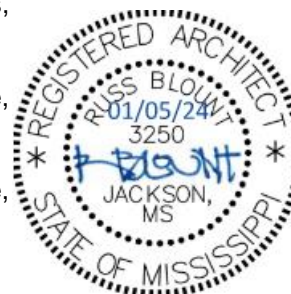


SECTION 009113 – ADDENDUM ONE

PART 1 - ADDENDA

1.1 PROJECT INFORMATION

- A. Project Name: 22034.02 Meridian High School Additions, Renovations and Ballfield Rebid
- B. Owner: Meridian Public School District, 1019 25th Avenue, Meridian, MS 38391
- C. Architect: Dale | Bailey, an Association, One Jackson Place, Suite 250, 188 East Capitol Street, Jackson, MS 39201-2100
- D. Architect Project Number: 22034.02
- E. Date of Addendum One: 5 January 2024



1.2 NOTICE TO BIDDERS

- A. This Addendum is issued to all registered plan holders pursuant to the Instructions to Bidders and Conditions of the Contract. This Addendum serves to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addendum affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement.
- B. The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.
- C. The date for receipt of bids is unchanged by this Addendum at same time and location.

1.3 GENERAL RESPONSES TO REQUESTS FOR INFORMATION

- A. QUESTION: Can "Best" hardware by the Dormakaba Group be allowed for door hardware where applicable?

ANSWER: Yes.

- B. QUESTION: Can the architect provide detailed plans of the awning including connection details?

ANSWER: The design of this awning is delegated to the manufacturer provided that it meets the base requirements of the specifications and drawings. The Contractor is encouraged to visit the site so that they may be familiar with the variety of conditions they will encounter.

- C. QUESTION: On AS101, it calls for an Auto Gate with Power(East Side of Campus), but I do not see any provisions in the Electrical Drawings. Please Advise.

ANSWER: See attached updated electrical sheets.

- D. QUESTION: Drawings C-202, C302, C402 and C602 are missing from the plans. Can you provide those?

ANSWER: See attached updated civil sheets.

- E. QUESTION: Can you provide the details for the ADA ramp at the Pressbox/Concessions? It would appear that structural and Architectural do not match. They also reference each other for details.

ANSWER: See attached updated structural sheets.

- F. QUESTION: Is the alternate a videoboard WITHOUT the scoreboard? Or is it the videoboard AND the scoreboard? Is the "title panel" (2.2 B 2. m.) a truss?

ANSWER: Base bid includes scoreboard; alternate with base bid include both scoreboard and videoboard. Design of the title panel will be any available by manufacturer.

- G. QUESTION: The spec for the flagpole is showing 45'0", but the drawing near the ball field is showing 60'0". Which is correct? Or are there two of them – one in the front of the school and one near the ball field?

ANSWER: There is only 1 required flagpole for this project. The flagpole measures 60' and is located at the baseball parking area. The existing flagpole for the school near the administration addition will remain.

- H. QUESTION: The drawings show an excellent illustration of the different types of panel signs, but no schedule or drawing which shows which is "A", or "B", or etc.....is there "Signage Schedule" coming out?

ANSWER: A room sign shall be provided for all rooms listed in finish schedules. Numbering and names shall be coordinated with owner. Contractor shall provide schedule as submittal to be reviewed. Location shall be coordinated with school personnel during construction and prior to installation.

- I. QUESTION: Can the architect provide clear direction on toilet accessories?

ANSWER: Updates to plans will be provide in the next addenda to clarify.

- J. QUESTION: General notes on page A-611 says to provide floor tile & wainscot at all drinking fountain, see interior elevations. There are none on the interior elevations page.

ANSWER: Disregard this note at there is no situation in the drawings that is applicable.

- K. QUESTION: On page a-611 in the admin building has a logo on the floor at the entrance. Is this a water jet logo?

ANSWER: Disregard this note as there is no situation in the drawings that is applicable.

L. QUESTION: I do not see Spec Section 084513 Structured-Polycarbonate-Panel Assemblies .. that is listed in the Table of Contents?

ANSWER: Disregard this section reference as there is no situation in the drawings that is applicable.

M. QUESTION: The bid plans on sheet A101-b call for "Include Meridian Logo in outfield to be roughly 50' SQ". Does "50' SQ" mean a 50' x 50' square (i.e. total of 2500 square feet) or a total of 50 square feet (i.e. 7.1' x 71' or 5' x 10' or similar)?

ANSWER: 50' SQ refers to 2500 square feet.

1.4 REVISIONS TO DRAWINGS

- A. Sheet S-101b (Revised). Pressbox foundation plan to include ramp columns and footings
- B. Sheet S-101c (New). Pressbox floor framing plan to include steel for entry ramp
- C. Sheet S-300 (Revised). Updated schedules for column footings and baseplates
- D. Sheet S-301 (Revised). Added details for pre-engineered stair at pressbox ramp
- E. Sheet S-402 (Revised). Updated detail at edge of pressbox and ramp
- F. Sheet S-403 (Revised). New details for pressbox ramp.
- G. Sheet C-200 (Revised). Updated to reflected additional demo items at baseball area
- H. Sheet C-202 (New). Added sheet to reflect additional demo items at baseball area
- I. Sheet C-300 (Revised). Updated to reflect additional site items of work at baseball area
- J. Sheet C-302 (New). Added sheet to reflect site items of work at baseball area
- K. Sheet C-400 (Revised). Updated to reflect additional dimensions at baseball area
- L. Sheet C-402 (New). Added to reflect dimensions/layout of work at baseball area
- M. Sheet C-403 (New). Added to reflect dimensions/layout of work at baseball area
- N. Sheet C-500 (Revised). Updated to reflect grading/drainage work at baseball area
- O. Sheet C-502 (New). Added to reflect grading/drainage work at baseball area
- P. Sheet C-600 (Revised). Updated to reflect water/sewer work at baseball area
- Q. Sheet C-602 (New). Added to reflect water/sewer work at baseball area
- R. Sheet C-701 (Revised). Added light duty concrete pavement detail for parking area.

- S. Sheet C-800 (Revised). Updated to reflect additional erosion control measures.
- T. Sheet E-004a (Revised). Added power for the gate at the east entrance.

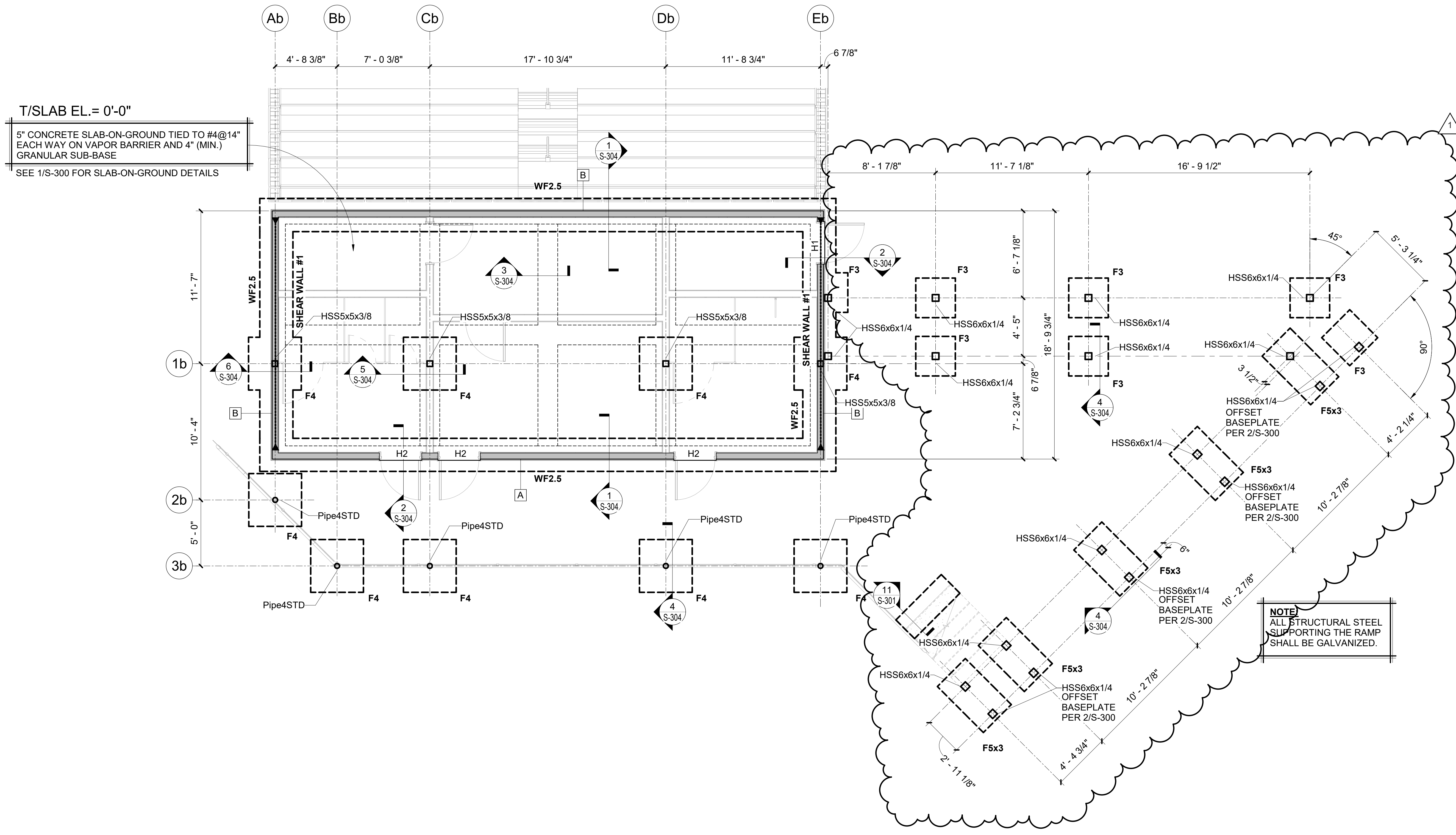
1.5 REVISIONS TO SPECIFICATIONS

- A. Section 330507.13 (New). Utility Directional Drilling
- B. Section 333113.01 (New). Cured In Place Pipe
- C. Section 312500 (New). Erosion and Sedimentation Control
- D. Section 323212 (New). Segmental Block Retaining Wall

1.6 ATTACHMENTS

- A. This Addendum includes the following attached Drawings.
 - 1. Sheet S-101b - Foundation, Second Floor Framing Plan - Pressbox & Concessions - dated 5 January 2024
 - 2. Sheet S-101c - Pressbox floor framing plan to include steel for entry ramp - dated 5 January 2024
 - 3. Sheet S-300 - Foundation Sections & Details - dated 5 January 2024
 - 4. Sheet S-301 - Foundation Sections & Details - dated 5 January 2024
 - 5. Sheet S-402 - Roof Framing Sections & Details - dated 5 January 2024
 - 6. Sheet S-403 - Roof Framing Sections & Details - dated 5 January 2024
 - 7. Sheet C-200 – Overall Demo Plan - dated 5 January 2024
 - 8. Sheet C-202 – Demo Plan - Baseball Field - dated 5 January 2024
 - 9. Sheet C-300 – Overall Site Plan - dated 5 January 2024
 - 10. Sheet C-302 – Site Plan - Baseball Field - dated 5 January 2024
 - 11. Sheet C-400 – Overall Geometric Plan - dated 5 January 2024
 - 12. Sheet C-402 – Geometric Plan - Baseball Field - dated 5 January 2024
 - 13. Sheet C-403 – Geometric Plan - East Sidewalk - dated 5 January 2024
 - 14. Sheet C-500 – Overall Grading and Drainage Plan - dated 5 January 2024
 - 15. Sheet C-502 – Grading and Drainage Plan - Baseball Field- dated 5 January 2024
 - 16. Sheet C-600 – Overall Utility Plan - dated 5 January 2024
 - 17. Sheet C-602 – Utility Plan - Baseball Field - dated 5 January 2024
 - 18. Sheet C-701 – Construction Details – dated 5 January 2024
 - 19. Sheet C-800 – Erosion Control Plan - dated 5 January 2024
 - 20. Sheet E-004a - Electrical Renovation Site Plan dated 5 January 2024
 - 21. Spec Section 330507.13 dated 5 January 2024
 - 22. Spec Section 333113.01 dated 5 January 2024
 - 23. Spec Section 312500 dated 5 January 2024
 - 24. Spec Section 323212 dated 5 January 2024

END OF ADDENDUM ONE



T/SLAB EL.= 0'-0"
5" CONCRETE SLAB-ON-GROUND TIED TO #4@14"
EACH WAY ON VAPOR BARRIER AND 4" (MIN.)
GRANULAR SUB-BASE
SEE 1/S-300 FOR SLAB-ON-GROUND DETAILS

LOAD-BEARING WALL SCHEDULE			
LEVEL	WALL MARK		
	A	B	C
1st FLOOR	1-2x6	1-2x6	-
2nd FLOOR	-	1-2x6	1-2x6
TOP PLATE	2-2x6	2-2x6	2-2x6
SILL PLATE	1-2x6	1-2x6	1-2x6

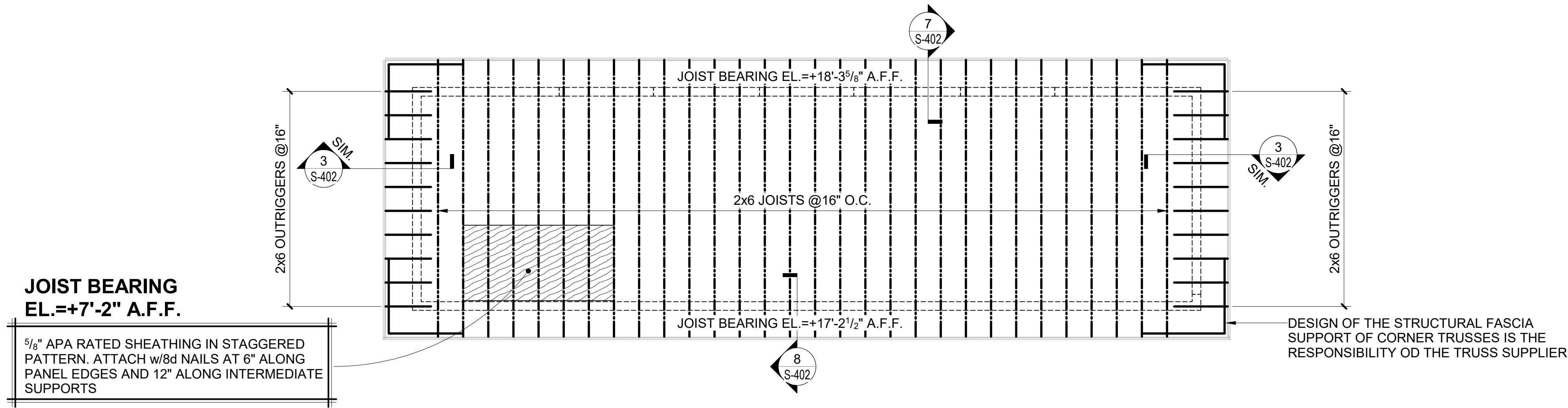
NOTE: ALL STUDS OR STUD PACKS SPACED @16" O.C.

SHEAR WALL SCHEDULE	
SHEAR WALL MARK	SW1
SHEATHING AND EDGE NAIL SIZE AND SPACING	1 9/32" w/10d@6"
INTERIOR NAIL SIZE AND SPACING	10d NAILS @12"
NUMBER OF BOUNDARY STUDS	(2)-2x6
SIMPSON HOLD DOWN DEVICE	HDU2-SDS2.5
16d NAIL SILL PLATE SPACING	2@16"
SILL PLATE ANCHOR SPACING	1/2" BOLT @32"
ATS FOUNDATION ANCHOR	PAB5 w/8" EMB.
DOWELS AT ANCHOR	-

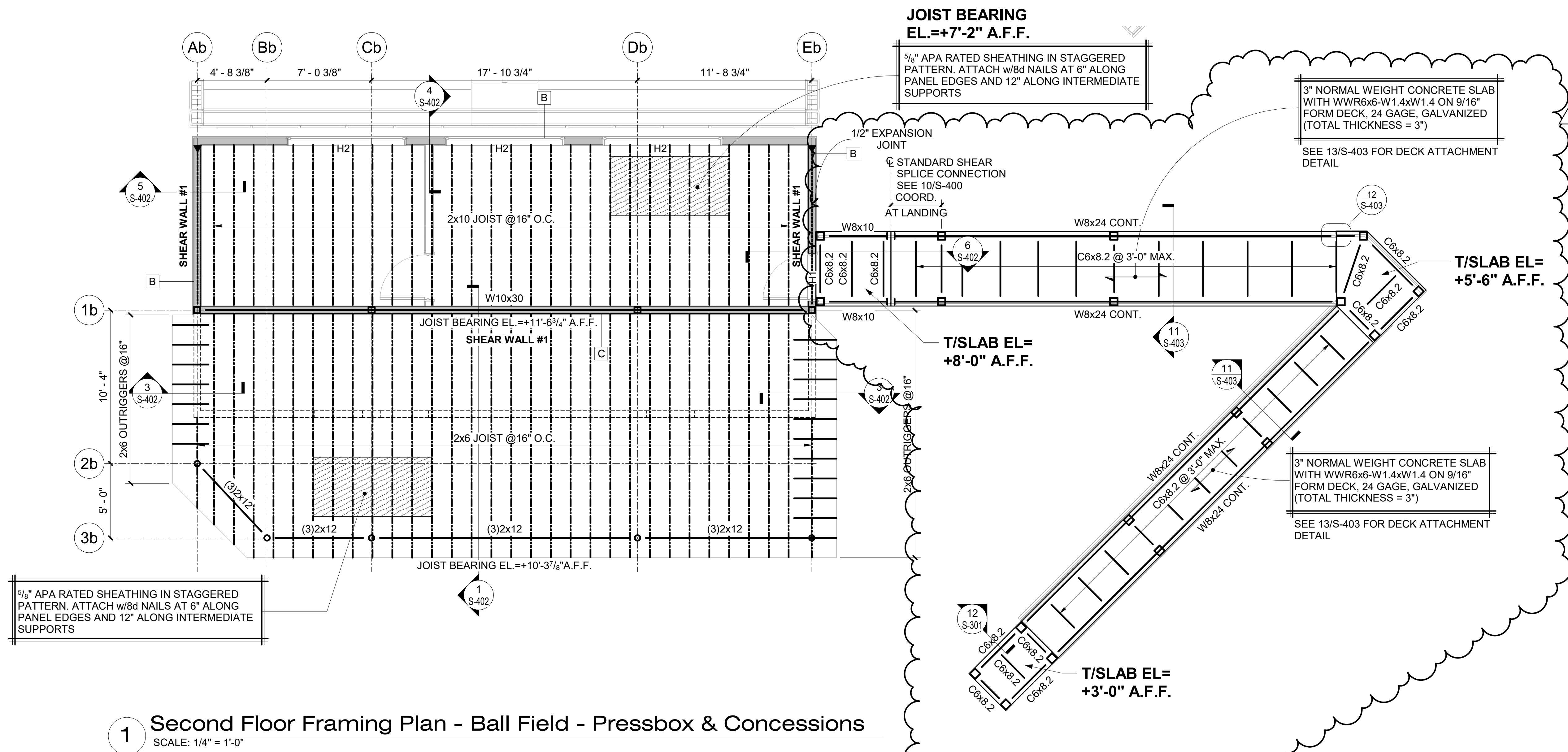
WALL LEGEND	
	CMU LOAD-BEARING WALLS (MARKED w/ REINF. ON PLANS)
	CMU PARTITION WALLS (UNMARKED ON PLANS)
	DENOTES BEAM BEARING. SEE STEEL BEAM BEARING ON CMU DETAIL 9/S-400
	CMU CONTRACTION JOINT
	LOAD-BEARING 2x WOOD WALL
	2x WOOD SHEAR WALL

- FOUNDATION PLAN NOTES**
- ALL DIMENSIONS ARE TO BE VERIFIED WITH ARCHITECTURAL DRAWINGS BEFORE DETAILING AND CONSTRUCTION ARE TO BEGIN. FOR DIMENSIONS NOT SHOWN, SEE ARCHITECTURAL DRAWINGS DIMENSIONS SHOWN ARE TO FACE OF STUD OR EDGE OF SLAB.
 - DO NOT LOCATE PLUMBING LINES WITHIN CONCRETE FOOTINGS.
 - CONTRACTOR SHALL SUBMIT THE LOCATIONS OF ALL THE MECHANICAL WALL OPENINGS FOR REVIEW AND APPROVAL BEFORE THE START OF WALL CONSTRUCTION.

1 Foundation Plan - Ball Field - Pressbox & Concessions
SCALE: 1/4" = 1'-0"



2 Roof Framing Plan - Ball Field - Pressbox & Concessions
SCALE: 1/4" = 1'-0"



1 Second Floor Framing Plan - Ball Field - Pressbox & Concessions
SCALE: 1/4" = 1'-0"

MHS Additions, Renovations, & Ballfield Rebid
2320 32nd St, Meridian, MS 39305

Construction Documents

Project No	22034.02
Date	12/06/2023
Drawn	S.T.
Checked	W.G./J.W./T.S.
Revisions	Rev Date
ADDENDUM #1	1/5/24

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Consulting Structural Engineers

220 Great Circle Road, Suite 106
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www.sdg-structure.com

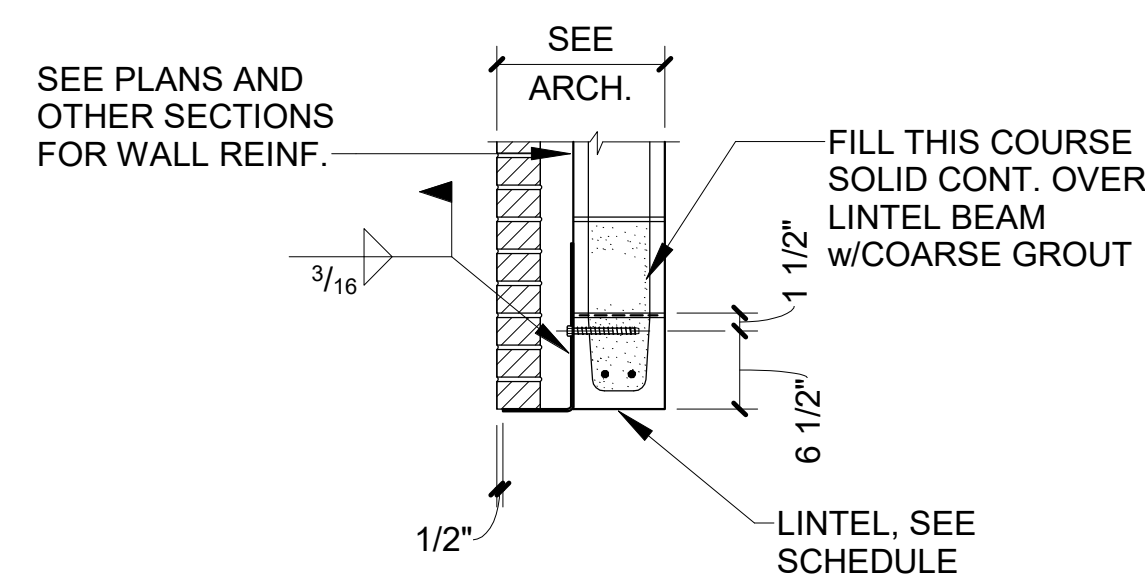
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S-101c

Second Floor, Roof
Framing Plan - Pressbox
& Concessions

BRICK LINTEL SCHEDULE		
OPENING WIDTH	ANGLE SIZE	REMARKS
0'-0" TO 10'-0"	BENT PL 3/8	3/4" DIA. x 6" SIMPSON TITEN SCREW ANCHOR @

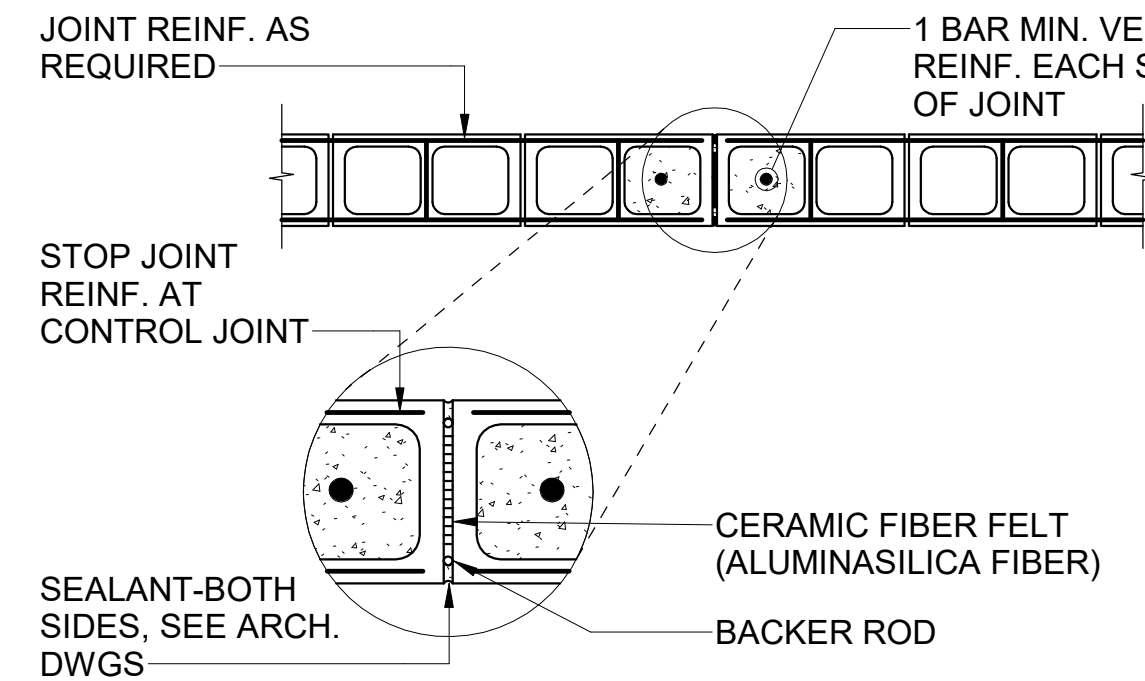
NOTE: 8" MIN. BEARING EACH END - TYP.



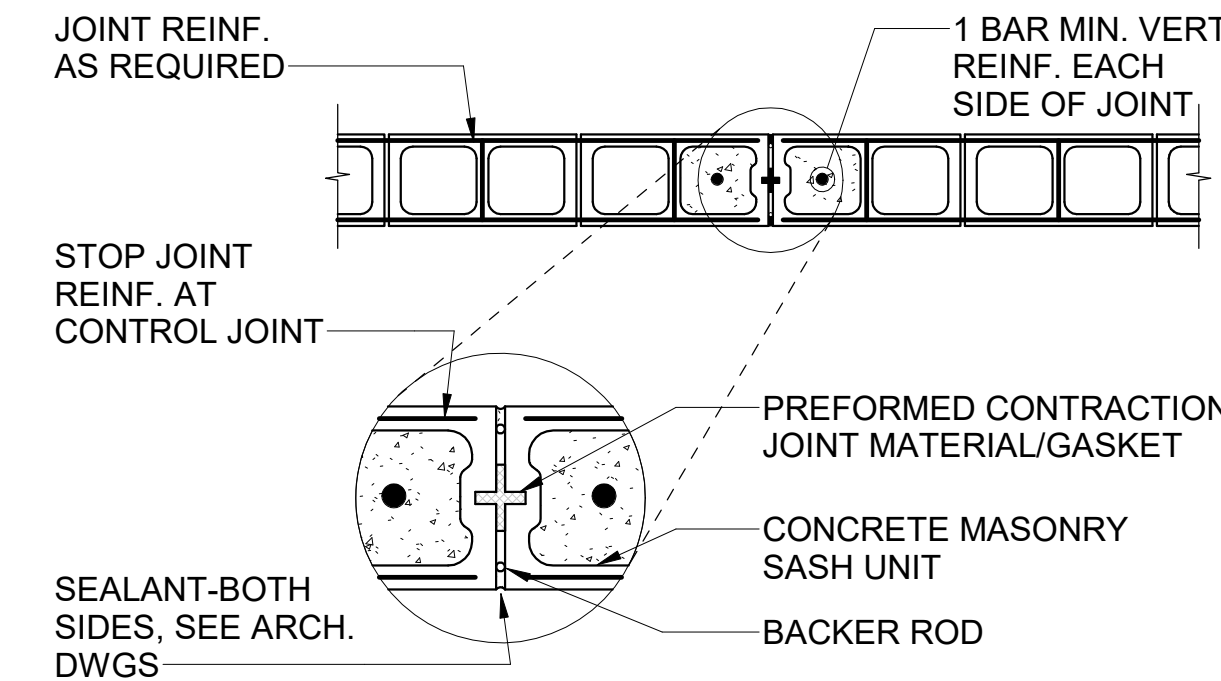
BOLTED

8 BRICK LINTEL SCHEDULE AND DETAILS

NOTE:
 1. SEE PLANS FOR LOCATION OF CONTRACTION JOINTS AND STRUCTURAL NOTES FOR MAX. SPACING.
 2. LOCATE CONTRACTION JOINTS 2'-0" MINIMUM FROM SIDES OF OPENINGS.
 3. C.J. (CMU CONTRACTION JOINT) SHOWN ON PLANS INDICATES APPROXIMATE LOCATIONS OF CONTRACTION JOINTS. LOCATIONS ARE INTENDED TO COINCIDE WITH CMU COURSING. COORDINATE LOCATION OF JOINTS WITH ARCH. DWGS. SEE ARCH. DWGS FOR LOCATIONS OF BRICK JOINTS.
 4. COORDINATE LOCATIONS W/ARCH. DWGS.
 5. DO NOT CONSTRUCT CONTRACTION JOINT THROUGH BOND BEAM.



4 HR-RATED CONTROL JOINT (IF NEEDED)



PREFORMED GASKET

COLUMN FOOTING SCHEDULE

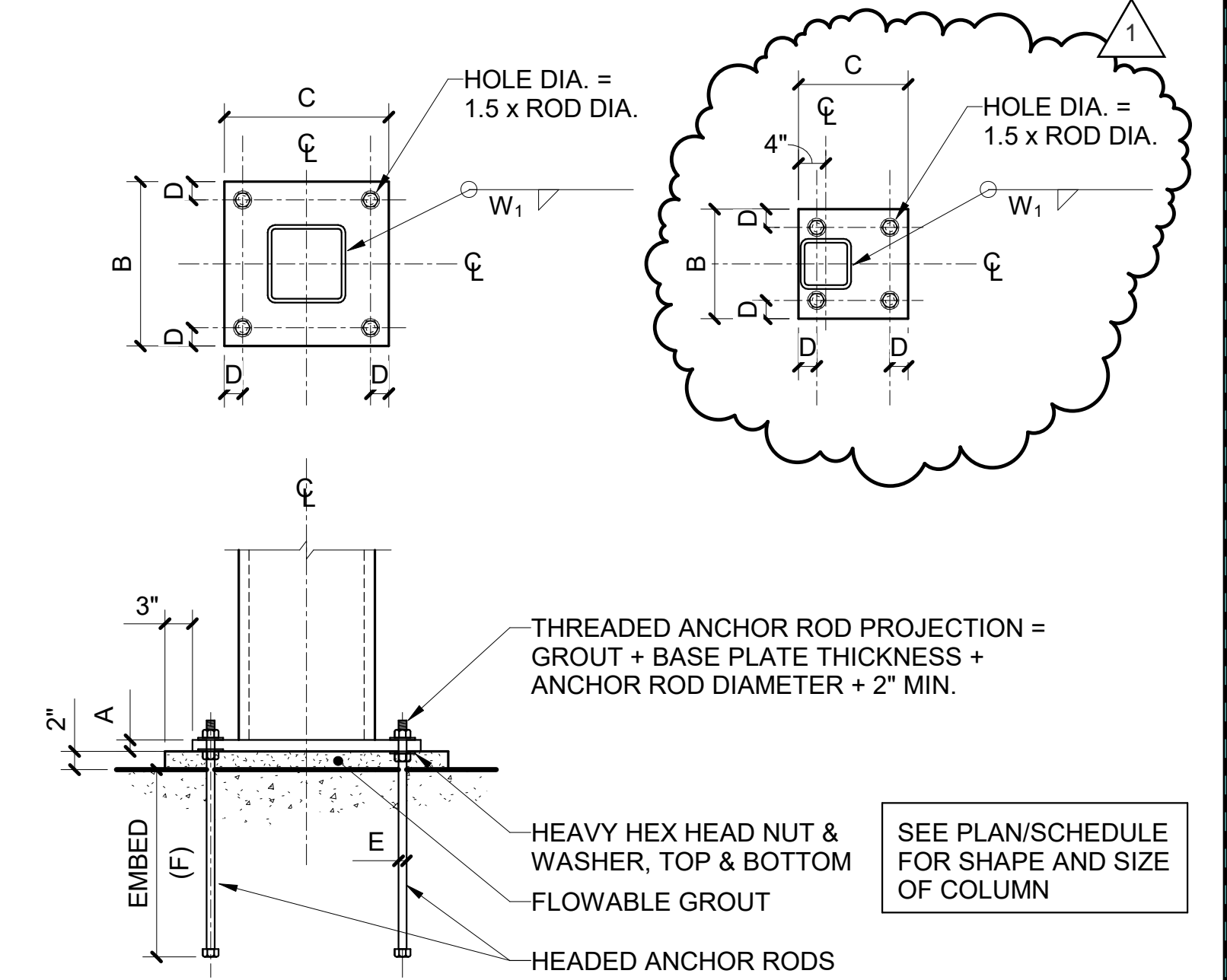
MARK	SIZE	BOTTOM REINF. EACH WAY	REMARKS
F3	3'-0"x3'-0"x1'-0"	4-#5	-
F4	4'-0"x4'-0"x1'-6"	4-#5	-
F5	5'-0"x5'-0"x1'-6"	5-#6	-
F5x3	5'-0"x3'-0"x1'-6"	5@12"	-
F6	6'-0"x6'-0"x1'-6"	5-#7	-

WALL FOOTING SCHEDULE

MARK	SIZE	REINFORCING		REMARKS
		CONTINUOUS	TRANSVERSE	
WF2.5	2'-6"x1'-0"	4-#4	#4@48"	-

3 FOOTING SCHEDULES

COLUMN SIZE	BASE PLATE				ANCHOR RODS		WELD
	A	B	C	D	E	F	W ₁
HSS4x4	1"	12"	12"	2"	1"	12"	4 1/4"
HSS5x5	1"	12"	12"	2"	1"	12"	4 1/4"
HSS6x6	1 1/4"	14"	14"	2"	3/4"	9"	4 1/4"
PIPE 4 STD.	1"	12"	12"	2"	3/4"	9"	4 1/4"



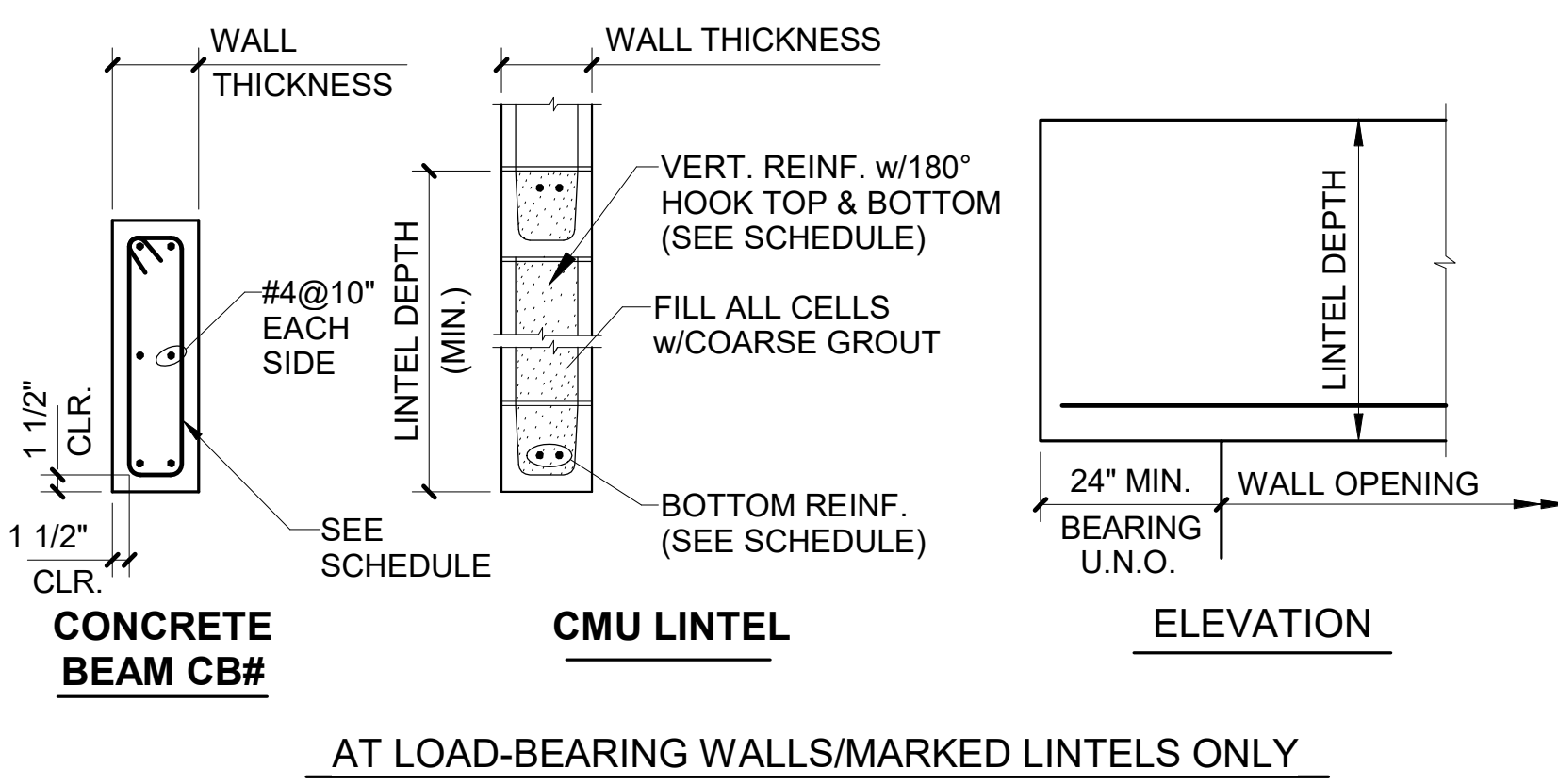
2 BASE PLATE AND ANCHOR ROD SCHEDULE

NOTE:

- 1. FILL ALL CMU CORES AT LINTEL BEARING w/2500 psi COARSE GROUT AND BARS VERT. AS SHOWN IN DETAIL 4/S-300 TYP. FULL HEIGHT

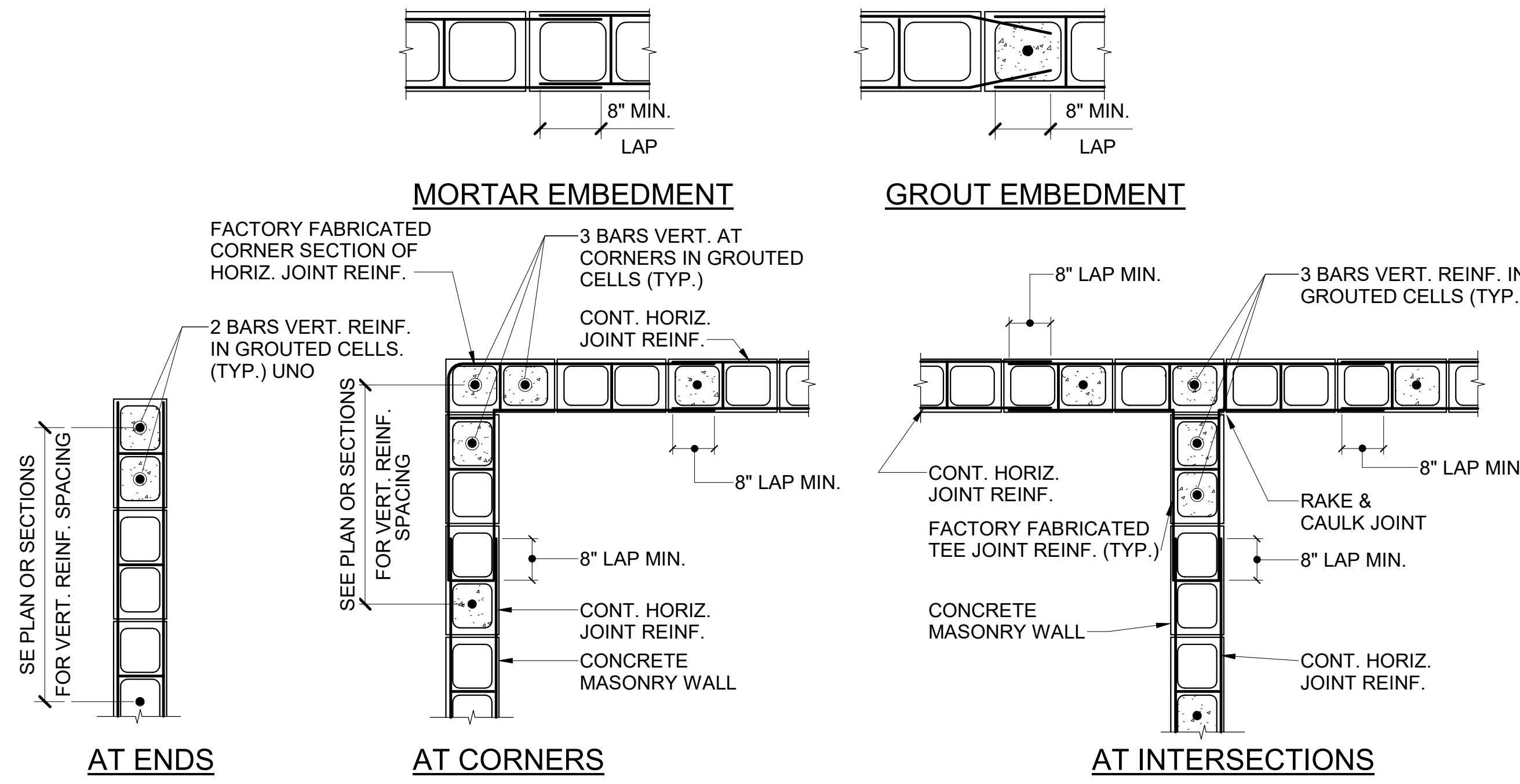
MARKED LINTEL SCHEDULE

MARK	WALL THICK'S	LINTEL/CB DEPTH	BOTTOM REINF.	TOP REINF.	VERT. REINF.	COMMENTS
L1	8"	16"	2-#5			-
L2	8"	24"	2-#5			-

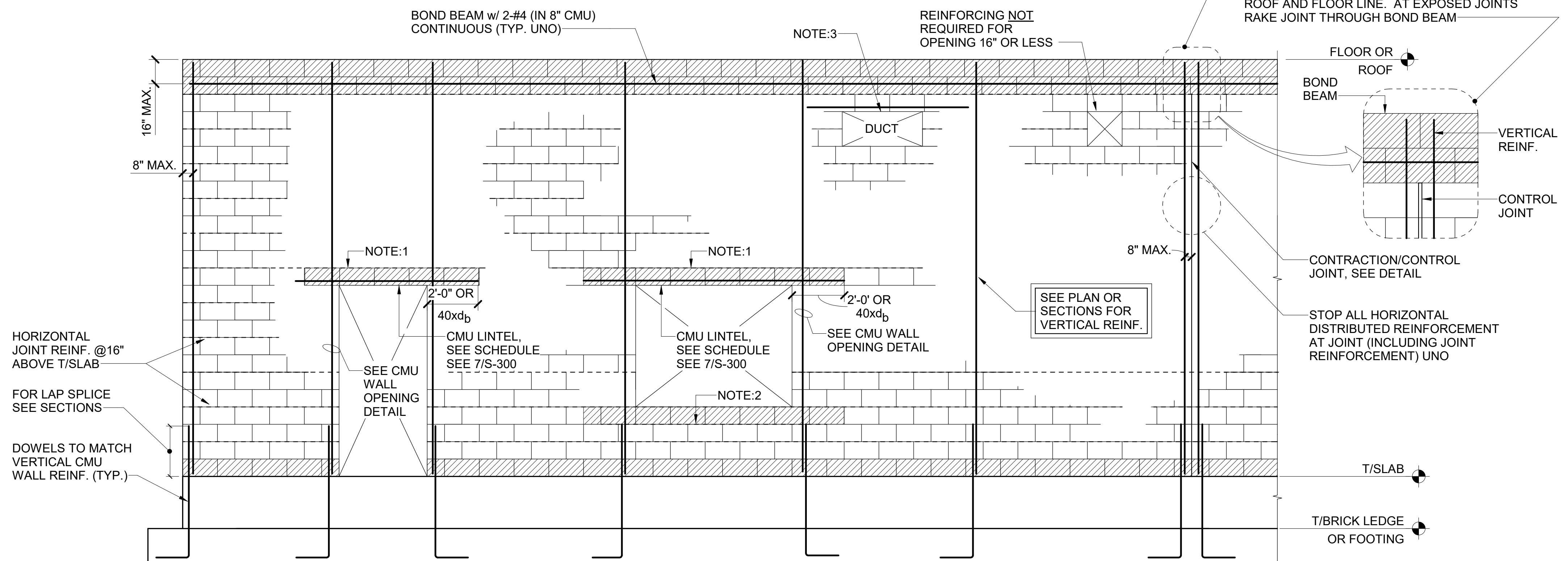


7 CMU LINTEL SCHEDULES AND DETAILS - AS NOTED

6 CMU WALL CONTRACTION/CONTROL JOINT DETAIL

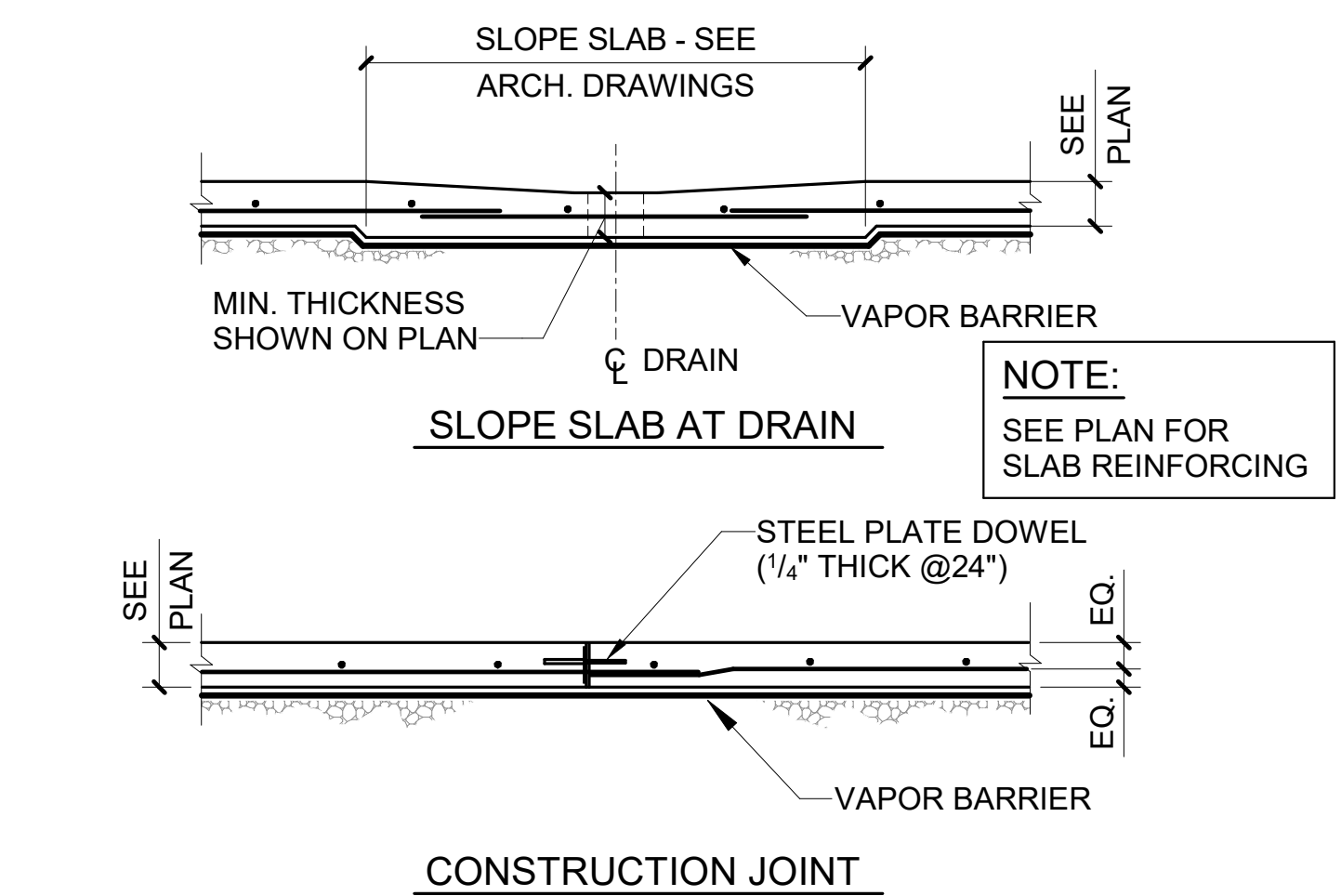


5 CMU WALL HORIZONTAL JOINT REINFORCEMENT DETAIL



NOTE:
 1. ADD HORIZONTAL JOINT REINFORCEMENT ABOVE LINTEL. EXTEND 4'-0" EACH SIDE OF OPENING.
 2. ADD HORIZONTAL JOINT REINFORCEMENT BELOW CMU SILL. EXTEND 4'-0" EACH SIDE OF OPENING.
 3. FOR MECHANICAL/PLUMBING PENETRATIONS, PROVIDE LINTEL OVER CMU OPENING PER UNMARKED CMU LINTEL SCHEDULE

4 TYPICAL CMU WALL REINFORCING



1 TYPICAL SLAB-ON-GROUND DETAILS

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Architects
 One Jackson Place 250
 188 East Capitol Street
 Jackson, MS 39201
 p 601.352.5411
 201 Park Court Suite B
 Ridgeland, MS 39157
 p 601.790.9432
 161 Lameuse St. Suite 201
 Biloxi, MS 39530
 p 228.374.1409
 dalebaileyplans.com



Construction Documents

Project No 22034.02
 Date 12/06/2023
 Drawn S.T.
 Checked W.G./J.W./T.S.
 Revisions Rev Date
 ADDENDUM #1 1/5/24

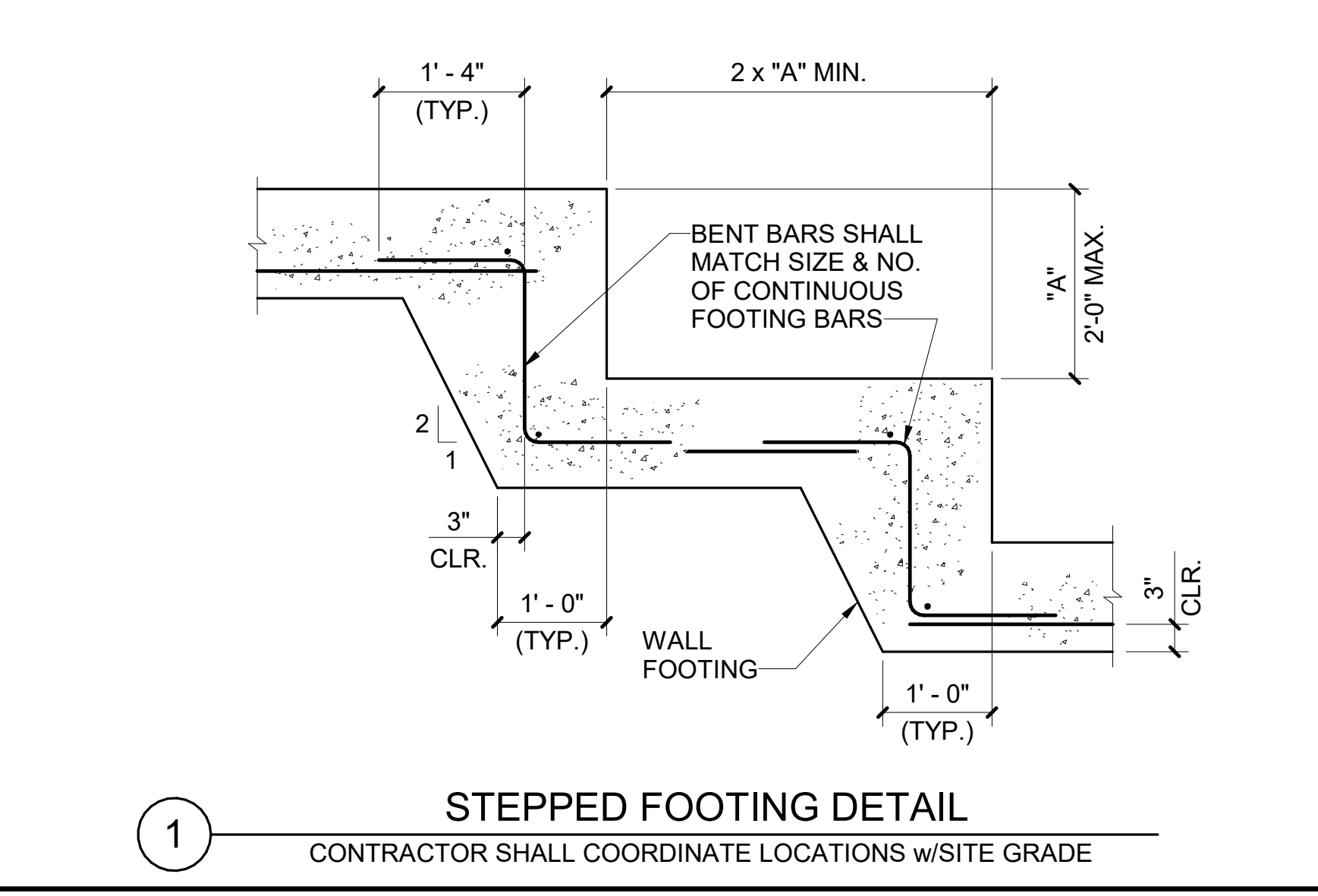
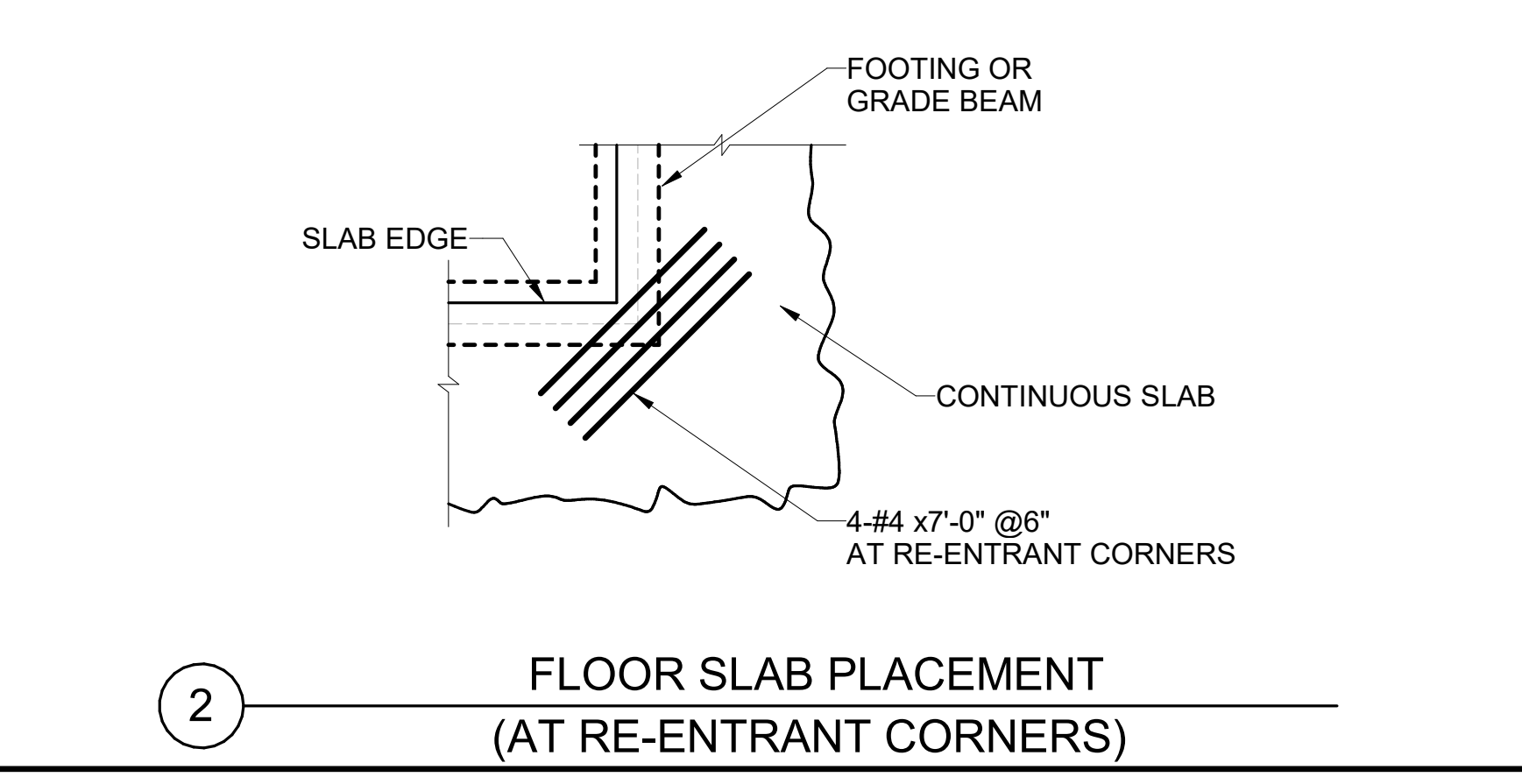
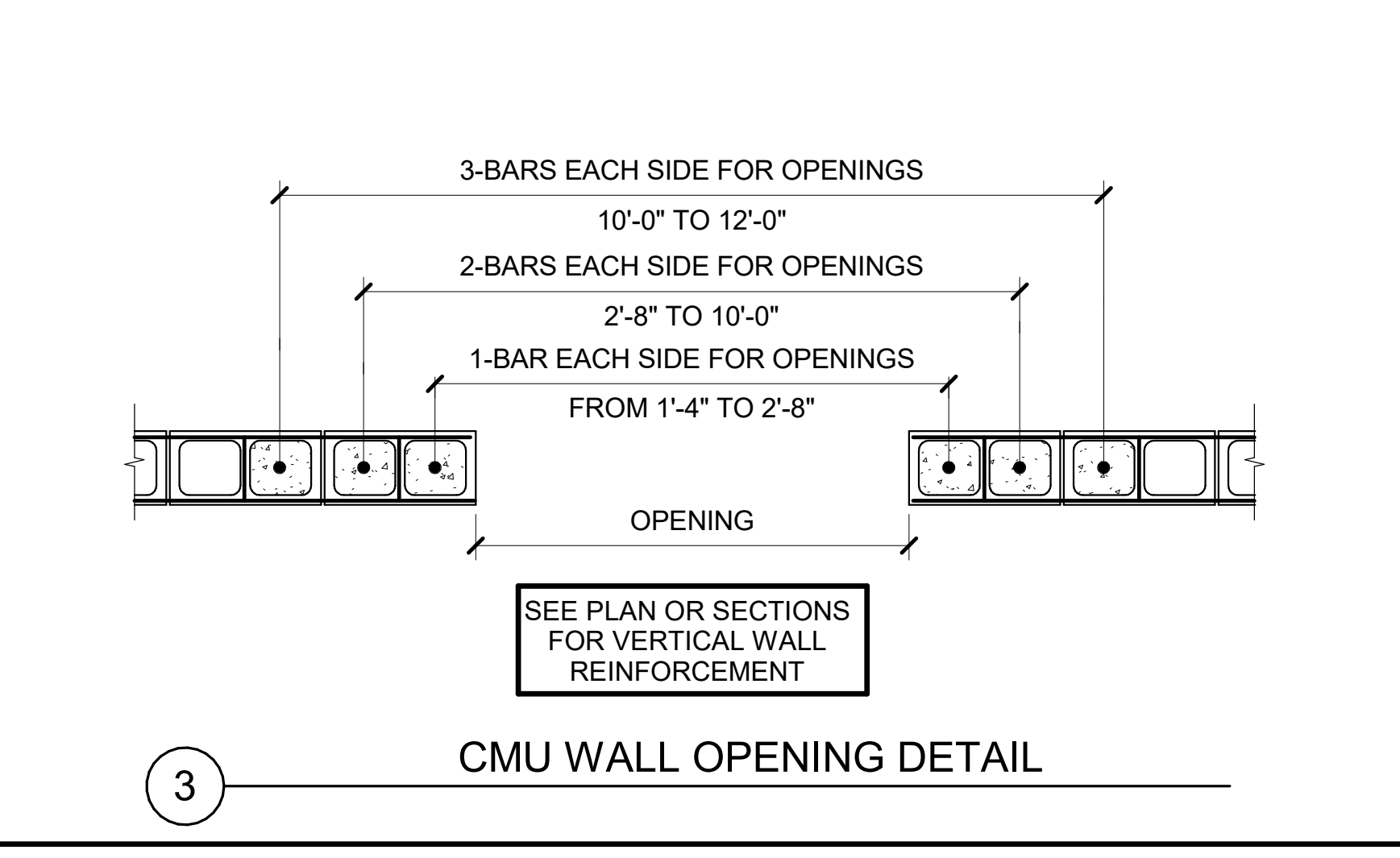
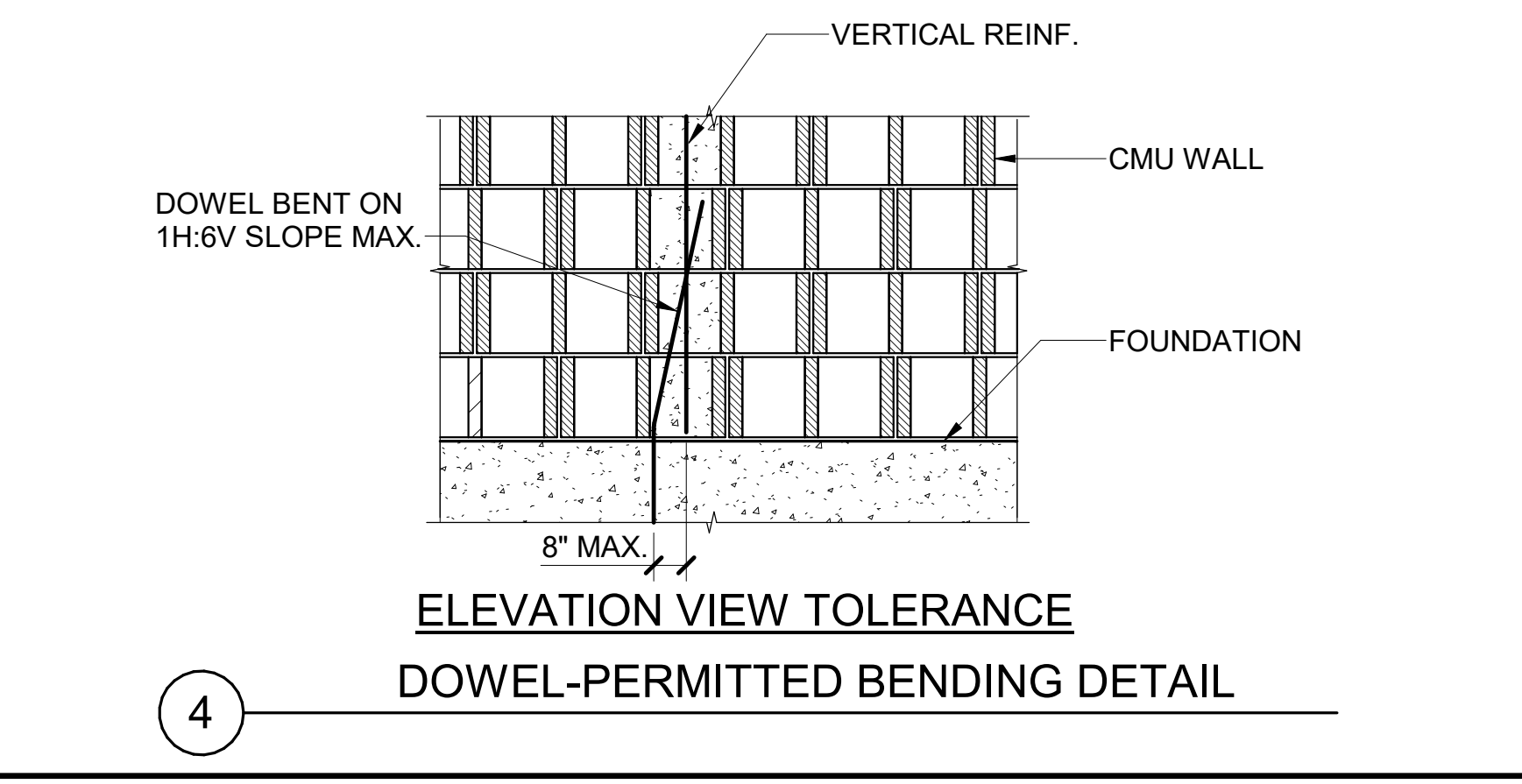


UN-MARKED CMU LINTEL SCHEDULE

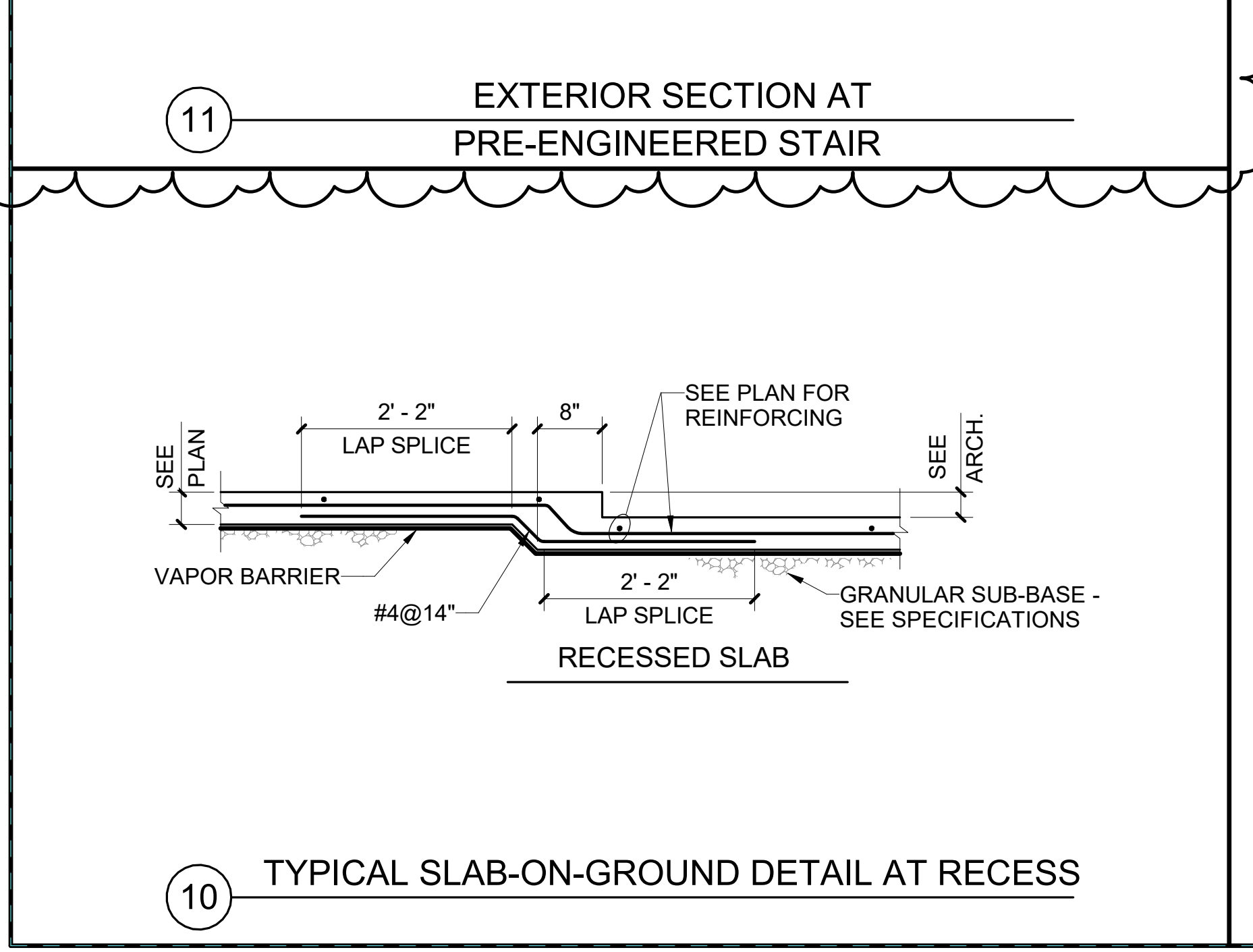
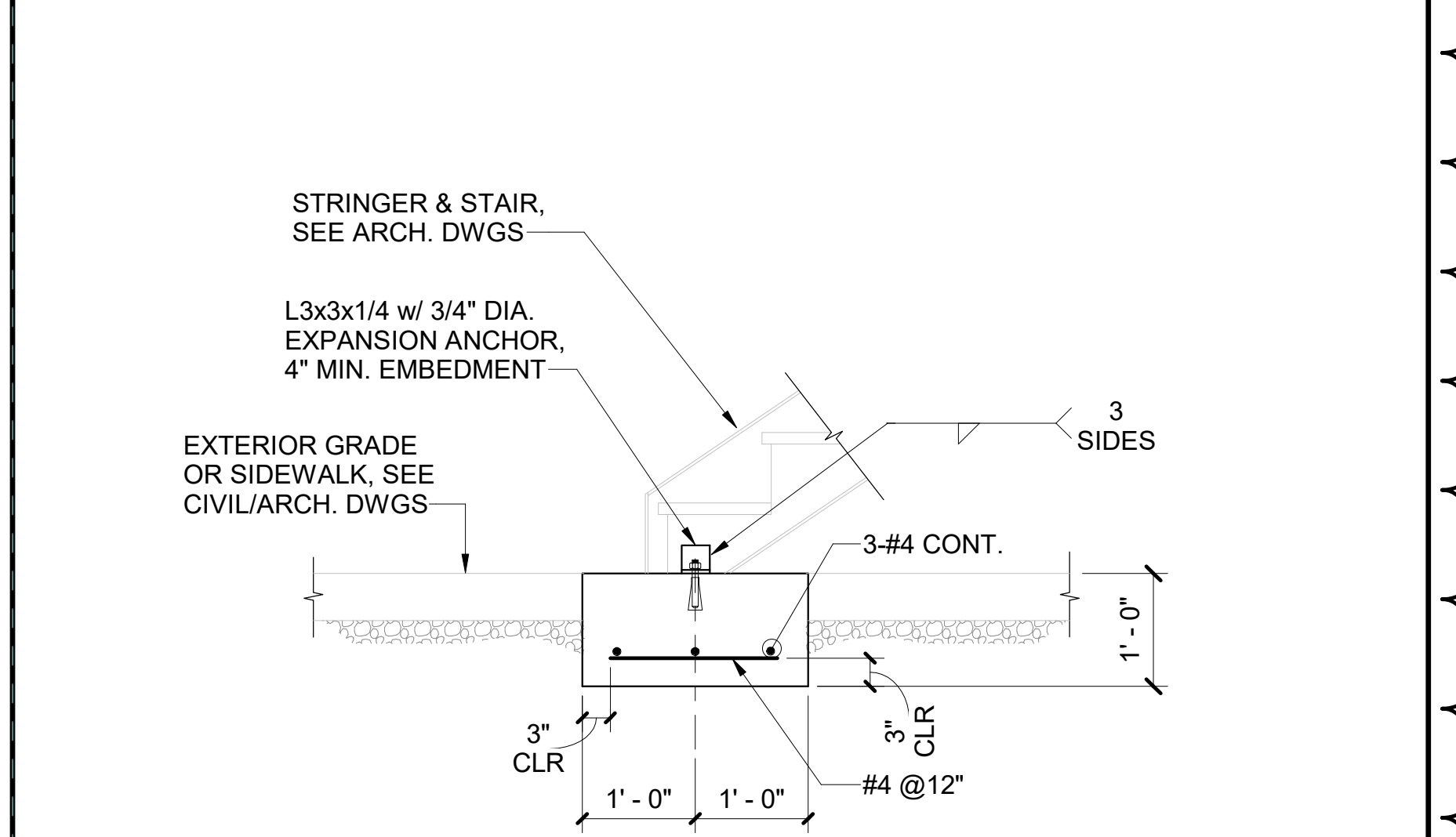
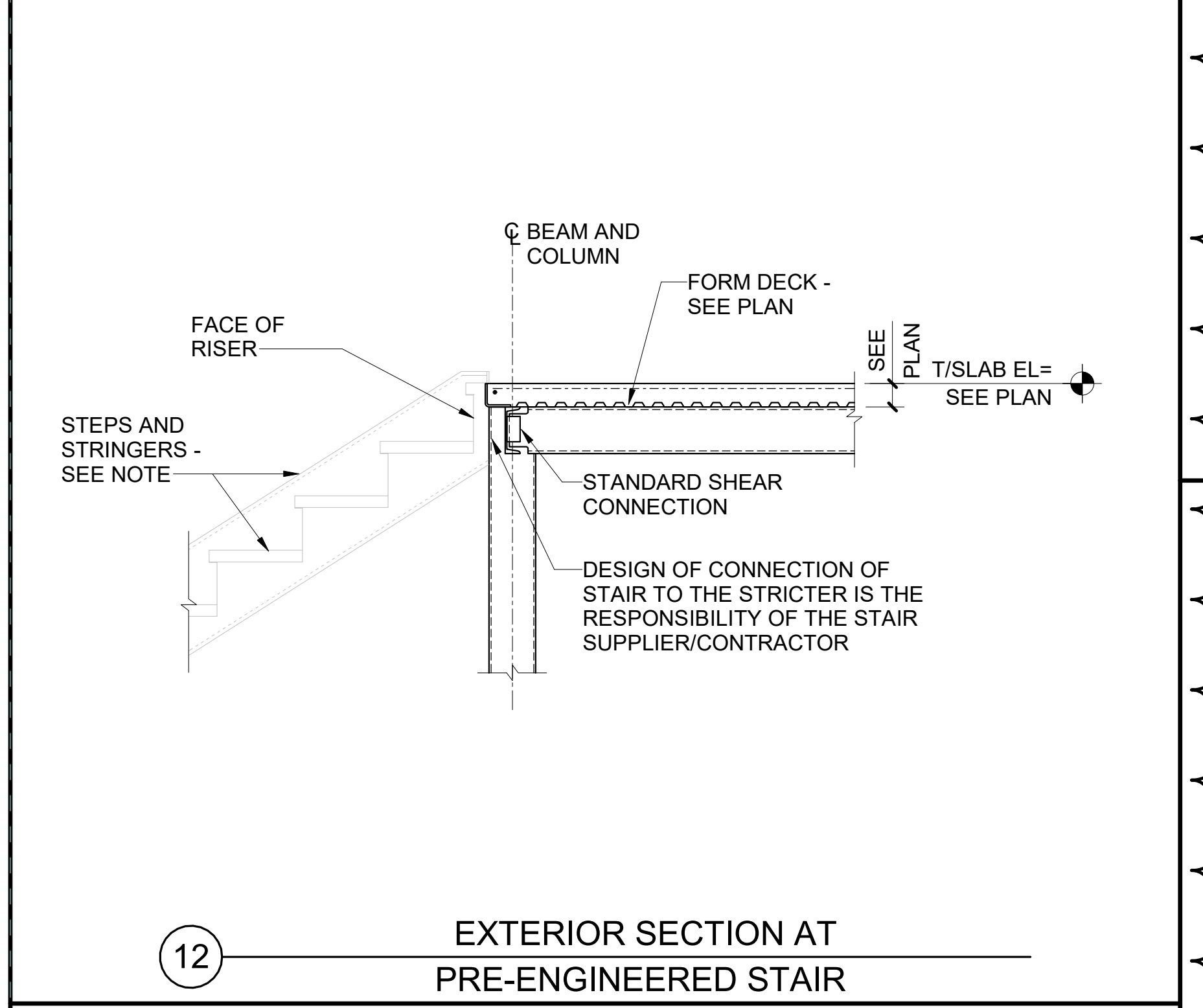
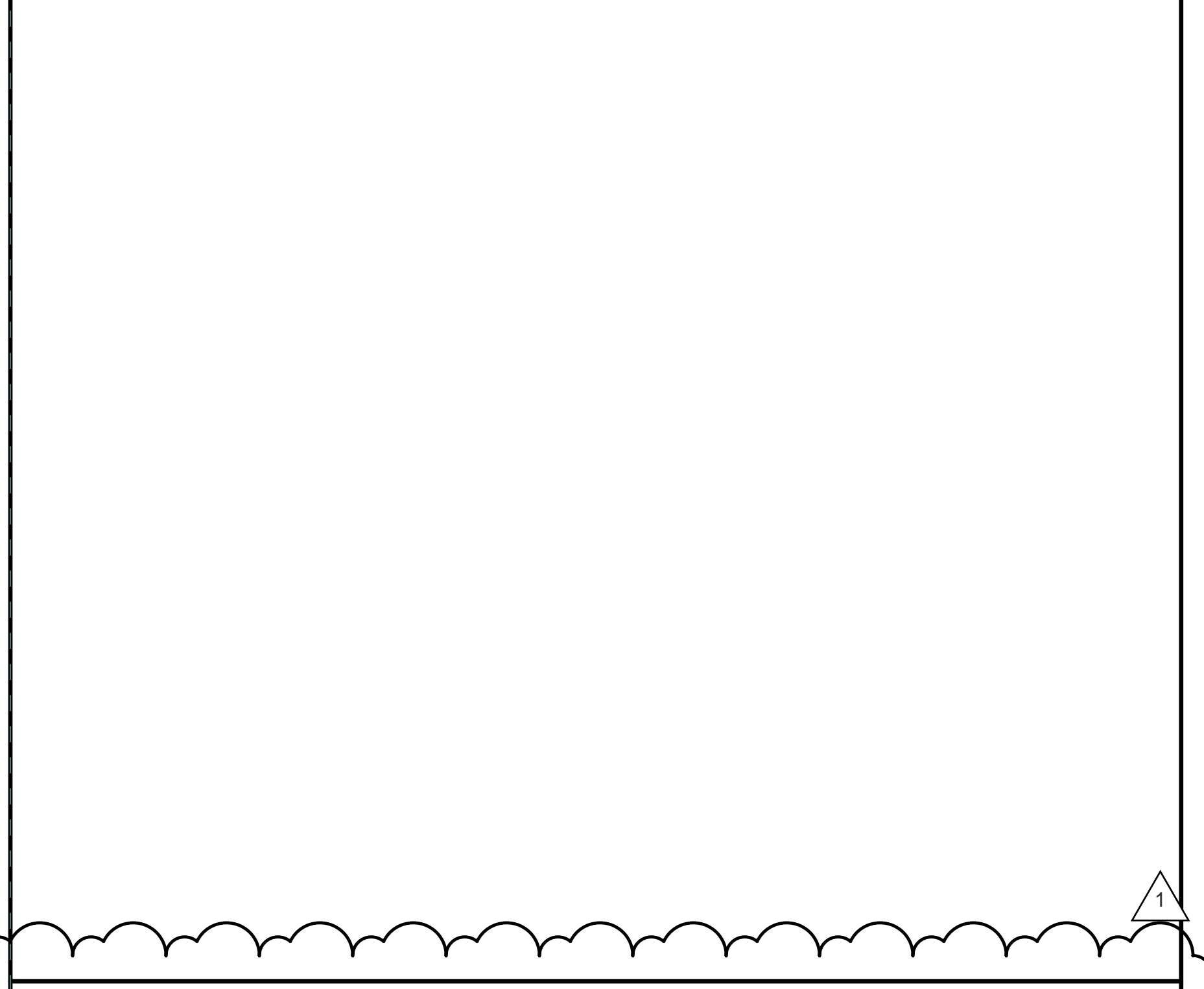
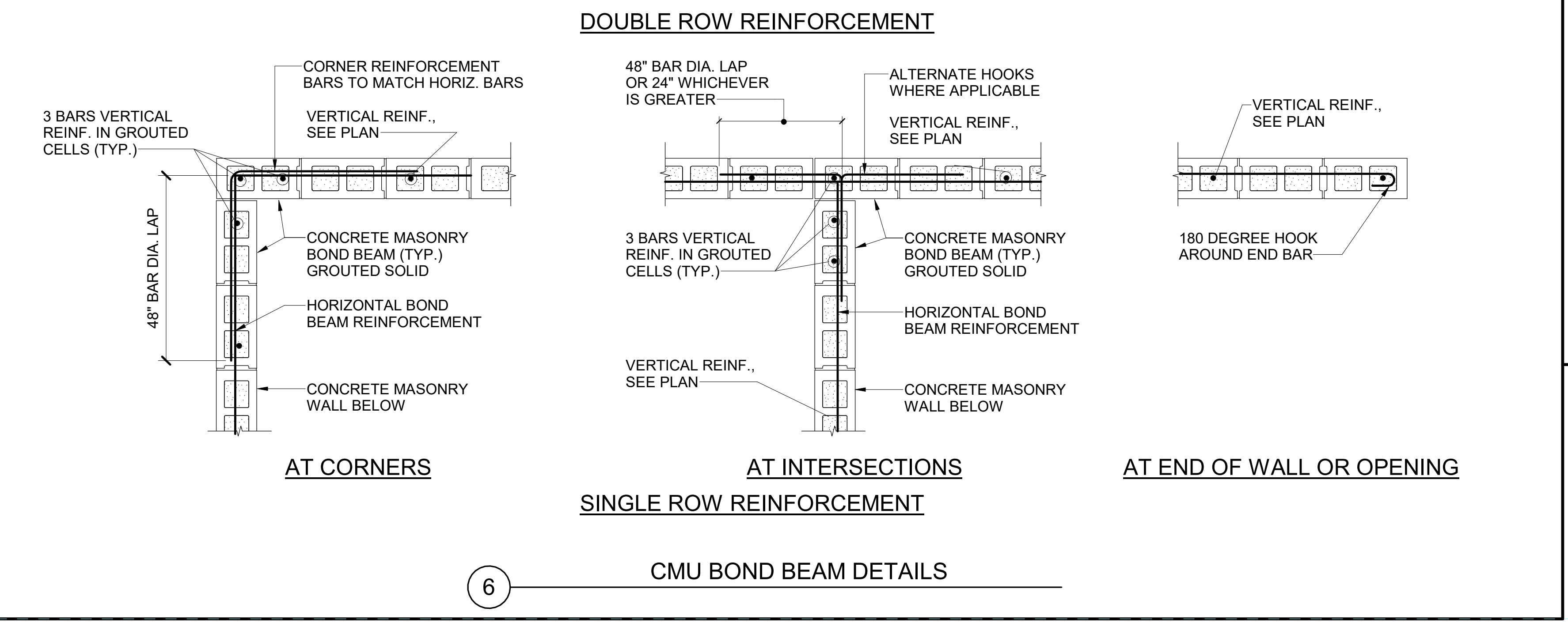
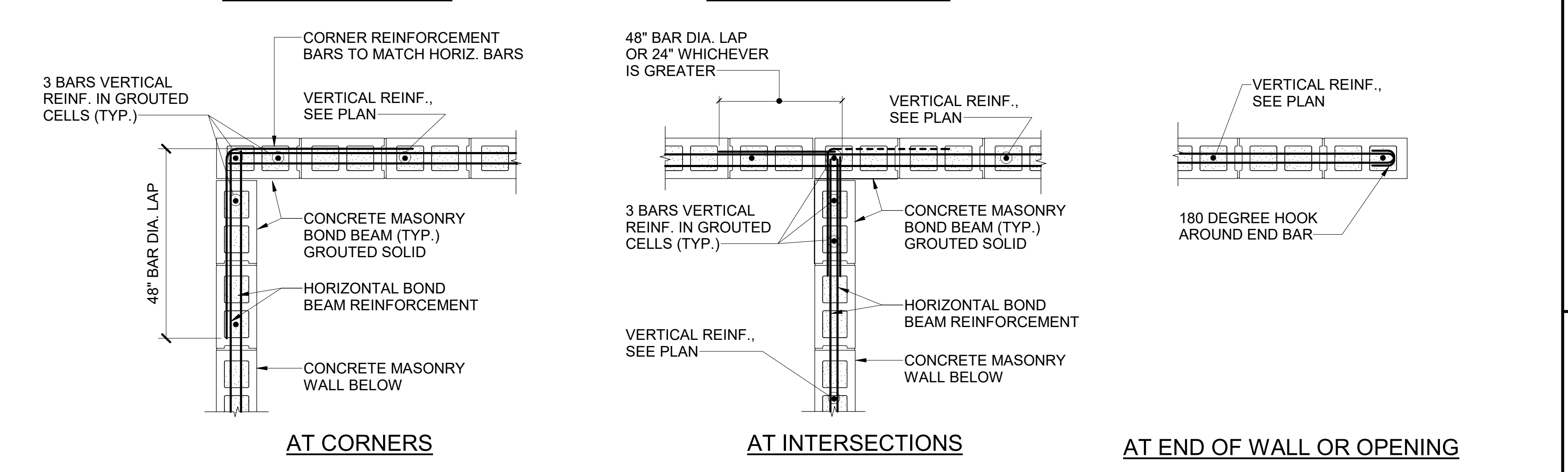
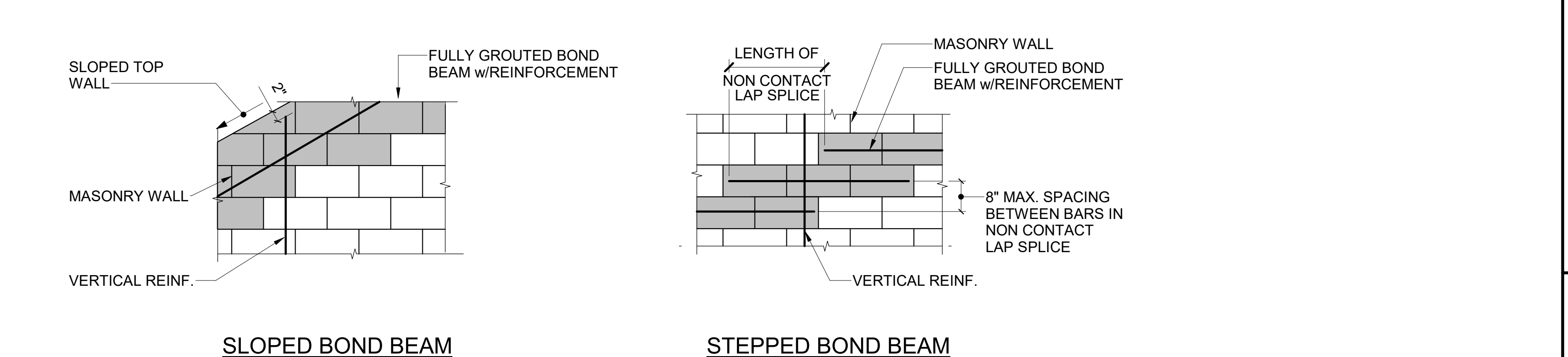
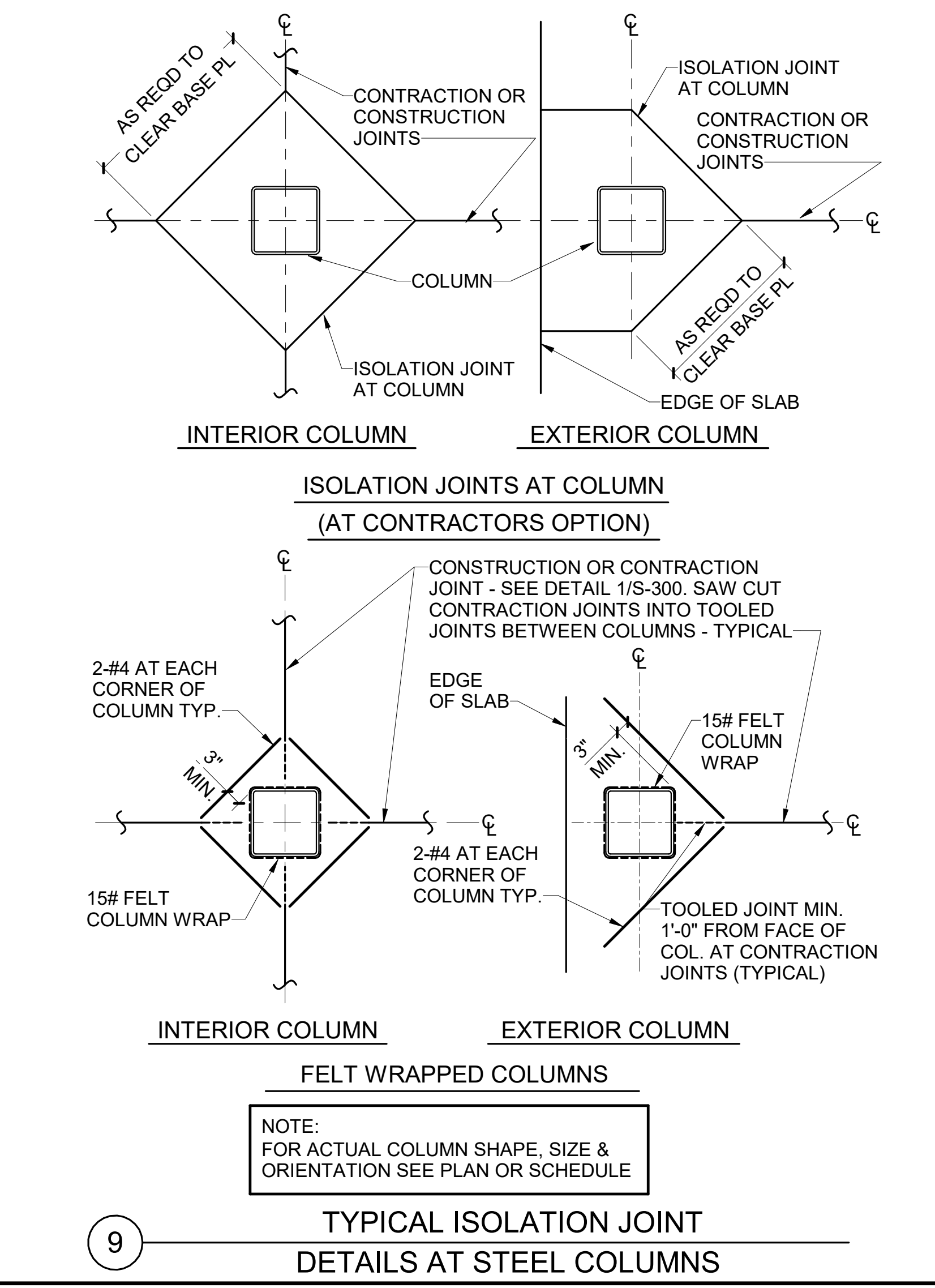
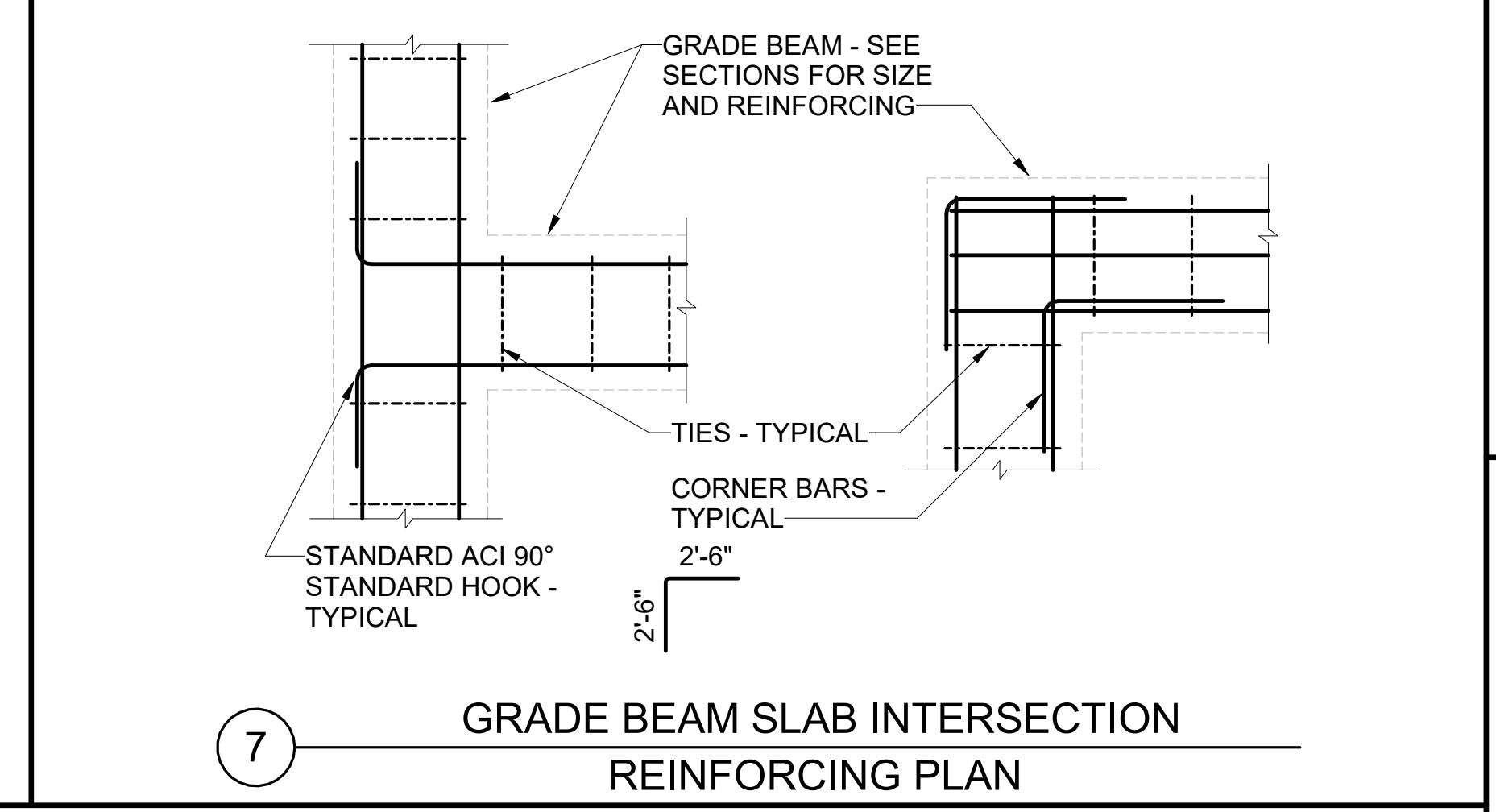
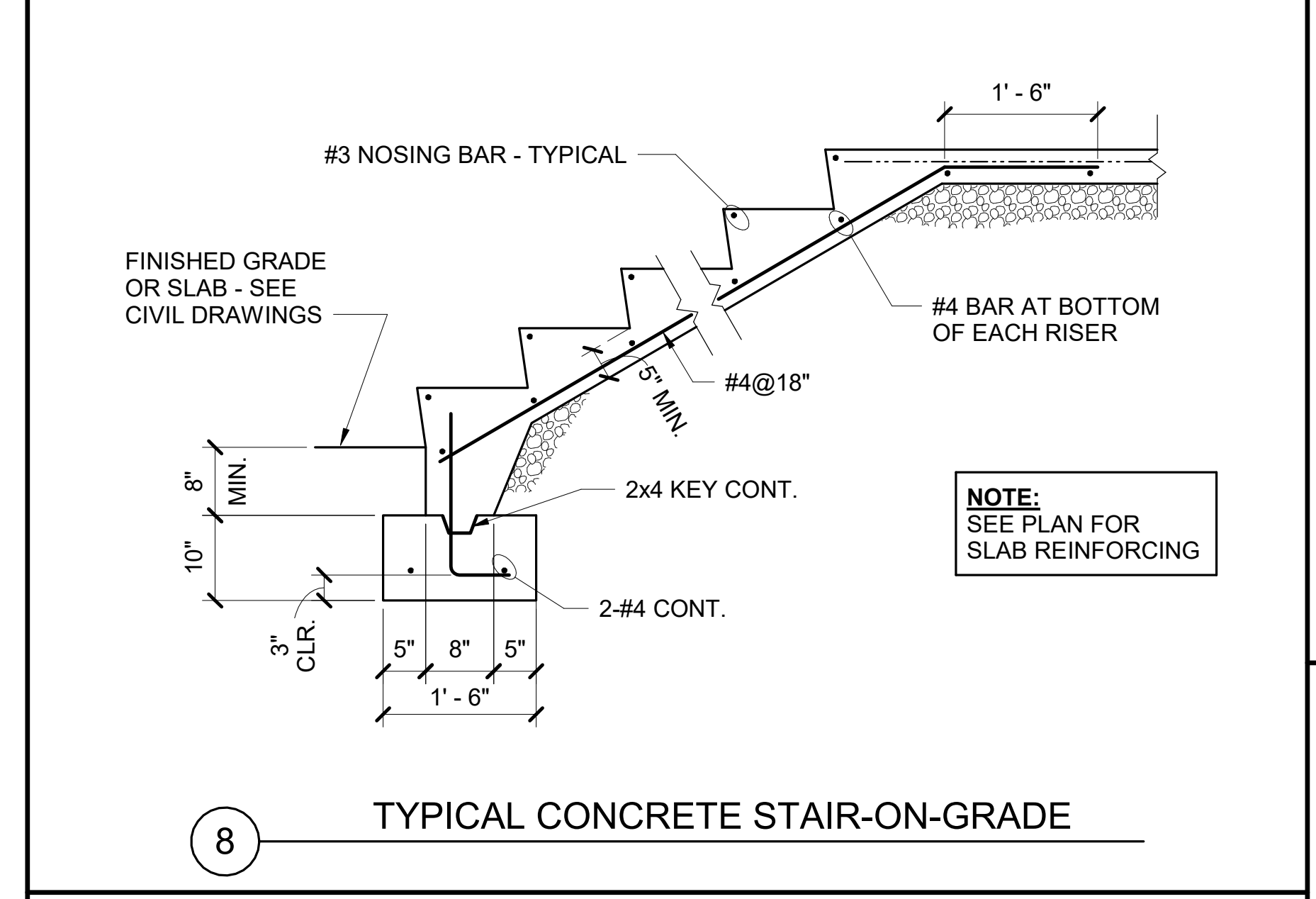
WALL OPENING WIDTH	LINTEL DEPTH	REINFORCING
UP TO 4'-0"	8"	2-#4 BOTTOM
4'-1" TO 6'-0"	8"	2-#5 BOTTOM
6'-1" TO 8'-0"	16"	2-#5 BOTTOM
8'-1" TO 15'-0"	24"	2-#6 BOTTOM

NOTE:
1. REINF. CMU CORE AT LINTEL BEARING w/1-#5 (MIN.) VERT. (TYP. UNO) SEE 4/S-300

SECTION **ELEVATION**



Structural Design Group
Consulting Structural Engineers
220 Great Circle Road, Suite 106
Nashville, Tennessee 37228
p 615.255.5537
www.sdg-structure.com
SDG Project No. 2022-292.00
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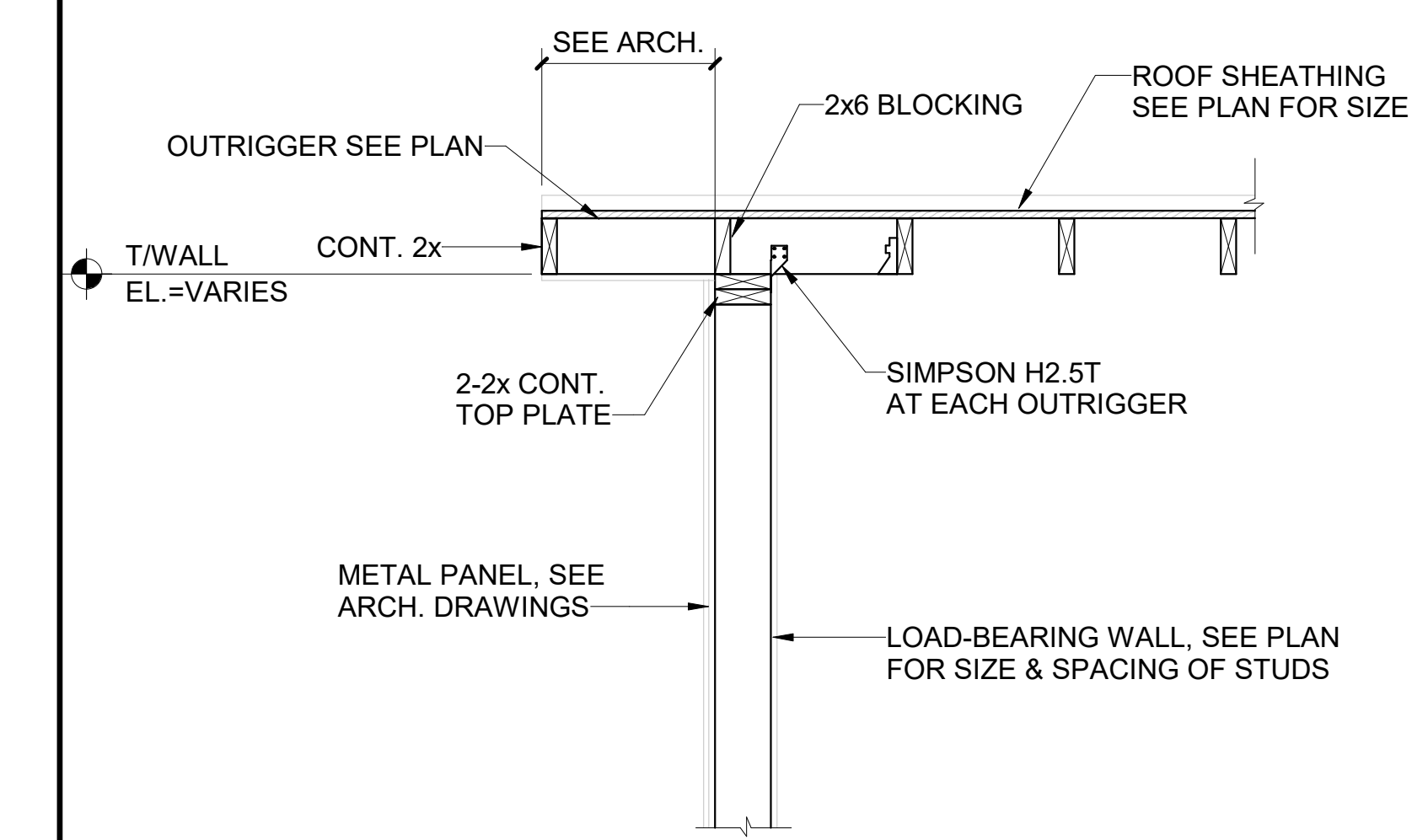
Construction Documents

Project No	22034.02
Date	12/06/2023
Drawn	Author
Checked	Checker
Revisions	Rev Date
ADDENDUM #1	1/5/24

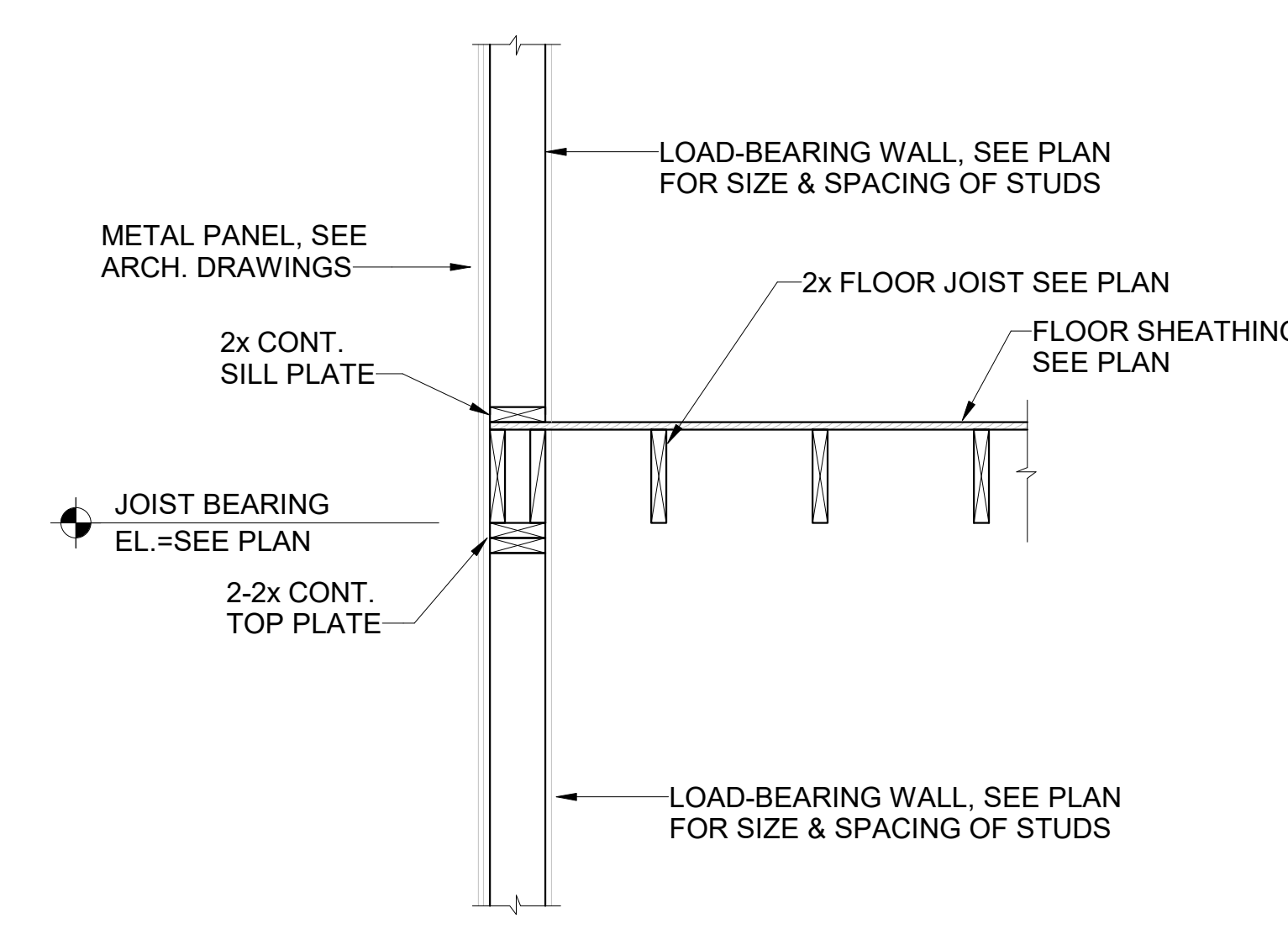
S-402

Roof Framing Sections & Details

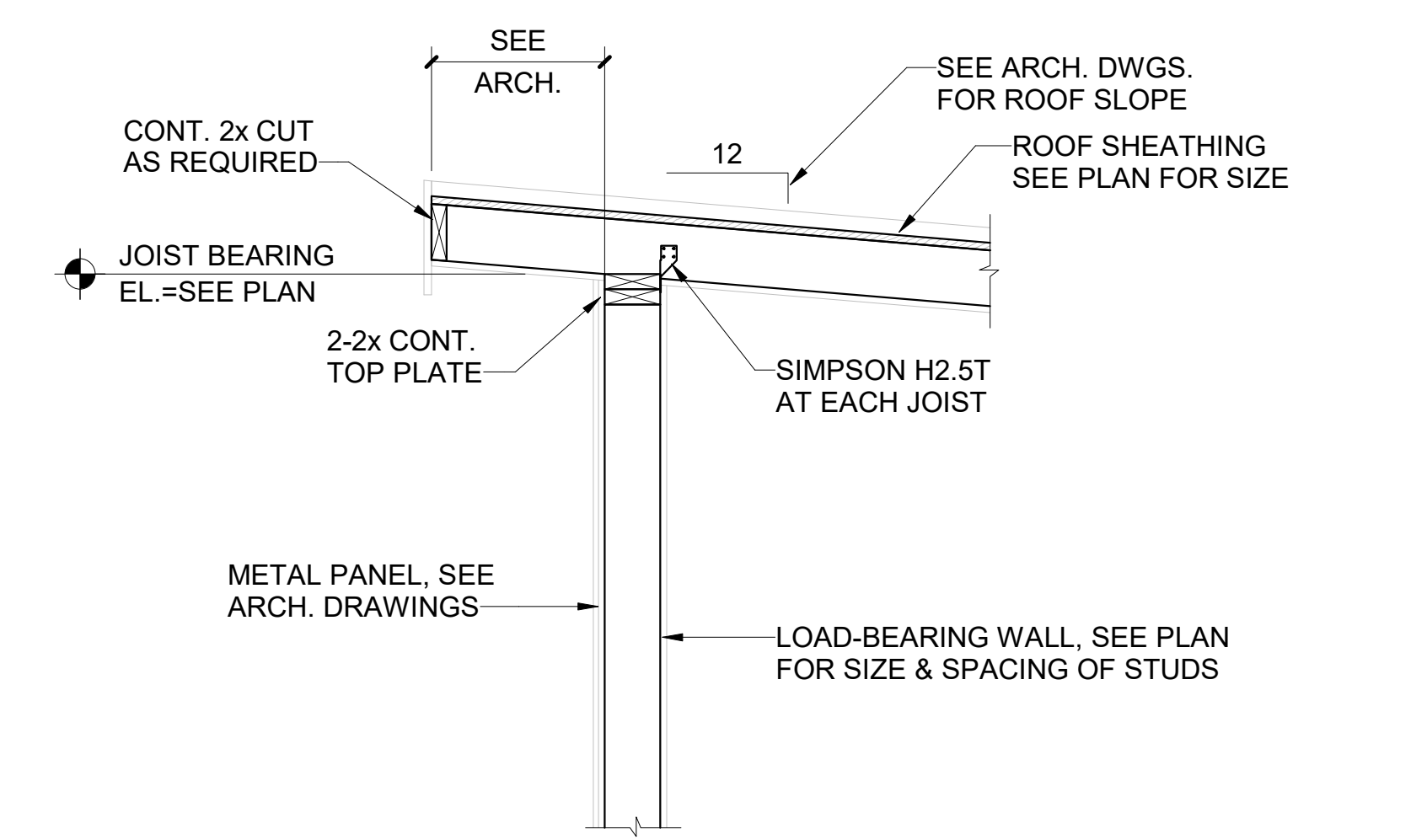
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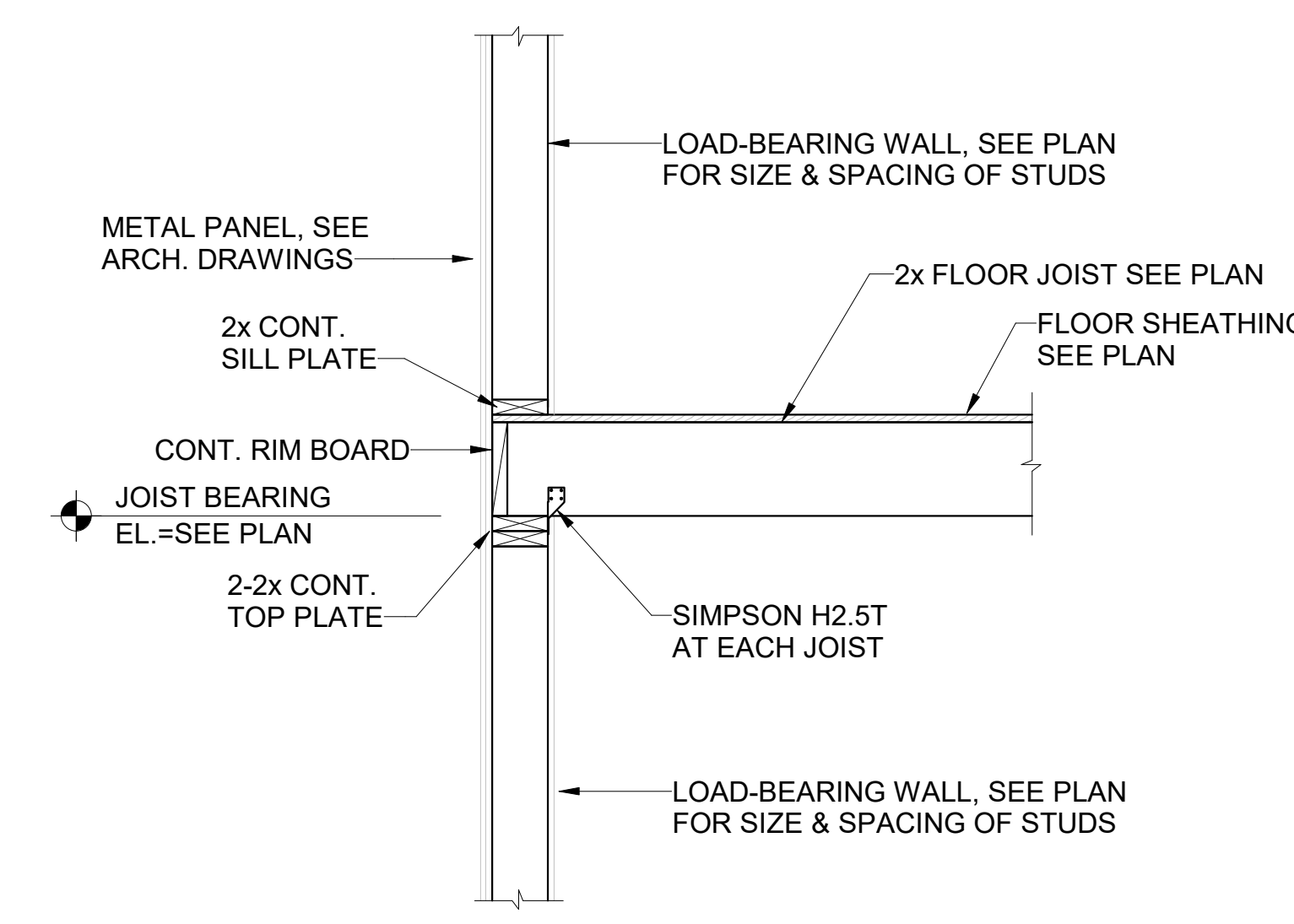
3 SECTION AT PRESSBOX/ CONCESSION



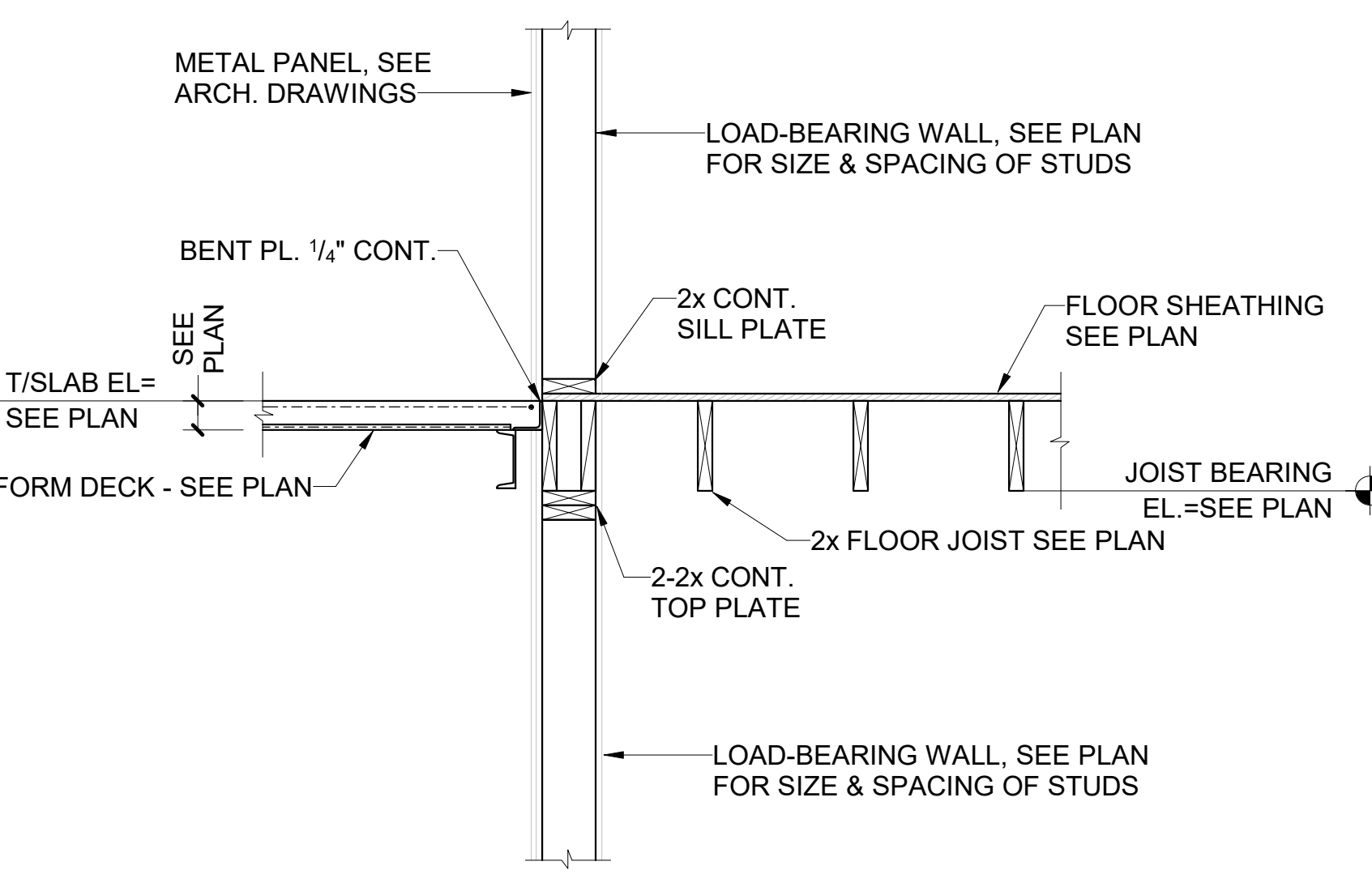
5 EXTERIOR SECTION AT PRESSBOX/ CONCESSION



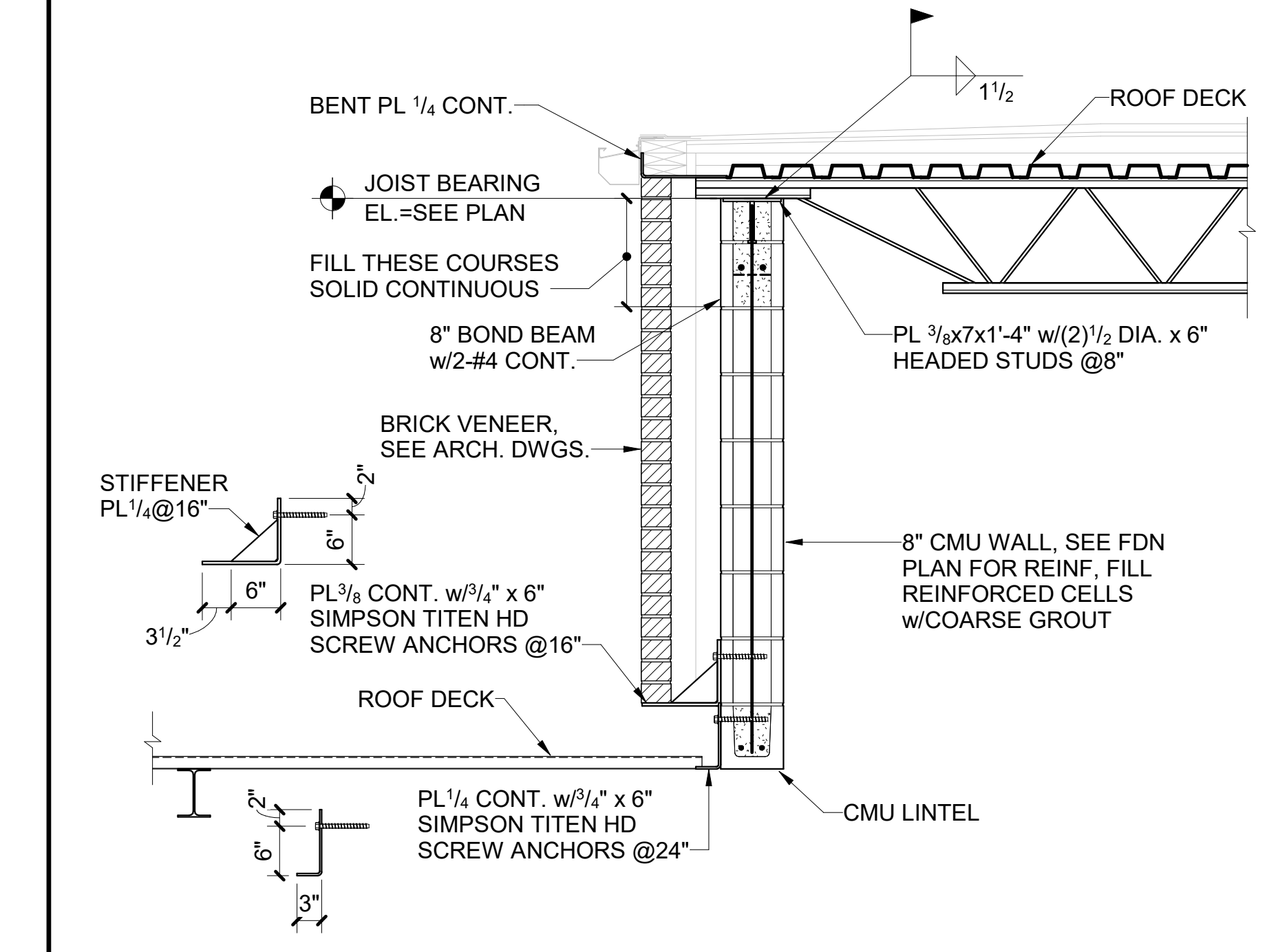
7 EXTERIOR ROOF SECTION AT PRESSBOX/ CONCESSION



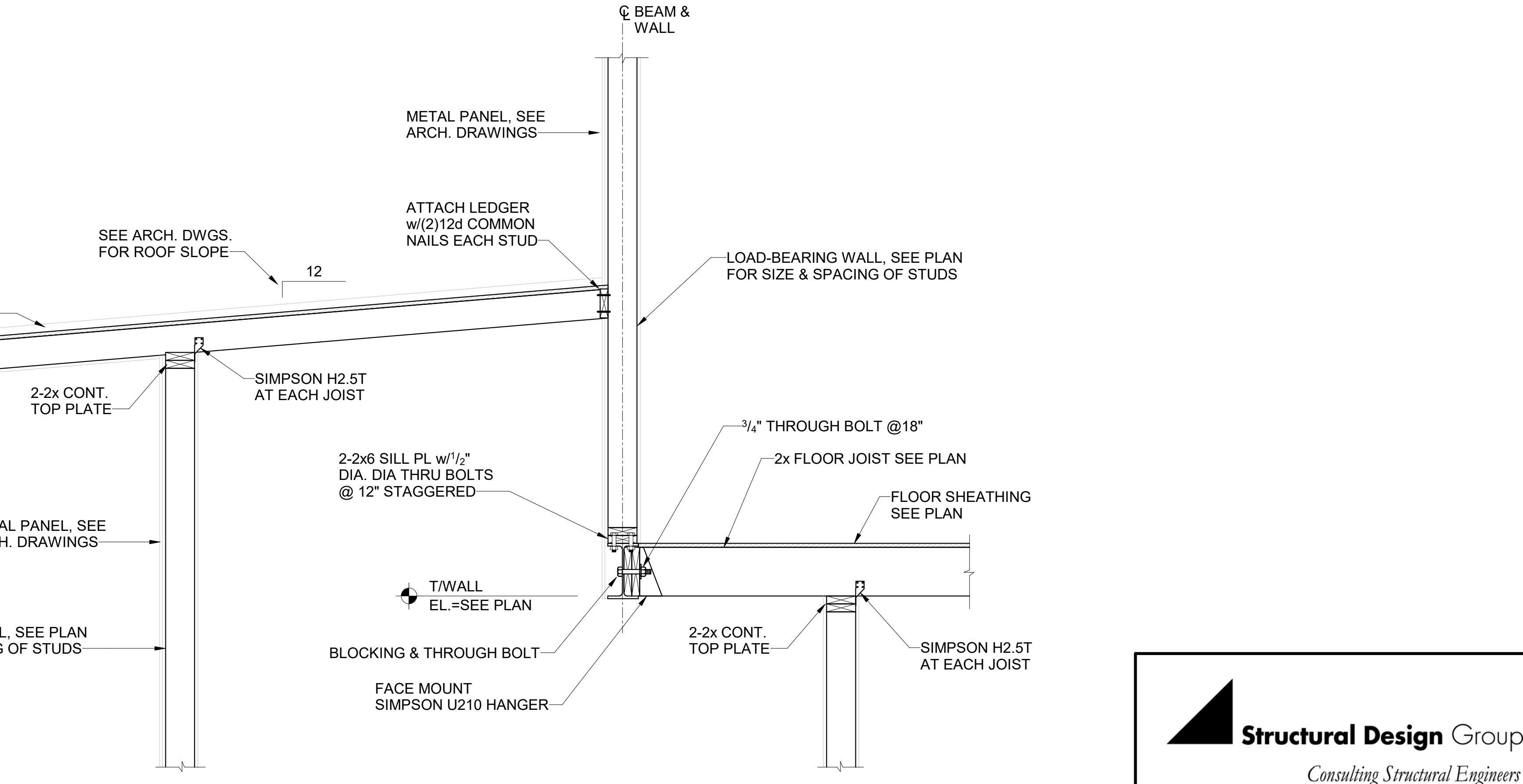
4 EXTERIOR SECTION AT PRESSBOX/ CONCESSION



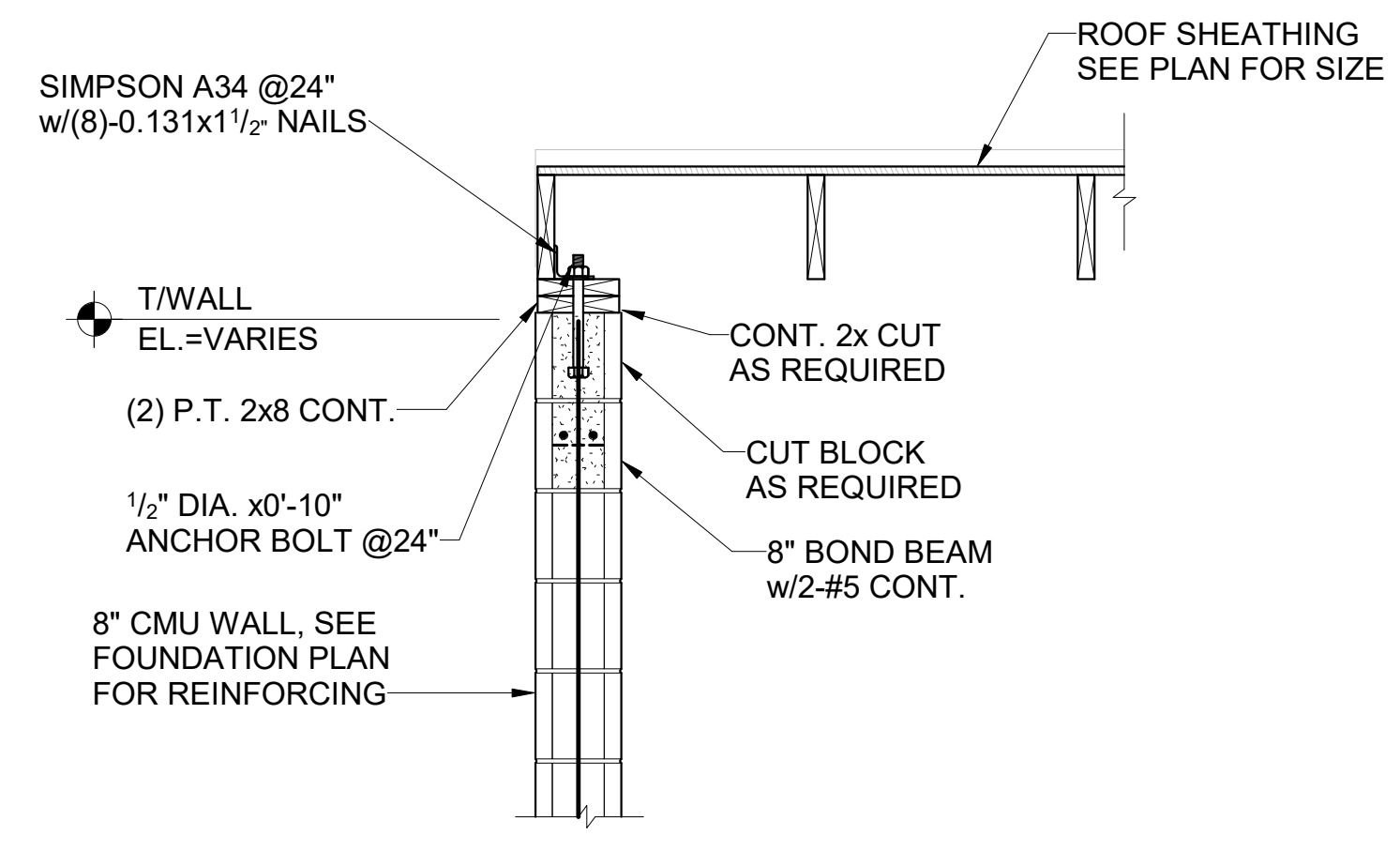
6 EXTERIOR SECTION AT PRESSBOX/ CONCESSION



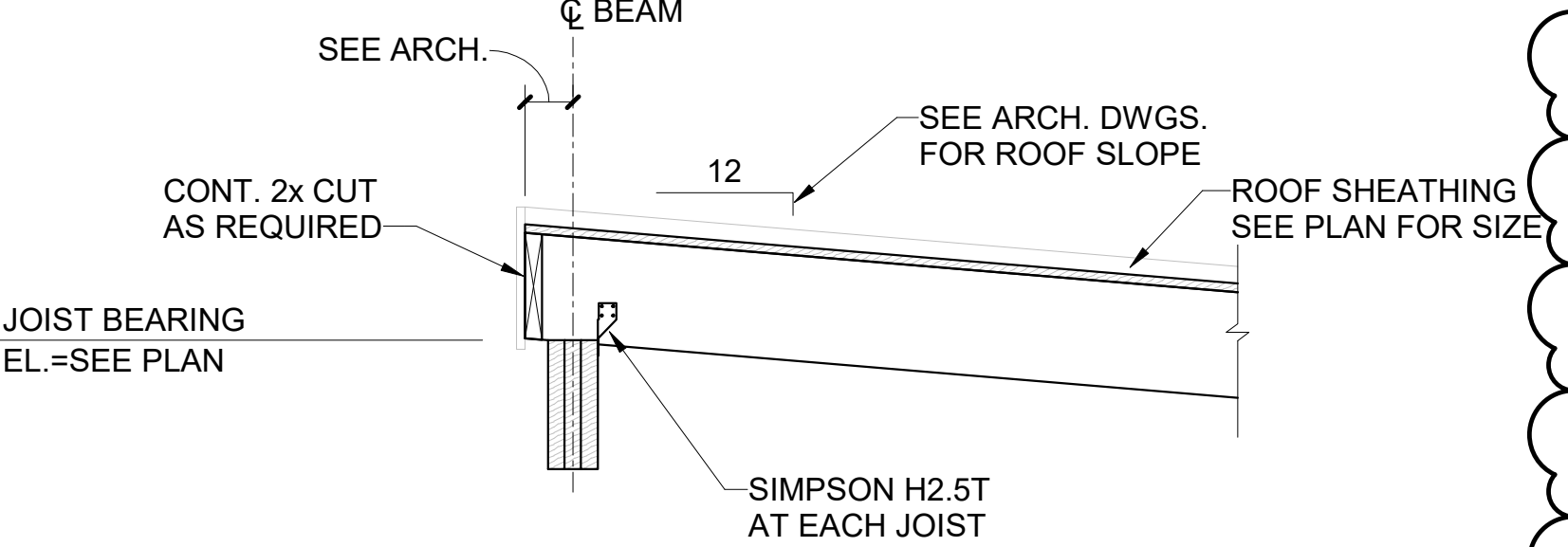
2 EXTERIOR ROOF SECTION



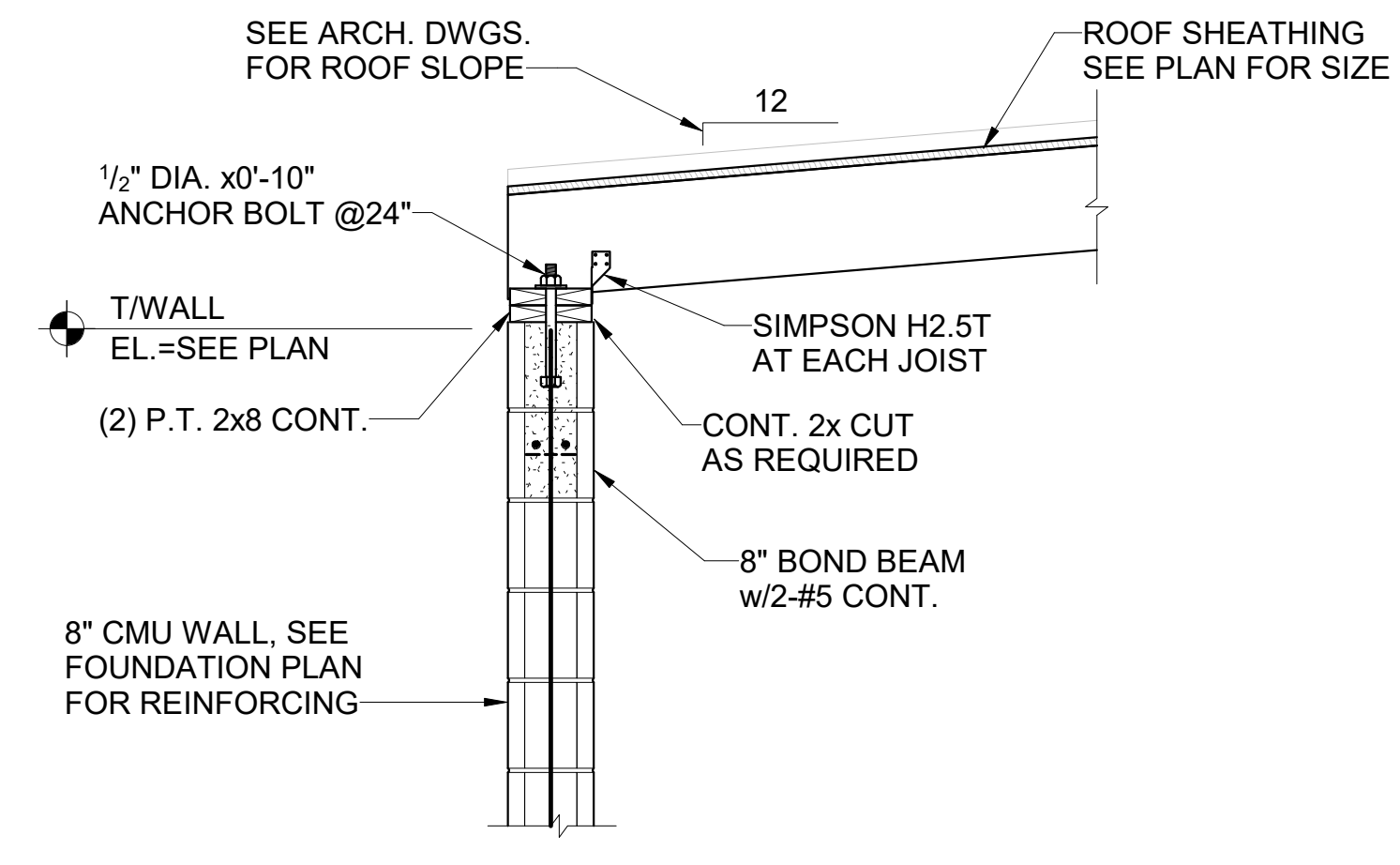
1 SECTION AT PRESSBOX/ CONCESSION



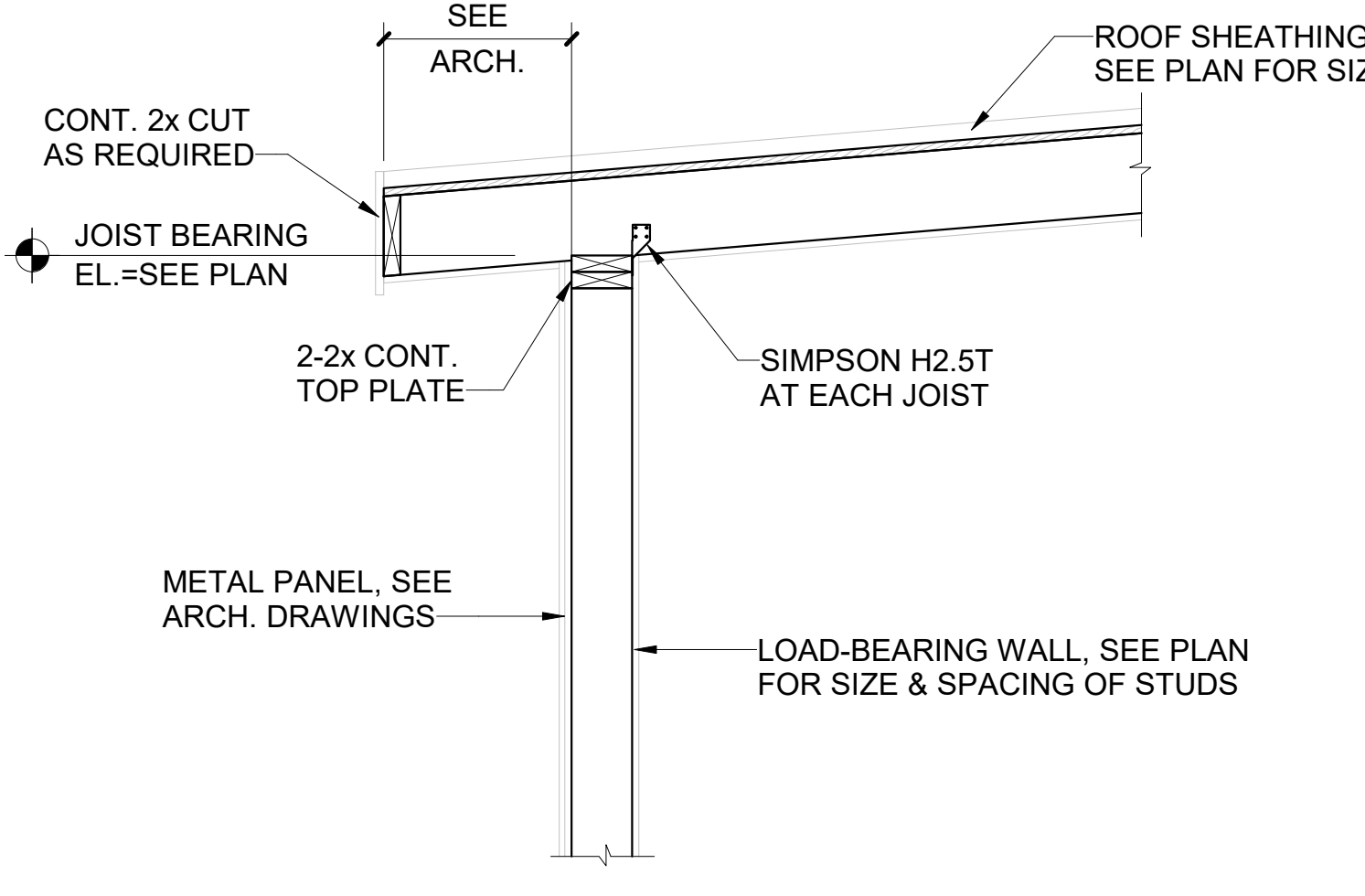
11 EXTERIOR ROOF SECTION AT DUGOUT



10 EXTERIOR ROOF SECTION AT DUGOUT

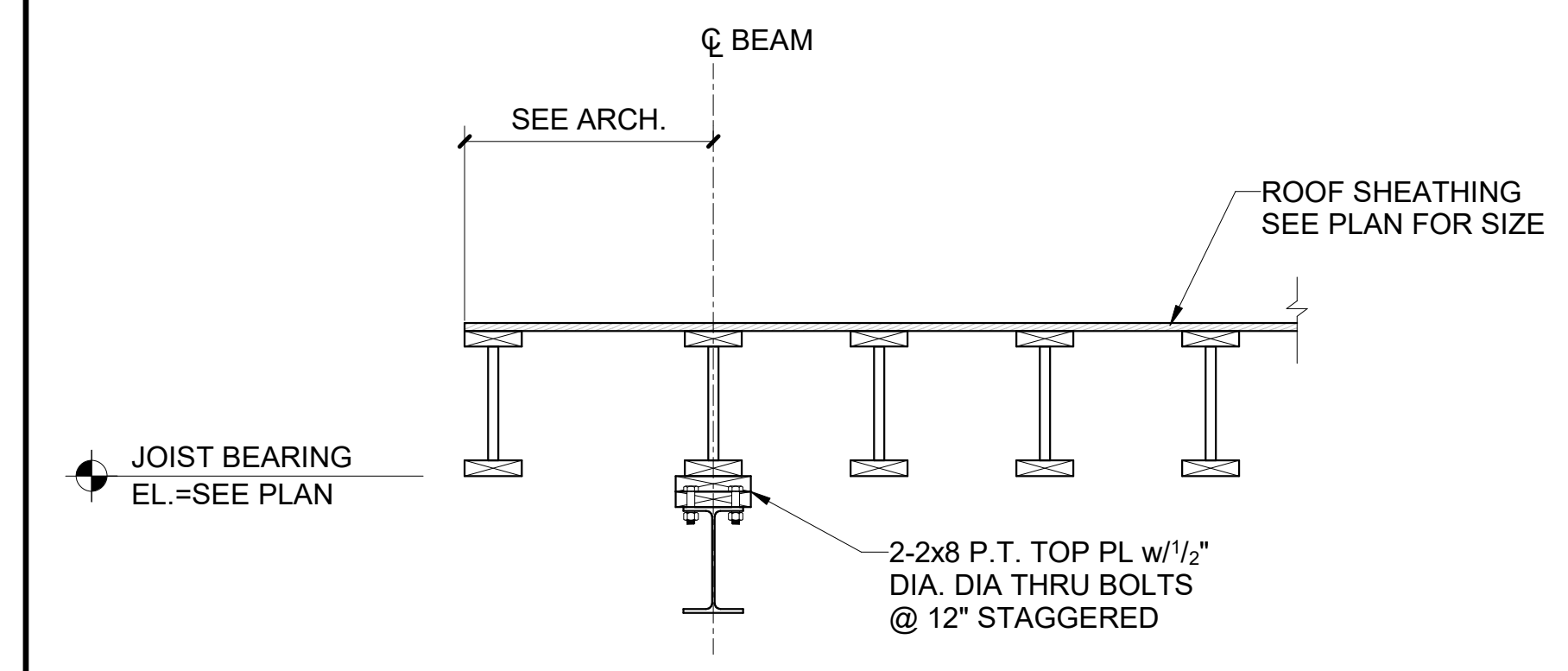


9 EXTERIOR ROOF SECTION AT DUGOUT

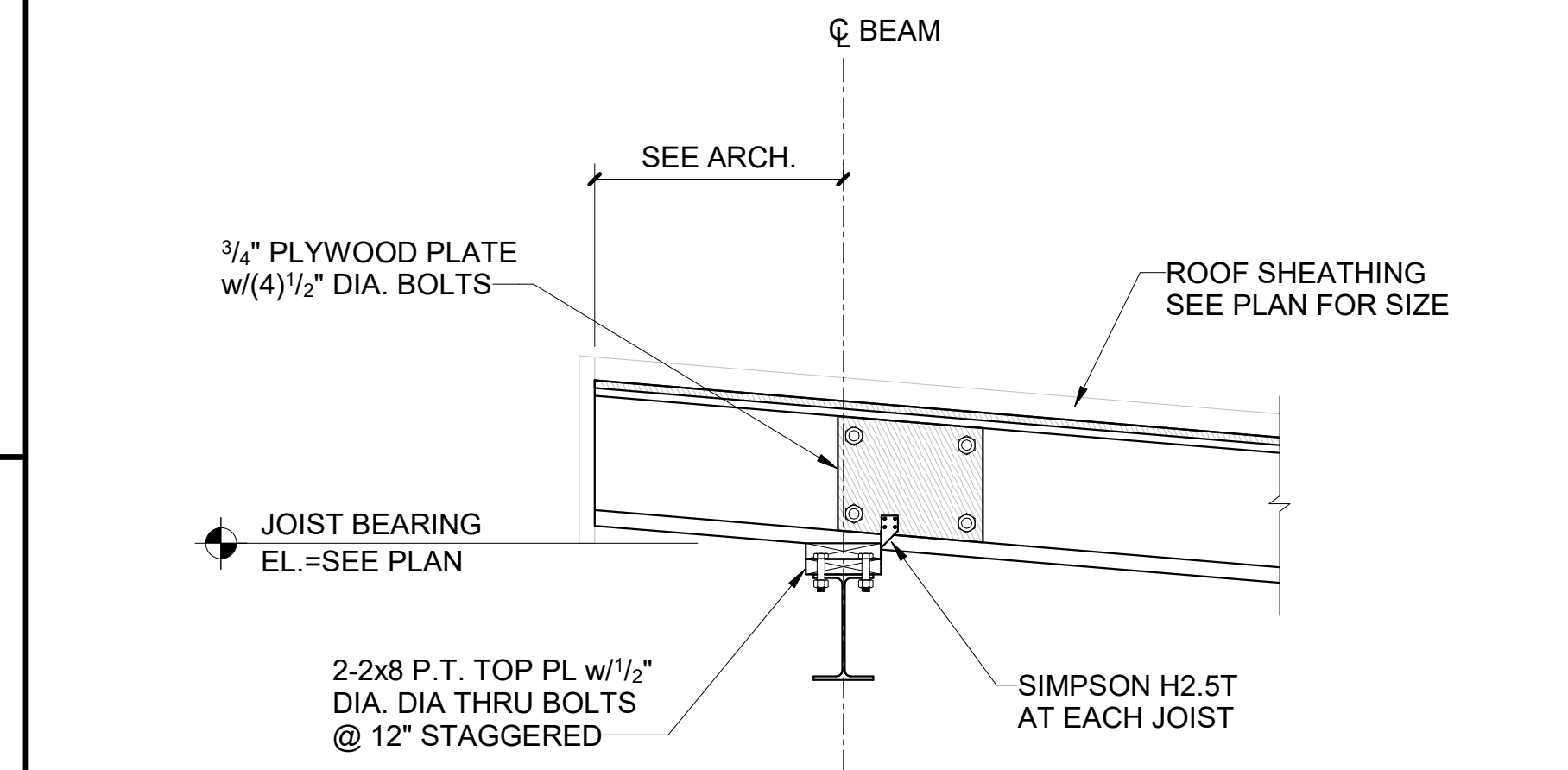


8 EXTERIOR ROOF SECTION AT PRESSBOX/ CONCESSION

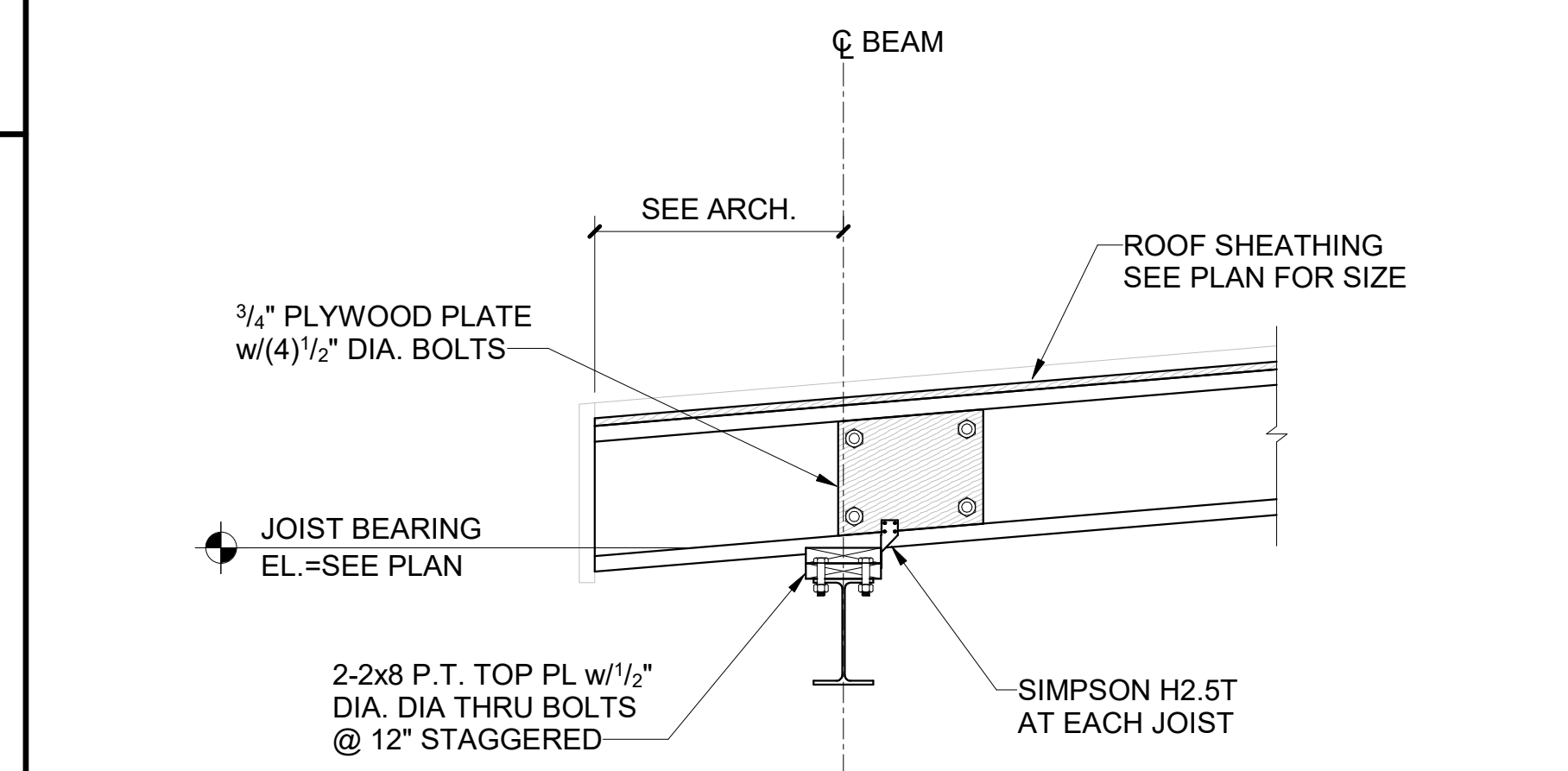
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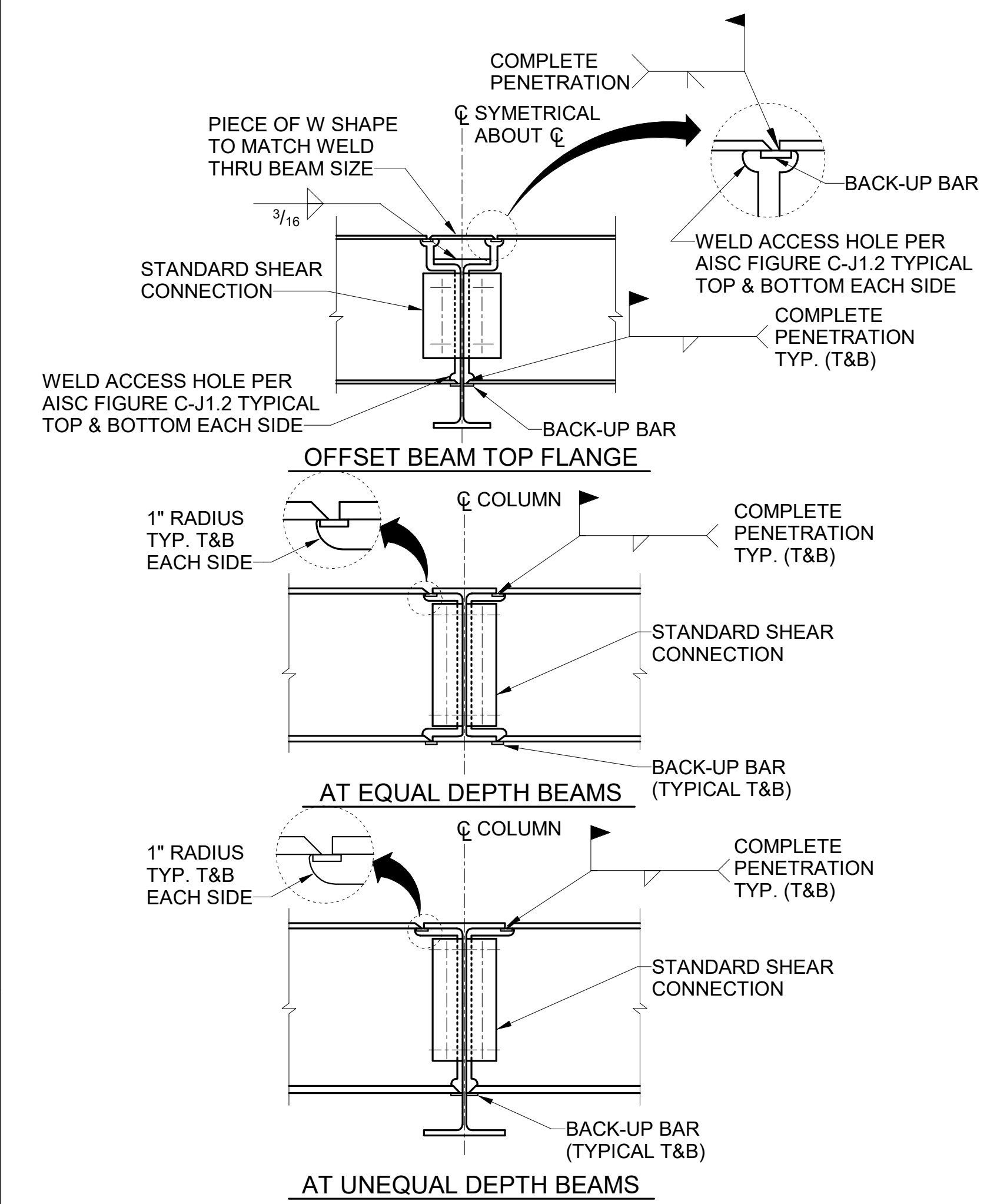
3 ROOF SECTION AT COVERED BATTING



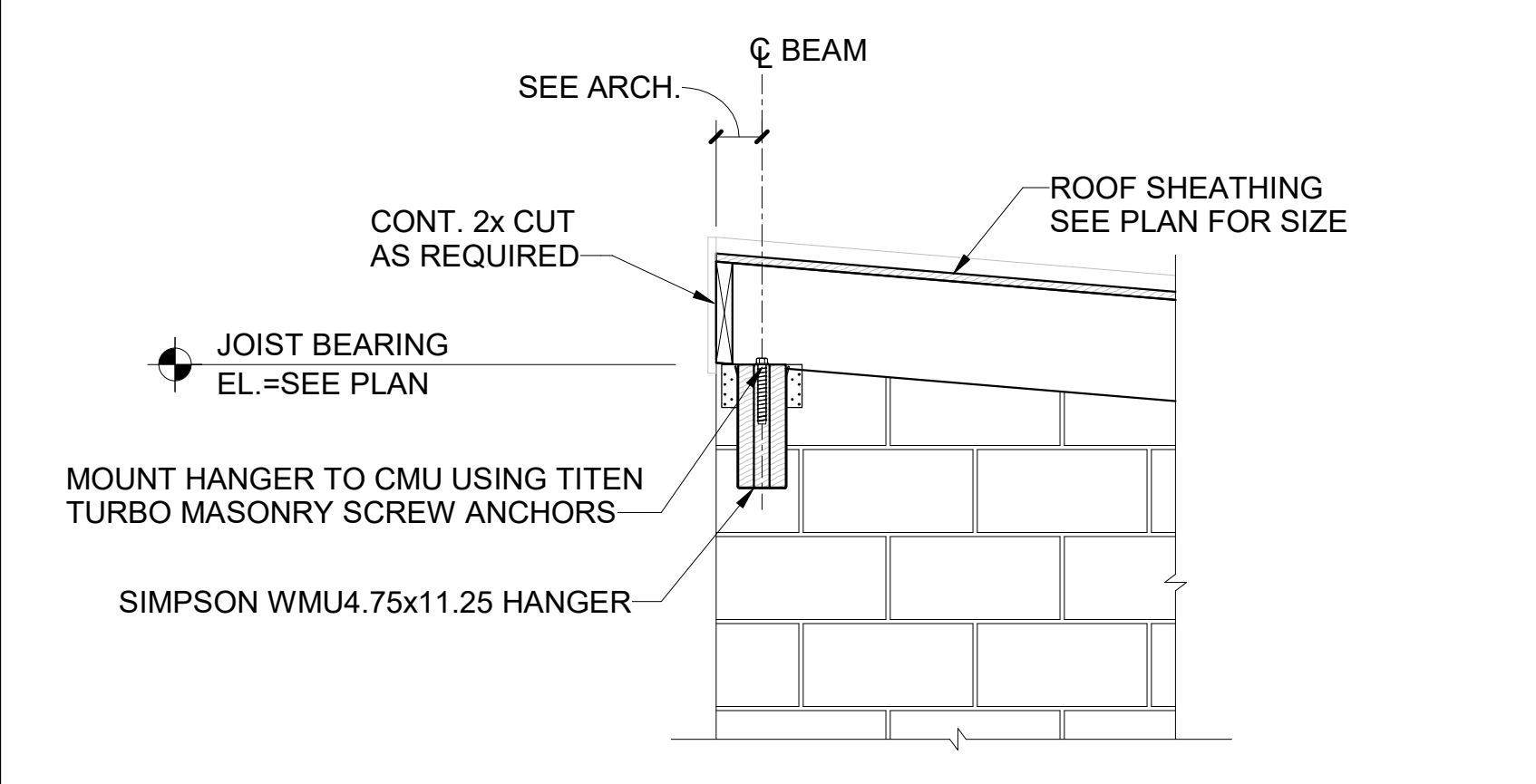
2 ROOF SECTION AT COVERED BATTING



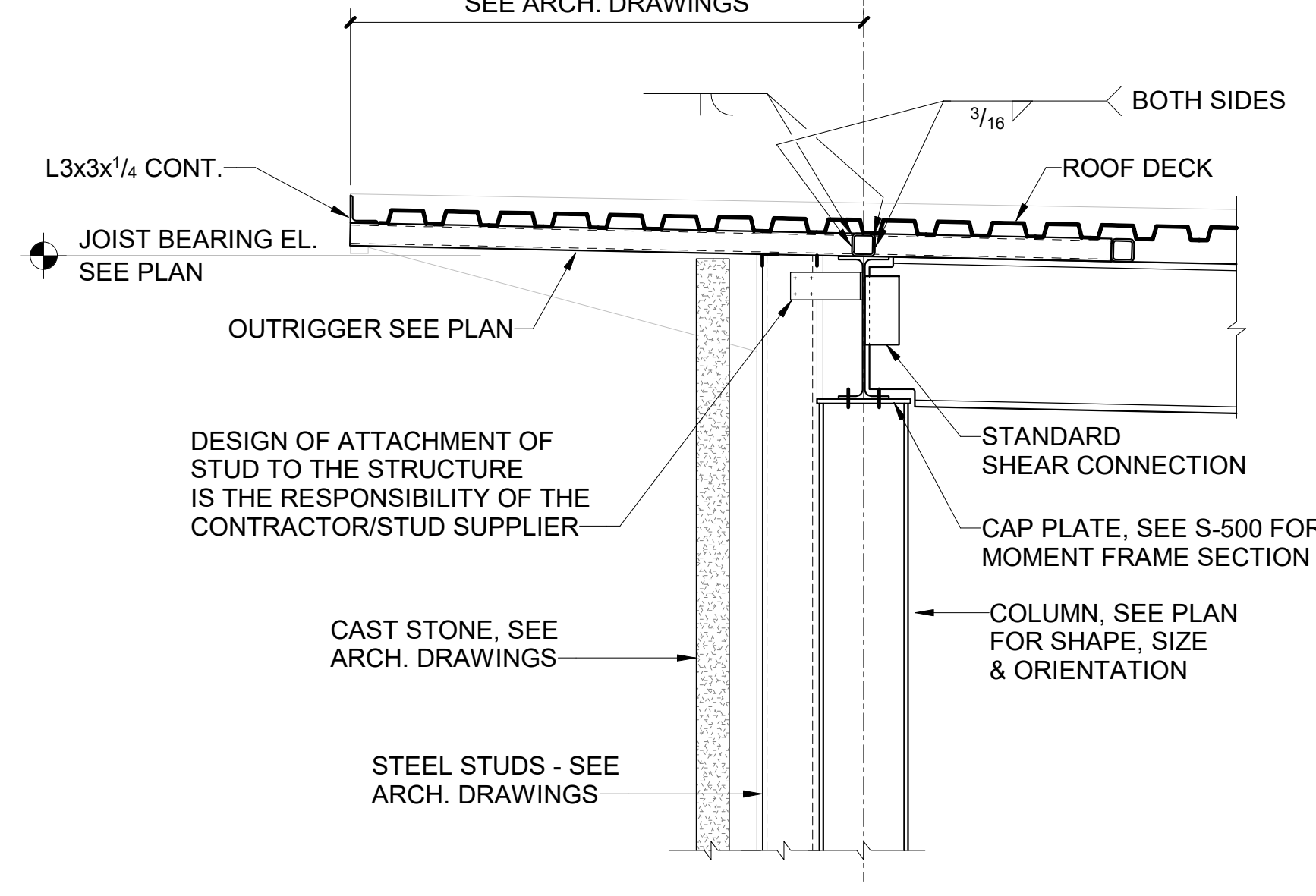
1 ROOF SECTION AT COVERED BATTING



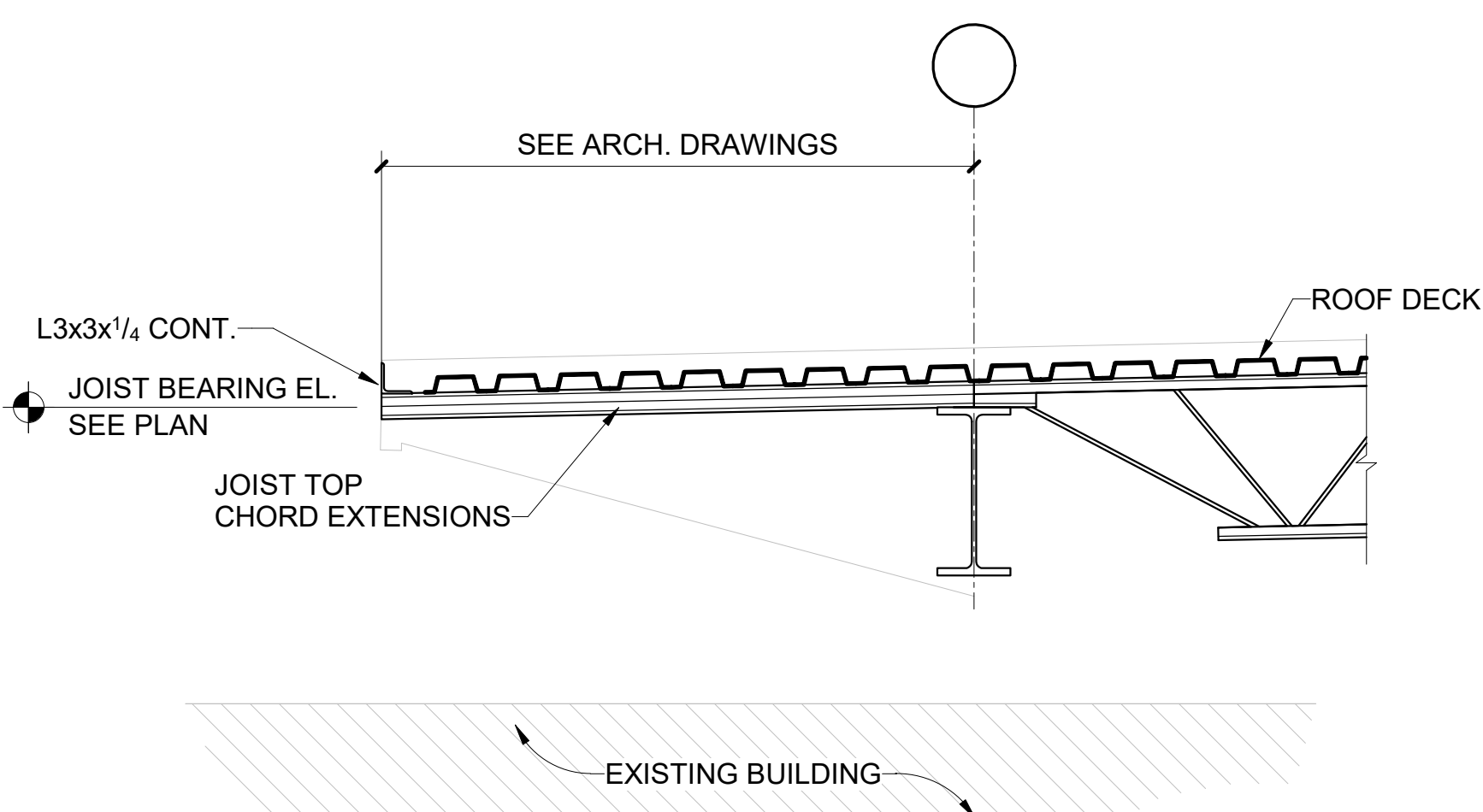
6 TYPICAL WELD-THRU DETAILS



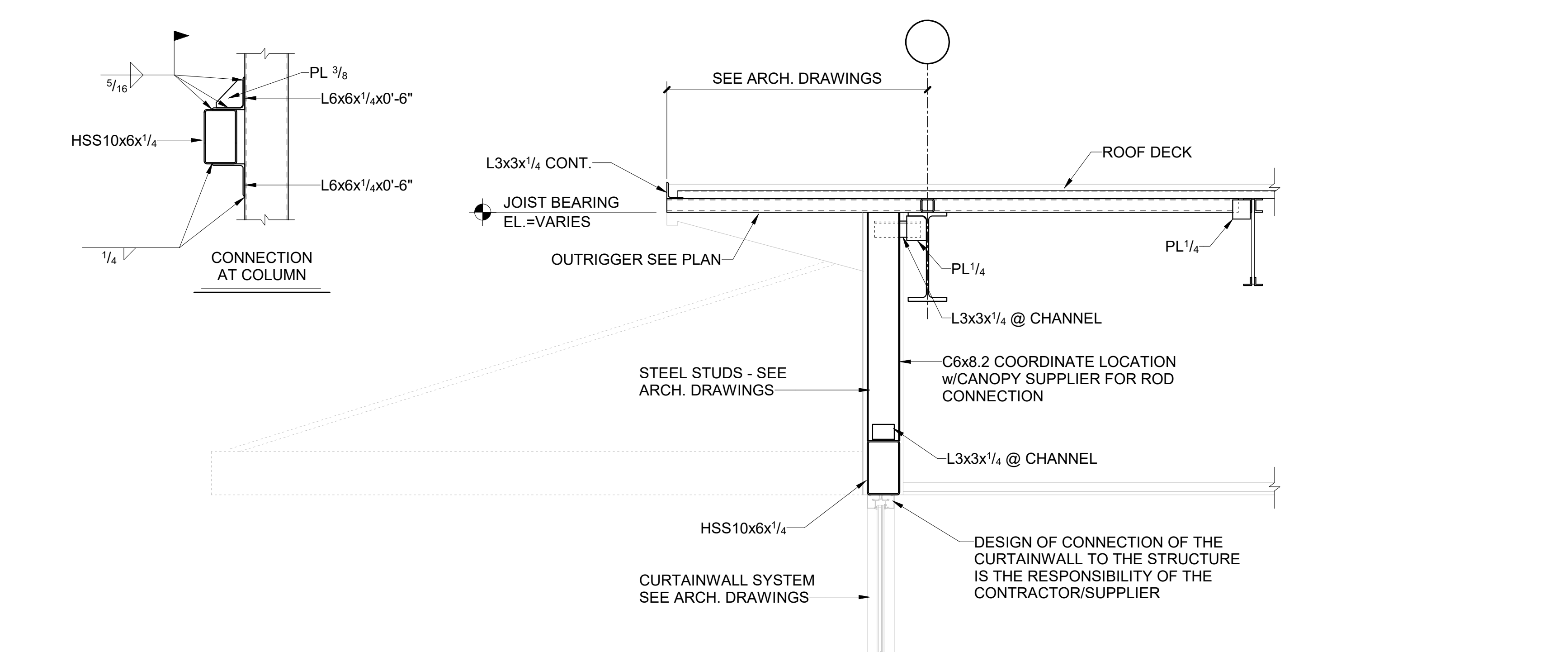
5 ROOF SECTION AT DUGOUT



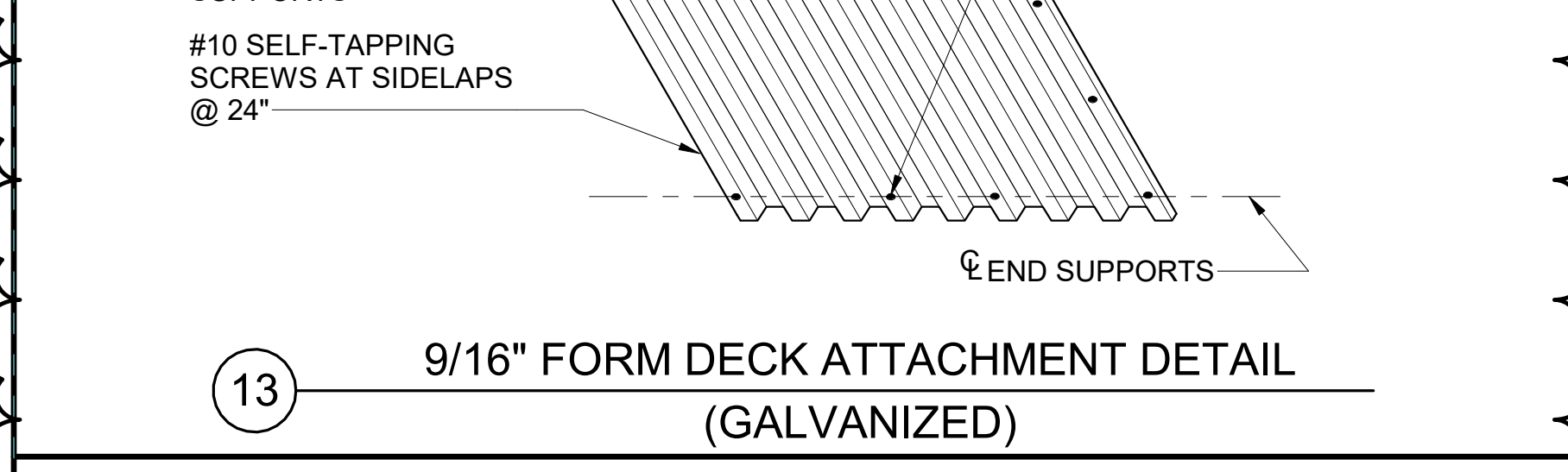
8 SECTION AT COLUMN



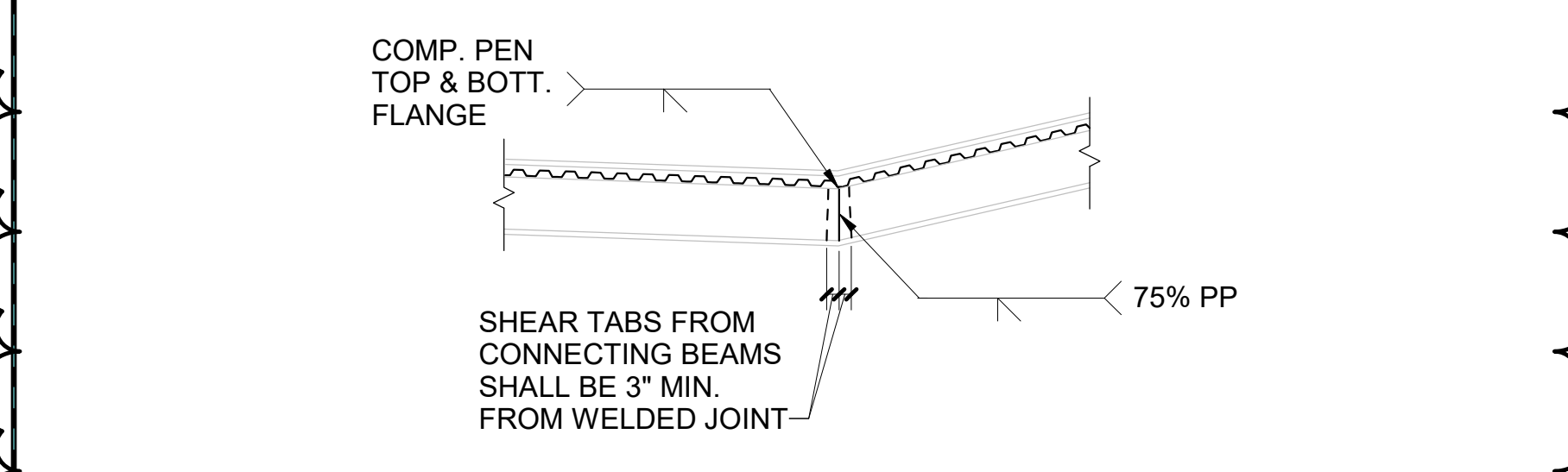
7 SECTION AT EXISTING



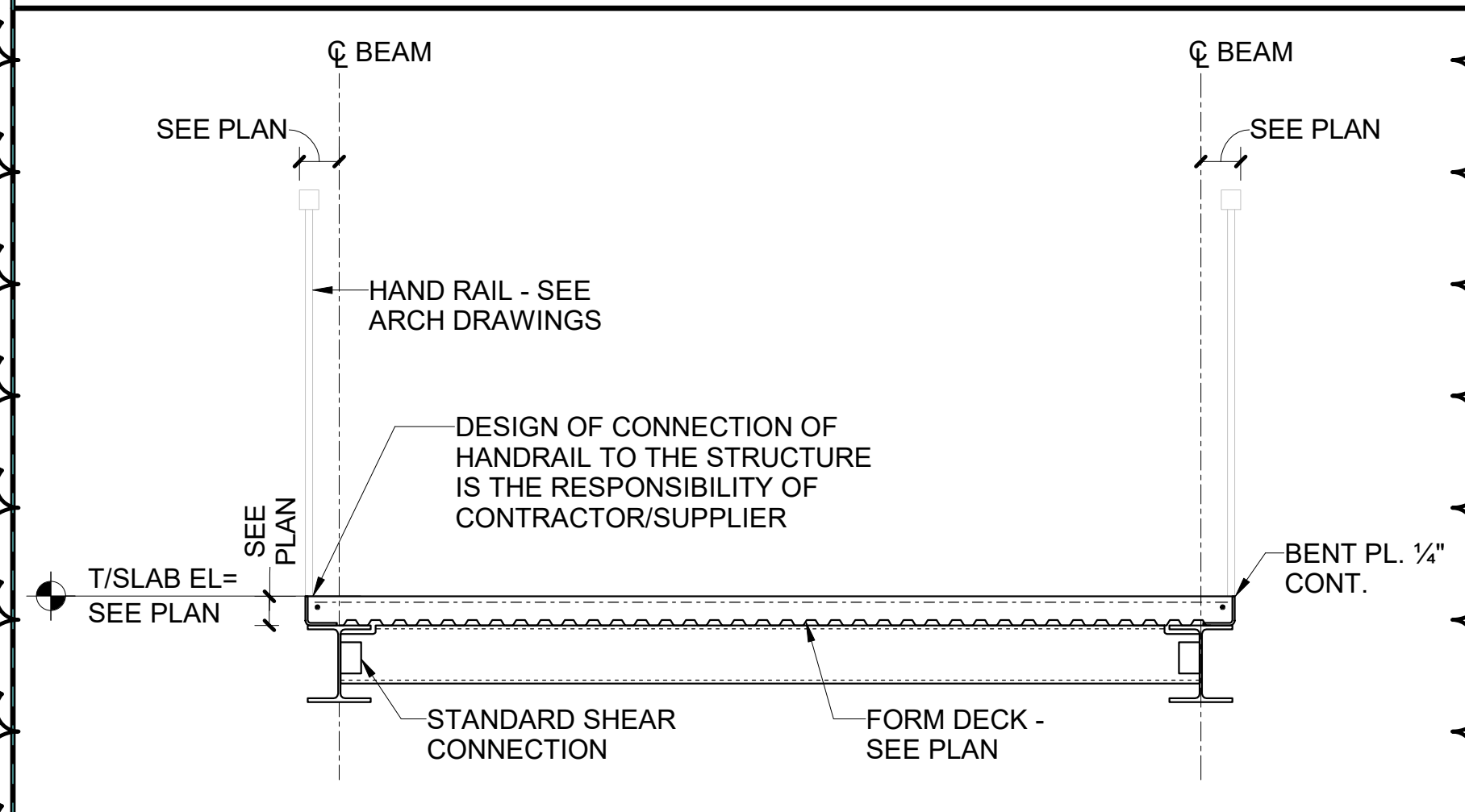
4 EXTERIOR ROOF SECTION



13 9/16" FORM DECK ATTACHMENT DETAIL (GALVANIZED)



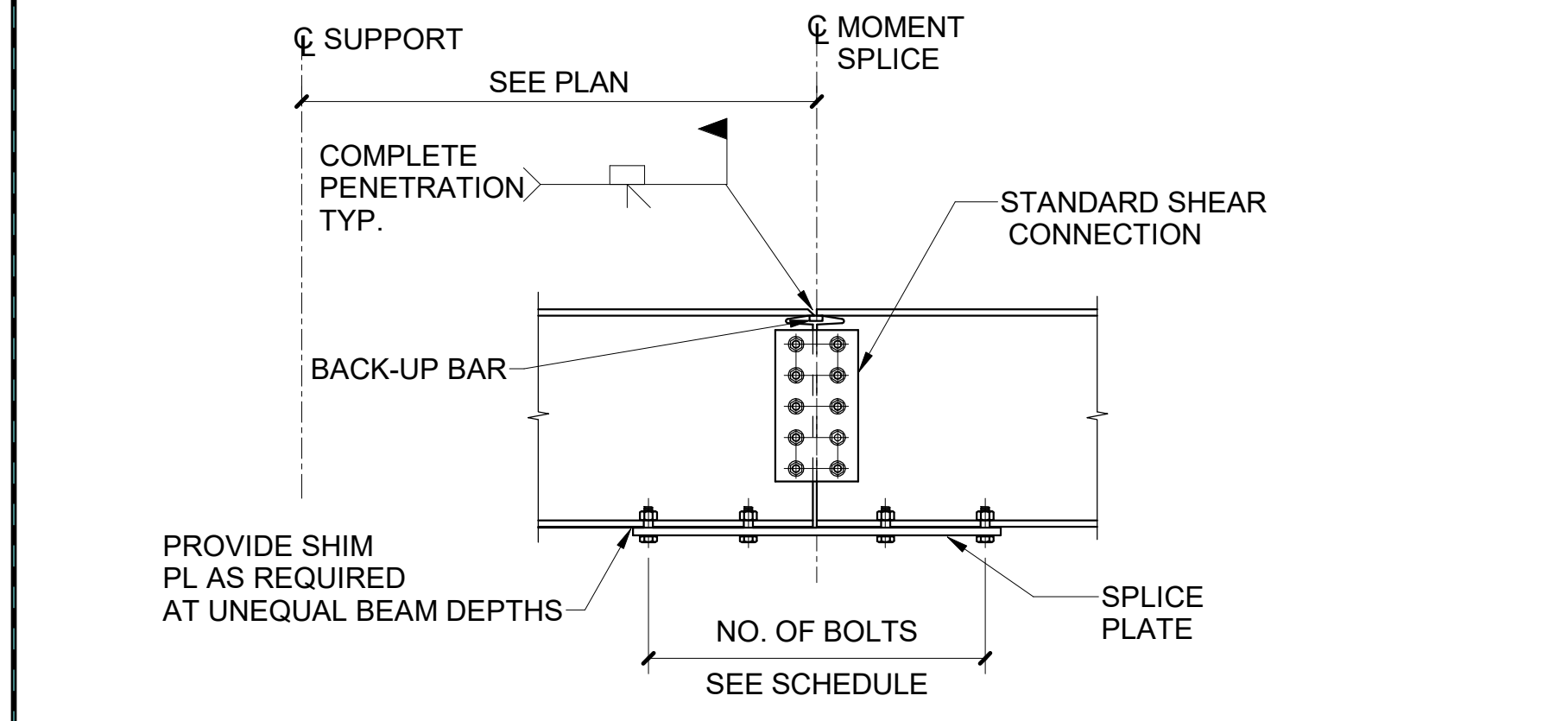
12 SETION AT KINKED BEAM



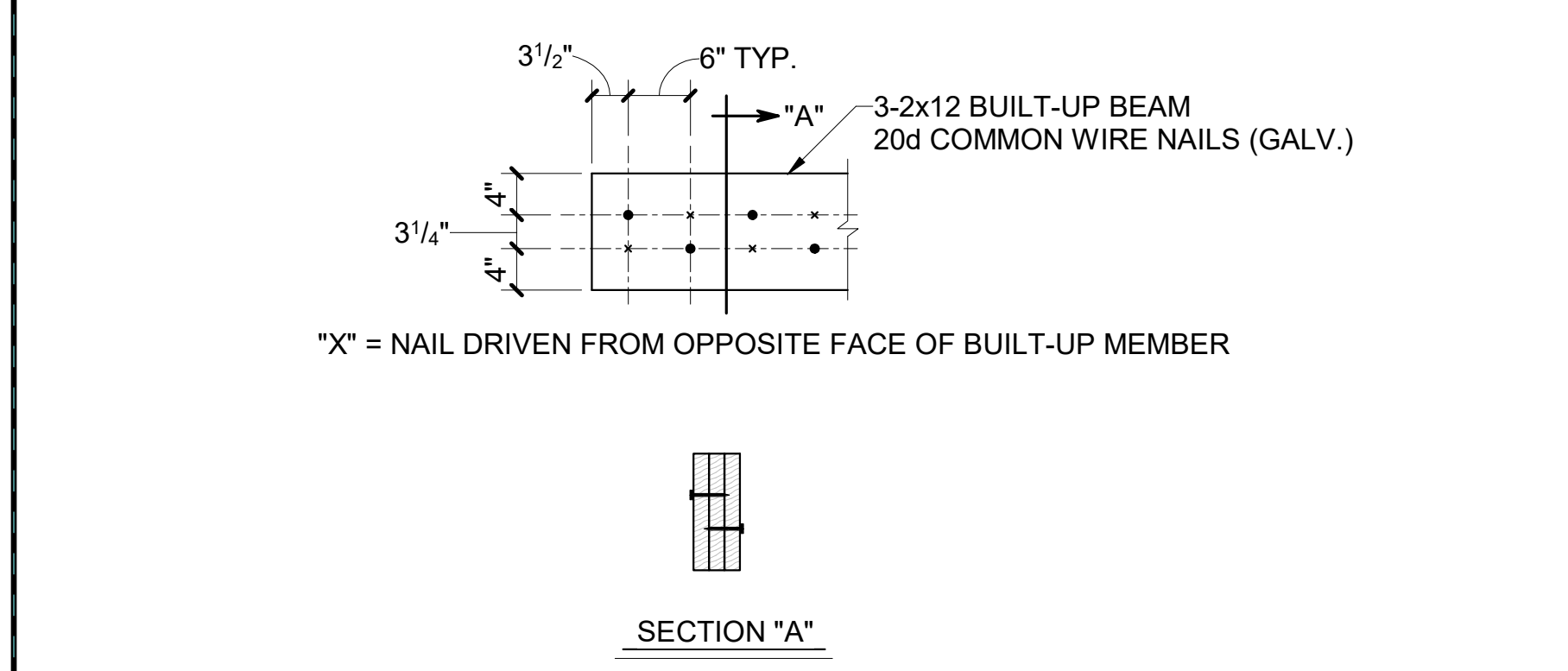
11 SETION AT RAMP

BEAM SIZE	# OF BOLTS (*)	PLATE SIZE
W16x57	8	PL 1/2x0'-8"

* NOTE : NUMBER OF BOLTS SHOWN IS TOTAL REQUIRED, AND IS TO BE PLACED IN TWO ROWS.

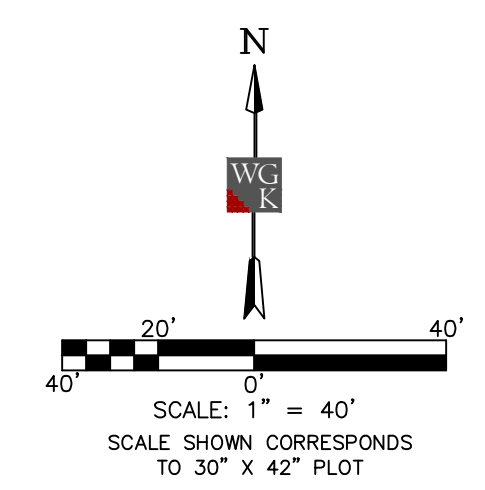
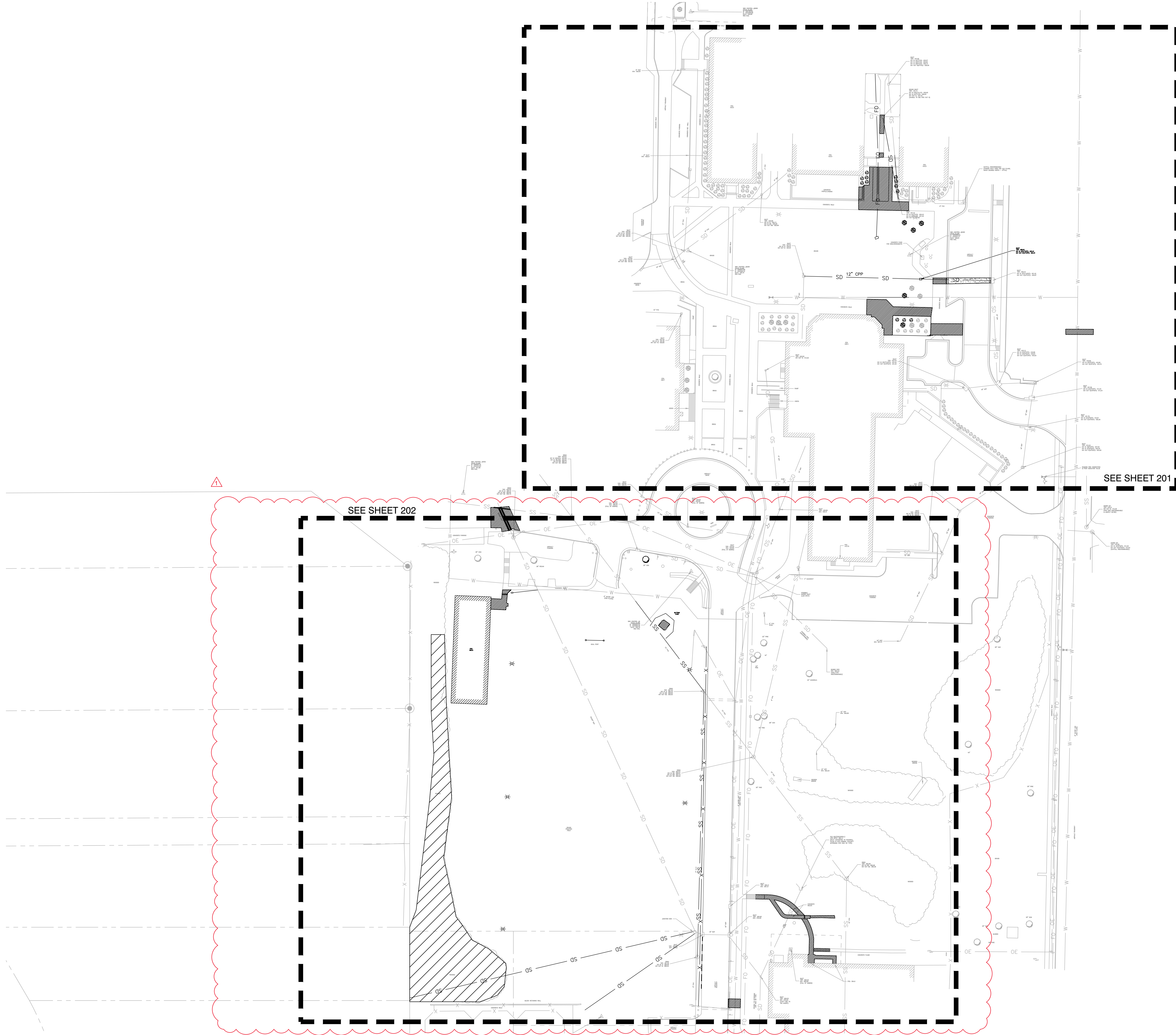


10 WELDED/BOLTED BEAM MOMENT SPLICE



9 BUILT-UP BEAM DETAIL

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DALE BAILEY
AN ASSOCIATION

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MHS Additions, Renovations, & Ballfield Rebid
 2320 32nd St, Meridian, MS 39305

Construction Documents

Project No	22034.02
Date	12/05/2023
Drawn	JB
Checked	BLM
Revision #	Date
Addendum #1	1/5/2024

WG K
 ENGINEERS & SURVEYORS
 204 West Leake Street
 Clinton, Mississippi 39056
 p. 601.925.4444
 132 West Cherokee Street
 Brookhaven, Mississippi 39601
 p. 601.833.9598

C-200
 Overall Demolition Plan



MHS Additions, Renovations, & Ballfield Rebid

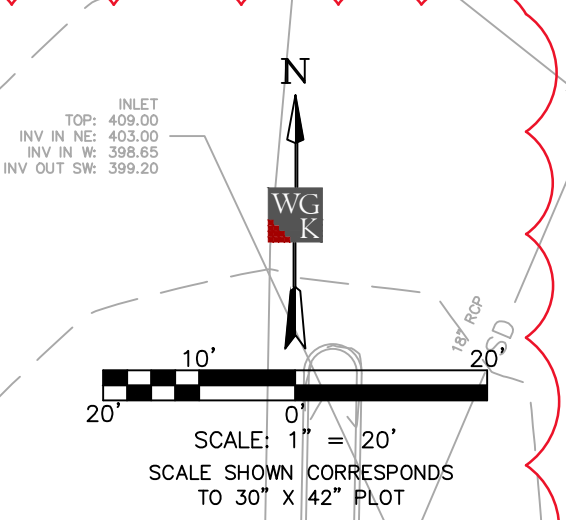
2320 32nd St, Meridian, MS 39305

Construction Documents

Project No	22034.02
Date	12/05/2023
Drawn	JB
Checked	BLM
Revision #	Date
Addendum #1	1/5/2024

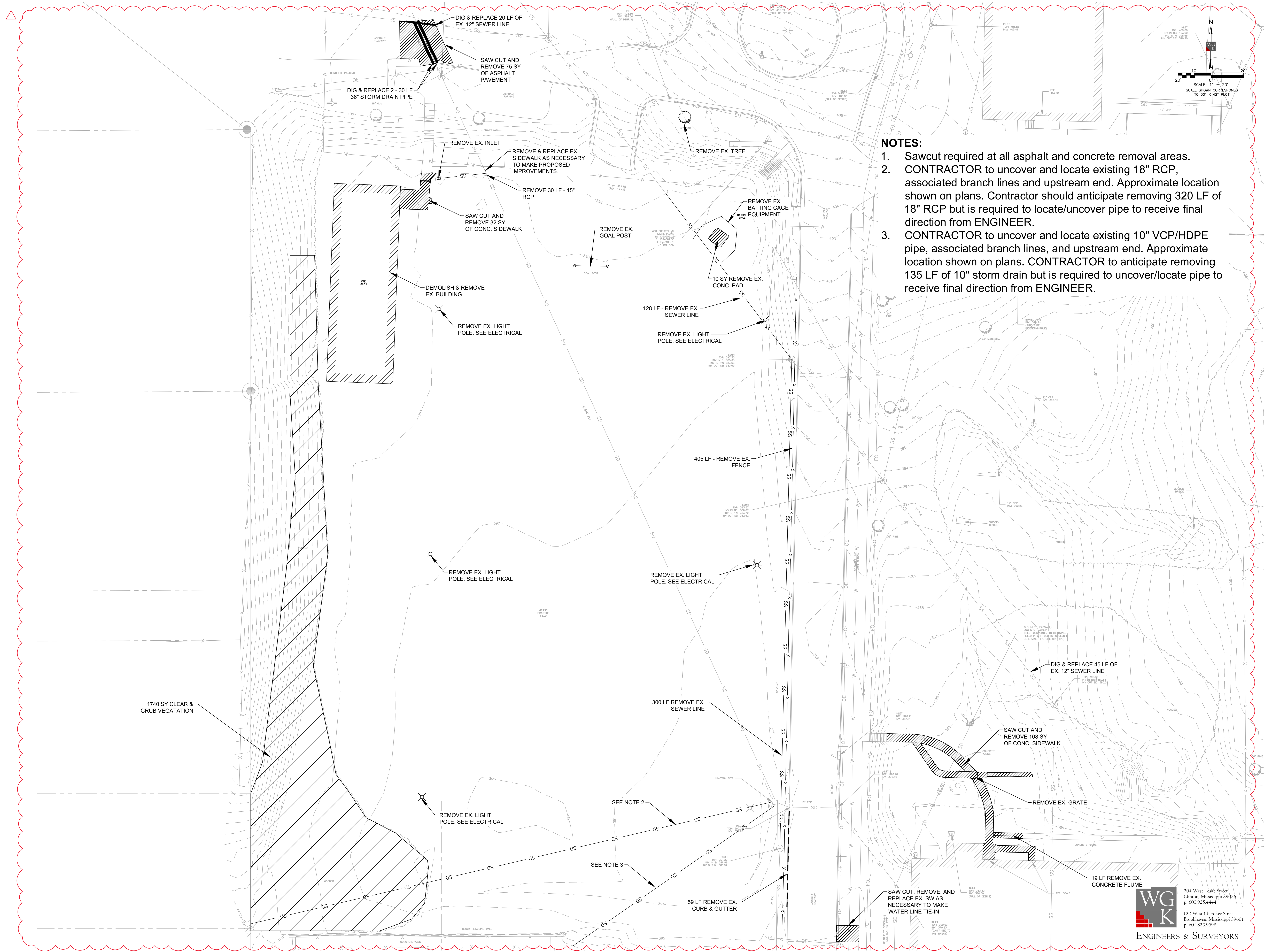
C-202

Demolition Plan -
Baseball Field

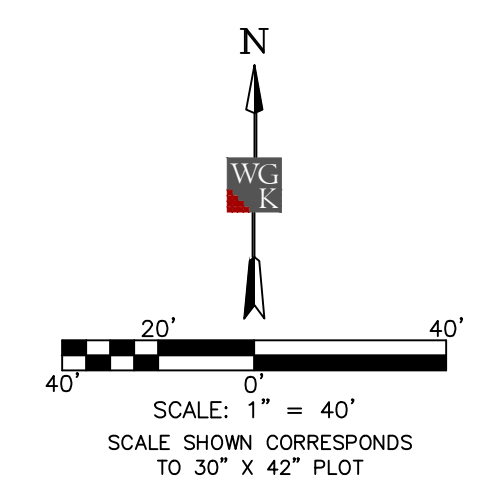


NOTES:

1. Sawcut required at all asphalt and concrete removal areas.
2. CONTRACTOR to uncover and locate existing 18" RCP, associated branch lines and upstream end. Approximate location shown on plans. Contractor should anticipate removing 320 LF of 18" RCP but is required to locate/uncover pipe to receive final direction from ENGINEER.
3. CONTRACTOR to uncover and locate existing 10" VCP/HDPE pipe, associated branch lines, and upstream end. Approximate location shown on plans. CONTRACTOR to anticipate removing 135 LF of 10" storm drain but is required to uncover/locate pipe to receive final direction from ENGINEER.



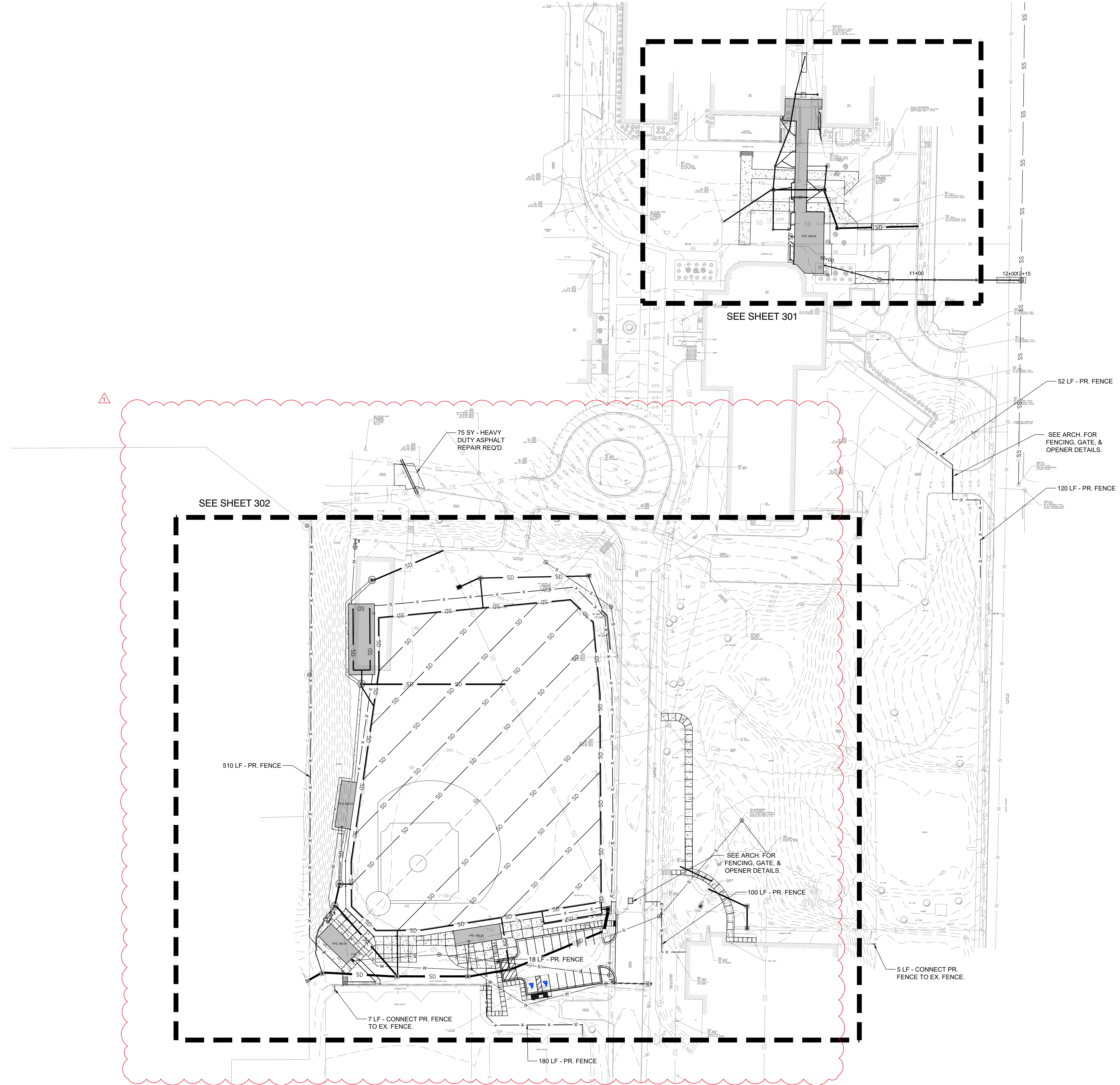
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MHS Additions, Renovations, & Ballfield Rebid
2320 32nd St, Meridian, MS 39305

Construction Documents

Project No	22034.02
Date	12/05/2023
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Revision #	Date
Addendum #1	1/5/2024



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MHS Additions, Renovations, & Ballfield Rebid

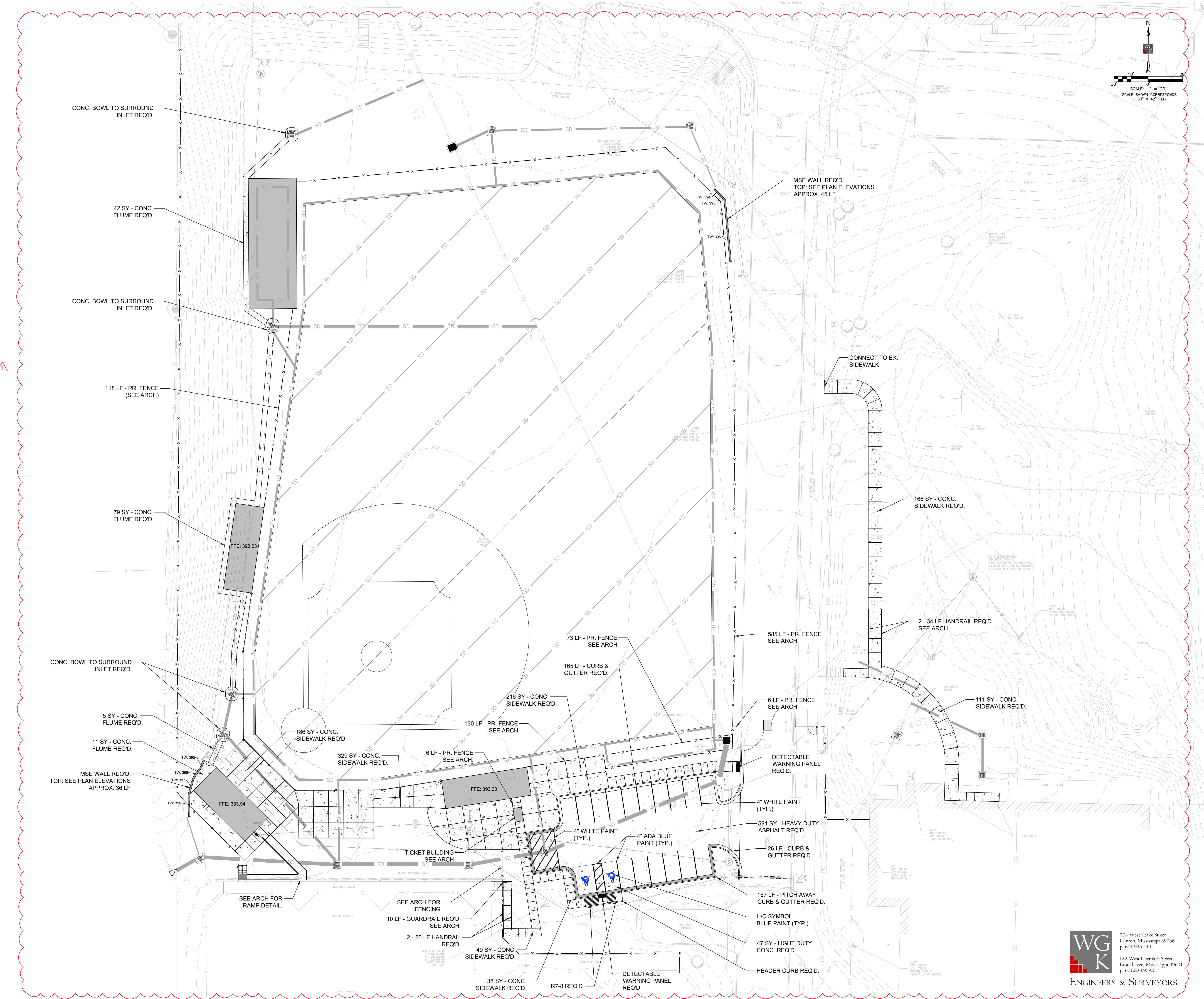
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Construction Documents

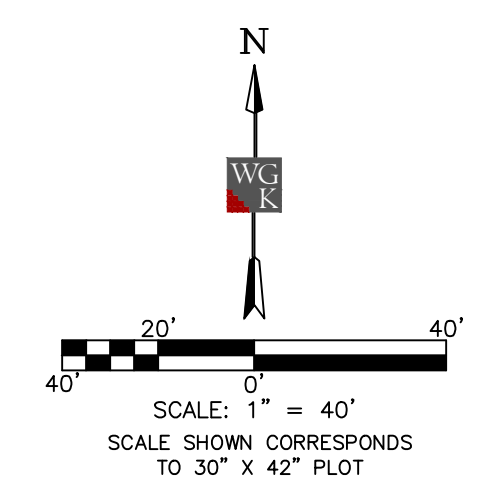
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Date	12/05/2023
Drawn	JB
Checked	BLM
Revision #	Date
Addendum #1	1/5/2024

C-302

Site Plan - Baseball Field



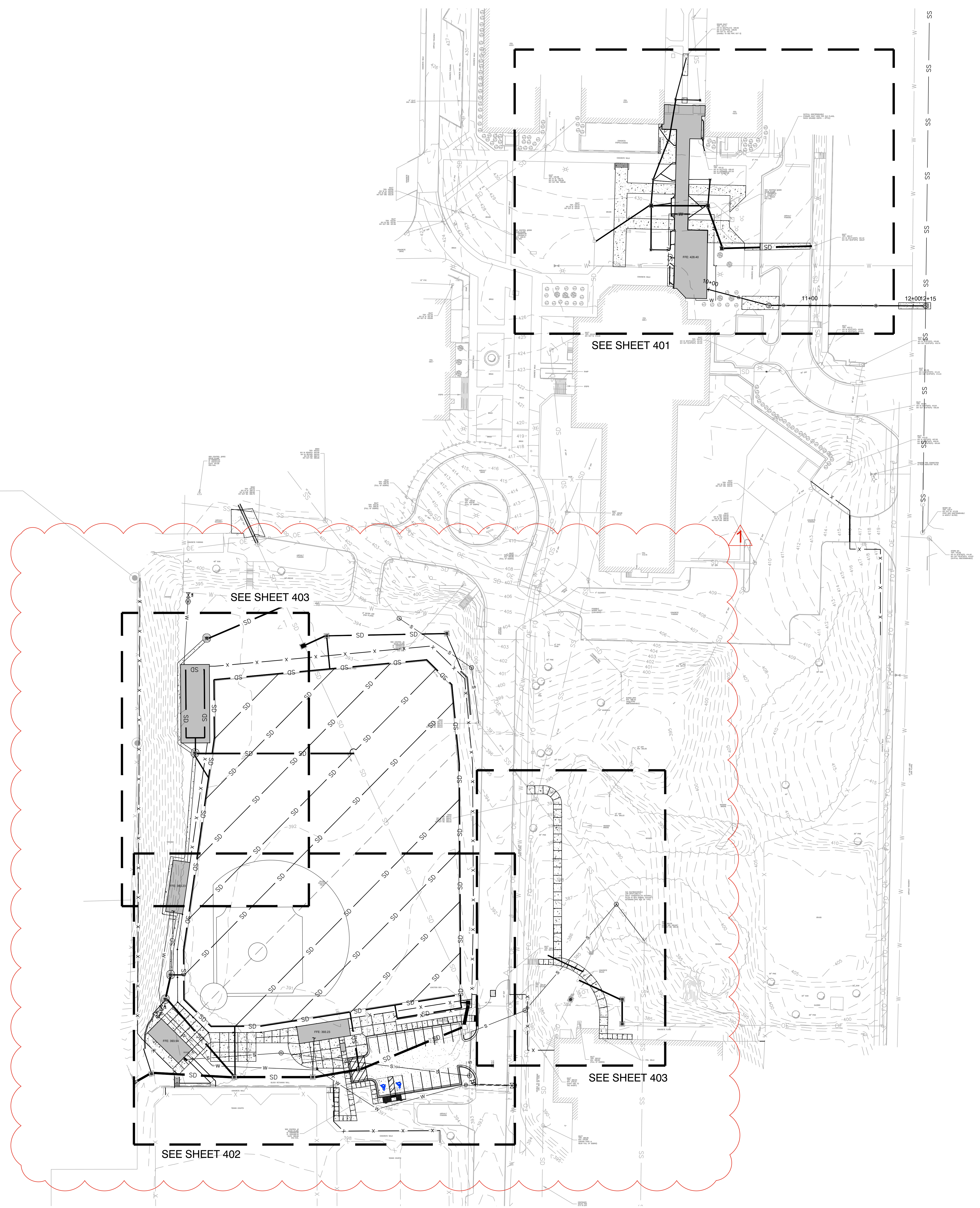
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Construction Documents

Project No	22034.02
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Checked	BLM
Revision #	Date
Addendum #1	1/5/2024



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MHS Additions, Renovations, & Ballfield Rebid

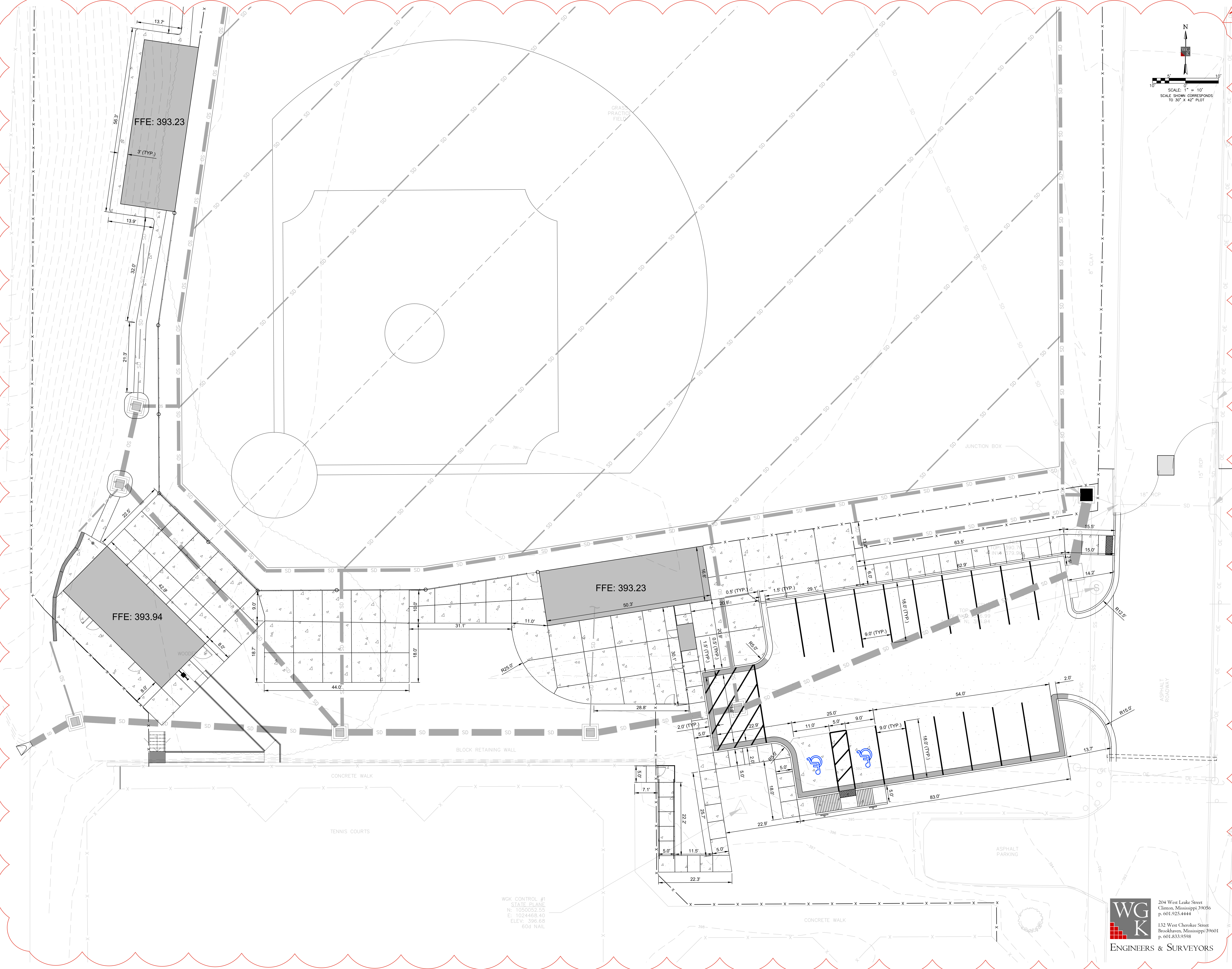
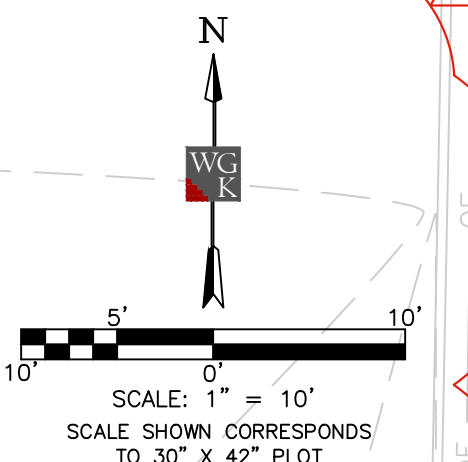
2320 32nd St, Meridian, MS 39305

Construction Documents

Project No 22034.02
Date 12/05/2023
Drawn JB
Checked BLM
Revision # Date
Addendum #1 1/5/2024

C-402

Geometric Plan - Baseball Field



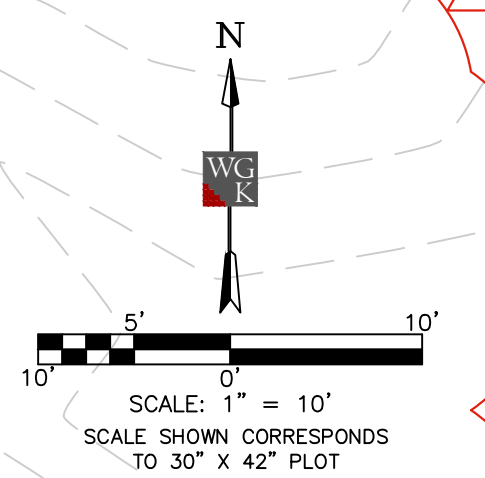
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STATE PLANE
N: 1050052.55
E: 1024468.40
ELEV: 396.68
60d NAIL

WGK
ENGINEERS & SURVEYORS

204 West Leake Street
Clinton, Mississippi 39056
p. 601.925.4444

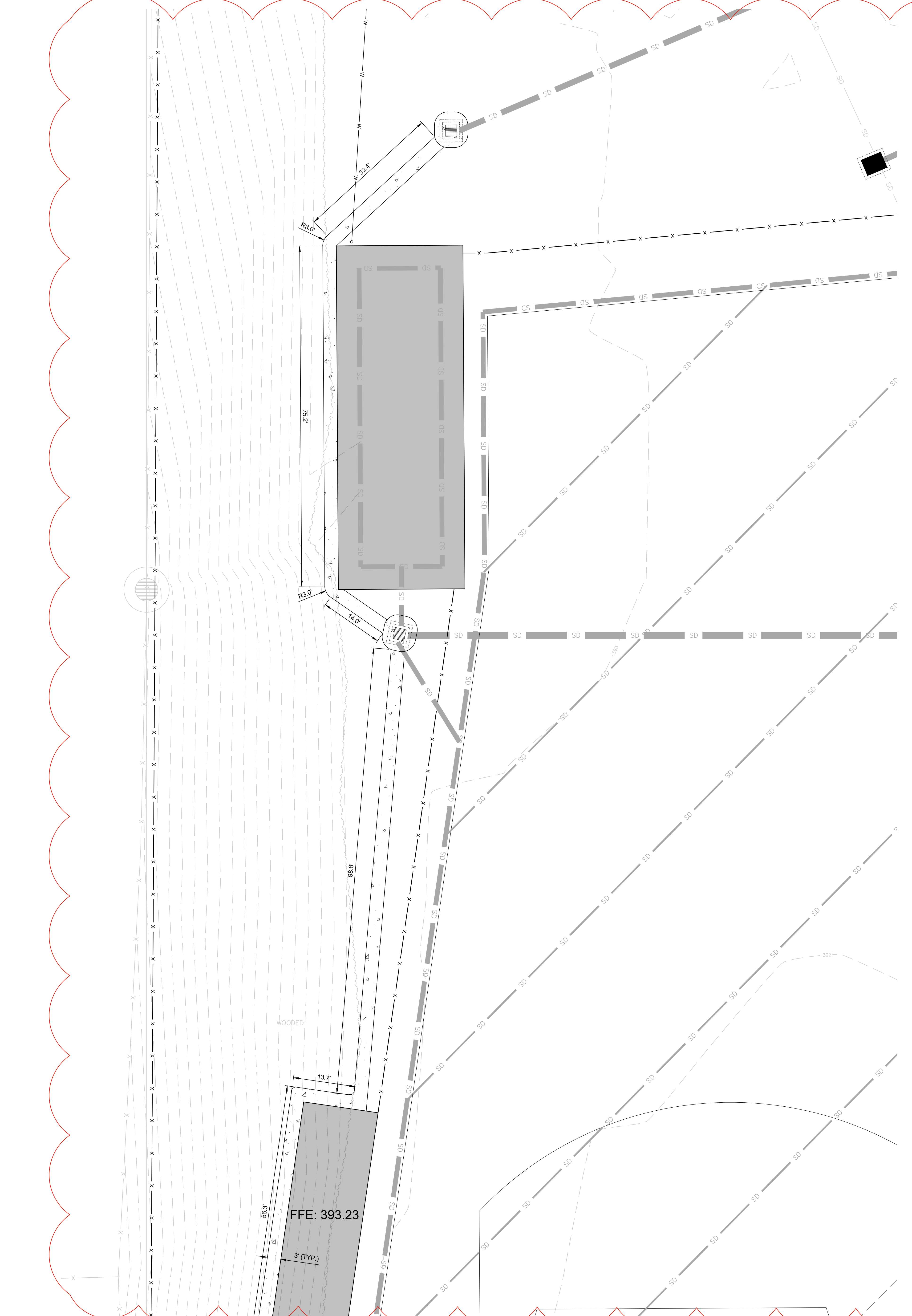
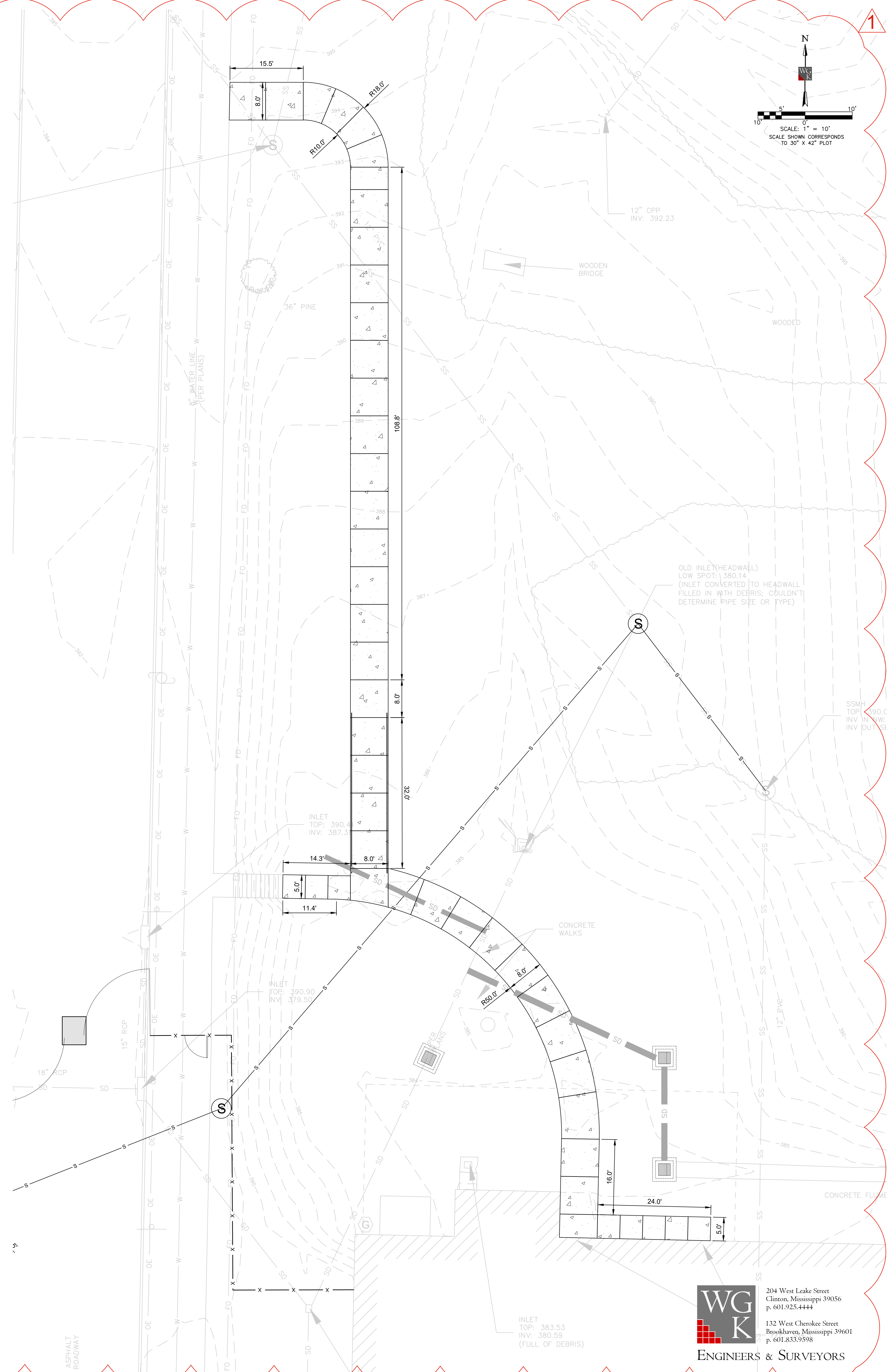
132 West Cherokee Street
Brookhaven, Mississippi 39601
p. 601.833.9598

V:\2024\2023\234-01_Meridian-Ballfield-and-High-School-Improvements\Production-Drawings\Geometric-Plan-Meridian-Ballfield_12/05/23.dwg, 12/05/23 4:57 PM, Dale B. Bailey



SCALE: 1" = 10'
SCALE SHOW CORRESPONDS
TO 30" X 42" PLOT

1



MHS Additions, Renovations, & Ballfield Rebid

2320 32nd St, Meridian, MS 39305

Construction Documents

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Addendum #1	1/5/2024

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ENGINEERS & SURVEYORS

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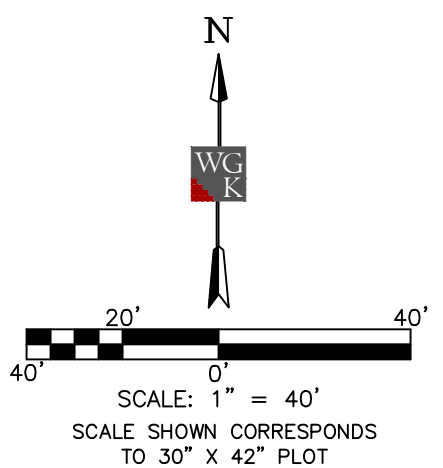
132 West Cherokee Street
Bookhaven, Mississippi 39601
p. 601.833.9598

C-403
Geometric Plan - East
Sidewalk

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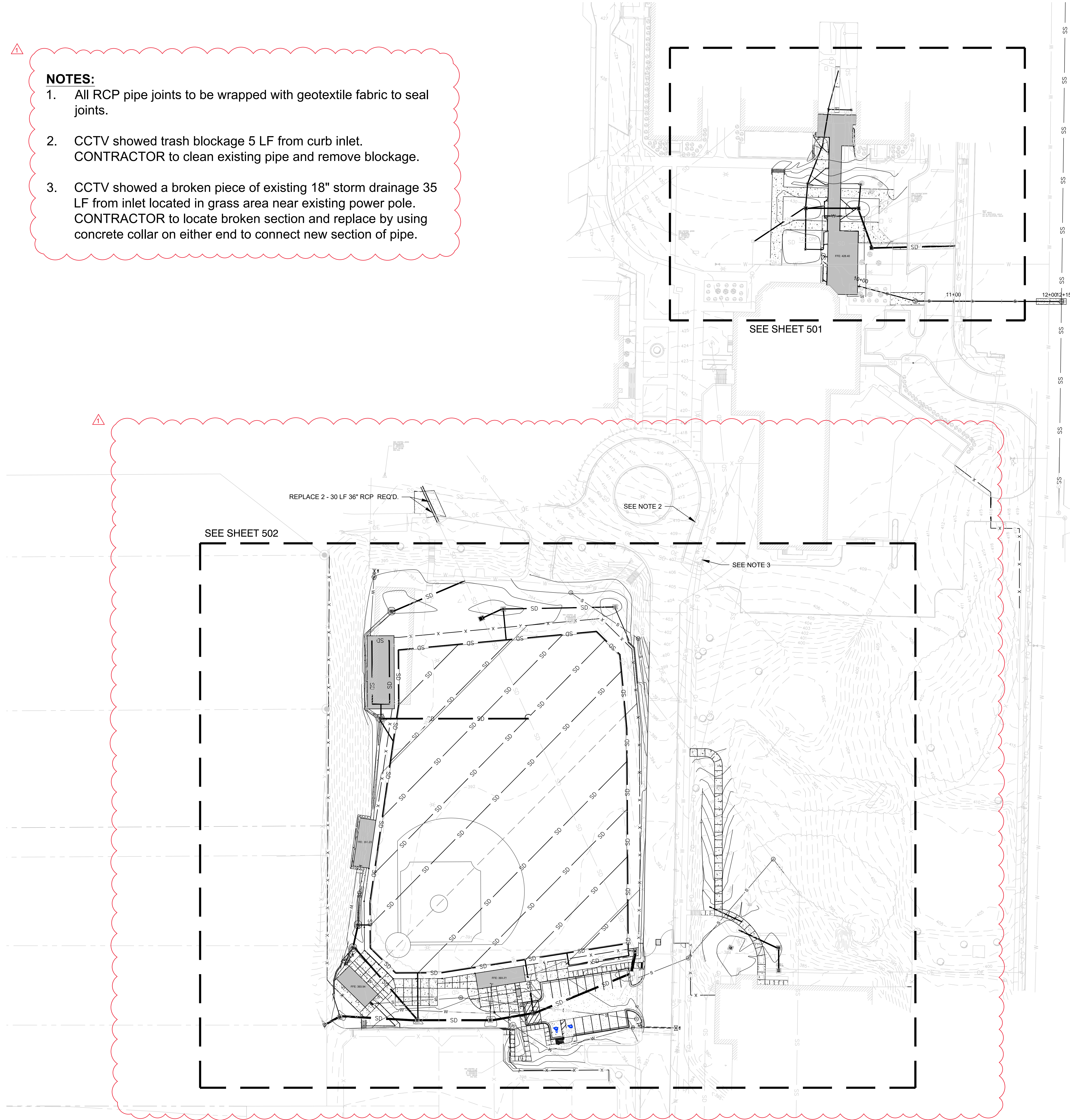
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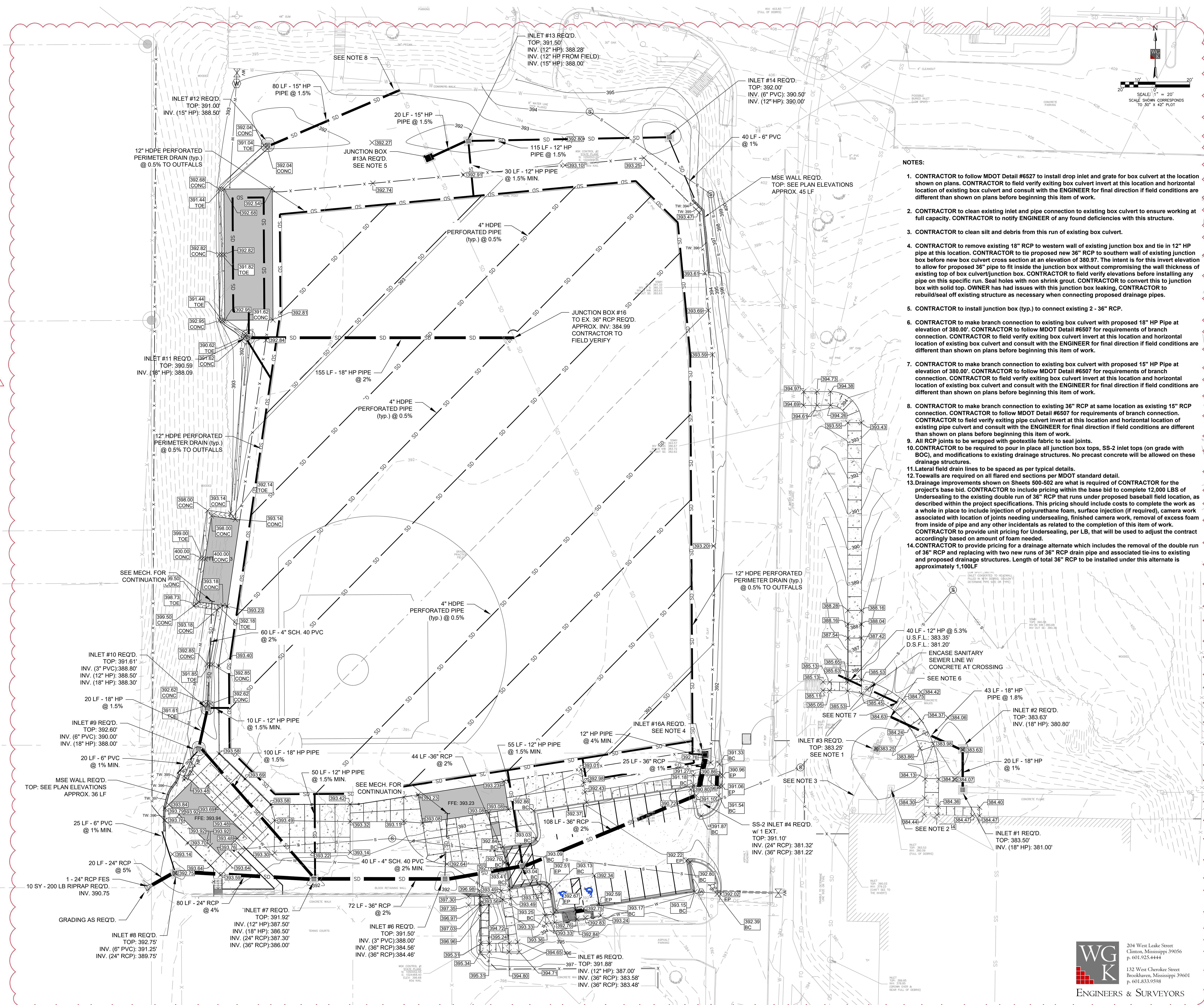
1. All RCP pipe joints to be wrapped with geotextile fabric to seal joints.
2. CCTV showed trash blockage 5 LF from curb inlet. CONTRACTOR to clean existing pipe and remove blockage.
3. CCTV showed a broken piece of existing 18" storm drainage 35 LF from inlet located in grass area near existing power pole. CONTRACTOR to locate broken section and replace by using concrete collar on either end to connect new section of pipe.



Construction Documents

Project No	22034.02
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Checked	BLM
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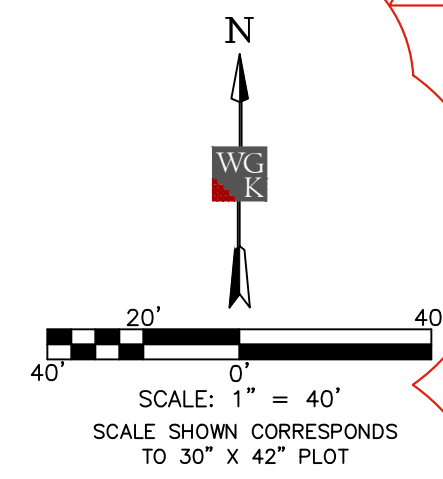


- NOTES:**
- CONTRACTOR to follow MDOT Detail #6527 to install drop inlet and grate for box culvert at the location shown on plans. CONTRACTOR to field verify existing box culvert invert at this location and horizontal location of existing box culvert and consult with the ENGINEER for final direction if field conditions are different than shown on plans before beginning this item of work.
 - CONTRACTOR to clean existing inlet and pipe connection to existing box culvert to ensure working at full capacity. CONTRACTOR to notify ENGINEER of any found deficiencies with this structure.
 - CONTRACTOR to clean silt and debris from this run of existing box culvert.
 - CONTRACTOR to remove existing 18" RCP to western wall of existing junction box and tie in 12" HP pipe at this location. CONTRACTOR to tie proposed new 36" RCP to southern wall of existing junction box before new box culvert cross section at an elevation of 380.97. The intent is for this invert elevation to allow for proposed 36" pipe to fit inside the junction box without compromising the wall thickness of existing top of box culvert/junction box. CONTRACTOR to field verify elevations before installing any pipe on this specific run. Seal holes with non shrink grout. CONTRACTOR to convert this to junction box with solid top. OWNER has had issues with this junction box leaking. CONTRACTOR to rebuild/seal off existing structure as necessary when connecting proposed drainage pipes.
 - CONTRACTOR to install junction box (typ.) to connect existing 2 - 36" RCP.
 - CONTRACTOR to make branch connection to existing box culvert with proposed 18" HP Pipe at elevation of 380.00'. CONTRACTOR to follow MDOT Detail #6507 for requirements of branch connection. CONTRACTOR to field verify existing box culvert invert at this location and horizontal location of existing box culvert and consult with the ENGINEER for final direction if field conditions are different than shown on plans before beginning this item of work.
 - CONTRACTOR to make branch connection to existing box culvert with proposed 15" HP Pipe at elevation of 380.00'. CONTRACTOR to follow MDOT Detail #6507 for requirements of branch connection. CONTRACTOR to field verify existing box culvert invert at this location and horizontal location of existing box culvert and consult with the ENGINEER for final direction if field conditions are different than shown on plans before beginning this item of work.
 - CONTRACTOR to make branch connection to existing 36" RCP at same location as existing 15" RCP connection. CONTRACTOR to follow MDOT Detail #6507 for requirements of branch connection. CONTRACTOR to field verify existing pipe culvert invert at this location and horizontal location of existing pipe culvert and consult with the ENGINEER for final direction if field conditions are different than shown on plans before beginning this item of work.
 - All RCP joints to be wrapped with geotextile fabric to seal joints.
 - CONTRACTOR to be required to pour in place all junction box tops, SS-2 inlet tops (on grade with BOC), and modifications to existing drainage structures. No precast concrete will be allowed on these drainage structures.
 - Lateral field drain lines to be spaced as per typical details.
 - Toewalls are required on all flared end sections per MDOT standard detail.
 - Drainage improvements shown on Sheets 500-502 are what is required of CONTRACTOR for the project's base bid. CONTRACTOR to include pricing within the base bid to complete 12,000 LBS of Undersealing to the existing double run of 36" RCP that runs under proposed baseball field location, as described within the project specifications. This pricing should include costs to complete the work as a whole in place to include injection of polyurethane foam, surface injection (if required), camera work associated with location of joints needing undersealing, finished camera work, removal of excess foam from inside of pipe and any other incidentals as related to the completion of this item of work. CONTRACTOR to provide unit pricing for Undersealing, per L.B. that will be used to adjust the contract accordingly based on amount of foam needed.
 - CONTRACTOR to provide pricing for a drainage alternate which includes the removal of the double run of 36" RCP and replacing with two new runs of 36" RCP drain pipe and associated tie-ins to existing and proposed drainage structures. Length of total 36" RCP to be installed under this alternate is approximately 1,100LF.

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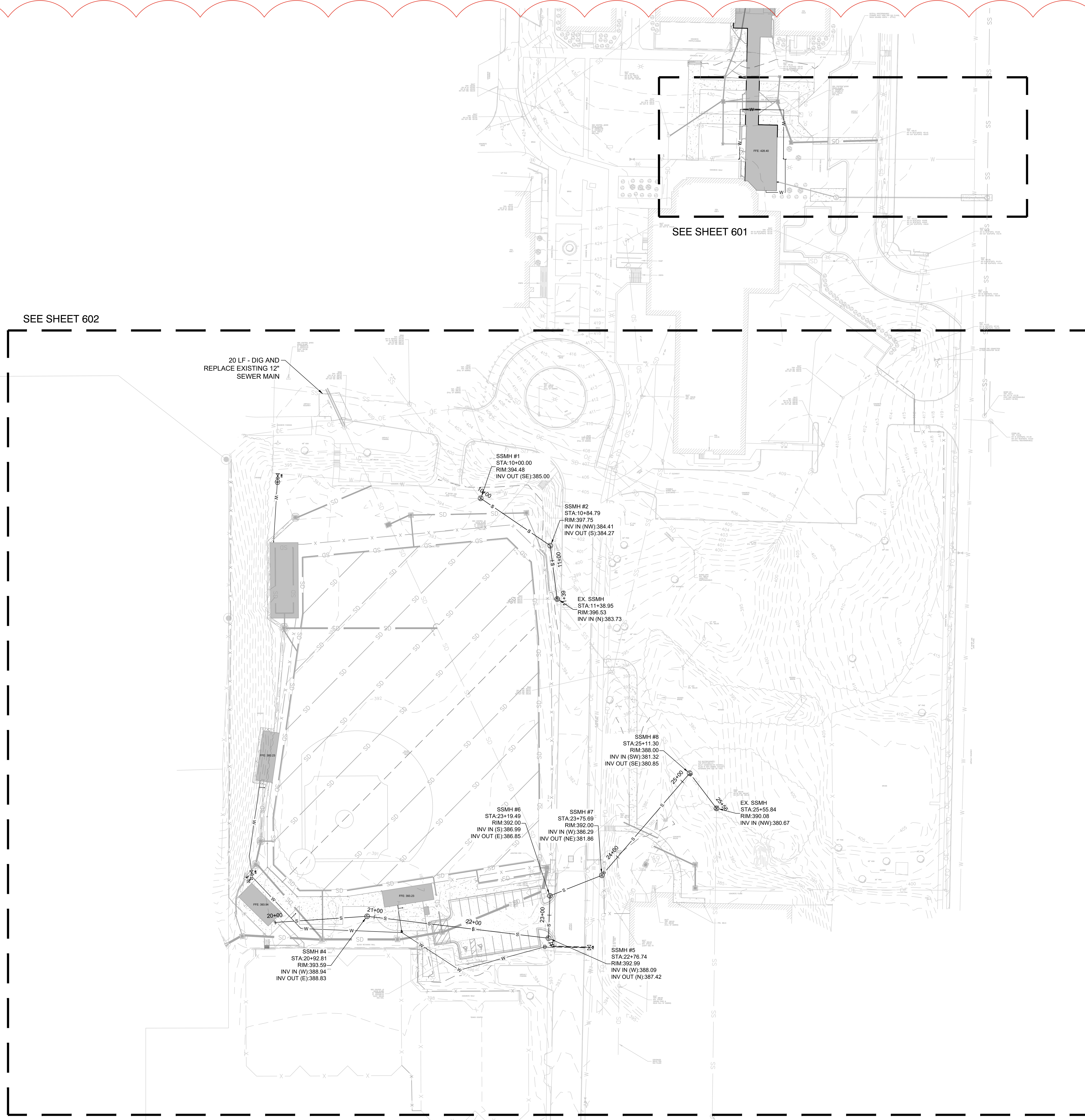
Construction Documents

Project No	22034.02
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Revision #	Date
Addendum #1	1/5/2024

C-600

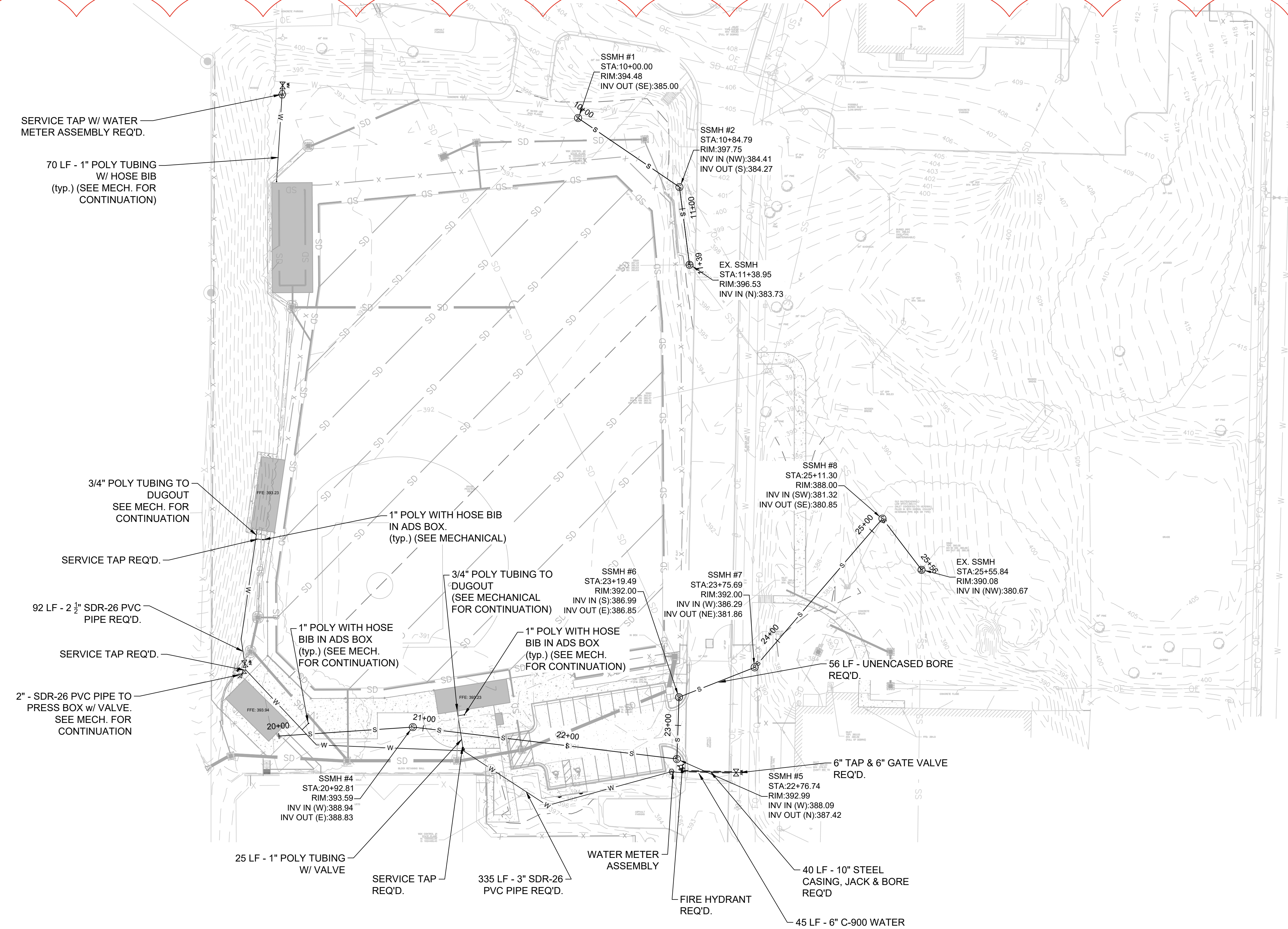
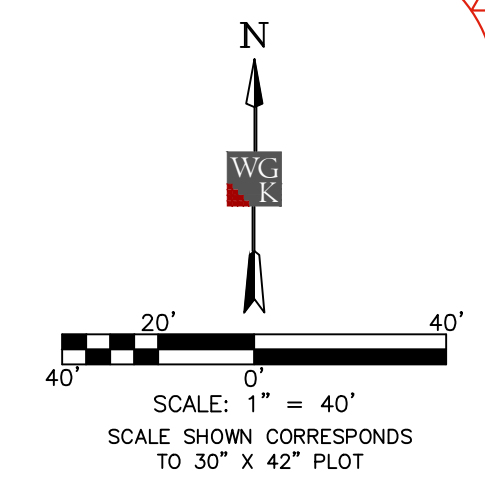
Overall Utility Plan

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ENGINEERS & SURVEYORS
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Clinton, Mississippi 39056
p. 601.925.4444
132 West Cherokee Street
Brookhaven, Mississippi 39601
p. 601.833.9598



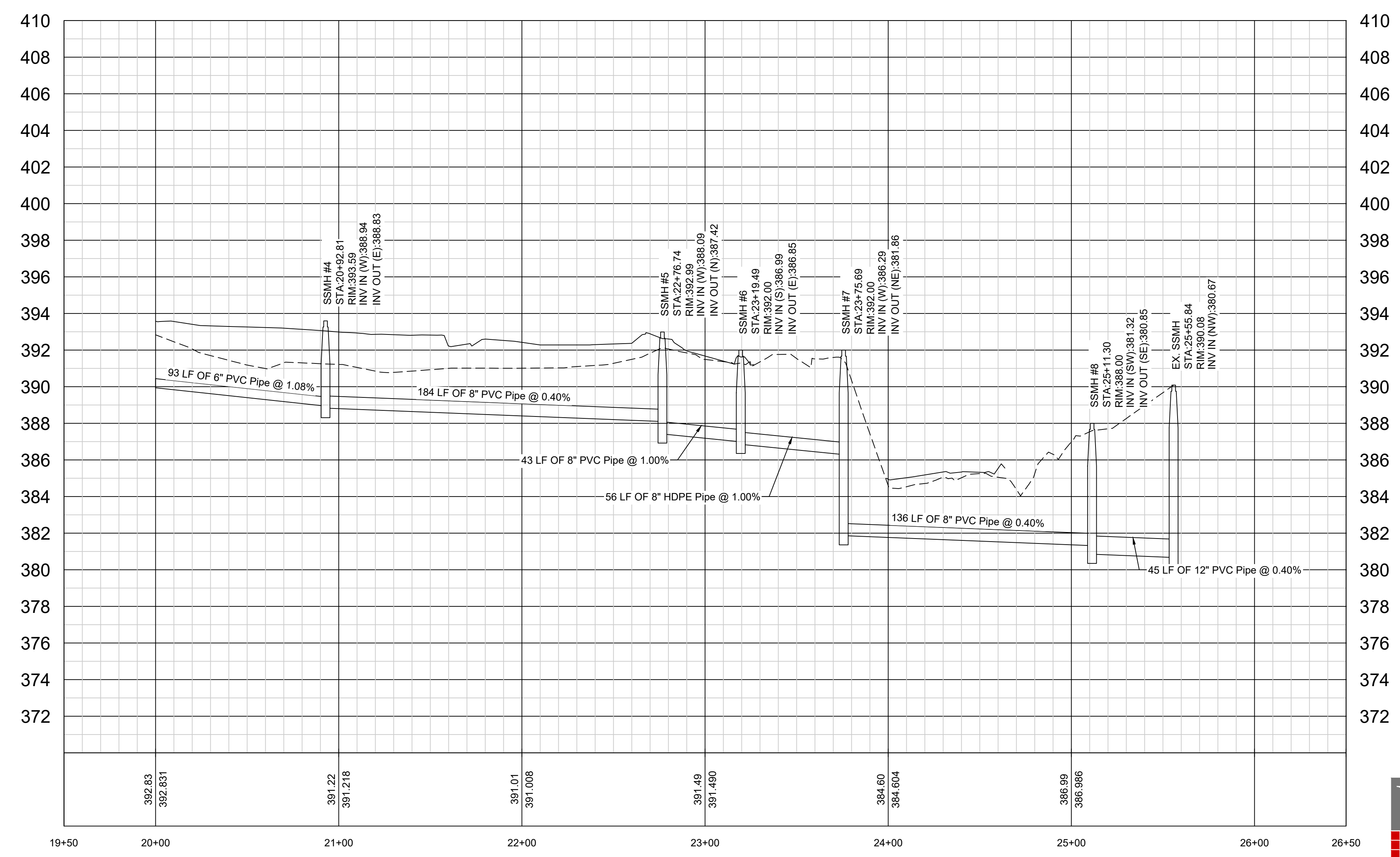
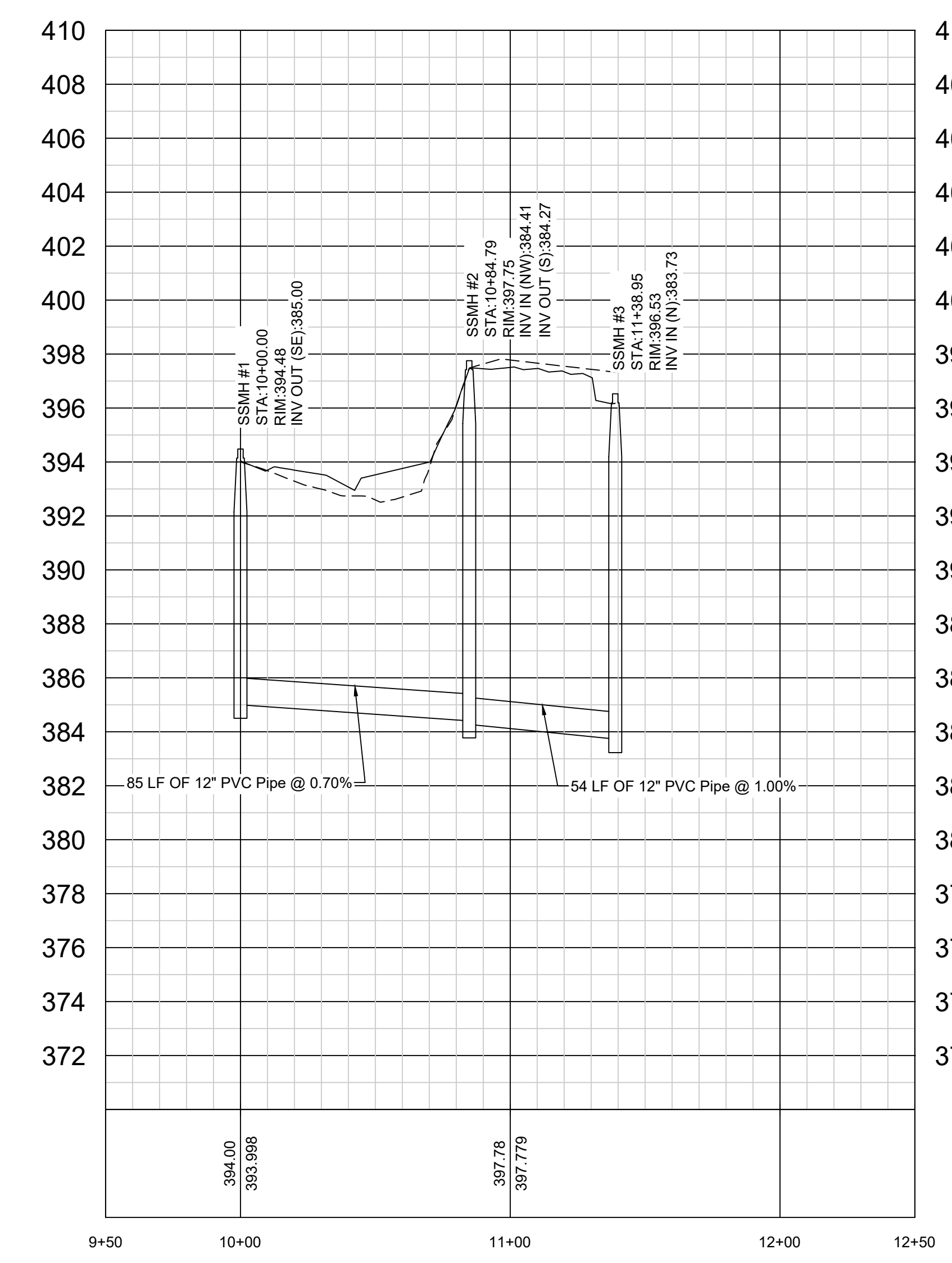
SEE SHEET 602

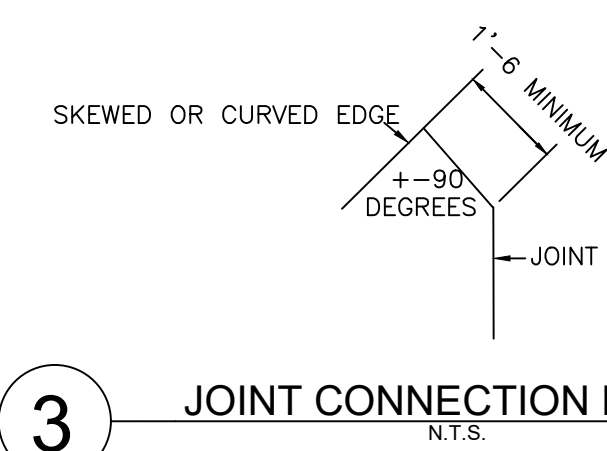
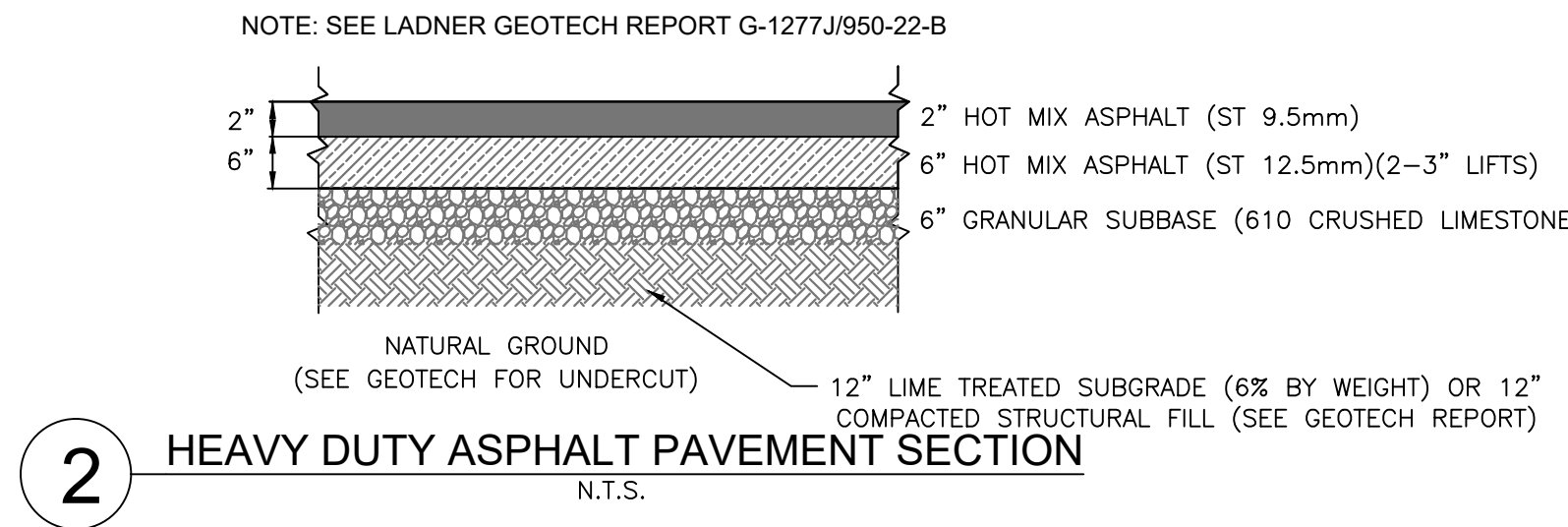
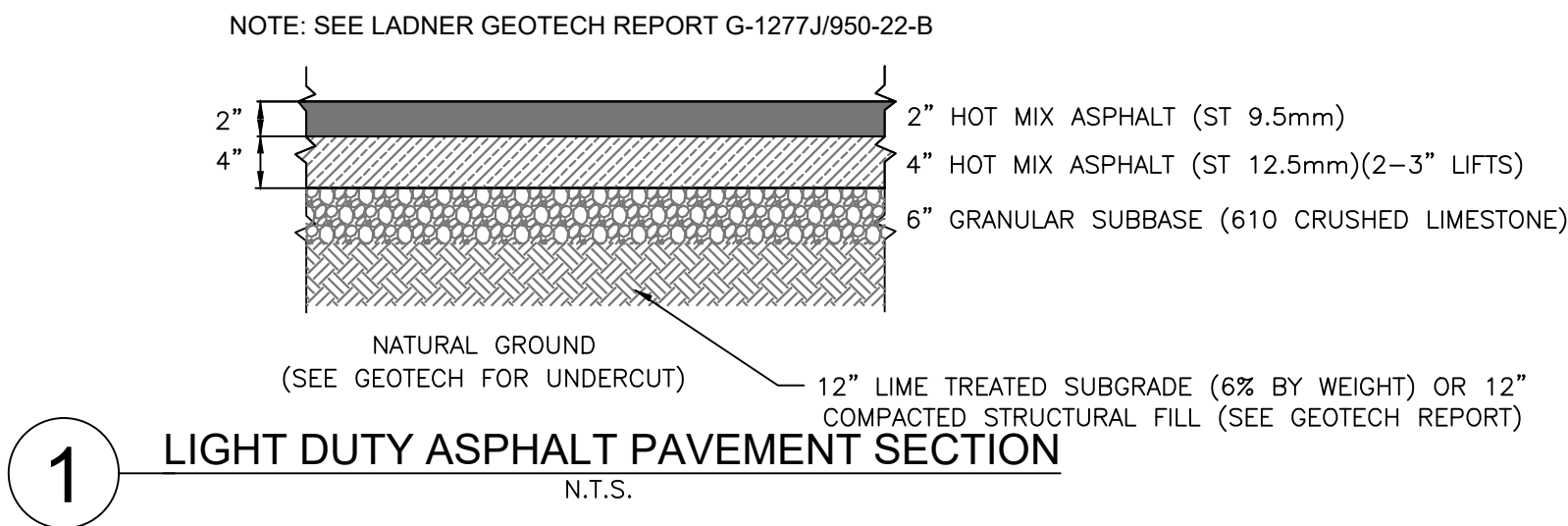
SEE SHEET 601



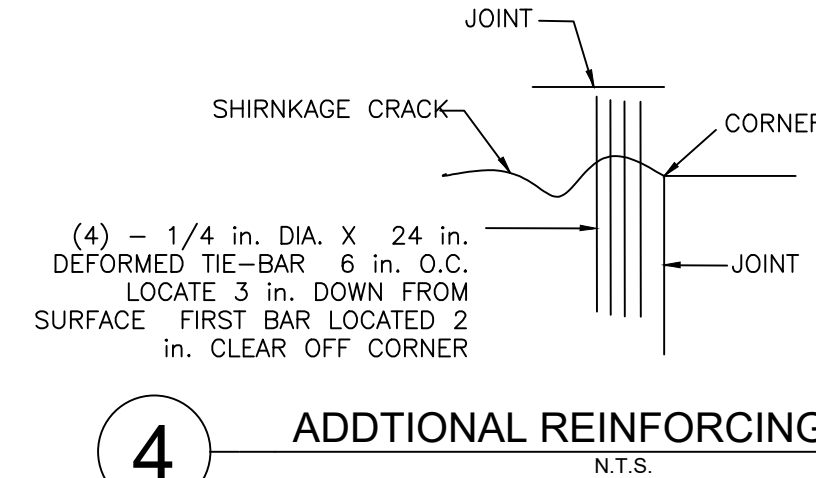
- NOTES:**
1. CONTRACTOR required to CCTV and check slopes of all new proposed sewer lines installed. See specifications for requirements.
 2. CONTRACTOR to not disrupt school or extracurricular activities with new water/sewer installations, connections, and/or switch overs.
 3. CONTRACTOR responsible for any bypass pumping required to complete the necessary sewer work.
 4. Hose bib general locations were determined by ARCHITECT, and OWNER will choose final locations before installation.

PROFILE SCALES:
1" = 40' HORIZONTAL
1" = 4' VERTICAL

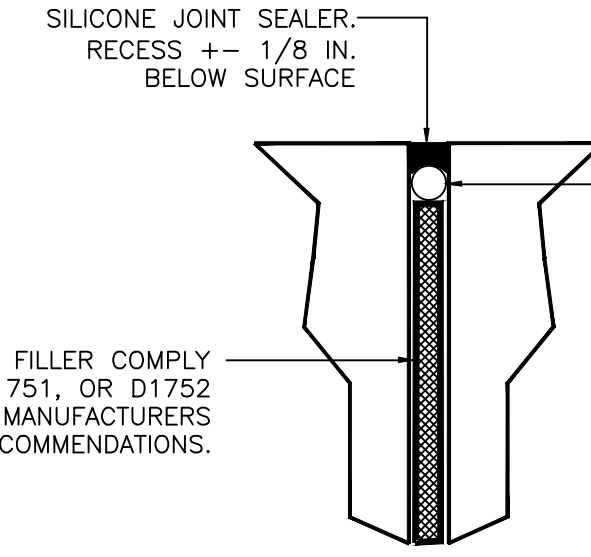
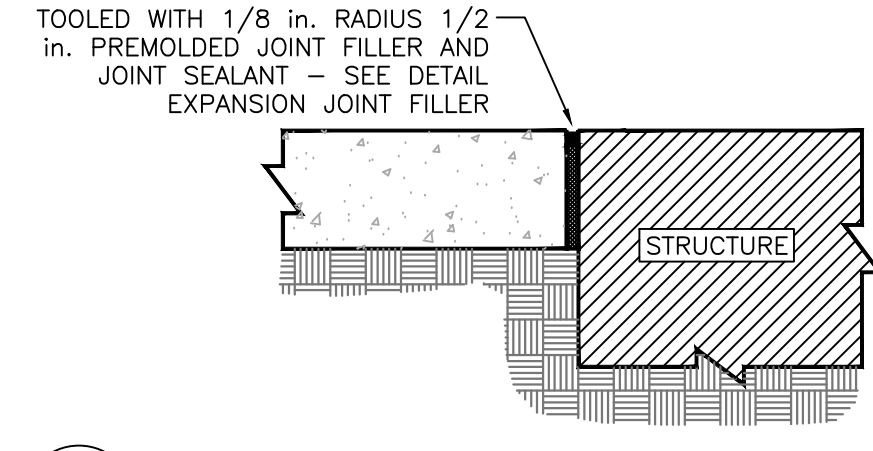




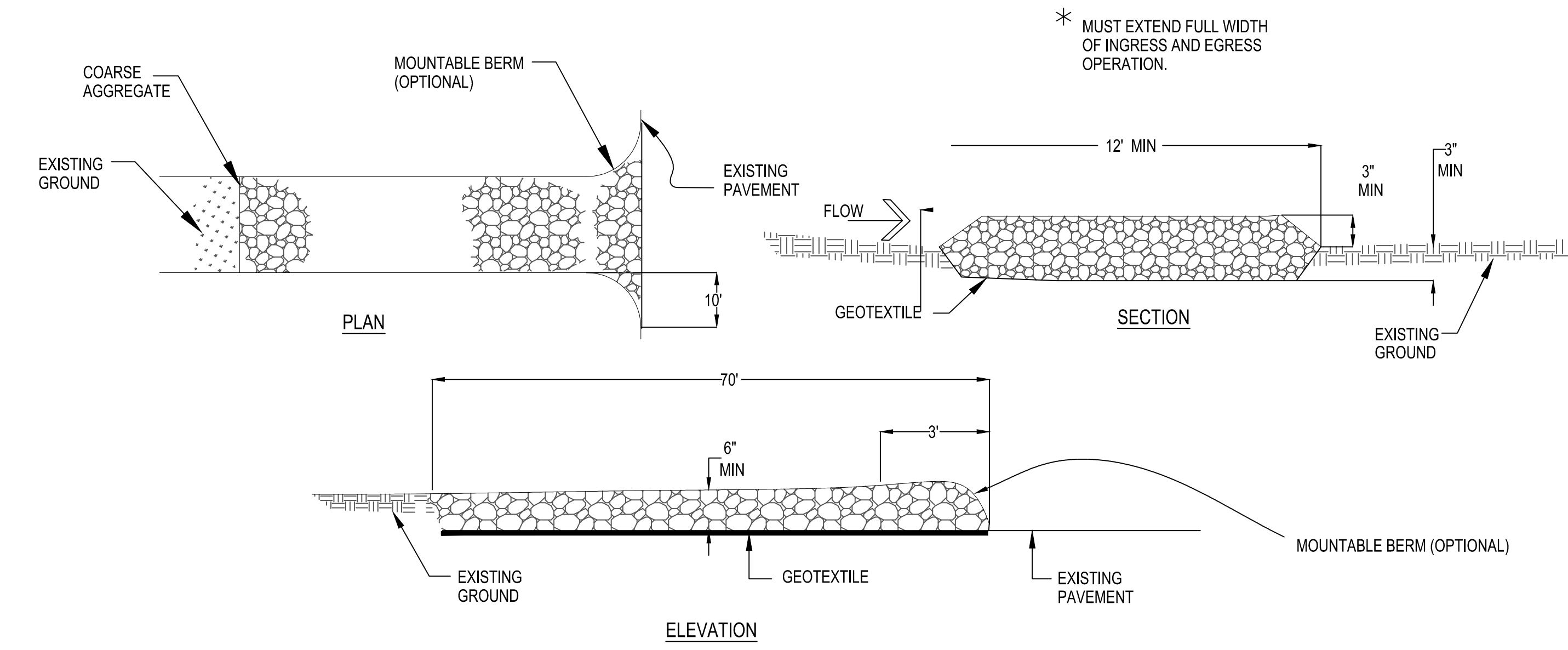
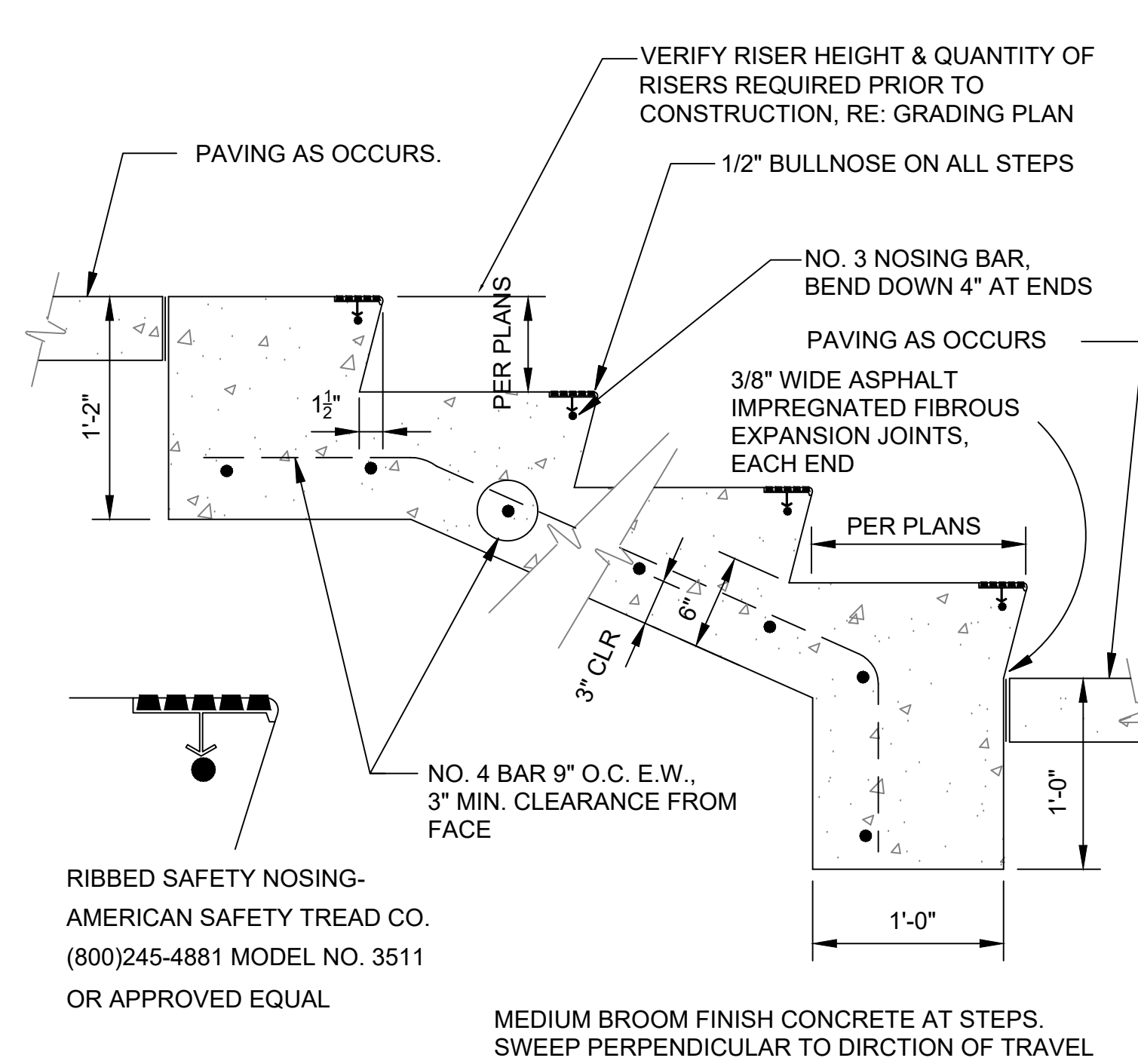
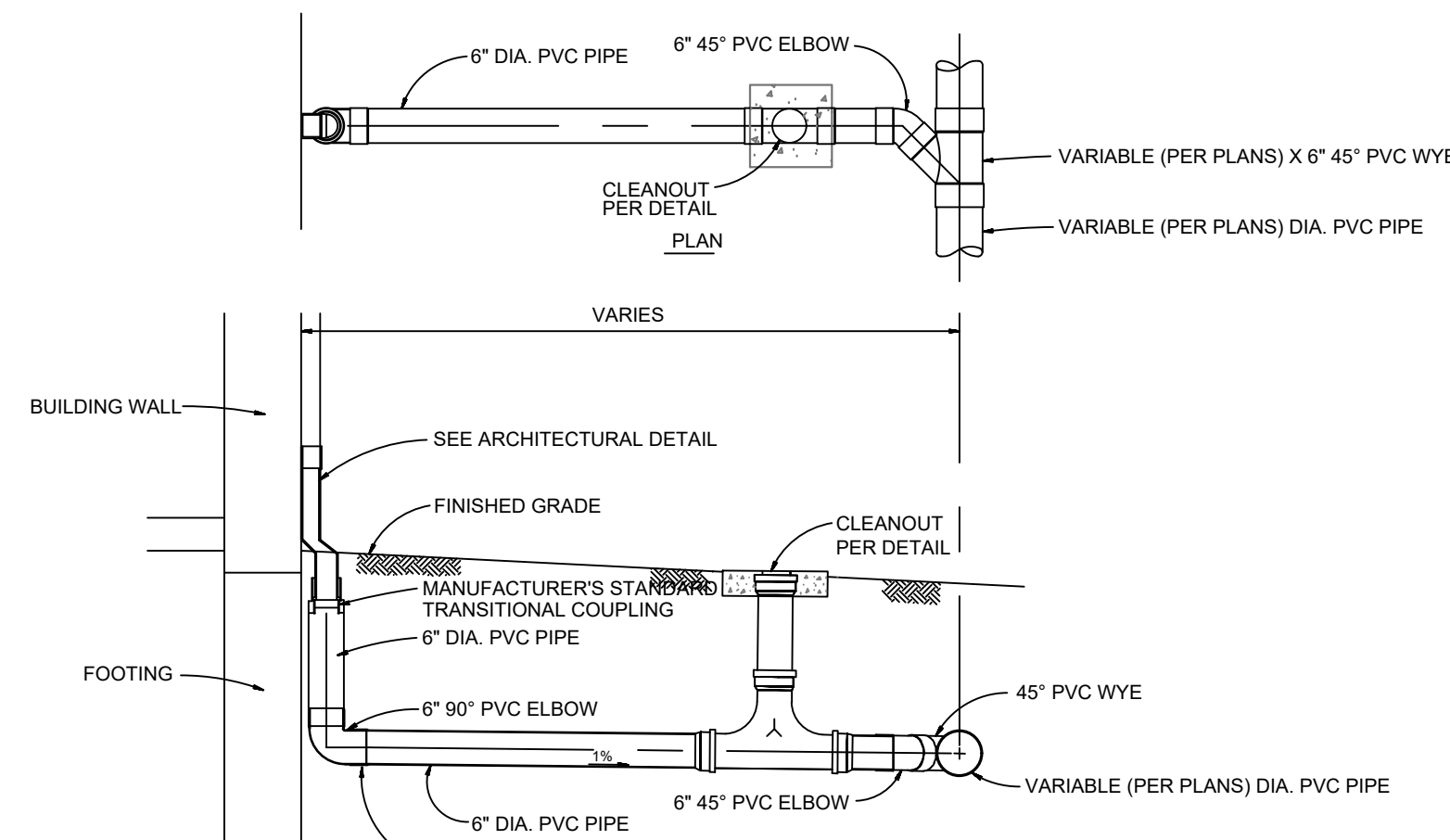
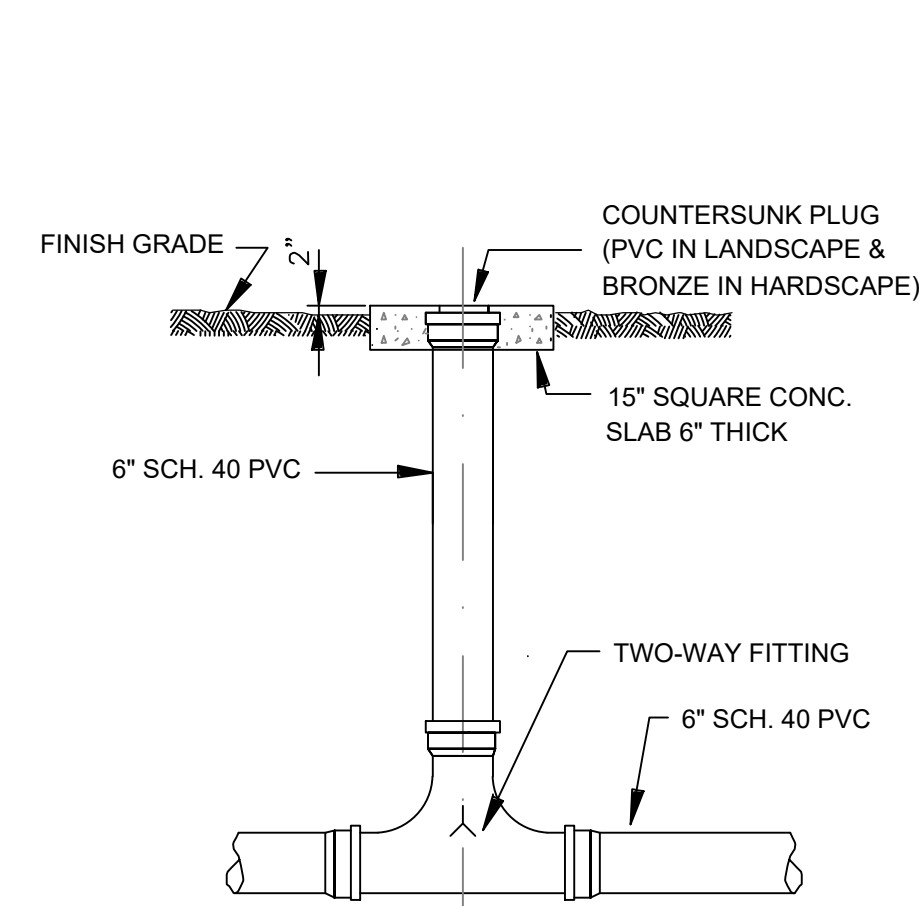
NOTE: TYPICAL JOINT CONNECTION TO SKEWED OR CURVED EDGE.



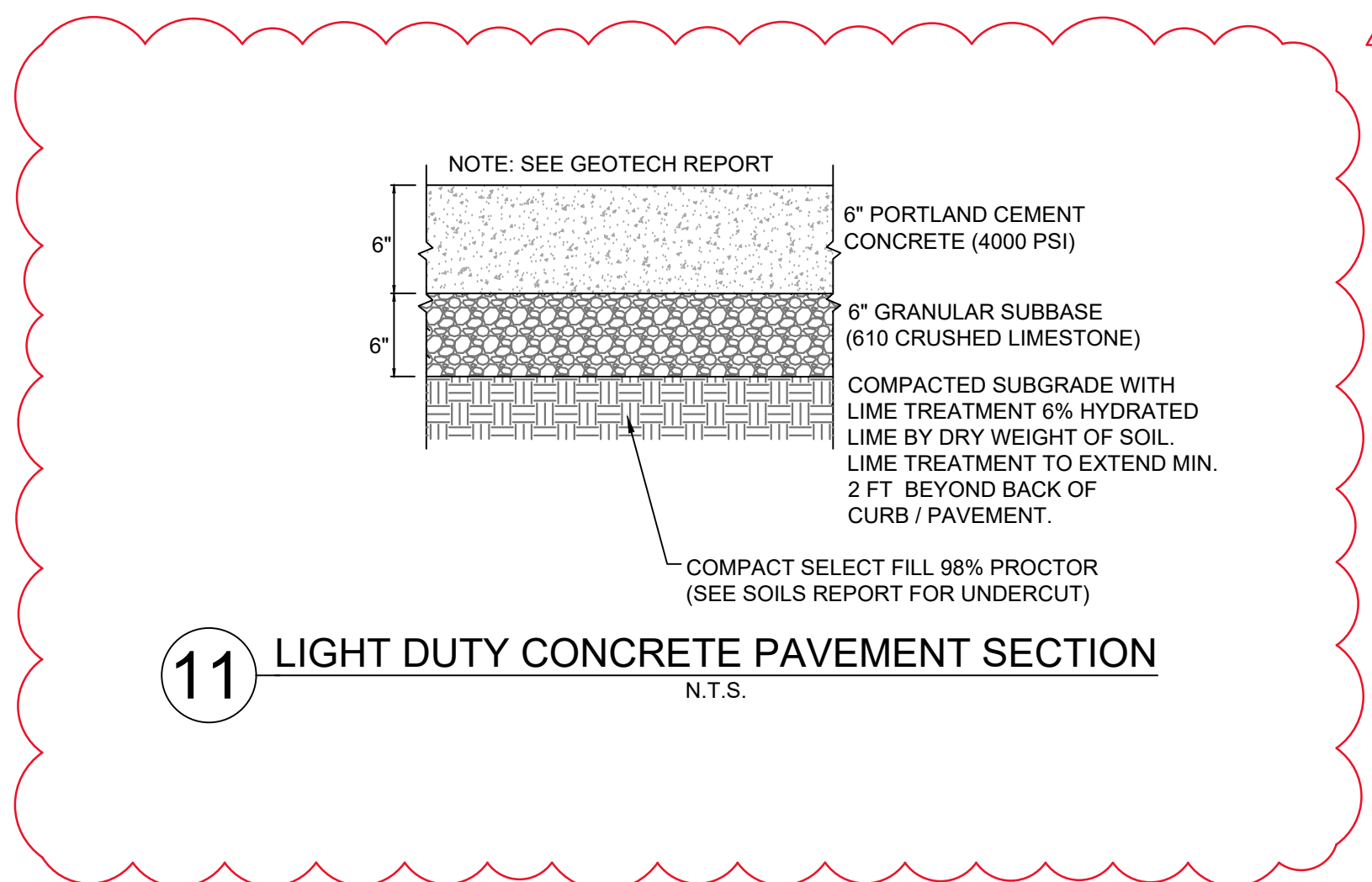
NOTE: ADDITIONAL REINFORCING STEEL TO BE USED WHERE JOINTS DO NOT LINE UP WITH CORNERS.



NOTE: TYPICAL JOINT CONNECTION TO SKEWED OR CURVED EDGE.



* MUST EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION.



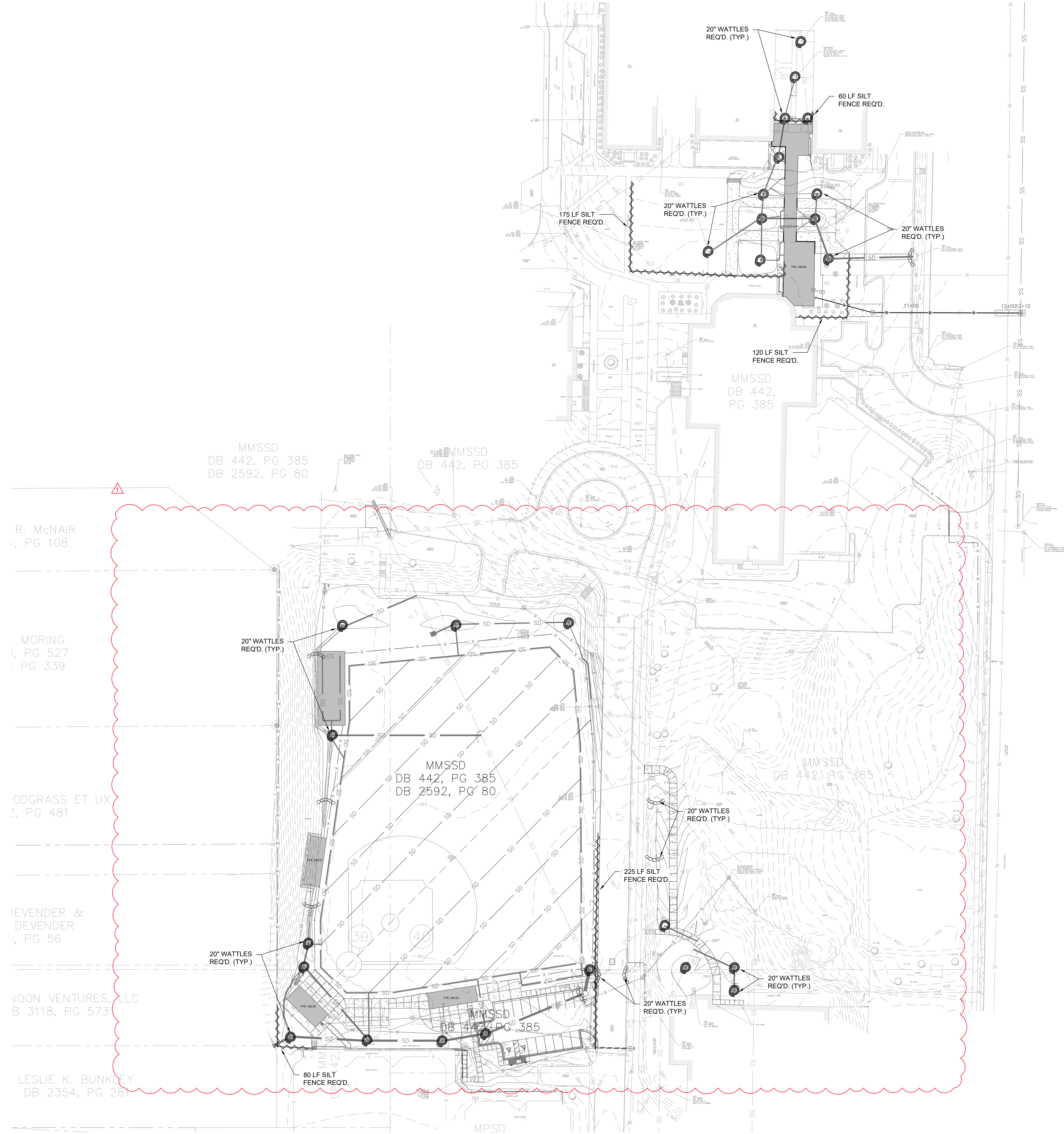
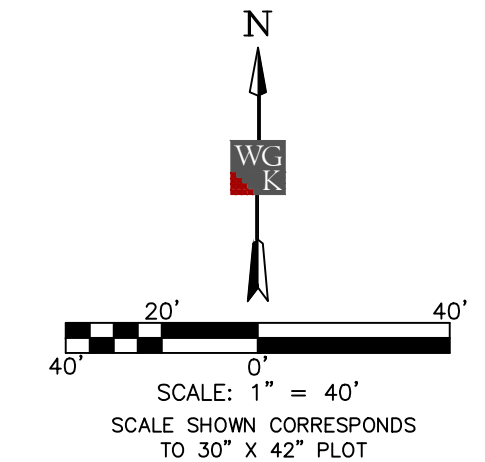
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One Jackson Place 250
188 East Capitol Street
Jackson, MS 39201
p 601.352.5411

201 Park Court Suite B
Ridgeland, MS 39157
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161 Lameuse St. Suite 201
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MHS Additions, Renovations, & Ballfield Rebid
2320 32nd St, Meridian, MS 39305

Construction Documents

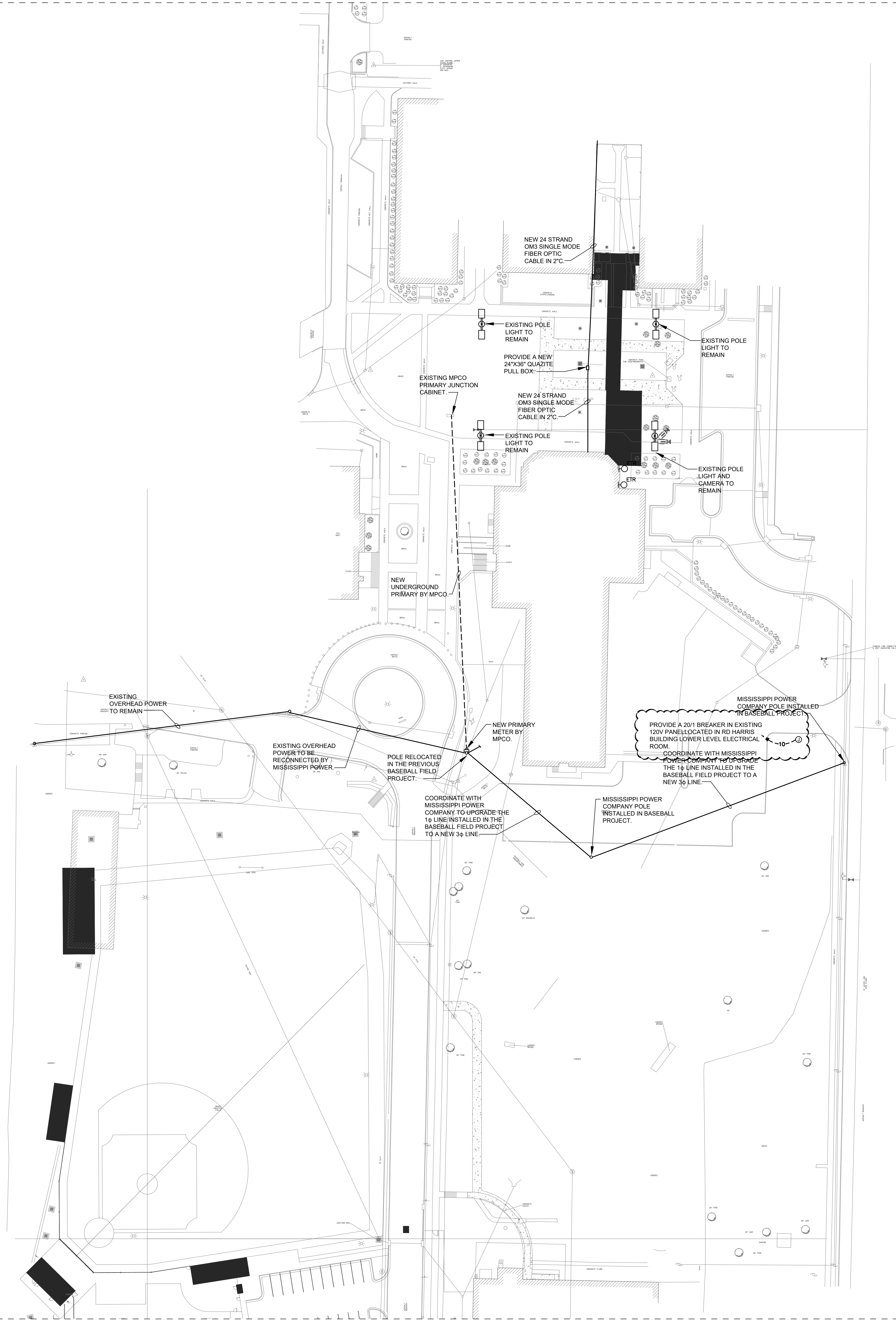
Project No	22034.02
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204 West Leake Street
Clinton, Mississippi 39056
p. 601.925.4444
132 West Cherokee Street
Brookhaven, Mississippi 39601
p. 601.833.9598

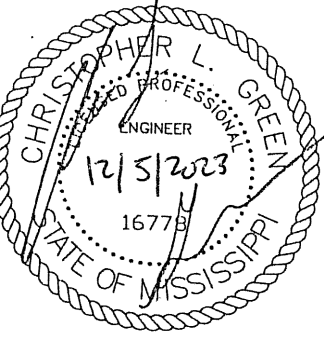
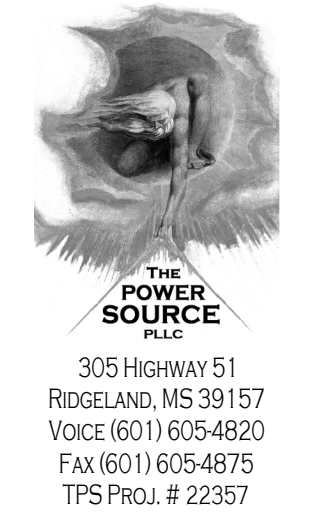
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Erosion Control Plan

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1 ELECTRICAL RENOVATION SITE PLAN
 E-004a Scale: 1" = 40'-0"



DALE BAILEY
 AN ASSOCIATION

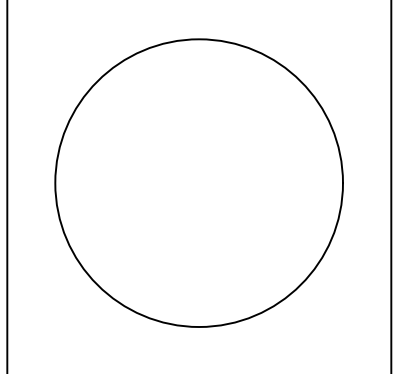
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MHS Additions, Renovations, & Ballfield Rebid
 2320 32nd St, Meridian, MS 39305

Construction Documents

Project No	22034.02
Date	12/05/2023
Revisions	
Drawn	HBS
Checked	CLG
ADD.#1	01/05/2024

Meridian High Addition
E-004a
 ELECTRICAL RENOVATION
 SITE PLAN

DOCUMENT 312500 – EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1-01 DESCRIPTION

- A. This item shall consist of preparing the ground surface, furnishing and applying fertilizer and lime, furnishing and sowing grass seeds, furnishing and placing grass sod on prepared areas, finishing, compacting, watering, establishing and repairing same, installing straw hay bales, silt fence and diversion berms to minimize erosion of soil in accordance with these SPECIFICATIONS.
- B. This item shall include the provision of all labor, materials, equipment, supplies and incidentals necessary to accomplish the erosion control activities specified herein.

1-02 SCOPE OF ACTIVITIES

- A. Seeding: This work shall consist of furnishing the specified kind and variety of seeds and seed treatment materials, treating the seeds and planting the seeds in a prepared and approved seedbed; covering the seeds and compacting the seedbed; and providing plant establishment, all in accordance with these SPECIFICATIONS and in the locations shown on the PLANS or as indicated in the SPECIFICATIONS.
- B. Fertilizing: This work shall consist of furnishing, transporting, spreading, and unless otherwise specified in the Contract, incorporating fertilizers of the type and in the amount designated into the prepared ground in the locations shown on the PLANS or as indicated in the SPECIFICATIONS.
- C. Sodding: This work shall consist of supplying, transporting and placing live, viable sod of the types required in the locations specified on the PLANS or as indicated in the SPECIFICATIONS.
- D. Mulching: This work shall consist of furnishing, transporting and placing vegetative mulch on slopes shoulders, medians and other areas shown on the PLANS, or as indicated in the SPECIFICATIONS.
- E. Agricultural Lime: This work shall consist of furnishing, transporting, and placing lime on slopes, shoulders, ROW, and other areas as shown on the PLANS or as indicated in the SPECIFICATIONS.
- F. Silt Fence: This work shall consist of furnishing and installing silt fence in the locations shown on the PLANS and/or SWPPP, or as directed by the ENGINEER, and as needed in additional locations to control runoff and erosion.
- G. Straw Bale Barriers: This work shall consist of furnishing and installing straw bale barriers in the locations shown on the PLANS and/or SWPPP, or as directed by the ENGINEER, and as needed in additional locations to control runoff and erosion.
- H. Diversion Berms: This work shall consist of furnishing and installing diversion berms in the locations shown on the PLANS and/or SWPPP, or as directed by the ENGINEER, and as needed in additional locations to control runoff and erosion.

PART 2 - MATERIALS

2-01 SEED

- A. All seeds shall comply with all federal standards, shall meet the requirements of the Seed Laws of the State of Mississippi and shall be tested in accordance with the U.S.D.A. guidelines. The seed shall be delivered in bags or containers bearing seed certification tags and other identification showing percent germination and purity of the seed.
- B. Bermuda seed shall be common, hulled or unhulled, fresh, clean, new crop seed testing at least 95% for purity and 85% for germination.
- C. Crimson Clover seed shall be fresh, clean, new crop seed testing at least 98% for purity and 85% for germination.
- D. Common Rye seed shall be fresh, clean, new crop seed testing 95% for purity and 85% for germination.
- E. Fescue seed shall be fresh, clean, new crop seed testing 95% for purity and 85% for germination.

2-02 FERTILIZER

- A. All fertilizer shall be an approved commercial grade containing nitrogen, phosphorus and potash and shall be delivered accompanied by identification of the brand and grade being furnished. Fertilizer may be furnished in bulk, in bags or other approved containers at the discretion of the CONTRACTOR.
- B. Unless otherwise specified, fertilizer shall be dry granular grade 13-13-13 (triple thirteen) and 10-20-10 at the rates specified herein.

2-03 SOD

- A. All sod shall be produced by a commercial sod farm in close proximity to the contract work. Sod shall be live, fresh, growing grass mat at least two (2) inches in thickness with soil adhering firmly to the roots. The sod shall be reasonably free from weeds and other grasses. Sod may be delivered in standard blocks neatly stacked on pallets or in rolls.
- B. Sod, where called for, shall be of the variety growing in the location to be sodded. Where little or no identifiable native turf or lawn grass can be found, sod shall be common Bermuda.
- C. Sod shall be delivered to site within three days of cutting, and laid within 24 hours of delivery.

2-04 MULCH

- A. Mulch shall be Class I vegetative material consisting of approved baled straw from cereal grain or common native hay crops in accordance with Section 715 of the MDOT Standard SPECIFICATIONS, latest edition. The mulch shall have been cured properly prior to baling and shall be reasonably free of foreign grasses and weeds.
- B. Where specified on the PLANS or called for in the Proposal, mulch shall be bituminous coated with Grade SS-1 emulsified asphalt in accordance with Section 702 of the MDOT Standard SPECIFICATIONS, latest edition.

2-05 LIME

- A. Lime shall be dry, native, crushed agricultural rock limestone reasonably free from rock, gravel, dirt,

clay, roots and other objectionable material. Lime may be furnished in bulk, in bags or other approved containers at the discretion of the CONTRACTOR.

2-06 EQUIPMENT

- A. The CONTRACTOR shall provide tractors, trucks, discs, harrows, drags, drills, sprayers, blowers and other incidental equipment as needed to properly place and install the seed, sod, fertilizer, water, lime, and to compact, grade, mulch and establish a living turf in the areas shown on the PLANS in accordance with these SPECIFICATIONS.
- B. The CONTRACTOR shall provide and utilize equipment suitable for the work, and shall provide laborers experienced in erosion control activities.

2-07 SILT FENCE

- A. Silt Fence shall consist of a woven synthetic filter fabric with at least 80% filtering efficiency supported by steel T-posts, meeting the requirements of the MDEQ Planning and Design manual, current edition. Wire cloth reinforcement shall be used where appropriate.

2-08 WATER

- A. Fresh, clean potable water shall be used by the CONTRACTOR.
- B. Water shall be provided by the CONTRACTOR from sources available to him, or supply can be purchased from the local utility through a metered connection at a designated location.

2-09 DIVERSION BERM

- A. Diversion berms shall be constructed per details contained in the Contract Drawings where directed by the ENGINEER.

PART 3 - EXECUTION

3-01 GENERAL

- A. Ground Preparation, Fertilizing and Liming
 - 1. The area to be planted shall be disked and prepared to a depth of at least four (4) inches. The specified amount of fertilizer and lime shall be applied uniformly over the surface and harrowed lightly so that it will be incorporated into the upper two (2) inches of the soil. If the soil is not moist, it shall be watered until it is in workable condition.
 - 2. The completed area to be planted shall present a smooth, uniform surface true to line and cross section. Planting shall follow immediately.
- B. Protection:
 - 1. The CONTRACTOR shall be responsible for maintaining and protecting seeded, sodded, mulched areas until final acceptance of the project. He shall take every precaution to prevent unnecessary foot and vehicular traffic and shall repair and restore immediately, without extra compensation.

C. Maintenance

1. The CONTRACTOR shall maintain the grassed areas until final acceptance of the work. Maintenance shall consist of re-fertilizing, watering, preserving, protecting, replacing, and such work as may be necessary to keep the sod in a satisfactory condition.
2. The CONTRACTOR shall be responsible for satisfactory growth of the grass, and until final acceptance he will be required to water and mow the grass at such intervals as will insure a living and growing sod at the time of acceptance. A "living and growing sod" shall be interpreted to include sod that is seasonably dormant during the cold or dry season with roots that have taken hold in the topsoil and capable of growing off after the dormant period.

D. Acceptance

1. A satisfactory stand of grass shall be defined as a cover of living grass (limited to the specified species) in which no gaps larger than 2" occur (in sodded areas) or 6" in seeded areas.

3-02 SEEDING

A. Seeding shall be accomplished with approved seed at the rates recommended for the mixtures and between the dates designated herein below.

1. RURAL Mixture No. 1 (March 01 to August 31)
 - a. Common Bermudagrass @ 15 lbs/acre
 - b. Bahiagrass @ 40 lbs/acre
2. RURAL Mixture No. 2 (September 01 to November 15)
 - a. Common Bermudagrass @ 15 lbs/acre
 - b. Bahiagrass @ 40 lbs/acre
 - c. Crimson Clover @ 20 lbs/acre
3. RURAL Mixture No. 3 (November 16 to February 28)
 - a. Bahiagrass (Pensacola, Wilmington or Argentine) @ 40 lbs/acre
 - b. Rye Grain (Marshall) @ 20 lbs/acre
 - c. Crimson Clover (Tibbee, Dixie, Autauga, Chief) @ 10 lbs/acre
 - d. Bermuda (unhulled) (Common) @ 25 lbs/acre
4. RESIDENTIAL/COMMERCIAL Mixture No. 1 (March 01 to August 31)
 - a. Common Bermudagrass @ 15 lbs/acre
5. RESIDENTIAL/COMMERCIAL Mixture No. 2 (September 01 to November 15)
 - a. Common Bermudagrass @ 15 lbs/acre
 - b. Rye Grass @ 20 lbs/acre
6. RESIDENTIAL/COMMERCIAL Mixture No. 3 (November 16 to February 28)

- a. Common Bermudagrass (unhulled) @ 20 lbs/acre
 - b. Rye grass @ 20 lbs/acre
- B. No seeding shall be done during windy weather or when the ground is frozen, wet or otherwise in a non-tillable condition. Full advantage shall be taken of time and weather conditions best suited for seeding.
- C. The seeds shall be sown uniformly in the specified amounts, preferably by approved mechanical seeders, and immediately rolled with a cultipacker or other satisfactory equipment; or covered lightly with soil by the use of garden rakes, or other approved methods.

3-03 FERTILIZING

- A. Fertilizer shall be spread uniformly at the rate specified preferably by mechanical methods. Lumps shall be broken as needed to facilitate spreading.
- B. Application: 10-20-10 : 800 lbs/acre (18#/1000 square feet)
13-13-13 : 600 lbs/acre (14#/1000 square feet)

3-04 SODDING

- A. General: Solid sodding shall only be performed when weather and soil conditions are deemed to be suitable for proper placement and growth.
- B. The solid sod shall be placed on the prepared surface with the edges in close contact. All cracks between blocks or strips of solid sod shall be closed with small pieces of fresh sod and all cracks too small for sod shall be filled by a light dressing of topsoil. The entire sodded area shall then be compacted and watered as necessary in accordance with these SPECIFICATIONS. Rollers, hand tamps or other approved equipment may be used for compacting.
- C. Surfaces of solid sodding which may slide due to the height and slope of the surface, or nature of the soil, shall be "pegged" with wooden pegs driven through the sod blocks into firm earth, sufficiently close to hold the sod in place.

3-05 MULCHING

- A. Equipment: Mulching equipment shall be capable of maintaining a constant air stream which will blow or eject controlled quantities of mulch in a uniform pattern. If asphalt is used, a jet or spray nozzle for applying uniform, controlled amounts of asphalt to the vegetative material as it is ejected shall be located at or near the discharge spout.

Mulch stabilizers shall consist of dull blades or disks without camber and approximately 20 inches in diameter. The disks shall be notched, shall be spaced at approximately 8 inch intervals, and shall be equipped with scrapers. The stabilizer shall weigh approximately 1000-1200 pounds, shall have a working width of no more than eight feet, and shall be equipped with a ballast compartment, so that when directed weight can be increased.

- B. Mulching shall be placed uniformly on designated areas within twenty-four (24) hours following the planting of spot sod, sod, or seeds, as applicable, unless weather conditions are such that mulching cannot be performed. Placement shall begin on the windward side of areas and from top of slopes.

In its final position the mulch shall be loose enough to allow air to circulate but compact enough to partially shade the ground and reduce erosion. The baled material shall be loosened and broken thoroughly before it is fed into the machine to avoid placement of unbroken clumps.

C. Application Rate: Two (2) tons per acre.

3-06 LIMING

A. General: Agricultural lime shall be spread uniformly at the rate specified preferably by mechanical methods. Lumps shall be broken as needed to facilitate application.

B. Application Rate: Two tons per acre (92 lbs/1000 sf) unless otherwise specified herein.

END OF DOCUMENT 312500

DOCUMENT 323212 – SEGMENTAL BLOCK RETAINING WALL

PART 1 - GENERAL

1-01 DESCRIPTION

- A. Work shall consist of furnishing and construction of a KEYSTONE Retaining Wall System or equal in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.
- B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.
- C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

1-02 RELATED SECTIONS

- A. Section 02200 - Earthwork

1-03 REFERENCE DOCUMENTS

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C-1372 Specification for Segmental Retaining Wall Units
 - 2. ASTM D-422 Particle Size Analysis
 - 3. ASTM D-698 Laboratory Compaction Characteristics of Soil-Standard Effort
 - 4. ASTM D-4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils
 - 5. ASTM D-4595 Tensile Properties of Geotextiles - Wide Width Strip
 - 6. ASTM D-5262 Unconfined Tension Creep Behavior of Geosynthetics
 - 7. ASTM D-3034 Polyvinyl Chloride Pipe (PVC)
 - 8. ASTM D-1248 Corrugated Plastic Pipe
- B. Geosynthetic Research Institute (GRI)
 - 1. GRI-GG4 Determination of Long Tern Design Strength of Geogrids
 - 2. GRI-GG5 Determination of Geogrid (soil) Pullout
- C. National Concrete Masonry Association (NCMA)
 - 1. NCMA SRWU-1 Test Method for Determining Connection Strength of SRW
 - 2. NCMA SRWU-2 Test Method for Determining Shear Strength of SRW

1-04 SUBMITTALS/CERTIFICATION

- A. CONTRACTOR shall submit a Manufacturer's certification, prior to start of work, that the retaining wall system components meet the requirements of this specification and the structure design.
- B. CONTRACTOR shall submit construction drawings and design calculations for the retaining wall system prepared and stamped by a Professional Engineer registered in the state of the project. The engineering designs, techniques, and material evaluations shall be in accordance with the KEYSTONE Design Manual, NCMA Design Guidelines For Segmental Retaining Walls, or the AASHTO Standard Specifications for Highway Bridges, Section 5.8 (whichever is applicable to designer).

- C. CONTRACTOR shall submit a test report documenting strength of specific modular concrete unit and geogrid reinforcement connection. The maximum design tensile load of the geogrid shall be equal to the laboratory tested ultimate strength of geogrid / facing unit connection at a maximum normal force limited by the "Hinge Height" of the structure divided by a safety factor of 1.5. The connection strength evaluation shall be performed in accordance with NCMA test method SRWU-1.

1-05 QUALITY ASSURANCE

- A. CONTRACTOR shall submit certification, prior to start of work, that the retaining wall system (modular concrete units and specific geogrid):
1. has been successfully utilized on a minimum of five (5) similar projects, i.e., height, soil fill types, erection tolerances, etc.; and
 2. has been successfully installed on a minimum of 1 million (1,000,000) square feet of retaining walls.
- B. CONTRACTOR shall submit a list of five (5) previously constructed projects of similar size and magnitude by the wall installer where the specific retaining wall system has been constructed successfully. Contact names and telephone numbers shall be listed for each project.
- C. CONTRACTOR shall provide evidence that the design engineer has a minimum of five years of documented experience in the design for reinforced soil structures. The design engineer shall provide proof of current professional liability insurance with an aggregate coverage limit of not less than \$2,000,000.
- D. OWNER shall provide soil testing and quality assurance inspection during earthwork and wall construction operations. OWNER's quality assurance program does not relieve the CONTRACTOR of responsibility for wall performance.

1-06 DELIVERY, STORAGE AND HANDLING

- A. CONTRACTOR shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.
- B. CONTRACTOR shall protect all materials from damage due to jobsite conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

PART 2 - PRODUCTS

2-01 DEFINITIONS

- A. Modular Unit - a concrete retaining wall element machine made from portland cement, water, and aggregates.
- B. Structural Geogrid - a structural element formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth and function primarily as reinforcement.
- C. Unit Drainage Fill - drainage aggregate which is placed within and immediately behind the modular concrete units.

- D. Reinforced Backfill - compacted soil which is placed within the reinforced soil volume as outlined on the plans.

2-02 MODULAR CONCRETE RETAINING WALL UNITS

- A. Modular concrete units shall conform to the following architectural requirements:
1. face color - standard manufacturers' color as selected by Architect from manufacturers standard color selections.
 2. face finish - sculptured rock face in angular tri-planer configuration. Other face finishes will not be allowed without written approval of Architect.
 3. bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.
 4. exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.
- B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.
- C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:
- compressive strength = 3000 psi minimum;
- absorption = 8 % maximum (6% in northern states) for standard weight aggregates;
- dimensional tolerances = $\pm 1/8"$ from nominal unit dimensions not including rough split face, $\pm 1/16"$ unit height - top and bottom planes; unit size - 8" (H) x 18" (W) x 12" (D) minimum;
- unit weight - 75 lbs/unit minimum for standard weight aggregates;
- inter-unit shear strength - 600 plf minimum at 2 psi normal pressure;
- geogrid/unit peak connection strength - 600 plf minimum at 2 psi normal force.
- D. Modular concrete units shall conform to the following constructability requirements:
- vertical setback = $1/8" \pm$ per course (near vertical) or 1"+ per course per the design;
- alignment and grid positioning mechanism - fiberglass pins, two per unit minimum;
- maximum horizontal gap between erected units shall be - 1/2 inch.

2-04 SHEAR CONNECTORS

- A. Shear connectors shall be 1/2 inch diameter thermoset isophthalic polyester resin-pultruded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F.
- B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

2-04 BASE LEVELING PAD MATERIAL

- A. Material shall consist of a compacted crushed stone base or non-reinforced concrete as shown on the construction drawings.

2-05 UNIT DRAINAGE FILL

- A. Unit drainage fill shall consist of clean 1" minus crushed stone or crushed gravel meeting the following gradation tested in accordance with ASTM D-422:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 inch	100
3/4 inch	75-100
No. 4	0 - 10
No. 50	0 - 5

- B. One cubic foot, minimum, of drainage fill shall be used for each square foot of wall face. Drainage fill shall be placed within cores of, between, and behind units to meet this requirement.

2-06 REINFORCED BACKFILL

- A. Reinforced backfill shall be free of debris and meet the following gradation tested in accordance with ASTM D-422:

<u>Sieve Size</u>	<u>Percent Passing</u>
2 inch	100-75
3/4 inch	100-75
No. 40	0-60
No. 200	0-35

Plasticity Index (PI) <15 and Liquid Limit <40 per ASTM D-4318.

- B. The maximum aggregate size shall be limited to 3/4 inch unless field tests have been performed to evaluate potential strength reductions to the geogrid design due to damage during construction.
- C. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the backfill or in the reinforced soil mass.
- D. CONTRACTOR shall submit reinforced fill sample and laboratory test results to the Architect/ENGINEER for approval prior to the use of any proposed reinforced fill material.

2-07 GEOGRID SOIL REINFORCEMENT

- A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn or high density polyethylene. Polyester geogrid shall be knitted from high tenacity polyester filament yarn with a molecular weight exceeding 25,000 Meg/m and a carboxyl end group values less than 30. Polyester geogrid shall be coated with an impregnated PVC coating that resists peeling, cracking, and stripping.
- B. T_a , Long Term Allowable Tensile Design Load, of the geogrid material shall be determined as follows:

$$T_a = T_{ult} / (RF_{cr} * RF_d * RF_{id} * FS)$$

T_a shall be evaluated based on a 75 year design life.

1. T_{ult}, Short Term Ultimate Tensile Strength
T_{ult} is based on the minimum average roll values (MARV)
 2. RF_{cr}, Reduction Factor for Long Term Tension Creep
RF_{cr} shall be determined from 10,000 hour creep testing performed in accordance with ASTM D5262. Reduction value = 1.60 minimum.
 3. RF_d, Reduction Factor for Durability
RF_d shall be determined from polymer specific durability testing covering the range of expected soil environments. RF_d = 1.10 minimum.
 4. RF_{id}, Reduction Factor for Installation Damage
RF_{id} shall be determined from product specific construction damage testing performed in accordance with GRI-GG4. Test results shall be provided for each product to be used with project specific or more severe soil type. RF_{id} = 1.10 minimum.
 5. FS, Overall Design Factor of Safety
FS shall be 1.5 unless otherwise noted for the maximum allowable working stress calculation.
- C. The maximum design tensile load of the geogrid shall not exceed the laboratory tested ultimate strength of the geogrid/facing unit connection as limited by the "Hinge Height" divided by a factor of safety of 1.5. The connection strength testing and computation procedures shall be in accordance with NCMA SRWU-1 Test Method for Determining Connection Strength of SRW.
- D. Soil Interaction Coefficient, C_i
C_i values shall be determined per GRI:GG5 at a maximum 0.75 inch displacement.
- E. Manufacturing Quality Control
The geogrid manufacturer shall have a manufacturing quality control program that includes QC testing by an independent laboratory.
The QC testing shall include:
Tensile Strength Testing
Melt Flow Index (HDPE)
Molecular Weight (Polyester)

PART 3 - EXECUTION

3-01 EXCAVATION

- A. CONTRACTOR shall excavate to the lines and grades shown on the construction drawings. OWNER's representative shall inspect the excavation and approve prior to placement of leveling material or fill soils. Proof roll foundation area as directed to determine if remedial work is required.
- B. Over-excavation and replacement of unsuitable foundation soils and replacement with approved compacted fill will be compensated per unit price schedule as agreed upon with the OWNER.

3-02 BASE LEVELING PAD

- A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit.
- B. Soil leveling pad materials shall be compacted to a minimum of 95 % Standard Proctor density per ASTM D-698
- C. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

3-03 MODULAR UNIT INSTALLATION

- A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.
- B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.
- C. Install shear/connecting devices per manufacturer's recommendations.
- D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.
- E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed two courses.

3-04 STRUCTURAL GEOGRID INSTALLATION

- A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.
- B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations as directed by the ENGINEER.
- C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.
- D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

3-05 REINFORCED BACKFILL PLACEMENT

- A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.
- B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.
- C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be dry of optimum, + 0%, - 3%.

- D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete unit.
- E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
- F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.
- G. At the end of each day's operation, the CONTRACTOR shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The CONTRACTOR shall not allow surface runoff from adjacent areas to enter the wall construction site.

3-06 CAP INSTALLATION

- A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

3-07 AS-BUILT CONSTRUCTION TOLERANCES

- A. Vertical alignment: ± 1.5 " over any 10' distance.
- B. Wall Batter: within 2 degrees of design batter.
- C. Horizontal alignment: ± 1.5 " over any 10' distance.
Corners, bends, curves ± 1 ft to theoretical location.
- D. Maximum horizontal gap between erected units shall be 1/2 inch.

3-08 FIELD QUALITY CONTROL

- A. The OWNER shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction. This does not relieve the CONTRACTOR from securing the necessary construction control testing during construction.
- B. Testing and inspections services shall only be performed by qualified and experienced technicians and engineers.
- C. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.

END OF DOCUMENT 323212

DOCUMENT 330507.13 – UTILITY DIRECTIONAL DRILLING

SECTION 1 – GENERAL

1.01 DESCRIPTION

- A. The intent of this specification is to provide general technical guidance to the utility Contractor for the installation of pipelines using horizontal directional drilling (HDD) techniques.
- B. The Contractor shall furnish all labor, materials, equipment, and incidentals required to successfully perform the installation of water system components, wastewater gravity and/or force main components at locations shown on the plans by using horizontal directional drilling (HDD) methods.
- C. The pipeline shall be complete with all accessories and shall have passed all required testing per the Contract Documents.
- D. The Contractor shall have made all inspections of the area(s) within the vicinity of the project and the immediate area of the work and become thoroughly familiar with the natural and manmade features encompassed about the project.

1.02 QUALITY ASSURANCE

A. Requirements

- 1. At the discretion of the Owner, it may be required that the Contractor be prequalified and approved through a prequalification process. The Contractor must furnish references able to attest to their capabilities in accordance with the prequalification process. Typically, prequalification will include provision of experience actively engaged in the installation of utility horizontal directional drilling; projects of a similar or larger size; etc.
- 2. The Contractor's field supervisor(s) shall have similar length experience either with the Contractor or similar contracting company engaged in the installation of horizontal directional drilling. While utility horizontal directional drilling is being performed, the field supervisor(s) shall be on-site at all times.

1.03 REQUIRED SUBMITTALS

The Contractor shall submit the following items to the Engineer for review and approval:

- A. Pipe material shop drawings: Pipe materials shall be High Density Polyethylene (HDPE), butt-welded and fused joints. Sizes/types required shall be shown on the plans and other sections of the contract documents.
- B. Manufacturer's Installation Manual
- C. Certificates: Submit certificates of compliance with referenced standards where requested by the Engineer.
- D. Field installation plan including at a minimum the following:
 - 1. Method of following proposed horizontal utility directional drilling alignment, including horizontal and vertical information

2. Erosion control plan
 3. Safety work plan
 4. Traffic control plan
 5. Surface settlement monitoring plan
 6. Operational factors to avoid fluid loss and spill contingency plan
 7. Sequencing and implementation schedule
 8. Site layout and size of pit(s) and work site(s)
 9. Contingency plan for possible problems
 10. Drawings necessary to document proposed plan
 11. Manufacturer and type of horizontal directional drilling equipment including all support equipment
 12. Tracking equipment to include:
 - a. Operating range
 - b. Degree of accuracy
 - c. Method of survey control
 - d. Frequency of survey control
 - e. Example of daily operations log
 13. Proposed drilling fluids
 14. Description of pilot hole
 - a. Prior to back reaming the Contractor shall submit a plotted profile of the pilot hole tracked points.
 15. Pullback hole enlargement procedures
 - a. Required reamer upsizing
 - b. Prior to pull back of pipe the Contractor shall submit a plotted profile of the reamed hole tracked points
 16. Pipe layout (pre-pull)
 17. Location and depth of all utilities
 18. Number of interruptions for pipe fusing
 19. Setbacks and drilling angles
 20. Spoil removal plan and disposal
- E. Record Drawings: During progress of the work, keep an up to date set of drawings showing field and shop drawing modifications including the drilling logs. The drawings shall show all piping on plans and in sections, with all reference dimensions and elevations required for complete record drawings of the directionally drilled pipe including the drilling logs to be included on the record drawings.

SECTION 2 – PIPE

2.01 STORAGE AND HANDLING

- A. Handle all pipe and accessories carefully with approved handling devices. Do not drop or roll pipe off trucks. Do not otherwise drop, roll or skid pipe. Materials cracked, gouged, chipped, dented or otherwise damaged will not be approved or accepted for use.
- B. Pipe and appurtenances shall be unloaded opposite to or as close to the place where they are to be laid as is practical to avoid unnecessary handling. Interiors shall be kept completely free from dirt and foreign matter.
- C. The Contractor shall be responsible for the proper support of the piping to ensure that the pipe is not over stressed or damaged in any manner.

SECTION 3 - INSTALLATION

3.01 GENERAL

A The work shall be performed by the Horizontal Directional Drill (HDD) Technique. Specific details of installation techniques are the responsibility of the utility Contractor and must fully comply with the pipe manufacturer’s installation recommendations. The Engineer will not direct “means and methods” to the Contractor to be used in installation of the directional drill pipe other than that pipe must be installed in accordance with the manufacturer specifications. In general, the work will proceed as follows:

1. All operations shall proceed in accordance with applicable safety rules, regulations, federal, state, local standards along with the Contractor’s safety plan.
2. Working conditions shall remain clean
3. Field verify location and depth of all existing utilities, including service connections, prior to initiation of the project improvements
 - a. With consultation and approval of Engineer the alignment, depth and/or grade may be modified to avoid utilities.
 - b. Check of baselines and benchmarks and report any discrepancies to Engineer. The baselines and benchmarks shall be used by the Contractor to establish and maintain all construction control.
4. The Contractor shall monitor the bore, reaming and pipe installation using a location and tracking system and provide shift and drilling logs. Frequency of the readings for the bore, reaming and pipe installation plots shall be approved by the Engineer. Typically these readings shall be made for every drill road at 3’ – 5’ intervals.
5. Pipe pulling shall immediately follow the pilot hole and reaming. Pipe placement/pulling in a collapsed/collapsing bore hole will not be permitted.
6. A 12-hour cooling relaxing period following installation is required prior to connection of and service lines or backfilling of the pit(s).
7. HDPE pipe shall protrude a minimum 6” into existing/new manholes. Upon removing the additional length within the manhole the pipe shall be restrained with flexible rubber connector and electrofusion flex restraints.
8. Make horizontal or vertical grade corrections to maintain allowable tolerances. For gravity sewer, a bore that result in a “belly” and/or a reverse grade is not acceptable and be replaced at no additional cost to the Owner. Replacement shall include the removal and replace of the non-accepted length of pipe by open-cut or a paralleled, drilled alignment as approved by the Engineer.
9. Tracer wire shall be required and the Contractor shall provide the manufacturers recommendation for the size and attachments for the tracing materials. Specification 330597.20 provides additional information/requirements for tracer wire/board installation.

3.02 BORE HOLE DIAMETER

A The Contractor shall minimize potential damage of soil displacement and/or settlement by limiting the ratio of the bore hole to the size of the installed pipe. If no back reaming is required the size of the pilot hole or back reamer bit shall be limited to the dimensions shown in the table

Maximum Pilot or Back-Reamer Bit Nominal Inside Pipe Diameter (In)	Diameter – Rotated 360 degrees Bit Diameter (In)
2”	4”
3”	6”
4”	8”
6”	10”
8”	12”

10"	14"
12" and greater	Product OD plus 6"

3.03 DRILLING FLUIDS

- A. A minimum pH of 6.0 is required for the drilling fluid. The drilling fluid shall be comprised of bentonite clay, lubricants, polymers, viscosifiers and potable water. The mix design shall be based on the soil conditions and manufacturers requirements.
- B. All drilling fluids, spoils and cuttings shall be removed from the project site and properly disposed. Disposal shall follow all environmental regulations and shall be removed and disposed of at no additional cost to the Owner.
- C. In the event of a drilling fluid fracture or losses occurring during the operations the Contractor shall cease operations, notify the Engineer and all appropriate regulatory agencies. Cleanup shall begin immediately with the Contractor preventing drilling fluid, spoils and/or cuttings from entering streets, streams, adjacent properties, storm sewers, etc. All costs resulting in clean up due to drilling fluid fracture shall be provided at no additional cost to the Owner.

3.04 TOLERANCES

A. Vertical Tolerances

- 1. Minimum slope for gravity sewer shall be as shown below:

Pipe Diameter (In)	Slope (Percentage)
4	0.84
6	0.49
8	0.34
10	0.25
12	0.19
18	0.11
21	0.092
24	0.077

- 2. For gravity sewer, grade shown on the plan shall be followed, however at no time can the downward slope of the gravity main be less than that shown in the table for the pipe size installed.

B. Horizontal Tolerances

- 1. Gravity sewer pipe deviations shall be a maximum of $\pm 12"$ in 100' but no more than 24" in 500'. Horizontal offsets from the planned alignment shall be corrected at the manholes.
- 2. Sewer force main pipe deviations shall be a maximum of 24" from the alignment shown on the plan.
- 3. Water main pipe deviations shall be a maximum of 24" from the alignment shown on the plan.

4. Regardless of the utility being installed the outside edge of the pipe should not encroach within 24" of the edge of the right-of-way or easement.
5. Any pipe installed outside of tolerances shall be abandoned after being fully grouted or removed and all voids filled at no additional cost to the Owner.

3.05 ACCEPTANCE

- A. Testing and final inspection shall be performed based on the required testing and final inspection for the utility installed. Testing requirements for each can be found in the respective standard specification for each.
- B. For gravity sewer a CCTV inspection of the completed pipe line shall be performed.
- C. In the area(s) of work, all sites/surfaces shall be restored to their preconstruction condition, unless noted otherwise.

END OF DOCUMENT 330507.13

DOCUMENT 333113.01 – CURED-IN-PLACE PIPE (CIPP)

PART 1 - GENERAL

1-01 SUMMARY

- A. Section includes the reconstruction of existing sewer lines by forming a new pipe within an existing deteriorated pipe, which has generally maintained its original shape. The process is defined as the reconstruction of sewer lines by installation of a thermosetting resin impregnated flexible felt fiber tube, coated on one side with polyurethane, which is installed into the existing sewer line utilizing a water column.
- B. Curing is accomplished by circulating hot water throughout the length of the inverted tube to cure the thermosetting resin into a hard impermeable pipe with the polyurethane coating on the inside surface of the new pipe.
- C. The pipe shall extend the full length of the original pipe and shall provide a structurally sound, joint-less, close fitting, and corrosion resistant cured-in-place pipe. The cured-in-place-pipe (CIPP) shall provide flow capacity equal to or greater than 100% of the original pipe's flow capacity when new.
- D. Related Sections: Refer to the following sections for related work, where applicable.
 - 1. Section 330130.65, "Sewer Flow Control."
 - 2. Section 330130.66, "Point Repairs."
 - 3. Section 330130.23, "Mainline Pipe Bursting."

1-02 SUBMITTALS

- A. Shop drawings, catalog data, and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe and fittings. Include manufacturer's recommendation for handling, storage, and repair of pipe and fittings damaged.
- B. Detail drawings and written description of the entire construction procedure to install pipe, bypass sewage flow and reconnection of sewer service connections.
- C. Certification of workmen training for installing pipe.
- D. Two (2) copies of the CCTV videos and NASSCO PACP coded defect report shall be submitted to Owner's Representative **before and after** new pipe installation.
- E. Contractor shall provide to the Engineer, with the videos and defect report, an exhibit that is color coded to reflect the NASSCO PACP standard mainline defect ratings in 5 point increments(0-5,6-10,11-15,16-20, etc...). The Engineer will provide the Contractor with paper or digital copies of the basemap to use in preparation of the required exhibits.

- F. Two (2) copies of an exhibit recommending the location of point repairs and a schedule of values in accordance with the Unit prices shown on the Proposal Form. Approval in writing for making point repairs shall be made to the Contractor prior to commencement of work.

1-03 PROJECT CONDITIONS

- A. Available data and records are indicated in contract documents.
- B. Public Notification Program:
1. Deliver written notices to each home or business 48 hours before commencement of work being conducted on section, including a local telephone number of Contractor contact for inquiries or complaints.
 2. Provide owner or occupant a summary of work to be completed, and time and duration of service interruption to building.
 3. Contact any home or business that cannot be reconnected within time stated in written notice.

PART 2 - PRODUCTS

- 2-01 Resin - The resin used shall be a high-grade corrosion resistant polyester, vinyl ester or epoxy and catalyst system specifically designed for the cured-in-place-pipe (CIPP) being installed. The minimum length shall be that deemed necessary by the engineer to effectively span the pipelining distance of the necessary sectional repair unless otherwise specified. In most cases complete reaches of pipe will be lined (inside face of manhole to inside face of manhole). The line lengths shall be verified in the field before impregnation of the tube with resin.
- 2-02 General Requirements of CIPP - The finished pipe must be such that when the thermosetting resin cures, the total wall thickness will be a homogeneous and monolithic felt and resin composite matrix that will be chemically resistant to withstand internal exposure to domestic sewerage. When cured the CIPP must form a mechanical bond with the conduit.
- 2-03 Reference Specifications - Installation and material tests of cured-in-place-pipe (CIPP) must meet the minimum requirements demonstrated in the following ASTM standards:
- | | | | |
|-------------|---|--|-------------|
| ASTM F-1216 | Standard Practice for the Installation of Cured-in-Place Pipe by Inversion Lining | | |
| ASTM D-638 | Test Method for Tensile Properties of Plastics | | |
| | Tensile Strength | | 3,000 psi |
| ASTM D-790 | Test Method of Flexural Properties of Plastics | | |
| | Flexural Strength | | 4,500 psi |
| | Flexural Modulus | | 250,000 psi |
- 2-04 Pre-Qualification
- A. Gulf Coast Underground, Insituform, Inc. and Suncoast Infrastructure, Inc. are pre-qualified installers of CIPP and both their liner materials are pre-approved.
- B. Pre-approval of products and installers is required to be classified as Commercially Acceptable.

- C. To be considered Commercially Acceptable, the product and the installer must demonstrate full compliance with the requirements outlined below. Products and installers deemed Commercially Acceptable will be allowed to bid as specified.
- D. For a product to be considered Commercially Acceptable, a minimum of 150,000 feet or 500 line sections of successful wastewater collection system installations in the U.S. must be documented to assure commercial viability. In addition, the Product shall have been in successful service within the wastewater collection system of the Owner (or some other city, town or county within the United States of America for a minimum of two years.)
- E. Other installers of CIPP wishing to be pre-qualified to install CIPP must submit a request package to the Owner no later than 10 days prior to the Bid Date.

2-05 Material Test And Pipe Design

- A. Material Tests - Independent material tests for compliance with this specification all be made according to the applicable ASTM standards. A certificate of compliance shall be provided for all materials furnished under this specification.
- B. Liner thickness shall be designed by Contractor to support all dead loads, live loads and groundwater loads imposed. Contractor shall submit design calculations to Engineer prior to fabrication.

PART 3 – EXECUTION

- 3-01 The Owner shall provide free access to water hydrants for cleaning, inversion and other work items requiring water. Owner shall provide rights of access along existing sewer easements and streets. Any additional access paths that have been negotiated by the Owner are shown on the plans. Contractor is responsible for providing appropriate traffic control for his operations throughout this project.
- 3-02 Sewers shall be cleaned of all debris, roots and other materials that would prohibit access to the sewer lines and video inspection equipment. Cleaning is defined as normal, heavy, and mechanical cleaning. Normal cleaning will consist of two passes of high pressure cleaning equipment. Heavy cleaning will consist of additional passes as necessary and includes root removal. Mechanical cleaning will consist of the use of specialized attachments specifically designed to remove built-up materials on the inside of the host pipe that cannot be removed by normal cleaning equipment.
- 3-03 Removal of protruding taps shall be required where taps would prohibit the access of the video equipment or proper installation of the CIPP tubing.
- 3-04 Reverse setups will only be allowed for blockages that require external repair prior to CIPP installation. All other blockages must be removed from the host pipe by means of standard cleaning equipment or mechanical cleaning equipment.
- 3-05 The Contractor will be required to locate buried manholes as directed by the Engineer. Location of manholes, by whatever means or technology that the contractor chooses to use, shall include uncovering the manhole, exposing and removing the cover. Modifications such as demolition and reconstruction will be made at the direction of the Engineer and in accordance with Specification Section 333000 and with pay items shown on the Proposal Form.

- 3-06 The Contractor shall be responsible for providing vacuum cleaning equipment to remove and dispose of materials cleaned from the host pipe and the manhole inverts. All solids shall be removed at the downstream manhole of the section being cleaned. Passing material from one sewer segment to another will not be permitted. The Contractor is responsible for obtaining all necessary permits and/or permission for the disposal of the materials removed at an approved location. Contractor shall submit to the Owner's Representative the appropriate documentation regarding disposal sites and formal agreements with the site owner prior to commencement of the work.
- 3-07 CCTV Inspection- Sewers to be lined with CIPP shall be CCTV inspected with a 360 degree pan and tilt color camera and an assessment of the sewers shall be made in accordance with the NASSCO PACP reporting format and coding standards. SEWERS WHICH WERE INSPECTED DURING THE DESIGN PHASE DO NOT REQUIRE DEFECT REPORTING EXCEPT FOR NEW DEFECTS IDENTIFIED PRIOR TO CIPP INSTALLATION.
- 3-08 Identification and Premeasurement of Lateral Connections – At each connection the operator will stop and turn the camera lens toward the lateral, thereby inspecting the first 8 to 12 inches of the connection. If there is still a doubt as to whether or not the connection is live, additional “dye and flush” tests shall be preformed. Owner's representatives will review this process live or review the video tapes to verify and approve which laterals are to be reinstated. All laterals will be directly measured from the back wall (opposing wall) of the basis manhole, typically the downstream manhole.
- 3-09 Cleaning shall be provided as necessary to ensure proper inversion of the cured-in-place-pipe.
- 3-10 Bypass of Flow - The Contractor shall bypass the sewerage around the sections of sewer to be lined. The bypass shall be made by plugging an existing upstream manhole and if necessary pumping the sewerage into the downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow.
- 3-11 Resin Impregnation of CIPP Tube - The Contractor shall designate a location where the tube shall be impregnated or “wet out” with resin, using distribution rollers and a “single-source” vacuum to thoroughly saturate the tube's felt fiber prior to installation. The impregnated tube shall be free of pinholes, resin voids and other defects. If the cured-in-place-pipe is impregnated at the manufacturing plant, it shall be delivered to the job site in a refrigerated truck and remain refrigerated prior to the installation to prevent premature curing.
- 3-12 Inversion of CIPP Tube - The impregnated tube shall be water or air inverted through an existing manhole or other approved access until it has fully traversed the designated line length and the inversion face breaches the target manhole or termination point.
- 3-13 Thermocouples shall be placed at the top, and if possible, the bottom interface of both ends of the liner for monitoring the temperatures during the cure cycle.
- 3-14 CIPP Processing (Curing and Cool Down) - The cure cycle and cool down will be dictated with consideration of the actual field conditions and shall be per the manufacturer's recommendations. The curing temperatures shall be monitored at the boiler truck's water inlet and outlet lines. The temperature reading from the truck shall be compared to the thermocouples to ensure that sufficient heat is being supplied to the system.
- 3-15 Once the pipe has reached exotherm, cool water shall be slowly introduced into the rehabilitated pipe. The water temperature shall be cooled inside of the pipe to below 100

degrees F. The cool down process will also be affected by actual field conditions, and may have to be modified in cases of severe weather conditions or below normal ground temperatures.

- 3-16 Termination and Sealing at Manhole Outlets - Termination of the cured-in-place-pipe at the manhole is completed by trimming the inverted pipe end back within approximately 2 inches of the outlet. The liner shall seal the annular space and hydraulic cement shall be used to finish the liner invert connection.
- 3-17 Testing - Leakage testing shall be conducted prior to the reinstatement of laterals and shall be performed under the supervision of the Owner's representative or inspector. The Contractor shall furnish all equipment and personnel necessary to conduct an acceptance test.
- 3-18 Internal Reconnection of Laterals - Lateral connections shall be reinstated robotically whereby a camera and robotic cutter are put into the newly rehabilitated line. Each lateral is identified by a dimple in the cured-in-place pipe or through pre-installation measurements. Initially, each lateral shall be relieved by cutting a 2 to 3 inch hole to ensure that no services will be interrupted and there will be no risk of backed up lines. Once this is accomplished, each lateral shall be fully reopened to 90% percent of its original size.
- 3-19 Remote CIPP lateral installation – In locations identified by the Engineer, the lateral shall be lined from behind the curb or sidewalk to the main and sealed at the main, all remotely. Internal reconnection of the lateral is included in this work item. A cleanout shall be installed at the launch point of the CIPP.
- 3-20 Final Inspection - Upon completion of installation, sewers shall be CCTV inspected, providing both a video recording and log which identifies all service connections and openings.

END OF DOCUMENT 333113.01