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Shink Engineering, PLC

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3. SITE REMOVAL PLAN
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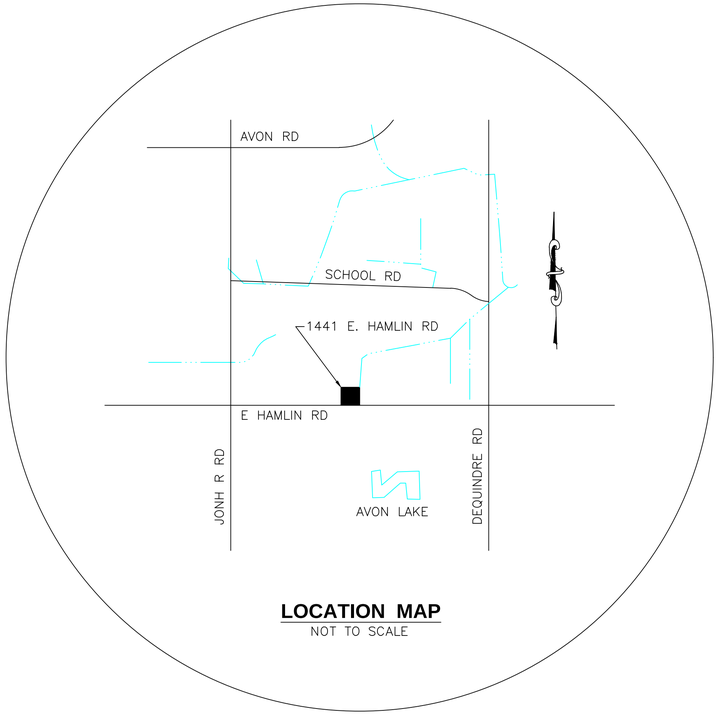
7. WETLAND & TREE SURVEY
8. WETLAND & TREE REMOVAL AND PRESERVATION PLAN
9. TREE INVENTORY
10. LANDSCAPE PLAN
11. PHOTOMETRIC PLAN
12. PHOTOMETRIC DETAILS



LOCATION MAP
NOT TO SCALE

DEVELOPER:
WIEGAND DEVELOPMENT
37580 MOUND ROAD
STERLING HEIGHTS, MI 48310
CONTACT: MICHAEL KLIEMAN
PHONE: 586.939.0840
EMAIL: mike@jhwiegands.com

SITE PLAN BY:
SHINK ENGINEERING, PLC
4146 PINE GROVE ROAD
FORT GRATIOT, MI 48059
CONTACT: LORI M SHINK
PHONE: 586-718-1965
EMAIL: lmshink@yahoo.com

LEGAL DESCRIPTION (TAX ID #70-15-24-326-004):
THE EAST ½ OF THE SOUTH 20 ACRES OF THE EAST ½ OF THE SOUTHWEST ¼ OF SECTION 24, T3N, R11E, CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTH ¼ CORNER OF SAID SECTION 24; THENCE N. 89°21'00" W. 669.90 FEET; THENCE N. 00°20'20" E. 642.82 FEET; THENCE S. 88°08'40" E. 670.12 FEET; THENCE S. 00°20'20" W. 628.72 FEET TO THE POINT OF BEGINNING. SAID PARCEL CONTAINS 9.777 ACRES TOTAL AND 8.855 ACRES NET. (NO BOUNDARY SURVEY WAS PROVIDED AT THIS TIME AND ALL PROPERTY LINES AS SHOWN AND LEGAL DESCRIPTION ARE PROVIDED BY CLIENT)

TOTAL ACREAGE = 9.777
TOTAL NET ACREAGE = 8.855

NOT TO BE USED AS CONSTRUCTION DRAWINGS

CITY FILE #19-026
SECTION #24

REVISIONS		
5	4/30/20	CITY OF ROCHESTER HILLS PLANNING COMMISSION
4	2/19/20	REVISIONS PER CITY OF ROCHESTER HILLS REVIEW
3	1/8/20	REVISIONS PER CITY OF ROCHESTER HILLS REVIEW
2	10/21/19	REVISIONS PER CITY OF ROCHESTER HILLS REVIEW

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 FOR FREE LOCATION OF PUBLIC UTILITIES

SHINK ENGINEERING, PLC
4146 PINE GROVE ROAD
FORT GRATIOT, MI 48059
lmshink@yahoo.com
586.718.1965

DATE:	5/13/19
DESIGNED BY:	LMS
DRAWN BY:	TW
CHECKED BY:	
APPROVED BY:	

COVER SHEET
WIEGAND RV STORAGE
1441 E HAMLIN ROAD, ROCHESTER HILLS, MI 48307

SCALE: N.T.S.
PROJECT NO.: 2015-0015
FILE NAME: HAMLIN-11.DWG
SHEET: 1 OF 12

1

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LEGEND

- SET IRON
- FOUND IRON
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING ELECTRIC HOOK UP
- EXISTING FIRE HYDRANT
- EXISTING GATE VALVE
- EXISTING WATER MANHOLE
- EXISTING WELL
- EXISTING CATCHBASIN
- EXISTING MANHOLE
- EXISTING FLOW ARROW
- EXISTING R.O.W. LINE
- EXISTING WATER MAIN
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING OVERHEAD WIRES
- EXISTING FENCE
- EXISTING UNDERGROUND ELECTRIC
- EXISTING UNDERGROUND GAS MAIN
- EXISTING UNDERGROUND TELEPHONE
- EXISTING CENTERLINE DITCH/SWALE
- APPROXIMATE LIMITS OF SOIL TYPES
- EXISTING GRADE
- PROPOSED GATE VALVE
- PROPOSED WATER SEE NOTE
- PROPOSED FIRE HYDRANT
- PROPOSED CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED LIGHT POLE
- PROPOSED WATER
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED GRADE
- PROPOSED FLOW ARROW
- PROPOSED EVERGREEN TREE "A"
- PROPOSED EVERGREEN TREE "B"
- PROPOSED CANOPY TREE
- PROPOSED ORNAMENTAL TREE
- PROPOSED SHRUB

UTILITY WARNING:
UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THESE PLANS WERE OBTAINED FROM UTILITY OWNERS AND OR OBSERVATIONS MADE IN THE FIELD. A MINIMUM OF THREE WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY "MISS DIG" (1-800-482-7171) AND HAVE ALL UTILITIES STAKED BEFORE ANY WORK MAY BEGIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION. THREE (3) WORKING DAYS BEFORE YOU DIG – CALL MISS DIG (1-800-482-7171).

UTILITY INFORMATION, AS SHOWN, INDICATES APPROXIMATE LOCATIONS AND TYPES OF UTILITIES ONLY, AS DISCLOSED TO THIS FIRM BY THE VARIOUS UTILITY COMPANY'S RECORD AND OR OBSERVATIONS MADE IN THE FIELD. NO GUARANTEE IS EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR IS RESPONSIBLE FOR FINAL VERIFICATION AS WELL AS VERIFYING THAT ALL UTILITIES WITHIN THE AREA OF WORK HAVE BEEN LOCATED.

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0 40 80 120
1" = 40'

EASEMENTS:

14' BICYCLE PATH EASEMENT
L. 19641, PG. 717-719

60' HIGHWAY EASEMENT
L. 47802, PG. 284-288

OIL AND GAS LEASE
LIBER 37589, PAGES 021-025

70' LEASE ACCESS
L. 52596, PG. 217-222

ZONED R4
KENNETH G FRANTZ
PID #70-15-24-326-008
LANDFILL

ZONED R4
WILLIAM HOTCHKISS
PID #70-15-24-326-005

ZONED R4
PAUL E BUNK
PID #70-15-24-326-006

ZONED I
JOAN WIEGAND
PID #70-15-24-401-003
11.000 ACRES

ZONED I
JOAN WIEGAND
PID #70-15-24-326-004
9.777 ACRES TOTAL

ZONED R4
ALAN A BUNCH, JR
PID #70-15-24-401-005

ZONED R4
DANIEL R MALEC
PID #70-15-24-401-004

LADD DRAIN

S88°08'40"E 670.12'

N00°20'20"E 642.82'

S00°20'20"W 628.72'

N00°47'50"W 368.89'

N89°21'00"W 669.90'

AQUENTS SANDY LOAM

WASEPI SANDY LOAM

WETLAND AREA
0.86 ACRES (37737.5 SQ.FT.)

WETLAND AREA
0.05 ACRES
(1,985 SQ. FT)

WETLAND AREA
0.04 ACRES
(1,944 SQ.FT.)

50' SETBACK

EX. TREES AND BRUSH

EX. CONCRETE PAD

EXISTING ELECTRICAL JUNCTION (IN DISREPAIR)

EXISTING BERM

EX. DITCH (DRY AT TIME OF TOPOGRAPHIC SURVEY)

EX. GRAVEL DRIVE

EX. ASPHALT DRIVE

EX. CONCRETE DRIVE

EX. GRAVEL DRIVE

EX. ASPHALT DRIVE

EX. CONCRETE

EX. ASPHALT ENTRANCE

ASPHALT PATH

EX. ASPHALT PATH

EX. ASPHALT ROAD

E HAMLIN ROAD (120' R.O.W.)

60' (½ R.O.W.)

SOUTH LINE OF SECTION 24.

SOUTH ¼ CORNER, SECTION 24.

70' LEASE ACCESS
L. 52596, PG. 217-222

14' BICYCLE PATH EASEMENT
L. 19641, PG. 717-719

60' HIGHWAY EASEMENT
L. 47802, PG. 284-288

EX. 6' TALL CHAIN LINK FENCE

EX. POND TOP OF WATER
718.58 8-27-15

WATER'S EDGE

APPROXIMATE LIMITS OF SOIL TYPES

EX. HOUSE
FF 732.78

GARAGE
FF 730.28

EX. HOUSE
FF 726.40

GARAGE
FF 725.37

SHED

CATCHBASIN
RIM 726.68
N. 12" I.E. 723.73
S.E.&W. 15" I.E. 723.53

SANITARY MANHOLE
RIM 727.99
E.&W. 12" I.E. 714.49

SANITARY MANHOLE
RIM 726.16
E.&W. 12" I.E. 713.61

SANITARY MANHOLE
RIM 726.16
E.&W. 12" I.E. 715.40

12" CMP

BENCHMARK #1

BENCHMARK #2

SOILS INFORMATION:

17A – WASEPI SANDY LOAM, 0 TO 3 PERCENT SLOPES

41B – AQUENTS, SANDY, LOAM, UNDULATING

SOIL SURVEY AREA: OAKLAND COUNTY, MICHIGAN
SURVEY AREA DATA: VERSION 12, SEP. 30, 2014

SETBACKS:

FRONT	50'
SIDE	50'
REAR	50'

NOTE:
ALL EXISTING ON SITE CONCRETE IS PARTIALLY BURIED.

EXISTING USE – VACANT

PROPOSED USE – RECREATIONAL VEHICLE STORAGE

ZONED:

I – INDUSTRIAL

BENCHMARK #1:
"OPEN" ARROW TOP OF FIRE HYDRANT. ±120' SOUTHEAST OF THE SOUTHEAST PROPERTY CORNER.
ELEVATION = 727.55 (NAVD 88)

BENCHMARK #2:
NORTH EDGE OF RIM OF SANITARY MANHOLE. ±120' EAST OF THE SOUTHWEST PROPERTY CORNER.
ELEVATION = 726.15 (NAVD 88)

NOT TO BE USED AS CONSTRUCTION DRAWINGS

CITY FILE #19-026
SECTION #24

R/S	#	DATE	DESCRIPTION
R	5	5/13/19	DESIGNED BY: LMS DRAWN BY: TW CHECKED BY: APPROVED BY:
S	4	4/30/20	CITY OF ROCHESTER HILLS PLANNING COMMISSION
S	3	2/19/20	REVISIONS PER CITY OF ROCHESTER HILLS REVIEW
S	2	1/8/20	REVISIONS PER CITY OF ROCHESTER HILLS REVIEW
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lmshink@yahoo.com
586.718.1965

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TOPOGRAPHIC SURVEY
WIEGAND RV STORAGE
1441 E HAMLIN ROAD, ROCHESTER HILLS, MI 48307

SCALE: 1" = 40'
PROJECT NO.: 2015-0015
FILE NAME: HAMLIN-11.DWG
SHEET: 2 OF 12

2

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- EXISTING UNDERGROUND ELECTRIC
- GAS — EXISTING UNDERGROUND GAS MAIN
- T — EXISTING UNDERGROUND TELEPHONE
- EXISTING CENTERLINE DITCH/SWALE
- 586.44 — EXISTING GRADE
- PROPOSED GATE VALVE
- PROPOSED WATER SEE NOTE
- PROPOSED FIRE HYDRANT
- PROPOSED CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED LIGHT POLE
- W — PROPOSED WATER
- ST — PROPOSED STORM SEWER
- SS — PROPOSED SANITARY SEWER
- 586.80 — PROPOSED GRADE
- PROPOSED FLOW ARROW
- PROPOSED EVERGREEN TREE "A"
- PROPOSED EVERGREEN TREE "B"
- PROPOSED CANOPY TREE
- PROPOSED ORNAMENTAL TREE
- PROPOSED SHRUB
- PROPOSED TREE & BRUSH REMOVAL

UTILITY WARNING:
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0 40 80 120
1" = 40'

ZONED R4
KENNETH G FRANTZ
PID #70-15-24-326-008
LANDFILL

ZONED R4
WILLIAM HOTCHKISS
PID #70-15-24-326-005

ZONED R4
PAUL E BUNK
PID #70-15-24-326-006

ZONED I
JOAN WIEGAND
PID #70-15-24-326-004
9.777 ACRES TOTAL

ZONED I
JOAN WIEGAND
PID #70-15-24-401-003
11.000 ACRES

ZONED R4
ALAN A BUNCH, JR
PID #70-15-24-401-005

ZONED R4
DANIEL R MALEC
PID #70-15-24-401-004

LADD DRAIN

S88°08'40"E 670.12'

N00°20'20"E 642.82'

S00°20'20"W 628.72'

N89°21'00"W 669.90'

N00°47'50"W 388.69'

50' SETBACK

EX. TREES AND BRUSH

EX. TREES AND DENSE BRUSH

TEMPORARY WETLAND IMPACTS
0.04 ACRES (1542 SQ.FT.)

WETLAND AREA
0.86 ACRES (37737.5 SQ.FT.)

WETLAND AREA TO BE REMOVED
0.05 ACRES (1,985 SQ. FT)

WETLAND AREA
0.05 ACRES
(1,985 SQ. FT)

WETLAND AREA TO BE REMOVED
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WETLAND AREA

EX. CONCRETE PAD TO BE REMOVED

EXISTING ELECTRICAL JUNCTION (IN DISREPAIR)

EX. TREES AND BRUSH TO BE REMOVED

EX. CONCRETE TO BE REMOVED

EXISTING BERM

EX. GRAVEL DRIVE

70' LEASE ACCESS
L. 52596, PG. 217-222

WATER'S EDGE

EX. POND TOP OF WATER
718.58 8-27-15

EX. ASPHALT DRIVE

EX. GRAVEL DRIVE

SHED

GARAGE
FF 725.37

EX. HOUSE
FF 732.78

GARAGE
FF 730.28

EX. HOUSE
FF 726.40

EX. CONCRETE DRIVE

EX. 6' TALL CHAIN LINK FENCE

14' BICYCLE PATH EASEMENT
L. 19641, PG. 717-719

60' HIGHWAY EASEMENT
L. 47802, PG. 284-288

ASPHALT PATH

EX. ASPHALT ENTRANCE TO BE REMOVED

EX. ASPHALT ROAD

E HAMLIN ROAD (120' R.O.W.)

60' (½ R.O.W.)

SOUTH LINE OF SECTION 24.

SOUTH ¼ CORNER, SECTION 24.

12" CMP

CATCHBASIN
RIM 726.68
N. 12" I.E. 723.73
S.E.&W. 15" I.E. 723.53

SANITARY MANHOLE
RIM 726.15
E.&W. 12" I.E. 715.40

SANITARY MANHOLE
RIM 727.99
E.&W. 12" I.E. 714.49

SANITARY MANHOLE
RIM 726.16
E.&W. 12" I.E. 713.61

BENCHMARK #1

BENCHMARK #2

EX. CONCRETE

EX. ASPH

BENCHMARK #1:
"OPEN" ARROW TOP OF FIRE HYDRANT. ±120' SOUTHEAST OF THE SOUTHEAST PROPERTY CORNER.
ELEVATION = 727.55 (NAVD 88)

BENCHMARK #2:
NORTH EDGE OF RIM OF SANITARY MANHOLE. ±120' EAST OF THE SOUTHWEST PROPERTY CORNER.
ELEVATION = 726.15 (NAVD 88)

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APPROVED BY:	

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SITE REMOVAL PLAN
WIEGAND RV STORAGE
1441 E HAMLIN ROAD, ROCHESTER HILLS, MI 48307

SCALE: 1" = 40'
PROJECT NO.: 2015-0015
FILE NAME: HAMLIN-11.DWG
SHEET: 3 OF 12

3

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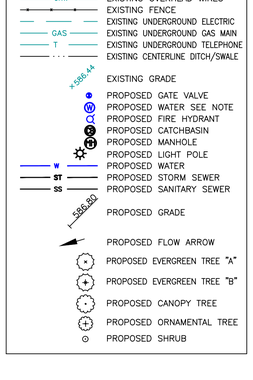

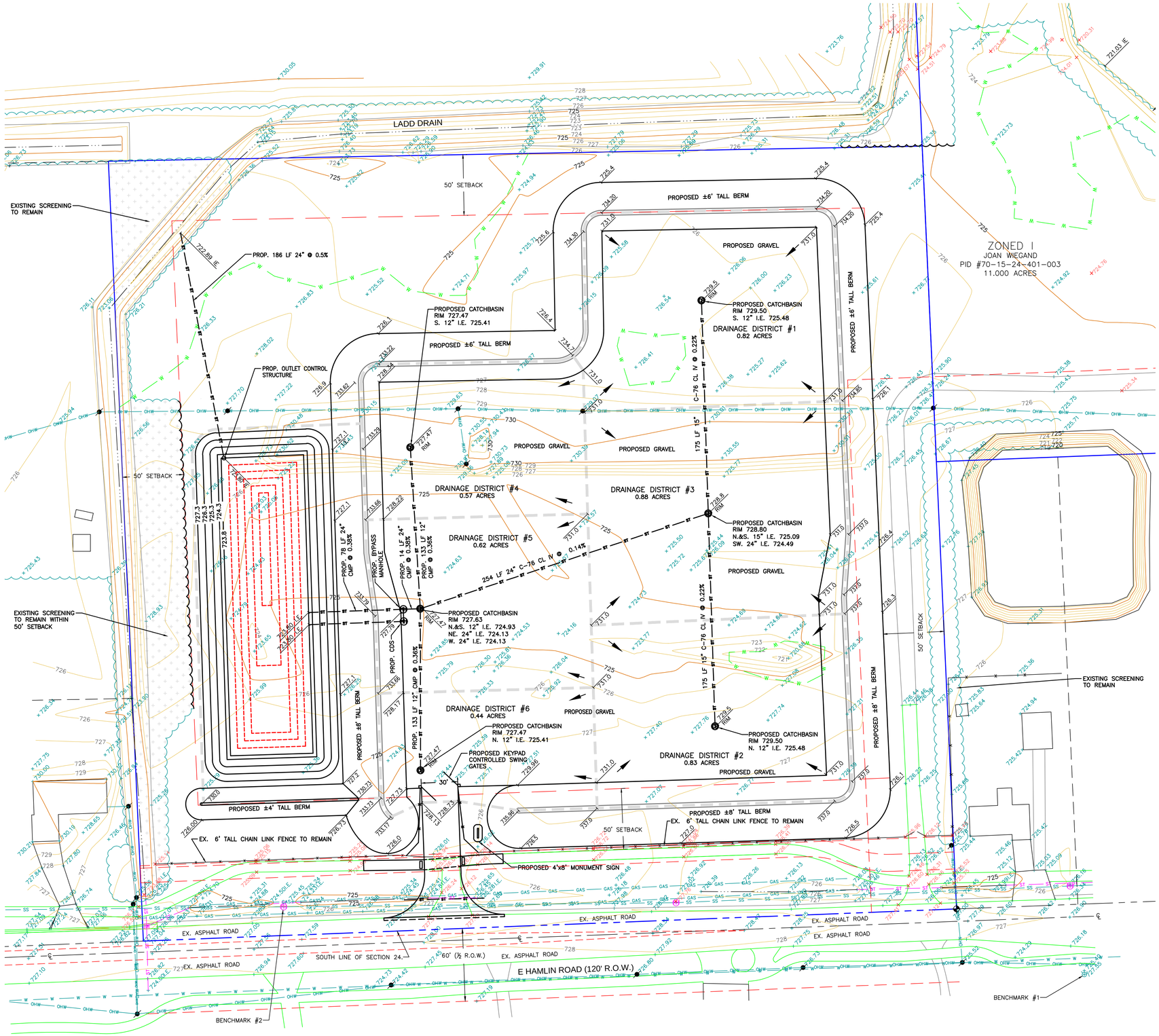

FIRE DEPARTMENT NOTES:
FIRE LANES SHALL BE DESIGNATED BY THE FIRE CODE OFFICIAL, AND SHALL BE POSED ON BOTH SIDES OF THE FIRE LANE, WITH FIRE LANE SIGNS, SPACED NOT MORE THAN 100 FEET APART. FIRE LANE SIGNS SHALL READ "NO STOPPING, STANDING, PARKING, FIRE LANE", AND SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. FIRE PREVENTION ORDINANCE CHAPTER 58, SEC. 503.

CONSTRUCTION SITE SHALL BE SAFEGUARDED IN ACCORDANCE WITH IFC 2006 CHAPTER 14.

OPEN BURNING IS NOT PERMITTED INCLUDING THE BURNING OF TRASH, DEBRIS, OR LAND CLEARING MATERIALS. OPEN BURNING FOR WARMING SAND AND/OR WATER FOR THE PREPARATION OF MORTAR SHALL BE WITHIN THE CITY OF ROCHESTER HILL BURN PERMIT GUIDELINES. FIRE PREVENTION ORDINANCE CHAPTER 58, SEC. 307.6.2 & 307.6.2.3.

SETBACKS:

FRONT	50'
SIDE	50'
REAR	50'

EXISTING USE – VACANT

PROPOSED USE – RECREATIONAL VEHICLE STORAGE

ZONED:

I – INDUSTRIAL

NOTE:
OWNER SHALL MAINTAIN MINIMUM 24' WIDE AISLES FOR POLICE, FIRE AND EMERGENCY VEHICLES.

BENCHMARK #1:
"OPEN" ARROW TOP OF FIRE HYDRANT. ±120' SOUTHEAST OF THE SOUTHEAST PROPERTY CORNER. ELEVATION = 727.55 (NAVD 88)

BENCHMARK #2:
NORTH EDGE OF RIM OF SANITARY MANHOLE. ±120' EAST OF THE SOUTHWEST PROPERTY CORNER. ELEVATION = 726.15 (NAVD 88)

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4	4/30/20	CITY OF ROCHESTER HILLS PLANNING COMMISSION
3	2/19/20	REVISIONS PER CITY OF ROCHESTER HILLS REVIEW
2	1/8/20	REVISIONS PER CITY OF ROCHESTER HILLS REVIEW
1	10/21/19	REVISIONS PER CITY OF ROCHESTER HILLS REVIEW

SITE PLAN
WIEGAND RV STORAGE
1441 E HAMLIN ROAD, ROCHESTER HILLS, MI 48307

SCALE: 1" = 40'
PROJECT NO.: 2015-0015
FILE NAME: HAMLIN-11.DWG
SHEET: 4 OF 12

4

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Shink Engineering, PLC

UTILITY WARNING:

UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THESE PLANS WERE OBTAINED FROM UTILITY OWNERS AND OR OBSERVATIONS MADE IN THE FIELD. A MINIMUM OF THREE WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY "MISS DIG" (1-800-482-7171) AND HAVE ALL UTILITIES STAKED BEFORE ANY WORK MAY BEGIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION. THREE (3) WORKING DAYS BEFORE YOU DIG – CALL MISS DIG (1-800-482-7171).

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PRIOR TO CONSTRUCTION, ALL LOCATION AND DEPTHS OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES (IN CONFLICT WITH THE CONSTRUCTION OF PROPOSED IMPROVEMENTS) SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR. DURING CONSTRUCTION, CONTRACTOR SHALL USE EXTREME CAUTION WHEN OPERATING NEAR OVERHEAD AND/OR BURIED UTILITIES.

PRIOR TO COMMENCING CONSTRUCTION, CONTRACTOR SHALL VERIFY ALL UTILITY CROSSINGS THAT MAY BE IN CONFLICT WITH ANY PROPOSED WORK WHETHER SHOWN IN THE PLAN / PROFILE OR NOT.

STANDARD NOTES

1. ALL CONSTRUCTION MUST BE CONFORMING TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROCHESTER HILLS, OAKLAND COUNTY AND THE STATE OF MICHIGAN.
2. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES, THE TOWNSHIP ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION, 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
3. CALL MISS DIG (1-800-482-7171) A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
4. FULL-TIME CONSTRUCTION REVIEW MAY BE REQUIRED DURING ALL PHASES OF CONSTRUCTION INCLUDING GRADING, PAVING, INSTALLATION OF SANITARY SEWER, STORM SEWERS, DRAINS, WATER MAINS AND APPURTENANCES, AND STREETS, WHERE APPLICABLE.
5. ALL SOIL EROSION AND SILT MUST BE CONTROLLED AND CONTAINED ON SITE.
6. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
7. EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATION. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION PRIOR TO CONSTRUCTION.
8. MEET EXISTING GRADES AT ALL PROPERTY LINES.
9. CONSTRUCTION SHALL NOT COMMENCE WITHOUT A REPRESENTATIVE OF THE OWNER PRESENT.
10. PRIOR TO CONSTRUCTION CONTRACTOR MUST HAVE IN HIS POSSESSION A COPY OF ALL PERMITS NECESSARY FOR CONSTRUCTION.
11. THE CONTRACTOR SHALL MAINTAIN HIS CONSTRUCTION OPERATIONS WITHIN THE PRESENT ROAD RIGHT-OF-WAY AND EASEMENTS AS NOTED ON THE PLANS. IN THE EVENT THE CONTRACTOR DEEMS IT NECESSARY TO OPERATE BEYOND THESE LIMITS, HE SHALL BE RESPONSIBLE FOR MAKING WRITTEN AGREEMENTS WITH THE PROPERTY OWNERS AND WILL FURNISH SAME TO OWNER AND TOWNSHIP ENGINEER.
12. THE CONTRACTOR SHALL MAINTAIN TRAFFIC AT ALL TIMES.
13. PAVED STREETS SHALL BE MAINTAINED IN A REASONABLE STATE OF CLEANLINESS.
14. FLOW IN EXISTING SEWERS SHALL BE MAINTAINED AT ALL TIMES.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POSITIVE ON SITE DRAINAGE.
16. ALL DISTURBED AREAS NOT PAVED UPON SHALL BE TREATED WITH 3" OF TOPSOIL, SEED AND MULCH.
17. ALL SIGNS MUST MEET SECTION 138-8.603 AND CHAPTER 134 OF THE CITY CODE OF ORDINANCES AND BE APPROVED UNDER A SEPARATE PERMIT ISSUED BY THE BUILDING DEPARTMENT.

LEGEND

- SET IRON
- FOUND IRON
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING ELECTRIC HOOK UP
- EXISTING FIRE HYDRANT
- EXISTING GATE VALVE
- EXISTING WATER MANHOLE
- EXISTING WELL
- EXISTING CATCHBASIN
- EXISTING MANHOLE
- EXISTING R.O.W. LINE
- W — EXISTING WATER MAIN
- ST — EXISTING STORM SEWER
- SS — EXISTING SANITARY SEWER
- OHW — EXISTING OVERHEAD WIRES
- EXISTING FENCE
- EXISTING UNDERGROUND ELECTRIC
- GAS — EXISTING UNDERGROUND GAS MAIN
- T — EXISTING UNDERGROUND TELEPHONE
- EXISTING CENTERLINE DITCH/SWALE
- +586.44 EXISTING GRADE
- PROPOSED GATE VALVE
- W PROPOSED WATER SEE NOTE
- PROPOSED FIRE HYDRANT
- PROPOSED CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED LIGHT POLE
- W — PROPOSED WATER
- ST — PROPOSED STORM SEWER
- SS — PROPOSED SANITARY SEWER
- 585.80 PROPOSED GRADE
- PROPOSED FLOW ARROW
- PROPOSED EVERGREEN TREE "A"
- PROPOSED EVERGREEN TREE "B"
- PROPOSED CANOPY TREE
- PROPOSED ORNAMENTAL TREE
- PROPOSED SHRUB

DETENTION BASIN CALCULATIONS

AREA (ACRES)	"C" FACTOR	ACRE IMPERVIOUS	
0.80	1.00	0.80	POND
3.47	0.85	2.95	GRAVEL PAVING
1.07	0.17	0.55	GRASS

COMPOUND C: 0.81
TOTAL DRAINAGE AREA: 5.34 ACRES

K1 = AxC (Design Constant) 4.2995
Qr = Allowable Release Rate = 0.20 cfs/ac.
Qa = Qr * A = 1.07 CFS

100 YR. FLOOD VOLUME REQUIRED

Qo = Qa/A*C= 0.25 CFS/AC-IMP.

T100 = -25+SQRT(10312.5/Qo) = 178.75

Vs = 16500*T100 - 40*Qo*T100
T100+25
= 12699 CF/AC-IMP.

Vtr = Vs*A*C = **54601** CF

REQUIRED 100 YEAR DETENTION VOLUME = 54601 CF
SEDIMENT FOREBAY VOLUME REQUIRED = 10734 CF

BANKFULL FLOOD VOLUME
The Bankfull Volume is a 24 hour, 1.5 yr. Storm Event (2.25"*A*C)
V_{BF} = 8170 * A * C= **35127** CF

FIRST FLUSH VOLUME
The First Flush Volume is a first 1" of rain over entire watershed
V_{FF} = 3630 x A x C= **15607** CF

STORAGE PROVIDED

ELEV.	AREA (FT²)	DEPTH (FT)	VOLUME (FT³)	TOTAL VOLUME (FT3)	
727.3	31537.4	1	29,278	83,887	FREEBOARD ELEVATION
726.3	27074.7	1	24,916	54,609	**HIGHWATER ELEVATION**
725.3	22818.2	1	20,775	29,693	
724.3	18797.5	0.5	8,918	8,918	
723.8	16889.9	0	0	0	
723.8	16889.9	0	0	0	

FIRST FLUSH

X_{FF} = 724.62

BUNKFULL FLOOD

X_{BF} = 725.52

100 YEAR

X_{100} = 726.30

TOP OF BERM 727.30

OUTLET CONTROL STRUCTURE

FIRST FLUSH OF RUNOFF
THE AVERAGE ALLOWABLE RELEASE RATE FOR RUNOFF IS 1" OVER AREA OF SITE IN 24 HRS.

Q_{FF} = V_{FF} x (1/24HRS) x (1HR/3600SEC)= 0.181 CFS

PLACE OPENINGS IN STANDPIPE AT BOTTOM OF BASIN = **723.80**

HEAD = h = X100 - BOTTOM BASIN ELEV = 2.50 FT

$A = Q_{FF} / (0.62 \times (2 \times 32.2 \times h)^{0.5})$ = 0.023 FT^2

A 1 INCH DIAMETER ORIFICE HAS AN AREA OF 0.0055 SF

A/ 0.0055 = 4.21

THEREFORE, USE THE FOLLOWING NUMBER OF 1 INCH DIAMETER HOLES
5.00 HOLES, AT ELEV. 723.80

OFF_{ACTUAL} = 0.215 CFS

BANKFULL FLOOD
FOR THE ALLOWABLE RELEASE RATE OF 24-40 HOURS. CHECK THE DISCHARGE THROUGH THE FIRST FLUSH ORIFICE TO SEE IF ADDITIONAL HOLES ARE NECESSARY.

HEAD = h = X100 - BOTTOM BASIN ELEV = 2.50 FT

$Q_{BF.O}$ = 0.62x (#HOLES x (AREA EACH HOLE$_{FF}$) x (2 x 32.2 x h)$^{0.5}$ = 0.215

$T_{BF.O}$ = (1SEC / $Q_{BF.O}$) x V_{BF} x (1HR / 3600SEC) = 45.48 HRS

CFS

BECAUSE THE HOLDING TIME EXCEEDS 40 HRS. ADDITIONAL ORIFICES IN THE STANDPIPE ARE REQUIRED.

VOLUME THROUGH 5 1 INCH DIAMETER HOLES IN 24 HOURS:
V=Q80.0X24HRSX3600SEC/HR = 18535 CF
REMAINING VOL. = 16592 CF
OBF = REMAINING VOLUME x (1 / 24HRS) x (1 / 3600SEC) = 0.192

PLACE OPENINGS AT FIRST FLUSH ELEVATION = 724.62 CFS
HEAD = h = X100 -Xff = 1.68 FT
A = OBF / (0.62 * SQRT(2*32.2*have)) = 0.030 SF

A 1 INCH DIAMETER ORIFICE HAS AN AREA OF 0.0055 SF
A/ 0.0055 = 5.46

THEREFORE, USE 6 1 INCH DIAMETER HOLES AT ELEV. = 724.62
OBF_{ACTUAL} = 0.211 CFS

100 YEAR FLOOD

Q_o = ALLOWABLE RELEASE RATE x AREA OF SITE IN ACRES= 1.07 CFS

Q_o IS A PEAK OR MAXIMUM FLOW. CALCULATE THE MAXIMUM FLOW PASSING THROUGH FIRST FLUSH AND BANKFULL ORIFICES. USING THE TOTAL HEAD, AND SUBTRACT FROM Q_o TO DETERMINE THE ORIFICE SIZE TO RELEASE THE 100 YEAR STORM VOLUME:

OFF_{ACTUAL}+OBF_{ACTUAL} = 0.215 CFS

Q_A - (Q_{FF} + Q_{BF}) = 0.853 CFS

A= Q_A/ (0.62 * (2 *32.2 * (X_{100}-X_{BF}))$^{0.5}$) = 0.132 SF

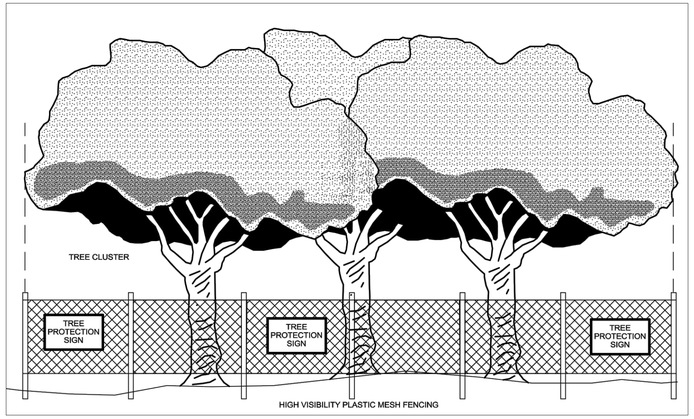
A 1 INCH DIAMETER ORIFICE HAS AN AREA OF 0.005 SF

A/ 0.005 = 24.28

THEREFORE, USE THE FOLLOWING NUMBER OF 1 INCH DIAMETER HOLES:
24 HOLES AT ELEV. = 725.52

SUMMARY OF REQUIRED STANDPIPE HOLES:

ELEVATION	# OF HOLES	DIAMETER OF HOLES
725.52	24	1 INCHES
724.62	6	1 INCHES
723.80	5	1 INCHES



PROTECTIVE FENCING:
Orange Vinyl construction fencing, chain link fencing, snow fencing or other similar fencing at least four feet (4') high and supported at a maximum of ten-foot (10') intervals by approved methods sufficient enough to keep the fence upright and in place. The fencing shall be of a highly visible material, and shall have a tree protection sign affixed to the fence every twenty (20) feet in such a manner to be clearly visible to the workers on-site.

PRIOR TO CONSTRUCTION:
The contractor or subcontractor shall construct and maintain, for each protected tree or group of trees on a construction site, a protective fencing which encircles the outer limits of the critical root zone of the trees to protect them from construction activity. All protective fencing shall be in place prior to commencement of any site work and remain in place until all exterior work has been completed.

TYPICAL TREE PROTECTION FENCING

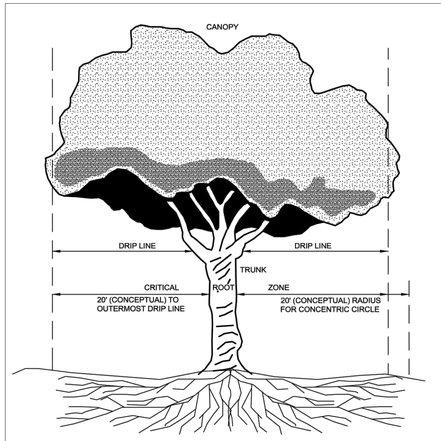
NO SCALE

FIRE DEPARTMENT NOTES:

FIRE LANES SHALL BE DESIGNATED BY THE FIRE CODE OFFICIAL, 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 TOPPING, STANDING, PARKING, FIRE LANE", AND SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

CONSTRUCTION SITES SHALL BE SAFEGUARDED IN ACCORDANCE WITH IFC 2006 CHAPTER 14.

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.



CRITICAL ROOT ZONE:
The area of undisturbed natural soil around a tree defined by a concentric circle with a radius to the distance from the tree trunk to the outermost portion of the drip line.

DRIP LINE:
A vertical line run through the outermost portion of the canopy of a tree and extending to the ground.

CRITICAL ROOT ZONE AREA

NO SCALE

"C" FACTOR	STATION FROM	STATION TO	LENGTH OF RUN (FEET)	PIPE (INCHES)	SLOPE %	ACRES	TOTAL ACRES	TIME FLOW (T) (MIN)	TIME CONC. (Tt) (MIN)	INTENSITY	FLOW Q	VELOCITY (FPS)	CAPACITY Q (CFS)
0.81	CB #1	CB #3	175	15	0.0022	0.82	0.82	1.17	16.17	4.25	2.8	2.5	3.2
0.81	CB #2	CB #3	175	15	0.0022	0.83	0.83	1.17	16.17	4.25	2.9	2.5	3.2
0.81	CB #3	CB #5	254	24	0.0014	0.88	2.53	1.57	17.73	4.10	8.4	2.7	8.4
0.81	CB #4	CB #5	133	12	0.0036	0.57	0.57	0.79	15.79	4.29	2.0	2.8	2.4
0.81	CB #6	CB #5	133	12	0.0036	0.44	0.44	0.79	15.79	4.29	1.5	2.8	2.4
0.81	CB #5	Pond	88	24	0.0038	0.62	4.16	0.43	18.17	4.05	13.7	3.4	14.0

NOT TO BE USED AS CONSTRUCTION DRAWINGS

CITY FILE #19-026
SECTION #24

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DATE: 5/13/19
DESIGNED BY: LMS
DRAWN BY: TW
CHECKED BY:
APPROVED BY:

SHINK ENGINEERING, PLC
4146 PINE GROVE ROAD
FORT GRATIOT, MI 48059
lmshink@yahoo.com
586.718.1965

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 FOR FREE LOCATION OF PUBLIC UTILITIES

SITE DETAILS
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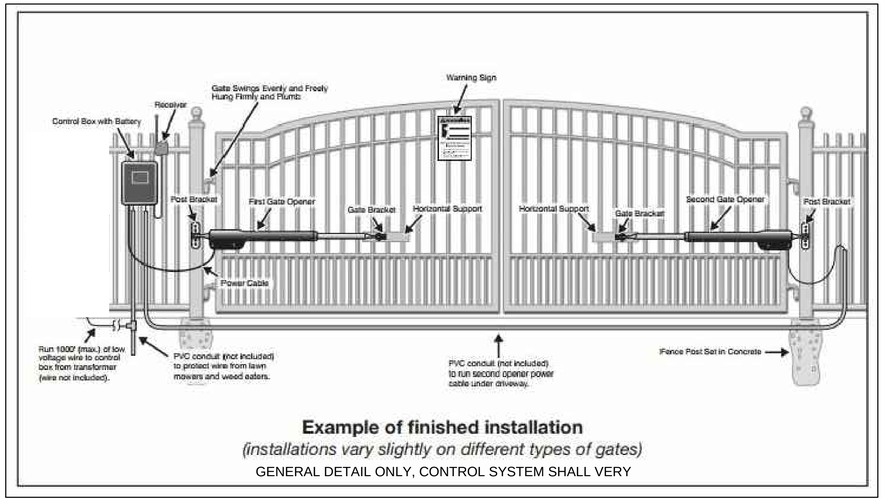
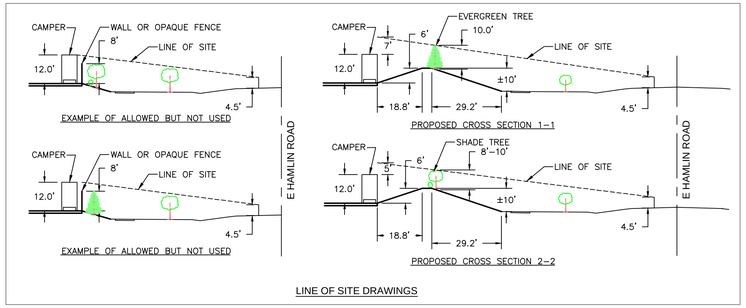


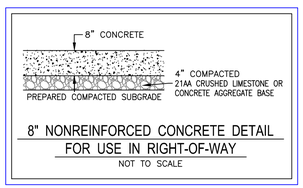
Example of finished installation

(installations vary slightly on different types of gates)

GENERAL DETAIL ONLY, CONTROL SYSTEM SHALL VERY



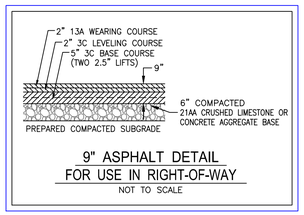
LINE OF SITE DRAWINGS



8" NONREINFORCED CONCRETE DETAIL FOR USE IN RIGHT-OF-WAY

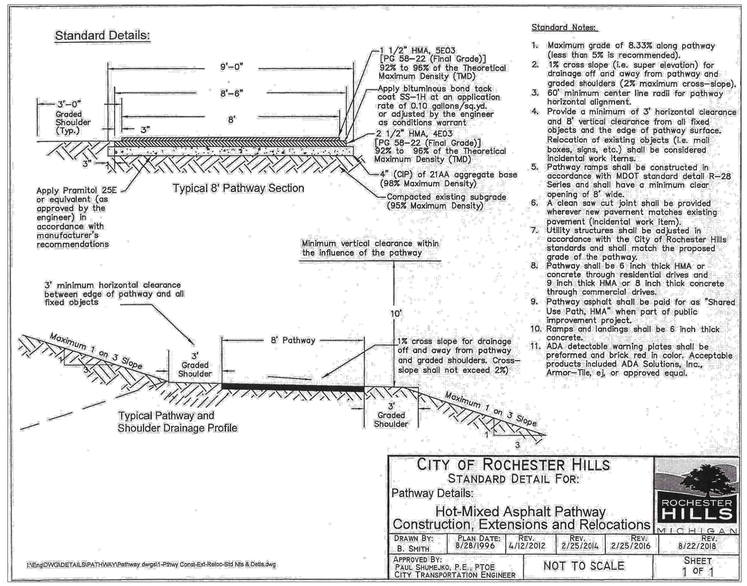
NOT TO SCALE

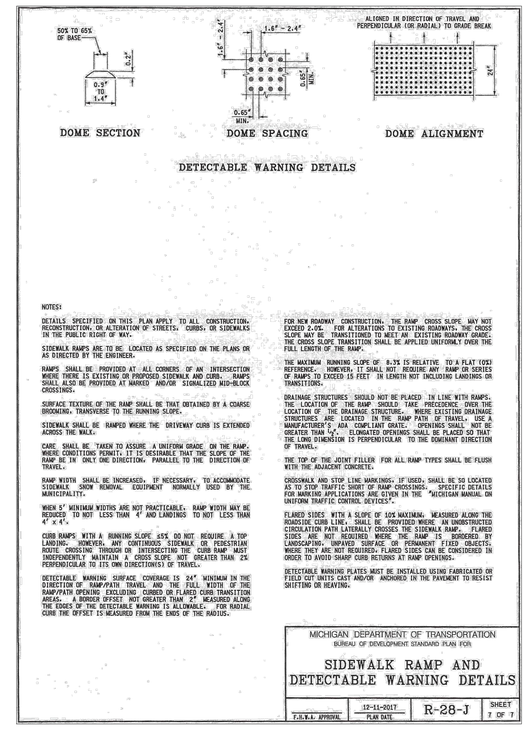
OR

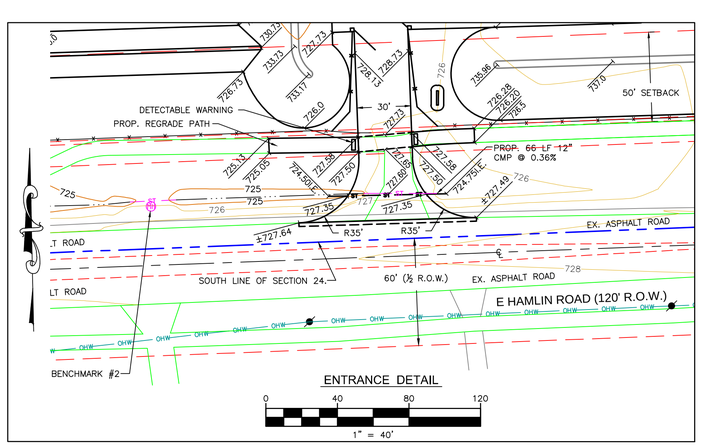


9" ASPHALT DETAIL FOR USE IN RIGHT-OF-WAY

NOT TO SCALE







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BENCHMARK #1:
"OPEN" ARROW TOP OF FIRE HYDRANT. ±120'
SOUTHEAST OF THE SOUTHEAST PROPERTY CORNER.
ELEVATION = 727.55 (NAVD 88)

BENCHMARK #2:
NORTH EDGE OF RIM OF SANITARY MANHOLE. ±120'
EAST OF THE SOUTHWEST PROPERTY CORNER.
ELEVATION = 726.15 (NAVD 88)

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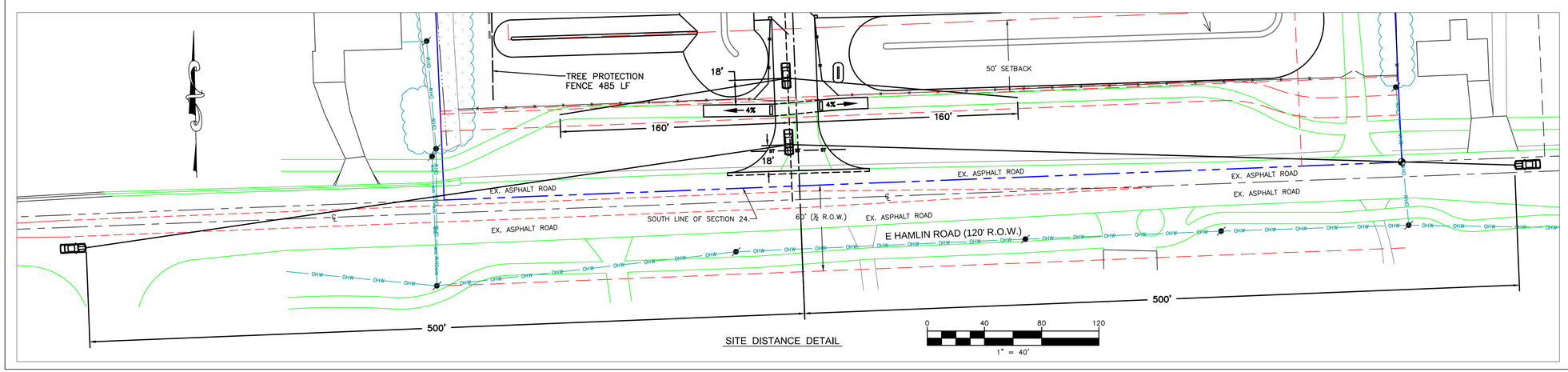

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