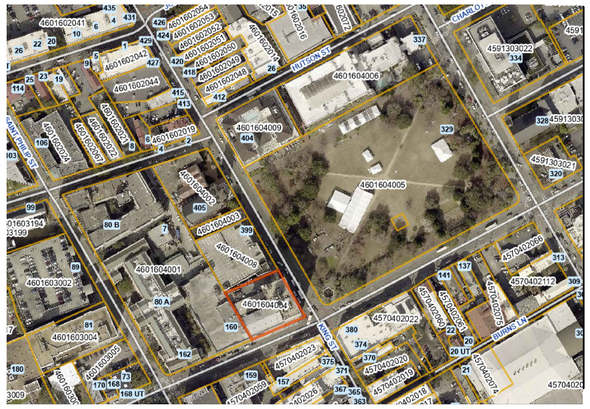
REPAIRS TO 12TH FLOOR STAIRS

THE FRANCIS MARION HOTEL

387 KING STREET, CHARLESTON SC 29403

PERMIT & CONSTRUCTION SET



1 PROJECT OVERVIEW
SCALE: NTS

OWNER:

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ENGINEER/ARCHITECT:

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PROJECT ENGINEER: MICHAEL A. MCLEAN, PE
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PROJECT INFORMATION:

JURISDICATION:	CITY OF CHARLESTON
PARCEL ID:	4601604004
LOCATION:	387 KING STREET CHARLESTON, SC 29403
ORIGINAL CONSTRUCTION:	CIRCA 1924
ORIGINAL CODE:	UNKNOWN
APPLICABLE CODE:	2021 SOUTH CAROLINA BUILDING CODE 2021 INTERNATIONAL EXISTING BUILDING CODE (2021 IEBC)
IBC USE & OCCUPANCY:	R1
CONSTRUCTION TYPE:	UNKNOWN, NO EXISTING ORIGINAL DRAWINGS
SPRINKLER SYSTEM:	YES (EXISTING)

PROJECT SUMMARY:

SCOPE OF WORK:

THESE DRAWINGS PROVIDE STRUCTURAL REPAIR GUIDANCE FOR REPAIRS TO A REINFORCED CONCRETE STAIR FLIGHT AT THE TWELFTH FLOOR. THE SCOPE OF WORK INCLUDES REMOVING DETERIORATED CONCRETE AND REBAR AND REPAIRING DETERIORATED CONCRETE WITH REPAIR MORTAR AND INSTALLING NEW REBAR WHERE EXISTING REBARS WERE CORRODED. THE SCOPE OF WORK INCLUDES REPAIRS TO CLAY MASONRY WALLS AND THE INSTALLATION OF NEW STRUCTURAL STEEL SHELF ANGLES TO SUPPORT CLAY MASONRY. TEMPORARY SHORING IS CURRENTLY INSTALLED.

CODE PATH ANALYSIS

1. THE APPLICABLE CODES ARE THE 2021 SOUTH CAROLINA BUILDING CODE (SCBC) AND THE 2021 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
2. IEBC 1201: THE STRUCTURE IS A HISTORIC STRUCTURE. IEBC CHAPTER 12: HISTORIC BUILDINGS APPLIES.
3. IEBC 1202: REPAIRS ARE PERMITTED WITH ORIGINAL OR LIKE MATERIALS AND METHODS OF CONSTRUCTION. HAZARDOUS MATERIALS SUCH AS LEAD PAINT OR ASBESTOS ARE NOT PERMITTED. REPLACEMENT GLAZING SHALL BE AS REQUIRED FOR NEW CONSTRUCTION IN SCBC CHAPTER 24.
4. IEBC 1203: THESE REPAIRS DO NOT ALTER EXISTING FIRE SAFETY SYSTEMS. THESE REPAIRS DO NOT CHANGE THE WIDTH OF EXISTING DOORS, CORRIDORS, OR STAIRS. REPAIRS TO EXISTING GUARDS OR RAILINGS, IF REQUIRED, ARE NOT INCLUDED IN THE SCOPE OF THESE DRAWINGS.
5. IEBC 1204: THESE REPAIRS DO NOT ALTER THE OCCUPANCY CLASSIFICATION.
6. IEBC 1205: THE REPAIRS ARE NOT FOR SUBSTANTIAL STRUCTURAL DAMAGE. DAMAGED ELEMENTS ARE PERMITTED TO BE RESTORED TO THEIR PRE-DAMAGED CONDITION. THE DAMAGE WAS NOT CAUSED BY SNOW, EARTHQUAKE, WIND, FLOOD, OR FIRE. ORIGINAL CONSTRUCTION DRAWINGS WERE NOT PROVIDED TO APPLIED BUILDING SCIENCES, INC. THEREFORE, THE DESIGN LIVE LOAD FOR THESE DRAWINGS IS 100 PSF. THESE REPAIRS ARE FOR A DANGEROUS CONDITION THAT WAS REPORTED BY MICHAEL A. MCLEAN, PE ON DECEMBER 11, 2023. WORK BEYOND WHAT IS REQUIRED TO REMEDY THE DANGEROUS CONDITION IS NOT REQUIRED BY THE IEBC AND IS NOT PROVIDED IN THESE DRAWINGS.

SHEET INDEX		03/13/2024 PERMIT SET	05/23/2024 REVISION 1
G001	TITLE	■	■
S001	SPECIFICATIONS	■	■
S002	SPECIFICATIONS	■	■
S003	TABLES		■
S401	DETAILS	■	■
S402	DETAILS	■	■
S403	DETAILS	■	■
S404	DETAILS	■	SHEET REMOVED
S405	DETAILS		■
S406	DETAILS		■

1

REVISION NOTES:

1. REVISION 1 SHOWS TEMPORARY SUPPORT OF BRICK VENEER SO THAT STEEL LINTELS CAN BE REPLACED WITHOUT REMOVING THE ENTIRE BRICK WALL. REVISION 1 ALSO SHOWS A CHANGE TO MAXIMUM CRACK WIDTH FOR BRICK WALL REPAIRS WITH PROSOCO STITCH TIES. THE MAX WIDTH IS CHANGED FROM 3/16" TO 1/2".

ABBREVIATIONS:

#-PLY	= NUMBER OF PLIES	PCI	= POUNDS PER CUBIC INCH
(#)	= QUANTITY	PG	= PERFORMANCE GRADE
1X	= 1" NOMINAL LUMBER	PLF	= POUNDS PER LINEAR FOOT
2X	= 2" NOMINAL LUMBER	PSF	= POUNDS PER SQUARE FOOT
ACI	= AMERICAN CONCRETE INSTITUTE	PSI	= POUNDS PER SQUARE INCH
A-DWGS	= ARCHITECTURAL DRAWINGS	PSL	= PARALLEL STRAND LUMBER
ADA	= AMERICANS WITH DISABILITIES ACT	PT	= PRESERVATIVE TREATED
AFF	= ABOVE FINISHED FLOOR	S-DWGS	= STRUCTURAL ENGINEERING DRAWINGS
AHJ	= AUTHORITY HAVING JURISDICTION	SAM	= SELF-ADHESIVE MEMBRANE
AISC	= AMERICAN INSTITUTE OF STEEL CONSTRUCTION	SIM	= SIMILAR
AISI	= AMERICAN IRON AND STEEL INSTITUTE	SF	= SQUARE FOOT/FEET
ANSI	= AMERICAN NATIONAL STANDARDS INSTITUTE	SGD	= SLIDING GLASS DOOR
APA	= AMERICAN PLYWOOD ASSOCIATION	SI	= SQUARE INCHES
ASCE	= AMERICAN SOCIETY OF CIVIL ENGINEERS	SMAW	= SHIELDED METAL ARC WELDING
ASD	= ALLOWABLE STRESS DESIGN	SS	= STAINLESS STEEL
ASTM	= AMERICAN SOCIETY FOR TESTING AND MATERIALS	SSMA	= STEEL STUD MANUFACTURERS ASSOCIATION
ATC	= APPLIED TECHNOLOGY COUNCIL	T&G	= TONGUE AND GROOVE
AWPA	= AMERICAN WOOD-PRESERVER'S ASSOCIATION	TBD	= TO BE DETERMINED
AWS	= AMERICAN WELDING SOCIETY	TPO	= THERMOPLASTIC POLYOLEFIN
CFR	= CODE OF FEDERAL REGULATIONS	TYP	= TYPICAL
CFS	= COLD-FORMED STEEL	UNO	= UNLESS NOTED OTHERWISE
CIP	= CAST-IN-PLACE	VIF	= VERIFY IN FIELD
CMU	= CONCRETE MASONRY UNIT	WFT	= WET FILM THICKNESS
CONT.	= CONTINUOUS	WOCD	= WINDOW OPENING CONTROL DEVICE
CPSC	= CONSUMER PRODUCT SAFETY COMMISSION	WRB	= WEATHER RESISTIVE BARRIER
DBO	= DESIGNED BY OTHERS	ZMAX	= SIMPSON COATING
DFT	= DRY FILM THICKNESS	ZRC	= ZINC RICH COATING
DIA	= DIAMETER		
DP	= DESIGN PRESSURE		
(E)	= EXISTING		
EA	= EACH		
EJ	= EXPANSION JOINT		
EOR	= ENGINEER OF RECORD		
EPA	= ENVIRONMENTAL PROTECTION AGENCY		
EQ	= EQUAL		
ESJ	= ENGINEERED SEALANT JOINT		
ESR	= EVALUATION SERVICE REPORT		
FA	= FLUID-APPLIED		
FA-RMS	= FLUID-APPLIED ROOF MEMBRANE SYSTEM		
FA-WRAB	= FLUID-APPLIED WEATHER RESISTIVE AIR BARRIER		
FLR	= FLOOR		
FRP	= FIBER REINFORCED POLYMER		
FT	= FOOT OR FEET		
GA	= GAUGE		
GWB	= GYPSUM WALL BOARD		
HDG	= HOT-DIPPED GALVANIZED		
HRS	= HOURS		
HSS	= HOLLOW STRUCTURAL STEEL		
IAW	= N ACCORDANCE WITH		
IBC	= INTERNATIONAL BUILDING CODE		
IEBC	= INTERNATIONAL EXISTING BUILDING CODE		
IFC	= INTERNATIONAL FIRE CODE		
IN	= INCH OR INCHES		
KSI	= KIPS PER SQUARE INCH		
LB OR LBS	= POUND OR POUNDS		
LLV	= LONG LEG VERTICAL		
L.B.	= LOAD BEARING		
LF	= LINEAR FEET		
MAX	= MAXIMUM		
MIN	= MINIMUM		
MPH	= MILES PER HOUR		
(N)	= NEW		
N/A	= NOT APPLICABLE		
NIS	= NOT IN SCOPE		
NFPA	= NATIONAL FIRE PROTECTION ASSOCIATION		
N.L.B.	= NOT LOAD BEARING		
NO.	= NUMBER		
NTS	= NOT TO SCALE		
OC	= ON CENTER		
OSB	= ORIENTED STRAND BOARD		
OZ	= OUNCES		
PCA	= PORTLAND CEMENT ASSOCIATION		

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
APPLIED BUILDING SCIENCES, INC
No. CC2897

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 39823
05/23/2024
MICHAEL A. MCLEAN

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WEST ELEVATION CANTILEVER STAIR REPAIRS
FRANCIS MARION HOTEL
387 KING STREET
CHARLESTON, SC 29403

SCHEMATIC DATE:	03/13/2024
PERMIT SET DATE:	03/13/2024
REVISION:	1 05/23/2024
DESIGN BY:	MAM
DRAWING BY:	JRE
CHECKED BY:	GM
PROJECT NO.:	800.19017

TITLE

SHEET
G001

SPECIFICATIONS

STRUCTURAL DESIGN INFORMATION:

41289788. ALL LOADS ARE PER ASCE 7-16.

41289789. BUILDING RISK CATEGORY: III

41289790. DEAD LOADS:

CONCRETE AND REPAIR MORTAR: 145 PCF
CLAY MASONRY AND TERRACOTTA: 39 PSF PER 4" WYTHE, 79 PSF, PER 8" WYTHE, 115 PSF, PER 12" WYTHE.
GYPSUM WALL BOARD: 2.75 PSF
SUSPENDED METAL LATH AND CEMENT PLASTER: 15 PSF
WOOD FRAMING (ALL): 15 PSF

41289791. LIVE LOAD: 100 PSF

41289792. GROUND SNOW LOAD: 5 PSF

41289793. BASIC DESIGN WIND SPEED AND WIND EXPOSURE: V = 155 MPH, EXPOSURE D

INTERNAL PRESSURE COEFFICIENT: +/-0.18 ENCLOSED
COMPONENTS AND CLADDING WIND PRESSURES:

NEGATIVE ZONE 4 WALL: -90 PSF ULTIMATE / -54 PSF ALLOWABLE
NEGATIVE ZONE 5 WALL: -165 PSF ULTIMATE / -99 PSF ALLOWABLE
POSITIVE ZONE 4 & 5: +90 PSF ULTIMATE / +54 PSF ALLOWABLE
NEGATIVE ZONE 1 ROOF: -130 PSF ULTIMATE / -78 PSF ALLOWABLE
NEGATIVE ZONE 2 ROOF: -205 PSF ULTIMATE/ -123 PSF ALLOWABLE
NEGATIVE ZONE 3 ROOF: -205 PSF ULTIMATE / -123 PSF ALLOWABLE
POSITIVE ALL ROOF ZONES: +20 PSF ULTIMATE / +12 PSF ALLOWABLE

THESE REPAIRS DO NOT ALTER THE MAIN WIND FORCE RESISTING SYSTEM. THESE DRAWINGS PROVIDE GUIDANCE FOR ATTACHMENT OF CLAY MASONRY VENEER TO THE EXISTING STRUCTURE ONLY.

41289794. SEISMIC DESIGN CATEGORY AND SITE CLASS:

SEISMIC IMPORTANCE FACTOR: IE = 1.25
SS = 1.348
S1 = 0.396
SDS = 1.078
SD1 = N/A
SEISMIC DESIGN CATEGORY = D

BASIC SEISMIC FORCE RESISTING SYSTEMS = UNKNOWN AND NOT IN SCOPE. THESE DRAWINGS DO NOT PROVIDE GUIDANCE TO REPAIR OR MODIFY THE EXISTING SEISMIC FORCE RESISTING SYSTEM. THESE DRAWINGS PROVIDE GUIDANCE FOR THE ATTACHMENT OF NON-STRUCTURAL COMPONENTS, SUCH AS CLAY MASONRY VENEER TO THE EXISTING STRUCTURE.

SEISMIC RESPONSE COEFFICIENT = NOT APPLICABLE.

RESPONSE MODIFICATION PROCEDURE = 2 ½, VENEER, ASCE TABLE 13.5-1 COEFFICIENTS FOR ARCHITECTURAL COMPONENTS

ANALYSIS PROCEDURE USED: THE SEISMIC DESIGN FORCE FOR NON-STRUCTURAL COMPONENTS WAS DETERMINED IN ACCORDANCE WITH ASCE 7-16 SECTION 13.3: SEISMIC DEMANDS ON NONSTRUCTURAL COMPONENTS.

a_p = 1 RIGIDLY ATTACHED COMPONENTS
I_p = 1 IMPORTANCE FACTOR
R_p = 1.5 VENEER
z=h = 170FT

HORIZONTAL FORCE, F_p = ANCHORS FOR MASONRY VENEER LINTEL ANCHORS INTO CONCRETE WERE DESIGNED FOR A MINIMUM SEISMIC FORCE OF 1.2 KIPS/FT IN TENSION.

VERTICAL FORCE = F_p = ANCHORS FOR MASONRY VENEER LINTEL ANCHORS INTO CONCRETE WERE DESIGNED FOR A MINIMUM SEISMIC FORCE OF 0.3 KIPS/FT IN SHEAR.

41289795. FLOOD DESIGN DATA: NOT APPLICABLE.

41289796. RAIN LOAD DATA: NOT APPLICABLE

41289797. GEOTECHNICAL INFORMATION: NOT APPLICABLE

41289798. SPECIAL LOADS: NOT APPLICABLE.

GENERAL NOTES:

1. THESE DRAWINGS ARE STRUCTURAL DRAWINGS THAT PROVIDE GUIDANCE FOR ITEMS LISTED IN THE SCOPE OF WORK AND DEPICTED IN THESE DRAWINGS ONLY. THESE DRAWINGS DO NOT PROVIDE GUIDANCE FOR WATERPROOFING, MECHANICAL, ELECTRICAL, PLUMBING, INTERIOR OR EXTERIOR FINISHES, SITE WORK, OR ANY OTHER COMPONENT OR SYSTEM THAT IS NOT SPECIFICALLY ADDRESSED IN THESE DRAWINGS.
2. PERFORM ALL WORK IN ACCORDANCE WITH ALL GOVERNING CODES AND ORDINANCES HAVING JURISDICTION OVER THIS PROPERTY, INDUSTRY STANDARDS, AND MANUFACTURERS' INSTRUCTIONS.
3. IF A CONFLICT ARISES BETWEEN THE BUILDING CODE, THE MANUFACTURER'S INSTRUCTIONS, OR THESE PLANS, THE MORE STRINGENT REQUIREMENT APPLIES.
4. REPORT INCONSISTENCIES OR OMISSIONS THAT ARE DISCOVERED PROMPTLY TO THE ENGINEER.
5. VERIFY EXISTING CONDITIONS AND NOTIFY THE ENGINEER OF ANY CONDITIONS WHICH DO NOT COMPLY WITH THESE PLANS. THESE DRAWINGS WERE PREPARED USING FIELD OBSERVATIONS. STRUCTURAL OR ARCHITECTURAL DRAWINGS WERE NOT PROVIDED. SOME ASSUMPTIONS WERE MADE TO PREPARE THESE DRAWINGS. THE INTENT OF THESE DRAWINGS IS TO REPAIR DETERIORATED CONCRETE, REPLACE CORRODED STEEL LINTELS, AND REPOINT MASONRY, NOT TO RECONFIGURE THE EXISTING EXTERIOR WALL ASSEMBLY. NOTIFY THE ENGINEER IF CONDITIONS ARE UNCOVERED THAT DIFFER FROM THESE PLANS SO THAT IT CAN BE EVALUATED.
6. SCALES AND DIMENSIONS SHOWN IN THESE PLANS ARE FOR REFERENCE PURPOSES ONLY. FIELD VERIFY DIMENSIONS PRIOR TO ORDERING MATERIAL OR COMMENCING THE WORK.
7. THE CONTRACTOR IS RESPONSIBLE FOR MEANS, METHODS, SCHEDULING, SEQUENCING, COORDINATION, AND SAFETY OF THE WORK. THE CONTRACTOR SHALL INSTALL A DEBRIS CATCH NET BELOW THE WORK AREA TO PREVENT DEBRIS FROM FALLING. (1)
8. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS, INCLUDING LOCAL JURISDICTIONAL AND STATE (IF APPLICABLE) PERMITS.
9. THE CONTRACTOR SHALL MAINTAIN MEANS OF EGRESS DURING THE WORK OR PROVIDE A SUITABLE ALTERNATIVE MEANS OF EGRESS. IF MEANS OF EGRESS CANNOT BE MAINTAINED DURING THE WORK, THE CONTRACTOR SHALL RESTRICT ACCESS TO THE WORK AREA. (1)
10. CONTRACTOR IS RESPONSIBLE FOR ASBESTOS TESTING AND/OR ABATEMENT AS REQUIRED BY LOCAL AND STATE PERMITTING.
11. THE CONTRACTOR SHALL PROTECT THE EXISTING STRUCTURE AND PORTIONS OF THE EXISTING STRUCTURAL THAT ARE TO REMAIN, AND ADJACENT PROPERTIES FROM DAMAGE.
12. THE CONTRACTOR SHALL ENSURE THAT LAY DOWN, STORAGE, AND INSTALLATION PROCEDURES OF ALL CONSTRUCTION MATERIALS COMPLY WITH THE MANUFACTURERS' INSTRUCTIONS.
13. THE CONTRACTOR SHALL HAUL OFF AND PROPERLY DISPOSE OF ALL DEBRIS RESULTING FROM THE WORK.
14. PRODUCT SUBSTITUTIONS ARE NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.

MASONRY REPAIR NOTES:

1. MASONRY CONSTRUCTION SHALL COMPLY WITH TMS 402/602 BUILDING REQUIREMENTS AND SPECIFICATIONS FOR MASONRY STRUCTURES
2. NEW MASONRY SHALL MATCH EXISTING SIZE, SHAPE, DIMENSIONS, AND MATERIAL PROPERTIES TO THE EXTENT POSSIBLE.
3. REPLACEMENT CLAY BRICK UNITS SHALL MATCH EXISTING SIZE, SHAPE, DIMENSION, AND MATERIAL PROPERTIES.
4. REPOINTING MORTAR SHALL BE TYPE N, M, OR S AND SHALL MATCH EXISTING.
5. REPLACEMENT TERRA COTTA UNITS SHALL MATCH EXISTING SIZE, SHAPE, DIMENSION, AND MATERIAL PROPERTIES.
6. CRACKS IN MASONRY SHALL BE REPAIRED WITH HELICAL STITCH TIES BY PROSOCO. HELICAL STITCH TIES SHALL BE BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND THESE DRAWINGS. (1)
7. BRICKS IN THE REPAIR AREA SHALL BE ANCHORED TO THE EXISTING WALL WITH PROSOCO HELICAL TIES. HELICAL WALL TIE INSTALLATION NOTES:
   - 7.1. LOCATE ANCHORS IN THE AREA TO BE ANCHORED PER PROJECT DRAWINGS AND DETAILS.
   - 7.2. SELECT PROPER ANCHOR LENGTH BY FIELD VERIFICATION. WALL TIES SHALL PENETRATE MINIMUM 6" INTO REINFORCED CONCRETE OR FULLY PENETRATE THE INTERIOR FACE SHELL OF TERRA COTTA.
   - 7.3. DRILL PROPER PILOT HOLE SIZE PER THE ANCHOR TYPE. SEE MANUFACTURER'S PRODUCT DATA FOR RECOMMENDATIONS.
   - 7.4. INSTALL HELICAL TIE INTO THE DRY SETTING TOOL MOUNTED IN AN SDS DRILL.
   - 7.5. DRIVE THE HELICAL TIE ANCHOR IN THE PILOT HOLE AND INTO THE BACKUP MATERIAL.
   - 7.6. THE SETTING TOOL WILL RECESS THE HELICAL TIE APPROXIMATELY 3/8 INCH FROM THE SURFACE.
   - 7.7. CONCEAL ANCHOR WITH SPECIFIED PATCHING COMPOUND.
   - 7.8. SPACE ANCHORS IN A STAGGERED PATTERN NOT MORE THAN 16 INCHES ON CENTER VERTICALLY AND 16 INCHES ON CENTER HORIZONTALLY. INSTALL ADDITIONAL ANCHORS WITHIN 12 INCHES OF OPENINGS AT INTERVALS, NOT EXCEEDING 8 INCHES AROUND THE PERIMETER. INCLINED ANCHORS WILL BE 16" ON CENTER. HORIZONTAL ANCHORS WILL BE 16" ON CENTER. THERE IS 8" SPACING BETWEEN A HORIZONTAL AND INCLINED ANCHOR.

STRUCTURAL STEEL NOTES:

1. ERECTION AND FABRICATION OF STRUCTURAL STEEL SHALL COMPLY WITH AISC 360-16: SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.
2. STRUCTURAL STEEL PROPERTIES SHALL COMPLY WITH TABLE 8: STRUCTURAL STEEL PROPERTIES
3. ALL NEW STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANIZED (HDG) IN ACCORDANCE WITH ASTM A123 AND ASTM FOR HARDWARE. STRUCTURAL STEEL SHALL BE COATED AS FOLLOWS: (1)
   - 3.1. FIELD PRIMER APPLIED AFTER FIELD WELDS OR CUTS: SHERWIN WILLIAMS ZINC-CLAD 5 ORGANIC ZINC-RICH PRIMER (SURFACE PREP SSCP-SP6)
   - 3.2. INTERMEDIATE COAT: SHERWIN WILLIAMS MACROPOXY 646 FAST CURE EPOXY (SURFACE PREP SSPC-SP2/3)
   - 3.3. FINISH COAT: TWO COATS SHERWIN WILLIAMS ACROLON 218 HS ACRYLIC POLYURETHANE SEMI-GLOSS.
4. BOLT HOLES FOR HDG OR STAINLESS STEEL SHALL BE 1/8" LARGER THAN THE BOLT/ANCHOR DIAMETER.
5. SCREW ANCHORS SHALL BE TYPE 316 SS, TITEN HD.
6. STEEL ANGLES SHALL BE INSTALLED LONG LEG VERTICAL (LLV).
7. IF REBAR IS WELDED, WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS. WELDING SHALL BE PERFORMED BY QUALIFIED PERSONNEL PER AWS D1.1.
   - 7.1. WELDING ELECTRODES SHALL COMPLY WITH AWS D1.1.
   - 7.2. WELDS SHALL BE BY SHIELDED METAL ARC WELD (SMAW) UNLESS OTHERWISE NOTED.
   - 7.3. WELDING ELECTRODES SHALL BE E70XX (AWS A5.1) CLASS UNLESS OTHERWISE NOTED. CONTRACTOR SHALL PROVIDE A FIRE WATCH DURING WELDING OPERATIONS.
8. QUALITY CONTROL SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH AISC 360 CHAPTER N. REFER TO SPECIAL INSPECTION NOTES.
   - 8.1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND FABRICATOR QUALITY CONTROL DRAWINGS TO THE ENGINEER FOR REVIEW.
   - 8.2. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN QUALITY CONTROL PROCEDURES AND PERFORM INSPECTIONS TO ENSURE THAT THE WORK IS PERFORMED IN ACCORDANCE WITH AISC 360, THE APPLICABLE CODE, AND THESE CONSTRUCTION DOCUMENTS.

CONCRETE REPAIR NOTES:

1. DESIGN ASSUMPTIONS: THE CONTRACTOR SHALL VERIFY EXISTING MATERIALS, TO INCLUDE GRADE OF EXISTING REBAR AND EXISTING CONCRETE COMPRESSIVE STRENGTH. THIS REPAIR DESIGN ASSUMES THAT THE EXISTING REBAR IS MINIMUM GRADE 60 AND THE EXISTING CONCRETE COMPRESSIVE STRENGTH IS MINIMUM F'C = 3000 PSI. AN ANALYSIS WAS PERFORMED TO VERIFY THAT THE STAIRS, IF RESTORED TO A PRE-DAMAGED STATE, ARE CAPABLE OF SUPPORTING A FACTORED LIVE LOAD OF 100PSF, THE SELF WEIGHT OF THE CONCRETE, AND THE MASONRY WALL COMPONENTS.
2. THE SCOPE OF CONCRETE REPAIR IS THE 12TH FLOOR CANTILEVER STAIR ON THE REAR ELEVATION. THE WORK INVOLVES REMOVING DETERIORATED CONCRETE AND REBAR AND INSTALLING NEW REBAR AND REPAIR MORTAR.
3. ALL CONCRETE REPAIR WORK SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING STANDARDS UNLESS NOTED OTHERWISE:
   - 3.1. ACI 318-19: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - 3.2. ACI 117-10: SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS.
   - 3.3. ACI 562-19: CODE REQUIREMENTS FOR ASSESSMENT, REPAIR, AND REHABILITATION OF EXISTING CONCRETE STRUCTURES.
4. THE CONTRACTOR SHALL VERIFY THE COMPRESSIVE STRENGTH OF THE EXISTING CONCRETE BY ANALYSIS. THE ANALYSIS SHALL INCLUDE A PETROGRAPHIC ANALYSIS IN ACCORDANCE WITH ASTM C856-LATEST REVISION: PETROGRAPHIC EXAMINATION OF HARDENED CONCRETE AND A MINIMUM COMPRESSIVE STRENGTH TEST IN ACCORDANCE WITH ASTM C42. THE CONTRACTOR SHALL SUBMIT THE RESULTS OF THE COMPRESSIVE STRENGTH TEST AND PETROGRAPHIC ANALYSIS TO THE ENGINEER FOR REVIEW.
5. CONCRETE REPAIR PRODUCTS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND PRODUCT DATA SHEETS AND THESE SPECIFICATIONS. IF THERE IS A CONFLICT BETWEEN INDUSTRY STANDARDS, THE MANUFACTURER'S INSTRUCTIONS, OR THESE SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
6. CONCRETE REPAIRS SHALL BE PERFORMED WITH SIKATOP 123 PLUS POLYMER MODIFIED PORTLAND CEMENT MORTAR WITH FERROGARD 901 PENET RATING CORROSION INHIBITOR..
7. REBARS SHALL BE CLEANED AND TREATED WITH SIKA ARMATEC-110 EPOCHEM BONDING PRIMARY AND REINFORCEMENT CORROSION PROTECTION.
8. REPAIR MORTAR SHALL BE MIXED AND APPORTIONED PER THE MANUFACTURER'S INSTRUCTIONS. SEE "MIXING AND APPLICATION".
9. REPAIR MORTAR SHALL NOT BE PUMPED THROUGH PIPE MADE OF ALUMINUM OR ALUMINUM ALLOYS.
10. REPAIR MORTAR SHALL BE PLACED IN ACCORDANCE WITH THE MIXING AND APPLICATION INSTRUCTIONS AND AT A RATE TO PROVIDE AN ADEQUATE SUPPLY OF MORTAR AT THE LOCATION OF PLACEMENT, AT A RATE SO THAT MORTAR HAS SUFFICIENT WORKABILITY SO THAT IT CAN BE CONSOLIDATED, WITHOUT SEGREGATION OR LOSS OF MATERIALS, WITHOUT INTERRUPTION SUFFICIENT TO REDUCE WORKABILITY THAT WOULD RESULT IN COLD JOINTS, AND DEPOSITED AS NEAR TO FINAL LOCATION AS POSSIBLE TO AVOID SEGREGATION DUE TO REHANDLING.
11. RETEMPERING IS NOT PERMITTED.
12. REPAIR MORTAR SHALL BE CONSOLIDATED AND WORKED AROUND REINFORCEMENT AND INTO THE CORNERS OF FORMS OR TERMINATIONS. MORTAR SHALL BE HAND APPLIED IN LIFTS TO PREVENT VOIDS IN THE REPAIR.
13. REPAIR MORTAR SHALL BE CURED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
14. REPAIR MORTAR SHALL BE PLACED WITH AMBIENT TEMPERATURE AND RELATIVE HUMIDITY WITHIN THE RANGES PERMITTED BY THE MANUFACTURER.
15. ANCHOR NEW CONCRETE REPAIR TO EXISTING SLAB WITH 8MM HELICAL TIES @ 12" OC
16. NEW REBAR SHALL BE GRADE 60.
17. THE CONCRETE REPAIR PROFILE SHALL PROVIDE 1 ½" (+/- 3/8") OF CLEAR COVER FOR REBAR.
18. CORROSION SHALL BE CLEANED FROM REBARS. REBARS THAT HAVE MORE THAN 10% SECTION LOSS SHALL BE SPLICED WITH NEW REBAR OF EQUIVALENT SIZE. CHASE/CLEAN CORROSION 18" BEYOND.
19. NEW REBAR SHALL BE TIED TO EXISTING REBAR WITH THE FOLLOWING DEVELOPMENT LENGTHS:

TENSION LAP SPLICE	=	50"
HOOKED BARS IN TENSION	=	18"

IF AS-BUILT CONDITIONS PREVENT PROPER DEVELOPMENT LENGTH FROM BEING ACHIEVED, MECHANICAL SPLICES MAY BE SUBSTITUTED. CONTRACTOR SHALL SUBMIT PRODUCT DATA FOR MECHANICAL SPLICES TO THE ENGINEER FOR REVIEW, IF APPLICABLE.

SURFACE PREPARATION:

1. AREAS TO BE REPAIRED MUST BE CLEAN, SOUND, AND FREE OF CONTAMINANTS. ALL LOOSE AND DETERIORATED CONCRETE SHALL BE REMOVED BY MECHANICAL MEANS.
2. MECHANICALLY PREPARE CONCRETE SUBSTRATE TO OBTAIN A SURFACE PROFILE OF +/- 1/16" (CSP 5 OR GREATER AS PER ICRI GUIDELINES) WITH A NEW EXPOSED AGGREGATE SURFACE. PREPARATION WORK SHALL BE DONE BY HIGH PRESSURE WATER BLAST, SCABBLER, OR OTHER APPROPRIATE MECHANICAL MEANS.
3. AREA TO BE PATCHED SHALL NOT BE LESS THAN 1/8" IN DEPTH.
4. THE BOND STRENGTH AT THE INTERFACE BETWEEN REPAIR MORTAR AND EXISTING PREPARED CONCRETE SHALL BE TESTED IN ACCORDANCE WITH ASTM C1583. NOTIFY THE ENGINEER OF RECORD IF THE BOND STRENGTH IS LESS THAN 175 PSI SO THAT AN EVALUATION CAN BE PERFORMED. A MINIMUM OF THREE LOCATIONS SHALL BE TESTED TO VERIFY THAT THE REPAIR MORTAR CAN ACHIEVE SUITABLE BOND WITH THE EXISTING PREPARED CONCRETE SURFACE.
5. SANDBLAST REBARS WITH TO A WHITE METAL FINISH TO REMOVE ALL CONTAMINANTS AND RUST. THE STEEL SHALL BE HIGH PRESSURE WASHED AFTER MECHANICAL CLEANING. PRIME STEEL WITH 2 COATS OF SIKA ARMATEC 110 EPOCEM PER THE PRODUCT DATA SHEET.
6. SAW CUT EDGES WITH A DOVETAIL TO THE EXTENT POSSIBLE.
7. THE SUBSTRATE SHOULD BE SATURATED SURFACE DRY (SSD) WITH CLEAN WATER PRIOR TO APPLICATION. NO STANDING WATER SHOULD REMAIN DURING APPLICATION.
8. PRIME THE PREPARED SUBSTRATE WITH A BRUSH OR SPRAYED APPLIED COAT OF SIKA® ARMATEC® 110 EPOCEM. ALTERNATELY, A SCRUB COAT OF SIKATOP®-123 PLUS CAN BE APPLIED PRIOR TO PLACEMENT OF THE MORTAR. THE REPAIR MORTAR HAS TO BE APPLIED INTO THE WET SCRUB COAT BEFORE IT DRIES.

QUALITY ASSURANCE:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR QUALITY ASSURANCE PER THE REPAIR MORTAR MANUFACTURE'S INSTRUCTIONS AND PERFORM SPECIAL INSPECTIONS AS REQUIRED BY THE SCBC.
2. THE CONTRACTOR SHALL BE QUALIFIED IN THE FIELD OF CONCRETE REPAIR AND PROTECTION WITH A SUCCESSFUL TRACK RECORD OF 5 YEARS OR MORE. THE CONTRACTOR SHALL MAINTAIN QUALIFIED PERSONNEL WHO HAVE RECEIVED PRODUCT TRAINING BY A MANUFACTURER'S REPRESENTATIVE.
3. INSTALL MATERIALS IN ACCORDANCE WITH ALL SAFETY AND WEATHER CONDITIONS REQUIRED BY THE MANUFACTURER OR AS MODIFIED BY APPLICABLE RULES AND REGULATIONS OF LOCAL, STATE AND FEDERAL AUTHORITIES HAVING JURISDICTION. CONSULT MATERIAL SAFETY DATA SHEETS FOR COMPLETE HANDLING RECOMMENDATIONS.
4. ALL MATERIALS MUST BE DELIVERED IN ORIGINAL, UNOPENED CONTAINERS WITH THE MANUFACTURER'S NAME, LABELS, PRODUCT IDENTIFICATION, AND BATCH NUMBERS. DAMAGED MATERIAL MUST BE REMOVED FROM THE SITE IMMEDIATELY.
5. STORE ALL MATERIALS OFF THE GROUND AND PROTECT FROM RAIN, FREEZING OR EXCESSIVE HEAT UNTIL READY FOR USE.
6. CONDITION THE SPECIFIED PRODUCT AS RECOMMENDED BY THE MANUFACTURER.
7. DO NOT APPLY MATERIAL IF IT IS RAINING OR SNOWING OR IF SUCH CONDITIONS APPEAR TO BE IMMINENT. MINIMUM APPLICATION TEMPERATURE 45°F (5°C) AND RISING.
8. PRECAUTIONS SHOULD BE TAKEN TO AVOID DAMAGE TO ANY SURFACE NEAR THE WORK ZONE DUE TO MIXING AND HANDLING OF THE SPECIFIED MATERIAL.

MIXING AND APPLICATION:

1. MECHANICALLY MIX IN AN APPROPRIATE SIZED MORTAR MIXER OR WITH A SIKA MUD PADDLE AND LOW SPEED (400-600 RPM) DRILL.
2. POUR APPROXIMATELY 4/5 GAL COMPONENT A INTO THE MIXING CONTAINER. ADD COMPONENT B WHILE CONTINUING TO MIX. MIX TO A UNIFORM CONSISTENCY FOR A MAXIMUM OF THREE MINUTES. ADD REMAINING COMPONENT A TO MIX FOR DESIRED CONSISTENCY. SHOULD SMALLER QUANTITIES BE NEEDED, BE SURE THE COMPONENTS ARE MEASURED IN THE CORRECT RATIO AND THAT COMPONENT B IS UNIFORMLY BLENDED BEFORE MIXING THE COMPONENTS TOGETHER. MIX ONLY THAT AMOUNT OF MATERIAL THAT CAN BE PLACED IN 10 – 15 MINUTES. DO NOT RETEMPER MATERIAL.
3. AT THE TIME OF APPLICATION, THE SUBSTRATE SHALL BE SATURATED SURFACE DRY WITH NO STANDING WATER. MORTAR MUST BE SCRUBBED INTO SUBSTRATE FILLING ALL PORES AND VOIDS. WHILE THE SCRUB COAT IS STILL PLASTIC, FORCE MATERIAL AGAINST EDGE OF REPAIR, WORKING TOWARD CENTER. IF REPAIR AREA IS TOO LARGE TO FILL WHILE SCRUB COAT IS STILL WET USE SIKA ARMATEC 110 EPOCEM IN LIEU OF SCRUB COAT. (SEE SPEC COMPONENT SC-200-0699)
4. AFTER FILLING, CONSOLIDATE, THEN SCREED. ALLOW MORTAR TO SET TO DESIRED STIFFNESS THEN FINISH WITH TROWEL FOR SMOOTH SURFACE. WOOD FLOAT OR SPONGE FLOAT FOR A ROUGH SURFACE.
5. AREAS WHERE THE DEPTH OF THE REPAIR AREA TO SOUND CONCRETE IS GREATER THAN 1-1/2", THE REPAIR SHALL BE MADE IN LIFTS OF 1-1/2" MAXIMUM THICKNESS. THE TOP SURFACE OF EACH LIFT SHALL BE SCORED TO PRODUCE A ROUGH SURFACE FOR THE NEXT LIFT. THE PRECEDING LIFT SHALL BE ALLOWED TO REACH FINAL SET BEFORE APPLYING FRESH MATERIAL. THE FRESH MORTAR MUST BE SCRUBBED INTO THE PRECEDING LIFT.

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SPECIFICATIONS

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S001

SPECIFICATIONS

6. CURING IS REQUIRED. MOIST CURE WITH WET BURLAP AND POLYETHYLENE, A FINE MIST OF WATER OR A WATER-BASED* COMPATIBLE CURING COMPOUND. MOIST CURING SHOULD COMMENCE IMMEDIATELY AFTER FINISHING AND CONTINUE FOR 48 HOURS. PROTECT NEWLY APPLIED MATERIAL FROM RAIN, SUN, AND WIND UNTIL COMPRESSIVE STRENGTH IS 70% OF THE 28-DAY COMPRESSIVE STRENGTH. TO PREVENT FROM FREEZING COVER WITH INSULATING MATERIAL. SETTING TIME IS DEPENDENT ON TEMPERATURE AND HUMIDITY. *PRETESTING OF CURING COMPOUND IS REQUIRED.
7. DO NOT USE SOLVENT-BASED CURING COMPOUNDS.
8. ADHERE TO ALL PROCEDURES, LIMITATIONS AND CAUTIONS FOR THE POLYMER-MODIFIED PORTLAND CEMENT MORTAR IN THE MANUFACTURERS CURRENT PRINTED TECHNICAL DATA SHEET AND LITERATURE.

CLEANING:

1. THE UNCURED POLYMER-MODIFIED PORTLAND CEMENT MORTAR CAN BE CLEANED FROM TOOLS WITH WATER. THE CURED POLYMER-MODIFIED PORTLAND CEMENT MORTAR CAN ONLY BE REMOVED MECHANICALLY.
2. LEAVE FINISHED WORK AND WORK AREA IN A NEAT, CLEAN CONDITION WITHOUT EVIDENCE OF SPILLOVERS ONTO ADJACENT AREAS.

SPECIAL INSPECTIONS:

1. SPECIAL INSPECTIONS ARE REQUIRED PER THE SCBC. THE RESULTS OF SPECIAL INSPECTIONS, TO INCLUDE REPORTS, TESTING RESULTS, CERTIFICATES OF COMPLIANCE ETC. SHALL BE SUBMITTED TO THE OWNER OR OWNER'S REPRESENTATIVE, THE BUILDING OFFICIAL, AND THE ENGINEER OF RECORD. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING THE RESULTS OF SPECIAL INSPECTIONS.
2. THIRD-PARTY INSPECTIONS SHALL BE PAID BY THE OWNER OR THE OWNER'S REPRESENTATIVE IN ACCORDANCE WITH SCBC SECTION 1704.2. THE CONTRACTOR SHALL COORDINATE SPECIAL INSPECTIONS WITH PRE-INSPECTION NOTICE TO THE OWNER.
3. SPECIAL INSPECTIONS SHALL BE IN ACCORDANCE WITH SCBC CHAPTER 17 AND LOCAL REQUIREMENTS PER THE BUILDING OFFICIAL.
4. PERIODIC SPECIAL INSPECTIONS SHALL BE BY THE SPECIAL INSPECTOR WHO IS INTERMITTENTLY PRESENT WHERE THE WORK TO BE INSPECTED HAS BEEN OR IS BEING PERFORMED. PERIODIC INSPECTIONS SHALL OCCUR AT A MINIMUM AT THE 33%, 67%, 99% STAGES OF PROGRESS AND SHALL INCLUDE NO LESS THAN 10% SAMPLE OF TOTAL POPULATION BY SQUARE FOOTAGE.
5. CONTINUOUS SPECIAL INSPECTIONS SHALL BE BY THE SPECIAL INSPECTOR WHO IS PRESENT CONTINUOUSLY WHEN AND WHERE THE WORK TO BE INSPECTED IS BEING PERFORMED.
6. THE CONTRACTOR RESPONSIBLE FOR THE PORTION OF REPAIR LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO COMMENCEMENT OF THE WORK ON THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN THE FOLLOWING:
   - 6.1. ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.
   - 6.2. ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL.
   - 6.3. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF THE REPORTS.
   - 6.4. IDENTIFICATION AND QUALIFICATION OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.
7. THE STATEMENT OF SPECIAL INSPECTIONS IS REQUIRED TO BE SUBMITTED AS A CONDITION FOR PERMIT ISSUANCE IN ACCORDANCE WITH THE SPECIAL INSPECTION AND STRUCTURAL TESTING REQUIREMENTS PER SCBC CHAPTER 17. THE OWNER OR OWNER'S AUTHORIZED AGENT, OTHER THAN THE CONTRACTOR, SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PROVIDE SPECIAL INSPECTIONS DURING CONSTRUCTION, AND IDENTIFY THE APPROVED AGENCIES TO THE BUILDING OFFICIAL. PRIOR TO THE START OF CONSTRUCTION, THE APPROVED AGENCIES SHALL PROVIDE WRITTEN DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING THE COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING OF THE SPECIAL INSPECTORS WHO WILL PERFORM THE SPECIAL INSPECTIONS DURING CONSTRUCTION. SPECIAL INSPECTIONS ARE REQUIRED FOR THE FOLLOWING STRUCTURAL SYSTEMS (REFER TO TABLE 1: SPECIAL INSPECTIONS)
8. SPECIAL INSPECTIONS FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH AISC 360 SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS CHAPTER N
   - 8.1. THE FABRICATOR AND ERECTOR SHALL ESTABLISH, MAINTAIN, AND IMPLEMENT QC PROCEDURES TO ENSURE THAT THEIR WORK IS PERFORMED IN ACCORDANCE WITH THIS SPECIFICATION AND THE CONSTRUCTION DOCUMENTS.
   - 8.2. MATERIAL IDENTIFICATION PRACTICES SHALL COMPLY WITH AISC CODE OF STANDARD PRACTICE.
   - 8.3. SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED TO THE OWNER, THE OWNER'S REPRESENTATIVE, AND THE ENGINEER OF RECORD.

REQUIRED SUBMITTALS:

1. THE CONTRACTOR SHALL SUBMIT THE FOLLOWING TO THE OWNER OR OWNER'S REPRESENTATIVE AND THE ENGINEER OF RECORD
   - 1.1. THE CONTRACTOR SHALL SUBMIT THE MANUFACTURER'S LITERATURE, TO INCLUDE PRODUCT DATA SHEETS AND APPROPRIATE MATERIAL SAFETY DATA SHEETS (MSDS) TO THE OWNER OR OWNER'S REPRESENTATIVE AND THE ENGINEER OF RECORD.
   - 1.2. RESULTS OF SPECIAL INSPECTIONS.
   - 1.3. SHOP AND ERECTION DRAWINGS FOR STRUCTURAL STEEL.
   - 1.4. PRODUCT DATA SHEETS FOR SUBSTITUTION REQUESTS.
   - 1.5. RESULTS OF CONCRETE TESTING TO INCLUDE ASTM C42 CONCRETE COMPRESSIVE STRENGTH TESTING, ASTM C856 PETROGRAPHIC EXAMINATION OF HARDENED CONCRETE TESTS, ASTM C1583: STANDARD TEST METHOD FOR MEASURING TENSILE STRENGTH OF CONCRETE SURFACES USING THE PULL OFF METHOD, ETC.
2. THE CONTRACTOR SHALL PROVIDE A WRITTEN WARRANTY FROM THE MANUFACTURER AGAINST DEFECTS OF MATERIALS FOR A PERIOD OF ONE YEAR BEGINNING WITH DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT.

1

TABLES MOVED TO S003

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SPECIFICATIONS

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SPECIFICATIONS

TABLE 1: SUMMARY OF REQUIRED TESTING

TEST	PURPOSE
ASTM C42: STANDARD TEST METHOD FOR OBTAINING AND TESTING DRILLED CORES AND SAWED BEAMS OF CONCRETE	DETERMINE THE COMPRESSIVE STRENGTH OF EXISTING SOUND CONCRETE IN VICINITY OF THE REPAIR. PERFORM MIN. 3 TESTS WITHIN APPROXIMATELY 25' OF THE REPAIR AREA. NOTIFY THE ENGINEER IF THE AVERAGE CONCRETE COMPRESSIVE STRENGTH IS LESS THAN 3000 PSI.
ASTM C856 PETROGRAPHIC EXAMINATION OF HARDENED CONCRETE	DETERMINE THE CONDITION OF EXISTING CONCRETE. DETERMINE THE CAUSE OF INFERIOR QUALITY, DISTRESS, OR DETERIORATION. DETERMINE PROBABLE FUTURE PERFORMANCE OF THE CONCRETE WITH RESPECT TO BONDING WITH REPAIR MORTAR. DETERMINE THE MIX PROPERTIES (AIR CONTENT, W/CM RATIO, NOMINAL MAXIMUM AGGREGATE SIZE. PERFORM ANALYSIS OF EXISTING SOUND CONCRETE IN THE REPAIR AREA.
ASTM D1583: STANDARD TEST METHOD FOR TENSILE STRENGTH OF CONCRETE SURFACES AND THE BOND STRENGTH OR TENSILE STRENGTH OF CONCRETE REPAIR AND OVERLAY MATERIALS BY DIRECT TENSION	DETERMINE THE BOND STRENGTH AT THE INTERFACE BETWEEN REPAIR MORTAR AND EXISTING PREPARED CONCRETE. PERFORM A MINIMUM OF THREE TESTS IN THE REPAIR AREA. NOTIFY THE ENGINEER IF BOND STRENGTH IS LESS THAN 175 PSI.

TABLE 5: INSPECTION TASKS AFTER WELDING

	INSPECTION TASKS AFTER WELDING – 'P' = PERFORMED 'O' = OBSERVED	QC	QA
1.	WELDS CLEANED	O	O
2.	SIZE, LENGTH AND LOCATION OF WELDS.	P	P
3.	WELDS MEET VISUAL ACCEPTANCE CRITERIA • CRACK PROHIBITION • WELD/BASE–METAL FUSION • CRATER CROSS SECTION • WELD PROFILES • WELD SIZE • UNDERCUT • POROSITY	P	P
4.	ARC STRIKES	P	P
5.	k–AREA[A]	P	P
6.	WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT–UP HEAVY SHAPES[B]	P	P
7.	BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	P	P
8.	REPAIR ACTIVITIES	P	P
9.	DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	P	P
10.	NO PROHIBITED WELDS HAVE BEEN ADDED WITHOUT THE APPROVAL OF THE EOR	O	O

[A] WHEN WELDING OF DOUBLER PLATES, CONTINUITY PLATES OR STIFFENERS HAS BEEN PERFORMED IN THE k–AREA, VISUALLY INSPECT THE WEB k–AREA FOR CRACKS WITHIN 3 IN. (75 MM) OF THE WELD.
[B] AFTER ROLLED HEAVY SHAPES (SEE SECTION A3.1C) AND BUILT–UP HEAVY SHAPES (SEE SECTION A3.1D) ARE WELDED, VISUALLY INSPECT THE WELD ACCESS HOLE FOR CRACKS.

TABLE 6: STRUCTURAL STEEL PROPERTIES

MATERIAL	ASTM	MIN YIELD STRENGTH, Fy	MIN TENSILE STRENGTH, Fu
"L" ANGLE	A572	50 KSI	65 KSI
"C" CHANNEL	A36	36 KSI	58 KSI
"MC" CHANEL	A36	36 KSI	58 KSI
"PL" PLATE	A36	36 KSI	58 KSI
BOLTS	A325	N/A	120 KSI
NUTS	A563	N/A	N/A
WASHERS (FLAT)	F436	N/A	N/A
THREADED ROD (TR)	F1554	55 KSI	75 KSI

TABLE 2: REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

	TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD[A]	IBC REFERENCE
1.	INSPECT REINFORCEMENT	–	X	ACI 318 Ch. 20, 25.2, 25.3, 26.6.1–26.6.3	1908.4
2.	REINFORCING BAR WELDING (IF APPLICABLE): A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706; B. INSPECT SINGLE–PASS FILLET WELDS, MAXIMUM 5/16"; AND C. INSPECT ALL OTHER WELDS.	– X	X X	AWS D1.4 ACI 318: 26.6.4	–
4.	INSPECT ANCHORS POST–INSTALLED IN HARDENED CONCRETE MEMBERS. A MINIMUM OF (3) POST INSTALLED ADHESIVE ANCHORS SHALL BE LOAD TESTED PER SCBC 1708.2. REFER TO LOAD TEST NOTES. B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A.	–	X	ACI 318: 17.8.2.4 ACI 318: 17.8.2	–
5.	VERIFY USE OF REQUIRED DESIGN MIX.	X	–	ACI 318: CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6.	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	–	ASTM C172 ASTM C31 ACI 318: 26.4, 26.12	1908.10
7.	INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	–	ACI 318: 26.5	1908.6, 1908.7, 1908.8
8.	VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	–	X	ACI 318: 26.5.3–26.5.5	1908.9
12.	INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	–	X	ACI 318: 26.11.1.2(b)	–

TABLE 3: INSPECTION TASKS PRIOR TO WELDING

	INSPECTION TASKS PRIOR TO WELDING – 'P' = PERFORMED 'O' = OBSERVED	QC	QA
1.	WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS.	P	0
2.	WPS AVAILABLE.	P	P
3.	MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE.	P	P
4.	MATERIAL IDENTIFICATION (TYPE/GRADE).	O	O
5.	WELDER IDENTIFICATION SYSTEM[A]	O	O
6.	FIT–UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) • JOINT PREPARATIONS • DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) • CLEANLINESS (CONDITION OF STEEL SURFACES) • TACKING (TACK WELD QUALITY AND LOCATION) • BACKING TYPE AND FIT (IF APPLICABLE)	O	O
7.	FIT–UP OF CJP GROOVE WELDS OF HSS T–, Y– AND K–JOINTS WITHOUT BACKING (INCLUDING JOINT GEOMETRY) • JOINT PREPARATIONS • DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) • CLEANLINESS (CONDITION OF STEEL SURFACES) • TACKING (TACK WELD QUALITY AND LOCATION)	P	O
8.	CONFIGURATION AND FINISH OF ACCESS HOLES.	O	O
9.	FIT–UP OF FILLET WELDS • DIMENSIONS (ALIGNMENT, GAPS AT ROOT) • CLEANLINESS (CONDITION OF STEEL SURFACES) • TACKING (TACK WELD QUALITY AND LOCATION)	O	O
10.	CHECK WELDING EQUIPMENT.	O	–

[A] THE FABRICATOR OR ERECTOR, AS APPLICABLE, SHALL MAINTAIN A SYSTEM BY WHICH A WELDER WHO HAS WELDED A JOINT OR MEMBER CAN BE IDENTIFIED. STAMPS, IF USED, SHALL BE THE LOW–STRESS TYPE.

TABLE 4: INSPECTION TASKS DURING WELDING

	INSPECTION TASKS DURING TO WELDING – 'P' = PERFORMED 'O' = OBSERVED	QC	QA
1.	CONTROL AND HANDLING OF WELDING CONSUMABLES • PACKAGING • EXPOSURE CONTROL	O	O
2.	NO WELDING OVER CRACKED TACK WELDS.	O	O
3.	ENVIRONMENTAL CONDITIONS • WIND SPEED WITHIN LIMITS • PRECIPITATION AND TEMPERATURE	O	O
4.	WPS FOLLOWED • SETTINGS ON WELDING EQUIPMENT • TRAVEL SPEED • SELECTED WELDING MATERIALS • SHIELDING GAS TYPE/FLOW RATE • PREHEAT APPLIED • INTERPASS TEMPERATURE MAINTAINED (MIN./MAX.) • PROPER POSITION (F, V, H, OH)	O	O
5.	WELDING TECHNIQUES • INTERPASS AND FINAL CLEANING • EACH PASS WITHIN PROFILE LIMITATIONS • EACH PASS MEETS QUALITY REQUIREMENTS	O	O
6.	PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS	P	P

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TABLES

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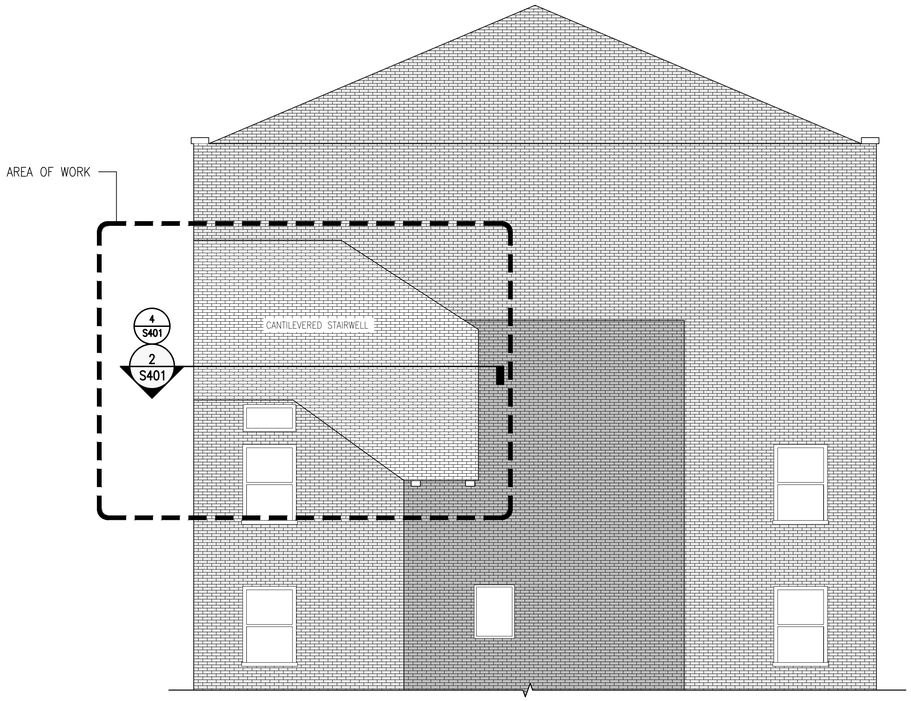
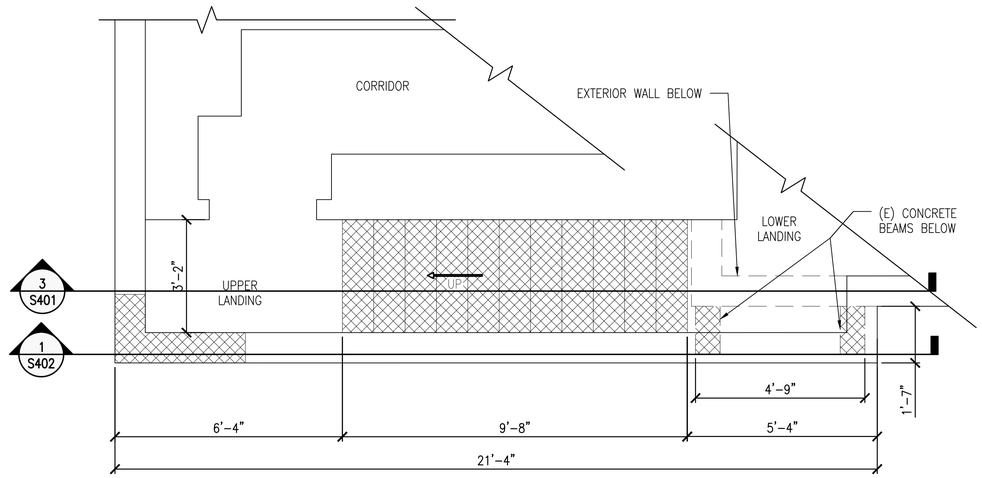


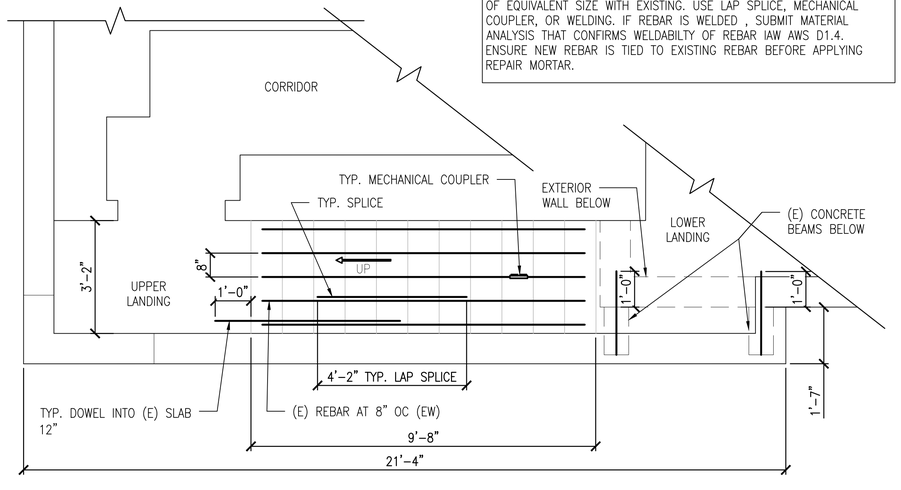
1 WEST ELEVATION - AREA OF WORK
SCALE: 1/4" = 1'–0"

KEY
= APPROXIMATE AREA OF DETERIORATED CONCRETE

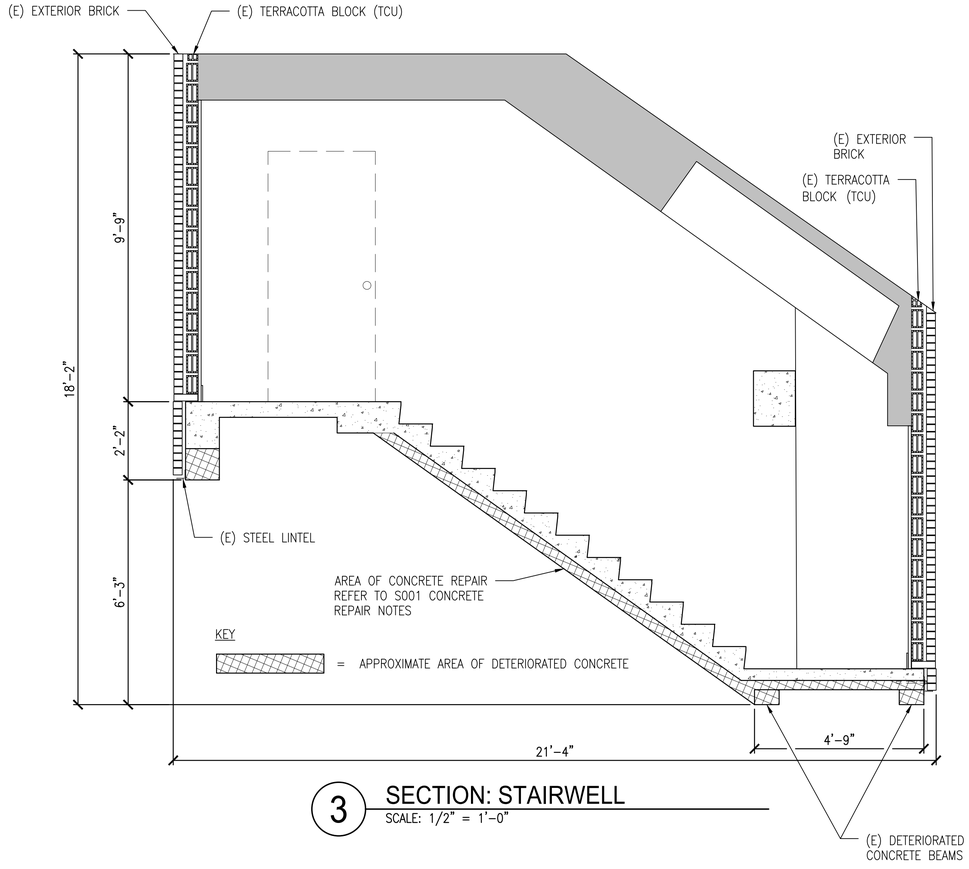


2 PLAN: STAIRWELL
SCALE: 1/2" = 1'–0"

DESIGN INTENT – THIS PLAN SHOWS TYPICAL REBAR LAP SPLICES, DOWEL EMBEDMENT LENGTH, AND MECHANICAL COUPLERS. THE DESIGN INTENT IS TO REPLACE DETERIORATED CONCRETE. CLEAN ALL CORROSION FROM REBAR. IF SECTION LOSS >10%, SPLICE NEW REBAR OF EQUIVALENT SIZE WITH EXISTING. USE LAP SPLICE, MECHANICAL COUPLER, OR WELDING. IF REBAR IS WELDED , SUBMIT MATERIAL ANALYSIS THAT CONFIRMS WELDABILTY OF REBAR IAW AWS D1.4. ENSURE NEW REBAR IS TIED TO EXISTING REBAR BEFORE APPLYING REPAIR MORTAR.



4 TYPICAL REBAR SPLICE, DOWEL, MECHANICAL COUPLING
SCALE: 1/2" = 1'–0"



3 SECTION: STAIRWELL
SCALE: 1/2" = 1'–0"

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DETAILS

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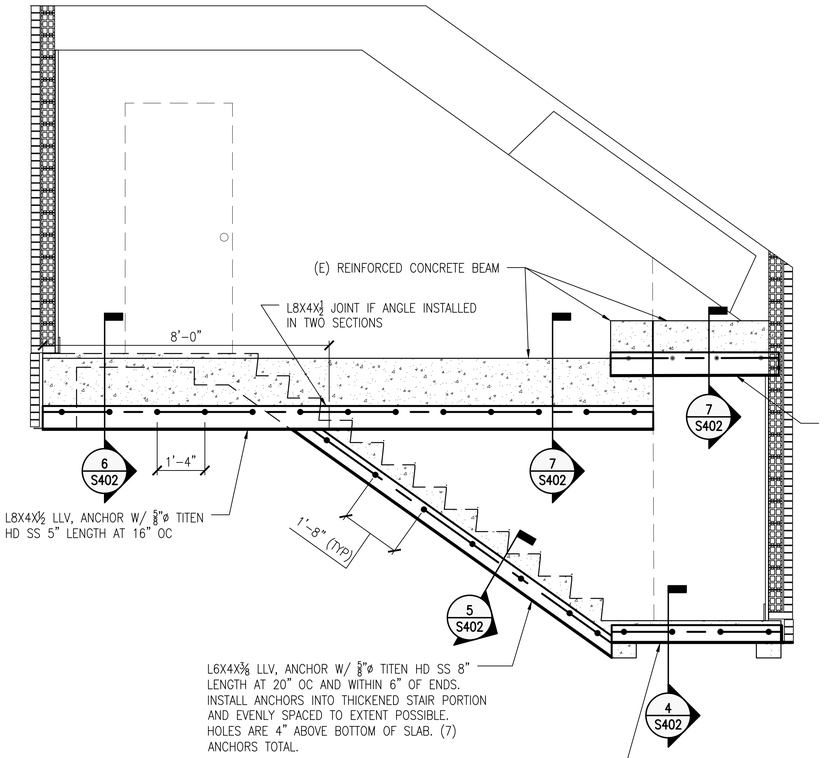
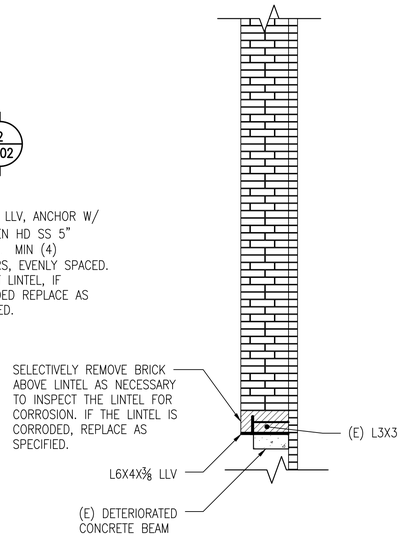
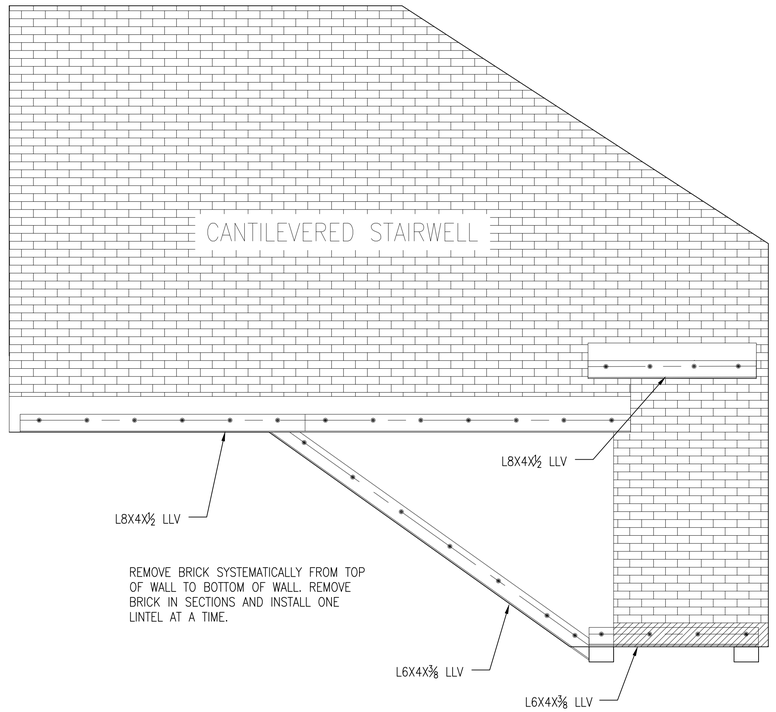
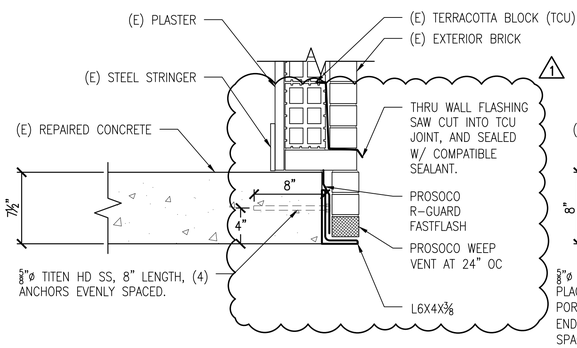
S401



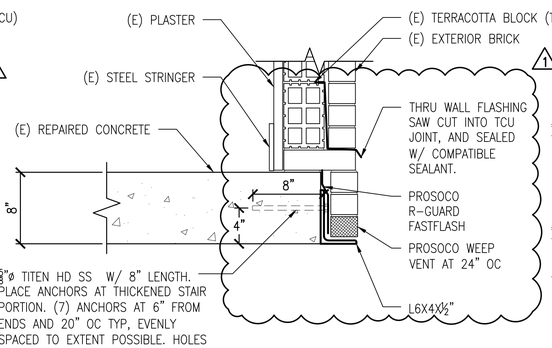




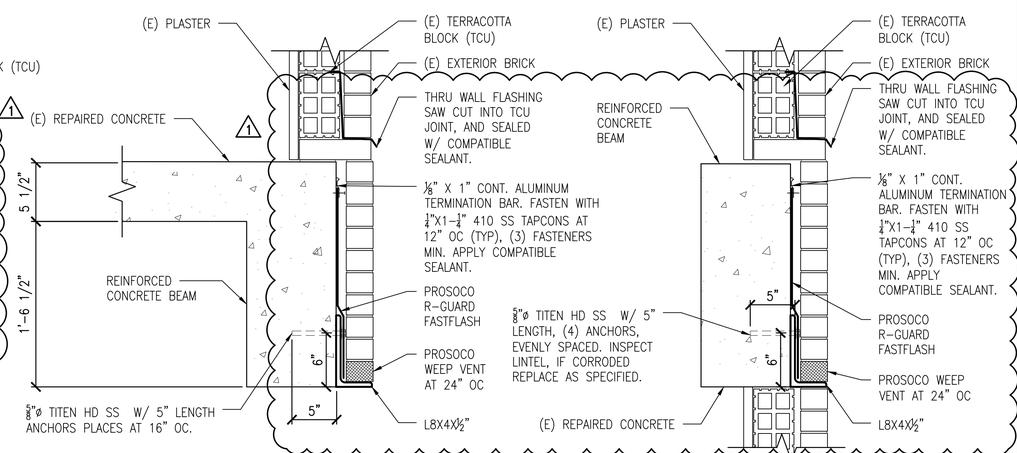
1 ELEVATION FOR NEW STEEL LINTELS
SCALE: 1/2" = 1'-0"



2 ELEVATION SHOWING EXTENT OF BRICK REMOVAL
SCALE: 1/2" = 1'-0"



3 ELEVATION SHOWING EXTENT OF BRICK REMOVAL
SCALE: 1/2" = 1'-0"



4 LINTEL TO CONCRETE ATTACHMENT
SCALE: 1-1/2" = 1'-0"

NOTE:
1. CONTRACTOR TO MATCH EXISTING BRICK CORBEL
2. REBARS TO CORRODED REBAR NOT SHOWN. REPAIR CORRODED REBAR IAW WITH SPECIFICATIONS. SEE CONCRETE REPAIR NOTES ON S001.

5 LINTEL TO CONCRETE ATTACHMENT
SCALE: 1-1/2" = 1'-0"

NOTE:
1. CONTRACTOR TO MATCH EXISTING BRICK CORBEL
2. REBARS TO CORRODED REBAR NOT SHOWN. REPAIR CORRODED REBAR IAW WITH SPECIFICATIONS. SEE CONCRETE REPAIR NOTES ON S001.

6 LINTEL TO CONCRETE ATTACHMENT
SCALE: 1-1/2" = 1'-0"

NOTE:
1. CONTRACTOR TO MATCH EXISTING BRICK CORBEL
2. REBARS TO CORRODED REBAR NOT SHOWN. REPAIR CORRODED REBAR IAW WITH SPECIFICATIONS. SEE CONCRETE REPAIR NOTES ON S001.

7 LINTEL TO CONCRETE ATTACHMENT
SCALE: 1-1/2" = 1'-0"

NOTE:
1. CONTRACTOR TO MATCH EXISTING BRICK CORBEL
2. REBARS TO CORRODED REBAR NOT SHOWN. REPAIR CORRODED REBAR IAW WITH SPECIFICATIONS. SEE CONCRETE REPAIR NOTES ON S001.

SOUTH CAROLINA
APPLIED BUILDING SCIENCES, INC
No. CC2897
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
PROFESSIONAL ENGINEER
No. 39823
05/23/2024
ANTHONY MCLEAN

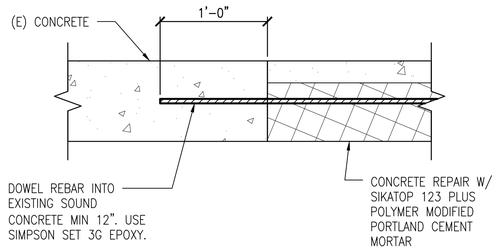
APPLIED BUILDING SCIENCES
2308 COSGROVE AVENUE
NORTH CHARLESTON, SC 29405
OFFICE: (843) 724-1456

WEST ELEVATION CANTILEVER STAIR REPAIRS
FRANCIS MARION
387 KING STREET
CHARLESTON, SC 29403

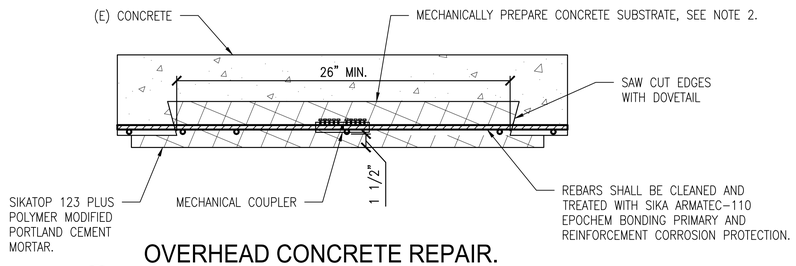
SCHEMATIC DATE:	03/13/2024
PERMIT SET DATE:	03/13/2024
REVISION:	1 05/23/2024
DESIGN BY:	MAM
DRAWING BY:	JRE
CHECKED BY:	GM
PROJECT NO.:	800.19017

DETAILS

SHEET
S402

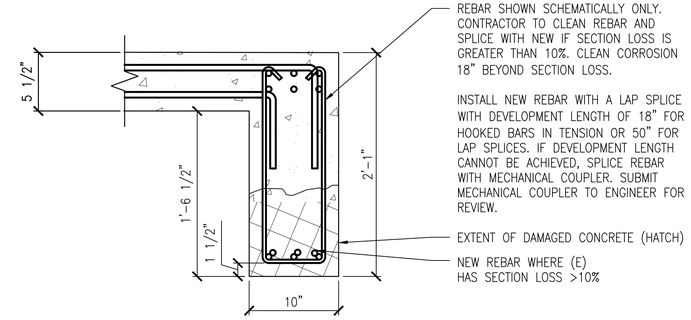


1 TYPICAL REBAR DOWEL
SCALE: 1-1/2" = 1'-0"

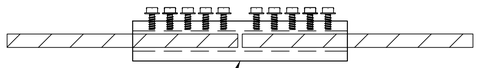


2 OVERHEAD CONCRETE REPAIR. WITH MECHANICAL COUPLER
SCALE: 1-1/2" = 1'-0"

NOTE:
1. REPAIR AREA MUST BE CLEAN, SOUND AND FREE OF CONTAMINANTS ALL LOOSE AND DETERIORATED CONCRETE SHALL BE REMOVED BY MECHANICAL MEANS.
2. MECHANICALLY PREPARE CONCRETE SUBSTRATE TO OBTAIN A SURFACE PROFILE OF ± 1/16" (CSP 5 OR GREATER AS PER ICRI GUIDELINES) WITH A NEW EXPOSED AGGREGATE SURFACE. PREPARATION WORK SHALL BE DONE BY HIGH PRESSURE WATER BLAST, SCABBLER, OR OTHER APPROPRIATE MECHANICAL MEANS.



3 REINFORCED CONCRETE BEAM REPAIR
SCALE: 1-1/2" = 1'-0"



4 MECHANICAL REBAR COUPLER
SCALE:6" = 1'-0"

DETAILS MOVED TO S406

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — APPLIED BUILDING SCIENCES, INC No. CC2897

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 39823 — 05/23/2024 — MICHAEL ANTHONY MCLEAN

APPLIED BUILDING SCIENCES
2308 COSGROVE AVENUE
NORTH CHARLESTON, SC 29405
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WEST ELEVATION CANTILEVER STAIR REPAIRS

FRANCIS MARION HOTEL

387 KING STREET
CHARLESTON, SC 29403

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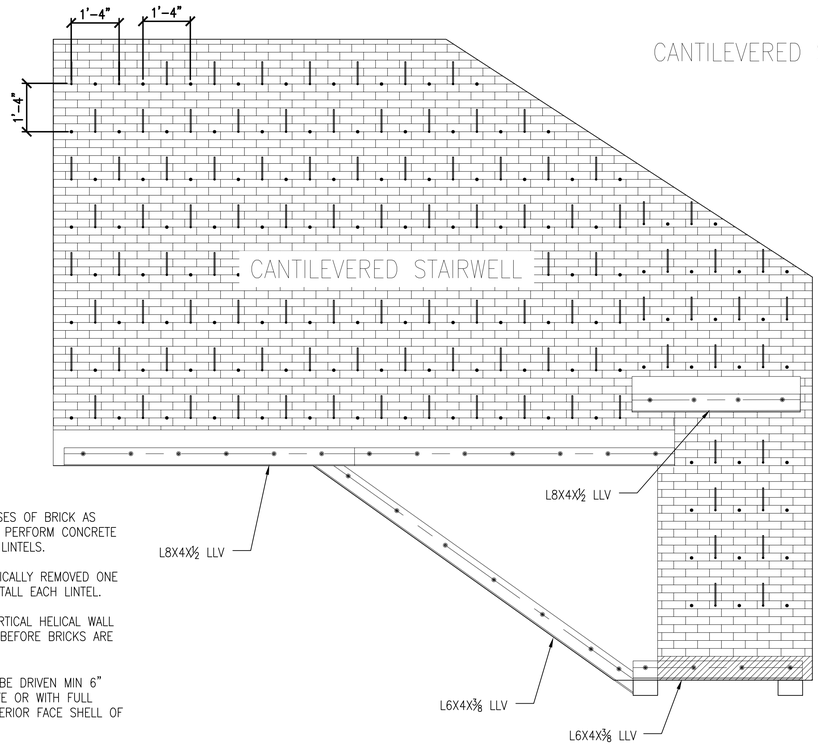
DETAILS

SHEET
S403



REMOVE UP TO TEN COURSES OF BRICK AS REQUIRED TO FLASH WALL, PERFORM CONCRETE REPAIR, AND INSTALL NEW LINTELS.

BRICK SHALL BE SYSTEMATICALLY REMOVED ONE SECTION AT A TIME TO INSTALL EACH LINTEL.

10MM HORIZONTAL AND VERTICAL HELICAL WALL TIES SHALL BE INSTALLED BEFORE BRICKS ARE REMOVED.

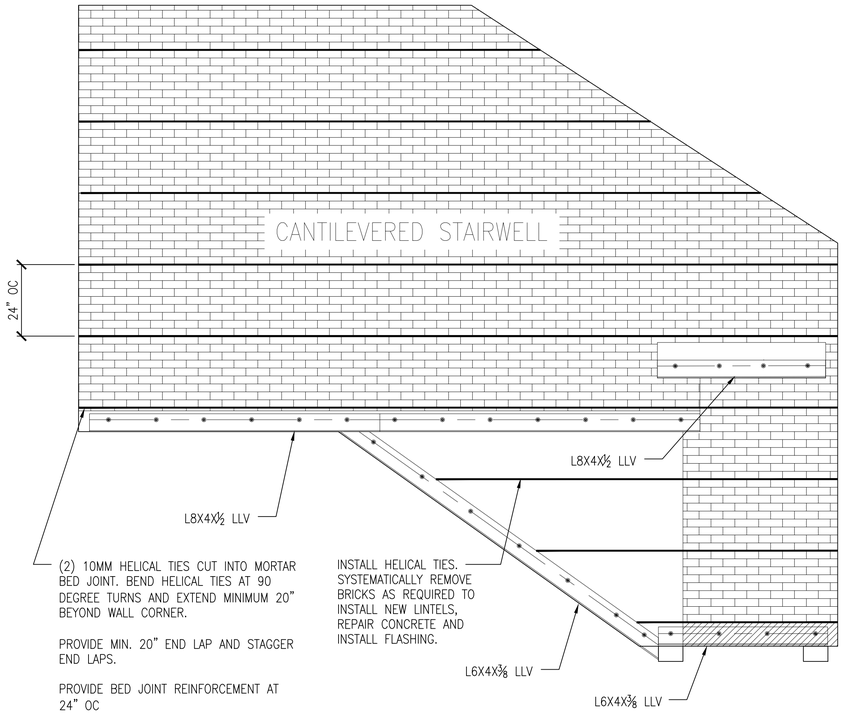
HELICAL WALL TIES SHALL BE DRIVEN MIN 6" INTO REINFORCED CONCRETE OR WITH FULL PENETRATION INTO THE INTERIOR FACE SHELL OF HOLLOW TERRA COTTA.

HELICAL WALL TIES SHALL BE INSTALLED AT 8" OC VERTICAL AND HORIZONTAL. TIES SHALL ALTERNATE HORIZONTAL AND INCLINED. INCLINED TIES SHALL BE INSTALLED AT 16" OC AND HORIZONTAL TIES SHALL BE AT 16" OC TIES SHALL BE STAGGERED SO THE SPACING BETWEEN A HORIZONTAL AND INCLINED TIE IS 8".

1 ELEVATION SHOWING APROXIMATE LOCATION OF WALL TIES

SCALE: 1/2" = 1'-0"

NOTE: APPROXIMATELY EVERY (10) COURSES THERE IS A CORBELED BRICK. REMOVE BRICK SYSTEMATICALLY TO THE CORBEL



(2) 10MM HELICAL TIES CUT INTO MORTAR BED JOINT. BEND HELICAL TIES AT 90 DEGREE TURNS AND EXTEND MINIMUM 20" BEYOND WALL CORNER.

PROVIDE MIN. 20" END LAP AND STAGGER END LAPS.

PROVIDE BED JOINT REINFORCEMENT AT 24" OC

INSTALL HELICAL TIES. SYSTEMATICALLY REMOVE BRICKS AS REQUIRED TO INSTALL NEW LINTELS, REPAIR CONCRETE AND INSTALL FLASHING.

2 ELEVATION SHOWING APROXIMATE BED JOINT REINFORCEMENT

SCALE: 1/2" = 1'-0"

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WEST ELEVATION CANTILEVER STAIR REPAIRS

FRANCIS MARION HOTEL

387 KING STREET
CHARLESTON, SC 29403

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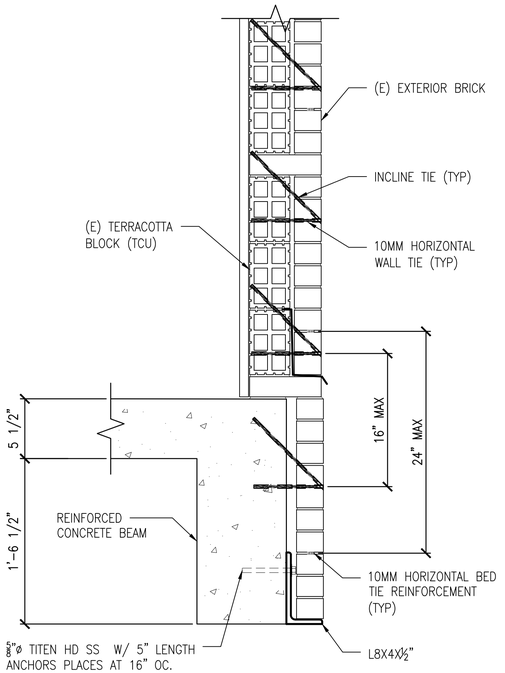
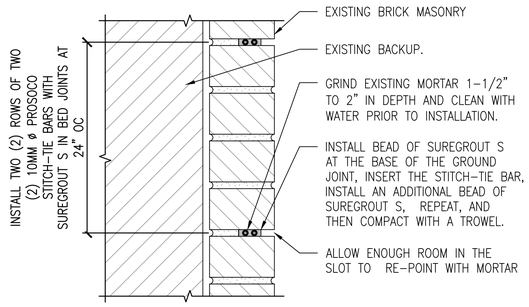
DETAILS

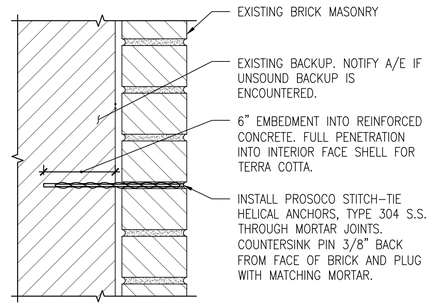
SHEET
S405



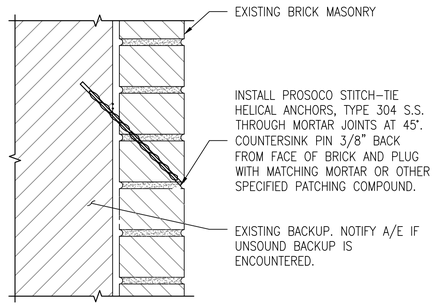
1 LINTEL TO CONCRETE ATTACHMENT
SCALE: 1-1/2" = 1'-0"



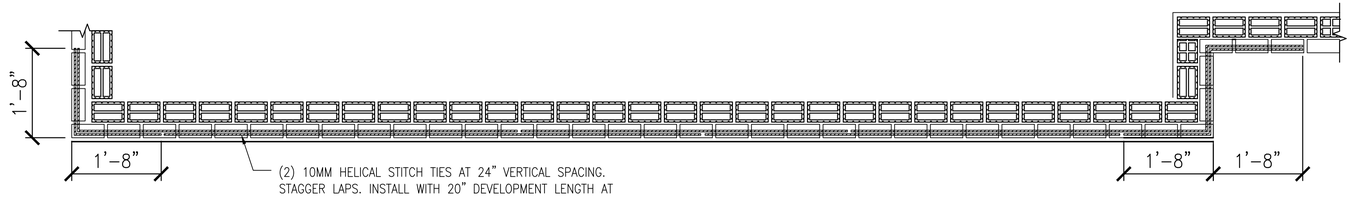
2 HORIZONTAL BED JOINT REINFORCEMENT
SCALE: 3" = 1'



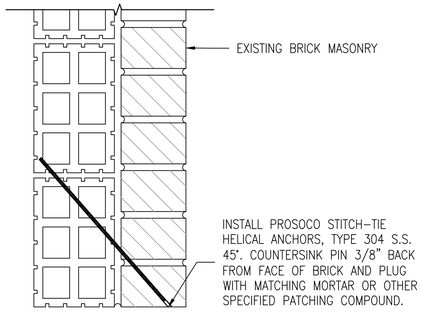
3 TYPICAL HORIZONTAL TIE
SCALE: 3" = 1'



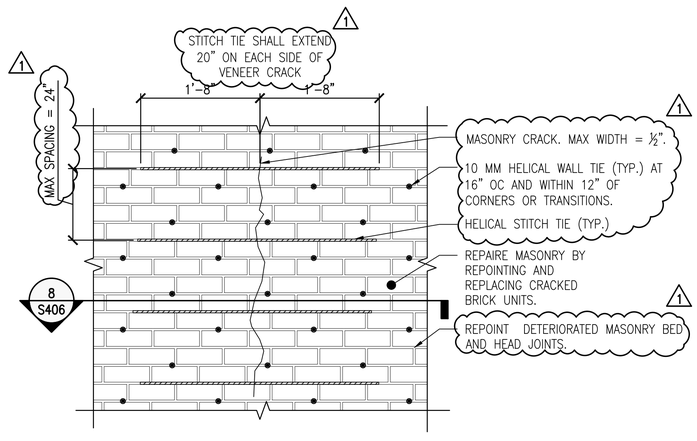
4 TYPICAL INCLINED TIE
SCALE: 3" = 1'



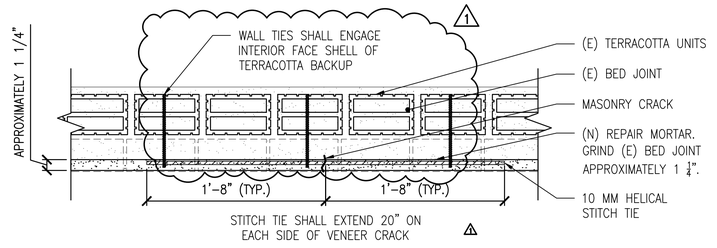
6 SECTION AT BED JOINT REINFORCEMENT
SCALE: 3/4" = 1'



5 INCLINED TIE AT BOTTOM COURSE
SCALE: 3" = 1'



7 STITCH TIE REPAIR ELEVATION
SCALE: 1" = 1'



8 STITCH TIE REPAIR SECTION
SCALE: 1-1/2" = 1'

SOUTH CAROLINA APPLIED BUILDING SCIENCES, INC No. CC2897 CERTIFICATE OF AUTHORIZATION

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