

CHAHAL SEMI TRUCK/TRAILER REPAIR FACILITY

6100 SCHOONER DRIVE
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

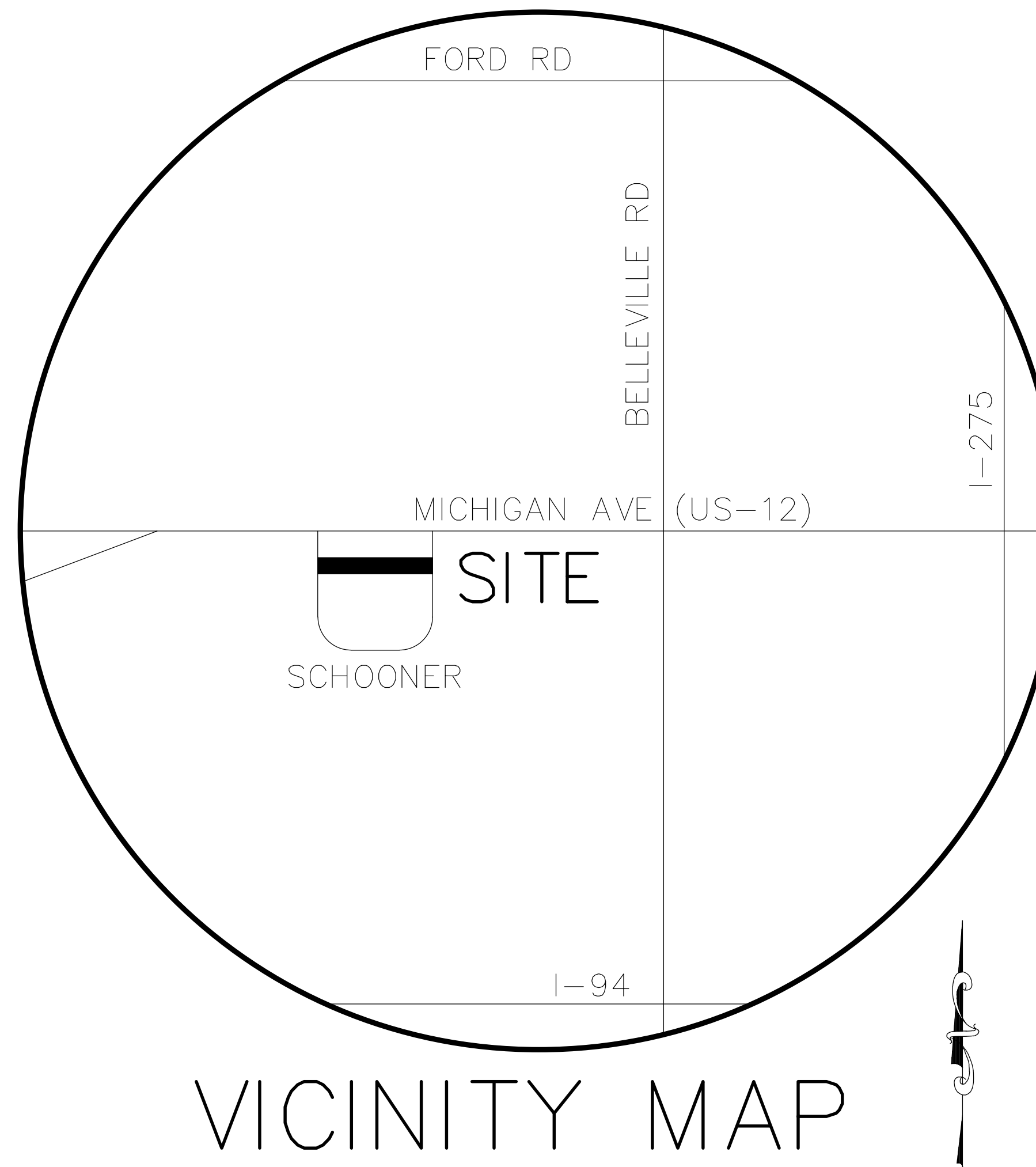
Land Characteristic	Existing	Proposed
Total Development Area (ac)	6.03	4.99
Impervious Area (ac)	1	3.24
Total Pervious Area (ac)	5	1.75
Pervious Area Breakdown by Cover Type		
Non-cultivated	4	0
Impervious Area (ac)	N/A	N/A
Improved area (grass/landscape)		
Predominant NRCS Soil Type	6.03 type B	1.19 type B
Wooded Area (ac)		
Predominant NRCS Soil Type	0 N/A	0 N/A

DESIGN ENGINEERS

HARDY CIVIL DESIGN SERVICES LLC
4996 MOORE
WAYNE MI 48184
Ph. (734) 756-2196
E-MAIL: kbhardy1964@hotmail.com
CONTACT: KEVIN HARDY

GENERAL CONTRACTOR

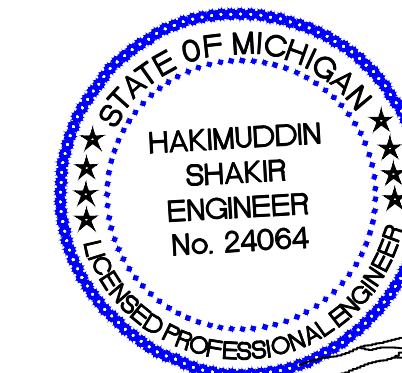
JOE DAVENPORT
(DAVENPORT BROTHERS CONST.)
301 INDUSTRIAL PARK DRIVE
BELLEVILLE, MI 48111
Ph. (313) 350-0369
E-MAIL: joe@davenportbrothers.com



VICINITY MAP

PROPERTY OWNER

SUKHDEV SINGH
8385 OPAL
WESTLAND, MI 48185
Ph. (734) 419-3060
E-MAIL: suksingh363@gmail.com



SHEET INDEX

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2. TOPOGRAPHIC SURVEY & REMOVALS PLAN
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4. STORM SEWER DESIGN PLAN
5. PROFILES
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7. DETAILS
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- PH-1 PHOTOMETRICS PLAN
- PH-2 PHOTOMETRICS BUILDING
- A1.0 FLOOR PLAN
- A2.0 BUILDING ELEVATIONS

REQUIRED PERMITS

WAYNE COUNTY (STORM WATER PERMIT)
WAYNE COUNTY SESC PERMIT
VAN BUREN TOWNSHIP (SITE DEVELOPMENT PERMIT)

PROPOSED USE

THE PROPOSED USE OF THE FACILITY IS FOR MAJOR TRUCK REPAIR.
VEHICLES AND THEIR TRAILERS MAY REQUIRE AND RECEIVE REPLACEMENT OR REPAIR TO ANY COMPONENT, SUCH AS ENGINES, EXHAUST SYSTEMS, TRANSMISSIONS, AND OR SUSPENSIONS.
NEW AND USED VEHICLES AND TRAILER COMPONENTS WILL BE REMOVED WITHIN THE PROPOSED BUILDING AND ALL NEW AND USED COMPONENTS WILL BE STORED WITHIN THE PROPOSED BUILDING.

LEGAL DESCRIPTION

COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 32, TOWN 2 SOUTH, RANGE 8 EAST, VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN; THENCE S.87°37'34"W., 61.08 FEET ALONG THE SOUTH LINE OF SAID SECTION 32, ALSO BEING THE NORTH LINE OF SECTION 5, TOWN 3 SOUTH, RANGE 8 EAST, VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN; THENCE ALONG THE WESTERLY LINE OF SCHOONER DRIVE (60' RIGHT OF WAY) THE FOLLOWING TWO COURSES: (1) SOUTHERLY 27.29 FEET ALONG THE ARC OF A 370 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 04°13'31" AND HAVING A CHORD BEARING S.07°20'55"E., 27.28 FEET AND (2) S.05°14'10"E., 476.68 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING S.05°14'10"E., 274.00 FEET; THENCE S.85°10'54"W., 1010.75 FEET; THENCE N.04°49'18"W., 216.33 FEET ALONG THE EASTERLY LINE OF SAID SCHOONER DRIVE; THENCE N.88°17'04"E., 217.19 FEET; THENCE N.05°42'41"W., 69.43 FEET; THENCE N.85°10'54"E., 792.98 FEET TO THE POINT OF BEGINNING. BEING A PART OF THE NORTH 1/2 OF SECTION 5, TOWN 3 SOUTH, RANGE 8 EAST, VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN.

TAX ID #83-017-99-0014-714

ZONING & SETBACKS

SUBJECT PROPERTY ZONED M2 (GENERAL INDUSTRIAL)
 PROPOSED USE: SEMI TRUCK/TRAILER REPAIR

ADJACENT PROPERTY ZONING:
 NORTH M1 & M2
 EAST M2
 SOUTH M2
 WEST M1

SCHEDULE OF REGULATIONS FOR M2 ZONING
 LOT SIZE NONE
 BUILDING HEIGHT 4 - STORY
 LOT COVERAGE 35%

SETBACKS

FRONT 60'(o)
 REAR 50'
 SIDES 50'(p), TOTAL 100'

SETBACK FOOTNOTES

(o) OFF-STREET PARKING FOR VISITORS, OVER AND ABOVE THE NUMBER OF SPACES REQUIRED UNDER SECTION 9.102 MAY BE PERMITTED WITHIN THE REQUIRED FRONT YARD PROVIDED THAT SUCH OFF-STREET PARKING IS NOT LOCATED WITHIN TWENTY (20) FEET OF THE FRONT LINE.
 (p) OFF-STREET PARKING SHALL BE PERMITTED IN A REQUIRED SIDE YARD SETBACK.

PROPOSED USE

THE PROPOSED USE OF THE FACILITY IS FOR MAJOR TRUCK REPAIR.

VEHICLES AND THEIR TRAILERS MAY REQUIRE AND RECEIVE REPLACEMENT OR REPAIR TO MAY COMPONENT, SUCH AS ENGINES, EXHAUST SYSTEMS, TRANSMISSIONS, AND OR SUSPENSIONS.

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6100 SCHOONER DRIVE
 TAX ID #83-017-99-0014-714

REQUIRED PARKING

PER TOWNSHIP ORDINANCE:

5 SPACES + EITHER 1 SPACE PER 550 S.F. GROSS FLOOR AREA OR 1 SPACE PER EACH EMPLOYEE AT PEAK SHIFT, WHICHEVER IS GREATER.

= 5+(MAX EMPLOYEE "5") = 10 REQUIRED SPACES OR
 = 5+(8320sf/550) = 20 REQUIRED SPACES

TOTAL SPACES REQUIRED = 20
 PROVIDED REGULAR SPACES 21
 PROVIDED BARRIER FREE SPACES 01
 TOTAL SPACES 22

GENERAL NOTES

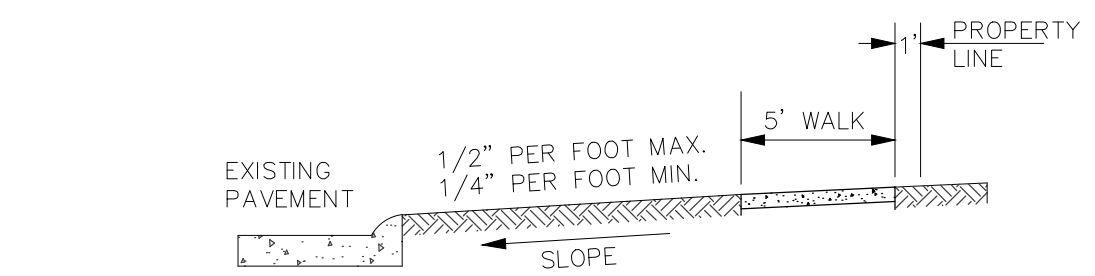
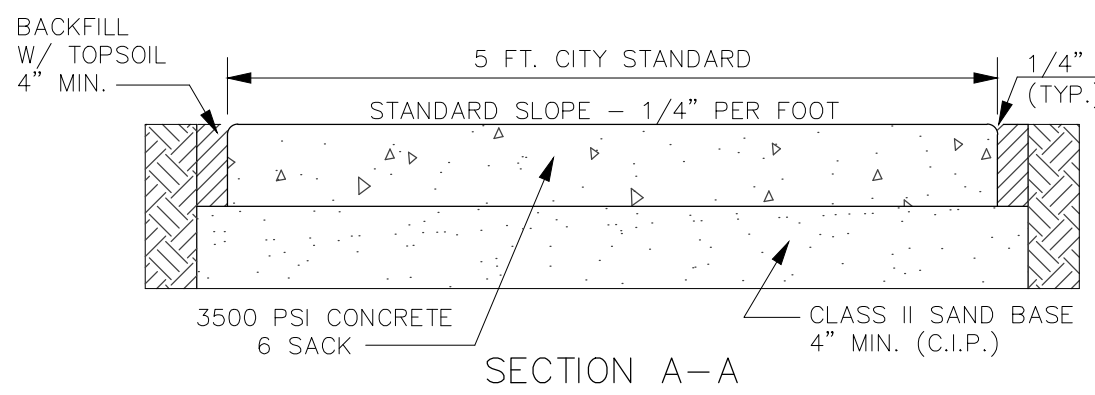
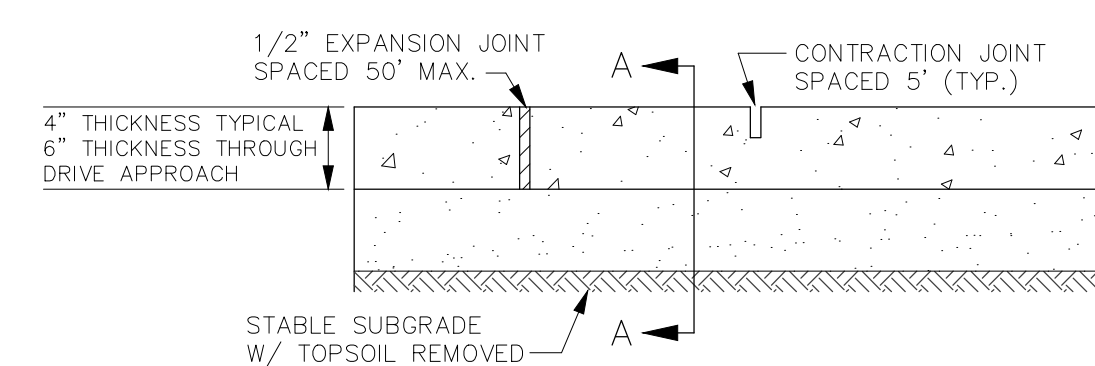
- PICK UP DEBRIS WITHIN PROPERTY LIMITS WEEKLY OR AS NEEDED.
- PHASING OF THE PROJECT IS NOT PROPOSED.
- THERE ARE NO WETLANDS LOCATED ON SUBJECT PROPERTY.
- PAVED SURFACES, WALKWAYS, SIGNS, LIGHTING AND OTHER STRUCTURES AND SURFACES SHALL BE MAINTAINED IN A SAFE, ATTRACTIVE CONDITION AS ORIGINALLY MAINTAINED IN A CLEARLY VISIBLE CONDITION.

SITE SPECIFIC NOTES

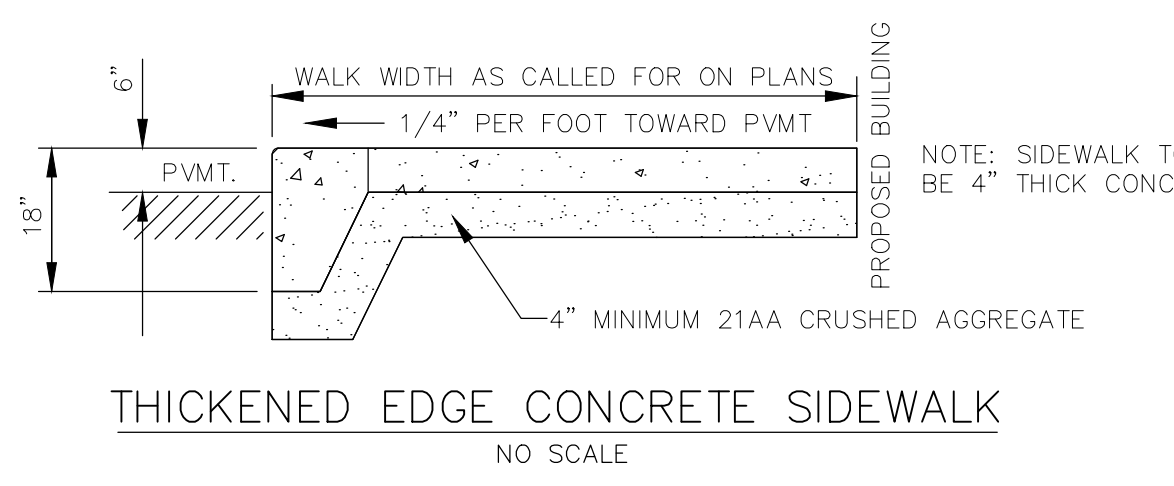
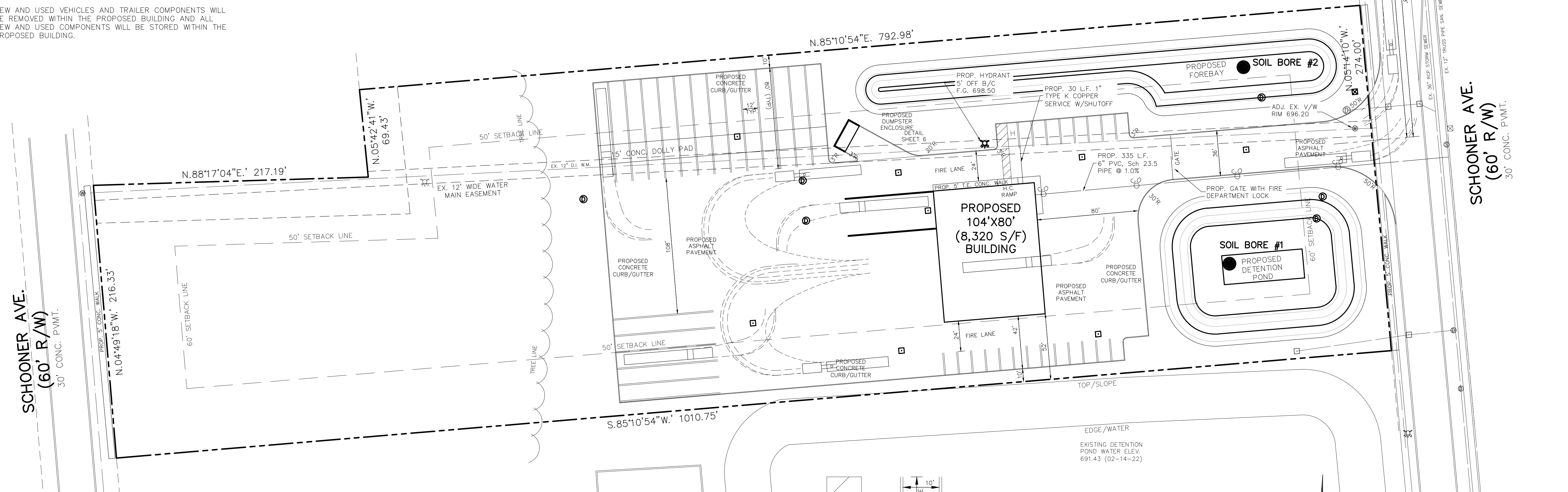
- PROPOSED SEMI TRUCK REPAIR FACILITY. THERE WILL BE NO LONG TERM PARKING WITHIN THE SUBJECT PROPERTY.
- TRUCKS PARKED ON THIS PROPERTY ARE FUNCTIONAL AND AWAITING REPAIR I.E., NO JUNK TRUCKS FOR PARTS SALVAGE.
- THERE WILL BE NO HAZARDOUS WASTE GENERATED FROM THE SITE.
- OILS, SOLVENTS AND OTHER CHEMICALS WILL BE REMOVED FROM THE SITE BY APPROVED HAULING METHODS.
- ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS, SPECIFICATIONS, AND GENERAL CONDITIONS OF THE TOWNSHIP.
- THE APPLICANT IS RESPONSIBLE FOR RESOLVING ANY DRAINAGE PROBLEMS ON ADJACENT PROPERTIES WHICH ARE THE RESULT OF THE APPLICANT'S ACTIONS.
- PROPOSED GATE TO BE SUPPLIED A FIRE DEPARTMENT LOCK.
- SITE FENCING IS NOT PROPOSED AS PART OF THIS PLAN.
- THERE IS NO PROPOSED SIGNAGE FOR THE SITE.

REQUIRED PERMITS

- WAYNE COUNTY STORM MANAGEMENT PERMIT.
- VAN BUREN DEVELOPMENT PERMIT

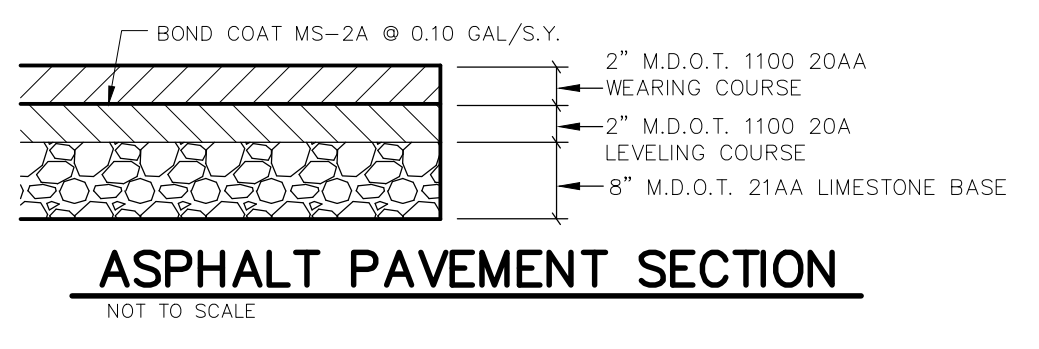
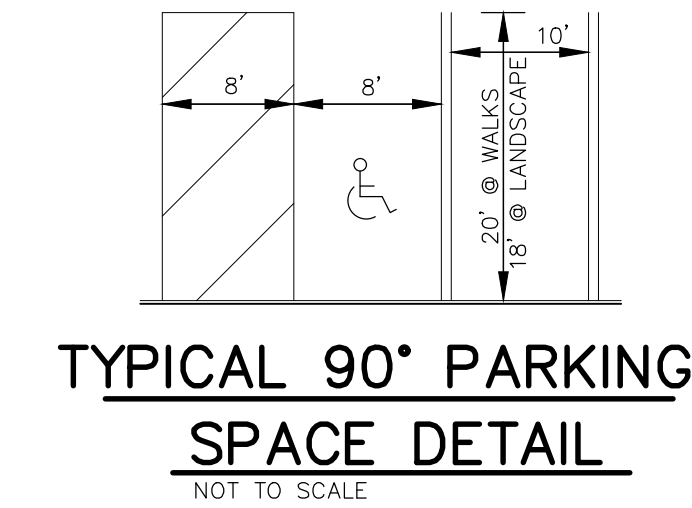


SIDEWALKS



CURB & GUTTER DETAIL
 USE CURB DETAIL 'F2'

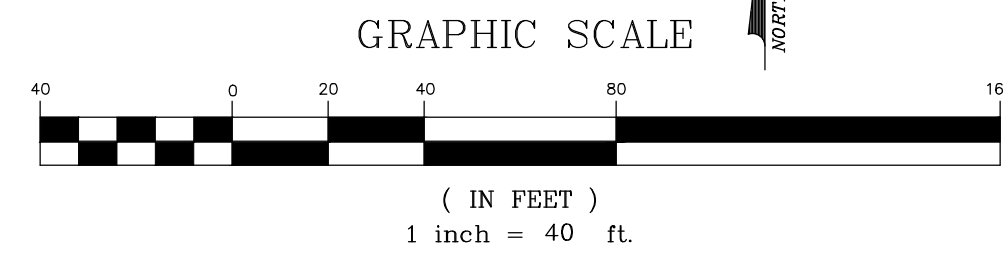
DETAIL	DIMENSIONS (M x N)	LANE TIES	CONCRETE CU. YD.	CRUSHED LESTONE LIN. FT.
F1	1'-6" x 7'-8"	AS SHOWN	0.0424	
F2	1'-6" x 7'-8"	OMITTED	0.0424	
F3	2'-0" x 1'-3/8"	AS SHOWN	0.0550	
F4	2'-0" x 1'-3/8"	OMITTED	0.0550	
F5	2'-6" x 1'-7/8"	AS SHOWN	0.0677	
F6	2'-6" x 1'-7/8"	OMITTED	0.0677	



PROPERTY OWNER
 SUDKHDEV SINGH
 8385 OPAL DRIVE
 WESTLAND, MI 48185

LEGEND

- EX. CATCH BASIN
- EX. SANITARY MANHOLE
- ⊙ EX. STORM MANHOLE
- ⊕ EX. HYDRANT
- ⊗ EX. UTILITY POLE
- ⊘ EX. VALVE WELL
- ⊙ EX. FENCE
- ⊙ EX. STREET SIGN
- ⊙ EX. LIGHT POLE



CIVIL DESIGN SERVICES LLC
 4996 MOORE ST. WAYNE, MI 48184
 (734) 756-2196
 E-mail: kbhardy1964@hotmail.com
HARDY
SITE PLAN
SEMI-TRUCK REPAIR FACILITY
6100 SCHOONER ROAD
VAN BUREN TWP, MI
 REVISIONS: 06-21-22, 08-03-22, 10-10-22
 DATE: 01-10-22
 DRAWING No.: A-
 JOB No.: 2022-01
 SHEET No.: 1 OF 1
 CHECKED BY:
 DRAWN BY:

ZONING & SETBACKS

SUBJECT PROPERTY ZONED M2 (GENERAL INDUSTRIAL)

ADJACENT PROPERTY ZONING:
 NORTH M1 & M2
 EAST M2
 SOUTH M2
 WEST M1

SCHEDULE OF REGULATIONS FOR M2 ZONING

LOT SIZE NONE
 BUILDING HEIGHT 4 - STORY
 LOT COVERAGE 35%

SETBACKS

FRONT 60'(o)
 REAR 50'
 SIDES 50'(p), TOTAL 100'

SETBACK FOOTNOTES

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 (p) OFF-STREET PARKING SHALL BE PERMITTED IN A REQUIRED SIDE YARD SETBACK.

FLOODZONE

THE SUBJECT PROPERTY IS LOCATED IN ZONE "C" (AREAS OF MINIMAL FLOODING) AS SHOWN ON FLOOD INSURANCE RATE MAP PANEL 26163C0195E, DATED FEBRUARY 02, 2012.

PARCEL SOILS TYPE

Ba BELLEVILLE LOAMY FINE SAND
 T1A TEDROW LOAMY FINE SAND, LOAMY SUBSTRATUM, 0 TO 2 PERCENT SLOPES
 PER USDA SOIL SURVEY OF SOUTHEAST MICHIGAN.

LAND AREA

THE SUBJECT PROPERTY CONTAINS 262,924 S/F - 6.02 AC.

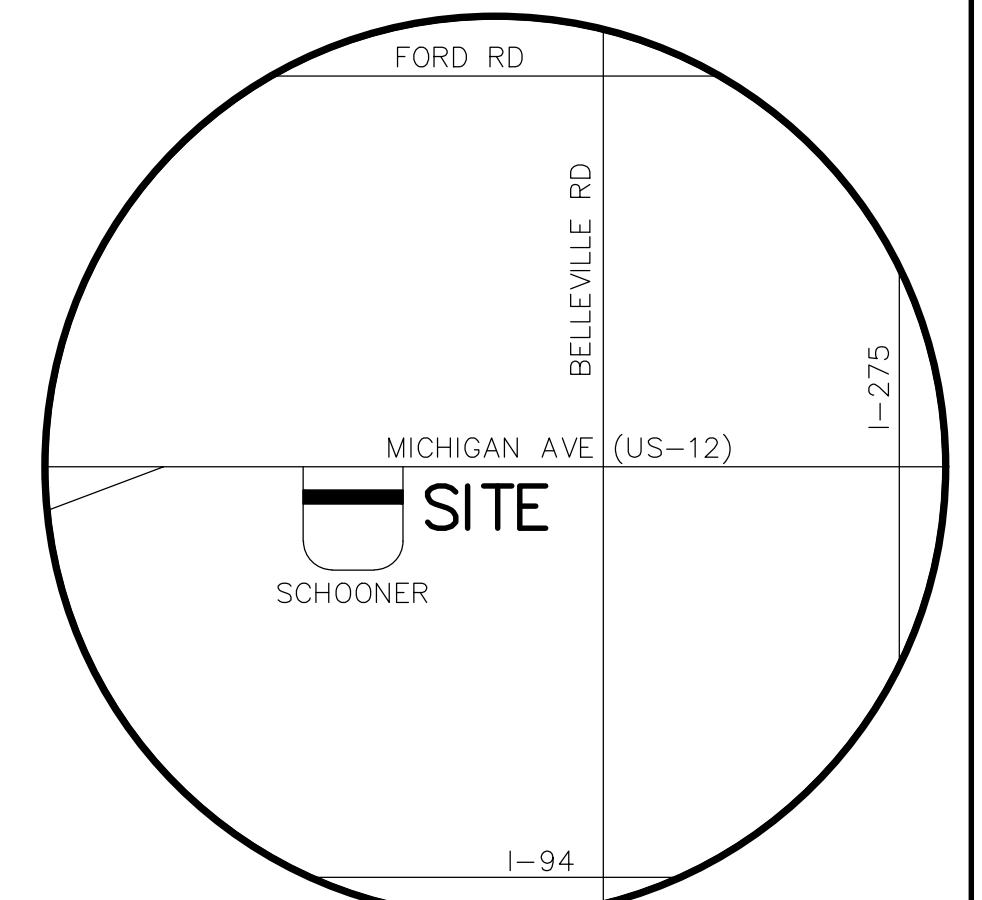
GENERAL NOTES

- PICK UP DEBRIS WITHIN PROPERTY LIMITS WEEKLY OR AS NEEDED.
- PHASING OF THE PROJECT IS NOT PROPOSED.
- THERE ARE NO WETLANDS LOCATED ON SUBJECT PROPERTY.
- PAVED SURFACES, WALKWAYS, SIGNS, LIGHTING AND OTHER STRUCTURES AND SURFACES SHALL BE MAINTAINED IN A SAFE, ATTRACTIVE CONDITION AS ORIGINALLY MAINTAINED IN A CLEARLY VISIBLE CONDITION.
- CONTRACTOR MUST PICK UP ANY FLOW FROM OFFSITE THAT CONTRIBUTES TO THE SITE.

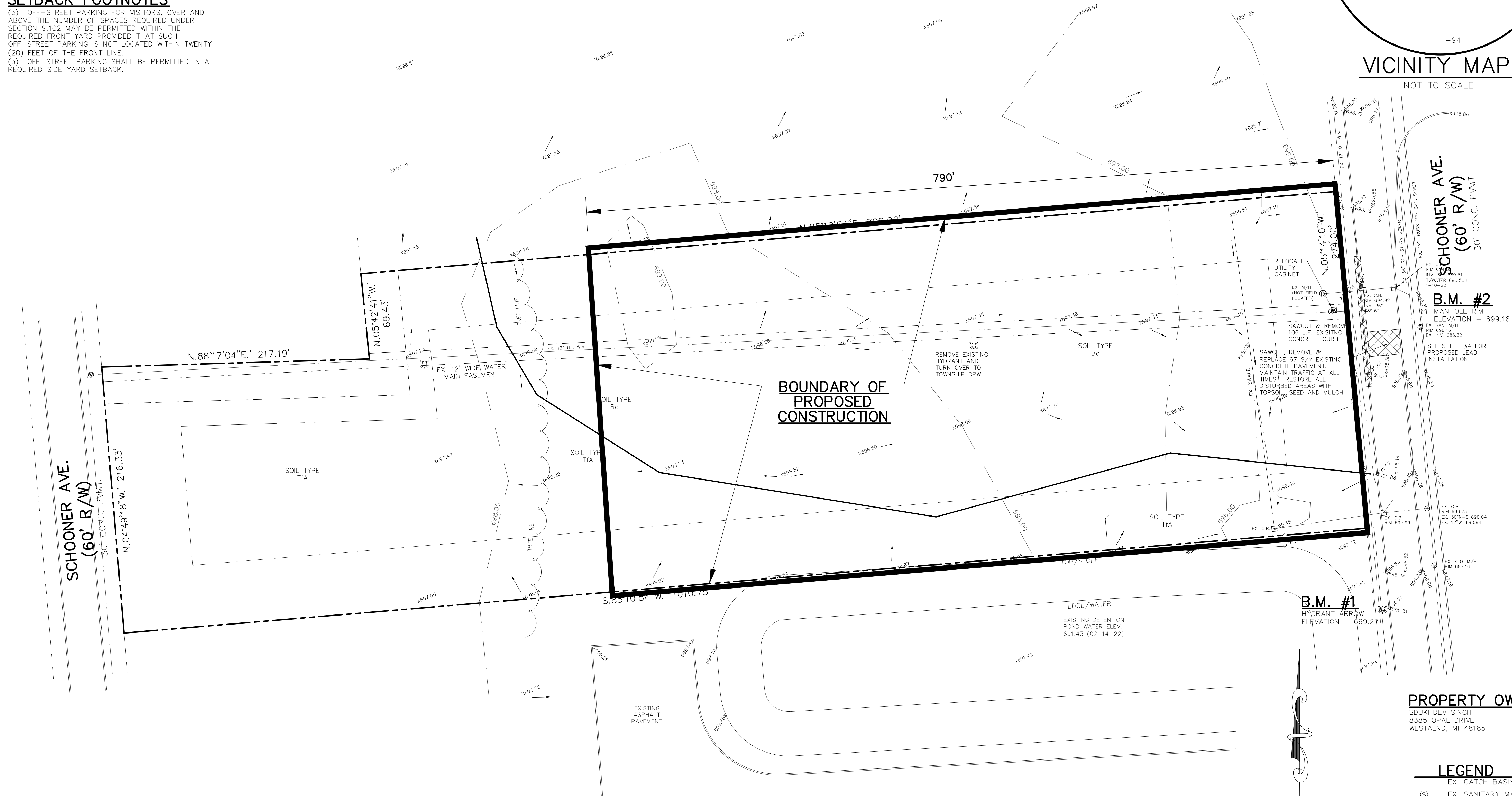
BENCHMARKS (USGS NAVD29)

RIM ON EXISTING MANHOLE LOCATED ON THE EAST SIDE OF SCHOONER DRIVE 115' SOUTH OF NORTHERLY PROPERTY LINE OF SUBJECT PARCEL ELEVATION - 699.16

ARROW ON HYDRANT LOCATED ON THE WEST SIDE OF SCHOONER DRIVE 65' SOUTH OF SOUTHERLY PROPERTY LINE OF SUBJECT PARCEL ELEVATION - 699.27



VICINITY MAP
NOT TO SCALE



SCHOONER AVE. (60' R/W)
30' CONC. PAVMT.

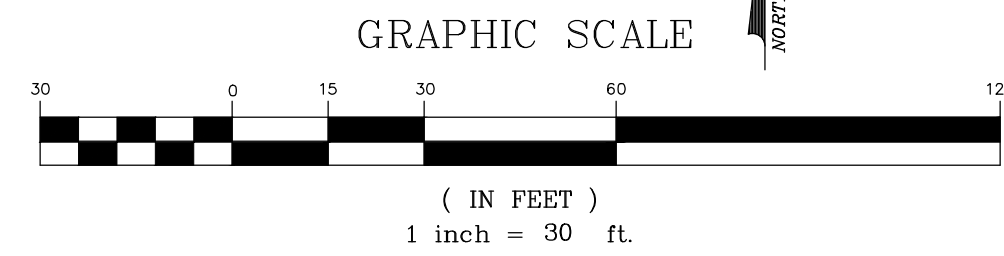
B.M. #2
MANHOLE RIM ELEVATION - 699.16
SEE SHEET #4 FOR PROPOSED LEAD INSTALLATION

B.M. #1
HYDRANT ARROW ELEVATION - 699.27

PROPERTY OWNER
SUKHDEV SINGH
8385 OPAL DRIVE
WESTLAND, MI 48185

LEGEND

□	EX. CATCH BASIN
⊙	EX. SANITARY MANHOLE
⊕	EX. STORM MANHOLE
⊙	EX. HYDRANT
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⊕	EX. STREET SIGN
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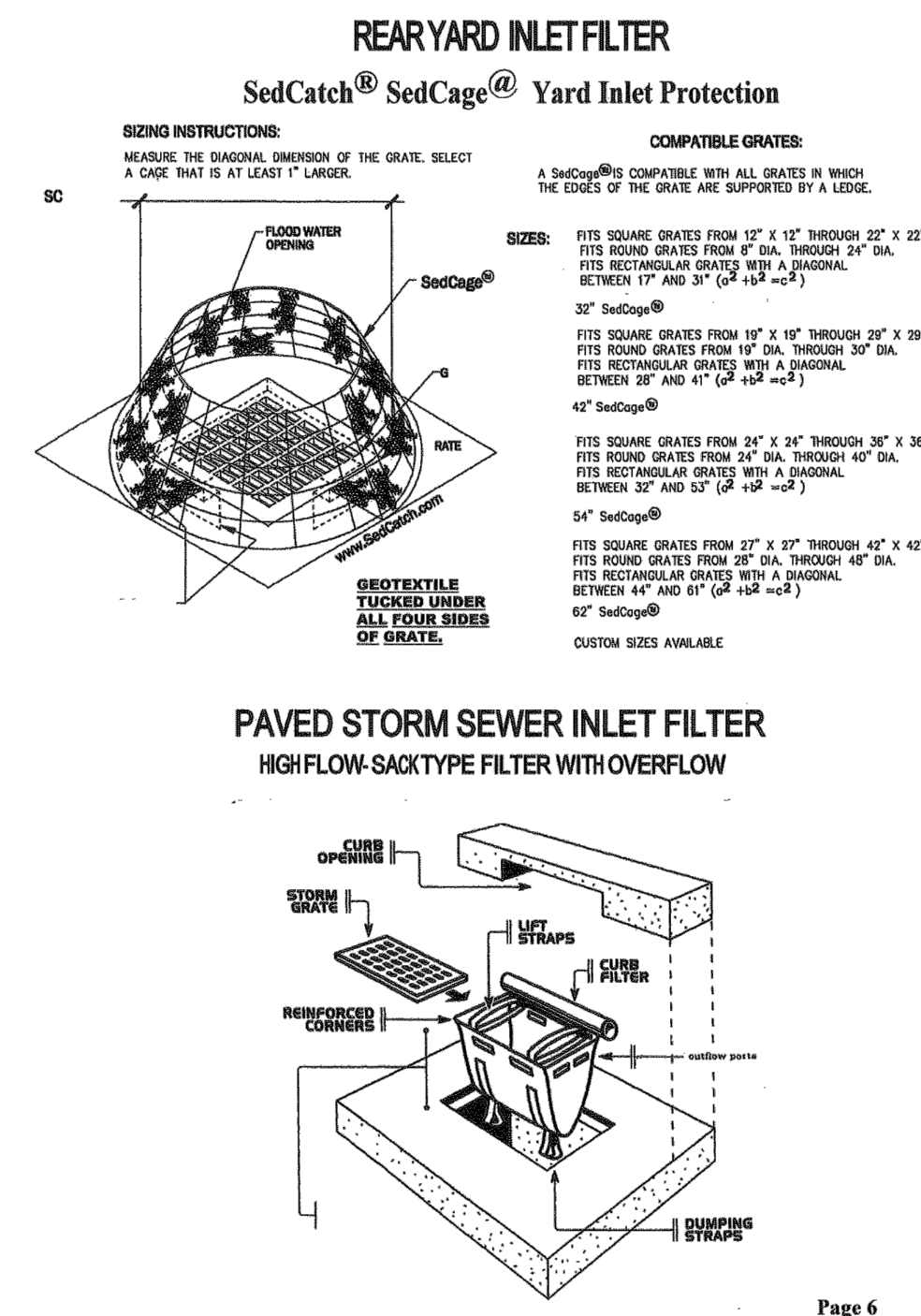
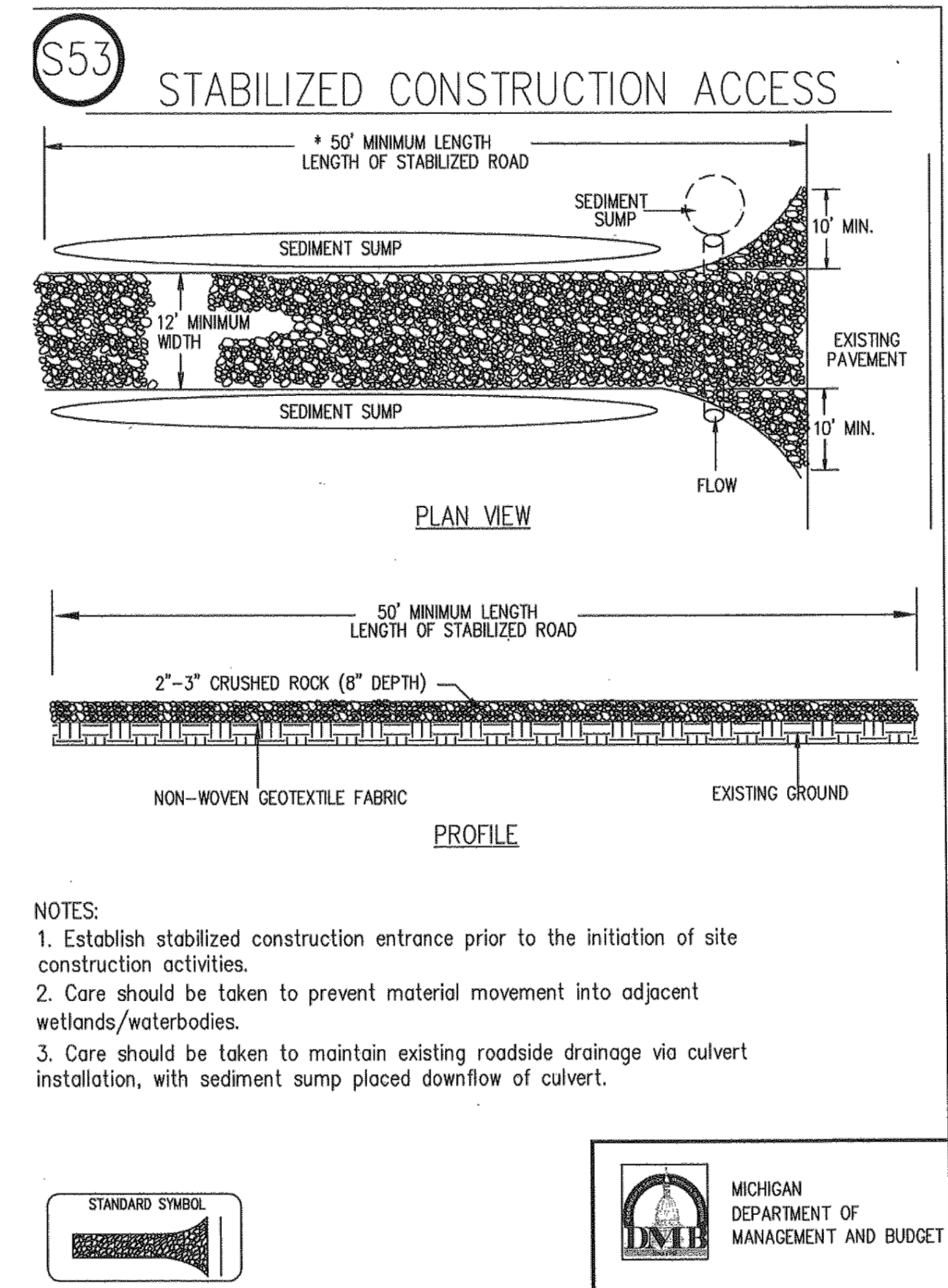
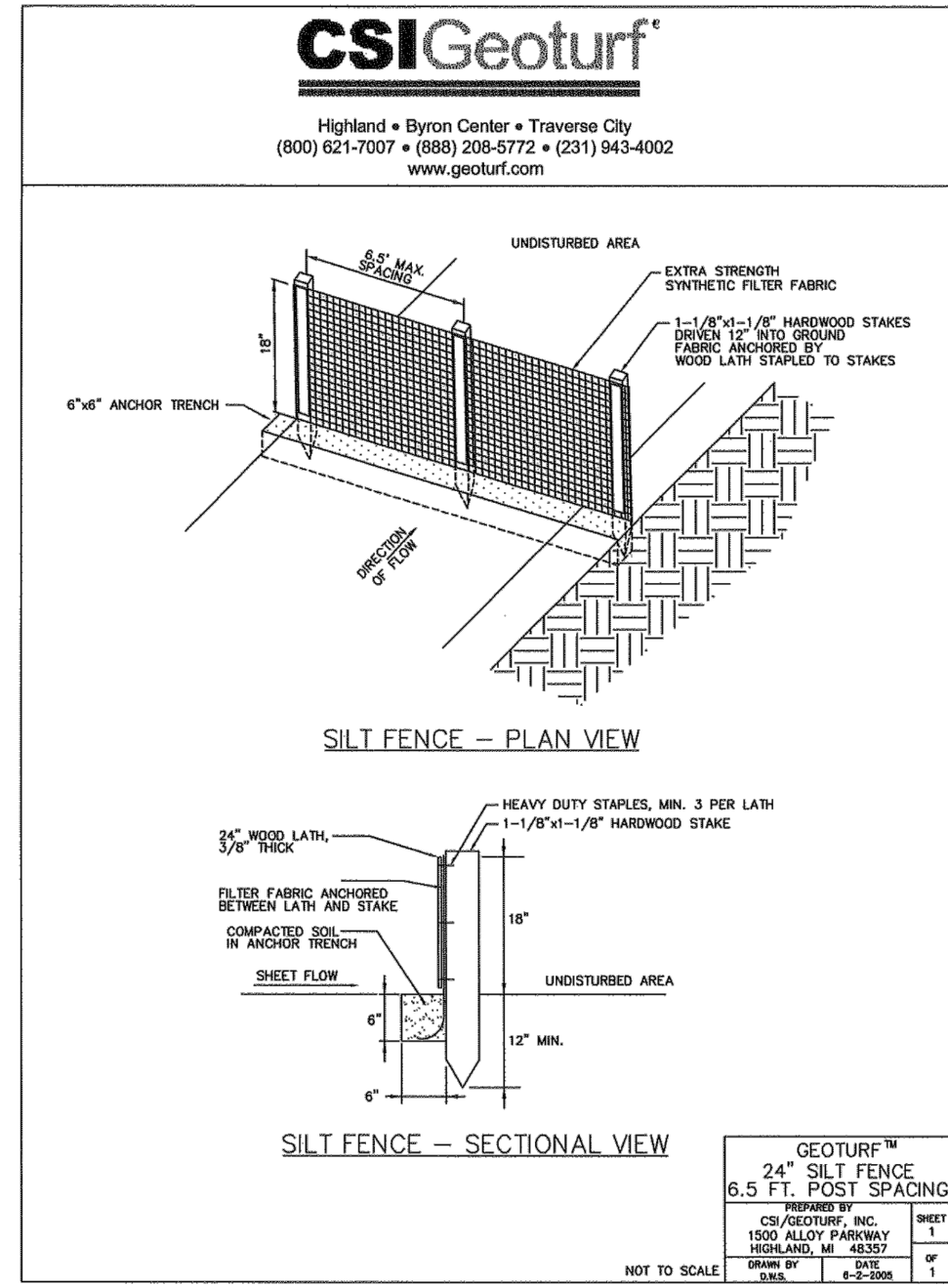


SHEET No.	JOB No.	DRAWING No.	REVISIONS	DATE	CHECKED BY:
			06-21-22		
2	2022-01	A-	08-03-22		
DRAWN BY:			DRAWN BY:		
DRAWN BY:			DRAWN BY:		
DRAWN BY:			DRAWN BY:		

SEMI-TRUCK REPAIR FACILITY
6100 SCHOONER ROAD
VAN BUREN TWP, MI

TOPOGRAPHIC SURVEY

HARDY CIVIL DESIGN SERVICES LLC
4996 MOORE ST. WAYNE, MI 48184
(734) 756-2196
E-mail: khardy1964@hotmail.com



CSI Geoturf
 Down to Earth Solutions
 Professional Construction, Turf, and Landscape Supplies
 CIVIL SITE IMPROVEMENTS • EROSION & SEDIMENT CONTROL • STORMWATER MANAGEMENT • LANDSCAPE ENHANCEMENTS

Geoturf® Filter Bag

Whenever accumulated water on a construction site must be pumped, utilize filter bags to ensure the water is properly filtered of silt and sediment prior to discharge into receiving bodies. Filter bags are constructed of strong, high quality, nonwoven geotextile filter fabric with a fill port to accommodate a pump discharge hose. The filter bag permits a controlled outflow of water, while retaining harmful pollutants.

Size 15' x 20' x 8"
 Snout Size 8"
 Holding Capacity 15 Cubic Yds.

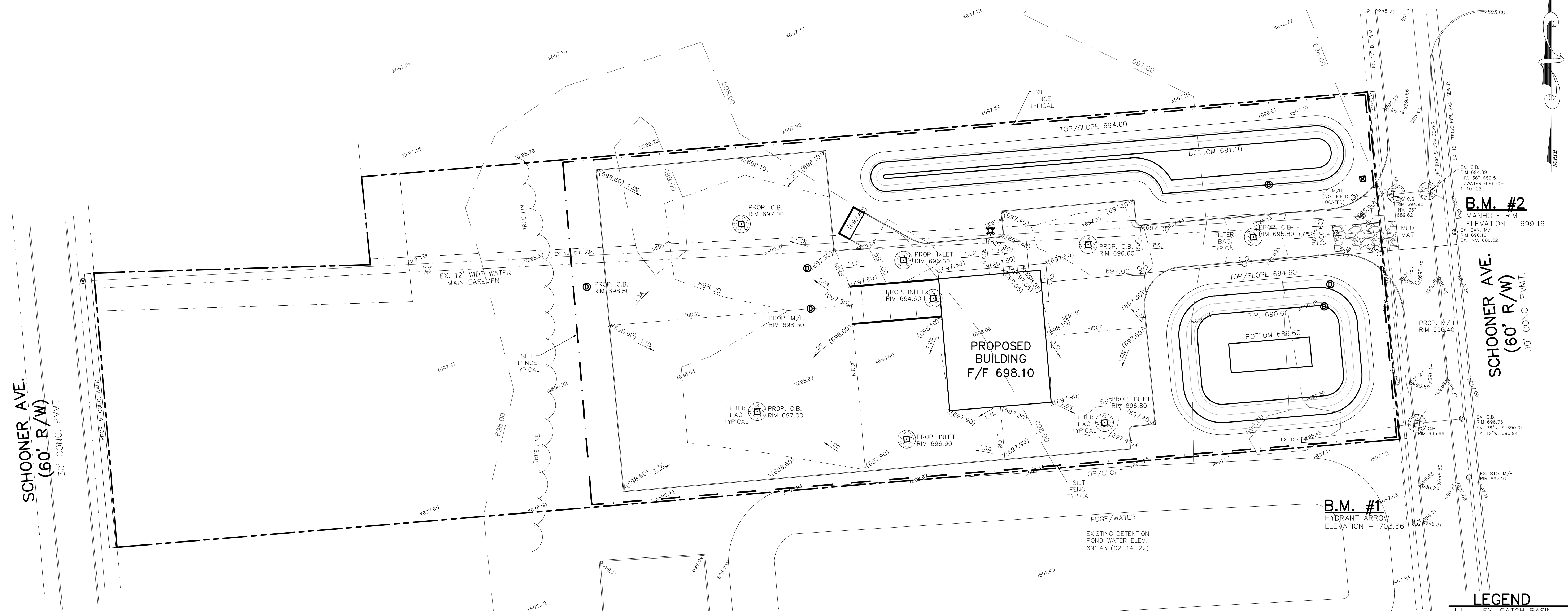
Meets the requirements of MDOT Item 208
 Erosion Control Filter Bag

SOIL EROSION SEQUENCE OF CONSTRUCTION

START DAY	END DAY	DESCRIPTION
8-14	11-30	1. STONE TRACKING PAD ATOP GEOTEXTILE LINER (MUD-MAT).
8-14	11-30	2. INSTALL SILT FENCING AND PROTECTIVE FENCING.
8-14	8-18	3. STRIP AND STOCKPILE TOPSOIL.
8-14	9-02	4. GRADE AND BALANCE AS REQUIRED. STABILIZE DITCHES, SWALES, COMMON AREAS AND SLOPES PER PLAN WITHIN 5 DAYS OF GRADE.
8-21	9-02	5. EXCAVATE DETENTION BASIN, INSTALL APPROVED OUTLET, STABILIZE BEFORE PAVING IS STARTED.
9-05	9-16	6. INSTALL UNDERGROUND UTILITIES (I.E. SANITARY, STORM AND WATER MAIN).
8-01	11-30	7. PLACE INLET FILTERS.
9-19	10-06	8. INSTALL PAVEMENT COMPLETE.
10-09	10-13	9. INSTALL ALL PUBLIC UTILITIES COMPLETE (ELECTRIC, TELEPHONE, AND CABLE T.V.).
10-16		10. ESTABLISH VEGETATION FOR ALL DISTURBED AREAS AND ROAD / R.O.W.s.
11-01		11. CLEAN OUT AND RESTORE SEDIMENT FOREBAY AND DETENTION POND TO DESIGN SPECIFICATIONS.
11-01		12. CLEAN OUT AND RESTORE SEDIMENT FOREBAY AND DETENTION POND TO DESIGN SPECIFICATIONS.
11-30		13. REMOVE SILT FENCE FOLLOWING W.C.D.O.E. APPROVAL.

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
SCRAPE STREETS		X	X	X	X	X	X
SWEEP STREETS				X			

- SOIL EROSION SEQUENCE OF CONSTRUCTION**
- (1) INSTALL SILT FENCE AS SHOWN HERE ON.
 - (2) COMPLETE MASS GRADING AND UNDERGROUND UTILITIES.
 - (3) COMPLETE BIOSWALE INSTALLATION
 - (4) CONSTRUCT PARKING AREA.
 - (5) RESTORE ALL DISTURBED AREAS WITH SOD OR TOPSOIL, SEED AND MULCH.
 - (6) REMOVE SILT FROM FROM BEHIND SILT FENCE AND REMOVE SILT FENCE.



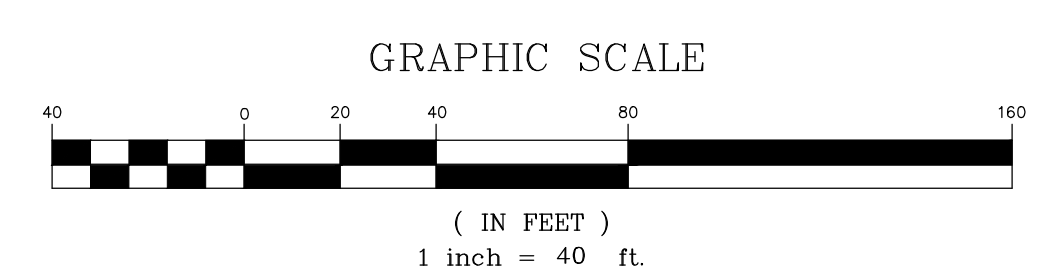
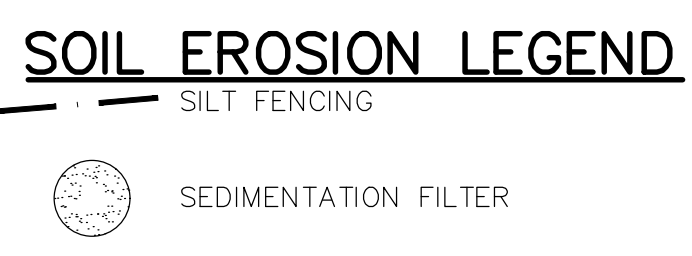
BENCHMARKS (USGS NAVD29)

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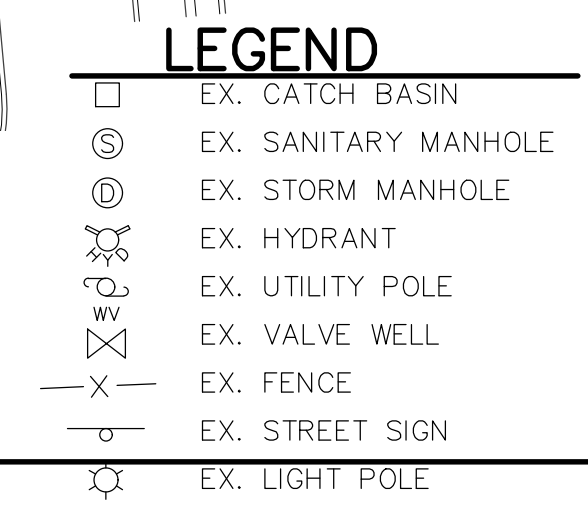
ARROW ON HYDRANT LOCATED ON THE WEST SIDE OF SCHOONER DRIVE 65' SOUTH OF SOUTHERLY PROPERTY LINE OF SUBJECT PARCEL ELEVATION - 699.27

SOIL EROSION QUANTITIES:

1800 L.F. SILT FENCING
 1 EA. MUD MAT
 12 EA. SEDIMENTATION FILTER



PROPERTY OWNER
 SDUKHDEV SINGH
 8385 OPAL DRIVE
 WESTLAND, MI 48185



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HARDY

GRADING AND SOIL EROSION PLAN

SEMI-TRUCK REPAIR FACILITY
6100 SCHOONER ROAD
VAN BUREN TWP, MI

REVISIONS

NO.	DATE	DESCRIPTION
06-21-22		
08-03-22		
10-10-22		

DRAWING No. A-

JOB No. 2022-01

SHEET No. 3 OF 3

DRAWN BY:

CHECKED BY:

Land Characteristic

Existing	Proposed
6.03	4.99
1	3.24
5	1.75

Pervious Area Breakdown by Cover Type

Non-cultivated	4	0
Impervious Area (ac)	N/A	N/A
Improved area (grass/landscape)	6.03	1.19
Predominant NRCS Soil Type	type B	type B (Type A, B, C, C)
Wooded Area (ac)	0	0
Predominant NRCS Soil Type	N/A	N/A (Type A, B, C, C)

MIN. RUNOFF COEFFS

Water surface	1.00
Roofs	0.95
Asphalt, Concrete	0.95
Gravel	0.95
Soil A	0.15
Soil B	0.20
Soil C	0.25
Soil D	0.30

CALCULATE RUNOFF COEFFICIENT
 $C=(A1+C1)/A$ 0.70

CALCULATE 100-year peak intensity
 $I100=5.40$ in/hr

CHANNEL PROTECTION VOLUME CONTROL (CPVC)
 $V_{cpvc}=12,680$ cf

CHANNEL PROTECTION RATE CONTROL (CPRC)
 $V_{cprc}=24,091$ cf

100-YEAR FLOOD CONTROL VOLUME CALCS
 $Q_{allow,calc}=1.27$ cfs/acre max. 1.0 cfs

$Q_{allow,calc}=1.00$ cfs/acre a site less than 2 acres must use a variable release rate of 1.00 cfs/acre

$Q_0=4.99$ cfs
 $Q_1=18.9$ cfs
 $V_r=66,018$ cf
Storage ration (Vr/Vs)= 0.473
100-year (req) 31,226 cf if not using bioretention

SITE DESIGN VOLUMES:
CPVC= 12,680
CPRC= 24,091
FLOOD CONTROL= 18,546 cf

SITE DESIGN MUST ACCOMMODATE THE FOLLOWING VOLUMES:
CPVC= 12,680
CPRC= 24,091
FLOOD CONTROL= 24,091 cf

TIME of CONCENTRATION CALCULATIONS

V (sheet flow)=	0.48	1	%slope
Flow time=	4.3	125	flow length
V (shallow flow)=	1.37	1.3	%slope
Flow time=	7.3	600	flow length
V (sewer flow)=	8.3	3.00	fps
Flow time=		600	flow length

concentration time= 20 min.
if site is less than 2 acres, 10 min.
 $T_{c1}=20$ min.

FOREBAY DESIGN

Required Volume 12680^{ns}

ENTER ELEV. AND AREA

ELEV.	AREA	VOLUME	CUM. VOL.	DEPTH
691.10	3,705.00	0.00	0.00	
692.00	7,725.00	5,028.93	5,028.93	0.90
693.00	12,414.00	9,967.28	14,996.20	1.00
		#####	#####	-693.00
		0.00	#####	0.00
		0.00	#####	0.00
		0.00	#####	0.00
		0.00	#####	0.00
		0.00	#####	0.00

$Z_{IT} = \text{LOWER EL.} + (\text{UPPER EL.} - \text{LOWER EL.})^*$
 $[(\text{REQ. VOL.} - \text{CUM. VOL.} \cdot \text{L.WER EL.}) / (\text{CUM. VOL.} \cdot \text{UPPER EL.} - \text{CUM. VOL.} \cdot \text{LOW EL.})]$

692.00	693.00	5,028.93	14,996.20
Z _{IT} =	692.77	ft	Weir wall is 1' higher than Z _{IT}

DETENTION POND DESIGN

Required Volume 24091^{ns}

ENTER ELEV. AND AREA

ELEV.	AREA	VOLUME	CUM. VOL.	DEPTH
690.60	7,711.00	0.00	0.00	
691.00	8,540.00	3,245.54	3,245.54	0.40
692.00	10,771.00	9,624.31	12,869.86	1.00
693.00	13,230.00	11,967.47	24,837.33	1.00
		#####	#####	-693.00
		0.00	#####	0.00
		0.00	#####	0.00
		0.00	#####	0.00
		0.00	#####	0.00

$Z_{IT} = \text{LOWER EL.} + (\text{UPPER EL.} - \text{LOWER EL.})^*$
 $[(\text{REQ. VOL.} - \text{CUM. VOL.} \cdot \text{L.WER EL.}) / (\text{CUM. VOL.} \cdot \text{UPPER EL.} - \text{CUM. VOL.} \cdot \text{LOW EL.})]$

692.00	693.00	12,869.86	24,837.33
Z _{IT} =	692.94	ft	Weir wall is 1' higher than Z _{IT}

ORIFICE CALCULATIONS

Average Discharge Rate (Q_{ave})= 0.07 cfs
Average Head= 0.835 ft
Extended Detention Orifice Area (a)= 0.015 sf
Extended Detention Orifice Diameter (d)= 1.7 inch

ORIFICE CALCULATIONS

Average Discharge Rate (Q_{ave})= 0.14 cfs
Average Head= 1.17 ft
Extended Detention Orifice Area (a)= 0.026 sf
Extended Detention Orifice Diameter (d)= 2.2 inch

UTILITY PLAN NOTES

- PROPOSED HYDRANT TO BE MINIMUM OF 5' OFF BACK OF CURB

GENERAL NOTES

- PICK UP DEBRIS WITHIN PROPERTY LIMITS WEEKLY OR AS NEEDED.
- PHASING OF THE PROJECT IS NOT PROPOSED.
- THERE ARE NO WETLANDS LOCATED ON SUBJECT PROPERTY.
- PAVED SURFACES, WALKWAYS, SIGNS, LIGHTING AND OTHER STRUCTURES AND SURFACES SHALL BE MAINTAINED IN A SAFE, ATTRACTIVE CONDITION AS ORIGINALLY MAINTAINED IN A CLEARLY VISIBLE CONDITION.

UTILITY CROSSING SCHEDULE

No.	INFO.	ELEVATION	ACTION
1	BOTTOM EX. 36" TOP PROP. 6" SAN.	689.70± 687.10	
2	BOTTOM EX. W.M. TOP PROP. 6" SAN.	690.70± 688.20	
3	BOT. PROP. 24" TOP PROP. 6" SAN.	690.25 688.45	
4	BOT. PROP 12" TOP PROP. 6" SAN.	692.25 689.85	
5	TOP EX. W.M. BOT. PROP. 24".	690.50± 690.75 (LOWER W.M. TO 689.20)	
6	TOP EX. W.M. PROP. 24" INV.	690.50± 691.05 (LOWER W.M. TO 689.50)	
7	TOP EX. W.M. PROP. 18" INV.	690.80± 690.20 (LOWER W.M. TO 688.70)	

STRUCTURE SCHEDULE

No.	INFO.	No.	INFO.	No.	INFO.
1	INV. 24" 691.10	6	4" DIA. MANHOLE RIM 698.30	11	2' DIA. INLET RIM 696.80
2	4" DIA. C.B. RIM 695.80 INV. 18" N. 692.29 INV. 24" W. 691.15 INV. 12" E. 692.29	7	4" DIA. C.B. RIM 697.00 INV. 15" NE. 692.52 INV. 12" SE. 692.52	12	INV. 12" SW. 691.10
3	4" DIA. C.B. RIM 696.60 INV. 24" E-W 691.68 INV. 12" N. 692.15	8	2' DIA. INLET RIM 696.90 INV. 12" NW. 692.90	13	2' DIA. INLET RIM 697.00 INV. 12" NE. 691.48
4	4" DIA. C.B. RIM 696.60 INV. 24" E-W 692.05	9	2' DIA. INLET RIM 694.60 INV. 12" W. 692.60		
5	4" DIA. MANHOLE RIM 697.80 INV. 24" E. 692.23 INV. 24" W. 692.36 INV. 18" S. 692.23	10	4" DIA. C.B. RIM 698.50 INV. 12" E. 692.60		

STORM SEWER DESIGN CHART

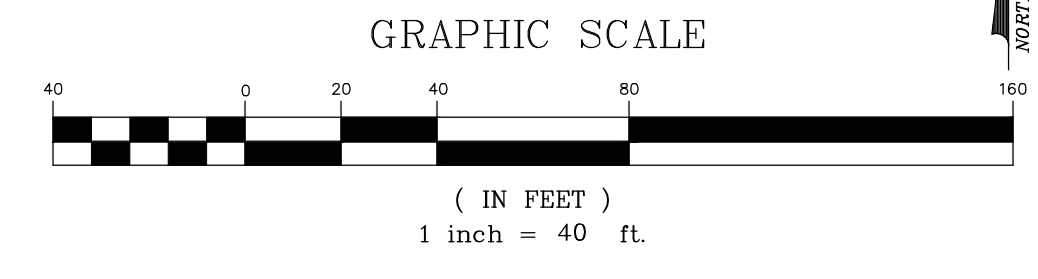
Roughness Coefficient	0.013	Time T=	20	Project Name:				Date:										
Run-off Coefficient	Varies	Rain Intsy I = 101/(12.33+T) ^{0.8}	Intensity I, in/hr	Runoff Q-CIA In.	Pipe Dia. In.	% Slope	Length ft	Velocity fps	Time of Flow, min	Capacity cfs	---	Invert	Downstream	Upstream	Ground	Downstream		
13	12	0.56	0.89	0.50	0.498	20.00	5.45	2.72	15	0.25	118	2.63	0.75	3.23	691.40	691.11	697.00	N/A
11	3	0.24	0.95	0.23	0.228	20.75	5.34	1.22	12	0.32	140	2.56	0.91	2.01	692.80	692.35	696.80	696.60
10	5	2.18	0.75	1.64	1.635	21.66	5.22	8.53	24	0.15	175	2.79	1.05	8.76	692.60	692.34	698.50	697.80
9	6	0.25	0.95	0.24	0.238	22.70	5.09	1.21	12	0.32	96	2.56	0.62	2.01	692.65	692.34	694.60	698.30
8	7	0.25	0.87	0.22	0.218	20.00	5.45	1.19	12	0.32	120	2.56	0.78	2.01	693.20	692.82	696.90	697.00
7	6	0.62	0.90	0.56	0.776	20.78	5.34	4.14	15	0.45	90	3.53	0.43	4.33	692.82	692.41	697.00	698.30
6	5	0.00	0.00	0.00	1.013	21.21	5.28	5.35	18	0.30	32	3.25	0.16	5.75	692.41	692.32	698.30	697.80
5	4	0.00	0.00	0.00	2.648	21.37	5.26	13.93	24	0.40	75	4.55	0.27	14.31	692.32	692.02	697.80	696.60
4	3	0.11	0.90	0.10	2.747	21.64	5.23	14.37	24	0.41	145	4.61	0.52	14.48	692.02	691.42	696.60	696.60
3	2	0.25	0.95	0.24	3.213	22.17	5.16	16.58	30	0.18	130	3.54	0.61	17.40	691.42	691.19	696.60	695.80
2	1	0.13	0.95	0.12	3.336	22.78	5.08	16.95	30	0.18	50	3.54	0.24	17.40	691.19	691.10	695.80	N/A
E	D			0.00	3.336	20.00	5.45	18.18	24	0.65	100	5.81	0.29	18.24	691.10	690.60		

Prepared by:

Invert	Downstream	Upstream	Ground	Downstream
691.40	691.11	697.00	N/A	
692.80	692.35	696.80	696.60	
692.60	692.34	698.50	697.80	
692.65	692.34	694.60	698.30	
693.20	692.82	696.90	697.00	
692.82	692.41	697.00	698.30	
692.41	692.32	698.30	697.80	
692.32	692.02	697.80	696.60	
692.02	691.42	696.60	696.60	
691.42	691.19	696.60	695.80	
691.19	691.10	695.80	N/A	
691.10	690.60			

SANITARY SEWER BASIS OF DESIGN

AVERAGE PER CAPITA FLOW = 100 gpd
PER 1000 SF OF BUILDING AREA = (8320/1000)*100 = 832 gpd
832 gpd/1440gpd~gpm = 0.578 gpm
0.578 gpm * 0.13368/60 = 0.0013 cfs
PEAKING FACTOR = 0.0013*4 = 0.0052 cfs
PROVIDED 6" LEAD @ 1.00% = CAPACITY 0.56 CFS



PROPERTY OWNER

SUDKHDEV SINGH
8385 OPAL DRIVE
WESTLAND, MI 48185

LEGEND

- EX. CATCH BASIN
- EX. SANITARY MANHOLE
- EX. STORM MANHOLE
- EX. HYDRANT
- EX. UTILITY POLE
- EX. VALVE WELL
- EX. FENCE
- EX. STREET SIGN
- EX. LIGHT POLE

HARDY CIVIL DESIGN SERVICES LLC
4996 MOORE ST. WAYNE, MI 48184
(734) 756-2196
E-mail: kbhardy1964@hotmail.com

STORM SEWER DESIGN

SEMI-TRUCK REPAIR FACILITY
6100 SCHOONER ROAD
VAN BUREN TWP, MI

REVISIONS

NO.	DATE	DESCRIPTION
06-21-22		
08-03-22		
10-10-22		

DRAWING NO. A-2022-01

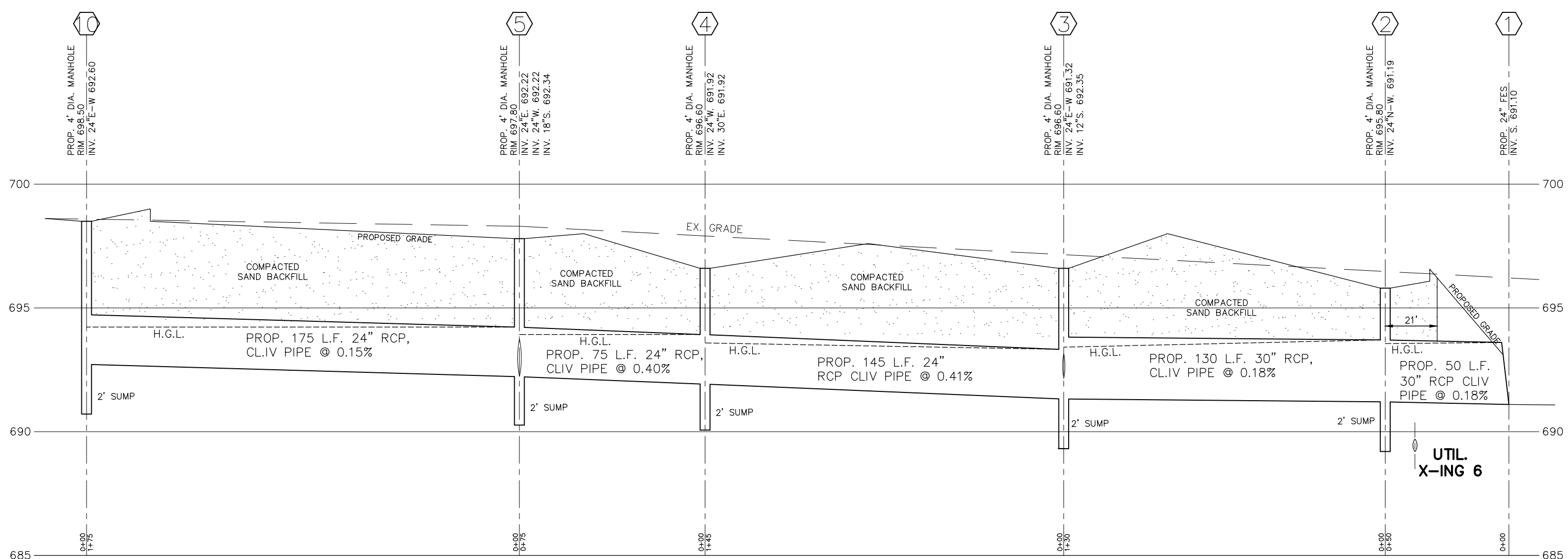
SHEET NO. 4 OF 4

CHECKED BY:

DRAWN BY:

STORM SEWER DESIGN CHART

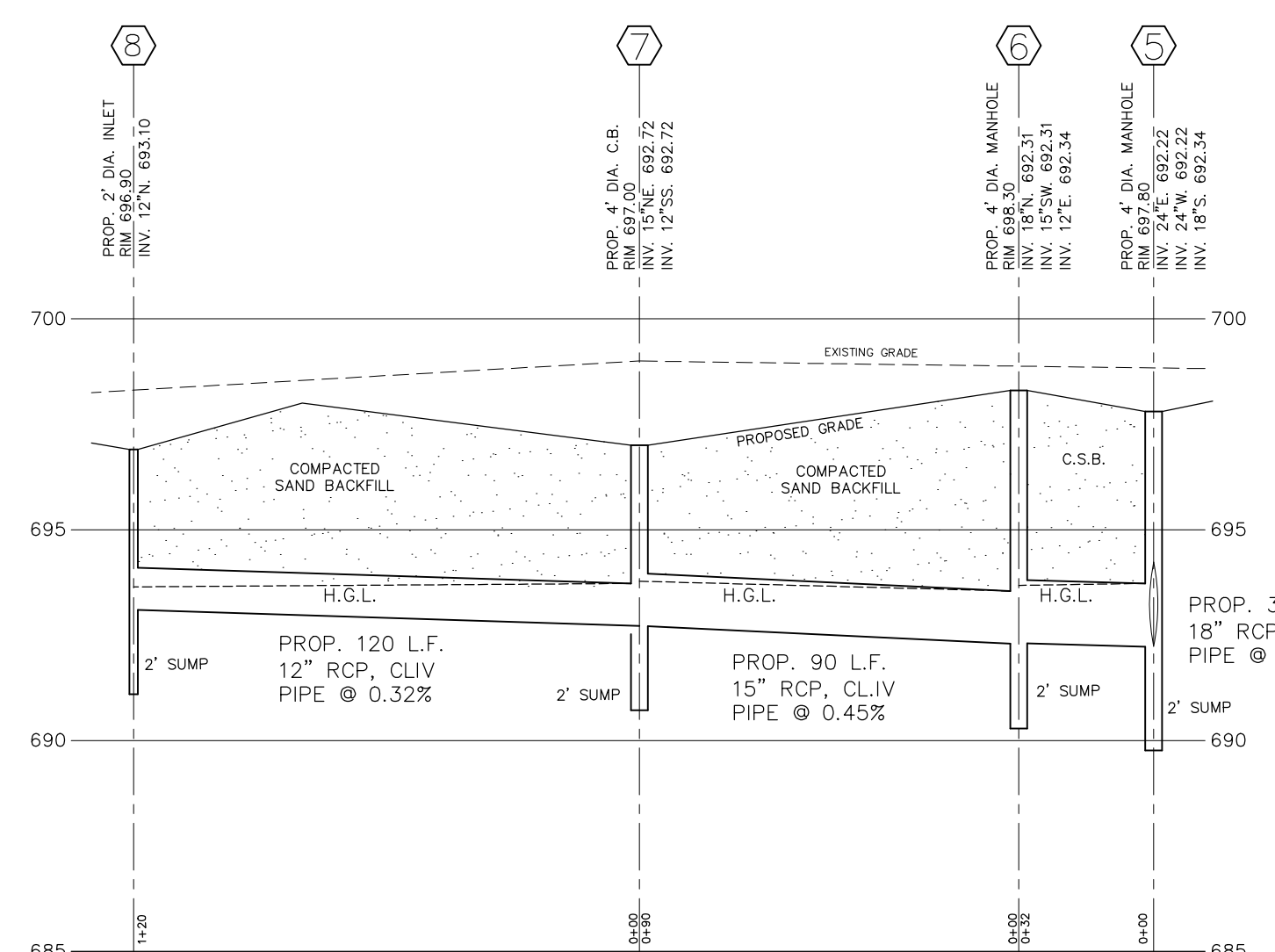
Storm Sewer Design Chart										Project Name:				Date:					
Runoff Coefficient										Project No.:				Prepared by:					
Roughness Coefficient										Time T=									
0.013										20									
Time T=										1=101((12.33+T) ^{0.8})									
From	To	Area, Ac.	Coeff. R	A x R	Total AxR	Time, Min	Intensity	Runoff Q-CIA	Pipe Dia.	In	% Slope	Length ft	Velocity fps	Time of Flow, min	Capacity cfs	Invert	Ground		
																Upstream	Downstream	Upstream	Downstream
13	12	0.56	0.89	0.50	0.498	20.00	5.45	2.72	15	0.25	118	2.63	0.75	3.23	691.40	691.11	697.00	N/A	
11	3	0.24	0.95	0.23	0.228	20.75	5.34	1.22	12	0.32	140	2.56	0.91	2.01	692.80	692.35	696.80	696.60	
10	5	2.18	0.75	1.64	1.635	21.66	5.22	8.53	24	0.15	175	2.79	1.05	8.76	692.60	692.34	698.50	697.80	
9	6	0.25	0.95	0.24	0.238	22.70	5.09	1.21	12	0.32	96	2.56	0.62	2.01	692.65	692.34	694.60	698.30	
8	7	0.25	0.87	0.22	0.218	20.00	5.45	1.19	12	0.32	120	2.56	0.78	2.01	693.20	692.82	696.90	697.00	
7	6	0.62	0.90	0.56	0.776	20.78	5.34	4.14	15	0.45	90	3.53	0.43	4.33	692.82	692.41	697.00	698.30	
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5	4	0.00	0.00	0.00	2.648	21.37	5.26	13.93	24	0.40	75	4.55	0.27	14.31	692.32	692.02	697.80	696.60	
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3	2	0.25	0.95	0.24	3.213	22.17	5.16	16.58	30	0.18	130	3.54	0.61	17.40	691.42	691.19	696.60	695.80	
2	1	0.13	0.95	0.12	3.336	22.78	5.08	16.95	30	0.18	50	3.54	0.24	17.40	691.19	691.10	695.80	N/A	
E	D				0.00	3.336	20.00	5.45	18.18	24	0.65	100	5.81	0.29	18.24	691.10	690.60		



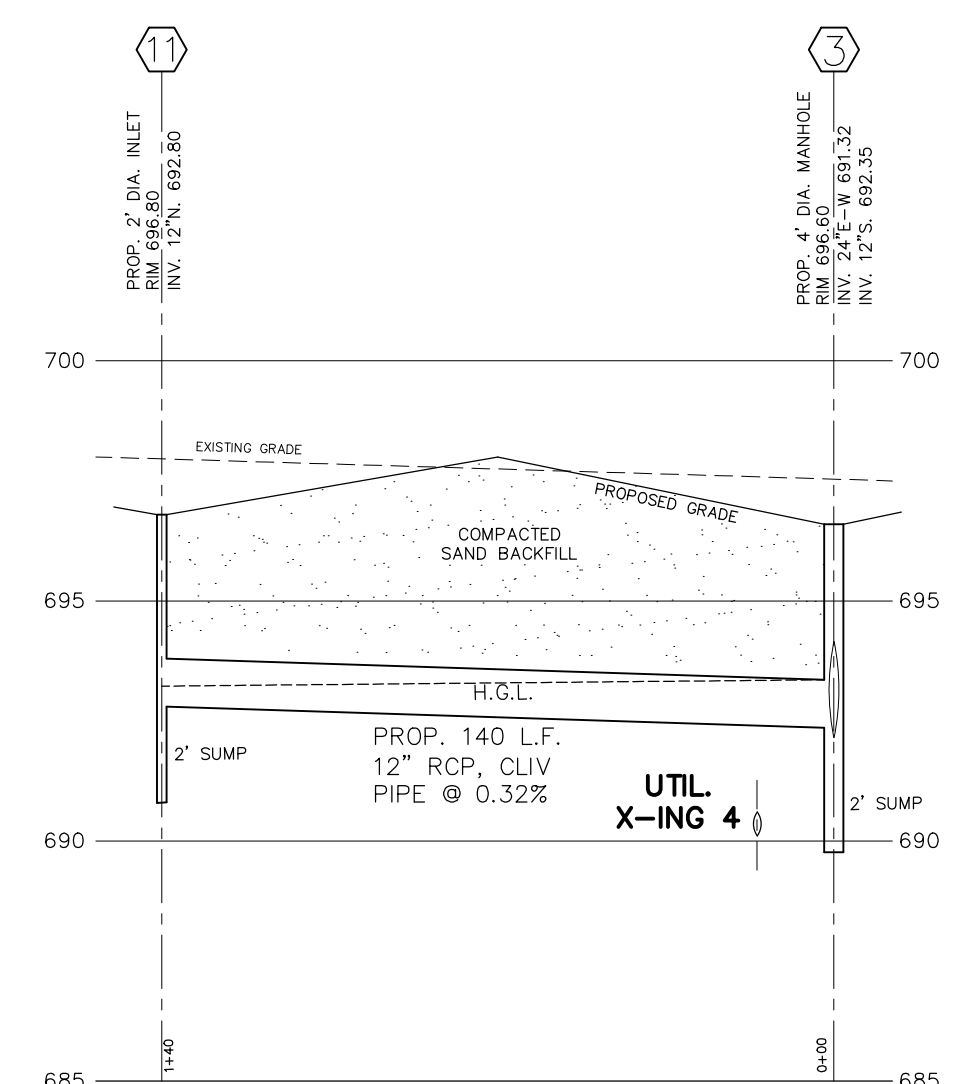
STORM SEWER PROFILES
SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL

UTILITY CROSSING SCHEDULE

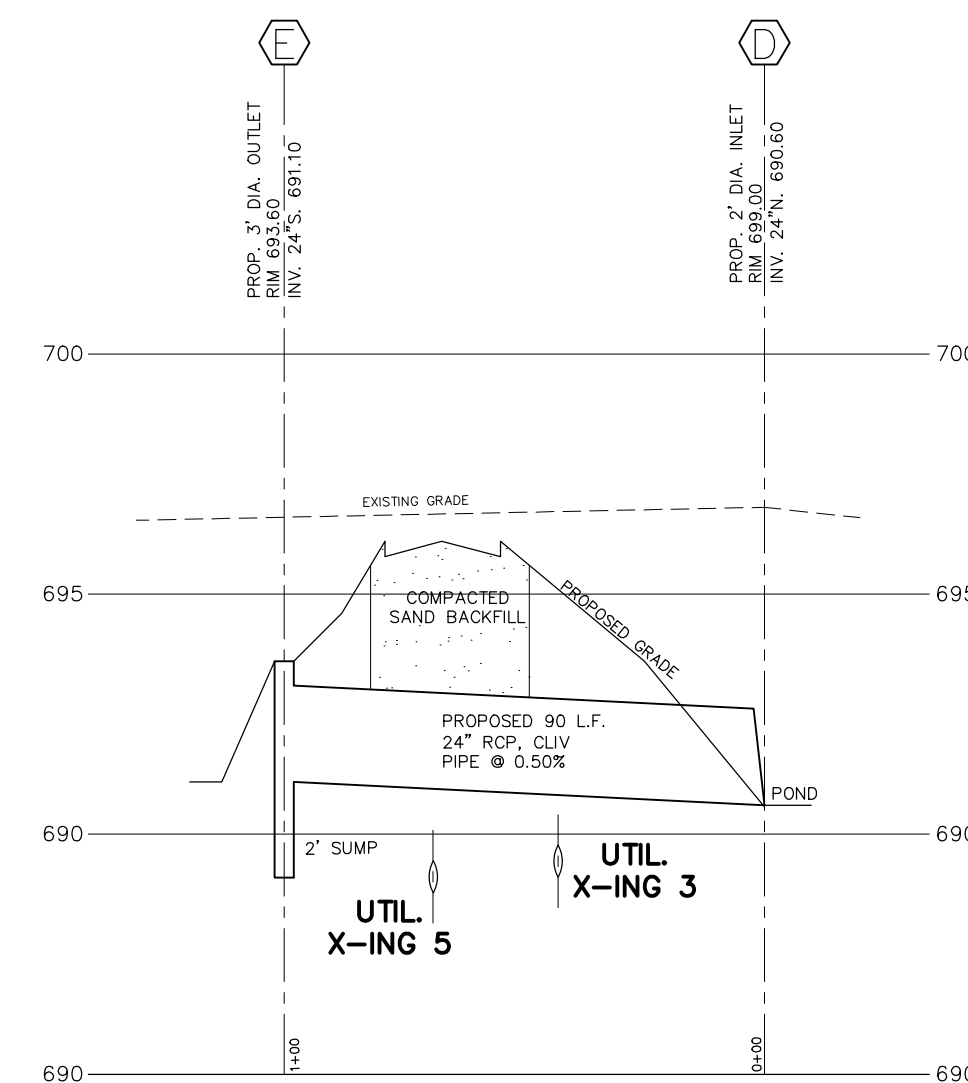
No.	INFO.	ELEVATION	ACTION
1	BOTTOM EX. 36" TOP PROP. 6" SAN.	689.70± 687.10	
2	BOTTOM EX. W.M. TOP PROP. 6" SAN.	690.70± 688.20	
3	BOT. PROP. 24" TOP PROP. 6" SAN.	690.25 688.45	
4	BOT. PROP. 12" TOP PROP. 6" SAN.	692.25 689.85	
5	TOP EX. W.M. BOT. PROP. 24"	690.50± (LOWER W.M. to 689.20) 690.75	
6	TOP EX. W.M. BOT. PROP. 24"	690.50± (LOWER W.M. to 689.50) 691.05	
7	TOP EX. W.M. BOT. PROP. 18"	690.80± (LOWER W.M. to 688.70) 690.20	



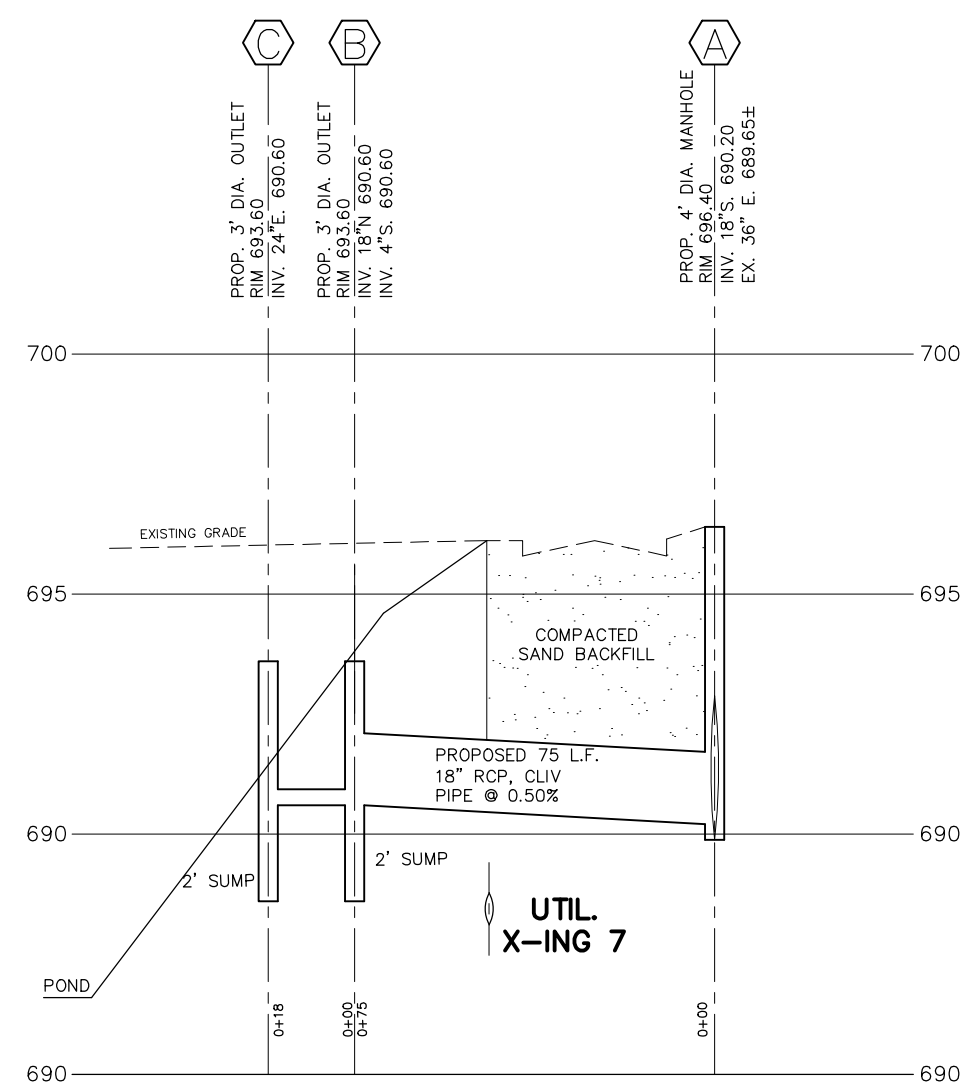
STORM SEWER PROFILES
SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL



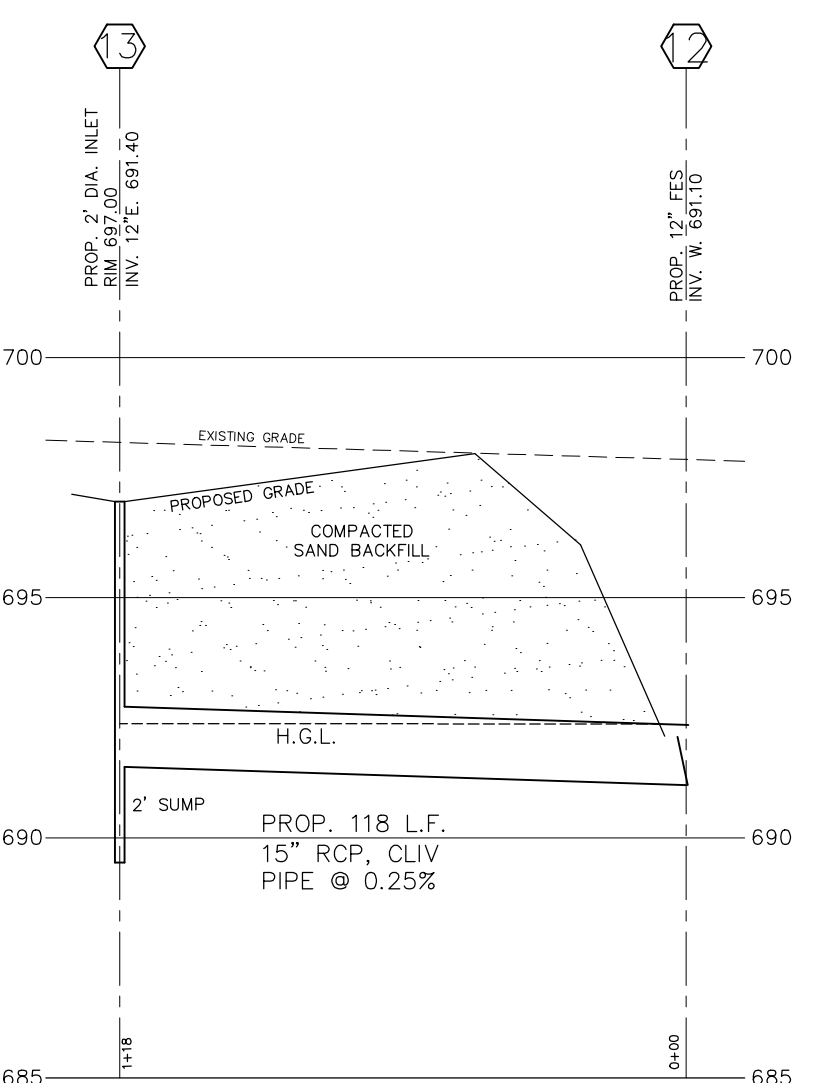
STORM SEWER PROFILES
SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL



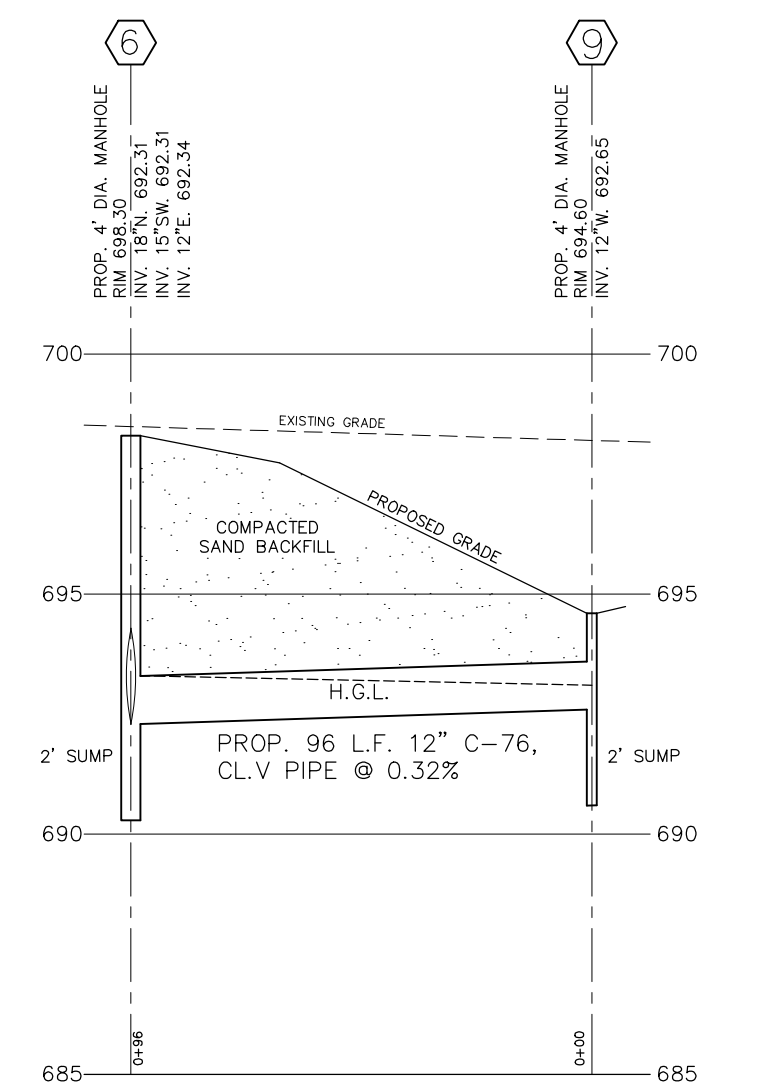
STORM SEWER PROFILES
SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL



STORM SEWER PROFILES
SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL



STORM SEWER PROFILES
SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL

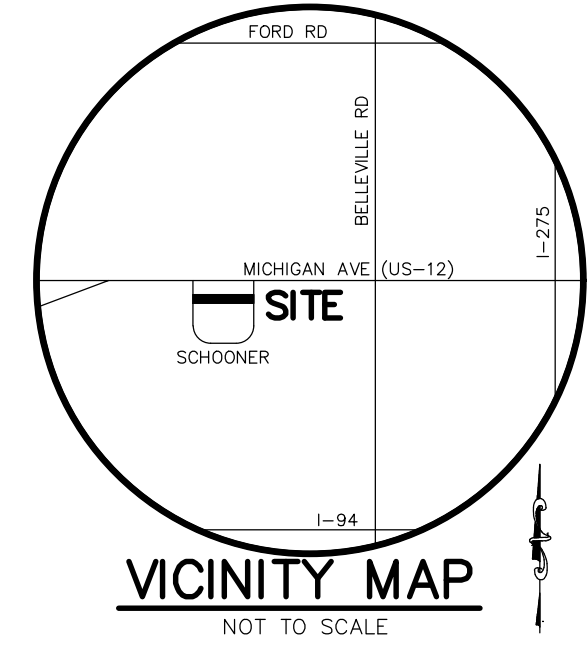


STORM SEWER PROFILES
SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL

EXHIBIT "A"

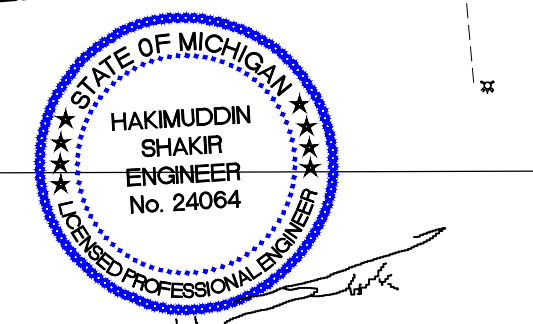
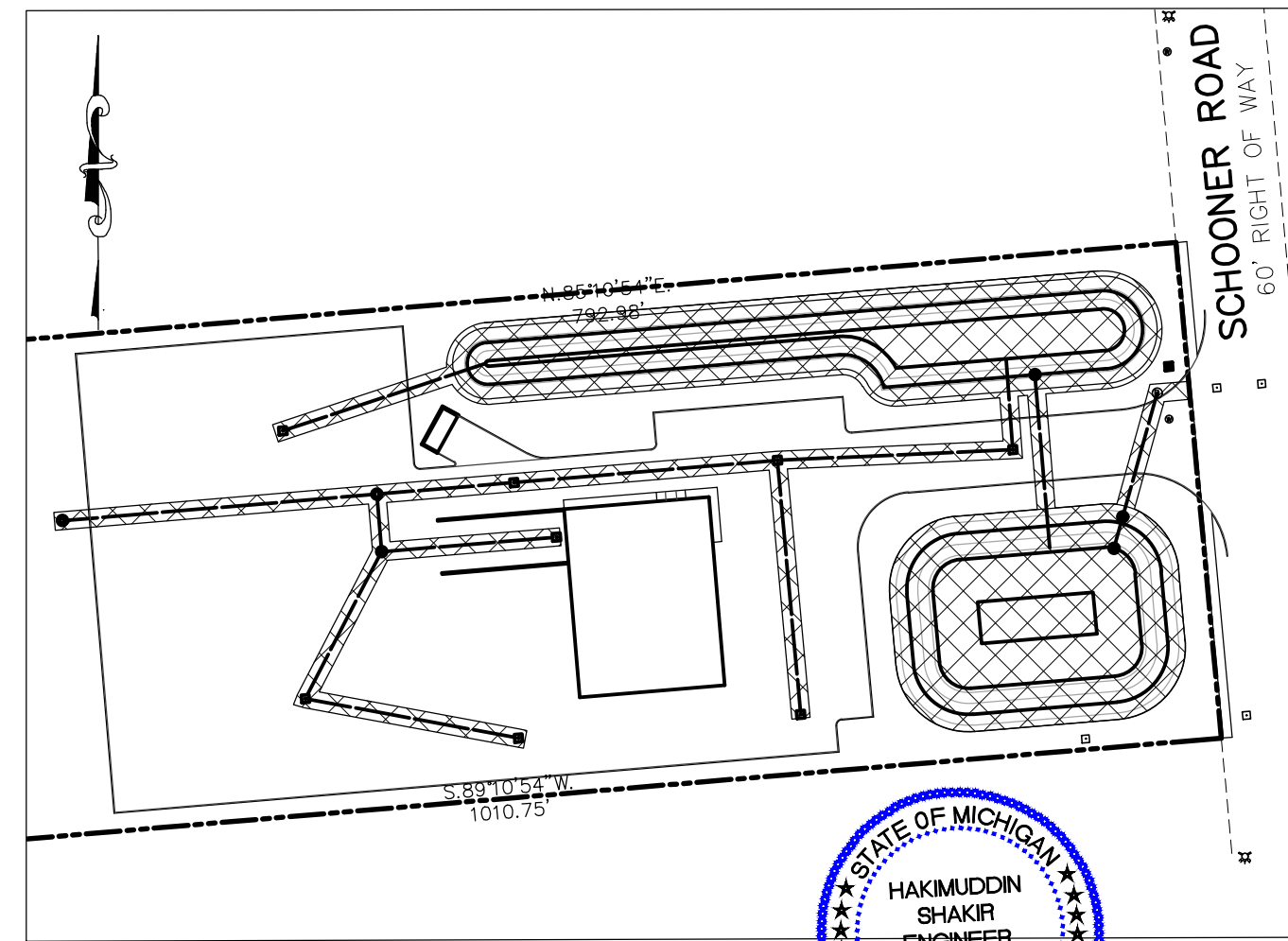
PHYSICAL LIMITS OF STORM WATER MANAGEMENT SYSTEM

LEGEND
 VAN BUREN TOWNSHIP
 MAINTENANCE
 RESPONSIBILITY



PROPERTY OWNER
 SDUKHDEV SINGH
 8385 OPAL DRIVE
 WESTLAND, MI 48185

ENGINEER
 HAKIM SHAKIR
 ENGINEERING SERVICES
 32190 SCHOOLCRAFT RD
 LIVONIA, MI 48150
 CONTACT: KEVIN HARDY
 (734) 756-2196



DATE: 04-21-2022
 JOB No. 2022-08
 DWG No. D-
 SHEET: 1 of 1
 SCALE: 1"=100'

EXHIBIT "A"
STORM MAINTENANCE
 CHAHAL TRUCKING
 VAN BUREN TWP., WAYNE
 COUNTY, MICHIGAN

HARDY CIVIL DESIGN SERVICES LLC
 4996 MOORE ST.
 WAYNE, MI 48184
 (734) 756-2196 // kbhardy1964@hotmail.com

EXHIBIT "B"

LONG TERM MAINTENANCE SCHEDULE CHART

MAINTENANCE ACTIVITIES	MANHOLES, INLETS, CHANNELS AND SWALES	INLETS TO FOREBAY	FOREBAY	OUTLET PIPE	FOREBAY STRUCTURES	PAVEMENT AREAS	FREQUENCY
MONITORING/INSPECTION							
INSPECT FOR SEDIMENT ACCUMULATION	X	X	X	X	X	X	AS NEEDED / SEMI-ANNUALLY
INSPECT FOR FLOATABLES, DEAD VEGETATION AND DEBRIS	X	X	X	X	X	X	ANNUALLY & AFTER MAJOR EVENTS
INSPECT FOR EROSION AND INTEGRITY OF SYSTEM	X	X	X	X	X	X	ANNUALLY & AFTER MAJOR EVENTS
INSPECT ALL COMPONENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS	X	X	X	X	X	X	ANNUALLY
ENSURE MAINTENANCE ACCESS REMAINS OPEN/CLEAR	X	X	X	X	X	X	ANNUALLY
PREVENTATIVE MAINTENANCE							
REMOVE ACCUMULATED SEDIMENTS	X	X	X	X	X	X	AS NEEDED, SELECT AREAS ONLY
REMOVE FLOATABLES, INVASIVE & DEAD VEGETATION & DEBRIS	X	X	X	X	X	X	AS NEEDED
RE-APPLY / REPLACE MULCH LAYER	X	X	X	X	X	X	RE-APPLY EVERY 7 MONTHS
REPLACE SUBSURFACE COMPONENTS (SOILS, STONES, 6" UNDERDRAIN)	X	X	X	X	X	X	REPLACE EVERY 7 MONTHS
"SWEEEPING OF PAVED SURFACES"	X	X	X	X	X	X	REPLACE EVERY 7 MONTHS, BANDS MORE THAN 6 HOURS AS NEEDED / SEMI-ANNUALLY
REMEDIAL ACTIONS							
PREPARE/STABILIZE AREAS OF EROSION, RESEED BARE AREAS	X	X	X	X	X	X	AS NEEDED
REPLACE DEAD PLANTINGS, LAWN	X	X	X	X	X	X	AS NEEDED
STRUCTURAL REPAIRS	X	X	X	X	X	X	AS NEEDED
MAKE ADJUSTMENTS/REPAIRS TO ENSURE PROPER FUNCTIONING	X	X	X	X	X	X	AS NEEDED

* NOT TO EXCEED THE LENGTH ALLOWED BY LOCAL COMMUNITY ORDINANCE.

A. PHYSICAL LIMITS OF THE STORM WATER MANAGEMENT SYSTEM
 THE STORM WATER MANAGEMENT SYSTEM (SWMS) SUBJECT TO THIS LONG-TERM MAINTENANCE PLAN (PLAN) IS DEPICTED ON EXHIBIT A TO THE PERMIT AND INCLUDES WITHOUT LIMITATION THE STORM SEWERS, CATCH BASINS, MANHOLES, INLETS, SWALES, SPILLWAYS, FOREBAY, DETENTION BASIN, OUTLET CONTROL STRUCTURE AND OUTLET PIPE THAT CONVEYS FLOW FROM THE DETENTION BASIN INTO THE VAN BUREN TOWNSHIP STORM SEWER. FOR PURPOSES OF THIS PLAN, THIS STORM WATER MANAGEMENT SYSTEM AND ALL OF ITS COMPONENTS AS SHOWN ON EXHIBIT A IS REFERRED TO AS CHAHAL TRUCKING.

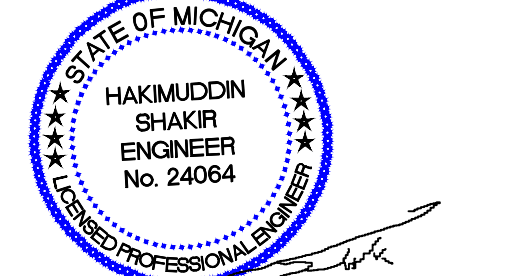
B. TIME FRAME FOR LONG-TERM MAINTENANCE RESPONSIBILITY
 AS CHAHAL TRUCKING IS RESPONSIBLE FOR MAINTAINING THE CHAHAL TRUCKING SWMS, INCLUDING COMPLYING WITH APPLICABLE REQUIREMENTS OF THE LOCAL OR WAYNE COUNTY SOIL EROSION AND SEDIMENTATION CONTROL PROGRAM, UNTIL WAYNE COUNTY RELEASES THE CONSTRUCTION PERMIT, LONG-TERM MAINTENANCE RESPONSIBILITY FOR THE CHAHAL TRUCKING SWMS COMMENCES WHEN DEFINED BY THE MAINTENANCE PERMIT ISSUED BY THE COUNTY. LONG-TERM MAINTENANCE CONTINUES IN PERPETUITY.

C. MANNER OF ENSURING MAINTENANCE RESPONSIBILITY
 THE TOWNSHIP OF VAN BUREN HAS ASSUMED RESPONSIBILITY FOR LONG-TERM MAINTENANCE OF AS CHAHAL TRUCKING SWMS. THE RESOLUTION BY WHICH THE CITY HAS ASSUMED MAINTENANCE RESPONSIBILITY IS ATTACHED TO THE PERMIT AS EXHIBIT C. AS CHAHAL TRUCKING THROUGH A MAINTENANCE AGREEMENT WITH THE CITY, HAS AGREED TO PERFORM THE MAINTENANCE ACTIVITIES REQUIRED BY THIS PLAN, VAN BUREN TOWNSHIP RETAINS THE RIGHT TO ENTER THE PROPERTY AND PERFORM THE NECESSARY MAINTENANCE OF THE AS CHAHAL TRUCKING SWMS IF AS CHAHAL TRUCKING FAILS TO PERFORM THE REQUIRED MAINTENANCE ACTIVITIES. TO ENSURE THAT THE AS CHAHAL TRUCKING SWMS IS MAINTAINED IN PERPETUITY, THE MAP OF THE PHYSICAL LIMITS OF THE STORM WATER MANAGEMENT SYSTEM (EXHIBIT A), THIS PLAN (EXHIBIT B), THE RESOLUTION ATTACHED AS EXHIBIT C, AND THE MAINTENANCE AGREEMENT BETWEEN THE TOWNSHIP OF VAN BUREN AND THE PROPERTY OWNER(S) WILL BE RECORDED WITH THE WAYNE COUNTY REGISTER OF DEEDS. UPON RECORDING, A COPY OF THE RECORDED DOCUMENTS WILL BE PROVIDED TO THE COUNTY.

D. LONG TERM MAINTENANCE PLAN AND SCHEDULE
 TABLE 1 IDENTIFIES THE MAINTENANCE ACTIVITIES TO BE PERFORMED, ORGANIZED BY CATEGORY (MONITORING/INSPECTION, PREVENTATIVE MAINTENANCE, AND REMEDIAL ACTIONS). WHILE PERFORMING MAINTENANCE, CHEMICALS SHOULD NOT BE APPLIED TO THE FOREBAY, DETENTION BASIN, BUFFER STRIP, OR WATERCOURSES. TABLE 1 ALSO IDENTIFIES SITE-SPECIFIC WORK NEEDED TO ENSURE THAT THE STORM WATER MANAGEMENT SYSTEM FUNCTION PROPERLY AS DESIGNED.

PROPERTY OWNER
 SDUKHDEV SINGH
 8385 OPAL DRIVE
 WESTLAND, MI 48185

ENGINEER
 HAKIM SHAKIR
 ENGINEERING SERVICES
 32190 SCHOOLCRAFT RD
 LIVONIA, MI 48150
 CONTACT: KEVIN HARDY
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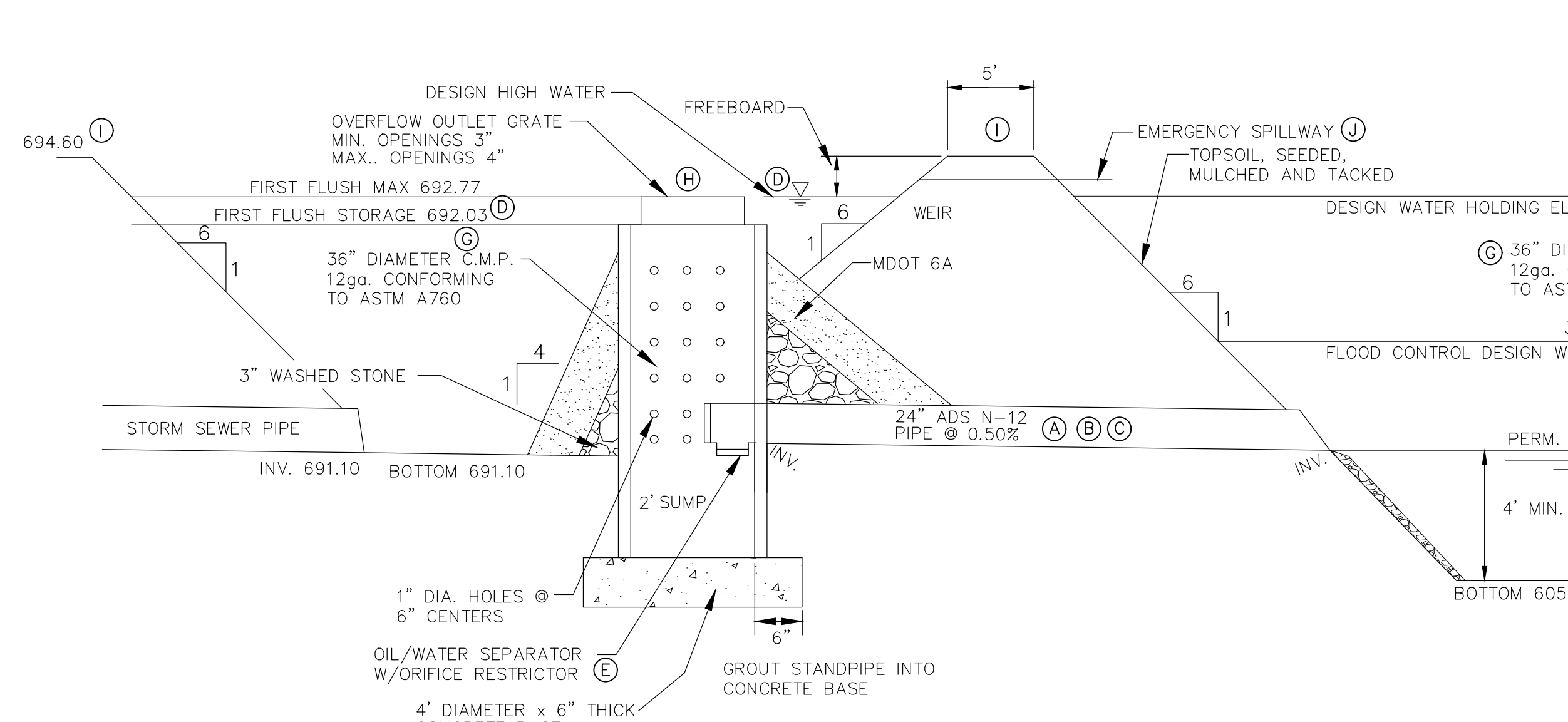
DATE: 04-21-2022
 JOB No. 2022-08
 DWG No. D-
 SHEET: 1 of 1
 SCALE: 1"=100'

EXHIBIT "B"
STORM MAINTENANCE
 CHAHAL TRUCKING
 VAN BUREN TWP., WAYNE
 COUNTY, MICHIGAN

HARDY CIVIL DESIGN SERVICES LLC
 4996 MOORE ST.
 WAYNE, MI 48184
 (734) 756-2196 // kbhardy1964@hotmail.com

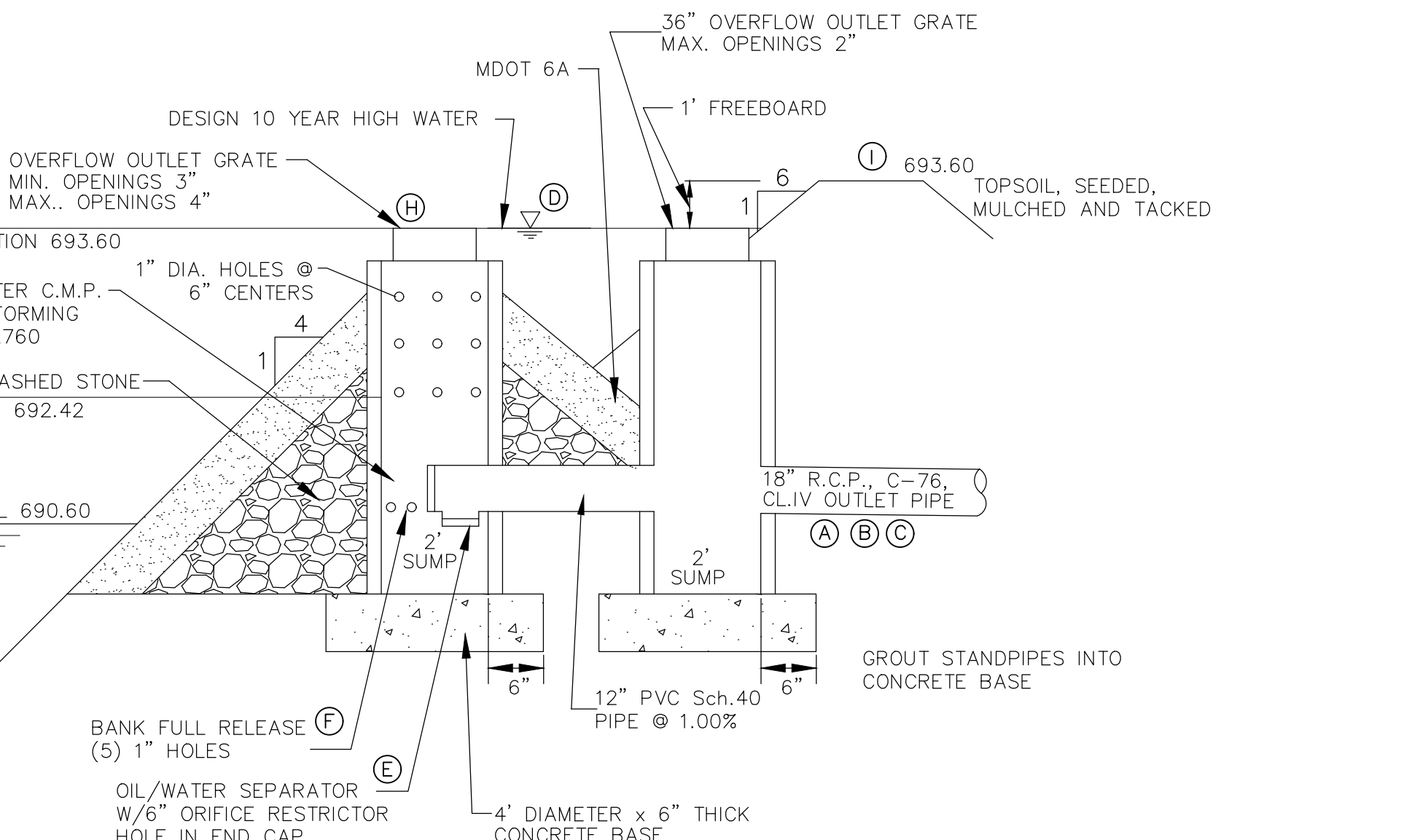
WETLANDS DATA
WAYNE COUNTY DPS GENERAL NOTES:

- ALL WORK WITHIN THE WAYNE COUNTY ROAD RIGHT-OF-WAY (ROW) AND DRAIN EASEMENT SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND GENERAL SPECIFICATIONS, INCLUDING SOIL EROSION AND SEDIMENTATION CONTROL OF THE WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES, AND MDOT 2012 SPECIFICATIONS FOR CONSTRUCTION.
- THESE PLANS ARE NOT VALID WITHOUT ATTACHMENT OF THE WAYNE COUNTY PERMIT SPECIFICATIONS FOR CONSTRUCTION WITHIN THE ROAD ROW, PARKS, DRAIN EASEMENT OR SANITARY SEWER UNDER JURISDICTION OF THE WAYNE COUNTY (07/01/93) REVISED 12/15/2004
- CONTRACTOR SHALL CONTACT MISS DIG AT 811 TO IDENTIFY AND FLAG / MARK THE LOCATIONS OF ALL UNDERGROUND UTILITIES AT THE PROPOSED CONSTRUCTION AREAS PRIOR TO START OF CONSTRUCTION, AND SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS OF ALL UNDERGROUND UTILITIES, AND RESOLVE ANY CONFLICT BETWEEN THE PROPOSED WORK AND THE EXISTING UNDERGROUND OR ABOVEGROUND UTILITIES.
- CONTRACTOR SHALL MAINTAIN 18" MINIMUM VERTICAL CLEARANCE AND 3 FEET MINIMUM HORIZONTAL CLEARANCE BETWEEN THE PROPOSED AND EXISTING UTILITIES. ANY PROPOSED UTILITY PERMITTED TO CROSS UNDER THE ROAD OR DRAIN, MUST BE PLACED A MINIMUM OF 7 FEET BELOW THE LOWEST POINT OF THE ROAD, OR 6 FEET BELOW THE DRAIN BOTTOM. OVERHEAD WIRES/CABLES MUST BE INSTALLED 18 FEET MINIMUM ABOVE THE ROAD CENTERLINE. TO RELOCATE ANY UTILITY WITHIN THE ROAD ROW, THE CONTRACTOR SHALL COORDINATE THE RELOCATION WITH THE UTILITY COMPANY AND AS DIRECTED BY THE WAYNE COUNTY ENGINEER.
- ALL SURVEY MONUMENTS / CORNERS AND BENCH MARKS LOCATED WITHIN THE CONSTRUCTION AREA MUST BE PRESERVED IN ACCORDANCE WITH PUBLIC ACT 74 AS AMENDED (INCLUDING ACT 34, P.A. 2000) AND AS PER WAYNE COUNTY PERMIT RULE 1.5. THE PERMIT HOLDER AND CONTRACTOR SHALL COORDINATE THE WORK WITH A PROFESSIONAL SURVEYOR LICENSED IN THE STATE OF MICHIGAN DURING CONSTRUCTION ACTIVITIES FOR THE PURPOSE OF WITNESSING, PRESERVING OR REPLACING SURVEY MONUMENTS AND MONUMENT BOXES.
- EXPOSURE OF ANY UTILITIES UNDER THE PAVEMENT WILL NOT BE PERMITTED, UNLESS APPROVED BY THE WAYNE COUNTY ENGINEER. PAVEMENT REMOVAL AND REPLACEMENT SHALL BE PERFORMED PER APPLICABLE WAYNE COUNTY STANDARD DETAILS AS DIRECTED BY THE WAYNE COUNTY ENGINEER.
- CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS WITHIN THE WAYNE COUNTY ROAD ROW AND DRAIN EASEMENT WITH 3" TOPSOIL, 1/4" SEED MIX AND MULCH. SLOPES STEEPER THAN 1 ON 3 SHALL BE RESTORED BY PLACING SOD ON 2" TOPSOIL.
- ALL BACKFILLS UNDER OR WITHIN 3 FEET OF THE PROPOSED OR EXISTING PAVEMENT, CURB OR SIDEWALK SHALL CONFORM TO THE WAYNE COUNTY TRENCH "B" BACKFILL REQUIREMENTS. TRENCH "A" BACKFILL MAY BE USED WITHIN THE ROAD ROW AREAS UNDER CONDITIONS OTHER THAN THOSE SPECIFIED FOR TRENCH "B".
- CONTRACTOR IS RESPONSIBLE FOR RESTORING OR REPLACING ALL DISTURBED LANDSCAPED AREAS, SPRINKLER SYSTEMS, FENCES, SIGNS, MAIL BOXES, ETC. WITHIN THE WAYNE COUNTY ROAD ROW AND / OR AS DIRECTED BY THE COUNTY ENGINEER.
- CONTRACTOR SHALL MAINTAIN TWO-WAY TRAFFIC AT ALL TIMES. OTHERWISE, DETOURING TRAFFIC MUST BE PER APPROVED PLANS. ALL SIGNING AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF M.M.U.T.C.D.
- MAINTAIN A SAFE AND ADEQUATE TRAVEL ROUTE FOR PEDESTRIANS AT ALL TIMES THROUGHOUT THE PROJECT DURATION.
- TUNNELING, BORING AND JACKING OPERATIONS SHALL BE IN ACCORDANCE WITH THE WAYNE COUNTY SPECIFICATIONS AND DETAILS.
- BORE PITS SHALL BE PLACED AT MINIMUM 10 FEET FROM THE BACK OF CURB OR EDGE OF PAVEMENT.
- REMOVE ALL ABANDONED CONDUITS FROM THE COUNTY ROADS ROW OR AS DIRECTED BY THE WAYNE COUNTY ENGINEER.
- CONTRACTOR SHALL PROVIDE COLD WEATHER PROTECTION FOR ALL PROPOSED CONCRETE WORK (PAVEMENTS, SIDEWALKS, DRIVE APPROACHES, ETC.) AS DIRECTED BY THE WAYNE COUNTY ENGINEER.
- OVERNIGHT VEHICLE PARKING AND STORAGE OF CONSTRUCTION MATERIALS AND EQUIPMENTS ARE NOT PERMITTED WITHIN THE WAYNE COUNTY ROADS RIGHTS-OF-WAY.
- CONTRACTOR SHOULD OBTAIN SOIL EROSION AND SEDIMENTATION CONTROL PERMIT FROM THE WAYNE COUNTY DPS. CONTACT THE WAYNE COUNTY SOIL EROSION OFFICE AT (734) 326-5565, OR THE COMMUNITY HAVING JURISDICTION OVER THE SOIL EROSION PERMIT.
- CONTRACTOR SHALL NOTIFY THE WAYNE COUNTY TRAFFIC SIGNAL SHOP AT (734) 955-2154 AT LEAST 72 HOURS PRIOR TO START OF WORK AT OR NEAR ANY SIGNALIZED INTERSECTIONS.
- CONTRACTOR SHALL NOTIFY WAYNE COUNTY 72 HOURS PRIOR TO START OF CONSTRUCTION. CONTACT THE PERMIT OFFICE AT (734) 858-2764



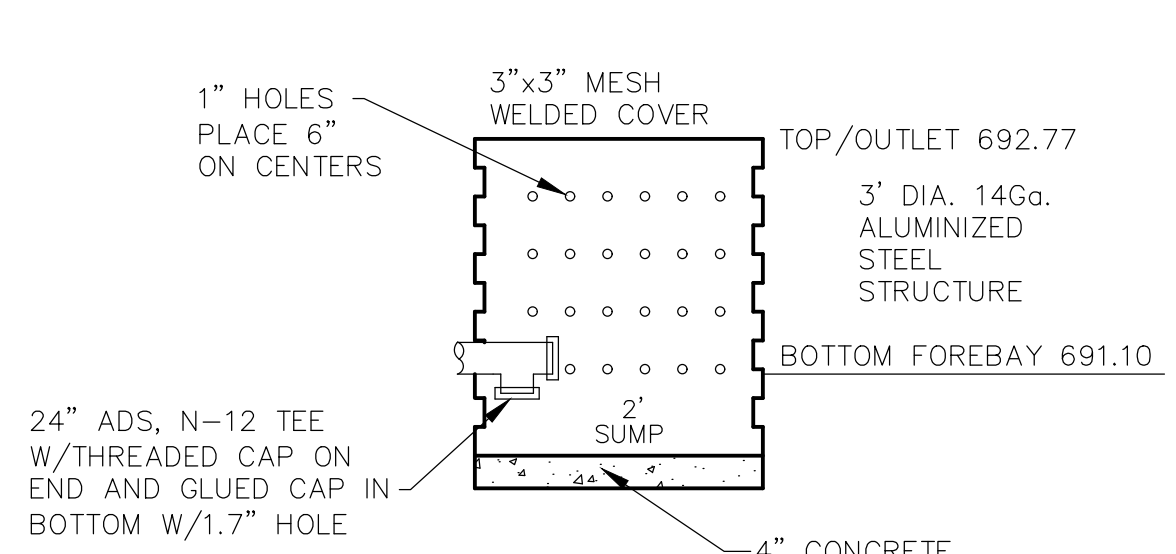
FOREBAY OUTLET STRUCTURE

OUTLET PIPE LENGTH (A)	OUTLET PIPE SLOPE (B)	OUTLET PIPE SIZE (C)	10-YEAR STORAGE (D)	FIRST FLUSH DISCHARGE ORIFICE SIZE (E)	STANDPIPE DIAMETER (G)	TOP OF STANDPIPE ELEVATION (H)	FOREBAY CREST ELEVATION (I)	EMERGENCY SPILLWAY ELEVATION (J)
100'	0.50%	24" @ 691.60	692.03	(1) 1.7" IN CAP	36"	692.77	694.60	693.60

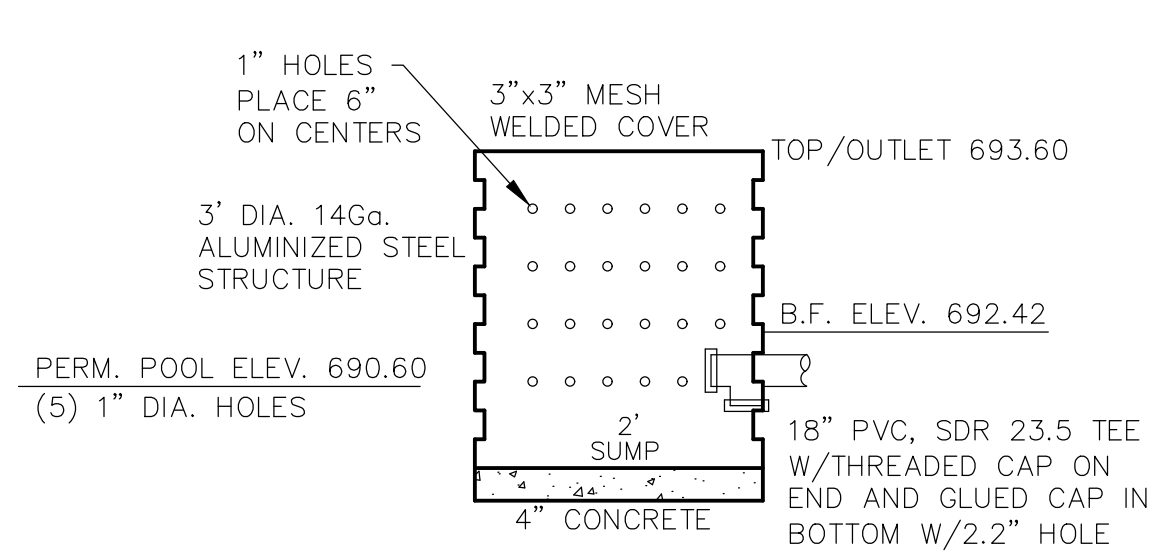


DETENTION OUTLET STRUCTURE

OUTLET PIPE LENGTH (A)	OUTLET PIPE SLOPE (B)	OUTLET PIPE SIZE (C)	100 YEAR STORAGE (D)	100 YEAR STORM RELEASE INV./ORIFICE SIZE (E)	BANKFULL STORM RELEASE INV./ORIFICE SIZE (F)	STANDPIPE DIAMETER (G)	TOP OF STANDPIPE ELEVATION (H)	POND CREST ELEVATION (I)	EMERGENCY SPILLWAY ELEVATION (J)
100'	0.50%	36"	693.60	(1) 2.2" HOLE @ 690.60	(5) 1" HOLES @ 690.60	36"	693.60	694.60	693.60



DETAIL FOREBAY OUTLET STRUCTURE "E"



DETAIL DETENTION OUTLET STRUCTURE "C"

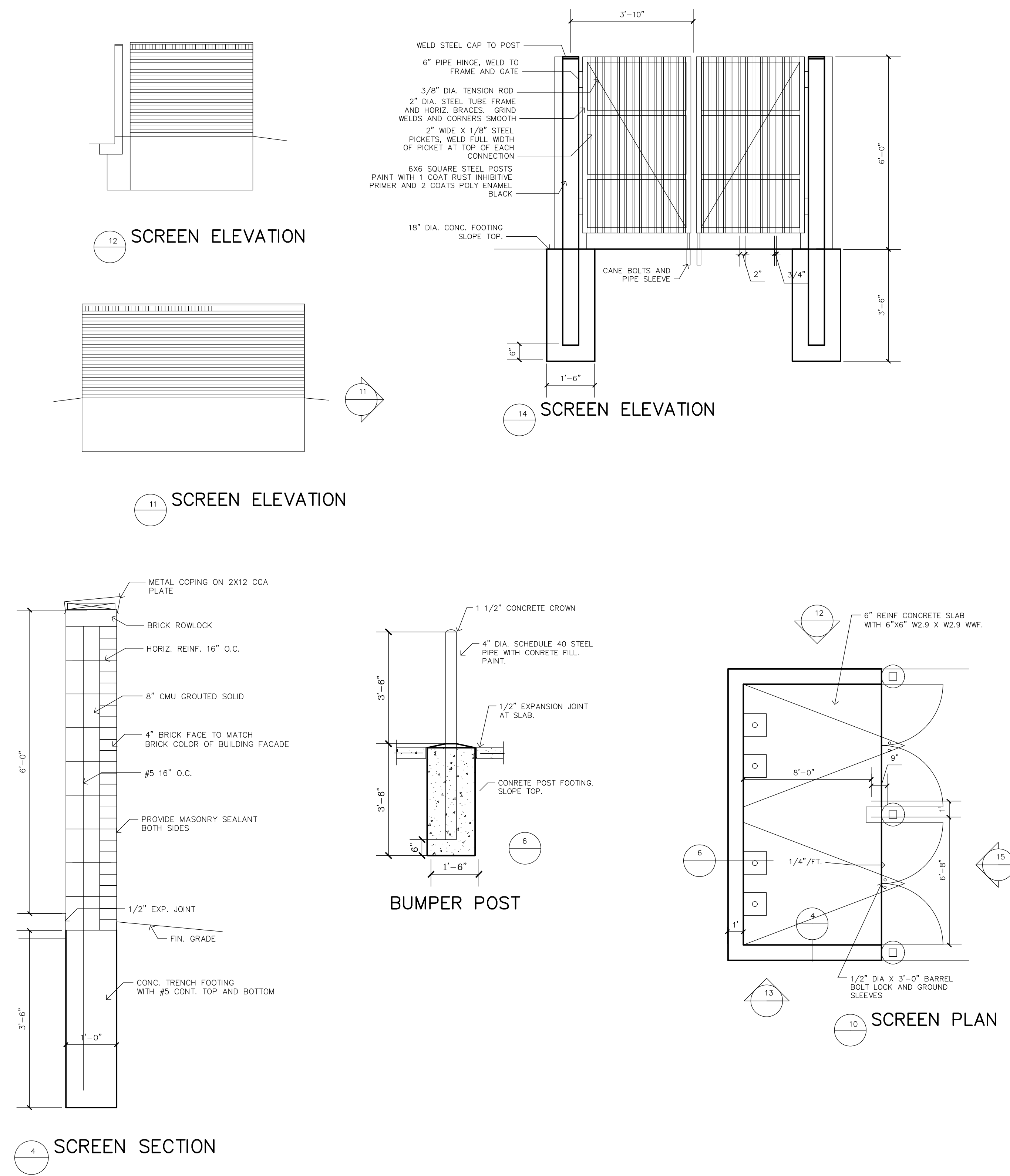
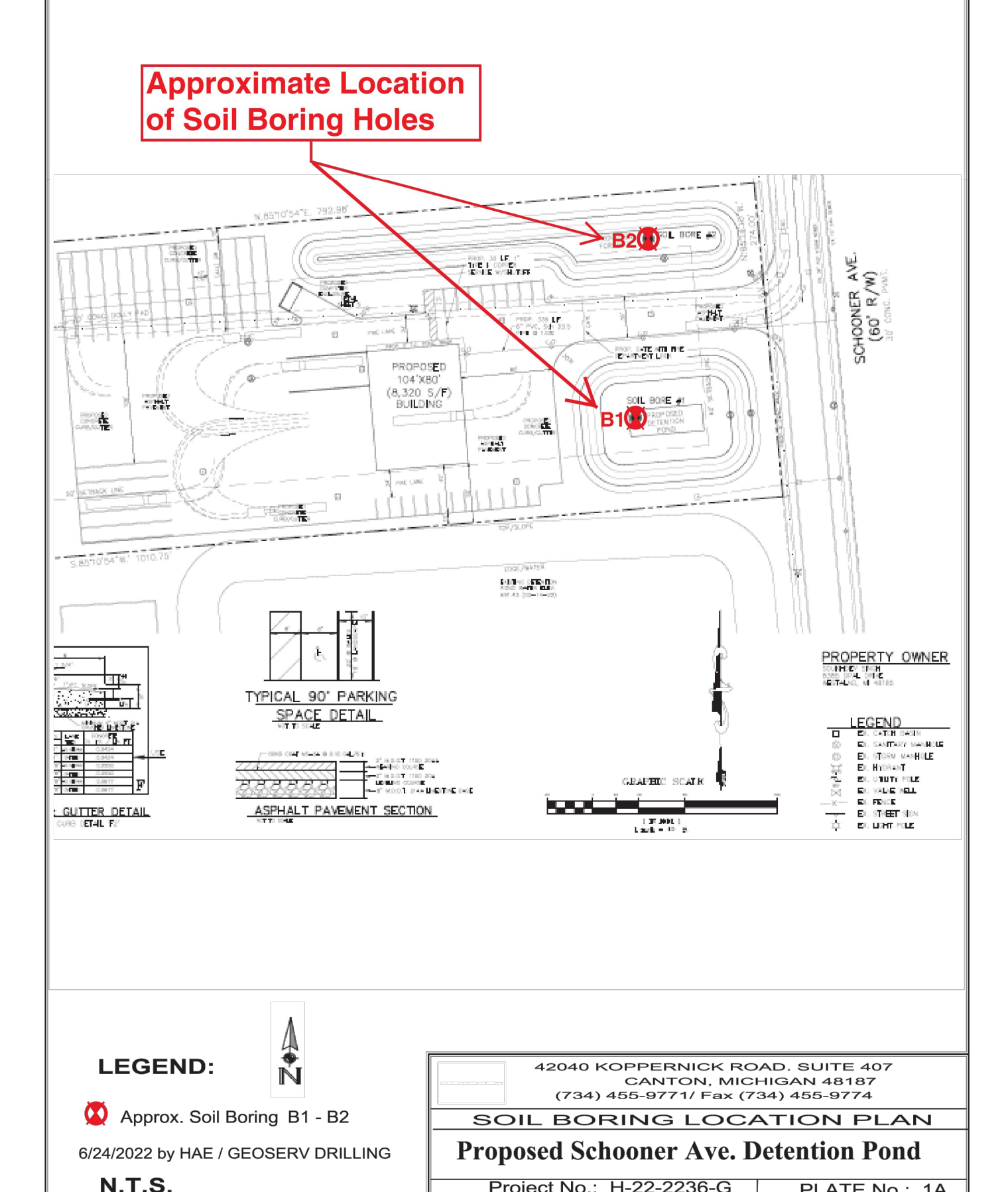
CIVIL DESIGN SERVICES LLC
 4996 MOORE ST. WAYNE, MI 48184
 (734) 756-2196
 E-mail: kbhardy1964@hotmail.com
HARDY
 DETAILS
SEMI-TRUCK REPAIR FACILITY
6100 SCHOONER ROAD
VAN BUREN TWP., MI
 REVISIONS
 06-21-22
 08-03-22
 10-10-22
 DATE
 01-10-22
 DRAWING No.
 A-
 CHECKED BY:
 DRAWN BY:
 JOB No.
 2022-01
 SHEET No.
 6 of 11

LOG OF GEOTECHNICAL SOIL BORING B1

Project: Truck Repair Facility - Proposed Detention Pond & Forebay
 Location: Schooner Avenue, Van Buren Township, MI
 Project No.: H-22-2236-G
 Prepared/Checked by: AAK / GH

ELEV. (FT)	SUBSURFACE PROFILE	SOIL SAMPLE DATA		SPT BLOW VALUE (Blows/Feet)
		MATERIAL DESCRIPTION	SOIL TYPE	
100.0	TOPSOIL			
99.0	Fine SAND (SP)	1.0	4	
	little silt		6	
	brown, moist, medium dense	2.5	11	20.3
97.0		3.0		
	Silly CLAY (CL)	3.5	3	
	trace sand		4	
	gray, moist, very stiff	5.0	9	15.4
94.5		5.5		
	SILT (ML)	6.0	7	
	little clay, trace sand		9	
	gray, moist, medium dense	7.5	10	18.6
92.0		8.0		
	Silly CLAY (CL)	8.5	2	
	trace sand		7	
	gray, moist, very stiff	10.0	6	13
88.0		12.0		
	Silly CLAY (CL)	13.5	7	
	trace sand		9	
	gray, moist, very stiff	15.0	17	16.4
83.0		17.0		
	Silly CLAY (CL)	18.5	7	
	trace sand		8	
	gray, moist, stiff	20.0	10	18
80.0		20.0		
	Silly CLAY (CL)		6	13
	trace sand		7	
	gray, moist, stiff		10	18
			13	23.4
			13	113.4
			6	13
			6	23.4
			6	113.4
			6	3.5

DRILLING INFORMATION: Date Drilled: 6/23/2022, Total Depth: 20 feet, During Drilling: 7 hours, At Completion: none.
 GROUNDWATER LEVEL OBSERVATIONS: None observed.



LOG OF GEOTECHNICAL SOIL BORING B2

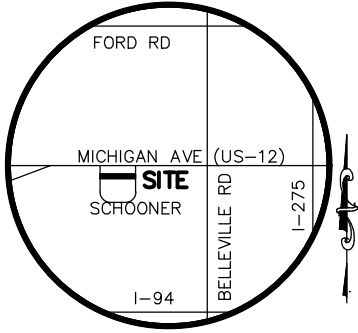
Project: Truck Repair Facility - Proposed Detention Pond & Forebay
 Location: Schooner Avenue, Van Buren Township, MI
 Project No.: H-22-2236-G
 Prepared/Checked by: AAK / GH

ELEV. (FT)	SUBSURFACE PROFILE	SOIL SAMPLE DATA		SPT BLOW VALUE (Blows/Feet)
		MATERIAL DESCRIPTION	SOIL TYPE	
100.0	TOPSOIL			
99.0	Sandy CLAY (CL)	1.0	3	
	little silt, trace gravel		4	
	gray/brown, moist, very stiff	2.5	5	19.2
97.0		3.0		
	Sandy CLAY (CL)	3.5	3	
	little silt, trace gravel		5	
	gray/brown, moist, very stiff	5.0	9	17.7
94.5		5.5		
	Silly CLAY (CL)	6.0	4	
	trace sand		7	
	gray, moist, very stiff	7.5	11	14.3
92.0		8.0		
	Silly CLAY (CL)	8.5	7	
	trace sand		9	
	gray, moist, very stiff	10.0	14	10.5
88.0		12.0		
	Silly CLAY (CL)	13.5	7	
	trace sand		7	
	brown, moist, medium dense	15.0	10	17
83.0		17.0		
	Silly CLAY (CL)	18.5	8	
	trace sand		15	
	gray, moist, stiff	20.0	13	28
80.0		20.0		
	Silly CLAY (CL)		8	8.8
	trace sand		13	28
	gray, moist, stiff		13	8.8
			13	139.1
			13	2.5

DRILLING INFORMATION: Date Drilled: 6/23/2022, Total Depth: 20 feet, During Drilling: 13 hours, At Completion: 15.
 GROUNDWATER LEVEL OBSERVATIONS: None observed.

EXHIBIT "A"

PHYSICAL LIMITS OF STORM WATER MANAGEMENT SYSTEM



VICINITY MAP

NOT TO SCALE

LEGEND

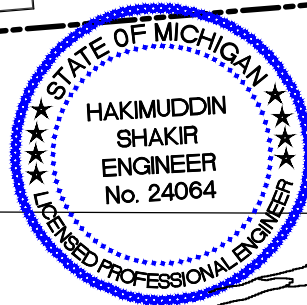
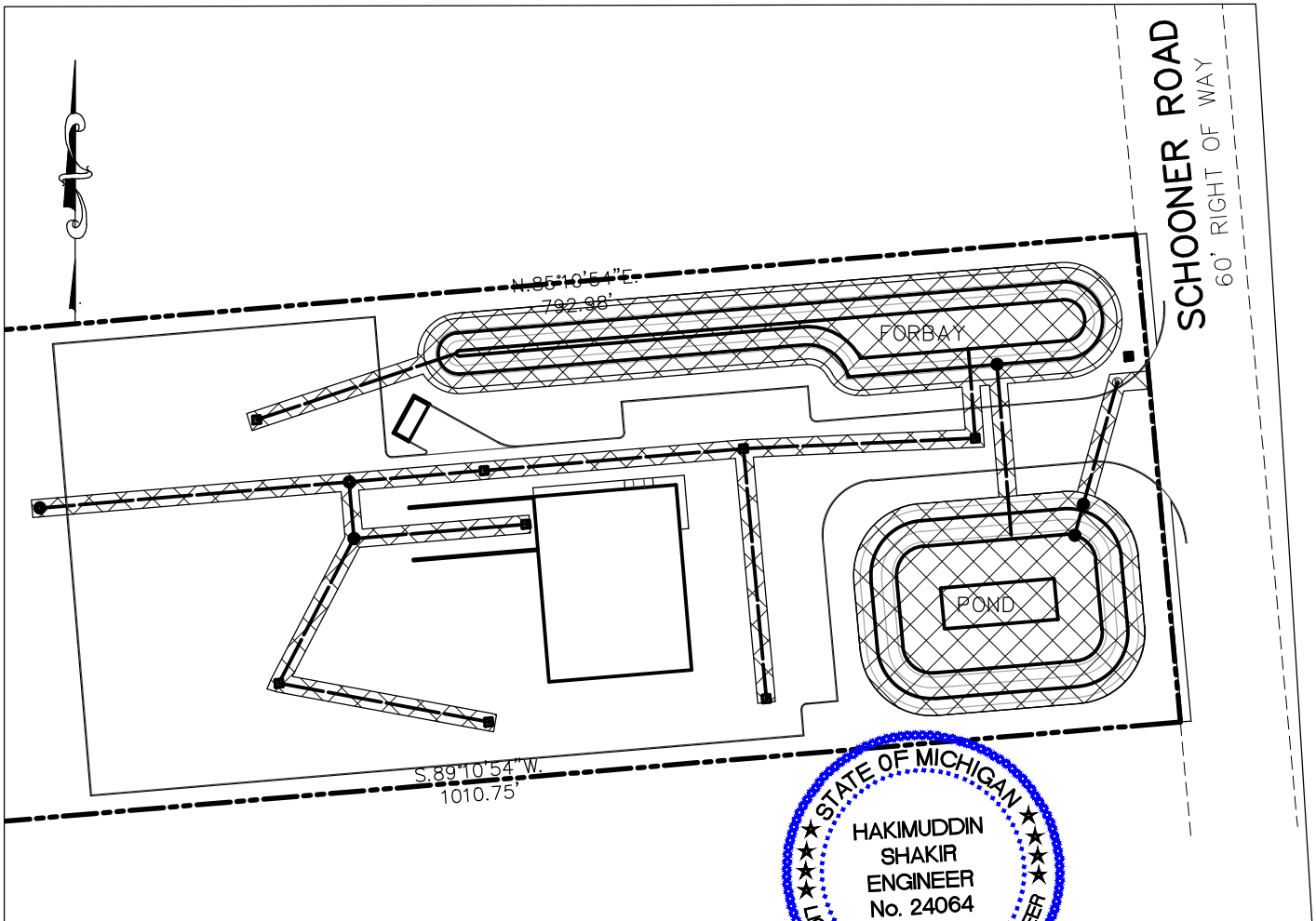
 VAN BUREN TOWNSHIP
MAINTENANCE
RESPONSIBILITY

PROPERTY OWNER

SDUKHDEV SINGH
8385 OPAL DRIVE
WESTLAND, MI 48185

ENGINEER

HAKIM SHAKIR
ENGINEERING SERVICES
32190 SCHOOLCRAFT RD
LIVONIA, MI 48150
CONTACT: KEVIN HARDY
(734) 756-2196



DATE:	04-21-2022	EXHIBIT "A" STORM MAINTENANCE CHAHAL TRUCKING VAN BUREN TWSP, WAYNE COUNTY, MICHIGAN
JOB No.	2022-08	
DWG No.	D-	
SHEET:	1 of 1	
SCALE:	1"=100'	

HARDY

CIVIL DESIGN
SERVICES LLC
4996 MOORE ST.
WAYNE, MI 48184
(734) 756-2196 // kbhardy1964@hotmail.com

EXHIBIT "B"

LONG TERM MAINTENANCE SCHEDULE CHART

* NOT TO EXCEED THE LENGTH ALLOWED BY LOCAL COMMUNITY ORDINANCE.

MAINTENANCE ACTIVITIES	CATCH BASINS, INLETS AND STORM SEWERS	CHANNELS AND SWALES	INLETS TO FOREBAY	BUFFER STRIP DETENTION AREA	OUTLET PIPE	OVERFLOW STRUCTURES	PAVEMENT AREAS					FREQUENCY
MONITORING/INSPECTION												
INSPECT FOR SEDIMENT ACCUMULATION	X	X	X	X	X	X						AS NEEDED / SEMI-ANNUALLY
INSPECT FOR FLOATABLES, DEAD VEGETATION AND DEBRIS	X	X	X	X	X	X						ANNUALLY & AFTER MAJOR EVENTS
INSPECT FOR EROSION AND INTEGRITY OF SYSTEM	X	X	X	X	X	X						ANNUALLY & AFTER MAJOR EVENTS
INSPECT ALL COMPONENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS	X	X	X	X	X	X						ANNUALLY
ENSURE MAINTENANCE ACCESS REMAIN OPEN/CLEAR	X	X	X	X	X	X						ANNUALLY
PREVENTATIVE MAINTENANCE												
REMOVE ACCUMULATED SEDIMENTS	X	X	X	X	X	X						AS NEEDED, SELECT AREAS ONLY
REMOVE FLOATABLES, INVASIVE & DEAD VEGETATION & DEBRIS	X	X	X	X	X	X						AS NEEDED
RE-APPLY / REPLACE MULCH LAYER				X								RE-APPLY EVERY 6 MONTHS, REPLACE EVERY 2-YEARS
REPLACE SUBSURFACE COMPONENTS (SOILS, STONES, 6" UNDERDRAIN)				X								EVERY 5-YEARS, OR WHEN WATER PONDS MORE THAN 6 HOURS
SWEEPING OF PAVED SURFACES								X				AS NEEDED / SEMI-ANNUALLY
REMEDIAL ACTIONS												
REPAIR/STABILIZE AREAS OF EROSION, RESEED BARE AREAS	X	X	X	X	X	X						AS NEEDED
REPLACE DEAD PLANTINGS, LAWN				X	X							AS NEEDED
STRUCTURAL REPAIRS	X	X	X				X	X				AS NEEDED
MAKE ADJUSTMENTS/REPAIRS TO ENSURE PROPER FUNCTIONING	X	X	X	X	X	X	X					AS NEEDED

A. PHYSICAL LIMITS OF THE STORM WATER MANAGEMENT SYSTEM

THE STORM WATER MANAGEMENT SYSTEM (SWMS) SUBJECT TO THIS LONG-TERM MAINTENANCE PLAN (PLAN) IS DEPICTED ON EXHIBIT A TO THE PERMIT AND INCLUDES WITHOUT LIMITATION THE STORM SEWERS, CATCH BASINS, MANHOLES, INLETS, SWALES, SPILLWAYS, FOREBAY, DETENTION BASIN, OUTLET CONTROL STRUCTURE AND OUTLET PIPE THAT CONVEYS FLOW FROM THE DETENTION BASIN INTO THE VAN BUREN TOWNSHIP STORM SEWER. FOR PURPOSES OF THIS PLAN, THIS STORM WATER MANAGEMENT SYSTEM AND ALL OF ITS COMPONENTS AS SHOWN ON EXHIBIT A IS REFERRED TO AS CHAHAL TRUCKING.

B. TIME FRAME FOR LONG-TERM MAINTENANCE RESPONSIBILITY

AS CHAHAL TRUCKING IS RESPONSIBLE FOR MAINTAINING THE CHAHAL TRUCKING SWMS, INCLUDING COMPLYING WITH APPLICABLE REQUIREMENTS OF THE LOCAL OR WAYNE COUNTY SOIL EROSION AND SEDIMENTATION CONTROL PROGRAM, UNTIL WAYNE COUNTY RELEASES THE CONSTRUCTION PERMIT. LONG-TERM MAINTENANCE RESPONSIBILITY FOR THE CHAHAL TRUCKING SWMS COMMENCES WHEN DEFINED BY THE MAINTENANCE PERMIT ISSUED BY THE COUNTY. LONG-TERM MAINTENANCE CONTINUES IN PERPETUITY.

C. MANNER OF ENSURING MAINTENANCE RESPONSIBILITY

THE TOWNSHIP OF VAN BUREN HAS ASSUMED RESPONSIBILITY FOR LONG-TERM MAINTENANCE OF AS CHAHAL TRUCKING SWMS. THE RESOLUTION BY WHICH THE CITY HAS ASSUMED MAINTENANCE RESPONSIBILITY IS ATTACHED TO THE PERMIT AS EXHIBIT C. AS CHAHAL TRUCKING THROUGH A MAINTENANCE AGREEMENT WITH THE CITY HAS AGREED TO PERFORM THE MAINTENANCE ACTIVITIES REQUIRED BY THIS PLAN. VAN BUREN TOWNSHIP RETAINS THE RIGHT TO ENTER THE PROPERTY AND PERFORM THE NECESSARY MAINTENANCE OF THE AS CHAHAL TRUCKING SWMS IF AS CHAHAL TRUCKING FAILS TO PERFORM THE REQUIRED MAINTENANCE ACTIVITIES. TO ENSURE THAT THE AS CHAHAL TRUCKING SWMS IS MAINTAINED IN PERPETUITY, THE MAP OF THE PHYSICAL LIMITS OF THE STORM WATER MANAGEMENT SYSTEM (EXHIBIT A), THIS PLAN (EXHIBIT B), THE RESOLUTION ATTACHED AS EXHIBIT C, AND THE MAINTENANCE AGREEMENT BETWEEN THE TOWNSHIP OF VAN BUREN AND THE PROPERTY OWNER(S) WILL BE RECORDED WITH THE WAYNE COUNTY REGISTER OF DEEDS. UPON RECORDING, A COPY OF THE RECORDED DOCUMENTS WILL BE PROVIDED TO THE COUNTY.

D. LONG TERM MAINTENANCE PLAN AND SCHEDULE

TABLE 1 IDENTIFIES THE MAINTENANCE ACTIVITIES TO BE PERFORMED, ORGANIZED BY CATEGORY (MONITORING/INSPECTION, PREVENTATIVE MAINTENANCE, AND REMEDIAL ACTIONS), WHILE PERFORMING MAINTENANCE, CHEMICALS SHOULD NOT BE APPLIED TO THE FOREBAY, DETENTION BASIN, BUFFER STRIP, OR WATERCOURSES. TABLE 1 ALSO IDENTIFIES SITE-SPECIFIC WORK NEEDED TO ENSURE THAT THE STORM WATER MANAGEMENT SYSTEM FUNCTION PROPERLY AS DESIGNED.

PROPERTY OWNER

SDUKHDEV SINGH
8385 OPAL DRIVE
WESTLAND, MI 48185

ENGINEER

HAKIM SHAKIR
ENGINEERING SERVICES
32190 SCHOOLCRAFT RD
LIVONIA, MI 48150
CONTACT: KEVIN HARDY
(734) 756-2196



DATE:	04-21-2022
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SHEET:	1 of 1
SCALE:	1"=100'

EXHIBIT "B"
STORM MAINTENANCE
CHAHAL TRUCKING
VAN BUREN TWSP, WAYNE
COUNTY, MICHIGAN

HARDY CIVIL DESIGN
SERVICES LLC
4996 MOORE ST.
WAYNE, MI 48184
(734) 756-2196 // kbhardy1964@hotmail.com

Hardy Civil Design Services, LLC

4996 Moore St., Wayne, MI 48184

(734) 756-2196, E-mail: hardy-cds@hotmail.com

October 10, 2022

Re: 6100 Schooner Drive
Van Buren Township, MI
Chahal trucking Facility

To: OHM
County review R22-0560

OHM review #1 response letter:

Storm water management:

1. Noted
2. Land Use Summary added to cover sheet.
3. Existing utility information added to all appropriate sheets.
4. Water elevation within the existing pipe has been added to sheets #2, #3, and #4.
5. Storm sewer calculations for structures E to D added to storm sewer design chart.
6. Buffer strip has been dimensioned.
7. CPVC requirement has and is located withing the storm sewer design calculations on sheet #4
8. Forebay and Detention details have been revised.
9. Rainfall intensity has been revised.
10. All storm sewer lengths have been verified.
11. Storm sewer calculations have been revised.
12. HGL have been added to the profiles.
13. There is no pump proposed for this site.
14. Exhibits submitted on 8.5"x11" sheets.
15. Noted.
16. Noted.

Constructability and right of way:

Noted

Traffic and Geometry:

1. There is 198' proposed spacing between drive approaches.
2. Dimension added.
3. This will be addressed on the landscaping plan.
4. Noted.
5. Noted.
6. Radius revised to 50'
7. Noted.

Kevin Hardy
Civil Design Services