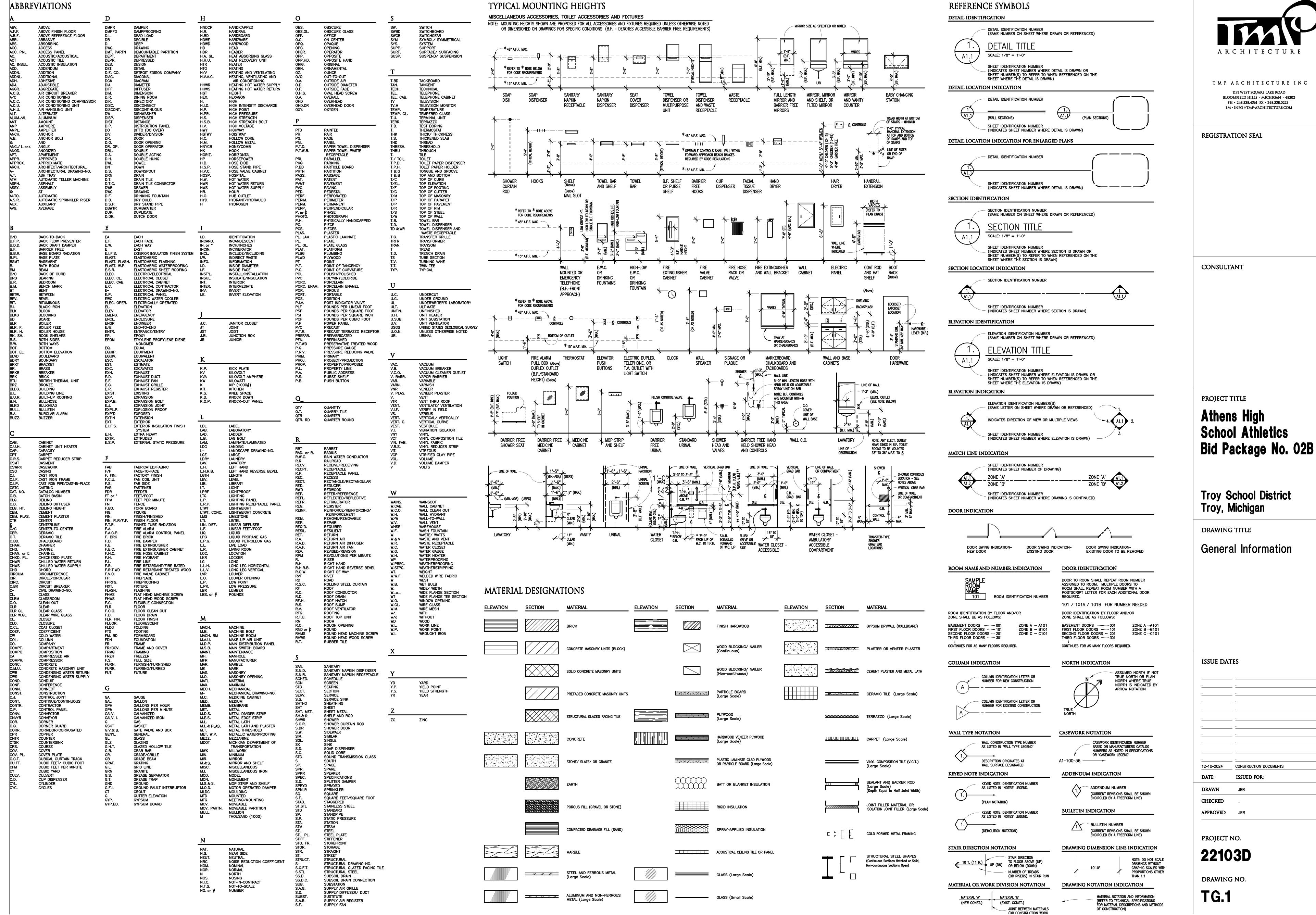
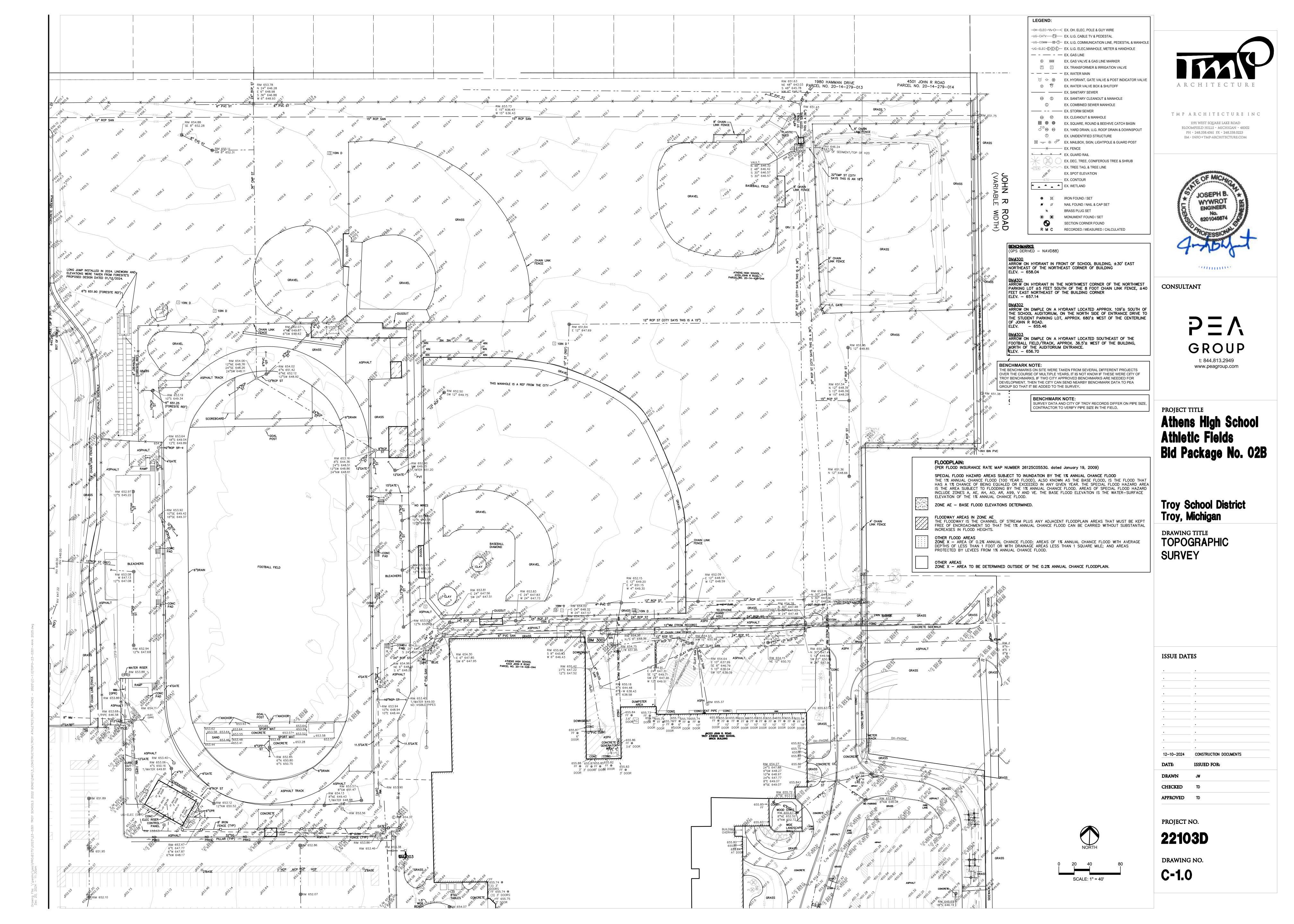


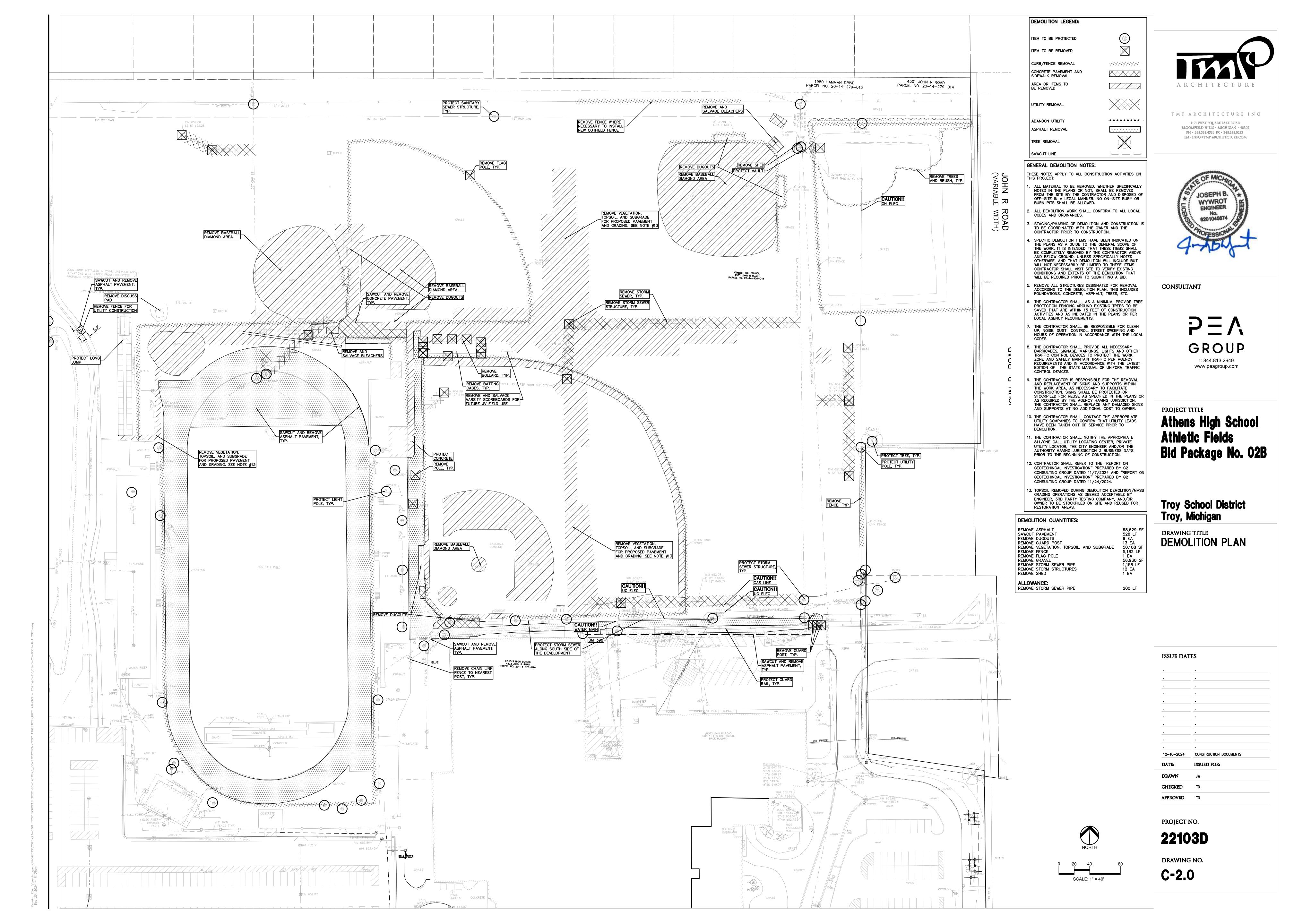
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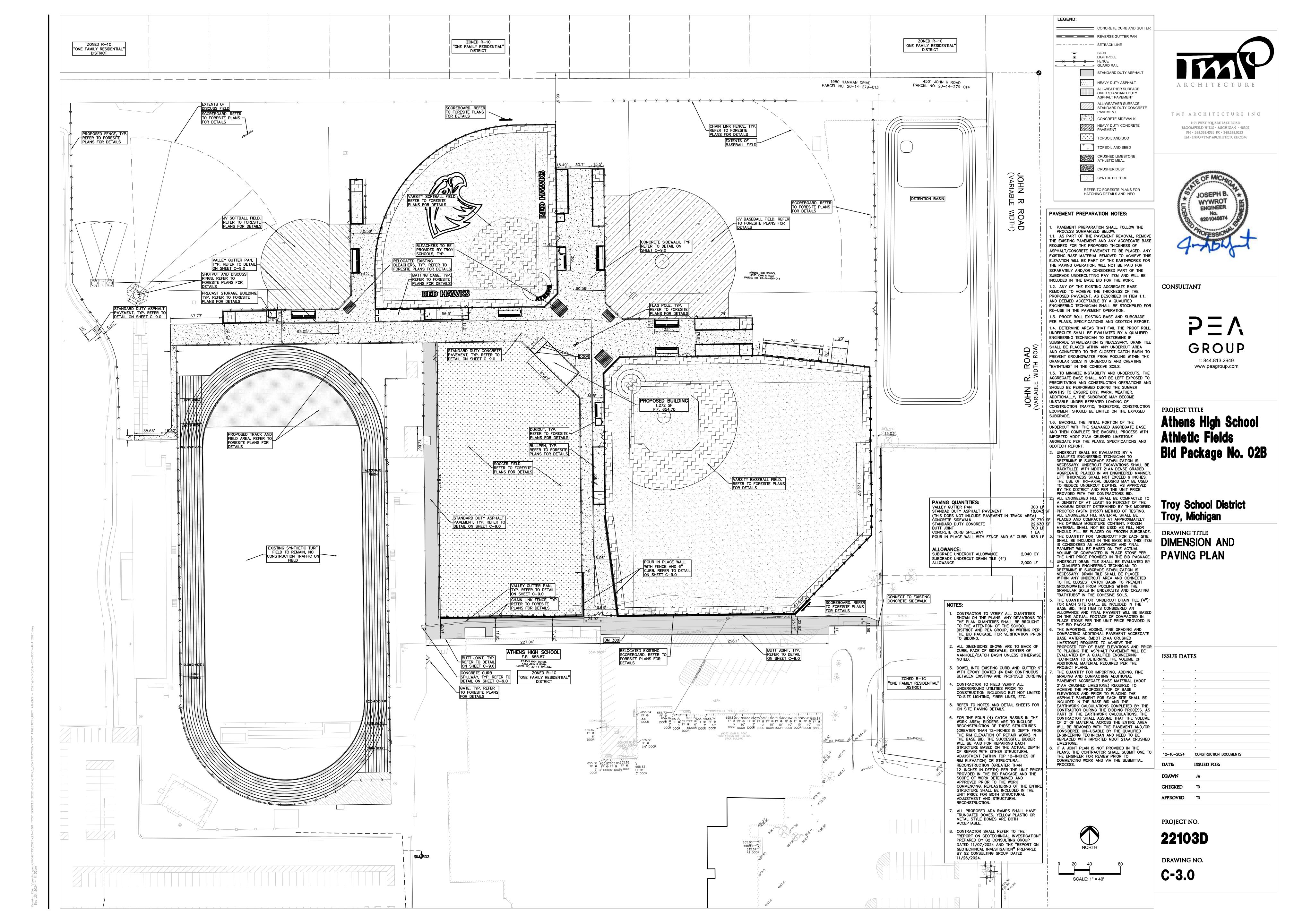


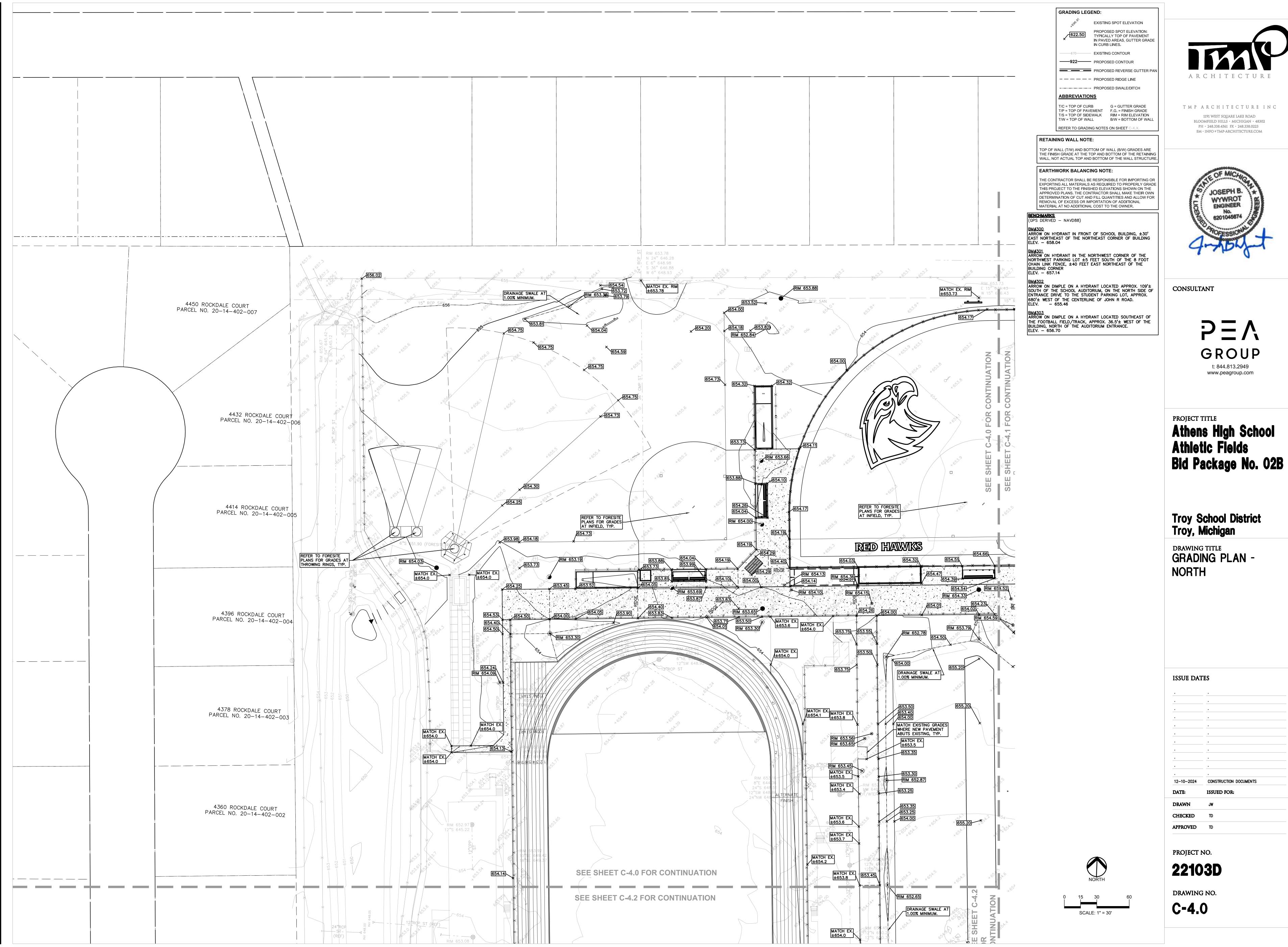
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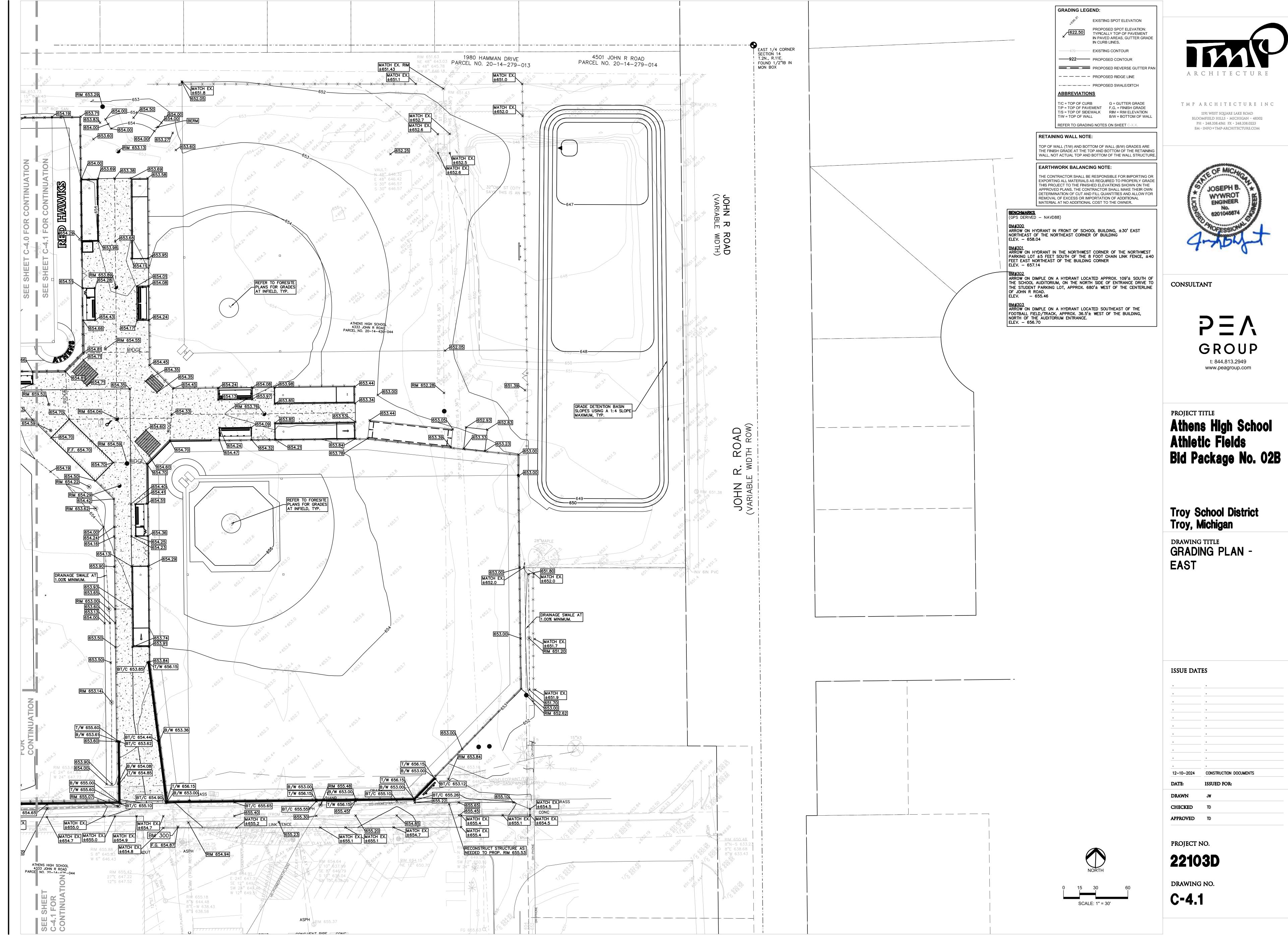
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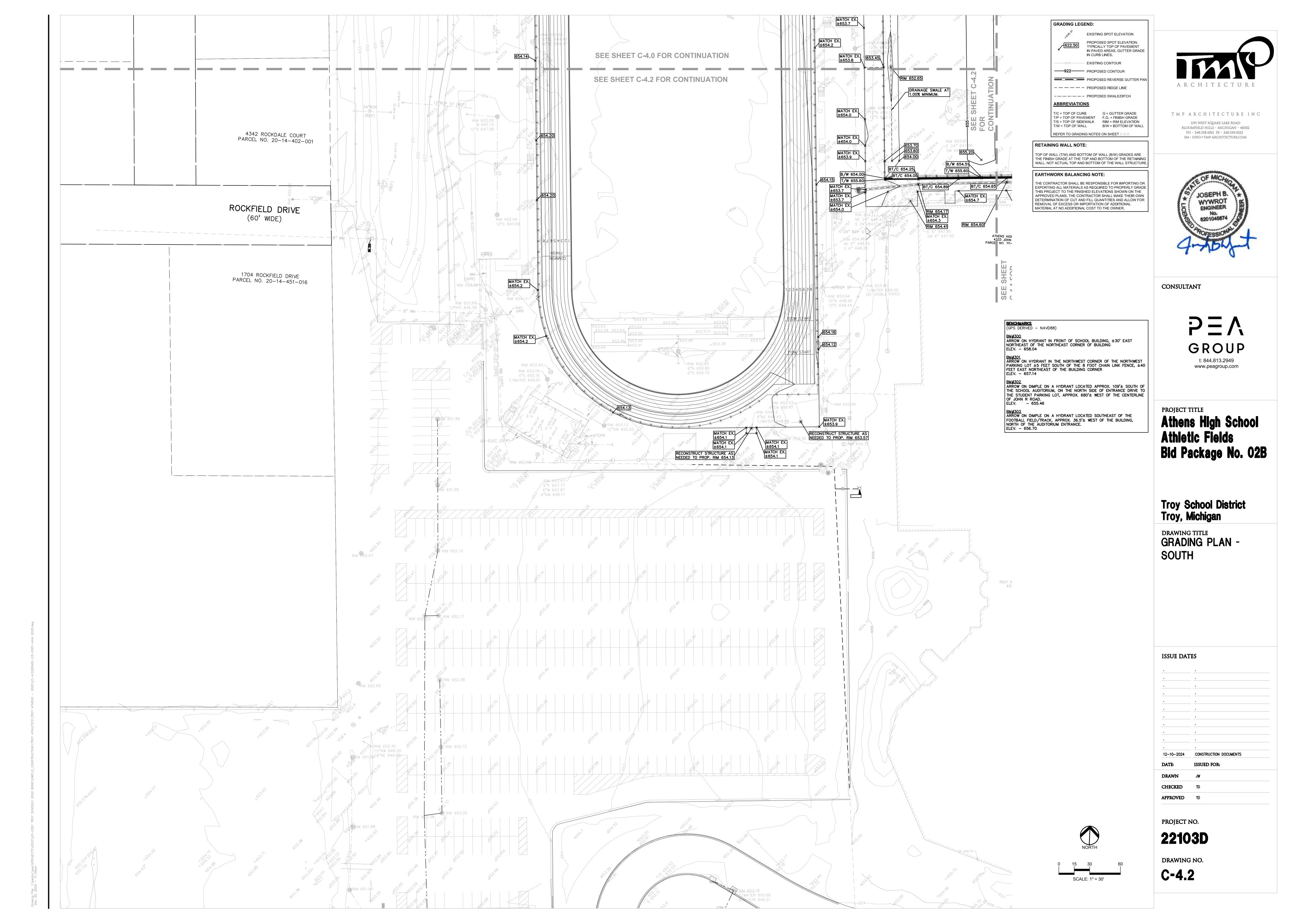


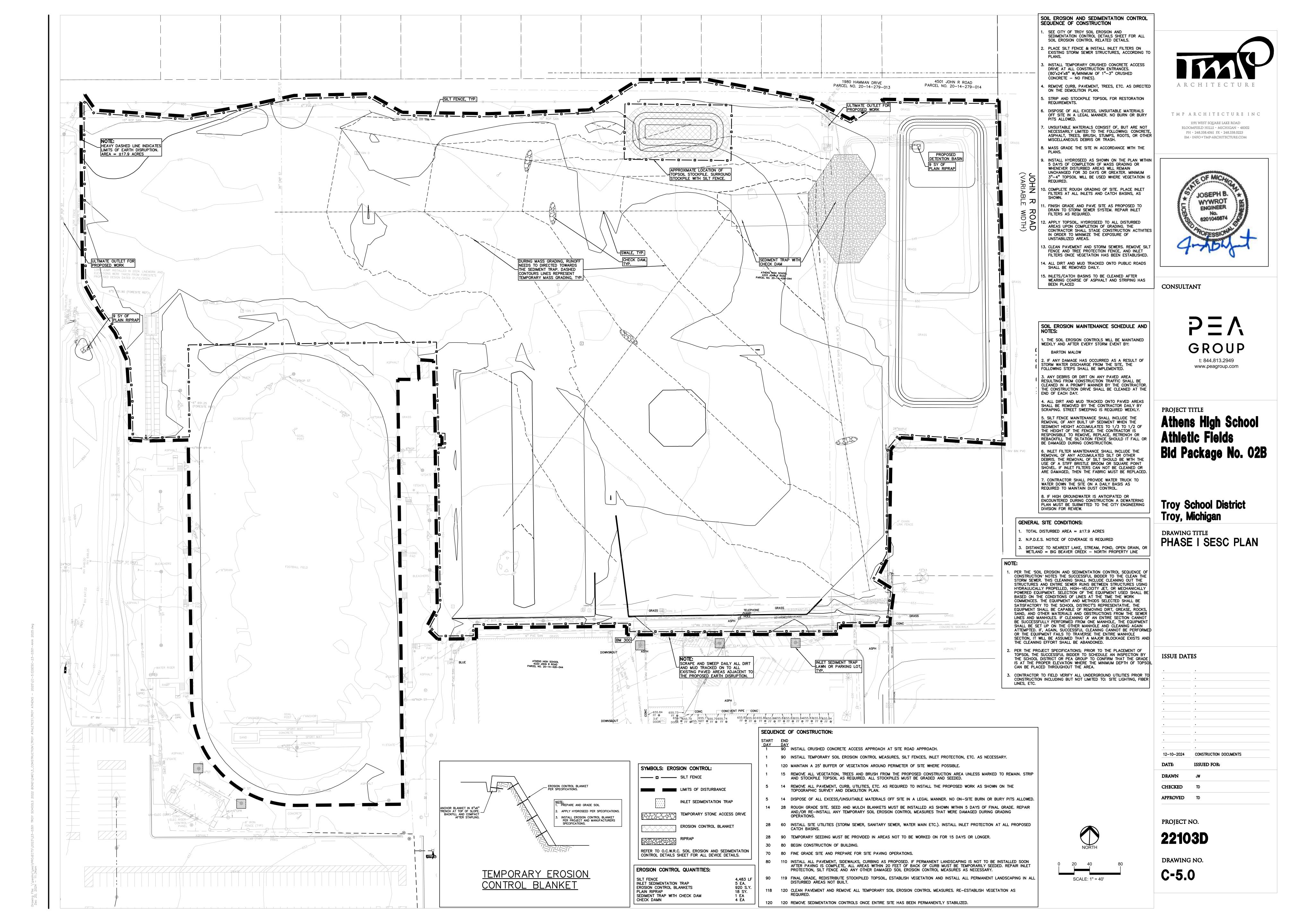


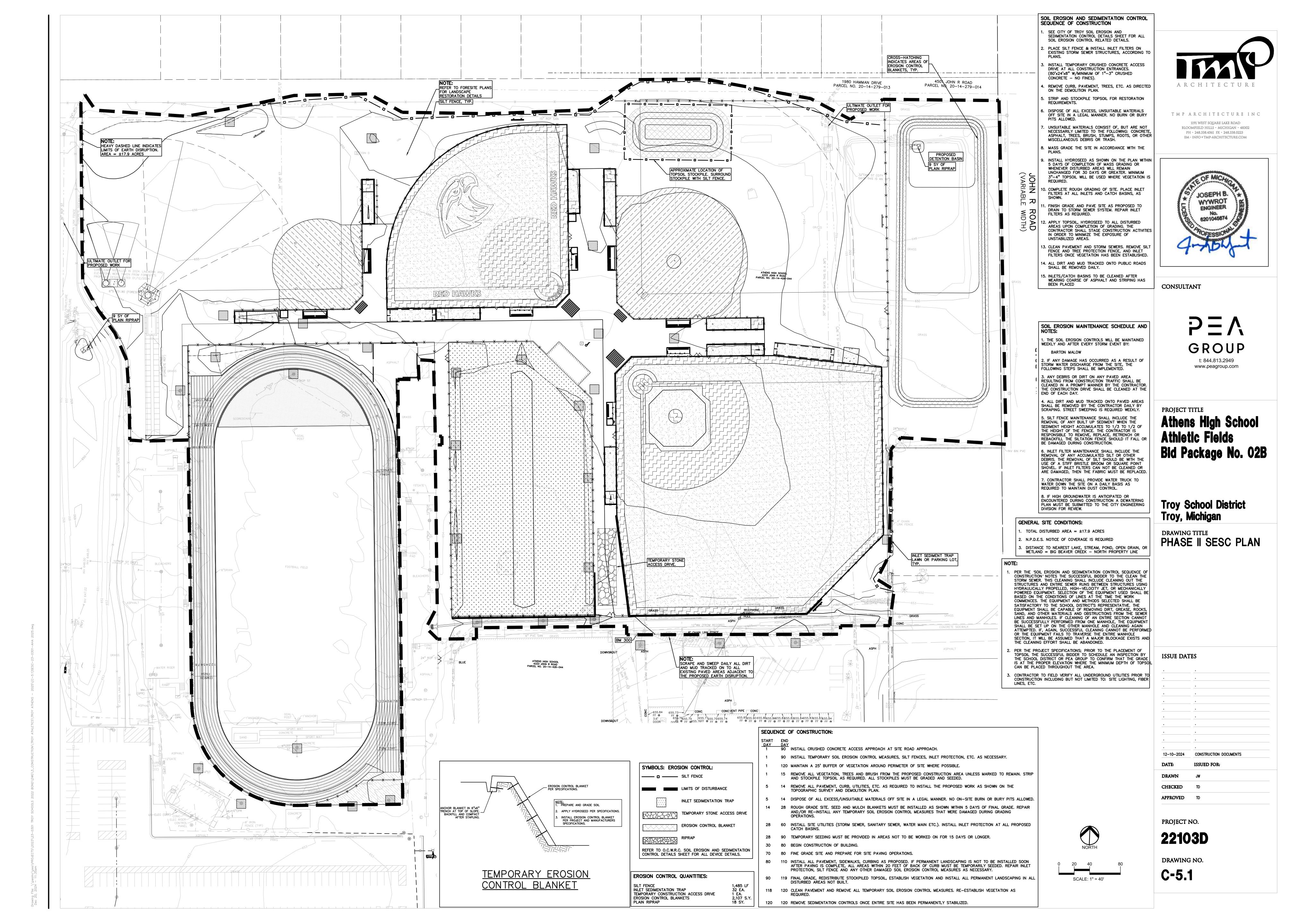


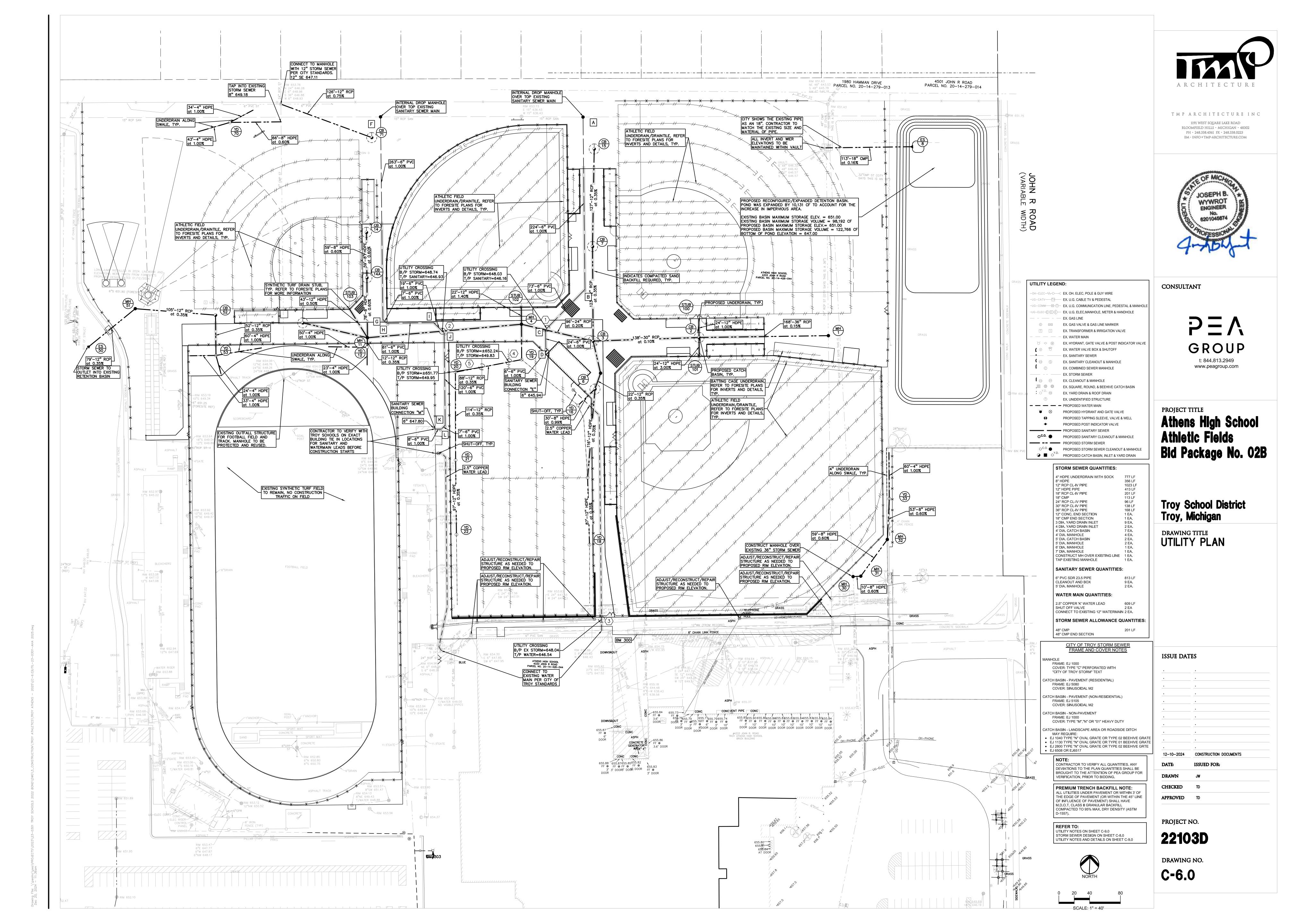












Site Drainage Data					
Select County:	Oakland				
Existing					
Natural Greenspace area:	4.60	acre		C =	0.30
Select NCRS Soil type:	D				
Improved Greenspace area:		acre		C =	0.30
Select NCRS Soil type:	D				
Wooded Area:		acre		C =	0.30
Select NCRS Soil type:	D				
Impervious Area:	0.00	acre		C =	0.95
Greenbelt Area:	4.60	acre		C =	0.30
Total Area (A):	4.60	acre			
Weighted Coefficient of Runo	off (C):		0.30		
Proposed					
Natural Greenspace area:	0.00	acre		C =	0.30
Select NCRS Soil type:	D				
Improved Greenspace area:	0.00	acre		C =	0.30
Select NCRS Soil type:	D				
Turf/Clay/Sand Area:	4.47	acre		C =	0.63
Select NCRS Soil type:	D				
Impervious Area:	0.13	acre		C =	0.95
Greenbelt Area:	4.47	acre		C =	0.63
Total Area (A):	4.60	acre			
Weighted Coefficient of Runo	off (C):		0.63		
Rainfall Intensity					
Flood Control Time of Conce	ntration, Tc =		20.00	minutes	
Rainfall Intensity			12/	18/2024 Detcalc	s V2.02

Flood Control Time of Concentration, Tc =	20.00 min	utes
	12/18/2024	Detcalcs V2.02
Rainfall Intensity		
Time of Concentration (T _C)	20.00	min
Since 15 <tc<60, equation<="" intensity="" td="" use=""><td></td><td></td></tc<60,>		
I1 = 30.2 /[(T + 9.17)^.81]		in/hr
I10 = 50.12 / [(T + 9.17)^.81]		in/hr
I100 = 83.3/[(T + 9.17)^.81]	5.42	in/hr
CPVC: Channel Protection Volume Control Vo	lume	
Vcpvc = (4719)CA	13,676	cf
CPRC: Channel Protection Rate Control Volum	ne: Extended l	Detentio
Ved= (6897)CA	19,988	
Q _{VED} = V _{ED} / (48*60*60)	0.12	
Forebay Calculations		
Forebay Volume = (545)CA	1,579	
Forebay Release Rate: QVF = VF/(48*60*60)	0.01	cfs
100-Year Allowable Outlet Rate		
Since 2 <a<100, qvrr="1.1055-0.206xln(A)</td"><td></td><td></td></a<100,>		
Q _{VRR} =	0.79	cfs/ac
400 Ve av Back Allewahle Bischerus		
100-Year Peak Allowable Discharge	4.00	
Area, A =	4.60	
$Q_{100P} = Q_{VRR}(A)$	3.64	cts
100-Year Runoff Volume		
V100R = (18,985)CA	55,019	cf
100-Year Peak Inflow		
500 01 01 00 000 000 00 00 000 00 000 00	15.71	ofo
$Q_{100IN} = C(I_{100})A$	15.71	CIS
Storage Curve Factor (Vs/Vr)		
$R = 0.206-0.15 \times In(Q100P/Q100IN)$	0.425	
100-Year Storage Volume		
Vs = R(V100R)	23,383	cf
VS - IX(V 100IX)	23,303	CI .
No infiltration will be provided, so no CPVC de		
V100D = Vs	23,383	cf
V _{100D} must be larger or equal to V _{ED} :		
Is V _{100D} >= V _{ED} ?	Yes	
V _{100D} =	23,383	cf

STORM WATER NARRATIVE:

THE MODIFICATIONS TO THE SITE ASSOCIATED WITH THIS PROJECT WILL BRING ABOUT A SLIGHT INCREASE IN THE IMPERVIOUS SURFACE FOR THE DRAINAGE AREA. CALCULATIONS WERE PERFORMED TO DETERMINE THE INCREASE IN STORAGE VOLUME REQUIRED BY THIS INCREASE IN IMPERVIOUS SURFACE AND THE DETENTION BASIN WILL BE REGRADED TO PROVIDE THE ADDITIONAL VOLUME NECESSARY.

THE PROPOSED SITE DEVELOPMENT ADDS AN ADDITIONAL 0.13 ACRES OF IMPERVIOUS AREA AND 4.47 ACRES OF TURF/CLAY/SAND ATHLETICS FIELDS. THE VAST MAJORITY OF THE PROPOSED IMPERVIOUS AREA WILL DRAIN TO THE EXISTING NORTHEAST BASIN. THE REQUIRED POND EXPANSION IS BASED ON THE OAKLAND COUNTY DESIGN METHOD FOR THE 100—YEAR STORM EVENT, WHICH CAN BE SEEN ON THIS SHEET. THE POND WILL NEED TO INCLUDE AN ADDITIONAL 23,383 CUBIC FEET. THE MAXIMUM STORAGE OF THE EXISTING BASIN IS 98,192 CUBIC FEET AND ADDING IN THE REQUIRED 100—YEAR ADDITIONAL IMPERVIOUS VOLUME, THE TOTAL POND WILL BE EXPANDED TO 122,766 CUBIC FEET. THE DETENTION POND REGRADE WILL INCORPORATE A TOTAL INCREASE IN VOLUME OF 24,574 CUBIC FEET. A COMPARISON OF THE EXISTING AND PROPOSED DEPTH/VOLUME RELATIONSHIP IS SHOWN BELOW.

Ľ	DEPTH/ VOLUME RELATIONSHIP IS SHOWN BELOW.								
		EXIST	ING COND	ITION	PROPOSED CONDITION				
	CONTOUR	AREA	VOLUME	TOTAL	AREA	VOLUME	TOTAL		
		SF	CF	CF	SF	CF	CF		
	647	137		0	6,434		0		
	648	16,189	8,163	8,163	20,322	13,378	13,378		
	649	27,869	22,029	30,192	36,768	28,545	41,923		
	650	32,282	30,076	60,268	40,396	38,582	80,505		
	651	43,566	37,924	98,192	44,125	42,261	122,766		

MAXIMUM WATER SURFACE ELEVATION (WSEL): 651.00 EXISTING STORAGE VOLUME AT MAXIMUM WSEL: 98,192 PROPOSED STORAGE VOLUME AT MAXIMUM WSEL: 122,766 INCREASE IN STORAGE VOLUME: 24,574

			_					
	STC	ORM STRUCTURES]	S	END SECTIONS			
МН	1	(6' DIA./O' SUMP) RIM = 652.69 36" W 646.96 36" S 646.86 36" N 646.86		8 50	END SECTION- 18" 646.24 END SECTION- 12" 649.00		END SECTI MATERIAL: END SECTI MATERIAL:	CMP ON
СВ	2	(5' DIA./0' SUMP) RIM = 653.76 30" W 647.61 12" N 647.55 12" S 648.65 36" E 647.21			SANITAR' STRUCTUR	-		
СВ	3	(5' DIA./0' SUMP) RIM = 654.04 24" W 648.15 12" N 648.25 12" S 648.25 30" E 647.75	*	A	MH (5' DIA.) RIM = 653.29 15" W 636.19 6" S 642.66 15" E 636.19 MH (5' DIA.)			
МН	4	(5' DIA./O' SUMP) RIM = 654.33 18" W 648.74 12" N 649.14 12" S 648.44 24" E 648.34	*		RIM = 653.88 15" W 637.00 6" S 642.95 15" E 637.00 NTERNAL DROP			
МН	5	(4' DIA./0' SUMP) RIM = 654.59 12" S 648.43 12" N 648.43			SANITARY LEANOUTS]		
СВ	6	(4' DIA./2' SUMP) RIM = 654.29 12" S 648.50 8" SW 648.77 12" N 648.50		к	C.O. IN BOX RIM = 653.57 INV. 647.65			
СВ	7	(4' DIA./2' SUMP) RIM = 653.89 12" N 648.68 12" S 648.68		L	C.O. IN BOX RIM = 653.63 INV. 647.72 C.O. IN BOX	-		
мн	11	(7' DIA./0' SUMP) RIM = 653.65 12" S 649.44 12" NW 649.94 8" N 649.64 12" W 649.54 18" E 649.14		G	RIM = 654.11 INV. 645.65 C.O. IN BOX RIM = 654.16 INV. 645.58 C.O. IN BOX RIM = 654.17	-		
YD	12	(4' DIA./2' SUMP) RIM = 653.30 4" W 649.59 4" S 649.59 12" N 649.49		1	INV. 646.45 C.O. IN BOX RIM = 654.35 INV. 646.26	-		
СВ	13	(4' DIA./2' SUMP) RIM = 653.69 12" E 649.85		В	C.O. IN BOX RIM = 654.53 INV. 644.91 C.O. IN BOX	-		
СВ	14	(4' DIA./2' SUMP) RIM = 653.66 8" S 650.47		С	RIM = 654.54 INV. 645.64 C.O. IN BOX	1		
СВ	14A	(4' DIA./2' SUMP) RIM = 654.00 8" N 650.11 8" S 650.11		D	RIM = 654.56 INV. 645.88]		
СВ	15	(4' DIA./2' SUMP) RIM = 653.13 12" S 649.12						
	1	1	I					

YD 16 (3' DIA./1' SUMP) RIM = 653.62 8" NE 649.07

YD 17 (3' DIA./2' SUMP)
RIM = 653.00
12" S 648.91
12" N 648.91

YD 18 (3' DIA./2' SUMP) RIM = 653.14 12" N 649.21

YD 19 (3' DIA./2' SUMP)
RIM = 653.79
12" W 648.60
12" N 648.60

YD 20 (3' DIA./2' SUMP) RIM = 652.78 12" S 648.91 12" E 648.91

YD 22 (3' DIA./2' SUMP) RIM = 652.65 12" N 649.65

MH 30 (5' DIA./0' SUMP)
RIM = 652.81
36" S 647.38
8" E 647.85
36" N 647.38

MH 32 (4' DIA./1' SUMP) RIM = 652.62 8" N 648.16

YD 33 (3' DIA./1' SUMP)
RIM = 651.20
4" N 648.58
8" S 648.48

CB 52 (4' DIA./0' SUMP)
RIM = 653.19
12" S 649.64
12" W 649.64

YD 53 (4' DIA./0' SUMP)
RIM = 653.30
4" E 649.92
4" W 649.92
4" S 649.92
12" N 649.82

YD 70 (3' DIA./2' SUMP)
RIM = 653.38
4" W 649.68
4" NE 649.68
8" E 649.58

STUB 100 12" S 647.80

STUB 102 12" S 649.45

STUB 103 12" SE 650.16

STUB 101

(4' DIA./2' SUMP) RIM = 652.84 12" W 647.94

12" N 649.37

(3' DIA./2' SUMP)
RIM = 652.87
12" S 649.31
12" N 649.31

(4' DIA./0' SUMP)
RIM = 652.49
8" NE 647.81
8" W 647.91

(4' DIA./0' SUMP) RIM = 654.03 12" E 649.28 12" SW 649.28



TMP ARCHITECTURE INC

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CONSULTANT



PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE
BASIN CALCS AND STRUCTURE **TABLE**

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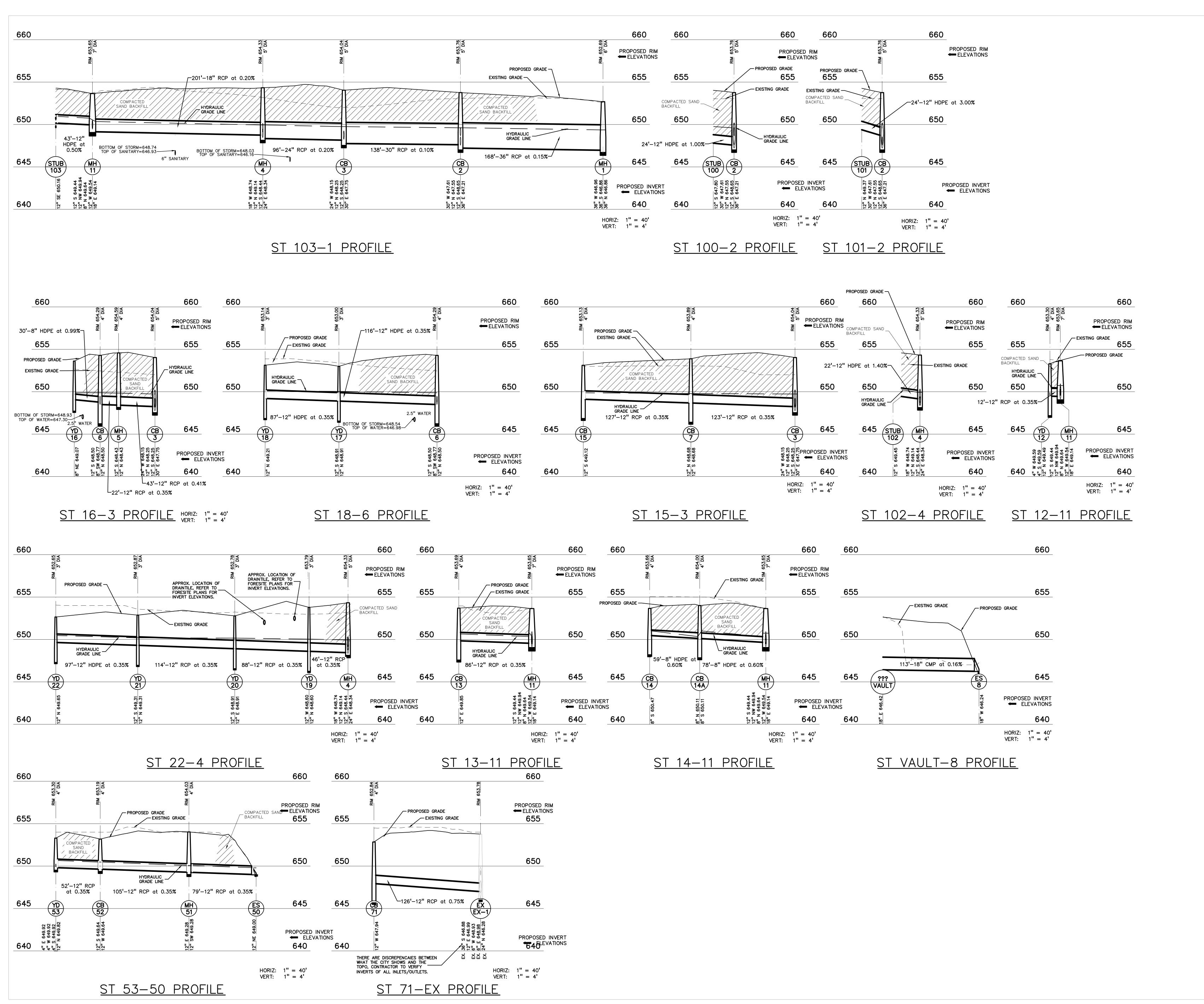
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Athens High School Athletic Fields
Bid Package No. 02B

Troy School District Troy, Michigan

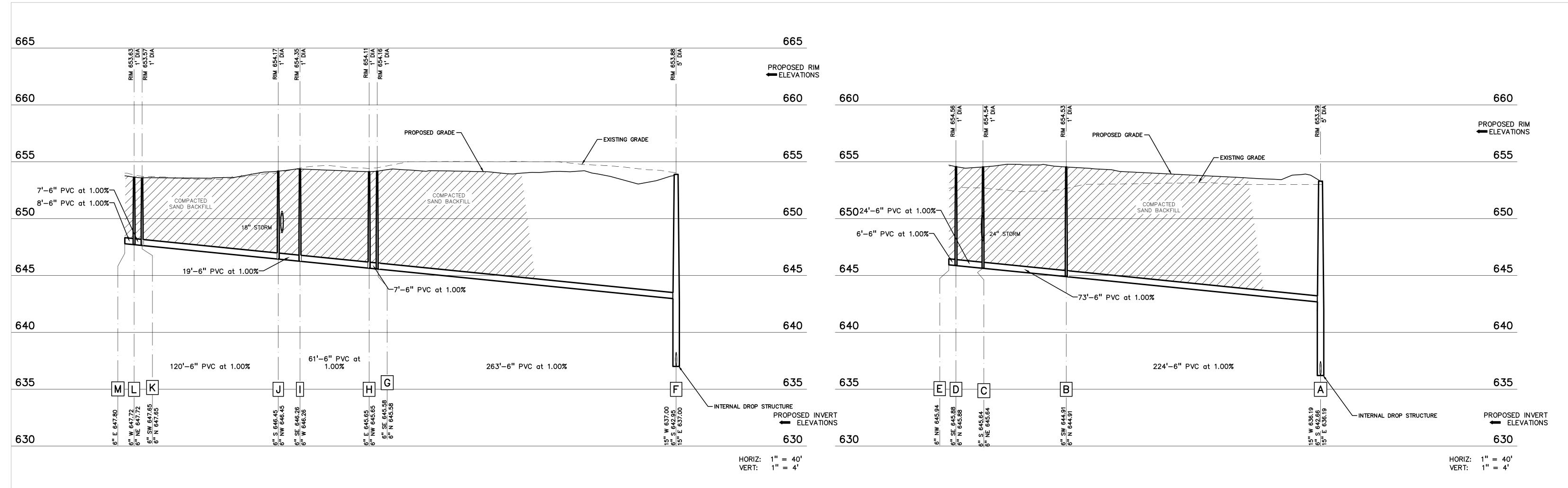
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PROPOSED BUILDING SANITARY SEWER PROFILE



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Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

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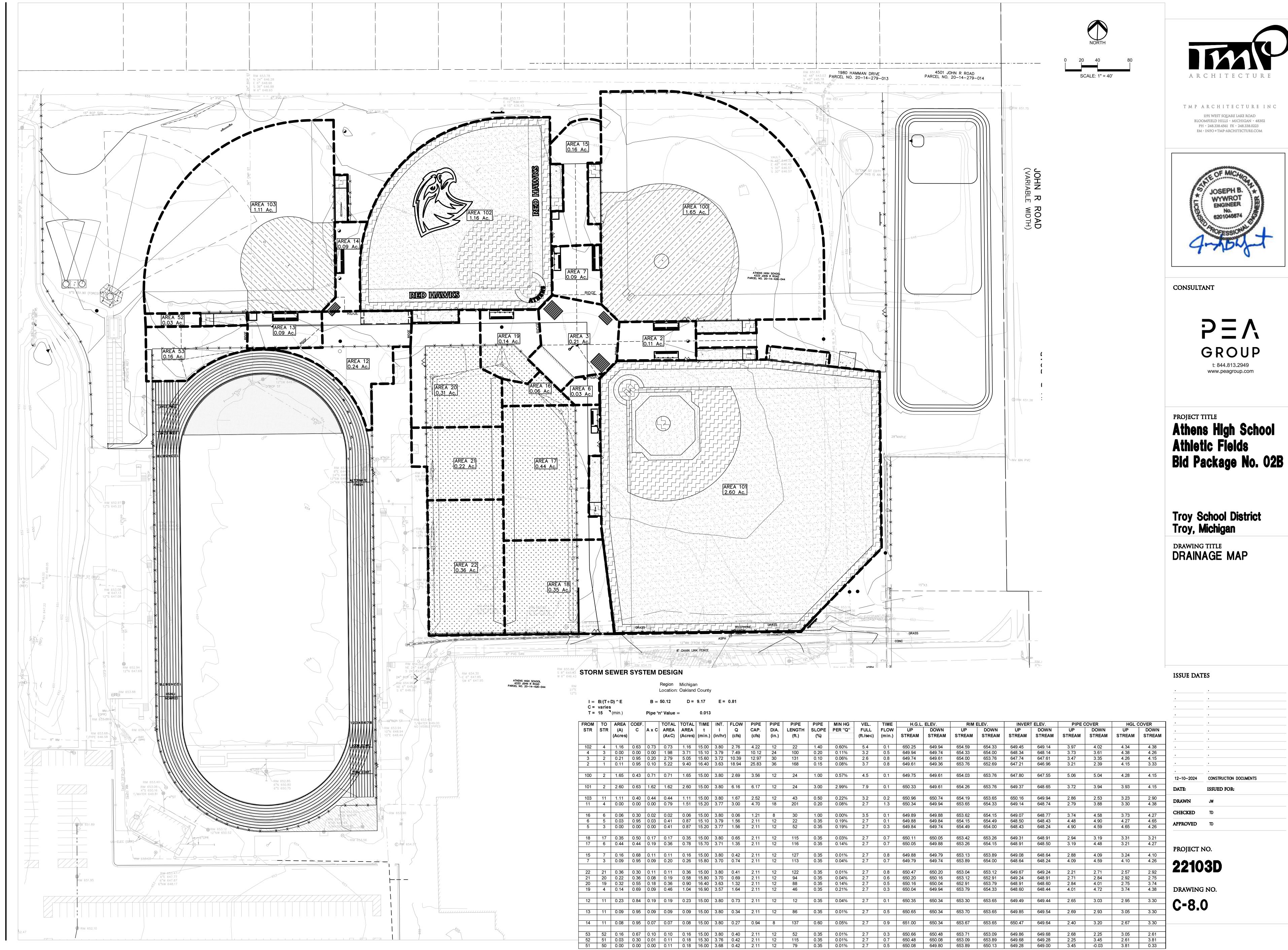
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GENERAL NOTES:

- THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.
- ALL CONSTRUCTION, WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT OSHA, MDOT AND MUNICIPALITY
 STANDARDS AND REGULATIONS.
- 2. THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- 3. THE CONTRACTOR SHALL CONTACT THE ENGINEER SHOULD THEY ENCOUNTER ANY DESIGN ISSUES DURING CONSTRUCTION. IF THE CONTRACTOR MAKES DESIGN MODIFICATIONS WITHOUT THE WRITTEN DIRECTION OF THE DESIGN ENGINEER, THE CONTRACTOR DOES SO
- AT HIS OWN RISK.

 4. ALL NECESSARY PERMITS, TESTING, BONDS AND INSURANCES ETC., SHALL BE PAID FOR BY THE CONTRACTOR. THE OWNER SHALL PAY
- 5. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. IF NO NOTIFICATION IS GIVEN AND DAMAGE RESULTS, SAID DAMAGE WILL BE REPAIRED AT SOLE EXPENSE OF THE CONTRACTOR. IF EXISTING UTILITY LINES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER SO THAT THE CONFLICT MAY BE RESOLVED.
- 5. CONTRACTOR SHALL VERIFY THAT THE PLANS AND SPECIFICATIONS ARE THE VERY LATEST PLANS AND SPECIFICATIONS AND FURTHERMORE, VERIFY THAT THESE PLANS AND SPECIFICATIONS HAVE BEEN APPROVED. ALL ITEMS CONSTRUCTED BY THE CONTRACTOR PRIOR TO RECEIVING FINAL APPROVAL, HAVING TO BE ADJUSTED OR RE—DONE, SHALL BE AT THE CONTRACTORS EXPENSE. SHOULD THE CONTRACTOR ENCOUNTER A CONFLICT BETWEEN THESE PLANS AND/OR SPECIFICATIONS, THEY SHALL SEEK CLARIFICATION IN WRITING FROM THE ENGINEER BEFORE COMMENCEMENT OF CONSTRUCTION. FAILURE TO DO SO SHALL BE AT SOLE
- 7. ANY WORK WITHIN THE STREET OR HIGHWAY RIGHTS-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION AND SHALL NOT BEGIN UNTIL ALL NECESSARY PERMITS HAVE BEEN ISSUED FOR THE WORK.
- 8. ALL PROPERTIES OR FACILITIES IN THE SURROUNDING AREAS, PUBLIC OR PRIVATE, DESTROYED OR OTHERWISE DISTURBED DUE TO CONSTRUCTION, SHALL BE REPLACED AND/OR RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR.
- 9. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADING, SIGNAGE, LIGHTS AND TRAFFIC CONTROL DEVICES TO PROTECT THE WORK AND SAFELY MAINTAIN TRAFFIC IN ACCORDANCE WITH LOCAL REQUIREMENTS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION). THE DESIGN ENGINEER, OWNER, CITY, AND STATE SHALL NOT BE HELD LIABLE FOR ANY CLAIMS RESULTING FROM ACCIDENTS OR DAMAGES CAUSED BY THE CONTRACTOR'S FAILURE TO COMPLY WITH TRAFFIC AND PUBLIC SAFETY REGULATIONS DURING THE CONSTRUCTION PERIOD.
- 10. THE USE OF CRUSHED CONCRETE IS PROHIBITED ON THE PROJECT WITHIN 100 FEET OF ANY WATER COURSE (STREAM, RIVER, COUNTY DRAIN, ETC.) AND LAKE, REGARDLESS OF THE APPLICATION OR LOCATION OF THE WATER COURSE OR LAKE RELATIVE TO THE PROJECT LIMITS.
- 1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST THE TOP OF ALL EXISTING AND PROPOSED STRUCTURES (MANHOLES, CATCH BASINS, INLETS, GATE WELLS ETC.) WITHIN GRADED AND /OR PAVED AREAS TO FINAL GRADE SHOWN ON THE PLANS. ALL SUCH ADJUSTMENTS SHALL BE INCIDENTAL TO THE JOB AND WILL NOT BE PAID FOR SEPARATELY.

PAVING NOTES

- 1. IN AREAS WHERE NEW PAVEMENTS ARE BEING CONSTRUCTED, THE TOPSOIL AND SOIL CONTAINING ORGANIC MATTER SHALL BE REMOVED PRIOR TO PAVEMENT CONSTRUCTION.
- . REFER TO ARCHITECTURAL PLANS FOR DETAILS OF FROST SLAB AT EXTERIOR BUILDING DOORS.
- 3. CONSTRUCTION TRAFFIC SHOULD BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE INITIAL LIFT THICKNESS COULD BE INCREASED AND PLACEMENT OF THE FINAL LIFT COULD BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM.
- 4. ALL EXPANSION JOINTS AND CONCRETE PAVEMENT JOINTS TO BE SEALED.
- 5. CONCRETE PAVEMENT JOINTING UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION;
 5.1. WHERE PROPOSED CONCRETE ABUTS A STRUCTURE, PROVIDE A MINIMUM 1/2" EXPANSION JOINT. THE JOINT FILLER BOARD MUST
 BE AT LEAST THE FULL DEPTH OF THE CONCRETE AND HELD DOWN A 1/2" TO ALLOW FOR SEALING.
 5.2. WHERE PROPOSED CONCRETE ABUTS EXISTING CONCRETE OR IN BETWEEN POURS OF PROPOSED CONCRETE (CONSTRUCTION JOINT),
- SUBMITTAL PROCESS.

 5.3. WHERE PROPOSED CONCRETE ABUTS EXISTING OR PROPOSED SIDEWALK OR CURBING, PROVIDE A MINIMUM 1/2" EXPANSION JOINT.

 5.4. CONTROL, LONGITUDINAL AND/OR TRANSVERSE JOINTS SHALL BE PLACED TO PROVIDE PANELS WITHIN THE PAVEMENT AS SQUARE AS POSSIBLE WITH THE FOLLOWING MAXIMUM SPACING PARAMETERS:

 5.4.1. 6—INCH THICK CONCRETE PAVEMENT: 12' X 12'

PROVIDE 5/8" DOWELS EVERY 30" CENTER TO CENTER HALF WAY ALONG THE THICKNESS OF THE PROPOSED PAVEMENT.

ALTERNATE DOWELS SIZES AND SPACING MUST BE APPROVED THE ENGINEER PRIOR TO COMMENCING WORK AND VIA THE

- 5.4.2. 8-INCH THICK CONCRETE PAVEMENT: 15' X 15'
 5.5. IRREGULAR-SHAPED PANELS MAY REQUIRE THE USE OF REINFORCING MESH OR FIBER MESH AS DETERMINED BY THE ENGINEER.
 THE USE OF MESH MUST BE APPROVED THE ENGINEER PRIOR TO COMMENCING WORK AND VIA THE SUBMITTAL PROCESS.
 5.6. IF A JOINT PLANE WORK AND VIA THE SUBMITTAL PROCESS.
- 6. CONCRETE CURBING JOINTING UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION
 6.1. JOINTS WHEN ADJACENT TO ASPHALT PAVEMENT
- 6.1.1. PLACE CONTRACTION JOINTS AT 10' INTERVALS
 6.1.2. PLACE 1/2" EXPANSION JOINT AT CATCH BASINS, EXISTING AND PROPOSED SIDEWALK OR EXISTING CURBING.
 6.1.3. PLACE 1" EXPANSION JOINT:
- 6.1.3.1. AT SPRING POINTS OF INTERSECTIONS OR ONE OF THE END OF RADIUS LOCATIONS IN A CURVE 6.1.3.2. AT 400' MAXIMUM INTERVALS ON STRAIGHT RUNS
- 6.1.3.3. AT THE END OF RADIUS AT OPPOSITE ENDS IN A CURBED LANDSCAPE ISLAND
 6.2. JOINTS WHEN TIED TO CONCRETE PAVEMENT
 6.2.1. PLACE CONTRACTION JOINTS OPPOSITE ALL TRANSVERSE CONTRACTION JOINTS IN PAVEMENT
 6.2.2. PLACE 1/2" EXPANSION JOINT AT CATCH BASINS. EXISTING AND PROPOSED SIDEWALK OR EXIST
- 6.2.1. PLACE CONTRACTION JOINTS OPPOSITE ALL TRANSVERSE CONTRACTION JOINTS IN PAVEMENT 6.2.2. PLACE 1/2" EXPANSION JOINT AT CATCH BASINS, EXISTING AND PROPOSED SIDEWALK OR EXISTING CURBING. 6.2.3. PLACE 1"EXPANSION JOINT OPPOSITE ALL TRANSVERSE EXPANSION JOINTS IN PAVEMENT

7.3. PLACE 1" EXPANSION JOINT WHERE ABUTTING SIDEWALK RAMP AND/OR RADIUS IN INTERSECTION

- 6.2.4. CURB AND GUTTER AND CONCRETE SHALL BE TIED TOGETHER SIMILAR TO A LONGITUDINAL LANE TIE JOINT (MDOT B1 JOINT) 6.3. IN BETWEEN POURS OF PROPOSED CONCRETE CURBING (CONSTRUCTION JOINT):
 6.3.1. CARRY THE REBAR CONTINUOUSLY BETWEEN POURS
 6.3.2. IF THE REBAR IS NOT LONG ENOUGH TO CARRY CONTINUOUSLY, THEN TIE TWO PIECES OF REBAR PER THE LATEST MDOT
- SPECIFICATIONS

 7. CONCRETE SIDEWALK JOINTING UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION

 7.1 PLACE TRANSVERSE CONTRACTION JOINTS FOLIAL TO THE WIDTH OF THE WALK WHEN WIDTH IS LESS THAN 8'
- 7.1. PLACE TRANSVERSE CONTRACTION JOINTS EQUAL TO THE WIDTH OF THE WALK WHEN WIDTH IS LESS THAN 8'
 7.2. PLACE TRANSVERSE AND LONGITUDINAL CONTRACTION JOINTS EQUAL TO 1/2 THE WIDTH OF THE WALK WHEN WIDTH IS EQUAL TO OR GREATER THAN 8'
- 7.4. PLACE TRANSVERSE 1/2" EXPANSION JOINT AT MAXIMUM OF 100' SPACING
 7.5. PLACE 1/2" EXPANSION JOINT WHEN ABUTTING A FIXED STRUCTURE, OTHER PAVEMENT (CONCRETE PAVEMENT AND DRIVE APPROACHES), UTILITY STRUCTURES, LIGHT POLE BASES AND COLUMNS

GENERAL GRADING AND EARTHWORK NOTES:

OR AS DICTATED BY FIELD CONDITIONS.

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT

ALL GRADES ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.

- 1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING TREES AND BRUSH AND REMOVE ALL THAT ARE NECESSARY TO GRADE SITE.
- 3. THE STAGING OF CONSTRUCTION ACTIVITIES SHALL OCCUR ONLY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITIES OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR.
- 4. ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL MEET THE REQUIREMENTS OF THE AUTHORIZED PUBLIC AGENCY OF
- JURISDICTION. AN EROSION CONTROL PERMIT MUST BE SECURED FROM THE CITY PRIOR TO CONSTRUCTION.

 5. ALL EARTHWORK AND GRADING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE SOILS INVESTIGATION AND REPORT.
- 6. REFER TO SOIL EROSION CONTROL PLAN FOR ADDITIONAL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND NOTES.
- 7. THE DETENTION BASIN SIDE SLOPES AND ALL SLOPE EXCEEDING 1:6 MUST BE STABILIZED BY SODDING OR BY PLACING A MULCH BLANKET PEGGED IN PLACE OVER SEED.
- 8. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SODDED IN ACCORDANCE WITH THE LANDSCAPE PLANS. PROVIDE A MINIMUM OF 3" OF TOPSOIL IN THESE AREAS UNLESS OTHERWISE NOTED.
- 9. THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES WITHIN AND ADJACENT TO THE SITE. BACKFILL FOR EXISTING UTILITY
 TRENCHES SHALL BE EXAMINED CRITICALLY. ANY TRENCHES FOUND TO HAVE SOFT, UNSTABLE OR UNSUITABLE BACKFILL MATERIAL, IN
 THE OPINION OF THE THIRD PARTY TESTING COMPANY, THAT ARE TO BE WITHIN THE ZONE OF INFLUENCE OF PROPOSED BUILDINGS OR
- PAVEMENT SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL.

 10. ON-SITE FILL CAN BE USED IF THE SPECIFIED COMPACTION REQUIREMENTS CAN BE ACHIEVED. IF ON-SITE SOIL IS USED, IT SHOULD
- BE CLEAN AND FREE OF FROZEN SOIL, ORGANICS, OR OTHER DELETERIOUS MATERIALS.

 11. THE FINAL SUBGRADE/EXISTING AGGREGATE BASE SHOULD BE THOROUGHLY PROOFROLLED USING A FULLY LOADED TANDEM AXLE TRUCK OR FRONT END LOADER UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS THAT CANNOT BE MECHANICALLY STABILIZED SHOULD BE REINFORCED USING GEOGRIDS OR REMOVED AND REPLACED WITH ENGINEERED FILL
- 12. SUBGRADE UNDERCUTTING, INCLUDING BACKFILLING SHALL BE PERFORMED TO REPLACE MATERIALS SUSCEPTIBLE TO FROST HEAVING AND UNSTABLE SOIL CONDITIONS. ANY EXCAVATIONS THAT MAY BE REQUIRED BELOW THE TOPSOIL IN FILL AREAS OR BELOW SUBGRADE IN CUT AREAS WILL BE CLASSIFIED AS SUBGRADE UNDERCUTTING.
- 13. SUBGRADE UNDERCUTTING SHALL BE PERFORMED WHERE NECESSARY AND THE EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ANY SUBGRADE UNDERCUTTING SHALL BE BACKFILLED AS RECOMMENDED IN THE GEOTECHNICAL ENGINEERING
- 14. ANY SUB-GRADE WATERING REQUIRED TO ACHIEVE REQUIRED DENSITY SHALL BE CONSIDERED INCIDENTAL TO THE JOB.

GENERAL UTILITY NOTES:

- . ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY.
- ALL TRENCHES UNDER OR WITHIN THREE (3) FEET OR THE FORTY-FIVE (45) DEGREE ZONE OF INFLUENCE LINE OF EXISTING AND/OR PROPOSED PAVEMENT, BUILDING PAD OR DRIVE APPROACH SHALL BE BACKFILLED WITH SAND COMPACTED TO AT LEAST NINETY-FIVE (95) PERCENT OF MAXIMUM UNIT WEIGHT (ASTM D-1557). ALL OTHER TRENCHES TO BE COMPACTED TO 90% OR BETTER.
- WHERE EXISTING MANHOLES OR SEWER PIPE ARE TO BE TAPPED, DRILL HOLES 4" CENTER TO CENTER, AROUND PERIPHERY OF OPENING TO CREATE A PLANE OF WEAKNESS JOINT BEFORE BREAKING SECTION OUT.
- . THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS FOR EXISTING UTILITIES ARE IN ACCORDANCE WITH AVAILABLE INFORMATION WITHOUT UNCOVERING AND MEASURING. THE DESIGN ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION OR THAT AL EXISTING UNDERGROUND FACILITIES ARE SHOWN. CONTRACTOR SHALL FIELD VERIFY UTILITIES.
- THE CONTRACTOR SHALL COORDINATE TO ENSURE ALL REQUIRED PIPES, CONDUITS, CABLES AND SLEEVES ARE PROPERLY PLACED FOR THE INSTALLATION OF GAS, ELECTRIC, PHONE, CABLE, IRRIGATION, ETC. IN SUCH A MANNER THAT WILL FACILITATE THEIR PROPER INSTALLATION
- 6. PIPE LENGTHS INDICATED ARE FROM CENTER OF STRUCTURE AND TO END OF FLARED END SECTION UNLESS NOTED OTHERWISE.
 7. CONTRACTOR SHALL INSPECT ALL EXISTING PUBLIC STORM SEWER, SANITARY SEWER AND WATER MAIN STRUCTURES WITHIN THE LIN
- 7. CONTRACTOR SHALL INSPECT ALL EXISTING PUBLIC STORM SEWER, SANITARY SEWER AND WATER MAIN STRUCTURES WITHIN THE LIMITS OF CONSTRUCTION AND WITH THE GOVERNING AGENCY INSPECTOR PRIOR TO ESTABLISHING FINAL GRADE. NOTIFY THE ENGINEER, OWNER/DEVELOPER, AND GOVERNING AGENCY IF STRUCTURE IS DEEMED TO BE STRUCTURALLY UNSOUND AND/OR IN NEED OF REPAIR.

STORM SEWER NOTES:

- 1. ALL STORM SEWER 12" DIAMETER OR LARGER SHALL BE REINFORCED CONCRETE PIPE (RCP C-76) CLASS IV WITH MODIFIED TONGUE AND GROOVE JOINT WITH RUBBER GASKETS UNLESS SPECIFIED OTHERWISE (ASTM C-443) UNLESS OTHERWISE MENTIONED.
- 2. ALL STORM SEWER LEADS SHALL BE CONSTRUCTED AT 1.00% MINIMUM SLOPE.

PRIOR TO THE PLACEMENT OF THE PROPOSED PAVEMENT AND LANDSCAPING.

3. ALL STORM SEWER 10" OR LESS AND/OR LEADS SHALL BE SDR 26 UNLESS OTHERWISE MENTIONED.

. JOINTS FOR P.V.C. PIPE SHALL BE ELASTOMERIC (RUBBER GASKET) AS SPECIFIED IN A.S.T.M. DESIGNATION D-3212.

CONSTRUCTION MATERIAL SUBMITTALS

UNLESS REQUIRED OTHERWISE IN THE PROJECT SPECIFICATIONS, THE CONTRACTOR SHALL ONLY SUBMIT THE FOLLOWING CONSTRUCTION MATERIAL SUBMITTALS, AS APPLICABLE TO THE PLANS, FOR REVIEW BY THE ENGINEER. UNLESS APPROVED IN ADVANCE AND IN WRITING BY THE ENGINEER, ANY MATERIAL SUBMITTALS PROVIDED TO THE ENGINEER FOR REVIEW IN ADDITION TO THIS LIST SHALL BE RETURNED

- TO THE CONTRACTOR WITHOUT A REVIEW BEING PERFORMED.

 1. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
- 2. UTILITY TRENCH BACKFILL MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
- 3. RIP RAP MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
- STORM AND SANITARY SEWER PIPING INCLUDING JOINTS
- 5. STORM AND SANITARY SEWER STRUCTURES
- 6. STORM AND SANITARY SEWER STRUCTURE FRAME AND COVERS INCLUDING CLEAN OUTS
- 7. PAVEMENT AGGREGATE BASE MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
- 8. PAVEMENT UNDERDRAIN MATERIAL AND BACKFILL WITH ALL BACKFILL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
- 9. PAVEMENT MIX DESIGNS SUBMITTED FOR REVIEW BY THE ENGINEER MUST FOLLOW THE CURRENT MDOT REVIEW CHECKLISTS AS SUMMARIZED BELOW AND ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER:

 •8.1. CONCRETE MIX DESIGN REVIEW CHECKLIST (FORM 2000)
- •8.2. SUPERPAVE MIX DESIGN CHECKLIST (FORM 1862)•8.3. MARSHALL MIX DESIGN CHECKLIST (FORM 1849)

TO BE USED AT IRREGULAR SHAPED

CONCRETE PAVEMENT PANELS AS

NOTED ON THE DRAWINGS.

- 10. SITE FENCING AND GATES INCLUDING FOOTINGS

 11. SITE RAILINGS INCLUDING FOOTING OR EMBEDMENTS
- 12. ANY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY STATE FOR THE CONTRACTOR TO SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW. THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO:
- •• TRENCH DRAIN MATERIAL AND SHOP DRAWING DEPICTING THE LAYOUT OF THE SYSTEM
- •• ANY SPECIALITY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY DO NOT STATE FOR THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW BUT THE CONTRACTOR REQUESTS TO BE REVIEWED. THE CONTRACTOR'S REQUEST FOR REVIEW MUST BE IN WRITING AND APPROVED BY THE ENGINEER PRIOR TO SUBMITTING THE INFORMATION.

TO LIMIT FUTURE PAVEMENT CRACKING AT IRREGULAR SHAPED PANELS OF CONCRETE

FABRIC TO PAVEMENT AS DETAILED BELOW

PAVEMENT, ADD FIBER MESH OR WELDED WIRE

FIBER MESH: POLYPROPYLENE FIBERS, 3/4" LONG, 100% VIRGIN CONFORMING TO ASTM C1116, TYPE

I. DOSE PER MANUFACTURERS PROPRIETARY

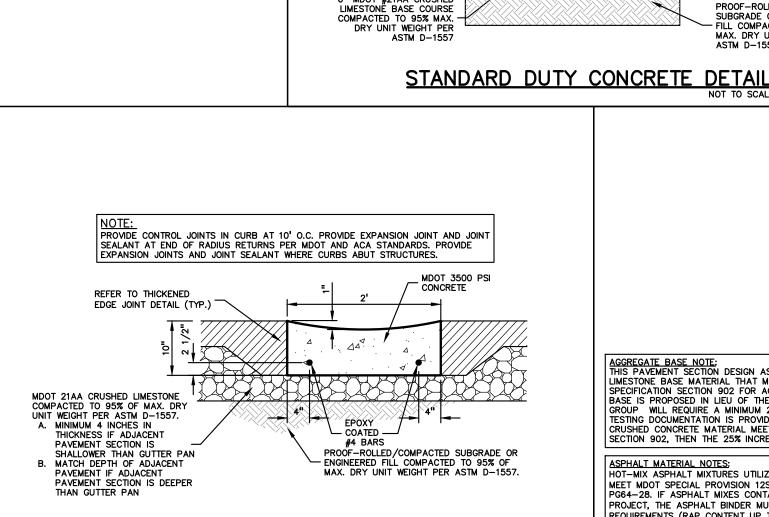
DESIGN RECOMMENDATIONS (PER ACI 544.4R-18

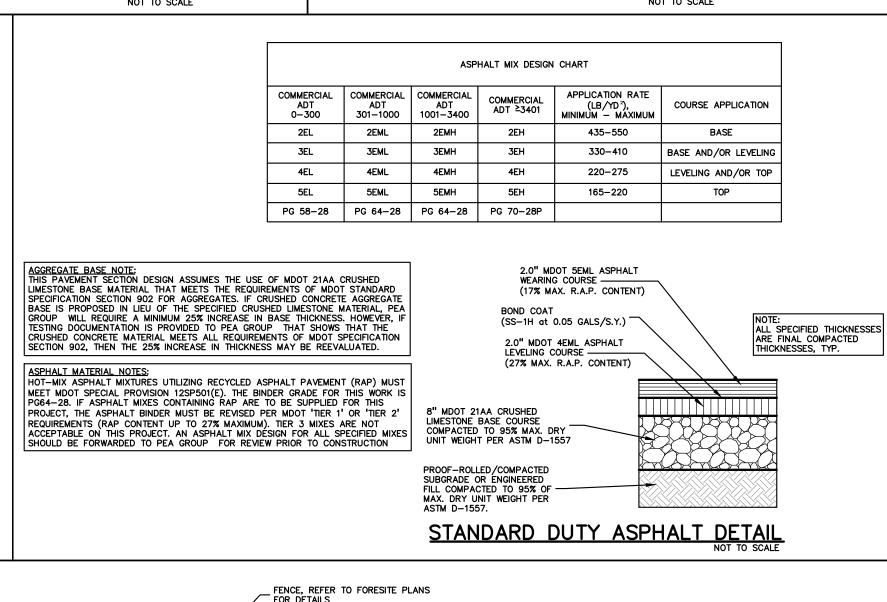
WELDED WIRE FABRIC: 6"x6" W4.0xW4.0 PLAIN

STEEL WELDED WIRE MESH

REFER TO THIS SHEET FOR TYPICAL CONCRETE PAVEMENT

REQUIREMENTS). SUBMIT MIX DESIGN TO ENGINEER FOR REVIEW PRIOR TO INSTALLATION





PAVEMENT SECTION PER PLANS AND SPECIFICATIONS. SEE DETAILS

(IN COHESIVE SOILS)

OCK, 1% MIN. SLOPE

CURB STRUCTUR

WIDTH VARIES - SEE PLAN

2% MAX. CROSS SLOPE

4" DIA. PERFORATED

CATCH BASIN -

CROSS-SLOPE OF SIDEWALK MUST NOT EXCEED 2.0%, EXCEPT IN TRANSITION AREA

MATCHING INTO EXISTING SIDEWALK

1 ON 1 SLOPE

4" MDOT CLASS II SAND BASE COURSE COMPACTED TO 95% MAXIMUM DRY UNIT WEIGHT PER ASTM D-1557

CAP IN FILTER SOCK, TYP. 1% MIN. SLOPE MIRAFI FW402 FILTER FABRIC

" DIA. PERFORATED CORRUGATE

PROVIDE 1" DEPTH SAWCUT CONTROL JOINTS AT INTERVALS EQUAL TO THE WIDTH OF THE

CONCRETE

SUBGRADE OR ENGINEERED
- FILL COMPACTED TO 95% OF MAX. DRY UNIT WEIGHT PER

CLEAN FILL PER

CURRENT MDOT SPE RESTORE AREA PER

SIDEWALK (NOT TO EXCEED 8' INTERVAL).

CORRUGATED SINGLE-WALL HDPE UNDERDRAIN WITH FILTER SOCK

MATCH TOPS WHEN POSSIBL OTHERWISE MAINTAIN 4" PIF

4" DIA. PERFORATED
_ CORRUGATED SINGLE-WALL
HDPE UNDERDRAIN WITH
FILTER SOCK

PLAN VIEW — PAVEMENT STRUCTURE PLAN VIEW — CU

PAVEMENT INLET/CATCH BASIN UNDERDRAIN DETAIL
NOT TO SCA

PROOF-ROLLED/COMPACTED SUBGRADE OR ENGINEERED

FILL COMPACTED TO 95% OF MAX. DRY UNIT WEIGHT PER ASTM D-1557.

ASPHALT OVERLAY. MATCH THICKNESS OF WEARING

COLD-MILL EXISTING SURFACE.
- DEPTH TO MATCH NEW PAVEMENT

4" MIN.

HIGH POINT, TYP. -

VERTICAL FACE -

SECTION A-A

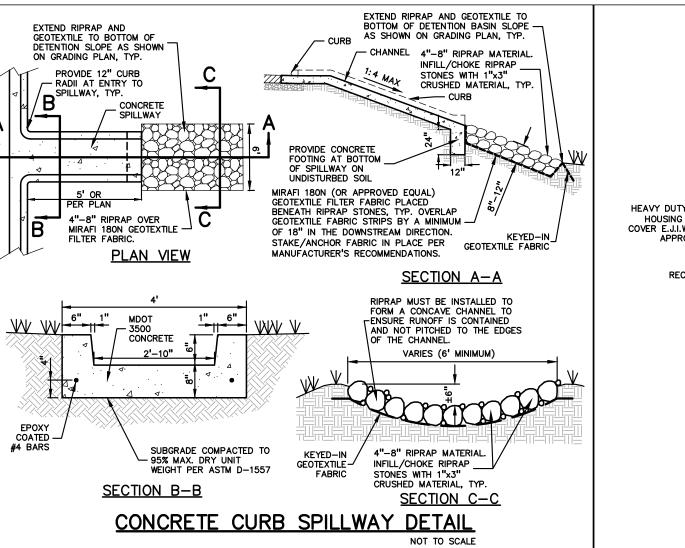
ASPHALT MIX AFTER MILLING.
REMOVE WEDGE BEFORE
OVERLAY OCCURS.
ASPHA

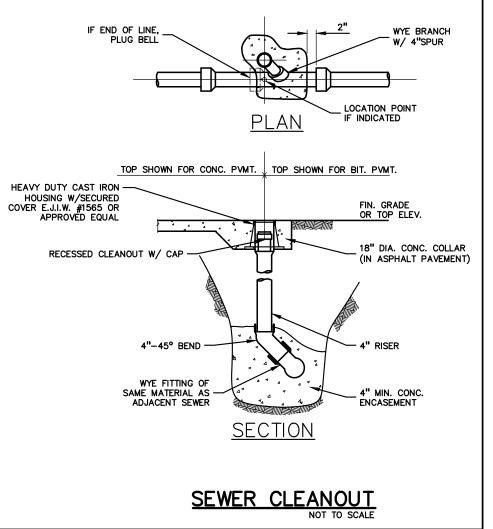
BUTT JOINT DETAIL

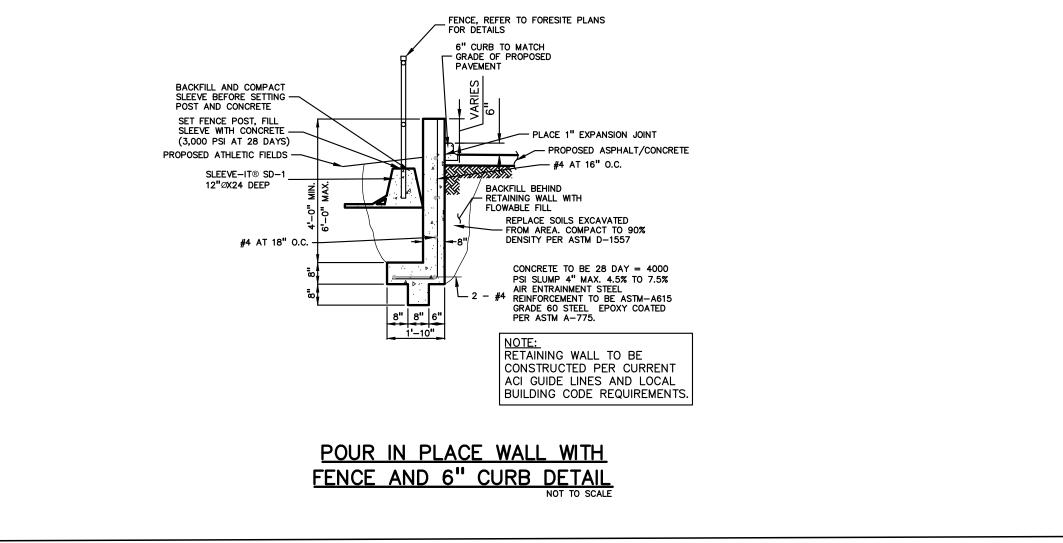
VARIES - SEE PLAN

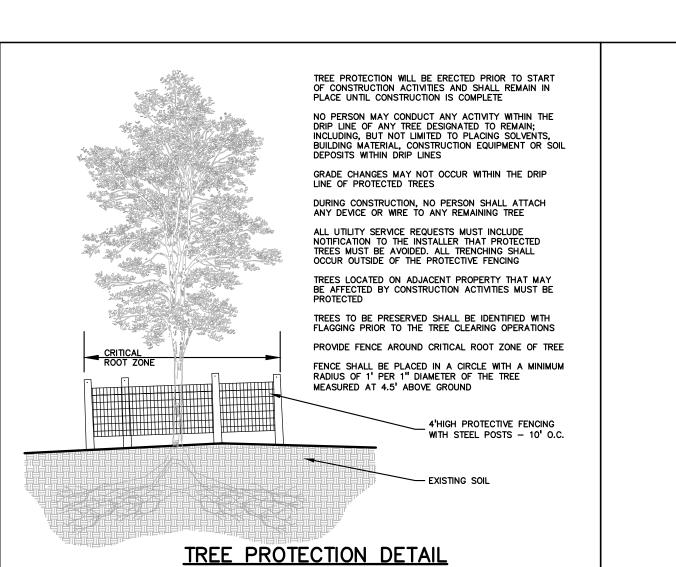
'IRREGULAR PANEL' CONCRETE DETAIL
SCALE: NONE

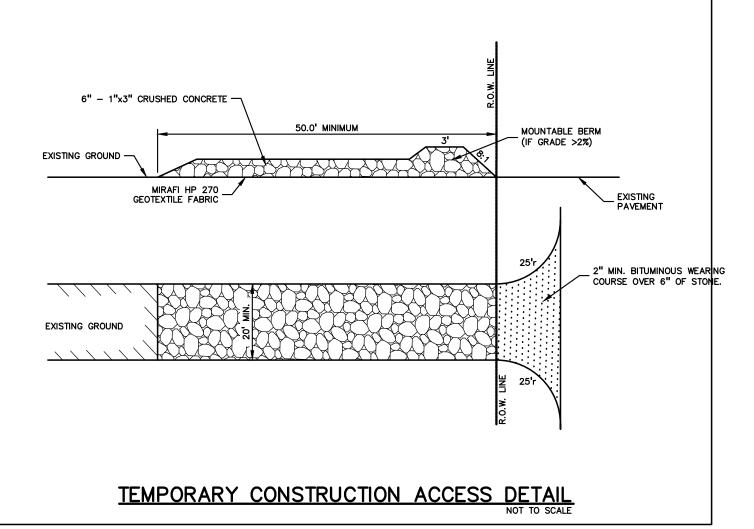
VALLEY GUTTER PAN DETAIL
NOT TO SCALE











A R C H I T E C T U R E

T M P A R C H I T E C T U R E I N C

1191 WEST SQUARE LAKE ROAD

BLOOMFIELD HILLS • MICHIGAN • 48302

PH • 248.338.4561 FX • 248.338.0223

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CONSULTANT

PEA GROUP t: 844.813.2949 www.peagroup.com

Athens High School

Athletic Fields
Bid Package No. 02B

Troy School District Troy, Michigan

NOTES AND
DETAILS

ISSUE DATES

DATE: ISSUED FOR:

DRAWN JW

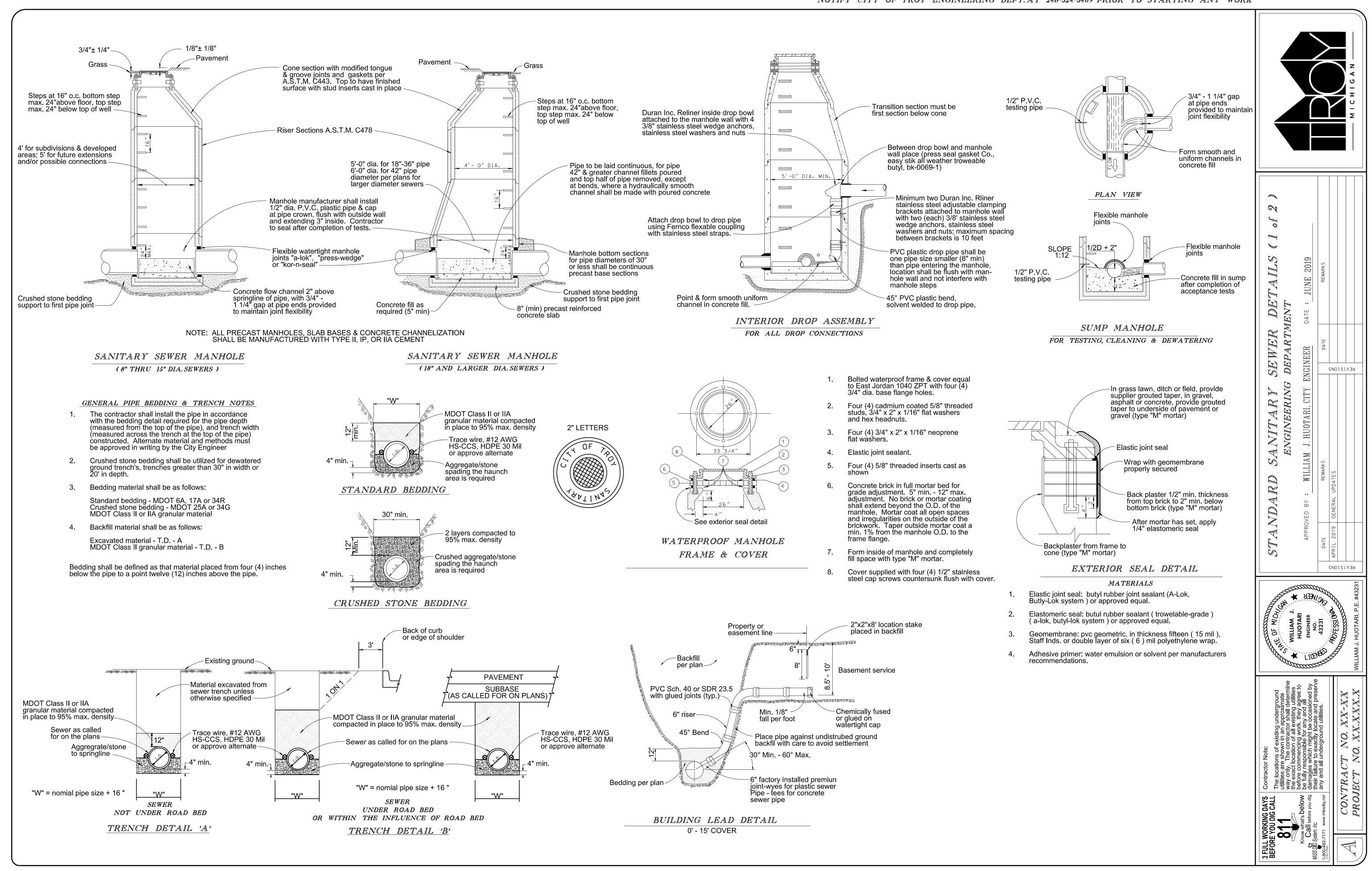
CHECKED TD

APPROVED TD

PROJECT NO.

22103D

C-9.0



- All construction shall conform to the current standards and specifications of the City of Troy. Prior to construction, the contractor shall attend a preconstruction meeting at a time and place arranged by the City Engineer, in which various utility companies and governmental agency répresentatives will be present. The design engineer shall submit approved plans to all utility companies and governmental agencies 10 (ten) days prior to the preconstruction meeting. Construction shall start within 3 (three) weeks of the meeting. The contractor shall notify the City Engineer 72 hours prior to starting any work.
- 2. The entire project area of publicly funded projects, and all areas not under the ownership of any private developer for privately funded projects, shall be digitally recorded in color prior to the start of construction. The DVD shall be utilized by the City to determine construction related damage and to assure adequate restoration.
- 3. Before start of construction, the contractor must request and have in his possession a sewer inspection permit issued by the Water Resource Commissioner's (WRC) office and contact the WRC office at 248-885-1105 24 hours prior to starting work. WRC must witness the new connection and all testing.
- 4. Prior to any excavation, the contractor shall telephone Miss Dig (1-800-482-7171) for the location of underground facilities and shall also notify representatives of other utilities located in the vicinity of the work. The contractor shall assume responsibility for the protection of all existing utilities, services and mains during construction. All costs for locating, removing and replacing or relocating these utilities, services and mains shall be included in the cost of constructing the sanitary sewer. All utilities, services and mains damaged during construction shall be repaired with like material. The contractor shall verify the depth and horizontal location of all existing utilities, services and mains before any work is started. The exact location of existing utilities, services and mains shall be determined by hand
- A City of Troy, Road Commission for Oakland County, and/or Michigan Department of Transportation permit is required for all construction within their road Right-of-Ways. It is the contractor's responsibility to secure all permits and bonds prior to construction, or to insure that all required permits and bonds have been obtained prior to starting construction.
- 6. The contractor shall abide by all the requirements of the road Right-of-Way owner regarding construction of sanitary sewer mains, maintaining traffic, barricading, boring, backfill and restoration. There will be no additional compensation due the contractor for complying with these requirements.
- 7. Prior to the start of construction, the contractor shall furnish material certificates to the City Engineer verifying that all the materials used on the project are in accordance with the specifications.
- All construction changes must have written approval of the City Engineer.
- Sewer Pipe Material:

a. 8" through 15" pipe shall be PVC (Poly Vinyl Chloride) composite sewer pipe conforming to the current ASTM D2680 specifications with elastomeric rubber gasketed joints for PVC.

- b. 18" and larger pipe shall be reinforced concrete circular sewer pipe conforming to the current ASTM specification C-76 (Wall C) with size and class as indicated on the plans. All reinforced concrete sewer pipe shall be cast with reinforcing steel extending into the spigots. All joints and gaskets shall be modified tongue and groove, conforming to the requirements of ASTM (C-443).
- Extra strength vitrified clay pipe conforming to the current ASTM specification (C-700). For use in industrial areas only.

Wood cross

- 10. All new manholes shall have approved flexible, water-tight seals where pipes pass through walls. Manholes shall be precast reinforced concrete in accordance with ASTM C478 current specifications. Precast manhole joints and gaskets shall be modified tongue and groove in accordance with ASTM C443 current specifications. Precast manhole cone sections shall be City of Troy modified eccentric cone type. All manholes shall be provided with bolt down frames and bolted, water-tight covers reading "City of Troy" in raised letters.
- 11. All precast manholes, slab bases, concrete pipe and concrete channelization shall be manufactured with Type II, IP or IIA cement.
- 12. Manhole steps shall normally be provided on a back wall of the manhole furthest from traffic, manhole steps shall be factory installed at 16 inches center to center spacing. Steps shall be M.A. Industries P.S.I. Polypropylene MSU #360 ALU Poly or approved alternate.
- 13. At the connections to manholes, sewers or extensions thereto, drop connections will be required when the difference in invert elevations exceeds 18 inches. All drop connections are to be interior, minimum manhole diameter is 5 feet.
- 14. Existing manholes shall be tapped with the "Kor-N-Seal" method, with a water-tight rubber boot for sewers 6" thru 15" in diameter. Manhole taps for 18" diameter sewers and larger shall have holes drilled at 4 inches on center around the periphery of the opening to create a plane of weakness before breaking out the section. Non-shrink grout shall be used to seal the opening and a concrete collar shall be poured 12 inches around the pipe and extend 12 inches beyond the opening.
- 15. Individual sanitary service leads shall be required for each separate unit within a proposed commercial, industrial and/or multiple family residential buildings.
- 16. Building lead connections shall be made with 6" wyes for PVC and 6" tees for concrete pipe. Wyes for PVC and pipe shall be factory fabricated (not extruded) and shall be checked for irregularities which could affect the deflection test prior to installation. Building lead pipe, wyes and caps shall be solid wall plastic pipe, 6" dia., SCH 40 or SDR 23.5 with chemically welded joints. The joint between two dissimilar sizes or types of building lead pipe shall be made with a proper fitting acceptable to the City Engineer.
- 17. All sanitary sewer leads shall be marked with a 2"x2"x8' location stake buried to 6" below finish grade.
- 18. No ground water, storm water, construction water, downspout drainage or weep tile drainage shall be allowed to enter any sanitary sewer installation.
- 19. In industrial areas, or any other areas where deemed necessary by the City Engineer, private service connections made to the service lead must have an accessible sampling and monitoring manhole. The manhole shall be located on private property at a location approved by the City Engineer.
- 20. Grease, oil and sand interceptors shall be installed by the user when the City Engineer determines they are necessary for the proper handling of liquid wastes, to remove grease in excessive amounts, to remove any flammable wastes, sand and other harmful ingredients. All interceptors shall be of a type and capacity approved by the City, shall be located so as to be rapidly and easily accessible for cleaning and inspection, and shall be continuously maintained by the user in an operating condition to accomplish the required result. All restaurants or establishments involved in the preparation of food shall install a grease interceptor. All grease interceptors shall be constructed in accordance with the detail and shall have a minimum capacity of 1000 gallons. The detail shown below is not designed to withstand traffic loads.

21. A mainline trace wire must be installed, with all service lateral trace wires properly connected to the mainline trace wire, to ensure full tracing/locating capabilities from a single connection point. Lay mainline trace wire continuously, by-passing around the outside of manholes/structures on the North or East side. Trace wire on all sanitary service laterals must terminate at an approved trace wire access box color coded green and located directly above the service lateral at the edge of road right of wav.

GENERAL NOTES

22. All sewer installations shall pass low pressure air test, deflection test and television inspection as specified in the city standards. All testing shall be carried out under the direct supervision of the inspector and the contractor. Any testing performed in the absence of a representative of the City will not be approved.

Air Test Table Minimum holding time in seconds required for pressure to drop from 4 to 3 psi Pipe Diameter

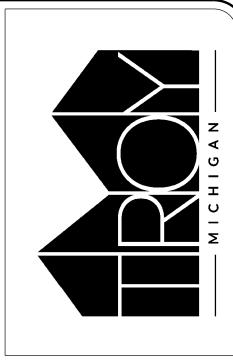
	Х	4"	6"	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"
	25 50 75 100	4 9 10 18	10 20 30 40	18 35 53 70	28 55 83 110	70 79 119 158	62 124 186 248	89 178 267 356	121 243 364 485	158 317 475 634	200 401 601 765	248 495 743 851	299 599 898 935	356 713 1020
Feet	125 150 175 200	22 26 31 35	50 59 69 79	88 406 123 141	138 165 193 220	198 238 277 317	309 371 425	446 510	595	680				
Of Line In	225 250 275 300	40 44 48 53	89 99 109 119	158 176 194 211	248 275 283	340								
Length	350 400	62 70	139 158	227										
	450 500	79 88	170											
	550 600	97 106												
	650	113	170	227	283	340	425	510	595	680	765	851	935	1020

NOTE: TO BE USED WHEN TESTING ONE DIAMETER ONLY

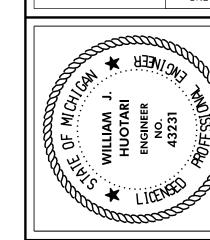
23. All television inspections shall be recorded on digital video disk (DVD) and turned over to the City for reference at a later date. The digital video recording shall display continuously the date, time and engineering stations and shall periodically display the name of the project, name of the area covered and direction of travel.

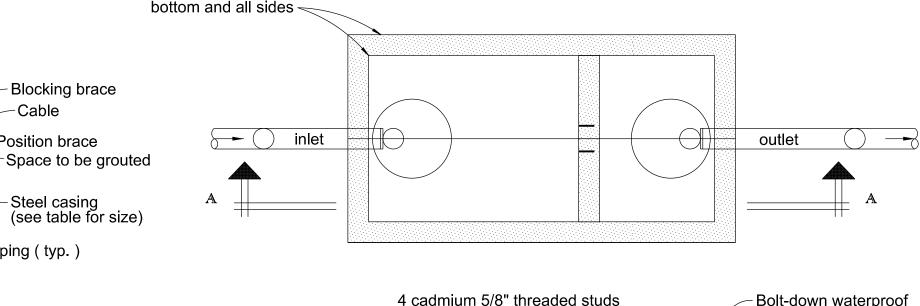
24. PVC composite pipe and any approved plastic pipe shall be subject to deflection test 30 days after construction with a nine sided mandrel. The contractor must supply the mandrel and perform the test. The City will witness the test. Deflection shall not exceed 5%. The City reserves the right to test the sewer for deflection not to exceed 7% during the period of the maintenance bond. Any sewer found exceeding these limits shall be replaced by and at the contractor's expense.

- 25. Infiltration testing when required cannot exceeding 100 gallons per inch of diameter per mile of pipe per 24 hour period. Test sections shall generally be limited to a maximum length of one half mile. The city reserves the right to test shorter pipe length segments if deemed necessary to assure that no segment exceeds the
- 26. The contractor shall provide a 3 year maintenance and guarantee bond to the City, dated from the time of final acceptance by the City. The bond shall be for 35% of the construction costs.
- 27. Before final acceptance, As-Built drawings must be submitteto the City of Troy Engineering Department. One electronic copy (PDF) and one digital copy (DWG



DETAILS (2 of 2) IENT	DATE : JUNE 2019	REMARKS				
SEWER DEPARTA	NGINEER .	DATE	SNO	ISI	3ΕΛ	
STANDARD SANITARY SEWER DETAILS (2 of 2). Engineering department	APPROVED BY : WILLIAM J. HUOTARI, CITY ENGINEER	REMARKS	119 GENERAL UPDATES			
STA	APF	DATE	APRIL 2019			
			SNO	ISI	4E ∧	ł





Approved coating on interior and exterior

Blocking brace

-Cable

Notch for strapping (typ.)

The ends of the casing shall be sealed after the sewer is installed through the casing

Steel casing

(see table for size)

3-loċátions (min.)

Wolmanized

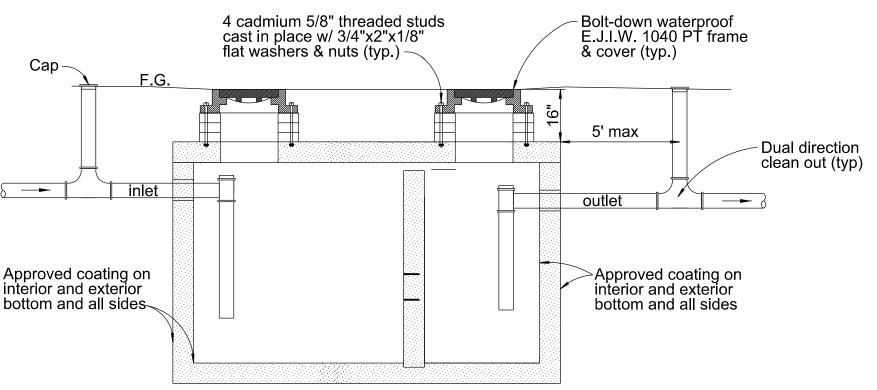
positon brace

Wolmanized

timber skid

PIPE SIZE	RECOMMENDED MINIMUM CASING DIAMETER	MINIMUM WALL THICKNESS
6"	12"	.375
8"	16"	.375
10"	18"	.375
12"	20"	.375
15"	24"	.406
18" & 21"	36"	.532
24"	42"	.563
27" & 30"	48"	.625
36"	54"	.688
42"	60"	.750
48"	66"	.813

STEEL CASING REQUIREMENTS



GREASE INTERCEPTOR (EXTERIOR) NOTE: Capacity - 1000 gallons (min)

Project Information

Type of soil being disrupted:

Derived from: Soil Survey Soil Borings Other

Present the chronological sequence and expected time of year for each major phase of earth disruption.

DATE

-adjacent property

-lake -----

NOT ACCEPTABLE

BUFFER ZONE

Site Clearing

Soil Erosion Control

Mass Balancing

Underground Utilities

Paving

ground cover is not acceptable.

Length of Buffer Zone Drop of Buffer Zone

Total length of vegetated

See silt fence

joint detail "a"

at lower right ·

FENCE POSTS

Coupler

Support fence -

SIDE

VIEW

Fence posts

ground 1' min.

driven into

Support fence

Fence posts ~

Undisturbed

vegetation -AV/AVV/AVV

SECTIONAL VIEW

PLAN VIEW

Restoration / Stabilization

Indicate the measures proposed to prevent sediment from leaving the site:

The graph listed below is used to determine the adequacy of an existing vegetative buffer zone

EXAMPLE

VEGETATIVE BUFFER ZONE

Sheet Sheet Sheet Flow Compacted earth Flow

acceptable

buffer zone

← DISTRUBED → UNDISTURBED AREA

% of Slope of Buffer Zone 4' / 80' x 100%

for use as a sediment filter. This graph is only applicable if the vegetation is a dense well-grown

stand of ground cover, at least 4" in height. An area covered with bushes and trees without a good

Hydrologic Characteristics of Site

Grate wraped in

PLAN VIEW

Finish grade elevation -

LAWN AREA

Sediment deposition

FILTER

area -

Definition

Purpose

Grate wraped in nonwoven geotextile filter fabric —

INLET SEDIMENT TRAP LAWN OR PARKING LOT

storm drain inlet or catch basin.

Sod inlet filter are pads of sod placed around a

Sod inlet filters are installed to slow the flow of

filter fabric

nonwoven geotextile

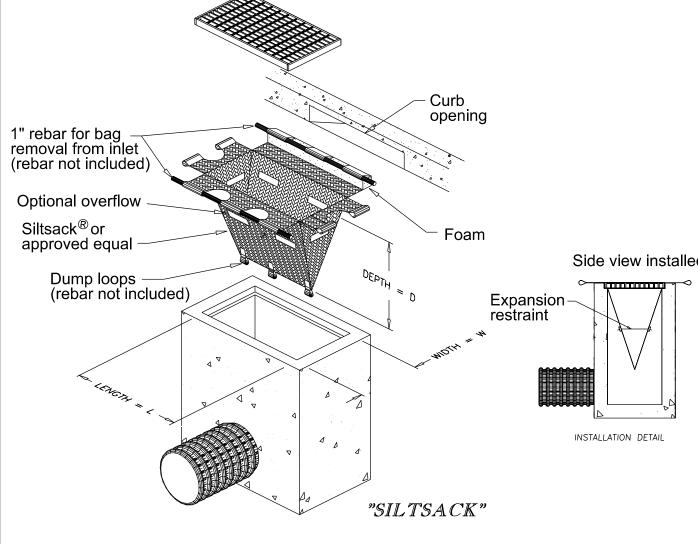
a. Type of "Offsite" drainage outlet(s) available for this site:

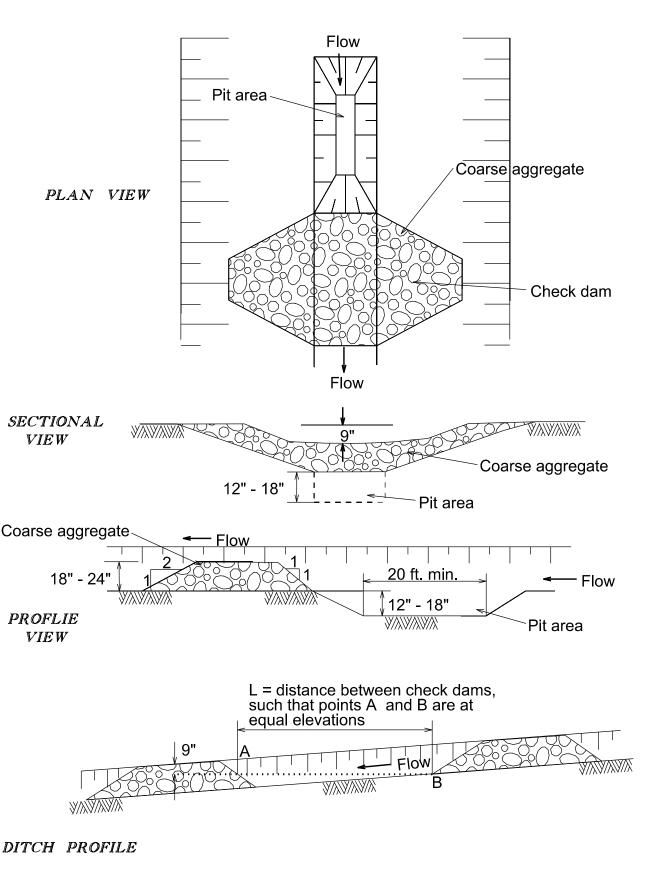
County Drain Name of Drain: Lake/Pond Name of Lake/Pond: River/Stream Name of River/Stream: Enclosed Drain Name of Enclosed Drain: Detention Basin (with outlet) Wetland Retention Basin (no oulet) Overland Flow

- Distance to nearest lake, stream, pond, open drain, or wetland:
- Does the project include any work or disruption with a flood plain
- Does the project include work within the cross-section of a lake/stream (Yes or No)?
- Is a MDEQ Permit required (Yes or No)? If Yes, what is the MDEQ Permit Number (if known):
- If MDEQ Permit is required and application has not been submitted, what is the expected date of submittal?

Builders and developers working in Troy are responsible for complying with the regulations for temporary Storm Drain inserts, also known as "siltsacks". The inserts are used on many construction projects to catch sediment not captured upstream by other construction-related erosion control devices and can be an important temporary environmental safeguard.

- Builders must clean and/or replace the inserts when half of the trap is filled with sediment.
- Builders must inspect and maintain the inserts whenever 1/2 inch of rain falls within a 24-hour period. The inserts are to be removed by the builders within 30 days of site stabilization or after the temporary erosion measures are no longer needed.





SOIL EROSION & SEDIMENTATION CONTROL NOTES

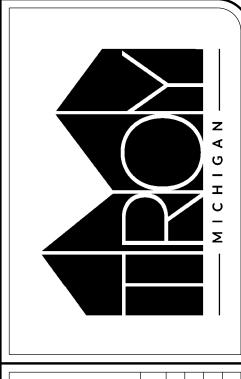
- 1. The following items are intended to be a guide to the contractor in evaluating Soil Erosion control requirements for the project. Specific Soil Erosion control devices and locations may be detailed on the plans. The contractor should also note that Soil Erosion and Sedimentation controls are included in the project unless specified otherwise on the plans or in the specifications.
- 2. All erosion and Sediment control work shall conform to the permit requirements and the standards and specifications of the City of Troy.
- Daily inspections shall be made by the contractor for effectiveness of Soil Erosion and Sedimentation control measures and any necessary repairs shall be performed without delay.
- 4. Erosion and any sedimentation from work on this site shall be contained on the site and not allowed to collect on any off-site areas or in waterways.
- 5. Waterways include natural or man-made open ditches, streams, storm
- 6. Contractor shall apply temporary soil erosion and sedimentation control measures when required or as directed. Contractor shall remove temporary measures as soon as permanent stabilization of slopes, ditches, and other earth changes has been accomplished.
- 7. Staging the work will be done by the contractor as indicated on the Soil Erosion plans and as required to ensure progressive stabilization of disturbed
- 8. The contractor will establish soil erosion control measures in the early stages of construction. Sediment control measures will be applied as a perimeter defense against any transporting of silt off the site.
- 9. Engineer and owner certification must be included on the plans. 10. Separate sheets showing soil erosion and sedimentation control plans must

11. The following guidelines are to be implemented:

a. Check Dams:

drains, lakes and ponds.

- Stone size must be increased with increased slope and velocity.
- Side slope of the dam should be 2:1 or flatter. Straw bales are not to be used for check dams.
- Add stones as needed to maintain design height and cross section. Any accumulation of sediment shall be removed and stockpiled in a
- stabilized area to prevent the material from eroding back into the drainage
- Vegetative Buffer Zones:
- Vegetation must be maintained in a vigorous condition.
- Reshape and reseed areas where concentrated flow occurs or vegetation
- To be used for sheet flows only.
- Not to be used as a roadway.
- Silt Fence:
- Must be installed along the contour line.
- is not to be used in areas of concentrated flow Must be trenched in at least 6 inches and backfilled.
- Multiple rows are to be used up a slope. Accumulated sediment must be periodically removed.
- Where necessary, a support fence shall be used to support the geotextile
- To be removed after site is permanently stabilized.
- d. Inlet Sediment Trap:
- The sediment deposition area and nonwoven geotextile filter fabric should be cleaned of all accumulated sediment after each storm.
- After all contributing areas are stabilized, the filter fabric will be removed, sediment deposition area filled, and a sod inlet filter placed over the disrupted lawn area.
- The filter material used to backfill parking lot drainage holes will be peastone. The side excavation for the placement of this material will not be deeper than the invert of the drainage holes.
- Inlet Filters After Paving or Grading:
- Inlet filters will remain in place until all denuded areas contributing to them are stabilized with vegetation.
- Periodic inspection and maintenance will be provided to insure that filters are functioning properly.
- Sod Inlet Filter:
- Sod inlet filters will only be used to handle light concentrations of sediment. Recommended for use after final grading is complete and during the
- establishment of a vegetative cover. Catch basin inlet covers may be wrapped in a non-woven geotextile filter
- fabric for additional filtration
- Periodic inspection and maintenance must be provided to insure efficient



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water into an inlet or catch basin and to filter Support fence Undisturbed vegetation out appreciable amounts of sediment in the process. ✓ Fence posts Sod inlet filters should only be used to handle Where applicable <u> 6 ft. max. spacing</u> light concentrations of sediment. They are best used after final grading is completed and during the establishment of a vegetative cover. Geotextile filter fabric Support fence MINIMUM SIZE SHALL BE 20 FT. X 20 FT. Coarse aggregate ______ 6" min depth Fabric layers anchor trench to be wrapped around fence Silt fence "a" < Silt fence "b" Geotextile filter fabric ← Flow Flow -fastened on the uphill side towards earth disruption Ridge of compacted Silt fence "b" earth on uphill side Sod Sheet flow Silt fence "a"--6" x 6" min **ISOMETERIC** Silt fence joint anchor trench VIEWDITCH PROFILE SILT FENCE SEDIMENT TRAP WITH CHECK DAM SOD INLET FILTER SILT FENCE JOINT DETAIL

Scarify the finish grade

Coarse aggregate
M.D.O.T. 6a

-Proposed final

pavement elevation

PARKING LOT

FILTER

1" dia. drainage holes

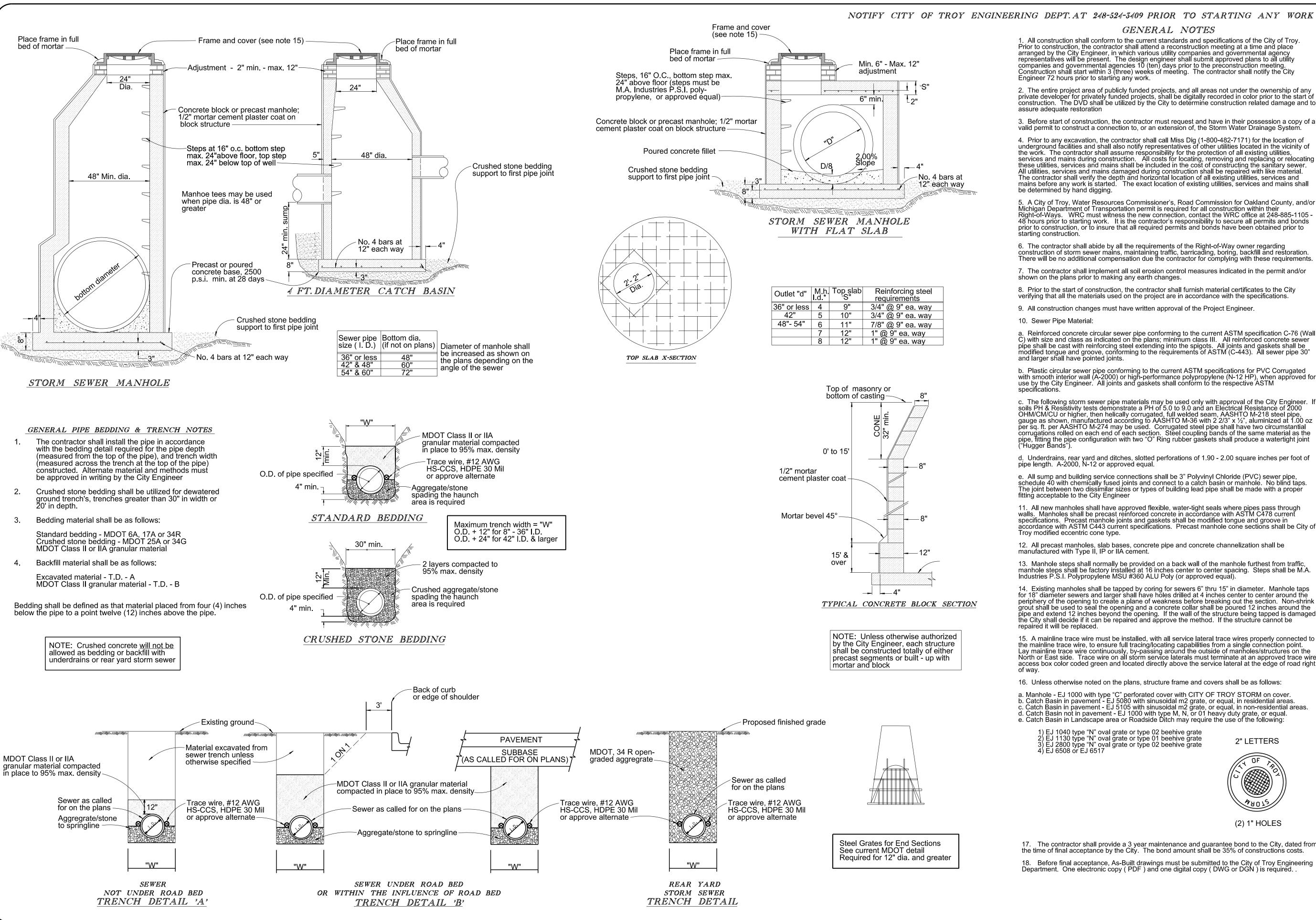
drilled through catch

basin cone & grouted after filter is removed

perpendicular to the slope

of the parking lot

If inserts are removed during times of flooding, the builder is responsible for re-installing them per Silt sock inserts are required for all developments with curb inlets or pavement inlets. Rear yard catch basins may utilize a non-woven Geotextile fabric. Side view installed





Prior to construction, the contractor shall attend a reconstruction meeting at a time and place arranged by the City Engineer, in which various utility companies and governmental agency representatives will be present. The design engineer shall submit approved plans to all utility companies and governmental agencies 10 (ten) days prior to the preconstruction meeting. Construction shall start within 3 (three) weeks of meeting. The contractor shall notify the City

- 2. The entire project area of publicly funded projects, and all areas not under the ownership of any private developer for privately funded projects, shall be digitally recorded in color prior to the start of construction. The DVD shall be utilized by the City to determine construction related damage and to
- 3. Before start of construction, the contractor must request and have in their possession a copy of a
- 4. Prior to any excavation, the contractor shall call Miss Dig (1-800-482-7171) for the location of underground facilities and shall also notify representatives of other utilities located in the vicinity of the work. The contractor shall assume responsibility for the protection of all existing utilities, services and mains during construction. All costs for locating, removing and replacing or relocating these utilities, services and mains shall be included in the cost of constructing the sanitary sewer.

 All utilities, services and mains damaged during construction shall be repaired with like material. The contractor shall verify the depth and horizontal location of all existing utilities, services and mains before any work is started. The exact location of existing utilities, services and mains shall
- 5. A City of Troy, Water Resources Commissioner's, Road Commission for Oakland County, and/or Michigan Department of Transportation permit is required for all construction within their Right-of-Ways. WRC must witness the new connection, contact the WRC office at 248-885-1105 -48 hours prior to starting work. It is the contractor's responsibility to secure all permits and bonds prior to construction, or to insure that all required permits and bonds have been obtained prior to

6. The contractor shall abide by all the requirements of the Right-of-Way owner regarding construction of storm sewer mains, maintaining traffic, barricading, boring, backfill and restoration. There will be no additional compensation due the contractor for complying with these requirements.

a. Reinforced concrete circular sewer pipe conforming to the current ASTM specification C-76 (Wall C) with size and class as indicated on the plans; minimum class III. All reinforced concrete sewer pipe shall be cast with reinforcing steel extending into the spigots. All joints and gaskets shall be modified tongue and groove, conforming to the requirements of ASTM (C-443). All sewer pipe 30"

b. Plastic circular sewer pipe conforming to the current ASTM specifications for PVC Corrugated with smooth interior wall (A-2000) or high-performance polypropylene (N-12 HP), when approved for use by the City Engineer. All joints and gaskets shall conform to the respective ASTM

c. The following storm sewer pipe materials may be used only with approval of the City Engineer. If soils PH & Resistivity tests demonstrate a PH of 5.0 to 9.0 and an Electrical Resistance of 2000 OHM/CM/CU or higher, then helically corrugated, full welded seam, AASHTO M-218 steel pipe, gauge as shown, manufactured according to AASHTO M-36 with 2 2/3" x ½", aluminized at 1.00 oz per sq. ft. per AASHTO M-274 may be used. Corrugated steel pipe shall have two circumstantial corrugations rolled on each end of each section. Steel coupling bands of the same material as the pipe, fitting the pipe configuration with two "O" Ring rubber gaskets shall produce a watertight joint

d. Underdrains, rear yard and ditches, slotted perforations of 1.90 - 2.00 square inches per foot of pipe length. A-2000, N-12 or approved equal.

e. All sump and building service connections shall be 3" Polyvinyl Chloride (PVC) sewer pipe, schedule 40 with chemically fused joints and connect to a catch basin or manhole. No blind taps. The joint between two dissímilar sizes or types of building lead pipe shall be made with a proper

11. All new manholes shall have approved flexible, water-tight seals where pipes pass through walls. Manholes shall be precast reinforced concrete in accordance with ASTM C478 current specifications. Precast manhole joints and gaskets shall be modified tongue and groove in accordance with ASTM C443 current specifications. Precast manhole cone sections shall be City of

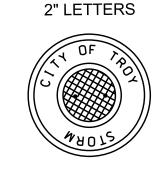
13. Manhole steps shall normally be provided on a back wall of the manhole furthest from traffic, manhole steps shall be factory installed at 16 inches center to center spacing. Steps shall be M.A. Industries P.S.I. Polypropylene MSU #360 ALU Poly (or approved equal).

14. Existing manholes shall be tapped by coring for sewers 6" thru 15" in diameter. Manhole taps for 18" diameter sewers and larger shall have holes drilled at 4 inches center to center around the periphery of the opening to create a plane of weakness before breaking out the section. Non-shrink grout shall be used to seal the opening and a concrete collar shall be poured 12 inches around the pipe and extend 12 inches beyond the opening. If the wall of the structure being tapped is damaged, the City shall decide if it can be repaired and approve the method. If the structure cannot be

15. A mainline trace wire must be installed, with all service lateral trace wires properly connected to the mainline trace wire, to ensure full tracing/locating capabilities from a single connection point. Lay mainline trace wire continuously, by-passing around the outside of manholes/structures on the North or East side. Trace wire on all storm service laterals must terminate at an approved trace wire access box color coded green and located directly above the service lateral at the edge of road right

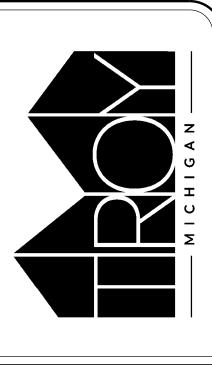
16. Unless otherwise noted on the plans, structure frame and covers shall be as follows:

a. Manhole - EJ 1000 with type "C" perforated cover with CITY OF TROY STORM on cover. b. Catch Basin in pavement - EJ 5080 with sinusoidal m2 grate, or equal, in residential areas. c. Catch Basin in pavement - EJ 5105 with sinusoidal m2 grate, or equal, in non-residential areas. d. Catch Basin not in pavement - EJ 1000 with type M, N, or 01 heavy duty grate, or equal. e. Catch Basin in Landscape area or Roadside Ditch may require the use of the following:

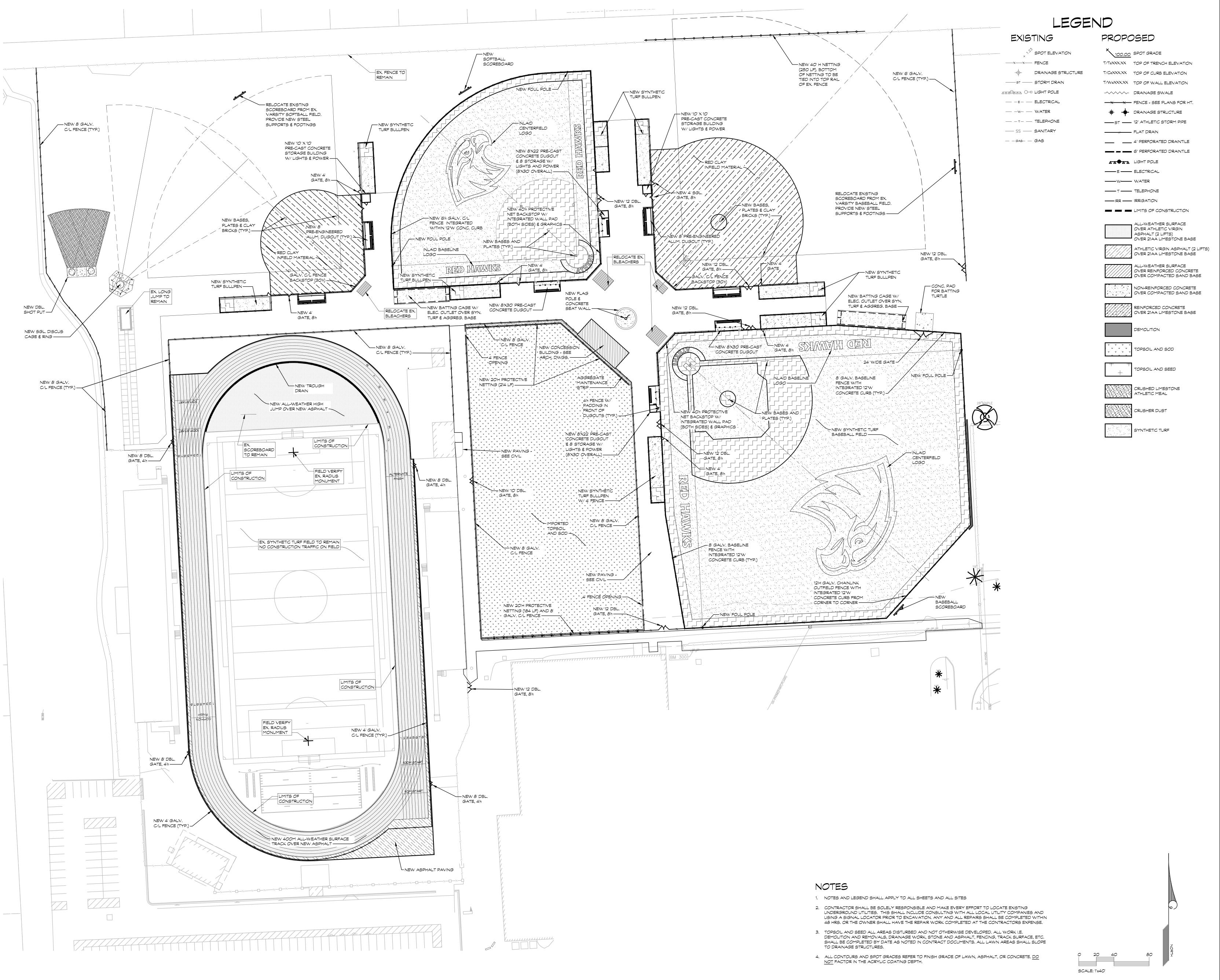


(2) 1" HOLES

17. The contractor shall provide a 3 year maintenance and guarantee bond to the City, dated from the time of final acceptance by the City. The bond amount shall be 35% of constructions costs.



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REGISTRATION SEAL

CONSULTANT



PROJECT TITLE Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

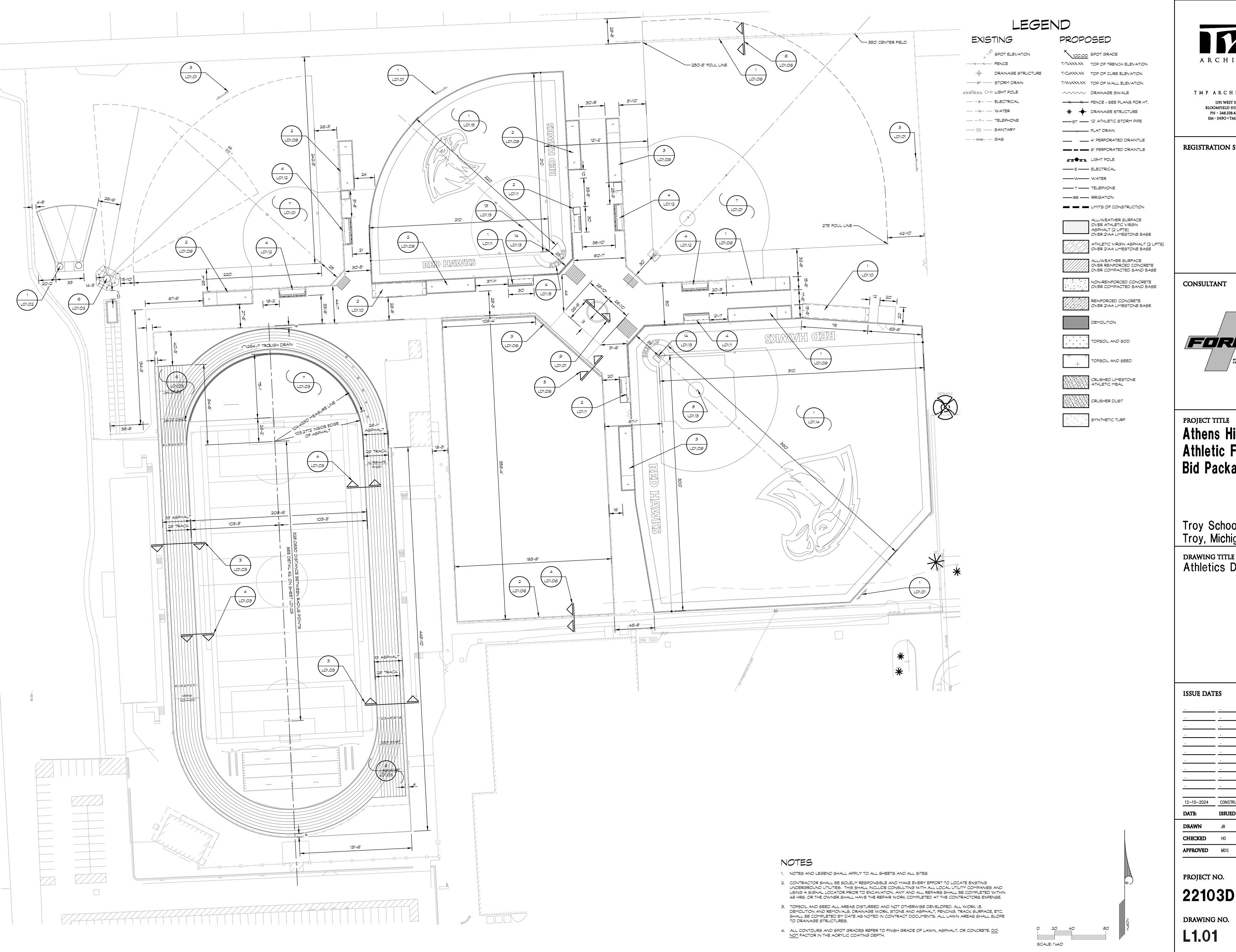
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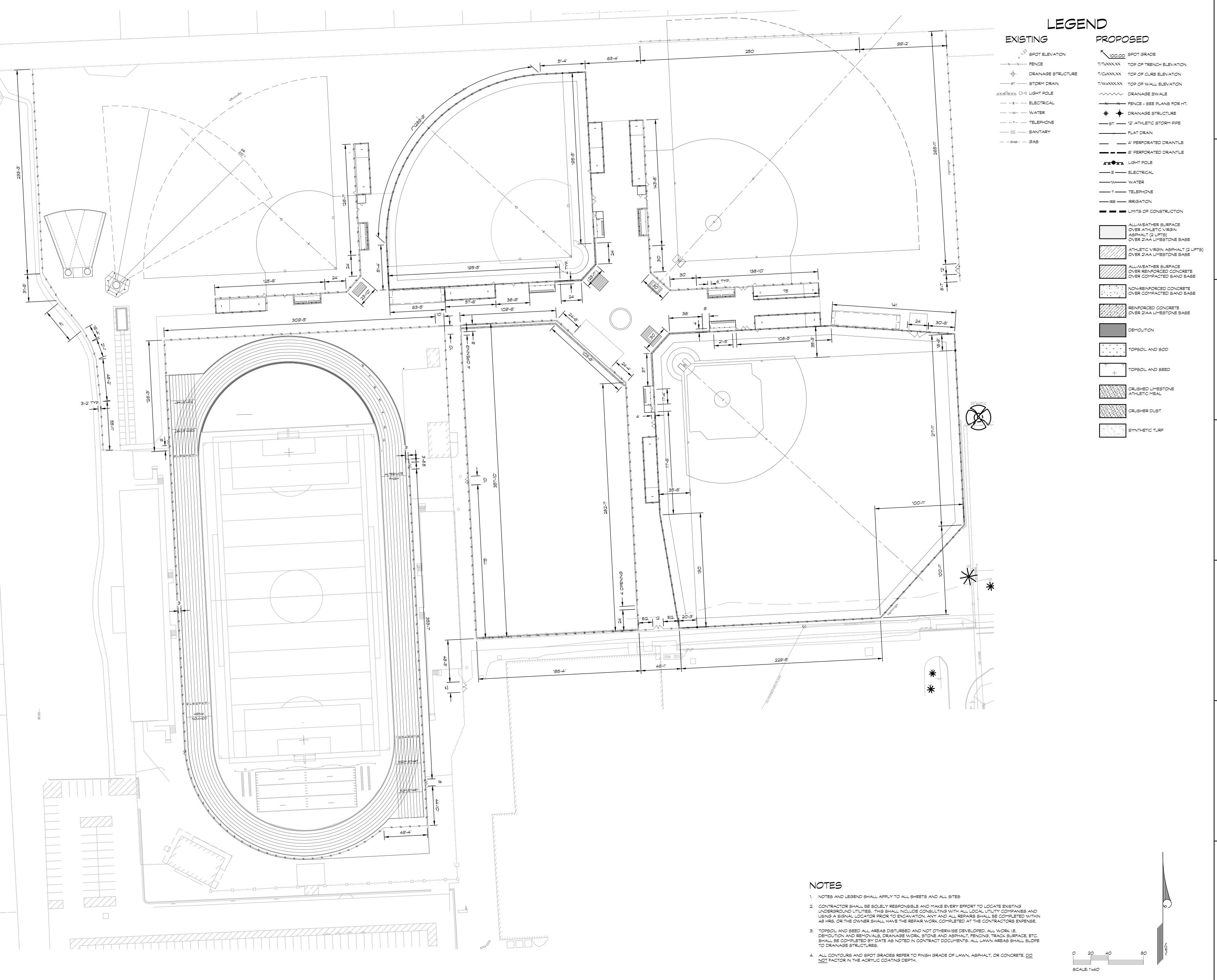
Troy School District Troy, Michigan

DRAWING TITLE
Athletics Dimension Plan

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Athens High School
Athletic Fields
Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE
Athletics Fence Plan

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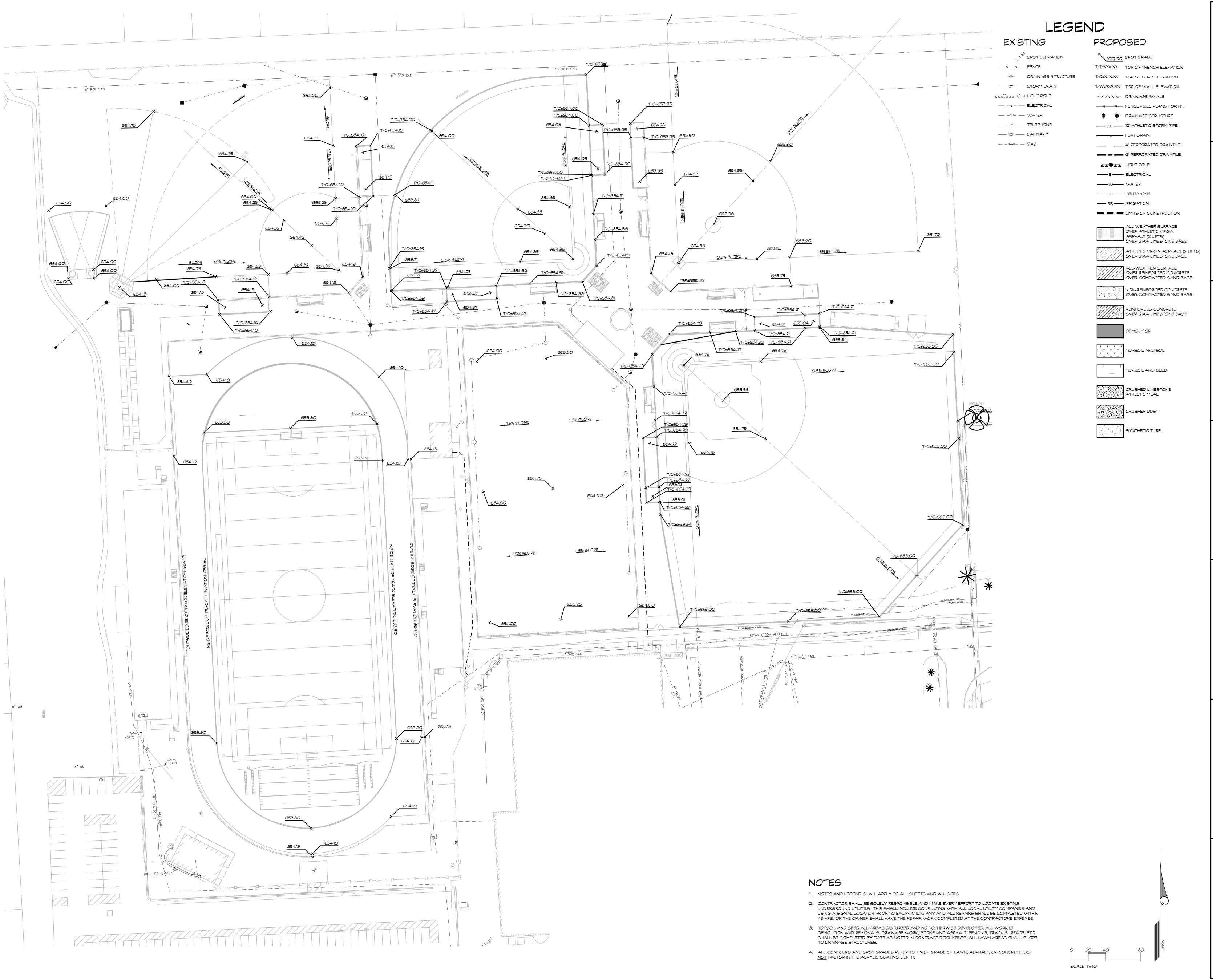
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PROJECT TITLE Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE
Athletics Grading Plan

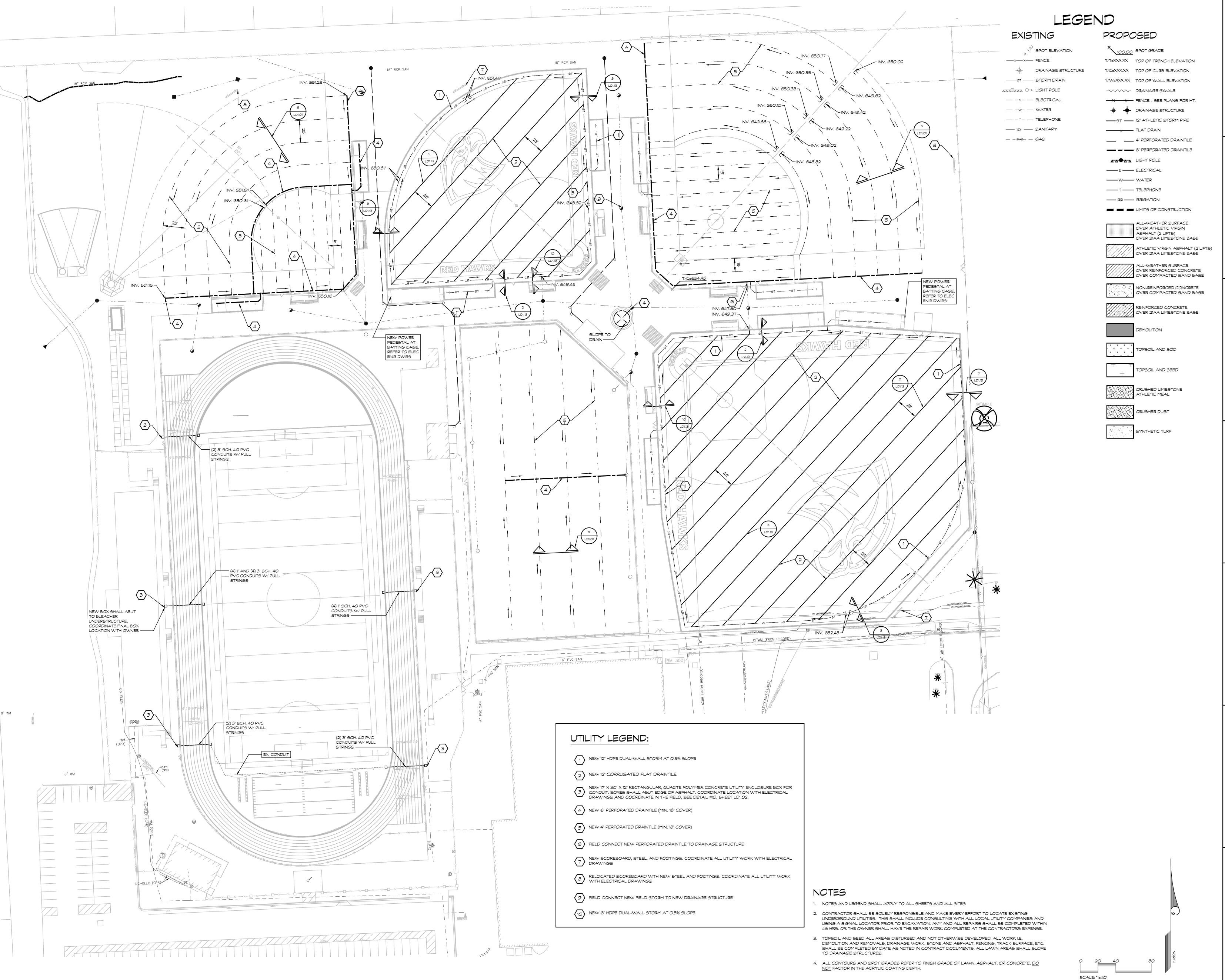
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Athletic Fields
Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE
Athletics Drainage Plan

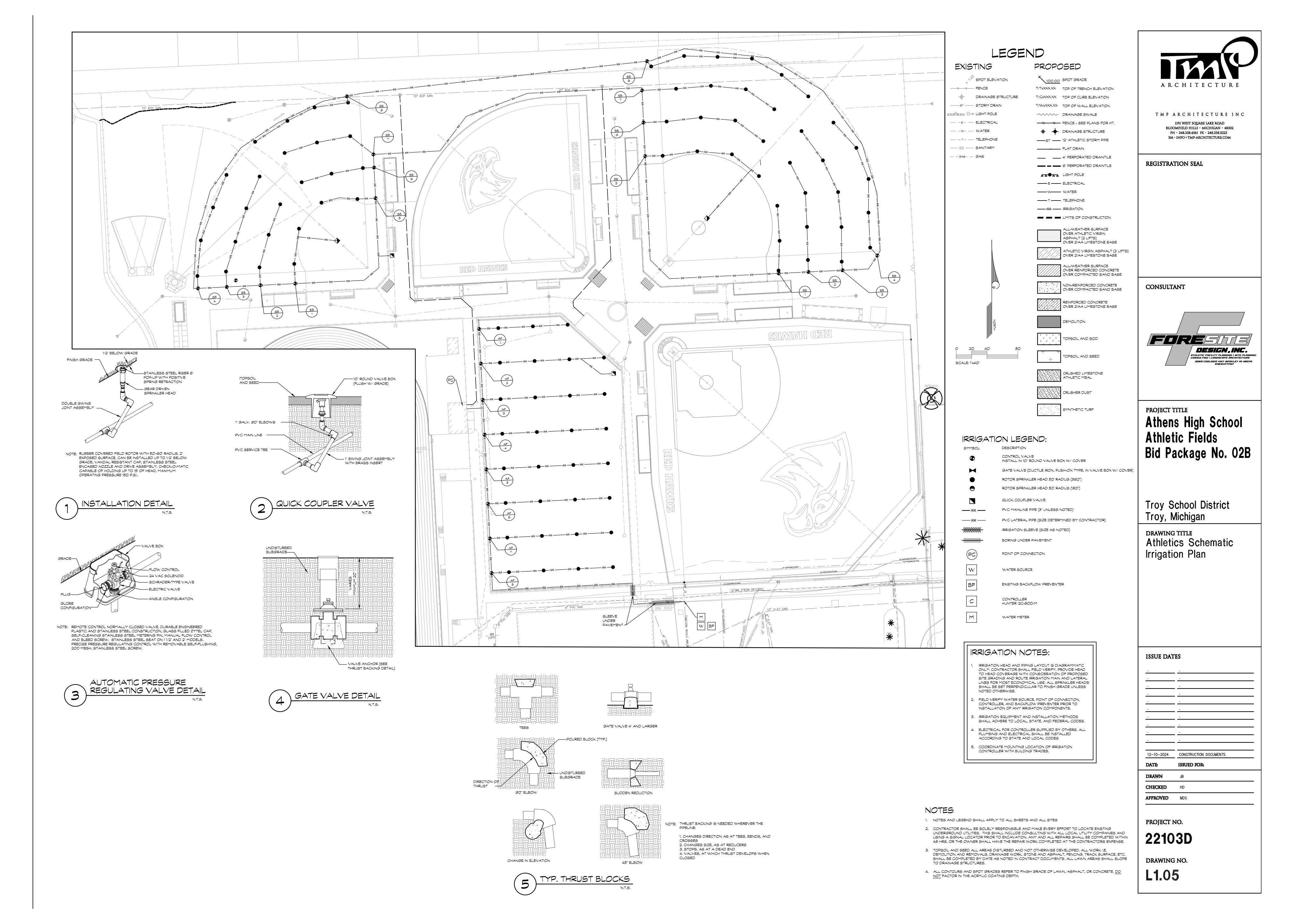
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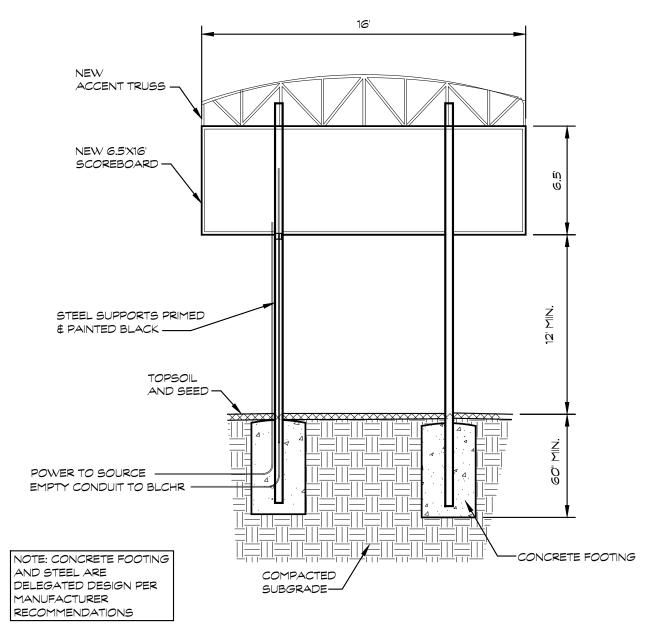
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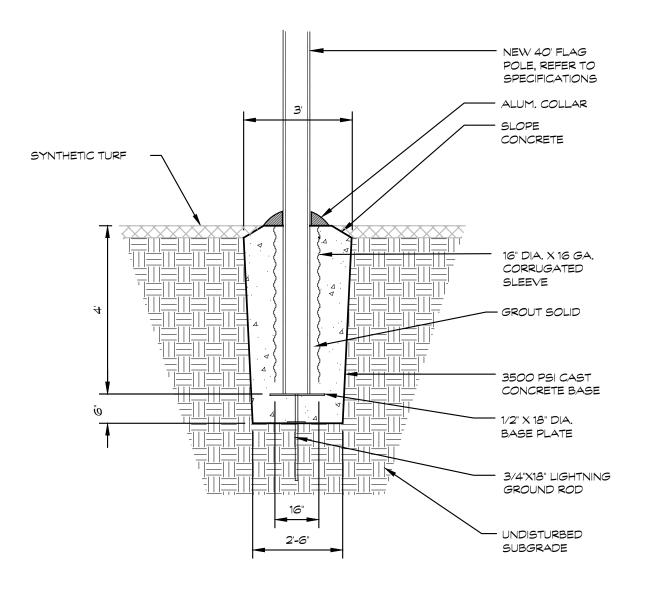
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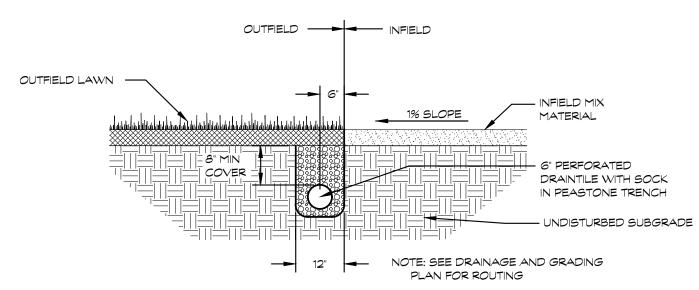




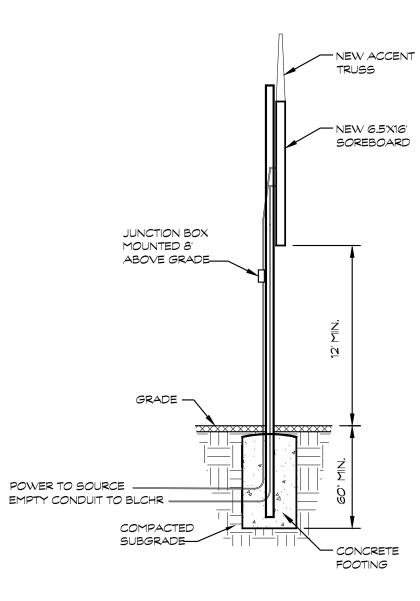
SCOREBOARD ELEVATION DETAIL VARSITY BASEBALL AND SOFTBALL SCALE 3/16"=1'-0"



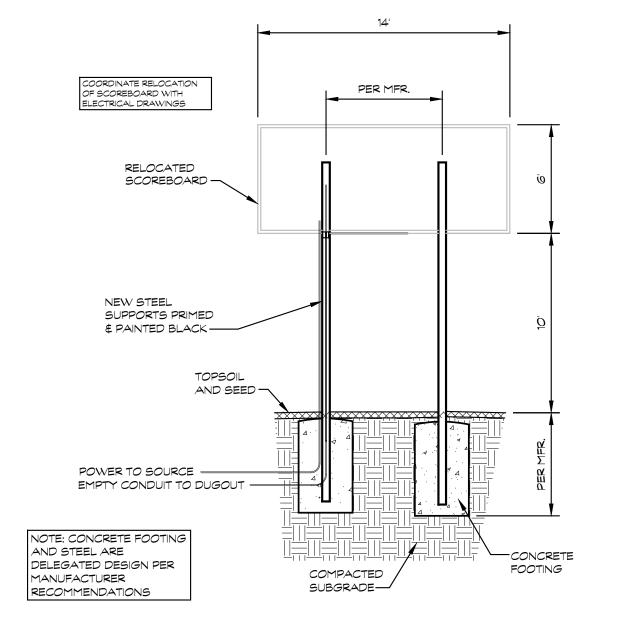
FLAG POLE FOUNDATION



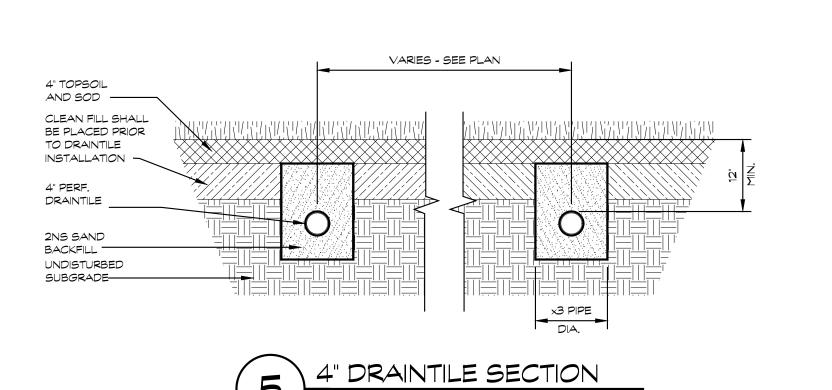
INFIELD/OUTFIELD DRAIN SECTION SCALE 1/2"=1'-0"



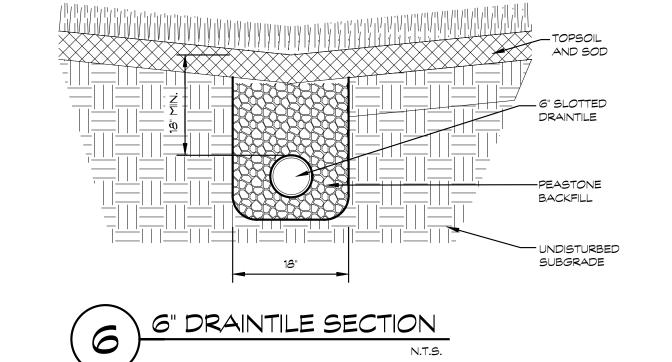
SCALE 3/16"=1'-0" VARSITY BASEBALL AND SOFTBALL

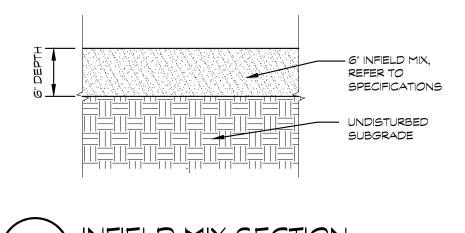


JV BASEBALL AND SOFTBALL SCALE 3/16"=1'-0"

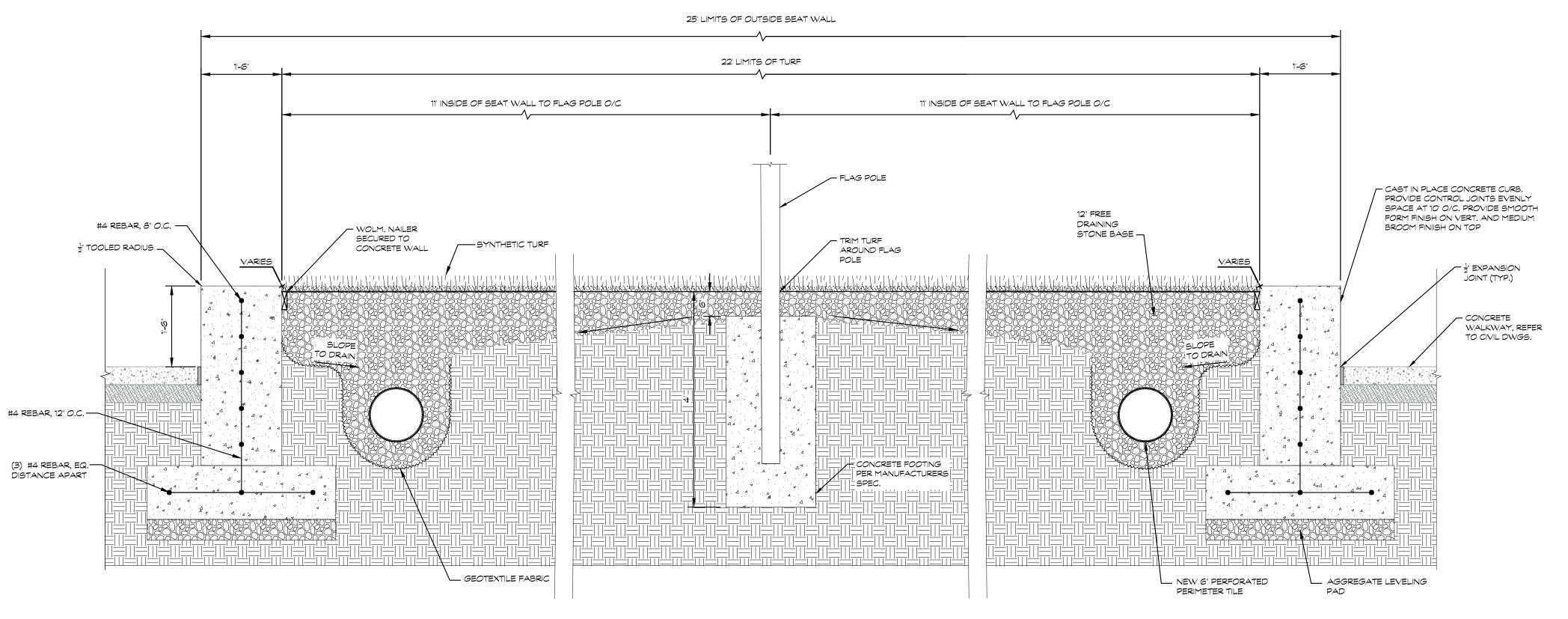


SCALE 3/4"=1'-0"





INFIELD MIX SECTION SCALE 1-1/2"=1'-0"

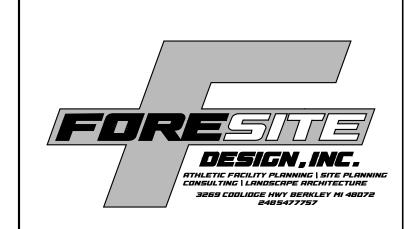


FLAG POLE FOCAL POINT SECTION SCALE 3/4"=1'-0"



REGISTRATION SEAL

CONSULTANT



PROJECT TITLE Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE Site Details

ISSUE DATES

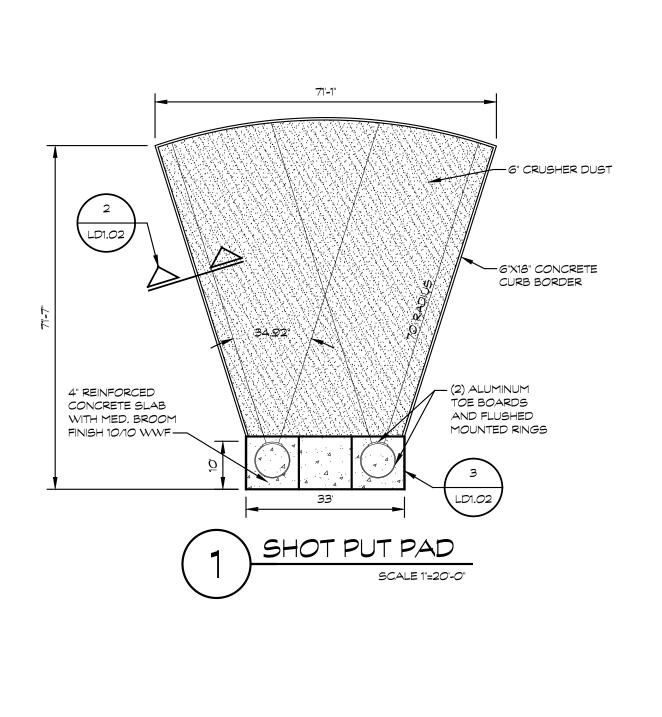
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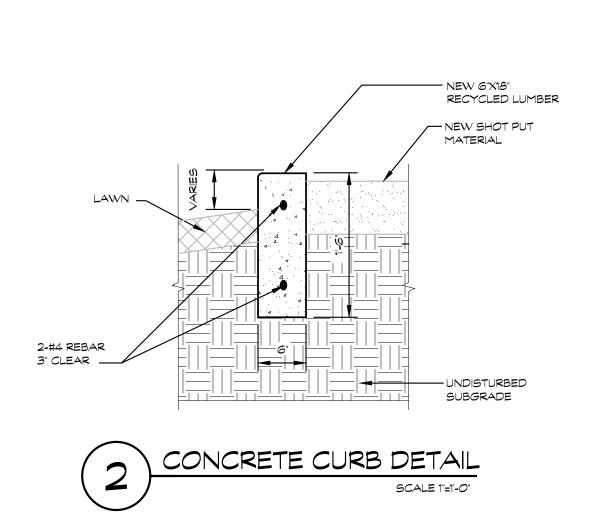
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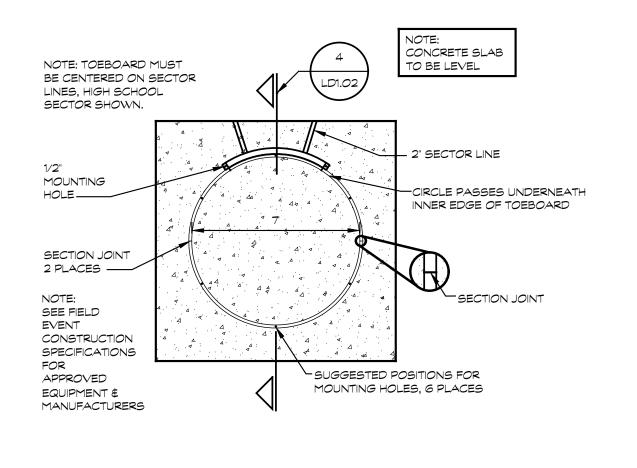
PROJECT NO.

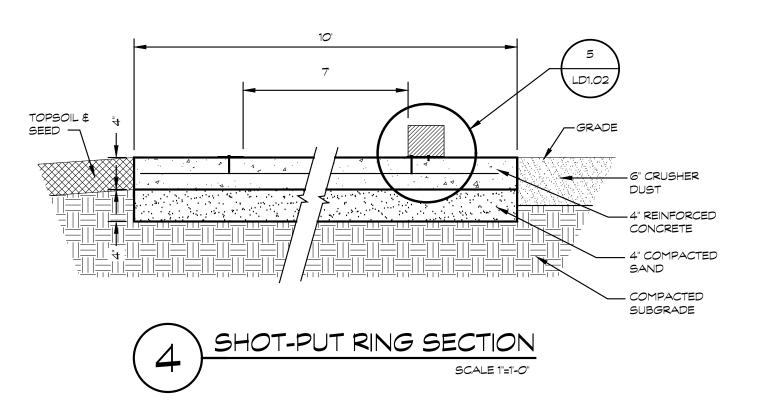
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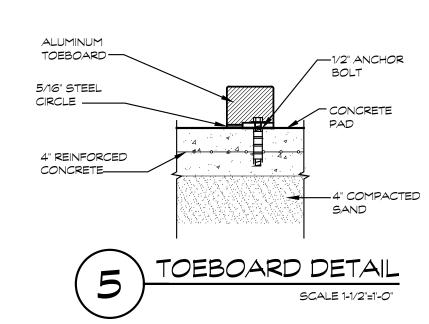
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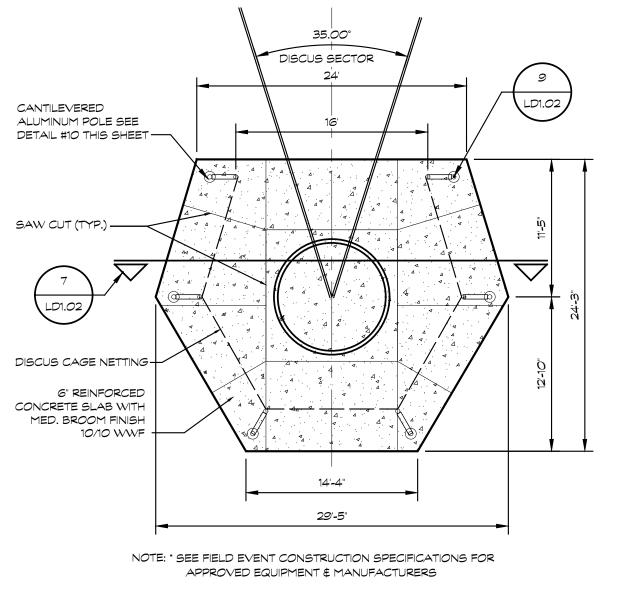




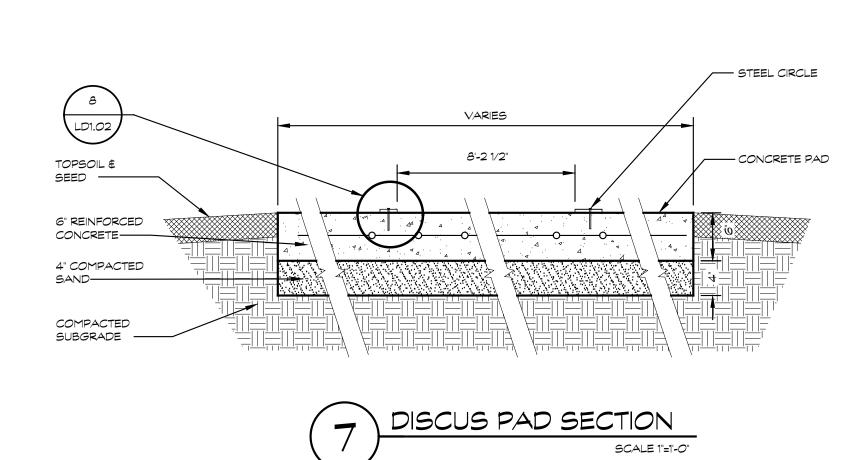


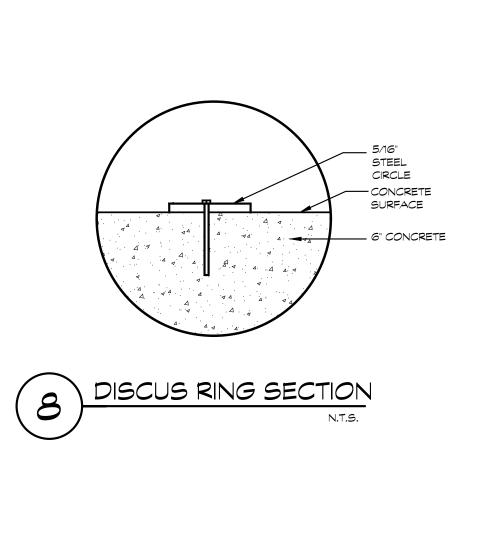


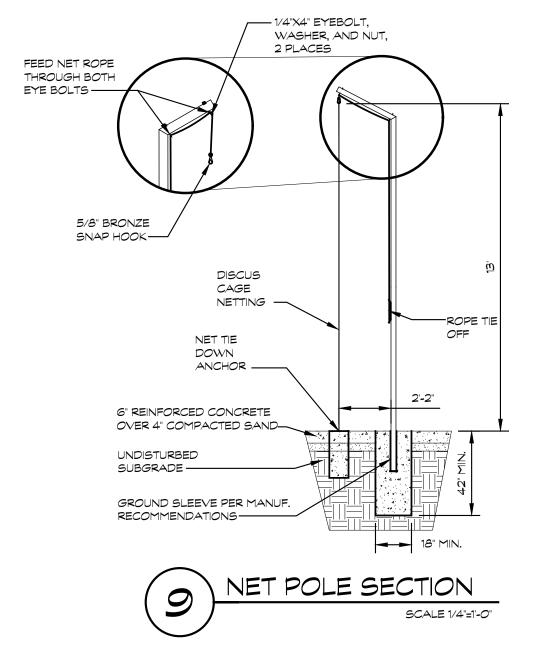


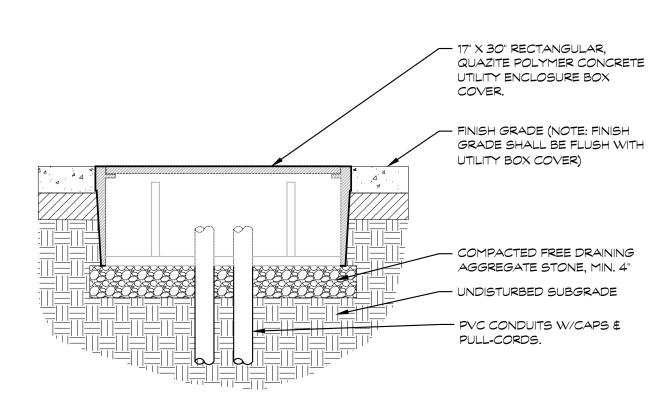


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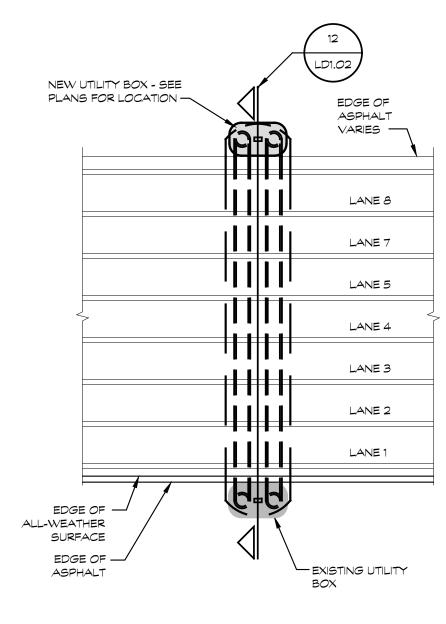




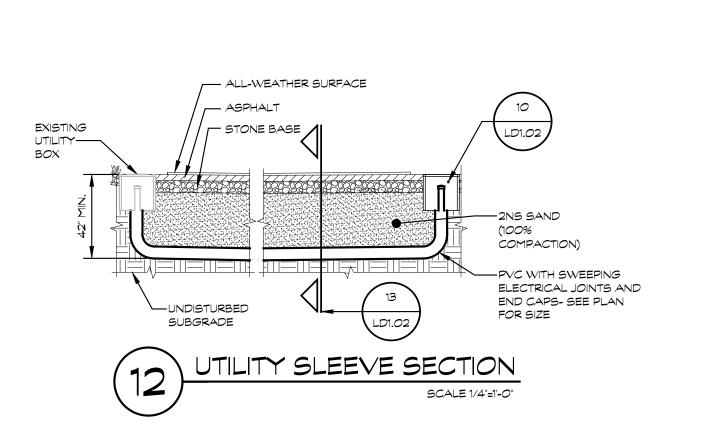


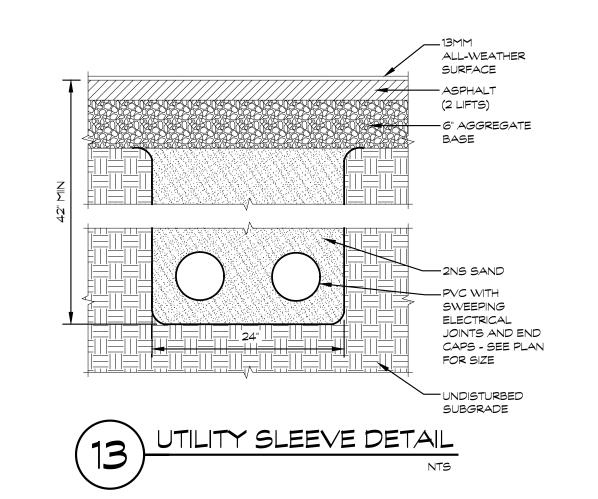
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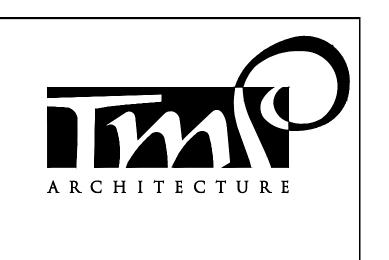










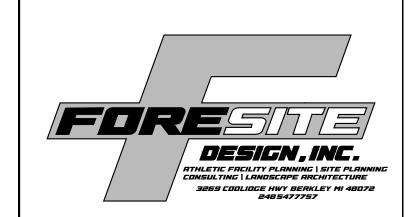


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REGISTRATION SEAL

CONSULTANT



Athens High School
Athletic Fields
Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE
Track and Field Event
Details

ISSUE DATES	
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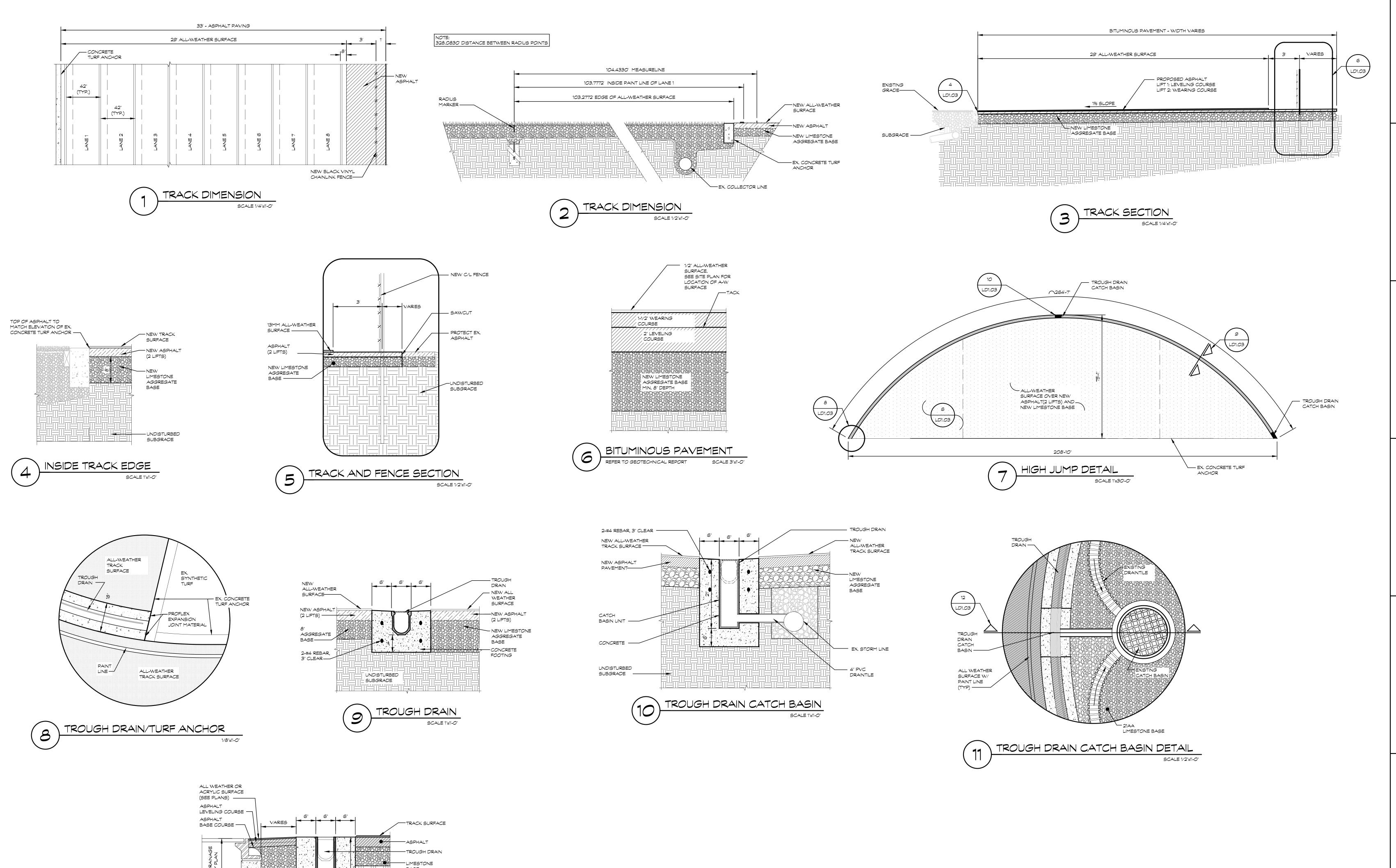
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PROJECT NO.

22103D



-UNDISTURBED SUBGRADE

— CONCRETE FOOTING

TROUGH DRAIN CATCH BASIN DETAIL

CATCH BASIN -

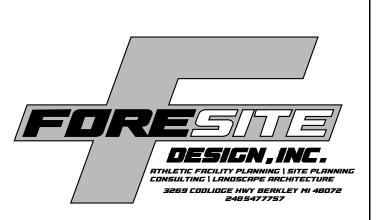


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Athletic Fields
Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE
Track and Field Event
Details

ISSUE DATES

12-10-2024 CONSTRUCTION DOCUMENTS

DATE: ISSUED FOR:

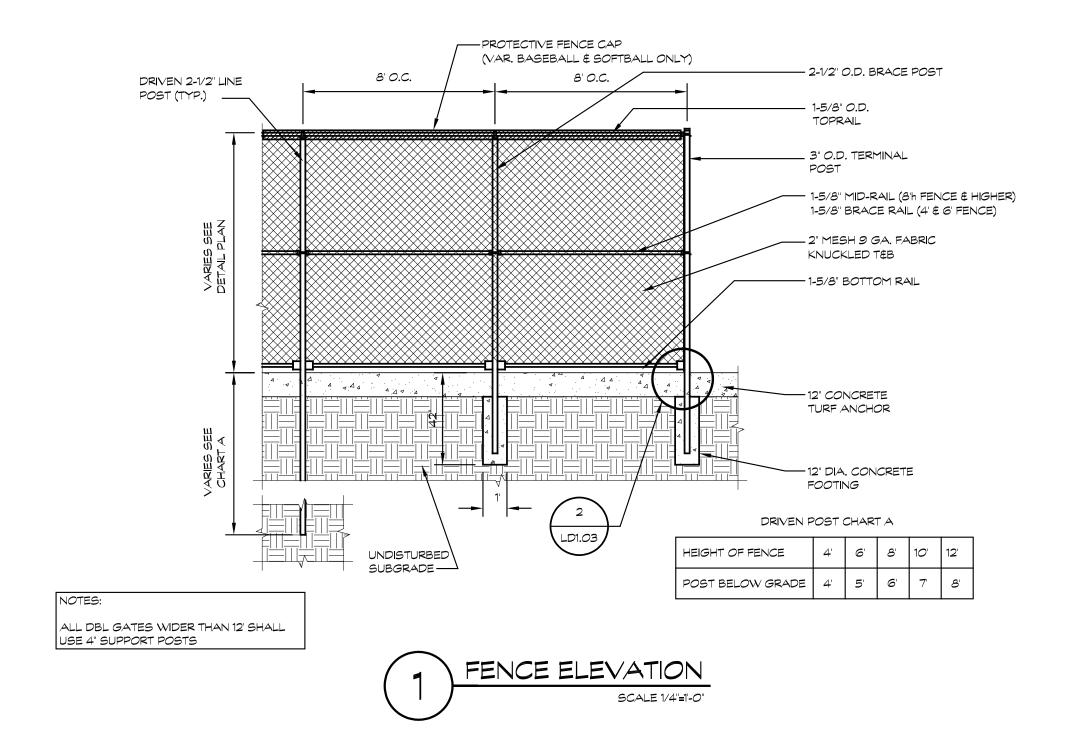
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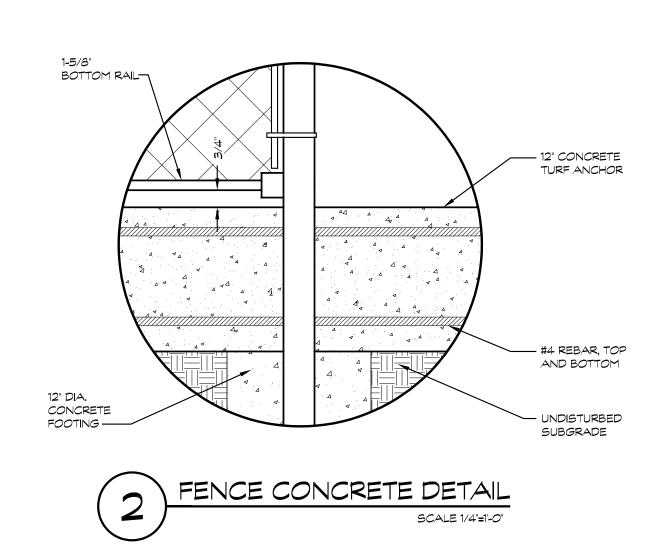
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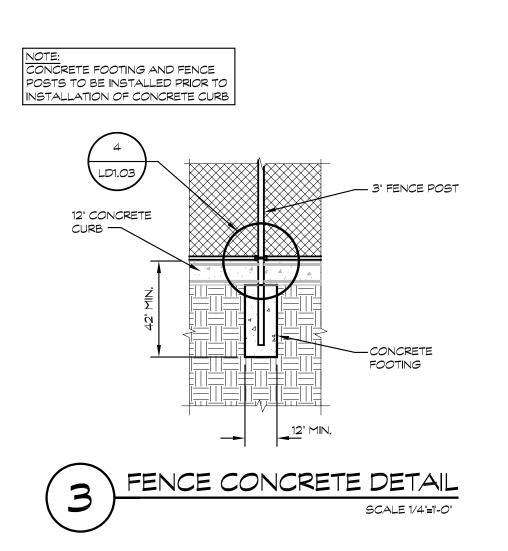
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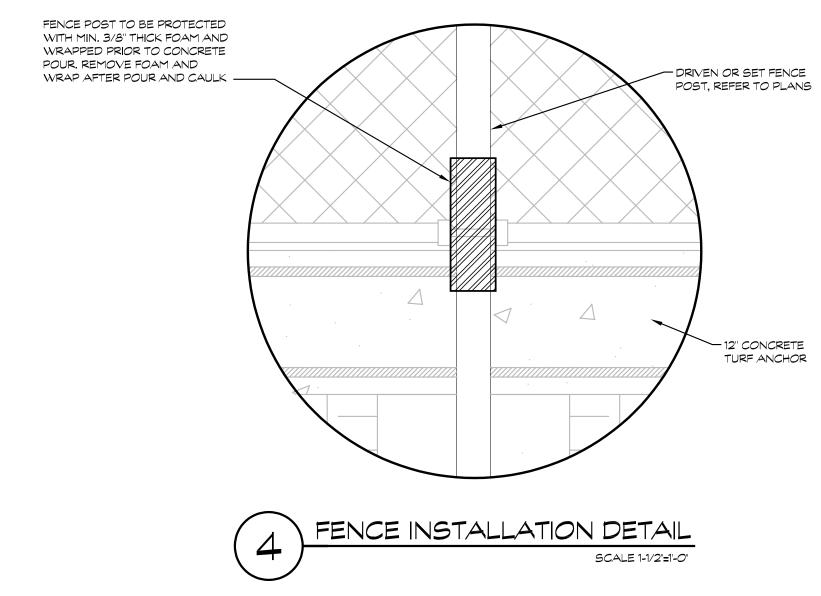
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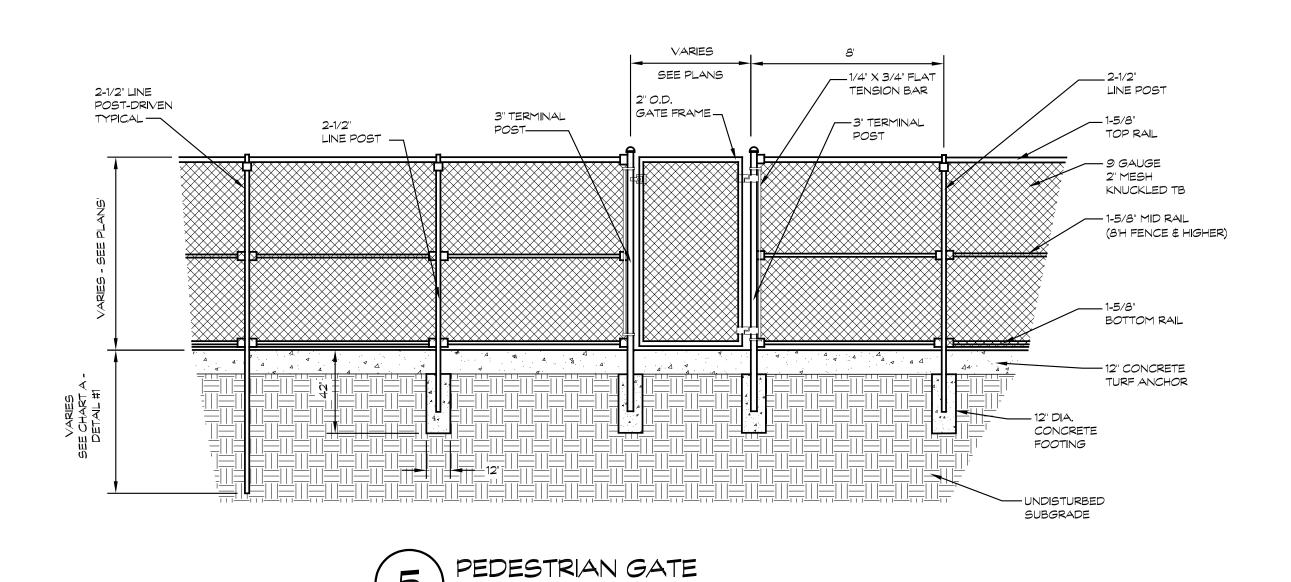
22103D



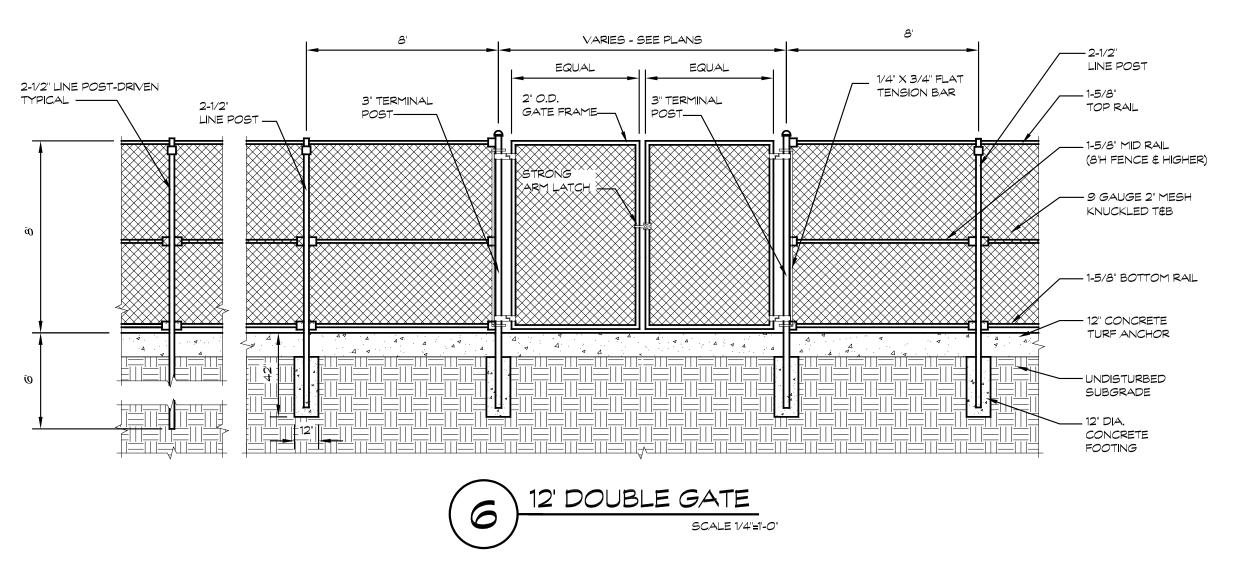


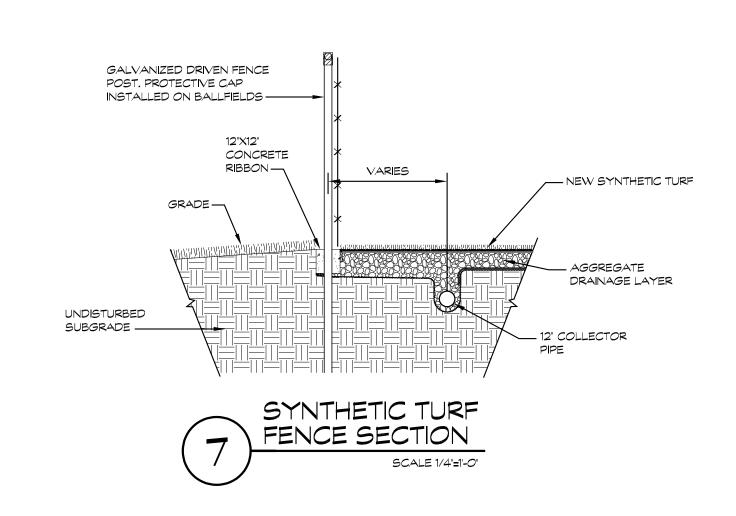


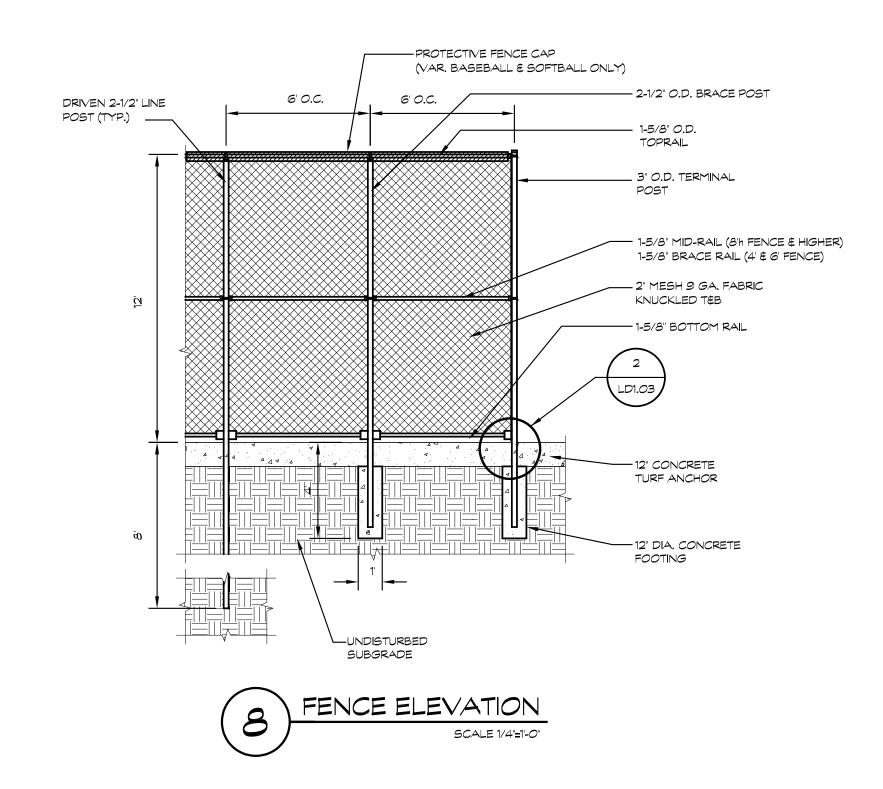




SCALE 1/4"=1'-0"









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CONSULTANT



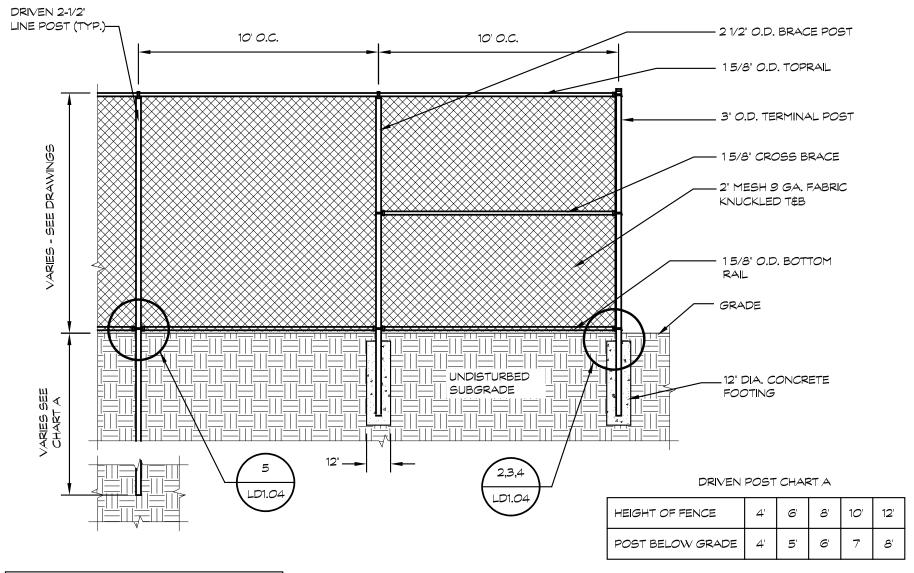
Athens High School
Athletic Fields
Bid Package No. 02B

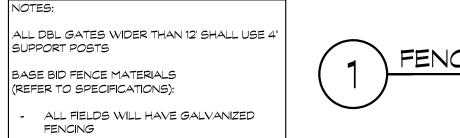
Troy School District Troy, Michigan

DRAWING TITLE
Synthetic Turf
Fence Details

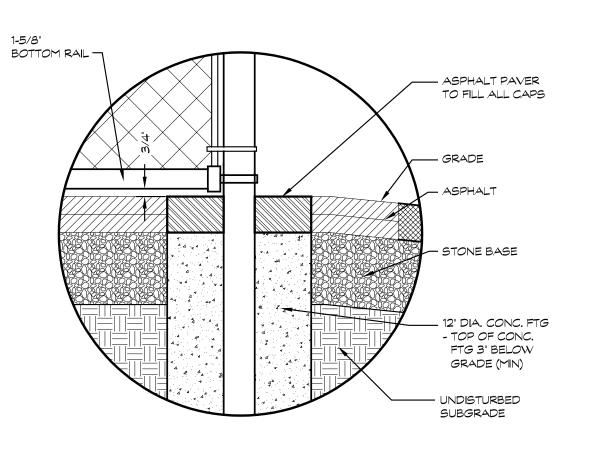
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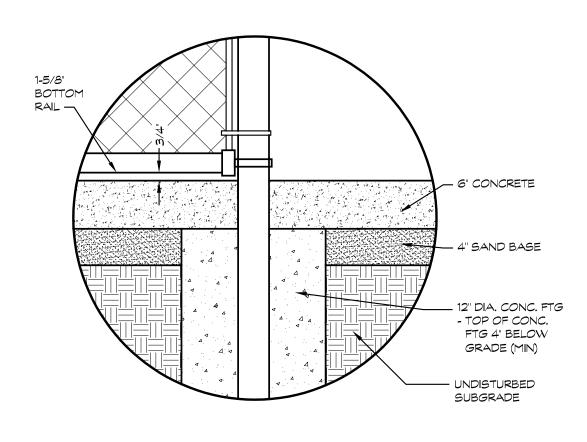




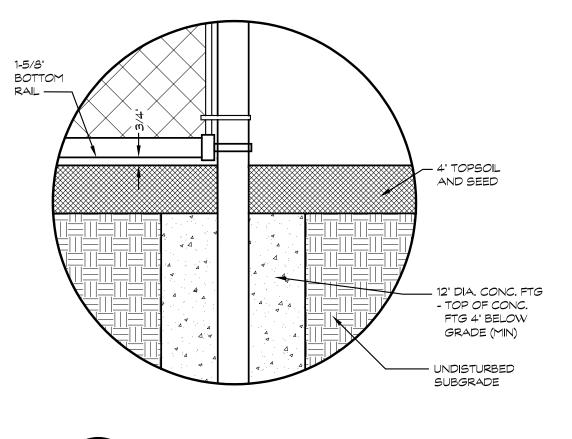




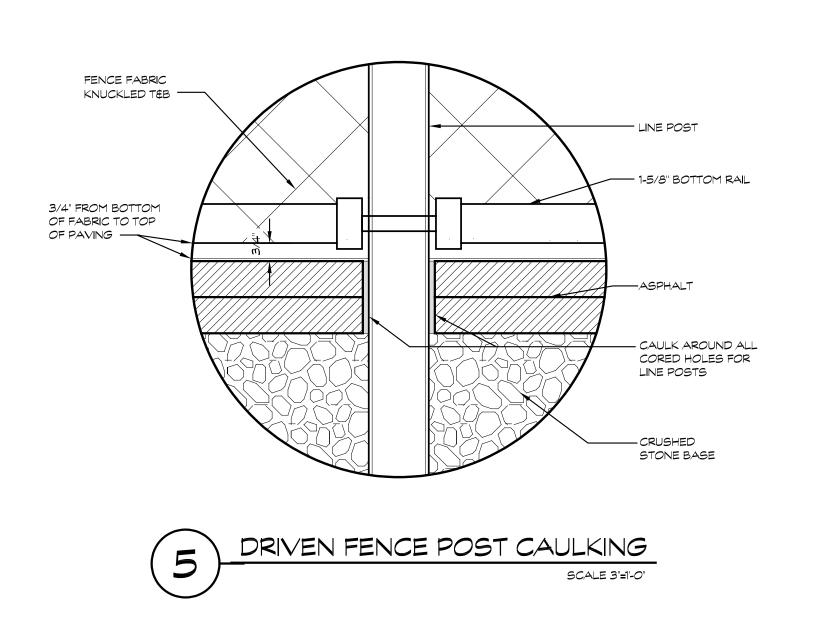


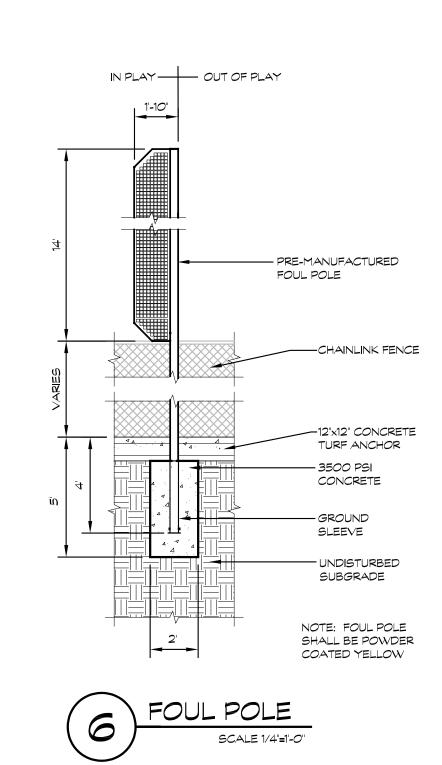


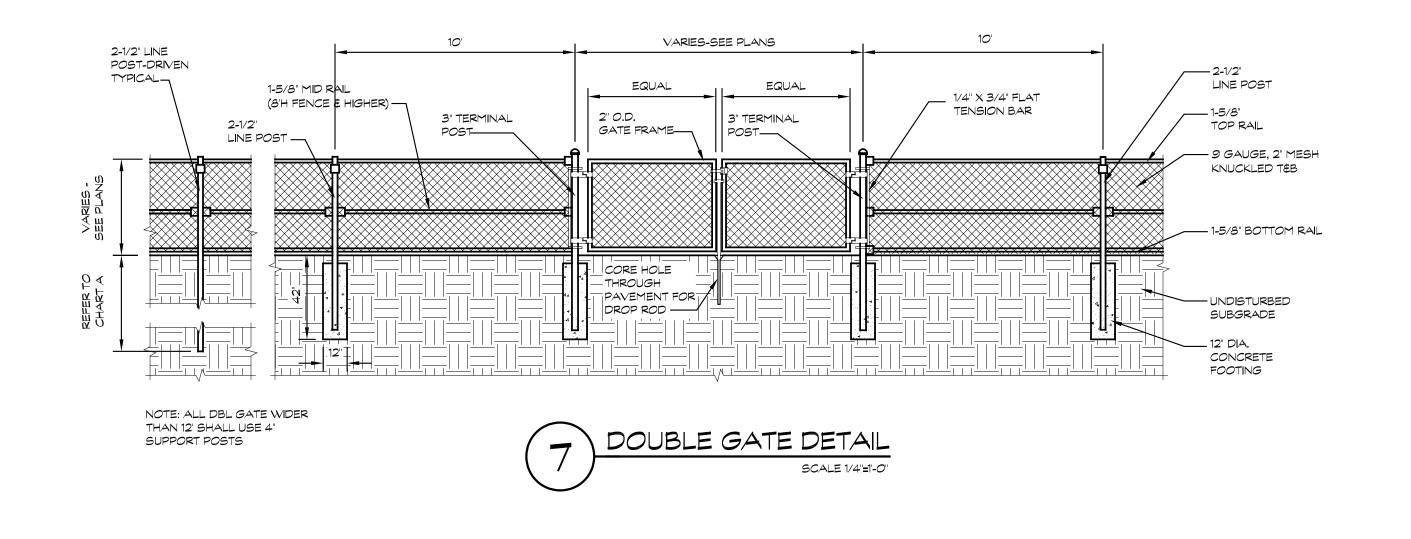


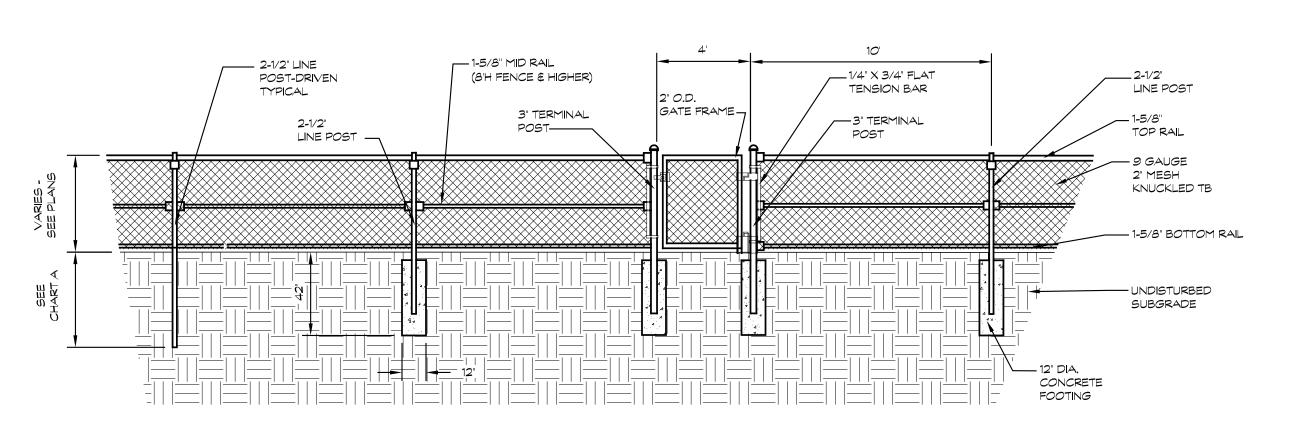
















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Athens High School
Athletic Fields
Bid Package No. 02B

Troy School District Troy, Michigan

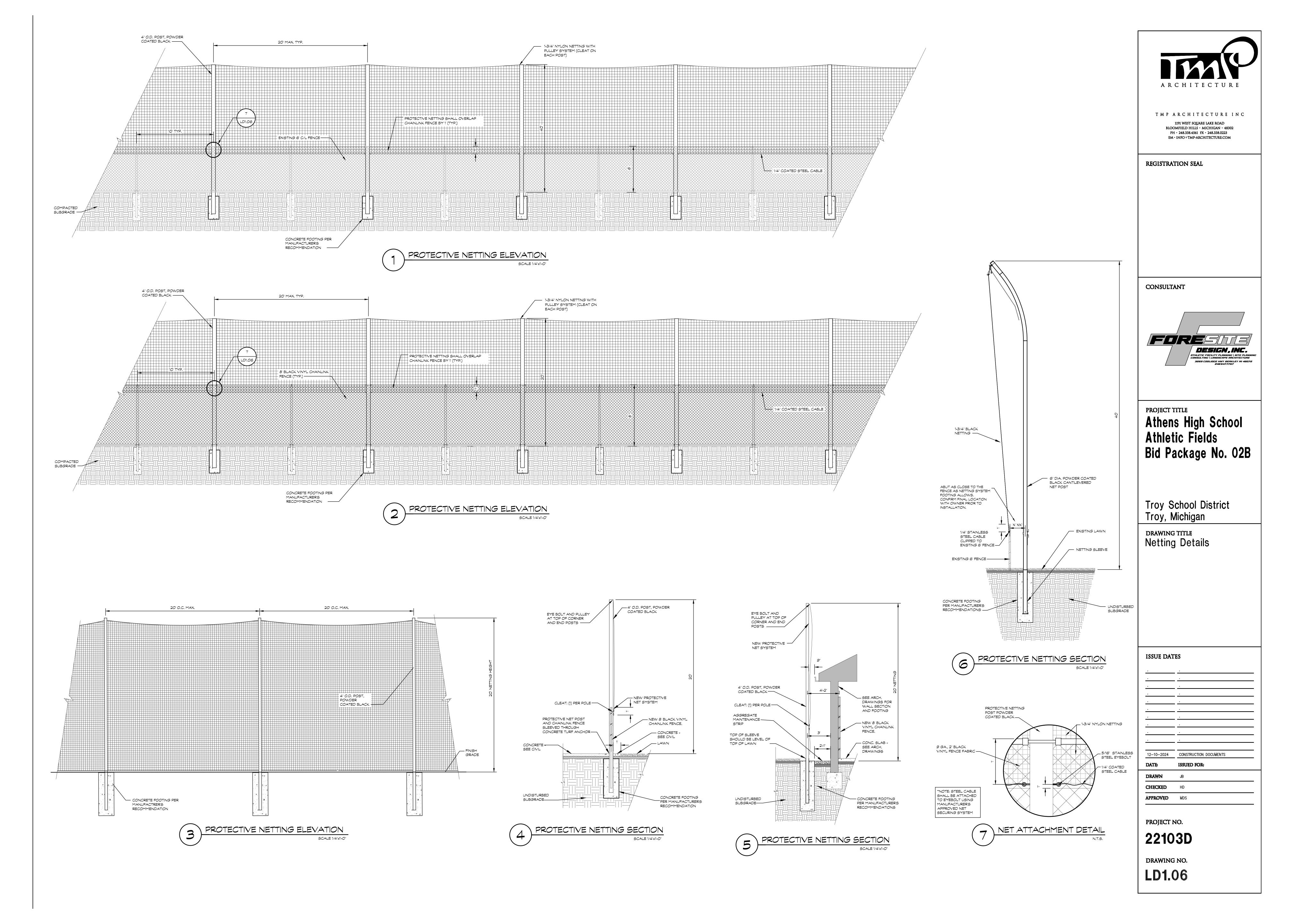
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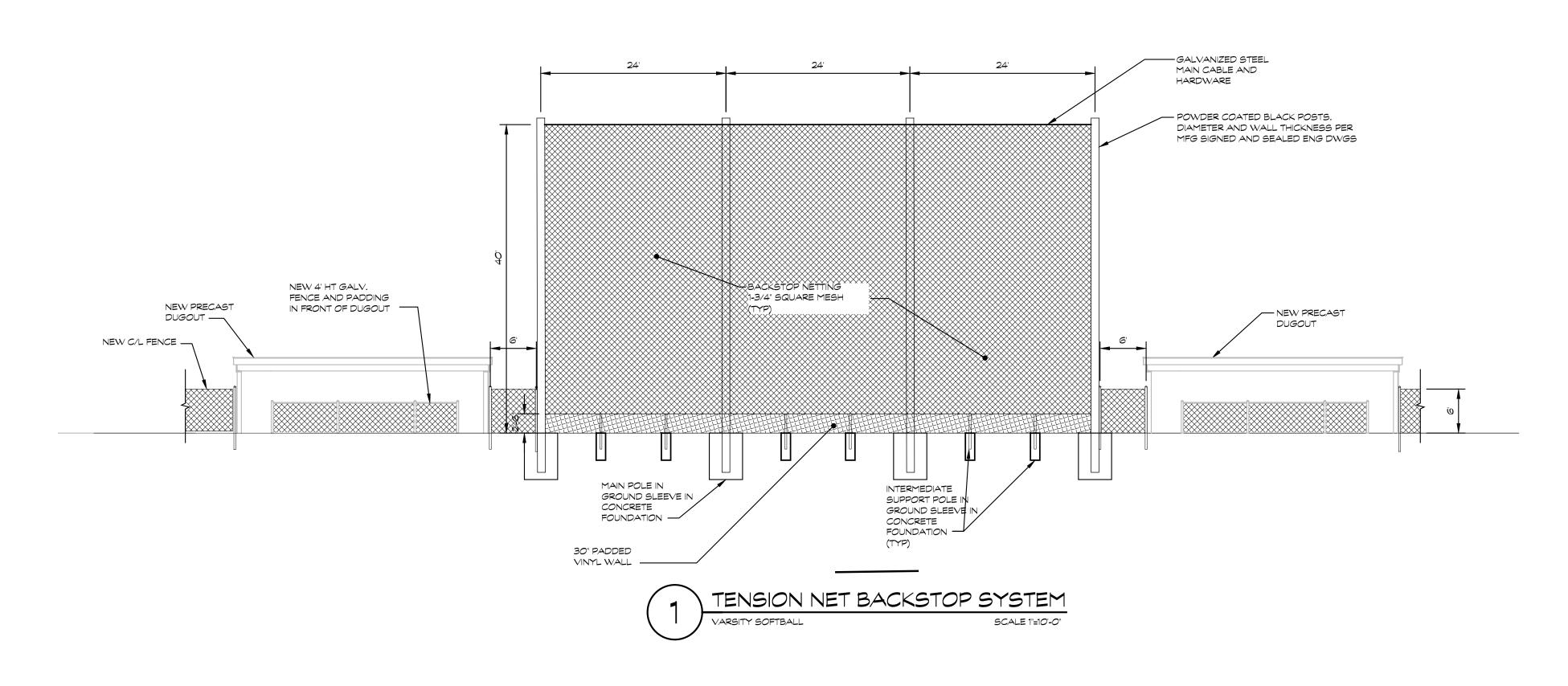
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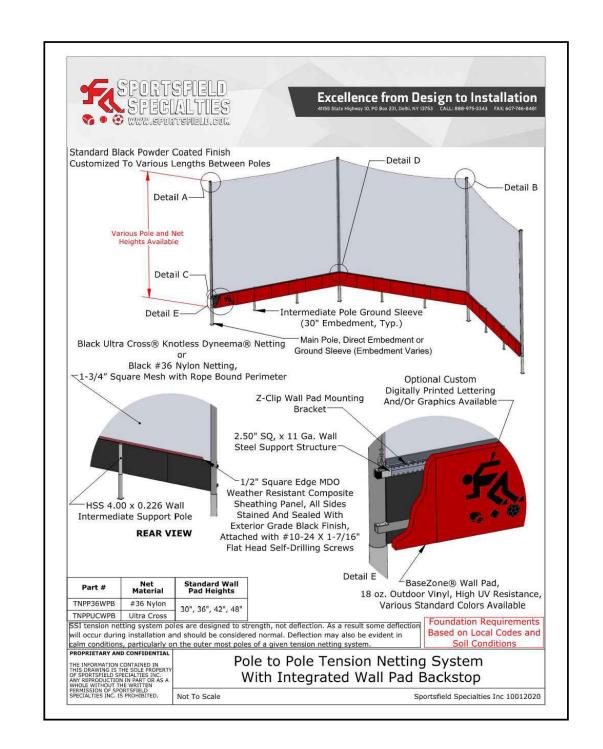
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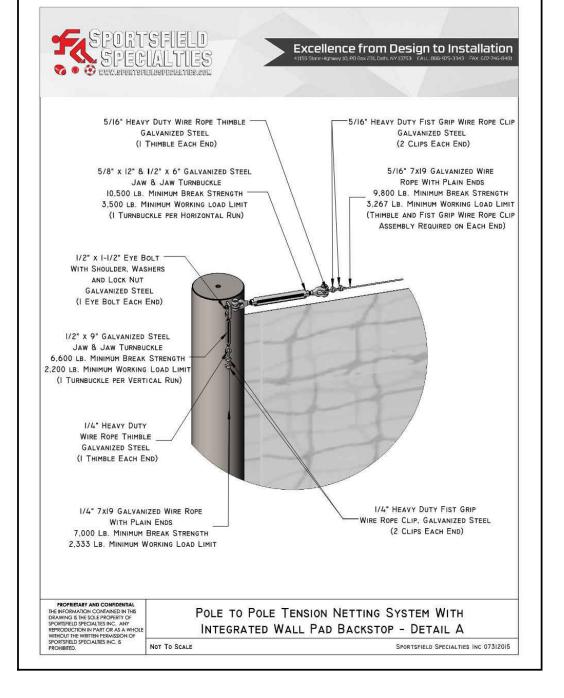
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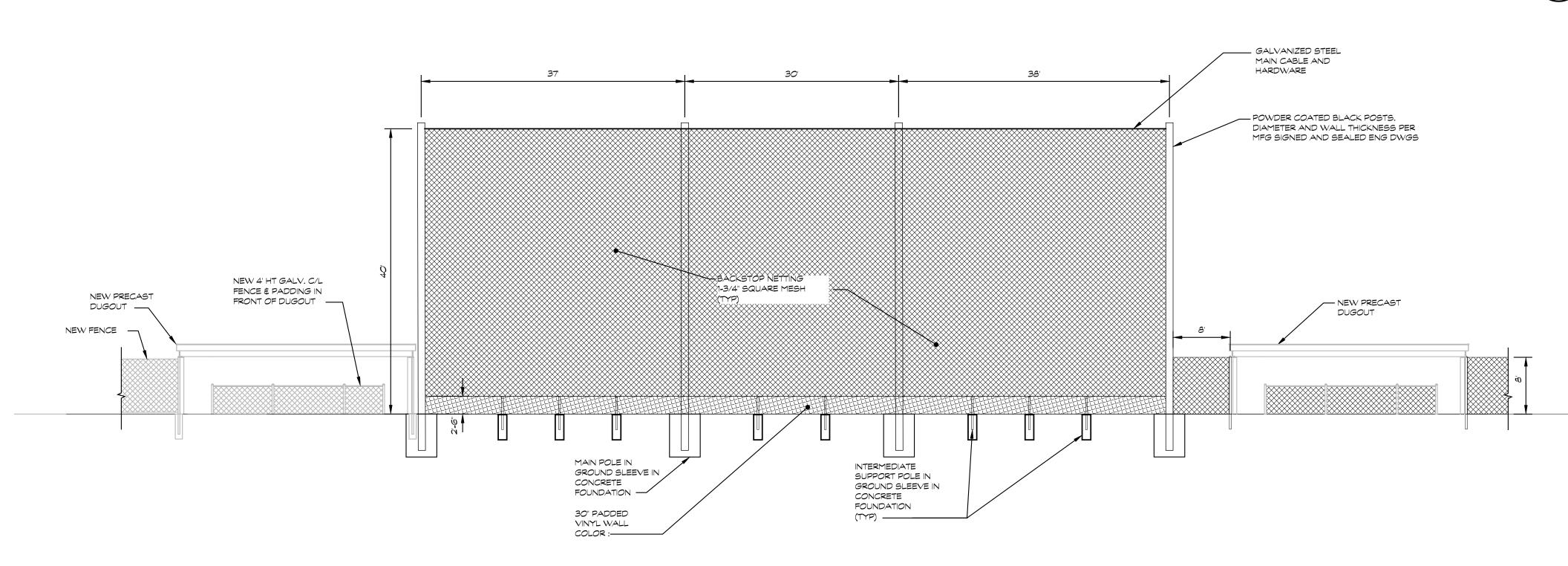




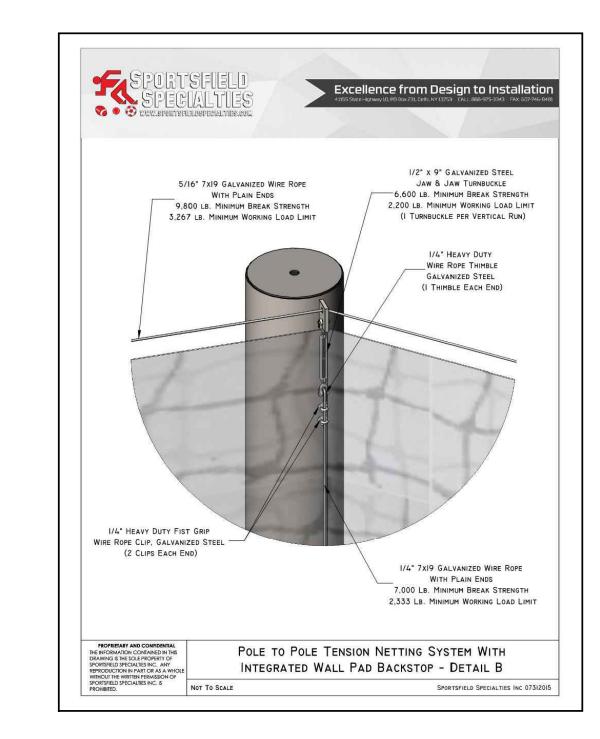
TENSION NETTING SYSTEM WITH INTEGRATED WALL PAD



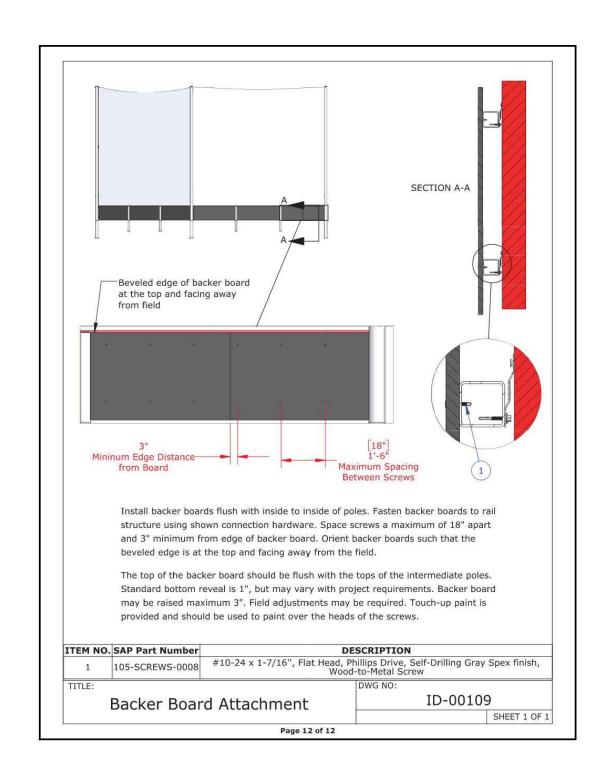
TENSION NETTING SYSTEM WITH INTEGRATED WALL PAD - DETAIL A



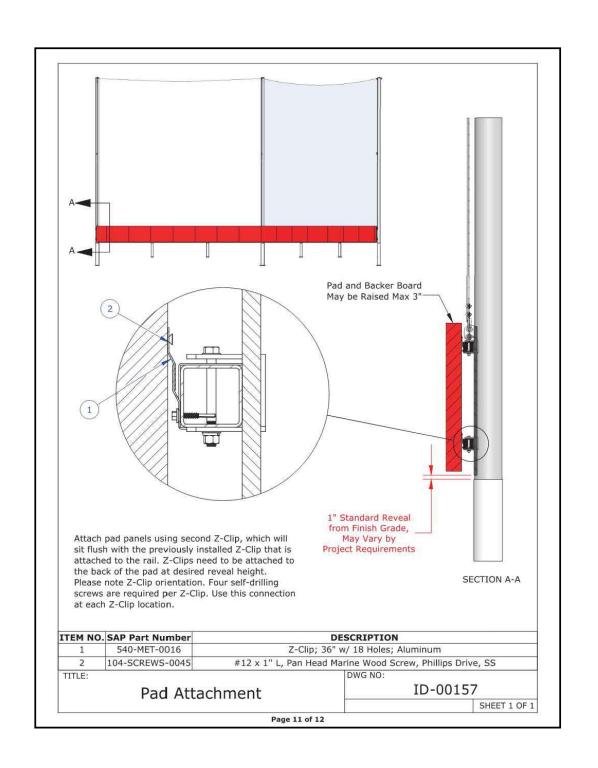




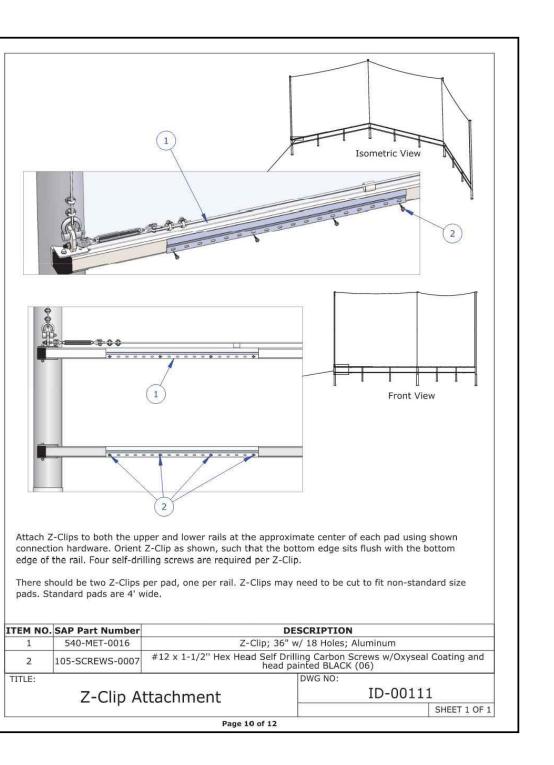
TENSION NETTING SYSTEM WITH INTEGRATED WALL PAD - DETAIL B



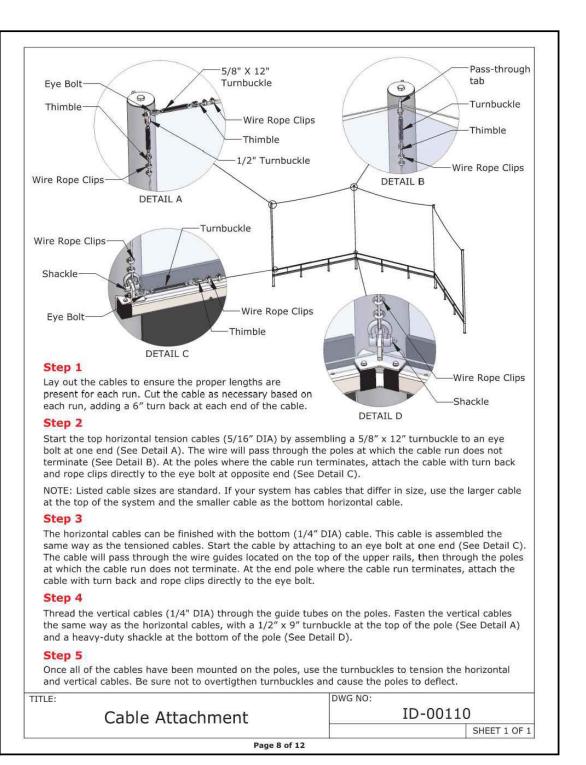










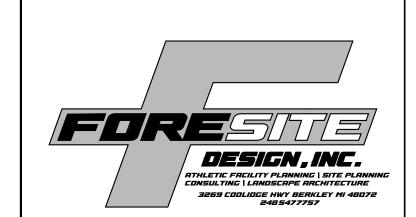






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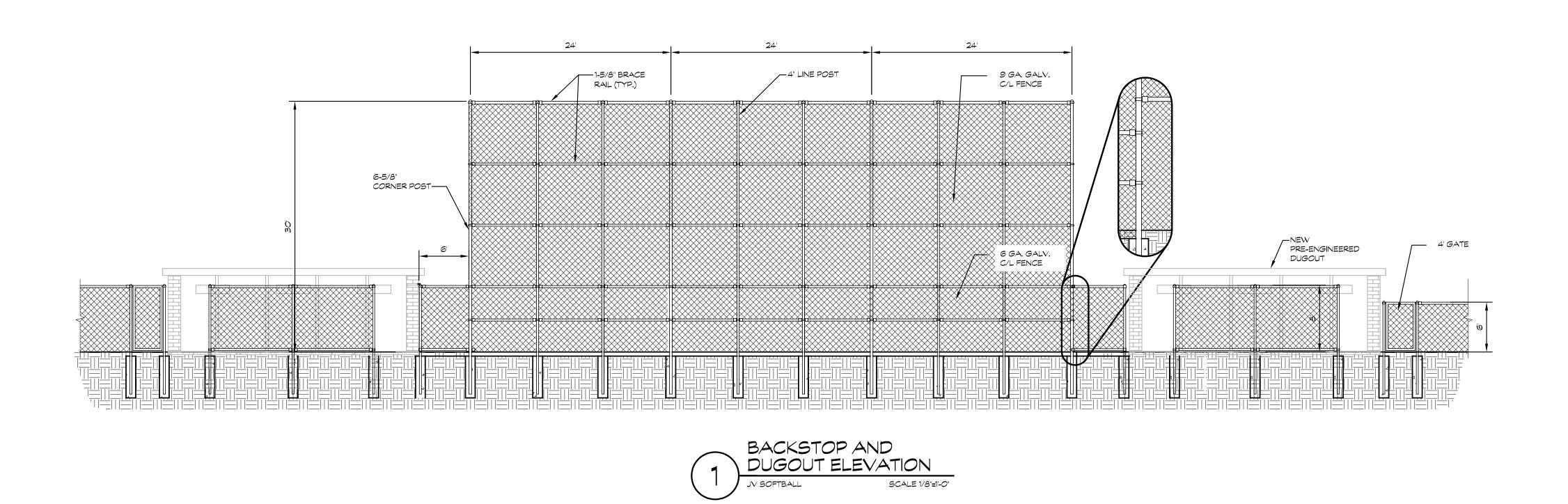


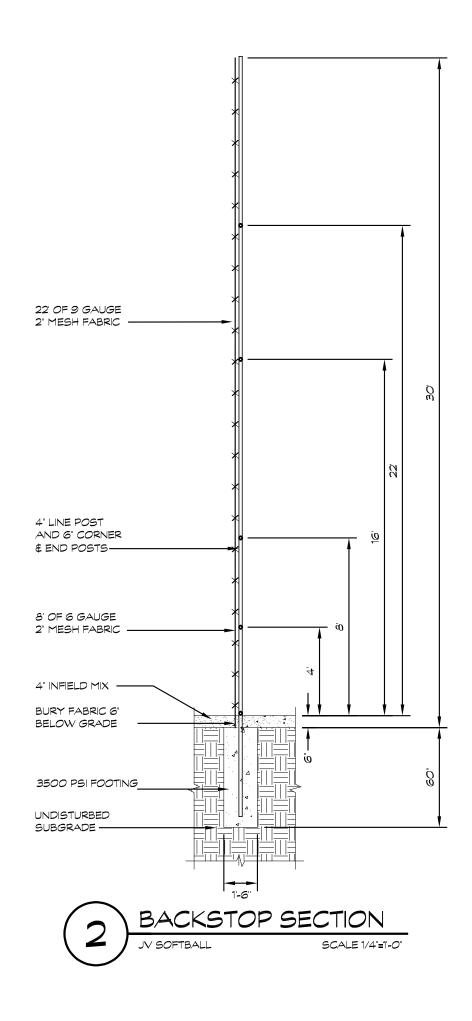
PROJECT TITLE Athens High School Athletic Fields Bid Package No. 02B

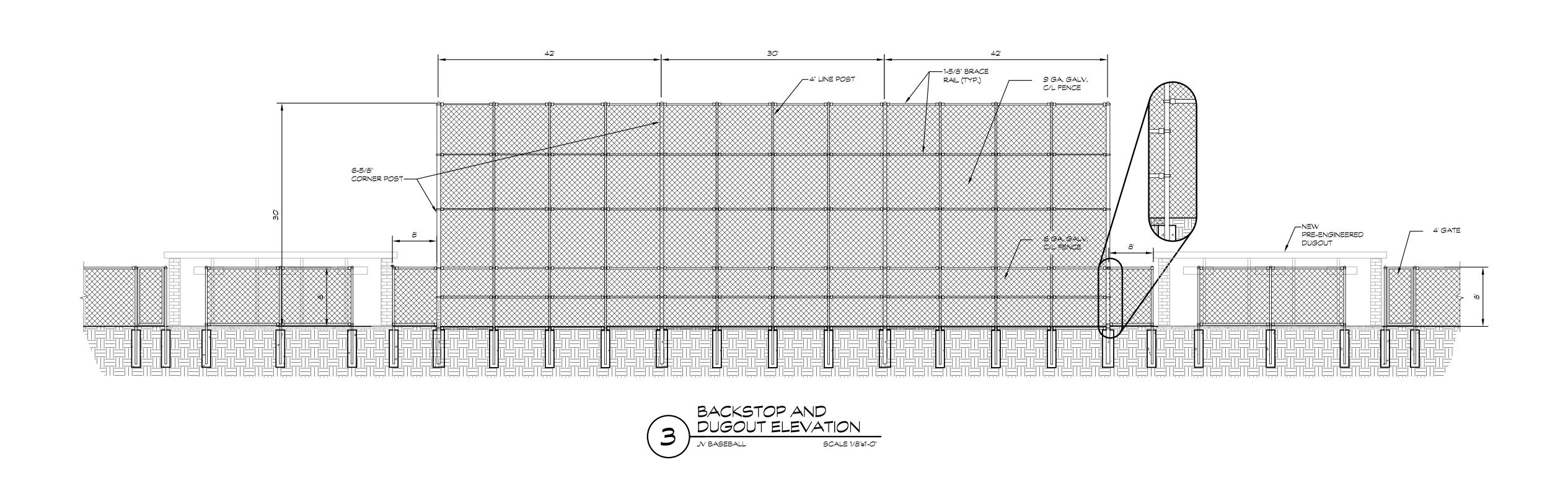
Troy School District Troy, Michigan

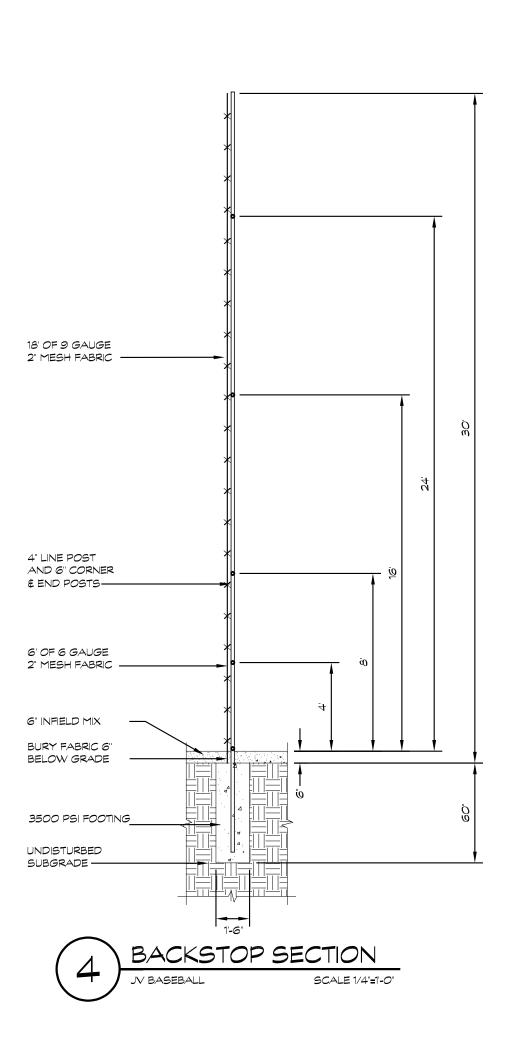
DRAWING TITLE Varsity Backstop Details

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Athens High School
Athletic Fields
Bid Package No. 02B

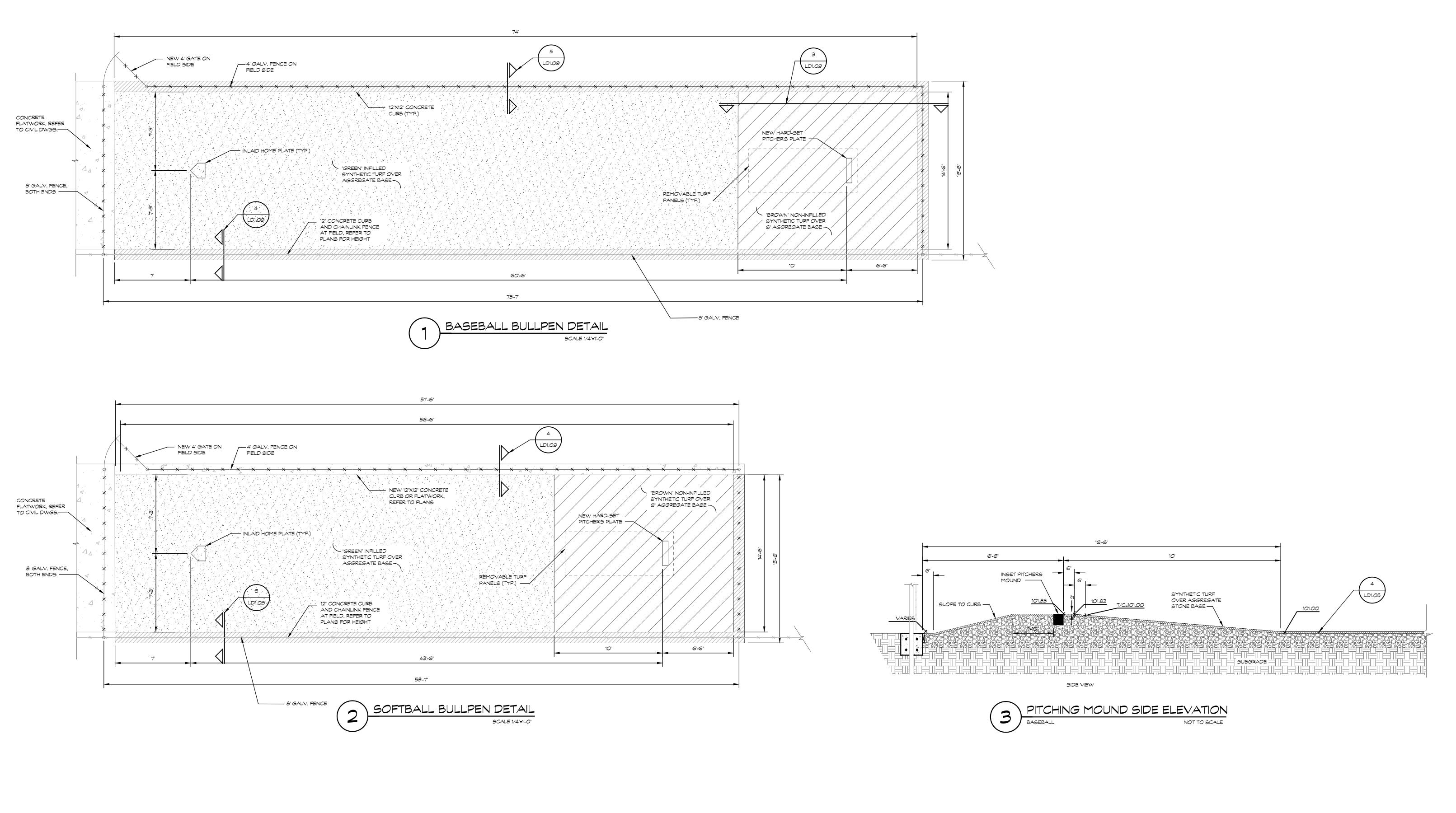
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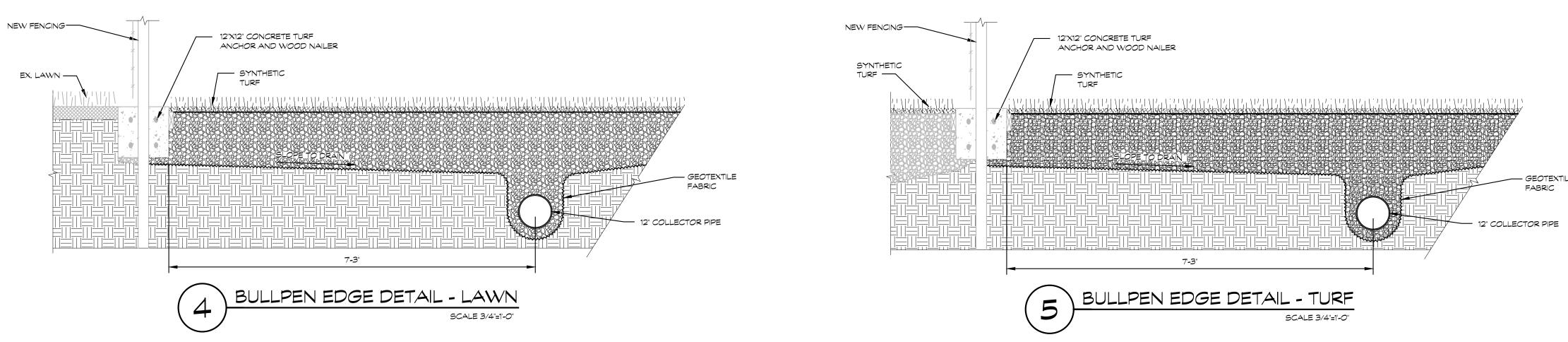
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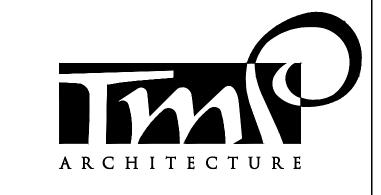
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PROJECT NO.

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Athletic Fields
Bid Package No. 02B

Troy School District Troy, Michigan

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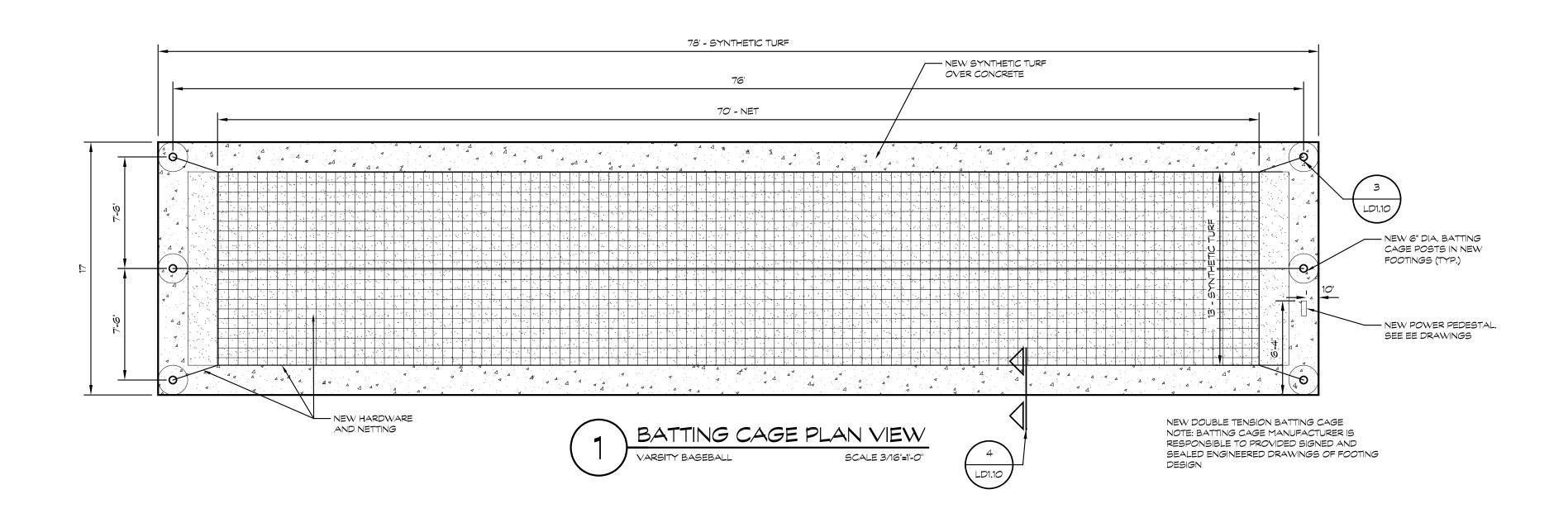
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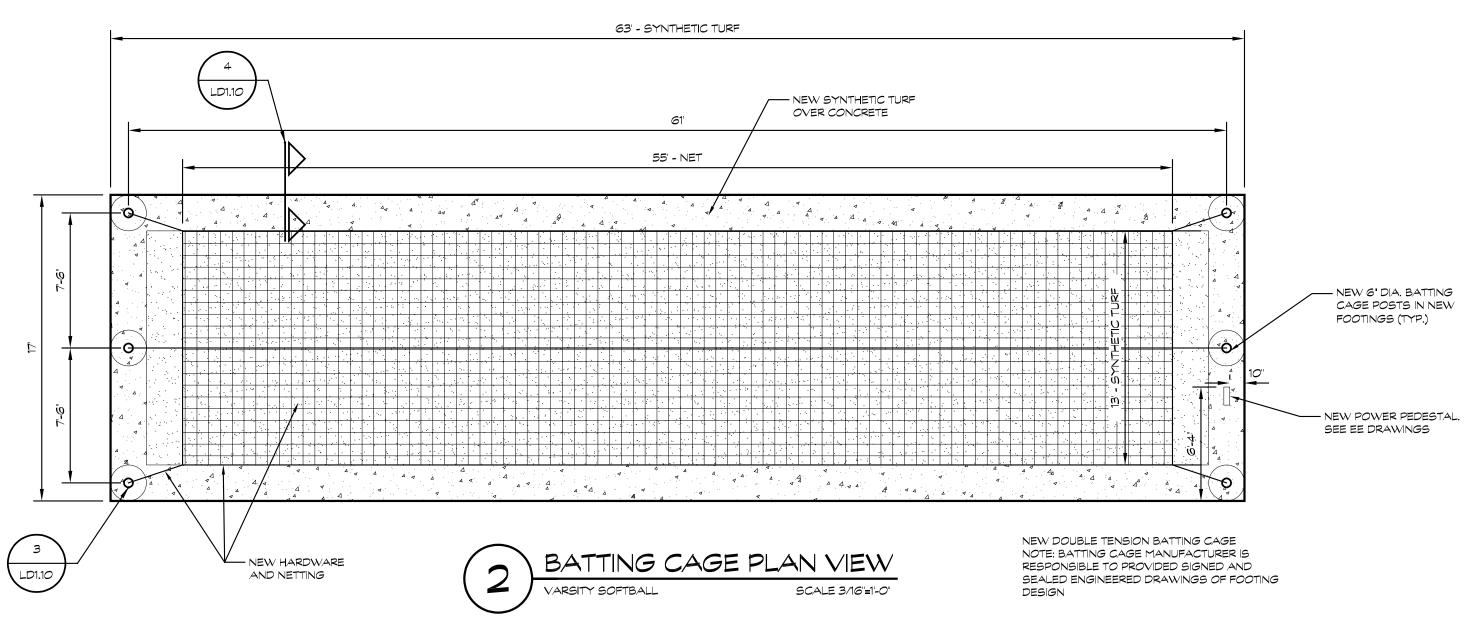
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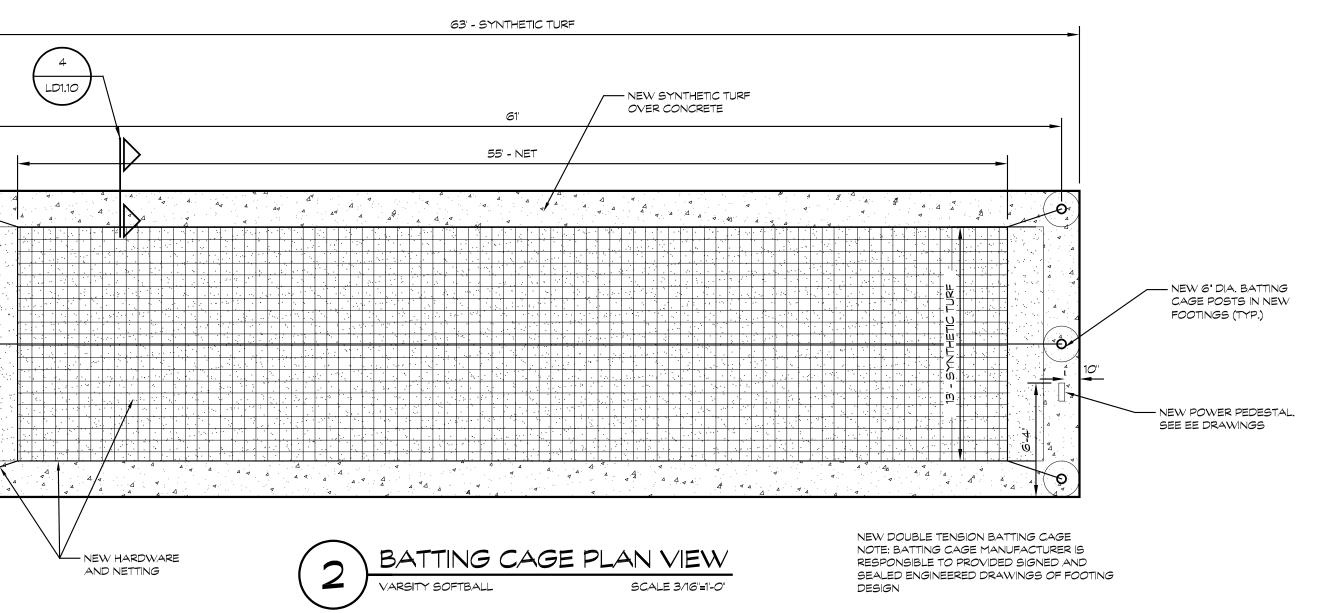
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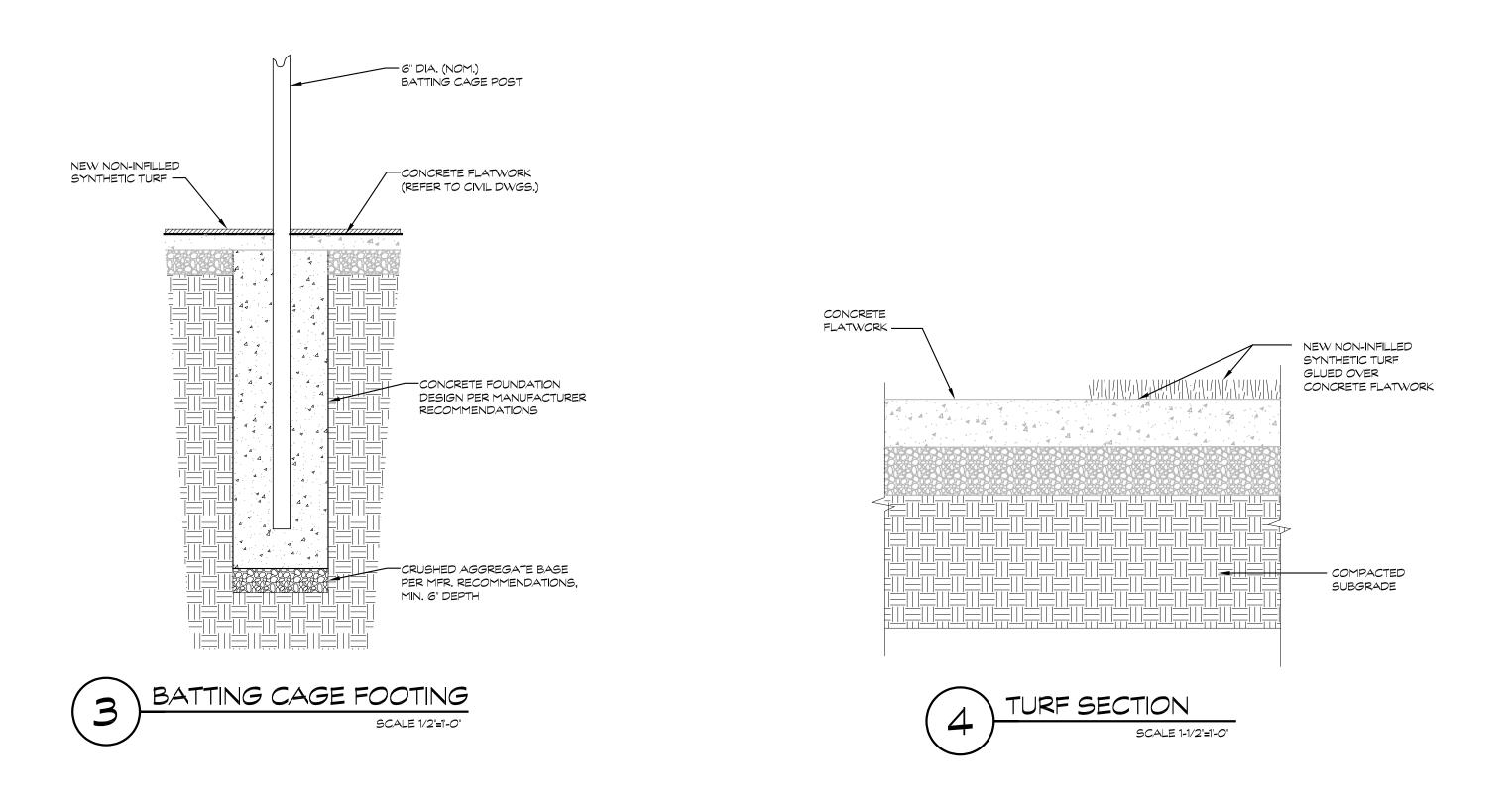
PROJECT NO.

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PROJECT TITLE Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

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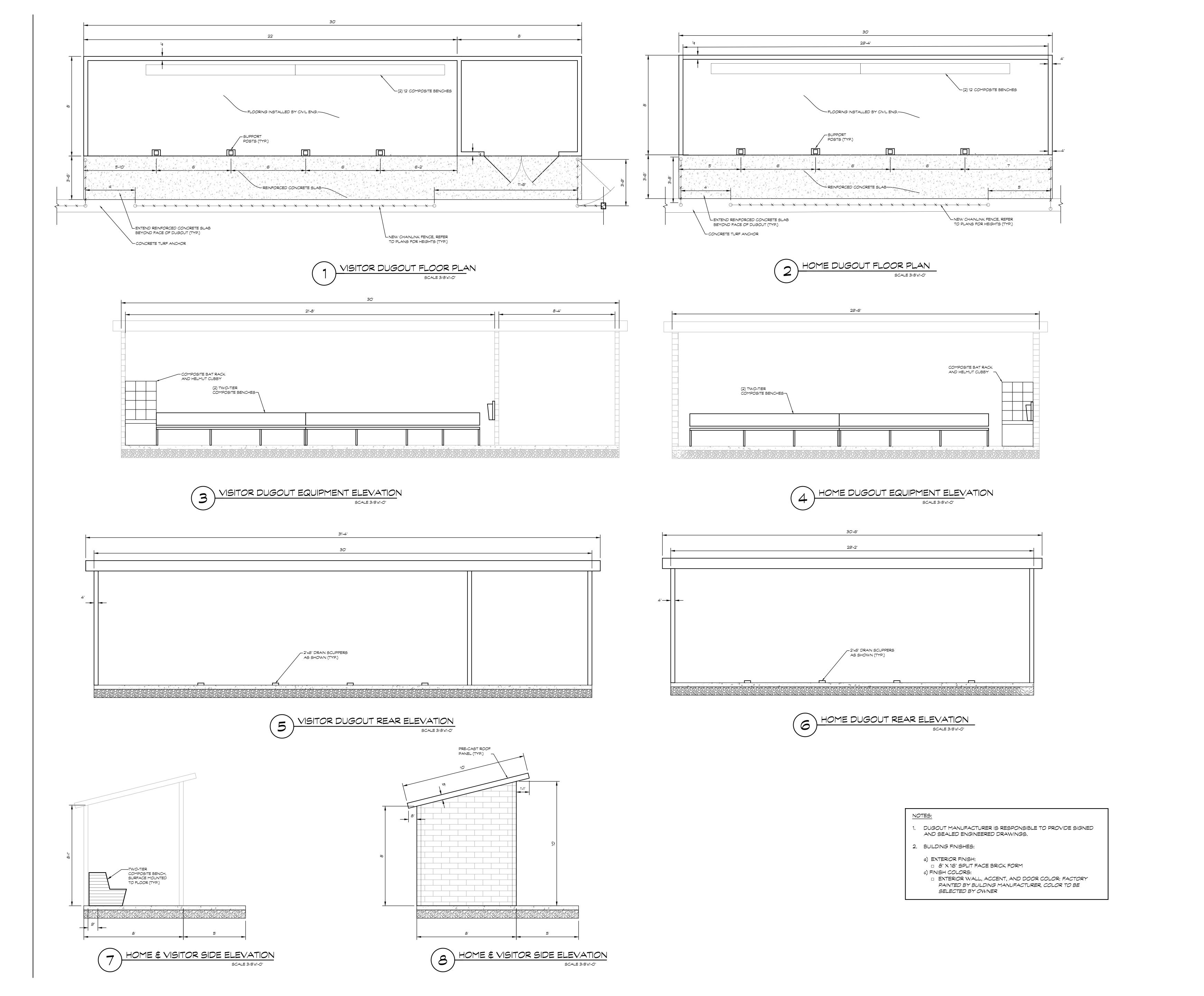
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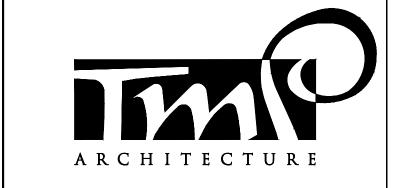
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DRAWING NO.

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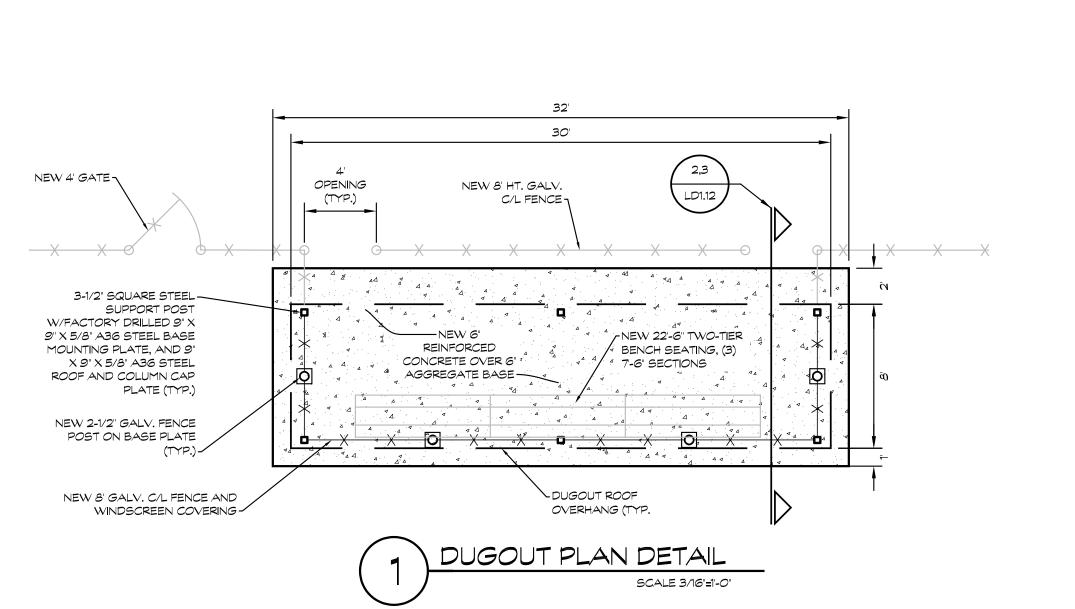
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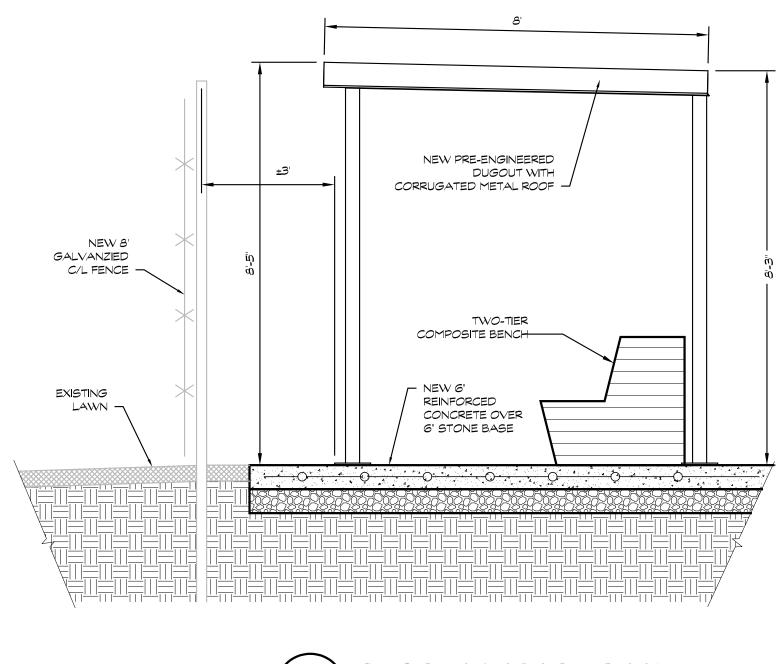
DRAWING TITLE
Varsity Dugouts
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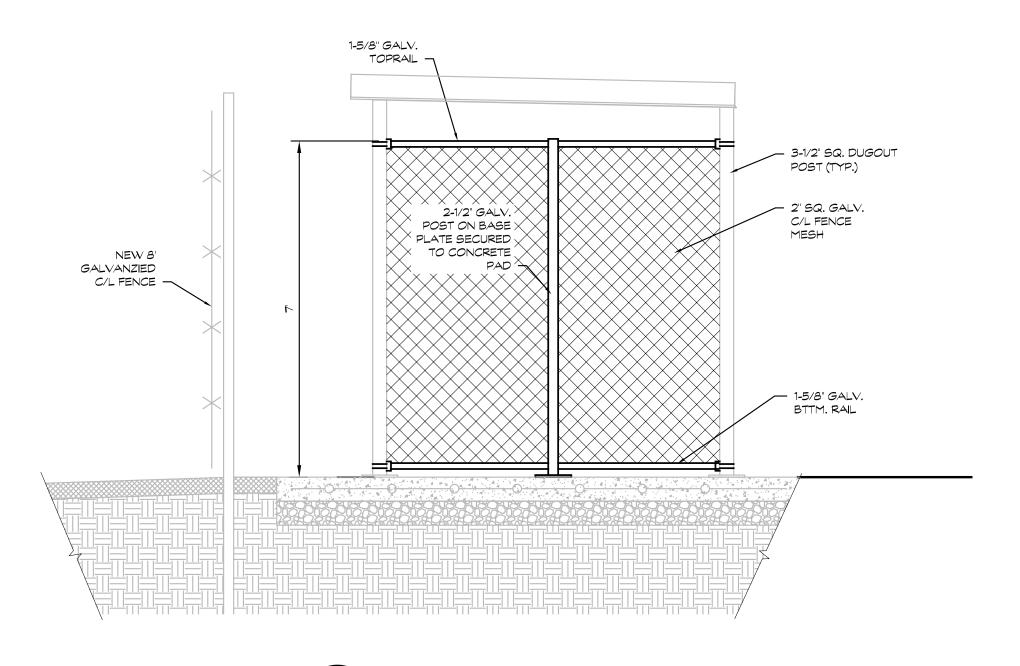
PROJECT NO.

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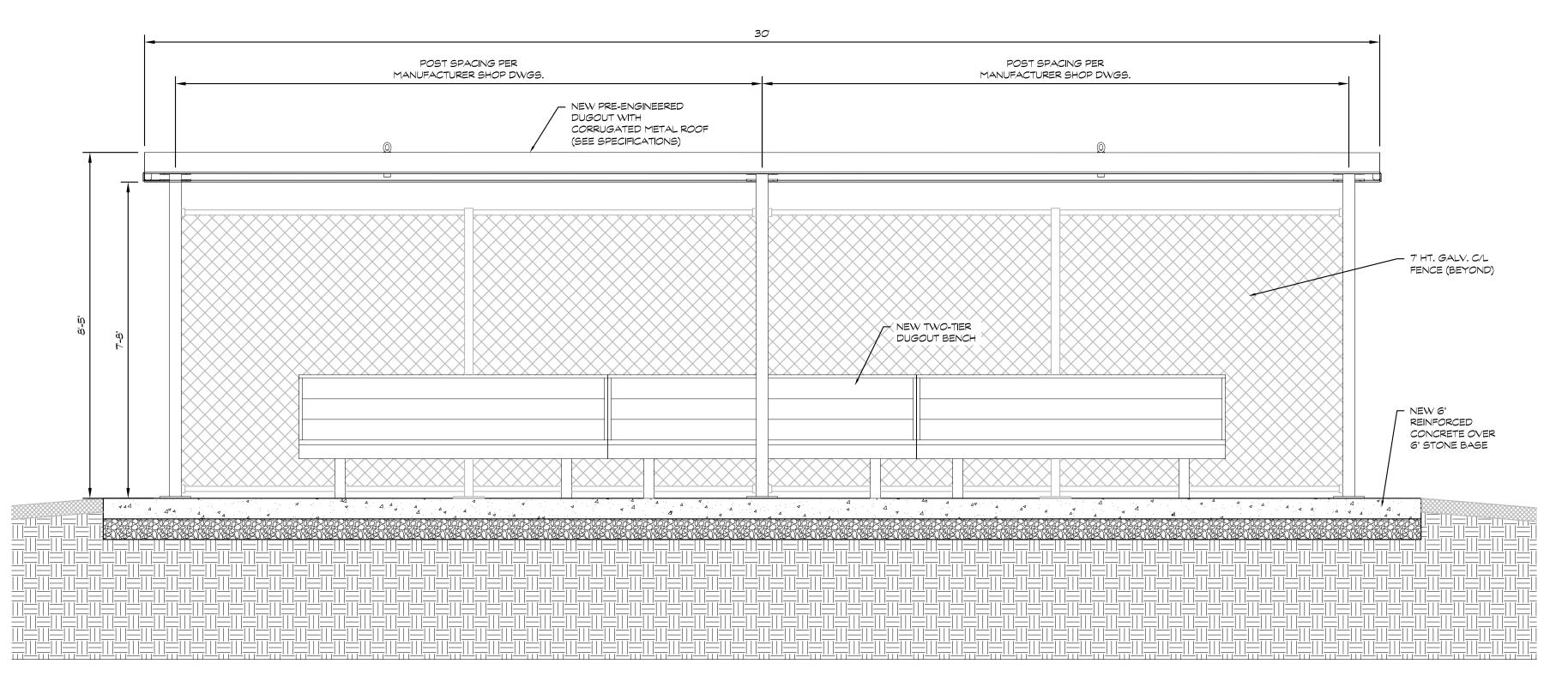




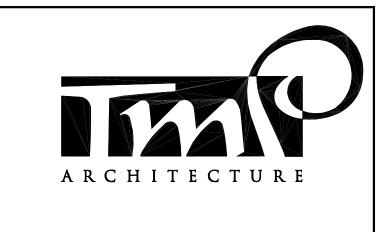




3 DUGOUT FENCE SECTION SCALE 1/2'=1'-0'





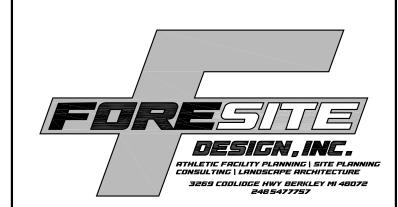


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Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE
J.V Dugout
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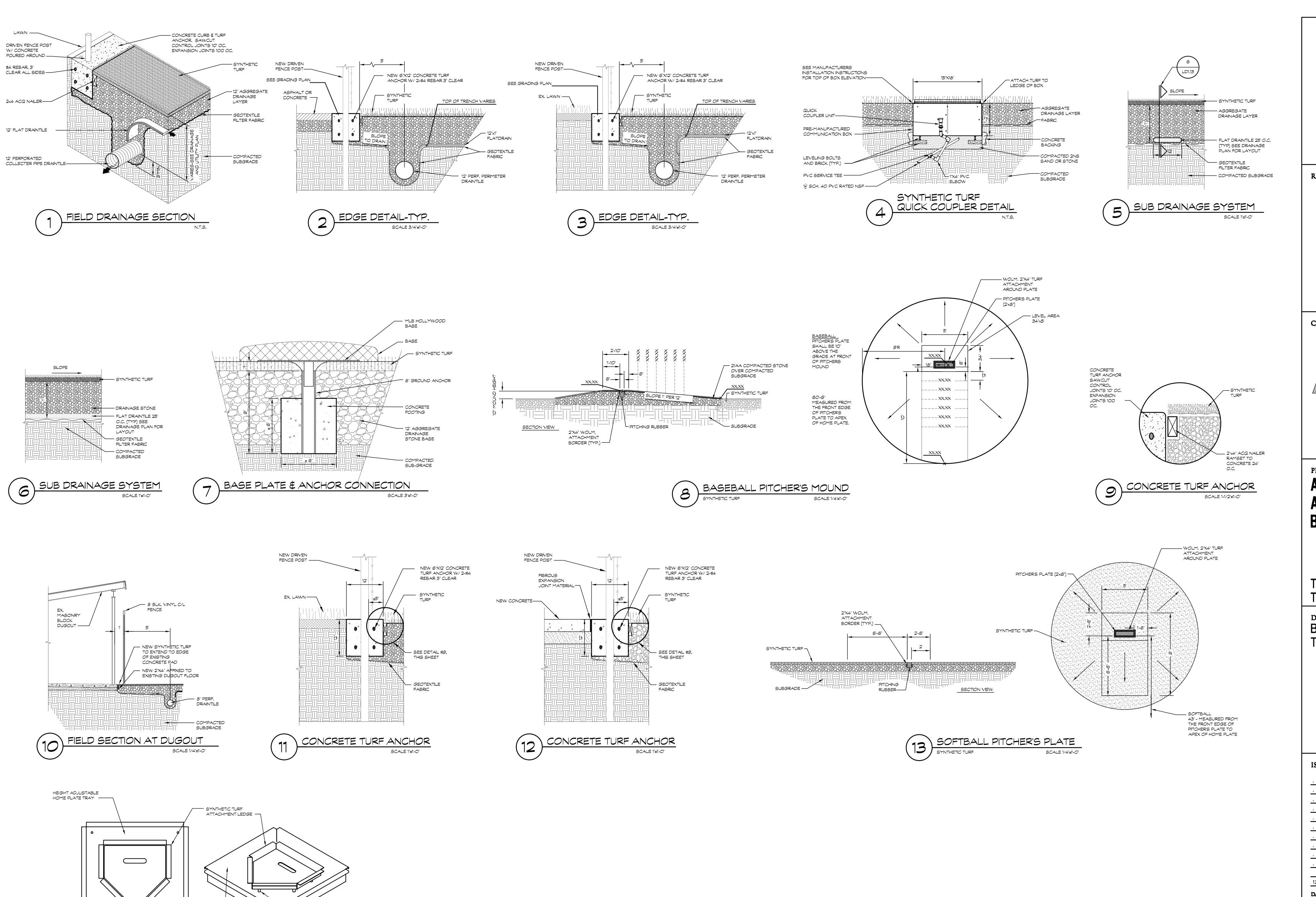
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DRAWING NO.

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Athens High School
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Bid Package No. 02B

Troy School District Troy, Michigan

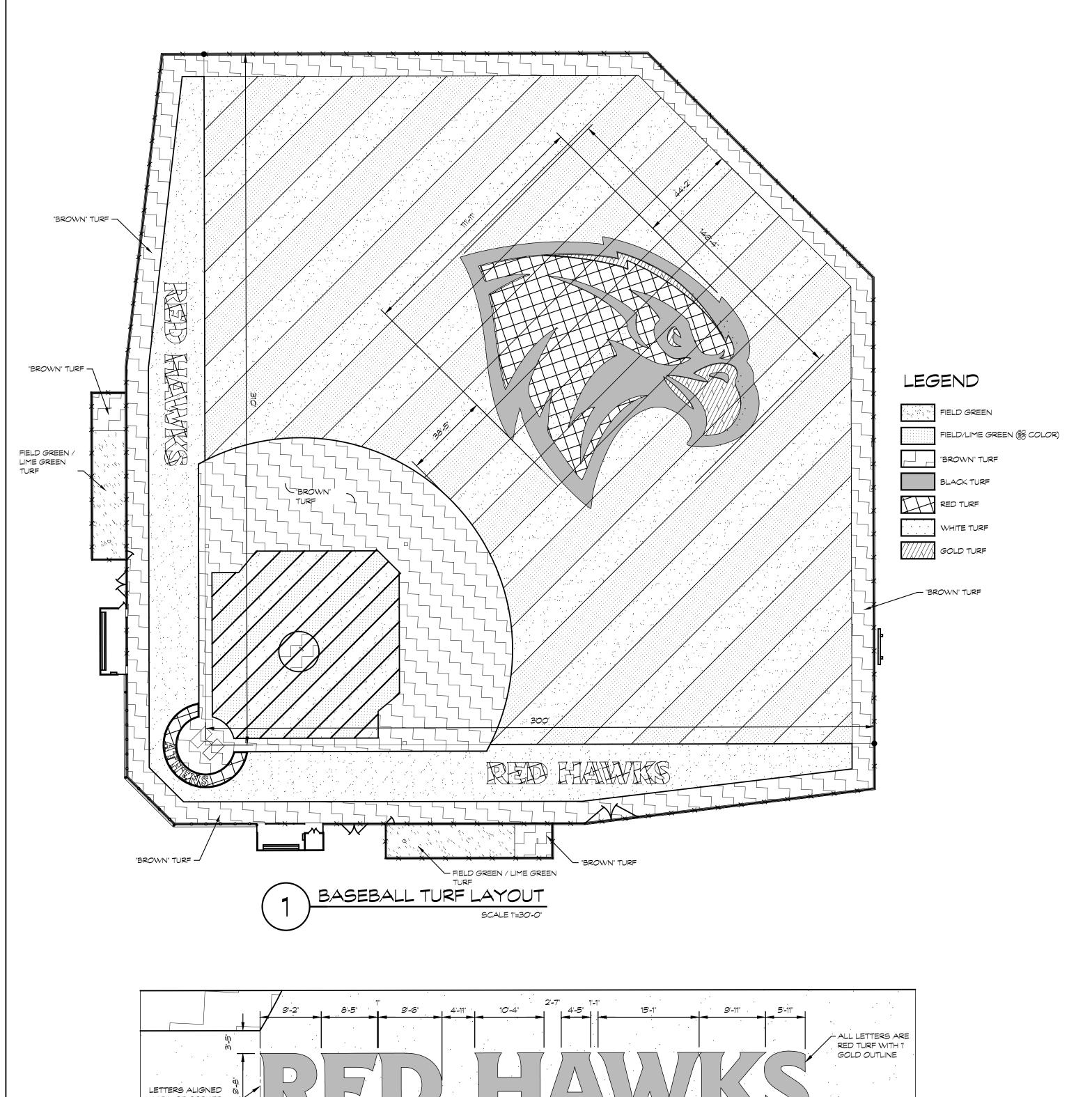
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Baseball and Softball
Turf Details

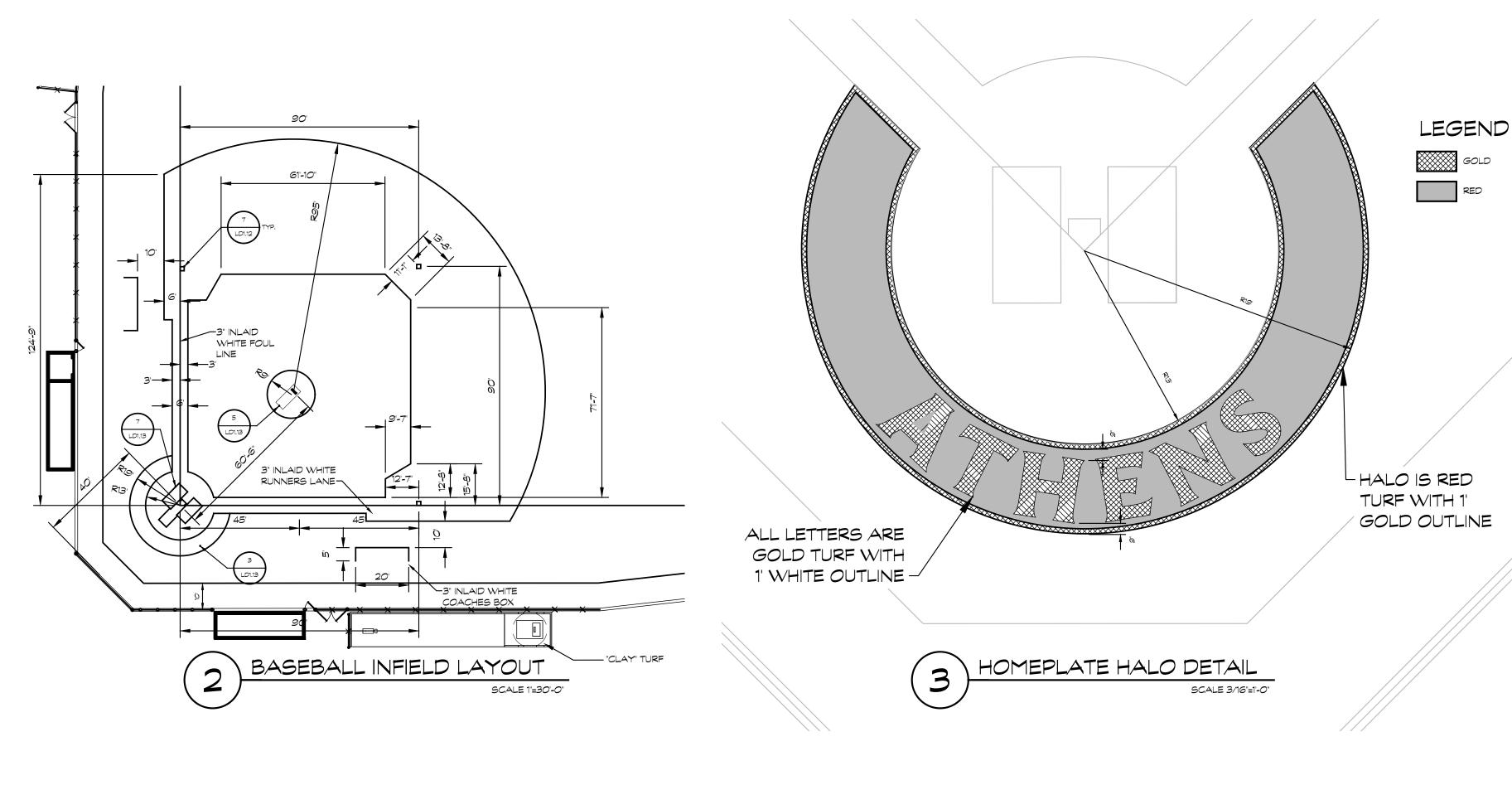
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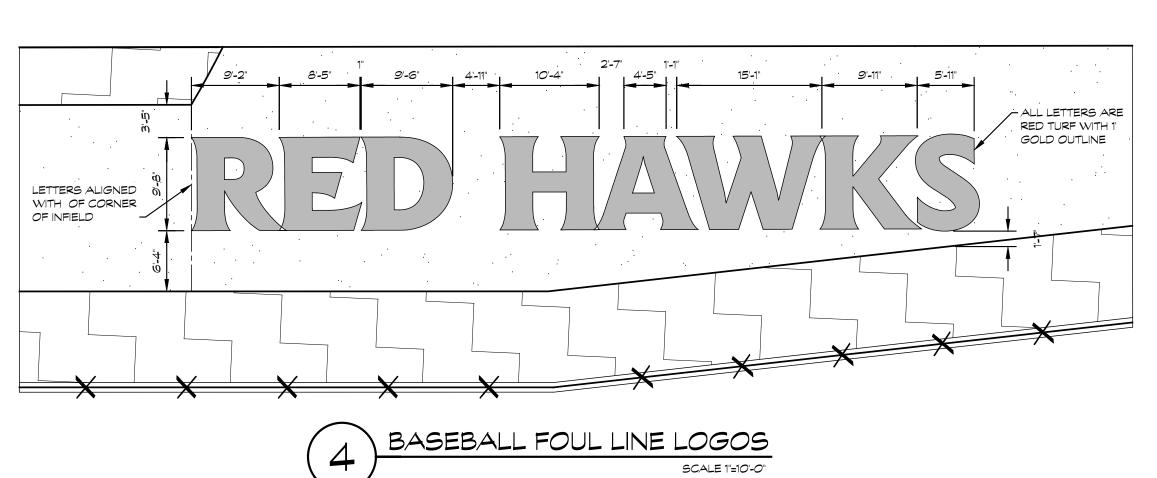
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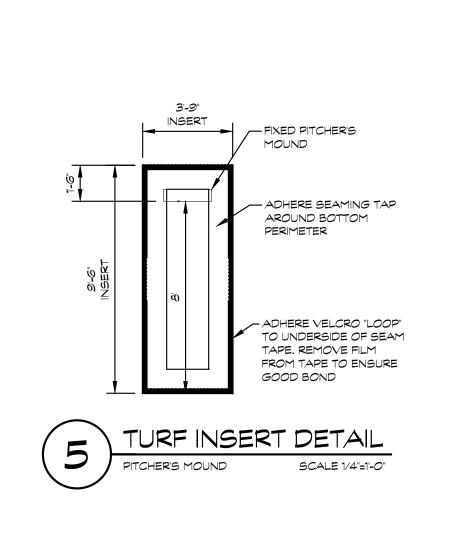
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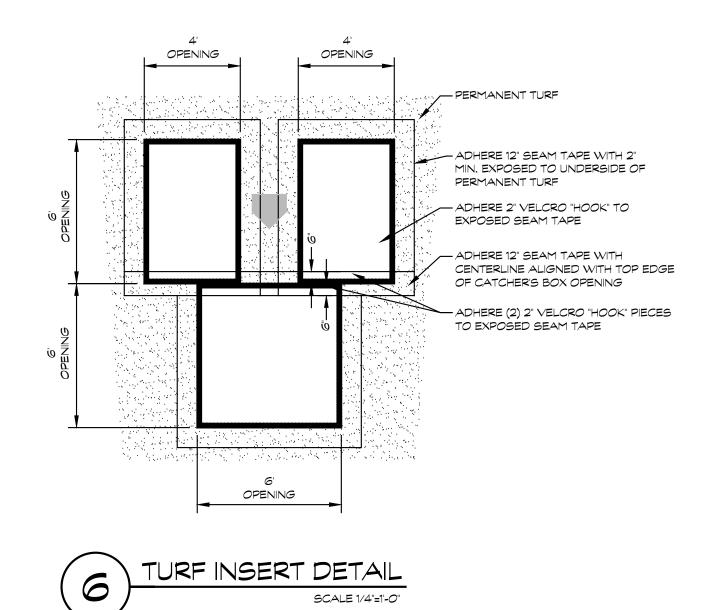
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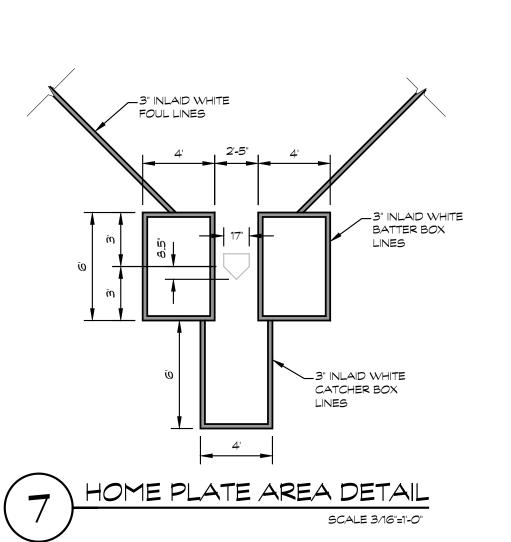


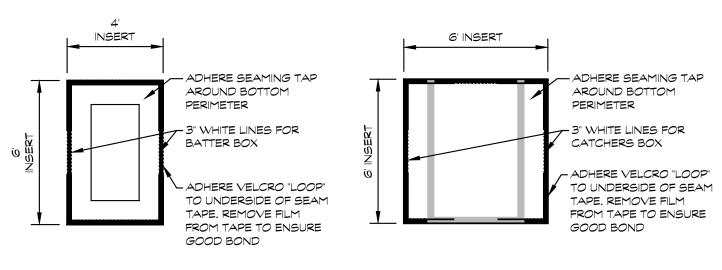




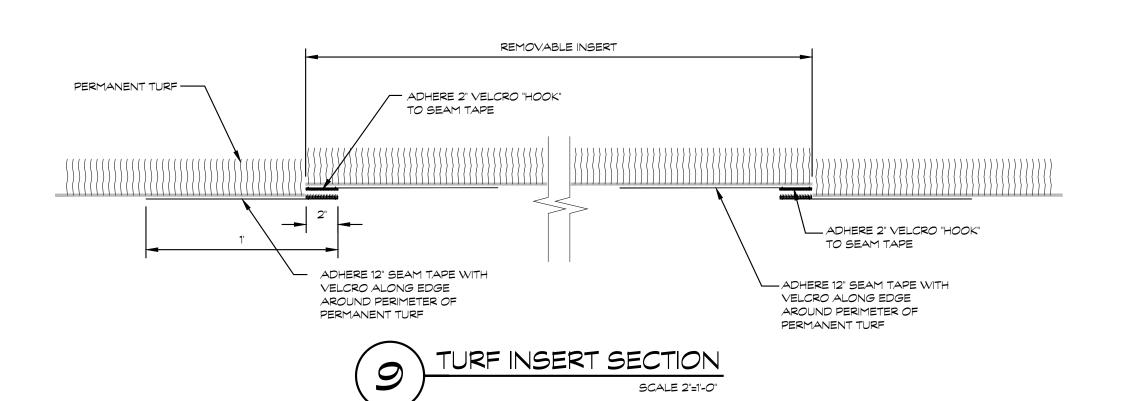












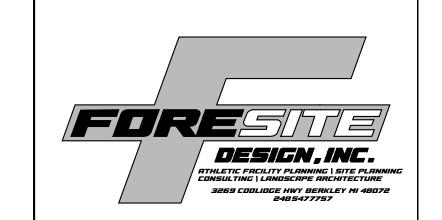


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Athens High School
Athletic Fields
Bid Package No. 02B

Troy School District Troy, Michigan

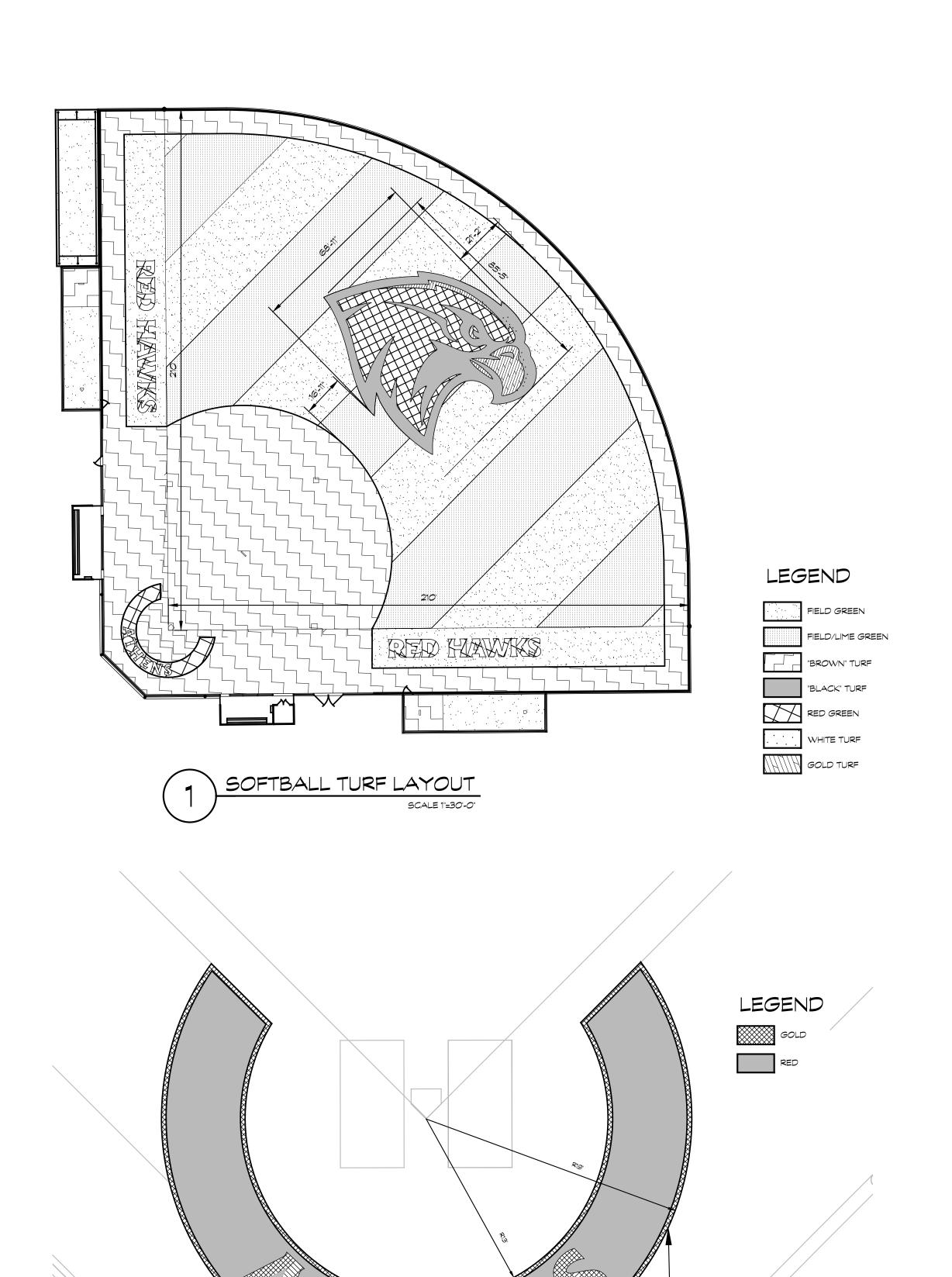
DRAWING TITLE
Baseball Turf
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PROJECT NO. **22103D**

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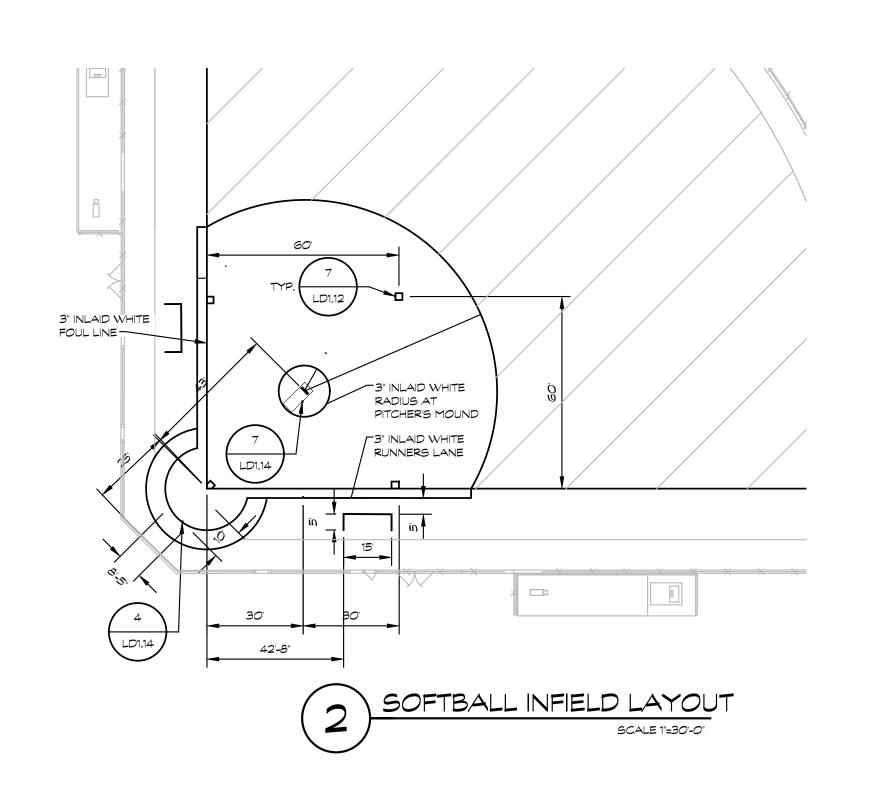
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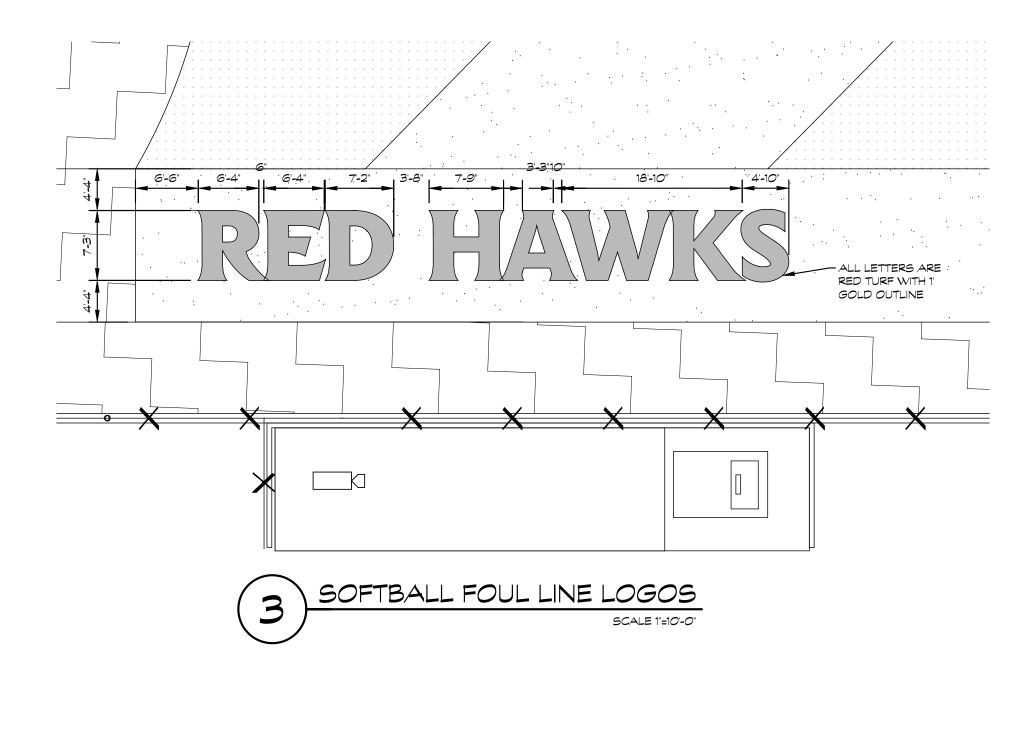
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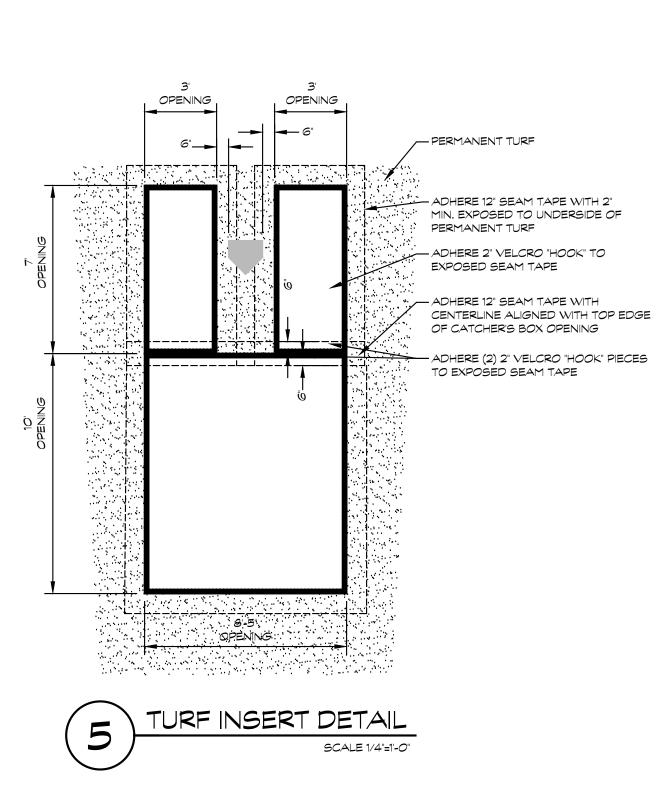
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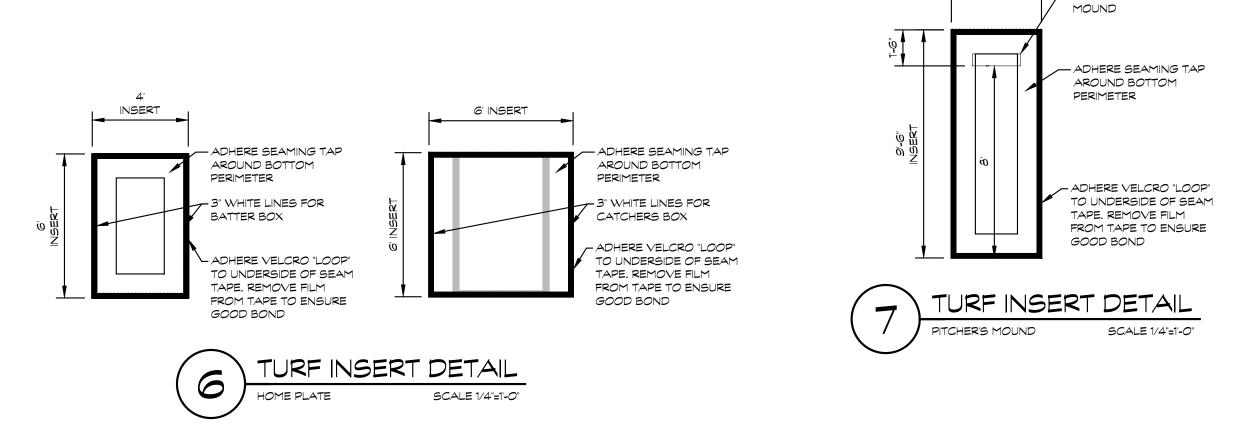
TURF WITH 1'

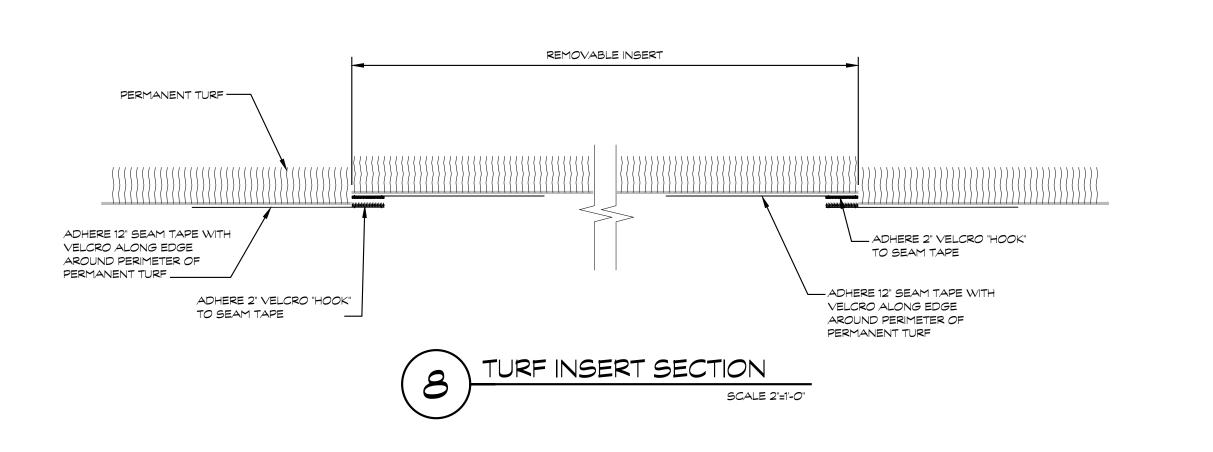
GOLD OUTLINE













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FIXED PITCHER'S



Athens High School
Athletic Fields
Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE Softball Turf Details

ISSUE	DATE

12-10-2024 CONSTRUCTION DOCUMENTS

DATE: ISSUED FOR:

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PROJECT NO.

22103D

STRUCTURAL GENERAL NOTES

- 1. THIS BUILDING HAS BEEN DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MICHIGAN BUILDING CODE, 2015 EDITION.
- 2. THE OWNER WILL EMPLOY QUALIFIED SPECIAL INSPECTORS TO PERFORM INSPECTIONS IN ACCORDANCE WITH CHAPTER 17 OF THE MICHIGAN BUILDING CODE EXCEPT AS NOTED BELOW. SPECIAL INSPECTIONS WILL BE PERFORMED FOR THE FOLLOWING:
- A. SOILS.
- B. CONCRETE. C. MASONRY.
- I. MASONRY SPECIAL INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH TMS 402 & TMS 602 AND SHALL BE LEVEL B QUALITY ASSURANCE.
- B. WHEN "PROFESSIONAL ENGINEER" IS REFERRED TO IN THE FOLLOWING NOTES, IT DENOTES A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN, QUALIFIED TO PERFORM THE WORK.
- 4. THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS, THE OWNERS REQUIREMENTS FOR ACCESS TO THE SITE AND
- CONTINUED OPERATIONS DURING CONSTRUCTION. 5. THE PLAN, DETAIL DIMENSIONS & ELEVATIONS RELATIVE TO THE EXISTING STRUCTURE HAVE BEEN TAKEN FROM AVAILABLE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY SUCH DIMENSIONS, ELEVATIONS & DETAILS AS NECESSARY AND MAKE APPROVED ADJUSTMENTS PRIOR TO CONSTRUCTION OR
- 6. THE CONTRACTOR SHALL SUBMIT CONCRETE REINFORCING, METAL DECK, AND COLD FORMED METAL TRUSS SHOP DRAWINGS PRIOR TO FABRICATION. THE CONTRACTOR SHALL ALSO SUBMIT MATERIAL REQUIREMENTS AND CONCRETE MIX DESIGNS. ALLOW (2) WEEKS FOR ENGINEER REVIEW.
- 7. THE STRUCTURE SHALL BE CONSIDERED TO BE IN AN UNSTABLE CONDITION UNTIL ALL FLOOR, WALL AND ROOF STRUCTURES ARE COMPLETED. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR STABILITY AND TO RESIST LATERAL LOADS DURING ERECTION.
- 8. ALL NON LOAD BEARING WALLS, EXCEPT INDICATED SHEAR WALLS, SHALL BE CONSTRUCTED TO ALLOW FOR VERTICAL DEFLECTION OF THE STRUCTURE ABOVE.

DIVISION 2 - DEMOLITION/SHORING

ORDERING OF MATERIAL.

- 1. CONTRACTOR SHALL PROVIDE ALL NECESSARY SHORING WHERE REQUIRED DURING CONSTRUCTION. SHORING SHALL BE DESIGNED & DETAILED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER. SHORING PROCEDURES, DESIGNS AND DETAILS SHALL BE SUBMITTED FOR REVIEW PRIOR TO COMMENCEMENT OF WORK, ALLOW (2) WEEKS FOR ENGINEER TO REVIEW.
- 2. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING ERECTION PROCEDURE AND SEQUENCING AND TO SUBMIT WRITTEN PROCEDURES TO ENSURE THE SAFETY OF THE STRUCTURE AND IT'S COMPONENTS DURING ERECTION.
- 3. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO DEMOLITION. IF CONDITIONS EXIST THAT ARE DIFFERENT FROM WHAT IS INDICATED ON THE DRAWINGS, NOTIFY ARCHITECT FOR DIRECTION BEFORE PROCEEDING.
- 4. DUE CARE MUST BE TAKEN NOT TO UNDERMINE OR DISTURB EXISTING SOIL AND FOUNDATIONS WHEN EXCAVATING ADJACENT TO EXISTING FOUNDATIONS. FIELD VERIFY THE DEPTH AND WIDTH OF ANY EXISTING FOOTINGS & NOTIFY ARCHITECT OF ANY INTERFERENCE'S WITH NEW WORK.

DIVISION 3 - CONCRETE

- 1. THE LATEST REVISION OF THE FOLLOWING CODES GOVERN THE DESIGN, DETAILING. FABRICATION AND CONSTRUCTION OF ALL REINFORCED CONCRETE:
- A. AMERICAN CONCRETE INSTITUTE (ACI) ACI 318, BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE. B. ACI 315, DETAILS & DETAILING OF CONCRETE REINFORCEMENT.
- 2. REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING ASTM MATERIAL SPECIFICATIONS.
- A. DEFORMED BAR REINFORCING: ASTM A615 GRADE 60. B. WELDED WIRE REINFORCEMENT: A1064 (FLAT SHEETS ONLY).
- 3. ALL EXTERIOR CONCRETE (INCLUDING FOUNDATION WALLS, PIERS & FOOTINGS) SHALL
- BE AS FOLLOWS:
- A. MINIMUM 28-DAY COMPRESSIVE STRENGTH (fc) = 4500 PSI. B. SLUMP = 3" TO 5".
- C. WATER/CEMENTITIOUS RATIO = 0.45. D. AIR ENTRAINMENT = 6% ± 1%.
- E. EXPOSURE CLASSES = F3, S0, W1, & C2.
- 4. ALL INTERIOR CONCRETE SHALL BE AS FOLLOWS: A. MINIMUM 28-DAY COMPRESSIVE STRENGTH (f'c) = 4000 PSI.

BAR SPACING, COVER, TOP BAR EFFECT ETC. PER ACI 318.

- B. SLUMP = 3" TO 5". C. WATER/CEMENTITIOUS RATIO = 0.50. D. EXPOSURE CLASSES = F0, S0, W1, & C1.
- 5. SPLICES FOR DEFORMED BARS SHALL BE CLASS B WITH APPLICABLE INCREASES FOR
- 6. BEFORE PLACING CONCRETE REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS OF PIPE SLEEVES, EMBEDDED ITEMS. OPENINGS, EQUIPMENT PADS, ELECTRICAL CONDUITS, RECESSES, DRAINS, ETC. ALL OPENINGS FOR PIPE, CONDUITS, ETC. SHALL BE SLEEVED. MINIMUM SLEEVE SPACING SHALL BE 3 SLEEVE DIAMETERS.
- 7. SUGGESTED CONSTRUCTION AND CONTROL JOINT LOCATIONS ARE INDICATED ON THE DRAWINGS. THE CONTRACTOR MAY DEVIATE FROM SUGGESTED JOINT LOCATIONS WITH PRIOR APPROVAL OF THE ARCHITECT.
- 8. CONCRETE CONTROL JOINTS SHALL BE CUT AS SOON AS CONCRETE HAS HARDENED SUFFICIENTLY TO PREVENT DISLODGMENT OF AGGREGATES. SAW A CONTINUOUS SLOT TO A DEPTH OF 1/4 THE THICKNESS OF THE SLAB BUT NOT LESS THAN 1". COMPLETE SAWING WITHIN 12 HOURS AFTER PLACEMENT.
- 9. PROVIDE A RECESS IN THE TOP OF FOUNDATION WALLS AT DOOR OPENINGS FOR SUPPORT OF THICKENED FLOOR SLABS AND TO RECEIVE DOOR JAMBS. DEPTH OF RECESS TO BE 2" GREATER THAN THICKNESS OF THE FLOOR SLABS, UNLESS NOTED
- 10. PROVIDE BENT CORNER BARS IN ALL WALLS AND FOOTINGS OF THE SAME SIZE AND NUMBER AS THE CONTINUOUS REINFORCEMENT.
- 11. CONCRETE SHALL BE TESTED BY AN INDEPENDENT TESTING AGENCY. A SET OF (3) CONCRETE TEST CYLINDERS SHALL BE MADE AND TESTED FOR COMPRESSION STRENGTH AT 7 AND 28 DAYS OR EVERY 50 CUBIC YARDS OF CONCRETE CAST (MINIMUM OF (1) SET PER DAY OF CASTING). ALSO SLUMP AND UNIT WEIGHT TESTS SHALL BE PERFORMED EVERY OTHER TRUCK LOAD. CONTRACTOR MADE CONCRETE TEST CYLINDERS ARE NOT ACCEPTABLE.

DIVISION 4 - MASONRY

- 1. THE LATEST REVISION OF THE FOLLOWING CODES GOVERN THE DESIGN, DETAILING AND CONSTRUCTION OF ALL MASONRY:
- A. THE MASONRY SOCIETY (TMS) TMS 402, BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES. B. TMS 602, SPECIFICATIONS FOR MASONRY STRUCTURES.
- 2. ALL MASONRY SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF F'm = 2000 PSI. 3. ALL MORTAR SHALL BE TYPE S, PROPORTIONED BY VOLUME ACCORDING TO ASTM
- 4. ALL GROUT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2000 PSI AND SHALL BE PROPORTIONED BY VOLUME ACCORDING TO ASTM C476.
- 5. ALL CONCRETE MASONRY UNITS SHALL BE NORMAL WEIGHT ASTM C90, GRADE N, UNITS UNLESS NOTED OTHERWISE. UNITS SHALL HAVE A MINIMUM NET AREA
- COMPRESSIVE STRENGTH OF 2000 PSI. 6. ALL MASONRY WALLS SHALL HAVE HORIZONTAL JOINT REINFORCEMENT (9 GA, HOT
- DIPPED GALVANIZED) AT 16" O.C. PROVIDE PREFABRICATED CORNER PIECES AT ALL CORNERS AND INTERSECTIONS OF WALLS.
- 7. ALL DEFORMED BAR REINFORCING SHALL BE ASTM A615, GRADE 60. AT LOCATIONS WHERE REINFORCING IS TO BE WELDED, THE DEFORMED BAR REINFORCING SHALL BE ASTM A706, GRADE 60.
- 8. LAP SPLICES IN WALLS SHALL BE DETERMINED IN ACCORDANCE WITH TMS 402 AND ARE INDICATED IN THE TYPICAL DETAILS, THE MINIMUM SPLICE SHALL BE 48 BAR
- 9. ALL MASONRY REINFORCING SHALL BE SECURED IN PLACE WITH REBAR POSITIONERS AND SPACERS.
- 10. ALL VERTICAL MASONRY WALL REINFORCEMENT SHALL BE CENTERED ON THE WALL, DOWELED INTO THE FOOTINGS, AND GROUTED SOLID, UNLESS NOTED OTHERWISE ON
- 11. IN ADDITION TO ALL OTHER REINFORCING IN MASONRY WALLS PROVIDE A MINIMUM OF (1) #5 BAR AT EACH SIDE OF ALL OPENINGS. EACH SIDE OF CONTROL JOINTS. AT CORNERS OR ENDS OF WALLS AND AT BEAM OR LINTEL BEARING. BAR TO BE FULL HEIGHT OF WALL.
- 12. ALL MASONRY WALLS SHALL HAVE A CONTINUOUSLY REINFORCED BOND BEAM NEAR THE TOP OF THE WALL, WITH (2) #5 BARS U.N.O. PROVIDE BENT CORNER BARS AT ALL BOND BEAM INTERSECTIONS. REFER TO APPROPRIATE DETAILS FOR LOCATION OF BOND BEAM.
- 13. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY WALL BRACING ADEQUATE TO RESIST LATERAL LOADS.
- 14. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF WALL CONTROL JOINTS AND EXPANSION JOINTS.
- 15. UNLESS NOTED OTHERWISE ON PLANS, LINTELS IN NON-LOAD BEARING MASONRY WALLS SHALL BE SIZED AS PER THE LOOSE LINTEL SCHEDULE ON THE DRAWINGS.
- 16. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR TYPE, SIZE, LOCATION AND ATTACHMENT REQUIREMENTS FOR MASONRY VENEER AND OTHER CLADDING.

DIVISION 5 - STEEL DECK

- 1. THE LATEST REVISION OF THE FOLLOWING CODES GOVERN THE DESIGN, DETAILING, MANUFACTURING AND ERECTION OF STEEL DECK.
- A. STEEL DECK INSTITUTE (SDI) MOC3, MANUAL OF CONSTRUCTION WITH STEEL DECK. B. SDI FDDM, FLOOR DECK DESIGN MANUAL. C. SDI RDDM, ROOF DECK DESIGN MANUAL.
- 2. ALL ROOF DECK SHALL BE AS FOLLOWS:
- A. ALL ROOF DECK SHALL BE 1 1/2" DEEP 22 GA WIDE RIB GALVANIZED DECK. 3 SPAN MINIMUM. 1.5B OR 1.5 VLPA BY VULCRAFT OR AN APPROVED EQUAL, SEE PLANS. B. FOR ROOD DECK SUPPORTED ON COLD FORMED METAL FRAMING: I. FASTEN DECK TO ALL SUPPORTS AND AT PERIMETER WITH SIMPSON STRONG-TIE #12 X METAL SCREW (OR APPROVED EQUAL), FASTEN DECK AT ALL

SUPPORTS AND PERIMETER IN 36/7 PATTERN. FASTEN SIDE LAPS WITH SIMPSON

- STRONG-TIE #10 X METAL SCREWS, 2 PER SPAN. 3. PROVIDE ADDITIONAL SUPPORT FRAMING AT OPENINGS IN ROOF AND FLOOR PER
- TYPICAL DETAILS. COORDINATE LOCATIONS WITH APPROPRIATE TRADES. 4. THE CONTRACTOR SHALL FURNISH ALL ACCESSORIES INCLUDING CLOSURES, "Z' CLOSURES, COLUMN CLOSURES, SCREED ANGLES, GIRDER FILLERS, CANT STRIP, FILLER SHEET AND REINFORCING CHANNEL, AS REQUIRED.
- 5. ALL DECKING SHALL BE WELDED TO STRUCTURAL STEEL BY QUALIFIED WELDERS USING PRE-QUALIFIED PROCEDURES. THE ERECTOR SHALL ESTABLISH A WELDING PROCEDURE FOR THE PLUG WELD OF THE STEEL DECKING TO THE STRUCTURAL STEEL FOR THE PARTICULAR GAGE USED. PRIOR TO THE START OF ERECTION OF THE STEEL DECK, EACH WELDER SHALL BE QUALIFIED USING THIS PROCEDURE AS WITNESSED BY THE OWNER'S TESTING AGENCY.
- THE METAL DECK SHALL BE DESIGNED TO BE CONTINUOUS OVER THREE (3) SPANS IN THE DIRECTION INDICATED. SINGLE AND DOUBLE SPANS, IF REQUIRED, SHALL SATISFY LOAD AND DEFLECTION REQUIREMENTS.
- NO LOADS SHALL BE PERMITTED TO BE HUNG FROM ANY ROOF DECK. ALL HANGERS FOR CEILINGS, DUCTWORK, ELECTRICAL CONDUIT, PIPING, ETC. SHALL BE HUNG DIRECTLY FROM STRUCTURAL STEEL WORK OR SUPPLEMENTARY MEMBERS.

DIVISION 5 - COLD FORMED METAL TRUSSES

ASTM A653-G60.

1. THE LATEST REVISION OF THE FOLLOWING CODES GOVERN THE DESIGN, DETAILING, FABRICATION AND ERECTION OF COLD FORMED METAL TRUSSES.

- A. AMERICAN IRON AND STEEL INSTITUTE (AISI) AISI S200, COLD-FORMED STEEL
- FRAMING GENERAL PROVISIONS. B. AISI S201, COLD-FORMED STEEL FRAMING - PRODUCT DATA. C. AISI S202, CODE OF STANDARD PRACTICE FOR COLD-FORMED STEEL STRUCTURAL
- D. AISI S214, COLD-FORMED STEEL FRAMING TRUSS DESIGN 2. COLD FORMED STEEL SHALL CONFORM TO THE FOLLOWING ASTM MATERIAL
- SPECIFICATIONS:
- A. ASTM A446, Fy = 33 KSI FOR MATERIAL 0.0478 INCH (18 GAGE) OR THINNER. B. ASTM A446, Fy = 50 KSI FOR MATERIAL 0.0598 INCH (16 GAGE) OR THICKER. 3. ALL COLD FORMED STEEL SHALL HAVE A GALVANIZED COATING CONFORMING TO
- 4. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST REVISION OF THE AMERICAN WELDING SOCIETY (AWS) D1.3 "STRUCTURAL WELDING CODE - SHEET
- 5. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING SUBMITTALS:
- A. SHOP DRAWINGS SHOWING SIZES, DESIGN VALUES, LOADS, MATERIALS, PERMANENT & TEMPORARY BRACING AND DIMENSIONAL RELATIONSHIPS OF COMPONENTS AS WELL AS BEARING AND ANCHORAGE DETAILS PREPARED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER.
- B. DESIGN CALCULATIONS PREPARED BY A PROFESSIONAL ENGINEER.
- 6. ALL ROOF TRUSSES SHALL BE DESIGNED FOR THE LOADS INDICATED ON THIS SHEET PLUS THE FOLLOWING: A. ROOF TRUSSES WITHIN 5 FOOT OF THE END WALL: NET UPLIFT = 10 PSF.
- B. REMAINING ROOF TRUSSES: NET UPLIFT = 5 PSF. 7. THE EXTENT OF ROOF TRUSSES SHOWN ON THE PLANS IS FOR REFERENCE ONLY. THE FABRICATOR SHALL VERIFY ALL DIMENSIONS, TRUSS LAYOUT, CONFIGURATION, NUMBER OF EACH TYPE OF TRUSS REQUIRED, LOADING AND DETAILS.
- 8. DEFLECTION OF TRUSSES SHALL BE LIMITED TO A MAXIMUM TOTAL LOAD DEFLECTION OF SPAN/360 (SPAN IS IN INCHES).

9. TEMPORARY BRACING OF THE TRUSSES, DURING CONSTRUCTION, IS THE

RESPONSIBILITY OF THE CONTRACTOR. 10. IN ADDITION TO THE DESIGN RESPONSIBILITIES OUTLINED IN THE AMERICAN IRON AND STEEL INSTITUTE (AISI) TRUSS DESIGN STANDARD, THE TRUSS FABRICATOR/ DESIGNER, AND HIS PROFESSIONAL ENGINEER, SHALL BE RESPONSIBLE FOR THE LOCATIONS AND DESIGN OF THE PERMANENT TRUSS MEMBER BRACING. DESIGN OF

THIS BRACING SHALL FOLLOW THE REQUIREMENTS INDICATED IN THE COLD FORMED

STEEL ENGINEERS INSTITUTE (CFSEI) TECH NOTE TN 551e, DESIGN GUIDE FOR PERMANENT BRACING OF COLD FORMED STEEL TRUSSES. NOTE THAT THE ROOF DECK SHEATHING HAS BEEN CONSIDERED TO ACT AS A DIAPHRAGM AND MAY BE CONSIDERED AS TOP CHORD BRACING FOR THE TRUSS. 11. LOCATIONS OF PERMANENT TRUSS BRACING TO RESIST WIND AND LATERAL FORCES ACTING PERPENDICULAR TO THE PLANE OF THE TRUSS OR FRAMING ARE INDICATED ON THE DRAWINGS. CRITERIA FOR THE MEMBER AND CONNECTION DESIGN FOR THIS

BRACING IS INDICATED ON THE DRAWINGS. THE COLD FORMED METAL FRAMING

CONTRACTOR AND HIS PROFESSIONAL ENGINEER ARE RESPONSIBLE FOR DESIGNING,

PROVIDING AND INSTALLING THIS BRACING (AND BRACING CONNECTIONS). 12. CONSTRUCTION/TEMPORARY BRACING OF THE COLD FORMED METAL TRUSSES IS THE RESPONSIBILITY OF THE TRUSS AND COLD FORMED METAL FRAMING INSTALLER AND HIS PROFESSIONAL ENGINEER. DESIGN OF THIS BRACING SHALL FOLLOW THE REQUIREMENTS INDICATED IN CFSEI TECH NOTE TN 551d, DESIGN GUIDE FOR CONSTRUCTION BRACING OF COLD FORMED STEEL TRUSSES.

DIVISION 31 - FOUNDATIONS/BACKFILL

- 1. CONTRACTOR SHALL REVIEW A COPY OF THE GEOTECHNICAL REPORT PREPARED FOR THIS PROJECT.
- 2. FOUNDATIONS ARE DESIGNED FOR A MAXIMUM ALLOWABLE BEARING CAPACITY OF 2000 PSF. FOUNDATIONS SHALL BEAR ON NATURAL UNDISTURBED SOILS OR ON ENGINEERED FILL.
- 3. THE OWNER WILL RETAIN THE SERVICES OF A GEOTECHNICAL ENGINEER TO MONITOR THE FOUNDATION WORK AND DETERMINE THE QUALITY OF THE SOIL AT ALL FOOTING LOCATIONS. IF UNSUITABLE MATERIALS ARE ENCOUNTERED AT THE FOOTING LOCATIONS. THE UNSUITABLE SHALL BE REMOVED AND REPLACED OR THE FOOTINGS LOWERED AT THE DIRECTION OF THE ENGINEER.
- 4. THE CONTRACTOR SHALL BE AWARE OF AND VERIFY LOCATION OF ALL UNDERGROUND UTILITIES, TANKS, ETC. DUE CARE SHALL BE EXERCISED DURING EXCAVATION SUCH THAT EXISTING UTILITIES ARE NOT DAMAGED.
- 5. ALL EXCAVATED MATERIAL SHALL BE TRANSPORTED TO A DISPOSAL AREA DESIGNATED BY THE OWNER ALL EXCAVATIONS SHALL CONFORM TO MI-OSHA REQUIREMENTS. ANY PERCHED GROUNDWATER ENTERING THE EXCAVATION SHALL BE PUMPED PRIOR TO PLACING CONCRETE.
- 6. ALL BACKFILL MATERIALS SHALL CONFORM TO MDOT CLASS II MATERIAL. ALL BACKFILL SHALL BE PLACED IN 9" LOOSE LIFTS AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH ASTM D-1557 (MODIFIED PROCTOR). FIELD DENSITY TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM D-2922 OR D-1556 WITH A MINIMUM OF 1 TEST PER 1500 SQ FEET OF AREA PER 9" LIFT (MINIMUM OF (3) TEST PER LIFT).

DESIGN CRITERIA

DESIGN CRITERIA MICHIGAN BUILDING CODE 2015 (ASCE 7-10)

RISK CATEGORY II. ROOF DEAD LOADS STANDING SEAM METAL ROOF (ALT (2) LAYERS SHINGLES)

MECHANICAL AND ELECTRICAL

SEISMIC DESIGN CATEGORY

STEEL DECK

COLD FORMED METAL

CEILING 5/8" GYPSUM

MISCELLANEOUS

SNOW LOADS

4 PSF 2 PSF 4 PSF 3 PSF 4 PSF

TOTAL ROOF LIVE LOADS MINIMUM LOAD

IMPORTANCE FACTOR $I_{s} = 1.0$ GROUND SNOW LOAD $P_a = 25 PSF$ SNOW EXPOSURE FACTOR $C_{e} = 1.0$ THERMAL FACTOR $C_t = 1.2$

20 PSF

FLAT USE SNOW P_f = 21 PSF (TYPICAL ROOF) SNOW DRIFT PER ASCE 7

WIND LOADS 115 MPH (3 SEC GUST) BASIC WIND SPEED EXPOSURE CATEGORY COMPONENTS AND CLADDING PER ASCE 7

SEISMIC DESIGN DATA SITE CLASS RESPONSE COEFFICIENTS $SD_S = 0.094$ $SD_1 = 0.072$

A.B. ADD'L	ANCHOR BOLT ADDITIONAL
A.F.F.	ABOVE FINISHED FLOOR
B.C.	BOTTOM CHORD
B.O.	BOTTOM OF DECK
	BOTTOM OF DECK BOTTOM OF FOOTING
B.O.S.	BOTTOM OF STEEL
B.O.T.	BOTTOM OF TRUSS
B.S.	BOTH SIDES
BM BOTT	BEAM BOTTOM
BRG	BEARING
C.L.	CENTER LINE
CJ	CONTROL JOINT
COL CONC	COLUMN CONCRETE
CONT	CONTINUOUS
CSJ	CONSTRUCTION JOINT
DET	DETAIL
DIA DIAG	DIAMETER DIAGONAL
DIAG	DIMENSION
DL	DEAD LOAD
DWG	DRAWING
E.F. EA	EACH FACE EACH
ELEV	ELEVATION
EQ	EQUAL
EX	EXISTING
F.S. F.V.	FAR SIDE FIELD VERIFY
F.V. FIN	FINISH
FLG	FLANGE
FLR	FLOOR
FDN FT	FOUNDATION FOOT
FTG	FOOTING
GA	GAGE
G.L.	GIRT LINE
H.P. HORIZ	HIGH POINT HORIZONTAL
k	KIPS
LG	LONG
L.P. LL	LOW POINT LIVE LOAD
L.L.H.	LONG LEG HORIZONTAL
L.L.V.	LONG LEG VERTICAL
LN	LINE
L.S.H. MAX	LONG SIDE HORIZONTAL MAXIMUM
MTL	METAL
MIN	MINIMUM
MISC	MISCELLANEOUS
N.S.	NEAR SIDE

NOT TO SCALE

NUMBER

ON CENTER

OPPOSITE

PIECE

PLATE

PLACES

REFERENCE

REQUIRED

SCHEDULE

SECTION

SIMILAR

SPACES

STEEL

TOP OF

STANDARD

TOP OF CONCRETE

TOP OF FOOTING

TOP OF MASONRY

UNLESS NOTED OTHERWISE

WELDED WIRE REINFORCEMENT

TOP OF STEEL

TYPICAL

VERTICAL

WITH

WORK POINT

POUNDS PER SQUARE FOOT

POUNDS PER SQUARE INCH

RINFORC-ED, -ING, EMENT

N.T.S.

PLCS

REINF

REQ'D SCHED

SECT

STL T.O.

T.O.F.

T.O.M.

T.O.S.

TYP

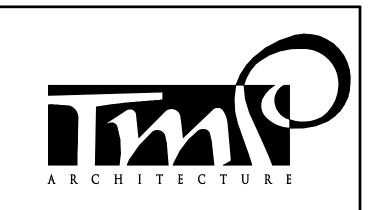
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REGISTRATION SEAL

CONSULTANT



PROJECT TITLE

Troy High School Athletic Fields BID PACKAGE No. 02B

Troy School Dsitrict Troy, Michigan

DRAWING TITLE **Structural General Notes**



ISSUE DATES

DATE: ISSUED FOR: DRAWN D. BART CHECKED B. KANNERS

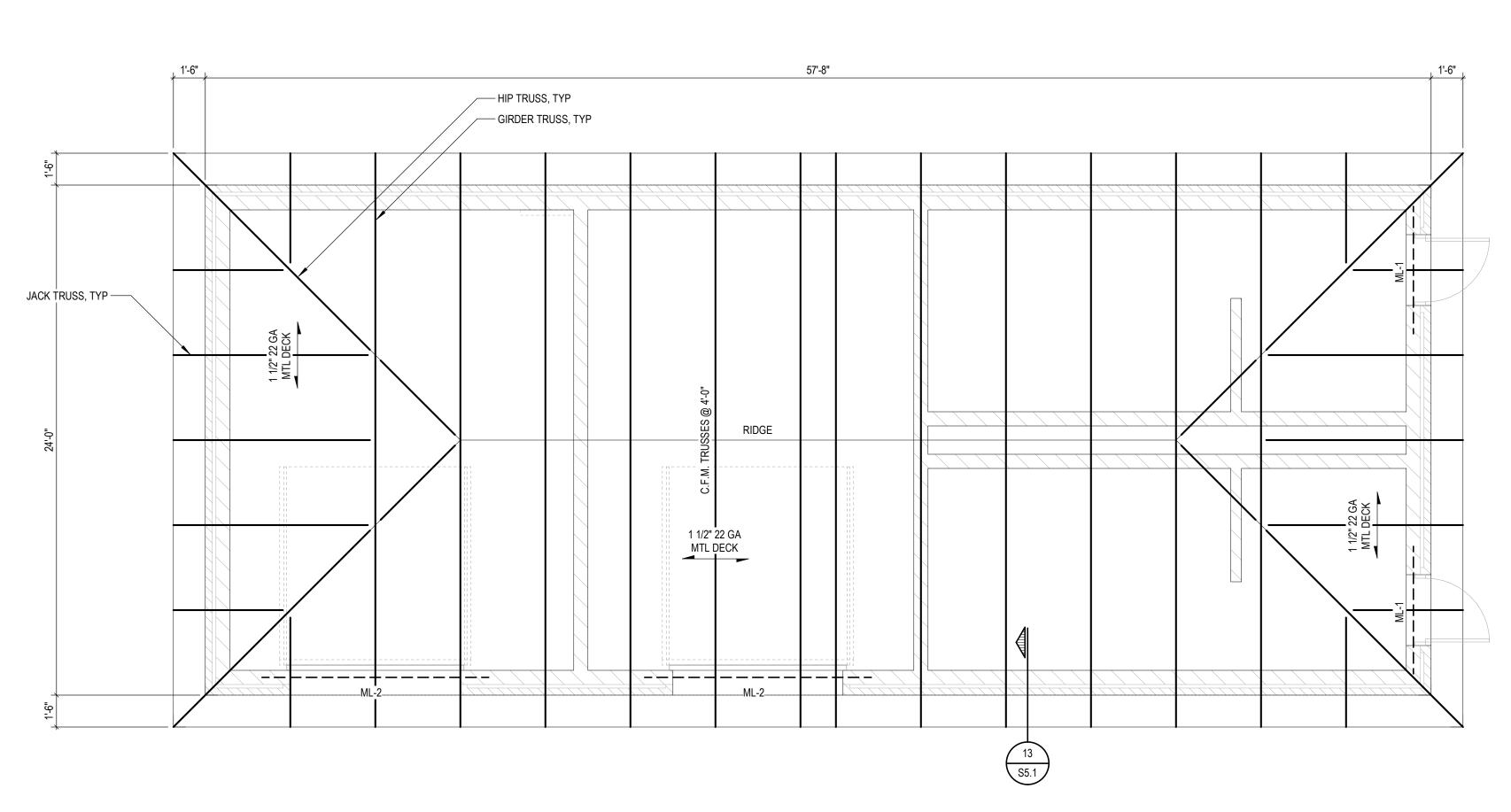
CONSTRUCTION DOCUMENTS

PROJECT NO.

APPROVED E. MANNOR

22103D









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CONSULTANT



Troy High School
Athletic Fields
BID PACKAGE No. 02B

Troy School Dsitrict Troy, Michigan

drawing title

Structural Plans



ISSUE DATES

12-10-2024 CONSTRUCTION DOCUMENTS

DATE: ISSUED FOR:

DRAWN D. BART

CHECKED B. KANNERS

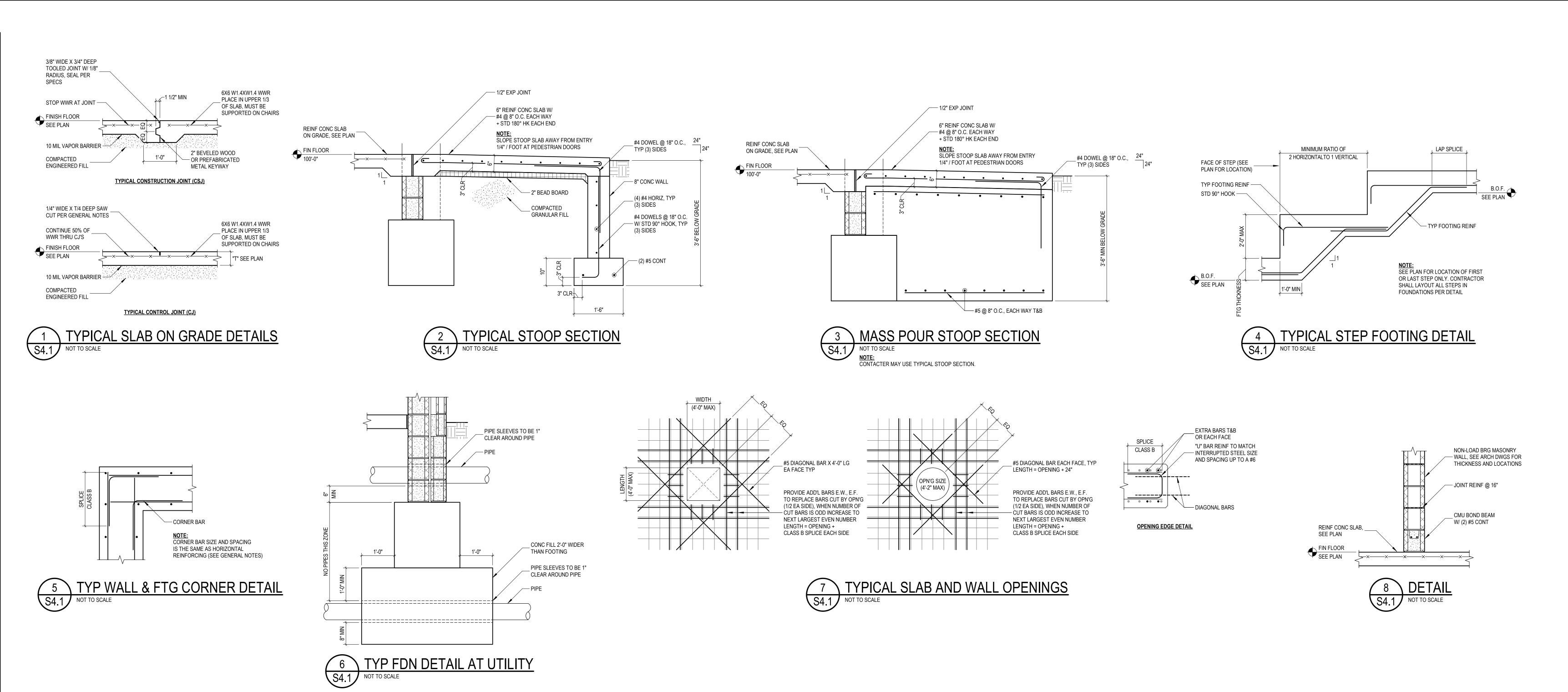
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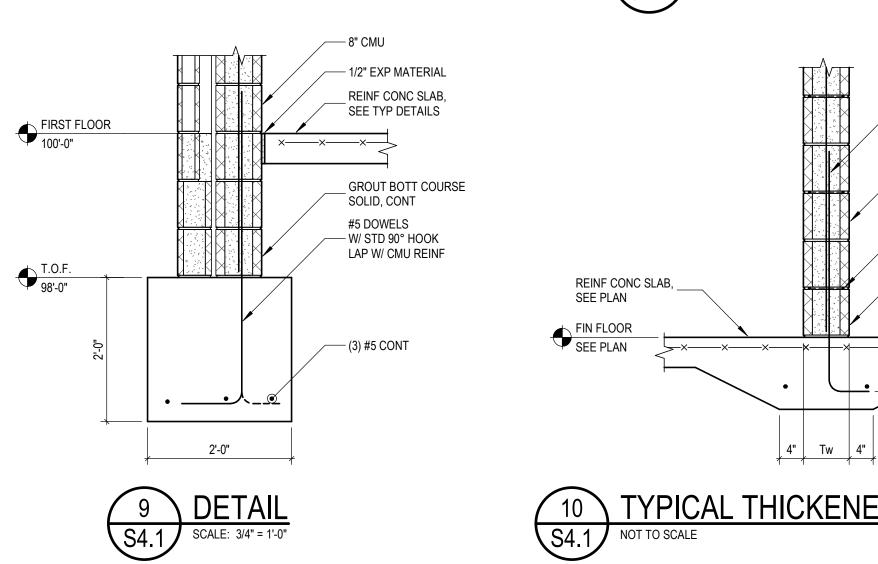
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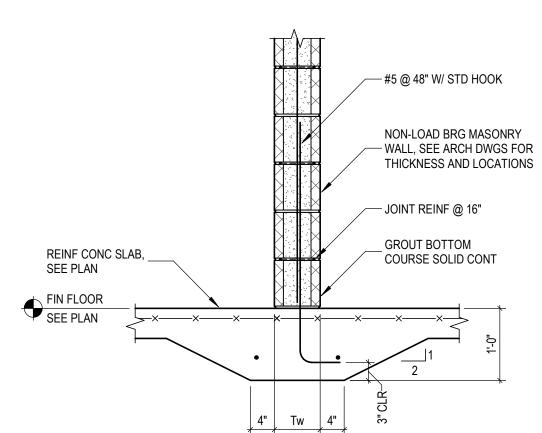
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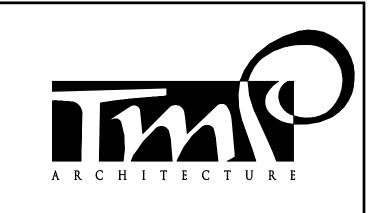
C:\Users\dbart\Documents\2314730066_Troy ToiletStorage Bld_S_v24_Darren -.rvt







10 TYPICAL THICKENED SLAB DETAIL



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PROJECT TITLE **Troy High School Athletic Fields**

BID PACKAGE No. 02B

Troy School Dsitrict Troy, Michigan

DRAWING TITLE **Concrete Details**



ISSUE DAT	ES
12-10-2024	CONSTRUCTION DOCUMENTS
DATE:	ISSUED FOR:
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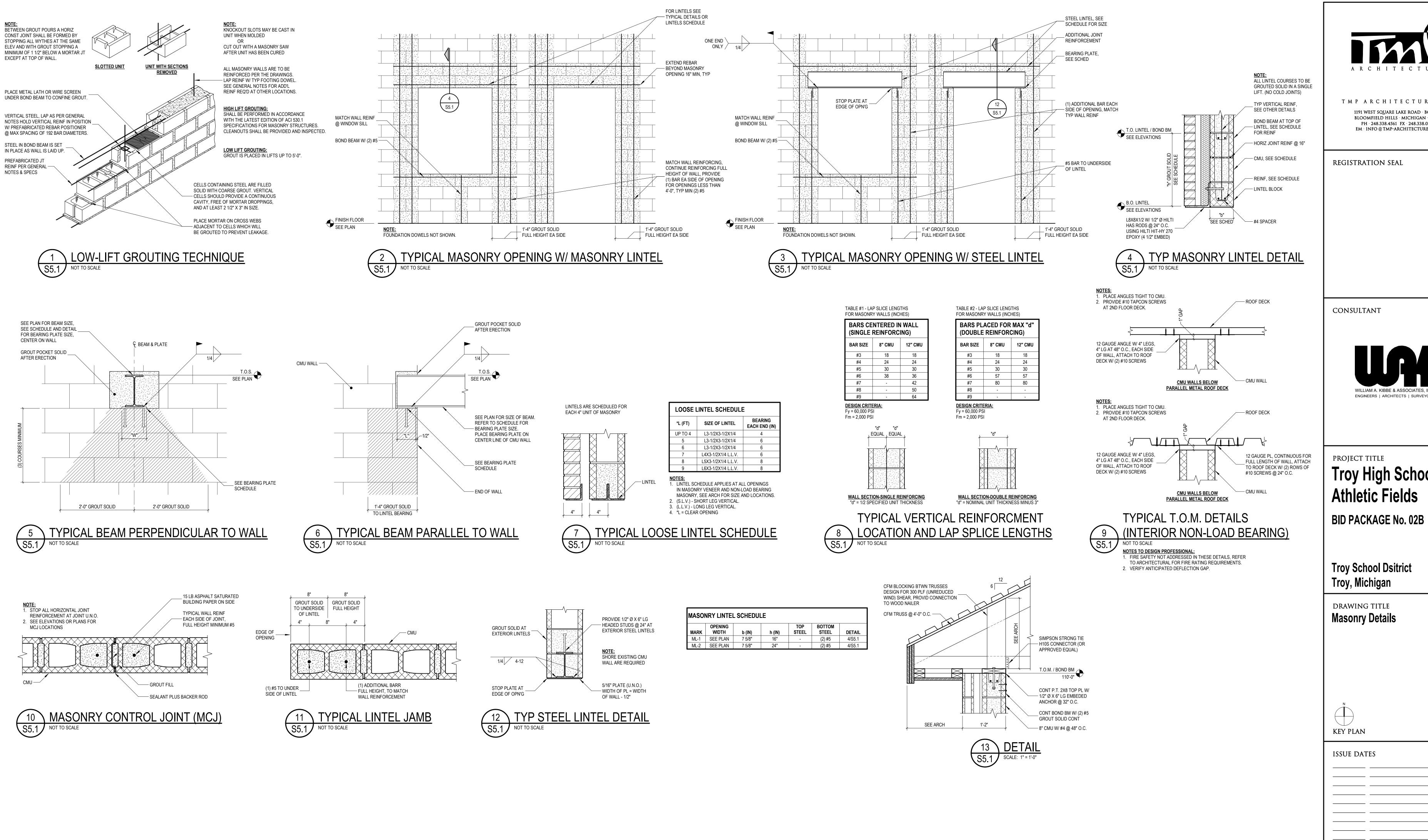
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PROJECT NO.

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REGISTRATION SEAL

CONSULTANT



PROJECT TITLE

Troy High School Athletic Fields

Troy School Dsitrict Troy, Michigan

DRAWING TITLE **Masonry Details**



ISSUE DATES CONSTRUCTION DOCUMENTS DATE: DRAWN D. BART

APPROVED E. MANNOR

CHECKED B. KANNERS

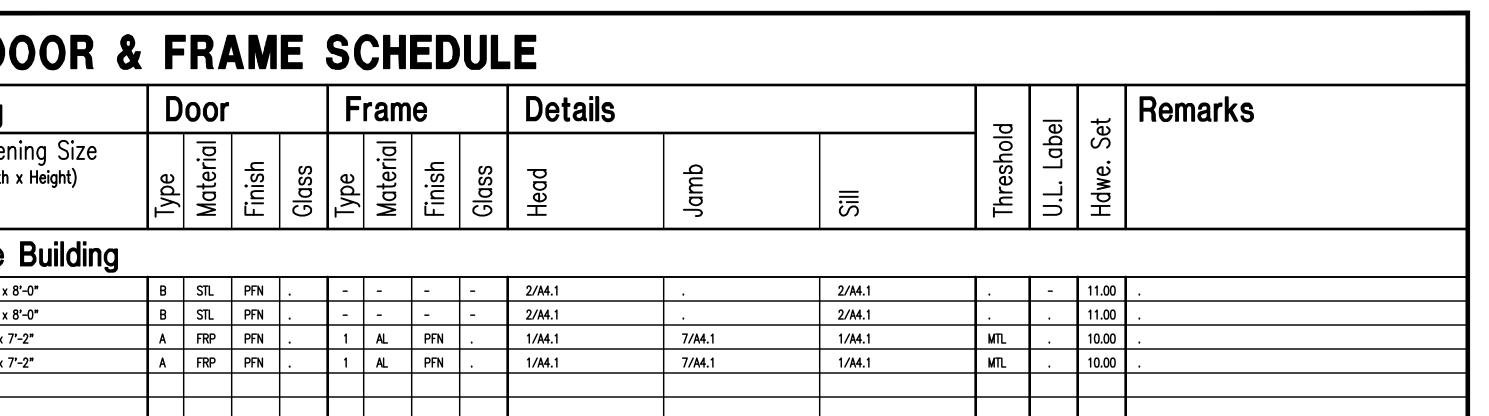
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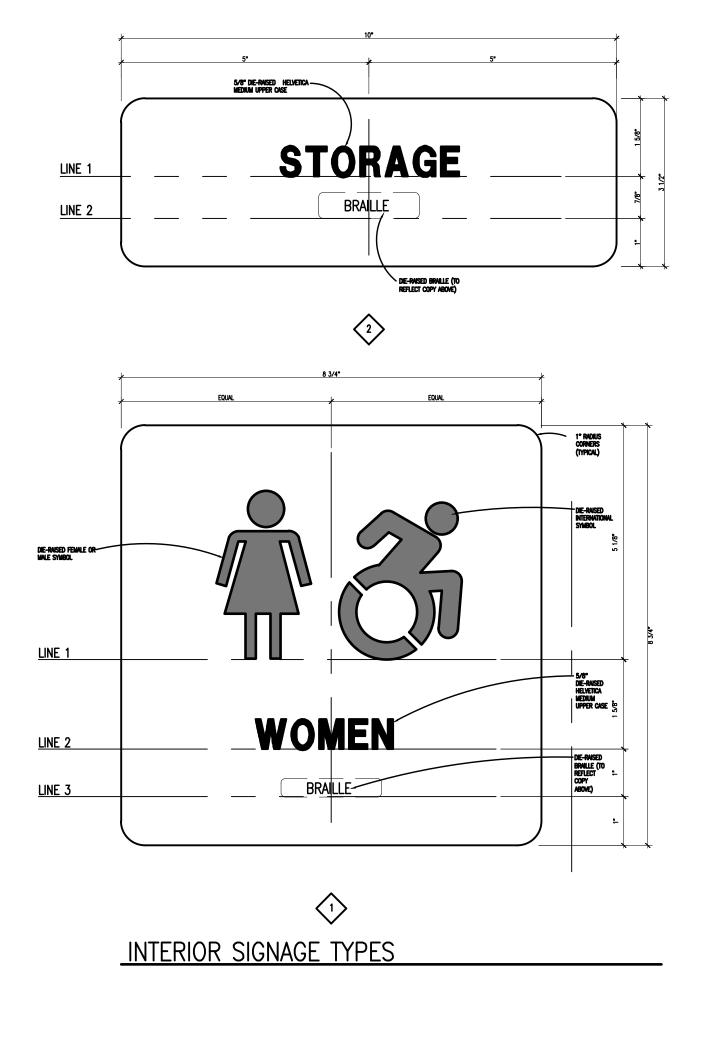
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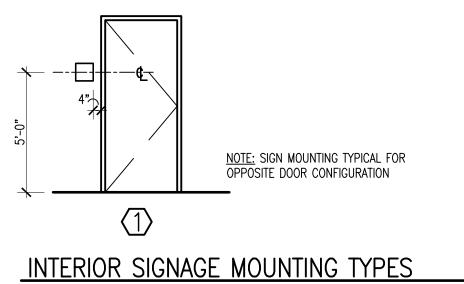
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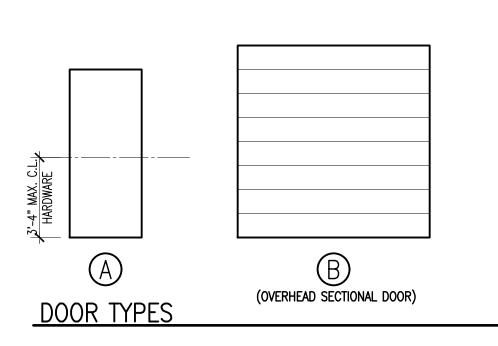
INTERIO	R SIGNA	AGE SCHED	ULE
Door or Room Number	Sign Type	Mounting Type	Text TBD = TO BE DETERMINED BY OWNER
101	2	1	Line 1: Storage Line 2: Braille Line 3: Line 4: Line 5: Line 6:
102	2	1	Line 1: Storage Line 2: Braille Line 3: Line 4: Line 5: Line 6:
103	1	1	LINE 1: SYMBOL LINE 2: WOMEN LINE 3: BRAILLE LINE 4: LINE 5: LINE 6:
104	1	1	LINE 1: SYMBOL LINE 2: MEN LINE 3: BRAILLE LINE 4: LINE 5: LINE 6:

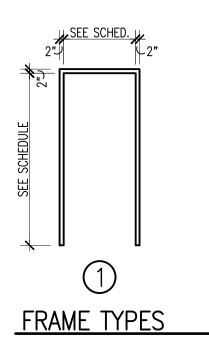
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DOOR SCHEDULE ABBREVIATIONS AND NOTES (REFER TO SPECIFICATIONS FOR ADDITIONAL DOOR INFORMATION)

DOOR SCHEDULE ABBREVIATIONS

ALUMINUM ALUMINUM AND GLASS FIRE RATED ALUMINUM FRAMING FIBERGLASS REINFORCED POLYESTER HOLLOW METAL PLASTIC LAMINATE CLAD METAL THRESHOLD NATURAL FINISHED WOODWORK PREFINISHED BY MANUFACTURER PTD SDSF STL STSTL WD SOLID SURFACE THRESHOLD STAINLESS STEEL

SOLID CORE HARDWOOD

DOOR SCHEDULE GENERAL NOTES 1. GALVANIZED METAL TO BE PROVIDED FOR HOLLOW METAL DOOR AND/OR FRAME AT EXTERIOR LOCATION. 2. DOORS ARE 1-3/4" THICK UNLESS OTHERWISE NOTED. 3. DETAIL NUMBERS NOTED SIM. REFER TO DETAILS SHOWING HEAD, JAMB, AND/ OR SILL DETAILS THAT REPRESENT CONDITIONS SIMILAR TO THOSE NOTED. 4. HOLLOW METAL FRAMES SET IN MASONRY WALLS ARE 5 3/4" WIDE (U.O.N.). 5. HOLLOW METAL FRAMES, SET IN GYPSUM BD. /METAL STUD PARTITIONS,

SIDE OF THE PARTITION. PROVIDE EQUAL RABBETS.

1 HR. FIRE RATING 3/4 HR. FIRE RATING 1/3 HR. FIRE RATING ** ALL FIRE RATED DOORS SHALL BE SMOKE AND DRAFT CONTROL LABELED IN ADDITION TO U.L. LABELS INDICATED. SHALL BE "DOUBLE BACK-BEND" FRAMES WITH A THROAT DIMENSION

U.L. DOOR LABEL DESIGNATIONS:

U.L. LABEL** MIN. OPENING PROTECTION ASSEMBLY

1-1/2 HR. FIRE RATING

3 HR. FIRE RATING

AN ASTERISK (*) CALLS ATTENTION TO THE REMARKS COLUMN OF THE SCHEDULE.

EQUAL TO THE PARTITION THICKNESS PLUS 9/16" RETURNS ON EACH



TMP ARCHITECTURE INC BLOOMFIELD HILLS MICHIGAN 48302 PH 248.388.4561 FX 248.388.0223 EM INFO TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT

PROJECT TITLE Athens High **School Athletics** Bid Package No. 02B

Troy School District Troy, Michigan

DOOR & Frame Schedule

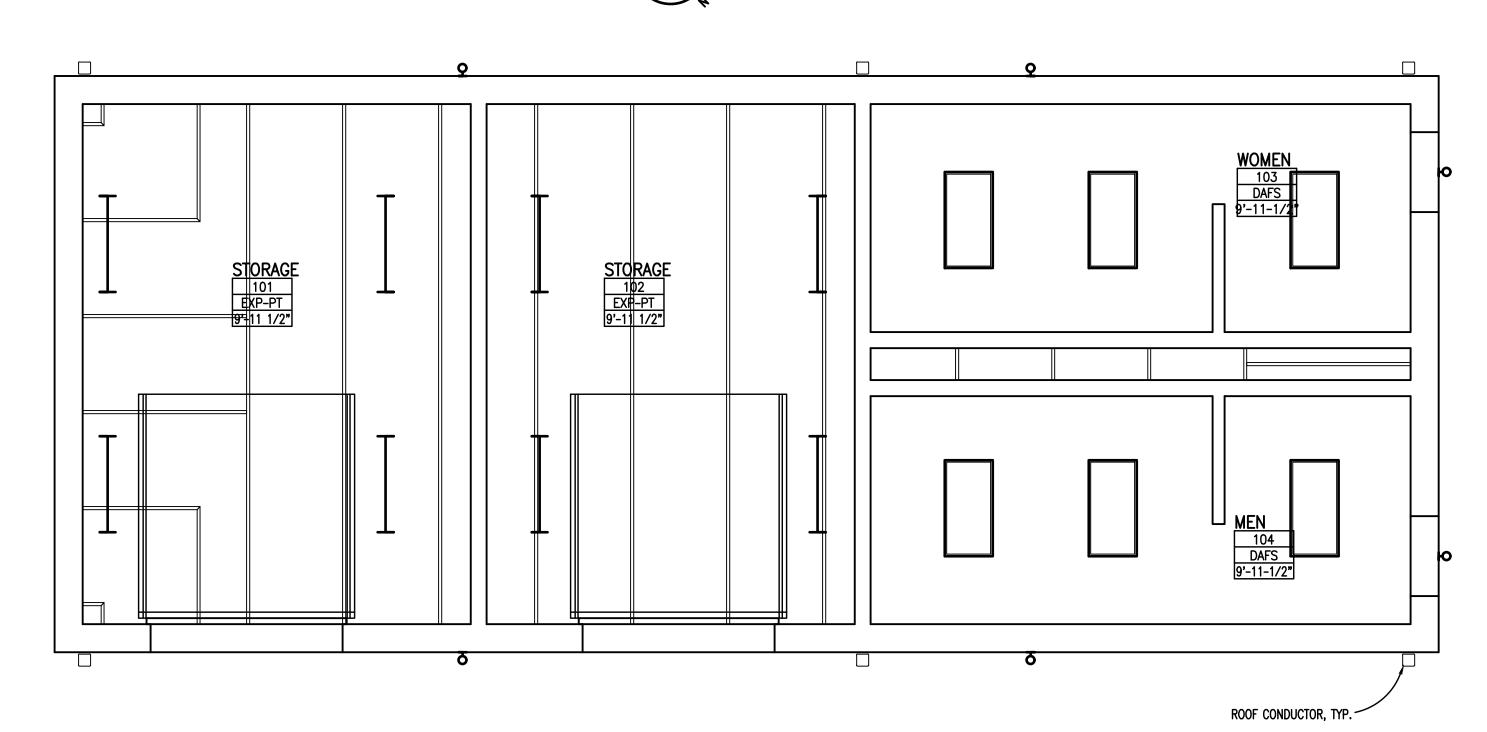
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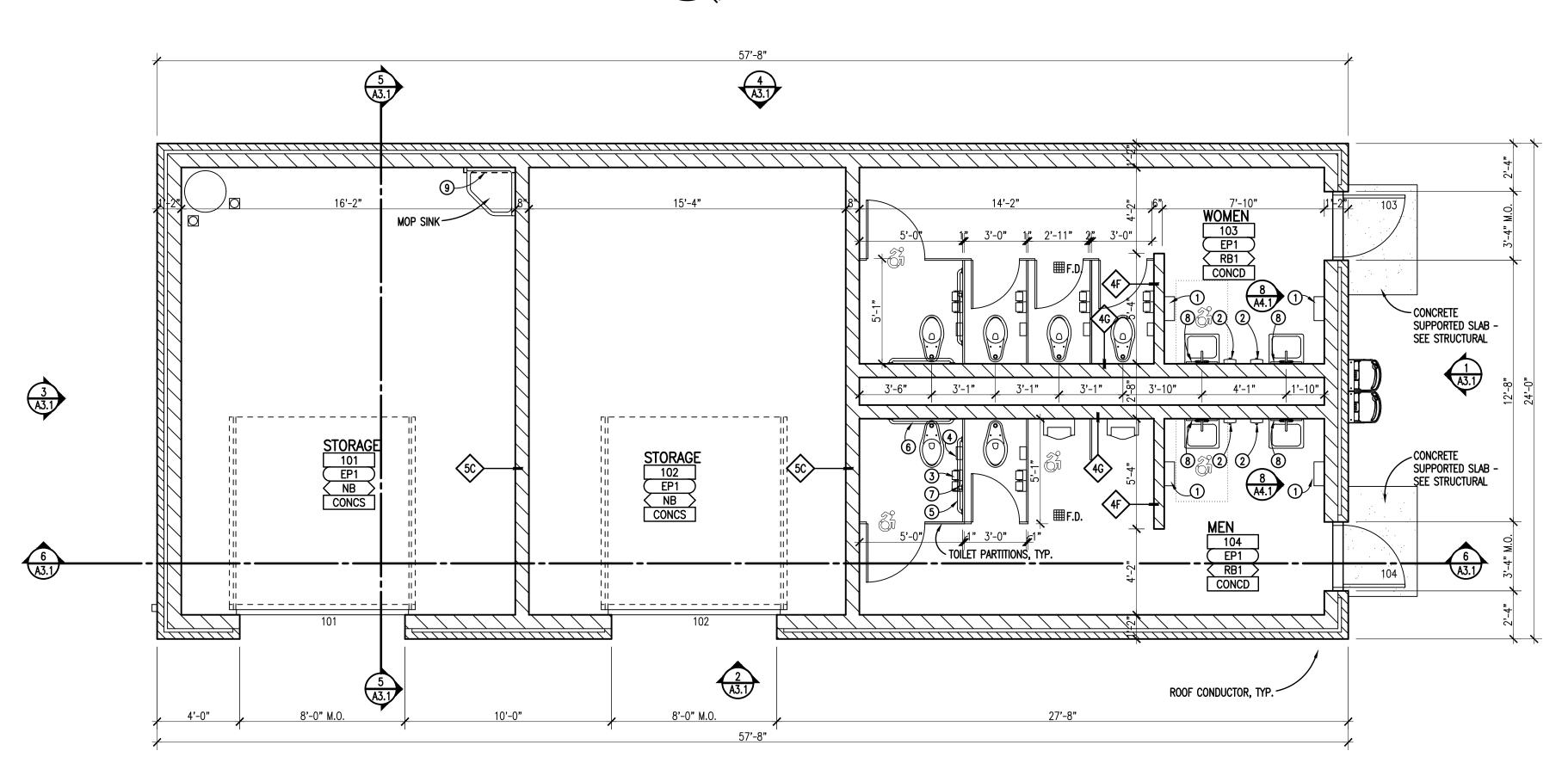
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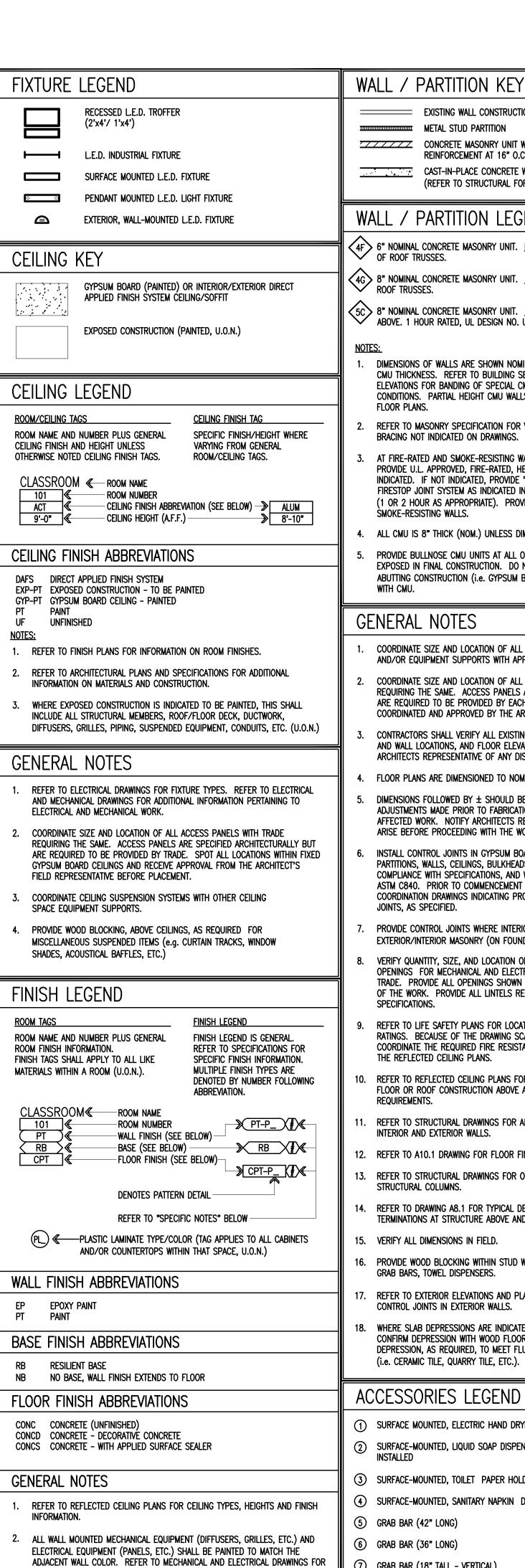


FIRST LEVEL REFLECTED CEILING PLAN



FIRST LEVEL FLOOR PLAN

SCALE: 1/4" = 1'-0"



QUANTITIES AND LOCATIONS.

EXISTING WALL CONSTRUCTION METAL STUD PARTITION CONCRETE MASONRY UNIT WALL w/ HORIZONTAL JOINT REINFORCEMENT AT 16" O.C.. CAST-IN-PLACE CONCRETE WALL (REFER TO STRUCTURAL FOR REINFORCING REQUIREMENTS) WALL / PARTITION LEGEND 4F 6" nominal concrete masonry unit. <u>Height:</u> from floor to underside OF ROOF TRUSSES. 8" NOMINAL CONCRETE MASONRY UNIT. <u>HEIGHT:</u> FROM FLOOR UNDERSIDE OF ROOF TRUSSES. 5C 8" NOMINAL CONCRETE MASONRY UNIT. HEIGHT: FROM FLOOR TO ROOF DECK ABOVE. 1 HOUR RATED, UL DESIGN NO. U905. DIMENSIONS OF WALLS ARE SHOWN NOMINAL IN PLAN FOR DETERMINING THE CMU THICKNESS. REFER TO BUILDING SECTIONS, WALL SECTIONS AND INTERIOR ELEVATIONS FOR BANDING OF SPECIAL CMU TYPES OR ANY OTHER SPECIAL CONDITIONS. PARTIAL HEIGHT CMU WALLS WILL BE NOTED AS SUCH ON THE REFER TO MASONRY SPECIFICATION FOR VERTICAL REINFORCEMENT AND WALL BRACING NOT INDICATED ON DRAWINGS. AT FIRE-RATED AND SMOKE-RESISTING WALLS (MASONRY OR GYPSUM BOARD), PROVIDE U.L. APPROVED, FIRE-RATED, HEAD-OF-WALL TERMINATIONS AS INDICATED. IF NOT INDICATED, PROVIDE "BASIS OF DESIGN", HEAD-OF-WALL FIRESTOP JOINT SYSTEM AS INDICATED IN SPECIFICATION SECTION 07 8446 (1 OR 2 HOUR AS APPROPRIATE). PROVIDE MINIMUM 1 HOUR TERMINATION AT SMOKE-RESISTING WALLS. 4. ALL CMU IS 8" THICK (NOM.) UNLESS DIMENSIONED OTHERWISE. PROVIDE BULLNOSE CMU UNITS AT ALL OUTSIDE CORNERS WHEN CORNERS ARE EXPOSED IN FINAL CONSTRUCTION. DO NOT BULLNOSE CORNERS WHEN ABUTTING CONSTRUCTION (i.e. GYPSUM BOARD) IS INTENDED TO BE FLUSH GENERAL NOTES COORDINATE SIZE AND LOCATION OF ALL CONCRETE HOUSEKEEPING PADS AND/OR EQUIPMENT SUPPORTS WITH APPROPRIATE EQUIPMENT MANUFACTURER. COORDINATE SIZE AND LOCATION OF ALL ACCESS PANELS WITH TRADE REQUIRING THE SAME. ACCESS PANELS ARE SPECIFIED ARCHITECTURALLY BUT ARE REQUIRED TO BE PROVIDED BY EACH TRADE. ALL LOCATIONS MUST BE COORDINATED AND APPROVED BY THE ARCHITECT'S FIELD REPRESENTATIVE. CONTRACTORS SHALL VERIFY ALL EXISTING BUILDING DIMENSIONS, PARTITION AND WALL LOCATIONS, AND FLOOR ELEVATIONS IN THE FIELD AND NOTIFY THE ARCHITECTS REPRESENTATIVE OF ANY DISCREPANCIES BEFORE START OF WORK. 4. FLOOR PLANS ARE DIMENSIONED TO NOMINAL WALL THICKNESS - TYPICAL. DIMENSIONS FOLLOWED BY ± SHOULD BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND/OR INSTALLATION OF AFFECTED WORK. NOTIFY ARCHITECTS REPRESENTATIVE IF DISCREPANCIES ARISE BEFORE PROCEEDING WITH THE WORK. 6. INSTALL CONTROL JOINTS IN GYPSUM BOARD AND METAL STUD-FRAMED PARTITIONS, WALLS, CEILINGS, BULKHEADS, FASCIAE AND SOFFITS IN COMPLIANCE WITH SPECIFICATIONS, AND WITH GENERAL REQUIREMENTS OF ASTM C840. PRIOR TO COMMENCEMENT OF FRAMING INSTALLATION SUBMIT COORDINATION DRAWINGS INDICATING PROPOSED LOCATIONS OF ALL CONTROL JOINTS, AS SPECIFIED. PROVIDE CONTROL JOINTS WHERE INTERIOR CMU (ON SLAB) ABUTS EXTERIOR/INTERIOR MASONRY (ON FOUNDATIONS OR FOOTINGS). VERIFY QUANTITY, SIZE, AND LOCATION OF ALL FLOOR, ROOF, AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK. PROVIDE ALL LINTELS REQUIRED FOR THESE OPENINGS PER REFER TO LIFE SAFETY PLANS FOR LOCATIONS OF REQUIRED FIRE RESISTANCE RATINGS. BECAUSE OF THE DRAWING SCALE OF THE LIFE SAFETY PLANS, COORDINATE THE REQUIRED FIRE RESISTANCE RATINGS WITH THOSE SHOWN ON THE REFLECTED CEILING PLANS. REFER TO REFLECTED CEILING PLANS FOR EXTENSION OF PARTITION WALLS TO FLOOR OR ROOF CONSTRUCTION ABOVE AND WALL FIRE RESISTANCE RATING REFER TO STRUCTURAL DRAWINGS FOR ALL WIND FRAME LOCATIONS AT INTERIOR AND EXTERIOR WALLS. REFER TO A10.1 DRAWING FOR FLOOR FINISH PATTERNS AND ROOM FINISHES. REFER TO STRUCTURAL DRAWINGS FOR ORIENTATION AND SIZES OF ALL STRUCTURAL COLUMNS. 14. REFER TO DRAWING A8.1 FOR TYPICAL DETAILS PERTAINING TO WALL TERMINATIONS AT STRUCTURE ABOVE AND MASONRY CONTROL JOINT DETAILS. 15. VERIFY ALL DIMENSIONS IN FIELD. PROVIDE WOOD BLOCKING WITHIN STUD WALLS FOR WALL MOUNTED ITEMS i.e. GRAB BARS, TOWEL DISPENSERS. REFER TO EXTERIOR ELEVATIONS AND PLAN DETAILS FOR LOCATIONS OF CONTROL JOINTS IN EXTERIOR WALLS. WHERE SLAB DEPRESSIONS ARE INDICATED FOR WOOD FLOOR SYSTEMS, CONFIRM DEPRESSION WITH WOOD FLOORING CONTRACTOR. ADJUST DEPRESSION, AS REQUIRED, TO MEET FLUSH WITH ADJACENT FLOOR MATERIALS (i.e. CERAMIC TILE, QUARRY TILE, ETC.). ACCESSORIES LEGEND 1) SURFACE MOUNTED, ELECTRIC HAND DRYER 2 SURFACE-MOUNTED, LIQUID SOAP DISPENSER - OWNER PROVIDED AND 3 SURFACE-MOUNTED, TOILET PAPER HOLDER - OWNER PROVIDED AND INSTALLED 4 SURFACE-MOUNTED, SANITARY NAPKIN DISPOSAL UNIT 5 GRAB BAR (42" LONG) 6 GRAB BAR (36" LONG) 7 GRAB BAR (18" TALL - VERTICAL) 8 CHANNEL FRAME MIRROR (24"W x 36" H) REFER TO SPEC. SECTION 012300 FOR COMPLETE LIST AND DESCRIPTION OF (9) MOP HOOK WITH SHELF GENERAL NOTES A. MOUNTING HEIGHTS AND POSITIONING SHALL BE AS INDICATED ON GENERAL INFORMATION SHEET (TG.1) U.O.N. ROOF PLAN LEGEND DRAWN SLOPE INDICATES SLOPE OF ROOF CHECKED ROOF PLAN NOTES 1. SEE MECHANICAL DRAWINGS FOR LOCATIONS OF PLUMBING VENTS PROJECT NO. (FLASH AS PER S.M.A.C.N.A. AND N.R.C.A. STANDARDS). 2. SEE MECHANICAL DRAWINGS FOR ADDITIONAL OPENINGS, IF ANY, IN NEW AND/OR EXISTING ROOFS. DETAILS OF SIMILAR OPENINGS REFERENCED ON THIS SHEET ARE APPLICABLE.

WHERE NEW OPENINGS OCCUR IN EXISTING ROOF AREAS, INSTALL

REPAIR ROOFING AND INSULATION TO 2'-0" (MIN.) AROUND OPENING.

4. WHERE WOOD NAILERS ARE SHOWN IN PLANE OF ROOF INSULATION, CUT

5. PROVIDE MIN. 1/150 VENTING OF TOTAL ATTIC AREA PER MBC 2015.

NAILERS AS REQUIRED TO MATCH INSULATION THICKNESS.

SUPPLEMENTAL STEEL FRAMING UNDER DECK PRIOR TO CUTTING HOLE IN DECK.

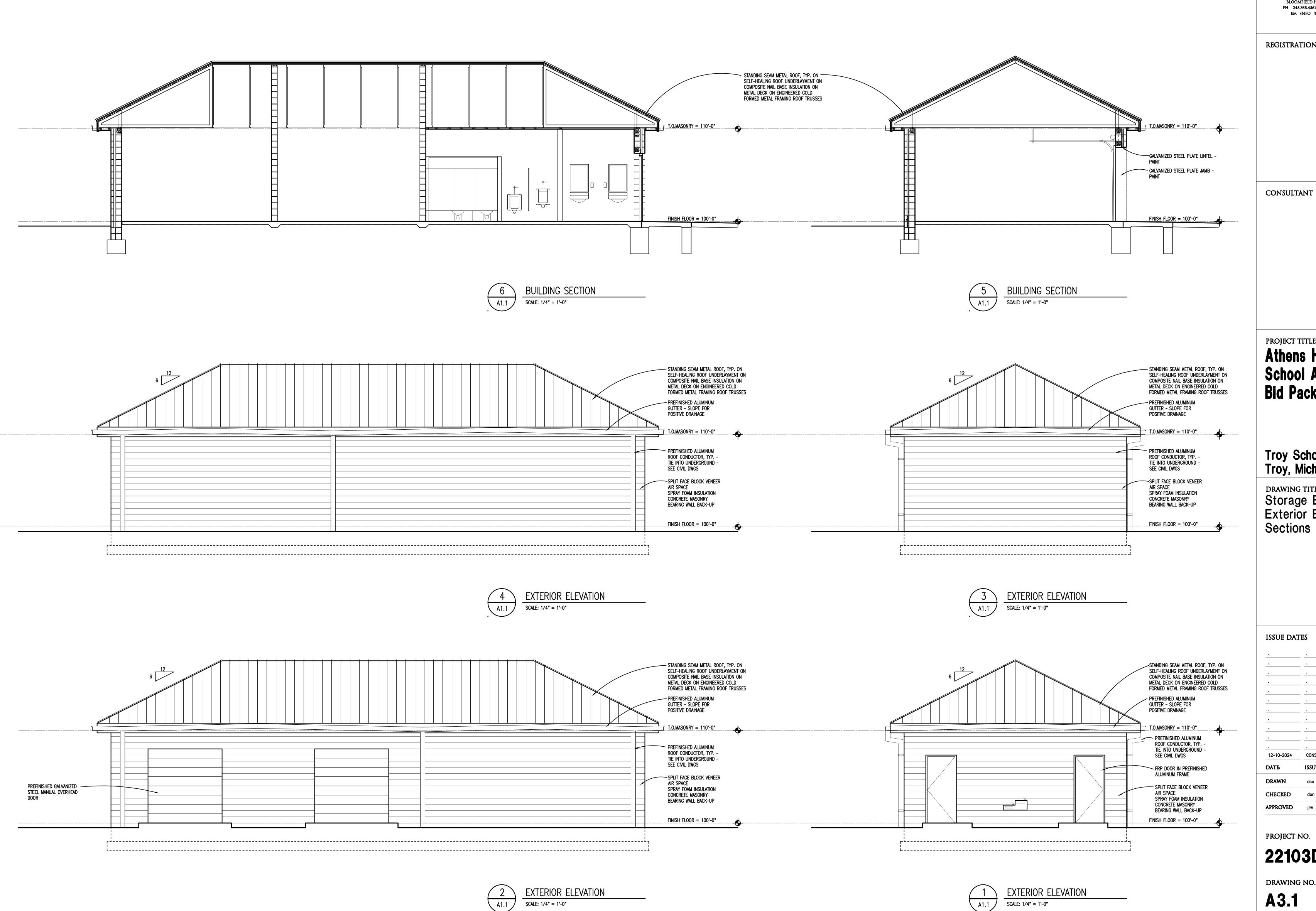
ARCHITECTURE MP ARCHITECTURE INC 1191 WEST SQUARE LAKE ROAD BLOOMFIELD HILLS MICHIGAN 48302 PH 248.388.4561 FX 248.388.0223 EM INFO TMP-ARCHITECTURE.COM REGISTRATION SEAL CONSULTANT PROJECT TITLE Athens High **School Athletics** Bid Package No. 02B **Troy School District** Troy, Michigan DRAWING TITLE Storage Building First Level Floor Plan **ISSUE DATES** APPROVED jrw

CONSTRUCTION DOCUMENTS

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ARCHITECTURE

TMP ARCHITECTURE INC 1191 WEST SQUARE LAKE ROAD BLOOMFIELD HILLS MICHIGAN 48302 PH 248.388.4561 FX 248.388.0223 EM INFO TMP-ARCHITECTURE.COM

REGISTRATION SEAL

PROJECT TITLE Athens High School Athletics Bid Package No. 02B

Troy School District Troy, Michigan

Storage Building
Exterior Elevations and
Sections

12-10-2024 CONSTRUCTION DOCUMENTS DATE:

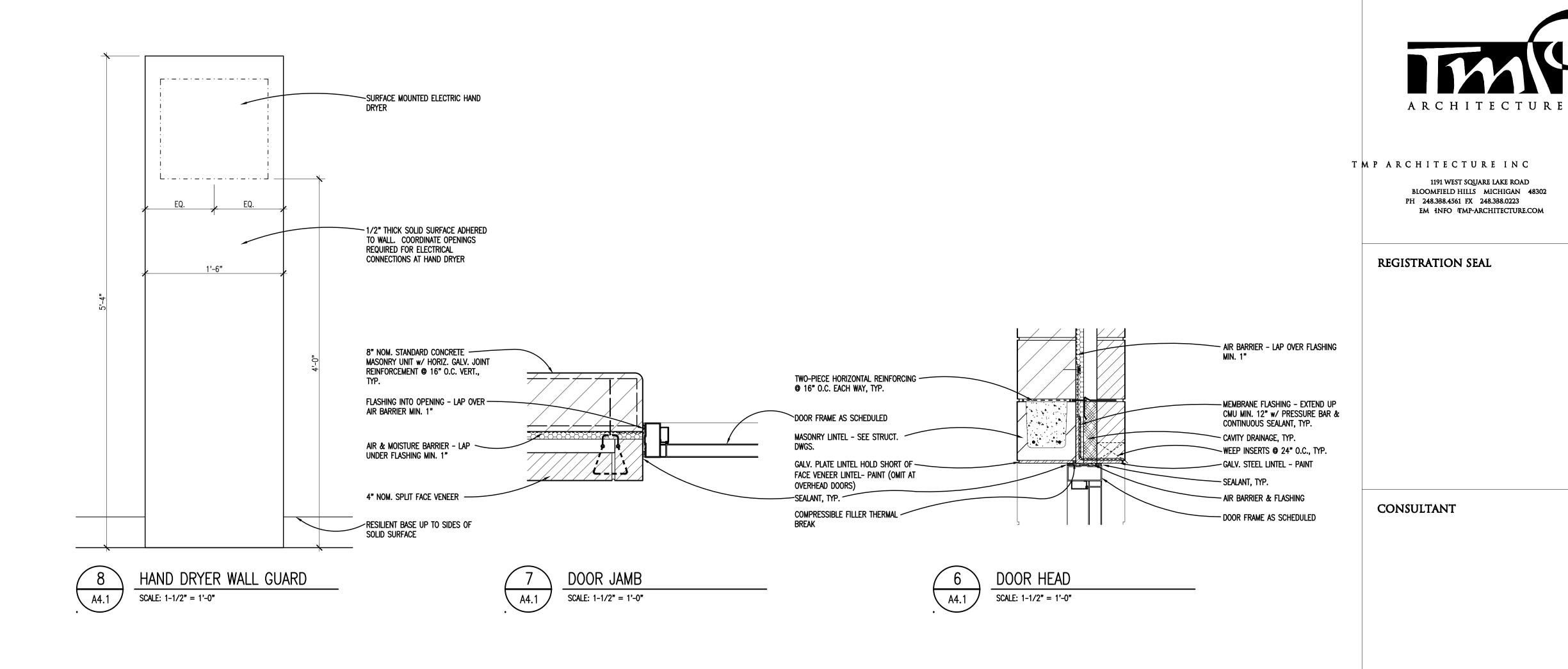
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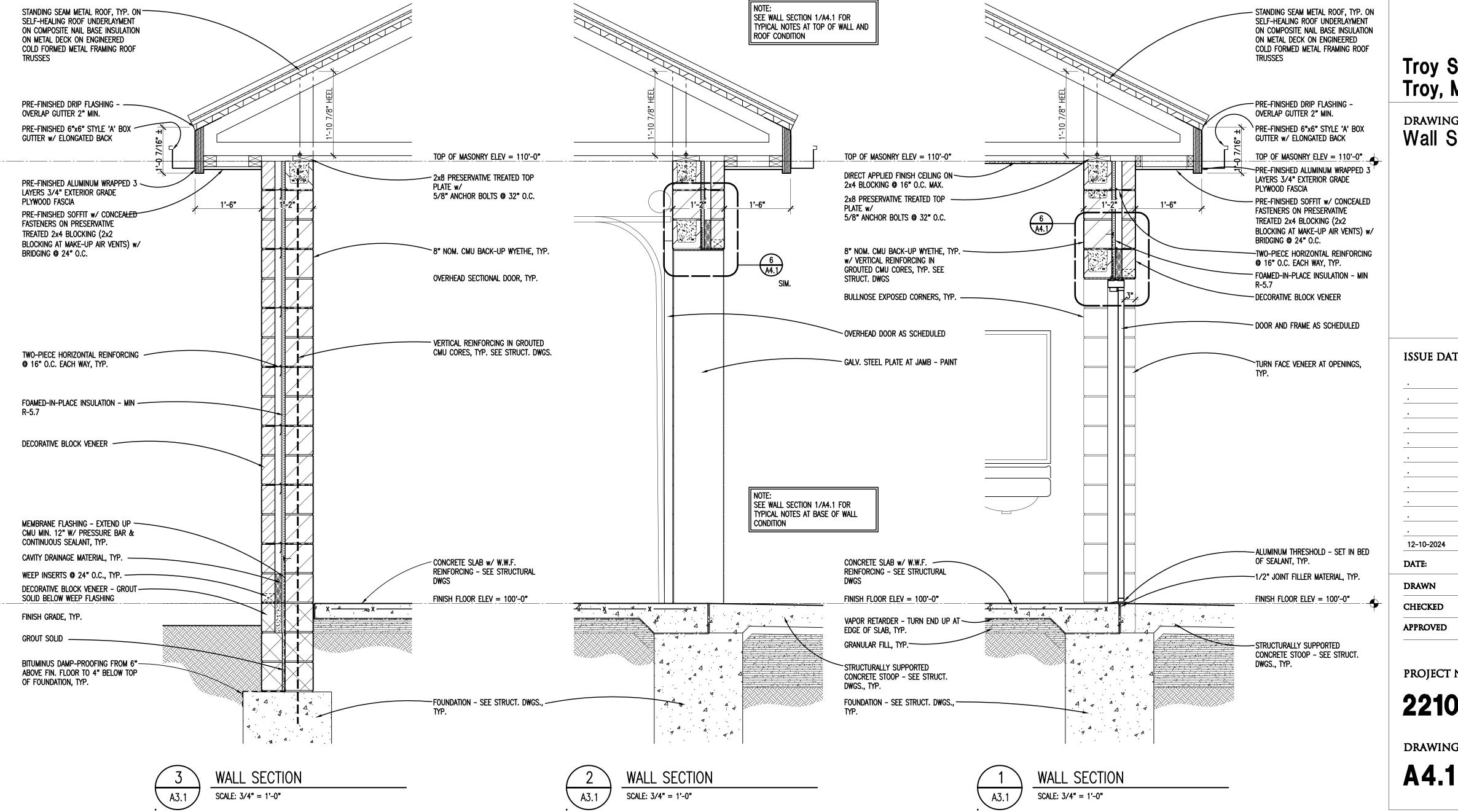




Troy School District Troy, Michigan

DRAWING TITLE Wall Sections

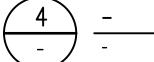
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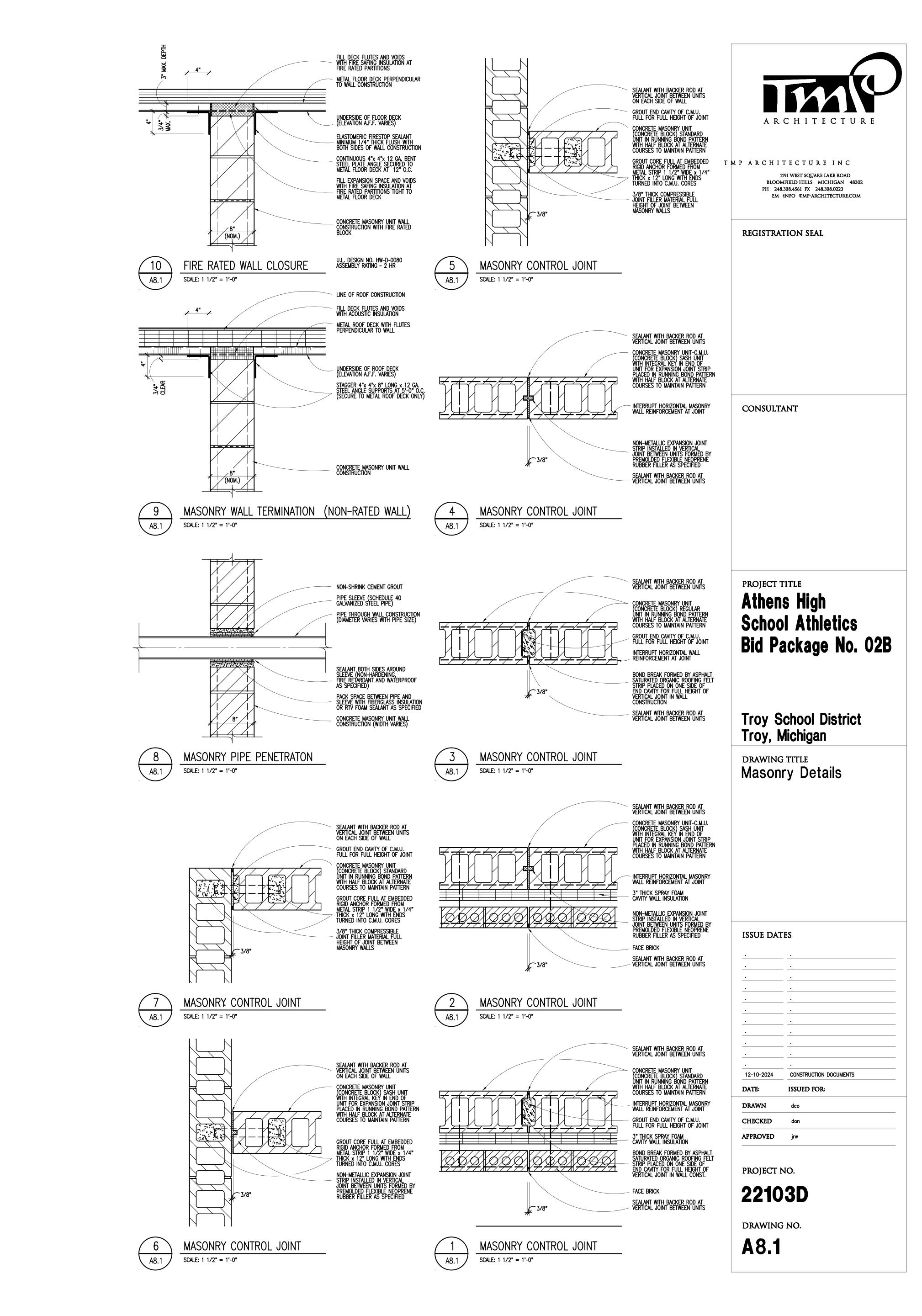












(AS DEFINED ON TC DRAWINGS)

(AS DEFINED ON TC DRAWINGS)

NOTE: LIST OF ADDITIONAL SYMBOLS & ABBREVIATIONS ASSOCIATED WITH TEMPERATURE CONTROLS ARE IDENTIFIED ON TC DRAWINGS.

MECHANICAL ABBREVIATION LIST MECHANICAL SYMBOL LIST MECHANICAL DRAWING INDEX PIPING SYMBOLS <u>ABBREVIATION</u> <u>DESCRIPTION</u> <u>DESCRIPTION</u> <u>ABBREVIATION</u> <u>DESCRIPTION</u> DUCTWORK SYMBOLS SHEET NO. COMPRESSED AIR FLOOR DRAIN PACU PACKAGED AIR CONDITIONING UNIT **DESCRIPTION** <u>SYMBOL</u> <u>DESCRIPTION</u> MECHANICAL STANDARDS AND DRAWING INDEX COMPRESSED AIR (SPECIFIC PSIG) FUNNEL FLOOR DRAIN PBD PARALLEL BLADE DAMPER AIR VENT – AUTOMATIC AIR TERMINAL UNIT AUTOMATIC AIR VENT FIRE HYDRANT PUMPED CONDENSATE MECHANICAL NEW WORK SITE PLAN PCW PROCESS COOLING WATER AIR COOLED CONDENSER FIRE HOSE CABINET M2.0 STORAGE BUILDING UNDERGROUND PLUMBING PLAN AIR VENT - MANUAL <u>TU−101</u> AIR TERMINAL UNIT WITH HEATING COIL ACCU PCWR PROCESS COOLING WATER RETURN AIR COOLED CONDENSING UNIT FIRE HOSE RACK STORAGE BUILDING PLUMBING PLAN PROCESS COOLING WATER SUPPLY BFP BACKFLOW PREVENTER ACCESS DOOR FIRE HOSE VALVE STORAGE BUILDING SHEET METAL PLAN PRESSURE DROP (FEET OF WATER) AREA DRAIN FULL LOAD AMPS VENTURI AIR TERMINAL UNIT ——— CATCH BASIN MECHANICAL DETAILS AIR EXTRACTOR PERIMETER HEAT MECHANICAL SCHEDULES FLOW METER PERIMETER HEAT RETURN ABOVE FINISHED FLOOR **S** VENTURI AIR TERMINAL UNIT WITH HEATING COIL AIR HANDLING UNIT FLOW MEASURING STATION PERIMETER HEAT SUPPLY MECHANICAL SCHEDULES CLEAN OUT – IN FLOOR **ALTERNATE** FLAT ON BOTTOM TEMPERATURE CONTROL STANDARDS AND GENERAL NOTES FLAT ON TOP PARTS PER MILLION CLEAN OUT - FLANGE DAMPER - HORIZONTAL FIRE (EXISTING, NEW) AIR PRESSURE DROP FEET PER MINUTE PRESSURE PRV PRESSURE REDUCING VALVE → DIRECTION OF FLOW FIRE PUMP DAMPER - HORIZONTAL FIRE / SMOKE (EXISTING, NEW) **ASHRAE** AMERICAN SOCIETY OF HEATING, REFRIGERATION FAN POWERED (AIR) TERMINAL UNIT PUMPED SANITARY DIRECTION OF PITCH - DOWN AND AIR-CONDITIONING ENGINEERS FLOOR SINK PUMPED STORM FOOD SERVICE EQUIPMENT CONTRACTOR AUTOMATIC SPRINKLER RISER POUNDS PER SQUARE INCH FINNED TUBE RADIATION DAMPER - SMOKE (EXISTING, NEW) AIR TRANSFER DUCT PSIA POUNDS PER SQUARE INCH - ABSOLUTE FIRE PROTECTION - SIAMESE CONNECTION - FREE STANDING FTR FINNED TUBE RADIATION PSIG POUNDS PER SQUARE INCH - GAUGE AUXILIARY DAMPER - VERTICAL FIRE (EXISTING, NEW) ACID VENT FACE VELOCITY PURIFIED WATER FIRE PROTECTION — SIAMESE CONNECTION — WALL MOUNTED AVTR ACID VENT THROUGH ROOF PURIFIED WATER RETURN DAMPER - VERTICAL FIRE / SMOKE (EXISTING, NEW) ACID WASTE NATURAL GAS PURIFIED WATER SUPPLY FIRE PROTECTION - SPRINKLER HEAD, CONCEALED GAUGE FIRE PROTECTION - SPRINKLER HEAD, PENDANT DAMPER - BACK DRAFT BUILDING AUTOMATION SYSTEM GALLON RELOCATED GRAVITY RELIEF HOOD RETURN GRILLE OR REGISTER BLOWER COIL UNIT FIRE PROTECTION - SPRINKLER HEAD, UPRIGHT BACKDRAFT DAMPER GALLONS PER HOUR RETURN AIR DAMPER - MOTORIZED FIRE PROTECTION - SPRINKLER HEAD, SIDEWALL **BELOW FINISHED FLOOR** GPM GALLONS PER MINUTE RETURN AIR TEMPERATURE BACKFLOW PREVENTER GREASE SANITARY WASTE RAIN CONDUCTOR **---**∃**0** FLOOR DRAIN DAMPER - VOLUME (MANUALLY ADJUSTABLE) RADIANT CEILING PANEL BRAKE HORSEPOWER BOTTOM OF DUCT **HYDROGEN** ROOF DRAIN FLOOR DRAIN — ELEVATION DIFFUSER - BLANK OFF BOTTOM OF PIPE HOSE BIBB REQUIRED FLOOR DRAIN — FUNNEL BRITISH THERMAL UNIT HEATING COIL ROOF EXHAUST FAN BRITISH THERMAL UNIT PER HOUR HOT DECK RETURN FAN FLOOR DRAIN — FUNNEL, ELEVATION DIFFUSER - LINEAR SLOT HIGH EFFICIENCY PARTICULATE ARRESTANCE BEVERAGE CONDUIT RELATIVE HUMIDITY FLOW MEASURING DEVICE (FOR TEST AND BALANCING) BACKWATER VALVE REFRIGERANT LIQUID HIGH LIMIT DIFFUSER - SQUARE OR RECTANGULAR HAND/OFF/AUTO RLFA RELIEF AIR FLOW SWITCH COMMON HEAT PUMP REVOLUTIONS PER MINUTE RPM REDUCED PRESSURE BACKFLOW PREVENTION DETECTION ASSY CAPACITY HORSEPOWER DUCT CROSS SECTION - SUPPLY CONSTANT AIR VOLUME HIGH PRESSURE DOMESTIC COLD WATER REDUCED PRESSURE BACKFLOW PREVENTION ZONE ASSY HOSE BIBB CATCH BASIN HIGH PRESSURE DOMESTIC HOT WATER REFRIGERANT SUCTION DUCT CROSS SECTION - RETURN **HPHWR** HIGH PRESSURE DOMESTIC HOT WATER RETURN COOLING COIL ROOFTOP UNIT MANHOLE COLD DECK HEAT PUMP LOOP **---**-⊃© OPEN SITE DRAIN DUCT CROSS SECTION - EXHAUST CONDENSATE DRAIN HEAT PUMP LOOP RETURN SUPPLY AIR DIFFUSER OR GRILLE CONTRACTOR FURNISHED, CONTRACTOR INSTALLED HPLS HEAT PUMP LOOP SUPPLY SOUND ATTENUATOR PIPE - ANCHOR CUBIC FEET PER HOUR SUPPLY AIR DUCT - FLEXIBLE CONNECTION PIPE - CAP OR PLUG CFM CUBIC FEET PER MINUTE HEATING SANITARY WASTE HEATING VENTILATING SUPPLY AIR TEMPERATURE PIPE - ELBOW DOWN DUCT - FLEXIBLE DUCT CHW CHWR CHWS CHILLED WATER HEATING, VENTILATING, AIR CONDITIONING SECTION CHILLED WATER RETURN SHORT CIRCUIT CURRENT RATING HOT WATER HEATING PIPE - ELBOW UP HOT WATER HEATING RETURN SUPPLY FAN CHILLED WATER SUPPLY DUCT TAKE-OFF - ROUND CONICAL PIPE - EXPANSION JOINT OR COMPENSATOR HOT WATER HEATING SUPPLY SHOWER CONDENSATE DOMESTIC HOT WATER PIPE - FLANGE DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP CNDS (_ CONDENSATE (SPECIFIC PSIG) DOMESTIC HOT WATER (SPECIFIC TEMP F) SNOW MELT RETURN DOMESTIC HOT WATER RETURN SNOW MELT SUPPLY PIPE - HOSE AND BRAID FLEXIBLE CONNECTION CLEAN OUT ELBOW - RECTANGULAR WITH TURNING VANES CARBON DIOXIDE HEAT EXCHANGER STATIC PRESSURE PIPE - RUBBER FLEXIBLE CONNECTION CONTINUATION OR CONTINUED SPECIFICATION STANDARD METHODS OF NOTATION CONTR CONTRACTOR SPRINKLER PIPE - GUIDE ELBOW - RECTANGULAR/ ROUND SMOOTH RADIUS CONV CONVECTOR INDOOR AIR QUALITY SQUARE FOOT/SQUARE FEET PIPE - TEE DOWN COEFFICIENT OF PERFORMANCE INSIDE DIAMETER START/STOP SUPPLY DIFFUSER WITH SCHEDULE TAG "1", ELBOW DOWN - RECTANGULAR CIRCULATING PUMP INVERT ELEVATION SERVICE SINK 10" DIAMETER NECK SIZE PIPE - TEE UP INTAKE HOOD CONDENSATE RETURN UNIT STORM 350-4 350 CFM TYPICAL FOR 4 CLINICAL SERVICE SINK STANDARD ELBOW DOWN — ROUND COOLING TOWER INFRARED HEATER STACK © ¬¬P/T PRESSURE AND TEMPERATURE TEST PLUG RETURN REGISTER WITH SCHEDULE TAG "1", CABINET UNIT HEATER INDIRECT WASTE STEAM ELBOW UP - RECTANGULAR DOMESTIC COLD WATER STEAM (SPECIFIC PSIG) 640 CFM TYPICAL FOR 2 DOMESTIC COLD WATER - FILTERED JANITOR'S CLOSET SUMMER / WINTER PRESSURE GAUGE AND COCK EXHAUST REGISTER E DESIGNATION SIMILAR. ELBOW UP - ROUND JOCKEY PUMP SWITCH CONDENSER WATER RETURN REDUCER - CONCENTRIC CONDENSER WATER SUPPLY THOUSAND AMP TRANSFER GRILLE FAN – AXIAL AIR TERMINAL UNIT WITH HEATING COIL NO. 101 REDUCER - ECCENTRIC DRIP AND TRAP KILOWATT TEMPERATURE CONTROL WITH SERVICE CLEARANCE SHOWN ROOF/OVERFLOW DRAIN ---- DISCHARGE AIR KILOWATT-HOUR TEMPERING COIL $(\circ_{\vdash}$ FAN - CENTRIFUGAL (ELEVATION) DISCHARGE AIR TEMPERATURE TEMPERATURE CONTROL PANEL STEAM TRAP - FLOAT AND THERMOSTATIC LEAVING AIR TEMPERATURE DRY BULB TRENCH DRAIN STEAM TRAP - BUCKET **LABORATORY** TEMPERATURE VENTURI AIR TERMINAL WITH HEATING COIL NO. 101 DIRECT DIGITAL CONTROL VARIABLE FREQUENCY CONTROLLER SERVING EQUIPMENT XX-# LAVATORY WITH SERVICE CLEARANCE SHOWN **TEMPORARY** STRAINER DRAINAGE FIXTURE UNITS POUNDS TERMINAL HEATING LEAVING DRY BULB TOTAL HEAT ABSORBED STRAINER WITH VALVE AND BLOW-OFF TERMINAL HEATING RETURN LOW LIMIT INCLINED DROP IN DIRECTION OF AIRFLOW DAY/NIGHT LOW PRESSURE CONDENSATE TOTAL HEAT REJECTED THERMOMETER PLUMBING FIXTURE UNIT IDENTIFICATION TAG LOW PRESSURE STEAM TERMINAL HEATING SUPPLY WATER CLOSET TYPE "1" DOWNSPOUT NOZZLE LOCKED ROTOR AMPS $-\!\!\!-\!\!\!\!-\!\!\!\!-\!\!\!\!-$ INCLINED RISE IN DIRECTION OF AIRFLOW DUCT SILENCER TIMER SWITCH TYPICAL FOR 2 LEAVING WET BULB LEAVING WATER TEMPERATURE DRAIN TILE VALVE - ANGLE INTAKE OR RELIEF HOOD DRAIN TILE CONNECTION TOTAL STATIC PRESSURE DOMESTIC WATER HEATER (AIR) TERMINAL UNIT MIXED AIR TEMPERATURE TURNING VANES REGISTER - RETURN OR EXHAUST TEMPERED WATER MAKE-UP AIR UNIT VALVE - BALANCE (i.e. BALANCE VALVE TO 0.5 GPM) REGISTER - RETURN WITH BOOT EXHAUST GRILLE OR REGISTER THOUSAND BRITISH THERMAL UNITS PER HOUR VALVE — COMBINATION BALANCE & FLOW MEASURING (i.e. BALANCE VALVE TO 0.5 GPM) 22x10 18x14ø MEDICAL COMPRESSED AIR UNIT HEATER UNDERWRITER'S LABORATORY \Box REGISTER - TRANSFER GRILLE EXHAUST AIR MINIMUM CIRCUIT AMPACITY ENTERING AIR TEMPERATURE MOTOR CONTROL CENTER → VALVE - CHECK OVAL DUCT EXPANSION COMPENSATOR MECHANICAL **ROOF EXHAUST FAN** - RECTANGULAR DUCT ELECTRONICALLY COMMUTATED MOTOR UNIT VENTILATOR → VALVE - SPRING CHECK MEZZANINE ELECTRIC CABINET UNIT HEATER **MANUFACTURER** CONSTRUCTION KEY NOTE (NUMBER) OR TRANSITION - CONCENTRIC \leftarrow VALVE VENT ENTERING DRY BULB DEMOLITION KEY NOTE (LETTER) 1/1000th INCH **ENERGY EFFICIENCY RATIO** VALVE - GLOBE EMERGENCY EYE WASH / SHOWER VACUUM MINIMUM $\leftarrow 0$ TRANSITION - ECCENTRIC **MISCELLANEOUS** VARIABLE AIR VOLUME EMERGENCY EYE WASH EQUIPMENT DESIGNATION, MILLION BRITISH THERMAL UNITS PER HOUR EXHAUST FAN VACUUM BREAKER (i.e. EXHAUST FAN NUMBER UNIT HEATER - HORIZONTAL THROW VOLUME DAMPER (MANUALLY ADJUSTABLE) EFFICIENCY MAXIMUM OVERCURRENT PROTECTION ELECTRIC HEATING COIL MOTOR STARTER PIPING RISER DESIGNATION HW-1———— VALVE − 0S&Y EXPANSION JOINT VARIABLE FREQUENCY CONTROLLER UNIT HEATER - VERTICAL THROW MOUNTED (i.e. HOT WATER RISER NUMBER 1 ——I♥—— VALVE – PLUG ELEVATION MOTOR VENT THROUGH ROOF ELECTRICAL MANUAL AIR VENT VENTURI TERMINAL UNIT **DOUBLE LINE DUCTWORK SYMBOLS ENERGY MANAGEMENT SYSTEM** MEDICAL VACUUM VERTICAL UNIT VENTILATOR VALVE - PRESSURE REGULATING - NEW SYSTEM COMPONENT <u>SYMBOL</u> ENERGY RECOVERY LOOP → VALVE – PRESSURE REDUCING EXISTING SYSTEM COMPONENT TO REMAIN NITROGEN DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP WASTE AND VENT NITROUS OXIDE **ENERGY RECOVERY LOOP SUPPLY** NOISE CRITERIA WASTE ANESTHETIC GAS DISPOSAL VALVE – PRESSURE RELIEF ENERGY RECOVERY UNIT - POINT OF NEW CONNECTION SYMBOL NORMALLY CLOSED EMERGENCY SHOWER WET BULB DUCT TAKE-OFF - ROUND CONICAL NORMALLY CLOSED TIMED CLOSED EXTERNAL STATIC PRESSURI WATER CLOSET VALVE - PRESSURE & TEMPERATURE RELIEF —SECTION OR PLAN NUMBER WATER COLUMN ELECTRIC UNIT HEATER NORMALLY CLOSED TIMED OPEN VENT THROUGH ROOF ENTERING WET BULB NATIONAL FIRE PROTECTION ASSOCIATION WATER GAUGE SHEET WHERE SECTION IS DRAWN ELECTRIC WATER COOLER NORMALLY OPEN TIMED CLOSED WALL HYDRANT ELBOW - RECTANGULAR WITH TURNING VANES WALL HYDRANT WASHING MACHINE SUPPLY AND DRAIN BOX ENTERING WATER TEMPERATURE NORMALLY OPEN TIMED OPEN EXHAUST NOT IN CONTRACT WATER PRESSURE DROP WATER METER — AREA OF ENLARGEMENT NORMALLY OPEN GAS METER ELBOW - RECTANGULAR SHORT RADIUS WITH SPLITTER VANES FIRE PROTECTION —— PLAN NUMBER **DEGREES FAHRENHEIT** NON POTABLE COLD WATER TRANSFORMER FACE AND BYPASS ELBOW - ROUND **DOUBLE LINE PIPING SYMBOLS** ZONE VALVE BOX FLOAT AND THERMOSTATIC SHEET WHERE ENLARGED PLAN IS DRAWN FACE AREA OUTSIDE AIR <u>SYMBOL</u> **DESCRIPTION** OUTSIDE AIR TEMPERATURE FAN COIL UNIT ELBOW - RECTANGULAR SMOOTH RADIUS FLANGE OUTLET BOX OPPOSED BLADE DAMPER ------- SECTION OR PLAN NUMBER FLEX CONNECTION ON CENTER/CENTER TO CENTER ELBOW DOWN - RECTANGULAR OUTSIDE DIAMETER STRAINER - BASKET OPEN ENDED DUCT OWNER FURNISHED, CONTRACTOR INSTALLED ELBOW DOWN - ROUND STRAINER - Y TYPE OWNER FURNISHED, OWNER INSTALLED SCALE: 1/8 OVERLOAD ELBOW UP - RECTANGULAR OVERFLOW RAIN CONDUCTOR VALVE - 2 WAY CONTROL OVERFLOW ROOF DRAIN ELBOW UP - ROUND OUTSIDE SCREW AND YOKE VALVE - 3 WAY CONTROL OUTLET VELOCITY OPERATOR WORKSTATION HEATING COIL VALVE - BUTTERFLY INCLINED DROP IN DIRECTION OF AIRFLOW VALVE - CHECK VALVE - DETECTOR CHECK INCLINED RISE IN DIRECTION OF AIRFLOW TEMPERATURE CONTROL - PARTIAL SYMBOLS LIST TRANSITION - CONCENTRIC <u>SYMBOL</u> <u>DESCRIPTION</u> <u>DESCRIPTION</u> OCCUPANCY SENSOR CARBON DIOXIDE SENSOR VALVE — OS&Y HORIZONTAL STEM TRANSITION - ECCENTRIC _____ PRESSURE TRANSMITTER CARBON MONOXIDE SENSOR VALVE - OS&Y VERTICAL STEM STATIC PRESSURE SENSOR OR PROBE DIFFERENTIAL PRESSURE TRANSMITTER TO BE DISCONNECTED AND REMOVED. VALVE - 2 WAY CONTROL VALVE FLOW METER GUARD FOR STAT OR SENSOR VALVE - 3 WAY CONTROL VALVE NOTE: SOME SYMBOLS AND ABBREVIATIONS THERMOSTAT OR TEMPERATURE SENSOR HUMIDISTAT OR HUMIDITY SENSOR

ARCHITECTURE

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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE MECHANICAL STANDARDS AND DRAWING INDEX

CONSTRUCTION DOCUMENTS

ISSUED FOR:

ION OR ENLARGED PLAN 78' - 1' - 0'	
SHEET WHERE SECTION IS CUT OR ENLARGED PLAN IS REFERENCED	
MATCH LINE	
HEAVY LINE WEIGHT INDICATES NEW WORK	12-10-2024
LIGHT LINE WEIGHT INDICATES EXISTING EQUIPMENT OR REFERENCED INFORMATION	DATE: DRAWN M
GRAY LINE INDICATES BACKGROUND INFORMATION	CHECKED N
DASHED LINES INDICATE PIPING ROUTED BELOW SLAB OR GRADE	APPROVED S
HATCH MARKS INDICATE EQUIPMENT OR MATERIALS	

SHOWN MAY NOT APPLY TO THIS PROJECT.

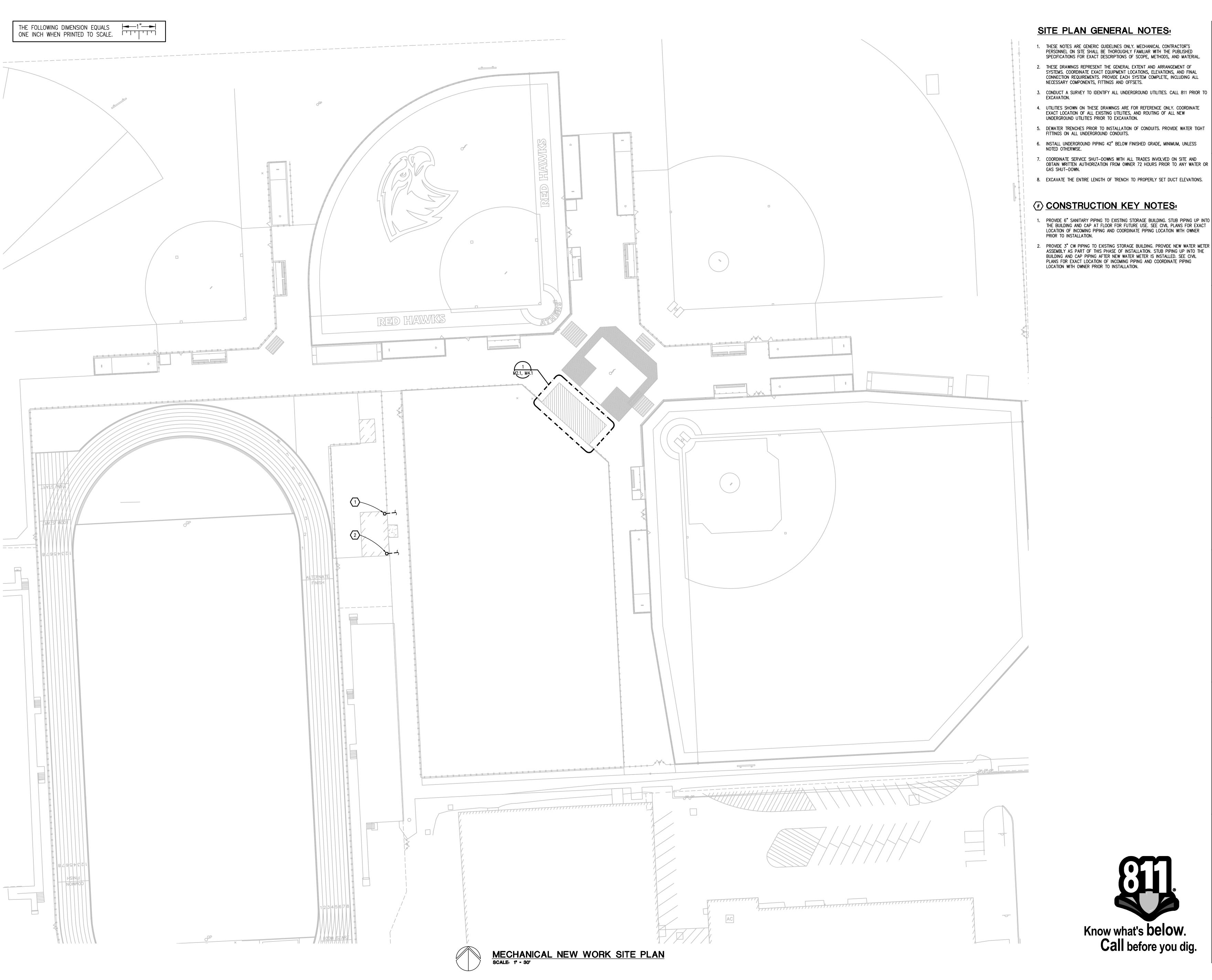
PROJECT NO.

22103D

DRAWING NO.

ISSUE DATES

M0.1



SITE PLAN GENERAL NOTES:

- 1. THESE NOTES ARE GENERIC GUIDELINES ONLY. MECHANICAL CONTRACTOR'S PERSONNEL ON SITE SHALL BE THOROUGHLY FAMILIAR WITH THE PUBLISHED SPECIFICATIONS FOR EXACT DESCRIPTIONS OF SCOPE, METHODS, AND MATERIAL.
- 2. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
- 3. CONDUCT A SURVEY TO IDENTIFY ALL UNDERGROUND UTILITIES. CALL 811 PRIOR TO EXCAVATION.
- 4. UTILITIES SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY. COORDINATE EXACT LOCATION OF ALL EXISTING UTILITIES, AND ROUTING OF ALL NEW UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
- 5. DEWATER TRENCHES PRIOR TO INSTALLATION OF CONDUITS. PROVIDE WATER TIGHT FITTINGS ON ALL UNDERGROUND CONDUITS.
- 6. INSTALL UNDERGROUND PIPING 42" BELOW FINISHED GRADE, MINIMUM, UNLESS NOTED OTHERWISE.
- GAS SHUT-DOWN.
- 8. EXCAVATE THE ENTIRE LENGTH OF TRENCH TO PROPERLY SET DUCT ELEVATIONS.

CONSTRUCTION KEY NOTES:

- 1. PROVIDE 6" SANITARY PIPING TO EXISTING STORAGE BUILDING, STUB PIPING UP INTO THE BUILDING AND CAP AT FLOOR FOR FUTURE USE. SEE CIVIL PLANS FOR EXACT LOCATION OF INCOMING PIPING AND COORDINATE PIPING LOCATION WITH OWNER PRIOR TO INSTALLATION.
- 2. PROVIDE 3" CW PIPING TO EXISTING STORAGE BUILDING. PROVIDE NEW WATER METER ASSEMBLY AS PART OF THIS PHASE OF INSTALLATION. STUB PIPING UP INTO THE BUILDING AND CAP PIPING AFTER NEW WATER METER IS INSTALLED. SEE CIVIL PLANS FOR EXACT LOCATION OF INCOMING PIPING AND COORDINATE PIPING LOCATION WITH OWNER PRIOR TO INSTALLATION.



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PROJECT TITLE Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE MECHANICAL NEW WORK SITE PLAN

Know what's **below**.

Call before you dig.

10-2024	CONSTRUCTION DOCUMENTS
E:	ISSUED FOR:

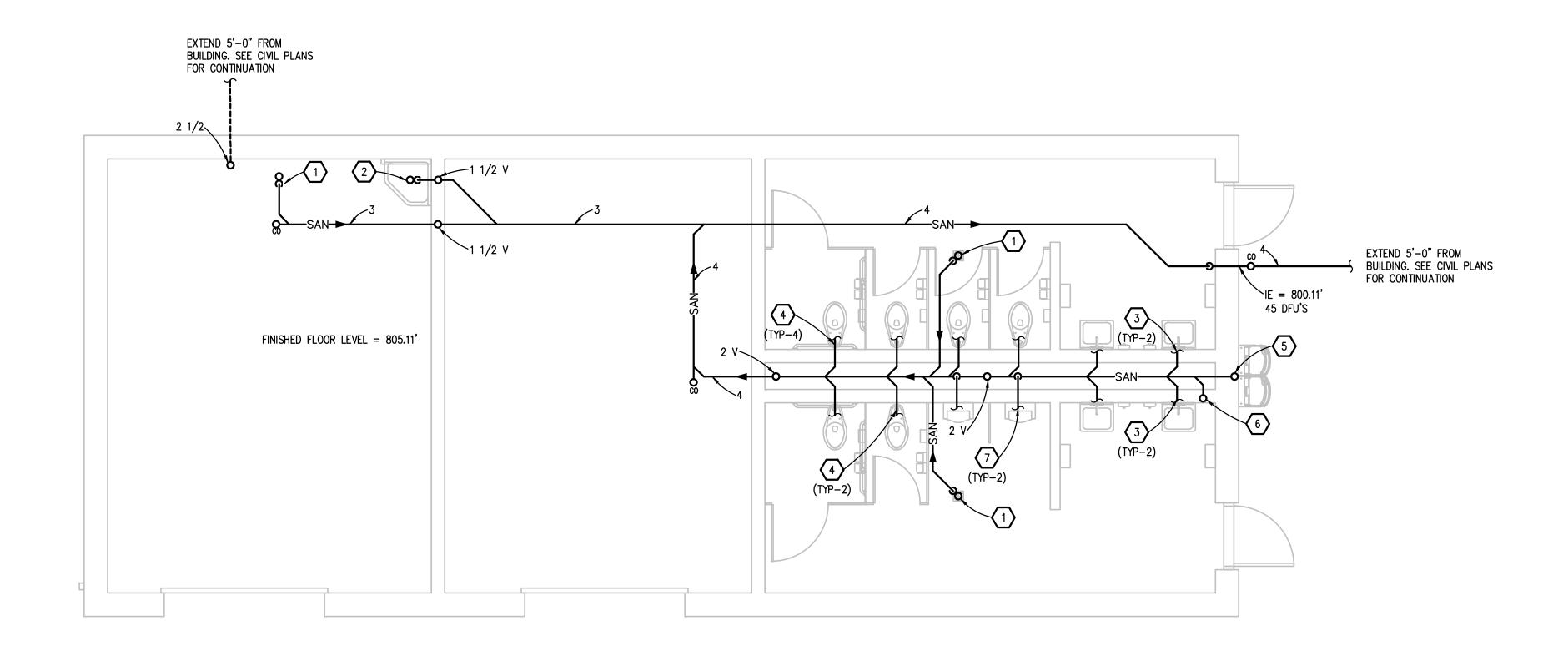
CHECKED MEP APPROVED **MEP**

ISSUE DATES

PROJECT NO. 22103D

DRAWING NO.

M0.2





STORAGE BUILDING UNDERGROUND PLUMBING PLAN
SCALE: 1/4" - 1" - 0"

PLUMBING GENERAL NOTES:

- 1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
- 2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
- 3. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
- 4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
- 5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL
- 6. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING
- 7. HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.
- PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
- PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
- 10. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
- 11. WATER SERVICE ENTRANCE PIPING SHALL BE BURIED WITH DEPTH OF COVER OVER TOP OF PIPE OF AT LEAST 72°, OR WITH TOP OF PIPE AT LEAST 12" BELOW LEVEL OF MAXIMUM FROST PENETRATION, OR AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS DEEPEST.

CONSTRUCTION KEY NOTES:

- 1. 3 SAN TO FLOOR DRAIN.
- 2. 3 SAN TO SERVICE SINK.
- 3. 3 SAN TO LAV.
- 4. 4 SAN TO WATER CLOSET.
- 5. 3 SAN TO DRINKING FOUNTAIN.
- 6. 4 SAN TO WALL CLEANOUT.
- 7. 3 SAN TO URINAL.
- 8. PROVIDE ELECTRIC HEAT TRACE AND INSULATION ON COLD WATER, HOT WATER AND HOT WATER RETURN PIPING LOCATED IN CEILING SPACE OF STORAGE ROOM INTO PLUMBING CHASE. LOCATE CONTROLLER IN STORAGE ROOM. COORDINATE CONTROLLER LOCATION WITH ELECTRICAL TRADES.



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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

STORAGE BUILDING
UNDERGROUND PLUMBING
PLAN

ISSUE DATES

12-10-2024 CONSTRUCTION DOCUMENTS

DRAWN **MEP**

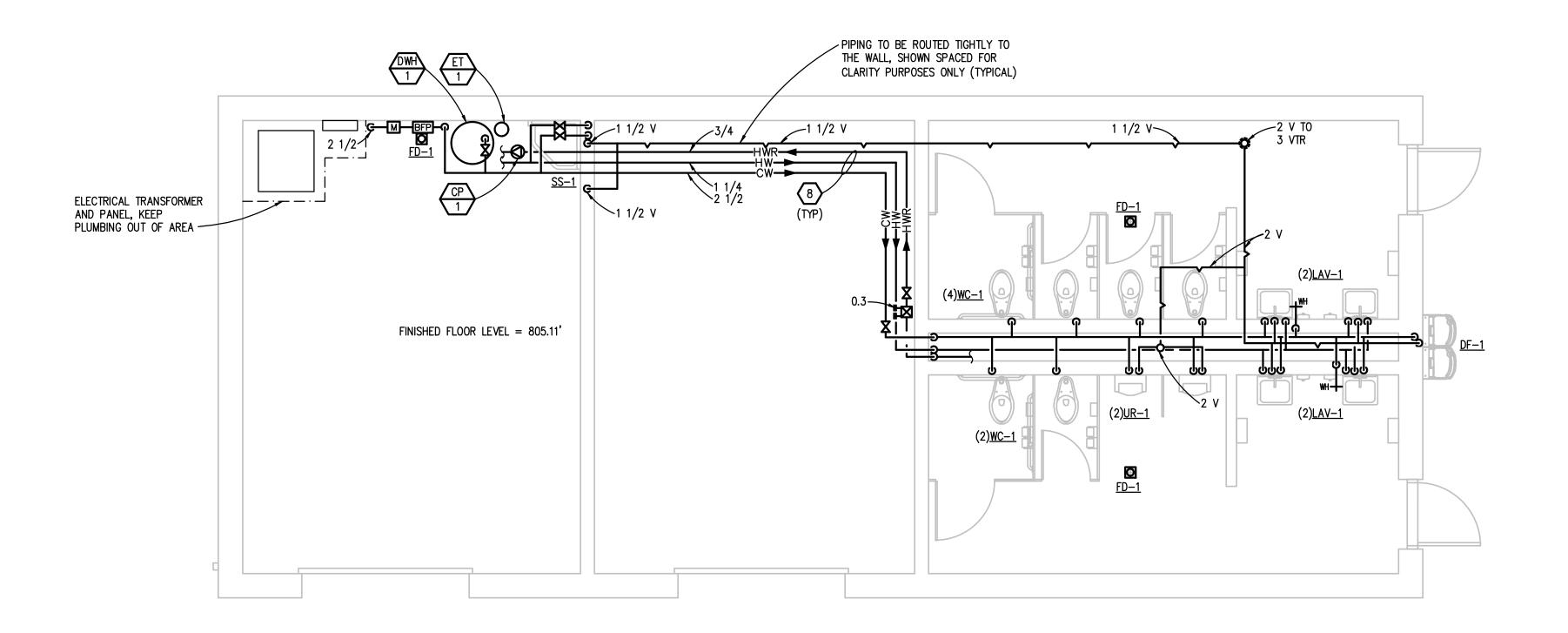
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APPROVED SVM

PROJECT NO. **22103D**

DRAWING NO.

M2.0





PLUMBING GENERAL NOTES:

- 1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
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- 4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
- 5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL
- 6. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING
- 7. HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.
- PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
- PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
- 10. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
- 11. WATER SERVICE ENTRANCE PIPING SHALL BE BURIED WITH DEPTH OF COVER OVER TOP OF PIPE OF AT LEAST 72°, OR WITH TOP OF PIPE AT LEAST 12" BELOW LEVEL OF MAXIMUM FROST PENETRATION, OR AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS DEEPEST.

CONSTRUCTION KEY NOTES:

- 1. 3 SAN TO FLOOR DRAIN.
- 2. 3 SAN TO SERVICE SINK.
- 3. 3 SAN TO LAV.4. 4 SAN TO WATER CLOSET.
- 5. 3 SAN TO DRINKING FOUNTAIN.
- 6. 4 SAN TO WALL CLEANOUT.
- 7. 3 SAN TO URINAL.
- 8. PROVIDE ELECTRIC HEAT TRACE AND INSULATION ON COLD WATER, HOT WATER AND HOT WATER RETURN PIPING LOCATED IN CEILING SPACE OF STORAGE ROOM INTO PLUMBING CHASE. LOCATE CONTROLLER IN STORAGE ROOM. COORDINATE CONTROLLER LOCATION WITH ELECTRICAL TRADES.



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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE
STORAGE BUILDING
PLUMBING PLAN

ISSUE 1	DATES	

12-10-2024 CONSTRUCTION DOCUMENTS

:: ISSUED FOR:

DRAWN MEP

CHECKED MEP

APPROVED **SVM**

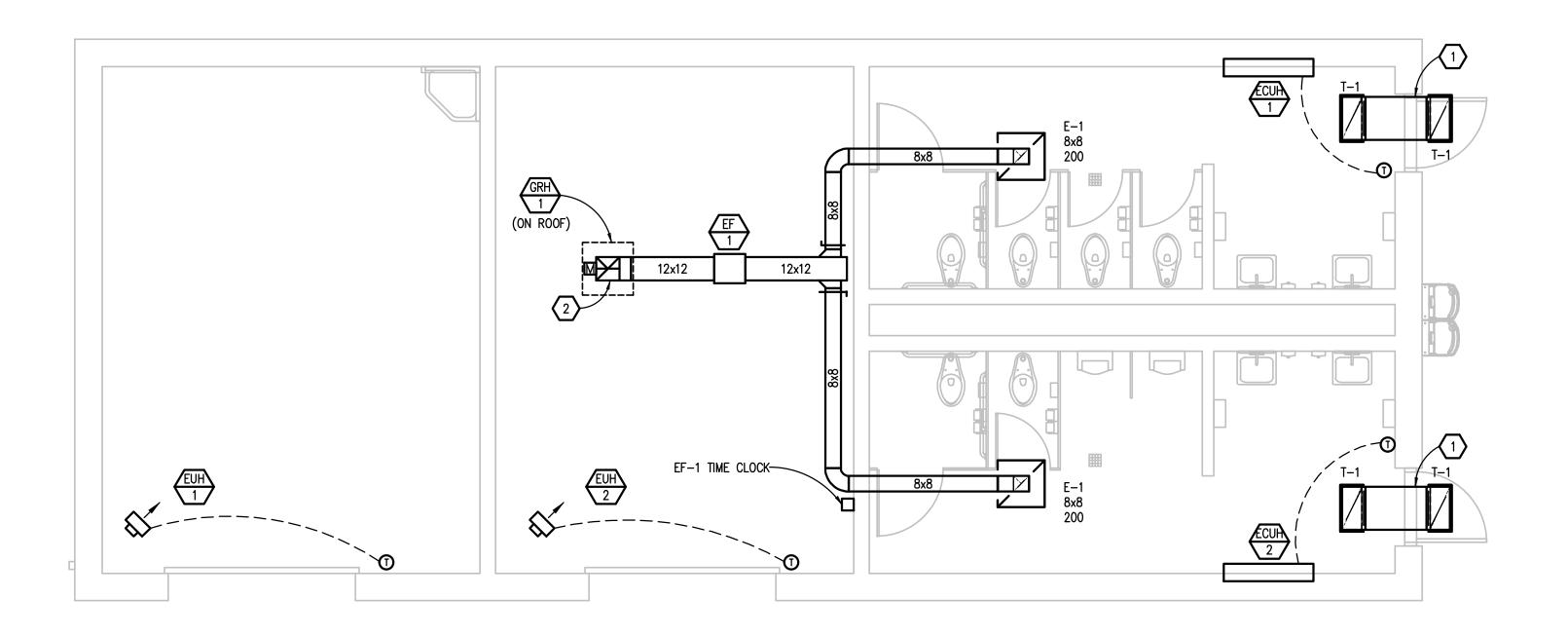
APPROVED SVM

PROJECT NO.

22103D

DRAWING NO.

M2.1





STORAGE BUILDING SHEET METAL PLAN
SCALE: 1/4' - 1' - 0"

SHEET METAL GENERAL NOTES:

- 1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
- 2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
- 3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
- 4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
- 5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL
- 6. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR DIMENSIONED LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
- 7. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

EXAMPLE 2 CONSTRUCTION KEY NOTES:

- 22x10 TRANSFER AIR DUCT WITH (2) TRANSFER GRILLES. EXTERIOR GRILLE TO BE WEATHERPROOF CONSTRUCTION AND LOCATED IN EAVE OF ROOF.
- 2. 12x12 EA UP TO GRH-1 ON ROOF.



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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE STORAGE BUILDING SHEET METAL PLAN

ISSUE	DATES	

12-10-2024 CONSTRUCTION DOCUMENTS

Drawn **Mep**

CHECKED MEP

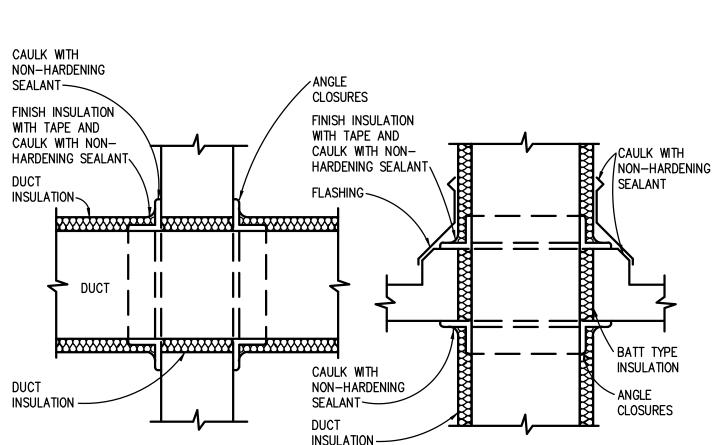
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PROJECT NO.

22103D

DRAWING NO.

M4.1



SEAL OPENING AROUND

SLEEVE AND CONCRETE

WALL WITH NON-SHRINK

- CALCIUM SILICATE INSULATION INSERT WHERE INSULATED PIPE PENETRATES WALL

360° SPLIT SHEET METAL SHIELD

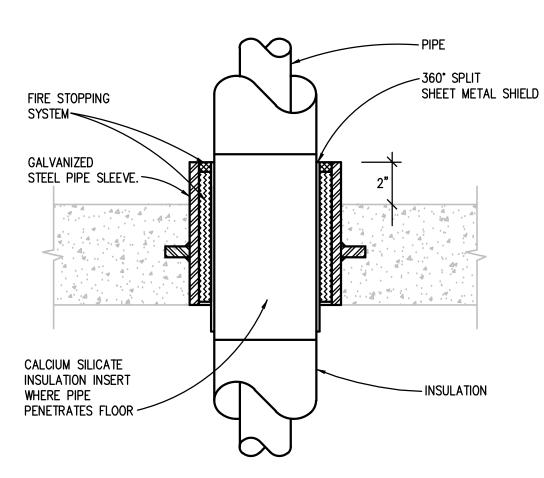
- SCHEDULE 40 BLACK

STEEL PIPE SLEEVE.

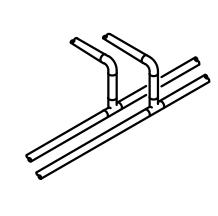
TERMINATE SLEEVE

FLUSH WITH FINISHED

WALL SURFACES



NEW FLOOR PIPE PENETRATION DETAIL



BRANCH CONNECTION OFF TOP APPLIES TO THE FOLLOWING SYSTEMS: DOMESTIC WATER STEAM & CONDENSATE LABORATORY GASES LABORATORY VACUUM COMPRESSED AIR NATURAL GAS

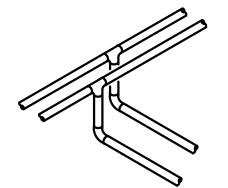
OUTSIDE

COORDINATE SEALANT

WITH EXTERIOR WALL

WATERPROOFING —

CONCRETE EXTERIOR WALL -



BRANCH CONNECTION OFF BOTTOM APPLIES TO THE FOLLOWING SYSTEMS: HOT WATER HEATING CHILLED WATER CONDENSER WATER **ENERGY RECOVERY** PROCESS COOLING WATER NOTE: BOTTOM AS INDICATED OR SIDE CONNECTION IS ACCEPTABLE. CONNECTION ABOVE CENTERLINE OF MAINS IS NOT ACCEPTABLE.

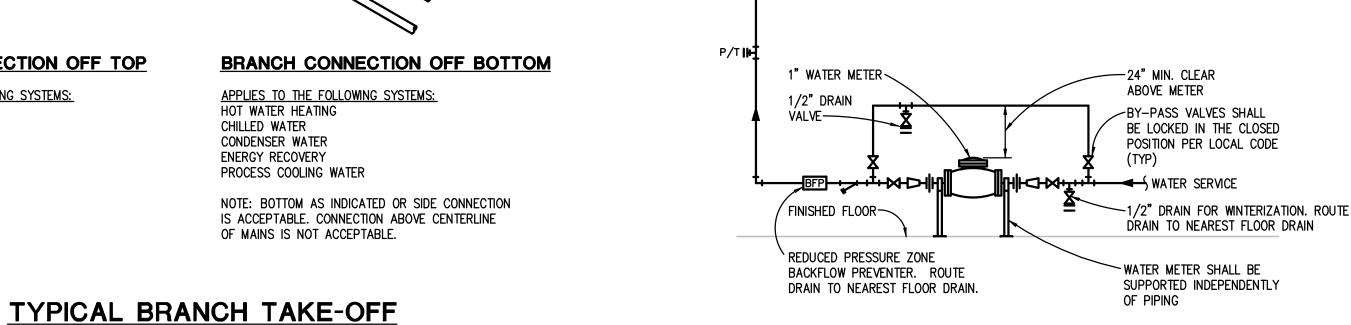
-CORE NEAT HOLE

IN EXTERIOR WALL OR PROVIDE CAST

IN PLACE PIPE SLEEVE FOR NEW WALLS

- MECHANICALLY EXPANDABLE

ELASTOMERIC MECHANICAL



DOMESTIC WATER METER PIPING DIAGRAM

NOTES:

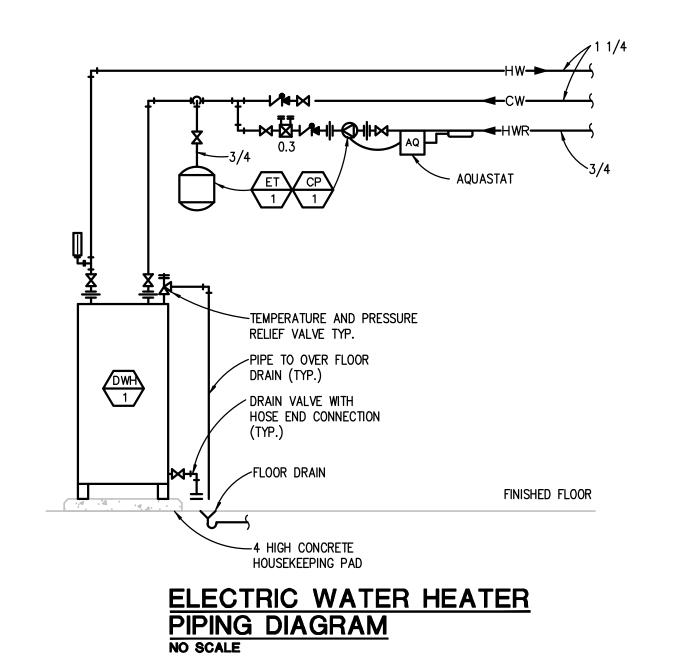
1. FOR 4" AND LARGER WATER SERVICES SHALL

2. ALL PIPING SHALL BE SUPPORTED INDEPENDENTLY

BE ROLLED OFF AT A 45° ANGLE FROM

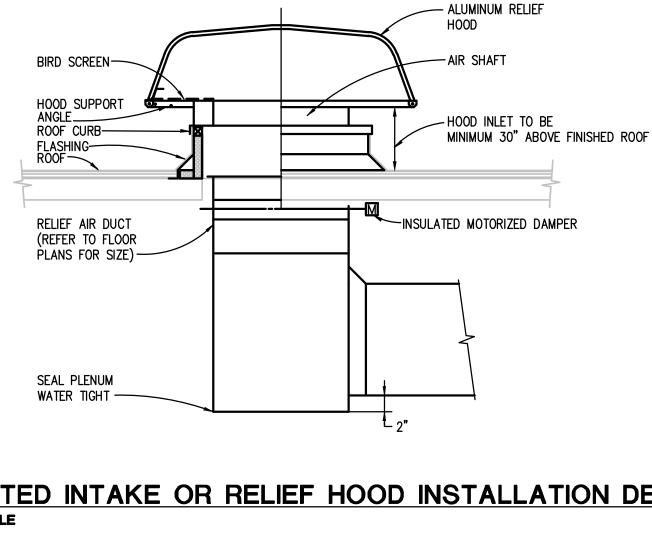
CENTERLINE OF WATER METER.

FROM WATER METER.

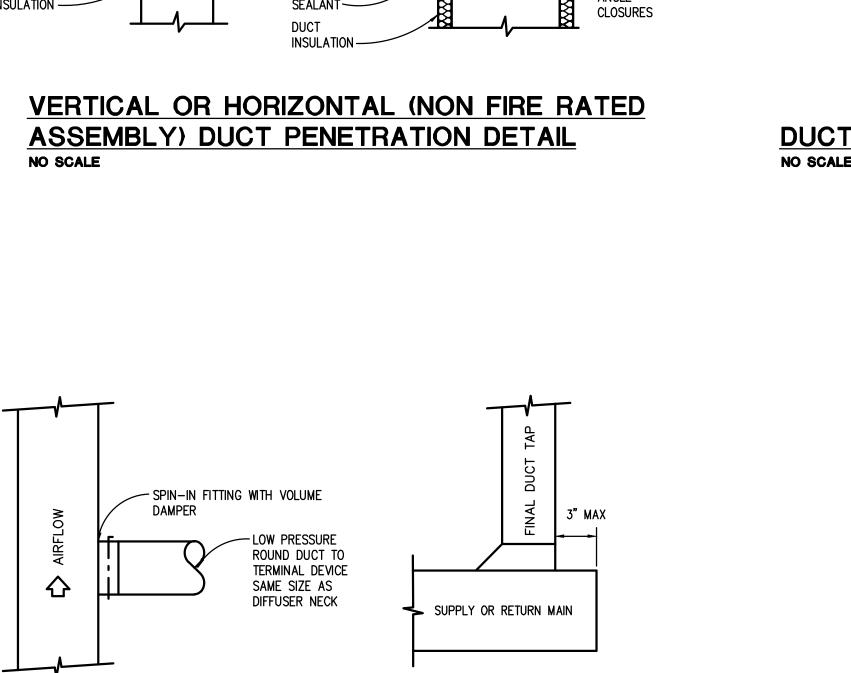


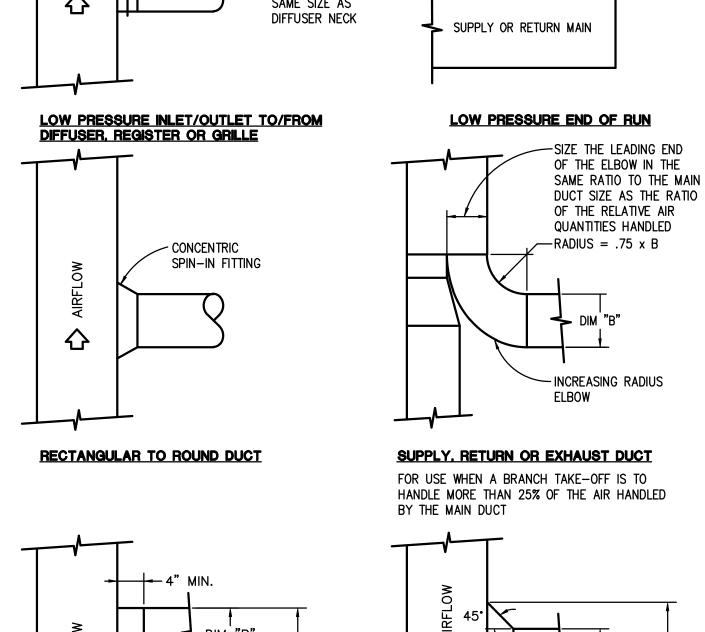
EXTERIOR BELOW GRADE WALL PIPE PENETRATION DETAIL
NO SCALE

CONNECTION PIPING DETAIL



DUCTED INTAKE OR RELIEF HOOD INSTALLATION DETAIL

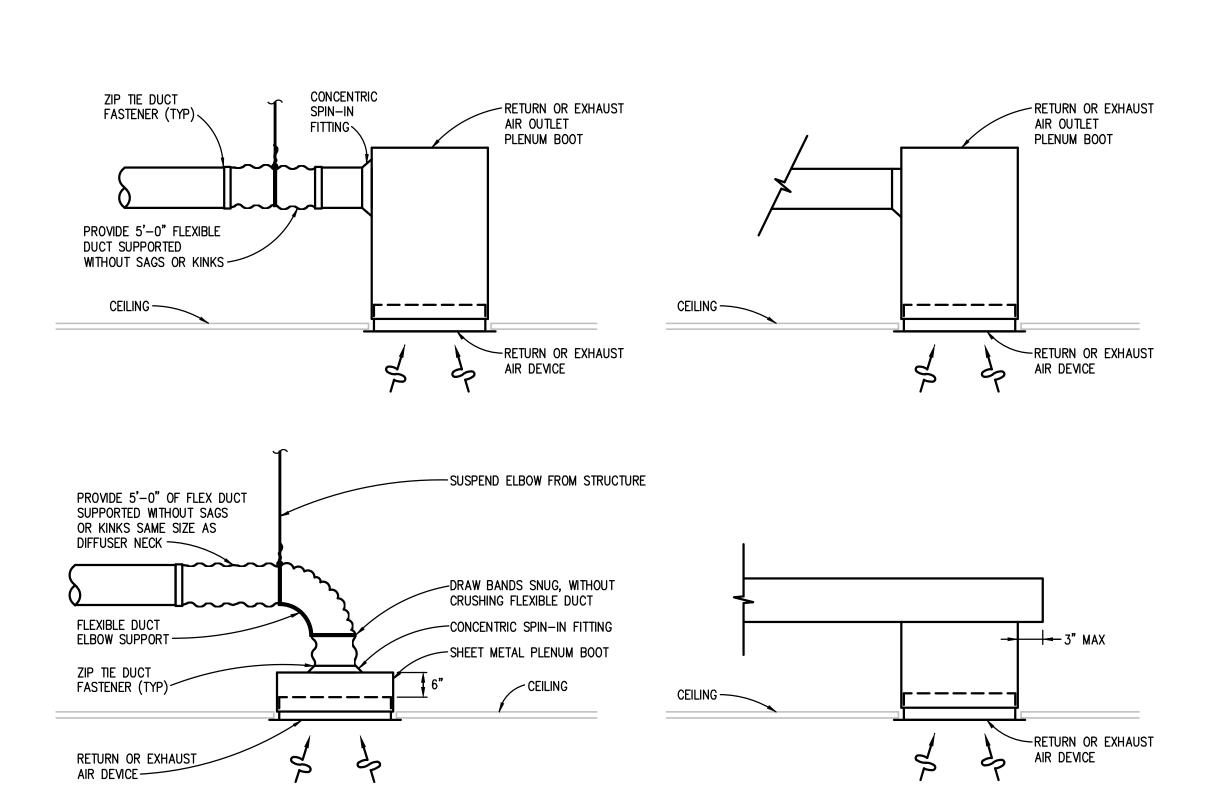




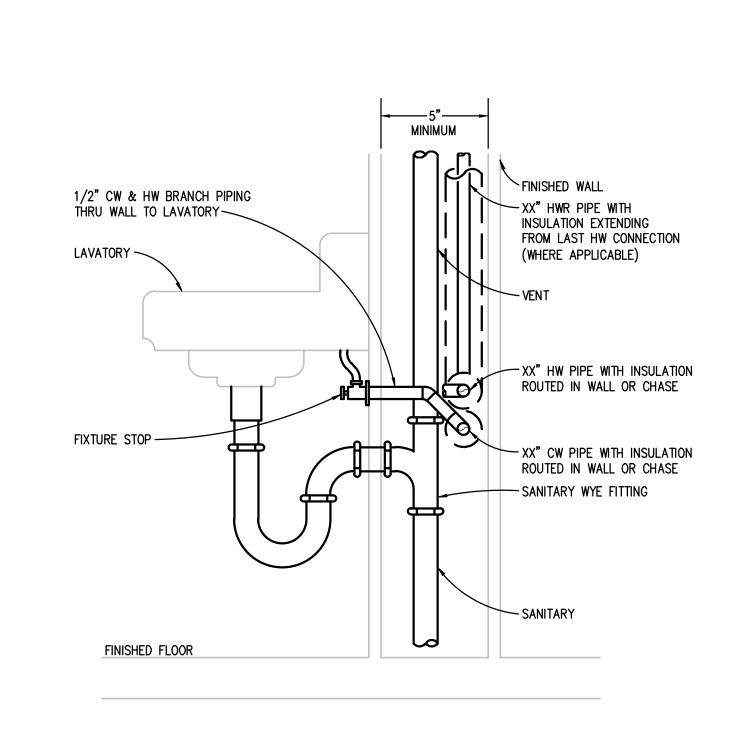
RECTANGULAR DUCT BRANCH TAKE-OFF DETAILS

SUPPLY DUCT

RETURN OR EXHAUST DUCT



RETURN OR EXHAUST AIR DEVICE INSTALLATION DETAIL NOTE: PAINT INTERIOR SURFACE OF PLENUM BOX FLAT BLACK.



TYPICAL LAVATORY DETAIL
NO SCALE



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PROJECT TITLE Athens High School Athletic Fields Bid Package No. 02B

PBA Project No.: 2023-0155.02

Troy School District Troy, Michigan

DRAWING TITLE MECHANICAL DETAILS

ISSUE DATE	ES

12-10-2024 CONSTRUCTION DOCUMENTS DATE: ISSUED FOR:

Drawn **Mep** CHECKED MEP APPROVED SVM

PROJECT NO.

22103D

DRAWING NO.

M6.1

DUC	DUCT SYSTEM APPLICATION SCHEDULE																	
		DUCT MATERIAL																
AIR SYSTEMS	G90 GALV. SHEET METAL	DOUBLE-WALL LINED G90 GALY. SHEET METAL (SOLID INNER WALL)	DOUBLE-WALL LINED G90 GALV. SHEET METAL (PERF. INNER WALL)	G90 GALV. SHEET METAL WITH 1-INCH LINING	GALVANNEALED SHEET METAL	ALUMINUM	TYPE 304 STAINLESS STEEL	TYPE 316 STAINLESS STEEL	PVC COATED GALV. SHEET METAL (4X1)	PVC COATED GALV. SHEET METAL (1X4)	PVC COATED GALV. SHEET METAL (4X4)	16 GA. CARBON STEEL	ZERO-CLEARANCE PREFABRICATED RANGE HOOD EXHAUST DUCT	FABRIC	DESIGN PRESSURE CLASS (INCHES WG)	SEAL CLASS	MAX. ALLOWABLE LEAKAGE RATE (PERCENT)	KEYED NOTES
EXHAUST AIR WITHOUT TERMINAL UNITS	Х														-2	A	5	
AIR TRANSFER DUCT				Х											+2	Α	5	
RELIEF AIR DOWNSTREAM OF FANS	Х														+6	Α	5	
OUTSIDE AIR AND MIXED AIR DUCT	Х														-6	Α	5	
GENERAL NOTES	-	-		-	-	-	-		-	-	-				-			,

1. 'X' INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS. 2. 4 X 1 PVC-COATED GALVANIZED STEEL: FACTORY-APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON EXTERIOR SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND MINIMUM 1 MIL (0.025 MM) THICK ON INTERIOR SURFACES. 3. 1 X 4 (4 X 1 REVERSE COATED) PVC—COATED GALVANIZED STEEL: FACTORY—APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON INTERIOR SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND MINIMUM 1 MIL (0.025 MM) THICK ON EXTERIOR SURFACES.

4. 4 X 4 PVC—COATED GALVANIZED STEEL: FACTORY—APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND 4 MILS (0.10 MM) THICK ON OPPOSITE SURFACES.

<u>KEYED NOTES</u>

A. SCREWS, DAMPERS, OR PROJECTIONS OF ANY TYPE ON INTERIOR OF DUCT SURFACE ARE PROHIBITED. B. DUCT SHALL BE LINED WITHIN 25 FEET UPSTREAM OF FANS. C. ALL WELDED CONSTRUCTION.

	ABOVEGROUND PLUMBING PIPE & ACCESSORY INSULATION APPLICATION SCHEDULE													
	IN	INSULATION MATERIAL & THICKNESS (INCHES)						FIEL	.D-APF					
	FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SILICATE	ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	PVDC (INDOOR)	PVDC (OUTDOOR)	KEYED NOTES
INDOOR PIPE SYSTEM AND SIZE (INCHES)														
DOMESTIC COLD WATER	1	1						Х		Х				Α
DOMESTIC HOT WATER SUPPLY & RETURN 140 DEG F AND LESS:														
NPS 1-1/4 AND SMALLER	1	1						Х		Х				Α
CONDENSATE AND EQUIPMENT DRAIN PIPING BELOW 60 DEG F	0.75	1												
FLOOR DRAINS, TRAPS AND SANITARY DRAIN PIPING WITHIN 10 FEET OF DRAIN RECEIVING CONDENSATE AND EQUIPMENT DRAIN WATER BELOW 60 DEG F	0.75	1						х		Х				A

UNLESS OTHERWISE INDICATED OR SCHEDULED, DO NOT INSULATE THE FOLLOWING: FIRE SUPPRESSION PIPING

UNDERGROUND PIPING **GENERAL NOTES**

- 1. 'X' OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A SYSTEM, CONTRACTOR MAY SELECT
- 2. INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.

KEYED NOTES

A. PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, CIRCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE, WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR. B. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL INSULATION.

	INSULATION MATERIAL & THICKNESS (INCHES)						API	ELD PLIED		
						 13			CKET TERIAL	
	FIBERGLASS BLANKET 0.75 LB/CU FT	FIBERGLASS BLANKET 1.0 LB/CU FT	FIBERGLASS BOARD 2.25 LB/CU FT	FIBERGLASS BOARD 6.0 LB/CU FT	FLEXIBLE ELASTOMERIC	ASTM E2336 2-HOUR FIRE RATED BLANKET	2—HOUR FIRE RATED BLANKET	ALUMINUM	SELF—ADHESIVE (FOR OUTDOOR APPLICATIONS)	keyed notes
DUCT SYSTEMS LOCATED INDOORS										
OUTSIDE AIR AND MIXED AIR, EXCEPT AS NOTED BELOW		1.5								
EXHAUST AND RELIEF AIR BETWEEN ISOLATION DAMPER AND PENETRATION OF BUILDING EXTERIOR, EXCEPT AS NOTED BELOW		1.5								
DUCT SYSTEMS LOCATED OUTDOORS										
RECTANGULAR DUCTS AND AIR PLENUMS, ALL TYPES				2					Х	

RECTANGULAR DUCTS AND AIR PLENUMS, ALL TYPES PLENUMS, DUCTS, AND DUCT ACCESSORIES NOT REQUIRING INSULATION:

DOUBLE-WALL METAL DUCTS WITH INSULATION OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1 - 2013 METAL DUCTS WITH DUCT LINER OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1 - 2013

FABRIC SUPPLY DUCTS FACTORY-INSULATED FLEXIBLE DUCTS FACTORY-INSULATED PLENUMS AND CASINGS

FIBROUS-GLASS DUCTS

FLEXIBLE CONNECTORS

VIBRATION-CONTROL DEVICES FACTORY-INSULATED ACCESS PANELS AND DOORS

GENERAL NOTES

- 1. 'X' OR THICKNESS IN INCHES INDICATE ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM
- THOSE INDICATED SELECTIONS. 2. REFER TO METAL DUCT SECTION OF SPECIFICATIONS FOR DUCT LINING AND DOUBLE-WALL INSULATED DUCT. 3. REFER TO HVAC CASINGS SECTION OF SPECIFICATIONS FOR DOUBLE-WALL INSULATED PLENUMS.

KEYED NOTES

- A. INCLUDE INSULATION AROUND DUCT MOUNTED COILS AND AIR TERMINAL UNIT COILS.
- B. NUMBER OF LAYERS AND TOTAL INSULATION THICKNESS AS RECOMMENDED BY SELECTED MANUFACTURER. C. DOES NOT APPLY TO PREFABRICATED, ZERO-CLEARANCE GREASE DUCT.
- D. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL DUCT INSULATION.
- E. EXPOSED SUPPLY DUCTWORK LOCATED IN A CONDITIONED SPACE SERVED BY THE SAME AIR HANDLING SYSTEM IS NOT REQUIRED TO BE INSULATED.

HORIZONTAL PIPING		ANI Che				R	ΓΑ	PP	LIC	CATION
		HANGEF				E	SHI	ELD T		
METAL PIPE TYPE & SIZE UNINSULATED SINGLE PIPE	MSS TYPE 1 CLEVIS HANGER	MSS TYPE 10 SWVEL RING BAND HANGER	MSS TYPE 41 DOUBLE ROD PIPE ROLLER	MSS TYPE 43 SINGLE ROD ROLLER HANGER	MSS TYPE 44 PIPE ROLLER & STAND	MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND	MSS TYPE 39 PROTECTION SADDLE	MSS TYPE 40 INSULATION PROTECTION SHIELD	THERMAL-HANGER SHIELD	KEYED NOTE
UP TO 2 INCH	Х	Х								
2-1/2 INCH TO 4 INCH	Х	Х								
INSULATED SINGLE COLD PIPES										
UP TO 2 INCH	Χ	Х						Х	Х	Α
2-1/2 INCH TO 4 INCH	Х								Х	
INSULATED SINGLE HOT PIPES										1
UP TO 2 INCH	Х	Х					Х	Х	Х	A, C
2-1/2 INCH TO 4 INCH			Χ	Х	Х	Х	Х		Х	B, C

- 1. "X" INDICATES APPROVED HANGER OR SUPPORT ELEMENTS. IF MORE THAN ONE HANGER OR SUPPORT ELEMENT IS INDICATED, SELECTION FROM APPROVED ELEMENTS IS CONTRACTOR'S OPTION.
- HANGERS AND SUPPORTS USED FOR FIRE PROTECTION SERVICES SHALL BE UL LISTED OR FMG APPROVED.
- LINED, OR USE MANUFACTURED COPPER TUBE ISOLATORS. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR HANGER SPACING.
- MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD HANGER ELEMENTS
- 8. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING ROLLER ELEMENTS AND
- THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEYED NOTES B AND C.
- KEYED NOTES
- B. USE THERMAL HANGER SHIELD DESIGNED FOR USE ON ROLLER SUPPORTS FOR INSULATED HOT PIPE. C. USE TYPE 39 PROTECTION SADDLES IF INSULATION WITHOUT VAPOR BARRIER IS INDICATED. FILL INTERIOR VOIDS

WITH INSULATION MATCHING ADJOINING INSULATION.

G /	ANI	5	SUF	PPC)R1	ΓΑ	PP	LIC	CATION
S	CHE	EDI	JLE						
HANGER OR SUPPORT TYPE							ELD T	YPE	
MSS TYPE 1 CLEVIS HANGER	MSS TYPE 10 SWIVEL RING BAND HANGER	MSS TYPE 41 DOUBLE ROD PIPE ROLLER	MSS TYPE 43 SINGLE ROD ROLLER HANGER	MSS TYPE 44 PIPE ROLLER & STAND	MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND	MSS TYPE 39 PROTECTION SADDLE	MSS TYPE 40 INSULATION PROTECTION SHIELD	THERMAL—HANGER SHIELD	KEYED NOTES
Χ	Х								
X	Х								
Х	Х						Х	Х	Α
Х								Х	
Х	Х					Х	Х	Х	A, C
	× × MSS TYPE 1 CLEVIS HANGER	× × MSS TYPE 1 CLEVIS HANGER × × MSS TYPE 10 SWVEL RING BAND HANGER	X X WSS TYPE 1 CLEVIS HANGER X X WSS TYPE 10 SWIVEL RING BAND HANGER MSS TYPE 41 DOUBLE ROD PIPE ROLLER SO S	X X WSS TYPE 1 CLEVIS HANGER X X WSS TYPE 10 SWIVEL RING BAND HANGER MSS TYPE 41 DOUBLE ROD PIPE ROLLER WSS TYPE 43 SINGLE ROD ROLLER HANGER SO S	X X X MSS TYPE 1 CLEVIS HANGER X X WES TYPE 10 SWIVEL RING BAND HANGER MSS TYPE 41 DOUBLE ROD PIPE ROLLER MSS TYPE 43 SINGLE ROD ROLLER HANGER MSS TYPE 44 PIPE ROLLER & STAND GATA GATA	X X X X X X X X X X	X X X MSS TYPE 1 CLEVIS HANGER WSS TYPE 10 SWIVEL RING BAND HANGER WSS TYPE 41 DOUBLE ROD PIPE ROLLER WSS TYPE 43 SINGLE ROD ROLLER HANGER WSS TYPE 44 PIPE ROLLER & STAND WSS TYPE 44 PIPE ROLLER & STAND WSS TYPE 46 ADJUSTABLE PIPE ROLL STAND WSS TYPE 46 ADJUSTABLE PIPE ROLL STAND WSS TYPE 39 PROTECTION SADDLE	X X X MSS TYPE 1 CLEVIS HANGER X X X MSS TYPE 10 SWIVEL RING BAND HANGER MSS TYPE 41 DOUBLE ROD PIPE ROLLER MSS TYPE 43 SINGLE ROD ROLLER HANGER MSS TYPE 44 PIPE ROLLER & STAND MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND X MSS TYPE 46 INSULATION SADDLE MSS TYPE 40 INSULATION PROTECTION SHIELD	X X X MSS TYPE 1 CLEVIS HANGER X X X MSS TYPE 10 SWVEL RING BAND HANGER MSS TYPE 41 DOUBLE ROD PIPE ROLLER MSS TYPE 43 SINGLE ROD ROLLER HANGER MSS TYPE 44 PIPE ROLLER & STAND MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND MSS TYPE 40 INSULATION PROTECTION SHIELD THERMAL—HANGER SHIELD

- REFER TO HANGER AND SUPPORT SECTION FOR APPROVED MANUFACTURERS.
- 4. HANGER ELEMENTS IN CONTACT WITH BARE COPPER PIPE SHALL BE COPPER PLATED, PLASTIC COATED, FELT
- 6. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING U-BOLTS OR STRUT CLAMPS AND THERMAL HANGER SHIELDS. REFER TO KEYED NOTE A.
- INDICATED FOR SINGLE COLD PIPES.
- MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD ROLLER HANGERS INDICATED AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEY NOTES B AND C. 10. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR ADDITIONAL SYSTEM SPECIFIC HANGER APPLICATIONS.
- A. USE THERMAL HANGER SHIELD ON TRAPEZE SUPPORTED INSULATED PIPE TO PREVENT CRUSHING OF INSULATION.

SCHEDULES GENERAL NOTES:

TYPICAL FOR ALL SCHEDULE SHEETS:

- 1. REFER TO ELECTRICAL STANDARD SCHEDULES, ONE LINE DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL ELECTRICAL INFORMATION
- 2. PROVIDE THE FOLLOWING FACTORY-WIRED ELECTRICAL OPTIONS/ACCESSORIES WHERE
- INDICATED IN SCHEDULE:
- A NON-FUSED DISCONNECT SWITCH
- B UNIT SHALL BE SINGLE POINT ELECTRICAL CONNECTION WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND
- CONTROLS C - SERVICE RECEPTACLE
- D FUSED DISCONNECT SWITCH
- E COMBINATION STARTER F - UNIT SHALL HAVE (2) SINGLE POINT CONNECTIONS WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS. (1) CONNECTION SHALL BE FOR CONDENSING SECTION AND (1) CONNECTION SHALL BE FOR THE REMAINDER OF THE UNIT.
- 3. FOR MODULATION/CONTROL TYPE COLUMN, "VFC" INDICATES VARIABLE FREQUENCY CONTROLLERS, "AUTO" INDICATES AUTOMATIC OPERATION (CONTROLLED BY TEMPERATURE CONTROLS OR SELF CONTAINED CONTROLS), "MANUAL" INDICATES HAND OPERATION.
- 4. IF VARIABLE FREQUENCY CONTROLLERS ARE INDICATED TO BE PROVIDED AND ARE NOT INSTALLED INTEGRAL TO THE UNIT. VARIABLE FREQUENCY CONTROLLERS SHALL BE SUPPLIED BY THE MECHANICAL CONTRACTOR (UNLESS OTHERWISE NOTED) AND INSTALLED BY THE ELECTRICAL CONTRACTOR INCLUDING THE LINE SIDE AND LOAD SIDE WIRING TO THE MOTOR AND INCLUDING MISCELLANEOUS STEEL REQUIRED FOR THE SUPPORT AND MOUNTING OF THE VFC. REFER TO FLOOR PLANS FOR
- 5. WHERE EQUIPMENT IS INDICATED TO HAVE A SINGLE POINT ELECTRICAL CONNECTION, THAT EQUIPMENT SHALL COME COMPLETE WITH FACTORY INSTALLED STARTERS, MOTOR OVERLOAD PROTECTION, CONTACTORS, FUSING AND ALL NECESSARY INTERNAL WIRING AND CONTROLS. PROVIDE A FACTORY MOUNTED UNIT DISCONNECTING MEANS WHERE THE ELECTRICAL CONTRACTOR SHALL MAKE SINGLE POINT CONNECTION. INSTALL PACKAGED EQUIPMENT SUCH THAT THE ELECTRICAL CONNECTION AND CONTROLS ARE ACCESSIBLE AND HAVE CLEARANCES MEETING THE NATIONAL ELECTRICAL CODE.
- 6. WHERE PACKAGED EQUIPMENT IS PROVIDED, NAMEPLATE MUST INDICATE MAXIMUM OVERCURRENT PROTECTION BY HACR RATED CIRCUIT BREAKERS OR FUSES. IF FUSE PROTECTION ONLY IS INDICATED, PROVIDE A FUSIBLE DISCONNECT AND FUSES WITH
- WHERE EQUIPMENT IS DESIGNATED BY MANUFACTURER AND MODEL NUMBER, THIS IS THE BASIS OF DESIGN. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT BY OTHER SPECIFIED MANUFACTURERS OR PROPOSED ALTERNATE EQUIPMENT BY THE BASIS OF DESIGN MANUFACTURER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS TO ELECTRICAL REQUIREMENTS, STRUCTURAL LOADING, OR ARCHITECTURAL APPURTENANCES AND SHALL INCLUDE THE COST OF SUCH revisions in his bid.
- WHERE EQUIPMENT IS SCHEDULED TO INCLUDE A SERVICE RECEPTACLE, PROVIDE A FACTORY MOUNTED SERVICE RECEPTACLE WITH APPROPRIATE FUSES AND TRANSFORMERS CONNECTED ON THE LINE SIDE OF THE UNIT DISCONNECT. PROVIDE A NAMEPLATE ON THE DISCONNECT SWITCH INDICATING THE PRESENCE OF LIVE POWER TO THE SERVICE RECEPTACLE WHEN THE UNIT DISCONNECT IS IN THE OFF
- 9. SIZE ALL EQUIPMENT FEEDERS BASED ON THE LISTED MOP (MAXIMUM OVERCURRENT PROTECTION). REFER TO THE FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE ON THE ELECTRICAL STANDARD SCHEDULES SHEET.



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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE MECHANICAL SCHEDULES

	VIBRATION ISOLATOR APPLICATION SCHEDULE													
					SLAB ON GRADE			UP TO 40	FT (12 M) FLO	OOR SPAN				
EQUIPMENT TYPE	EQUIPMENT CATEGORY	HORSEPOWER AND OTHER	RPM	BASE TYPE	ISOLATOR TYPE	MIN. DEFL., IN. (MM)	BASE TYPE	ISOLATOR TYPE	MIN. DEFL., IN. (MM)	KEYED NOTES				
SUSPENDED AXIAL FANS,	UP TO 22 IN. DIAMETER	ALL	ALL				A OR B	8a OR 8b	0.75 (19)	NOTES 1, 3, 4				
PLENUM FANS, CABINET FANS, FAN SECTIONS, CENTRIFUGAL INLINE	24 IN. DIAMETER AND UP	≤2 IN. SP	UP TO 300 301 TO 500 500 AND UP				A OR B A OR B A OR B	8a OR 8b 8a OR 8b 8a OR 8b	1.50 (38) 1.50 (38) 1.50 (38)					
FANS		>2 IN. SP	UP TO 300 301 TO 500 500 AND UP				A OR B A OR B A OR B	8a OR 8b 8a OR 8b 8a OR 8b	3.50 (89) 2.50 (64) 2.50 (64)					

GENERAL NOTES:

KEYED NOTES:

- 1. THRUST RESTRAINTS: PROVIDE THRUST RESTRAINTS BETWEEN FAN DISCHARGE AND DUCT (IN PAIRS, LOCATED ON THE CENTERLINE OF THE DISCHARGE OUTLET OF THE FAN, BRIDGING THE FLEXIBLE DUCT CONNECTOR) FOR ALL FAN HEADS, FOR AXIAL AND CENTRIFUGAL FANS UNITS OPERATING AT 2 INCHES OR GREATER TOTAL STATIC PRESSURE AND AS SHOWN ON DRAWINGS. SPRING DEFLECTION SHALL BE SAME AS THE SUPPORT ISOLATORS.
- 2. PIPING RISER ISOLATION: PROVIDE PIPE RISER RESILIENT ANCHORS, SPRING MOUNTS AND RESILIENT PIPE GUIDES CAPABLE OF DISTRIBUTING THE LOADS WITHIN THE BUILDING DESIGN LIMITS AT THE SUPPORT POINTS.
- 3. HORIZONTAL PIPING VIBRATION ISOLATION: PROVIDE TYPE 8a OR 8b SPRING HANGERS FOR PIPING CONNECTED TO VIBRATION ISOLATED EQUIPMENT FOR ALL PIPING IN MECHANICAL ROOMS OR THE FOLLOWING MINIMUM HORIZONTAL DISTANCES FROM THE ISOLATED EQUIPMENT: UP TO 6" - 50 FEET (1 1/2" MINIMUM DEFLECTION), 8" AND LARGER - 100 FEET (2 1/2" MINIMUM DEFLECTION), WHICHEVER IS GREATER, AND AS SHOWN ON DRAWINGS. THE FIRST 4 HANGERS FROM THE ISOLATED EQUIPMENT SHALL BE TYPE 8b.

4. DUCTWORK VIBRATION ISOLATION: PROVIDE TYPE 8d OR 8b SPRING HANGERS FOR DUCTWORK WITH A CROSS SECTION OF 2 SQUARE FEET OR GREATER CONNECTED TO AIR HANDLING UNITS, RETURN OR RELIEF FANS, AND VIBRATION ISOLATED EQUIPMENT FOR ALL SUCH DUCTWORK IN MECHANICAL

ROOMS OR FOR A MINIMUM HORIZONTAL DISTANCE OF 100 FEET FROM THE ISOLATED EQUIPMENT, WHICHEVER IS GREATER, AND AS SHOWN ON DRAWINGS (3/4" MINIMUM DEFLECTION). 5. IF SPAN DOES NOT EXCEED 20 FT. SPRING DEFLECTION MAY BE 1.0 IN AND TYPE D BASE MAY BE USED. FOR SPANS GREATER THAN 20 FT. USE

SPRING DEFLECTION INDICATED AND TYPE E BASE. **BASE TYPES:**

BASE TYPE A - NO BASE, ISOLATORS ATTACHED DIRECTLY TO EQUIPMENT.

BASE TYPE B - STRUCTURAL, STEEL RAILS OR BASE. BASE TYPE C — CONCRETE INERTIA BASE.

BASE TYPE D - CURB - MOUNTED ALUMINUM BASE WITH 1" DEFL. SPRING ISOLATORS BASE TYPE E - CURB - MOUNTED STEEL BASE WITH ADJUSTABLE 1", 2" OR 3" DEFL. SPRING ISOLATORS

ISOLATOR TYPES:

ISOLATOR TYPE 1a - ELASTOMERIC ISOLATION PAD. ISOLATOR TYPE 1b - ELASTOMERIC ISOLATION PAD WITH STEEL LOAD BEARING PLATE.

ISOLATOR TYPE 2 - ELASTOMERIC FLOOR ISOLATOR. ISOLATOR TYPE 3 - FREE STANDING SPRING FLOOR ISOLATOR. ISOLATOR TYPE 4 - RESTRAINED SPRING ISOLATOR.

ISOLATOR TYPE 5 - THRUST RESTRAINT. ISOLATOR TYPE 6 - AIR SPRING.

ISOLATOR TYPE 7 - ELASTOMERIC HANGERS.

ISOLATOR TYPE 8a - SPRING HANGERS. ISOLATOR TYPE 8b - SPRING HANGERS WITH VERTICAL-LIMIT STOP.

								MAT	ERIAL												PRESS	SURE C	ONNEC	TIONS							AVITY I				ISOL	ATION \	VALVES	3	
PE SIZE (INCHES) BOVEGROUND DOME	SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (STD.)	GALV. STEEL (SCHED. 40)	STAINLESS STEEL (SCHED. 10)	EX EX	DE PIPE	PE SHEATHED CARBON STEEL PIPE	CSST	NO-HUB CISP	PVC TYPE DWV	PP DRAINAGE PIPE	COPPER TYPE DWV	DUCTILE IRON PIPE	SOLDERED	BRAZED	MELDED WELDED	THREADED	FLANGED	GROOVED	INSERT & CRIMP	FUSION	PRESSURE—SEAL	B MECHANICALLY-FORMED TEE	MECHANICAL JOINT	PUSH-ON-JOINT	SOLVENT WELDED	SOLDERED	FUSION	CISP HUBLESS	HEAVY-DUTY HUBLESS	BALL	AGA BALL	GENERAL SERVICE BUTTERFLY	LUBRICATED PLUG	GATE	KEYED NOTE
P TO 4		Х															Х	Х			Х	Х			Х	Х								Х	Π	Х			А
BOVEGROUND SANIT	ΓARY	WAST	E & \	/ENT	- MIN	ı. wo	RKIN	G PRE	SS. 1	0-FO	OT HE	AD C	F W/	ATER																									•
-1/2 TO 15												Х																				Х							
NDERGROUND SANIT	ARY V	WAST	E & V	ENT	- MIN	. WO	RKING	PRE	SS.: 1	D-FO	OT HE	AD O	F WA	TER			•														•								
	Т											Х																					Х			$\overline{\Box}$			
TO 12										-							_		1		1					_				i —	 	1	1	1	+	$\overline{}$	_	+	

<u>GENERAL NOTES</u> 1. 'X' INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS. 2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS.

a. NPS 2 AND SMALLER: USE DIELECTRIC NIPPLE/WATERWAY. b. NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.

3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS. 4. PLUMBING EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM. 5. GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

KEYED NOTES

A. GROOVED AND FLANGED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS ONLY FOR THIS PIPING SYSTEM. ACCESSIBLE LOCATIONS ARE DEFINED AS EXPOSED CONSTRUCTION OR ABOVE LAY-IN CEILINGS. B. JOINTS ARE NOT PERMITTED ON UNDERGROUND WATER PIPING. C. USE CAST IRON DRAINAGE PATTERN (DURHAM) FITTINGS.

D. INSTALL IN CONTAINMENT JACKET, REFER TO SPECIFICATIONS. E. VALVES, UNIONS, AND FLANGED JOINTS MAY BE USED IN ACCESSIBLE LOCATIONS ONLY, EXCLUDING CEILINGS USED AS AIR PLENUMS. ACCESSIBLE LOCATIONS ARE DEFINED AS EXPOSED CONSTRUCTION OR ABOVE LAY-IN CEILINGS. USE ONLY STEEL WELDED FITTINGS AND WELDED JOINTS IN CEILING USED AS AIR PLENUMS. F. NO JOINTS ALLOWED UNDERGROUND.

12-10-2024 CONSTRUCTION DOCUMENTS DRAWN **MEP**

APPROVED **SVM**

PROJECT NO.

CHECKED **MEP**

ISSUE DATES

PLUN	MBING	CONNE	ECTION	N SCH	EDULE
UNIT IDENTIFICATION	CW INCHES	HW INCHES	SAN INCHES	VENT INCHES	KEYED NOTES
UR-1	3/4	-	2	1 1/2	
WC-1	1 1/2	-	4	2	
LAV-1	1/2	1/2	1 1/2	1 1/2	1
SS-1	3/4	3/4	3	-	
DF-1	1/2	_	1 1/2	1 1/2	
FD-1	_	_	3	_	

GENERAL NOTES:

1. INDIVIDUAL WATER LINE BRANCHES, WASTE LINES, VENTS, AND TRAPS FOR CONNECTION TO INDIVIDUAL FIXTURES, FIXTURE FITTINGS, AND SPECIALTIES SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE OR AS INDICATED ON DRAWINGS, WHICHEVER IS GREATER. <u>KEYED NOTES:</u>
1. PROVIDE MIXING VALVE.

			DOM	ESTIC	WAT	ER HEAT	ER S	CHED	ULE (ELEC	TRIC)			
UNIT IDENTIFICATION	STORAGE CAPACITY	KW INPUT	RECOVERY GPH	E.W.T. *F	L.W.T. *F	MODULATION/ CONTROL TYPE			ELE	CTRICAL			MODEL NUMBER	KEYED NOTE
	GALLONS						VOLTS	PHASE	FLA	MOP	SCCR KA	OPTIONS/ ACCESSORIES		
DWH-1	50	7	20	40	130	AUTO	208	3	33	40	5	В	LDT-40TH	

1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBERS ARE LOCHINVAR UNLESS OTHERWISE NOTED.

		DOM	ESTIC	HOT \	NATE	R SYS	TEM E	XPANSI	ON TAN	NK SC	HEDU	LE		
UNIT IDENTIFICATION	SYSTEM SERVED	ESTIMATED TOTAL SYSTEM VOLUME	TYPE	OPERATING	PRESSURES TANK	AT EXPANSION		PERATING ATURES	EXPANSION VOLUME	MINIMUM TANK	DIMEN	SIONS	MODEL NUMBER	KEYED NOTES
		GALLONS		INITIAL PSIG	PRE- CHARGE PSIG	MAX (OPERATING) PSIG	MINIMUM *F	MAXIMUM *F	GALLONS	VOLUME GALLONS	DIAMETER INCHES	HEIGHT INCHES		
ET-1	HW	11	DIAPHRAGM	38	38	150	40	200	0.9	0.9	8	13	PT-5	

GENERAL NOTES:

1. MODEL NUMBERS ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL PRE-CHARGE THE TANK TO THE VALUE INDICATED IN THE SCHEDULE. FOR TANKS THAT ARE SUPPLIED PRE-CHARGED BY THE MANUFACTURER, THE CONTRACTOR SHALL CONFIRM THE PRESSURE ADJUSTMENTS AS REQUIRED.

							PUMP \$	SCHE	DULE								
UNIT IDENTIFICATION	SYSTEM SERVED	LOCATION	COUPLING TYPE	WATERFLOW GPM	FLUID TYPE	SYSTEM OPERATING			MOTOR		MODULATION/ CONTROL TYPE		ELE	CTRICAL		MODEL NUMBER	KEYED NOTES
						TEMP. *F FOR PUMP SELECTION		BHP	HP	RPM		VOLTS	PHASE	SCCR KA (NOTE 4)	OPTIONS/ ACCESSORIES		
CP-1	HWR	STORAGE 101	FLEXIBLE	0.3	WATER	40°F	10	1/12	1/12	2650	AUTO	120	1	5	-	PL-30B	

GENERAL NOTES:

1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBER ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.
3. CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

			GR	AVITY	REL	IEF H	OOD :	SCHE	DULE			
UNIT IDENTIFICATION	SYSTEM SERVED	CFM	THROAT SIZE	THROAT VELOCITY	STATIC PRESSURE		HOOD SIZE		CURB HEIGHT	HOOD CONSTRUCTION	MODEL NUMBER	KEYED NOTE
	OLIVIED .		INCHES	FPM	DROP IN. W.G.	WIDTH INCHES	LENGTH INCHES	HEIGHT INCHES	INCHES		Nomber.	
GRH-1	EF-1	400	12x12	420	0.024	26	27	14	18	ALUMINUM	FGR	

GENERAL NOTES:

1. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED. 2. PROVIDE WITH BIRD SCREEN.

		GRILL	E, REGI	STER, AN	ID DIFFUS	SER SCH	EDULE		
UNIT IDENTIFICATION	TYPE	FACE SIZE	NECK SIZE	FRAME TYPE	ACCESSORY	CONSTRUCTION	FINISH	MODEL NUMBER	KEYED NOTES
E-1	GRILLE	24x24	SEE PLANS	NOTE 2	I	ALUMINUM	WHITE	APDDR	
T-1	GRILLE	24x12	22x10	NOTE 2	-	ALUMINUM	WHITE	530	

GENERAL NOTES:

1. MODEL NUMBERS ARE TITUS UNLESS OTHERWISE NOTED.

				ELE	CTRIC PR	OPELL	ER FAN L	JNIT H	HEATE	R SC	HEDU	LE			
UNIT IDENTIFICATION	CAPACITY MBH	F.A	AN	HEATING	FINAL AIR TEMPERATURE	MOTOR HP	MODULATION/ CONTROL TYPE			ELE	CTRICAL			MODEL NUMBER	KEYED NOTES
		RPM	CFM	ELEMENT KW	*F			VOLTS	PHASE	FLA	MOP	SCCR KA	OPTIONS/ ACCESSORIES		
EUH-1	34.1	1550	575	10.0	115	1/20	AUT0	208	1	48.1	60	10	В	F1FUH10CA1	
EUH-2	34.1	1550	575	10.0	115	1/20	AUT0	208	1	48.1	60	10	В	F1FUH10CA1	

GENERAL NOTES:

1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE MARKEL UNLESS OTHERWISE NOTED.

						ELEC	TRIC	CENT	RIFUC	AL F	AN C	ABINE	ET UNI	T HEATE	R SC	HEDU	LE					
UNIT IDENTIFICATION	CAPACITY MBH		AIR		F/	AN	HEATING	ELEMENT		DIMENSIONS		RECESS DEPTH	FILTER	MODULATION/ CONTROL TYPE			ELE	CTRICAL			MODEL NUMBER	KEYED NOTES
		AIRFLOW CFM	E.D.B. *F	L.D.B. *F	H.P.	R.P.M.	1ST STAGE KW	TOTAL KW	LENGTH INCHES	HEIGHT INCHES	DEPTH INCHES	INCHES	TYPE		VOLTS	PHASE	FLA	МОР	SCCR KA	OPTIONS/ ACCESSORIES		
ECUH-1	27.3	500	60	98	1/8	1500	4	8	46	25	9	4	THROWAWAY	AUT0	208	1	40.4	50	5	В	63T46D	
ECUH-2	27.3	500	60	98	1/8	1500	4	8	46	25	9	4	THROWAWAY	AUT0	208	1	40.4	50	5	В	63T46D	

GENERAL NOTES:

1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE MARKEL UNLESS OTHERWISE NOTED.

												P	OWER	VENTIL	ATOR	SCHEDU	JLE																
UNIT IDENTIFICATION	SYSTEM SERVED	TYPE	AIRFLOW CFM	T.S.P. In. W.G.	TIP SPEED FPM	FAN RPM		М	OTOR		CURB HEIGHT INCHES	MODULATION/ CONTROL TYPE		ELEC	TRICAL								MAXIMU	M SOUND	POWER LEV	ÆLS						MODE NUMBE	. KEYED NOTE:
							BHP	HP	RPM	DRIVE TYPE			VOLTS	PHASE	SCCR	OPTIONS/			UNIT DISC	CHARGE Lw	BY OCTAVE	BAND					UNIT	NLET Lw B	Y OCTAVE E	BAND			
															(NOTE 3)	ACCESSORIES	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ 2 (DB)	2000 HZ (DB)	4000 HZ 8 (DB)	000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	000 HZ (DB)	
EF-1	TOILET RMS	INLINE	400	0.3	3,941	1,384	0.05	1/10	1725	DIRECT	_	AUT0	120	1	5	В	_	_	_	-	-	-	-	_	69	69	65	58	55	53	50	43 SQ-90-	VG

GENERAL NOTES:

1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED.
3. CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.



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REGISTRATION SEAL

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Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE MECHANICAL SCHEDULES

SSUE	DATES	

-	

12-10-2024 CONSTRUCTION DOCUMENTS

DRAWN **MEP** CHECKED MEP

22103D

APPROVED **SVM**

PROJECT NO.

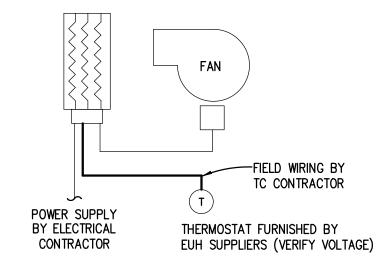
DRAWING NO.

M7.2

TEMPERATURE CONTROL - SYMBOLS LIST

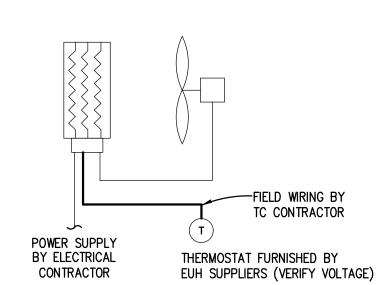
SCHEMATIC	SYMBOLS	SCHEMATIC	SYMBOLS (CONT.)
<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>SYMBOL</u>	DESCRIPTION
AQ L	AQUASTAT, STRAP ON BULB	SW	SWITCH
C02	CARBON DIOXIDE SENSOR — WALL MOUNTED		TEMPERATURE SENSOR - RIGID ELEMENT IN WELL
C02	CARBON DIOXIDE SENSOR — DUCT MOUNTED		TEMPERATURE SENSOR - STRAP ON BULB
cs	CURRENT SWITCH		✓ TEMP SENSOR — DUCT MOUNTED AVG ELEMENT
СТ	CURRENT TRANSDUCER		TEMP SENSOR - DUCT MOUNTED RIGID ELEMENT
	DAMPER - OPPOSED BLADE	T	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)
////	DAMPER - PARALLEL BLADE	TMR	TIMER SWITCH
М	DAMPER MOTOR	XF	TRANSFORMER
DPS	DIFFERENTIAL PRESSURE SWITCH	A	VALVE - 2 WAY CONTROL VALVE
DPT	DIFFERENTIAL PRESSURE TRANSMITTER		VALVE - 3 WAY CONTROL VALVE
ECM	ELECTRONICALLY COMMUTATED MOTOR	VFC	VARIABLE FREQUENCY CONTROLLER
СМ	FIRE ALARM SYSTEM, ADDRESSABLE CONTROL MODULE	vs	VELOCITY SENSOR
FM	FLOW METER	MB	VIBRATION SWITCH
FS	FLOW SWITCH	WIRING SY	MBOLS
FZ ~~	✓ FREEZESTAT	-(M/S)-	COIL - MOTOR STARTER CONTACTOR
	GUARD FOR STAT OR SENSOR		COIL - RELAY
	✓ HUMIDIFIER		CONTACT - INSTANT OPERATING, NO
H	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)	-\	CONTACT - INSTANT OPERATING, NC
н	HUMIDITY SENSOR, DUCT MOUNTED		GROUND
LVL	LEVEL SWITCH OR TRANSMITTER	- 9	MOTOR, SINGLE PHASE
LS	LIMIT SWITCH	்டி	PUSH BUTTON - MOMENTARY, NC (MUSHROOM HEAD)
	LINE - ELECTRIC	H 0 A	- OUTOU DOOLTON OF FOTOD
	LINE - INSTRUMENT AIR (PNEUMATIC)		SWITCH - 3 POSITION SELECTOR HAND/OFF/AUTO
M/s	MOTOR STARTER	°°	SWITCH — FLOW (AIR, WATER, ETC.), NO
os	OCCUPANCY SENSOR	% 20°	SWITCH - LIMIT, NO
PT	PRESSURE TRANSMITTER	T	SWITCH - PRESSURE & VACUUM, NC
R	RELAY, ELECTRIC		SWITCH - TEMPERATURE ACTUATED, NO
1 N	SELECTOR SWITCH, (N=NUMBER OF POSITIONS)	l	
Al	SIGNAL - DDC/BAS, ANALOG INPUT	<i>-</i> ∕∕∕- 0Ls	THERMAL OVERLOAD, SINGLE PHASE
AO	SIGNAL - DDC/BAS, ANALOG OUTPUT	HHH-	THERMAL OVERLOAD CONTACTS-3 PHASE
DI	SIGNAL - DDC/BAS, DIGITAL INPUT	$\frac{W}{M}$	TRANSFORMER
DO	SIGNAL - DDC/BAS, DIGITAL OUTPUT	0	WIRE TERMINATION AT DEVICE
Al	SIGNAL - PACKAGED EQUIPMENT, ANALOG INPUT	+	WIRE TO WIRE TERMINATION
AO	SIGNAL - PACKAGED EQUIPMENT, ANALOG OUTPUT		WIRING NOT CONNECTED
DI	SIGNAL - PACKAGED EQUIPMENT, DIGITAL INPUT	ABBREVIAT	<u>ions</u>
DO	SIGNAL - PACKAGED EQUIPMENT, DIGITAL OUTPUT	ABBREVIATION	· · · · · · · · · · · · · · · · · · ·
DD	SMOKE DETECTOR — DUCT MOUNTED	BAS DDC	BUILDING AUTOMATION SYSTEM DIRECT DIGITAL CONTROL
s/s	START/STOP RELAY	TC NO	TEMPERATURE CONTROLS NORMALLY OPEN
SPT	STATIC PRESSURE TRANSMITTER	NC NC	NORMALLY CLOSED
SP	STATIC PRESSURE SENSOR OR PROBE		
NOTES:			

- 1. SOME SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.
- 2. REFER TO MECHANICAL STANDARDS ON DRAWING MO.1 FOR ADDITIONAL SYMBOLS & ABBREVIATIONS THAT MAY BE USED ON TEMPERATURE CONTROL DRAWINGS.



TYPICAL ECUH CONTROL

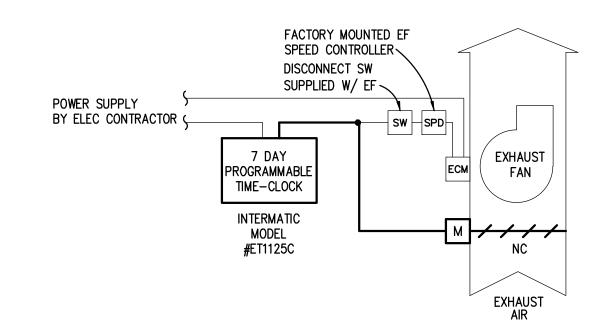
REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNITS. SEQUENCE OF OPERATION: SPACE THERMOSTAT SHALL ENERGIZE UNIT HEATER CONTROL CIRCUIT TO MAINTAIN SPACE TEMPERATURE SETPOINT.



TYPICAL EUH CONTROL

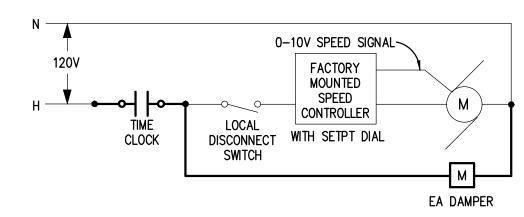
REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNITS.

SEQUENCE OF OPERATION: SPACE THERMOSTAT SHALL ENERGIZE UNIT HEATER CONTROL CIRCUIT TO MAINTAIN SPACE TEMPERATURE SETPOINT.



EF-1 CONTROL

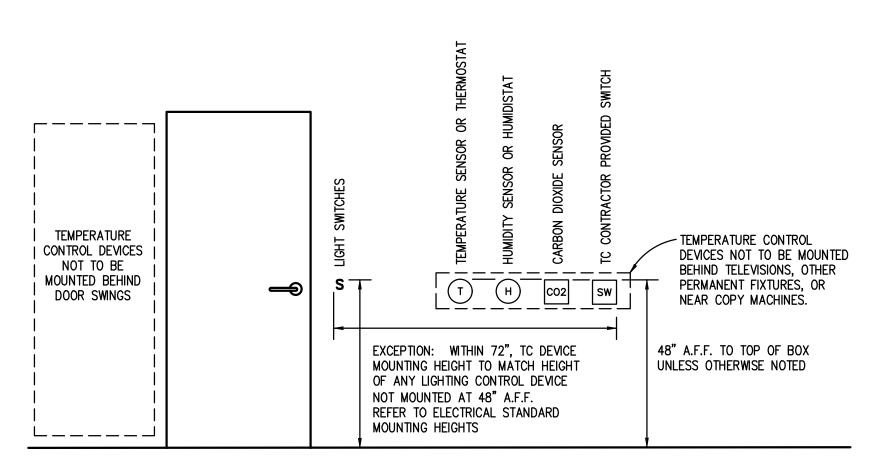
- 1. REFER TO MECH FLOOR PLANS FOR LOCATION.
- 2. EXHAUST FAN SPEED SHALL BE MANUALLY SET VIA ON BOARD POTENTIOMETER DIAL DURING SYSTEM BALANCING.
- SEQUENCE OF OPERATION: EXHAUST FAN SHALL BE STARTED AND STOPPED BY LOCAL PROGRAMMABLE TIME CLOCK. WIRING INTERLOCK SHALL OPEN DAMPERS.



EF-1 MOTOR CONTROL WIRING

TC GENERAL NOTES

- 1. THESE GENERAL NOTES SHALL BE APPLICABLE FOR ALL TEMPERATURE CONTROL (TC)
- 2. "PROVIDE" IS DEFINED AS 'FURNISH AND INSTALL".
- 3. TEMPERATURE CONTROLS CONTRACTOR (TC CONTRACTOR) SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
- 4. FOR TEMPERATURE CONTROL DRAWINGS ONLY: ALL DETAILED INFORMATION IDENTIFIED WITH HEAVY LINE WEIGHT SHALL BE PROVIDED BY TC CONTRACTOR. ALL OTHER INFORMATION IDENTIFIED WITH LIGHT LINE WEIGHT SHALL BE PROVIDED BY OTHER
- 5. ALL CONTROL SCHEMATICS AND WIRING DIAGRAMS ARE FOR THE CLARIFICATION OF EQUIPMENT INTERLOCKING FUNCTIONS AND THE INTERFACE OF VARIOUS CONTRACTORS' WORK AND SHALL NOT BE MISTAKEN AS SHOP DRAWINGS FOR ACTUAL INSTALLATION.
- 6. TC CONTRACTOR SHALL PROVIDE DDC CONTROLLERS AS REQUIRED TO MEET INTENT OF DESIGN DOCUMENTS. REFER TO THE PLANS FOR THE DDC FUNCTIONS THAT APPLY TO EACH MECHANICAL SYSTEM.
- 7. ALL TC PROVIDED COMPONENTS AND ALL TC CONTRACTOR INSTALLED WIRING SHALL BE LABELED PER SPECIFICATIONS.
- 8. ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE ELECTRICAL SPECIFICATIONS.
- 9. VARIABLE FREQUENCY CONTROLLER, FAN AND PUMP MOTOR STARTERS, STARTER WRING, CONTROL VOLTAGE TRANSFORMERS AND ASSOCIATED POWER WIRING SHALL BE PROVIDED BY OTHER TRADES.
- 10. DUCT SMOKE DETECTORS SHALL BE FURNISHED, INSTALLED AND WIRED TO THE FIRE ALARM SYSTEM BY THE ELECTRICAL CONTRACTOR. ELECTRICAL SHALL PROVIDE FIRE ALARM SYSTEM CONTROL MODULES FOR REQUIRED SAFETIES TO MOTOR STARTERS OR VFC'S AS INDICATED. CONTROL MODULES SHALL BE LOCATED NEAR RESPECTIVE MOTOR STARTERS OR VFCs. TC CONTRACTOR SHALL PROVIDE INTERLOCK WIRING FROM CONTROL MODULES TO MOTOR STARTERS OR VFCs.
- 11. ALL DDC AND CONTROL INTERLOCK WIRING SHALL BE BY TC CONTRACTOR UNLESS OTHERWISE NOTED. TC CONTRACTOR SHALL COORDINATE WITH VFC AND MOTOR STARTER SUPPLIERS TO DETERMINE EXACT WIRING REQUIREMENTS AND TERMINATION
- 12. ALL DDC AND CONTROL INTERLOCK WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
- 13. ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH ELECTRICAL SPECIFICATION REQUIREMENTS. WHERE RACEWAY IS REQUIRED, TWO SEPARATE ELECTRICAL RACEWAY SYSTEMS SHALL BE PROVIDED: ONE FOR 120V WIRING AND THE OTHER FOR 24V WIRING.
- 14. TC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TC SYSTEM UNLESS OTHERWISE NOTED. REFER TO ELECTRICAL PANEL SCHEDULES FOR SPARE CIRCUITS OR CIRCUITS DEDICATED TO TEMPERATURE CONTROLS. COORDINATE CIRCUIT USE WITH ELECTRICAL CONTRACTOR.
- 15. TC CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
- 16. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES. PROVIDE WALL MOUNTED DEVICE GUARDS WHERE INDICATED ON TC DETAILS OR AT SPECIFIC LOCATIONS INDICATED ON MECHANICAL FLOOR PLANS.
- 17. TC CONTRACTOR SHALL PROVIDE AUXILIARY PANELS FOR REQUIRED PANEL MOUNTED EQUIPMENT SUCH AS RELAYS, TRANSDUCERS, CONTROL TRANSFORMERS, ETC. AUXILIARY PANELS SHALL BE LOCATED NEXT TO ASSOCIATED DDC PANEL. DEPENDING ON WIRE QUANTITY OR COMPLEXITY, PROVIDE CONDUITS BETWEEN PANELS OR WIRING THROUGH WITH CONDUIT STUBS ABOVE ALL ASSOCIATED PANELS.
- 18. REMOTELY MOUNTED FIELD DEVICES SUCH AS RELAYS, CONTROL TRANSFORMERS, ETC., SHALL BE HOUSED IN AN ENCLOSURE PROVIDED BY THE TC CONTRACTOR.
- 19. CONTROL TRANSFORMERS WHEN REQUIRED SHALL BE SIZED FOR 150% OF ACTUAL
- 20. FREEZESTATS SHALL BE MOUNTED ON UPSTREAM FACE OF COOLING COILS. FREEZESTAT QUANTITY SHALL BE ONE PER 20 SQ. FT OF CROSS SECTIONAL AREA.
- 21. CURRENT SWITCHES USED FOR OPERATIONAL STATUS SHALL HAVE CURRENT THRESHOLD SETPOINT ADJUSTED TO INDICATE BELT OR DRIVE FAILURE.
- 22. ALL CONTROL VALVES, CONTROL DAMPERS AND ASSOCIATED CONTROL ACTUATORS IDENTIFIED ON TC DRAWINGS SHALL BE FURNISHED BY TC CONTRACTOR UNLESS OTHERWISE NOTED. DAMPER SIZE AND LOCATIONS ARE INDICATED ON MECHANICAL FLOOR PLAN DRAWINGS.
- 23. ALL CONTROL VALVES AND DAMPERS FURNISHED BY THE TC CONTRACTOR SHALL BE INSTALLED BY THE MECHANICAL CONTRACTOR. ALL PIPE PENETRATIONS AND BASIC FITTINGS REQUIRED FOR SENSOR INSTALLATIONS SHALL BE PROVIDED BY MECHANICAL CONTRACTOR.
- 24. DAMPER ACTUATORS SHALL BE INSTALLED BY TC CONTRACTOR WHEN FURNISHED BY TC CONTRACTOR.
- 25. ALL INSTRUMENTATION TUBING REQUIRED FOR DPS AND DPT COMPONENT INSTALLATIONS SHALL BE PROVIDED BY TC CONTRACTOR.
- 26. TC CONTRACTOR SHALL FIELD MOUNT ALL REQUIRED "SHIPPED LOOSE" PACKAGED CONTROL COMPONENTS FURNISHED BY EQUIPMENT SUPPLIERS WHERE INDICATED. ALL REQUIRED 24V AND 120V FIELD WIRING SHALL BE PROVIDED BY TC CONTRACTOR UNLESS NOTED OTHERWISE. TC CONTRACTOR SHALL COORDINATE SPECIFIC SYSTEM WIRING REQUIREMENTS WITH PACKAGED EQUIPMENT SUPPLIERS.



TC DEVICE STANDARD MOUNTING HEIGHTS DETAIL



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REGISTRATION SEAL

CONSULTANT



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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE TEMPERATURE CONTROL STANDARDS AND **GENERAL NOTES**

12-10-2024	CONSTRUCTION DOCUMENTS
DATE:	ISSUED FOR:

DRAWN MEP

CHECKED MEP APPROVED **SVM**

ISSUE DATES

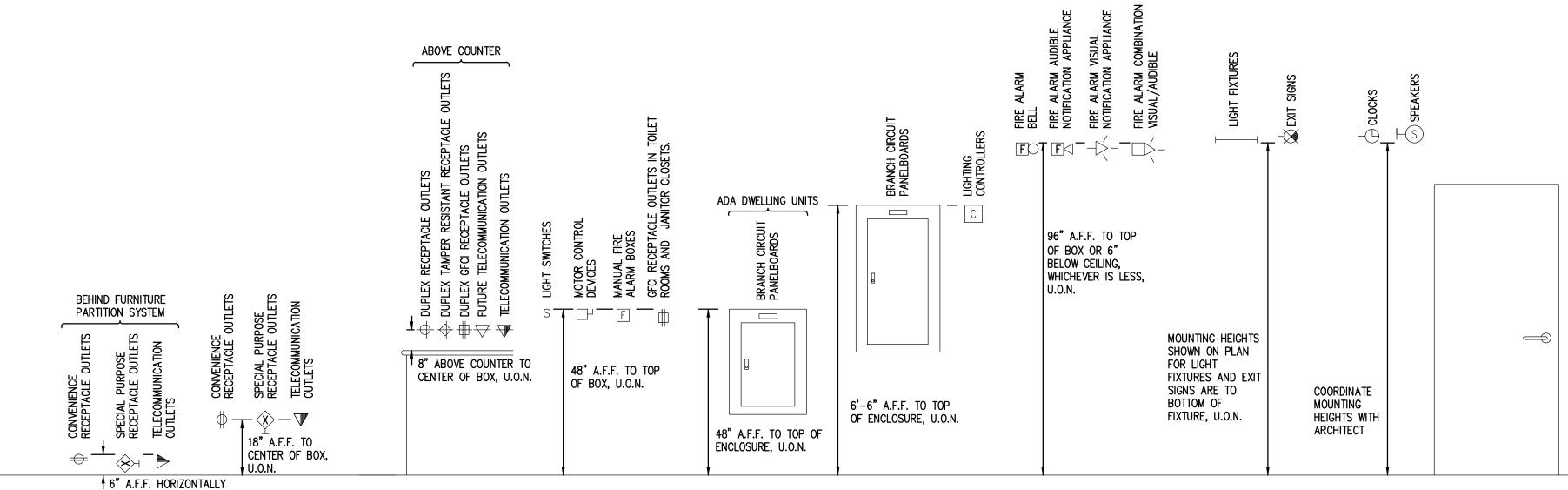
PROJECT NO.

22103D

DRAWING NO.

M8.1

TO TOP OF BOX, U.O.N.



ELECTRICAL DRAWING INDEX

SHEET NO. SHEET TITLE E0.1 ELECTRICAL STANDARDS AND DRAWING INDEX E0.2 ELECTRICAL STANDARD SCHEDULES E0.3 ELECTRICAL NEW WORK SITE PLAN E2.1 STORAGE BUILDING LIGHTING PLAN E3.1 STORAGE BUILDING POWER AND AUXILIARY SYSTEMS PLAN E5.1 ONE LINE DIAGRAM AND PANEL SCHEDULES E7.1 ELECTRICAL DETAILS AND DIAGRAMS

ELECTRICAL ABBREVIATION LIST

ARC ENERGY REDUCTION

ABOVE FINISH FLOOR

AUDIENCE LEFT

AUDIENCE RIGHT

AUXILIARY

BREAKER

DEMOLITION

DIMENSION

DISCONNECT

DOWNSTAGE

EMERGENCY

FIRE ALARM

FULL LOAD AMPS

FRONT OF HOUSE

DEMO

EM/ EMERG

AMPERES FRAME (BREAKER RATING)

ARC FAULT CIRCUIT INTERRUPTER

AUTOMATIC LOAD CONTROL RELAY

AMPERES TRIP (BREAKER SETTING)

AUTOMATIC TRANSFER SWITCH

BRANCH CIRCUIT EMERGENCY

LIGHTING TRANSFER SWITCH

BOLTED PRESSURE SWITCH

CONTRACTOR FURNISHED

CONTRACTOR INSTALLED

CURRENT TRANSFORMER

DISTRIBUTION PANEL

EMERGENCY BATTERY UNIT

ELECTRICAL CONTRACTOR

ELECTRICAL METALLIC TUBING

ELECTRICALLY OPERATED

EMERGENCY POWER OFF

ELECTRIC WATER COOLER

ELECTRONICALLY COMMUTATED MOTOR

FOOD SERVICE EQUIPMENT CONTRACTOR

STANDARD METHODS OF NOTATION

CIRCUIT BREAKER

AMPS INTERRUPTING CAPACITY

ABBREVIATION DESCRIPTION

GROUND

GROUND FAULT CIRCUIT INTERRUPTER OFCI

GROUND FAULT PROTECTION

HAND-OFF-AUTO

ISOLATED GROUND

JUNCTION BOX

THOUSAND AMP

KILOVOLT - AMPERES

KILOWATT - HOURS

LIGHTNING ARRESTOR

LIGHTING DISTRIBUTION PANEL

MINIMUM CIRCUIT AMPACITY

MAIN CIRCUIT BREAKER

MOTOR CONTROL CENTER

MAIN DISTRIBUTION PANEL

MAXIMUM OVERCURRENT PROTECTION

LIGHTING PANEL

KILOVOLT

KILOWATT

MAXIMUM

MECHANICAL

MISCELLANEOUS

MAIN LUGS ONLY

NORMALLY CLOSED

NOT IN CONTRACT

NORMALLY OPEN

NON-FUSIBLE

NIGHT LIGHT

NOT TO SCALE

NATIONAL ELECTRICAL CODE

MINIMUM

MOUNTED

MOUNTING

MOTOR

NEUTRAL

HORSEPOWER

HIGH VOLTAGE

G/GRD/EG

MECH

ABBREVIATION DESCRIPTION

SCCR

SCHED

SWGR

ON CENTER

OWNER FURNISHED,

OWNER FURNISHED,

PUSHBUTTON STATION

POTENTIAL TRANSFORMER

POWER DISTRIBUTION PANEL

RECEPTACLE DISTRIBUTION PANEL

SHORT CIRCUIT CURRENT RATING

TELEPHONE TERMINAL BACKBOARD

SURGE PROTECTION DEVICE

OWNER INSTALLED

RECEPTACLE

SCHEDULE

SHUNT TRIP

SWITCHBOARD

TERMINAL BOX

TELECOMMUNICATIONS

UNLESS OTHERWISE NOTED

TAMPER RESISTANT

SWITCHGEAR

UPSTAGE

WIRE OR WATTS WIRELESS ACCESS POINT

WIRE GUARD

WEATHERPROOF

TRANSFORMER

RELOCATED

EXPLOSION PROOF

WEATHER RESISTANT

RECEPTACLE PANEL

RIGID STEEL CONDUIT

CONTRACTOR INSTALLED

ABBREVIATION DESCRIPTION



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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE ELECTRICAL STANDARDS AND DRAWING INDEX

CONSTRUCTION KEY NOTE (NUMBER) OR DEMOLITION KEY NOTE (LETTER) EQUIPMENT DESIGNATION, (i.e. EXHAUST FAN NUMBER 1) FOOD SERVICE EQUIPMENT TAG SECTION NUMBER SHEET ON WHICH SECTION IS DRAWN AREA OF ENLARGEMENT PLAN NUMBER		HEAVY LINE WEIGHT INDICATES NEW WORK LIGHT LINE WEIGHT INDICATES EXISTING EQUIPMENT OR REFERENCED INFORMATION GRAY LINE INDICATES BACKGROUND INFORMATION THIN GRAY LINE INDICATES CEILING GRID DASHED LINES INDICATE CONDUIT ROUTED IN OR BELOW SLAB OR GRADE HATCH MARKS INDICATE EQUIPMENT OR MATERIALS TO BE DISCONNECTED AND REMOVED. CIRCUIT HOMERUN DUCT BANK — CONCRETE ENCASED / DIRECT BURIED
SECTION OR PLAN NUMBER SECTION OR ENLARGED PLAN SCALE: 1/8" - 1' - 0" SHEET ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)	AN	• IN USE • SPARE

ISSUE DATES

12-10-2024 CONSTRUCTION DOCUMENTS DATE: ISSUED FOR:

drawn **ZDB** CHECKED ZDB

APPROVED STP

PROJECT NO. 22103D

DRAWING NO.

E0.1

	COPPER CONDUCTORS							ALUMINUM CONDUCTORS					
OVERCURRENT	WIRE SIZE (AWG OR KCMIL)			CONDUIT SIZE			NOTES		WIRE SIZE (AWG OR KCMIL)		CONDUIT SIZE		
DEVICE RATING (AMPERES)	PHASE & NEUTRAL	GROUND	SINGLE PHASE 2 WIRE+G (1PH, 1N, 1G, 2PH, 1G)	SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	THREE PHASE 3 WIRE+G (3PH, 1G)	THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)		PHASE & NEUTRAL	GROUND	SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	THREE PHASE 3 WIRE+G (3PH, 1G)	THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)	
15-20	12	12	3/4"	3/4"	3/4"	3/4"						<u> </u>	
25-30	10	10	3/4"	3/4"	3/4"	3/4"							
35-40	8	10	3/4"	3/4"	3/4"	3/4"							
45-50	8 (6)	10	3/4"	3/4"	3/4"	3/4"	1			NOT ACCEPTABLE	- - -		
60	6 (4)	10	3/4" (1")	3/4" (1")	3/4" (1")	1" (1 1/4")	1						
70	4	8	1"	1 1/4"	1 1/4"	1 1/4"							
80	4 (3)	8	1"	1 1/4"	1 1/4"	1 1/4"	1						
90–100	3 (2)	8	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1	1	6	1 1/2"	1 1/2"	1 1/2"	
110	2 (1)	6	-	1 1/4"	1 1/4"	1 1/4" (1 1/2")	1	1/0	4	1 1/2"	1 1/2"	2"	
125	1 (1/0)	6	-	1 1/4" (1 1/2")	1 1/4" (1 1/2")	1 1/2"	1	2/0	4	1 1/2"	1 1/2"	2"	
150	1/0	6	-	1 1/2"	1 1/2"	1 1/2"		3/0	4	2"	2"	2 1/2"	
175	2/0	6	-	2"	2"	2"		4/0	4	2"	2"	2 1/2"	
200	3/0	6	-	2"	2"	2 1/2"		250	4	2"	2"	3"	
225	4/0	4	-	2"	2"	2 1/2"		300	2	2 1/2"	2 1/2"	3"	
250	250	4	-	2 1/2"	2 1/2"	2 1/2"		350	2	2 1/2"	2 1/2"	3"	
300	350	4	-	2 1/2"	2 1/2"	3"		500	2	3"	3"	3 1/2"	
350	500	3	-	3"	3"	3"		2-4/0	2-1/0	2-2"	2-2"	2-2"	
400	500	3	-	3"	3"	3"		2-250	2-1/0	2-2 1/2"	2-2 1/2"	2-2 1/2"	

CONTRACTOR TO SIZE FEEDERS AND BRANCH CIRCUITS BASED ON THIS SCHEDULE AND OVER CURRENT DEVICE SIZE, UNLESS NOTED OTHERWISE.

- 2. CONTRACTOR MAY COMBINE 20A CIRCUITS AS NOTED IN SPECIFICATION. 3. COPPER CONDUCTORS ARE BASED ON THHN/THWN-2 UP TO AND INCLUDING #4/0. COPPER CONDUCTORS LARGER THAN #4/0 AND ALUMINUM CONDUCTORS ARE BASED ON XHHW-2.
- 4. CONDUIT SIZES ARE VALID FOR EMT OR RSC. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT.
- 5. SIZE OF DISCONNECT SWITCH LOCATED AT EQUIPMENT SHALL BE SIZED BASED UPON OVERCURRENT PROTECTION OF THAT DEVICE. 6. OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLING DIFFERENT SIZE/QUANTITY OF CONDUCTORS TO OBTAIN AN EQUIVALENT AMPACITY.

2. WATTAGE LISTED IS FROM THE BASIS OF DESIGN MANUFACTURER.

3. FINISH TO BE APPROVED BY INTERIOR DESIGNER, ARCHITECT OR CLIENT.

1. REFER TO PLANS FOR LOCATION OF LOCAL CONTROL.

3. REFER TO LUMINAIRE SCHEDULE FOR FIXTURE CHARACTERISTICS.

2. CONTRACTOR SHALL PROVIDE FLOOR PLAN INDICATING SENSOR AND EQUIPMENT LOCATIONS OF CHOSEN CONTROL SYSTEM.

5. REFER TO TEMPERATURE CONTROL DRAWINGS AND DIAGRAMS FOR ADDITIONAL SENSOR REQUIREMENTS.
6. PROVIDE WRING CONTROL DIAGRAM FOR APPLICABLE CONTROL SYSTEM(S).

4. LIGHTING SENSOR SHALL HAVE CONTACT FOR HVAC CONTROL WHEN A "YES" SELECTION IS MADE IN THE HVAC CONTROL COLUMN.

4. ALL LUMINAIRES TO BE AS SPECIFIED OR EQUAL APPROVED BY PBA AND/OR ILLUMINART.

1. CONDUCTORS ARE BASED ON 90°C, 600V INSULATED WIRE APPLIED AT 75°C FOR TERMINATION RATED 60/75°C OR 75°C. FOR TERMINATION RATED AT 60°C, USE CONDUCTORS AND CONDUIT SIZES INDICATED IN PARENTHESES.

TYPE	DESCRIPTION	MANUFACTURER(S)	WATTAGE	VOLTAGE	LIGHT CHARACTERISTICS	CONTROLS	REMARKS
L1	24"x48" VANDAL RESISTANT RECESSED LIGHT FIXTURE: FULLY GASKETED STEEL HOUSING AND DOOR WITH ALLEN PIN FASTENERS AND A12.125 UV STABILIZED POLYCARBONATE LENS. FIXTURE SHALL BE WHITE. NOTE: PROVIDE (3) ALLEN PIN SCREW DRIVERS AND TURN OVER TO OWNER.	1. KENALL RMCA SERIES 2. NEW STAR 57R SERIES 3. KUTZON VL SERIES	45	MULTI	LED 5,000 LUMENS 4000K, 80CRI	0-10V 10% DIMMING	FOR FIXTURES INDICATED AS EMERGENCY PROVIDE 1,400 LUMEN OUTPUT COLD WEATHER RATED EMERGENCY BATTERY PACK.
L2	48" LINEAR CHAIN HUNG FIXTURE: STEEL HOUSING PAINTED AFTER FABRICATION. FROSTED LENS WITH WIRE GUARD. FIXTURE SHALL BE WHITE	1. LITHONIA CLX SERIES 2. COLUBIA LCL SERIES 3. METALUX FP SERIES	30	MULTI	LED 4,000 LUMENS 4000K, 80CRI	0-10V 10% DIMMING	FOR FIXTURES INDICATED AS EMERGENCY PROVIDE 1,400 LUMEN OUTPUT COLD WEATHER RATED EMERGENCY BATTERY PACK.
EXIT SIGN	WHITE DIE CAST ALUMINUM FACE, RED LETTERS, HIGH OUTPUT LED DIFFUSE LIGHT PANEL, NICKEL-CADMIUM BATTERY BACK UP. WRE GUARD. SINGLE OR DOUBLE STENCIL WITH DIRECTIONAL ARROWS AS INDICATED ON PLAN. PROVIDE MOUNTING AS INDICATED ON PLAN.	1. LITHONIA SIGNATURE SERIES 2. DUAL-LITE SEMPRA SERIES 3. SURELITE CX SERIES	2	MULTI	HIGH OUTPUT LED LIGHT PANEL		
OL1	LED ARCHITECTURAL WALL PACK FIXTURE: TYPE IV FORWARD THROW DISTRIBUTION, WEATHER RESISTANT ALUMINUM HOUSING, IP65 RATED. COLOR SHALL BE BRONZE.	1. LITHONIA WST SERIES 2. SPAULDING TRP SERIES 3. MCGRAW EDISON IST SERIES	25	MULTI	LED 3,000 LUMENS 4000K, 70 CRI	INTEGRAL PHOTOCELL	FOR FIXTURES INDICATED AS EMERGENCY PROVIDE 1,400 LUMEN OUTPUT COLD WEATHER RATED EMERGENCY BATTERY PACK.

		DRY TYP	E DISTRII	BUTION TE	RANSFOR	RMER CIR	CUIT SIZI	NG SCHEE	ULE			
	PRIMARY (480V)					ECONDARY BY/120 VOLT					KEYED NOTES	
XFMR	OVERCURRENT		OVERCURRENT		CONE	OUCTOR SIZ	E (AWG OR I	(CMIL)			UNDING	
KVA	PROTECTION	PROTECTION	PHASE & NEUTRAL			SUPPLY SIDE BONDING JUMPER		CONDUIT (4W + SSBJ)		ELECTRODE CONDUCTOR		
			COPPER	ALUMINUM	COPPER	ALUMINUM	COPPER	ALUMINUM	COPPER	ALUMINUM		
9	20A	30A	10	NA	8	NA	3/4"	NA	8	NA		
15	25A	60A	6	NA	8	NA	1"	NA	8	NA	1	
30	45A	100A	3	1	8	6	1 1/4"	1 1/2"	8	6	1	
45	70A	175A	2/0	4/0	4	2	2"	2 1/2"	4	2		
75	125A	300A/225A	350 / 4/0	500 / 300	2	1/0	3"	3 1/2"	2	1/0	2	
112 1/2	175A	400A	600	2-250	1/0	2	3 1/2"	2-2 1/2"	1/0	1/0		
150	225A	600A	2-350	2-500	2-2	2-1/0	2-3"	2-3 1/2"	2/0	4/0		
225	350A	800A	2-600	3-400	2-1/0	3–1/0	2-3 1/2"	3–3"	3/0	4/0		
300	500A	1200A	3–600	4-500	3–1/0	4-1/0	3-3 1/2"	4-3 1/2"	3/0	250		
500	800A	1600A	4-600	5-600	4-1/0	5-3/0	4-3 1/2"	5-3 1/2"	3/0	250		
GENERAL NOT	ES:	•		•		<u>. </u>		•			-	

- 1. TRANSFORMERS AND FEEDERS ARE BASED ON 480 VOLT, 3 PHASE, 3 WIRE PRIMARY AND 208Y/120 VOLT, 3 PHASE, 4 WIRE, SECONDARY. 2. ALUMINUM CONDUCTORS ARE PERMITTED ONLY IF INCLUDED IN FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE.
- 3. PRIMARY OVERCURRENT PROTECTION IS SIZED AT 125% OF TRANSFORMER FULL LOAD CURRENT. PROVIDE PRIMARY OVERCURRENT DEVICE SELECTION TO ALLOW TRANSFORMER IN-RUSH CURRENT AND PROTECT BASED ON THE ANSI DAMAGE CURVE. IF MANUFACTURER REQUIRES PRIMARY OVERCURRENT GREATER THAN 125% (NOT TO EXCEED 250%) THEN PRIMARY FEEDER
- 4. SECONDARY CONDUCTOR BASED ON TEN FOOT MAXIMUM LENGTH (NEC 240.21(C)(2)). IF CONDUCTORS ARE LONGER THAN TEN FOOT, REQUIREMENTS IN NEC 240.21(C)(6) MUST BE MET. IN NO CASE SHALL CONDUCTORS BE LONGER THAN TWENTY-FIVE FEET.
- 1. CONDUCTORS ARE BASED ON 90°C, 600V. INSULATED WIRE APPLIED AT 75°C FOR TERMINATION RATED 60/75°C OR 75°C. 2. THE SMALLER SIZE IS TO BE USED TO FEED 225A PANELBOARDS.

MOTOR CIRCUIT SIZING SCHEDULE (120V, SINGLE PHASE)								
MOTOR HP	CIRCUIT BREAKER	MANUAL MOTOR STARTER SIZE	COMBINATION STARTER SIZE	MOTOR DISCONNECT (NOTE 3)				
1/6	15A	1 HP	0	20A				
1/4	15A	1 HP	0	20A				
1/3	15A	1 HP	0	20A				
1/2	20A	1 HP	0	20A				

1. BASED ON MOTOR FULL LOAD AMPERES AS PROVIDED BY THE NEC 2. BASED ON MOTOR RUNNING OVERLOAD PROTECTIONS PROVIDED BY THERMAL OVERLOAD RELAYS. 3. WHERE THE STARTER IS LOCATED REMOTE FROM THE MOTOR, PROVIDE DISCONNECT LOCATED AT THE MOTOR, SIZE AS INDICATED.

BRANCH WIRE SIZE MAXIMUM BRANCH CIRCUIT LENGTH (IN FEET) CKT (AWG)						
RATING (A)		120V	208V	240V	277V	480V
20A	12	83	143	165	191	331
	10	128	222	256	295	511
	8	201	348	402	464	804
	6	313	542	625	721	1250
30A	10	85	148	170	197	341
	8	134	232	268	309	536
	6	208	361	417	481	833
	4	313	542	625	721	1250

GENERAL NOTES:

1. THE ABOVE TABLE VALUES ARE BASED ON COPPER CONDUCTORS, IN STEEL CONDUIT, WITH A LOAD POWER

PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO 3%.

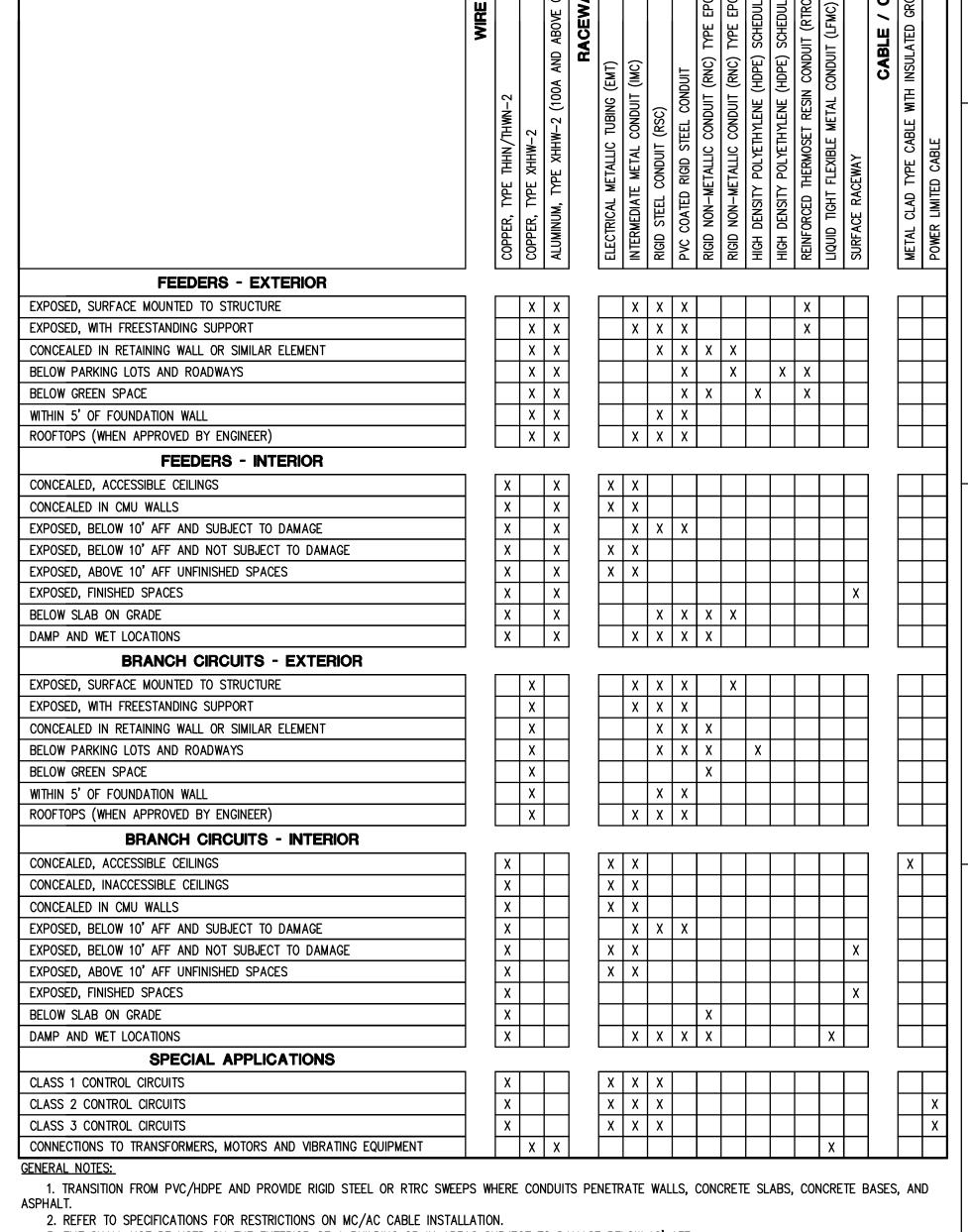
- FACTOR OF 0.85 PER NEC CHAPTER 9, TABLE 9. 2. PROVIDE BRANCH CIRCUIT CONDUCTORS AS INDICATED IN THE TABLE ABOVE FOR ALL LIGHTING AND RECEPTACLE BRANCH CIRCUITS. WHERE BRANCH CIRCUITS SERVE DEDICATED EQUIPMENT, THE CONTRACTOR MAY PERFORM VOLTAGE DROP CALCULATIONS BASED ON ACTUAL EQUIPMENT CONNECTED LOAD AND PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO A MAXIMUM OF 3%.
- 3. CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 9 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT. 4. LIMITS FOR CONDUCTOR LENGTHS SHOWN ARE BASED ON A MAXIMUM BRANCH CIRCUIT LOADING OF 64% OF THE BRANCH BREAKER RATING AND A MAXIMUM OF 3 PERCENT VOLTAGE DROP TO COMPLY WITH ASHRAE 90.1 AND THE NEC. FOR CIRCUITS LOADED GREATER THAN 64% OF BRANCH BREAKER RATING, THE CONTRACTOR SHALL

	INTERIOR LIGHTING CONTROL SCHEDULE												
PLAN	ROOM TYPE	LOCA	AL CONTROL	CONTROL	SENSOR TYPE	TURN ON LIGHTING	BI-LEVEL		DAYLIGHT	NO DETECTION FULL OFF	EMERGENCY LIGHTING	HVAC	NOTES
REFERENCE	ROOM TIPE	SWITCH TYPE	SWITCH CONTROL	ON / OFF	SENSUR TIPE	TO %	CONTROL	SIDE LIGHT	TOP MAINTAIN FC LIGHT LEVEL	(MIN)	CIRCUIT CONTROL		NOTES
Α	ELECTRICAL/MECHANICAL ROOM	LINE VOLTAGE	ON-OFF	MANUAL ON / MANUAL OFF	N/A	FULL 100%	N/A	N/A	N/A N/A	N/A	BATTERY	N/A	
В	RESTROOM (ALL OTHER RESTROOMS)	LINE VOLTAGE	ON-OFF (KEYED)	SENSOR ON / SENSOR OFF	ULTRASONIC	FULL 100%	N/A	N/A	N/A N/A	20	BATTERY	YES	
С	STORAGE ROOM (≥50 FT2 AND ≤ 1000 SQFT)	LINE VOLTAGE	ON-OFF	SENSOR ON / SENSOR OFF	ULTRASONIC	FULL 100%	N/A	N/A	N/A N/A	20	BATTERY	N/A	

N/A = NOT APPLICABLE

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RACEWAY / CONDUCTOR / CABLE APPLICATION SCHEDULE



3. EMT SHALL NOT BE USED ON THE EXTERIOR OF A BUILDING OR IN AREAS SUBJECT TO DAMAGE BELOW 10' AFF. 4. INSTALL SURFACE RACEWAYS ONLY WHERE INDICATED ON DRAWINGS.

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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE ELECTRICAL STANDARD SCHEDULES

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12-10-2024 CONSTRUCTION DOCUMENTS

DRAWN ZDB CHECKED ZDB

APPROVED STP

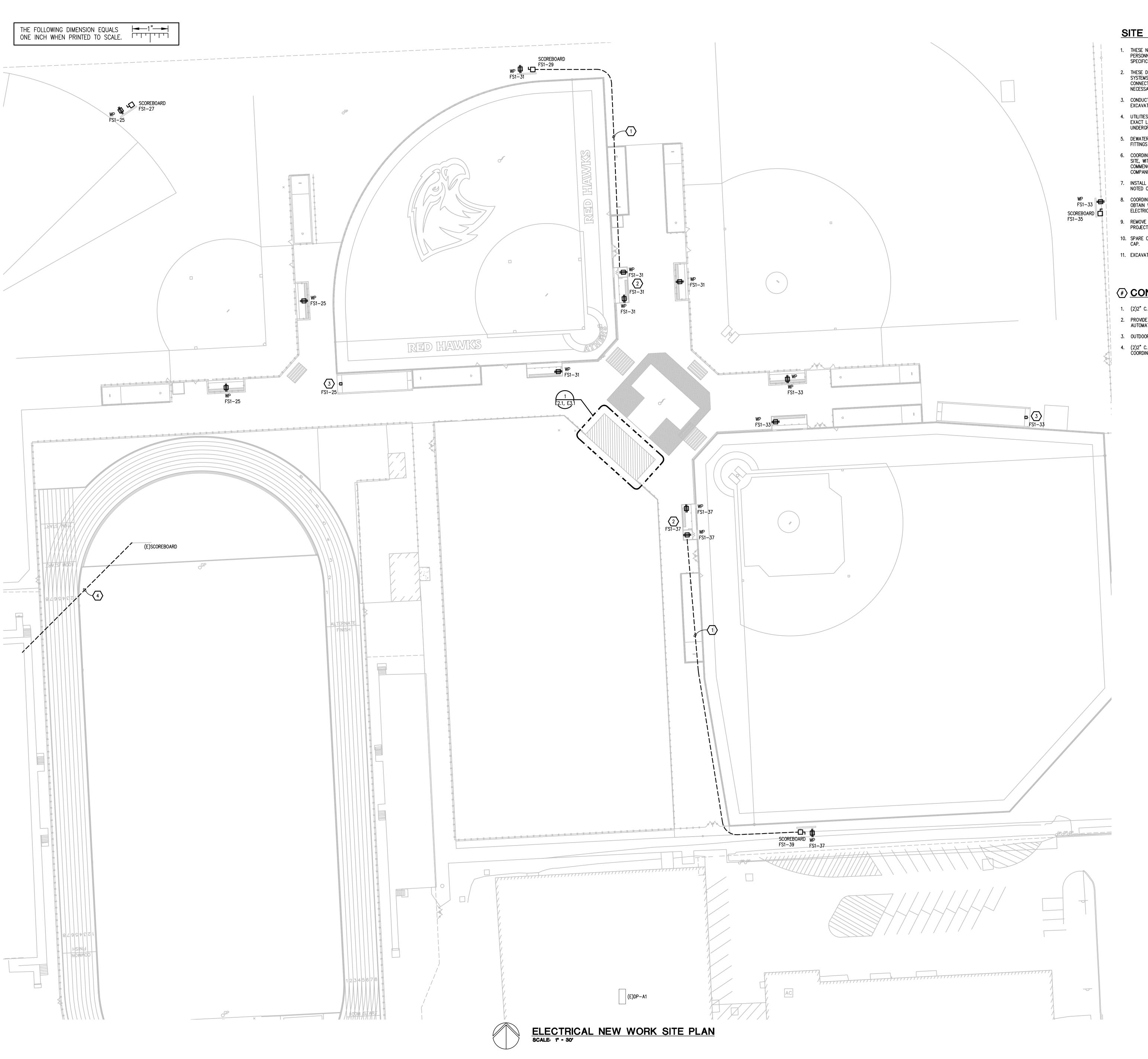
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22103D

DRAWING NO.

E0.2

NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.



SITE PLAN GENERAL NOTES:

- 1. THESE NOTES ARE GENERIC GUIDELINES ONLY. ELECTRICAL CONTRACTOR'S PERSONNEL ON SITE SHALL BE THOROUGHLY FAMILIAR WITH THE PUBLISHED SPECIFICATIONS FOR EXACT DESCRIPTIONS OF SCOPE, METHODS, AND MATERIAL.
- 2. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
- 3. CONDUCT A SURVEY TO IDENTIFY ALL UNDERGROUND UTILITIES. CALL 811 PRIOR TO EXCAVATION.
- 4. UTILITIES SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY. COORDINATE EXACT LOCATION OF ALL EXISTING UTILITIES, AND ROUTING OF ALL NEW UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
- 5. DEWATER TRENCHES PRIOR TO INSTALLATION OF CONDUITS. PROVIDE WATER TIGHT FITTINGS ON ALL UNDERGROUND CONDUITS.
- 6. COORDINATE DEMOLITION WORK, AND ELECTRICAL AND TELEPHONE SERVICES TO THE SITE, WITH THE RESPECTIVE LOCAL UTILITY COMPANY REPRESENTATIVES PRIOR TO COMMENCEMENT OF WORK. INCLUDE ALL ASSOCIATED COST/FEES BY THE UTILITY COMPANIES IN THE BID PRICE.
- 7. INSTALL UNDERGROUND CONDUITS 42" BELOW FINISHED GRADE, MINIMUM, UNLESS NOTED OTHERWISE.
- 8. COORDINATE SERVICE SHUT-DOWNS WITH ALL TRADES INVOLVED ON SITE AND OBTAIN WRITTEN AUTHORIZATION FROM OWNER 72 HOURS PRIOR TO ANY ELECTRICAL AND/OR TELEPHONE SHUT-DOWN.
- REMOVE ALL DE-ENERGIZED CONDUCTORS FROM SITE AT COMPLETION OF THE
- 10. SPARE CONDUITS SHALL INCLUDE PULL STRING AND SHALL BE TERMINATED WITH A
- 11. EXCAVATE THE ENTIRE LENGTH OF TRENCH TO PROPERLY SET DUCT ELEVATIONS.

CONSTRUCTION KEY NOTES:

- 1. (2)2" C. WITH PULL STRING FROM SCOREBOARD TO HOME DUGOUT STORAGE.
- 2. PROVIDE LIGHT FIXTURE L2 IN STORAGE ROOM ADJACENT TO DUGOUT WITH AUTOMATIC ON/OFF CONTROL VIA OCCUPANCY SENSORS.
- 3. OUTDOOR POWER PEDESTAL.
- (2)2" C. WITH PULL STRING FROM SCOREBOARD TO UNDERSIDE OF BLEACHERS. COORDINATE FINAL LOCATION WITH OWNER.



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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE **ELECTRICAL NEW WORK** SITE PLAN

CHECKED ZDB APPROVED STP PROJECT NO. 22103D DRAWING NO.

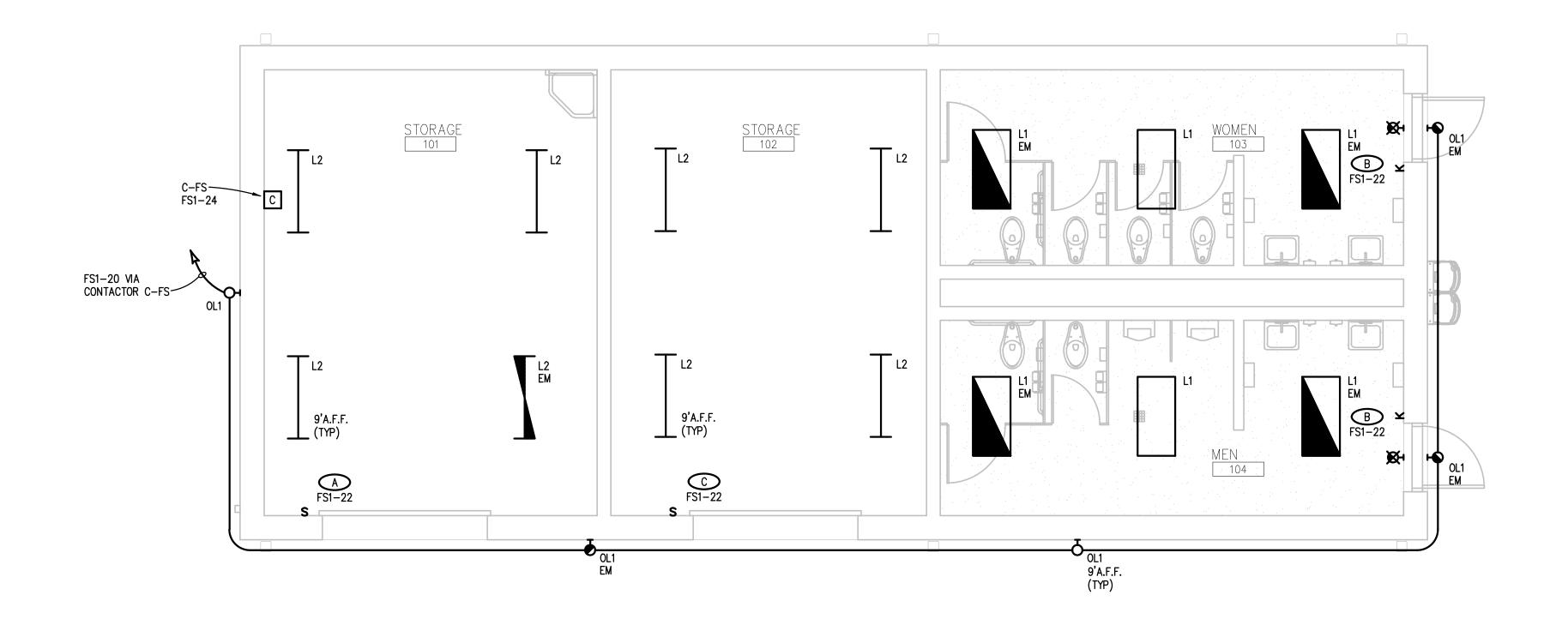
Know what's **below**.

Call before you dig.

12-10-2024 CONSTRUCTION DOCUMENTS

ISSUE DATES

E0.3





STORAGE BUILDING LIGHTING PLAN
SCALE: 1/4" - 1' - 0"

ELECTRICAL GENERAL NOTES:

TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

- THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
- 2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
- 3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER
- 4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
- 5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
- 6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
- 7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
- 8. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
- 9. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.
- REFER TO LIGHTING CONTROL SCHEDULE FOR ROOM CONTROL AND EMERGENCY LIGHTING CIRCUIT CONTROL REQUIREMENTS. DESIGNATION FOR ROOM IS INDICATED AS A LETTERED OVAL SYMBOL.
- 11. CONNECT EXIT SIGNS TO NORMAL LIGHTING BRANCH CIRCUIT SERVING THE AREA. CONNECT AHEAD OF ANY LIGHTING CONTROL DEVICE OR SYSTEM.



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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE
STORAGE BUILDING
LIGHTING PLAN

ISSUE DATES	

12-10-2024 CONSTRUCTION DOCUMENTS

DRAWN ZDB

CHECKED ZDB

CHECKED ZDB

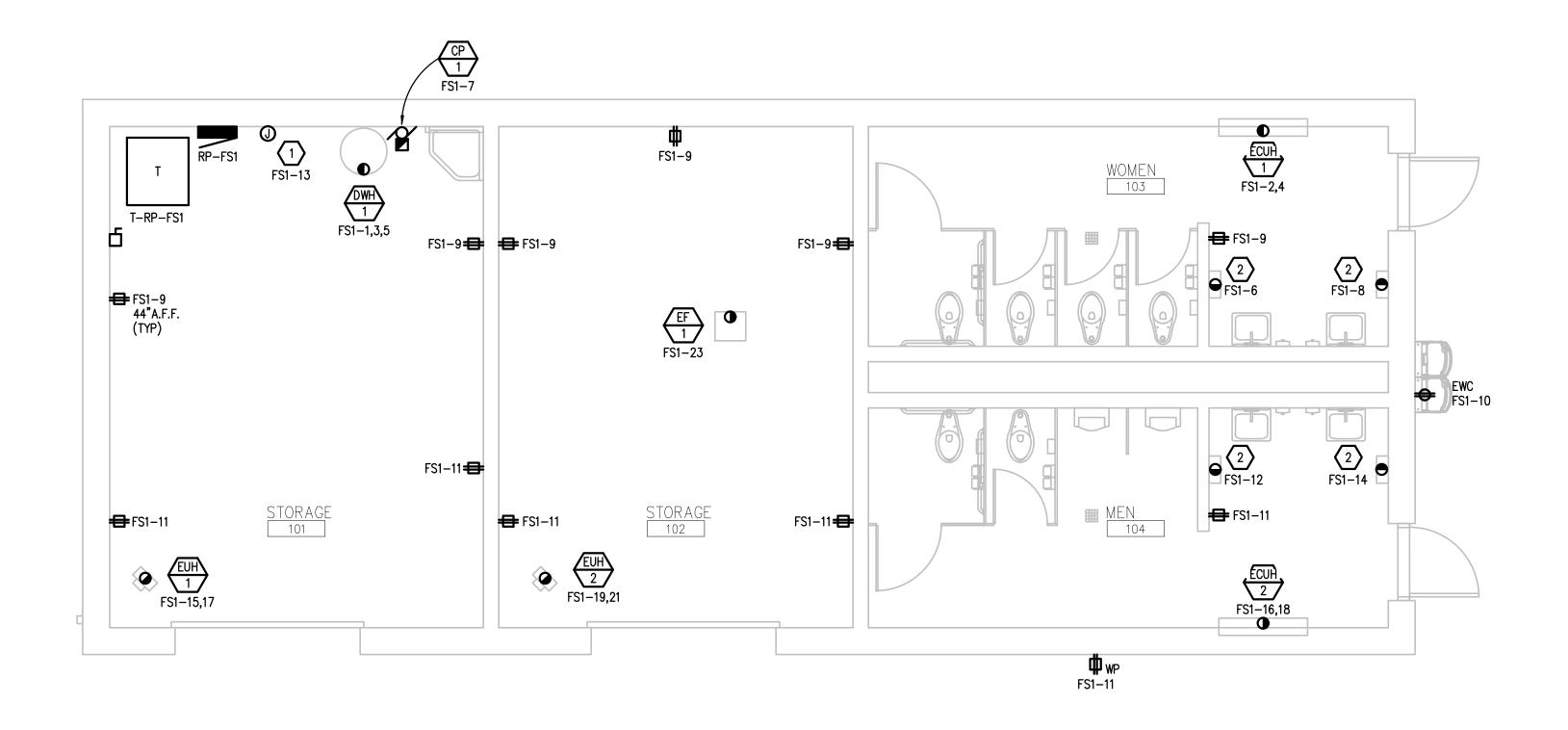
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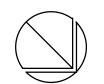
PROJECT NO.

22103D

DRAWING NO.

E2.1





STORAGE BUILDING POWER AND AUXILIARY SYSTEMS PLAN
SCALE: 1/4" - 1" - 0"

ELECTRICAL GENERAL NOTES:

- 1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
- INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
- COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
- 4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
- 5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
- SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.

6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT

- COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
- 8. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
- 9. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.
- REFER TO LIGHTING CONTROL SCHEDULE FOR ROOM CONTROL AND EMERGENCY LIGHTING CIRCUIT CONTROL REQUIREMENTS. DESIGNATION FOR ROOM IS INDICATED AS A LETTERED OVAL SYMBOL.
- 11. CONNECT EXIT SIGNS TO NORMAL LIGHTING BRANCH CIRCUIT SERVING THE AREA. CONNECT AHEAD OF ANY LIGHTING CONTROL DEVICE OR SYSTEM.

CONSTRUCTION KEY NOTES:

- 1. HEAT TRACE BY OTHERS.
- 2. HAND DRYER BY OTHERS. COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL ELEVATION PLANS.



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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

STORAGE BUILDING
POWER AND AUXILIARY
SYSTEMS PLAN

ISSUE DATI	ES
12-10-2024	CONSTRUCTION DOCUMENTS
DATE	ISSUED FOR:

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CHECKED ZDB

APPROVED STP

PROJECT NO. **22103D**

DRAWING NO.

E3.1

TO UTILITY SERVICE NECESSARY COMPONENTS, FITTINGS AND OFFSETS. (E)PRIMARY SWITCH LINEUP (E)DP-A1 CONNECTED LOAD CALCULATIONS [/] 600A 600A [/] 600A 600A (E)DP-A1 (METERED PER NEC 220.87) 68.1 KVA X 125% 85.1 KVA -80E 125E 125E 63.3 KVA 20E RP-FS1 (ADDED LOAD) (E)DP-A1 TOTAL CONNECTED LOAD 148.4 KVA (E)T-DP3 225KVA 13.2KV-480Y/277V 3ø, 4W (E)UNIT SUBSTATION (E)UNIT SUBSTATION DP-A1 NO. 2 (E)DP-3 (E)SUBSTATION DP-A1 13.2KV-480Y/277V 3ø, 4W, 400A 400A [/] 100A [′] 100A • • | | -/ 600A 3P 13.2KV-480Y/277V T-FS1 175KVA (E)LOAD (E)LOAD (E)AHU-2 (E)AHU-3 (E)LOAD (E)LP-AD (E)LP-AA (E)RP-AF RP-FS1

			SH	IORT	-CIRCL	JIT CALCUL	ATIC	NS						
FAULT POINT	PANEL/ TRANSFORMER	SOURCE FAULT POINT	SOURCE Isc	CONDUIT TYPE	CONDUCTOR MATERIAL	CONDUCTOR OR BUS SIZE	'C' VALUE	E (V)	L (FT)	XFMR kVA	XFMR %Z	f	М	Isc
1	(E)SUBSTATION DP-A1							480		300	5.42			6,658
2	T-FS1(PRIMARY)	1	6,658	NM	CU	2 SETS OF 1/0	9317	480	500.0			0.645	0.61	4,048
3	T-FS1(SECONDARY)	2	4,048	М	CU			208		75	3.61	1.618	0.38	3,56
4	RP-FS1	3	3,568	М	CU	1 SET OF 4/0	15082	208	10.0			0.020	0.98	3,49
	$ sc = sc \times M $ $M = 1/(1+f)$	CONI f =	LOWING TH DUCTOR OR 1.732 x L C x n x E	BUS x lsc	lsc =	ARE BASED ON THE "POI UTILITY XFMR: kVA x 100,000 E x 1.732 x %Z	OINT" METHOD WHERE: XFMR: p(sc) x Ep x 1.73 x %Z s(sc) = Ep x M x p(sc) 100,000 x KVA Es							

ŧ	LOAD TYPE	DESCRIPTION	CB TYPE	СВ	VA	ØA	ØB	ØC	VA	СВ	CB TYPE	DESCRIPTION		LOAD TYPE	#
1	NC NC	DWH-1		40	3960 3960	8160	8160		4200 4200	50		ECUH-1		E E	2
<u>3</u> 5	NC	DWI - 1		40	3960		0100	5160	1200	20		HAND DRYER		NC NC	6
<u>, </u>		CP-1		15	250	1450		3100	1200	20		HAND DRYER		NC NC	8
<u>′</u> 9		RECEPTACLES		20	1080	1100	1580		500	20	GFCI			NC NC	10
11		RECEPTACLES		20	1080		1000	2280	1200	20		HAND DRYER		NC	12
3		HEAT TRACE	GFEP	20	250	1450			1200	20		HAND DRYER		NC	14
5	E				5000		9200		4200				E	16	
7	Е	-EUH-1		60	5000			9200	4200	50		ECUH-2		E	18
9	Е	EIII 0			5000	5180			180	20		EXTERIOR LIGHTING		L	20
21	Ε	EUH-2		60	5000		5510		510	20		LIGHTING		L	22
23	М	EF-1		15	280			400	120	20		CONTACTOR C-FS		NC	24
25	R	RECEPTACLES		20	1080	1080				20		SPARE			26
27	NC	SCOREBOARD		20	500		500			20		SPARE			28
29	NC	SCOREBOARD		20	500			500		20		SPARE			30
31	R	RECEPTACLES		20	900	900				20		SPARE			32
33	R	RECEPTACLES		20	1080		1080			20		SPARE			34
35	NC	SCOREBOARD		20	500			500		20		SPARE			36
37	R	RECEPTACLES		20	540	540				20		SPARE			38
39	NC	SCOREBOARD		20	500		500			20		SPARE			40
41		SPARE		20						20		SPARE			42
						18760	26530	18040							
	DANFII	BOARD INFORMATION				ØA	ØB	ØC	EMANID	CALCULA	TEN	FEEDER AND OVERCURRENT			
	VOLTA		BR ANCH	I CIRCUI	T CONNE	CTED LO	7D			LOAD		SIZING	NOTES:		
		MPACITY: 225A	CONTINU			OILD LOI	<u>\U</u>		100%	LOTID		125%	<u>110 123.</u>		
	MAIN 1		ELECTRI				36800	•	100%	36800	•	100% 36800			
		IM A.I.C.: 10,000			US LOAD	(NC)	19550		100%	19550	•	100% <u>30800</u> 100% 19550			•
	MOUNT		KITCHEN			()	19000		100%	19000		100% 19330			•
	MOON	SON ACL			NSE LOAD	(R)	5760		100%	5760	•	100% 5760			
		FEED-THROUGH LUGS			MAND LO			•	50%	3700	•	100%100%			•
		DOUBLE LUGS	LIGHTIN			V.3	690	•	100%	690	•	125% 863			•
		INTEGRAL SPD			• •	TING LOA		•	.00%	000	•	100%			
					ST LOAD				125%			100%			•
	PANELI	BOARD LOCATION			NING LOA		530	•	100%	530	•	100% 530			•
			NOTE: DE	EMAND AN		NFORMATIC		TOTA	AL(KVA): (AMPS):			L (AMPS): 176			•

DIAGRAM GENERAL NOTES:

- 1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL
- 2. FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED
- 3. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "TRANSFORMER CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
- 4. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH THE MOTOR CIRCUIT SIZING SCHEDULES ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
- 5. BASIS OF DESIGN IS SQUARE D DISTRIBUTION EQUIPMENT. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT FROM OTHER APPROVED MANUFACTURERS, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING ELECTRICAL EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED.
- 6. TRANSFORMERS ARE 480V-208Y/120, 3ø, 4W UNLESS OTHERWISE NOTED.

***** CONSTRUCTION KEY NOTES:

1. (2)1 1/2°C. EACH WITH (4)1/0 + (1)4 GROUND.

(E)RP-ITAB

CONSULTANT



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REGISTRATION SEAL

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PROJECT TITLE

Athens High School Athletic Fields Bid Package No. 02B

Troy School District Troy, Michigan

DRAWING TITLE ONE LINE DIAGRAM AND PANEL SCHEDULES

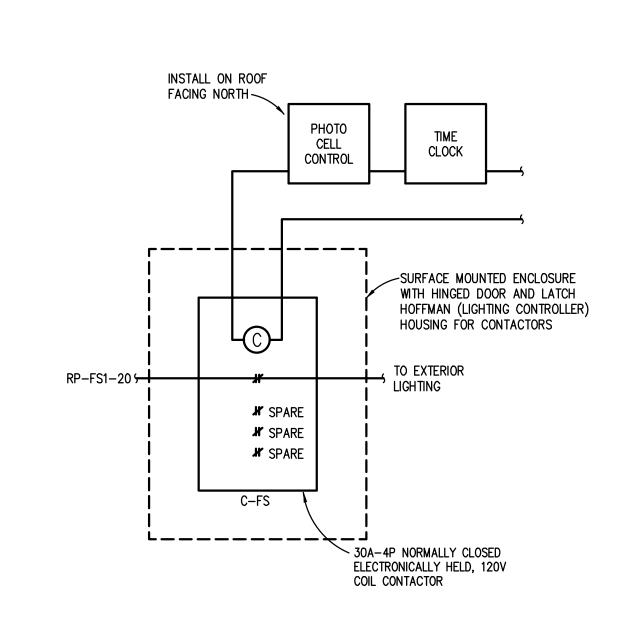
ISSUE DATI	ES
12_10_2024	CONSTRUCTION DOCUMENTS

DRAWN ZDB CHECKED ZDB APPROVED STP

PROJECT NO.

22103D

E5.1



EXTERIOR LIGHTING CONTACTOR

TRENCH EXCAVATION OUTLINE

— BACKFILL (SEE SPECIFICATIONS)

— SCHEDULE 40 PVC CONDUIT – SIZE AND QUANTITY AS NOTED ON PLAN

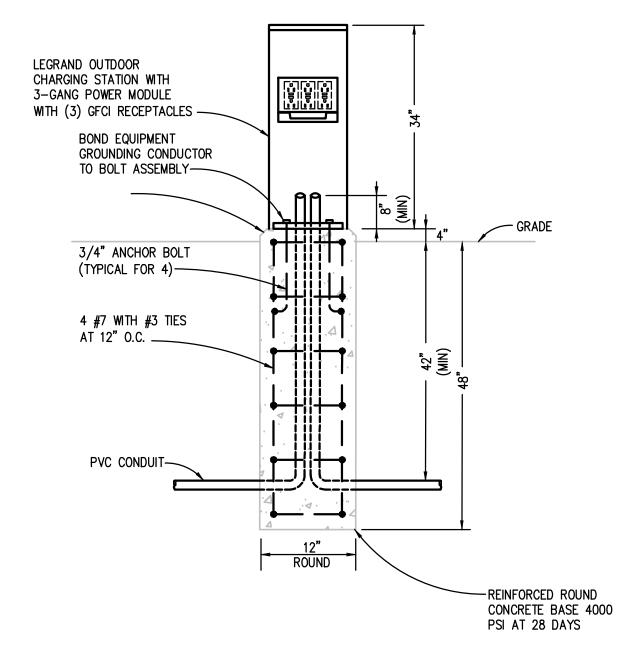
COMPACTED SAND BACKFILL (3" MIN)

- DUCT SPACER, FOR ON CENTER SPACING REFER TO SPECIFICATIONS

COMPACTED SAND BEDDING (3" MIN)

RECESSED KEYED

LOCK/LATCH (MADE OF STEEL)



OUTDOOR POWER PEDESTAL DETAIL NO SCALE

- PANEL IDENTIFICATION

PER SPECIFICATIONS

CONTINUOUS PIANO HINGE OR DOOR
IN DOOR TO PERMIT COVER TO
SWING OPEN WHILE STILL SECURED
(RIGHT SIDE OF CONTINUOUS

HINGE) TO THE BACKBOX

-DOOR HINGE

(TYPICAL)

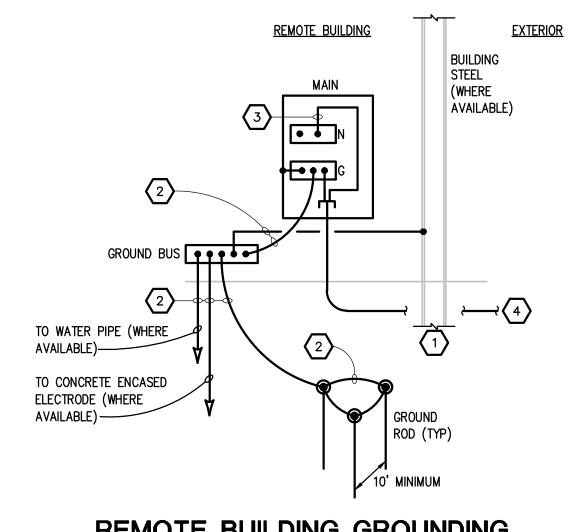
FRONT TRIM SCREW (TYPICAL)

1. INSTALL POWER PEDESTAL PER MANUFACTURER'S REQUIREMENTS. 2. PROVIDE PRECAST CONCRETE BASE AS MANUFACTURED BY

_ _ _ _ _ _

PANELBOARD FRONT COVER DETAIL

NORTHERN CONCRETE PIPE, INC. OR APPROVED EQUAL. 3. CONCRETE REINFORCEMENTS SHALL BE BARE, ZINC GALVANIZED, OR ELECTRICALLY CONDUCTIVE COATED STEEL. BOND ALL CONCRETE REINFORCEMENTS AND ANCHOR BOLTS TOGETHER SO THAT SYSTEM IS ELECTRICALLY CONTINUOUS.

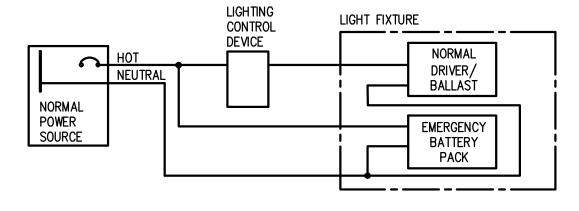


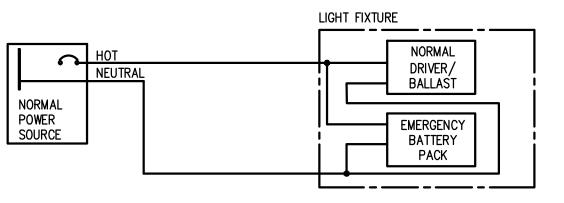
REMOTE BUILDING GROUNDING

KEYED NOTES

NO SCALE

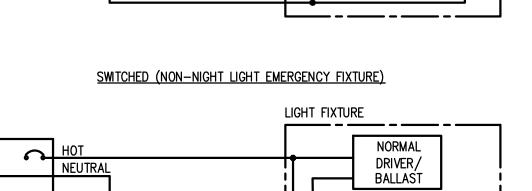
- 1. METAL IN-GROUND SUPPORT STRUCTURE IN DIRECT CONTACT WITH EARTH VERTICALLY FOR A MINIMUM OF 10FT, WHERE AVAILABLE.
- 2. GROUNDING ELECTRODE CONDUCTOR, #4/0 COPPER.
- 3. GROUNDED CONDUCTOR (NEUTRAL), SEE ONE LINE DIAGRAM. 4. PHASE CONDUCTORS, GROUNDED CONDUCTOR (NEUTRAL), AND EQUIPMENT GROUNDING CONDUCTOR IN CONDUIT TO MAIN BUILDING. SEE ONE LINE DIAGRAM.

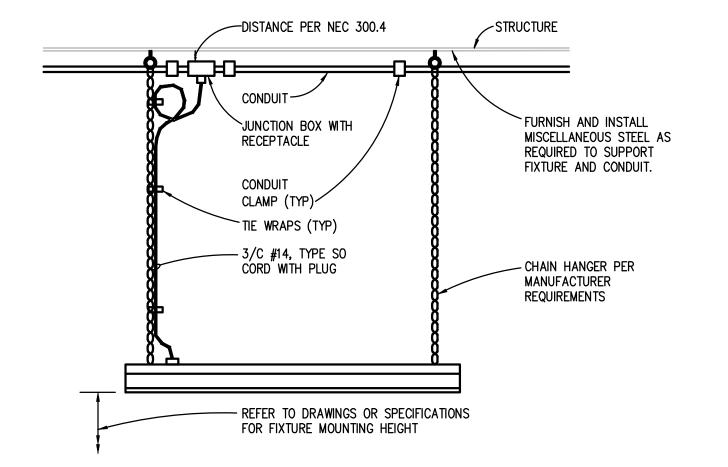




UNSWITCHED (NIGHT LIGHT EMERGENCY FIXTURE)

EMERGENCY BATTERY BACKUP WIRING DIAGRAM - INTERNAL TO LIGHT FIXTURE

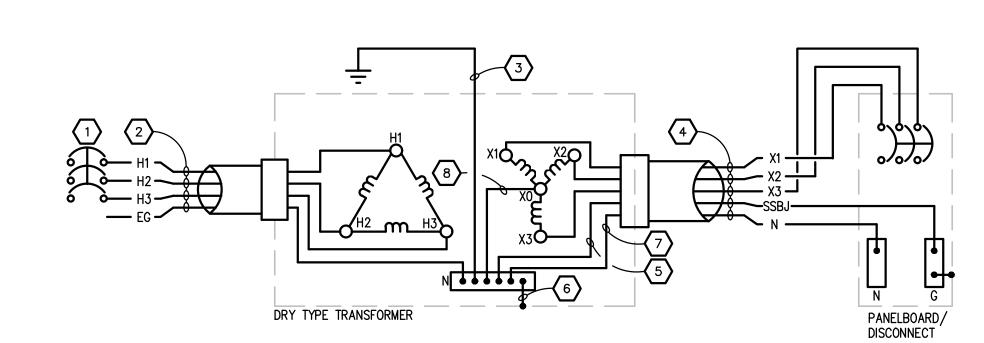




UNDERGROUND CONDUIT DETAIL

QUANTITY AND CONFIGURATION OF DUCTS SHALL BE AS SHOWN ON PLAN DRAWINGS. 12" MINIMUM SEPARATION SHALL BE MAINTAINED BETWEEN ELECTRICAL AND COMMUNICATIONS DUCTS.

TYPICAL MOUNTING DETAIL FOR CHAIN **HUNG LIGHTING FIXTURES**

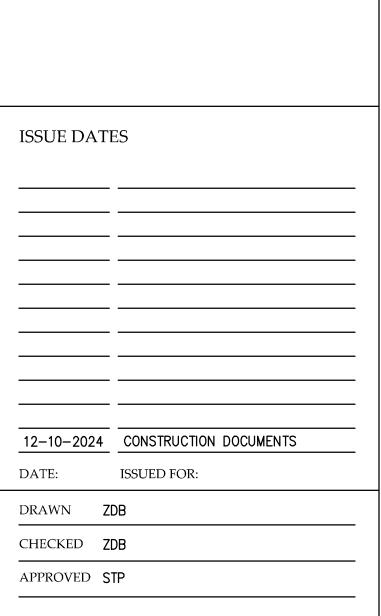


DRY TYPE DISTRIBUTION TRANSFORMER **GROUNDING ARRANGEMENT**

NO SCALE

KEYED NOTES

- 1. 480V, 3Ø PRIMARY CIRCUIT BREAKER BASED ON DRY TYPE DISTRIBUTION TRANSFORMER CIRCUIT SIZING SCHEDULE ON ELECTRICAL STANDARD SCHEDULE DRAWING UNLESS OTHERWISE NOTED. 2. PRIMARY FEEDER BASED ON FEEDER AND BRANCH CIRCUIT SIZING TABLE ON ELECTRICAL
- STANDARD SCHEDULE DRAWING UNLESS OTHERWISE NOTED. 3. GROUNDING ELECTRODE CONDUCTOR TO NEAREST GROUNDING ELECTRODE (i.e. METAL IN GROUND SUPPORT STRUCTURE, METAL WATER PIPE, GROUND RING, OR GROUND BUS). SEE DRY TYPE DISTRIBUTION TRANSFORMER CIRCUIT SIZING SCHEDULE ON ELECTRICAL STANDARD SCHEDULE DRAWING FOR SIZE UNLESS OTHERWISE NOTED.
- 4. 208Y/120V, 3ø, 4W SECONDARY FEEDER BASED ON DRY TYPE DISTRIBUTION TRANSFORMER CIRCUIT SIZING SCHEDULE ON ELECTRICAL STANDARD SCHEDULE DRAWING UNLESS OTHERWISE
- 5. SUPPLY SIDE BONDING JUMPER. 6. SYSTEM BONDING JUMPER. 7. GROUNDED CONDUCTOR (NEUTRAL). 8. NEUTRAL CONDUCTOR PROVIDED WITH EQUIPMENT.



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PBA Project No.: 2023-0155.02

Athens High School

Bid Package No. 02B

ELECTRICAL DETAILS AND

Athletic Fields

Troy School District Troy, Michigan

DRAWING TITLE

DIAGRAMS

PROJECT NO.

DRAWING NO.

REGISTRATION SEAL

CONSULTANT

PROJECT TITLE