GREENHILLS NORTH ADDITION
ANN ARBOR, WASHTENAW COUNTY, MI
SITE PLAN

OWNER/APPLICANT
GREENHILLS SCHOOL
850 GREENHILLS DRIVE
ANN ARBOR, MI, 48105
CONTACT: JOHN NICKEL
734-205-4059

CONTRACTOR
J.S. VIG
15040 CLEAT STREET
PLYMOUTH, MI 48170
734.283.3002

ENGINEER/SURVEYOR/LANDSCAPE ARCH.
MIDWESTERN CONSULTING, LLC
3815 PLAZA DR.
ANN ARBOR, MI 48108
CONTACT: PROJECT MANAGER
734-995-0200

ARCHITECT
INTEGRATED DESIGN SOLUTIONS
1441 W. LONG LAKE RD, STE. 200
TROY, MI, 48098
CONTACT: CHRISTA AZAR
248-823-2100

LEGAL DESCRIPTION
(PER CHICAGO TITLE INSURANCE COMPANY, TITLE COMMITMENT NO. CM25422, REVISION NO. 1, EFFECTIVE DATE JANUARY 18, 2017)

The land referred to in this Commitment is located in the City of Ann Arbor, County of Washtenaw, State of Michigan, and described as follows:

Outlot J, Earhart Subdivision, as recorded in Liber 19 of Plats, Pages 20 through 25, inclusive, Washtenaw County Records, EXCEPTING THEREFROM a strip of land 150 feet wide lying West of and adjacent to the limited access right of way of Highway US-23 over and across the South 970 feet of the North 980 feet of Outlot J.

SITE DATA

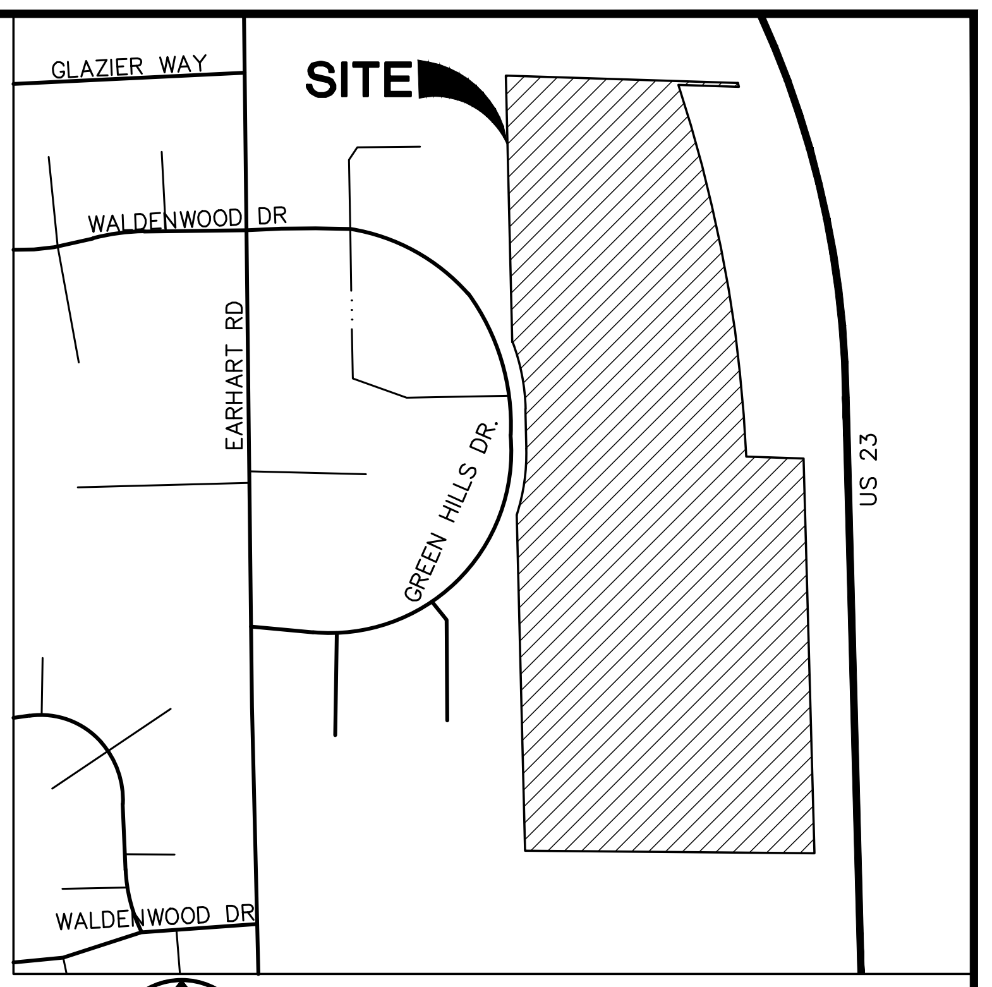
		REQUIRED/PERMITTED		EXISTING		Proposed	
Zoning		**R1B**		**R1B**		**R1B**	
	Permitted Use			PRIVATE 6-12 GRADE SCHOOL		PRIVATE 6-12 GRADE SCHOOL	
	Site Area	10,000	sf min.	30.49	ACRES	30.49	ACRES
				1,328,144.40	sf	1,328,144.40	sf
	Lot Width	70	ft min.	2,037	ft	2,037	ft
Building							
	Floor Area Ratio	None	% max.	9.15%		12%	
						8,002	sf ground floor
				139,358	sf	8,665	sf upper floors
	Lot Coverage	None	% max.	10.5	%	11.10	%
	Building Height	30	ft	~30	ft	~30	ft
		15	ft min. first story	15	ft min. first story	15	min. first story
		55	ft max. within 80ft *	55	ft max. within 80ft *	55	ft max. within 80ft *
		75	ft max. 80-300ft *	75	ft max. 80-300ft *	75	ft max. 80-300ft *
		120	ft max. 300-1,000ft *	120	ft max. 300-1,000ft *	120	ft max. 300-1,000ft *
		300	ft max. >1,000ft *	300	ft max. >1,000ft *	300	ft max. >1,000ft *
		* from R district (existing site is >1,000ft from R district)					
Setbacks							
	Front (not on Transit Corridor, measured to property line)	30	ft min.				
		NA	ft max.	138	ft	138	ft
		5	ft min. one side	621	ft (north)	621	ft (north)
		14	ft min. total sides	633	ft (south)	633	ft (south)
	Side / Rear	40	ft min.	108	ft (rear)	108	ft (rear)
Vehicular Parking							
	Required Parking	None	spaces min.	Total: 195 Reg, 6 BF, 3 BFV	spaces total	Total: 195 Reg, 6 BF, 3 BFV	spaces total
Bicycle Parking							
		5	spaces min. per classroom	40	spaces	40	spaces*
		* variance granted in 1989 allows 40 instead of 420 spaces					

SITE MAP
SCALE : NTS

PROJECT NARRATIVE
THE PROPOSED PROJECT INVOLVES TWO ADDITIONS TO THE EXISTING GREENHILLS SCHOOL. THE EXISTING GRAVEL FIRE LANE ALONG THE NORTH SIDE OF THE SCHOOL WILL BE REPLACED WITH A 20' WIDE PAVED FIRE LANE. GRASS PAVERS WILL BE INSTALLED IN AN EXISTING TURF FIELD TO ALLOW FOR SUPPORT OF OVERFLOW VEHICLE PARKING FOR SPECIAL EVENTS.

NATURAL FEATURES AND IMPACT SUMMARY
NATURAL FEATURES PRESENT ON THE SITE INCLUDE WETLANDS, LANDMARK TREES AND MAN-MADE STEEP SLOPES.
IMPACTS TO WETLAND BUFFER AND ONE LANDMARK TREE ARE INCLUDED IN THE PROJECT.
SEE NATURAL FEATURES PLAN FOR SPECIFIC LOCATIONS AND DETAILED DESCRIPTIONS.

CITY OF ANN ARBOR REQUIRED NOTES
1. THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE CITY OF ANN ARBOR PUBLIC SERVICES STANDARD SPECIFICATIONS WHICH ARE INCLUDED BY REFERENCE.
2. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM THIS REQUIREMENT. THE WORK SHALL BE PERFORMED IN COMPLETE CONFORMANCE WITH THE CURRENT CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS AND DETAILS.
3. SIDEWALKS CONSTRUCTED IN THE PUBLIC RIGHT-OF-WAY SHALL MEET ALL REQUIREMENTS AND GUIDELINES AS SET FORTH IN THE ADA STANDARDS FOR ACCESSIBLE DESIGN. SIDEWALK AND CURB RAMP GRADES WILL BE REVIEWED DURING CONSTRUCTION PLAN SUBMITTALS.
4. ALL SIDEWALKS SHALL BE KEPT AND MAINTAINED IN GOOD REPAIR BY THE OWNER OF THE LAND ADJACENT TO AND ABUTTING THE SAME. PRIOR TO THE ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY FOR THIS SITE, ALL EXISTING SIDEWALKS IN NEED OF REPAIR MUST BE REPAIRED IN ACCORDANCE WITH CITY STANDARDS.
5. PAVEMENT MARKINGS DISTURBED DUE TO PAVEMENT CUTS OR CONSTRUCTION RELATED ACTIVITIES SHALL BE REPLACED. REPLACEMENT DURING CONSTRUCTION MAY BE CONSIDERED TEMPORARY, WITH FINAL PAVEMENT MARKING RESTORATION TO OCCUR AT THE END OF THE PROJECT.
6. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING PUBLIC ROAD PAVEMENT. DAMAGE TO THE PUBLIC ROAD PAVEMENT DURING CONSTRUCTION MAY NECESSITATE MILLING AND RESURFACING OF THE DAMAGED AREAS.
7. THE NO CHANGE TO SOLID WASTE PICK UP OR WASTE GENERATION. STUDENT GROWTH WILL HAVE INSIGNIFICANT IMPACT TO EXISTING STORAGE CAPACITY OR COLLECTIONS.



VICINITY MAP
SCALE : NTS

SHEET INDEX

#	SHEET TITLE
01	COVER SHEET
V1.0	TOPOGRAPHIC AND BOUNDARY SURVEY_ALTA
02	OVERALL EXISTING CONDITIONS PLAN
03	EXISTING CONDITIONS PLAN
04	DEMOLITION & REMOVALS PLAN
05	NATURAL FEATURES PLAN
06	NATURAL FEATURES OVERLAY
07	OVERALL LAYOUT PLAN
08	DIMENSIONAL LAYOUT PLAN
09	GRADING & SESC PLAN
10	UTILITY PLAN
11	LANDSCAPE PLAN
12	STORMWATER MANAGEMENT PLAN
13	STORMWATER CALCULATIONS
14	FIRE PROTECTION PLAN
15	SITE DETAILS
16	ELECTRICAL SITE PLAN
17	PHOTOMETRIC PLAN
18	ARCHITECTURAL ELEVATIONS

GREENHILLS NORTH ADDITION

JOB No. **23313**

REVISIONS:	REV. DATE
PER MUNICIPAL REVIEW	12/19/25
PER MUNICIPAL REVIEW	3/19/26

DATE: 7/31/25
SHEET 01 OF 17
CADD:
ENG: HTH
PM: HTH
TECH:
23313CV01
FB#

01

MIDWESTERN CONSULTING
3815 Plaza Drive Ann Arbor, Michigan 48108
(734) 995-0200 • www.midwesternconsulting.com

RELEASED FOR:	DATE

HEATH HARTT ENGINEER No. 56247
Heath Hartt
HEATH HARTT
P.E.

23313 – GREENHILLS NORTH ADDITION

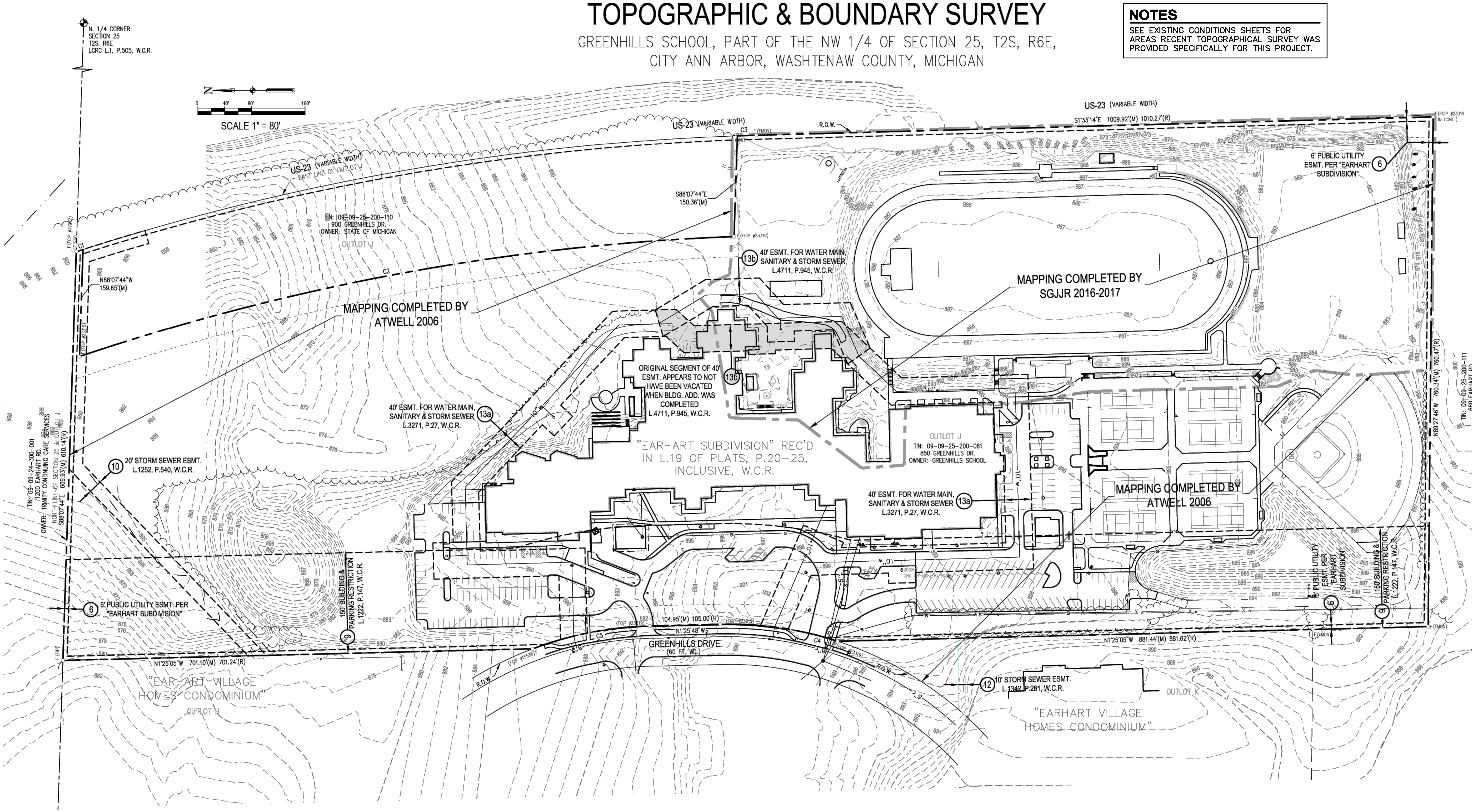
M:\Civil3d_Proj_2023\23313\Site Plan\23313CV01.dwg, 3/20/2026 3:43 PM, Heath Hartt, COVER SHEET, None

TOPOGRAPHIC & BOUNDARY SURVEY

GREENHILLS SCHOOL, PART OF THE NW 1/4 OF SECTION 25, T2S, R6E,
CITY ANN ARBOR, WASHTENAW COUNTY, MICHIGAN

NOTES

SEE EXISTING CONDITIONS SHEETS FOR AREAS RECENT TOPOGRAPHICAL SURVEY WAS PROVIDED SPECIFICALLY FOR THIS PROJECT.



SURVEY LEGEND

●	BENCHMARK
△	CONTROL POINT
○ F	FOUND IRON PIPE
+ 700.00	EX. SPOT ELEV.
+ TC 701.00	EX. TOP OF CURB ELEV.
+ GU 700.50	EX. GUTTER ELEV.
+ EM 700.70	EX. EDGE OF METAL
+ CC 700.70	EX. CURB CUT ELEV.
+ TW 703.00	EX. TOP OF WALL ELEV.
+ BW 702.00	EX. BOTTOM OF WALL ELEV.
⊕	SOIL BORING
☒	ELECTRIC TRANSFORMER
☒	CABLE RISER
⊙	UTILITY POLE
>>	GUY WIRE
☼	LIGHT POLE
⊚	FIRE HYDRANT
⊖	SHUT OFF VALVE
▨ (1221)	CATCH BASIN (ROUND)
▦ (1221)	CATCH BASIN (SQUARE)
Ⓣ (1221)	COMMUNICATIONS MANHOLE
ST (1221)	STORM MANHOLE
Ⓢ (1221)	SANITARY MANHOLE
Ⓔ (1221)	ELECTRIC MANHOLE
Ⓖ (1221)	GAS MANHOLE
Ⓦ (1221)	WATER MANHOLE
STM (1221)	STEAM TUNNEL MANHOLE
AC	AIR CONDITIONER
¤	IRRIGATION CONTROL VALVE
+ FDC	EX. FIRE DEPT. CONNECTION
▫ DS	EX. DOWNSPOUT
○ CO	EX. CLEANOUT
●	EX. BOLLARD/POST
─○─	SIGN
─○──○─	SIGN – DOUBLE POST
BL	EX. BIKE LOOP
○	TREE – DECIDUOUS
●	TREE – CONIFEROUS
◎	BUSH/SHRUB
∼ ∼ ∼	EX. TOPO CONTOUR
─────	BUILDING PERIMETER (TYP.)
— — —	BUILDING/ROOF OVERHANG
⌣⌣⌣⌣	EX. BRUSH/WOODED LIMITS
—x——x—	EX. FENCE LINE
· · · · ·	EX. GUARD RAIL
—ctv—	EX. CABLE TELEVISION
—com—	EX. COMMUNICATION
—ue—	EX. UNDERGROUND ELECTRIC
—oe—	EX. ELECTRIC
—fiber—	EX. FIBER OPTIC
—g—	EX. NATURAL GAS
—oh—	EX. OVERHEAD UTILITY
—s—	EX. SANITARY SEWER
—r—	EX. STORM SEWER
—w—	EX. WATER MAIN
—SL—	EX. ELECTRIC STREET LIGHTING
—— · · ——	EDGE OF WATER
—— - - ——	PROPERTY LINE

SCHEDULE B EXCEPTIONS

(PER CHICAGO TITLE INSURANCE COMPANY, TITLE COMMITMENT NO. CM25422, REVISION NO. 1, EFFECTIVE DATE JANUARY 18, 2017)

①-⑤ **ITEMS 1–5 ARE NOT SURVEY MATTERS**

⑥ Easements as shown on the recorded plat. **(6 FOOT WIDE PUBLIC UTILITY EASEMENT SHOWN HEREON)**

⑦-⑧ **ITEMS 7–8 ARE NOT SURVEY MATTERS**

⑨ Building and use restrictions as recorded in Liber 1222, page 147, Washtenaw County Records, but omitting any covenant or restriction based on race, color, religion, sex, handicap, familial status, or national origin. **(150 FOOT BUILDING AND PARKING RESTRICTION SHOWN HEREON)**

⑩ Right of way for storm sewer, as recorded in Liber 1252, page 540, Washtenaw County Records. **(20 FOOT WIDE STORM SEWER EASEMENT SHOWN HEREON)**

⑪ Easement in favor of the City of Ann Arbor, as recorded in Liber 2622, page 229, Washtenaw County Records. **(AFFECTS SUBJECT PROPERTY, SUBSEQUENT DOCUMENT L.3356, P.250, SCH. B EXCEPTION NO. 14, APPEARS TO ABANDON THE EASEMENT DESCRIBED IN L.2622, P.229, NOT PLOTTED)**

⑫ Easement in favor of Greenhills School, as recorded in Liber 1342, page 281, Washtenaw County Records. **(10 FOOT WIDE STORM EASEMENT LIES ON ADJOINING PARCEL, BENEFITS THE SUBJECT THE PROPERTY)**

⑬ Grant of Easement in favor of the City of Ann Arbor, as recorded in Liber 3271, page 27 and Liber 4711, page 945, Washtenaw County Records. **(40 FOOT WIDE EASEMENT FOR WATER MAIN, SANITARY AND STORM SEWER SHOWN HEREON)**

⑭ Resolution Accepting and Releasing a Utility Easement, as recorded in Liber 3356, page 250, Washtenaw County Records. **(AFFECTS SUBJECT PROPERTY, DOCUMENT APPEARS TO ABANDON THE EASEMENT DESCRIBED IN L.2622, P.229, NOT PLOTTED)**

⑮ Terms and conditions contained in Greenhills School Development Agreement, as recorded in Liber 4797, page 356, Washtenaw County Records. **(AFFECTS THE SUBJECT PROPERTY, NOT PLOTTABLE)**

LEGAL DESCRIPTION

(PER CHICAGO TITLE INSURANCE COMPANY, TITLE COMMITMENT NO. CM25422, REVISION NO. 1, EFFECTIVE DATE JANUARY 18, 2017)

The land referred to in this Commitment is located in the City of Ann Arbor, County of Washtenaw, State of Michigan, and described as follows:

Outlot J, Earhart Subdivision, as recorded in Liber 19 of Plats, Pages 20 through 25, inclusive, Washtenaw County Records, EXCEPTING THEREFROM a strip of land 150 feet wide lying West of and adjacent to the limited access right of way of Highway US–23 over and across the South 970 feet of the North 980 feet of Outlot J.

CONTROL POINT TABLE

Point No.	Northing	Easting	Elevation	Description
1	286860.49	13309766.69	893.14	CP SGJJR CAP REBAR
2	286328.58	13309930.85	886.62	CP SGJJR CAP REBAR
3	286490.13	13309695.17	886.64	CP NAIL–SPIKE
4	286466.86	13309941.22	886.30	CP NAIL–SPIKE
5	286805.57	13309589.91	894.75	CP SGJJR CAP REBAR
6	286953.60	13309617.11	894.50	CP SGJJR CAP REBAR

BENCHMARKS

SITE BENCHMARK 21
SET "BENCHTIE"–BRAND SURVEY SPIKE IN NORTHWEST FACE OF 12" HONEY LOCUST NEAR SOUTHEAST CORNER OF TRACK & FIELD.

NORTHING = 286297.30
EASTING = 13309922.07
ELEVATION = 887.75 FEET (NAVD88)

SITE BENCHMARK 22
CUT SQUARE IN TOP OF NORTHEAST CORNER CONCRETE WALL, 24" HIGH, AT NORTHEAST OF ALUMINUM BLEACHERS .

NORTHING = 286584.01
EASTING = 13309651.20
ELEVATION = 889.46 FEET (NAVD88)

NOTES

1. A PORTION OF THE GREENHILLS SCHOOL PARCEL WAS MAPPED BY SMITHGROUPJJR IN MAY OF 2016 & JANUARY OF 2017. THIS AREA IS COMPRISED OF THE EXISTING TRACK AND SURROUNDING AREAS AS SHOWN HEREON. THE REMAINDER OF THE SITE MAPPING SHOWN HEREON WAS COMPLETED BY ATWELL IN 2006.

   MAPPING COMPLETED BY SMITHGROUPJJR ADHERES TO STANDARDS OUTLINED IN THE CITY OF ANN ARBOR SITE PLAN REQUIREMENTS. NOTES NO. 4, 5 AND 8 PERTAIN ONLY TO EFFORTS MADE BY SMITHGROUPJJR IN 2016–2017. THE RECORD MAPPING BY ATWELL RECEIVED VISUAL VERIFICATION IN THE FIELD AND THE SANITARY AND WATER UTILITIES SHOWN HEREON WERE CHECKED AGAINST PROVIDED RECORD MAPS. ATWELL MAPPING SHOULD BE USED ONLY FOR GENERAL GRADING AND PLANNING PURPOSES AND IS NOT SUFFICIENTLY VERIFIED TO SUPPORT DESIGN EFFORTS.
2. HORIZONTAL DATUM IS ACCORDING TO MICHIGAN STATE PLANE GRID COORDINATES, SOUTH ZONE (2113), GEOID 2012A, INTERNATIONAL FEET AS LINEAR UNIT OF MEASURE.
3. VERTICAL DATUM IS ACCORDING TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), WITH BENCHMARKS LISTED HEREON.
4. SMITHGROUPJJR PERFORMED A TOPOGRAPHIC SURVEY UTILIZING DATA COLLECTED WITH GLOBAL POSITIONING RECEIVERS REFERENCING THE MICHIGAN CONTINUOUSLY OPERATING REFERENCE NETWORK.
5. MISS–DIG STAKING TICKET A60920228 WAS ISSUED FOR THIS PROJECT ON 4/1/2016.
6. UNDERGROUND UTILITY LOCATIONS WERE DERIVED FROM ACTUAL MEASUREMENTS ON VISIBLE UTILITIES, MISS DIG FLAGS/MARKINGS, AND/OR AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATIONS, NOR SHOULD THEY IT BE ASSUMED THAT THEY ARE THE ONLY UNDERGROUND UTILITIES IN THE AREA.

   THE LOCATION OF THE UNDERGROUND ELECTRIC LINE SHOWN HEREON WAS PLACED BASED ON VERBAL TESTIMONY BY THE GREENHILLS MAINTENANCE STAFF. LOCATION IS VERY APPROXIMATE AND IS ONLY SHOWN TO INDICATE THE EXISTENCE OF AN ELECTRIC UTILITY IN THE AREA. UTILITY SHOULD BE MARKED BY ELECTRICIAN PRIOR TO EXCAVATION.
7. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED AND ARE NOT CONSIDERED A PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE AND OR DEVELOPMENT OF THIS SITE.
8. ADDITIONAL SPOT ELEVATIONS MAY BE CONTAINED IN THE PROJECT DATABASE, AND ALTHOUGH NOT APPEARING IN THE RECORD PLAN DOCUMENT DUE TO SCALE AND VISIBILITY, WERE UTILIZED IN THE DIGITAL TERRAIN MODEL FOR CREATION OF THE ONE–FOOT CONTOURS. THE ADDITIONAL SPOT ELEVATION DATA IS AVAILABLE FOR FUTURE DESIGN ANALYSIS, BEING LOCATED ON A FROZEN LAYER WITHIN THE PROJECT DATABASE.

CURVE TABLE

Curve No.	Length (M)	Length (R)	Radius	Delta	Chord Bearing	Chord Length
C1	10.62	--	3622.72	0°10'05"	S17°48'05"E	10.62
C2	996.03	--	3472.72	16°26'00"	S10°23'02"E	992.62
C3	28.17	--	3622.72	0°26'44"	S1°46'37"E	28.17
C4	177.55	177.48	520.00	19°33'46"	N8°13'39"E	176.69
C5	178.93	179.18	530.00	19°20'35"	N10°58'50"W	178.08

CERTIFICATE

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH LOCAL AND STATE JURISDICTIONAL REQUIREMENTS REGULATING MAPPING STANDARDS. THE UNDERSIGNED STATES THAT PROPER FIELD PROCEDURES, INSTRUMENTATION AND ADEQUATE STAFF WERE EMPLOYED TO ACHIEVE THE RESULTS INDICATED HEREIN.

SMITHGROUPJJR, INC.

CHARLES A. LANGOLF, PS 56210
PROFESSIONAL SURVEYOR
STATE OF MICHIGAN
charles.langolf@smithgroupjjr.com

CHARLES A. LANGOLF
No. 56210

DATE: 2/17/2017

GREENHILLS SCHOOL

850 GREENHILLS DRIVE
ANN ARBOR, MICHIGAN

Owner:

GREENHILLS SCHOOL

SMITHGROUPJJR

201 DEPOT STREET
SECOND FLOOR
ANN ARBOR, MI 48104
734.662.4457
www.smithgroupjjr.com

ISSUED FOR	REV	DATE
CLIENT ISSUE	0	5/20/2016
ADDITIONAL MAPPING	1	2/17/2017

SEALS AND SIGNATURES

NOT FOR CONSTRUCTION

KEY PLAN

DRAWING TITLE

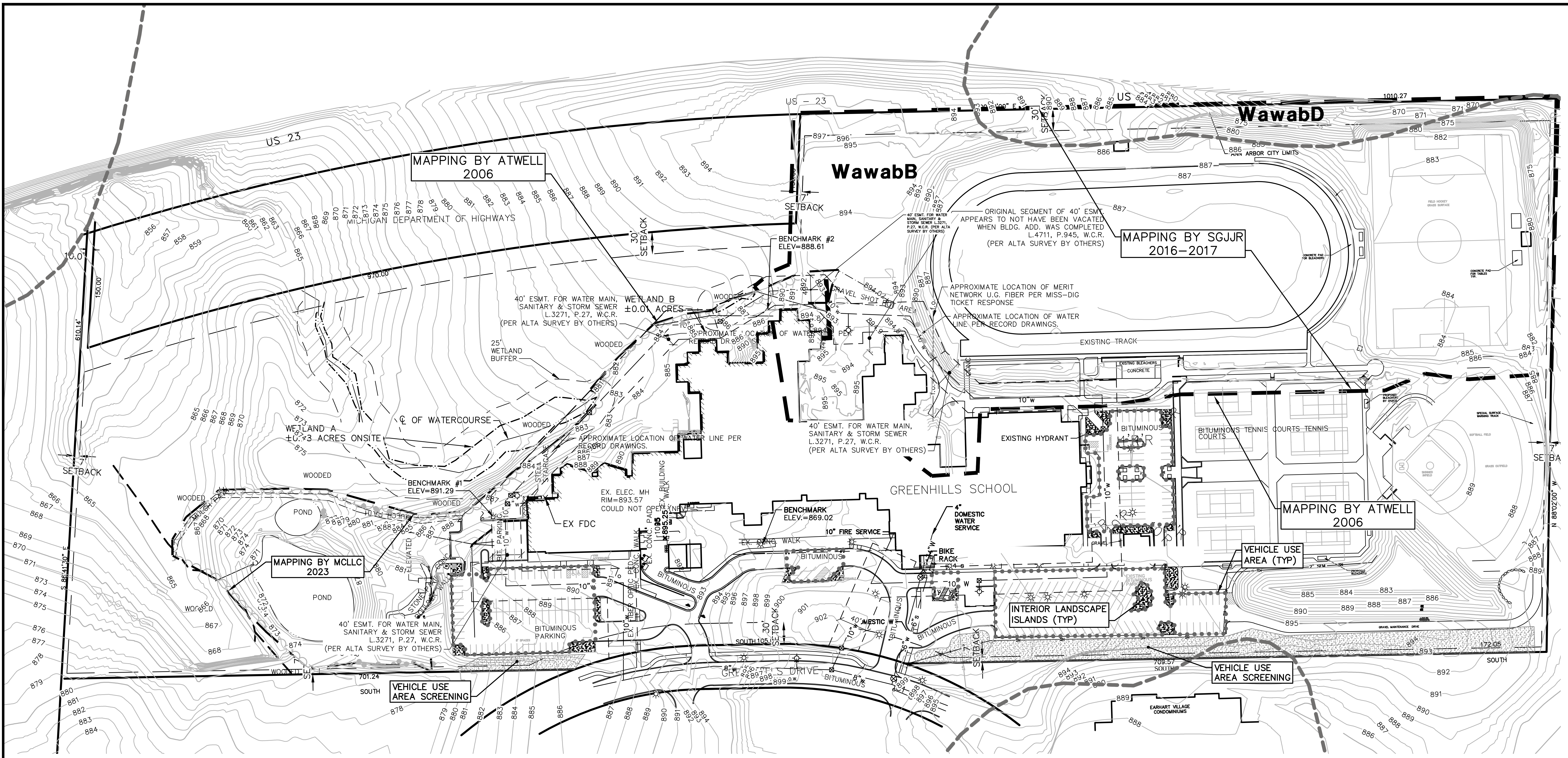
TOPOGRAPHIC &
BOUNDARY SURVEY

SCALE: 1" = 80'

PROJECT NUMBER: 21216

DRAWING NUMBER: V.1.0

FILE: P:\21216.000\CAD\C\Model\21216 V–BASE–SPA.dwg USER: jwywrot DATE: Oct, 22 2019 TIME: 04:24 pm



SCALE: 1" = 80'

0 80 160 240

811 Know what's below. Call before you dig.

LEGEND

838	EXIST. CONTOUR
836.2	EXIST. SPOT ELEVATION
☒	EXIST. AC UNIT
☼	EXIST. LIGHT POLE
—×— f.o. —	EXIST. FIBER OPTIC LINE
— — w — —	EXIST. WATER MAIN
⊕—	EXIST. HYDRANT
—☒—	EXIST. GATE VALVE IN BOX
^fdc	EXIST. FIRE DEPARTMENT CONNECTION
— r —○—	EXIST. STORM SEWER
—□—	EXIST. CATCH BASIN OR INLET
—●—	EXIST. BEEHIVE INLET
)—	END SECTION
•ds	EXIST. DOWNSPOUT
- - - s -○- - -	EXIST. SANITARY SEWER
◎co	EXIST. CLEANOUT
Þ	SIGN
•	POST
—//—//—//—	FENCE
●	SINGLE TREE
☁	TREE OR BRUSH LIMIT
Ⓡ	EXIST. BOULDER
⊕	EXIST. BOLLARD
▬ ▬ ▬	EXIST. SOIL TYPE LIMITS
Xxx	EXIST. SOIL TYPE
•••••••	VEHICLE USE AREA (VUA)
▨	INTERIOR EXISTING VUA ISLANDS

EXISTING LANDSCAPING, SCREENING AND BUFFERING

1. VEHICLE USE AREA AS SHOWN IS A TOTAL OF 64,153 S.F.
2. SCREENING FROM RIGHT OF WAY TO THE VEHICLE USE AREA IS PROVIDED BY AN EXISTING CONTINUOUS 10'+ STRIP OF TREES. TREES ARE A MIXTURE OF DECIDUOUS AND EVERGREEN TREES.
3. INTERIOR LANDSCAPE ISLANDS ARE PROVIDED WITHIN THE EXISTING PARKING AREAS. THE TOTAL EXISTING INTERIOR ISLANDS PROVIDED AS SHOWN IS 5,465 S.F.. TOTAL INTERIOR ISLANDS REQUIRED OF 1:15 OF VUA IS 4,344 S.F..
4. A LANDSCAPE MODIFICATION IS REQUESTED FOR THE DEPRESSED ISLANDS REQUIREMENTS AND THE PLACEMENT OF ONE DECIDUOUS TREE WITHIN THE INTERIOR ISLANDS.
   - 4.1. THERE ARE NO PROPOSED IMPROVEMENTS WITHIN THE VUA AS PART OF THIS SITE PLAN.
   - 4.2. THE EXISTING VUA IS PART OF A PREVIOUS APPROVED SITE PLAN WHICH WAS PRIOR TO THE REQUIREMENT FOR DEPRESSED ISLANDS
   - 4.3. THE EXISTING SOIL PRESENT ON THE SITE CONSIST OF SOILS THAT ARE UNFAVORABLE FOR INFILTRATION.
   - 4.4. NO ALTERATIONS ARE PROPOSED TO EXISTING LANDSCAPING AND ARE PROPOSED TO BE MAINTAINED AS AN EXISTING NON-CONFORMING CONDITION.
   - 4.5. THERE ARE EXISTING DECIDUOUS TREES THAT ARE ADJACENT TO THE VUA WHICH ARE NOT LOCATED WITHIN THE INTERIOR ISLANDS.

NOTES

1. THE BASE SURVEY WAS PREPARED BY MIDWESTERN CONSULTING IN DECEMBER 2023. ALL UNDERGROUND UTILITIES AND STRUCTURES HAVE BEEN SHOWN TO A REASONABLE DEGREE OF ACCURACY AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THEIR EXACT LOCATION AND TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCING WORK.
2. WETLANDS AS SHOWN AS MAPPED 10/18/19 BY SMITHGROUP ON SITE PLAN.

BENCHMARKS

BENCHMARK #1: TOP OF CONCRETE LIGHT POLE BASE AT NORTHEAST CORNER OF PARKING LOT ELEVATION=891.29 (NAVD88)

BENCHMARK #2: NORTHEAST CORNER OF TOP OF CONCRETE WALL, NORTHEAST EXTENSION OF WING WALL ELEVATION=888.61 (NAVD88)

SOILS DESCRIPTION

BASED ON SOIL SURVEY OF WASHTENAW COUNTY MICHIGAN

WawabB – WAWASEE LOAM, 3 TO 6 PERCENT SLOPES
WawabD – WAWASEE LOAM, 12 TO 18 PERCENT SLOPES

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

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CLIENT
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JOHN NICKEL
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GREENHILLS NORTH ADDITION

SITE PLAN
OVERALL EXISTING CONDITIONS PLAN

02

DATE: 7/31/25
SHEET 02 OF 17

REVISIONS:	REV. DATE	
PER MUNICIPAL REVIEW	12/19/25	CADD:
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- - - - - -)——	END SECTION
•ds	EXIST. DOWNSPOUT
s - -○- - -	EXIST. SANITARY SEWER
◎co	EXIST. CLEANOUT
▸	SIGN
•	POST
—//—//—//—	FENCE
●	SINGLE TREE
☁	TREE OR BRUSH LIMIT
Ⓡ	EXIST. BOULDER
—·—·—·—	WETLAND LIMITS
— — — —	WETLAND BUFFER

NOTES

1. SEE FIRE PROTECTION PLAN FOR BOLLARD REMOVAL AND INSTALLATION AT THE SOUTHWEST FIRE LANE ACCESS.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF ANN ARBOR STANDARD SPECIFICATIONS FOR CONSTRUCTION. https://www.a2gov.org/engineering/engineering-and-contractor-resources/

TREE LEGEND AND INVENTORY

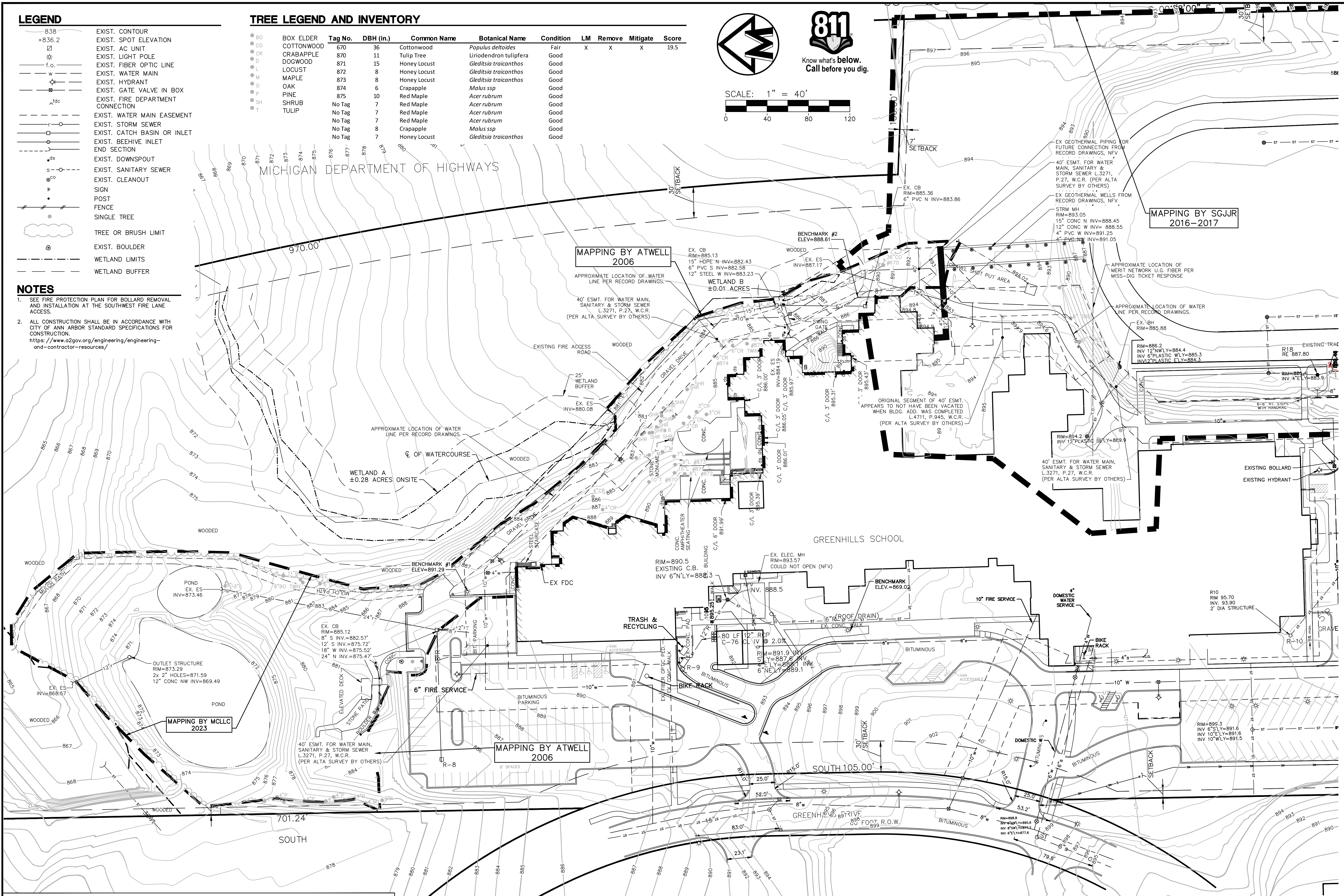
● BO	BOX ELDER
● CO	COTTONWOOD
● CR	CRABAPPLE
● D	DOGWOOD
● L	LOCUST
● M	MAPLE
● O	OAK
● P	PINE
● SH	SHRUB
● T	TULIP

Tag No.	DBH (in.)	Common Name	Botanical Name	Condition	LM	Remove	Mitigate	Score
670	36	Cottonwood	*Populus deltoides*	Fair	X	X	X	19.5
870	11	Tulip Tree	Liriodendron tulipfera	Good				
871	15	Honey Locust	*Gleditsia traicanthos*	Good				
872	8	Honey Locust	*Gleditsia traicanthos*	Good				
873	8	Honey Locust	*Gleditsia traicanthos*	Good				
874	6	Crapapple	*Malus ssp*	Good				
875	10	Red Maple	*Acer rubrum*	Good				
No Tag	7	Red Maple	*Acer rubrum*	Good				
No Tag	7	Red Maple	*Acer rubrum*	Good				
No Tag	7	Red Maple	*Acer rubrum*	Good				
No Tag	8	Crapapple	*Malus ssp*	Good				
No Tag	7	Honey Locust	*Gleditsia traicanthos*	Good				

811 Know what's **below.** **Call** before you dig.

SCALE: 1" = 40'

0 40 80 120



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JOHN NICKEL
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GREENHILLS NORTH ADDITION

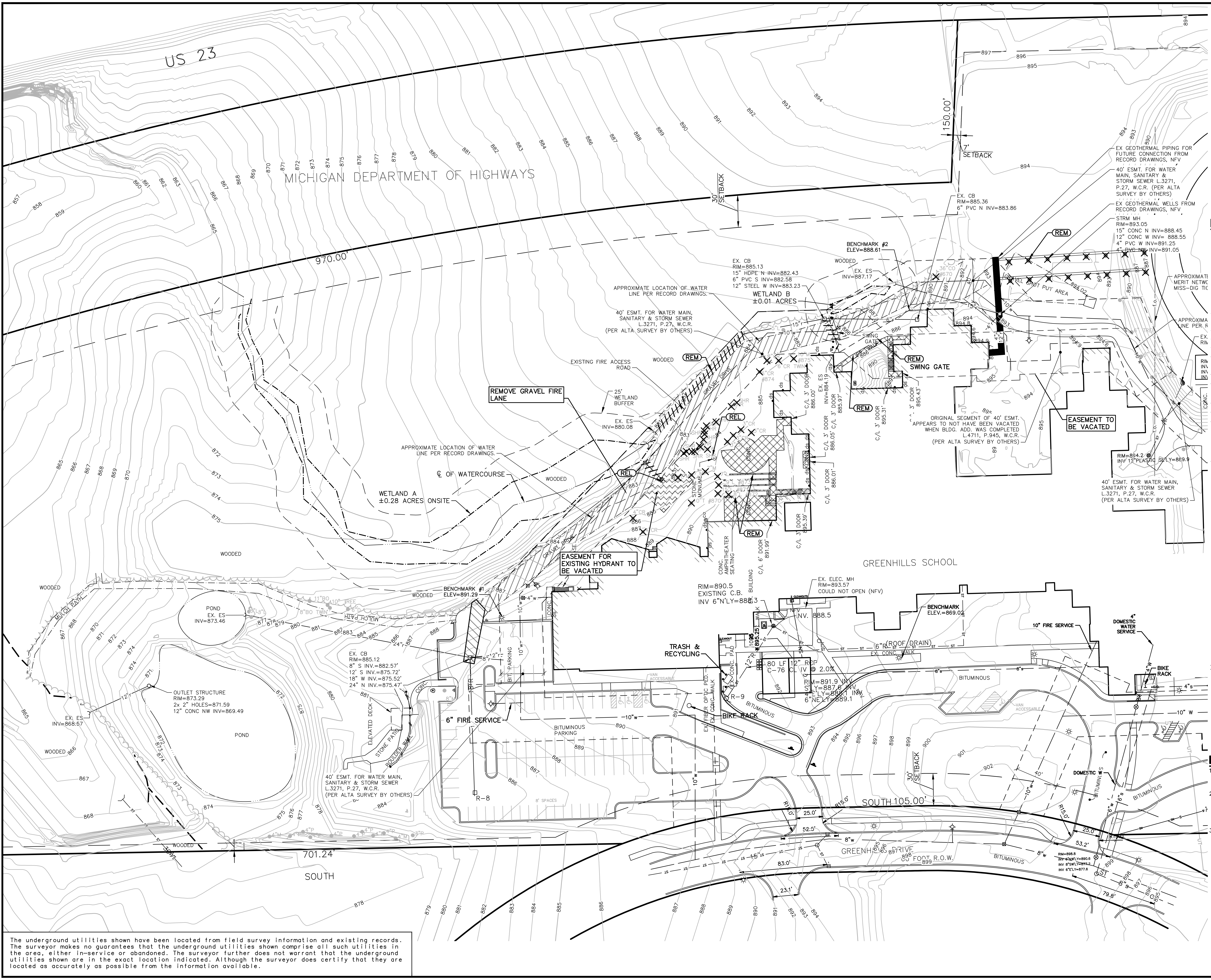
SITE PLAN
EXISTING CONDITIONS PLAN

03

JOB No. 23313

DATE: 7/31/25
SHEET 03 OF 17

REVISIONS:	REV. DATE	
PER MUNICIPAL REVIEW	12/19/25	CADD:
PER MUNICIPAL REVIEW	3/19/26	ENG: HTH
		PM: HTH
		TECH:
		23313EX02
		FB#



SCALE: 1" = 40'

0 40 80 120

Know what's **below.**
Call before you dig.

LEGEND

838	EXIST. CONTOUR
×836.2	EXIST. SPOT ELEVATION
-o- U.P.	EXIST. UTILITY POLE
U.P.	EXIST. UTILITY POLE W/ TRANS.
o- GP	EXIST. GUY POLE
	GUY WIRE
☒	ELEC. TRANSFORMER
▨	EXIST. AC UNIT
☒	EXIST. GENERATOR
—— OH ——	EXIST. OVERHEAD UTILITY LINE
☼	EXIST. LIGHT POLE
—— t ——	EXIST. TELEPHONE LINE
—— e ——	EXIST. ELECTRIC LINE
—— g ——	EXIST. GAS LINE
— — w — —	EXIST. WATER MAIN
	EXIST. HYDRANT
	EXIST. GATE VALVE IN BOX
⊗	EXIST. GATE VALVE IN WELL
fdc	FIRE DEPARTMENT CONNECTION
—— r —o—	EXIST. STORM SEWER
—□—	EXIST. CATCH BASIN OR INLET
	EXIST. BEEHIVE INLET
	END SECTION
	CULVERT
●ds	EXIST. DOWNSPOUT
- - - s -o- - -	EXIST. SANITARY SEWER
◎co	EXIST. CLEANOUT
	SIGN
○HH	UTILITY HANDHOLE
●	POST
	EXIST. BOLLARD
●	SINGLE TREE
	TREE OR BRUSH LIMIT
	SECTION CORNER
▩	CONCRETE TO BE REMOVED
▨	BIT./GRAVEL TO BE REMOVED
	EASEMENT TO BE VACATED
/////////////	UTILITY TO BE ABANDONED/ REMOVED
×	TREE TO BE REMOVED
REL	ITEM TO BE RELOCATED
REM	ITEM TO BE REMOVED

NOTES

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2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF ANN ARBOR STANDARD SPECIFICATIONS FOR CONSTRUCTION.
https://www.a2gov.org/engineering/engineering-and-contractor-resources/
3. EXISTING GEOWELLS TO BE ABANDONED, GROUT FILLED AND CAPPED IN ACCORDANCE WITH WCEHC STANDARDS

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GREENHILLS NORTH ADDITION

SITE PLAN
DEMOLITION & REMOVALS PLAN

04

DATE: 7/31/25
SHEET 04 OF 17
CADD:
ENG: HTH
PM: HTH
TECH:
23313RM01
FB#

JOB No. **23313**

REVISIONS:	REV. DATE
PER MUNICIPAL REVIEW	12/19/25
PER MUNICIPAL REVIEW	3/19/26

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NATURAL FEATURES DESCRIPTION AND IMPACT SUMMARY

SMITHGROUP SURVEYED THE NORTHERN PORTION OF THE WOODLOT NORTH OF THE GREENHILLS SCHOOL FACILITY ON OCTOBER 7, 2019.

A MAJORITY OF THE OVERSTORY IN THIS LOCATION WAS DOMINATED BY 24"–36"DBH WHITE OAK, SHAGBARK HICKORY AND BLACK WALNUT ALONG WITH SMALLER SHAGBARK HICKORY AND OCCASIONAL HACKBERRY, BITTERNUT HICKORY, BLACK OAK, SLIPPERY ELM AND BLACK CHERRY (SEE SURVEY SHEETS FOR MORE SPECIFIC TREE INFORMATION). THE UNDERSTORY WAS DOMINATED BY TARTARIAN HONEYSUCKLE, COMMON BUCKTHORN AND CHOKECHERRY. GROUND COVER INCLUDED BLACK RASPBERRY, WHITE AVENS, VIRGINIA CREEPER, POISON IVY AND JUMPSEED.

AN INCISED STREAM WAS OBSERVED EXTENDING ALONG ALMOST THE ENTIRE LENGTH OF THE NORTH PROPERTY LINE. THIS STREAM WAS THREE TO FIVE FEET BELOW GRADE WITH STEEP BANKS IN MANY LOCATIONS AND EVIDENCE OF FLASHY CONDITIONS. AT THE WESTERN EXTENT, IT BEGINS IN WHAT APPEARED TO BE A STORM OUTFLOW ALTHOUGH MOST OF THE STRUCTURE WAS UNDER WATER. THE STREAM FLOWED OFFSITE TO THE EAST THROUGH A LARGE CULVERT UNDER US–23. IN SOME LOCATIONS, A NARROW FORESTED WETLAND WAS OBSERVED ADJACENT TO THE STREAM BANK AND IS IDENTIFIED ON THIS PLAN SHEET. AN INTERMITTENT STREAM WAS OBSERVED IN THE CENTRAL PART OF THE WOODLOT THAT RECEIVES STORMWATER DISCHARGE FROM THE SCHOOL PROPERTY. THIS STREAM JOINS THE ONE NOTED ABOVE JUST WEST OF THE US–23 CULVERT. THIS STREAM LOCATION IS SHOWN ON THIS PLAN SHEET. THE JURISDICTIONAL NATURE OF THESE TWO STREAMS IS UNDETERMINED AT THIS TIME HOWEVER IT APPEARS THAT THEY BOTH ARE ASSOCIATED WITH STORMWATER DISCHARGES.

NO KNOWN ENDANGERED SPECIES HABITATS EXIST ON THIS SITE.

THIS PARCEL IS LOCATED IN ZONE X OF THE FLOOD INSURANCE RATE MAP NUMBER 26161C02666E WHICH BEARS AN EFFECTIVE DATE OF 4/2/2012 AND IS NOT IN A SPECIAL FLOOD HAZARD AREA.

THERE IS ONE LANDMARK TREE LOCATED WITHIN THE CONSTRUCTION LIMITS WHICH WILL BE REMOVED AS PART OF THE PROPOSED PROJECT.

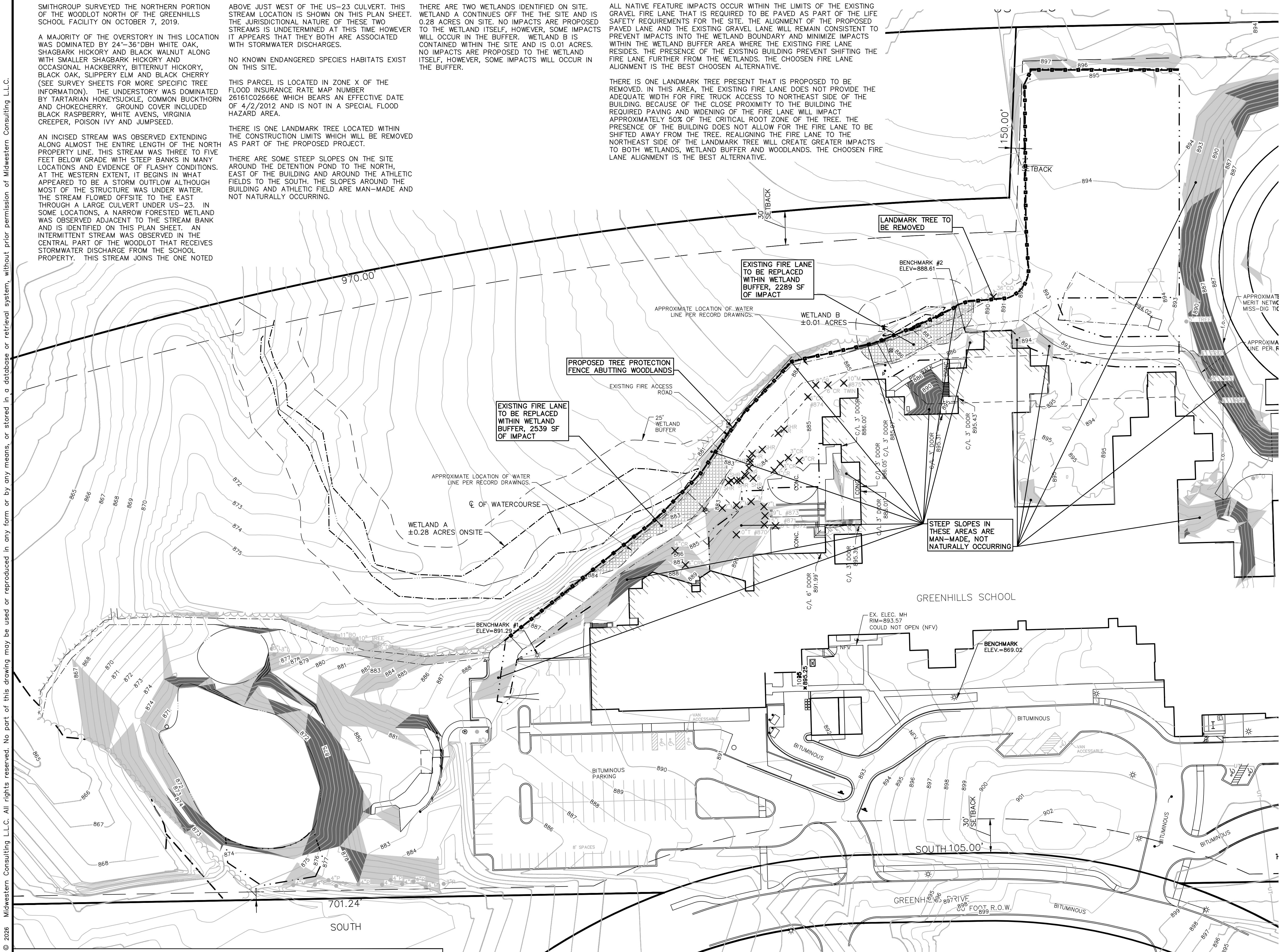
THERE ARE SOME STEEP SLOPES ON THE SITE AROUND THE DETENTION POND TO THE NORTH, EAST OF THE BUILDING AND AROUND THE ATHLETIC FIELDS TO THE SOUTH. THE SLOPES AROUND THE BUILDING AND ATHLETIC FIELD ARE MAN–MADE AND NOT NATURALLY OCCURRING.

THERE ARE TWO WETLANDS IDENTIFIED ON SITE. WETLAND A CONTINUES OFF THE THE SITE AND IS 0.28 ACRES ON SITE. NO IMPACTS ARE PROPOSED TO THE WETLAND ITSELF, HOWEVER, SOME IMPACTS WILL OCCUR IN THE BUFFER. WETLAND B IS CONTAINED WITHIN THE SITE AND IS 0.01 ACRES. NO IMPACTS ARE PROPOSED TO THE WETLAND ITSELF, HOWEVER, SOME IMPACTS WILL OCCUR IN THE BUFFER.

NATURAL FEATURES ALTERNATIVE ANALYSIS

ALL NATIVE FEATURE IMPACTS OCCUR WITHIN THE LIMITS OF THE EXISTING GRAVEL FIRE LANE THAT IS REQUIRED TO BE PAVED AS PART OF THE LIFE SAFETY REQUIREMENTS FOR THE SITE. THE ALIGNMENT OF THE PROPOSED PAVED LANE AND THE EXISTING GRAVEL LANE WILL REMAIN CONSISTENT TO PREVENT IMPACTS INTO THE WETLAND BOUNDARY AND MINIMIZE IMPACTS WITHIN THE WETLAND BUFFER AREA WHERE THE EXISTING FIRE LANE RESIDES. THE PRESENCE OF THE EXISTING BUILDING PREVENT SHIFTING THE FIRE LANE FURTHER FROM THE WETLANDS. THE CHOOSEN FIRE LANE ALIGNMENT IS THE BEST CHOOSEN ALTERNATIVE.

THERE IS ONE LANDMARK TREE PRESENT THAT IS PROPOSED TO BE REMOVED. IN THIS AREA, THE EXISTING FIRE LANE DOES NOT PROVIDE THE ADEQUATE WIDTH FOR FIRE TRUCK ACCESS TO NORTHEAST SIDE OF THE BUILDING. BECAUSE OF THE CLOSE PROXIMITY TO THE BUILDING THE REQUIRED PAVING AND WIDENING OF THE FIRE LANE WILL IMPACT APPROXIMATELY 50% OF THE CRITICAL ROOT ZONE OF THE TREE. THE PRESENCE OF THE BUILDING DOES NOT ALLOW FOR THE FIRE LANE TO BE SHIFTED AWAY FROM THE TREE. REALIGNING THE FIRE LANE TO THE NORTHEAST SIDE OF THE LANDMARK TREE WILL CREATE GREATER IMPACTS TO BOTH WETLANDS, WETLAND BUFFER AND WOODLANDS. THE CHOOSEN FIRE LANE ALIGNMENT IS THE BEST ALTERNATIVE.



SCALE: 1" = 40'

Know what's **below.**
Call before you dig.

LEGEND

838	EXIST. CONTOUR
— · · — · · —	LIMITS OF DISTURBANCE
—▪—▪—▪—	TREE PROTECTION FENCING
●	EXISTING TREE
◌	EXISTING LANDMARK TREE AND CRITICAL ROOT ZONE
×	TREE TO BE REMOVED
▢	SLOPES 12–25%
▨	SLOPES 25–50%
■	SLOPES 50% & GREATER
▦	WETLAND BUFFER IMPACT AREAS

TREE LEGEND

BO	BOX ELDER
CO	COTTONWOOD
CR	CRABAPPLE
D	DOGWOOD
L	LOCUST
M	MAPLE
O	OAK
P	PINE
SH	SHRUB
T	TULIP

TREE MITIGATION SUMMARY

ID #	Landmark Trees Removed	DBH	50%	Requirement
670	Cottonwood	36"	18"	Eight (8) 2.5" cal Canopy Trees - or- Eight (8) 5' tall Evergreen Trees

WETLAND BUFFER IMPACTS

SEE LANDSCAPE PLAN FOR MITIGATION REQUIREMENTS

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GREENHILLS NORTH ADDITION
SITE PLAN
NATURAL FEATURES PLAN

05

JOB No. 23313
DATE: 7/31/25
SHEET 05 OF 17

REVISIONS:	REV. DATE	
PER MUNICIPAL REVIEW	12/19/25	CADD:
PER MUNICIPAL REVIEW	3/19/26	ENG: HTH
		PM: HTH
		TECH:
		23313NF01
		FB#

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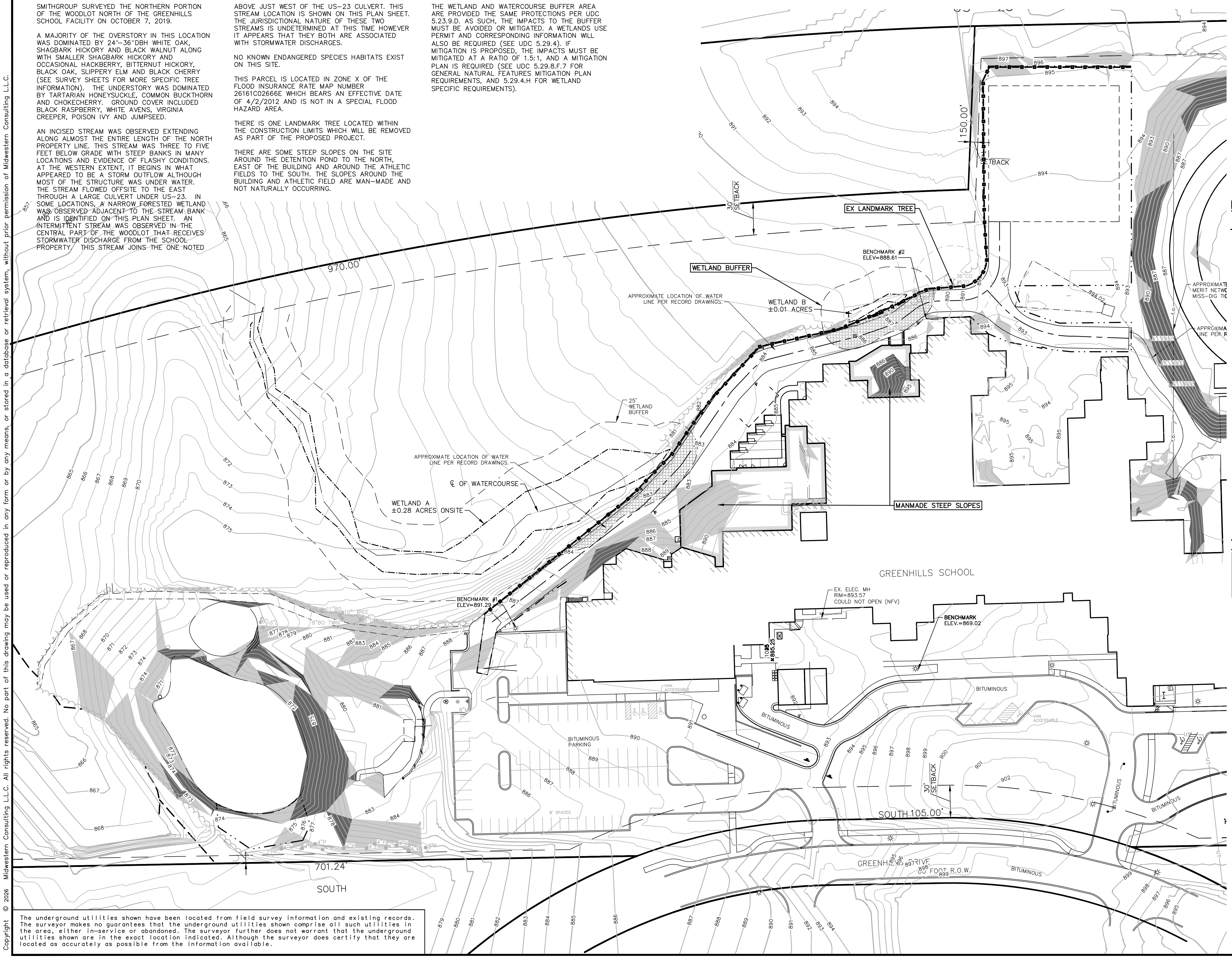
THE WETLAND AND WATERCOURSE BUFFER AREA ARE PROVIDED THE SAME PROTECTIONS PER UDC 5.23.9.D. AS SUCH, THE IMPACTS TO THE BUFFER MUST BE AVOIDED OR MITIGATED. A WETLANDS USE PERMIT AND CORRESPONDING INFORMATION WILL ALSO BE REQUIRED (SEE UDC 5.29.4). IF MITIGATION IS PROPOSED, THE IMPACTS MUST BE MITIGATED AT A RATIO OF 1.5:1, AND A MITIGATION PLAN IS REQUIRED (SEE UDC 5.29.8.F.7 FOR GENERAL NATURAL FEATURES MITIGATION PLAN REQUIREMENTS, AND 5.29.4.H FOR WETLAND SPECIFIC REQUIREMENTS).



SCALE: 1" = 40'

0 40 80 120

811
Know what's **below.**
Call before you dig.

LEGEND

838	EXIST. CONTOUR
— · · — · · —	LIMITS OF DISTURBANCE
●	EXISTING TREE
◌	EXISTING LANDMARK TREE AND CRITICAL ROOT ZONE
×	TREE TO BE REMOVED
░	SLOPES 12–25%
▒	SLOPES 25–50%
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▦	WETLAND BUFFER IMPACT AREAS

TREE LEGEND

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GREENHILLS NORTH ADDITION

SITE PLAN
NATURAL FEATURES OVERLAY

06

DATE: 7/31/25		
SHEET 06 OF 17		
REVISIONS:	REV. DATE	CADD:
PER MUNICIPAL REVIEW	12/19/25	ENG: HTH
PER MUNICIPAL REVIEW	3/19/26	PM: HTH
		TECH:
		23313NF01
		FB#

JOB No. 23313

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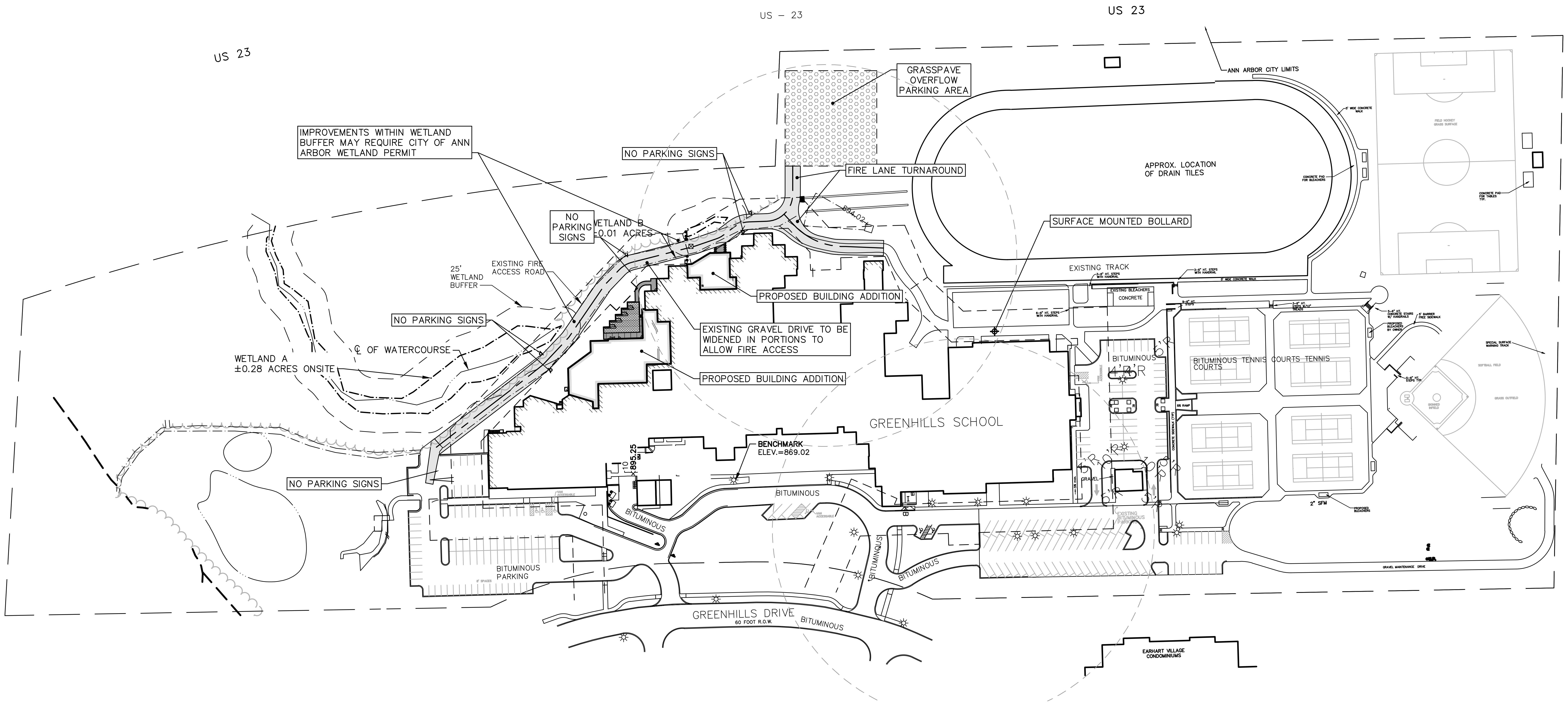

SCALE: 1" = 80'

0 80 160 240

Know what's **below.**
Call before you dig.

NOTES

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2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF ANN ARBOR STANDARD SPECIFICATIONS FOR CONSTRUCTION. https://www.a2gov.org/engineering/engineering-and-contractor-resources/

NOTES

ADD NOTES AS NECESSARY

LEGEND

⓪	NUMBER OF STANDARD PARKING SPACES IN ROW
▭	PROP. BITUMINOUS PAVEMENT
▨	PROP. GRASS PAVE PARKING
▦	PROP. PERVIOUS PAVERS
▹	SIGN
●▣	PROP. SINGLE LIGHT
▣●▣	PROP. DOUBLE LIGHT

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GREENHILLS NORTH ADDITION

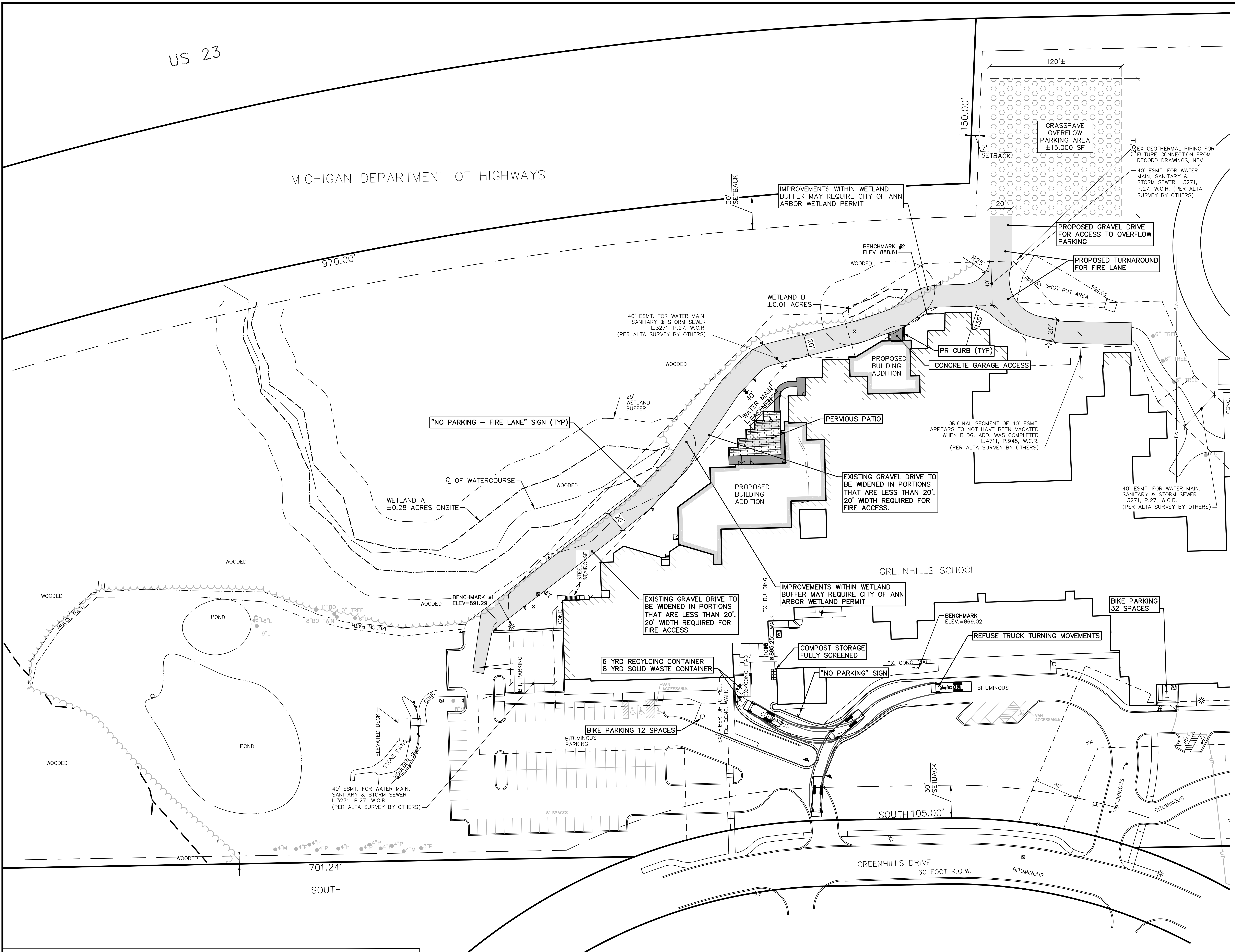
SITE PLAN
OVERALL LAYOUT PLAN

07

DATE: 7/31/25
SHEET 07 OF 17
CADD:
ENG: HTH
PM: HTH
TECH:
23313SP01
FB#

JOB No. 23313

REVISIONS:	REV. DATE
PER MUNICIPAL REVIEW	12/19/25
PER MUNICIPAL REVIEW	3/19/26



SCALE: 1" = 40'
0 40 80 120

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NOTES

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2. NO PART OF A BUILDING, PERMEABLE PAVERS OR RAIN GARDEN SHALL BE PLACED WITHIN THE WATER MAIN EASEMENT.

LEGEND

⓪	NUMBER OF STANDARD PARKING SPACES IN ROW
░	PROP. GRAVEL DRIVE
▨	PROP. GRASS PAVE PARKING
▦	PROP. PERVIOUS PAVERS
▢	PROP. BITUMINOUS PAVEMENT
▸	SIGN
•⊠	PROP. SINGLE LIGHT
⊠•⊠	PROP. DOUBLE LIGHT

SOLID WASTE NARRATIVE

THE CURRENT SOLID WASTE STORAGE, CONTAINERS AND SCREENING WERE IMPROVED AS PART OF THE SITE PLAN IN 2018 FOR "GREENHILLS SCHOOL STORAGE BUILDING EXPANSION". THERE ARE NO PROPOSED CHANGES TO THE EXISTING WASTE AND RECYCLING AREAS OR PICKUP.

CURRENT WASTE OPERATIONS CONSIST OF:
- 8 YRD DUMPSTER, P/U 4 TIMES/WEEK TUES–FRI
- 6 YRD & 4 YRD RECYCLING CONTAINER PICKED UP TWICE WEEKLY, TUES & FRI
- (32) 64 GALLON COMPOST CONTAINERS PICKED UP TWICE WEEKLY BY PRIVATE CONTRACTOR, MR. GREEN
- (2) 96 GALLON SHREDDING CONTAINERS PICKED UP MONTHLY BY PRIVATE CONTRACTOR, ALL SHRED

THE EXISTING REFUSE, RECYCLING, COMPOST AND SHREDDING OPERATION WILL REMAIN UNCHANGED WITH THIS SITE PLAN WITH NO ANTICIPATED INCREASE IN GENERATION RATES.

ALL CONTAINERS ARE SCREENED FROM PUBLIC STREETS WITH EXISTING DENSE VEGETATION.

THE PROPERTY OWNER IS RESPONSIBLE FOR ALL SNOW AND ICE REMOVAL REQUIRED FOR SAFE ACCESS TO THE ENCLOSURES AND SERVICING OF ALL SOLID WASTE CONTAINERS.

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GREENHILLS NORTH ADDITION

SITE PLAN
DIMENSIONAL LAYOUT PLAN

08

JOB No. 23313

REVISIONS:	REV. DATE	
PER MUNICIPAL REVIEW	12/19/25	
PER MUNICIPAL REVIEW	3/19/26	

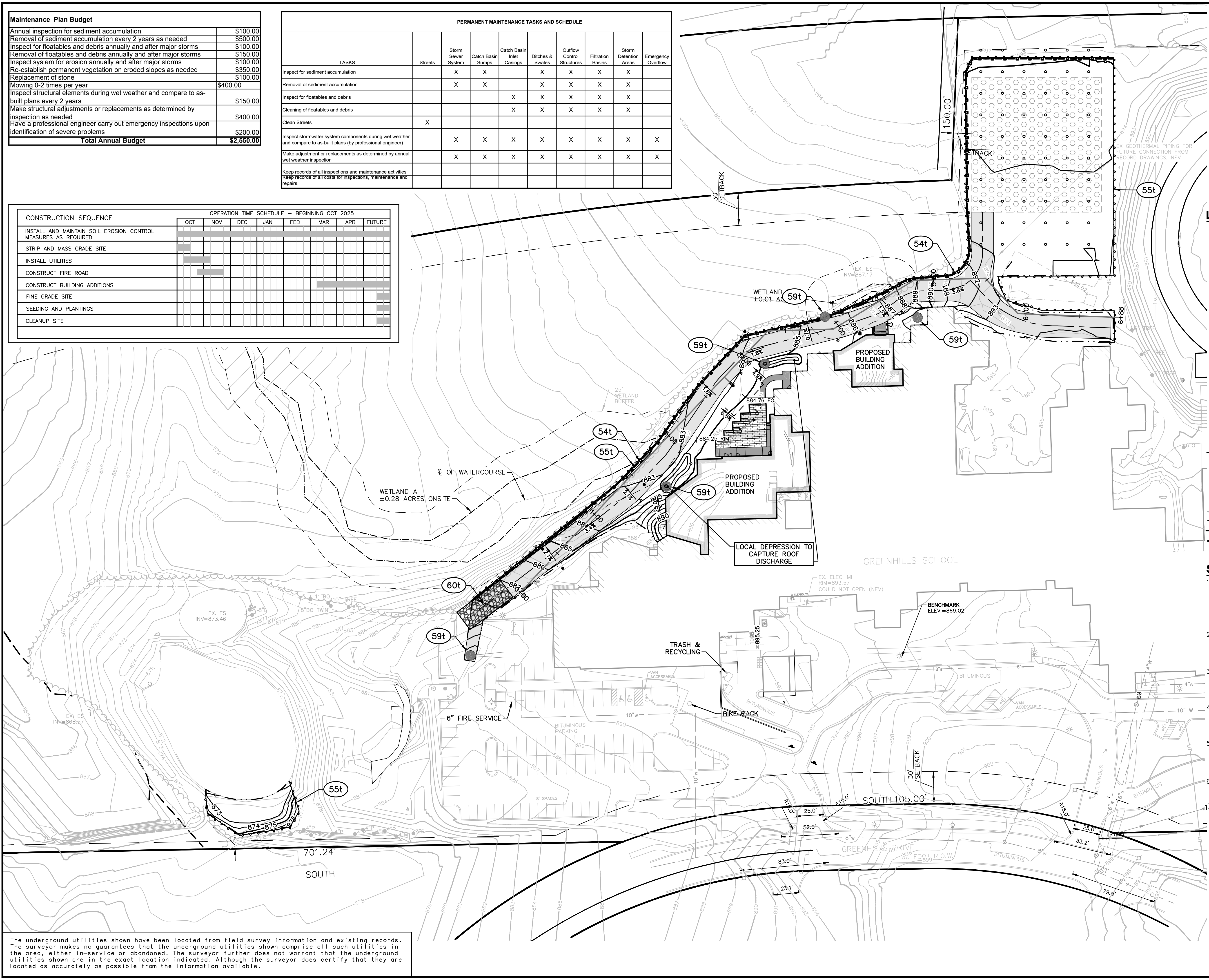
DATE: 7/31/25
SHEET 08 OF 17
CADD:
ENG: HTH
PM: HTH
TECH:
23313SP02
FB#

Maintenance Plan Budget	
Annual inspection for sediment accumulation	$100.00
Removal of sediment accumulation every 2 years as needed	$500.00
Inspect for floatables and debris annually and after major storms	$100.00
Removal of floatables and debris annually and after major storms	$150.00
Inspect system for erosion annually and after major storms	$100.00
Re-establish permanent vegetation on eroded slopes as needed	$350.00
Replacement of stone	$100.00
Mowing 0-2 times per year	$400.00
Inspect structural elements during wet weather and compare to as-built plans every 2 years	$150.00
Make structural adjustments or replacements as determined by inspection as needed	$400.00
Have a professional engineer carry out emergency inspections upon identification of severe problems	$200.00
Total Annual Budget	**$2,550.00**

PERMANENT MAINTENANCE TASKS AND SCHEDULE

TASKS	Streets	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlet Casings	Ditches & Swales	Outflow Control Structures	Filtration Basins	Storm Detention Areas	Emergency Overflow
Inspect for sediment accumulation		X	X		X	X	X	X	
Removal of sediment accumulation		X	X		X	X	X	X	
Inspect for floatables and debris				X	X	X	X	X	
Cleaning of floatables and debris				X	X	X	X	X	
Clean Streets	X								
Inspect stormwater system components during wet weather and compare to as-built plans (by professional engineer)		X	X	X	X	X	X	X	X
Make adjustment or replacements as determined by annual wet weather inspection		X	X	X	X	X	X	X	X
Keep records of all inspections and maintenance activities									
Keep records of all costs for inspections, maintenance and repairs.									

CONSTRUCTION SEQUENCE	OPERATION TIME SCHEDULE – BEGINNING OCT 2025							
	OCT	NOV	DEC	JAN	FEB	MAR	APR	FUTURE
INSTALL AND MAINTAIN SOIL EROSION CONTROL MEASURES AS REQUIRED	▨	▨	▨	▨	▨	▨	▨	▨
STRIP AND MASS GRADE SITE	▨							
INSTALL UTILITIES	▨	▨						
CONSTRUCT FIRE ROAD	▨	▨						
CONSTRUCT BUILDING ADDITIONS						▨	▨	▨
FINE GRADE SITE								▨
SEEDING AND PLANTINGS								▨
CLEANUP SITE								▨



SCALE: 1" = 40'

0 40 80 120

Know what's **below.**
Call before you dig.

LEGEND

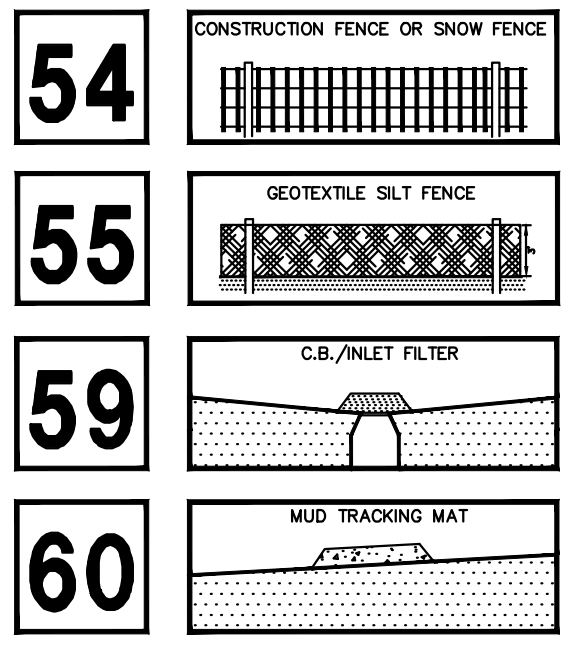
838	EXIST. CONTOUR
838	PROP. CONTOUR
×836.2	EXIST. SPOT ELEVATION
36.60×	PROP. SPOT ELEVATION
☼	EXIST. LIGHT POLE
✳	PROP. LIGHT POLE
⌖	EXIST. HYDRANT
⌖	PROP. HYDRANT
⊠	EXIST. GATE VALVE IN BOX
■	PROP. GATE VALVE IN BOX
⊗	EXIST. GATE VALVE IN WELL
●	PROP. GATE VALVE IN WELL
×	EXIST. CURB STOP & BOX
✖	PROP. CURB STOP & BOX
○	EXIST. STORM SEWER
●	PROP. STORM SEWER
□	EXIST. CATCH BASIN OR INLET
■	PROP. CATCH BASIN OR INLET
⊕	EXIST. BEEHIVE INLET
⊕	PROP. BEEHIVE INLET
⊃	END SECTION
○	EXIST. SANITARY SEWER
●	PROP. SANITARY SEWER
◎CO	EXIST. CLEANOUT
◎CO	PROP. CLEANOUT
—···—	C/L OF DITCH
⇨ ⇨	DRAINAGE DIRECTION
Þ	SIGN
●	SINGLE TREE
☁	TREE OR BRUSH LIMIT
—//—//—	FENCE
—•—•—	SILTFENCE
—··—··—	LIMITS OF DISTURBANCE
—▫—▫—	CONSTRUCTION FENCE
FF	FINISH FLOOR ELEVATION

SESC NOTES

1. ALL SOIL EROSION CONTROL MEASURES SHALL COMPLY WITH THE CURRENT CITY OF ANN ARBOR ORDINANCES, WASHTENAW COUNTY STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND STATE OF MICHIGAN "SOIL EROSION AND SEDIMENTATION CONTROL ACT" (ACT #347).
2. PRIOR TO COMMENCING EARTHMOVING OPERATIONS, THE GRADING CONTRACTOR SHALL INSTALL THE MUD TRACKING MAT, THE SILT FENCE AND TEMPORARY GRAVEL FILTER(S) SHOWN ON THE PLANS.
3. ALL DISTURBED AREAS, EVEN WHERE FUTURE PAVEMENT AND BUILDINGS ARE PROPOSED, ARE TO BE RE-VEGETATED PER COUNTY STANDARDS FOR TEMPORARY SEEDING.
4. ESTIMATED EARTHWORK FOR THIS PROJECT IS 1,000 CY CUT AND 100 CY FILL. THIS IS AN ESTIMATE ONLY AND IS NOT TO BE USED FOR CONSTRUCTION OR ESTIMATING PURPOSES.
5. THE ESTIMATED COST OF PROTECTING ALL EXPOSED SURFACES FROM EROSION SHOULD CONSTRUCTION CEASE IS $3,000. (RESPREAD 3" TOPSOIL AND SEEDING)
6. TOTAL DISTURBED AREA IS 49,503 SQ FT.

SOIL EROSION CONTROL MEASURES

t = temporary p = permanent



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ANN ARBOR, MI 48105
JOHN NICKEL
734.205.4059

GREENHILLS NORTH ADDITION
SITE PLAN
GRADING & SESC PLAN

09

DATE: 7/31/25
SHEET 09 OF 17
CADD:
ENG: HTH
PM: HTH
TECH:
23313GP01
FB#

JOB No. 23313

REVISIONS:	REV. DATE
PER MUNICIPAL REVIEW	12/19/25
PER MUNICIPAL REVIEW	3/19/26

SANITARY SEWER FLOW MITIGATION CALCULATIONS

Greenhills School North Addition
850 Greenhills Drive, 48015

Design Flow
Based on the City of Ann Arbor's sanitary sewer flow evaluation Table 'A', the design dry weather flow rate will be:

750 Middle and High School	20	gpd/student =	15000 gpd
		Total	15000 gpd

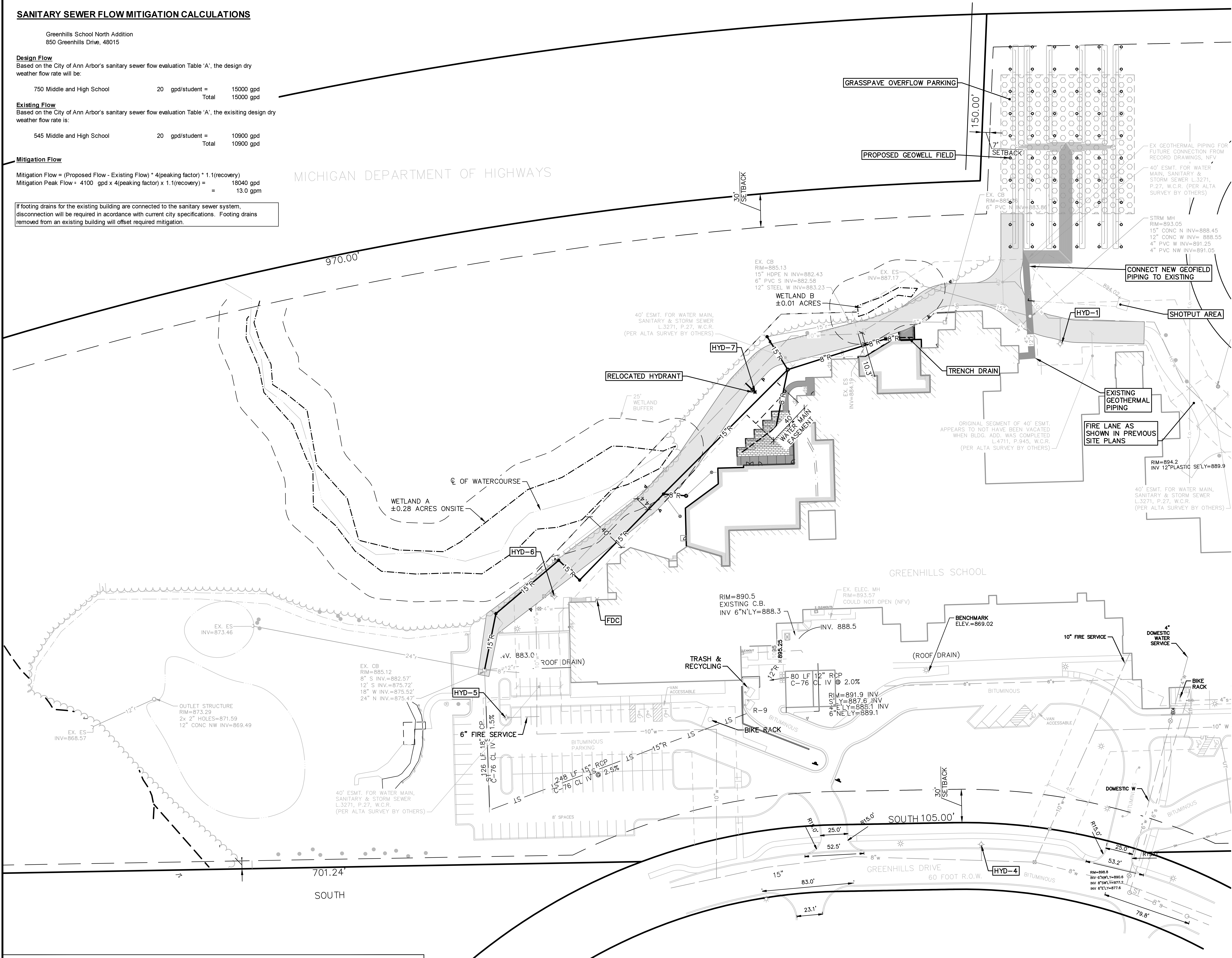
Existing Flow
Based on the City of Ann Arbor's sanitary sewer flow evaluation Table 'A', the exisiting design dry weather flow rate is:

545 Middle and High School	20	gpd/student =	10900 gpd
		Total	10900 gpd

Mitigation Flow

Mitigation Flow = (Proposed Flow - Existing Flow) * 4(peaking factor) * 1.1(recovery)
Mitigation Peak Flow = 4100 gpd x 4(peaking factor) x 1.1(recovery) = 18040 gpd
= 13.0 gpm

If footing drains for the existing building are connected to the sanitary sewer system, disconnection will be required in acordance with current city specifications. Footing drains removed from an existing building will offset required mitigation.



SCALE: 1" = 40'
0 40 80 120

Know what's **below.**
Call before you dig.

LEGEND

U.P.	EXIST. UTILITY POLE
	GUY WIRE
	ELEC. TRANSFORMER
	EXIST. AC UNIT
	EXIST. GENERATOR
OH	EXIST. OVERHEAD UTILITY LINE
	EXIST. LIGHT POLE
e	EXIST. ELECTRIC LINE
E	PROP. ELECTRIC LINE
g	EXIST. GAS LINE
G	PROP. GAS LINE
w	EXIST. WATER MAIN
W	PROP. WATER MAIN
	EXIST. HYDRANT
	PROP. HYDRANT
	EXIST. GATE VALVE IN BOX
	PROP. GATE VALVE IN BOX
	EXIST. GATE VALVE IN WELL
	PROP. GATE VALVE IN WELL
	EXIST. CURB STOP & BOX
	PROP. CURB STOP & BOX
fdc	EXIST. FIRE DEPARTMENT CONNECTION
FDC	PROP. FIRE DEPARTMENT CONNECTION
KB	PROP. KNOXBOX
r	EXIST. STORM SEWER
R	PROP. STORM SEWER
	EXIST. CATCH BASIN OR INLET
	PROP. CATCH BASIN OR INLET
	EXIST. BEEHIVE INLET
	PROP. BEEHIVE INLET
RD	PROP. ROOF DRAIN
	END SECTION
	HEAD WALL
	CULVERT
ds	EXIST. DOWNSPOUT
DS	PROP. DOWNSPOUT
s	EXIST. SANITARY SEWER
S	PROP. SANITARY SEWER
co	EXIST. CLEANOUT
CO	PROP. CLEANOUT
t	TELEPHONE RISER
catv	CABLE TELEVISION RISER
e	ELECTRIC METER
w	WATER METER
scb	SPRINKLER CONTROL BOX
g	GAS METER

NOTES

1. SEE FIRE PROTECTION PLAN FOR BOLLARD REMOVAL AND INSTALLATION AT THE SOUTHWEST FIRE LANE ACCESS.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF ANN ARBOR STANDARD SPECIFICATIONS FOR CONSTRUCTION. https://www.a2gov.org/engineering/engineering-and-contractor-resources/
3. SEE SANITARY MITIGATION FLOW CALCULATIONS, THIS SHEET.

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GREENHILLS NORTH ADDITION

SITE PLAN
UTILITY PLAN

10

DATE: 7/31/25	
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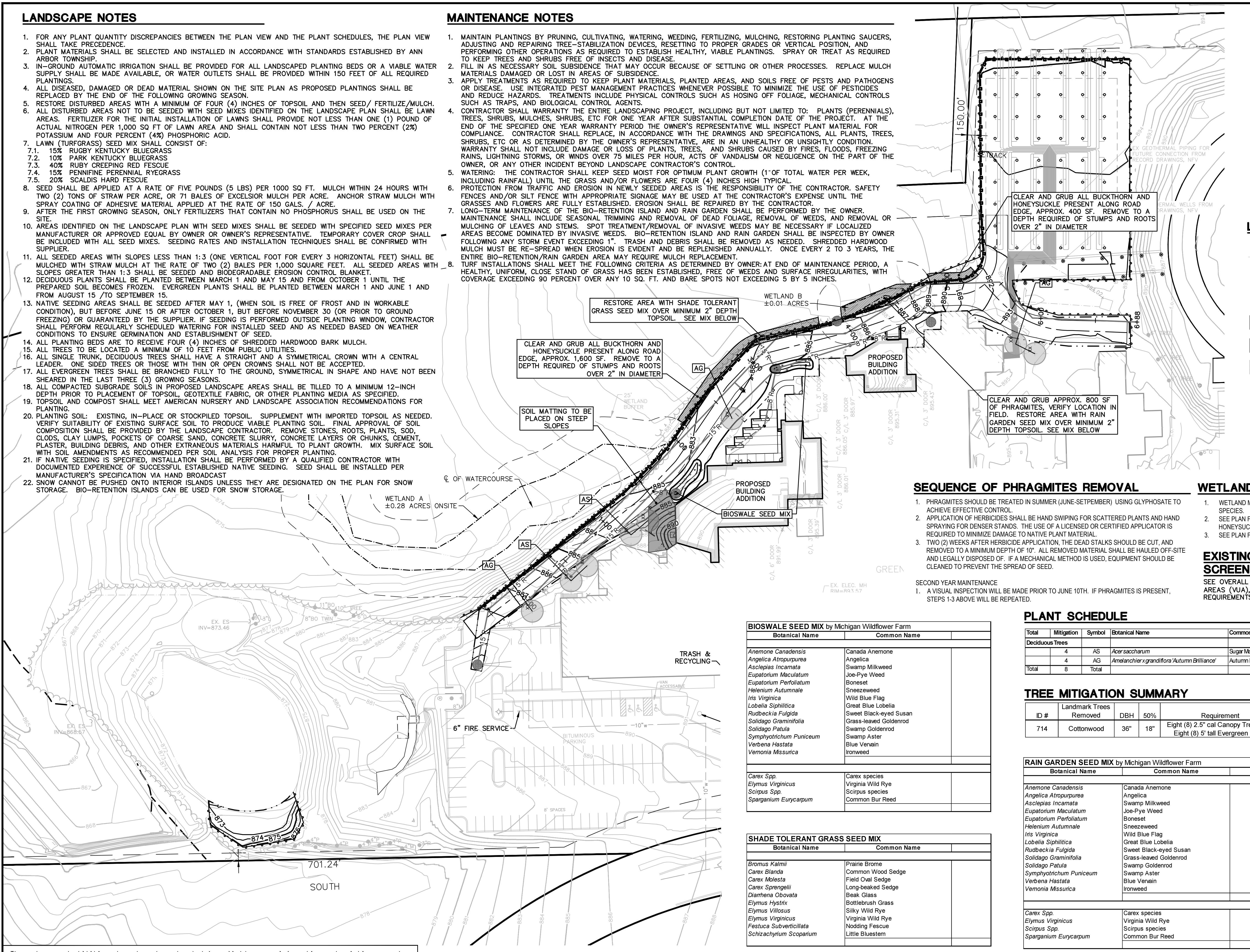
M:\Civil3d_Proj_2023\23313\Site Plan\23313UP01.dwg, 3/20/2026 3:44 PM, Heath Hartt, 10 UTILITY PLAN, None

LANDSCAPE NOTES

1. FOR ANY PLANT QUANTITY DISCREPANCIES BETWEEN THE PLAN VIEW AND THE PLANT SCHEDULES, THE PLAN VIEW SHALL TAKE PRECEDENCE.
2. PLANT MATERIALS SHALL BE SELECTED AND INSTALLED IN ACCORDANCE WITH STANDARDS ESTABLISHED BY ANN ARBOR TOWNSHIP.
3. IN-GROUND AUTOMATIC IRRIGATION SHALL BE PROVIDED FOR ALL LANDSCAPED PLANTING BEDS OR A VIABLE WATER SUPPLY SHALL BE MADE AVAILABLE, OR WATER OUTLETS SHALL BE PROVIDED WITHIN 150 FEET OF ALL REQUIRED PLANTINGS.
4. ALL DISEASED, DAMAGED OR DEAD MATERIAL SHOWN ON THE SITE PLAN AS PROPOSED PLANTINGS SHALL BE REPLACED BY THE END OF THE FOLLOWING GROWING SEASON.
5. RESTORE DISTURBED AREAS WITH A MINIMUM OF FOUR (4) INCHES OF TOPSOIL AND THEN SEED/ FERTILIZE/MULCH.
6. ALL DISTURBED AREAS NOT TO BE SEEDED WITH SEED MIXES IDENTIFIED ON THE LANDSCAPE PLAN SHALL BE LAWN AREAS. FERTILIZER FOR THE INITIAL INSTALLATION OF LAWNS SHALL PROVIDE NOT LESS THAN ONE (1) POUND OF ACTUAL NITROGEN PER 1,000 SQ FT OF LAWN AREA AND SHALL CONTAIN NOT LESS THAN TWO PERCENT (2%) POTASSIUM AND FOUR PERCENT (4%) PHOSPHORIC ACID.
7. LAWN (TURFGRASS) SEED MIX SHALL CONSIST OF:
   - 7.1. 15% RUGBY KENTUCKY BLUEGRASS
   - 7.2. 10% PARK KENTUCKY BLUEGRASS
   - 7.3. 40% RUBY CREEPING RED FESCUE
   - 7.4. 15% PENNIFINE PERENNIAL RYEGRASS
   - 7.5. 20% SCALDIS HARD FESCUE
8. SEED SHALL BE APPLIED AT A RATE OF FIVE POUNDS (5 LBS) PER 1000 SQ FT. MULCH WITHIN 24 HOURS WITH TWO (2) TONS OF STRAW PER ACRE, OR 71 BALES OF EXCELSIOR MULCH PER ACRE. ANCHOR STRAW MULCH WITH SPRAY COATING OF ADHESIVE MATERIAL APPLIED AT THE RATE OF 150 GALS. / ACRE.
9. AFTER THE FIRST GROWING SEASON, ONLY FERTILIZERS THAT CONTAIN NO PHOSPHORUS SHALL BE USED ON THE SITE.
10. AREAS IDENTIFIED ON THE LANDSCAPE PLAN WITH SEED MIXES SHALL BE SEEDED WITH SPECIFIED SEED MIXES PER MANUFACTURER OR APPROVED EQUAL BY OWNER OR OWNER'S REPRESENTATIVE. TEMPORARY COVER CROP SHALL BE INCLUDED WITH ALL SEED MIXES. SEEDING RATES AND INSTALLATION TECHNIQUES SHALL BE CONFIRMED WITH SUPPLIER.
11. ALL SEEDED AREAS WITH SLOPES LESS THAN 1:3 (ONE VERTICAL FOOT FOR EVERY 3 HORIZONTAL FEET) SHALL BE MULCHED WITH STRAW MULCH AT THE RATE OF TWO (2) BALES PER 1,000 SQUARE FEET. ALL SEEDED AREAS WITH SLOPES GREATER THAN 1:3 SHALL BE SEEDED AND BIODEGRADABLE EROSION CONTROL BLANKET.
12. DECIDUOUS PLANTS SHALL BE PLANTED BETWEEN MARCH 1 AND MAY 15 AND FROM OCTOBER 1 UNTIL THE PREPARED SOIL BECOMES FROZEN. EVERGREEN PLANTS SHALL BE PLANTED BETWEEN MARCH 1 AND JUNE 1 AND FROM AUGUST 15 /TO SEPTEMBER 15.
13. NATIVE SEEDING AREAS SHALL BE SEEDED AFTER MAY 1, (WHEN SOIL IS FREE OF FROST AND IN WORKABLE CONDITION), BUT BEFORE JUNE 15 OR AFTER OCTOBER 1, BUT BEFORE NOVEMBER 30 (OR PRIOR TO GROUND FREEZING) OR GUARANTEED BY THE SUPPLIER. IF SEEDING IS PERFORMED OUTSIDE PLANTING WINDOW, CONTRACTOR SHALL PERFORM REGULARLY SCHEDULED WATERING FOR INSTALLED SEED AND AS NEEDED BASED ON WEATHER CONDITIONS TO ENSURE GERMINATION AND ESTABLISHMENT OF SEED.
14. ALL PLANTING BEDS ARE TO RECEIVE FOUR (4) INCHES OF SHREDDED HARDWOOD BARK MULCH.
15. ALL TREES TO BE LOCATED A MINIMUM OF 10 FEET FROM PUBLIC UTILITIES.
16. ALL SINGLE TRUNK, DECIDUOUS TREES SHALL HAVE A STRAIGHT AND A SYMMETRICAL CROWN WITH A CENTRAL LEADER. ONE SIDED TREES OR THOSE WITH THIN OR OPEN CROWNS SHALL NOT BE ACCEPTED.
17. ALL EVERGREEN TREES SHALL BE BRANCHED FULLY TO THE GROUND, SYMMETRICAL IN SHAPE AND HAVE NOT BEEN SHEARED IN THE LAST THREE (3) GROWING SEASONS.
18. ALL COMPACTED SUBGRADE SOILS IN PROPOSED LANDSCAPE AREAS SHALL BE TILLED TO A MINIMUM 12-INCH DEPTH PRIOR TO PLACEMENT OF TOPSOIL, GEOTEXTILE FABRIC, OR OTHER PLANTING MEDIA AS SPECIFIED.
19. TOPSOIL AND COMPOST SHALL MEET AMERICAN NURSERY AND LANDSCAPE ASSOCIATION RECOMMENDATIONS FOR PLANTING.
20. PLANTING SOIL: EXISTING, IN-PLACE OR STOCKPILED TOPSOIL. SUPPLEMENT WITH IMPORTED TOPSOIL AS NEEDED. VERIFY SUITABILITY OF EXISTING SURFACE SOIL TO PRODUCE VIABLE PLANTING SOIL. FINAL APPROVAL OF SOIL COMPOSITION SHALL BE PROVIDED BY THE LANDSCAPE CONTRACTOR. REMOVE STONES, ROOTS, PLANTS, SOD, CLODS, CLAY LUMPS, POCKETS OF COARSE SAND, CONCRETE SLURRY, CONCRETE LAYERS OR CHUNKS, CEMENT, PLASTER, BUILDING DEBRIS, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH. MIX SURFACE SOIL WITH SOIL AMENDMENTS AS RECOMMENDED PER SOIL ANALYSIS FOR PROPER PLANTING.
21. IF NATIVE SEEDING IS SPECIFIED, INSTALLATION SHALL BE PERFORMED BY A QUALIFIED CONTRACTOR WITH DOCUMENTED EXPERIENCE OF SUCCESSFUL ESTABLISHED NATIVE SEEDING. SEED SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATION VIA HAND BROADCAST
22. SNOW CANNOT BE PUSHED ONTO INTERIOR ISLANDS UNLESS THEY ARE DESIGNATED ON THE PLAN FOR SNOW STORAGE. BIO-RETENTION ISLANDS CAN BE USED FOR SNOW STORAGE.

MAINTENANCE NOTES

1. MAINTAIN PLANTINGS BY PRUNING, CULTIVATING, WATERING, WEEDING, FERTILIZING, MULCHING, RESTORING PLANTING SAUCERS, ADJUSTING AND REPAIRING TREE-STABILIZATION DEVICES, RESETTING TO PROPER GRADES OR VERTICAL POSITION, AND PERFORMING OTHER OPERATIONS AS REQUIRED TO ESTABLISH HEALTHY, VIABLE PLANTINGS. SPRAY OR TREAT AS REQUIRED TO KEEP TREES AND SHRUBS FREE OF INSECTS AND DISEASE.
2. FILL IN AS NECESSARY SOIL SUBSIDENCE THAT MAY OCCUR BECAUSE OF SETTLING OR OTHER PROCESSES. REPLACE MULCH MATERIALS DAMAGED OR LOST IN AREAS OF SUBSIDENCE.
3. APPLY TREATMENTS AS REQUIRED TO KEEP PLANT MATERIALS, PLANTED AREAS, AND SOILS FREE OF PESTS AND PATHOGENS OR DISEASE. USE INTEGRATED PEST MANAGEMENT PRACTICES WHENEVER POSSIBLE TO MINIMIZE THE USE OF PESTICIDES AND REDUCE HAZARDS. TREATMENTS INCLUDE PHYSICAL CONTROLS SUCH AS HOSING OFF FOLIAGE, MECHANICAL CONTROLS SUCH AS TRAPS, AND BIOLOGICAL CONTROL AGENTS.
4. CONTRACTOR SHALL WARRANTY THE ENTIRE LANDSCAPING PROJECT, INCLUDING BUT NOT LIMITED TO: PLANTS (PERENNIALS), TREES, SHRUBS, MULCHES, SHRUBS, ETC FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION DATE OF THE PROJECT. AT THE END OF THE SPECIFIED ONE YEAR WARRANTY PERIOD THE OWNER'S REPRESENTATIVE WILL INSPECT PLANT MATERIAL FOR COMPLIANCE. CONTRACTOR SHALL REPLACE, IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS, ALL PLANTS, TREES, SHRUBS, ETC OR AS DETERMINED BY THE OWNER'S REPRESENTATIVE, ARE IN AN UNHEALTHY OR UNSIGHTLY CONDITION. WARRANTY SHALL NOT INCLUDE DAMAGE OR LOSS OF PLANTS, TREES, AND SHRUBS CAUSED BY FIRES, FLOODS, FREEZING RAINS, LIGHTNING STORMS, OR WINDS OVER 75 MILES PER HOUR, ACTS OF VANDALISM OR NEGLIGENCE ON THE PART OF THE OWNER, OR ANY OTHER INCIDENT BEYOND LANDSCAPE CONTRACTOR'S CONTROL.
5. WATERING: THE CONTRACTOR SHALL KEEP SEED MOIST FOR OPTIMUM PLANT GROWTH (1"OF TOTAL WATER PER WEEK, INCLUDING RAINFALL) UNTIL THE GRASS AND/OR FLOWERS ARE FOUR (4) INCHES HIGH TYPICAL.
6. PROTECTION FROM TRAFFIC AND EROSION IN NEWLY SEEDED AREAS IS THE RESPONSIBILITY OF THE CONTRACTOR. SAFETY FENCES AND/OR SILT FENCE WITH APPROPRIATE SIGNAGE MAY BE USED AT THE CONTRACTOR'S EXPENSE UNTIL THE GRASSES AND FLOWERS ARE FULLY ESTABLISHED. EROSION SHALL BE REPAIRED BY THE CONTRACTOR.
7. LONG-TERM MAINTENANCE OF THE BIO-RETENTION ISLAND AND RAIN GARDEN SHALL BE PERFORMED BY THE OWNER. MAINTENANCE SHALL INCLUDE SEASONAL TRIMMING AND REMOVAL OF DEAD FOLIAGE, REMOVAL OF WEEDS, AND REMOVAL OR MULCHING OF LEAVES AND STEMS. SPOT TREATMENT/REMOVAL OF INVASIVE WEEDS MAY BE NECESSARY IF LOCALIZED AREAS BECOME DOMINATED BY INVASIVE WEEDS. BIO-RETENTION ISLAND AND RAIN GARDEN SHALL BE INSPECTED BY OWNER FOLLOWING ANY STORM EVENT EXCEEDING 1". TRASH AND DEBRIS SHALL BE REMOVED AS NEEDED. SHREDDED HARDWOOD MULCH MUST BE RE-SPREAD WHEN EROSION IS EVIDENT AND BE REPLENISHED ANNUALLY. ONCE EVERY 2 TO 3 YEARS, THE ENTIRE BIO-RETENTION/RAIN GARDEN AREA MAY REQUIRE MULCH REPLACEMENT.
8. TURF INSTALLATIONS SHALL MEET THE FOLLOWING CRITERIA AS DETERMINED BY OWNER: AT END OF MAINTENANCE PERIOD, A HEALTHY, UNIFORM, CLOSE STAND OF GRASS HAS BEEN ESTABLISHED, FREE OF WEEDS AND SURFACE IRREGULARITIES, WITH COVERAGE EXCEEDING 90 PERCENT OVER ANY 10 SQ. FT. AND BARE SPOTS NOT EXCEEDING 5 BY 5 INCHES.



SEQUENCE OF PHRAGMITES REMOVAL

1. PHRAGMITES SHOULD BE TREATED IN SUMMER (JUNE-SETPEMBER) USING GLYPHOSATE TO ACHIEVE EFFECTIVE CONTROL.
2. APPLICATION OF HERBICIDES SHALL BE HAND SWIPING FOR SCATTERED PLANTS AND HAND SPRAYING FOR DENSER STANDS. THE USE OF A LICENSED OR CERTIFIED APPLICATOR IS REQUIRED TO MINIMIZE DAMAGE TO NATIVE PLANT MATERIAL.
3. TWO (2) WEEKS AFTER HERBICIDE APPLICATION, THE DEAD STALKS SHOULD BE CUT, AND REMOVED TO A MINIMUM DEPTH OF 10". ALL REMOVED MATERIAL SHALL BE HAULED OFF-SITE AND LEGALLY DISPOSED OF. IF A MECHANICAL METHOD IS USED, EQUIPMENT SHOULD BE CLEANED TO PREVENT THE SPREAD OF SEED.

SECOND YEAR MAINTENANCE

1. A VISUAL INSPECTION WILL BE MADE PRIOR TO JUNE 10TH. IF PHRAGMITES IS PRESENT, STEPS 1-3 ABOVE WILL BE REPEATED.

WETLAND BUFFER MITIGATION

1. WETLAND MITIGATION SHALL INCLUDE THE REMOVAL OF INVASIVE SPECIES.
2. SEE PLAN FOR LOCATION OF PHRAGMITES, BUCKTHORN AND HONEYSUCKLE FOR REMOVAL.
3. SEE PLAN FOR RESTORATION OF MITIGATED AREAS.

EXISTING LANDSCAPING SCREENING AND BUFFERING

SEE OVERALL EXISTING CONDITIONS PLAN FOR VEHICLE USE AREAS (VUA), LANDSCAPE, SCREENING AND BUFFERING REQUIREMENTS.

SCALE: 1" = 40'

0 40 80 120

Know what's **below.**
Call before you dig.

LANDSCAPE LEGEND

● XX	PROPOSED CANOPY TREE (MITIGATION)
✹ XX	PROPOSED EVERGREEN TREE (MITIGATION)
⁘	PROPOSED BIOSWALE NATIVE SEED
■	PROPOSED SOIL MATTING
▨	INVASIVE SPECIES REMOVAL AREAS (WETLAND BUFFER MITIGATION)

PLANT SCHEDULE

Total	Mitigation	Symbol	Botanical Name	Common Name	Size	Spacing	Root	Remarks
Deciduous Trees								
	4	AS	*Acer saccharum*	Sugar Maple	2.5" cal	As Shown	B&B	
	4	AG	*Amelanchier x grandiflora 'Autumn Brilliance'*	Autumn Brilliance Serviceberry	2.5" cal	As Shown	B&B	
Total	8	Total						

TREE MITIGATION SUMMARY

ID #	Landmark Trees Removed	DBH	50%	Requirement
714	Cottonwood	36"	18"	Eight (8) 2.5" cal Canopy Trees - or- Eight (8) 5' tall Evergreen Trees

BIOSWALE SEED MIX by Michigan Wildflower Farm

Botanical Name	Common Name	
Anemone Canadensis	Canada Anemone	
Angelica Atropurpurea	Angelica	
Asclepias Incarnata	Swamp Milkweed	
Eupatorium Maculatum	Joe-Pye Weed	
Eupatorium Perfoliatum	Boneset	
Helenium Autumnale	Sneezeweed	
Iris Virginica	Wild Blue Flag	
Lobelia Siphilitica	Great Blue Lobelia	
Rudbeckia Fulgida	Sweet Black-eyed Susan	
Solidago Graminifolia	Grass-leaved Goldenrod	
Solidago Patula	Swamp Goldenrod	
Symphyotrichum Puniceum	Swamp Aster	
Verbena Hastata	Blue Vervain	
Vernonia Missurica	Ironweed	
Carex Spp.	Carex species	
Elymus Virginicus	Virginia Wild Rye	
Scirpus Spp.	Scirpus species	
Sparganium Eurycarpum	Common Bur Reed	

SHADE TOLERANT GRASS SEED MIX

Botanical Name	Common Name	
Bromus Kalmii	Prairie Brome	
Carex Blanda	Common Wood Sedge	
Carex Molesta	Field Oval Sedge	
Carex Sprengelii	Long-beaked Sedge	
Diarrhena Obovata	Beak Glass	
Elymus Hystrix	Bottlebrush Grass	
Elymus Villosus	Silky Wild Rye	
Elymus Virginicus	Virginia Wild Rye	
Festuca Subverticillata	Nodding Fescue	
Schizachyrium Scoparium	Little Bluestem	

RAIN GARDEN SEED MIX by Michigan Wildflower Farm

Botanical Name	Common Name	
Anemone Canadensis	Canada Anemone	
Angelica Atropurpurea	Angelica	
Asclepias Incarnata	Swamp Milkweed	
Eupatorium Maculatum	Joe-Pye Weed	
Eupatorium Perfoliatum	Boneset	
Helenium Autumnale	Sneezeweed	
Iris Virginica	Wild Blue Flag	
Lobelia Siphilitica	Great Blue Lobelia	
Rudbeckia Fulgida	Sweet Black-eyed Susan	
Solidago Graminifolia	Grass-leaved Goldenrod	
Solidago Patula	Swamp Goldenrod	
Symphyotrichum Puniceum	Swamp Aster	
Verbena Hastata	Blue Vervain	
Vernonia Missurica	Ironweed	
Carex Spp.	Carex species	
Elymus Virginicus	Virginia Wild Rye	
Scirpus Spp.	Scirpus species	
Sparganium Eurycarpum	Common Bur Reed	

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GREENHILLS NORTH ADDITION

SITE PLAN
LANDSCAPE PLAN

11

DATE: 7/31/25
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M:\Civil3d_Proj_2023\23313\Site Plan\23313LP01.dwg, 3/20/2026 3:44 PM, Heath Hartt, 11 LANDSCAPE PLAN, None

PROPOSED POND EXPANSION

A. Existing Detention Pond

Elevation	Area (sft)	Depth (ft)	Volume (cft)	Cum. Volume (cft)
871.59	14,343	0	0	0
873.29	17,424	1.70	26,960	26,960
			Total Volume =	26,960

B. Existing Detention Pond With Proposed Expansion

Elevation	Area (sft)	Depth (ft)	Volume (cft)	Cum. Volume (cft)
871.59	14,343	0	0	0
873.29	18,643	1.70	27,958	27,958
			Total Volume =	27,958

Required additional Volume = 6146 cf - 5360 cf = 786 cf
Provided additional Volume = 27,958 cf - 26,960 cf = 998 cf

STORM WATER SUMMARY

Existing Drainage Area to Wetlands

Area (ac):	0.85
C:	0.51

Proposed Drainage Area to Wetlands

Area (ac):	0.49
C:	0.63

Proposed Drainage Area to Existing Detention Basin

Area (ac):	0.36
C:	0.74

100 Year Flood Volume (cf)

	Existing	Proposed
Wetland	5360	5096
Detention Basin	5360*	6146**

*This is the volume that the detention basin was designed to detain for the existing drainage area. In the actual site condition, this runoff drains to the wetland instead of as intended to the detention basin.

**includes 20% penalty for non-infiltration.

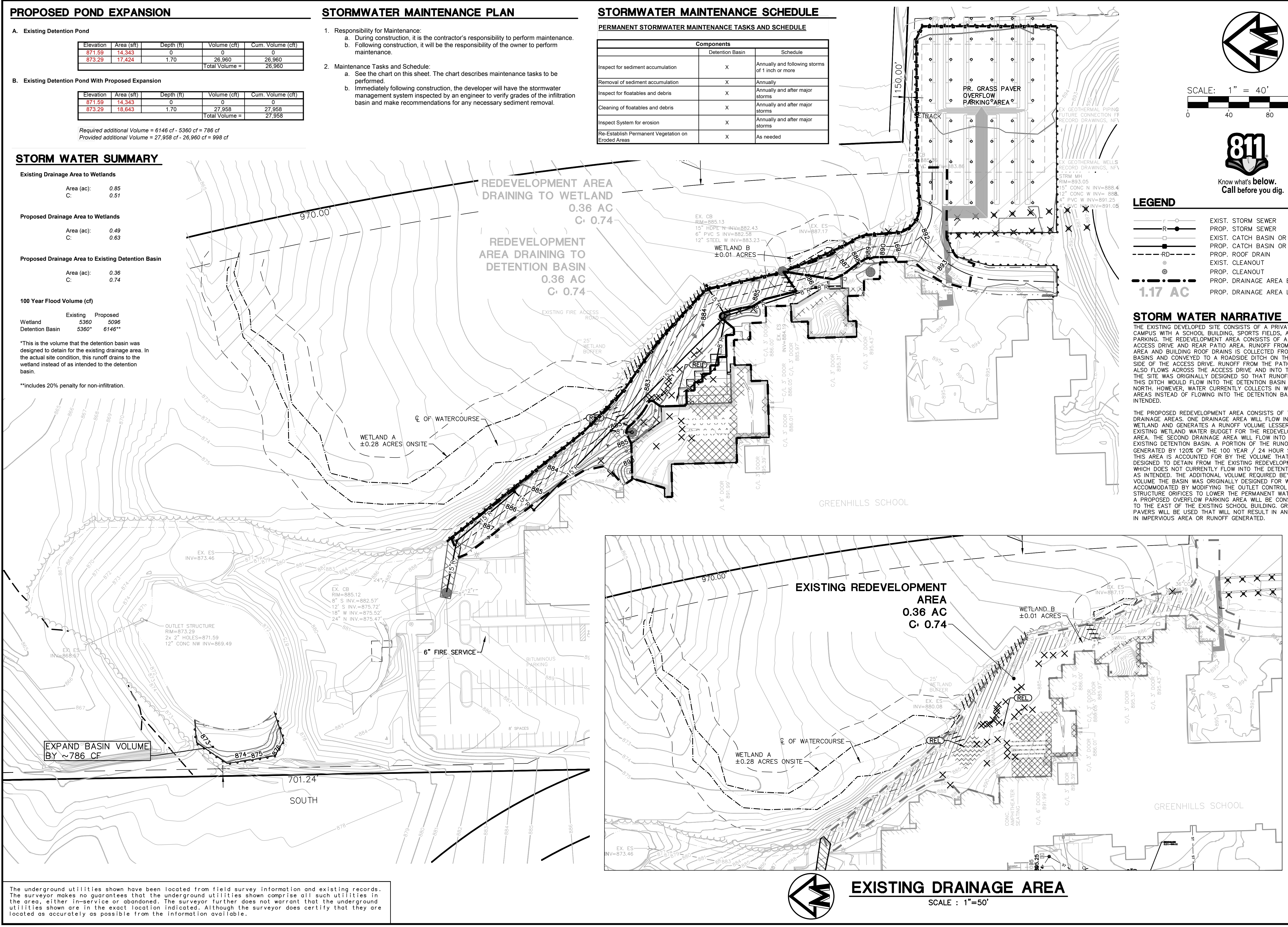
STORMWATER MAINTENANCE PLAN

1. Responsibility for Maintenance:
    a. During construction, it is the contractor's responsibility to perform maintenance.
    b. Following construction, it will be the responsibility of the owner to perform maintenance.
2. Maintenance Tasks and Schedule:
    a. See the chart on this sheet. The chart describes maintenance tasks to be performed.
    b. Immediately following construction, the developer will have the stormwater management system inspected by an engineer to verify grades of the infiltration basin and make recommendations for any necessary sediment removal.

STORMWATER MAINTENANCE SCHEDULE

PERMANENT STORMWATER MAINTENANCE TASKS AND SCHEDULE

Components		
	Detention Basin	Schedule
Inspect for sediment accumulation	X	Annually and following storms of 1 inch or more
Removal of sediment accumulation	X	Annually
Inspect for floatables and debris	X	Annually and after major storms
Cleaning of floatables and debris	X	Annually and after major storms
Inspect System for erosion	X	Annually and after major storms
Re-Establish Permanent Vegetation on Eroded Areas	X	As needed



EXISTING DRAINAGE AREA
SCALE : 1"=50'

SCALE: 1" = 40'
0 40 80 120

Know what's **below.**
Call before you dig.

LEGEND

——r—○——	EXIST. STORM SEWER
——R—●——	PROP. STORM SEWER
——□——	EXIST. CATCH BASIN OR INLET
——■——	PROP. CATCH BASIN OR INLET
- - - -RD- - - -	PROP. ROOF DRAIN
◎	EXIST. CLEANOUT
◉	PROP. CLEANOUT
▬ • ▬ • ▬	PROP. DRAINAGE AREA BOUNDARY
1.17 AC	PROP. DRAINAGE AREA LABEL

STORM WATER NARRATIVE

THE EXISTING DEVELOPED SITE CONSISTS OF A PRIVATE SCHOOL CAMPUS WITH A SCHOOL BUILDING, SPORTS FIELDS, AND PARKING. THE REDEVELOPMENT AREA CONSISTS OF A GRAVEL ACCESS DRIVE AND REAR PATIO AREA. RUNOFF FROM THE REAR AREA AND BUILDING ROOF DRAINS IS COLLECTED FROM CATCH BASINS AND CONVEYED TO A ROADSIDE DITCH ON THE NORTH SIDE OF THE ACCESS DRIVE. RUNOFF FROM THE PATIO AREA ALSO FLOWS ACROSS THE ACCESS DRIVE AND INTO THIS DITCH. THE SITE WAS ORIGINALLY DESIGNED SO THAT RUNOFF FROM THIS DITCH WOULD FLOW INTO THE DETENTION BASIN TO THE NORTH. HOWEVER, WATER CURRENTLY COLLECTS IN WETLAND AREAS INSTEAD OF FLOWING INTO THE DETENTION BASIN AS INTENDED.

THE PROPOSED REDEVELOPMENT AREA CONSISTS OF TWO DRAINAGE AREAS. ONE DRAINAGE AREA WILL FLOW INTO THE WETLAND AND GENERATES A RUNOFF VOLUME LESSER THAN THE EXISTING WETLAND WATER BUDGET FOR THE REDEVELOPMENT AREA. THE SECOND DRAINAGE AREA WILL FLOW INTO THE EXISTING DETENTION BASIN. A PORTION OF THE RUNOFF VOLUME GENERATED BY 120% OF THE 100 YEAR / 24 HOUR STORM FOR THIS AREA IS ACCOUNTED FOR BY THE VOLUME THAT IT WAS DESIGNED TO DETAIN FROM THE EXISTING REDEVELOPMENT AREA, WHICH DOES NOT CURRENTLY FLOW INTO THE DETENTION BASIN AS INTENDED. THE ADDITIONAL VOLUME REQUIRED BEYOND THE VOLUME THE BASIN WAS ORIGINALLY DESIGNED FOR WILL BE ACCOMMODATED BY MODIFYING THE OUTLET CONTROL STRUCTURE ORIFICES TO LOWER THE PERMANENT WATER LEVEL. A PROPOSED OVERFLOW PARKING AREA WILL BE CONSTRUCTED TO THE EAST OF THE EXISTING SCHOOL BUILDING. GRASS PAVERS WILL BE USED THAT WILL NOT RESULT IN AN INCREASE IN IMPERVIOUS AREA OR RUNOFF GENERATED.

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

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GREENHILLS NORTH ADDITION
SITE PLAN
STORMWATER MANAGEMENT PLAN

12

DATE: 7/31/25
SHEET 12 OF 17

REVISIONS:	REV. DATE	
PER MUNICIPAL REVIEW	12/19/25	CADD:
PER MUNICIPAL REVIEW	3/19/26	ENG: HTH
		PM: HTH
		TECH:
		23313SW01
		FB#

JOB No. 23313

EXISTING DRAINAGE AREA TO DETENTION BASIN / WETLAND

THIS CALCULATION REPRESENTS THE VOLUME OF STORMWATER THAT WAS ORIGINALLY ATTRIBUTED TO STORAGE IN THE BASIN, BUT DURING FIELD STUDY IS ACTUALLY DRAINING TO THE WETLAND AREA.

I. Common Items and Assumptions:

A. First Flush = (0.5"/12) x 43,560 x area x developed C

B. Bankfull Flood = 8,170 x area x developed C

C. Detention Volume Equation

$V = (A_t + A_b + (A_t \times A_b)\text{^}0.5)\ (H/3)$

where, A_t = Area at top of storage elevation

A_b = Area at bottom of storage elevation

H = Depth of analysis

II. Detention Pond Volumes:

A. First Flush, Bankfull Flood and 100-year Storm Event

1. Contributing Area = 0.85 Ac.

2. Developed Runoff Coefficient:

	Area (A), Ac.			Coefficient (C)	A x C
Rooftop / Asphalt Area	0.09			0.95	0.08
Lawn/Landscaped Area	0.62			0.25	0.16
Gravel	0.22			0.85	0.19
Totals:	0.85				0.43
Developed C =	0.43 /	0.85	=	0.51	

3. First Flush Volume:

V = (0.5"/12) x 43,560 x 0.51 x 0.85 = 785 CF

4. Bankfull Flood Volume:

V = 8,170 x 0.51 x 0.85 = 3535 CF

5. 100-Year Flood Volume:

Q_A = 0.15 x 0.85 = 0.13 CFS

Q_O = 0.1273 /(0.85 x 0.51) = 0.29 CFS/Ac-Imp.

T = -25 + (10,312.50 / 0.29)^0.5 = 162.25 min.

V_S = ((16,500 x 162.25) / (162.25 +25))-(40 x 0.29 x 162.25) = 12388.2 CF/Ac-Imp.

V_T = 12388 x 0.85 x 0.51 = 5360 CF

10720

PROPOSED WETLAND DRAINAGE AREA

THIS CALCULATION IS PROVIDED TO SHOW THE PROPOSED AREA THAT WILL CONTINUE TO DRAIN TO THE WETLANDS TO MAINTAIN THE WATER BUDGET FOR THE WETLANDS.

W1 - Determining Post-Development Cover Types, Areas, Curve Numbers, and Runoff Coefficients

Rational Method Variables

Cover Type	Soil Type	Area (sft)	Area (ac)	Runoff Coeff. (C)	(C) x (Area)
Gravel		13,371	0.31	0.85	0.26
Grass	B	7,960	0.18	0.25	0.05
Total		21,331	0.49		0.31

Weighted C = (Sum(C)x(Area))/(Area Total)= 0.63

NRCS Variables (Pervious)

Cover Type	Soil Type	Area (sft)	Area (ac)	Curve Number	(CN) x (Area)
Grass	B	7,960	0.18	69	0.13
Total		7,960	0.18		0.13

Weighted CN = (Sum(CN)x(Area))/(Area Total)= 69

NCRS Variables (Impervious)

Cover Type	Soil Type	Area (sft)	Area (ac)	Curve Number	(CN) x (Area)
Gravel		13,371	0.31	85	0.26
Total		13,371	0.31		0.26

Weighted CN = (Sum(CN)x(Area))/(Area Total)= 85

W2 - W2 - First Flush Runoff Calculations (V_{ff})

A. V_{ff} = 1" x 1'/12" x 43560 sft/ac x A x C where A= 0.49 and where C= 0.63

V_{ff} = 1" x 1'/12" x 43560 sft/ac x 0.49 x 0.63 = 1,120 cf

W3 - W3 - Pre-Development Bankfull Runoff Calculations ($V_{bf\text{-}pre}$)

A. 2 year / 24 hour storm event: P= 2.35 in

B. Pre-Development CN (Good Cover Woods, Type B Soils) CN= 58

C. S = (1000 / CN) - 10 S= 7.241 in

D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 0.100 in

E. Total Site Area excluding "Self-Crediting" BMPs 21,331 sft

F. $V_{bf\text{-}pre}$ = Q x (1/12) x Area $V_{bf\text{-}pre}$ = 177 cft

W4 - Pervious Cover Post-Development Bankfull Runoff Calculations ($V_{bf\text{-}per\text{-}post}$)

A. 2 year / 24 hour storm event: P= 2.35 in

B. Pervious Cover CN From Worksheet 1 CN= 69

C. S = (1000 / CN) - 10 S= 4.493 in

D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 0.354 in

E. Pervious Cover Area from Worksheet 1 7,960 sft

F. $V_{bf\text{-}per\text{-}post}$ = Q x (1/12) x Area $V_{bf\text{-}per\text{-}post}$ = 235 cft

W5 - W5 - Impervious Cover Post-Development Bankfull Runoff Calculations ($V_{bf\text{-}imp\text{-}post}$)

A. 2 year / 24 hour storm event: P= 2.35 in

B. Impervious Cover CN From Worksheet 1 CN= 85

C. S = (1000 / CN) - 10 S= 1.765 in

D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 1.060 in

E. Impervious Cover Area from Worksheet 1 13,371 sft

F. $V_{bf\text{-}imp\text{-}post}$ = Q x (1/12) x Area $V_{bf\text{-}imp\text{-}post}$ = 1,181 cft

W6 - W6 - Pervious Cover Post-Development 100-Year Runoff Calculations ($V_{100\text{-}per\text{-}post}$)

A. 100 year / 24 hour storm event: P= 5.11 in

B. Pervious Cover CN From Worksheet 1 CN= 69

C. S = (1000 / CN) - 10 S= 4.493 in

D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 2.038 in

E. Pervious Cover Area from Worksheet 1 7,960 sft

F. $V_{100\text{-}per\text{-}post}$ = Q x (1/12) x Area $V_{100\text{-}per\text{-}post}$ = 1,352 cft

W7 - W7 - Impervious Cover Post-Development 100-Year Runoff Calculations ($V_{100\text{-}imp\text{-}post}$)

A. 2 year / 24 hour storm event: P= 5.11 in

B. Impervious Cover CN From Worksheet 1 CN= 85

C. S = (1000 / CN) - 10 S= 1.765 in

D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 3.470 in

E. Impervious Cover Area from Worksheet 1 13,371 sft

F. $V_{bf\text{-}imp\text{-}post}$ = Q x (1/12) x Area $V_{bf\text{-}imp\text{-}post}$ = 3,866 cft

W8 - Time of Concentration (Tc-hrs)

A. Assume 15-minute minimum time of concentration Tc= 0.25 hr

W9 - Runoff Summary & On-Site Infiltration Requirement

A. Summary from Previous Worksheets

First Flush Volume (Vff)	**1,120 cft**
Pre-Development Bankfull Runoff Volume (Vbf-pre)	**177 cft**
Pervious Cover Post-Development Bankfull Volume (Vbf-per-post)	*235 cft*
Impervious Cover Post-Development Bankfull Volume (Vbf-imp-post)	*1,181 cft*
Total BF Volume (Vbf-post)	**1,416 cft**
Pervious Cover Post-Development 100-Year Volume (V100-per-post)	*1,352 cft*
Impervious Cover Post-Development 100-Year Volume (V100-imp-post)	*3,866 cft*
Total 100-Year Volume (V100)	**5,218 cft**

B. Determine Onsite Infiltration Requirement

Subtract the Pre-Development Bankfull from the Post-Development Bankfull Volume

Total Post-Development Bankfull Volume (Vbf-post)	1,416 cft
Pre-Development Bankfull Runoff Volume (Vbf-pre)	177 cft
Bankfull Volume Difference	**1,239 cft**
Infiltration Requirement (Vinf)	**1,239 cft**

W10 - Detention/Retention Requirement

A. Q_p = 238.6 Tc^-0.82 743.63 cfs/(in x sq. mi)

B. Total Site Area excluding "Self-Crediting" BMPs 0.49 ac

C. $Q_{100} = Q_{100\text{-}per} + Q_{100\text{-}imp}$ (from W6 and W7, respectively) 5.508 in

D. Peak Flow (PF) = Q_p x Q_{100} x Area / 640 3.13 cfs

E. Delta = PF - 0.15 x Area (ac) 3.06 cfs

[0.15 x Area (ac)] *0.07 cfs*

F. V_{det} = Delta / PF x V_{100} 5,096 cft

Required Detention not including infiltration credit or penalty.

Sediment Forebay Volume Required (5% of V100) 261 cft

W13 - Site Summary of Infiltration & Detention

A. Stormwater Management Summary

Min Infiltration Requirement (V_{inf})	1,239 cft
Designed/Provided Infiltration Volume	0 cft
% Minimum Required Infiltration Provided	0 %
Total Calculated Detention Volume, V_{det}	5,096 cft
Net Required Detention Volume (V_{det} - Designed/Provided Infiltration Volume)	5,096 cft

Detention Outlet Calculcations

A. Required Detention Volumes (Reduced by 6-hour infiltration)

Storm Event	Req'd Volume	less	Infil. Credit	=	Final Volume
First Flush	1,120 cft	-	0 cft	=	**1,120** cft
Bankfull	1,416 cft	-	0 cft	=	**1,416** cft
100 -year	5,096 cft	-	0 cft	=	**5,096** cft

PROPOSED DRAINAGE AREA TO EXISTING POND

THIS CALCULATION REPRESENTS THE VOLUME OF WATER THAT IS NOW BEING DIRECTED TO THE EXISTING BASIN. THE DIFFERENCE IN THIS VOLUME AND THE ORIGINAL VOLUME THAT WAS TO BE SENT TO THE BASIN WILL BE PROVIDED THROUGH THE ENLARGEMENT OF THE BASIN

W1 - Determining Post-Development Cover Types, Areas, Curve Numbers, and Runoff Coefficients

Rational Method Variables

Cover Type	Soil Type	Area (sft)	Area (ac)	Runoff Coeff. (C)	(C) x (Area)
Building/Pavement		10,860	0.25	0.95	0.24
Grass	B	3,003	0.07	0.25	0.02
Pavers		1,760	0.04	0.25	0.01
Total		15,623	0.36		0.26

Weighted C = (Sum(C)x(Area))/(Area Total)= 0.74

NRCS Variables (Pervious)

Cover Type	Soil Type	Area (sft)	Area (ac)	Curve Number	(CN) x (Area)
Grass	B	3,003	0.07	69	0.05
Pavers		1,760	0.04	69	0.03
Total		4,763	0.11		0.08

Weighted CN = (Sum(CN)x(Area))/(Area Total)= 69

NCRS Variables (Impervious)

Cover Type	Soil Type	Area (sft)	Area (ac)	Curve Number	(CN) x (Area)
Building/Pavement		10,860	0.25	98	0.24
Total		10,860	0.25		0.24

Weighted CN = (Sum(CN)x(Area))/(Area Total)= 98

W2 - W2 - First Flush Runoff Calculations (V_{ff})

A. V_{ff} = 1" x 1'/12" x 43560 sft/ac x A x C where A= 0.36 and where C= 0.74

V_{ff} = 1" x 1'/12" x 43560 sft/ac x 0.36 x 0.74 = 963 cf

W3 - W3 - Pre-Development Bankfull Runoff Calculations ($V_{bf\text{-}pre}$)

A. 2 year / 24 hour storm event: P= 2.35 in

B. Pre-Development CN (Good Cover Woods, Type B Soils) CN= 58

C. S = (1000 / CN) - 10 S= 7.241 in

D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 0.100 in

E. Total Site Area excluding "Self-Crediting" BMPs 15,623 sft

F. $V_{bf\text{-}pre}$ = Q x (1/12) x Area $V_{bf\text{-}pre}$ = 130 cft

W4 - Pervious Cover Post-Development Bankfull Runoff Calculations ($V_{bf\text{-}per\text{-}post}$)

A. 2 year / 24 hour storm event: P= 2.35 in

B. Pervious Cover CN From Worksheet 1 CN= 69

C. S = (1000 / CN) - 10 S= 4.493 in

D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 0.354 in

E. Pervious Cover Area from Worksheet 1 4,763 sft

F. $V_{bf\text{-}per\text{-}post}$ = Q x (1/12) x Area $V_{bf\text{-}per\text{-}post}$ = 141 cft

W5 - W5 - Impervious Cover Post-Development Bankfull Runoff Calculations ($V_{bf\text{-}imp\text{-}post}$)

A. 2 year / 24 hour storm event: P= 2.35 in

B. Impervious Cover CN From Worksheet 1 CN= 98

C. S = (1000 / CN) - 10 S= 0.204 in

D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 2.122 in

E. Impervious Cover Area from Worksheet 1 10,860 sft

F. $V_{bf\text{-}imp\text{-}post}$ = Q x (1/12) x Area $V_{bf\text{-}imp\text{-}post}$ = 1,920 cft

W6 - W6 - Pervious Cover Post-Development 100-Year Runoff Calculations ($V_{100\text{-}per\text{-}post}$)

A. 100 year / 24 hour storm event: P= 5.11 in

B. Pervious Cover CN From Worksheet 1 CN= 69

C. S = (1000 / CN) - 10 S= 4.493 in

D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 2.038 in

E. Pervious Cover Area from Worksheet 1 4,763 sft

F. $V_{100\text{-}per\text{-}post}$ = Q x (1/12) x Area $V_{100\text{-}per\text{-}post}$ = 809 cft

W7 - W7 - Impervious Cover Post-Development 100-Year Runoff Calculations ($V_{100\text{-}imp\text{-}post}$)

A. 2 year / 24 hour storm event: P= 5.11 in

B. Impervious Cover CN From Worksheet 1 CN= 98

C. S = (1000 / CN) - 10 S= 0.204 in

D. Q = [(P-0.2S)^2] / [P+0.8S] Q= 4.873 in

E. Impervious Cover Area from Worksheet 1 10,860 sft

F. $V_{bf\text{-}imp\text{-}post}$ = Q x (1/12) x Area $V_{bf\text{-}imp\text{-}post}$ = 4,410 cft

W8 - Time of Concentration (Tc-hrs)

A. Assume 15-minute minimum time of concentration Tc= 0.25 hr

W9 - Runoff Summary & On-Site Infiltration Requirement

A. Summary from Previous Worksheets

First Flush Volume (Vff)	**963 cft**
Pre-Development Bankfull Runoff Volume (Vbf-pre)	**130 cft**
Pervious Cover Post-Development Bankfull Volume (Vbf-per-post)	*141 cft*
Impervious Cover Post-Development Bankfull Volume (Vbf-imp-post)	*1,920 cft*
Total BF Volume (Vbf-post)	**2,061 cft**
Pervious Cover Post-Development 100-Year Volume (V100-per-post)	*809 cft*
Impervious Cover Post-Development 100-Year Volume (V100-imp-post)	*4,410 cft*
Total 100-Year Volume (V100)	**5,219 cft**

B. Determine Onsite Infiltration Requirement

Subtract the Pre-Development Bankfull from the Post-Development Bankfull Volume

Total Post-Development Bankfull Volume (Vbf-post)	2,061 cft
Pre-Development Bankfull Runoff Volume (Vbf-pre)	130 cft
Bankfull Volume Difference	**1,931 cft**
Infiltration Requirement (Vinf)	**1,931 cft**

W10 - Detention/Retention Requirement

A. Q_p = 238.6 Tc^-0.82 743.63 cfs/(in x sq. mi)

B. Total Site Area excluding "Self-Crediting" BMPs 0.36 ac

C. $Q_{100} = Q_{100\text{-}per} + Q_{100\text{-}imp}$ (from W6 and W7, respectively) 6.911 in

D. Peak Flow (PF) = Q_p x Q_{100} x Area / 640 2.88 cfs

E. Delta = PF - 0.15 x Area (ac) 2.83 cfs

[0.15 x Area (ac)] *0.05 cfs*

F. V_{det} = Delta / PF x V_{100} 5,121 cft

Required Detention not including infiltration credit or penalty.

Sediment Forebay Volume Required (5% of V100) 261 cft

W13 - Site Summary of Infiltration & Detention

A. Stormwater Management Summary

Min Infiltration Requirement (V_{inf})	1,931 cft
Designed/Provided Infiltration Volume	0 cft
% Minimum Required Infiltration Provided	0 %
Total Calculated Detention Volume, V_{det}	5,121 cft
Net Required Detention Volume (V_{det} - Designed/Provided Infiltration Volume)	5,121 cft

B. Detention Volume Increase for sites where the required infiltration volume cannot be achieved.

% Required Infiltration NOT Provided (100% - % Minimum Required Infiltration Provided)	100.0 %
Net % Penalty (20% x % Required Infiltration NOT Provided)	20.0 %
Total Required Detention Volume, including penalty [(100% + Net % Penalty) x Net Required Detention Volume)]	**6,146** cft

Detention Outlet Calculcations

A. Required Detention Volumes (Reduced by 6-hour infiltration)

Storm Event	Req'd Volume	less	Infil. Credit	=	Final Volume
First Flush	963 cft	-	0 cft	=	**963** cft
Bankfull	2,061 cft	-	0 cft	=	**2,061** cft
100 -year	5,121 cft	-	0 cft	=	**5,121** cft
100-year + Req'd Penalty	6,146 cft	-	0 cft	=	**6,146** cft
Forebay Volume Required (5% of 100-yr)				=	**256** cft

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GREENHILLS NORTH ADDITION

SITE PLAN
STORMWATER CALCULATIONS

13

DATE: 7/31/25
SHEET 13 OF 17
CADD:
ENG: HTH
PM: HTH
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23313SW01
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JOB No. 23313

REVISIONS:	REV. DATE
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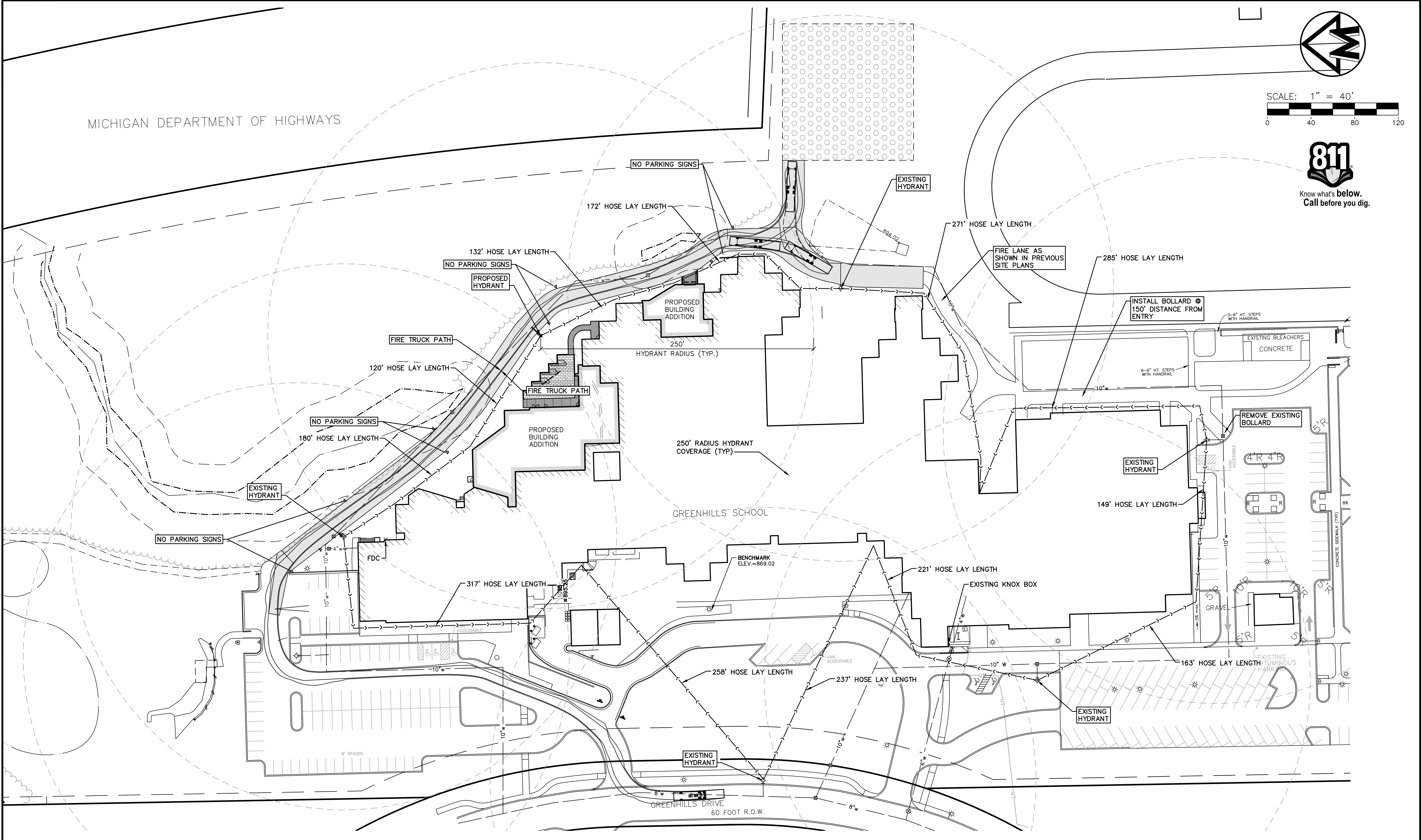
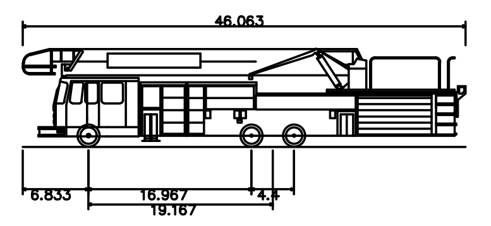


FIRE PROTECTION NOTES

1. NO FIREWALLS ARE PRESENT IN THE BUILDING.
2. THE EXISTING BUILDING IS PARTIALLY SUPPRESSED.
3. THE NEW ADDITIONS WILL BE FULLY SPRINKLERED.



AAFD Aerial SPH 100	
Overall Length	46.063ft
Overall Width	7.833ft
Overall Body Height	10.177ft
Min Body Ground Clearance	0.607ft
Track Width	6.543ft
Lock-to-lock time	4.00s
Max Wheel Angle	32.69°

TRUCK TURNING TEMPLATE DETAIL

SCALE : NTS

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GREENHILLS NORTH ADDITION

SITE PLAN
FIRE PROTECTION PLAN

14

DATE: 7/31/25
SHEET 14 OF 17
CADD:
ENG: HTH
PM: HTH
TECH:
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JOB No. **23313**

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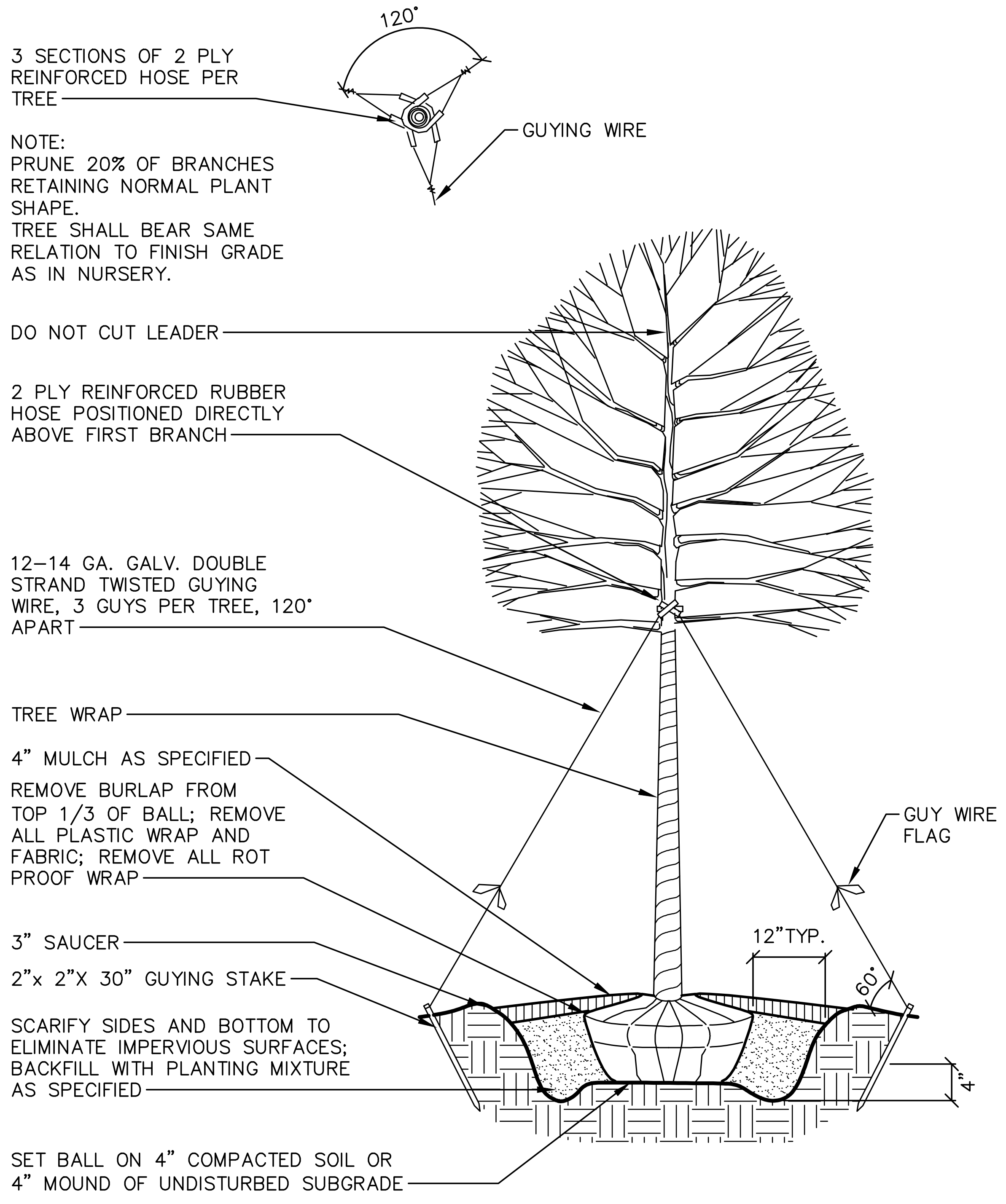
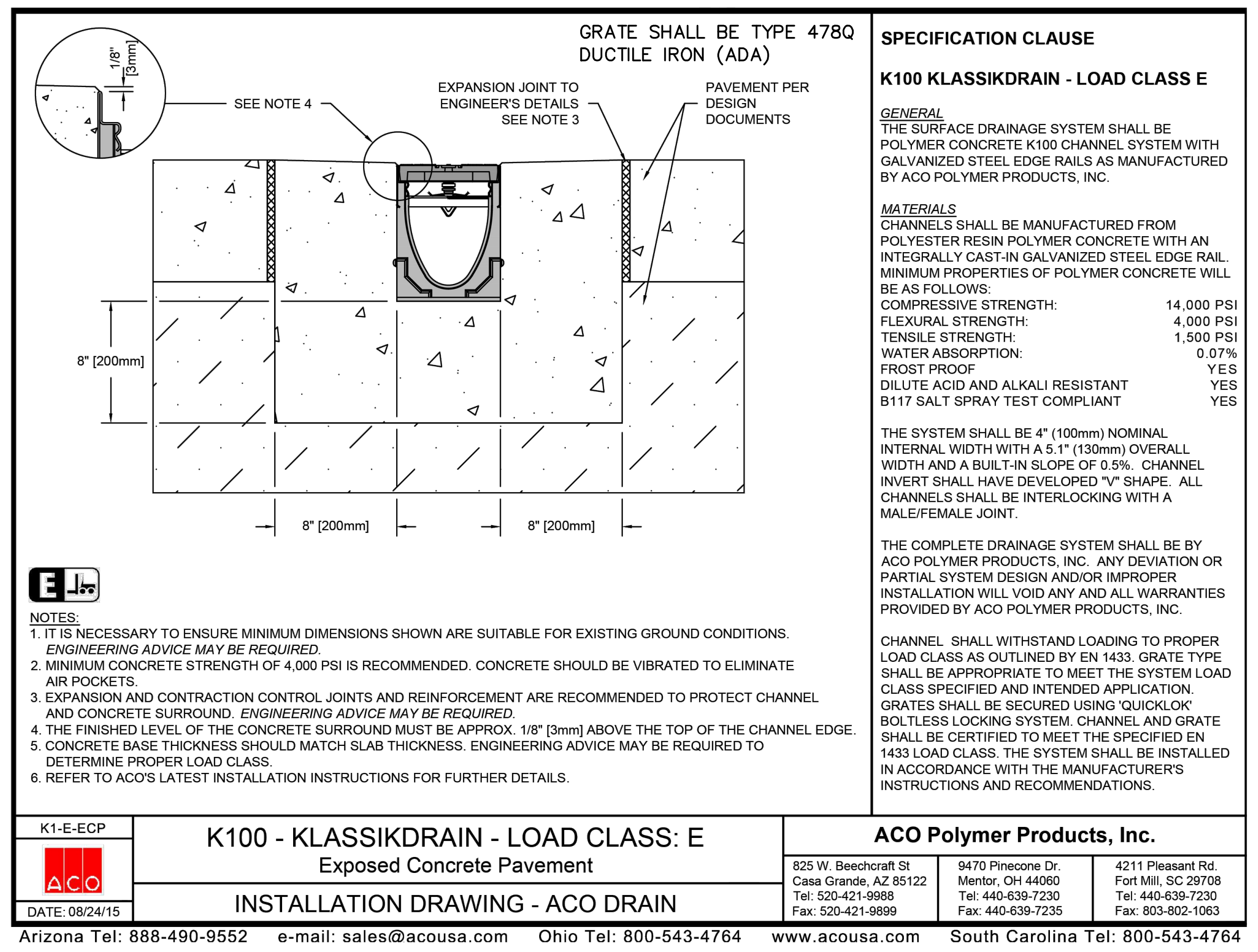


DECIDUOUS TREE - PLANTING DETAIL

SCALE : NTS



NOTES:
1. IT IS NECESSARY TO ENSURE MINIMUM DIMENSIONS SHOWN ARE SUITABLE FOR EXISTING GROUND CONDITIONS. *ENGINEERING ADVICE MAY BE REQUIRED.*
2. MINIMUM CONCRETE STRENGTH OF 4,000 PSI IS RECOMMENDED. CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
3. EXPANSION AND CONTRACTION CONTROL JOINTS AND REINFORCEMENT ARE RECOMMENDED TO PROTECT CHANNEL AND CONCRETE SURROUND. *ENGINEERING ADVICE MAY BE REQUIRED.*
4. THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. 1/8" [3mm] ABOVE THE TOP OF THE CHANNEL EDGE.
5. CONCRETE BASE THICKNESS SHOULD MATCH SLAB THICKNESS. ENGINEERING ADVICE MAY BE REQUIRED TO DETERMINE PROPER LOAD CLASS.
6. REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

SPECIFICATION CLAUSE

K100 KLASSIKDRAIN - LOAD CLASS E

GENERAL
THE SURFACE DRAINAGE SYSTEM SHALL BE POLYMER CONCRETE K100 CHANNEL SYSTEM WITH GALVANIZED STEEL EDGE RAILS AS MANUFACTURED BY ACO POLYMER PRODUCTS, INC.

MATERIALS
CHANNELS SHALL BE MANUFACTURED FROM POLYESTER RESIN POLYMER CONCRETE WITH AN INTEGRALLY CAST-IN GALVANIZED STEEL EDGE RAIL. MINIMUM PROPERTIES OF POLYMER CONCRETE WILL BE AS FOLLOWS:

COMPRESSIVE STRENGTH:	14,000 PSI
FLEXURAL STRENGTH:	4,000 PSI
TENSILE STRENGTH:	1,500 PSI
WATER ABSORPTION:	0.07%
FROST PROOF	YES
DILUTE ACID AND ALKALI RESISTANT	YES
B117 SALT SPRAY TEST COMPLIANT	YES

THE SYSTEM SHALL BE 4" (100mm) NOMINAL INTERNAL WIDTH WITH A 5.1" (130mm) OVERALL WIDTH AND A BUILT-IN SLOPE OF 0.5%. CHANNEL INVERT SHALL HAVE DEVELOPED "V" SHAPE. ALL CHANNELS SHALL BE INTERLOCKING WITH A MALE/FEMALE JOINT.

THE COMPLETE DRAINAGE SYSTEM SHALL BE BY ACO POLYMER PRODUCTS, INC. ANY DEVIATION OR PARTIAL SYSTEM DESIGN AND/OR IMPROPER INSTALLATION WILL VOID ANY AND ALL WARRANTIES PROVIDED BY ACO POLYMER PRODUCTS, INC.

CHANNEL SHALL WITHSTAND LOADING TO PROPER LOAD CLASS AS OUTLINED BY EN 1433. GRATE TYPE SHALL BE APPROPRIATE TO MEET THE SYSTEM LOAD CLASS SPECIFIED AND INTENDED APPLICATION. GRATES SHALL BE SECURED USING 'QUICKLOK' BOLTLESS LOCKING SYSTEM. CHANNEL AND GRATE SHALL BE CERTIFIED TO MEET THE SPECIFIED EN 1433 LOAD CLASS. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

K1-E-ECP
ACO
DATE: 08/24/15

K100 - KLASSIKDRAIN - LOAD CLASS: E
Exposed Concrete Pavement
INSTALLATION DRAWING - ACO DRAIN

ACO Polymer Products, Inc.

825 W. Beechcraft St
Casa Grande, AZ 85122
Tel: 520-421-9988
Fax: 520-421-9899

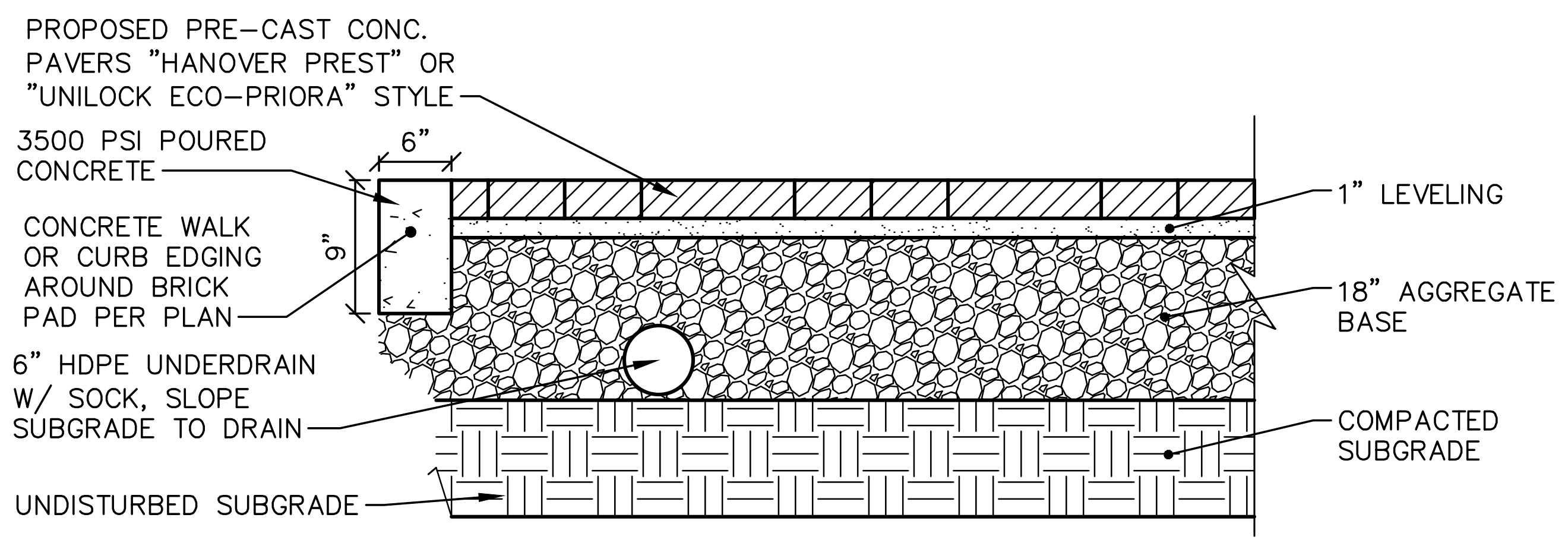
9470 Pinecone Dr.
Mentor, OH 44060
Tel: 440-639-7230
Fax: 440-639-7235

4211 Pleasant Rd.
Fort Mill, SC 29708
Tel: 440-639-7230
Fax: 803-802-1063

Arizona Tel: 888-490-9552 e-mail: sales@acousa.com Ohio Tel: 800-543-4764 www.acousa.com South Carolina Tel: 800-543-4764

TRENCH DRAIN DETAIIL

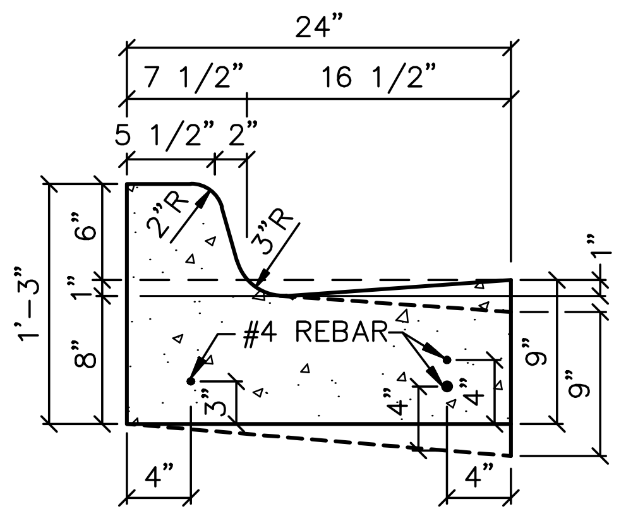
SCALE : NTS



CONCRETE PAVER DETAIL

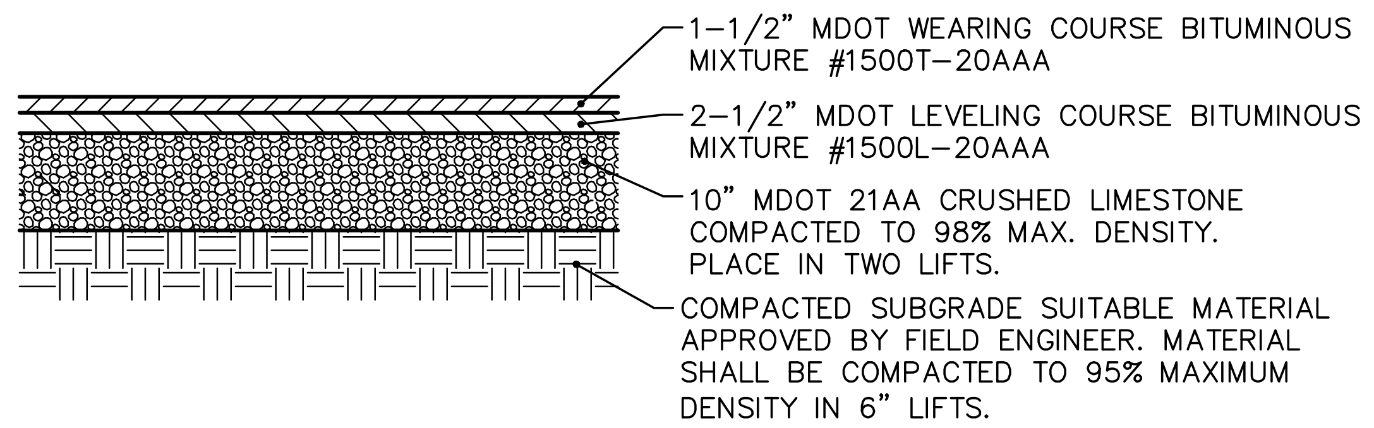
NOT TO SCALE

STEEL EDGING W/ 18" STAKES



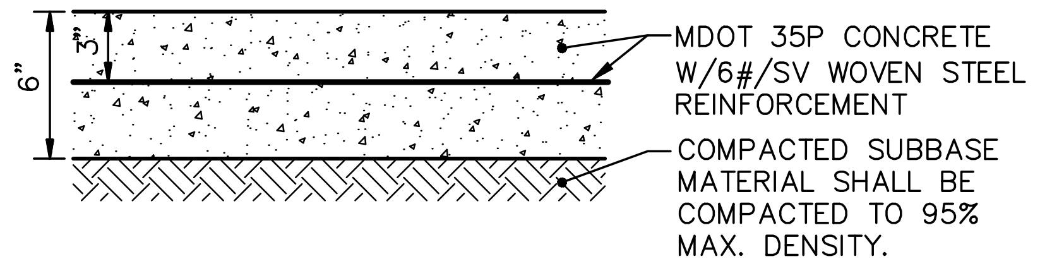
STANDARD CURB

SCALE : NTS



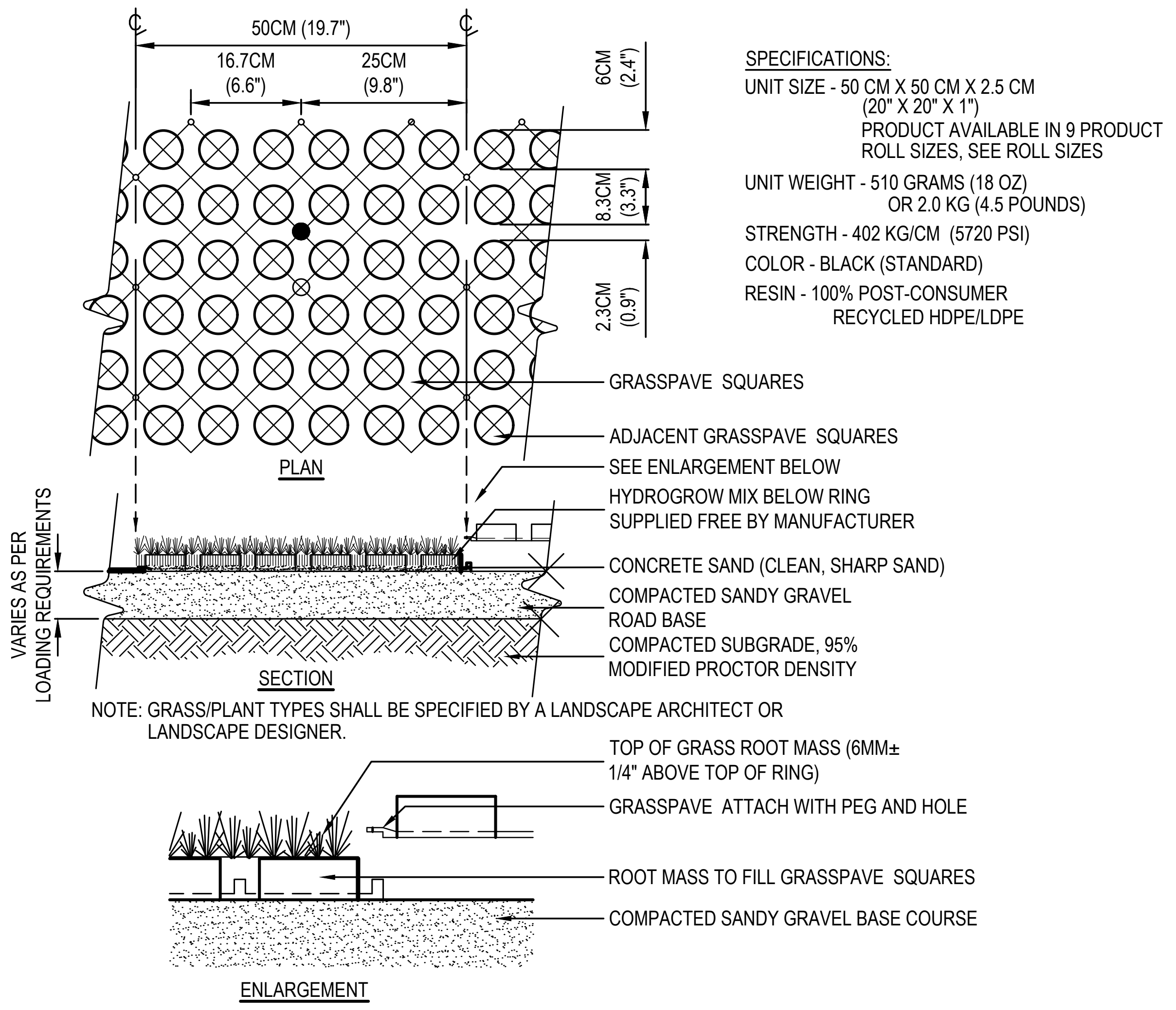
HEAVY DUTY BIT. PAVEMENT DETAIL

FOR USE IN TRUCK TRAFFIC AREA NOT TO SCALE



HEAVY DUTY CONCRETE PAVEMENT

SCALE : NTS

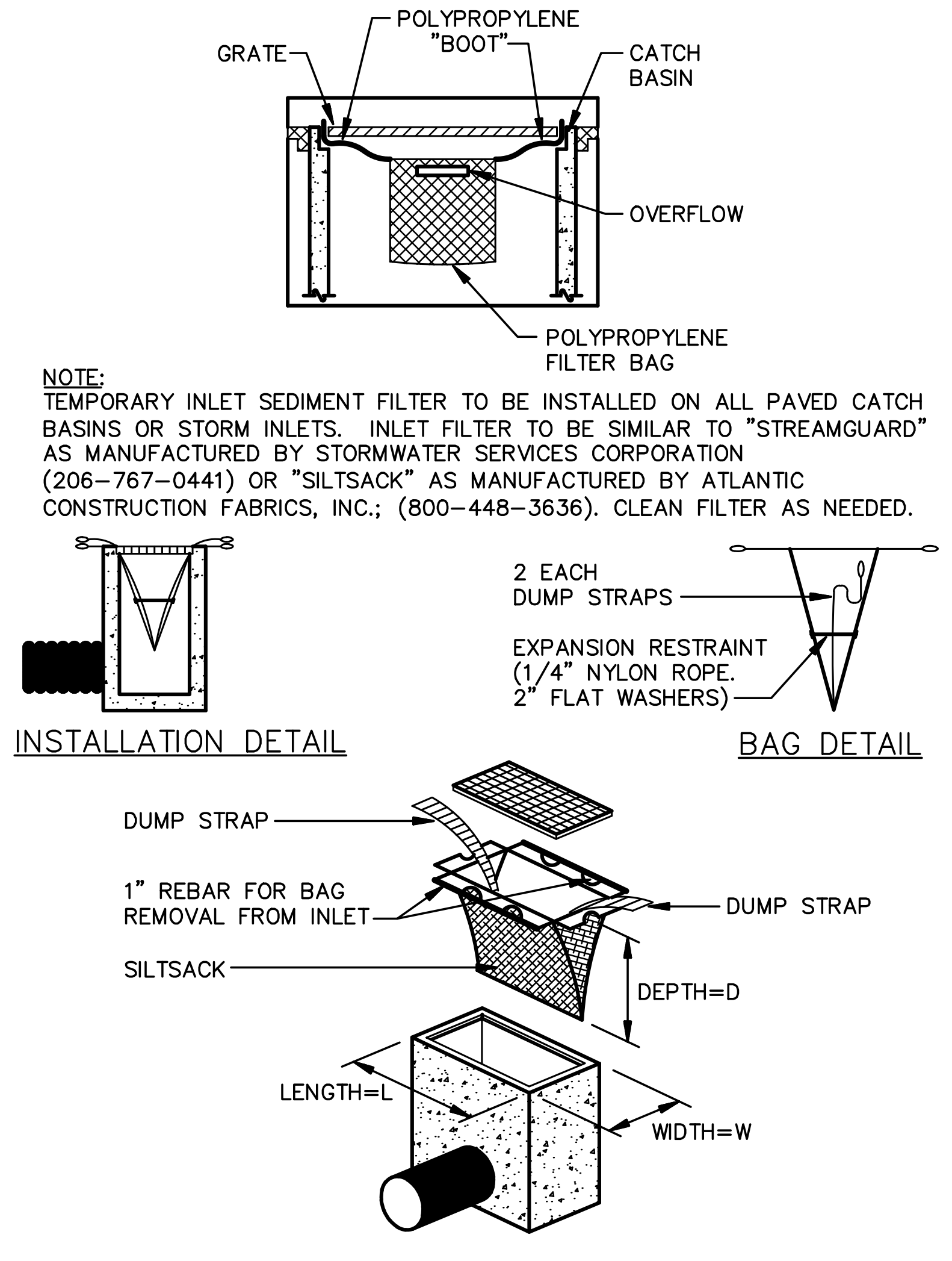


SPECIFICATIONS:
UNIT SIZE - 50 CM X 50 CM X 2.5 CM (20" X 20" X 1")
PRODUCT AVAILABLE IN 9 PRODUCT ROLL SIZES, SEE ROLL SIZES
UNIT WEIGHT - 510 GRAMS (18 OZ) OR 2.0 KG (4.5 POUNDS)
STRENGTH - 402 KG/CM (5720 PSI)
COLOR - BLACK (STANDARD)
RESIN - 100% POST-CONSUMER RECYCLED HDPE/LDPE

NOTE: GRASS/PLANT TYPES SHALL BE SPECIFIED BY A LANDSCAPE ARCHITECT OR LANDSCAPE DESIGNER.

GRASSPAVE2 PARKING LOT DETAIL

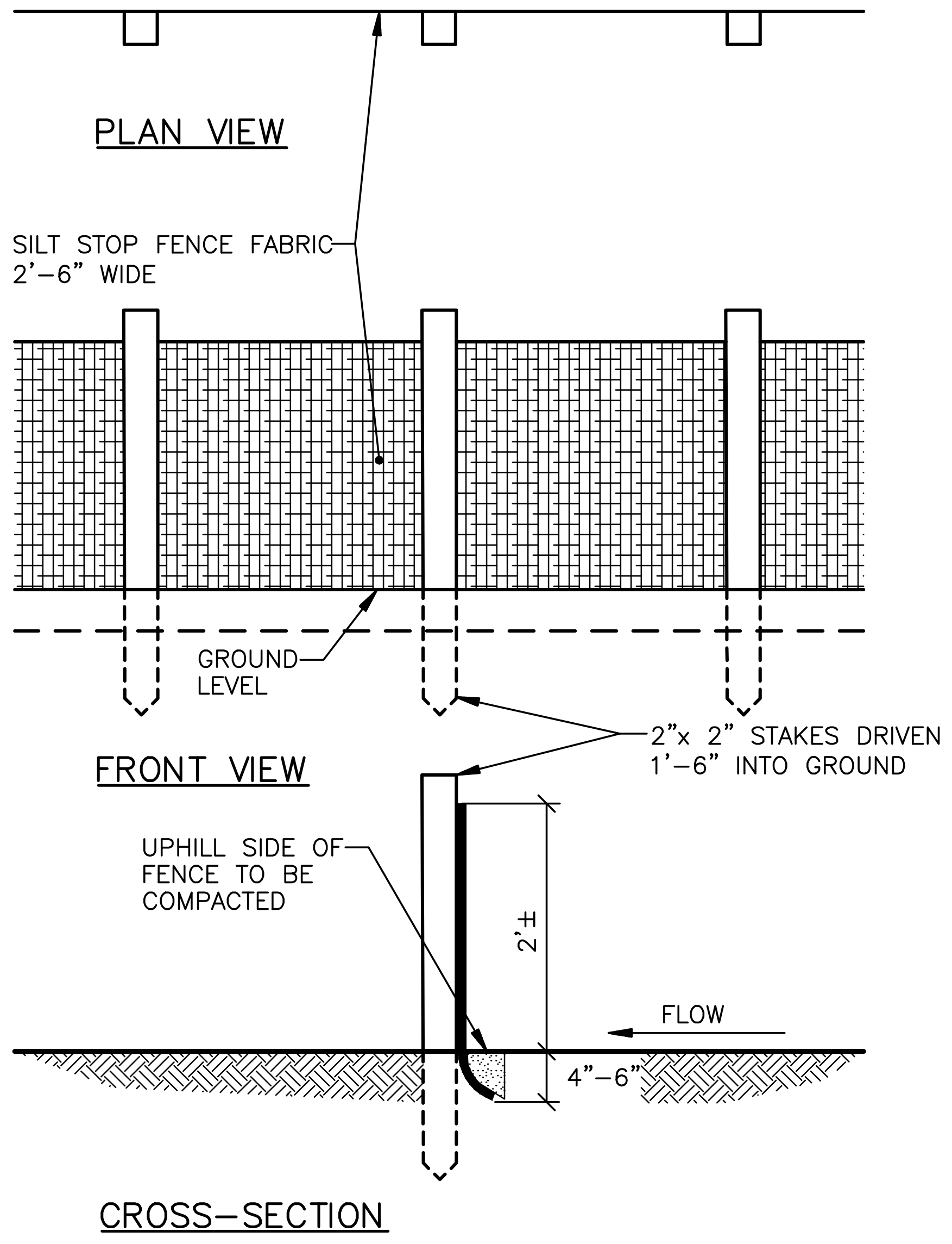
SCALE : NTS



NOTE:
TEMPORARY INLET SEDIMENT FILTER TO BE INSTALLED ON ALL PAVED CATCH BASINS OR STORM INLETS. INLET FILTER TO BE SIMILAR TO "STREAMGUARD" AS MANUFACTURED BY STORMWATER SERVICES CORPORATION (206–767–0441) OR "SILTSACK" AS MANUFACTURED BY ATLANTIC CONSTRUCTION FABRICS, INC.; (800–448–3636). CLEAN FILTER AS NEEDED.

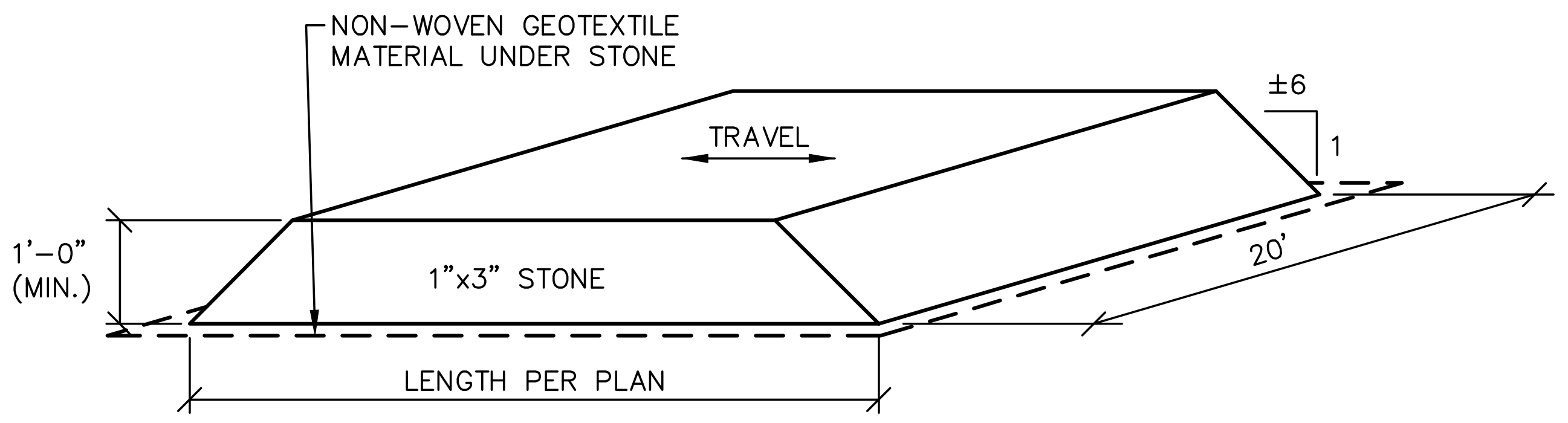
SILT SACK DETAIL 59t

NO SCALE



SILT FENCE DETAIL 55t

NOT TO SCALE



GRAVEL MUD TRACKING MAT 60t

NOT TO SCALE

MIDWESTERN
CONSULTING
3815 Plaza Drive Ann Arbor, Michigan 48108
(734) 995-0200 • www.midwesternconsulting.com

CLIENT
GREENHILLS SCHOOL
850 GREENHILLS DRIVE
ANN ARBOR, MI 48105
JOHN NICKEL
734.205.4059

GREENHILLS NORTH ADDITION

SITE PLAN
SITE DETAILS

15

DATE: 7/31/25
SHEET 15 OF 17
CADD:
ENG: HTH
PM: HTH
TECH:
23313DT01
FB#

JOB No. **23313**

REVISIONS:	REV. DATE
PER MUNICIPAL REVIEW	12/19/25
PER MUNICIPAL REVIEW	3/19/26

KEY NOTES

Ⓐ EXISTING VISIONAIRE CONCOURSE LED LUMINAIRE.
REPLACE EXISTING 5000K, 70 CRI BOARD WITH RETROFIT 3000K, 70 CRI BOARD FROM MANUFACTURER. EXISTING MODEL NO. CON-2-T3-80LC-7-5K-UNV-BOA6-BZ-CLS. EXISTING POLE TO REMAIN. FIELD VERIFY EXISTING PRIOR TO ORDERING.

Ⓑ EXISTING VISIONAIRE CONCOURSE LED LUMINAIRE.
REPLACE EXISTING 5000K, 70 CRI BOARD WITH RETROFIT 3000K, 70 CRI BOARD FROM MANUFACTURER. EXISTING MODEL NO. CON-2-T5-80LC-7-5K-UNV-SM-BZ. EXISTING POLE TO REMAIN. FIELD VERIFY EXISTING PRIOR TO ORDERING.

Ⓒ EXISTING VISIONAIRE CONCOURSE LED LUMINAIRE.
REPLACE EXISTING 5000K, 70 CRI BOARD WITH RETROFIT 3000K, 70 CRI BOARD FROM MANUFACTURER. EXISTING MODEL NO. CON-2-T3-80LC-7-5K-UNV-BOA6-BZ. EXISTING POLE TO REMAIN. FIELD VERIFY EXISTING PRIOR TO ORDERING.

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architecture engineering interiors & technology
1441 west long lake, suite 200
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5211 cascade road SE, suite 300
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Ann Arbor, MI 48108	Ann Arbor, MI 48104
734-995-0200	734-213-6091
www.midwesternconsulting.com	www.sdistructures.com

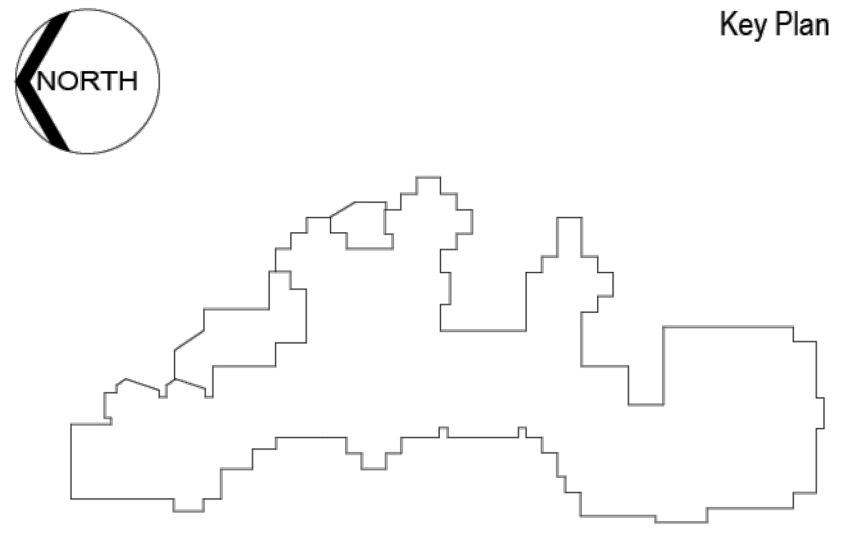
Project Title

Greenhills Schools

North Addition

805 Greenhills Dr
Ann Arbor, MI 48105

Key Plan



Project Administrator
C. Azar
Project Designer
N. Friedrich
Project Architect / Engineer
N. Friedrich
Drawn By
N. Friedrich
Q.M. Review
J. DuShane
Approved
S. Batzold
Drawing Scale
1" = 40'-0"

Issued for	Issue Date

IDS Drawing Title

Electrical Site Plan

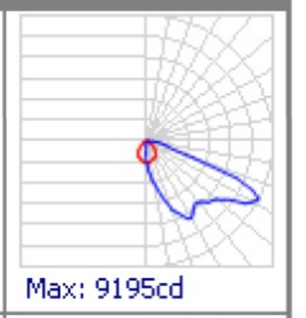
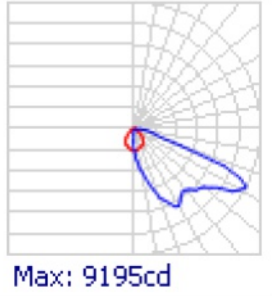
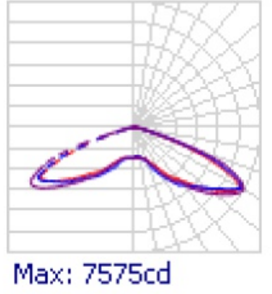
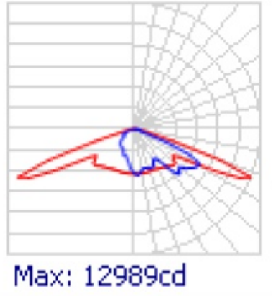
16

iDS Project Number
23203-2000

Drawing Number
ES.01

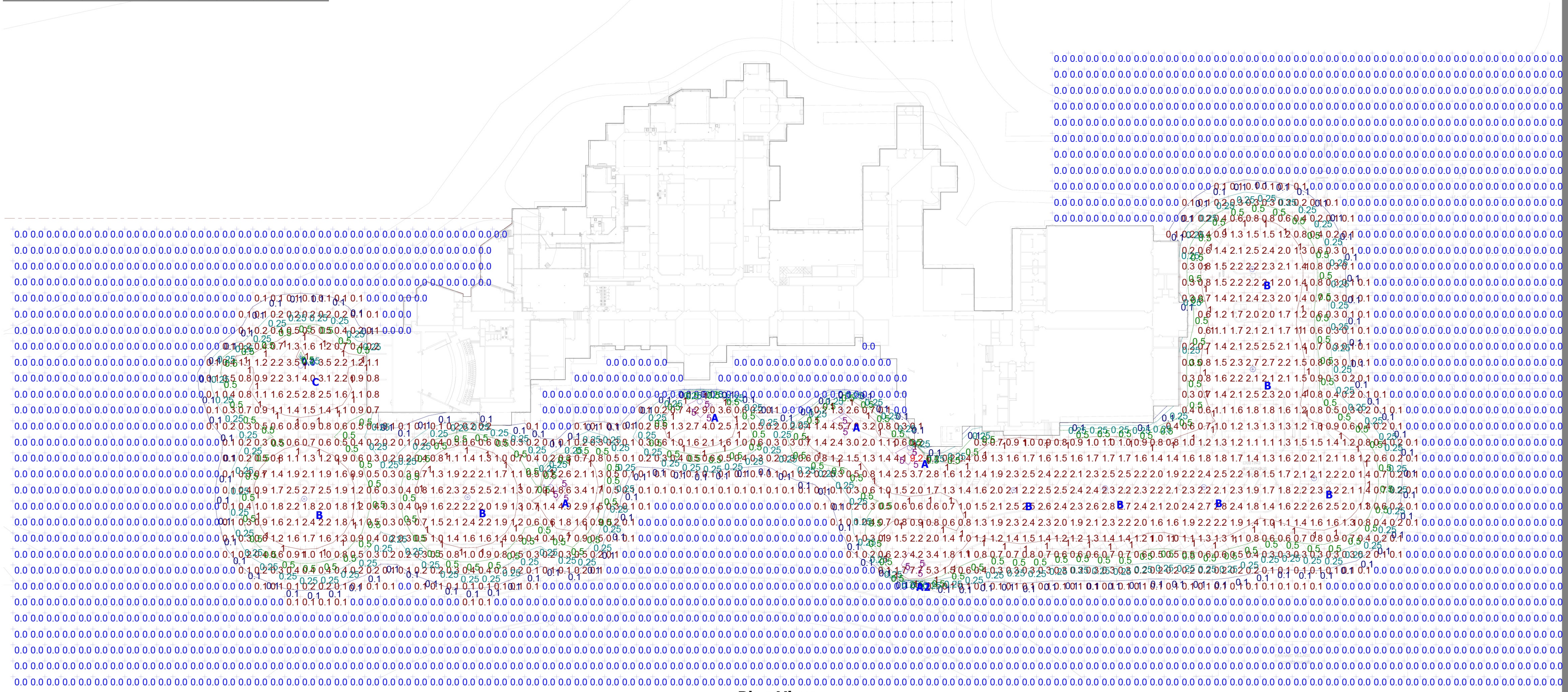
3/6/2026 2:37:59 PM Autodesk Docs://Greenhills School (2023)/Greenhills School-E23.rvt

Schedule

Symbol	Label	QTY	Number Lamps	Lumens per Lamp	LLF	Wattage	Polar Plot
	A	4	1	11352	0.9	173	 Max: 9195cd
	A2	1	1	11352	0.9	173	 Max: 9195cd
	B	8	1	21976	0.9	173.3	 Max: 7575cd
	C	1	1	21209	0.9	175	 Max: 12989cd

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	0.2 fc	9.2 fc	0.0 fc	N/A	N/A

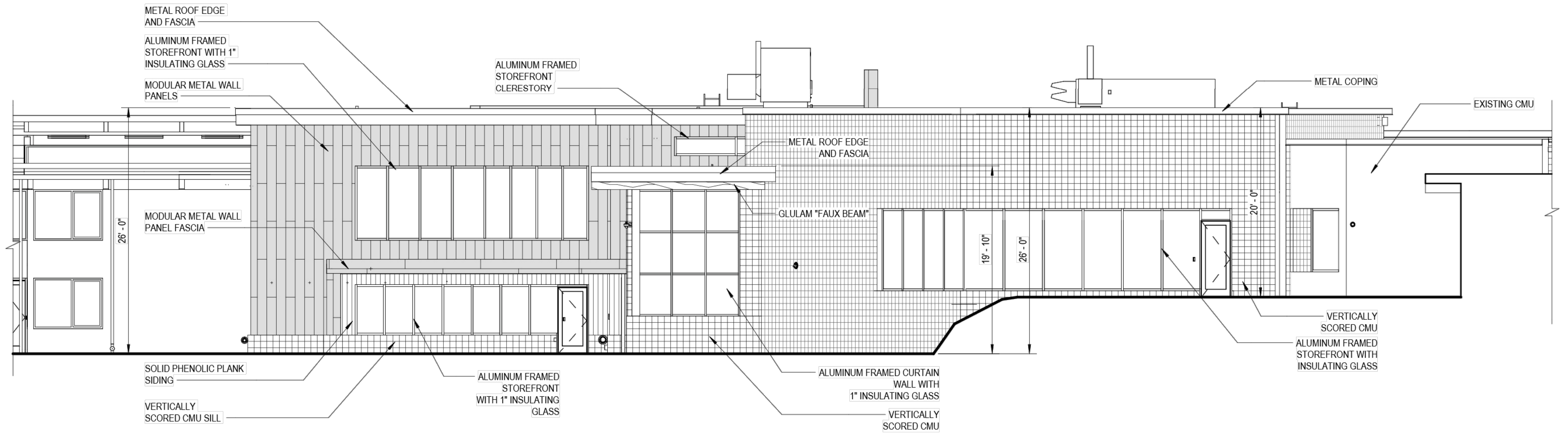


Plan View

Greenhills Schools
23230-1000
Existing Site Lighting Calculations with retrofit 3000K LED boards

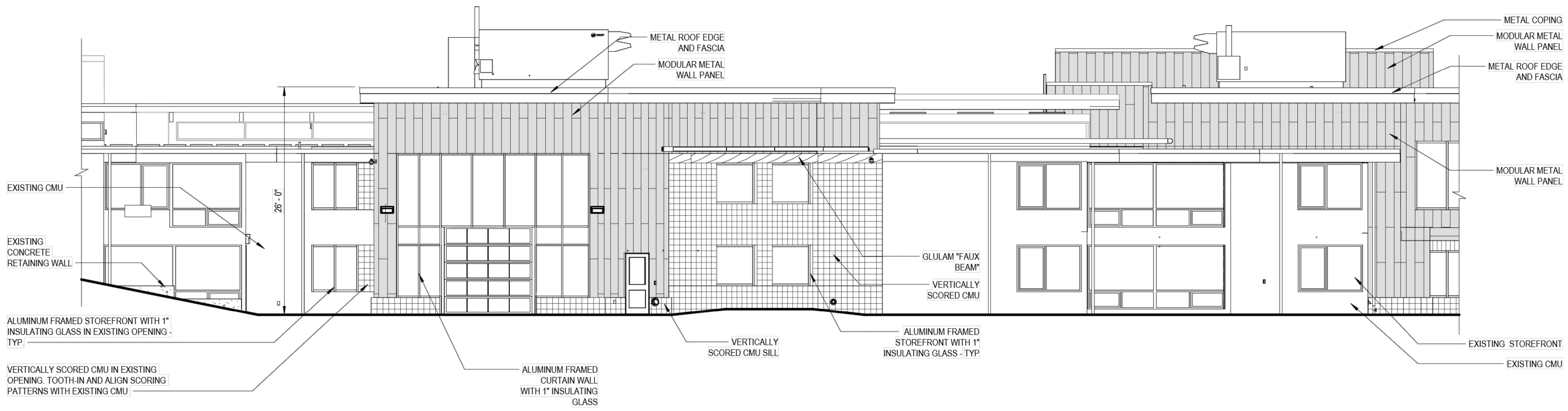
Designer
IDS - NJF
Date
02/24/2026
Scale
Not to Scale
Drawing No.

Summary **17**



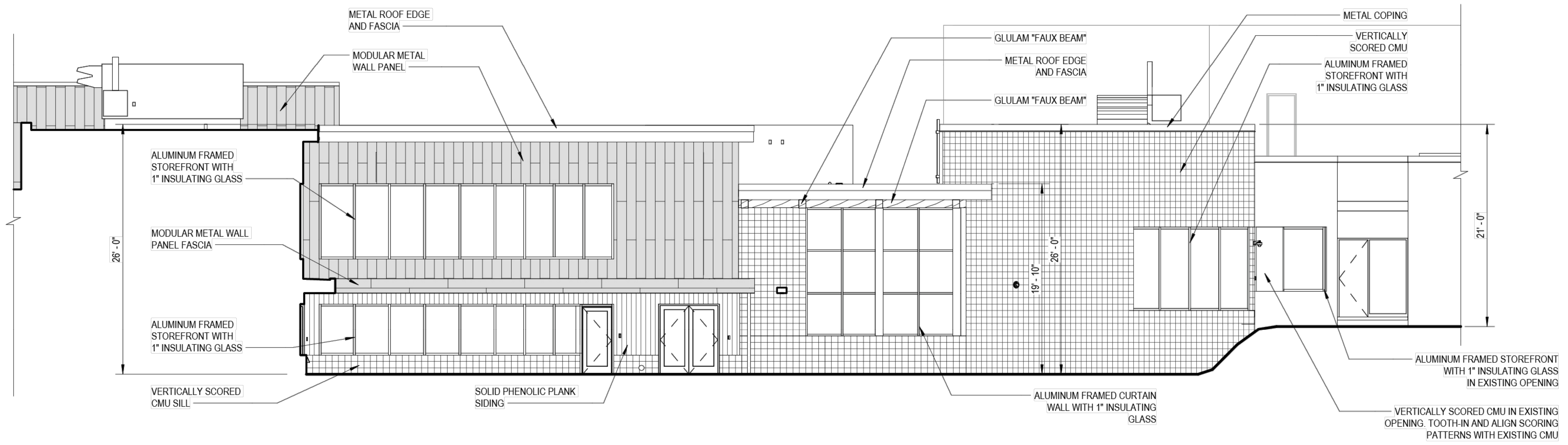
3 / A0.1 PARTIAL NORTH ELEVATION - AREA A

1/8" = 1'-0"



2 / A0.1 PARTIAL EAST ELEVATION - AREA B

1/8" = 1'-0"



1 / A0.1 PARTIAL EAST ELEVATION - AREA A

1/8" = 1'-0"

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Project Title

Greenhills Schools

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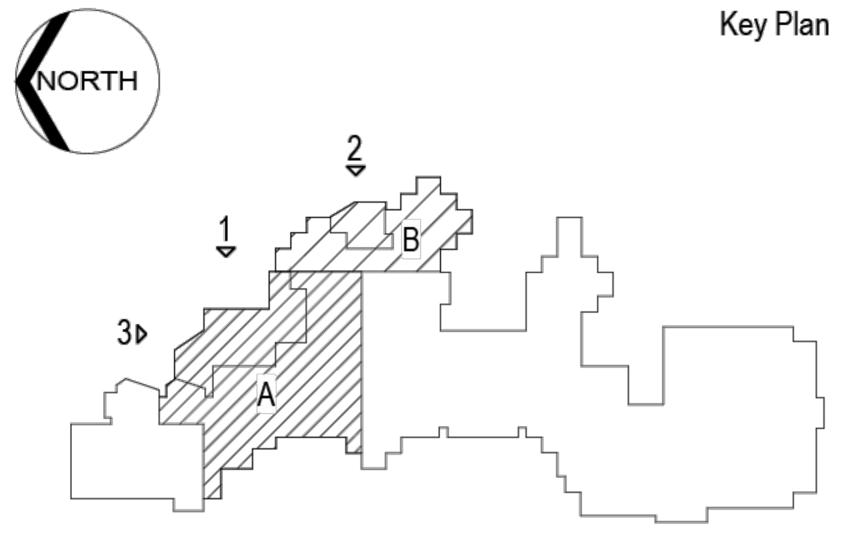
Key Plan



Project Administrator
C.Azar

Project Designer
J.Klee

Project Architect / Engineer
B.Jones

Drawn By
B. Jones

Q.M. Review
QM

Approved
B.Sundberg

Drawing Scale
As Noted

Issued for	Issue Date
Site Plan Approval	07/31/2025

IDS Drawing Title

Exterior Elevations

18

iDS Project Number
23203-2000

Drawing Number
A4. 0