

STRUCTURAL GENERAL NOTES

DIVISION 1 - GENERAL REQUIREMENTS

- 1.1 QUALITY ASSURANCE
  - A. VERIFY ALL DIMENSIONS AND CONDITIONS ON DRAWINGS AND REPORT ANY DISCREPANCY TO CONTRACTING OFFICER.
  - B. SEE OTHER DISCIPLINE DRAWINGS FOR FLOOR AND ROOF OPENINGS, TRENCHES, PIPE SLEEVES, EQUIPMENT PADS AND MISCELLANEOUS FRAMING.
  - C. ALL CONTRACTOR-DESIGNED ELEMENTS SHALL BE DESIGNED BY A PROFESSIONALLY LICENSED STRUCTURAL ENGINEER. SUBMIT CERTIFICATION THAT ELEMENTS WERE DESIGNED FOR LOADS SPECIFIED ON DRAWINGS OR IN THE BUILDING CODE. THE FOLLOWING ELEMENTS SHALL BE CONTRACTOR-DESIGNED: SUPPORT FRAMING & BRACING FOR NONSTRUCTURAL COMPONENTS, EQUIPMENT CONNECTIONS TO STRUCTURE, AND ALL TEMPORARY BRACING/SHORING.
  - D. ALL TESTING AND INSPECTION OF WELDS SHALL BE DONE BY AN INDEPENDENT TESTING SERVICE ACCEPTABLE TO THE CONTRACTING OFFICER AND SHALL CONFORM TO THE LATEST EDITION OF ANSII/AWS D1.1. WELD INSPECTORS SHALL BE AWS CERTIFIED.
  - E. ALL WELDS SHALL BE VISUALLY INSPECTED.
  - F. SHOP DRAWINGS PREPARED BY SUPPLIERS AND SUBCONTRACTORS SHALL BE REVIEWED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO CONTRACTING OFFICER.
  - G. PROVIDE SHOP DRAWINGS SHOWING SIZE, METHOD OF ANCHORAGE, AND WEIGHT OF ALL EQUIPMENT THAT IS TO BE SUPPORTED BY THE STRUCTURE FOR REVIEW BY THE CONTRACTING OFFICER TO DETERMINE ADEQUACY OF THE STRUCTURE, PRIOR TO ORDERING.
- 1.2 EXISTING BUILDING NOTES
  - A. EXISTING STRUCTURAL INFORMATION SHOWN WAS OBTAINED BY LIMITED FIELD TAKE-OFF AND FROM EXISTING DRAWINGS DATED:
    - 1. 1998 - NAVFAC NO 5276518
    - 2. REFER TO BID PACKAGE FOR EXISTING DRAWINGS.
  - B. VERIFY EXISTING INFORMATION DIMENSIONS AND SIZES AS REQUIRED TO COMPLETE THE WORK.
- 1.3 DEMOLITION
  - A. DEMOLITION OF EXISTING CONCRETE CONSTRUCTION SHALL BE DONE SO AS NOT TO FRACTURE OR STRUCTURALLY DAMAGE ADJACENT CONSTRUCTION TO REMAIN. SALVAGE AS MUCH REINFORCING AS PRACTICAL FOR ANCHORING AND BONDING NEW TO EXISTING CONSTRUCTION.
- 1.4 SPECIAL INSPECTIONS
  - A. SPECIAL INSPECTION IS REQUIRED AS NOTED IN THE SPECIFICATIONS.
- 1.5 DESIGN CRITERIA
  - A. THE STRUCTURAL RENOVATION IS DESIGNED IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE (IBC), UFC 1-200-01, AND UFC 4-179-01.
  - B. SEISMIC DESIGN CATEGORY = B
  - C. STRUCTURAL COMPONENTS TO BE DETAILED FOR THERMAL EXPANSION.
  - D. MAXIMUM FLAME TEMPERATURE AT DEVICE IS 899° CELSIUS. (1650° FAHRENHEIT) PER UFC 4-179-01.
  - E. MAXIMUM TRAINING COMPARTMENT TEMPERATURE 204° CELSIUS. (400° FAHRENHEIT), PER UFC 4-179-01.
  - F. MAXIMUM TRAINING COMPARTMENT WALL TEMPERATURE 538° CELSIUS. (1000° FAHRENHEIT). PER UFC 4-179-01.
  - G. FLOOR LIVE LOADS:
    - 1. TRAINING FLOORS AND GRATING 100 PSF

DIVISION 3 - CONCRETE

- 3.1 GENERAL
  - A. REINFORCED CONCRETE/MORTAR AT THE INTERIOR OF THE FIREFIGHTER TRAINING COMPARTMENTS SHALL BE LIGHTWEIGHT (115 PCF) CONCRETE WITH A 28-DAY COMPRESSIVE STRENGTH OF 5000 PSI, UNLESS NOTED OTHERWISE.
  - B. ALL CONCRETE/MORTAR REPAIR WORK SHALL BE CAPABLE TO WITHSTAND A SUSTAINED TEMPERATURE OF 1000° FAHRENHEIT.
  - C. REINFORCED CONCRETE AT EXTERIOR SHALL BE NORMALWEIGHT CONCRETE WITH A 28-DAY COMPRESSIVE STRENGTH OF 4500 PSI.
  - D. PROVIDE CLEAR COVER FOR REINFORCING BARS IN CONCRETE AS FOLLOWS:
    - 1. WALLS:
      - ALL FACES EXPOSED TO EARTH OR WEATHER: 2";
      - BASEMENT WALL INTERIOR FACE NOT EXPOSED TO EARTH OR WEATHER: 1"
    - 2. STRUCTURAL/SUPPORTED SLABS: 1"
    - 3. COLUMNS, PILASTERS & BEAMS (CLEAR TO TIES OR STIRRUPS): 1-1/2"
  - E. ALL CONCRETE EXPOSED TO WEATHER SHALL BE AIR ENTRAINED WITH 4.5% TO 7.5%.
  - F. TROWEL FINISHED SLABS SHALL HAVE 0% TO 3% AIR CONTENT.
- 3.2 REINFORCING FOR CONCRETE
  - A. GENERAL
    - 1. ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60, DEFORMED BARS UNLESS NOTED OTHERWISE. WELDING OF ASTM A615 GRADE 60 REINFORCING IS NOT ALLOWED.
    - 2. ALL REINFORCING BARS SHALL BE DETAILED AND PLACED IN ACCORDANCE WITH THE ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES SPECIFICATIONS. CONTINUOUS BARS SHALL BE LAPPED.
    - 3. WELDED WIRE REINFORCEMENT SHALL BE ASTM A185.
    - 4. ALL REINFORCING BARS SHALL BE DETAILED, FABRICATED, SUPPORTED, AND PLACED IN ACCORDANCE WITH THE LATEST EDITION OF ACI 315 DETAILS AND DETAILING OF CONCRETE REINFORCEMENT AND CRS'S MANUAL OF STANDARD PRACTICE.

DIVISION 5 - METALS

- 5.1 STRUCTURAL STEEL
  - A. GENERAL
    - 1. MATERIALS SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE.
      - a. W & WT SHAPES: ASTM A992 GRADE 50
      - b. PLATES, CHANNELS, ANGLES: ASTM A36
      - c. PIPES: ASTM A53, TYPE E OR S, GRADE B
      - d. STEEL TUBES: ASTM A500, GRADE B, Fy=46KSI
      - e. BOLTS: ASTM A325, 3/4" DIAMETER (MIN.)
      - f. THREADED ROD: ASTM A36
      - g. STAINLESS STEEL: TYPE 304, 316 OR D319 NON-MAGNETIC, CHROMIUM-NICKEL, LOW-CARBON AUSTENITIC ALLOYS.
      - h. ELECTRODES: E70XX FOR A36 STEEL AND SMAW PROCESS OR ITS EQUIVALENT, MATCHING WELD METAL FOR OTHER STEEL GRADES AND/OR PROCESSES.
    - 2. ALL STEEL MEMBERS SUPPORTING WORK BY OTHER TRADES (INCLUDING, BUT NOT LIMITED TO, LINTELS, WALL SUPPORTS, CURB ANGLES, AND SIMILAR SUPPORTING MEMBERS) SHALL BE ADJUSTABLE ITEMS. THESE MEMBERS SHALL BE DETAILED AND FABRICATED TO PROVIDE ADJUSTABLE CONNECTIONS TO THE SUPPORTING STRUCTURAL STEEL FRAME. THE STEEL MEMBERS' TOTAL ADJUSTABILITY SHALL BE AS REQUIRED TO PROVIDE PROPER ALIGNMENT AND TOLERANCES AS SPECIFIED IN THE SPECIFICATIONS OF OTHER TRADES AND SHALL INCLUDE TOLERANCES OF THE STRUCTURAL STEEL. COORDINATE REQUIRED ADJUSTABILITY AND MEANS OF PROVIDING ADJUSTABILITY WITH FABRICATOR AND OTHER TRADES.
  - B. BOLTS CONNECTIONS AND SPLICES
    - 1. DETAIL STEEL BEAM CONNECTIONS AS SIMPLE SPAN BEAMS, UNLESS NOTED OTHERWISE.

- 2. ALL BEAM CONNECTIONS SHALL BE DESIGNED AND DETAILED FOR SERVICE LOAD REACTIONS IN KIPS (k) INDICATED WITH THE MINIMUM NUMBER OF BOLTS LISTED BELOW. PROVIDE A SHEAR CONNECTION WITH THE MINIMUM CAPACITY AND MINIMUM NUMBER OF BOLTS LISTED BELOW. THE MINIMUM NUMBER OF BOLTS LISTED BELOW FOR THE CORRESPONDING BEAM SIZES SHALL BE APPLICABLE TO ALL FRAMING CONDITIONS UNLESS OFFSET ELEVATION REQUIREMENTS NECESSITATE MODIFIED CONNECTION DETAILS.
 

| NOMINAL BEAM SIZE | MIN # OF BOLTS | MIN CONNECTION CAPACITY (ASD) |
|-------------------|----------------|-------------------------------|
| W8 & W10          | 2 BOLTS        | 9 KIPS                        |
- 3. ALL BOLTED CONNECTIONS SHALL BE DESIGNED AS SNUG-TIGHT BEARING CONNECTIONS WITH THREADS INCLUDED IN THE SHEAR PLANE, UNLESS NOTED OTHERWISE.
- 4. ALL CONNECTIONS WITHIN FIREFIGHTER TRAINING COMPARTMENTS SHALL BE DESIGNED TO ACCOMMODATE THERMAL MOVEMENT FOR A TEMPERATURE CHANGE OF 1600 DEGREES FAHRENHEIT.
- C. WELDS
  - 1. ALL WELDING SHALL BE IN ACCORDANCE WITH LATEST AWS AND AISC SPECIFICATIONS.
  - 2. ALL WELDS SHALL BE MADE BY WELDERS CERTIFIED ACCORDING TO AWS PROCEDURES.
- D. ERECTION
  - 1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH LATEST AISC SPECIFICATIONS.
- E. EQUIPMENT SUPPORT FRAMING
  - 1. PROVIDE ADDITIONAL FRAMING NOT SHOWN ON THE DRAWINGS AS REQUIRED FOR EQUIPMENT SUPPORT.
  - 2. COORDINATE ALL FRAMING DIMENSIONS AT EQUIPMENT FOR ACTUAL EQUIPMENT PROVIDED.
  - 3. WHENEVER POSSIBLE, HANGERS FOR DUCTWORK, CABLE TRAYS, LIGHTS, PLUMBING/SPRINKLER PIPES OR ANY OTHER DISCIPLINE ITEM NOT LISTED SHALL BE HUNG DIRECTLY FROM THE STEEL OR CONCRETE FLOOR BEAMS. WHEN HANGERS ARE NOT ABLE TO BE HUNG DIRECTLY FROM THE FLOOR BEAMS, THE HANGERS MAY BE ATTACHED TO THE CONCRETE FLOOR WITH EXPANSION ANCHORS PROVIDED THE FOLLOWING CRITERIA ARE MET:
    - a. A SINGLE HANGER LOAD SHALL NOT EXCEED 500 LBS (UNFACTORED SERVICE LOAD). A HANGER WITH A 500 LBS LOAD SHALL BE SPACED 5'-9" AWAY FROM AN ADJACENT HANGER AND ONLY ONE HANGER PER DECK SPAN BETWEEN BEAMS
    - b. TOTAL HANGER LOADS SHALL NOT EXCEED 15 PSF OVER ANY AREA.
    - c. ATTACH HANGERS TO THE THICKEST PORTION OF THE SLAB.

- 5.2 GRATING
  - A. GRATING SHALL HAVE BANDED EDGES.
  - B. STEEL GRATING SHALL BE ASTM A 1011 WITH SIZE AS NOTED ON DRAWINGS (UNO).
  - C. PROVIDE SADDLE CLIPS AND MACHINE BOLTS @ 24" O.C. MINIMUM (MINIMUM 4 PER SECTION OF GRATING - 2 PER BEARING SIDE).
- 5.3 EMBEDDED ITEMS AND ANCHORS FOR CONCRETE
  - A. AT AREAS OUTSIDE OF THE FIREFIGHTER TRAINING COMPARTMENTS, ALL POST-INSTALLED REINFORCING BAR DOWELS ATTACHED TO EXISTING CONSTRUCTION SHALL BE EPOXY GROUTED INTO EXISTING CONCRETE. EPOXY GROUT SHALL BE CAPABLE OF DEVELOPING CAPACITIES FOR ALL APPLICABLE LIMIT STATES AND CONDITIONS OF INSTALLATION EQUIVALENT TO HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT (BASIS OF DESIGN). HOLE-CLEANING (AS SPECIFIED BY THE ANCHOR SYSTEM MANUFACTURER) SHALL BE REQUIRED.
  - B. AT AREAS WITHIN THE FIREFIGHTER TRAINING COMPARTMENTS, ALL POST-INSTALLED REINFORCING BAR DOWELS ATTACHED TO EXISTING CONSTRUCTION SHALL BE INSERTED INTO CORE DRILLED HOLES FILLED WITH CONCRETE GROUT. REFER TO APPLICABLE DETAILS.
  - C. ALL ANCHORS NOTED AS EXPANSION (EXP) ANCHORS SHALL BE OF THE SIZE, MATERIAL, AND FINISH SPECIFIED AND SHALL BE CAPABLE OF DEVELOPING CAPACITIES FOR ALL APPLICABLE LIMIT STATES AND CONDITIONS OF INSTALLATION EQUIVALENT TO HILTI KWIK BOLT KB-TZ ANCHORS (BASIS OF DESIGN). HOLE-CLEANING SHALL BE REQUIRED AND AS SPECIFIED BY THE ANCHOR MANUFACTURER.
  - C. PRODUCTS SHALL HAVE AN ICC ESR REPORT ILLUSTRATING ITS COMPLIANCE WITH THE SPECIFIED BUILDING CODE, SEISMIC DESIGN CATEGORY, CRACKED CONCRETE CONDITIONS, LOAD RESISTANCE, INSTALLATION CATEGORY, AND COMPREHENSIVE INSTALLATION INSTRUCTIONS
  - D. WHEN INSTALLING ANCHOR BOLTS, INSERTS, OR DOWELS INTO EXISTING CONCRETE, USE A MECHANICAL REBAR LOCATING DEVICE TO LOCATE EXISTING REINFORCING AND DRILL HOLE TO MISS REINFORCEMENT.
  - E. INSTALL ANCHORS PER THE MANUFACTURER'S INSTRUCTIONS. PROVIDE INSTALLATION TRAINING FOR ALL PERSONNEL INSTALLING ANCHORS.
  - F. INSERTS INTO CONCRETE SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE (ALL EMBEDMENT DEPTHS ARE MINIMUM VALUES):

**EXPANSION ANCHORS:**

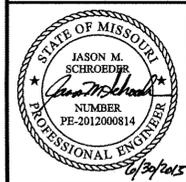
| ANCHOR DIAM. (IN) | EMBEDMENT (IN) |
|-------------------|----------------|
| 3/8               | 2              |
| 1/2               | 3 1/4          |
| 5/8               | 4              |
| 3/4               | 4 3/4          |

**ADHESIVE ANCHORS:**

| ANCHOR DIAM. (IN) | EMBEDMENT (IN) |
|-------------------|----------------|
| 3/8               | 3 1/2          |
| 1/2               | 4 1/4          |
| 5/8               | 5              |
| 3/4               | 6 5/8          |

STRUCTURAL ABBREVIATIONS

|        |                               |
|--------|-------------------------------|
| BLDG   | BUILDING                      |
| BP     | BASE PLATE                    |
| BOTT   | BOTTOM                        |
| BRG    | BEARING                       |
| B/STL  | BOTTOM OF STEEL               |
| CJ     | CONTROL JOINT                 |
| CL     | CENTER LINE                   |
| CLR    | CLEAR COVER                   |
| CSJ    | CONSTRUCTION JOINT            |
| CONT   | CONTINUOUS                    |
| CTRD   | CENTERED                      |
| DWL    | DOWEL                         |
| DWG    | DRAWING                       |
| EA     | EACH                          |
| EE     | EACH END                      |
| EF     | EACH FACE                     |
| EL     | ELEVATION                     |
| EQUIP  | EQUIPMENT                     |
| EW     | EACH WAY                      |
| EXP    | EXPANSION                     |
| (E)    | EXISTING                      |
| FD     | FLOOR DRAIN                   |
| FND    | FOUNDATION                    |
| FF     | FAR FACE                      |
| FTG    | FOOTING                       |
| FV     | FIELD VERIFY                  |
| FW     | FIELD WELD                    |
| GALV   | GALVANIZED                    |
| GC     | GENERAL CONTRACTOR            |
| GRTG   | GRATING                       |
| HORZ   | HORIZONTAL                    |
| LBS    | POUNDS                        |
| LONG   | LONG                          |
| LLH    | LONG LEG HORIZONTAL           |
| LLV    | LONG LEG VERTICAL             |
| MANF   | MANUFACTURER                  |
| MECH   | MECHANICAL                    |
| MTL    | METAL                         |
| NA     | NOT APPLICABLE                |
| NF     | NEAR FACE                     |
| NTS    | NOT TO SCALE                  |
| O.C.   | ON CENTER                     |
| OPNG   | OPENING                       |
| PC     | PIECE                         |
| PDF    | POWER DRIVEN FASTENER         |
| PEMB   | PER-ENGINEERED METAL BUILDING |
| PL     | PLATE                         |
| PLF    | POUNDS PER LINEAL FT          |
| PROJ   | PROJECTION                    |
| PSF    | POUNDS PER SQUARE FOOT        |
| REINF  | REINFORCEMENT                 |
| SIM    | SIMILAR                       |
| S.O.G  | SLAB ON GRADE                 |
| SPA    | SPACE                         |
| T&B    | TOP AND BOTTOM                |
| T/P    | TOP OF PILASTER               |
| T.O.S. | TOP OF SLAB                   |
| T/F    | TOP OF FOUNDATION             |
| T/STL  | TOP OF STEEL                  |
| UNO    | UNLESS NOTED OTHERWISE        |
| VERT   | VERTICAL                      |
| VVA    | VERIFY WITH ARCHITECTURAL     |
| VWM    | VERIFY WITH MECHANICAL        |
| W/     | WITH                          |
| WIN    | WITH IN                       |
| WWR    | WELDED WIRE REINFORCEMENT     |



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| APPROVED                                   |
| FOR COMMANDER NAVFAC DWG                   |
| ACTIVITY                                   |
| D. COREY MELTON,<br>TRAINING DIRECTOR SWDS |
| SATISFACTORY TO: 6/19/15                   |
| DES: JMS / BRV JMS / CHK: BJB              |
| PK/SM: RS / JMS                            |
| BRANCH MANAGER                             |
| CHIEF ENG/ARCH: DWG                        |
| FIRE PROTECTION                            |

DEPARTMENT OF THE NAVY  
NAVFAC MID-ATLANTIC  
GREAT LAKES NAVAL STATION  
GREAT LAKES, ILLINOIS  
RENOVATE SWOSU FIREFIGHTING TRAINER (BUILDING 510)  
STRUCTURAL SYMBOLS, AND ABBREVIATIONS  
GENERAL NOTES, AND ABBREVIATIONS

|                                     |
|-------------------------------------|
| SCALE: AS NOTED                     |
| PROJECT NO: 1310337                 |
| CONSTR. CONTR. NO: N40085-15-R-8720 |
| NAVFAC DRAWING NO: 12689578         |
| SHEET 16 OF 86                      |
| <b>S-001</b>                        |

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2

3

4

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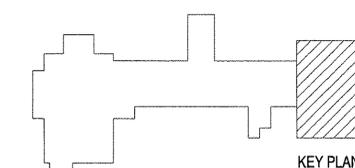
### SHEET NOTES

1. FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SEE S-001.
2. VERIFY ALL DIMENSIONS AND CONDITIONS IN FIELD.
3. VERIFY CRACK LENGTHS AND QUANTITIES IN FIELD.

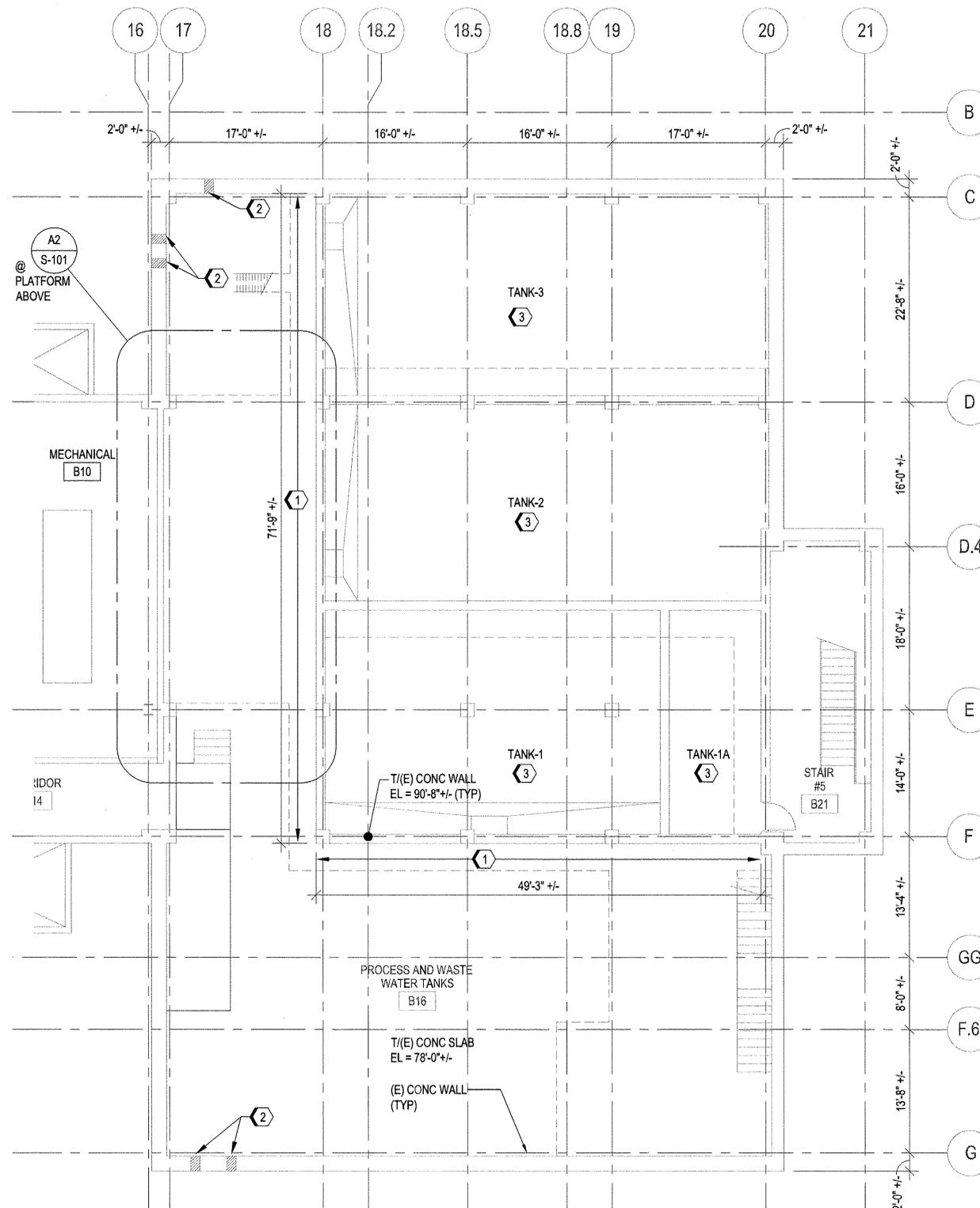
### KEYED NOTES

1. FOR CRACKS GREATER THAN 1MM WIDE IN CONCRETE WALL, INJECT CRACKS WITH EPOXY SEALANT. APPROXIMATE LINEAR FEET OF CRACKS FOR ESTIMATING ONLY. VERIFY ALL LENGTHS, WIDTHS, AND LOCATIONS IN FIELD.  
EAST WALL: ~ 300LF  
SOUTH WALL: ~ 350LF
2. REFER TO PLUMBING DRAWINGS.
3. INSPECT INTERIOR OF TANKS AND REPAIR ANY CRACKS IN CEMENTITIOUS WATERPROOFING LINER WITH EPOXY SEALANT. ASSUME THE FOLLOWING SQUARE FOOTAGE FOR REPAIR. CONFIRM ALL QUANTITIES IN FIELD.  
TANK 1: ~ 375 SQ FT  
TANK 1A: ~ 170 SQ FT  
TANK 2: ~ 430 SQ FT  
TANK 3: ~ 435 SQ FT
4. NEW HP-2 MECHANICAL UNIT. MAXIMUM OPERATING WEIGHT NOT TO EXCEED 7,200#. CONTRACTOR TO COORDINATE LOCATION AND ATTACHMENT THROUGH STEEL GRATING TO BEAMS BELOW WITH MECHANICAL CONTRACTOR.
5. STEEL BEAM CONNECTION. SEE DETAIL A4/S-302.

### KEY PLAN



KEY PLAN



**A1 BASEMENT PARTIAL FLOOR PLAN**  
1/8" = 1'-0"



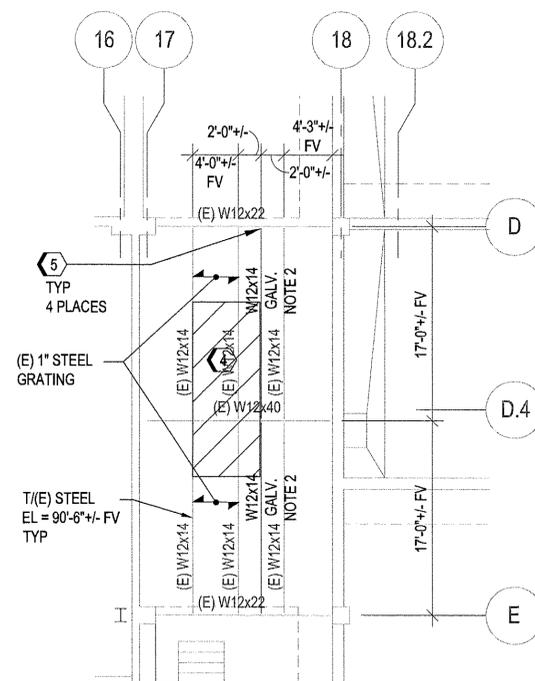
SCALE: 1/8" = 1'-0"

### A2 PARTIAL PLATFORM FRAMING PLAN

1/8" = 1'-0"

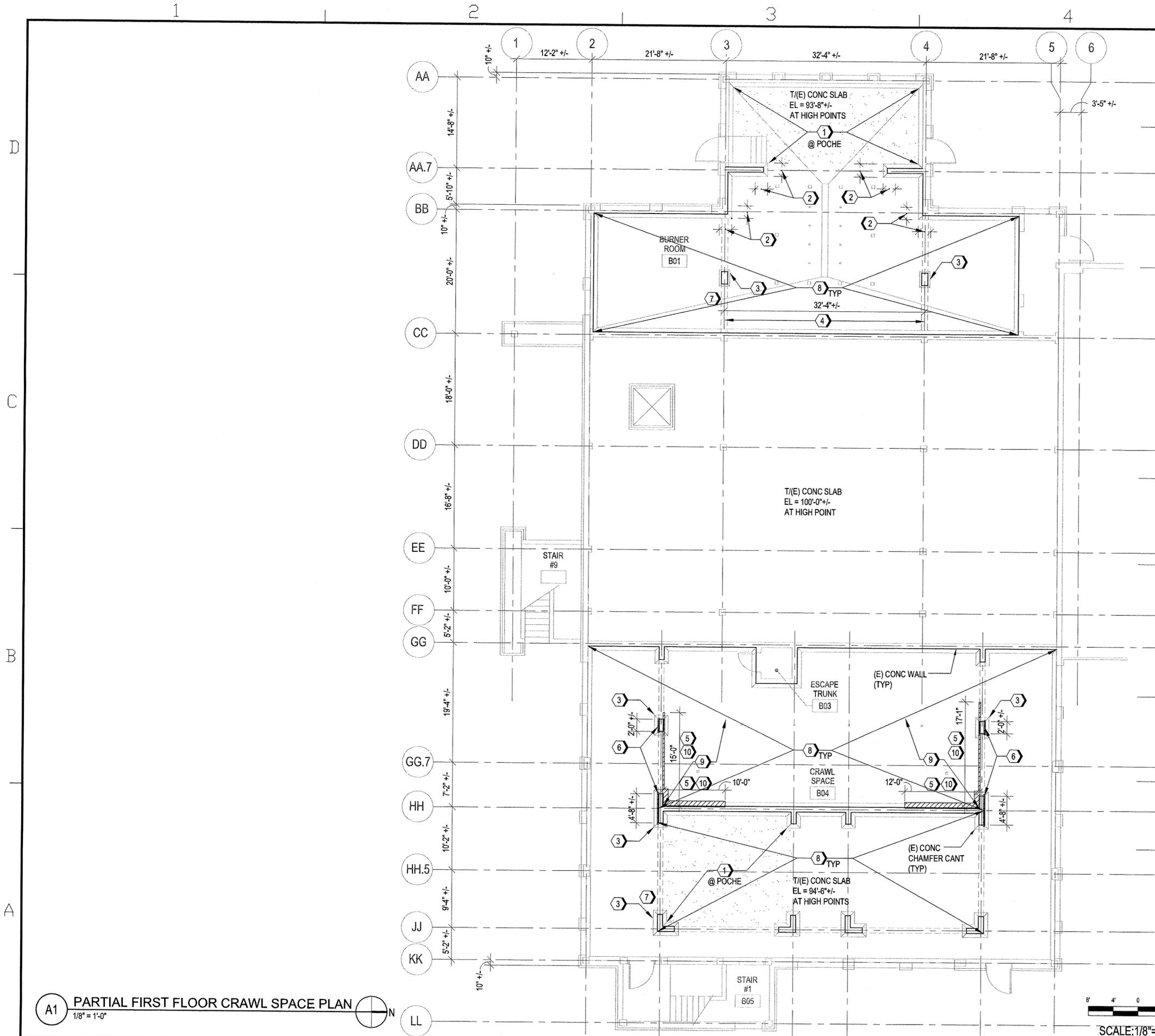
#### NOTES:

1. NEW BEAMS T/STL ELEVATION SHALL MATCH EXISTING BEAMS T/STL ELEVATION.
2. GRATING SHALL BE ATTACHED TO THE NEW STEEL BEAMS TO BRACE THE TOP FLANGE OF THE BEAMS.

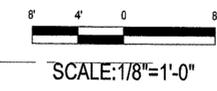


A2

|   |                                |
|---|--------------------------------|
| DATE  |                                |
| DESCRIPTION   |                                |
| SYN   |                                |
|   |                                |
|   |                                |
|   |                                |
| 501 NORTH BROADWAY<br>ST. LOUIS, MISSOURI 63102<br>TEL. 314-335-4000 FAX 314-335-3012 |                                |
| APPROVED  |                                |
| FOR COMMANDER NAVFAC  | DWG                            |
| ACTIVITY  |                                |
| D. ODREY MELTON,<br>TRAINING DIRECTOR SWDS  | SATISFACTORY TO 6/18/15        |
| BES JMS DRV JMS CHK BJH   |                                |
| PM/DM RS / JMS  |                                |
| BRANCH MANAGER  |                                |
| CHIEF ENG/ARCH DWG  |                                |
| FIRE PROTECTION   |                                |
| DEPARTMENT OF THE NAVY  | NAVFAC MID-ATLANTIC            |
| GREAT LAKES NAVAL STATION   | GREAT LAKES, ILLINOIS          |
| RENOVATE SWOSU FIREFIGHTING TRAINER (BUILDING 510)                                    | STRUCTURAL BASEMENT FLOOR PLAN |
| SCALE:  | AS NOTED                       |
| PROJECT NO.:  | 1310337                        |
| CONSTR. CONTR. NO.:   | N40085-15-R-8720               |
| NAVFAC DRAWING NO.:   | 12689579                       |
| SHEET   | 17 OF 86                       |
| <b>S-101</b>  |                                |



**A1 PARTIAL FIRST FLOOR CRAWL SPACE PLAN**  
 1/8" = 1'-0"



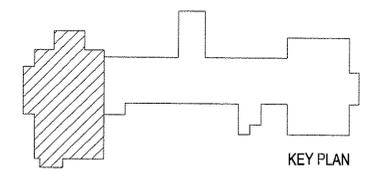
**SHEET NOTES**

1. FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SEE S-001.
2. VERIFY ALL DIMENSIONS AND CONDITIONS IN FIELD.
3. VERIFY CRACK LENGTHS AND QUANTITIES IN FIELD.
4. INSPECT FOR LOOSE BOLTED CONNECTIONS AROUND FIRE PLACE AREAS. HAND TIGHTEN SNUGLY LOOSE BOLTS AND NUTS. DOUBLE NUT IF BOLT IS LONG ENOUGH OTHERWISE DAMAGE THREADS TO PREVENT FUTURE LOOSENING. SEE S-103 FOR FIRE PLACE AREAS.

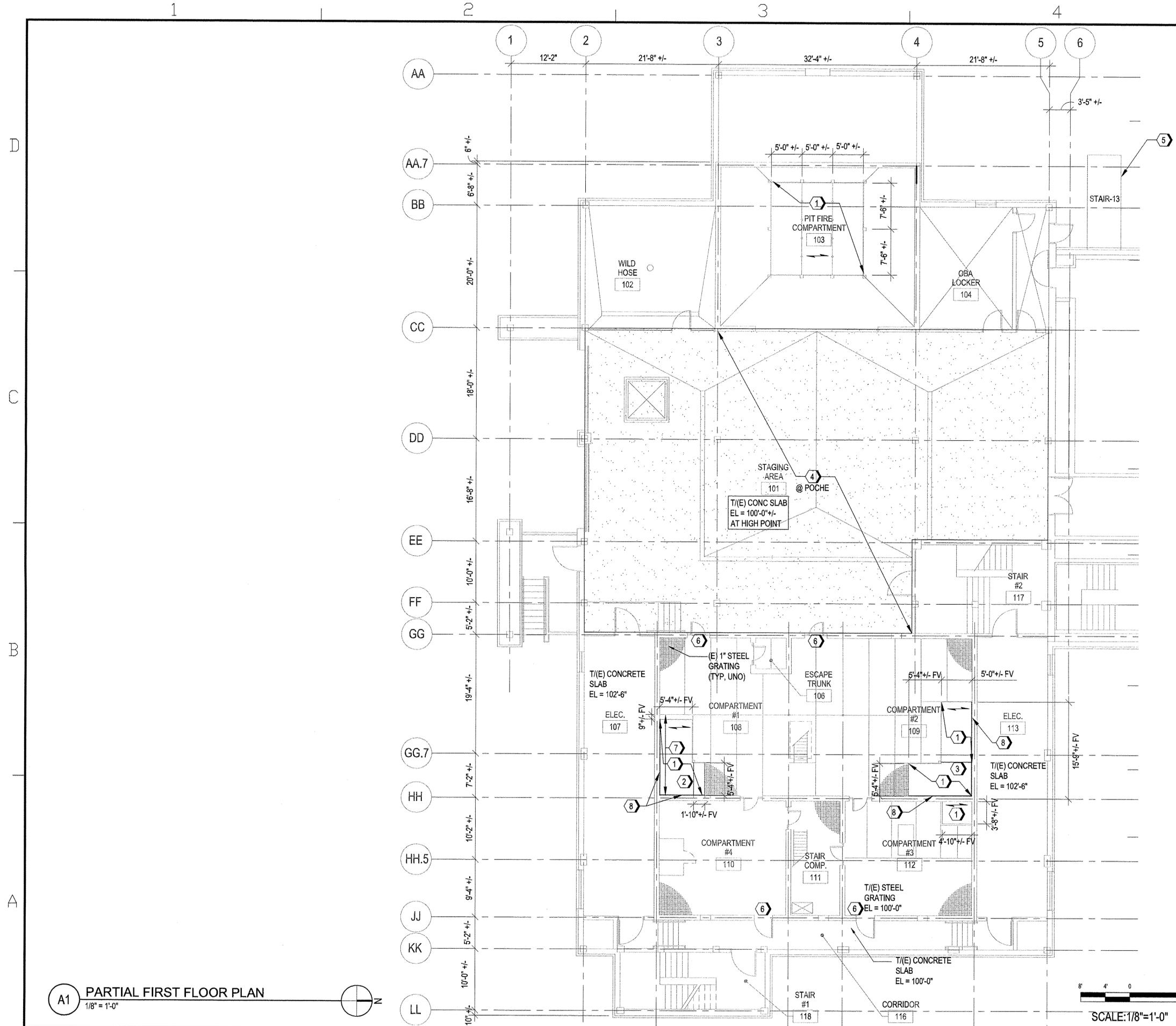
**KEYED NOTES**

- 1 ROUT AND SEAL ALL CRACKS GREATER THAN 1MM WIDE IN EXISTING CONCRETE SLAB ON GRADE. SEE DETAIL A4/S-301. APPROXIMATELY 50 LINEAR FEET OF CRACKS FOR ESTIMATING ONLY. VERIFY ALL LENGTHS, WIDTHS, AND LOCATIONS IN FIELD.
- 2 REMOVE EXISTING CONCRETE CHAMFER CANT 2'-0" EACH WAY FROM CORNER OF EXISTING CONCRETE WALL AND REPLACE. SEE DETAIL A1/S-301.
- 3 REMOVE EXISTING CONCRETE CHAMFER CANT AROUND BASE OF EXISTING CONCRETE COLUMN AND REPLACE. SEE DETAIL A1/S-301.
- 4 REPAIR EXISTING CONCRETE WALL CONSTRUCTION JOINT AND VOIDS. SEE DETAIL A3/S-301.
- 5 REPAIR EXISTING CONCRETE WALL AND CHAMFER CANT ADJACENT TO FIRE PLACE. SEE DETAILS A1, A2, A3, B1, & B2/S-301. REPAIR SHALL EXTEND FROM FIRST FLOOR DOWN TO CRAWL SPACE FINISH FLOOR LEVEL. CONTRACTOR TO COORDINATE EQUIPMENT REMOVAL BY OTHERS PRIOR TO DEMOLITION.
- 6 EXISTING CONCRETE WALL PATCH TO BE REMOVED AND REPLACED. EXTENDS FROM BOTTOM OF WALL OPENING TO CRAWL SPACE FINISH FLOOR. CONTRACTOR TO COORDINATE WITH FIRE PLACE EQUIPMENT. SEE DETAILS A3/S-301.
- 7 REPAIR CHIPPED & CRACKED CONCRETE WALL LINTEL ABOVE. ~1'x1' AREA. SEE DETAIL A3/S-301.
- 8 REMOVE EXISTING JOINT FILLER MATERIAL AND PROVIDE NEW HEAT RESISTANT SEALANT BETWEEN ALL CONCRETE CHAMFER CANTS AND BASE OF WALLS AND COLUMNS IN CRAWL SPACE AREAS. SEE DETAIL A5/S-301. LOCATIONS ANNOTATED WITH HEAVY LINE WEIGHT.
- 9 EXISTING FIRE PLACE EQUIPMENT BELOW FIRE PLACE AREAS TO BE REMOVED AND SALVAGED BY OTHERS.
- 10 PROVIDE STEEL PLATE AND REFRACTORY PANEL HEAT SHIELDING BELOW GRATING TO TOP OF CONCRETE CHAMFER CANT BELOW. SEE DETAILS B1, B2, & B3/S-301. COORDINATE DIMENSIONS AND CLEARANCES IN FIELD. INSTALL AFTER CONCRETE WALL REPAIRS HAVE BEEN MADE.

**KEY PLAN**



|   |  |
|---|--|
| <p>DATE</p> <p>DESCRIPTION</p> <p>SYN</p>   |  |
| <p><b>JACOBS</b></p> <p>501 NORTH BROADWAY ST. LOUIS, MISSOURI 63102<br/>       TEL 314-335-4000 FAX 314-335-5012</p>   |  |
| <p>APPROVED</p> <p>FOR COMMANDER NAVFAC DWG</p> <p>ACTIVITY</p> <p>D. COREY MELTON, TRAINING DIRECTOR SWDS</p> <p>SATISFACTORY TO 6/18/15</p> <p>DES JMS DRW JMS CHK BJH</p> <p>PM/DM RS / JMS</p> <p>BRANCH MANAGER</p> <p>CHIEF ENG/ARCH DWG</p> <p>FIRE PROTECTION</p>   |  |
| <p>DEPARTMENT OF THE NAVY</p> <p>NAVAL FACILITIES ENGINEERING COMMAND</p> <p>NAVFAC MID-ATLANTIC</p> <p>GREAT LAKES, ILLINOIS</p> <p>GREAT LAKES NAVAL STATION</p> <p>RENOVATE SWOSU FIREFIGHTING TRAINER (BUILDING 510)</p> <p>STRUCTURAL FIRST FLOOR CRAWL SPACE PLAN</p> |  |
| <p>SCALE: AS NOTED</p> <p>PROJECT NO.: 1310337</p> <p>CONSTR. CONTR. NO.: N40085-15-R-8720</p> <p>NAVFAC DRAWING NO.: 12689580</p> <p>SHEET 18 OF 86</p> <p><b>S-102</b></p>  |  |



**A1 PARTIAL FIRST FLOOR PLAN**  
 1/8" = 1'-0"

### SHEET NOTES

1. FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SEE S-001.
2. VERIFY ALL DIMENSIONS AND CONDITIONS IN FIELD.
3. VERIFY CRACK LENGTHS AND QUANTITIES IN FIELD.
4. INSPECT FOR LOOSE BOLTED CONNECTIONS AROUND FIRE PLACE AREAS. HAND TIGHTEN SNUGLY LOOSE BOLTS AND NUTS. DOUBLE NUT IF BOLT IS LONG ENOUGH OTHERWISE DAMAGE THREADS TO PREVENT FUTURE LOOSENING. SEE S-103 FOR FIRE PLACE AREAS.
5. APPLY NEW FLOOR SEALER IN CORRIDOR 116 INCLUDING STAIRS AND UPPER LANDINGS.

### KEYED NOTES

- 1 FIRE PLACE AREA WITH EXISTING 2 1/2" DEEP RIVETED GRATING WITH END BARS. T/ GRATING EL = 100'-0" FV. REMOVE AND REPLACE EXISTING GRATING WITH 2 1/2" DEEP RIVETED PLAIN STEEL GRATING TO MATCH. COORDINATE DIMENSIONS AND CLEARANCES IN FIELD. SEE DETAIL A3/S-302.
- 2 REPLACE EXISTING W8x13 WITH NEW W8x13. MATCH EXISTING CONNECTION DETAILS AND PROVIDE HORIZONTAL SLOTTED HOLES AT CONNECTIONS. PROVIDE HEAT SHIELDING PER DETAIL B4/S-301.
- 3 REPLACE EXISTING W8x10 WITH NEW W8x10. MATCH EXISTING CONNECTION DETAILS AND PROVIDE HORIZONTAL SLOTTED HOLES AT CONNECTIONS. PROVIDE HEAT SHIELDING PER DETAIL B4/S-301.
- 4 ROUT AND SEAL ALL CRACKS GREATER THAN 1MM WIDE IN EXISTING CONCRETE SLAB ON GRADE. SEE DETAIL A4/S-301. APPROXIMATELY 500 LINEAR FEET OF CRACKS FOR ESTIMATING ONLY. VERIFY ALL LENGTHS, WIDTHS, AND LOCATIONS IN FIELD.
- 5 REPAIR EXISTING CONCRETE STAIR TREADS. SEE DETAIL A1/S-302. 2 LOCATIONS.
- 6 REMOVE AND REPAIR CRACKED CONCRETE AT DOOR THRESHOLD. SEE DETAIL B1/S-302.
- 7 1" REFRACTORY PANEL BEHIND MOCK-UP PANEL. APPROXIMATELY 130 SQ FT, FIELD VERIFY. MATCH EXISTING PANEL LAYOUT. MANUFACTURER TO GO AROUND OBSTRUCTIONS (WITHIN 5/8" OF OBSTRUCTION) ON FACE OF WALL. ATTACH PANELS TO CONCRETE PER MANUFACTURERS INSTRUCTIONS.
- 8 REPLACE STEEL GRATING SUPPORT ANGLE. SEE DETAIL B1/S-301.

### KEY PLAN

|                             |  |                       |  |  |  |
|-----------------------------|--|-----------------------|--|--|--|
| DEPARTMENT OF THE NAVY      |  | NAVFAC MID-ATLANTIC   |  | NAVAL FACILITIES ENGINEERING COMMAND               |  |
| GREAT LAKES NAVAL STATION   |  | GREAT LAKES, ILLINOIS |  | RENOVATE SWOSU FIREFIGHTING TRAINER (BUILDING 510) |  |
| AS NOTED                    |  | PROJECT NO. 1310337   |  | CONSTR. CONTR. NO. N40085-15-R-8720                |  |
| NAVFAC DRAWING NO. 12689581 |  | SHEET 19 OF 86        |  | S-103  |  |

DATE

DESCRIPTION

SYM

**JACOBS**

501 NORTH BROADWAY ST. LOUIS, MISSOURI 63102  
 TEL 314-336-4000 FAX 314-335-5012

APPROVED

FOR COMMANDER NAVFAC DVG

ACTIVITY

D. COREY MELTON, TRAINING DIRECTOR SWOS

SATISFACTORY TO: 6/18/15

DES: JMS | REV: JMS | CHK: BJH

PM/DM: RS / JMS

BRANCH MANAGER

CHIEF ENG/ARCH: DVG

FIRE PROTECTION

SCALE: 1/8" = 1'-0"

IF SHEET IS LESS THAN 22" X 34" REDUCED PRINT - USE GRAPHIC SCALES

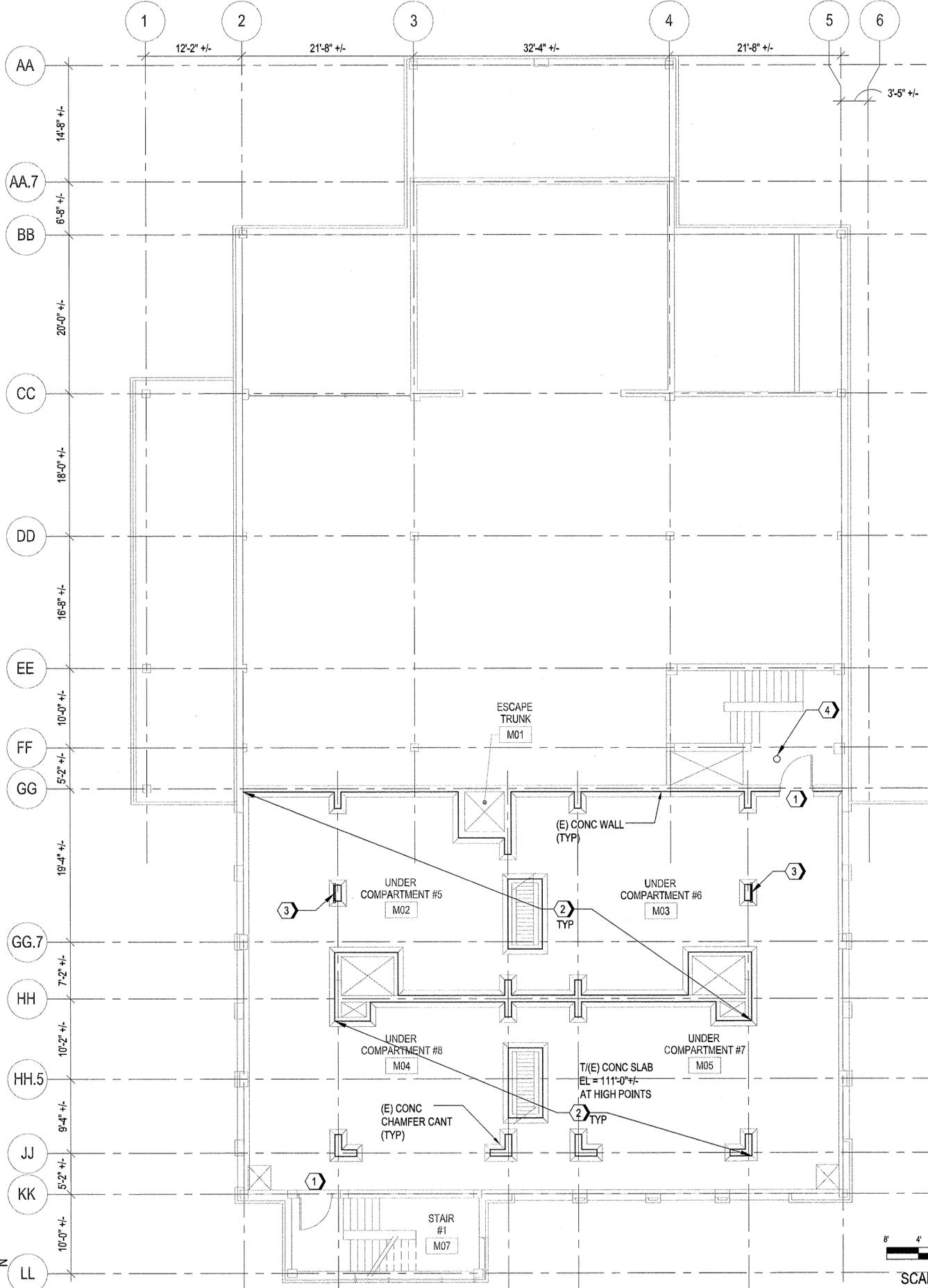
1

2

3

4

5



**SHEET NOTES**

- FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SEE S-001.
- VERIFY ALL DIMENSIONS AND CONDITIONS IN FIELD.
- VERIFY CRACK LENGTHS AND QUANTITY IN FIELD.
- INSPECT FOR LOOSE BOLTED CONNECTIONS AROUND FIRE PLACE AREAS. HAND TIGHTEN SNUGLY LOOSE BOLTS AND NUTS. DOUBLE NUT IF BOLT IS LONG ENOUGH OTHERWISE DAMAGE THREADS TO PREVENT FUTURE LOOSENING. SEE S-103 FOR FIRE PLACE AREAS.
- APPLY NEW FLOOR SEALER IN CRAWL SPACE FLOOR AREA.
- EXISTING FIRE PLACE EQUIPMENT AND UTILITIES BELOW FIRE PLACE AREAS TO REMAIN. TAKE CARE NOT TO DAMAGE EXISTING EQUIPMENT.

**KEYED NOTES**

- REMOVE AND REPAIR CRACKED CONCRETE AT ALL DOOR THRESHOLDS. SEE DETAIL B1/S-302.
- REMOVE EXISTING JOINT FILLER MATERIAL AND PROVIDE NEW HEAT RESISTANT SEALANT BETWEEN ALL CONCRETE CHAMFER CANTS AND BASE OF WALLS AND COLUMNS IN CRAWL SPACE AREAS. SEE DETAIL A5/S-301. LOCATIONS ANNOTATED WITH HEAVY LINE WEIGHT.
- EXISTING CONCRETE WALL PATCH TO BE REMOVED AND REPLACED. EXTENDS FROM BOTTOM OF WALL OPENING TO CRAWL SPACE FINISH FLOOR. CONTRACTOR TO COORDINATE WITH FIRE PLACE EQUIPMENT. SEE DETAIL A3/S-301.
- CORE DRILL SLAB FOR NEW FLOOR DRAIN. REFER TO PLUMBING DRAWINGS. SCAN PRIOR TO DRILLING. DO NOT CUT OR DAMAGE EXISTING REBAR.

**KEY PLAN**

|   |  |
|---|--|
| DATE  |  |
| DESCRIPTION   |  |
| SYMBOL  |  |
|   |  |
|   |  |
|   |  |
| 501 NORTH BROADWAY ST. LOUIS, MISSOURI 63102<br>TEL 314-335-4000 FAX 314-335-5015 |  |
| APPROVED  |  |
| FOR COMMANDER NAVFAC DWG  |  |
| ACTIVITY  |  |
| D. COREY MELTON, TRAINING DIRECTOR SWDS   |  |
| SATISFACTORY TO: 6/19/15  |  |
| DES: JMS DWG: JMS CHK: BUH  |  |
| PM/DW: RS / JMS   |  |
| BRANCH MANAGER  |  |
| CHIEF ENG/ARCH DWG  |  |
| FIRE PROTECTION   |  |
| DEPARTMENT OF THE NAVY  | NAVFAC MID-ATLANTIC                                |
| GREAT LAKES, ILLINOIS   | GREAT LAKES, ILLINOIS                              |
| RENOVATE SWOSU FIREFIGHTING TRAINER (BUILDING 510)                                | RENOVATE SWOSU FIREFIGHTING TRAINER (BUILDING 510) |
| STRUCTURAL  | PARTIAL SECOND FLOOR CRAWL SPACE PLAN              |
| SCALE: AS NOTED   |  |
| PROJECT NO: 1310337   |  |
| CONSTR. CONTR. NO: N40085-15-R-8720   |  |
| NAVFAC DRAWING NO: 12689582   |  |
| SHEET 20 OF 86  |  |
| <b>S-104</b>  |  |

**A1 PARTIAL SECOND FLOOR CRAWL SPACE PLAN**  
1/8" = 1'-0"



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B

A

D

C

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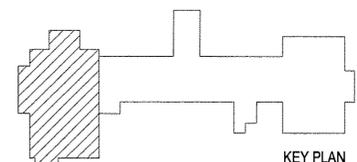
### SHEET NOTES

1. FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SEE S-001.
2. VERIFY ALL DIMENSIONS AND CONDITIONS IN FIELD.
3. VERIFY CRACK LENGTHS AND QUANTITIES IN FIELD.
4. APPLY NEW FLOOR SEALER IN CORRIDOR 209 AND 210 INCLUDING STAIRS AND UPPER LANDINGS.
5. EXISTING FIRE PLACE EQUIPMENT AND UTILITIES BELOW FIRE PLACE AREAS TO REMAIN. TAKE CARE NOT TO DAMAGE EXISTING EQUIPMENT.

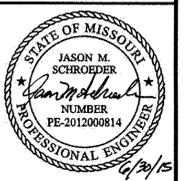
### KEYED NOTES

- 1 FIRE PLACE AREA TOPPED WITH EXISTING 2 1/2" DEEP RIVETED GRATING WITH END BARS. T/ GRATING EL = 120'-0" F.V. REMOVE AND REPLACE EXISTING GRATING WITH 2 1/2" DEEP RIVETED PLAIN STEEL GRATING TO MATCH. COORDINATE DIMENSIONS AND CLEARANCES IN FIELD. SEE DETAIL A3/S-302.
- 2 REPLACE EXISTING W8x10 WITH NEW W8x10. MATCH EXISTING CONNECTION DETAILS AND PROVIDE HORIZONTAL SLOTTED HOLES AT CONNECTIONS. PROVIDE HEAT SHIELDING PER DETAIL B4/S-301.
- 3 REMOVE AND REPAIR CRACKED CONCRETE AT DOOR THRESHOLD. SEE DETAIL B1/S-302.
- 4 CORE DRILL SLAB FOR NEW FLOOR DRAIN. REFER TO PLUMBING DRAWINGS. SCAN PRIOR TO DRILLING. DO NOT CUT OR DAMAGE EXISTING REBAR.
- 5 REPLACE STEEL GRATING SUPPORT ANGLE. SEE DETAIL B2/S-302.
- 6 PROVIDE SAFETY CHAINS AT HANDRAILS. 4 LOCATIONS TOTAL. SEE DETAIL A2/S-302.
- 7 NEW ROOF DRAIN. SEE ARCHITECTURAL DRAWINGS. LOCATE CORE DRILL HOLE TO MISS EXISTING HOLLOWCORE SLAB TENDONS.
- 8 MOCK-UP IN THIS AREA TO REMAIN. CONTRACTOR TO SHORE STEEL MOCK-UP, STEEL GRATING AND BEAMS AS REQUIRED FOR REPLACEMENT OF STEEL GRATING AND STEEL BEAM IN ADJACENT COMPARTMENT.

### KEY PLAN



| NO. | SYMBOL | DESCRIPTION | DATE |
|-----|--------|-------------|------|
|     |        |             |      |
|     |        |             |      |



|   |
|---|
| APPROVED                                  |
| FOR COMMANDER NAVFAC DWG                  |
| ACTIVITY                                  |
| D. COREY MELTON<br>TRAINING DIRECTOR SWDS |
| SATISFACTORY TO 6/18/15                   |
| DES JMS DRW JMS CHK BJH                   |
| PH/DM RS / JMS                            |
| BRANCH MANAGER                            |
| CHIEF ENGINEER DWG                        |
| FIRE PROTECTION                           |

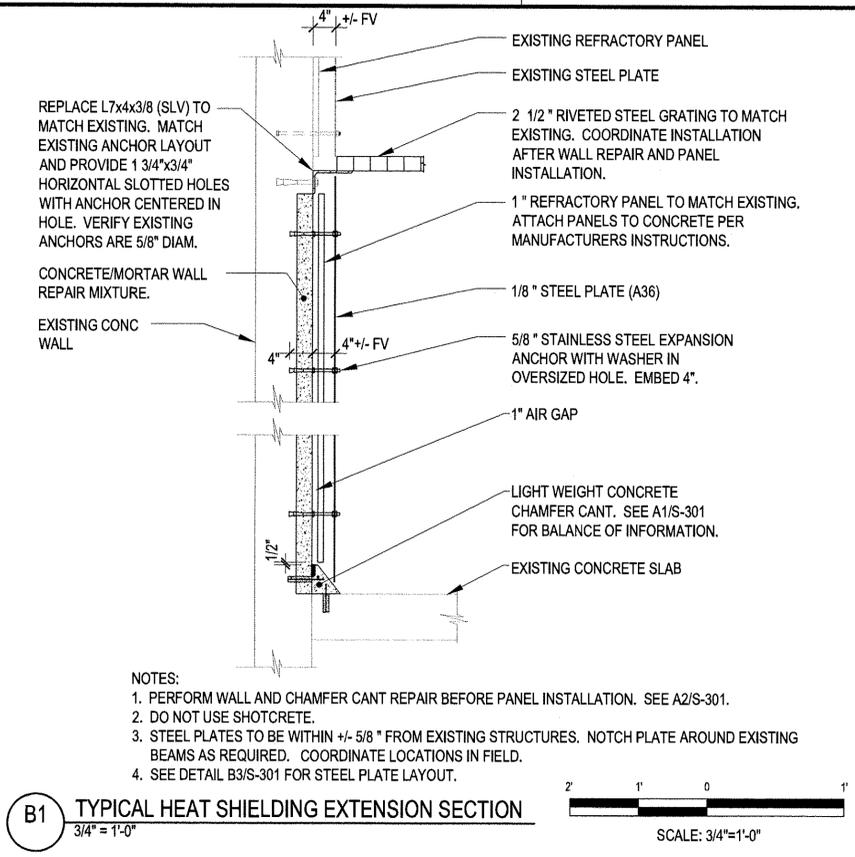
DEPARTMENT OF THE NAVY  
NAVFAC MID-ATLANTIC  
NAVFAC FACILITIES ENGINEERING COMMAND  
GREAT LAKES, ILLINOIS  
GREAT LAKES NAVAL STATION  
RENOVATE SWOSU FIREFIGHTING TRAINER (BUILDING 510)  
STRUCTURAL SECOND FLOOR PLAN

|                     |                  |
|---------------------|------------------|
| SCALE:              | AS NOTED         |
| PROJECT NO.:        | 1310337          |
| CONSTR. CONTR. NO.: | N40085-15-R-8720 |
| NAVFAC DRAWING NO.: | 12689583         |
| SHEET               | 21 OF 88         |
| <b>S-105</b>        |                  |

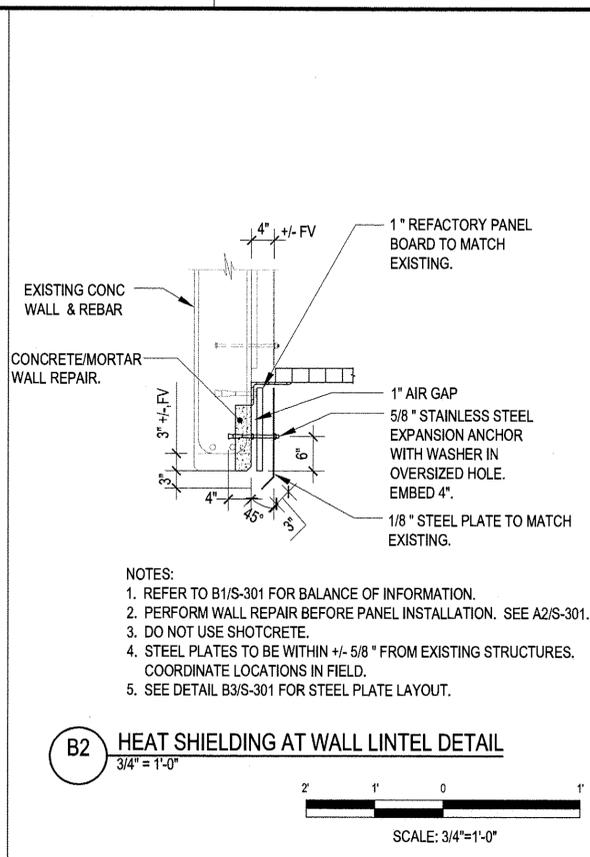
**A1 PARTIAL SECOND FLOOR PLAN**  
1/8" = 1'-0"



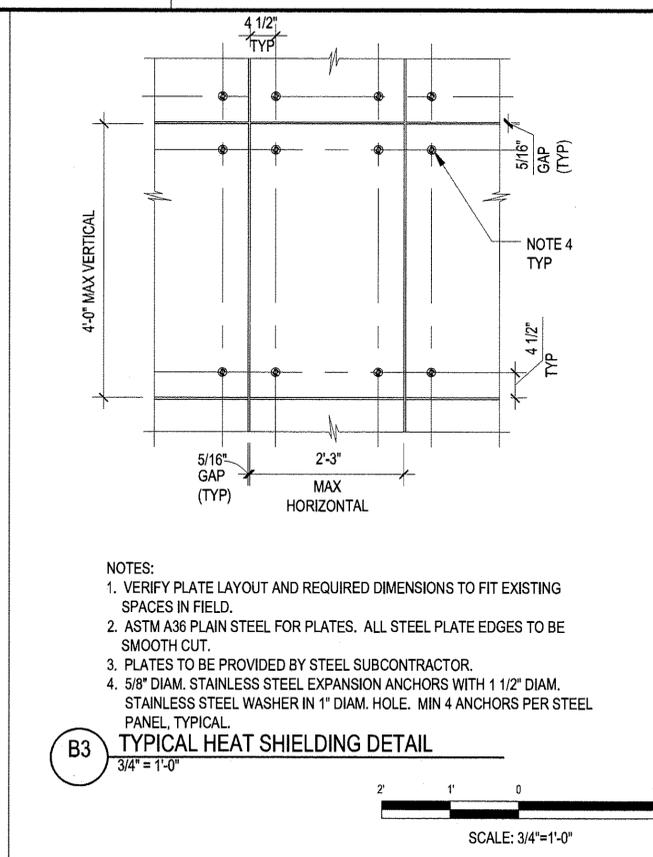
SCALE: 1/8" = 1'-0"



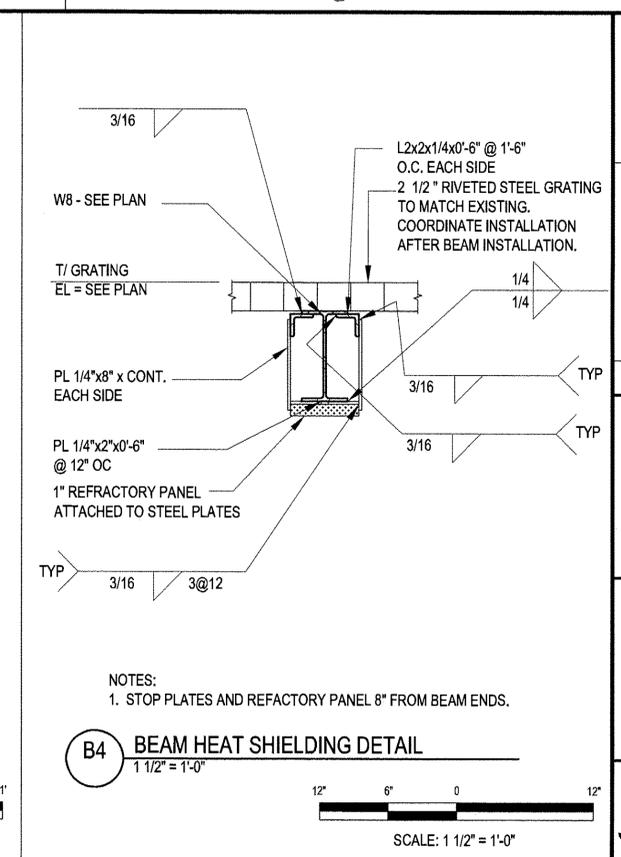
**B1 TYPICAL HEAT SHIELDING EXTENSION SECTION**  
3/4" = 1'-0"



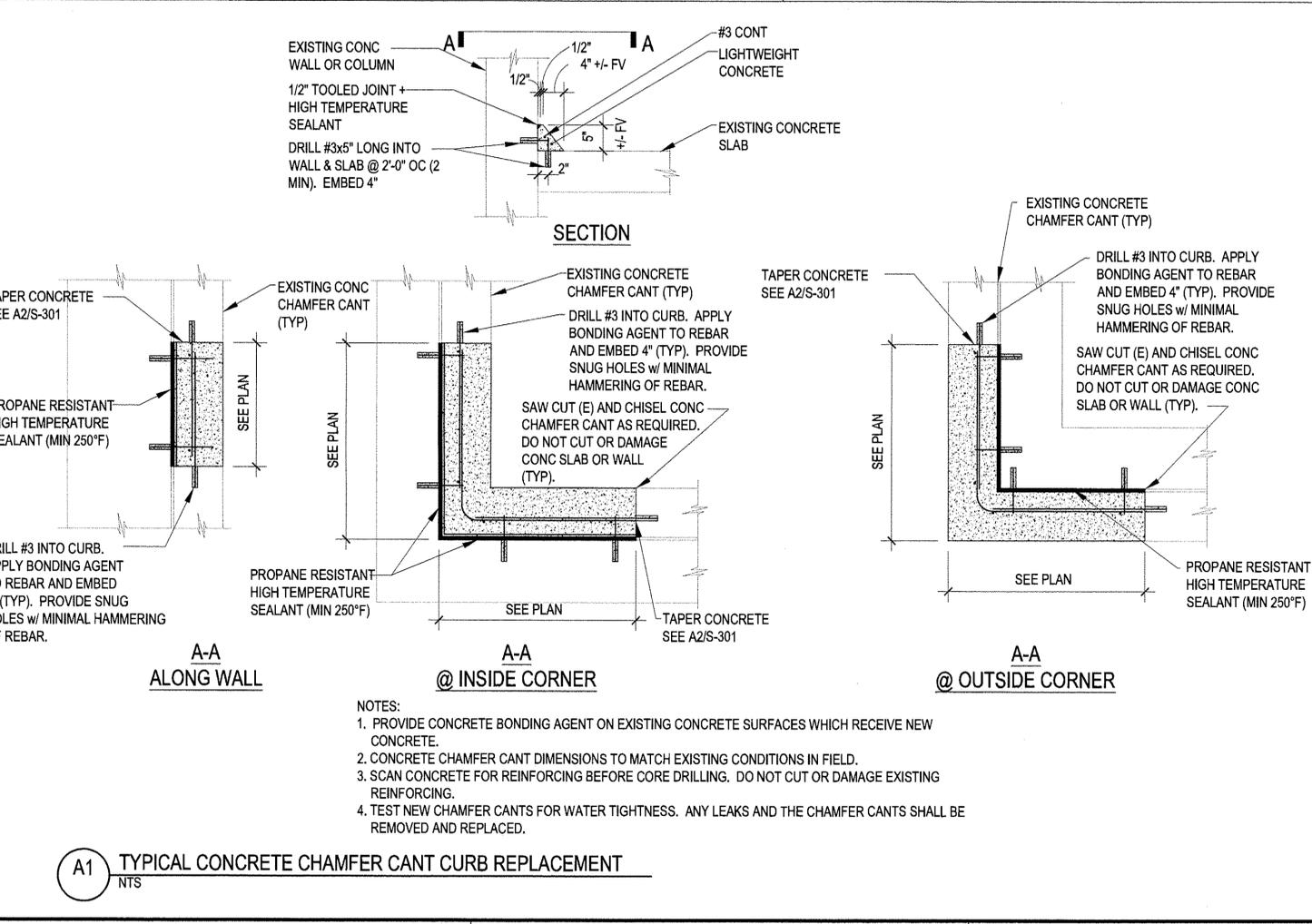
**B2 HEAT SHIELDING AT WALL LINTEL DETAIL**  
3/4" = 1'-0"



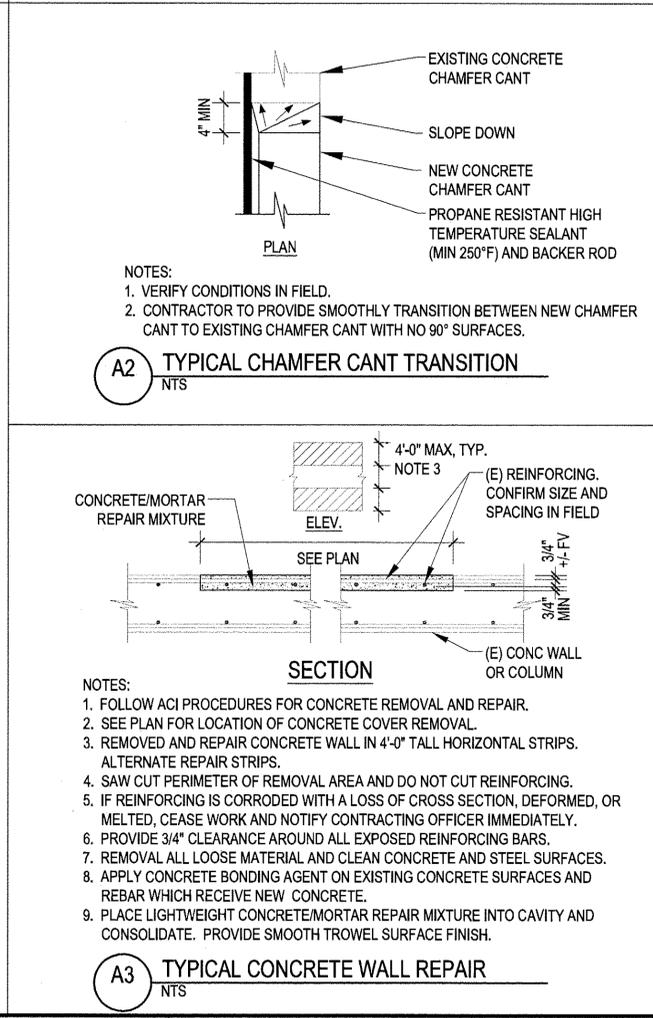
**B3 TYPICAL HEAT SHIELDING DETAIL**  
3/4" = 1'-0"



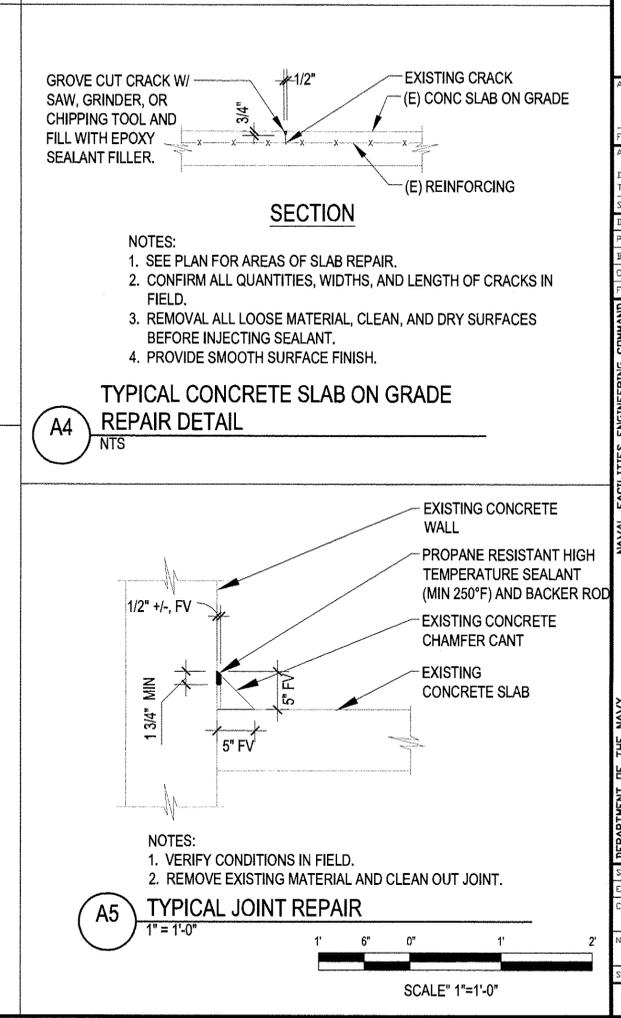
**B4 BEAM HEAT SHIELDING DETAIL**  
1 1/2" = 1'-0"



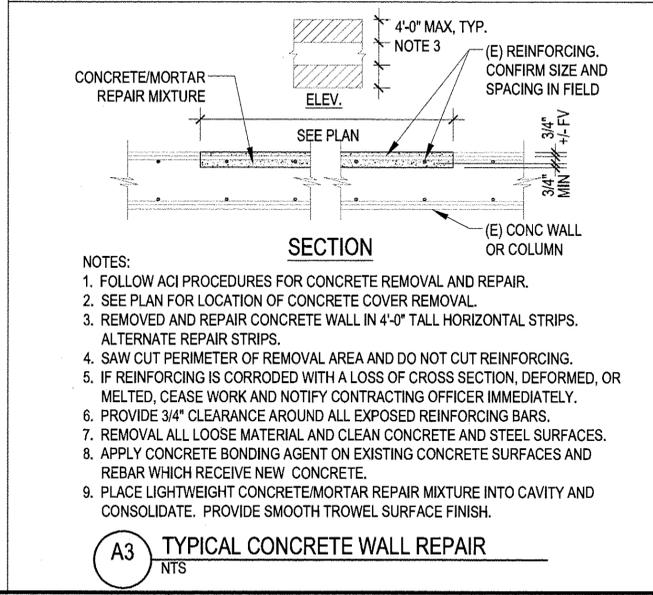
**A1 TYPICAL CONCRETE CHAMFER CANT CURB REPLACEMENT**  
NTS



**A2 TYPICAL CHAMFER CANT TRANSITION**  
NTS

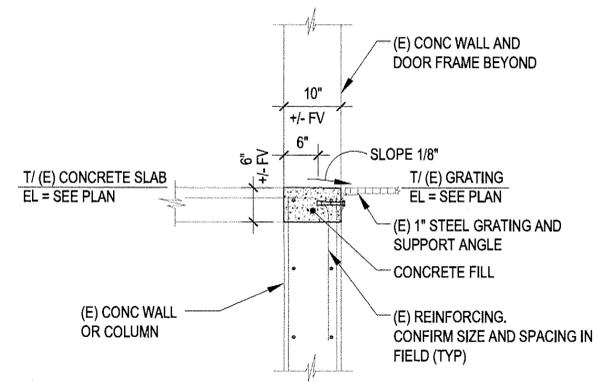


**A4 TYPICAL CONCRETE SLAB ON GRADE REPAIR DETAIL**  
NTS



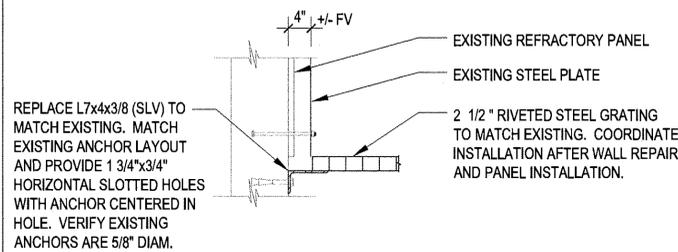
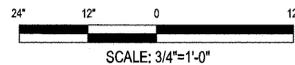
**A3 TYPICAL CONCRETE WALL REPAIR**  
NTS

|   |  |
|---|--|
| DATE  |  |
| DESCRIPTION   |  |
| BY  |  |
|   |  |
|   |  |
|   |  |
| 501 NORTH BROADWAY<br>ST. LOUIS, MISSOURI 63102<br>TEL. 314-335-4000 FAX 314-335-5012 |  |
| APPROVED  |  |
| FDR COMMANDER NAVFAC DWG  |  |
| ACTIVITY  |  |
| D. COREY MELTON, TRAINING DIRECTOR SWDS   |  |
| SATISFACTORY TO: 6/18/15  |  |
| BES: JMS DRV: JMS CHK: BJH  |  |
| PM/DM: RS / JMS   |  |
| BRANCH MANAGER  |  |
| CHIEF ENG/ARCH DWG  |  |
| FIRE PROTECTION   |  |
| NAVAL FACILITIES ENGINEERING COMMAND  |  |
| NAVFAC MID-ATLANTIC   |  |
| GREAT LAKES, ILLINOIS   |  |
| GREAT LAKES NAVAL STATION   |  |
| RENOVATE SWOSU FIREFIGHTING TRAINER (BUILDING 510)                                    |  |
| STRUCTURAL SECTIONS AND DETAILS   |  |
| SCALE: AS NOTED   |  |
| EPROJECT NO: 1310337  |  |
| CONSTR. CONTR. NO: N40085-15-R-8720   |  |
| NAVFAC DRAWING NO: 12689584   |  |
| SHEET 22 OF 86  |  |
| <b>S-301</b>  |  |

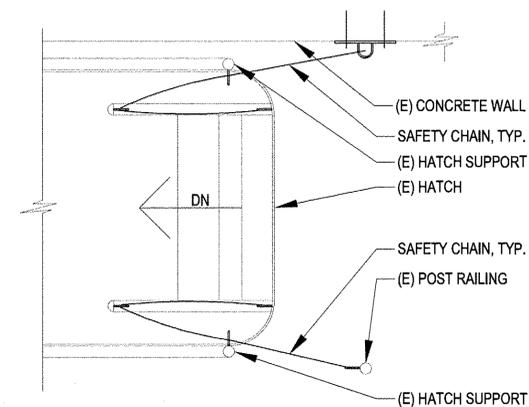
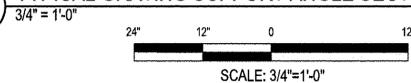


- NOTES:
1. FOLLOW ACI PROCEDURES FOR CONCRETE REMOVAL AND REPAIR.
  2. SEE PLAN FOR LOCATION OF CONCRETE REMOVAL AT DOOR THRESHOLDS.
  3. SHORE EXISTING GRATING THEN REMOVE EXISTING ANGLE AND EXPANSION BOLTS UP TO DOOR WIDTH.
  4. CHIP OUT CRACKED CONCRETE AREA AND DO NOT CUT OR DAMAGE REINFORCING.
  5. PROVIDE 3/4" CLEARANCE AROUND ALL EXPOSED REINFORCING BARS.
  6. REMOVAL ALL LOOSE MATERIAL AND CLEAN CONCRETE AND STEEL SURFACES.
  7. APPLY CONCRETE BONDING AGENT ON EXISTING CONCRETE AND REBAR SURFACES WHICH RECEIVE NEW CONCRETE.
  8. PLACE LIGHTWEIGHT CONCRETE REPAIR MIXTURE INTO CAVITY AND CONSOLIDATE. PROVIDE SMOOTH TROWEL SURFACE FINISH WITH CONCRETE SEALANT.
  9. REINSTALL EXISTING ANGLE WITH NEW 5/8" DIAM. STAINLESS STEEL EXPANSION ANCHORS WITH 4" EMBED. ANCHOR SPACING TO MATCH EXISTING HOLE PATTERN IN ANGLE.

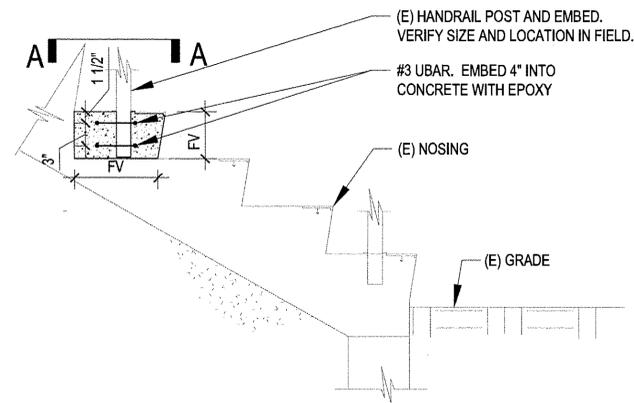
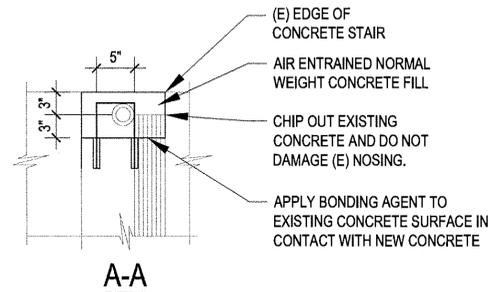
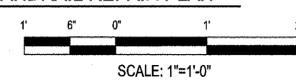
**B1** TYPICAL CONCRETE REPAIR @ DOOR THRESHOLD DETAIL



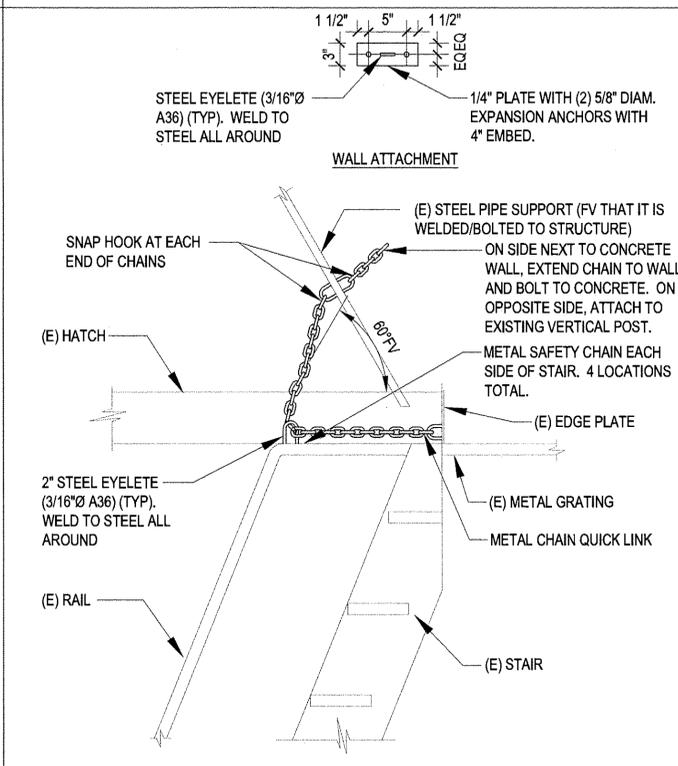
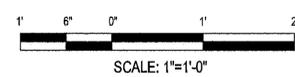
**B2** TYPICAL GRATING SUPPORT ANGLE SECTION



**B3** TYPICAL SHIPBOARD HANDRAIL REPAIR PLAN

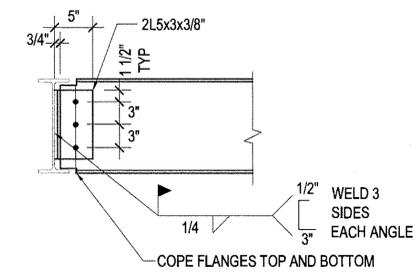
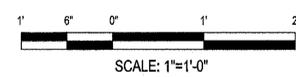


**A1** TYPICAL CONCRETE STAIR REPAIR DETAIL



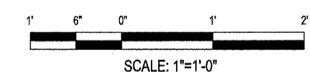
- NOTES:
1. RIVETED STEEL GRATING; PLAIN SURFACE PER ANSI/NAAMM MBG 531.
  2. STEEL TO CONFORM TO ASTM A1011. NO FINISH.
  3. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
  4. THE NUMBER OF BEARING BARS AND THE CONFIGURATION OF THE RETICULINE BARS WILL VARY WITH OVERALL FINISHED DIMENSIONS.
  5. CONFIRM ALL QUANTITIES AND DIMENSIONS OF GRATING IN FIELD TO FIT CURRENT FIRE PIT AND FIRE PLACES.

**A3** TYPICAL FIRE PLACE GRATING DETAIL



- NOTE:
1. PROVIDE SHORT SLOTTED HORIZONTAL HOLES IN ANGLE.
  2. PROVIDE (3) 3/4" DIAM. A325-N BOLTS.

**A4** TYPICAL DOUBLE ANGLE CONNECTION BEAM TO GIRDER DETAIL



|   |                                 |
|---|---------------------------------|
| DATE  |                                 |
| DESCRIPTION   |                                 |
| SYM   |                                 |
|   |                                 |
|   |                                 |
|   |                                 |
| 501 NORTH BROADWAY ST. LOUIS, MISSOURI 63102<br>TEL 314-395-4000 FAX 314-395-5012 |                                 |
| APPROVED  |                                 |
| FOR COMMANDER NAVFAC DWG  |                                 |
| ACTIVITY  |                                 |
| D. ODREY MELTON, TRAINING DIRECTOR SWDS   |                                 |
| SATISFACTORY TD 6/18/15   |                                 |
| DES JMS DRW JMS CHK BJH   |                                 |
| PM/DN RS / JMS  |                                 |
| BRANCH MANAGER  |                                 |
| CHIEF ENG/ARCH DWG  |                                 |
| FIRE PROTECTION   |                                 |
| DEPARTMENT OF THE NAVY  | NAVFAC MID-ATLANTIC             |
| GREAT LAKES, ILLINOIS   | GREAT LAKES NAVAL STATION       |
| RENOVATE SWOSU FIREFIGHTING TRAINER (BUILDING 510)                                | STRUCTURAL SECTIONS AND DETAILS |
| SCALE: AS NOTED   |                                 |
| PROJECT NO: 1310337   |                                 |
| CONSTR. CONTR. NO: N40085-15-R-8720   |                                 |
| NAVFAC DRAWING NO: 12689585   |                                 |
| SHEET 23 OF 86  |                                 |
| <b>S-302</b>  |                                 |