CAMDEN CROSSING

9.36 ACRE DEVELOPMENT
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

PRELIMINARY SITE PLAN

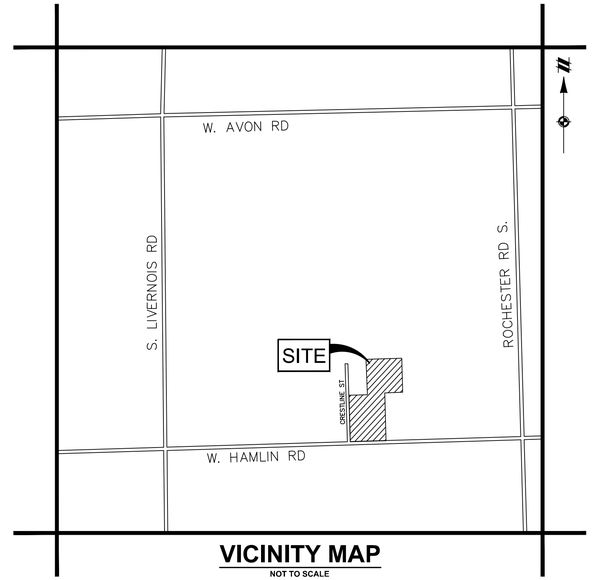
Site Plan Review

Reviewed for compliance to the City Ordinance, Building and Fire Codes

Department	Reviewer	Approved
Planning	Kristen Kapelanski 248-841-2772 KapelanskiK@RochesterHills.org	Yes
Building	Mark Artinian 248-841-2446 ArtinianM@RochesterHills.org	Yes
Engineering	Jason Boughton 248-841-2490 BoughtonJ@RochesterHills.org	Yes
Traffic	Lt. Ann Echols 248-841-2701 EcholsA@RochesterHills.org	Yes
Nat. Resources	Matt Einheuser 248-841-2551 EinheuserM@RochesterHills.org	Yes
Fire	Lt. Ann Echols 248-841-2701 EcholsA@RochesterHills.org	Yes

City of Rochester Hills
Planning & Economic Development

Conditions and mark-ups noted throughout the plan set must be addressed prior to final approval.



VICINITY MAP
NOT TO SCALE

DEVELOPMENT TEAM

DEVELOPER
M2J1, LLC
14955 TECHNOLOGY DRIVE
SHELBY TOWNSHIP, MI 48315
PHONE: (586) 421-5729
CONTACT: JIM POLYZOIS

LANDSCAPE ARCHITECT
NUNEZ DESIGN, INC.
249 PARK STREET
TROY, MI 48083
PHONE: (248) 224-5933
CONTACT: RALPH NUNEZ

CIVIL ENGINEER
ATWELL, LLC
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
PHONE: (248) 447-2000
CONTACT: ERIC LORD, P.E.

SURVEYOR
REICHERT
140 FLUMERFELT LANE
ROCHESTER, MI 48306
PHONE: (248) 651-0592
CONTACT: GEORGE REICHERT

Minimum site area using the MR Overlay is 10 acres. The Planning Commission may modify this requirement if another standard is more reasonable due to existing site or neighborhood conditions or because the site cannot physically comply with one or more of the requirements. In determining whether the modification is warranted, the Planning Commission shall consider the findings for approving a conditional use listed in Section 138-2.302 of the Zoning Ordinance.

Per a phone conversation with John Ackerman of Atwell, LLC on 6/29/2020, the Design Professional intends to use the 2015 Michigan Residential Code for all new structures.

Colored renderings must be provided prior to the Planning Commission meeting.

LEGAL DESCRIPTION

15-22-451-029 LOT 15 EXCEPT THE NORTH 420.00 FT. OF "HAMLIN PLACE FARMS" A SUBDIVISION OF PART OF THE S.E. 1/4 OF SEC. 22 AND PART OF THE S.W. 1/4 OF SEC. 23, T.3N., R.11E., CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN AS RECORDED IN L.15 OF PLATS, P.34, OAKLAND COUNTY RECORDS.

15-22-451-002 LOT 14 OF "HAMLIN PLACE FARMS" A SUBDIVISION OF PART OF THE S.E. 1/4 OF SEC. 22 AND PART OF THE S.W. 1/4 OF SEC. 23, T.3N., R.11E., CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN AS RECORDED IN L.15 OF PLATS, P.34, OAKLAND COUNTY RECORDS.

PART OF 15-22-451-022 THE NORTH 404.00 FT. OF LOT 13 OF "HAMLIN PLACE FARMS" A SUBDIVISION OF PART OF THE S.E. 1/4 OF SEC. 22 AND PART OF THE S.W. 1/4 OF SEC. 23 T.3N., R.11E., CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN AS RECORDED IN L.15 OF PLATS, P.34, OAKLAND COUNTY RECORDS.

SITE DATA

THE CURRENT ZONING CLASSIFICATION IS R-3 WITH MIXED RESIDENTIAL OVERLAY
GROSS AREA: 9.36 AC. NET AREA: 9.36 AC.

UNIT DENSITY
AREA=9.36 AC
UNITS=26 SINGLE FAMILY DETACHED CONDOMINIUMS
COVERAGE=26/9.36=2.69 UNITS PER ACRE

SETBACKS
PERIMETER
FRONT (STREET): 30'
FRONT (OTHER): 35'
SIDE: 15'
REAR: 60'
INTERIOR
FRONT: 20'
SIDE: 5'/15' TOTAL
REAR: 35'

SIDEWALK PROVIDED
ROADS ARE TO BE PRIVATE

SHEET INDEX

STATE OF MICHIGAN
JARED M. KIME
ENGINEER
No. 57644
LICENSED PROFESSIONAL ENGINEER

CITY FILE #19-031
SECTION #22

NOT FOR CONSTRUCTION

The applicant should not remove any trees until the Land Improvement Permit process has been initiated

The applicant needs to submit a Land Improvement Permit (LIP) application with engineer's estimate, fee and construction plans to proceed with the construction plan review process.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTION 22
TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

M2J1, LLC
CAMDEN CROSSING
PRELIMINARY SITE PLAN
COVER SHEET

DATE
AUG. 16, 2019

2020-06-15 PER CITY
2021-01-21 PER CITY
2021-07-02 PER CITY
2021-08-23 PER CITY

REVISIONS

NA NA NA
N/A

DRAWN BY: KS
CHECKED BY: JA
P.M.: J.ACKERMAN
JOB #: 18001982
FILE CODE: –
SHEET NO. C-01

CAD FILE: 18001982 C-01 – CV.DWG

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35 ft. interior rear setback required. The Planning Commission may modify this requirement if another standard is more reasonable due to existing site or neighborhood conditions or because the site cannot physically comply with one or more of the requirements. In determining whether a modification is warranted, the Planning Commission shall consider the findings for approving a conditional use listed in Section 138-2.302 of the Zoning Ordinance.

Provide curb ramps and detectable warnings at each sidewalk interface with the road.

RELOCATED SPEED HUMP (SEE DETAIL ON SH. C-08)

EXISTING HUMP TO BE RELOCATED

EXISTING HUMP

CRESTLINE STREET
(66' WIDE PUBLIC RIGHT OF WAY)

EX. 40 FT. WIDE PIPELINE EASEMENT

30' PERIMETER SETBACK

EX. 66' ROW

13.8' | 14' | 13.8' | 264' | 14.4' | 14' | 12.9'

N1°06'03"E 549.84'

6.0' | 110' | 45'

PR. 8' WIDE PATHWAY EASEMENT

7 TYPE "A" UNIT | 6 TYPE "A" UNIT | 5 TYPE "A" UNIT | 4 TYPE "A" UNIT | 3 TYPE "A" UNIT | 2 TYPE "A" UNIT | 1 TYPE "A" UNIT

43' | 57'

S89°08'03"E 211.91'

26' | 35' | 35'

75.0'

PROPOSED 5' CONCRETE WALK, TYP.

8 TYPE "A" UNIT | 9 TYPE "A" UNIT

88'

15' PERIMETER SETBACK

1865 CRESTLINE ST
#15-22-451-028

EX. 40 FT. WIDE PIPELINE EASEMENT

1845 CRESTLINE ST
#15-22-451-025

1835 CRESTLINE ST
#15-22-451-027

15' PERIMETER SETBACK

PR. M-DETAIL

R50'

R25'

18.5'

15'(TYP.)

10 TYPE "B" UNIT | 11 TYPE "B" UNIT | 12 TYPE "B" UNIT | 13 TYPE "B" UNIT | 14 TYPE "B" UNIT | 15 TYPE "B" UNIT

39' | 60'

S1°07'12"W 419.68'

20'

16' (TYP)

3' DRIVEWAY TAPER (TYP)

R25'

69'

60' PERIMETER SETBACK

PR. RECREATION AREA

W. HAMILIN ROAD
(120' WIDE PUBLIC RIGHT OF WAY)
(CITY OF ROCHESTER HILLS JURISDICTION)

PR. B2 CURB & GUTTER

30' PERIMETER SETBACK

CARDINAL LANE
(27 FEET WIDE-PRIVATE)

27' BC-BC | 45' ROAD EASEMENT

ADA DETECTABLE WARNING

4' | 5' | 22'

PR. SPLIT RAIL FENCE

25' | 100' | S86°52'11"E 423.66'

35'

26 TYPE "B" UNIT | 25 TYPE "B" UNIT

16.4'

PR. RCOC MOUNTABLE CURB & GUTTER

EX. WETLAND

S89°08'03"E 423.25'

24 TYPE "B" UNIT | 23 TYPE "B" UNIT | 22 TYPE "B" UNIT | 21 TYPE "B" UNIT | 20 TYPE "B" UNIT | 19 TYPE "B" UNIT | 18 TYPE "B" UNIT | 17 TYPE "B" UNIT | 16 TYPE "B" UNIT

15'(TYP.)

39' | 60'

EX. 120' ROW

25'

S1°06'45"W 567.52'

15' PERIMETER SETBACK

400 HAMLIN RD.
#15-22-451-022

15' PERIMETER SETBACK

EX. 12' WIDE ACCESS DRIVE TO BE UTILIZED FOR DETENTION BASIN MAINTENANCE ACCESS.

PROPOSED FOREBAY

PROPOSED DETENTION BASIN

S89°09'26"E 211.69'

15' PERIMETER SETBACK

N1°06'54"E 404.00'

LOT 327 #15-22-409-009 | LOT 326 #15-22-409-010 | LOT 325 #15-22-409-011 | LOT 324 #15-22-409-012 | LOT 323 #15-22-409-013 | LOT 322 #15-22-409-014 | LOT 321 #15-22-409-015

LEGEND

- PROPERTY LINE
- PR. SPLIT RAIL FENCE
- PR. BUILDING SETBACK
- PR. CURB AND GUTTER
- PR. ASPHALT
- PROPOSED CONCRETE
- PR. ACCESS PATH
- EX. WETLAND

UNIT LEGEND

1. TYPE A: 43'x57' – UNITS 1–9
2. TYPE B: 39'x60' – UNITS 10–26

NOTES

1. THE DEVELOPER IS PROPOSING A 26 UNIT SITE CONDOMINIUM.
2. ALL SIGNAGE WILL BE IN CONFORMANCE WITH THE CITY OF ROCHESTER HILLS REQUIREMENTS. A SEPARATE SIGN PERMIT MUST BE OBTAINED FROM THE BUILDING DEPARTMENT.
3. DETECTIBLE WARNING SURFACES SHALL BE PROVIDED AT THE SIDEWALK APPROACHES TO THE ROADWAYS.
4. BUILDING CONSTRUCTION TYPE WILL BE WOOD FRAME.
5. CITY SHALL FURNISH AND PLACE ALL PERMANENT ROW STREET SIGNS WITH MONIES PAID BY DEVELOPER.
6. THE PROPOSED PRIVATE ROADS ARE NOT BEING CONSTRUCTED TO THE CITY'S PUBLIC ROAD STANDARDS, AND THEREFORE, CANNOT BE TRANSFERRED AS PUBLIC ROADS IN THE FUTURE.

CITY FILE #19-031
SECTION #22

NOT FOR CONSTRUCTION

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTION 22
TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

M2J1, LLC

CAMDEN CROSSING
PRELIMINARY SITE PLAN
SITE LAYOUT PLAN

DATE
AUG. 16, 2019

2020-06-15 PER CITY
2021-01-21 PER CITY
2021-07-02 PER CITY
2021-08-23 PER CITY

REVISIONS

0 20 40
SCALE: 1" = 40 FEET

DRAWN BY: KS
CHECKED BY: JA
P.M.: J.ACKERMAN
JOB #: 18001982
FILE CODE: –
SHEET NO. C-02

CAD FILE: 18001982 C-03 – LDWG

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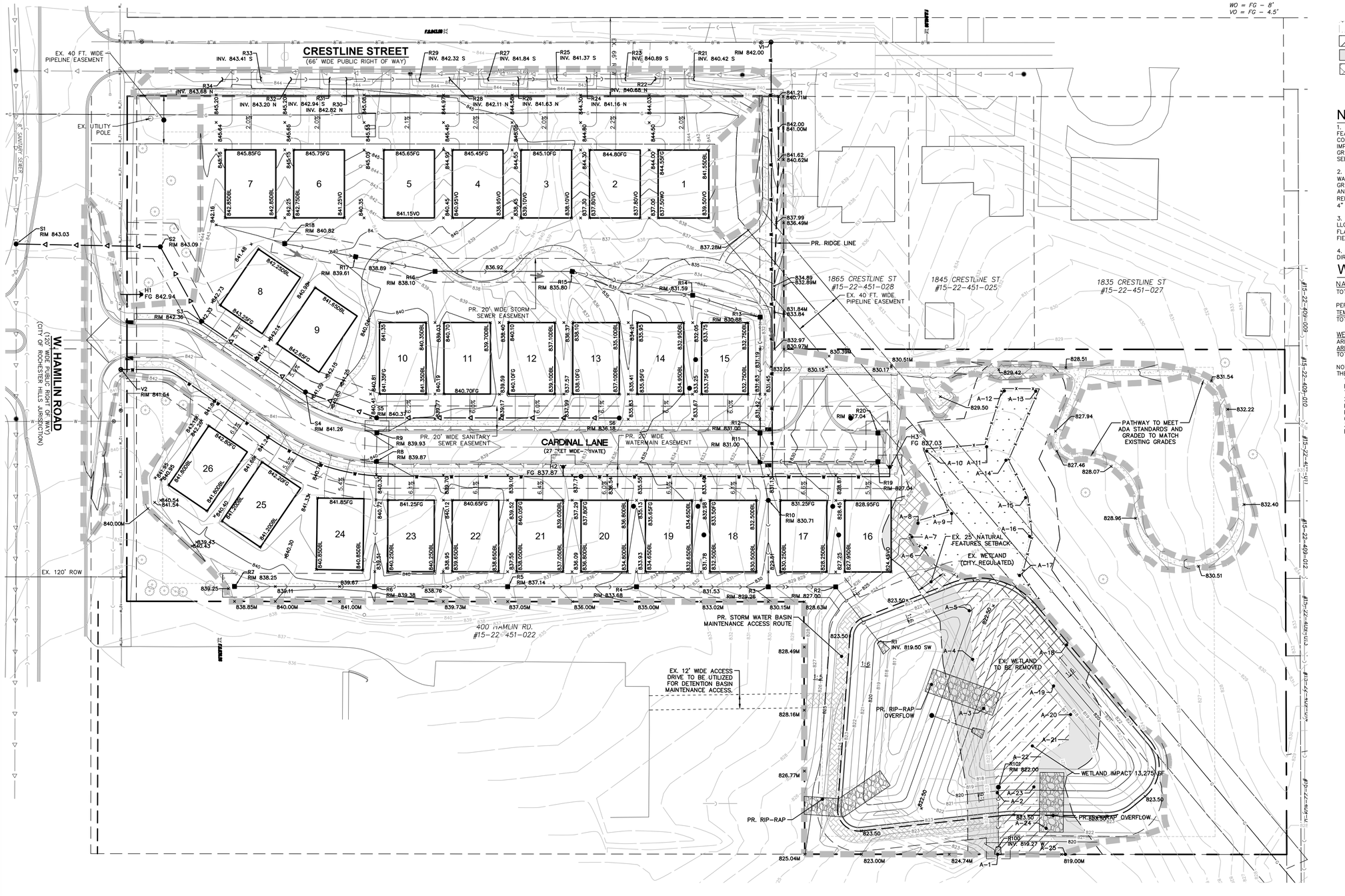

LEGEND

- PR. 1' CONTOUR
- PR. 5' CONTOUR
- EX. 1' CONTOUR
- EX. 5' CONTOUR
- PROPERTY LINE
- CENTERLINE OF SWALE
- PR. MOUNTABLE CURB AND GUTTER
- EX. MANHOLE / CATCH BASIN
- PR. MANHOLE / CATCH BASIN
- EX. HYDRANT
- PR. HYDRANT
- EX. GATE VALVE & WELL
- PR. GATE VALVE & WELL
- EX. WATER MAIN MANHOLE
- PR. SANITARY SEWER MANHOLE
- EX. SANITARY SEWER MANHOLE
- PR. EMERGENCY OVERFLOW ROUTE
- EX. WETLAND
- PR. WETLAND IMPACT
- PERMANENT NATURAL FEATURES BUFFER IMPACT
- TEMPORARY NATURAL FEATURES BUFFER IMPACT

SPOT GRADE DESIGNATIONS
FG = FINISH GRADE
DBL = DROP BRICK LEDGE
WO = WALKOUT
VO = WEWOUT
RIM = RIM GRADE/FLOW LINE

WO = FG - 8'
VO = FG - 4.5'

NOTES

1. FOR ALL TEMPORARY GRADING IMPACTS TO THE NATURAL FEATURE BUFFERS, BMPS WILL BE IMPLEMENTED DURING THE CONSTRUCTION PHASE OF THE PROJECT. ANY TEMPORARY IMPACTED AREA IS TO BE RESTORED TO ORIGINAL GRADE WITH ORIGINAL SOILS OR EQUIVALENT SOILS AND SEEDED WITH A CITY-APPROVED WETLAND SEED MIX.

2. DRIVE SLOPES ARE FROM FINISHED GRADE TO BACK OF WALK. AN ADDITIONAL 4" WILL BE ADDED TO THE FINISHED GRADE ELEVATION TO ESTABLISH GARAGE FLOOR ELEVATION AND AN ADDITIONAL 1.5% FOR DRIVE SLOPES. LOTS 1-7 REFLECT FINAL DRIVE SLOPES TO GARAGE FLOOR (TOP OF 4" SLAB).

3. WETLANDS WERE DELINEATED BY M.McCONNELL, ATWELL LLC, ON 11-27-18. THE ALPHA-NUMERIC WETLAND FLAGGING (A-1 - A-25) IS PROVIDED AS APPLIED IN THE FIELD.

4. ROOF DOWNSPOTS FOR LOTS 1-7 SHALL HAVE DRAINAGE DIRECTED TOWARDS REAR YARD ON-SITE CATCH BASINS.

WETLAND SUMMARY

NATURAL FEATURES SETBACK	
TOTAL EXISTING SETBACK	1,006 LF (24,403 SF)
PERMANENT IMPACT	452 LF (10,959 SF)
TEMPORARY IMACT	129 LF (2,857 SF)
TOTAL IMACT	581 LF (13,816 SF)

WETLAND IMPACTS	
AREA TO BE FILLED	13,275 SF
AREA TO BE UNDISTURBED	9,134 SF
TOTAL WETLAND	22,409 SF

NOTE: WETLAND IMPACT QUALIFIES FOR AN EXEMPTION TO THE WETLAND USE PERMIT, PROVIDED THAT:
1. PRIOR WRITTEN NOTICE IS GIVEN TO THE CITY ENGINEER AND WRITTEN CONSENT IS OBTAINED FROM THE CITY MAYOR PRIOR TO WORK COMMENCING.
2. THE WORK IS CONDUCTED USING BEST MANAGEMENT PRACTICES (BMPS) TO ENSURE FLOW AND CIRCULATION PATTERNS AND CHEMICAL AND BIOLOGICAL CHARACTERISTICS OF WETLANDS ARE NOT IMPACTED.
3. SUCH THAT ALL IMPACTS TO THE AQUATIC ENVIRONMENT ARE MINIMIZED.

CITY FILE #19-031
SECTION #22

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ATWELL
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SOUTHFIELD, MI 48076
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SECTION 22, TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

M2J1, LLC
CAMDEN CROSSING
PRELIMINARY SITE PLAN
GRADING PLAN

DATE
AUG. 16, 2019
2020-06-15 PER CITY
2021-01-21 PER CITY
2021-07-02 PER CITY
2021-08-23 PER CITY

REVISIONS

SCALE: 1" = 40 FEET

DRAWN BY: KS
CHECKED BY: JA
P.M.: J.ACKERMAN
JOB #: 18001982
FILE CODE: –
SHEET NO. C-03

CAD FILE: 18001982 C-04 – G.DWG

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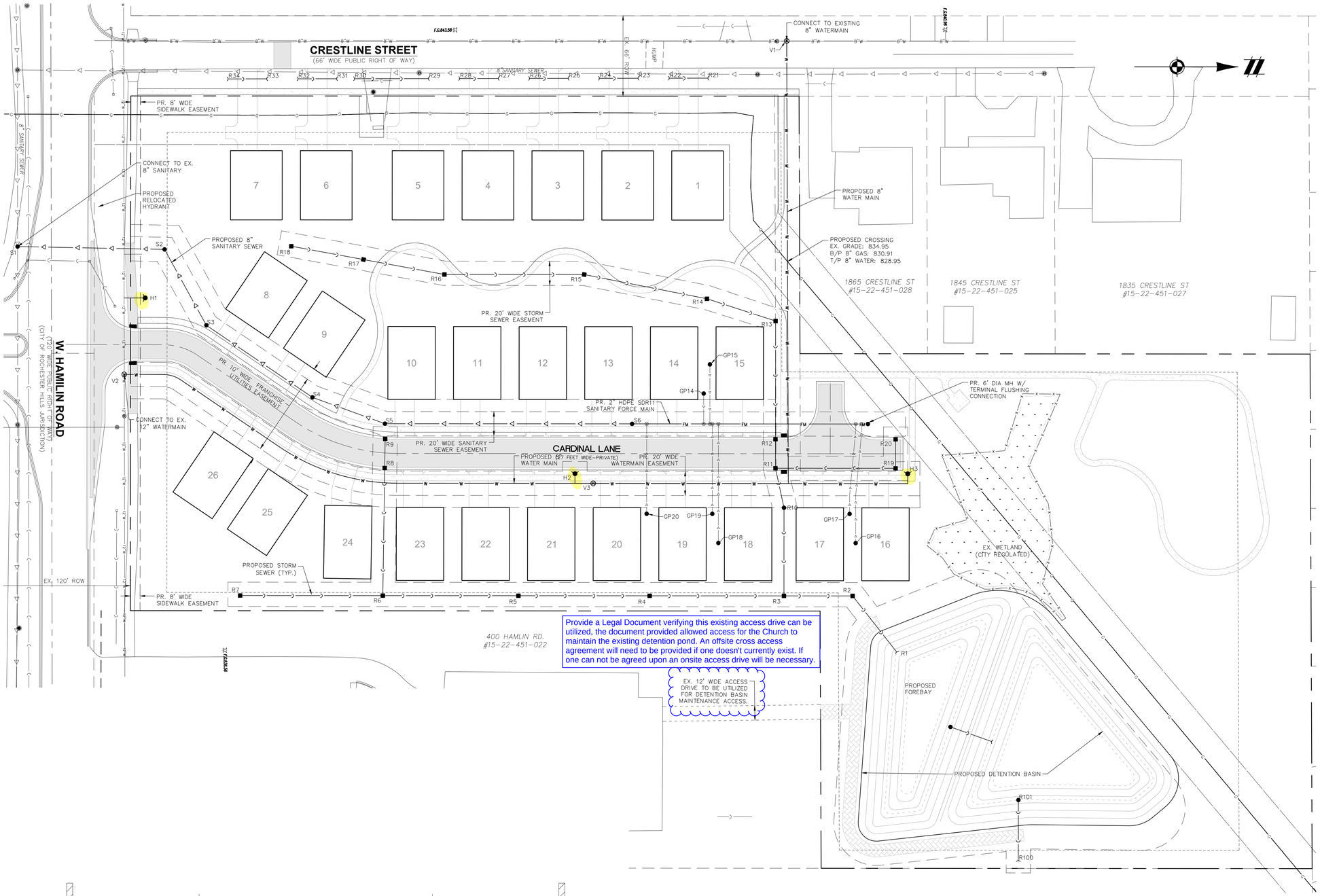


LEGEND

- BOUNDARY LINE
- EXISTING ROW
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY SEWER LEAD
- PROPOSED SANITARY SEWER FORCEMAIN
- EX. MANHOLE/CATCH BASIN/END SECTION
- PROPOSED SANITARY MANHOLE/STOP BOX
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- PR. MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING WATER VALVE/HYDRANT
- PROPOSED WATER VALVE/HYDRANT
- EXISTING LIGHT POLE
- EXISTING UNDERGROUND GAS
- EXISTING UTILITY POLE
- PROPOSED UTILITY POLE
- PROPOSED FENCE
- PROPOSED ACCESS PATH

UTILITY NARRATIVE

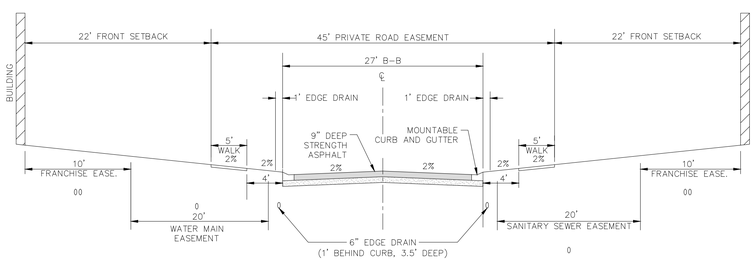
SANITARY SEWER – PROPOSED GRAVITY SEWER WILL CONNECT TO THE EXISTING 8" SANITARY SEWER ON THE SOUTH SIDE OF HAMLIN RD. PROPOSED UNITS 14–20 WILL BE SERVICED BY GRINDER PUMP AND LOW PRESSURE FORCEMAIN SYSTEM DUE TO SHALLOW EXISTING SEWER ELEVATIONS. PROPOSED UNITS 1–13 AND 21–26 WILL BE SERVICED BY GRAVITY SEWER. GRINDER PUMP LOCATIONS ARE PRELIMINARY AND THE FINAL LOCATION AND DESIGN ARE TO BE DETERMINED DURING DETAILED ENGINEERING AND PLOT PLAN.

WATERMAIN – THE PROPOSED 8" WATERMAIN WILL HAVE A MINIMUM COVER OF 6' AND CONNECT TO EXISTING MAIN ON THE NORTH SIDE OF HAMLIN ROAD AND WILL LOOP INTO THE EXISTING MAIN ON THE WEST SIDE OF CRESTLINE ST.

STORM WATER MANAGEMENT – ON–SITE RUN–OFF WILL BE COLLECTED IN A PROPOSED STORM SEWER SYSTEM AND CONVEYED TO A PROPOSED DETENTION BASIN LOCATED AT THE NORTH EASTERN AREA OF THE SITE. THE NEW BASIN WILL BE SIZED TO ACCOMMODATE THE EXISTING DETENTION PREVIOUSLY PROVIDED FOR THE CHURCH PARCEL AS WELL AS THE 25 YEAR STORM EVENT FOR THE PROPOSED DEVELOPMENT AREA. THE BASIN WILL DISCHARGE TO THE ADJACENT EXISTING WETLAND. THE PRETREATMENT REQUIREMENT WILL BE MET BY PROVIDING A SEDIMENT FOREBAY WITHIN THE BASIN. FRONT YARD DRAINAGE FOR UNITS 1–7 ALONG CRESTLINE STREET WILL BE DIRECTED TO THE ROADSIDE DITCH AND WILL FLOW NORTH, FOLLOWING THE EXISTING DRAINAGE COURSE. ROOF RUN–OFF FOR UNITS 1–7 WILL BE DIRECTED TO THE REAR YARD TO BE CAPTURED IN THE ON–SITE STORMWATER SYSTEM.

SANITARY SEWER BASIS OF DESIGN

Total No. of Single Family Lots:			26 Lots	
No. of Users per Lot:			2.44 Persons	
Total Expected Population Served:			64 Persons	
Average Daily Flow (per capita):			100 G.P.D.	
Peaking Factor:	18+√(POP/1000) = 4+√(POP/1000)		4.29	
Average Flow:	POP * 100 =		**6,400 G.P.D.**	
	=		4.4 G.P.M.	
	=		0.010 C.F.S.	
Peak Flow:	6,400	* 4.29 =	**27,468 G.P.D.**	
	=		19.1 G.P.M.	
	=		0.043 C.F.S.	
Pipe Capacity:	8	in. diameter	A=	0.349 sf
	0.40%	slope	R=	0.167 ft
	0.013	Manning's 'n'		
	Manning's Capacity =		0.766 C.F.S.	
	Velocity Flowing Full =		2.20 F.P.S.	



TYPICAL ROAD CORRIDOR
NO SCALE

CITY FILE #19-031
SECTION #22

NOT FOR CONSTRUCTION

Know what's below. Call before you dig.

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

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

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SECTION 22
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M2J1, LLC

CAMDEN CROSSING
PRELIMINARY SITE PLAN
UTILITY PLAN

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0 20 40
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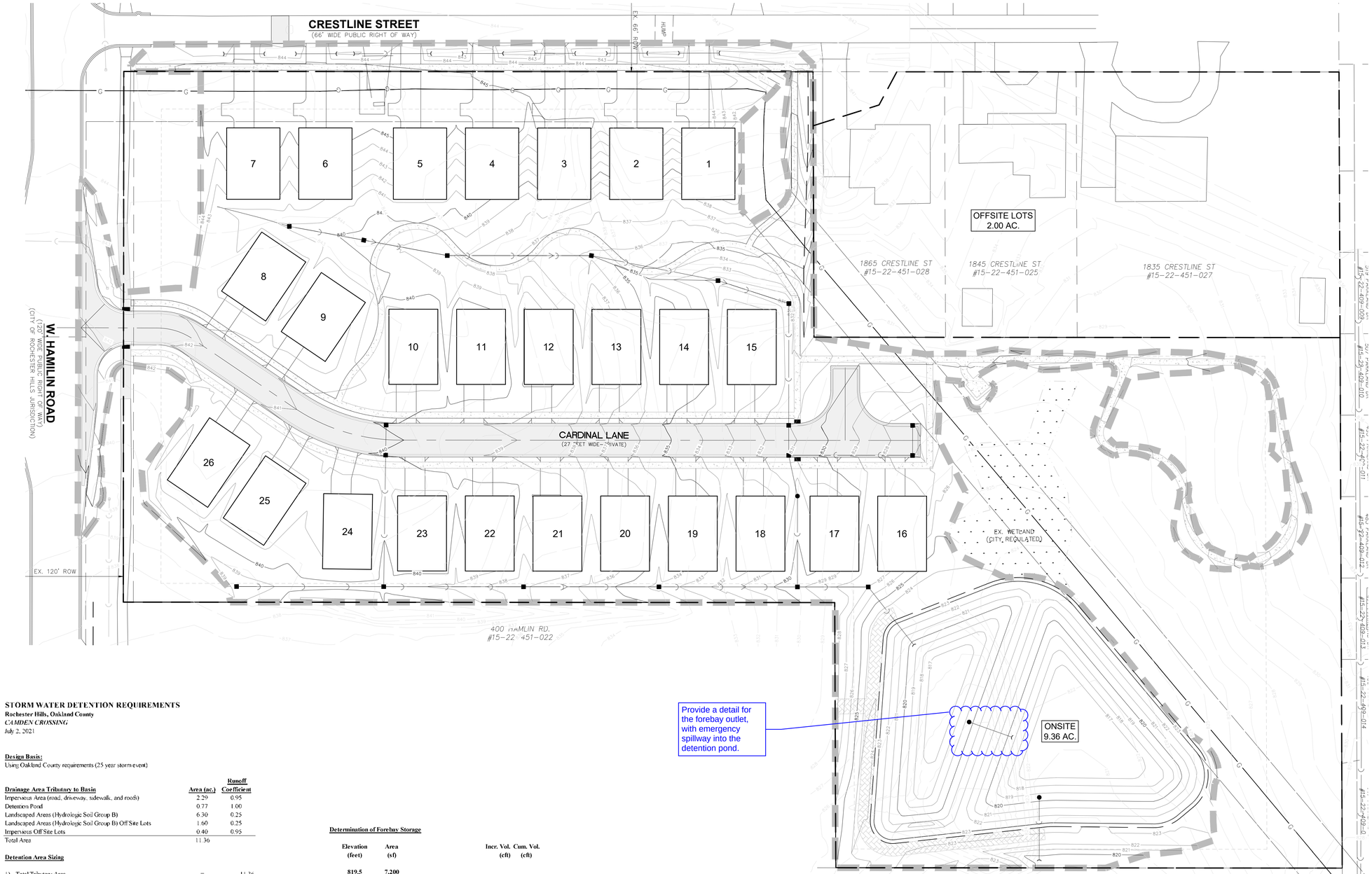


LEGEND

- 588 — PR. 1' CONTOUR
- 590 — PR. 5' CONTOUR
- 588 — EX. 1' CONTOUR
- 590 — EX. 5' CONTOUR
- PROPERTY LINE
- CENTERLINE OF SWALE
- PROPOSED R.O.W. LINE
- LIMITS OF GRADING
- EX. MANHOLE / CATCH BASIN
- PR. MANHOLE / CATCH BASIN

STORM WATER DETENTION REQUIREMENTS

Rochester Hills, Oakland County
CAMDEN CROSSING
July 2, 2021

Design Basis:
Using Oakland County requirements (25 year storm event)

Drainage Area Tributary to Basin	Area (ac.)	Runoff Coefficient
Impervious Area (road, driveway, sidewalk, and roofs)	2.29	0.95
Detention Pond	0.77	1.00
Landscaped Areas (Hydrologic Soil Group B)	6.30	0.25
Landscaped Areas (Hydrologic Soil Group B) Off Site Lots	1.60	0.25
Impervious Off Site Lots	0.40	0.95
Total Area	11.36	

Detention Area Sizing

1) Total Tributary Area	=	11.36
Developed Runoff Coefficient (C)		0.47
Allowable Discharge Rate (C_a)	=	0.20 cfs/ac
2) Maximum Allowable Runoff, Qa = C_a x A	=	2.27 cfs
Maximum Allowable Runoff, Church Parcel Detention Calculations	=	0.70 cfs
Total Maximum Allowable Runoff	=	2.97 cfs
3) Calculate Qo Qa / (a * c) (max. outflow per acre impervious)		0.43 cfs/acre impervious
4) Max. Storage Time, T = -25 * sqrt(8062.5/Qo)	=	112.10 minutes
5) Max. Storage Required, Vs = ((12,900*T) / (T+25)) - 40QoT	=	8,624 cf / acre impervious
6) Total Storage Required, Vt = Vs * a * c	=	**45,685 cf**
As-Built Volume of Existing Church Basin (Per As-Built St. Mark Church plans dated 8-19-1999)	=	**10,541 cf**
Total Storage Required	=	**56,226 cf**
7) 1-Year Storm Calculation for Forebay Total Storage (Vt = 4,320 x A x C)	=	22,884 cf
8) Sizing of Overflow Weir		
Q=CLH^3/2		
Q (CIA) = 10.62 cfs		
L= ? ft		
H= 0.5 ft		
C= 3.367		
L= Q/(3.367*H^3/2)=	=	9 ft

Determination of Forebay Storage

Elevation (feet)	Area (sf)	Incr. Vol. (cft)	Cum. Vol. (cft)
819.5	**7,200**		
		3,925	3,925
820	**8,500**		
		9,900	13,825
821	**11,300**		
		12,850	26,675
822	**14,400**		
		Total Volume=	**26,675 cf**

Determination of Storage Provided in Basin (Including Forebay Storage)

Elevation (feet)	Area (sf)	Incr. Vol. (cft)	Cum. Vol. (cft)
819.5	**18,600**		
		10,000	10,000
820	**21,400**		
		24,350	34,350
821	**27,300**		
		30,550	64,900
822	**33,800**		
		Total Volume=	**64,900 cf**

Storage & Elevation Summary

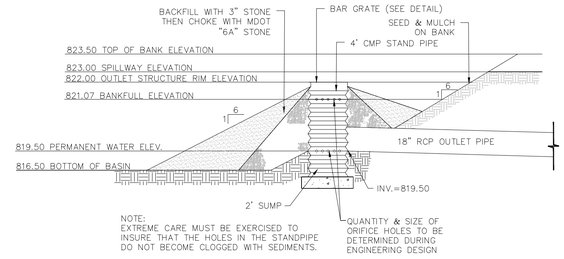
Acutal 25-Year Storm Elevation	=	821.72
Design 25-Year Storm Elevation	=	822.00 feet
Top of Bank Elevation	=	823.50 feet
Minimum Top of Bank Elevation	=	824.00 feet
Bankfull Volume: Vbf=6,897 x C x A	=	36,535 cf
Bankfull Elevation		821.07 feet
Volume Provided	=	64,900 pl
Volume Required	=	56,226 cf

Checking 100-yr Overflow Structure Size (O.S.1)

Size of Outlet Structure	4 ft	
Percent of Structure that can be used as weir	100%	
Calculated Length of weir	12.56 ft	
Acreage Tributary to weir	11.36 Ac	
Composite Runoff Coefficient	0.47	
Longest time of flow to Basin (Preliminary Assumption)	25 min	
Flow into Basin Q CIA	18.54 cfs	
Volume of Basin	56,226 cf	
Storage Elevation (O.S.1 Rim Elevation)	**822.00** ft	
Actual Top of Bank Elevation	**823.50** ft	
Time to fill Basin=V/Q	50.54 min	
Intensity= 275/(T+25)	2.74 in/hr	
Q Expected= Qe= CIA	14.49 cfs	
Height of Water at Weir		
Qweir= 3.33x Lx(H^1.5)		
H=	0.49 ft	
Overflow water elevation	823.01 <	823.50

Sizing Overflow Outlet Pipe

Size of pipe	18 in	
Area (ai=	1.77 sf	
Pipe Invert	819.50 ft	
Springline=	820.25 ft	
Overflow Elev=	823.01 ft	
Head (h)	4.18 ft	
Qcapacity=0.62*a*sqrt(2gh)	17.96 cfs	
Qexpected (from above)	14.49 cfs	
Qcapacity > Qexpected	OK	



DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL
NO SCALE

NOT FOR CONSTRUCTION

Know what's below. Call before you dig.

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

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

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTION 22
TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

M2J1, LLC
CAMDEN CROSSING
PRELIMINARY SITE PLAN
OVERALL DRAINAGE AREA PLAN

DATE
AUG. 16, 2019
2020-06-15 PER CITY
2021-01-21 PER CITY
2021-07-02 PER CITY
2021-08-23 PER CITY

REVISIONS

SCALE: 1" = 40 FEET

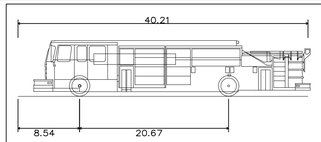
DRAWN BY: KS
CHECKED BY: JA
P.M.: J.ACKERMAN
JOB #: 18001982
FILE CODE: —
SHEET NO. C-05

CITY FILE #19-031
SECTION #22

CAD FILE: 18001982 C-09 - DET.DWG

K:\18001982\DWG\PLAN SETS\SITE-PRELIMINARY\18001982 C-09 - DET.DWG 8/20/2021 4:43 PM KEVIN SULLIVAN

Construction type V with a maximum of 2,313 sq. ft. per house requires a fire flow of 1,000 GPM and an average fire hydrant spacing of 500 feet. Provide documentation, including calculations that a fire flow of 1,000 GPM can be provided. Flow test information can be obtained by contacting the Rochester Hills Engineering Department at 248-656-4640.



Fire Truck	
Overall Length	40.210ft
Overall Width	8.500ft
Overall Body Height	7.745ft
Min Body Ground Clearance	0.656ft
Track Width	8.167ft
Lock-to-lock time	5.00s
Curb to Curb Turning Radius	42.500ft

LEGEND

- PROPOSED WATER MAIN
- EXISTING WATER MAIN
- 250' RADIUS HYDRANT COVERAGE (TYP.)
- PROPOSED PAVEMENT
- PROPOSED HYDRANT
- EXISTING HYDRANT

FIRE DEPARTMENT NOTES:

1. FIRE LANES SHALL BE DESIGNATED BY THE FIRE CODE OFFICAL, AND SHALL BE CONSPICUOUSLY POSTED ON BOTH SIDES OF THE FIRE LANE, WITH FIRE LANE SIGNS, SPACED NOT MORE THAN 100 FEET APART. FIRE LANE SIGNS SHALL READ "NO STOPPING, STANDING, PARKING, FIRE LANE", AND SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
   FIRE PREVENTION ORDINANCE CHAPTER 58, SEC. 503
2. CONSTRUCTION SITES SHALL BE SAFEGUARDED IN ACCORDANCE WITH IFC 2006 CHAPTER 14.
3. OPEN BURNING IS NOT PERMITTED INCLUDING THE BURNING OF TRASH, DEBRIS, OR LAND CLEARING MATERIALS. OPEN BURNING FOR WARMING OF SAND AND/OR WATER FOR THE PREPARATION OF MORTAR SHALL BE WITHIN THE CITY OF ROCHESTER HILLS BURN PERMIT GUIDELINES.
   FIRE PREVENTION ORDINANCE CHAPTER 58, SEC. 307.6.2 & 307.6.2.3
4. BUILDING CONSTRUCTION TYPE WILL BE WOOD FRAME.
5. THE TYPICAL SQUARE FOOTAGE OF EACH UNIT IS AS FOLLOWS:
   TYPE A = 1,826 SF
   TYPE B = 2,313 SF OR 2,120 SF

CITY FILE #19-031
SECTION #22

NOT FOR CONSTRUCTION

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SOUTHFIELD, MI 48076
248.447.2000

SECTION 22
TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

M2J1, LLC

CAMDEN CROSSING
PRELIMINARY SITE PLAN
FIRE PROTECTION PLAN

DATE
AUG. 16, 2019

2020-06-15 PER CITY
2021-01-21 PER CITY
2021-07-02 PER CITY
2021-08-23 PER CITY

REVISIONS

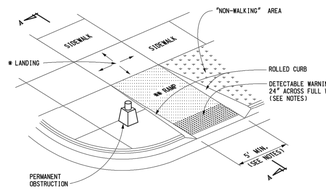
0 20 40
SCALE: 1" = 40 FEET
DRAWN BY: KS
CHECKED BY: JA
P.M.: J.ACKERMAN
JOB #: 18001982
FILE CODE: -
SHEET NO. C-06

CAD FILE: 18001982 C-06 - FP.DWG

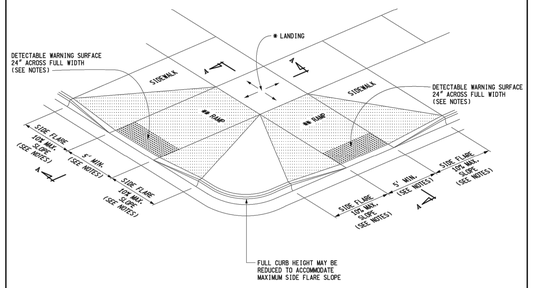
K:\18001982\DWG\PLAN SETS\SITE-PRELIMINARY\18001982 C-06 - FP.DWG 8/23/2021 10:19 AM KEVIN SULLIVAN

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAX(MUM). SEE NOTES.



CURB RAMP TYPE R
(ROLLED SIDES)



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

DEPARTMENT DIRECTOR
Paul C. Ajegba

PREPARED BY
DESIGN DIVISION
DRAWN BY: R.L.T.
CHECKED BY: K.K.P.

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

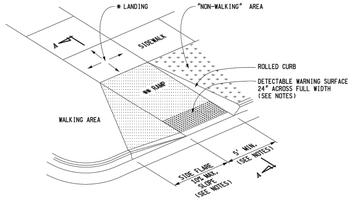
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

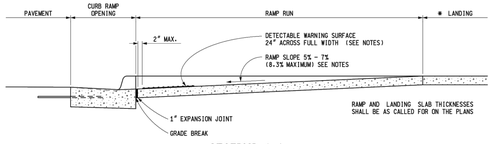
F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 1 OF 7

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAX(MUM). SEE NOTES.



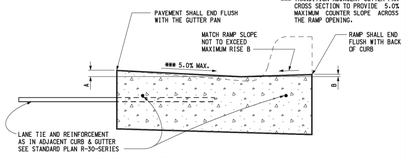
CURB RAMP TYPE RF
(ROLLED / FLARED SIDES)



SECTION A-A

CURB TYPE	MAXIMUM RISE (INCHES) A	B
B1	3/4	1
B2	3/4	1
B3	3/4	1
D1	3/4	1
D2	3/4	1
D3	3/4	1
C1	1/2	1/2
C2	1/2	1/2
C3	3/4	1/2
C4	3/4	1/2
C5	1	1/2
C6	1	1/2
F1	1/2	1/2
F2	1/2	1/2
F3	3/4	1/2
F4	3/4	1/2
F5	1	1/2
F6	1	1/2

FOR CURB TYPES SEE STANDARD PLAN R-30-SERIES



SECTION THROUGH CURB RAMP OPENING
(TYPICAL ALL RAMP TYPES)

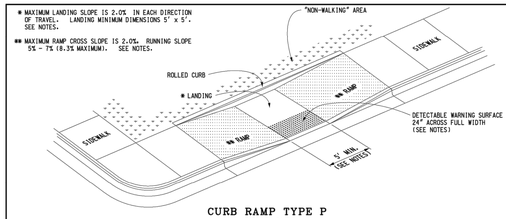
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

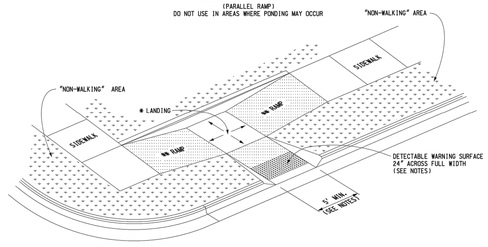
F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 2 OF 7

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

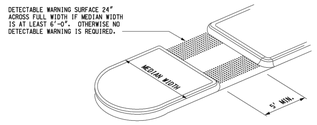
** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



CURB RAMP TYPE P
(PARALLEL RAMP)
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR



CURB RAMP TYPE C
(COMBINATION RAMP)



CURB RAMP TYPE M
(MEDIAN ISLAND)

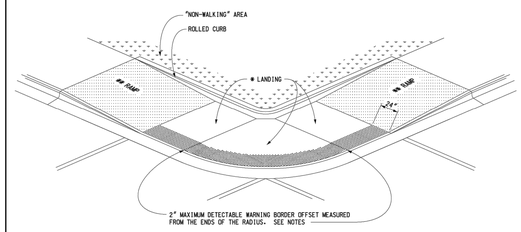
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

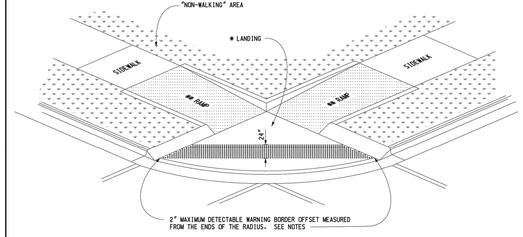
F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 3 OF 7

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAX(MUM). SEE NOTES.



(RADIAL DETECTABLE WARNING SHOWN)



(TANGENT DETECTABLE WARNING SHOWN)

CURB RAMP TYPE D
(DEPRESSED CORNER)

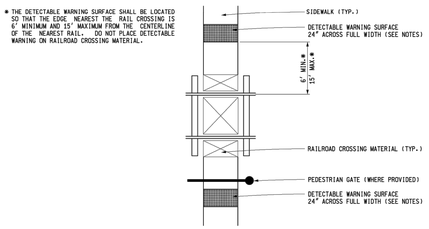
USE ONLY WHEN INDEPENDENT DIRECTIONAL RAMPS CAN NOT BE CONSTRUCTED FOR EACH CROSSING DIRECTION

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

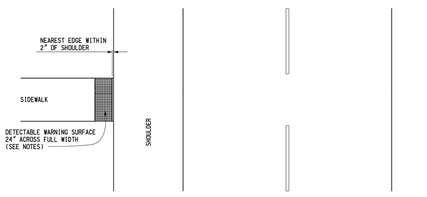
CURB RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 4 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

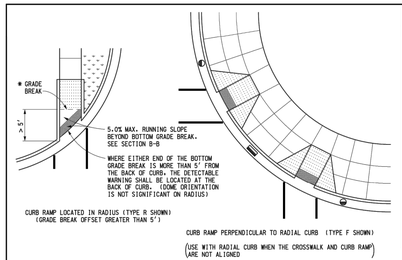


DETECTABLE WARNING AT FLUSH SHOULDER OR ROADWAY

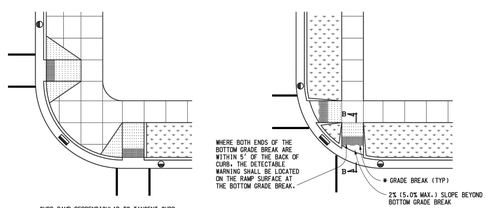
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

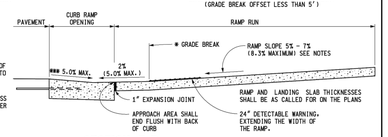
CURB RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 5 OF 7



LEGEND
- SLOPED SURFACE
- DETECTABLE WARNING
- "NON-WALKING" AREA
- CROSSWALK MARKING
- PREFERRED LOCATION OF DRAINAGE INLET (TYP.)
- ALTERNATE LOCATION OF DRAINAGE INLET (TYP.)





* 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.

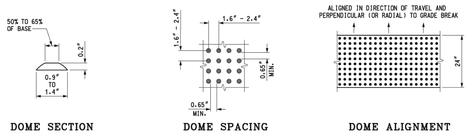
SEE SHEET 2 FOR CURB RAMP OPENING DETAILS.

SECTION B-B
CURB RAMP ORIENTATION

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 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 5' MINIMUM WIDTHS ARE NOT PRACTICABLE, 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% 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 CURBED 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 2.0%. 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 CIRCULATION PATH LATERALLY CROSSES THE CURB RAMP. 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.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 7 OF 7

CITY FILE #19-031
SECTION #22

NOT FOR CONSTRUCTION

ATWELL
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SOUTHFIELD, MI 48076
248.447.2000

SECTION 22
TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

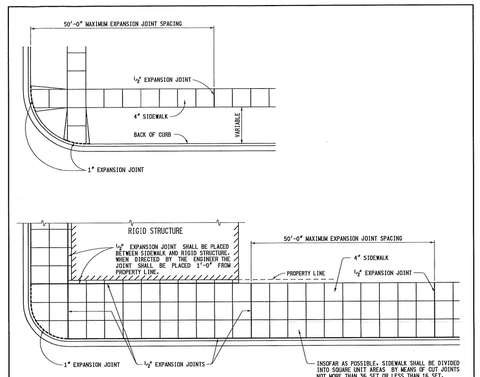
M2J1, LLC
CAMDEN CROSSING
PRELIMINARY SITE PLAN
DETAIL SHEET

DATE
AUG. 16, 2019
2020-06-15 PER CITY
2021-01-21 PER CITY
2021-07-02 PER CITY
2021-08-23 PER CITY

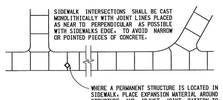
REVISIONS
NA NA NA
N/A

DRAWN BY: KS
CHECKED BY: JA
P.M.: J.ACKERMAN
JOB #: 18001982
FILE CODE: –
SHEET NO. C-07

CAD FILE: I:\18001982\CAD\PLAN SETS\SITE PRELIMINARY\18001982 C-07 - DTL.DWG 8/20/2021 4:44 PM KEVIN SULLIVAN



LOCATION OF JOINTS IN CONCRETE SIDEWALK



TYPICAL SIDEWALK JOINT LAYOUTS

4" CONCRETE SIDEWALK

MDOT
Michigan Department of Transportation

PREPARED BY DESIGN DIVISION
DRAWN BY: R.L.T.
CHECKED BY: K.E.P.

DEPARTMENT DIRECTOR
Kirk T. Steudle

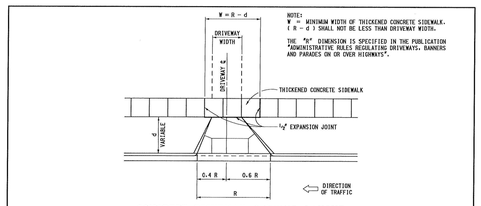
APPROVED BY: Randy W. Roth
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: Mark A. Van Port Fliet
DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT

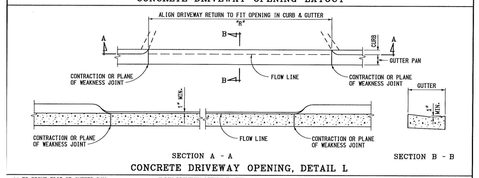
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK

9-30-2014	7-1-2014	R-29-I	SHEET
F.H.W.A. APPROVAL	PLAN DATE		1 OF 4

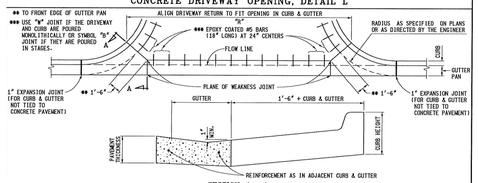


CONCRETE DRIVEWAY OPENING LAYOUT



SECTION A - A SECTION B - B

CONCRETE DRIVEWAY OPENING, DETAIL L



SECTION A - A

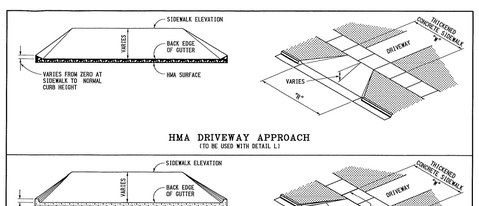
CONCRETE DRIVEWAY OPENING, DETAIL M

NOTE:
FOR ROADWAYS WITH CONCRETE PAVEMENTS, LONGITUDINAL LANE TIES WILL BE CONTINUOUS THROUGH THE DRIVEWAY OPENING AND THE SPACING OF THE #5 BARS IN CONCRETE DRIVEWAYS SHALL BE ADJUSTED TO AVOID CONFLICT WITH THE LONGITUDINAL LANE TIES.

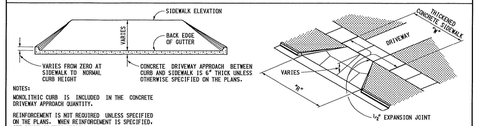
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK

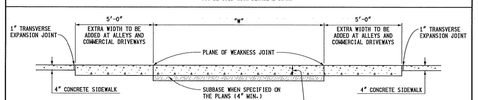
9-30-2014	7-1-2014	R-29-I	SHEET
F.H.W.A. APPROVAL	PLAN DATE		2 OF 4



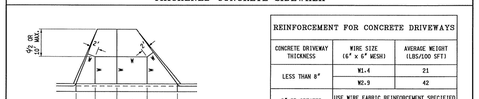
HMA DRIVEWAY APPROACH
(TO BE USED WITH DETAIL L)



CONCRETE DRIVEWAY APPROACH
(TO BE USED WITH DETAIL L OR M)



THICKENED CONCRETE SIDEWALK



ADJUST DRIVEWAY JOINTS AS NEEDED TO ALIGN WITH ANY EXISTING TRANSVERSE PAVEMENT JOINTS.

JOINT LAYOUT IS AS INDICATED OR AS DIRECTED BY THE ENGINEER.

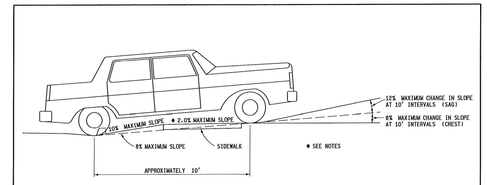
INTERMEDIATE DRIVEWAY JOINT DETAILS

REINFORCEMENT FOR CONCRETE DRIVEWAYS		
CONCRETE DRIVEWAY THICKNESS	WIRE SIZE (6" x 6" MESH)	AVERAGE WEIGHT (LBS/100 SFT)
LESS THAN 8"	W1.4	21
	W2.9	42
8" OR GREATER	USE WIRE FABRIC REINFORCEMENT SPECIFIED ON STANDARD PLAN R-37-SERIES	

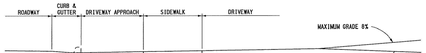
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK

9-30-2014	7-1-2014	R-29-I	SHEET
F.H.W.A. APPROVAL	PLAN DATE		3 OF 4



LOW VOLUME COMMERCIAL OR RESIDENTIAL DRIVEWAY SLOPES



COMMERCIAL DRIVEWAY PROFILE FOR MAJOR TRAFFIC GENERATORS

NOTES:

FOR DRIVEWAY DESIGN REFER ALSO TO "ADMINISTRATIVE RULES REGULATING DRIVEWAYS, BANNERS, AND PARADES ON OR OVER HIGHWAYS" AND GEOMETRIC DESIGN G-680-SERIES, COMMERCIAL DRIVEWAYS.

FOR CURB AND GUTTER DETAILS, SEE STANDARD PLAN R-30-SERIES.

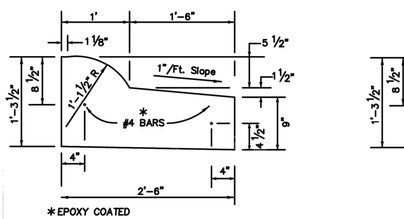
TRANSVERSE SIDEWALK SLOPES ARE TYPICALLY 1.5% (2.0% MAXIMUM). IN ORDER TO MEET SITE CONDITIONS, IF THE TRANSVERSE SLOPE IS REQUIRED TO BE LESS THAN 1.5%, LONGITUDINAL DRAINAGE MUST BE PROVIDED.

WHEN SETTING GRADES FOR COMMERCIAL DRIVES, THE TYPES OF VEHICLES USING THE DRIVE SHOULD BE CONSIDERED.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK

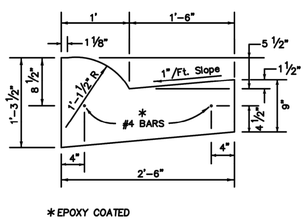
9-30-2014	7-1-2014	R-29-I	SHEET
F.H.W.A. APPROVAL	PLAN DATE		4 OF 4



*EPOXY COATED

B-2 MODIFIED REVERSE GUTTER

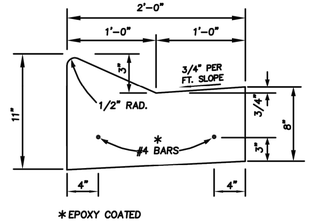
NO SCALE



*EPOXY COATED

B-2 MODIFIED CURB & GUTTER

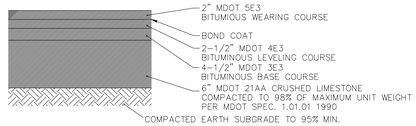
NO SCALE



*EPOXY COATED

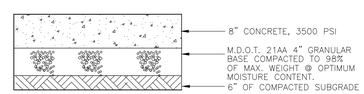
MOUNTABLE CURB & GUTTER

NO SCALE



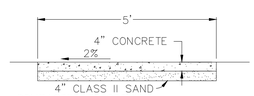
STANDARD BITUMINOUS PAVEMENT

NO SCALE



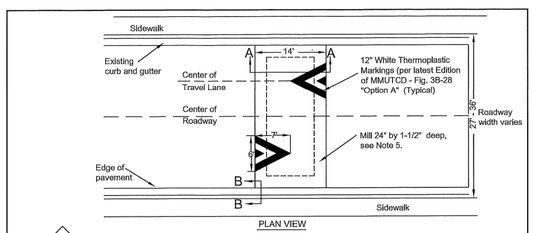
ALTERNATE CONCRETE PAVING SECTION

NO SCALE



CONCRETE SIDEWALK DETAIL

NO SCALE



IMPORTANT:
To gain maximum effect, speed humps must be the full 3". Speed humps shall be 3" high with an allowable maximum tolerance of ± 0.25". Contractors must not exceed this heights based on consideration for emergency and fire department vehicles. Because of this concern, any speed humps constructed over 3.25" must be corrected at the contractor's expense. Contractor shall use City template for speed hump construction.

NOTES:
1. Cross section shows approximate elevations for 3" speed hump.
2. Speed humps shall not be placed over manholes, water valves, survey monuments, junction chambers, in conflict with driveways, horizontal curves, or adjacent to fire hydrants.
3. Speed humps must be placed at locations approved and specified by the Department of Public Service/Engineering Department.
4. Speed humps shall be constructed with an approved HMA, per City of Rochester Hills standards. A tack coat shall be applied prior to application of pavement. HMA shall be placed in two (2) lifts.
5. Existing roadway shall be milled a width of 24" and a minimum depth of 1-1/2" around the perimeter of the speed hump.
6. Contractor must provide verification of cross-section dimensions.
7. Signs and markings typical for both directions, installed by City.

CITY OF ROCHESTER HILLS
STANDARD DETAIL FOR:
Speed Hump Detail

DRAWN BY:	FILE NAME:	PLAN DATE:	REV.	REV.
B. SMITH	CIRC DRV	8/28/1996	4/12/2012	7/29/2014

APPROVED BY: PAUL SHUMEJKO, P.E., PTOE, CITY TRANSPORTATION ENGINEER
NOT TO SCALE
SHEET 1 OF 2

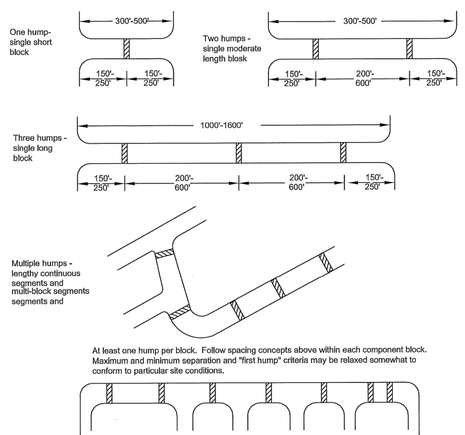
I:\Esri\TRAFFDWGS-PROJECTS-PDF'S\Details\Speed Hump

EXAMPLE OF SPEED HUMP LOCATIONS

1. Single short blocks (300 feet to 500 feet) where speed control problems area unusual. Where such blocks must be treated, a single hump positioned near mid-block would likely provide satisfactory speed control over the entire block.

2. Where control is required on single block segments of moderate length (500 feet to 1000 feet), a two-hump configuration should be satisfactory.

3. On very long blocks (1000 feet to 1600 feet), three or more humps might be necessary.

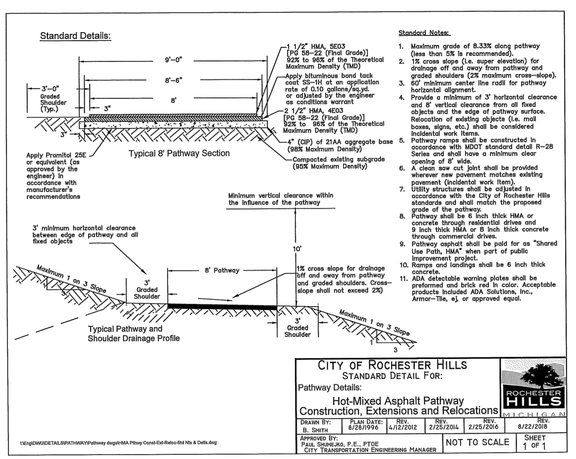


CITY OF ROCHESTER HILLS
STANDARD DETAIL FOR:
Speed Hump Location Detail

DRAWN BY:	FILE NAME:	PLAN DATE:	REV.	REV.
B. SMITH	SPEED HMP	8/28/1996	4/12/2012	3/15/2014

APPROVED BY: PAUL SHUMEJKO, P.E., PTOE, CITY TRANSPORTATION ENGINEER
NOT TO SCALE
SHEET 2 OF 2

I:\Esri\TRAFFDWGS-PROJECTS-PDF'S\Details\Speed Hump



CITY OF ROCHESTER HILLS
STANDARD DETAIL FOR:
Pathway Details:
Hot-Mixed Asphalt Pathway Construction, Extensions and Relocations

DRAWN BY:	PLAN DATE:	REV.	REV.	REV.
B. SMITH	8/28/1996	4/12/2012	2/25/2014	8/22/2018

APPROVED BY: PAUL SHUMEJKO, P.E., PTOE, CITY TRANSPORTATION ENGINEERING MANAGER
NOT TO SCALE
SHEET 1 OF 1

I:\Esri\DWGS\DETAILS\PATH\MAY\Pathway dwgs\HMA Pthwy Const-Ext-Relocs-Std Nts & Dwlls.dwg

CITY FILE #19-031
SECTION #22

NOT FOR CONSTRUCTION

Know what's below. Call before you dig.

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

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

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTION 22
TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

M2J1, LLC
CAMDEN CROSSING
PRELIMINARY SITE PLAN
DETAIL SHEET

DATE
AUG. 16, 2019
2020-06-15 PER CITY
2021-01-21 PER CITY
2021-07-02 PER CITY
2021-08-23 PER CITY

REVISIONS

NA NA NA
N/A

DRAWN BY: KS
CHECKED BY: JA
P.M.: J.ACKERMAN
JOB #: 18001982
FILE CODE: –
SHEET NO. C-08

CAD FILE: 18001982 C-07 -DT.DWG

K:\18001982\DWG\PLAN SETS\SITE-PRELIMINARY\18001982 C-07 -DT.DWG 8/20/2021 4:44 PM KEVIN SULLIVAN