

CHAHAL SEMI TRUCK/TRAILER REPAIR FACILITY

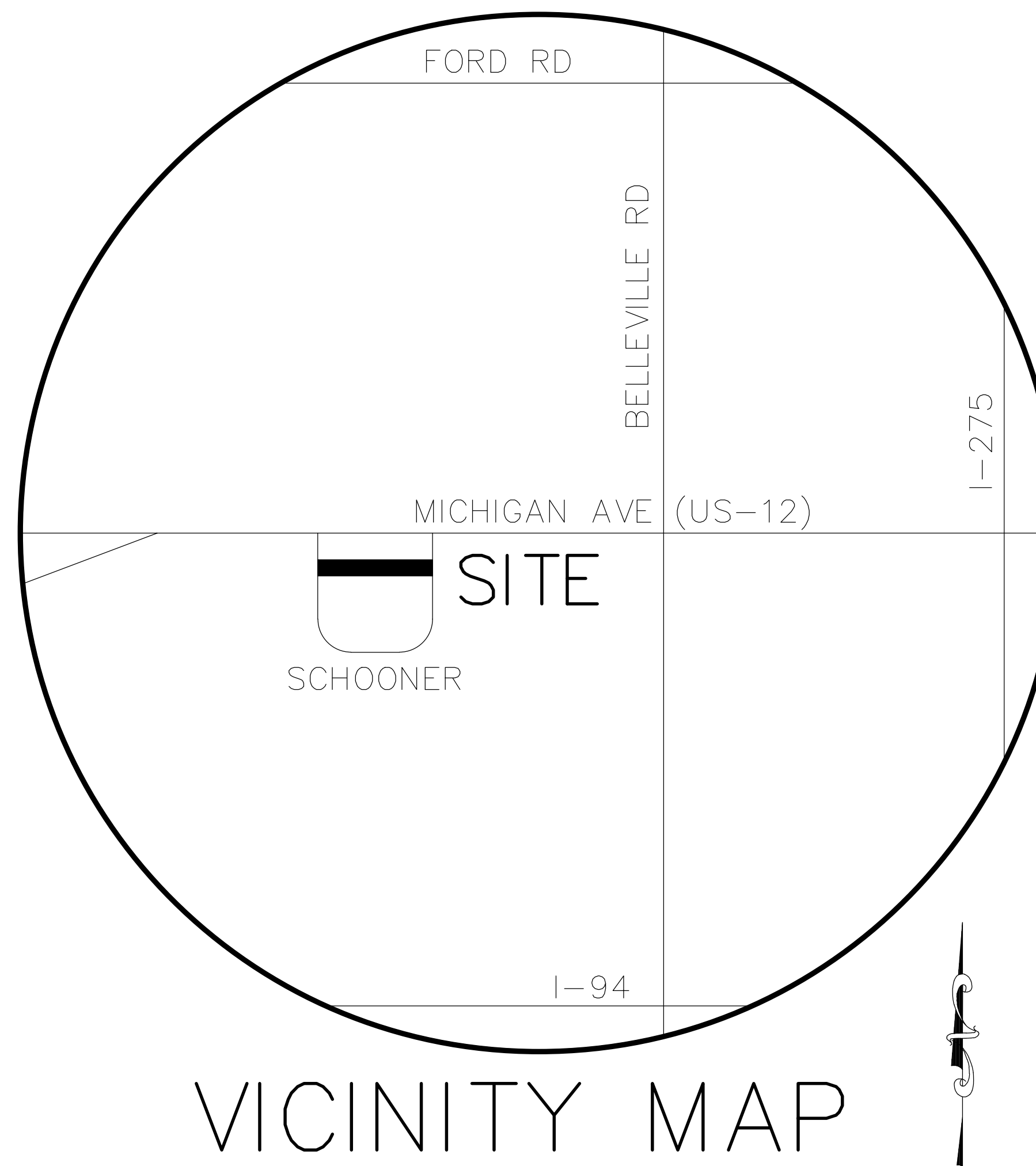
6100 SCHOONER DRIVE
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

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

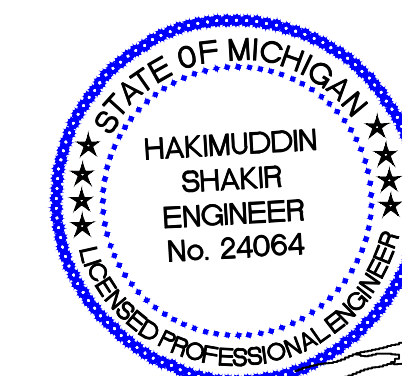
Land Characteristic	Existing	Proposed
Total Development Area (ac)	6.03	4.99
Impervious Area (ac)	1	3.24
Total Pervious Area (ac)	5	1.75
Pervious Area Breakdown by Cover Type		
Non-cultivated	4	0
Impervious Area (ac)	N/A	N/A
Improved area (grass/landscape)	6.03	1.19
Predominant NRCS Soil Type	type B	type B
Wooded Area (ac)	0	0
Predominant NRCS Soil Type	N/A	N/A
	REQUIRED VOLUME	UNIT PROVIDED VOLUME
CPVC	13,042	cf 1,956
CPRC	24,780	cf 0
Flood control vol. =	33,268	cf 31,312
Total volumes =	31,312	cf 33,268

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
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4. STORM SEWER DESIGN PLAN
5. PROFILES
6. DETAILS
7. 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

REQUIRED PERMITS

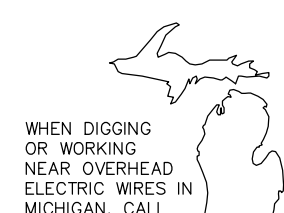
WAYNE COUNTY (STORM WATER PERMIT)
WAYNE COUNTY SESC PERMIT
VAN BUREN TOWNSHIP (SITE DEVELOPMENT PERMIT)

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.



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.

PROPOSED USE

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

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

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

REQUIRED PARKING

PER TOWNSHIP ORDINANCE:

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

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

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

GENERAL NOTES

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

SITE SPECIFIC NOTES

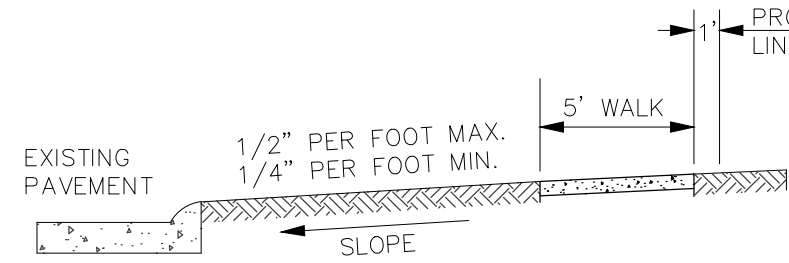
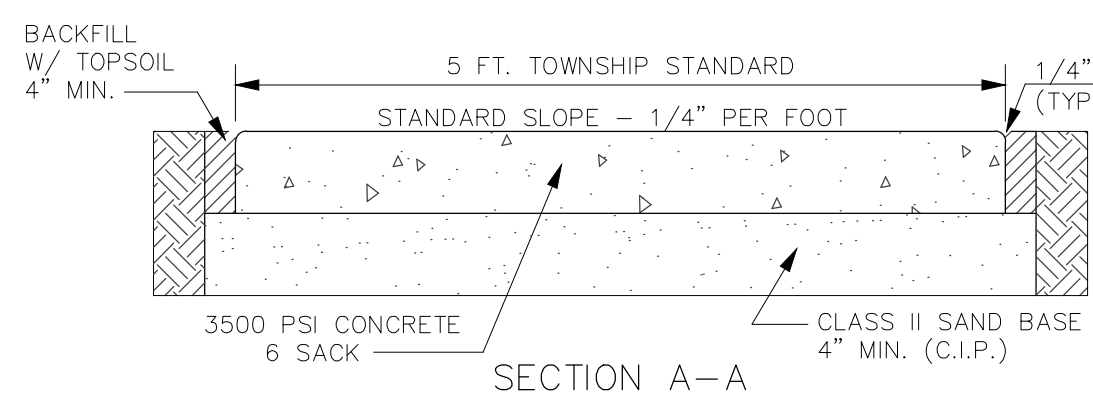
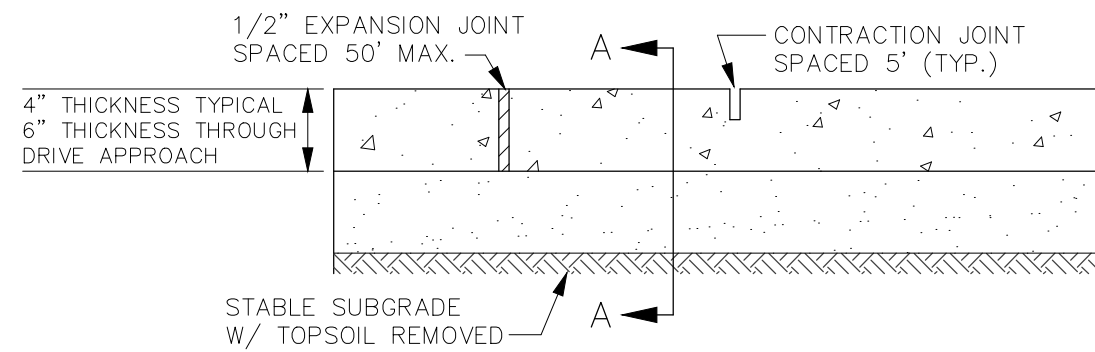
- PROPOSED SEMI TRUCK REPAIR FACILITY. THERE WILL BE NO LONG TERM PARKING WITHIN THE SUBJECT PROPERTY.
- TRUCKS PARKED ON THIS PROPERTY ARE FUNCTIONAL AND AWAITING REPAIR I.E., NO JUNK TRUCKS FOR PARTS SALVAGE.
- THERE WILL BE NO HAZARDOUS WASTE GENERATED FROM THE SITE.
- OILS, SOLVENTS AND OTHER CHEMICALS WILL BE REMOVED FROM THE SITE BY APPROVED HAULING METHODS.
- ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS, SPECIFICATIONS, AND GENERAL CONDITIONS OF THE TOWNSHIP.
- THE APPLICANT IS RESPONSIBLE FOR RESOLVING ANY DRAINAGE PROBLEMS ON ADJACENT PROPERTIES WHICH ARE THE RESULT OF THE 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.

REQUIRED PERMITS

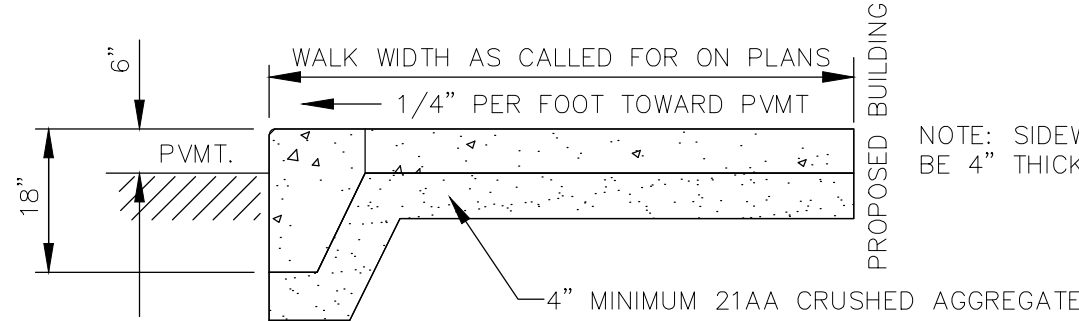
- WAYNE COUNTY STORM MANAGEMENT PERMIT.
- VAN BUREN DEVELOPMENT PERMIT

NOTE

SOIL BORE INFORMATION LOCATED ON SHEET #7.

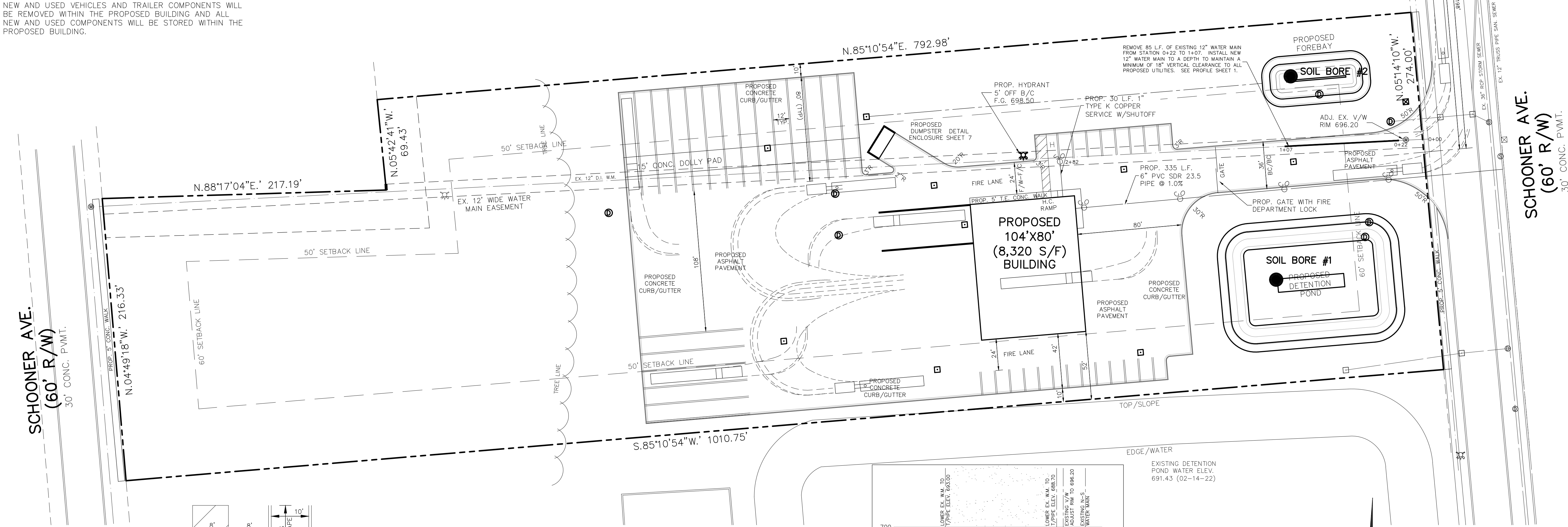


SIDEWALKS



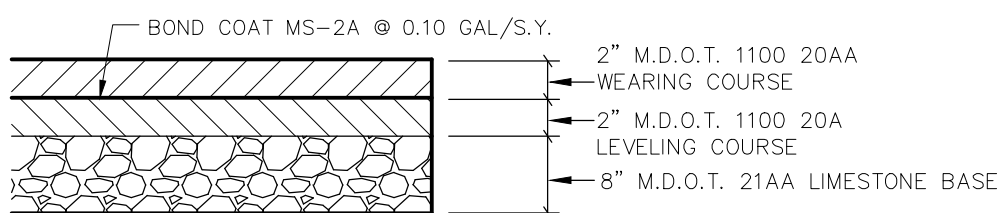
THICKENED EDGE CONCRETE SIDEWALK

NO SCALE



TYPICAL 90° PARKING SPACE DETAIL

NOT TO SCALE



ASPHALT PAVEMENT SECTION

NOT TO SCALE

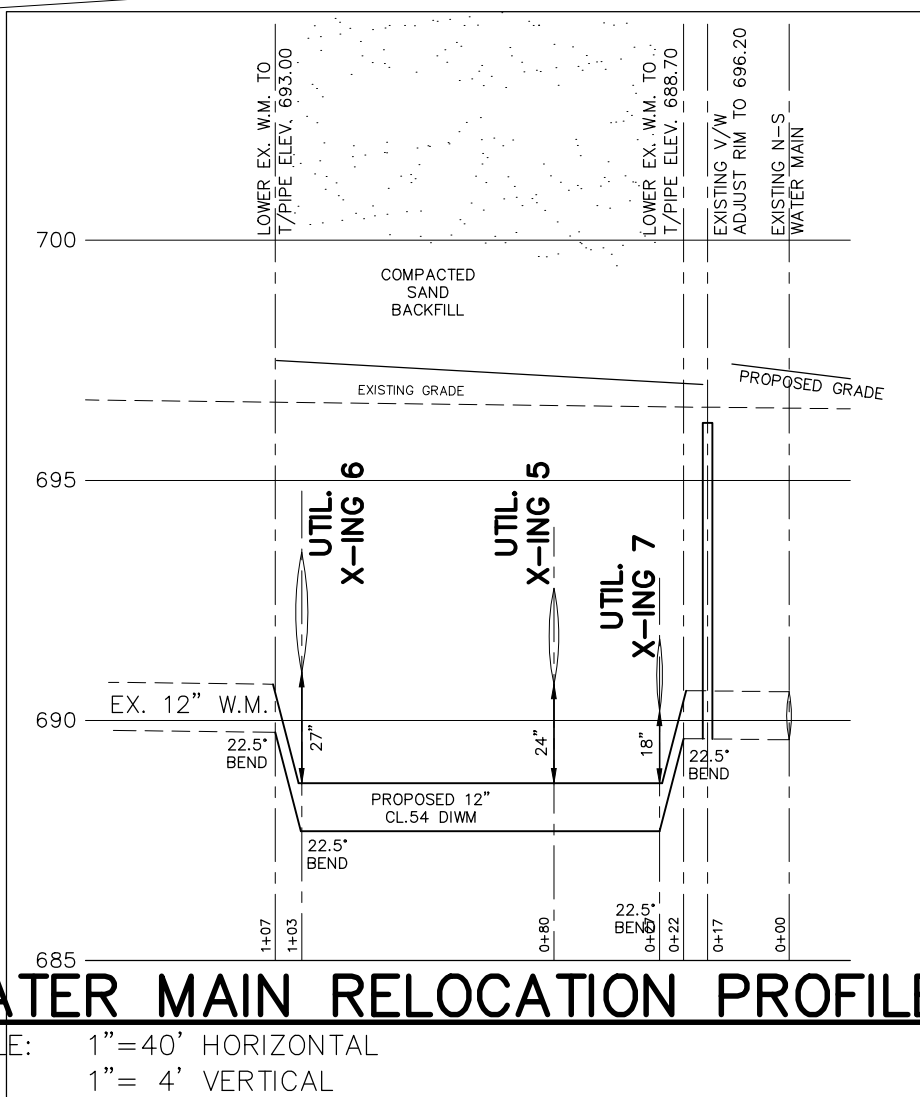
DETAIL	DIMENSIONS	LANE	CONCRETE
F1	1'-6" 7/8"	AS SHOWN	0.0424
F2	1'-6" 7/8"	OMITTED	0.0424
F3	2'-0" 1 3/8"	AS SHOWN	0.0550
F4	2'-0" 1 3/8"	OMITTED	0.0550
F5	2'-6" 1 7/8"	AS SHOWN	0.0677
F6	2'-6" 1 7/8"	OMITTED	0.0677

CURB & GUTTER DETAIL

USE CURB DETAIL 'F2'

WATER MAIN RELOCATION PROFILE

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

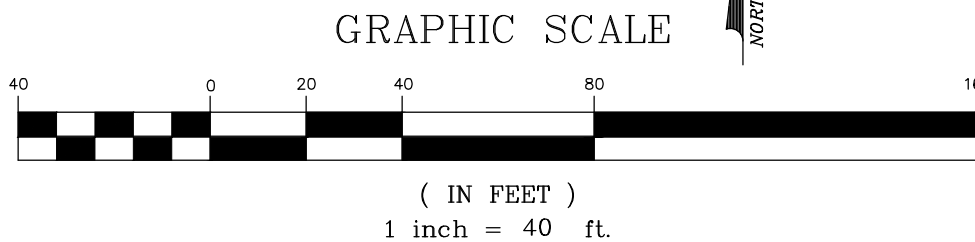


PROPERTY OWNER

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



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

SITE PLAN

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

SHEET No.	JOB No.	DRAWING No.	DATE	REVISIONS
1	2022-01	A-	01-10-22	12-28-22 01-10-23 02-02-23
OF	..		CHECKED BY:	

ZONING & SETBACKS

SUBJECT PROPERTY ZONED M2 (GENERAL INDUSTRIAL)

ADJACENT PROPERTY ZONING:

NORTH M1 & M2
EAST M2
SOUTH M2
WEST M1

SCHEDULE OF REGULATIONS FOR M2 ZONING

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

SETBACKS

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

SETBACK FOOTNOTES

(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.

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.

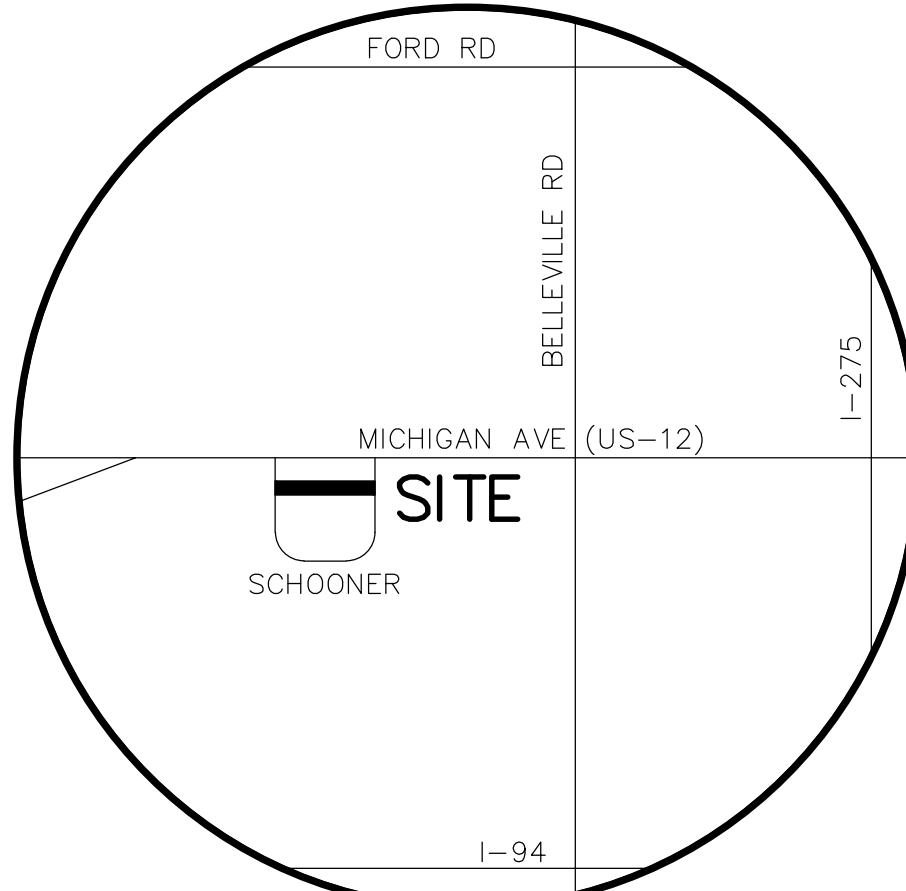
BENCHMARKS (USGS NAVD29)

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

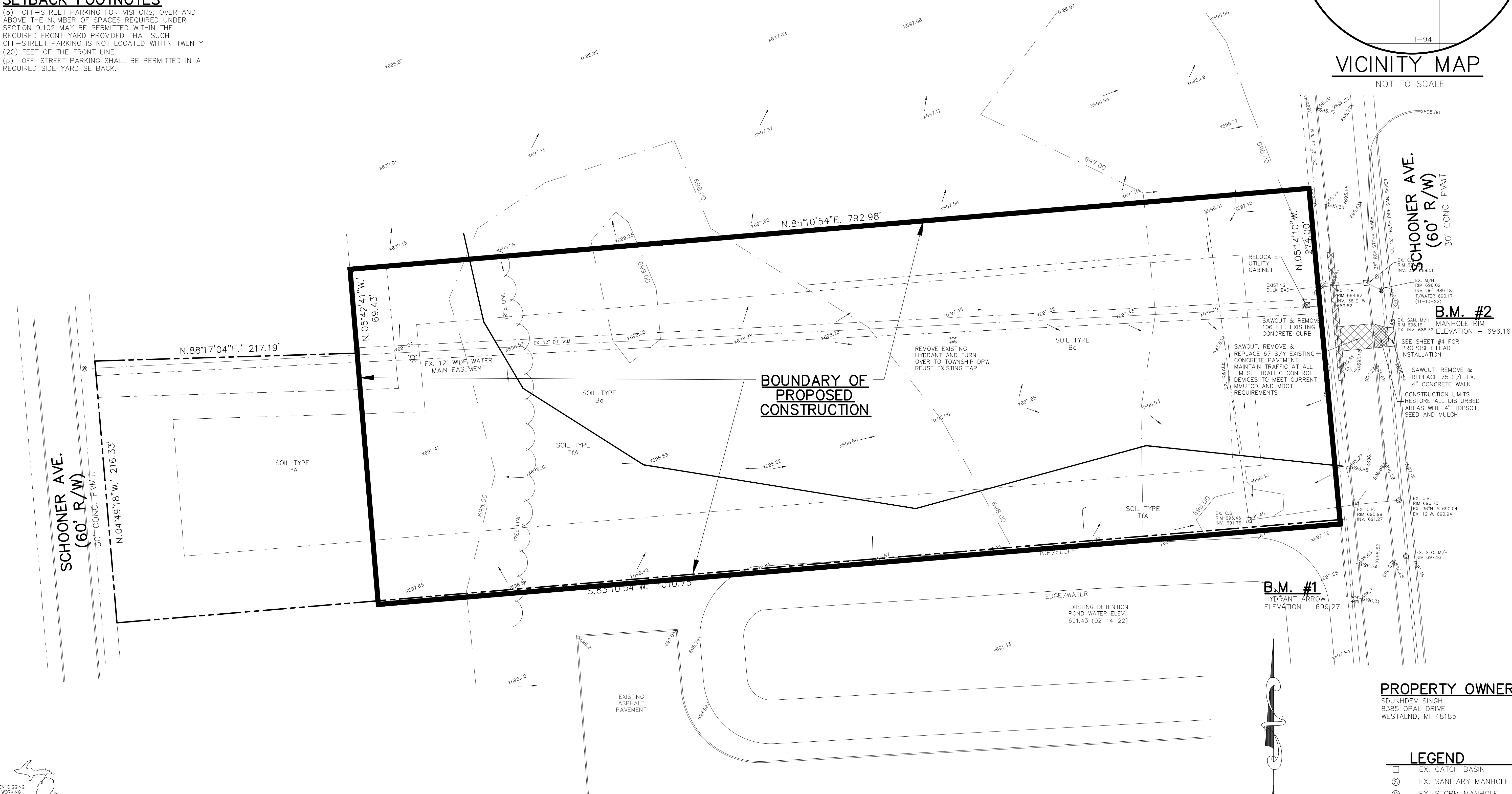
TRAFFIC CONTROL/SIGNAGE NOTES

- 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

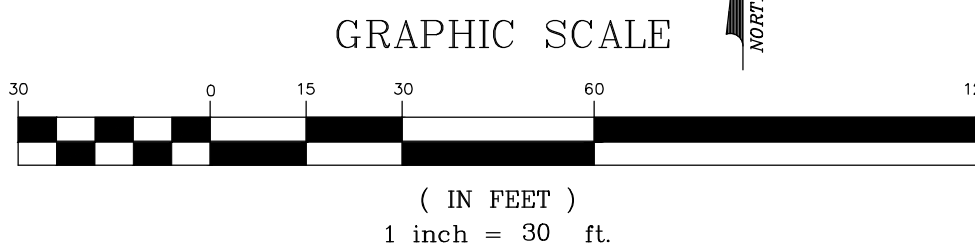


PROPERTY OWNER

SDUKHDEV SINGH
8385 OPAL DRIVE
WESTLAND, MI 48185

LEGEND

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- 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)

TOPOGRAPHIC
SURVEY

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

REVISIONS
12-28-22
01-10-23
02-02-23

DATE
01-10-22

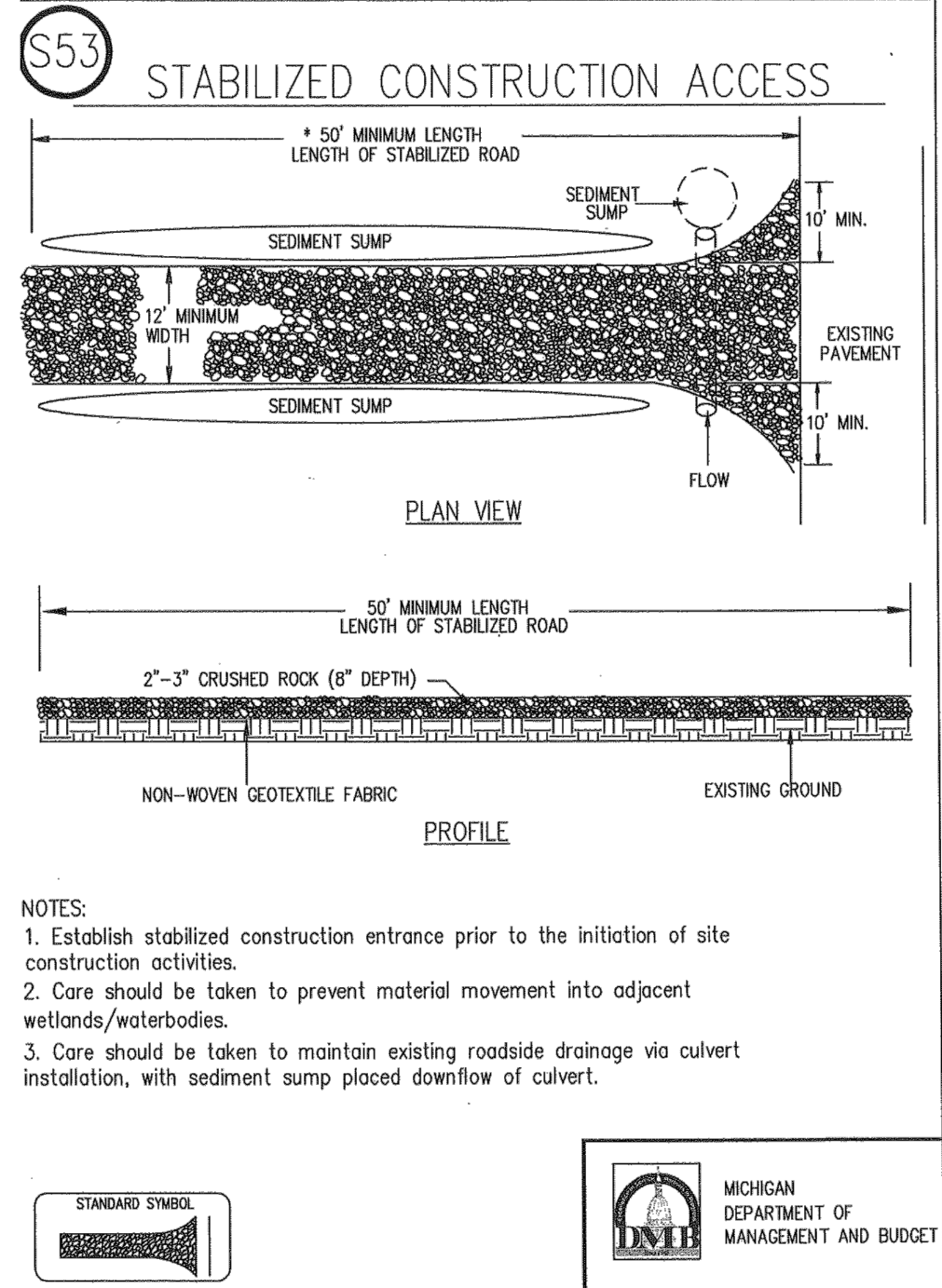
DRAWING No.
A-

JOB No.
2022-01

SHEET No.
2 OF 2

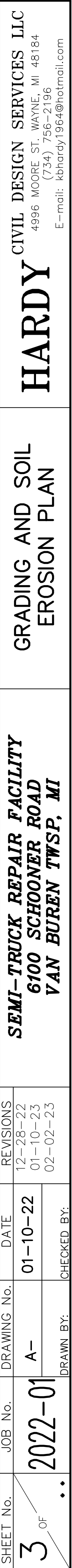
CHECKED BY:
..

HARDY CIVIL DESIGN SERVICES LLC
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(734) 756-2196
E-mail: kbhardy1964@hotmail.com



SOIL EROSION SEQUENCE OF CONSTRUCTION

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



REQUIREMENTS FOR NEW OPEN POND PROJECT

TOTAL LAND AREA:

6.03

acres

TOTAL DISRUPTIVE AREA:

4.99

acres

LAND USE SUMMARY

Land Characteristic

Existing

Proposed

Coeff.

A*C

Total Development Area (ac)

6.03

4.99

0.95

0.37

Roof Area (ac)

0

0.39

0.95

2.85

Pavement Area (ac)

0

3

0.95

0

Gravel (ac)

0

0

0.95

0

Total Pervious Area (ac)

6.03

1.6

0.25

0.4

totals:

6.03

4.99

3.62

Pervious Area Breakdown by Cover Type

Non-cultivated

4

0

Impervious Area (ac)

N/A

N/A

Improved area (grass/landscape)

4.99

1.76

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)=

100-YEAR FLOOD CONTROL VOLUME CALCS

Qallow,calc=

0.73

cfs/acre

0.10

cfs/acre, max allow. release rate of

1.00

cfs/acre

a site less than 2 acres must use a variable release rate of

Tributary area=

4.99

acres

100-year release, Q(allow)

0.499

cfs

Qo=

2.49

cfs

Qj=

16.53

cfs

Vr=

67,904

cf

Storage Ratio(Vs/Vr)=

0.5

100-year (req), Vs=

33,268

cf

SUMMARY OF CALCULATED VOLUMES:

cpvc=

13,042

cf

cpvc=

24,780

cf

Flood Control Volume=

20,226

cf if CPVC volume is met

Flood Control Volume=

33,268

cf if CPVC volume is not met

ORRIFICE CALCULATIONS

Orifice (CPVC) rate control

Q(ave)=

0.01

ft

H(ed)=

2.11

ft

Average Head, H(ed)

1.055

ft

Orifice Area A=

0.002

sq/ft

Orifice Dia, D100=

0.64

inches

number holes req.=

1

ea

Calculated D(100-year)=

0.053

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

ORRIFICE CALCULATIONS

Orifice Flood Rate Control

Q(ave)=

0.18

ft

H(ed)=

2.29

ft

Average Head, H(ed)

1.145

ft

Orifice Area A=

0.042

sq/ft

Orifice Dia, D100=

2.78

inches

number holes req.=

1

ea

Calculated D(100-year)=

0.231

ft

Therefore use, number of holes=

1

ea

hole size=

2.8

inch

place hole at elev=

690.60

ft

Actual (D100)=

0.2317

ft

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 SAVE, ATTRACTIVE CONDITION AS ORIGINALLY MAINTAINED IN A CLEARLY VISIBLE CONDITION.

ITEM

UNIT

QTY

Soil Erosion

Soil Fence

Mud mat

complete

1

Water main system

6" CL 54 DIWVM

Hydrant Asam

1" Copper water serv.

12" DIWVM (Vertical relocation)

12

1

1

85

Sanitary Sewer lead

complete

1

Detention areas

complete

1

Paving:

21AA Aggregate Base

4" Asphalt Pavement

Concrete Curbingutter

s/y

s/y

17

17

10,400

10,400

1,700

Storm Sewer:

12" C-76, CLIV RCP

15" C-76, CLIV RCP

18" C-76 CL IV RCP

24" C-76, CLIV RCP

2" Diameter inlet

4" Diameter manhole

5" Diameter manhole

if

if

if

if

ea

ea

ea

356

483

30

744

4

6

2

CALCULATE RUNOFF COEFFICIENT

C=(AI*Ci)/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=

7.5

min.

10

minutes (site minimum)

T=

10

min.

REQ. DETENTION VOL. DETERMINATION

CPVC

13,042

cf

CPVC

24,780

cf

Flood control vol.=

33,268

cf

SITE MINIMUM

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

contour elevation

area

volume

volume

691.10

55

0

0

692.00

680

368

368

693.00

1,580

1,130

1,498

694.00

2,730

2,155

3,653

CPVC (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

1,497.50

3,652.50

ELEV=

693.21

Total Vol bioretention Prov.

1,956

OPEN DETENTION POND DESIGN

contour elevation

area

volume

volume

690.60

5,735

0

0

691.00

6,490

6,113

6,113

692.00

8,532

7,511

13,624

692.42

9,910

9,221

22,845

693.00

10,800

10,355

33,200

5,400

38,600

0

38,600

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

692.42

693.00

22,844.50

33,199.50

ELEV=

692.89

SANITARY SEWER BASIS OF DESIGN

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

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

1,350 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

REQUIRED VOLUME

UNIT

PROVIDED VOLUME

13,042

cf

1,956

24,780

cf

0

33,268

cf

31,312

Total volumes=

31,312

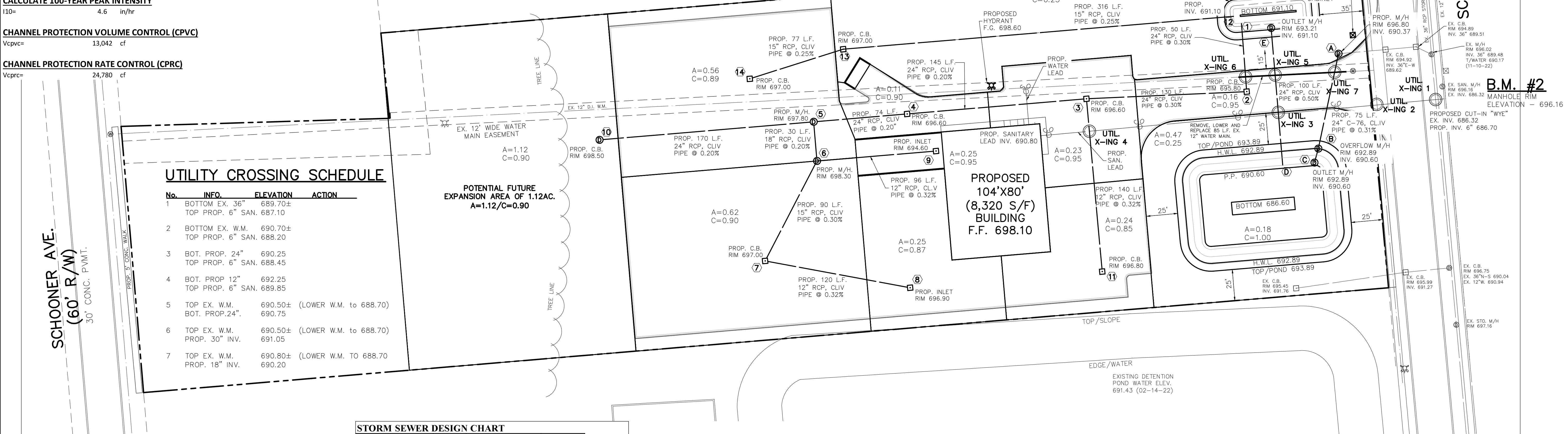
cf

33,268

1.062 %

NOTE

SOIL BORE INFORMATION LOCATED ON SHEET #7



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. 15"SW. 692.45

INV. 24"W. 691.25

INV. 24"W. 691.25

7

4" DIA. C.B. RIM 697.00

INV. 15"NE. 692.72

INV. 12"SE. 692.72

12

INV. 15"W. 691.10

3

4" DIA. C.B. RIM 696.60

INV. 24"E-W. 691.64

INV. 12"S. 692.35

13

4" DIA. C.B. RIM 697.00

INV. 15"NE. 691.89

14

42" DIA. INLET RIM 697.00

INV. 15"NE. 692.08

4

4" DIA. C.B. RIM 696.60

INV. 24"E-W. 691.93

9

2" DIA. INLET RIM 694.60

INV. 12"W. 692.76

10

4" DIA. C.B. RIM 698.50

INV. 24"E. 692.65

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

Factor

Equivalent Area 100% Acres C*A

Total Area 100% Acres C*A

t Time (min)

I Inch Per Hour

Q C*^{1.48}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 V²/(2g)

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

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

0.11

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

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

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

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

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

0.07

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

0.21

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

0.11

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

0.12

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

0.22

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

0.72

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

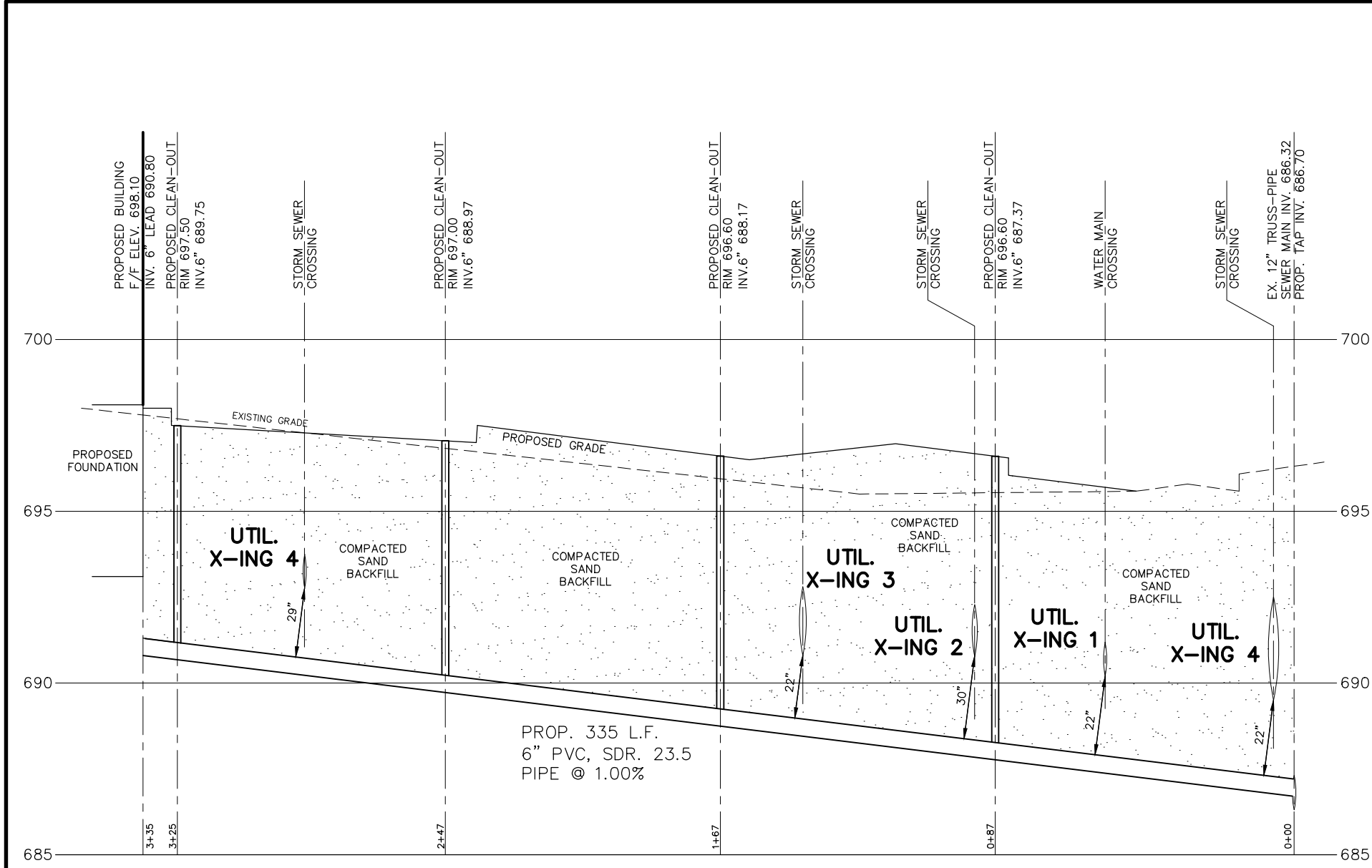
0.25

692.45

690.60

690.37

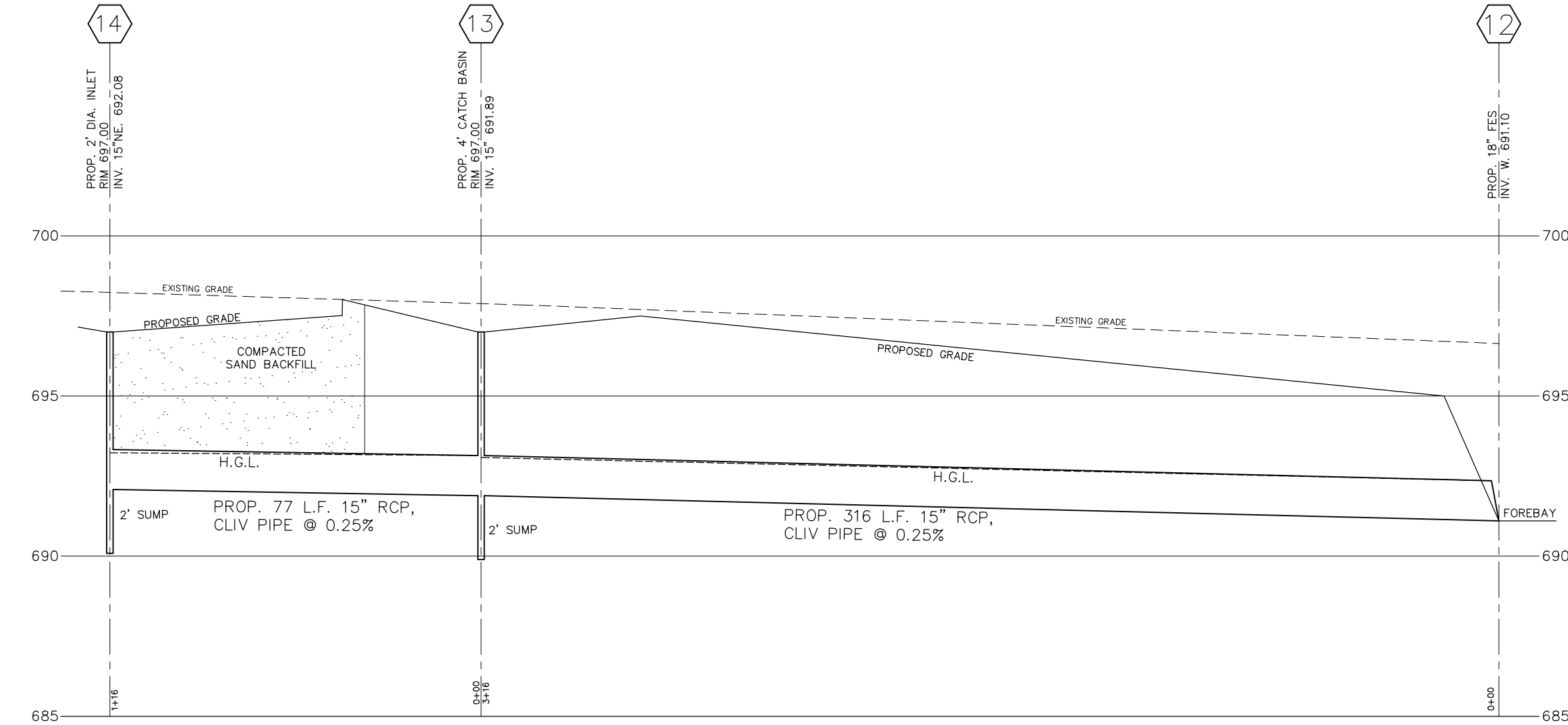
692.89



SANITARY LEAD PROFILES

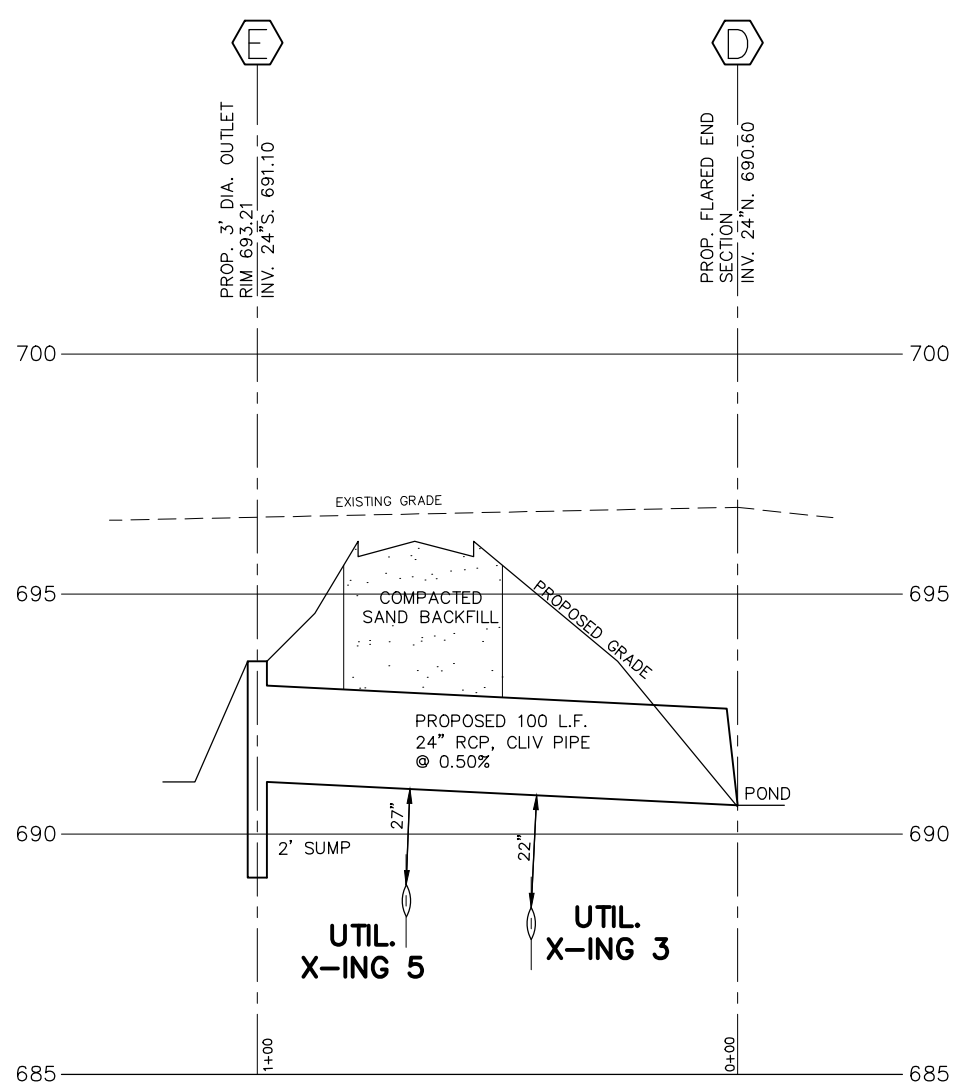
SCALE: 1"=40' HORIZONTAL
1" = 4' VERTICAL

STORM SEWER DESIGN CHART																											
Roughness Coefficient		0.013		Initial Time (T) =		10																					
				Rain Intensity (I) =		4.64																					
Storm Sewer Line				Increment		Equivalent Area 100%		Total Area 100%																			
From Structure	To Structure	**	**	Acres A	C Factor	Acres C*A	Acres C*A	t Time (min)	I Inch Per Hour	Q C*H*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	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	1.120	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					



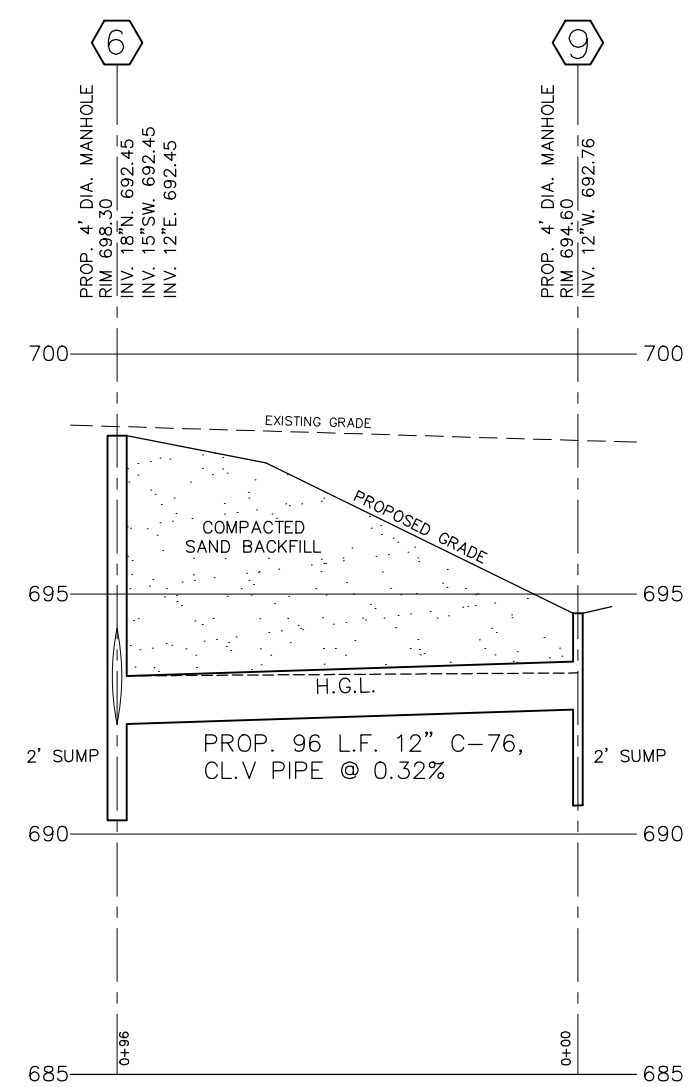
STORM SEWER PROFILES

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



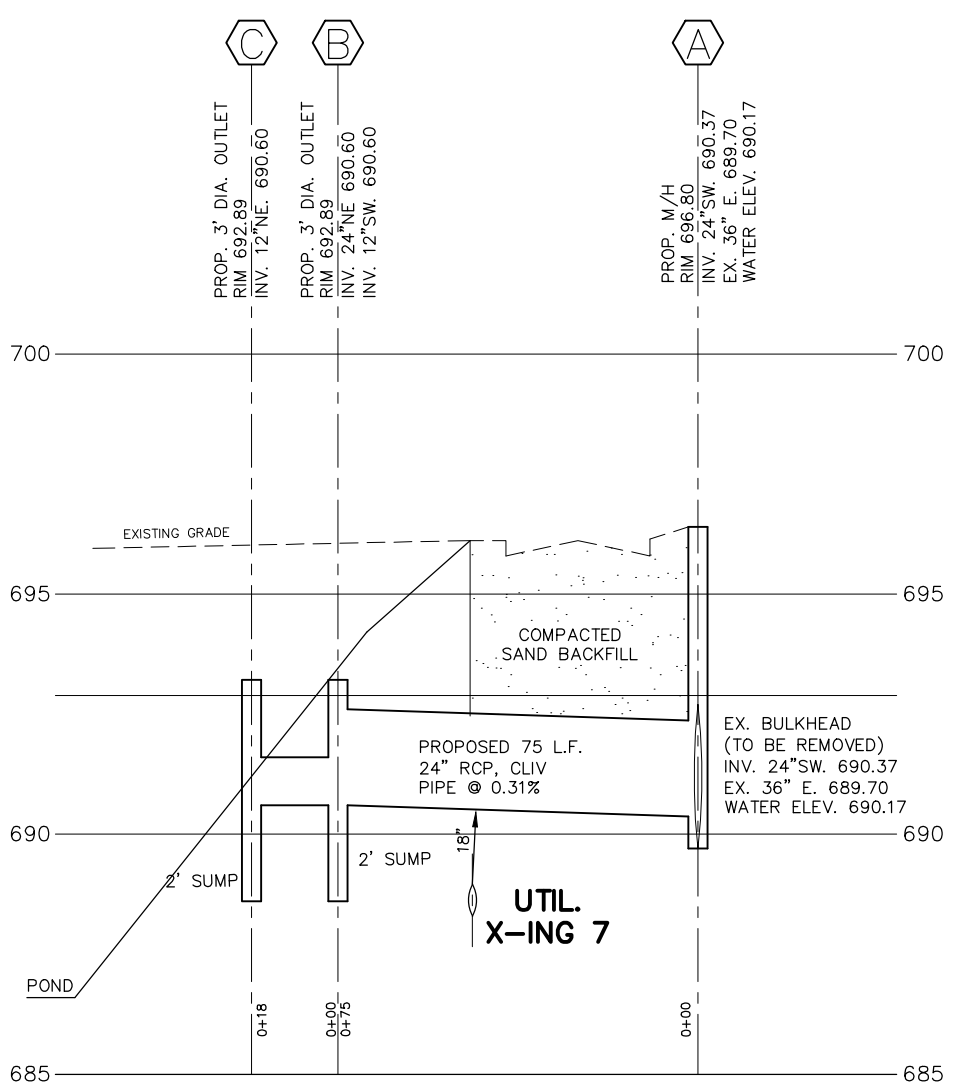
STORM SEWER PROFILES

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



STORM SEWER PROFILES

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

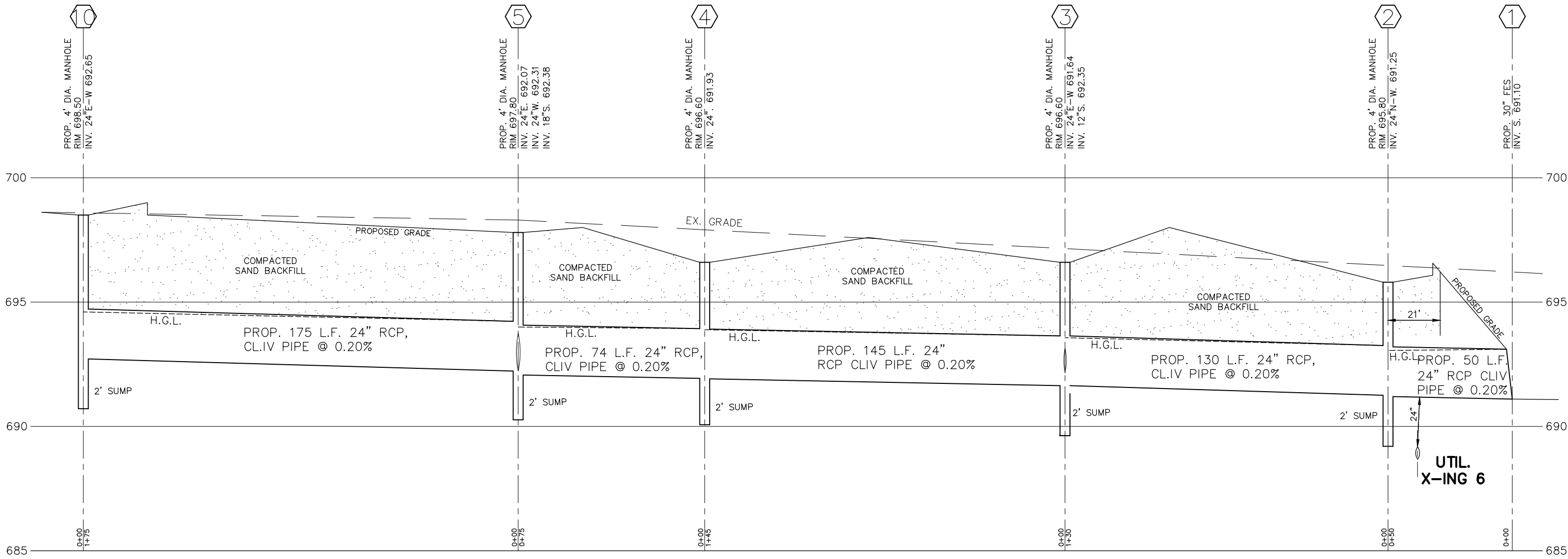


STORM SEWER PROFILES

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

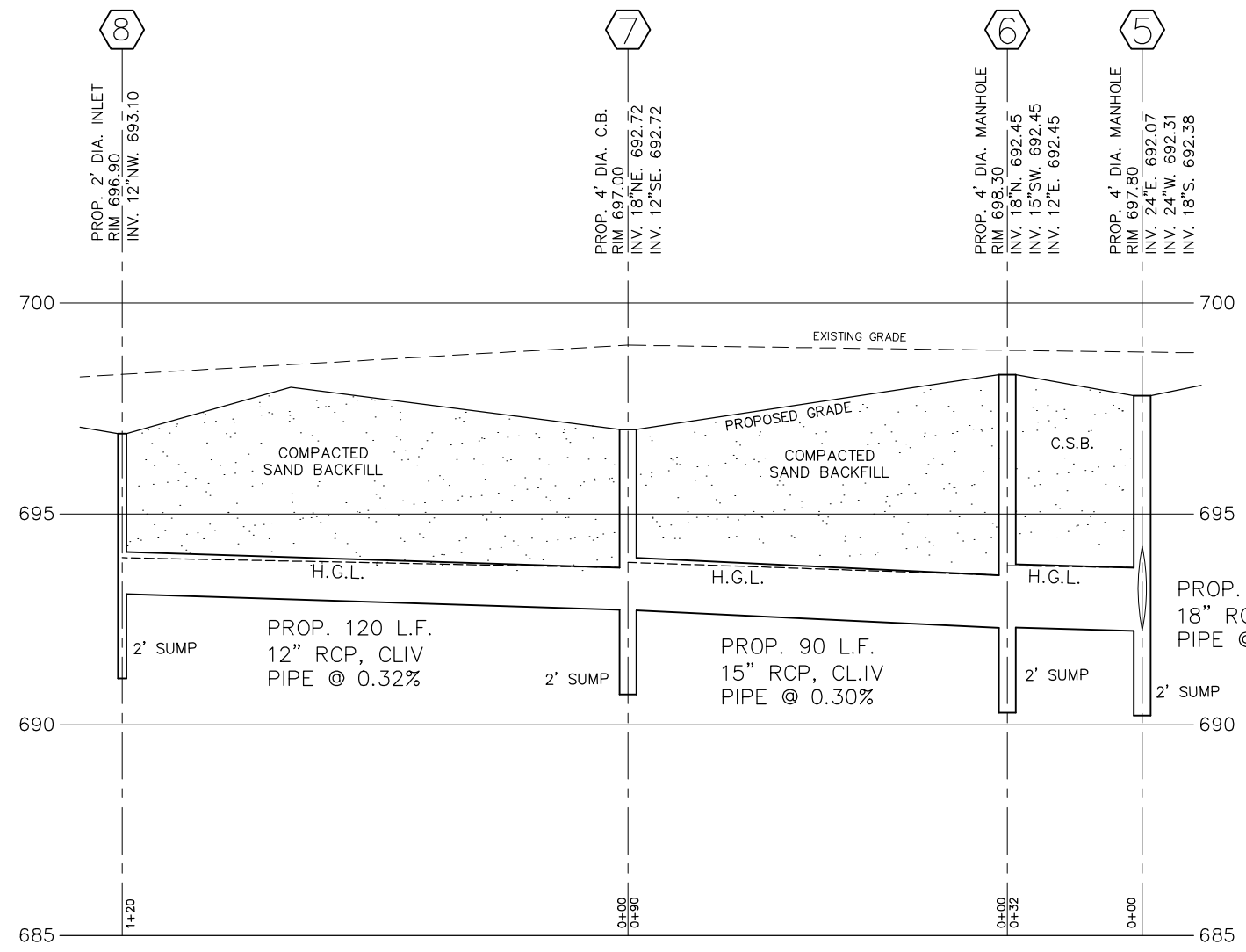
UTILITY CROSSING SCHEDULE

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 688.70)
	BOT. PROP. 24"	690.75	
6	TOP EX. W.M.	690.50±	(LOWER W.M. to 688.70)
	BOT. PROP. 30"	691.05	
7	TOP EX. W.M.	690.80±	(LOWER W.M. TO 688.70)
	BOT. PROP. 18"	690.20	



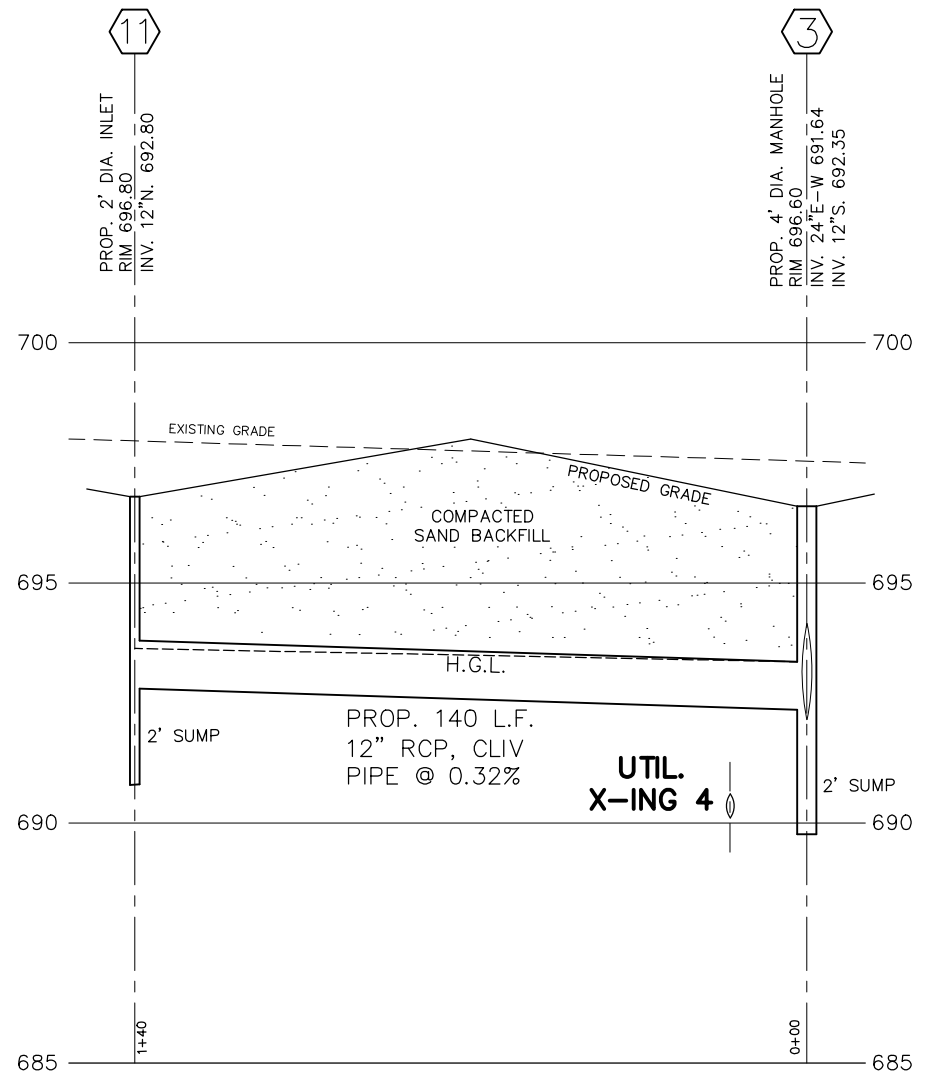
STORM SEWER PROFILES

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



STORM SEWER PROFILES

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



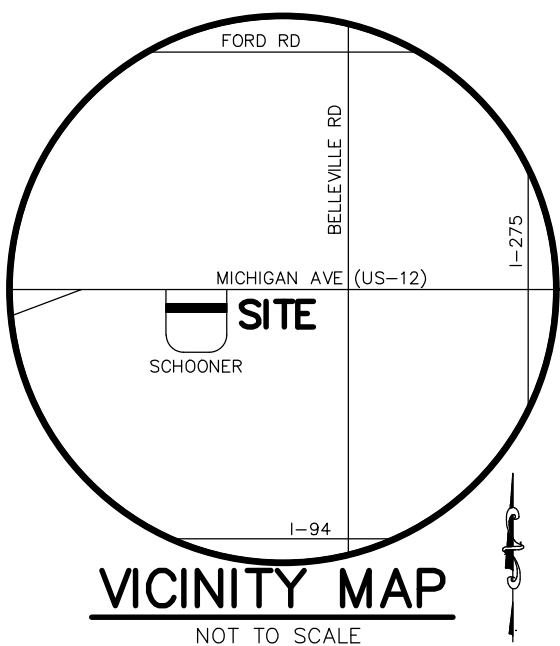
STORM SEWER PROFILES

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



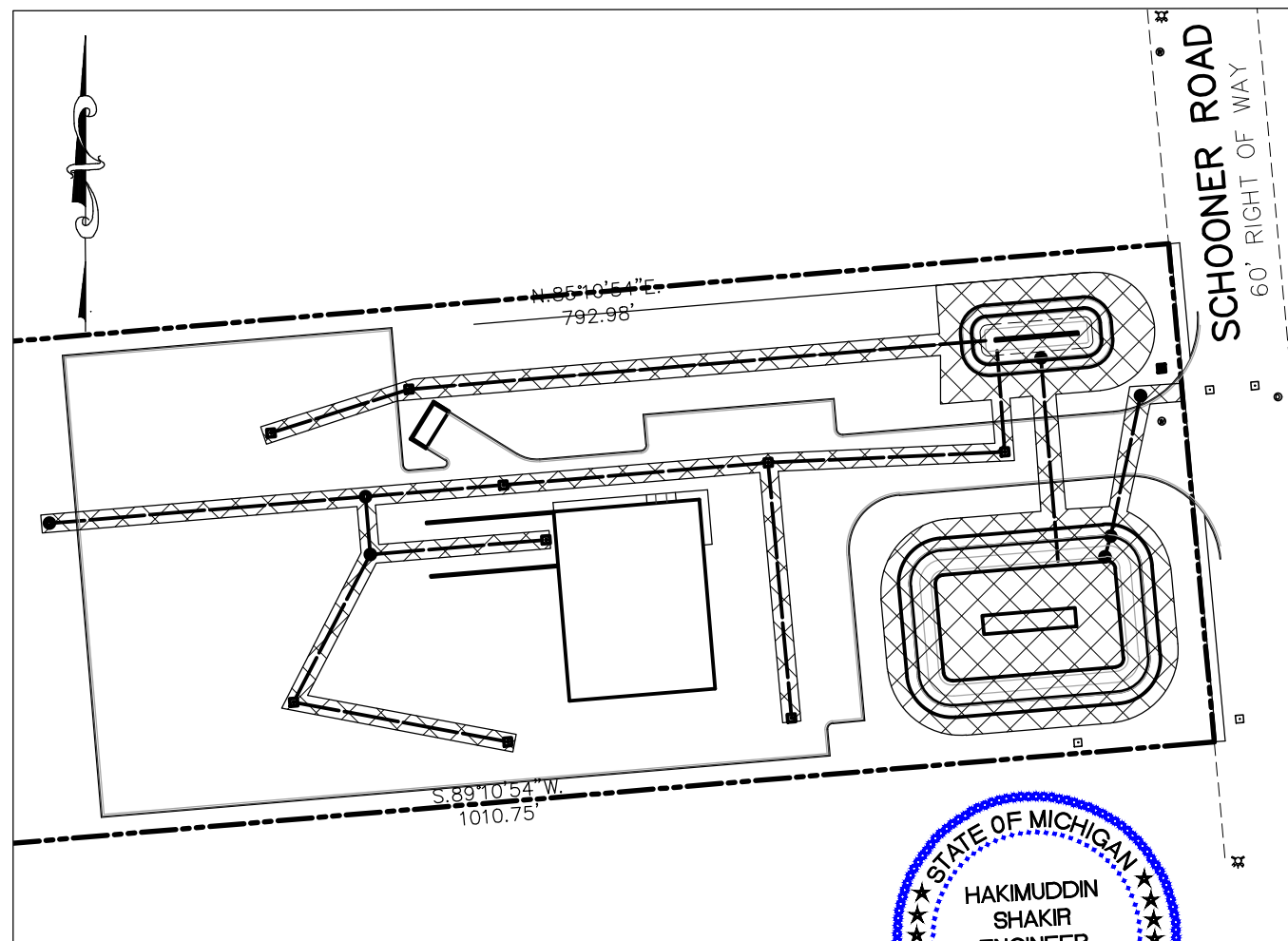
3 WORKING DAYS
BEFORE STARTING YOUR PROJECT
811
(TOLL FREE)

PHYSICAL LIMITS OF STORM WATER MANAGEMENT SYSTEM



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

LONG TERM MAINTENANCE SCHEDULE CHART

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

[illegible]

* 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

A5 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 CHASAL TRUCKING SWMS. THE RESOLUTION BY WHICH THE CITY HAS ASSUMED MAINTENANCE OF AS CHASAL TRUCKING SWMS IS ATTACHED AS EXHIBIT A TO THE MAINTENANCE AGREEMENT WITH THE CITY. HAS AGREED TO PERFORM THE MAINTENANCE ACTIVITIES REQUIRED BY THE TOWNSHIP OF VAN BUREN TO MAINTAIN THE AS CHASAL TRUCKING SWMS TO MEET THE NECESSARY MAINTENANCE OF THE AS CHASAL TRUCKING SWMS. IF AS CHASAL TRUCKING FAILS TO PERFORM THE REQUIRED MAINTENANCE ACTIVITIES, TO ENSURE THAT THE AS CHASAL TRUCKING SWMS MEET THE NECESSARY MAINTENANCE SYSTEMS, THE TOWNSHIP OF VAN BUREN HAS ASSUMED THE MANAGEMENT SYSTEM (EXHIBIT A). THIS PLAN (EXHIBIT B), THE RESOLUTION ATTACHED AS EXHIBIT C, THE MAINTENANCE AGREEMENT BETWEEN THE TOWNSHIP OF VAN BUREN AND THE PROPERTY OWNER(S) OF THE AS CHASAL TRUCKING SWMS, AND THE RECORD 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 STORAGE WATER MANAGEMENT SYSTEM FUNCTION PROPERLY AS DESIGNED.

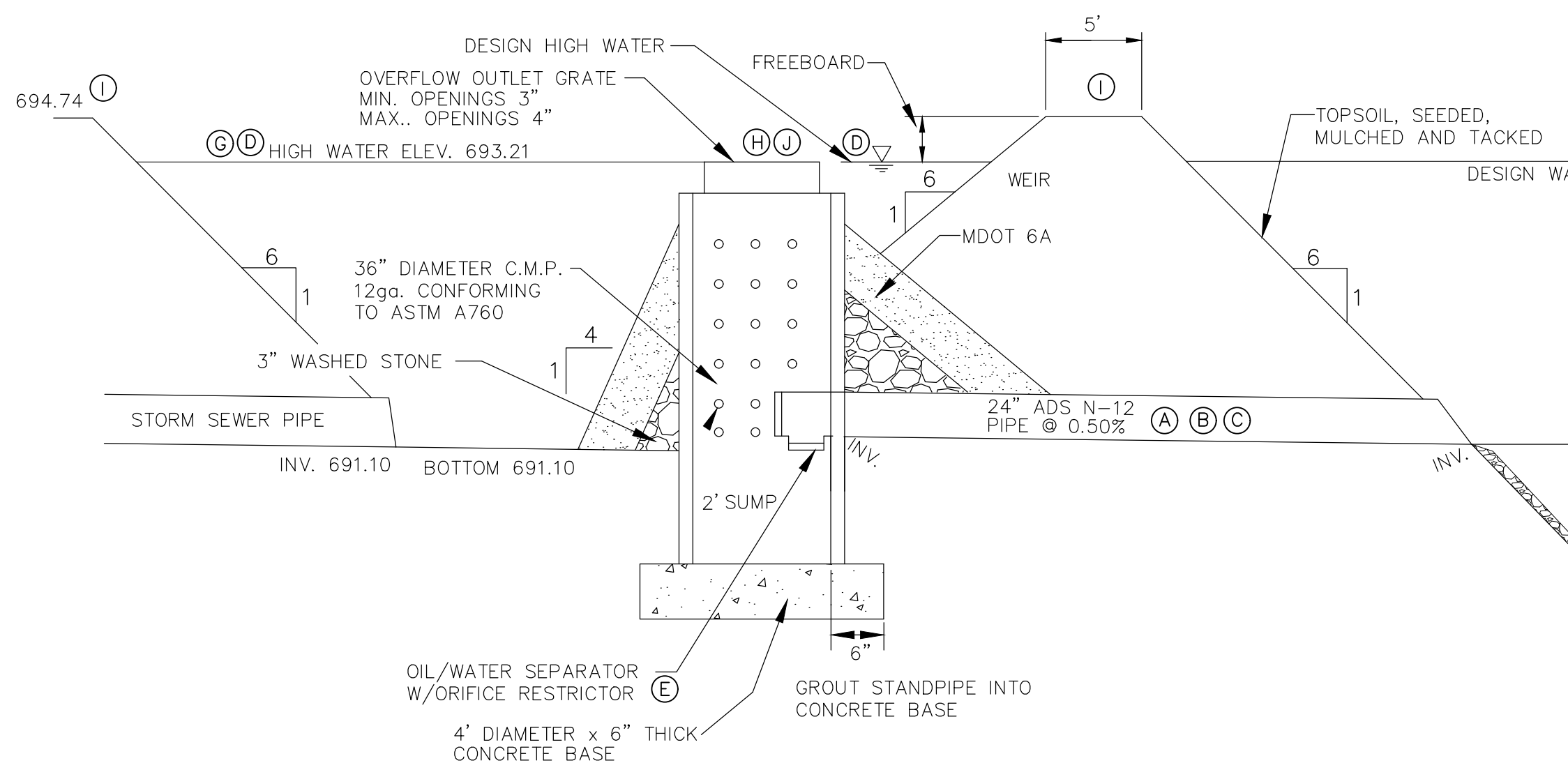
PROPERTY OWNER
SDUKHDEV SINGH
8385 OPAL DRIVE
WESTLAND, MI 48185

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

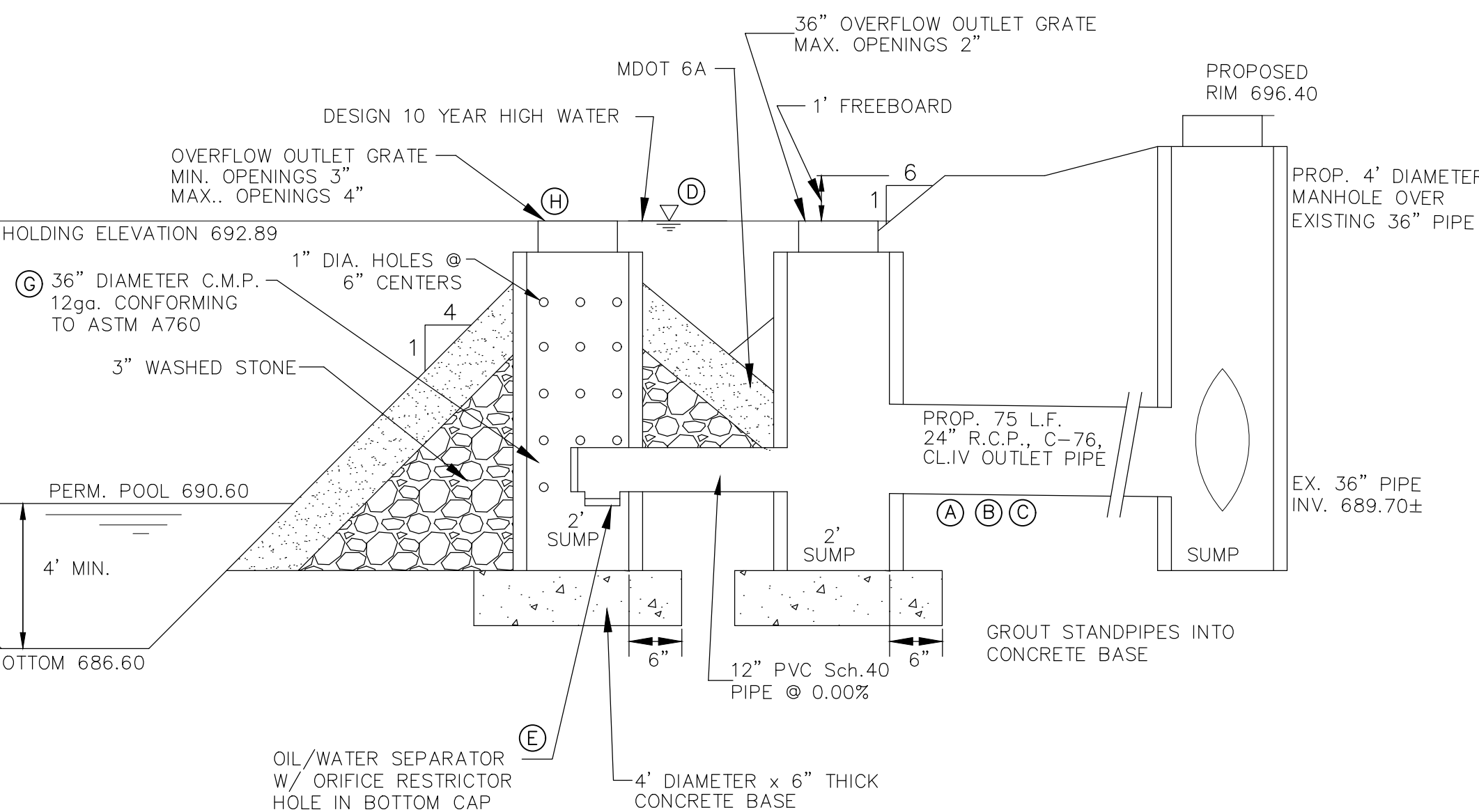
DATE: 12-08-22
JOB No. 2022-01
DWG No. D-
SHEET: 1 of 1
SCALE: 1"=100'

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



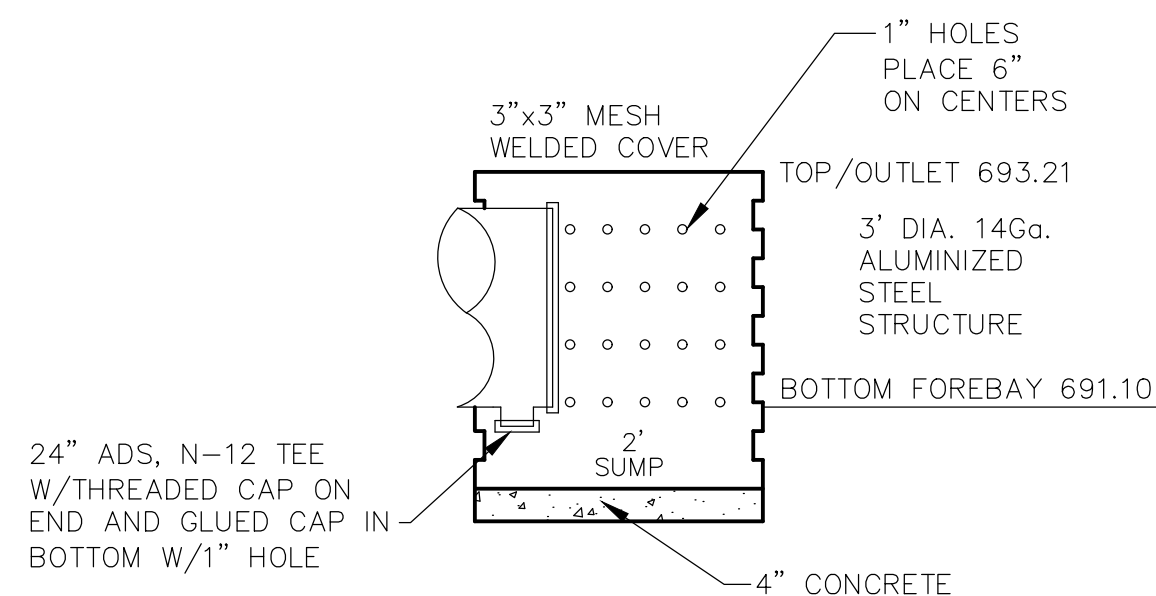
FORBAY OUTLET SCHEDULE									
OUTLET PIPE LENGTH (A)	OUTLET PIPE SLOPE (B)	OUTLET PIPE SIZE Ø INV. (C)	FOREBAY STORAGE ELEVATION (D)	CPVC DISCHARGE ORIFICE SIZE (E)		STANDPIPE DIAMETER (G)	TOP OF STANDPIPE ELEVATION (H)	FOREBAY CREST ELEVATION (I)	EMERGENCY SPILLWAY ELEVATION (J)
100'	0.50%	24"Ø 691.10	693.21	(1) 1" HOLE IN CAP		36"	693.21	694.21	693.21



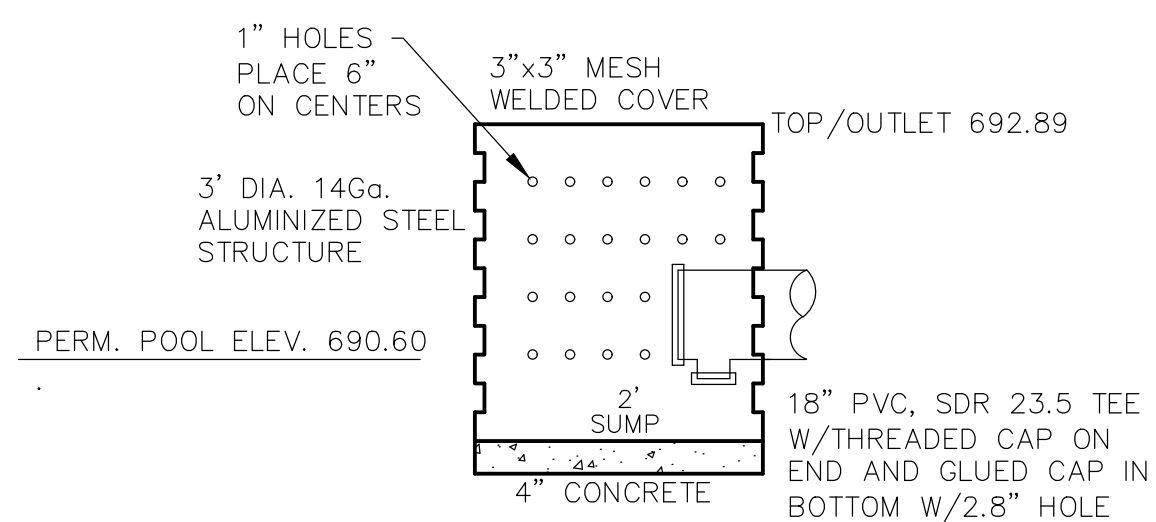
DETENTION OUTLET SCHEDULE								
OUTLET PIPE LENGTH (A)	OUTLET PIPE SLOPE (B)	OUTLET PIPE SIZE (C)	100 YEAR STORAGE (D)	100 YEAR STORM RELEASE INV./ORIFICE SIZE (E)	STANDPIPE DIAMETER (G)	TOP OF STANDPIPE ELEVATION (H)	POND CREST ELEVATION (I)	EMERGENCY SPILLWAY ELEVATION (J)
100'	0.50%	24"	692.89	(1) 2.8" HOLE @ 690.60	36"	692.89	693.89	693.89

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 RULES 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 AS 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, 1/4" SOD 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 8" BACKFILL REQUIREMENTS. TRENCH 4" BACKFILL MAY BE USED WITHIN THE ROAD ROW AREAS UNDER CONDITIONS OTHER THAN THOSE SPECIFIED FOR TRENCH 8". CONTRACTOR SHALL BE 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.
9. 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.
10. MAINTAIN A SAFE AND ADEQUATE TRAVEL ROUTE FOR PEDESTRIANS AT ALL TIMES THROUGHOUT THE PROJECT DURATION.
11. TUNNELING, BORING AND JACKING OPERATIONS SHALL BE IN ACCORDANCE WITH THE WAYNE COUNTY SPECIFICATIONS AND DETAILS.
12. BORE PITS SHALL BE PLACED AT MINIMUM 10 FEET FROM THE BACK OF CURB OR EDGE OF PAVEMENT.
13. REMOVE ALL ABANDONED CONDUITS FROM THE COUNTY ROADS ROW OR AS DIRECTED BY THE WAYNE COUNTY ENGINEER.
14. CONTRACTOR SHALL PROVIDE COLD WEATHER PROTECTION FOR ALL PROPOSED CONCRETE WORK (PAVEMENTS, SIDEWALKS, DRIVE APPROACHES, ETC.) AS DIRECTED BY THE WAYNE COUNTY ENGINEER.
15. OVERNIGHT VEHICLE PARKING AND STORAGE OF CONSTRUCTION MATERIALS AND EQUIPMENTS ARE NOT PERMITTED WITHIN THE WAYNE COUNTY ROADS RIGHTS-OF-WAY.
16. CONTRACTOR SHALL OBTAIN SOIL EROSION AND SEDIMENTATION CONTROL PERMIT FROM THE WAYNE COUNTY DEPARTMENT OF THE WAYNE COUNTY SOIL EROSION OFFICE AT (734) 326-5565, OR THE COMMUNITY HAVING JURISDICTION OVER THE SOIL EROSION PERMIT.
17. 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.
18. CONTRACTOR SHALL NOTIFY WAYNE COUNTY 72 HOURS PRIOR TO START OF CONSTRUCTION. CONTACT THE PERMIT OFFICE AT (734) 858-2764



NOT TO SCALE



NOT TO SCALE

DETAILS

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

REVISIONS
12-28-22
01-10-23
02-02-23

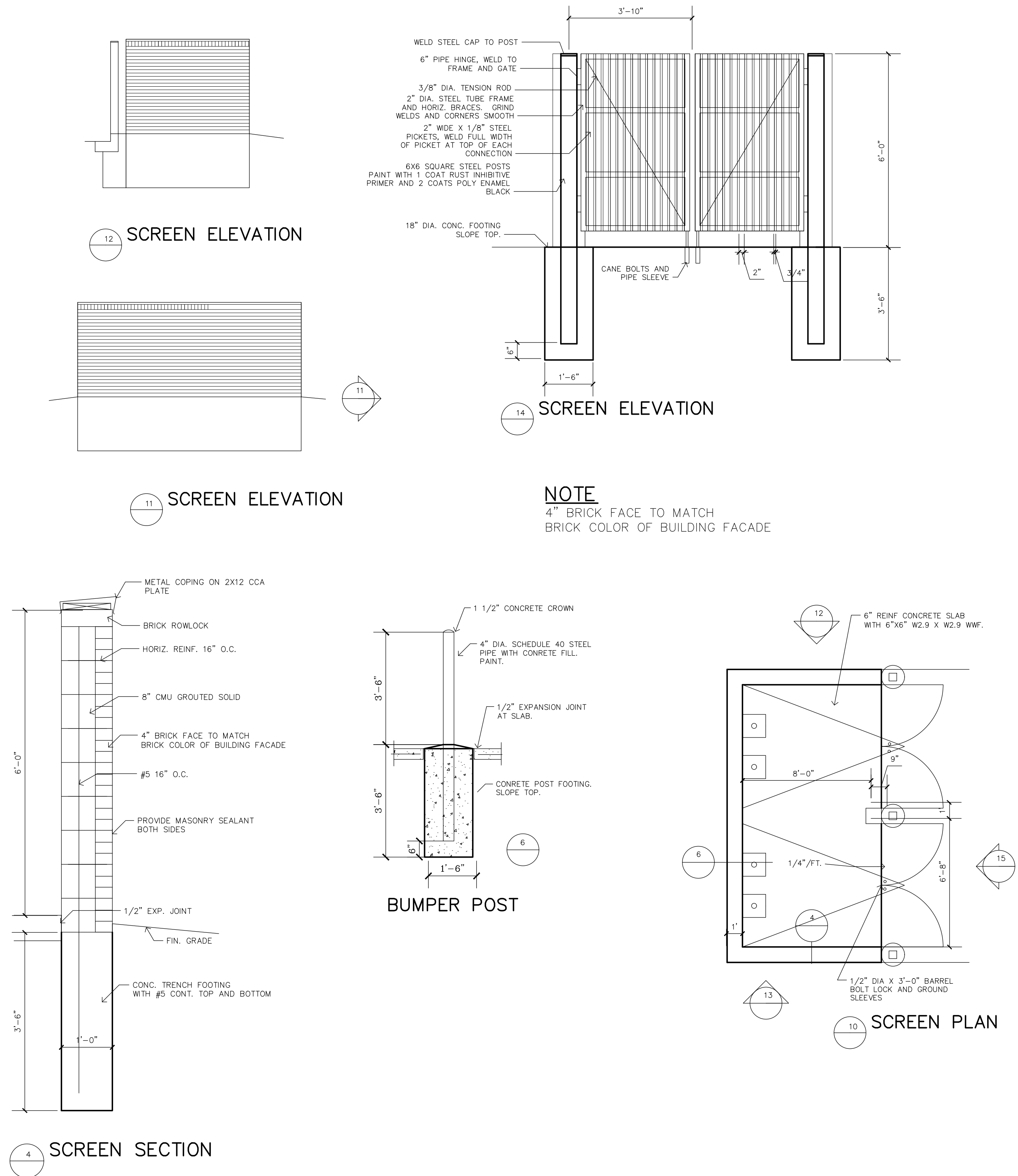
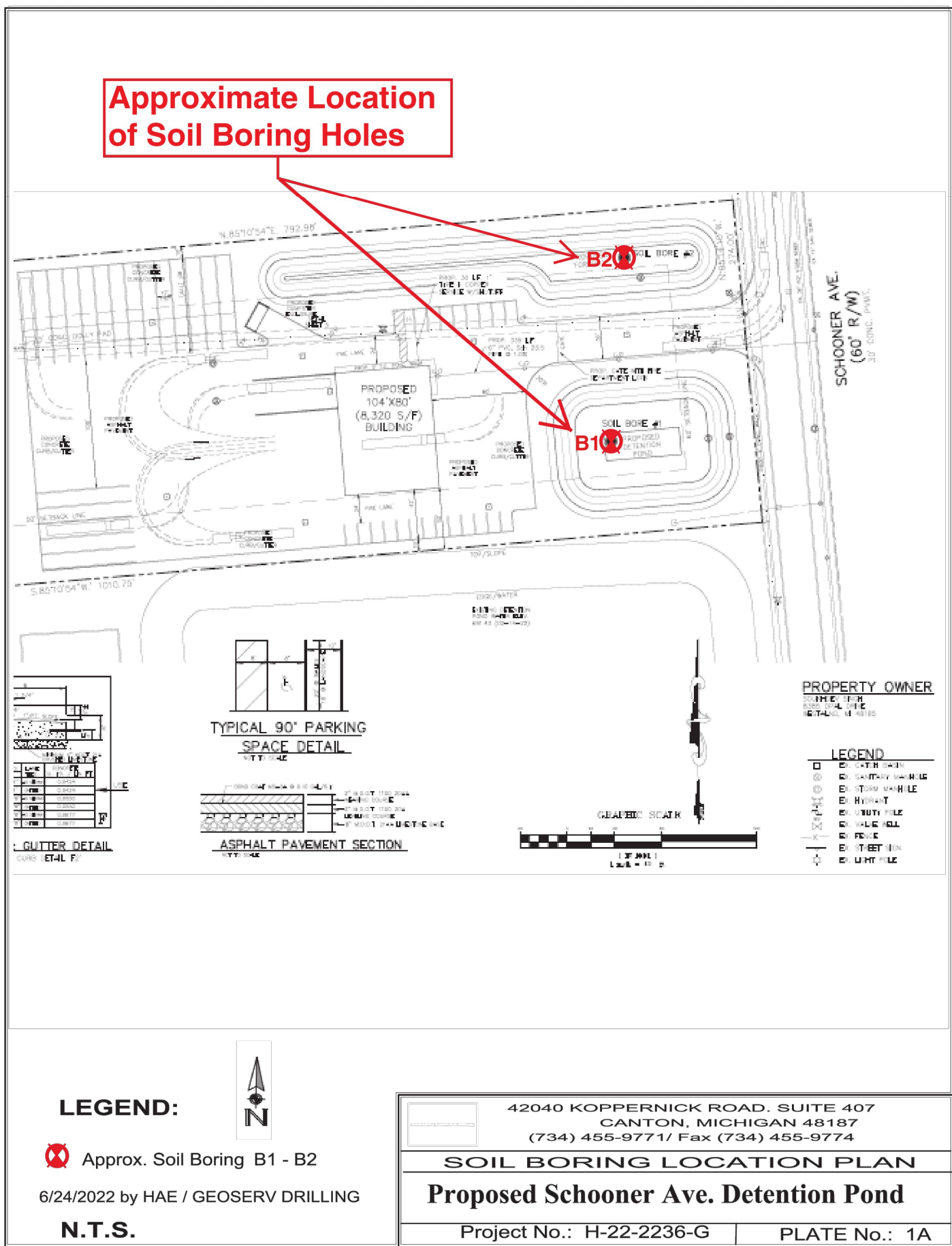
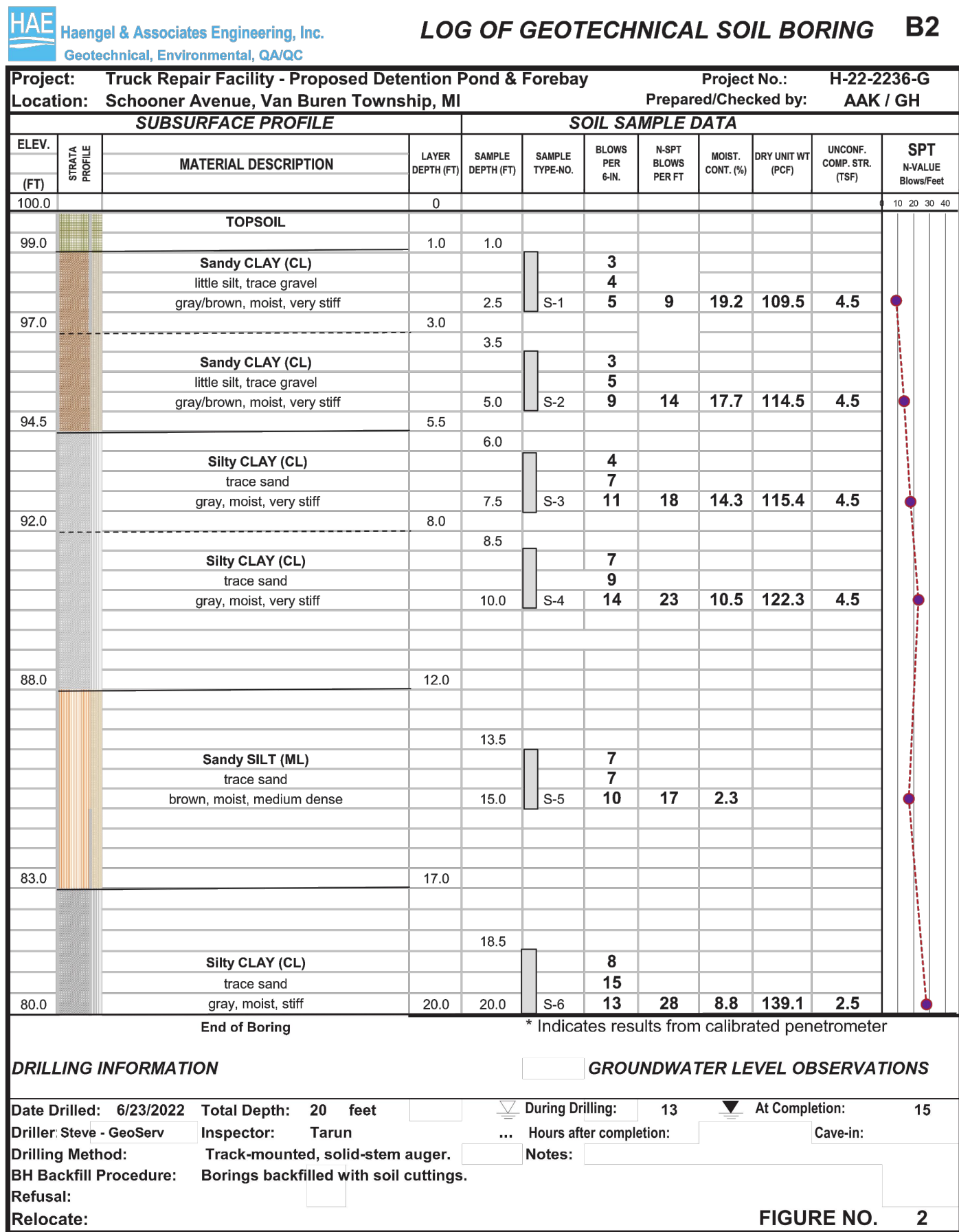
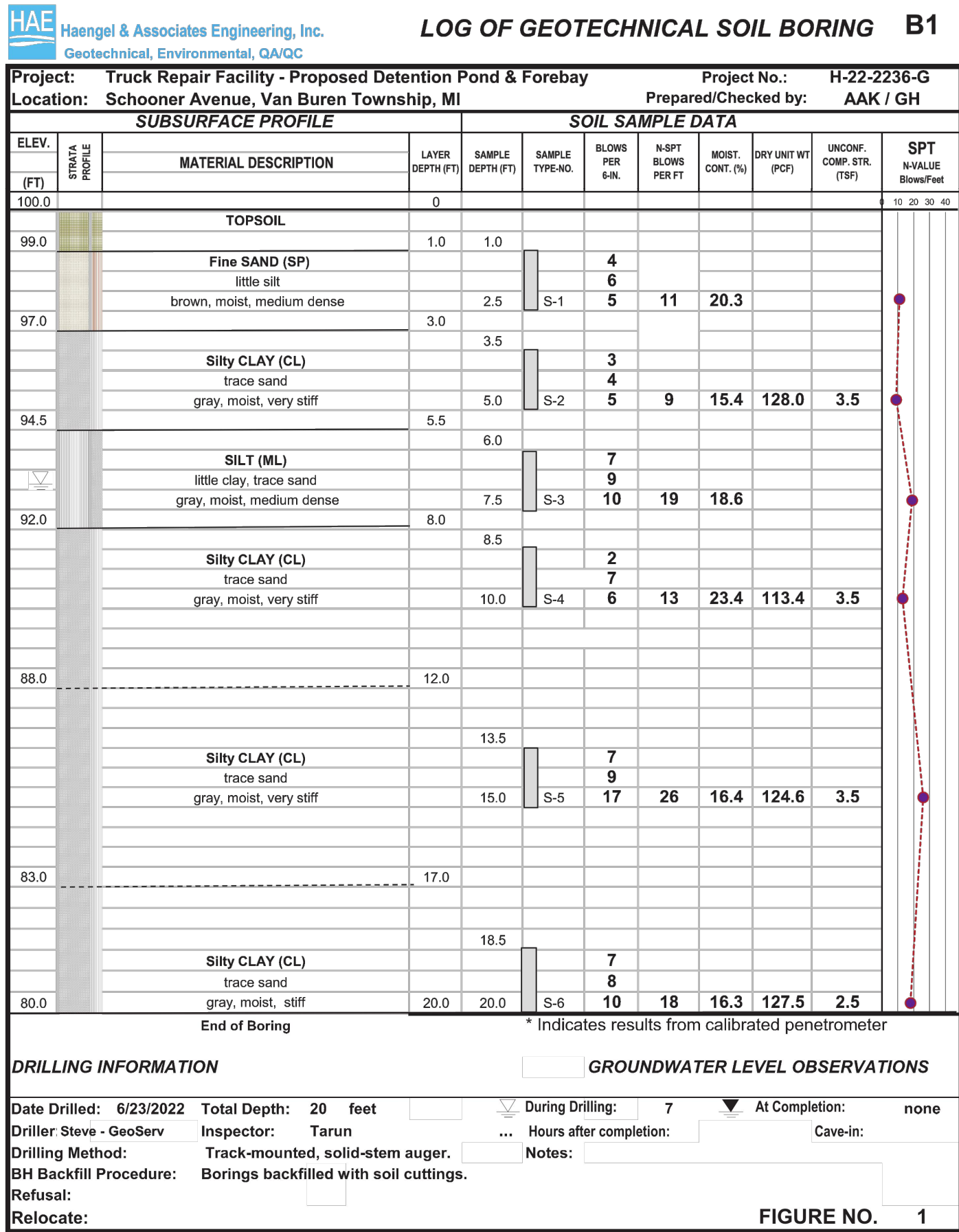
DATE
01-10-22

A-

2022-
JOB No.

SHEET No. 6 OF

HARDY
CIVIL DESIGN SERVICES LLC
4996 MOORE ST. WAYNE, MI 48184
(734) 756-2196
F-mail: khhardy1964@hotmail.com



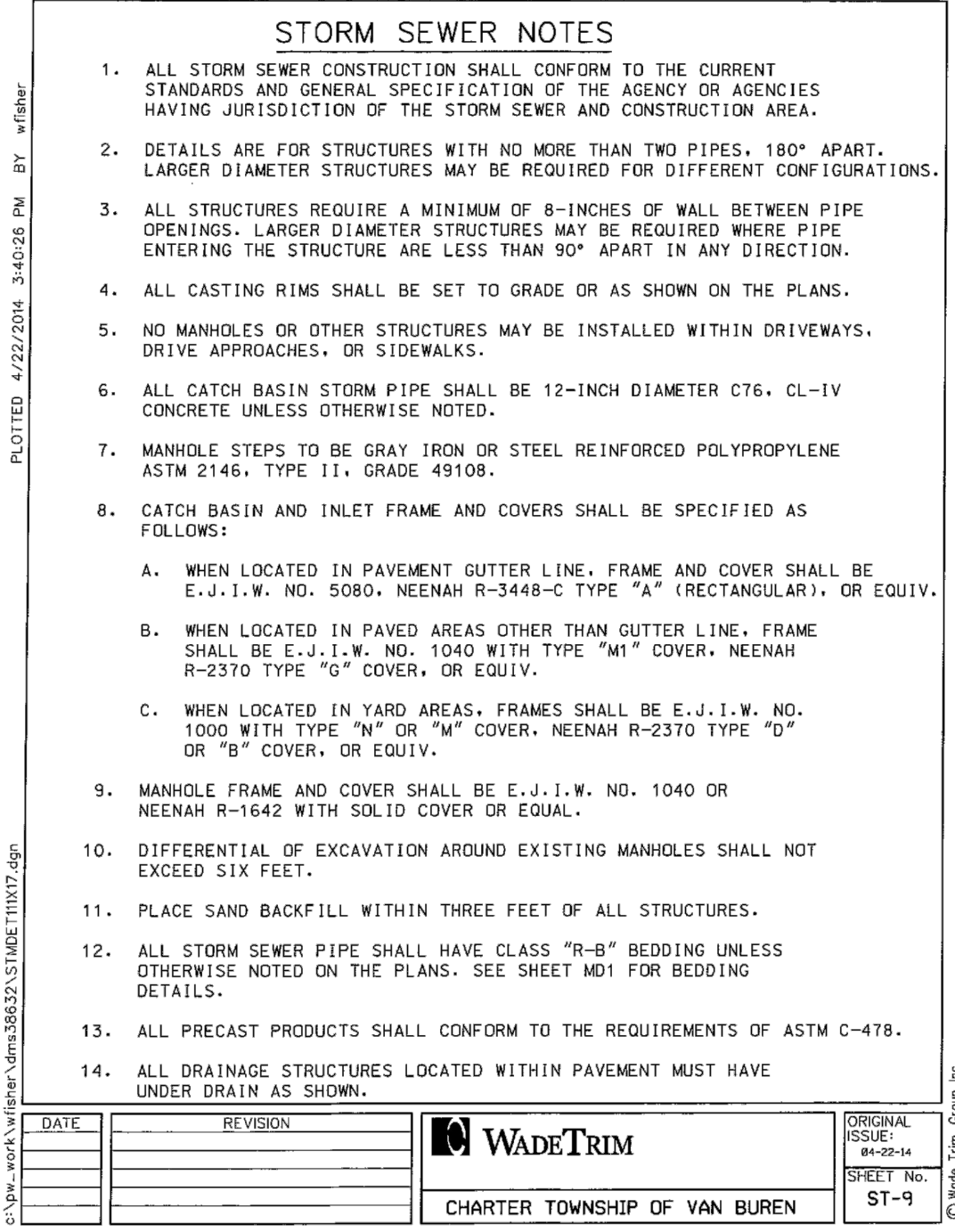
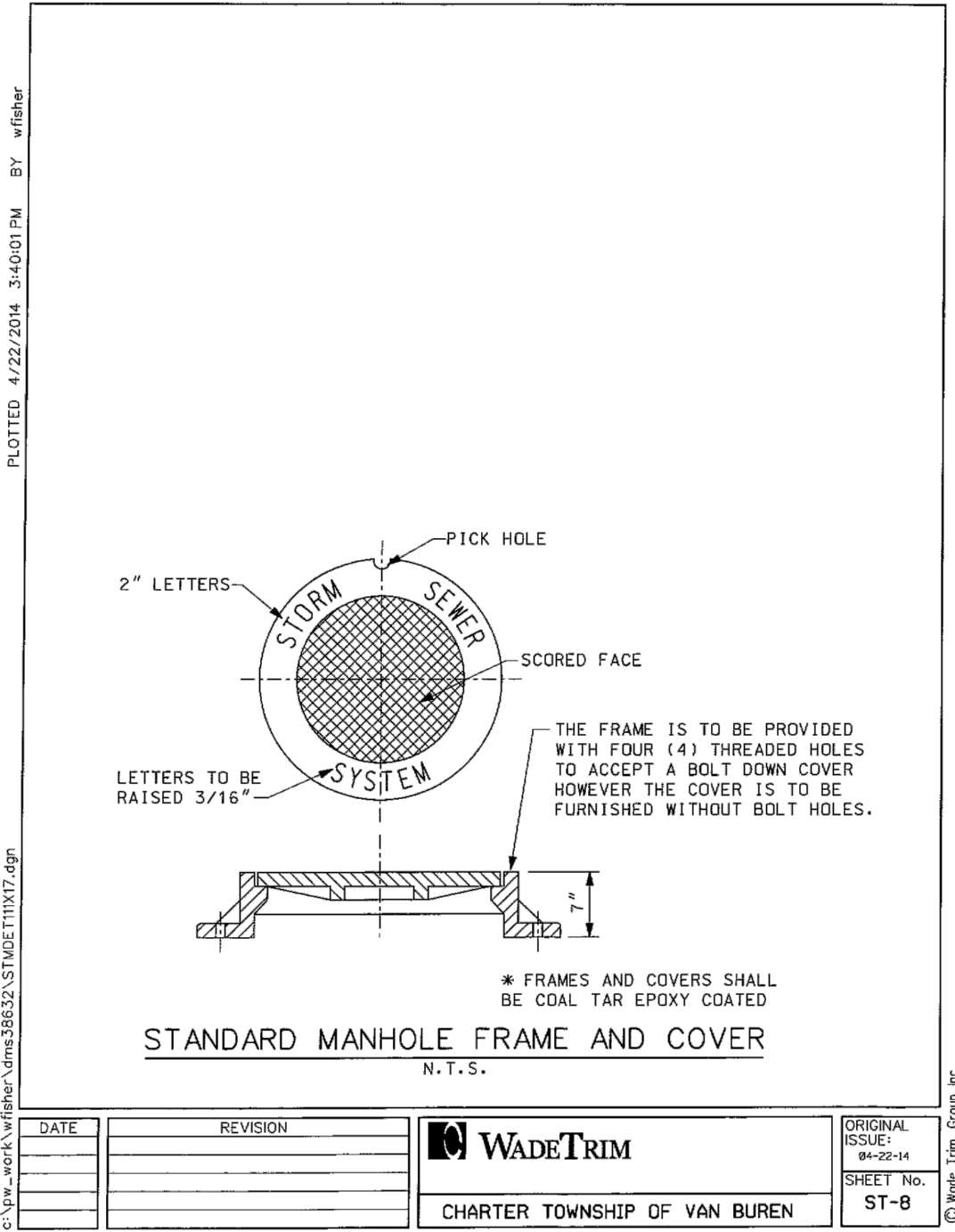
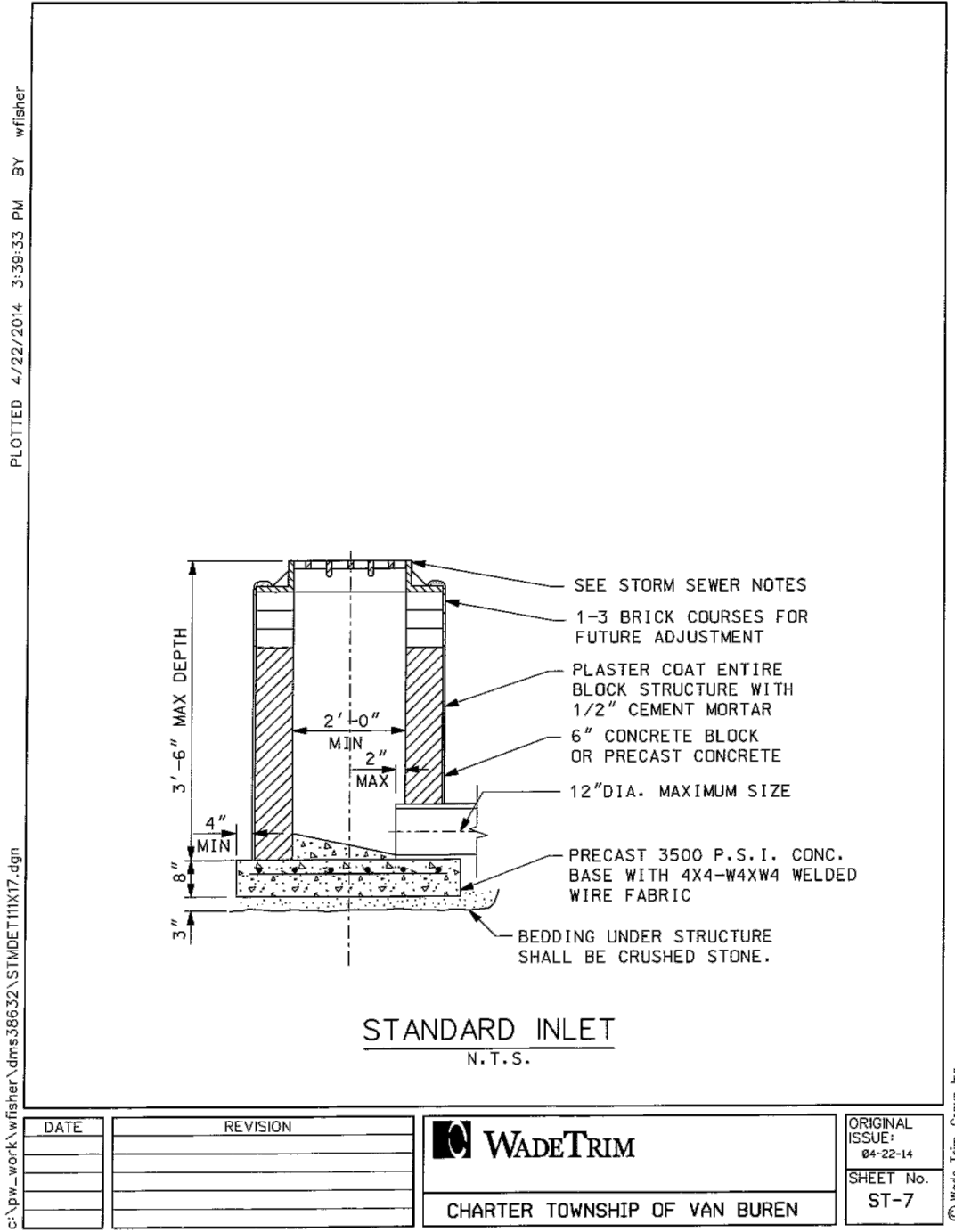
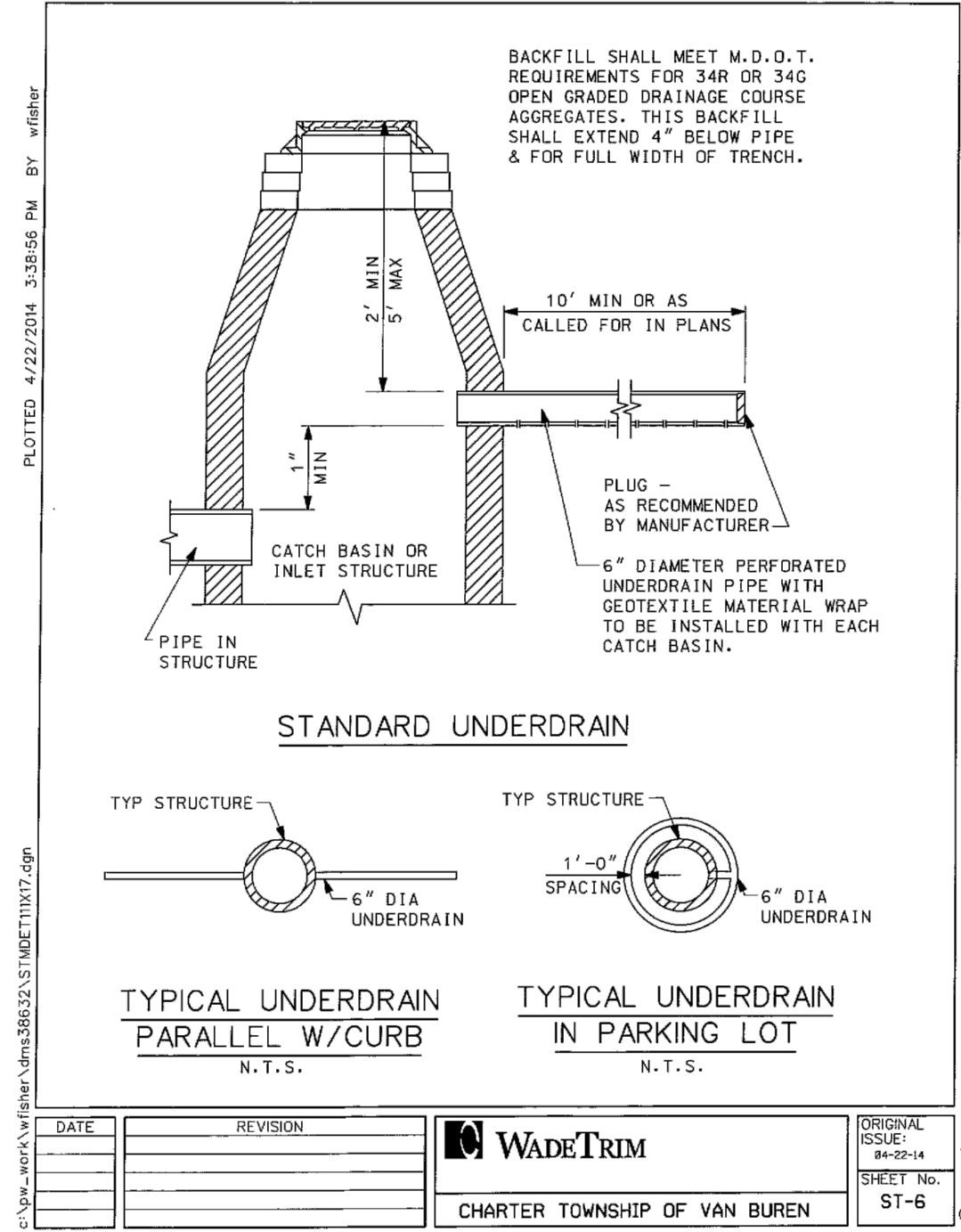
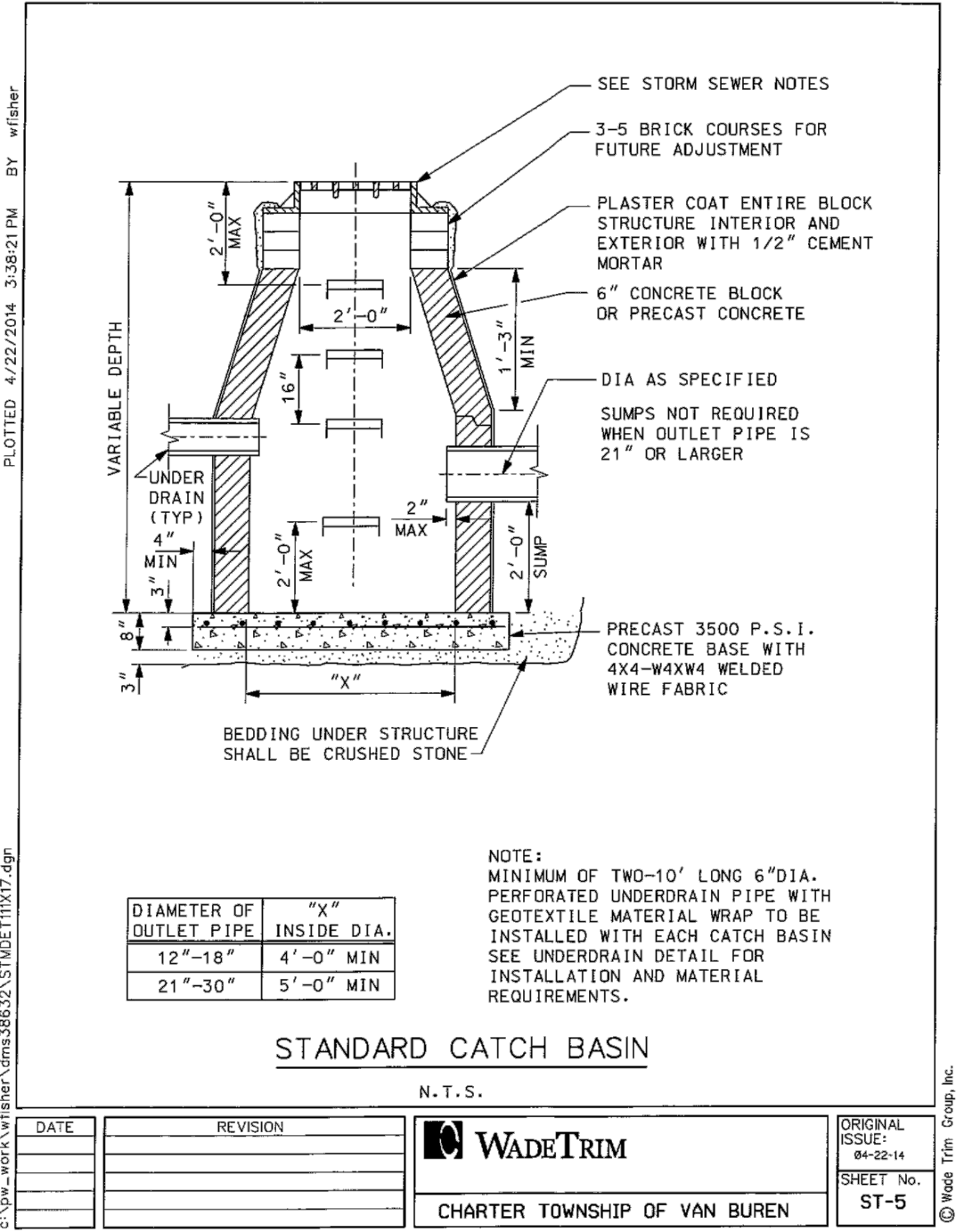
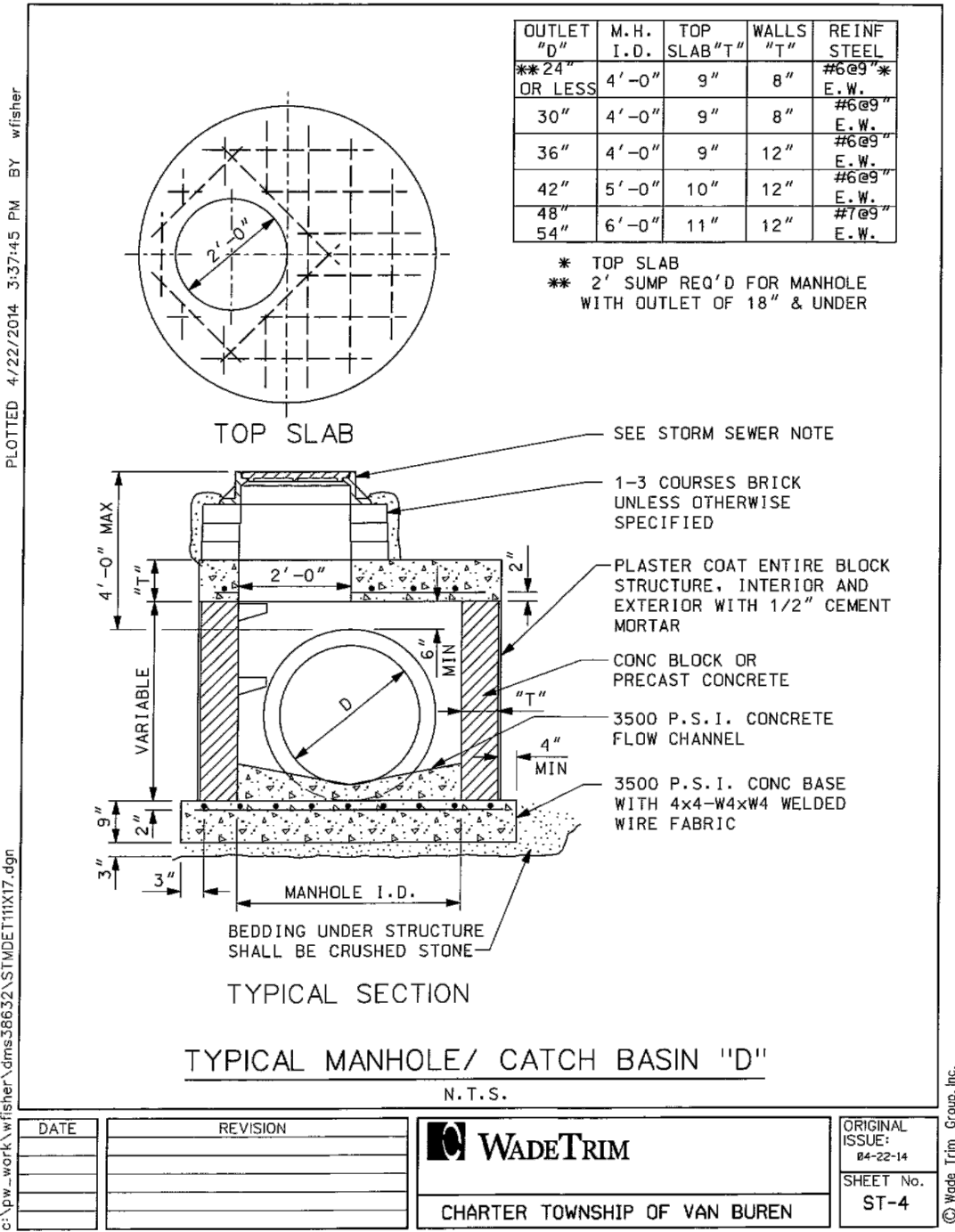
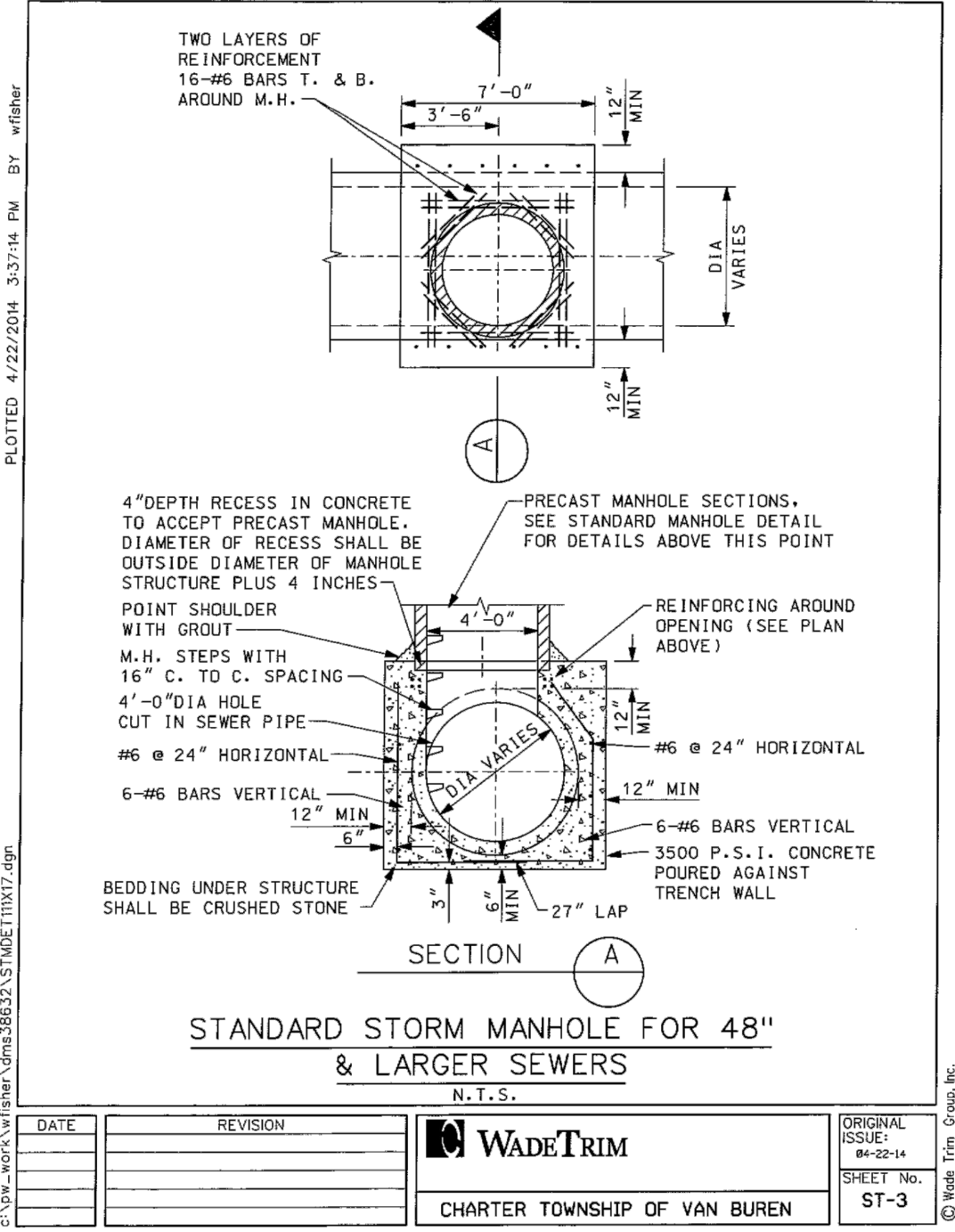
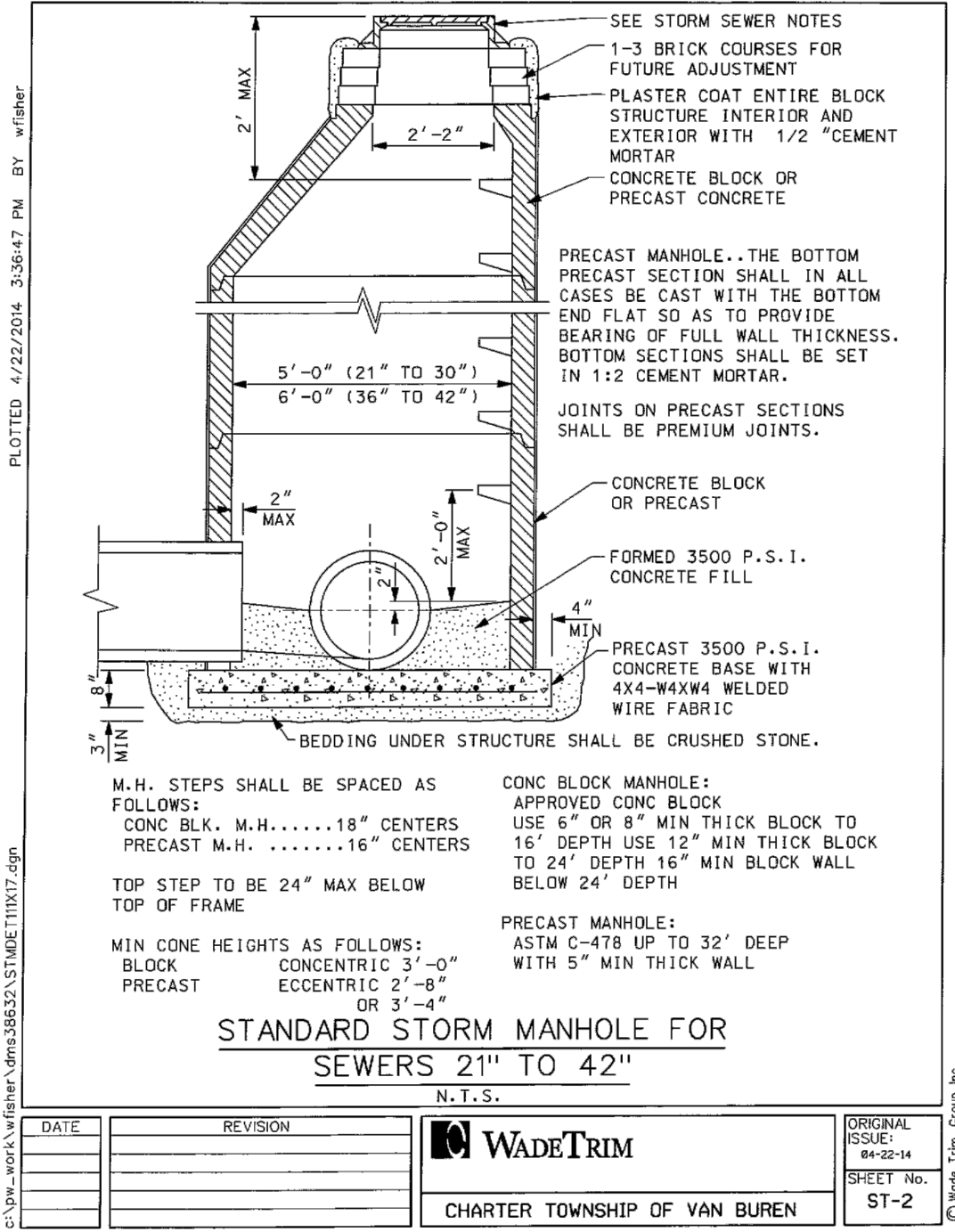
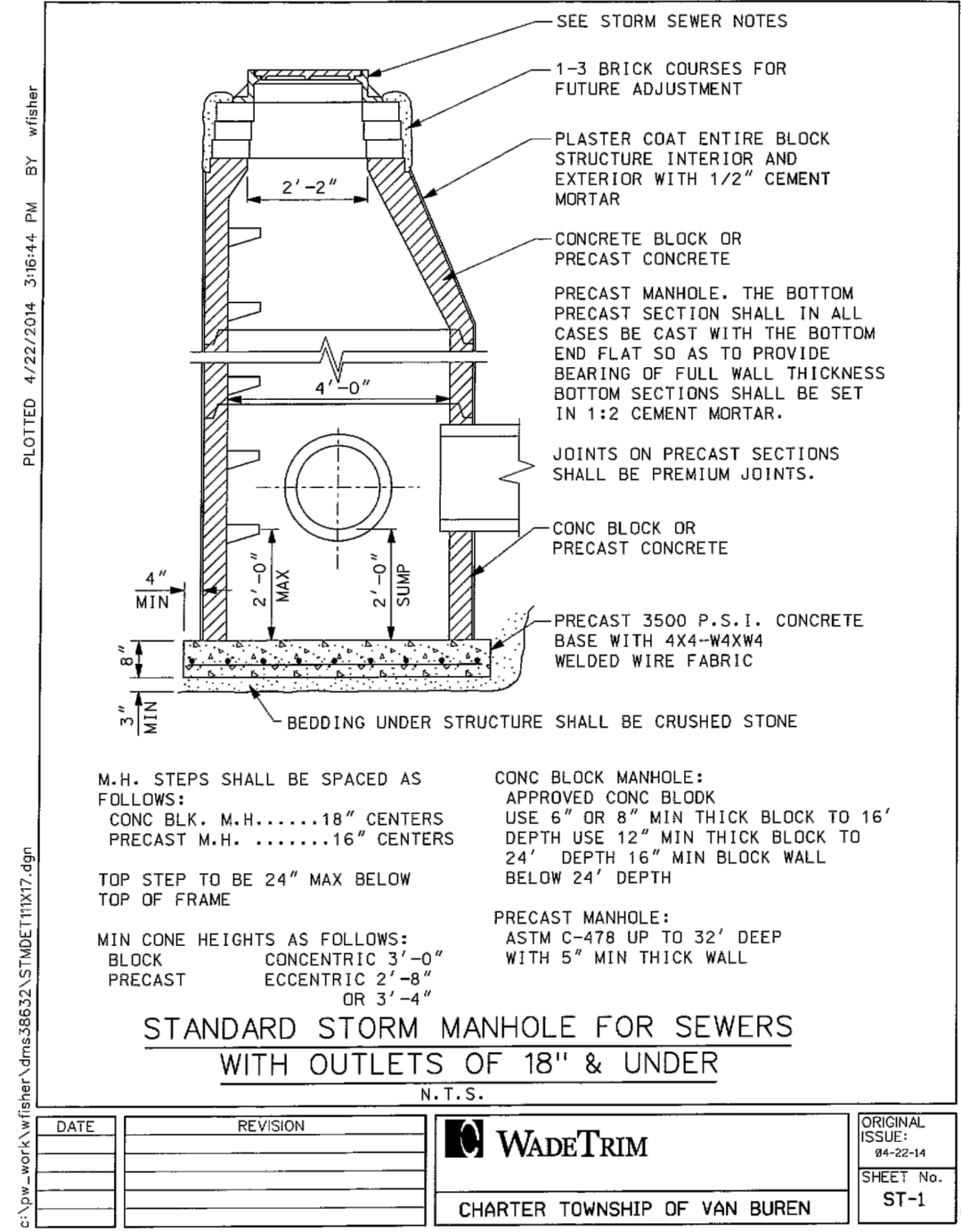
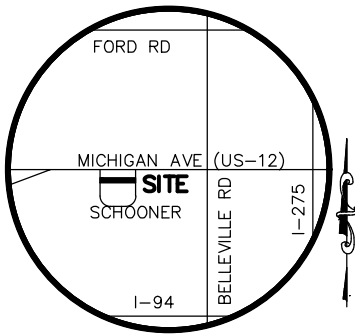


EXHIBIT "A"

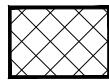
PHYSICAL LIMITS OF STORM WATER MANAGEMENT SYSTEM



VICINITY MAP

NOT TO SCALE

LEGEND



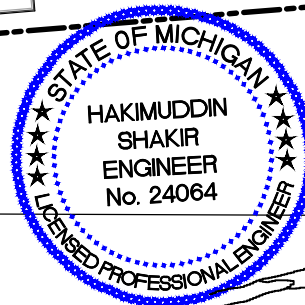
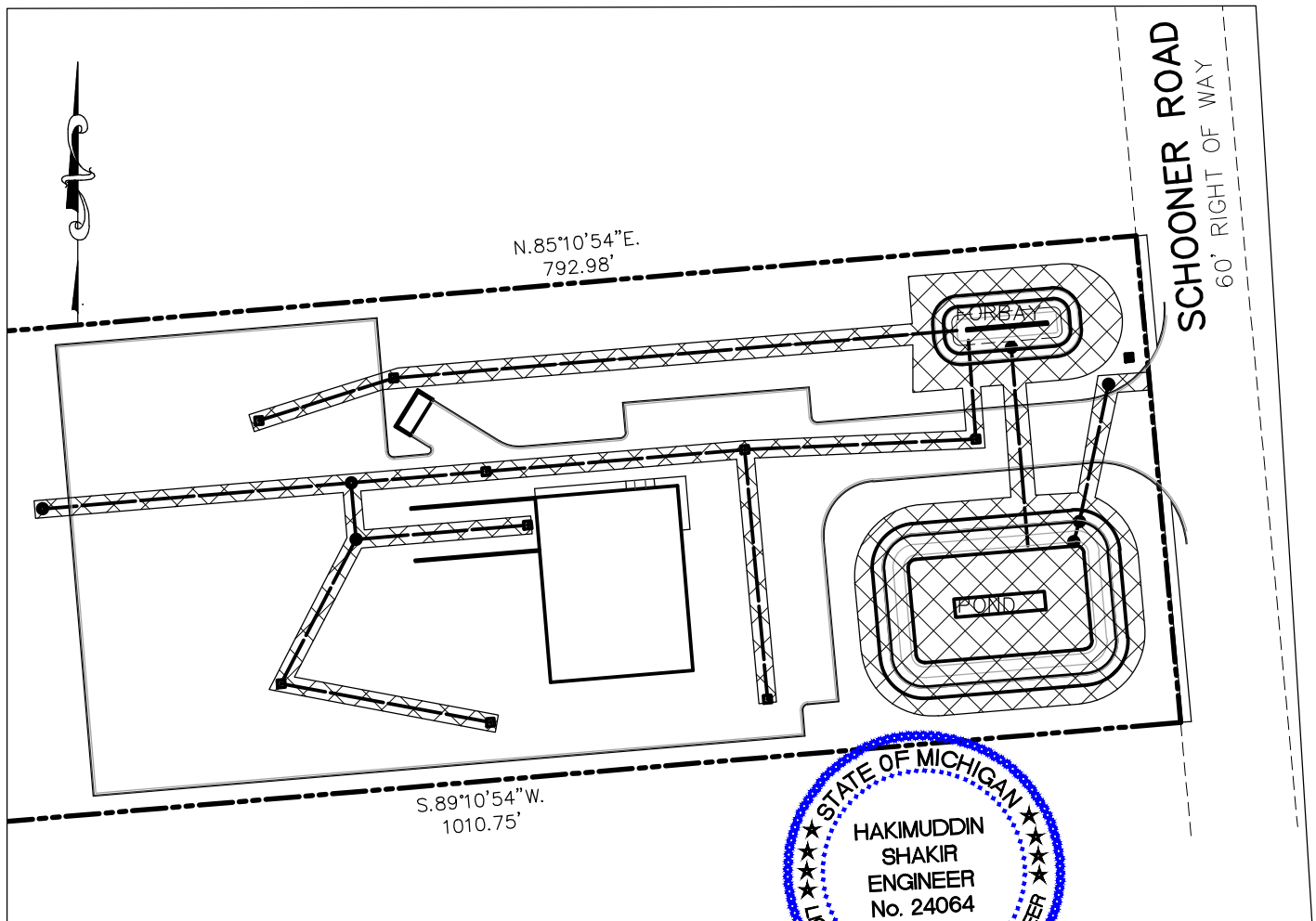
VAN BUREN TOWNSHIP
MAINTENANCE
RESPONSIBILITY

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
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

* 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			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		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

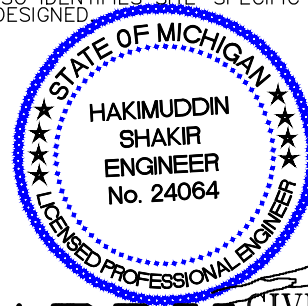
TABLE 1 IDENTIFIES THE MAINTENANCE ACTIVITIES TO BE PERFORMED, ORGANIZED BY CATEGORY (MONITORING/INSPECTION, PREVENTATIVE MAINTENANCE, AND REMEDIAL ACTIONS). WHILE PERFORMING MAINTENANCE, CHEMICALS SHOULD NOT BE APPLIED TO THE FOREBAY, DETENTION BASIN, BUFFER STRIP, OR WATERCOURSES. TABLE 1 ALSO IDENTIFIES 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
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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

February 02, 2023

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

To: OHM
County review R22-0560

OHM review #43 response letter:

Storm water management:

1. Noted
2. Orifice size has been revised.
3. Storm sewer design chart intensity calculations have been revised.

Kevin Hardy, Civil Design Services