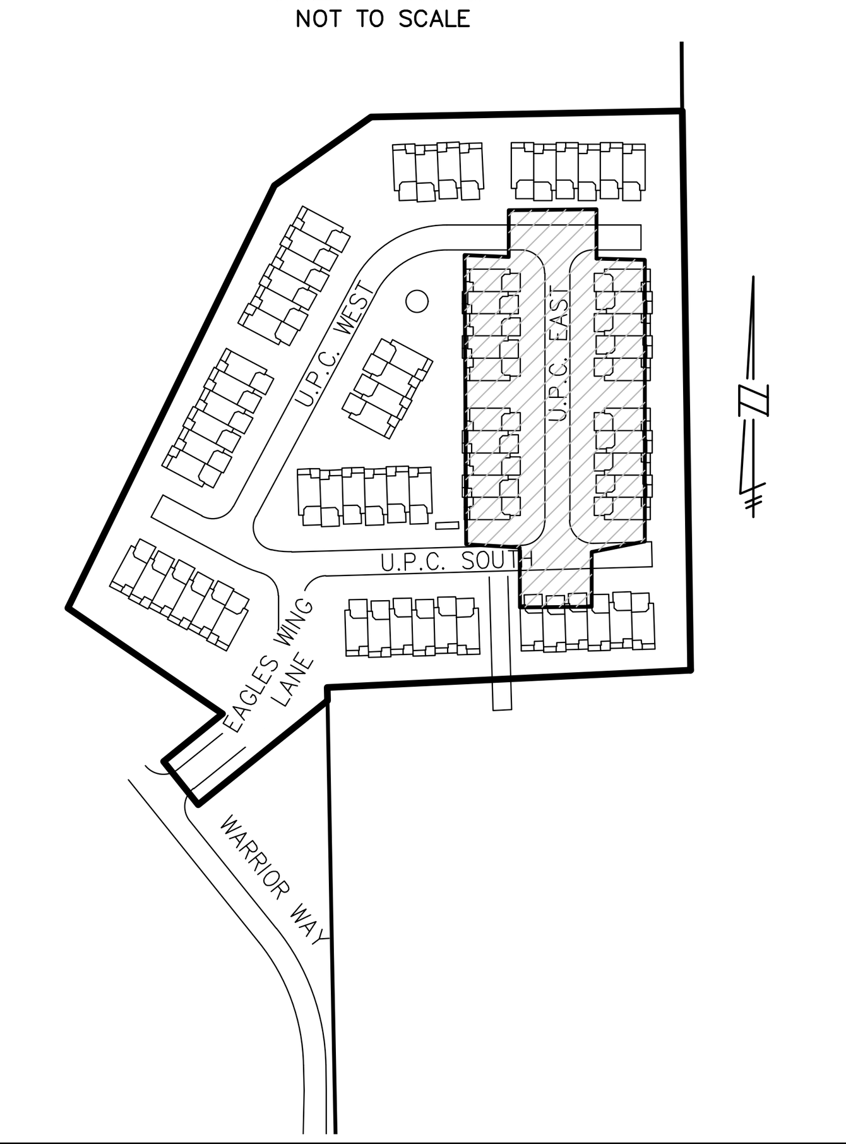
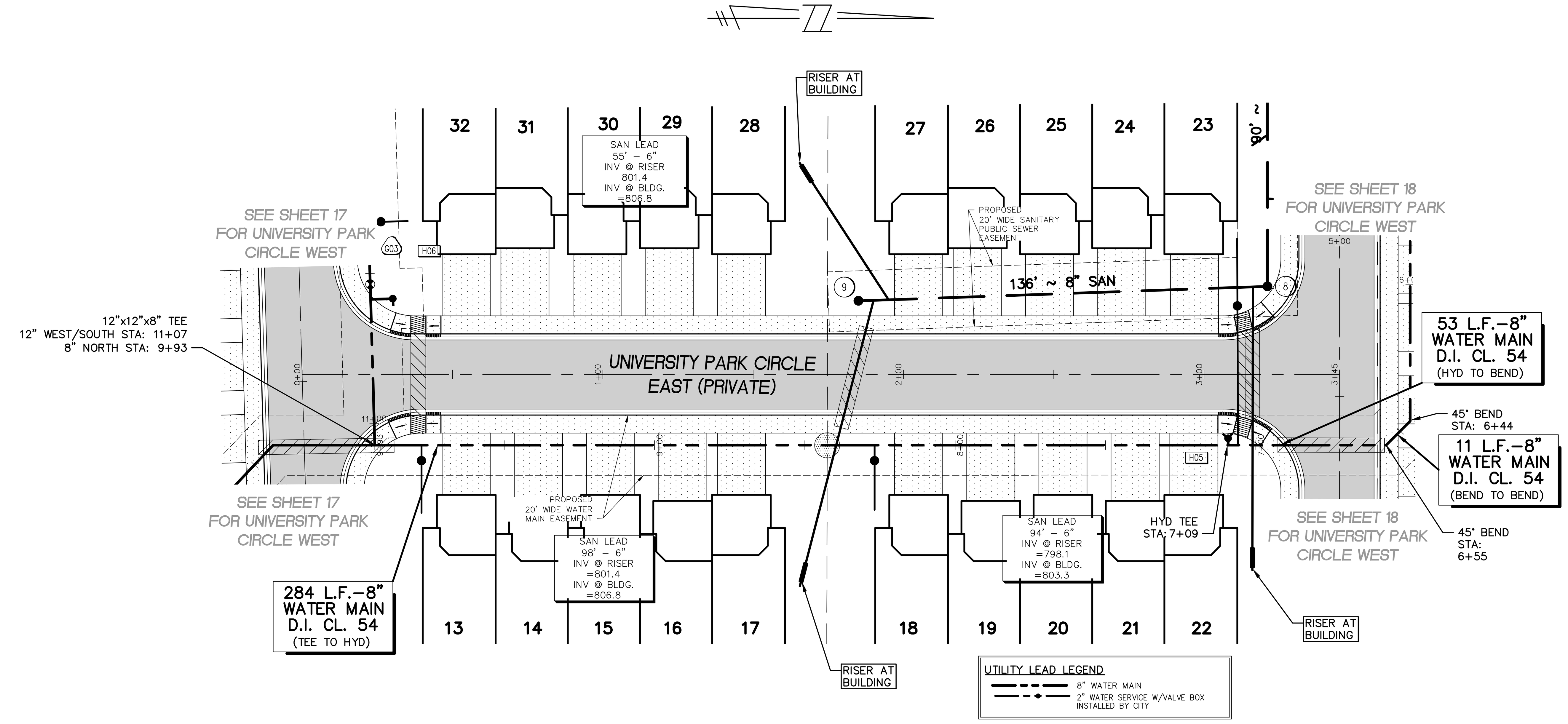
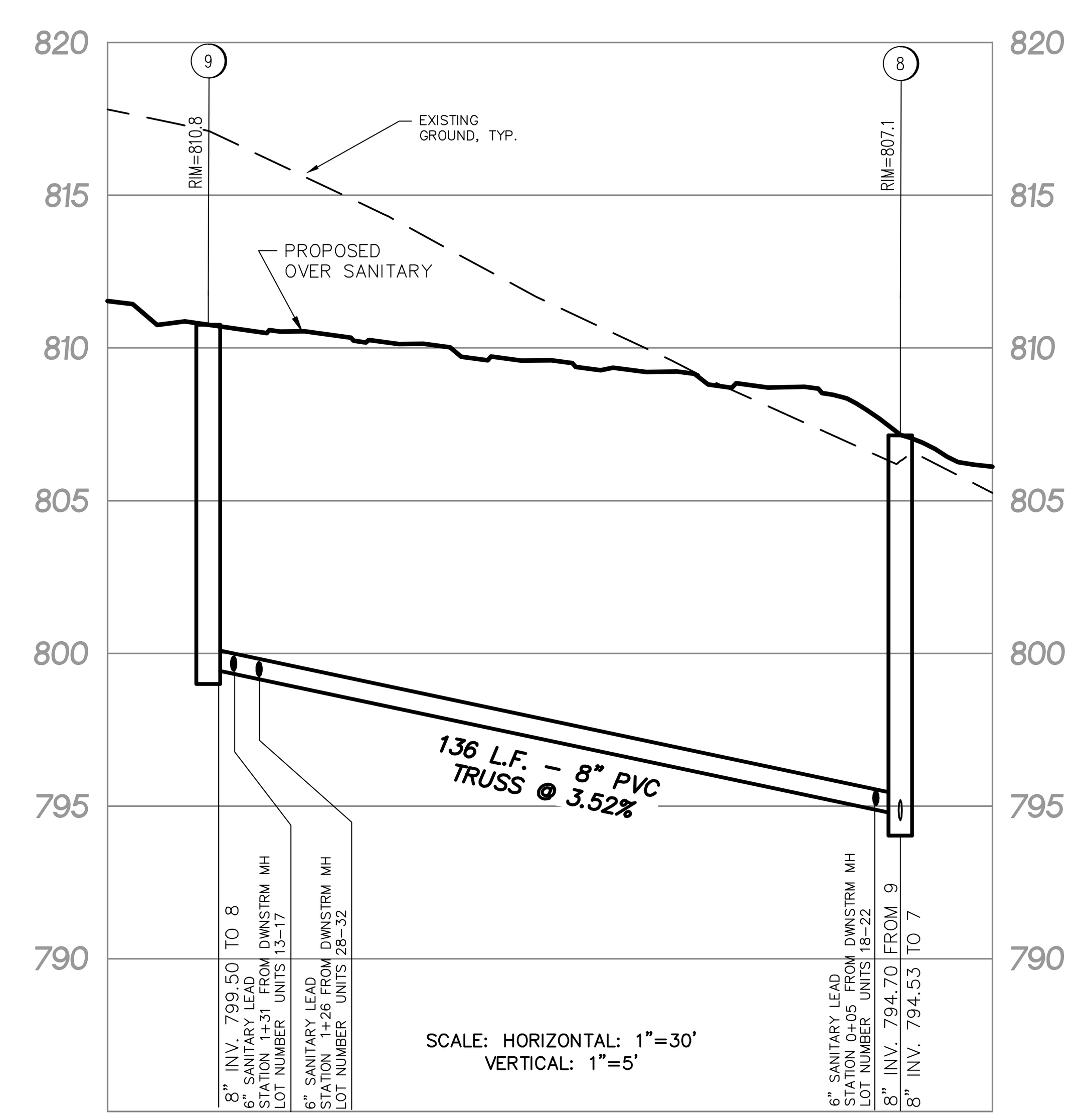
KEY MAP
NOT TO SCALE







NOTES

1. ALL HYDRANTS TO BE A MINIMUM 6' OFF BACK OF CURB AND 5' OFF EDGE OF DRIVEWAY PAVEMENT (TYP.)
2. MAINTAIN 6' COVER OVER ALL WATER MAIN.
3. ALL WATER MAINS SHALL BE CEMENT-LINED DUCTILE IRON PIPE CLASS 54.
4. ALL SANITARY SEWER LEAD ENDS TO BE TEMPORARY STAKED UNTIL PERMANENT CONNECTION IS MADE.
5. ALL SANITARY SEWER LEADS SHALL HAVE A MINIMUM SLOPE OF 1.0%.
6. NO CONNECTIONS RECEIVING STORM WATER, SURFACE WATER OR GROUND WATER SHALL BE MADE TO THE SANITARY SEWER.
7. ALL WATER SERVICES SHALL BE INSTALLED BY THE CITY OF ROCHESTER HILLS

CAUTION: UTILITY CROSSING

COMPACTED SAND BACKFILL UNDER THE INFLUENCE OF ROADS. MATERIAL COMPACTED TO 95% MAXIMUM UNIT DENSITY.

SCALE

30 0 15 30 60 120

(IN FEET)
Scale: 1 inch = 30 ft.

LEGEND

EXISTING / PROPOSED

- PAVEMENT (ASPHALT)
- SIDE WALK (CONCRETE)
- CONCRETE CURB AND GUTTER
- STORM SEWER
- SANITARY SEWER
- WATER MAIN
- MANHOLE
- REAR YARD INLET FILTER (SI-3)
- CURB INLET W/SILT SAC (SI-4A)
- END SECTION
- GATE VALVE
- HYDRANT
- FLOOD PLAIN
- CONTOURS (1000)
- SPOT ELEVATION (1000.0 / 1000.00 T/C)
- SURFACE DRAINAGE OVERFLOW ROUTE
- TREE FENCE
- SILT FENCE
- PROPOSED DRIVEWAY LOCATION
- LIMIT OF DISTURBANCE
- SILT FENCE GRAVEL FILTER (SP-3)

THE GROVES

SECTION 15, TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

REVISIONS

NO.	ITEM	DATE
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2.	REVISE PER CITY OF ROCHESTER HILLS	5-11-2020
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DATE: 03-23-2020 | DESIGNED BY: GWN | CHECKED BY: P.K. | JOB NUMBER: 19-034 | DRAWING FILE: 19034SAN.dwg

UNIVERSITY PARK CIRCLE SANITARY & WATERMAIN PLAN

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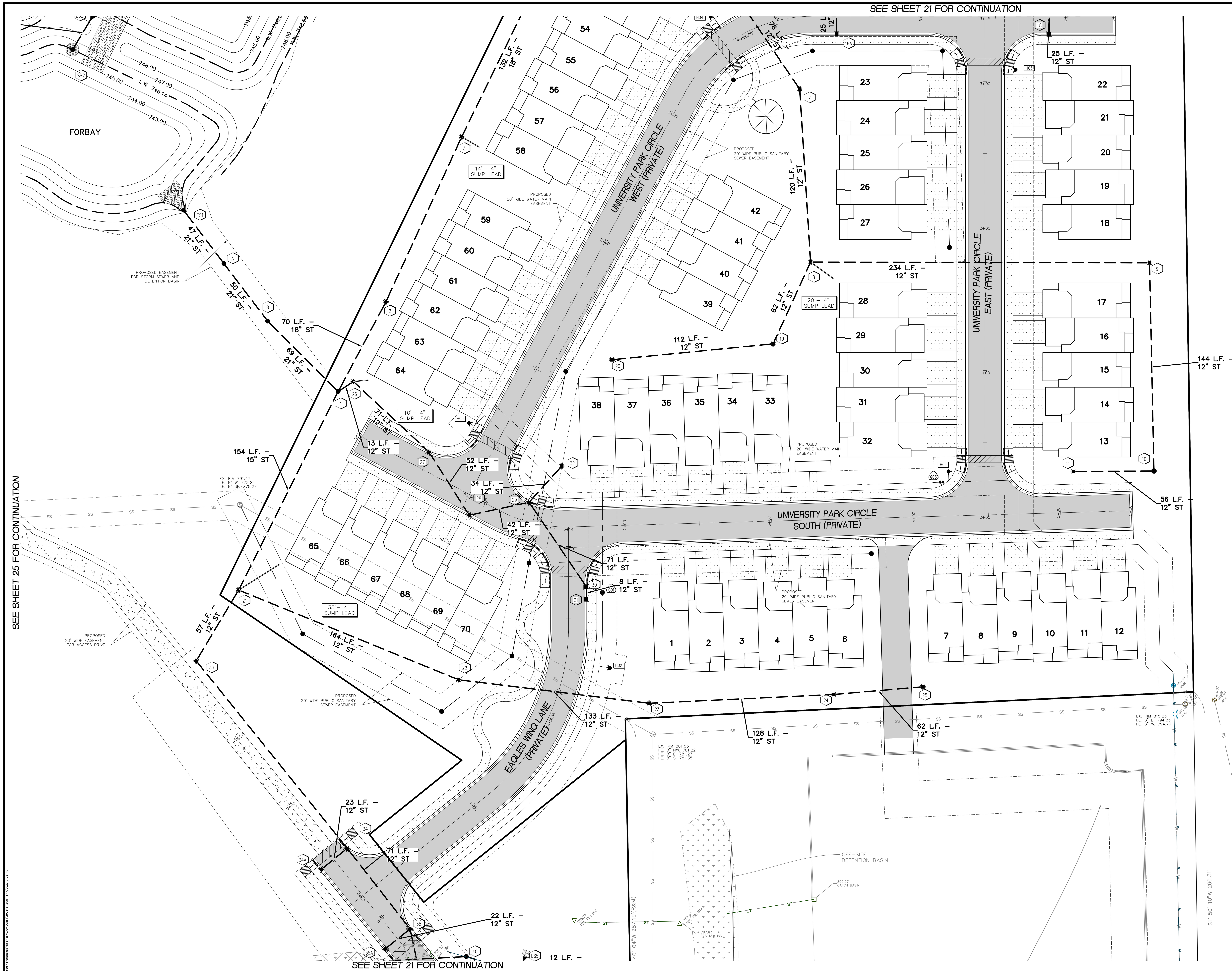
CONSULTING ENGINEERS
100 MAINCENTRE • SUITE 10 • NORTHVILLE, MI • 48167
PHONE: 248.308.3331 EMAIL: info@seiberkeast.com

SHEET 19

City File No. 19-022 Section 15

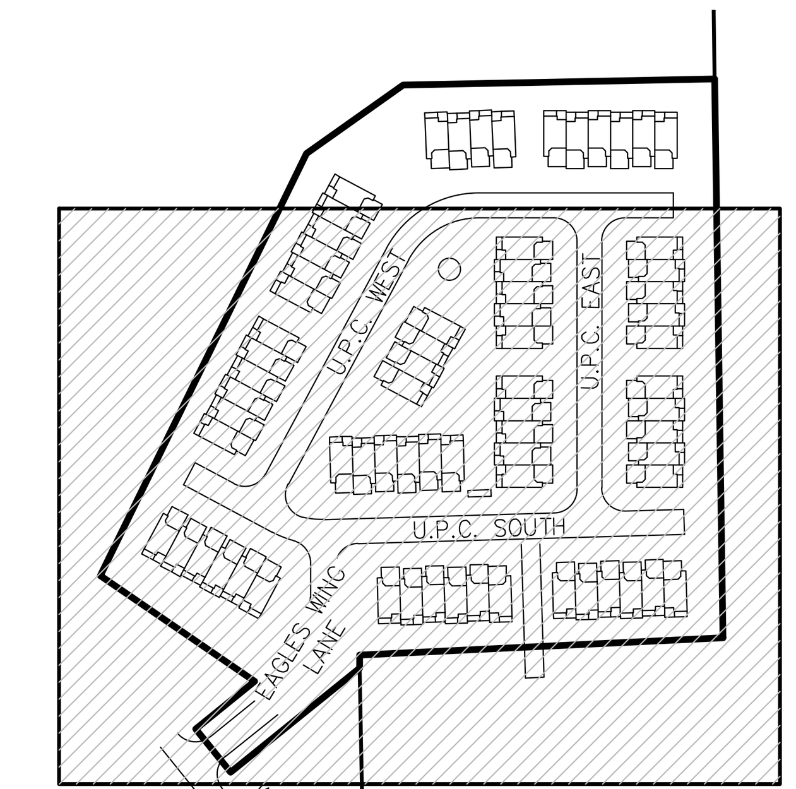


SCALE

(IN FEET)
Scale: 1 inch = 30 ft.

KEY MAP

NOT TO SCALE



LEGEND

EXISTING	PROPOSED	
		PAVEMENT (ASPHALT)
		SIDE WALK (CONCRETE)
		CONCRETE CURB AND GUTTER
		STORM SEWER
		SANITARY SEWER
		WATER MAIN
		MANHOLE
		REAR YARD INLET FILTER (SI–3)
		CURB INLET W/SILT SAC (SI–4A)
		END SECTION
		GATE VALVE
		HYDRANT
		FLOOD PLAIN
1000	1000	CONTOURS
1000.0	1000.00 T/C	SPOT ELEVATION
		SURFACE DRAINAGE OVERFLOW ROUTE
		TREE FENCE
		SILT FENCE
		PROPOSED DRIVEWAY LOCATION
		LIMIT OF DISTURBANCE
		SILT FENCE GRAVEL FILTER (SP–3)

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STORM SEWER PLAN

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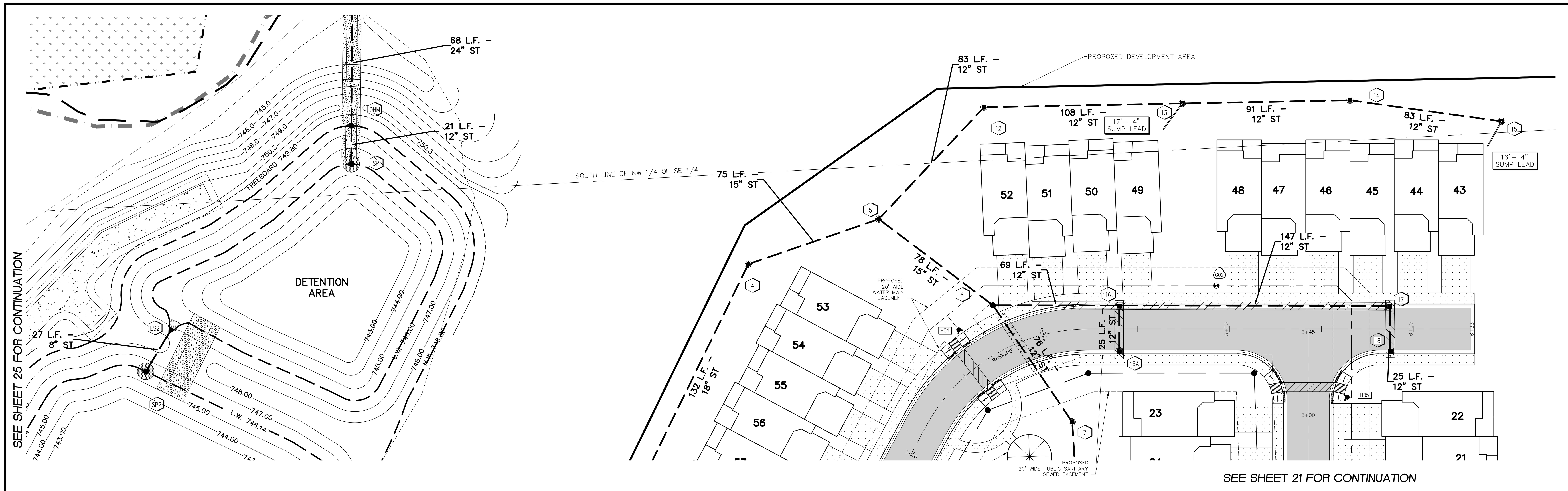
SHEET 20

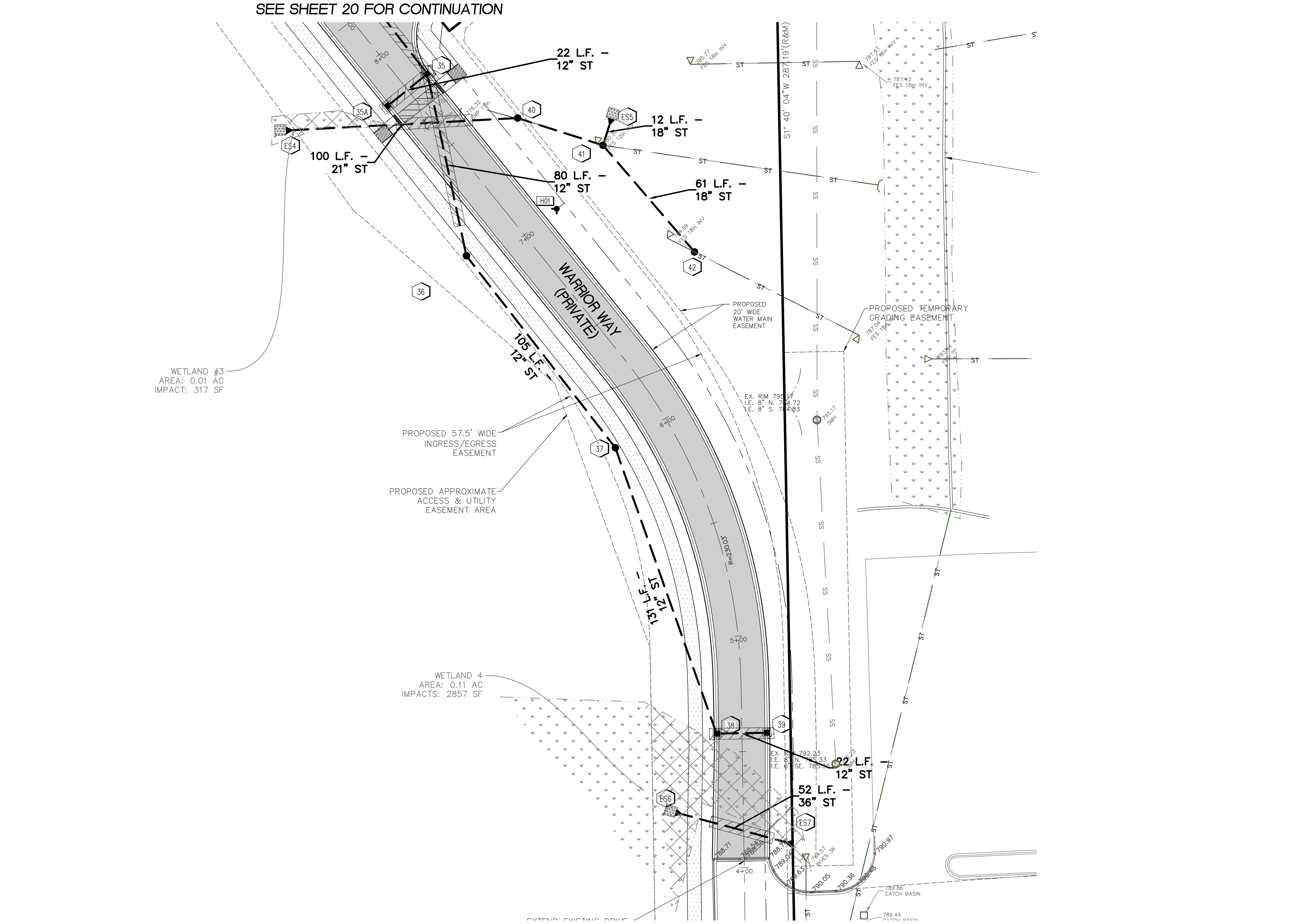
City File No. 19–022 Section 15

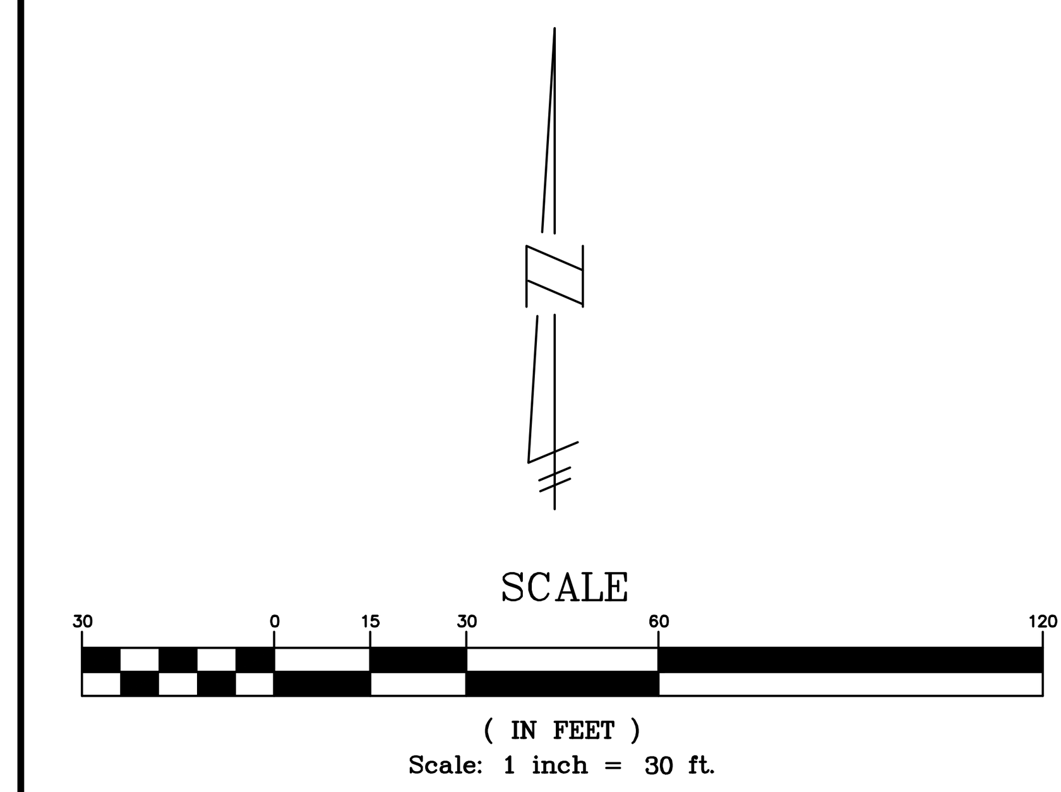


SEE SHEET 20 FOR CONTINUATION

STORM SEWER STRUCTURE TABLE

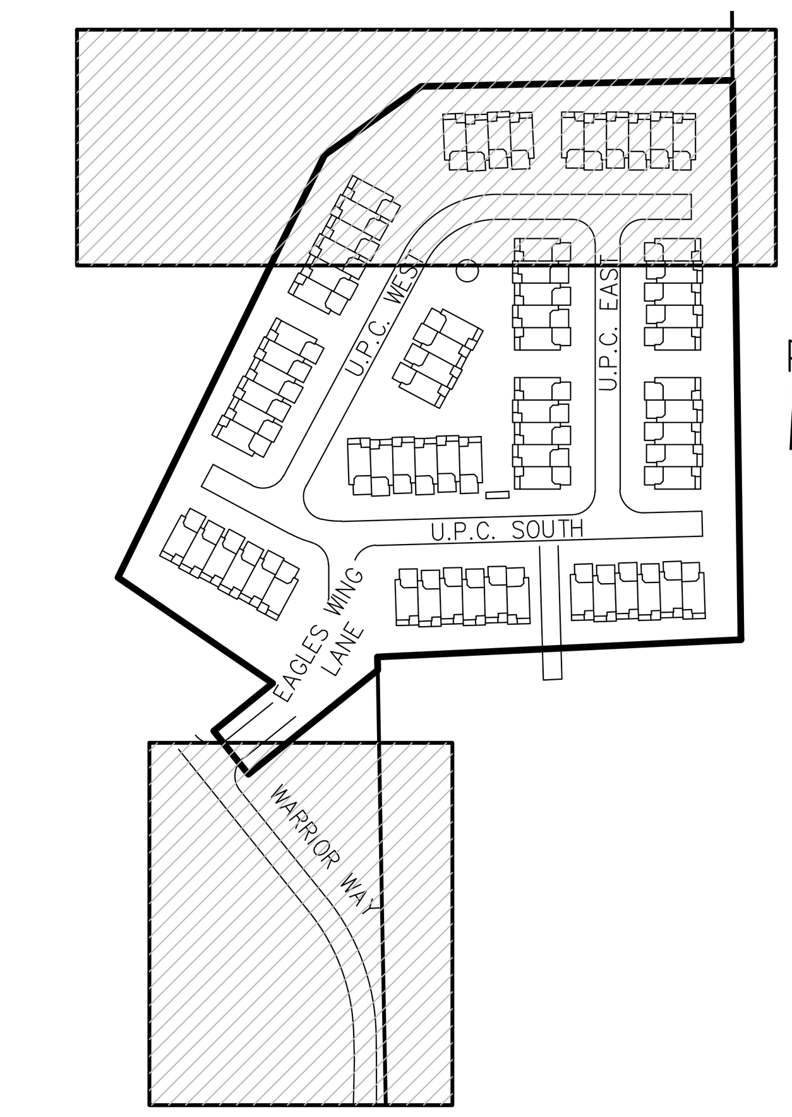
Number	Type	Size (Dia)	Sump Depth	Frame & Cover
A	Manhole	4	2	EJIW 1040 Type A Cover
B	Manhole	4	2	EJIW 1040 Type A Cover
1	Manhole	5	2	EJIW 1040 Type A Cover
2	Catch Basin	4	2	EJIW 1040 Type N Cover
3	Catch Basin	4	2	EJIW 1040 Type N Cover
4	Catch Basin	4	2	EJIW 1040 Type N Cover
5	Catch Basin	4	2	EJIW 1040 Type N Cover
6	Manhole	4	0	EJIW 1040 Type A Cover
7	Catch Basin	4	2	EJIW 1040 Type N Cover
8	Catch Basin	4	2	EJIW 1040 Type N Cover
9	Catch Basin	4	2	EJIW 1040 Type N Cover
10	Catch Basin	4	2	EJIW 1040 Type N Cover
11	Inlet	2	0	EJIW 7065 with Type N Grate
12	Catch Basin	4	2	EJIW 1040 Type N Cover
13	Catch Basin	4	2	EJIW 1040 Type N Cover
14	Catch Basin	4	2	EJIW 1040 Type N Cover
15	Inlet	2	0	EJIW 7065 with Type N Grate
16	Catch Basin with Floatable Trap	4	3	EJIW 7065 with Type M1 Grate
16A	Inlet	2	0	EJIW 7065 with Type M1 Grate
17	Catch Basin with Floatable Trap	4	3	EJIW 7065 with Type M1 Grate
18	Inlet	2	0	EJIW 7065 with Type M1 Grate
19	Catch Basin	4	2	EJIW 1040 Type N Cover
20	Inlet	2	0	EJIW 7065 with Type N Grate
21	Catch Basin	4	2	EJIW 1040 Type N Cover
22	Catch Basin	4	2	EJIW 1040 Type N Cover
23	Catch Basin	4	2	EJIW 1040 Type N Cover
24	Catch Basin	4	2	EJIW 1040 Type N Cover
25	Inlet	2	0	EJIW 7065 with Type N Grate
26	Catch Basin	4	2	EJIW 1040 Type N Cover
27	Catch Basin with Floatable Trap	4	3	EJIW 7065 with Type M1 Grate
28	Catch Basin with Floatable Trap	4	3	EJIW 7065 with Type M1 Grate
29	Catch Basin with Floatable Trap	4	3	EJIW 7065 with Type M1 Grate
30	Catch Basin with Floatable Trap	4	3	EJIW 7045 with Type M1 Grate
31	Inlet	2	0	EJIW 7045 with Type M1 Grate
32	Inlet	2	0	EJIW 1040 Type N Cover
33	Catch Basin	4	2	EJIW 1040 Type N Cover
34	Catch Basin with Floatable Trap	4	3	EJIW 7045 with Type M1 Grate
34A	Inlet	2	0	EJIW 7045 with Type M1 Grate
35	Catch Basin with Floatable Trap	4	3	EJIW 7045 with Type M1 Grate
35A	Inlet	2	0	EJIW 7045 with Type M1 Grate
36	Manhole	4	0	EJIW 1040 Type A Cover
37	Manhole	4	0	EJIW 1040 Type A Cover
38	Catch Basin with Floatable Trap	4	3	EJIW 7045 with Type M1 Grate
39	Inlet	2	0	EJIW 7045 with Type M1 Grate
40	Manhole	4	0	EJIW 1040 Type A Cover
41	Manhole	4	0	EJIW 1040 Type A Cover
42	Manhole	4	0	EJIW 1040 Type A Cover
Forebay/Sediment Basin Outlet 36" Diameter Stand Pipe - See Detail Storm Sewer Detail Sheet 1 of 1				
Detention Basin Outlet 36" Diameter Stand Pipe - See Detail Storm Sewer Detail Sheet 1 of 1				
Overflow Man Hole - See Detail on Sheet 24				





KEY MAP

NOT TO SCALE



LEGEND

EXISTING	PROPOSED	
		PAVEMENT (ASPHALT)
		SIDE WALK (CONCRETE)
		CONCRETE CURB AND GUTTER
		STORM SEWER
		SANITARY SEWER
		WATER MAIN
		MANHOLE
		REAR YARD INLET FILTER (SI–3)
		CURB INLET W/SILT SAC (SI–4A)
		END SECTION
		GATE VALVE
		HYDRANT
		FLOOD PLAIN
1000	1000	CONTOURS
+ 1000.0	1000.00 T/C	SPOT ELEVATION
		SURFACE DRAINAGE
		OVERFLOW ROUTE
		TREE FENCE
		SILT FENCE
		PROPOSED DRIVEWAY LOCATION
		LIMIT OF DISTURBANCE
		SILT FENCE GRAVEL FILTER (SP–3)

THE GROVES

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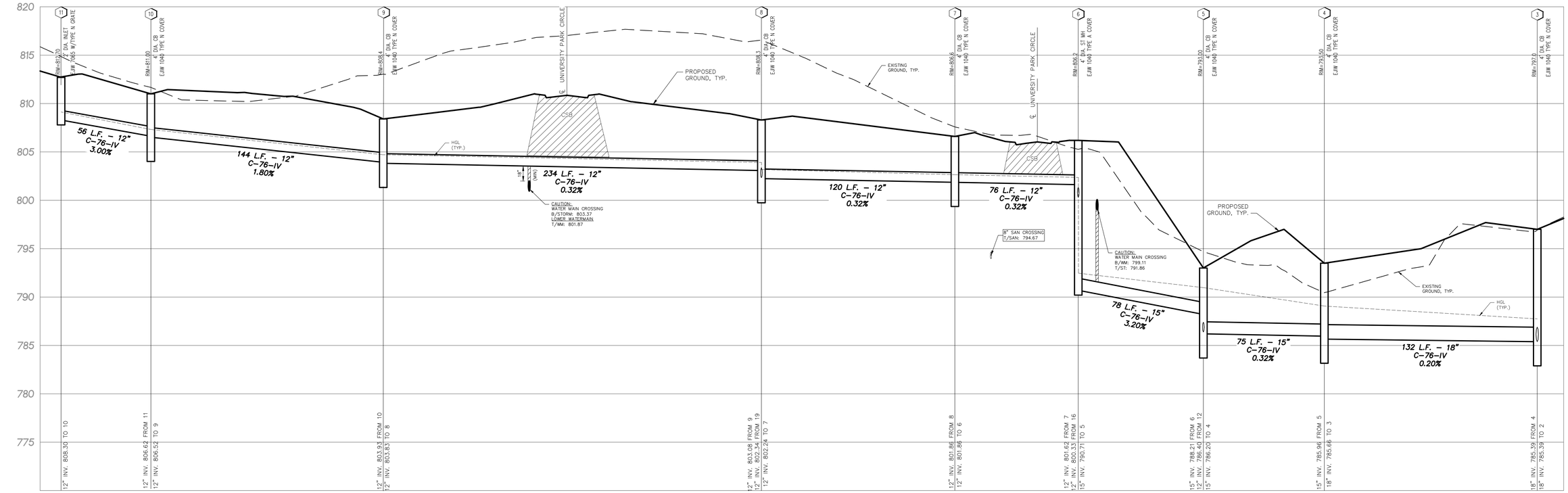
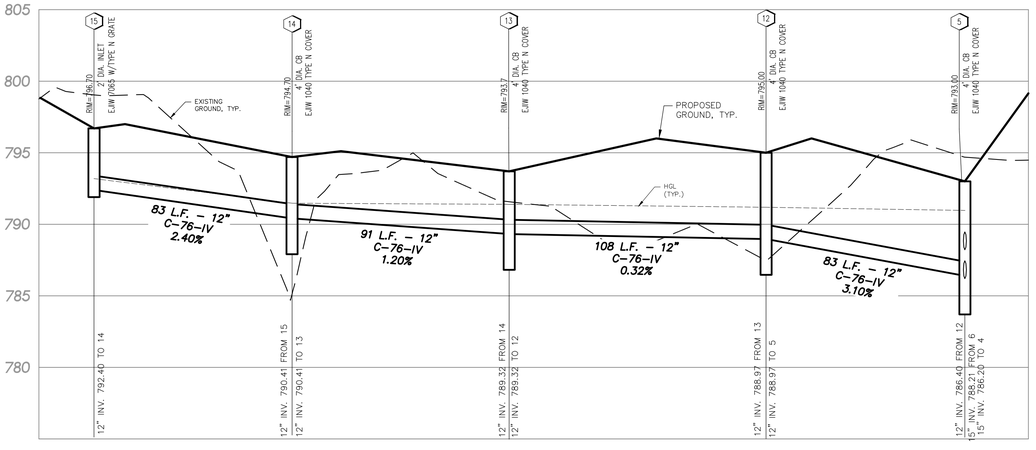
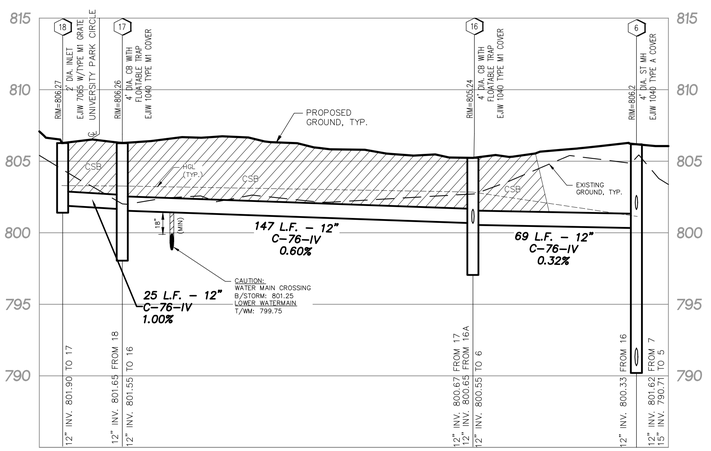
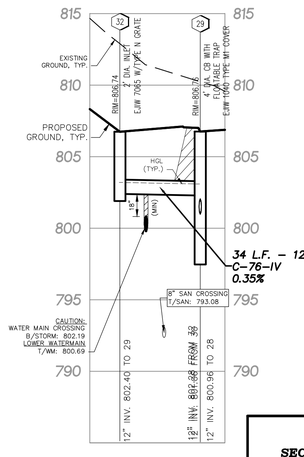
SHEET 21

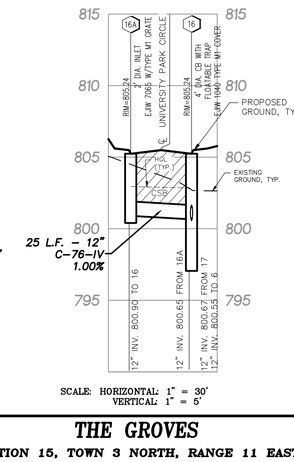
City File No. 19–022 Section 15











SCALE: HORIZONTAL: 1" = 30'
VERTICAL: 1" = 5'

THE GROVES

SECTION 15, TOWN 3 NORTH, RANGE 11 EAST
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SHEET 22

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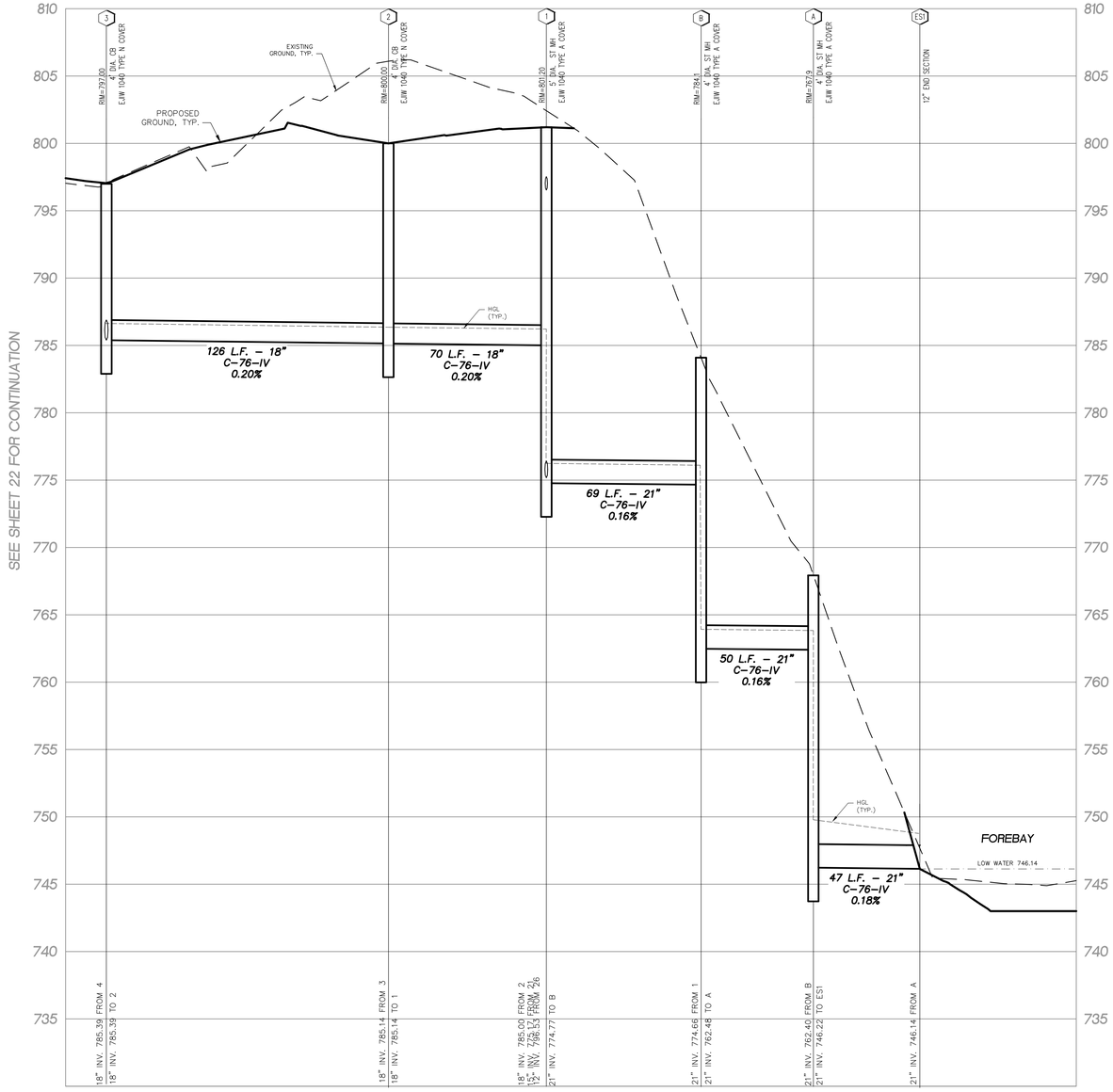

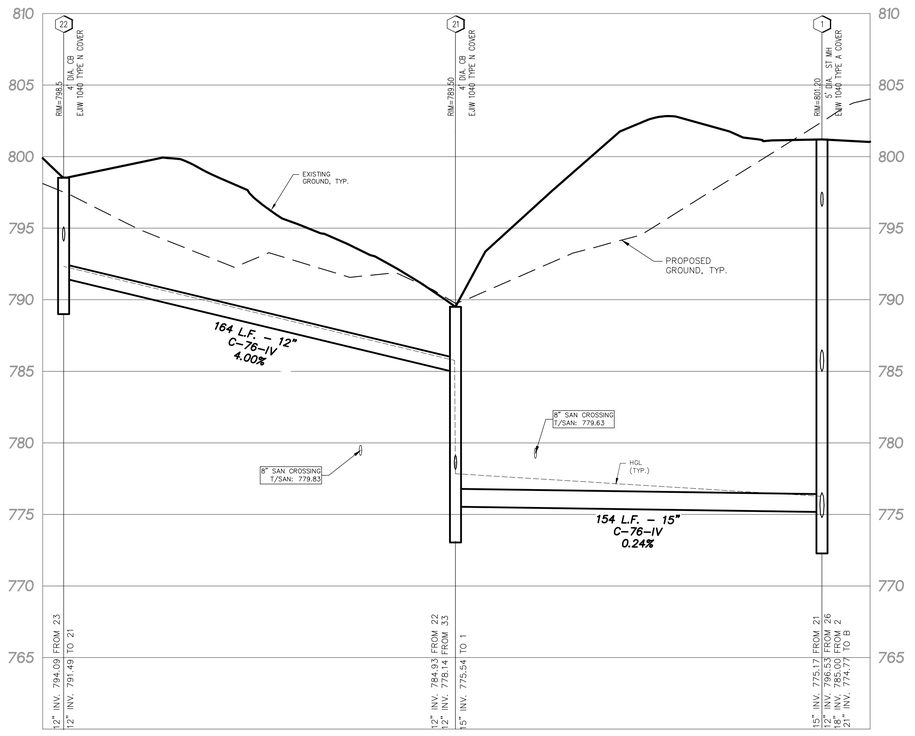

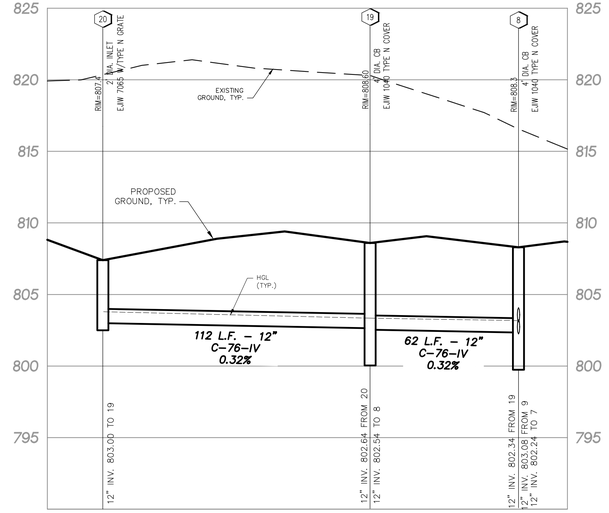

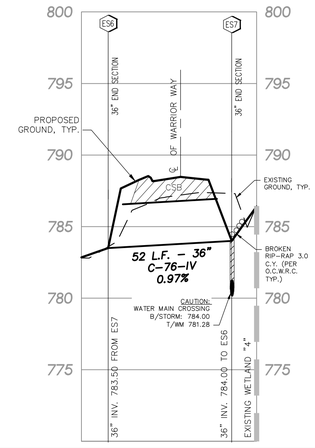

SCALE: HORIZONTAL: 1" = 30'
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THE GROVES

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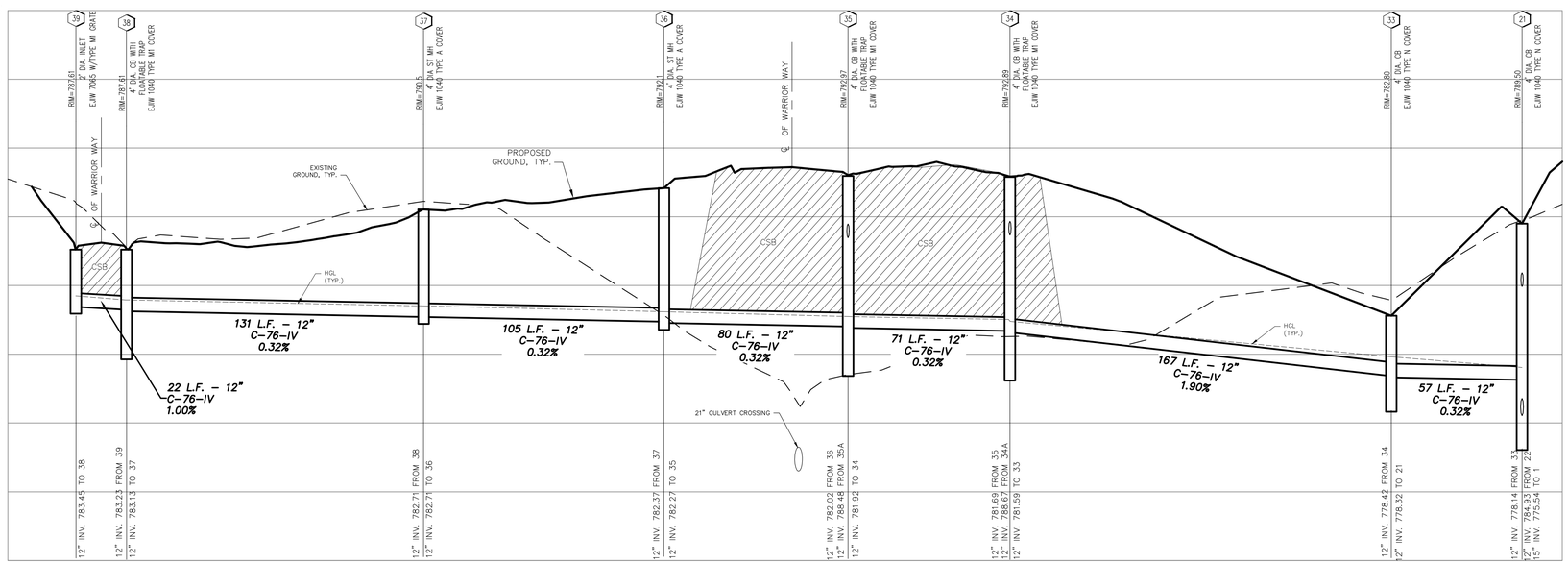

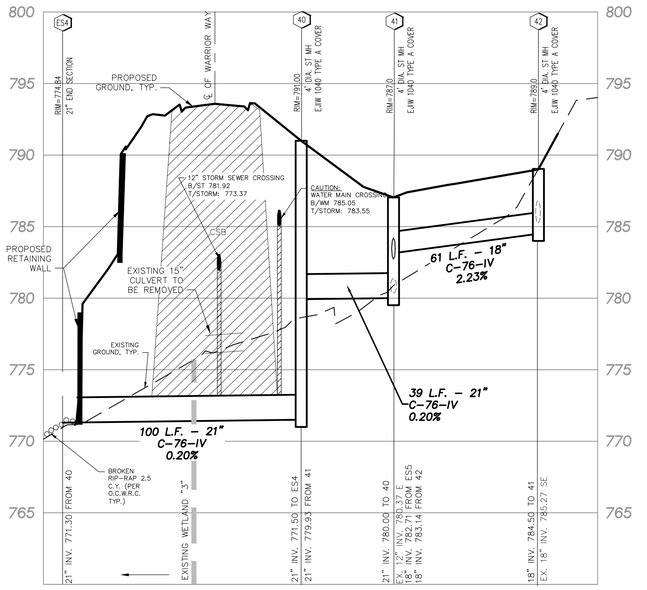

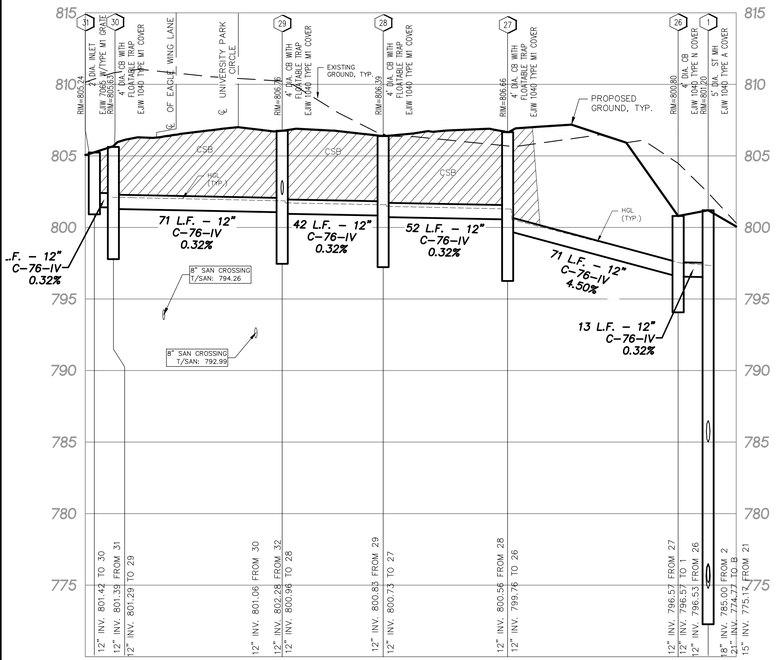

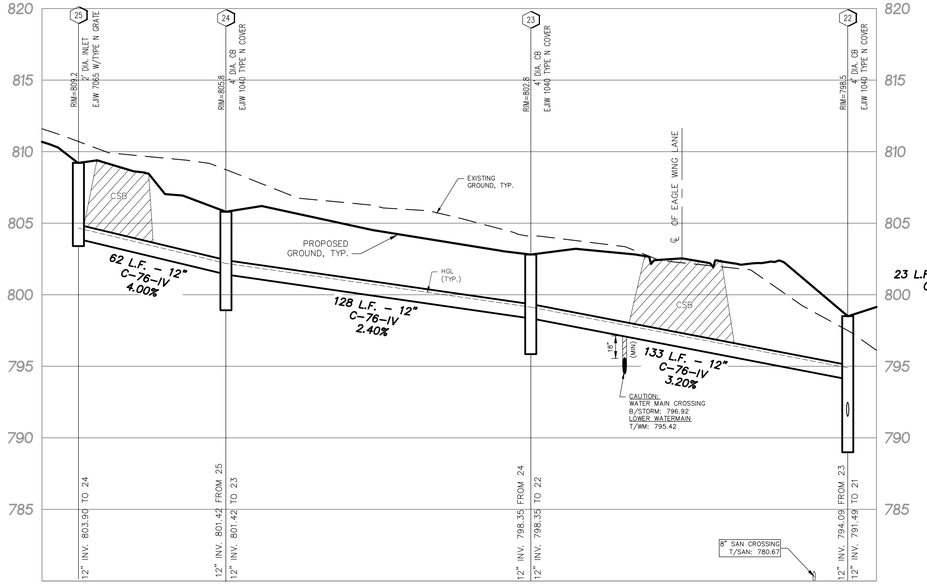

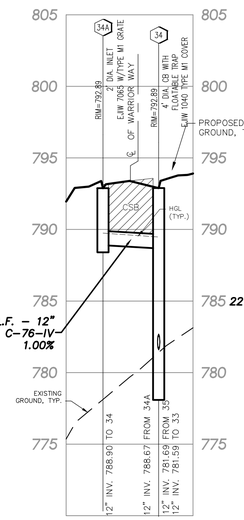

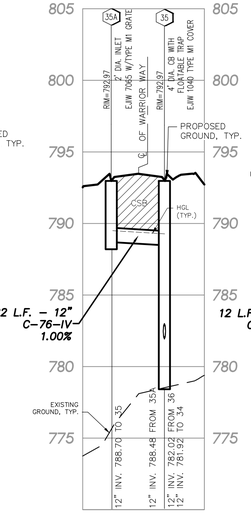

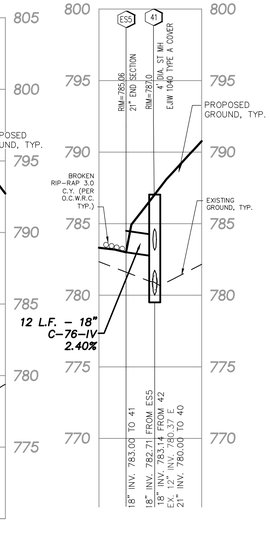

SCALE: HORIZONTAL: 1" = 30'
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THE GROVES

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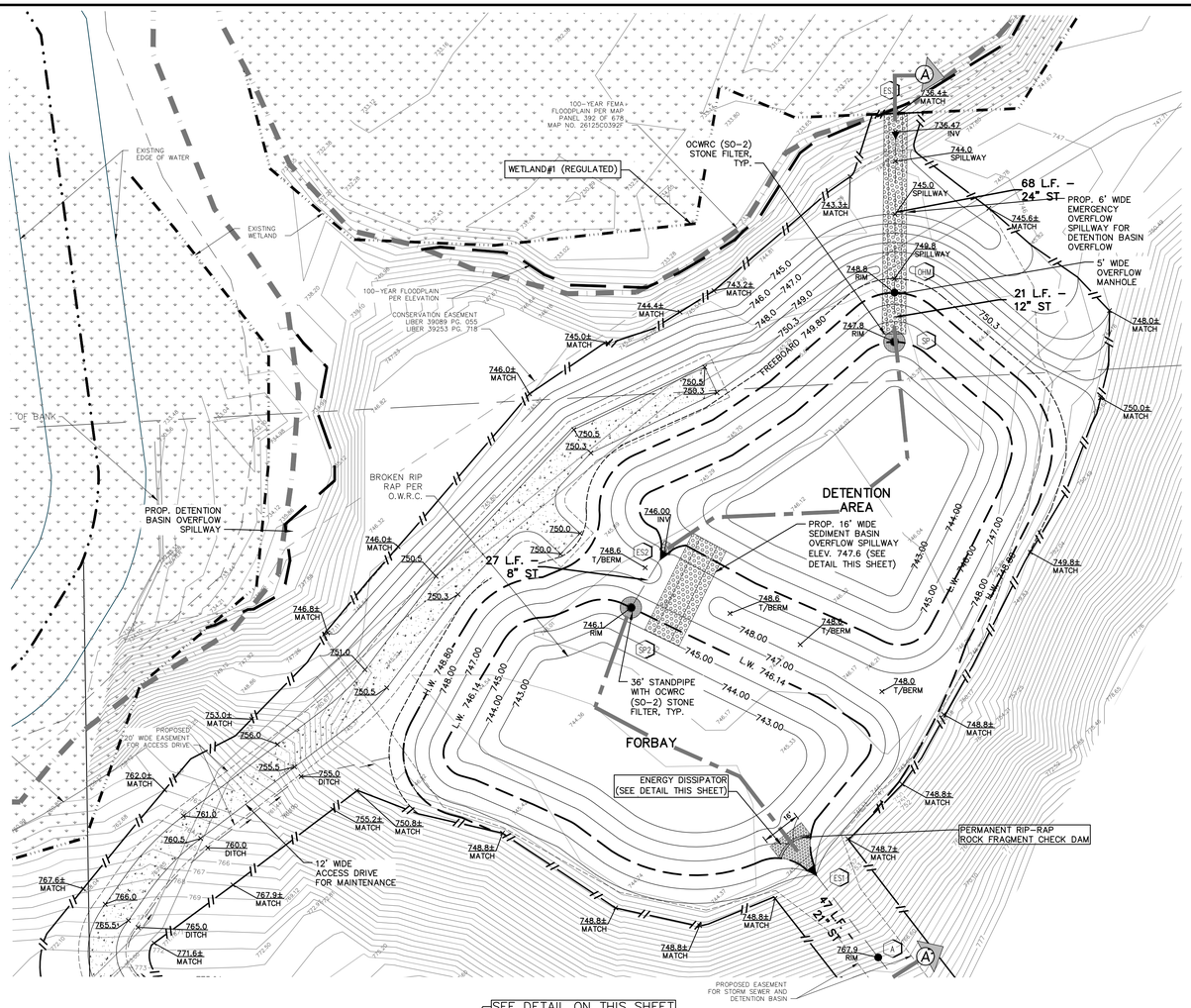
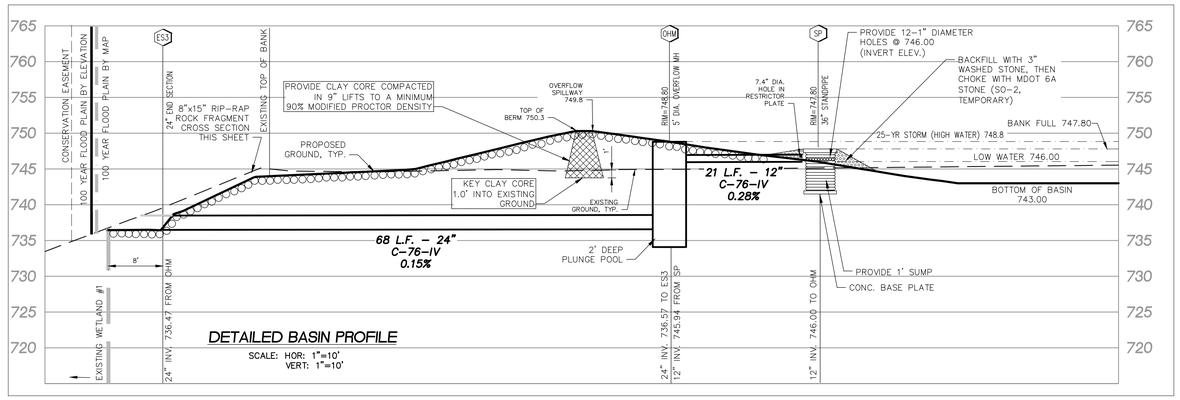
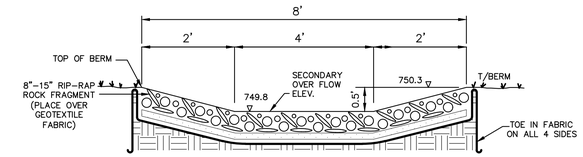
SHEET 24

City File No. 19-022 Section 15



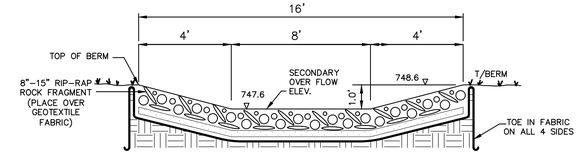




NOTE: GEOTEXTIE FABRICS SHALL HAVE THE FOLLOWING MINIMUM SPECIFICATIONS:

GRAB TENSILE STRENGTH: 300 LBS
MULLEN BURST STRENGTH: 600 PSI
TRAPEZOID TEAR STRENGTH: 120 LBS
ULTRA-VIOLET STABILITY: 70%
FABRIC: WOVEN POLYPROPYLENE MONOFILAMENT YARNS

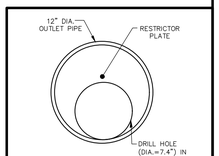
DETENTION BASIN EMERGENCY OVERFLOW SPILLWAY



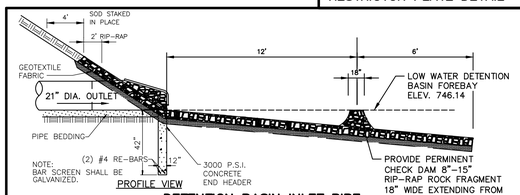
NOTE: GEOTEXTIE FABRICS SHALL HAVE THE FOLLOWING MINIMUM SPECIFICATIONS:

GRAB TENSILE STRENGTH: 300 LBS
MULLEN BURST STRENGTH: 600 PSI
TRAPEZOID TEAR STRENGTH: 120 LBS
ULTRA-VIOLET STABILITY: 70%
FABRIC: WOVEN POLYPROPYLENE MONOFILAMENT YARNS

SEDIMENT BASIN OVERFLOW SPILLWAY

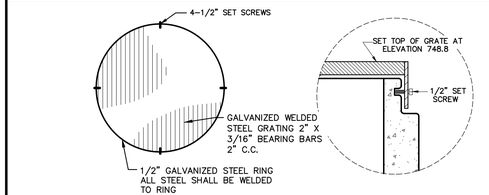


RESTRICTOR PLATE DETAIL



DETENTION BASIN INLET PIPE ENERGY DISSIPATOR DETAIL

NO SCALE

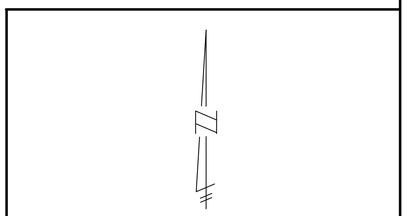


5' DIA. DETENTION BASIN OVERFLOW MANHOLE (25 YR OVERFLOW) OUTLET GRATE

(NOT TO SCALE)

BASIN CROSS SECTION A-A

SCALE: HOR: 1"=50'
VERT: 1"=5'



(IN FEET)
Scale: 1 inch = 30 ft.

LEGEND

EXISTING	PROPOSED	
		PAVEMENT (ASPHALT)
		SIDE WALK (CONCRETE)
		CONCRETE CURB AND GUTTER
		STORM SEWER
		SANITARY SEWER
		WATER MAIN
		MANHOLE
		REAR YARD INLET FILTER (SI-3)
		CURB INLET W/SILT SAC (SI-4A)
		END SECTION
		GATE VALVE
		HYDRANT
		FLOOD PLAIN
1000	1000	CONTOURS
1000.0	1000.00 T/C	SPOT ELEVATION
		SURFACE DRAINAGE
		OVERFLOW ROUTE
		TREE FENCE
		SILT FENCE
		PROPOSED DRIVEWAY LOCATION
		LIMIT OF DISTURBANCE
		SILT FENCE GRAVEL FILTER (SP-3)

THE GROVES

SECTION 15, TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

REVISIONS

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DATE: 03-23-2020 | DESIGNED BY:GWN | JOB NUMBER: 19-034
CHECKED BY: P.K. | DRAWING FILE: 19034DB.dwg

DETENTION BASIN PLAN AND PROFILE

SEIBER, KEAST ENGINEERING, L.L.C.
CONSULTING ENGINEERS
100 MAINCENTRE • SUITE 10 • NORTHVILLE, MI • 48167
PHONE: 248.308.3331 EMAIL: info@seiberkeast.com

SHEET 25

City File No. 19-022 Section 15

Storm Water Detention Calculation

Based on City of Rochester Hills Engineering Design Standards

DETERMINE DETENTION REQUIRED (25-YEAR STORM)

Qall =	2.35	cfs (0.2 cfs/AC.)	
AC. =	11.74	(AREA TRIBUTARY TO THE DETENTION BASIN)	
C =	0.645		
Qo =	Qall / (AC. x C) =	0.31	
T =	-25 + SQRT(8062.5/Qo) =	136.30	min.
Vs =	((12900 x T)/(T + 25))-(40 x Qo x T)=	9211.06	C.F./Ac. imp.
Vt =	Vs x AC. x C =	69810.087	C.F.
TOTAL DETENTION REQUIRED =		**69,810**	**C.F.**

TOTAL DETENTION PROVIDED (25 YEAR)

Forebay

ELEVATION	AREA(s.f.)	VOLUME	
748.80	22675		
748.00	19434	16844	C.F.
747.00	16302	17868	
746.14	13470	12802	
	TOTAL BASIN A	**47514**	**C.F.**

Detention Basin

ELEVATION	AREA(s.f.)	VOLUME	
748.80	19966		
748.00	17231	14879	C.F.
747.00	14214	15723	
746.00	11509	12862	
	TOTAL BASIN B	**43463**	**C.F.**

TOTAL DETENTION PROVIDED 90,976 C.F.

DETENTION BASIN OUTLET SIZING

H =	2.49	ft.	(High Water Elevation - Elevation at Center of Outlet Pipe)
Q =	2.35	c.f.s.	
A =	0.2992	s.f. =	0.617207 FOOT diameter outlet pipe
	7.41	inch Dia.	**USE 7.4 INCH DIAMETER OUTLET**

PERMANENT WATER VOLUME REQUIRED

(volume of water below the normal water surface)

Permanent Water Volume Required = Twice the First Flush Volume =
13,756 x 2 = **27,512 C.F.**
Permanent Water Volume Provided = **41,513 C.F.**

Minimum Permanent Water Depth Required = 3 Feet
Permanent Water Depth Provided = 3 Feet

PERMANENT WATER VOLUME PROVIDED

Forebay

ELEVATION	AREA(s.f.)	VOLUME	
746.14	13470		
745.00	10828	13850	
744.00	8362	9595	
	TOTAL	**23445**	**C.F.**

Detention Basin

ELEVATION	AREA(s.f.)	VOLUME	
746.00	11509		
745.00	8940	10225	
744.00	6748	7844	
	TOTAL	**18069**	**C.F.**
	TOTAL BOTH BASINS	**41513**	**C.F.**

FIRST FLUSH VOLUME REQUIRED PROVIDED IN SEDIMENT BASIN

(Post Development Water Quality)

Volume Required = 1815 x 11.74 Ac x 0.593 = **13,756 C.F.**

Volume Provided at Elev. **747.10** **14,146 C.F.**

FIRST FLUSH DEWATERING TIME 24 HRS MINIMUM

First Flush Average Discharge, $Q_{ff} = V_{ff} / T_{24}$	0.16	cfs
First Flush Elev. Head, $h_{ave} = 2/3 \times (X_{ff} - X_o)$	0.6432	ft
First Flush Total Orifice Area, Aff		
$= Q_{ff} / (0.62 \times (2 \times g \times h_{ave})^{(1/2)})$	0.039899151	sf
Enter First Flush Orifice Diameter	1	inches
Orifice Area, $A_{ff\text{-}new}$	0.0055	sf
Number of First Flush Orifice Holes Required (Rounded down to nearest whole #)	**7**	holes at elev **746.14**
Revised First Flush Discharge, $Q_{ff\text{-}new}$		
$= A_{ff\text{-}new} \times \#holes \times 0.62 \times (2 \times g \times h_{ave})^{(1/2)}$	0.152	cfs
First Flush Storage Time, $T_{ff\text{-}new}$	25.08	hours
$= V_{ff} / Q_{ff\text{-}new}$ / 3600 sec/hr		

BANK FULL FLOOD VOLUME REQUIRED

(Channel Protection)

Bank Full Volume Req. 6788 x 11.74 Ac. x 0.593 = **51,446 C.F.**

Bank Full Volume Provided at Elevation **747.80** **52,306 C.F.**

BANK FULL FLOOD DEWATERING TIME

(Volume Storage Time not less than 24 hrs nor more than 48hrs)
Target Storage Time 40 Hours

Bank Full Average Discharge, $Q_{bf} = V_{bf} / T_{40}$	0.36	cfs
Bank Full Elev. Head, $h_{ave} = 2/3 \times (X_{bf} - X_o)$	1.20	ft
Bank Full Total Orifice Area, A_{bf}		
$= Q_{bf} / (0.62 \times (2 \times g \times h_{ave})^{(1/2)})$	0.0666	sf
Enter Bank Full Orifice Diameter	1	inches
Orifice Area, $A_{bf\text{-}new}$	0.0055	sf
Number of First Flush Orifice Holes Required	**12**	holes at elev **746.00**
Revised First Flush Discharge, $Q_{bf\text{-}new}$		
$= A_{bf\text{-}new} \times \#holes \times 0.62 \times (2 \times g \times h_{ave})^{(1/2)}$	0.357	cfs
Bank Full Storage Time, $T_{bf\text{-}new}$	40.73	hours
$= V_{bf} / Q_{bf\text{-}new}$ / 3600 sec/hr		

CALCULATIONS FOR DETENTION BASIN 100-YEAR OVERFLOW STRUCTURES

Overflow Manhole

Acreage Trib to Overflow (on + offsite):	11.74	ac
Composite run off coefficient:	0.645	
(From Pipe Flow Calculations)		
Longest time of flow to forebay:	24.39	min
Sum of all Flow into Basin 100-year	46.32	cfs
Volume of the Detention Basin and Forebay =	90,976	cf
Time to Fill Basin and Forbay	32.74	min.
I = 275/(T+25) Where T= 57.13	3.35	In / hr
Qexp=CIA=Max outlet rate during 100 year storm	**25.38**	**cfs**

CAPACITY OF 5-FOOT DIAMETER MAN HOLE

$Q = C*L*H^{3/2}$

C =	3.33		5.00 foot dia manhole
L =	7.85	ft	50.00 % of MH used as a Weir
H =	1.00	ft	
Qprov =	**26.15**	**cfs**	

Detention Basin Overflow Spillway

CAPACITY OF 6-FOOT WIDE OVER FLOW SPILLWAY

100-yr capacity exists in the overflow MH outlet, therefore use 4' wide spillway

$Q = C*L*H^{3/2}$

C =	3.33	
L =	4	ft
H =	0.50	ft
Qprov =	**4.71**	cfs

TOTAL CAPACITY OF THE OVERFLOW MANHOLE AND SPILLWAY EXCEED THE MAXIMUM 100 YEAR OUTLET RATE

Capacity of Detention Basin Outlet Pipe

Orifice Formula, Q = 0.625*A*sqrt(64.4*H)

Qexp at 5' Dia. Manhole =	25.38	cfs
Outlet Size =	24.00	in
Invert Elevation =	736.57	ft
Springline EL. =	737.57	ft
H =	11.23	ft
Area Req'd = A =	1.51	sf
Area of Outlet Used	3.14	sf
Diameter Provided =	24.00	in
Use	**24.000**	**in Dia Outlet**

CALCULATIONS FOR FOREBAY 10-YEAR OVERFLOW SPILLWAY

Flow from Storm Sewer and Sheet Flow to Forebay

Flow from Storm Sewer =	**21.63**	**cfs**
Sheet Flow to Forebay		
1.49 Ac x 175/T+25 x 0.546 =	**3.16**	**cfs**
	24.79	

$Q = C*L*H^{3/2}$

C =	3.33	
L =	8	ft
H =	1.00	ft
Qprov =	**26.64**	**cfs**

"C" Factor for Area Tributary to the Forebay Overflow Spillway

	Area		C	A *C
Total Tributary Area	1.49	Ac.		
ForeBay Low Water	0.31	Ac @	1.00	0.309
Gravel Drive	0.07	Ac @	0.85	0.060
Lawn Area Slopes > 8%	1.11	Ac @	0.40	0.444
TOTAL AREA	1.49	Ac.		0.813
Cavg = A*C/TOTAL	**0.546**			1.63

DETERMINE "C" FACTOR FOR DETENTION BASIN

		Area			C		A *C
TOTAL AREA TRIBUTARY TO DETENTION BASIN	=	11.74	Ac				
ROOF AND PAVING AREA (WALKS, DRIVE, ROAD)	=	5.06	Ac	@	0.95	=	4.807
DETENTION & FOREBAY (LOW WATER AREA)	=	0.57	Ac	@	1.00	=	0.573
GRAVEL DRIVE	=	0.16	Ac	@	0.85	=	0.136
LAWN AREA & UNDEVELOPED < 4% SLOPES	=	2.76	Ac	@	0.30	=	0.828
LAWN AREA & UNDEVELOPED 4%-8% SLOPES	=	0.83	Ac	@	0.35	=	0.291
LAWN AREA & UNDEVELOPED > 8% SLOPES	=	2.36	Ac	@	0.40	=	0.944
TOTAL AREA	=	11.74					7.58
Cavg = A * C / TOTAL ACRES	=	**0.645**					

THE GROVES

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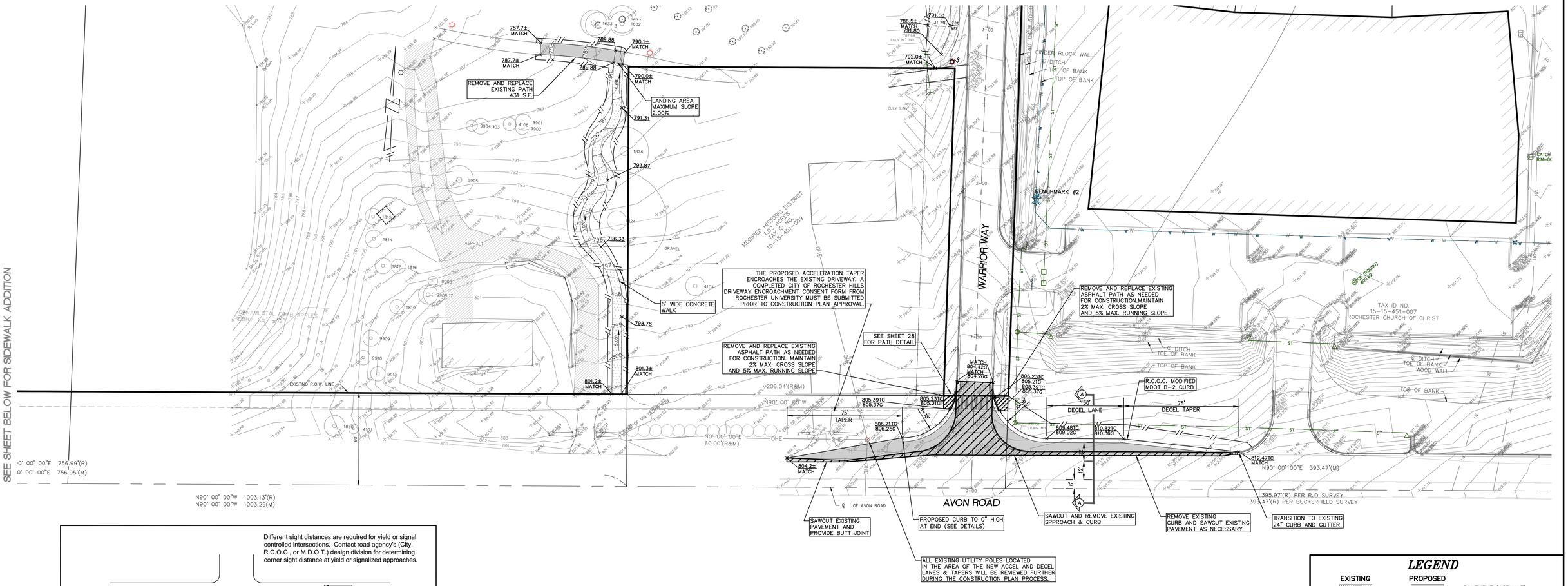
DETENTION BASIN CALCULATIONS

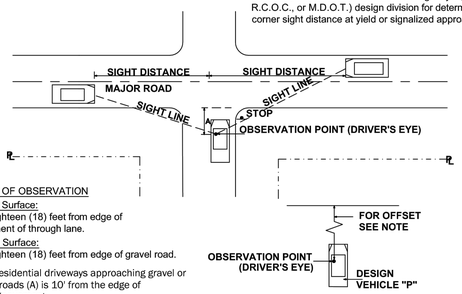
SEIBER, KEAST ENGINEERING, L.L.C.
CONSULTING ENGINEERS
100 MAINCENTRE • SUITE 10 • NORTHVILLE, MI • 48167
PHONE: 248.308.3331 EMAIL: info@seiberkeast.com

SHEET 26

City File No. 19-022 Section 15



Different sight distances are required for yield or signal controlled intersections. Contact road agency's (City, R.C.O.C., or M.D.O.T.) design division for determining corner sight distance at yield or signalized approaches.



POINT OF OBSERVATION

Paved Surface:
(A) Eighteen (18) feet from edge of pavement of through lane.

Gravel Surface:
(A) Eighteen (18) feet from edge of gravel road.

* For residential driveways approaching gravel or paved roads (A) is 10' from the edge of gravel/pavement.

The point of vision shall be from the height of eye, 3.5 feet above the proposed intersecting elevation to a height of object 3.5 feet above the existing or proposed road centerline and shall be continuously visible within the specified limits.

MINIMUM CORNER SIGHT DISTANCE FOR DRIVEWAYS AND STREETS AT MAJOR ROAD INTERSECTIONS FOR PASSENGER VEHICLES

MAJOR ROAD POSTED OR 85% SPEED IN MPH	MINIMUM SIGHT DISTANCE IN FEET, BOTH DIRECTIONS	
	2 OR 3 LANE THRU ROAD IN FEET	4 OR 5 LANE THRU ROAD IN FEET
25	280	295
30	335	355
35	390	415
40	445	470
45	500	530
50	555	590
55	610	650

The basic prima facia speed shall be used for gravel roads, unless otherwise approved by the Engineer.

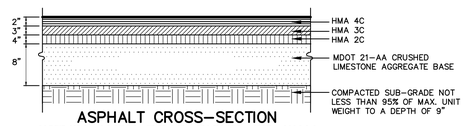
NOTES

1. Any deviation from given data requires an engineering study approved by the road agency (City, R.C.O.C., or M.D.O.T.) in accordance with the latest edition AASHTO policy on geometric design.
2. This design guide also applies to new Permit and Plat construction projects.
3. The above data is based on a left turn maneuver into the intersecting roadway as described in AASHTO. Due to the higher potential accident severity, the left turning sight distance was used to determine the corner sight distanced required. Right turn onto major roads shall have the same sight distances.
4. Existing site conditions may require an engineering study to determine sight distance.

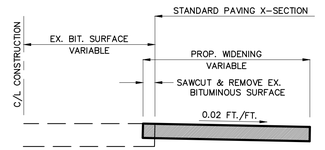
CITY OF ROCHESTER HILLS
STANDARD DETAIL FOR:
Sight Distance Roadways

Drawn By: B. Smith	File Name: Circ Drv	Plan Date: 8/28/1996	Rev. 4/12/2012	Rev. 3/15/2014	Rev.
Approved By: Paul Shumejko, P.E., PTOE City Transportation Engineer			NOT TO SCALE		Sheet 1 of 2

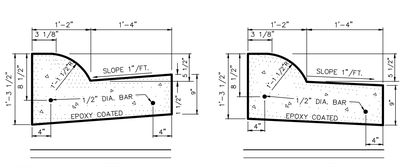
I:\ENG\DWG\DETAILS\ROADS\SIGHT DISTANCE-Rds & Pothe.DWG



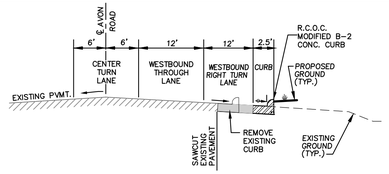
ASPHALT CROSS-SECTION WITHIN AVON ROAD RIGHT-OF-WAY



CONNECTION TO EXISTING PAVEMENT DETAIL



STANDARD GUTTER DETAIL REVERSE GUTTER DETAIL
30" M.D.O.T. B-2 ROLL CURB WITH GUTTER



CROSS SECTION FOR APPROACH (A-A) AT AVON ROAD

ROAD COMMISSION FOR OAKLAND COUNTY NOTES

1. A PERMIT MUST BE OBTAINED FROM THE R.C.O.C. PERMIT DIVISION PRIOR TO ANY WORK BEING DONE ALONG EXISTING COUNTY ROADS.
2. MAINTAIN ACCESS TO EXISTING RESIDENTS AT ALL TIMES DURING CONSTRUCTION.
3. THROUGH TRAFFIC MUST BE MAINTAINED AT ALL TIMES AND TWO WAY TRAFFIC RESTORED PRIOR TO WORK END EACH DAY.
4. ALL MAIL BOXES ARE TO BE TEMPORARILY RELOCATED AND MAIL SERVICE MAINTAINED DURING CONSTRUCTION. MAIL BOXES ARE TO BE PERMANENTLY RESET IN ACCORDANCE WITH LOCAL POSTAL REQUIREMENTS.
5. RESTORE ALL DISTURBED AREAS, DRIVEWAYS, LAWNS, ETC. TO A CONDITION AT LEAST EQUAL TO EXISTING.
6. OVERHEAD LINES TO BE A MINIMUM 18' ABOVE PROPOSED TOP OF PAVEMENT.
7. REMOVE OR RELOCATE FIXED OBJECTS PRIOR TO EXCAVATION.
8. ALL SLOPES STEEPER THAN 1 ON 6 MUST BE COVERED WITH EROSION CONTROL BLANKET.
9. SIDEWALK RAMP CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT ADA STANDARDS AND SPECIFICATIONS.
10. CONTRACTOR TO VERIFY ALL EXISTING LOCATIONS, INVERTS AND GRADES PRIOR TO START OF ANY WORK DAY.
11. ADDITIONAL DITCHING MAY BE NECESSARY TO OBTAIN POSITIVE DRAINAGE. AS DIRECTED BY R.C.O.C. DURING CONSTRUCTION.
12. RESURFACE ALL DISTURBED AREAS WITHIN AVON ROAD RIGHT-OF-WAY WITH MIN. 4" TOPSOIL, SEED & MULCH

SCALE
30 0 15 30 60 120
(IN FEET)
Scale: 1 inch = 30 ft.

LEGEND

EXISTING	PROPOSED	
		PAVEMENT (ASPHALT)
		SIDE WALK (CONCRETE)
		CONCRETE CURB AND GUTTER
		STORM SEWER
		SANITARY SEWER
		WATER MAIN
		MANHOLE
		REAR YARD INLET FILTER (SI-3)
		CURB INLET W/SILT SAC (SI-4A)
		END SECTION
		GATE VALVE
		HYDRANT
		FLOOD PLAIN
1000	1000	CONTOURS
+ 1000.0	1000.00 T/C	SPOT ELEVATION
		SURFACE DRAINAGE
		OVERFLOW ROUTE
		TREE FENCE
		SILT FENCE
		PROPOSED DRIVEWAY LOCATION
		LIMIT OF DISTURBANCE
		SILT FENCE GRAVEL FILTER (SP-3)

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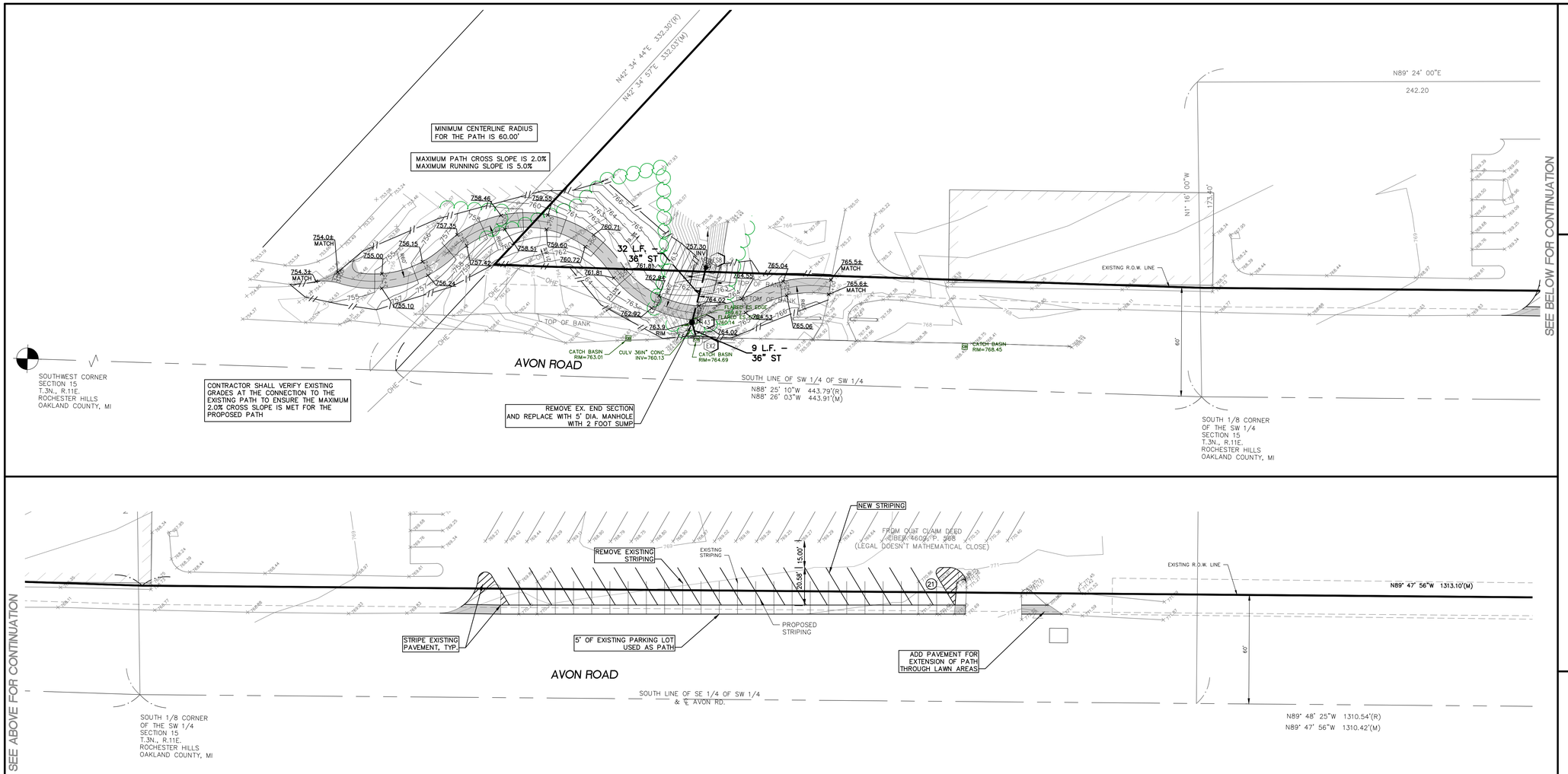
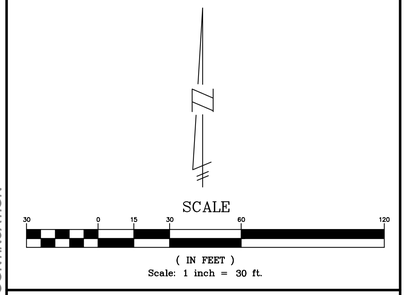
APPROACH PLAN

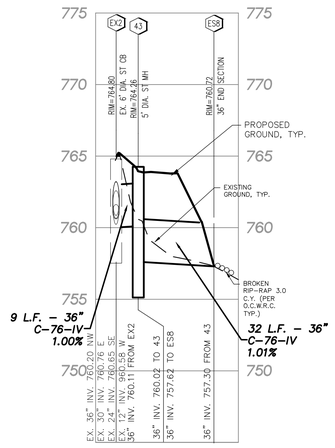
SEIBER, KEAST ENGINEERING, L.L.C.
CONSULTING ENGINEERS
100 MAINCENTRE • SUITE 10 • NORTHVILLE, MI • 48167
PHONE: 248.308.3331 EMAIL: info@seiberkeast.com

SHEET 27

City File No. 19-022 Section 15

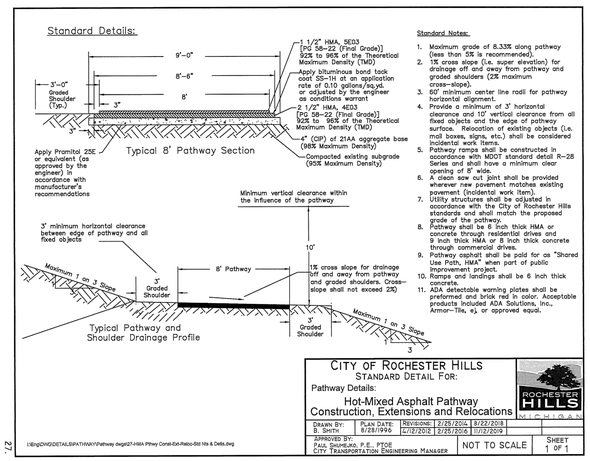






LEGEND

EXISTING	PROPOSED
	PAVEMENT (ASPHALT)
	SIDE WALK (CONCRETE)
	CONCRETE CURB AND GUTTER
	STORM SEWER
	SANITARY SEWER
	WATER MAIN
	MANHOLE
	REAR YARD INLET FILTER (SI-3)
	CURB INLET W/SILT SAC (SI-4A)
	END SECTION
	GATE VALVE
	HYDRANT
	FLOOD PLAIN
1000	1000 CONTOURS
1000.0	1000.00 T/C SPOT ELEVATION
	SURFACE DRAINAGE
	OVERFLOW ROUTE
	TREE FENCE
	SILT FENCE
	PROPOSED DRIVEWAY LOCATION
	LIMIT OF DISTURBANCE
	SILT FENCE GRAVEL FILTER (SP-3)



THE GROVES

SECTION 15, TOWN 3 NORTH, RANGE 11 EAST
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

REVISIONS

NO.	ITEM	DATE
1.	REVISE WETLAND NUMBERS	4-28-2020
2.	REVISE PER CITY OF ROCHESTER HILLS	5-11-2020
3.	REVISED PER CITY PUD REVIEW	6-4-20

UTILITY WARNING

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

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

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

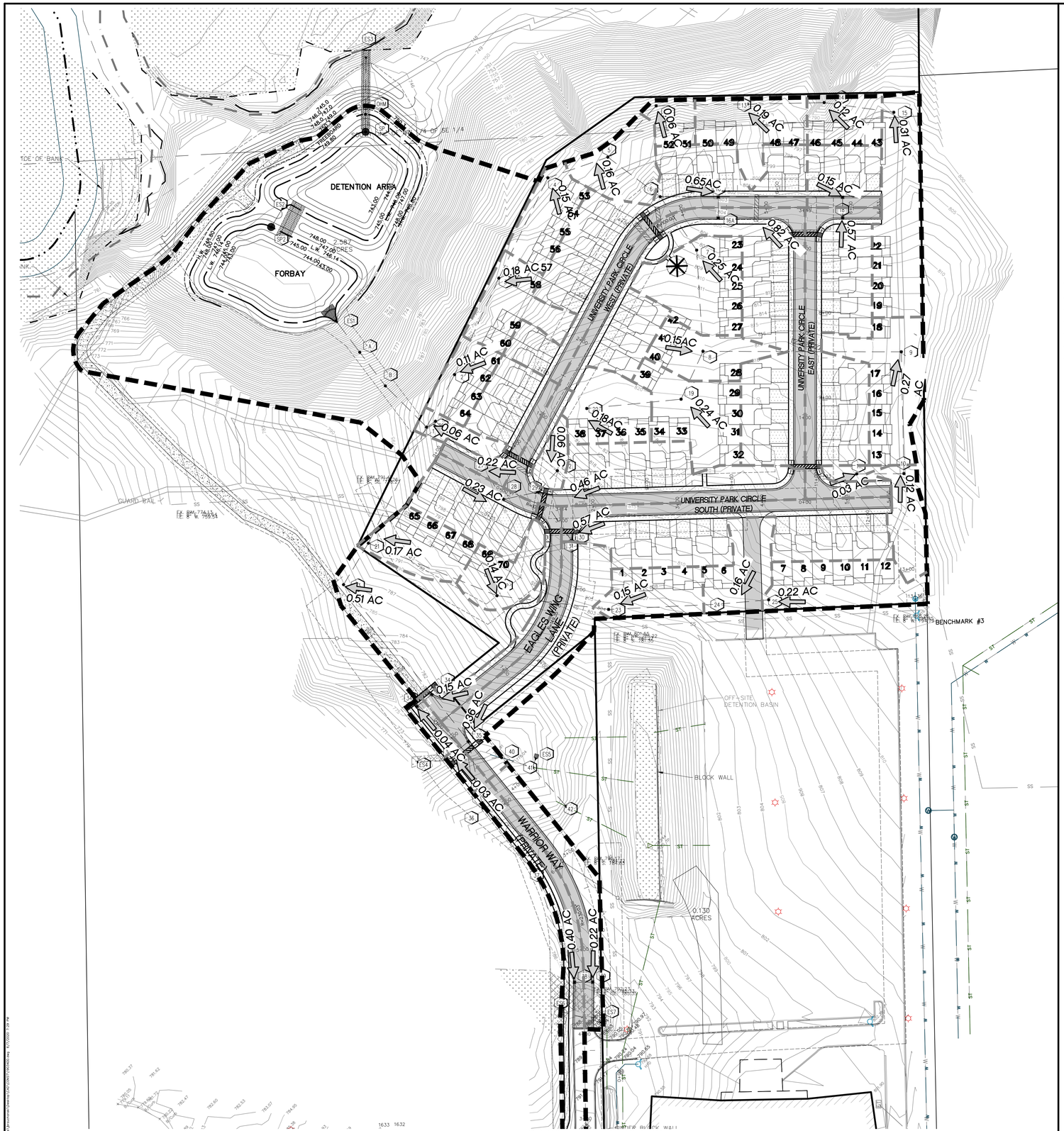
DATE: 03-23-2020 | DESIGNED BY:GWN | CHECKED BY: P.K. | JOB NUMBER: 19-034 | DRAWING FILE: 19034AP.dwg

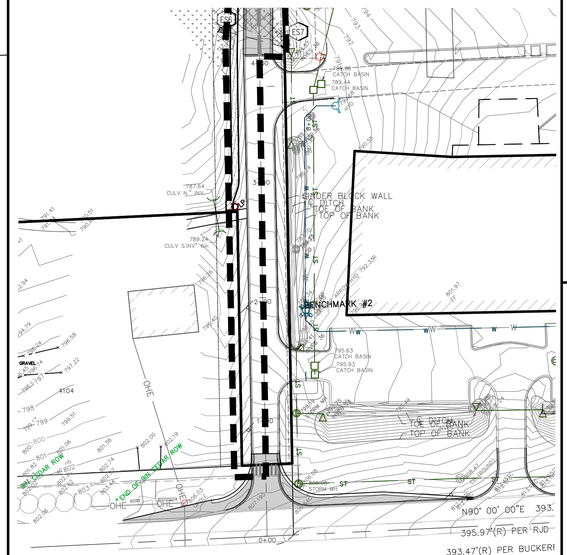
AVON WALK EXTENSION PLAN

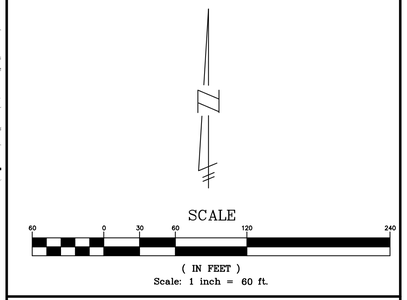
SEIBER, KEAST ENGINEERING, L.L.C.
CONSULTING ENGINEERS
100 MAINCENTRE • SUITE 10 • NORTHVILLE, MI • 48167
PHONE: 248.308.3331 EMAIL: info@seiberkeast.com

SHEET 28

City File No. 19-022 Section 15







LEGEND

EXISTING	PROPOSED
	PAVEMENT (ASPHALT)
	SIDE WALK (CONCRETE)
	CONCRETE CURB AND GUTTER
	STORM SEWER
	SANITARY SEWER
	WATER MAIN
	MANHOLE
	REAR YARD INLET FILTER (SI-3)
	CURB INLET W/SILT SAC (SI-4A)
	END SECTION
	GATE VALVE
	HYDRANT
	FLOOD PLAIN
1000	CONTOURS
1000.0	SPOT ELEVATION
	SURFACE DRAINAGE
	OVERFLOW ROUTE
	TREE FENCE
	SILT FENCE
	PROPOSED DRIVEWAY LOCATION
	LIMIT OF DISTURBANCE
	SILT FENCE GRAVEL FILTER (SP-3)

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DRAINAGE DISTRIBUTION PLAN

SEIBER, KEAST ENGINEERING, L.L.C.
CONSULTING ENGINEERS
100 MAINCENTRE • SUITE 10 • NORTHVILLE, MI • 48167
PHONE: 248.308.3331 EMAIL: info@seiberkeast.com

SHEET 29

City File No. 19-022 Section 15