VOLUME 2

REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING
JEFFERSON CITY, MISSOURI

OWNER: STATE OF MISSOURI
MICHAEL L. PARSON,
GOVENOR

OFFICE OF ADMINISTRATION

PROJECT MANAGEMENT: OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

MARTIN/MARTIN
CONSULTING ENGINEERS

31 West 31st Street
816.381.4150

Kansas City, Missouri 64108
martinmartin.com

DESIGNER: ANDREW LACK, PE
816.381.4150 ext 167
ALACK@MARTINMARTIN.COM

PROJECT NUMBER: O2440-01

ASSET NUMBER: 3101010001

SHEET NUMBER:

G-001

1 OF 9 SHEETS
06/14/2024

SYMBOLS LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
-	GRID LINES	〰	ROUGHENED SURFACE, INTENTIONALLY ROUGHEN TO 1/4" AMPLITUDE, UNO
X	SECTION OR DETAIL CUT	▨	STEP
XX	SHEET NUMBER	▨	SLOPE
X	ELEVATION CUT	1	KEY NOTE
XX	SHEET NUMBER	▨	SUBGRADE
XXX'-XX"	ELEVATION CALLOUT		
X	DRAWING REVISION NUMBER		
☁	CURRENT REVISION CLOUD		

NOTES:
1. ITEMS NOT DESIGNED BY M/M ARE SHOWN HALFTONED,
2. ITEMS INCLUDE:
   - EXISTING CONSTRUCTION
   - PERFORMANCE SPECIFIED ITEMS (FRP, ETC.)

ABBREVIATIONS LIST

(E) or EXIST	Existing
/	Per
@	At
AB	Anchor Bolt
ACI	American Concrete Institute
ADDNL	Additional
ALT	Alternate
APPROX	Approximate
B/ or BO	Bottom of
BLDG	Building
BM	Beam
CC	Center to Center
CIP	Cast-In-Place
CL	Centerline
CLG	Ceiling
CLMS	Ceiling/Light/Mechanical/ Superimposed Load
CLR	Clear
COL	Column
CONC	Concrete
CONN	Connection
CONST	Construction
CONT	Continue or Continuous
CONTR	Contractor
COORD	Coordinate
CTR(D)	Center(ed)
D or DL	Dead Load
db	Rebar Diameter
DBL	Double
DFS	Deferred Submittal
DIA OR Ø	Diameter
DIAG	Diagonal
DIM	Dimension
DTL(s)	Detail(s)
DWG(s)	Drawing(s)
DWL(s)	Dowels(s)
E-W	East-West
EA	Each
EE	Each End
EF	Each Face
EL	Elevation
ELEV	Elevator
EMBED	Embedded

ENGR	Engineer
EOR	Engineer-of-Record
EQ	Equal
EQ SP	Equally Spaced
ES	Each Side
EW	Each Way
EXT	Exterior
FAB	Fabricate
FIN	Finish(ed)
FLR	Floor
FND	Foundation
FRP	Fiber Reinforced Polymer
FT	Foot or Feet
FV	Field Verify
GA	Gage or Gauge
GALV	Galvanized
GC	General Contractor
GR	Grade or Grind
GR BM	Grade Beam
HORIZ	Horizontal
IN	Inch
k	Kip
L	Length or Live Load
LB(S)	Pound(s)
LL	Live Load
LOC(s)	Location(s) or Locate
LONG	Longitudinal
Lr	Roof Live Load
MAX	Maximum
MECH	Mechanical
MEP	Mech/Elect/Plumb
MIN	Minimum
MISC	Miscellaneous
MNFR	Manufacturer
N	North
N-S	North-South
NO OR #	Number
NOM	Nominal
NS	Non-Shrink or Near Side
NTS	Not to Scale
NWC	Normal Weight Concrete
O.F.	Outside Face
OAE	Or Approved Equivalent
OC	On Center

OPNG	Opening
OPP	Opposite
PCA	Portland Cement Association
PERP	Perpendicular
PLF	Pounds Per Lineal Foot
PSF	Pounds Per Square Foot
PSI	Pounds Per Square Inch
QTY	Quantity
RC	Reinforced Concrete
RE: or REF	Refer to (Reference)
REINF	Reinforce(ing)(d)(ment)
REQD	Required
SCHED	Schedule
SECT	Section
SIM	Similar
SL	Snow Load
SOG	Slab on Grade
SP	Space(s)
SP @	Space at
SPECS	Specifications
STD	Standard
STL	Steel
STR	Structural
SYM	Symmetrical
T	Top
T&B	Top and Bottom
T/ or T.O.	Top of
TOC	Top of Concrete
TRANS	Transverse
TWS	Two-Way Slab
TYP	Typical
ULT	Ultimate
UNO	Unless Noted Otherwise
Vasd	Service Level/Nominal Design Wind Speed
VERT	Vertical
VIF	Verify in Field
Vult	Ultimate Design Wind Speed
W	Wind Load
W/	With
W/O	Without
WT	Weight
WxH	Width x Height

DESIGN CRITERIA

1) CODES AND STANDARDS:

1A) GENERAL DESIGN
- INTERNATIONAL BUILDING CODE 2021 AS ADOPTED BY THE STATE OF MISSOURI

1B) THE AUTHORITY HAVING JURISDICTION (AHJ) IS THE STATE OF MISSOURI

2) LATERAL LOAD RESISTING SYSTEM DESCRIPTION:
- THE WORK SHOWN ON THESE DRAWINGS DOES NOT INCREASE THE EXISTING LATERAL LOADS ACTING ON THE STRUCTURE OR ALTER THE EXISTING LATERAL FORCE RESISTING SYSTEM.

3) GRAVITY LOADS:

3A) DEAD LOAD
- DEAD LOAD = CONCRETE SELF WEIGHT
- SUPER IMPOSED DEAD LOAD INCLUDING FINISHES AND MEP = 8 PSF

3B) LIVE LOAD
- OFFICES = 50PSF + 15PSF PARTITION
- LIGHT STORAGE = 125 PSF
- STAIRS AND EXIT WAYS = 100 PSF
- CORRIDORS ABOVE FIRST FLOOR = 80 PSF
- ROOF LIVE LOAD = 20 PSF

3C) DRIFTING, SLIDING AND UNBALANCED SNOW
- MINIMUM FLAT ROOF SNOW LOAD = 20 PSF (CONTROLLING)
- RAIN ON SNOW LOAD = 5 PSF
- FLAT ROOF SNOW LOAD = 14 PSF

4) MISCELLANEOUS:

4A) ROOFING
- MINIMUM ROOF INSULATION VALUE OF R-30
- WHITE ROOFING MEMBRANE ASSUMED

DEFERRED SUBMITTALS

1) GENERAL:

1A) THE FOLLOWING PORTIONS OF THE STRUCTURAL DESIGN WILL NOT BE SUBMITTED AT THE TIME OF BID DOCUMENT ISSUANCE. WHEN RECEIVED AND REVIEWED, THESE DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD BY THE CONTRACTOR:
- SHORING DESIGN AND DETAILS REQUIRED TO FACILITATE REPAIRS
- FIBER REINFORCED POLYMER (FRP) STRENGTHENING DESIGN AND DETAILING

1B) SUBMIT STAMPED STRUCTURAL CALCULATIONS FOR ALL DEFERRED SUBMITTAL ITEMS PRIOR TO OR CONCURRENTLY WITH DRAWINGS OR PRODUCT DATA. INCLUDE ANALYSIS OF ATTACHMENT TO PRIMARY STRUCTURE. INCLUDE CURRENT ICC EVALUATION SERVICE (ICC-ES) TESTING REPORT WITH ALL PROPRIETARY STRUCTURAL ELEMENTS AND ANCHORS/FASTENERS.

2) SUBMITTALS:

2A) PROVIDE THE FOLLOWING DEFERRED SUBMITTAL ITEMS:
- FRP SPECIFICATION AND LAYOUT DETAILS INCLUDING ALL COMPONENT AND ASSEMBLY PRODUCT DATA AND TESTING REQUIREMENTS
- FRP CALCULATIONS IN ACCORDANCE WITH ACI 440
- SHORING DESIGN AND DETAILS

GENERAL NOTES

1) GENERAL:

1A) ENGINEER: REFERENCES ON THE STRUCTURAL DRAWINGS TO 'ENGINEER' MEAN THE STRUCTURAL ENGINEER OF RECORD. OTHER ENTITIES ARE SPECIFICALLY NOTED AS "CONTRACTOR'S ENGINEER", "MECHANICAL ENGINEER", ETC.

1B) THESE NOTES SUPPLEMENT THE SPECIFICATIONS, WHICH SHALL BE REFERENCED FOR ADDITIONAL REQUIREMENTS.

1C) STRUCTURAL ELEMENTS ARE CENTERED ON GRID LINES AND GRID LINE INTERSECTIONS UNLESS DIMENSIONED OTHERWISE.

2) USE OF DRAWINGS:

2A) DO NOT SCALE DRAWINGS.

2B) DETAILS ON DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.

2C) DETAILS NOTED TYPICAL APPLY TO ALL SIMILAR CONDITIONS. WHERE NO SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ELSEWHERE ON THE PROJECT.

2D) WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES AND SPECIFICATIONS:
- CONTACT THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION
- THE MORE STRINGENT REQUIREMENTS SHALL GOVERN FOR BIDDING / PRICING

3) EXISTING STRUCTURES:

3A) CONTRACT DOCUMENTS HAVE BEEN PREPARED USING AVAILABLE DRAWINGS AND SITE OBSERVATION AS PERMITTED BY ACCESS RESTRICTIONS DURING DESIGN.

3B) DURING CONSTRUCTION, THE CONTRACTOR MAY ENCOUNTER EXISTING CONDITIONS WHICH ARE NOT KNOWN OR ARE AT VARIANCE WITH PROJECT DOCUMENTATION. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ALL CONDITIONS NOT PER THE CONTRACT DOCUMENTS. EXAMPLES INCLUDE:
- SIZES OR DIMENSIONS OTHER THAN THOSE SHOWN
- DAMAGE OR DETERIORATION TO MATERIALS AND COMPONENTS
- CONDITIONS OF INSTABILITY OR LACK OF SUPPORT
- ITEMS NOTED AS EXISTING ON THE DRAWINGS BUT NOT FOUND IN THE FIELD

3C) PREPARE DIMENSIONAL DRAWINGS OF ALL DISCOVERED ITEMS.

3D) CONTRACTOR SHALL FIELD VERIFY ALL EXISTING STRUCTURAL CONDITIONS PRIOR TO SUBMITTING SHOP DRAWINGS.

3E) SUBMIT A DIMENSIONED DRAWING OF ALL NEW OPENINGS THROUGH EXISTING STRUCTURE FOR SHORING AND CONCRETE PLACEMENT AND SECURE APPROVAL PRIOR TO CUTTING. NEW OPENING MAY BE EITHER SHOWN ON THE CONTRACT DOCUMENTS OR PROPOSED BY THE CONTRACTOR. DRAWING SHALL SHOW:
- VERTICAL & HORIZONTAL LOCATION AND SIZE OF NEW OPENING(S)
- ALL EXISTING OPENINGS IN THE VICINITY OF THE NEW OPENING(S)
- ALL EXISTING STRUCTURE (BEAMS, COLUMNS, SLABS, WALLS, ETC) IN THE VICINITY OF THE NEW OPENING(S)
- ALL REINFORCING BAR SIZES AND POSITIONS (LAYOUT LOCATION AND DEPTH) CONFLICTING WITH OR IN THE VICINITY OF THE NEW OPENING(S)

4) SUBMITTALS AND SUBSTITUTIONS:

4A) SUBMITTALS: REFER TO SPECIFICATIONS FOR DETAILED REQUIREMENTS. PROVIDE THE FOLLOWING SUBMITTALS:
- ALL DEFERRED DESIGN SUBMITTALS
- ALL PRODUCT DATA AND MATERIALS INCLUDING BUT NOT LIMITED TO CONCRETE REPAIR PRODUCTS, EPOXIES, FRP REPAIR PRODUCTS, INTUMESCENT PAINT, AND POST-INSTALLED FASTENERS INCLUDING LATEST ICC TEST REPORT.

4B) IF THE CONTRACTOR REQUESTS A CHANGE FROM THE STRUCTURAL DRAWINGS, IT SHALL BE APPROVED BY THE ENGINEER AND DESIGNED BY MARTIN/MARTIN, INC. PRIOR TO SUBMITTING SHOP DRAWINGS. VARIATION SHALL BE INDICATED ON THE SHOP DRAWINGS. CONTRACTOR SHALL COMPENSATE MARTIN/MARTIN, INC. FOR MAKING THE CHANGE.
- CONSTRUCTION DOCUMENTS SHALL NOT BE REPRODUCED FOR USE IN SUBMITTALS
- ALL SHOP DRAWINGS SHALL REFERENCE THE STRUCTURAL DRAWING NUMBER AND DETAIL USED TO PREPARE THE SUBMITTAL

4C) SUBSTITUTIONS: ENGINEER'S APPROVAL SHALL BE SECURED FOR ALL SUBSTITUTIONS

4D) NONCONFORMANCE: NOTIFY ENGINEER OF CONDITIONS NOT CONSTRUCTED PER THE CONTRACT DOCUMENTS PRIOR TO PROCEEDING WITH CORRECTIVE WORK. SUBMIT PROPOSED REPAIR TO THE ENGINEER FOR ACCEPTANCE. CONTRACTOR SHALL COMPENSATE MARTIN/MARTIN, INC. FOR DESIGNING THE REPAIR.

4E) ALL SHOP DRAWINGS SHALL BE SUBMITTED AS NOTED IN SPECIFICATIONS.

5) TEMPORARY CONDITIONS, CONSTRUCTION ENGINEERING, AND OSHA STANDARDS:

5A) THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION AND ONLY FOR LOADS ANTICIPATED DURING THE STRUCTURE'S SERVICE LIFE.

5B) THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL TEMPORARY BRACING AND/OR SUPPORT THAT MAY BE REQUIRED AS THE RESULT OF THE CONTRACTOR'S CONSTRUCTION METHODS AND/OR SEQUENCES. REFER TO "LATERAL LOAD RESISTING SYSTEM DESCRIPTION" IN DESIGN CRITERIA FOR ADDITIONAL INFORMATION. CONTRACTOR SHALL PROVIDE ALL REQUIRED ENGINEERING AND OTHER MEASURES TO ACHIEVE THE MEANS, METHODS, AND SEQUENCES OF WORK WHICH MAY INCLUDE, BUT IS NOT LIMITED TO:
- LAYOUT
- DESIGN FOR FORMWORK, SHORING, AND RESHORING
- DESIGN OF CONCRETE MIXES
- SURVEYING TO VERIFY CONSTRUCTION TOLERANCES
- EVALUATION OF TEMPORARY CONSTRUCTION LOADS ON STRUCTURE DUE TO EQUIPMENT AND MATERIALS

5C) NOTHING SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE CONSTRUED AS ELIMINATING THE NEED FOR THE CONTRACTOR TO COMPLY WITH ALL OSHA REQUIREMENTS. WHERE THE STRUCTURAL DRAWINGS APPEAR TO CONFLICT WITH OSHA REQUIREMENTS, THE STRUCTURAL DRAWINGS REPRESENT FINAL CONDITIONS ONLY.
- THE CONTRACTOR SHALL ADD ALL ERECTION FRAMING NECESSARY TO COMPLY WITH OSHA
- THE CONTRACTOR SHALL ADD ALL CLOSURES FOR OPENINGS

STRUCTURAL DRAWING LIST

SHEET NUMBER	SHEET TITLE
S-001	GENERAL NOTES
S-002	GENERAL NOTES
S-003	QAQC
S-101	SECOND FLOOR PLAN
S-102	THIRD FLOOR PLAN
S-103	ROOF FRAMING PLAN
S-200	CONCRETE REINFORCING DETAILS
S-201	FRP DETAILS

STATE OF MISSOURI
MICHAEL L. PARSON
GOVENOR

ANDREW CARL LACK
NUMBER
PE-2020002968
06-14-2024

PROFESSIONAL SEAL

MARTIN/MARTIN
CONSULTING ENGINEERS
31 West 31st Street
816.381.4150
Kansas City, Missouri 64108
martinmartin.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

REPLACE HVAC,
STRUCTURAL REPAIRS, &
REPLACE ROOF VOLUME 2
GEORGE WASHINGTON
CARVER STATE OFFICE
BUILDING

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
FACILITY # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE:06/14/2024

CAD DWG FILE:
DRAWN BY: MM
CHECKED BY: AL
DESIGNED BY: RK

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
S-001
2 OF 9 SHEETS
06/14/2024

DESIGNERS:RISA KRUEGER
LEAD REVIT TECH:MIKE MATA
DATE PRINTED:6/10/2024 10:29:50 AM
FILE PATH:Autodesk Docs://MM Structural Projects 2023/23.0892.S.02-GWC SLAB REPAIR-S23.rvt

MM JOB #: 23.0892.S.02
PRINCIPAL:NICOLE LANE
EOR: ANDREW LACK
PROJECT MANAGER:LUKE WALDO

QUALITY ASSURANCE GENERAL NOTES
STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS AND TESTING

1) GENERAL:
1A) SCOPE OF WORK
- THE OWNER WILL ENGAGE A QUALIFIED INSPECTION AND TESTING AGENCY(S) TO PERFORM SPECIAL INSPECTIONS AND TESTING FOR ALL STRUCTURAL MEMBERS AND ASSEMBLIES AS NOTED HEREIN.
- SUBMIT DOCUMENTATION OF QUALIFICATIONS, INCLUDING COMPETENCE AND RELEVANT WORK EXPERIENCE OR TRAINING OF SPECIAL INSPECTORS TO THE AUTHORITY HAVING JURISDICTION PRIOR TO THE START OF WORK.
- SPECIAL INSPECTIONS ARE IN ADDITION TO INSPECTIONS BY THE AUTHORITY HAVING JURISDICTION REQUIRED BY IBC 2021 SECTION 110.
- REFER TO THE SPECIFICATIONS FOR REPORTING AND PROCEDURAL REQUIREMENTS FOR QUALITY ASSURANCE AND QUALITY CONTROL.

1B) SPECIAL INSPECTIONS AND TESTING ARE APPLICABLE TO ALL REVISIONS AND/OR FUTURE WORK ADDED BY AMENDMENTS TO THESE DOCUMENTS.

1C) DEFINITIONS
- SPECIAL INSPECTOR: THE AGENCY ENGAGED BY THE OWNER AND APPROVED BY THE AUTHORITY HAVING JURISDICTION TO ACT AS THE DESIGNATED REPRESENTATIVE TO PERFORM INSPECTIONS.
- SPECIAL INSPECTION: INSPECTION PERFORMED BY THE SPECIAL INSPECTOR ACCORDING TO IBC 2021 SECTION 1704 TO ENSURE COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS.
- (P) PERIODIC INSPECTION: THE PART-TIME OR INTERMITTENT OBSERVATION BY THE SPECIAL INSPECTOR OF WORK BEING PERFORMED. SPECIAL INSPECTOR SHALL BE PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. OBSERVATION OF ALL WORK (100% VISUAL) SHALL BE MADE AT THE COMPLETION OF THE WORK.
- (C) CONTINUOUS INSPECTION: THE FULL-TIME OBSERVATION BY THE SPECIAL INSPECTOR OF WORK BEING PERFORMED. SPECIAL INSPECTOR SHALL BE PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. OBSERVATION OF ALL WORK (100% VISUAL) SHALL BE MADE AT THE COMPLETION OF THE WORK.

1D) DEFICIENCIES IN WORK
- CORRECT DEFICIENCIES IN WORK THAT TESTS AND INSPECTIONS INDICATE DO NOT COMPLY WITH THE CONTRACT DOCUMENTS AND REFERENCED STANDARDS.
- ALL COST OF ADDITIONAL TESTING AND/OR INSPECTIONS FOR CORRECTIVE WORK SHALL BE BORNE BY THE CONTRACTOR.

2) SHOP FABRICATIONS:
2A) GENERAL
- PERFORM INSPECTIONS AND TESTING FOR ALL SHOP FABRICATED STRUCTURAL MEMBERS AND ASSEMBLIES AS NOTED HEREIN. SPECIAL INSPECTOR SHALL PERFORM SPECIAL INSPECTIONS AND TESTING UNLESS THE FABRICATOR IS REGISTERED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION OR FABRICATION HAS A CURRENT ICC-ES EVALUATION REPORT.
- SPECIAL INSPECTOR SHALL VERIFY THE FABRICATOR MAINTAINS AND FOLLOWS DETAILED SHOP FABRICATION AND QUALITY CONTROL PROCEDURES, UNLESS FABRICATOR IS REGISTERED AND APPROVED.
- AT THE COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE AUTHORITY HAVING JURISDICTION ACCORDING TO IBC 2021 SECTION 1704.2.5.1.
- APPROVED FABRICATORS MAY PERFORM TESTING NOTED HEREIN EXCEPT THAT NONDESTRUCTIVE TESTING (NDT) SHALL ONLY BE PERFORMED BY PERSONNEL WITH QUALIFICATIONS THAT MEET OR EXCEED THE CRITERIA OF AWS D1.1 SUBCLAUSE 6.14.6 AND AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING (ASNT) SNT-TC-1A OR ASNT CP-189.

2B) SHOP FABRICATIONS INCLUDED
- SHOP FABRICATED STRUCTURAL STEEL

POST-INSTALLED ANCHOR NOTES

1) PERSONNEL REQUIREMENTS:
1A) THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. SUBMIT DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS HAVE PASSED THE TRAINING COURSE PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.

1B) PERSONNEL WHO WILL INSTALL HORIZONTAL OR UPWARDLY INCLINED ADHESIVE ANCHORS IN CONCRETE THAT SUPPORT SUSTAINED TENSION LOADS SHALL BE CERTIFIED BY THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM. THESE ANCHORS ARE DESIGNATED WITH A (CERT) AFTER THE ANCHOR CALL OUT. SUBMIT DOCUMENTED CONFIRMATION THAT PERSONNEL HAVE PASSED THE TRAINING COURSE PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.

2) INSTALLATION REQUIREMENTS:
2A) ALL POST-INSTALLED ANCHORS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS AND PER MANUFACTURER'S ON-SITE TRAINING.

2B) ALL ADHESIVE ANCHORS AND ADHESIVE ANCHORED REINFORCEMENT DESIGNS ARE FOR INSTALLATION IN THE FOLLOWING CONDITIONS, UNLESS NOTED OTHERWISE. WRITTEN APPROVAL MUST BE RECEIVED FROM ENGINEER PRIOR TO INSTALLATION IN ALTERNATE CONDITIONS.
- DRY CONCRETE, UNLESS NOTED OTHERWISE
- CONCRETE TEMPERATURE AT TIME OF INSTALLATION THROUGH CURE TIME MUST BE WITHIN THE TEMPERATURE RANGE SPECIFIED IN MANUFACTURER'S PRINTED INSTALLATION INSTRUCTION FOR ADHESIVE GEL AND CURE TIMES
- ANCHOR HOLES TO BE HAMMER DRILLED AND CLEANED
- CONCRETE MUST BE AT LEAST 21 DAYS OLD BEFORE INSTALLATION OF ANCHORS
- HOLES TO BE CLEANED AND PREPARED IN STRICT ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS AND EVALUATION REPORT PRIOR TO ADHESIVE INJECTION

2C) THE POSITION OF EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE SHALL BE LOCATED PRIOR TO INSTALLING POST INSTALLED ANCHORS OR REINFORCEMENT. EXISTING REINFORCEMENT SHALL BE LOCATED USING A SCANNER, GPR, X-RAY, OR OTHER MEANS. DO NOT DAMAGE OR CUT EXISTING REINFORCEMENT.

3) SUBSTITUTION REQUESTS:
3A) SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS AND PRODUCT DATA DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS IN COMPLIANCE WITH THE RELEVANT BUILDING CODES, LOAD RESISTANCE, INSTALLATION CATEGORY, CREEP APPROVAL, IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE OF THE SPECIFIED PRODUCT.

POST-INSTALLED ANCHOR TABLE - HILTI

ANCHOR TYPE	PRODUCT	Fy (KSI)	Fu (KSI)	COMMENT
ADHESIVE (IN CONCRETE)	HILTI HIT-HY 200 V3	-	-	SUBMIT CALCULATIONS FOR SUBSTITUTIONS
ADHESIVE ANCHOR RODS	-	36 MIN	58 MIN	THREADED ROD, UNGREASED

3B) CONTRACTOR CAN SUBMIT ALTERNATE ANCHOR CALCULATIONS FROM THE FOLLOWING MANUFACTURERS:
- DEWALT
- SIMPSON STRONG-TIE COMPANY, INC.

EXTERNALLY BONDED FRP NOTES

1) GENERAL:
1A) ALL WORK SHALL CONFORM WITH ACI 440.12-22 - SPECIFICATION FOR STRENGTHENING OF CONCRETE STRUCTURES WITH EXTERNALLY BONDED FIBER-REINFORCED POLYMER (FRP) MATERIALS USING WET-LAY UP METHOD.

1B) THESE DOCUMENTS INCLUDE FRP SYSTEM DESIGN IN ACCORDANCE WITH ACI 440.12, "METHOD 1".

1C) CONCRETE SUBSTRATE REPAIR REQUIREMENTS AND FRP PERFORMANCE REQUIREMENTS ARE INDICATED IN THE PROJECT DETAILS.

1D) ALL MEMBERS TO BE STRENGTHENED ARE "BOND CRITICAL".

2) SUBMITTALS:
2A) SUBMIT THE FOLLOWING PRIOR TO STARTING THE WORK:
- DESIGN CALCULATIONS PREPARED AND SEALED BY THE SPECIALTY ENGINEER DEMONSTRATING THE LAYOUT MEETS THE PERFORMANCE REQUIREMENTS ON THE DRAWINGS
- DRAWINGS PREPARED AND SEALED BY THE SPECIALTY ENGINEER DETAILING THE EXTENT, NUMBER OF LAYERS, ORIENTATION, AND ALL OTHER REQUIRED INFORMATION FOR INSTALLATION OF THE FRP SYSTEM
- QUALIFICATIONS FOR FULL TIME ON-SITE STAFF TRAINED BY FRP MANUFACTURER
- PRODUCT DATA SHEETS AND MATERIAL CERTIFICATES.
- FRP MANUFACTURER'S INSTALLATION QUALITY CONTROL MANUAL

3) ACCEPTANCE:
3A) INSPECT FINISHED PRODUCT FOR DEFECTS INCLUDING DELAMINATIONS. IF DELAMINATIONS ARE DISCOVERED, REPAIR THE DEFECTIVE AREA IN ACCORDANCE WITH THE SPECIFICATION.

3B) THE CONTRACTOR SHALL PERFORM PULL-OFF ADHESION TESTING AND PROVIDE THE RESULTS TO THE SPECIALTY ENGINEER FOR ACCEPTANCE PRIOR TO REMOVING ANY ASSOCIATED SHORING.
- PERFORM THREE ADHESION TESTS PER DAY PER SUBSTRATE OF INSTALLATION AT A REPRESENTATIVE MOCKUP TESTING AREA AWAY FROM REPAIR AREA IN ACCORDANCE WITH ASTM D7522
- PROVIDE TEST REPORT FOR ENGINEER REVIEW
- ACCEPTABLE TEST RESULTS SHALL BE DEFINED BY THE SPECIALTY ENGINEER

CONCRETE NOTES

1) GENERAL:
1A) ALL WORK SHALL CONFORM WITH ACI 301-20, UNLESS NOTED OTHERWISE IN DRAWINGS OR PROJECT SPECIFICATIONS.

1B) DETAIL BARS IN ACCORDANCE WITH THE DRAWINGS, PROJECT SPECIFICATIONS, AND ACI PUBLICATION SP-66 (2004): "ACI DETAILING MANUAL".

2) REINFORCING MATERIALS:
2A) TYPICAL REINFORCING: ASTM A615, Fy = 60 KSI, Fu = 90 KSI

3) REINFORCING FABRICATION:
3A) SPLICES:
- NO SPLICING OF REINFORCEMENT PERMITTED EXCEPT AS NOTED ON DRAWINGS. MAKE BARS CONTINUOUS AROUND CORNERS WHERE DETAIL NOT PROVIDED. WHERE PERMITTED, SPLICES MAY BE MADE BY CONTACT LAPS.
- SEE 'LAP SPLICE SCHEDULE' FOR LAP LENGTHS

3B) MISCELLANEOUS REINFORCING REQUIREMENTS:
- PROVIDE ADDITIONAL BARS OR STIRRUPS REQUIRED TO SECURE REINFORCING IN PLACE DURING CONCRETE PLACEMENT
- MAKE ALL REINFORCING BAR BENDS IN THE FABRICATOR'S SHOP UNLESS NOTED
- NO WELDING OF REINFORCING PERMITTED UNLESS NOTED ON DRAWINGS. WHERE PERMITTED, PERFORM WELDING IN ACCORDANCE WITH AWS D1.4-2018
- PROVIDE ADDED REINFORCING TO TRIM ALL OPENINGS, NOTCHES, AND REENTRANT CORNERS AS NOTED IN TYPICAL DETAILS

4) STRUCTURAL CONCRETE MIX REQUIREMENTS:
4A) SEE 'CONCRETE MIX TABLE'

5) NON-SHRINK GROUT:
5A) CONFORM TO ASTM C1107

5B) ACHIEVE 6000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.

6) PLACING REINFORCEMENT:
6A) REINFORCEMENT PROTECTION:
- COLUMN CAPITALS: 1 1/2 IN CLEAR COVER
- SEE ACI 117-10 FOR REINFORCEMENT PLACING TOLERANCES

6B) PROVIDE ACCESSORIES NECESSARY TO PROPERLY SUPPORT REINFORCING AND WELDED WIRE REINFORCEMENT AT POSITIONS SHOWN ON PLANS. ALL REINFORCING, DOWELS, BOLTS, AND EMBEDDED PLATES SHALL BE SET AND TIED IN PLACE BEFORE THE CONCRETE IS POURED. "STABBING" INTO PREVIOUSLY PLACED CONCRETE IS NOT PERMITTED.

7) MODIFICATIONS TO HARDENED OR EXISTING CONCRETE:
7A) UNLESS NOTED ON THE STRUCTURAL DOCUMENTS MODIFICATIONS AS LISTED BELOW SHALL NOT BE MADE TO HARDENED OR EXISTING CONCRETE WITHOUT APPROVAL OF THE ENGINEER:
- SAW CUTTING
- CORING
- CHIPPING

7B) DO NOT CUT OR DAMAGE ANY REINFORCING WITHOUT APPROVAL OF THE ENGINEER.

CONCRETE MIX TABLE

CONC MIX TYPE	INTENDED USE	28 DAY STRENGTH f'c (KSI)	CONC WEIGHT	MAX W/C RATIO, INCLUDING FLY ASH	MAX AGGREGATE SIZE, IN (ASTM C33)	TOTAL AIR CONTENT (%), NOTE a	OTHER REQTS, NOTE b
1	COLUMN CAPITALS	4	NWC	0.50	1/2	- -	SCC

CONCRETE MIX TABLE NOTES:

PROPORTIONS OF MATERIALS IN CONCRETE MIX SHALL BE ESTABLISHED TO:

- PROVIDE THE MINIMUM COMPRESSIVE STRENGTH AS INDICATED IN THE MIX TABLE. DO NOT EXCEED THE MAXIMUM WATER-CEMENT RATIO NOTED.

- PROVIDE WORKABILITY AND CONSISTENCY TO PERMIT CONCRETE TO BE WORKED READILY INTO FORMS AND AROUND REINFORCEMENT UNDER CONDITIONS OF PLACEMENT TO BE EMPLOYED, WITHOUT SEGREGATION OR EXCESSIVE BLEEDING. CONTRACTOR SHALL SELECT APPROPRIATE SLUMP. USE ADMIXTURES AS REQUIRED TO OBTAIN DESIRED RESULTS.

USE TYPE I / II PORTLAND CEMENT UNLESS NOTED OTHERWISE. FOR CONCRETE MIXES USED ON FLOORS MINIMUM CEMENTITIOUS CONTENT SHALL BE 540 POUNDS PER CUBIC YARD

FOR CONCRETE PLACED BY PUMPING PROVIDE CONCRETE MIX FLOWABILITY TO FACILITATE PUMPING. ENTRAINED AIR MAY BE USED TO FACILITATE PUMPING SUBJECT TO THE PROVISIONS OF NOTE b BELOW.

a. WHERE AIR CONTENT IS INDICATED IN THE MIX TABLE, PROVIDE AIR ENTRAINING ADMIXTURE. TOTAL AIR CONTENT LIMITS INCLUDE BOTH ENTRAINED AND ENTRAPPED AIR +/- 1 1/2%. 'NP' IN COLUMN INDICATES ADDITION OF ENTRAINED AIR IS NOT PERMITTED EXCEPT WHERE CONTRACTOR CAN DEMONSTRATE THAT SLABS WITH ENTRAINED AIR WILL HAVE A FINISH ACCEPTABLE TO THE ENGINEER WITHOUT BLISTERS. AIR CONTENT NOTED IS BASED ON 3/4" AGGREGATE. IF 3/8" AGGREGATE IS USED, INCREASE AIR CONTENT BY 11/2%.

b. ABBREVIATIONS FOR OTHER REQUIREMENTS AS FOLLOWS:SCC = SELF CONSOLIDATING CONCRETE, SLUMP FLOW = 26" ± 4"

STATE OF MISSOURI
MICHAEL L. PARSON
GOVENOR

STATE OF MISSOURI
ANDREW CARL LACK
NUMBER
PE-2020002968
PROFESSIONAL ENGINEER
06-14-2024

PROFESSIONAL SEAL

MARTIN/MARTIN
CONSULTING ENGINEERS
31 West 31st Street
816.381.4150
Kansas City, Missouri 64108
martinmartin.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 2
GEORGE WASHINGTON CARVER STATE OFFICE BUILDING

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
FACILITY # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE:06/14/2024

CAD DWG FILE:
DRAWN BY: MM
CHECKED BY: AL
DESIGNED BY: RK

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
S-002

06/14/2024

MM JOB #: 23.0892.S.02
PRINCIPAL: NICOLE LANE
EOR: ANDREW LACK
PROJECT MANAGER: LUKE WALDO

DESIGNERS: RISA KRUEGER
LEAD REVIT TECH: MIKE MATA
DATE PRINTED: 6/10/2024 10:29:50 AM
FILE PATH: Autodesk Docs://MM Structural Projects 2023/23.0892.S.02-GWC SLAB REPAIR-S23.rvt

STRUCTURAL CONCRETE TESTING

ITEM	FREQUENCY	STANDARD	CRITERIA
CONCRETE			
- COMPOSITE SAMPLE		ASTM C172	OBTAIN AT POINT OF PLACEMENT. FOR DRILLED PIERS OBTAIN NEAR BEGINNING OF LOAD PRIOR TO PLACEMENT IN SHAFT. ADJUST FREQUENCY AS REQUIRED TO PROVIDE MINIMUM 5 TOTAL TESTS PER MIX BUT NOT MORE THAN ONE SAMPLE PER TRUCK LOAD BUT NOT LESS THAN 1 TEST FOR 5000 SF OF WALL OR SLAB AREA
1. f'c ≤ 5000 PSI	100 CY/MIX/DAY		
- SLUMP/SLUMP FLOW	EACH COMPOSITE SAMPLE	ASTM C143 (SLUMP) OR ASTM C1611 (SLUMP FLOW)	SPECIFIED SLUMP SHALL BE AS SUBMITTED IN THE MIX DESIGN ±1 1/2". PERFORM ADDITIONAL TESTS WHEN CONCRETE CONSISTENCY APPEARS TO CHANGE
- AIR CONTENT WHEN AIR ENTRAINMENT IS SPECIFIED AND LIGHTWEIGHT CONCRETE	EACH COMPOSITE SAMPLE	ASTM C231 PRESSURE METHOD (NWC) OR ASTM C173 VOLUMETRIC METHOD (LWC)	-
- TEMPERATURE	EACH COMPOSITE SAMPLE AND 60 MINUTE INTERVALS	ASTM C1064	REQUIRED WHEN AIR TEMPERATURE IS 40°F AND BELOW OR 80°F AND ABOVE
- COMPRESSIVE STRENGTH	EACH COMPOSITE SAMPLE	ASTM C31 ASTM C39 EITHER: (4)6x12 OR (6)4x8 CYLINDERS	TEST PER SCHEDULE BELOW FOR 28-DAY STRENGTH: - 7 DAYS: (1) 6x12 OR (1) 4x8 - 28 DAYS: (2) 6x12 OR (3) 4x8 - 56 DAYS: (1) 6x12 OR (2) 4x8 (IF 28 DAY TESTS DO NOT ACHIEVE SPECIFIED 28 DAY STRENGTH) ACCEPTANCE CRITERIA PER ACI 318
- IMPACT-ECHO AFTER CURING	EACH LOCATION	ASTM 1383	PERFORM OVER FULL AREA OF COLUMN CAPITAL EXTENSION. VERIFY CONTINUITY BETWEEN THE SLAB AND THE NEW CAPITALS. PERFORM REPAIRS AT JOINT DISCONTINUITIES

STRUCTURAL CONCRETE TESTING NOTES:

1. NONDESTRUCTIVE TESTING MAY BE PERMITTED BY THE ENGINEER, BUT WILL NOT BE USED AS SOLE BASIS FOR APPROVAL OR REJECTION OF DEFICIENT CONCRETE.
2. REPORTS OF COMPRESSIVE STRENGTH TESTS SHALL CONTAIN THE FOLLOWING INFORMATION: DATE OF CONCRETE PLACEMENT, LOCATION OF CONCRETE BATCH IN WORK, DESIGN 28-DAY COMPRESSIVE STRENGTH, SLUMP, CONCRETE SUPPLIER AND MIXTURE ID NUMBER, TIME OF BATCH AND PLACEMENT, AMBIENT AIR TEMPERATURE, SITE ADDED WATER AND ADMIXTURES, UNIT WEIGHT, AND AS REQUIRED BY ASTM C39.

STRUCTURAL CONCRETE SPECIAL INSPECTIONS

ITEM	FREQUENCY	STANDARD	CRITERIA
REINFORCING STEEL			
- DURING PLACEMENT	P	ACI 301-16 3.2-3.3	VERIFY GRADE, FINISH, SIZE, BAR QUANTITY, LOCATION, SPACING, COVER, HOOK LENGTHS, SPLICE LENGTH, SPLICE LOCATIONS, BEND DIAMETERS, COATING, SURFACE CONDITION, AND SUPPORT
- PRIOR TO PLACEMENT OF CONCRETE	100%		
- FIELD BENDING	P	ACI 301-16 3.3.2.8	-
CONCRETE			
- MIX DESIGN	EACH TRUCK	-	VERIFY USE OF APPROVED DESIGN MIXTURE FOR EACH TRUCK LOAD
- FORMWORK PRIOR TO PLACEMENT OF CONCRETE	P	ACI 301-16 2.2-2.3	INSPECT FIRST POUR OF EACH TYPE
- PLACEMENT OF CONCRETE	C	ACI 301-16 5.3.2	-
- CURING	P	ACI 301-16 5.3.6	-
- SHORE/FORM REMOVAL	P	ACI 301-16 2.3.2	-

POST-INSTALLED ANCHOR/REINFORCING STEEL TESTING

ITEM	FREQUENCY	STANDARD	CRITERIA
ADHESIVE ANCHORS, REINFORCING STEEL ANCHORED INTO HARDENED CONCRETE			
- TENSION TEST	FIRST 3 AND 1% OF REMAINING	ASTM E488 STATIC TENSION	TEST THE INSTALLATION OF THE FIRST 3 OF EACH TYPE, BASE MATERIAL, AND POSITION (DOWN, HORIZONTAL, OVERHEAD). OBSERVE ASTM E488 MINIMUM EDGE DISTANCES FOR DETERMINING TEST LOCATIONS. SUBMIT PROPOSED TEST LOCATIONS AND REQUESTS FOR REQUIRED TENSION TEST LOAD VALUES TO ENGINEER

POST-INSTALLED ANCHORS/REINFORCING STEEL SPECIAL INSPECTIONS

ITEM	FREQUENCY	STANDARD	CRITERIA
REINFORCING STEEL ANCHORED INTO HARDENED CONCRETE			
- PRIOR TO START OF WORK	-	ICC-ES REPORT	REVIEW CONTRACTOR'S INSTALLATION PROCEDURE
- PRIOR TO INSTALLATION OF REINFORCING STEEL	EACH	ICC-ES REPORT	VERIFY TYPE, DIAMETER, LENGTH, FINISH, AND BASE MATERIAL. VERIFY SOLID GROUTED AREA AROUND ANCHORS IN GROUTED MASONRY
- DURING INSTALLATION OF REINFORCING STEEL	C	ICC-ES REPORT	CONTINUOUS INSPECTION REQUIRED REGARDLESS IF PERIODIC INSPECTION IS PERMITTED BY ICC-ES REPORT. VERIFY HOLE DIMENSIONS, HOLE CLEANING, ANCHOR EMBEDMENT, EDGE DISTANCES AND SPACING
- CURE TIME	100% VISUAL	-	VERIFY FULL CURE TIME HAS ELAPSED PRIOR TO APPLICATION OF TORQUE OR LOAD TO ANCHOR

CARBON FIBER REINFORCED POLYMER (FRP) SPECIAL INSPECTIONS

ITEM	FREQUENCY	STANDARD	CRITERIA
DURING FRP INSTALLATION			
- MONITOR MIXING OF ALL EPOXY COMPONENTS	P	DEFERRED DESIGN AND PRODUCT MANUFACTURER'S REQUIREMENTS	SPECIFIED MIX RATIO, SEQUENCE, AND PROCEDURE
- RECORD BATCH NUMBERS FOR FABRIC AND EPOXY USED EACH DAY AND NOTE LOCATIONS OF INSTALLATION	P	DEFERRED DESIGN AND PRODUCT MANUFACTURER'S REQUIREMENTS	-
- MEASURE SQUARE FOOTAGE OF FABRIC AND VOLUME OF EPOXY USED EACH DAY	P	DEFERRED DESIGN AND PRODUCT MANUFACTURER'S REQUIREMENTS	-
AFTER FRP INSTALLATION			
- INSPECT ALL FRP COMPOSITE APPLIED AREAS IN ACCORDANCE WITH THE MANUFACTURER'S SECIFICATIONS FOR VOIDS, BUBBLES, AND DELAMINATIONS	P	DEFERRED DESIGN AND PRODUCT MANUFACTURER'S REQUIREMENTS	SPECIFICATION LIMITATIONS AND REQUIREMENTS FOR VOIDS, BUBBLES, AND DELAMINATIONS
- VERIFY REPAIR ACTIVITIES MEET MANUFACTURER'S REQUIREMENTS	P	DEFERRED DESIGN AND PRODUCT MANUFACTURER'S REQUIREMENTS	SPECIFIED REPAIR PROCEDURES
- COMPLETE REPORT SUMMARIZING ITEMS LISTED ABOVE	P	-	SUBMIT TO OWNER, DEFERRED FRP DESIGNER, ENGINEER OF RECORD, AND FRP COMPOSITE SYSTEM MANUFACTURER

FRP SPECIAL INSPECTION NOTES:

1. A TRAINED FIELD SUPERVISOR OR ENGINEER SHALL PERIODICALLY OBSERVE ALL ASPECTS OF PREPARATION, MIXING, AND APPLICATION.
2. ALL DEFECTIVE AREAS SHALL BE REPAIRED AS NOTED IN DEFERRED DESIGNER'S SPECIFICATION.
3. FRP SPECIAL INSPECTIONS LISTED ARE FOR PRICING ONLY. FINAL REQUIREMENTS "FOR CONSTRUCTION" BY DEFERRED DESIGNER AND PRODUCT MANUFACTURER.

CARBON FIBER REINFORCED POLYMER (FRP) TESTING

ITEM	FREQUENCY	STANDARD	CRITERIA
FIBER REINFORCED POLYMER FABRIC			
- DIRECT TENSION ADHESION TESTING	MINIMUM OF (3) TESTS PER DAY OF INSTALLATION PER SUBSTRATE	ASTM D 7522	TESTS SHALL BE PERFORMED ON EACH TYPE OF SUBSTRATE OR FOR EACH SURFACE PREPARATION METHOD USED. SEE SPECIFICATION FOR DETAILED REQUIREMENTS.
- DELAMINATION TEST VIA SOUNDING	EACH LOCATION FOLLOWING CURE	-	TEST ALL CURED FRP SYSTEMS FOR THE PRESENCE OF DELAMINATIONS, VOIDS, BUBBLED, AND ANY OTHER DEFECTS TO BE REPAIRED BY SOUNDING (CHAIN DRAG OR SIMILAR). NOTE THE LOCATION AND EXTENTS OF DEFECTS.

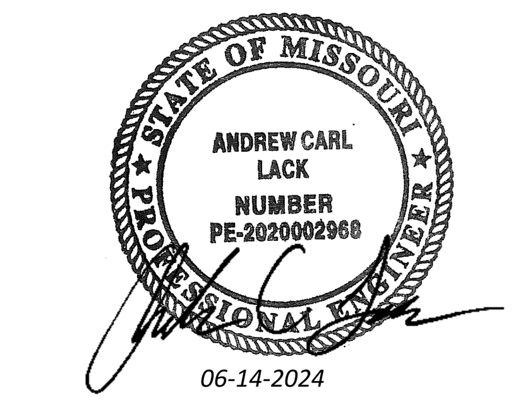
FRP TESTING NOTES:

1. CONTRACTOR SHALL COORDINATE ALL TEST LOCATIONS WITH ENGINEER.
2. PULL-OFF TESTS SHALL BE PERFOMED ON A PREPRESENTATIVE AREA AWAY FROM THE AREA BEING STRENGTHENED WHENEVER POSSIBLE.
3. THE PREPARED SURFACE OF THE BONDED FRP SYSTEM SHALL BE ALLOWED TO CURE A MINIMUM OF 72 HOURS BEFORE EXECUTION OF THE DIRECT TENSION PULL-OFF TEST.
4. THE LOCATIONS OF THE PULL-OFF TESTS SHALL BE REPRESENTATIVE AND ON FLAT SURFACES. IF NO ADJACENT AREA EXISTS, THE TESTS SHALL BE CONDUCTED ON AREAS OF THE FRP SYSTEM SUBJECTED TO RELATIVELY LOW STRESS DURING SERVICE.
5. THE MINIMUM ACCEPTABLE VALUE FOR ANY SINGLE PULL-OFF TEST IS 175 PSI. THE AVERAGE OF THE TESTS AT EACH LOCATION SHALL NOT BE LESS THAN 200 PSI. ADDITIONAL TESTS MAY BE REQUIRED TO QUALIFY THE WORK.
6. TEST LOCATIONS SHALL BE FILLED WITH THICKENED EPOXY AFTER THE VALUES HAVE BEEN RECORDED AND VERIFIED BY THE SPECIAL INSPECTOR AND THE TEST DOLLIES HAVE BEEN REMOVED.
7. FRP ADHESION TESTING LISTED IS FOR PRICING ONLY. FINAL REQUIREMENTS "FOR CONSTRUCTION" BY DEFERRED DESIGNER AND PRODUCT MANUFACTURER.

DESIGNERS: RISA KRUEGER
LEAD REVIT TECH: MIKE MATA
DATE PRINTED: 6/10/2024 10:29:50 AM
FILE PATH: Autodesk Docs://MM Structural Projects 2023/23.0892.S.02-GWC SLAB REPAIR-S23.rvt

MM JOB #: 23.0892.S.02
PRINCIPAL: NICOLE LANE
EOR: ANDREW LACK
PROJECT MANAGER: LUKE WALDO

STATE OF MISSOURI
MICHAEL L. PARSON
GOVENOR



PROFESSIONAL SEAL

MARTIN/MARTIN CONSULTING ENGINEERS
31 West 31st Street Kansas City, Missouri 64108
816.381.4150 martinmartin.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 2
GEORGE WASHINGTON CARVER STATE OFFICE BUILDING

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

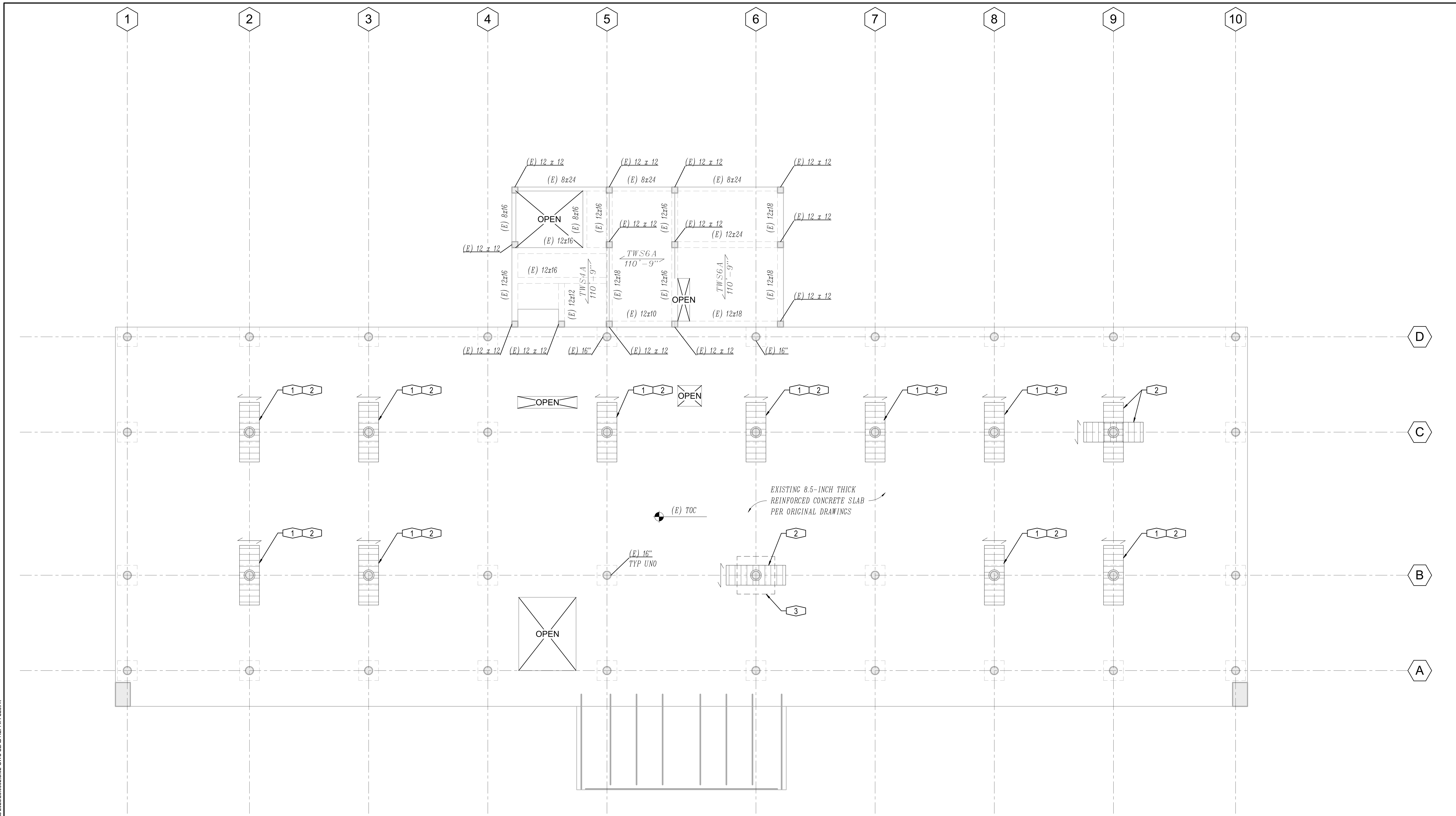
PROJECT # O2440-01
SITE # 1010
FACILITY # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE:06/14/2024

CAD DWG FILE:
DRAWN BY: MM
CHECKED BY: AL
DESIGNED BY: RK

SHEET TITLE:
QAQC

SHEET NUMBER:
S-003



SECOND FLOOR FRAMING PLAN

NORTH

1/8" = 1'-0"

PLAN NOTES:

1. SEE S-000 SERIES SHEETS FOR GENERAL NOTES, SYMBOLS AND QAQC.
2. SEE S-200 SERIES SHEETS FOR TYPICAL CONCRETE DETAILS.
3. SEE WORK LIST TABLE FOR A COMPREHENSIVE LIST OF WORK ITEMS FOR THE ENTIRE PROJECT. EVERY WORK ITEM NUMBER WILL NOT NECESSARILY BE USED ON EACH PLAN.
4. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND FOR BIDDING PURPOSES ONLY. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS PRIOR TO PERFORMING REPAIRS OR INSTALLING SEALANTS AND COATINGS.
5. INDICATES APPROXIMATE LOCATION AND MINIMUM SQUARE FOOTAGE FOR FRP REINFORCING IN N-S DIRECTION PER WORK ITEM: 2
6. INDICATES APPROXIMATE LOCATION AND MINIMUM SQUARE FOOTAGE FOR FRP REINFORCING IN E-W DIRECTION PER WORK ITEM: 2
7. ELECTRICAL CONDUIT MAY BE PRESENT IN THE CONCRETE SLAB(S). CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO WORK AND PROTECT KNOWN ELECTRICAL ITEMS.

WORK LIST

Keynote Number	Description	Detail Number	Estimated Quantity for 2nd Floor	Estimated Total Quantity
1	PERFORM GPR AT LOCATION TO DETERMINE THE TOP COVER OF THE TOP REINFORCEMENT IN SLAB. AT LOCATIONS ON LEVEL 2 AND LEVEL 3 WHERE THE COVER FOR TOP REINFORCEMENT IN BOTH DIRECTIONS IS LESS THAN 1 1/2", WORK LIST ITEM 2 IS NOT REQUIRED. AT LOCATIONS ON THE ROOF WHERE THE COVER FOR TOP REINFORCEMENT IN BOTH DIRECTIONS IS LESS THAN 2", WORK LIST ITEM 2 IS NOT REQUIRED.	--	10 LOCS	30 LOCS
2	INSTALL FIBER REINFORCED POLYMER REINFORCING TO THE TOP SIDE OF CONCRETE SLAB, AS DESIGNED BY A SPECIALTY STRUCTURAL ENGINEER. PAINT UNDERSIDE OF SLAB AND INDICATE "FRP ABOVE"	5/S-201 6/S-201 11/S-201	400 SF	1200 SF
3	INSTALL COLUMN CAPITAL EXTENSION BELOW SLAB	4/S-200 5/S-200	1 LOC	7 LOCS

WORK LIST NOTES:

1. THE VALUES IN THE "ESTIMATED QUANTITY" COLUMN OF THE WORK LISTS MAY BE GREATER THAN OR LESS THAN THE AMOUNTS SHOWN ON PLAN. USE THE QUANTITIES LISTED IN THE WORK LIST FOR BID PURPOSES AND PROVIDE UNIT COSTS. CONTRACTOR SHALL FIELD VERIFY QUANTITIES AND LOCATIONS PRIOR TO WORK.
2. BID PRICING SHALL REFLECT THE PRODUCTS SPECIFIED IN THIS DOCUMENT AND PROJECT SPECIFICATIONS. SUBSTITUTIONS AND ASSOCIATED PRICING MAY BE SUBMITTED IN ADDITION TO THE UNIT COST PRICES FOR THE SPECIFIED MATERIALS. THE ENGINEER SHALL REVIEW AND DETERMINE IF THE ALTERNATE PRODUCT IS CONSIDERED "EQUAL" AND IF IT WILL BE ALLOWED AS A SUBSTITUTION.
3. CONTRACTOR SHALL KEEP A CURRENT SCHEDULE OF VALUES FOR ALL WORK ITEMS BEING PERFORMED WITH QUANTITIES COMPLETED TO DATE FOR OWNER REVIEW AT WEEKLY MEETINGS. ANY ANTICIPATED OVERAGES OR SHORTAGES TO THE BID QUANTITIES LISTED ABOVE SHOULD BE PRESENTED AS WELL.

MM JOB #: 23.0892.S.02
PRINCIPAL: NICOLE LANE
EOR: ANDREW LACK
PROJECT MANAGER: LUKE WALDO

DESIGNERS: RISA KRUEGER
LEAD REVIT TECH: MIKE MATA
DATE PRINTED: 6/10/2024 10:29:51 AM
FILE PATH: Autodesk Docs://MM Structural Projects 2023/23.0892.S.02-GWC SLAB REPAIR-S23.rvt

STATE OF MISSOURI
MICHAEL L. PARSON
GOVENOR

STATE OF MISSOURI
ANDREW CARL LACK
NUMBER
PE-2020002968
PROFESSIONAL ENGINEER
06-14-2024

PROFESSIONAL SEAL

MARTIN/MARTIN
CONSULTING ENGINEERS
31 West 31st Street
816.381.4150
Kansas City, Missouri 64108
martinmartin.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 2
GEORGE WASHINGTON CARVER STATE OFFICE BUILDING

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

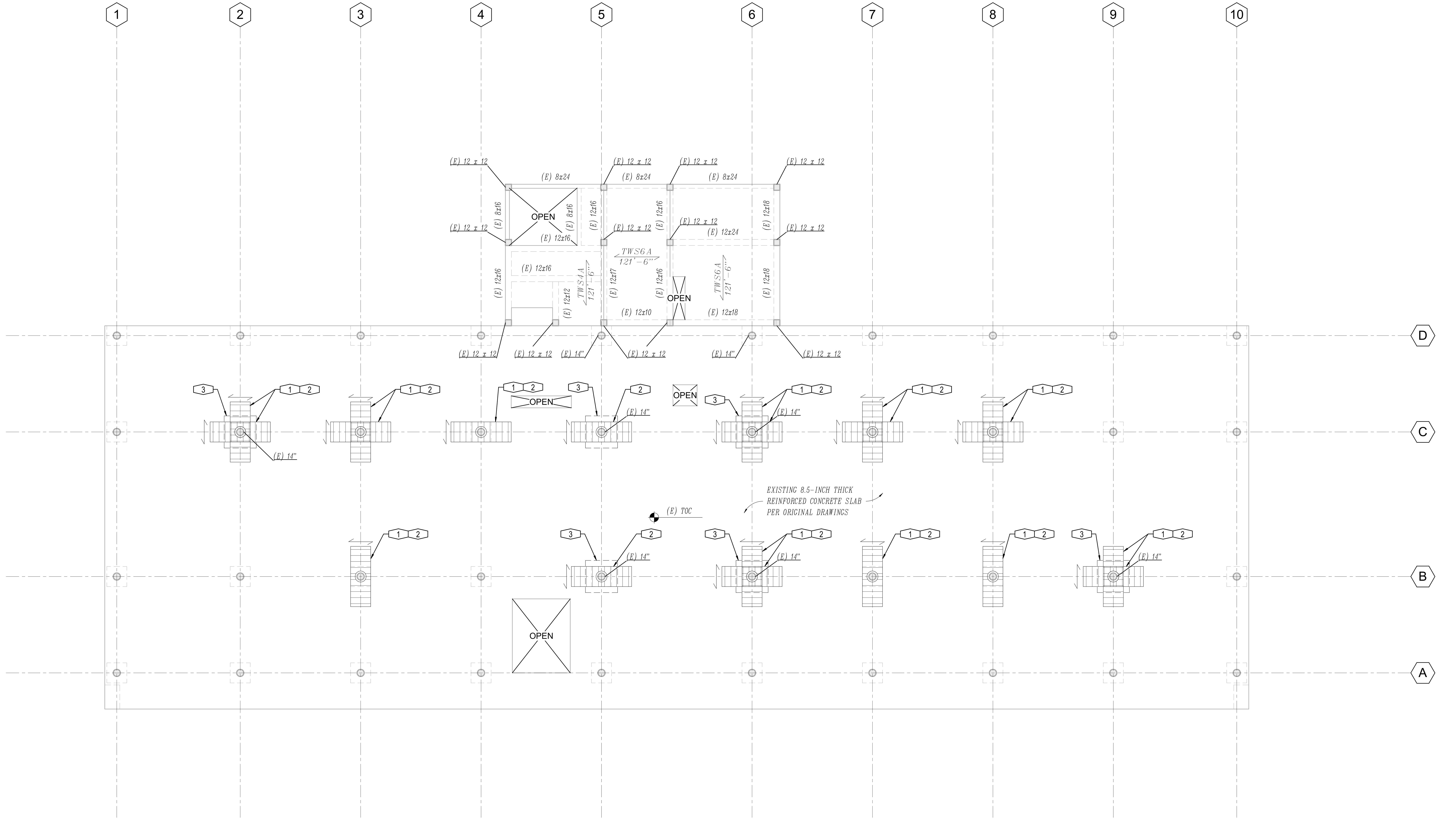
PROJECT # O2440-01
SITE # 1010
FACILITY # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/2024

CAD DWG FILE:
DRAWN BY: MM
CHECKED BY: AL
DESIGNED BY: RK

SHEET TITLE:
SECOND FLOOR PLAN

SHEET NUMBER:
S-101



THIRD FLOOR FRAMING PLAN

NORTH

1/8" = 1'-0"

PLAN NOTES:

1. SEE S-000 SERIES SHEETS FOR GENERAL NOTES, SYMBOLS AND QAQC.
2. SEE S-200 SERIES SHEETS FOR TYPICAL CONCRETE DETAILS.
3. SEE WORK LIST TABLE FOR A COMPREHENSIVE LIST OF WORK ITEMS FOR THE ENTIRE PROJECT. EVERY WORK ITEM NUMBER WILL NOT NECESSARILY BE USED ON EACH PLAN.
4. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND FOR BIDDING PURPOSES ONLY. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS PRIOR TO PERFORMING REPAIRS OR INSTALLING SEALANTS AND COATINGS.
5. INDICATES APPROXIMATE LOCATION AND MINIMUM SQUARE FOOTAGE FOR FRP REINFORCING IN N-S DIRECTION PER WORK ITEM: 2
6. INDICATES APPROXIMATE LOCATION AND MINIMUM SQUARE FOOTAGE FOR FRP REINFORCING IN E-W DIRECTION PER WORK ITEM: 2
7. ELECTRICAL CONDUIT MAY BE PRESENT IN THE CONCRETE SLAB(S). CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO WORK AND PROTECT KNOWN ELECTRICAL ITEMS.

WORK LIST

Keynote Number	Description	Detail Number	Estimated Quantity for 3rd Floor	Estimated Total Quantity
1	PERFORM GPR AT LOCATION TO DETERMINE THE TOP COVER OF THE TOP REINFORCEMENT IN SLAB. AT LOCATIONS ON LEVEL 2 AND LEVEL 3 WHERE THE COVER FOR TOP REINFORCEMENT IN BOTH DIRECTIONS IS LESS THAN 1 1/2", WORK LIST ITEM 2 IS NOT REQUIRED. AT LOCATIONS ON THE ROOF WHERE THE COVER FOR TOP REINFORCEMENT IN BOTH DIRECTIONS IS LESS THAN 2", WORK LIST ITEM 2 IS NOT REQUIRED.	- -	11 LOCS	30 LOCS
2	INSTALL FIBER REINFORCED POLYMER REINFORCING TO THE TOP SIDE OF CONCRETE SLAB, AS DESIGNED BY A SPECIALTY STRUCTURAL ENGINEER. PAINT UNDERSIDE OF SLAB AND INDICATE "FRP ABOVE"	5/S-201 6/S-201 11/S-201	615 SF	1200 SF
3	INSTALL COLUMN CAPITAL EXTENSION BELOW SLAB	4/S-200 5/S-200	6 LOCS	7 LOCS

WORK LIST NOTES:

1. THE VALUES IN THE "ESTIMATED QUANTITY" COLUMN OF THE WORK LISTS MAY BE GREATER THAN OR LESS THAN THE AMOUNTS SHOWN ON PLAN. USE THE QUANTITIES LISTED IN THE WORK LIST FOR BID PURPOSES AND PROVIDE UNIT COSTS. CONTRACTOR SHALL FIELD VERIFY QUANTITIES AND LOCATIONS PRIOR TO WORK.
2. BID PRICING SHALL REFLECT THE PRODUCTS SPECIFIED IN THIS DOCUMENT AND PROJECT SPECIFICATIONS. SUBSTITUTIONS AND ASSOCIATED PRICING MAY BE SUBMITTED IN ADDITION TO THE UNIT COST PRICES FOR THE SPECIFIED MATERIALS. THE ENGINEER SHALL REVIEW AND DETERMINE IF THE ALTERNATE PRODUCT IS CONSIDERED "EQUAL" AND IF IT WILL BE ALLOWED AS A SUBSTITUTION.
3. CONTRACTOR SHALL KEEP A CURRENT SCHEDULE OF VALUES FOR ALL WORK ITEMS BEING PERFORMED WITH QUANTITIES COMPLETED TO DATE FOR OWNER REVIEW AT WEEKLY MEETINGS. ANY ANTICIPATED OVERAGES OR SHORTAGES TO THE BID QUANTITIES LISTED ABOVE SHOULD BE PRESENTED AS WELL.

DESIGNERS RISA KRUEGER
LEAD REVIT TECH MIKE MATA
DATE PRINTED 6/10/2024 10:28:51 AM
FILE PATH Autodesk Docs://MM Structural Projects 2023/23.0892.S.02-GWC SLAB REPAIR-S23.rvt

MM JOB #: 23.0892.S.02
PRINCIPAL NICOLE LANE
FOR: ANDREW LACK
PROJECT MANAGER LUKE WALDO

STATE OF MISSOURI
MICHAEL L. PARSON
GOVENOR

STATE OF MISSOURI
ANDREW CARL LACK
NUMBER PE-2020002968
PROFESSIONAL ENGINEER
06-14-2024

PROFESSIONAL SEAL

MARTIN/MARTIN CONSULTING ENGINEERS
31 West 31st Street
816.381.4150
Kansas City, Missouri 64108
martinmartin.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 2
GEORGE WASHINGTON CARVER STATE OFFICE BUILDING

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

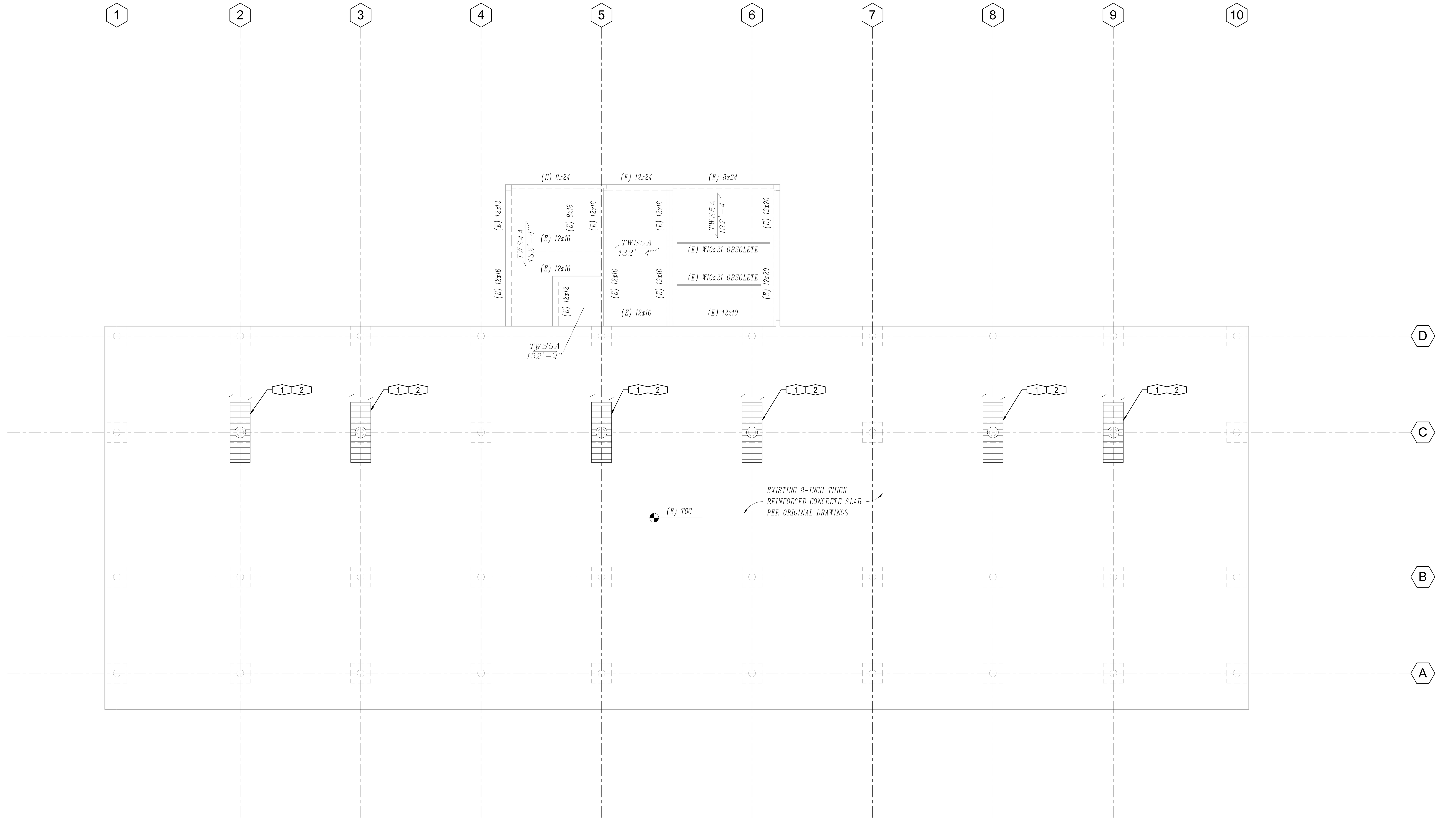
PROJECT # O2440-01
SITE # 1010
FACILITY # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE:06/14/2024

CAD DWG FILE:
DRAWN BY: MM
CHECKED BY: AL
DESIGNED BY: RK

SHEET TITLE:
THIRD FLOOR PLAN

SHEET NUMBER:
S-102



NORTH

ROOF FRAMING PLAN

1/8" = 1'-0"

PLAN NOTES:

1. SEE S-000 SERIES SHEETS FOR GENERAL NOTES, SYMBOLS AND QAQC.
2. SEE S-200 SERIES SHEETS FOR TYPICAL CONCRETE DETAILS.
3. SEE WORK LIST TABLE FOR A COMPREHENSIVE LIST OF WORK ITEMS FOR THE ENTIRE PROJECT. EVERY WORK ITEM NUMBER WILL NOT NECESSARILY BE USED ON EACH PLAN.
4. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND FOR BIDDING PURPOSES ONLY. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS PRIOR TO PERFORMING REPAIRS OR INSTALLING SEALANTS AND COATINGS.
5. INDICATES APPROXIMATE LOCATION AND MINIMUM SQUARE FOOTAGE FOR FRP REINFORCING IN N-S DIRECTION PER WORK ITEM: 2
6. INDICATES APPROXIMATE LOCATION AND MINIMUM SQUARE FOOTAGE FOR FRP REINFORCING IN E-W DIRECTION PER WORK ITEM: 2
7. ELECTRICAL CONDUIT MAY BE PRESENT IN THE CONCRETE SLAB(S). CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO WORK AND PROTECT KNOWN ELECTRICAL ITEMS.
8. REFER TO DESIGN CRITERIA FOR ROOFING REQUIREMENTS FOR FRP PROTECTION.

WORK LIST

Keynote Number	Description	Detail Number	Estimated Quantity for Roof	Estimated Total Quantity
1	PERFORM GPR AT LOCATION TO DETERMINE THE TOP COVER OF THE TOP REINFORCEMENT IN SLAB. AT LOCATIONS ON LEVEL 2 AND LEVEL 3 WHERE THE COVER FOR TOP REINFORCEMENT IN BOTH DIRECTIONS IS LESS THAN 1 1/2", WORK LIST ITEM 2 IS NOT REQUIRED. AT LOCATIONS ON THE ROOF WHERE THE COVER FOR TOP REINFORCEMENT IN BOTH DIRECTIONS IS LESS THAN 2", WORK LIST ITEM 2 IS NOT REQUIRED.	--	6 LOCS	30 LOCS
2	INSTALL FIBER REINFORCED POLYMER REINFORCING TO THE TOP SIDE OF CONCRETE SLAB, AS DESIGNED BY A SPECIALTY STRUCTURAL ENGINEER. PAINT UNDERSIDE OF SLAB AND INDICATE "FRP ABOVE"	5/S-201 6/S-201 11/S-201	185 SF	1200 SF
3	INSTALL COLUMN CAPITAL EXTENSION BELOW SLAB	4/S-200 5/S-200	0	7 LOCS

WORK LIST NOTES:

1. THE VALUES IN THE "ESTIMATED QUANTITY" COLUMN OF THE WORK LISTS MAY BE GREATER THAN OR LESS THAN THE AMOUNTS SHOWN ON PLAN. USE THE QUANTITIES LISTED IN THE WORK LIST FOR BID PURPOSES AND PROVIDE UNIT COSTS. CONTRACTOR SHALL FIELD VERIFY QUANTITIES AND LOCATIONS PRIOR TO WORK.
2. BID PRICING SHALL REFLECT THE PRODUCTS SPECIFIED IN THIS DOCUMENT AND PROJECT SPECIFICATIONS. SUBSTITUTIONS AND ASSOCIATED PRICING MAY BE SUBMITTED IN ADDITION TO THE UNIT COST PRICES FOR THE SPECIFIED MATERIALS. THE ENGINEER SHALL REVIEW AND DETERMINE IF THE ALTERNATE PRODUCT IS CONSIDERED "EQUAL" AND IF IT WILL BE ALLOWED AS A SUBSTITUTION.
3. CONTRACTOR SHALL KEEP A CURRENT SCHEDULE OF VALUES FOR ALL WORK ITEMS BEING PERFORMED WITH QUANTITIES COMPLETED TO DATE FOR OWNER REVIEW AT WEEKLY MEETINGS. ANY ANTICIPATED OVERAGES OR SHORTAGES TO THE BID QUANTITIES LISTED ABOVE SHOULD BE PRESENTED AS WELL.

DESIGNERS RISA KRUEGER
LEAD REVIT TECH MIKE MATA
DATE PRINTED 6/10/2024 10:29:52 AM
FILE PATH Autodesk Docs://MM Structural Projects 2023/23.0892.S.02-GWC SLAB REPAIR-S23.rvt

MM JOB #: 23.0892.S.02
PRINCIPAL NICOLE LANE
FOR: ANDREW LACK
PROJECT MANAGER LUKE WALDO

STATE OF MISSOURI
MICHAEL L. PARSON
GOVENOR

STATE OF MISSOURI
ANDREW CARL LACK
NUMBER PE-2020002968
PROFESSIONAL ENGINEER
06-14-2024

PROFESSIONAL SEAL

MARTIN/MARTIN
CONSULTING ENGINEERS
31 West 31st Street
816.381.4150
Kansas City, Missouri 64108
martinmartin.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 2
GEORGE WASHINGTON CARVER STATE OFFICE BUILDING

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
FACILITY # 3101010001

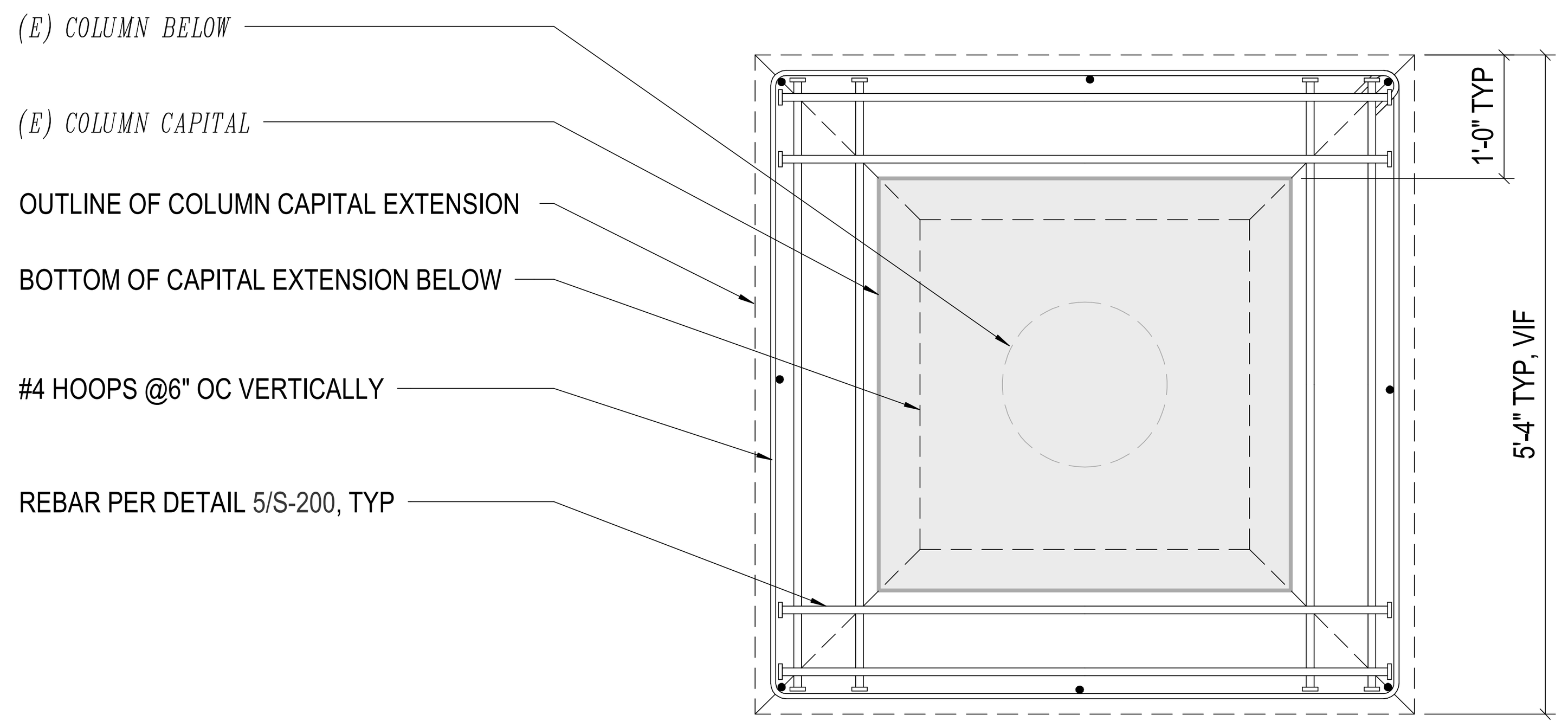
REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:

ISSUE DATE:06/14/2024

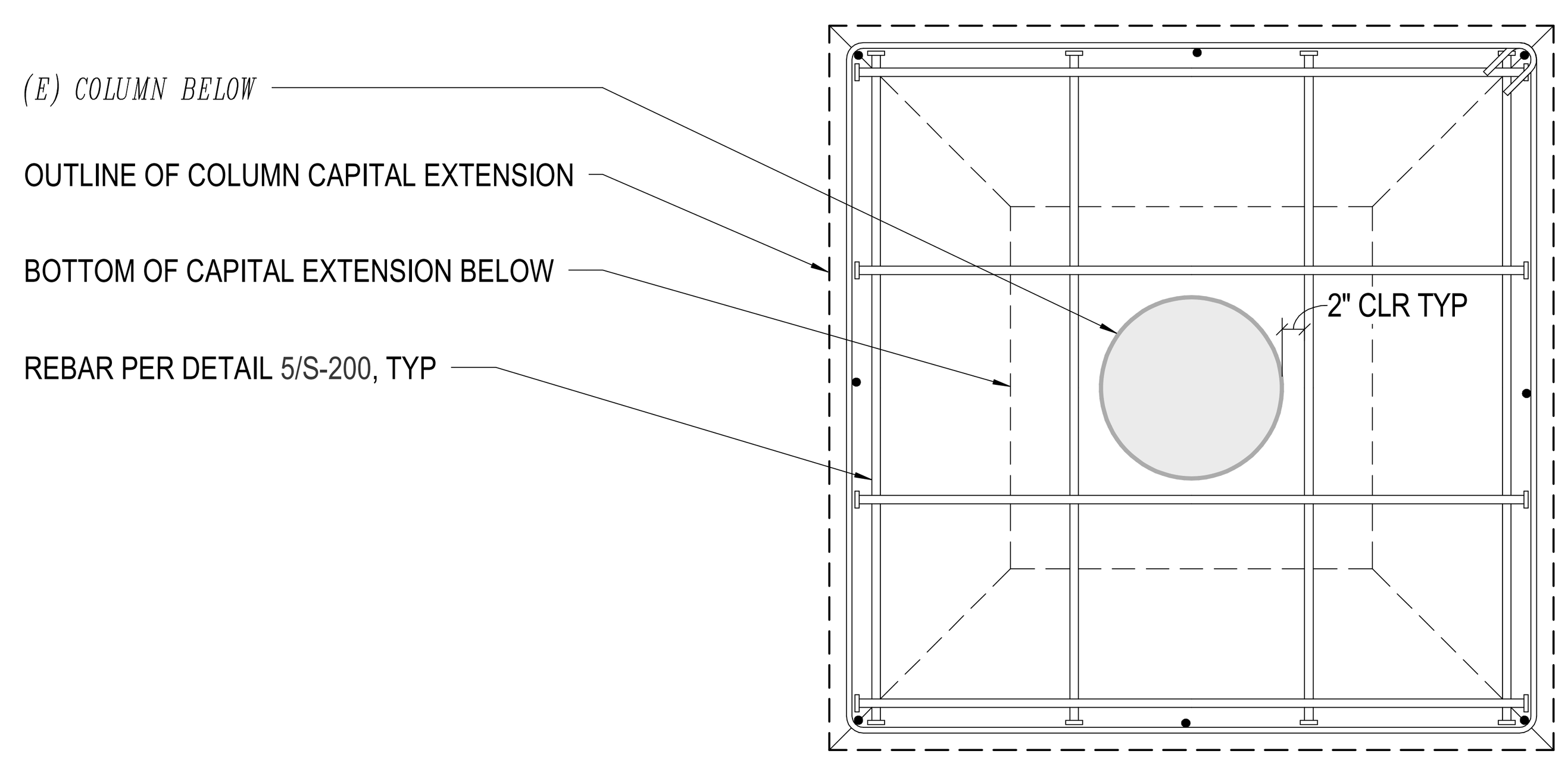
CAD DWG FILE:
DRAWN BY: MM
CHECKED BY: AL
DESIGNED BY: RK

SHEET TITLE:
ROOF FRAMING PLAN

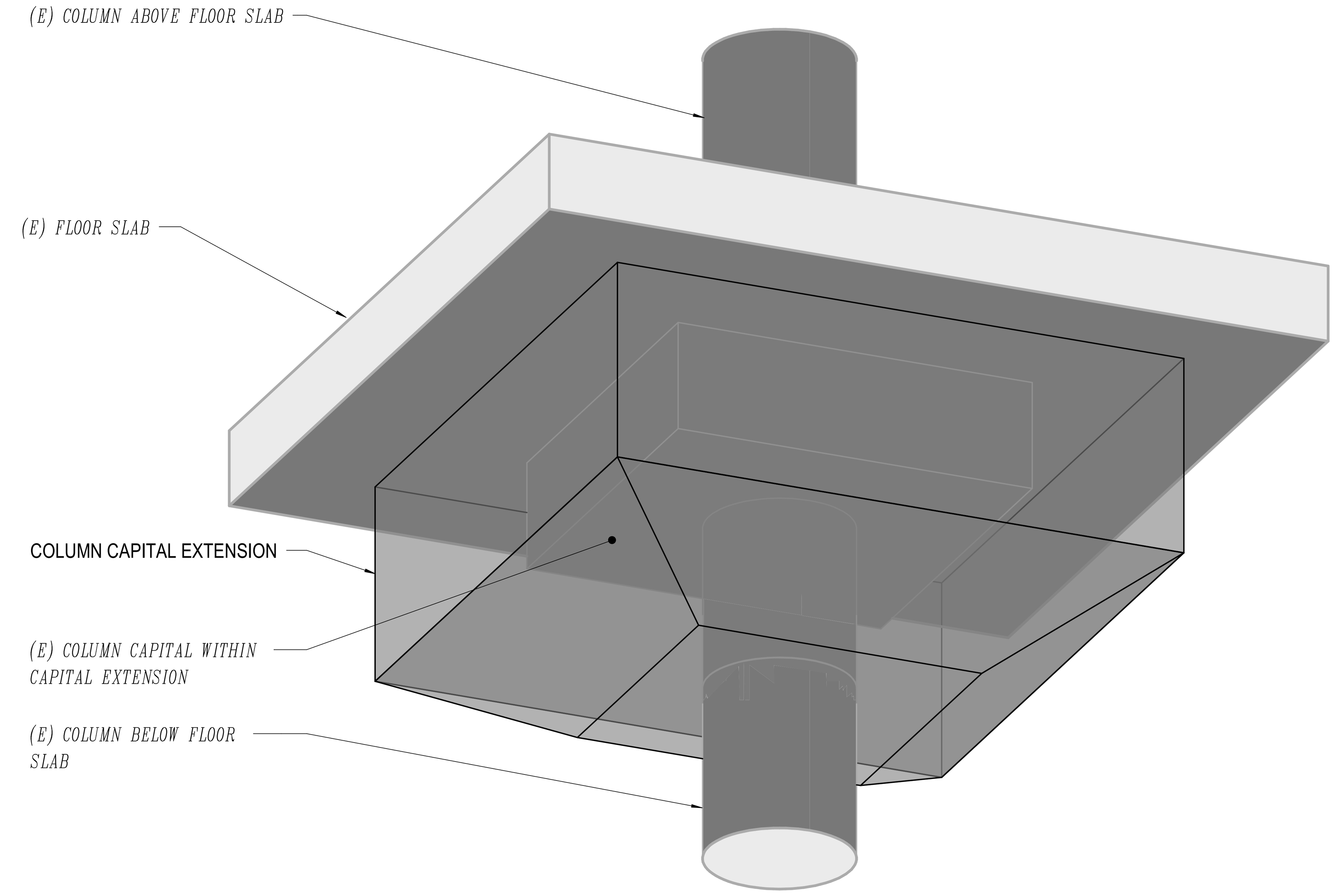
SHEET NUMBER:
S-103



10 3/4" = 1'-0" COLUMN CAPITAL EXTENSION SECTION

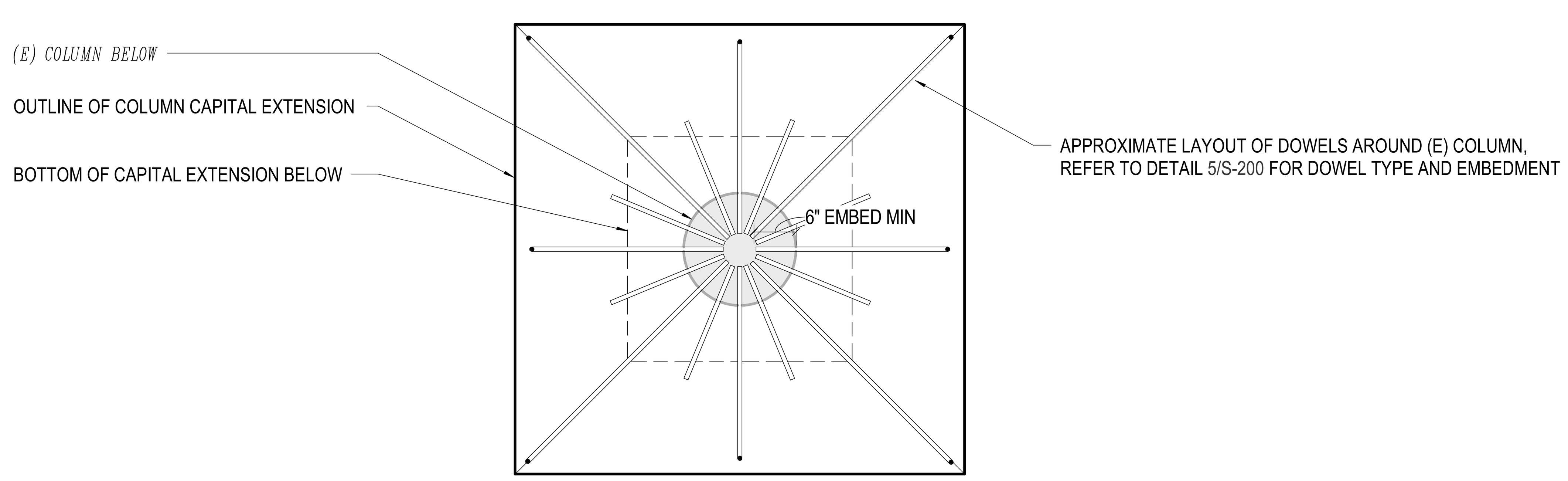


11 3/4" = 1'-0" COLUMN CAPITAL EXTENSION SECTION

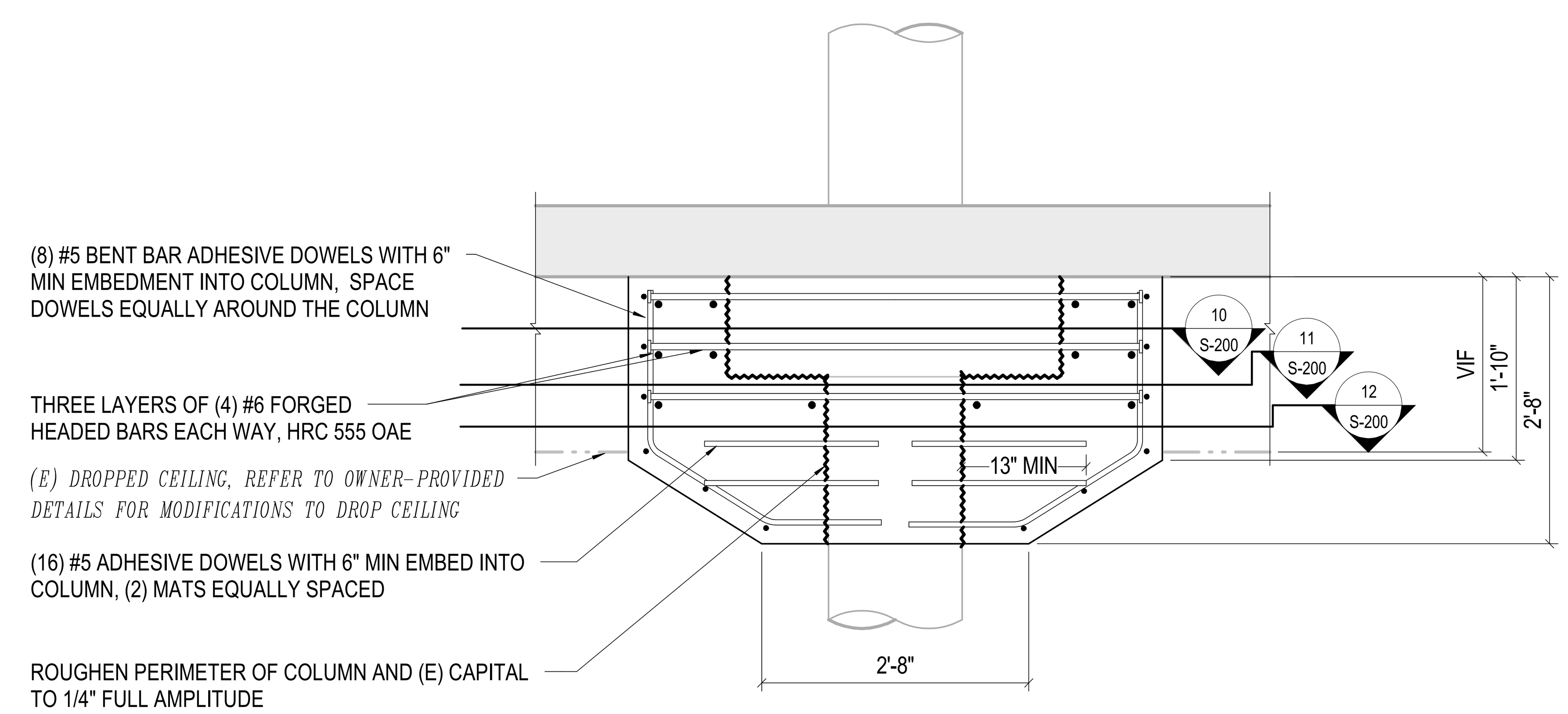


NOTES:
1. COLUMN CAPITAL EXTENSION TO BE INSTALLED IS SLIGHTLY TRANSPARENT IN THIS DETAIL TO GIVE ADDITIONAL CONTEXT FOR THE REPAIR.
2. ESTIMATED VOLUME OF CONCRETE PER CAPITAL EXTENSION IS 58 CF.

4 NO SCALE COLUMN CAPITAL EXTENSION ISOMETRIC



12 3/4" = 1'-0" COLUMN CAPITAL EXTENSION SECTION



NOTE:
1. LOCATE EXISTING COLUMN REBAR PRIOR TO DRILLING FOR NEW DOWELS. AVOID EXISTING REBAR.

5 3/4" = 1'-0" COLUMN CAPITAL EXTENSION

DESIGNERS:RISA KRUEGER
LEAD REVIT TECH:MIKE MATA
DATE PRINTED:6/10/2024 10:29:52 AM
FILE PATH:Autodesk Docs://MM Structural Projects 2023/23.0892.S.02-GWC SLAB REPAIR-S23.rvt

MM JOB #: 23.0892.S.02
PRINCIPAL:NICOLE LANE
FOR: ANDREW LACK
PROJECT MANAGER:LUKE WALDO

STATE OF MISSOURI
MICHAEL L. PARSON
GOVENOR

PROFESSIONAL SEAL

MARTIN/MARTIN CONSULTING ENGINEERS
31 West 31st Street
816.381.4150
Kansas City, Missouri 64108
martinmartin.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 2
GEORGE WASHINGTON CARVER STATE OFFICE BUILDING

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
FACILITY # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE:06/14/2024

CAD DWG FILE:
DRAWN BY: MM
CHECKED BY: AL
DESIGNED BY: RK

SHEET TITLE:
CONCRETE REINFORCING DETAILS

SHEET NUMBER:
S-200
8 OF 9 SHEETS
06/14/2024

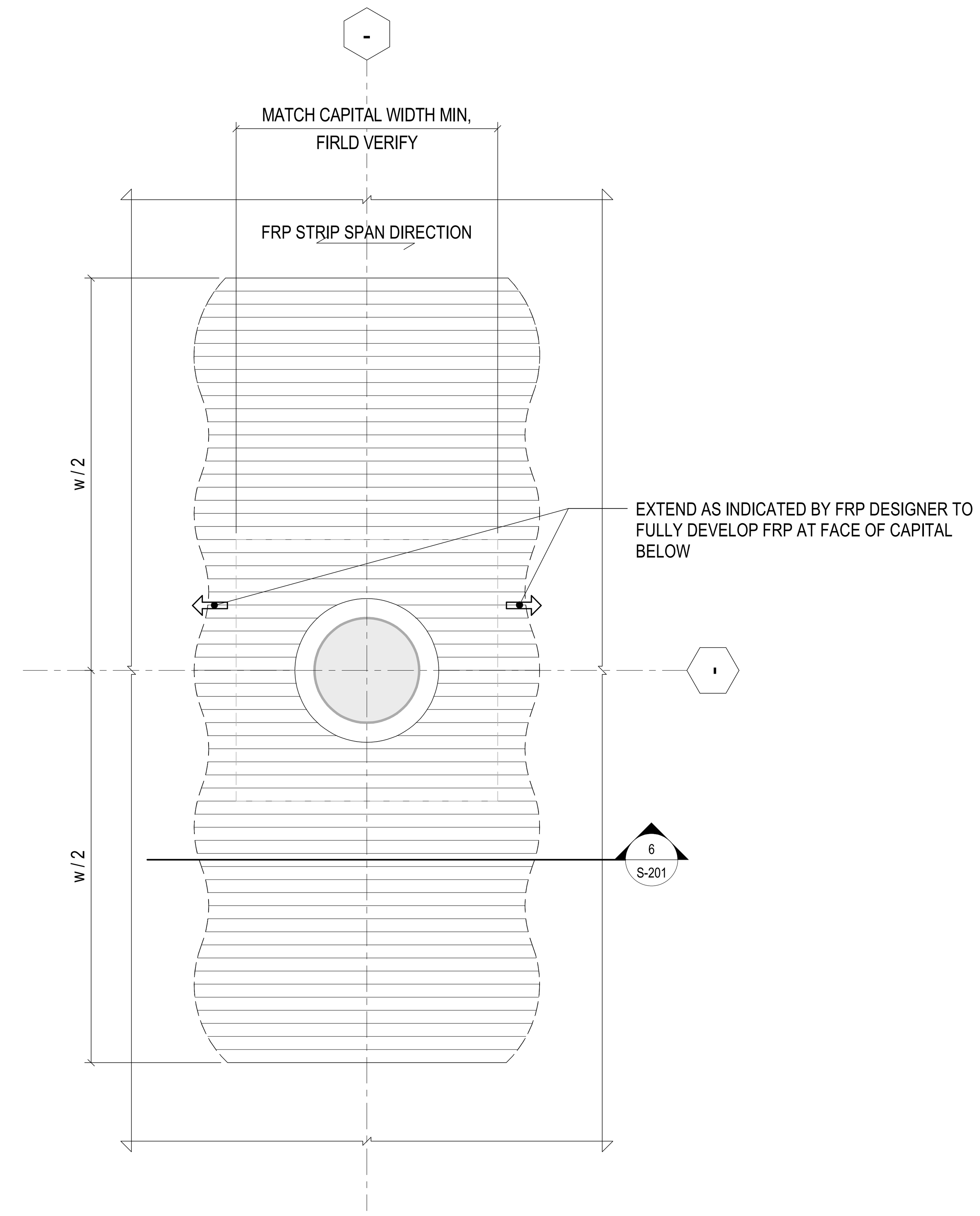
FRP LOCATIONS AND INFORMATION

Column			Strip			Top Reinforcing			Demands	
LVL	NS Grid	EW Grid	Span Direction	ts (in)	w (ft)	c (in)	No.	Bar Size	Mu (k-ft)	Mui (k-ft)
2	2	B	EW	8.5	10	3.15*	20	#6	-135.5	-105
2	3	B	EW	8.5	10	3.15*	14	#6	-105.5	-88.5
2	6	B	NS	8.5	11.25	3.5	26	#6	-157.6	-100.1
2	8	B	EW	8.5	10	3.15*	14	#6	-102.1	-86.6
2	9	B	EW	8.5	10	3.15*	20	#6	-135.7	-105.6
2	2	C	EW	8.5	10	3.15*	20	#6	-149.2	-111.4
2	3	C	EW	8.5	10	3.15*	14	#6	-113.9	-93
2	5	C	EW	8.5	10	3.15*	22	#6	-165.1	-115.3
2	6	C	EW	8.5	10	3.15*	22	#6	-164	-118.6
2	7	C	EW	8.5	10	3.15*	14	#6	-110.4	-89
2	8	C	EW	8.5	10	3.15*	14	#6	-114	-92.2
2	9	C	EW	8.5	10	2.5	20	#6	-148.8	-111.5
2	9	C	NS	8.5	10.17	3.375	23	#6	-155.8	-108.5
3	3	B	EW	8.5	10	3.5*	14	#6	-108.7	-88.5
3	5	B	NS	8.5	11.25	3.75	26	#6	-142.5	-89.4
3	6	B	EW	8.5	10	3.5*	22	#6	-159.5	-115
3	6	B	NS	8.5	11.25	3.5*	26	#6	-156.9	-100.1
3	7	B	EW	8.5	10	3.5*	14	#6	-100.5	-82.7
3	8	B	EW	8.5	10	3.5*	14	#6	-105.2	-86.6
3	9	B	EW	8.5	10	3.5*	20	#6	-139	-105.5
3	9	B	NS	8.5	10.17	3.5*	23	#6	-147.1	-95.4
3	2	C	EW	8.5	10	3.5*	20	#6	-147.2	-111.1
3	2	C	NS	8.5	10.17	3.5*	23	#6	-155.8	-108.5
3	3	C	EW	8.5	10	3.5*	14	#6	-111.9	-92.9
3	3	C	NS	8.5	10	3.5*	23	#6	-141.3	-98
3	4	C	NS	8.5	10	3.5*	23	#6	-143.1	-95
3	5	C	NS	8.5	11.25	3.52	26	#6	-169.5	-111.2
3	6	C	EW	8.5	10	3.5*	22	#6	-162.1	-119.1
3	6	C	NS	8.5	11.25	3.5*	26	#6	-163.7	-112
3	7	C	EW	8.5	10	3.5*	14	#6	-108.4	-89
3	7	C	NS	8.5	10	3.5*	23	#6	-139.2	-95.7
3	8	C	EW	8.5	10	3.5*	14	#6	-112	-92.1
3	8	C	NS	8.5	10	3.5*	23	#6	-141.2	-111.9
R	2	C	EW	8	10	3.17*	16	#6	-103.7	-68.2
R	3	C	EW	8	10	3.17*	12	#6	-78.3	-56.3
R	5	C	EW	8	10	3.17*	18	#6	-116.6	-72.6
R	6	C	EW	8	10	3.17*	18	#6	-116.6	-72.6
R	8	C	EW	8	10	3.17*	12	#6	-78.3	-56.3
R	9	C	EW	8	10	3.17*	16	#6	-103.7	-68.2

NOTES:

1. EXISTING CONCRETE PROPERTIES ARE ASSUMED TO BE:
   A. f'c = 3,000 psi
   B. fy = 50,000 psi
2. * INDICATES AN ASSUMED TOP COVER FOR BARS BASED ON PREVIOUS EXPLORATORY INVESTIGATION AND STATISTICAL ANALYSIS OF GPR AT SELECT LOCATIONS. CONTRACTOR OPTION: FIELD VERIFY COVER AND PROVIDE UPDATED VALUES FOR REVIEW.
3. TOP REINFORCING NUMBER AND SIZE ARE IN THE SAME SPAN DIRECTION AS THE FRP REINFORCING.
4. Mu IS THE ENVELOPED ULTIMATE MOMENT AT THE COLUMN AFTER MOMENT REDISTRIBUTION PER ACI 318-19 SECTION 6.6.5.
5. Mui IS THE ULTIMATE MOMENT PRODUCED FROM 1.2 * DEAD + 1.6 * CONSTRUCTION LIVE LOAD OR 1.4 * DEAD. IT IS PROVIDED FOR USE IN DETERMINING THE EXISTING SUBSTRATE STRAIN AT TIME OF APPLICATION OF THE FRP.

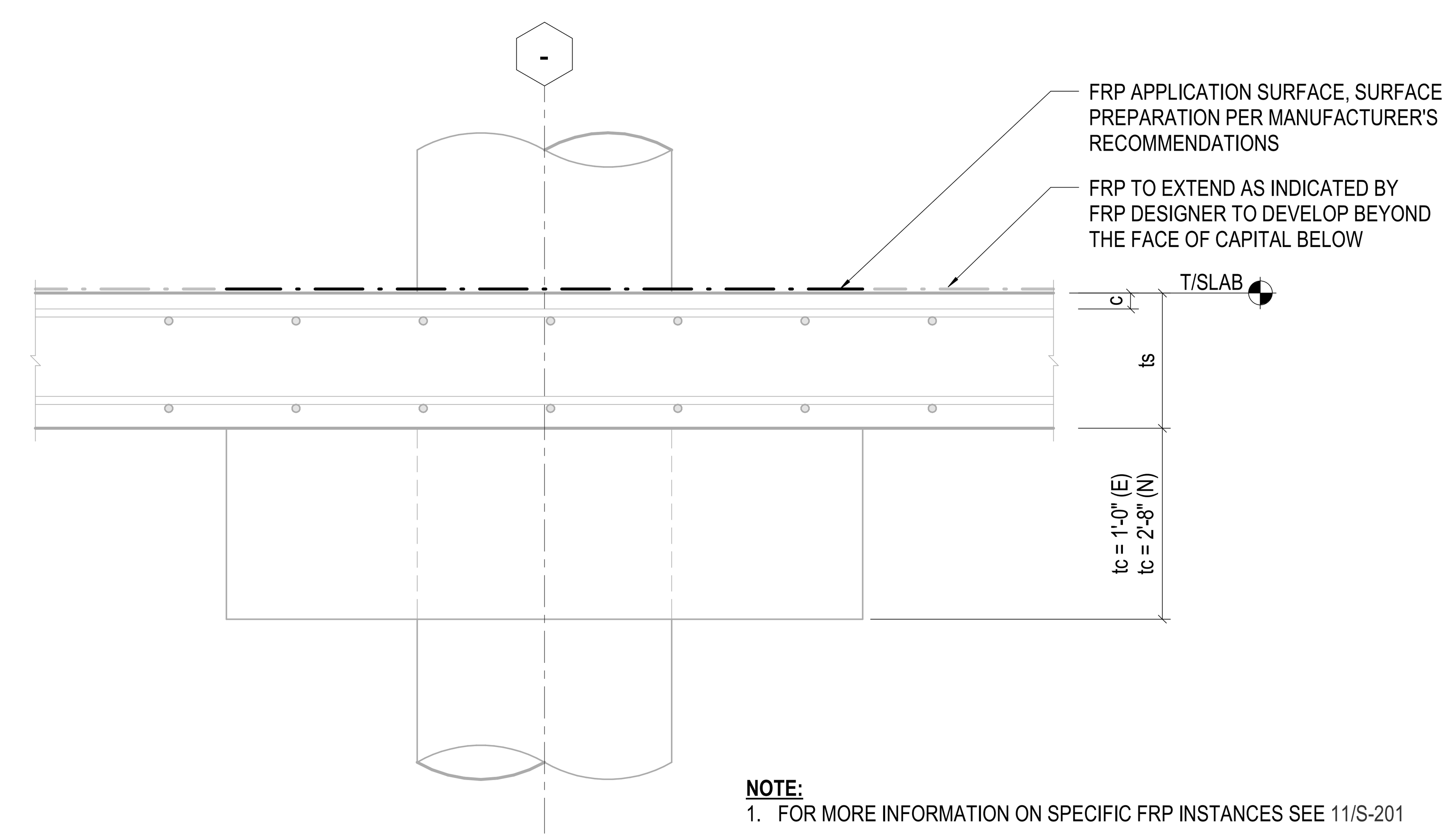
11 NO SCALE FIBER REINFORCED POLYMER DELEGATED DESIGN PROPERTIES



NOTE:

1. FOR MORE INFORMATION ON SPECIFIC FRP INSTANCES SEE 11/S-201
2. CONTRACTOR TO PAINT OUTLINE OF THE EXTENTS OF FRP INSTALLATION ON THE UNDERSIDE OF SLAB DIRECTLY BELOW FRP FOR FUTURE REFERENCE.

5 3/4" = 1'-0" FRP REINFORCING AT TOP SIDE OF FLOOR SLAB



NOTE:

1. FOR MORE INFORMATION ON SPECIFIC FRP INSTANCES SEE 11/S-201

6 1 1/2" = 1'-0" FRP REINFORCING AT COLUMN CAPITAL

MM JOB #: 23.0892.S.02
PRINCIPAL: NICOLE LANE
EOR: ANDREW LACK
PROJECT MANAGER: LUKE WALDO

DESIGNERS: RISA KRUEGER
LEAD REVIT TECH: MIKE MATA
DATE PRINTED: 6/10/2024 10:29:53 AM
FILE PATH: Autodesk Docs://MM Structural Projects 2023/23.0892.S.02-GWC SLAB REPAIR-S23.rvt

STATE OF MISSOURI
MICHAEL L. PARSON
GOVENOR

STATE OF MISSOURI
ANDREW CARL LACK
NUMBER PE-2020002968
PROFESSIONAL ENGINEER
06-14-2024

PROFESSIONAL SEAL

MARTIN/MARTIN
CONSULTING ENGINEERS
31 West 31st Street
816.381.4150
Kansas City, Missouri 64108
martinmartin.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 2
GEORGE WASHINGTON CARVER STATE OFFICE BUILDING

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
FACILITY # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE:06/14/2024

CAD DWG FILE:
DRAWN BY: MM
CHECKED BY: AL
DESIGNED BY: RK

SHEET TITLE:
FRP DETAILS

SHEET NUMBER:
S-201
9 OF 9 SHEETS
06/14/2024