = 0.0055$ SF
  REQUIRED NUMBER 1" HOLES = 0.0232/0.0055 = 4.2 HOLES
  USE (4) 1" DIA. HOLES AT 4" O.C. WITH LOWEST ROW AT 710.80

  ACTUAL RELEASE RATE:
  $Q_{CPRC\text{-}ACT} = 0.62 \times 0.0055 \times 4 \times \sqrt{(64.4 \times 1.80)} = 0.147$ CFS

  ACTUAL HOLDING TIME:
  T_{ACT} = 22,266 CF/(0.114 x 3600) = 42.1 HOURS < 48 HOURS → OK

  OUTLET PIPE SIZING AND FLOOD CONTROL RESTRICTOR SIZING:
  $Q_{MAX} = 4.58$ CFS
  $D_{OUTLET} = 12" = 1.00'$
  Z_{OUT} = CROWN OF OUTLET PIPE = 710.80 + 1.00 = 711.80
  $H_{MAX} = Z_{100} - Z_{OUT} = 713.50 - 711.80 = 2.70'$
  $A_{OUT} = Q_{MAX} / (0.62 \times \sqrt{(64.4 \times H_{MAX})} = 4.58/(0.62 \times \sqrt{(64.4 \times 2.70)}) = 0.5602$ SF
  $D_{OUT} = 0.8445' = 10.13"$

  USE A 12" OUTLET PIPE WITH A 10" RESTRICTOR:
  $D_{OUT} = 12"$ $A_{OUT} = 0.7854$ SF
  $D_O = 10"$ $A_O = 0.5454$ SF

  ACTUAL RELEASE RATE:
  $Q_{MAX\text{-}ACT} = 0.62 \times A_O \times \sqrt{(64.4 \times H_{MAX})} = 0.62 \times 0.5454 \times \sqrt{(64.4 \times 2.70)} = 4.46$ CFS $< Q_{MAX}$

  CALCULATE RISER OUTLET PIPE SLOPE:
  $SLOPE = [(Q_{MAX} \times n)/(1.486 \times A_{OUT} \times R^{2/3})]^2$
  $R = D_{OUT}/4 = 12"/4 = 3.00" = 0.25'$
  $SLOPE = [(4.58 \times 0.012)/(1.486 \times 0.7854 \times 0.25^{2/3})]^2 = 0.00065$ FT/FT = 0.065%

  USE A 12" PVC OUTLET PIPE AT 0.32% (MIN. ALLOWABLE)

  CHECK PIPE VELOCITY:
  $V = Q_{MAX}/A_{OUT} = 4.58/0.7854 = 5.83$ FPS < 8 FPS & > 2.5 FPS → OK

DUE TO THE SHALLOW DEPTH OF THE DITCH ALONG NORTH CANTON CENTER ROAD, THE DISCHARGE FROM THE BASINS GRAVITY OUTLET SHALL FLOW TO A LIFT/PUMP STATION STRUCTURE WHERE IT THE DISCHARGE WILL BE LIFTED TO GRAVITY FLOW TO THE DITCH. THE PUMPS SHALL BE SIZED TO ACCOMMODATE THE MAXIMUM ALLOWABLE DISCHARGE.

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
CHO SUBMITTAL	5/16/24								
CHO RESUBMITTAL	7/15/24								
CHO RESUBMITTAL	10/16/24								
PSP SUBMITTAL	1/31/25								

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NEW HUDSON, MICHIGAN 48165
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MISS DIG 811
THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM

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10741 FELLOWS HILL DRIVE
PLYMOUTH, MI 48170

STORMWATER MANAGEMENT PLAN
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24
SCALE HOR: 1" = 50' VER: 1" = N/A
DESIGNED BY SRB
JOB NO. 24104
DRAWN BY SRB
SHEET SP–5.5

SCALE: 1" = 30'

LEGEND

EXISTING		PROPOSED	
MANHOLE		MANHOLE	
CATCH BASIN		CATCH BASIN	
INLET		INLET	
CLEANOUT		CLEANOUT	
END SECTION		END SECTION	
ROOF DRAIN		ROOF DRAIN	
GATE VALVE		GATE VALVE	
HYDRANT		HYDRANT	
WATER SHUT-OFF		WATER SHUT-OFF	
UTILITY POLE		TREE REMOVAL	
GUY ANCHOR		SANITARY SEWER	
LIGHT POLE		STORM SEWER	
SIGN		PERF. STORM SEWER	
TREE		WATER MAIN	
TREE LINE		DITCH	
SANITARY SEWER		CONTOUR MAJOR	
STORM SEWER		CONTOUR MINOR	
WATER MAIN			
GAS MAIN			
ELECTRIC CABLE			
CONTOUR MAJOR			
CONTOUR MINOR			
+100.00 SPOT ELEVATION			

NOTE: SEE PLYMOUTH TOWNSHIP STADARD DETAIL SHEET 'GDS' FOR TYPICAL STORM SEWER/DRAINAGE NOTES AND DETAILS.

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
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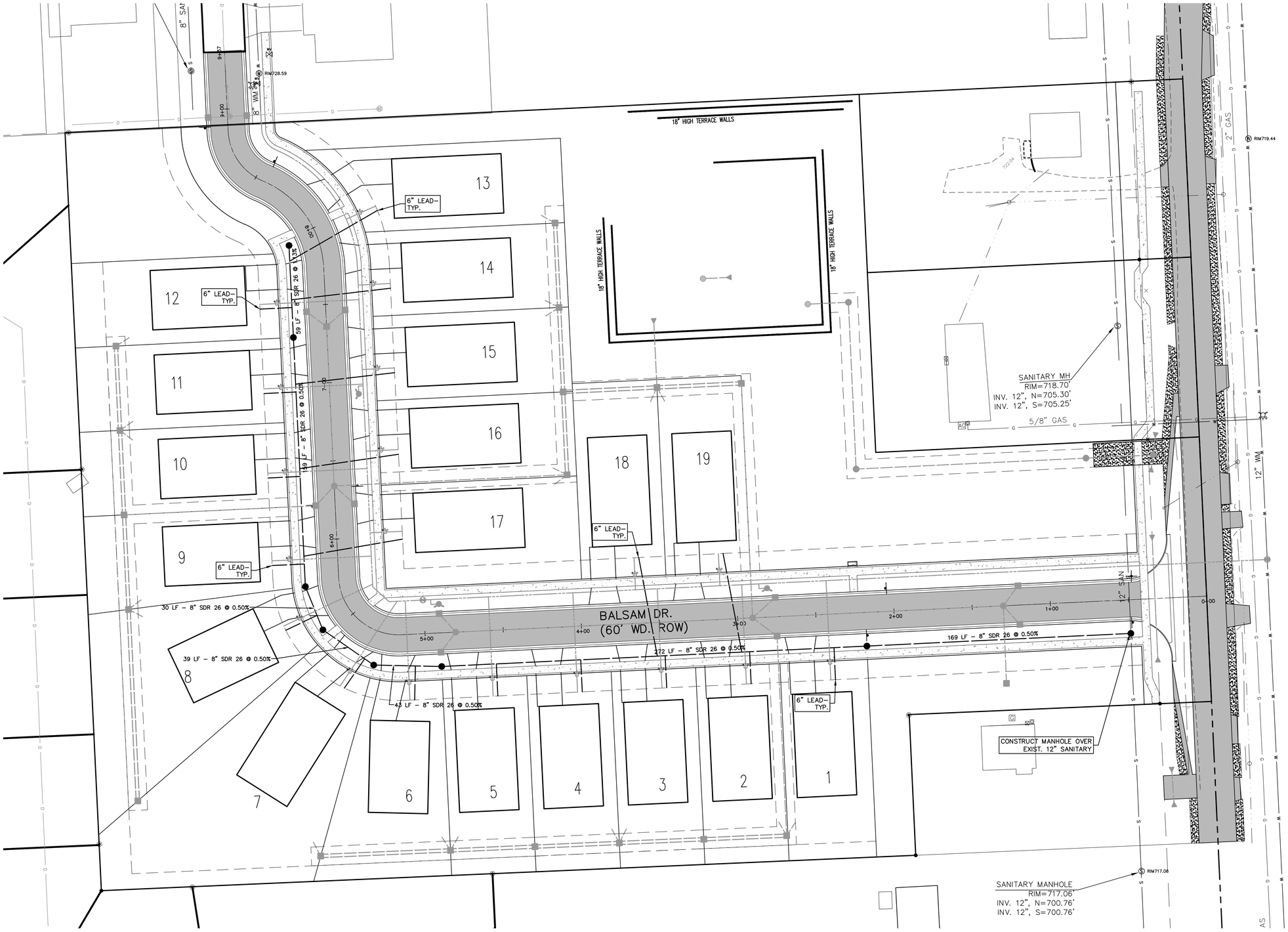
STORM SEWER PLAN
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = 30' VER: 1" = N/A	
DESIGNED BY SRB	JOB NO.	24104	
DRAWN BY SRB	SHEET	SP-6	



N

W E

S

SCALE: 1" = 30'

LEGEND

EXISTING	PROPOSED
MANHOLE	MANHOLE
CATCH BASIN	CATCH BASIN
INLET	INLET
CLEANOUT	CLEANOUT
END SECTION	END SECTION
ROOF DRAIN	ROOF DRAIN
GATE VALVE	GATE VALVE
HYDRANT	HYDRANT
WATER SHUT–OFF	WATER SHUT–OFF
UTILITY POLE	TREE REMOVAL
GUY ANCHOR	
LIGHT POLE	
SIGN	
TREE	
TREE LINE	
SANITARY SEWER	SANITARY SEWER
STORM SEWER	STORM SEWER
WATER MAIN	PERF. STORM SEWER
GAS MAIN	WATER MAIN
ELECTRIC CABLE	℄ DITCH
CONTOUR MAJOR	CONTOUR MAJOR
CONTOUR MINOR	CONTOUR MINOR
+100.00 SPOT ELEVATION	

SANITARY SEWER BASIS OF DESIGN:

NUMBER OF UNITS =	19 UNITS
REU'S =	1.0/UNIT x 19 = 19 REU'S
NUMBER PEOPLE/REU =	3.2 PEOPLE/REU
NUMBER OF PEOPLE =	19 x 3.2 = 60.8 PEOPLE
AVERAGE DAILY FLOW =	(100 GPCPD x 60.8)/(7.5 x 24 x 3600) = 0.009 CFS
PEAKING FACTOR =	4.0
PEAK DAILY FLOW =	(4.0 x 100 GPCPD x 60.8)/(7.5 x 24 x 3600) = 0.04 CFS

AN 8" DIAMETER SEWER AT 0.40% (MIN.) SLOPE HAS A CAPACITY OF 1.24 CFS

NOTE: SEE PLYMOUTH TOWNSHIP STADARD DETAIL SHEET 'S–1' FOR TYPICAL SANITARY SEWER NOTES AND DETAILS.

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
CHO SUBMITTAL	5/16/24								
CHO RESUBMITTAL	7/15/24								
CHO RESUBMITTAL	10/16/24								
PSP SUBMITTAL	1/31/25								

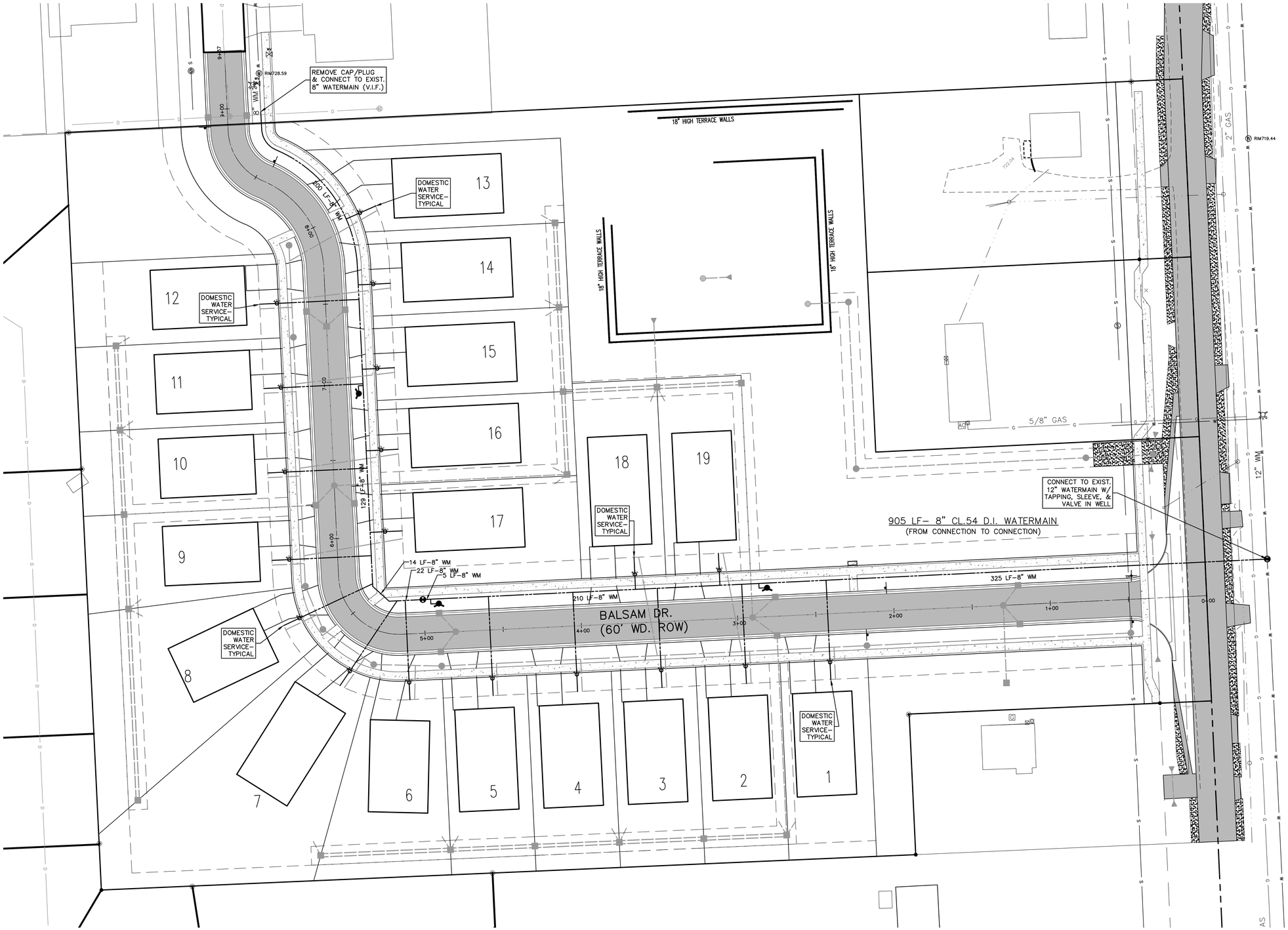
ZEIMET WOZNIAK & ASSOCIATES
Consulting Civil Engineers
55800 GRAND RIVER AVE., SUITE 100
NEW HUDSON, MICHIGAN 48165
P: (248) 437-5099 F: (248) 437-5222 www.zeimetwozniak.com

MISS DIG 811 — THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM

PROJECT SPONSOR:
CRS–COMMERICIAL REAL ESTATE
10741 FELLOWS HILL DRIVE
PLYMOUTH, MI 48170

SANITARY SEWER PLAN
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = 30' VER: 1" = N/A	
DESIGNED BY SRB	JOB NO.	24104	
DRAWN BY SRB	SHEET	SP–7	



SCALE: 1" = 30'

LEGEND

EXISTING		PROPOSED	
MANHOLE		MANHOLE	
CATCH BASIN		CATCH BASIN	
INLET		INLET	
CLEANOUT		CLEANOUT	
END SECTION		END SECTION	
ROOF DRAIN		ROOF DRAIN	
GATE VALVE		GATE VALVE	
HYDRANT		HYDRANT	
WATER SHUT-OFF		WATER SHUT-OFF	
UTILITY POLE		TREE REMOVAL	
GUY ANCHOR		SANITARY SEWER	
LIGHT POLE		STORM SEWER	
SIGN		PERF. STORM SEWER	
TREE		WATER MAIN	
TREE LINE		℄ DITCH	
SANITARY SEWER		CONTOUR MAJOR	
STORM SEWER		CONTOUR MINOR	
WATER MAIN			
GAS MAIN			
ELECTRIC CABLE			
CONTOUR MAJOR			
CONTOUR MINOR			
+100.00 SPOT ELEVATION			

WATERMAIN BASIS OF DESIGN:

NUMBER OF UNITS =	19 UNITS	
REU'S =	1.0/UNIT x 19 =	19 REU'S
NUMBER PEOPLE/REU =	3.2 PEOPLE/REU	
NUMBER OF PEOPLE =	19 x 3.2 = 60.8 PEOPLE	
AVERAGE DAILY FLOW =	(100 GPCPD x 60.8)/1,000,000 = 0.0061 MGD	
PEAKING FACTOR =	2.5	
PEAK DAILY FLOW =	(2.5 x 100 GPCPD x 60.8)/1,000,000 = 0.015 MGD	

NOTE: SEE PLYMOUTH TOWNSHIP STADARD DETAIL SHEET 'W-1' FOR TYPICAL WATERMAIN NOTES AND DETAILS.

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
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CHO RESUBMITTAL	7/15/24								
CHO RESUBMITTAL	10/16/24								
PSP SUBMITTAL	1/31/25								

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PLYMOUTH, MI 48170

WATERMAIN PLAN
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = 30' VER: 1" = N/A	
DESIGNED BY SRB	JOB NO.	24104	
DRAWN BY SRB	SHEET	SP-8	

SCALE: 1" = 40'

SITE DATA

GROSS SITE AREA	6.50 AC.
LESS 43' R.O.W.	0.17 AC.
	6.33 AC.

DENSITY 13 UNITS/6.33 AC.=2.05 UNITS/AC.

MINIMUM LOT WIDTH 90 FEET
MINIMUM LOT AREA 12,000 S.F.

SETBACKS:
FRONT 30'
REAR 50'
SIDE 10' (TOTAL 20')

DETENTION BASINS/RAIN GARDENS
1.05 ACRES

THE PARALLEL PLAN PROVIDES NO SHARED OPEN SPACE. THE CHO PLAN PROVIDES 0.77 ACRES OF SHARED OPEN SPACE. SHARED OPEN SPACE DOES NOT INCLUDE DETENTION BASINS.

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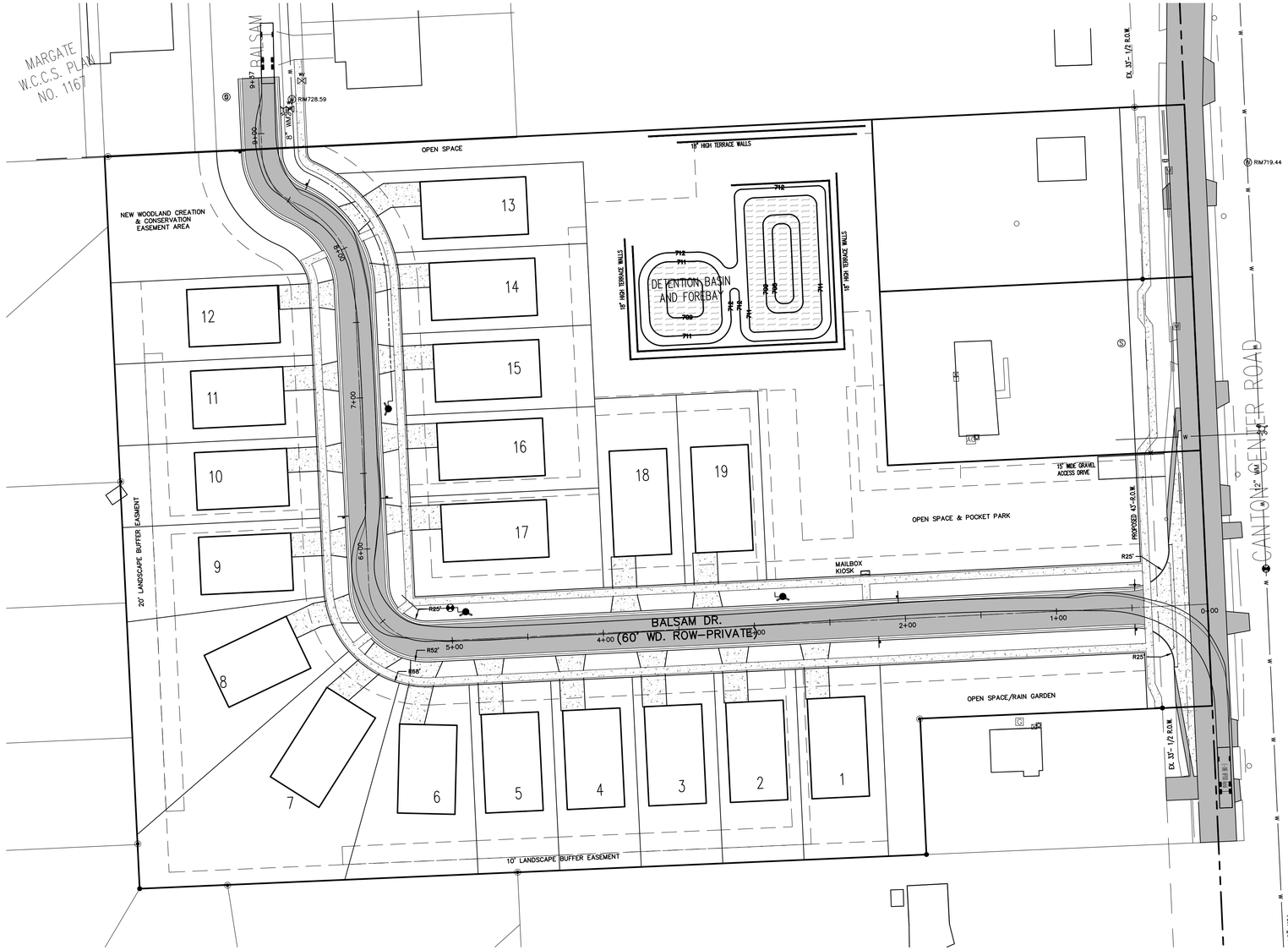
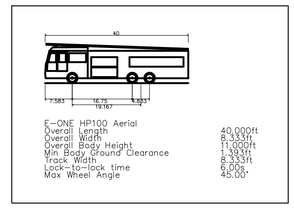
PLYMOUTH, MI 48170

PARALLEL PLAN
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = 40' VER: 1" = N/A	
DESIGNED BY SRB	JOB NO.	24104	
DRAWN BY SRB	SHEET	SP-9	



SCALE: 1" = 40'



E-ONE HP100 Aerial	
Overall Length	40.000ft
Overall Width	8.333ft
Overall Body Height	11.000ft
Min Body Ground Clearance	1.391ft
Track Width	8.333ft
Lock-to-lock time	6.00s
Max Wheel Angle	45.00°

TYPICAL FIRE TURNING TEMPLATE
NOT TO SCALE

CAUTIONARY NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AS DISCLOSED BY AVAILABLE UTILITY COMPANY RECORDS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE COMPANY. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. 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. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF A CONFLICT IS APPARENT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTMENT OF ALL STRUCTURES, KNOWN OR UNKNOWN, SHOWN OR UNSHOWN, LOCATED WITHIN THE LIMITS OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE IF ANY SUCH STRUCTURES ARE IDENTIFIED. ALL COSTS ASSOCIATED WITH LOCATING AND ADJUSTING THESE STRUCTURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. DESIGN PROFESSIONAL AND CLIENT WARRANT THAT IN TRANSMITTING INSTRUMENTS OF SERVICE, OR ANY OTHER INFORMATION, THE TRANSMITTING PARTY IS THE COPYRIGHT OWNER OF SUCH INFORMATION OR HAS PERMISSION FROM THE COPYRIGHT OWNER TO TRANSIT SUCH INFORMATION FOR ITS USE OF THE PROJECT. IF THE CLIENT AND DESIGN PROFESSIONAL INTEND TO TRANSMIT INSTRUMENTS OF SERVICE OR ANY OTHER INFORMATION OR DOCUMENTATION IN DIGITAL FORM, THEY SHALL ENDEAVOR TO ESTABLISH NECESSARY PROTOCOLS GOVERNING SUCH TRANSMISSIONS.

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PLYMOUTH, MI 48170

FIRE TURNING STUDY
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = 40' VER: 1" = N/A	
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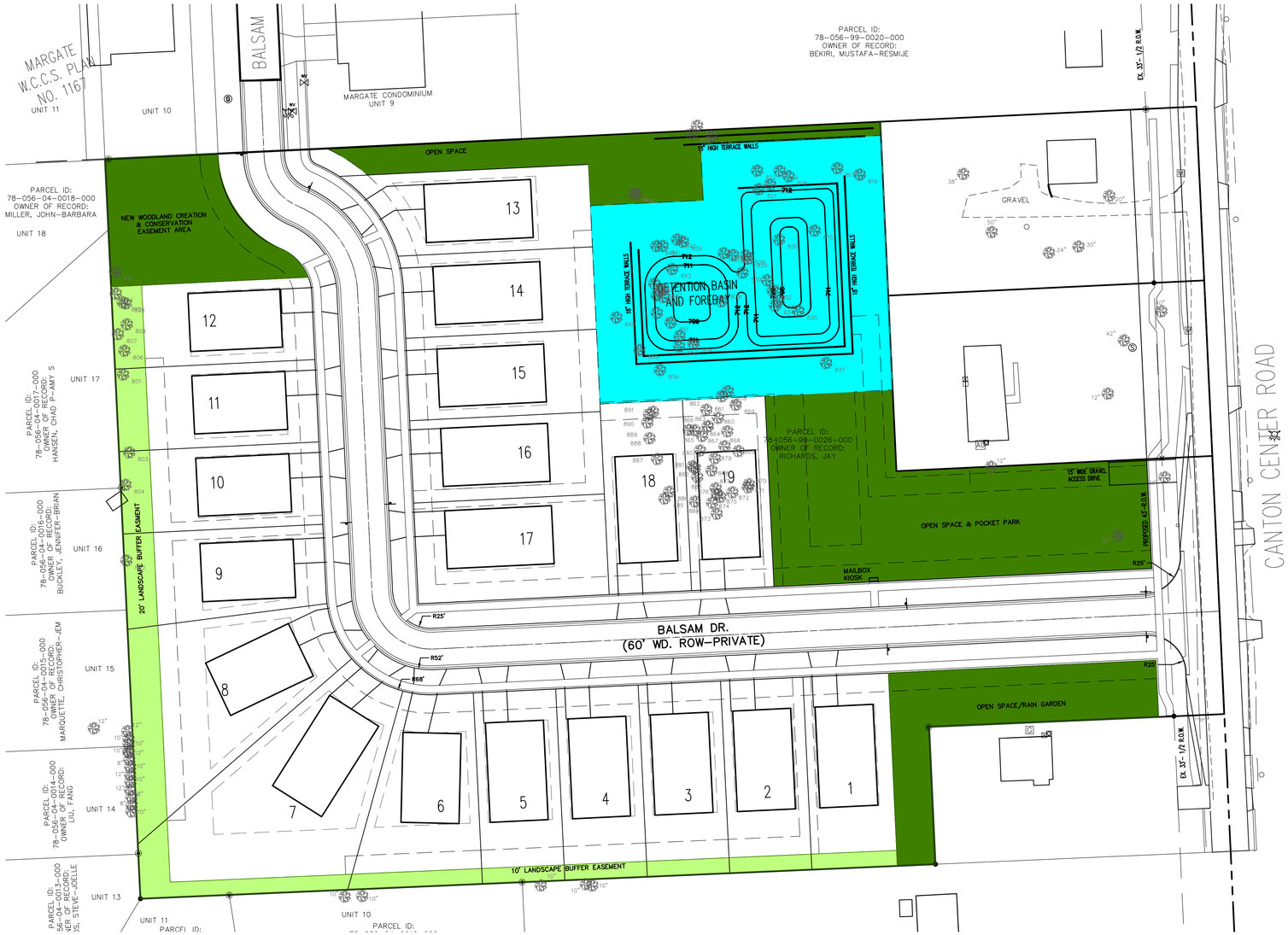

OPEN SPACE LEGEND:

	SHARED OPEN SPACE–	1.07 ACRES
	LANDSCAPE BUFFER EASEMENT–	0.29 ACRES
	STORMWATER MANAGEMENT–	0.67 ACRES

NOTE: SEE LANDSCAPE PLANS FOR PLANTING DETAILS.

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MISS DIG 811 THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM

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PLYMOUTH, MI 48170

OPEN SPACE PLAN
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE HOR: 1" = 40' VER: 1" = N/A
DESIGNED BY SRB	JOB NO. 24104
DRAWN BY SRB	SHEET SP-11

N
W E
S
SCALE: 1" = 40'

UTILITY LEGEND

EXISTING	PROPOSED
MANHOLE	MANHOLE
CATCH BASIN	CATCH BASIN
INLET	INLET
CLEANOUT	CLEANOUT
END SECTION	END SECTION
ROOF DRAIN	ROOF DRAIN
GATE VALVE	GATE VALVE
HYDRANT	HYDRANT
WATER SHUT-OFF	WATER SHUT-OFF
UTILITY POLE	TREE REMOVAL
GUY ANCHOR	SANITARY SEWER
LIGHT POLE	STORM SEWER
SIGN	WATER MAIN
TREE	DITCH
TREE LINE	
SANITARY SEWER	
STORM SEWER	
WATER MAIN	
GAS MAIN	
ELECTRIC CABLE	

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
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BASEMENT UNIT FIT STUDY
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = 40' VER: 1" = N/A	
DESIGNED BY SRB	JOB NO.	24104	
DRAWN BY SRB	SHEET	SP-12	

UTILITY NOTES
AT LEAST 72 HOURS (3 WORKING DAYS) PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY MISS DIG (811) AND THE LOCAL COMMUNITY (WHERE APPLICABLE) TO STAKE LOCATIONS OF EXISTING UTILITIES.

THE CONTRACTOR SHALL EXPOSE AND VERIFY THE EXACT LOCATION, SIZE, DEPTH, MATERIAL, AND ORIENTATION OF EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION AND FURNISH THE INFORMATION TO THE DESIGN ENGINEER TO CONFIRM OR RE-DESIGN. COSTS FOR EXPLORATORY EXCAVATION IS INCIDENTAL AND SHALL NOT BE CONSIDERED AN EXTRA TO THE CONTRACT.

THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES FROM DAMAGE. ANY SERVICE OR UTILITY DAMAGED OR REMOVED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT THE CONTRACTORS EXPENSE, IN CONFORMANCE WITH THE REQUIREMENTS OF THE UTILITY COMPANY PROVIDER.

DAMAGE TO PRIVATE PROPERTY
ALL SIDEWALKS, DRIVEWAYS, LAWNS, FENCING, TREES, SHRUBS, SPRINKLERS, LANDSCAPING, ETC., THAT ARE DAMAGED DURING CONSTRUCTION MUST BE REPAIRED OR REPLACED, IN KIND OR BETTER, BY THE CONTRACTOR. ALL STREET SIGNS, MAILBOXES, ETC., REMOVED SHALL BE REPLACED, IN KIND OR BETTER, BY THE CONTRACTOR. ALL THE REPAIRS OR REPLACEMENTS DUE TO THE CONTRACTORS WORK ARE TO BE INCLUDED IN THE CONTRACT PRICES AND SHALL NOT BE AN EXTRA TO THE CONTRACT.

THE CONTRACTOR SHALL SECURE PERMISSION IN WRITING FROM ADJACENT PROPERTY OWNERS PRIOR TO ENTERING UPON ANY ADJOINING PROPERTIES, UNLESS OFFSITE PERMITS HAVE ALREADY BEEN OBTAINED BY THE OWNER AND ARE PART OF THE CONTRACT DOCUMENTS.

DEWATERING ACTIVITIES
IF NOT SPECIFICALLY PROVIDED FOR IN THE CONSTRUCTION DESIGN DOCUMENTS, THE DESIGN OR QUALITATIVE ANALYSIS OF GROUND WATER DEWATERING SYSTEMS IS BEYOND THE SCOPE OF THESE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING AND PROVIDING APPROPRIATE EXCAVATION DEWATERING SYSTEMS FOR USE DURING CONSTRUCTION.

THE DEWATERING METHOD SELECTED BY THE CONTRACTOR WILL NOT ADVERSELY AFFECT ADJACENT PAVEMENTS OR STRUCTURES PRIOR TO THE BEGINNING DEWATERING CONDITIONS. MEANS AND METHODS OF DEWATERING ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. THE COST OF DEWATERING WILL BE CONSIDERED INCLUDED IN THE WORK OF CONSTRUCTING UNDERGROUND UTILITIES UNLESS SPECIFICALLY INDICATED OTHERWISE.

BY-PASS PUMPING
FROM TIME-TO-TIME IT MAY BE NECESSARY FOR THE CONTRACTOR TO BY-PASS PUMP TO COMPLETE THE WORK INDICATED ON THE PLANS. THE COST OF BY-PASS PUMPING, THE METHODS, EQUIPMENT, AND MEANS OF PROVIDING THAT WORK ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTORAND SHALL BE CONSIDERED PART OF THE WORK WHETHER SPECIFICALLY CALLED OUT ON THE PLANS OR NOT.

PIPE CONSTRUCTION MEANS AND METHODS
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE MEANS AND METHODS FOR CONSTRUCTING THE UNDERGROUND PIPE SYSTEMS PROPOSED ON THE PLANS, INCLUDING BUT NOT LIMITED TO THE NEED FOR SHORING/BRACING OF TRENCHES, DEWATERING OF TRENCHES, SCHEDULING WORK AT OFF PEAK HOURS, AND/OR MAINTAINING EXISTING FLOWS THAT MAY BE ENCOUNTERED VIA PUMPING, BY-PASS PIPING OR OTHER MEANS. THE CONTRACTOR SHALL NOT BE PAID ANY ADDITIONAL COMPENSATION TO IMPLEMENT ANY MEANS AND METHODS TO SATISFACTORLY COMPLETE THE CONSTRUCTION.

PAVEMENT REMOVAL
THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE THICKNESS OF THE PAVEMENT REMOVAL. PAVEMENT CORE SAMPLES ARE FOR INFORMATIONAL PURPOSES ONLY AS TO THE THICKNESS OF THE PAVEMENT AT THE CORE LOCATION. THE OWNER AND ENGINEER MAKE NO REPRESENTATION, WARRANTY, OR GUANANTEE THAT THE SAMPLES ACCURATELY REFLECT THE PAVEMENT THICKNESS OF THE PROJECT.

TRAFFIC MAINTENANCE
DURING CONSTRUCTION, THE CONTRACTOR SHALL ACCOMMODATE BOTH VEHICLE AND PEDESTRIAN TRAFFIC IN THE ROAD RIGHTS-OF-WAY. THE CONTRACTOR'S EQUIPMENT AND OPERATIONS ON PUBLIC STREETS SHALL BE GOVERNED BY ALL APPLICABLE LOCAL, COUNTY, AND STATE ORDINANCES, REGULATIONS AND LAWS. THE CONTRACTOR SHALL OBTAIN AND SATISFY ANY AND ALL PERMIT REQUIREMENTS BY LOCAL, COUNTY, AND STATE GOVERNMENTAL AGENCIES HAVING AUTHORITY.

IN ADDITION, WHERE THE WORK REQUIRES THE CLOSURE OF ONE OR MORE LANES OR IS WITHIN THE INFLUENCE OF THE ROAD OR PEDESTRIAN RIGHT-OF-WAY, THE CONTRACTOR SHALL PROVIDE ALL SIGNS, BARRICADES, FLAG PERSONS, AND OTHER TRAFFIC CONTROL MEASURES AS REQUIRED BY THE LOCAL COMMUNITY, COUNTY, OR MDOT HAVING JURISDICTION OF THE ROAD AND IN ACCORDANCE TO THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).

COMPENSATION FOR TRAFFIC CONTROL SHALL BE CONSIDERED INCLUDED IN THE CONTRACT PRICES UNLESS SPECIFIC TRAFFIC CONTROL ITEMS ARE INCLUDED IN THE ACCPTED BID.

IRRIGATION
THE CONTRACTOR SHALL MAINTAIN OR REPAIR ANY EXISTING IRRIGATION SYSTEMS WITHIN THE PROJECT AREA UNLESS PLANS CALL FOR THE SYSTEM TO BE REMOVED. THE OWNER AND ZWA MAKE NO REPRESENTATIONS, WARRANTY, OR GUARANTEE AS TO THE LOCATION OF IRRIGATION SYSTEMS. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PROTECT THE IRRIGATION SYSTEM DURING CONSTRUCTION ACTIVITIES. COMPENSATION FOR MAINTAINING OR REPAIRING EXISTING IRRIGATION SYSTEMS SHALL BE CONSIDERED INCLUDED IN THE CONTRACT PRICES UNLESS SPECIFIC IRRIGATION SYSTEM REPAIR ITEMS ARE IN INCLUDED IN THE ACCEPTED BID.

SUBSOIL CONDITIONS
ANY SOIL BORING PROVIDED BY THE OWNER AND/OR ENGINEER IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THIS INFORMATION IS NOT OFFERED AS EVIDENCE OF GROUND CONDITIONS THROUGHOUT THE PROJECT AND ONLY REFLECT THE GROUND CONDITIONS AT THE LOCATION OF THE BORING ON THE DATE IT WAS TAKEN.

THE ACCURACY AND RELIABILITY OF THE SOIL BORING LOGS AND REPORT ARE NOT WARRANTED OR GUARANTEED IN ANY WAY BY THE OWNER OR ENGINEER AS TO THE SUB-SOIL CONDITIONS FOUND ON THE SITE. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION AND SUB-SOIL INVESTIGATION AND SECURE OTHER SUCH INFORMATION AS THE CONTRACT DEEMS NECESSARY TO DO THE WORK PROPOSED IN PREPARATION OF THEIR BID.

UNDERCUTTING AND PREPARATION OF SUBGRADE
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE ANY AND ALL SOILS WHICH DO NOT CONFORM TO THE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A SUBGRADE IN CONFORMANCE WITH THE PROJECT PLANS AND/OR SPECIFICATIONS. THE MEANS AND METHODS USED TO ACHIEVE THE REQUIRED RESULT SHALL SOLELY BY THE CONTRACTOR'S RESPONSIBILITY.

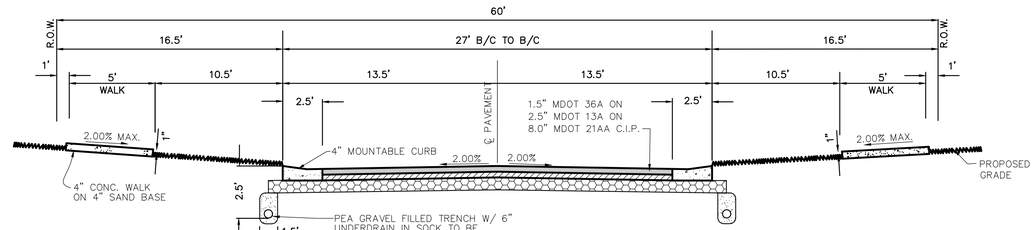
ANY AREAS OF UNDERCUTTING THAT RESULT IN ADDITIONAL OR EXTRA WORK BECAUSE THEY COULD NOT BE IDENTIFIED BY THE CONTRACTOR'S PRE-BID OBSERVATION OR ARE NOT SET FORTH IN THE PLANS AND SPECIFICATIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER BEFORE ANY EXTRA WORK IS PERFORMED. THE CONTRACTOR SHALL MAKE A REQUEST FOR ANY ADDITIONAL COMPENSATION FOR THE UNDERCUTTING IN WRITING AND THE REQUEST SHALL CONFORM TO THE CONTRACT'S CHANGE ORDER PROVISIONS.

STRUCTURAL BACKFILL
STRUCTURAL BACKFILL SHALL BE PLACED IN CONFORMANCE WITH THE PROJECT PLANS, SPECIFICATIONS, OR AS REQUIRED BY THE COMMUNITY, GOVERNMENTAL AGENCY OR UTILITY THAT HAS AUTHORITY OVER THE WORK.

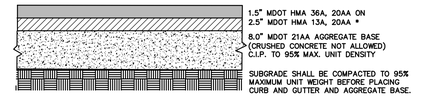
TRENCH BACKFILL
TRENCH BACKFILL SHALL BE PLACED IN CONFORMANCE WITH THE PLANS AND/OR SPECIFICATIONS. TRENCH BACKFILL SHALL ALSO BE INSTALLED IN CONFORMANCE WITH THE COMMUNITY REQUIREMENTS OR AGENCY/UTILITY GOVERNING THE WORK. IN CASE OF CONFLICTING REQUIREMENTS, THE MORE STRINGENT SHALL APPLY.

GRADING AND EARTH BALANCE
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WHETHER THE SITE EARTHWORK BALANCES OR NOT. ANY EXCESS CUT MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR IN AN ACCEPTABLE, LEGAL MANNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMPORT APPROVED FILL MATERIAL AND PLACE IT AS REQUIRED TO OBTAIN ALL SITE GRADES AND COMPACTION REQUIREMENTS PER THE ENGINEER'S PLAN AND ALL APPLICABLE GOVERNMENTAL STANDARDS. THE ENGINEER AND OWNER MAKE NO REPRESENTATION AS TO THE QUANTITIES THAT MAY BE NEEDED TO CREATE A BALANCED EARTHWORK CONDITION OR THAT THE SITE EARTHWORK IS BALANCED.

SOIL EROSION AND SEDIMENTATION CONTROL
THE CONTRACTOR SHALL OBTAIN THE REQUIRED SOIL EROSIN PERMIT AND SATISFY ALL REGULATORY REQUIREMENTS FOR CONTROLLING SOIL EROSION AND SEDIMENT TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS. THE ENGINEER AND OWNER ARE NOT RESPONSIBLE FOR INSPECTION OR APPROVAL OF THE CONTRACTOR'S WORK IN CONNECTION WITH SATISPYING THE SOIL EROSION PERMIT REQUIREMENTS UNLESS SPECIFICALLY STATED IN THE CONTRACT DOCUMENTS.

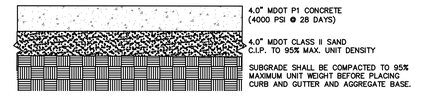


TYPICAL PRIVATE ROADWAY SECTION
NOT TO SCALE

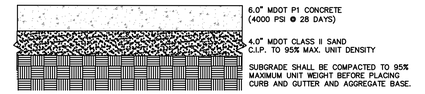


* APPLY BOND COAT AT RATE OF 0.05 GAL./SQ. YD. BETWEEN LIFTS.

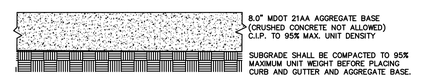
ONSITE HMA PAVING SECTION



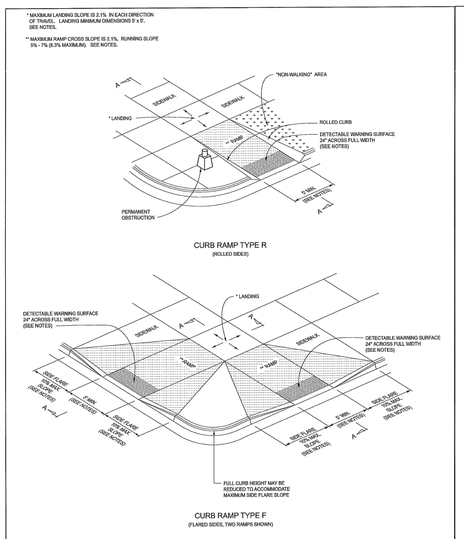
CONCRETE SIDEWALK PAVING SECTION



CONCRETE DRIVEWAY PAVING SECTION



AGGREGATE DRIVEWAY PAVING SECTION



CURB RAMP TYPE R
(ROLLED SIDES)

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

APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES

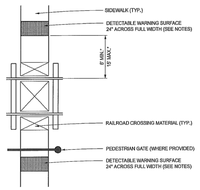
APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT

MDOT Michigan Department of Transportation
DEPARTMENT DIRECTOR BRADLEY C. WIEFFERICH, PE

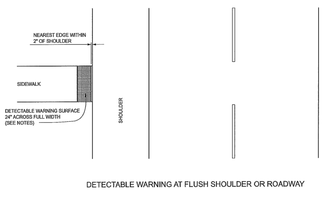
STANDARD PLAN FOR
CURB RAMP AND
DETECTABLE WARNING DETAILS

(SPECIAL DETAIL)	11/08/2023	R-28-K	SHEET
FHWA APPROVAL	PLAN DATE		1 OF 7

* THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE RAIL CROSSING IS 6' MINIMUM AND 15' MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL. DO NOT PLACE DETECTABLE WARNING ON RAILROAD CROSSING MATERIAL.



DETECTABLE WARNING AT RAILROAD CROSSING

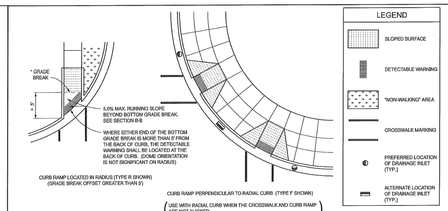


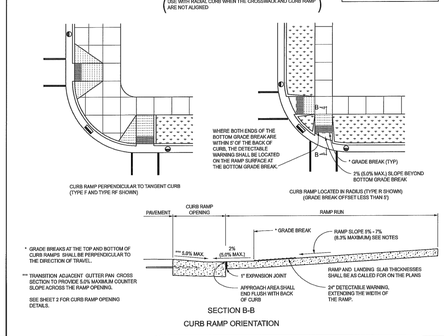
DETECTABLE WARNING AT FLUSH SHOULDER OR ROADWAY

MDOT Michigan Department of Transportation
DEPARTMENT DIRECTOR BRADLEY C. WIEFFERICH, PE

STANDARD PLAN FOR
CURB RAMP AND
DETECTABLE WARNING DETAILS

(SPECIAL DETAIL)	11/08/2023	R-28-K	SHEET
FHWA APPROVAL	PLAN DATE		5 OF 7





SECTION B-B

* GRADE BREAKS AT THE TOP AND BOTTOM OF CURB RAMPS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.

** TRANSITION ADJACENT GUTTER PAN CROSS SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.

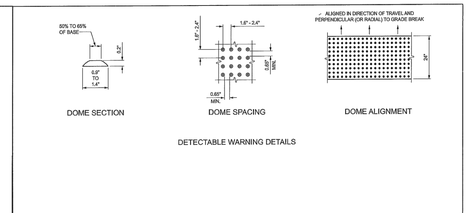
SEE SHEET 2 FOR CURB RAMP OPENING DETAILS.

CURB RAMP ORIENTATION

MDOT Michigan Department of Transportation
DEPARTMENT DIRECTOR BRADLEY C. WIEFFERICH, PE

STANDARD PLAN FOR
CURB RAMP AND
DETECTABLE WARNING DETAILS

(SPECIAL DETAIL)	11/08/2023	R-28-K	SHEET
FHWA APPROVAL	PLAN DATE		6 OF 7



DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

CURB RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP, WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 6' MINIMUM WIDTHS ARE NOT FEASIBLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND LANDINGS TO NOT LESS THAN 4' x 4'.

CURB RAMPS WITH A RUNNING SLOPE ≤ 5% DO NOT REQUIRE A TOP LANDING. HOWEVER, ANY CONTINUOUS SIDEWALK OR PEDESTRIAN ROUTE CROSSING THROUGH OR INTERSECTING THE CURB RAMP MUST INDEPENDENTLY MAINTAIN A CROSS SLOPE NOT GREATER THAN 2.1% PERPENDICULAR TO ITS OWN DIRECTION(S) OF TRAVEL.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURVED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.1%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH NOT INCLUDING LANDINGS OR TRANSITIONS.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN ½". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

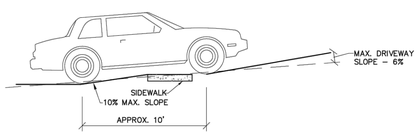
FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED 48" WIDE PATH CANNOT BE MAINTAINED. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE, OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

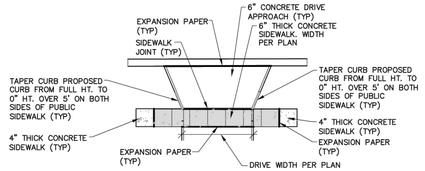
MDOT Michigan Department of Transportation
DEPARTMENT DIRECTOR BRADLEY C. WIEFFERICH, PE

STANDARD PLAN FOR
CURB RAMP AND
DETECTABLE WARNING DETAILS

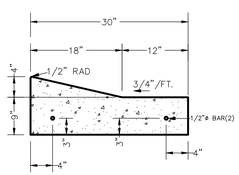
(SPECIAL DETAIL)	11/08/2023	R-28-K	SHEET
FHWA APPROVAL	PLAN DATE		7 OF 7



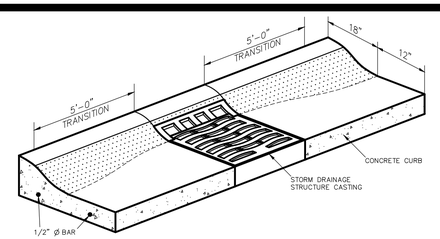
DRIVEWAY SLOPE DETAIL
N.T.S.



DRIVEWAY/SIDEWALK DETAIL
N.T.S.



MOUNTABLE CURB & GUTTER DETAIL
NOT TO SCALE



CURB TRANSITION DETAIL
NOT TO SCALE

ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE	ISSUED FOR	DATE
CHO SUBMITTAL	5/16/24								
CHO RESUBMITTAL	7/15/24								
CHO RESUBMITTAL	10/16/24								
PSP SUBMITTAL	1/31/25								

ZEIMET WOZNIAK & ASSOCIATES
Consulting Civil Engineers
55800 GRAND RIVER AVE., SUITE 100
NEW HUDSON, MICHIGAN 48165
P: (248) 437-5099 F: (248) 437-5222 www.zeimetwozniak.com

MISS DIG 811 — THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM

PROJECT SPONSOR:
CRS-COMMERICIAL REAL ESTATE
10741 FELLOWS HILL DRIVE
PLYMOUTH, MI 48170

CONSTRUCTION NOTES AND DETAILS
GLENVIEW ESTATES
PLYMOUTH TOWNSHIP, MICHIGAN

DATE 5/16/24	SCALE	HOR: 1" = N/A VER: 1" = N/A	
DESIGNED BY SRB	JOB NO.	24104	
DRAWN BY SRB	SHEET	SP-13	

WATERMAIN SPECIFICATIONS

A. Description

This work includes excavation, placing, backfilling, disinfection and testing watermain pipe, hydrants, fittings, thrust blocks, valves, wells and service leads when called for on the plans.

B. Materials

1. SEE NOTES AND MATERIALS AT RIGHT OF SHEET.
2. Backfill, Concrete, Reinforcement and Other Materials
   a. The materials shall meet the requirements specified in the current Michigan Department of Transportation (M.D.O.T.) Standard Specifications for Highway Construction, Division 8.
   b. Backfill shall be granular material Class II.
   c. Concrete for encasement shall be Grade P1.
   d. Steel reinforcement for encasement shall be Grade 60.

C. Construction

1. Pipe Handling

The pipe shall be distributed at the site by the Contractor as required and care shall be exercised to prevent injury to the pipe in handling. Proper tools and implements satisfactory to the Project Engineer for safely handling the pipe and other materials shall be provided by the Contractor. Pipe must be protected from falling either from truck to ground or into the trench, and when distributed along the line or stored near a road, must be kept clear of danger of damage to passing vehicles.

All materials will be inspected before placing in the trench, and if defective, marked "REJECTED", and removed from the site by the Contractor.

2. Excavation

The Contractor shall do all the excavation required for the construction of the mains and appurtenances, including clearing of the site of the work and the removal and disposal of all materials necessary to be removed in the construction of all work under this Contract. The cost of doing such work shall be understood as being included in the Contract Unit Price per lineal foot for laying watermain.

Excavated materials may be temporarily stored along the trench, unless otherwise noted, in a manner that will not cause damage to trees, shrubs, fences, or other property, nor that will endanger the bank of the trench by imposing too great a load thereon.

Excavations shall be adequately braced and/or sheeted to prevent caving or squeezing of the soil, or disturbing existing utilities or pavement, and shall be completely dewatered prior to construction of the watermains or other structures.

Where, through the Contractor's construction procedure, or because of poor existing ground conditions, it is impossible to maintain alignment and grade property, or provide suitable support for the pipe, the Contractor shall, at his own expense, excavate below grade and replace with suitable approved material in order to insure that the pipe, when laid, will maintain correct alignment and grade.

The subgrade shall be accurately prepared to line and grade so that the pipe, when laid, shall have uniform bearing upon the approved backfill, throughout its length.

Pavement cutting, maintenance and reinstatement shall be done in a manner satisfactory to the Wayne County Department of Public Services.

a. Trench Bottom. The bottom of trench shall be excavated neatly to the required grade prior to filling with four (4) inches, or to the depth required by the detail drawing for the specific type of pipe used, of bank run sand thoroughly compacted by tamping before the pipe is laid. Blocking under pipe is strictly prohibited unless specifically ordered in writing by the Township Engineer; and, then only for each specific length of pipe in question.

b. Sheeting, Shoring and Bracing. Excavations shall be sheeted and braced as necessary to insure substantial completion of the work and/or to insure the safety of the workmen or the public or to protect adjoining structures.

No extra compensation shall be paid the Contractor for sheeting or bracing left in place, unless ordered left in place by the Township Engineer and then only a fair salvage value for material left in place shall be paid. The Contractor shall receive no extra compensation for sheeting or bracing left in place in tunnels.

c. Disposal of Excavated Material. With the exception of an amount of excavated materials sufficient for backfilling and construction of fills as called for on the plans, all broken concrete, stone and excess excavated materials shall be legally disposed of by the Contractor off-site. On-site disposal may be permitted by the Project Engineer.

d. Pumping and Draining. The Contractor shall provide and maintain adequate pumping and drainage facilities for removal and disposal of water from trenches, or other excavations. The contractor shall also provide pumping and drainage facilities and shall operate same as may be necessary until construction is completed.

Where the work is in ground containing an excessive amount of water, the Contractor shall provide, install, maintain, and operate suitable well points, connecting manifolds, and reliable pumping equipment to operate same to insure proper construction of the work.

Drainage or discharge lines shall be connected to adjacent public stormwater drains or extended to nearby watercourses wherever possible. In any event, all pumping and drainage shall be done without damage to any highway or other property, public or private, property owners. If it should become necessary to lay pipe in water, the method of installation must be approved by the Township Engineer.

The Contractor shall receive no extra compensation for providing, maintaining or operating any dewatering or drainage facilities unless otherwise stated elsewhere in these specifications.

e. Utilities Crossing. In crossing over or under any main or lateral sewer, sewer connection, catch basin, watermain, service connection, gas main, gas connection, conduit, or any underground improvement, the Contractor shall use all possible care in protecting the same from injury, damage or the free unobstructed continuous use of the same as far as possible, and the contract work shall be performed in such a manner as will effect the least damage or interference with such improvements or the free and unobstructed use of the same. The Contractor will be required, without any additional compensation, to repair, replace or rebuild any such improvement injured or damaged by him, and shall be responsible to the department, companies, individuals, or corporations controlling such improvements.

f. Soil Erosion and Sedimentation Control (SESC) Measures. Whether SESC permit is required or not, the owner shall be responsible to see to it that appropriate SESC measures are provided and properly maintained at all times during construction up to time the site is completed and stabilized.

3. Laying Pipe

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

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

When the temperature is above 60 degrees F., the spigot of each pipe laid shall be brought tightly home in the bell of the preceding pipe. When the temperature is below 60 degrees F., the pipe shall be laid with the spigot end approximately 1/16 inch from the face of the bell to allow for expansion.

Wherever deflections at joints are required by changes in grade or alignment or to plumb valve stems, the deflection at any bell and spigot joint shall not exceed that which will cause the spigot end of pipe to be away from home in the bell of the adjacent pipe a distance of 1/4 inch at the point of greatest opening. The deflection at any mechanical joint shall not exceed three-quarters of the maximum deflection recommended by the manufacturer of the joint used.

Where necessary to cut pipe, cutting shall be done with approved tools and cut ends of pipe shall be square and regular. Cutting shall be done in a manner to avoid damage to lining and coating.

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

Tools or other objects shall not be stored or left in the pipe.

Pipe shall be laid at depths to provide cover of 6 ft. 0 inch over the top of the pipe unless otherwise noted on the plans or elsewhere in these specifications.

4. Tunneling or Boring

When tunneling is required by the Wayne County Department of Public Services or is specified on the plans, said tunneling shall be in accordance with the current Wayne County Department of Public Services Requirements for Construction within Road Right of Way or Parks under Jurisdiction of the Board (Revised August 1, 2007).

When tunneling by jacking or boring, all voids shall be filled by means of pressure grouting with a 1:3 cement-sand mortar. This work must be accomplished within 24 hours after the conduit crossing has been completed. The tunneling shall extend a minimum of 10 feet outside the edges of the county road pavement. Pressure grouting will not be required for casings four (4) inch in diameter or smaller unless the voids are one (1) inch or larger.

5. Thrust Blocks

Concrete thrust blocks shall be placed at all 22-1/2 degree bends, or greater, dead-ends, fittings, "tee's", hydrants and at crosses where required by the Township Engineer.

Thrust blocks shall be placed to bear on undisturbed soil.

In unstable soil conditions, the thrust blocks are to be supported by removal of the unstable soils and replacement with ballast of sufficient stability to resist the thrusts. All thrust blocks shall be approved by the Township Engineer before backfilling. Where retaining glands and/or threaded rods are used to restrain a joint thrust blocks must also be employed.

6. Backfill

Backfill is defined as that material placed into the trench from the top of the standard pipe bedding (as shown on Trench "A" detail in Sheet W-2) to the ground surface. Backfill shall be placed into the trench according to one of the following specified manners as determined by the location of the trench or the edge of trench nearest the existing pavement, roadway, sidewalk, driveway or parking area.

Wherever compaction is required, it shall be accomplished by suitable mechanical compaction equipment approved by the Township Engineer. Frozen backfill materials are not permitted under any circumstance whatsoever.

a. Under or Adjacent to Pavement

Trench Location	Backfill Requirements
1) Under existing or proposed pavement	Backfill shall be full depth mechanically compacted MDOT Class II granular material constructed in six (6) inch layers, loose measure with each layer compacted to not less than 95 percent of maximum unit weight at optimum moisture content per A.A.S.T.H.O.-180 or by M.D.O.T. Cone Density Method.
2) Parallel to and less than five (5) feet from edge pavement	
3) Parallel and less than ten (10) feet and more than five (5) feet from edge of pavement	Selected excavated or other acceptable backfill materials shall be placed, after standard bedding called for on plan has been completed, into trench in six (6) inch layers, loose measure, with each layer compacted to not less than 90 percent of maximum unit weight. Backfill material used must provide compaction meeting requirements stated above.

b. Open Space Areas. All trenches in open space areas shall be backfilled by properly bedding the pipe according to the pipe bedding details and then shall be backfilled by spreading backfill material over the trench and mechanically compacting to 90 percent of maximum unit weight. Contractor shall regrade as necessary during the life of the contract and as directed by the Township Engineer.

c. Special Backfill, where called for on the plans or where required by road permits, the Contractor shall backfill trenches and/or other excavation with the specified material placed into the trench or excavation in six (6) inch deep layers, loose measure, with each layer compacted in accordance with the requirements of said plans or road permits before the succeeding layer is placed.

d. Backfill. Backfill shall not be placed against any portion of a structure until the structure has passed inspection and has been approved by the Township Engineer for backfilling. All trenches should be backfilled as soon as inspection is completed in order to avoid unnecessary risk or damage to the structure and also to reduce the risk of accidents involving the public.

If a bulldozer or other machine is used to place the backfill material, no material shall be pushed or dropped into the trench, but shall be placed on the sloping ends of the completed backfill, and allowed to roll in place to the bottom of the trench.

7. Gate Wells and Valves

Gate wells shall be constructed as shown on the watermain standard detail plans. Covers shall be set to finish grade.

Gate valves shall be of the size and installed at the location as shown on the plans. They shall be set square with the line of the main, and unless otherwise directed by the Township Engineer, all gate valves shall be set with stems plumb. At each side of each gate valve installed the Contractor shall furnish and install on the main a corporation stop as shown on the detail drawing.

8. Hydrants

Hydrants shall be located as shown on the plans, and shall be set plumb. The hydrant and valve shall be set as indicated on the standard detail drawing and to the finish grade called for on the plans.

9. Concrete Encasement

Encasement shall be formed of approved materials where job conditions require form work above the top of the trench.

Whenever the drawings show the pipe to be encased in concrete, a mud mat may be poured first, at the option of the Contractor, or when directed by the Township Engineer. In any event, where a mud mat is used, the thickness of the mat shall be in addition to the total depth of the encasement.

Encasements shall be constructed to bear on undisturbed earth.

All steel reinforcement shall be accurately placed in the positions shown on the plans and firmly held during the placing of concrete. Lap all bars 30 bar diameters, minimum 12 inches. Field bending as required shall be done cold. Tie all bars in place before concreting.

Place concrete in a dry trench. When trench is wet, use the tremie method. Place concrete uniformly across the width of encasement and from end to end. Vibrating to consolidate concrete is required using due care to minimize aggregate segregation.

10. Connections

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

No connections to existing water mains shall be made until after the new main has passed the bacteriological and hydrostatic tests and the Township DPW authorizes same.

Only Plymouth Township personnel or the Contractor under direct Plymouth Township personnel's supervision may operate line valves.

All materials used at the final connection are to be clean and sanitized.

D. Testing

1. Water mains

a. Hydrostatic tests

The Great Lakes Water Authority and the Plymouth Township Engineer shall be notified and be present to witness the hydrostatic test.

Temporary blow, caps, or plugs shall be provided at the ends of the new main to permit testing.

Water mains shall be leakage and pressure tested in accordance with the AWWA Standard C600. Prior to testing, mains shall be appropriately flushed in accordance with C600.

No hydrostatic testing may be performed until trench backfield compacting has been successfully completed and compacting test reports have been furnished to the Township Engineer.

b. Chlorinating

After satisfactory hydrostatic test is obtained, the new main shall be chlorinated. Chlorine shall be applied by means of a solution through a corporation stop at the beginning of the main. A slow flow of water shall be let into the main approximately at the point of injection of the chlorine solution, at a rate such that the chlorine dosage of the entering water shall be at least 25 parts per million (ppm). An open discharge shall be maintained at the far end of the main, and the introduction of chlorine solution and water shall continue until the water discharging at the far end shall be opened and sufficient water drawn off to assure that the full dosage of chlorine reaches each outlet.

The chlorine treated water shall remain in the main at least 24 hours, and at the end of that time the chlorine residual at pipe extremities and other representative points shall be at least 10 ppm. If the chlorine residual is less than 10 ppm at the end of the retention period, repeat until the required 10 ppm residual is obtained.

Following chlorination, all treated water shall be thoroughly flushed from the main until the replacement water throughout its length shall, upon test, both chemically and bacteriologically, be proven equal to the water quality in the source water supply system and safe.

The Contractor must notify the Township Engineers, Spalding DeDecker (248-844-5400), to schedule a bacteriological sampling and testing. The testing must be scheduled 48 hours in advance. Two consecutive samples will be taken, 24 hours apart.

Samples will be taken for every 1,000 feet of watermain and dead-end lines.

Should the initial treatment of all or any section of the main, in the opinion of the Township Engineer, prove ineffective, the chlorination procedure shall be repeated until confirmed tests show that water sampled from the new main conforms to the foregoing requirement.

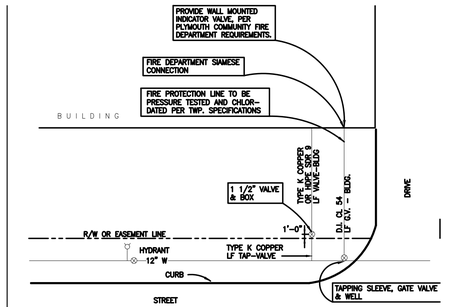
Final watermain connections to the public system will not be allowed until written authorization is provided to the Plymouth Township Engineer.

Cost for sampling and testing will the responsibility of the contractor. If inspection fees are in arrears, no testing will be scheduled.

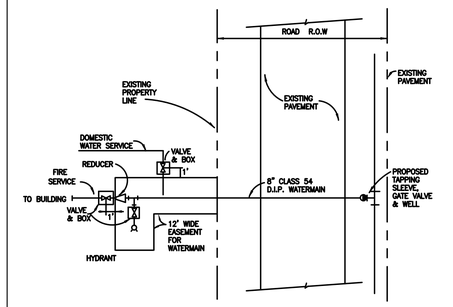
2. Testing and Inspection of Pipe Materials and Backfill Compaction

a. Manufacturers' test certificates shall accompany all pipe shipments and shall be provided to the Township Engineer.

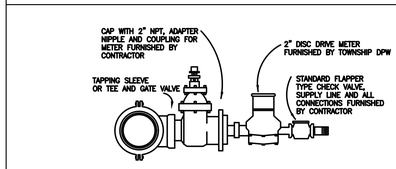
b. Where watermain is constructed in easement and paved areas not in public rights of way, the testing shall be performed by an independent testing laboratory and the cost of services performed shall be paid for by the Contractor. Compaction testing shall be one test per layer per 50 feet of trench.



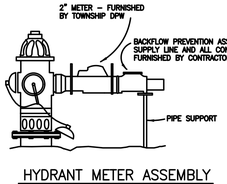
PRIVATE FIRE PROTECTION WATERMAIN



BUILDING FIRE SERVICE AND DOMESTIC WATER SUPPLY DETAIL



GATE VALVE METER ASSEMBLY



HYDRANT METER ASSEMBLY

NOTE: PERMIT FROM DPW IS REQUIRED TO USE HYDRANTS

METER AND CHECK VALVES REQUIRED FOR ALL CONSTRUCTION WATER

TEMPORARY METER CONNECTIONS

FIRE PROTECTION

PRIVATE FIRE PROTECTION WATERMAIN NOTES
FOR CONSTRUCTION AND TESTING

A. Private fire protection watermain is that watermain lying outside the easement or right of way limits and is not included in the State permit.

B. Private fire protection watermain is a private line for fire protection only. No domestic water service is allowed from this line, and all maintenance is the property owner's responsibility.

C. Private fire protection watermain shall be installed under the inspection of the Township Engineer. Contact Township Engineer, Spalding DeDecker, telephone number (248) 844-5400 forty-eight (48) hours prior to starting construction.

D. Private fire protection watermain shall be pressure tested and disinfected according to the requirements on the Plymouth Township Standard Details.

E. The Contractor is responsible for providing, and paying for, testing for standard pressure tests to 200 psi, chlorine residual, and bacteriological testing by a qualified private laboratory. Test results shall be reported to the Township Engineer, Spalding DeDecker.

F. Private fire protection watermain shall not be connected to the existing main until satisfactory test results have been obtained and reported and the Township DPW manager authorizes same.

G. Private fire protection watermain shall be ductile iron pipe class 54.

G. Backflow prevention assembly is required to be installed prior to hydrant use for the protection of the drinking water distribution system.

WATERMAIN NOTES AND MATERIALS

1. All workmanship, materials, and testing shall be in accordance with the current standards and specification of the Plymouth Charter Township and GLWA. (Great Lakes Water Authority).
2. Watermain shall be ductile iron, Class 54 with double thickness cement lining, meeting all requirements of the current ANSI/AWWA Specification A 21.51/C151. Pipe shall be seal coated with an approved bituminous seal coat in accordance with ANSI/AWWA specification A21.4/C-104
3. Joints for ductile iron watermain shall meet all requirements of the current ANSI/AWWA Specification C111/A21.11 and shall be James G. Clow and Sons, Inc. "Super Bell-Tite", U. S. Pipe and Foundry Co., " Tyton Joint" or approved equal.
4. Polyethylene wrapping will be required for any watermain which will be laid in soils which exceed the corrosive rates of gray and ductile/cast iron pipe. The current requirements of ANSI/AWWA specification C105/A21.5 apply
5. Bolts for bolted joints, hydrants, valves and fittings shall be high-strength, low alloy steel COR-TEN Bolts, conforming to A.S.A. A21. 11-6.4 Standard Specifications.
6. Watermain and hydrant gate valves shall be EJIW Resilient Seated Gate Valves opening to the right, conforming with AWWA C500 and C509 current standards. Gate well covers shall be EJIW 1040 in paved areas and in landscaped areas, bearing lettering "Department of Water Supply". An allowable alternate valve is Mueller Resilient Seat Gate Valves.
7. Fire hydrants shall be either: The East Jordan Iron Works, Midwest 5BR-250 5 1/4", with breakaway flange; or the Mueller Super Centurion 200, Model A-425, 5 1/4" two way. All hydrants shall be six (6) feet bury, six (6) inch mechanical joint shoe, I-1/8" pentagon operating nut (point to flat) and capnuts open left, two pumper nozzles, one (1) 3 3/4" (I.D.) Detroit Standard thread pumper connection and one (1) 5" storz fitting pumper connection painted red.
8. Place thrust blocks of poured concrete (2500 psi) at bends, tees and hydrants as shown on the Standard Detail sheets.
9. Provide a minimum of 18 inch vertical clearance between watermain and storm or sanitary sewers or replace the sewer section with Watermain pipe as specified above. The crossing shall be centered over one water main pipe length so the joints are as far from the sewer pipe as possible.
10. Watermains shall have six (6) feet of cover from finish grade. Grade stakes at maximum 100 foot intervals are required. When watermains must dip to pass under a storm sewer or sanitary sewer, the sections which are deeper than normal shall be kept to a minimum length by the use of vertical 11-1/4 bends properly anchored.
11. All trenches under or within five (5) feet of the existing and/or proposed pavement shall be backfilled to grade with thoroughly compacted MDOT Class II granular material. The backfill shall be placed in six (6) inch layers with each layer compacted by an approved mechanical method to 95% of maximum unit weight as determined by the AASHTO T-180 or the Michigan Dept. of Transportation Cone Density testing method.
12. Standard pipe bedding shall conform to WCDPS "Trench B" requirements.
13. No connections to existing watermains shall be made until after the new main has passed the bacteriological and hydrostatic tests and the Township DPW manager authorizes same.
14. New mains must be tested at a pressure of 200 pounds per square inch for not less than two (2) hours, with leakage not to exceed the rate as specified in AWWA Standard C600.
    No pipe installation will be accepted if the leakage is greater than that determined by the following formula:
    $L = SD(P)^{1/2} / 148{,}000$
    Where:
    L = allowable leakage, gallons per hour
    S = length of pipe tested, feet
    D = nominal diameter of the pipe, inches
    P = average test pressure during leakage test, pounds per square inch (gauge)
15. Hydrostatic pressure tests shall be witnessed by the Township Engineer. Contractor shall provide 48 hours notice to the Township Engineer.
16. New or repaired watermains shall be disinfected in accordance with AWWA Standard C651 before they are placed in service. Mains must be flushed before disinfection. Before placing mains in service, 2 consecutive samples shall indicate the absence of coliform (R325.11110 of administrative rules promulgated under Michigan Safe Drinking Water Act, Act 399 of 1976, as amended).
17. It shall be the Contractor's responsibility to verify and/or obtain any necessary information regarding the presence of underground utilities on the project.
18. Contractor shall call MISS DIG at (800) 482-7171 at least three (3) working days prior to construction. Contractor shall be responsible for any damage done to any existing utility during construction.
19. Only Plymouth Township personnel or the Contractor under Plymouth Township's direct supervision may operate existing line valves.
20. Contractor shall notify the Township Engineer two (2) working days prior to start of construction or testing of watermains. Contact Spalding DeDecker at (248) 844-5400.
21. Hydrants in paved areas shall be protected by four 4-inch steel pipe posts - concrete filled embedded four feet, exposed three (3) feet and painted yellow.
22. A pre-construction meeting shall be scheduled two weeks prior to expected start of construction, with the Township Engineer, Township Department of Public Works, Building Department, Plymouth Community Fire Department. The owner, Contractor and Project Engineer shall contact Spalding DeDecker at (248) 844-5400.
23. Restrained joints may be employed only if used in conjuction with thrust blocks.
24. Hydrants shall comply with AWWA Standard C502. Hydrant weep holes shall be plugged.
25. Pipe fittings shall comply with AWWA Standards C110 and C153. Pipe joints shall comply with AWWA Standards C111 and C115.
26. Pipe material shall meet the NSF/Ansi Standard 62 requirements and its certification shall be stamped on the exterior wall of the pipe.
27. Horizontal separation of 10 feet minimum shall be maintained between all watermains and sanitary/storm sewers, measured from outside of pipes.
28. Restoration of any existing hard surface area, of any type, required as a result of removal of existing surfacing by Plymouth Township forces or agents during the course of maintenance of water main or sanitary sewer located under pavement, is the responsibility of the owner of this site and will not be performed by, nor paid for by Plymouth Township.

DETAILS NOT TO SCALE

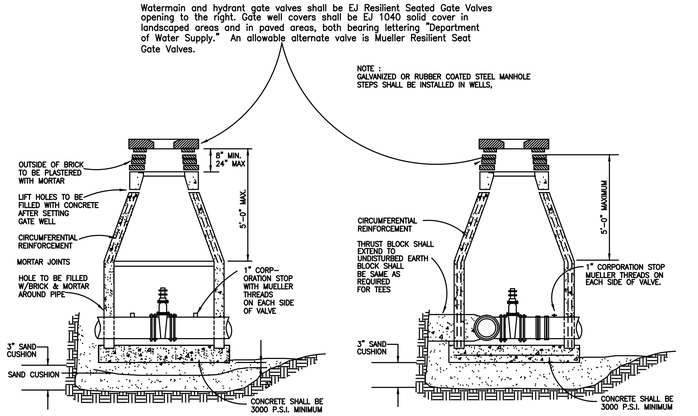
DATE	DESCRIPTION
SEPTEMBER 2024	GATE WELL COVER NOTE
JUNE 2006	BACTERIOLOGICAL TESTING
JULY 2005	UPDATED PER REVISED SPECIFICATIONS
JANUARY 2003	HYDRANT SPECIFICATION
OCTOBER 2000	TITLE BLOCK ADDRESS CHANGE
MARCH 1998	ORIGINAL

PLYMOUTH CHARTER TOWNSHIP
DEPARTMENT OF PUBLIC WORKS
9955 N. HAGGERTY ROAD
PLYMOUTH, MICHIGAN 48170-4673
734-354-3270

STANDARD WATER MAIN DETAILS

CHARTER TOWNSHIP OF PLYMOUTH, WAYNE COUNTY, MICHIGAN

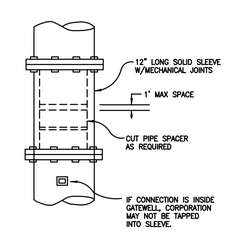
Watermain and hydrant gate valves shall be EJ Resilient Seated Gate Valves opening to the right. Gate well covers shall be EJ 1040 solid cover in landscaped areas and in paved areas, both bearing lettering "Department of Water Supply." An allowable alternate valve is Mueller Resilient Seat Gate Valves.



PRE-CAST GATE VALVE AND WELL

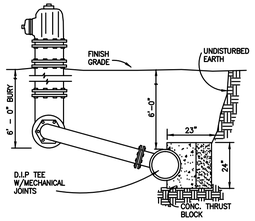
TAPPING SLEEVE VALVE AND WELL DETAIL

GATE VALVE AND WELL DETAIL

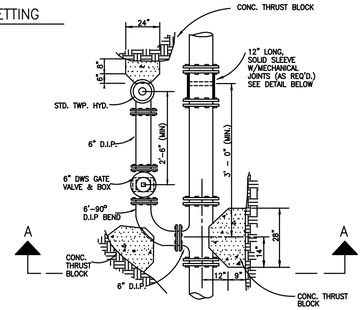


SOLID SLEEVE CONNECTION

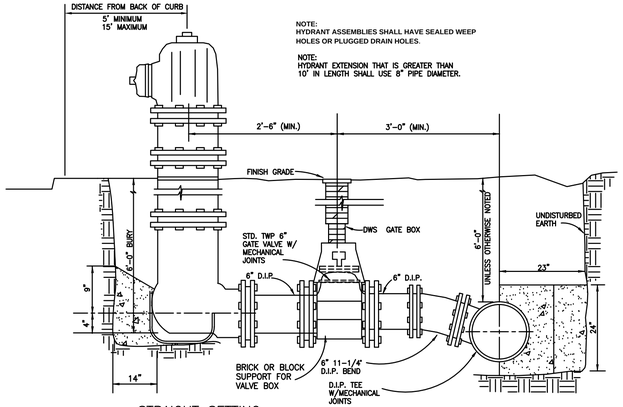
ELBOW SETTING



SECTION A-A

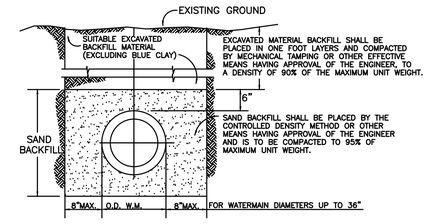


PLAN



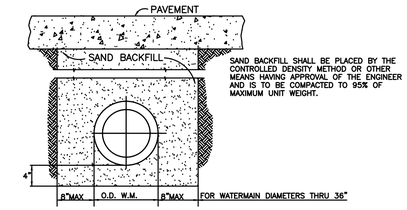
STRAIGHT SETTING

FIRE HYDRANT DETAILS



TRENCH "A" SHALL BE USED UNDER CONDITIONS OTHER THAN SPECIFIED FOR TRENCH "B".

TRENCH "A"

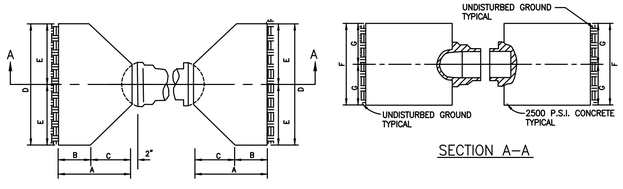


TRENCH "B" SHALL BE USED UNDER ROAD SURFACE, PAVEMENT, SIDEWALK, CURB, AGGREGATE & PAVED DRIVES AND WHERE THE EDGE OF TRENCH IS WITHIN 3 FEET OF THE PAVEMENT.

TRENCH "B"

PIPE BEDDING DETAILS

SIZE	A min.	B min.	C	D	E	F	G
6	1'-11"	0'-9"	1'-2"	2'-6"	1'-3"	1'-6"	0'-9"
8	1'-11"	0'-9"	1'-2"	3'-0"	1'-6"	2'-0"	1'-0"
12	2'-1"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"
16	2'-8"	1'-0"	1'-8"	5'-0"	2'-6"	4'-0"	2'-0"

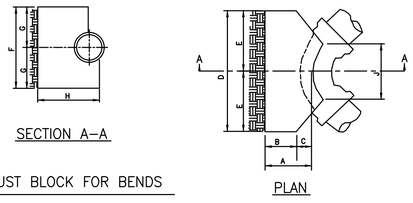


PLAN

SECTION A-A

THRUST BLOCK FOR PLUGS AND CAPS

SIZE	ANGLE	A	B min.	C	D	E	F	G	H min	J
6	45°	1'-9"	0'-9"	1'-0"	2'-0"	1'-0"	1'-6"	0'-9"	1'-11"	1'-4"
6	90°	1'-9"	0'-9"	1'-0"	2'-6"	1'-3"	1'-6"	0'-9"	1'-11"	1'-2"
8	45°	1'-9"	0'-9"	1'-0"	2'-4"	1'-2"	2'-0"	1'-0"	1'-11"	1'-4"
8	90°	1'-9"	0'-9"	1'-0"	3'-4"	1'-8"	2'-6"	1'-3"	1'-11"	1'-2"
12	22½°	1'-9"	0'-9"	1'-0"	2'-6"	1'-3"	2'-0"	1'-0"	2'-0"	1'-4"
12	45°	2'-1"	0'-9"	1'-4"	3'-6"	1'-9"	2'-6"	1'-3"	2'-4"	1'-4"
12	90°	2'-1"	0'-9"	1'-4"	5'-6"	2'-9"	3'-0"	1'-6"	2'-4"	1'-8"
16	22½°	2'-8"	1'-0"	1'-8"	3'-4"	1'-8"	2'-6"	1'-3"	3'-0"	1'-2"
16	45°	2'-8"	1'-0"	1'-8"	5'-4"	2'-8"	3'-0"	1'-6"	3'-0"	2'-6"
16	90	2'-8"	1'-0"	1'-8"	6'-0"	3'-0"	5'-0"	2'-6"	3'-0"	2'-8"

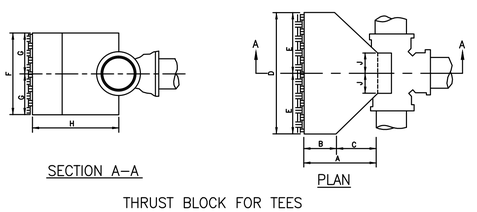


SECTION A-A

PLAN

THRUST BLOCK FOR BENDS

SIZE	A	B min.	C	D	E	F	G	H min.	J
6X6	1'-9"	0'-9"	1'-0"	2'-6"	1'-3"	1'-6"	0'-9"	2'-3"	0'-6"
8X8	1'-9"	0'-9"	1'-0"	3'-0"	1'-6"	2'-0"	1'-0"	2'-3"	0'-6"
12X8	1'-9"	0'-9"	1'-0"	3'-0"	1'-6"	2'-0"	1'-0"	2'-5"	0'-6"
12X12	2'-1"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"	2'-9"	0'-8"
16X8	1'-9"	0'-9"	1'-0"	3'-0"	1'-6"	2'-0"	1'-0"	2'-9"	0'-6"
16X12	2'-1"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"	3'-1"	0'-8"
16X16	2'-8"	1'-0"	1'-8"	5'-0"	2'-6"	4'-0"	2'-0"	3'-8"	0'-11"

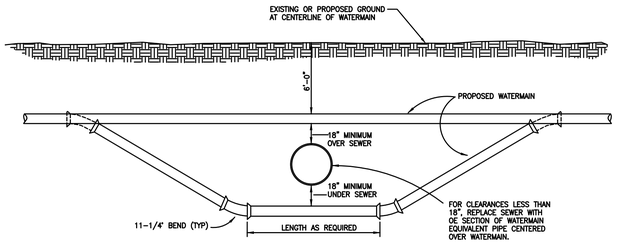


SECTION A-A

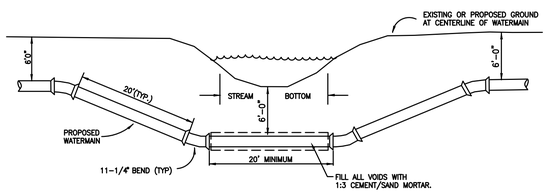
PLAN

THRUST BLOCK FOR TEES

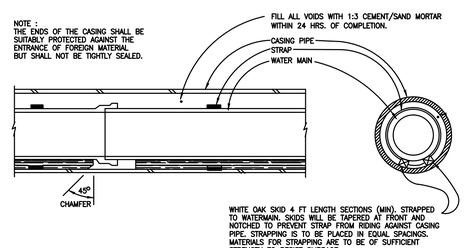
THRUST BLOCK DETAILS



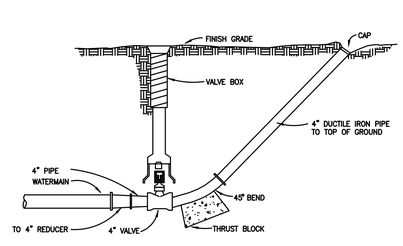
CLEARANCE DIAGRAM FOR WATERMAINS CROSSING OVER OR UNDER SEWER



PROFILE OF WATERMAIN AT STREAM CROSSING



TYPICAL SECTION OF WATERMAIN IN CASING PIPE



TEMPORARY 4" BLOW-OFF DETAIL

DETAILS NOT TO SCALE

DATE	DESCRIPTION
OCTOBER 2022	H10 ASSEMBLY PER EGLE.
OCTOBER 2019	INCORPORATED UPDATES
JULY 2006	UPDATED PER REVISED STANDARDS
OCTOBER 2000	TITLE BLOCK ADDRESS CHANGE
MARCH 1998	ORIGINAL

PLYMOUTH CHARTER TOWNSHIP
DEPARTMENT OF PUBLIC WORKS
9955 N. HAGGERTY ROAD
PLYMOUTH, MICHIGAN 48170-4673
734-354-3270

STANDARD WATER MAIN DETAILS

CHARTER TOWNSHIP OF PLYMOUTH, WAYNE COUNTY, MICHIGAN

W-2

WATER SERVICES

WATER SERVICE PERMITS AND NOTICES

A. Before installation of any water service between the curb stop or gate valve and the proposed structure, the contractor shall obtain a plumbing permit from the Plymouth Township Building Department at (734) 354–3210.

B. Before any work may be started, there must be a water agreement paid in full on file in the Plymouth Township Department of Public Works.

C. An inspection of the installation of the tap, service line in the right–of–way or easement, and curb stop and gate valve by the Plymouth Township Department of Public Works is required. Two (2) working days notice shall be provided prior to beginning any construction. Contact Plymouth Township Department of Public Works at (734) 354–3270.

WATER SERVICE INSTALLATION

A. Taps shall be made after the watermain has successfully passed a bacteria and pressure test and the connection to the Plymouth Township system is completed. The tap shall be made at a right angle to the watermain. The tap shall be made on the upper half of the main at a 45 degree angle from the vertical place on the side of the main to which service is to be extended.

B. A curb stop valve shall be inserted on the service at one (1) foot inside the property line or one foot outside the easement line. A curb box shall be installed vertically over the valve so that, after the service is backfilled to final grade, a key may be placed on the valve and it may be operated easily.

C. In order to insure that no rocks will be placed over the pipe, the first foot of cover over the pipe shall be placed by hand. The remainder of the trench shall be backfilled in a manner suitable to the Township. No debris or boulders over two (2) inches shall be included in any of the backfill material.

D. Any portion of the service that will be beneath pavement shall be mechanically compacted to the subgrade elevation. Trenches outside of paved areas shall be compacted in a manner to avoid settlement.

E. All services shall be a minimum of five (5) feet below final grade.

WATER SERVICE APPROVED MATERIALS LIST

A. Service Connections

1. 4 inches or larger
   a. Ductile or cast iron tee
   b. Tapping sleeve
2. 1–1/2 inch or 2 inches
   a. Corporation – Mueller No. H–15000 or equal
3. 1 inch or smaller
   a. Installed by the Plymouth Township Department of Public Works

B. Service Line

1. 4 inch or larger
   a. Ductile Iron
2. Smaller than 4 inches
   a. Copper – type "K"
   b. HDPE – from valve box/curb stop to building
      (note: portion from public main to valve box/curb stop is required to be copper)
      i. Shall be of SDR 9
      ii. Rated for use at pressure class of 250 psi
      iii. Meet requirements of AWWA C901
      iv. Meet requirements of ASTM D3550 and shall have min. cell classification of PE445474C
      v. Meet the following pipe color identification requirements:
         a) Stripes or colored exterior pipe product shall be blue for potable water
         b) Permanent identification of piping shall be provided by co–extruding multiple equally spaced color stripes into the pipe outside surface or by solid colored pipe shell
         c) The Striping material shall be the same material as the pipe material except for the color
         d) Plain Black HPDE Pipe without color code markings may not be used
      vi. Include trace wire; trace wire shall terminate above the ground at the point where the wire enters the building

C. Saddle

1. Mueller bronze double–strap No. CC thread or equal

D. Union

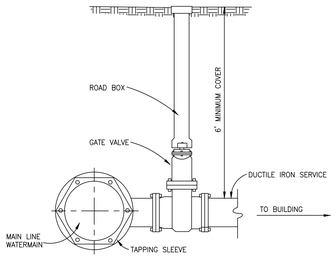
1. Mueller Brass No. H–15405 or H–15400 or equal

E. Curb Stop

1. 4 inch or larger
   a. East Jordan gate valve opening to right
   b. Mueller gate valve opening to right or equal
2. Smaller than 4 inch
   a. Mueller No. H–15200 Oriseal or equal

F. Curb Box

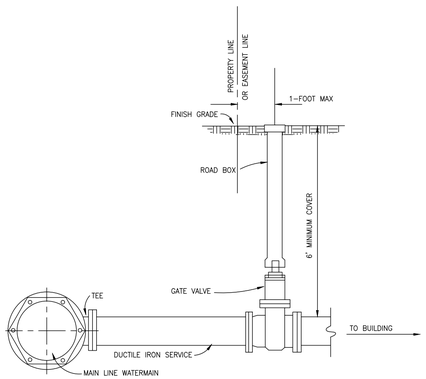
1. 4 inch or larger
   a. East Jordan cast iron – no plastic
   b. Approved equal cast iron – no plastic
2. Smaller than 4 inch
   a. Mueller No. H–10386 with Rod No. 84140 or equal



TAPPING SLEEVE CONNECTION

4 INCH OR LARGER WATER SERVICE

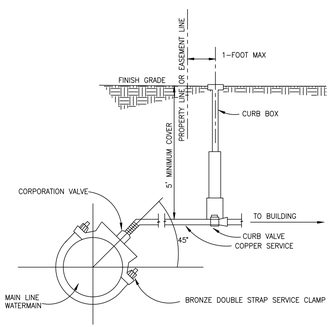
(INSTALLATION BY CONTRACTOR)



TEE CONNECTION

4 INCH OR LARGER WATER SERVICE

(INSTALLATION BY CONTRACTOR)



1–1/2 INCH OR 2 INCH WATER SERVICE CONNECTION

(INSTALLATION BY PLYMOUTH TOWNSHIP)

SERVICE CONNECTION DETAILS

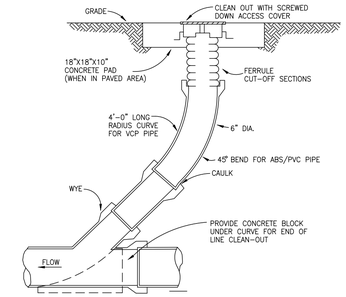
SANITARY SEWER SERVICES

SANITARY SEWER SERVICE PERMITS AND NOTICES

A. Before installation of any sanitary sewer service to the proposed structure, the Contractor shall obtain a plumbing permit from the Plymouth Township Building Department at (734) 354–3209.

B. Before any work may be started there must be a sanitary sewer agreement paid in full on file in the Plymouth Township Department of Public Works.

C. An inspection of the installation of the tap and service line in the right–of–way or easement, by the Plymouth Township Department of Public Works and the Building Department is required. Two (2) working days notice shall be provided prior to beginning any construction. Contact Plymouth Township Department of Public Works at (734) 354–3270 for the tap inspection and Plymouth Township Building Department at (734) 354–3209 for the service line inspection.



CLEAN OUT DETAIL

SANITARY SEWER SERVICE APPROVED MATERIALS

A. Extra strength clay pipe: Vitrified Clay Pipe shall conform to ASTMC700 Specifications. House leads shall conform to this specification. Joints are to be ASTM 425 Type I or Type III, "O" Ring Wedgelock, or equal.

B. Acrylonitrile–butadiene–styrene (ABS) composite sewer pipe and fittings shall conform to ASTM designation D 2680–72 specifications. House leads shall be solid wall ABS pipe (6 inch), extra strength (ES) meeting ASTM DI 788–68 specifications. (Residential use only)

C. Other materials may be approved for a specific installation by the Township Public Works Manager.

D. Solid wall PVC pipe, six (6) inch dia., SDR–23.5 (ASTMD 3034) is also allowed for residential service leads.

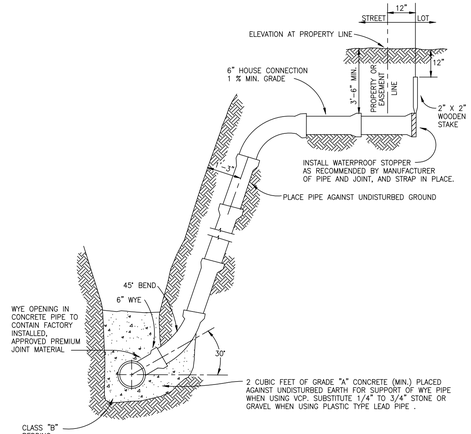
SANITARY SEWER SERVICE INSTALLATION

A. For VCP pipe, each wye or end of service lead shall have a plug with a Wedgelock type No. 1 joint. For ABS pipe the stopper shall be factory approved material.

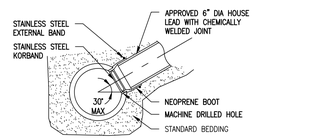
B. Each wye or end of service lead shall be marked by setting a 1 inch x 2 inch x 6 ft. cypress, ash or cedar stake vertically above the end of the lead.

C. Backfill at all risers shall be carefully placed and tamped sufficiently to insure against damage from backfill settlement.

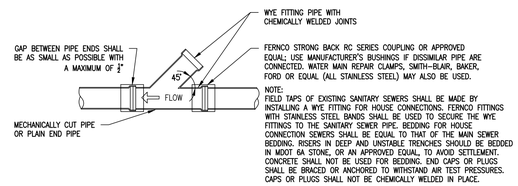
D. Service connection sewer bedding for ABS pipe shall be equal to that of main sewer bedding. Service connections shall be made in plant fabricated 45 degrees or 60 degrees wye fittings. Fittings and risers shall not be bedded in concrete.



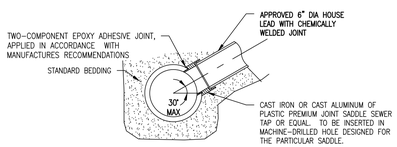
SANITARY SEWER SERVICE AND RISER CONNECTION



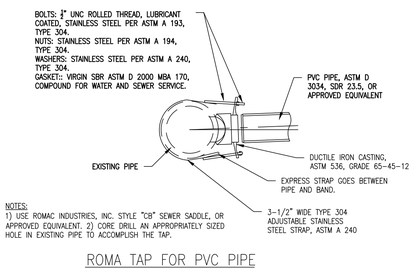
KOR–N–TEE TAP FOR CONCRETE PIPE



WYE PIPE INSERTION WITH FLEXIBLE COUPLINGS (RIDGID PIPE)



SEWER TAP–ALL SIZES OF MAIN SEWER, VITRIFIED CLAY PIPE



NOTES:
1) USE ROMAC INDUSTRIES, INC. STYLE "CB" SEWER SADDLE, OR APPROVED EQUIVALENT. 2) CORE DRILL AN APPROPRIATELY SIZED HOLE IN EXISTING PIPE TO ACCOMPLISH THE TAP.

ROMA TAP FOR PVC PIPE

DETAILS NOT TO SCALE

DATE	DESCRIPTION
OCTOBER 2019	UPDATED SEWER TAP DETAILS & HDPE WATER SERVICE
JUNE 2006	BACTERIOLOGICAL TESTING
JULY 2005	UPDATED PER REVISED STANDARDS
OCTOBER 2000	TITLE BLOCK ADDRESS CHANGE
MARCH 1998	ORIGINAL

PLYMOUTH CHARTER TOWNSHIP
DEPARTMENT OF PUBLIC WORKS
9955 N. HAGGERTY ROAD
PLYMOUTH, MICHIGAN 48170–4673 734–354–3270

STANDARD SANITARY SEWER AND WATER SERVICE DETAILS

CHARTER TOWNSHIP OF PLYMOUTH, WAYNE COUNTY, MICHIGAN

W — S

SANITARY SEWER SPECIFICATIONS

A. Description

This work includes construction lines of sanitary sewer pipe of the required type and diameters, manholes and other structures, excavation, backfill and testing.

B. Materials

1. All workmanship, materials and testing shall be in accordance with current standards and specifications of the Plymouth Charter Township and Wayne County Department of Public Services.

2. Allowable types of sewer pipe and joints are:

SEE NOTES AND MATERIALS AT RIGHT OF SHEET

C. Construction

1. Handling Pipe

The pipe shall be distributed at the site and protected from falling from truck to ground or into the trench, and kept clear of passing vehicles.

All materials will be inspected before placing in the trench, and if defective, marked "REJECTED", and shall be removed form the site by the Contractor.

2. Excavation

All excavation shall be open-cut made in such a manner and to such a depth, length and width as will provide ample room for building and structures and for bracing, sheeting and supporting the sides of the excavation for pumping and drainage of ground water and sewage which may be encountered, and for the removal of all materials excavated.

All work shall be done to true line and grade as established on the plans and in accordance with grade stakes set by the engineer. The Contractor shall remove all obstructions or encumbrances which shall be understood as being included in the Contract Unit Prices per lineal foot for laying sewer.

a. Trench. Excavation shall be of sufficient widths and depths to provide adequate room for construction and installation of the work to lines, grades, and dimensions called for on the plans, except the width of a trench from the invert to a height 12 inches above the top of the sewer barrel, shall not be greater than one (1) foot plus the outside diameter of the sewer barrel for sewer 12 inches to 36 inches in diameter and two (2) feet plus the outside diameter for sewers 42 inches in diameter and larger, except for sewers four (4) inches to 12 inches inclusive, the width of the trench may be 30 inches. If the maximum trench width, as specified above, is exceeded, unless otherwise shown on the drawings, the Contractor shall install, at his own expense, such concrete cradling or other bedding, as is approved by the Engineer, to support the added load of the backfill. Where, through the Contractor's construction procedures or because of poor existing ground conditions, it is impossible to maintain alignment and grade properly, the Contractor shall, at his own expense, excavate below grade and refill the trench to the proper grade with a compacted 1-1/2 inch maximum size aggregate, such aggregate to consist of angular shaped, crushed stone or blast furnace slag containing sufficient smaller size aggregate to provide proper "keying" of the material together in order to insure that the pipe, when laid, will maintain correct alignment and grade.

b. Sheeting and Bracing. Where the condition of the ground requires the sides of the trench shall be securely held by bracing and sheeting which may be removed in units when the level of the backfill has reached a point where it is safe to pull the sheeting.

Sheeting, bracing and shoring shall not be left in place after the completion of the work. Where required to protect the work, adjacent structures or property, sheeting, bracing and shoring shall be left in place, but shall be cut off or left not less than two feet below the established surface grade. Sheeting, bracing, or shoring so required to be left in place shall be considered as incidental to the work.

c. Groundwater and Sewage. The Contractor shall remove by well points, pumping, bailing or other acceptable method, any water that may accumulate or be found in the trenches or precautions to keep the trenches and other excavations entirely clear of water during construction of sewers and structures. Where existing sewers or drains are encountered in this work, adequate provision shall be made for diverting the flow in such existing sewers so that the excavation shall be kept dry during the progress of the construction work. Newly laid concrete shall be adequately protected from injury resulting from groundwater or sewage or from the handling of water or sewerage. No drainage ditches shall be placed within the area to be occupied by any structure except as permitted by the Township Engineer.

d. Utilities Crossings. In crossing over or under any main or lateral sewer, sewer connection, catch basin, watermain, service connection, gas main, gas connection, conduit, or any underground improvement, the Contractor shall use all possible care in protecting the same from injury, damage or the free unobstructed continuous use of the same as far as possible, and the Contract work shall be performed in such a manner as will effect the least damage or interference with such improvements or the free and unobstructed use of the same.

The Contractor will be required, without any additional compensation, to repair, replace or rebuild any such improvement injured or damaged by him, and shall be responsible to the department, companies, individuals, or corporations controlling such improvements.

3. Excavated Materials

Excavated material may be used in backfilling around sewers and other structures, provided it is suited for such a purpose. All material in excess of the quantity required for backfilling, or that which is unsuited for backfilling, shall be hauled away by the contractor and disposed of legally or by dumping in places on the site designated by the Project Engineer. The Contractor shall provide all labor for spreading such material at the place of dumping and shall leave the area in a finished condition satisfactory to the Project Engineer.

4. Tunneling

If tunneling is required, it shall be in accordance with the Requirements for Construction within the Road Right of Way under the Jurisdiction of the Wayne County Department of Public Services.

When tunneling by jacking or boring, all voids shall be filled by means of pressure grouting with a 1:3 cement-sand mortar. This work must be accomplished within 24 hours after the conduit crossing has been completed. The tunneling shall extend a minimum of 10 feet outside the edges of the pavement. Pressure grouting will not be required for casings four (4) inches in diameter or smaller unless the voids are one (1) inch or larger.

5. Cutting PVC Truss Pipe

Cutting of pipe lengths, where required, shall be performed by the use of tools or equipment that will provide a neat, perpendicular cut without damage to the plastic or the filler material. Champer outer edge of truss pipe walls along cut edges. Bowing or warping of PVC pipe can occur with temperature fluctuations. The Contractor shall store and protect the pipe to minimize bowing. Nominal 12 ft. 6 inch pipe lengths having deviations from straight greater than 1 inch shall not be used.

6. Bedding, Laying and Joining Pipe

a. General. All pipe shall be laid to the line and grade called for on the plan. Each pipe, as laid, shall be checked by the Contractor with line and grade pole to insure that his result is obtained. The finished work shall be straight and shall be sighted through between manholes.

Each pipe shall be inspected for defects prior to being lowered into the trench; and inside of pipe and outside of spigot shall be cleaned of any dirt or foreign matter.

Construction shall begin at the outlet (lowest) end and shall proceed upgrade with spigot ends pointing in the direction of flow unless otherwise approved by the Township.

b. Rigid Pipe Materials. The pipe shall be laid on the standard bedding consisting of the sand cushion, which shall extend to a subgrade four (4) inches below the bottom of the pipe. The pipes shall be centered in the bells and pushed tight together to form a smooth and continuous invert. After laying of pipe, care shall be taken so as not to disturb its line or grade. Should line or grade become disturbed, the pipe shall be relaid properly by the Contractor.

The remainder of the standard pipe bedding, free from stones and lumps shall be placed with care, in six (6) inch layers to an elevation providing 12 inches of cover over the pipe. Each layer shall be thoroughly compacted by power tamping.

c. PVC Truss Pipe. Pipe shall conform to ASTM D2680 and joints to ASTM D3212. Bedding for PVC Truss pipe shall be in accordance with the latest applicable ASTM D specification, except, (1) only Class I & Class II materials may be used, (2) embedment shall extend to minimum 12 inches above top of pipe, and (3) flooding or puddling shall not be used.

Where unstable bottoms are encountered, the Contractor shall provide a foundation consisting of an approved graded and processed angular stone or gravel.

Concrete cradle bedding shall not be used where allowable trench widths are exceeded. In lieu of concrete cradle bedding, standard pipe bedding shown shall be provided to the full width between undisturbed trench walls or at least to 2.5 pipe diameters on both sides of the pipes.

Due to the potential damage to exterior walls of truss pipe, particularly under cold weather conditions, if rocks, frozen materials or large objects strike the pipe, the Contractor shall carefully avoid dumping any materials other than approved bedding sand or stone on the pipe until 12 inches of cover is placed over it. Pipe walls and ends shall also be protected from abrasion and damage during handling, and shall be fully inspected just prior to placing in the trench.

Care shall be taken during bedding compaction to avoid distorting the shape of the pipe or damaging its exterior wall.

7. Backfill

Backfill is defined as that material placed into the trench from the top of the pipe bedding (as indicated in the detail "Pipe Bedding Details" on sheet S-2) to the ground surface. Backfill shall be placed into the trench according to one of the following specified manners as determined by the location of the trench or the edge of trench nearest the existing pavement, roadway, sidewalk, driveway or parking area.

Wherever compaction is required, it shall be accomplished by suitable mechanical compaction equipment approved by the Township Engineer. Frozen backfill materials are not permitted under any circumstance whatsoever.

a. Under or Adjacent to Pavement

Trench Location	Backfill Requirements
1) Under existing or proposed pavement	Backfill shall be full depth mechanically compacted MDOT Class II granular material constructed in six (6) inch layers, loose measure with each layer compacted to not less than 95 percent of maximum unit weight at optimum moisture content per AASHO T-180 or by M.D.O.T. Cone Density Method.
2) Parallel to and less than three (5) feet from edge pavement	
3) Parallel and less than ten (10) feet and more than three (5) feet from edge of pavement	Selected excavated or other acceptable backfill materials shall be placed, after standard bedding called for on plan has been completed, into trench in six (6) inch layers, loose measure, with each layer compacted to not less than 90 percent of maximum unit weight. Backfill material used must provide compaction meeting requirements of the local unit of government.

b. Open Space Areas. All trenches in open space areas shall be backfilled by properly bedding the pipe according to the pipe bedding details and then spreading backfill material over the pipe and mechanically compacting to 90 percent of maximum unit weight. Contractor shall regrade as necessary during the life of the contract and as directed by the Township Engineer.

c. Special Backfill. Where called for on the plans or where required by road permits, the Contractor shall backfill trenches and/or other excavation with the specified material placed into the trench or excavation in six (6) inch deep layers, loose measure, with each layer compacted in accordance with the requirements of said plans or road permits before the succeeding layer is placed.

d. Backfill. Backfill shall not be placed against any portion of a structure until the structure has passed inspection and has been approved by the Township Engineer for backfilling. All trenches should be backfilled as soon as inspection is completed in order to avoid unnecessary risk or damage to the structure and also to reduce the risk of accidents involving the public.

If a bulldozer or other machine is used to place the backfill material, no material shall be pushed or dropped into the trench, but shall be placed on the sloping ends of the completed backfill, and allowed to roll in place to the bottom of the trench.

8. Connections to Existing Structures

Where the plans call for connections to existing manholes or sewer laterals, the Contractor shall exercise due care to insure that the structure as a whole is not damaged.

9. Manholes

Manholes shall be constructed of the type and in accordance with the details included with this document, and at all locations shown on the plans, or as laid out in the field by the Project Engineer. All necessary metal steps, frames and covers, etc., shall be furnished and installed at the unit bid price. Covers shall be set at the required final elevation so that no subsequent adjustment shall be necessary.

Connections to manholes shall be properly supported and braced where not resting on original ground so that any settlement will not disturb the connection.

Excavation shall be carried to the depth required to permit the construction of the required base and bottom of excavation shall be trimmed to a uniform horizontal bed. The excavation shall be sufficiently wide to allow for shoring, bracing, or form work, should any or all be necessary.

When precast units are used for construction, the bottom precast unit shall have cast openings of sufficient size to receive the sewer pipe. If such openings are not provided, the bottom portion of the manhole shall be constructed of masonry work from the concrete base to at least six (6) inches above the top of the largest pipe entering the manhole, and precast units shall be placed from the masonry to the desired top elevation. When precast units are used for manhole construction, the manhole casting shall be placed on at least three courses of masonry work for future adjusting purposes.

Set bolted watertight frames and covers to the required finished elevations as shown on the plans.

When completed, manholes shall be cleared of scaffolds and cleaned of surplus mortar or other foreign materials.

10. Wyes, Risers and Service Connections

Wye branches with type of joint matching six (6) inch lead proposed to be used, or stubs fitted with suitable stoppers of the same type of material and joint as the main sewer, shall be set as called for on the plans.

Riser shall connect to wye branches constructed as part of sewer proper and shall include a 45 degree bend and straight pipe laid to the heights specified at the right of way line or easement line.

House connection sewer bedding for PVC pipe shall be equal to that of main sewer bedding. House connections shall be made in plant fabricated 45 degrees or 60 degrees wye fittings. Fittings and risers shall not be bedded in concrete.

For VCP pipe, each wye or end of service lead shall have a plug with a Wedgelock type no. 1 joint. For PVC pipe the stopper shall be factory approved material.

Each wye or end of service lead shall be marked by setting a 1 inch x 2 inch x 6 ft. cypress, ash or cedar stake vertically above the end of the lead.

Backfill at all risers shall be carefully placed and tamped sufficiently to insure against damage from backfill settlement.

11. Stubs

Where called for, stubs shall be one full pipe length, or at least six (6) feet long, bulkheaded with masonry or factory approved plugs or caps.

12. Testing and Inspection of Pipe materials and Backfill Compaction

a. Manufacturer's test certificates shall accompany all pipe shipments and shall be provided to the Township Engineer.

b. Where sewer is constructed in easements and paved areas not in public rights of way, the backfill testing shall be performed by an independent testing laboratory and the cost of services performed shall be paid for by the Contractor. Compaction testing shall be one test per layer of backfill per 50 feet of trench.

13. Testing for Infiltration and Television Inspection

a. Television Inspection. All sanitary sewers shall be television inspected with test results approved by the Township prior to placing the sewer into service. All courses not true to line or grade shall be dug up and relaid. Television inspection for all sanitary sewers eight (8)inches in diameter up to and including 27 inches in diameter shall be provided by the Contractor and included in unit price bid per foot of sewer. A video of all lines televised shall be provided to the Township at the completion of the inspection.

b. Infiltration/Exfiltration Testing

1) All sanitary sewers shall be subjected to air or, infiltration tests or a combination of same, prior to acceptance. All sewers over 24 inch diameter shall be subject to infiltration tests. All sewers of 24 inch diameter or smaller, where the ground water level above the top of the sewer is over seven (7) feet, shall be subjected to infiltration tests. All sewers of 24 inch diameter or less, where the ground water level above the top of the sewer is seven (7) feet or less, shall be subjected to an air test

2) Maximum allowable infiltration shall not exceed 100 gallons per inch of diameter per mile of pipe between manholes per 24 hours for any section of the system and shall include the infiltration from all manholes and other appurtenances.

3) Manholes on sewers to be subjected to air tests shall be equipped with a one half (1/2) inch diameter galvanized capped pipe nipple extending through the manhole wall, three (3) inches into the manhole and at an elevation equal to the top of the sewer pipe. Prior to the air test the ground water elevation shall be determined by blowing air through the pipe nipple, to clear it and then connecting a clear plastic tube to the pipe nipple. The tube shall be suspended vertically in the manhole and the ground water in the elevation determined by observing the water level in the tube. The air test pressure shall be adjusted to compensate for the maximum ground water level above the top of the sewer pipe to be tested. After all tests are performed and the sewer is ready for final acceptance, the pipe nipple shall be capped.

4) The procedure for air testing of sewers shall be as follows: All house leads shall be properly plugged and blocked to withstand the air pressure. The sewer line shall be tested in increments between manholes. The line shall be cleaned and plugged at each manhole. Such plugs shall be designed to hold against the test pressure and shall provide an airtight seal. One of the plugs shall have an orifice through which air can be introduced into the sewer. An air supply line shall be connected to the orifice. The air supply line shall be fitted with suitable control valves and a pressure gauge for continually measuring the air pressure in the sewer. The pressure gauge shall have a minimum diameter of 3-1/2 inches and range of 0-10 PSIG. The gauge shall have minimum divisions of 0.10 PSIG and an accuracy of +/- 0.04 PSIG.

The sewer shall be pressurized to 4.0 PSIG greater than the greatest back pressure caused by ground water over the top of the sewer pipe. At least 2 minutes shall be allowed for the air pressure to stabilize between 3.5 and 4.0 PSIG.

If necessary, air shall be added to the sewer to maintain a pressure of 3.5 PSIG or greater.

After the stabilization period, the air supply control valve shall be closed so that no more air will enter the sewer. The sewer air pressure shall not begin if the air pressure is less than 3.5 PSIG, or such other pressure as is necessary to compensate for ground water level.

5) The time required for the air pressure to decrease 1.0 PSIG during the test shall not be less than the time shown in the tables listed in Appendix C of the current "Sewer Use Regulations". Wayne County.

6) The Contractor shall provide all equipment, materials and personnel qualified to perform the testing required, at the Contractor's expense. Proper notice shall be given the Township Engineer in advance of testing.

7) For any section of sewer which fails to pass any of the previously described tests, the Contractor shall determine the location of the leaks, repair them and retest the sewer. The tests shall be repeated until satisfactory results are obtained.

8) Chemical or cement grouting is not an acceptable method of repairing leaking pipe, joints or structural failure, except where specifically approved by the Township Engineer.

14. Deflection Testing for PVC Truss Pipe

The completed installation shall at no point have out-of-round pipe deflections greater than five (5) percent. The Engineer shall have the option of requiring deflectiometer or go/no-go gauging tests run prior to acceptance on pipe lines where high deflections are suspected. Pipe with deflections greater than five (5) percent will be considered unacceptable and shall be relaid by the Contractor.

Deflection Mandrel

A. Sizing. The mandrel shall have an outside diameter equal to 95 % of the inside diameter of the pipe. The inside diameter of the pipe shall be the average outside diameter minus two minimum wall thicknesses for O.D. controlled pipe and the average inside diameter for I.D. controlled pipe.

B. Design. The rigid mandrel shall be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed. The mandrel shall have nine or more legs as long as the total number of legs is an odd number. The barrel section of the mandrel shall have a length of at least 75% of inside diameter of pipe. The rigid mandrel shall not have adjustable or collapsible legs which would allow reduction in mandrel diameter during testing. A proving ring shall be provided and used for verifying each size mandrel.

C. Proving Ring. Furnish a "proving ring" with each mandrel. Fabricate the ring of 2"-thick, 3"-wide bar steel to a diameter 0.02" larger than approved mandrel pitch diameter.

D. Mandrel Dimensions (5% allowance). Average inside diameter and minimum mandrel diameter are specified in the table below.

PVC Truss Vs. Mandrel Diameter

Nominal Size (Inches)	Average I.D. (inches)	Minimum Mandrel Diameter (Inches)
8	7.75	7.36
10	9.75	9.26
12	11.79	11.20
15	14.77	14.03

Deflection Testing

A. Perform deflection testing on flexible and semi-rigid pipe to confirm pipe has no more than 5% deflection. Mandrel testing shall conform to ASTM D 3034. Perform testing no sooner than 30 days after backfilling of line segment, but prior to final acceptance testing of the line segment.

B. Pull the approved mandrel by hand through sewer sections. Replace any section of sewer not passing the mandrel. Mandrel testing is not required for stubs.

SANITARY SEWER NOTES AND MATERIALS

1. All workmanship, materials and testing shall be in accordance with current standards and specifications of the Plymouth Charter Township and the WCDPS.

2. Allowable types of sewer pipe and joints are:

a. Extra strength clay pipe: Vitrified Clay Pipe shall conform to ASTM C700 Specifications. House leads shall conform to this specification. Joints are to be ASTM 425 Type I or Type III, "O" Ring Wedgelock, or equal.

b. Reinforced concrete sewer pipe shall conform to ASTM C-76 Class III, Class IV or Class V as called for on the drawings. Joints shall be modified grooved tongue and rubber gasket.

c. Polyvinyl Chloride (PVC) Truss or SDR 26 composite sewer pipe and fittings shall conform to ASTM designation D 2680-95a specifications. Joints shall be elastomeric gasket push -on type which shall conform to ASTM designation D 3212. House leads shall be solid wall PVC pipe (6 inch), SDR 23.5. (Residential use only)

d. Ductile iron pipe and fittings for Pressure Class 150 service or greater shall meet ANSI/AWWA C151/A 21.51 specifications and shall be fully cement lined in accordance with ANSI/AWWA C104/A21.4. Thickness class shall be 54 or higher.

3. Standard pipe bedding shall conform to WCDPS Trench "B" requirements.

4. All trenches under or within five (5) feet of the existing and/or proposed curb or pavement shall be backfilled to grade with thoroughly compacted, approved sand meeting MDOT CL II granular material specifications. The backfill shall be placed in six (6) inch layers with each layer compacted by an approved mechanical method to 95% of maximum unit weight as determined by the AASTHO T-180 or the Michigan Department of Transportation Cone Density testing method.

5. The reuse of existing sanitary sewer leads for new construction will require an internal inspection of the existing lead to determine the suitability of the pipe. The results of the internal inspection (video) must be provided to the DPW for evaluation. If the lead is found to be in suitable condition, the sanitary lead may be reused. If the lead is in unsuitable condition, the lead must be repaired or a new lead constructed, as necessary.

6. Testing of sanitary sewers and existing stubs by infiltration/exfiltration or air testing is required. Infiltration for any section of sewers between manholes shall not exceed 100 gal./inch dia./mile/24 hours.

7. All sanitary sewers shall be television inspected with test results approved by Plymouth Township prior to placing the sewer into service. All courses not true to line or grade shall be dug up and relaid. Television Inspection for all sanitary sewers eight (8) inches in diameter to and including 27 inches in diameter shall be provided by the contractor.

8. All elevations are based on (U.S.G.S.) Datum.

9. No footing drains shall be connected to the building sewer.

10. The differential in excavation elevation around existing manholes shall not exceed six (6) feet.

11. To tap an existing manhole or sewer pipe, the Contractor shall utilize coring the manhole or pipe using Kor-n-Seal boot, Res-Seal, Link-Seal, Press Wedge II or other approved equal. All taps to the manhole must be made below the transition section.

12. No connection receiving storm water, surface water, or ground water shall be made to sanitary sewers.

13. It shall be the contractor's responsibility to verify and/or obtain any information necessary regarding the presence of underground utilities on the project.

14. Where sanitary sewer crosses a watermain, provide a minimum of 18 inch vertical clearance between watermain and sanitary sewer or construct the sewer of material meeting the watermain specification.

15. Contractor shall call MISS DIG at (800) 482-7171 at least three (3) working days prior to construction. Contractor shall be responsible for any damage done to any existing utility during construction.

16. Contractor shall notify the Plymouth Charter Township Department of Public Works two (2) working days prior to the start of construction. Phone (734) 354-3270.

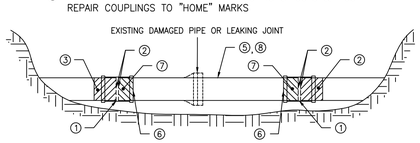
17. Contractor shall notify the Township Engineer two (2) working days prior to construction or testing. Contact Spalding DeDecker and Associates, Inc at (248) 844-5400.

18. Contractor shall notify the Wayne County Department of Public Services, Engineering Division, Permits Office, seventy-two (72) hours prior to the start of construction. Phone (734) 595-6504 Ext. 3.

19. A pre-construction meeting shall be scheduled two weeks prior to expected start of construction with the Township Engineer, Department of Public Works, Building Department, and the Plymouth Community Fire Department. Contact Spalding DeDecker at (248) 844-5400. All permits must be obtained, executed storm sewer agreement and easements submitted, fees paid, and approved construction sets submitted prior to scheduling a pre-construction meeting.

20. Restoration of any existing hard surface area, of any type, required as a result of removal of existing surfacing by Plymouth Township forces or agents during the course of maintenance of water main or sanitary sewer located under pavement, is the responsibility of the owner of this site and will not be performed by, nor paid for, by Plymouth Township.

① CUT EXISTING DAMAGED PIPE AS SQUARELY AS POSSIBLE
② CHAMFER OUTER EDGE OF TRUSS PIPE WALLS
③ CLEAN THOROUGHLY AND LUBE LIBERALLY THE REMAINING PIPE SPIGOTS APPROXIMATELY 1-½ TIMES THE COUPLING LENGTH
④ PUSH REPAIR COUPLING IN POSITION ALLOWING 3" TO 4" OF SPIGOT TO EXTEND BEYOND COUPLING
⑤ CUT REPLACEMENT LENGTH AS CLOSE AS POSSIBLE TO LENGTH THAT WAS REMOVED
⑥ MARK ENDS OF REPLACEMENT PIPE ½ LENGTH OF COUPLER
⑦ LUBE LIBERALLY THE ENDS OF THE REPLACEMENT LENGTH AND IN FRONT OF REPAIR COUPLING ON EXISTING LENGTHS
⑧ ALIGN REPLACEMENT LENGTH WITH EXISTING SPIGOTS & PUSH REPAIR COUPLINGS TO "HOME" MARKS



REPAIR COUPLING DETAIL

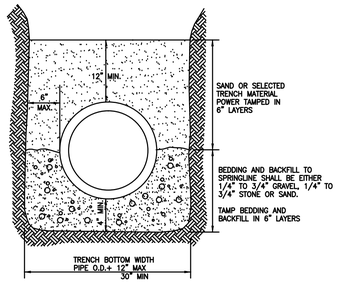
DETAILS NOT TO SCALE

DATE	DESCRIPTION
OCTOBER 2021	UPDATED NOTES AND TOWNSHIP ENGINEER CONTACT
APRIL 2019	INCORPORATED UPDATES
SEPTEMBER 2008	ABS TRUSS ELIMINATION
JUNE 2006	BACTERIOLOGICAL TESTING
JULY 2005	UPDATED PER REVISED STANDARDS
SEPTEMBER 2002	WCDPS SHEET NUMBER CHANGED
MARCH 1998	ORIGINAL

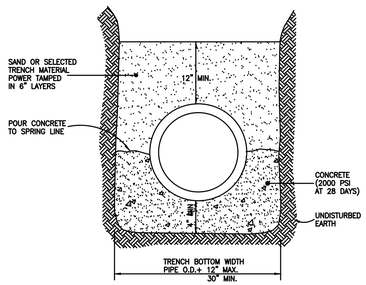
PLYMOUTH CHARTER TOWNSHIP
DEPARTMENT OF PUBLIC WORKS
9955 N. HAGGERTY ROAD
PLYMOUTH, MICHIGAN 48170-4673 734-354-3270

STANDARD SANITARY SEWER NOTES

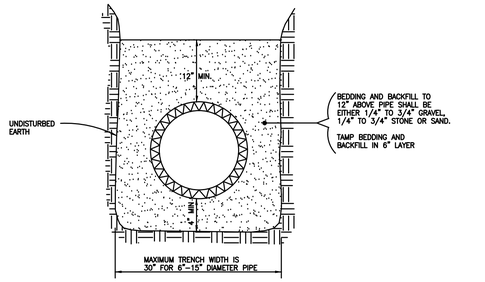
CHARTER TOWNSHIP OF PLYMOUTH, WAYNE COUNTY, MICHIGAN



BEDDING FOR PVC OR CONCRETE PIPE

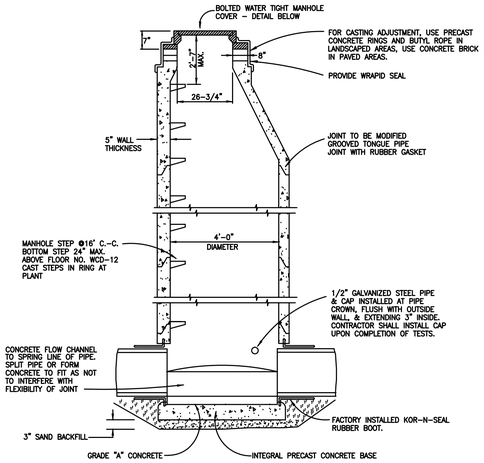


BEDDING FOR PVC OR CONCRETE PIPE ONLY
WITH CONCRETE CRADLE ON DISTURBED SUBBASE

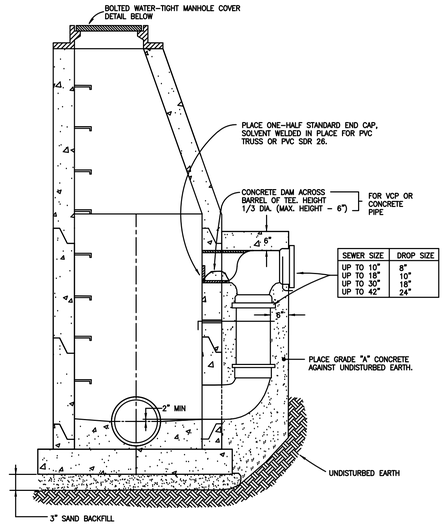


BEDDING FOR PVC TRUSS COMPOSITE, PVC SOLID WALL & DUCTILE IRON PIPE

PIPE BEDDING DETAILS

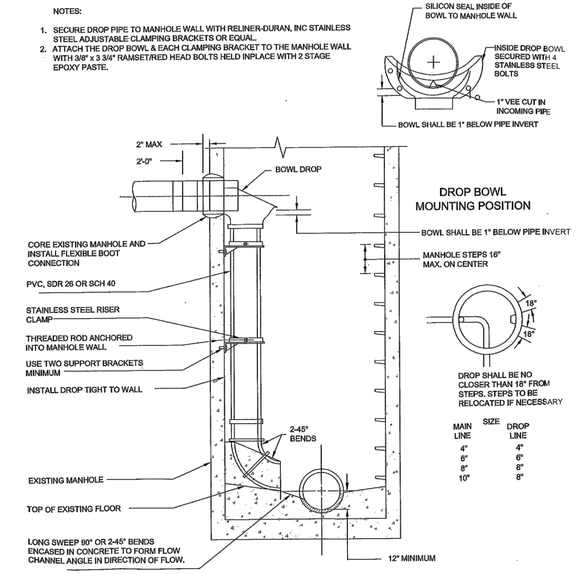


STANDARD MANHOLE FOR SEWER 8" THROUGH 24"



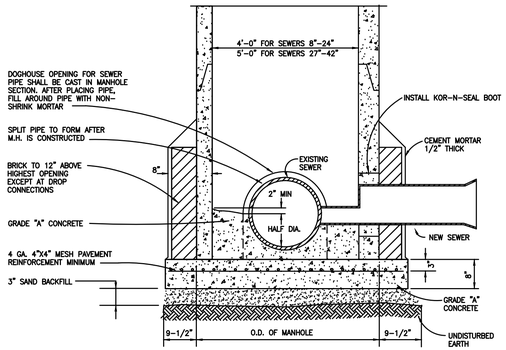
STANDARD EXTERIOR DROP CONNECTION AT MANHOLE

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



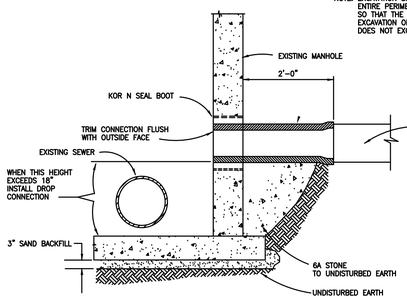
INTERIOR DROP CONNECTION AT MANHOLE

NOTE: TO BE USED ONLY WHEN NO OTHER ALTERNATIVE IS AVAILABLE AND WITH APPROVAL OF THE TOWNSHIP DEPARTMENT OF PUBLIC WORKS.



STANDARD MANHOLE BUILT OVER EXISTING SEWER

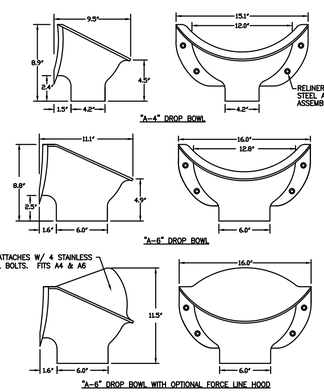
MANHOLE RISERS & CONES SHALL MEET THE REQUIREMENT OF A.S.T.M. SPEC.–C–478 EXCEPT THAT A WALL THICKNESS OF 5" WILL BE REQUIRED. LENGTH OF EACH RISER SHALL BE A MULTIPLE OF 16" LENGTH OF CONE SHALL BE 2'–8" MIN. TWO LIFT HOLES WILL BE PERMITTED IN EACH UNIT, AND MUST BE FILLED WITH NON–SHRINK MORTAR AFTER SETTING MANHOLE.



STANDARD CONNECTION TO EXISTING MANHOLE

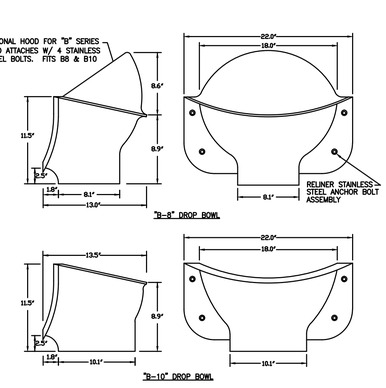
MANHOLE SPECIFICATIONS

MANHOLE RISERS & CONES SHALL MEET THE REQUIREMENT OF A.S.T.M. SPEC.–C–478 EXCEPT THAT A WALL THICKNESS OF 5" WILL BE REQUIRED. LENGTH OF EACH RISER SHALL BE A MULTIPLE OF 16" LENGTH OF CONE SHALL BE 2'–8" MIN. TWO LIFT HOLES WILL BE PERMITTED IN EACH UNIT, AND MUST BE FILLED WITH NON–SHRINK MORTAR AFTER SETTING MANHOLE.



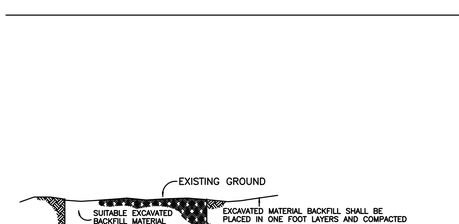
THE "A–4" BOWL WILL SERVICE UP THROUGH FULL 6" INLETS. THE "A–6" BOWL WILL SERVICE UP THROUGH FULL 8" INLETS. CAN BE USED FOR 10" INLET MODERATE FLOWS. ALL SIZES ARE FOR RETROFIT OR NEW CONSTRUCTION. FOR MORE INFORMATION, GO TO WWW.RELINER.COM.

USE 4 ANCHOR ASSEMBLIES TO ATTACH DROP BOWL TO MANHOLE WALL. USE STAINLESS STEEL PIPE BRACKETS TO SUPPORT DOWN PIPE. EXTERNAL PIPE COUPLER REQUIRED. PROVIDE SWEEP AT DOWN PIPE OUTLET.



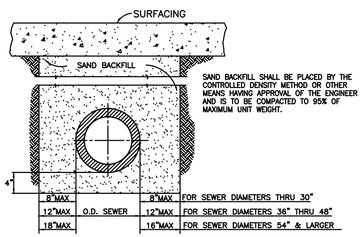
THE "B–8" BOWL WILL SERVICE UP THROUGH FULL 10" INLETS. THE "B–10" BOWL WILL SERVICE UP THROUGH FULL 12" INLETS. CAN BE USED FOR 15" AND 16" INLET MODERATE FLOWS. ALL SIZES ARE FOR RETROFIT OR NEW CONSTRUCTION. FOR MORE INFORMATION, GO TO WWW.RELINER.COM.

USE 4 ANCHOR ASSEMBLIES TO ATTACH DROP BOWL TO MANHOLE WALL. USE STAINLESS STEEL PIPE BRACKETS TO SUPPORT DOWN PIPE. EXTERNAL PIPE COUPLER REQUIRED. PROVIDE SWEEP AT DOWN PIPE OUTLET.



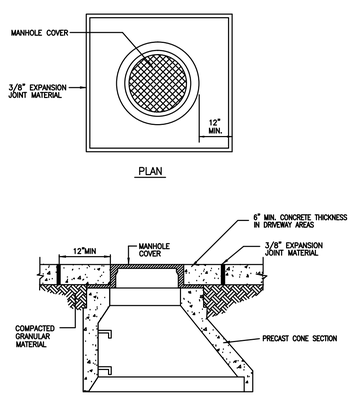
TRENCH "A" SHALL BE USED UNDER CONDITIONS OTHER THAN SPECIFIED FOR TRENCH "B".

TRENCH "A"



TRENCH "B" SHALL BE USED UNDER ROAD SURFACE, PAVEMENT, SIDEWALK, CURB, AGGREGATE & PAVED DRIVES AND WHERE THE EDGE OF TRENCH IS WITHIN 3 FEET OF THE PAVEMENT.

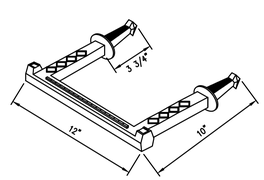
TRENCH "B"



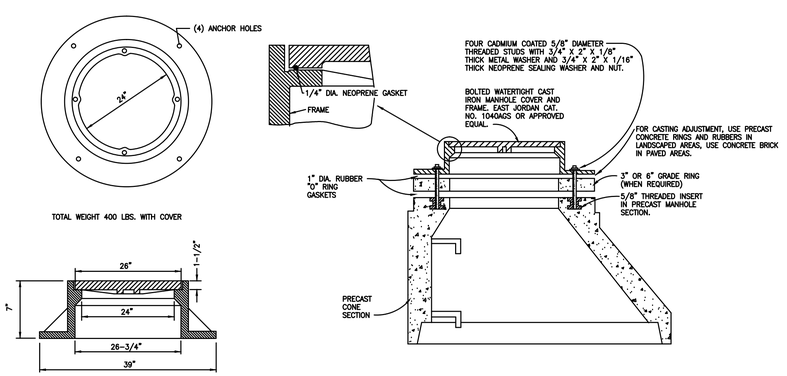
NOTE: ISOLATION SLABS ARE TO BE USE IN ALL CONCRETE DRIVEWAYS, SIDEWALKS AND CONCRETE PAVEMENT.

ISOLATION SLAB FOR
MANHOLES IN CONCRETE PAVEMENT

NOTE:
MANHOLE STEPS TO BE POLYPROPYLENE COATED STEEL MEETING THE REQUIREMENTS IN ASTM A615 AND D4101, TYPE II, GRADE 49108, M.A. INDUSTRIES PS–1 OR PS–1B (OR APPROVED EQUAL) STEPS TO BE INSTALLED DURING MANHOLE MANUFACTURE. PLACE AT 16" CEN. ON CEN. 45° FROM CENTERLINE OF WATER MAIN. FIRST STEP TO BE PLACED AT A MAXIMUM DISTANCE OF 21" FROM THE FINISHED RIM ELEVATION.



MANHOLE STEP DETAILS



STANDARD SOLID WATER TIGHT BOLTED MANHOLE COVER DETAILS

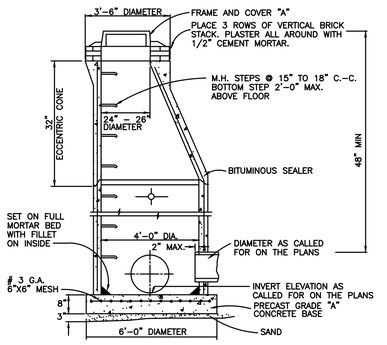
DETAILS NOT TO SCALE

DATE	DESCRIPTION
OCTOBER 2019	ADDED INTERIOR DROP CONNECTION
APRIL 2014	REVISE DROP CONNECTION PER MDEQ
AUGUST 2008	ABS TRUSS ELIMINATION
JUNE 2006	BACTERIOLOGICAL TESTING
JULY 2005	UPDATED PER REVISED STANDARDS
OCTOBER 2000	TITLE BLOCK ADDRESS CHANGE
MARCH 1998	ORIGINAL

PLYMOUTH CHARTER TOWNSHIP
DEPARTMENT OF PUBLIC WORKS
9955 N. HAGGERTY ROAD
PLYMOUTH, MICHIGAN 48170–4673 734–354–3270

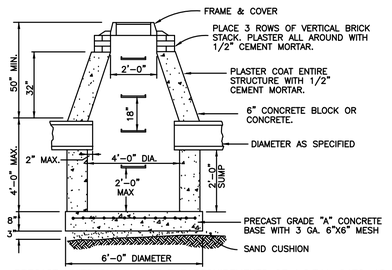
STANDARD SANITARY SEWER DETAILS

CHARTER TOWNSHIP OF PLYMOUTH, WAYNE COUNTY, MICHIGAN



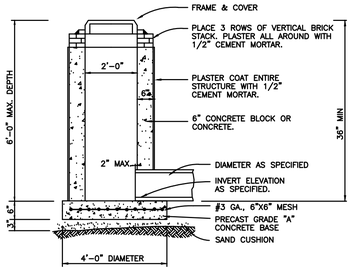
PRECAST UNITS SHALL MEET THE REQUIREMENTS OF A.S.T.M. C478-18

STANDARD MANHOLE



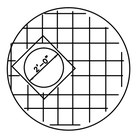
PRECAST UNITS SHALL MEET THE REQUIREMENTS OF A.S.T.M. C478-18

STANDARD CATCH BASIN



PRECAST UNITS SHALL MEET THE REQUIREMENTS OF A.S.T.M. C478-18

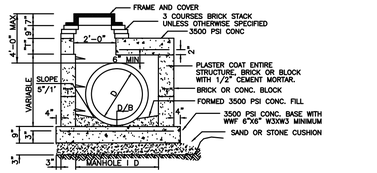
STANDARD INLET OR CLEANOUT



TOP SLAB

OUTLET "D"	M.H ID	TOP SLAB"T"	WALL "T"	REINF STEEL
24" or LESS	4'-0"	9"	8"	#6 @ 9" EW
30"	4'-0"	9"	8"	#6 @ 9" EW
36"	4'-0"	9"	12"	#6 @ 9" EW
42"	5'-0"	10"	12"	#6 @ 9" EW
48" 54"	6'-0"	11"	12"	#7 @ 9" EW

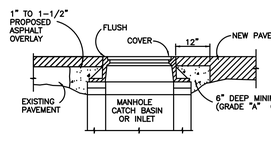
2' SUMP REQ'D FOR MANHOLE WITH OUTLETS OF 18" & UNDER



TYPICAL SECTION

PRECAST UNITS SHALL MEET THE REQUIREMENTS OF A.S.T.M. C478-18

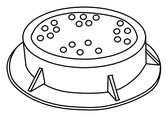
TYPICAL MANHOLE "D"



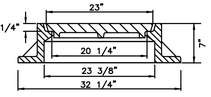
DRAINAGE STRUCTURE COVER - CONCRETE RING

DETAIL FOR NEW INSTALLATION OR ADJUSTMENT

HEAVY DUTY

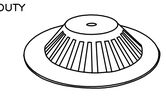


1000 Type B Perforated Cover
Has 20 - 1 1/4" Dia Holes

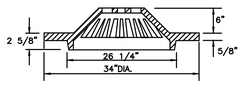


MANHOLE COVER "A"

HEAVY DUTY



6508

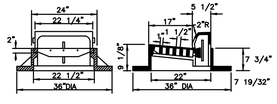


Approximately 280 square inches of opening
Fits 24" sewer pipe bell
Provide "DUMP NO WASTE !" lettering.

REAR YARD DRAINAGE COVER

HEAVY DUTY

TOTAL WEIGHT 490#

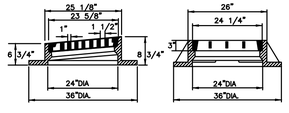


7050 Approx 160 Sq Inches Opening
This unit available with adjusting grate for increase of 1 1/2 inches pavement grade.
Provide "DUMP NO WASTE !" lettering and fish image.

CATCH BASIN OR INLET COVER FOR CURB & GUTTER

HEAVY DUTY

TOTAL WEIGHT 515#

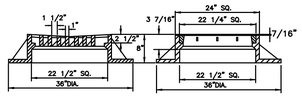


7076 APPROX. 275 SQ. IN. OF OPENING

CATCH BASIN OR INLET COVER FOR GUTTER IN PAVED AREAS

HEAVY DUTY

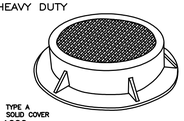
TOTAL WEIGHT 435#



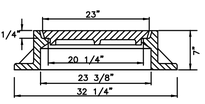
5105 APPROX. 225 SQ. IN. OF OPENING
Provide "DUMP NO WASTE !" lettering and fish image.

CATCH BASIN OR INLET COVER IN PAVED AREAS

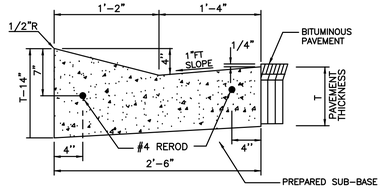
HEAVY DUTY



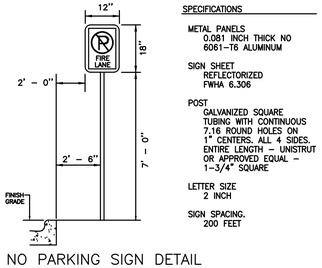
TYPE A SOLID COVER
1000 (SPECIFY TYPE COVER OR GRATE)
Machined bearing surfaces
Designed for heavy metropolitan traffic



CLEANOUT COVER



MOUNTABLE CONC. CURB & GUTTER



SPECIFICATIONS

METAL PANELS
0.081 INCH THICK NO 6061-T6 ALUMINUM

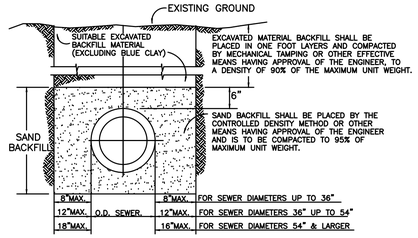
SIGN SHEET
REFLECTORIZED FWHA 6.306

POST
GALVANIZED SQUARE TUBING WITH CONTINUOUS 7.16 ROUND HOLES ON 1" CENTERS. ALL 4 SIDES. ENTIRE LENGTH - UNISTRUT OR APPROVED EQUAL - 1-3/4" SQUARE

LETTER SIZE
2 INCH

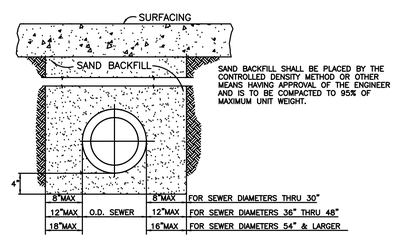
SIGN SPACING.
200 FEET

NO PARKING SIGN DETAIL



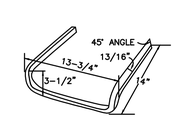
TRENCH "A" SHALL BE USED UNDER CONDITIONS OTHER THAN SPECIFIED FOR TRENCH "B".

TRENCH "A"

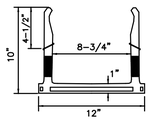


TRENCH "B" SHALL BE USED UNDER ROAD SURFACE, PAVEMENT, SIDEWALK, CURB, AGGREGATE & PAVED DRIVES AND WHERE THE EDGE OF TRENCH IS WITHIN 3 FEET OF THE PAVEMENT.

TRENCH "B"



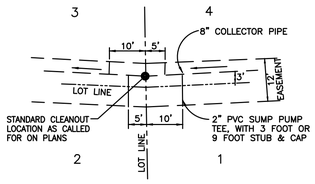
ALUMINUM STEP



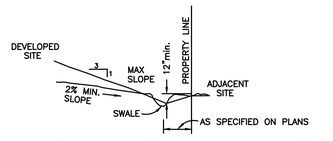
PLASTIC COATED STEEL STEP

NOTE: STEPS PROJECT 6" FROM FACE OF WALL

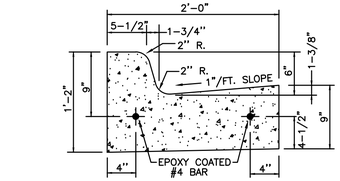
MANHOLE STEPS



SUMP PUMP COLLECTOR SYSTEM DETAIL



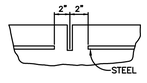
SWALE AND SLOPE AT BOUNDARY DETAIL



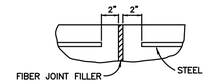
CONCRETE CURB & GUTTER

M.D.O.T. DETAIL F-4

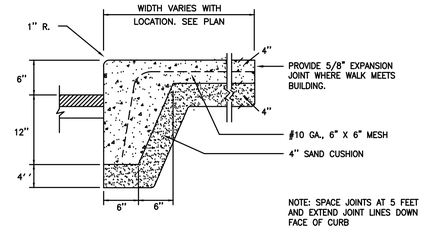
JOINTS IN CURB OR CURB & GUTTER NOT TIED TO CONCRETE PAVEMENT:
1) PLACE 1" FIBER JOINT FILLER AT SPRING POINTS OF STREET RETURNS.
2) PLACE 1" FIBER JOINT FILLER AT APPROXIMATELY 400 FOOT INTERVALS WHEN SPRING POINTS OF INTERSECTING STREETS ARE MORE THEN 400 FEET APART PLACE AN EXPANSION JOINT 10' TO 50' EACH SIDE OF EACH CATCH BASIN
3) PLACE CONTROL JOINTS AT APPROXIMATELY 50 FOOT INTERVALS.



CONTROL JOINT
BREAK STEEL

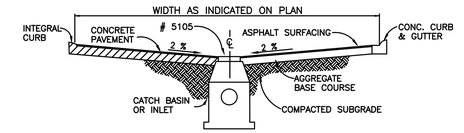


EXPANSION JOINT
BREAK STEEL

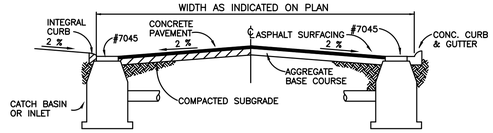


NOTE: SPACE JOINTS AT 5 FEET AND EXTEND JOINT LINES DOWN FACE OF CURB

INTEGRAL CONCRETE CURB & WALK



INVERTED CROWN



STANDARD CROWN

STANDARD DRIVE AND SITE SURFACING CROSS SECTIONS WITH CURB AND GUTTER

SURFACING THICKNESS & MATERIAL SPECIFICATION REQUIREMENTS

A. For commercial and industrial site development only, surfacing for parking areas, as provided in Section 20.2 of the Zoning Ordinance, shall consist of a minimum surface thickness of 1 1/2 inch MDOT Mixture 36A Bituminous and 1 1/2 MDOT Mixture 13 A Bituminous and laid on a eight (8) inch minimum thickness base course placed in two (2) compacted four (4) inch layers of MDOT Specification 22A, or equivalent. This minimum specification shall not be construed as a substitute for sufficient pavement thickness where traffic conditions and/or soil conditions require more substantial pavement designs.

B. Concrete curb and gutter shall be MDOT Detail C-4, unless approved otherwise, with concrete mixture MDOT P1 or approved equivalent.

C. Concrete paving may be used which provides an equivalent section based on AASHTO Design Criteria.

DETAILS NOT TO SCALE

DATE	DESCRIPTION
OCTOBER 2019	INCORPORATED UPDATES
JUNE 2006	UPDATED PER REVISED STANDARDS
JULY 2005	UPDATED PER REVISED STANDARDS
OCTOBER 2000	TITLE BLOCK ADDRESS CHANGE
MARCH 1998	ORIGINAL

PLYMOUTH CHARTER TOWNSHIP
DEPARTMENT OF PUBLIC WORKS
9955 N. HAGGERTY ROAD
PLYMOUTH, MICHIGAN 48170-4673
734-354-3270

GRADING, DRAINAGE AND SURFACING STANDARD DETAILS

CHARTER TOWNSHIP OF PLYMOUTH, WAYNE COUNTY, MICHIGAN

GDS

GRADING AND REAR YARD DRAINAGE PLAN NOTES AND MATERIALS

A. Rear yard storm sewers shall be min. 12 inch diameter concrete pipe ASTM C76 CLIII, or larger as the design requires.

B. Covers for structures shall be EJIW 6508.

C. Standard bedding and backfill for concrete storm sewer is Trench A.

D. Pipes serving as underdrains only shall be six (6) inch diameter perforated plastic underdrain pipe placed in a trench backfilled with 10A stone full depth. The Underdrain pipe may be either A.B.S., P.V.C. with a minimum crushing strength of 1000 lbs/ft.

E. Where rear yard surface drainage is not being collected, the surface swales are less than two (2) percent and sump pump collection lines are not tied into the sewer, two (2) foot structures with 1000-A (Solid) frames are required for the under drain system. Underdrain pipe will be minimum six (6) inch diameter perforated plastic pipe at a minimum slope of 0.30 percent backfill with 10A stone full depth.

F. Where rear yard surface drainage is being collected, the surface swales are less than two (2) percent and sump pump collection lines are tied into the sewer, four (4) foot structures with 6508 (Beehive) frames are required. The storm sewer line will be minimum 12 inch perforated pipe at a minimum slope of 0.32 percent backfill with 10A stone full depth. feet of 10A Stone

TESTING NOTES

A. The Contractor is required to secure the services of a qualified testing laboratory for the quality control testing for all backfill and earthwork compaction density control and all sampling and testing of concrete, asphalt and aggregate.

B. These tests shall be performed in the field at the specified rates below:

1. All concrete for air content, temperature, cylinder tests - one set of tests and cylinders per 250 cubic yards used, or one set per day.
2. Compaction testing of backfill shall be one compaction test per layer of backfill per 50 feet of trench.
3. Compaction testing of aggregate base courses and earth fills shall be one compaction test per layer of material per one hundred feet of base or subgrade.

C. Bituminous leveling and surface courses less than three (3) inch thick shall be compacted to 100 percent of the average unit weight determined by the Rolling Test Method. Bituminous base courses shall be compacted to 95 percent of maximum. Field density shall be determined by the nuclear densometer method.

PLAN NOTES

1. All workmanship, materials, and testing shall be in accordance with the current standards and specifications of the Plymouth Charter Township and Michigan Department of Transportation or Wayne County Department of Public Services where referenced.
2. It shall be the contractor's responsibility to verify and/or obtain any information necessary regarding the presence of underground utilities on the project.
3. Standard utility trench bedding and backfill shall conform to WCDPS trench B. For utilities located at least five (5) feet outside the edge of existing or proposed pavement or sidewalk, WCDPS Trench A may be used.
4. Contractor shall call MISS DIG at (800) 482-7171 at least three (3) working days prior to construction. Contractor shall be responsible for any damage done to any existing utility during construction.
5. Contractor shall notify the Plymouth Township Department of Public Works two (2) working days prior to the start of construction. Phone (734) 354-3270.
6. Contractor shall notify the Township Engineer two (2) working days prior to start of construction or testing, Spalding DeDecker Phone: (248) 844-5400.
7. Testing and inspection of all materials and construction is required at the expense of the Contractor.

SIDEWALKS

A. Where required by the Planning Commission and/or Township Zoning Ordinance, public walks are to be installed as part of the site development and along the frontage of the property.

B. Sidewalks shall be five (5) feet in width.

C. Sidewalks shall extend through all driveways without steps, curbs or other obstacles.

D. Sidewalks shall use MDOT concrete mixture Grade P1, placed six (6) inch thick at residential drives, eight (8) inch thick at commercial drives, and four (4) inch thick elsewhere.

E. Detectable warning surface shall be provided on walking surfaces in accordance with the current Americans with Disability Act Accessibility Guidelines (ADAAG).

STORM SEWER SYSTEM

A. A structure with multiple pipe connections, with at least one of which being a 12 inch, must be a minimum four (4) foot structure.

B. Storm sewers must have a minimum of three (3) feet of cover.

C. All structures that do not meet the minimum cover requirement of the standard structure shall be specified as Typical Manhole "D".

D. A two (2) foot sump is required, at a minimum in the first structure upstream of the storm outlet.

STORM SEWER NOTES AND MATERIALS

A. Standard Storm Sewer trench bedding and backfill shall conform to WCDPS trench B. For storm sewers located at least five (5) feet outside the edge of existing or proposed pavement or sidewalk, WCDPS Trench A may be used.

B. Storm sewer pipe shall be reinforced concrete pipe ASTM 76, Class IV. RCP-C76 Class III may be used when the minimum depth of cover on the pipe is more than three (3) feet and outside of pavement. Both pipe uses are subject to surface loadings.

C. Joints for RCP storm sewer pipe may be either modified tongue and groove with synthetic rubber gasket (ASTMC361), or standard tongue and groove with cold mastic (Dewitt #10). For pipe sizes 30 inches or larger the joints shall be inside cement pointed.

SUMP PUMP DISCHARGE COLLECTOR SYSTEM MATERIALS

A. Sump pump discharge line is two (2) inch PVC schedule 40 pipe for connecting the pump discharge line to the tee in the collector pipe.

B. Structures with a 1000-A (solid) frame, are a two (2) foot diameter structure with a 1000-A (Solid) frame. The collector pipe shall be minimum pipe shall be minimum eight (8) inch PVC truss at a minimum slope of 0.30 percent Cleanouts are required at 300 foot intervals and the upper end of the collector pipe.

C. Minimum depth of all piping is three (3) feet.

D. Minimum slope on discharge lines and collector pipe is 0.30 percent.

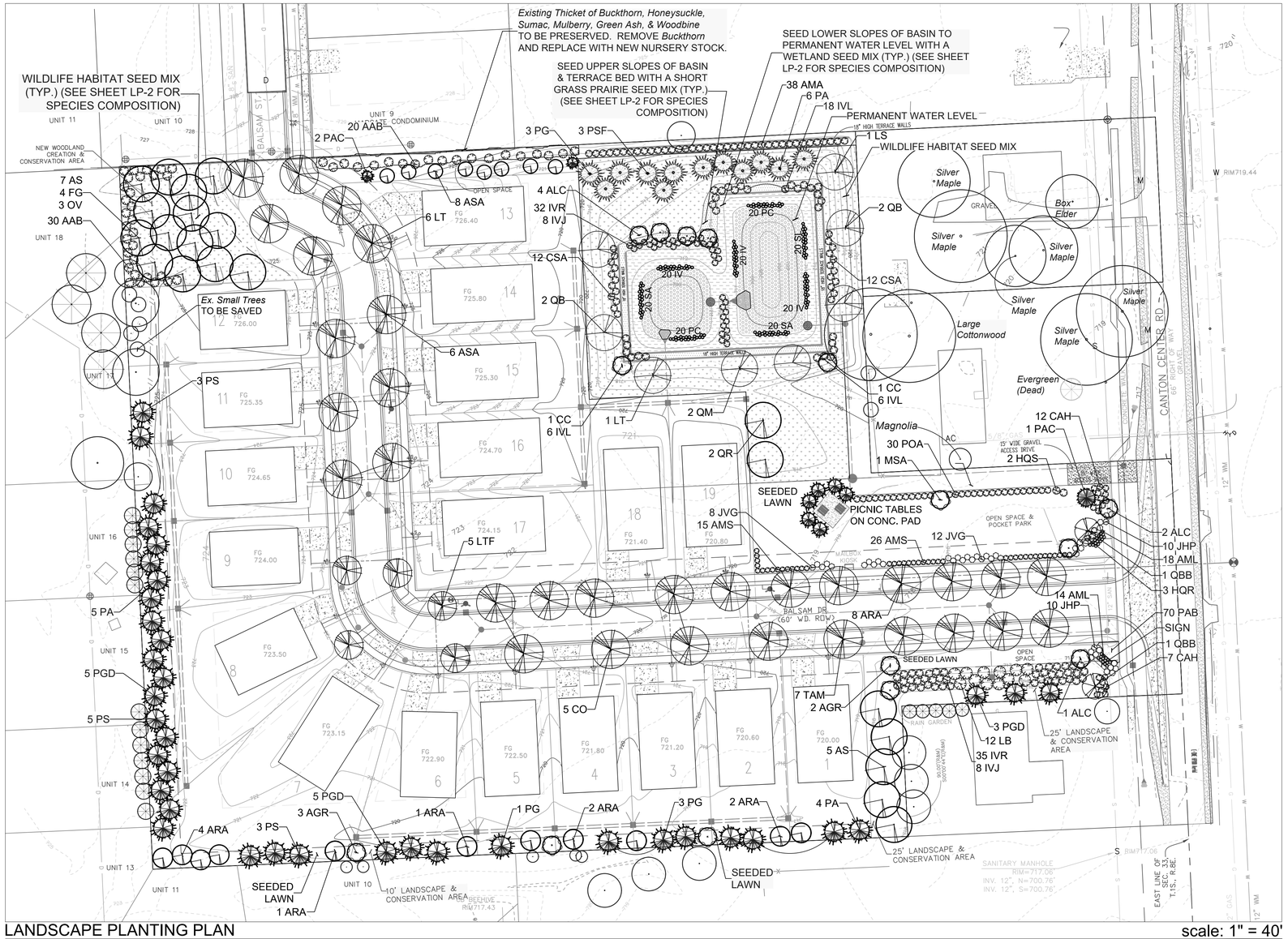
E. Connect the pipe to the storm drainage system. Where the outlet is a drain, place a concrete headwall and plain rip rap for erosion protection.

F. The collector piping is placed in the rear yard drainage easement.

G. Sump Pump collector lines must connect to the storm sewer system at a catchbasin , manhole or rear yard inlet.

H. No surface water shall be drained by the sump pump. Collector system and all structures on this system shall have solid covers.

TYPICAL PAVEMENT FOR NON-PUBLIC ROADWAYS & DETAILS



LANDSCAPE PLANTING PLAN scale: 1" = 40'

LANDSCAPE CALCULATIONS:

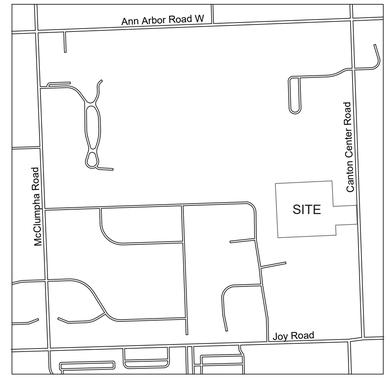
LANDSCAPING ADJACENT TO A MAJOR THOROUGHFARE
* The buffer area shall include deciduous shade trees, evergreen trees, ornamental trees, and shrubs.

STREET TREES (740 lineal feet)
* One (1) deciduous tree shall be provided for every forty (40) lineal feet of street frontage equals 37 trees.
* Street Trees Provided: Thirty-seven (37) Deciduous Trees

DETENTION POND PLANTING
* Deciduous shade trees and ornamental trees, shrubs, perennials, grasses, and other groundcovers shall be clustered around the perimeter of the detention pond to achieve a variety of plant materials.

REPLACEMENT TREES
* No replacement trees required.

OTHER LANDSCAPE AREAS - OPEN SPACE, LANDSCAPE AND CONSERVATION EASEMENTS, NEW WOODLAND CREATION AND CONSERVATION PLANTINGS
* Eighty seven (87) trees and one hundred five (105) shrubs are proposed in addition to the above listed required landscape plantings.



LOCATION MAP not to scale

PLANT LIST

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE
LANDSCAPING ADJACENT TO A THOROUGHFARE				
ALC	3	*Amelanchier laevis* 'Cumulus'	Cumulus Single Stem Serviceberry	3" cal. B&B
AML	32	*Aronia melanocarpa* 'Low Scape Mound'	Low Scape Mound Black Chokeberry	30" ht., 3 gal. pot
CAH	19	*Clethra alnifolia* 'Hummingbird'	Hummingbird Summersweet	36" ht., 5 gal. pot
JHP	20	*Juniperus horizontalis* 'Plumosa'	Andorra Spreading Juniper	24" spr., 3 gal. pot
PAC	1	*Picea abies* 'Cupressina'	Cupressina Norway Spruce	10' ht. B&B
QBB	2	*Quercus bicolor* 'Beacon'	Beacon Swamp White Oak	3" - 3-1/2" cal. B&B
PAB	70	*Pennisetum alopecuroides*'Burgandy Bunny'	Burgandy BunnyDwarf Fountain Grass	1 gal. pot, 24" o.c.
STREET TREES				
ARA	8	*Acer rubrum* 'Armstrong Gold'	Armstrong Gold Red Maple	3-1/2" - 4" cal. B&B
ASA	6	*Acer sacharrum* 'Apollo'	Apollo Sugar Maple	3" - 3-1/2" cal. B&B
CO	5	*Celtis occidentalis*	Northern Hackberry	3-1/2" - 4" cal. B&B
HQR	3	*Hydrangea quercifolia* 'Ruby Slippers'	Ruby Slippers Oakleaf Hydrangea	36" ht., 5 gal. pot
LT	6	*Liriodendron tulipifera*	Tuliptree	4" cal. B&B
LTF	5	*Liriodendron tulipifera* 'Fastigiata'	Fastigiate Tuliptree	3-1/2" - 4" cal. B&B
TAM	7	*Tilia americana* 'McKSentry	American Sentry Linden	3" - 3-1/2" cal. B&B
DETENTION POND PLANTINGS				
ALC	4	*Amelanchier laevis* 'Cumulus'	Cumulus Single Stem Serviceberry	2" cal. B&B
AMA	38	*Aronia melanocarpa* 'Autumn Magic'	Autumn Magic Black Chokeberry	36" ht., 5 gal. pot
CC	2	*Cercis canadensis* 'Alba'	White Flowering Eastern Redbud	2" cal. B&B
CSA	24	*Cornus sericea* 'Arctic Fire'	Arctic Fire Red Twig Dogwood	36" ht., 5 gal. pot
IVL	30	*Itea virginica* 'Little Henry'	Little Henry Virginia Sweetspire	30" ht., 5 gal. pot
IVJ	8	*Ilex verticillata* 'Jim Dandy'	Jim Dandy Michigan Holly	36" ht., 5 gal. pot
IVR	32	*Ilex verticillata* 'Red Sprite'	Red Sprite Michigan Holly	30" ht., 5 gal. pot
LS	1	*Liquidambar styraciflua*	American Sweetgum	4" cal. B&B
LT	1	*Liriodendron tulipifera*	Tuliptree	4" cal. B&B
PA	6	*Picea abies*	Norway Spruce	10' ht. B&B
PG	3	*Picea glauca*	White Spruce	8' ht. B&B
PSF	3	*Pinus strobus* 'Fastigiata'	Fastigiate Eastern White Pine	10' ht. B&B
QB	4	*Quercus bicolor*	Swamp White Oak	3" - 3-1/2" cal. B&B
QM	2	*Quercus macrocarpa*	Bur Oak	3" - 3-1/2" cal. B&B
Emergent Plantings				
IV	60	*Iris virginica*	Blue Flag Iris	Bare Root
PC	40	*Pontederia cordata*	Pickeral Weed	Bare Root
SA	40	*Scirpus acutus*	Hard-Stemmed Bulrush	Bare Root
SL	20	*Sagittaria latifolia*	Broad-Leaf Arrowhead	Bare Root
RAIN GARDEN PLANTINGS				
LB	22	*Lindera benzoin*	Spicebush	36" ht., 3 gal. pot
IVJ	8	*Ilex verticillata* 'Jim Dandy'	Jim Dandy Michigan Holly	36" ht., 5 gal. pot
IVR	36	*Ilex verticillata* 'Red Sprite'	Red Sprite Michigan Holly	36" ht., 5 gal. pot
POCKET PARK PLANTINGS				
AMS	41	*Aronia melanocarpa* 'Snowfire'	Snowfire Black Chokeberry	30" ht., 3 gal. pot
HQS	2	*Hydrangea quercifolia* 'Snow Queen'	Snow Queen Oakleaf Hydrangea	30" ht., 5 gal. pot
JVG	20	*Juniperus virginiana* 'Grey Guardian'	Grey Guardian Spreading Juniper	30" spr., 5 gal. pot
MSA	1	*Malus sp.* 'Adirondack'	Adirondack Crabapple	2" cal. B&B
POA	30	*Physocarpus opulifolius* 'Amber Jubilee'	Amber Jubilee Eastern Ninebark	30" ht., 5 gal. pot
PSF	6	*Pinus strobus* 'Fastigiata'	Fastigiate Eastern White Pine	10' ht. B&B
QR	2	*Quercus rubra*	Northern Red Oak	3" cal. B&B
OPEN SPACE & LANDSCAPE AND CONSERVATION EASEMENT PLANTINGS				
AAB	20	*Aronia arbutifolia* 'Brilliantissima'	Brilliantissima Red Chokeberry	30" ht., 5 gal. pot
AGR	5	*Amelanchier x grandiflora* 'Robin Hill'	Robin Hill Apple Serviceberry	2-1/2" cal. B&B
AS	5	*Acer saccharum*	Sugar Maple	3" cal. B&B
ASA	8	*Acer saccharum* 'Apollo'	Apollo Sugar Maple	3" - 3-1/2" cal. B&B
ARA	10	*Acer rubrum* 'Armstrong Gold'	Armstrong Gold Red Maple	4" cal. B&B
PA	9	*Picea abies*	Norway Spruce	8' ht. B&B
PAC	2	*Picea abies* 'Cupressina'	Cupressina Norway Spruce	10' ht. B&B
PG	5	*Picea glauca*	White Spruce	8' ht. B&B
PGD	7	*Picea glauca* 'Densata'	Black Hills White Spruce	8' ht. B&B
PS	13	*Pinus strobus*	Eastern White Pine	12' ht. B&B
NEW WOODLAND CREATION AND CONSERVATION AREA PLANTINGS				
AAB	30	*Aronia arbutifolia* 'Brilliantissima'	Brilliantissima Red Chokeberry	36" ht., 5 gal. pot
AS	7	*Acer saccharum*	Sugar Maple	3" cal. B&B
FG	4	*Fagus grandifolia*	American Beech	3" cal. B&B
OV	3	*Ostrya virginiana*	American Hophornbeam	3" cal. B&B

COST ESTIMATE

TOTAL MATERIALS SPECIFIED:			
* Deciduous Trees (3" cal.):	43	$350	$15,050.00
* Deciduous Tr. (3-1/2" - 4" cal):	26	$400	$10,400.00
* Deciduous Tr. (4" cal):	17	$450	$7,650.00
* Evergreen Trees (8' ht.):	24	$350	$8,400.00
* Evergreen Trees (10' ht.):	18	$400	$7,200.00
* Evergreen Trees (12' ht.):	13	$450	$5,850.00
* Ornamental Trees (2" cal.):	7	$250	$1,750.00
* Ornamental Trees (2-1/2" cal.):	5	$300	$1,500.00
* Ornamental Trees (3" cal.):	3	$325	$975.00
* Sm. Deciduous Shrubs (30"):	187	$50	$9,350.00
* Lg. Deciduous Shrubs (36"):	188	$60	$11,280.00
* Spr. Evergreen Shrubs (24"):	20	$50	$1,000.00
* Spr. Evergreen Shrubs (30"):	20	$70	$1,400.00
* Perennials	70	$10	$700.00
* Emergent Perennials	200	$8	$1,600.00
* Wetland Seed Mix			$1,250.00
* Upland Seed Mix			$1,000.00
* Wildlife Habitat Seed Mix			$2,500.00
* Seeded Lawn (sq. yds.)	8,000	$0.75	$6,000.00
* Cluster Mailbox Units	2	$800	$1,600.00
* Picnic Tables	2	$400	$800.00
* Concrete Pad (sq. ft.)	324	$10	$3,240.00
* Underground Irrigation			$2,000.00
* Planting Soil	64 cu. yds.	$35	$2,240.00
* Shredded Hardwood Bark	78 cu. yds.	$30	$2,340.00
			==========
TOTAL			$107,075.00

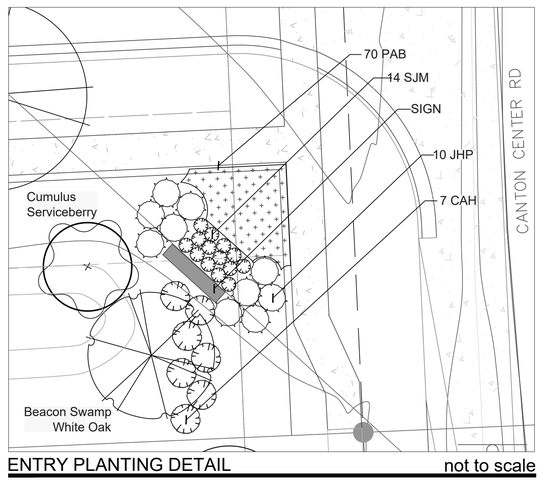
LEGEND

- PROPOSED GREENBELT TREE
- PROPOSED STREET TREE
- PROPOSED CONSERVATION AREA TREE
- PROPOSED DETENTION POND TREE
- PROPOSED ORNAMENTAL TREE
- PROPOSED DECIDUOUS SHRUB
- PROPOSED EVERGREEN SHRUB
- PROPOSED EMERGENT PLANTINGS
- PROPOSED WETLAND SEED MIX
- PROPOSED CUSTOM SHORT GRASS SEED MIX
- PROPOSED WILDLIFE HABITAT SEED MIX
- *EXISTING TREES TO BE PRESERVED*

NOTE:
* A metal plaque mounted on stone will be provided in the pocket park to commemorate Farmer Jay.

TABLE FOR PROPOSED PLANT MATERIAL

* Deciduous trees (86 total)
  - 3" cal.to 3-1/2" cal. - 43 (50%)
  - 3-1/2" cal. to 4"cal. - 26 (30%)
  - greater than 4" cal. - 17 (20%)
* Evergreen trees (55 total)
  - 8' height - 24 (44%)
  - 10' height - 18 (33%)
  - 12' height - 13 (23%)
* Ornamental trees (15 total)
  - 2" cal. - 7 (47%)
  - 2-1/2" cal. - 5 (33%)
  - 3" cal. - 3 (20%)
* Evergreen shrubs (25 total)
  - 3' height - 11 (44%)
  - 6' height - 15 (56%)
* Deciduous shrubs (160 total)
  - 36" height - 160 (100%)
  - 30" height - 0 (0%)



ENTRY PLANTING DETAIL not to scale

NOTES:
* See Sheet LP - 2: LANDSCAPE NOTES & DETAILS for landscape development notes, landscape planting details, detention pond notes and seed mix compositions, and detail for proper pruning techniques.
* See Sheet LP - 3: TREE PRESERVATION PLAN for tree inventory list, proposed action for existing trees, summary of tree totals, and tree protection detail.

date: January 31, 2025
PSP Submittal
revised:

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

40' 0' 40' 80' 120' north
scale: 1" = 40'

LANDSCAPE PLAN FOR:
Mr. Leo Gonzalez
CRS-Commercial Real Estate Services
550 Forest Avenue
Plymouth, Michigan 48152
(734) 846-8045

PROJECT LOCATION:
Glenview Estates
9133 Canton Center Road
Plymouth Township, Michigan

LANDSCAPE PLAN BY:
Nagy Devlin Land Design, L.L.C.
31736 West Chicago Avenue
Livonia, Michigan 48150
(734) 634-9208
R.L.A. State of Michigan #1260

STATE OF MICHIGAN J. BRIAN DEVLIN NO.1260 REGISTERED LANDSCAPE ARCHITECT

AUTOCAD SIGNATURE ORIGINAL IN BLUE

LP - 1: LANDSCAPE PLANTING PLAN

* Base data provided by Zeimet Wozniak & Associates.

LANDSCAPE DEVELOPMENT NOTES:

PLANTING

1. Installation of all plant material shall be in accordance with the latest edition of the *American Association of Nurserymen Standards for Nursery Stock* and with the specifications set forth by Plymouth Township, Michigan.
2. The plant materials shall conform to the type stated on the plant list. Sizes shall be the minimum stated on the plant list or larger. All measurements shall be in accordance with the latest edition of the *American Association of Nurserymen Standards for Nursery Stock.*
3. The plant material shall be nursery grown and inspected by the Owner's representative before planting. The Owner's representative reserves the right to reject any plant material at any time.
4. Plants designated "B&B" shall be balled and burlapped with firm balls of earth.
5. Dig shrub pits one foot (1') larger than the shrub rootball, tree pits three (3) times the width of the tree rootball and backfill with one (1) part topsoil and one (1) part soil from excavated pit. Plant trees and shrubs at the same grade level at which they were planted at the nursery. If wet, clay soils are evident, plant trees and shrubs slightly higher.
6. The Contractor is responsible for planting the materials at the correct grades and spacing. The plants shall be oriented to give the best appearance.
7. When the plant has been properly set, the pit shall be backfilled with the topsoil mixture, gradually filling, patting, and settling with water.
8. Trees in lawn areas to have a four foot (4') circle of mulch, four inches (4') deep, and three inches (3") away from the trunk. Planting beds are to be mulched with shredded bark mulch to a minimum depth of four inches (4"). Only natural color shredded hardwood bark mulch will be accepted.
9. Remove all twine, wire, and burlap from the top one third (1/3) of tree and shrub root balls and from tree trunks. Remove all non-biodegradable material such as plastic or nylon completely from branches and stems.
10. All plant materials shall be pruned and injuries repaired. The initial amount of pruning shall be limited to the removal of dead or injured limbs and to compensate for the loss of roots from transplanting. Future pruning shall be minimal to assure the proper maturation of plants. Cuts should be flush, leaving no stubs. DO NOT apply tree paint over freshly cut wounds. Shrubs along the site perimeter shall be allowed to grow together in a natural form.
11. Organic, friable topsoil shall be evenly distributed and fine graded over all areas to receive lawns at uniform depth of four inches (4") after settlement.
12. All lawn areas shall be sodded with a Grade A Kentucky Blue Grass blend over the topsoil. Peat sod is not acceptable. Existing lawn in generally good condition but with bare, sparse, or weedy areas must be renovated by filling in low areas, raking, overseeding, and top dressing all sparse and bare spots and continuing with a weed and feed program.
13. All plantings shall be completed within three (3) months, and no later than November 30, from the date of issuance of a certificate of occupancy if such certificate is issued during the April1 thru September 30 period; if the certificate is issued during the October 1 thru March 31 period, the planting shall be completed no later than the ensuing May 31; plantings shall thereafter be reasonably maintained, including permanence and health of plant materials to provide a screen to abutting properties and including the absence of weeds and refuse.
14. Backfill directly behind all curbs and along sidewalks and compact to the top of curbs or walk to support vehicle and pedestrian weight without settling.
15. All landscape areas, especially parking lot islands and landscape beds next to buildings shall be excavated of all building materials and poor soils to a depth of twelve inches to eighteen inches (12"-18") and backfilled with good, medium-textured planting soil (loam or light yellow clay loam). Add four inches to six inches (4"-6") of topsoil over the fill material and crown a minimum of six inches (6") above the top of curbs and/or walks after earth settling unless otherwise noted on the landscape plan.
16. Conversion of all asphalt and gravel areas to landscape planting beds shall be done in the following manner: a. Remove all asphalt, gravel, and compacted earth to a depth of six inches to eighteen inches (6"-18") depending on the depth of the sub base and dispose of off site; b. Call the Township for an inspection prior to backfilling; c. Replace excavated material with good, medium-textured planting soil (loam or light yellow clay loam) to a minimum of two inches (2") above the top of the curb and sidewalk, add four inches to six inches (4"-6") of topsoil and crown to a minimum of six inches (6") above the adjacent curb and walk after earth settling, unless otherwise noted on the landscape plan.
    If conversion from asphalt to landscape occurs in or between an existing landscape area(s), replace excavated material from four inches to six inches (4"-6") below adjacent existing grade with good, medium-textured planting soil (loam or light yellow clay loam) and add four inches to six inches (4"-6") of topsoil to meet existing grades after earth settling.
17. Edging shall consist of Ryerson Steel edging or approved equivalent.
18. Elevate the rootballs of Yew shrubs to allow for better drainage.

MATERIAL

1. Required landscape material shall satisfy the criteria of the American Association of Nurserymen Standards for Nursery Stock and be:
    a. Nursery grown;
    b. State Department of Agriculture inspected;
    c. No. 1 grade material with a straight, unscarred trunk, and well-developed uniform crown (park grade trees will not be accepted);
    d. Staked, wrapped, watered, and mulched according to the details provided; and
    e. Guaranteed for one (1) year.
2. Topsoil shall be friable, fertile soil of clay loam character containing at least five percent (5%) but not more than twenty percent (20%) by weight of organic matter with a pH range between 6.0 and 7.0. The topsoil shall be free from clay lumps, coarse sand, plant roots, sticks, and other foreign materials.
3. The seed mixture shall consist of the following types and proportions: Kentucky Blue Grass blend "Baron/Sheri/Adelphi" @ sixty percent (60%), Chewing Fescue @ twenty-five percent (25%), Creeping Red Fescue @ ten percent (10%), and Perennial Rye Grass @ five percent (5%). Weed content shall not exceed one percent (1%). The mix shall be applied at a rate of 200 pounds per acre.
4. Sod shall be two (2) year old "Baron/Sheri/Adelphi" Kentucky Blue Grass blend grown in a sod nursery on loam soil.
5. Proposed perennials shall be full, well-rooted plants.
6. Callery Pear (*Pyrus calleryana*) and Norway Maple (*Acer platanoides*) shall not be substituted for any tree species in the plant list. Contact the Landscape Architect for acceptable plant substitutions.
7. Cobblestone mulch to consist of two inch to four inch (2" - 4") cobbles six inches (6") deep with geotextile fabric beneath and along the sides.

GENERAL

1. Do not plant deciduous or evergreen trees directly over utility lines or under overhead wires. Maintain a six foot (6') distance from the centerline of utilities and twenty feet (20') from the centerline of overhead wires for planting holes. Call MISS DIG forty-eight (48) hours prior to landscape construction for field location of utility lines.
2. The Contractor agrees to guarantee all plant material for a period of one (1) year. At that time, the Owner's representative reserves the right for a final inspection. Plant material with twenty-five percent (25%) die back, as determined by the Owner's representative shall be replaced. This guarantee includes the furnishing of new plants, labor, and materials. These new plants shall also be guaranteed for a period of one (1) year.
3. The work shall consist of providing all necessary materials, labor, equipment, tools, and supervision required for the completion as indicated on the drawings.
4. All landscape areas including parking lot islands shall be irrigated by an automatic underground irrigation system. Lawns and shrub/landscape areas shall be watered by separate zones to minimize overwatering.
5. All written dimensions override scale dimensions on the plans.
6. Report all changes, substitutions, or deletions to the Owner's representative.
7. All bidders must inspect the site and report any discrepancies to the Owner's representative.
8. All specifications are subject to change due to existing conditions.
9. The Owner's representative reserves the right to approve all plant material.

MAINTENANCE OF GENERAL LANDSCAPE AREAS

1. The Owner of the landscaping shall perpetually maintain such landscaping in good condition so as to present a healthy, neat, and orderly appearance, free from refuse and debris.
2. The Owner shall conduct a seasonal landscape maintenance program including regular lawn cutting (at least once per week during the growing season), pruning at appropriate times, watering, and snow removal during winter.
3. The Contractor is responsible for watering and maintenance of all seed areas until a minimum of ninety percent (90%) coverage, as determined by the Owner's representative.
4. All diseased and/or dead material shall be removed within sixty (60) days following notification and shall be replaced within the next appropriate planting season or within one (1) year, whichever comes first.
5. Any debris such as lawn clippings, fallen leaves, fallen limbs, and litter shall be removed from the site on a weekly basis at the appropriate season.
6. All planting beds shall be maintained by removing weeds, fertilizing, and replenishing mulch as needed.
7. Annual beds shall be kept free of weeds and mulched with sphagnum peat of a neutral pH as needed. Perennial beds shall be kept free of weeds and mulched with fine textured shredded bark as needed. Cut spent flower stalks from perennial plants at regular intervals.

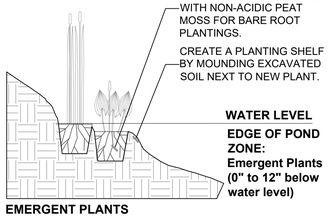
DETENTION POND LANDSCAPE NOTES:

PLANTING:

1. Follow the Supplier's recommended procedures for bed preparation, installation, and soil erosion control measures of the proposed seeded areas. After the plants germinate and begin to grow follow the maintenance guidelines included on this sheet.
2. Rototill four inches (4") of compost or topsoil into the top six inches (6") of the surface of the basin. (Compost may be obtained from the municipal facility at Six Mile and Ridge Roads. Call Onyx Environmental at 248 305-8377 or 248 349-7230 for hours of operation and general information.)
3. Provide a cover crop of annual rye at a rate of ten pounds (10#) per acre and seed oats at a rate of thirty pounds (30#) per acre over the entire area to be seeded.
4. Provide "No Mow" signs around the seeded area according to Canton Township standards.
5. Install barrier / wildlife-deterent fencing around the perimeter of the basin for a period of one (1) year to allow the emergent plantings to become established.
6. Install the emergent plantings around the detention basin after the cover crop has established to avoid damage by waterfowl.

MAINTENANCE OF THE DETENTION AREA

1. ESTABLISHMENT: During the first growing season, the native seed areas should be mowed two (2) to four (4) times to a height of four inches to six inches (4"-6") when the plants reach a height of ten inches to twelve inches (10"-12"). Hand pulling may be needed to control unwanted weed populations. If a mower cannot be set high enough, a string trimmer can be used. During the second growing season, the native seed areas should be mowed a few times to a height of about eight inches (8"), when the plants reach a height of ten inches to eighteen inches (10"-18"). Hand pulling may be needed to control unwanted weed populations. By the second growing season it should be apparent if some areas need reseeding. Long term management includes mowing and hand pulling of weeds. The native planting may be mowed to a short height and the clippings removed in the early Spring before birds begin nesting.
2. WATERING: Watering should be performed as needed. During the establishment period after the initial planting, watering is very important and should be conducted every two to three (2-3) days. The initial planting should be checked regularly for appropriate moisture availability. Two (2) methods for determining adequate moisture levels include the following: a.) if the plants wilt during the day when the temperature is at its highest, but revive during the night, then watering is not necessary, and b.) by testing the soil moisture at a depth of four inches (4") by inserting a small rod into the soil. If the rod is wet, then the soil is moist at a depth of four inches (4") and watering is not necessary.
3. EROSION CONTROL: Provide an erosion control blanket on the side slopes of the seeded areas detention area. The erosion control blanket shall be pegged in place.
4. EDGING: The edge of the detention area should be maintained to avoid grass growing into the detention area. The edge can be maintained with a V-notch cut edge. The channel should be maintained at four inches (4") or greater and renewed every six to eight (6-8) weeks.
5. CUTTING BACK: Tall wildflowers should be cut back by one-third. Early flowering plants can be cut back in late June or early July and late flowering plants in late October.
6. THINNING: After the detention area has become established and thriving, it may be necessary to thin perennials by dividing individual plants in Spring or Fall.
7. REPLACEMENT: Any plants that die or become diseased should be replaced. Plant health should be checked regularly with replanted material occurring in the Spring or Fall.
8. REMOVAL OF LITTER AND DEBRIS: Litter, trash, and debris should be removed on a regular basis to insure that inlets remain free flowing and to keep the area in a neat and attractive appearance.
9. INORGANIC APPLICATIONS: In general, detention areas do not need fertilization as nutrients from surrounding areas is usually at an elevated level. If soil fertility appears to be an issue, the soil should be tested and appropriate actions taken based on the results. Insecticides, herbicides, fungicides, and rodenticides should not be used in the detention area. If a plant is diseased or infested with insects, it should simply be removed and replaced.



POND ZONE PLANTING DETAIL n.t.s.

SEED MIX COMPOSITIONS

WETLAND SEED MIX
MICHIGAN WILDFLOWER FARM
A composition of wildflowers, sedges, and grasses.
Application rate: 3 oz. per 1000sq. ft. or 7 lbs. per acre

BOTANICAL NAME	COMMON NAME
Wildflowers	
Asclepias incarnata	Swamp Milkweed
Aster novae-anglae	New England Aster
Aster puniceus	Swamp Aster
Aster umbellatus	Flat-Top Aster
Eupatorium maculatum	Joe-Pye Weed
Eupatorium perfoliatum	Boneset
Euthamia graminifolia	Grassleaved Goldenrod
Liatris spicata	Marsh Blazing Star
Pedicularis lanceolata	Swamp Betony
Rudbeckia subtomentosa	Sweet Black-Eyed Susan
Silphium serfoliatum	Cupplant
Silphium terebinthinaceum	Prairie Dock
Solidago patula	Swamp Goldenrod
Solidago riddellii	Ridell's Goldenrod
Verbena hastata	Blue Vervain
Vernonia missurica	Ironweed
Veronicastrum virginicum	Culver's Root
Sedges/Grasses	
Andropogon gerardii	Big Bluestem
Carex crinita	Fringed Sedge
Carex stricta	Tussock Sedge
Scirpus cyperinus	Wool Grass
Scirpus atrovirens	Bulrush

WETLAND SEED MIX

CUSTOM SHORT GRASS SEED MIX
MICHIGAN WILDFLOWER FARM
Fifty percent (50%) Forbs/Fifty percent (50%) Grass.
Application rate: 5 oz. per 1000 sq. ft. or 10 lbs. per acre

BOTANICAL NAME	COMMON NAME
Wildflowers	
Achillea millefolium	Yarrow
Aquilegia canadensis	Wild Columbine
Asclepias tuberosa	Butterflyweed
Aster laevis	Smooth Aster
Coreopsis lanceolata	Sand Tickseed
Echinacea purpurea	Purple Coneflower
Kuhnia eupatoroides	False Boneset
Monarda fistulosa	Bergamot
Penstemon digitalis	Fokglove Beardstongue
Rudbeckia hirta	Black-Eyed Susan
Solidago speciosa	Showy Goldenrod
Sedges/Grasses	
Schzachyrium scoparius	Little Bluestem
Bouteloua curtipendula	Side Oats Grama
Koeleria pyramidata	June Grass*
Sporobolus heterolepsis	Prairie Dropseed*

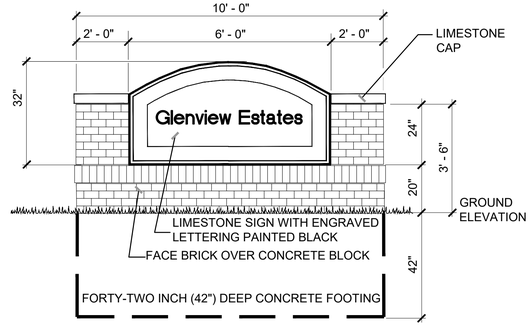
* Supplier to add these species to the mix.

CUSTOM SHORT GRASS SEED MIX

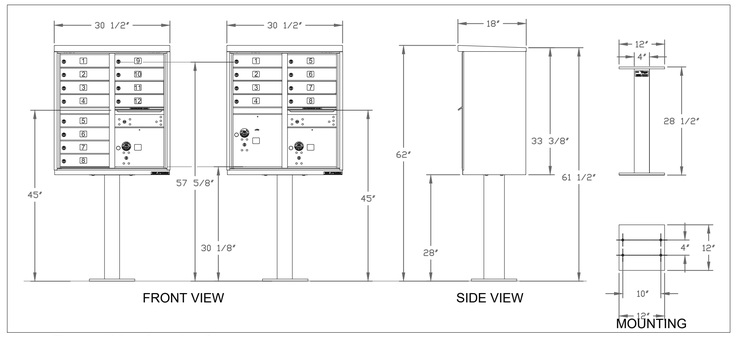
WILDLIFE HABITAT SEED MIX
MICHIGAN WILDFLOWER FARM
Twenty percent (20%) Forbs/Eighty percent (80%) Grass. Application rate: 5 oz. per 1000 sq. ft. or ten pounds (10#) per acre.

BOTANICAL NAME	COMMON NAME
Forbs	
Achillea millefolium	Yarrow
Asclepias syriaca	Common Milkweed
Aster novae-angliae	New England Aster
Aster pilosus	Hairy Aster
Coreopsis lanceolata	Sand Tickseed
Echinacea purpurea	Purple Coneflower
Monarda fistulosa	Wild Bergamot
Oenothera biennis	Common Evening Primrose
Ratibida pinnata	Yellow Coneflower
Rudbeckia hirta	Black-Eyed Susan
Silphium integrifolium	Rosin Weed
Solidago rigida	Stiff Goldenrod
Sedges/Grasses	
Andropogon gerardii	Big Bluestem
Bouteloua curtipendula	Side Oats Grama
Schzachyrium scoparius	Little Bluestem
Sorgastrum nutans	Indian Grass

MICHIGAN WILDFLOWER FARM
11770 Cutler Road
Portland, Michigan 48875-9452
Phone: (517) 647 6010 Fax: (517) 647 6072

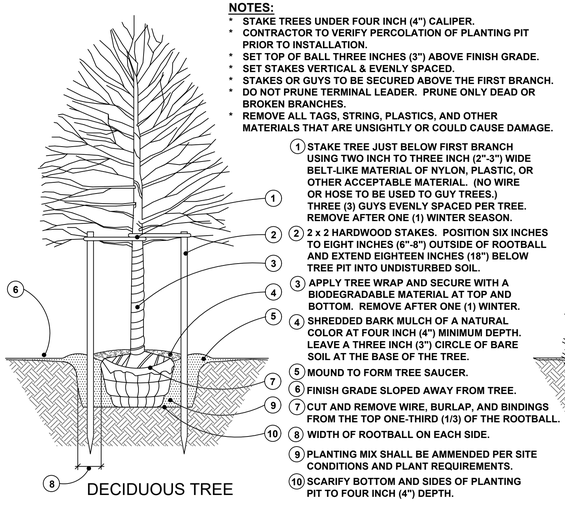


LIMESTONE ENTRY SIGN DETAIL not to scale

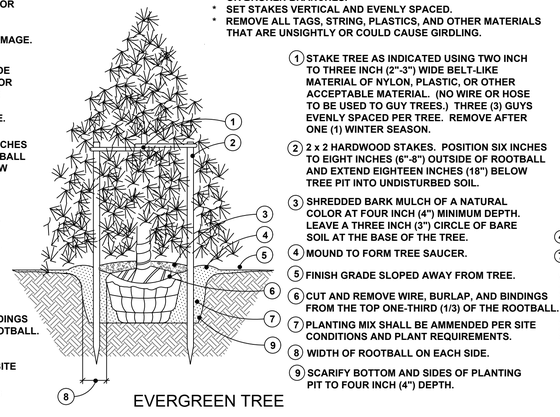


Florence Manufacturing Company
VITAL Cluster Box Unit - 1570-8V2FG with finial cap and column pedestal cover and Beige finish.
Mailbox cluster shall be mounted on a five foot by three foot (5' x 3') concrete pedestal.

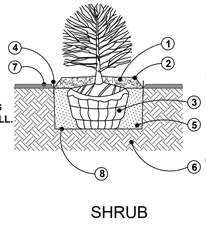
MAILBOX CLUSTER DETAIL not to scale



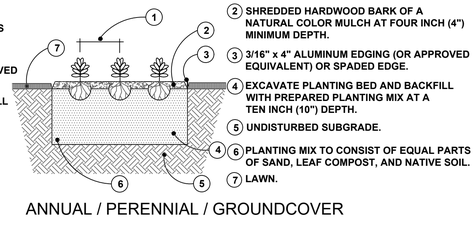
DECIDUOUS TREE



EVERGREEN TREE



SHRUB



ANNUAL / PERENNIAL / GROUNDCOVER

GENERAL NOTES FOR ALL PLANTINGS:
* DO NOT CUT CENTRAL LEADER.
* REMOVE ALL TAGS, STRINGS,PLASTICS, AND ANY OTHER NON-BIODEGRADABLE MATERIALS (EXCEPT LABEL FOR PLANT NAME) FROM PLANT STEMS OR CROWN WHICH ARE UNSIGHTLY OR COULD CAUSE GIRDLING.
* PLANTS SHALL BEAR THE SAME RELATION TO FINISH GRADE AS IT BORE TO THE PREVIOUS GRADE IN THE NURSERY. SET THE BASE OF THE PLANT SLIGHTLY HIGHER THAN EXISTING GRADE IF PLANTING IN CLAY SOILS.
* CENTER THE ROOTBALL IN THE PLANTING HOLE. LEAVE THE BOTTOM OF THE PLANTING HOLE FIRM. USE WATER TO SETTLE THE PLANTING MIX AND REMOVE ANY AIR POCKETS AND FIRMLY SET THE TREE OR SHRUB. GENTLY TAMP IF NEEDED.

PLANTING DETAILS not to scale

NOTES:
* See Sheet LP - 1: LANDSCAPE PLANTING PLAN for overall planting plan, plant list, cost estimate, a chart for the variety of sizes for landscape plant materials, and calculations for landscape requirements.
* See Sheet LP - 3: TREE PRESERVATION PLAN for tree inventory list, proposed action for existing trees, summary of tree totals, and tree protection detail.

date: January 31, 2025 PSP Submittal
revised:

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

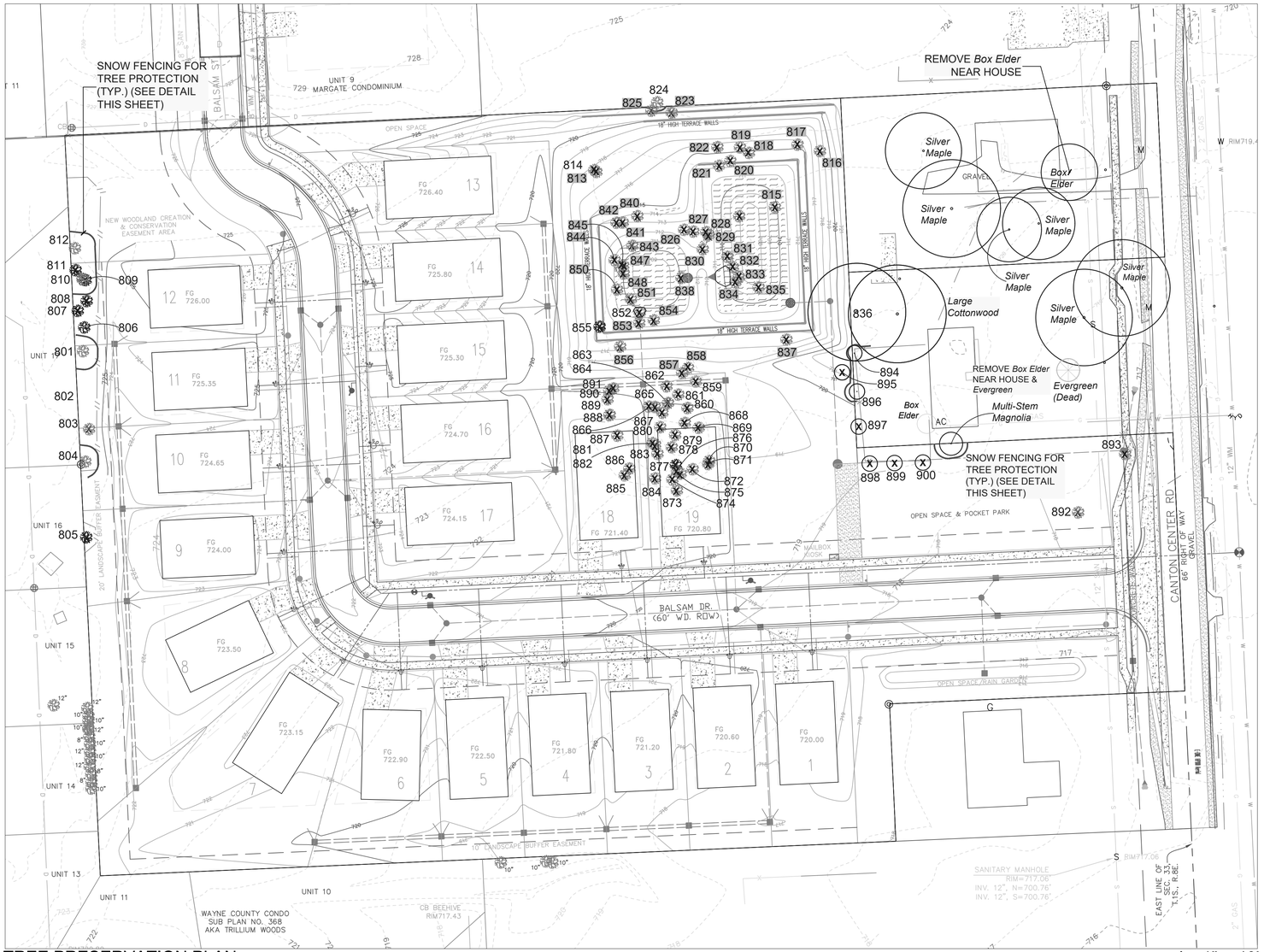
LANDSCAPE PLAN FOR:
Mr. Leo Gonzalez
CRS-Commercial Real Estate Services
550 Forest Avenue
Plymouth, Michigan 48152
(734) 846-8045

PROJECT LOCATION:
Glenview Estates
9133 Canton Center Road
Plymouth Township, Michigan

LANDSCAPE PLAN BY:
Nagy Devlin Land Design, L.L.C.
31736 West Chicago Avenue
Livonia, Michigan 48150
(734) 634-9208
R.L.A. State of Michigan #1260

STATE OF MICHIGAN J. BRIAN DEVLIN NO.1260 REGISTERED LANDSCAPE ARCHITECT
J. Brian Devlin AUTOCAD SIGNATURE ORIGINAL IN BLUE

LP - 2: LANDSCAPE NOTES & DETAILS



TREE PRESERVATION PLAN scale: 1" = 40'

TREE INVENTORY LIST

NO.	SIZE	BOTANICAL NAME	COMMON NAME	CONDITION	ACTION
801	27"	*Platanus occidentalis*	American Sycamore	Fair Slight L	Save
802	13"	*Morus sp.*	Mulberry	Poor DL, OS, W	Off Site
803	9"	*Morus sp.*	Mulberry	Poor M, OS, W, VGr	Remove*
804	10"	*Juglans nigra*	Black Walnut	Fair/Poor OS	Save
810	26"	*Platanus occidentalis*	American Sycamore	Fair	Save
812	7",10",11",15"	*Morus sp.*	Mulberry	Poor BD, DL, SS	Save
813	14"	*Populus deltoides*	Cottonwood	Fair	Remove*
815	8"	*Acer saccharinum*	Silver Maple	Fair/Poor VGr	Remove*
816	37"	*Acer negundo*	Box Elder	Fair/Poor DL	Remove*
817	48",58"	*Acer negundo*	Box Elder	Poor BD, DL, LV	Remove*
818	19"	*Acer negundo*	Box Elder	V. Poor Maj. BD, L	Remove*
819	23",28"	*Acer negundo*	Box Elder	Poor BD, DL, SS	Remove*
820	15"	*Acer negundo*	Box Elder	Very Poor Maj. BR	Remove*
821	32"	*Acer negundo*	Box Elder	Dead Stem only	Remove*
822	16"	*Acer negundo*	Box Elder	Poor L, VOrBitGr	Remove*
823	14",16",19"	*Acer negundo*	Box Elder	Poor BR, DL, L	Remove*
825	10",14",19",22"	*Acer negundo*	Box Elder	V. Poor MDLs	Remove*
826	14",17"	*Acer negundo*	Box Elder	Poor BD, DL	Remove*
827	12"	*Acer negundo*	Box Elder	Poor DL, NC	Remove*
828	15"	*Acer negundo*	Box Elder	Fair/ Poor Sl. L	Remove*
829	8",15"	*Acer negundo*	Box Elder	Poor DL, M, NC	Remove*
830	6", 12"	*Acer negundo*	Box Elder	Poor Many DL	Remove*
831	14",18",20"	*Acer saccharinum*	Silver Maple	Fair	Remove*
832	10",14",15"	*Acer negundo*	Box Elder	Poor Many DL, L	Remove*
833	38"	*Populus deltoides*	Cottonwood	Fair	Remove*
834	18"	*Acer negundo*	Box Elder	Poor Sev. L, DL	Remove*
835	15",18"	*Acer negundo*	Box Elder	Poor BD, DL	Remove*
837	14"	*Populus deltoides*	Cottonwood	Fair/Poor L	Remove*
838	28"	*Acer negundo*	Box Elder	Poor BD, DL, L, VGr	Remove*
840	8"	*Acer negundo*	Box Elder	Dead	Remove*
841	14"	*Acer negundo*	Box Elder	V. Poor MDL, L VGr	Remove*
842	6",13",20"	*Acer negundo*	Box Elder	Poor Tot VC Gr, DL	Remove*
843	8"	*Acer negundo*	Box Elder	V. Poor MBD, DL, M	Remove*
844	8",10"	*Acer negundo*	Box Elder	V. Poor Tot. VC Gr	Remove*
845	8"	*Acer negundo*	Box Elder	Poor OS, VC Gr	Remove*
847	10"	*Acer negundo*	Box Elder	Poor OS, Vines Gr	Remove*
848	3",8"	*Acer negundo*	Box Elder	Fair	Remove*
850	10"	*Acer negundo*	Box Elder	Poor BR, L, VGr	Remove*
851	15", 17"	*Ulmus pumila*	Siberian Elm	Poor Many DL, VGr	Remove*

SUBTOTALS: Total: 39 Save: 4 Remove: 0 Remove*: 34 Off Site: 1

NO.	SIZE	BOTANICAL NAME	COMMON NAME	CONDITION	ACTION
853	12"	*Acer negundo*	Box Elder	V. Poor L, DL, OS	Remove*
854	15",23"	*Acer negundo*	Box Elder	Fair/Poor DL	Remove*
856	11"	*Morus sp.*	Mulberry	Poor DL, OS, VGr	Remove*
857	15"	*Acer negundo*	Box Elder	Poor MDL, BD, DL	Remove*
858	13"	*Acer negundo*	Box Elder	Fair/Poor Sl. L	Remove*
859	12",17"	*Acer negundo*	Box Elder	Poor BD, DL, L	Remove*
860	9",17"	*Ulmus pumila*	Siberian Elm	V. Poor Many DL	Remove*
861	16"	*Morus sp.*	Mulberry	Poor Many DL, BD	Remove*
862	3",15"	*Acer negundo*	Box Elder	Poor MDL, DL, L	Remove*
863	17"	*Acer negundo*	Box Elder	Fair/Poor L	Remove*
864	11",11"	*Acer negundo*	Box Elder	Poor DL, L	Remove*
865	12"	*Acer negundo*	Box Elder	Poor Sev. L, OS	Remove*
866	9"	*Acer negundo*	Box Elder	V. Poor Ex. L, DL, OS	Remove*
867	8"	*Acer negundo*	Box Elder	Poor DL, NC	Remove*
869	12"	*Ulmus pumila*	Siberian Elm	V. Poor MBD, DL, OS	Remove*
870	6",8"	*Ulmus pumila*	Siberian Elm	Poor DL, OS	Remove*
873	6",9"	*Ulmus pumila*	Siberian Elm	Poor Many DL, L	Remove*
874	11"	*Ulmus pumila*	Siberian Elm	Poor BD, DL	Remove*
875	10"	*Ulmus pumila*	Siberian Elm	V. Poor MBD, DL, L	Remove*
876	10"	*Ulmus pumila*	Siberian Elm	Poor BD, DL	Remove*
878	21"	*Ulmus pumila*	Siberian Elm	Fair/Poor Sl. L	Remove*
879	12"	*Ulmus pumila*	Siberian Elm	Poor DL, NC	Remove*
880	4",8"	*Acer negundo*	Box Elder	Poor BD, DL	Remove*
881	24"	*Ulmus pumila*	Siberian Elm	Poor SS, DL	Remove*
882	25"	*Ulmus pumila*	Siberian Elm	Poor Many DL	Remove*
883	21"	*Ulmus pumila*	Siberian Elm	Poor BD, DL	Remove*
884	21"	*Acer negundo*	Box Elder	V. Poor Ext. L, DL	Remove*
887	7",9"	*Ulmus pumila*	Siberian Elm	Poor BD, DL	Remove*
889	24"	*Populus deltoides*	Cottonwood	Fair	Remove*
890	8"	*Ulmus pumila*	Siberian Elm	Poor BD, DL	Remove*
892	MS (7) 9"-15"	*Malus sp.*	Crabapple	Poor BD, DL, SS	Remove*
893	5",7",8"	*Acer negundo*	Box Elder	Poor BD, DL, L	Remove*
894	24"	*Acer negundo*	Box Elder	Fair	Save
895	8",10",10"	*Acer negundo*	Box Elder	Poor Sev. L, OS	Remove*
896	16",17",24"	*Acer negundo*	Box Elder	Fair/Poor	Save
897	12",18",28"	*Acer negundo*	Box Elder	V. Poor Many DL	Remove*
898	10"	*Morus sp.*	Mulberry	Fair	Remove*
899	5",7",8"	*Acer negundo*	Box Elder	Poor BR, DL	Remove*
900	6",8"	*Morus sp.*	Mulberry	Fair	Remove*

SUBTOTALS: Total: 39 Save: 2 Remove: 0 Remove*: 37

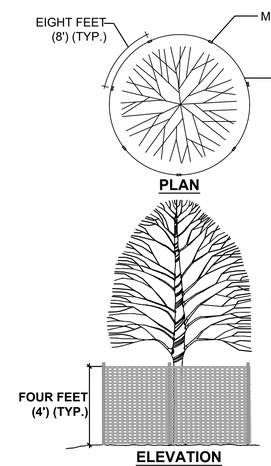
DEFINITIONS OF RATINGS

- GOOD: The tree appears to be in a healthy and satisfactory condition with an overall sound stem structure and with a full and balanced crown; the growth habit appears normal; there is no indication of pests or diseases present; and the life expectancy is judged to be greater than twenty-five (25) years. The rating based on the health / condition chart ranges from 30 to 24.
- FAIR: The tree appears to be in a healthy and satisfactory condition with a minimum of structural problems and with minor crown imbalance or thin crown; the growth habit appears normal; there is no indication of pests or diseases present; and the life expectancy is judged to be greater than twenty (20) years. The rating based on the health / condition chart ranges from 23 to 16.
- POOR: The tree appears to be in an unhealthy condition with structural problems and with major crown imbalance, dead or dying limbs, or growth only in the top quarter of the tree; the growth habit is misshapen and askew; there is evidence of pests or diseases present; and the life expectancy is judged to be less than ten (10) years. The rating based on the health / condition chart ranges from 15 to 7.
- VERY POOR (V. Poor): The tree appears to be in an unhealthy condition with major structural problems and with major crown imbalance or several dead limbs and/or peeling bark; the growth habit is severely misshapen and askew; there is evidence of pests or diseases present; and the life expectancy is judged to be less than five (5) years. The rating based on the health / condition chart ranges from 6 to 1.
- DEAD: The tree has no live branches, is topped, or has fallen. The rating based on the health / condition chart is 0.

ABBREVIATIONS

BD - Bark damage; BR - Base rot; DL - Dead limbs;
L - Leaning; LV - Lacks vigor; M - Misshapened;
NC - Narrow crown; OS - One-sided growth; SS - Stem split;
TR - Trunk rot; VC - Vine covered; V - Vines: Gr - Grapevine,
W - Weeping fluid from trunk or limb; M - Major;
MS - Multiple Stems (no.); Sev. - Severe; Sl. - Slight

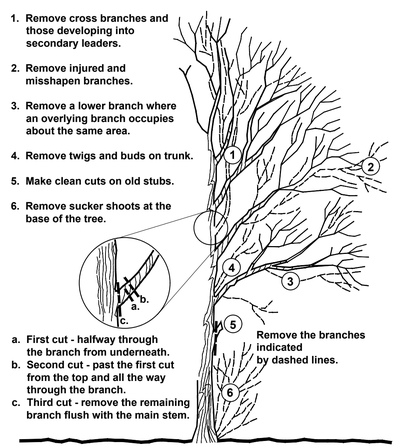
NOTES:
* See Sheet LP - 1: LANDSCAPE PLANTING PLAN for overall planting plan, plant list, cost estimate, and calculations for landscape requirements.
* See Sheet LP - 2: LANDSCAPE NOTES & DETAILS for landscape development notes, landscape planting details, detention pond notes and seed mix compositions, and detail for proper pruning techniques.



NOTES:

1. ORANGE PLASTIC 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 EIGHT FEET (8') 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 TOWNSHIP.
4. FENCING SHALL BE ERECTED PRIOR TO CONSTRUCTION. THE TWP. SHALL BE NOTIFIED ONCE THE FENCING IS INSTALLED FOR INSPECTION.
5. UNDER NO CIRCUMSTANCES SHALL THE PROTECTIVE FENCING BEREMOVED WITHOUT PROPER APPROVAL FROM THE TOWNSHIP.
6. NO PERSON SHALL CONDUCT ANY ACTIVITY WITHIN THE AREAS PROPOSED TO REMAIN. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO:
   a. NO SOLVENTS OR CHEMICALS WITHIN THE PROTECTED AREA;
   b. NO BUILDING MATERIALS OR CONSTRUCTION EQUIPMENT WITHIN THE PROTECTED AREA;
   c. NO GRADE CHANGES OR FILL WITHIN THE PROTECTED AREA;
   d. NO REMOVAL OF VEGETATION FROM THE GROUND UP;
   e. ANY PROPOSED SWALES MUST BE DIRECTED AROUND THE PROTECTED AREA OR HAND DUG WITHIN THE PROTECTED AREA.
7. ADJACENT REGULATED TREES MUST ALSO BE PROTECTED.

TREE PROTECTION DETAIL not to scale



PRUNING DETAIL not to scale

TREE SUMMARY

COLUMN 1:	Save:	4	Remove:	0 @ 0"	Remove*:	34	Off Site: 1
COLUMN 2:	Save:	2	Remove:	0 @ 0"	Remove*:	37	Off Site: 0
TOTAL:	Save:	6	Remove:	0 @ 0"	Remove*:	71	Off Site: 1

TOTALS

Total trees surveyed:	78
Save: Trees to be saved	6
Remove: Trees to be removed with replacement required	0
Remove*: Trees to be removed with replacement not required due to classification as an undesirable species (as listed on the chart in Section 26.7.1.c. of the Township Zoning Ordinance)	71
Off Site: Trees on adjacent property	1

Replacements required:
No regulated trees to be removed, therefore, zero (0) replacement trees required.

40' 0' 40' 80' 120' north
scale: 1" = 40'

date: January 31, 2025 PSP Submittal
revised:

Know what's below. Call before you dig.

LANDSCAPE PLAN FOR:
Mr. Leo Gonzalez
CRS-Commercial Real Estate Services
550 Forest Avenue
Plymouth, Michigan 48152
(734) 846-8045

PROJECT LOCATION:
Glenview Estates
9133 Canton Center Road
Plymouth Township, Michigan

LANDSCAPE PLAN BY:
Nagy Devlin Land Design, L.L.C.
31736 West Chicago Avenue
Livonia, Michigan 48150
(734) 634-9208
R.L.A. State of Michigan #1260

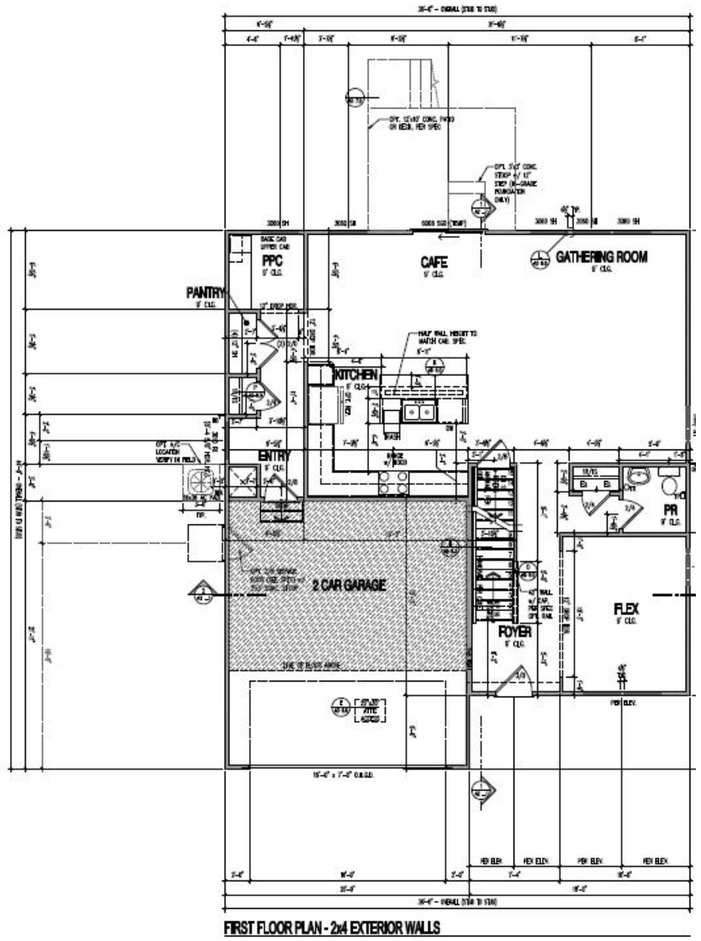
STATE OF MICHIGAN J. BRIAN DEVLIN NO.1260 REGISTERED LANDSCAPE ARCHITECT

J. Brian Devlin AUTOCAD SIGNATURE ORIGINAL IN BLUE

LP - 3: TREE PRESERVATION PLAN

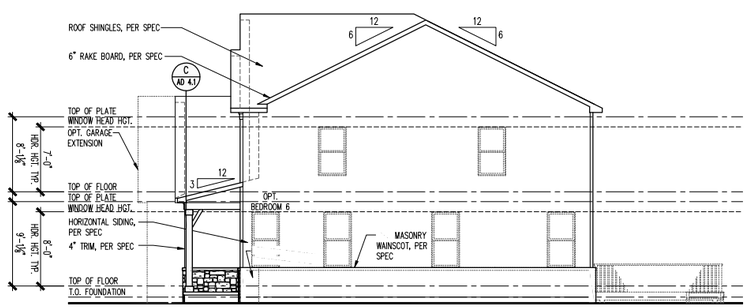
* Base data provided by Zeimet Wozniak & Associates.

The elevations are conceptual.
First floor masory will be provided on the
front, rear, and sides of each house to
meet the 40% masonry requirement. Masonry will not
extend above the first floor.



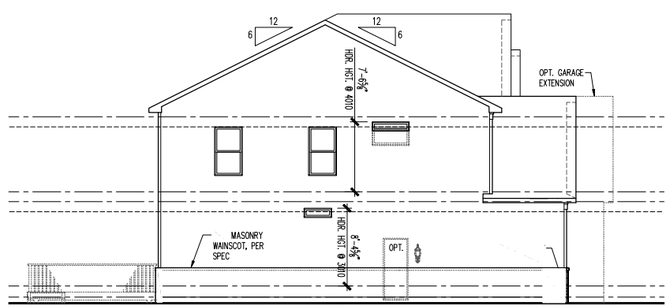
FIRST FLOOR PLAN - 2x4 EXTERIOR WALLS

FRONT ELEVATION
SCALE: 1/4" = 1'-0"



RIGHT ELEVATION
SCALE: 1/8" = 1'-0"

REAR ELEVATION
SCALE: 1/8" = 1'-0"



LEFT ELEVATION
SCALE: 1/8" = 1'-0"

PulteGroup

Farmhouse 201
2 Car Front Entry
Front, Side and Rear Elevations, Roof Plan and Ventilation Schedule

PRODUCTION MANAGER
Rick Starkey
INITIAL RELEASE DATE:
01/31/2022
CURRENT RELEASE DATE:
01/31/2022

REV # | DATE / DESCRIPTION

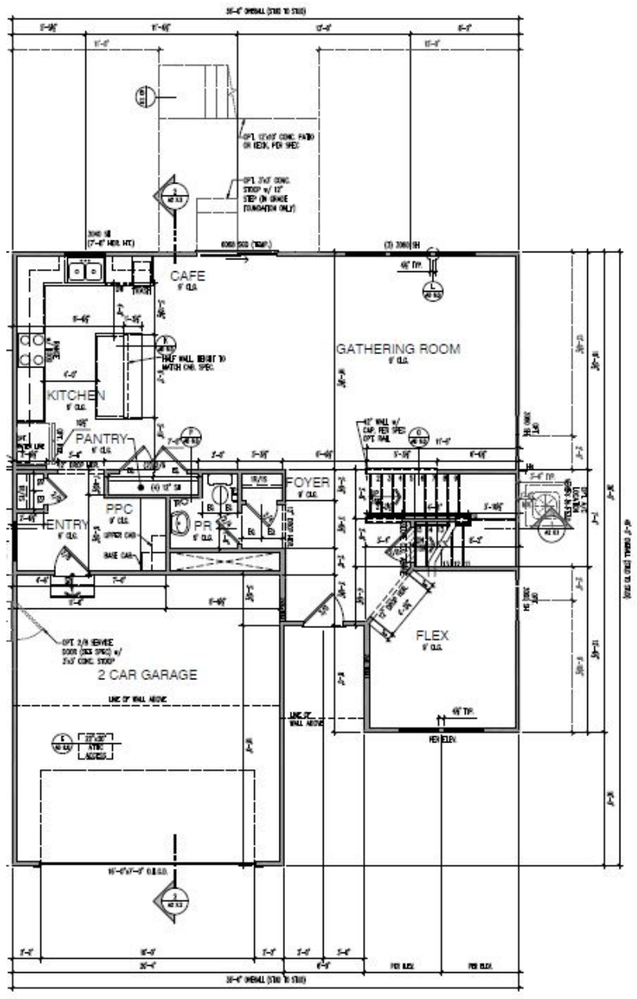
GARAGE HANDING
GARAGE LEFT

PLAN NAME
MERCER
NPC PLAN NUMBER
1385.301
LAWSON PLAN ID
-

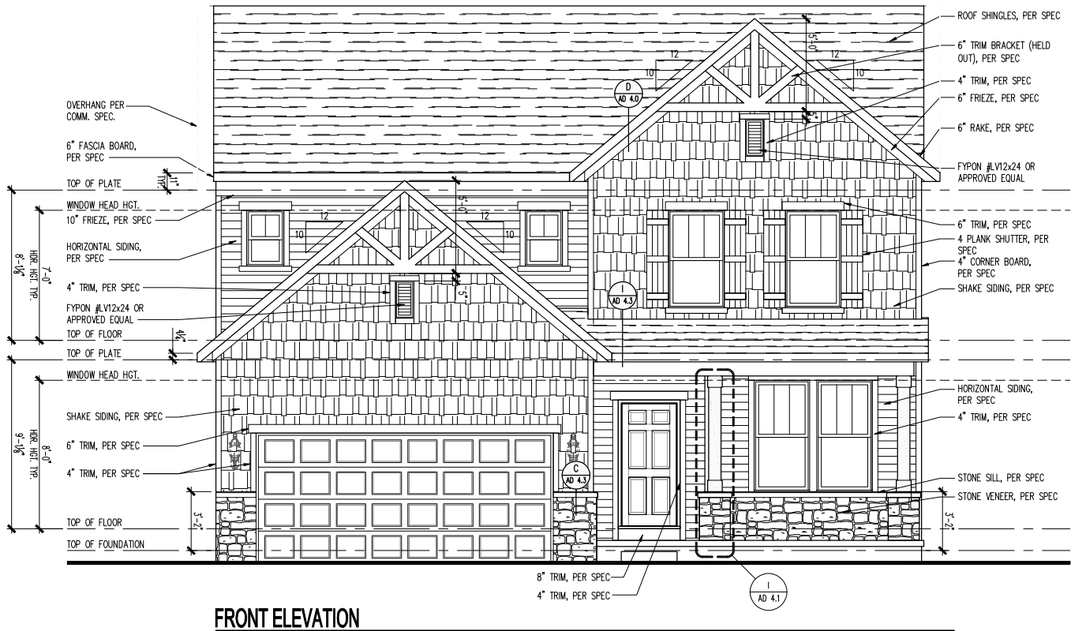
SHEET
A3-FH201
2FB.1

NOTE: SCALES NOTED ON DRAWINGS RELATE TO FULL SIZE PLOTS ON 22x34 SHEETS – 11x17 SHEETS REPRESENT 1/2 SCALE PLOTS

PLOTTED: February 1, 2022 / Tiffany Yost / A3-FH201 2FB.1.DWG

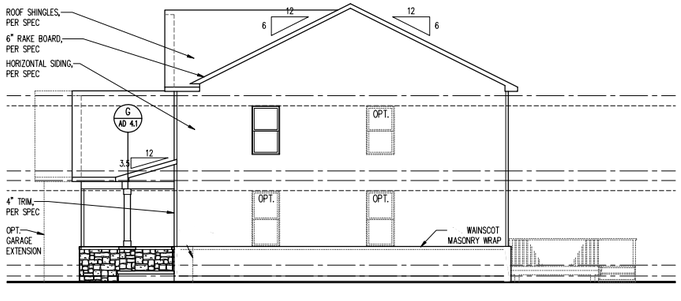


The elevations are conceptual.
First floor masory will be provided on the
front, rear, and sides of each house to
meet the 40% masonry requirement. Masonry will not
extend above the first floor.

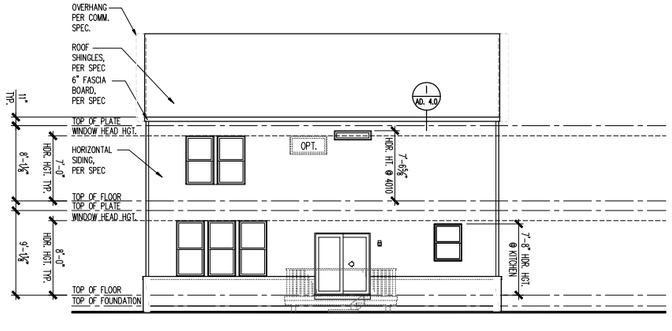


FRONT ELEVATION
SCALE: 1/4" = 1'-0"

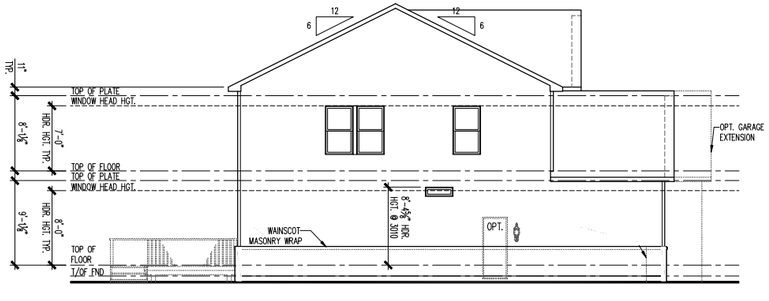
FIRST FLOOR PLAN - 2x4 EXTERIOR WALLS



RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



REAR ELEVATION
SCALE: 1/8" = 1'-0"



LEFT ELEVATION
SCALE: 1/8" = 1'-0"

PulteGroup

NC201
2 Car Front Entry
Front, Side and Rear Elevations, Roof Plan and Ventilation Schedule

PRODUCTION MANAGER
Rick Storkey
INITIAL RELEASE DATE:
01/31/2022
CURRENT RELEASE DATE:
01/31/2022

REV #	DATE / DESCRIPTION

GARAGE HANDING
GARAGE LEFT

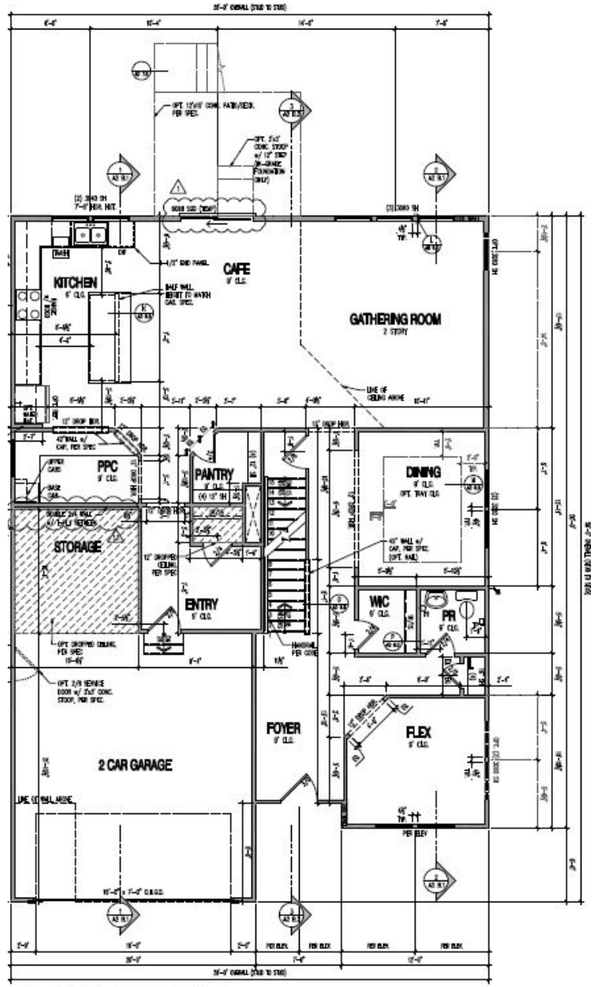
PLAN NAME
NEWBERRY
NPC PLAN NUMBER
1918.301
LAWSON PLAN ID
–

SHEET
A3-NC201
2FB.1

NOTE: SCALES NOTED ON DRAWINGS RELATE TO FULL SIZE PLOTS ON 22x34 SHEETS – 11x17 SHEETS REPRESENT 1/2 SCALE PLOTS

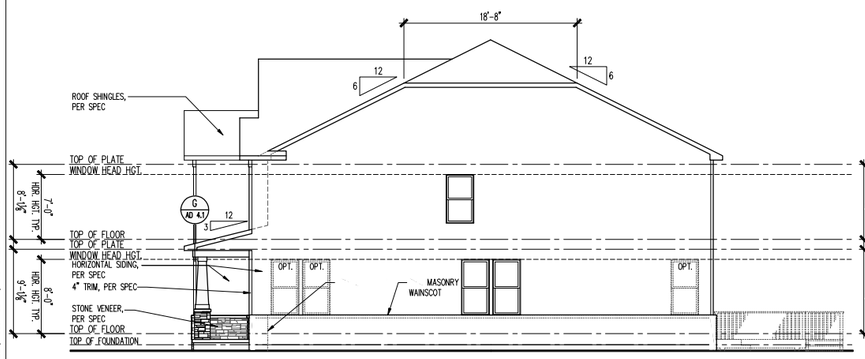
PLOTTED: February 17, 2022 / User-893 / A3-NC201 2FB1.DWG

The elevations are conceptual.
First floor masory will be provided on the front, rear, and sides of each house to meet the 40% requirement. Masonry will not extend above the first floor.

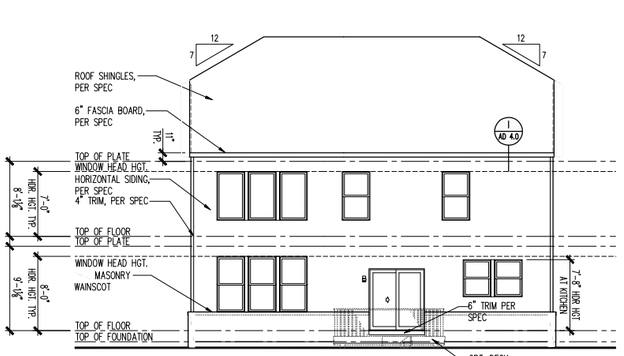


FIRST FLOOR PLAN - 2x4 EXTERIOR WALLS

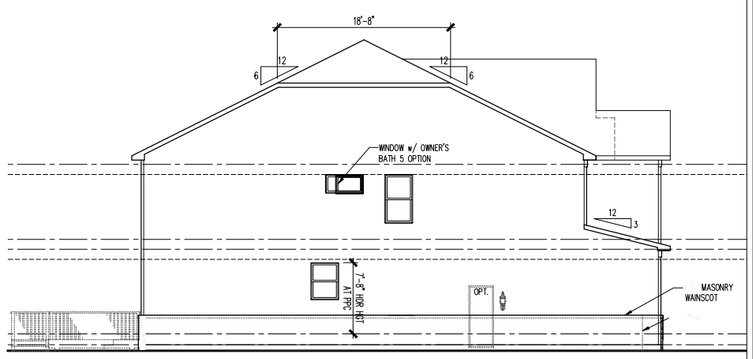
FRONT ELEVATION
SCALE: 1/4" = 1'-0"



RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



REAR ELEVATION
SCALE: 1/8" = 1'-0"



LEFT ELEVATION
SCALE: 1/8" = 1'-0"

PulteGroup

CR201
2 Car Front Entry
Front, Side, and Rear Elevations, Roof Plan and Ventilation Schedule

PRODUCTION MANAGER
Rick Starkey
INITIAL RELEASE DATE:
01/31/2022
CURRENT RELEASE DATE:
01/31/2022

REV #	DATE / DESCRIPTION

GARAGE HANDING
GARAGE LEFT

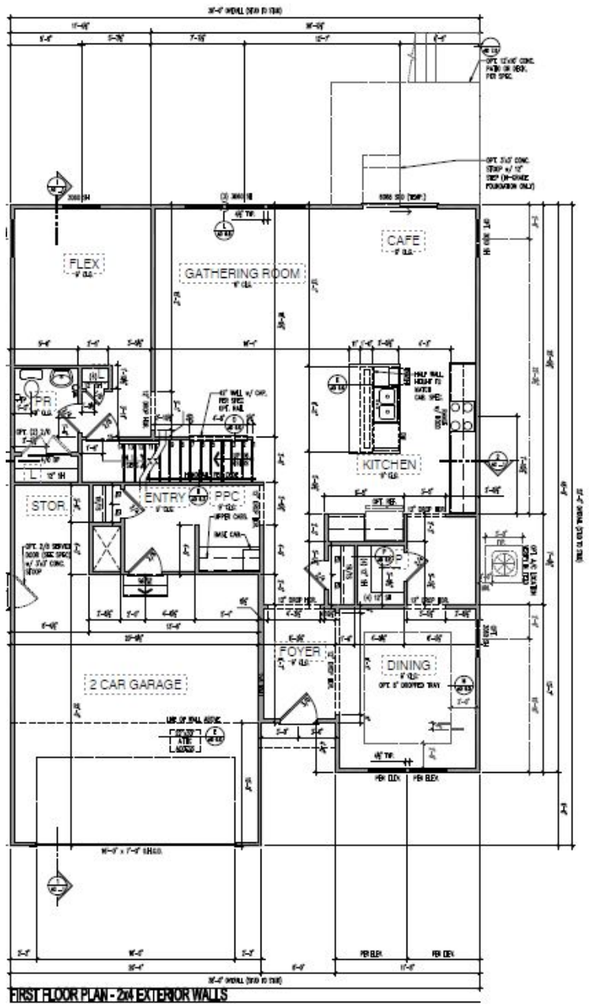
PLAN NAME
WAVERLY
NPC PLAN NUMBER
1590.301
LAWSON F AN ID
-

SHEET
A3-CR201
2FB.1

NOTE: SCALES NOTED ON DRAWINGS RELATE TO FULL SIZE PLOTS ON 22x34 SHEETS — 11x17 SHEETS REPRESENT 1/2 SCALE PLOTS

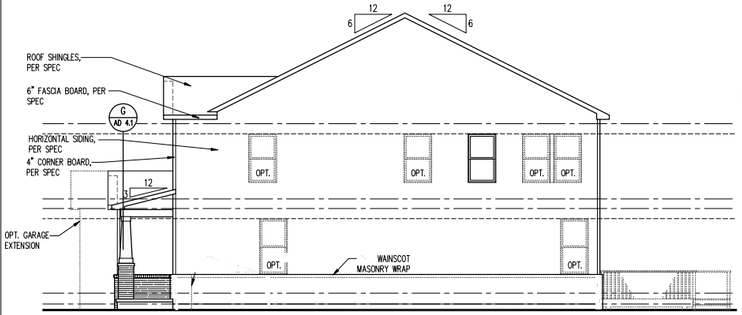
PLOTTED: February 18, 2022 / User: 694 / A3-CR201 2FB1.DWG

The elevations are conceptual.
First floor masory will be provided on the front, rear, and sides of each house to meet the 40% masonry requirement. Masonry will not extend above the first floor.

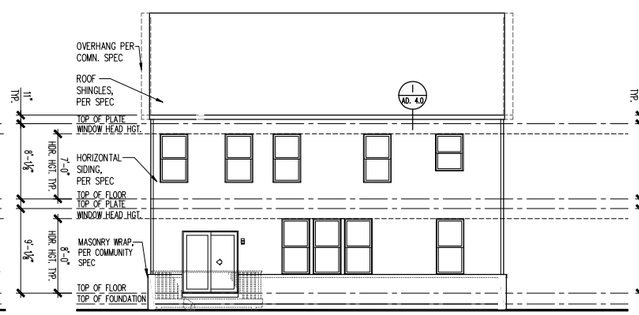


FIRST FLOOR PLAN - 2X4 EXTERIOR WALLS

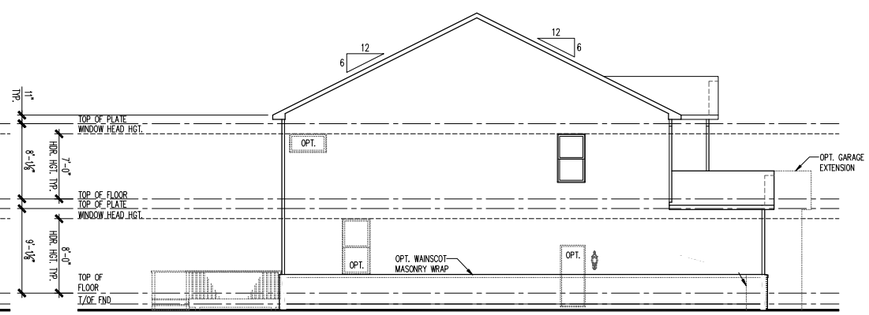
FRONT ELEVATION
SCALE: 1/4" = 1'-0"



RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



REAR ELEVATION
SCALE: 1/8" = 1'-0"



LEFT ELEVATION
SCALE: 1/8" = 1'-0"

PulteGroup

CR201
2 Car Front Entry
Front, Side and Rear Elevations, Roof Plan and Ventilation Schedule

PRODUCTION MANAGER
Rick Starkey
INITIAL RELEASE DATE:
01/31/2022
CURRENT RELEASE DATE:
01/31/2022

REV # | DATE / DESCRIPTION

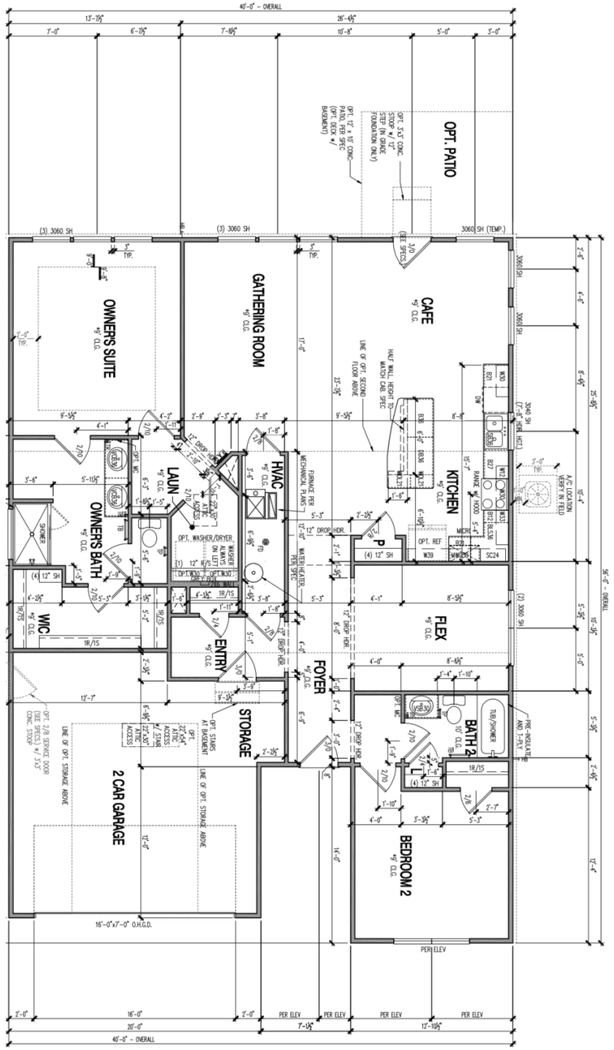
GARAGE HANDING
GARAGE LEFT

PLAN NAME
CONTINENTAL
NPC PLAN NUMBER
1917.301
LAWSON PLAN ID
-

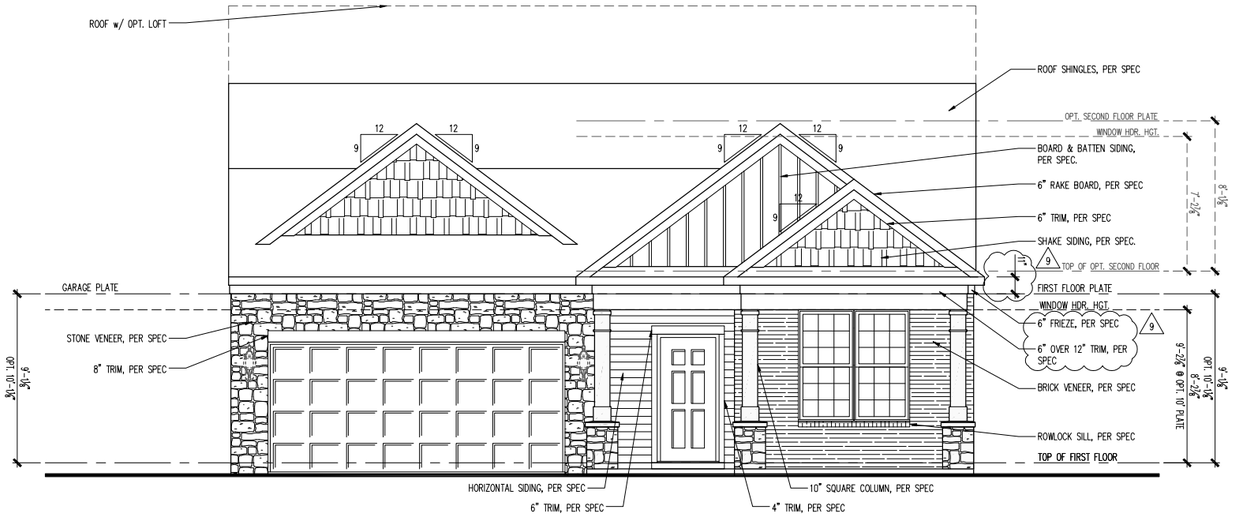
SHEET
A3-CR201
2FB.1

NOTE: SCALES NOTED ON DRAWINGS RELATE TO FULL SIZE PLOTS ON 22x34 SHEETS – 11x17 SHEETS REPRESENT 1/2 SCALE PLOTS

PLOTTED: February 15, 2022 / Thao Le Truong Phuong / A3-CR201 2FB1.DWG



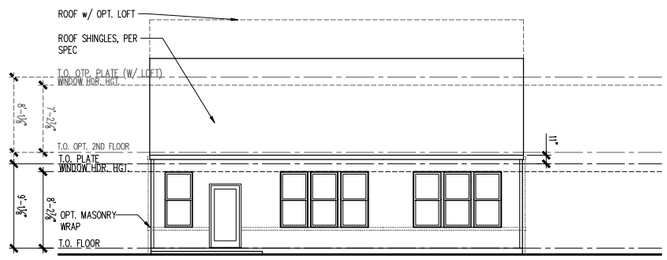
First Floor Plan



FRONT ELEVATION

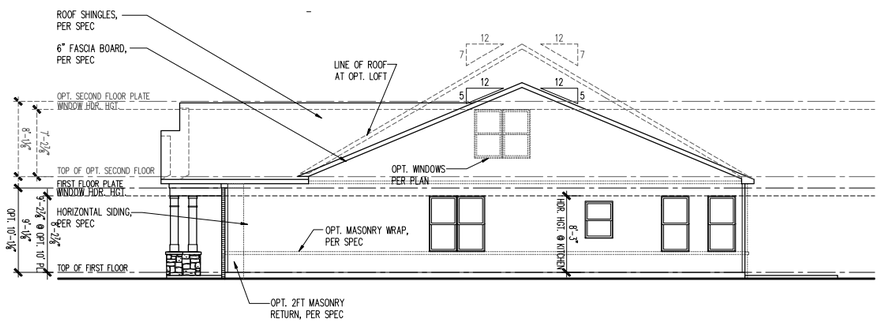
SCALE: 1/4" = 1'-0"

The elevations are conceptual.
First floor masory will be provided on the front, rear, and sides of each house to meet the required 40%. Masonry will not extend above the first floor.



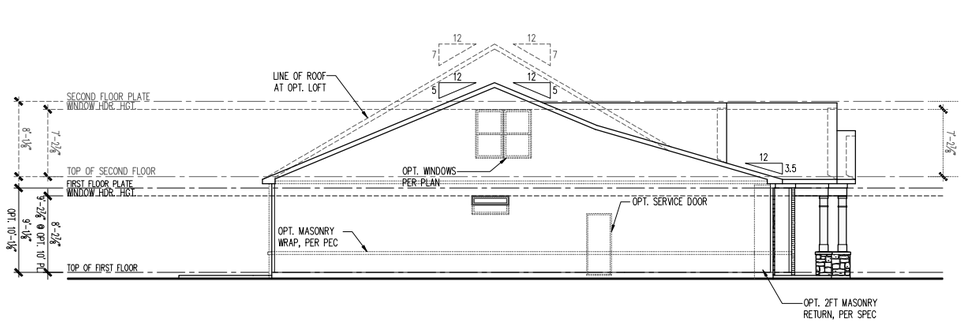
REAR ELEVATION

SCALE: 1/8" = 1'-0"



RIGHT ELEVATION

SCALE: 1/8" = 1'-0"



LEFT ELEVATION

SCALE: 1/8" = 1'-0"

Midwest Zone Office
1900 Golf Road - Suite 300
Schaumburg, Illinois 60173

PULTE GROUP

ELEVATION 14 - SLAB
2 CAR FRONT ENTRY
FRONT, SIDE AND REAR ELEVATIONS, ROOF PLAN AND VENTILATION SCHEDULE

PRODUCT MANAGER
Rick Starkey
INITIAL RELEASE
DATE: 03/07/2014

REV#	DATE/DESCRIPTION
1	04/28/2023 REVISIONS
2	08/04/2023 PCR UPDATES
3	04/12/2024 PCR REVISIONS
4	.
5	.
6	.
7	.

PROJECT TYPE
Single Family

SPECIFICATION LEVEL
—

PLAN NAME
Abbeyville
NPC CHILD NUMBER
1559.300

SHEET
A3 14-2FS.1

PLOTTED March 29, 2024 / 710583 / A3 14-2FS.1 ELEVATION 14-SLAB.dwg