

CHAHAL SEMI TRUCK/TRAILER REPAIR FACILITY

6100 SCHOONER DRIVE
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

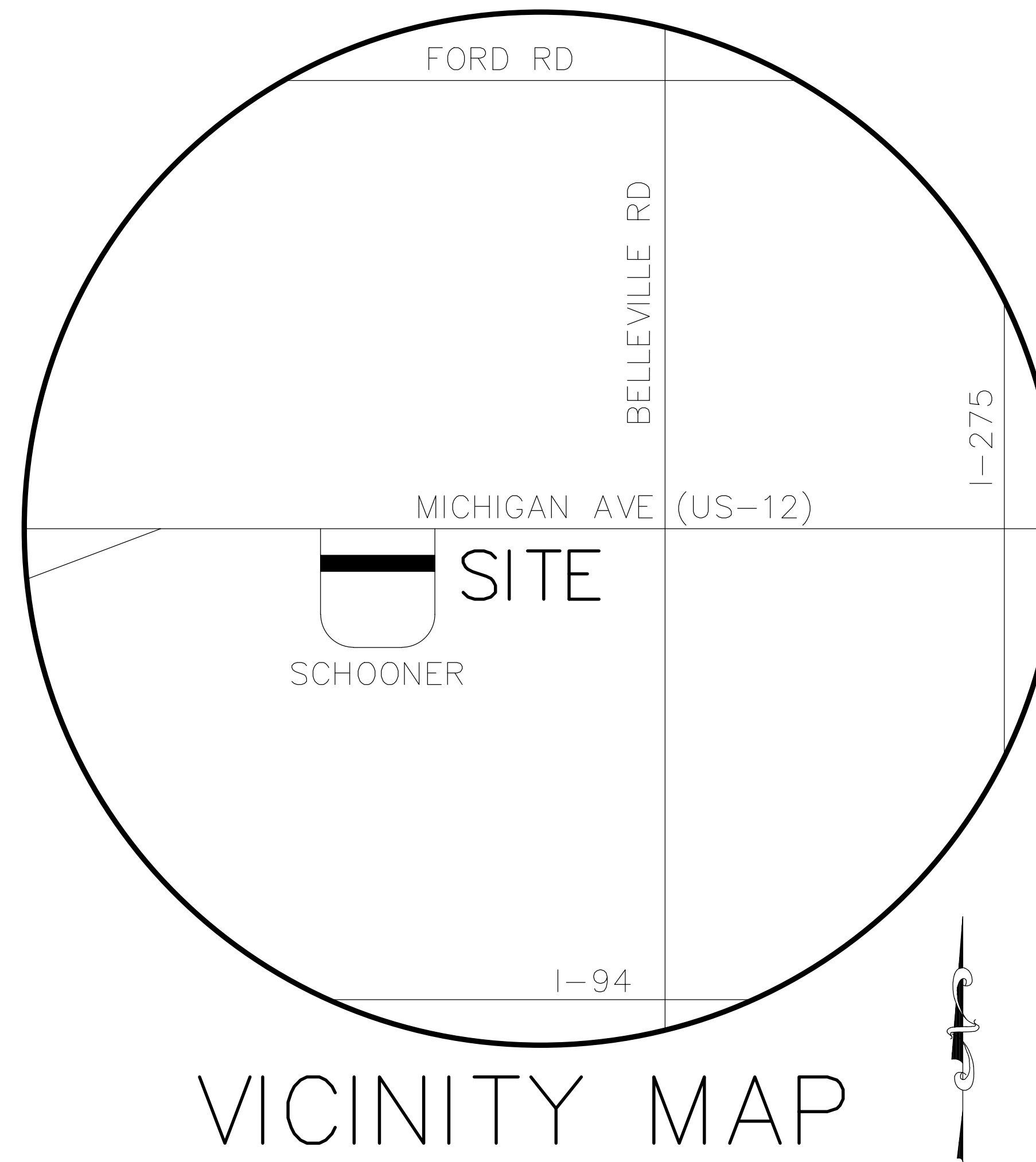
Land Characteristic	Existing	Proposed
Total Development Area (ac)	6.03	4.99
Impervious Area (ac)	1	3.24
Total Pervious Area (ac)	5	1.75
Pervious Area Breakdown by Cover Type		
Non-cultivated	4	0
Impervious Area (ac)	N/A	N/A
Improved area (grass/landscape)		
Predominant NRCS Soil Type	6.03 type B	1.19 type B
Wooded Area (ac)		
Predominant NRCS Soil Type	0 N/A	0 N/A
	REQUIRED VOLUME	UNIT
CPVC	13,042	cf
CPRC	24,780	cf
Flood control vol.=	54,463	cf
Total volumes=	54,463	cf
	PROVIDED VOLUME	
	1,956	
	0	
	52,507	

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

1. SITE PLAN
2. TOPOGRAPHIC SURVEY & REMOVALS PLAN
3. GRADING & SOIL EROSION PLAN
4. STORM SEWER DESIGN PLAN
5. PROFILES
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7. DETAILS
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- LP-2 LANDSCAPING DETAILS
- 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.

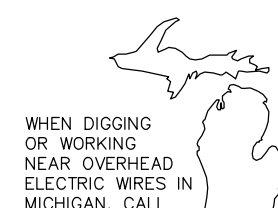
VEHICLES AND THEIR TRAILERS MAY REQUIRE AND RECEIVE REPLACEMENT OR REPAIR TO MAY COMPONENT, SUCH AS ENGINES, EXHAUST SYSTEMS, TRANSMISSIONS, AND OR SUSPENSIONS.

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, 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



MISS DIG

3 WORKING DAYS BEFORE STARTING YOUR PROJECT

811
(TOLL FREE)

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.

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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

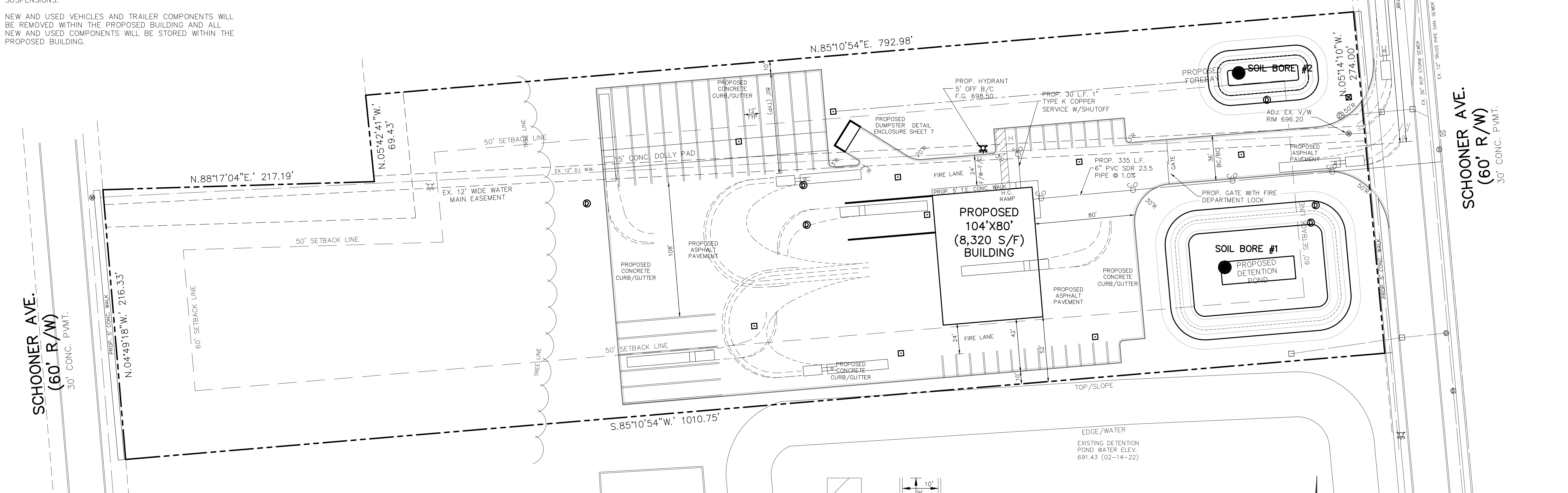
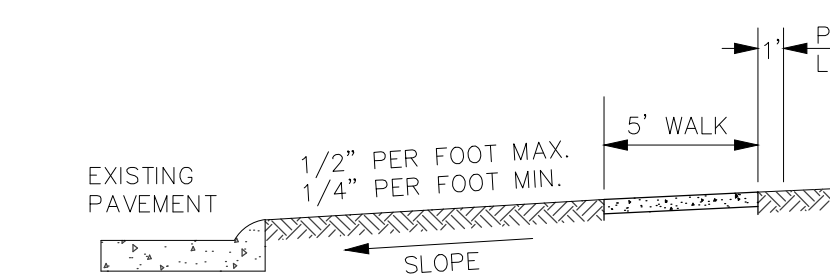
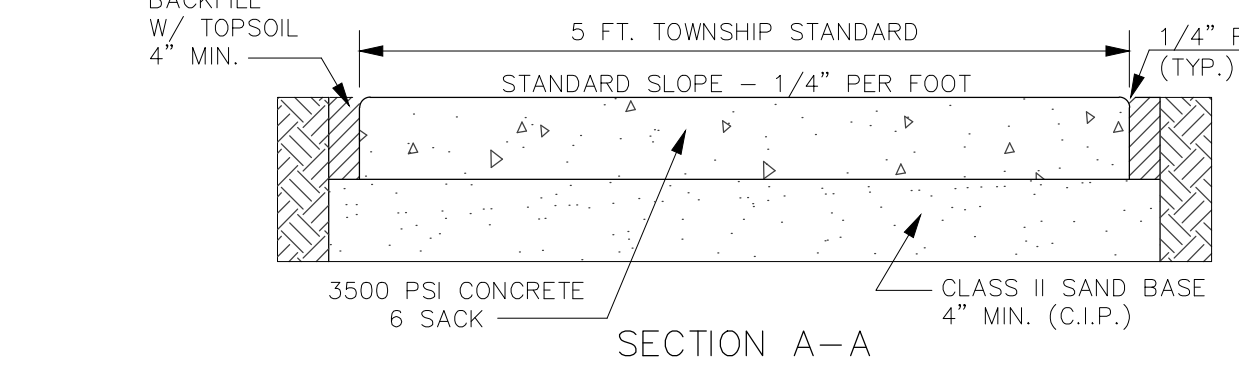
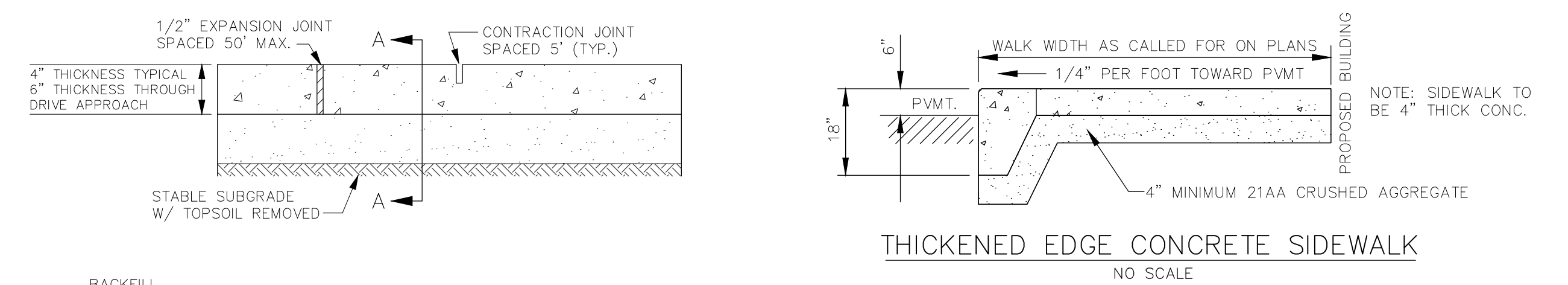
- PROPOSED SEMI TRUCK REPAIR FACILITY. THERE WILL BE NO LONG TERM PARKING WITHIN THE SUBJECT PROPERTY.
- TRUCKS PARKED ON THIS PROPERTY ARE FUNCTIONAL AND AWAITING REPAIR I.E., NO JUNK TRUCKS FOR PARTS SALVAGE.
- THERE WILL BE NO HAZARDOUS WASTE GENERATED FROM THE SITE.
- OILS, SOLVENTS AND OTHER CHEMICALS 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

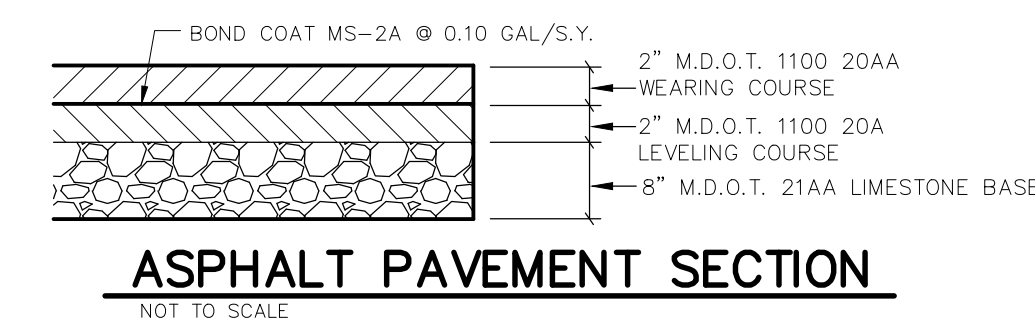
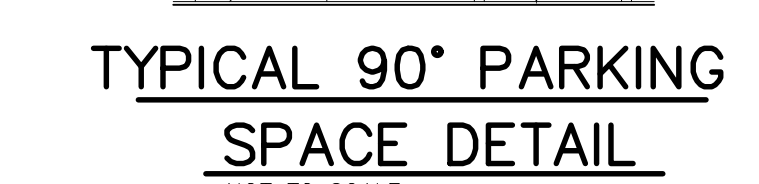
NOTE

SOIL BORE INFORMATION LOCATED ON SHEET #6



CURB & GUTTER DETAIL

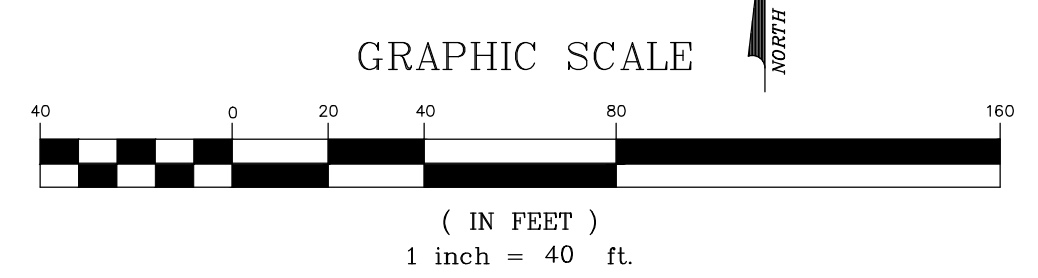
DETAIL	DIMENSIONS (M x N)	LANE TIES	CONCRETE CU. YD. / LIN. FT.
F1	1'-6" x 7/8"	AS SHOWN	0.0424
F2	1'-6" x 7/8"	OMITTED	0.0424
F3	2'-0" x 1 3/8"	AS SHOWN	0.0550
F4	2'-0" x 1 3/8"	OMITTED	0.0550
F5	2'-6" x 1 7/8"	AS SHOWN	0.0677
F6	2'-6" x 1 7/8"	OMITTED	0.0677



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



WHEN DIGGING OR WORKING NEAR OVERHEAD ELECTRIC WIRES IN MICHIGAN, CALL MISS DIG 811 (TOLL FREE)

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

SITE PLAN

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

REVISIONS: 06-21-22, 08-03-22, 10-10-22, 12-08-22

DRAWING No. A-01-10-22

JOB No. 2022-01

SHEET No. 1 OF 1

CHECKED BY: [Signature]

DRAWN BY: [Signature]

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'

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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.

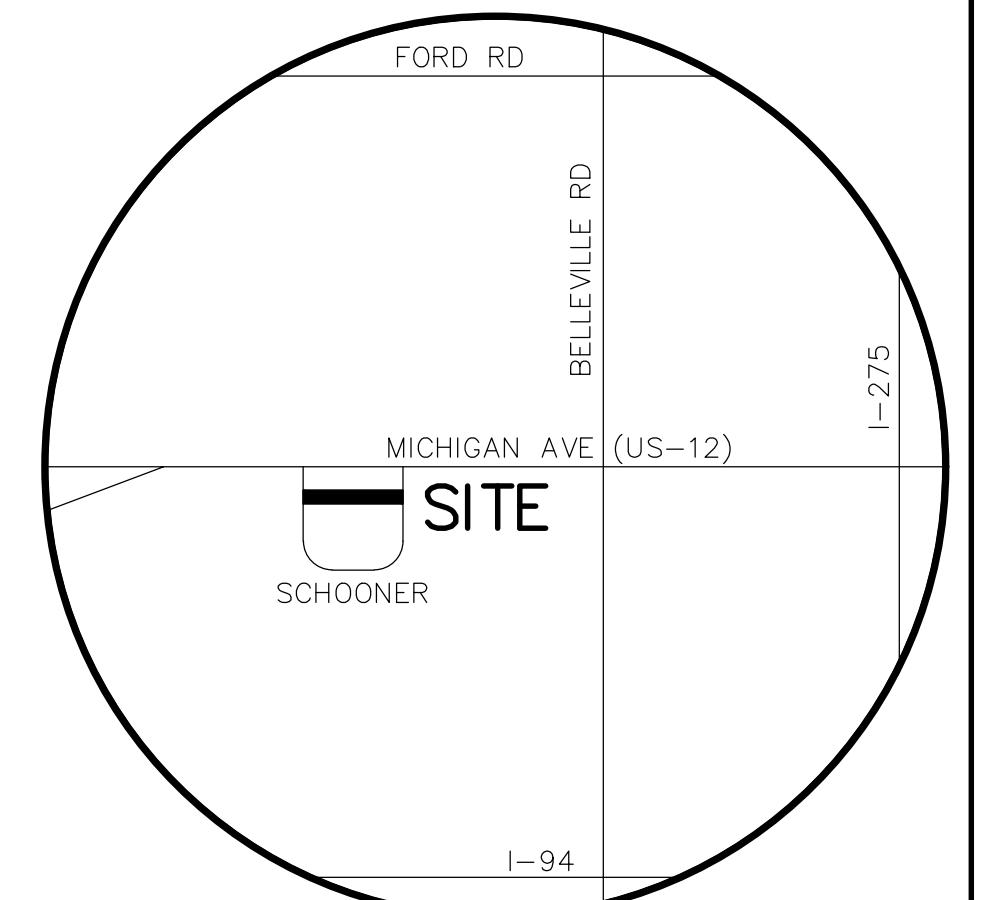
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- CONTRACTOR MUST PICK UP ANY FLOW FROM OFFSITE THAT CONTRIBUTES TO THE SITE.

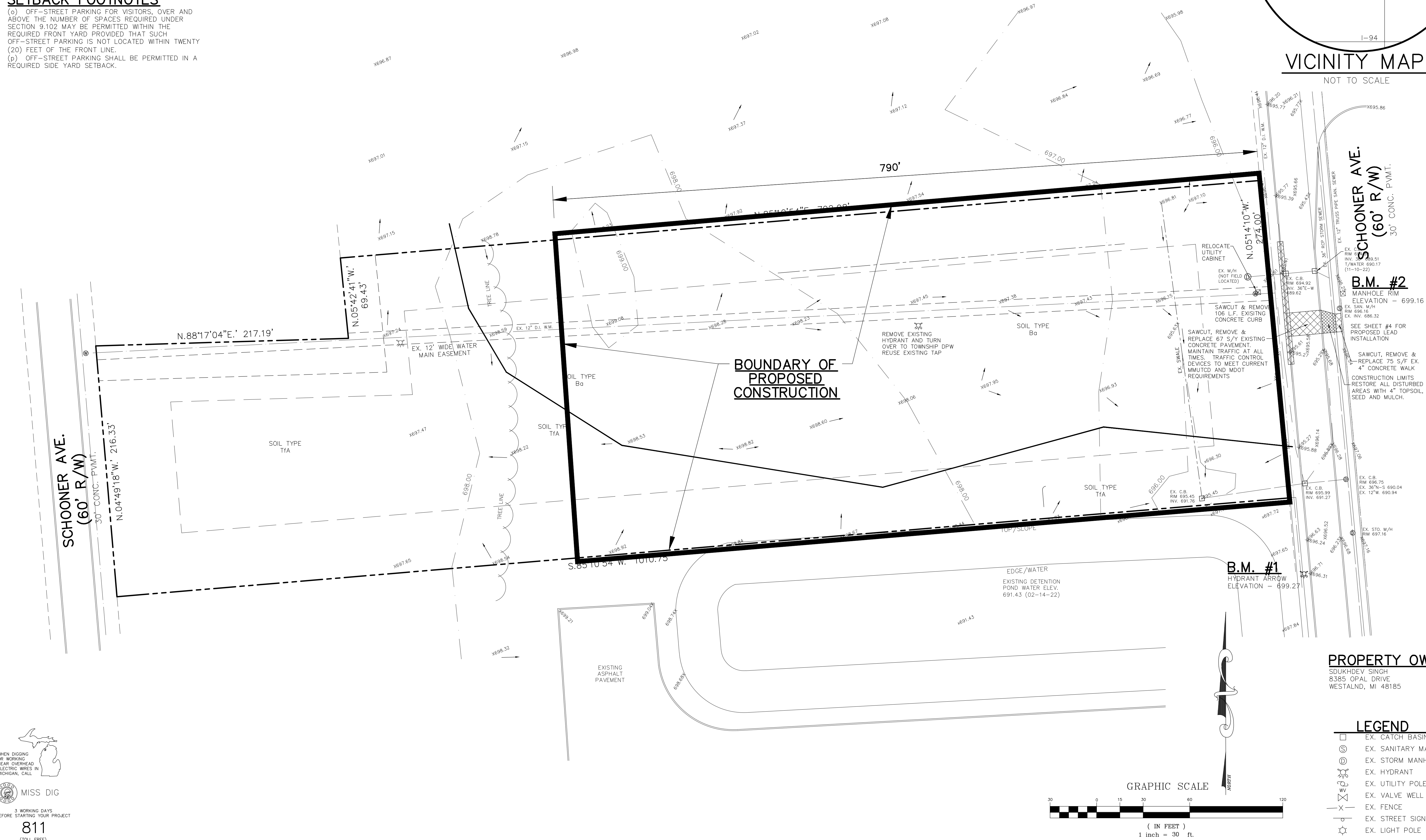
BENCHMARKS (USGS NAVD29)

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.

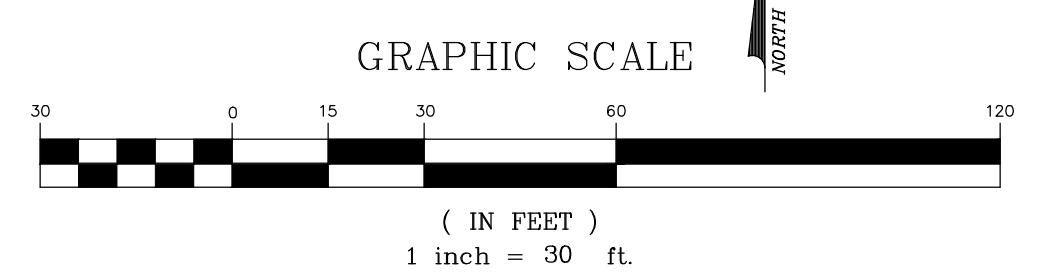
B.M. #2
 MANHOLE RIM ELEVATION - 699.16
 EX. SAN. W/H RIM 696.16
 EX. INV. 686.32
 SEE SHEET #4 FOR PROPOSED LEAD INSTALLATION
 SAWCUT, REMOVE & REPLACE 75 S/F EX. 4" CONCRETE WALK
 CONSTRUCTION LIMITS RESTORE ALL DISTURBED AREAS WITH 4" TOPSOIL, SEED AND MULCH.

B.M. #1
 HYDRANT ARROW ELEVATION - 699.27

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



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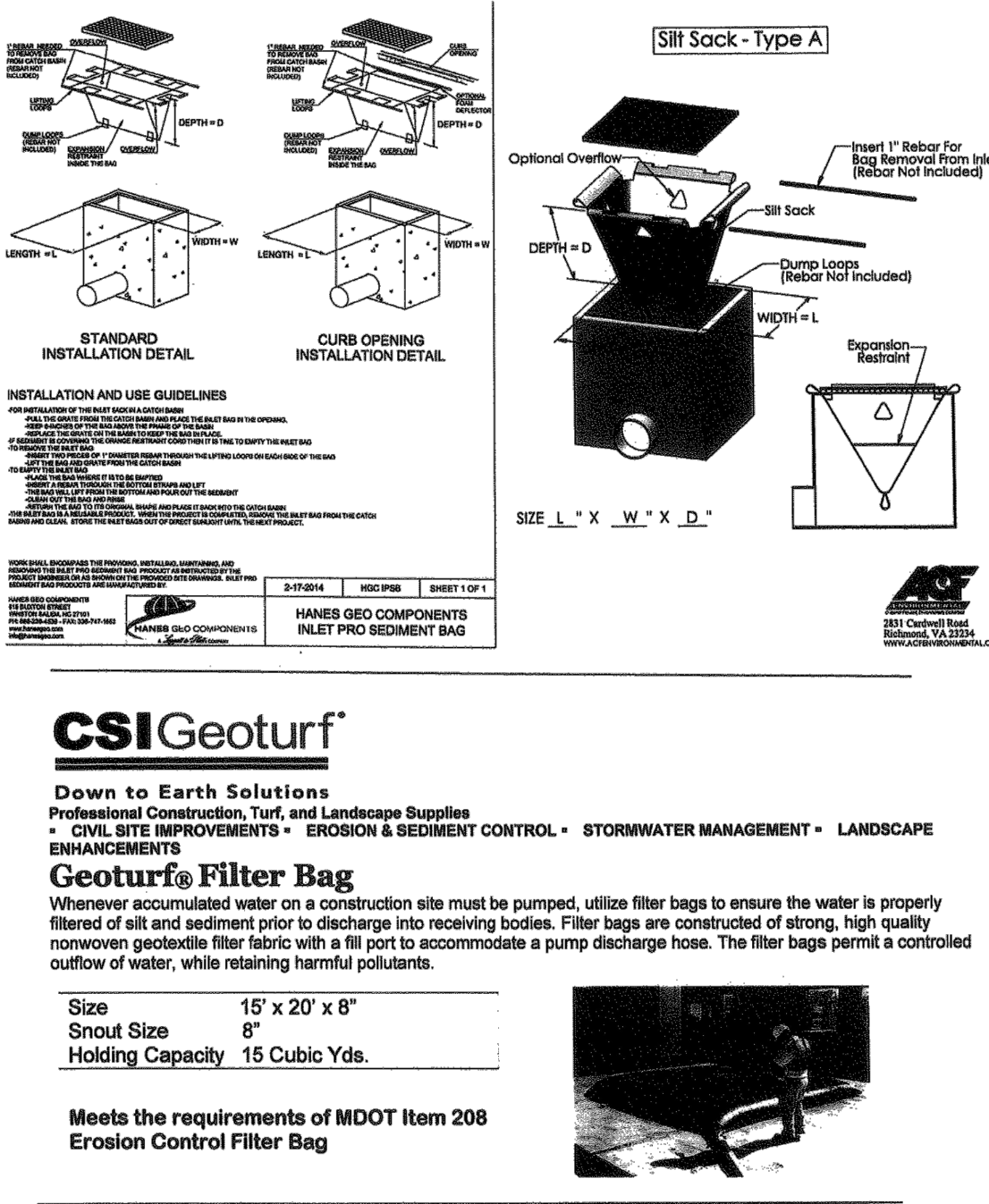
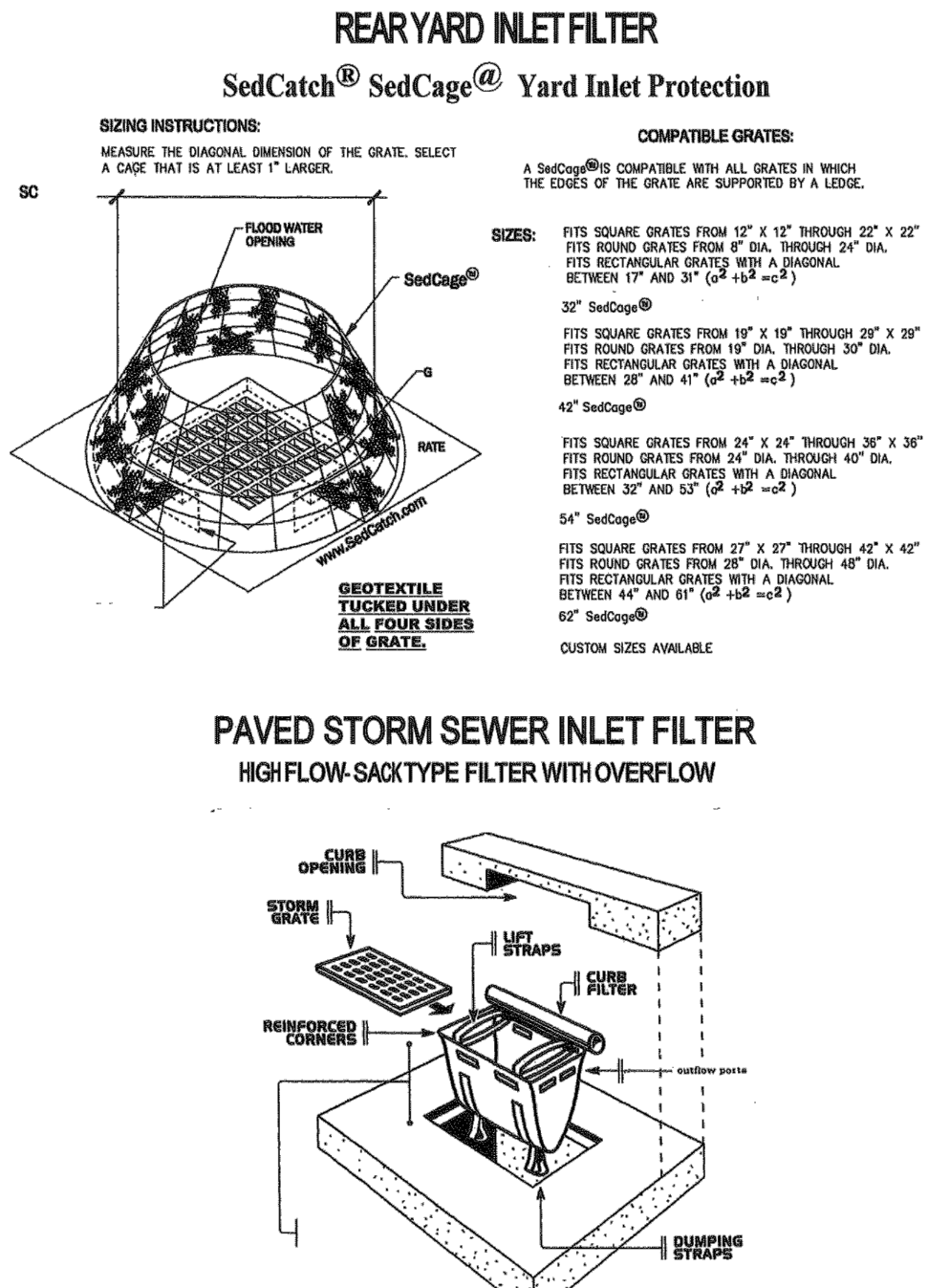
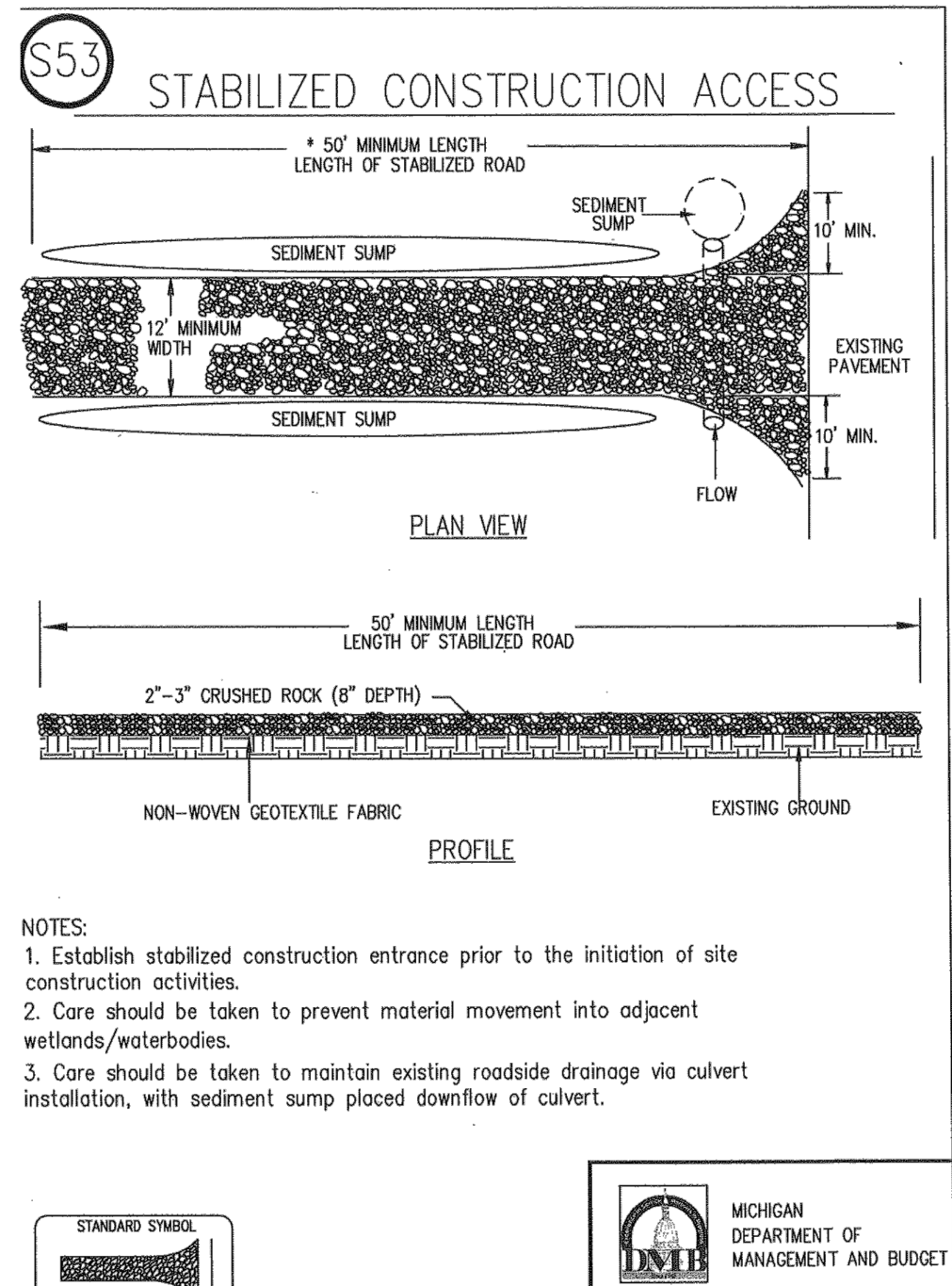
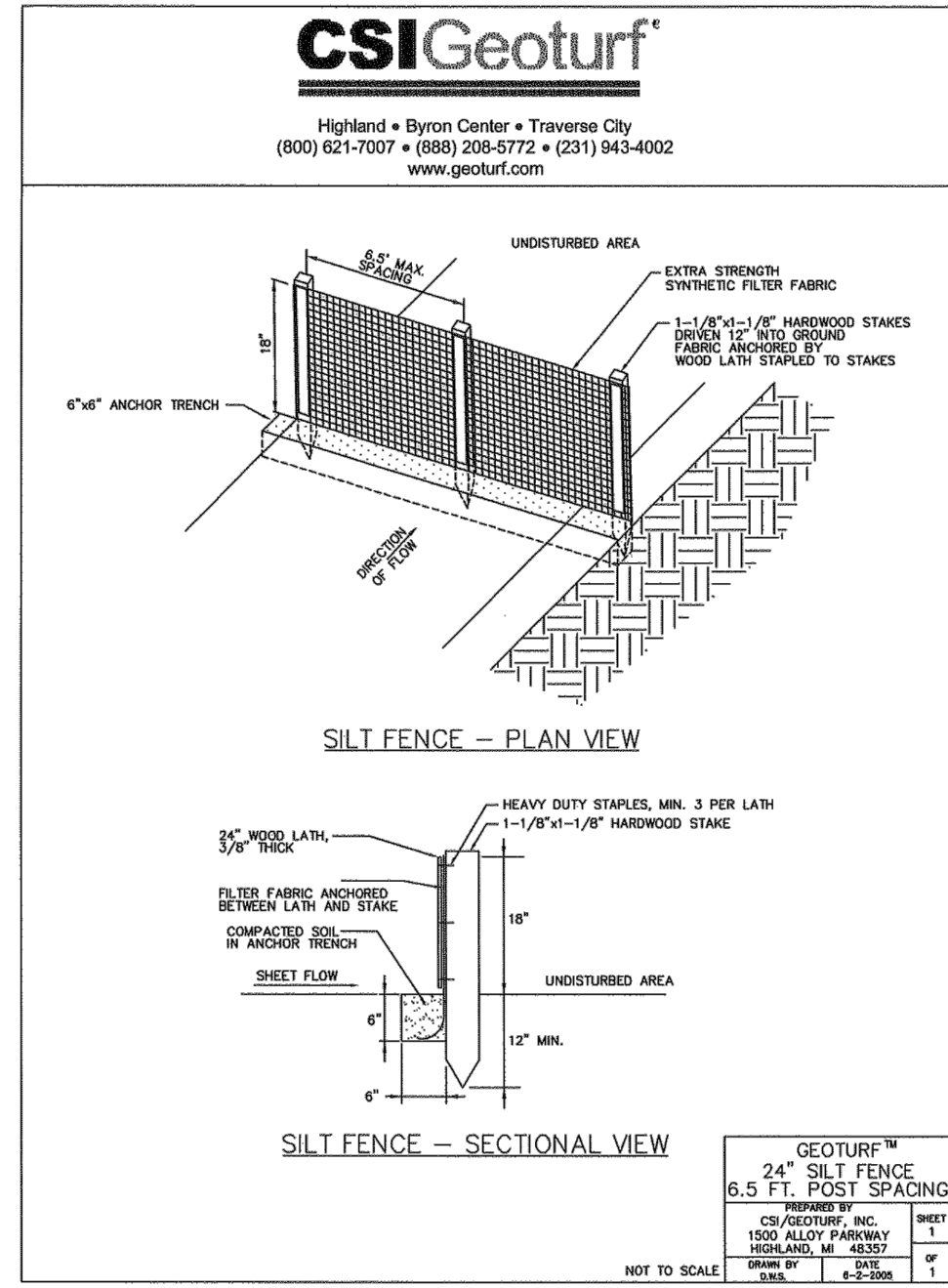
HARDY

TOPOGRAPHIC SURVEY

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

SHEET No.	JOB No.	DRAWING No.	DATE	REVISIONS
2	2022-01	A-	01-10-22	06-21-22 08-03-22 10-10-22 12-08-22

DRAWN BY: ..
 CHECKED BY:



SOIL EROSION SEQUENCE OF CONSTRUCTION

START DAY	END DAY	ACTIVITY
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.

SOIL EROSION SEQUENCE OF CONSTRUCTION

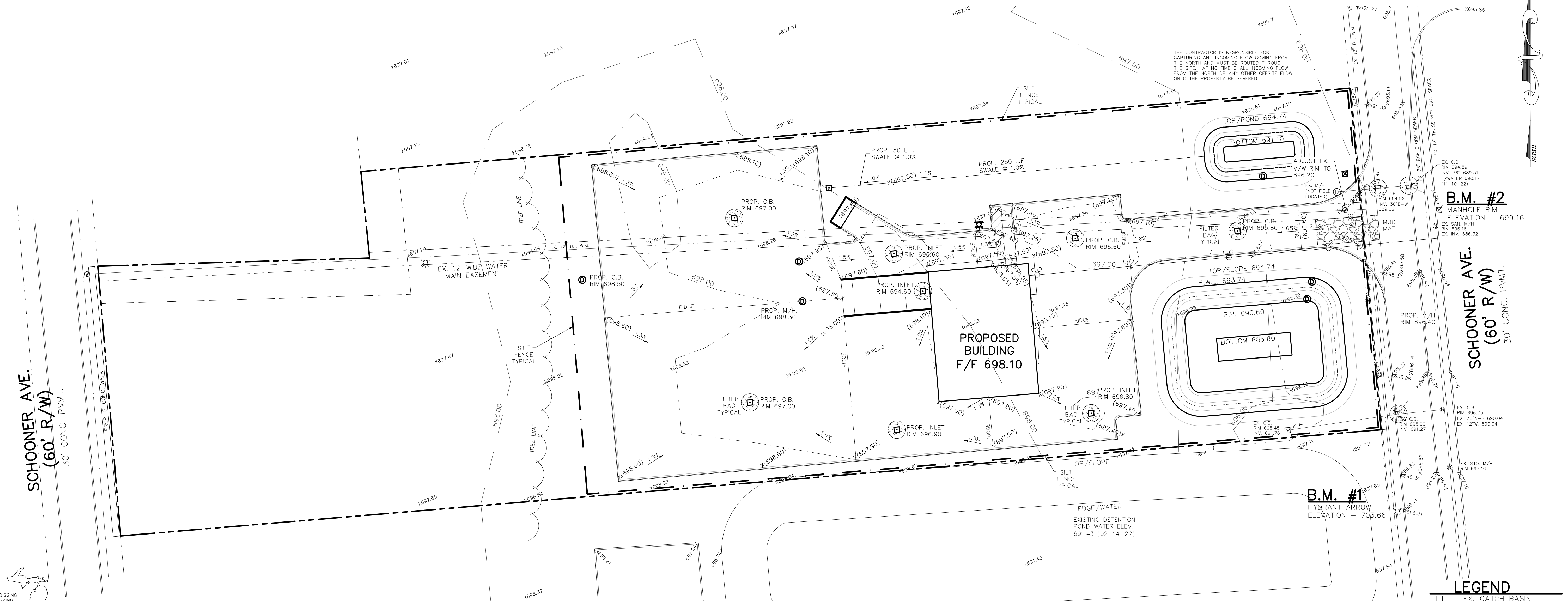
	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
SCRAPE STREETS		X	X	X	X	X	X
SWEEP STREETS				X			

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.

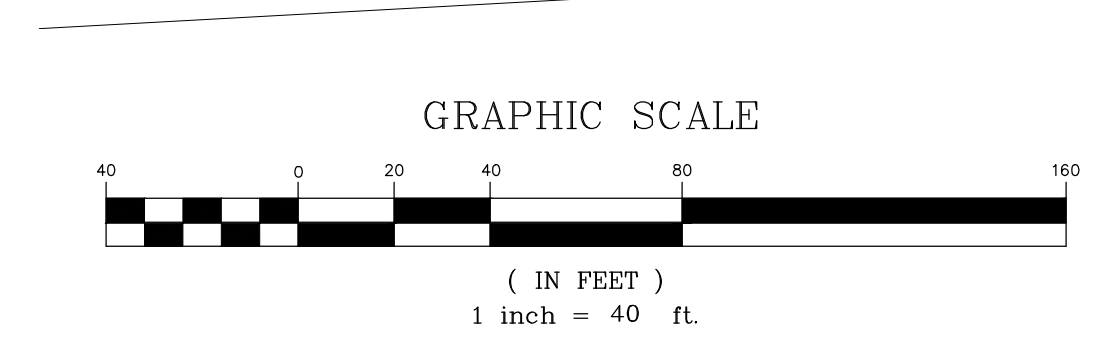
Meets the requirements of MDOT Item 208
Erosion Control Filter Bag



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

SOIL EROSION LEGEND
SILT FENCING
SEDIMENTATION FILTER



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3 WORKING DAYS BEFORE STARTING YOUR PROJECT
811 (TOLL FREE)

LEGEND

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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		
12-08-22		

DRAWING No. A-
DATE 01-10-22
3 OF 3
2022-01
DRAWN BY: [Signature]
CHECKED BY: [Signature]

TOTAL DISRUPTIVE AREA:

6.03 acres

LAND USE SUMMARY

Table with columns: Land Characteristic, Existing, Proposed, Coeff., A*C. Rows include Total Development Area, Roof Area, Pavement Area, Gravel Area, Total Pervious Area.

Pervious Area Breakdown by Cover Type

Table with columns: Cover Type, Area, Coeff., A*C. Rows include Non-cultivated, Impervious Area, Improved area, Wooded Area.

Calculated CPVC Volume (cf)=

CALCULATE RUNOFF COEFFICIENT

C=(A1*C1)/A = 0.72

TIME OF CONCENTRATION CALCULATIONS

Table with columns: Variable, Value, Unit. Rows include V (sheet flow), Flow time, V (shallow flow), Flow time, V (sewer flow), Flow time, concentration time, T.

CALCULATE 100-YEAR PEAK INTENSITY

I100= 7.4 in/hr

CHANNEL PROTECTION VOLUME CONTROL (CPVC)

Vcpcv= 13,042 cf

CHANNEL PROTECTION RATE CONTROL (CPRC)

Vcprc= 24,780 cf

100-YEAR FLOOD CONTROL VOLUME CALCS

Qallow,calc= 0.73 cfs/acre @ 0.10 cfs, max allow. release rate a site less than 2 acres must use a variable release rate of 1.00 cfs/acre. 100-year release, Q(allow) = 0.10 cfs/acre. Tributary area= 4.99 acres. Qo= 0.50 cfs. Qi= 26.59 cfs. Vr= 67,904 cf. Storage Ratio(Vs/Vr)= 0.8. 100-year (req), Vs= 54,463 cf.

SUMMARY OF CALCULATED VOLUMES:

cpvc= 13,042 cf. cprc= 24,780 cf. Flood Control Volume= 41,421 cf if CPVC volume is met. Flood Control Volume= 54,463 cf if CPVC volume is not met.

REQ. DETENTION VOL. DETERMINATION

CPVC 13,042 cf. CPRC 24,780 cf. SITE MINIMUM. Flood control vol.= 54,463 cf.

In lieu of Bioretention swales the site is designed with Forebay Required Forebay Design Volume = 15% of CPVC volume. 15% of CPVC volume = 1,956 cf.

FOREBAY OUTLET ELEVATION

elev= 691.10 ft

FOREBAY POND DESIGN

Table with columns: contour elevation, area, volume, cumulative volume. Rows show elevations from 691.10 to 693.00.

CPVC (High Water) ELEV = LOWER EL. + (UPPER EL. - LOWER EL.) * (REQ. VOL. - CUM. VOL. LOWER EL.) / (CUM. VOL. UPPER EL. - CUM. VOL. LOWER EL.)

Table with columns: elevation, area, volume, cumulative volume. Shows calculation for ELEV= 692.42 ft.

Total Vol bioretention Prov. = 1,956

ORRIFICE CALCULATIONS

Orifice (CPVC) rate control. Q(ave)= 0.01 ft. H(ed)= 1.32 ft. Average Head, H(ed)= 0.66 ft. Orifice Area A= 0.003 sq/ft. Orifice Dia, D100= 0.72 inches. number holes req.= 1 ea. Calculated D(100-year)= 0.060 ft.

Therefore use, number of holes= 1 ea. hole size= 1.0 inch. place hole at CPVC elev= 691.10 ft. Actual (D100)= 0.0833 ft.

DETENTION POND OUTLET ELEVATION

elev= 690.60 ft. Required Flood Control after removing CPVC volume. Required Flood Control= 52,507 cf.

OPEN DETENTION POND DESIGN

Table with columns: contour elevation, area, volume, cumulative volume. Rows show elevations from 690.60 to 694.00.

CPVC (High Water) ELEV = LOWER EL. + (UPPER EL. - LOWER EL.) * (REQ. VOL. - CUM. VOL. LOWER EL.) / (CUM. VOL. UPPER EL. - CUM. VOL. LOWER EL.)

Table with columns: elevation, area, volume, cumulative volume. Shows calculation for ELEV= 693.74 ft.

NOTE

SOIL BORE INFORMATION LOCATED ON SHEET #6

ORRIFICE CALCULATIONS

Orifice Flood Rate Control. Q(ave)= 0.14 ft. H(ed)= 3.14 ft. Average Head, H(ed)= 1.57 ft. Orifice Area A= 0.023 sq/ft. Orifice Dia, D100= 2.05 inches. number holes req.= 1 ea. Calculated D(100-year)= 0.171 ft.

Therefore use, number of holes= 1 ea. hole size= 2.1 inch. place hole at elev= 690.60 ft. Actual (D100)= 0.1708 ft.

ITEM UNIT QTY

Table with columns: Item, Unit, Qty. Lists items like Soil Erosion, Water main system, Sanitary Sewer lead, Paving, Storm Sewer.

UTILITY PLAN NOTES

- 1. PROPOSED HYDRANT TO BE MINIMUM OF 5' OFF BACK OF CURB
2. OLD HYDRANT SHALL BE DELIVERED TO VAN BUREN TOWNSHIP DPW DEPARTMENT.
3. NEW HYDRANT SHALL UTILIZE THE EXISTING HYDRANT TEE.

GENERAL NOTES

- 1. PICK UP DEBRIS WITHIN PROPERTY LIMITS WEEKLY OR AS NEEDED.
2. PHASING OF THE PROJECT IS NOT PROPOSED.
3. THERE ARE NO WETLANDS LOCATED ON SUBJECT PROPERTY.
4. 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.

SANITARY SEWER BASIS OF DESIGN

BUILDING AREA = 8,320 S/F (ROUND UP TO 9,000 S/F)

0.15 UNITS PER 1000 S/F = 0.15 * 9,000 = 1,350 UNITS

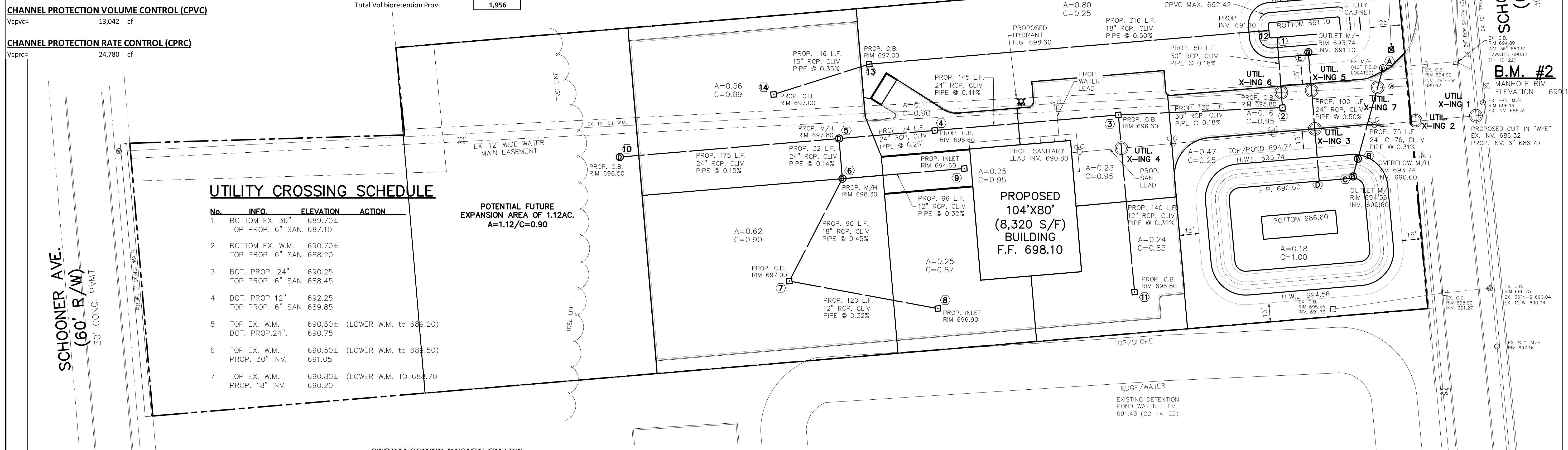
1350 gpd/1440gpd=0.9375 gpm

0.9375 gpm * 0.13368/60 = 0.0021 cfs

PEAKING FACTOR = 0.0021*4 = 0.0084 cfs

PROVIDED 6" LEAD @ 1.00% = CAPACITY 0.56 CFS

THE CONTRACTOR IS RESPONSIBLE FOR CAPTURING ANY INCOMING FLOW COMING FROM THE NORTH AND MUST BE ROUTED THROUGH THE SITE. AT NO TIME SHALL INCOMING FLOW FROM THE NORTH OR ANY OTHER OFFSITE FLOW INTO THE PROPERTY BE SERVED.



UTILITY CROSSING SCHEDULE

Table with columns: No., INFO., ELEVATION, ACTION. Lists 7 utility crossings with details on pipe size and elevation.

POTENTIAL FUTURE EXPANSION AREA OF 1.12AC. A=1.12/C=0.90

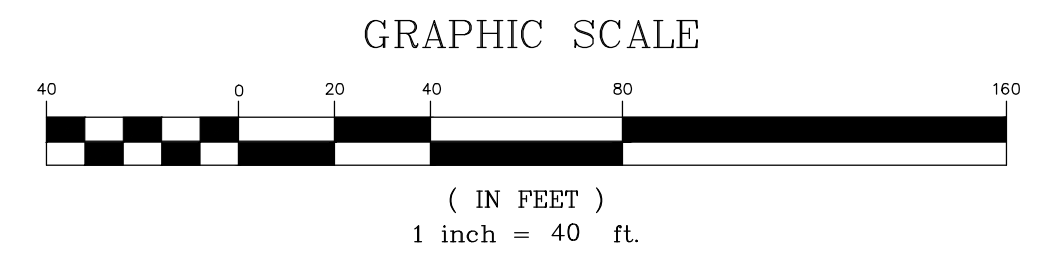
STRUCTURE SCHEDULE

Table with columns: No., INFO., No., INFO., No., INFO. Lists 13 structures including manholes, inlets, and sanitary sewer structures.

STORM SEWER DESIGN CHART

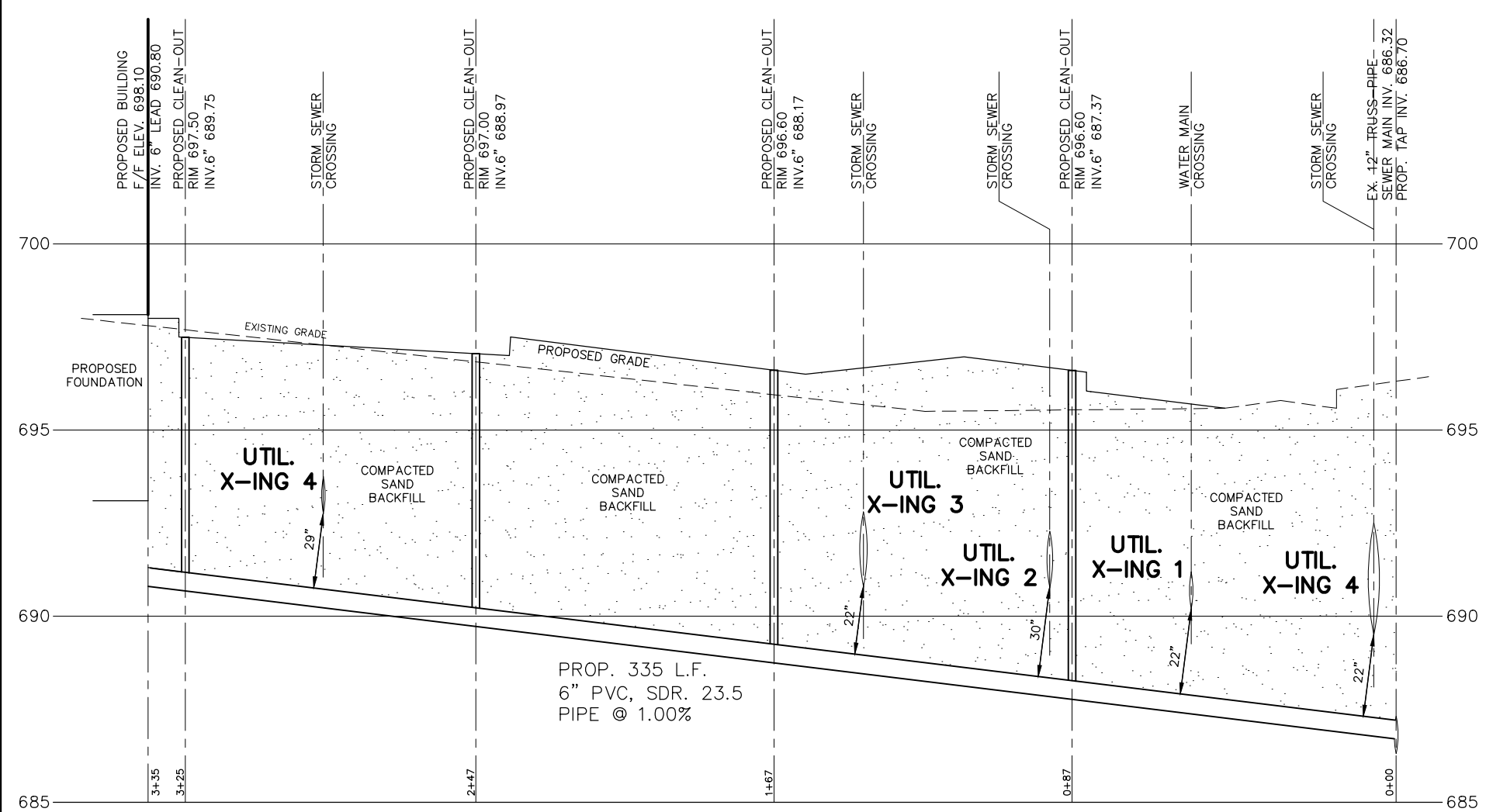
Roughness Coefficient = 0.013, Initial Time (T) = 10, Rain Intensity (I) = 7.43

Large design chart table with columns: Storm Sewer Line, From Structure, To Structure, Acres, C Factor, Equivalent Area, Total Area, t Time, I Inch Per Hour, Q C*P*A, Pipe Dia., Slope, Length of Line, Manning Velocity, Time of Flow, Manning Capacity, Energy Loss, H.G. Elev., Upper invert Elev., Lower invert Elev., Upper Structure t/pipe (ft).



MISS DIG logo and text: WHEN DIGGING OR WORKING NEAR OVERHEAD ELECTRIC WIRES IN MICHIGAN, CALL MISS DIG. 3 WORKING DAYS BEFORE STARTING YOUR PROJECT. 811 (TOLL FREE)

Vertical title block containing: CIVIL DESIGN SERVICES LLC, HARDY, STORM SEWER DESIGN, SEMI-TRUCK REPAIR FACILITY, 6100 SCHOONER ROAD, VAN BUREN TWP, MI, REVISIONS, DATE, DRAWING NO., JOB NO., SHEET NO., 4 OF 4, 2022-01, DRAWN BY, CHECKED BY.

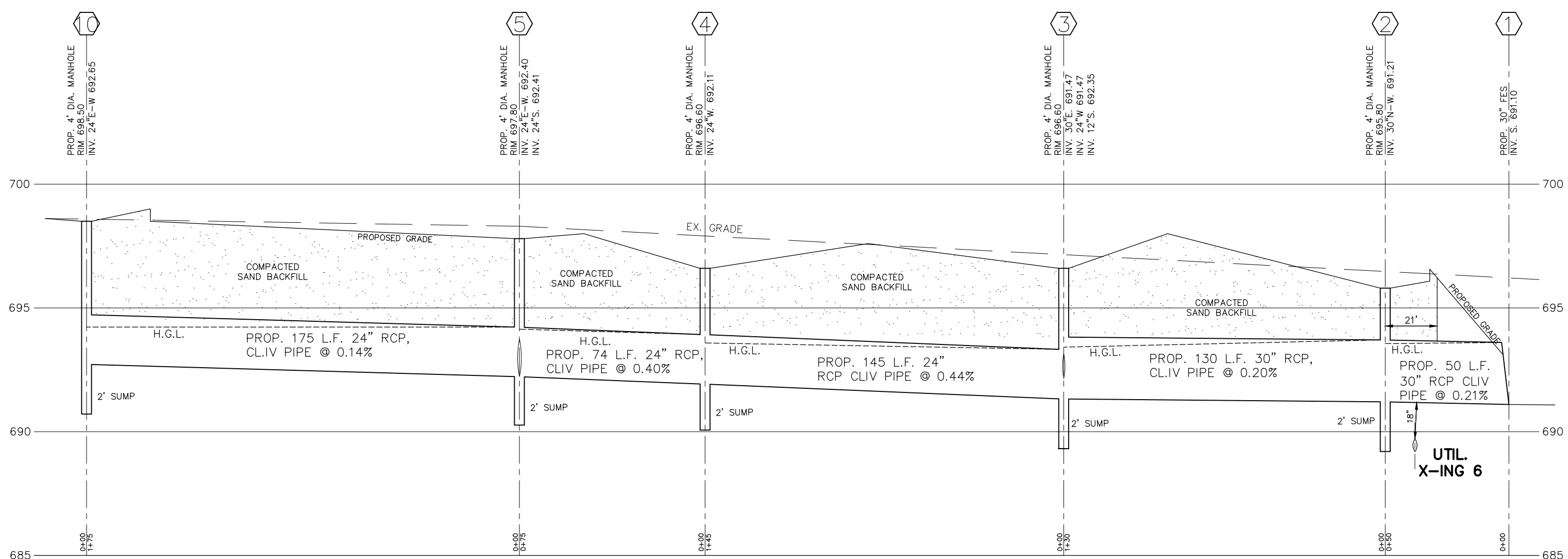


SANITARY LEAD PROFILES

SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL

UTILITY CROSSING SCHEDULE

No.	INFO.	ELEVATION	ACTION
1	BOTTOM EX. 36"	689.70±	
	TOP PROP. 6" SAN.	687.10	
2	BOTTOM EX. W.M.	690.70±	
	TOP PROP. 6" SAN.	688.20	
3	BOT. PROP. 24"	690.25	
	TOP PROP. 6" SAN.	688.45	
4	BOT. PROP. 12"	692.25	
	TOP PROP. 6" SAN.	689.85	
5	TOP EX. W.M.	690.50±	(LOWER W.M. to 689.20)
	BOT. PROP. 24"	690.75	
6	TOP EX. W.M.	690.50±	(LOWER W.M. to 689.50)
	BOT. PROP. 30"	691.05	
7	TOP EX. W.M.	690.80±	(LOWER W.M. TO 688.70)
	BOT. PROP. 18"	690.20	

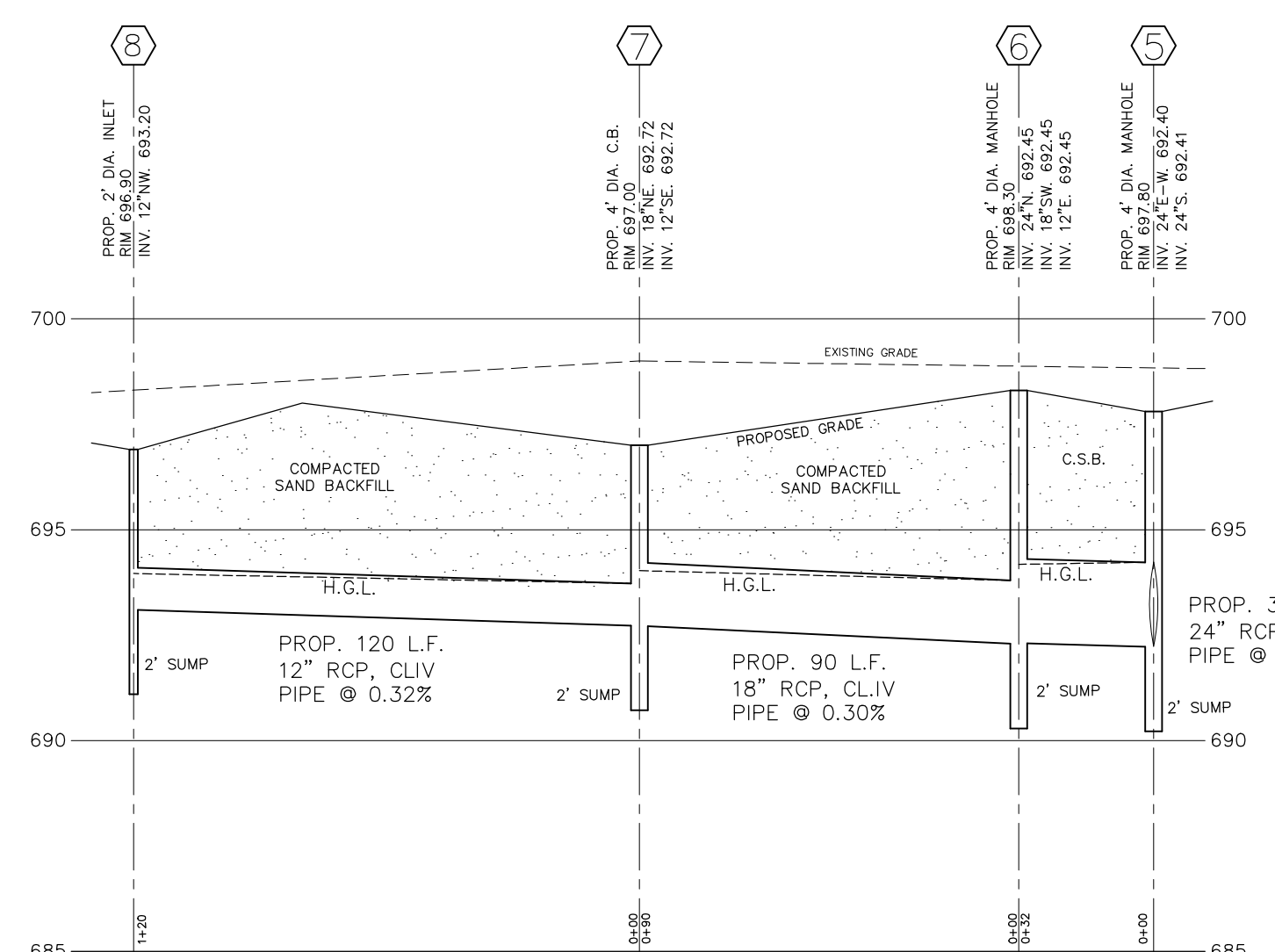


STORM SEWER PROFILES

SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL

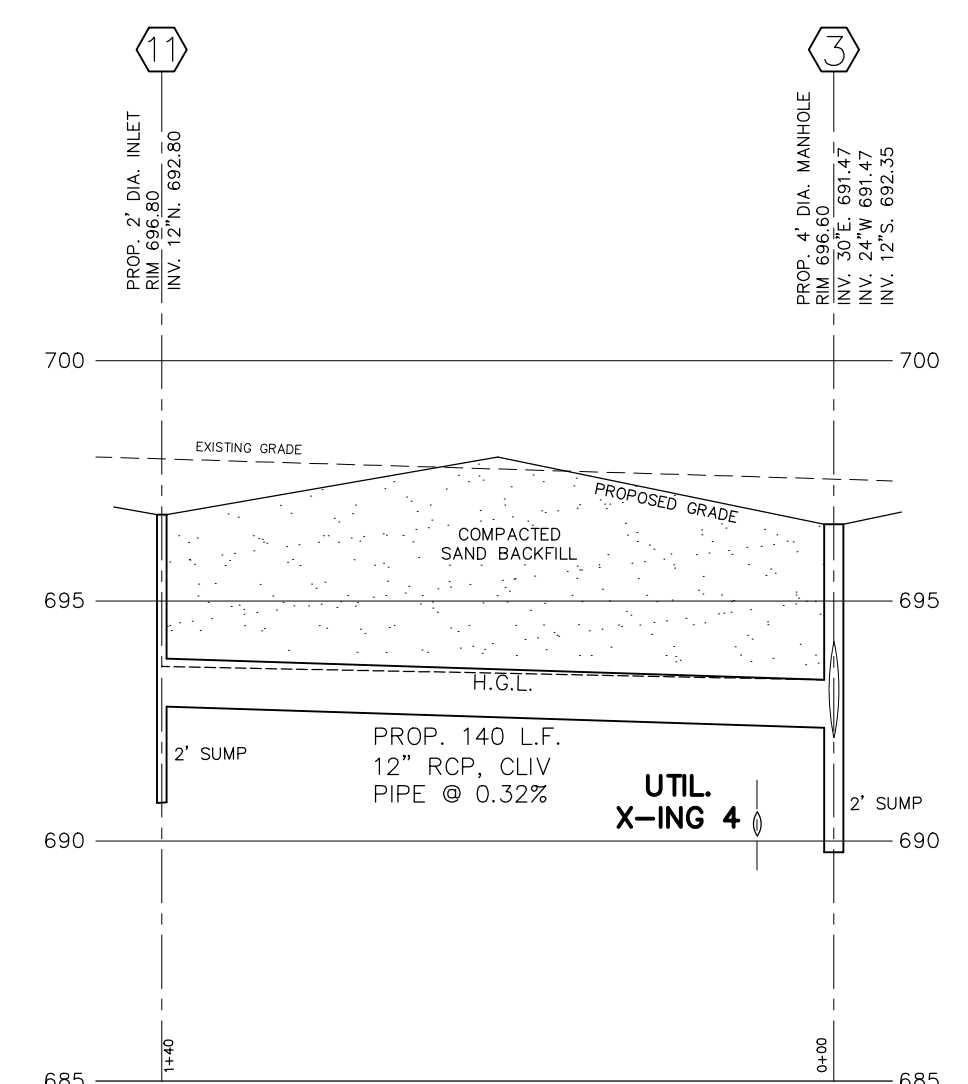
STORM SEWER DESIGN CHART

Roughness Coefficient		Initial Time (T) =		Rain Intensity (I) =		Equivalent Area 100%		Total Area 100%		t		I		Q		Pipe		Length		Manning		Time of		Manning		Capacity		Energy		H.G.		Upper		Lower		Upper								
From	To	0.013	10	7.43	Acres	C	Acres	Acres	Acres	Time	Inch	Per	Hour	C ^{1/4} *A	(cfs)	Di.	Slope	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft									
14	13	0.56	0.89	0.50	0.498	10.00	7.43	3.70	15	0.35	116	3.11	0.62	3.82	0.43	0.15	694.21	693.09	692.68	694.34																								
13	12	0.80	0.25	0.20	0.698	10.00	7.43	5.19	18	0.50	316	4.20	1.25	7.42	1.89	0.27	694.22	692.68	691.10	694.18																								
11	3	0.24	0.95	0.23	0.228	10.00	7.43	1.69	12	0.32	140	2.56	0.91	2.01	0.41	0.10	693.66	692.80	692.35	693.80																								
10	5	1.12	0.90	1.01	1.008	10.00	7.43	7.49	24	0.14	175	2.69	1.08	8.46	0.35	0.11	694.65	692.65	692.41	694.65																								
9	6	0.25	0.95	0.24	0.238	10.00	7.43	1.76	12	0.32	96	2.56	0.62	2.01	0.28	0.10	693.63	692.76	692.45	693.76																								
8	7	0.25	0.87	0.22	0.218	10.00	7.43	1.62	12	0.32	120	2.56	0.78	2.01	0.35	0.10	693.96	693.10	692.72	694.34																								
7	6	0.62	0.90	0.56	0.776	10.78	4.95	3.84	18	0.30	90	3.25	0.46	5.75	0.32	0.16	694.10	692.72	692.45	694.22																								
6	5	0.00	0.00	0.00	1.013	11.24	4.87	4.94	24	0.14	31	2.69	0.19	8.46	0.06	0.11	694.35	692.45	692.40	694.45																								
5	4	0.00	0.00	0.00	2.021	11.43	4.84	9.79	24	0.40	74	4.55	0.27	14.29	0.43	0.32	694.21	692.40	692.11	694.40																								
4	3	0.11	0.90	0.10	1.120	11.70	4.80	10.18	24	0.44	145	4.77	0.51	14.99	0.92	0.35	694.04	692.11	691.47	694.11																								
3	2	0.23	0.95	0.22	2.567	12.21	4.73	12.13	30	0.20	130	3.73	0.58	18.33	0.44	0.22	693.93	691.47	691.21	693.97																								
2	1	0.16	0.95	0.15	2.719	12.79	4.64	12.62	30	0.21	50	3.83	0.22	18.78	0.18	0.23	693.55	691.21	691.10	693.71																								
E	D	0	0	0.00	2.719	13.01	4.64	12.62	24	0.50	100	5.09	0.33	15.98	0.72	0.40	692.92	691.10	690.60	693.10																								
B	A	0	0	0.00	2.719	13.34	4.57	12.42	24	0.31	75	4.01	0.31	12.58	0.34	0.25	692.45	690.60	690.37	692.60																								



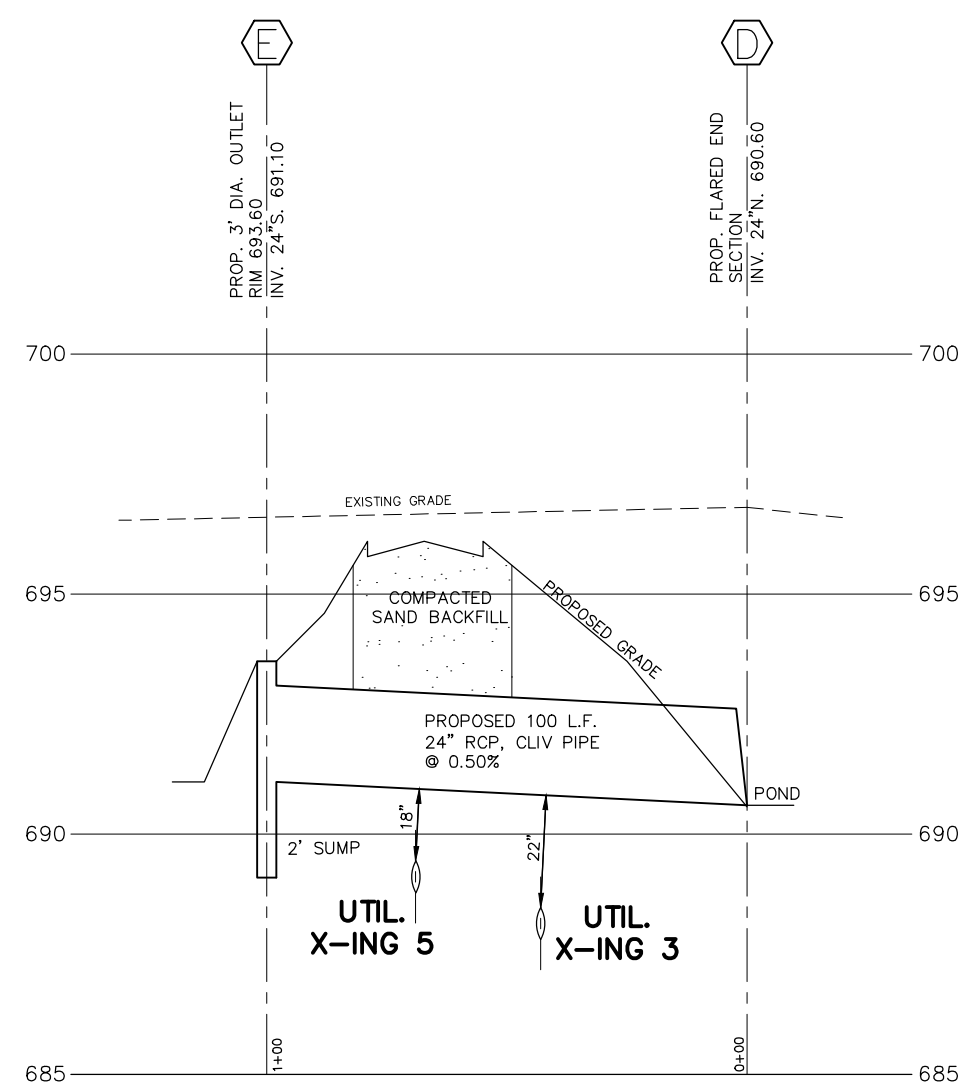
STORM SEWER PROFILES

SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL



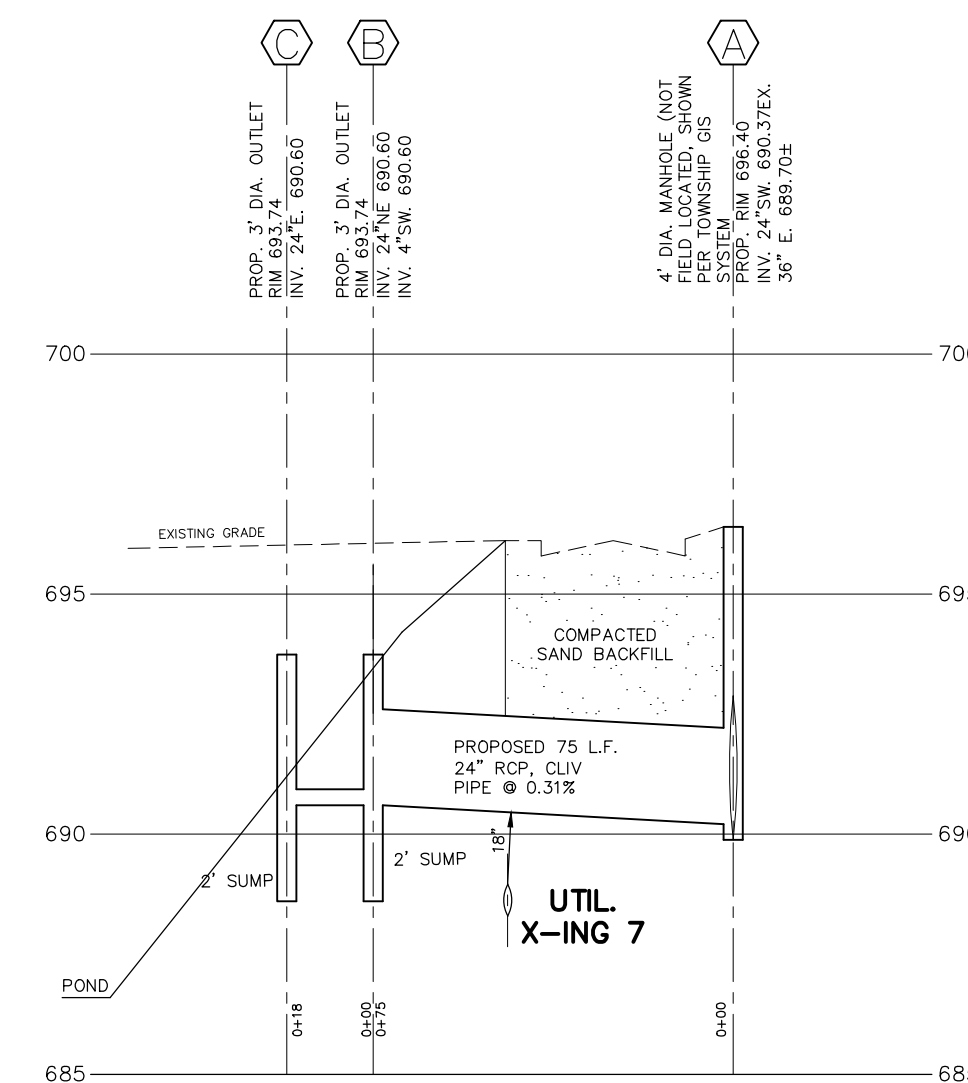
STORM SEWER PROFILES

SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL



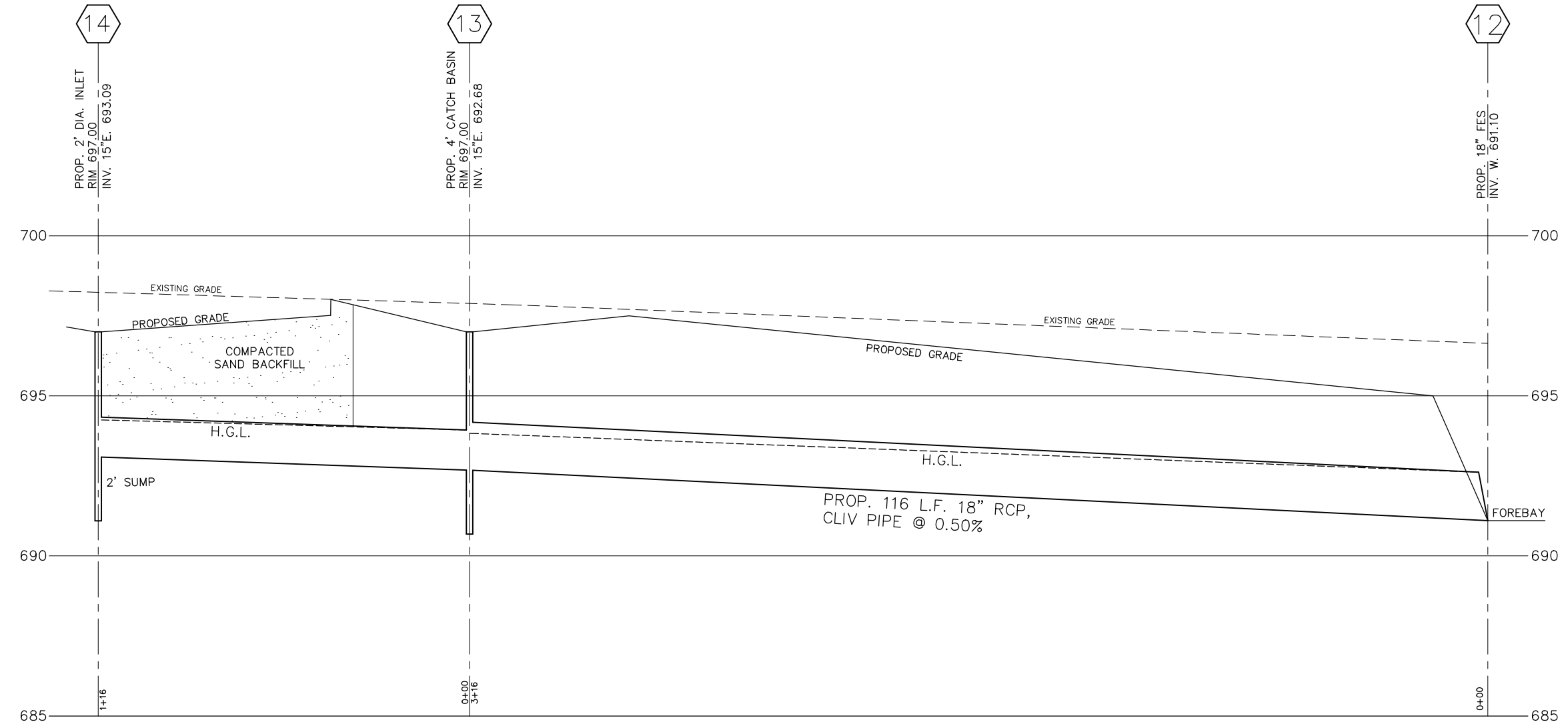
STORM SEWER PROFILES

SCALE: 1"=40' HORIZONTAL
1"= 4' VERTICAL



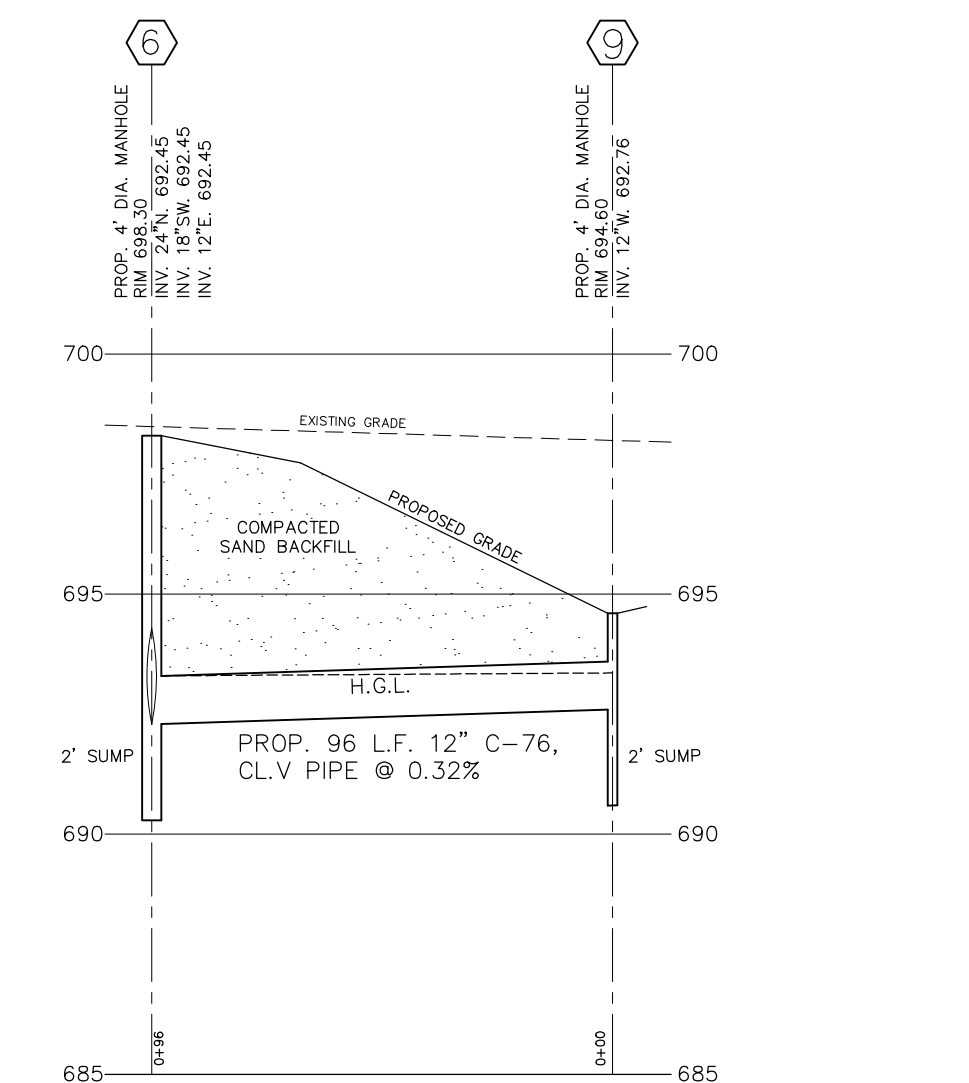
STORM SEWER PROFILES

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



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

STORM SEWER PROFILES

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

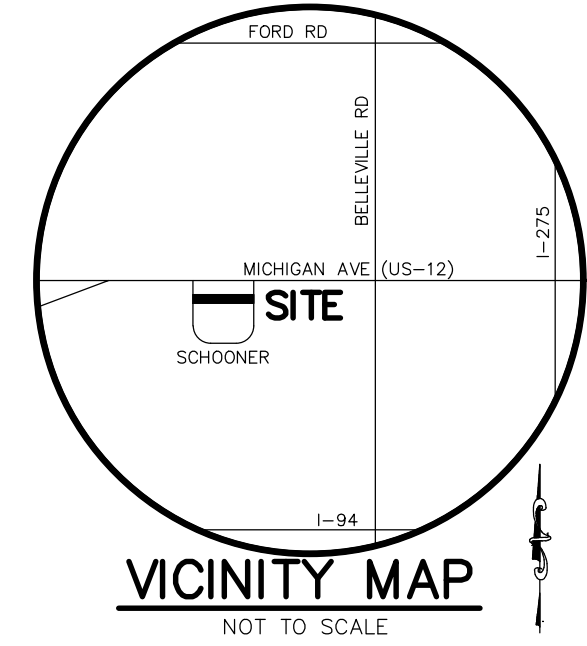
SHEET NO.	JOB NO.	DRAWING NO.	DATE	REVISIONS
5	2022-01	A-	01-10-22	06-21-22
				08-03-22
				10-10-22
				12-08-22

DRAWN BY: [Signature]
CHECKED BY: [Signature]

EXHIBIT "A"

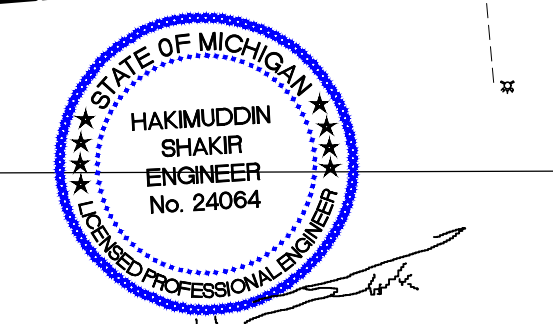
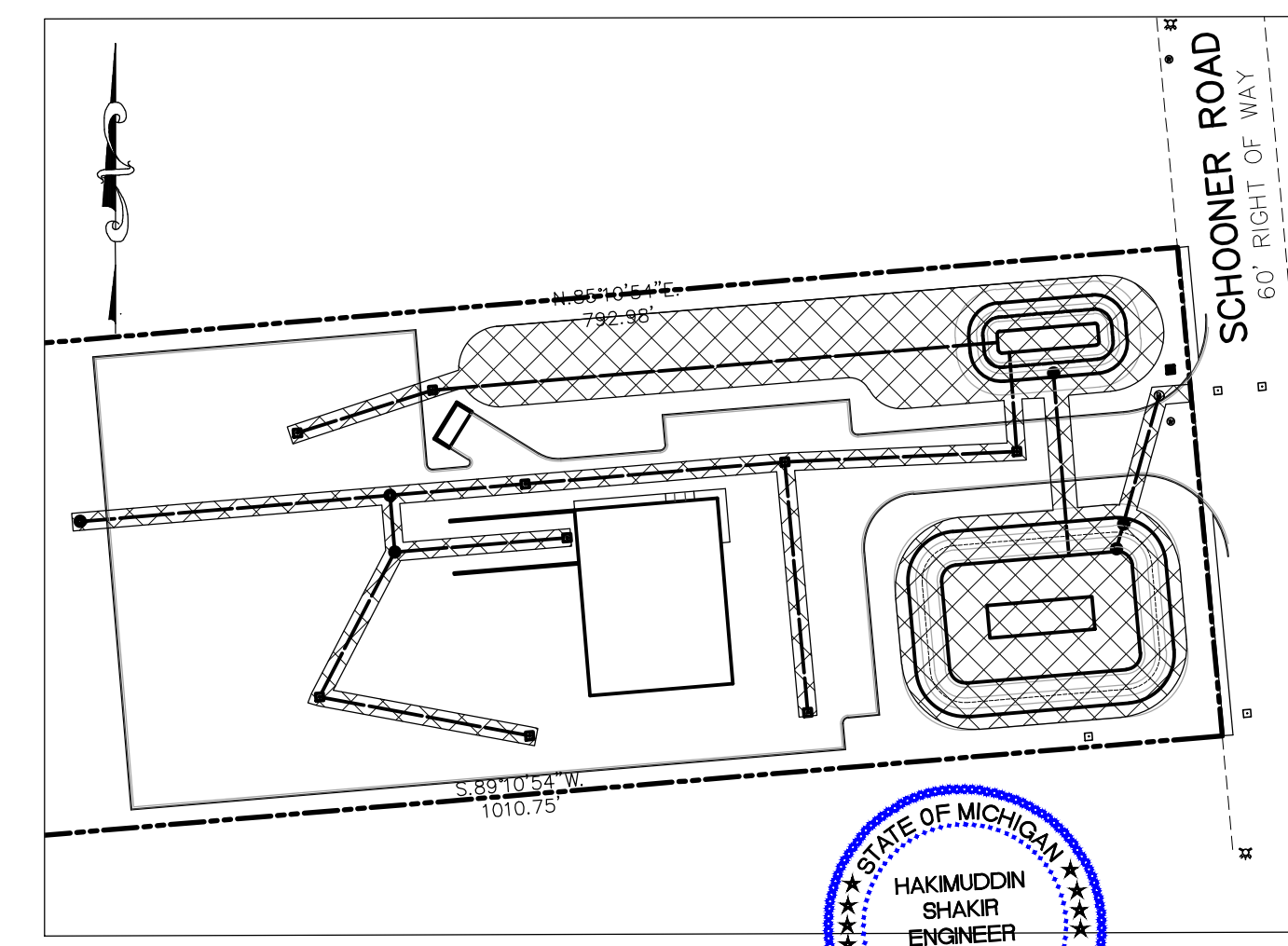
PHYSICAL LIMITS OF STORM WATER MANAGEMENT SYSTEM

LEGEND
 VAN BUREN TOWNSHIP
 MAINTENANCE
 RESPONSIBILITY



PROPERTY OWNER
 SUDKHDEV 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: 12-08-22
 JOB No. 2022-01
 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

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

MAINTENANCE ACTIVITIES	CHANNELS AND SWALES	CHANGES TO FOREBAY	BUFFER STRIP	SETBACK POINT & 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, SWASHES & 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 6 MONTHS, REPLACE EVERY 2-YEARS
REPLACE SUBSURFACE COMPONENTS (SOILS, STONES, 6" UNDERDRAIN)	X	X	X	X	X	X	REPLACE EVERY 2-YEARS, WITH WATER BODIES, UNDERDRAIN & WITH WATER
SWEEPING OF PAVED SURFACES	X	X	X	X	X	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	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.

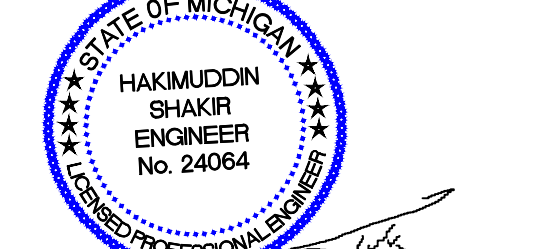
B. TIME FRAME FOR LONG-TERM MAINTENANCE RESPONSIBILITY
 AS CHAHAL TRUCKING IS RESPONSIBLE FOR MAINTAINING THE CHAHAL TRUCKING SWMS, INCLUDING COMPLYING WITH APPLICABLE REQUIREMENTS OF THE LOCAL OR WAYNE COUNTY SOIL EROSION AND SEDIMENTATION CONTROL PROGRAM, UNTIL WAYNE COUNTY RELEASES THE CONSTRUCTION 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
 SUDKHDEV SINGH
 8385 OPAL DRIVE
 WESTLAND, MI 48185

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



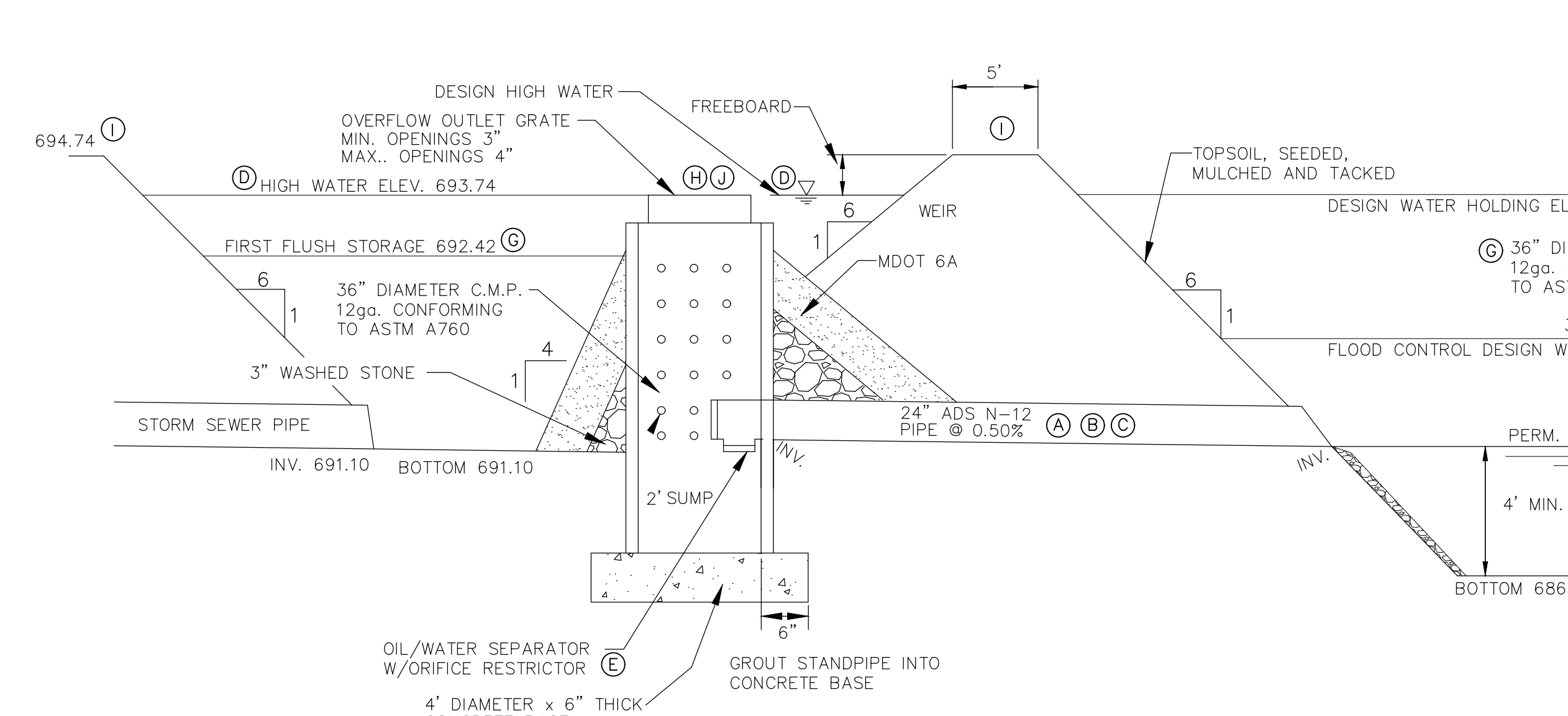
DATE: 12-08-22
 JOB No. 2022-01
 DWG No. D-
 SHEET: 1 of 1
 SCALE: 1"=100'

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

HARDY CIVIL DESIGN SERVICES LLC
 4996 MOORE ST.
 WAYNE, MI 48184
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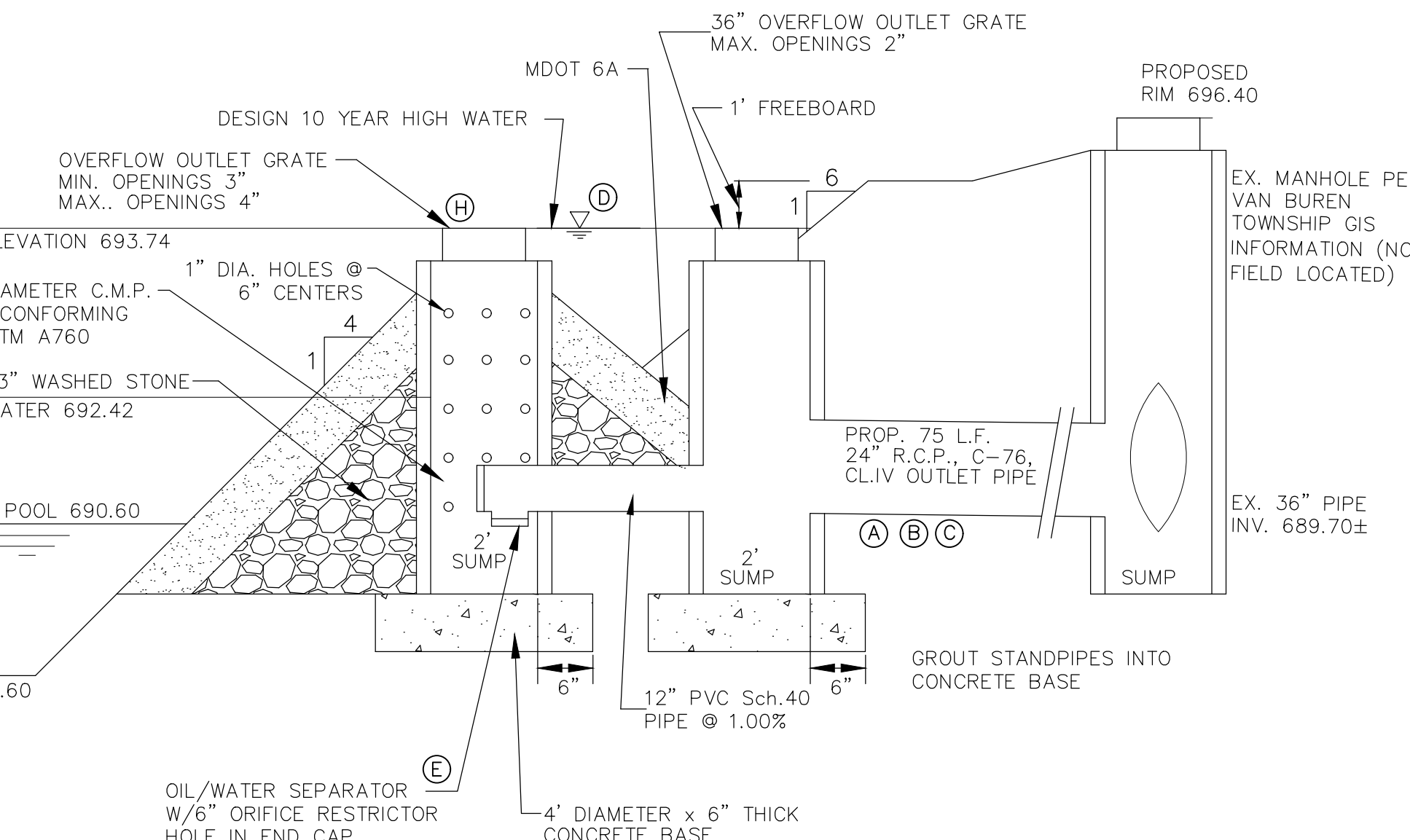
WETLANDS DATA
WAYNE COUNTY DPS GENERAL NOTES:

- 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



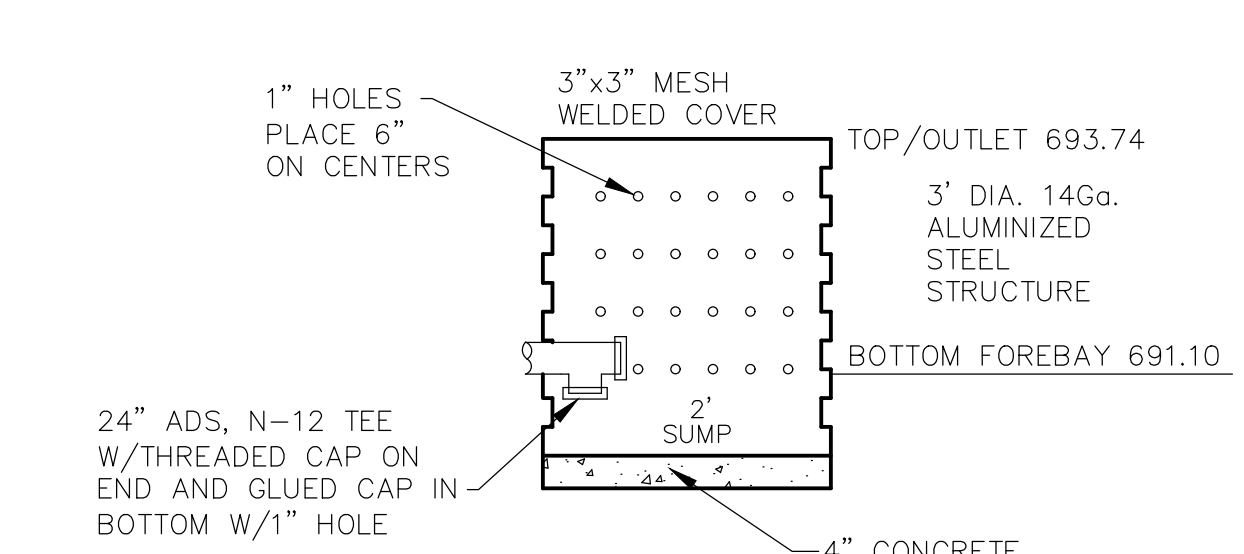
FOREBAY OUTLET STRUCTURE

OUTLET PIPE LENGTH (A)	OUTLET PIPE SLOPE (B)	OUTLET PIPE SIZE (C)	FOREBAY STORAGE ELEVATION (D)	CPVC DISCHARGE ORIFICE SIZE (E)	STANDPIPE DIAMETER (G)	TOP OF STANDPIPE ELEVATION (H)	FOREBAY CREST ELEVATION (I)	EMERGENCY SPILLWAY ELEVATION (J)
100'	0.50%	24" @ 691.10	692.42	(1) 1" HOLE IN CAP	36"	693.74	694.74	693.74

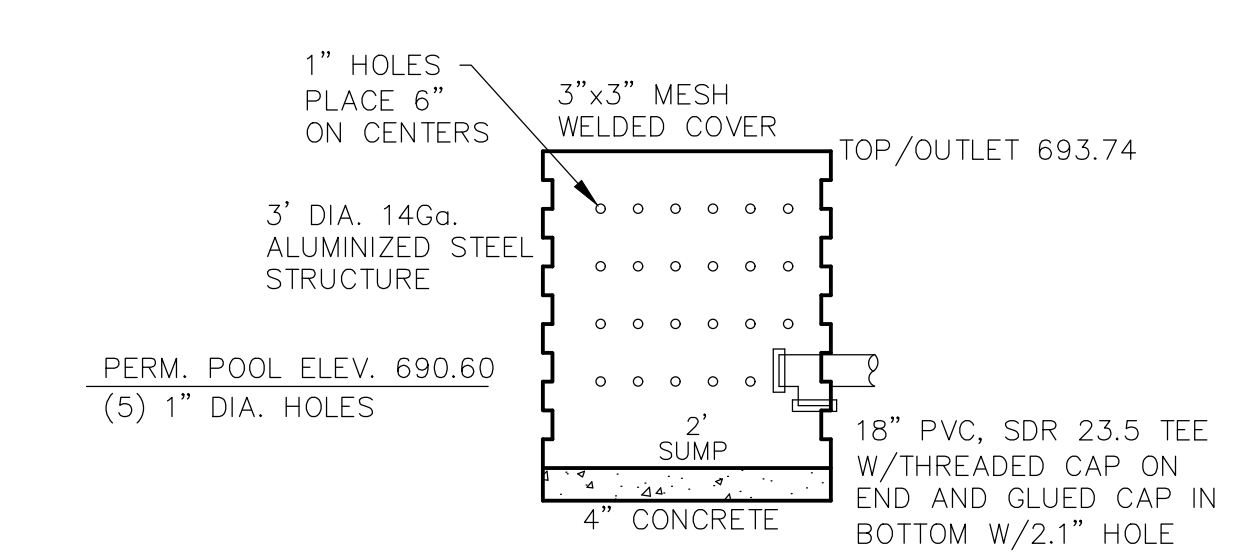


DETENTION OUTLET STRUCTURE

OUTLET PIPE LENGTH (A)	OUTLET PIPE SLOPE (B)	OUTLET PIPE SIZE (C)	100 YEAR STORAGE (D)	100 YEAR STORM RELEASE INV./ORIFICE SIZE (E)	STANDPIPE DIAMETER (G)	TOP OF STANDPIPE ELEVATION (H)	POND CREST ELEVATION (I)	EMERGENCY SPILLWAY ELEVATION (J)
100'	0.50%	24"	693.74	(1) 2.1" HOLE @ 690.60	36"	693.74	694.74	694.74

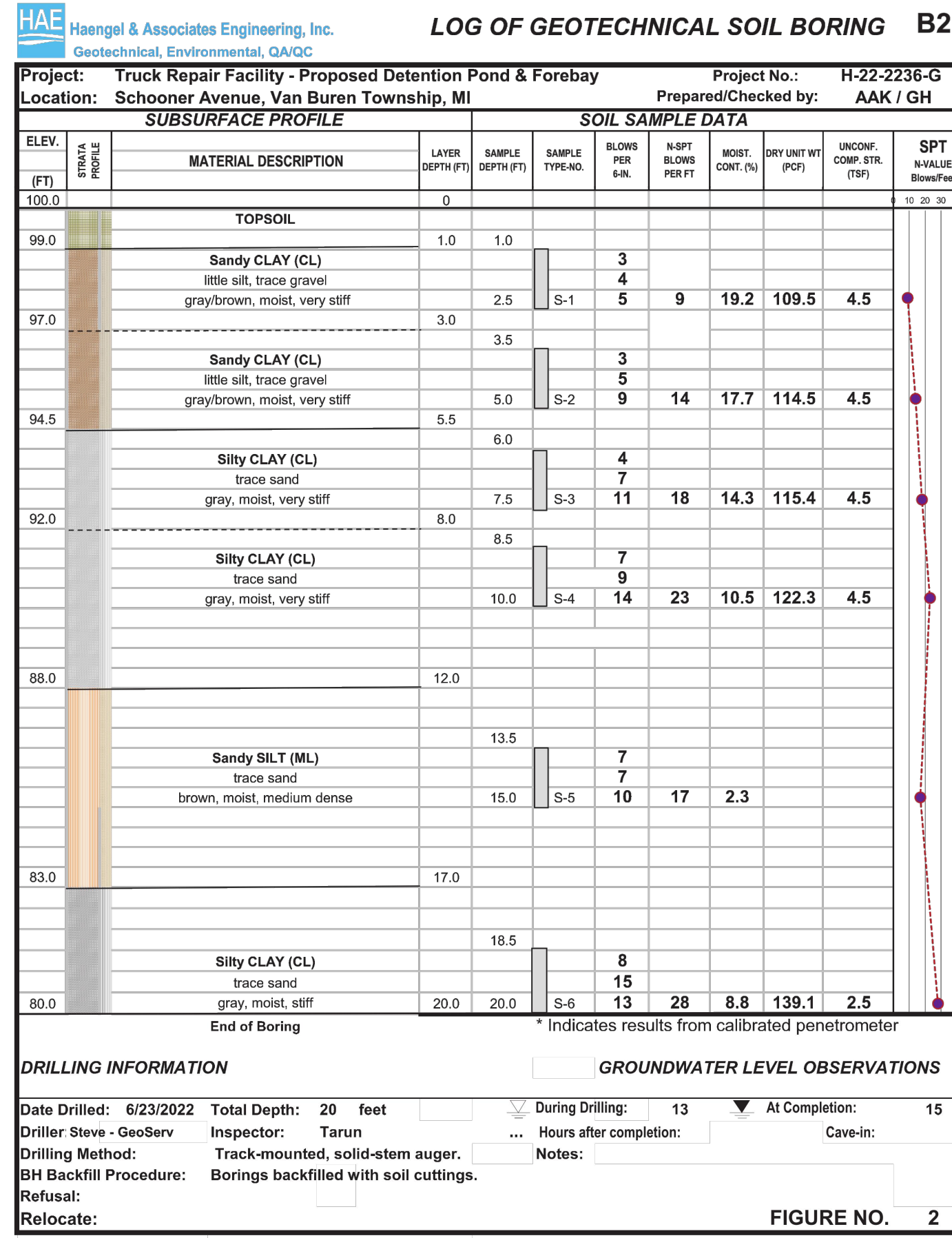
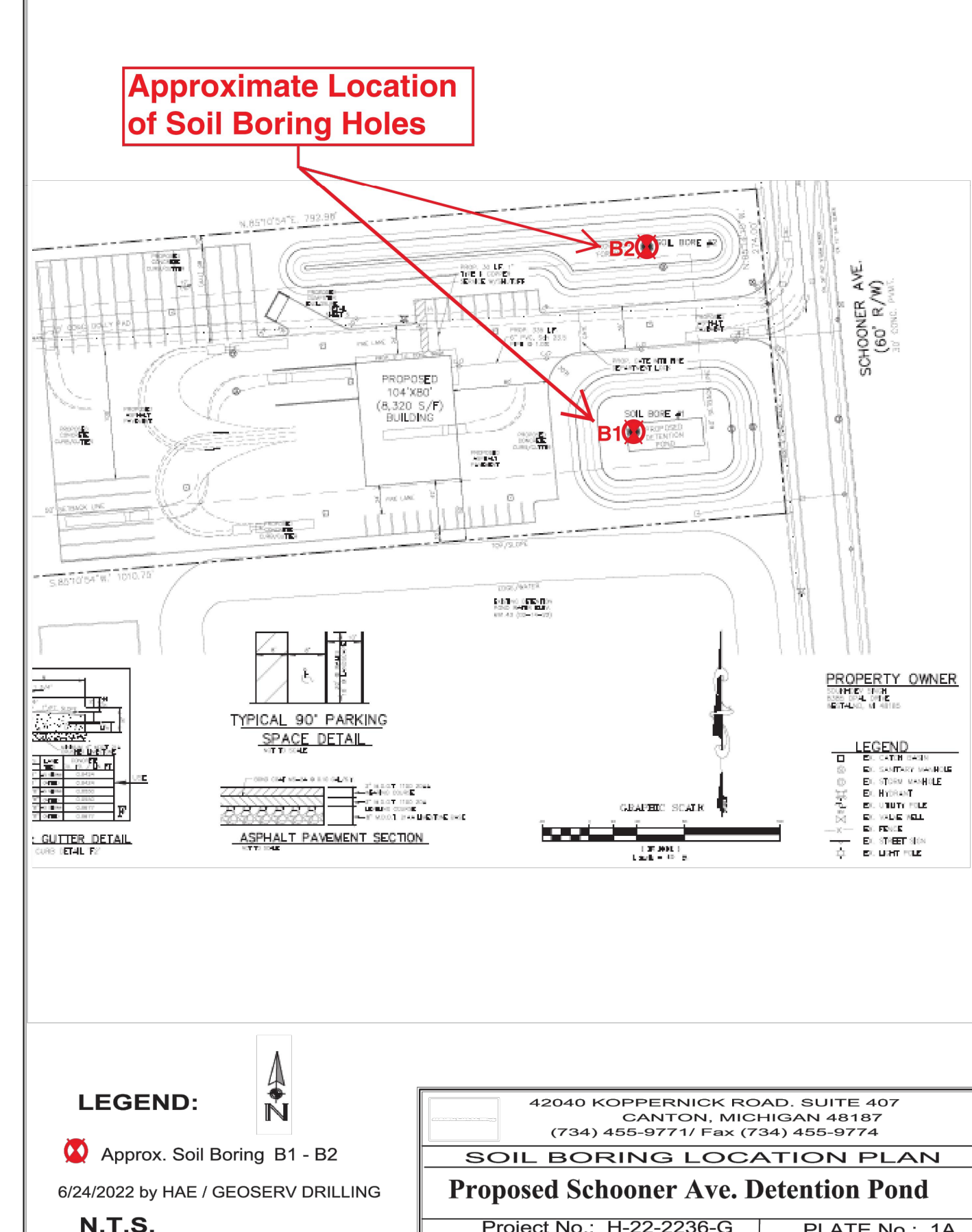
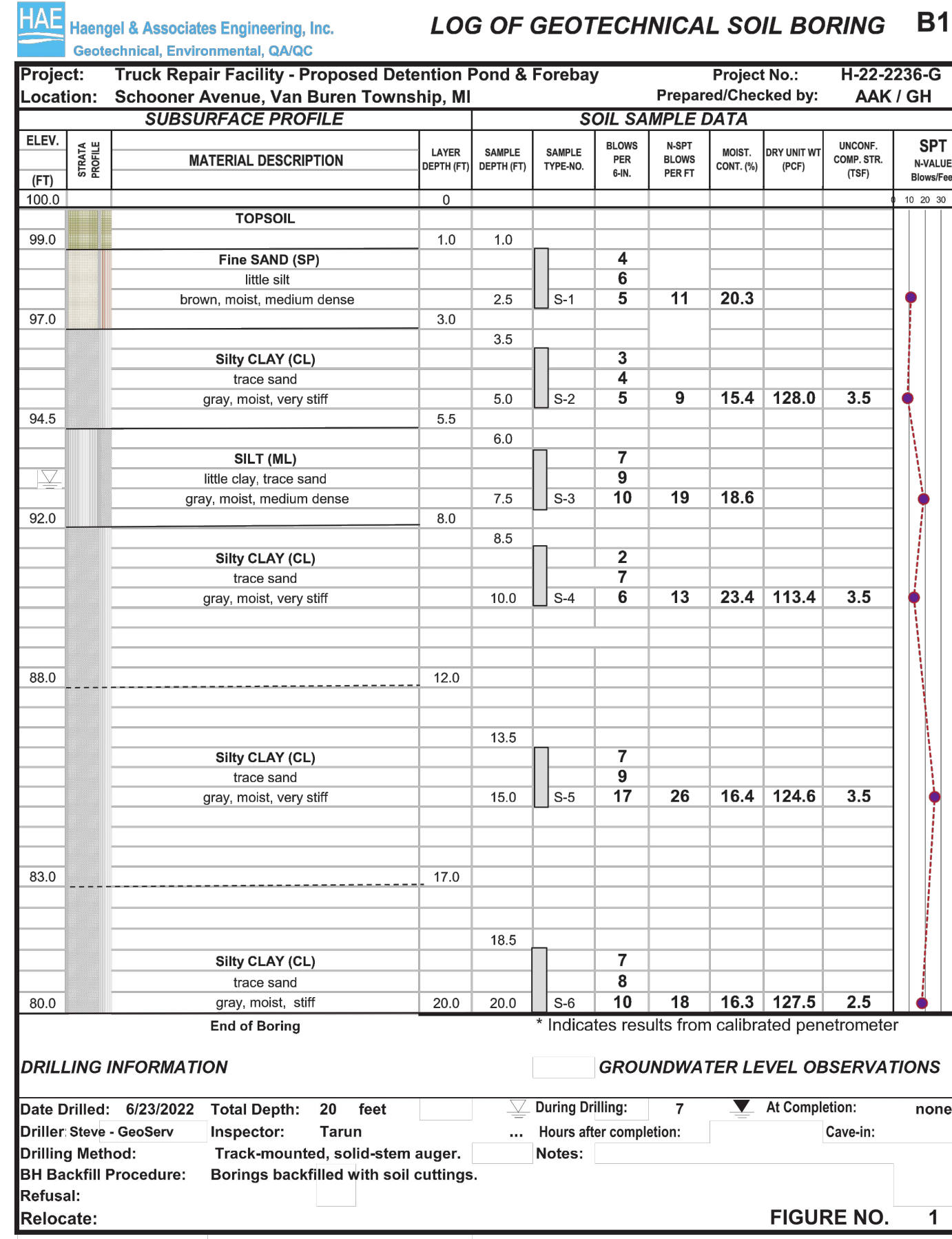


DETAIL FOREBAY OUTLET STRUCTURE "E"



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, 12-08-22
 DATE: 01-10-22
 DRAWING No. A-
 CHECKED BY:
 DRAWN BY:
 JOB No. 2022-01
 SHEET No. 6 of 11



THE SOIL BORE REPORTS INDICATE A MEDIUM DENSITY FINE SAND MATERIAL FROM A DEPTH OF 1' TO 3' BELOW GROUND LEVEL OVER A VERY STIFF SILTY GRAY CLAY WITH TRACE OF SAND FROM A DEPTH OF 3' TO 5.5' OVER A MEDIUM STIFF SILTY GRAY CLAY WITH TRACE OF SAND FROM A DEPTH OF 5.5' TO 8' OVER A VERY STIFF SILTY GRAY CLAY WITH TRACE OF SAND FROM A DEPTH OF 8' TO 17' OVER A STIFF SILTY GRAY CLAY WITH TRACE OF SAND FROM A DEPTH OF 17' TO 20'.

THIS MATERIAL DOES NOT PROVIDE INFILTRATION INTO THE SUBSTRATA.

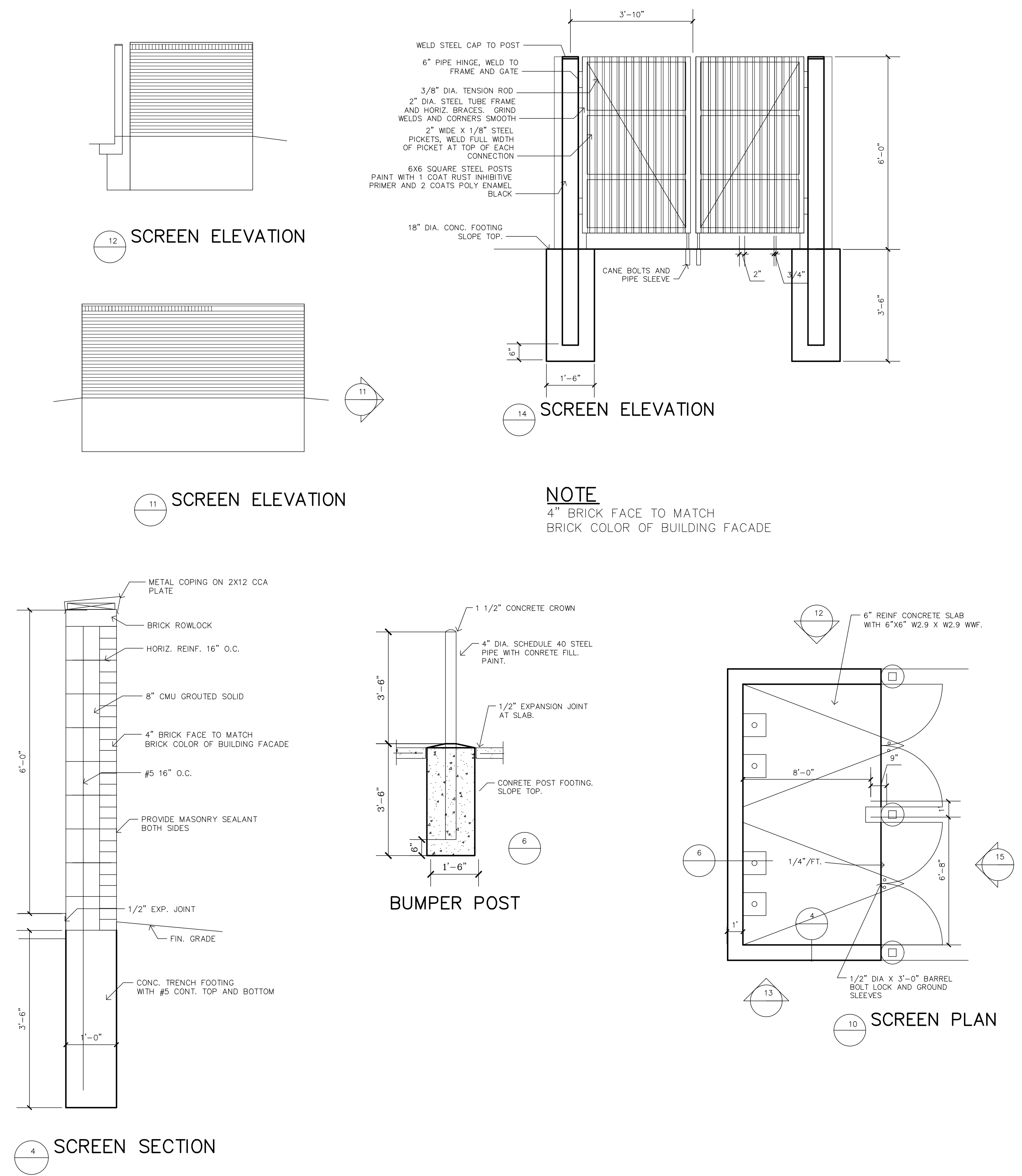
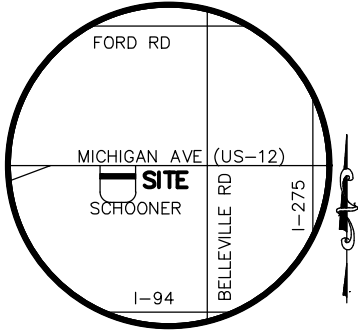


EXHIBIT "A"

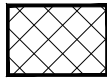
PHYSICAL LIMITS OF STORM WATER MANAGEMENT SYSTEM



VICINITY MAP

NOT TO SCALE

LEGEND



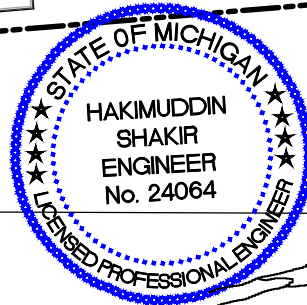
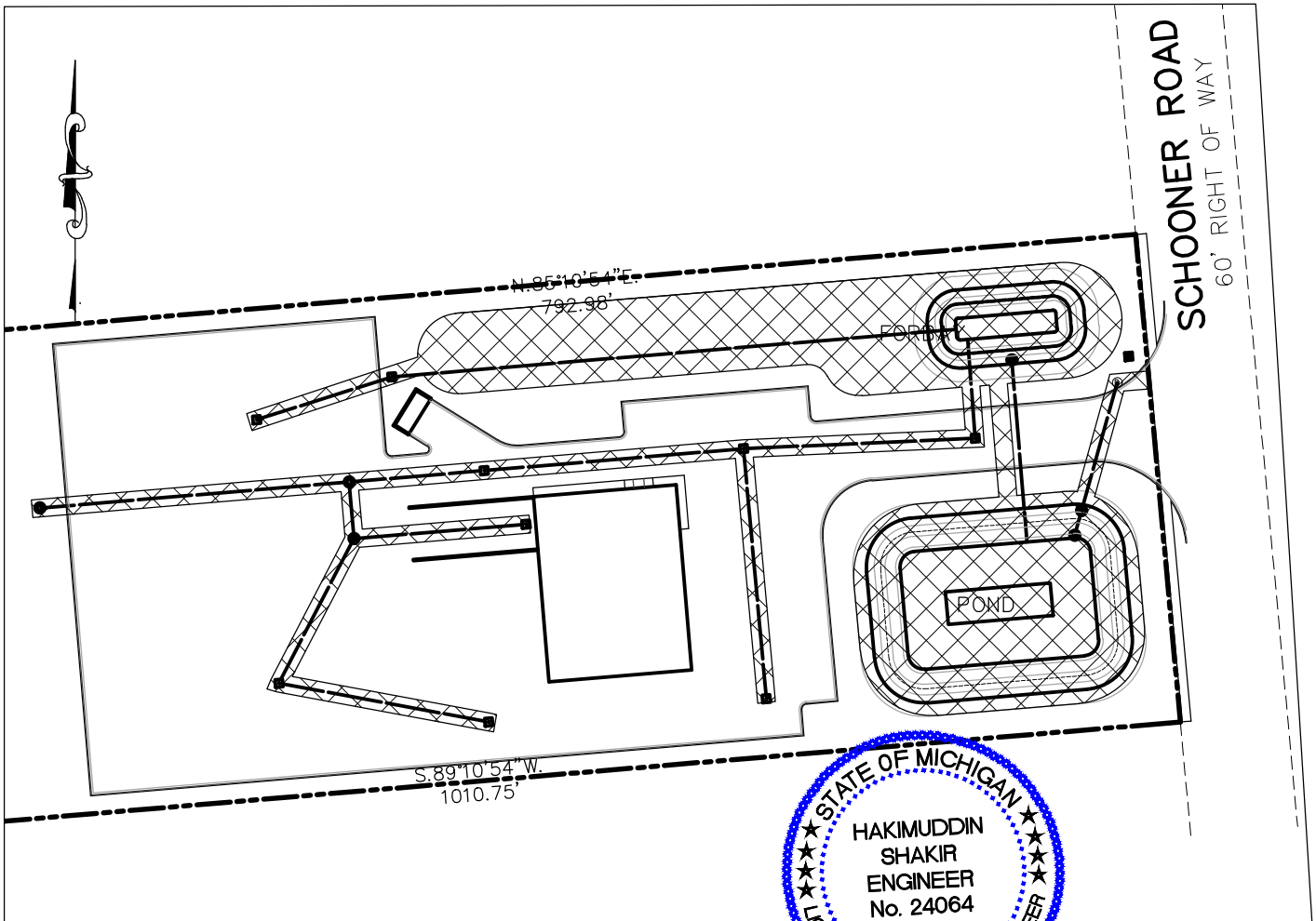
VAN BUREN TOWNSHIP
MAINTENANCE
RESPONSIBILITY

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:	12-08-2022	EXHIBIT "A" STORM MAINTENANCE CHAHAL TRUCKING VAN BUREN TWSP, WAYNE COUNTY, MICHIGAN
JOB No.	2022-01	
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	SEDIMENT POND & DETENTION POND	OUTLET PIPE	OVERFLOW STRUCTURES	PAVEMENT AREAS	FREQUENCY
MONITORING/INSPECTION									
INSPECT FOR SEDIMENT ACCUMULATION	X	X	X	X	X	X	X		AS NEEDED / SEMI-ANNUALLY
INSPECT FOR FLOATABLES, DEAD VEGETATION AND DEBRIS	X	X	X	X	X	X	X		ANNUALLY & AFTER MAJOR EVENTS
INSPECT FOR EROSION AND INTEGRITY OF SYSTEM	X	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	X		ANNUALLY
ENSURE MAINTENANCE ACCESS REMAIN OPEN/CLEAR	X	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				RE-APPLY EVERY 6 MONTHS, REPLACE EVERY 2-YEARS
REPLACE SUBSURFACE COMPONENTS (SOILS, STONES, 6" UNDERDRAIN)				X	X				EVERY 5-YEARS, OR WHEN WATER PONDS MORE THAN 6 HOURS
SWEEPING OF PAVED SURFACES				X				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		X	X	AS NEEDED
MAKE ADJUSTMENTS/REPAIRS TO ENSURE PROPER FUNCTIONING	X	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: 12-08-2022
JOB No. 2022-01
DWG No. D-
SHEET: 1 of 1
SCALE: 1"=100'

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

HARDY CIVIL DESIGN
SERVICES LLC
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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

December 07, 2022

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

To: OHM
County review R22-0560

OHM review #2 response letter:

Storm water management:

1. Noted
2. The required and provided CPVC and CPRC volumes have been provided on cover sheet. We were not able to locate the Engineers Certification within the County Standards Book. Could you please provide the page within the County Standards book as to the certification and where this information is required to be included on the plans or send a copy of a blank Certification.
3. Soils information shown on sheet #7 along with a statement of our findings.
4. "D" is not a manhole; it is a flared end section as revised on profiles. Invert elevations have been added to catch basins along the southerly property line. All obtainable existing storm sewer information is shown on the plans.
5. Upon field investigation, we are not able to locate an existing manhole (labeled as m/h A) even though the Townships records indicate there is a manhole. At this point we simply do not know if there is a manhole or not. We are assuming that (per Township records) the manhole does exist. Due to the conflicting information, we noted on the plans that the manhole is not field located.
6. Flow times have been checked and revised.
7. Storm sewer management calculations have been revised.
8. Storm sewer management calculations have been revised.
9. Storm sewer management calculations have been revised.
10. HGL calculations have been added to storm design table.
11. Storm sewer run D-E has been revised. Storm sewer run B-A has also been revised.
12. Permanent pool elevation is labeled on sheets #3 and #4.
13. "D" is not a manhole; it is a flared end section as revised on profiles.
14. Per Wayne County Storm Management requirements, as stated on page 41 under section 6.3.4 (Buffer Strip) it states "a site that is less than 5 acres, a buffer strip of 15 feet wide must be established. A copy of this page is included in this response letter.
15. Manhole added.
16. Contour elevations are shown on contour lines.
17. Storm sewer design chart has been revised.
18. Stormwater Management Exhibit B has been revised to add requested information.

Wayne County Stormwater Standards Manual

Calculate the adjusted flood control volume with CPVC credit):

28,000 – 10,000 = 18,000 cubic feet

Is the adjusted flood control volume less than the CPRC? Yes.

Required flood control volume = 19,000 cubic feet

Since the flood control volume is equal to the CPRC volume, the entire pond volume can be treated as the CPRC volume and discharged over a 48-hour period. Any volume above 19,000 cubic feet will overflow to the receiving system.

The volume of the permanent pool within an open detention system does not satisfy any of the flood control or CPRC storage volume requirements.

6.3.4 Additional Requirements

To protect water resources, Wayne County has adopted the following additional requirements to minimize pollutants in stormwater runoff from development projects.

Buffer Strip

A buffer strip is a zone that is used for filtering direct stormwater runoff into a stormwater control system and for providing maintenance access to a stormwater control system. The buffer strip varies in size dependent of the development. For a site that is less than 5 acres, a buffer strip of 15 feet wide must be established and/or preserved along the edge of any surface water in the development site (except for bioretention areas and vegetated swales). For a site greater than 5 acres, a minimum of 25 feet wide buffer strip must be established and/or preserved along the edge of any surface water in the development site (except for bioretention areas and vegetated swales)

- Along watercourses, the width of a buffer strip must be measured from the top of bank of the watercourse. Around other surface waters, the width of the buffer strip must be measured from the minimum freeboard elevation of the surface water. Additional requirements for buffer strips associated with open detention basins and retention basins are described in Section 8.1.
- The ground slope of a buffer strip should not be steeper than 1:6.
- Construction activities, paving, and chemical application, except for construction activities needed to create or establish the buffer strip, are prohibited in the buffer strip.

Landscape Plan

Because vegetation is an important part of many components of stormwater control systems, a landscaping plan must be submitted to the County.

- The plan must depict landscaping elements that function as part of the stormwater control system, including the buffer strip.
- The landscape plan must include (at a minimum) specifications for the soils and plant materials that the applicant proposes to include in the landscape; and a description of the methods and planting techniques that the applicant proposes to utilize during landscape installation.
- The installation and maintenance of the landscaping described in the landscape plan is included as regulated construction activity for which the County may require financial assurance.

Guidance and requirements for landscaping plans are described in Chapter 8.



Hardy Civil Design Services, LLC

4996 Moore St., Wayne, MI 48184

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

November 29, 2022

Re: Schooner Drive
Van Buren Township, MI

To: McKenna/Fishbeck

Mckenna review #2 response letter:

3. Dumpster note has been added to detail on sheet #7.
4. Noted.

Fishbeck Township review #2 response letter:

General:

1. Standard details have been provided.
2. "MISS-DIG" labels added to appropriate sheets.
3. Quantities table has been updated.

Water Main:

1. Appropriate notes have been added to sheet #4.
2. Building lead shut-off has been added to the plans.
3. Existing V/W rim adjustment has been added to sheet #3.
4. The plans indicate that the existing water main is proposed to be lowered for a distance of 85 l.f. to accommodate the (3) proposed new utility crossings. The proposed pipe elevations do not facilitate any other option but to lower the water main to provide adequate separation. The location of the piping from cb2 to fes 1, outlet structure E to fes D, and mh 1 to overflow structure B have been grouped to minimize the amount of water main that will need to be lowered.

Sanitary Sewer:

1. Sewer basis of design has been updated per the information we found on website.
2. Lead connection has been revised to a cut in "wye" as noted on sheet #4
3. Noted. 3a. Sanitary sewer lead profile has been added to sheet #5.
4. Additional notes have been added to sheet #2 and sheet #4. Pavement, curb, and walk Details are (and have been) shown on sheet #1

Storm Sewer:

1. Upon investigation of the site, we are not able to locate a downstream manhole from the existing catch basin on the east side of the street into the existing 36" line. All obtainable inverts are shown on the drawings.
2. Upon field investigation, we are not able to locate an existing manhole (labeled as m/h A, even though the Townships records indicate there is a manhole. At this point we simply do not know if

there is a manhole or not. We are assuming that (per your records) the manhole does exist. Due to the conflicting information, we noted on the plans that the manhole is not field located.

3. The calculated future flow from M/H 10 has been considered and made part of the Storm Sewer Management System. It is based on a development area of 1.12 acres with a runoff coefficient of 0.90. The potential future expansion area has been shown on the plans.
4. The maximum allowable discharge has been revised to 0.10 cfs/acre.
5. Although OHM is performing the Wayne County Review for the Storm sewer calculations, we have revised them. Drainage areas, runoff coefficients and pipe sizing have been verified. In no case is a pipe designed as an oversized pipe.
6. Note has been added to sheets #3 and #4.
7. The plans indicate that the existing water main is proposed to be lowered for a distance of 85 l.f. to accommodate the (3) proposed new utility crossings. The proposed pipe elevations do not facilitate any other option but to lower the water main to provide adequate separation. The location of the piping from cb2 to fes 1, outlet structure E to fes D, and mh 1 to overflow structure B have been grouped to minimize the amount of water main that will need to be lowered. Forebay design meets county standards. The outflow from the forebay is restricted to dewater within the allotted time despite the proximity between the inlet and outlet.
8. Utility crossing dimensions have been added to the profiles. The utility crossing table is still located on the profile and storm sewer design sheets.
9. Vertical restrictions of the site prevent matching 8/10th points.
10. Noted.
11. Pipe direction call has been revised.

Paving and Grading:

1. Removal/Restoration notes have been added to sheet #2
2. The crossing will be performed in a manner to maintain traffic at all times and has been noted on sheet #2.
3. An additional line has been added to the drawing to show the limits of the concrete gutter pan. In addition, the drive opening along the north side of the building has been opened to 24' f/c to f/c, and noted on sheet #1
4. Detail has been revised.
5. Additional grades have been added to the grading plan in the ADA ramp location.

Kevin Hardy
Civil Design Services