
ADDENDUM

PROJECT: WSD
New Sr. High School

OWNER: Wynne School District

TO: Gary Hoyt
Nabholz Construction
Addendum NO: **01**

DATE: 10/31/2024

PROJECT NO: **ARCH1010-23010**

CONTRACT FOR: General Construction

ADDENDUM NO. 1

DATED: October 31, 2024

All bidders are hereby notified of the following additions, changes, & revisions in specifications & drawings for the above named project and shall revise their bids accordingly. Said additions, changes and revisions are hereby made a part of said documents as if therein contained, bound, and/or repeated.

Description:**Drawings:**

1. Sheet C1.00 Overall Site Plan: The Fence legend has been updated as reflected on sheet, clouded and marked Add #1.
2. Sheet C1.01 Site Plan: The Fence legend has been updated as reflected on sheet, clouded and marked Add #1.
3. Sheet C1.02 Site Plan: The Fence legend has been updated as reflected on sheet, clouded and marked Add #1.
4. Sheet C1.03 Site Plan: The Fence legend has been updated as reflected on sheet, clouded and marked Add #1.
5. Sheet C1.04 Site Plan: The Fence legend has been updated as reflected on sheet, clouded and marked Add #1.
6. Sheet C1.05 Site Plan: The Fence legend has been updated as reflected on sheet, clouded and marked Add #1.
7. Sheet C1.06 Site Plan: The Fence legend has been updated as reflected on sheet, clouded and marked Add #1.
8. Sheet C1.07 Site Plan: The Fence legend has been updated as reflected on sheet, clouded and marked Add #1.
9. Sheet C2.00 Overall Utility Plan: Distribution System Contamination Note #8 has been added to the Overall Utility Plan as reflected on sheet, clouded and marked Add #1.
10. Sheet C2.03 Utility Plan: Water Main notes have been added to the Utility Plan as reflected on sheet, clouded and marked Add #1.
11. Sheet C2.04 Utility Plan: Manhole RIM Elevations have been adjusted on the Utility Plan as reflected on sheet, clouded and marked Add #1.
12. Sheet C2.05 Utility Plan: RIM Elevation has been adjusted on the Utility Plan as reflected on sheet, clouded and marked Add #1.

13. Sheet C2.10 Sanitary Sewer Main Plan & Profile: Drawing sheet has been added to the set of construction documents, clouded and marked Add #1.
14. Sheet C3.04 Grading and Drainage Plan: HDPE Slope and Invert In Elevation have been adjusted on the Plan as reflected on sheet, clouded and marked Add #1.
15. Sheet A1.23 Roof Plan: Detail at Roof Parapet Step added to drawing sheet, clouded and marked Add #1.
16. Sheet S004 General Details: Details indicated on sheet updated, clouded and marked Add #1.
17. Sheet S101.1 Foundation Plan – Area A North: Detail 2 added to drawing sheet, clouded and marked Add #1.
18. Sheet S101.3 Foundation Plan – Area B: Arbor Pit at Stage modified on drawing sheet, clouded and marked Add #1.
19. Sheet S102.1A Second Floor Diaphragm Chord Reinf. Plan – Area A North: Drawing Sheet added to CD Set, clouded and marked Add #1.
20. Sheet S102.2A Second Floor Diaphragm Chord Reinf. Plan – Area A South: Drawing Sheet added to CD Set, clouded and marked Add #1.
21. Sheet S103.1A Third Floor Diaphragm Chord Reinf. Plan – Area A South: Drawing Sheet added to CD Set, clouded and marked Add #1.
22. Sheet S203.1 Foundation Sections – Area B: Drawing Sheet added to CD Set, clouded and marked Add #1.

Specifications:

1. Specification Section 22 11 13 Facility Water Distribution Piping: Spec Section has been added to the project manual.
2. Specification Section 33 05 13 Manholes and Structures: Spec Section has been added to the project manual.
3. Specification Section 33 10 00 Site Water Distribution: Spec Section has been added to the project manual.
4. Specification Section 33 11 00 Water Service Connections: Spec Section has been added to the project manual.
5. Specification Section 33 12 00 Disinfection of Water Distribution: Spec Section has been added to the project manual.
6. Specification Section 33 41 11 Storm Drainage: Spec Section has been added to the project manual.
7. Specification Section 03 45 00 Architectural Precast: Spec Section has been added to the project manual.
8. Specification Section 07 10 00 Waterproofing: Spec Section has been added to the project manual.
9. Specification Section 08 40 00 Storefront: Spec Section has been added to the project manual.
10. Specification Section 09 64 42 Theatre and Staging Anchored Resilient Wood Stage Flooring: Spec Section has been added to the project manual.
11. Specification Section 10 51 13 Metal Lockers: Spec Section has been added to the project manual.
12. Specification Section 10 73 00 Aluminum Walkway Covers: Spec Section has been added to the project manual.
13. Specification Section 13 12 50 Permanent Grandstands Home Side: Spec Section has been added to the project manual.
14. Specification Section 13 12 51 Permanent Grandstands Visitor Side: Spec Section has been added to the project manual.

Attachments

Addendum #1

Spec Section 22 11 13, Spec Section 33 05 13, Spec Section 33 10 00, Spec Section 33 11 00, Spec Section 33 12 00, Spec Section 33 41 11, Spec Section 03 45 00, Spec Section 07 10 00, Spec Section 08 40 00, Spec Section 09 64 42, Spec Section 10 51 13, Spec Section 10 73 00, Spec Section 13 12 50, Spec Section 13 12 51, Sheet C1.00, Sheet C1.01, Sheet C1.02, Sheet C1.03, Sheet C1.04, Sheet C1.05, Sheet C1.06, Sheet C1.07, Sheet C2.00, Sheet C2.03, Sheet C2.04, Sheet C2.05, Sheet C2.10, Sheet C3.04, Sheet A1.23, Sheet S004, Sheet S101.1, Sheet S101.3, Sheet S102.1A, Sheet S102.2A, Sheet S103.1A, Sheet S203.1

END ADDENDUM #1

Waylon W. Reed, NCARB
Director of Architecture
ARCH 1010
901.502.6597

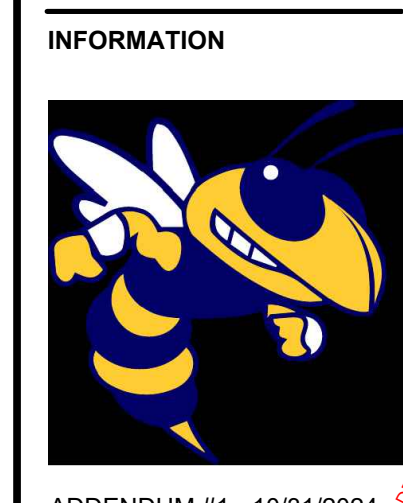


PROJECT NAME
 NEW HIGH SCHOOL
 CAMPUS FOR WYNNE
 SCHOOL DISTRICT

LOCATION
 800 E JACKSON AVE
 WYNNE AR 72396

PROJECT NUMBER
 A-23010.361AC

OWNER
 WYNNE SCHOOL DISTRICT



ADDENDUM #1 - 10/31/2024

SHEET TITLE
 OVERALL SITE PLAN

DATE
 10/17/2024

SHEET NUMBER

C1.00

EXISTING LEGEND

- ⊗ WATER METER
- ⊕ FIRE HYDRANT
- ⊖ WATER VALVE
- ⊘ GRATE INLET
- ⊙ INLET
- ⊚ CURB GRATE INLET
- ⊛ STORMWATER MANHOLE
- ⊜ DRAINAGE MANHOLE
- ⊝ JUNCTION BOX
- ⊞ SANITARY SEWER MANHOLE
- ⊟ GRINDER PUMP
- ⊠ GAS METER
- ⊡ SEWER OR DRAIN CLEAN-OUTS
- ⊢ TRANSFORMER
- ⊣ POWER POLE
- ⊤ LIGHT POLE
- ⊥ ELECTRIC BOX
- ⊦ TELEPHONE BOX
- ⊧ SURVEY BENCHMARK
- ⊨ PROPERTY BOUNDARY CORNER
- ⊩ OVERHEAD ELECTRIC
- ⊪ MOVABLE FENCE
- ⊫ CHAIN LINK FENCE
- ⊬ PROPERTY LINE

PROPOSED SITE PLAN LEGEND

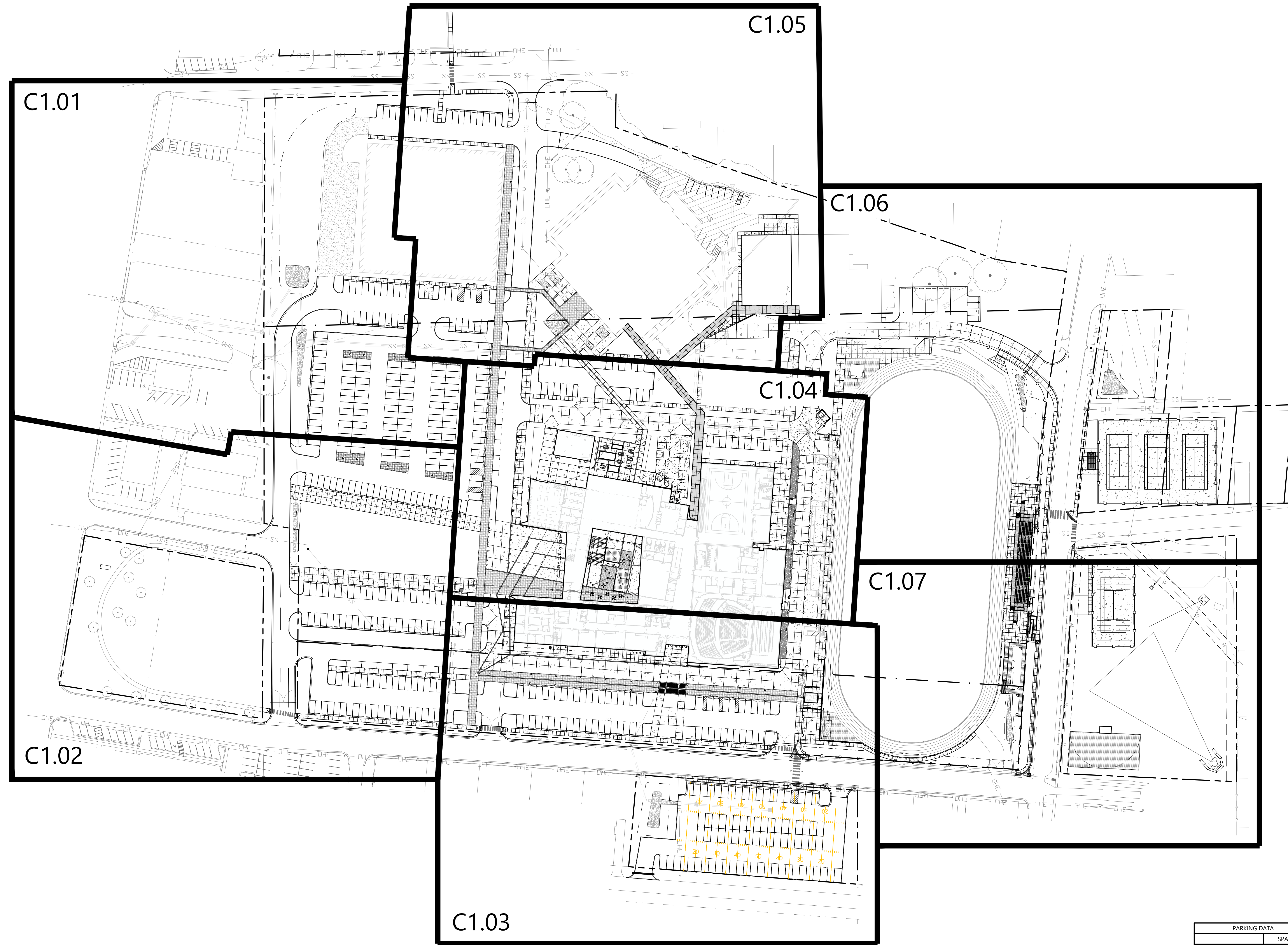
- ▬ PROPOSED CURB (REF. PLANS FOR TYPE)
- ▬ HEAVY DUTY CONCRETE PAVEMENT
- ▬ ASPHALT PAVEMENT
- ▬ PERMEABLE PAVERS
- ▬ TYPICAL CONCRETE SIDEWALK
- ▬ WOODEN DECK
- ▬ DRAINAGE ROCK (REF. LANDSCAPE PLAN)
- ▬ BROKEN CONCRETE PAVEMENT
- ▬ STEEL FENCE
- ▬ CHAIN LINK FENCE

GENERAL NOTES:

1. EXISTING SURVEY DATA WAS OBTAINED FROM A TOPOGRAPHIC & BOUNDARY SURVEY PERFORMED BY SORRELL-SMITH ENGINEERING CONSULTANTS, INC.
2. SURVEY DATA IS BASED UPON NAD 83, STATE STATE PLANE, ARKANSAS NORTH FEET COORDINATE SYSTEM.
3. ELEVATIONS ARE BASED UPON NATIONAL GEODETIC VERTICAL DATUM.
4. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL CITY, COUNTY, STATE, AND FEDERAL REGULATIONS AND CODES AS WELL AS OSHA STANDARDS. SITE CONTRACTOR SHALL MEET OR EXCEED ALL LOCAL, STATE, AND FEDERAL EROSION CONTROL MEASURES.
5. THE APPROXIMATE LOCATION OF KNOWN UTILITIES & SUBSURFACE STRUCTURES AS SHOWN HEREON ARE BASED ON ABOVE-GROUND VISIBLE STRUCTURES & RECORD DRAWINGS PROVIDED. LOCATIONS OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF THESE & ALL OTHER SUBSURFACE AND/OR LATENT FACILITIES PRIOR TO BEGINNING WORK. ALL REPAIRS OR RELOCATIONS NECESSARY SHALL BE MADE AS REQUIRED BY THE OWNER OF THE UTILITY OR STRUCTURE & THE COST OF SUCH REPAIRS NECESSARY SHALL BE BORNE BY THE CONTRACTOR.
6. ALL WORK PERFORMED WITHIN THE RIGHT-OF-WAY SHALL BE COORDINATED WITH THE CITY OF WYNNE ENGINEERING DEPARTMENT AND TRAFFIC DEPARTMENT.
7. ALL STREETS, DRIVES, WALKS, DRAINAGE STRUCTURES, FENCES, ETC. THAT ARE DISTURBED SHALL BE RESTORED TO THEIR ORIGINAL OR BETTER CONDITION USING LIKE MATERIALS. COST OF SUCH REPAIRS SHALL BE BORNE BY THE CONTRACTOR UNLESS PROVISION FOR PAYMENT IS MADE IN THE PROPOSAL.
8. THE CONTRACTOR IS REQUIRED TO NOTIFY THE ONE CALL CENTER AT 1-800-482-8998 48 HOURS PRIOR TO DIGGING IN ORDER THAT UNDERGROUND UTILITIES IN THE AREA CAN BE LOCATED.
9. THE CONTRACTOR SHALL NOT BEGIN WORK UNTIL THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN IMPLEMENTED, AND THE SWPPP, EROSION CONTROL PLAN, AND SIGNED AUTOMATIC NOTICE OF COVERAGE IS POSTED ON SITE.
10. CONTRACTOR IS RESPONSIBLE FOR ALL FIELD TESTING AS DESCRIBED IN THE SPECIFICATIONS (INCLUDING BUT NOT LIMITED TO COMPACTION DENSITY TESTING, ETC.) AND SHALL PROVIDE RESULTS TO ENGINEER, AND MAINTAIN RECORDS AND RESULTS OF ALL TESTS PERFORMED DURING CONSTRUCTION. TESTING BY THE CONTRACTOR SHALL BE INCLUDED IN THE BID.
11. EXISTING FACILITIES AND FEATURES ARE SHOWN LIGHT-LINED AND/OR SCREENED. NEW FACILITIES AND FEATURES ARE SHOWN SOLID AND HEAVY-LINED.
12. SLOPES AND GRADES SHOWN ARE IN UNITS OF FT/FT UNLESS OTHERWISE NOTED.
13. ALL PAVEMENT AND CURB MEASUREMENTS ARE TAKEN FROM FACE OF CURB OR EDGE OF PAVEMENT.
14. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

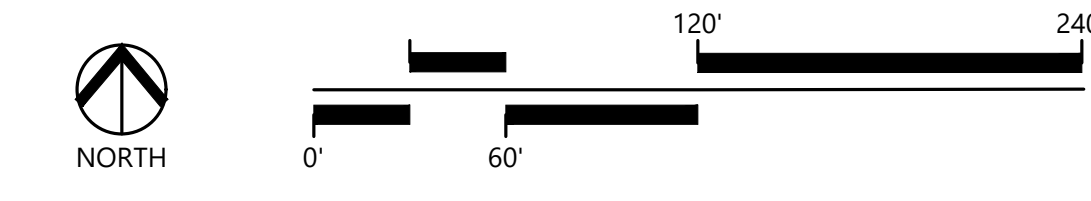
SITE FURNISHINGS			
KEY	QTY	DESCRIPTION	MANUFACTURER MODEL/COLOR
S1	74	CUBIC BENCH 19-3/4" X 19-3/4" X 19-3/4"	EDS CONCRETE PRODUCTS SF-CU202020
S2	5	SM. CUBIC BENCH 19-3/4" X 47-1/2" X 19-3/4"	EDS CONCRETE PRODUCTS SF-CU204820
S3	4	MED. CUBIC BENCH 19-3/4" X 94-1/2" X 19-3/4"	EDS CONCRETE PRODUCTS SF-CU209420
S4	3	LRG. CUBIC BENCH 19-3/4" X 118-3/4" X 19-3/4"	EDS CONCRETE PRODUCTS SF-CU2011820
S5	5	SM. CUBIC BENCH W/ IPE SEAT BACK 19-3/4" X 47-1/2" X 19-3/4"	EDS CONCRETE PRODUCTS SF-CU2011820 SF-IPESB2
S6	4	LRG. CUBIC BENCH W/ IPE SEAT BACK 19-3/4" X 118-3/4" X 19-3/4"	EDS CONCRETE PRODUCTS SF-CU2011820 SF-IPESB3
S7	16	VIBE STEEL BIKE RACK	ANOVA RLA30 - GRAY
S8	10	RAUTSTER PICNIC SET	MMCITE RTS351 - LEMON YELLOW
S9	20	PARC CENTRE CHAIR	LANDSCAPE FORMS CHAIR WITH NO ARMS-FOG
S10	5	PARC CENTRE TABLE	LANDSCAPE FORMS 30" ROUND-FOG
S11	9	CORNER BENCH	VESTRE 4103MK SAFFRON YELLOW
S12	5	ORBIT SEATING UNIT	MMCITE LOB460 LEMON YELLOW
S13	10	RETRACTABLE BOLLARDS	RELIANCE FOUNDRY ROLLARD R-8472 STAINLESS STEEL

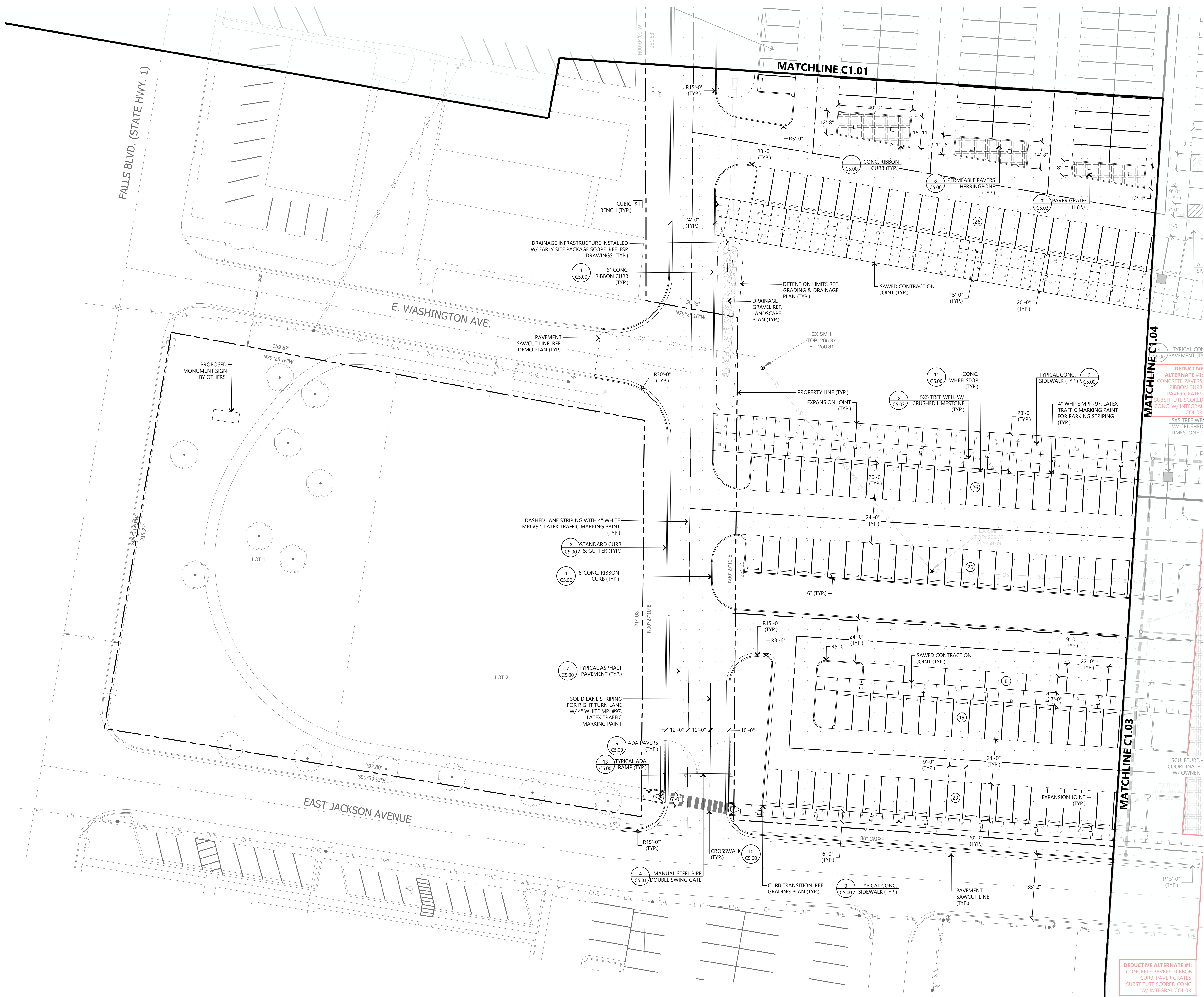
SITE FURNISHING SCHEDULE NOTES:
 REFER TO PLANS FOR LOCATION. INSTALL PER MANUFACTURER'S SPECIFICATIONS. FINAL LOCATION TO BE APPROVED BY LANDSCAPE ARCHITECT. SUBMIT CUTSHEET FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.



PARKING DATA	
	SPACES
STUDENT	318
FACULTY	115
VISITOR	99
BUS	7
ADA TOTAL	12
ADA VAN ACCESSIBLE	3
PROPOSED TOTAL	539

SCALE: 1" = 60'-0"





EXISTING LEGEND

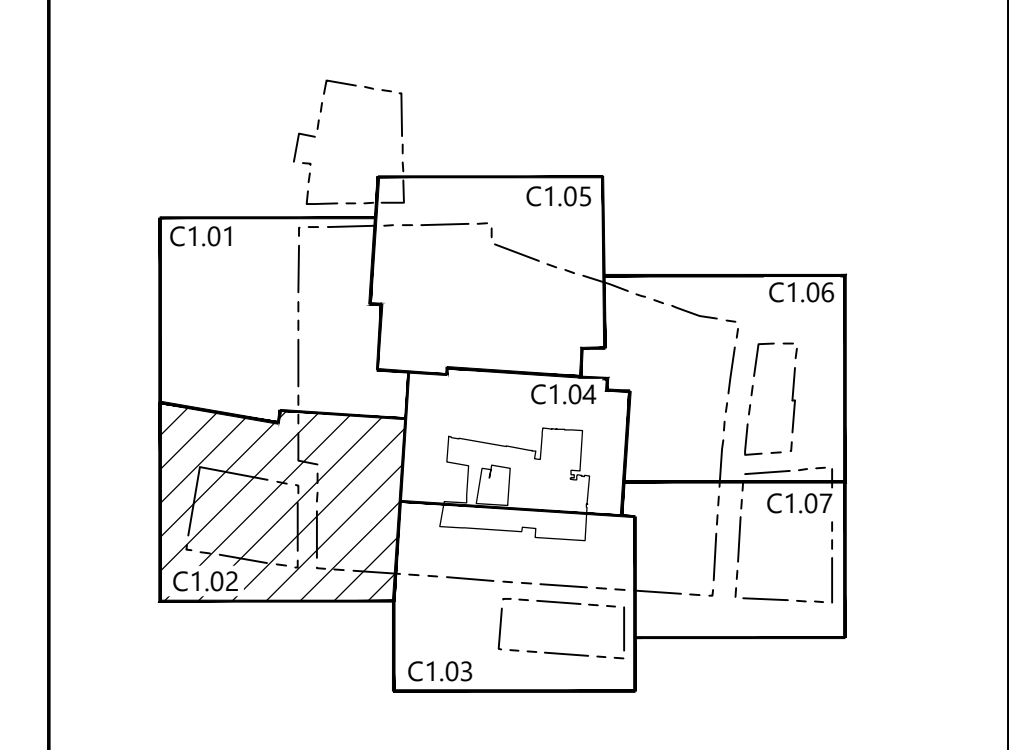
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- ⊕ FIRE HYDRANT
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- ⊕ GRATE INLET
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DEDUCTIVE ALTERNATE #1:
CONCRETE PAVERS, RIBBON CURB,
PAVER GRATES
SUBSTITUTE SCORED CONC.
W/ INTEGRAL COLOR

KEYMAP



PROJECT NAME

NEW HIGH SCHOOL
CAMPUS FOR WYNNE
SCHOOL DISTRICT

LOCATION

800 E JACKSON AVE
WYNNE AR 72396

PROJECT NUMBER

A-23010.361AC

OWNER

WYNNE SCHOOL DISTRICT

INFORMATION



ADDENDUM #1 - 10/31/2024

SHEET TITLE

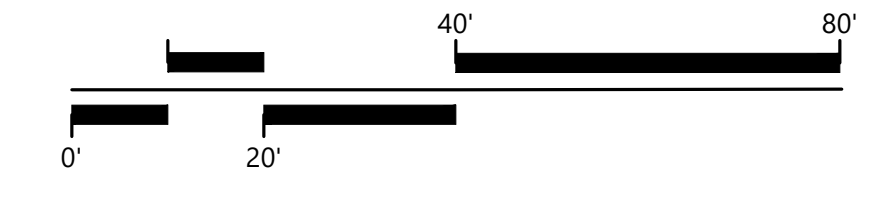
SITE PLAN

DATE

10/17/2024

SHEET NUMBER

C1.02





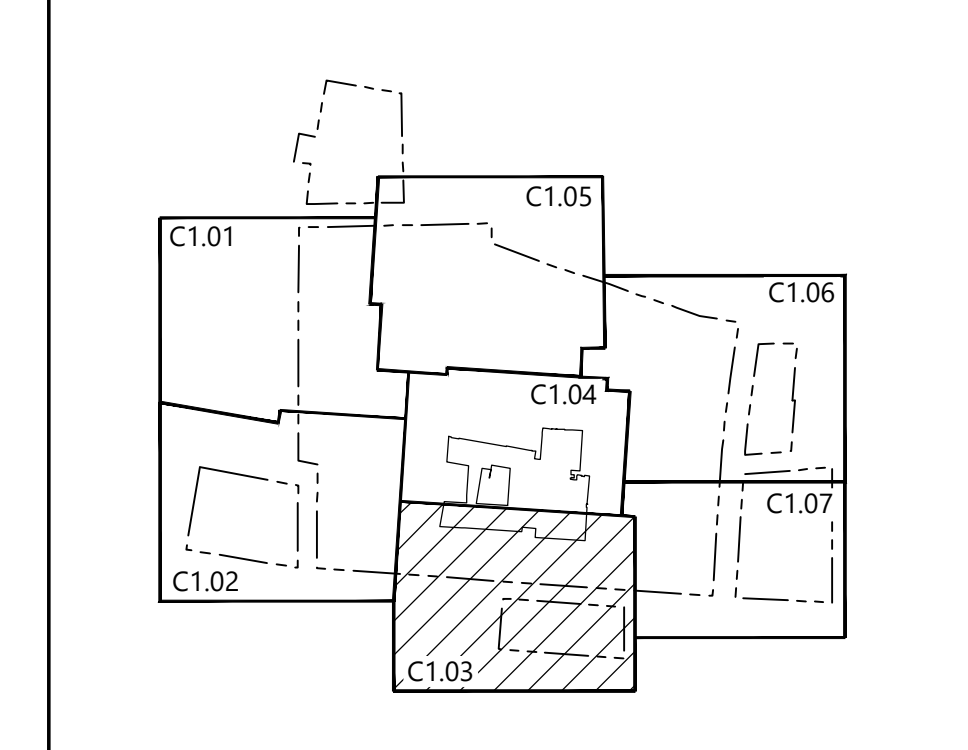
EXISTING LEGEND

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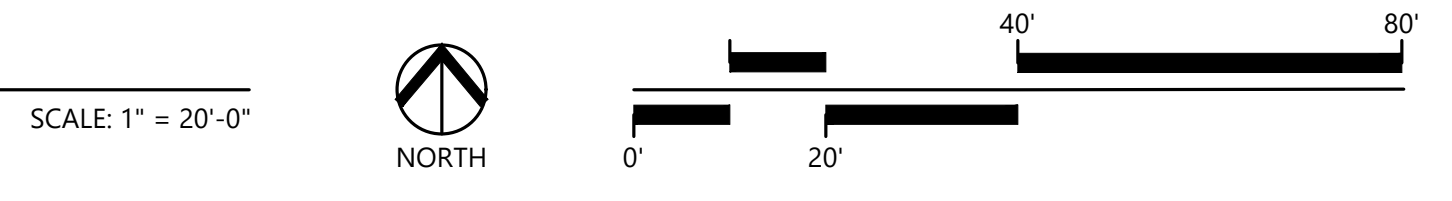
PROPOSED SITE PLAN LEGEND

- ▬ PROPOSED CURB (REF. PLANS FOR TYP)
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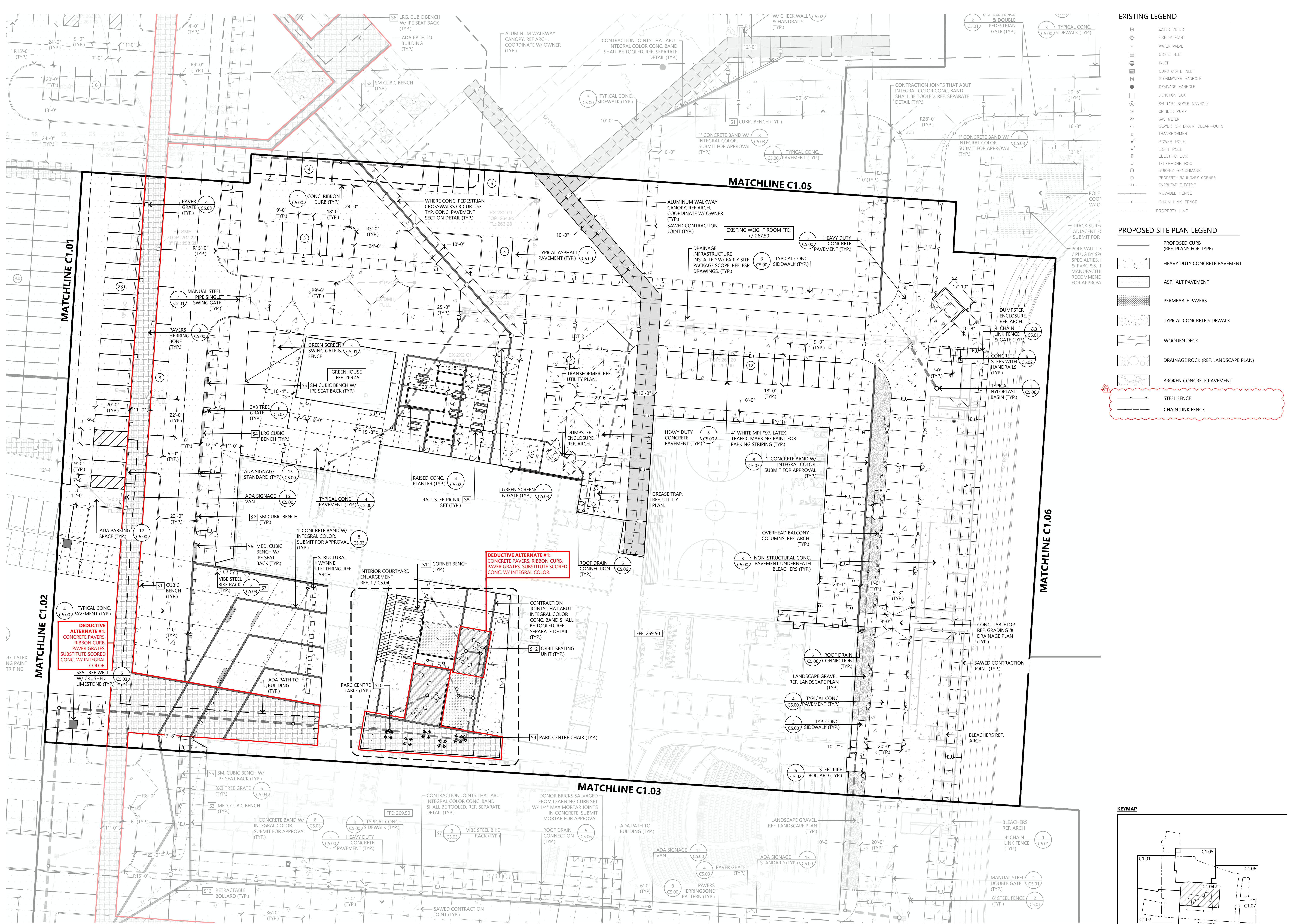
KEYMAP



1 SITE PLAN



DEDUCTIVE ALTERNATE #1:
 CONCRETE PAVERS, RIBBON
 CURB, PAVER GRATES,
 SUBSTITUTE SCORED CONC.
 W/ INTEGRAL COLOR.



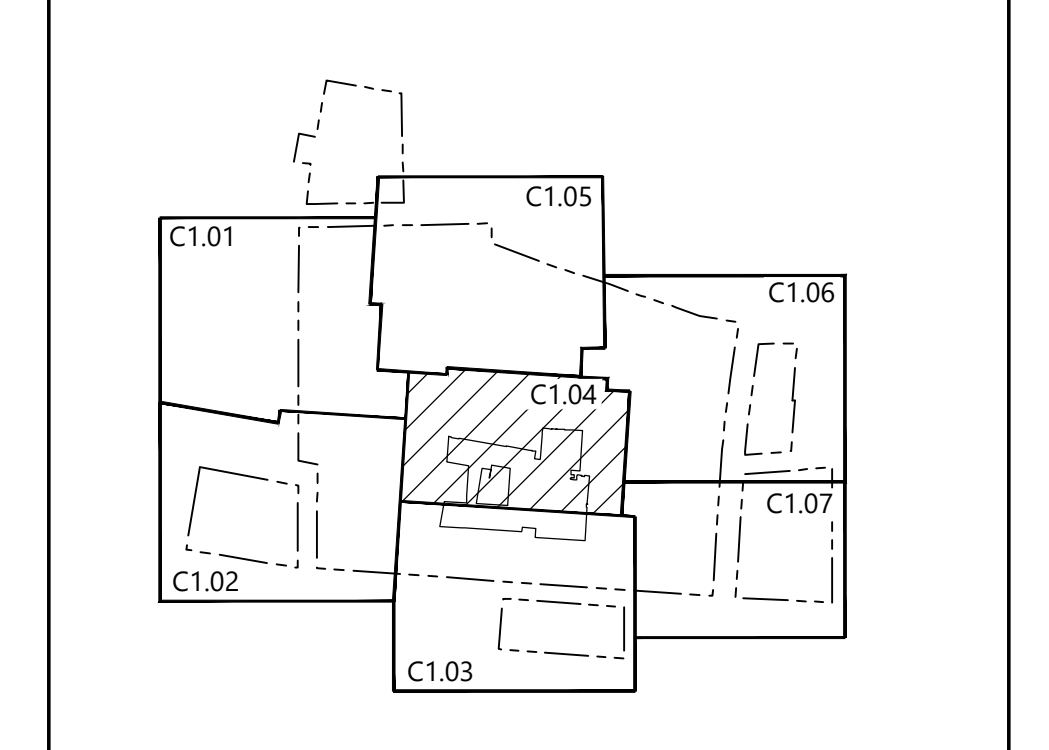
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KEYMAP



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PROJECT NUMBER
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ADDENDUM #1 - 10/31/2024

SHEET TITLE
 SITE PLAN

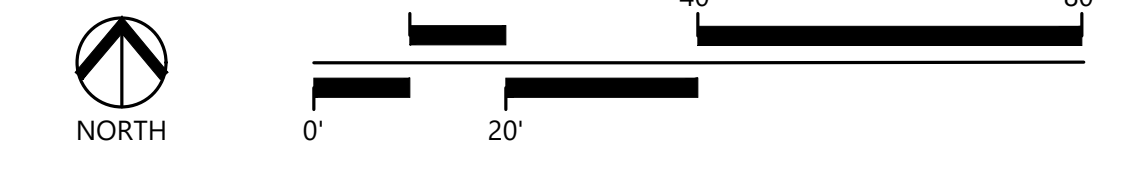
DATE
 10/17/2024

SHEET NUMBER

C1.04

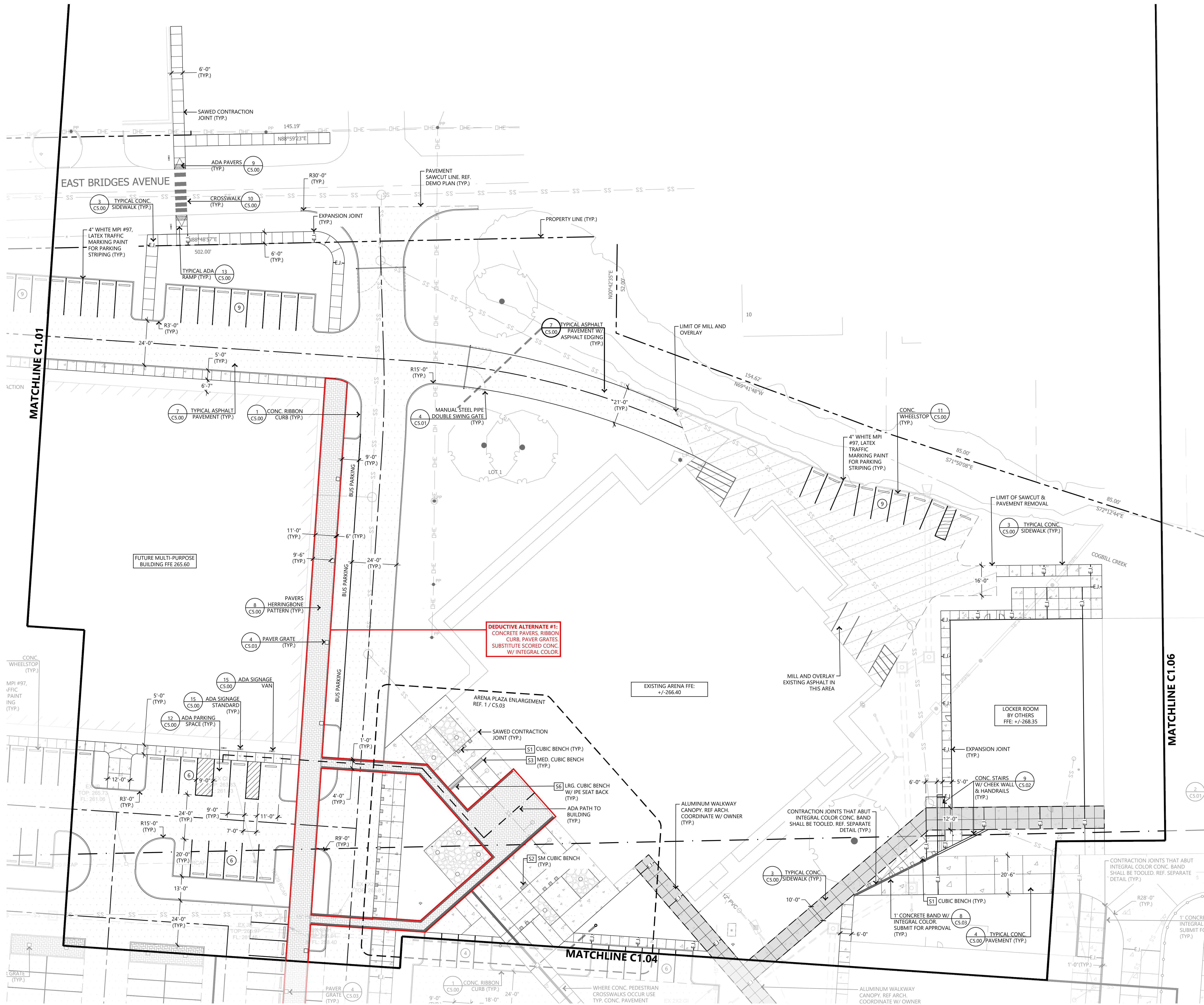
1 SITE PLAN

SCALE: 1" = 20'-0"



DEDUCTIVE ALTERNATE #1:
 CONCRETE PAVERS, RIBBON CURB,
 PAVER GRATES. SUBSTITUTE SCORED
 CONC. W/ INTEGRAL COLOR.

DEDUCTIVE ALTERNATE #1:
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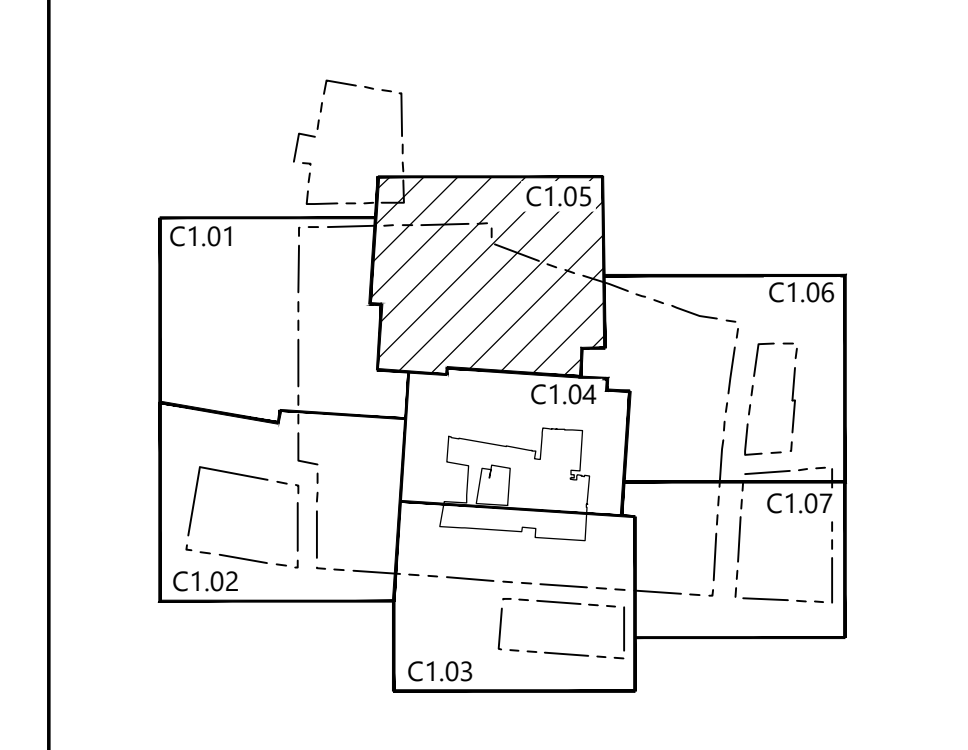
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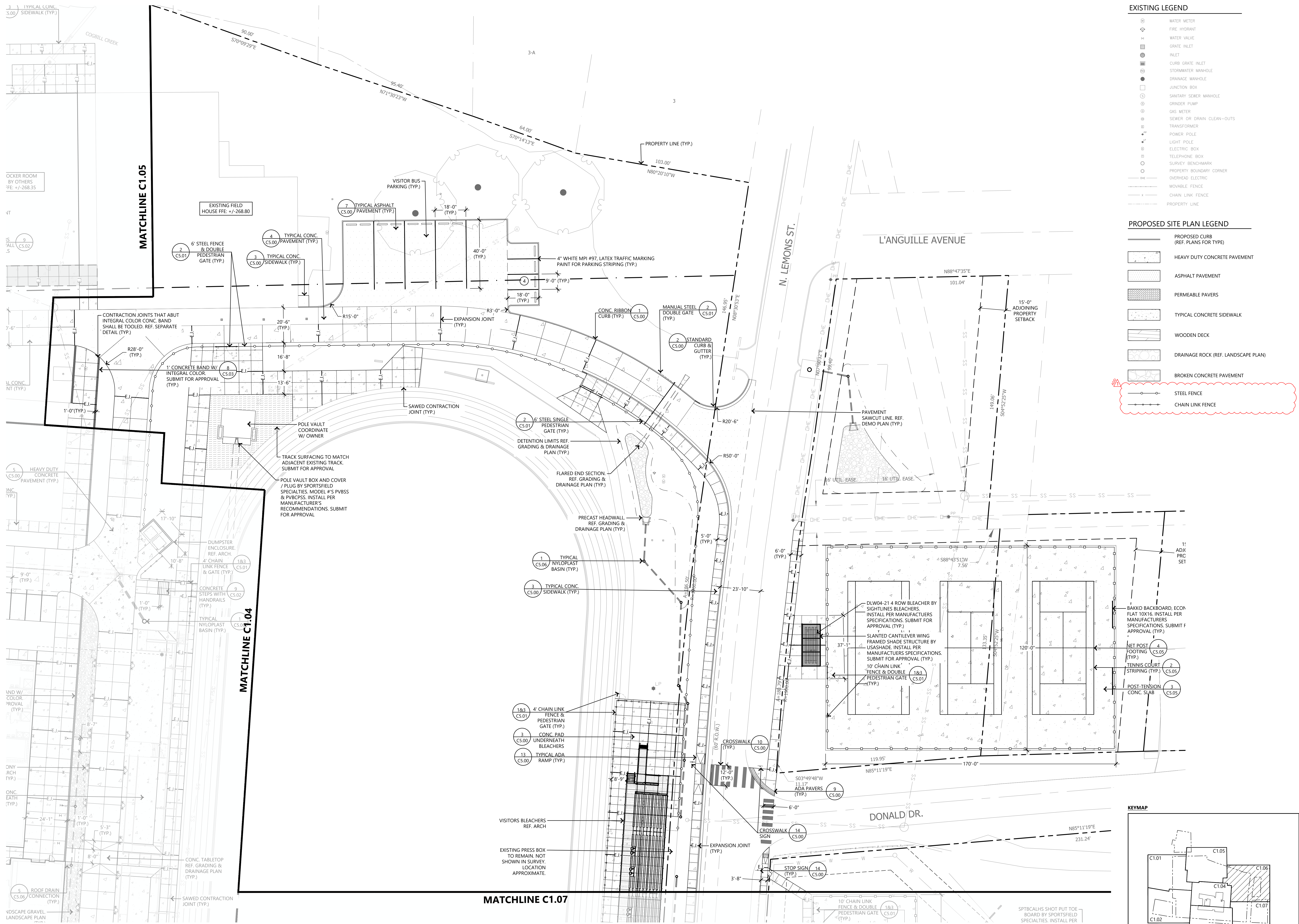
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PROPOSED SITE PLAN LEGEND

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KEYMAP





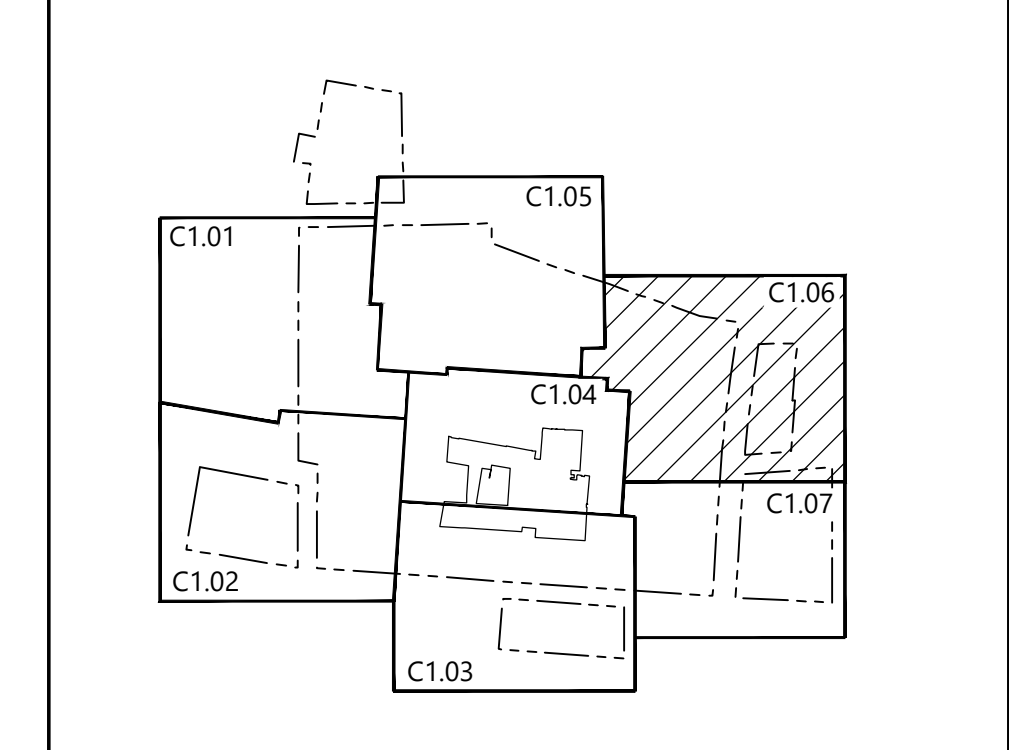
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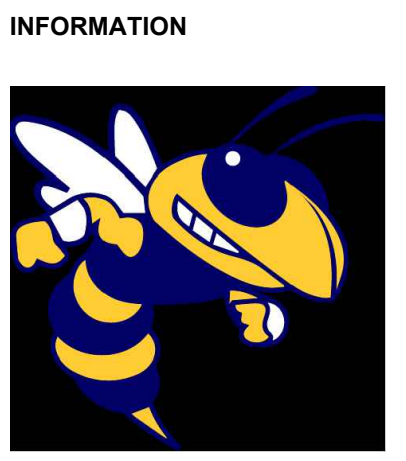


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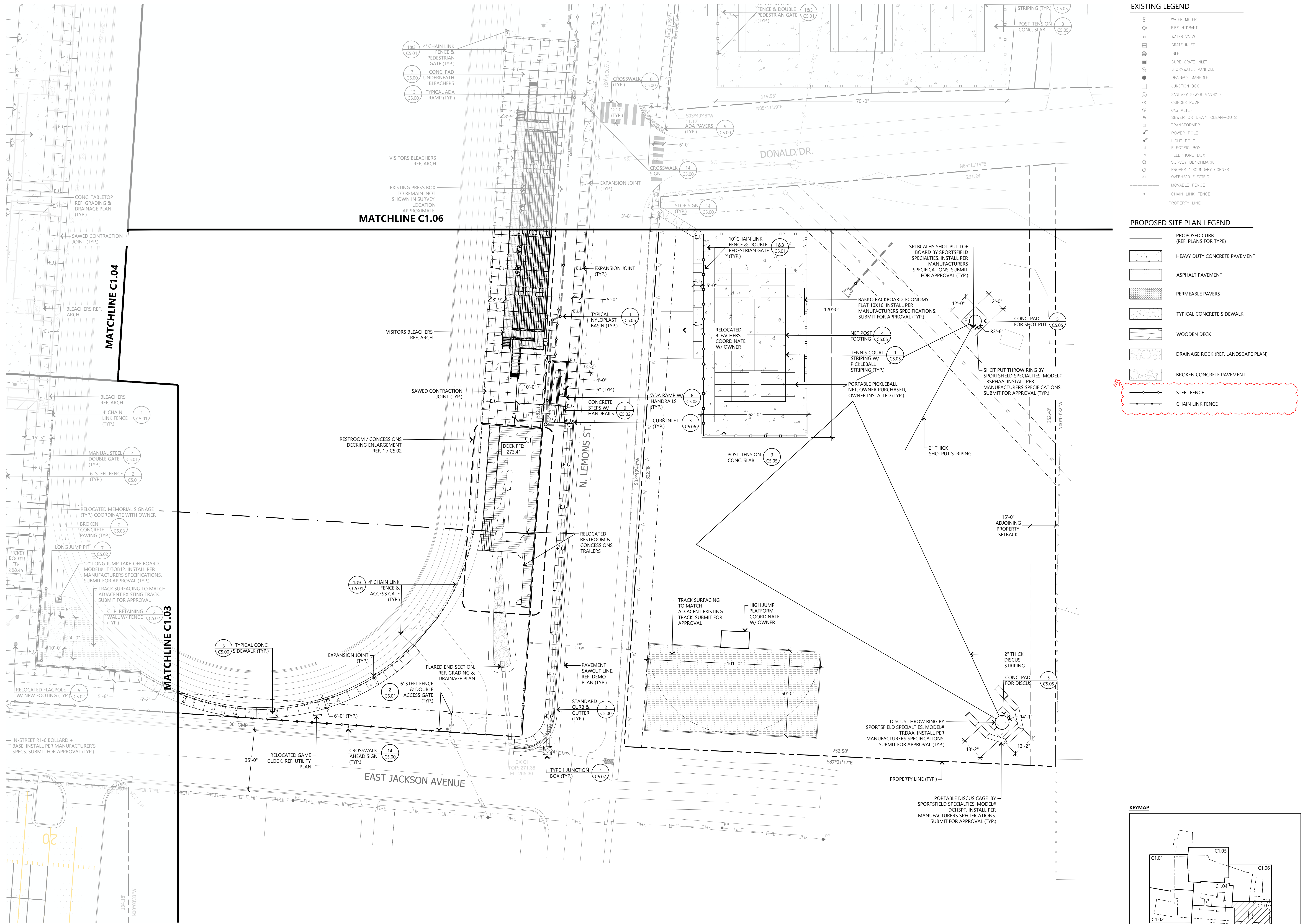


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DATE
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SHEET NUMBER



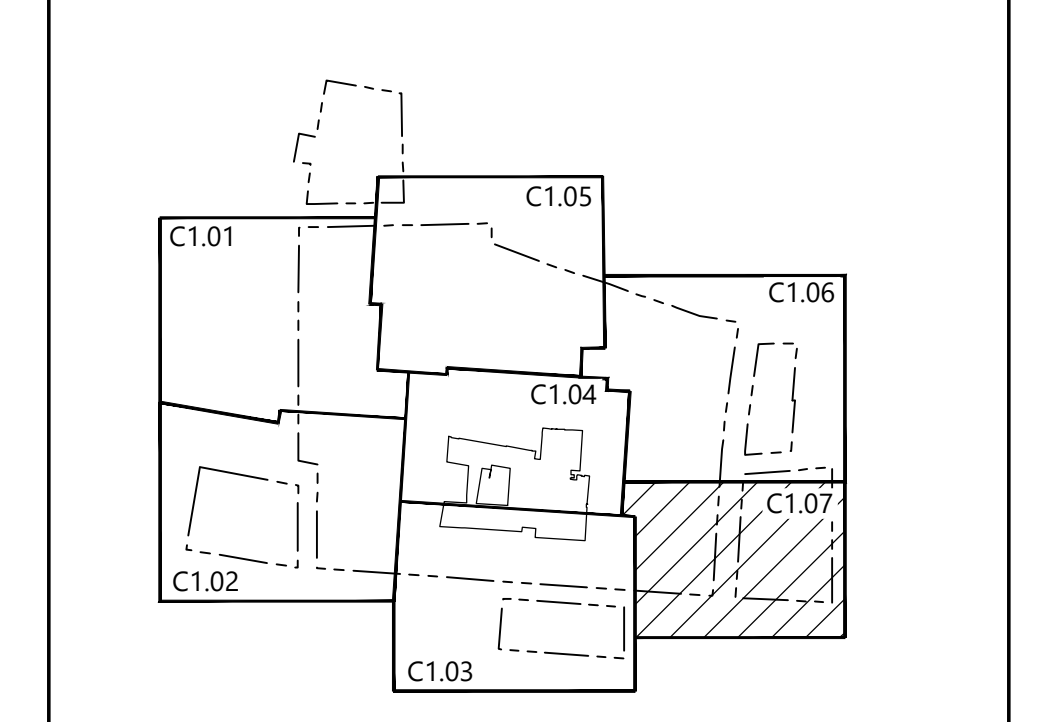
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- ▬ HEAVY DUTY CONCRETE PAVEMENT
- ▬ ASPHALT PAVEMENT
- ▬ PERMEABLE PAVERS
- ▬ TYPICAL CONCRETE SIDEWALK
- ▬ WOODEN DECK
- ▬ DRAINAGE ROCK (REF. LANDSCAPE PLAN)
- ▬ BROKEN CONCRETE PAVEMENT
- ▬ STEEL FENCE
- ▬ CHAIN LINK FENCE

KEYMAP

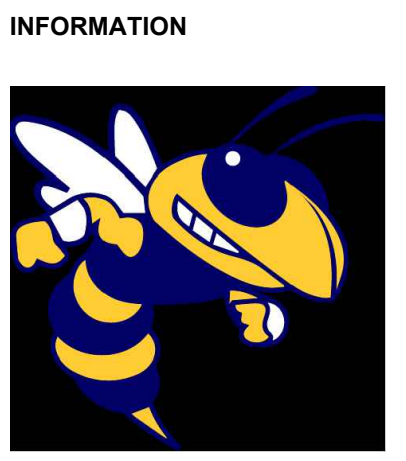


PROJECT NAME
 NEW HIGH SCHOOL
 CAMPUS FOR WYNNE
 SCHOOL DISTRICT

LOCATION
 800 E JACKSON AVE
 WYNNE AR 72396

PROJECT NUMBER
 A-23010.361AC

OWNER
 WYNNE SCHOOL DISTRICT

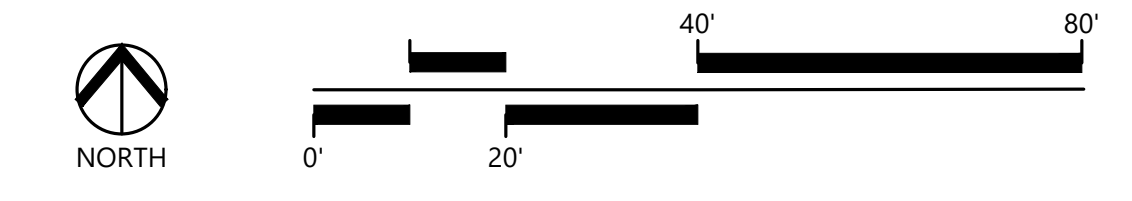


ADDENDUM #1 - 10/31/2024

SHEET TITLE
 SITE PLAN

DATE
 10/17/2024

SHEET NUMBER





PROJECT NAME
NEW HIGH SCHOOL
CAMPUS FOR WYNNE
SCHOOL DISTRICT

LOCATION
800 E JACKSON AVE
WYNNE AR 72396

PROJECT NUMBER
A-23010.361AC

OWNER
WYNNE SCHOOL DISTRICT

INFORMATION



ADDENDUM #1 - 10/31/2024

EXISTING LEGEND

- ⊙ WATER METER
- ⊕ FIRE HYDRANT
- ⊕ WATER VALVE
- ⊕ GRATE INLET
- ⊕ INLET
- ⊕ CURB GRATE INLET
- ⊕ STORMWATER MANHOLE
- ⊕ DRAINAGE MANHOLE
- ⊕ JUNCTION BOX
- ⊕ SANITARY SEWER MANHOLE
- ⊕ GRINDER PUMP
- ⊕ GAS METER
- ⊕ SEWER OR DRAIN CLEAN-OUTS
- ⊕ TRANSFORMER
- ⊕ POWER POLE
- ⊕ LIGHT POLE
- ⊕ ELECTRIC BOX
- ⊕ TELEPHONE BOX
- ⊕ SURVEY BENCHMARK
- ⊕ PROPERTY BOUNDARY CORNER
- ⊕ OVERHEAD ELECTRIC
- ⊕ MOVABLE FENCE
- ⊕ CHAIN LINK FENCE
- ⊕ PROPERTY LINE

PROPOSED UTILITY LEGEND

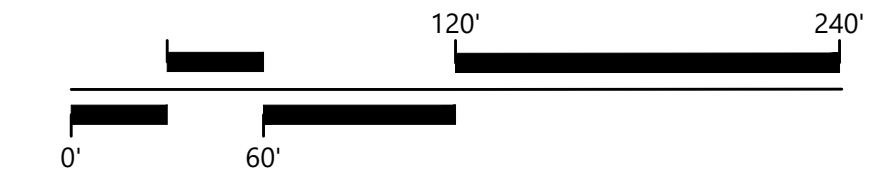
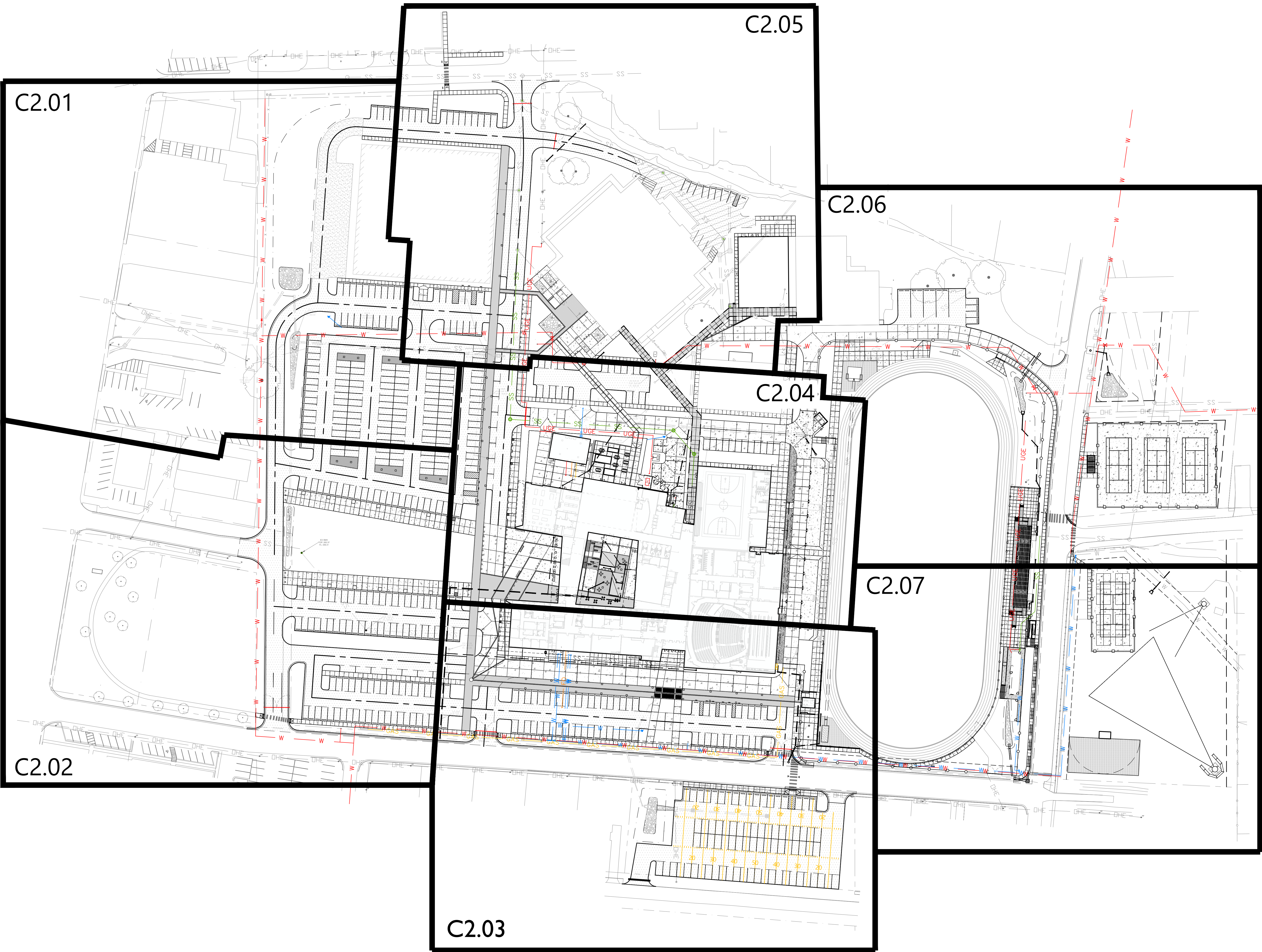
- W WATER LINE
- ⊕ WATER METER
- ⊕ WATER VALVE
- FDC
- ⊕ FIRE HYDRANT
- SS SANITARY SEWER
- UGE UNDERGROUND ELECTRIC LINES/CONDUIT
- OHE OVERHEAD ELECTRIC
- ⊕ TRANSFORMER AND CONCRETE PAD
- FO FIBER LINE
- COMM COMMUNICATION LINE
- GAS GAS LINE
- ⊕ GAS METER

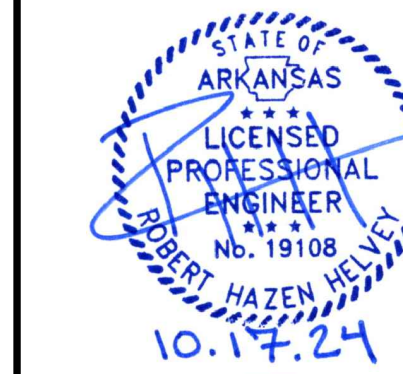
UTILITY NOTES:

1. EXISTING STRUCTURES AND UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND FOR INFORMATION PURPOSES ONLY. ALL STRUCTURES AND UTILITIES MAY NOT BE SHOWN. ALL EXISTING UTILITY LOCATIONS MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION (WHETHER SHOWN OR NOT SHOWN). UTILITY SERVICE MUST BE MAINTAINED DURING AND AFTER CONSTRUCTION.
2. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES.
3. ALL WATER LINE AND SANITARY SEWER WORK MUST BE PERFORMED IN ACCORDANCE WITH (LOCAL JURISDICTION) STANDARD SPECIFICATIONS AND DETAILS, AND SHALL BE COORDINATED WITH LOCAL JURISDICTION.
4. THE CONTRACTOR SHALL COORDINATE THE CONNECTIONS TO THE EXISTING WATER LINES WITH THE LOCAL JURISDICTION.
5. PROVIDE THRUST BLOCKING FOR THE PROPOSED WATER LINES AS SHOWN ON THE DETAIL SHEETS AND AS REQUIRED BY THE LOCAL JURISDICTION.
6. ALL WATER AND SEWER LINES AND SERVICES CROSSING ROADWAYS ARE TO BE BACKFILLED WITH COMPACTED CLASS 7 AGGREGATE BASE COURSE.
7. ALL WATER MAINS SHALL BE A MINIMUM OF 3-FT BELOW FINISHED GRADE AND A MINIMUM OF 1-FT BELOW STORM DRAINS.
8. PER ARKANSAS RULES PERTAINING TO PUBLIC WATER SYSTEMS SECTION XIV A, THE OPERATING ROUTINE SHALL INCLUDE NECESSARY PROTECTIVE MEASURES TO DETECT AND REMOVE OR DESTROY ANY CONTAMINANT OF CONCERN OR REGULATION THAT MIGHT ENTER THE DISTRIBUTION SYSTEM. EVERY PRECAUTION MUST BE TAKEN AGAINST THE POSSIBILITY OF SEWAGE CONTAMINATION OF THE WATER IN THE DISTRIBUTION SYSTEM. WATER MAINS AND SANITARY SEWERS SHALL BE CONSTRUCTED AS FAR APART AS PRACTICABLE, AND SHALL BE SEPARATED BY UNDISTURBED AND COMPACTED EARTH. A MINIMUM HORIZONTAL DISTANCE OF TEN FEET SHOULD BE MAINTAINED BETWEEN WATER LINES AND SEWER LINES OR OTHER SOURCES OF CONTAMINATION. WATER LINES AND SEWERS SHALL NOT BE LAID IN THE SAME TRENCH EXCEPT ON THE WRITTEN APPROVAL OF THE ARKANSAS DEPARTMENT OF HEALTH. WATER MAINS NECESSARILY IN CLOSE PROXIMITY TO SEWERS MUST BE PLACED SO THAT THE BOTTOM OF THE WATER LINE WILL BE AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER LINE AT ITS HIGHEST POINT. IF THIS DISTANCE MUST UNAVOIDABLY BE REDUCED, THE WATER LINE OR THE SEWER LINE MUST BE ENCASED IN WATERTIGHT PIPE WITH SEALED WATERTIGHT ENDS EXTENDING AT LEAST TEN FEET EITHER SIDE OF THE CROSSING. ANY JOINT IN THE ENCASEMENT PIPE IS TO BE MECHANICALLY RESTRAINED. THE ENCASEMENT PIPE MAY BE VENTED TO THE SURFACE IF CARRYING WATER OR SEWER UNDER PRESSURE. WHERE A WATER LINE MUST UNAVOIDABLY PASS BENEATH THE SEWER LINE, AT LEAST 18 INCHES OF SEPARATION MUST BE MAINTAINED BETWEEN THE OUTSIDE OF THE TWO PIPES IN ADDITION TO THE PRECEDING ENCASEMENT REQUIREMENT. EXCEPTIONS TO THIS MUST BE APPROVED IN WRITING BY THE ARKANSAS DEPARTMENT OF HEALTH. A MINIMUM HORIZONTAL DISTANCE OF THREE FEET SHALL BE MAINTAINED BETWEEN WATER LINES AND OTHER UNDERGROUND UTILITIES OF A NONSANITARY NATURE (GAS, ELECTRIC, ETC.). EXCEPTIONS TO THIS MUST BE APPROVED IN WRITING BY THE ARKANSAS DEPARTMENT OF HEALTH AND HUMAN SERVICES.
9. ALL SANITARY SEWER WORK SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE LOCAL JURISDICTIONS STANDARD SPECIFICATIONS AND DETAILS AND SHALL BE COORDINATED WITH THE LOCAL JURISDICTION.

EXISTING UNDERGROUND UTILITIES NOTE:

1. THE SURVEY DID NOT INCLUDE ANY EXISTING UNDERGROUND UTILITIES. THE FEW EXISTING UNDERGROUND UTILITIES THAT ARE SHOWN ON THESE PLANS SHOULD BE CONSIDERED APPROXIMATE LOCATIONS.
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3. THERE IS A KNOWN EXISTING WATER MAIN (SHOWN IN RED ON THESE PLANS) THAT IS ROUTED EAST-WEST THROUGH THE PROPERTY. THESE RED WATER LINES ARE APPROXIMATIONS FROM CITY WATER MAPS AND ARE NOT TO BE CONSIDERED AS CLOSE APPROXIMATIONS.
4. THE CONTRACTOR SHALL TAKE ANY AND ALL PRECAUTIONS TO PREVENT DAMAGE OF EXISTING UNDERGROUND UTILITIES.





PROJECT NAME
NEW HIGH SCHOOL
CAMPUS FOR WYNNE
SCHOOL DISTRICT

LOCATION
800 E JACKSON AVE
WYNNE AR 72396

PROJECT NUMBER
A-23010.361AC

OWNER
WYNNE SCHOOL DISTRICT

INFORMATION



ADDENDUM #1 - 10/31/2024

EXISTING LEGEND

- WATER METER
- ⊕ FIRE HYDRANT
- ⊕ WATER VALVE
- ⊕ GRATE INLET
- ⊕ INLET
- ⊕ CURB GRATE INLET
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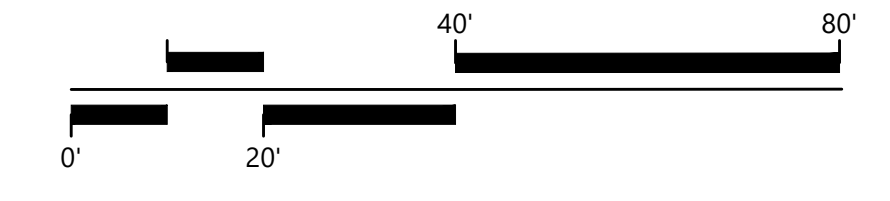
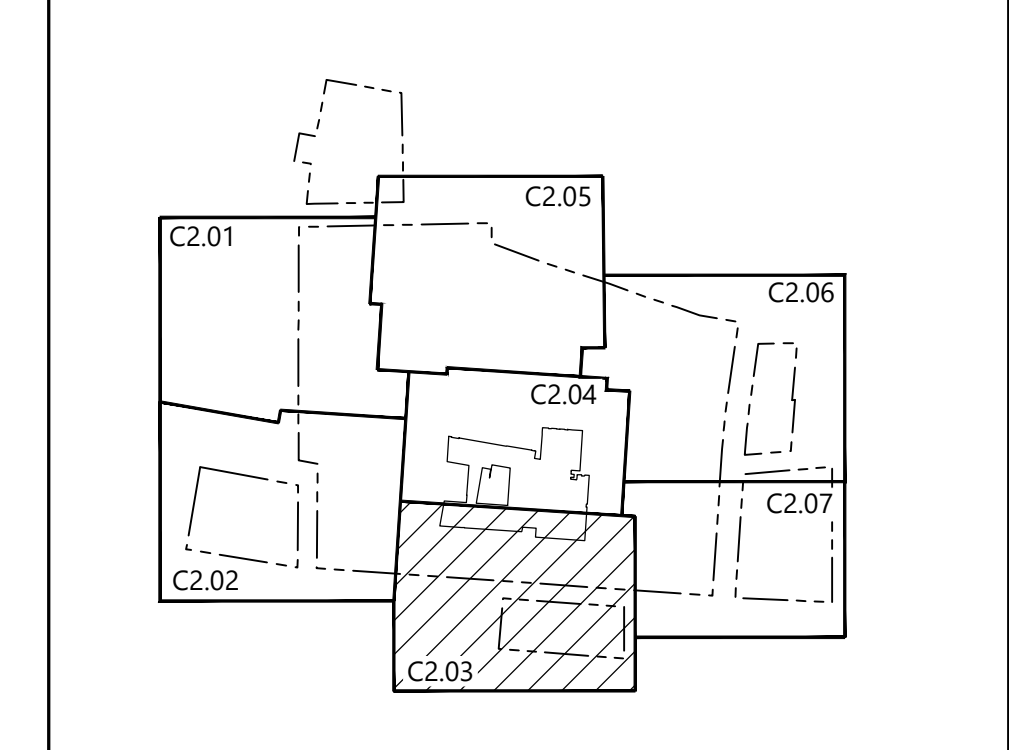
PROPOSED UTILITY LEGEND

- W — WATER LINE
- ⊕ WATER METER
- ⊕ WATER VALVE
- ⊕ FDC
- ⊕ FIRE HYDRANT
- SS — SANITARY SEWER
- UGE — UNDERGROUND ELECTRIC LINES/CONDUIT
- OHE — OVERHEAD ELECTRIC
- ⊕ TRANSFORMER AND CONCRETE PAD
- FO — FIBER LINE
- COMM — COMMUNICATION LINE
- GAS — GAS LINE
- ⊕ GAS METER



NOTE:
EXISTING WATER MAIN ROUTING/LOCATIONS SHOWN IN RED WERE NOT SURVEYED AND ARE APPROXIMATED BASED ON CITY MAPS. THE CONTRACTOR SHALL FIELD VERIFY LOCATION AND PROTECT & MAINTAIN THE EXISTING WATER MAINS ON AND AROUND THE PROJECT SITE AND PROVIDE THE AE WITH LOCATIONS OF VALVES, BENDS, ETC. NOT SHOWN ON THE SURVEY. THE CONTRACTOR SHALL PROVIDE THE AE WITH ELEVATION SHOTS WHEN THE MAIN IS LOCATED.

KEYMAP





PROJECT NAME
NEW HIGH SCHOOL
CAMPUS FOR WYNNE
SCHOOL DISTRICT

LOCATION
800 E JACKSON AVE
WYNNE AR 72396

PROJECT NUMBER
A-23010.361AC

OWNER
WYNNE SCHOOL DISTRICT

INFORMATION



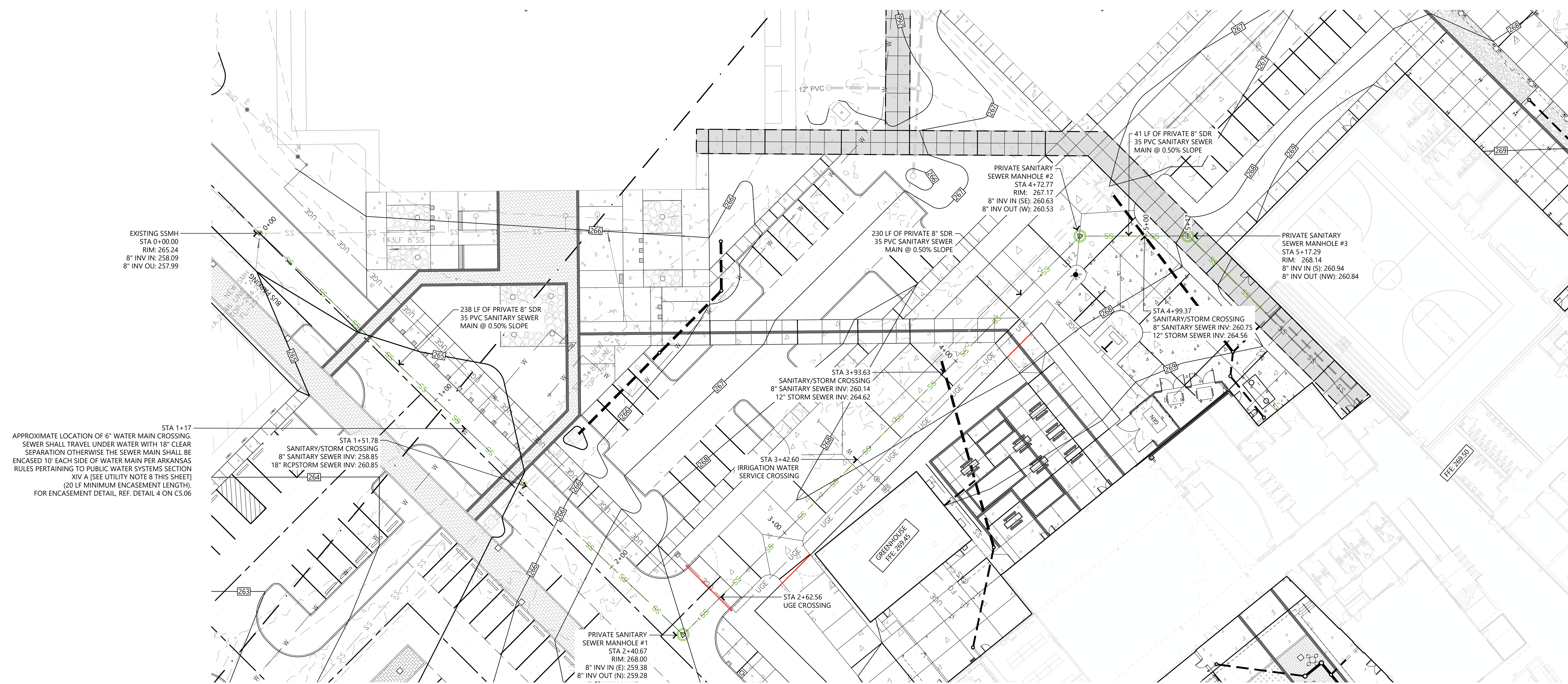
ADDENDUM #1 - 10/31/2024

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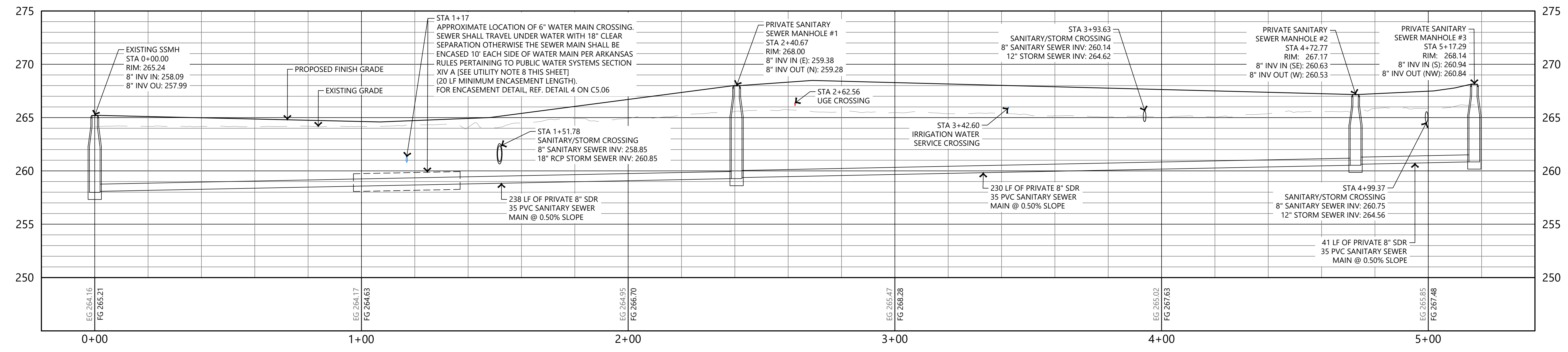
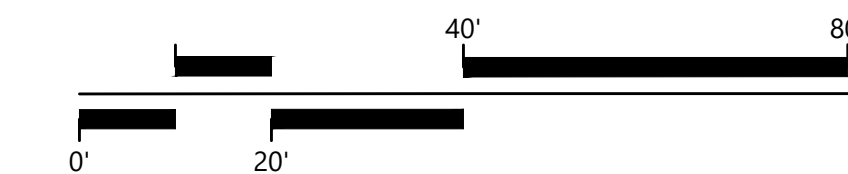
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1 PRIVATE SANITARY SEWER MAIN PLAN

SCALE: 1" = 20'-0"



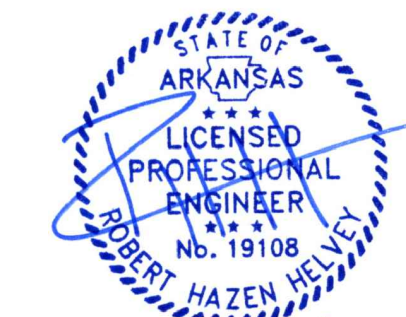
2 PRIVATE SANITARY SEWER MAIN PROFILE

HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 5'-0"

SHEET TITLE
SANITARY SEWER
PLAN & PROFILE

DATE
10/17/2024

SHEET NUMBER



PROJECT NAME
NEW HIGH SCHOOL
CAMPUS FOR WYNNE
SCHOOL DISTRICT

LOCATION
800 E JACKSON AVE
WYNNE AR 72396

PROJECT NUMBER
A-23010.361AC

OWNER
WYNNE SCHOOL DISTRICT



ADDENDUM #1 - 10/31/2024

SHEET TITLE
GRADING & DRAINAGE
PLAN

DATE
10/17/2024

SHEET NUMBER

C3.04

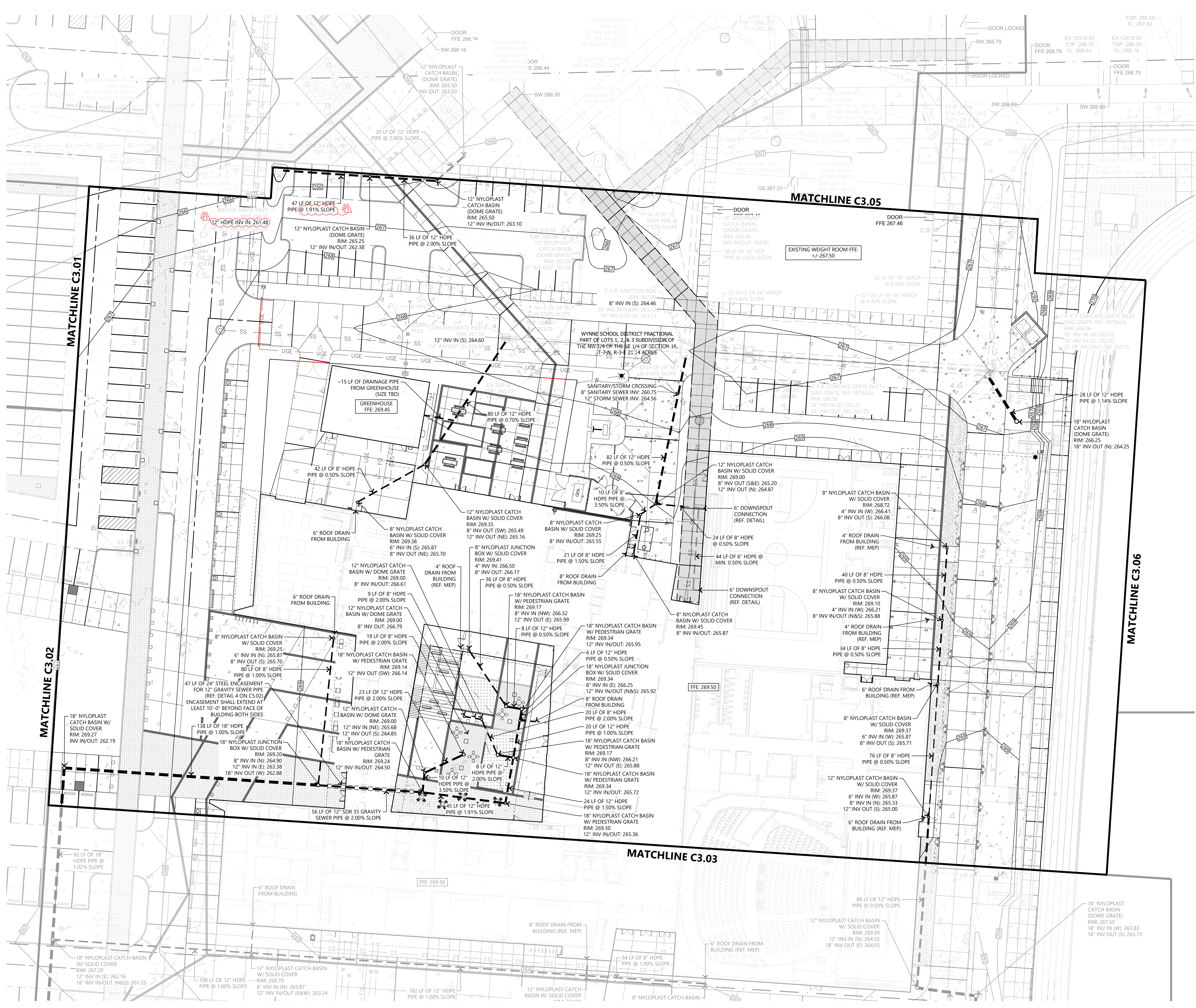
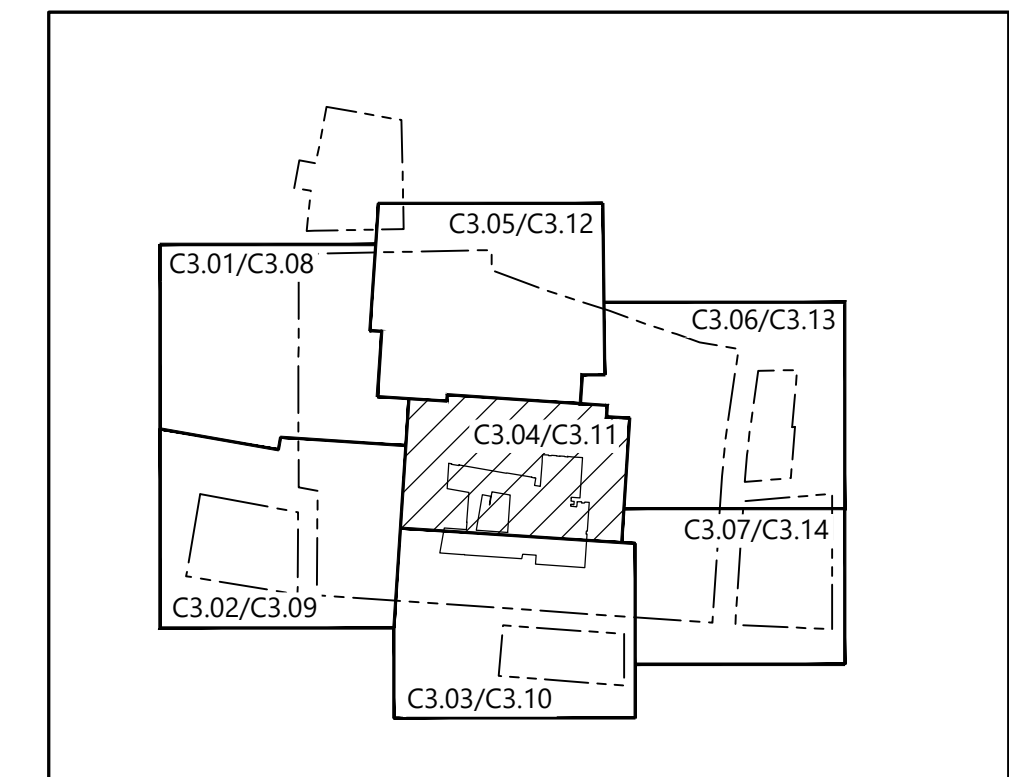
EXISTING LEGEND

- WATER METER
- FIRE HYDRANT
- WATER VALVE
- GRATE INLET
- INLET
- CURB GRATE INLET
- STORMWATER MANHOLE
- DRAINAGE MANHOLE
- JUNCTION BOX
- SANITARY SEWER MANHOLE
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- TRANSFORMER
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- TELEPHONE BOX
- SURVEY BENCHMARK
- PROPERTY BOUNDARY CORNER
- OVERHEAD ELECTRIC
- MOVABLE FENCE
- CHAIN LINK FENCE
- PROPERTY LINE

PROPOSED GRADING & DRAINAGE LEGEND

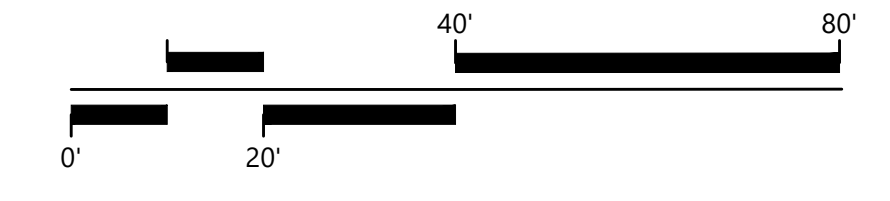
- CONCAVE GRATE INLET
- JUNCTION BOX
- NYLOPLAST CATCH BASIN
- ▭ FLARED END SECTION
- ▬ HDPE STORM PIPE
- ▬ PERFORATED HDPE STORM PIPE
- ▬ RCP/RCHPE STORM PIPE
- ▬ PROPOSED 1 FT. CONTOUR ELEVATION
- ▬ PROPOSED 5 FT. CONTOUR ELEVATION
- SPOT ELEVATIONS
- ▬ FLOWLINE

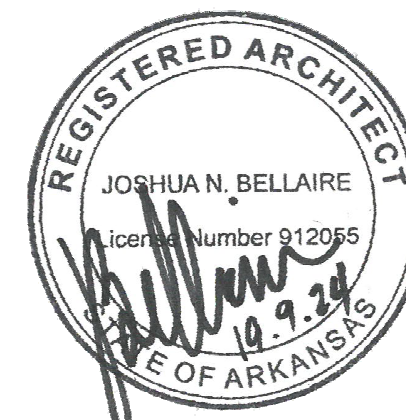
KEYMAP



1 GRADING & DRAINAGE PLAN

SCALE: 1" = 20'-0"





PROJECT NAME

NEW HIGH SCHOOL
 CAMPUS FOR WYNNE
 SCHOOL DISTRICT

800 E JACKSON AVE
 WYNNE AR 72386

LOCATION

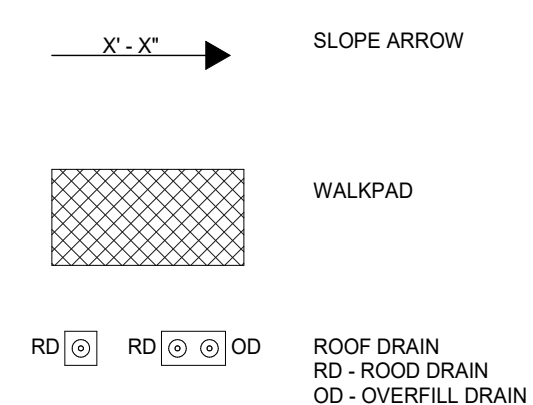
PROJECT NUMBER
 A-23010.361AC

OWNER

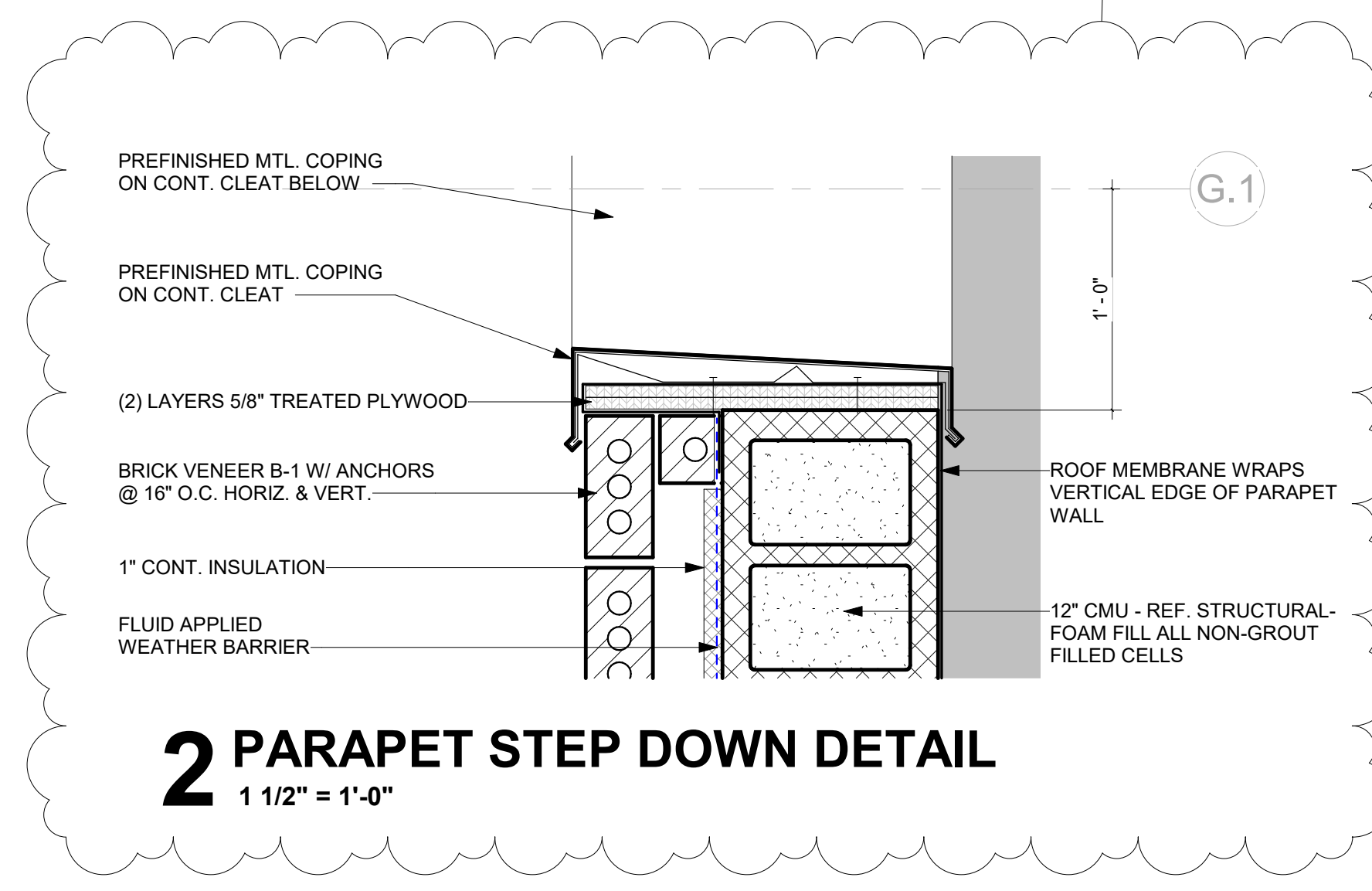
WYNNE SCHOOL DISTRICT

INFORMATION

ADDENDUM #1 - 10/31/2024



NOTE: CONTRACTOR TO REF.
 SPECIFICATIONS FOR DED. BID ALT. FOR
 ROOF COMPOSITION



1 ROOF PLAN
 1/16" = 1'-0"

SHEET TITLE

ROOF PLAN

DATE

10/10/2024

SHEET NUMBER

A123



**NOT FOR
CONSTRUCTION**

PROJECT NAME

WSD - NEW SENIOR HIGH SCHOOL

LOCATION

800 E JACKSON AVE
WYNNIE AR 72396

PROJECT NUMBER

-

DEVELOPER/OWNER

WYNNIE SCHOOL DISTRICT

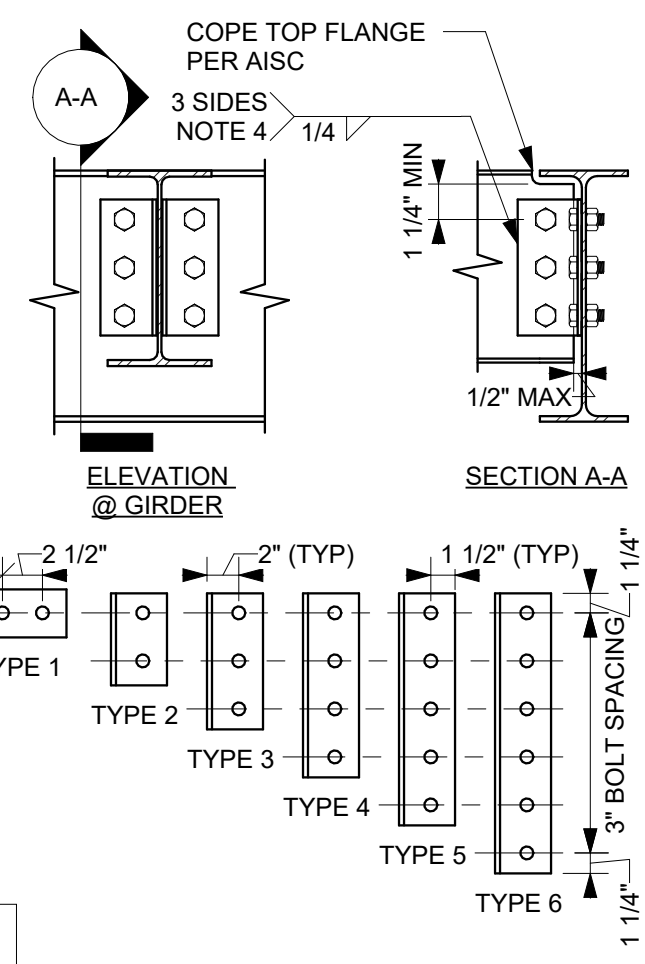
INFORMATION



TYPE	CAPACITY	SINGLE SHEAR PLATE SIZE	# OF BOLTS	BEAM SIZE
1	11 kips	L6x4x3/8	2	W6, C6
2	21 kips	L3 1/2x3 1/2x5/16	2	W8, W10, C8, C10
3	38 kips	L3 1/2x3 1/2x5/16	3	W12, W14, C12
4	63 kips	L3 1/2x3 1/2x5/16	4	W16, W18
5	109 kips	L3 1/2x3 1/2x5/16	5	W21
6	148 kips	L3 1/2x3 1/2x5/16	6	W24

- NOTES:**
- ALL BOLTS SHALL BE ASTM A325 BEARING TYPE BOLTS.
 - ALL HOLES SHALL BE STANDARD HOLES.
 - CONNECTION CAPACITIES ARE LRFD FACTORED CAPACITIES BASED ON THE SMALLEST COPED BEAM WEB THICKNESS OF EACH BEAM DEPTH.
 - ANGLES MAY BE SHOP WELDED TO SUPPORTED BEAM AT CONTRACTOR'S OPTION. IF CONNECTION IS WELDED, DO NOT PROVIDE BOLT HOLES IN ANGLE LEGS TO RECEIVE WELDS.
 - SINGLE CLIP ANGLE CONNECTIONS ARE NOT ALLOWED.
 - BEAM-TO-BEAM SHOWN, BEAM-TO-COLUMN SIMILAR.

NOTE:
CONNECTIONS PROVIDED HERE ARE FOR REPRESENTATION PURPOSES ONLY. ACTUAL CONNECTION REQUIREMENTS MAY VARY. COORD.

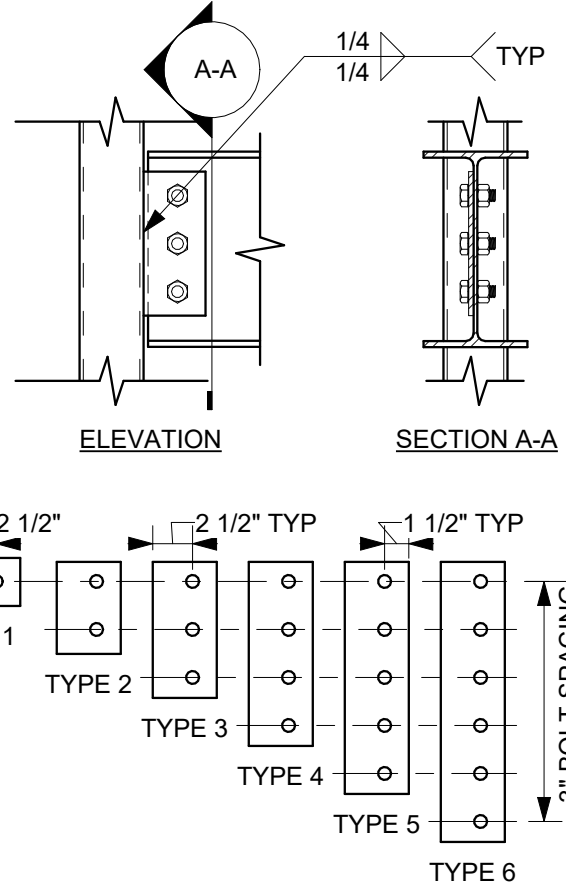


1 TYP STEEL SHEAR DOUBLE ANGLE CONN SCHED
1" = 1'-0"

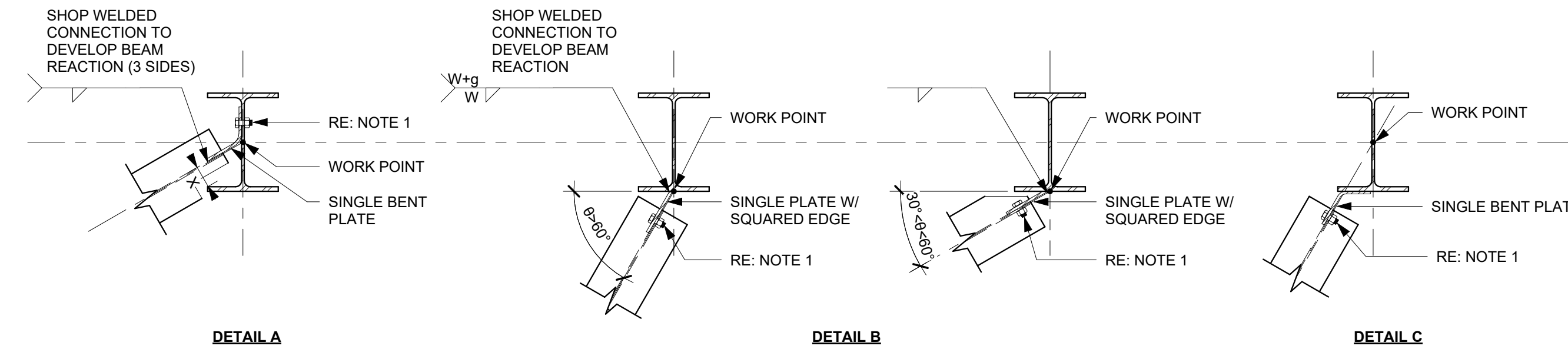
TYPE	CAPACITY	SINGLE SHEAR PLATE SIZE	# OF BOLTS	BEAM SIZE
1	10 kips	PL 1/2" x 6" x 3"	2	W6, C4, C6
2	30 kips	PL 3/8" x 4" x 5 1/2"	2	W8, W10, C8, C10
3	47 kips	PL 3/8" x 4" x 8 1/2"	3	W12, W14, C12
4	63 kips	PL 3/8" x 4" x 11 1/2"	4	W16, W18
5	79 kips	PL 3/8" x 4" x 1'-2 1/2"	5	W21
6	95 kips	PL 3/8" x 4" x 1'-5 1/2"	6	W24

- NOTES:**
- ALL BOLTS SHALL BE ASTM A325 BEARING TYPE BOLTS.
 - ALL HOLES SHALL BE STANDARD HOLES.
 - DO NOT COPE BEAMS AT STANDARD SHEAR TAB CONNECTIONS.
 - ALL CONNECTION CAPACITIES ARE LRFD FACTORED CAPACITIES BASED ON THE SMALLEST BEAM WEB THICKNESS OF EACH BEAM DEPTH.

NOTE:
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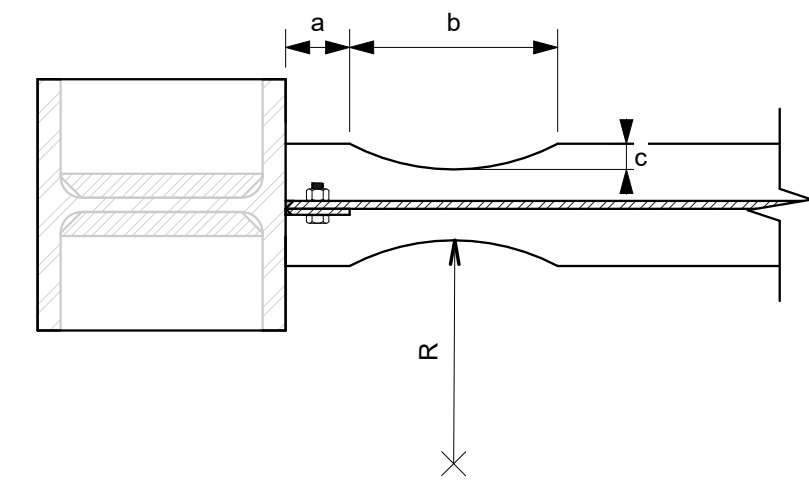
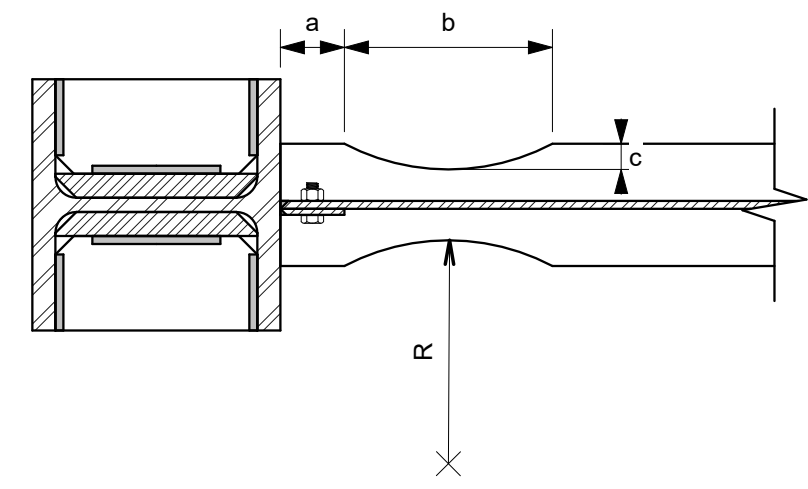


2 TYP STEEL SHEAR TAB CONN SCHED
1" = 1'-0"



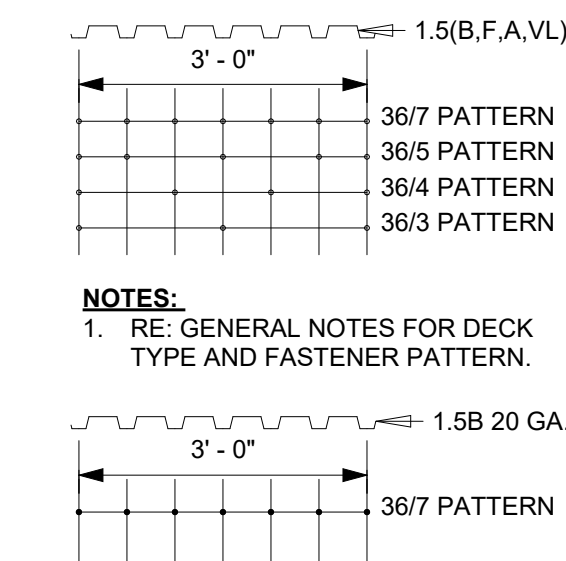
- NOTES:**
- SNUG-TIGHTENED BOLTED CONNECTION USING A325 BOLTS IN HORIZONTAL SHORT-SLOTTED HOLES. RESISTANCE BY BOLTS TO SHEAR SHALL BE BY SHEAR/BEARING.
 - FABRICATOR SHALL ASSUME WORKPOINT TO BE LOCATED AT CENTERLINE OF COLUMN FOR VALUES OF X<1" AND PROVIDE CONNECTION AS SPECIFIED IN DETAIL A. FABRICATOR SHALL ASSUME LOCATION OF WORKPOINT TO BE AT COLUMN FLANGE-WEB INTERSECTION AND PROVIDE CONNECTION AS SPECIFIED IN DETAIL B WHERE CLEARANCE DOES NOT EXIST FOR DETAIL A TO APPLY. FABRICATOR SHALL APPLY DETAIL C ONLY WHEN LOCATION OF WORKPOINT MUST BE LOCATED AT COLUMN CENTERLINE AND CLEARANCE DOES NOT EXIST FOR DETAIL A TO APPLY. LOCATION OF WORKPOINTS SHALL BE APPROVED BY THE ENGINEER PRIOR TO SHOP DRAWING SUBMITTAL. DETAIL C SHALL NOT BE USED FOR LOADS GREATER THAN 40 KIPS.
 - SINGLE PLATE CONNECTION MAY BE USED ONLY WHERE WORKPOINT IS AT INTERSECTION OF COLUMN FLANGE AND WEB.
 - SINGLE BENT PLATES SHALL BE DESIGNED FOLLOWING PROCEDURES OUTLINED IN THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
 - REFER TO SPECIFICATIONS FOR CONNECTION DESIGN CRITERIA.

3 TYP STEEL SKEWED SHEAR CONN. AT COLUMN
3/4" = 1'-0"



BEAM	COLUMN	REDUCED BEAM SECTION (RBS) SCHEDULE								
		SHEAR TAB # BOLTS	DOUBLER PLATES t _d W _{d1} W _{d2}	CONTINUITY PLATES t _c	RBS DIMENSIONS a b c R					
W12X35	W10X100	3	3/8"	1/4"	1/4"	3/8"	4"	9"	1.20"	8.47"
	W12X120									
	W14X132									
W14X38	W10X100	3	3/8"	1/4"	1/4"	3/8"	4"	10"	1.38"	9.72"
	W12X120									
	W14X132									
W14X48	W14X132	3	1 1/2"	3/8"	1/4"	3/8"	4"	10"	1.57"	8.74"
	W14X132									
	W14X145									
W16X89	W14X145	4	1 1/2"	3/8"	1/4"	1"	6"	12"	1.98"	10.09"
	W14X193									
	W12X120									
W18X60	W14X132	5	1 1/2"	3/8"	1/4"	1/2"	4"	12"	1.50"	12.10"
	W14X193									
	W12X120									
W18X71	W14X132	5	1 1/2"	3/8"	1/4"	1/2"	4"	13"	1.61"	13.96"
	W14X193									
	W12X120									
W27X94	W14X193	6	1 1/2"	3/8"	1/4"	3/4"	6"	18"	2.25"	19.20"

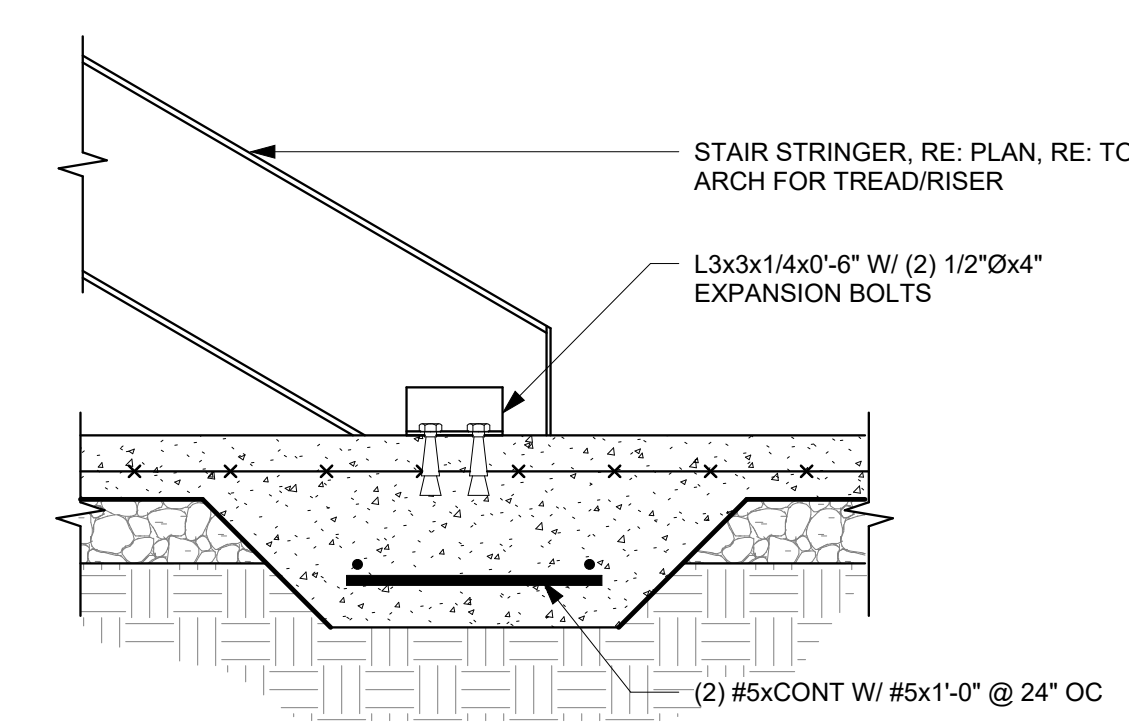
- NOTES:**
- t_d = DOUBLER PLATE THICKNESS
 - W_{d1} = WELD OF DOUBLER PLATE TO COLUMN FLANGES
 - W_{d2} = WELD OF DOUBLER PLATE TO COLUMN WEB
 - t_c = CONTINUITY PLATE THICKNESS



DECK ATTACHMENT SCHEDULE		
ZONE	WELD/SCREW PATTERN	SIDE LAP REQ.
AUDITORIUM	5/8" Ø PUDDLE WELDS, 36/7	(9) #10 SCREWS/SPAN
AREA A NORTH	#12 SCREWS, 36/7	(3) #10 SCREWS/SPAN
AREA A SOUTH	3/4" Ø PUDDLE WELDS, 36/7	(18) #14 SCREWS/SPAN

- NOTES:**
- ATTACHMENT SIDE LAPS SHALL BE #10 TEK SCREWS, U.N.O.
 - ATTACHMENT AROUND OPENINGS SHALL BE WELDS/SCREWS PER SCHEDULE @ 8" OC.
 - AT ROOF PERIMETER, PROVIDE WELDS/SCREWS PER SCHEDULE @ 6" OC.
 - PROVIDE A MINIMUM END LAP OF 3" (TYP).
 - DECK SHALL BEAR 2 1/2", MIN ON STRUCTURAL STEEL UNLESS NOTED OTHERWISE ON PLAN.
 - METAL DECKING SHALL BE CONTINUOUS OVER AT LEAST TWO SUPPORTS.

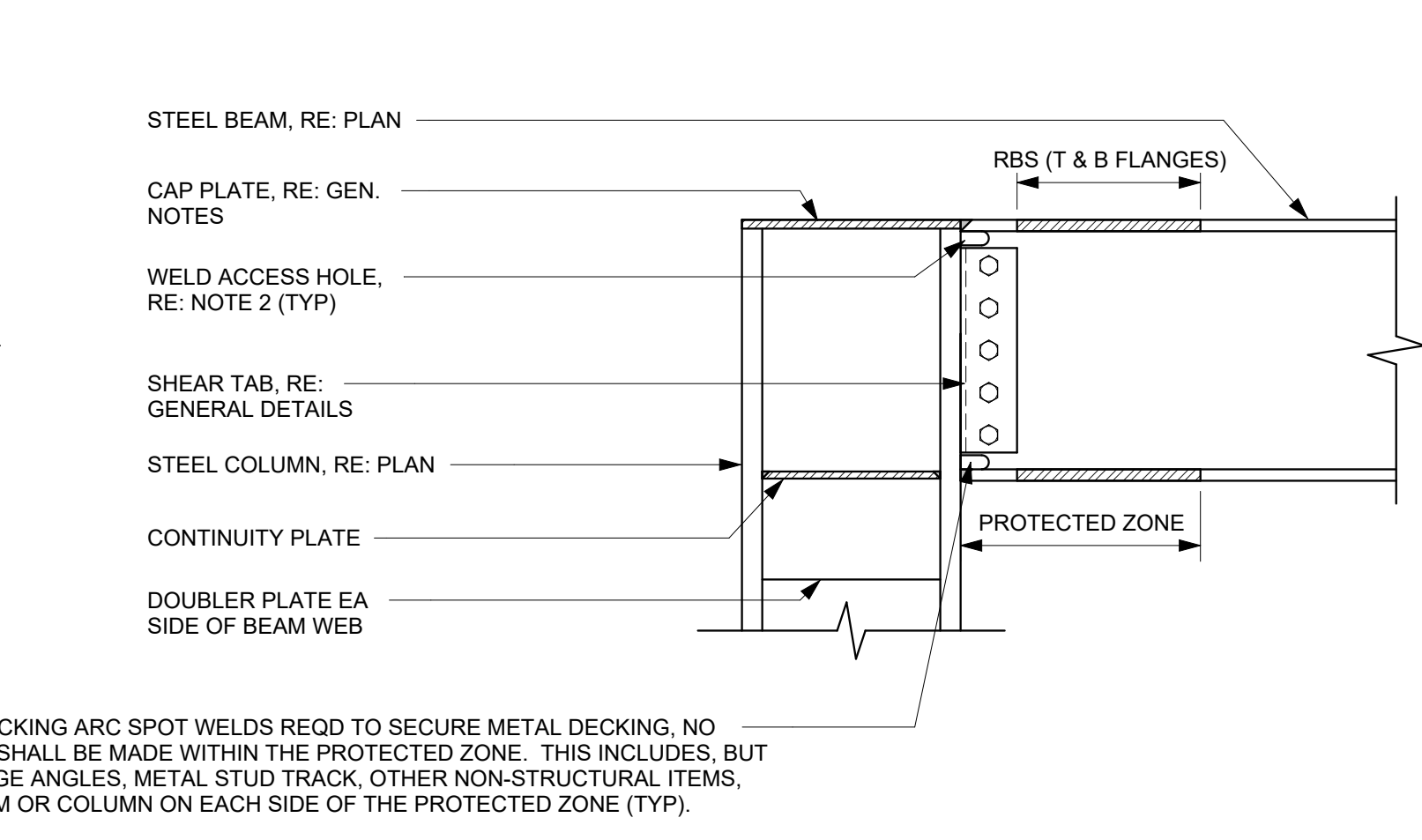
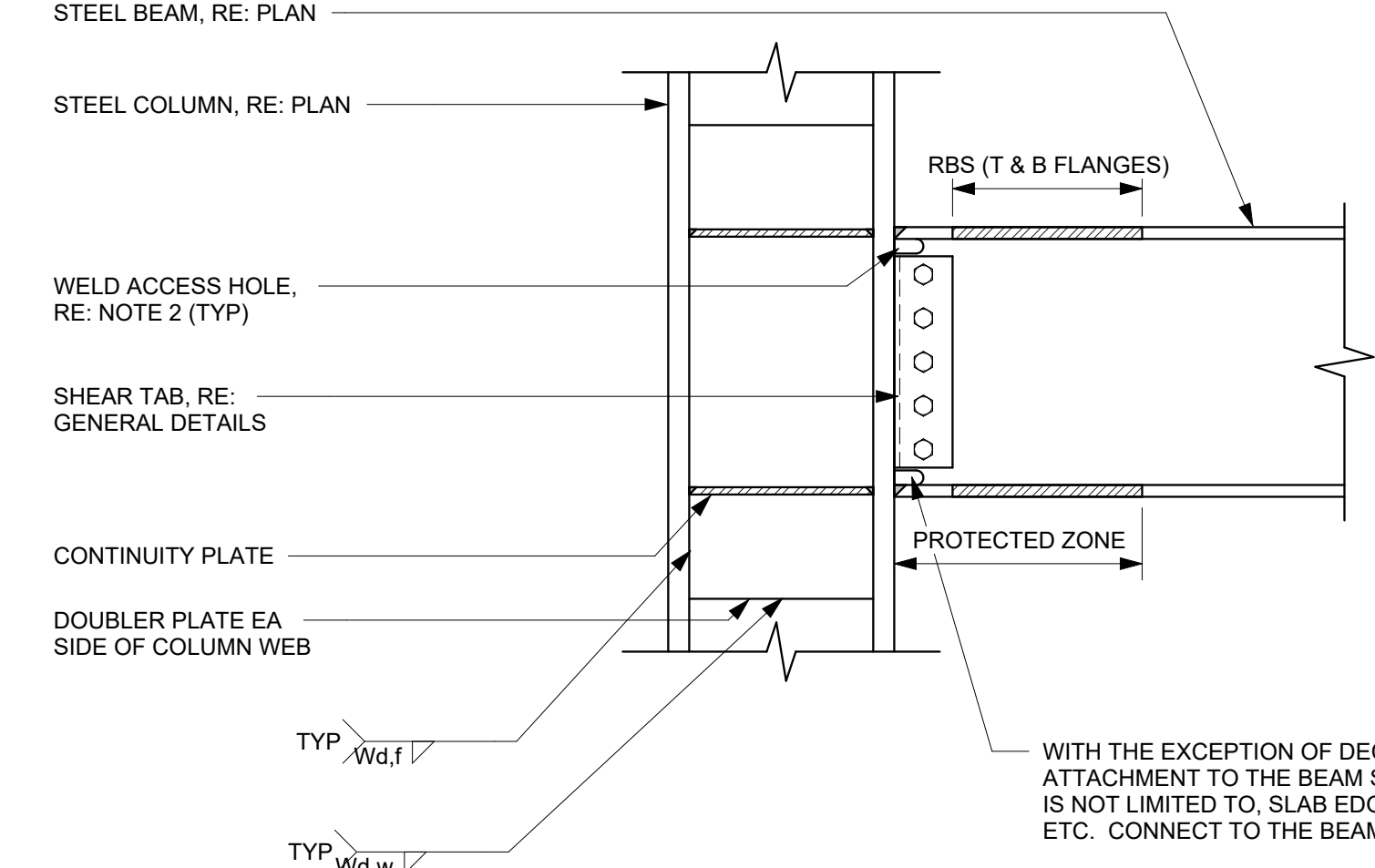
5 TYP STEEL METAL DECK FASTENER PATTERN
1/2" = 1'-0"



- NOTE:**
1. EXTEND THICKENED EDGE 6" PAST STRINGER FACE.

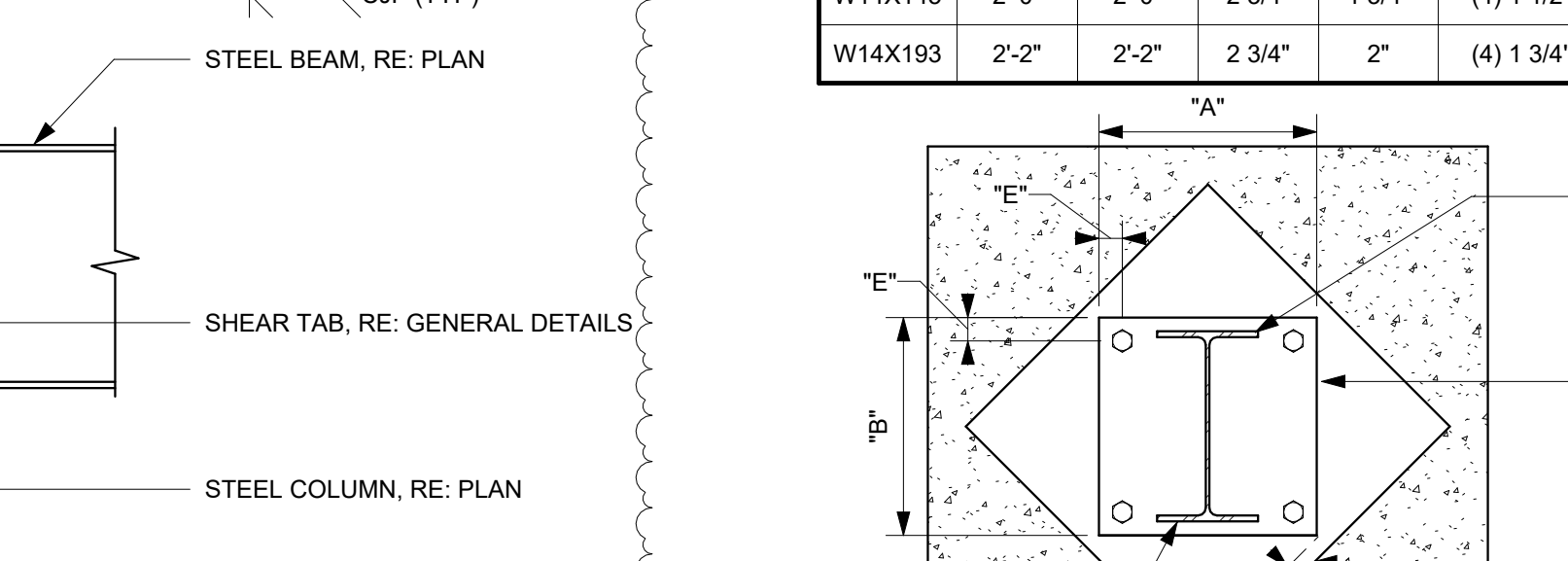
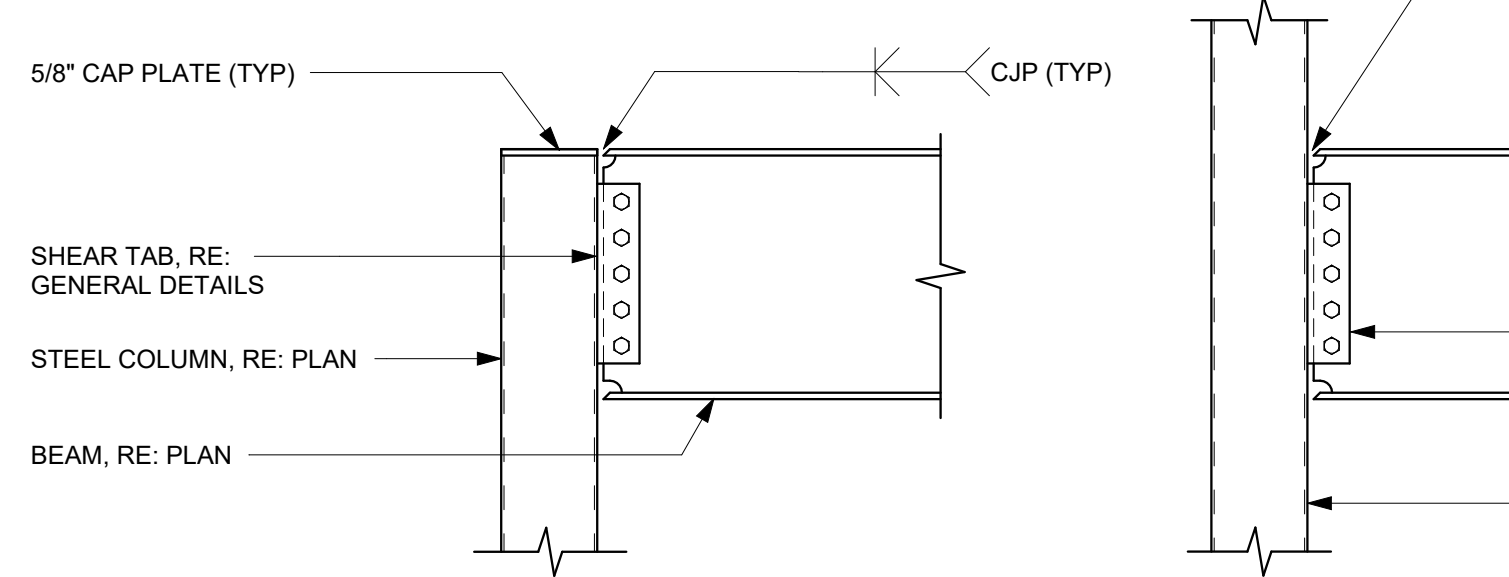
6 TYP STEEL STAIR BASE DETAIL
1" = 1'-0"

4 TYP STEEL MOMENT CONNECTIONS - RBS
1" = 1'-0"



- NOTES:**
- BEAM FLANGES AND WEBS SHALL BE CONNECTED TO COLUMN FLANGES USING COMPLETE-JOINT-PENETRATION (CJP) GROOVE WELDS. BEAM FLANGE WELDS SHALL CONFORM TO THE REQUIREMENTS FOR DEMAND CRITICAL WELDS IN SECTION 7.3 AND APPENDIX W OF THE AISC SEISMIC PROVISIONS. (THE AISC SEISMIC PROVISIONS) OR "SEISMIC PROVISIONS" AS USED HERE IN REFER TO AISC 341-16 SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS).
 - WELD ACCESS HOLE GEOMETRY SHALL CONFORM TO THE REQUIREMENTS OF AISC 360-16 SECTION J1.6.
 - ALL CONTINUITY PLATE WELDS SHALL BE CONNECTED TO COLUMN FLANGES/DOUBLER PLATES USING COMPLETE-JOINT-PENETRATION (CJP) GROOVE WELDS. WELDS SHALL CONFORM TO THE REQUIREMENTS FOR DEMAND CRITICAL WELDS IN SECTION 7.3 AND APPENDIX W OF THE AISC SEISMIC PROVISIONS. (THE AISC SEISMIC PROVISIONS) OR "SEISMIC PROVISIONS" AS USED HERE IN REFER TO AISC 341-16 SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS).

7 TYP STEEL MOMENT CONN. - HSS COLUMNS
3/4" = 1'-0"

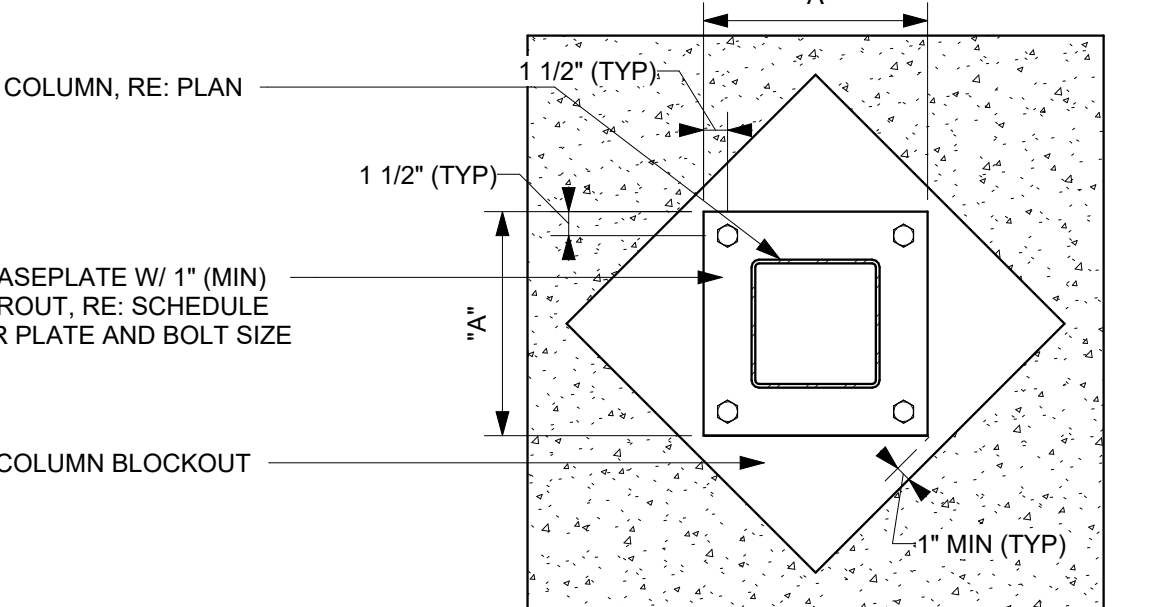
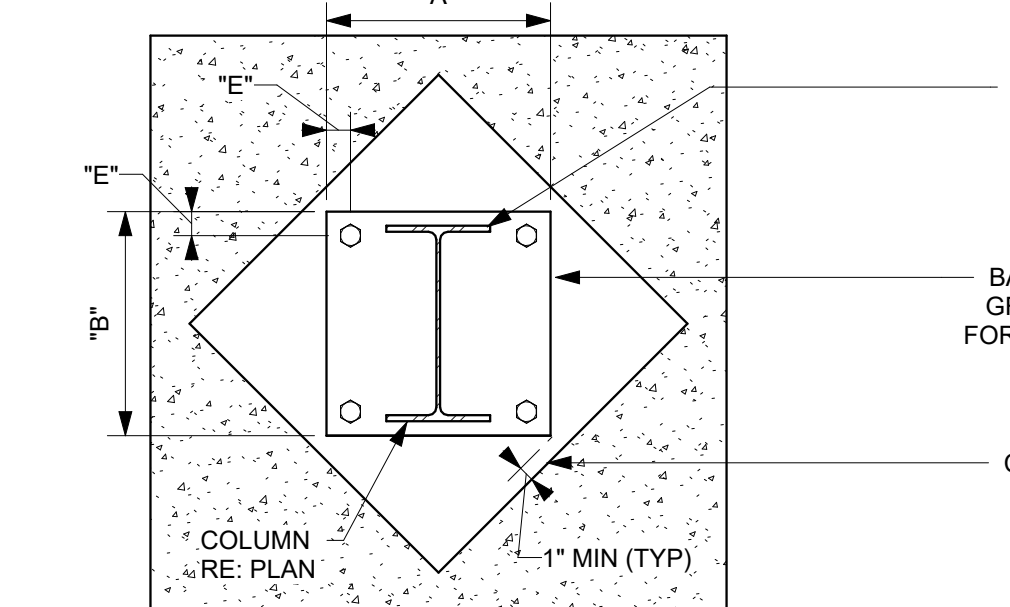


- NOTE:**
1. PROVIDE CJP WELD FOR FULL WIDTH OF COLUMN OR BEAM FLANGE, WHICHEVER IS SMALLER.

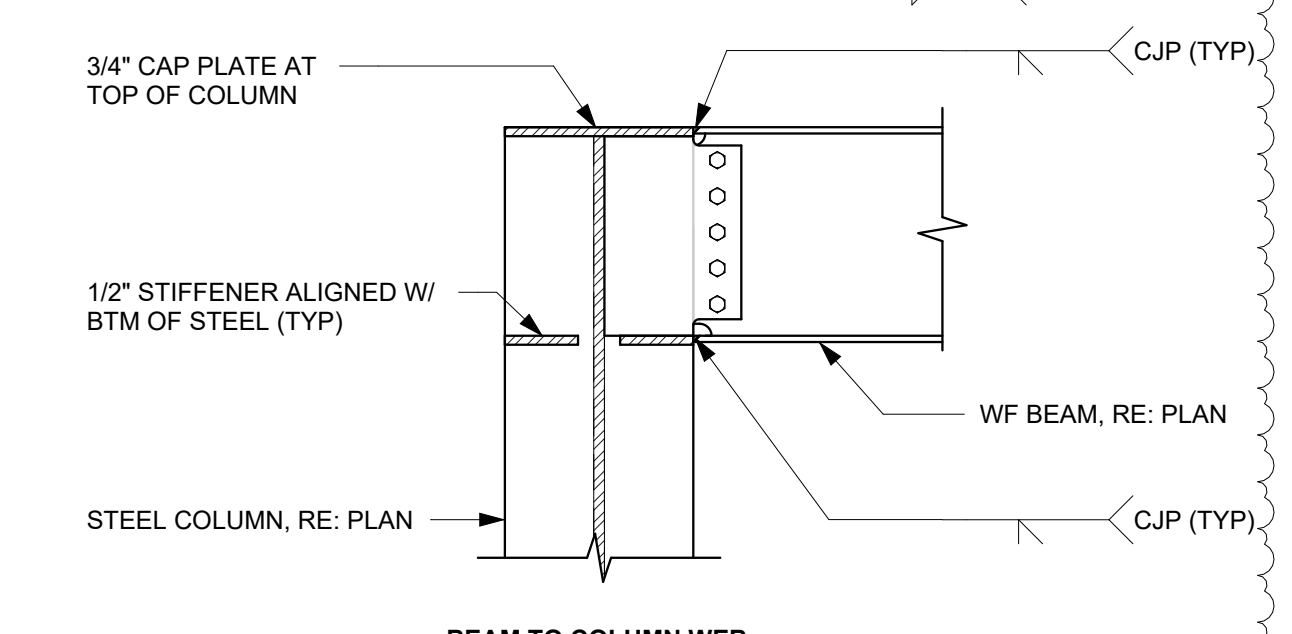
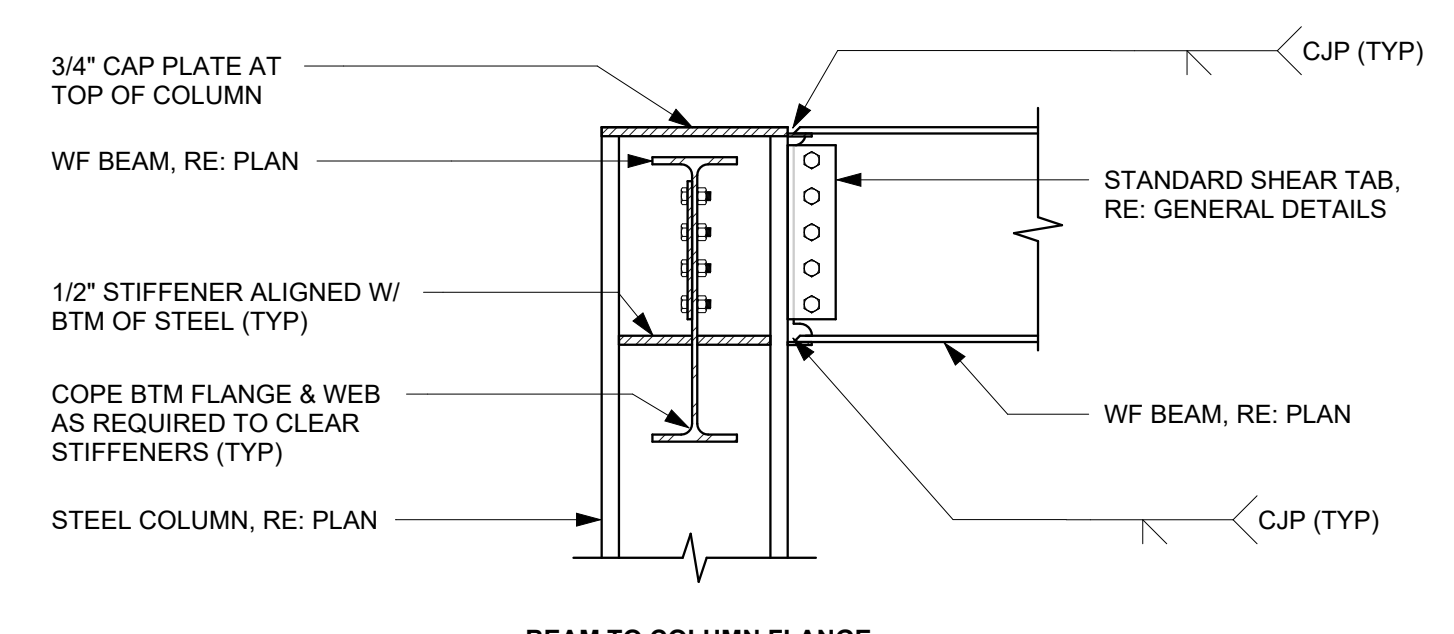
8 TYP STEEL COLUMN BASEPLATE
1" = 1'-0"

COLUMN SIZE	"A"	"B"	"E"	PLATE THICK	BOLTS F1554 GR 105	ANCHOR EMBED
W10X100	1'-8"	1'-8"	2 1/2"	1 1/2"	(4) 1 1/4"Ø	15"
W12X65	1'-6"	1'-6"	1 1/2"	3/4"	(4) 3/4"Ø	9"
W12X120	1'-10"	1'-10"	2 1/2"	1 3/4"	(4) 1 1/2"Ø	15"
W14X132	2'-0"	2'-0"	2 3/4"	1 3/4"	(4) 1 3/4"Ø	21"
W14X145	2'-0"	2'-0"	2 3/4"	1 3/4"	(4) 1 1/2"Ø	15"
W14X193	2'-2"	2'-2"	2 3/4"	2"	(4) 1 3/4"Ø	21"

COLUMN SIZE	"A"	PLATE THICK	BOLTS F1554 GR 105	ANCHOR EMBED
HSS6x6x1/4	1'-0"	3/4"	(4) 3/4"Ø	9"
HSS8x8x1/4	1'-2"	3/4"	(4) 3/4"Ø	12"

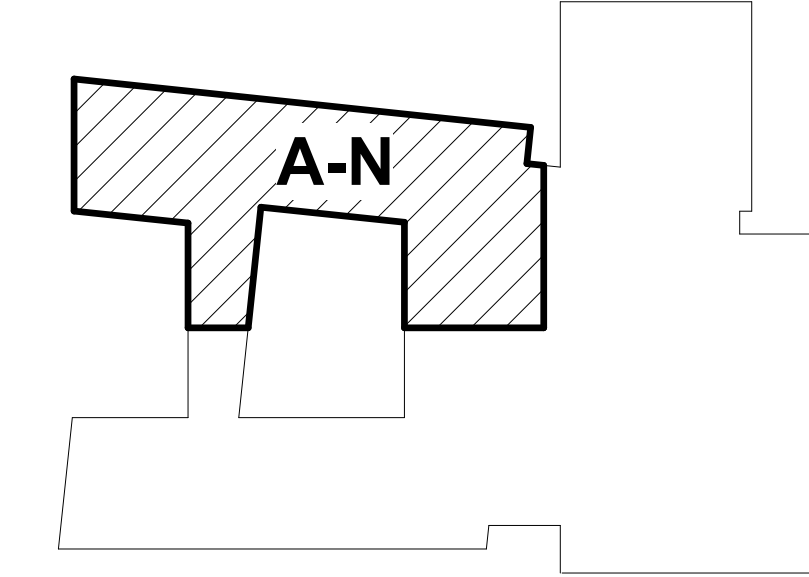


9 TYP STEEL MOMENT CONNECTIONS - WIDE FLANGE COLUMNS
3/4" = 1'-0"



9 TYP STEEL MOMENT CONNECTIONS - WIDE FLANGE COLUMNS
3/4" = 1'-0"

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PROJECT NAME

WSD - NEW SENIOR HIGH SCHOOL

LOCATION

800 E JACKSON AVE
 WYNNE AR 72396

PROJECT NUMBER

-

DEVELOPER/OWNER

WYNNE SCHOOL DISTRICT

INFORMATION



FOUNDATION PLAN NOTES:

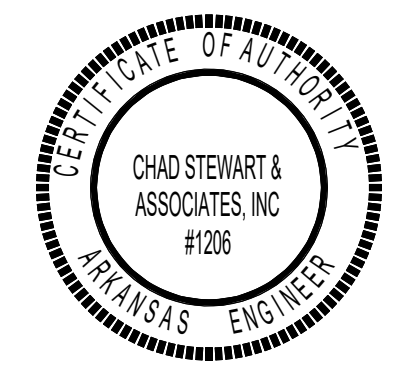
- ELEVATIONS ARE BASED ON TOP OF SLAB DATUM EL 0'-0" COORD. W/ CIVIL FOR FINAL GRADING ELEVATIONS.
- TYPICAL TOP OF FOOTING ELEVATION = -1'-4" (TYP UNO).
- FOR DESIGN CRITERIA, GENERAL NOTES, AND TYPICAL DETAILS, RE: GENERAL NOTES & DETAILS SHEET.
- FOR ELEVATIONS, WALL SECTIONS, AND DIMENSIONS NOT SHOWN, RE: ARCHITECTURAL DRAWINGS.
- RE: GENERAL DETAILS FOR TYPICAL SLAB-ON-GRADE CONTROL & CONSTRUCTION JOINT DETAILS. NOTE THAT CONTROL JOINTS ARE NOT SHOWN ON PLAN FOR CLARITY. RE: SPECIFICATIONS FOR GENERAL REQUIREMENTS. JOINTS SHALL BE PROVIDED AT A MAXIMUM SPACING OF 12'-0" EACH WAY.
- RE: GENERAL DETAILS FOR TYPICAL FOOTING CORNER BAR REQUIREMENTS.
- RE: GENERAL DETAILS FOR TYPICAL FOOTING STEP REQUIREMENTS.



2 CALLOUT
 1" = 1'-0"

1 FOUNDATION PLAN - AREA A NORTH
 1/8" = 1'-0"

CSA PROJECT NO. 24122
 Chad Stewart & Associates, Inc.
 9720 Village Circle
 Lakeland, TN 38002
 Phone 901-260-7850 CSAEngineering.com



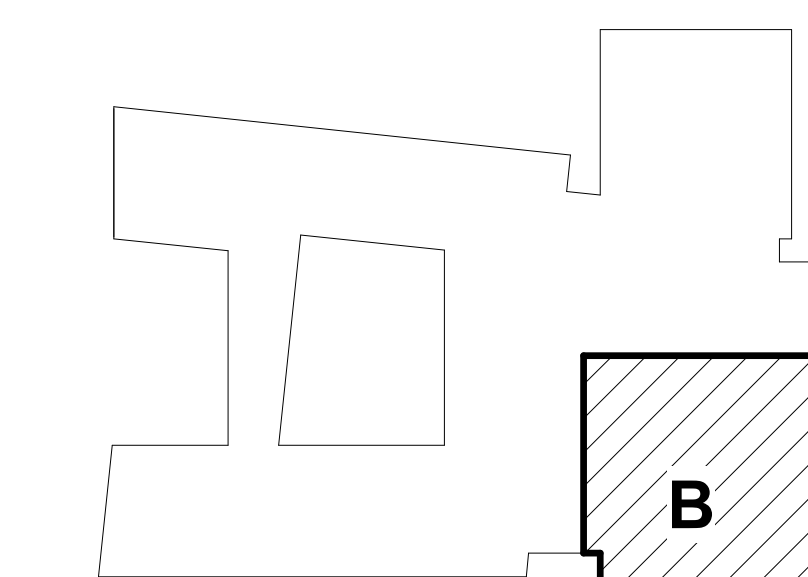
SHEET TITLE
 FOUNDATION PLAN - AREA A NORTH

DATE
 17.10.24

SHEET NUMBER

S101.1

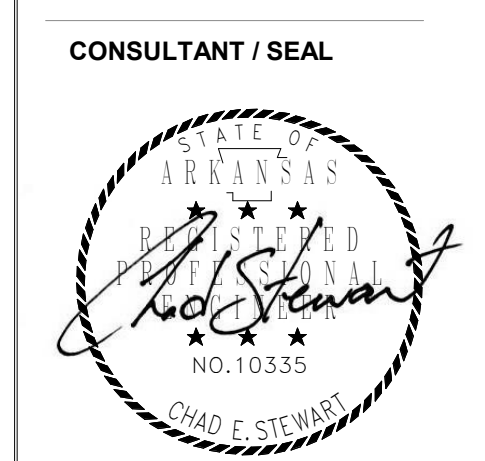
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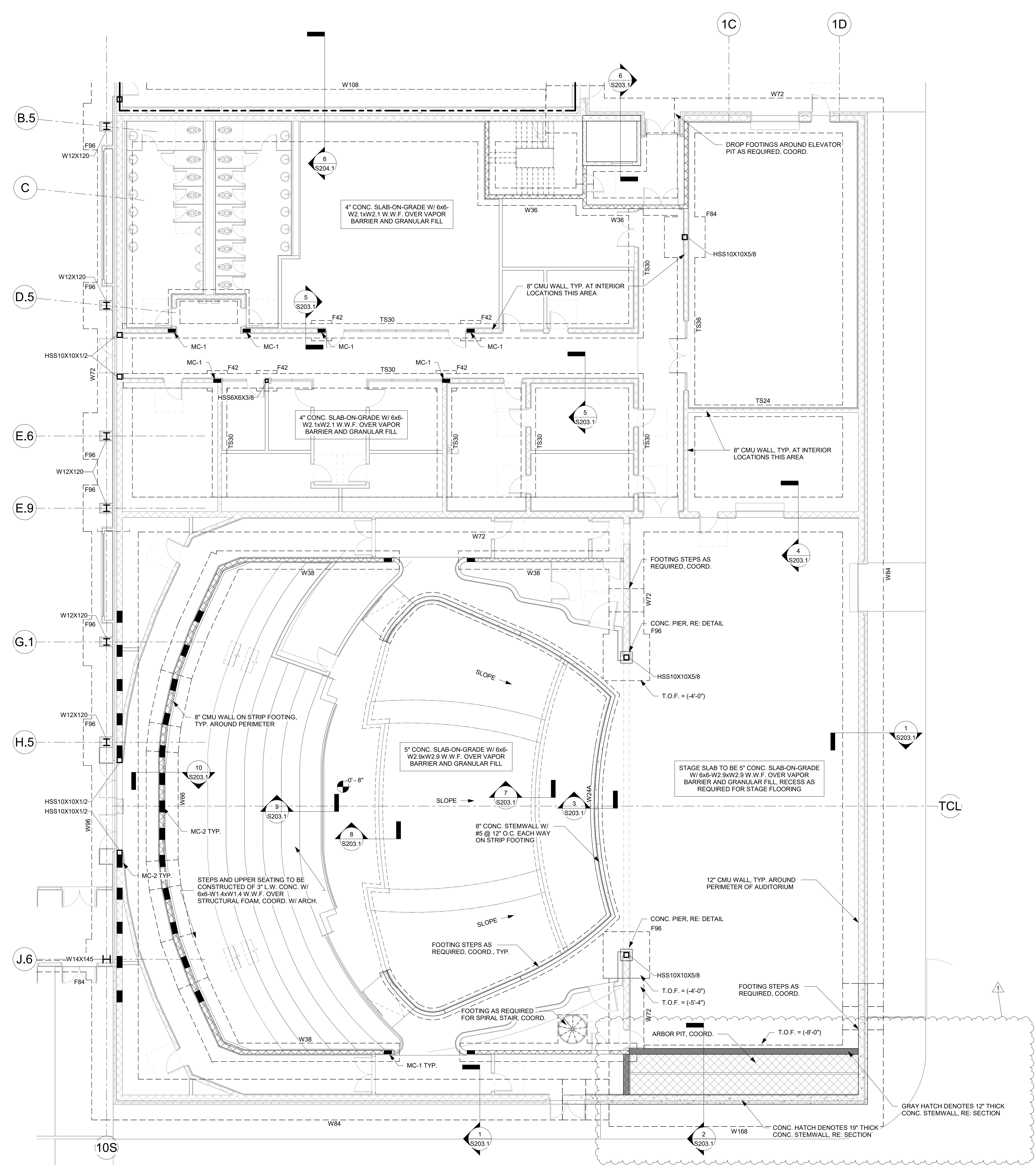
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PROJECT NAME
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LOCATION
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 WYNNE AR 72396

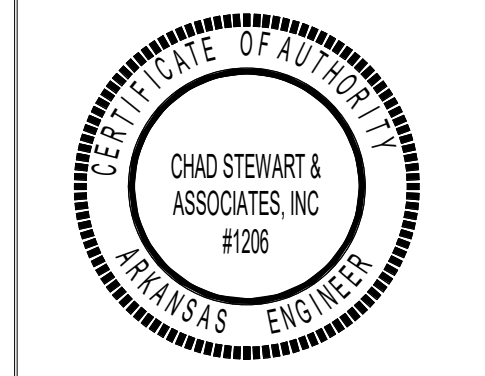
PROJECT NUMBER
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DEVELOPER/OWNER
 WYNNE SCHOOL DISTRICT



- FOUNDATION PLAN NOTES:**
- ELEVATIONS ARE BASED ON TOP OF SLAB DATUM EL 0'-0". COORD. W/ CIVIL FOR FINAL GRADING ELEVATIONS.
 - TYPICAL TOP OF FOOTING ELEVATION = -1'-4" (TYP UNO).
 - FOR DESIGN CRITERIA, GENERAL NOTES, AND TYPICAL DETAILS, RE: GENERAL NOTES & DETAILS SHEET.
 - FOR ELEVATIONS, WALL SECTIONS, AND DIMENSIONS NOT SHOWN, RE: ARCHITECTURAL DRAWINGS.
 - RE: GENERAL DETAILS FOR TYPICAL SLAB-ON-GRADE CONTROL & CONSTRUCTION JOINT DETAILS. NOTE THAT CONTROL JOINTS ARE NOT SHOWN ON PLAN FOR CLARITY. RE: SPECIFICATIONS FOR GENERAL REQUIREMENTS. JOINTS SHALL BE PROVIDED AT A MAXIMUM SPACING OF 12'-0" EACH WAY.
 - RE: GENERAL DETAILS FOR TYPICAL FOOTING CORNER BAR REQUIREMENTS.
 - RE: GENERAL DETAILS FOR TYPICAL FOOTING STEP REQUIREMENTS.

1 FOUNDATION PLAN - AREA B
 1/8" = 1'-0"



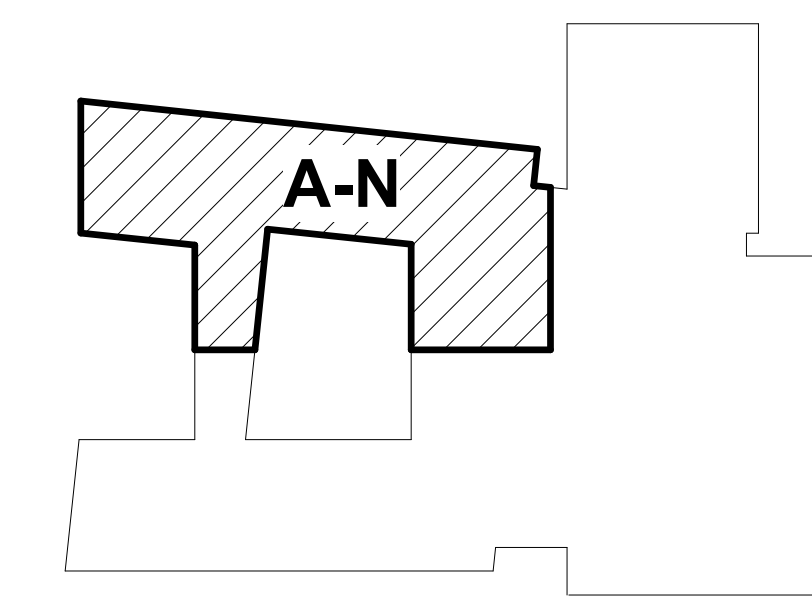
SHEET TITLE
 FOUNDATION PLAN - AREA B

DATE
 17.10.24

SHEET NUMBER

S101.3

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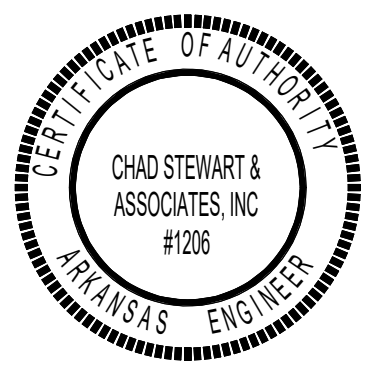
DEVELOPER/OWNER

WYNNE SCHOOL DISTRICT

INFORMATION



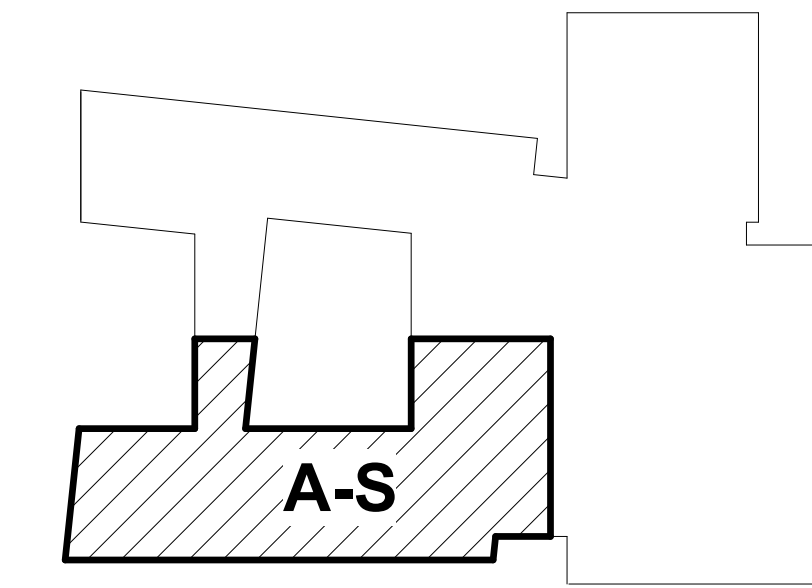
SECOND FLOOR DIAPHRAGM CHORD REINF. PLAN
1 - AREA A NORTH
 1/8" = 1'-0"



SHEET TITLE
 SECOND FLOOR DIAPHRAGM CHORD REINF. PLAN - AREA A NORTH
 DATE
 17.10.24
 SHEET NUMBER

S102.1A

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LOCATION

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PROJECT NUMBER

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DEVELOPER/OWNER

WYNNE SCHOOL DISTRICT

INFORMATION



SHEET TITLE
 SECOND FLOOR DIAPHRAGM CHORD REINF. PLAN - AREA A SOUTH

DATE
 17.10.24

SHEET NUMBER

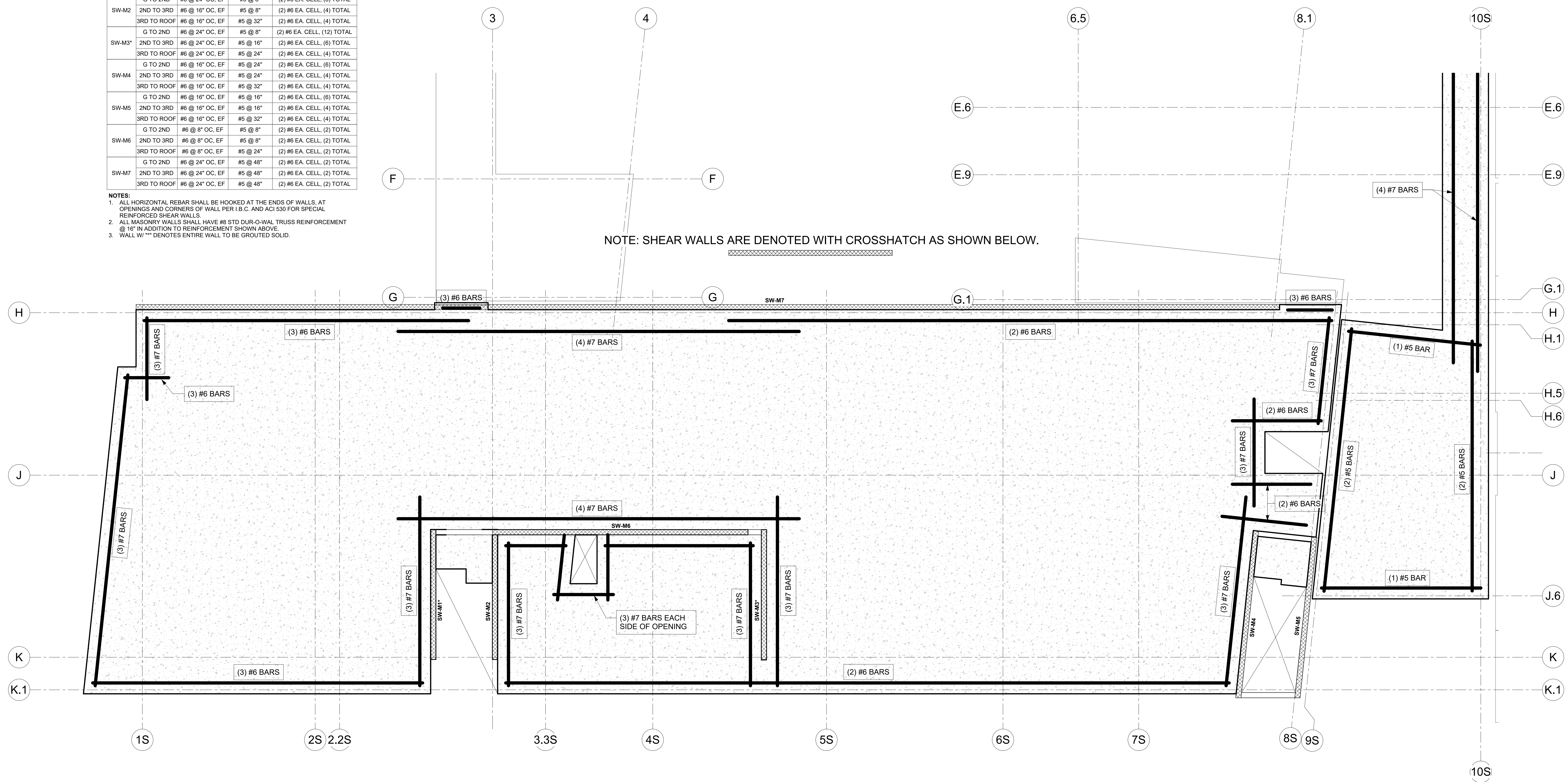
S102.2A

MASONRY SHEARWALL REINFORCEMENT SCHEDULE

TAG	LEVEL	REINFORCEMENT		
		VERTICAL	HORIZONTAL	END CELLS REINF.
SW-M1*	G TO 2ND	#6 @ 24" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (16) TOTAL
	2ND TO 3RD	#6 @ 16" OC, EF	#5 @ 16"	(2) #6 EA. CELL, (4) TOTAL
	3RD TO ROOF	#6 @ 16" OC, EF	#5 @ 32"	(2) #6 EA. CELL, (4) TOTAL
SW-M2	G TO 2ND	#6 @ 24" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (8) TOTAL
	2ND TO 3RD	#6 @ 16" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (4) TOTAL
	3RD TO ROOF	#6 @ 16" OC, EF	#5 @ 32"	(2) #6 EA. CELL, (4) TOTAL
SW-M3*	G TO 2ND	#6 @ 24" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (12) TOTAL
	2ND TO 3RD	#6 @ 24" OC, EF	#5 @ 16"	(2) #6 EA. CELL, (6) TOTAL
	3RD TO ROOF	#6 @ 24" OC, EF	#5 @ 24"	(2) #6 EA. CELL, (4) TOTAL
SW-M4	G TO 2ND	#6 @ 16" OC, EF	#5 @ 24"	(2) #6 EA. CELL, (6) TOTAL
	2ND TO 3RD	#6 @ 16" OC, EF	#5 @ 24"	(2) #6 EA. CELL, (4) TOTAL
	3RD TO ROOF	#6 @ 16" OC, EF	#5 @ 32"	(2) #6 EA. CELL, (4) TOTAL
SW-M5	G TO 2ND	#6 @ 16" OC, EF	#5 @ 16"	(2) #6 EA. CELL, (6) TOTAL
	2ND TO 3RD	#6 @ 16" OC, EF	#5 @ 16"	(2) #6 EA. CELL, (4) TOTAL
	3RD TO ROOF	#6 @ 16" OC, EF	#5 @ 32"	(2) #6 EA. CELL, (4) TOTAL
SW-M6	G TO 2ND	#6 @ 8" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (2) TOTAL
	2ND TO 3RD	#6 @ 8" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (2) TOTAL
	3RD TO ROOF	#6 @ 8" OC, EF	#5 @ 24"	(2) #6 EA. CELL, (2) TOTAL
SW-M7	G TO 2ND	#6 @ 24" OC, EF	#5 @ 48"	(2) #6 EA. CELL, (2) TOTAL
	2ND TO 3RD	#6 @ 24" OC, EF	#5 @ 48"	(2) #6 EA. CELL, (2) TOTAL
	3RD TO ROOF	#6 @ 24" OC, EF	#5 @ 48"	(2) #6 EA. CELL, (2) TOTAL

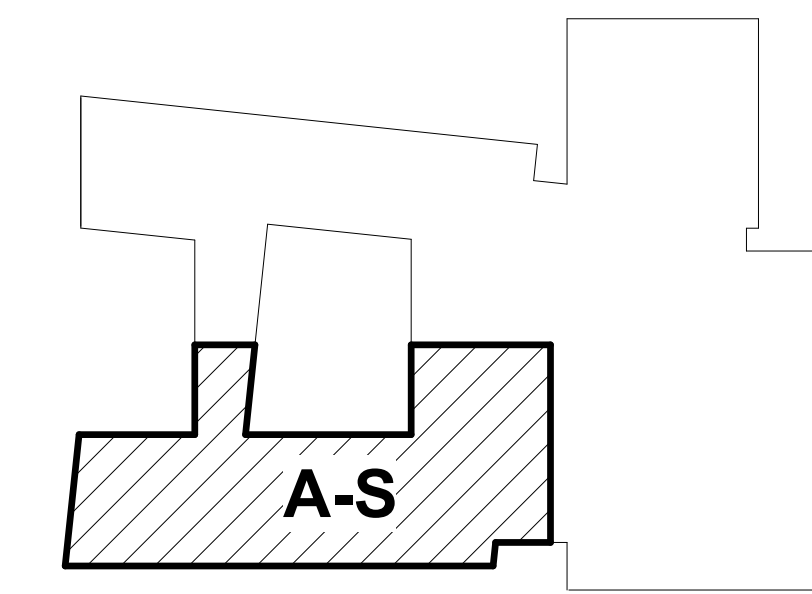
- NOTES:
- ALL HORIZONTAL REBAR SHALL BE HOOKED AT THE ENDS OF WALLS, AT OPENINGS AND CORNERS OF WALL PER I.B.C. AND ACI 530 FOR SPECIAL REINFORCED SHEAR WALLS.
 - ALL MASONRY WALLS SHALL HAVE #8 STD DUR-O-WAL TRUSS REINFORCEMENT @ 16" IN ADDITION TO REINFORCEMENT SHOWN ABOVE.
 - WALL W-*** DENOTES ENTIRE WALL TO BE GROUTED SOLID.

NOTE: SHEAR WALLS ARE DENOTED WITH CROSSHATCH AS SHOWN BELOW.



1 - AREA A SOUTH
 1/8" = 1'-0"

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PROJECT NAME

WSD - NEW SENIOR HIGH SCHOOL

LOCATION

800 E JACKSON AVE
WYNNE AR 72396

PROJECT NUMBER

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DEVELOPER/OWNER

WYNNE SCHOOL DISTRICT

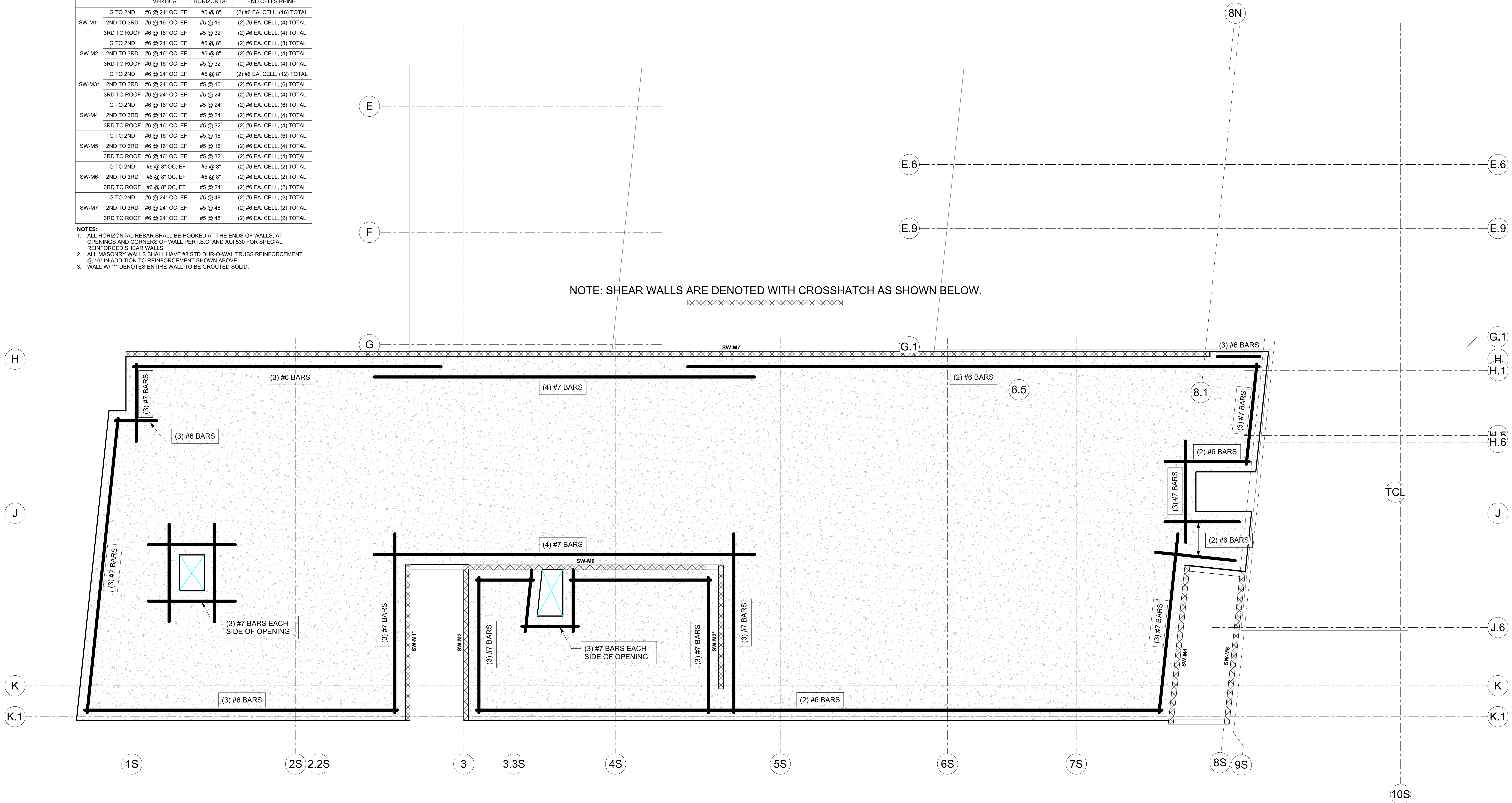
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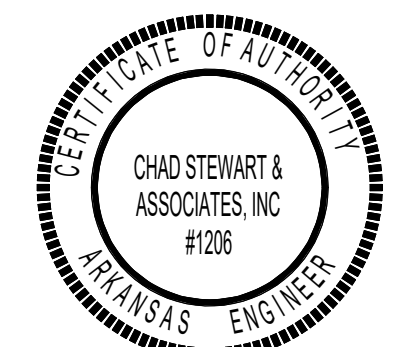
MASONRY SHEARWALL REINFORCEMENT SCHEDULE				
TAG	LEVEL	REINFORCEMENT		
		VERTICAL	HORIZONTAL	END CELLS REINF.
SW-M1*	G TO 2ND	#6 @ 24" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (16) TOTAL
	2ND TO 3RD	#6 @ 16" OC, EF	#5 @ 16"	(2) #6 EA. CELL, (4) TOTAL
	3RD TO ROOF	#6 @ 16" OC, EF	#5 @ 32"	(2) #6 EA. CELL, (4) TOTAL
SW-M2	G TO 2ND	#6 @ 24" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (8) TOTAL
	2ND TO 3RD	#6 @ 16" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (4) TOTAL
	3RD TO ROOF	#6 @ 16" OC, EF	#5 @ 32"	(2) #6 EA. CELL, (4) TOTAL
SW-M3*	G TO 2ND	#6 @ 24" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (12) TOTAL
	2ND TO 3RD	#6 @ 24" OC, EF	#5 @ 16"	(2) #6 EA. CELL, (6) TOTAL
	3RD TO ROOF	#6 @ 24" OC, EF	#5 @ 24"	(2) #6 EA. CELL, (4) TOTAL
SW-M4	G TO 2ND	#6 @ 16" OC, EF	#5 @ 24"	(2) #6 EA. CELL, (6) TOTAL
	2ND TO 3RD	#6 @ 16" OC, EF	#5 @ 24"	(2) #6 EA. CELL, (4) TOTAL
	3RD TO ROOF	#6 @ 16" OC, EF	#5 @ 32"	(2) #6 EA. CELL, (4) TOTAL
SW-M5	G TO 2ND	#6 @ 16" OC, EF	#5 @ 16"	(2) #6 EA. CELL, (6) TOTAL
	2ND TO 3RD	#6 @ 16" OC, EF	#5 @ 16"	(2) #6 EA. CELL, (4) TOTAL
	3RD TO ROOF	#6 @ 16" OC, EF	#5 @ 32"	(2) #6 EA. CELL, (4) TOTAL
SW-M6	G TO 2ND	#6 @ 8" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (2) TOTAL
	2ND TO 3RD	#6 @ 8" OC, EF	#5 @ 8"	(2) #6 EA. CELL, (2) TOTAL
	3RD TO ROOF	#6 @ 8" OC, EF	#5 @ 24"	(2) #6 EA. CELL, (2) TOTAL
SW-M7	G TO 2ND	#6 @ 24" OC, EF	#5 @ 48"	(2) #6 EA. CELL, (2) TOTAL
	2ND TO 3RD	#6 @ 24" OC, EF	#5 @ 48"	(2) #6 EA. CELL, (2) TOTAL
	3RD TO ROOF	#6 @ 24" OC, EF	#5 @ 48"	(2) #6 EA. CELL, (2) TOTAL

- NOTES:
- ALL HORIZONTAL REBAR SHALL BE HOOKED AT THE ENDS OF WALLS, AT OPENINGS AND CORNERS OF WALL PER I.B.C. AND ACI 530 FOR SPECIAL REINFORCED SHEAR WALLS.
 - ALL MASONRY WALLS SHALL HAVE #8 STD DUR-O-WAL TRUSS REINFORCEMENT @ 16" IN ADDITION TO REINFORCEMENT SHOWN ABOVE.
 - WALL W/ "" DENOTES ENTIRE WALL TO BE GROUTED SOLID.

NOTE: SHEAR WALLS ARE DENOTED WITH CROSSHATCH AS SHOWN BELOW.



THIRD FLOOR DIAPHRAGM CHORD REINF. PLAN - AREA A SOUTH
1/8" = 1'-0"



SHEET TITLE

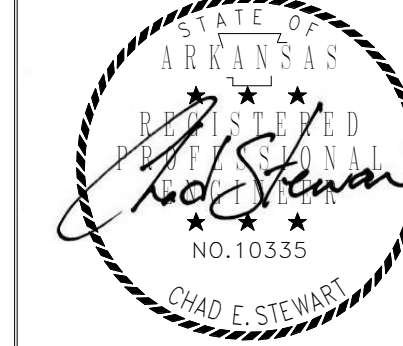
THIRD FLOOR DIAPHRAGM CHORD REINF. PLAN - AREA A SOUTH

DATE

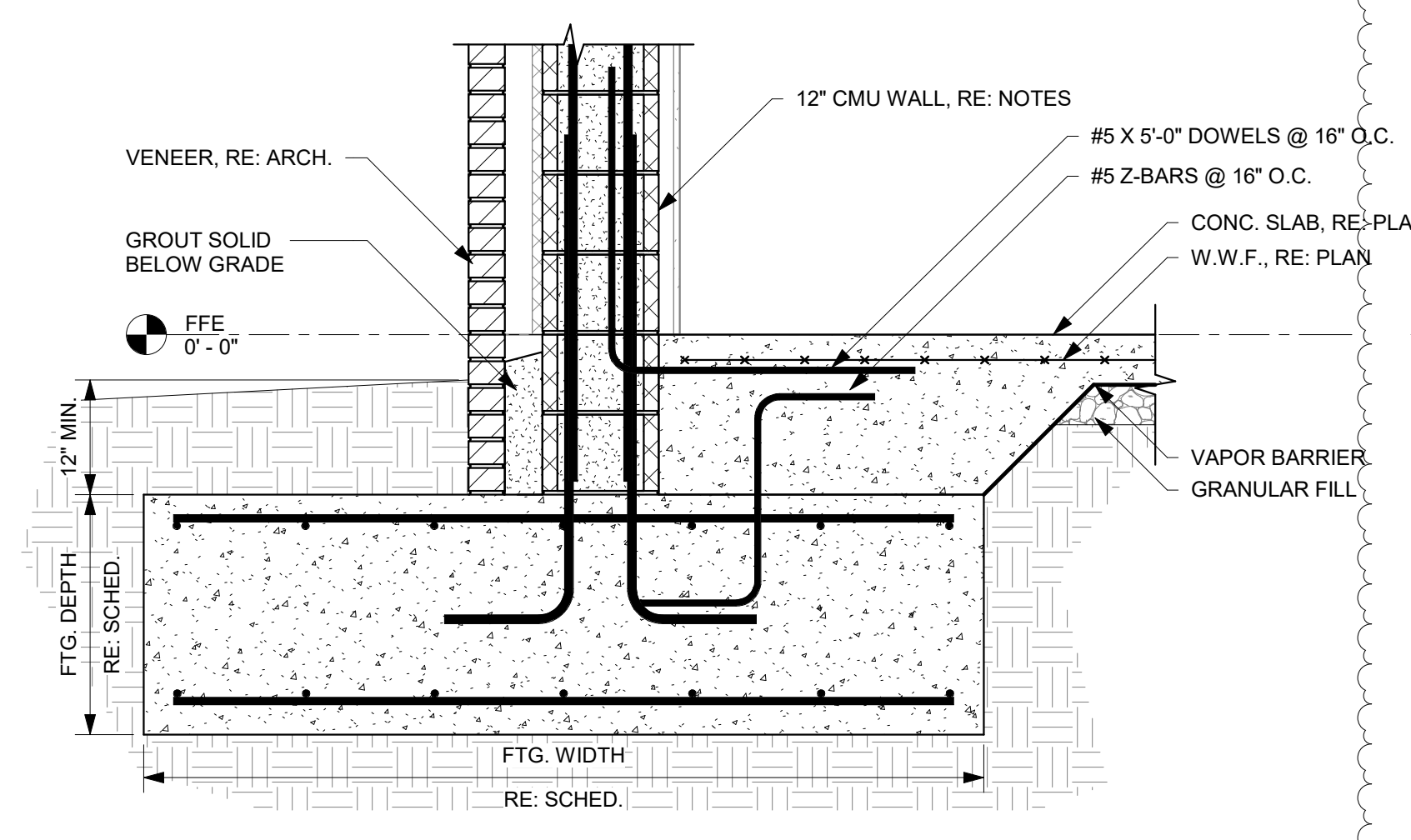
17.10.24

SHEET NUMBER

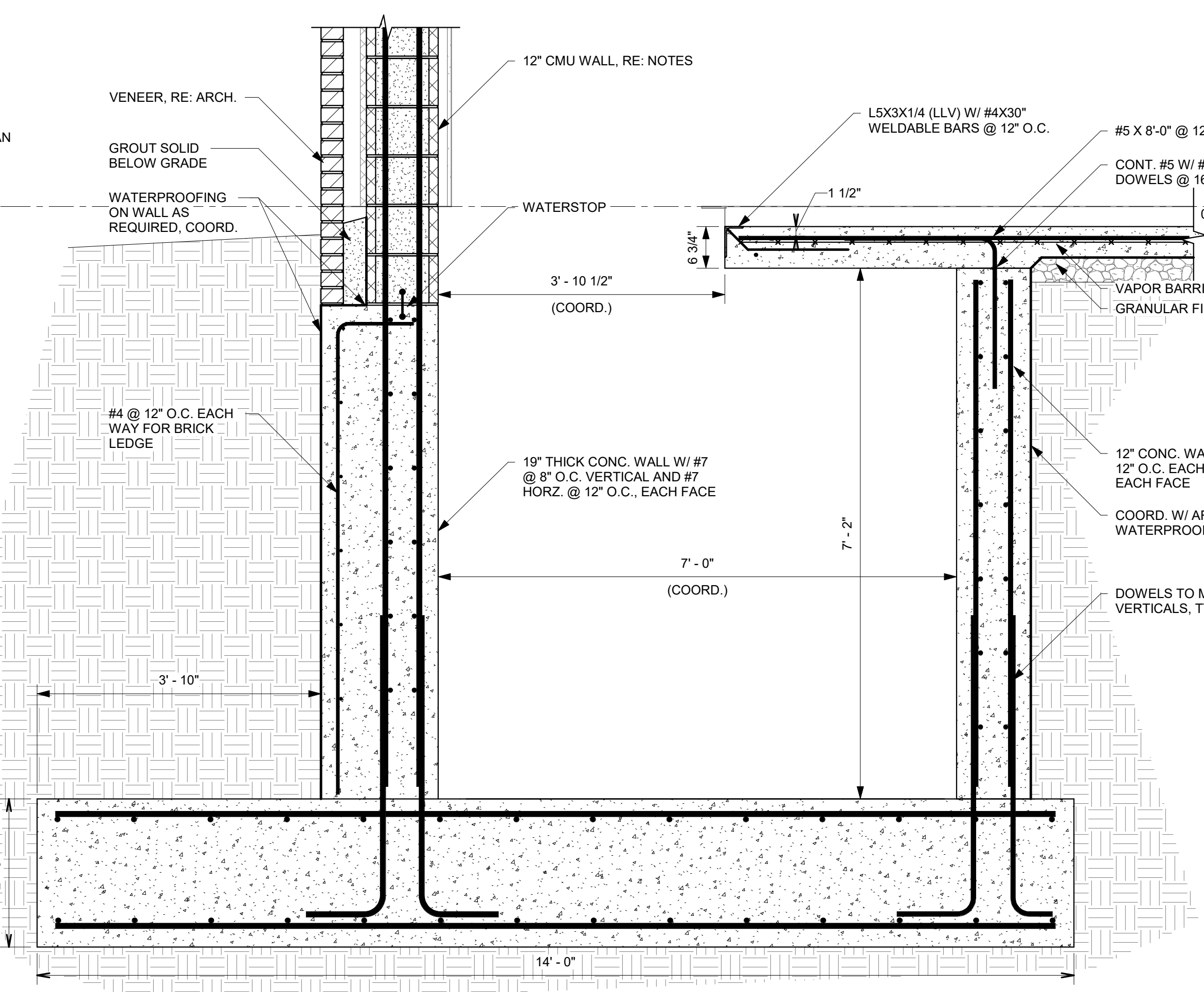
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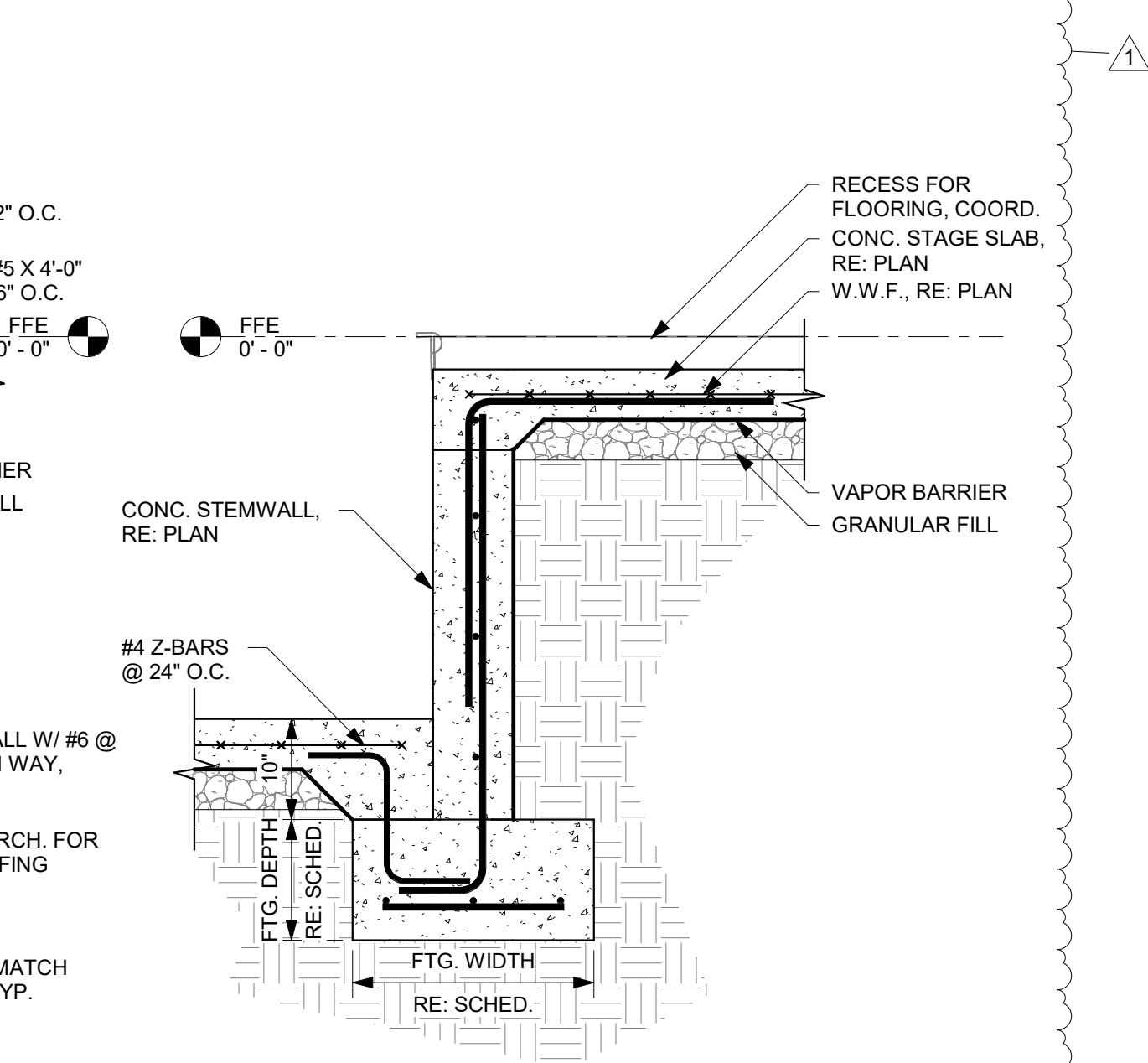
NOT FOR CONSTRUCTION



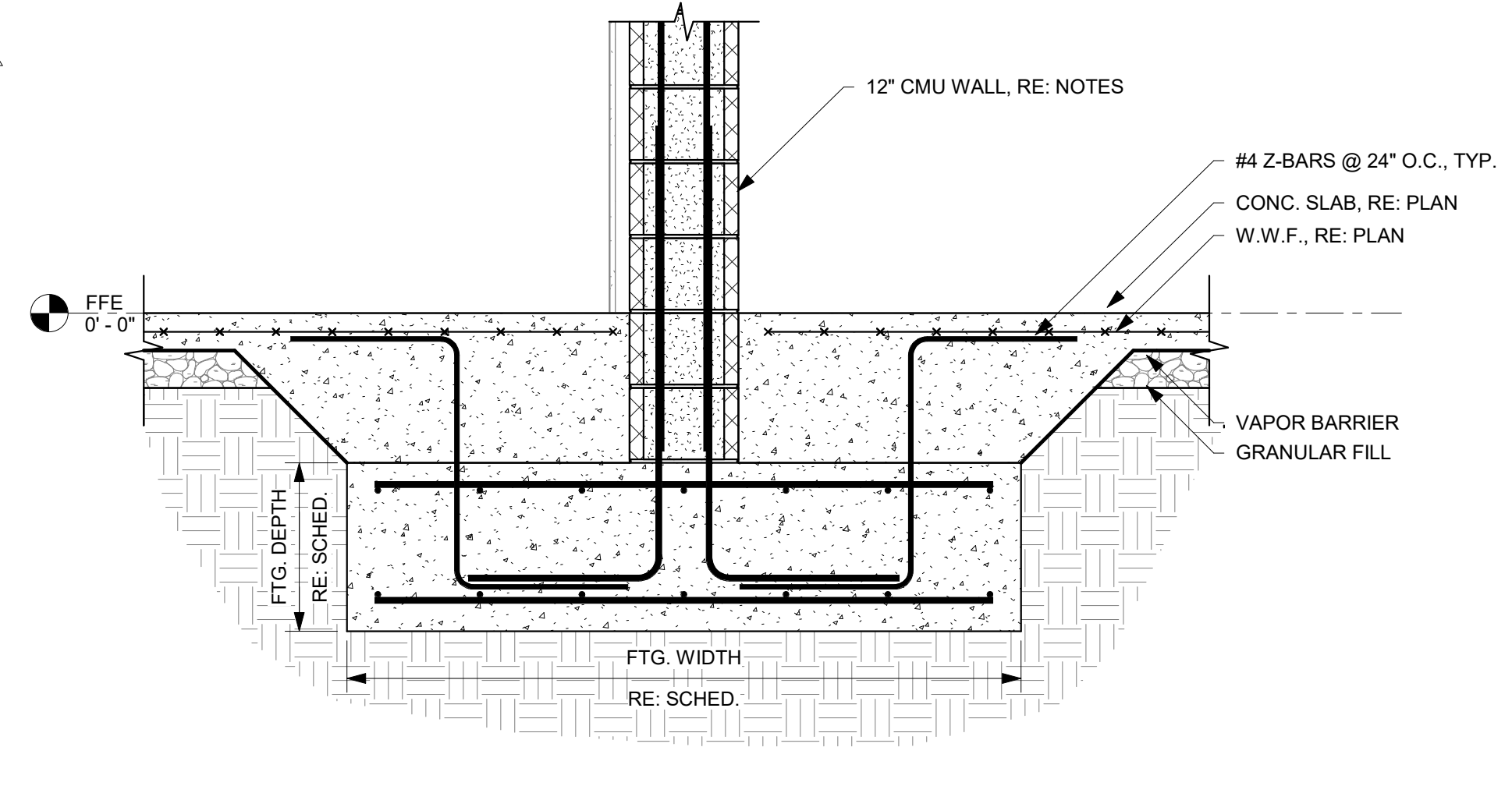
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3/4" = 1'-0"



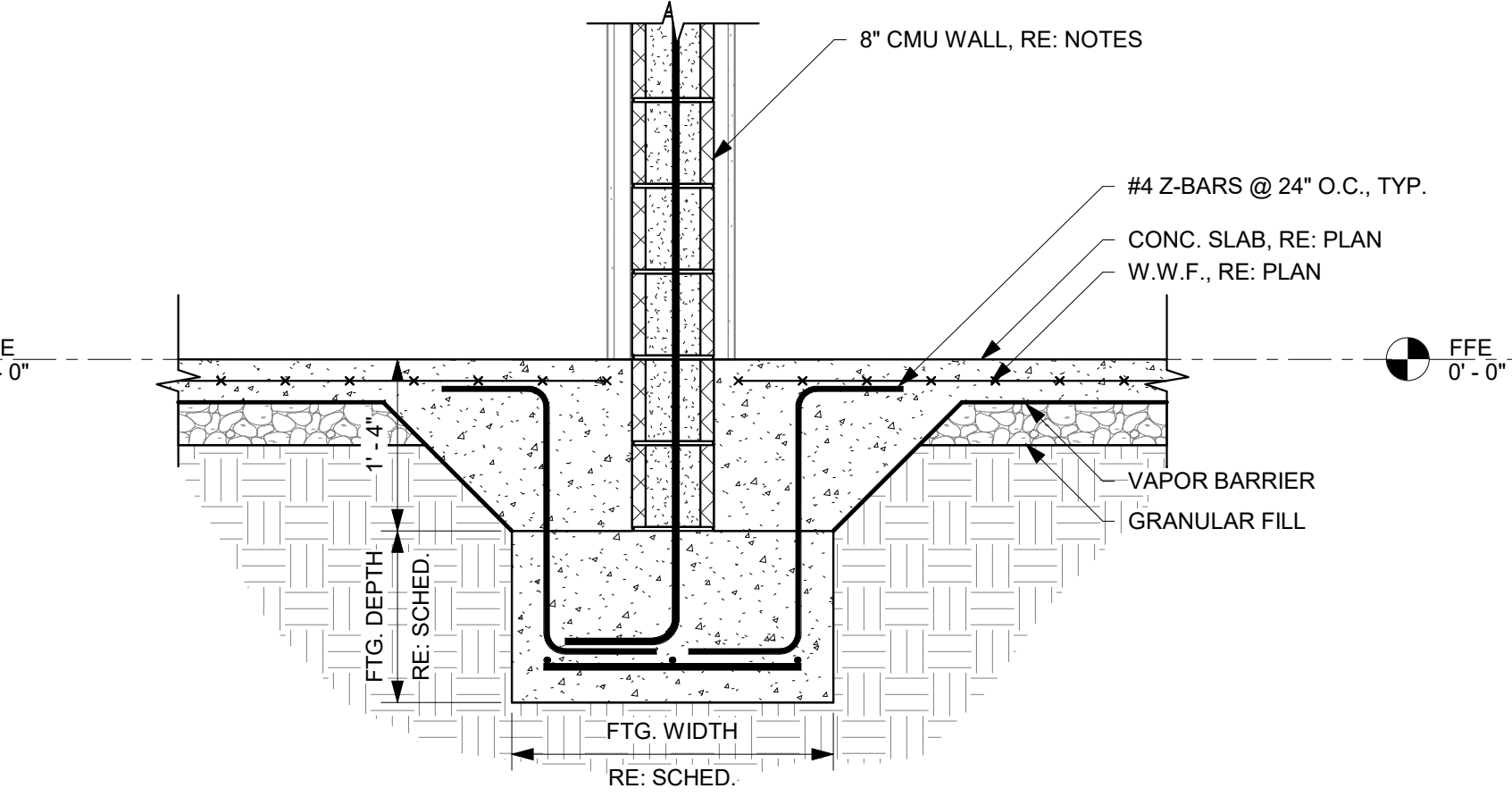
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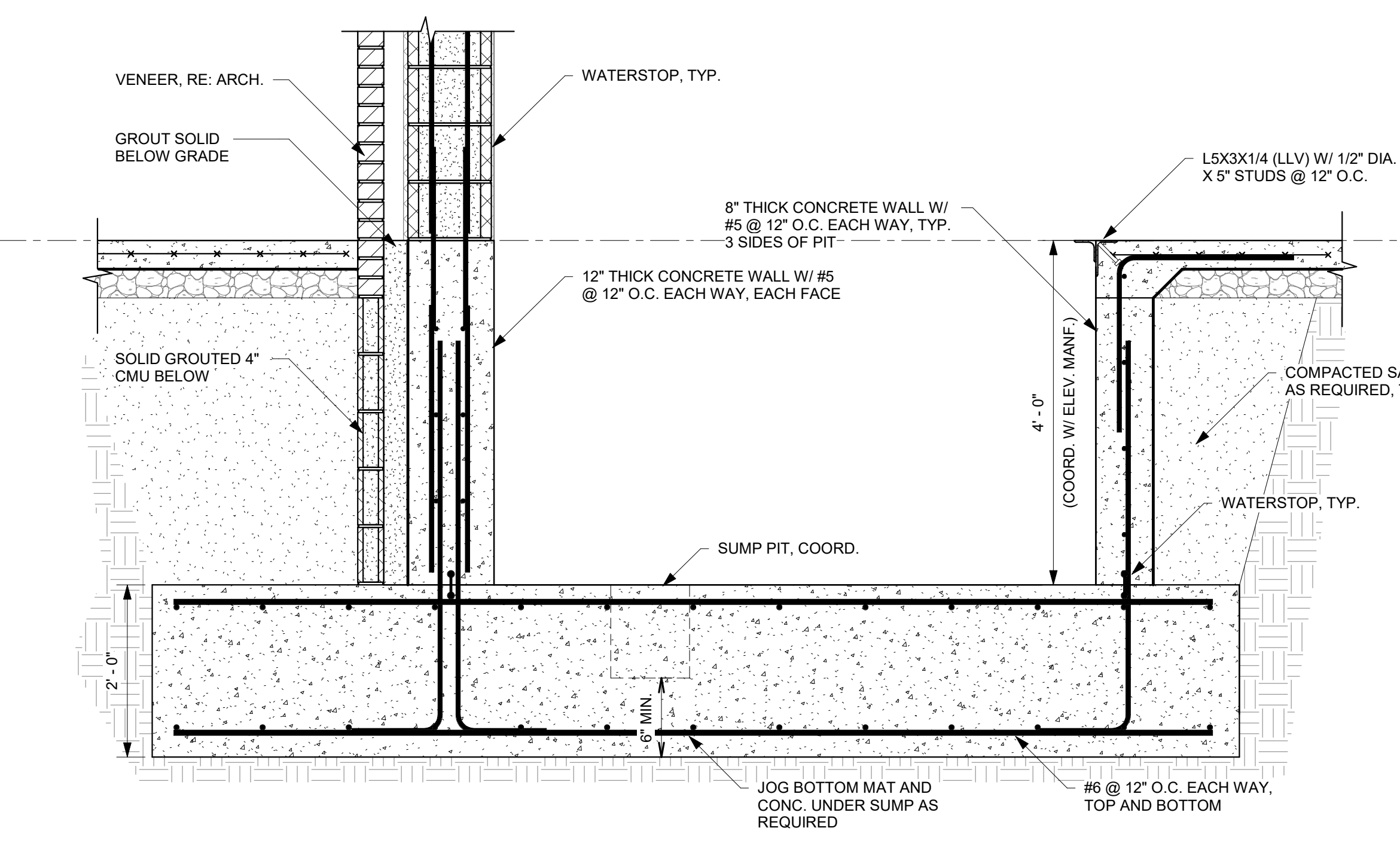
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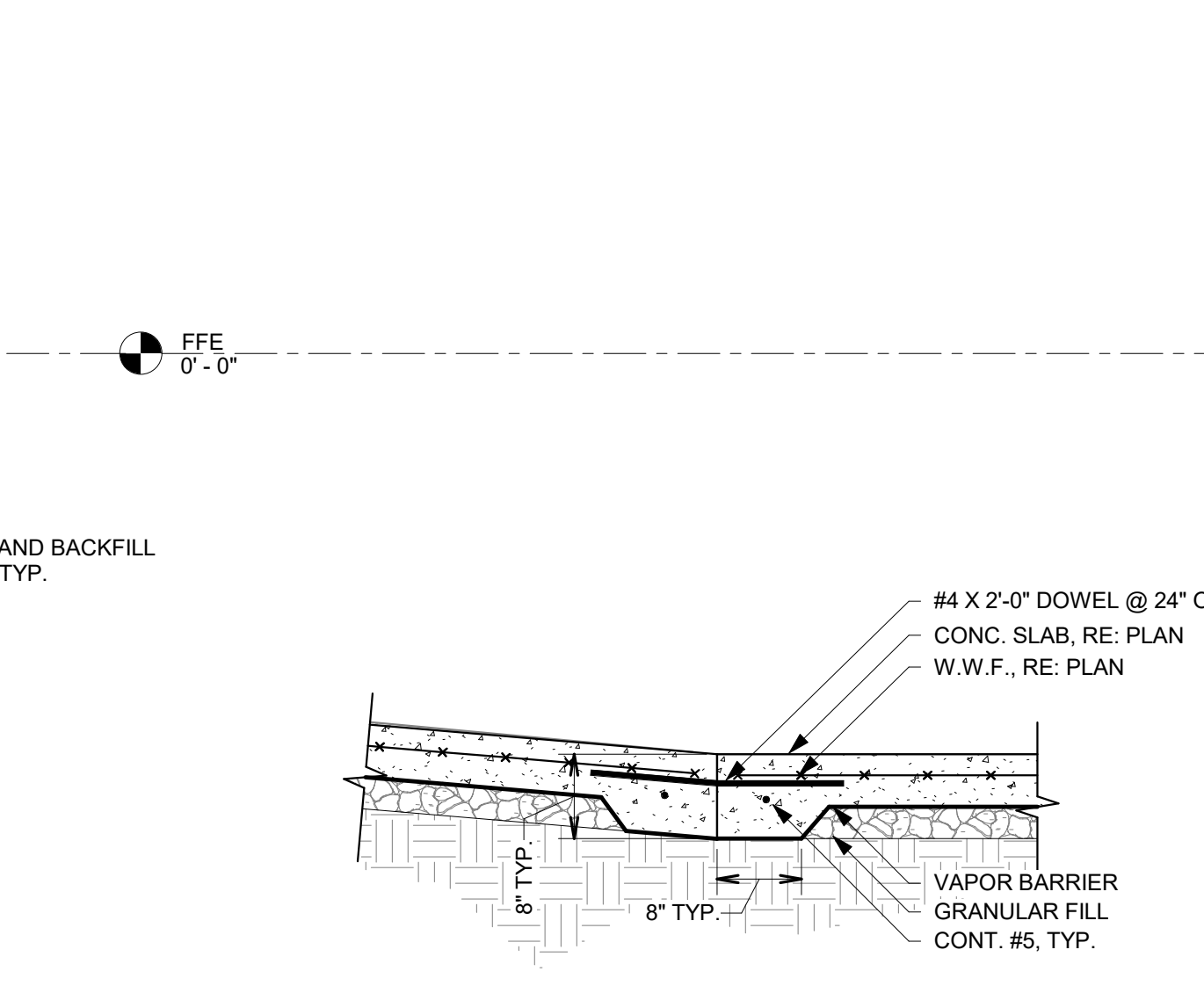
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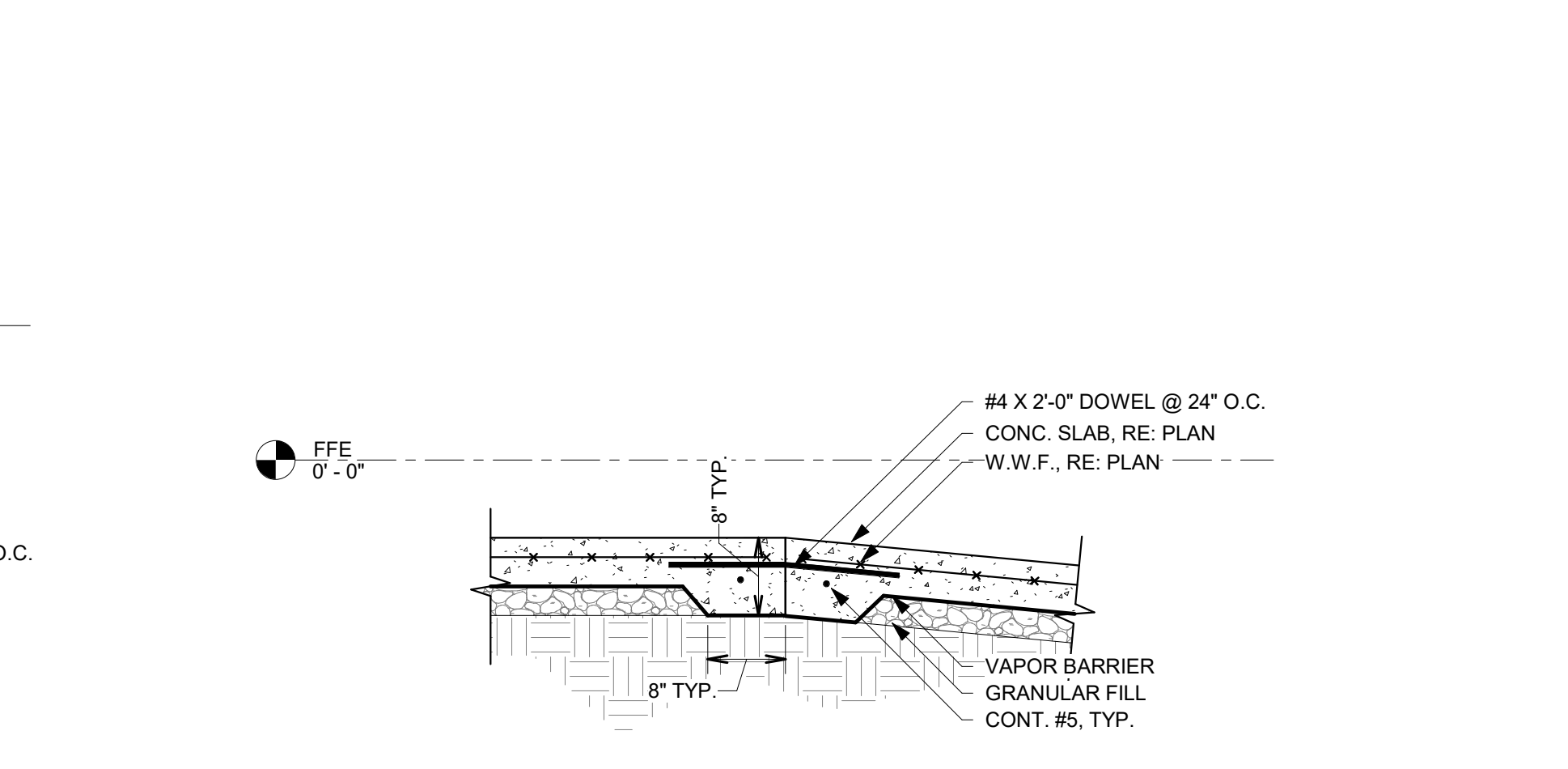
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3/4" = 1'-0"



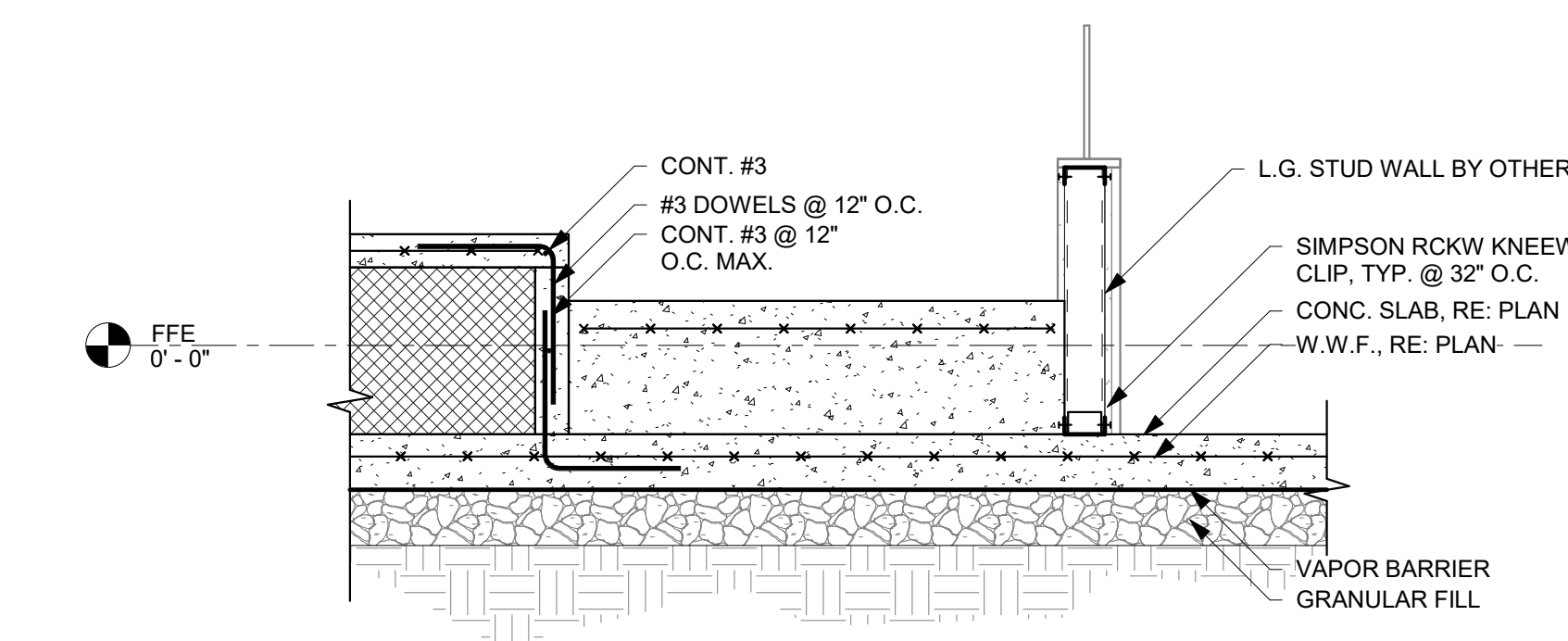
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3/4" = 1'-0"



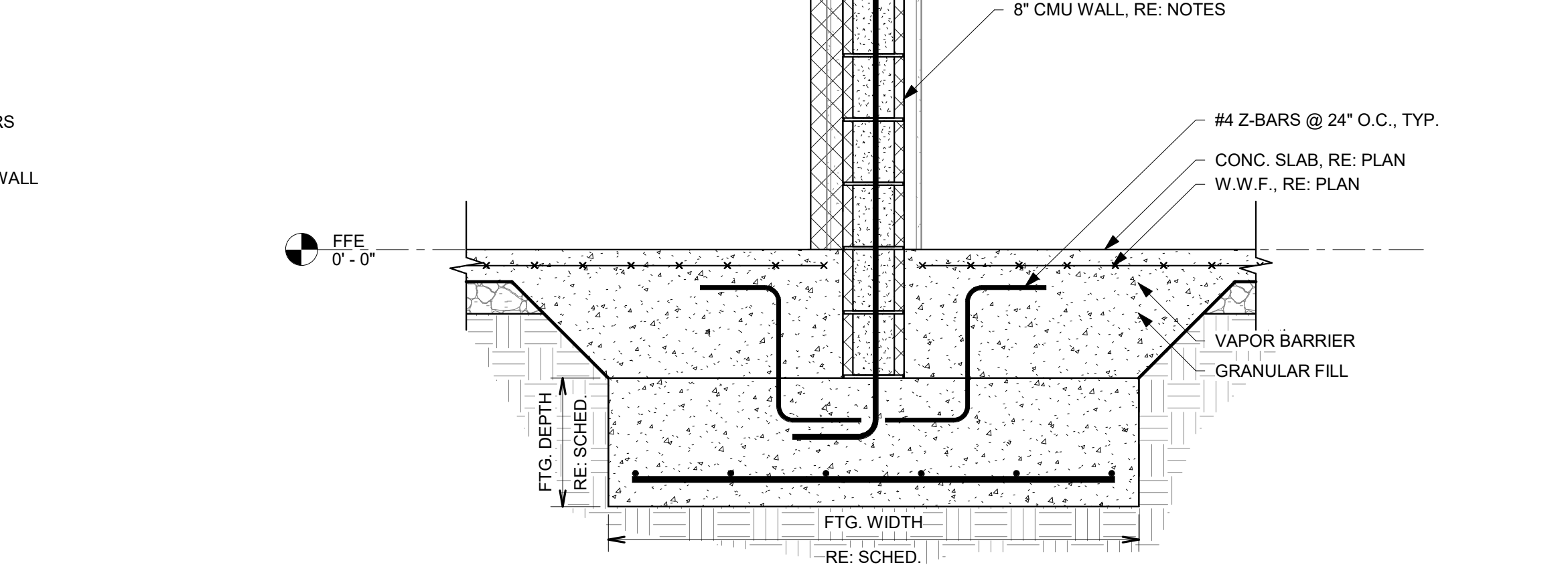
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3/4" = 1'-0"



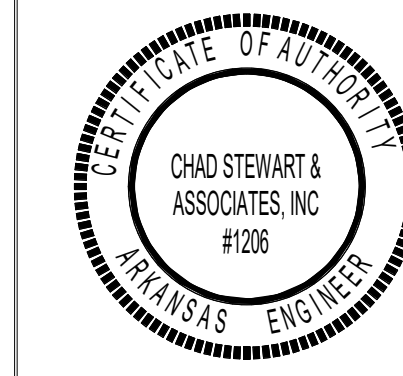
8 FDS - SECTION
3/4" = 1'-0"



9 FDS - SECTION
3/4" = 1'-0"



10 FDS - SECTION
3/4" = 1'-0"



SECTION 221113

FACILITY WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes water-distribution piping and related components outside the building for combined water service and fire-service mains.
- B. Utility-furnished products include water meters that will be furnished to the site, ready for installation.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Detail precast concrete vault assemblies and indicate dimensions, method of field assembly, and components.

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control test reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
 - 2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
 - 3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- C. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.
- D. Comply with FMG's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.
- E. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.

- F. NSF Compliance:
 - 1. Comply with NSF 14 for plastic potable-water-service piping.
 - 2. Comply with NSF 61 Annex G for materials for water-service piping and specialties for domestic water.

1.6 PROJECT CONDITIONS

- A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to requirements indicated:
 - 1. Notify Engineer no fewer than two days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of water-distribution service without Engineer's written permission.

1.7 COORDINATION

- A. Coordinate connection to water main with utility company.

PART 2 - PRODUCTS

2.1 PIPES AND FITTINGS

- A. Soft Copper Tube: ASTM B 88, Type K and ASTM B 88, Type L, water tube, annealed temper.
 - 1. Copper, Solder-Joint Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
- B. Hard Copper Tube: ASTM B 88, Type K and ASTM B 88, Type L, water tube, drawn temper.
 - 1. Copper, Solder-Joint Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
- C. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated.
 - 1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - 2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
- D. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.
 - 1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - 2. Gaskets: AWWA C111, rubber.

- E. Grooved-Joint, Ductile-Iron Pipe: AWWA C151, with cut, rounded-grooved ends.
 - 1. Grooved-End, Ductile-Iron Pipe Appurtenances:
- F. PE, Fire-Service Pipe: ASTM F 714, AWWA C906, or equivalent for PE water pipe; FMG approved, with minimum thickness equivalent to FMG Class 200.
 - 1. Molded PE Fittings: ASTM D 3350, PE resin, socket- or butt-fusion type, made to match PE pipe dimensions and class.
- G. PVC, AWWA Pipe: AWWA C900, Class 200, with bell end with gasket, and with spigot end.
 - 1. Comply with UL 1285 for fire-service mains if indicated.
 - 2. PVC Fabricated Fittings: AWWA C900, Class 200, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
 - 3. PVC Molded Fittings: AWWA C907, Class 150, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
 - 4. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - a. Gaskets: AWWA C111, rubber.
 - 5. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - a. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
 - 6. Tracer wire.
 - a. Trace wire shall be provided with all non-metallic pipe and shall be designed and manufactured for direct burial service. Trace wire insulating jacket shall be BLUE in color. Typical THHN or nylon coated electrical wire is not allowed. Trace wire for open trench installation shall be 12-gauge, insulated solid copper wire. The insulating jacket shall be a minimum of 30 mil polyethylene complying with ASTM-D-1248, 30 volt rating. Trace wire for directional bore or jacked installation shall be 12-gauge , (CCS) insulated copper-clad solid steel core hard drawn high strength horizontal drill tracing wire, average tensile break strength of at least 1000#, with minimum of 45 mil polyethylene jacket complying with ASTM-D-1248, 30 volt rating. At the CONTRACTOR'S option, CCS wire can be used for open trench installation.

2.2 JOINING MATERIALS

- A. Refer to Section 330500 "Common Work Results for Utilities" for commonly used joining materials.
- B. Brazing Filler Metals: AWS A5.8, BCuP Series.
- C. Bonding Adhesive for Fiberglass Piping: As recommended by fiberglass piping manufacturer.

- D. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.3 PIPING SPECIALTIES

- A. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- B. Tubular-Sleeve Pipe Couplings:
 - 1. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.
 - a. Standard: AWWA C219.

2.4 GATE VALVES

- A. AWWA, Cast-Iron Gate Valves:
 - 1. Nonrising-Stem, Metal-Seated Gate Valves:
 - a. Description: Gray- or ductile-iron body and bonnet; with cast-iron or bronze double-disc gate, bronze gate rings, bronze stem, and stem nut.
 - 1) Standard: AWWA C500.
 - 2) Minimum Pressure Rating: 200 psi
 - 3) End Connections: Mechanical joint.
 - 4) Interior Coating: Complying with AWWA C550.
 - 2. Nonrising-Stem, Resilient-Seated Gate Valves:
 - a. Description: Gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.
 - 1) Standard: AWWA C509.
 - 2) Minimum Pressure Rating: 200 psi.
 - 3) End Connections: Mechanical joint.
 - 4) Interior Coating: Complying with AWWA C550.
 - 3. Nonrising-Stem, High-Pressure, Resilient-Seated Gate Valves:
 - a. Description: Ductile-iron body and bonnet; with bronze or ductile-iron gate, resilient seats, bronze stem, and stem nut.
 - 1) Standard: AWWA C509.
 - 2) Minimum Pressure Rating: 250 psi.
 - 3) End Connections: Push on or mechanical joint.
 - 4) Interior Coating: Complying with AWWA C550.
 - 4. OS&Y, Rising-Stem, Metal-Seated Gate Valves:
 - a. Description: Cast- or ductile-iron body and bonnet, with cast-iron double disc, bronze disc and seat rings, and bronze stem.

- 1) Standard: AWWA C500.
 - 2) Minimum Pressure Rating: 200 psi.
 - 3) End Connections: Flanged.
5. OS&Y, Rising-Stem, Resilient-Seated Gate Valves:
- a. Description: Cast- or ductile-iron body and bonnet, with bronze or gray- or ductile-iron gate, resilient seats, and bronze stem.
 - 1) Standard: AWWA C509.
 - 2) Minimum Pressure Rating: 200 psi.
- B. UL/FMG, Cast-Iron Gate Valves:
1. UL/FMG, Nonrising-Stem Gate Valves:
 - a. Description: Iron body and bonnet with flange for indicator post, bronze seating material, and inside screw.
 - 1) Standards: UL 262 and FMG approved.
 - 2) Minimum Pressure Rating: 175 psi.
 - 3) End Connections: Flanged.
 2. OS&Y, Rising-Stem Gate Valves:
 - a. Description: Iron body and bonnet and bronze seating material.
 - 1) Standards: UL 262 and FMG approved.
 - 2) Minimum Pressure Rating: 175 psi.
 - 3) End Connections: Flanged.
- C. Bronze Gate Valves:
1. OS&Y, Rising-Stem Gate Valves:
 - a. Description: Bronze body and bonnet and bronze stem.
 - 1) Standards: UL 262 and FMG approved.
 - 2) Minimum Pressure Rating: 175 psi.
 - 3) End Connections: Threaded.
 2. Nonrising-Stem Gate Valves:
 - a. Description: Class 125, Type 1, bronze with solid wedge, threaded ends, and malleable-iron handwheel.
 - 1) Standard: MSS SP-80.

2.5 GATE VALVE ACCESSORIES AND SPECIALTIES

- A. Tapping-Sleeve Assemblies:
1. Description: Sleeve and valve compatible with drilling machine.
 - a. Standard: MSS SP-60.

- b. Tapping Sleeve: Cast- or ductile-iron or stainless-steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.
 - c. Valve: AWWA, cast-iron, nonrising-stem, metal resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.
- B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.
- 1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.
- C. Indicator Posts: UL 789, FMG-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.

2.6 CORPORATION VALVES AND CURB VALVES

- A. Service-Saddle Assemblies: Comply with AWWA C800. Include saddle and valve compatible with tapping machine.
- 1. Service Saddle: Copper alloy with seal and AWWA C800, threaded outlet for corporation valve.
 - 2. Corporation Valve: Bronze body and ground-key plug, with AWWA C800, threaded inlet and outlet matching service piping material.
 - 3. Manifold: Copper fitting with two to four inlets as required, with ends matching corporation valves and outlet matching service piping material.
- B. Curb Valves: Comply with AWWA C800. Include bronze body, ground-key plug or ball, and wide tee head, with inlet and outlet matching service piping material.
- C. Service Boxes for Curb Valves: Similar to AWWA M44 requirements for cast-iron valve boxes. Include cast-iron telescoping top section of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over curb valve and with a barrel approximately 3 inches in diameter.
- 1. Shutoff Rods: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and slotted end matching curb valve.

2.7 WATER METERS

- A. Water meters will be furnished by utility company.
- B. Displacement-Type Water Meters:
- 1. Description: With bronze main case.
 - a. Standard: AWWA C700.
 - b. Registration: Flow in cubic feet.

C. Compound-Type Water Meters:

1. Description:
 - a. Standard: AWWA C702.
 - b. Registration: Flow in cubic feet.

2.8 BACKFLOW PREVENTERS

- A. Backflow preventers shall be provided in accordance with the local water authority's requirements.

2.9 WATER METER BOXES

- A. Description: Cast-iron body and cover for disc-type water meter, with lettering "WATER METER" in cover; and with slotted, open-bottom base section of length to fit over service piping.
1. Option: Base section may be cast-iron, PVC, clay, or other pipe.
- B. Description-1: Cast-iron body and double cover for disc-type water meter, with lettering "WATER METER" in top cover; and with separate inner cover; air space between covers; and slotted, open-bottom base section of length to fit over service piping.
- C. Description-2: Polymer-concrete body and cover for disc-type water meter, with lettering "WATER" in cover; and with slotted, open-bottom base section of length to fit over service piping. Include vertical and lateral design loadings of 15,000 lb minimum over 10 by 10 inches square.

2.10 CONCRETE VAULTS

- A. Description: Precast, reinforced-concrete vault, designed for A-16 load designation according to ASTM C 857 and made according to ASTM C 858.
1. Ladder: ASTM A 36/A 36M, steel or polyethylene-encased steel steps.
 2. Manhole: ASTM A 48/A 48M Class No. 35A minimum tensile strength, gray-iron traffic frame and cover.
 - a. Dimension: 24-inch minimum diameter, unless otherwise indicated.
 3. Manhole-1: ASTM A 536, Grade 60-40-18, ductile-iron traffic frame and cover.
 - a. Dimension: 24-inch- minimum diameter, unless otherwise indicated.
 4. Drain: ASME A112.6.3, cast-iron floor drain with outlet of size indicated. Include body anchor flange, light-duty cast-iron grate, bottom outlet, and integral or field-installed bronze ball or clapper-type backwater valve.

2.11 FIRE HYDRANTS

- A. Dry-Barrel Fire Hydrants:
1. Description: Freestanding, with one NPS 4-1/2 and two NPS 2-1/2 outlets,

5-1/4-inch main valve, drain valve, and NPS 6 START_SIEND_SI mechanical-joint inlet. Include interior coating according to AWWA C550. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure.

- a. Standard: AWWA C502.
 - b. Pressure Rating: 250 psig
2. Description-1: Freestanding, with one NPS 4-1/2 and two NPS 2-1/2 outlets, 5-1/4-inch main valve, drain valve, and NPS 6 START_SIEND_SI mechanical-joint inlet. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure.
- a. Standards: UL 246, FMG approved.
 - b. Pressure Rating: 250 psig.
 - c. Outlet Threads: NFPA 1963, with external hose thread used by local fire department. Include cast-iron caps with steel chains.
 - d. Operating and Cap Nuts: Pentagon, 1-1/2 inches point to flat.
 - e. Direction of Opening: Open hydrant valve by turning operating nut to left or counterclockwise.
 - f. Exterior Finish: Red alkyd-gloss enamel paint, unless otherwise indicated.

B. Wet-Barrel Fire Hydrants:

1. Description: Freestanding, with one NPS 4-1/2 and two NPS 2-1/2 outlets, NPS 6 threaded or flanged inlet, and base section with NPS 6 mechanical-joint inlet. Include interior coating according to AWWA C550.
 - a. Standard: AWWA C503.
 - b. Pressure Rating: 150 psig minimum.
2. Description-1: Freestanding, with one NPS 4-1/2 and two NPS 2-1/2 outlets, NPS 6 threaded or flanged inlet, and base section with NPS 6 mechanical-joint inlet.
 - a. Standards: UL 246 and FMG approved.
 - b. Pressure Rating: 150 psig minimum.
 - c. Outlet Threads: NFPA 1963, with external hose thread used by local fire department. Include cast-iron caps with steel chains.
 - d. Operating and Cap Nuts: Pentagon, 1-1/2 inches point to flat.
 - e. Direction of Opening: Open hydrant valves by turning operating nut to left or counterclockwise.
 - f. Exterior Finish: Red alkyd-gloss enamel paint, unless otherwise indicated.

2.12 FIRE DEPARTMENT CONNECTIONS

A. Fire Department Connections:

1. Description: Freestanding, with cast-bronze body, thread inlets according to NFPA 1963 and matching local fire department hose threads, and threaded bottom outlet. Include lugged caps, gaskets, and chains; lugged swivel connection and drop clapper for each hose-connection inlet; 18-inch-START_SIEND_SI high brass sleeve; and round escutcheon plate.

- a. Standard: UL 405.
- b. Connections: Two NPS 2-1/2 inlets and one NPS 6 outlet.
- c. Connections-1: Four NPS 2-1/2 inlets and one NPS 6 outlet.
- d. Connections-2: Six NPS 2-1/2 inlets and one START_SIEND_SINPS 8 outlet.
- e. Inlet Alignment: horizontal.
- f. Finish Including Sleeve: Rough chrome-plated.
- g. Escutcheon Plate Marking: "STANDPIPE."

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Refer to Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

- A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.
- B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.
- C. Do not use flanges or unions for underground piping.
- D. Flanges, unions, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.
- E. Underground water-service piping NPS 3/4 to NPS 3 shall be soft copper tube, ASTM B 88, Type K; ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.
- F. Underground water-service piping NPS 4 and NPS 6 shall be any of the following:
 1. Soft copper tube, ASTM B 88, Type K; ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.
 2. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed joints.
 3. NPS 4 and NPS 6: NPS 6 PVC, AWWA Class 150 pipe; PVC, AWWA Class 150 molded fittings; and gasketed joints.
- G. Water Meter Box Water-Service Piping NPS 3/4 to NPS 2 shall be same as underground water-service piping.
- H. Aboveground Water-Service Piping NPS 3/4 to NPS 3 shall be hard copper tube, ASTM B 88, Type K, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.
- I. Aboveground and vault water-service piping NPS 4 and NPS 6 shall be any of the following:
 1. Hard copper tube, ASTM B 88, Type K; ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.

2. Ductile-iron, grooved-end pipe; ductile-iron, grooved-end appurtenances; and grooved joints.
- J. Underground Fire-Service-Main Piping NPS 4 to NPS 8 shall be any of the following:
1. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed joints.
 2. PE, Class 200, fire-service pipe; molded PE fittings; and heat-fusion joints.
 3. PVC, AWWA Class 150 pipe listed for fire-protection service; PVC Class 150 fabricated or molded fittings; and gasketed joints.
 4. PVC, AWWA Class 200 pipe listed for fire-protection service; PVC Class 200 fabricated fittings; and gasketed joints.
- K. Aboveground and Vault Fire-Service-Main Piping NPS 4 to NPS 8 shall be ductile-iron, grooved-end pipe; ductile-iron-pipe appurtenances; and grooved joints.
- L. Underground Combined Water-Service and Fire-Service-Main Piping NPS 6 to NPS 10 shall be any of the following:
1. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed joints.
 2. PVC, AWWA Class 200 pipe listed for fire-protection service; PVC fabricated or molded fittings of same class as pipe; and gasketed joints.
- M. Aboveground and Vault Combined Water Service and Fire-Service-Main Piping NPS 6 to NPS 10 shall be ductile-iron, grooved-end pipe; ductile-iron-pipe appurtenances; and grooved joints.

3.3 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3START_SIEND_SI and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FMG, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.
- B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
1. Underground Valves, NPS 3START_SIEND_SI and Larger: AWWA, cast-iron, nonrising-stem, resilient seated gate valves with valve box.
 2. Underground Valves, NPS 4START_SIEND_SI and Larger, for Indicator Posts: UL/FMG, cast-iron, nonrising-stem gate valves with indicator post.
 3. Use the following for valves in vaults and aboveground:
 - a. Gate Valves, NPS 2 and Smaller: Bronze, rising stem.
 - b. Gate Valves, NPS 3 and Larger: AWWA

3.4 PIPING SYSTEMS – COMMON REQUIREMENTS

- A. See Section 330500 "Common Work Results for Utilities" for piping-system common requirements.

3.5 PIPING INSTALLATION

- A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.
- B. Water-Main Connection-1: Tap water main according to requirements of water utility company and of size and in location indicated.
- C. Make connections larger than NPS 2 with tapping machine according to the following:
 - 1. Install tapping sleeve and tapping valve according to MSS SP-60.
 - 2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
 - 3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
 - 4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.
- D. Make connections NPS 2 and smaller with drilling machine according to the following:
 - 1. Install service-saddle assemblies and corporation valves in size, quantity, and arrangement required by utility company standards.
 - 2. Install service-saddle assemblies on water-service pipe to be tapped. Position outlets for corporation valves.
 - 3. Use drilling machine compatible with service-saddle assemblies and corporation valves. Drill hole in main. Remove drilling machine and connect water-service piping.
 - 4. Install corporation valves into service-saddle assemblies.
 - 5. Install manifold for multiple taps in water main.
 - 6. Install curb valve in water-service piping with head pointing up and with service box.
- E. Comply with NFPA 24 for fire-service-main piping materials and installation.
 - 1. Install copper tube and fittings according to CDA's "Copper Tube Handbook."
- F. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.
- G. Install PE pipe according to ASTM D 2774 and ASTM F 645.
- H. Install PVC, AWWA pipe according to ASTM F 645 and AWWA M23.
- I. Bury piping with depth of cover over top at least 30 inches, with top at least 12 inches below level of maximum frost penetration.
- J. Extend water-service piping and connect to water-supply source and building-water-piping systems at outside face of building wall in locations and pipe sizes indicated.
 - 1. Terminate water-service piping at building wall until building-water-piping systems are installed. Terminate piping with caps, plugs, or flanges as

required for piping material. Make connections to building-water-piping systems when those systems are installed.

- K. Sleeves are specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- L. Mechanical sleeve seals are specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- M. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.

3.6 JOINT CONSTRUCTION

- A. See Section 330500 "Common Work Results for Utilities" for basic piping joint construction.
- B. Make pipe joints according to the following:
 - 1. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
 - 2. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
 - 3. Ductile-Iron Piping, Grooved Joints: Cut-groove pipe. Assemble joints with grooved-end, ductile-iron-piping couplings, gaskets, lubricant, and bolts according to coupling manufacturer's written instructions.
 - 4. PE Piping Insert-Fitting Joints: Use plastic insert fittings and fasteners according to fitting manufacturer's written instructions.
 - 5. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
 - 6. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure.

3.7 ANCHORAGE INSTALLATION

- A. Anchorage, General: Install water-distribution piping with restrained joints. Anchorages and restrained-joint types that may be used include the following:
 - 1. Concrete thrust blocks.
 - 2. Locking mechanical joints.
 - 3. Set-screw mechanical retainer glands.
 - 4. Bolted flanged joints.
 - 5. Heat-fused joints.
 - 6. Pipe clamps and tie rods.
- B. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:
 - 1. Gasketed-Joint, Ductile-Iron, Water-Service Piping: According to AWWA C600.
 - 2. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.
 - 3. Fire-Service-Main Piping: According to NFPA 24.

- C. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.8 VALVE INSTALLATION

- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.
- B. UL/FMG, Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.
- C. MSS Valves: Install as component of connected piping system.
- D. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.

3.9 WATER METER INSTALLATION

- A. Install water meters, piping, and specialties according to utility company's written instructions.
- B. Water Meters: Install displacement-type water meters, NPS 2 and smaller, in meter boxes with shutoff valves on water meter inlets. Include valves on water meter outlets and valved bypass around meters unless prohibited by authorities having jurisdiction.
- C. Water Meters-1: Install compound-type water meters, NPS 3 and larger, in meter vaults. Include shutoff valves on water meter inlets and outlets and valved bypass around meters. Support meters, valves, and piping on brick or concrete piers.

3.10 BACKFLOW PREVENTER INSTALLATION

- A. Install backflow preventers of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.
- B. Do not install backflow preventers that have relief drain in vault or in other spaces subject to flooding.
- C. Do not install bypass piping around backflow preventers.
- D. Support NPS 2-1/2 and larger backflow preventers, valves, and piping near floor and on brick or concrete piers.

3.11 WATER METER BOX INSTALLATION

- A. Install water meter boxes in paved areas flush with surface.
- B. Install water meter boxes in grass or earth areas with top 2 inches START_S IEND_S I above surface.

3.12 CONCRETE VAULT INSTALLATION

- A. Install precast concrete vaults according to ASTM C 891.

3.13 FIRE HYDRANT INSTALLATION

- A. General: Install each fire hydrant with separate gate valve in supply pipe, anchor with restrained joints or thrust blocks, and support in upright position.
- B. Wet-Barrel Fire Hydrants: Install with valve below frost line. Provide for drainage.
- C. AWWA Fire Hydrants: Comply with AWWA M17.
- D. UL/FMG Fire Hydrants: Comply with NFPA 24.

3.14 FIRE DEPARTMENT CONNECTION INSTALLATION

- A. Install protective pipe bollards on two sides of each fire department connection. Pipe bollards are specified in Section 055000 "Metal Fabrications."

3.15 CONNECTIONS

- A. See Section 330500 "Common Work Results for Utilities" for piping connections to valves and equipment.
- B. Connect water-distribution piping to existing water main. Use tapping sleeve and tapping valve.
- C. Connect water-distribution piping to interior domestic water and fire-suppression piping.
- D. Connect waste piping from concrete vault drains to sanitary sewerage system. See Section 221313 "Facility Sanitary Sewers" for connection to sanitary-sewer piping.

3.16 FIELD QUALITY CONTROL

- A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Hydrostatic Tests: Test at not less than one-and-one-half times working pressure for two hours.
 - 1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
- C. Prepare reports of testing activities.

3.17 IDENTIFICATION

- A. Install continuous underground detectable warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, directly over piping. Underground warning tapes are specified in Section 312000 "Earth Moving."
- B. Permanently attach equipment nameplate or marker indicating plastic water-service piping, on main electrical meter panel. See Section 330500 "Common Work Results for Utilities" for identifying devices.

3.18 CLEANING

- A. Clean and disinfect water-distribution piping as follows:
 - 1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
 - 2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
 - 3. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or do as follows:
 - a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
 - b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
 - c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
 - d. Submit water samples in sterile bottles to authorities having jurisdiction. Two (2) sets of samples shall be taken on consecutive days and tested at an ADH-approved laboratory. Repeat procedure if biological examination shows evidence of contamination.
- B. Prepare reports of purging and disinfecting activities.

END OF SECTION

SECTION 330513

MANHOLES AND STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Modular precast concrete manhole and structures with tongue-and-groove joints, cover frame, covers, anchorage, and accessories. For junction box and inlet structure, and detention basin.
 - 2. Bedding and cover materials.
- B. Related Sections:
 - 1. Section 32 0523 - Concrete for Exterior Improvements: Concrete for manhole and structure base pad construction.

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 318 - Building Code Requirements for Structural Concrete.
 - 2. ACI 530/530.1 - Building Code Requirements for Masonry Structures and Specifications for Masonry Structures.
- B. ASTM International:
 - 1. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
 - 2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 3. ASTM A536 - Standard Specification for Ductile Iron Castings.
 - 4. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 5. ASTM C55 - Standard Specification for Concrete Brick.
 - 6. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).
 - 7. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
 - 8. ASTM C497 - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.
 - 9. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.
 - 10. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.
 - 11. ASTM D3753 - Standard Specification for Glass-Fiber-Reinforced Polyester

1.3 DESIGN REQUIREMENTS

- A. Equivalent strength: Based on structural design of reinforced concrete as outlined in ACI 318.

- B. Design of Lifting Devices for Precast Components: In accordance with ASTM C913.
- C. Design of Joints for Precast Components: In accordance with ASTM C913; maximum leakage of 0.025 gallons per hour per foot of joint at 3 feet of head.

1.4 SUBMITTALS

- A. Shop Drawings: Indicate manhole and structure locations, elevations, piping, and sizes and elevations of penetrations.
- B. Product Data: Submit cover and frame construction, features, configuration, and dimensions.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the Arkansas Department of Transportation (ARDOT) Standard Specifications.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years of experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with precast concrete manufacturer's instructions for unloading, storing and moving precast manholes and structures.
- B. Store precast concrete manholes and structures to prevent damage to Owner's property or other public or private property. Repair property damaged from materials storage.
- C. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Drawings to indicate its intended use.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Cold Weather Requirements: ACI 530.

PART 2 - PRODUCTS

2.1 MANHOLES AND STRUCTURES

- A. Manufactures
 - 1. Precast Manhole square manhole.
 - a. Hanson Pipe and Products, Inc, 48-inch square manhole or equal.
- B. Manhole and Structure Sections: Reinforced precast concrete in accordance with ASTM C478 with gaskets in accordance with ASTM C923 or cast-in-place (submit shop drawings for cast-in-place reinforcement and dimensions) .

- C. Mortar and Grout: As specified in Section 040511, Masonry Mortar and Grout. Type S.
- D. Reinforcement: As specified in Section 320523, Concrete for Exterior Improvements.

2.2 FRAMES AND COVERS

- A. Refer to Drawings for frame, grates, and covers required for each manhole and structure.
- B. Product Description: Cast iron construction, machined flat bearing surface and as shown on the Drawings.

2.3 COMPONENTS

- A. Manhole Steps: corrosion resistant, coated, and reinforced with steel per ASTM C-478. Steel reinforcing minimum 1/2" diameter. Formed integral with manhole and structure sections.

2.4 CONFIGURATION

- A. Shaft Constructions: As indicated on the Drawings, lipped male/female joints; sleeved to receive pipe sections.
- B. Shape: As indicated on the Drawings.
- C. Clear Inside Dimensions: As indicated on the Drawings.
- D. Design Depth: As indicated on Drawings.
- E. Clear Cover Opening: As indicated on Drawings.
- F. Pipe Entry: Furnish openings as indicated on Drawings.
- G. Steps: As required by code.

2.5 BEDDING AND COVER MATERIALS

- A. Refer to Section 312116, Trenching.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify items provided by other sections of Work are properly sized and located.
- B. Verify built-in items are in proper location, and ready for roughing into Work.
- C. Verify correct size of manhole and structure excavation.

3.2 PREPARATION

- A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

- B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.
- C. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage. Remove and replace damaged units.

3.3 INSTALLATION

- A. Excavation and Backfill:
 - 1. Excavate for manholes and structures in accordance with Section 312000 in location and to depth shown. Provide clearance around sidewalls of structure for construction operations.
 - 2. When groundwater is encountered, prevent accumulation of water in excavations. Place manholes and structures in dry trench.
 - 3. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation.
- B. Place base pad, trowel top surface level.
- C. Place manhole and structure sections plumb and level, trim to correct elevations, anchor to base pad.
- D. Backfill excavations for manholes and structures in accordance with Section 312000.
- E. Form and place manhole and structures cylinder plumb and level, to correct dimensions and elevations.
- F. Cut and fit for pipe sections.
- G. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour to form continuous drainage channel as indicated on Drawings.
- H. Set cover frames and covers level without tipping, to correct elevations.
- I. Coordinate with other sections of Work to provide correct size, shape, and location.

3.4 PRECAST CONCRETE MANHOLE AND STRUCTURE INSTALLATION

- A. Lift precast components at lifting points designated by manufacturer.
- B. When lowering manholes and structures into excavations and joining pipe to units, take precautions to ensure interior of pipeline and structure remains clean.
- C. Set precast structures bearing firmly and fully on crushed stone bedding, compacted in accordance with provisions of Section 312000 and 312116 or on other support system shown on Drawings.
- D. Assemble multi-section structures by lowering each section into excavation. Lower, set level, and firmly position base section before placing additional sections.

- E. Remove foreign materials from joint surfaces and verify sealing materials are placed properly. Maintain alignment between sections by using guide devices affixed to lower section.
- F. Joint sealing materials may be installed on site or at manufacturer's plant.
- G. Verify manholes and structures installed satisfy required alignment and grade.
- H. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space with mortar.
- I. Cut pipe to finish flush with interior of structure.
- J. Shape inverts through manhole and structures as shown on Drawings.

3.5 FRAME AND COVER INSTALLATION

- A. Set frames using mortar and pre-cast concrete rings. Install precast reinforced concrete rings. Lay precast concrete rings in full bed of mortar and completely fill joints.

3.6 FIELD QUALITY CONTROL

- A. Test cast-in-place concrete in accordance with Section 32 0523 Concrete for Exterior Improvements.
- B. Vertical Adjustment of Existing Manholes and Structures:
 - 1. Where required, adjust top elevation of existing manholes and structures to finished grades shown on Drawings.
 - 2. Reset existing frames, grates and covers, carefully removed, cleaned of mortar fragments, to required elevation in accordance with requirements specified for installation of castings.
 - 3. Remove concrete without damaging existing vertical reinforcing bars when removal of existing concrete wall is required. Clean vertical bars of concrete and bend into new concrete top slab or splice to required vertical reinforcement, as indicated Drawings.
 - 4. Clean and apply sand-cement bonding compound on existing concrete surfaces to receive cast-in-place concrete in accordance with Section 32 0523.

END OF SECTION

SECTION 33 1000

SITE WATER DISTRIBUTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe and fittings for site water line including domestic water line and fire water line
 - 2. Valves.
 - 3. Hydrants.
 - 4. Positive displacement meters.
 - 5. Backflow preventers.
 - 6. Underground pipe markers.
 - 7. Precast concrete vault.
 - 8. Bedding and cover materials.
- B. Related Sections:
 - 1. Section 31 2000 - Earthwork: Product and execution requirements for excavation and backfill required by this section.
 - 2. Section 31 2116 - Trenching: Execution requirements for trenching required by this section.
 - 3. Section 33 1100 – Water service connections: Connections for domestic water service 2 inches or smaller.
 - 4. Section 33 1200 - Disinfection of Water Distribution: Disinfection of site service utility water piping.
 - 5. Section 32 0523 – Concrete for Exterior Improvements: Concrete for thrust restraints.

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. American Society of Mechanical Engineers:
 - 1. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
 - 2. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- C. American Society of Sanitary Engineering:
 - 1. ASSE 1012 - Backflow Preventer with Intermediate Atmospheric Vent.
 - 2. ASSE 1013 - Reduced Pressure Principle Backflow Preventers.
- D. ASTM International:
 - 1. ASTM B88 - Standard Specification for Seamless Copper Water Tube.
 - 2. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.

3. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 4. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 5. ASTM D1785 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
 6. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
 7. ASTM D2466 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
 8. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
 9. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 10. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
 11. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
 12. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
- E. American Welding Society:
1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
- F. American Water Works Association:
1. AWWA C104 - American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
 2. AWWA C105 - American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.
 3. AWWA C111 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 4. AWWA C151 - American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.
 5. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service.
 6. AWWA C502 - Dry-Barrel Fire Hydrants.
 7. AWWA C504 - Rubber-Sealed Butterfly Valves.
 8. AWWA C508 - Swing-Check Valves for Waterworks Service, 2 in. (50 mm) Through 24 in. (600 mm) NPS.
 9. AWWA C509 - Resilient-Seated Gate Valves for Water-Supply Service.
 10. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
 11. AWWA C606 - Grooved and Shouldered Joints.
 12. AWWA C700 - Cold-Water Meters - Displacement Type, Bronze Main Case.

13. AWWA C701 - Cold-Water Meters - Turbine Type, for Customer Service.
14. AWWA C702 - Cold-Water Meters - Compound Type.
15. AWWA C706 - Direct-Reading, Remote-Registration Systems for Cold-Water Meters.
16. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. through 12 in., for Water Distribution.
17. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in. through 3 in., for Water Service.
18. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.

G. Underwriters Laboratories Inc.:

1. UL 246 - Hydrants for Fire - Protection Service.

1.3 SUBMITTALS

- A. Product Data: Submit data on pipe materials, pipe fittings, valves and accessories.
- B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.
- B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the project specifications or City of Wynne's standard specifications - whichever is more stringent, City of Wynne's Fire Department's, the Arkansas Department of Health's requirements.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store valves in shipping containers with labeling in place.

PART 2 PRODUCTS

2.1 WATER PIPING

- A. Ductile Iron Pipe: AWWA C151: AWWA C104:
 1. Fittings: Ductile iron, standard thickness.
 2. Joints: Mechanical joint or flanged as indicated, or AWWA C111, rubber gasket with rods.
 3. Jackets: AWWA C105 polyethylene jacket, Double layer, half lapped, 10 mil polyethylene tape.
- B. Copper Tubing: ASTM B88, Type K, annealed:
 1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
 2. Joints: Compression connection or AWS A5.8, BCuP silver braze.
- C. PVC Pipe: ASTM D1784 and CS-256 Type 1, Grade 1 or Grade 2, Polyvinyl Chloride Plastic. Pipe shall conform to ASTM D2241, SDR-17 Pressure Class 250:

1. Fittings shall be in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.
2. Joints shall be in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.

2.2 GATE VALVES

- A. Manufacturers:
 1. American Darling.
 2. Mueller.
 3. Smith Metropolitan.
 4. Approved equal.
- B. 2-1/2 inches and Smaller: Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, compression IPS ends, with control rod, post indicator, extension box and valve key.
- C. 3 inches and Larger: AWWA C509, Iron body, bronze trim, non-rising stem with square nut, single wedge, resilient seat, flanged mechanical joint ends, control rod, post indicator, extension box and valve key.

2.3 UNDERGROUND PIPE MARKERS

- A. Plastic Ribbon Tape: Bright colored, continuously printed, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.
- B. Trace Wire: 12-gauge insulated copper wire, insulating jacket shall be a minimum of 30 mil polyethylene complying with ASTM-D-1248, 30 volt rating, brightly colored plastic covering, imprinted with "Water Service" in large letters.

2.4 TAPPING SLEEVES

- A. Sleeves may be iron or steel. Tapping sleeves shall be designed for a working pressure of at least 175-psi and a test pressure as required for the project (225 psi or greater as required). Fabricated steel sleeves shall be Type 304 stainless steel OR carbon steel coated with high build Thermo-Set Epoxy. A test plug shall be furnished through the body for hydrostatic pressure testing on all sleeves. The outlets shall conform to ANSI B16.1, Class 125 flanges designed to accept tapping valves described herein. All bolts shall be of corrosion resistant alloy. Sleeves may be designed for a watertight seal by the use of mechanical followers or by the use of a gasket placed in a recess between the sleeve body and the pipe barrel. Only sleeves with mechanical followers or full circle gaskets may be used for full size taps. The use of other type sleeves is restricted to taps where the branch is at least one size smaller than the run.

2.5 BEDDING AND COVER MATERIALS

- A. Bedding: As indicated on Drawings.
- B. Cover: As indicated on the Drawings.
- C. Soil Backfill from Above Pipe to Finish Grade: As indicated on the Drawings.

2.6 ACCESSORIES

- A. Concrete for Thrust Restraints: Concrete type specified in Section 32 0523.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify building service connection and municipal utility water main size, location, and invert are as indicated on Drawings.

3.2 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

3.3 BEDDING

- A. Excavate pipe trench in accordance with Section 33 1100 for Work of this Section.
- B. Form and place concrete for pipe thrust restraints at change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide thrust restraint bearing on subsoil as indicated on the Drawings.
- C. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding 6 inches compacted depth; compact to 95 percent of Standard Proctor.
- D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact to 95 percent.

3.4 INSTALLATION - PIPE

- A. Maintain separation of water main from sewer piping in accordance with Arkansas Department of Health requirements and in accordance with the below:
 - 1. All water mains are to cross over sewer mains with a minimum of 18-in of vertical separation and water and sewer mains shall have a minimum of 10-ft horizontal separation.
 - 2. Where 18-in of separation cannot be achieved, the water or sewer main shall be encased in watertight pipe with sealed watertight ends extending at least ten feet either side of the crossing.
 - 3. Where a water main must unavoidably pass beneath the sewer line, at least 18 in of separation must be maintained between the outside of the two pipes in addition to either the water or sewer main being encased in watertight pipe with sealed watertight ends extending at least ten feet either side of the crossing.
- B. Install pipe to indicated elevation to within tolerance of 1 inch.
- C. Install ductile iron piping and fittings to AWWA C600.
- D. Route pipe in straight line as indicated.
- E. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- F. Install access fittings to permit disinfection of water system performed under Section 02516.
- G. Form and place concrete for thrust restraints at each elbow or change of direction of pipe main.
- H. Establish elevations of buried piping with not less than 2.5ft of cover.
- I. Install trace wire continuous buried 6 inches below finish grade, above pipe line; coordinate with Section 33 1100.
- J. Backfill trench in accordance with Section 31 2116.

3.5 INSTALLATION - VALVES AND HYDRANTS

- A. Set valves on solid bearing.
- B. Center and plumb valve box over valve. Set box cover flush with finished grade.

3.6 TAPPING SLEEVES AND VALVES

- A. The pipe shall be free of dirt and other debris before attaching tapping sleeve or tapping saddle. That part of the pipe barrel, other than concrete pipe, which will be in contact with

- the gasket of tapping saddles, shall be smooth. All rough areas on the pipe barrel shall be smoothed. The CONTRACTOR shall field verify all pipe and fitting dimensions. Tapping sleeve, tapping saddle, or direct tap shall be installed at least twenty-four (24) inches from bell joints, fittings, end of pipe joint, or another tap.
- B. Tapping saddles or sleeves shall be bolted securely to the pipe. The face of the outlet shall be plumb. Mechanical joint glands for tapping sleeves shall be installed. The strap bolts for tapping saddles shall be alternately tightened "snug" and then alternately tightened to a torque of 100 foot-pounds.
 - C. The tapping valve shall be bolted securely to the tapping sleeve or tapping saddle outlet flange. The tapping valve shall be adequately supported from beneath. The weight of the tapping valve shall not be supported by the tapping sleeve/saddle. A concrete "mud slab" at least six (6) inches thick shall be poured under the location of all tapping valves 14 inches and larger and the weight of the valve shall be supported by the mud slab. The tapping machine shall be bolted securely to the valve.
 - D. After installation of the tapping sleeve or saddle and the tapping valve and before drilling through the pipe, the assembly shall be hydrostatically tested at the pressure specified by the City of Wynne's water department, by introducing water through the sleeve or saddle test tap.
 - E. The pilot drill and shell cutter shall be in good condition. The pilot, shell cutter, and any other component of the tapping machine that will or may come into contact with the interior of the tap valve, tap saddle, or potable water pipe, shall be thoroughly sterilized with straight bleach or super-chlorinated solution. The shell cutter shall be the size required to cut the full opening specified.
 - F. Only qualified operators shall operate the tapping machine. The "coupon" shall be withdrawn and be given to the ENGINEER for inspection. Care shall be exercised to avoid drilling or cutting the backside of the pipe by carefully assuring the engagement of the pilot drill and shell cutter shaft.
 - G. Openings in the pipe barrel for tapping saddles installed on dry pipe shall be cut with a pilot drill and shell cutter. Torch cutting is not permitted.
 - H. Tapping operations must not commence before inspection by the ENGINEER or his authorized representative. Tapping operations must not commence before the tapping assembly has passed a pressure test as required by the City of Wynne's water department.
 - I. A thick coat of coal tar epoxy or other approved bituminous material shall be applied to the straps and bolts of saddles after installation and cleaning or by enclosing polyethylene material in accordance with the City of Wynne's water department requirements.
 - J. Tapping saddles and sleeves with a run size 2" or larger shall be adequately thrust blocked with concrete.

3.7 SERVICE CONNECTIONS

- A. Install water service in shall be in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent..
- B. Install water meter and backflow preventer in concrete vault located on site.
- C. Install water service to 5 feet of building. Connect to building water service.
- D. Install Work in shall be in accordance with the project specifications or City of Wynne's standard specifications - whichever is more stringent, City of Wynne's Fire Department, and Arkansas Department of Health's standards.

3.8 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Flush and disinfect system in accordance with Section 33 1200.

3.9 HYDROSTATIC PRESSURE AND LEAKAGE TESTS

- A. Testing shall begin within five (5) days after the completion of the installation of the water main (on a per main or per section/area basis). Once pressure testing is begun, it shall be vigorously pursued until complete. After the pipelines or isolated sections of the pipeline have been filled with water and air purged, the pressure shall be increased to the test pressure by means of a pump.
- B. The CONTRACTOR shall furnish a pump and appurtenances as described in Section 34 herein. The OWNER will furnish the meter and pressure gauge after the CONTRACTOR has satisfied himself that the line will pass the test. The CONTRACTOR shall furnish all labor for conducting the tests.
- C. The test pressure shall be 225 psi at the highest point of the pipeline segment being tested or as otherwise specified by the ENGINEER. All pipelines, service lines, and appurtenances shall be tested. The pressure test shall be documented and documentation shall be provided to the AE and the City of Wynne's water department for review and approval.
- D. The duration of the hydrostatic leakage test shall be two (2) hours or as specified by the ENGINEER.
1. The duration of the hydrostatic leakage test on tapping sleeves/saddles shall be thirty (30) minutes at 225 psi with zero leakage.
- E. The source of water for the pump suction shall be potable water from the OWNER'S distribution system. The vessel used must be approved by the ENGINEER.
- F. All interior valves including guardian valves on fire hydrants and other appurtenances shall be open during all tests.
- G. After the specified test pressure has been applied the entire pipeline shall be checked in the presence of the ENGINEER giving particular attention to that part of the pipeline and those appurtenances that are exposed.
- H. If leaks are apparent, the CONTRACTOR shall, at his own expense, perform whatever work and/or replace whatever material that is required in order to remedy the defect and stop the leaks. All corrective work shall be approved by the ENGINEER.
- I. After the CONTRACTOR has taken the necessary action to repair or replace any part of the pipeline or appurtenances where leaks were apparent or if no leaks were apparent, the pipelines shall be subjected to a leakage test at the pressure specified with a meter inserted in the test pump discharge line.
- J. 1. The maximum leakage per hour for jointed pipe (ductile iron, PVC, concrete pipe, etc.) shall be as calculated from the following formula:
All rubber gasket or O-ring joints
$$Q = LD \sqrt{P} / 148,000$$

Q = Quantity of makeup water (gallons per hour)
L = Length of pipe section being tested (feet)
D = Nominal pipe diameter (inches)
P = Test pressure (psi); 225 psi or as specified by the ENGINEER
2. The maximum leakage per hour for non-jointed pipe (welded steel, welded PVC, welded HDPE, etc., and containing gasket-jointed connections for fittings, valves, etc.) shall be as calculated from the following formula:

$$Q = ND \sqrt{P} / 7,400$$

Q = Quantity of makeup water (gallons per hour)

N = Summation of mechanical and push-on gasket joints in length of pipe tested

D = Nominal pipe diameter (inches)

P = Test pressure (psi); 225 psi or as specified by the ENGINEER

3. The test pressure shall not vary by more than \pm five (5) psi for the duration of the test. During the duration of the two-hour test, if the test pressure drops more than 5.0 psi from the start pressure, the test shall be terminated and considered failure due to assumed leaks in the tested pipe section. If the pressure rises beyond the allowed 5 psi variance, the test shall be terminated and remaining air shall be purged from the pipeline.

4. Upon completion of a two-hour test where the test pressure did not vary by more than \pm five (5) psi, the CONTRACTOR shall determine the leakage amount by measuring the amount of "make-up" water necessary to restore the original starting pressure.

- K. If any test of pipe laid discloses leakage greater than the allowable leakage as calculated from the above formula(s), the CONTRACTOR shall, at his expense, locate the leak or leaks and perform whatever work and/or replace whatever material that is required in order to remedy the defect(s) and stop the leak(s). All corrective work must be approved by the ENGINEER. Tests on tapping sleeves/saddles must have zero leakage to be considered successful.

3.10 TEST PUMP

- A. The CONTRACTOR shall provide a water pump for testing the mains hydrostatically. The pump shall have the following features:
1. Designed so that the required test pressures can be attained.
 2. RESERVED
 3. The pump discharge shall be equipped with the following, in the order listed from the pump outward (see CAW Standard Detail Sheet):
 - a. Check valve arranged so as to prevent flow back toward pump.
 - b. Adjustable pressure regulating device capable of maintaining discharge pressure at a constant level.
 - c. Valved exhaust outlet.
 - d. Section of flexible hose - length sufficient that ends of hose rests on ground.
 - e. Outlet for pressure gauge. Outlet shall be equipped with valve and surge dampening device. Connection for gauge shall be 1/4" F.I.P. The pressure gauge will be furnished by the OWNER.
 4. The pump suction shall be equipped with the following from the pump outward (see CAW Standard Detail Sheet):
 - a. Suction pipe.
 - b. Straight meter coupling - 1/2" M.I.P. x 5/8" Meter Nut.
 - c. 5/8" meter - furnished by owner
 - d. Straight meter coupling - 1/2" M.I.P. x 5/8" Meter Nut.
 - e. End screen to prohibit entry of foreign matter if pump suction is connected to a vessel instead of on a water main.
- B. The CONTRACTOR shall provide all other necessary connections for connecting pump from the suction source and to the main being tested.

3.11 FIELD QUALITY CONTROL

- A. Perform pressure test on domestic site water distribution system in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.
- B. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

END OF SECTION

SECTION 33 1100

WATER SERVICE CONNECTIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe and fittings for domestic water service connections to buildings.
 - 2. Corporation stop assembly.
 - 3. Curb stop assembly.
 - 4. Meter setting equipment.
 - 5. Water meters.
 - 6. Backflow preventers.
 - 7. Underground pipe markers.
 - 8. Precast concrete vault.
 - 9. Bedding and cover materials.
- B. Related Sections:
 - 1. Section 31 2000 – Earthwork.
 - 2. Section 31 2116 - Trenching.
 - 3. Section 33 1000 – Site Water Distribution
 - 4. Section 33 1200 - Disinfection of Water Distribution

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. American Society of Mechanical Engineers:
 - 1. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
 - 2. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- C. American Society of Sanitary Engineering:
 - 1. ASSE 1012 - Backflow Preventer with Intermediate Atmospheric Vent.
 - 2. ASSE 1013 - Reduced Pressure Principle Backflow Preventers.
- D. ASTM International:
 - 1. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
 - 2. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.
 - 3. ASTM B88 - Standard Specification for Seamless Copper Water Tube.
 - 4. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.
 - 5. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m^{3 - 6. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³ (2,700 kN-m/m³}

7. ASTM D1785 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
 8. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
 9. ASTM D2466 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
 10. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
 11. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 12. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- E. American Welding Society:
1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
- F. American Water Works Association:
1. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
 2. AWWA C700 - Cold-Water Meters - Displacement Type, Bronze Main Case.
 3. AWWA C701 - Cold-Water Meters - Turbine Type, for Customer Service.
 4. AWWA C702 - Cold-Water Meters - Compound Type.
 5. AWWA C706 - Direct-Reading, Remote-Registration Systems for Cold-Water Meters.
 6. AWWA C800 - Underground Service Line Valves and Fittings.
 7. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in. through 3 in., for Water Service.
 8. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.

1.3 SUBMITTALS

- A. Shop Drawings: Provide shop drawings for precast concrete vaults to include detail drawings showing the vault and accessories.
- B. Product Data: Submit data on pipe materials, pipe fittings, corporation stop assemblies, curb stop assemblies, meters, meter setting equipment, service saddles, backflow preventer, and accessories.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of piping mains, curb stops, connections, thrust restraints, and invert elevations.
- B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the project specifications or City of Wynne's standard specifications – whichever is more stringent, City of Wynne's Fire Department, and the Arkansas Department of Health's standards and requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- B. During loading, transporting, and unloading of materials and products, exercise care to prevent any damage.

- C. Store products and materials off ground and under protective coverings and custody, away from walls and in manner to keep these clean and in good condition until used.
- D. Exercise care in handling precast concrete products to avoid chipping, cracking, and breakage.

PART 2 PRODUCTS

2.1 WATER PIPING AND FITTINGS

- A. Copper Tubing: ASTM B88 Type K annealed:
 - 1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
 - 2. Joints: Compression connection or AWS A5.8, BCuP silver braze.

2.2 CORPORATION STOP ASSEMBLY

- A. Furnish materials accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.
- B. Corporation Stops:
 - 1. Brass or red brass alloy body conforming to ASTM B62.
 - 2. Inlet end threaded for tapping according to AWWA C800.
 - 3. Outlet end suitable for service pipe specified.
- C. Service Saddles:
 - 1. Double strap type, designed to hold pressures in excess pipe working pressure.

2.3 CURB STOP ASSEMBLY

- A. Furnish materials in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.
- B. Curb Stops:
 - 1. Brass or red brass alloy body conforming to ASTM B62.
 - 2. Plug type valve.
 - 3. Positive pressure sealing.

2.4 METER SETTING EQUIPMENT

- A. Furnish materials in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.

2.5 WATER METERS

- A. Furnish materials in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.
- B. Provide meter as indicated on Drawings.

2.6 BACKFLOW PREVENTERS

- A. Furnish materials in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.
- B. Reduced Pressure Backflow Preventers:
 - 1. Comply with ASSE 1013.
 - 2. Bronze body, with bronze internal parts and stainless steel springs.
 - 3. Two independently operating, spring loaded check valves; diaphragm type differential pressure relief valve located between check valves; third check valve opening under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.

- C. Double Check Valve Assemblies: Comply with ASSE 1012; Bronze body with corrosion resistant internal parts and stainless steel springs; two independently operating check valves with intermediate atmospheric vent.

2.7 UNDERGROUND PIPE MARKERS

- A. Furnish materials in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.
- B. Plastic Ribbon Tape: Bright colored, continuously printed, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.
- C. Trace Wire: 12-gauge insulated copper wire, insulating jacket shall be a minimum of 30 mil polyethylene complying with ASTM-D-1248, 30 volt rating, brightly colored plastic covering, imprinted with "Water Service" in large letters.

2.8 PRECAST CONCRETE VAULT

- A. Furnish materials in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.
- B. Product Description: Precast vault designed in accordance with ASTM C858, comprising modular, interlocking sections complete with accessories.
- C. Shape: As indicated on Drawings.

2.9 BEDDING AND COVER MATERIALS

- A. Bedding: As indicated on Drawings
- B. Cover: As indicated on Drawings

2.10 ACCESSORIES

- A. Concrete for Thrust Restraints: Concrete type specified in Section 32 0523.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify building service connection and municipal utility water main size, location, and invert are as indicated on Drawings.

3.2 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

3.3 INSTALLATION - CORPORATION STOP ASSEMBLY

- A. Make connection for each different kind of water main using suitable materials, equipment and methods approved by the Architect/Engineer.
- B. Provide service clamps for mains other than of cast iron or ductile iron mains.
- C. Screw corporation stops directly into tapped and threaded iron main at 10 and 2 o'clock position on main's circumference; locate corporation stops at least 12 inches apart longitudinally and staggered.
- D. For plastic pipe water mains, provide full support for service clamp for full circumference of pipe, with minimum 2 inches width of bearing area; exercise care against crushing or causing other damage to water mains at time of tapping or installing service clamp or corporation stop.
- E. Use proper seals or other devices so no leaks are left in water mains at points of tapping; do not backfill and cover service connection until approved by the Engineer.

3.4 BEDDING

- A. Excavate pipe trench in accordance with Section 31 2116.

- B. Backfill around sides and to top of pipe in accordance with Section 31 2000.
- C. Maintain optimum moisture content of fill material to attain required compaction density.
- D. Place fill material in accordance with Section 31 2000.

3.5 INSTALLATION - PIPE AND FITTINGS

- A. Maintain separation of water main from sewer in accordance with Arkansas Department of Health requirements and in accordance with the below:
 - 1. All water mains are to cross over sewer mains with a minimum of 18-in of vertical separation and water and sewer mains shall have a minimum of 10-ft horizontal separation.
 - 2. Where 18-in of separation cannot be achieved, the water or sewer main shall be encased in watertight pipe with sealed watertight ends extending at least ten feet either side of the crossing.
 - 3. Where a water main must unavoidably pass beneath the sewer line, at least 18-in of separation must be maintained between the outside of the two pipes in addition to either the water or sewer main being encased in watertight pipe with sealed watertight ends extending at least ten feet either side of the crossing.
- B. Route pipe in straight line.
- C. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- D. Install access fittings to permit disinfection of water system performed under Section 02516.
- E. Form and place concrete for thrust restraints at each elbow or change of direction of pipe main.
- F. Establish elevations of buried piping with not less than 2.5 ft of cover.
- G. Install trace wire continuous, buried 12 inches below finish grade, above pipe line; coordinate with Section 33 1000.
- H. Backfill trench in accordance with Section 31 2116.

3.6 INSTALLATION - WATER METERS

- A. Install Work in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.

3.7 INSTALLATION - BACKFLOW PREVENTERS

- A. Install backflow preventer where indicated on the Contract Drawings and in accordance with manufacturer's instructions.
- B. Comply with City of Wynne's requirements and plumbing codes in regards to testing and installation requirements.

3.8 SERVICE CONNECTIONS

- A. Install water service in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.

3.9 PRECAST CONCRETE VAULT

- A. Construct valve vaults of precast concrete.
- B. Seal vault joints watertight with preformed plastic joint sealant compound. Apply asphalt waterproofing to exterior walls.
- C. Seal annular space between pipe and wall sleeves as indicated on the Contract Drawings.
- D. Install vault covers and frames; adjust to finished grade elevation.

3.10 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Flush and disinfect system in accordance with Section 33 1200.

3.11 FIELD QUALITY CONTROL

- A. Perform pressure test on domestic site water distribution system in accordance with the project specifications or City of Wynne's standard specifications, whichever is more stringent.

END OF SECTION

SECTION 33 1200

DISINFECTION OF WATER DISTRIBUTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes disinfection of potable water distribution system; and testing and reporting results.
- B. Related Sections:
 - 1. Section 33 1000 - Site Water Distribution Product and Execution requirements for installation, testing, of site domestic water distribution piping.

1.2 REFERENCES

- A. American Water Works Association:
 - 1. AWWA B300 - Hypochlorites.
 - 2. AWWA B301 - Liquid Chlorine.
 - 3. AWWA B302 - Ammonium Sulfate.
 - 4. AWWA B303 - Sodium Chlorite.
 - 5. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
 - 6. AWWA C651 - Disinfecting Water Mains.

1.3 SUBMITTALS

- A. Product Data: Submit procedures, proposed chemicals, and treatment levels for review.
- B. Test Reports: Indicate results comparative to specified requirements of the Arkansas Department of Health.
- C. Certificate: Certify cleanliness of water distribution system meets or exceeds Arkansas Department of Health Standards

1.4 CLOSEOUT SUBMITTALS

- A. Disinfection Report:
 - 1. Type and form of disinfectant used.
 - 2. Date and time of disinfectant injection start and time of completion.
 - 3. Test locations.
 - 4. Name of person collecting samples.
 - 5. Initial and 24-hour disinfectant residuals in treated water in ppm for each outlet tested.
 - 6. Date and time of flushing start and completion.
 - 7. Disinfectant residual after flushing in ppm for each outlet tested.
- B. Bacteriological Report:
 - 1. Date issued, project name, and testing laboratory name, address, and telephone number.
 - 2. Time and date of water sample collection.
 - 3. Name of person collecting samples.
 - 4. Test locations.
 - 5. Initial and 24-hour disinfectant residuals in ppm for each outlet tested.
 - 6. Coliform bacteria test results for each outlet tested.
 - 7. Certify water conforms, or fails to conform, to bacterial standards of the Arkansas Department of Health.
- C. Water Quality Certificate: Certify water conforms to quality standards of the Arkansas Department of Health, suitable for human consumption.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the Project Specifications and City of Wynne's standards, whichever is more stringent.

1.6 QUALIFICATIONS

- A. Water Treatment Firm: Company specializing in disinfecting potable water systems specified in this section with minimum three years of experience.
- B. Testing Firm: Arkansas Department of Health

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

- A. Chemicals: AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify piping system has been cleaned, inspected, and pressure tested.
- B. Perform scheduling and disinfecting activity with start-up, water pressure testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

3.2 DISINFECTION REQUIREMENTS

- A. Testing shall begin within five (5) days after the completion of the pressure testing of the water main (on a per main or per section/area basis). Blowoff and sample points shall be constructed by the CONTRACTOR as shown on the Plans or as directed by the ENGINEER. Fire hydrants shall be utilized as blowoff points whenever possible. Fire hydrants are not satisfactory for sample points. Openings for sample points shall be 1" copper riser pipe that extends well above the surface, as shown on the CAW Standard Details. A flushing plan shall be so designed so that all samples may be taken on each trip. The lines shall not be considered acceptable until two (2) consecutive samples taken twenty-four (24) hours apart are negative. Sampling may commence only Monday through Thursday. First samples may not be collected on Fridays, Saturdays, Sundays, and official holidays.
- B. There are two acceptable methods of disinfecting: continuous feed method using liquid chlorine or calcium hypochlorite and the slug method using liquid chlorine or calcium hypochlorite. The slug method applies to large mains and shall be used only on approval of the ENGINEER. Liquid chlorine shall be used only when the CONTRACTOR has suitable equipment available and employees who are familiar with the physiological, chemical and physical properties and who are properly trained and equipped to handle any emergency that may arise. If, in the opinion of the ENGINEER, the equipment is inadequate or the personnel are not qualified, this method shall not be used.
- C. When the continuous feed or slug method is to be used, the pipelines and appurtenances shall be thoroughly flushed prior to disinfecting. The flushing plan shall be approved by the ENGINEER. The ENGINEER may halt or reduce flushing if the distribution system pressures are reduced by the flushing operations.
- D. The CONTRACTOR is reminded that chlorine is a powerful oxidant and reacts readily with foreign substances. All chlorine compounds shall be handled and stored in accordance with manufacturer's recommendations. Breathing of chlorine gas can be fatal. Hypochlorite solutions should not come into contact with skin or clothing. Containers used for mixing hypochlorite solution shall be clean and dry.
- E. When the continuous flow method is used, the final concentration of chlorine inside the main shall be 50 parts per million. When the slug method is used, the concentration of chlorine entering the pipeline shall be at least 300 to 400 parts per million (ppm) and be of sufficient size/length to provide a minimum of two (2) hours of contact time as it flows through the pipeline. The strength/concentration of the slug shall be monitored as it flows through the pipeline and at no time shall it be allowed to drop below 100 ppm. If at any time the concentration of the slug nears 100 ppm, the flow shall be stopped, chlorination equipment shall be relocated to the head of the slug, and as flow resumes, chlorine shall be applied to restore the chlorine concentration of the slug to at least 300 ppm.

- F. Calcium hypochlorite shall contain at least 60% available chlorine by weight in granular form.
- G. When the continuous feed or slug method is used and the source of the chlorine is calcium hypochlorite, a solution of hypochlorite and water shall be prepared by mixing thoroughly in a suitable container. The mix shall contain one (1) pound of calcium hypochlorite per gallon of water. A suitable pump shall be provided for pumping this solution into the pipelines to be disinfected. This pump shall be equipped with a flow-measuring device.
- H. When liquid chlorine is used, the equipment for injection shall consist of a solution feed chlorinator in combination with a booster pump for injecting the chlorine-gas water solution into the pipeline. Introduction of chlorine-gas directly from the supply cylinder shall not be permitted. The pump shall be equipped with a flow-measuring device.
- I. During application of any chlorine solution, care shall be taken to assure that the solution does not flow back into the distribution system.
- J. The procedure for disinfecting by the continuous flow method shall be as follows:
 - 1. The flow through the pipeline and the solution flow shall be regulated so that the required concentration of chlorine is attained. The flow through the main shall be measured by using a pitot gauge or meter.
 - 2. The introduction of the solution shall be continuous until the desired concentration is attained throughout the pipe line system. The concentration shall be checked by the Drop Dilution Method
 - 3. After the required concentration has been attained all internal valves shall be operated in order to assure that the solution comes in contact with all appurtenances.
 - 4. The solution shall remain in the pipe line system for twenty-four (24) hours after which the pipelines shall be thoroughly flushed. The chlorine concentration shall be checked before flushing. If the concentration is less than 25 parts per million, the disinfecting procedure shall be repeated if directed by the ENGINEER.
- K. The procedure for disinfecting by the slug method shall be the same as the continuous flow method except that the flow rates shall be regulated so that the specified concentration of chlorine shall be in contact with all parts of the pipe line for at least two (2) hours.
- L. Disinfecting by the tablet method is not allowed by the Arkansas Department of Health.
- M. After final flushing, samples of water shall be collected from the sample points provided by the CONTRACTOR and tested by the OWNER. The CONTRACTOR shall provide any assistance required in collecting the samples.
- N. If any of the samples collected are positive, the disinfecting procedures shall be repeated as directed by the ENGINEER until negative samples are collected. Only the continuous flow or slug method may be used.
- O. The cost of water used for flushing after positive samples have been collected shall be deducted from amounts due the CONTRACTOR. The amount used shall be determined by measurements of flow using a pitot gauge. Payment shall be based on the lowest prevailing water rate.
- P. Payments to the CONTRACTOR (or DEVELOPER if a SPECIAL CONTRACT) shall be reduced by \$30.00 per sample for each positive sample collected to cover the cost of collecting and testing the samples.
- Q. Any chlorinated water release that would cause a chlorine residual above 0.10 ppm in a body of water containing any aquatic life forms shall be de-chlorinated as needed to prevent the resultant chlorine level from exceeding the 0.10 ppm limit. Chemicals used in the de-chlorination process shall not also produce other water qualities that would be harmful to the aquatic life forms in a receiving body of water; harmful water qualities such as, but not limited to, changes in pH, dissolved oxygen concentrations, etc.
- R. Water draining from the sampling points and flushing shall be directed to adequate drainage structures so as not to create a nuisance and to avoid damage to other facilities, structures, and/or property. The CONTRACTOR shall be responsible for any damages.

3.3 FIELD QUALITY CONTROL

- A. Disinfection, Flushing, and Sampling:
1. Upon completion of retention period required for disinfection, flush pipeline until chlorine concentration in water leaving pipeline is no higher than that generally prevailing in existing system or is acceptable for domestic use.
 2. Legally dispose of chlorinated water. When chlorinated discharge may cause damage to environment, apply neutralizing chemical to chlorinated water to neutralize chlorine residual remaining in water.
- B. Bacteriological Tests:
1. After final flushing and before pipeline is connected to existing system, or placed in service, two sets of acceptable water samples collected from the new water line and taken on consecutive days shall be submitted by the Contractor to the bacteriological laboratory at the Arkansas Department of Health in Little Rock, Arkansas.
 2. Samples shall be tested for bacteriological quality in accordance with Standard Methods for the Examination of Water and Wastewater per the American Public Health Association, AWWA, and Water Environment Association (latest edition and shall show the absence of coliform organisms.
 3. If samples collected are positive, the disinfecting procedures and samples shall be repeated until two consecutive day samples are tested safe.

END OF SECTION

SECTION 334111
STORM DRAINAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Storm drainage piping.
2. Accessories.
3. Underground pipe markers.

B. Related Sections:

1. Section 31 2000 – Earthwork: Backfill and compaction for structures and storm piping.
2. Section 31 2116 - Trenching: Execution requirements for trenching required by this section.
3. Section 32 0523 - Concrete for Exterior Improvements: Concrete type for catch basin base pad construction.
4. Section 33 0513 - Manholes and Structures.

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
2. ASTM C14 - Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.
3. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
4. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
5. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
6. ASTM C924 - Standard Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method.
7. ASTM C969 - Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines.
8. ASTM C1103 - Standard Practice for Joint Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines.
9. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
10. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³ (2,700 kN-m/m³)).

11. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
12. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
13. ASTM D2564 - Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
14. ASTM D2729 - Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
15. ASTM D2751 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
16. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
17. ASTM D6938 - 10 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
18. ASTM D3034 - Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
19. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

1.3 SUBMITTALS

- A. Product Data: Submit data indicating pipe, pipe accessories, and appurtenances.
- B. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents:
 1. Accurately record actual locations of pipe runs, connections, catch basins, structures, and invert elevations.
 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the Arkansas Department of Transportation (ARDOT) Standard Specifications.

1.6 COORDINATION

- A. Coordinate the Work with termination of storm sewer connection outside building, trenching, and to the connection to municipal storm sewer utility service.

PART 2 - PRODUCTS

2.1 STORM DRAINAGE PIPING

- A. Polyethylene Pipe:
 1. Piping and fittings shall be ADS N-12 ST IB pipe as manufactured by Advanced Drainage Systems (ADS) of Hilliard, OH, or equal.

2. Piping and fittings shall have a smooth interior and annular exterior corrugations.
3. Pipe shall be manufactured in accordance with AASHTO M252, Type S or SP for 4-inch through 10-inch diameter, and AASHTO M294 or ASTM F2306 for 12-inch through 60-inch diameter.
4. Pipe shall be joined using a bell and spigot joint meeting AASHTO M252, AASHTO M294 or ASTM F2306. The joint shall be soil-tight and gaskets shall meet the requirements of ASTM F477.
5. Fittings shall conform to AASHTO M252, AASHTO M294, or ASTM F2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the soil-tight joint performance requirements of AASHTO M252, AASHTO M294 or ASTM F2306.
6. Virgin material for pipe and fitting production shall be high density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch diameters, or 435400C for 12- through 60-inch diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 60-inch virgin pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306, respectively.

B. Perforated Pipe for Underdrains:

1. Piping and fittings shall be perforated ADS single wall corrugated HDPE pipe as manufactured by Advanced Drainage Systems (ADS) of Hilliard, OH, or equal.
2. Perforations shall be Type B pattern as specified by ADS. Contractor shall obtain approval if perforation pattern other than Type B is to be used.
3. Perforated pipe shall be wrapped in geotextile fabric. Fabric shall be 4-oz non-woven geotextile fabric, Mirafi 140N or equivalent.

C. Reinforced Concrete Pipe:

1. Reinforced concrete pipe and flared-end sections: ASTM C 76, Type III, tongue and groove joints.
2. Joint material: cold-applied preformed plastic gasket type sealant conforming to ASTM C 443.

2.2 ACCESSORIES

- A. Filter Fabric: Non-biodegradable, non-woven, 6 oz minimum weight.
- B. Grout: Specified in Section 320523.

2.3 UNDERGROUND PIPE MARKERS

- A. Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, imprinted with "Storm Sewer Service" in large letters.

2.4 CATCH BASINS

- A. Refer to Section 33 0513 Manholes and Structures and as indicated on the Drawings.

2.5 BEDDING AND COVER MATERIALS

- A. Bedding: As indicated on the Drawings.
- B. Cover: As indicated on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

3.2 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.
- B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 BEDDING

- A. Excavate pipe trench in accordance with Section 312116 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Place bedding material at trench bottom, level materials in continuous layer not exceeding 8 inches compacted depth.
- C. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION - PIPE

- A. Install pipe, fittings, and accessories in accordance with ASTM D2321. Seal joints watertight.
- B. Place pipe on bedding material as indicated on the Drawings.
- C. Lay pipe to slope gradients noted on drawings with maximum variation from indicated slope of 1/8 inch in 10 feet.
- D. Place bedding backfill around pipe as indicated on the Drawings.
- E. Install trace wire continuous over top of pipe buried 12 inches below finish grade, above pipe line.
- F. Install site storm drainage system piping to 5 feet of building. Connect to building storm drainage system.

3.5 INSTALLATION - CATCH BASINS AND STRUCTURES

- A. Perform work in accordance with Drawings.

- B. Refer to Section 330513, Manholes and Structures.

3.6 FIELD QUALITY CONTROL

- A. Request inspection prior to and immediately after placing aggregate cover over pipe.

3.7 PROTECTION OF FINISHED WORK

- A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.
 - 1. Take care not to damage or displace installed pipe and joints during construction of pipe supports, backfilling, testing, and other operations.
 - 2. Repair or replace pipe that is damaged or displaced from construction operations.

END OF SECTION

**SECTION 03 4500
ARCHITECTURAL PRECAST CONCRETE**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work Included: Manufacture, deliver, erect, and install precast concrete units specified.

1.02 RELATED DOCUMENTS

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are located in Division 1 of the Specifications.

1.03 SUBMITTALS AND SUBSTITUTIONS

- A. In accordance with Section 01 3000.
1. Product Data: Submit manufacturer's specifications and instructions for manufactured materials and products. Include manufacturer's certifications and laboratory test reports as required.
 2. Shop Drawings: Submit Shop Drawings showing information for fabrication and installation of precast concrete units. Indicate member dimensions and cross-section, location, size and type reinforcement, including special reinforcement and lifting devices necessary for handling and erection.
 3. Provide layout, dimensions, and identification of each precast unit corresponding to sequence and procedure of installation. Indicate welded connections by AWS standard symbols. Detail inserts, connections, and joints, including accessories and construction at openings in precast units.
 4. Provide location and details of anchorage devices that are embedded in related construction. Furnish templates if required for accurate placement.
 5. Include erection procedure for precast units and erection sequence.
 6. Provide manufacturer's complete design calculations prepared and stamped by registered engineer.
- B. Submit 12"x12" finished samples as directed by Architect. Provide full size samples as required to be incorporated into masonry mock-up panel described in Section 04 2000.

1.04 QUALITY ASSURANCE

- A. Furnish architectural precast concrete products complying with these specifications regarding physical requirements, workmanship, texture, and color.
- B. Manufacturer: Regularly engaged in manufacture of this type product with inspection and quality control system and capability to produce precast units at rate that will not cause delays in Project.
- C. Cast in accurate molds designed to withstand high frequency vibration.
- D. Execute mix design, casting, finishing and curing using manufacturer's standard quality controlled production methods. However, the end product of any method must comply with all the aesthetic and physical characteristics specified.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver precast concrete units to Project Site in quantities and at times to assure continuity of installation. Store units at Project Site to ensure against cracking, distortion, staining, and physical damage, and so markings are visible. Lift and support units at designated lift points.

- B. Deliver anchorage items which are embedded in related construction before start of related work. Provide setting diagrams, templates, instructions and directions required for installation.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Reinforcement: Welded wire fabric with the addition of deformed reinforcing bars according to design criteria. Use galvanized deformed bars with one inch and less clearance to an exterior face.
- B. Mechanical, electrical, special equipment and anchors, metal jambs and related items for work of other trades, if required, are supplied to manufacturer for casting into units by appropriate supplier under this Contract.
- C. Anchorage devices, weld plates, inserts, wood nailers and lifting handles as furnished and securely embedded by manufacturer.
- D. Sealant: Refer to Section 07 9000 for material and installation requirements.

2.02 PHYSICAL QUALITIES

- A. Concrete Mix: Design to have minimum compression strength of 5000 psi at 28 days when tested in 6" x 12" cylinders complying with ASTM C-39 latest revision.
- B. Absorption: Not to exceed 5% maximum when tested complying with ASTM C-97 latest revision.
- C. Water Cement Ratio: Not to exceed 5 gallons per sack of cement.
- D. If mix designs with known test histories are used and semi-automatic batching equipment is employed, only certification of compliance to above is required. If test reports are requested by architect, same paid for by Owner.
- E. Unit Tolerances:
 - 1. Warpage: Not to exceed 1/8" per 6'-0" length of panel.
 - 2. Squareness: No panel more than 1/8" in 6 feet off square.
 - 3. Location of Anchors and Inserts: Locate plus or minus 3/8" from center line of location required.
 - 4. Blockouts and Reinforcing. Locate within plus or minus 1/4" of positions required.
- F. Reinforcing and connections shown on Drawings are adequate for normal temperature and building stresses. Manufacturer is responsible for additional reinforcing and connections necessary for fabrication, transportation, and erection stresses.

2.03 FINISH

- A. Exposed Exterior Panel Faces: Color and texture to be similar to cut limestone.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. If installation is not performed by manufacturer, Contractor assumes full responsibility for the work. Employ skilled supervisors and workmen experienced in this type work.
- B. Handle units in a nearly vertical plane at all times. Stack vertically and lean against proper supports until used, unless otherwise approved by manufacturer.

- C. Center in their allotted space according to approved Shop Drawings and securely bolt or weld as required.
- D. Protect units from staining during installation and after installation.
- E. Rake back and seal joints complying with sealant specifications and details.
- F. After work is completed, repair damaged architectural precast concrete products to satisfaction of Architect, and then wash down and clean entire surface with soap and clear water, preferably from a hose.

END OF SECTION

**SECTION 07 1000
WATERPROOFING**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work Included: Furnish labor, materials, tools, and equipment required and perform waterproofing work specified.

1.02 RELATED DOCUMENTS

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are located in Division 1 of the Specifications.

1.03 SUBMITTALS AND SUBSTITUTIONS

- A. In accordance with Section 01 3000.
- B. Substitutions will not be considered prior to the award of the General Contract.
- C. Product Data: Submit manufacturer's product data, installation instructions, use limitations and recommendations.
- D. Samples: Submit representative samples of the following for approval:
 - 1. Sheet Membrane
 - 2. Protection Board
 - 3. Prefabricated Drainage Composite
- E. Shop Drawings: Details of all conditions including transitions, corners, terminations, etc.

1.04 QUALITY ASSURANCE

- A. Qualifications of Installers: Perform work under this Section by specialty subcontractor regularly engaged in performance of type work required. Use workmen experienced in installation of specified products. Applicator to provide qualified, competent foreman present and in charge at all times work under this Section is performed.
- B. Installer Guarantee: Furnish written guarantee for waterproofed under this Section against leakage for period of 2 years after acceptance, making good at his own expense leakage which may develop within guarantee period.

1.05 PRODUCT HANDLING

- A. Protection: Protect waterproofing materials before, during, and after installation. Protect installed work and materials of other trades.
- B. Replacements: In event of damage, immediately make repairs and replacements necessary to Architect approval and at Contractor's expense.

PART 2 - PRODUCTS

2.01 COLD-APPLIED MEMBRANE WATERPROOFING

- A. MANUFACTURERS: Polyguard Products, Inc., Ennis, Texas 75120-0755, phone: 800-541-4994, or approved equal.

- B. Self-adhesive Membrane Waterproofing shall be Polyguard 650 Membrane, a 60 mil rubberized asphalt membrane consisting of a high density polyethylene film bonded to a layer of rubberized asphalt meeting or exceeding the following requirements:
- C. Accessory Products
 - 1. Substrate Conditioner: Shall be Polyguard 650 LT Liquid Adhesive or Polyguard ShurTac Water Based Liquid Adhesive.
 - 2. Mastic: Shall be Polyguard 650 Mastic
 - 3. Liquid Membrane: Shall be Polyguard LM-95.
 - 4. Termination Bar: Shall be Polyguard Termination Bar
- D. Prefabricated Drainage Composite: Shall be Polyguard Drainage Composites Flow 15-P.

2.02 UNDERSLAB WATERPROOFING SYSTEM

- A. At Elevator Pit Slab: Underslab Waterproofing shall be Polyguard Underseal Underslab Waterproofing Barrier Membrane, a 84 mil rubberized asphalt membrane consisting of a strong sheet membrane with a facing of extremely high strength polyethylene backing laminated to a thick layer of proprietary stress absorbing / waterproofing formulation, with a top layer of nonwoven geotextile fabric:
- B. Accessory Products
 - 1. Fabric Tape: Shall be Polyguard Underseal Fabric Tape
 - 2. Surface Primer: Shall be Polyguard 650 LT Liquid Adhesive or California Sealant
 - 3. Liquid Membrane: Shall be Polyguard LM95

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Inspection: Carefully inspect installed work of other trades and verify work is complete to point where this installation may properly commence.
- B. Discrepancies: Do not proceed with installation in areas of discrepancy until discrepancies are fully resolved.

3.02 INSTALLATION OF WATERPROOFING IN GENERAL

- A. Preparation: Prepare surfaces to receive waterproofing, strictly complying with manufacturer's recommendations. Deliver waterproofing materials to project site in original sealed containers with manufacturer's brand and name clearly identified.
- B. Installation: Install waterproofing complying with manufacturer's recommendations, covering surfaces to prevent penetration of moisture.

3.03 INSTALLING COLD-APPLIED MEMBRANE WATERPROOFING

- A. Priming: Apply primer to a cleaned, dust free surface. Apply by roller or spray. Apply Polyguard 650 LT Liquid Adhesive at the rate of 250-300 sq. ft. per gallon. Apply Polyguard ShurTac Water Based Liquid Adhesive at the rate of 350-400 per gallon. Allow to dry per manufacturer's directions.
- B. Membrane Installation - Vertical Surfaces
 - 1. All inside and outside corners shall be treated either with 12 inch wide membrane strip or by applying a 90 mil thick application of Polyguard LM-95. The 12 inch wide membrane should be centered over outside corners.

2. Install a 3/4 inch, 45 degree angle cant of Polyguard LM 95 Liquid Membrane at all changes in plane including inside corners.
 3. Waterproofing membrane should be applied vertically in sections of 8 feet in length or less. On walls higher than 8 feet, apply two or more sections with the upper section overlapping the lower.
 4. Side laps should be a minimum of 2 2 inches and end laps should be a minimum of 6 inches.
 5. Use a hard roller to firmly press in the material as it is placed on the vertical surface.
 6. All terminations of the membrane should receive a bead of Polyguard 650 Mastic. The bead should be troweled to a flat surface approximately 1/8 inch thick by 3/4 inches wide. The mastic should be worked into cut edge terminations.
 7. Inadequately lapped seams and damaged areas should be patched with small sections of membrane. The patch should extend a least 6 inches in each direction beyond the defect.
 8. Fishmouths and severe wrinkles should be slit, flaps overlapped and repaired as above.
 9. Termination bar at top termination of field sheet. (optional)
- C. Install drainage membrane immediately after installation of the waterproofing membrane.

3.04 INSTALLING UNDERSLAB WATERPROOFING

- A. Installation shall be in accordance with manufacturer's instructions and ASTM E 1634-98.
- B. Membrane Installation - Horizontal Surfaces:
1. Unroll waterproofing barrier membrane with longest dimension parallel with direction of pour.
 2. Place extremely high strength backing to the soil and fabric to the concrete.
 3. Lap waterproofing barrier membrane over footings and seal to foundation walls.
 4. Overlap side seams using the 4" edge trim seal. Clean polyethylene backing of waterproofing barrier membrane prior to application on the 4" edge seal with 30% Isopropyl Alcohol.
 5. End laps should be overlapped a minimum of 4" and addressed by applying a coat of liquid adhesive approximately 150-200 sq. ft. per gallon to fabric side of waterproofing barrier membrane and placing adjacent sheet on top. Roll to assure full adhesion.
 6. After application of end lap use liquid adhesive to prime seam and apply a 12" piece of fabric tape centered over seam to seal extend out 6" past side laps – roll with laminate roller.
 7. If annular space of pipe through opening is 1/2" or less apply liquid adhesive to fabric side of membrane. Apply a 3/4" cant/fillet around pipe penetration extending onto fabric side of waterproofing barrier membrane and pipe a minimum of 3".
 8. If annular space of pipe through opening exceeds 1/2" then a patch of fabric seal tape is required. Apply a heavy coat approximately 150 - 200 sq. ft. per gallon liquid adhesive onto the fabric side of the waterproofing barrier membrane extending 6" beyond pipe. Apply a patch 6" larger than pipe diameter. Press or roll patch firmly to obtain full adhesion to waterproofing barrier membrane. Apply another coat of liquid adhesive to the fabric side of the fabric tape patch and apply liquid membrane.
 9. Steel reinforcements will be applied directly over the waterproofing barrier membrane. It is utmost important that reinforcement (rebar) chairs that are used are compatible with the system. Steel chairs and bolster be plastic dipped or have plastic caps.
 10. Precaution should be taken to protect the waterproofing barrier membrane during placement of reinforcing or concrete. Visually inspect waterproofing barrier membrane prior to pouring of concrete for any punctures or damage to membrane which needs to be repaired. Patch any damaged areas by applying the liquid adhesive at a rate of 150-200 sq. ft. per gallon to fabric side of waterproofing barrier membrane and apply a patch of fabric tape.
 11. Prior to slab pour all standing water must be removed from the membrane.

END OF SECTION

**SECTION 08 4000
ENTRANCES AND STOREFRONTS**

PART 1 - GENERAL

1.01 SCOPE

- A. Provide aluminum doors and framing specified.

1.02 RELATED DOCUMENTS

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are located in Division 1 of the Specifications.

1.03 SUBMITTALS AND SUBSTITUTIONS

- A. In accordance with Section 01 3000.
- B. Substitutions will not be considered prior to the award of the General Contract.

1.04 QUALITY ASSURANCE

- A. Fabricate exterior door and frame units to withstand the wind pressure loading shown or, or if not shown, 20 lbs. per sq. ft. on the gross area of the frames, doors, panels and glass, acting inward and also outward.

1.05 WARRANTY

- A. Submit a warranty signed by the manufacturer, contractor, installer, agreeing to replace aluminum doors, windows, framing and glazing which fall in materials and workmanship within 2 years of the date of acceptance. Failure of materials or workmanship shall include, but not be limited to, failure in operation of doors, windows, and hardware, excessive leakage of air infiltration, excessive deflections, delamination of panels, deterioration of finish or metal in excess of normal weathering, and defect in accessories, weatherstripping, and other components of the work.
 - 1. Submit 10 year warranty by manufacturer of polyvinylidene fluoride (PVDF) coating.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for entrance system as follows:
 - 1. Welded door corner construction shall be supported with a LIMITED LIFETIME WARRANTY for the life of the door under normal use. SEE SECTION 2.02, item C below for DOOR CONSTRUCTION.

1.06 ADJUSTMENT

- A. After installation, make adjustments as necessary to insure proper operation of all hardware items.
- B. Door Opening Force: In accordance with the Americans With Disabilities Act (ADA), adjust all door hardware so that the maximum force required for pushing or pulling open a door shall be as follows:
 - 1. Fire doors shall have the minimum opening force allowable by the appropriate administrative authority.
 - 2. Exterior hinged doors: 8.5 lbf (SBS)
 - 3. Interior hinged doors: 5.0 lbf
 - 4. These forces do not apply to the force required to retract latch bolts or disengage other devices that may hold the door in a closed position.

- C. Door Closers: If door is equipped with a closer, then the sweep period of the closer shall be adjusted so that from an open position of 70 deg., the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers who produce products that may be submitted to Architect for review are:
1. Kawneer
 2. Oldcastle BE
 3. EFCO
 4. Tubelite

2.02 SWINGING GLASS DOORS

- A. Material Standard: ASTM B 221; 6063-T6 alloy and temper.
- B. Kawneer 350 Heavy Wall™ Swing Door, Old Castle Rugged Door or equivalent:
1. Vertical face dimension: 3-1/2" (88.9 mm)
 2. Top Rail: 3-1/2" (88.9 mm)
 3. Bottom Rail: 6-1/2" (165.1 mm)
 4. Optional Bottom Rail: 10" (254.0 mm)
- C. Entrance System Fabrication:
1. Door corner construction shall consist of mechanical clip fastening, SIGMA 1-1/8" long fillet welds along top and bottom of rail extrusion at stile and rail intersection, and deep penetration plug weld at all four corners of door. Must be full penetration plug weld to leg of clip, 1-1/8" long fillet welds along top and bottom of rails at stiles intersection, no tie-rod construction of any type or partial design allowed. Meeting rail to still joint fillet weld "only" is NOT ACCEPTABLE. Glazing stops shall be hook-in type with EPDM glazing gaskets reinforced with non-stretchable chord.
- D. Refer to Section 08 7000 for Hardware.

2.03 FRAMING

- A. Door, Storefront, and Windows: Provide standard shapes and moldings of Kawneer glazed framing system, or approved equal.
1. Trifab VG 451T at exterior
 2. Trifab VG 450 at interior
- B. Subsill: Manufacturer's standard High-Performance (HP) subsill with sealed end-dams.
- C. Storefront System Performance Requirements:
1. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a static air pressure differential of 6.24 psf (300 Pa). , with interior perimeter seal installed.
 2. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 10 psf (383 Pa) as defined in AAMA 501.
 3. Uniform Load: A static air design load of 20 psf shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.
 4. Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than: 0.44 (low-e) or 0.61 (clear), as determined by AAMA 507 or NFRC 100.

2.04 ALUMINUM FLASHING AND BREAKMETAL

- A. Provide 0.040 thick material for flashing and 0.090 material for break metal.

2.05 SEALANTS

- A. Shop Applied: Provide GE Silpruf or Dow Corning 795 shop applied silicone sealant, or approved equal.
- B. Field Applied:
1. Structural sealant for glazing perimeter shall be GE SSG Ultra Glaze, Dow Corning 995, or approved equal.
 2. For soft joints adjacent to Architectural Precast Concrete and Cast Stone products, use Tremco, Inc., Spectrem 3, Single-Component, Nonsag, Non-Staining, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 3. For other joints, select an appropriate sealant for the type of joint, movement and substrates involved. Acceptable products include Tremco Dymeric, GE 1200, Dow Corning 999, GE Silpruf, Dow Corning 795, Tremco Curtainwall Sealant, Dow Corning 790, PTI 606 Butyl Tape, Tremco Polyshim Tape, or approved equal.

2.06 FINISH

- A. Factory finish with oven cured Kynar 500 based polyvinylidene fluoride (PVDF) coating, AAMA 2605 70% resin formulation in Custom Color to be selected by Architect.
1. Dry Film Thickness, ASTM D1400: 0.20 mil primer coat plus 1.0 mil color coat, 1.20 mil total, minimum thickness.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in compliance with manufacturer's recommendations and accepted shop drawings. Set units plumb, level and true to line, without warp or rack of framing, windows, and doors. Anchor securely in place. Secure to structure with non-staining, non-corrosive shims, anchors, fasteners, spacers, and fillers. Use care in erection so as not to mar, abrade, or stain finished surfaces. Where aluminum is to be placed in contact with steel, concrete and other dissimilar surface, back paint the aluminum before erection with an acceptable bituminous paint.
- B. Seal frames with a Silicone approved sealant in color to match frames, making a neat fully weatherproof job. Refer to Section 07 9000, and comply with requirements of that section.
- C. Protection: After erection, adequately protect by masking, light motor oil, vaseline or other acceptable covering all exposed parts of the work and the finish from damage by grinding and polishing machines and/or by plaster, lime, cement, acid or other harmful substances.
- D. Cleaning: After completion of all other work in the vicinity of the aluminum doors, windows, and framing, remove all masking, vaseline and/or other covering used to protect the work, and thoroughly clean the aluminum surfaces with soap and plain water or a petroleum product such as white gasoline, kerosene, or distillate. Do not use abrasive cleaning agents.

END OF SECTION

SECTION 10 73 00
ALUMINUM WALKWAY COVERS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Design, fabrication, and installation of welded extruded aluminum walkway cover systems.
- B. Products Furnished but not Installed Under this Section: Column sleeves (styrofoam blockouts) or anchor bolts (if required)

1.02 REFERENCES

- A. The Aluminum Association (AA):
 - 1. The Aluminum Design Manual 2000, Specifications & Guidelines for Aluminum Structures.
- B. American Architectural Manufacturers Association (AAMA):
 - 1. AAMA 611, Voluntary Specification for Anodized Architectural Aluminum.
 - 2. AAMA 2603, Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 - 3. AAMA 2605, Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- C. American Society of Civil Engineers (ASCE):
 - 1. ASCE 7, Minimum Design Loads for Buildings and Other Structures.
- D. American Society for Testing and Materials (ASTM):
 - 1. ASTM B 209, Specification for Aluminum and Aluminum- Alloy Sheet and Plate.
 - 2. ASTM B 221, Specification for Aluminum and Aluminum- Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 3. ASTM C 150, Specification for Portland Cement.
 - 4. ASTM C 404, Specification for Aggregates for Masonry Grout.
- E. American Welding Society (AWS):
 - 1. ANSI/AWS D1.2, Structural Welding Code - Aluminum.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Design Walkways in accordance with The Aluminum Design Manual 2000.

2. Comply with the wind requirements of ASCE 7.
3. Provide an all-welded extruded aluminum system complete with internal drainage. Non-welded systems are not acceptable.
4. Provide expansion joints to accommodate temperature changes of 120 degrees F. Provide expansion joints with no metal-to-metal contact.

B. Performance Requirements:

1. Grout: Compressive strength of 2000 psi, minimum.

1.04 SUBMITTALS

A. Product Data: Manufacturer's product information, specifications, and installation instructions for walkway cover components and accessories.

B. Shop Drawings: Include plan dimensions, elevations, and details.

C. Samples:

1. Selection: Manufacturer's standard range of colors for the finishes selected.
2. Verification: 2-inch-square samples of each finish selected on the substrate specified.

D. Design Data: Design calculations bearing the seal of a Registered Professional Engineer, licensed in the state where the project is located. Design calculations shall state that the walkway cover system design complies with the wind requirements of ASCE 7, the stability criteria of applicable building code, and all other governing criteria.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: At least ten years' experience in the design, fabrication, and erection of extruded aluminum walkway cover systems.

B. Installer Qualifications: Have walkway covers installed by manufacturer, third party installation is not acceptable.

PART 2 PRODUCT

2.01 MANUFACTURERS

A. The design is based on products fabricated by: Peachtree Protective Covers, Inc., 3255 South Sweetwater Rd., Lithia Springs, GA 30122, 770-439-2120, fax 770-439-2122.

1. Comparable products by the following manufacturers also will be acceptable:
 - a. Dittmer Architectural Aluminum

b. Avadek Walkway Cover Systems

2. Substitutions: Comparable products of other manufacturers will be considered under standard substitution procedures.

2.02 MATERIALS

- A. Aluminum Members: Extruded aluminum, ASTM B 221, 6063 alloy, T6 temper.
- B. Fasteners: Aluminum, 18-8 stainless steel, or 300 series stainless steel.
- C. Protective Coating for Aluminum Columns Embedded in Concrete: Clear acrylic.
- D. Grout:
 1. Portland Cement: ASTM C 150, Type I.
 2. Sand: ASTM C 404.
 3. Water: Potable.
- E. Gaskets: Dry seal santoprene pressure type.
- F. Aluminum Flashing: ASTM B 209, Type 3003 H14, 0.040 inch, minimum.

2.03 MIXES

- A. Grout: 1 part portland cement to 3 parts sand, add water to produce a pouring consistency.

2.04 FABRICATION

- A. General:
 1. Shop Assembly: Assemble components in shop to greatest extent possible to minimize field assembly.
 2. Welding: In accordance with ANSI/AWS D1.2.
 3. Bent Construction: Factory assemble beams to columns to form one-piece rigid bents. Where used make welds smooth and uniform using an inert gas shielded arc. Perform suitable edge preparation to assure 100% penetration. Grind welds only where interfering with adjoining structure to allow for flush connection. Field welding is not permitted. Rigid mechanical joints can be used if supported by engineering calculations and/or testing.
 4. Deck Construction: Fabricate from extruded modules that interlock in a self-flashing manner. Positively fasten interlocking joints creating a monolithic structural unit capable of developing the full strength of the sections. The fastenings must have minimum shear strength of 350 pounds each. Assemble deck with sufficient camber to offset dead load deflection.
- B. Columns: Provide radius-cornered tubular extrusions with cutout and internal diverter for drainage where indicated. Circular downspout opening in column not acceptable.
- C. Beams: Provide open-top tubular extrusion, top edges thickened for strength and designed to receive deck members in self-flashing manner.
- D. Deck: Extruded self-flashing sections interlocking into a composite unit. Provide welded plate closures at deck ends.

- E. Fascia: Manufacturer's standard shape. Provide fascia splices where continuous runs of fascia are jointed. Locate splices to be in line with bents and fasten in place on hidden or non-vertical surfaces.
- F. Arches: For barrel vault protective covers, provide sharp-cornered tubular extrusions.
- G. Factory Finishing: Finish designations prefixed by AA comply with system established by the AAMA for designating aluminum finishes.
 - 1. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.4 mils to 0.7 mils thick), complying with AAMA 611.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Verify that all concrete, masonry, and roofing work in the vicinity is complete and cleaned.

3.02 ERECTION

- A. Erect protective cover true to line, level, and plumb. Protect aluminum columns embedded in concrete with clear acrylic. Fill downspout columns with grout to the discharge level to prevent standing water. Install weep holes at top of concrete in non-draining columns to remove condensation.
- B. Provide hairline miters and fitted joints.

3.03 CLEANING

- A. Clean all protective cover components promptly after installation.

3.04 PROTECTION

- A. Protect materials during and after installation.

END OF SECTION

SECTION 09 64 42
THEATRE AND STAGING ANCHORED RESILIENT WOOD STAGE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions, Supplementary General Conditions, bidding, and contract conditions shall apply to, and form a part of this Section.
- B. Concrete
- C. Rough Carpentry

1.2 GENERAL CONDITIONS

- A. For the sake of brevity these specifications shall omit phrases such as "(Sub) Contractor shall furnish and install", "unless otherwise indicated or specified", etc., but these phrases are nevertheless implied. Mention of materials and operations requires the (Sub) Contractor to furnish and install such materials and perform such operations complete to the satisfaction of the Consultant. Exceptions are noted herein or shown on the drawings.
- B. No representative of the Owner shall have power to waive the obligations of this contract for the furnishing of good materials or of performing good work, as herein described, in full accordance with the contract documents. The failure of any representative of the Owner to condemn any defective work or materials shall not release the obligation to at once tear out, remove, and properly replace the same at any time prior to final acceptance upon discovery of said defective work or material. However, when requested, the Owner's representative shall observe and accept or reject any material furnished; and in the event the material has been once accepted by the Owner's representative, such acceptance shall be binding on the Owner unless such material can be clearly shown as not meeting the specifications for this work.

1.3 SCOPE OF WORK

- A. The work under this contract shall include the furnishing of all labor, materials, tools, equipment, transportation, services, etc., and supervision necessary to complete the installation of the resilient stage floor system. All work shall be furnished as described in these specifications, as illustrated on the accompanying Drawings, or as directed by the Owner. The work is comprised of, but not limited to, the following principal items:
 - 1. Sheet moisture retarder on substrate surface,
 - 2. Plywood sub flooring and cushion sleepers,
 - 3. Tempered hardboard flooring, screwed,
 - 4. Surface finishing.

1.4 RESPONSIBILITY

- A. Notwithstanding the detailed information contained herein and on the drawings, provide working overall systems in accordance with good flooring practice and accepted industry standards. Verify the completeness of the parts list, type numbers and the overall suitability of the material to meet the intent of the design. Notify the Owner of any discrepancies, relevant to said information, prior to the bid date, for review.

- B. Minor items of material needed in order to meet the requirements stated above, even if not specifically mentioned herein or on the drawings, shall be supplied without claim for additional payment.

1.5 JOB CONDITIONS

- A. Verify all conditions applicable or pertaining to this work. Coordinate with scheduled work of any other trades and notify Consultant in writing of discrepancies, conflicts, or omissions prior to bid time or correct same at Contractor's expense.
- B. Do not proceed with delivery and installation of flooring until after spaces to receive flooring have been enclosed and are dry and maintained at or above approximately the same humidity condition as planned for occupancy. Place flooring materials in spaces to be floored 10 days prior to start of installation. Open packages of flooring that are sealed (if any) to permit natural adjustment of moisture content. Maintain ambient temperature in a range of 65F to 75F prior to, during and after installation of flooring. Refer to part 3 for additional information.
- C. So far as possible, the drawings show arrangement of material that will fit into the spaces available. If conditions exist at the job site which makes installation of work as shown impossible, prepare drawings for Owner's review showing how the work may be installed. Also provide Owner with cost for contractor to provide additional work and outline work such that Owner may opt to perform said work. On acceptance of the conditions by the Owner, install the work as directed by the Owner.
- D. Contractor shall take care not to damage any materials or equipment which will be reused or to disconnect any wiring other than as required to install new materials or equipment. Any material, which will be reused, that is damaged by the Contractor, shall be repaired or replaced by the Contractor at no cost to the Owner.
- E. Owner assumes no responsibility for actual condition of area affected by this work. Conditions existing at time of inspection for bidding purposes will be maintained by Owner in so far as practicable.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Floor manufacturer shall be a firm established in the industry that has been in business for a minimum of ten years. Manufacturer shall submit a list of projects where the specified flooring has been installed. The square footage of these projects must total at least 150,000 square feet.
- B. Installer Qualifications: Installer shall have a minimum of five continuous years experience and shall be approved by the manufacturer of the flooring materials.
 - 1. Single Installer Responsibility: Entire resilient wood floor system shall be installed by a single firm (herein referred to as the Contractor), for undivided responsibility. Include vapor barrier, anchorage system, sleepers, sub-flooring, adhesives or mastics, resilient mounts, flooring, insulation, trim, expansion provisions, and other accessory items as indicated.
- C. Performance Qualifications of Flooring System: Shock absorption shall average 53% min. (DIN 18032 Part II). "Uniformity" of shock absorption of plus or minus 5 percentage points shall be maintained throughout entire surface at each test point using DIN test 18032 Part II.
- D. Warranty: The manufacturer will warranty the product, and installation of the product, for a period of two years from the date of completion. An unsigned copy of the warranty must accompany the product samples before a contract for installation is issued.

1.7 SUBMITTALS

A. Shop Drawings:

1. Indicate floor joint pattern, grain direction, and termination details.
2. Indicate provisions for expansion and contraction.
3. Product Data: Provide data for floor materials and floor finishing system.

B. Samples:

1. Submit one 24" x 24" fully assembled wood floor sample showing floor construction and all layers, and also illustrating floor finish, color and sheen.

C. Submit certification that products meet or exceed specified requirements.

D. Manufacturers Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Protect wood flooring from excessive moisture in shipment, storage and handling. Deliver in unopened bundles and store in a dry place, with adequate air circulation. Materials shall not be delivered to building until "wet work" such as concrete and plaster have been completed and cured to a condition of equilibrium.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All materials shall be new and of first quality. All materials and equipment shall be manufactured and installed in accordance with applicable standards of the American National Standards Institute (ANSI), the American Hardboard Association (AHA), the American Lumber Standards Committee (ALSC), the American Plywood Association (APA), the Surface Burning Characteristics of Building Materials (ASTM E84), the American Wood Preservers Association (AWPA) - All Timber Products - Preservative Treatment by Pressure Process, the Southern Pine Inspection Bureau (SPIB), the West Coast Lumber Inspection Bureau (WCLIB), the Western Wood Products Association (WWPA), and DIN test 18032-Part II, Otto-Graf Institute, Stuttgart, West plus any and all local government or other applicable codes.

- B. The flooring products of certain manufacturers are specified by catalog number for establishing a standard of quality. Items equal in quality and performance by manufacturers other than those specified will be permissible upon acceptance by the Owner.

2.2 PRIMARY MATERIALS

A. Stage Flooring:

1. 3/4" Temper hardboard faced panels
 - a. Top and Bottom face: Class 1, 1/8" tempered hardboard
 - b. Core: solid core Grade C plywood
 - c. Factory Bonded
2. Thickness: 3/4".
3. Width: 4'
4. Length: 8'

5. Moisture content: At time of delivery, limited average moisture content of wood flooring to 7% with 9% maximum for any piece.

6. Approved Manufacturers:

- a. "Olympic Tempered Plyron" by Swanson Group
- b. "RigidPly" by Roseburg Lumber
- c. "Tempered Plyron" by Eagle Plywood Specialties
- d. Approved equal

B. Subfloor:

1. 1" inch thick, APA Rated Sheathing, 48/24, C-C Plugged Exterior in accord with PS 1-09.

C. Anchored Sleepers:

1. 1-1/2" thick x 2-5/8" x 8' factory assembled steel encased treated wooden sleeper. Sleeper must be free to move vertically within steel channel confines to assure proper uniformity of resiliency and function. Sleepers to have the additional following minimum properties:

- a. 20-gauge steel channel
- b. Resilient pads, 7/16" thick, of EPDM rubber with a durometer rating of 60.
- c. A stop block that eliminates over compression of the resilient pads under heavy loads. Stop block shall allow not more than 1/4" of pad compression.

2. Approved Manufacturers:

- a. Robbins Performing Arts: Bio-Channel Classic.

2.3 ACCESSORY MATERIALS

A. Fasteners:

1. Flooring – Zinc plated, 1-1/2" Phillip's flat head, steel screws.
2. Subfloor - Galvanized, steel screws; length for full wood penetration, but not to exit on underside of sleeper.
3. Channel anchors at wood floor – Zinc plated, 1-1/4" pan head, steel screws.
4. Channel anchors to concrete – 1-1/4" pneumatic or powder-actuated concrete anchor

B. Vapor barrier: 6 mils thick polyethylene sheet conforming to ASTM D2103.

C. Cork Expansion Strip: Composition cork expansion strip; FS HH-C 576, Type I-B, Class 2.

D. Sound damping material between sleepers:

1. Mineral wool, 1.5 minimum to 3.0 maximum pounds per cubic foot.
2. Fiberglass batt, nominal 2" thick, 1.5 minimum to 3.0 maximum pounds per cubic foot.

2.4 FINISH

A. Paint: Breakthrough V57-90 by PPG Industries Architectural Coatings.

1. Color: Wrought Iron Black.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that substrate surface is smooth and flat to plus or minus 1/8" over 10 feet.

3.2 PREPARATION

- A. Broom clean substrate surfaces.
- B. Conditioning: Do not proceed with delivery and installation of flooring until after spaces to receive flooring have been enclosed and are dry and maintained at or above approximately the same humidity condition as planned for occupancy. Contractor shall place flooring materials in spaces to be floored 10 days prior to start of installation. Open packages of flooring that are sealed (if any) to permit natural adjustment of moisture content.

3.3 INSTALLATION

- A. Comply with flooring manufacturer's instructions and recommendations for applications indicated.
- B. Cover entire area with vapor barrier; lapping edges a minimum of 6 inches. Minimize formation of trapped air "bubbles." "Roll-in" vapor barrier, to ensure complete and total adhesion to mastic.
- C. Place Bio-Channels 16" O.C. end-to-end, staggering end joints in adjacent rows. Anchor at predetermined locations (approximately 22" O.C.).
- D. Fill voids between Bio-Channels with mineral wool Insulation with a minimum density of 1.5 pounds per cubic foot (pcf), to a maximum density of 3 pcf, to top of Bio-Channel assembly. Ensure there is no mineral wool on top of Bio-Channel assembly prior to laying subfloor.
- E. Install layer of plywood subfloor perpendicular to sleeper channels and fasten subfloor along sleepers as specified. Leave 3/8" gap for expansion at edge of floor.
- F. Install hardboard flooring, perpendicular to the layer of plywood subfloor, by screwing to subfloor, leaving 3/32" gaps between panels for expansion with end joints staggered. Install sheets with cut edge toward the stage rear wall. Leave 1/8" gap for expansion at edge of floor. Pre-drill and counter-sink screws through hardboard panel face extending 1" into substrate. Locate screws at 16" intervals along center of both panel axes, at panel corners, and at 16" intervals around perimeter of each panel. Screws at edge should be 1/2" from edge. Use no adhesives.
- G. Complete assembled floor must be of uniform flatness to plus or minus 1/8" over 10 feet

3.4 FINISHING – HARD BOARD FLOORING

- A. Remove all dirt and dust, including dust in the expansion seams, by vacuum or tack cloth before first coat and between coats, if needed.
- B. Protect adjacent surfaces and seating areas.
- C. Apply one coat of paint per manufacturer's recommendations, to entire floor, including all edges, and allow appropriate drying time. Lightly sand with 220-320 grit sandpaper, careful to not sand through to bare wood. Remove sanding dust. Apply second coat of paint. Allow to dry for 48 hours before heavy foot traffic. Allow to cure for seven (7) days before application of tape. Edges shall be straight and sharp.

3.5 EXTRA STOCK/REPLACEMENT MATERIAL

- A. After completion of work, deliver to project site not less than 5% of the quantity of flooring materials (sleepers, subfloor and floor surface) of type installed on the project, in specified sizes.
- B. Provide three (3) one-gallon containers of specified floor finish.

3.6 PROTECTION

- A. Protect completed flooring during remainder of construction period with heavy Kraft paper or other suitable covering, so that flooring and finish will be without damage or deterioration at time of acceptance.

3.7 CLEANING

- A. Clean work areas of trash and debris.

B. Clean floor surfaces in accordance with manufacturer's instructions.

END OF SECTION

SECTION 10 51 13 - METAL LOCKERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Related Requirements:

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at **[Project site]<Insert location>**.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal locker **[and bench]**.

- B. Sustainable Design Submittals:

- 1. Third-Party Certifications: For each product.
- 2. Third-Party Certified Life Cycle Assessment: For each product.

- C. Shop Drawings: For metal lockers.

- 1. Include plans, elevations, sections, and attachment details.
- 2. Show locker trim and accessories.
- 3. Include locker identification system and numbering sequence.

- D. Samples: For each color specified, in manufacturer's standard size.

- E. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available.

- F. Samples for Verification: For the following products, in manufacturer's standard size:

- 1. Lockers and equipment.
- 2. Locker benches.

- G. Product Schedule: For lockers. **[Use same designations indicated on Drawings.]**

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

- B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

- 1. The following metal locker hardware items equal to [10]<Insert number> percent of amount installed for each type and finish installed, but no fewer than [five]<Insert number> units:

- a. Locks.
- b. Blank identification plates.
- c. Hooks.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for their installation.
- B. Deliver [master and control keys][combination control charts] to Owner by registered mail or overnight package service[.], [addressed as follows:]

- 1. <Insert name and address of Owner's representative>.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of recessed openings by field measurements before fabrication.

1.9 COORDINATION

- A. Coordinate sizes and locations of [concrete][concrete masonry][wood] bases for metal lockers.
- B. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that metal lockers can be supported and installed as indicated.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.

- 1. Failures include, but are not limited to, the following:

- a. Structural failures.
- b. Faulty operation of latches and other door hardware.

2. Damage from deliberate destruction and vandalism is excluded.
3. Warranty Period for Knocked-Down Metal Lockers: [Two]<Insert number> years from date of Substantial Completion.
4. Warranty Period for Welded Metal Lockers: [Lifetime][10 years]<Insert years> from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain metal lockers and accessories from single source from single locker manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: For lockers and locker benches indicated to be accessible, comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design".

2.3 LOCKS

- A. Combination Padlock: Provided by Owner.

2.4 FABRICATION

- A. Fabricate metal lockers square, rigid, without warp, and with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch and free of sharp edges and burrs.
 1. Form body panels, doors, shelves, and accessories from one-piece steel sheet unless otherwise indicated.
 2. Provide fasteners, filler plates, supports, clips, and closures as required for complete installation.
- B. Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments.
- C. Equipment: Provide each locker with an identification plate and the following equipment:
 1. Double-Tier Units: One double-prong ceiling hook and two single-prong wall hooks.
 2. Open-Front Athletic Lockers: Two single-prong wall hooks bolted to locker back and coat rod.
- D. Welded Construction: Factory preassemble metal lockers by welding all joints, seams, and connections; with no bolts, nuts, screws, or rivets used in assembly of main locker groups. Factory weld main locker groups into one-piece structures. Grind exposed welds smooth and flush.
- E. Accessible Lockers: Fabricate as follows:
 1. Locate bottom shelf no lower than **15 inches** above the floor.
 2. Where hooks, coat rods, or additional shelves are provided, locate no higher than **48 inches** above the floor.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and floors or support bases, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install lockers level, plumb, and true; shim as required, using concealed shims.
 - 1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than **36 inches** o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
 - 2. Anchor single rows of metal lockers to walls near top [**and bottom of lockers**][**of lockers and to floor**].
 - 3. Anchor back-to-back metal lockers to floor.
- B. Knocked-Down Lockers: Assemble with manufacturer's standard fasteners, with no exposed fasteners on door faces or face frames.
- C. Welded Lockers: Connect groups together with manufacturer's standard fasteners, with no exposed fasteners on face frames.
- D. Equipment:
 - 1. Attach hooks with at least two fasteners.
 - 2. Attach door locks on doors using security-type fasteners.
 - 3. Identification Plates: Identify metal lockers with identification indicated on Drawings.
 - a. Attach plates to each locker door, near top, centered, with at least two aluminum rivets.
 - b. Attach plates to upper shelf of each open-front metal locker, centered, with a least two aluminum rivets.
- E. Trim: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.
 - 1. Attach recess trim to recessed metal lockers with concealed clips.
 - 2. Attach filler panels with concealed fasteners. Locate filler panels where indicated on Drawings.
 - 3. Attach sloping-top units to metal lockers, with closures at exposed ends.
 - 4. Attach boxed end panels using concealed fasteners to conceal exposed ends of nonrecessed metal lockers.
 - 5. Attach finished end panels using fasteners only at perimeter to conceal exposed ends of nonrecessed metal lockers.
- F. Fixed Benches: Provide no fewer than two pedestals for each bench, uniformly spaced not

more than **72 inches** apart. Securely fasten tops of pedestals to undersides of bench tops, and anchor bases to floor.

- G. Movable Benches: Place benches in locations indicated on Drawings.

3.3 ADJUSTING

- A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding.[**Verify that integral locking devices operate properly.**]

3.4 PROTECTION

- A. Protect metal lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.
- B. Touch up marred finishes, or replace metal lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION 10 51 13

SECTION 13 12 50
PERMANENT GRANDSTANDS HOME SIDE
(I-Beam, interlocking decking, chairback seating)

A. GENERAL

1. The work consists of providing labor, materials, equipment, engineering, installation and supervision of an elevated galvanized I-beam bleacher system.
 - a) Framing and substructure
 - b) Decking system
 - c) Seating
 - d) Handrails/guardrails
 - e) ADA Ramp
2. Building Codes
 - a) Must meet or exceed all State and Local applicable codes and be in compliance with the International Building Code adopted by the jurisdiction. (IBC 2021)
3. Dimensions/Capacities
 - a) The overall length of bleacher shall be as per architectural drawings
 - b) The number of rows shall be as per architectural drawings
 - c) Height of first row is 17" above front walkway
 - d) The rise per row shall be as per architectural drawings
 - e) The depth per row shall be as per architectural drawings
 - f) Gross seating capacity shall be as per architectural drawings
 - g) Front walkway elevation shall be as per architectural drawings

B. STRUCTURAL PERFORMANCE:

1. Design Loads/Structural – Framing Members
 - a) Dead loading: 6 PSF for understructure.
 - b) Live loads: 100 PSF for understructure
2. Design Loads/Semi-Closed Decking System
 - a) Dead loading: 6 PSF for decking, platforms, and stairs.
 - b) Live loads: 100 PSF for decking, platforms, and stairs.
 - c) Deflection limits: engineer assemblies to withstand design loads with deflections no greater than the following:
 - (1) Decking, platforms, and stairs: vertical deflection of L/240.
 - d) Sway loads of 24 PLF per row parallel to seat and 10 PLF per row perpendicular to seat run.
3. Design Loads/Handrail/Guardrail
 - a) 50 PLF in any direction.
 - b) 200 LB concentrated load any direction
4. Design Loads/Seat Boards
 - a) Live loads: 120 PLF for seating.

C. PROPOSAL DRAWINGS: Submit with bid proposal the following scheduled design plans:

1. Plan showing general design and seat locations
2. A decking and aisle layout plan.

- a) SUBMITTALS
- b) Shop Drawings: Manufacturer to submit shop drawings sealed by a registered professional engineer in the applicable state and shall be of sufficient clarity to indicate location, nature, and extent of the work proposed and show in detail that it will conform to the applicable code and relevant laws.

D. PRODUCTS

1. ACCEPTABLE MANUFACTURERS

- a) Grandstands
 - (1) All manufacturers must be preapproved by the Architect no later than 7 days prior to Bid Date.
- b) Chair Back Seating: Irwin Seating
 - (1) Model: 22" width Patriot, or equal

E. PRODUCT DESCRIPTION (Permanent Steel Grandstand)

1. Substructure (Galvanized Steel I-Beam)

- a) Horizontal Beam Design: All horizontal beams are wide flange beams. Traverse bays are free of cross bracing the total length of the grandstand.
- b) Stringers: Stringers are wide flange with steel angle rise and depth fabrication and are placed at 6 feet on center maximum.
- c) Structural shapes shall meet one of the following ASTM specifications: A36, A36/A572 grade 50, A572 grade 50, A529-50, or A500 grade B.
- d) Shop connections are seal welds.
- e) After fabrication, all steel is hot-dipped galvanized to ASTM-A-123 specifications.
- f) Design to be stamped by state licensed engineer.
- g) Painted steel finish is unacceptable.

2. Decking: Interlocking Decking System

- a) Rise and depth per row: Refer to drawings.

3. CLOSED Aluminum Decking System

- a) Decking system platforms shall be an all-aluminum extrusions attached to the understructure by means of concealed aluminum clips, galvanized bolts, washers and nuts. The attachment of the riser to the platforms shall form a structurally integrated system.
- b) Platform shall have a minimum aluminum wall thickness of .078" and aluminum shall be alloy 6063-T6.
- c) Walking surface shall be fluted slip-resistant decking.
- d) The platforms shall have integral bolt runners, to allow for the attachment of seat supports, aisle steps and aisle handrails to be made without penetrating the decking system. Through bolting is prohibited.
- e) Deck shall allow for reconfiguration of seating and aisles without alteration of the understructure.

4. Decking System Riser

- a) The decking system riser shall be extruded aluminum: alloy 6063-T6 with a mill finish.
- b) The riser shall attach using extruded aluminum bolt clips, designed to clamp the riser to the supporting structure and hot dipped galvanized carriage bolts, and hex nuts or equal. Self-drilling fasteners are prohibited.
- c) The riser shall be structurally connected to every frame line.

5. Seating

- a) Each seat 17 inches above its respective tread
 - b) Bench Seating:
 - (1) 2x10 aluminum seat
 - (2) Joint and splice sleeves required for continuous seating over 30' in length
6. Guardrails/Handrails System
- a) All railing shall consist of 1-5/8" schedule 40 anodized pipe.
 - b) All pipe fittings shall be of cast aluminum or equal.
 - c) Guardrail supports to be 2x3" angle.
 - d) Rail pipe shall be secured to the guardrail support by means of galvanized tension bands.
 - e) The top rail shall be 42" minimum above the nearest seat on the sides and rear, and 42" above the tread on the front walkway.
 - f) Handrails on stairs shall be 34" above the leading most edge of the stair tread.
 - g) An aluminized chain link fence shall be provided on the front, sides and rear of the bleacher and at all egress areas.
 - h) Handrails shall be provided at all walking areas and shall extend 1-1/2" from guardrail material. Standoff shall be extruded aluminum, alloy 6061-T6.
 - i) Handrails shall have internal sleeves for splice purposes and finished rail shall be continuous and shall not exceed 1-5/8" diameter.
7. Clip Sets
- a) Clip sets shall adequately connect seat and foot planks to the supporting structure so as to transmit all design loads to the understructure members, as specified in the design section.
 - b) All planks shall be connected to the supporting structure using four way adjustable clips, carriage bolts, and 5/16" galvanized nuts.
 - c) Splice Connectors
 - (1) Internal splices, where required, shall be two per joint, aluminum alloy 6061-T6 and shall penetrate the joint a minimum of 9" in each direction and be riveted at one end only to allow for contraction and expansions.
8. Front Walkway:
- a) Clear Width: Per Drawings
 - b) Elevation: Per Drawings
9. Entry Stairs.
- a) Stair rise: per drawings with aluminum closure and contrasting aluminum stair nose.
 - b) Stair tread depth: per drawings.
 - c) Stairs to be firmly anchored to uniformly poured concrete bases.
 - d) Guardrails on Stair to be 42 inches above leading edge of step.
 - e) Stairs to have handrail extension. The top of the handrails and handrail extensions shall be placed not less than 34 inches or more than 38 inches above the nosing of the treads and landings.
10. Aisle:
- a) Aisle with seating on both sides to have discontinuous mid-aisle handrails.
 - b) The handrails shall have breaks at intervals not to exceed 5 rows. These breaks shall have clear width of at least 22 inches and not greater than 36 inches horizontally.
 - c) Handrails to have 34 inch top rail with an intermediate rail at approximately 22 inches above tread.

- d) Aluminum tread nosing of contrasting color on aisle steps.
- e) Mid-Aisle steps shall be provided for riser heights above 8 inches and shall provide equal rise and run throughout the aisle. These steps shall have a riser closure to the sided edges of the half step with no recesses.

11. Ramp Design

- a) Slope: 1 in 12.
- b) Guardrail as required by code plus toe board
- c) The ramp system shall be designed to support, in addition to its own weight, a uniformly distributed live load of not less than 100 pounds per square foot of gross horizontal projection.
- d) All decking members shall sustain live loads of not less than 120 pounds per lineal foot, over a 6 foot span, multi-span condition.

12. ADA Provision

- a) Quantity of wheelchair spaces: see plans
- b) Riser area adjacent to wheelchair spaces to have intermediate construction so 4 in sphere cannot pass through opening.

13. Materials/Finishes

- a) Substructures:
 - (1) Structural shapes shall meet one of the following ASTM specifications: A36, A36/A572 grade 50, A572 grade 50, A529-50, or A500 grade B.
 - (2) Shop connections are seal welds.
 - (3) After fabrication, all steel is hot-dipped galvanized to ASTM-A-123 specifications.
 - (4) Painted steel finish is unacceptable.
- b) Extruded Aluminum:
 - (1) Seat Planks, Extruded aluminum alloy, 6063-T6, Clear anodized 204R1, AA-M10C22A31, Class II.
 - (2) Tread Planks: Extruded aluminum alloy, 6063-T6 mill finish.
 - (3) Riser Planks: Extruded aluminum alloy, 6063-T6 mill finish.
 - (4) Railing: Extruded aluminum alloy, 6063-T6 clear anodized 204R1, AA-M10C22A31, Class II
- c) Chairback Seating:
 - (1) Irwin Patriot Series, 22" Chair Width
 - (a) Blow-mold Patriot back
 - (b) Blow-molded seat with torsion spring seat lift mechanism
 - (c) Steel chair platform - Riser mounted
 - (d) Blow-mold armrest attachment

14. Accessories

- a) Channel End Caps: Aluminum alloy 6063-T6, clear anodized 204R1, AA-M10C22A31, Class II.

15. Hardware:

- a) Bolts, Nuts: Hot-dipped galvanized or mechanically galvanized.
- b) Hold down clip assembly: Aluminum alloy 6005A-T6, mill finish
- c) Structural Hardware: Equal to or greater than hot-dipped galvanized ASTM-A307. No connections utilizing high strength bolts are classed as slip critical.

16. Aisle Nose and Stair Nose:

- a) Aluminum alloy, 6063-T6, non-skid black powder coated finish or other paint system meeting AAMA 603.8-92 specifications.

F. INSTALLATION

1. Installation must be performed by the Manufacturer, or industry professional with 10 years of experience.
2. All plank to be free of defects such as, but not limited to dents, scratches, water (moisture), and damage.
3. All surfaces to be cleaned prior to final inspection.
4. Inspection to be conducted by owner, state and/or county inspector, or any other designated person(s), elected by said owner.
5. Legally remove all packing material and construction type debris from owner's property.

G. WARRANTY

1. Permanent Grandstand shall be under warranty for a period of one year beginning at the Date of Substantial Completion for projects installed by Manufacturer. The grandstand is warranted to be free of defect in materials and workmanship in the course of manufacture. This warranty excludes any other defects resulting from abnormal use in service, accidental or intentional damage or any occurrences beyond Manufacturer's control.

H. MAINTENANCE

1. Owner is to conduct annual inspection and required maintenance of grandstand to ensure safe conditions. It is also recommended that a professional engineer or registered architect perform inspections biennia

END OF SECTION

SECTION 13 12 51
PERMANENT GRANDSTANDS VISITOR SIDE
(Angle frame, interlocking decking)

A. GENERAL

1. The work consists of providing labor, materials, equipment, engineering, installation and supervision of an elevated angle bleacher system.
 - a. Framing and substructure
 - b. Decking system
 - c. Seating
 - d. Handrails/guardrails
 - e. ADA Ramp
2. Building Codes
 - a. Must meet or exceed all State and Local applicable codes and be in compliance with the International Building Code adopted by the jurisdiction. (IBC 2021)
3. Dimensions/Capacities
 - a. The overall length of bleacher shall be as per architectural drawings
 - b. The number of rows shall be as per architectural drawings
 - c. Height of first row is 17" above front walkway
 - d. The rise per row shall be as per architectural drawings
 - e. The depth per row shall be as per architectural drawings
 - f. Gross seating capacity shall be as per architectural drawings
 - g. Front walkway elevation shall be as per architectural drawings

B. STRUCTURAL PERFORMANCE:

1. Design Loads/Structural – Framing Members
 - a. Dead loading: 6 PSF for understructure.
 - b. Live loads: 100 PSF for understructure
2. Design Loads/Semi-Closed Decking System
 - a. Dead loading: 6 PSF for decking, platforms, and stairs.
 - b. Live loads: 100 PSF for decking, platforms, and stairs.
 - c. Deflection limits: engineer assemblies to withstand design loads with deflections no greater than the following:
 1. Decking, platforms, and stairs: vertical deflection of L/240.
 - d. Sway loads of 24 PLF per row parallel to seat and 10 PLF per row perpendicular to seat run.
3. Design Loads/Handrail/Guardrail
 - a. 50 PLF in any direction.
 - b. 200 LB concentrated load any direction
4. Design Loads/Seat Boards
 - a. Live loads: 120 PLF for seating.

C. PROPOSAL DRAWINGS: Submit with bid proposal the following scheduled design plans:

1. Plan showing general design and seat locations.

2. A decking and aisle layout plan.

D. SUBMITTALS

1. Shop Drawings: Manufacturer to submit shop drawings sealed by a registered professional engineer in the applicable state and shall be of sufficient clarity to indicate location, nature, and extent of the work proposed and show in detail that it will conform to the applicable code and relevant laws.

E. PRODUCTS

1. ACCEPTABLE MANUFACTURERS

a. Grandstands

1. All manufacturers must be preapproved by the Architect no later than 7 days prior to Bid Date.

F. PRODUCT DESCRIPTION (Permanent Angle Framed Grandstand)

1. Substructure (All-Aluminum Angle Frame)

- a. The understructure of the system shall consist of a series of aluminum frames spaced at intervals of no more than 6'-0" and joined by means of aluminum sway braces.
- b. Each frame shall consist of vertical members, adequate diagonal braces, and horizontal members welded to form the rise per row and back-to-back spacing between seat rows as indicated.
- c. All welded connections shall be by certified aluminum welders, and all mating parts shall be welded on all sides to assure adequate strength.
- d. Vertical members shall be constructed on a minimum of 2" x 2" x 3/16" angle aluminum, alloy 6061-T6, mill finish.
- e. Horizontal members shall be constructed of 2" x 2" x 3/16" or larger aluminum, alloy 6061-T6, mill finish.
- f. Sway braces shall be constructed of 1 1/2" x 1 1/2" x 3/16" aluminum angle, alloy 6061-T6, mill finish.

2. Decking: Interlocking Decking System

- a. Rise and depth per row: Refer to drawings.

3. CLOSED Aluminum Decking System

- a. Decking system platforms shall be an all-aluminum extrusions attached to the understructure by means of concealed aluminum clips, galvanized bolts, washers and nuts. The attachment of the riser to the platforms shall form a structurally integrated system.
- b. Platform shall have a minimum aluminum wall thickness of .078" and aluminum shall be alloy 6063-T6.
- c. Walking surface shall be fluted slip-resistant decking.
- d. The platforms shall have integral bolt runners, to allow for the attachment of seat supports, aisle steps and aisle handrails to be made without penetrating the decking system. Through bolting is prohibited.

- e. Deck shall allow for reconfiguration of seating and aisles without alteration of the understructure.
4. Decking System Riser
- a. The decking system riser shall be extruded aluminum: alloy 6063-T6 with a mill finish.
 - b. The riser shall attach using extruded aluminum bolt clips, designed to clamp the riser to the supporting structure and hot dipped galvanized carriage bolts, and hex nuts or equal. Self-drilling fasteners are prohibited.
 - c. The riser shall be structurally connected to every frame line.
5. Seating
- a. Each seat 17 inches above its respective tread
 - b. Bench Seating:
 - 1. 2x10 aluminum seat
 - 2. Joint and splice sleeves required for continuous seating over 30' in length
6. Guardrails/Handrails System
- a. All railing shall consist of 1-5/8" schedule 40 anodized pipe.
 - b. All pipe fittings shall be of cast aluminum or equal.
 - c. Guardrail supports to be 2x3" angle.
 - d. Rail pipe shall be secured to the guardrail support by means of galvanized tension bands.
 - e. The top rail shall be 42" minimum above the nearest seat on the sides and rear, and 42" above the tread on the front walkway.
 - f. Handrails on stairs shall be 34" above the leading most edge of the stair tread.
 - g. An aluminized chain link fence shall be provided on the front, sides and rear of the bleacher and at all egress areas.
 - h. Handrails shall be provided at all walking areas and shall extend 1-1/2" from guardrail material. Standoff shall be extruded aluminum, alloy 6061-T6.
 - i. Handrails shall have internal sleeves for splice purposes and finished rail shall be continuous and shall not exceed 1-5/8" diameter.
7. Clip Sets
- a. Clip sets shall adequately connect seat and foot planks to the supporting structure so as to transmit all design loads to the understructure members, as specified in the design section.
 - b. All planks shall be connected to the supporting structure using four way adjustable clips, carriage bolts, and 5/16" galvanized nuts.
 - c. Splice Connectors
 - 1. Internal splices, where required, shall be two per joint, aluminum alloy 6061-T6 and shall penetrate the joint a minimum of 9" in each direction and be riveted at one end only to allow for contraction and expansions.
8. Front Walkway:
- a. Clear Width: Per Drawings
 - b. Elevation: Per Drawings

9. Entry Stairs.

- a. Stair rise: per drawings with aluminum closure and contrasting aluminum stair nose.
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3. All surfaces to be cleaned prior to final inspection.
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I. MAINTENANCE

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END OF SECTION