

STRUCTURAL DESIGN CRITERIA

- THIS PROJECT IS DESIGNED IN ACCORDANCE WITH THE FOLLOWING BUILDING CODE AND STANDARDS:
- NORTH CAROLINA STATE BUILDING CODE, 2018 EDITION
 - ASCE 7-10 "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES"
 - AISC STEEL CONSTRUCTION MANUAL, 14TH EDITION USING ALLOWABLE STRESS DESIGN PROVISIONS
 - AISC 360-10 "SPECIFICATIONS FOR STRUCTURAL BUILDINGS" USING ALLOWABLE STRESS DESIGN PROVISIONS
 - ACI 318-14 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"
 - ACI 303-10 "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
 - ACI 530-13/ASCE 5-13/TMS 402-13 "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES"
 - AWS D1.1 2006 STRUCTURAL WELDING CODE - STEEL
 - FACTORY MUTUAL INSURANCE REQUIREMENTS

DESIGN LOADS

<u>ROOF</u>	
DEAD	
1. 12" 20GA TYPE B G90 GALV METAL DECK	3 PSF
MEMBRANE ROOF SYSTEM	5 PSF
SUSPENDED FRAMING	12 PSF ACTUAL
LIVE LOAD	20 PSF
ADDITIONAL LOADS	
PIPE RACKS	300 PLF
SNOW LOAD	
GROUND SNOW, P _s	15 PSF
ROOF SNOW AND DRIFTING	PER ASCE 7-10

ELEVATED CATWALK

DEAD	
GRATING	10 PSF
SUSPENDED FRAMING	5 PSF ACTUAL
LIVE	60 PSF
WIND	
VELOCITY	
V _{ULT}	116 MPH
V _{DOM}	90 MPH
RISK CATEGORY	II
ASCE 7-10 EXPOSURE CATEGORY	C

NOTE: FACTORY MUTUAL REQUIREMENTS SHALL BE IMPLEMENTED AS DIRECTED BY GRIFOLS.

SEISMIC	
RISK CATEGORY	II
SOIL SITE CLASSIFICATION	D
S _s	0.155
S ₁	0.076
S _{0.5}	0.165
S _{D1}	0.122
SEISMIC DESIGN CATEGORY	B
RESPONSE COEFFICIENT, C _s	
BRACED FRAME	0.055
RESPONSE MODIFICATION FACTOR, R	3
ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE SYSTEMS
BASIC SEISMIC FORCE RESISTING SYSTEM	EQUIVALENT LATERAL FORCE SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE

GENERAL NOTES

1. THESE GENERAL NOTES AND DESIGN CRITERIA PROVIDE BASIC REFERENCE INFORMATION FOR THIS PROJECT. THIS INFORMATION SHALL BE USED IN CONJUNCTION WITH THE DESIGN DRAWINGS.
2. THAT WHICH IS REFERENCED AS BEING ON "HOLD" SHALL BE INCLUDED IN THE BID AND WORK. HOWEVER, FABRICATION SHALL NOT PROCEED UNTIL THE REFERENCED "HOLD" CLOUD IS REMOVED.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF EXISTING CONSTRUCTION THAT AFFECT NEW CONSTRUCTION PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS. DISCREPANCIES BETWEEN DESIGN DRAWINGS AND FIELD CONDITIONS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY. CONTRACT DRAWINGS SHALL NOT BE SCALED FOR THE PURPOSE OF ESTABLISHING CORRECT DIMENSIONS.
4. CONTRACTOR SHALL INVESTIGATE ACTUAL LOCATIONS OF UNDERGROUND UTILITIES BEFORE EXCAVATING, AND INFORM ENGINEER OF ALL VARIATIONS. ALL EXCAVATIONS NEAR THESE UTILITIES SHALL BE CARRIED OUT WITH EXTREME CAUTION.
5. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH WORK BY OTHER TRADES. COORDINATION INCLUDES LOCATING SLEEVES FOR PIPING, CONDUIT, ETC. BEFORE CONSTRUCTION BEGINS.
6. STRUCTURAL MEMBERS HAVE BEEN DESIGNED TO ACCOMMODATE THE MECHANICAL EQUIPMENT AND OPENINGS SHOWN ON THE MECHANICAL DRAWINGS. THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL ANY SUBSTITUTIONS TO THE MECHANICAL SYSTEMS WHICH RESULT IN REVISIONS TO THE STRUCTURE.
7. CONTRACTOR SHALL ADHERE TO ALL SAFETY REGULATIONS REQUIRED BY OWNER AND OSHA.
8. CONTRACTOR SHALL PROVIDE ADEQUATE BRACING FOR THE STRUCTURE SO THAT IT WILL BE STABLE DURING ALL STAGES OF CONSTRUCTION. THE STRUCTURE AND FOUNDATIONS ARE DESIGNED FOR A COMPLETED CONDITION ONLY AND THEREFORE MAY REQUIRE ADDITIONAL SUPPORT TO MAINTAIN STABILITY BEFORE COMPLETION. METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION, INCLUDING SHORING/ UNDERPINNING OF EXIST FOUNDATIONS, ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR INVESTIGATING THE LOCATION OF REINFORCEMENT IN EXISTING CONCRETE PRIOR TO BEGINNING DRILLING ACTIVITIES FOR PENETRATIONS, SETTING ANCHOR BOLTS, ETC. CONTRACTOR SHALL NOTIFY THE ENGINEER OF INTERFERENCE OR DISCREPANCIES IMMEDIATELY.

FOUNDATION AND SLAB ON GRADE NOTES

1. NOT USED
2. SHALLOW SPREAD FOOTINGS ARE DESIGNED FOR A BEARING CAPACITY OF 2500 PSF. BEARING CAPACITY SHALL BE VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE. WRITTEN REPORTS OF FINDINGS SHALL BE SUBMITTED TO THE ENGINEER.
3. SLABS ON GRADE ARE DESIGNED FOR A MODULUS OF SUBGRADE REACTION K=100 PCI.
4. CONTRACTOR SHALL DEWATER AS NECESSARY PRIOR TO EXCAVATING.
5. CONTRACTOR SHALL PROTECT ALL FOUNDATION EXCAVATIONS FROM DETERIORATION DUE TO EXPOSURE TO MOISTURE UNTIL FOUNDATIONS AND BACK FILLING HAVE BEEN COMPLETED.
6. RETAINING WALLS TO BE BACKFILLED IN ALTERNATING EQUAL LIFTS ON EACH SIDE, NOT TO EXCEED 8", TO FINAL GRADE ELEVATIONS.
7. SLAB ON GRADE SHALL BE PLACED ON A 10-MIL VAPOR RETARDER ON TOP OF A 6" LAYER OF COMPACTED "CRUSHER RUN" STONE.
8. AT ALL TURNS AND CORNERS IN TURN-DOWN SLABS, PROVIDE CORNER BARS OF THE SAME SIZE AND QUANTITY AS THE CONTINUOUS LONGITUDINAL REINFORCING WITH 2'-0" LEG LENGTHS.
9. PROVIDE 2 - #4 BARS X 3'-0" LONG DIAGONAL IN THE TOP FACE OF SLAB ON GRADE AT ALL RE-ENTRANT CORNERS. PLACE 1" CLEAR OF CORNER.
10. EXTEND REINFORCING BARS PAST RE-ENTRANT CORNERS A MINIMUM OF TENSION DEVELOPMENT LENGTH (L_d).
11. PROVIDE 2 - #4 BARS IN TOP OF WALL FOOTINGS SUPPORTING MASONRY WALLS WHERE OPENINGS OF DOORS OCCUR. EXTEND BARS 2'-0" BEYOND EDGE OF OPENINGS.
12. PROVIDE 2-#5 BARS ON ALL SIDES OF OPENINGS IN CONCRETE WALLS WHERE LARGEST DIMENSION EXCEEDS 12". EXTEND BARS 2'-0" BEYOND EDGE OF OPENING.
13. INTERSECTING WALLS SHALL BE KEYED IF POURED SEPARATELY. RUN HORIZONTAL WALL REINFORCING CONTINUOUSLY INTO INTERSECTING WALL.
14. ALL PIPING, CONDUITS, ETC., SHALL BE LAID BELOW THE BOTTOM SURFACE OF CONCRETE SLABS ON GRADE.
15. SAW CUT ALL SLABS ON GRADE AS SOON AS POSSIBLE AFTER FINISHING OPERATIONS HAVE BEEN COMPLETED WITHOUT DISLODGING AGGREGATES. CONSTRUCTION JOINTS MAY BE SUBSTITUTED FOR SAW CUT JOINTS.
16. LOCALLY DEPRESS BOTTOM OF FOOTINGS AS REQUIRED AT ANCHOR RODS TO PROVIDE 3 INCH MINIMUM COVER TO BOTTOM OF ANCHOR RODS.
17. REFER TO ELECTRICAL DRAWINGS FOR GROUNDING DETAILS.
18. DRILLED-IN ANCHOR RODS AND REBAR DOWELS SHALL BE INSTALLED USING HILTI HIT HY 200 MAX ADHESIVE ANCHORING SYSTEM IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. CONCRETE SHALL CURE FOR 7 DAYS MINIMUM BEFORE DRILLING HOLES FOR ANCHORS OR DOWELS.
19. INTERIOR SLABS SHALL RECEIVE A TROWELED FINISH. SLABS SHALL BE CURED FOR 7 DAYS(MIN) USING 6 MIL POLYETHYLENE SHEETS CONFORMING TO ASTM.
20. UNLESS NOTED OTHERWISE, SLABS SHALL BE FINISHED TO THE FOLLOWING TOLERANCES IN ACCORDANCE WITH ASTM E1155:
SLAB ON GRADE FT=25 OVERALL, 17 LOCAL
FL = 17 OVERALL, 12 LOCAL
21. WALLS EXPOSED TO VIEW SHALL RECEIVE A SMOOTH-RUBBED FINISH.

STRUCTURAL CONCRETE NOTES

1. CONCRETE DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI SPECIFICATIONS 318 AND 301.
2. UNLESS OTHERWISE NOTED, ALL CONCRETE SHALL BE NORMAL WEIGHT CONCRETE AND SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS AS NOTED BELOW.

FOOTINGS	3000 PSI
SLABS ON GRADE	4000 PSI
PIERS AND FOUNDATION WALLS	4000 PSI
3. WATER SHOULD NOT BE ADDED TO CONCRETE AT THE JOB SITE BEYOND THE MIX DESIGN AMOUNT. ADDITIONAL WATER SERIOUSLY REDUCES CONCRETE STRENGTH AND INCREASES SHRINKAGE. REQUEST A "HIGH RANGE WATER REDUCER" (SUPERPLASTICIZER) FOR MORE WORKABLE CONCRETE.
4. CONTRACTOR SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS OF ACI 305 "HOT WEATHER CONCRETING" AND ACI 306 RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING".
5. UNLESS OTHERWISE NOTED, ALL DETAILING, FABRICATION AND PLACING OF REINFORCING STEEL SHALL CONFORM TO THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES-ACI 315.
6. ALL DEFORMED REINFORCING BARS SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A615, LATEST REVISION, GRADE 60. REINFORCING BARS THAT WILL BE WELDED SHALL CONFORM TO ASTM A706, DEFORMED.
7. ALL SPLICES SHALL BE CLASS "B" TENSION LAP SPLICES UNLESS OTHERWISE NOTED.
8. WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A1064, LATEST REVISION. FURNISH IN SHEETS OR MATS.
9. WELDED WIRE REINFORCEMENT SHALL LAP 2 FULL MESHES AND BE SECURELY WIRED AT EACH SIDE AND END.
10. REINFORCING BARS AND WELDED WIRE REINFORCEMENT SHALL BE SUPPORTED WITH STANDARD BAR CHAIRS AND SPACERS AS REQUIRED TO MAINTAIN THE CONCRETE PROTECTION SPECIFIED.
11. UNLESS OTHERWISE NOTED, CHAMFER ALL EXPOSED CONCRETE CORNERS WITH A 3/4" x 45 DEGREE CHAMFER.
12. REFER TO DRAWINGS OF OTHER TRADES AND VENDOR DRAWINGS FOR PENETRATIONS IN SLABS REQUIRING SLEEVES, EMBEDMENTS, AND RECESSED ITEMS NOT SHOWN.
13. CONTRACTOR SHALL VERIFY ALL SIZES AND LOCATIONS OF ALL MECHANICAL AND ELECTRICAL OPENINGS AND EQUIPMENT PADS WITH MECHANICAL AND ELECTRICAL EQUIPMENT DETAILS AND SHOP DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL OPENINGS AND SLEEVES FOR PROPER DISTRIBUTION FOR ALL UTILITY LINES THROUGHOUT THE BUILDING.
14. ALL DIMENSIONS AT FLOOR DEPRESSIONS SHALL BE VERIFIED USING THE OWNER'S ARCHITECTURAL DRAWINGS PRIOR TO PLACING SLABS.
15. UNLESS OTHERWISE NOTED, REINFORCING BARS SHALL HAVE A MINIMUM CONCRETE COVER AS FOLLOWS:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3 INCHES
CONCRETE EXPOSED TO EARTH OR WEATHER: #5 BARS AND SMALLER: 1 1/2 INCHES
OTHERS 2 INCHES
CONCRETE NOT EXPOSED TO EARTH OR WEATHER - WALLS AND SLABS: 3/4 INCHES

STRUCTURAL STEEL NOTES

1. UNLESS OTHERWISE NOTED, ALL STRUCTURAL STEEL FOR WIDE FLANGE AND STRUCTURAL TEE MEMBERS SHALL CONFORM TO ASTM A992 (Fy =50 KSI MINIMUM). MISCELLANEOUS STEEL, CHANNELS, AND PLATE SHALL CONFORM TO ASTM A36, Fy =36 KSI.
2. STEEL PIPE SHALL CONFORM TO ASTM A53, TYPE E OR S, GRADE B, Fy =35 KSI (MIN). STRUCTURAL TUBING STEEL (NOTED "HSS") SHALL CONFORM TO ASTM A500, GRADE B, Fy =46 KSI (MIN).
3. ANCHOR RODS SHALL CONFORM TO ASTM F1554 GRADE 36.
4. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE ALLOWABLE STRESS DESIGN PROVISIONS OF AISC 360-10 "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS".
5. ALL CONNECTIONS SHALL BE WELDED OR HIGH-STRENGTH BOLTED. UNLESS NOTED OTHERWISE, BOLTS SHALL BE 3/4" DIAMETER A325-N BOLTS (THREADS IN SHEAR PLANE). OVERSIZED OR SLOTTED HOLES SHALL BE USED ONLY WHERE NOTED ON THE DESIGN DRAWINGS, UNLESS APPROVED BY THE ENGINEER PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS. WELDS SHALL BE MADE WITH E70XX ELECTRODES (SMAW PROCESS) OR E70S ELECTRODES (TIG OR GTAW PROCESS). ALL STRUCTURAL WELDS TO BE MADE BY AWS CERTIFIED WELDERS.
6. CONTRACTOR SHALL RETAIN A FABRICATOR WHO UTILIZES A QUALIFIED PROFESSIONAL ENGINEER DULY REGISTERED IN THE STATE OF NORTH CAROLINA TO PREPARE SHOP DRAWINGS, CALCULATIONS, AND OTHER STRUCTURAL DATA FOR STRUCTURAL STEEL CONNECTIONS. FABRICATOR'S ENGINEER SHALL AFFIX HIS SEAL TO THE DRAWINGS AND CALCULATIONS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS.
7. THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN AND DETAILING OF ALL CONNECTIONS NOT FULLY DETAILED ON THE CONTRACT DOCUMENTS. TYPICAL CONNECTION DETAILS ARE INDICATED ON THE DRAWINGS FOR DESIGN INTENT ONLY.
8. CONNECTIONS SHALL BE DESIGNED BASED ON ALLOWABLE STRESS DESIGN PROVISIONS OF THE AISC STEEL CONSTRUCTION MANUAL 14TH EDITION USING DOUBLE-ANGLE, SEATED, OR SINGLE SHEAR PLATE CONNECTIONS (SINGLE ANGLE CONNECTIONS SHALL NOT BE USED), UNLESS HIGHER LOADS ARE NOTED ON THE DRAWINGS, CONNECTIONS SHALL BE DESIGNED FOR THE FOLLOWING:
 - A. NON-COMPOSITE BEAMS:
 - a. MEMBERS LESS THAN OR EQUAL TO 10 FEET IN LENGTH: 30% OF THE TOTAL UNIFORM LOAD CAPACITY FOR THE GIVEN SHAPE AND SPAN
 - b. ALL OTHER BEAMS: 50% OF THE TOTAL UNIFORM LOAD CAPACITY FOR THE GIVEN SHAPE AND SPAN
 - B. HOWEVER, IN NO CASE SHALL THE LENGTH OF A FRAMED CONNECTION BE LESS THAN ONE-HALF OF THE "T" DIMENSION OF THE BEAM WEB.
9. BOLTED CONNECTIONS SHALL BE ASSEMBLED AND TIGHTENED FOR THE FOLLOWING JOINT TYPES IN ACCORDANCE WITH THE SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC) (2004 EDITION):
 - A. SNUG-TIGHTENED JOINTS:
ALL CONNECTIONS EXCEPT AS NOTED BELOW OR ON THE DRAWINGS.
 - B. PRETENSIONED JOINTS:
CONNECTIONS FOR MEMBERS WITH AXIAL LOADS, INCLUDING HORIZONTAL AND VERTICAL BRACING, DRAG STRUTS, AND COLLECTOR BEAMS.
 - C. SLIP CRITICAL JOINTS(SCJ):
WHERE NOTED ON DRAWINGS.

AFTER TIGHTENING ALL BOLTS TO A "SNUG TIGHT" CONDITION AS PER RCSC, COMPLETE THE TIGHTENING PROCESS USING TWIST-OFF-TYPE TENSION-CONTROL BOLT TENSIONING OR DIRECT TENSION INDICATING (DTI) WASHERS.

THE CONTRACTOR SHALL PROVIDE WRENCHES AND A SKIDMORE-WILHELM CALIBRATOR FOR FIELD CALIBRATION AND INSPECTIONS OF BOLTED CONNECTIONS.

DIRECTIONS FOR INSTALLING BOLTED ASSEMBLIES SHALL BE INCLUDED ON THE SHOP DRAWING ERECTION PLANS. FIELD BOLTED CONNECTIONS SHALL BE DETAILED SUCH THAT ERECTION CAN COMPLY WITH OSHA 29 CFR PART 1926 SAFETY STANDARDS FOR STEEL ERECTION.

STRUCTURAL STEEL NOTES CONT.

11. GUSSET PLATES SHALL BE 3/8" MINIMUM.
12. UNLESS SHOWN OTHERWISE ON THE DRAWINGS, ALL BRACING CONNECTIONS SHALL BE DESIGNED & DETAILED SO THAT ALL FORCE COMPONENTS CAN BE DELIVERED DIRECTLY TO THE CENTERLINE OF INTERSECTING MEMBERS. WHERE THIS IS NOT DONE, CONNECTIONS SHALL BE DESIGNED FOR RESULTING ECCENTRICITIES.
13. (+) INDICATES TENSION IN MEMBER
(-) INDICATES COMPRESSION IN MEMBER
FORCES SHOWN ON THE DESIGN DRAWINGS ARE BASED ON ALLOWABLE STRESS DESIGN PROVISIONS AND SHALL NOT BE REDUCED.
14. STEEL SHALL BE CLEANED AND PRIMED AS FOLLOWS:

STEEL SURFACE PREP: SSPC SP-3 (POWER-TOOL CLEAN)
PRIMER: TNEMEC SERIES 10-1009 (1 COAT, 2.0 MILS DRY FILM THICKNESS)
FINISH COAT:TNEMEC SERIES 2H HI-BUILD TNEME-GLOSS (2 COATS, 1.5 MILS DRY FILM THICKNESS EACH COAT)
15. ALL EXTERIOR STEEL SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123.
16. PRIOR TO WELDING TO EXISTING STEEL, EXISTING SURFACES SHALL BE POWER TOOL CLEANED (SSPC-SP3) IN ORDER TO REMOVE EXISTING PAINT, DIRT, GREASE, AND ALL OTHER FOREIGN MATTER WITHIN 2 INCHES OF WELD LOCATION. SURFACES SHALL BE TOUCHED UP WITH PRIMER AFTER WELDING HAS BEEN COMPLETED.
17. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT ACCIDENTAL FIRE DURING ALL FIELD WELDING. PRECAUTIONS MAY INCLUDE, BUT NOT BE LIMITED TO, POSTING A FIRE WATCH WITH A FIRE EXTINGUISHER, THE USE OF PROTECTIVE WELDING BLANKETS, OR ANY OTHER METHOD OR COMBINATION OF METHODS USED TO PREVENT FIRE.
18. UNLESS OTHERWISE NOTED, ALL COLUMN ANCHOR BOLT HOLES SHALL BE OVERSIZED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE "AISC MANUAL FOR DETAILING FOR STEEL CONSTRUCTION".
19. OPEN ENDS OF ALL HSS AND PIPE SHAPES SHALL BE CLOSED WITH A 3/16" (MIN) CLOSURE PLATE SEAL WELDED ALL AROUND (UNO)
20. UNLESS NOTED OTHERWISE, ALL HSS SECTIONS SHALL BE ORIENTED LONG SIDE VERTICAL (LSV).
21. ANGLES AND WT STEMS SHALL BE TOED DOWN (UNO).
22. HORIZONTAL & VERTICAL BRACING SHALL BE PROVIDED WITH A 4-BOLT CONN AT EACH END, UNLESS NOTED OTHERWISE OR WHERE LOADS NOTED ON DRAWINGS REQUIRE ADDITIONAL BOLTS.

METAL DECK NOTES

1. ROOF DECK SHALL BE 1 1/2", 20 GAGE, G90 GALVANIZED, TYPE B (WIDE RIB) METAL DECK (VULCRAFT TYPE 1.5B OR APPROVED EQUAL). DECK SHALL BE DESIGNED FOR A 3-SPAN CONDITION (MINIMUM). MINIMUM YIELD STRESS SHALL BE 50 KSI. DECK SHALL MEET FACTORY MUTUAL APPROVAL FOR A 1-90 CLASS WIND RATING.
2. ROOF DECK SHALL BE ATTACHED TO ALL SUPPORTING STEEL USING THE HILTI DECK FASTENER SYSTEM AS MFG'D BY HILTI, INC. ATTCH DECK AS FOLLOWS:
 - a. FOR A 6'-0" WIDTH AROUND THE BUILDING PERIMETER, ATTACH DECK TO ALL STEEL FOR A 30/7 PATTERN USING X-ENP-19-L15 CONNECTORS. IN ADDITION, ATTACH DECK TO ALL PERIMETER STEEL AT 6' OC MAX USING THESE SAME CONNECTORS.
 - b. ATTACH DECK TO ALL OTHER STEEL IN THE FIELD OF THE ROOF FOR A 30/5 PATTERN USING X-ENP-19-L15 CONNECTORS.
 - c. MAKE SIDE LAP CONNECTIONS USING #10 GALVANIZED SELF-DRILLING SCREWS AT 9' OC MAX.
3. SUSPENDED LOADS SHALL NOT BE HUNG FROM THE ROOF DECK.

STEEL GRATING NOTES:

1. PLATFORM GRATING SHALL BE 1 1/4" x 3/16" GALVANIZED GRATING WITH BEARING BARS AT 1 3/16" O.C. (TYPE 19-W-4) AS MFG'D BY OHIO GRATINGS, INC. (OR APPROVED EQUAL).
2. UNLESS APPROVED OTHERWISE, FABRICATE IN SECTIONS NOT TO EXCEED A WEIGHT OF 300 LBS.
3. ATTACH GRATING TO STEEL FRAMING WITH MFRG'S STANDARD CLIPS. PROVIDE A MINIMUM OF 2 PER SIDE.
4. ALL OPENINGS IN GRATING SHALL BE BANDED UNLESS NOTED OTHERWISE. PROVIDE 1/2" X 4" HIGH TOE PLATE AT PERIMETER OF SHOP FABRICATED OPENINGS
5. EDGE OF GRATING SHALL MATCH PERIMETER EDGE OF BEAM FLANGE (UNO).
6. ALL GALVANIZED SURFACES DAMAGED BY SHIPPING, ERECTION, OR FIELD CUTTING OF GRATING SHALL BE REPAIRED USING A GALVANIZING REPAIR PAINT CONFORMING TO ASTM A780.



ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

PO BOX 1308
300 SOUTH DAWSON STREET
RALEIGH, NORTH CAROLINA
27602
919.821.5547
www.hagersmith.com

Copyright 2021

SEA
LS

PRELIMINARY
NOT FOR CONSTRUCTION

ASSOCIATES / CONSULTANTS



ARDURRA

ARDURRA GROUP NORTH CAROLINA
2840 Plaza Place, Suite 103
Raleigh, North Carolina 27612
Phone: (919) 277-0494
www.Ardurra.com
NC FIRM LICENSE NO F-0113
JOB NO. 2021-0411

NOTES:
 1. SEE DWG S-001 FOR GENERAL NOTES & DESIGN CRITERIA.
 2. F4.5 DENOTES 4'-6"x4'-6"x1'-0" THK FTG w/
 #5 BARS TOP & BOTT @ 12" OC, EA WAY, TYP OF (3).
 F6 DENOTES 6'-0"x6'-0"x1'-6" THK FTG w/
 #5 BARS TOP & BOTT @ 12" OC, EA WAY, TYP OF (4).



ARCHITECTURE
 LANDSCAPE ARCHITECTURE
 PLANNING
 INTERIOR DESIGN

PO BOX 1308
 300 SOUTH DAWSON STREET
 RALEIGH, NORTH CAROLINA
 27602
 919.821.5547
 www.hagersmith.com © Copyright 2021

PRELIMINARY
 NOT FOR CONSTRUCTION

ASSOCIATES / CONSULTANTS



ARDURRA GROUP NORTH CAROLINA
 2840 Plaza Place, Suite 103
 Raleigh, North Carolina 27612
 Phone: (919) 277-0494
 www.Ardurra.com
 NC FIRM LICENSE NO F-0113
 JOB NO. 2021-0411

PROJECT 000-000

**GRIFOLS E430
 EXPANSION
 - 60% SET**

8368 US-70 BUS. HWY WEST
 CLAYTON, NC 27520

CLIENT

GRIFOLS

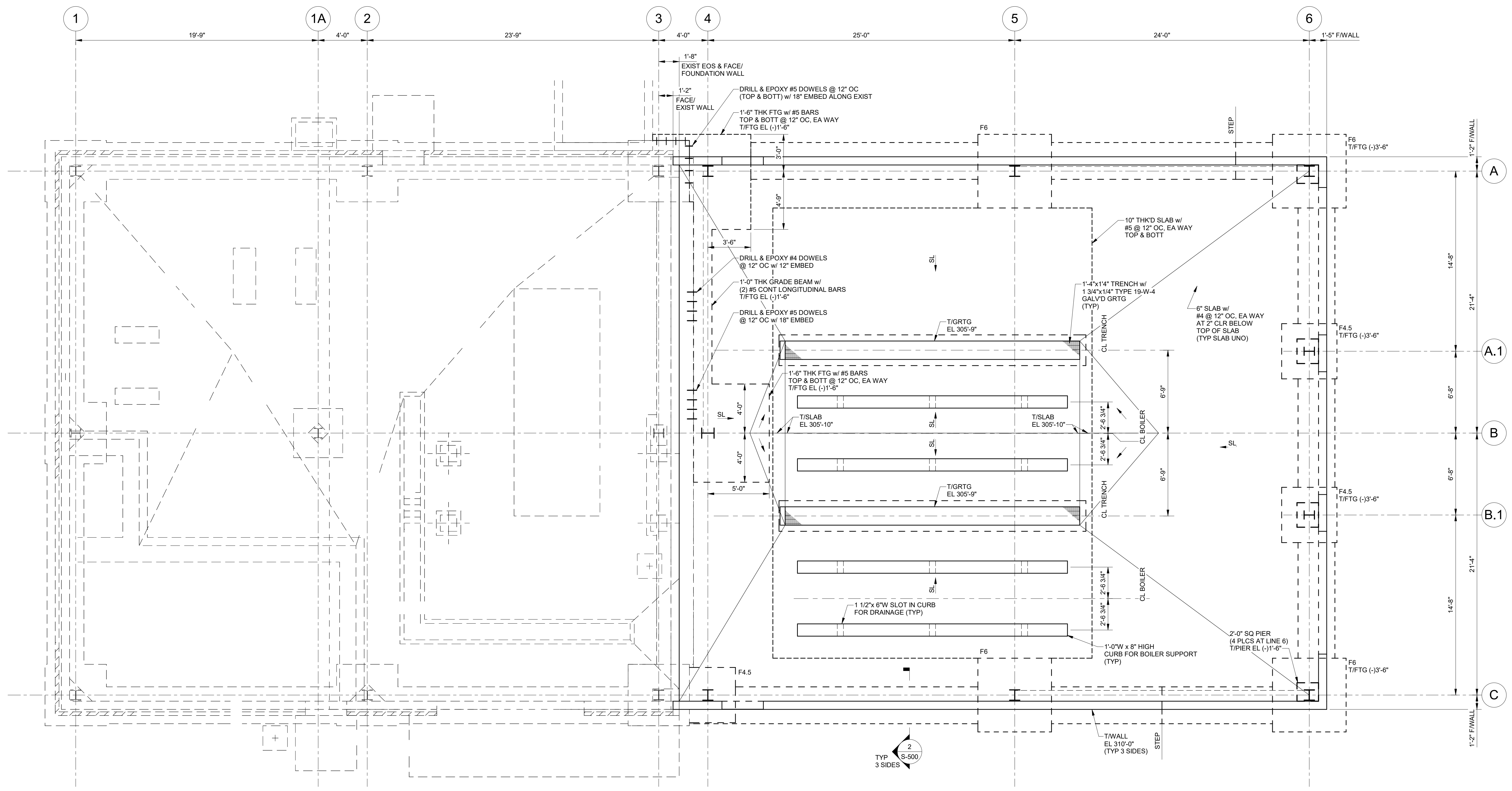
DRAWING TITLE
FOUNDATION AND SLAB PLAN

REVISIONS		
NUMBER	DESCRIPTION	DATE

DRAWN BY VRT
 CHECKED BY RTB
 DATE ISSUED _____

S-101

OF



1 FOUNDATION AND SLAB PLAN
 Scale: 1/4" = 1'-0"
 T/SLAB EL 306'-0" (UNO)
 T/FTG EL (-)1'-6" (UNO)



ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

PO BOX 1308
300 SOUTH DAWSON STREET
RALEIGH, NORTH CAROLINA
27602
919.821.5547
www.hagersmith.com © Copyright 2021

PRELIMINARY
NOT FOR CONSTRUCTION

ASSOCIATES / CONSULTANTS



ARDURRA
ARDURRA GROUP NORTH CAROLINA
2840 Plaza Place, Suite 103
Raleigh, North Carolina 27612
Phone: (919) 277-0494
www.Ardurra.com
NC FIRM LICENSE NO F-0113
JOB NO. 2021-0411

PROJECT 000-000

**GRIFOLS E430
EXPANSION
- 60% SET**

8368 US-70 BUS. HWY WEST
CLAYTON, NC 27520

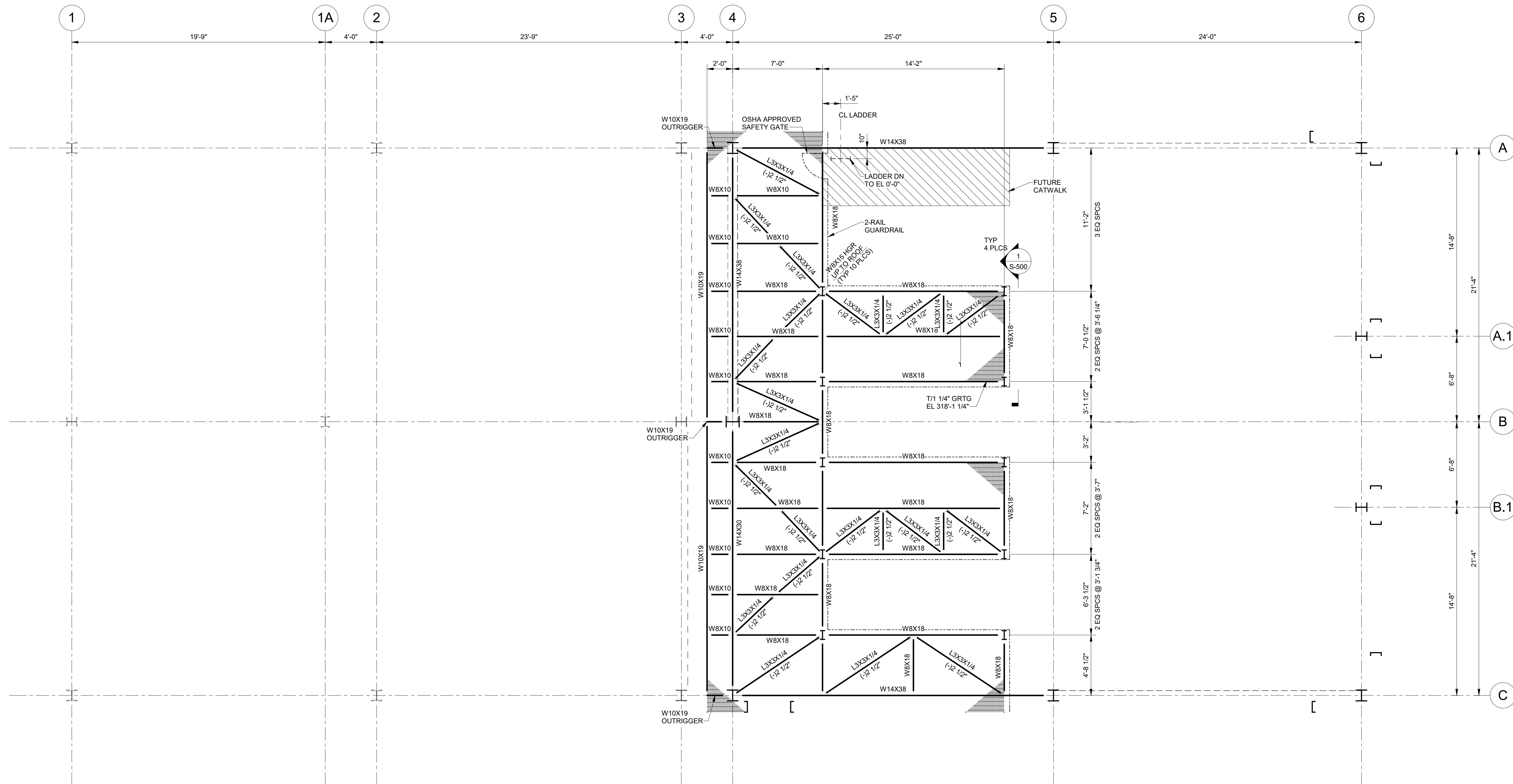
CLIENT

GRIFOLS

DRAWING TITLE
CATWALK FRAMING PLAN

REVISIONS		
NUMBER	DESCRIPTION	DATE

DRAWN BY Author **S-102**
CHECKED BY Checker
DATE ISSUED OF



1 CATWALK FRAMING PLAN
Scale: 1/4" = 1'-0"
T/STL EL 318'-0" (UNO)



ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

PO BOX 1308
300 SOUTH DAWSON STREET
RALEIGH, NORTH CAROLINA
27602
919.821.5547
www.hagersmith.com © Copyright 2021

PRELIMINARY
NOT FOR CONSTRUCTION

ASSOCIATES / CONSULTANTS



ARDURRA
ARDURRA GROUP NORTH CAROLINA
2840 Plaza Place, Suite 103
Raleigh, North Carolina 27612
Phone: (919) 277-0494
www.Ardurra.com
NC FIRM LICENSE NO F-0113
JOB NO. 2021-0411

PROJECT 000-000

**GRIFOLS E430
EXPANSION
- 60% SET**

8368 US-70 BUS. HWY WEST
CLAYTON, NC 27520

CLIENT

GRIFOLS

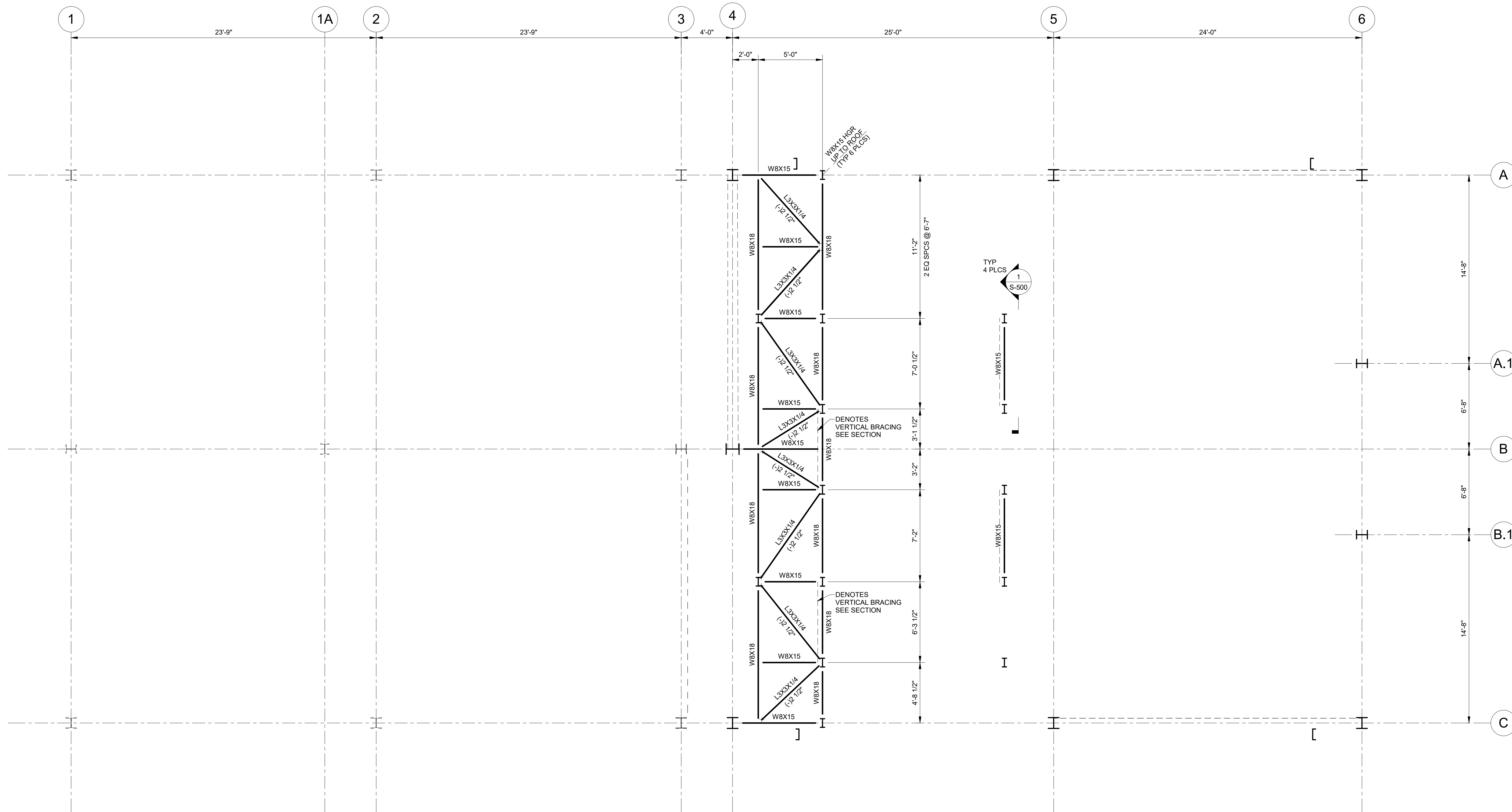
DRAWING TITLE
PIPE SUPPORT FRAMING PLAN

REVISIONS		
NUMBER	DESCRIPTION	DATE

DRAWN BY Author
CHECKED BY Checker
DATE ISSUED

S-103

OF



1 PIPE SUPPORT FRAMING PLAN
Scale: 1/4" = 1'-0"
T/STL EL 328'-0" (UNO)



ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

PO BOX 1308
300 SOUTH DAWSON STREET
RALEIGH, NORTH CAROLINA
27602
919.821.5547
www.hagersmith.com © Copyright 2021

PRELIMINARY
NOT FOR CONSTRUCTION

ASSOCIATES / CONSULTANTS



ARDURRA

ARDURRA GROUP NORTH CAROLINA
2840 Plaza Place, Suite 103
Raleigh, North Carolina 27612
Phone: (919) 277-0494
www.Ardurra.com
NC FIRM LICENSE NO F-0113
JOB NO. 2021-0411

PROJECT 000-000

**GRIFOLS E430
EXPANSION
- 60% SET**

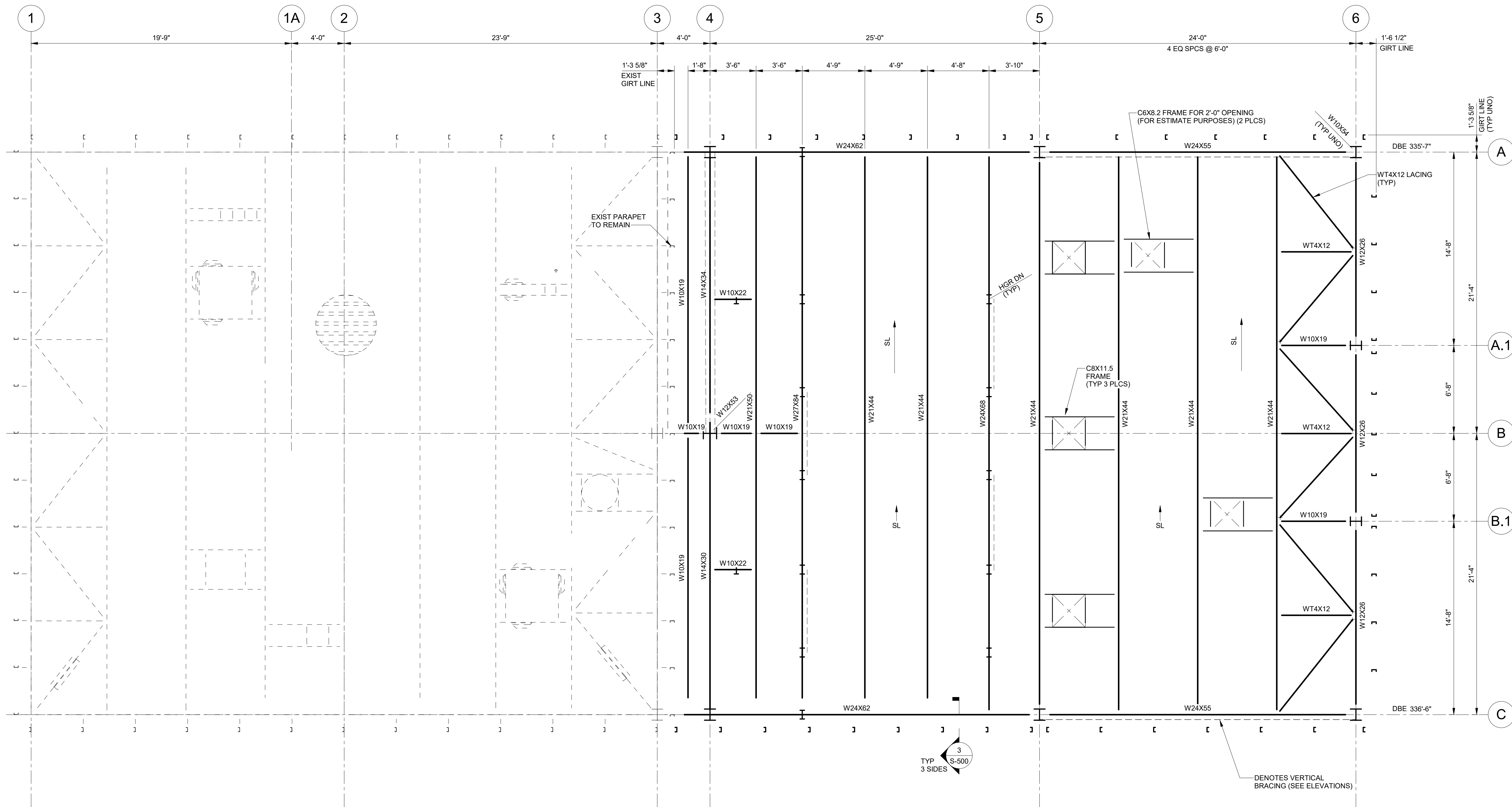
8368 US-70 BUS. HWY WEST
CLAYTON, NC 27520

CLIENT
GRIFOLS

DRAWING TITLE
ROOF FRAMING PLAN

NUMBER	DESCRIPTION	DATE

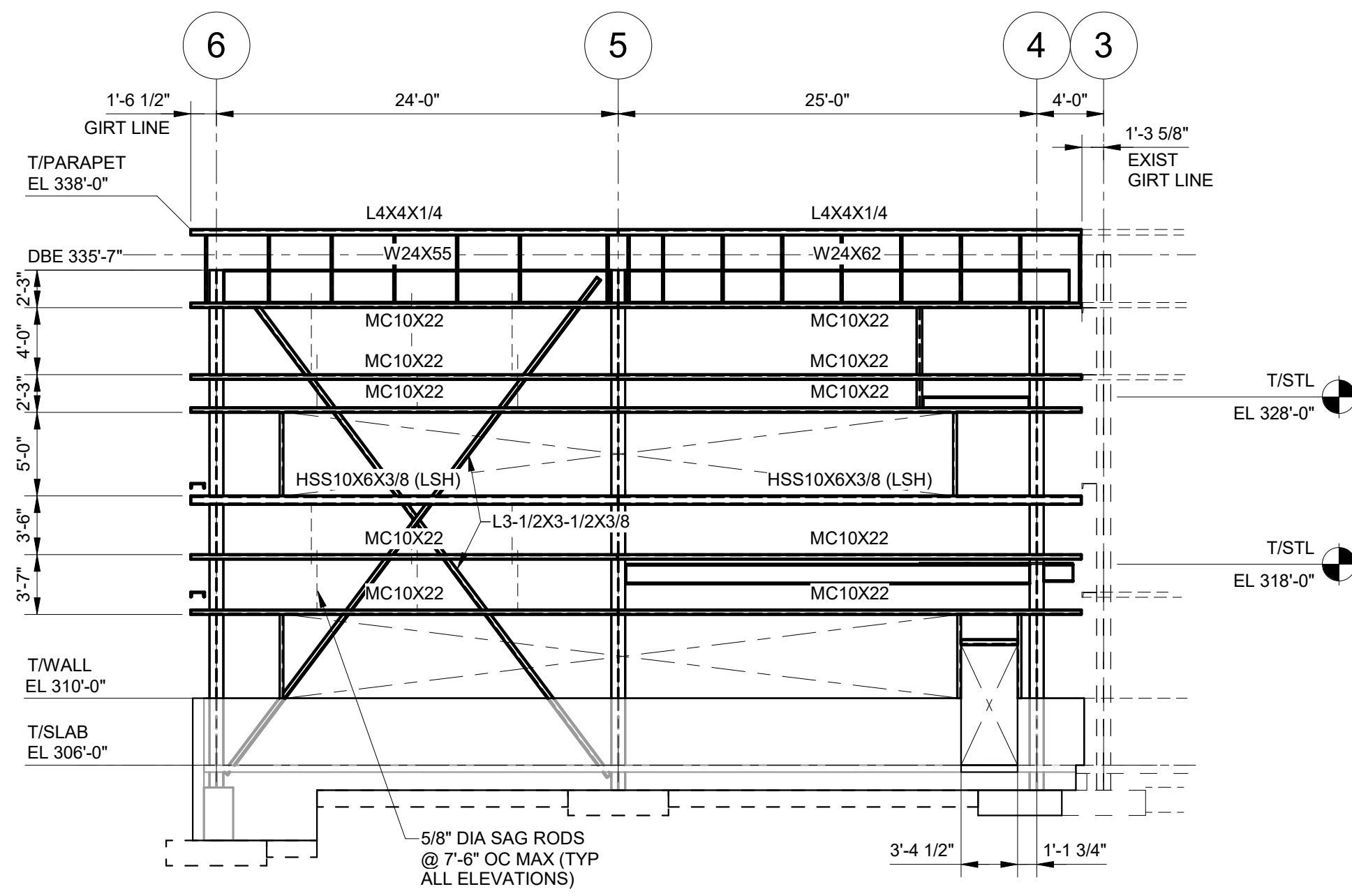
DRAWN BY Author
CHECKED BY Checker
DATE ISSUED
S-104
OF



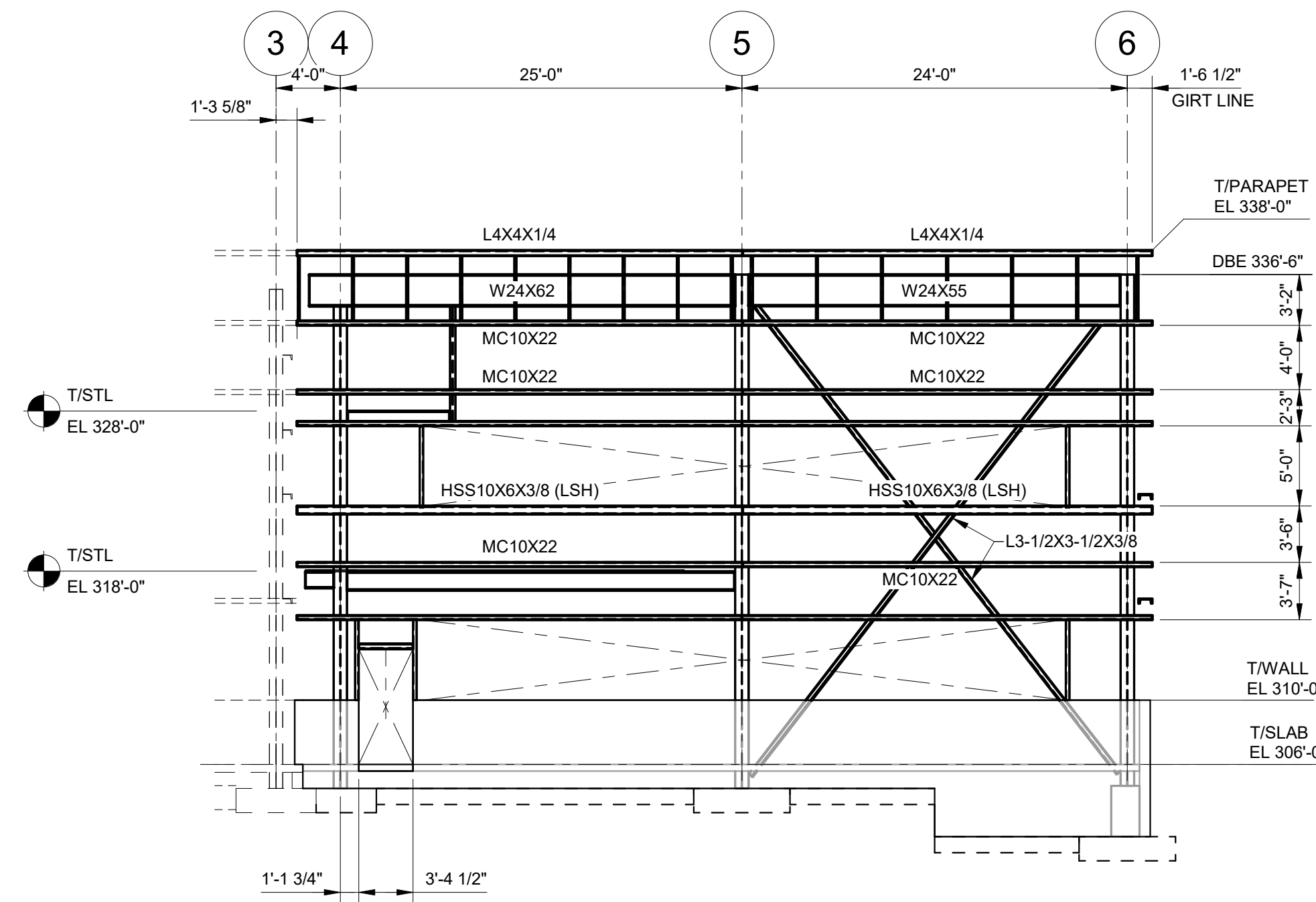
1 ROOF FRAMING PLAN
Scale: 1/4" = 1'-0"
DBE (DECK BEARING ELEVATION) AS NOTED

PRELIMINARY
NOT FOR CONSTRUCTION

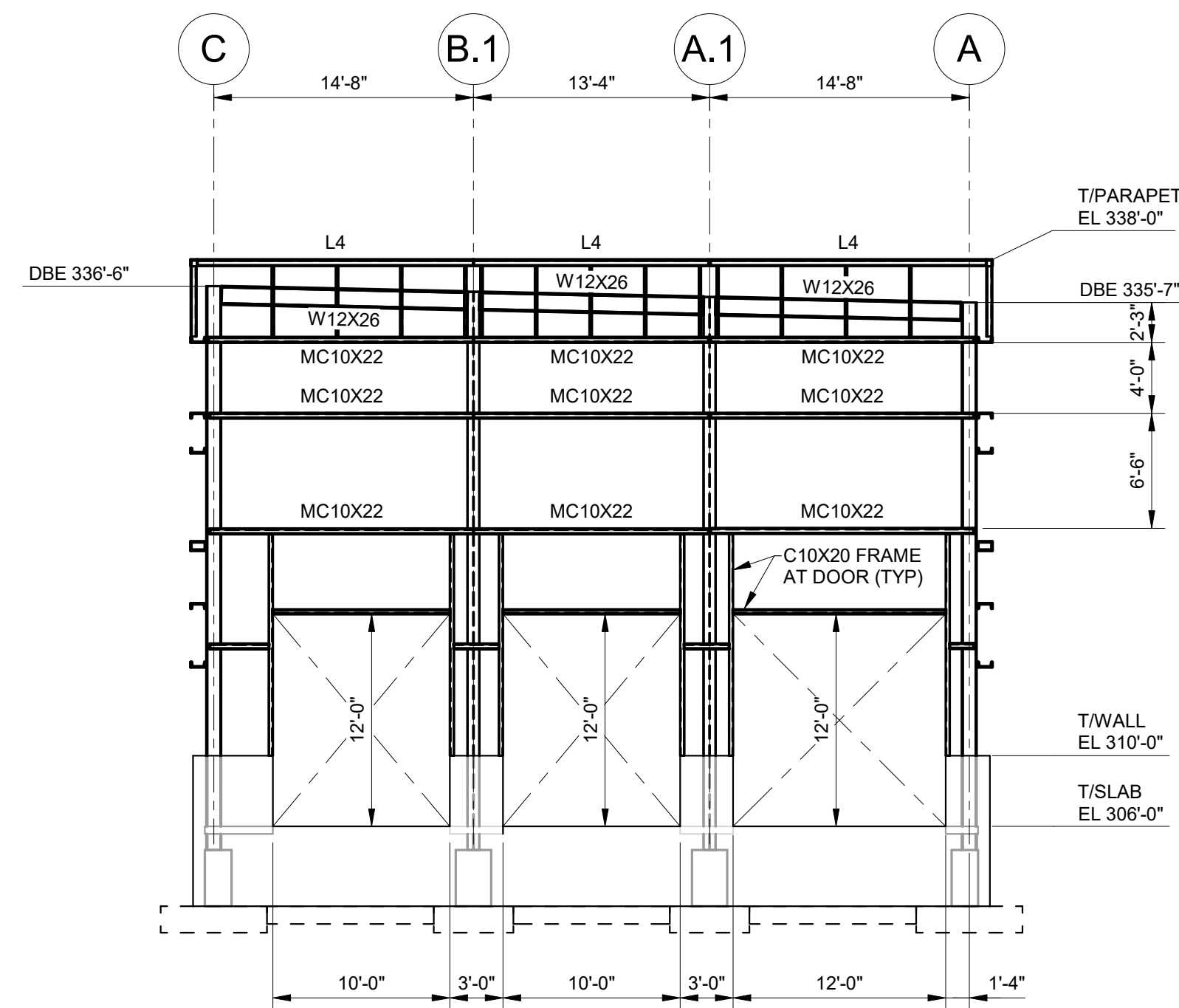
ASSOCIATES / CONSULTANTS



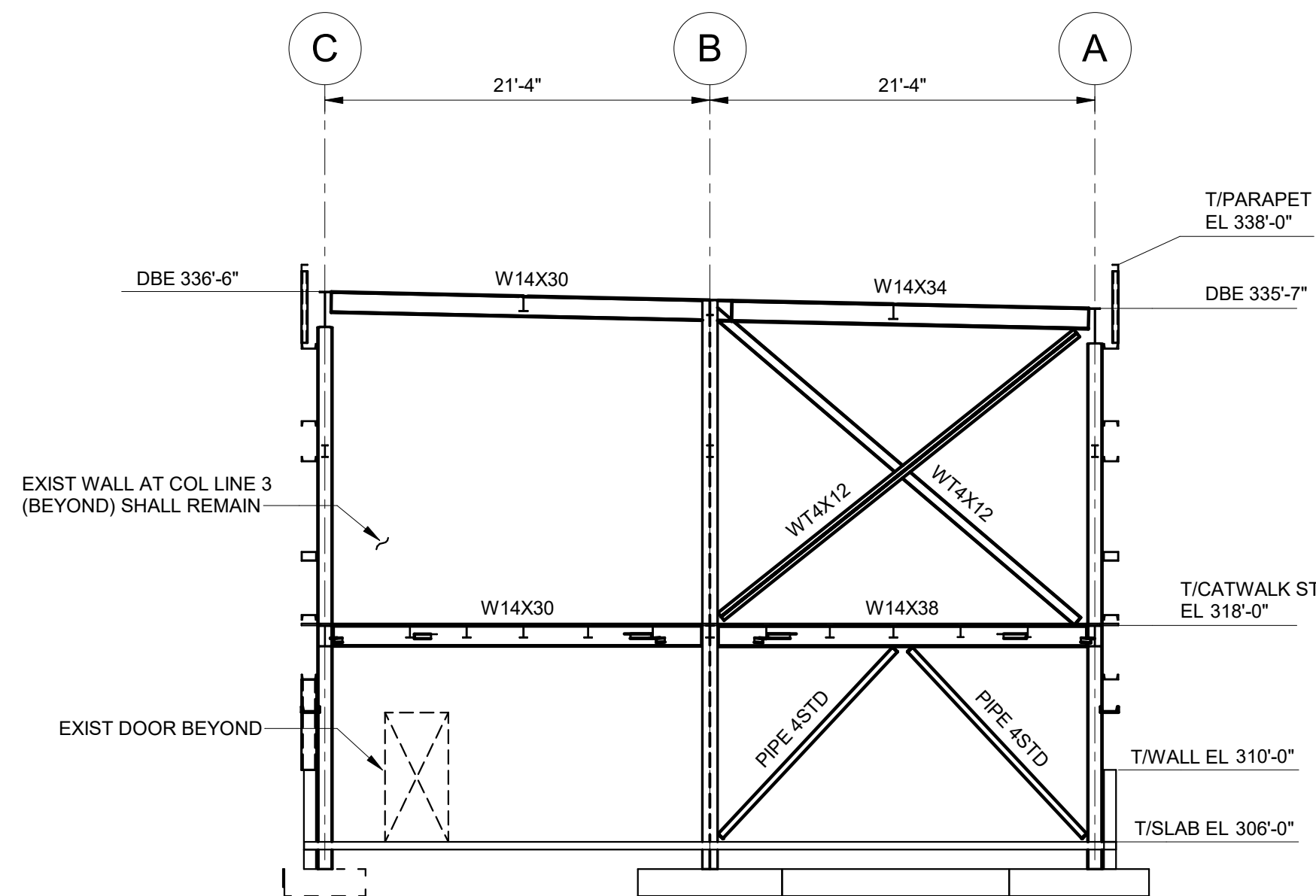
1 ELEVATION AT LINE A
Scale: 1/8" = 1'-0"



2 ELEVATION AT LINE C
Scale: 1/8" = 1'-0"



3 ELEVATION AT LINE 6
Scale: 1/8" = 1'-0"



4 ELEVATION AT LINE 4
Scale: 1/8" = 1'-0"

PROJECT 000-000

**GRIFOLS E430
EXPANSION
- 60% SET**

8368 US-70 BUS. HWY WEST
CLAYTON, NC 27520

CLIENT

GRIFOLS

DRAWING TITLE

ELEVATIONS

REVISIONS

NUMBER	DESCRIPTION	DATE

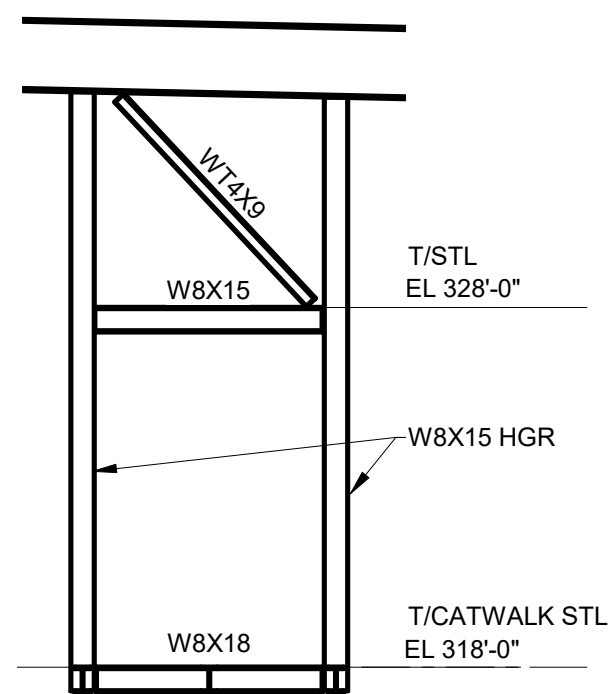
DRAWN BY Author

CHECKED BY Checker

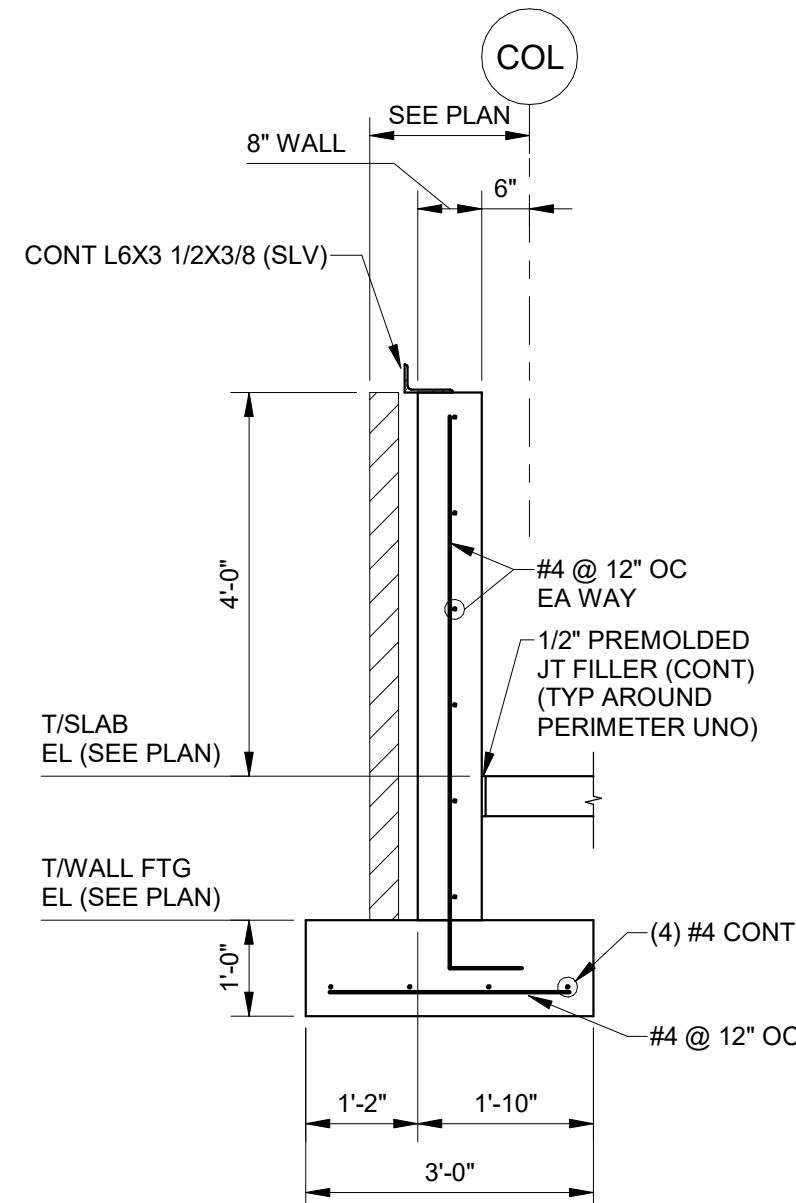
DATE ISSUED

S-200

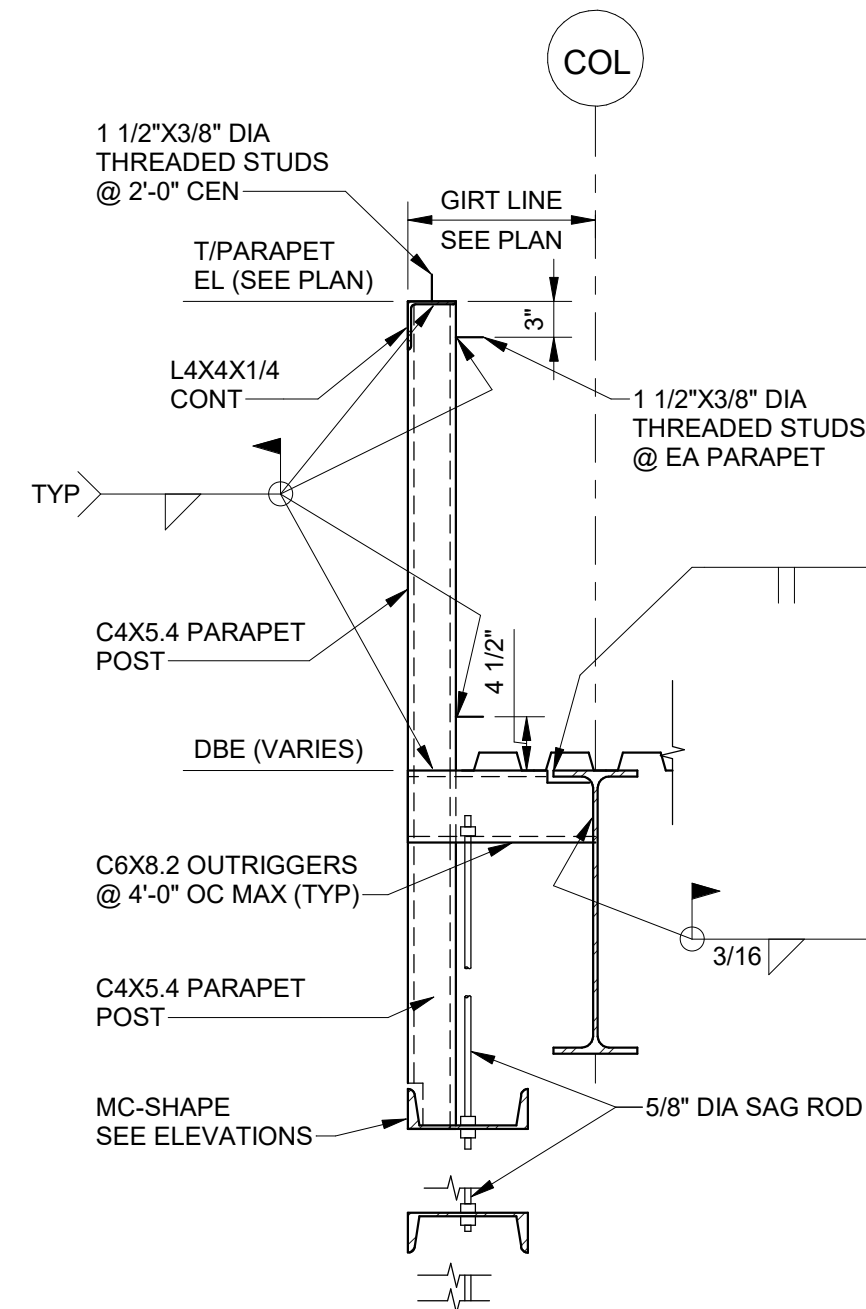
OF



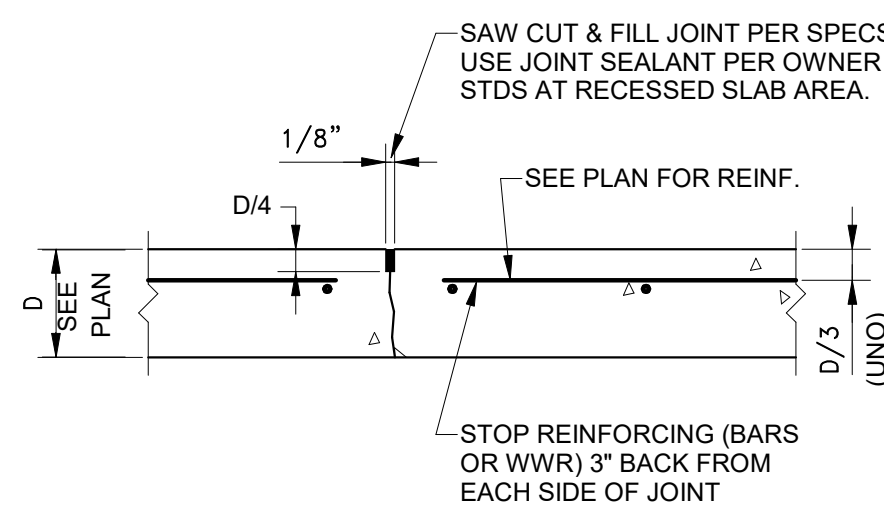
1 SECTION
Scale: 3/16" = 1'-0"



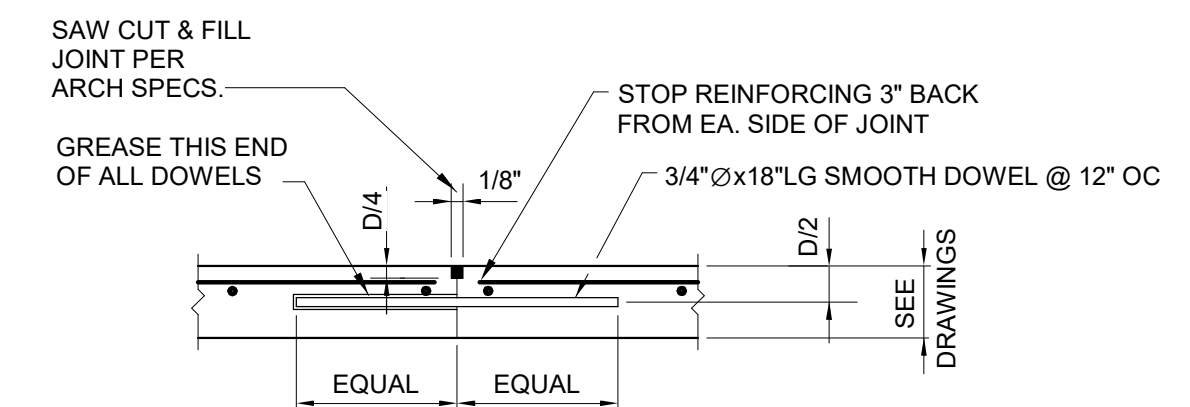
2 SECTION
Scale: 1/2" = 1'-0"



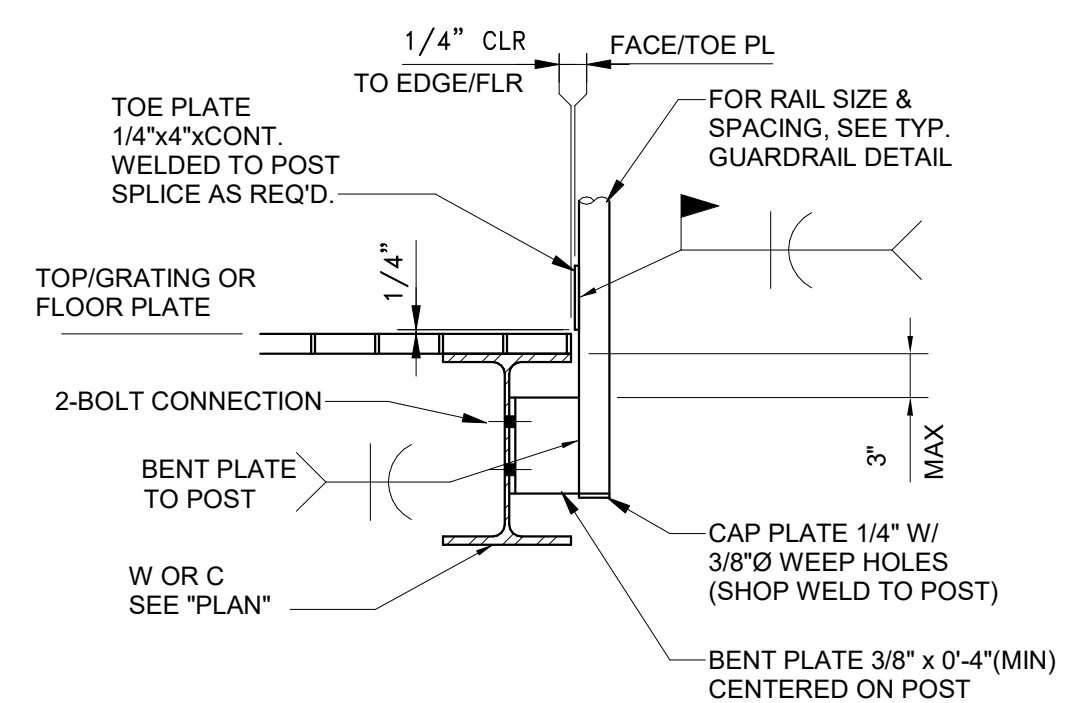
3 SECTION
Scale: 3/4" = 1'-0"



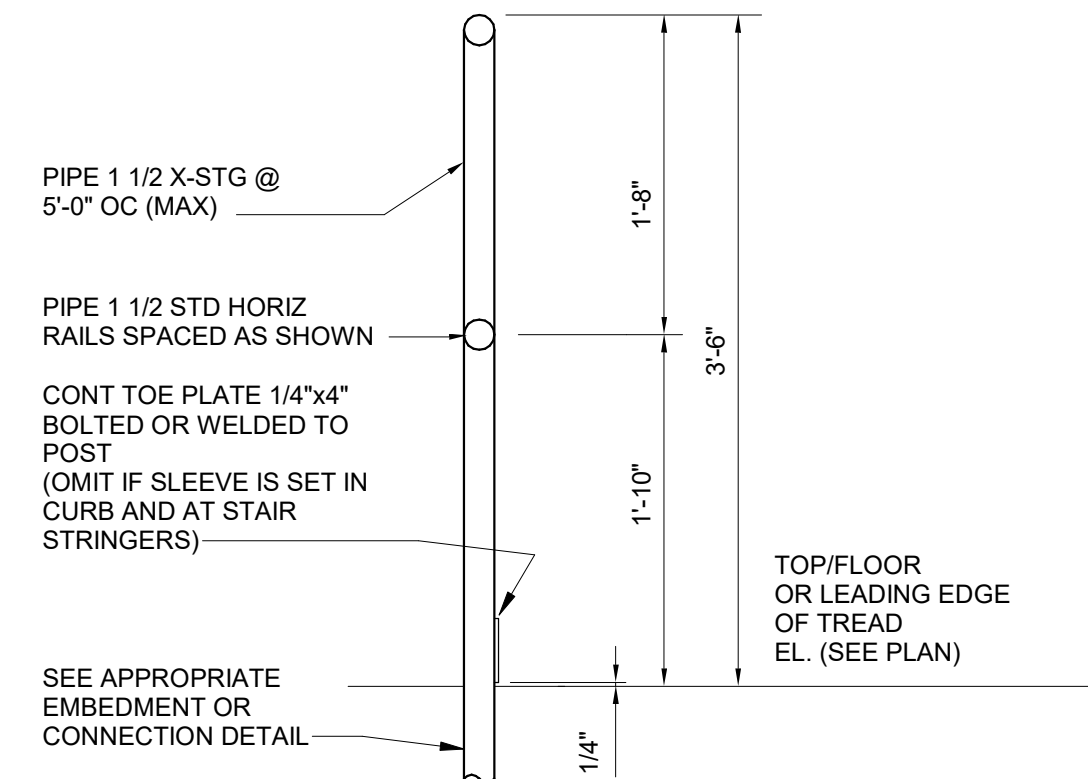
4 TYPICAL SLAB ON GRADE CONTROL JOINT
Scale: 1" = 1'-0"



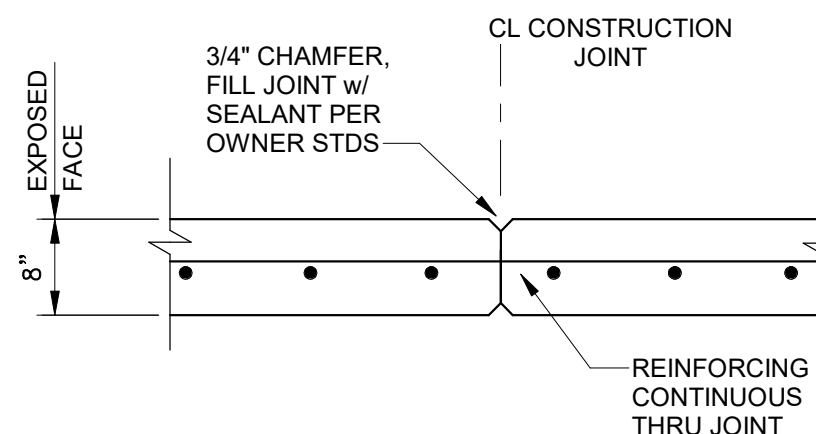
5 SLAB ON GRADE CONSTRUCTION JOINT
Scale: 1" = 1'-0"



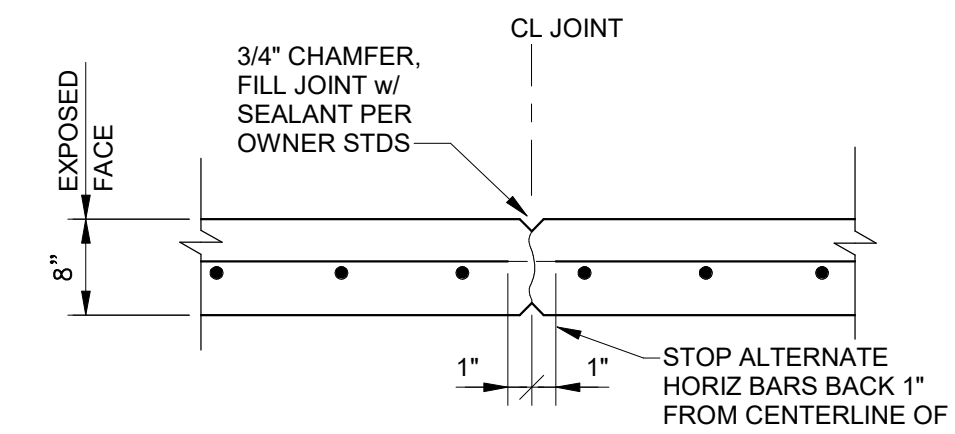
6 FIXED GUARDRAIL CONNECTION DETAIL
Scale: 1" = 1'-0"



7 TYPICAL GUARDRAIL DETAIL
Scale: 1" = 1'-0"



8 TYPICAL CONSTRUCTION JOINT IN WALL (UNO)
Scale: 3/4" = 1'-0"



9 TYPICAL CONTROL JOINT IN WALL (UNO)
Scale: 3/4" = 1'-0"



ARCHITECTURE
LANDSCAPE ARCHITECTURE
PLANNING
INTERIOR DESIGN

PO BOX 1308
300 SOUTH DAWSON STREET
RALEIGH, NORTH CAROLINA
27602
919.821.5547
www.hagersmith.com © Copyright 2012

PRELIMINARY
NOT FOR CONSTRUCTION

ASSOCIATES / CONSULTANTS



ARDURRA

ARDURRA GROUP NORTH CAROLINA
2840 Plaza Place, Suite 103
Raleigh, North Carolina 27612
Phone: (919) 277-0494
www.Ardurra.com
NC FIRM LICENSE NO F-0113
JOB NO. 2021-0411

PROJECT 000-000

**GRIFOLS E430
EXPANSION
- 60% SET**

8368 US-70 BUS. HWY WEST
CLAYTON, NC 27520

CLIENT

GRIFOLS

DRAWING TITLE
SECTIONS AND DETAILS

NUMBER	DESCRIPTION	DATE

DRAWN BY Author
CHECKED BY Checker
DATE ISSUED
S-500
OF