

Hardy Civil Design Services, LLC

4996 Moore St., Wayne, MI 48184

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

May 22, 2023

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

To: OHM
County review R22-0560

OHM review #11 response letter:

Storm Water Management:

1. Noted
2. Exhibit "B" has been revised.
3. The calculation has been revised.

Right of way constructability:

1. A) Additional grades have been added to sheet #3.
B) Detail D-6 is noted regarding the 1/2" expansion joint at the face of walk.
C) Detail RS-5 has been added to the plan set.
2. Noted.

Landscape:

1. Landscape items to be addressed by others.

Kevin Hardy, Civil Design Services

CHAHAL SEMI TRUCK/TRAILER REPAIR FACILITY

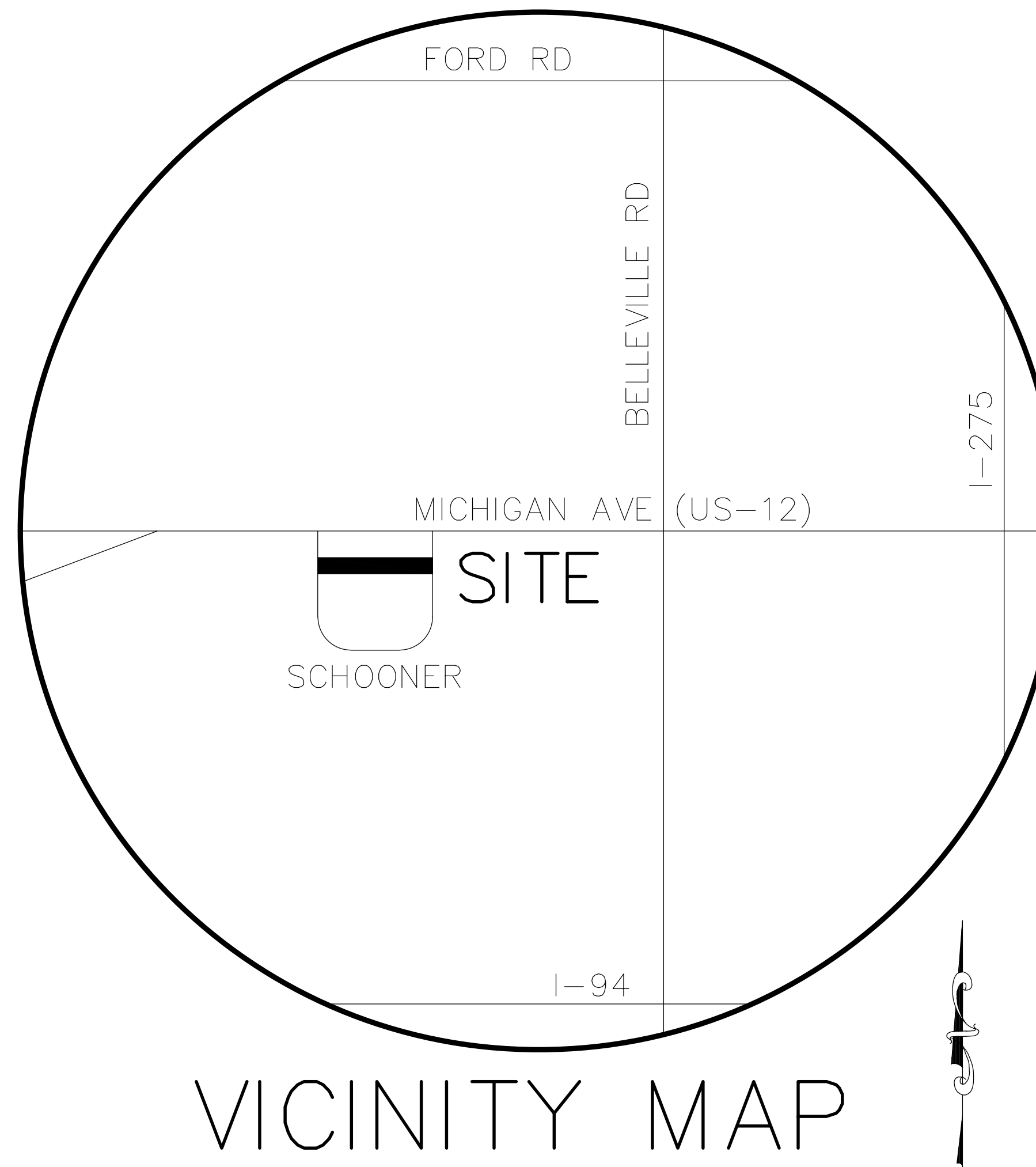
6100 SCHOONER DRIVE
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

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

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, M 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

LAND USE SUMMARY

Land Characteristic	Existing	Proposed
Total Development Area (ac)	4.99	4.99
Roof Area (ac)	0	0.39
Pavement Area (ac)	0	3
Gravel (ac)	0	0
Total Pervious Area (ac)	4.99	1.6

totals:

Pervious Area Breakdown by Cover Type

Non-cultivated	4.99	0
Impervious Area (ac)	N/A	3.39

Improved area (grass/landscape)	0	1.6
Predominant NRCS Soil Type	B	B

Wooded Area (ac)	0	0
Predominant NRCS Soil Type	N/A	N/A

	Required Volume	Units	Provided Volume
CPVC	13,042	cf	0
CPRC	24,780	cf	24,780
Flood Control	49,641	cf	49,767

Total Volumes	49,641	cf	49,767
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CERTIFICATION

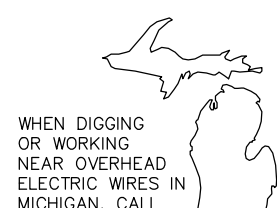
THE PROFESSIONAL ENGINEER WHO SIGNS AND SEALS THIS SITE PLAN CERTIFIES THAT THE VALUES IN THIS TABLE REFLECT THE WAYNE COUNTY STORMWATER CALCULATIONS REQUIRED FOR THIS DEVELOPMENT AND THAT GEOTECHNICAL INVESTIGATIONS WERE PERFORMED THAT PROVIDE CONCLUSIVE DOCUMENTATION THAT DEMONSTRATES WHETHER INFILTRATION (I.E., CPVC VOLUME CONTROL) IS PRACTICABLE.

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
6. DETAILS
7. DETAILS
8. TOWNSHIP DETAILS
9. TOWNSHIP DETAILS
10. COUNTY DETAILS
11. COUNTY DETAILS
- LP-1 LANDSCAPING PLAN
- LP-2 LANDSCAPING DETAILS
- PH-1 PHOTOMETRICS PLAN
- PH-2 PHOTOMETRICS BUILDING
- A1.0 FLOOR PLAN
- A2.0 BUILDING ELEVATIONS



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.

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 3 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.

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

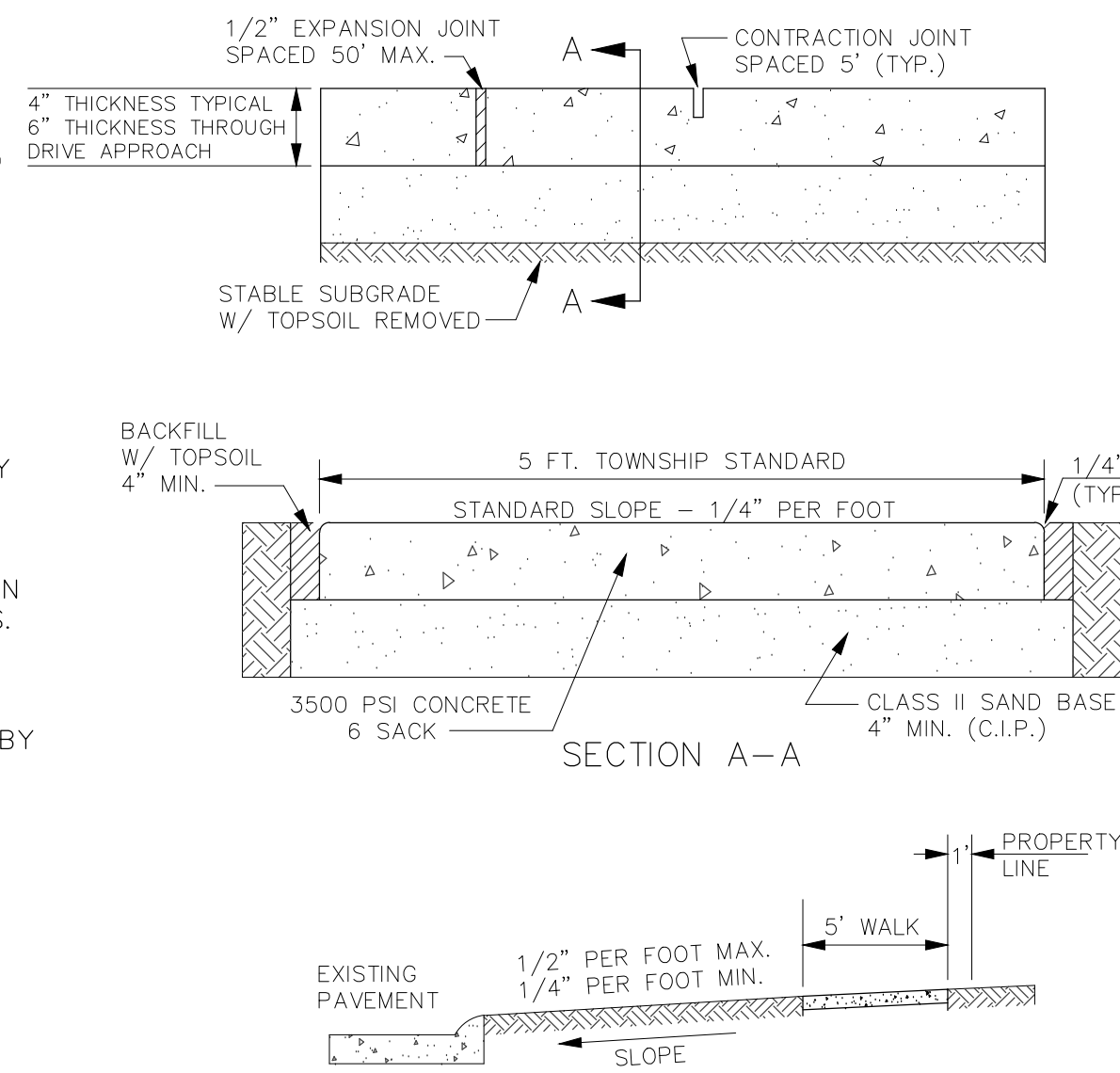
- PROPOSED SEMI TRUCK REPAIR FACILITY. THERE WILL BE NO LONG TERM PARKING WITHIN THE SUBJECT PROPERTY.
- TRUCKS PARKED ON THIS PROPERTY ARE FUNCTIONAL AND AWAITING REPAIR I.E., NO JUNK TRUCKS FOR PARTS SALVAGE.
- THERE WILL BE NO HAZARDOUS WASTE GENERATED FROM THE SITE.
- OILS, SOLVENTS AND OTHER CHEMICALS 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 APPLICANTS 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.
- ALL PAVEMENT JOINTS PER WAYNE COUNTY DETAIL RS-02 OR AS DIRECTED BY THE COUNTY ENGINEER.
- REMOVE, REPLACE, SALVAGE, STORE AND REINSTALL ALL EXISTING TRAFFIC SIGNS ACCEPTED BY CONSTRUCTION PER COUNTY ENGINEER.

REQUIRED PERMITS

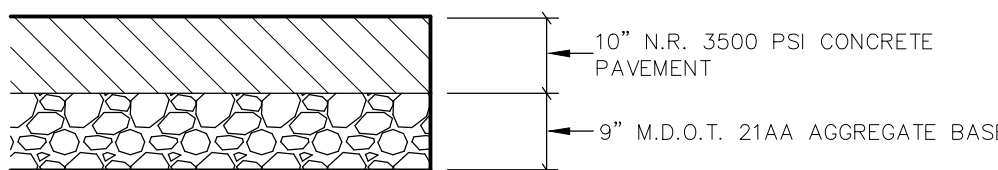
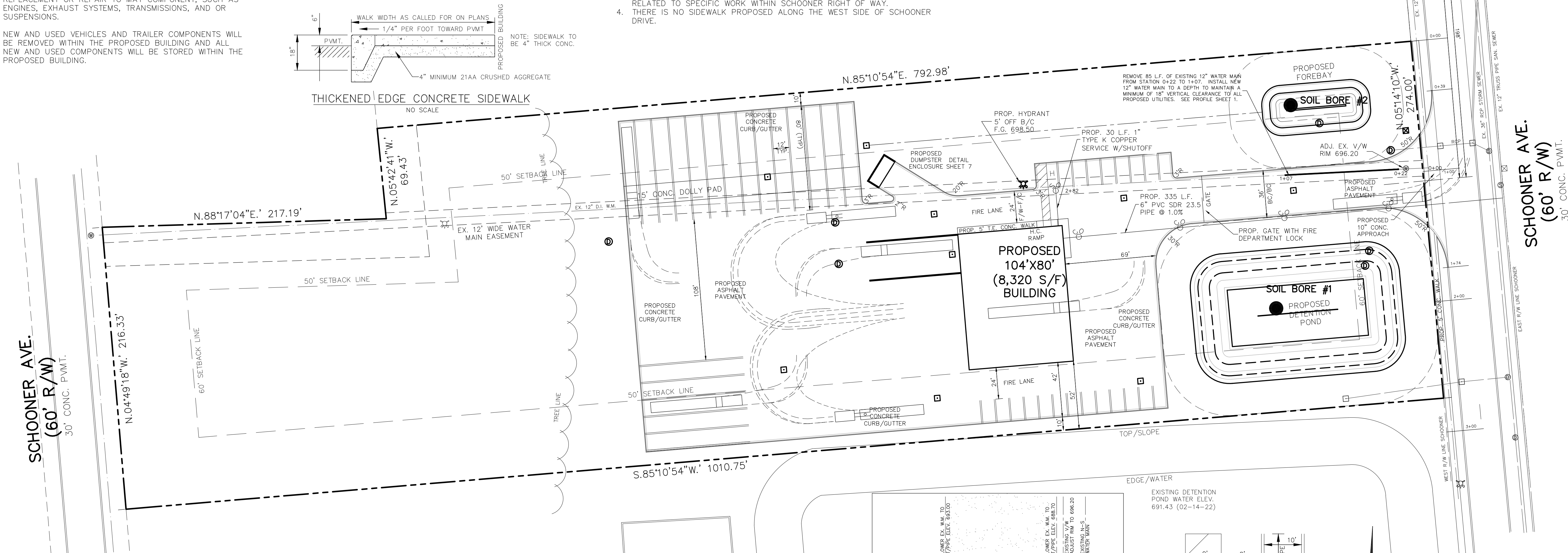
- WAYNE COUNTY STORM MANAGEMENT PERMIT.
- VAN BUREN DEVELOPMENT PERMIT

NOTE

- SOIL BORE INFORMATION LOCATED ON SHEET #7.
- PRESERVE ALL EXISTING MONUMENTATION DURING CONSTRUCTION PER RULE 1.5.
- REFER TO SHEETS #10 AND #11 FOR APPROPRIATE COUNTY DETAILS AS RELATED TO SPECIFIC WORK WITHIN SCHOONER RIGHT OF WAY.
- THERE IS NO SIDEWALK PROPOSED ALONG THE WEST SIDE OF SCHOONER DRIVE.

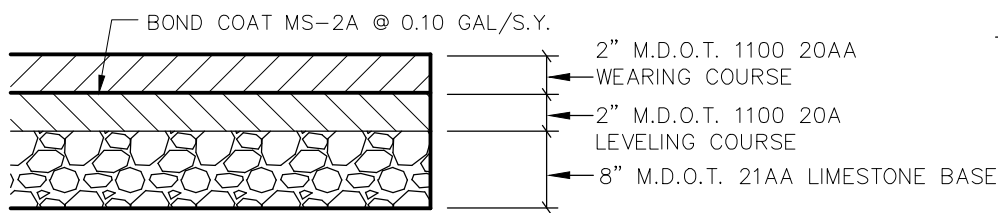


SIDEWALKS



APPROACH CROSS-SECTION

NOT TO SCALE



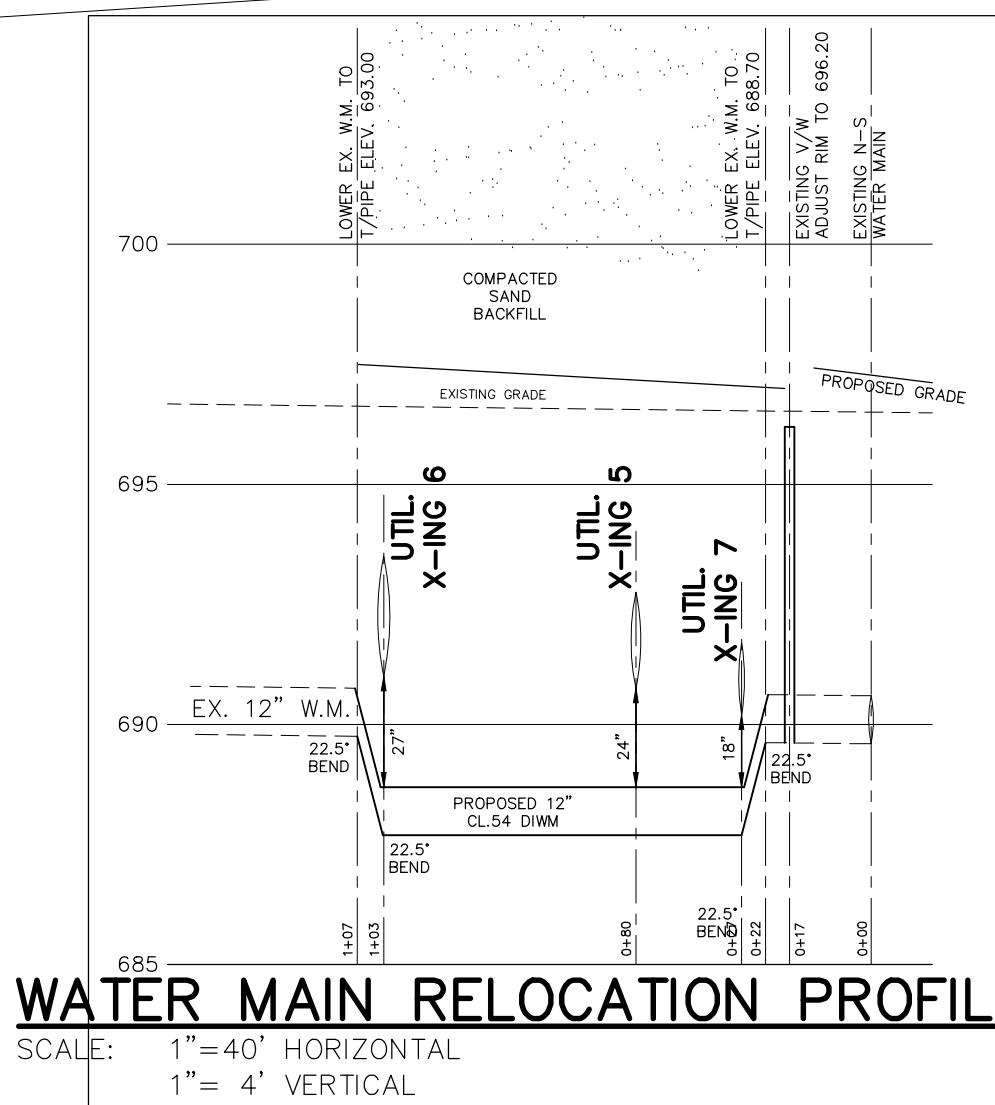
ASPHALT PAVEMENT SECTION

NOT TO SCALE

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

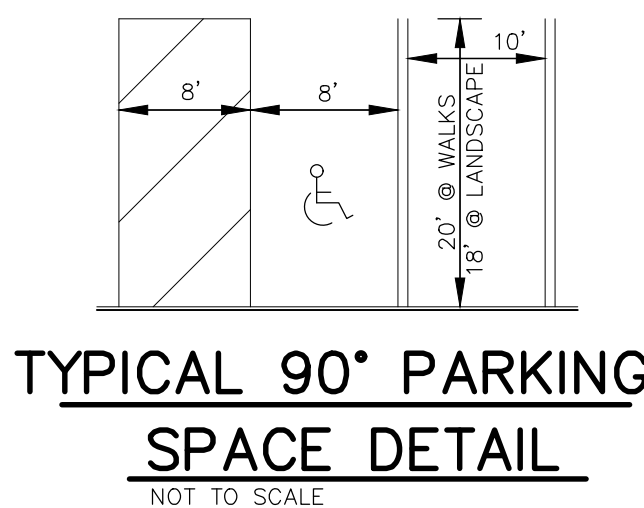
CURB & GUTTER DETAIL

USE CURB DETAIL 'F2'



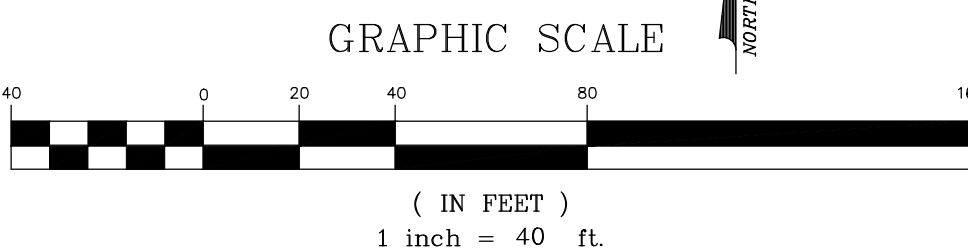
WATER MAIN RELOCATION PROFILE

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



TYPICAL 90° PARKING SPACE DETAIL

NOT TO SCALE



GRAPHIC SCALE

(IN FEET)

1 inch = 40 ft.

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



MISS DIG

3 WORKING DAYS
BEFORE STARTING YOUR PROJECT

811

(TOLL FREE)

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

SITE PLAN

HARDY

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

ZONING & SETBACKS

SUBJECT PROPERTY ZONED M2 (GENERAL INDUSTRIAL)

ADJACENT PROPERTY ZONING:

NORTH M1 & M2
EAST M2
SOUTH M2
WEST M1

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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
TfA TEDROW LOAMY FINE SAND, LOAMY SUBSTRATUM, 0 TO 2 PERCENT SLOPES
PER USDA SOILD 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.
- REFER TO SHEETS #10 AND #11 FOR APPROPRIATE COUNTY DETAILS RELATED TO THE ROADWAY CROSSING AND RIGHT OF WAY RESTORATION.
- ALL AREAS TO BE RESTORED WITHIN A TIMELY MANNER. PERMIT WILL NOT BE RELEASED UNTIL PERMIT OFFICE IS SATISFIED THAT VEGETATION HAS BEEN RE-ESTABLISHED.

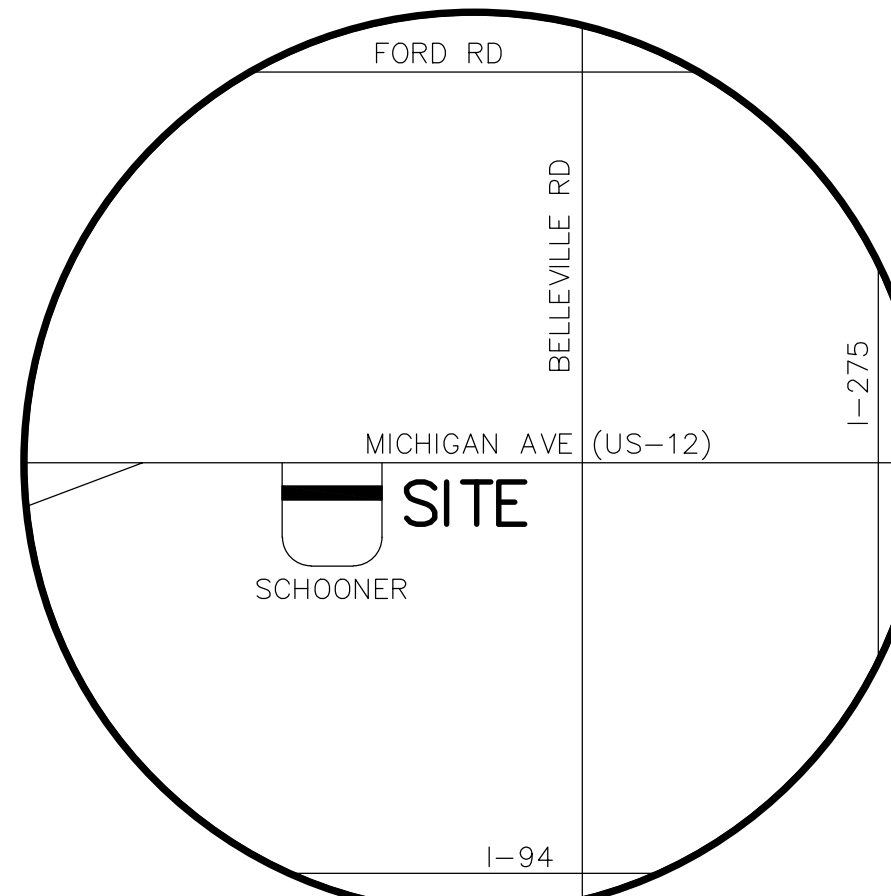
BENCHMARKS (USGS NAVD29)

RIM ON EXISTING MANHOLE LOCATED ON THE EAST SIDE OF SCHOONER DRIVE 115' SOUTH OF NORTHERLY PROPERTY LINE OF SUBJECT PARCEL
ELEVATION - 696.16

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

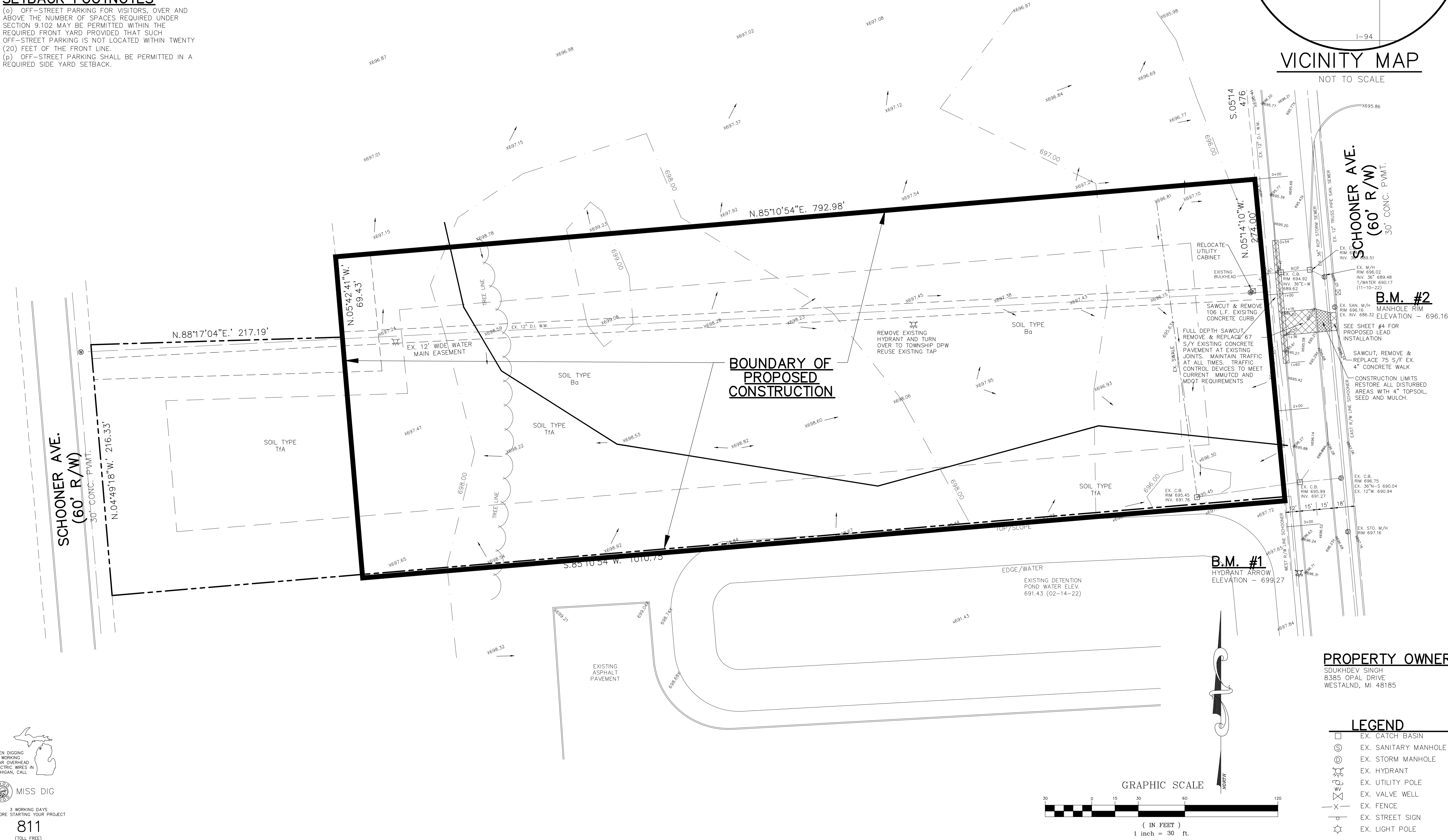
TRAFFIC CONTROL/SIGNAGE NOTES

- TWO-WAY TRAFFIC MUST BE MAINTAINED AT ALL TIMES.
- ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS OF MDOT, MMUTCD AND TOWNSHIP REQUIREMENTS.



VICINITY MAP

NOT TO SCALE

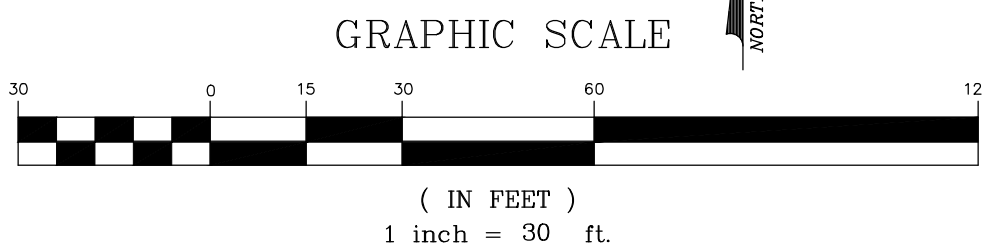


PROPERTY OWNER

SDUKHDEV SINGH
8385 OPAL DRIVE
WESTALND, 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



MISS DIG

3 WORKING DAYS
BEFORE STARTING YOUR PROJECT

811

(TOLL FREE)

HARDY CIVIL DESIGN SERVICES LLC
4996 MOORE ST. WAYNE, MI 48184
(734) 756-2196
E-mail: khordy1964@hotmail.com

TOPOGRAPHIC
SURVEY

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

REVISIONS
03-07-23
03-23-23
04-05-23
05-22-23

DATE
01-10-22

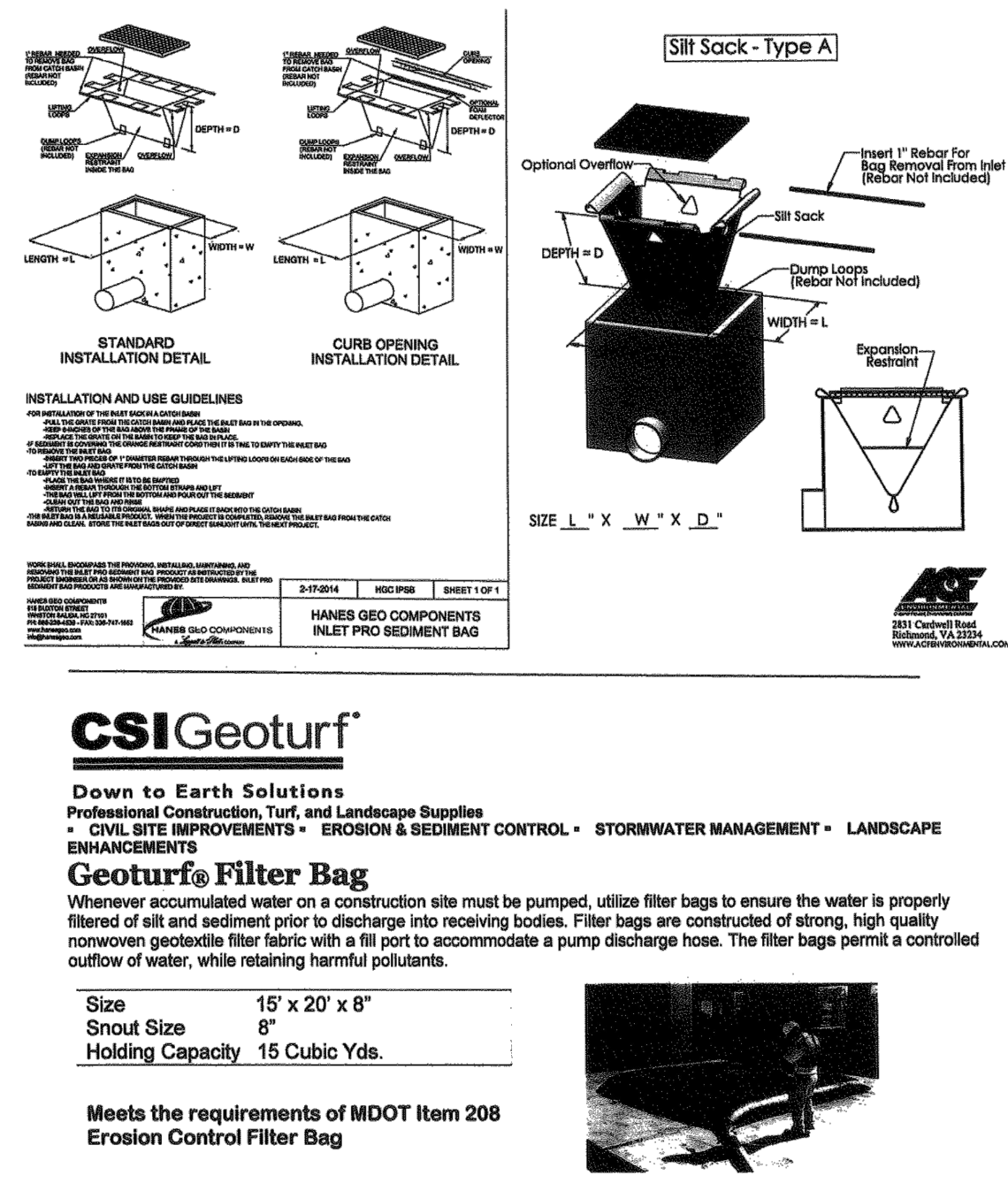
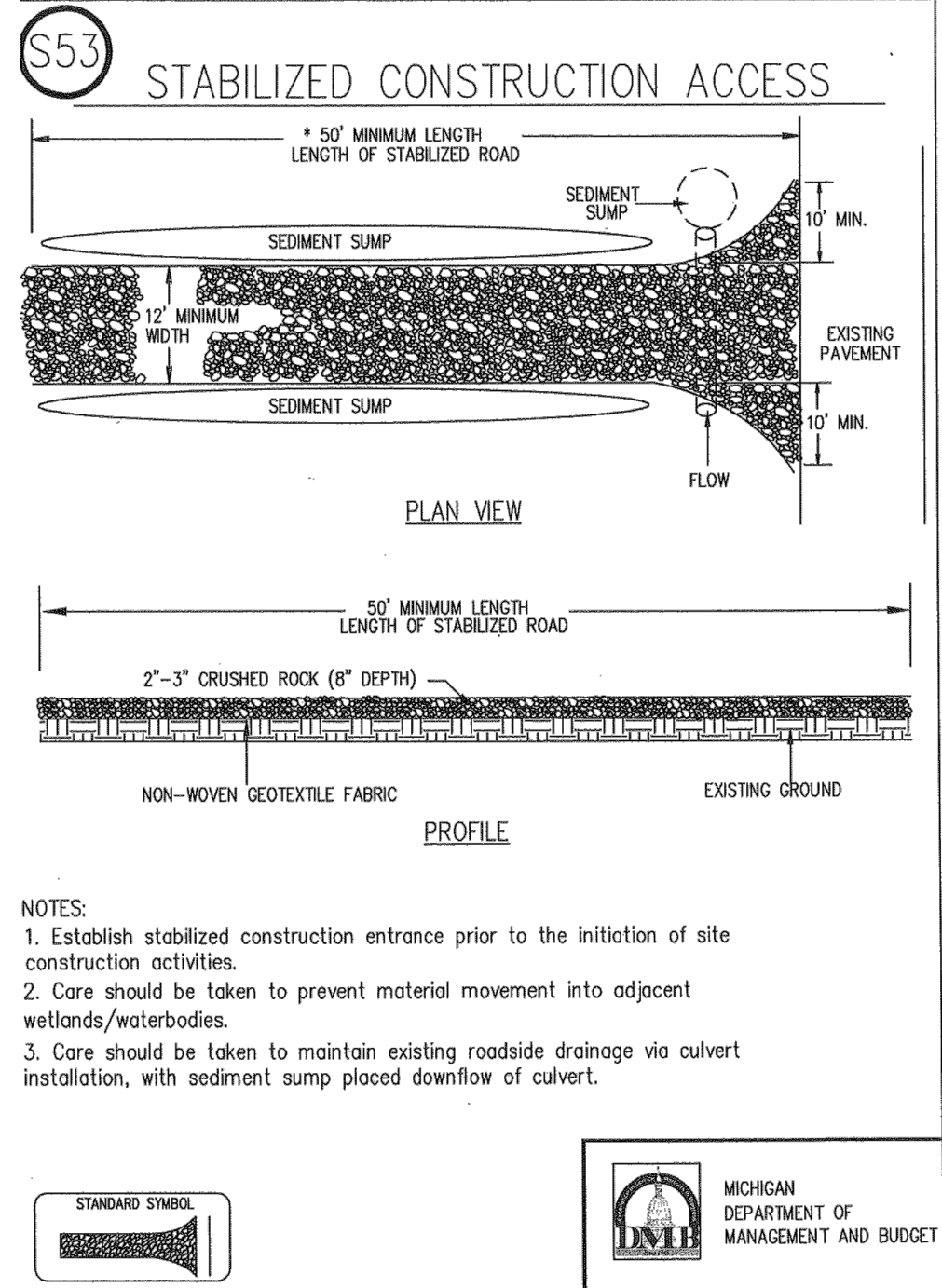
DRAWING No.
A-

JOB No.
2022-01

SHEET No.
2 OF 11

CHECKED BY:

DRAWN BY:



SOIL EROSION SEQUENCE OF CONSTRUCTION

START DAY	END DAY
4-14	7-30
4-14	7-30
4-14	4-18
4-14	5-02
4-21	5-02
5-05	5-16
4-01	7-30
5-19	6-06
6-16	6-13
7-01	
7-01	
7-30	

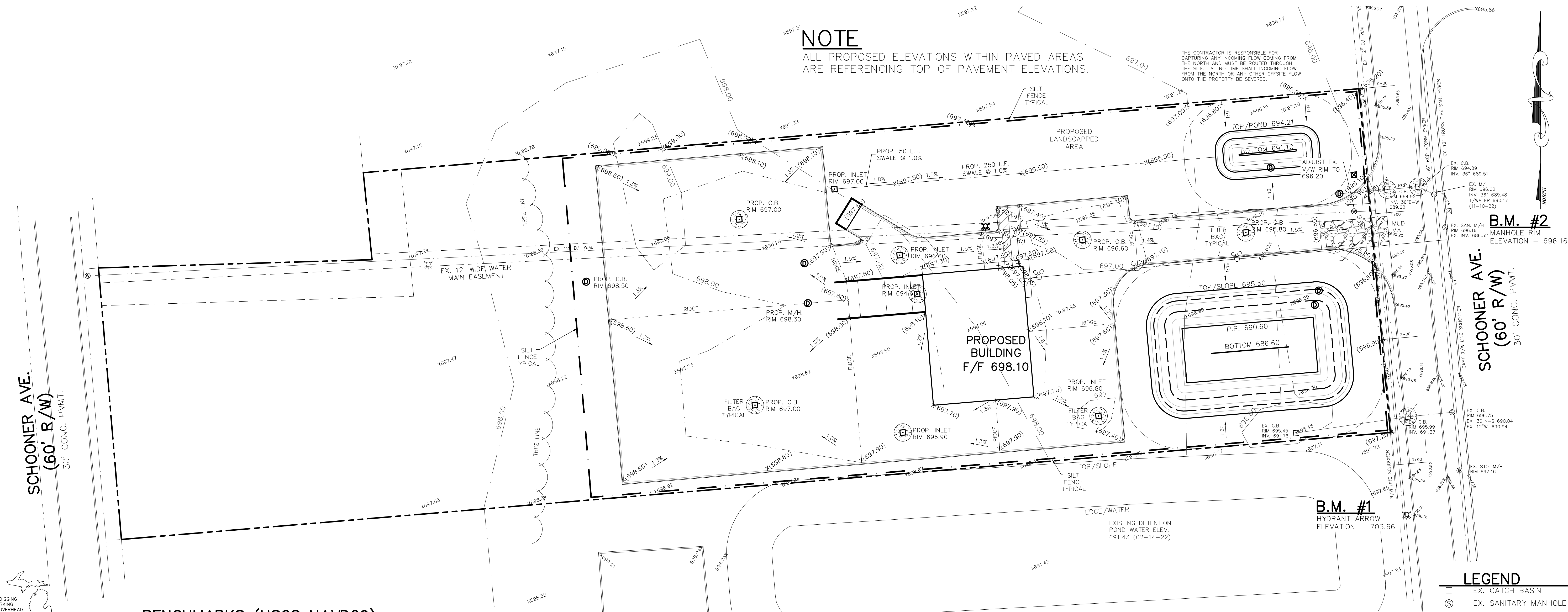
1. STONE TRACKING PAD ABOVE GEOTEXTILE LINER (MUD-MAT).
2. INSTALL SILT FENCING AND PROTECTIVE FENCING.
3. STRIP AND STOCKPILE TOPSOIL.
4. GRADE AND BALANCE AS REQUIRED. STABILIZE DITCHES, SWALES, COMMON AREAS AND SLOPES PER PLAN WITHIN 5 DAYS OF GRADE.
5. EXCAVATE DETENTION BASIN, INSTALL APPROVED OUTLET, STABILIZE BEFORE PAVING IS STARTED.
6. INSTALL UNDERGROUND UTILITIES (I.E. SANITARY, STORM AND WATER MAIN).
7. PLACE INLET FILTERS.
8. INSTALL PAVEMENT COMPLETE.
9. INSTALL ALL PUBLIC UTILITIES COMPLETE (ELECTRIC, TELEPHONE, AND CABLE).
10. ESTABLISH VEGETATION FOR ALL DISTURBED AREAS AND ROAD / R.O.W.s.
11. CLEAN OUT STORM SEWERS SYSTEM.
12. CLEAN OUT AND RESTORE SEDIMENT FOREBAY AND DETENTION POND TO DESIGN SPECIFICATIONS.
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			

1. INSTALL SILT FENCE AS SHOWN HEREON.
2. COMPLETE MASS GRADING, DETENTION PONDS AND UNDERGROUND UTILITIES. (MAINTAIN SILT FENCE AND INSTALL SEDIMENTATION FILTERS).
3. CONSTRUCT PARKING LOT AREA. (MAINTAIN SILT FENCE AND SEDIMENTATION FILTERS).
4. RESTORE ALL DISTURBED AREAS WITH TOPSOIL, SEED AND MULCH. MAINTAIN SILT FENCE AND SEDIMENTATION FILTERS).
5. AFTER VEGETATION HAS BEEN WELL ESTABLISHED, REMOVE SILT FENCE AND SEDIMENTATION FILTERS.

RESTORATION REQUIREMENTS: PRIOR TO FINAL INSPECTION THE FOLLOWING ITEMS PLUS ALL THE ITEMS ON THE APPROVED SOIL EROSION PLAN AND SESC PERMIT:

1. ALL DISTURBED EARTH PERMANENTLY STABILIZED WITH VEGETATION OR PAVEMENT.
2. ACCUMULATED SEDIMENT REMOVED FROM ENTIRE STORM SEWER SYSTEM.
3. ACCUMULATED SEDIMENT REMOVED FROM DETENTION/SEDIMENT BASIN.
4. RESTORED DETENTION/SEDIMENT BASIN TO DESIGN STANDARD.
5. REMOVED ALL TEMPORARY CONTROLS AFTER APPROVAL BY WAYNE COUNTY.

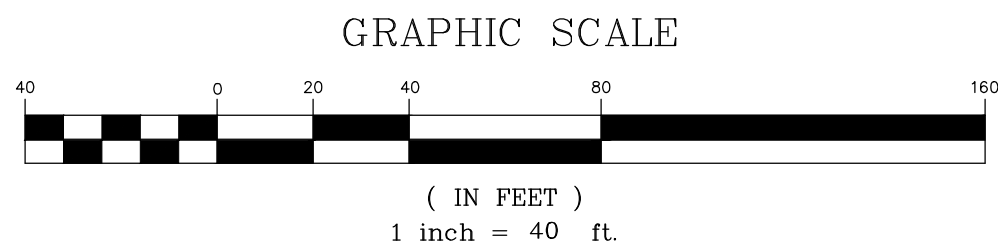


RIM ON EXISTING MANHOLE LOCATED ON THE EAST SIDE OF SCHOONER
DRIVE 115' SOUTH OF NORTHERLY PROPERTY LINE OF SUBJECT PARCEL
ELEVATION = 696.16

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

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

— • — SILT FENCING
 SEDIMENTATION FILTER



SDUKHDEV SINGH
8385 OPAL DRIVE
WESTALND, MI 48185

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	EX. VALVE WELL
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	EX. STREET SIGN
	EX. LIGHT POLE

WHEN DIGGING
OR WORKING
NEAR OVERHEAD
ELECTRIC WIRES IN
MICHIGAN, CALL

 MISS DIG

3 WORKING DAYS
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**GRADING AND SOIL
EROSION PLAN**

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

SHEET No.	JOB No.	DRAWING No.	DATE	REVISIONS
3 OF 11	2022-01	A -	01-10-22	03-07-23
				03-23-23
		DRAWN BY:	CHECKED BY:	04-05-23
				05-22-23

REQUIREMENTS FOR NEW OPEN POND PROJECT

TOTAL DISRUPTIVE AREA:

4.99 acres

LAND USE SUMMARY

Land Characteristic

	Existing	Proposed	Coeff.	A°C
Total Development Area (ac)	4.99	4.99		
Roof Area (ac)	0	0.39	0.95	0.37
Pavement Area (ac)	0	3	0.95	2.85
Gravel (ac)	0	0	0.95	0
Total Pervious Area (ac)	4.99	1.6	0.25	0.4
totals:	4.99	4.99		3.62

Pervious Area Breakdown by Cover Type

Non-cultivated	4.99	0
Impervious Area (ac)	N/A	3.39
Improved area (grass/landscape)	0	1.6
Predominant NRCS Soil Type	B	B (Type A, B, C, C)
Wooded Area (ac)	0	0
Predominant NRCS Soil Type	N/A	N/A (Type A, B, C, C)

Calculated CPVC Volume (cf)=

CALCULATE RUNOFF COEFFICIENT

C=(A1°C1)/A 0.72

TIME OF CONCENTRATION CALCULATIONS

V (sheet flow)=	0.34	0.5	%slope
Flow time=	1.5	30	flow length
V(shallow flow)=	1.2	1	%slope
Flow time=	2.8	200	flow length
V(sewer flow)=	3	3	fps
Flow time=	3.19	575	flow length

concentration time= 7 min. 10 minutes (site minimum)
T= 10 min.

CALCULATE 100-YEAR PEAK INTENSITY

I100= 4.6 in/hr

CHANNEL PROTECTION VOLUME CONTROL (CPVC)

Vcpvc= 13,042 cf

CHANNEL PROTECTION RATE CONTROL (CPRC)

Vcprc= 24,780 cf

NOTE

SOIL BORE INFORMATION LOCATED ON SHEET #7

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 688.70)	
6	TOP EX. W.M. PROP. 30" INV.	690.50± 691.05 (LOWER W.M. to 688.70)	
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. 692.45		INV. 12"N. 692.80
	INV. 24"N. 691.25		INV. 15"SW. 692.45		
	INV. 24"W. 691.25		INV. 12"E. 692.45	12	INV. 15"W. 691.10
3	4" DIA. C.B. RIM 697.00	7	4" DIA. C.B. RIM 696.60	13	4" DIA. C.B. RIM 697.00
	INV. 24"E-W. 691.64		INV. 15"NE. 692.72		INV. 15" 691.89
	INV. 12"S. 692.35		INV. 12"SE. 692.72	14	42" DIA. INLET RIM 697.00
4	4" DIA. C.B. RIM 696.60	8	2" DIA. INLET RIM 696.90		INV. 15"NE. 692.08
	INV. 24"E-W. 691.93		INV. 12"NW. 693.10		
5	4" DIA. MANHOLE RIM 697.60	9	2" DIA INLET RIM 694.60		
	INV. 24"E. 692.07		INV. 12"W. 692.76		
	INV. 24"W. 692.65	10	4" DIA C.B. RIM 698.50		
	INV. 18"S. 692.38		INV. 24"E. 692.65		

100-YEAR FLOOD CONTROL VOLUME CALCS

Qallow,calc= 0.73 cfs/acre 0.1 cfs, max allowable release rate
a site less than 2 acres must use a variable release rate of 1.00cfs/acre
Tributary area= 4.99 acres
100-year release, Qo= 0.499 cfs/acre
Q= 16.53 cfs
Vr= 67,904 cf
Storage Ratio(Vr/Vs)= 0.731
100-year (req), Vs= 49,641 cf

SUMMARY OF CALCULATED VOLUMES:

cpvc= 13,042 cf
cprc= 24,780 cf
Flood Control Volume= 36,599 cf if CPVC volume is met
Flood Control Volume= 49,641 cf if CPVC volume is not met

REQ. DETENTION VOL. DETERMINATION

CPVC 13,042 cf
CPRC 24,780 cf
Flood control vol.= 49,641 cf
SITE MINIMUM
IF CPVC CAN NOT BE MET

15% of CPVC in Forebay 1,956 cf

Design CPVC Vol.= 22,823 cf

Design control vol.= 47,685 cf (Control flood - Forebay)

FOREBAY DESIGN (15% of CPVC Vol.)

contour elevation	area	volume	cumulative volume	surface depth	cumulative depth
691.10	55	0	0	0	0.00
692.00	672	364	364	0.90	0.90
693.00	1,587	1,130	1,493	1.00	1.90
694.00	2,730	2,159	3,652	1.00	2.90
Total Vol. Provided			5,508		
Total Vol bioretention Prov.			5,508		

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

693.00	694.00	1,493.00	3,652.00
ELEV=	693.21		

ORRIFICE CALCULATIONS

Orifice First flush rate control

Q(ave)= 0.075 cfs
average head H(ave)= 1.06 ft
Orifice Area A= 0.015 sq/ft
Orifice Dia, ff= 1.644 inches
number holes req.= 1 ea
Calculated D(100-year)= 0.137 ft

Therefore use, number of holes= 1.00 inch hole @ 691.10

DETENTION POND OUTLET ELEVATION

elev= 690.60 ft
Qres, req. Flood Control= 47,685 cf

OPEN DETENTION POND DESIGN

contour elevation	area	volume	cumulative volume	surface depth	cumulative depth
690.60	5,443	0	0	0	0.00
691.00	6,172	5,807	5,807	0.40	0.40
692.00	8,460	7,316	13,123	1.00	1.40
693.00	10,942	9,701	22,824	1.00	2.40
694.00	13,693	12,317	35,141	1.00	3.40
694.50	15,558	14,626	49,767	0.50	3.90

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

693.00	694.00	22,824.00	35,141.40
ELEV=	693.00		

FLOOD CONTROL (High Water) ELEV= LOWER EL. + (UPPER EL. - LOWER EL.)
(REQ VOL-CUM VOL LOWER EL.)/(CUM VOL UPPER EL-CUM VOL LOW EL.)

694.00	694.50	35,141.40	49,767.00
ELEV=	694.50		

ORRIFICE CALCULATIONS

Channel protection rate control

Q(ave)= 0.14 ft
H(ed)= 1.95 ft
Orifice Area A= 0.021 sq/ft
Orifice Dia, D100= 1.95 inches

Therefore use = 2.00 inch hole @ 690.60

FLOOD CONTROL ORIFICE

100-Year Head H(res)= 1.50 ft
H100= 3.90 ft
Q(ed)= 0.0540 cfs
Q(res)= 0.370 cfs
Flood control orifice (a)= 0.061 sf
Flood control orifice diameter (d)= 3.335 inches

Therefore use = 3.30 inch hole @ 693.00

	Required Volume	Units	Provided Vol
CPVC	13,042	cf	0
CPRC	24,780	cf	0
Flood Control	49,641	cf	49,767
Total Volumes	49,641	cf	49,767

UTILITY PLAN NOTES

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

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
- REFER TO SHEETS #10 AND #11 FOR APPROPRIATE COUNTY DETAILS AS RELATED TO SPECIFIC WORK WITHIN SCHOONER RIGHT OF WAY.

SANITARY SEWER BASIS OF DESIGN

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

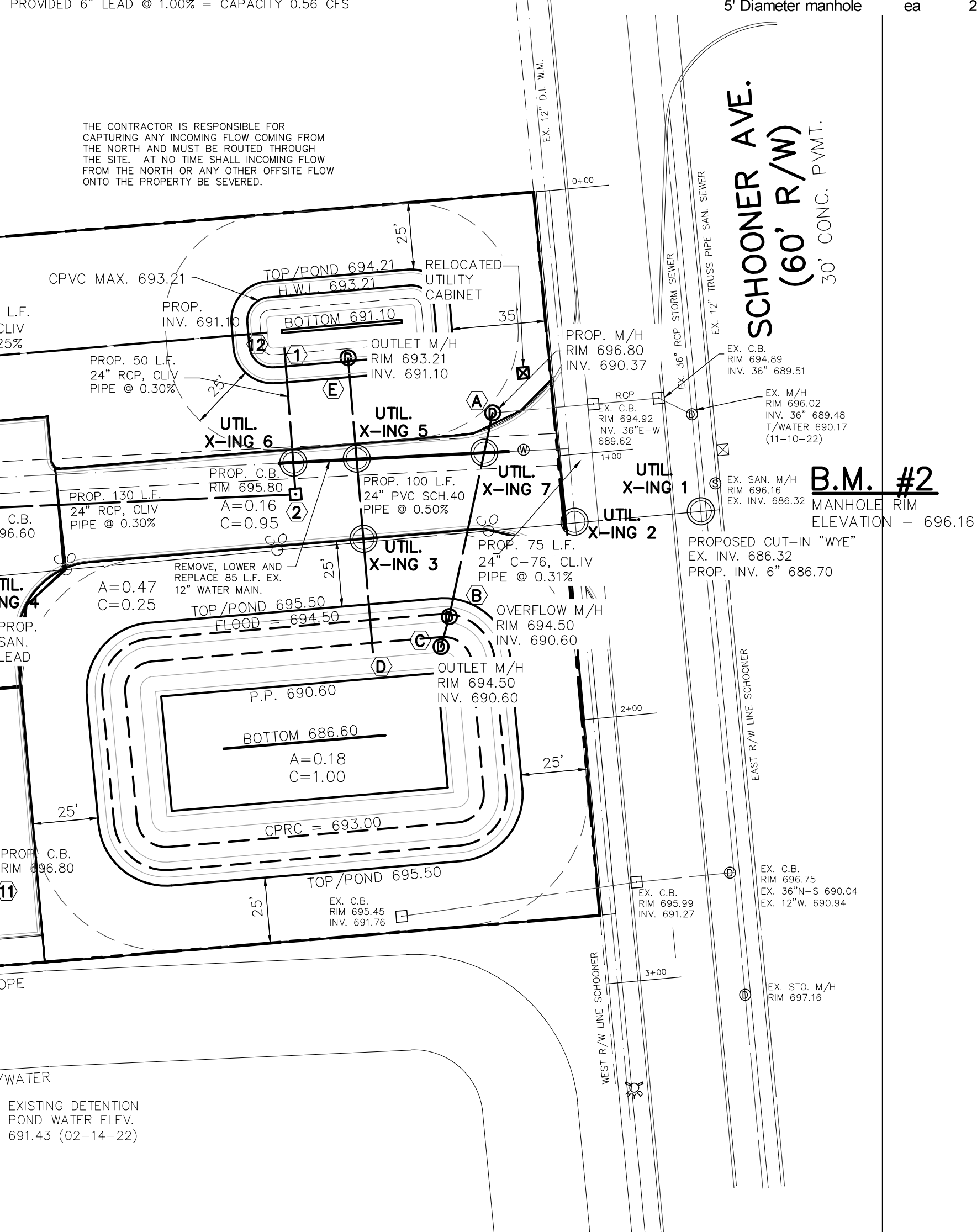
0.15 UNITS PER 1000 S/F = 0.15 * 9,000 = 1,350 UNITS

1350 gpd/1440gpd-gpm = 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



UTILITY CROSSING SCHEDULE

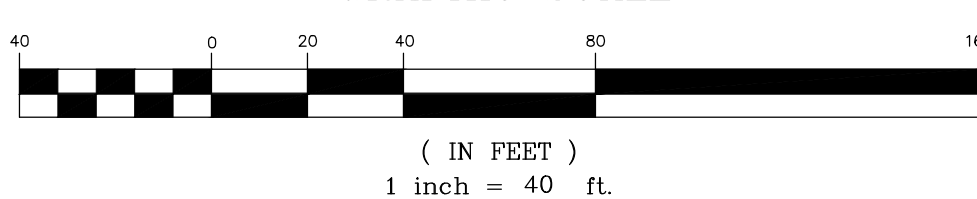
No.	INFO.	ELEVATION	ACTION
1	BOTTOM EX. 36" TOP PROP. 6" SAN.	689.70± 687.10	
2	BOTTOM EX. W.M. TOP PROP. 6" SAN.	690.70± 688.20	
3	BOT. PROP. 24" TOP PROP. 6" SAN.	690.25 688.45	
4	BOT. PROP 12" TOP PROP. 6" SAN.	692.25 689.85	
5	TOP EX. W.M. BOT. PROP.24".	690.50± 690.75 (LOWER W.M. to 688.70)	
6	TOP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

STORM SEWER DESIGN CHART

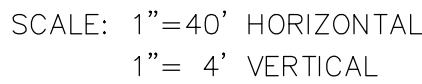
Roughness Coefficient	0.013	Initial Time (T)=	10
		Rain Intensity (I)=	4.64

Storm Sewer Line	From Structure	To Structure	Increment	C	Equivalent Area 100%	Total Area 100%	t Time (min)	I Inch Per Hour	Q C*1*A (cfs)	Pipe Dia. (in)	Slope %	Length of Line (ft)	Manning Velocity in Pipe (ft/sec)	Time of Flow (min)	Manning Capacity of Sewer (cfs)	Energy Loss	V ² /2(g)	H.G. Elev. Upper End	Upper invert Elev. (ft)	Lower invert Elev. (ft)	Upper Structure t/pipe (ft)
14	13		0.56	0.89	0.50	0.498	10.00	4.64	2.31	15	0.25	77	2.63	0.49	3.23	0.20	0.11	693.23	692.08	691.89	693.33
13	12		0.80	0.25	0.20	0.698	10.49	4.55	3.18	15	0.25	316	2.63	2.00	3.23	0.84	0.11	693.08	691.89	691.10	693.14
11	3		0.24	0.95	0.23	0.228	10.00	4.64	1.06	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	4.64	4.68	24	0.20	170	3.22	0.88	10.11	0.49	0.16	694.64	692.65	692.31	694.65
9	6		0.25	0.95	0.24	0.238	10.00	4.64	1.10	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	4.64	1.01	12	0.32	120	2.56	0.78	2.01	0.35	0.10	693.96	693.10	692.72	694.10
7	6		0.62	0.90	0.56	0.776	10.78	4.51	3.50	15	0.30	90	2.88	0.52	3.53	0.29	0.13	693.85	692.72	692.45	693.97
6	5		0.00	0.00	0.00	1.013	11.30	4.42	4.48	18	0.20	31	2.66	0.19	4.69	0.07	0.11	693.85	692.45	692.38	693.95
5	4		0.00	0.00	0.00	2.021	11.50	4.39	8.87	24	0.20	74	3.22	0.38	10.11	0.21	0.16	693.98	692.07	691.93	694.07
4	3		0.11	0.90	0.10	2.120	11.88	4.33	9.18	24	0.20	145	3.22	0.75	10.11	0.42	0.16	693.89	691.93	691.64	693.93
3	2		0.23	0.95	0.22	2.567	12.63	4.22	10.83	24	0.30	130	3.94	0.55	12.38	0.56	0.24	693.57	691.64	691.25	693.64
2	1		0.16	0.95	0.15	2.719	13.18	4.15	11.28	24	0.30	50	3.94	0.21	12.38	0.22	0.24	693.07	691.25	691.10	693.25
E	D		0	0	0.00	2.719	13.39	4.12	11.20	24	0.50	100	5.09	0.33	15.98	0.72	0.40	692.92	691.10	690.60	693.21
B	A		0	0	0.00	2.719	13.72	4.07	11.06	24	0.31	75	4.01	0.31	12.58	0.34	0.25	692.45	690.60	690.37	692.89

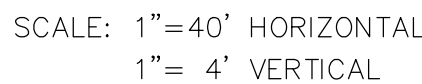
GRAPHIC SCALE



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



Storm Sewer Line			Increment		Equivalent Area 100%	Total Area 100%	t	I	Q	Pipe		Length	Manning	Time of	Manning			H.G.	Upper	Lower	Upper
From Structure	To Structure	**	Acres A	C Factor	Acres C*A	Acres C*A	Time (min)	Inch Per Hour	C*I*A (cfs)	Dia. (in)	Slope %	of Line (ft)	Velocity in Pipe (ft/sec)	Flow (cfs)	Capacity of Sewer (cfs)	Energy Loss	V ² /(2g)	Upper Elev. (ft)	Upper invert Elev. (ft)	Lower invert Elev. (ft)	Upper Structure t/pipe (ft)
14	13		0.56	0.89	0.50	0.498	10.00	4.64	2.31	15	0.25	77	2.63	0.49	3.23	0.20	0.11	693.23	692.08	691.89	693.33
13	12		0.80	0.95	0.20	0.698	10.49	4.55	3.18	15	0.25	316	2.63	2.00	3.23	0.84	0.11	693.08	691.89	691.10	693.14
11	3		0.24	0.25	0.23	0.228	10.00	4.64	1.06	12	0.32	140	2.56	0.91	2.01	0.41	0.10	693.66	692.80	692.35	693.14
10	5		1.12	0.90	1.01	1.008	10.00	4.64	4.68	24	0.20	170	3.22	0.88	10.11	0.49	0.16	694.64	692.65	692.31	694.65
9	6		0.25	0.95	0.24	0.238	10.00	4.64	1.10	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	4.64	1.01	12	0.32	120	2.56	0.78	2.01	0.35	0.10	693.96	693.10	692.72	694.10
7	6		0.62	0.90	0.56	0.776	10.78	4.51	3.50	15	0.30	90	2.88	0.52	3.53	0.29	0.13	693.85	692.72	692.45	693.97
6	5		0.00	0.00	0.00	1.013	11.30	4.42	4.48	18	0.20	31	2.66	0.19	4.69	0.07	0.11	693.85	692.45	692.38	694.05
5	4		0.00	0.00	0.00	2.021	11.50	4.39	8.87	24	0.20	74	3.22	0.38	10.11	0.21	0.16	693.98	692.07	691.93	693.97
4	3		0.11	0.90	0.10	2.120	11.88	4.33	9.18	24	0.20	145	3.22	0.75	10.11	0.42	0.16	693.89	691.93	691.64	693.93
3	2		0.23	0.95	0.22	2.567	12.63	4.22	10.83	24	0.30	130	3.94	0.55	12.38	0.56	0.24	693.57	691.64	691.25	693.64
2	1		0.16	0.95	0.15	2.719	13.18	4.15	11.28	24	0.30	50	3.94	0.21	12.38	0.22	0.24	693.07	691.25	691.10	693.25
E	D		0	0	0.00	2.719	13.39	4.12	11.20	24	0.50	100	5.09	0.33	15.98	0.72	0.40	692.92	691.10	690.60	693.21
B	A		0	0	0.00	2.719	13.72	4.07	11.06	24	0.31	75	4.01	0.31	12.58	0.34	0.25	692.45	690.60	690.37	692.88



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4	BOT. PROP 12" TOP PROP. 6" SAN.	692.85 689.85	
5	TOP EX. W.M. BOT. PROP. 24".	690.50± 690.75	(LOWER W.M. to 688.70)
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7	TOP EX. W.M. BOT. PROP. 18"	690.80± 690.20	(LOWER W.M. to 688.70)

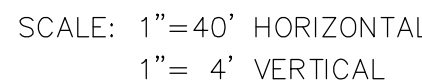
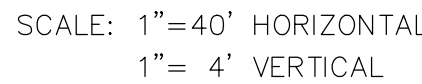
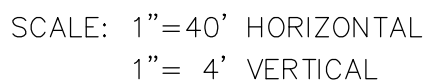
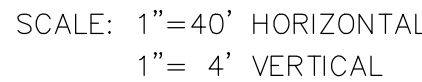
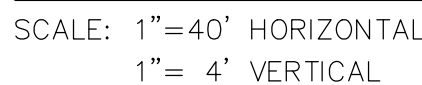
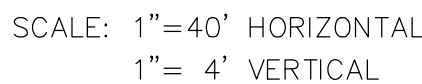
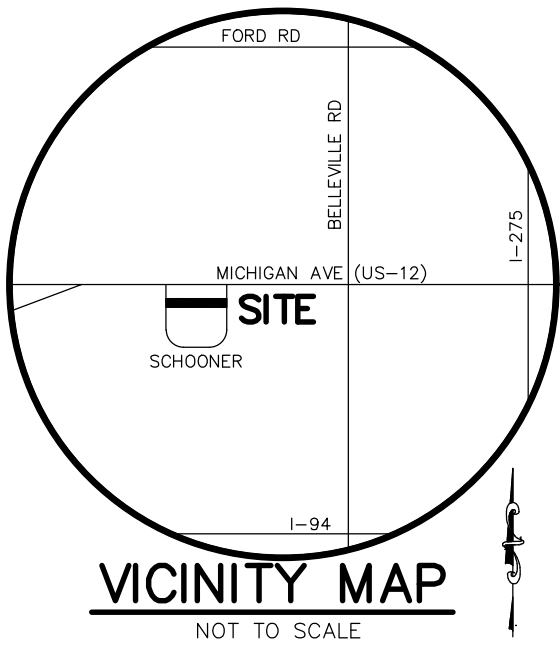


EXHIBIT "A"

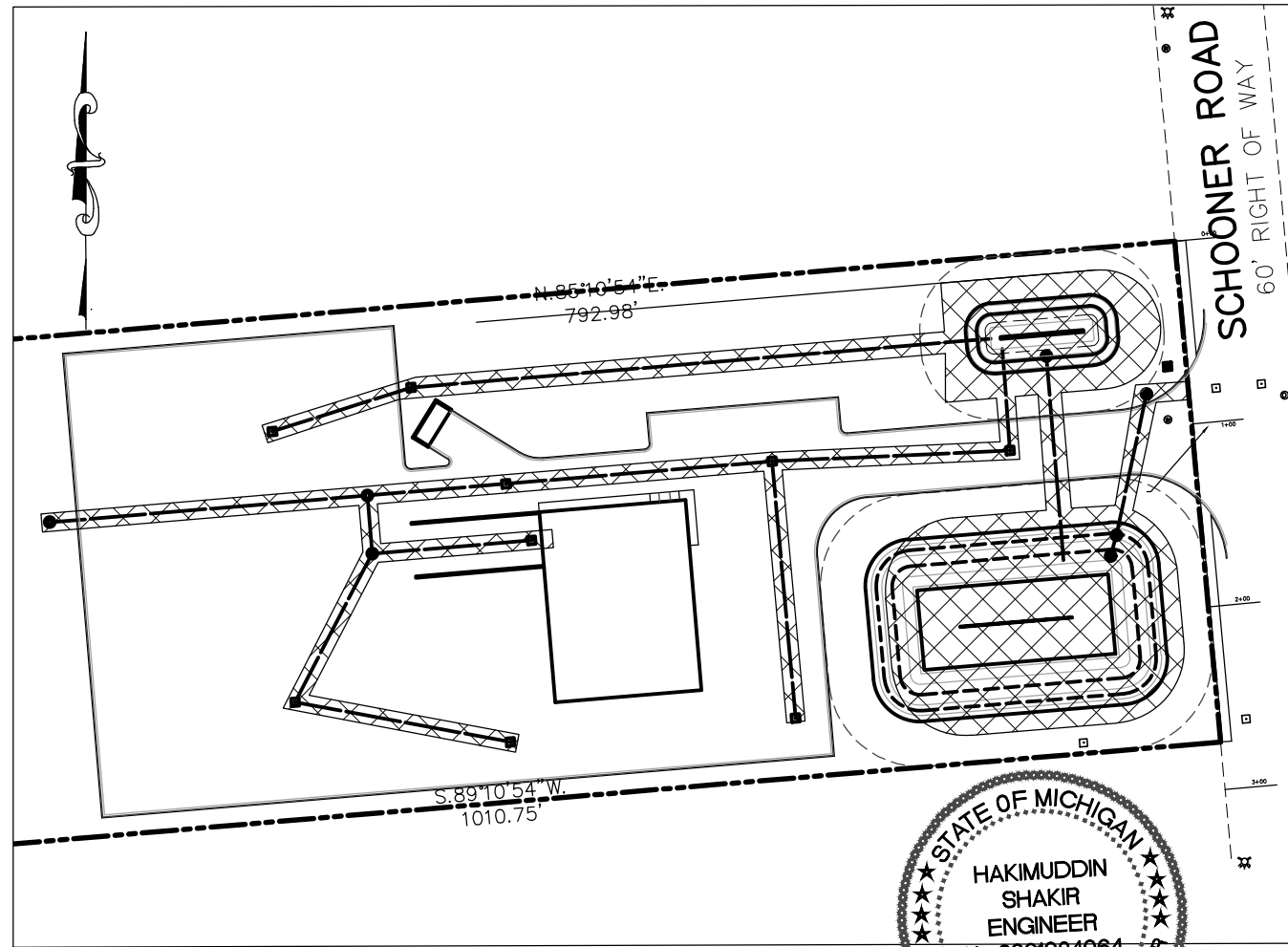
PHYSICAL LIMITS OF STORM WATER MANAGEMENT SYSTEM

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: 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	VAN BUREN TOWNSHIP MAINTENANCE RESPONSIBILITY										FREQUENCY
	CHANNELS AND SWALES	INLETS TO FOREBAY	BUFFER STRIP	SEDIMENT POND & DETENTION POND	OUTLET PIPE	OVERFLOW STRUCTURES	PAVEMENT AREAS				
MONITORING/INSPECTION											
INSPECT FOR SEDIMENT ACCUMULATION	XX	XX	XX	XX	XX	XX					AS NEEDED / SEMI-ANNUALLY
INSPECT FOR FLOATABLES, DEAD VEGETATION AND DEBRIS	XX	XX	XX	XX	XX	XX					ANNUALLY & AFTER MAJOR EVENTS
INSPECT FOR EROSION AND INTEGRITY OF SYSTEM	XX	XX	XX	XX	XX	XX					ANNUALLY & AFTER MAJOR EVENTS
INSPECT ALL COMPONENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS	XX	XX	XX	XX	XX	XX					ANNUALLY
ENSURE MAINTENANCE ACCESS REMAIN OPEN/CLEAR	XX	XX	XX	XX	XX	XX					ANNUALLY
PREVENTATIVE MAINTENANCE											
REMOVE ACCUMULATED SEDIMENTS	XX	XX	XX	XX	XX	XX					AS NEEDED, SELECT AREAS ONLY
REMOVE FLOATABLES, INVASIVE & DEAD VEGETATION & DEBRIS	XX	XX	XX	XX	XX	XX					AS NEEDED
RE-APPLY / REPLACE MULCH LAYER											RE-APPLY EVERY 6 MONTHS, REPLACE EVERY 2 YEARS
REPLACE SUBSURFACE COMPONENTS (SOILS, STONES, 6" UNDERDRAIN)											AS NEEDED / SEMI-ANNUALLY
SWEEPING OF PAVED SURFACES							XX				AS NEEDED / SEMI-ANNUALLY
REMEDIAL ACTIONS											
REPAIR/STABILIZE AREAS OF EROSION, RESEED BARE AREAS	XX	XX	XX	XX	XX	XX					AS NEEDED
REPLACE DEAD PLANTINGS, LAWN	XX	XX	XX	XX	XX	XX					AS NEEDED
STRUCTURAL REPAIRS	XX	XX	XX	XX	XX	XX					AS NEEDED
MAKE ADJUSTMENTS/REPAIRS TO ENSURE PROPER FUNCTIONING	XX	XX	XX	XX	XX	XX					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
(734) 756-2196

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

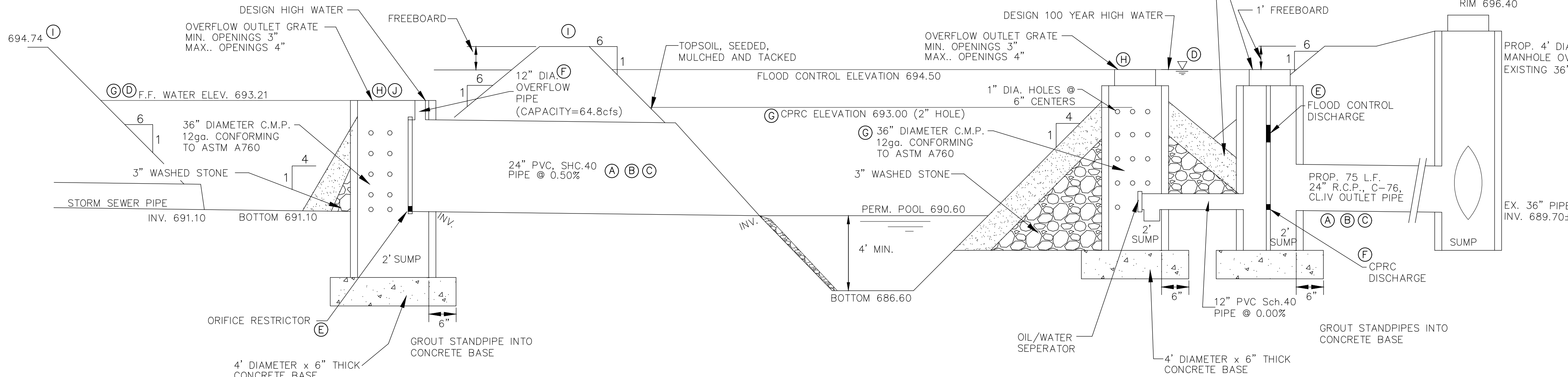
EXHIBIT "B"
STORM MAINTENANCE
CHAHAL TRUCKING
VAN BUREN TWP., WAYNE
COUNTY, MICHIGAN

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

WETLANDS DATA

WAYNE COUNTY DPS GENERAL NOTES:

1. 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.
2. 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
3. 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.
4. 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.
5. 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.
6. 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 AN AS DIRECTED BY THE WAYNE COUNTY ENGINEER.
7. CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS WITHIN THE WAYNE COUNTY ROAD ROW AND DRAIN EASEMENT WITH 3" TOPSOIL, THM SEED MIX AND MULCH. SLOPES STEEPER THAN 1 ON 3 SHALL BE RESTORED BY PLACING SOD ON 2" TOPSOIL.
8. 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".
9. 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.
10. 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.
11. MAINTAIN A SAFE AND ADEQUATE TRAVEL ROUTE FOR PEDESTRIANS AT ALL TIMES THROUGHOUT THE PROJECT DURATION.
12. TUNNELING, BORING AND JACKING OPERATIONS SHALL BE IN ACCORDANCE WITH THE WAYNE COUNTY SPECIFICATIONS AND DETAILS.
13. BORE PITS SHALL BE PLACED AT MINIMUM 10 FEET FROM THE BACK OF CURB OR EDGE OF PAVEMENT.
14. REMOVE ALL ABANDONED CONDUITS FROM THE COUNTY ROADS ROW OR AS DIRECTED BY THE WAYNE COUNTY ENGINEER.
15. CONTRACTOR SHALL PROVIDE COLD WEATHER PROTECTION FOR ALL PROPOSED CONCRETE WORK (PAVEMENTS, SIDEWALKS, DRIVE APPROACHES, ETC.) AS DIRECTED BY THE WAYNE COUNTY ENGINEER.
16. OVERNIGHT VEHICLE PARKING AND STORAGE OF CONSTRUCTION MATERIALS AND EQUIPMENTS ARE NOT PERMITTED WITHIN THE WAYNE COUNTY ROADS RIGHTS-OF-WAY.
17. 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.
18. 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.
19. CONTRACTOR SHALL NOTIFY WAYNE COUNTY 72 HOURS PRIOR TO START OF CONSTRUCTION. CONTACT THE PERMIT OFFICE AT (734) 858-2764



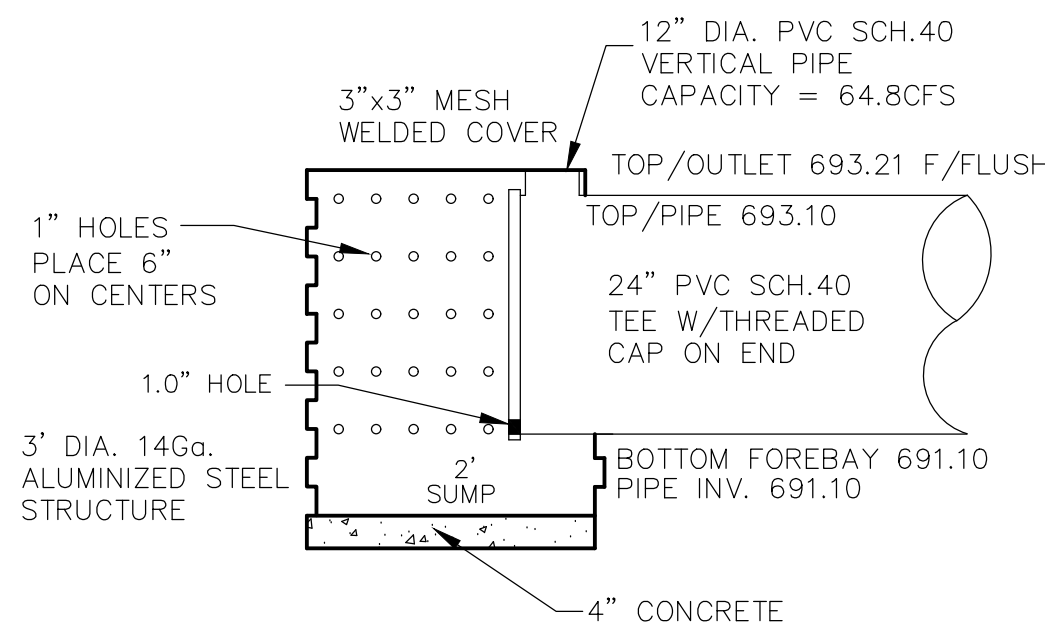
FOREBAY OUTLET STRUCTURE

FORBAY OUTLET SCHEDULE									
OUTLET PIPE LENGTH (A)	OUTLET PIPE SLOPE (B)	OUTLET PIPE SIZE (C)	FOREBAY STORAGE ELEVATION (D)	CPVC DISCHARGE ORIFICE SIZE (E)	OVERFLOW PIPE VERTICAL (F)	STANDPIPE DIAMETER (G)	TOP OF STANDPIPE ELEVATION (H)	FOREBAY CREST ELEVATION (I)	EMERGENCY SPILLWAY ELEVATION (J)
100'	0.50%	24" @ 691.10	693.21	(1) 1.0" HOLE IN CAP	12" DIA. CAPACITY = 64.8cfs	36"	693.21	694.21	693.21

MAXIMUM CALCULATED VOLUME FROM STORM WATER COLLECTION SYSTEM IS 11.28cfs

DETENTION OUTLET STRUCTURE

DETENTION OUTLET SCHEDULE									
OUTLET PIPE LENGTH (A)	OUTLET PIPE SLOPE (B)	OUTLET PIPE SIZE (C)	100 YEAR STORAGE (D)	100 YEAR FLOOD RELEASE INV./ORIFICE SIZE (E)	CPVC DISCHARGE ORIFICE SIZE (F)	STANDPIPE DIAMETER (G)	TOP OF STANDPIPE ELEVATION (H)	POND CREST ELEVATION (I)	EMERGENCY SPILLWAY ELEVATION (J)
100'	0.50%	24"	694.50	(1) 3.3" HOLE @ 693.00	2" HOLE @ 690.60	36"	694.50	695.50	694.50



DETAIL FOREBAY OUTLET STRUCTURE "E"

NOT TO SCALE

DETAILS

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

REVISIONS
03-07-23
03-23-23
04-05-23
05-22-23

DATE
01-10-22

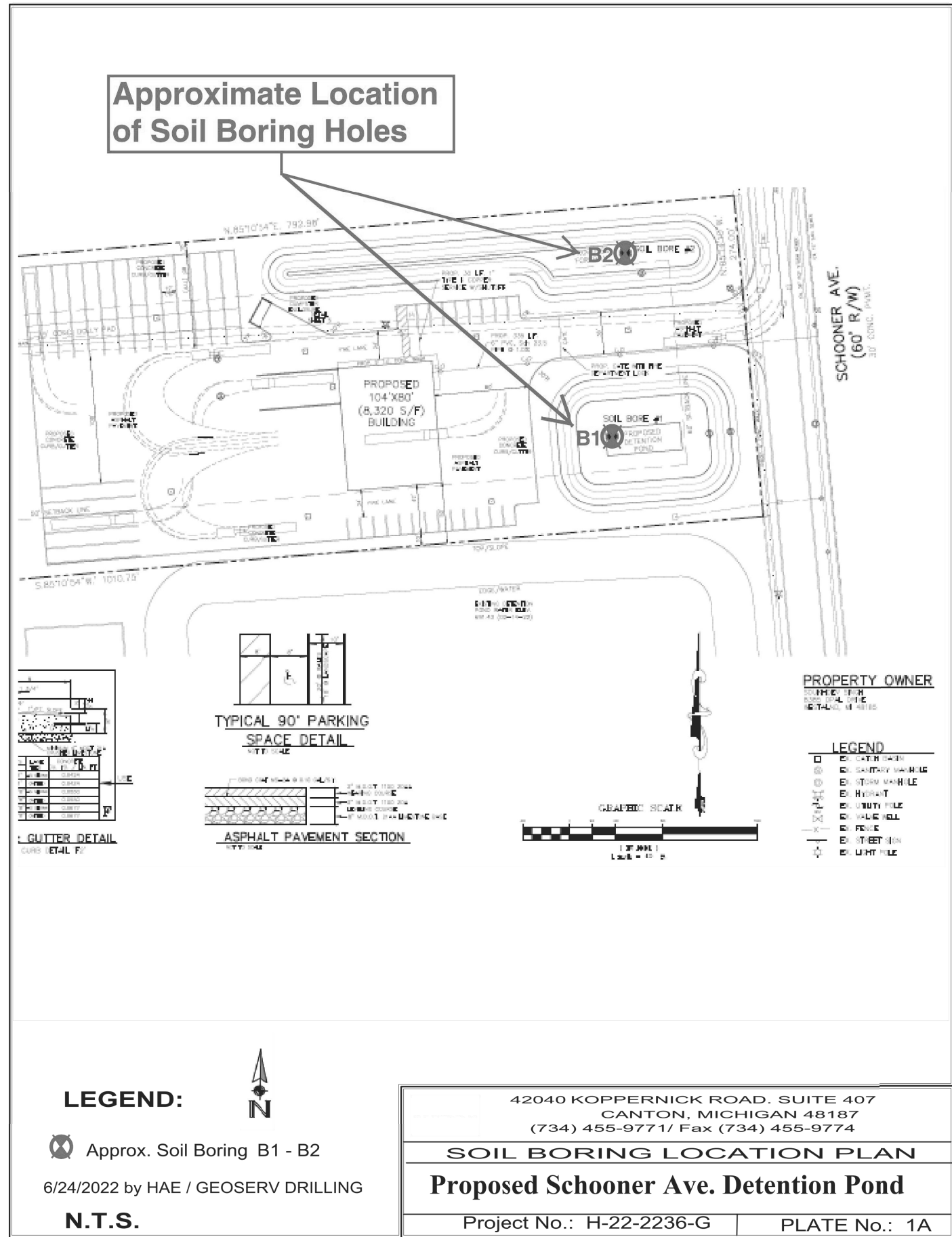
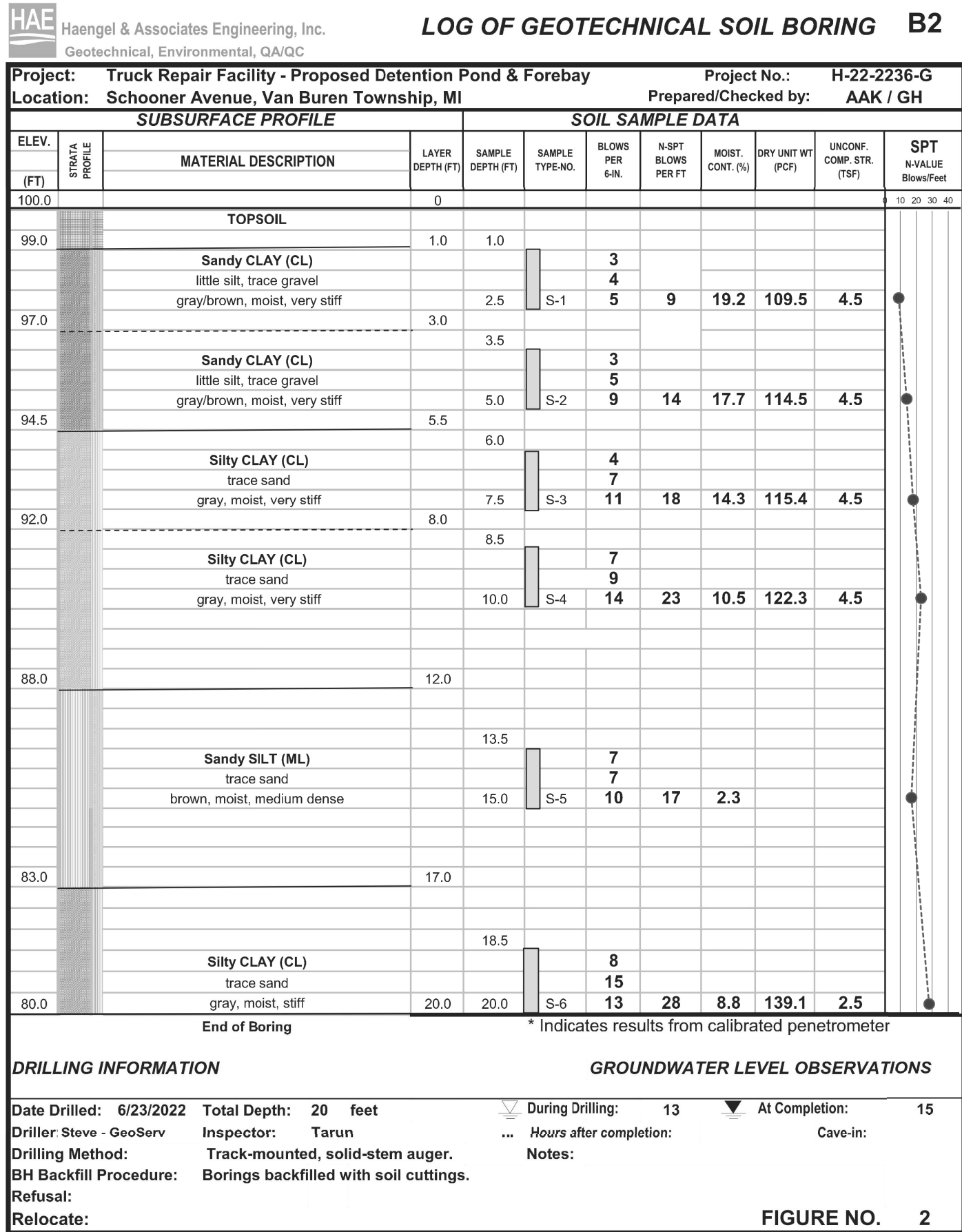
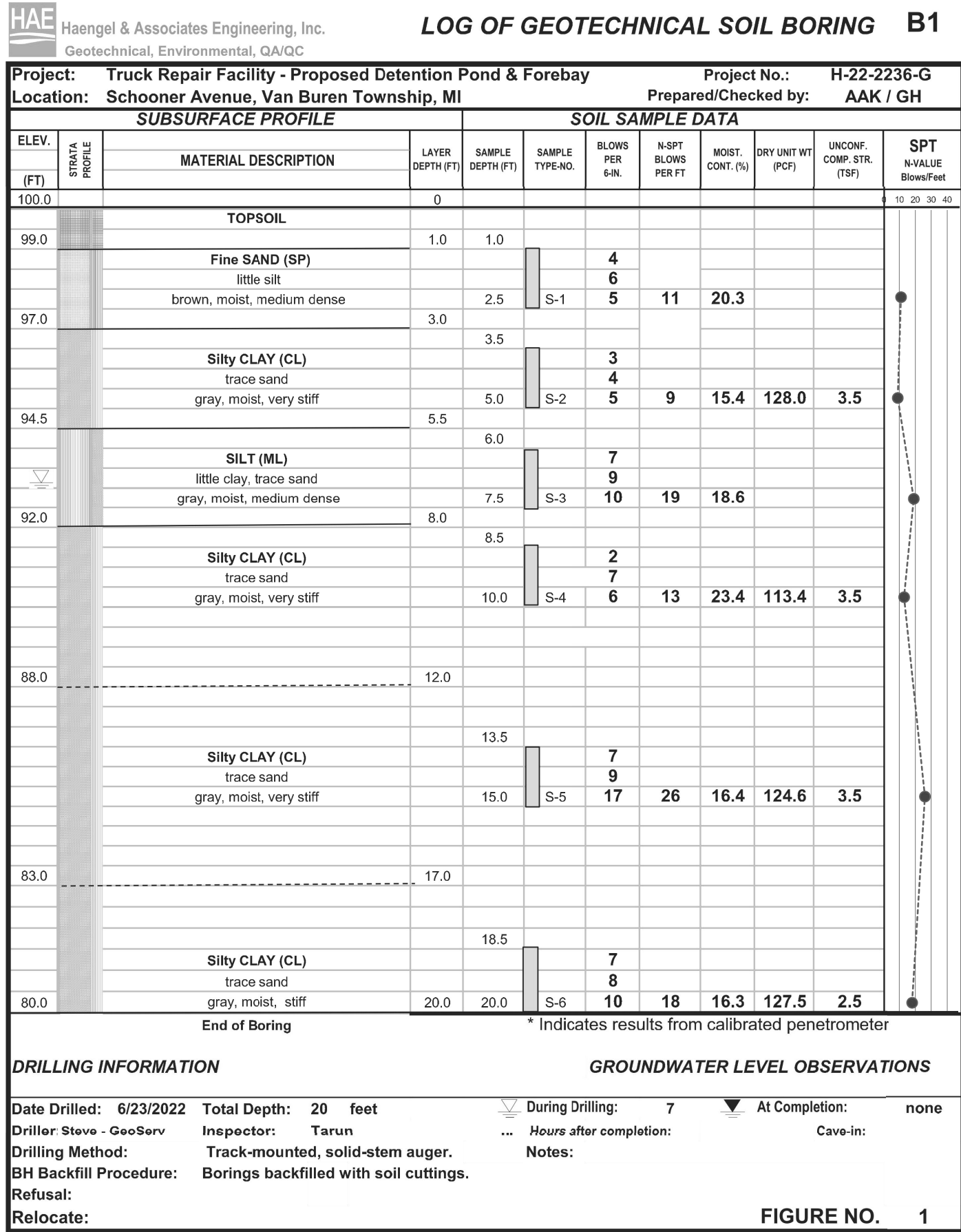
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A-

CHECKED BY:

DRAWN BY:

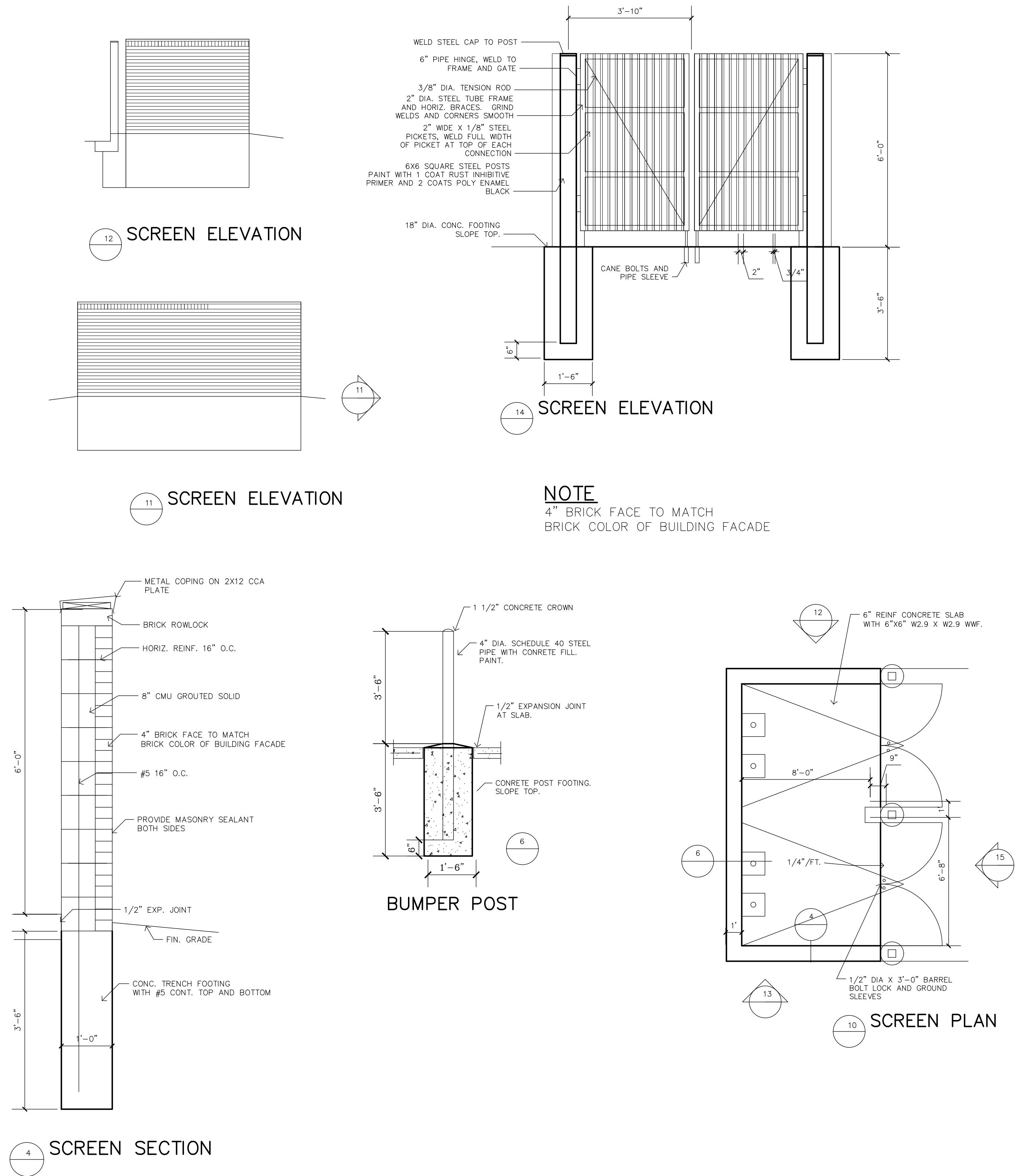
SHEET No.
6 OF 11
2022-01

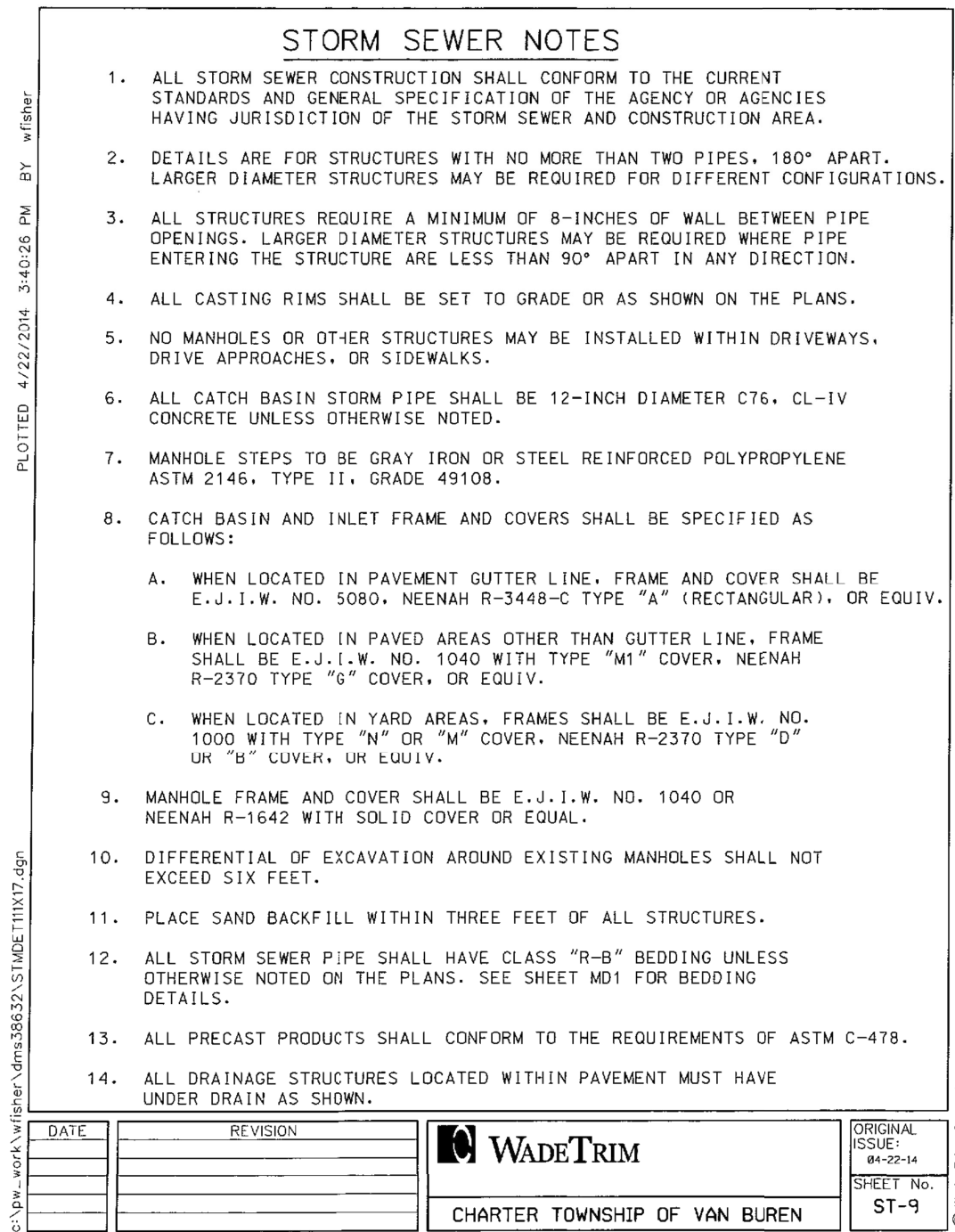
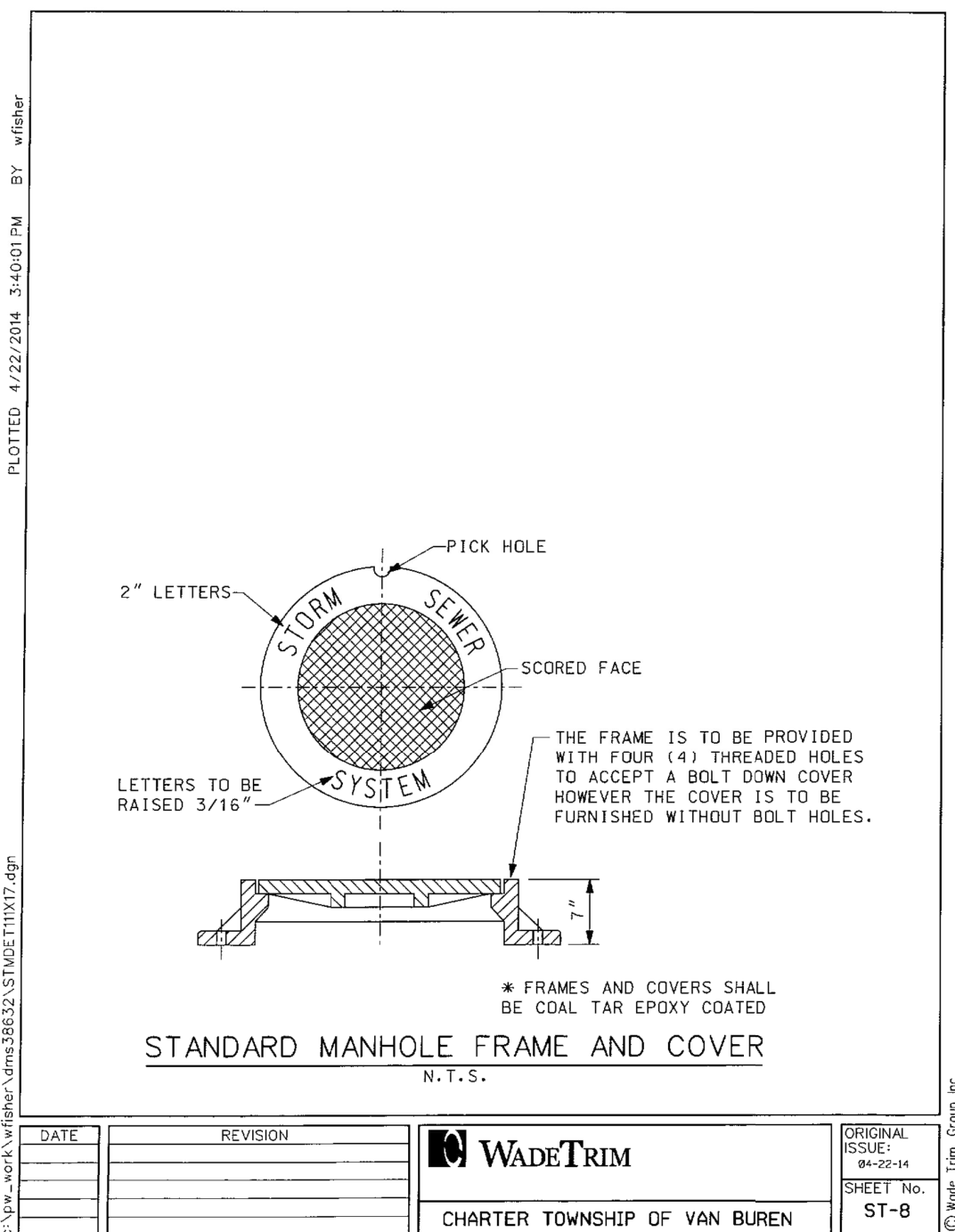
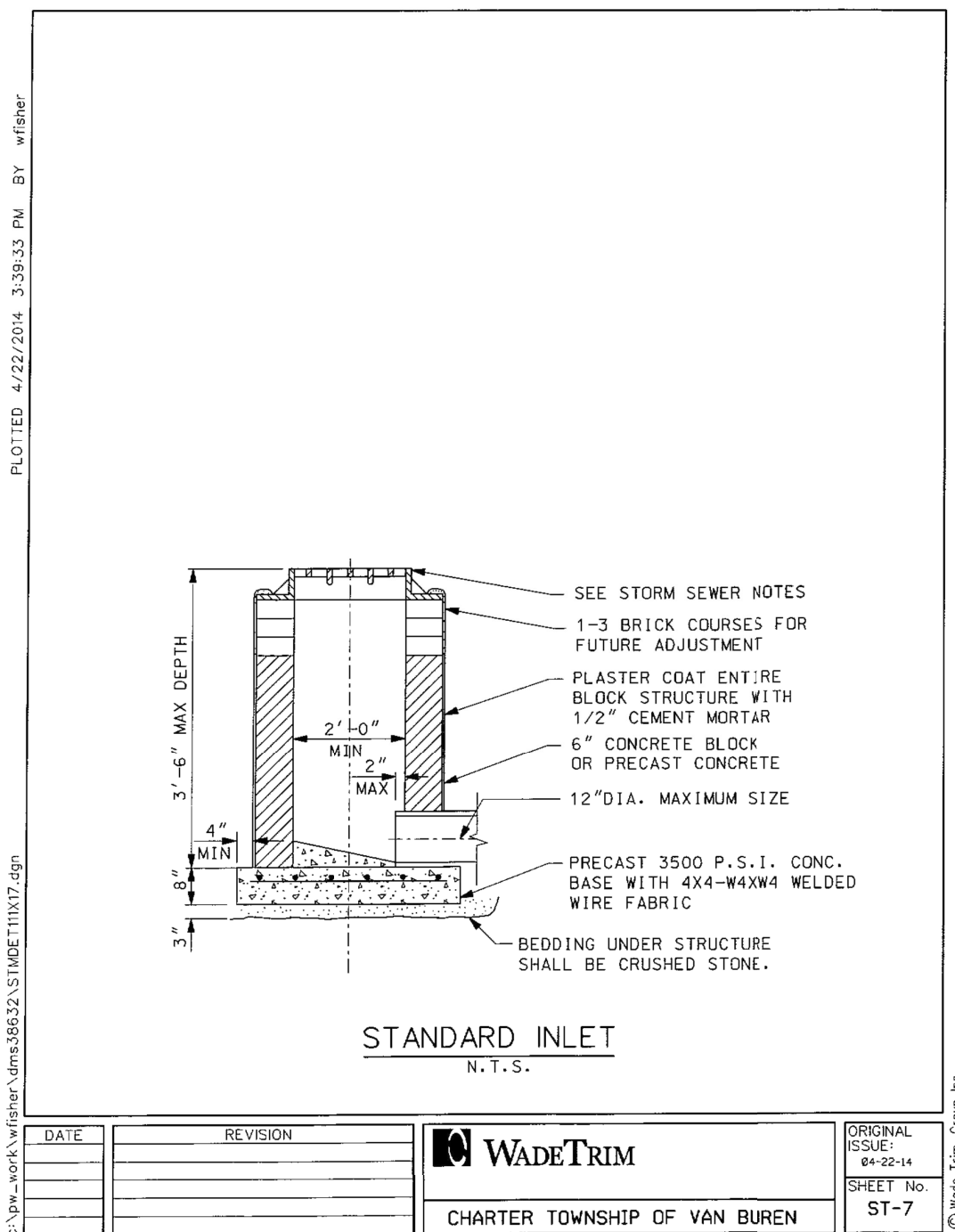
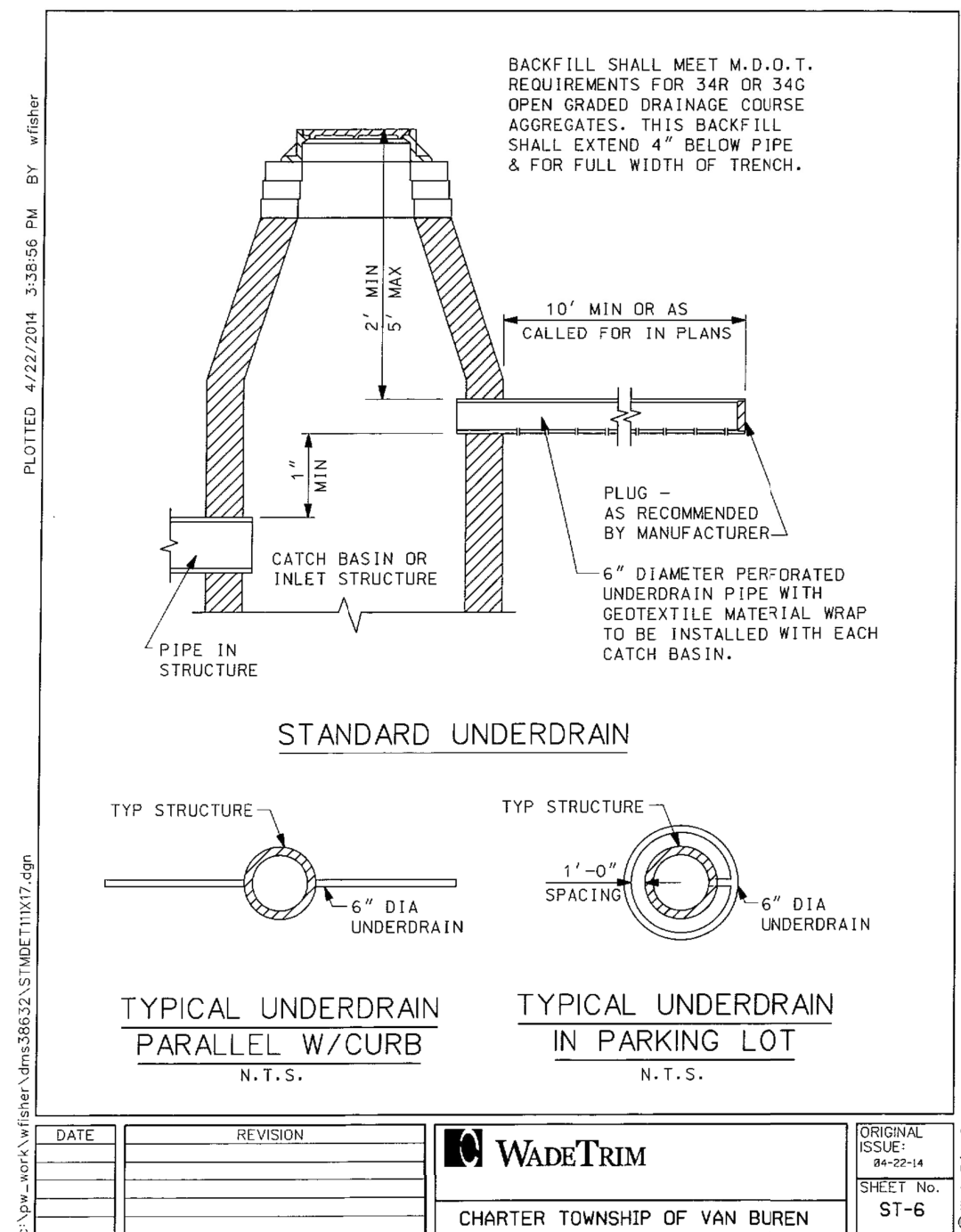
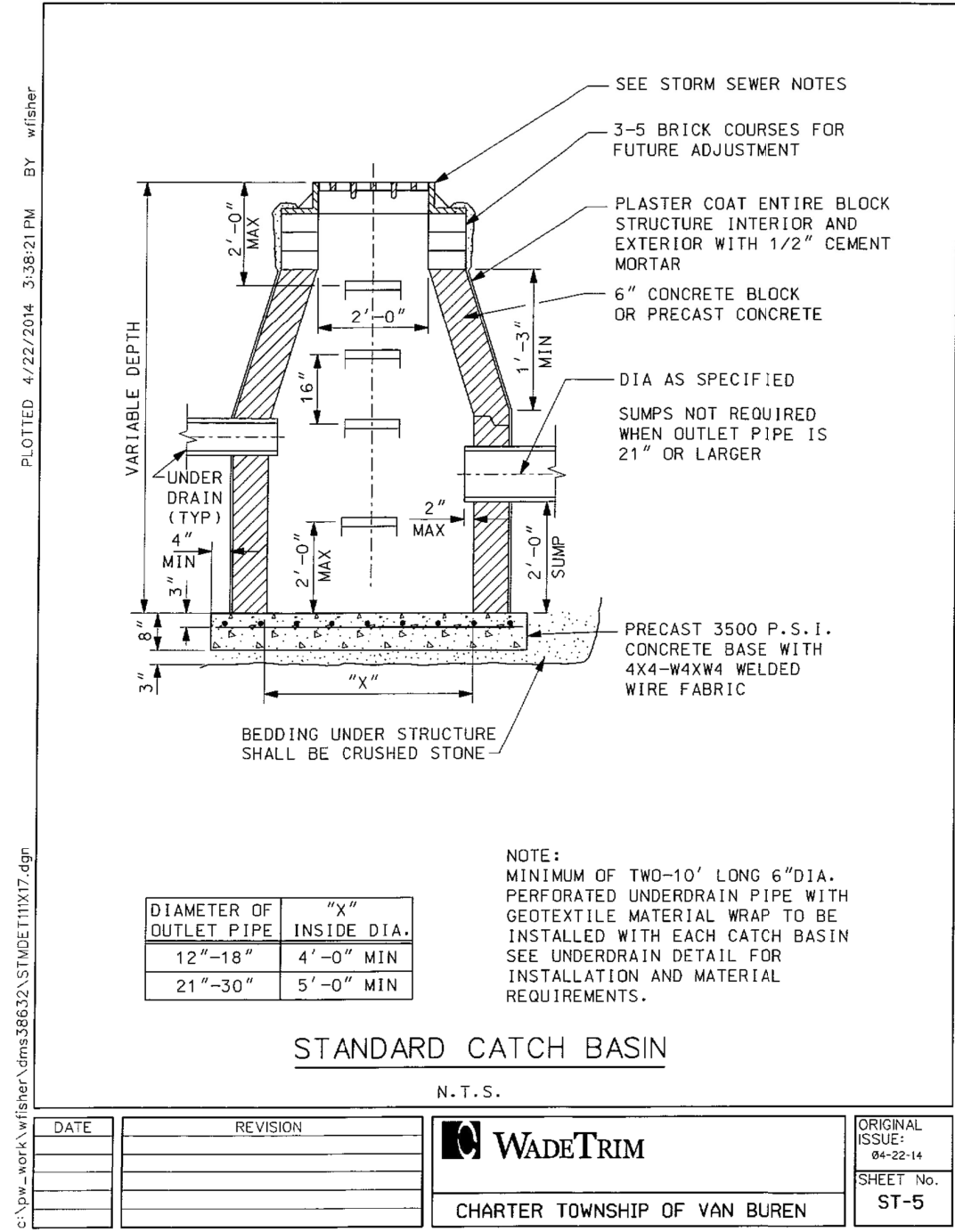
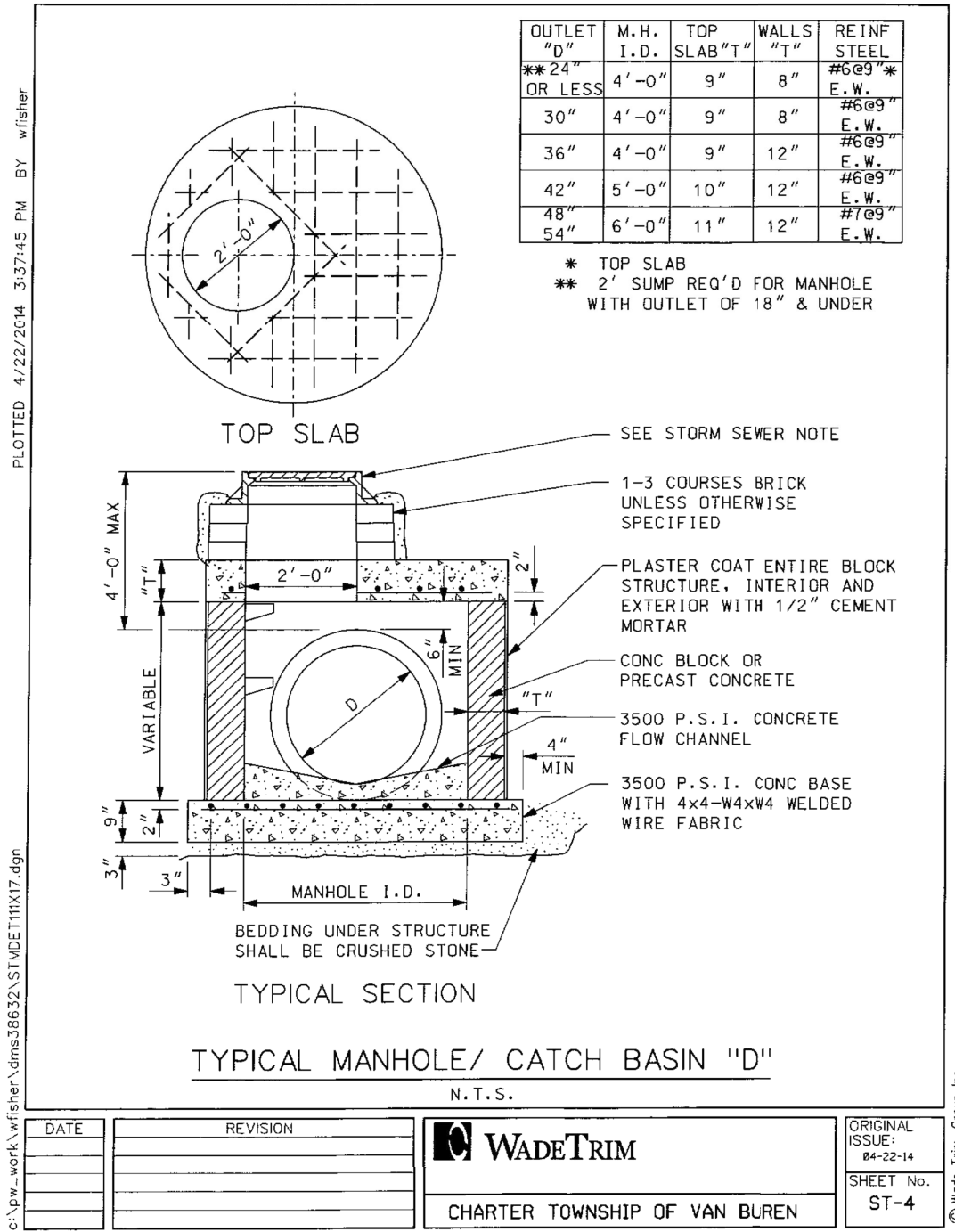
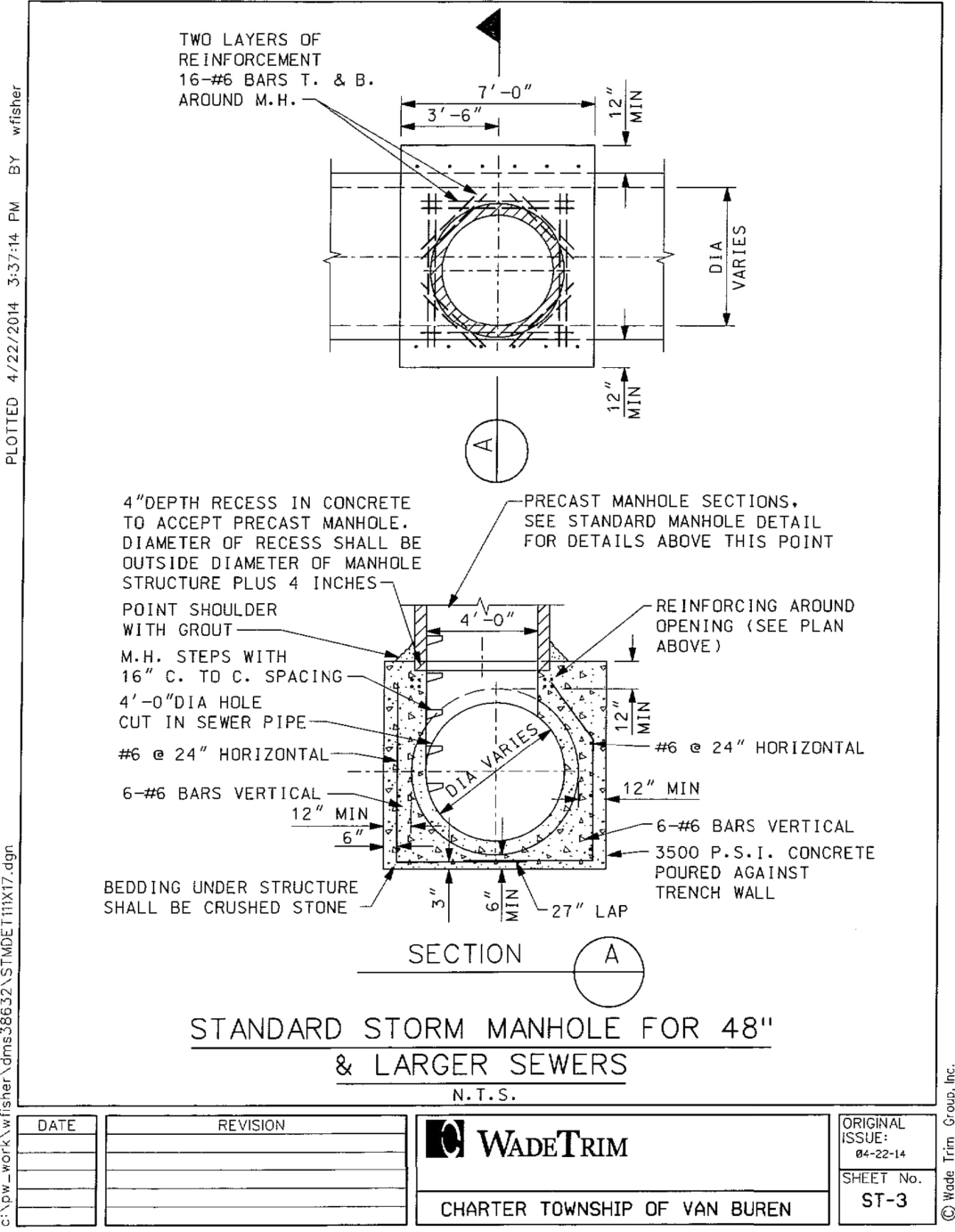
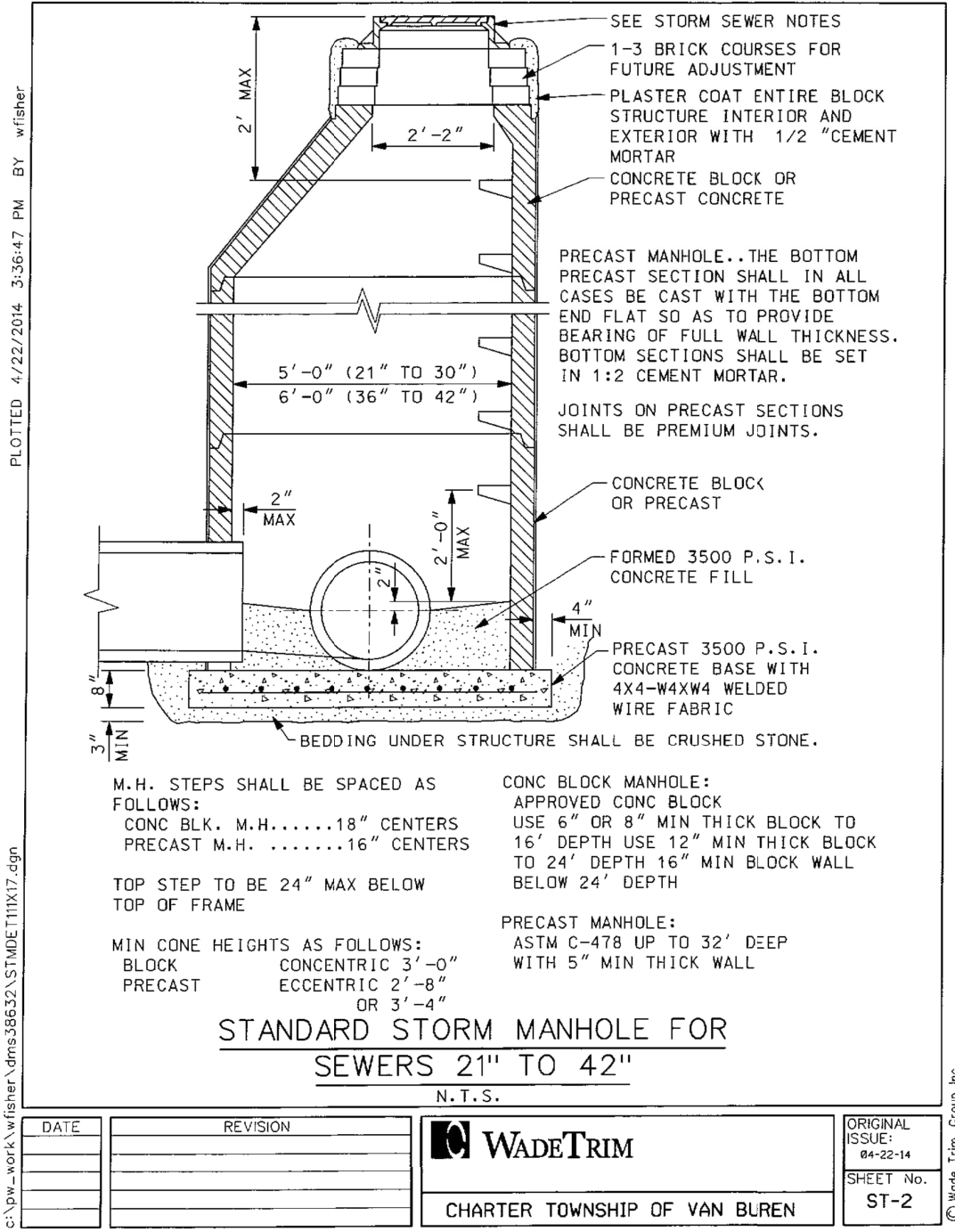
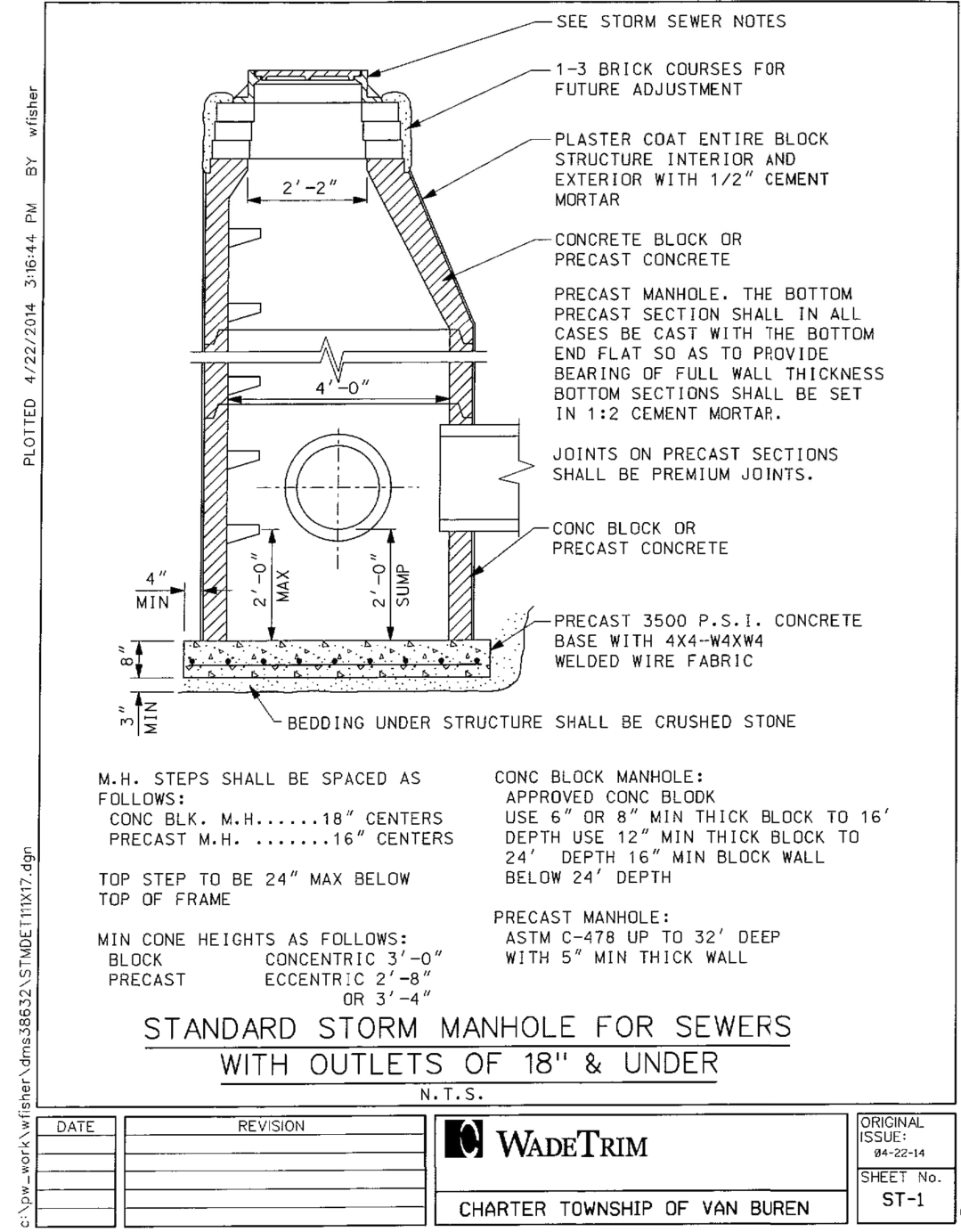
CIVIL DESIGN SERVICES LLC
4996 MOORE ST. WAYNE, MI 48184
(734) 756-2196
E-mail: kbhardy1964@hotmail.com
HARDY

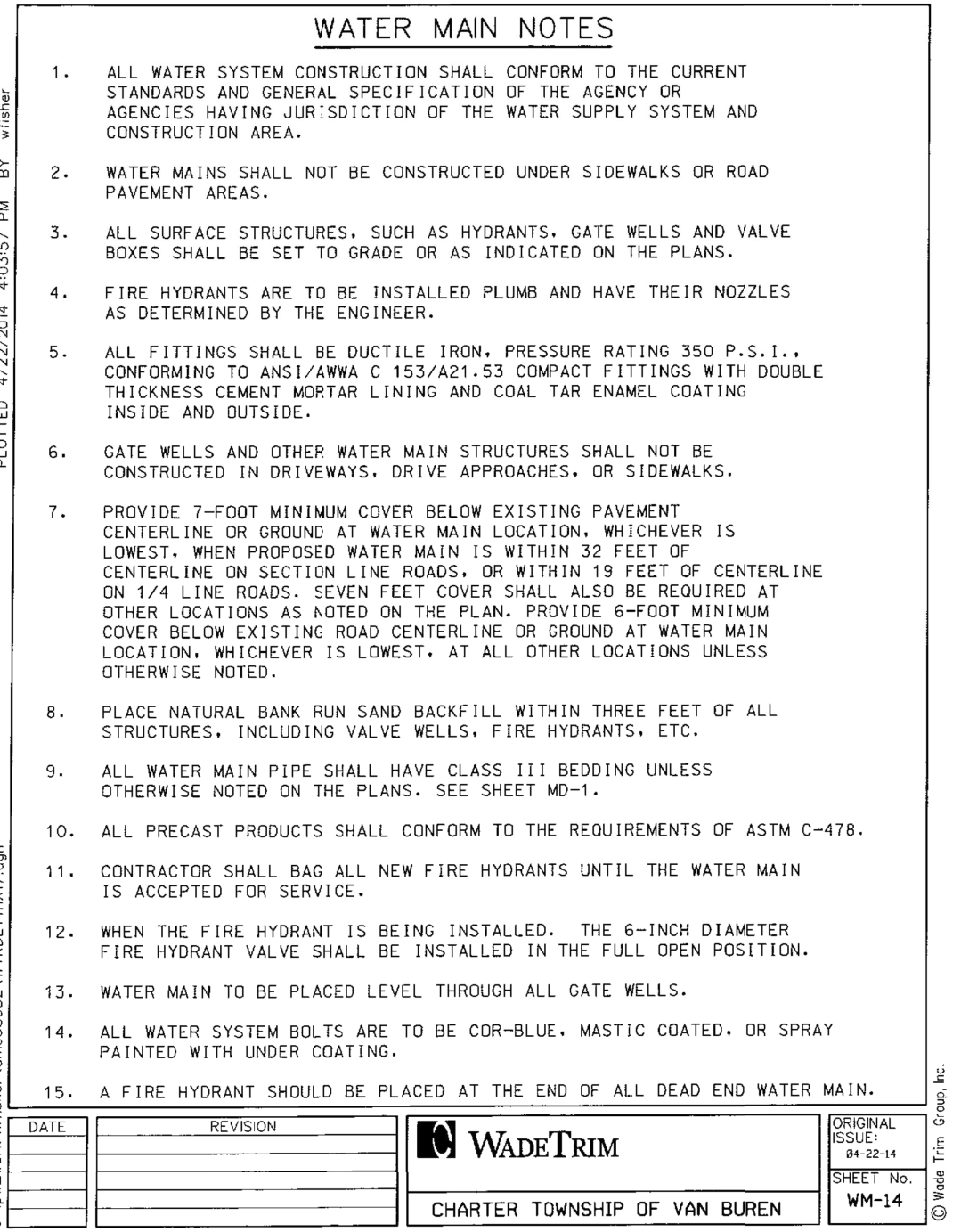
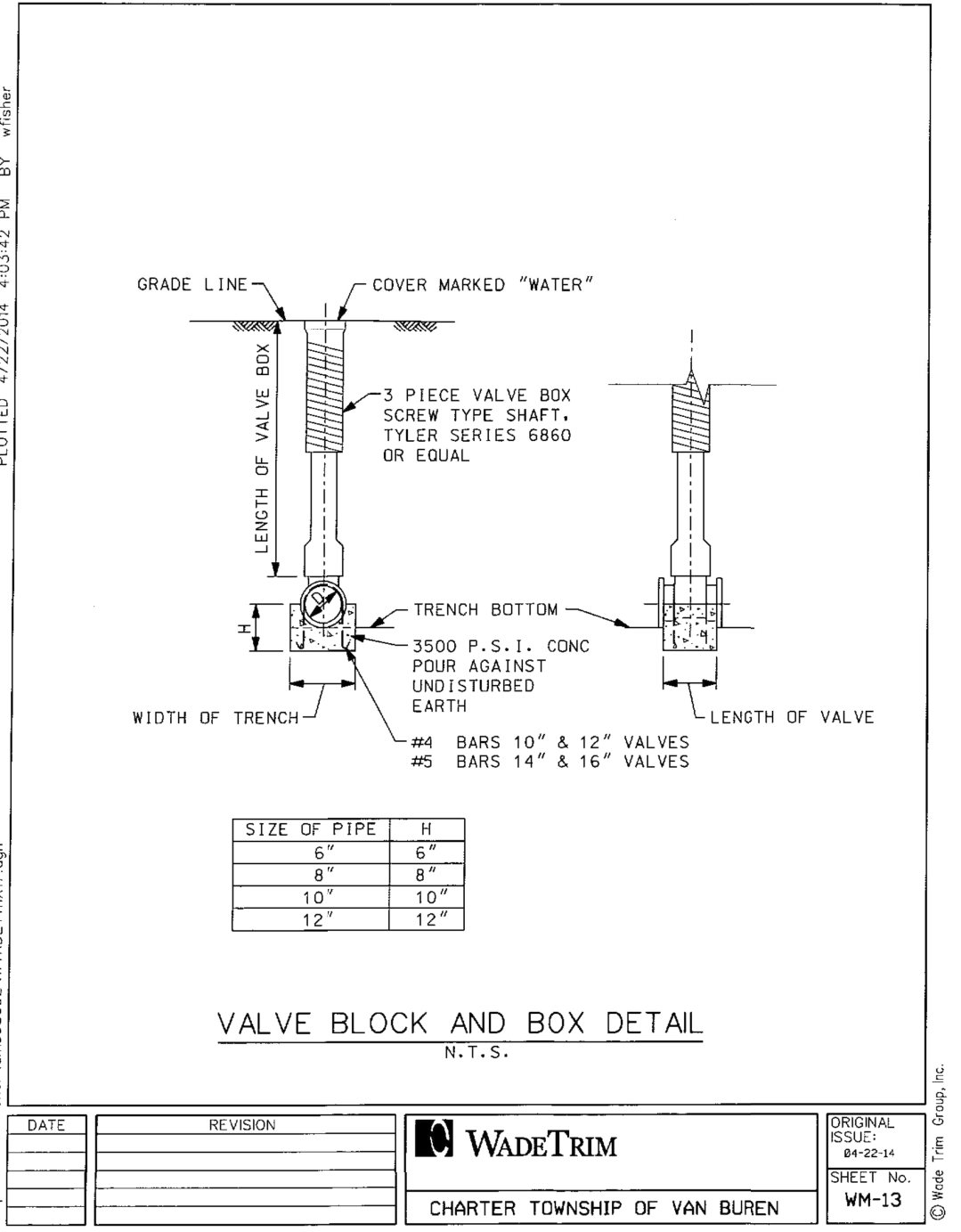
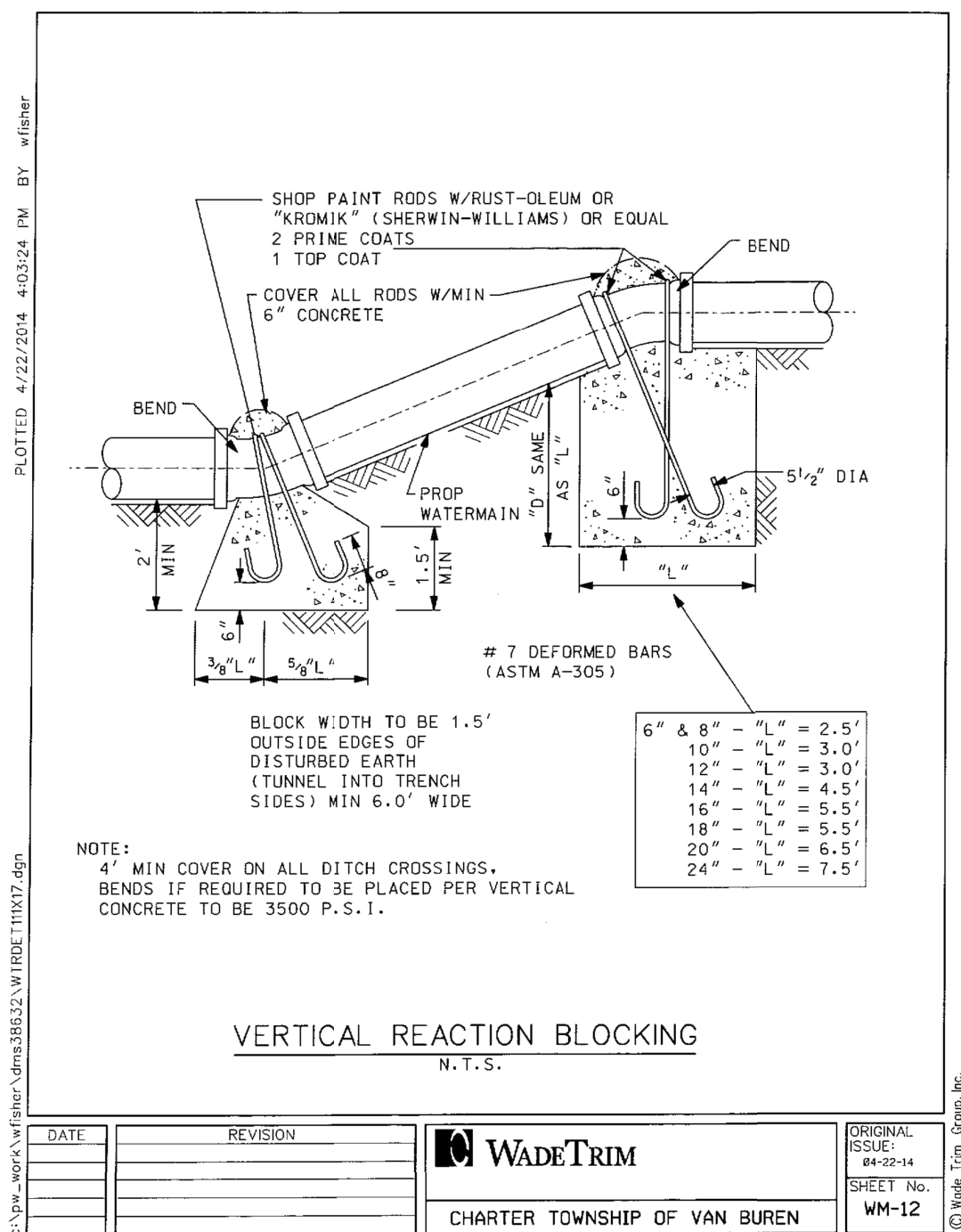
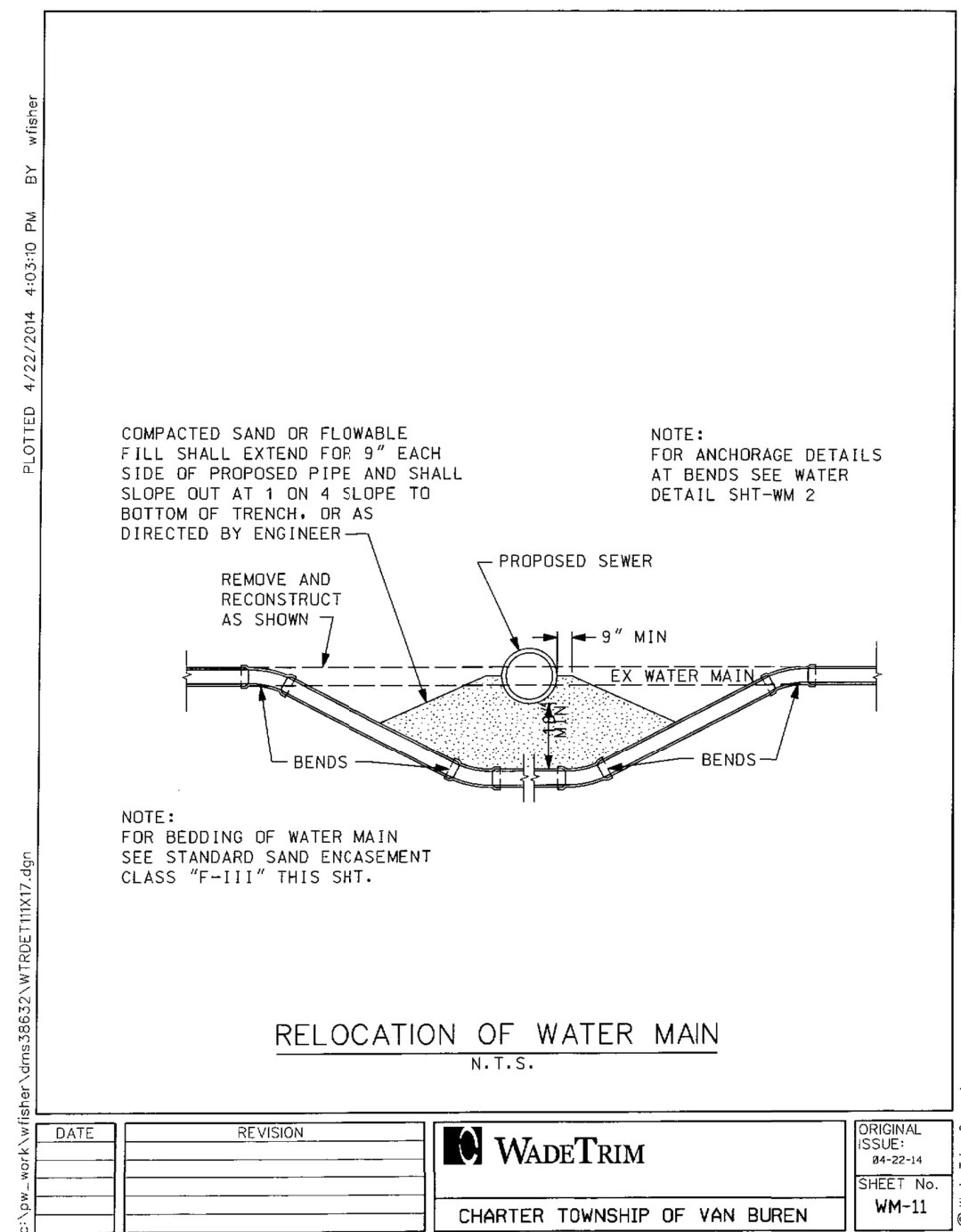
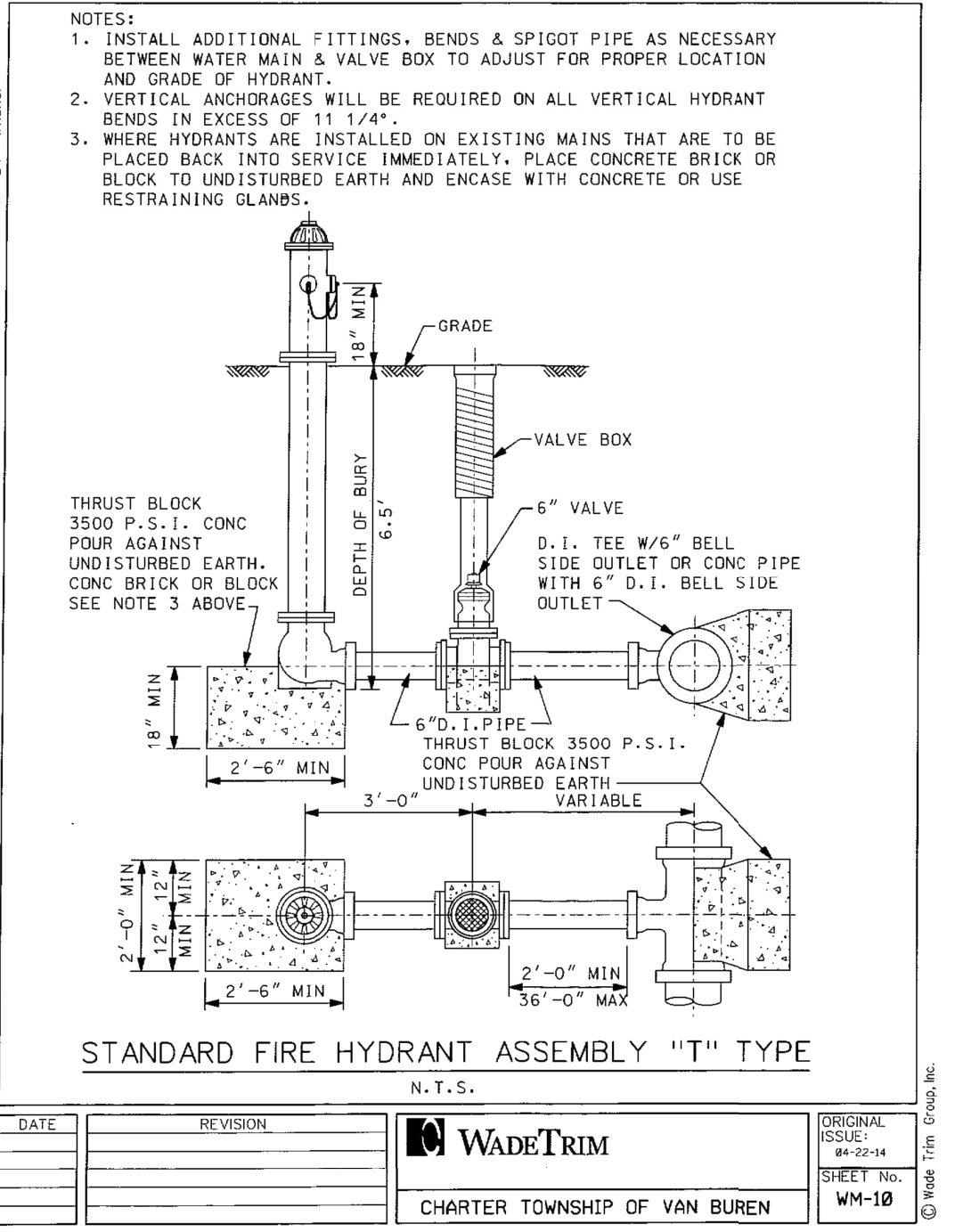
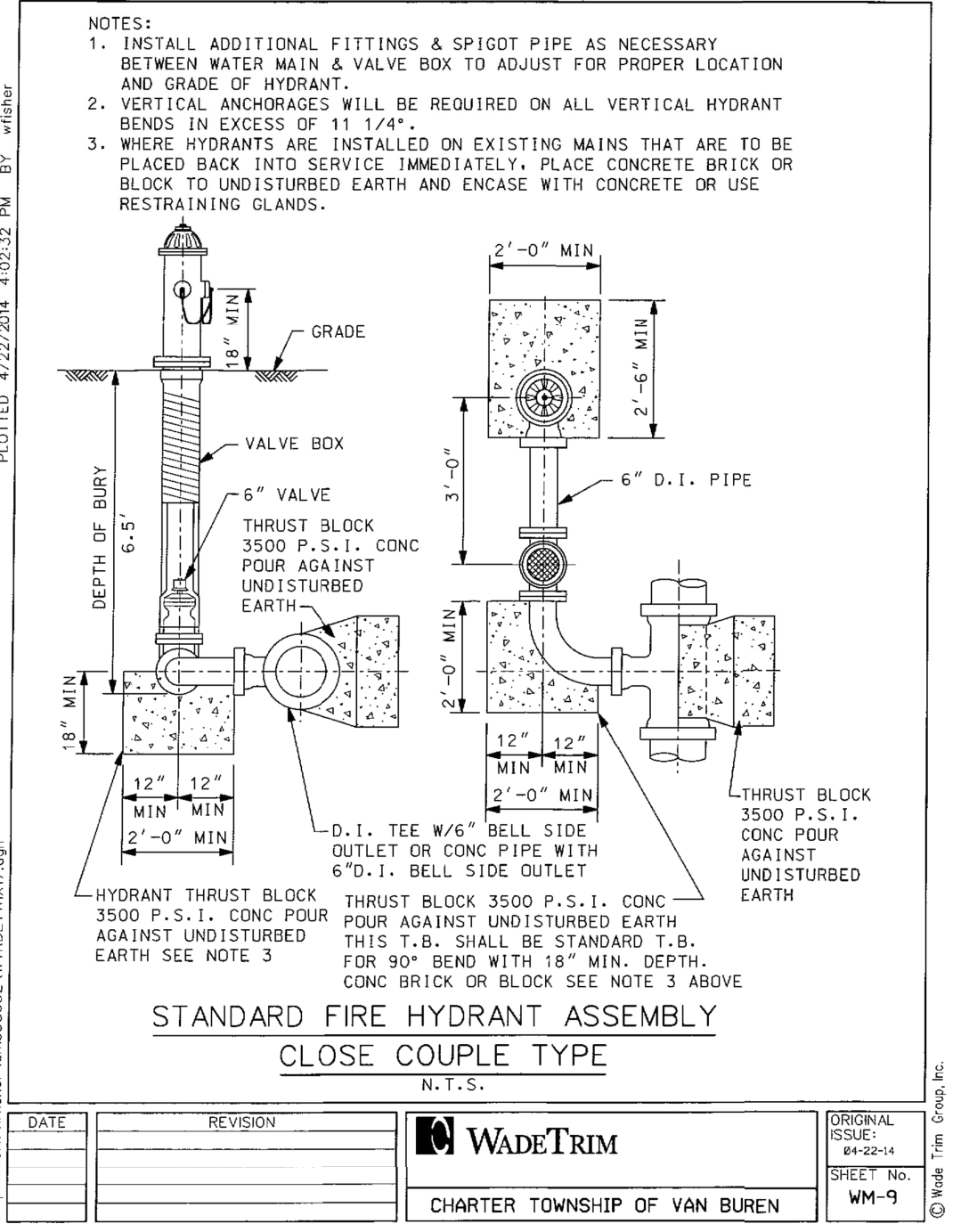
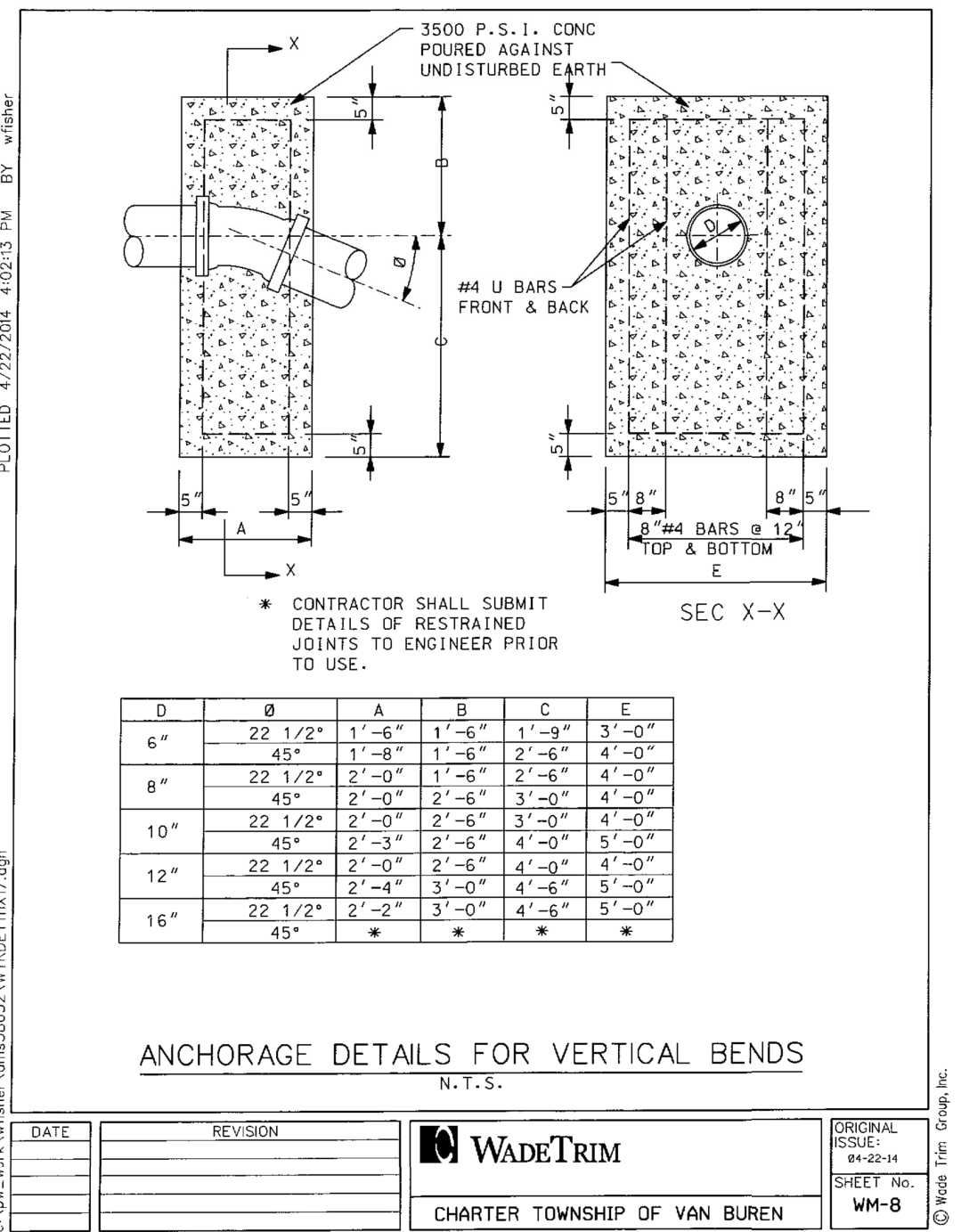
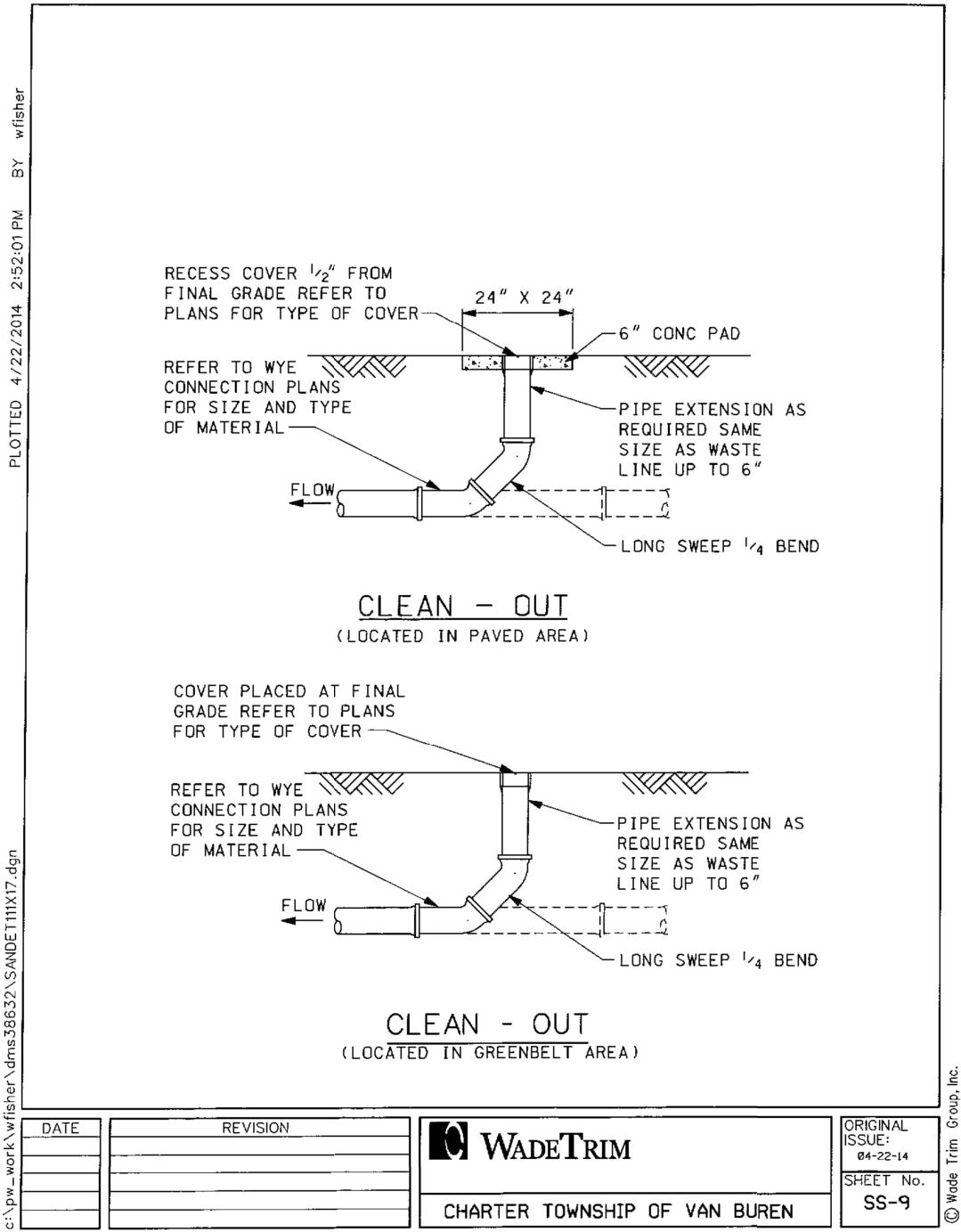
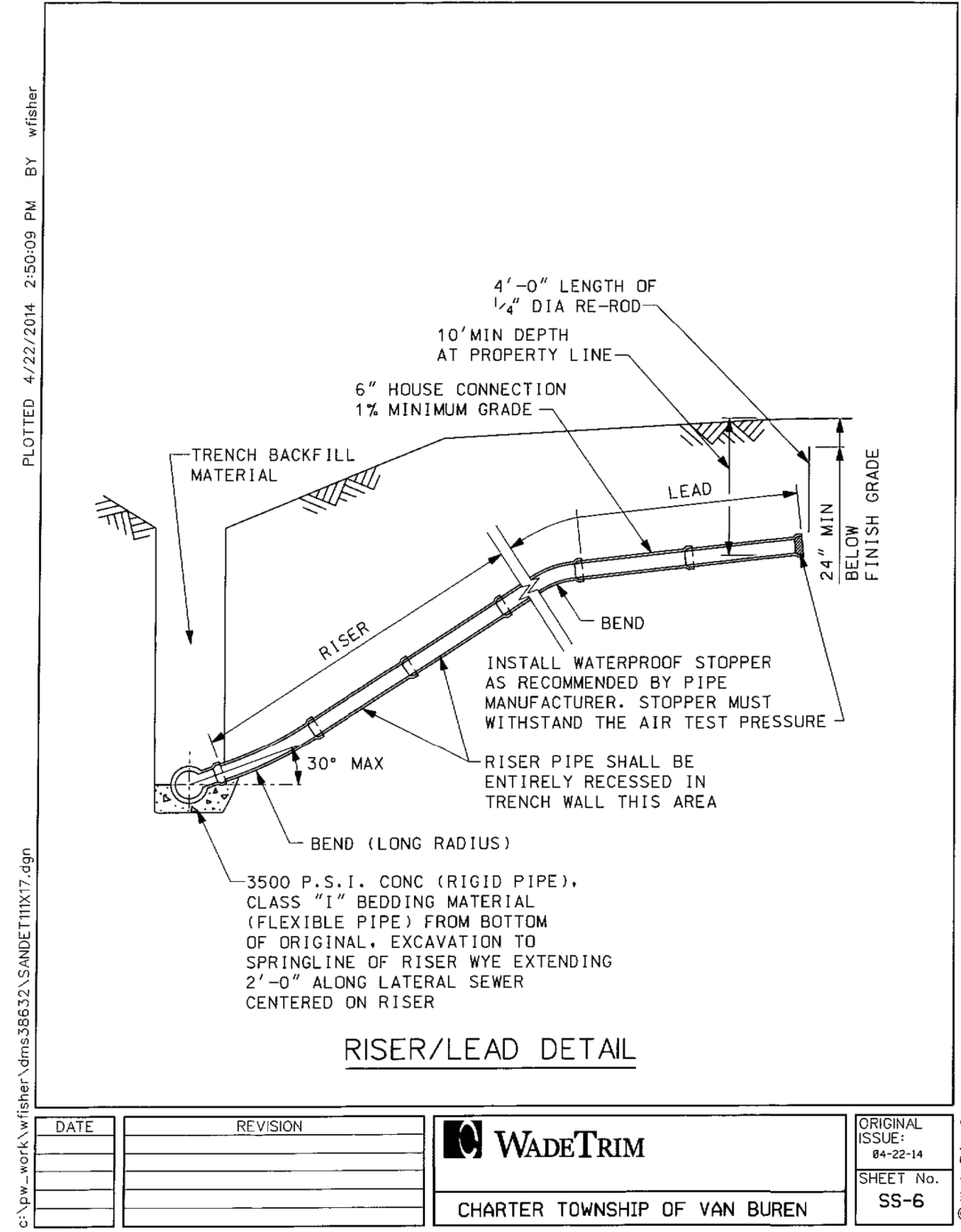


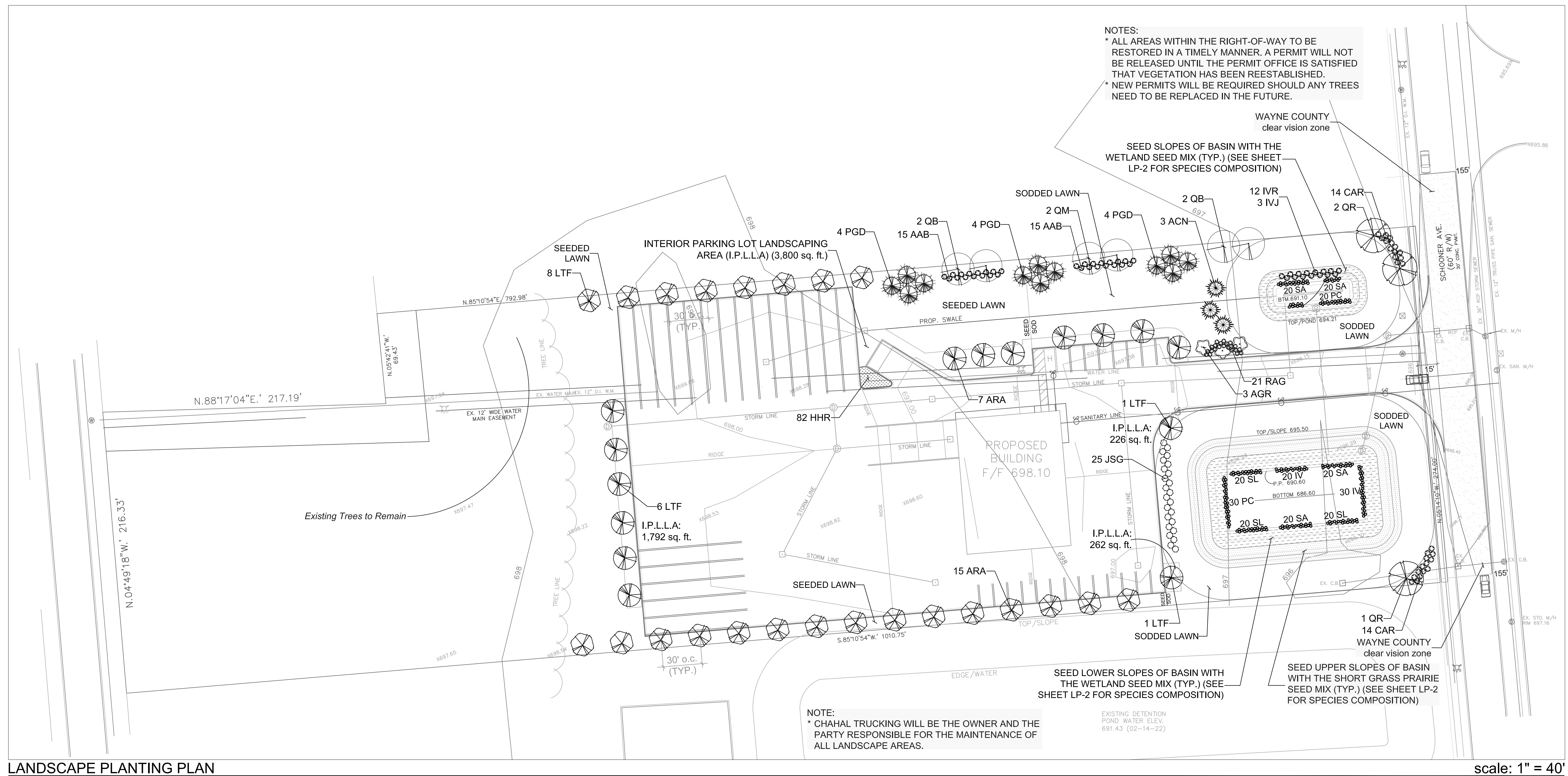
THE SOIL BORE REPORTS INDICATE A MEDIUM DENSITY FINE SAND MATERIAL FROM A DEPTH OF 1' TO 3' BELOW GROUND LEVEL OVER A VERY STIFF SILTY GRAY CLAY WITH TRACE OF SAND FROM A DEPTH OF 3' TO 5.5' OVER A MEDIUM STIFF SILTY GRAY CLAY WITH TRACE OF SAND FROM A DEPTH OF 5.5' TO 8' OVER A VERY STIFF SILTY GRAY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









PLANT LIST				
KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE
FRONTAGE LANDSCAPING - Schooner Avenue				
ACN	3	<i>Abies concolor</i>	Concolor Fir	8' ht. B&B
AGR	3	<i>Amelanchier x grandiflora</i> 'Robin Hill'	Robin Hill Apple Serviceberry	2" cal. B&B
CAR	28	<i>Clethra alnifolia</i> 'Ruby Spice'	Ruby Spice Summersweet	30" ht., 5 gal. pot
QR	3	<i>Quercus rubra</i>	Red Oak	3" cal. B&B
RAG	21	<i>Rhus aromatica</i> 'Gro-Low'	Gro-Low Fragrant Sumac	24" ht., 3 gal. pot
INTERIOR PARKING LOT LANDSCAPING				
ARA	7	<i>Acer rubrum</i> 'Armstrong Gold'	Armstrong Gold Red Maple	3" cal. B&B
LTF	8	<i>Liriodendron tulipifera</i> 'Fastigiata'	Fastigate Tuliptree	3" cal. B&B
HHR	82	<i>Heimerocallis sp.</i> 'Happy Returns'	Happy Returns Daylily	1 gal. pot, 36" o.c.
LOADING AREA LANDSCAPING				
JSG	25	<i>Juniperus x pfitzeriana</i> 'Sea Green'	Sea Green Spreading Juniper	30" spr., 5 gal. pot
OPEN SPACE LANDSCAPING				
AAB	30	<i>Aronia arbutifolia</i> 'Brilliantissima'	Brilliantissima Red Chokeberry	36" ht., 5 gal. pot
PGD	12	<i>Picea glauca</i> 'Black Hills'	Black Hills White Spruce	8' ht. B&B
STORMWATER BASIN LANDSCAPING				
IVJ	3	<i>Ilex verticillata</i> 'Jim Dandy'	Jim Dandy Michigan Holly	30" ht., 5 gal. pot
IJR	12	<i>Ilex verticillata</i> 'Red Sprite'	Red Sprite Michigan Holly	30" ht., 5 gal. pot
QB	2	<i>Quercus bicolor</i>	Swamp White Oak	3" cal. B&B
Emergent Plantings				
IV	50	<i>Iris virginica</i>	Blue Flag Iris	Bare Root
PC	50	<i>Pontederia cordata</i>	Pickeral Weed	Bare Root
SA	60	<i>Scirpus acutus</i>	Hard-Stemmed Bulrush	Bare Root
SL	60	<i>Sagittaria latifolia</i>	Broad-Leaf Arrowhead	Bare Root
GREENBELT BUFFER LANDSCAPING				
ARA	15	<i>Acer rubrum</i> 'Armstrong Gold'	Armstrong Gold Red Maple	3" cal. B&B
LTF	8	<i>Liriodendron tulipifera</i> 'Fastigiata'	Fastigate Tuliptree	3" cal. B&B

LANDSCAPE CALCULATIONS

FRONTLAND LANDSCAPING - Schooner Avenue (240 l.f.)

- * One (1) deciduous or evergreen tree / 40 l.f. = 6 trees
- * One (1) ornamental tree / 100 l.f. = 2.4 trees = 3 trees
- * Eight (8) shrubs / 40 l.f. = 48 shrubs

PARKING LOT LANDSCAPING (88,352 sq. ft. of parking area)

- * Interior landscaping shall account for a minimum of five percent of all paved parking areas
- * 88,352 times .05 equals 4,418 sq. ft.
- * One (1) deciduous tree shall be planted for each three hundred (300) sq. ft. or fraction thereof of interior landscaped area
- * 4,418 divided by 300 = 14.73 trees = 15 trees
- * Interior parking lot landscape provided equals 6,014 sq. ft.

OPEN SPACE LANDSCAPING (20,644 sq. ft.)

- * One (1) deciduous or evergreen tree shall be planted per 3,000 sq. ft. of open area
- * 20,644 divided by 3,000 equals 6.88 trees = 7 trees

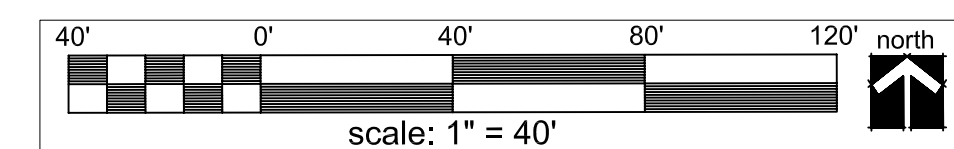
STORMWATER BASIN LANDSCAPING

- * The landscape treatment for the side slopes and bottom of the basin shall be planted with native plants consisting of a native seed mix and plugs
- * Trees and shrubs shall be planted around the perimeter of the basin

GREENBELT BUFFER LANDSCAPING

- * One (1) deciduous or evergreen tree shall be planted per 30 ln. ft. of required buffer

NOTE:
* See Sheet LP-2 for landscape planting details, landscape development notes, parking lot island detail, detention pond planting notes, and seed mix compositions.



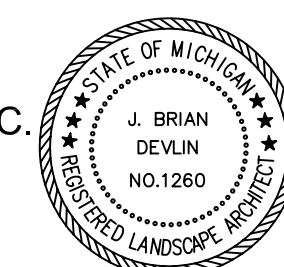
date: March 2, 2022
revised:
05-16-2022 Revise for Township review ltr.
dated April 14, 2022.
04-19-2023 Revise for site plan changes.
05-29-2023 Revise for Township review ltr.
dated May 19, 2023.



LANDSCAPE PLAN FOR:
Davenport Brothers Construction
301 Industrial Park Drive
Belleville, Michigan 48111
(734) 697-2994

PROJECT LOCATION
Chahal Trucking Facility
Schooner Avenue
Van Buren Township
Michigan

LANDSCAPE PLAN BY:
Nagy Devlin Land Design, L.L.C.
31736 West Chicago Ave.
Livonia, Michigan 48150
(734) 634-9208



J. Brian Devlin
AUTOCAD SIGNATURE
ORIGINAL IN BLUE

LANDSCAPE PLANTING NOTES:

PLANTING

- Installation of all plant material shall be in accordance with the latest edition of the *American Association of Nurserymen Standards for Nursery Stock* and with the specifications set forth by Van Buren Township, Michigan.
- The plant materials shall conform to the type stated on the plant list. Sizes shall be the minimum stated on the plant list or larger. All measurements shall be in accordance with the latest edition of the *American Association of Nurserymen Standards for Nursery Stock*.
- The plant material shall be nursery grown and inspected by the Owner's representative before planting. The Owner's representative reserves the right to reject any plant material at any time.
- Plants designated "B&B" shall be balled and burlapped with firm balls of earth. Dig shrub pits one foot (1') larger than the shrub rootball, tree pits three (3) times the width of the tree rootball and backfill with one (1) part topsoil and one (1) part soil from excavated pit. Plant trees and shrubs at the same grade level at which they were planted at the nursery. If wet, clay soils are evident, plant trees and shrubs slightly higher.
- The Contractor is responsible for planting the materials at the correct grades and spacing. The plants shall be oriented to give the best appearance.
- When the plant has been properly set, the pit shall be backfilled with the topsoil mixture, gradually filling, patting, and settling with water.
- Trees in lawn areas to have a four foot (4') circle of mulch, four inches (4") deep, and three inches (3") away from the trunk. Shrub beds are to be mulched with shredded bark mulch to a minimum depth of three inches (3"). Perennial beds are to be mulched with shredded bark mulch to a minimum depth of two inches (2"). Only natural color, finely shredded hardwood bark mulch will be accepted.
- Remove all twine, wire, and burlap from the top one third (1/3) of tree and shrub root balls and from tree trunks. Remove all non-biodegradable material such as plastic or nylon completely from branches and stems. All tree wrap, stakes, and guys are to be removed after one (1) winter season.
- All plant materials shall be pruned and injuries repaired. The amount of pruning shall be limited to the removal of dead or injured limbs and to compensate for the loss of roots from transplanting. Cuts should be flush, leaving no stubs. Cuts over three quarters of an inch (3/4") shall be painted with tree paint. Shrubs along the site perimeter shall be allowed to grow together in a natural form.
- Organic, friable topsoil shall be evenly distributed and fine graded over all areas to receive lawns at uniform depth of four inches (4") after settlement.
- All lawn areas shall be sodded with a Grade A Kentucky Blue Grass blend over the topsoil.
- All plantings shall be completed within three (3) months, and no later than November 30, from the date of issuance of a certificate of occupancy if such certificate is issued during the April 1 thru September 30 period; if the certificate is issued during the October 1 thru March 31 period, the planting shall be completed no later than the ensuing May 31. If the Owner is to pursue a Certificate of Occupancy prior to landscaping requirements being fulfilled, a performance guarantee must be provided.
- Backfill directly behind all curbs and along sidewalks and compact to the top of curbs or walk to support vehicle and pedestrian weight without settling.
- Conversion of all asphalt and gravel areas to landscape planting beds shall be done in the following manner: a. Remove all asphalt, gravel, and compacted earth to a depth of six inches to eighteen inches (6"-18") depending on the depth of the sub base and dispose of off site; b. Call the Township for an inspection prior to backfilling; c. Replace excavated material with good, medium-textured planting soil (loam or light yellow clay loam) to a minimum of two inches (2") above the top of the curb and sidewalk, add four inches to six inches (4"-6") of topsoil and crown to a minimum of six inches (6") above the adjacent curb and walk after earth settling, unless otherwise noted on the landscape plan.
If conversion from asphalt to landscape occurs in or between an existing landscape area(s), replace excavated material from four inches to six inches (4"-6") below adjacent existing grade with good, medium-textured planting soil (loam or light yellow clay loam) and add four inches to six inches (4"-6") of topsoil to meet existing grades after earth settling.

MATERIALS

- Required landscape material shall satisfy the criteria of the American Association of Nurserymen Standards for Nursery Stock and be: a.) Northern nursery grown; b.) State Department of Agriculture inspected; c.) No. 1 grade material with a straight, unscarred trunk, and well-developed uniform crown (park grade trees will not be accepted); d.) Staked, wrapped, watered, and mulched according to the details provided; and e.) Guaranteed for one (1) year.
- Topsoil shall be friable, fertile soil of clayloam character containing at least five percent (5%) but not more than twenty percent (20%) by weight of organic matter with a pH range between 6.0 and 7.0. The topsoil shall be free from clay lumps, coarse sand, plant roots, sticks, and other foreign materials.
- The seed mixture for the seeded lawn areas as indicated on the plan shall consist of a Kentucky Blue Grass blend and mulched with clean straw free of noxious weed seeds. Maintenance of the right-of-way lawn area shall consist of a regular cuttings as needed. Weed content of the seed mixture shall not exceed one percent (1%). The mix shall be applied at a rate of 200 pounds per acre.
- Sod, if specified, shall be two (2) year old "Baron/Sheri/Adelphi" Kentucky Blue Grass blend grown in a sod nursery on loam soil.
- Proposed perennials shall be full, well-rooted plants.
- Callery Pear (*Pyrus calleryana*) and Norway Maple (*Acer platanoides*) shall not be substituted for any tree species in the plant list. Contact the Landscape Architect for acceptable plant substitutions.

GENERAL

- Do not plant deciduous or evergreen trees directly over utility lines or under overhead wires. Maintain a six foot (6') distance from the centerline of utilities and twenty feet (20') from the centerline of overhead wires for planting holes. Call MISS DIG forty-eight (48) hours prior to landscape construction for field location of utility lines.
- The Contractor agrees to guarantee all plant material for a period of one (1) year. At that time, the Owner's representative reserves the right for a final inspection. Plant material with twenty-five percent (25%) die back, as determined by the Owner's representative shall be replaced. This guarantee includes the furnishing of new plants, labor, and materials. These new plants shall also be guaranteed for a period of one (1) year.
- The work shall consist of providing all necessary materials, labor, equipment, tools, and supervision required for the completion as indicated on the drawings.
- Landscape areas shall be irrigated by an automatic underground irrigation system. Lawns and shrub/landscape areas shall be watered by separate zones to minimize overwatering.
- All written dimensions override scale dimensions on the plans.
- All substitutions or deviations from the landscape plan must be approved by Van Buren Township prior to installation.
- All bidders must inspect the site and report any discrepancies to the Owner's representative.
- All specifications are subject to change due to existing conditions.
- The Owner's representative reserves the right to approve all plant material.
- The Contractor is responsible for watering and maintenance of all seed areas until a minimum of ninety percent (90%) coverage, as determined by the Owner's representative.

LONG TERM MAINTENANCE SCHEDULE

- The Owner of the landscaping shall perpetually maintain such landscaping in good condition so as to present a healthy, neat, and orderly appearance, free from refuse and debris.
- The Owner shall conduct a seasonal landscape maintenance program including regular lawn cutting, (at least once per week during the growing season), pruning at appropriate times, watering, and snow removal during winter.
- All diseased and/or dead material shall be removed within sixty (60) days following notification and shall be replaced within the next appropriate planting season or within one (1) year, whichever comes first.
- Any debris such as lawn clippings, fallen leaves, fallen limbs, and litter shall be removed from the site on a weekly basis at the appropriate season.
- All planting beds shall be maintained by removing weeds, fertilizing, and replenishing mulch as needed.
- The irrigation system should be kept in good working order with routine inspections and maintenance. A complete winterization procedure should be performed every year prior to the advent of freezing temperatures.

DETENTION POND LANDSCAPE DEVELOPMENT NOTES:

PLANTING:

- Follow the Supplier's recommended procedures for bed preparation, installation, and soil erosion control measures of the proposed seeded areas. After the plants germinate and begin to grow follow the maintenance guidelines included on this sheet.
- Rototill four inches (4") of compost or topsoil into the top six inches (6") of the surface of the basin. (Compost may be obtained from the municipal facility at Six Mile and Ridge Roads. Call Onyx Environmental at 248 305-8377 or 248 349-7230 for hours of operation and general information.)
- Provide a cover crop of annual rye at a rate of ten pounds (10#) per acre and seed oats at a rate of thirty pounds (30#) per acre over the entire area to be seeded.

MAINTENANCE OF THE DETENTION AREA

- ESTABLISHMENT: During the first growing season, the native seed areas should be mowed two (2) to four (4) times to a height of four inches to six inches (4"-6") when the plants reach a height of ten inches to twelve inches (10"-12"). Hand pulling may be needed to control unwanted weed populations. If a mower cannot be set high enough, a string trimmer can be used. During the second growing season, the native seed areas should be mowed a few times to a height of about eight inches (8"), when the plants reach a height of ten inches to eighteen inches (10"-18"). Hand pulling may be needed to control unwanted weed populations. By the second growing season it should be apparent if some areas need reseeding. Long term management includes mowing and hand pulling of weeds. The native planting may be mowed to a short height and the clippings removed in the early Spring before birds begin nesting.
- WATERING: Watering should be performed as needed. During the establishment period after the initial planting, watering is very important and should be conducted every two to three (2-3) days. The initial planting should be checked regularly for appropriate moisture availability. Two (2) methods for determining adequate moisture levels include the following: a.) if the plants wilt during the day when the temperature is at its highest, but revive during the night, then watering is not necessary, and b.) by testing the soil moisture at a depth of four inches (4") by inserting a small rod into the soil. If the rod is wet, then the soil is moist at a depth of four inches (4") and watering is not necessary.
- EROSION CONTROL: Provide an erosion control blanket on the side slopes of the seeded areas detention area. The erosion control blanket shall be pegged in place.
- EDGING: The edge of the detention area should be maintained to avoid grass growing into the detention area. The edge can be maintained with a V-notch cut edge. The channel should be maintained at four inches (4") or greater and renewed every six to eight (6-8) weeks.
- CUTTING BACK: Tall wildflowers should be cut back by one-third. Early flowering plants can be cut back in late June or early July and late flowering plants in late October.
- THINNING: After the detention area has become established and thriving, it may be necessary to thin perennials by dividing individual plants in Spring or Fall.
- REPLACEMENT: Any plants that die or become diseased should be replaced. Plant health should be checked regularly with replanted material occurring in the Spring or Fall.
- REMOVAL OF LITTER AND DEBRIS: Litter, trash, and debris should be removed on a regular basis to insure that inlets remain free flowing and to keep the area in a neat and attractive appearance.
- INORGANIC APPLICATIONS: In general, detention areas do not need fertilization as nutrients from surrounding areas is usually at an elevated level. If soil fertility appears to be an issue, the soil should be tested and appropriate actions taken based on the results. Insecticides, herbicides, fungicides, and rodenticides should not be used in the detention area. If a plant is diseased or infested with insects, it should simply be removed and replaced.

SEED MIX COMPOSITIONS

WETLAND SEED MIX

A composition of wildflowers, sedges, and grasses.
Application rate: 3 oz. per 1000 sq. ft. or
7 lbs. per acre

BOTANICAL NAME	COMMON NAME
Wildflowers	
<i>Asclepias incarnata</i>	Swamp Milkweed
<i>Aster novae-anglae</i>	New England Aster
<i>Aster puniceus</i>	Swamp Aster
<i>Aster umbellatus</i>	Flat-Top Aster
<i>Eupatorium maculatum</i>	Joe-Pye Weed
<i>Eupatorium perfoliatum</i>	Boneset
<i>Euthamia graminifolia</i>	Grassleaved Goldenrod
<i>Liatris spicata</i>	Marsh Blazing Star
<i>Pedicularis lanceolata</i>	Swamp Betony
<i>Rudbeckia subtomentosa</i>	Black-Eyed Susan
<i>Silphium serotiatum</i>	Cupplant
<i>Silphium terebinthinaceum</i>	Prairie Dock
<i>Solidago patula</i>	Swamp Goldenrod
<i>Solidago riddellii</i>	Ridell's Goldenrod
<i>Verbena hastata</i>	Blue Vervain
<i>Vernonia missurica</i>	Ironweed
<i>Veronicastrum virginicum</i>	Culver's Root
Sedges/Grasses	
<i>Andropogon scoparius</i>	Little Bluestem
<i>Carex crinita</i>	Fringed Sedge
<i>Carex stricta</i>	Tussock Sedge
<i>Scirpus cyperinus</i>	Wool Grass



CUSTOM SHORT GRASS SEED MIX

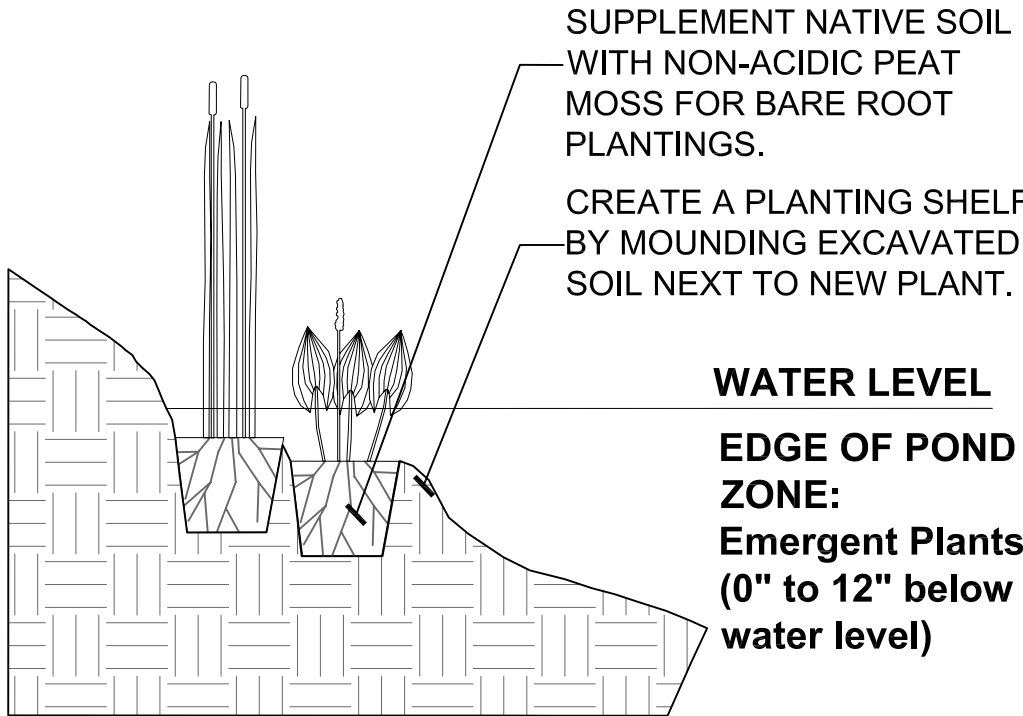
Fifty percent (50%) Forbs/Fifty percent (50%) Grass.
Application rate: 5 oz. per 1000 sq. ft.
or 10 lbs. per acre

BOTANICAL NAME	COMMON NAME
Wildflowers	
<i>Achillea millefolium</i>	Yarrow
<i>Aquilegia canadensis</i>	Wild Columbine
<i>Asclepias tuberosa</i>	Butterflyweed
<i>Aster laevis</i>	Smooth Aster
<i>Coreopsis lanceolata</i>	Sand Tickseed
<i>Echinacea purpurea</i>	Purple Coneflower
<i>Kuhnia eupatorioides</i>	False Boneset
<i>Monarda fistulosa</i>	Bergamot
<i>Penstemon digitalis</i>	Fokglove Beardstongue
<i>Rudbeckia hirta</i>	Black-Eyed Susan
<i>Solidago speciosa</i>	Showy Goldenrod
Sedges/Grasses	
<i>Schizachyrium scoparius</i>	Little Bluestem
<i>Bouteloua curtipendula</i>	Side Oats Grama
<i>Koeleria pyramidata</i>	June Grass*
<i>Sporobolus heterolepis</i>	Prairie Dropseed*

* Supplier to add these species to the mix.

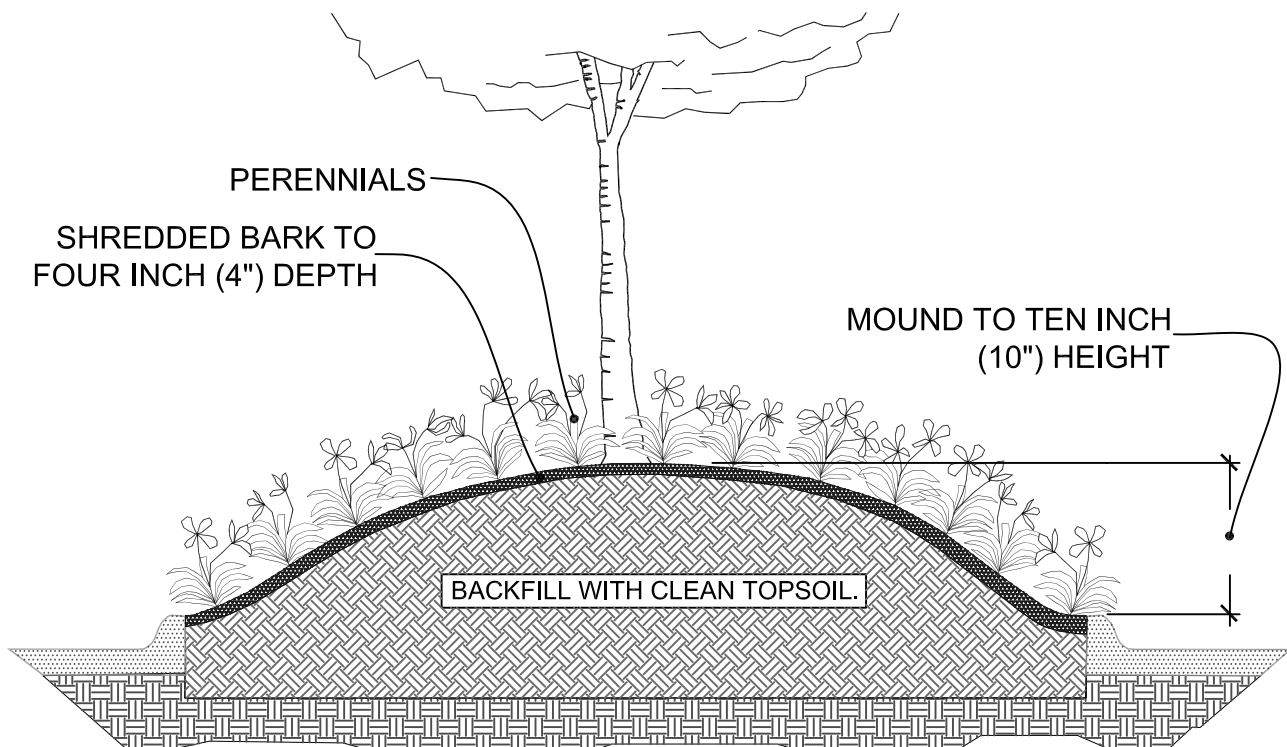


MICHIGAN WILDFLOWER FARM
11770 Cutler Road
Portland, Michigan 48875-9452
Phone: (517) 647 6010
Fax: (517) 647 6072

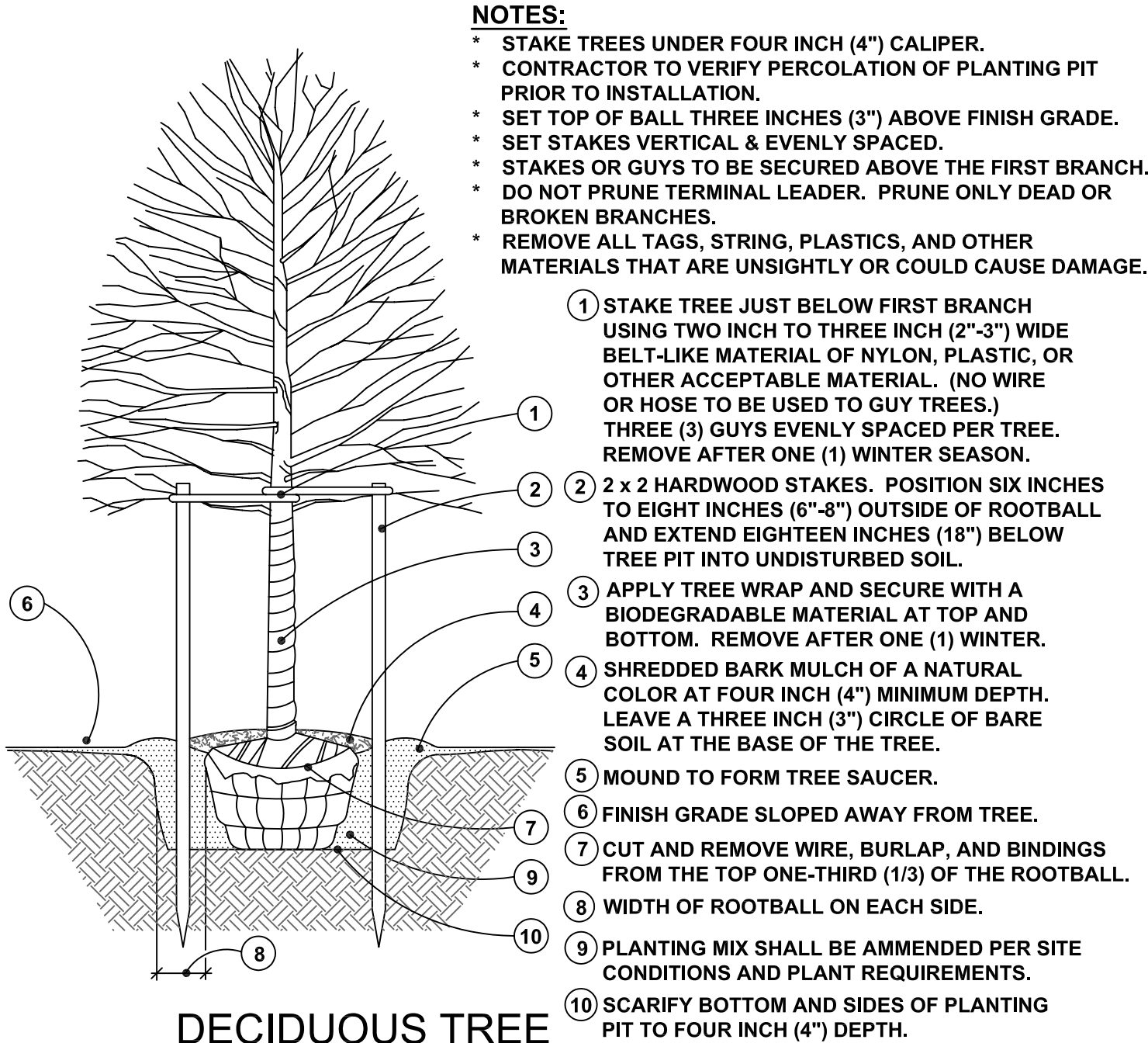


EMERGENT PLANTS

POND ZONE PLANTING DETAIL not to scale

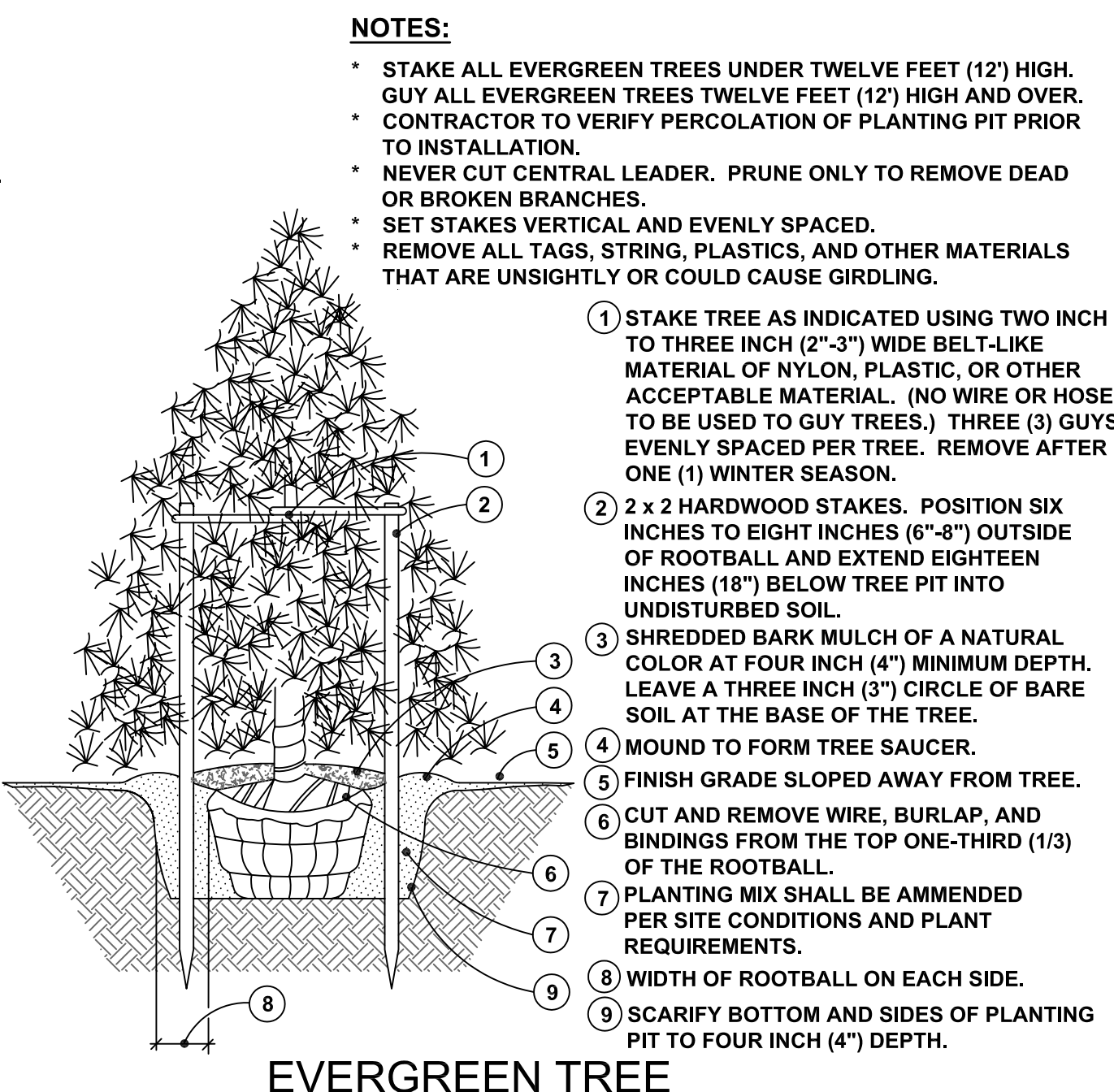


PARKING LOT ISLAND DETAIL not to scale

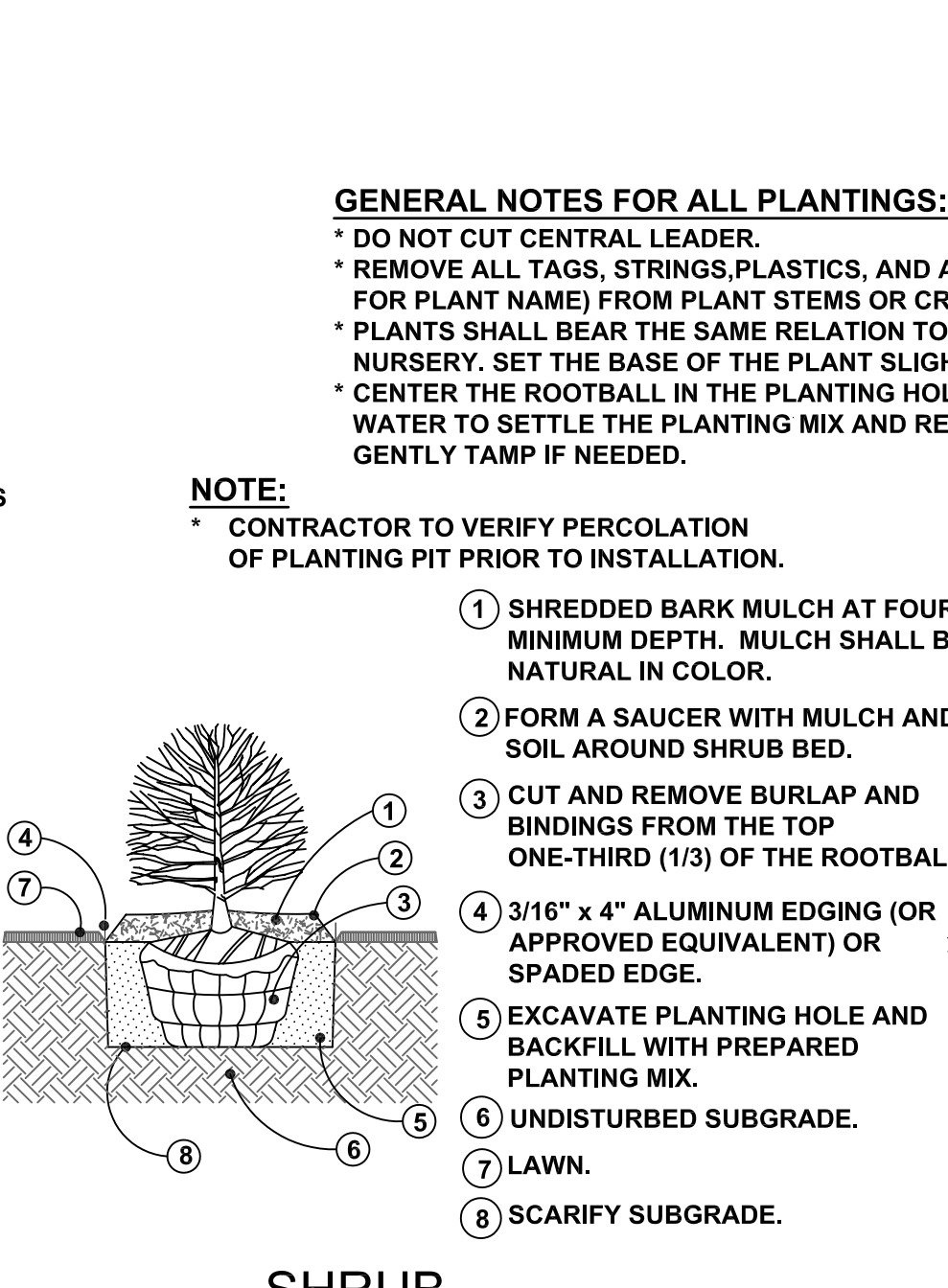


DECIDUOUS TREE

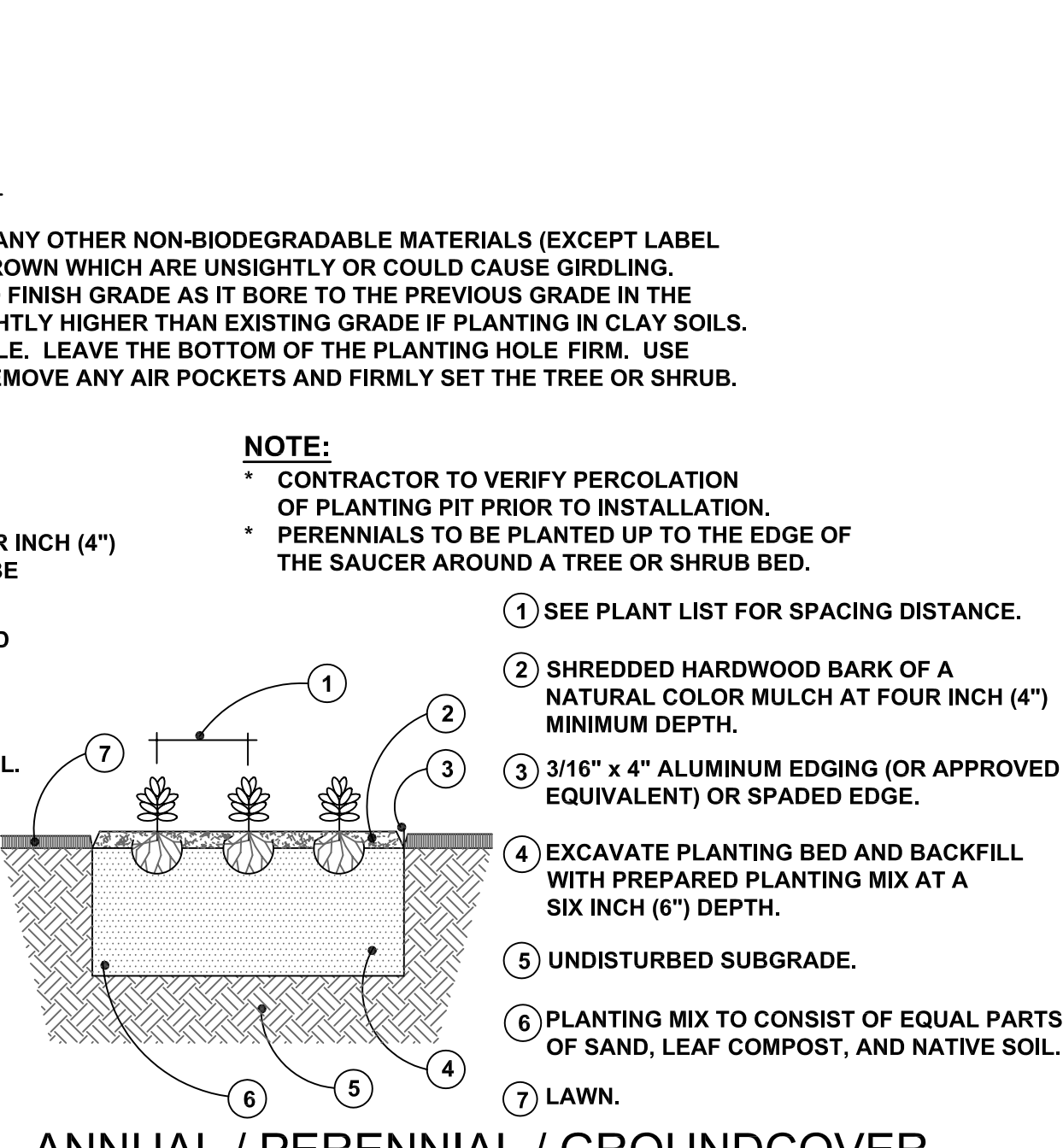
PLANTING DETAILS



EVERGREEN TREE



SHRUB



ANNUAL / PERENNIAL / GROUNDCOVER

not to scale

GENERAL NOTES FOR ALL PLANTINGS:

- DO NOT CUT CENTRAL LEADER.
- REMOVE ALL TAGS, STRINGS, PLASTICS, AND ANY OTHER NON-BIODEGRADABLE MATERIALS (EXCEPT LABEL FOR PLANT NAME) FROM PLANT STEMS OR CROWN WHICH ARE UNSIGHTLY OR COULD CAUSE GIRDLING.
- PLANTS SHALL BEAR THE SAME RELATION TO FINISH GRADE AS IT BORE TO THE PREVIOUS GRADE IN THE NURSERY. SET THE BASE OF THE PLANT SLIGHTLY HIGHER THAN EXISTING GRADE IF PLANTING IN CLAY SOILS.
- CENTER THE ROOTBALL IN THE PLANTING HOLE. LEAVE THE BOTTOM OF THE PLANTING HOLE FIRM. USE WATER TO SETTLE THE PLANTING MIX AND REMOVE ANY AIR POCKETS AND FIRMLY SET THE TREE OR SHRUB. GENTLY TAMP IF NEEDED.

- NOTE:**
- CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION.

NOTE:

- CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION.
- PERENNIALS TO BE PLANTED UP TO THE EDGE OF THE SAUCER AROUND A TREE OR SHRUB BED.

date: March 2, 2022
revised:
05-16-2022 Revise for Township review ltr.
dated April 14, 2022.
04-19-2023 Revise for site plan changes.
05-29-2023 Revise for Township review ltr.
dated May 19, 2023.

LANDSCAPE PLAN FOR:
Davenport Brothers Construction
301 Industrial Park Drive
Belleville, Michigan 48111
(734) 697-2994

PROJECT LOCATION:
Chahal Trucking Facility
Schooner Avenue
Van Buren Township,
Michigan

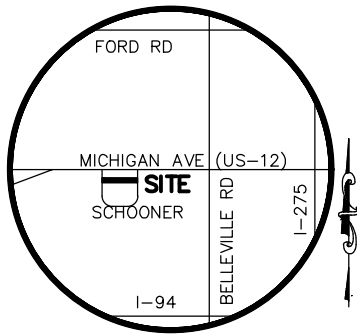
LANDSCAPE PLAN BY:
Nagy Devlin Land Design, L.L.C.
31736 West Chicago Ave.
Livonia, Michigan 48150
(734) 634-9208



LP - 2: LANDSCAPE NOTES & DETAILS

EXHIBIT "A"

PHYSICAL LIMITS OF STORM WATER MANAGEMENT SYSTEM



VICINITY MAP

NOT TO SCALE

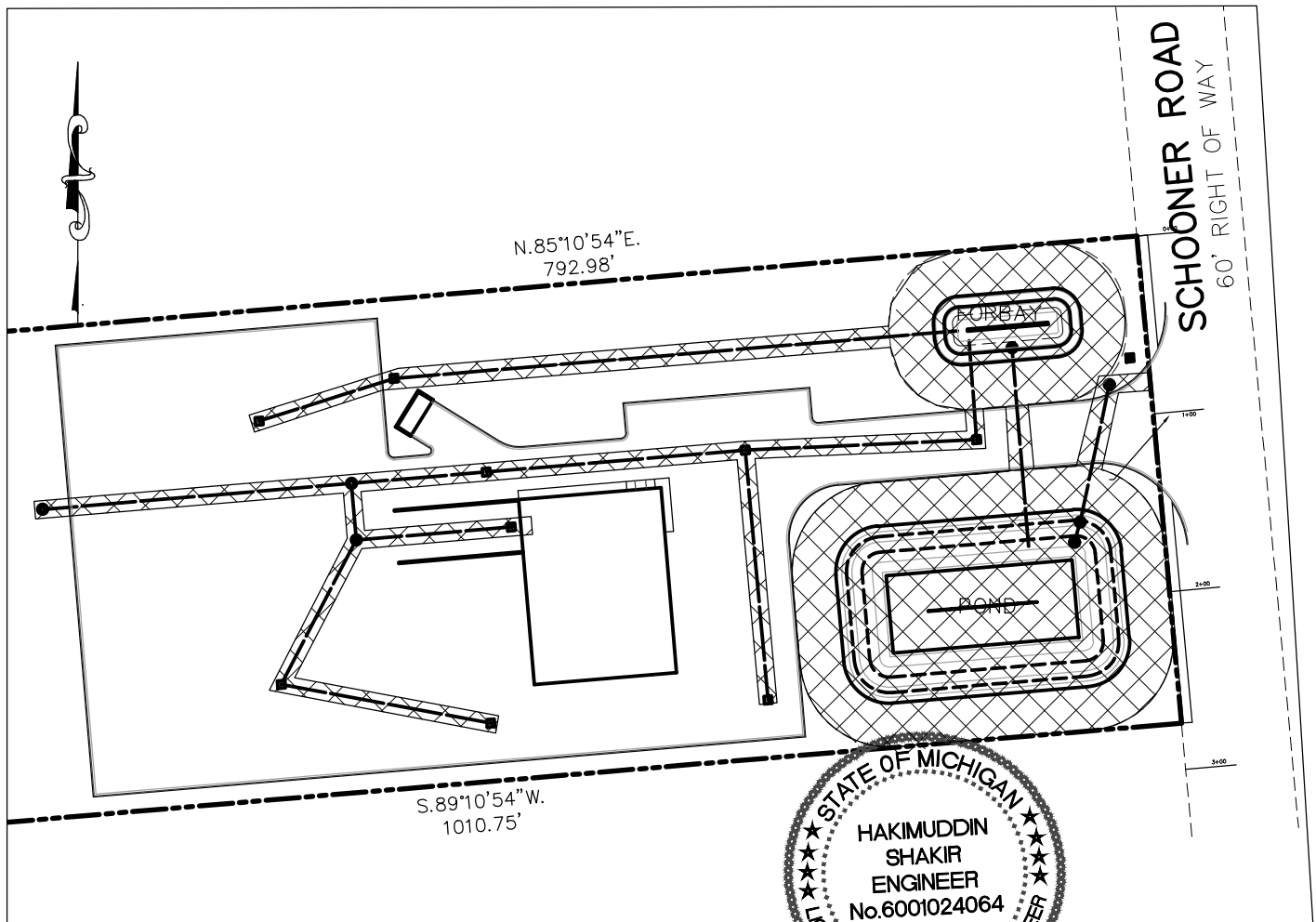


PROPERTY OWNER

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 "A"
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

EXHIBIT "B"

LONG TERM MAINTENANCE SCHEDULE CHART

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

* 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	X		AS NEEDED, SELECT AREAS ONLY
REMOVE FLOATABLES, INVASIVE & DEAD VEGETATION & DEBRIS	X	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		AS NEEDED / SEMI-ANNUALLY
REMEDIAL ACTIONS									
REPAIR/STABILIZE AREAS OF EROSION, RESEED BARE AREAS	X	X	X	X	X	X	X		AS NEEDED
REPLACE DEAD PLANTINGS, LAWN				X	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	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.



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