TYPE H BOX MAGAZINE
STANDARD DRAWINGS

DRAWING INDEX			
SHEET NO.	SHEET ID	SHEET TITLE	NAVFAC DWG NO.
1	G–001	SHEET INDEX	14138777
2	G–002	SYMBOLS & ABBREVIATIONS	14138778
3	S–001	GENERAL STRUCTURAL NOTES	14138779
4	S–002	GENERAL STRUCTURAL NOTES	14138780
5	S–003	GENERAL STRUCTURAL NOTES	14138781
6	S–004	TYPICAL CONCRETE DETAILS	14138782
7	S–005	TYPICAL CONCRETE DETAILS	14138783
8	S–101	FOUNDATION PLAN	14138784
9	S101A	FOUNDATION PLAN – ALTERNATE	14138785
10	S–102	FLOOR SLAB REINFORCING PLAN	14138786
11	S–103	ROOF FRAMING PLAN	14138787
12	S–104	ROOF SLAB REINFORCING PLAN	14138788
13	S–105	DRAINAGE AND VENTILATION PLAN	14138789
14	S105A	DRAINAGE AND VENTILATION PLAN – ALTERNATE	14138790
15	S–201	FRAMING ELEVATIONS	14138791
16	S–202	FRAMING ELEVATIONS	14138792
17	S–203	FRAMING ELEVATIONS	14138793
18	S–204	FRAMING ELEVATIONS	14138794
19	S–205	FRONT WALL PARTIAL ELEVATION AND DETAILS	14138795
20	S–301	WALL SECTIONS	14138796
21	S–302	WALL SECTIONS	14138797
22	S–303	WALL SECTIONS	14138798
23	S–304	WALL SECTIONS	14138799
24	S–305	WALL SECTIONS	14138800
25	S305A	MECHANICAL ROOM SECTIONS – ALTERNATE	14138801
26	S–401	ENLARGED PLANS	14138802
27	S–402	ENLARGED PLANS	14138803
28	S–403	ENLARGED PLANS	14138804
29	S404A	MECHANICAL ROOM FOUNDATION PLAN – ALTERNATE	14138805
30	S405A	DRAINAGE AND VENTILATION PLAN – ALTERNATE	14138806
31	S–501	DOOR TRENCH AND COVER DETAILS	14138807
32	S–502	PILASTER REINF DETAILS	14138808
33	S–503	BOUNDARY ELEMENT REINF DETAILS	14138809
34	S–504	DOOR TRENCH AND COVER DETAILS	14138810
35	S–505	DOOR TRENCH AND COVER DETAILS	14138811
36	S–506	DOOR STOP, PLOW AND TRENCH COVER ROLLER DETAILS	14138812
37	S–507	CANOPY AND RAIL SUPPORT DETAILS	14138813
38	S–508	CANOPY AND RAIL SUPPORT DETAILS	14138814
39	S–509	SECURITY PILASTER DETAILS	14138815
40	S–510	SECURITY PILASTER DETAILS	14138816
41	S–701	DOOR NOTES AND SCHEDULES	14138817
42	S–702	DOOR ELEVATIONS	14138818
43	S–703	DOOR PLATE ELEVATIONS	14138819
44	S–704	DOOR DETAILS	14138820
45	S–705	DOOR DETAILS	14138821

DRAWING INDEX			
SHEET NO.	SHEET ID	SHEET TITLE	NAVFAC DWG NO.
46	S–706	DOOR DETAILS	14138822
47	S–707	AIR INTAKE SECTIONS AND DETAILS	14138823
48	S707A	PENETRATION DETAILS	14138824
49	S–708	VENTILATOR DETAILS, SECTIONS, AND ELEVATIONS	14138825
50	S–709	DRAINAGE ISOMETRIC	14138826
51	S709A	DRAINAGE ISOMETRIC – ALTERNATE	14138827
52	E–001	ELECTRICAL SYMBOLS & LEGEND	14138828
53	E–002	ELECTRICAL SYMBOLS & LEGEND	14138829
54	EG101	ELECTRICAL GROUNDING PLAN	14138830
55	EG101A	ELECTRICAL GROUNDING PLAN (ALTERNATE)	14138831
56	EG102	ELECTRICAL GROUNDING PLAN	14138832
57	EG102A	ELECTRICAL GROUNDING PLAN (ALTERNATE)	14138833
58	EG201	ELECTRICAL GROUNDING PLAN ELEVATIONS	14138834
59	EG202	ELECTRICAL LIGHTNING ZONE PROTECTION ELEVATION	14138835
60	E–101	ELECTRICAL FLOOR PLAN	14138836
61	E101A	ELECTRICAL FLOOR PLAN – ALTERNATE	14138837
62	E–102	ELECTRICAL FLOOR PLAN	14138838
63	E102A	ELECTRICAL FLOOR PLAN – ALTERNATE	14138839
64	E–501	ELECTRICAL DETAILS	14138840
65	E–502	ELECTRICAL DETAILS	14138841
66	E–503	ELECTRICAL DETAILS	14138842
67	E–504	ELECTRICAL DETAILS	14138843
68	E–505	ELECTRICAL DETAILS	14138844
69	E–506	ELECTRICAL DETAILS	14138845
70	E–507	ELECTRICAL DETAILS	14138846
71	E–508	ELECTRICAL DETAILS	14138847
72	E–509	ELECTRICAL DETAILS	14138848
73	E–510	ELECTRICAL DETAILS	14138849
74	E–511	ELECTRICAL DETAILS	14138850
75	E–512	ELECTRICAL DETAILS – ALTERNATE	14138851
76	E–513	ELECTRICAL DETAILS	14138852
77	E–601	ELECTRICAL ONE–LINE	14138853
78	E–602	ELECTRICAL ONE–LINE	14138854
79	E–603	ELECTRICAL SCHEDULES	14138855
80	E–604	ELECTRICAL SCHEDULES	14138856
81	T–101	TELECOMMUNICATION FLOOR PLAN	14138857
82	T101A	TELECOMMUNICATION FLOOR PLAN – ALTERNATE	14138858
83	T–501	TELECOMMUNICATION DETAILS	14138859
84	T–601	TELECOMMUNICATION AND SECURITY RISER	14138860
85	T601A	TELECOMMUNICATION AND SECURITY RISER–ALTERNATE	14138861

DEPARTMENT OF DEFENSE EXPLOSIVES SAFETY BOARD (DDESB) APPROVAL NOTES:

DO NOT REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION.

1. THIS STANDARD IS APPROVED BY THE DEPARTMENT OF DEFENSE EXPLOSIVE SAFETY BOARD (DDESB) AS A 7–BAR EARTH COVERED MAGAZINE AND MAY BE SITED AS AN EXPOSED SITE MAGAZINE FROM OTHER POTENTIAL EXPLOSION SITES STORING UP TO 500,000 LBS HAZARD DIVISION 1.1 EXPLOSIVES.
2. THE DESIGN AND DETAILING OF THIS STANDARD MAGAZINE FOR BLAST LOADING IS THE SOLE RESPONSIBILITY OF THE GOVERNMENT. THE GOVERNMENT IS THE ENGINEER OF RECORD FOR THE BLAST DOOR.
3. ANY DEVIATION FROM THESE STANDARD DRAWINGS, EXCEPT FOR FOUNDATION MODIFICATIONS, WITHOUT THE WRITTEN APPROVAL FROM THE DEPARTMENT OF DEFENSE EXPLOSIVE SAFETY BOARD (DDESB) MAY REQUIRE THE MAGAZINE TO BE CONSIDERED AN UNDEFINED MAGAZINE AND MAY SEVERELY RESTRICT THE ALLOWABLE STORAGE CAPACITY.
4. THE SITE ADAPT ENGINEER IS THE ENGINEER OF RECORD FOR THE SITE ADAPT PROCESS.

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

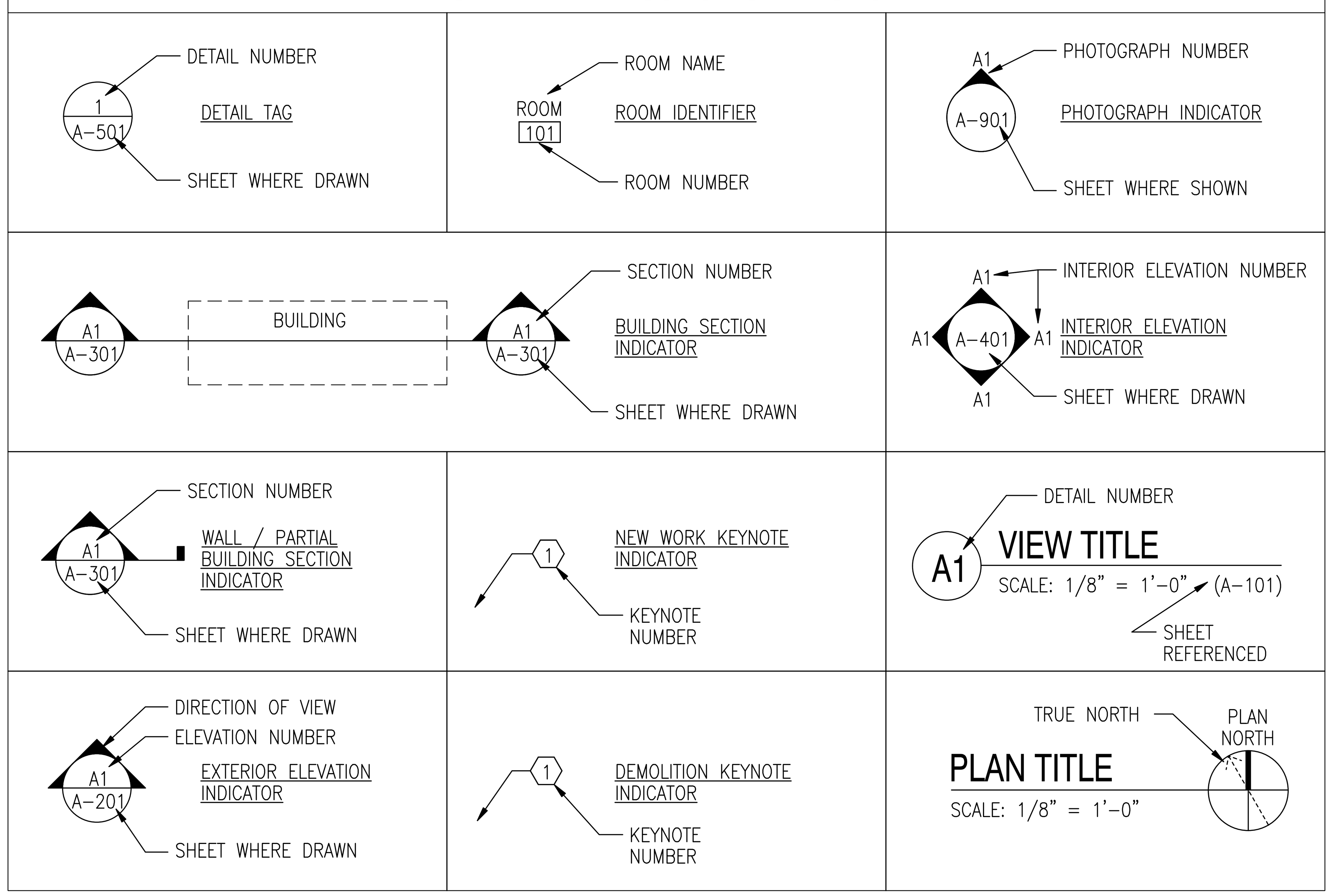
SHEET INDEX

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138777
SHEET 1 OF 85

G-001

DRAWFORM REVISION: 25 AUGUST 2020

GENERAL PROJECT SYMBOLS



STRUCTURAL ABBREVIATIONS:

AB	ANCHOR BOLT
ACI	AMERICAN
ADD'L	ADDITIONAL
ALT	ALTERNATE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
BM	BEAM
BMS	BALANCED MAGNETIC SWITCH
BOT	BOTTOM
CI	CAST IRON
CIP	CAST-IN-PLACE
CJ	CONSTRUCTION JOINT
CL	CENTER LINE
CLJ	CONTROL JOINT
CLR	CLEAR (ANCE)
CJP	COMPLETE JOINT PENETRATION
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CONT'D	CONTINUED
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DEG	DEGREE
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIST	DISTANCE
DWG	DRAWING
EA	EACH
EF	EACH FACE
EL	ELEVATION
ELECT	ELECTRICAL
EJ	EXPANSION JOINT
EOR	ENGINEER OF RECORD
EQ	EQUAL
ES	EACH SIDE
ETC	ET CETERA
EW	EACH WAY
EXT	EXTERIOR
FDN	FOUNDATION
FL	FLOOR
FIN	FINISH
FIN FL	FINISH FLOOR
FS	FAR SIDE
FT	FOOT OR FEET
FTG	FOOTING
GA	GAUGE
GFCI	GROUND-FAULT CIRCUIT INTERRUPTERS
GI	GALVANIZED IRON
HAS	HEADED ANCHOR STUD
HK	HOOK
HORIZ, (H)	HORIZONTAL
HSS	HOLLOW STRUCTURAL SECTION
IBC	INTERNATION BUILDING CODE
IDS	INTRUSION DETECTION SYSTEM
IF	INSIDE FACE
ILD	INTERNAL LOCKING DEVICE
IN	INCH
INFO	INFORMATION
INTERM	INTERMEDIATE
lb	POUNDS
JT	JOINT
LP	LOW POINT
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONGIT	LONGITUDINAL
MANUF, MFR	MANUFACTURER
MAX	MAXIMUM
MECH	MECHANICAL
MIN	MINIMUM
MISC	MISCELLANEOUS
MPH	MILES PER HOUR
MTL	METAL
NIC	NOT IN CONTRACT
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER
OF	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
oz	OUNCES
PCF	POUNDS PER CUBIC FOOT
PJ	PANEL JOINT
PJP	PARTIAL JOINT PENETRATIONS
PL	PLATE
PN	PART NUMBER
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
RAD	RADIUS
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
SCH/SCHED	SCHEDULE
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SOG	SLAB-ON-GRADE
SPA	SPACE
SPECS	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STIFF	STIFFENER
STRUCT	STRUCTURAL
T	TOP
TBD	TO BE DETERMINED
TEMP	TEMPERATURE STEEL
THK	THICK
THRU	THROUGH
TOS	TOP OF SLAB, TOP OF STEEL
TYP	TYPICAL
UFC	UNIFIED FACILITIES CRITERIA
UNO	UNLESS NOTED OTHERWISE
VERT, (V)	VERTICAL
W/	WITH

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES FJ	DRW MR	CHK DW
PM/DM		--
BRANCH MANAGER		--
CHIEF ENG/ARCH		--
FIRE PROTECTION		--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

SYMBOLS & ABBREVIATIONS

SCALE: AS NOTED

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138778

SHEET 2 OF 85

G-002

DRAWFORM REVISION: 25 AUGUST 2020

GENERAL:

1. THESE CONSTRUCTION DOCUMENTS ARE CONSTRUCTION STANDARDS FOR THE NAVY TYPE H STANDARD MAGAZINES AND HAVE BEEN SITE ADAPTED BY THE EOR.

2. ALL MATERIALS AND WORKMANSHIP MUST CONFORM TO THE DRAWINGS AND SPECIFICATIONS.

3. EQUIPMENT PENETRATION OPENINGS AND LOCATIONS WHEN INDICATED ON DRAWINGS ARE FOR INFORMATION ONLY AND MUST BE VERIFIED WITH THE APPROPRIATE DRAWING AND/OR EQUIPMENT SUPPLIER BEFORE CONSTRUCTION.

   A. SEE STRUCTURAL AND ELECTRICAL DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS REQUIRED FOR DUCT WORK, PIPES AND PIPE SLEEVES.

   B. OPENINGS OR POCKETS LARGER THAN 6 INCHES NOT INDICATED IN STRUCTURAL DRAWINGS MUST NOT BE PLACED WITHOUT WRITTEN NOTIFICATION OF THE CONTRACTING OFFICER.

   C. OPENINGS OR PENETRATIONS OF ANY SIZE IN BLAST-RESISTING STRUCTURAL COMPONENTS (BLAST DOOR, HEADER BEAM, PARAPET BEAM, PILASTERS, ROOF PANEL, SIDE WALLS, REAR WALL, INTERIOR COLUMNS) THAT ARE UNPLANNED OR NOT SHOWN IN THE DRAWINGS ARE NOT PERMITTED TO BE CONSTRUCTED WITHOUT PRIOR APPROVAL FROM THE CONTRACTING OFFICER.

4. THE STRUCTURAL DRAWINGS SHOW ONLY THE BASIC STRUCTURAL SYSTEM. REFER TO OTHER DRAWINGS FOR ORNAMENTS, GROOVES, CLIPS, GROUNDS, SLAB DEPRESSIONS, CURBS, EQUIPMENT PADS, PENETRATIONS, NON-BEARING WALLS AND OTHER NON-STRUCTURAL ITEMS.

5. GENERAL NOTES AND STANDARD DETAILS MUST BE USED WHERE APPLICABLE, UNLESS NOTED OTHERWISE. NOTES AND DETAILS ON THE DRAWINGS MUST TAKE PRECEDENCE OVER GENERAL NOTES AND STANDARD DETAILS. WHERE CONFLICTS ARISE BETWEEN DRAWINGS AND SPECIFICATIONS, MOST STRINGENT WILL GOVERN. CONTACT THE CONTRACTING OFFICER IN WRITING FOR CLARIFICATION BEFORE PROCEEDING WITH WORK.

6. ALL OMISSIONS AND/OR CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE CONTRACT DOCUMENTS MUST BE BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER IN WRITING BEFORE PROCEEDING WITH ANY WORK INVOLVED.

7. DIMENSIONS MUST NOT BE SCALED FROM THE PLANS, SECTIONS AND/OR DETAILS OF THE STRUCTURAL DRAWINGS. DIMENSIONS PROVIDED WITHIN BRACKETS ARE IN UNITS OF MILLIMETERS ROUNDED TO THE NEAREST INTEGER NUMBER.

8. COORDINATE WITH THE CONTRACTING OFFICER FOR PROCUREMENT AND INSTALLATION OF INTERNAL LOCKING DEVICE (ILD), BOLTWORKS, AND THE DISTRIBUTION OF KEY SETS FOR EACH MAGAZINE DOOR. THE ILD MUST BE PROCURED WITH TWO UNIQUE KEYS IN ORDER TO OPERATE THE BOLTWORKS.

9. CONTACT THE DoD LOCK PROGRAM FOR DIRECTIONS ON HOW TO PROCURE THE INTERNAL LOCKING DEVICE (ILD), BOLTWORKS, AND A LIST OF RECOMMENDED MANUFACTURERS FOR MAGAZINE DOORS:
   A. DoD LOCK PROGRAM: https://navfac.navy.mil/go/locks
   B. EMAIL: ILD_Field_Support@navy.mil
   C. ILD SUPPORT HOTLINE: 805-982-5625.
   D. DoD LOCK PROGRAM TECHNICAL SUPPORT HOTLINE: 800-290-7607 OR 805-982-1212.

10. COORDINATE WITH THE CONTRACTING OFFICER FOR THE CONNECTION OF THE BALANCED MAGNETIC SWITCH (BMS) ON THE DOOR AND THE ILD, WHICH MUST BE INSTALLED AND CONNECTED TO THE INTRUSION DETECTION SYSTEM (IDS) BY NIWC.

DESIGN CRITERIA:

1. THE STRUCTURAL DESIGN AND CONSTRUCTION MUST COMPLY WITH THE FOLLOWING GOVERNMENT STANDARDS:

   A. UFC 1-200-01, "DESIGN: GENERAL BUILDING REQUIREMENTS"

2. DESIGN LOADS:
   THE FOLLOWING LOADS WERE USED AS BASIS OF DESIGN.

A. DEAD LOADS		ACTUAL WEIGHT
a. SOIL		110 PCF
B. LIVE LOADS		
a. CANOPY ROOF		20 PSF
b. MAGAZINE AND MECHANICAL ROOM ROOF		100 PSF
c. MAGAZINE FLOOR		1,250 PSF (UNIFORM)
		32K (HS20-44 AXLE)
		15K (FORKLIFT AXLE)
		31K (CPS CONTAINER EACH)
		TWO (2) STACKED CPS CONTAINERS
		ONE (1) CPS CONTAINER IN CONCURRENCE WITH TRUCK TRAILER HS20-44 AXLE
		ONE (1) CPS CONTAINER IN CONCURRENCE WITH FORKLIFT
d. MECHANICAL ROOM FLOOR		150 PSF (UNIFORM)

3. WIND DESIGN DATA

A. ULTIMATE WIND SPEED:	210 MPH
B. WIND SPEED (ALLOWABLE STRESS DESIGN)	163 MPH
C. EXPOSURE:	"C"
D. RISK CATEGORY:	III

4. SEISMIC DESIGN DATA

A. RISK CATEGORY:	III
B. IMPORTANCE FACTOR:	1.25
C. SEISMIC DESIGN CATEGORY:	D
D. SITE SEISMICITY:	Ss = 2.79g, S1 = 0.68g
E. SITE CLASS:	D

DESIGN CRITERIA: (CONTINUED)

5. SNOW DESIGN DATA:

A.	GROUND SNOW LOAD:	45 PSF
B.	EXPOSURE FACTOR:	1.0
C.	IMPORTANCE FACTOR:	1.10
D.	THERMAL FACTOR:	1.2

6. EXPLOSIVES SAFETY DESIGN LOADS:
   A. EXPLOSIVES SAFETY DESIGN LOADS FOR DOOR AND ROOF OF MAGAZINES ARE PRESCRIBED BY NAVFAC EXWC. DESIGN GUIDANCE IS PROVIDED BY UFC 3-340-02 2008 WITH CHANGE 2, 1 SEPT 2014.

   B. TRIANGULAR PULSE LOAD VALUES BASED ON NAVFAC EXWC TECHNICAL REPORT TR-NAVFAC EXWC-SH-2202, BASIS OF DESIGN FOR EXPLOSIVE SAFETY FOR UPDATES TO NAVY TYPE C AND TYPE D EARTH-COVERED MAGAZINES AND NAVY MODULAR STORAGE MAGAZINE, DATED SEPTEMBER 2021:

MEMBER	PEAK PRESSURE	IMPULSE	DURATION
DOOR AND HEADER BEAM	249 PSI	2,084 PSI-M S	16.7 M S
ROOF SLAB	142 PSI	1,626 PSI-M S	22.9 M S
ROOF PARAPET	108 PSI	1,508 PSI-M S	27.9 M S

   C. APPROVED LOCATION AND STORAGE CAPACITY OF EACH ECM MUST BE DETERMINED BY THE SAFETY OFFICER BASED ON ORIENTATION AND PROXIMITY RELATIVE TO NEARBY FACILITIES/MAGAZINES.

CONSTRUCTION PROCEDURES & SAFETY REQUIREMENTS:

1. THE CONTRACT STRUCTURAL DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHOD OF CONSTRUCTION. PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE, WORKERS OR OTHER PERSONS DURING CONSTRUCTION. SUCH MEASURES MUST INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR THE BUILDING, FORMS, SCAFFOLDING, PLANKING, SAFETY NETS, ETC.

2. THE CONTRACTOR MUST ENGAGE PROPERLY QUALIFIED PERSONS TO DETERMINE WHERE AND HOW TEMPORARY PRECAUTIONARY MEASURES MUST BE USED DURING CONSTRUCTION. THE CONTRACTOR MUST ALSO PROVIDE THEIR OWN THIRD-PARTY INSPECTOR TO REVIEW AND VERIFY INSTALLATION OF ALL TEMPORARY PRECAUTIONARY MEASURES.

3. THE CONTRACTOR MUST SUPERVISE AND DIRECT THE WORK SO AS TO MAINTAIN RESPONSIBILITY FOR COORDINATING THE WORK OF ALL TRADES AND THE CHECKING OF ALL DIMENSIONS. ALL DISCREPANCIES MUST BE CALLED TO THE ATTENTION OF THE CONTRACTING OFFICER AND MUST BE RESOLVED BEFORE PROCEEDING WITH THE WORK.

4. THE CONTRACTOR MUST COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE, FEDERAL, AND INTERNATIONAL LAWS, INCLUDING THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) AND REGULATIONS ADOPTED PURSUANT THERETO.

5. CONSTRUCTION LOADS INCLUDING MATERIALS MUST NOT EXCEED THE DESIGN LIVE LOAD. PROVIDE ADEQUATE SHORING, RESHORING AND/OR BRACING WHERE REQUIRED.

FOUNDATIONS:

1. THE FOUNDATIONS HAVE BEEN DESIGNED USING THE FOLLOWING ALLOWABLE BEARING PRESSURES:

A.	DEAD PLUS LIVE LOAD:	4,000 PSF
B.	TOTAL DESIGN LOAD (INCLUDING WIND OR SEISMIC, TRANSIENT LOAD FACTOR = 1.33)	5,300 PSF
C.	BLAST DESIGN LOAD (DYNAMIC INCREASE FACTOR = 2.5):	10,000 PSF

2. EARTH COVER MATERIAL TO BE USED AS MAGAZINE COVER AND WITHIN THE EMBANKMENT IS TO BE NON-EXPANSIVE, FREE OF DELETERIOUS MATERIAL AND MEET THE FOLLOWING CHARACTERISTICS:

   A. ALLOWABLE WET SOIL DENSITY: 110 - 120 PCF.
   B. ASTM D2487 CLASSIFICATION: SM, SM-SC, SC
   C. ASTM D1140 MATERIAL FINER THAN #200 SIEVE (0.075MM) -MIN. 25%: MAX. 50%
   D. MAXIMUM PARTICLE SIZE: 1"
   E. ASTM D4318: MAX LIQUID LIMIT = 35, MAX PLASTICITY INDEX = 12.
   F. REQUIREMENTS FOR EARTH COVER ECMS IN ACCORDANCE WITH DEFENSE EXPLOSIVES SAFETY REGULATION (DESR) 6055.09.

3. RETAINING WALLS HAVE BEEN DESIGNED USING THE FOLLOWING CRITERIA.

A. PASSIVE EQUIVALENT FLUID PRESSURE:	300 PSF / FT
B. AT-REST LATERAL PRESSURE WITH 2:1 BACKFILL (RESTRAINED):	
a. WITHOUT SEISMIC:	33 PSF / FT
b. WITH SEISMIC	71 PSF / FT
C. CANTILEVERED WALL LATERAL PRESSURE (UNRESTRAINED):	
a. WITHOUT SEISMIC:	40 PSF / FT
b. WITH SEISMIC	102 PSF / FT
D. FRICTION FACTOR BETWEEN SOIL AND CONCRETE PLACED AGAINST SOIL:	0.35
E. FRICTION FACTOR BETWEEN SOIL AND CONCRETE PLACED AGAINST FORMWORK:	0.25
F. MINIMUM SOIL COHESIVE STRENGTH:	500 PSF

4. SAND MATERIAL USED AS A FREE-DRAINING LAYER AT THE EXTERIOR CONCRETE SURFACES AT THE ROOF PANEL, ENDWALL, AND SIDEWALLS MUST MEET MINIMUM REQUIREMENTS FOR ECMS IN ACCORDANCE WITH DEFENSE EXPLOSIVES SAFETY REGULATION (DESR) 6055.09.

FOUNDATIONS: (CONTINUED)

5. FOOTINGS MUST HAVE A MINIMUM WIDTH OF 24 INCHES AND A MINIMUM BOTTOM DEPTH OF 24 INCHES BELOW ADJACENT GRADE.

6. STRUCTURAL DRAWINGS INDICATE GENERAL SLAB ON GRADE AND FOUNDATION PREPARATION. SEE PROJECT SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.

7. ALL FILLING, BACKFILLING AND COMPACTING MUST BE PER PROJECT SPECIFICATION. COMPACTION OF SOILS ON TOP OF MAGAZINE MUST BE PERFORMED WITH HAND COMPACTION TOOLS ONLY.

8. EXPANSIVE SOILS MUST NOT BE USED FOR BACKFILL OR FILL. BACKFILL AT RETAINING WALLS MUST CONFORM TO THE PROJECT SPECIFICATIONS.

9. ALL EXCAVATIONS MUST BE PROPERLY BACKFILLED. DO NOT PLACE BACKFILL BEHIND RETAINING WALLS BEFORE CONCRETE HAS ATTAINED FULL DESIGN STRENGTH. CONTRACTOR MUST BRACE OR PROTECT ALL BUILDING AND PIT WALLS BELOW GRADE FROM LATERAL LOADS UNTIL ATTACHING FLOORS ARE COMPLETELY IN PLACE AND HAVE ATTAINED FULL STRENGTH. CONTRACTOR MUST PROVIDE FOR DESIGN, PERMITS AND INSTALLATION OF SUCH BRACING.

10. CONTRACTOR MUST PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM SURFACE WATER, GROUND WATER AND SEEPAGE.

11. CONTRACTOR MUST PROVIDE FOR DESIGN AND INSTALLATION OF ALL CRIBBING, SHEETING, AND SHORING REQUIRED TO SAFELY RETAIN THE EARTH BANKS.

12. EXCAVATION FOR FOUNDATIONS MUST BE APPROVED BY THE CONTRACTING OFFICER PRIOR TO PLACING THE REINFORCING AND CONCRETE.

13. SHALLOW FOOTING FOUNDATIONS MUST BE PLACED AND INSTALLED IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS PREPARED FOR THE PROJECT.

14. FOUNDATION BACKFILL AND UTILITY TRENCH BACKFILL WITHIN BUILDING AREA MUST BE MECHANICALLY COMPACTED IN LAYERS PER THE SPECIFICATIONS TO THE APPROVAL OF THE CONTRACTING OFFICER. FLOODING WILL NOT BE PERMITTED.

15. NEW FOUNDATIONS MUST BEAR ON APPROVED, UNDISTURBED, NATURAL SUBGRADE SOILS OR ON PROPERLY COMPACTED AND APPROVED FILL MATERIALS PLACED DIRECTLY ABOVE APPROVED SUBGRADES AS INDICATED IN CONSTRUCTION DRAWINGS AND SPECIFICATIONS.

CAST-IN-PLACE CONCRETE:

1. THE DESIGN AND CONSTRUCTION OF REINFORCED CONCRETE MUST CONFORM TO THE ACI BUILDING CODE (ACI 318) AND THE FOLLOWING CODES AND STANDARD SPECIFICATIONS:

A.	CONCRETE MIXING	ASTM C94
B.	CONCRETE PLACEMENT	ACI 304

2. MATERIAL MUST CONFORM TO ALL OF THE FOLLOWING STANDARD SPECIFICATIONS, LATEST EDITION:

A.	PORTLAND CEMENT	ASTM C150, TYPE I OR II
B.	CONCRETE AGGREGATES	C33
C.	REINFORCING STEEL (GRADE 60)	ASTM A615 DEFORMED BARS
	ASTM A706 GRADE 60 IS NOT EQUIVALENT AND IS NOT ACCEPTABLE.	
D.	WELDED WIRE FABRIC (SHEET TYPE ONLY, ROLL TYPE NOT ACCEPTABLE)	ASTM A1064

3. CONCRETE MUST ATTAIN THE FOLLOWING 28-DAY COMPRESSIVE STRENGTHS, UNLESS OTHERWISE INDICATED:

A.	ALL STRUCTURAL CONCRETE:	5,000 PSI
B.	LEAN CONCRETE	3,000 PSI

4. CHLORIDES OR CHLORIDE SALTS ARE NOT ALLOWED IN THE CONCRETE MIXES.

5. ALL REINFORCING STEEL DETAILING AND PLACEMENT MUST CONFORM TO THE ACI DETAILING MANUAL PUBLICATION SP-66, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" ACI-318, AND THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI-315. PROVIDE ADEQUATE BOLSTERS, HI-CHAIRS, SUPPORT BARS, ETC., TO MAINTAIN SPECIFIED COVER FOR THE ENTIRE LENGTH OF ALL REINFORCING. SECURE ALL REINFORCING BARS, ANCHOR BOLTS AND OTHER CONCRETE INSERTS IN POSITION PRIOR TO PLACING CONCRETE.

6. WELDING OF REINFORCING STEEL IS PROHIBITED.

7. MINIMUM CONCRETE PROTECTION (COVER) FOR REINFORCEMENT MUST BE PROVIDED AS FOLLOWS UNLESS SPECIFICALLY CALLED OUT OTHERWISE IN PLANS AND DETAILS:

A.	CONCRETE PLACED AGAINST EARTH.	3 INCH
B.	CONCRETE PLACED AGAINST FORM AND LATER EXPOSED TO EARTH OR WEATHER.	2 INCH
C.	COLUMNS AND BEAMS (FROM TIE OR STIRRUP)	2 INCH
D.	SLAB EXPOSED TO WEATHER OR GROUND.	2 INCH
E.	SLABS AND WALLS (NOT EXPOSED TO WEATHER OR GROUND).	3/4 INCH

CAST-IN-PLACE CONCRETE: (CONTINUED)

8. PROJECTING CORNERS OF BEAMS, WALLS, COLUMNS, ETC., MUST BE FORMED WITH 3/4 INCH CHAMFER, UNLESS OTHERWISE NOTED.

9. PROVIDE SLEEVES FOR ELECTRICAL OPENINGS IN CONCRETE BEFORE PLACING. DO NOT CUT ANY REINFORCING WHICH MAY CONFLICT. CORING IN CONCRETE IS NOT PERMITTED EXCEPT AS SHOWN. NOTIFY THE CONTRACTING OFFICER IN ADVANCE IF THE FIELD CONDITIONS DO NOT REFLECT THE CONDITIONS SHOWN ON THE DRAWINGS.

10. CONDUIT OR PIPE SIZE (O.D.) MUST NOT EXCEED 30 PERCENT OF SLAB THICKNESS AND MUST BE PLACED BETWEEN THE TOP AND BOTTOM REINFORCING UNLESS SPECIFICALLY DETAILED OTHERWISE. CONCENTRATIONS OF CONDUITS OR PIPES MUST BE AVOIDED EXCEPT WHERE DETAILED OPENINGS ARE PROVIDED.

11. ALL ROUGHENED SURFACES IN CONCRETE MUST BE MADE WITH A MINIMUM AMPLITUDE OF 1/4 INCH .

12. SEE SHEET S-002 FOR LIGHTWEIGHT CONCRETE MIX DESIGN FOR HIGH SECURITY MAGAZINE DOOR.

13. VERTICAL CONCRETE ELEMENTS LIKE COLUMNS AND PILASTERS, AS WELL AS HORIZONTAL MEMBERS LIKE HEADER BEAMS AND PARAPET BEAMS, ARE GOOD CANDIDATES FOR SELF CONSOLIDATED CONCRETE (SCC). THE CONTRACTOR SHALL CONSIDER THE USE OF SCC FOR THESE ELEMENTS AND/OR ADDITIONAL ELEMENTS IN WHICH REBAR CONGESTION OR ADEQUATE VIBRATORY CONSOLIDATIONS IS A CONCERN.

NOTES TO DESIGNER - REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION:

1. EDIT UFGS 01 45 35 "SPECIAL INSPECTIONS" IN ACCORDANCE WITH UFC 3-301-01 "STRUCTURAL ENGINEERING" AND INCORPORATE ADDITIONAL ITEMS IDENTIFIED IN APPENDIX C OF UFC 4-420-01.

2. SITE PARAMETERS FOR WIND AND SEISMIC LOADS INDICATED IN THE DESIGN CRITERIA NOTES SECTION OF THIS SHEET ARE BASED ON A SITE LOCATION OF GUAM. IF THE LOCAL CONDITIONS FOR THE PROJECT SITE REQUIRE MORE STRINGENT WIND AND/OR SEISMIC PARAMETERS, THE DESIGN CRITERIA AND STRUCTURAL DESIGN MUST BE REVISED ACCORDINGLY.

3. THESE DRAWINGS ARE TO BE UTILIZED IN CONJUNCTION WITH ALL DoD REQUIREMENTS FOR SITE ADAPTATIONS. EXAMPLES INCLUDE, BUT ARE NOT LIMITED TO, PHYSICAL SECURITY, CIVIL, FOUNDATIONS, AND SPECIFICATIONS. ANY DEVIATION FROM THE STANDARD DRAWINGS FOR THE MAGAZINE STRUCTURE ITSELF (ROOF, WALLS, INTERIOR COLUMNS, EARTH COVER, HEADER BEAM, PARAPET BEAM, PILASTER, BLAST DOOR, ETC) WITHOUT THE WRITTEN APPROVAL FROM THE DEPARTMENT OF DEFENSE EXPLOSIVE SAFETY BOARD (DDESB) MAY RESULT IN THE MAGAZINE TO BE CONSIDERED AN UNDEFINED MAGAZINE AND MAY SEVERELY RESTRICT STORAGE CAPACITY.

4. NEW SHEETS MUST BE ADDED AS NECESSARY BY THE SITE ADAPT ENGINEER FOR LANGUAGE TRANSLATIONS.

5. THE MAGAZINE ROOF SLAB, SIDE/REAR WALLS, PARAPET BEAM, AND WING WALLS IN THIS STANDARD DESIGN HAVE BEEN DESIGNED FOR THE BACKFILL SOIL PARAMETERS AND SOIL TYPES INDICATED IN THE FOUNDATIONS SECTION OF THE GENERAL NOTES. AVAILABLE SOILS FOR A GIVEN PROJECT SITE MAY VARY. THE SITE-ADAPT ENGINEER MUST SPECIFY BACKFILL SOIL MATERIALS THAT WILL MEET FOUNDATION CRITERIA INDICATED IN THE GENERAL NOTES WHENEVER POSSIBLE. IF LOCAL SOILS MEETING SPECIFIED REQUIREMENTS ARE NOT AVAILABLE, SEE NOTES TO DESIGNER #8.

6. THE CONTRACTOR MUST PERFORM A GEOTECHNICAL INVESTIGATION ON SITE TO CONFIRM THE SOIL CONDITION PRIOR TO COMMENCING FOUNDATION WORK. THE FOUNDATION DESIGN AND CRITERIA MUST BE MODIFIED TO REFLECT SOIL CONDITIONS AND SITE SPECIFIC SOIL CONDITIONS AND ALLOWABLE BEARING PRESSURE AS DETERMINED BY THE SITE ADAPTATION GEOTECHNICAL REPORT.

7. THE SITE ADAPT ENGINEER MUST CONDUCT A SITE-SPECIFIC GEOTECHNICAL INVESTIGATION FOR EACH MAGAZINE INSTALLATION. THE SITE ADAPT ENGINEER MUST COORDINATE THE FOUNDATION SYSTEMS, SELECTION OF FILL, SUBGRADE PREPARATION, AND COMPACTION REQUIREMENTS SHOWN IN THE STANDARD DRAWINGS WITH THE RECOMMENDATIONS FROM THE GEOTECHNICAL REPORT AND IMPLEMENT THEM INTO THE DRAWINGS AND SPECIFICATIONS.

8. SPECIFIED EARTH COVER MATERIALS IN THE FOUNDATION GENERAL NOTES ARE MORE STRINGENT THAN WHAT IS REQUIRED BY DESR 6055.09 AND WHAT HAS BEEN SPECIFIED FOR PREVIOUS MAGAZINE DESIGNS. THE SITE ADAPT ENGINEER MUST EVALUATE THE LOCAL AVAILABILITY OF SPECIFIED EARTH COVER MATERIALS. THE SITE ADAPT ENGINEER MAY SELECT ALTERNATIVE EARTH COVER MATERIALS, BUT THE MATERIAL MUST AT LEAST MEET REQUIREMENTS OF DESR 6055.09 AND THE MAGAZINE STRUCTURE MUST BE EVALUATED AS PART OF THE SITE ADAPT DESIGN FOR SPECIFIC SOIL PROPERTIES. THE ALTERNATIVE EARTH COVER MATERIAL SELECTED BY THE SITE ADAPT ENGINEER MUST STILL FALL IN THE 100-120 PCF DENSITY RANGE.

9. THE MAGAZINE SIDE WALLS AND WING WALLS AND CONNECTIONS HAVE BEEN DESIGNED FOR 2:1 SLOPE. THIS SLOPE CANNOT BE CHANGED UNLESS CALCULATIONS ARE PERFORMED TO ANALYZE ALL AFFECTED ELEMENTS. IF ANY ELEMENT IS MODIFIED, ENDORSEMENTS AND APPROVAL ARE REQUIRED FROM NAVFAC ATLANTIC, NAVFAC EXWC, NOSSA, AND DDESB.

10. FOR THE GROUNDING REEL AND CABLE ASSEMBLY THE DOR MUST PROVIDE SPECIFICATIONS. THE GROUNDING CABLE MUST MOVE WITH THE DOOR AND MUST NOT HAVE INTERFERENCES WHILE TRAVELING. THE DOR MUST REQUIRE THE CONTRACTOR TO PROVIDE A DELEGATED DESIGN WITH SHOP DRAWING AND CALCULATION SUBMITTAL PACKAGES.

11. PROVIDE BOTH LEADING AND TRAILING EDGE DOOR BUMPERS. DOOR BUMPERS ARE TO BE A DELEGATED DESIGN.

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	--
BRANCH MANAGER	--
CHIEF ENG/ARCH	--
FIRE PROTECTION	--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

GENERAL STRUCTURAL NOTES

SCALE:	NOT TO SCALE
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138779
SHEET	3 OF 85

S-001

DRAWFORM REVISION: 25 AUGUST 2020

STRUCTURAL STEEL:

1. DETAIL, FABRICATE, AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH THE "AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS," LATEST EDITION.
2. CONTRACTOR MUST REVIEW AND APPROVE STRUCTURAL STEEL SHOP DRAWINGS PRIOR TO SUBMITTAL TO THE CONTRACTING OFFICER. DO NOT BEGIN FABRICATION PRIOR TO THE COMPLETION OF THE SHOP DRAWING REVIEW PROCESS.
3. FURNISH STRUCTURAL STEEL THAT IS NEW, CLEAN, STRAIGHT, AND CONFORMING TO THE FOLLOWING STANDARD SPECIFICATION, LATEST EDITION:
   - A. STRUCTURAL STEEL WIDE FLANGE: ASTM A992
   - B. STRUCTURAL STEEL CHANNELS, ANGLES, S-SHAPES, AND PLATES: ASTM A992 OR ASTM A572, GRADE 50
   - C. HOLLOW STRUCTURAL STEEL SECTIONS: ASTM A500, GRADE C
   - D. ANCHOR BOLTS: ASTM F1554 (GRADE SPECIFIED AS REQUIRED)
   - E. HIGH STRENGTH BOLTS: ASTM F3125 GRADE A325
   - F. HEADED STUD ANCHORS: ASTM A29 (TYPE B)
   - G. STAINLESS STEEL: ASTM 240, TYPE 304
   - H. SUBSTITUTIONS OF STEEL SHAPES IS NOT PERMITTED.
4. STRUCTURAL STEEL MUST CONFORM TO THE FOLLOWING PROPERTIES OR COATINGS:
   - A. ALL WELDMENT AND EMBEDMENTS FABRICATED FOR THE DOOR JAMB, HEAD, LOCKING PILASTER, AND TRENCH MUST BE MADE OF TYPE 304 STAINLESS STEEL PER ASTM A240.
   - B. ALL DOOR STRUCTURAL STEEL MUST BE PRIMED AND PAINTED AFTER FABRICATION. REFER TO DOOR COATINGS NOTES ON S-002.
   - C. ALL OTHER STRUCTURAL STEEL INCLUDING CANOPY FRAMING MUST BE HOT DIP GALVANIZED PER ASTM A123 AND COATED A MINIMUM DRY FILM THICKNESS (DFT) OF 12 MILS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:
     - a. PRIMER COAT: SOLVENT-BASED TWO COMPONENT EPOXY ANTI-CORROSIVE PRIMER (3-5 MILS), MPI (THE MASTER PAINTERS INSTITUTE) #101.
     - b. INTERMEDIATE COAT: HIGH SOLIDS EPOXY COATING (3-5 MILS). MPI #108.
     - c. TOP COAT: HIGH SOLIDS POLYURETHANE COATING (3-5 MILS). MPI #72.
     - d. GALVANIZE STRUCTURAL STEEL AFTER FABRICATION WHERE PRACTICAL. REPAIR DAMAGED GALVANIZED COATING USING ASTM A780 ZINC-RICH PAINT. FIELD CUTTING OF ANY HOT-DIP GALVANIZED HARDWARE IS NOT PERMITTED.
5. REPAIR ABRADED AND RUSTED SHOP PAINT WITH SAME PAINT AS SPECIFIED IN STRUCTURAL STEEL NOTE 4C.
6. WELDING MUST COMPLY WITH THE "STRUCTURAL WELDING CODE - STEEL" (AWS D1.1) AND THE "STRUCTURAL WELDING CODE - STAINLESS STEEL" (AWS D1.6). WELD ELECTRODES MUST BE E70XX. PASSIVATION OF STAINLESS STEEL WELDS MUST BE PERFORMED PER ASTM A380. UNLESS OTHERWISE NOTED, MINIMUM WELD SIZE MUST BE 1/4 INCH CONTINUOUS FILLET WELD.
7. UNLESS OTHERWISE NOTED WELD ALL SHOP CONNECTIONS AND BOLT ALL FIELD CONNECTIONS. THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF ALL CONNECTIONS, UNLESS OTHERWISE DETAILED.
8. DO NOT CUT OR BURN HOLES IN STRUCTURAL STEEL WITHOUT THE APPROVAL OF THE CONTRACTING OFFICER.
9. SPLICING OF STRUCTURAL STEEL IS NOT PERMITTED WITH THE EXCEPTION OF THE WT MEMBERS SUPPORTING THE TOP OF THE DOOR.
10. GROUT BELOW BASE PLATES WITH NON-SHRINK GROUT WITH COMPRESSIVE STRENGTH, f'c = 5,000 PSI.
11. COAT ALL STRUCTURAL STEEL EXPOSED TO SOIL WITH TWO COATS OF COAL TAR EPOXY. EPOXY MUST MEET THE REQUIREMENTS OF PAINT SPECIFICATION SSPC-16.
12. BLAST DOOR AND COMPONENTS MUST MEET THE FOLLOWING TOLERANCES.
    - A. BLAST DOOR MUST HAVE A TOTAL MAX FLATNESS TOLERANCE OF ±1/4" VERTICALLY AND HORIZONTALLY.
    - B. TRENCHES AND DOOR GUIDE RAIL MUST HAVE A ±1/4" MAX DIFFERENTIAL TOLERANCE PER EVERY 37'-0" .
    - C. POCKET SECURITY PILASTER AND ALL OTHER VERTICAL AND HORIZONTAL DOOR BEARING SURFACES MUST HAVE A ±1/4" MAX TOTAL TOLERANCE.

LIGHTWEIGHT CONCRETE:

1. THE FOLLOWING MIX DESIGN AND CONCRETE MATERIAL PROPERTIES MUST BE USED FOR THE LIGHTWEIGHT CONCRETE LAYER IN THE HIGH SECURITY DOOR:

LIGHTWEIGHT CONCRETE MIX DESIGN

MATERIAL	AMOUNT	UNIT	SPECIFIC GRAVITY	ASTM
LIGHTWEIGHT AGGREGATE	1530	lb	1.38	C331
CEMENT TYPE II	721	lb	3.15	C150
WATER	315	lb	1	C1602
SILICA FUME	82	lb	2.2	C1240
SUPERPLASTICIZER - TYPE A	8	oz*	1.27	C494
SYNTHETIC FIBERS - TYPE III	0.70	lb	0.855	C1116
TOTAL VOLUME	27	cu ft		
oz*/ 100lb OF CEMENTITIOUS MATERIAL				

LIGHTWEIGHT CONCRETE MATERIAL PROPERTY REQUIREMENTS

PROPERTY	AMOUNT	UNIT	ASTM
SLUMP	2 + 1/4	in	C143
MINIMUM DENSITY - UNIT WEIGHT	115	lb/cu ft	C138
STRENGTH (28 DAY MINIMUM)	4000	psi	C39

2. LIGHTWEIGHT AGGREGATES MUST BE DRY.
3. ADJUST WATER AMOUNT TO +/- 0.5 lb SO THAT MIX HOLDS SHAPE WHEN FORMED INTO A BALL IN THE HAND.
4. MIX CAN BE SPLIT FOR VOLUME NEEDED.
5. MIX PROCEDURE:
   - A. WEIGH OUT ALL MATERIALS.
   - B. IN A SEPARATE CONTAINER, COMBINE AND MIX HALF OF WATER, PLASTICIZER AND ALL FIBERS.
   - C. IN ANOTHER SEPARATE CONTAINER, COMBINE AND MIX SILICA FUME AND CEMENT.
   - D. POUR WATER WITH PLASTICIZER AND ALL FIBERS INTO MIXER.
   - E. POUR LIGHTWEIGHT FINE AGGREGATE INTO MIXER.
   - F. SLOWLY ADD SILICA FUME AND CEMENT TO MIXER.
   - G. ADD REMAINING WATER ADJUSTING AS NECESSARY (NOTE 3).
   - H. ALLOW TO MIX FOR AT LEAST 10 MINUTES.
   - I. WHEN MIX IS READY, POUR INTO DOOR CAVITIES OVER REBAR, TO PRESCRIBED DEPTH, ENSURE MIX FILLS ALL AREAS BEHIND REBAR, VIBRATE AS NECESSARY, NO VOIDS ALLOWED.
6. ALLOW CONCRETE TO CURE FOR 14 DAYS BEFORE MOVING DOOR. THE 4X RED OAK AND EXTERIOR PLATES SHALL NOT BE INSTALLED OVER THE CONCRETE DOOR UNTIL TWO OF THE FOLLOWING THREE CONDITIONS OCCUR:
   - A. THE MOISTURE CONTENT ON THE SURFACE OF THE CONCRETE IS LESS THAN OR EQUAL TO 4.0 PERCENT AS MEASURED BY AN IMPEDANCE TEST PER ASTM F2659.
   - B. THE IN-SITU RELATIVE HUMIDITY INSIDE THE CONCRETE IS LESS THAN OR EQUAL TO 75.0 PERCENT AS MEASURED PER ASTM F2170.
   - C. 28 DAYS HAVE PASSED SINCE POURING THE CONCRETE.
7. QUESTIONS CAN BE REFERRED TO NAVFAC EXWC DOD LOCK PROGRAM, AND SECURITY, ENGINEERING DIV SH22.

STEEL DECK:

1. THE DESIGN, FABRICATION, AND ERECTION OF METAL DECKING MUST BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE SDI SPECIFICATIONS AND THE SDI DIAPHRAGM MANUAL
2. STEEL ROOF DECK AND SIDING IS 1 1/2" x 18 GAUGE FACTORY-FINISHED DESIGNED FOR THE DEAD AND LIVE LOADS INDICATED.
3. STEEL ROOF DECK AND SIDING MUST BE ATTACHED TO SUPPORTS WITH #14 STAINLESS STEEL SCREWS AT EACH VALLEY (MINIMUM 5 PER PANEL). PROVIDE AISI 304 STAINLESS STEEL SEALING CAPS WITH BONDED NEOPRENE WASHER OVER EACH FASTENER. USE 1/4-INCH BUTYL TAPE TO SEAL LAPS.
4. THE PLANS INDICATE DECK SPAN DIRECTION.
5. SUSPENDED CEILINGS, LIGHT FIXTURES, DUCTS, AND OTHER UTILITIES MUST NOT BE SUPPORTED FROM THE STEEL DECK.
6. STEEL DECK MUST CONFORM TO THE COATINGS FOR STRUCTURAL STEEL.

BLAST DOOR NOTES:

1. THE BLAST DOOR MANUFACTURER MUST BE SOLELY RESPONSIBLE FOR INSTALLATION AND ERECTION OF THE BLAST DOOR.
2. THE DOOR MANUFACTURER MUST COMMENCE A SHOP DEMONSTRATION OF EACH DOOR IN THE PRESENCE OF A GOVERNMENT OFFICIAL, CONSISTING OF A SUCCESSFUL CYCLE OF OPENING AND CLOSING THE DOOR BY CONTROLS, OPENING AND CLOSING OF TRENCH PLATES BY DOOR PLOWS AND ALIGNMENT OF DOOR IN SECURITY PILASTER. DEMONSTRATION MUST BE A MINIMUM OF HALF THE LENGTH OF THE DOOR TRAVEL. DEMONSTRATION MUST ALSO INCLUDE MANUAL OPERATION OF BLAST DOOR IN BOTH DIRECTIONS.
3. THE DOOR MANUFACTURER MUST COMMENCE A FIELD DEMONSTRATION OF EACH DOOR IN THE PRESENCE OF A GOVERNMENT OFFICIAL, CONSISTING OF A SUCCESSFUL CYCLE OF OPENING AND CLOSING THE DOOR BY CONTROLS, OPENING AND CLOSING OF TRENCH PLATES BY DOOR PLOWS, LOCKING AND UNLOCKING DOOR, AND ALIGNMENT OF DOOR IN SECURITY PILASTER.
4. THE BLAST DOOR MANUFACTURER MUST HAVE A MINIMUM OF 10 YEARS OF EXPERIENCE IN THE DESIGN, CONSTRUCTION AND INSTALLATION OF DOORS WEIGHING A MINIMUM OF 30 KIPS, CONSISTING OF BOTTOM ROLLING DOORS AND LARGE HEAVY DOORS SUCH AS MAGAZINE BLAST DOORS AND/OR NUCLEAR CONTAINMENT DOORS. THE BLAST DOOR MANUFACTURER MUST SUBMIT PROOF OF EXPERIENCE TO THE CONTRACTING OFFICER FOR APPROVAL BY NAVFAC EXWC AND NAVFAC ATLANTIC. A MINIMUM OF 5 EXAMPLES MUST BE SUBMITTED.
5. PROVIDE STEEL PLATE BOTTOM WHEELS HAVING A MINIMUM TREAD DIAMETER AS REQUIRED FOR THE ACTUAL WHEEL LOADING. CONSTRUCT WHEEL ASSEMBLES TO PERMIT REMOVAL OF THE WHEEL WITHOUT REMOVING THE DOOR LEAF FOR ITS POSITION ON THE RAIL.
6. THE GENERAL CONTRACTOR MUST SELECT A SINGLE SUPPLIER TO PROVIDE A COMPLETE BLAST DOOR SYSTEM INCLUDING BUT NOT LIMITED TO THE BLAST DOOR AND ALL OF ITS ASSOCIATED COMPONENTS AND HARDWARE, RAIL, TRENCH, TRENCH COVER ASSEMBLY, PLOW AND EMBEDDED PLATES.
7. PROVIDE A HAND RELEASE ON THE DESIGNED BRAKING SYSTEM TO RELEASE THE BRAKE WHEN IT BECOMES NECESSARY TO MANUALLY MOVE THE DOOR. PROVIDE AN AUTOMATIC RESET TYPE HAND RELEASE SO THAT THE BRAKE WILL BE OPERABLE DURING SUBSEQUENT ELECTRICAL OPERATIONS OF THE DOOR.
8. BLAST DOOR MANUFACTURER MUST PROVIDE A COMPLETE BLAST DOOR MANUAL THAT INCLUDES MAINTENANCE AND STEP BY STEP INSTRUCTIONS OF WHEEL REMOVAL.
9. THE PLOW/TRENCH COVER ASSEMBLY ALONG WITH THE WHEEL/MOTOR ASSEMBLY ARE NOTIONAL AND SHOWN FOR BIDDING PURPOSES AND MAY VARY BASED ON THE DOOR MANUFACTURER'S APPROVED DESIGN.

DOOR COATINGS:

1. ALL COATINGS AND INSTALLATION OF COATINGS MUST COMPLY WITH:
   - A. UFGS - 09 97 13.27.
   - B. SHOP COATINGS: SSPC (THE SOCIETY OF PROTECTIVE COATINGS) QP3.
   - C. FIELD COATINGS: SSPC QP1 + QS1.
   - D. COLOR: LIGHT GRAY.
2. SURFACE PREPARATION:
   - A. REMOVE SLAG FROM ALL WELDING SURFACES PRIOR TO CLEANING IN ACCORDANCE WITH NACE SP0178.
   - B. SOLVENT CLEAN SURFACE TO BE COATED PRIOR TO ABRASIVE BLASTING IN ACCORDANCE WITH SSPC SP1.
   - C. DRY ABRASIVE BLAST TO NEAR WHITE FINISH IN ACCORDANCE WITH SSPC SP10. BLAST PROFILE MUST BE 1-3 MILS TOOTH HEIGHT.
3. PAINT SYSTEMS:
   - A. TOTAL COATING DRY FILM THICKNESS (DFT): 12 MILS.
   - B. PRIMER COAT: ABRASION RESISTANT INORGANIC ZINC SILICATE PRIMER (3-5 MILS). SSPC PAINT 20, TYPE IC, LEVEL 1, WITH AT LEAST 85% ZINC IN DRY FILM.
   - C. INTERMEDIATE COAT: HIGH SOLIDS EPOXY COATING (3-5 MILS). MPI #108.
   - D. TOP COAT: HIGH SOLIDS POLYURETHANE COATING (3-5 MILS). MPI #72.
4. ALL SURFACES OF ALL DOOR COMPONENTS MUST BE SOLVENT CLEANED, DRY ABRASIVE BLASTED, AND ZINC RICH PRIMER COATED. PRIOR TO FULLY ASSEMBLING OR FABRICATING DOOR, CLEAN AND PRIMER SURFACES THAT WILL BECOME INACCESSIBLE AFTER DOOR IS ASSEMBLED. THE DOOR MUST NOT BE GALVANIZED. EPOXY INTERMEDIATE AND POLYURETHANE TOP COATS MUST BE APPLIED TO ALL EXTERIOR SURFACES OF THE FULLY-ASSEMBLED DOOR.

MECHANICAL MATERIALS

1. LOUVERS MUST BE CONSTRUCTED OF 16 GAUGE GALVANIZED STEEL WITH 4" DEEP FRAME. BLADES MUST BE 16 GAUGE GALVANIZED STEEL POSITIONED AT APPROXIMATELY 37.5 DEGREES DOWN FROM THE HORIZONTAL AND SPACED APPROXIMATELY 6" ON CENTER. SCREEN MUST BE 19 GAUGE GALVANIZED 1/4" MESH. APPROXIMATELY 50% FREE AREA.
2. VENTILATORS MUST BE CONSTRUCTED OF MINIMUM 24 GAUGE GALVANIZED STEEL AND MUST BE DESIGNED FOR A SUSTAINED WIND SPEED OF 132 MPH.
3. FIRE DAMPER FUSIBLE LINKS MUST HAVE A MELTING POINT OF 160 TO 165 DEGREES FAHRENHEIT. BREAKING STRENGTH MUST BE SUITABLE FOR LOADS IMPOSED BY COUNTERWEIGHTS.
4. PIPE FLANGE GASKETS MUST BE OF NON-ASBESTOS MATERIAL IN ACCORDANCE WITH ASME B16.21. GASKETS MUST BE FLAT, 1/16 INCH THICK, AND CONTAIN ARAMID FIBERS BONDED WITH STYRENE BUTADIENE RUBBER. FLANGE FASTENERS MUST BE TYPE 316 STAINLESS STEEL.
5. PROVIDE A DIELETRIC INSULATOR WHEREVER DISSIMILAR METALS CONTACT EACH OTHER.
6. PIPES UTILIZED FOR AIR MOVEMENT BETWEEN THE MECHANICAL ROOM AND MAGAZINE MUST BE ASTM A312 TP316 STAINLESS STEEL. PIPE FLANGES MUST BE IN ACCORDANCE WITH ASTM B16.5 AND ASTM A182 F316 STAINLESS STEEL.

ELECTRICAL BONDING & GROUNDING

1. ALL STEEL LOUVERS, VENTILATORS, GUARDRAILS, DOORS AND FRAMES MUST BE ELECTRICALLY BONDED TO THE MAGAZINE REINFORCING CAGE.
2. ALL STRUCTURAL AND MISCELLANEOUS ITEMS EMBEDDED IN CONCRETE MUST BE ELECTRICALLY BONDED TO THE REINFORCING CAGE BY WIRE TIES.
3. THE REINFORCING CAGE MUST BE MADE ELECTRICALLY CONTINUOUS BY WIRE TIES AT A MINIMUM OF 48 INCH ON CENTERS IN EVERY DIRECTION, REFER TO DETAIL A1 ON DRAWING E-504.
4. ALL WALLS AND CONSTRUCTION JOINTS MUST BE ELECTRICALLY BONDED. SEE THE ELECTRICAL DRAWINGS FOR DETAILS.
5. ALL STRUCTURAL STEEL AND REINFORCING STEEL MUST BE GROUNDED TO THE SECONDARY GROUND. SEE THE ELECTRICAL DRAWINGS FOR DETAILS.
6. BURIED OR EMBEDDED ITEMS MUST BE DOCUMENTED WITH PHOTOS AT INTERVALS OF 20 FEET .

PLUMBING MATERIALS

1. FLOOR DRAIN FIXTURES MUST CONSIST OF A CAST IRON BODY, NICKEL BRONZE ADJUSTABLE TOP, 6" ROUND STRAINER, FLASHING COLLAR, AND SURFACE MEMBRANE CLAMP. PROVIDE WITH DEEP SEAL TRAP AND BARRIER-TYPE TRAP SEAL PROTECTION DEVICE CONFORMING TO ASSE 1072 WHERE CONNECTING TO SANITARY SEWER SYSTEM.
2. UNDERGROUND DRAINAGE PIPING MUST CONSIST OF ASTM D2665 SCH 40 PVC SOLID CORE PIPING WITH DWV PATTERN FITTINGS. PERFORATED DRAIN PIPING MUST INCLUDE 1/2" DIAMETER HOLES SPACED 5" O.C. IN TWO ROWS 120 DEGREES APART PER ASTM D2729. ALL PERFORATED DRAIN PIPING MUST BE INSTALLED WITH HOLES FACING DOWN. WEEP HOLE PIPING EXTENDING THRU THE HEADWALL MUST BE SCH 80 PVC.
3. PREFABRICATED TRENCH DRAINS MUST BE 6" WIDE, SHALLOW, NO MORE THAN 6" DEEP, PRECAST POLYESTER CONCRETE CHANNEL OF INTERLOCKING DESIGN. 3" OUTLETS. DUCTILE IRON EDGE RAIL AND EXTRA HEAVY DUTY, DIN19580 LOAD CLASS E DUCTILE IRON SLOTTED TOP GRATE FASTENED TO RAIL. GRATE SLOTS MUST BE NO WIDER THAN 1/4" OR PROVIDE STAINLESS STEEL MESH SCREEN FASTENED TO BOTTOM OF GRATES. MESH OPENINGS MUST BE NO LARGER THAN 1/4" TO MITIGATE RODENT ENTRY.

SYM | DESCRIPTION | DATE | APPR

NAVFAC

SEAL

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES FJ	DRW MR	CHK DW

PM/DM	--
BRANCH MANAGER	--
CHIEF ENG/ARCH	--
FIRE PROTECTION	--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

GENERAL STRUCTURAL NOTES

SCALE:	NOT TO SCALE
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138780
SHEET	4 OF 85

S-002

DRAWFORM REVISION: 25 AUGUST 2020

SPECIAL INSPECTION SCHEDULE / VERIFICATION			
ITEM	EXTENT OF INSPECTION	REFERENCE	COMMENT / SCOPE
CONCRETE CONSTRUCTION			
REINFORCING STEEL PLACEMENT	P	ACI 318: 3.5, 26.6.2	INSPECT SIZE, SPACING, COVER, POSITIONING AND GRADE OF REINFORCING STEEL. VERIFY THAT REINFORCING BARS ARE FREE OF FORM OIL OR OTHER DELETERIOUS MATERIALS. INSPECT BAR LAPS AND MECHANICAL SPLICES. VERIFY THAT BARS ARE ADEQUATELY TIED AND SUPPORTED ON CHAIRS OR BOLSTERS.
CONCRETE PLACEMENT	C	ACI 318: 26.5.2	INSPECT PLACEMENT OF CONCRETE. VERIFY THAT CONCRETE CONVEYANCE AND DEPOSITING AVOIDS SEGREGATION OR CONTAMINATION. VERIFY THAT CONCRETE IS PROPERLY CONSOLIDATED.
SAMPLING AND TESTING OF CONCRETE	C	ASTM C 172; ASTM C 31; ACI 318: 26.12	TEST CONCRETE COMPRESSIVE STRENGTH, SLUMP, AIR-CONTENT AND TEMPERATURE
CURING AND PROTECTION	P	ACI 318: 26.5.3-26.5.5	INSPECT CURING, COLD WEATHER PROTECTIONS AND HOT WEATHER PROTECTION PROCEDURES.
FORMWORK	P	ACI 318: 26.11	INSPECT FLATWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.
DOOR CONSTRUCTION			
FABRICATOR CERTIFICATION/ QUALITY CONTROL PROCEDURES	S		REVIEW OF FABRICATOR'S QUALITY CONTROL PROCEDURES OR AISC CERTIFICATION.
FABRICATION INSPECTION	P		INSPECT IN-PLACE FABRICATION, OR REVIEW FABRICATOR'S APPROVED INDEPENDENT INSPECTION AGENCY'S REPORTS
SHOP DEMONSTRATION	C		SEE BLAST DOOR NOTES
SPECIAL ITEMS RELATED TO THE OTHER EXPLOSIVES SAFETY RELATED ITEMS			
REBAR FARADAY-SHIELD	P	DWG EG201; E-501; E-504	INSPECT REINFORCING STEEL TO ENSURE ELECTRICAL CONTINUITY BETWEEN THE CAP, WALLS, SLAB AND FOUNDATION THROUGH CRIMPED CONNECTIONS. DOCUMENT CONNECTIONS WITH PHOTOS AND CONTINUITY TEST. ALL CRIMPED CONNECTIONS MUST BE INSPECTED PRIOR TO CONCRETE PLACEMENT.
ECM GROUNDING	P	DWGS EG201; E-501; E-504	VISUALLY INSPECT TO ENSURE ECM FOUNDATION IS BONDED TO THE GROUNDING SYSTEM. DOCUMENT WITH PHOTOS.
GROUNDING SYSTEM	P	DWGS EG201; E-501; E-504, DA PAM 385-64, 17-27.	VISUALLY INSPECT GROUNDING SYSTEM CONDUCTORS TO ENSURE NO DAMAGE, BREAKAGE, OR CORROSION HAS OCCURRED TO THE CONDUCTORS DURING INSTALL AND BEFORE EARTH BURIAL DOCUMENT WITH PHOTOS.
INDIVIDUAL BONDS	P	DWGS EG201; E-501; E-504, NFPA 780, 8.9; DA PAM 385-64,17.27.	INSPECT ALL BONDS FOR LOOSE CONNECTIONS THAT MIGHT RESULT IN HIGH-RESISTANCE CONNECTIONS.
LPS COMPONENTS	P	NFPA 780, 8.9; DA PAM 385-64, 17-27	INSPECT LPS COMPONENTS FOR SECURE MOUNTING AND PROTECTION AGAINST ACCIDENTAL MECHANICAL DISPLACEMENT.
LPS TESTING	S	NFPA 780, 8.9 DA PAM 385-64, 17-28	PERFORM BONDING TEST ACROSS EACH BOND, AND AN EARTH ELECTRODE TEST OF THE LPS.
EARTH COVER	P	DWGS S-301	INSPECT DEPTH GAUGES ON ROOF PRIOR TO EARTH COVER PLACEMENT FOR SIZE AND STABILITY. INSPECT EARTH COVER DEPTH AND SLOPE TO ENSURE A 2'-0" MINIMUM IS PROVIDED ABOVE STRUCTURE.
DOOR CONTACT POINTS	C	DWGS S-205, S-505	INSPECT BEARING SURFACE AT TOP OF DOOR FRAME AND THE TRENCH AT THE BOTTOM OF THE DOOR.
MISCELLANEOUS EMBEDDED AND ATTACHED ITEMS (DOORS, FRAMES, TRENCHES, ETC)	P		INSPECT EMBEDDED AND ATTACHED ITEMS TO ENSURE THEY ARE BONDED TO THE GROUNDING SYSTEM. DOCUMENT WITH PHOTOS.
ADDITIONAL INSPECTIONS THAT MUST BE PERFORMED PER CHAPTER 17 OF THE IBC.			
STEEL CONSTRUCTION	P	IBC SEC 1705.2	
CONCRETE CONSTRUCTION	C	IBC SEC 1705.3	
SOILS	C	IBC SEC 1705.6	
DRIVEN DEEP FOUNDATIONS	P	IBC SEC 1705.7	
CAST-IN-PLACE DEEP FOUNDATIONS	P	IBC SEC 1705.8	
HELICAL PILE FOUNDATIONS	P	IBC SEC 1705.9	
FABRICATED ITEMS	P	IBC SEC 1705.11	
SPECIAL INSPECTIONS FOR WIND RESISTANCE	P	IBC SEC 1705.12	
SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE	P	IBC SEC 1705.13	
TESTING FOR SEISMIC RESISTANCE	P	IBC SEC 1705.14	
ADDITIONAL SPECIAL INSPECTIONS			
TOLERANCES	C	SEE SPECIFICATIONS	

SPECIAL INSPECTION NOTES:

1. INSPECTION INTERVALS ARE AS FOLLOWS:
   - C – CONTINUOUS: THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED.
   - P – PERIODIC: THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR BEING PERFORMED AND AT THE COMPLETION OF THE WORK.
   - S – SUBMITTAL
2. STRUCTURAL TEST AND SPECIAL INSPECTIONS ARE BASED ON CHAPTER 17 OF THE IBC AND UFC 3-301-01.
3. CONTRACTOR MUST HIRE A QUALIFIED INSPECTION AND TESTING AGENCY TO PERFORM SPECIAL INSPECTIONS AND TESTING IN ACCORDANCE WITH THE IBC. SUBMIT INSPECTION REPORTS TO THE CONTRACTING OFFICER FOR EACH DAY SPECIAL INSPECTIONS AND TESTING ARE PERFORMED.
4. THE SPECIAL INSPECTIONS LISTED IN THIS TABLE ARE TO BE USED IN CONJUNCTION WITH ALL SPECIAL INSPECTION REQUIREMENTS PER THE IBC SHOWN.
5. THE CONTRACTOR MUST EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED UNDER SECTION 1705 OF THE IBC REQUIRING VERIFICATION AND INSPECTION. THE CONTRACTING OFFICER MUST ATTEND ALL OBSERVATIONS. THESE INSPECTIONS ARE IN ADDITION TO THE INSPECTIONS DEFINED IN SECTION 110. THE INSPECTING AGENCY MUST PROVIDE REPORTS OF THE SPECIAL INSPECTIONS DIRECTLY TO THE GOVERNMENT.

SYM | DESCRIPTION | DATE | APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES FJ | DRW MR | CHK DW

PM/DM --
BRANCH MANAGER --
CHIEF ENG/ARCH --
FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

GENERAL STRUCTURAL NOTES

SCALE: NOT TO SCALE
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138781
SHEET 5 OF 85

S-003

DRAWFORM REVISION: 25 AUGUST 2020

FILE NAME: C:\Users\kanus.c.ulrichs\OneDrive - US Navy-flankspeed\Projects\Update Std Mags\BOX TYPE G AND H\Type H Box ECM Standard Drawings Working Set\S-003.dwg LAYOUT NAME: S-003 - GENERAL STRUCTURAL NOTES PLOTTED: Wednesday, October 09, 2024 - 11:53am USER: kanus.c.ulrichs

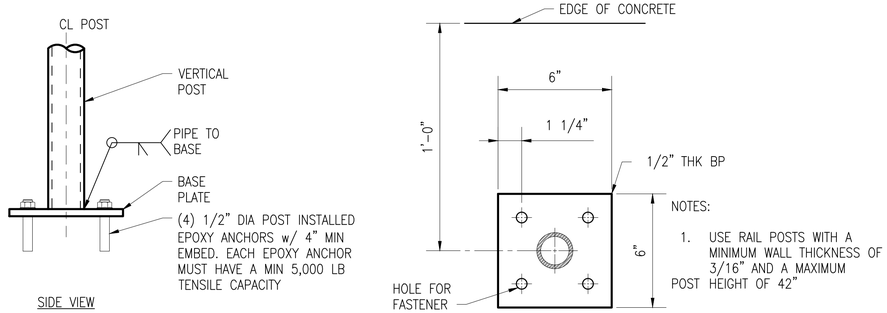
MINIMUM TENSION LAP SPLICE LENGTHS ("1.3l_d")			MINIMUM EMBEDMENT LENGTHS FOR STANDARD END HOOKS ("l_{dh}")		STRAIGHT DEVELOPMENT LENGTH	
BAR SIZE	f' = 5,000 PSI		BAR SIZE	f' ≥ 5,000 PSI	f' = 5,000 PSI	
	TOP BARS	OTHER BARS			TOP BARS	OTHER BARS
#3	31.2	31.2	#3	6	–	–
#4	36.9	31.2	#4	7	17.1	13.2
#5	46.1	35.5	#5	10	23.2	17.9
#6	55.4	42.6	#6	13	33.7	25.9
#7	80.7	62.1	#7	16	57.3	44.1
#8	92.3	71.0	#8	19	–	–
#9	104.1	80.1	#9	23	80.4	61.8
#10	117.2	90.1	#10	27	–	–
#11	130.1	100.1	#11	32	–	–

NOTES:

1. IF CONCRETE COVER IS NOT GREATER THAN THE DIAMETER OF THE BAR OR THE CENTER TO CENTER SPACING IS NOT GREATER THAN (3) BAR DIAMETERS, THEN VALUES MUST BE INCREASED BY 50%. ALL LAPS ARE TYPICAL TENSION LAP SPLICES UNO ON PLANS OR DETAILS.
2. "TOP BARS" ARE HORIZONTAL BARS WITH MORE THAN 12 INCH DEPTH OF CONCRETE CAST BELOW THEM.
3. LAPS SPLICES AND EMBEDMENT LENGTHS SHOWN IN THIS DETAIL ARE BASED ON A DYNAMIC INCREASE FACTOR = 1.29. LAPS FOR REINFORCEMENT IN STRUCTURAL COMPONENTS NOT RELATED TO BLAST DESIGN (WING WALLS, FOUNDATIONS, SLAB-ON-GRADE) MAY BE REDUCED BY THE DYNAMIC INCREASE FACTOR. LAP SPLICES FOR REINFORCEMENT IN BLAST COMPONENTS (HEADER BEAM, PARAPET BEAM, ROOF SLAB, SIDE/ END WALLS, PILASTERS, INTERIOR COLUMNS) MAY NOT BE REDUCED BY THE DYNAMIC INCREASE FACTOR.
4. DIMENSIONS GIVEN ARE IN INCHES. MULTIPLY BY 25.4 TO CONVERT TO MILLIMETERS.
5. WHEN SPLICING BARS OF DIFFERENT SIZES, THE LAP SPLICE LENGTH MUST BE THE GREATER OF THE SPLICE LENGTH OF THE SMALLER BAR OR THE DEVELOPMENT LENGTH OF THE LARGER BAR.

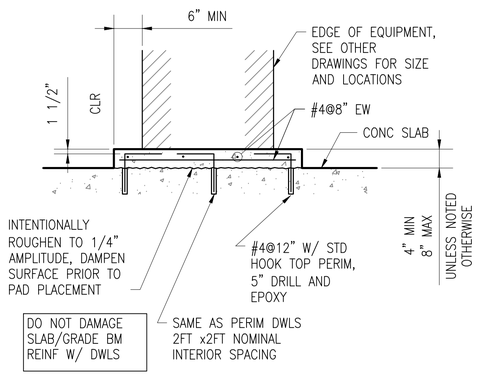
C1 REINFORCEMENT SPLICE SCHEDULE

NOT TO SCALE



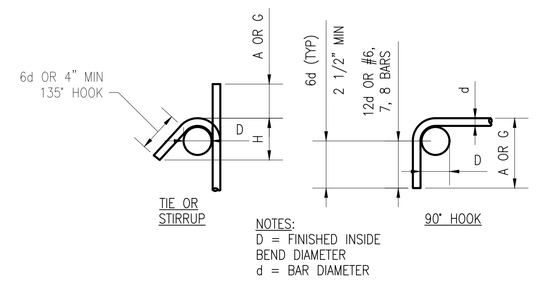
B1 ALUMINUM GUARDRAIL POST DETAIL

NOT TO SCALE



A1 TYPICAL MISCELLANEOUS HOUSEKEEPING PAD (INTERIOR)

NOT TO SCALE



PRINCIPAL REINFORCING

STIRRUP HOOKS 135° SEISMIC HOOK			
BAR SIZE	D	A OR G	APPROX H
#3	1.5	4	2.5
#4	2	4.5	3
#5	2.5	5.5	3.75
#6	4.5	8	4.5
#7	5.25	9	5.25
#8	6	10.5	6

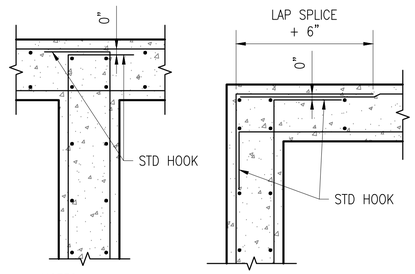
BAR SIZE	DIMENSIONS OF STANDARD 180-DEG HOOKS, ALL GRADE			DIMENSIONS OF STANDARD 90-DEG HOOKS, ALL GRADE	
	A OR G	J	D	A OR G	D
#3	5	3	3	6	3
#4	6	4	3	8	3
#5	7	5	4	10	4
#6	8	6	5	12	5
#7	10	7	6	14	6
#8	11	8	6	16	6
#9	15	12	10	19	10
#10	17	14	11	22	11
#11	19	15	12	24	12

NOTES:

1. DIMENSIONS GIVEN ARE IN INCHES. MULTIPLY BY 25.4 TO CONVERT TO MILLIMETERS.

C3 STIRRUPS AND TIE HOOK DIMENSIONS

NOT TO SCALE



NOTES:

1. ALL HOOKS MUST BE STD 90 DEGREE HOOKS UNO.
2. SEE DRAWINGS FOR ADDITIONAL HORIZONTAL BARS. STAGGER BETWEEN TYPICAL REINF SPACING, EXTEND TO 1/5 OF DISTANCE TO NEAREST ADJACENT WALL IN EACH DIRECTION, UNO.

A3 WALL REINFORCEMENT AT CORNERS AND INTERSECTIONS

NOT TO SCALE

APPR | DATE | DESCRIPTION | SYM

NAVFAC

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW
PM/DM					-.-
BRANCH MANAGER					-.-
CHIEF ENG/ARCH					-.-
FIRE PROTECTION					-.-

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

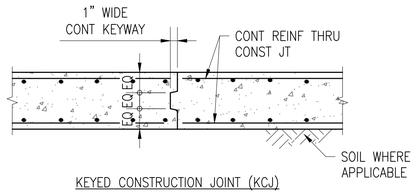
TYPE H BOX MAGAZINE

TYPICAL CONCRETE DETAILS

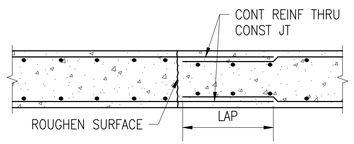
SCALE: NOT TO SCALE
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138782
SHEET 6 OF 85

S-004

DRAWFORM REVISION: 25 AUGUST 2020



KEYED CONSTRUCTION JOINT (KCJ)



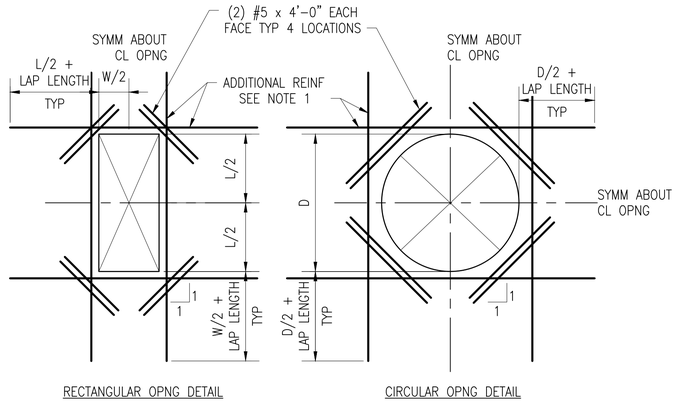
ROUGHENED CONSTRUCTION JOINT (CJ)

NOTES:

1. TO BE USED ONLY WHERE CALLED FOR IN THE CONTRACT DOCUMENTS, OR AS PERMITTED BY THE CONTRACTING OFFICER.

C1 CONSTRUCTION JOINT DETAIL

NOT TO SCALE



RECTANGULAR OPNG DETAIL

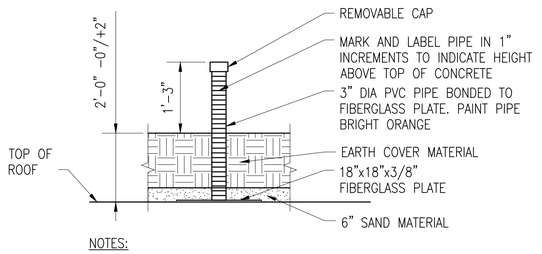
CIRCULAR OPNG DETAIL

NOTES:

1. PROVIDE ADDITIONAL REINFORCING THE SAME SIZE AS DISCONTINUOUS REINFORCEMENT AT OPENING. QUANTITY OF REINFORCING IN EACH DIRECTION MUST BE EQUAL TO OR ONE GREATER THAN THE NUMBER OF DISCONTINUOUS BARS. PLACE 1/2 OF ADDITIONAL REINFORCING BARS EACH SIDE OF OPENING, PLACE ADDITIONAL REINFORCEMENT AT 3" OC (TYPICAL BOTH DIRECTIONS AND ALL LAYERS OF REINFORCEMENT). START FIRST BAR 2" CLEAR OF OPENING.
2. EXTEND ADDITIONAL REINFORCING BEYOND EDGE OF OPENING AS SHOWN ABOVE. ADDITIONAL BARS SHALL TERMINATE AT THE END OF THE WALL WITH A STANDARD HOOK WHERE THE LENGTH OF THE WALL WILL NOT PERMIT BARS TO EXTEND AS SHOWN ABOVE.
3. TYPICAL WALL OR SLAB REINFORCING NOT SHOWN FOR CLARITY. TERMINATE TYPICAL REINFORCING 2" CLEAR OF OPENING.
4. ADDITIONAL REINFORCING AS SHOWN ABOVE IS REQUIRED FOR SLABS, WALLS, AND FOUNDATIONS WHERE THE OPENING SIZE IS GREATER THAN THE SPACING OF REINFORCING IN EITHER DIRECTION MINUS 4" OF CONCRETE COVER (2" COVER EACH SIDE OF OPENING).
5. PROVIDE OPENING ONLY WHERE SHOWN ON THE DRAWINGS. PROPOSED OPENINGS NOT SHOWN ON THE DRAWINGS MUST BE APPROVED BY THE CONTRACTING OFFICER.

C3 EXTRA REINFORCING AROUND OPENINGS

NOT TO SCALE

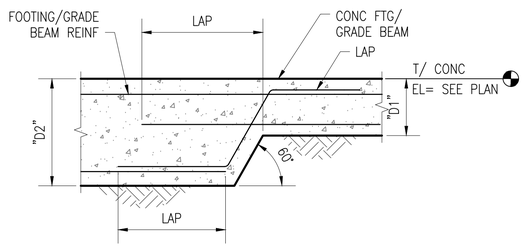


NOTES:

1. PLACE DEPTH GAUGE ABOVE WATERPROOFING MEMBRANE SYSTEM.

A1 DEPTH GAUGE DETAIL

NOT TO SCALE



A3 TYPICAL BOTTOM STEP FOOTING/ GRADE BEAM

NOT TO SCALE

APPR'R
DATE
DESCRIPTION
SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW
PM/DM					--
BRANCH MANAGER					--
CHIEF ENG/ARCH					--
FIRE PROTECTION					--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

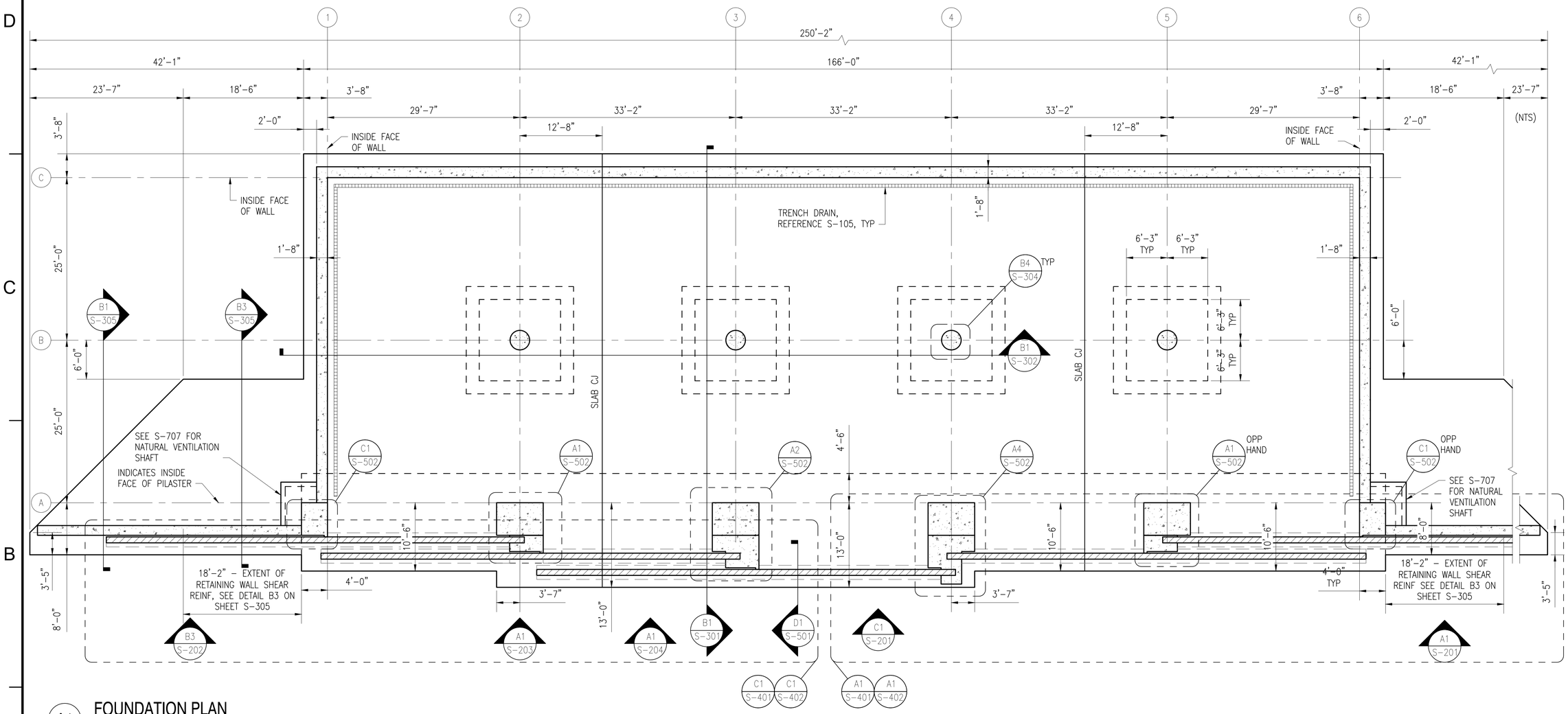
TYPE H BOX MAGAZINE

TYPICAL CONCRETE DETAILS

SCALE:	NOT TO SCALE
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138783
SHEET	7 OF 85

S-005

DRAWFORM REVISION: 25 AUGUST 2020



A1 FOUNDATION PLAN

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

0 4' 8' 16'

SHEET NOTES:

1. ALL ELEVATIONS ARE IN REFERENCE TO A DATUM ELEVATION OF 0'-0" FOR MAGAZINE FINISHED FLOOR ELEVATION. SEE CIVIL DRAWINGS FOR ACTUAL ELEVATIONS.
2. SEE SHEET S-001, S-002, AND S-003 FOR GENERAL NOTES.
3. ALL REINFORCING STEEL MUST BE CONTINUOUSLY BONDED AND GROUNDED PER S-002 AND ELECTRICAL DRAWINGS.
4. SLAB ON GRADE CONSTRUCTION JOINTS ARE INDICATED AS "CJ" ON PLAN. SEE STANDARD DETAIL ON S-005 FOR CONSTRUCTION JOINT DETAILS.
5. BLAST DOOR IS NOT SHOWN FOR CLARITY.
6. SEE SHEET S-102 FOR ARRANGEMENT OF SLAB REINFORCING.
7. SEE SHEET S-105 FOR FOUNDATION DRAINAGE FLOOR PLAN.
8. CONNECT CIVIL PAVEMENT TO MAGAZINE SLAB SO THERE IS NO DIFFERENTIAL MOVEMENT OR SETTLEMENT.
9. DIMENSIONS PROVIDED WITHIN BRACKETS ARE IN UNITS OF MILLIMETERS ROUNDED TO THE NEAREST INTEGER NUMBER.

APPR'R | DATE | SYM | DESCRIPTION

NAVFAC

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APPROVED 05/22/2024

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ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
FIRE PROTECTION	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

FOUNDATION PLAN

SCALE:	1/8" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138784
SHEET	8 OF 85

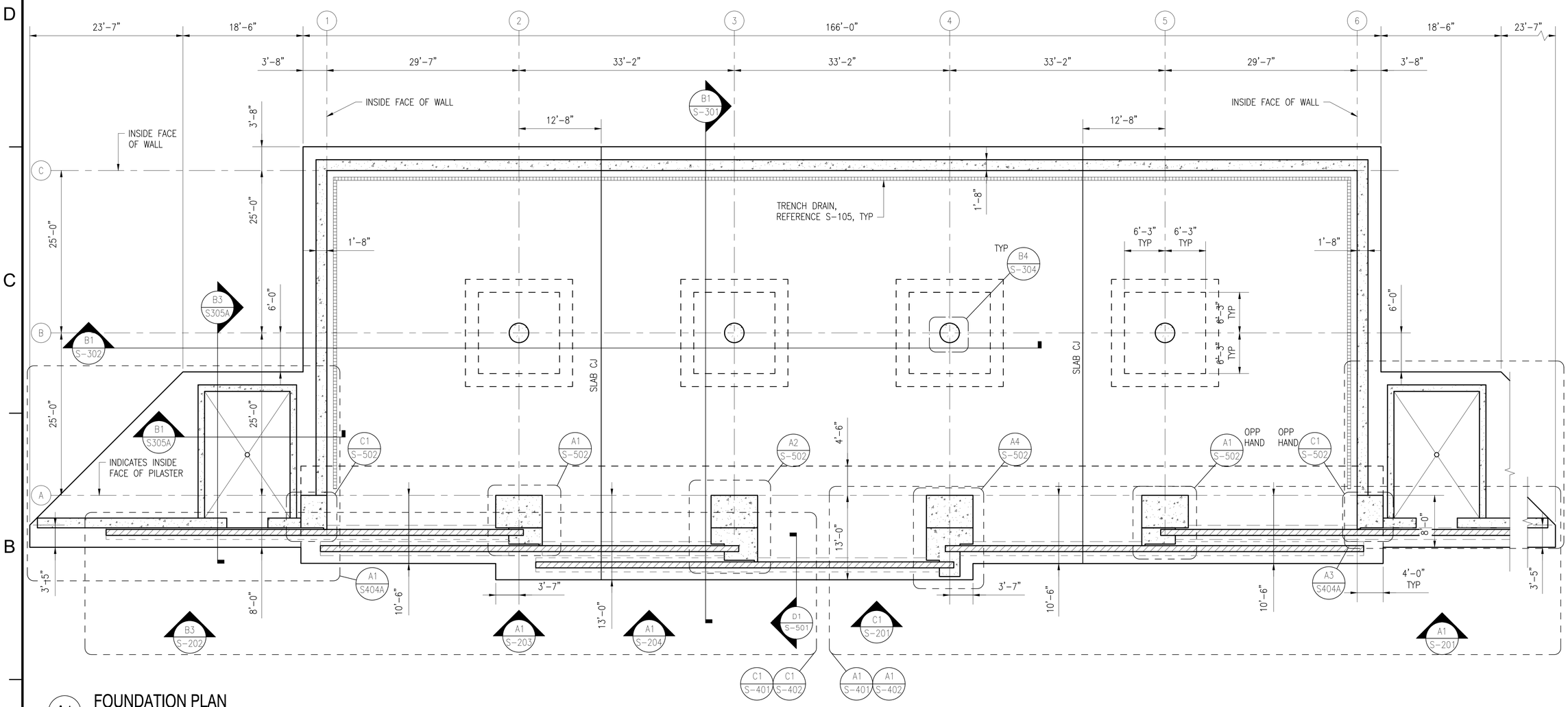
S-101

DRAWFORM REVISION: 25 AUGUST 2020

FILE NAME: C:\Users\Venus.culichs\OneDrive - US Navy-floorspeed\Projects\Update Std Mags\BOX TYPE G AND H\Type H Box ECM Standard Drawings Working Set\S-101.dwg LAYOUT NAME: S-101 - FOUNDATION PLAN PLOTTED: Wednesday, October 09, 2024 - 11:53am USER: kxnus.culichs

NOTES TO DESIGNER – REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION:

1. THE MECHANICAL ROOMS ARE ALTERNATE AND ARE NOT PART OF THE BASE DESIGN. THE ROOMS MAY BE ADDED ONLY IF JUSTIFIED THROUGH MISSION REQUIREMENTS.



A1 FOUNDATION PLAN

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

0 4' 8' 16'

SHEET NOTES:

1. ALL ELEVATIONS ARE IN REFERENCE TO A DATUM ELEVATION OF 0'-0" FOR MAGAZINE FINISHED FLOOR ELEVATION. SEE CIVIL DRAWINGS FOR ACTUAL ELEVATIONS.
2. SEE SHEET S-001, S-002, AND S-003 FOR GENERAL NOTES.
3. ALL REINFORCING STEEL MUST BE CONTINUOUSLY BONDED AND GROUNDED PER S-002 AND ELECTRICAL DRAWINGS.
4. SLAB ON GRADE CONSTRUCTION JOINTS ARE INDICATED AS "CJ" ON PLAN. SEE STANDARD DETAIL ON S-005 FOR CONSTRUCTION JOINT DETAILS.
5. BLAST DOOR IS NOT SHOWN FOR CLARITY.
6. SEE SHEET S-102 FOR ARRANGEMENT OF SLAB REINFORCING.
7. SEE SHEET S105A FOR FOUNDATION DRAINAGE FLOOR PLAN.
8. CONNECT CIVIL PAVEMENT TO MAGAZINE SLAB SO THERE IS NO DIFFERENTIAL MOVEMENT OR SETTLEMENT.
9. DIMENSIONS PROVIDED WITHIN BRACKETS ARE IN UNITS OF MILLIMETERS ROUNDED TO THE NEAREST INTEGER NUMBER.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

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APPROVED 05/22/2024

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ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

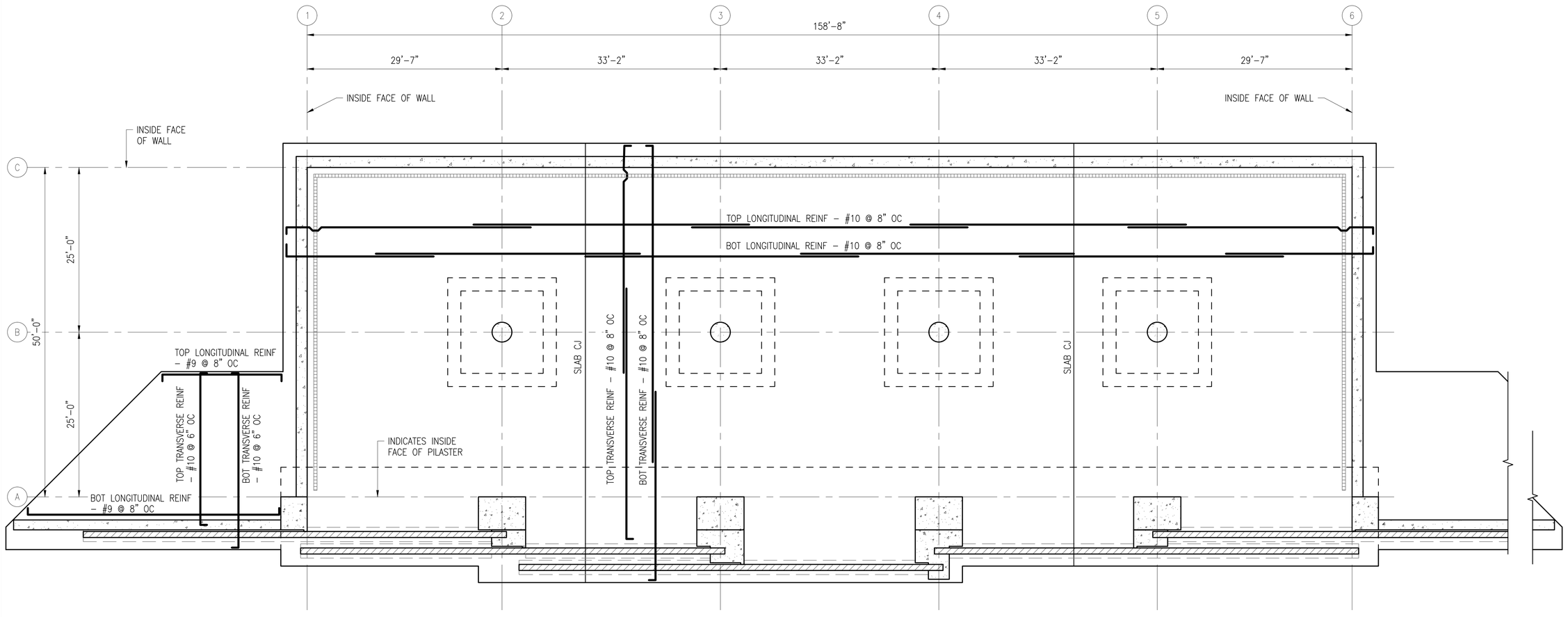
TYPE H BOX MAGAZINE

FOUNDATION PLAN – ALTERNATE

SCALE:	1/8" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138785
SHEET	9 OF 85

S101A

DRAWFORM REVISION: 25 AUGUST 2020



A1 FLOOR SLAB REINFORCING PLAN

SCALE: 1/8" = 1'–0"

0 4' 8' 16'

SHEET NOTES:

1. ALL ELEVATIONS ARE IN REFERENCE TO A DATUM ELEVATION OF 0'–0" FOR MAGAZINE FINISHED FLOOR ELEVATION. SEE CIVIL DRAWINGS FOR ACTUAL ELEVATIONS.
2. SEE SHEET S–001, S–002, AND S–003 FOR GENERAL NOTES.
3. ALL REINFORCING STEEL MUST BE CONTINUOUSLY BONDED AND GROUNDED PER S–002 AND ELECTRICAL DRAWINGS.
4. DIMENSIONS PROVIDED WITHIN BRACKETS ARE IN UNITS OF MILLIMETERS ROUNDED TO THE NEAREST INTEGER NUMBER.
5. SPLICE TOP BARS AT GRID LINES AND SPLICE BOTTOM BARS MIDWAY BETWEEN GRID LINES.

APPR'D | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

FLOOR SLAB REINFORCING PLAN

SCALE: 1/8" = 1'–0"

EPROJECT NO.: 1702805

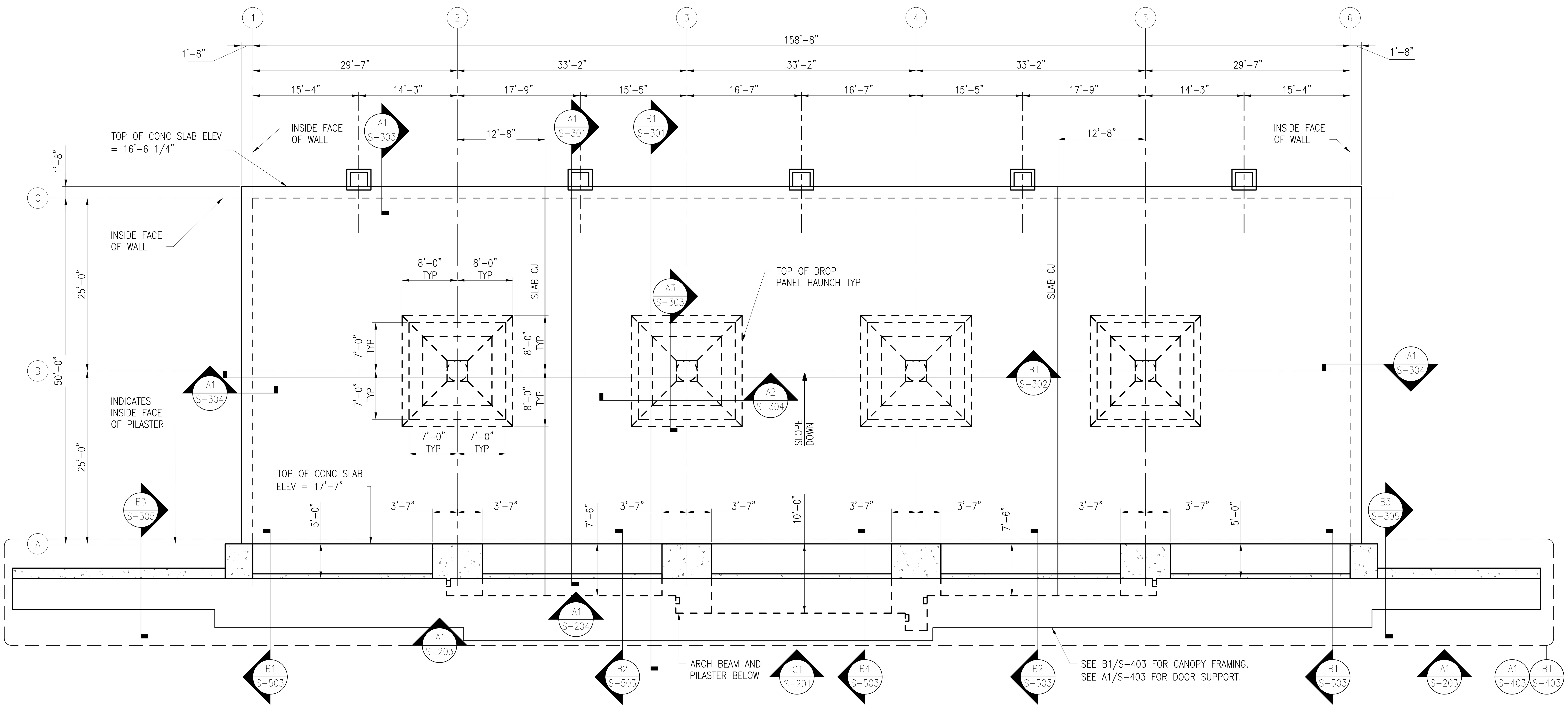
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
14138786

SHEET 10 OF 85

S-102

DRAWFORM REVISION: 25 AUGUST 2020



(A1) ROOF FRAMING PLAN

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

0 4' 8' 16'

SHEET NOTES:

1. ALL ELEVATIONS ARE IN REFERENCE TO A DATUM ELEVATION OF 0'-0" FOR MAGAZINE FINISHED FLOOR ELEVATION. SEE CIVIL DRAWINGS FOR ACTUAL ELEVATIONS.
2. SEE SHEET S-001, S-002, AND S-003 FOR GENERAL NOTES.
3. ALL REINFORCING STEEL MUST BE CONTINUOUSLY BONDED AND GROUNDED PER S-002 AND ELECTRICAL DRAWINGS.
4. CONCRETE SLAB MUST BE MOIST CURED FOR A MINIMUM OF 14 DAYS.
5. SEE S-005 FOR CONCRETE SLAB CONSTRUCTION JOINT DETAILS.
6. DIMENSIONS PROVIDED WITHIN BRACKETS ARE IN UNITS OF MILLIMETERS ROUNDED TO THE NEAREST INTEGER NUMBER.

SYM DESCRIPTION DATE APPR
NAVFAC
SEAL
A/E INFO
APPROVED 05/22/2024
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES FJ DRW MR CHK DW
PM/DM --
BRANCH MANAGER --
CHIEF ENG/ARCH --
FIRE PROTECTION --
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA
TYPE H BOX MAGAZINE
ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138787
SHEET 11 OF 85
S-103
DRAWFORM REVISION: 25 AUGUST 2020

NORTH/SOUTH				
CALLOUT	BAR SIZE	# OF BARS	CONTINUOUS OR DISCONTINUOUS	DISTRIBUTED WIDTH*
W1	#4	12	CONTINUOUS	5'–8"
M1–1	#6	31	CONTINUOUS	17'–3"
		5	DISCONTINUOUS	
M1–2	#5	31	CONTINUOUS	17'–3"
M1–3	#5	31	CONTINUOUS	16'–11"
		2	DISCONTINUOUS	
M1–4	#4	31	CONTINUOUS	17'–3"
		9	DISCONTINUOUS	
M1–5	#4	31	CONTINUOUS	17'–3"
		14	DISCONTINUOUS	
M2–1	#6	35	CONTINUOUS	19'–10"
		7	DISCONTINUOUS	
M2–2	#5	35	CONTINUOUS	19'–10"
M2–3	#5	35	CONTINUOUS	19'–2"
		2	DISCONTINUOUS	
M2–4	#4	35	CONTINUOUS	19'–10"
		10	DISCONTINUOUS	
M2–5	#4	35	CONTINUOUS	19'–10"
		15	DISCONTINUOUS	
M3–1	#6	35	CONTINUOUS	19'–10"
		7	DISCONTINUOUS	
M3–2	#5	35	CONTINUOUS	19'–10"
M3–3	#5	35	CONTINUOUS	19'–2"
		1	DISCONTINUOUS	

NORTH/SOUTH (CONT.)				
CALLOUT	BAR SIZE	# OF BARS	CONTINUOUS OR DISCONTINUOUS	DISTRIBUTED WIDTH*
M3–4	#4	35	CONTINUOUS	19'–10"
		10	DISCONTINUOUS	
M3–5	#4	35	CONTINUOUS	19'–10"
		14	DISCONTINUOUS	
C1–1	#6	26	CONTINUOUS	13'–4"
		4	DISCONTINUOUS	
C1–2	#7	26	CONTINUOUS	13'–4"
C1–3	#7	26	CONTINUOUS	14'–0"
		5	DISCONTINUOUS	
C1–4	#6	26	CONTINUOUS	13'–4"
		4	DISCONTINUOUS	
C1–5	#9	26	CONTINUOUS	13'–4"
		7	DISCONTINUOUS	
C2–1	#6	28	CONTINUOUS	13'–4"
		2	DISCONTINUOUS	
C2–2	#7	28	CONTINUOUS	13'–4"
C2–3	#7	28	CONTINUOUS	14'–0"
		4	DISCONTINUOUS	
C2–4	#6	28	CONTINUOUS	13'–4"
		4	DISCONTINUOUS	
C2–5	#9	28	CONTINUOUS	13'–4"
		6	DISCONTINUOUS	

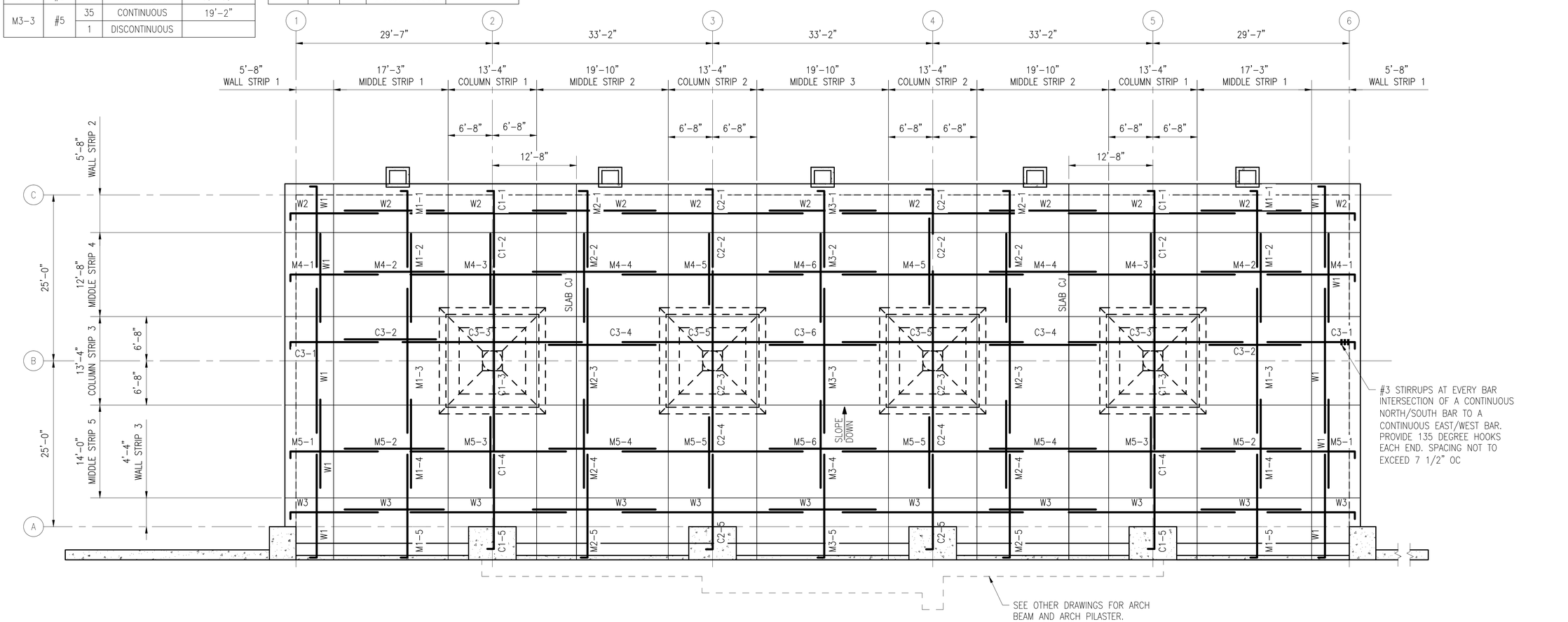
EAST/WEST				
CALLOUT	BAR SIZE	# OF BARS	CONTINUOUS OR DISCONTINUOUS	DISTRIBUTED WIDTH*
W2	#4	12	CONTINUOUS	5'–8"
M4–1	#7	21	CONTINUOUS	12'–8"
		7	DISCONTINUOUS	
M4–2	#6	21	CONTINUOUS	12'–8"
		3	DISCONTINUOUS	
M4–3	#6	21	CONTINUOUS	12'–4"
		5	DISCONTINUOUS	
M4–4	#5	21	CONTINUOUS	12'–8"
		7	DISCONTINUOUS	
M4–5	#6	21	CONTINUOUS	12'–4"
		1	DISCONTINUOUS	
M4–6	#6	21	CONTINUOUS	12'–8"
C3–1	#7	28	CONTINUOUS	13'–4"
		1	DISCONTINUOUS	
C3–2	#7	28	CONTINUOUS	13'–4"
C3–3	#7	28	CONTINUOUS	14'–0"
		7	DISCONTINUOUS	

EAST/WEST (CONT.)				
CALLOUT	BAR SIZE	# OF BARS	CONTINUOUS OR DISCONTINUOUS	DISTRIBUTED WIDTH*
C3–4	#6	28	CONTINUOUS	13'–4"
		3	DISCONTINUOUS	
C3–5	#7	28	CONTINUOUS	14'–0"
		2	DISCONTINUOUS	
C3–6	#6	28	CONTINUOUS	13'–4"
		5	DISCONTINUOUS	
M5–1	#7	23	CONTINUOUS	14'–0"
		8	DISCONTINUOUS	
M5–2	#6	23	CONTINUOUS	14'–0"
		3	DISCONTINUOUS	
M5–3	#6	23	CONTINUOUS	13'–8"
		6	DISCONTINUOUS	
M5–4	#5	23	CONTINUOUS	14'–0"
		7	DISCONTINUOUS	
M5–5	#6	23	CONTINUOUS	13'–8"
		2	DISCONTINUOUS	
M5–6	#6	23	CONTINUOUS	14'–0"
W3	#4	9	CONTINUOUS	4'–4"

*CHANGES IN DISTRIBUTED WIDTH SHOULD BE ON SIDE(S) ADJACENT TO INTERIOR COLUMN(S).

SHEET NOTES:

1. SEE SHEET S–001, S–002, AND S–003 FOR GENERAL NOTES.
2. ALL REINFORCING STEEL MUST BE CONTINUOUSLY BONDED AND GROUNDED PER S–002 AND ELECTRICAL DRAWINGS.
3. THE ORDER OF BAR PLACEMENT IS AS FOLLOWS:
   1. BOTTOM – PLAN EAST/WEST BARS
   2. BOTTOM – PLAN NORTH/SOUTH BARS
   3. TOP – PLAN NORTH/SOUTH BARS
   4. TOP – PLAN EAST/WEST BARS
4. SPLICES TO OCCUR AT 1/3 SPAN AND 2/3 SPAN LOCATIONS. SPAN IS DEFINED AS THE DISTANCE BETWEEN GRIDS. AN EXCEPTION TO THIS DIRECTIVE: SPLICES OCCURING WITHIN A DROP PANEL SHALL BE SHIFTED SO THAT THE ENTIRE SPLICE OCCURS OUTSIDE THE DROP PANEL.
5. WHEN PLACING EACH LAYER OF REINFORCING, THE CONTRACTOR SHALL PLACE ALL CONTINUOUS BARS SHOWN FOR THAT FIRST LAYER. CONTINUOUS BARS ARE DEFINED AS BARS THAT WILL CONTINUE FROM ONE WALL OF THE MAGAZINE TO THE OPPOSITE WALL, WITH CONTACT SPLICES. THE DISCONTINOUS BARS SHALL THEN BE PLACED MIDWAY BETWEEN THE CONTINUOUS BARS, EQUALLY SPACED THROUGHOUT THE DISTRIBUTED WIDTH. FOR EXAMPLE, IF THERE ARE 28 CONTINUOUS BARS AND 7 DISCONTINUOUS BARS IN ONE LAYER, THE DISCONTINUOUS BARS WILL BE PLACED BETWEEN EVERY FOURTH CONTINUOUS BAR. ENSURE ONE DISCONTINUOUS BAR IS PLACED AT EACH EDGE OF THE DROP PANEL.
6. SCHEDULED BARS SHALL BE PROVIDED FOR BOTH A TOP LAYER AND A BOTTOM LAYER WITHIN THE SLAB. THE REINFORCING SIZE, SPACING, QUANTITIES AND SPLICES ARE IDENTICAL FOR BOTH THE TOP AND BOTTOM BARS.
7. DISCONTINUOUS BARS SHALL BE SPLICED/TERMINATED AT THE SAME LOCATIONS AS THE CONTINUOUS BARS. THEREFORE, FOR EACH SPECIFIC CALLOUT, THE DISCONTINUOUS AND CONTINUOUS BARS SHALL BE THE SAME LENGTH AND SPLICED/TERMINATED AT THE SAME LOCATIONS.
8. CALLOUTS C1–3, C2–3, C3–3, AND C3–5 OCCUR AT THE DROP PANEL LOCATIONS. THESE LOCATIONS WILL HAVE THREE LAYERS OF REINFORCING IN EACH DIRECTION IN LIEU OF TWO LAYERS OF REINFORCING IN EACH DIRECTION. THE THIRD LAYER SHALL BE IDENTICAL TO THE OTHER TWO LAYERS. THIS CAN BE SEEN ON A3/S–303 AND A2/S–304.
9. THERE ARE TWO DISTRIBUTED WIDTHS FOR ALL COLUMN AND MIDDLE STRIPS. FOR EACH STRIP, THE CONTINUOUS BARS SHALL BE DISTRIBUTED OVER THE NARROWER DISTRIBUTED WIDTH. DISCONTINUOUS BARS SHOULD BE DISTRIBUTED OVER THE WIDER DISTRIBUTED WIDTH INCLUDING ONE BAR PLACED OUTSIDE THE NARROWER DISTRIBUTED WIDTH. STRIPS THAT ARE 8 INCHES WIDER SHALL HAVE ONE DISCONTINUOUS BAR ON EACH EXTREME EDGE OF THE STRIP. STRIPS THAT ARE 4 INCHES WIDER SHALL HAVE ONE DISCONTINUOUS BAR ON THE SIDE ADJACENT TO THE INTERIOR COLUMN.
10. AT LOCATIONS WITH BARS OF EQUAL SIZE AND SPACING, A SPLICE MAY BE ELIMINATED AT THE CONTRACTOR'S DISCRETION.



A1 ROOF SLAB REINFORCING PLAN

SCALE: 1/8" = 1'–0"

0 4' 8' 16'

APPR | DATE | DESCRIPTION | SYM

NAVFAC

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ROOF SLAB REINFORCING PLAN

SCALE: 1/8" = 1'–0"

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
14138788

SHEET 12 OF 85

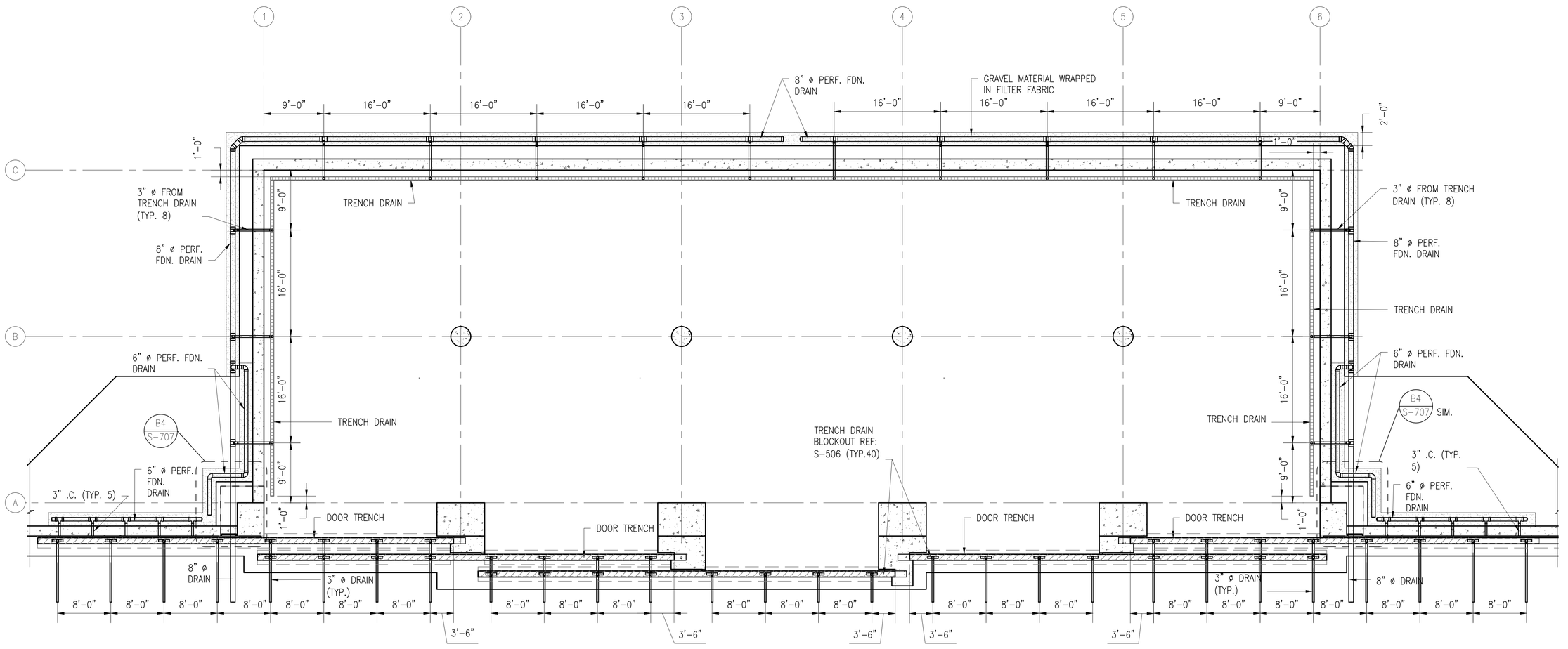
S-104

DRAWFORM REVISION: 25 AUGUST 2020

FILE NAME: C:\Users\kanus.c.ulrichs\OneDrive - US Navy–floridaspeed\Projects\Update Std Mags\BOX TYPE G AND H\Type H Box ECM Standard Drawings Working Set\S–104.dwg LAYOUT NAME: S–104 – ROOF SLAB REINFORCING PLAN PLOTTED: Wednesday, October 09, 2024 – 11:53am USER: kanus.c.ulrichs

NOTES TO DESIGNER – REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION:

1. FINAL CONFIGURATION AND TERMINATION OF DRAINAGE MUST BE DETERMINED BY THE SITE ADAPT ENGINEER.



A1 DRAINAGE AND VENTILATION PLAN

SCALE: 1/8" = 1'–0"

0 4' 8' 16'

APPR	DATE	DESCRIPTION	SYM

NAVFAC

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

DRAINAGE AND VENTILATION PLAN

SCALE: 1/8" = 1'–0"

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138789

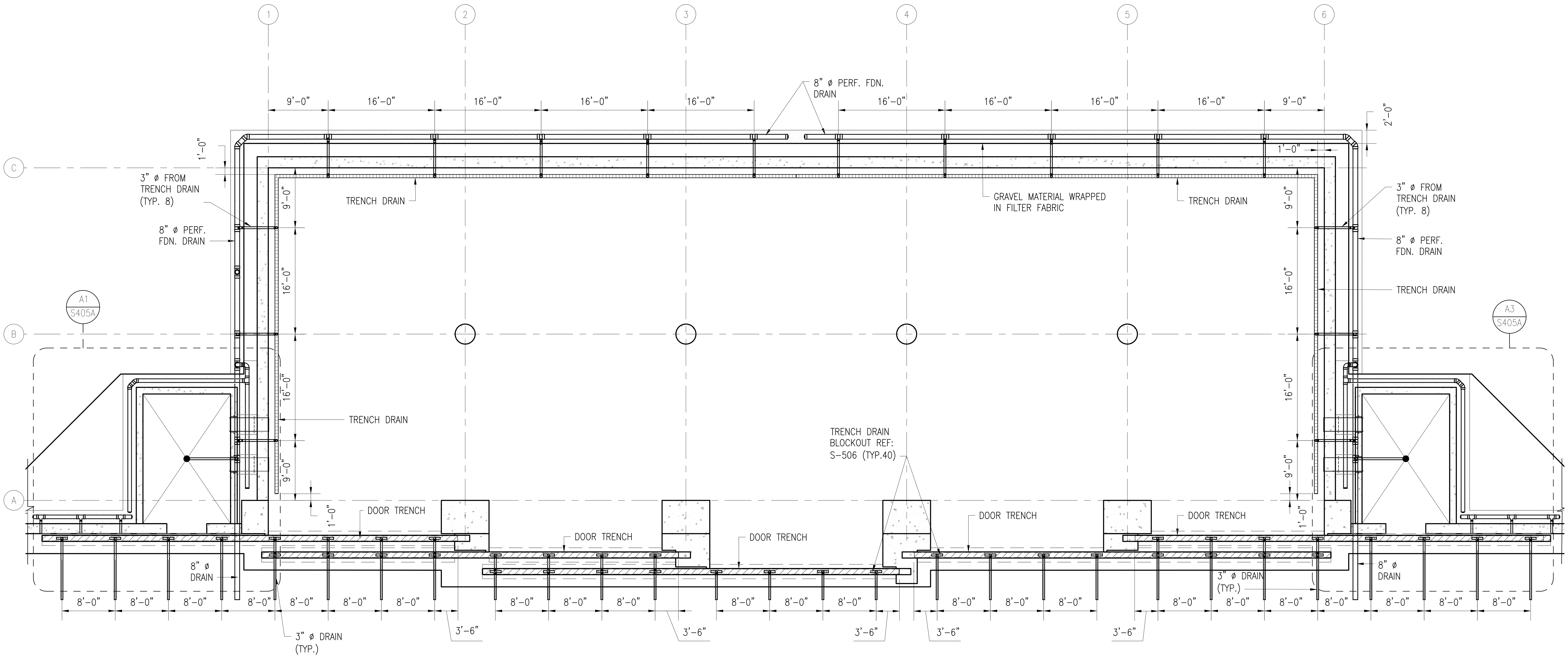
SHEET 13 OF 85

S-105

DRAWFORM REVISION: 25 AUGUST 2020

NOTES TO DESIGNER – REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION:

1. THE MECHANICAL ROOMS ARE ALTERNATE AND ARE NOT PART OF THE BASE DESIGN. THE ROOMS MAY BE ADDED ONLY IF JUSTIFIED THROUGH MISSION REQUIREMENTS.
2. FINAL CONFIGURATION AND TERMINATION OF DRAINAGE MUST BE DETERMINED BY THE SITE ADAPT ENGINEER.
3. NATURAL VENTILATION INTAKE AND RELIEF SHAFTS ARE NOT REQUIRED WHEN THE MECHANICAL ROOM OPTION IS EXERCISED.
4. THE SITE ADAPT ENGINEER MUST DETERMINE THE FINAL NUMBER OF MECHANICAL ROOMS REQUIRED TO MEET THE PROJECT REQUIREMENTS.



A1 DRAINAGE AND VENTILATION PLAN - ALTERNATE

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

0 4' 8' 16'

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM --

BRANCH MANAGER --

CHIEF ENG/ARCH --

FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

DRAINAGE AND VENTILATION PLAN – ALTERNATE

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

EPROJECT NO.: 1702805

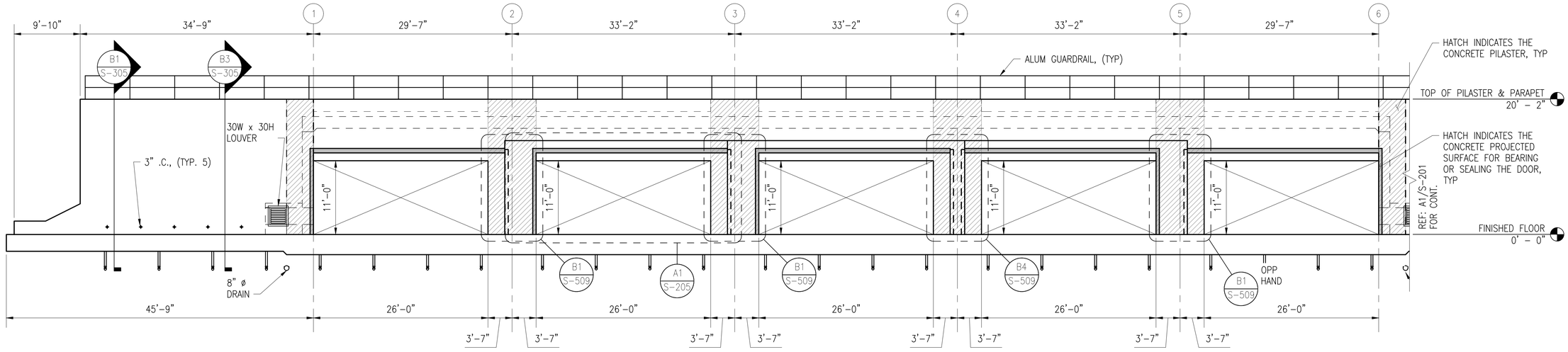
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138790

SHEET 14 OF 85

S105A

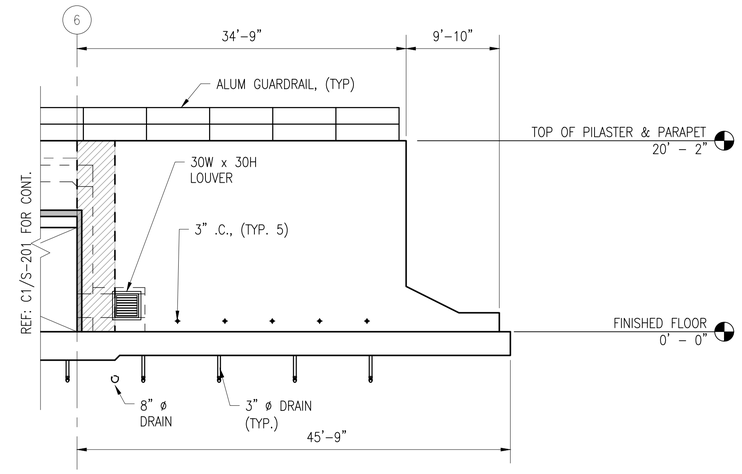
DRAWFORM REVISION: 25 AUGUST 2020



C1 EXTERIOR ELEVATION

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

0 4' 8' 16'



A1 EXTERIOR ELEVATION CONTINUED

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

0 4' 8' 16'

APPR	DATE	SYM	DESCRIPTION

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM --

BRANCH MANAGER --

CHIEF ENG/ARCH --

FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

FRAMING ELEVATIONS

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

EPROJECT NO.: 1702805

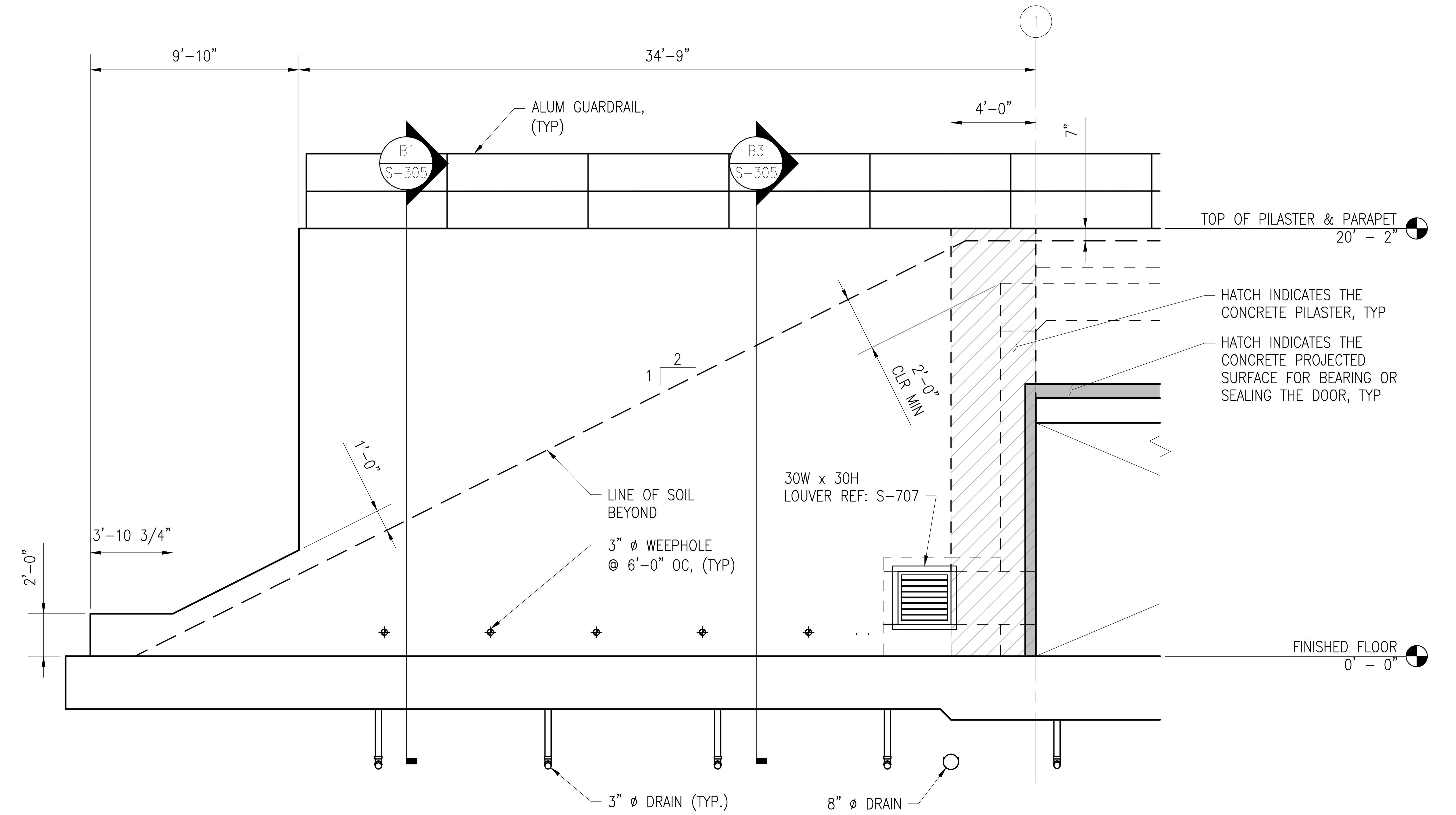
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138791

SHEET 15 OF 85

S-201

DRAWFORM REVISION: 25 AUGUST 2020



B3 RETAINING WALL ELEVATION

SCALE: 1/4" = 1'-0"

APPROVED	05/22/2024
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO	DATE
DES FJ	DRW MR CHK DW
PM/DM	--
BRANCH MANAGER	--
CHIEF ENG/ARCH	--
FIRE PROTECTION	--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

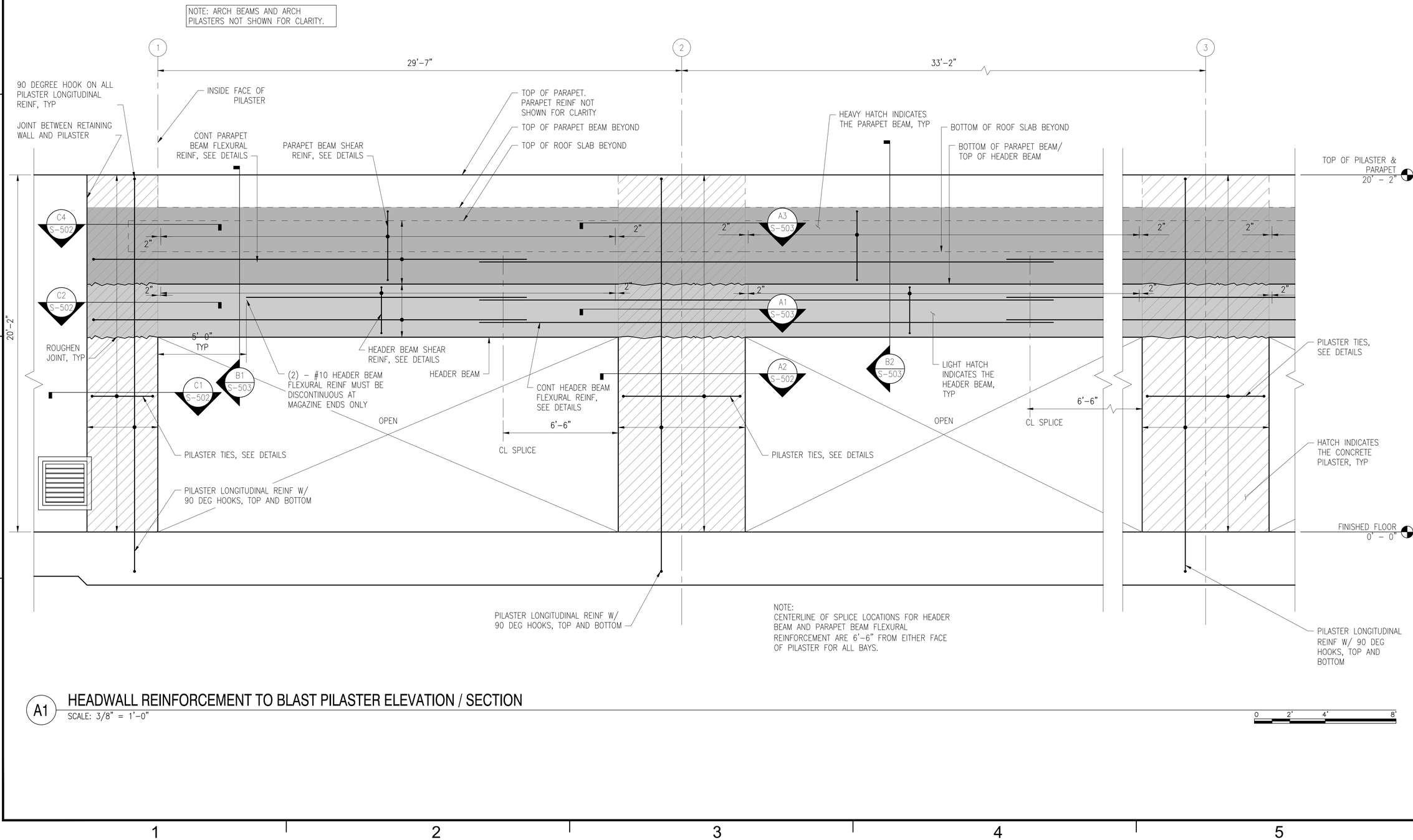
FRAMING ELEVATIONS

SCALE:	1/4" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138792
SHEET 16	OF 85

S-202

DRAWFORM REVISION: 25 AUGUST 2020

NOTE: ARCH BEAMS AND ARCH PILASTERS NOT SHOWN FOR CLARITY.



NOTE:
CENTERLINE OF SPLICE LOCATIONS FOR HEADER BEAM AND PARAPET BEAM FLEXURAL REINFORCEMENT ARE 6'–6" FROM EITHER FACE OF PILASTER FOR ALL BAYS.

A1 HEADWALL REINFORCEMENT TO BLAST PILASTER ELEVATION / SECTION

SCALE: 3/8" = 1'–0"

0 2' 4' 8'

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM –.–

BRANCH MANAGER –.–

CHIEF ENG/ARCH –.–

FIRE PROTECTION –.–

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

FRAMING ELEVATIONS

SCALE: 3/8" = 1'–0"

EPROJECT NO.: 1702805

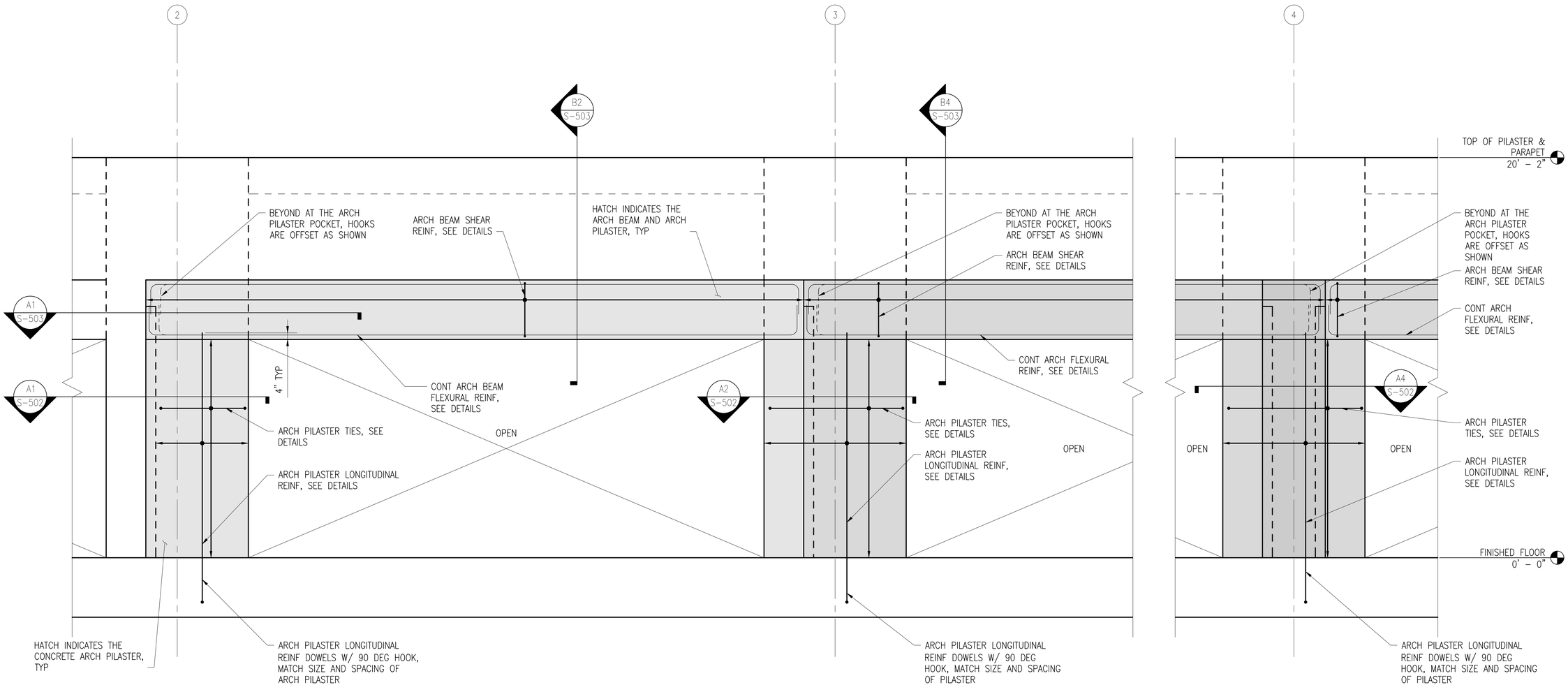
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138793

SHEET 17 OF 85

S-203

DRAWFORM REVISION: 25 AUGUST 2020



A1 ARCH BEAM TO ARCH PILASTER REINFORCEMENT ELEVATION / SECTION

SCALE: 3/8" = 1'–0"

0 2' 4' 8'

APPR	DATE	DESCRIPTION	SYM

NAVFAC

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

FRAMING ELEVATIONS

SCALE: 3/8" = 1'–0"

EPROJECT NO.: 1702805

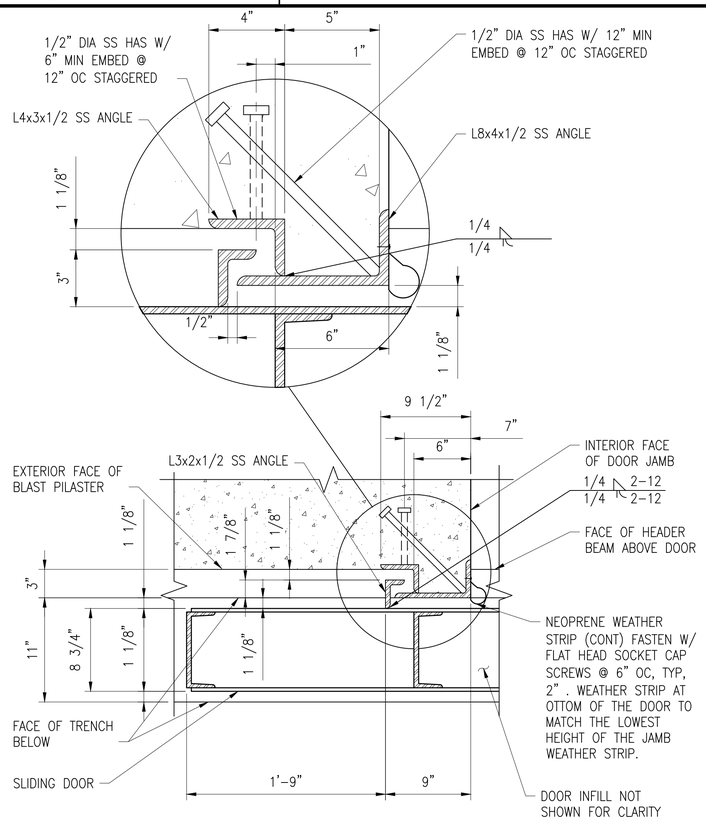
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138794

SHEET 18 OF 85

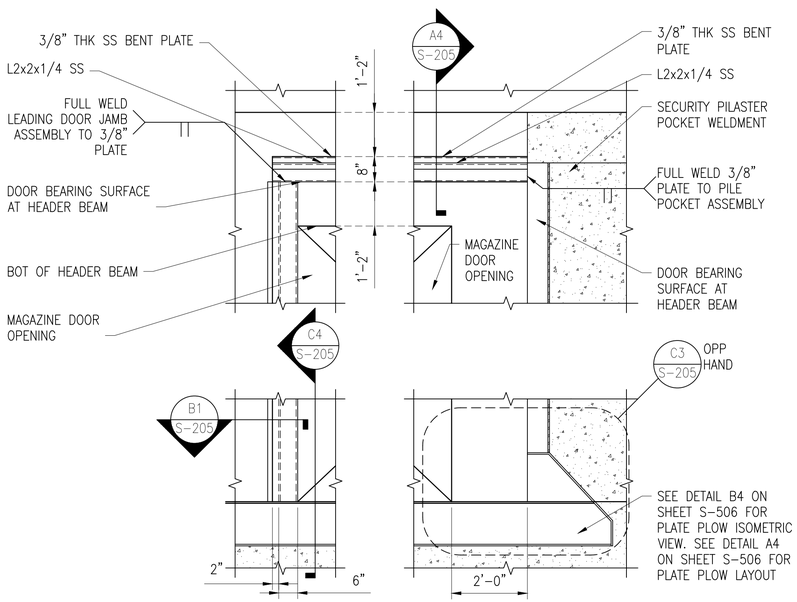
S-204

DRAWFORM REVISION: 25 AUGUST 2020



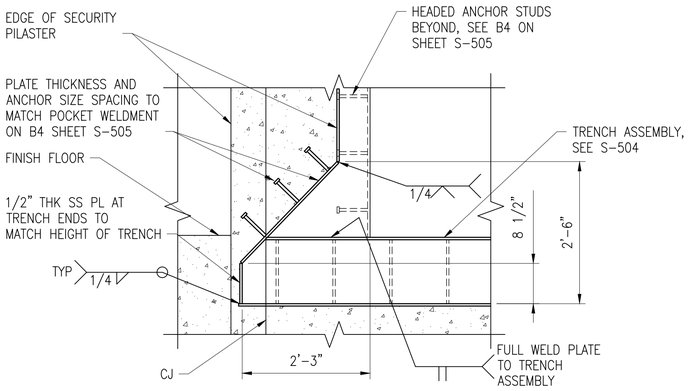
B1 LEADING DOOR EDGE JAMB DETAIL

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



A1 ELEVATION OF DOOR BEARING SURFACES

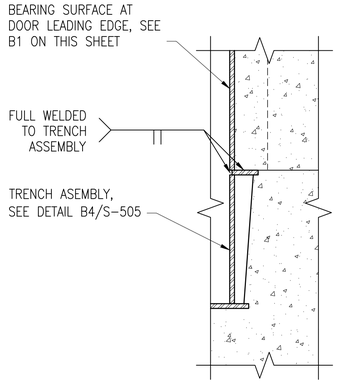
SCALE: 1/2" = 1'-0"



1. DIMENSIONS NOTED WITH AN (*) MUST BE COORDINATED BY THE DOOR MANUFACTURER ENSURING THE DOOR SYSTEM PERFORMS AS INTENDED.
2. SEE SHEETS S-504, S-505, S-509 AND S-510 FOR INFORMATION NOT SHOWN.

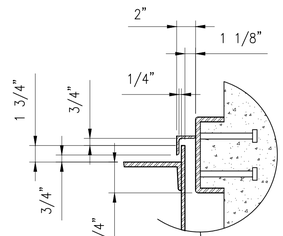
C3 SECURITY PILASTER POCKET AT DOOR PLOW

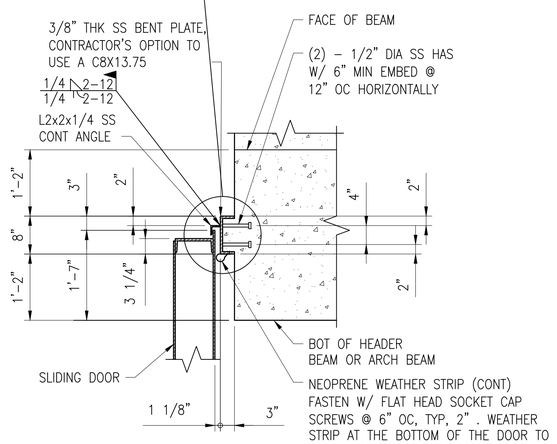
SCALE: 3/4" = 1'-0"



C4 LEADING DOOR JAMB AT TRENCH

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





A4 DETAIL

SCALE: 3/4" = 1'-0"

NO	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

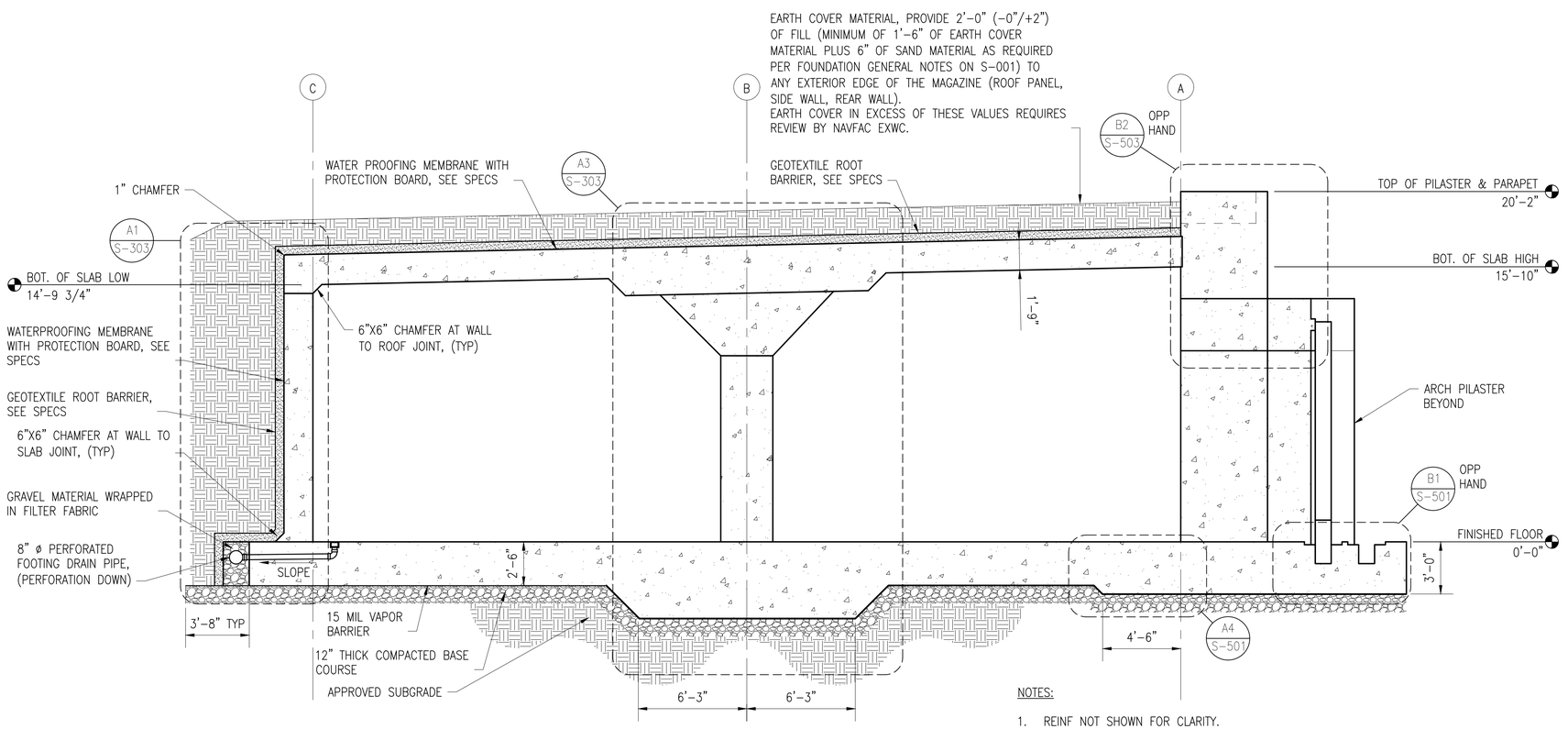
TYPE H BOX MAGAZINE

FRONT WALL PARTIAL ELEVATION AND DETAILS

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138795
SHEET 19 OF 85

S-205

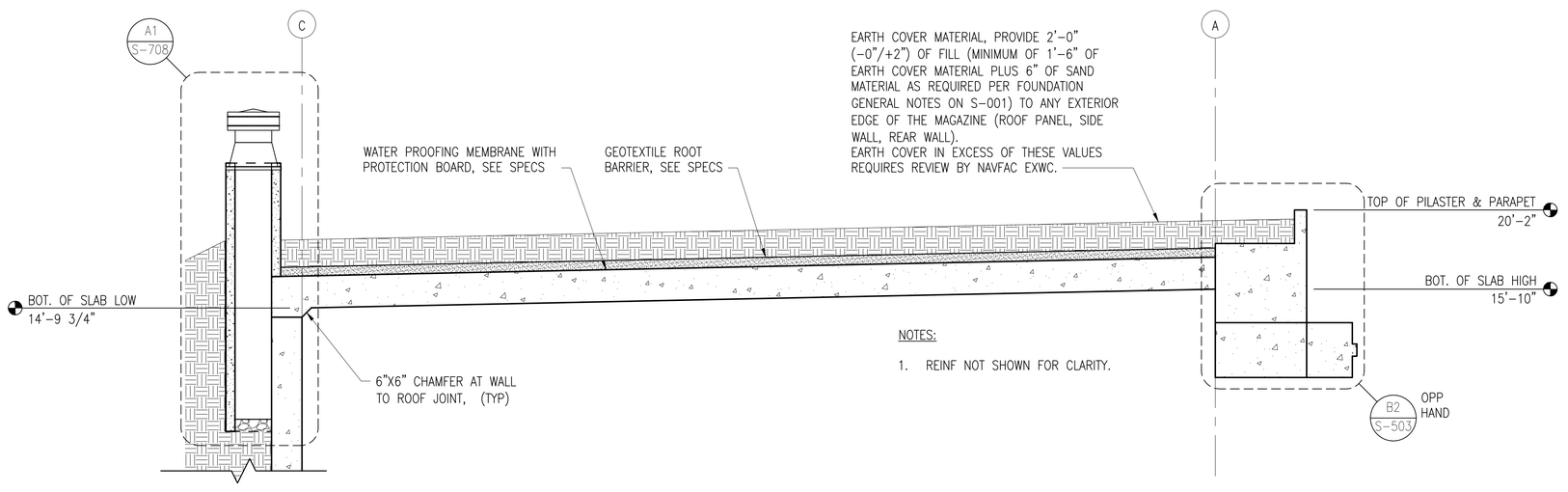
DRAWFORM REVISION: 25 AUGUST 2020



B1 SECTION (COLUMN STRIP)

SCALE: 1/4" = 1'-0"

0 2' 4' 8'



A1 SECTION (MIDDLE STRIP)

SCALE: 1/4" = 1'-0"

0 2' 4' 8'

APPR	
DATE	
SYM	DESCRIPTION

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM --

BRANCH MANAGER --

CHIEF ENG/ARCH --

FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

WALL SECTIONS

SCALE: 1/4" = 1'-0"

EPROJECT NO.: 1702805

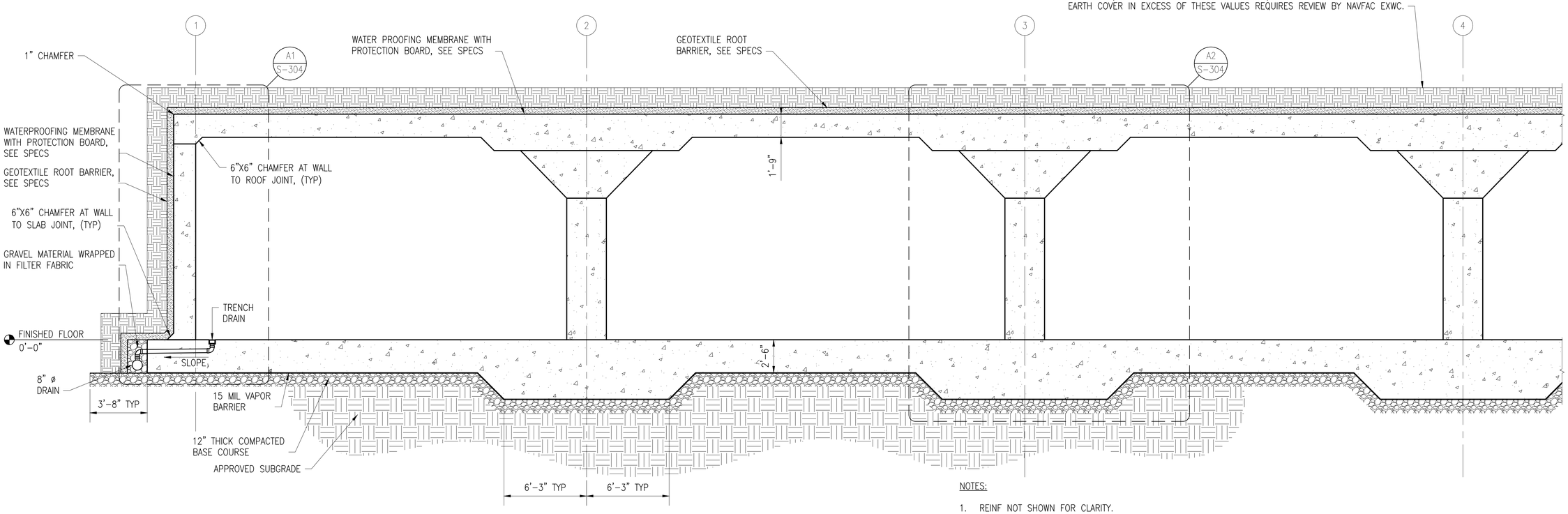
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138796

SHEET 20 OF 85

S-301

DRAWFORM REVISION: 25 AUGUST 2020



NOTES:

1. REINF NOT SHOWN FOR CLARITY.

B1 SECTION (COLUMN STRIP) LONG

SCALE: 1/4" = 1'-0"

0 2' 4' 8'

APPR	
DATE	
DESCRIPTION	
SYM	

NAVFAC

SEAL

A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
FIRE PROTECTION	

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HAMPTON ROADS, VIRGINIA

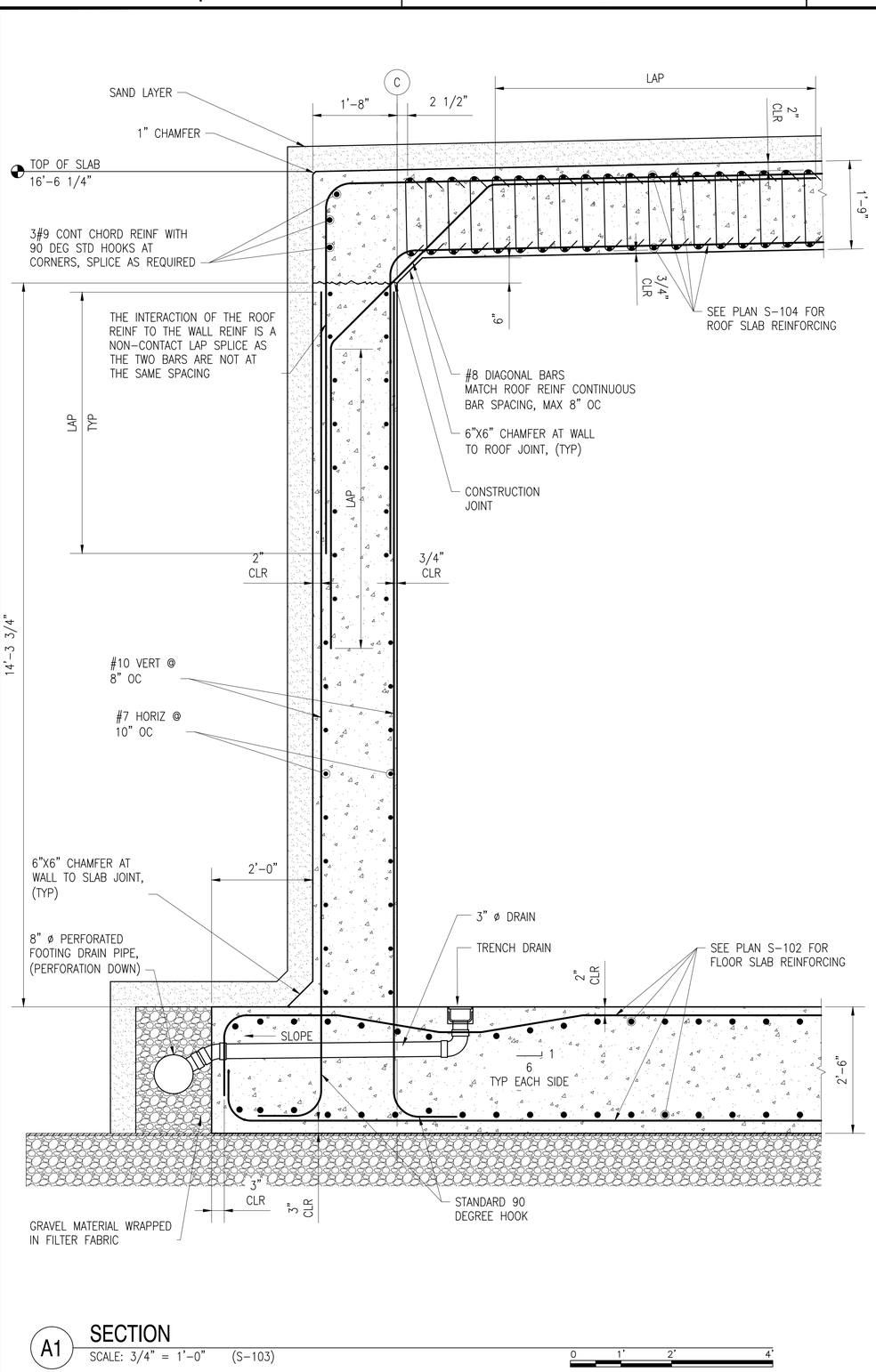
TYPE H BOX MAGAZINE

WALL SECTIONS

SCALE:	1/4" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138797
SHEET	21 OF 85

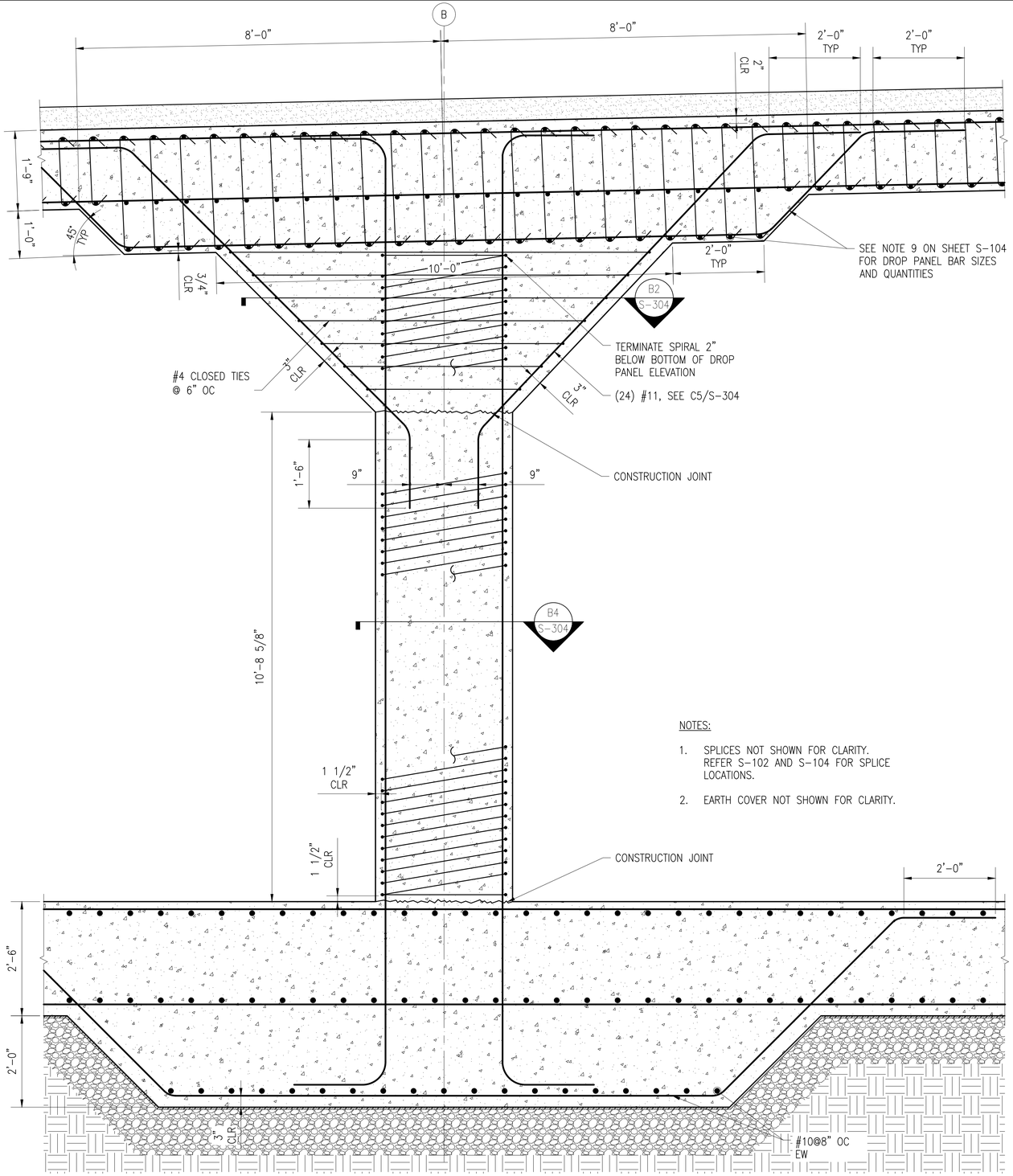
S-302

DRAWFORM REVISION: 25 AUGUST 2020



A1 SECTION
SCALE: 3/4" = 1'-0" (S-103)

0 1' 2' 4'



A3 SECTION
SCALE: 3/4" = 1'-0" (S-103)

0 1' 2' 4'

APPR
DATE
DESCRIPTION
SYM

NAVFAC

SEAL

A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW
PM/DM					--
BRANCH MANAGER					--
CHIEF ENG/ARCH					--
FIRE PROTECTION					--

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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

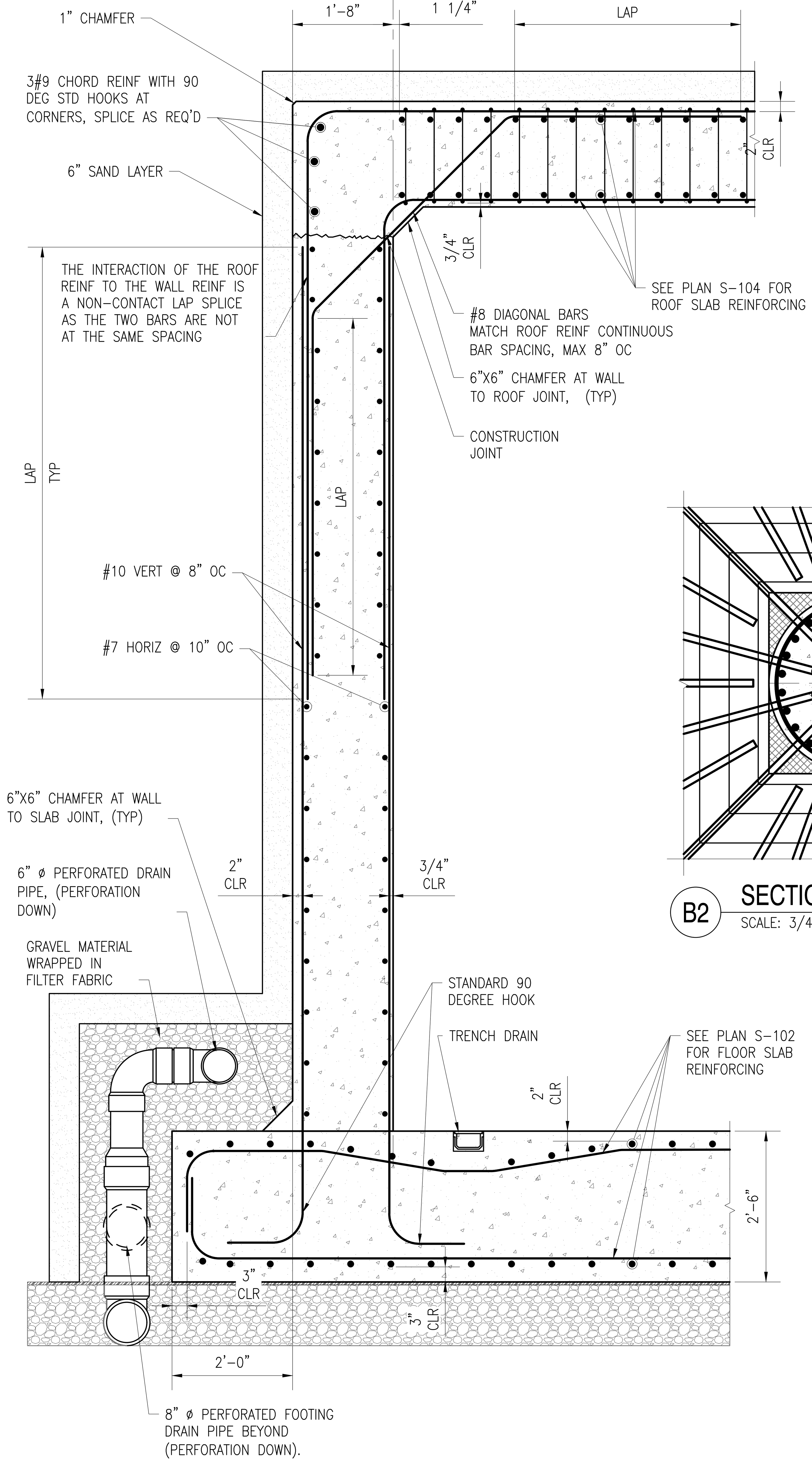
TYPE H BOX MAGAZINE

WALL SECTIONS

SCALE: 3/4" = 1'-0"
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
14138798
SHEET 22 OF 85

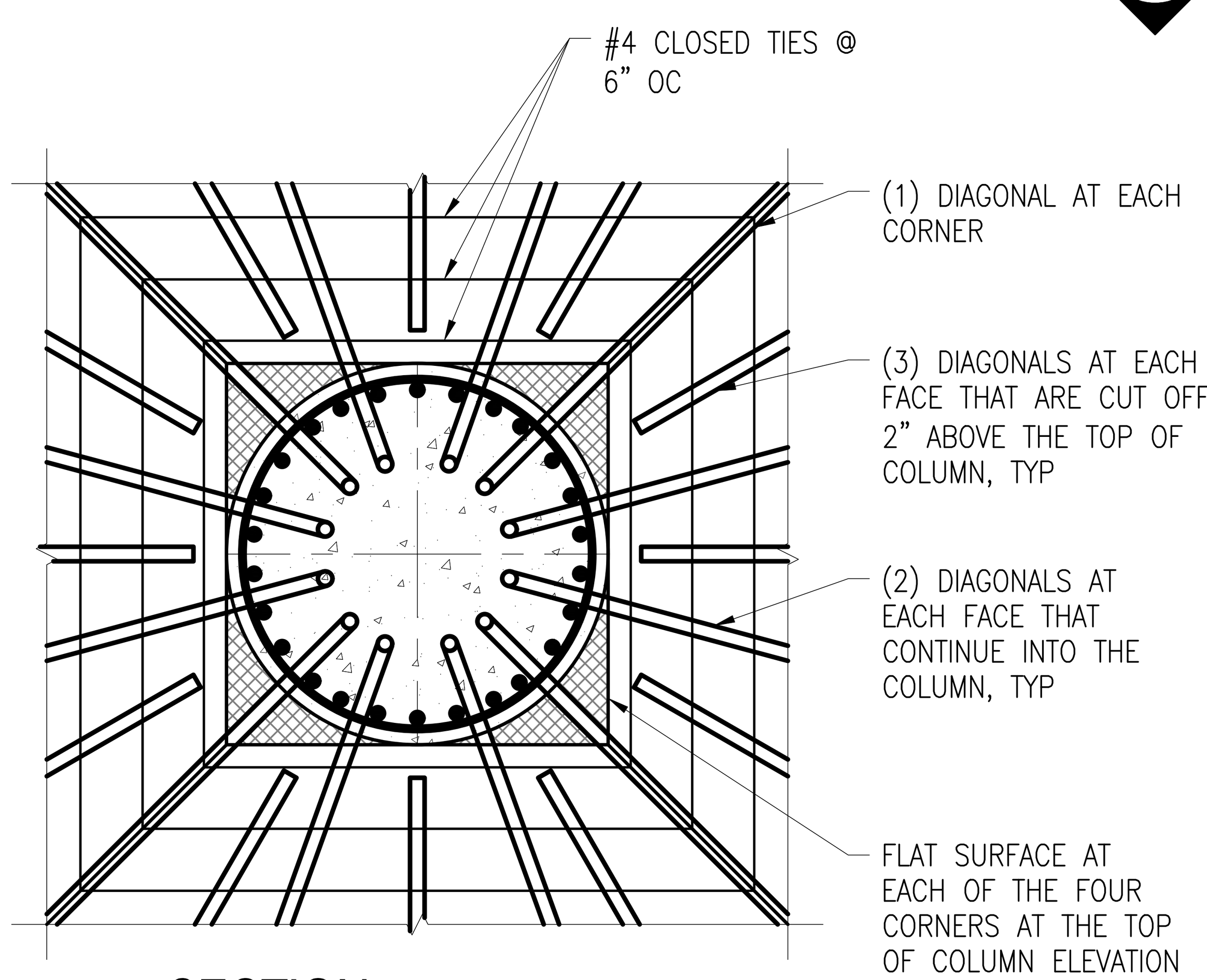
S-303

DRAWFORM REVISION: 25 AUGUST 2020

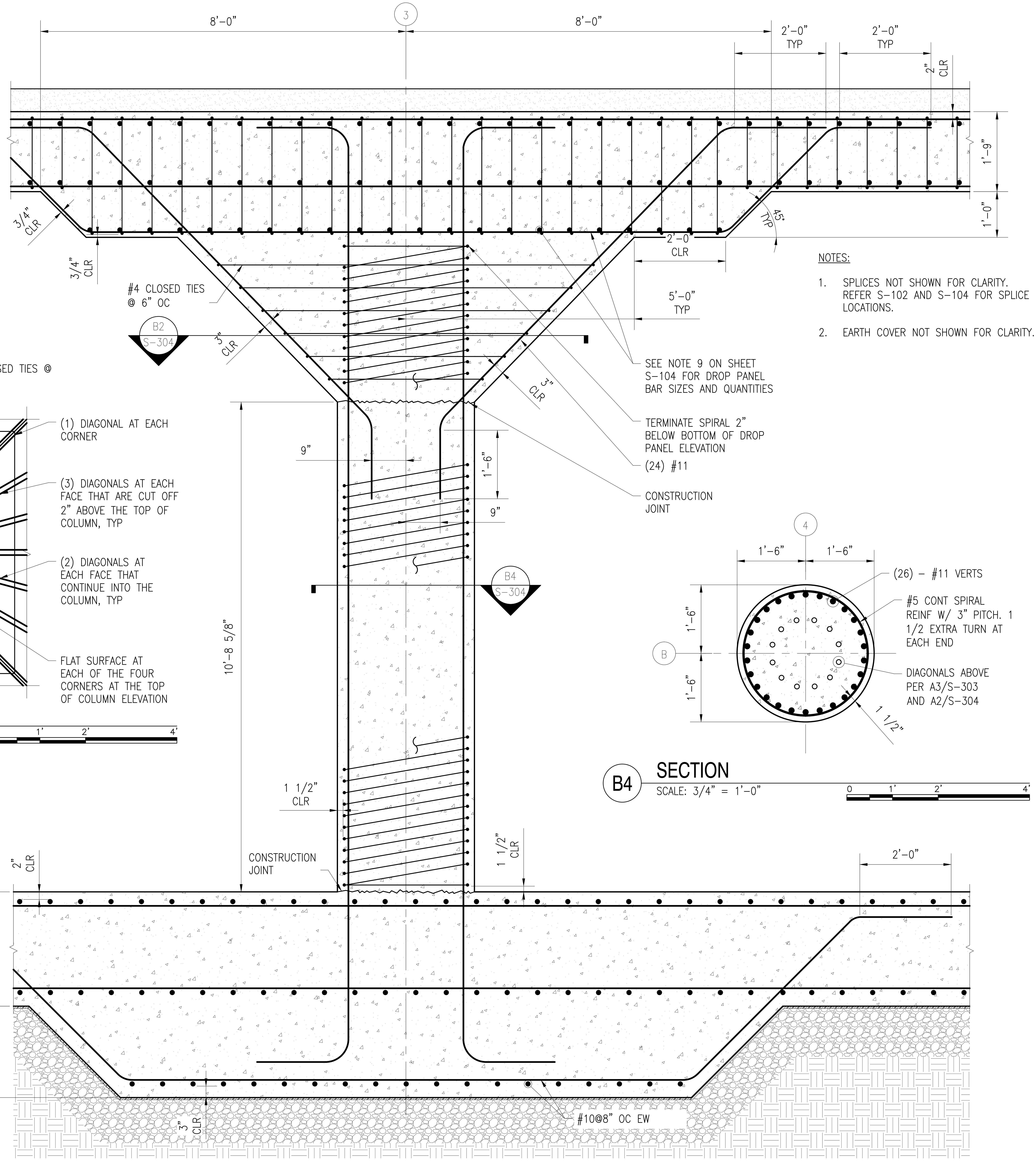


1" CHAMFER
1'-8"
1 1/4"
LAP
3#9 CHORD REINF WITH 90 DEG STD HOOKS AT CORNERS, SPLICE AS REQ'D
6" SAND LAYER
2" CLR
3/4" CLR
THE INTERACTION OF THE ROOF REINF TO THE WALL REINF IS A NON-CONTACT LAP SPLICE AS THE TWO BARS ARE NOT AT THE SAME SPACING
SEE PLAN S-104 FOR ROOF SLAB REINFORCING
#8 DIAGONAL BARS MATCH ROOF REINF CONTINUOUS BAR SPACING, MAX 8" OC
6"X6" CHAMFER AT WALL TO ROOF JOINT, (TYP)
CONSTRUCTION JOINT
LAP TYP
LAP
#10 VERT @ 8" OC
#7 HORIZ @ 10" OC
6"X6" CHAMFER AT WALL TO SLAB JOINT, (TYP)
6" ø PERFORATED DRAIN PIPE, (PERFORATION DOWN)
2" CLR
3/4" CLR
GRAVEL MATERIAL WRAPPED IN FILTER FABRIC
STANDARD 90 DEGREE HOOK
TRENCH DRAIN
SEE PLAN S-102 FOR FLOOR SLAB REINFORCING
2" CLR
2'-6"
3" CLR
3" CLR
2'-0"
8" ø PERFORATED FOOTING DRAIN PIPE BEYOND (PERFORATION DOWN).

A1 SECTION
SCALE: 3/4" = 1'-0"



B2 SECTION
SCALE: 3/4" = 1'-0"



8'-0"
8'-0"
2'-0" TYP
2'-0" TYP
2" CLR
1'-9"
1'-0"
3/4" CLR
3/4" CLR
45° TYP
2'-0" CLR
5'-0" TYP
#4 CLOSED TIES @ 6" OC
B2 S-304
3" CLR
3" CLR
SEE NOTE 9 ON SHEET S-104 FOR DROP PANEL BAR SIZES AND QUANTITIES
TERMINATE SPIRAL 2" BELOW BOTTOM OF DROP PANEL ELEVATION
(24) #11
CONSTRUCTION JOINT
9"
1'-6"
9"
B4 S-304
10'-8 5/8"
1 1/2" CLR
1 1/2" CLR
CONSTRUCTION JOINT
2" CLR
2'-0"
2'-6"
2'-0"
3" CLR
#10@8" OC EW
(26) - #11 VERTS
#5 CONT SPIRAL REINF W/ 3" PITCH. 1 1/2 EXTRA TURN AT EACH END
DIAGONALS ABOVE PER A3/S-303 AND A2/S-304
1 1/2"

NOTES:

1. SPLICES NOT SHOWN FOR CLARITY. REFER S-102 AND S-104 FOR SPLICE LOCATIONS.
2. EARTH COVER NOT SHOWN FOR CLARITY.

B4 SECTION
SCALE: 3/4" = 1'-0"

A2 SECTION
SCALE: 3/4" = 1'-0"

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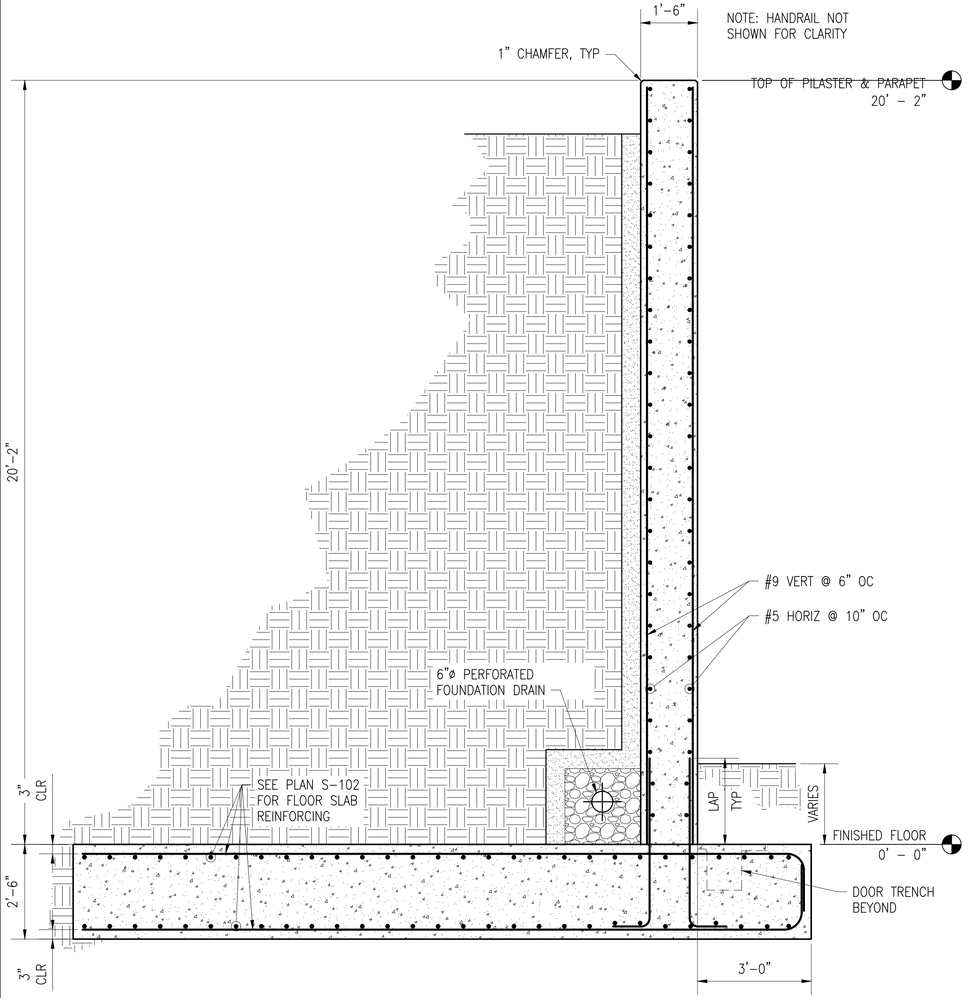
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

WALL SECTIONS

SCALE: 3/4" = 1'-0"
EPROJECT NO: 1702805
NAVFAC DRAWING NO. 14138799
SHEET 23 OF 85

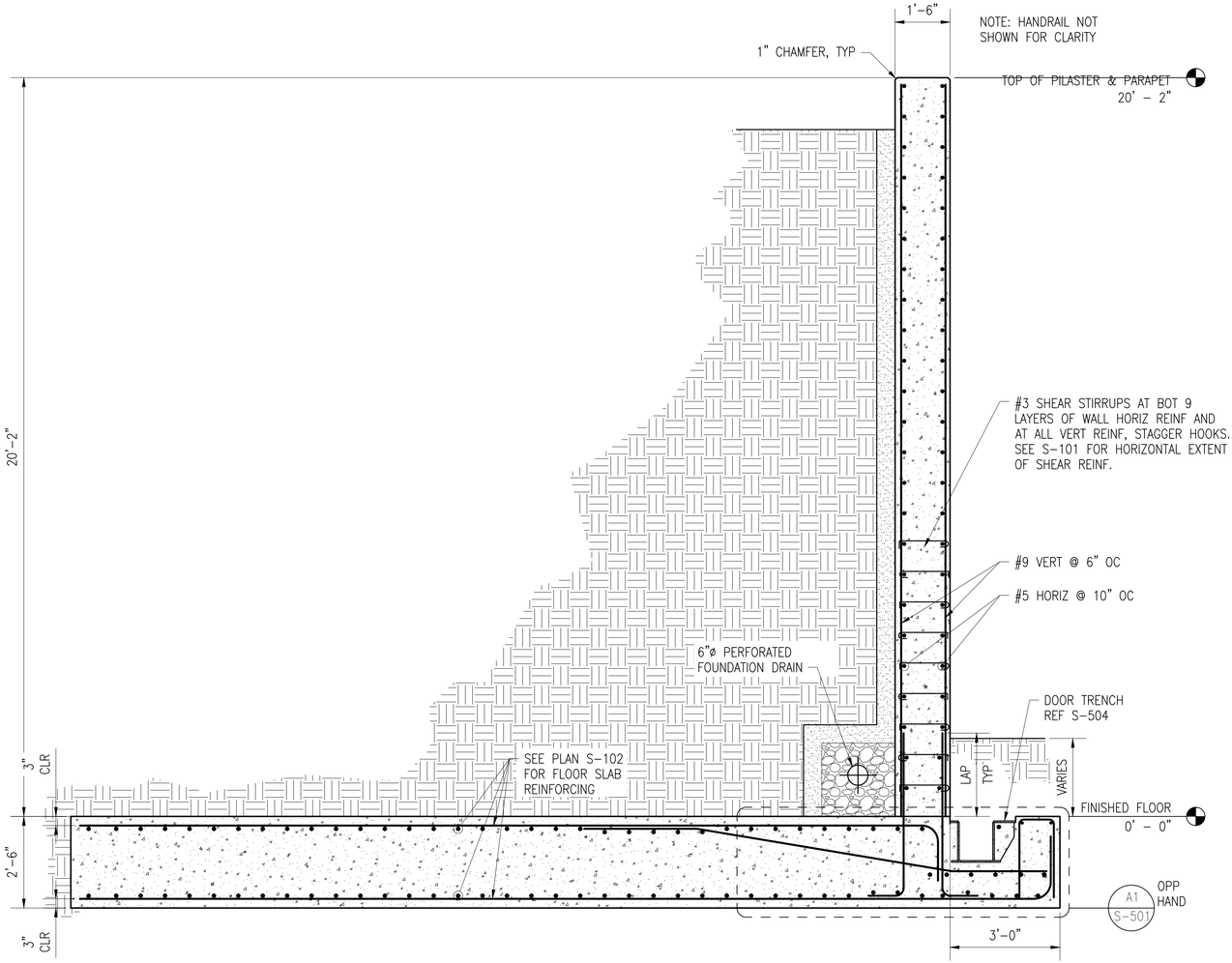
S-304



B1 RETAINING WALL SECTION

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

0 1' 2' 4'



B3 RETAINING WALL SECTION

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

0 1' 2' 4'

APPR	DATE	SYM	DESCRIPTION

SEAL

A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	--
BRANCH MANAGER	--
CHIEF ENG/ARCH	--
FIRE PROTECTION	--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

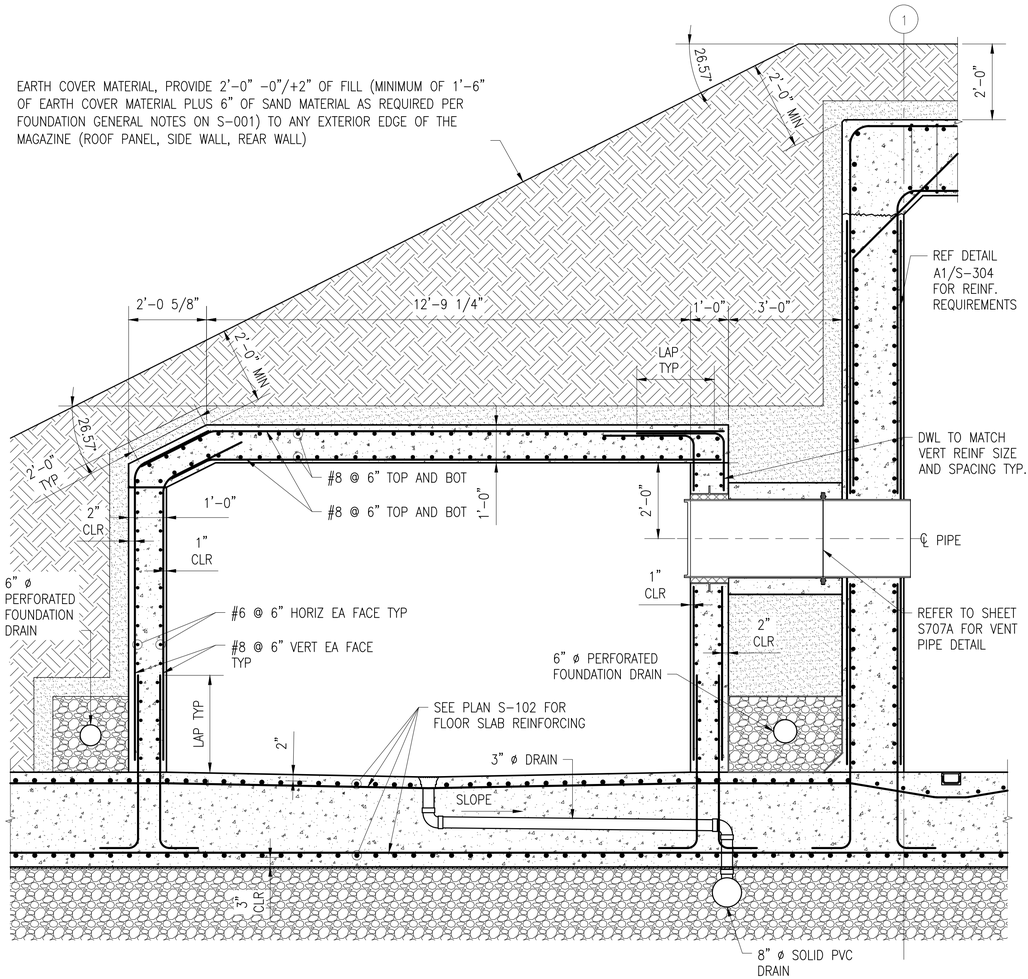
TYPE H BOX MAGAZINE

WALL SECTIONS

SCALE:	1/2" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138800
SHEET	24 OF 85

S-305

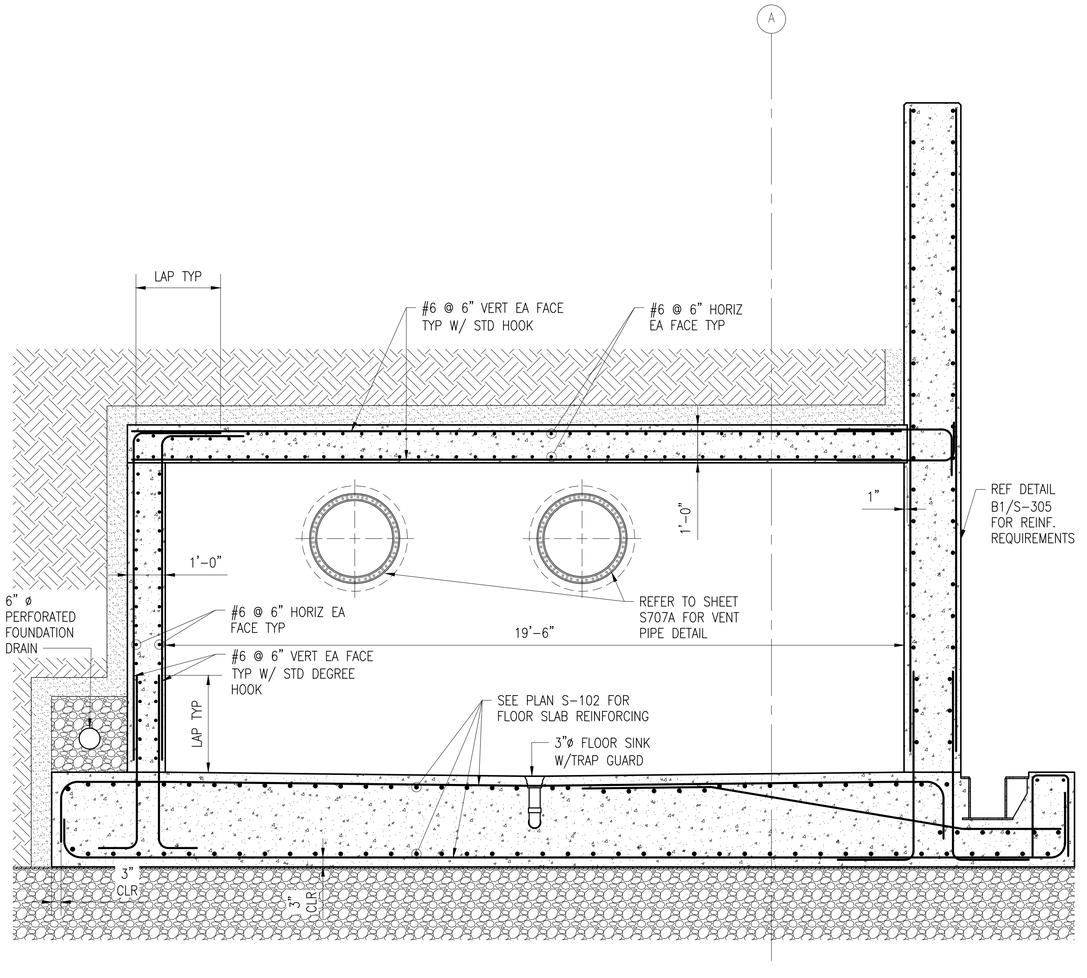
DRAWFORM REVISION: 25 AUGUST 2020



B1 MECHANICAL ROOM TRANSVERSE SECTION

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

0 1' 2' 4'



B3 MECHANICAL ROOM LONGITUDINAL SECTION

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

0 1' 2' 4'

NO.	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
FIRE PROTECTION	

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HAMPTON ROADS, VIRGINIA

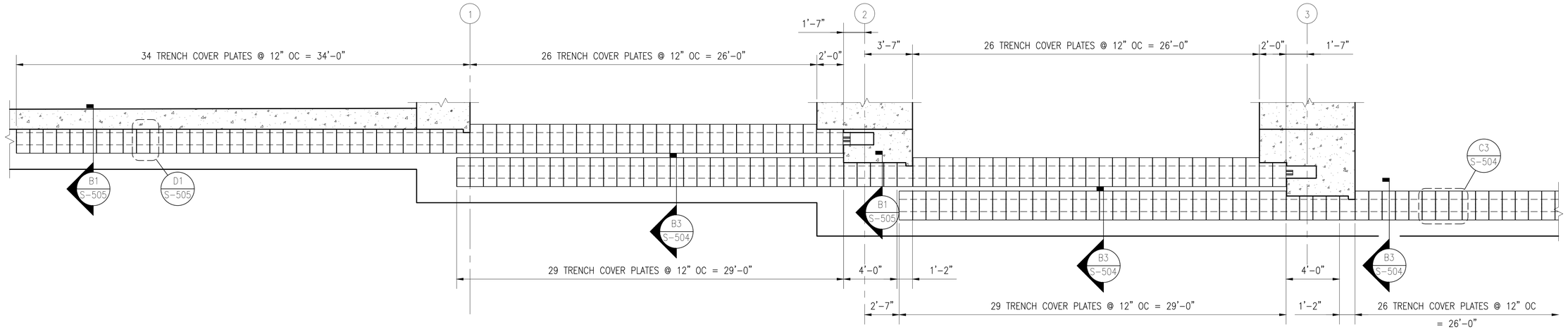
TYPE H BOX MAGAZINE

MECHANICAL ROOM SECTIONS – ALTERNATE

SCALE:	1/2" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138801
SHEET	25 OF 85

S305A

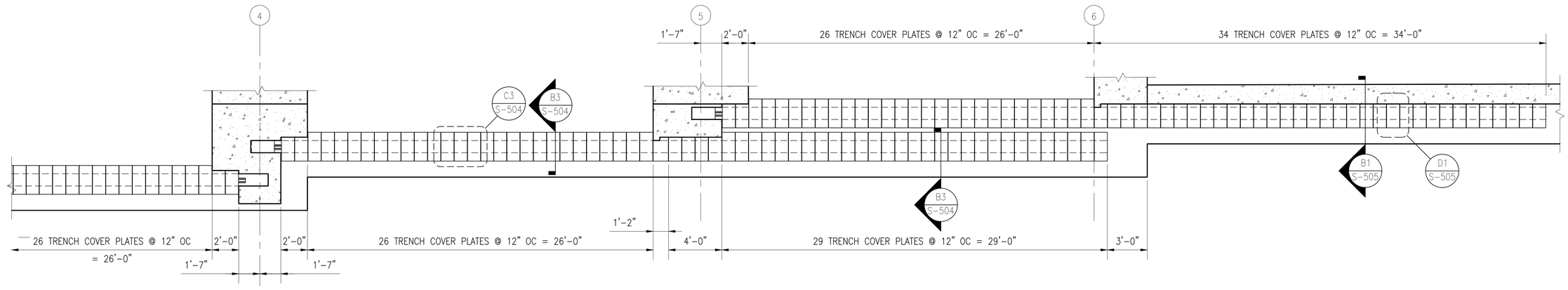
DRAWFORM REVISION: 25 AUGUST 2020



C1 TRENCH COVER LAYOUT PLAN

SCALE: 1/4" = 1'-0"

0 2' 4' 8'



A1 TRENCH COVER LAYOUT PLAN (CONT'D)

SCALE: 1/4" = 1'-0"

0 2' 4' 8'

APPR	DATE	SYM	DESCRIPTION

NAVFAC

SEAL

A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	--
BRANCH MANAGER	--
CHIEF ENG/ARCH	--
FIRE PROTECTION	--

DEPARTMENT OF THE NAVY
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HAMPTON ROADS, VIRGINIA

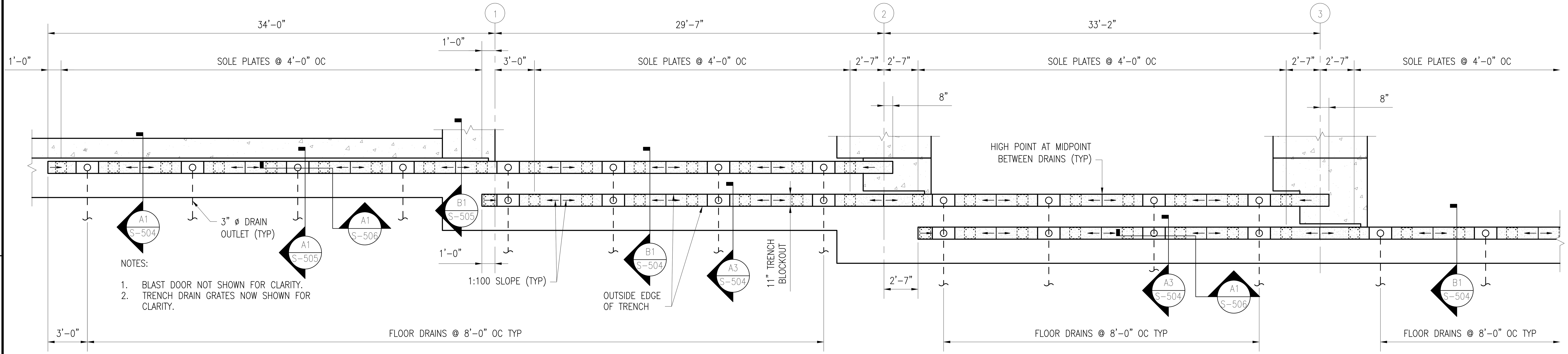
TYPE H BOX MAGAZINE

ENLARGED PLANS

SCALE:	1/4" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138802
SHEET	26 OF 85

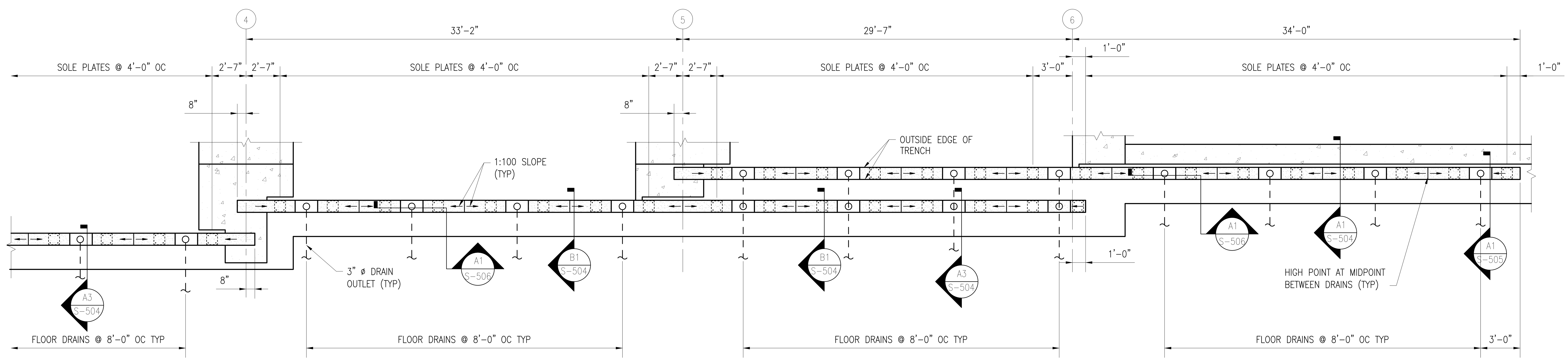
S-401

DRAWFORM REVISION: 25 AUGUST 2020



C1 TRENCH LAYOUT PLAN

SCALE: 1/4" = 1'-0"



A1 TRENCH LAYOUT PLAN (CONT'D)

SCALE: 1/4" = 1'-0"

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ACTIVITY

SATISFACTORY TO DATE

DES FJ	DRW MR	CHK DW

PM/DM --
BRANCH MANAGER --
CHIEF ENG/ARCH --
FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

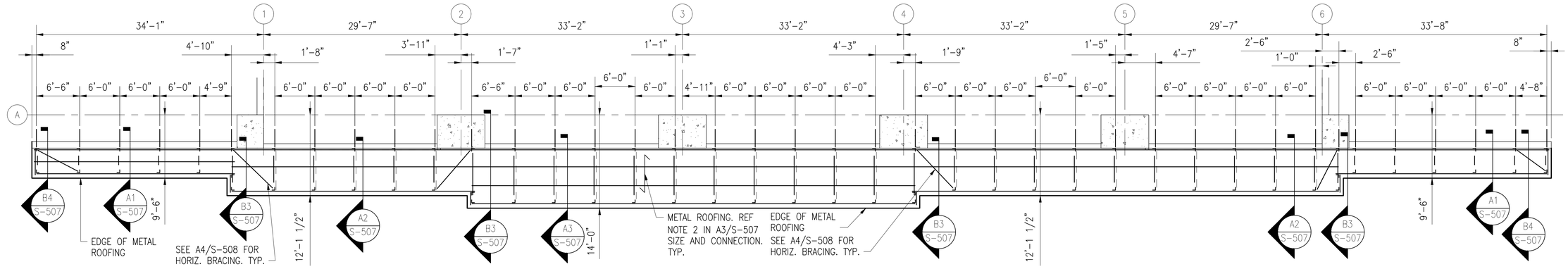
TYPE H BOX MAGAZINE

ENLARGED PLANS

SCALE: 1/4" = 1'-0"
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138803
SHEET 27 OF 85

S-402

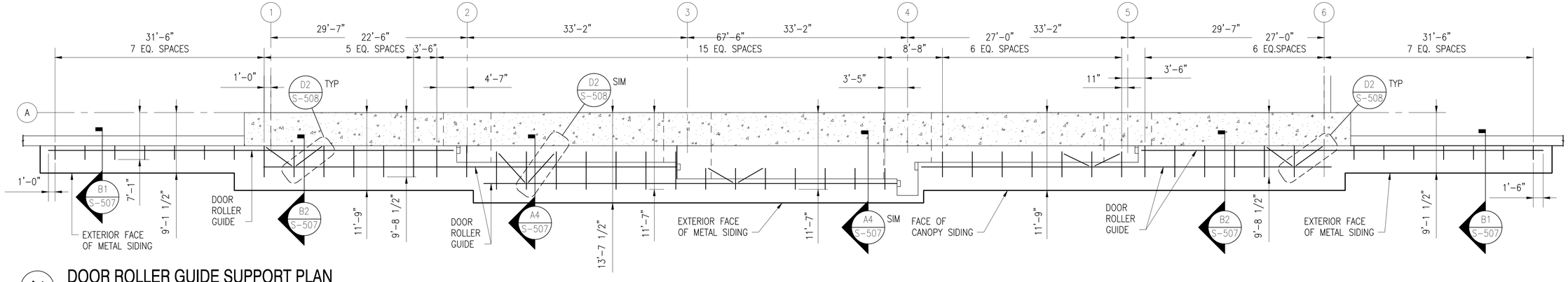
DRAWFORM REVISION: 25 AUGUST 2020



B1 **CANOPY FRAMING PLAN**

SCALE: 1/8" = 1'-0" (S-201)

0 4' 8' 16'



A1 **DOOR ROLLER GUIDE SUPPORT PLAN**

SCALE: 1/8" = 1'-0" (S-201)

0 4' 8' 16'

NO.	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

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ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ENLARGED PLANS

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

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
14138804

SHEET 28 OF 85

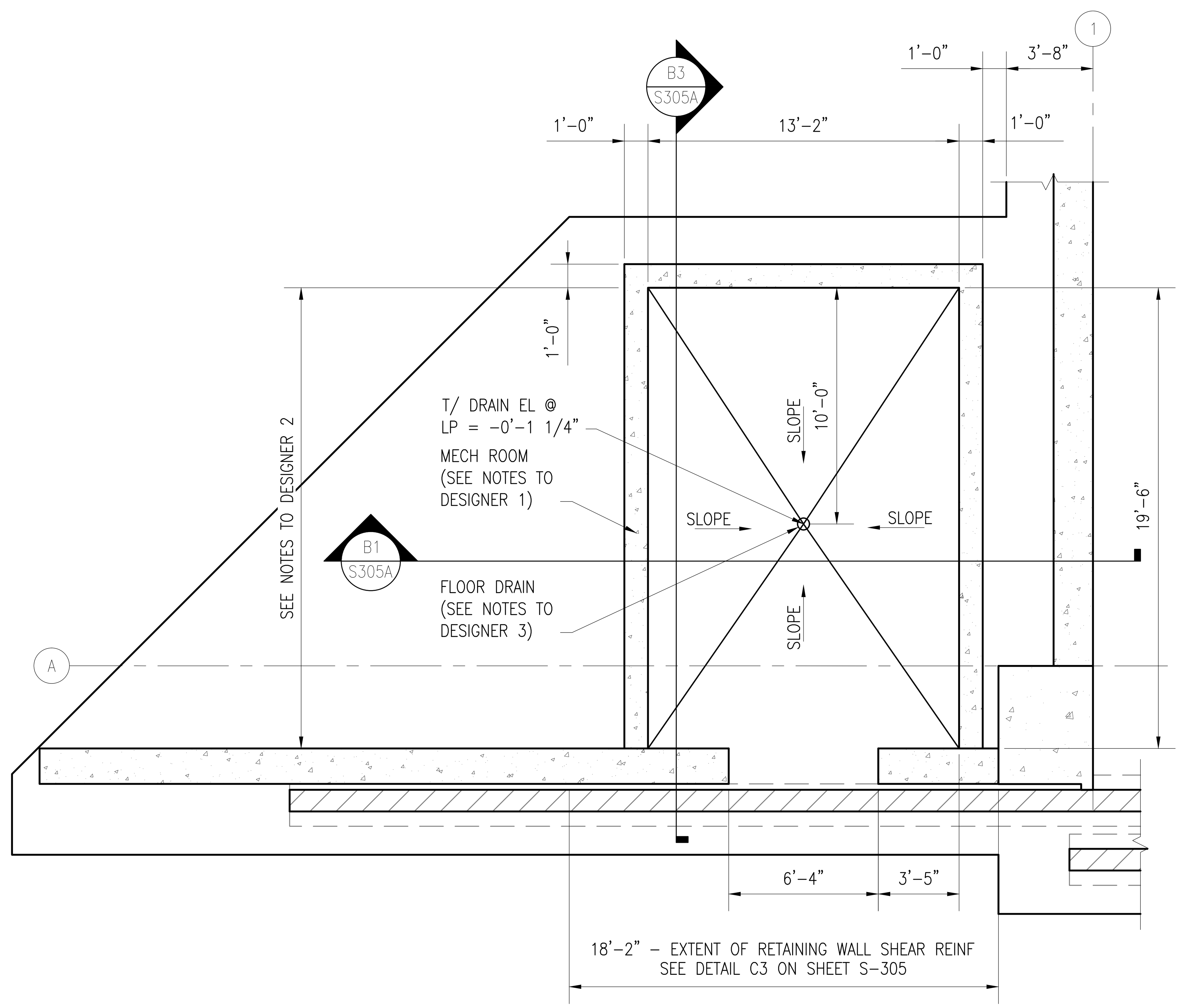
S-403

DRAWFORM REVISION: 25 AUGUST 2020

FILE NAME: C:\Users\kanus.c.ulrichs\OneDrive - US Navy-Horsepen\Projects\Update Std Mags\BOX TYPE G AND H\Type H Box ECM Standard Drawings Working Set\S-403.dwg LAYOUT NAME: S-403 - ENLARGED PLANS PLOTTED: Wednesday, October 09, 2024 - 11:54am USER: kanus.c.ulrichs

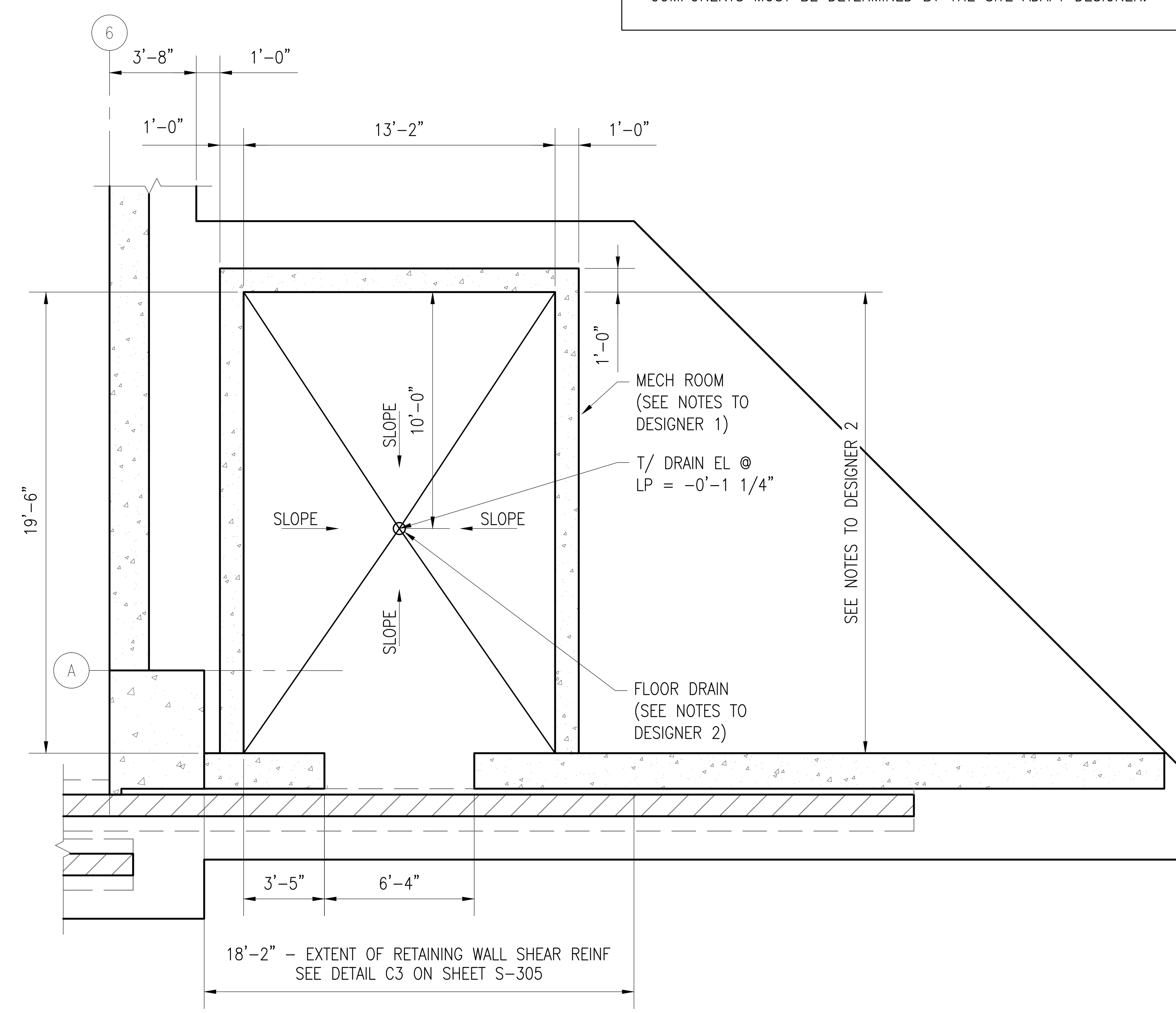
NOTES TO DESIGNER – REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION:

1. THE MECHANICAL ROOMS ARE AN ALTERNATE AND ARE NOT PART OF THE BASE DESIGN. THE ROOMS MAY BE ADDED ONLY IF JUSTIFIED THROUGH MISSION REQUIREMENTS.
2. THE MECHANICAL ROOM LENGTH SHOWN IS A MINIMUM VALUE, AND THE SITE DESIGNER MUST DETERMINE FINAL LENGTH (PLAN NORTH–SOUTH DIMENSION TOWARDS BACK WALL OF MAGAZINE) BASED ON THE SITE REQUIREMENTS. THE INTERNAL LENGTH OF THE MECHANICAL ROOM MUST NOT EXCEED 28'–6" , AND THE WIDTH MAY NOT BE MODIFIED.
3. COORDINATE FINAL LOCATION OF FLOOR DRAIN OR FLOOR SINK WITH EQUIPMENT LAYOUT. FINAL PIPING CONFIGURATION AND TERMINATION POINT MUST BE DETERMINED BY SITE ADAPT DESIGNER.
4. NATURAL VENTILATION INTAKE AND RELIEF SHAFTS ARE NOT REQUIRED WHEN THE MECHANICAL ROOM OPTION IS EXERCISED.
5. MECHANICAL EQUIPMENT SELECTION, MECHANICAL ROOM LAYOUT, AND ALL ASSOCIATED DUCTWORK, PIPING, CONTROLS, AND OTHER REQUIRED COMPONENTS MUST BE DETERMINED BY THE SITE ADAPT DESIGNER.



A1 ENLARGED MECHANICAL ROOM FOUNDATION PLAN 1

SCALE: 1/4" = 1'–0"



A3 ENLARGED MECHANICAL ROOM FOUNDATION PLAN 2

SCALE: 1/4" = 1'–0"

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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND–ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

MECHANICAL ROOM FOUNDATION PLAN–ALTERNATE

SCALE: 1/4" = 1'–0"

EPROJECT NO.: 1702805

NAVFAC DRAWING NO. 14138805

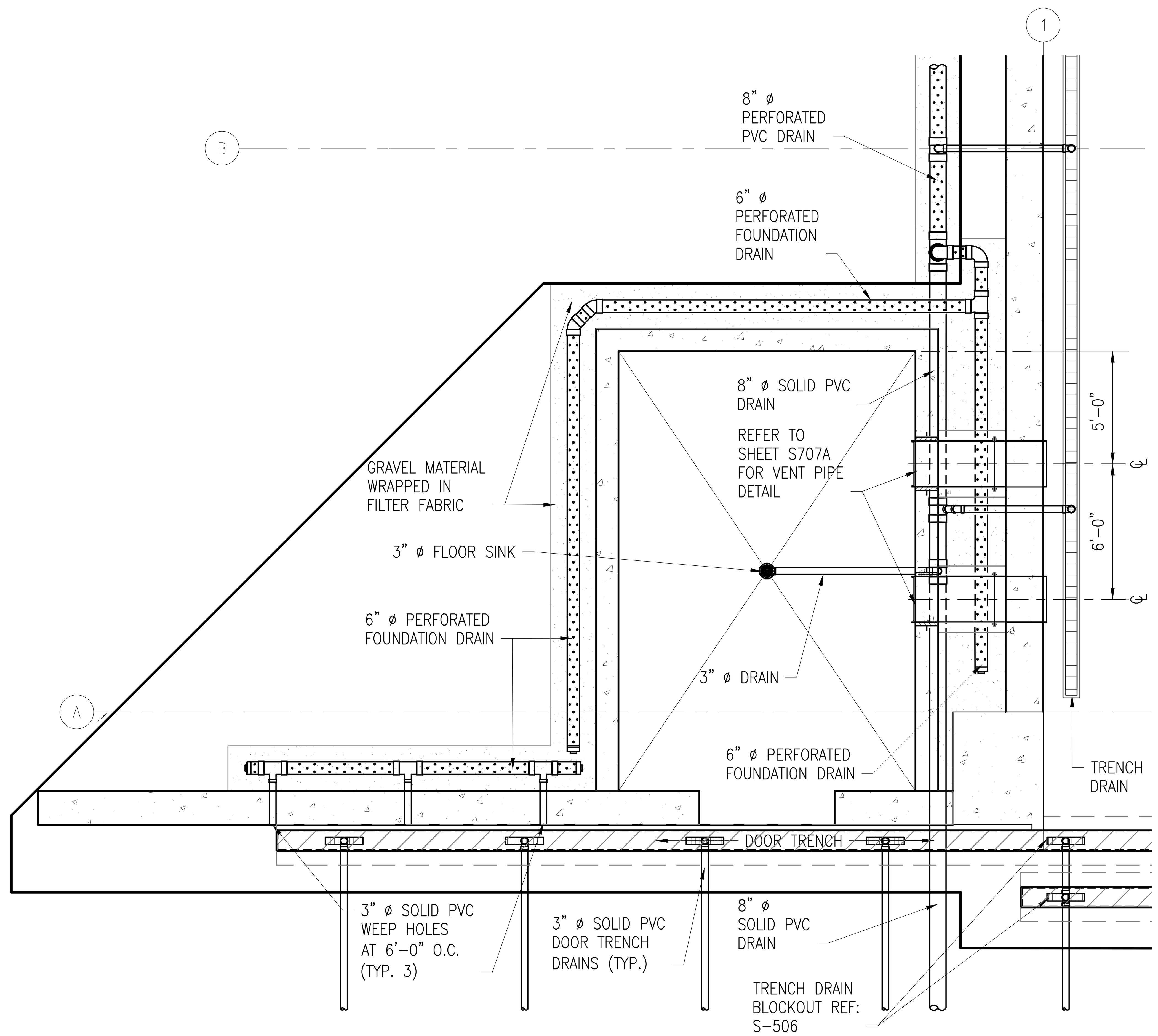
SHEET 29 OF 85

S404A

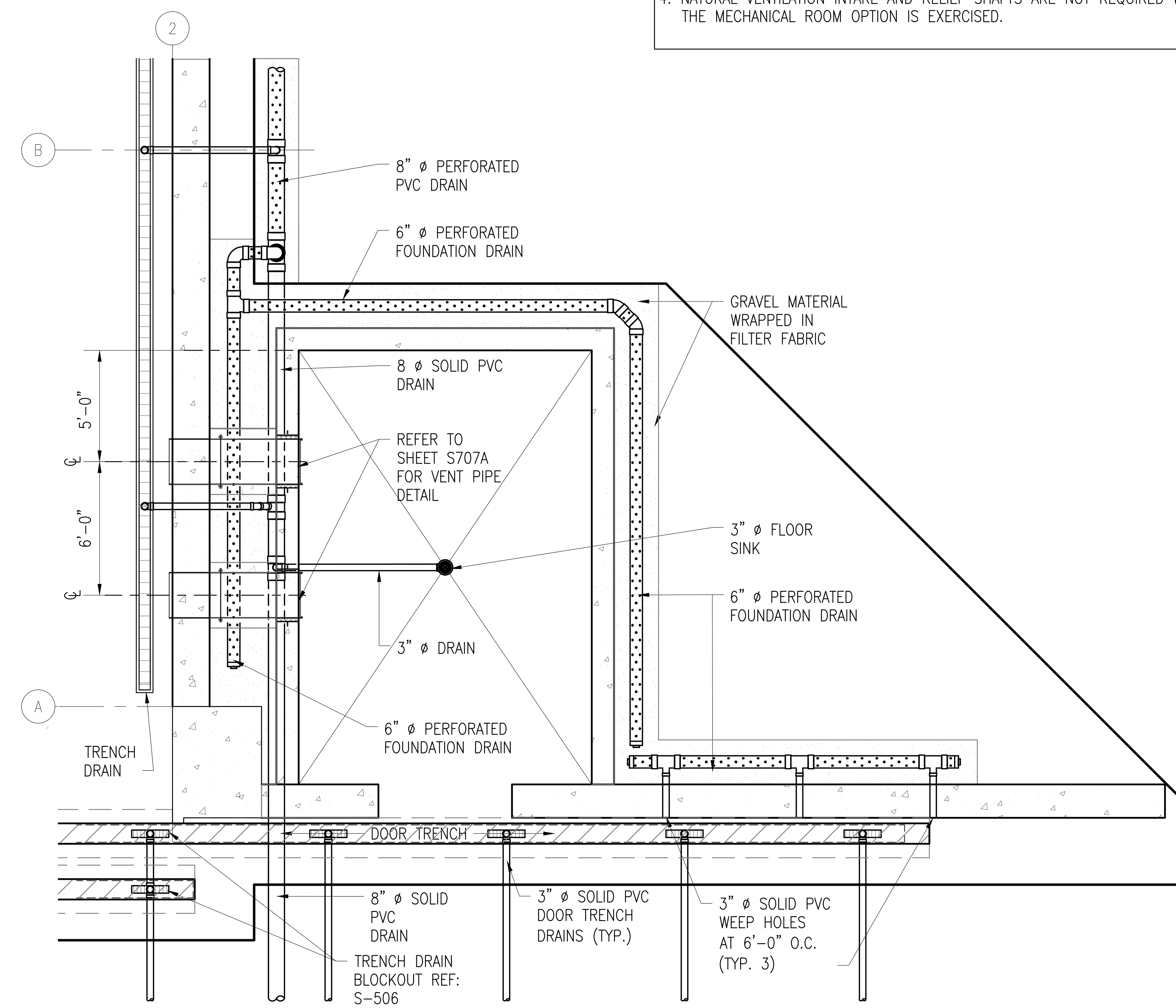
DRAWFORM REVISION: 25 AUGUST 2020

NOTES TO DESIGNER – REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION:

1. THE MECHANICAL ROOMS ARE AN ALTERNATE AND ARE NOT PART OF THE BASE DESIGN. THE ROOMS MAY BE ADDED ONLY IF JUSTIFIED THROUGH MISSION REQUIREMENTS.
2. THE MECHANICAL ROOM LENGTH SHOWN IS A MINIMUM VALUE, AND THE SITE DESIGNER MUST DETERMINE FINAL LENGTH (PLAN NORTH–SOUTH DIMENSION TOWARDS BACK WALL OF MAGAZINE) BASED ON THE SITE REQUIREMENTS. THE INTERNAL LENGTH OF THE MECHANICAL ROOM MUST NOT EXCEED 28'–6", AND THE WIDTH MAY NOT BE MODIFIED.
3. COORDINATE FINAL LOCATION OF FLOOR DRAIN OR FLOOR SINK WITH EQUIPMENT LAYOUT. FINAL PIPING CONFIGURATION AND TERMINATION POINT MUST BE DETERMINED BY SITE ADAPT DESIGNER.
4. NATURAL VENTILATION INTAKE AND RELIEF SHAFTS ARE NOT REQUIRED WHEN THE MECHANICAL ROOM OPTION IS EXERCISED.



A1 ALTERNATE ENLARGED MECHANICAL ROOM DRAIN AND VENT PLAN 1
SCALE: 1/4" = 1'–0"



A3 ALTERNATE ENLARGED MECHANICAL ROOM DRAIN AND VENT PLAN 2
SCALE: 1/4" = 1'–0"

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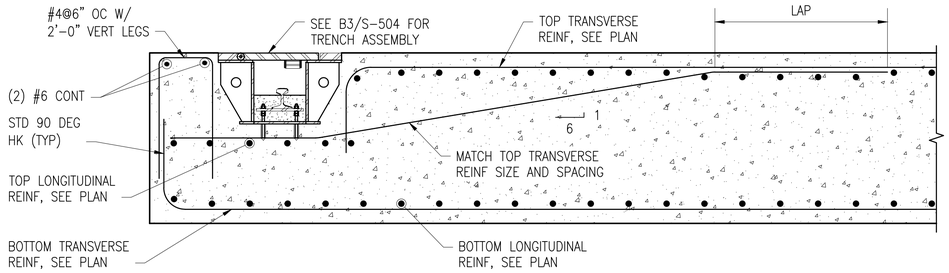
DRAINAGE AND VENTILATION PLAN – ALTERNATE

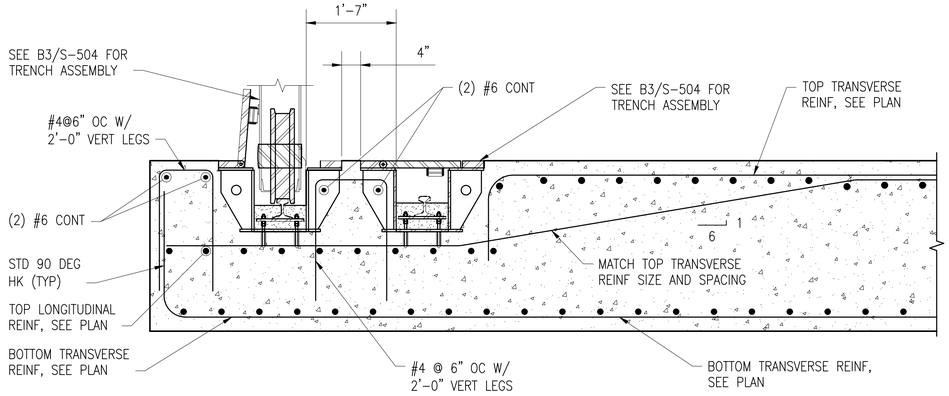
APPROVED 05/22/2024
DES FJ | DRW MR | CHK DW
SCALE: 1/4" = 1'–0"
EPROJECT NO: 1702805
NAVFAC DRAWING NO. 14138806
SHEET 30 OF 85
S405A



D1 REINFORCEMENT AT TRENCH

SCALE: 3/4" = 1'-0"

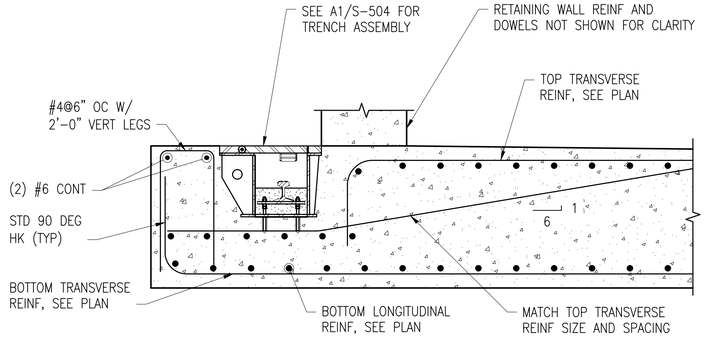
0 1' 2' 4'



B1 REINFORCEMENT AT DOUBLE TRENCHES

SCALE: 3/4" = 1'-0"

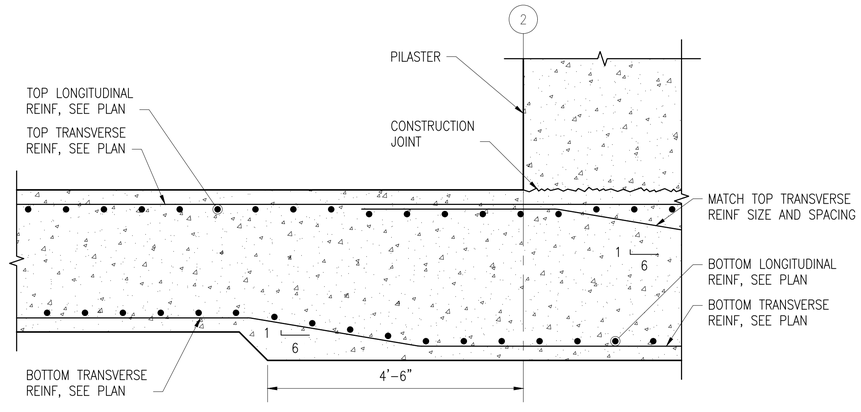
0 1' 2' 4'



A1 REINFORCEMENT AT TRENCH AT RETAINING WALL

SCALE: 3/4" = 1'-0"

0 1' 2' 4'



A4 REINFORCEMENT AT SLAB STEP

SCALE: 3/4" = 1'-0"

0 1' 2' 4'

APPR	DATE	SYM	DESCRIPTION

NAVFAC

SEAL

A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	- -
BRANCH MANAGER	- -
CHIEF ENG/ARCH	- -
FIRE PROTECTION	- -

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
HAMPTON ROADS, VIRGINIA

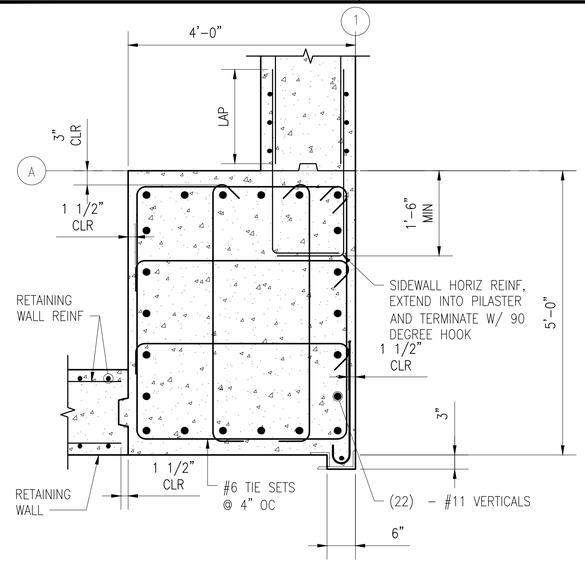
TYPE H BOX MAGAZINE

DOOR TRENCH AND COVER DETAILS

SCALE:	3/4" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138807
SHEET	31 OF 85

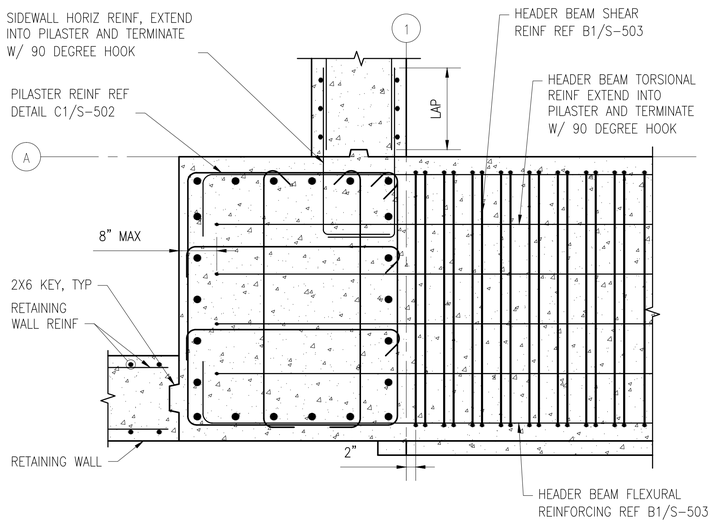
S-501

DRAWFORM REVISION: 25 AUGUST 2020



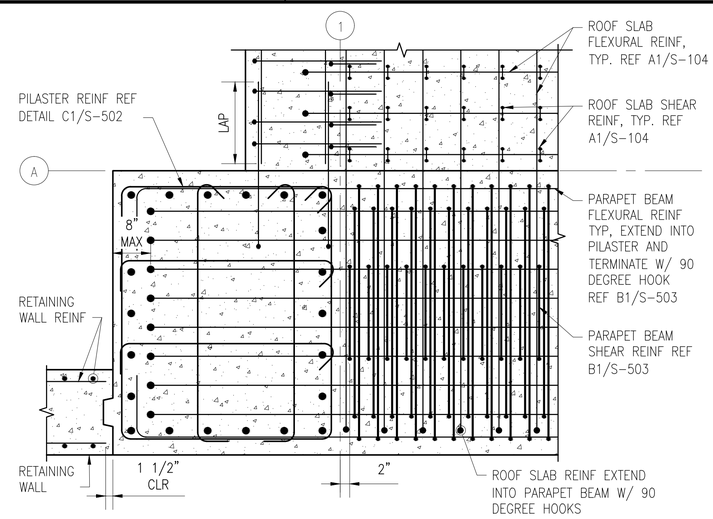
C1 PILASTER CORNER PLAN

SCALE: 3/4" = 1'-0"



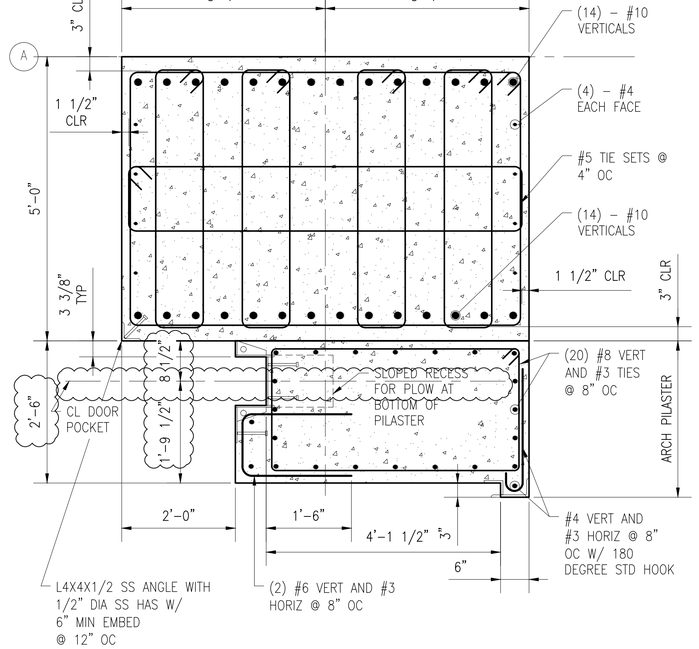
C2 PILASTER CORNER THRU HEADER BEAM

SCALE: 3/4" = 1'-0"



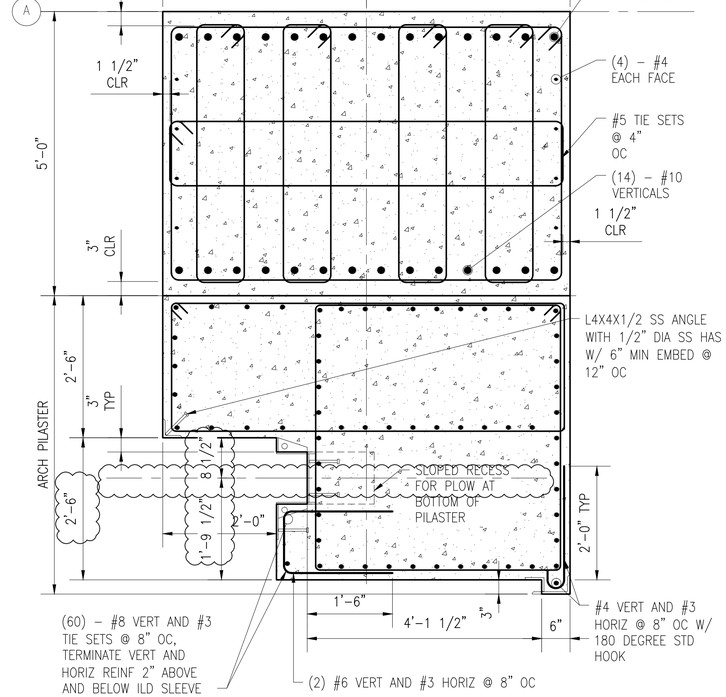
C4 PILASTER CORNER THRU PARAPET BEAM/ ROOF SLAB

SCALE: 3/4" = 1'-0"



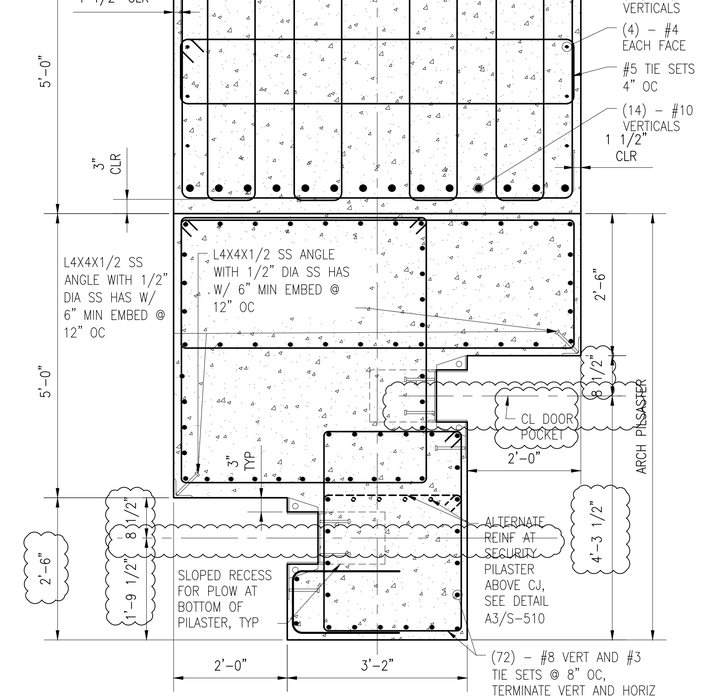
A1 PILASTER INTERIOR PLAN

SCALE: 3/4" = 1'-0"



A2 PILASTER MIDDLE LEFT PLAN

SCALE: 3/4" = 1'-0"



A4 PILASTER MIDDLE RIGHT PLAN

SCALE: 3/4" = 1'-0"

NO.	DESCRIPTION	DATE	APPR
	MINOR NON-PC CHANGES	2024 10 07	

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

PILASTER REINF DETAILS

SCALE: 3/4" = 1'-0"

EPROJECT NO.: 1702805

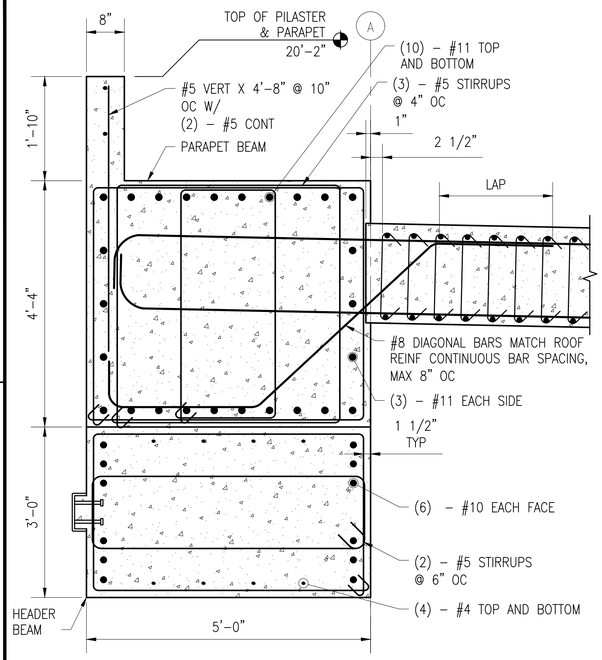
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
14138808

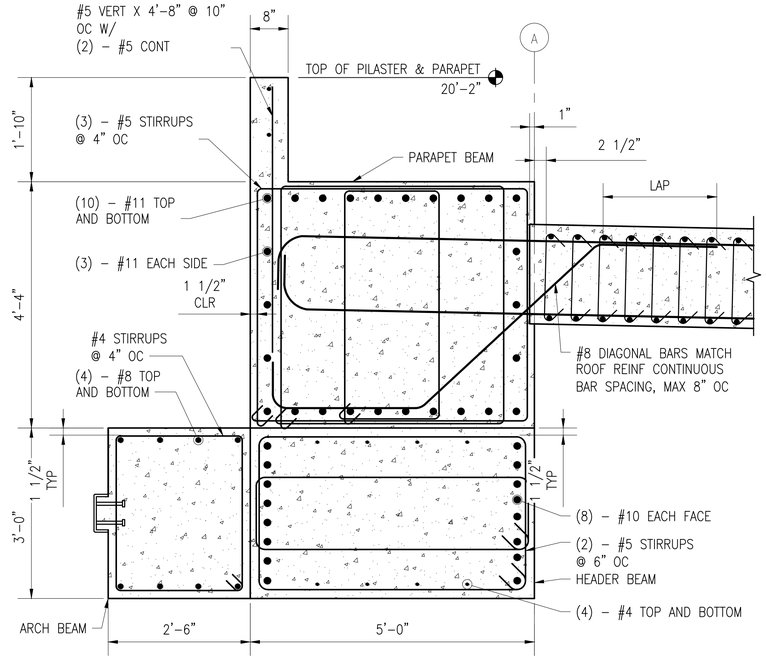
SHEET 32 OF 85

S-502

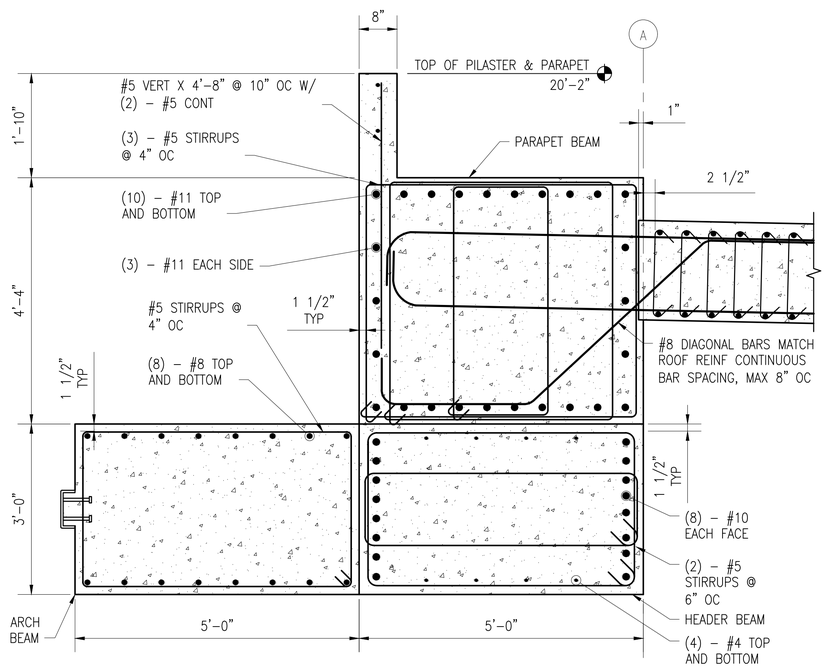
DRAWFORM REVISION: 25 AUGUST 2020



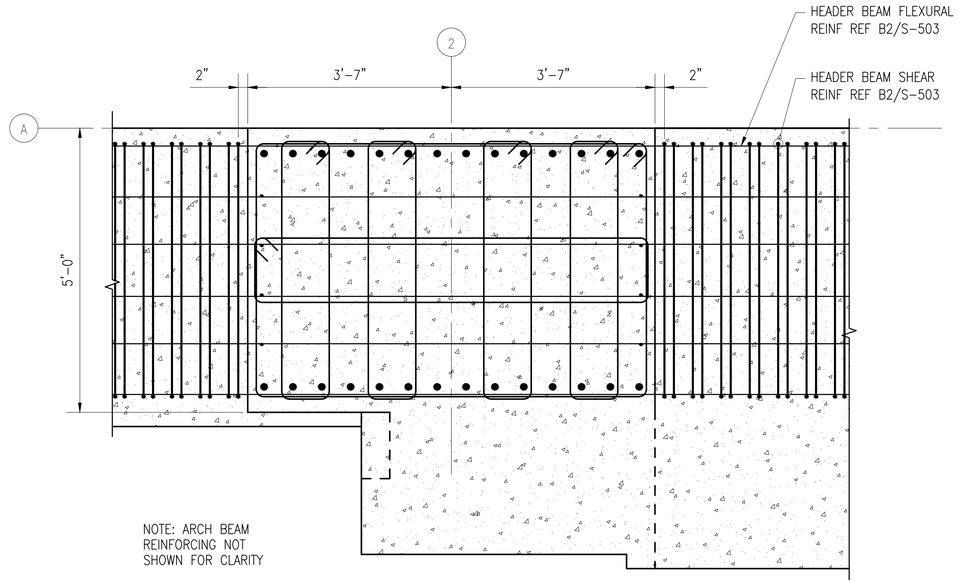
B1 HEADER BEAM CORNER SECTION
SCALE: 3/4" = 1'-0"



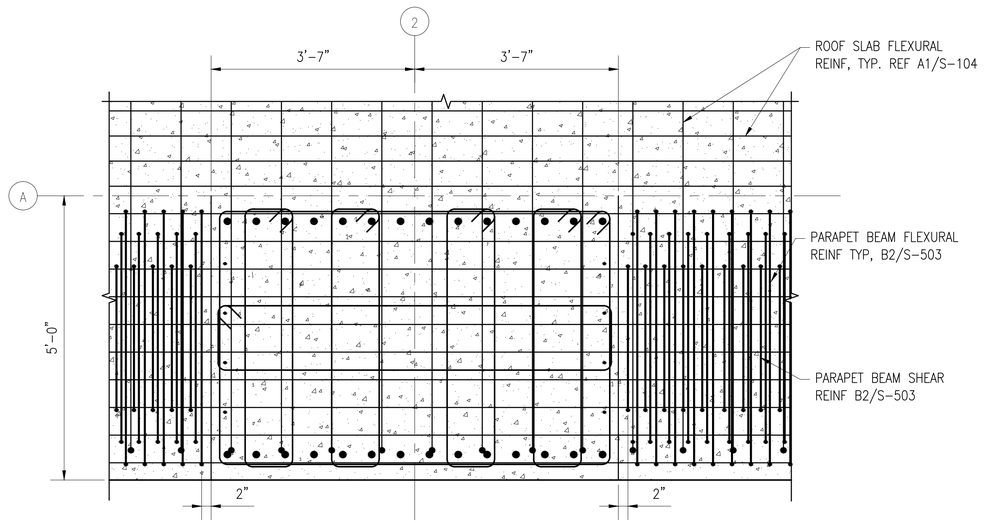
B2 HEADER BEAM INTERIOR SECTION
SCALE: 3/4" = 1'-0"



B4 HEADER BEAM MIDDLE SECTION
SCALE: 3/4" = 1'-0"



A1 PILASTER INTERIOR THRU HEADER BEAM
SCALE: 3/4" = 1'-0"



A3 PILASTER INTERIOR THRU PARAPET BEAM / ROOF SLAB
SCALE: 3/4" = 1'-0"

APPR	DATE	SYM	DESCRIPTION

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	-- --
BRANCH MANAGER	-- --
CHIEF ENG/ARCH	-- --
FIRE PROTECTION	-- --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

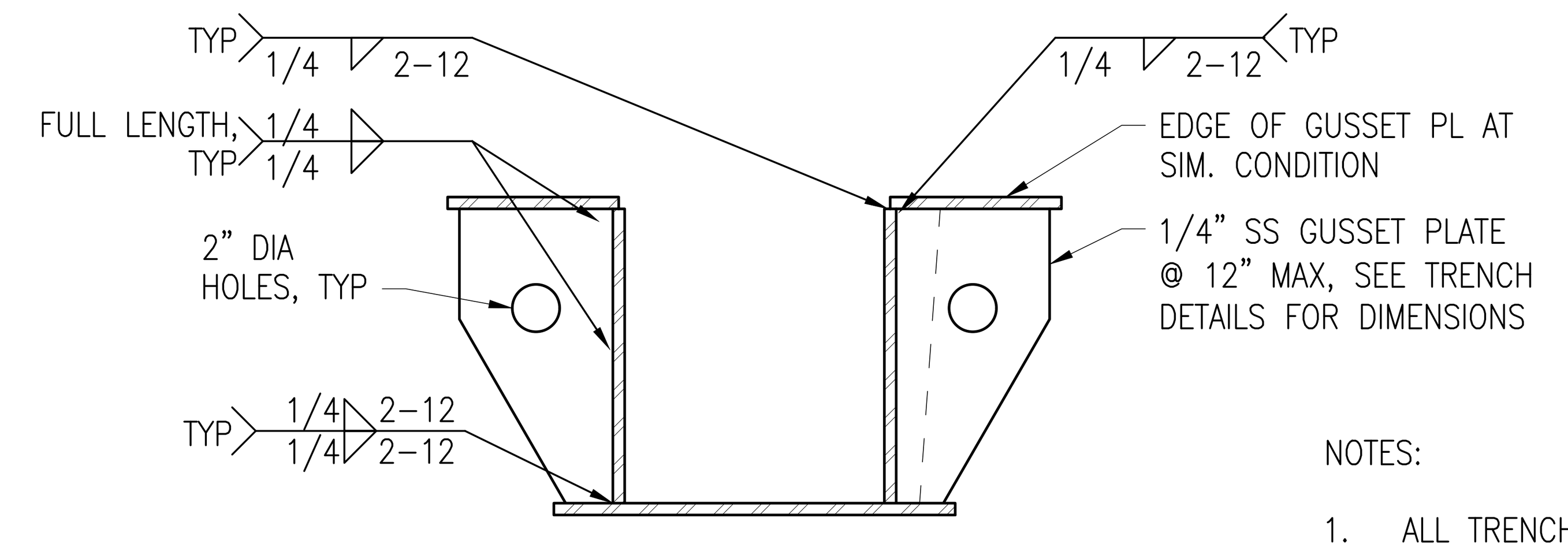
TYPE H BOX MAGAZINE

BOUNDARY ELEMENT REINF DETAILS

SCALE:	3/4" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138809
SHEET	33 OF 85

S-503

DRAWFORM REVISION: 25 AUGUST 2020



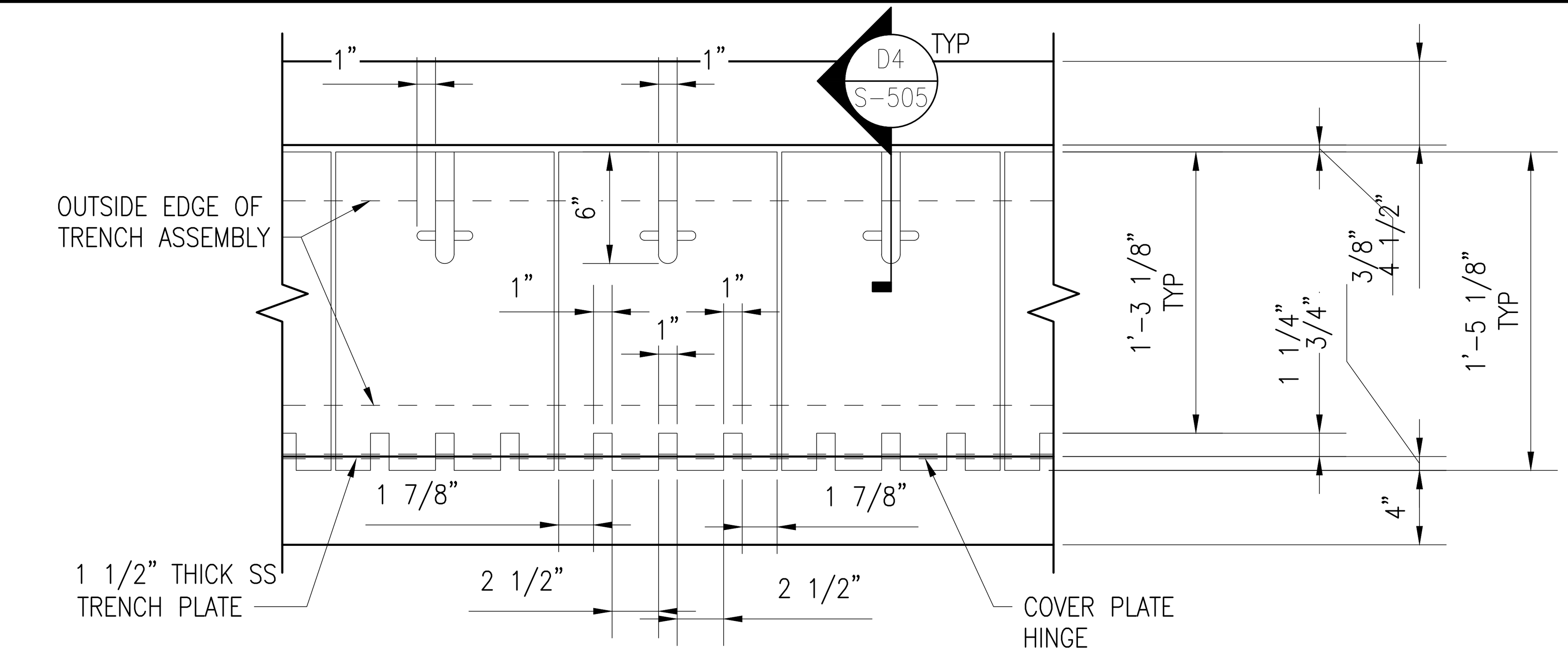
NOTES:

1. ALL TRENCH PLATES ARE 1/2" THK SS, UNO.
2. SEE TRENCH DETAILS FOR OVERALL SIZE OF TRENCH PLATE ASSEMBLY.
3. TRENCH PL MFR TO PROVIDE OVERSIZE BOLT HOLES ON TRENCH BOTTOM PL FOR ACCESS OF SOLE PL ANCHOR BOLTS TO CONC.

D1 TRENCH ASSEMBLY AND WELDMENT

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

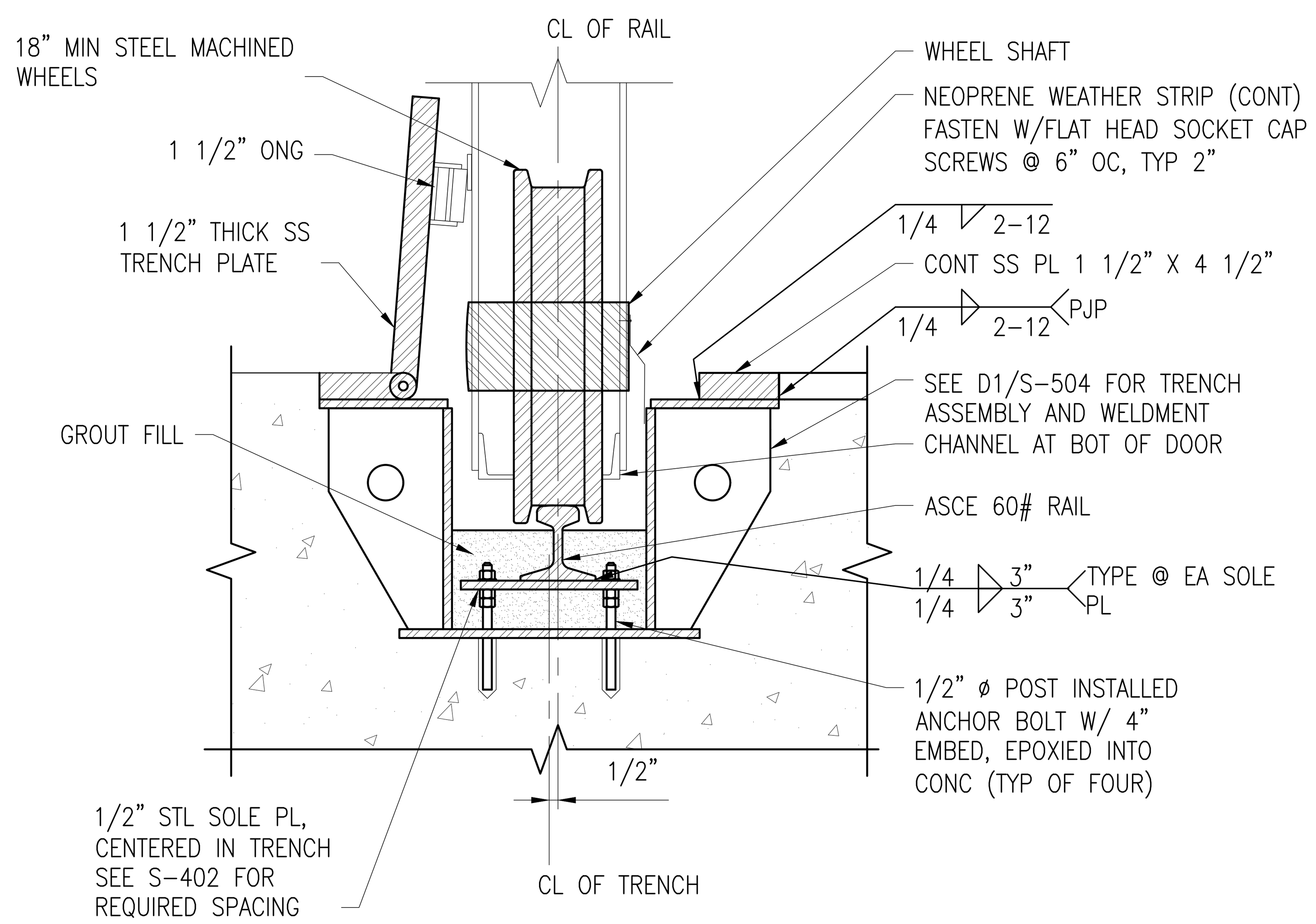
0 6" 1' 2'



C3 TRENCH COVER PLATE AT MAGAZINE DOOR

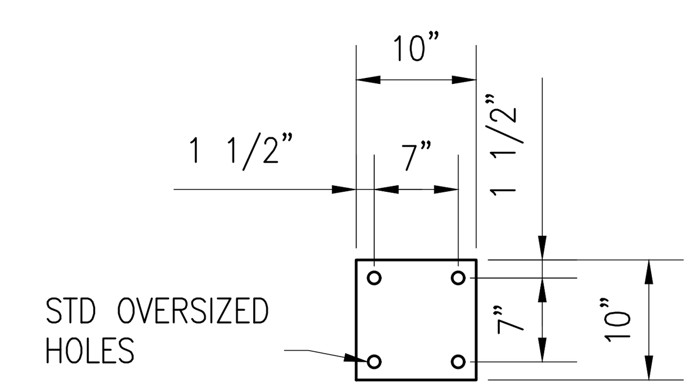
SCALE: 1 1/2" = 1'-0"

0 6" 1' 2'



NOTES:

1. TENSION ANCHOR BOLTS TO SOLE PLATE PRIOR TO POURING GROUT.

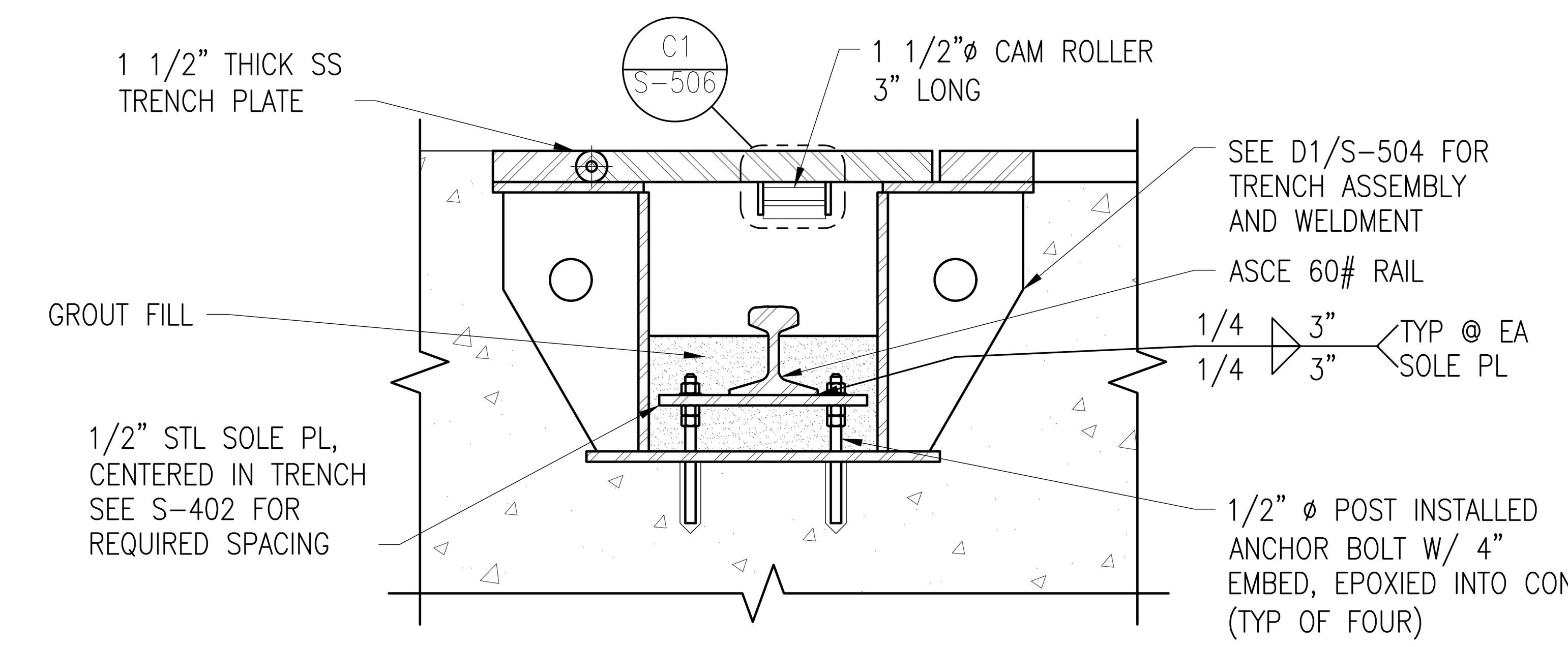


SOLE PLATE PLAN

B1 TRENCH AT MAGAZINE OPEN COVER

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

0 6" 1' 2'



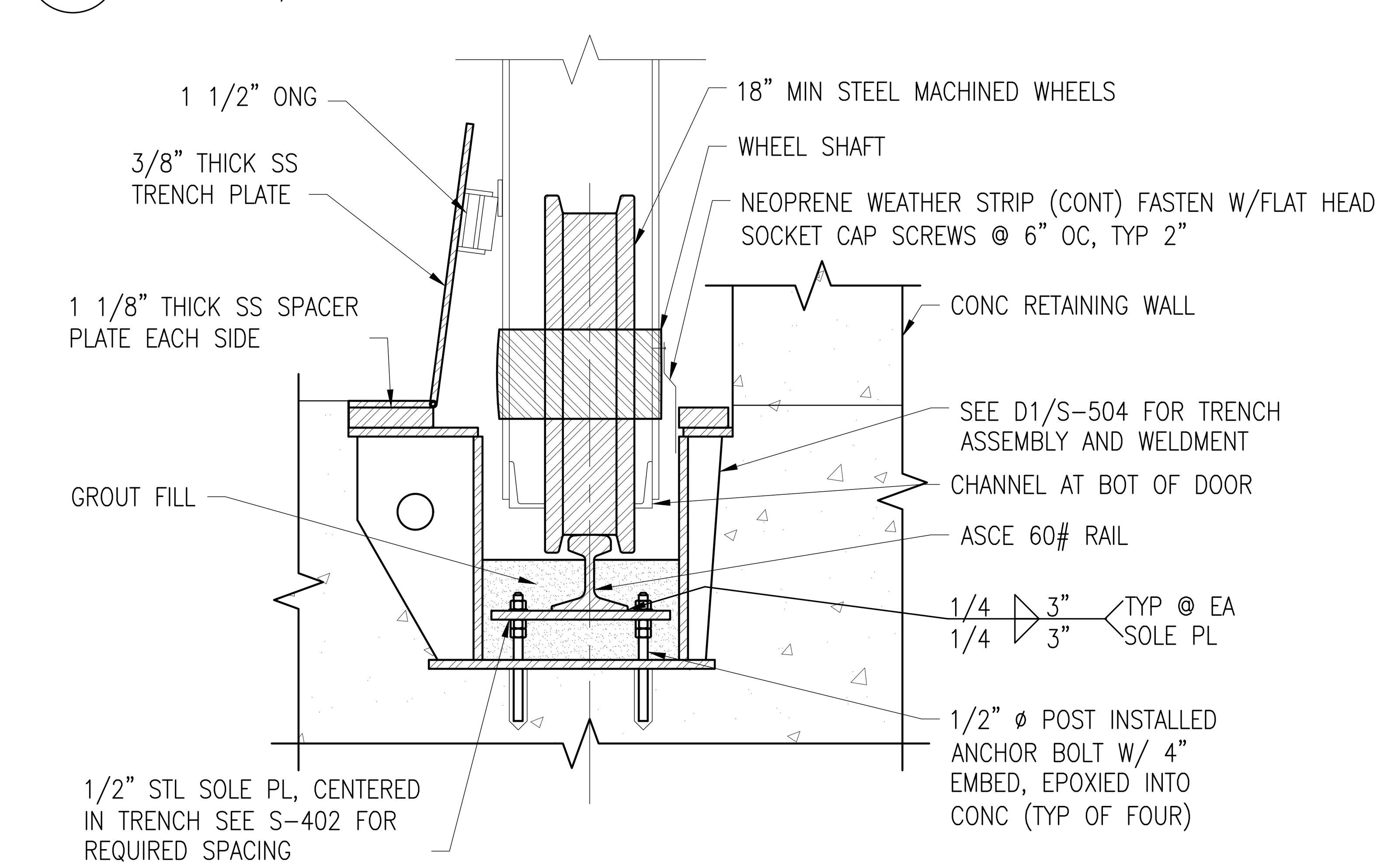
NOTES:

1. TENSION ANCHOR BOLTS TO SOLE PLATE PRIOR TO POURING GROUT.

B3 TRENCH AT MAGAZINE WITH CLOSED COVER

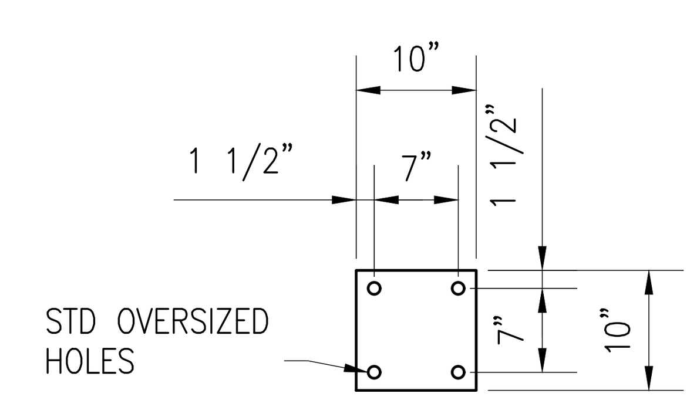
SCALE: 1 1/2" = 1'-0"

0 6" 1' 2'



NOTES:

1. TENSION ANCHOR BOLTS TO SOLE PLATE PRIOR TO POURING GROUT.

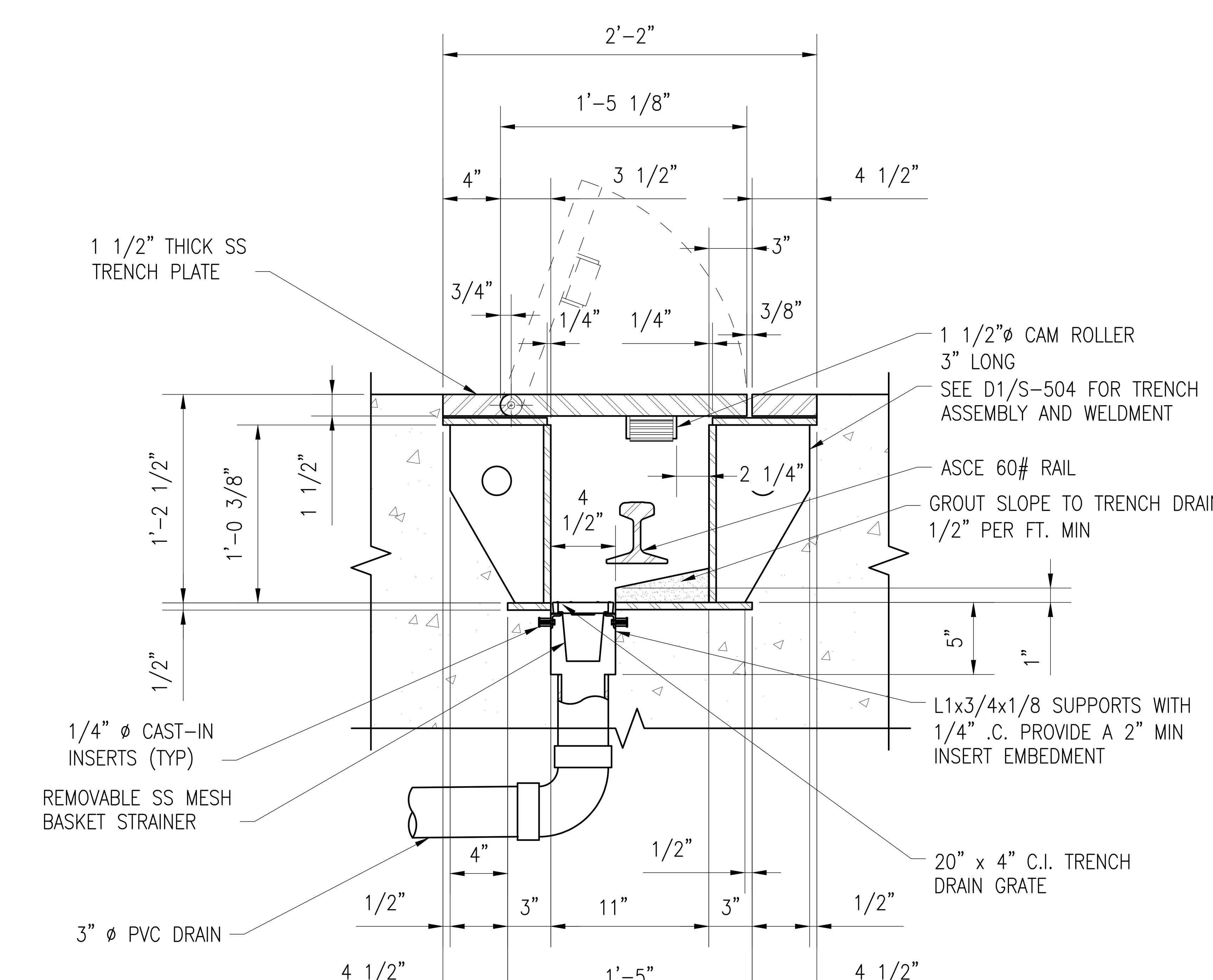


SOLE PLATE PLAN

A1 TRENCH AT RETAINING WALL/PILASTER

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

0 6" 1' 2'



A3 TRENCH AT MAGAZINE AT DRAIN

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

0 6" 1' 2'

SYM	DESCRIPTION	DATE	APPR

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES FJ	DRW MR	CHK DW

PM/DM --
BRANCH MANAGER --
CHIEF ENG/ARCH --
FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

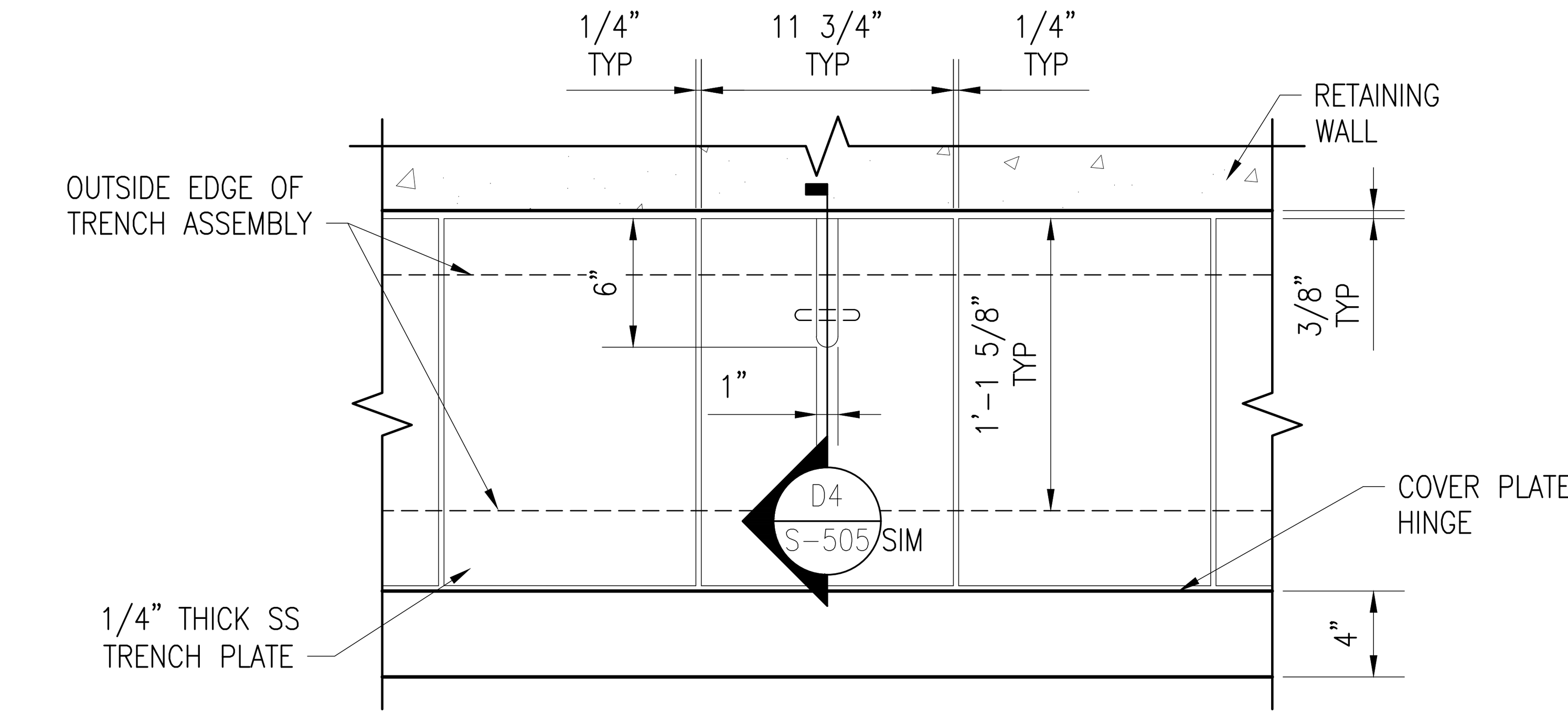
TYPE H BOX MAGAZINE

DOOR TRENCH AND COVER DETAILS

SCALE: 1 1/2" = 1'-0"
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138810
SHEET 34 OF 85

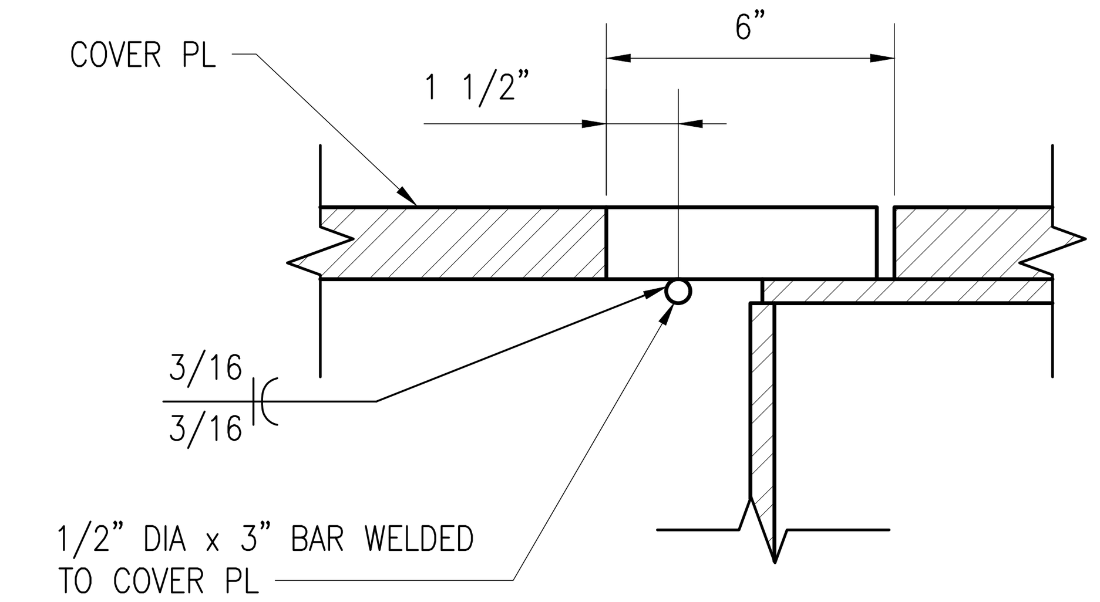
S-504

DRAWFORM REVISION: 25 AUGUST 2020



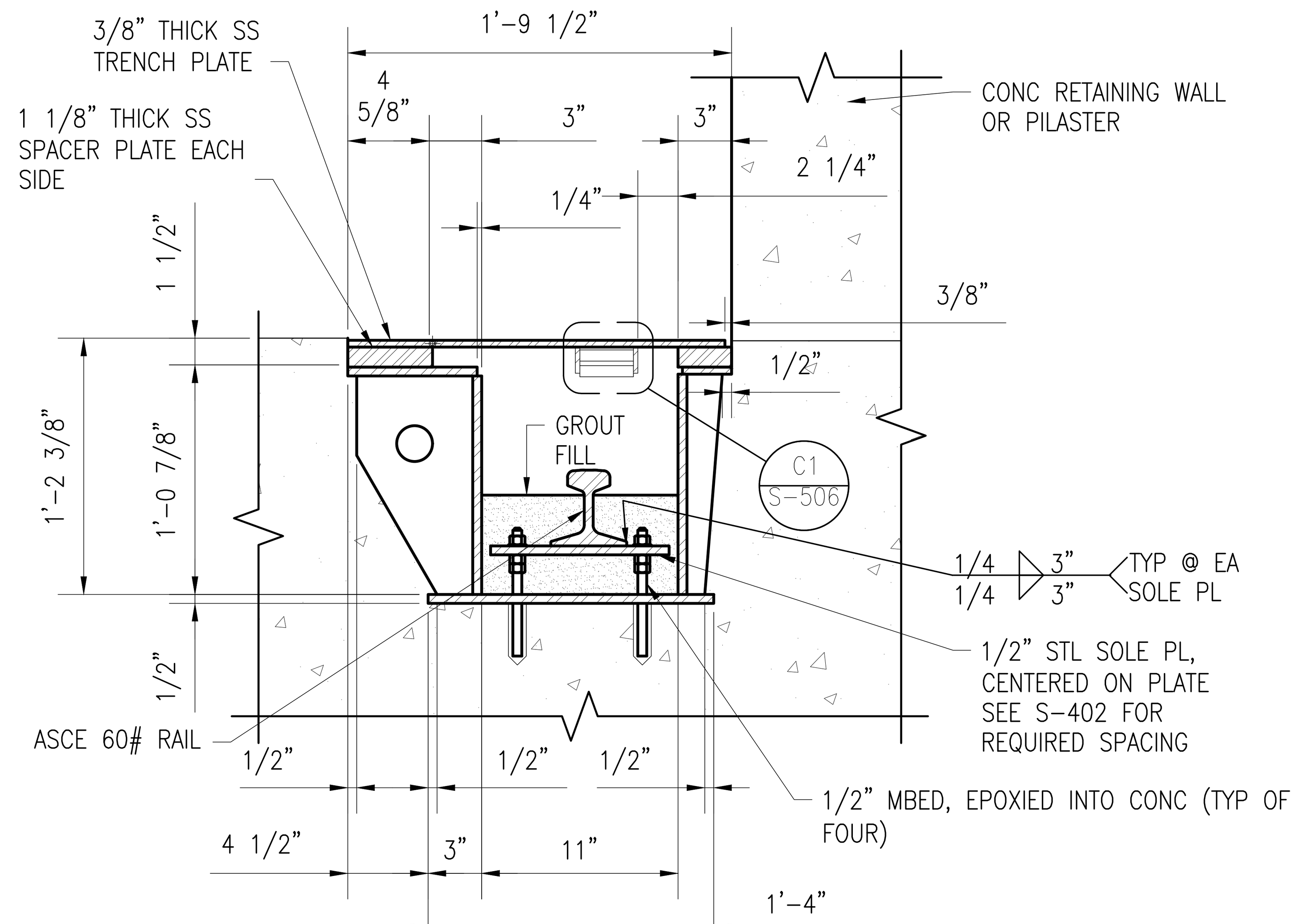
D1 TRENCH COVER PLATE AT RETAINING WALL/PILASTER

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



D4 TRENCH PLATE MANUAL LIFT

SCALE: 3" = 1'-0"

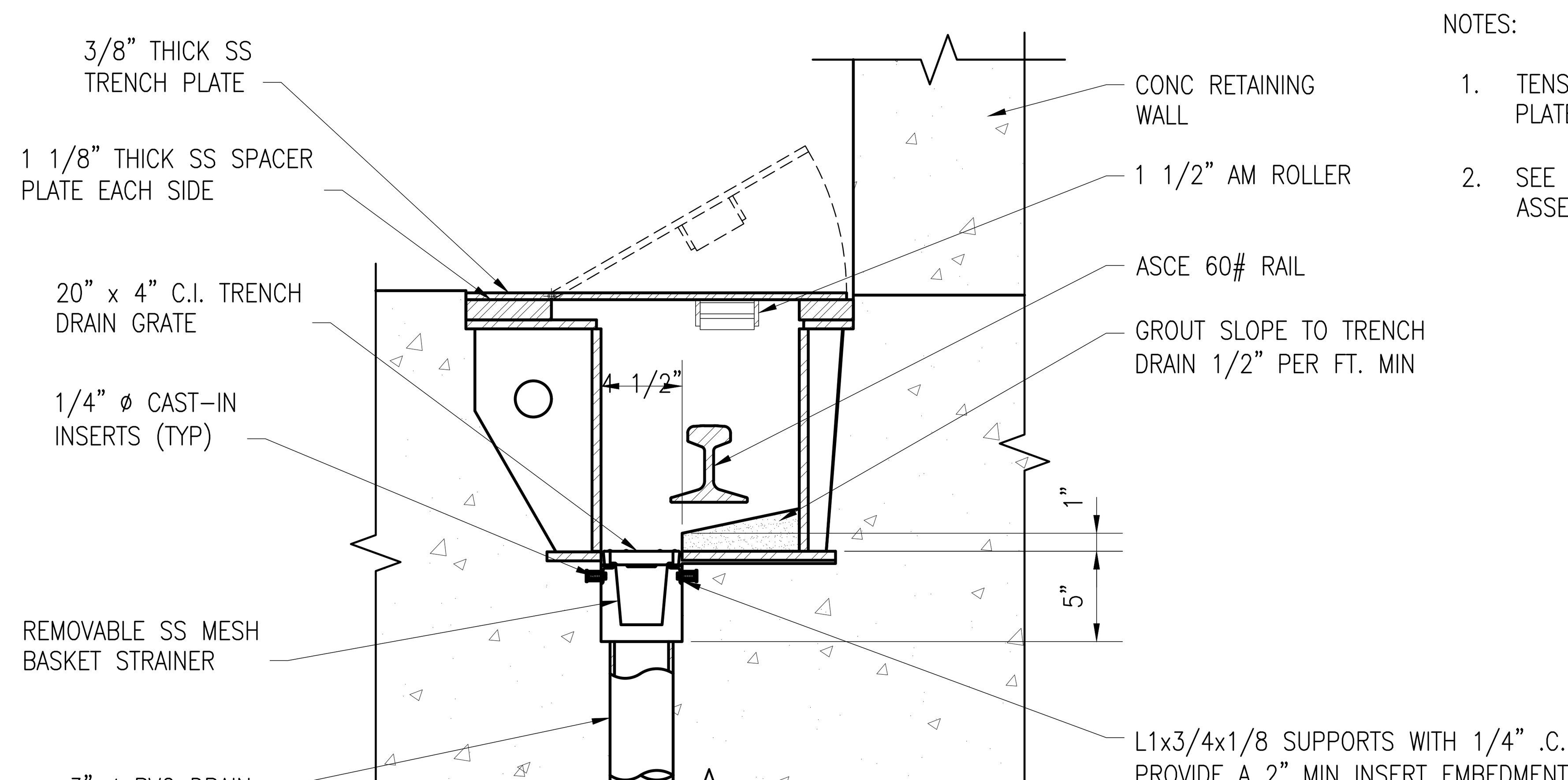


B1 TRENCH AT RETAINING WALL/PILASTER WITH CLOSED COVER

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

NOTES:

1. TENSION ANCHOR BOLTS TO SOLE PLATE PRIOR TO POURING GROUT.
2. SEE D1/S-504 FOR TRENCH ASSEMBLY AND WELDMENT.

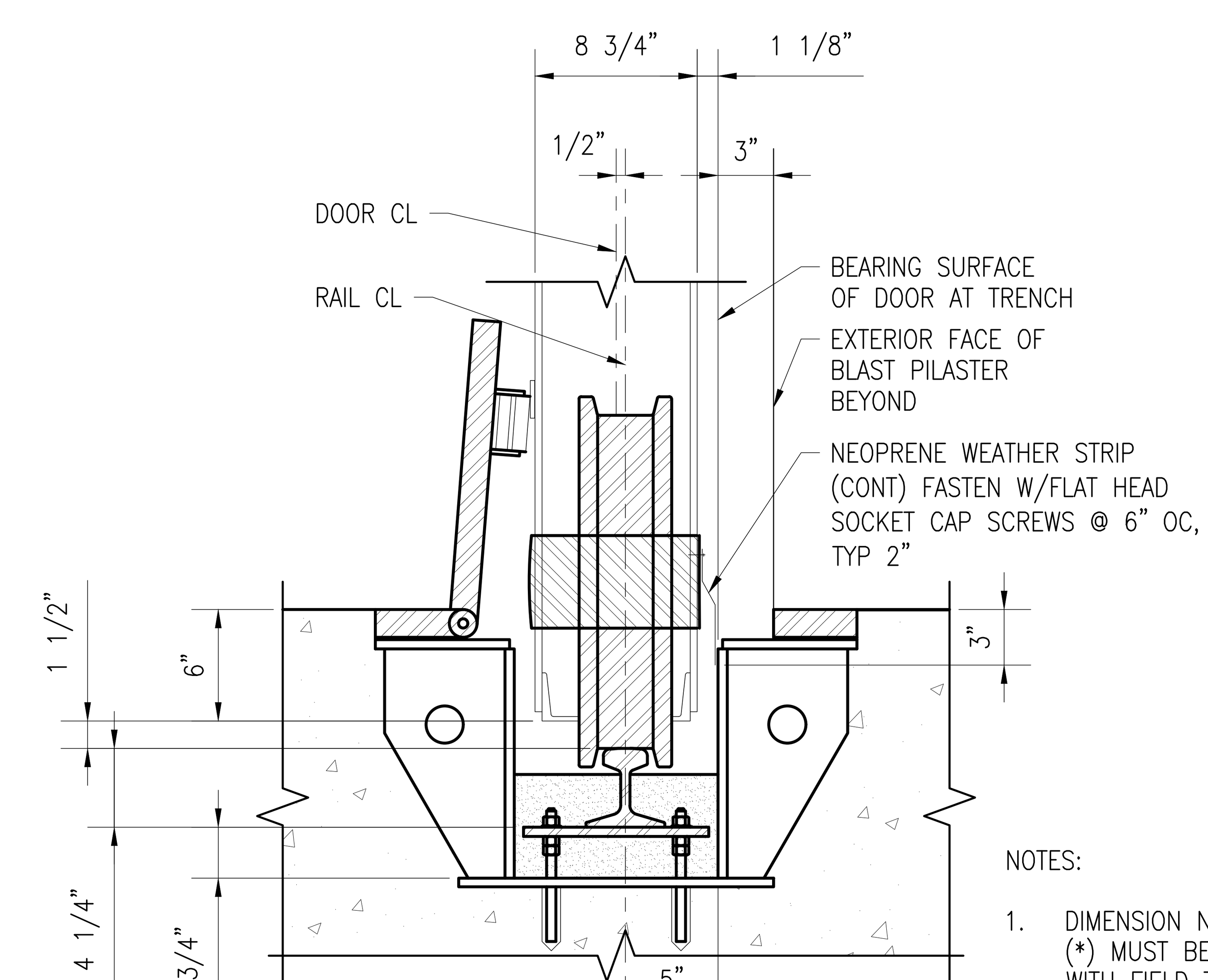


A1 TRENCH AT RETAINING WALL/PILASTER AT DRAIN

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

NOTES:

1. TENSION ANCHOR BOLTS TO SOLE PLATE PRIOR TO POURING GROUT.
2. SEE D1/S-504 FOR TRENCH ASSEMBLY AND WELDMENT.



A4 DOOR ALIGNMENT AT TRENCH

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

NOTES:

1. DIMENSION NOTED WITH AN (*) MUST BE COORDINATED WITH FIELD TOLERANCES TO PROVIDE A LEVEL RAIL AND TO PROVIDE THE REQUIRED DOOR BEARING SURFACE.

NAVFAC

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

DES FJ | DRW MR | CHK DW

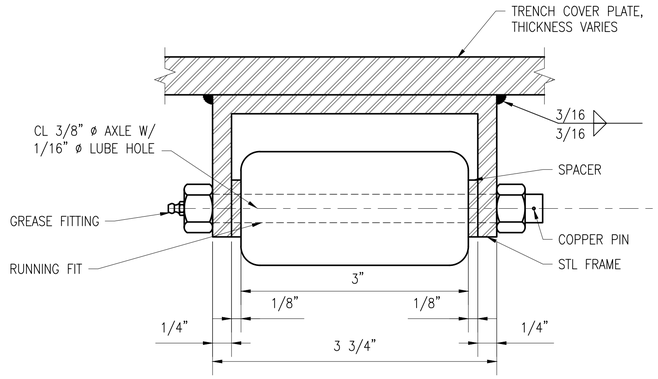
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-ATLANTIC
HAMPTON ROADS, VIRGINIA

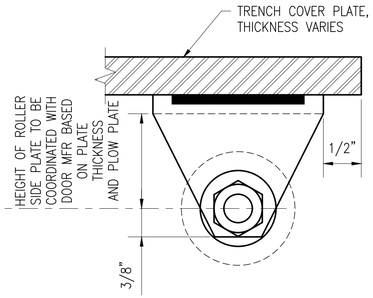
TYPE H BOX MAGAZINE

DOOR TRENCH AND COVER DETAILS

SCALE: AS NOTED
EPROJECT NO: 1702805
NAVFAC DRAWING NO. 14138811
SHEET 35 OF 85

S-505



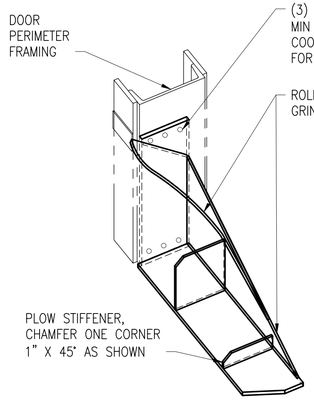


ASSEMBLY DESIGN/MANUFACTURING NOTES:

1. ASSEMBLY SHOWN IS NOTIONAL AND IT IS FOR BIDDING PURPOSES. ASSEMBLY MAY VARY BASED ON DOOR MANUFACTURER'S DESIGN.

C1 TYPICAL TRENCH COVER ROLLER

SCALE: 12" = 1'-0"

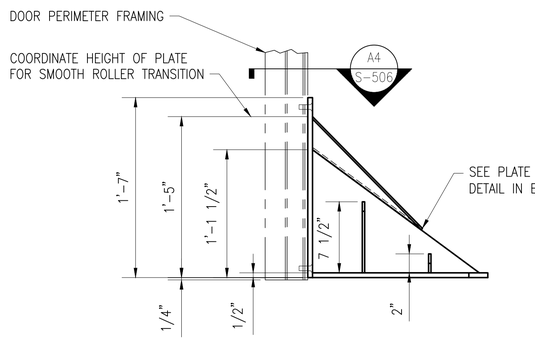


GENERAL PLOW NOTES:

1. ALL PLATES ARE 1/4" THICK PLATE UNLESS NOTED OTHERWISE IN DETAILS.
2. WELD ALL JOINTS 3/16" FILLET UNLESS NOTED OTHERWISE.
3. DIMENSIONS NOTED WITH AN (*) MUST BE COORDINATED WITH PLOW MANUFACTURER ENSURING THAT DOOR TRENCH COVER ROLLER HAS A SMOOTH TRANSITION BETWEEN CLOSED AND OPEN POSITIONS.
4. PLOW TO BE INSTALLED ON BOTH ENDS OF EACH DOOR.

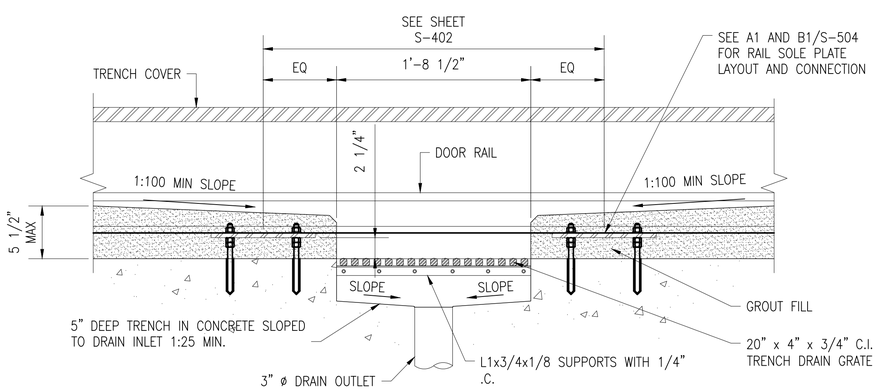
B4 PLATE PLOW ISOMETRIC VIEW

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



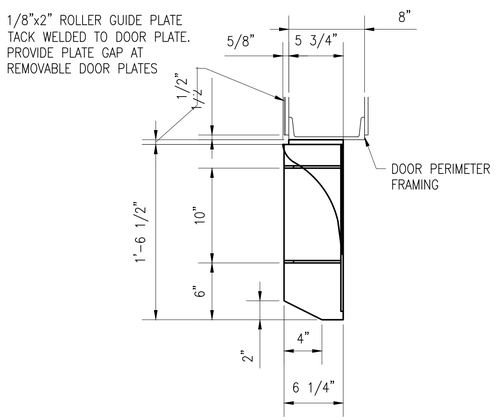
B1 DETAIL - PLATE PLOW SIDE ELEVATION

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



A1 TRENCH DRAIN BLOCKOUT

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



A4 DETAIL - PLATE PLOW PLAN

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

APPR'D | DATE | DESCRIPTION | SYM

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

DOOR STOP, PLOW AND TRENCH COVER ROLLER DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1702805

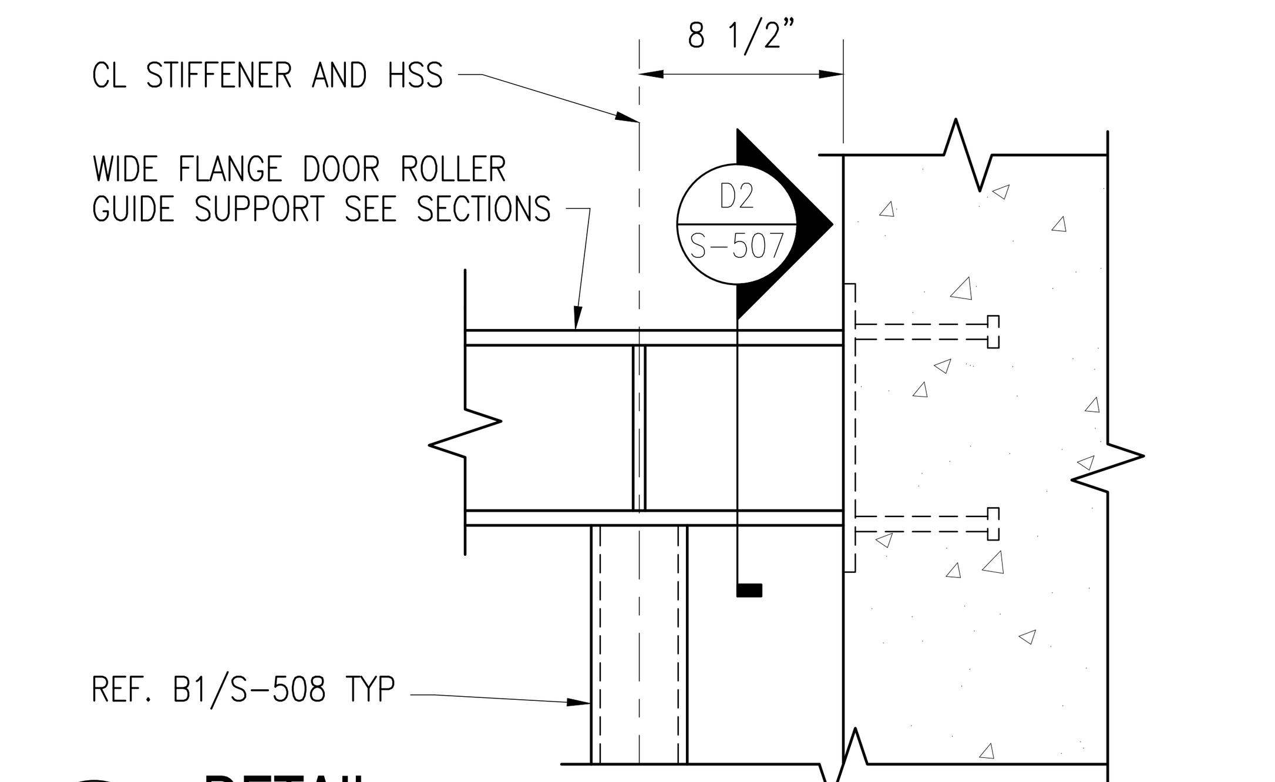
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138812

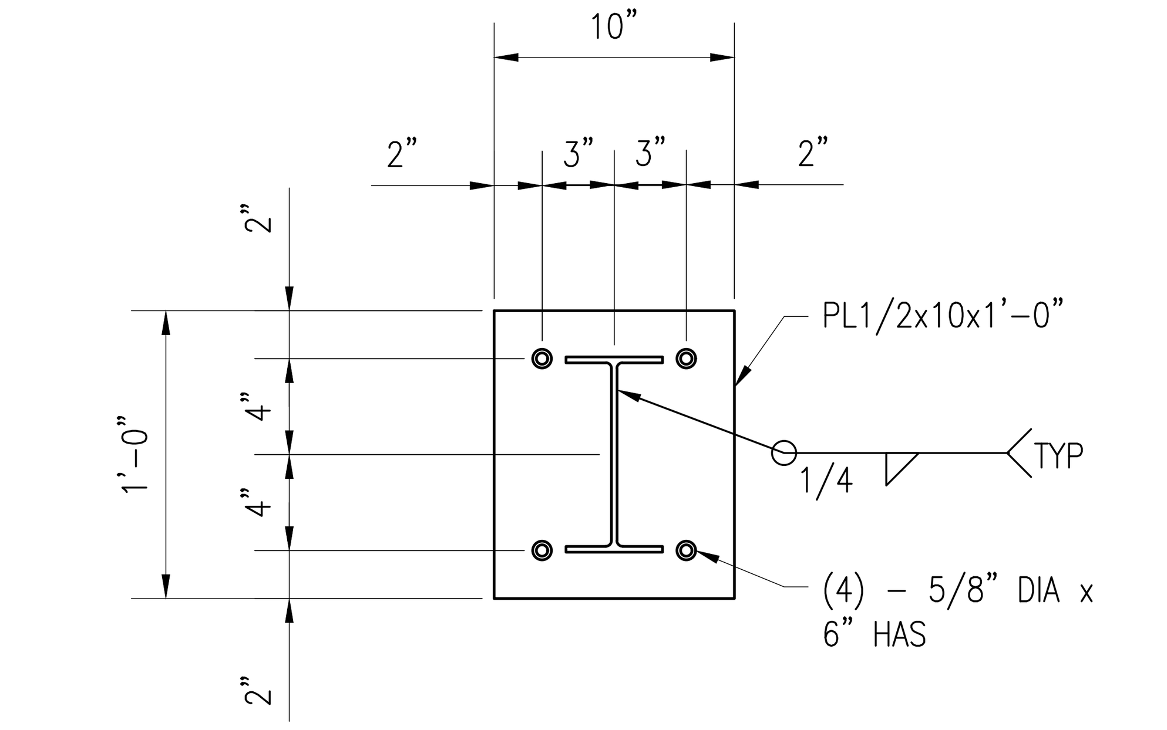
SHEET 36 OF 85

S-506

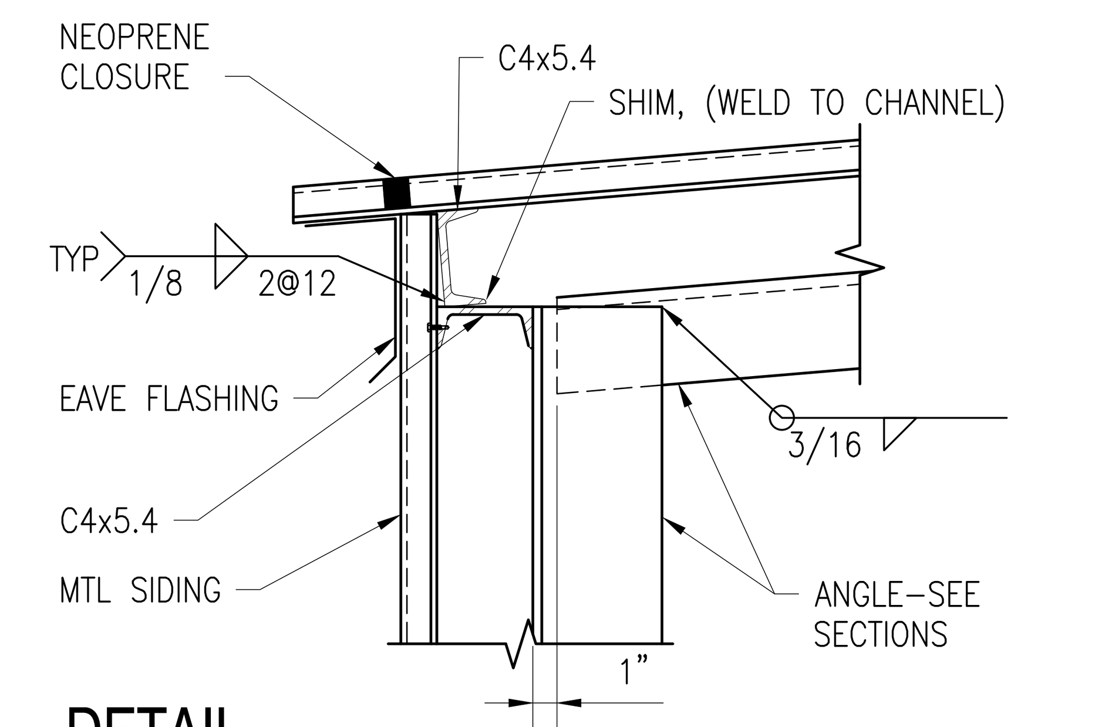
DRAWFORM REVISION: 25 AUGUST 2020



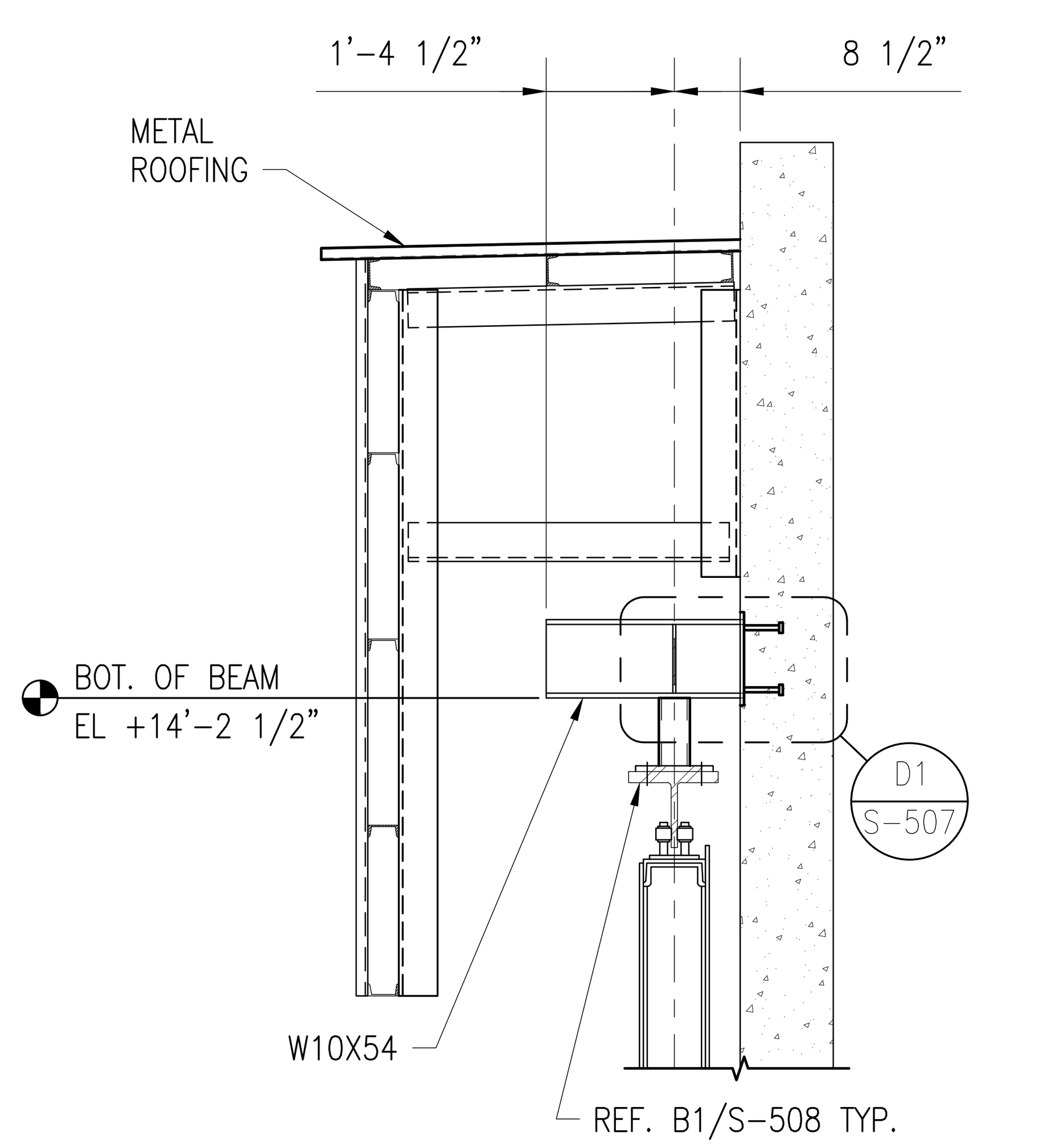
D1 DETAIL
SCALE: 1 1/2" = 1'-0"



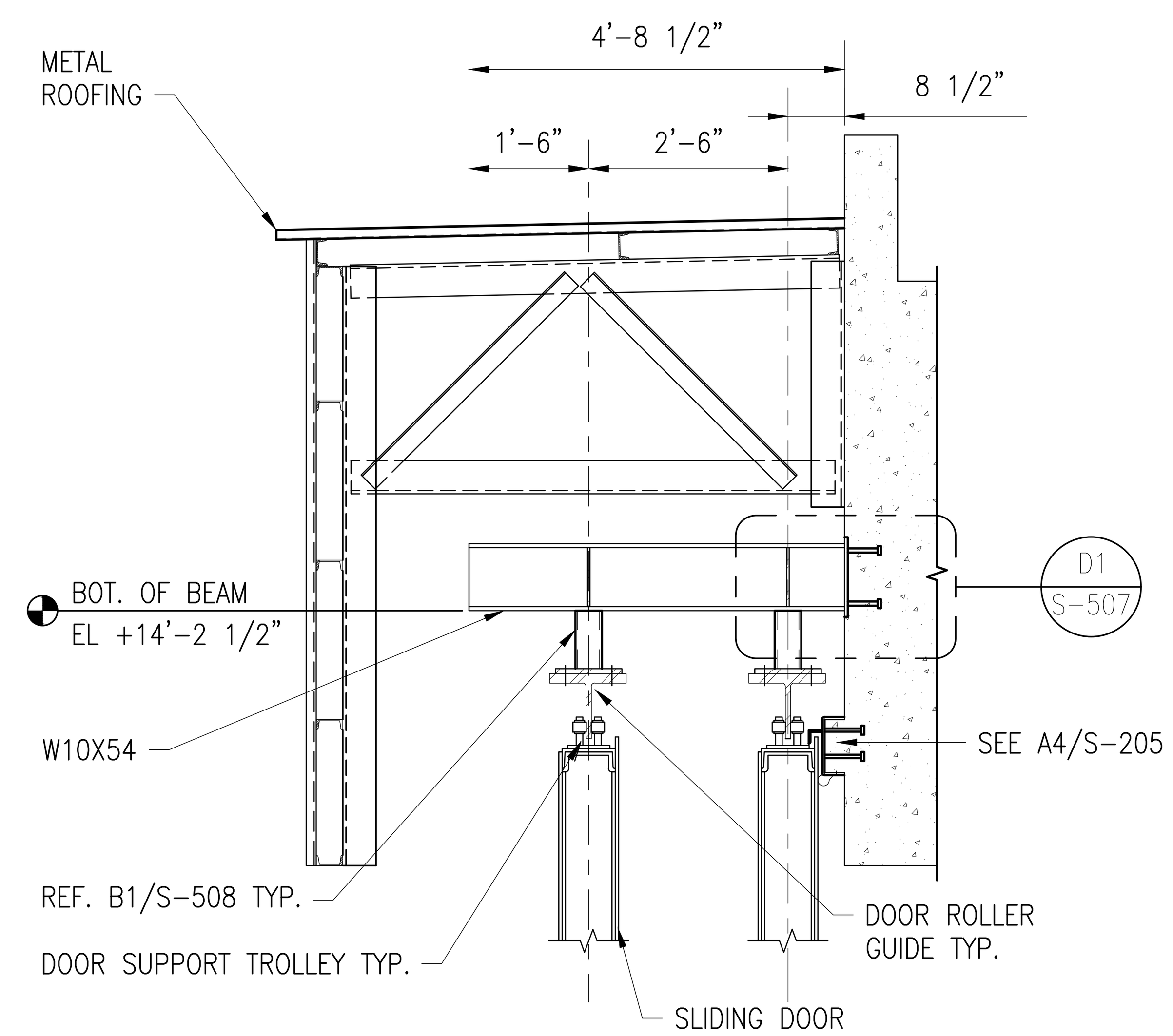
D2 SECTION
SCALE: 1 1/2" = 1'-0"



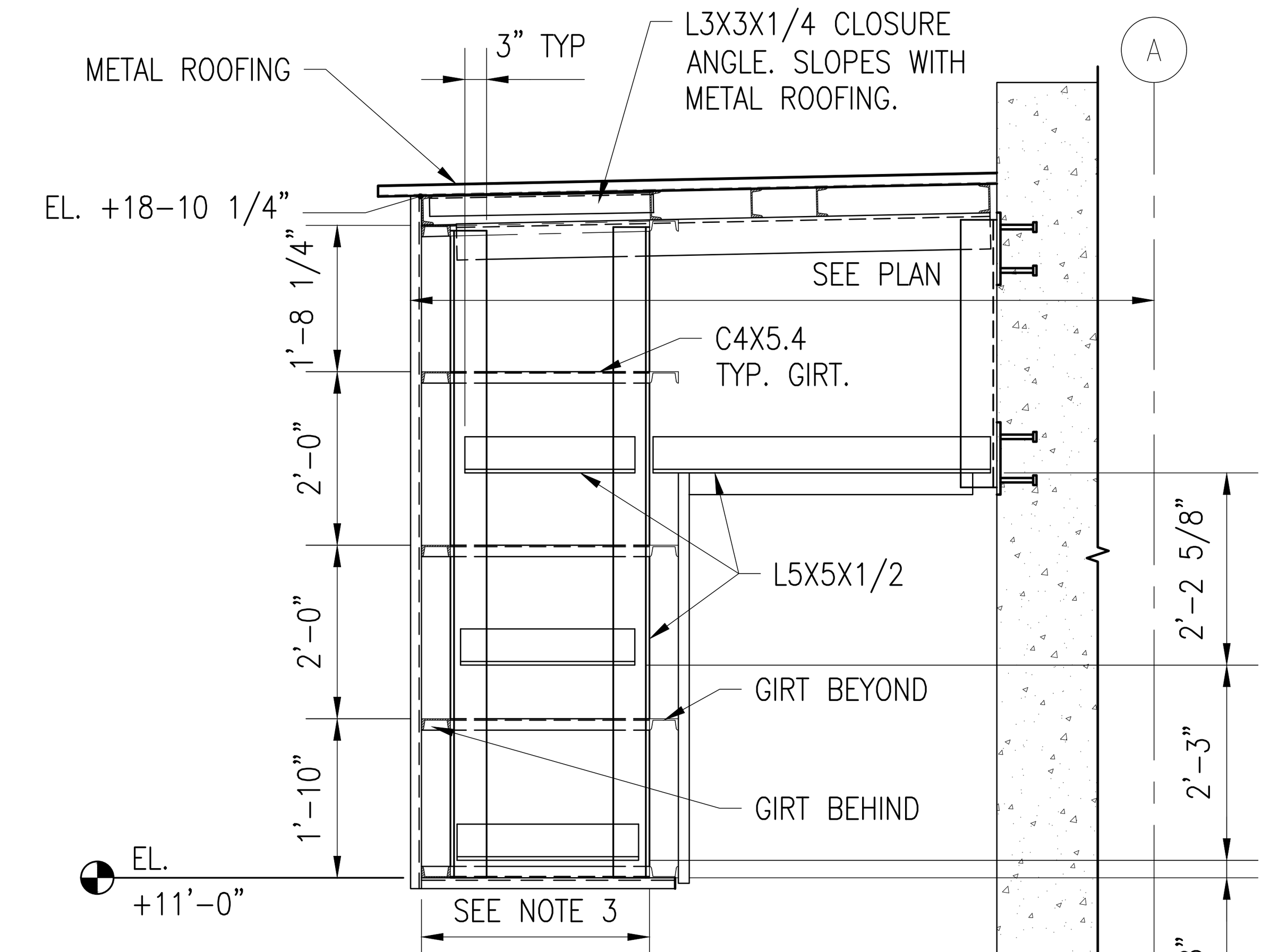
D3 DETAIL
SCALE: 1 1/2" = 1'-0"



B1 DOOR RAIL SUPPORT
SCALE: 1/2" = 1'-0"

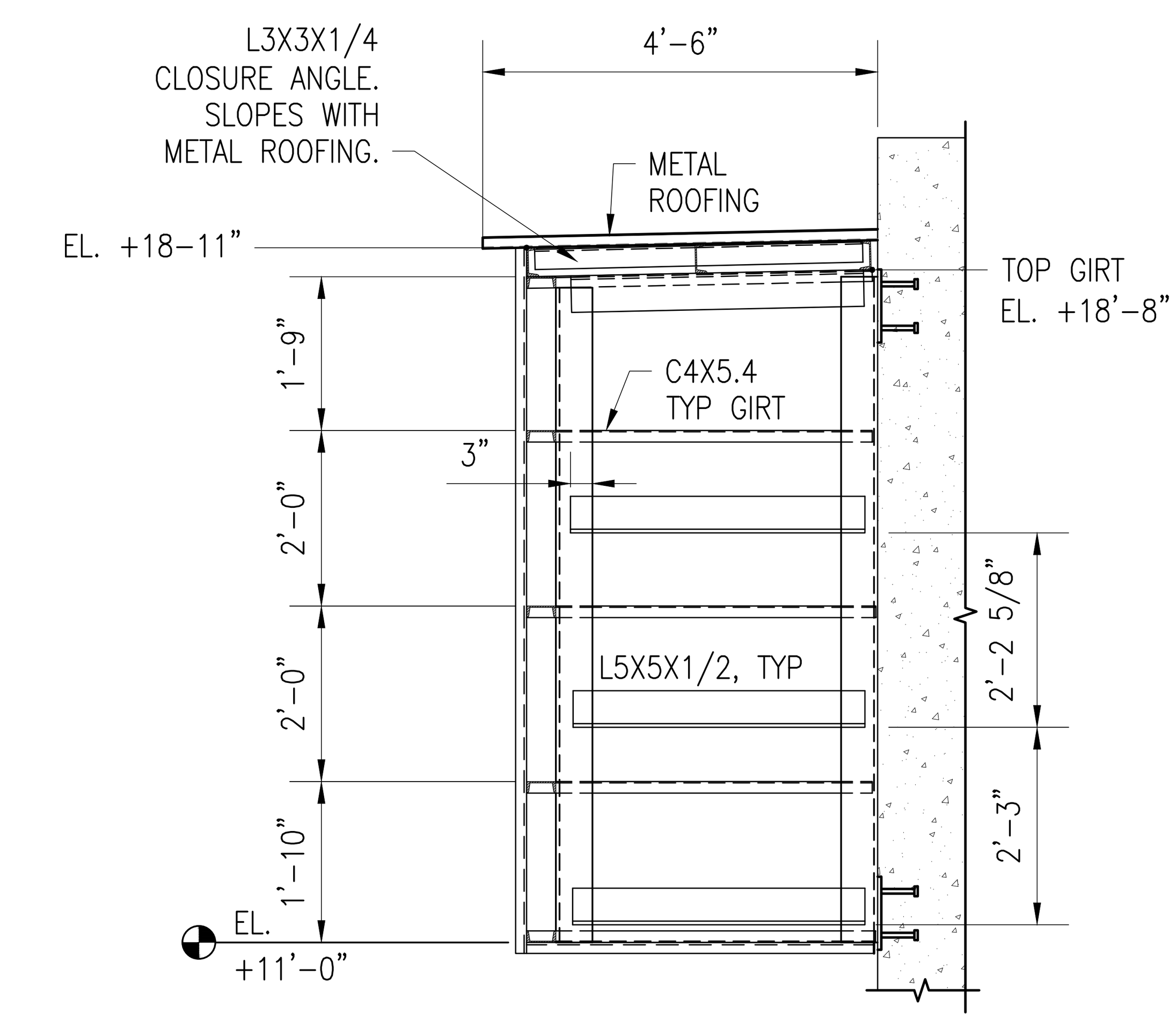


B2 DOOR RAIL SUPPORT
SCALE: 1/2" = 1'-0"



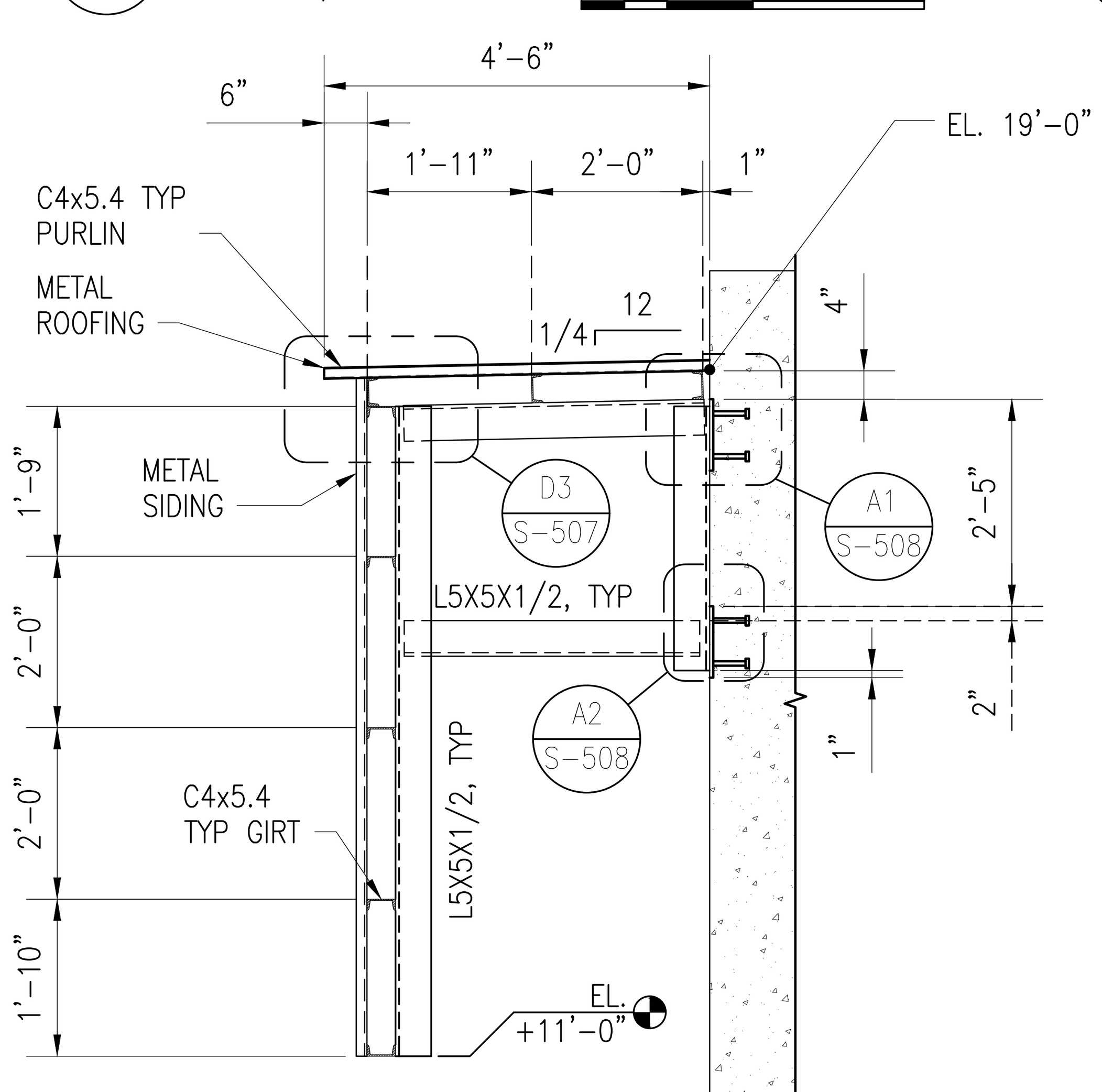
1. SEE B4/S-508 FOR CONNECTIONS.
2. REFERENCE OTHER SECTIONS ON THIS SHEET FOR FRAMING NOT CALLED OUT.
3. GIRT EXT. SIDE DIM
   @ GRID 1 & 6 = 2'-7 1/2"
   @ GRID 2 & 4 = 1'-10 1/2"

B3 CANOPY WIDTH TRANSITION
SCALE: 1/2" = 1'-0"



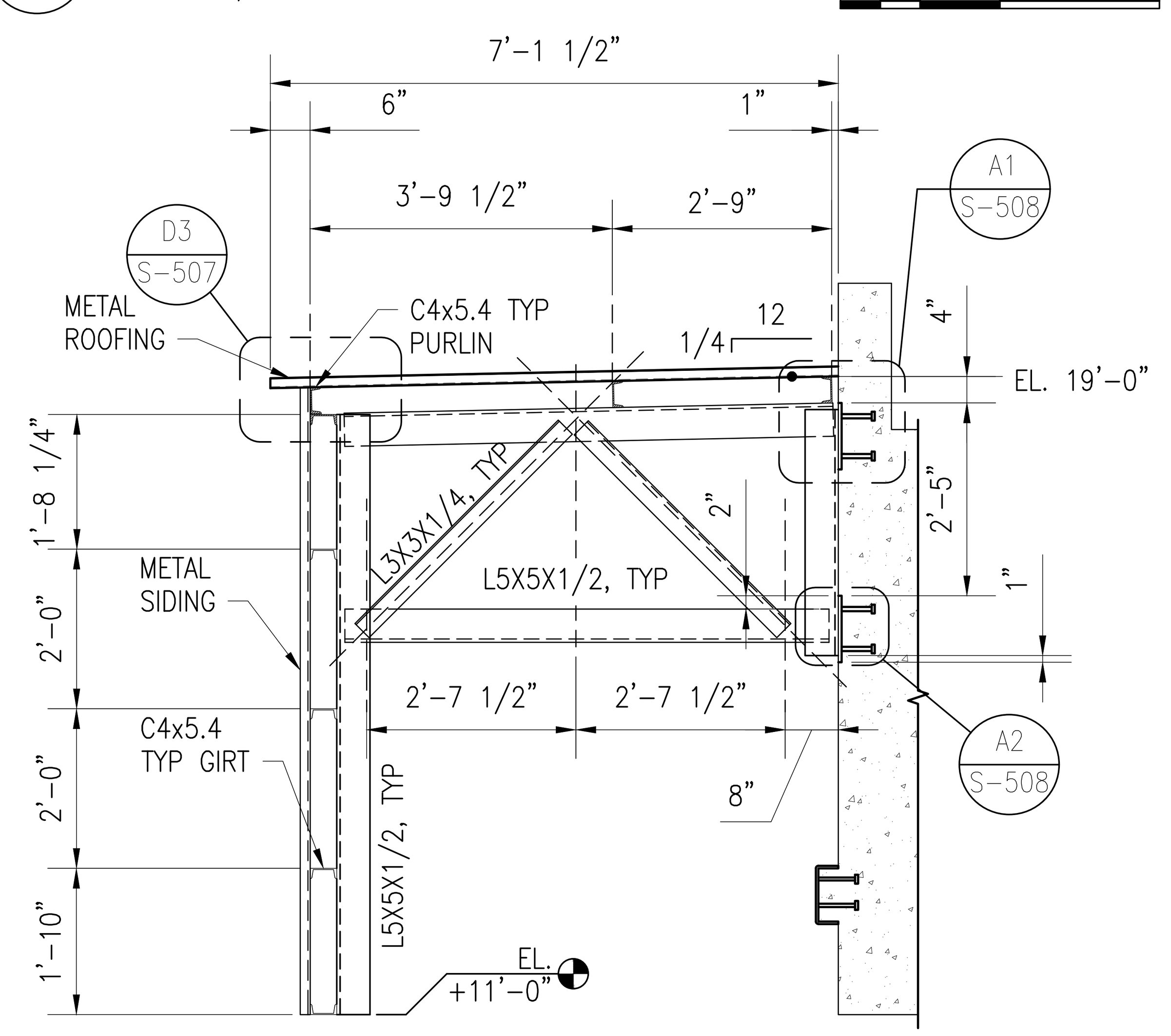
1. SEE B4/S-508 FOR CONNECTIONS.
2. REFERENCE OTHER SECTIONS ON THIS SHEET FOR FRAMING NOT CALLED OUT.

B4 CANOPY END CLOSURE
SCALE: 1/2" = 1'-0"



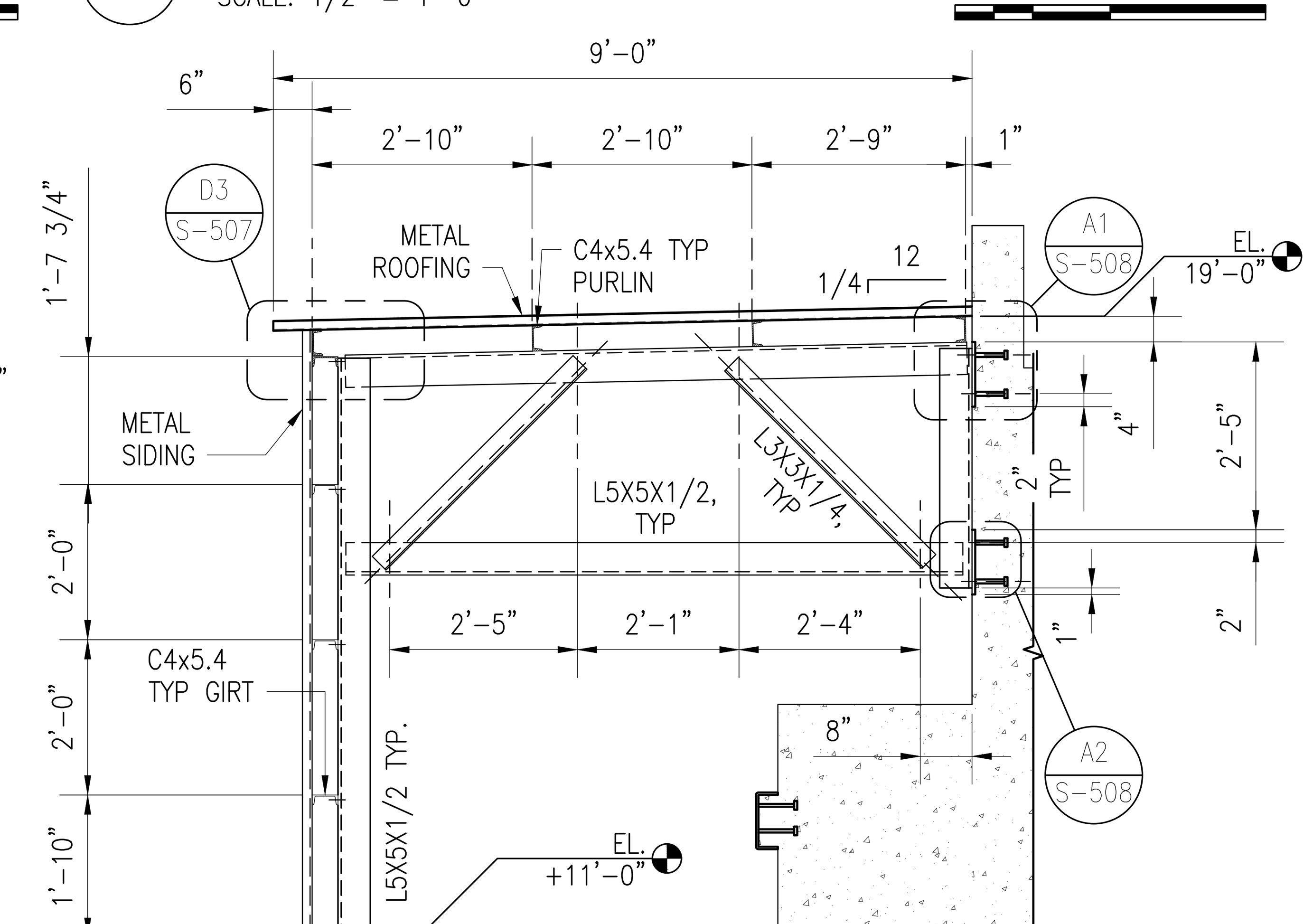
1. SEE B4/S-508 FOR CONNECTIONS.

A1 CANOPY SECTION
SCALE: 1/2" = 1'-0"



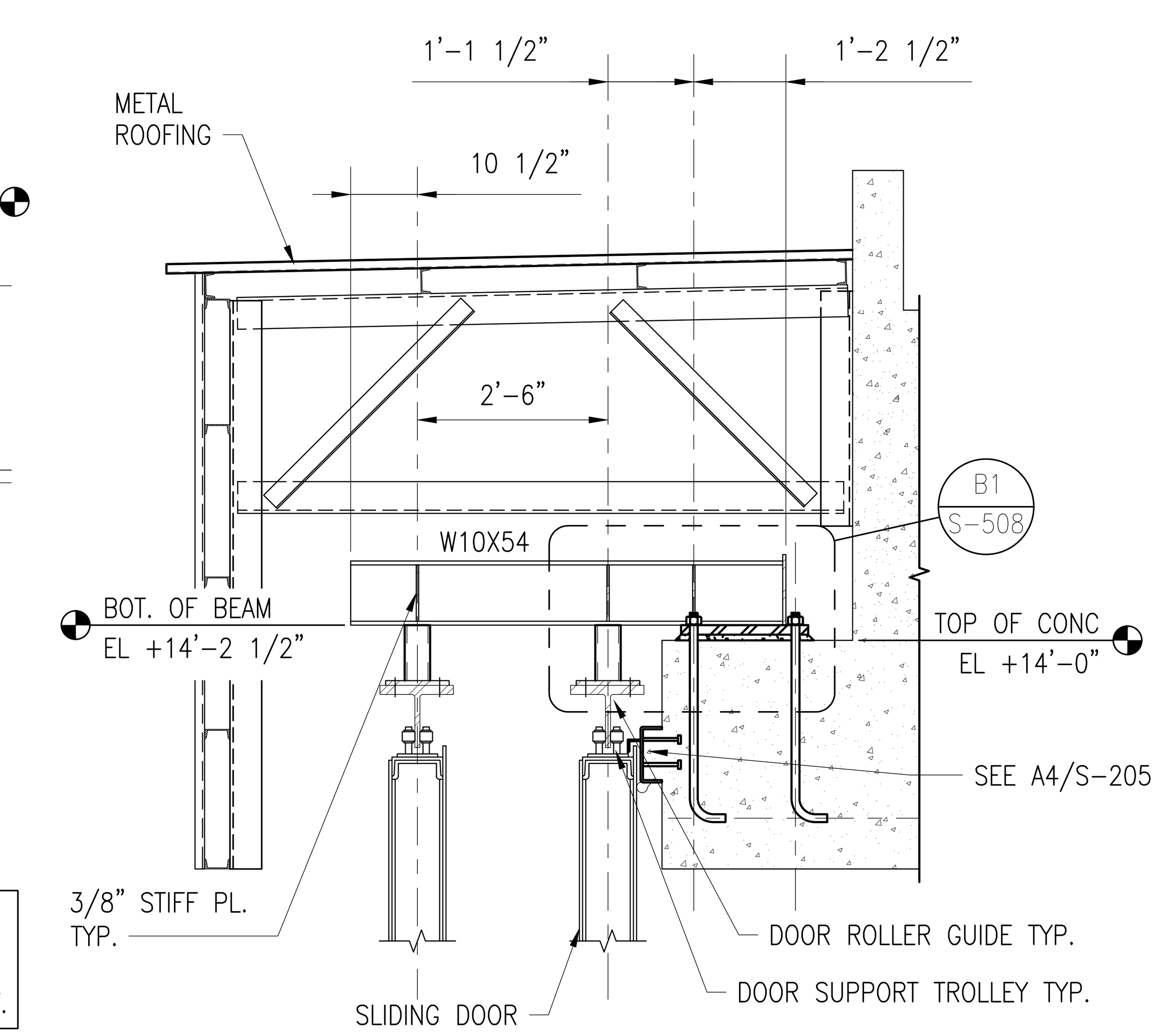
1. SEE B4/S-508 FOR CONNECTIONS.

A2 CANOPY SECTION
SCALE: 1/2" = 1'-0"



1. SEE B4/S-508 FOR CONNECTIONS.
2. 18 GAGE X 1 1/2" DEEP FACTORY FINISHED HI-RIB METAL ROOFING & SIDING. FASTEN TO PURLIN & GIRT WITH #14 STAINLESS STEEL SCREWS & WASHERS AT EA. VALLEY (MINIMUM 5 PER PANEL) USE 1/4" BUTYL TAPE TO SEAL LAPS. TYP. FOR THE CANOPY.

A3 CANOPY SECTION
SCALE: 1/2" = 1'-0"



A4 DOOR RAIL SUPPORT
SCALE: 1/2" = 1'-0"

SYM	DESCRIPTION	DATE	APPR

NAVFAC

APPROVED 05/22/2024
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES FJ | DRW MR | CHK DW

PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-ATLANTIC
HAMPTON ROADS, VIRGINIA

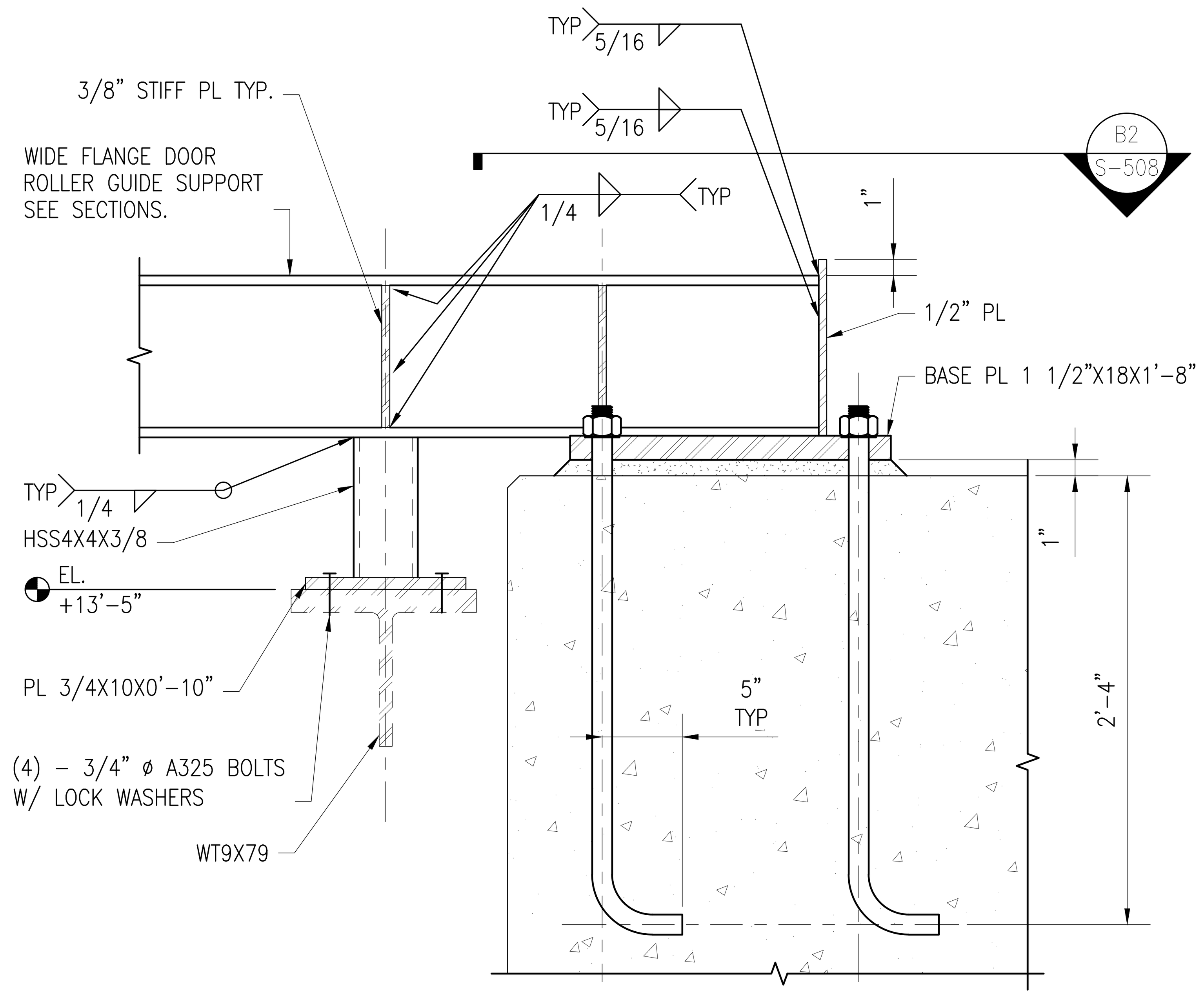
TYPE H BOX MAGAZINE
CANOPY AND RAIL SUPPORT DETAILS

SCALE: AS NOTED
EPROJECT NO: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138813
SHEET 37 OF 85

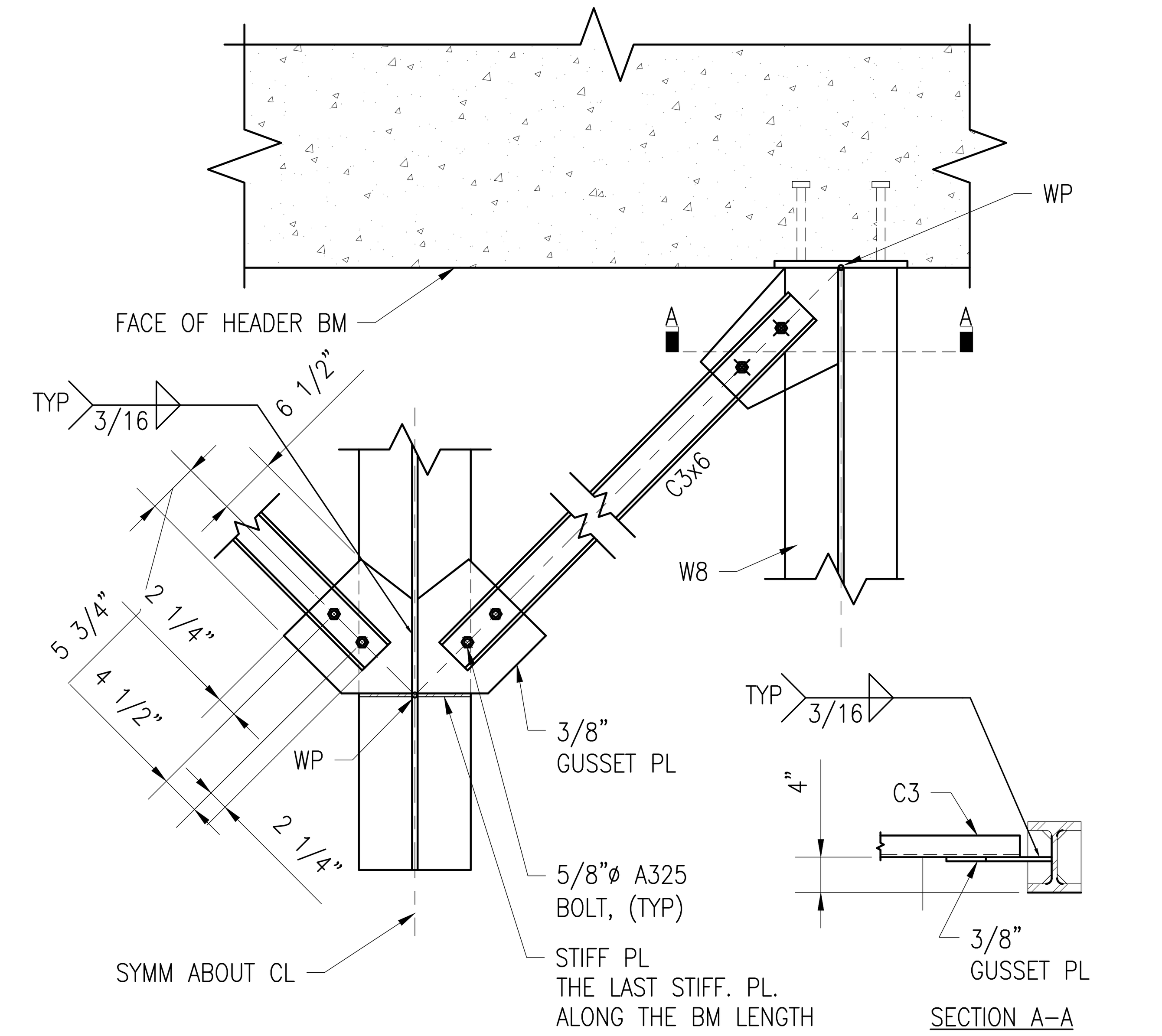
S-507

DRAWFORM REVISION: 25 AUGUST 2020

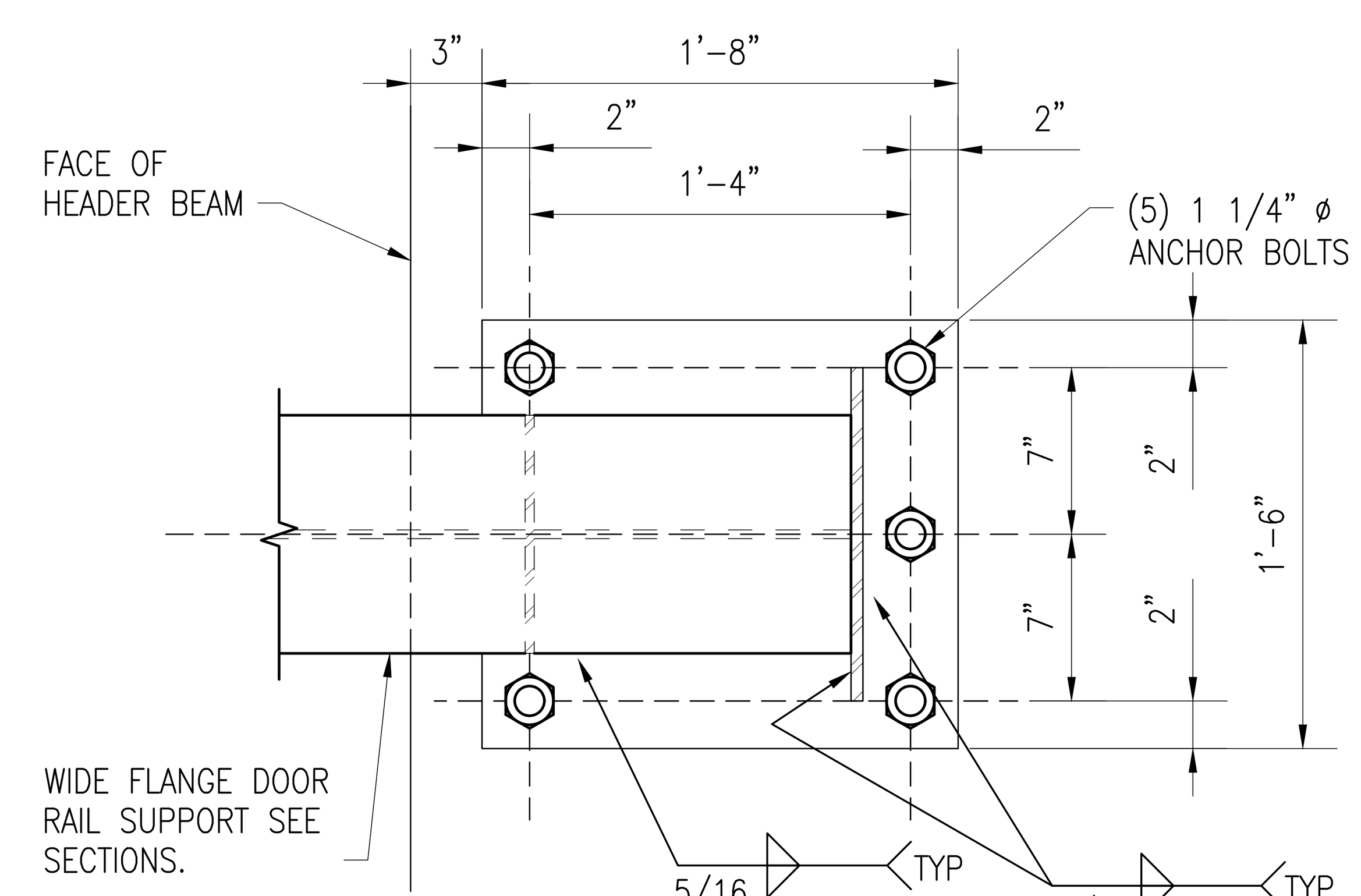
*DOOR ROLLER GUIDE MUST HAVE A 9 KIP MINIMUM LATERAL LOAD CAPACITY. WELD DOOR ROLLER GUIDE PER MANUFACTURER'S RECOMMENDATIONS.



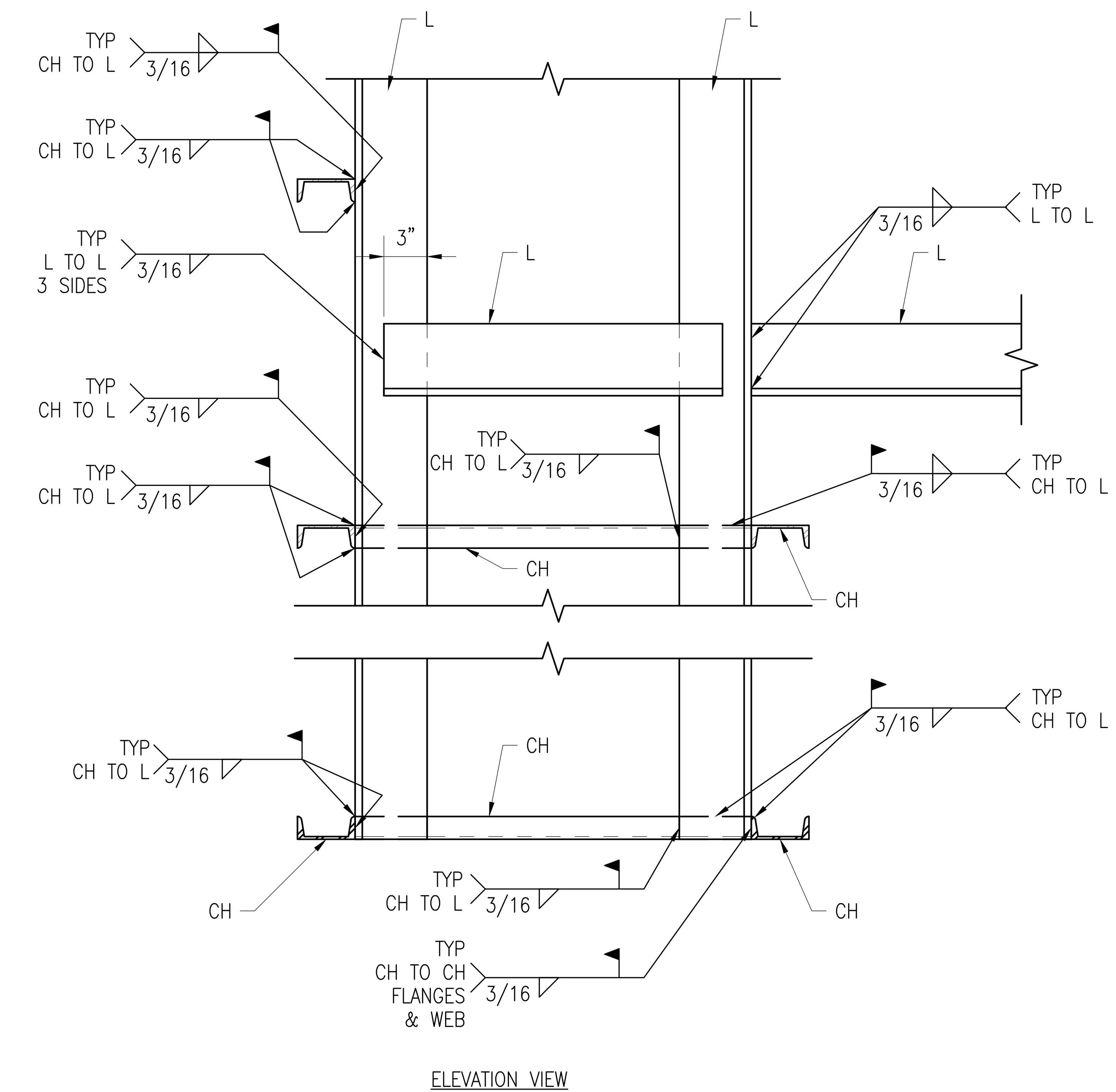
B1 DOOR RAIL SUPPORT
SCALE: 1 1/2" = 1'-0"



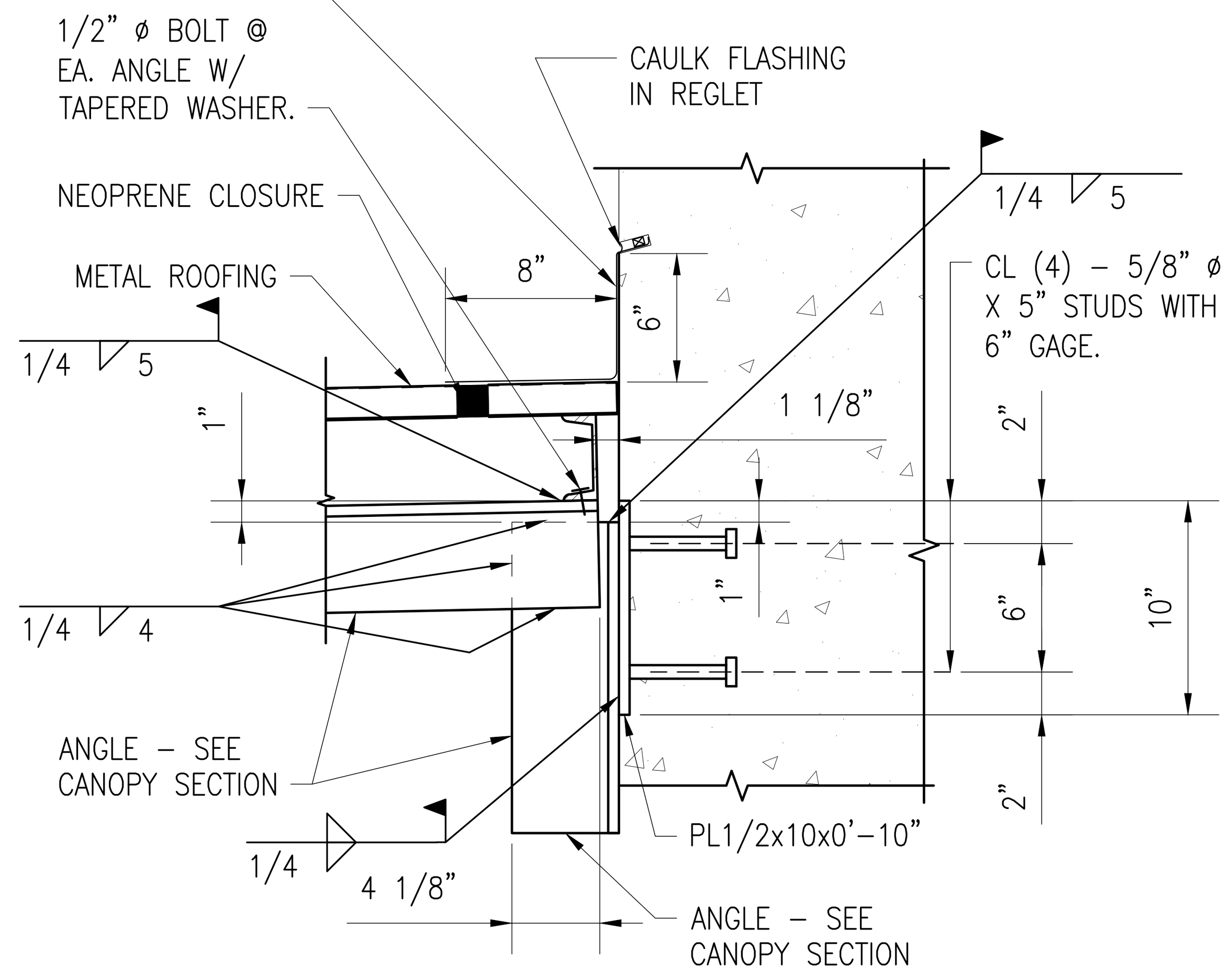
D2 DETAIL
SCALE: 3/4" = 1'-0"



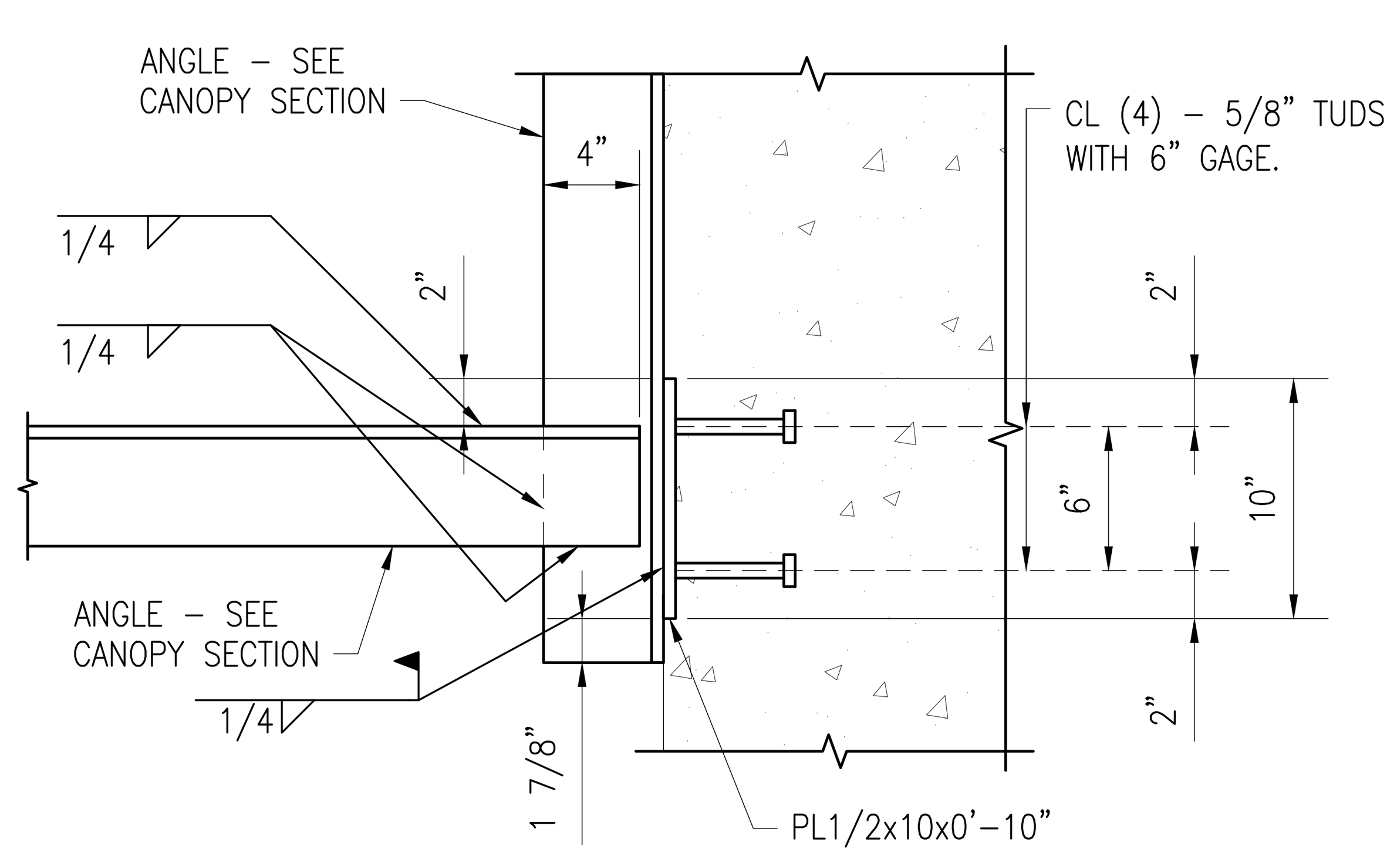
B2 DOOR RAIL SUPPORT
SCALE: 1 1/2" = 1'-0"



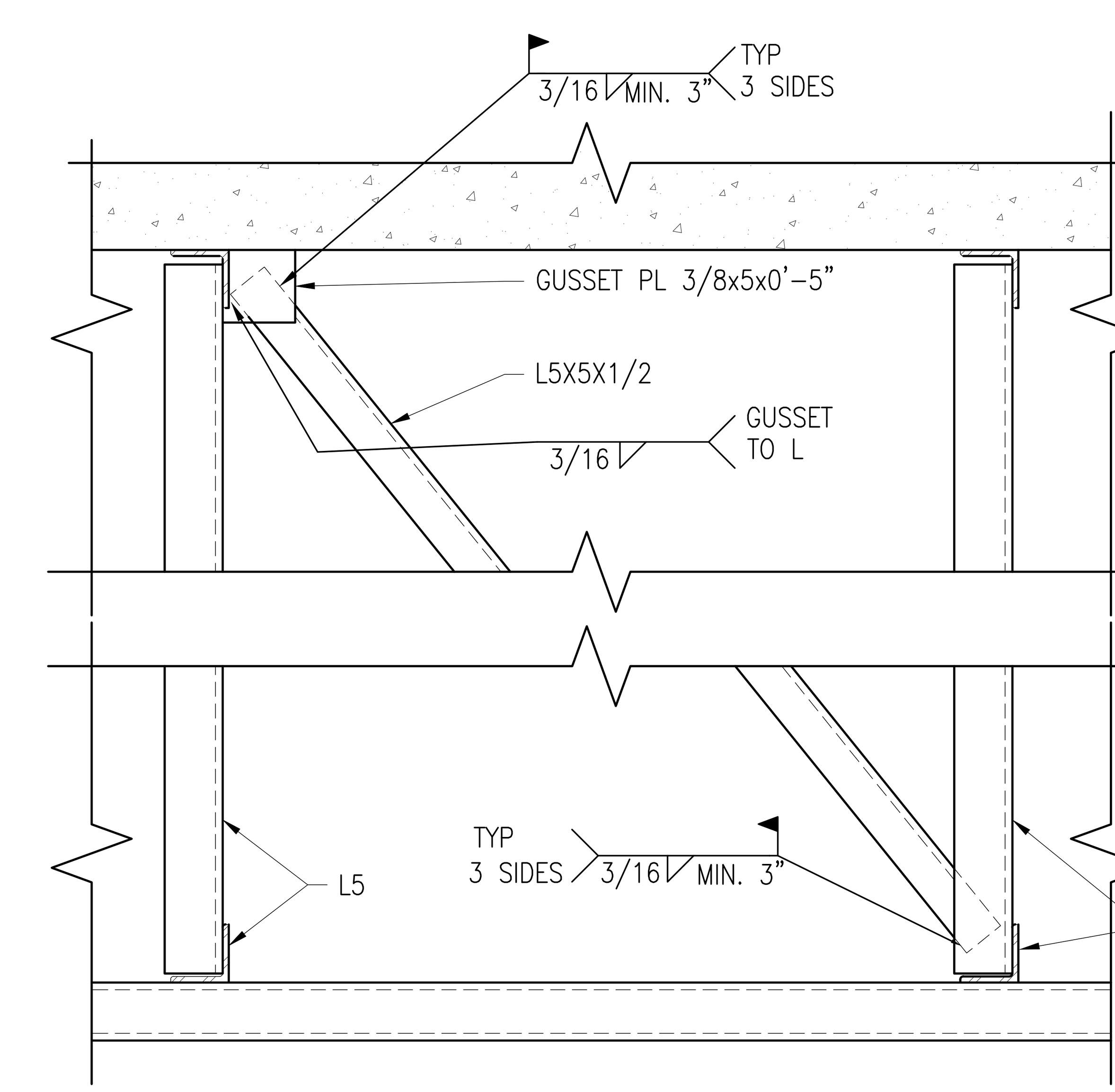
B4 CANOPY TYPICAL CONNECTION DIAGRAM
SCALE: 1 1/2" = 1'-0"



A1 CANOPY CONNECTION
SCALE: 1 1/2" = 1'-0"



A2 CANOPY CONNECTION
SCALE: 1 1/2" = 1'-0"



A4 DETAIL
SCALE: 3/4" = 1'-0"

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES FJ DRW MR CHK DW

PM/DM --

BRANCH MANAGER --

CHIEF ENG/ARCH --

FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

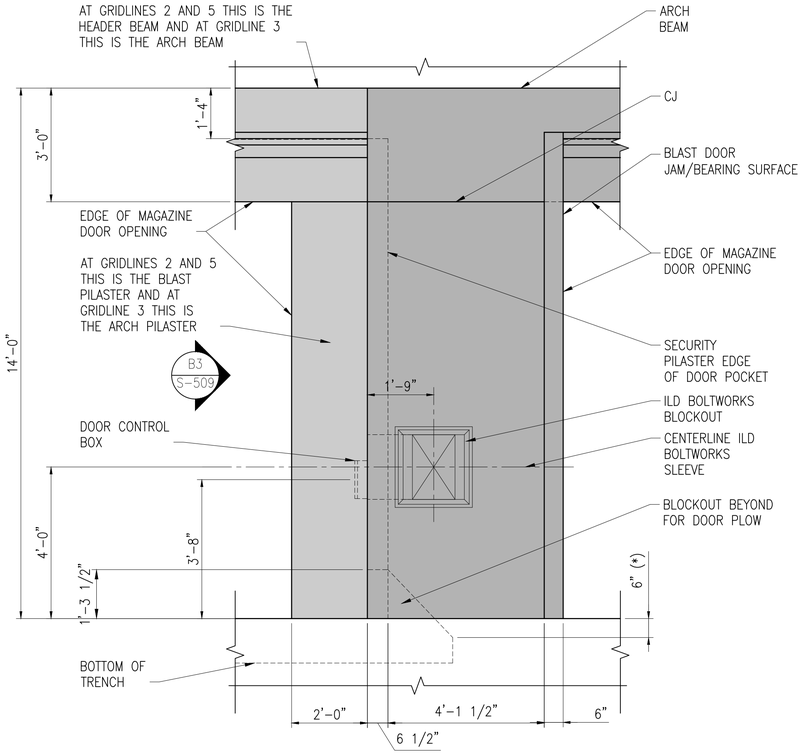
TYPE H BOX MAGAZINE

CANOPY AND RAIL SUPPORT DETAILS

SCALE: AS NOTED
EPROJECT NO: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138814
SHEET 38 OF 85

S-508

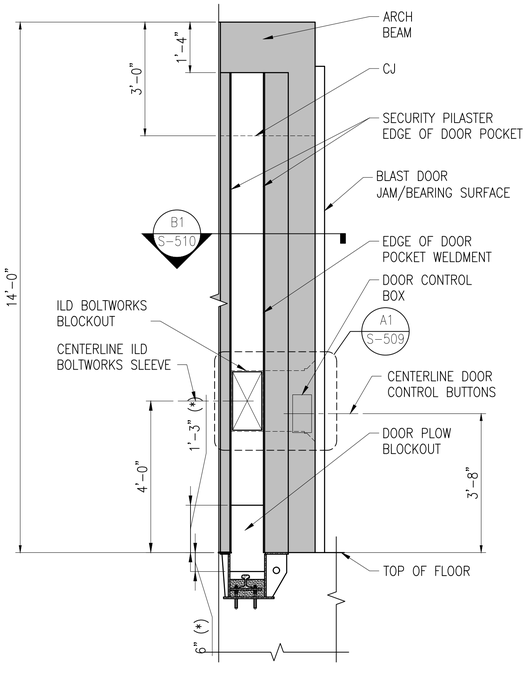
DRAWFORM REVISION: 25 AUGUST 2020



NOTES:
1. DIMENSIONS NOTED WITH AN (*) MUST BE COORDINATED BY THE DOOR MANUFACTURER ENSURING THE DOOR SYSTEM PERFORMS AS INTENDED.
2. SEE SHEET S-204 FOR LAYOUT OF ARCH/SECURITY PILASTER AND ARCH BEAM.
3. SEE SHEETS S-502 AND S-503 FOR REINFORCEMENT SIZE AND SPACING.

B1 SECURITY PILASTER ELEVATION FROM FRONT OF MAGAZINE @ GRIDLINES 2, 3 AND 5

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



NOTES:
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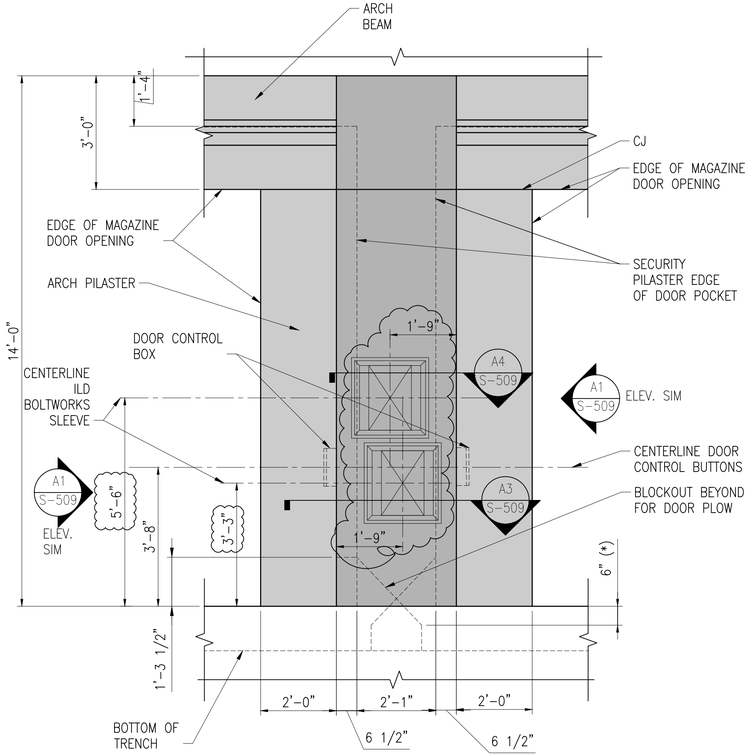
2. SEE SHEET S-204 FOR LAYOUT OF ARCH/SECURITY PILASTER AND ARCH BEAM.
3. SEE SHEETS S-502 AND S-503 FOR REINFORCEMENT SIZE AND SPACING.

B3 SECURITY PILASTER ELEVATION

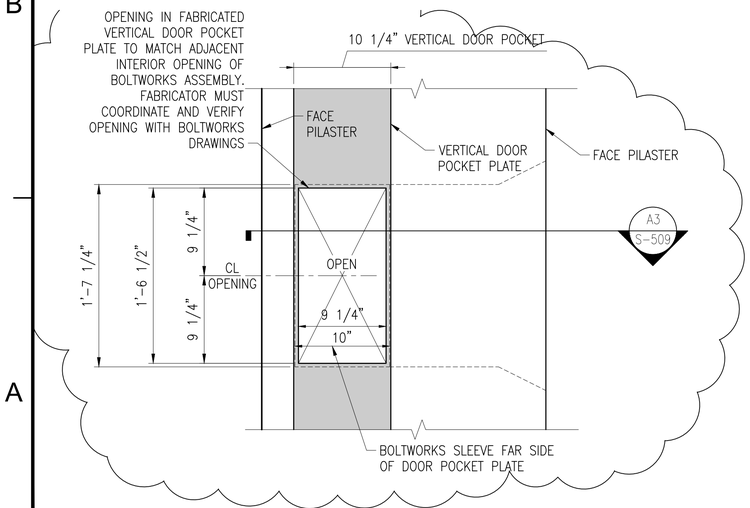
SCALE: 1/2" = 1'-0"



NOTES:
1. DIMENSIONS NOTED WITH AN (*) MUST BE COORDINATED BY THE DOOR MANUFACTURER ENSURING THE DOOR SYSTEM PERFORMS AS INTENDED.
2. SEE SHEET S-204 FOR LAYOUT OF ARCH/SECURITY PILASTER AND ARCH BEAM.
3. SEE SHEETS S-502 AND S-503 FOR REINFORCEMENT SIZE AND SPACING.

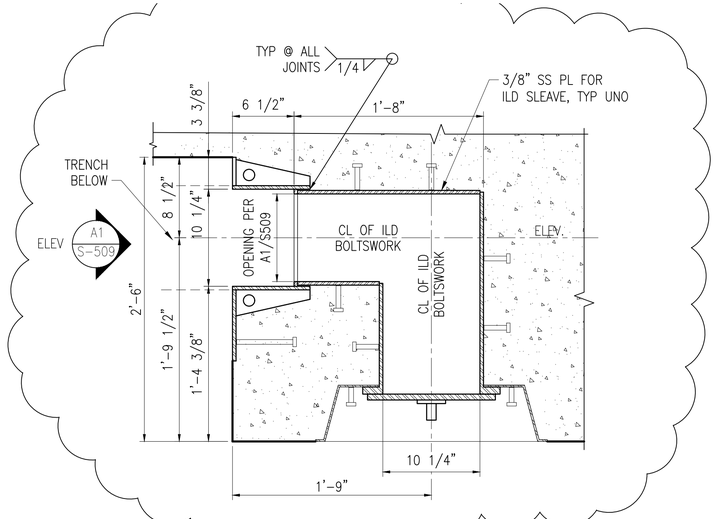
B4 SECURITY PILASTER ELEVATION FROM FRONT OF MAGAZINE @ GRID 4

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



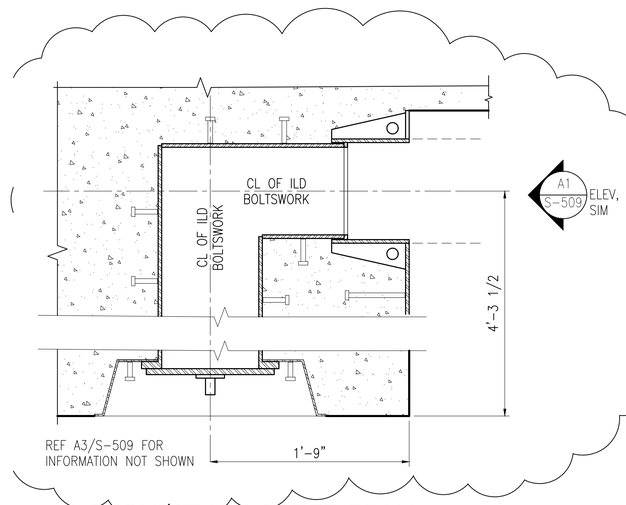
A1 ILD BOLTWORKS BLOCKOUT

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



A3 SECURITY PILASTER PLAN

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



A4 SECURITY PILASTER PLAN

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

		2024 10 07	APPR
	MINOR NON-PC CHANGES		DATE
			DESCRIPTION
			SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW
PM/DM					--
BRANCH MANAGER					--
CHIEF ENG/ARCH					--
FIRE PROTECTION					--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

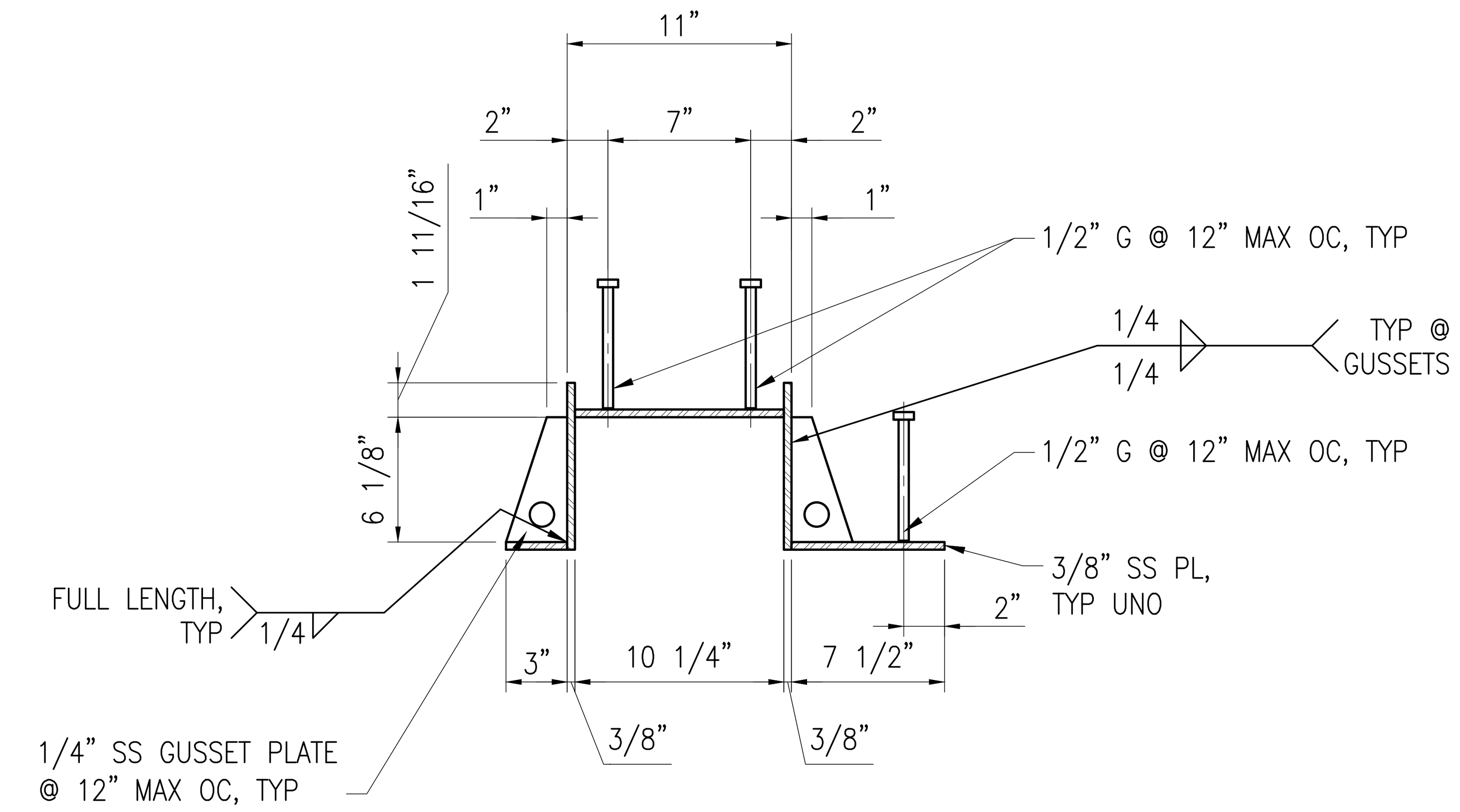
TYPE H BOX MAGAZINE

SECURITY PILASTER DETAILS

SCALE:	AS NOTED
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138815
SHEET	39 OF 85

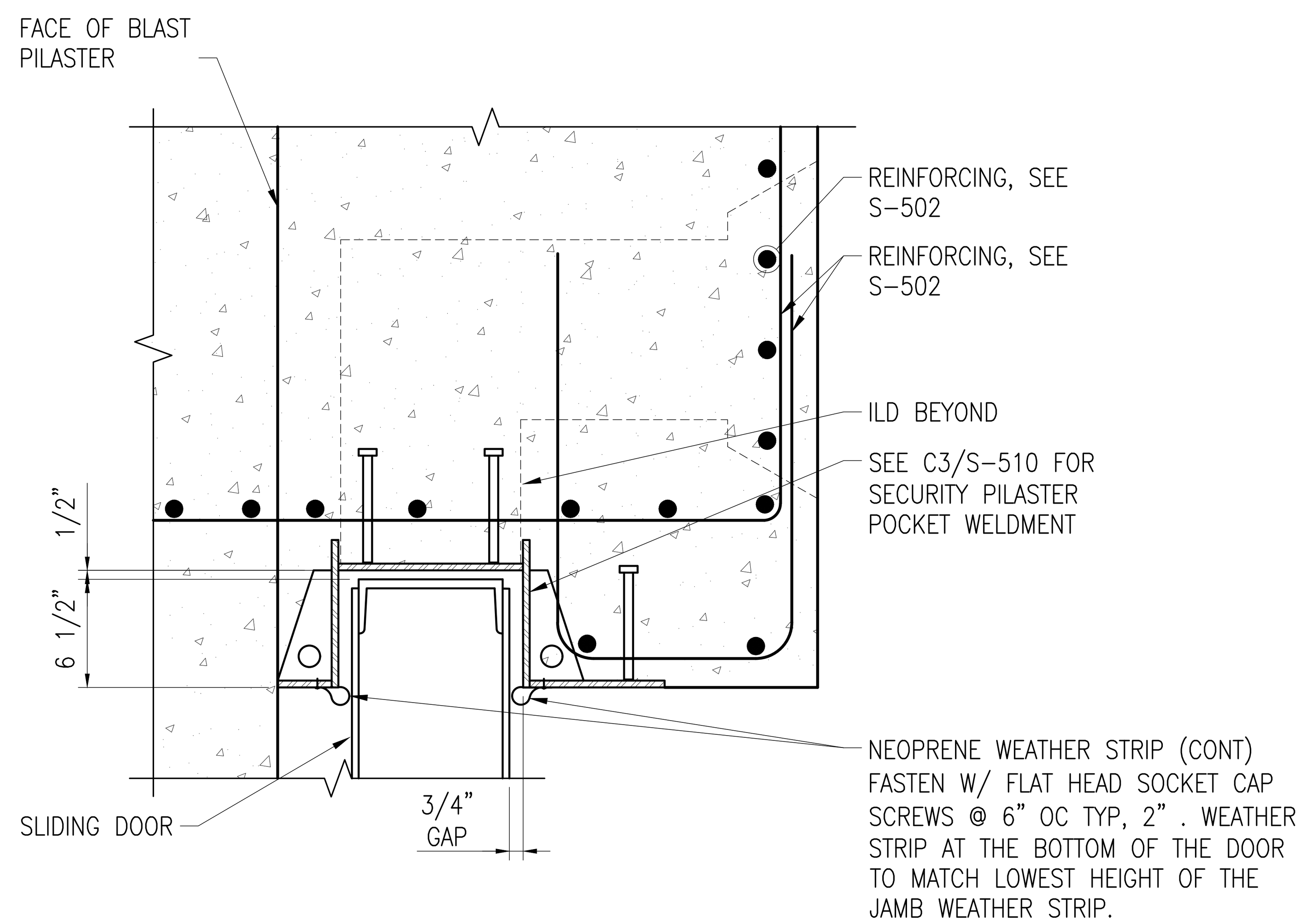
S-509

DRAWFORM REVISION: 25 AUGUST 2020



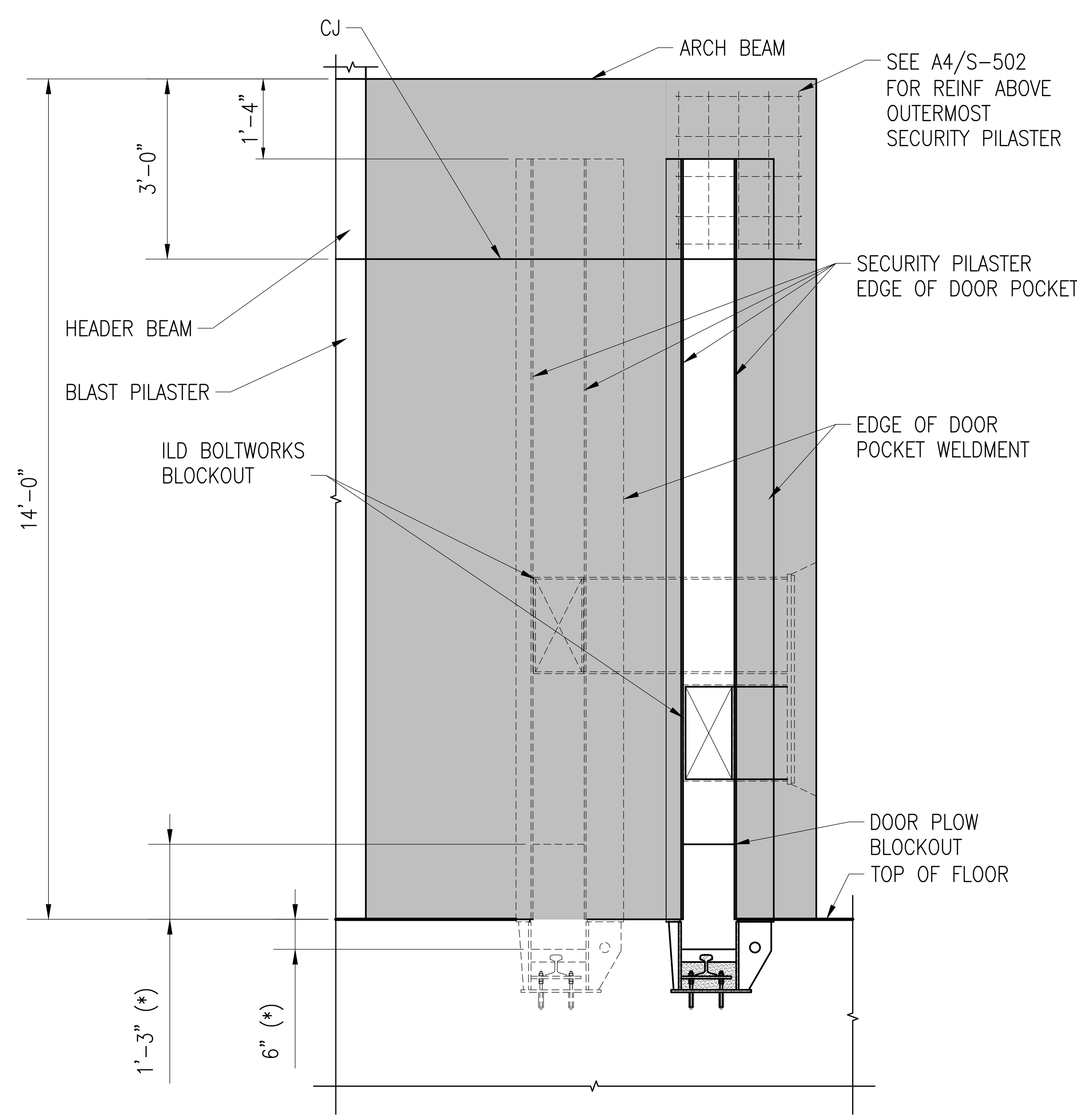
C3 DETAIL - TYP SECURITY PILASTER POCKET WELDMENT

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



B1 SECTION - TYP SECURITY PILASTER

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



NOTES:

1. DIMENSIONS NOTED WITH AN (*) MUST BE COORDINATED BY THE DOOR MANUFACTURER ENSURING THE DOOR SYSTEM PERFORMS AS INTENDED.
2. SEE SHEET S-204 FOR LAYOUT OF ARCH/SECURITY PILASTER AND ARCH BEAM NOT SHOWN IN THIS DETAIL.
3. SEE SHEETS S-502 AND S-503 FOR REINFORCEMENT SIZE AND SPACING.

A3 SECURITY PILASTER ELEVATION

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

SYM	DESCRIPTION	DATE	APPR
	MINOR NON-PC CHANGES	2024 10 07	

NAVFAC

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES FJ	DRW MR	CHK DW
PM/DM		--
BRANCH MANAGER		--
CHIEF ENG/ARCH		--
FIRE PROTECTION		--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

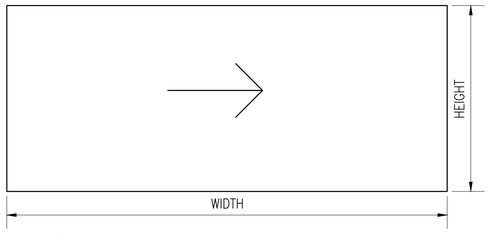
SECURITY PILASTER DETAILS

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138816
SHEET 40 OF 85

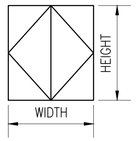
S-510

DRAWFORM REVISION: 25 AUGUST 2020

DOOR SCHEDULE							
DOOR TYPE	SIZE			MATERIAL	FINISH	HARDWARE	U_VALUE
	HEIGHT	WIDTH	THICKNESS				
B	13'–1" INT. 12'–11 1/4" EXT.	31'–0"	0'–8 3/4"	STEEL	PAINT	2	PER FACILITY DESIGN
A	6'–8"	6'–0"	0'–1 3/4"	INSULATED HOLLOW METAL	PAINT	1	STANDARD
NOTE: TYPE A DOOR MUST BE A DOUBLE EGRESS DOOR – RHR (RIGHT HAND REVERSE).							



TYPE 'B': SLIDING BLAST DOOR FOR OPENING SEE SHEET C1/S–201



TYPE 'A'

C1 DOOR LEGEND

SCALE: 3/16" = 1'–0"

0 4' 8' 16'

HW SET #1	
DOOR: TYPE A	
QTY	HARDWARE
6	HINGE (A5111) FULL MORTISE W/ MODIFIED NON–REMOVABLE PIN
2	EXIT DEVICE (FF–L–2890B)
1	CYLINDER W/ EXTERNAL LEVER COMPATIBLE W/ EXIT DEVICE
1	ELECTRIC STRIKE (E09391)
1	ELECTRIC STRIKE (E09391)
2	KICK PLATE (J102)
2	OVERHEAD STOP (C01541)
1	REMOVABLE ASTRAGAL
1	THRESHOLD (J35100)
1	HEAD GASKET (R0Y164)
1	JAMB GASKET (R0Y164)
1	RAIN DRIP (R0Y976)
1	SWEEP (R0Y416)
1	BALANCE MAGNETIC SWITCH (UL 634 HSS)
1	INTERNAL LOCKING DEVICE (ILD)
1	INTRUSION DETECTION SYSTEM (IDS)

HW SET #2	
DOOR: TYPE B	
QTY	HARDWARE
1	INTERNAL LOCKING DEVICE (ILD)
1	INTRUSION DETECTION SYSTEM (IDS)
1	SWITCH (UL 634 HSS)
REFER TO DETAILS FOR SPECIFIC GASKETING AND FABRICATED ELEMENTS.	

GENERAL NOTES:

1. ALL FINISHES, BHMA 630; 626
2. LOCKSETS AND LATCHES MUST COMPLY WITH (ANSI/BHMA A156.13, SERIES 1000, OPERATIONAL GRADE 1, SECURITY GRADE (L) (2) (AND) (ANSI/ BHMA A156.2, SERIES 4000, GRADE L).
3. COORDINATE ALL HARDWARE SECURITY REQUIREMENTS WITH THE SERVICE AND INSTALLATION SECURITY PERSONNEL.
4. ALL HIGH SECURITY PADLOCKS ARE GFCI.

A1 DOOR HARDWARE SCHEDULE

NOT TO SCALE

APPR'D | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

DOOR NOTES AND SCHEDULES

SCALE: AS NOTED

EPROJECT NO.: 1702805

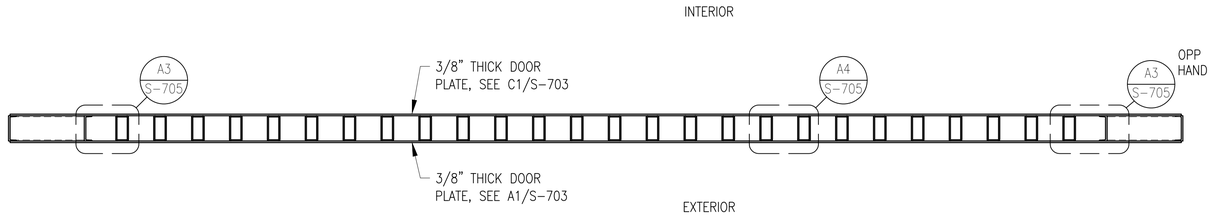
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138817

SHEET 41 OF 85

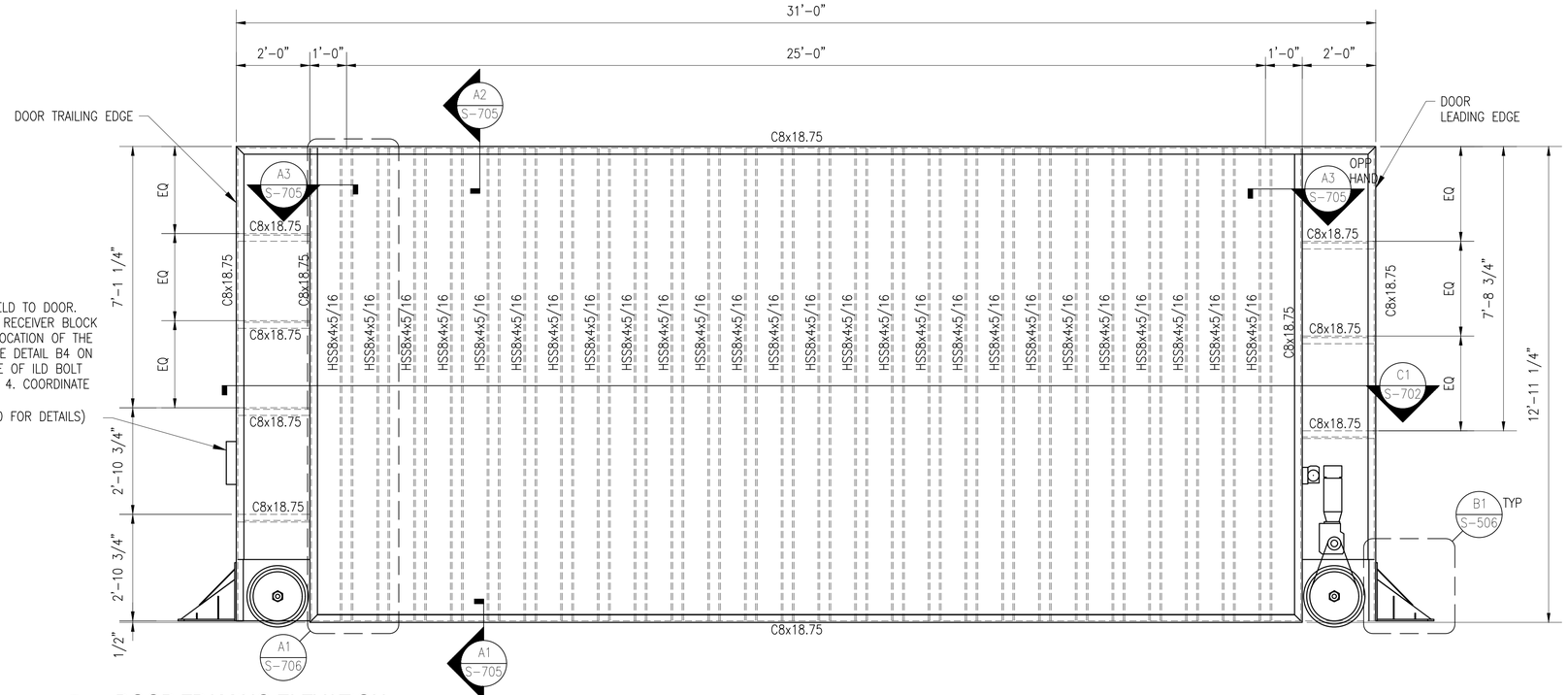
S-701

DRAWFORM REVISION: 25 AUGUST 2020



C1 **DOOR FRAMING SECTION**
SCALE: 1/2" = 1'-0"

0 1' 2' 4'



ILD BOLT RECEIVER BLOCK. WELD TO DOOR. THE CENTERLINE OF ILD BOLT RECEIVER BLOCK SHOWN IS FOR THE TYPICAL LOCATION OF THE ILD EXCEPT @ GRIDLINE 4. SEE DETAIL B4 ON SHEET S-509 FOR CENTERLINE OF ILD BOLT RECEIVER BLOCKS @ GRIDLINE 4. COORDINATE LOCATION WITH ILD.
(SEE SHEETS S-509 & S-510 FOR DETAILS)

NOTES:

1. DOOR FRAMING ONLY SHOWN. SEE OTHER SHEETS FOR DOOR PLATE ELEVATIONS/DETAILS.
2. SEE A4/S-505 FOR THE DOOR ALIGNMENT DETAIL WHICH SHOWS THE DIMENSIONAL RELATIONSHIPS OF THE DOOR, TRENCH, RAIL AND WHEEL.

A1 **DOOR FRAMING ELEVATION**
SCALE: 1/2" = 1'-0"

0 1' 2' 4'

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
FIRE PROTECTION	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

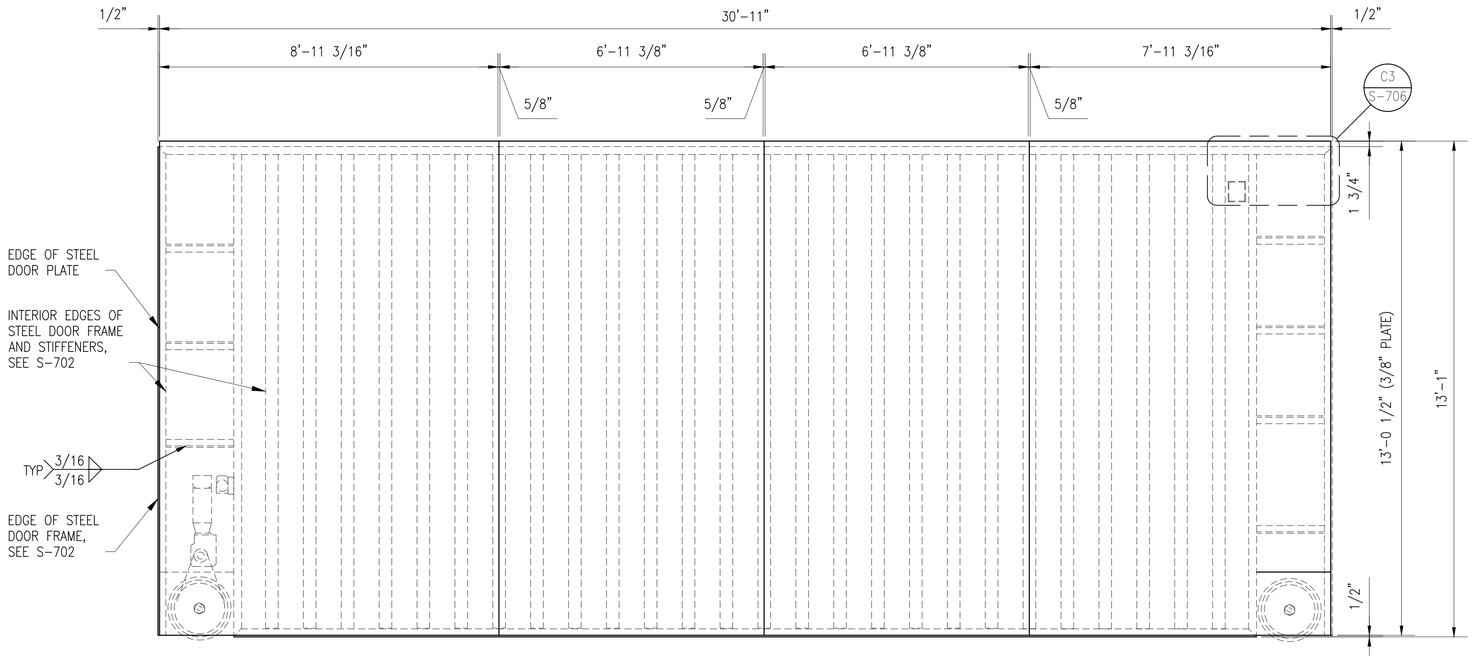
TYPE H BOX MAGAZINE

DOOR ELEVATIONS

SCALE:	1/2" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138818
SHEET	42 OF 85

S-702

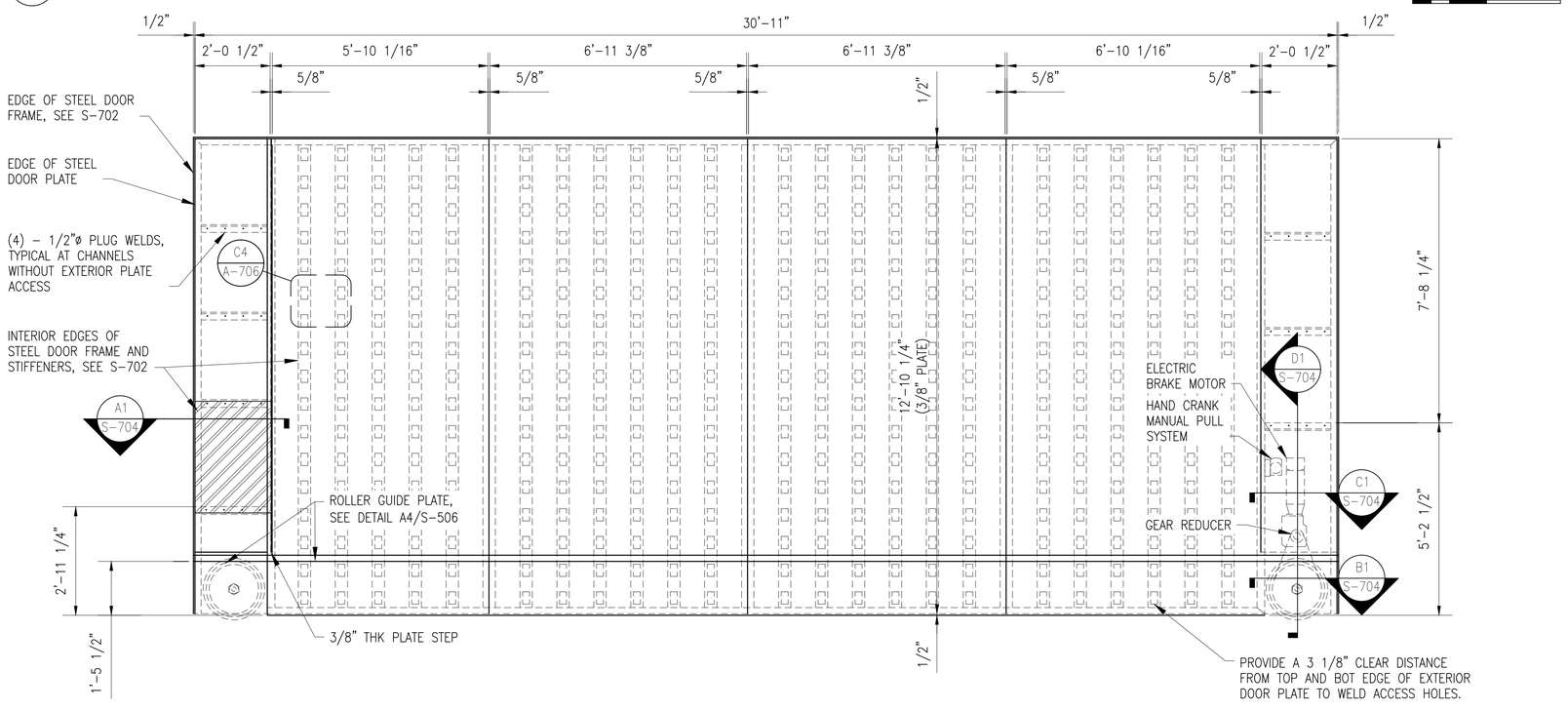
DRAWFORM REVISION: 25 AUGUST 2020



C1 DOOR INTERIOR PLATE ELEVATION

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

0 1' 2' 4'



A1 DOOR EXTERIOR PLATE ELEVATION

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

0 1' 2' 4'

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
FIRE PROTECTION	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

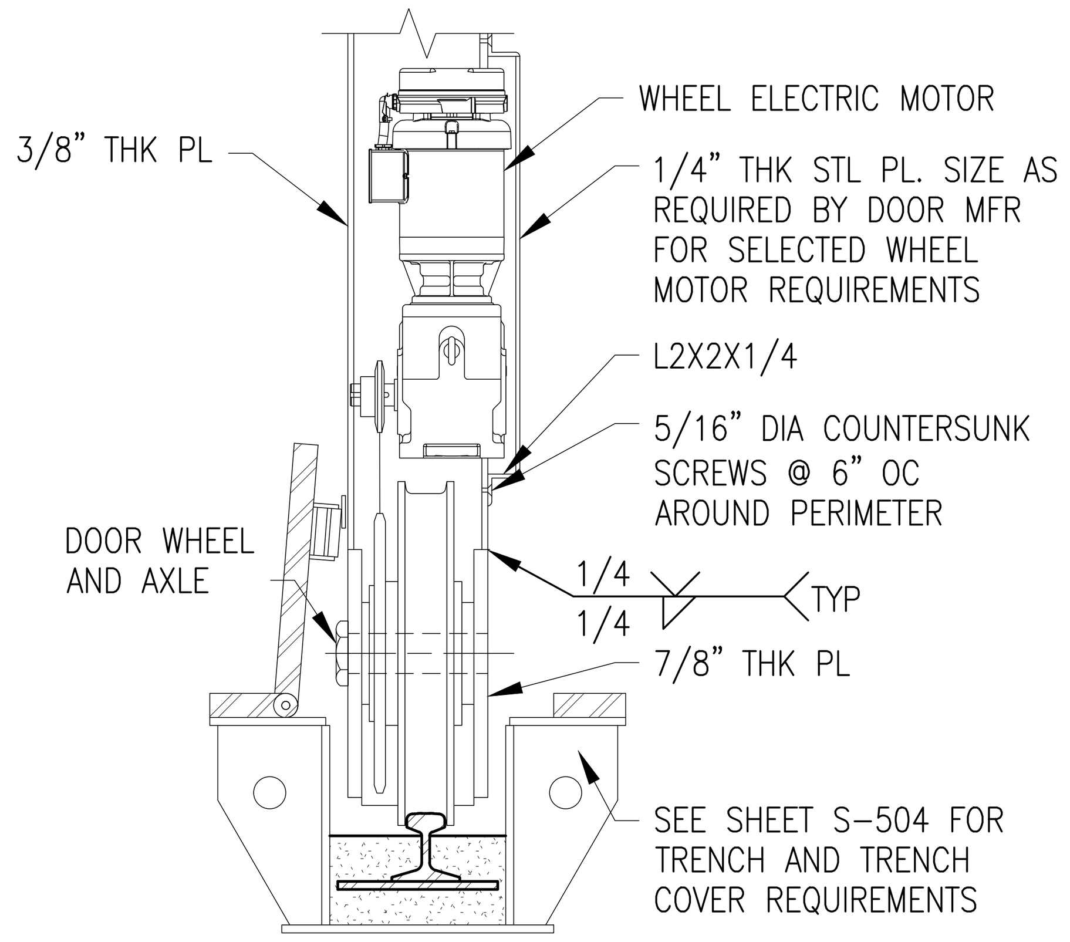
TYPE H BOX MAGAZINE

DOOR PLATE ELEVATIONS

SCALE:	1/2" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138819
SHEET	43 OF 85

S-703

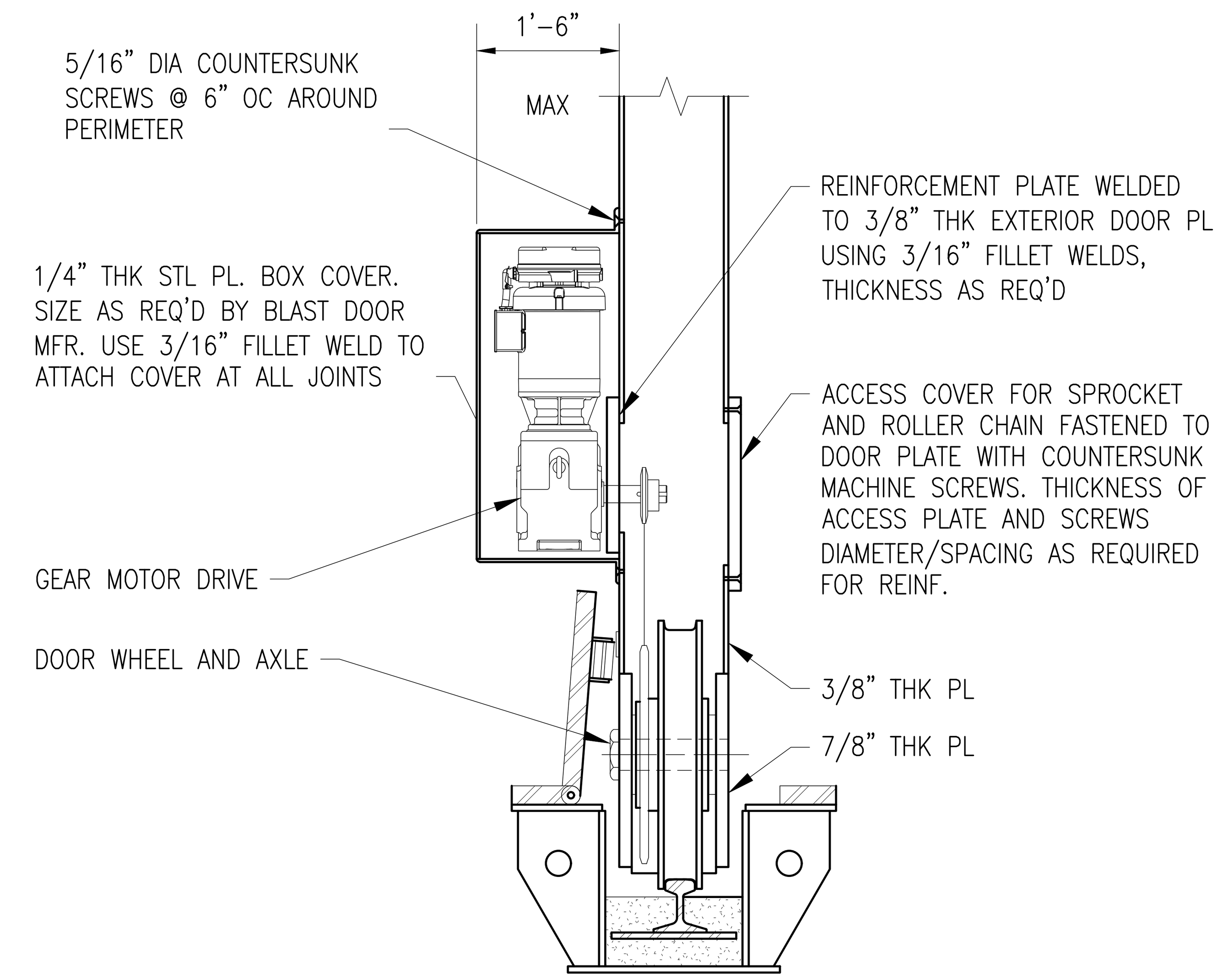
DRAWFORM REVISION: 25 AUGUST 2020



DESIGN/MANUFACTURING NOTES:

1. MOTOR INSTALLATION SHOWN IS NOTIONAL AND IS FOR BIDDING PURPOSES AND MAY VARY BASED ON DOOR MANUFACTURER'S APPROVED DESIGN.
2. DOOR MANUFACTURER'S DESIGN MUST ALLOW FOR MAINTENANCE OF THE MOTOR ASSEMBLY AND ITS COMPONENTS, INCLUDING REMOVAL OF AND REPLACEMENT OF THE MOTOR ASSEMBLY.
3. USE STANDARD PARTS AS MUCH AS POSSIBLE.
4. ACCESS TO THE MOTOR ASSEMBLY IS NOT NECESSARILY LIMITED TO ONE SIDE OF THE DOOR. IF ACCESS TO BOTH SIDES OF THE DOOR IS USED, IT MUST BE SHOWN THAT THE WHEEL LOAD PATH THROUGH THE SUPPORTING PLATES IS ADEQUATE.
5. A MOTOR ASSEMBLY MOUNTED INTERNAL TO THE DOOR IS PREFERRED; HOWEVER, A MOTOR ASSEMBLY MOUNTED ON THE EXTERIOR OF THE DOOR MAY BE ACCEPTABLE IF APPROVED.
6. SEE DETAIL C3 ON SHEET S-704 FOR ALTERNATIVE DOOR DRIVE ARRANGEMENT.

D1 DETAIL - DOOR WHEEL
SCALE: 1" = 1'-0"
0 6" 1' 2'



DESIGN/MANUFACTURING NOTES:

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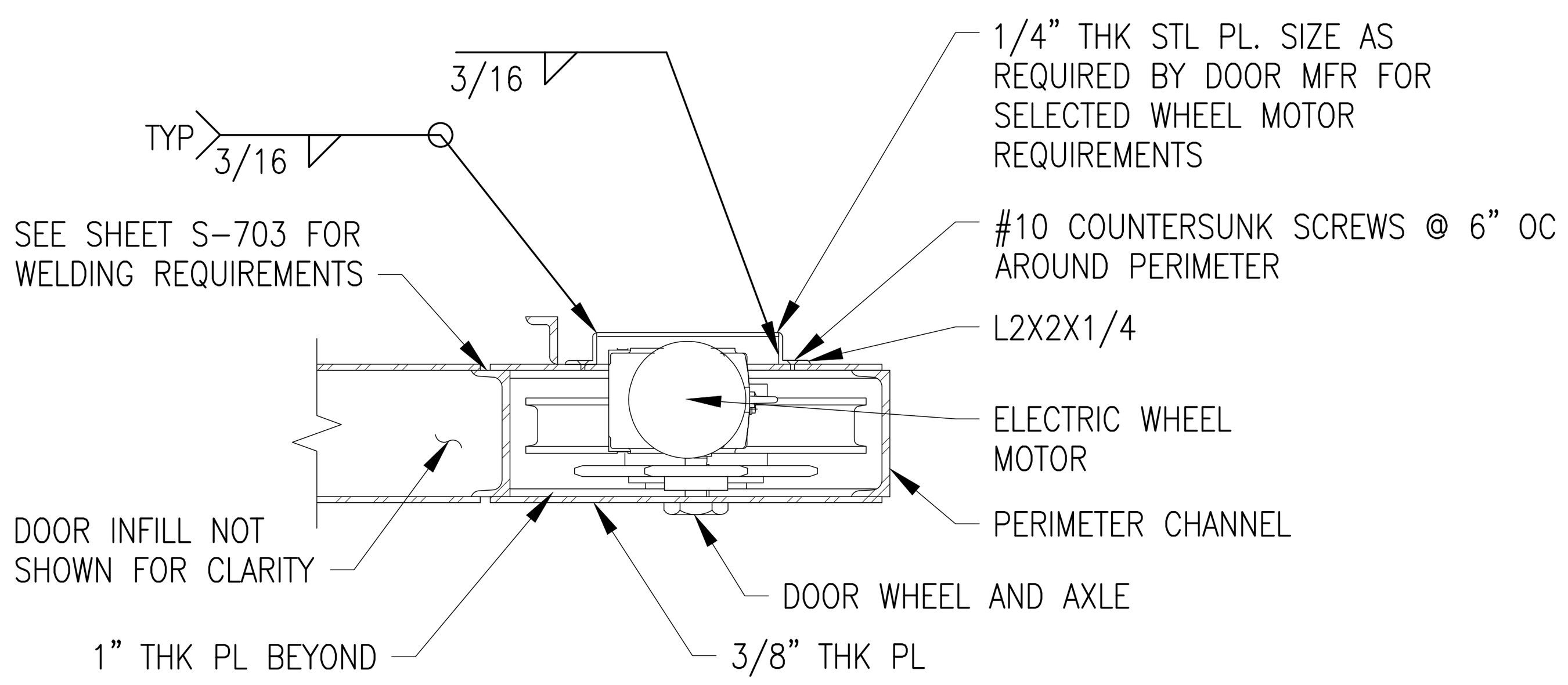
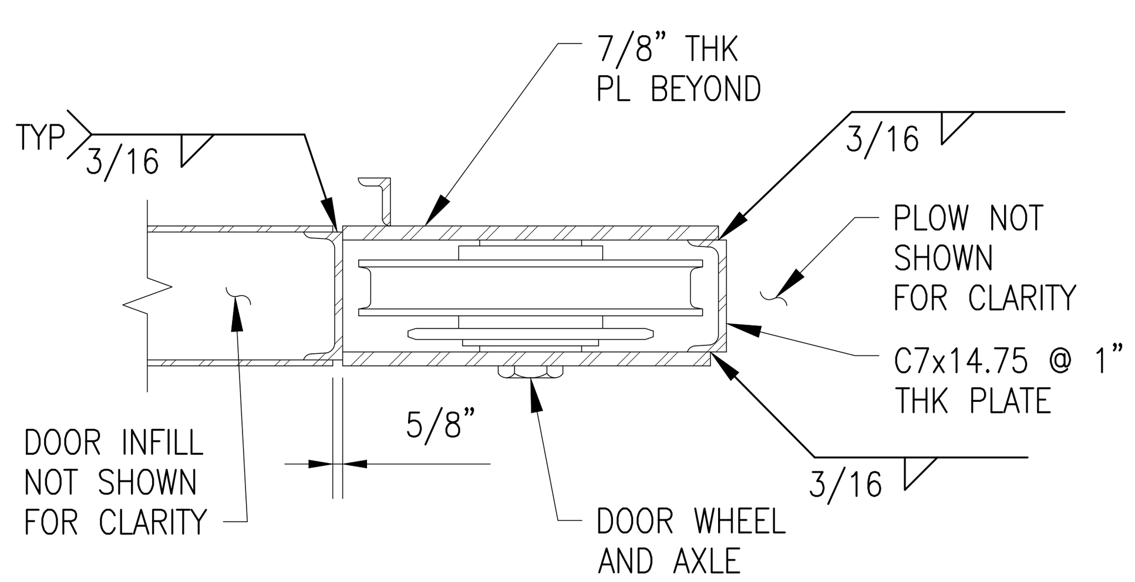
3. USE STANDARD PARTS AS MUCH AS POSSIBLE.
4. ACCESS TO THE MOTOR ASSEMBLY IS NOT NECESSARILY LIMITED TO ONE SIDE OF THE DOOR. IF ACCESS TO BOTH SIDES OF THE DOOR IS USED, IT MUST BE SHOWN THAT THE WHEEL LOAD PATH THROUGH THE SUPPORTING PLATES IS ADEQUATE.
5. A MOTOR ASSEMBLY MOUNTED INTERNAL TO THE DOOR IS PREFERRED; HOWEVER, A MOTOR ASSEMBLY MOUNTED ON THE EXTERIOR OF THE DOOR MAY BE ACCEPTABLE IF APPROVED.

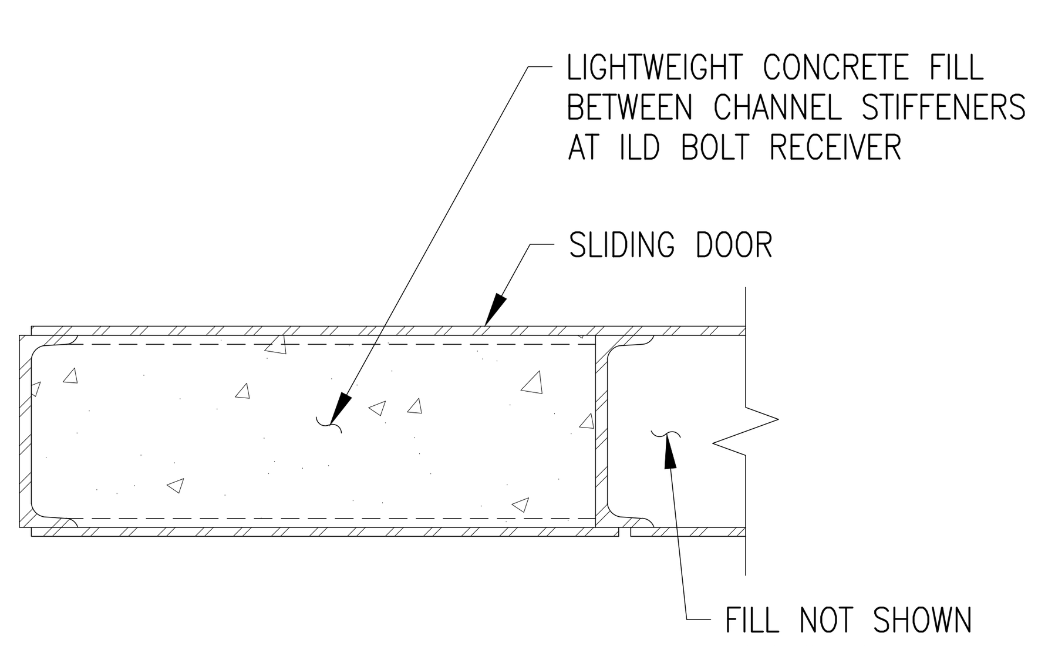
C3 DETAIL - DOOR ALTERNATE DRIVE ARRANGEMENT
SCALE: 1" = 1'-0"
0 6" 1' 2'



C1 DETAIL - DOOR WHEEL AND MOTOR DOOR
SCALE: 1" = 1'-0"
0 6" 1' 2'



B1 DETAIL - DOOR WHEEL
SCALE: 1" = 1'-0"
0 6" 1' 2'



NOTES:

1. SEE SHEET S-705 FOR WELDING REQUIREMENTS.

A1 DETAIL - ILD BOLT RECEIVER DOOR FILL
SCALE: 1 1/2" = 1'-0"
0 6" 1' 2'

SYM | DESCRIPTION | DATE | APPR

NAVFAC

SEAL

A/E INFO

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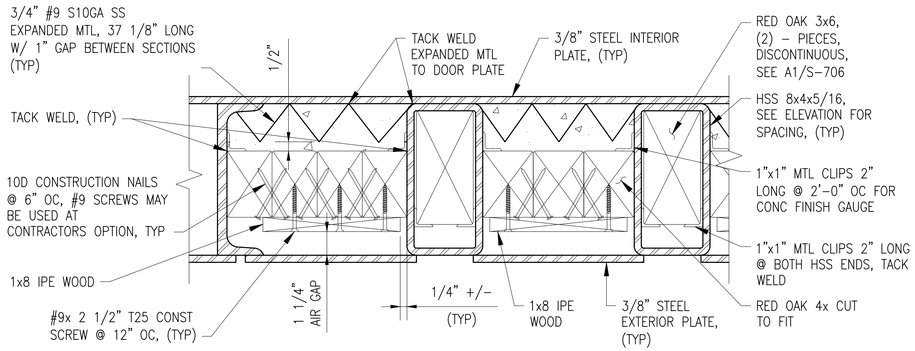
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

DOOR DETAILS

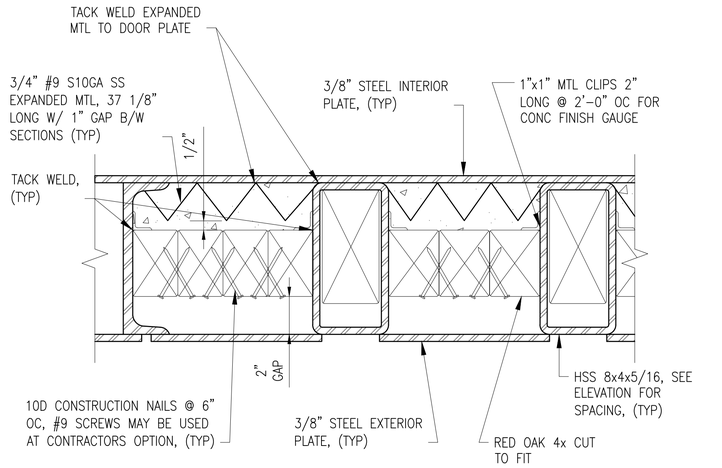
SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138820
SHEET 44 OF 85

S-704



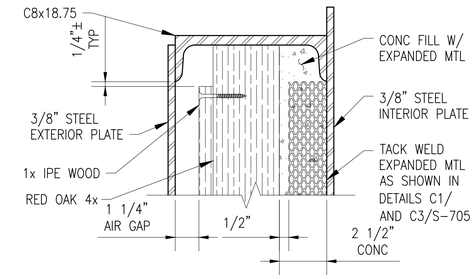
C1 DOOR STIFFENER AND INFILL LAYOUT - TOP/ BOTTOM DOOR SECTIONS

SCALE: 3" = 1'–0"



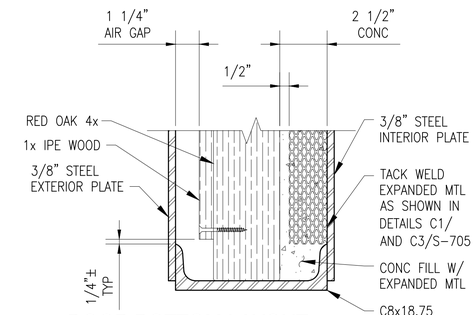
C3 DOOR STIFFENER AND FILL LAYOUT - MIDDLE DOOR SECTIONS

SCALE: 3" = 1'–0"



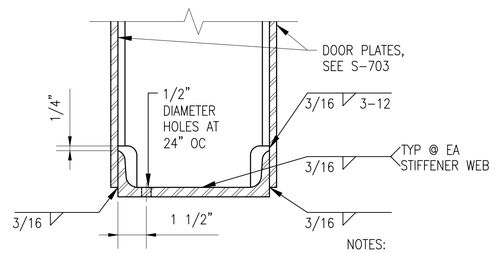
D5 DOOR TOP LAYOUT

SCALE: 3" = 1'–0"



C5 DOOR BOTTOM LAYOUT

SCALE: 3" = 1'–0"

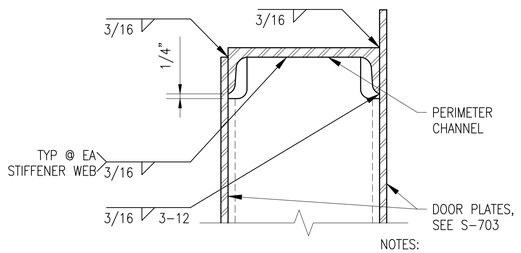


NOTES:

1. DOOR INFILL NOT SHOWN FOR CLARITY.

A1 DETAIL AT BOTTOM OF DOOR

SCALE: 3" = 1'–0"

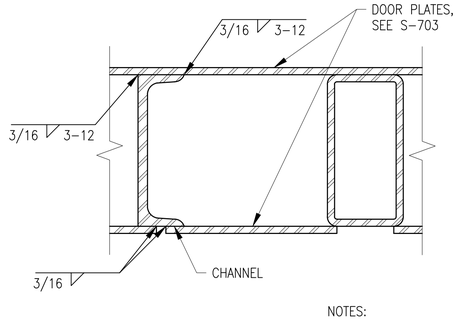


NOTES:

1. DOOR INFILL NOT SHOWN FOR CLARITY.

A2 DETAIL AT TOP OF DOOR

SCALE: 3" = 1'–0"

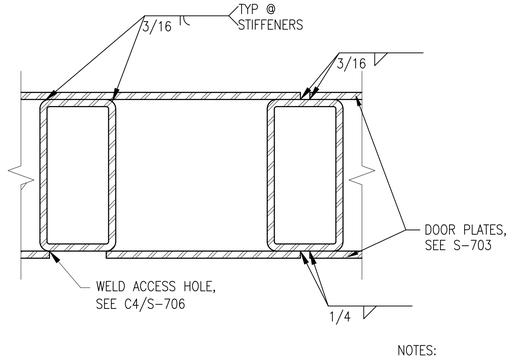


NOTES:

1. DOOR INFILL NOT SHOWN FOR CLARITY.

A3 WELD DETAIL AT DOOR EDGE

SCALE: 3" = 1'–0"



NOTES:

1. DOOR INFILL NOT SHOWN FOR CLARITY.

A4 WELD DETAIL AT INTERIOR STIFFENERS

SCALE: 3" = 1'–0"

APPR.	
DATE	
DESCRIPTION	
SYM	

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM	– –
BRANCH MANAGER	– –
CHIEF ENG/ARCH	– –
FIRE PROTECTION	– –

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

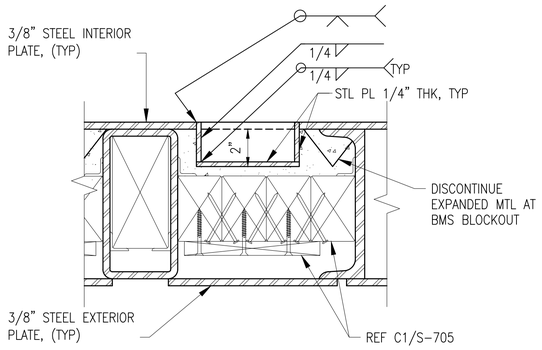
TYPE H BOX MAGAZINE

DOOR DETAILS

SCALE:	3" = 1'–0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138821
SHEET	45 OF 85

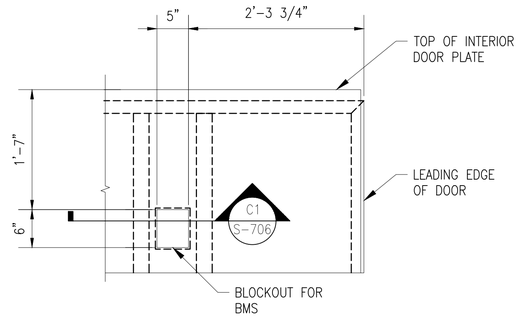
S-705

DRAWFORM REVISION: 25 AUGUST 2020



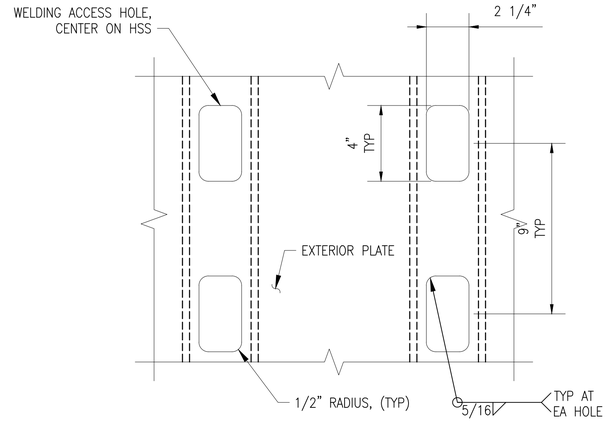
C1 BMS BLOCKOUT DETAIL

SCALE: 3" = 1'-0"



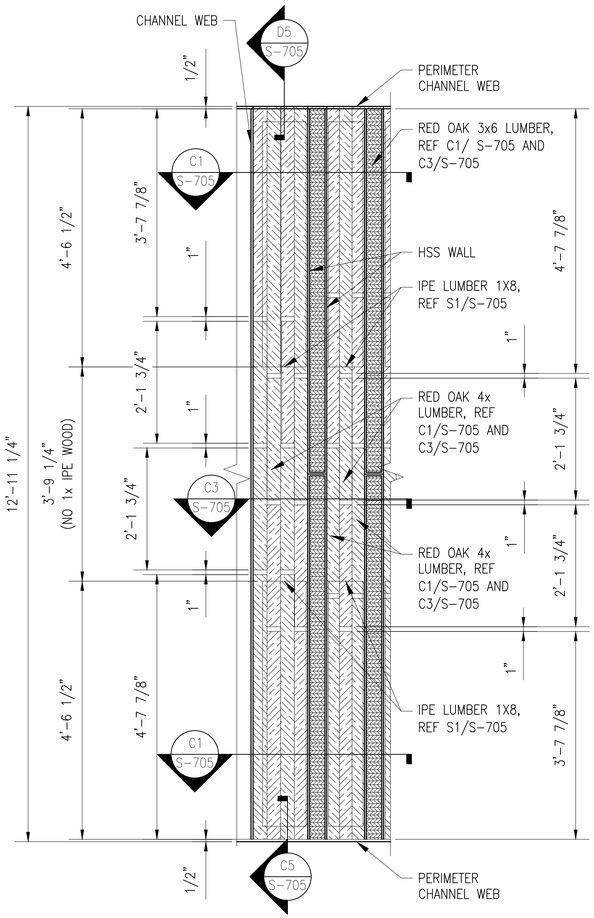
C3 BMS BLOCKOUT LOCATION

SCALE: 1" = 1'-0"



C4 EXTERIOR PLATE TO HSS STIFFENER CONNECTION

SCALE: 3" = 1'-0"



NOTES TO DESIGNER:

1. WOOD INFILL SHOWN ON THIS SHEET CONSISTS OF RED OAK AND IPE SPECIES. THE WOOD INFILL IS REQUIRED FOR PHYSICAL SECURITY RATING OF THE DOOR, AND RED OAK AND IPE ARE SPECIFIED AS HARDWOODS WITH DESIRABLE TRAITS FOR ENHANCED PHYSICAL SECURITY. THE SITE-ADAPT ENGINEER MAY SELECT ALTERNATIVE HARDWOOD SPECIES IF RED OAK AND/OR IPE ARE NOT READILY AVAILABLE AT THE INSTALLATION SITE. HOWEVER, THE SITE-ADAPT ENGINEER SHOULD CONSIDER HARDWOOD SPECIES WITH SIMILAR MATERIAL PROPERTIES TO RED OAK AND IPE FOR ENHANCED PHYSICAL SECURITY.

A1 ELEVATION - TYPICAL CONFIGURATION OF DOOR INFILL

SCALE: 3/4" = 1'-0"

APPR	DATE	DESCRIPTION	SYM

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

DOOR DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
14138822

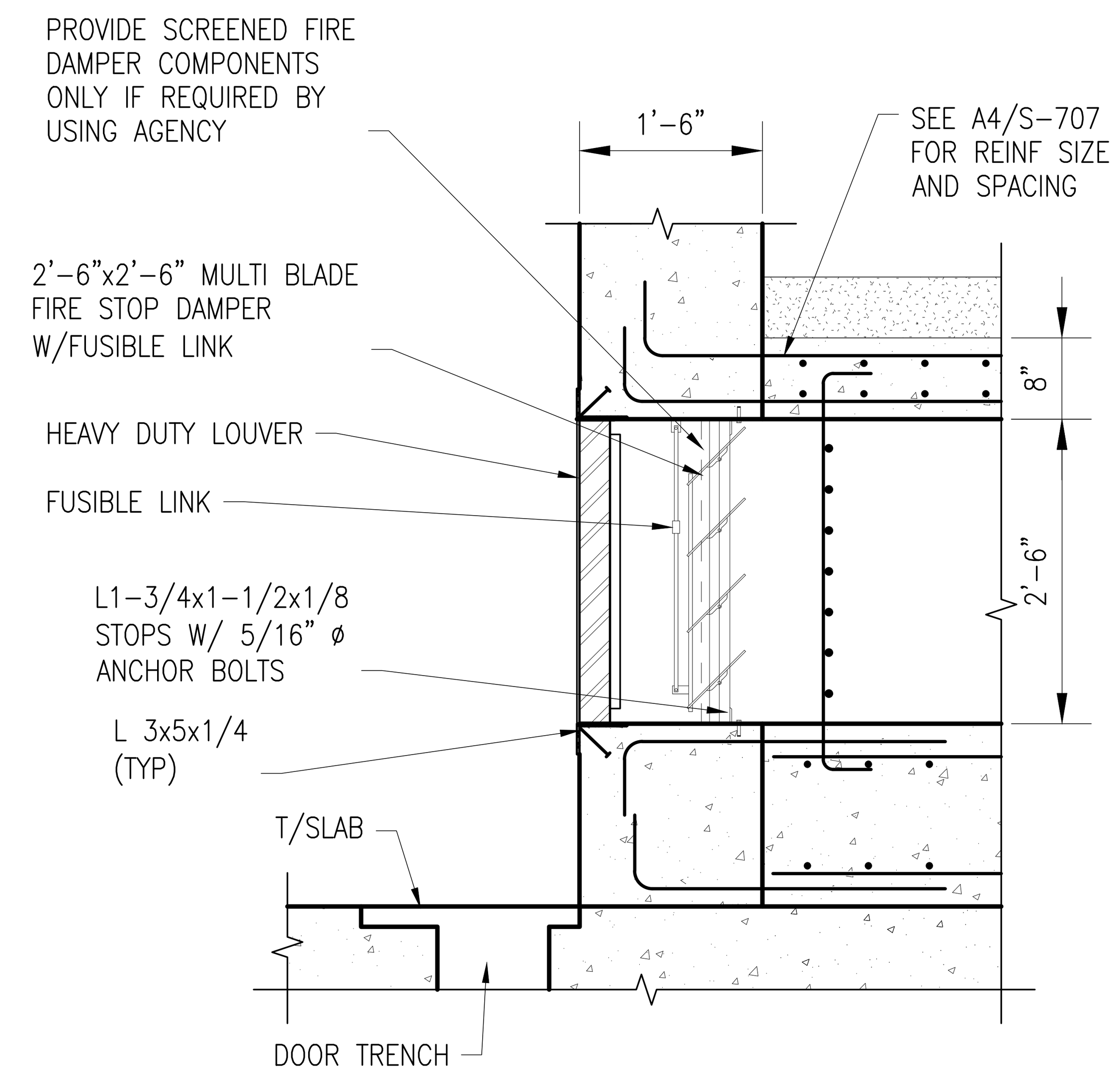
SHEET 46 OF 85

S-706

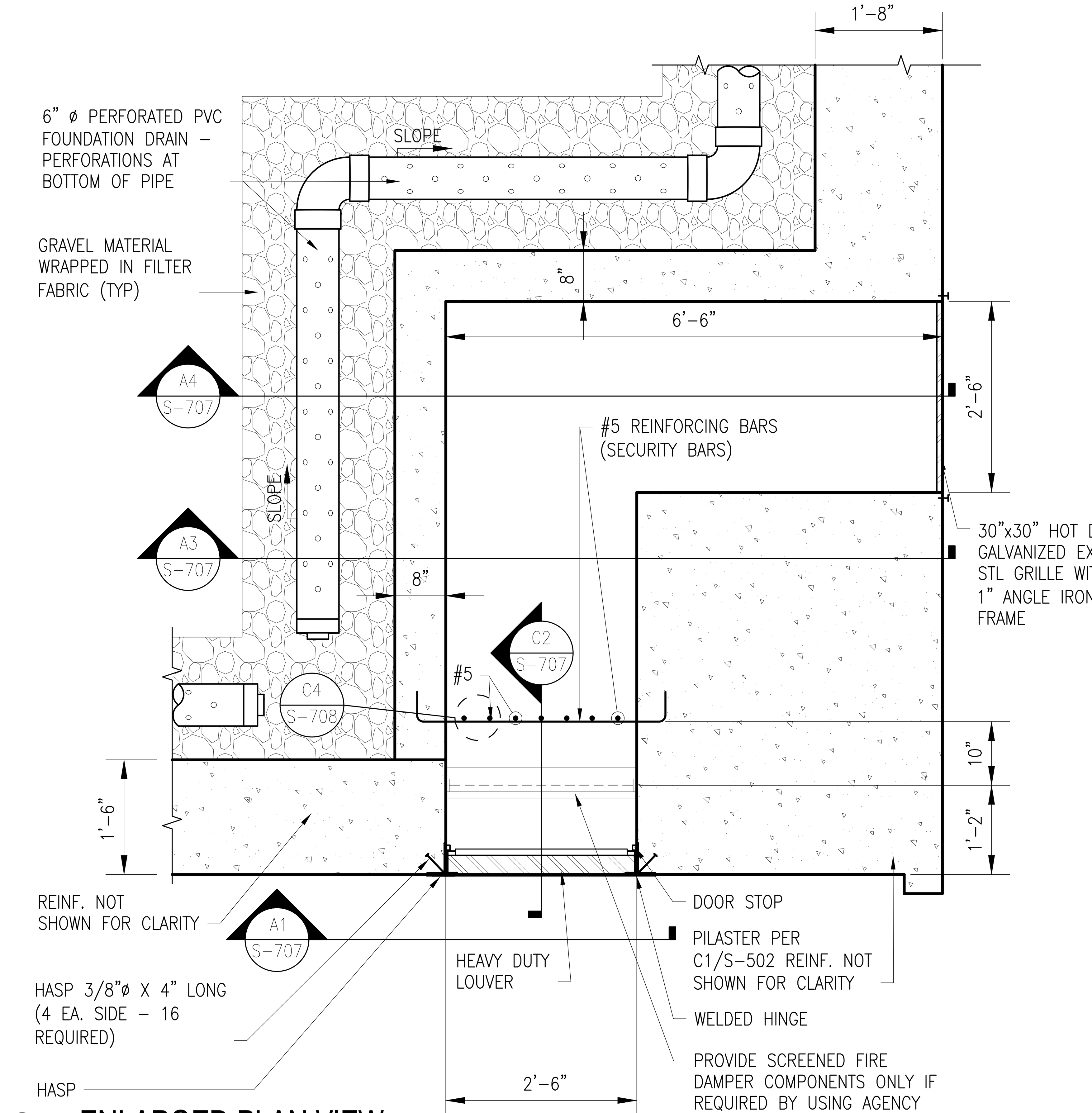
DRAWFORM REVISION: 25 AUGUST 2020

NOTES TO DESIGNER – REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION.

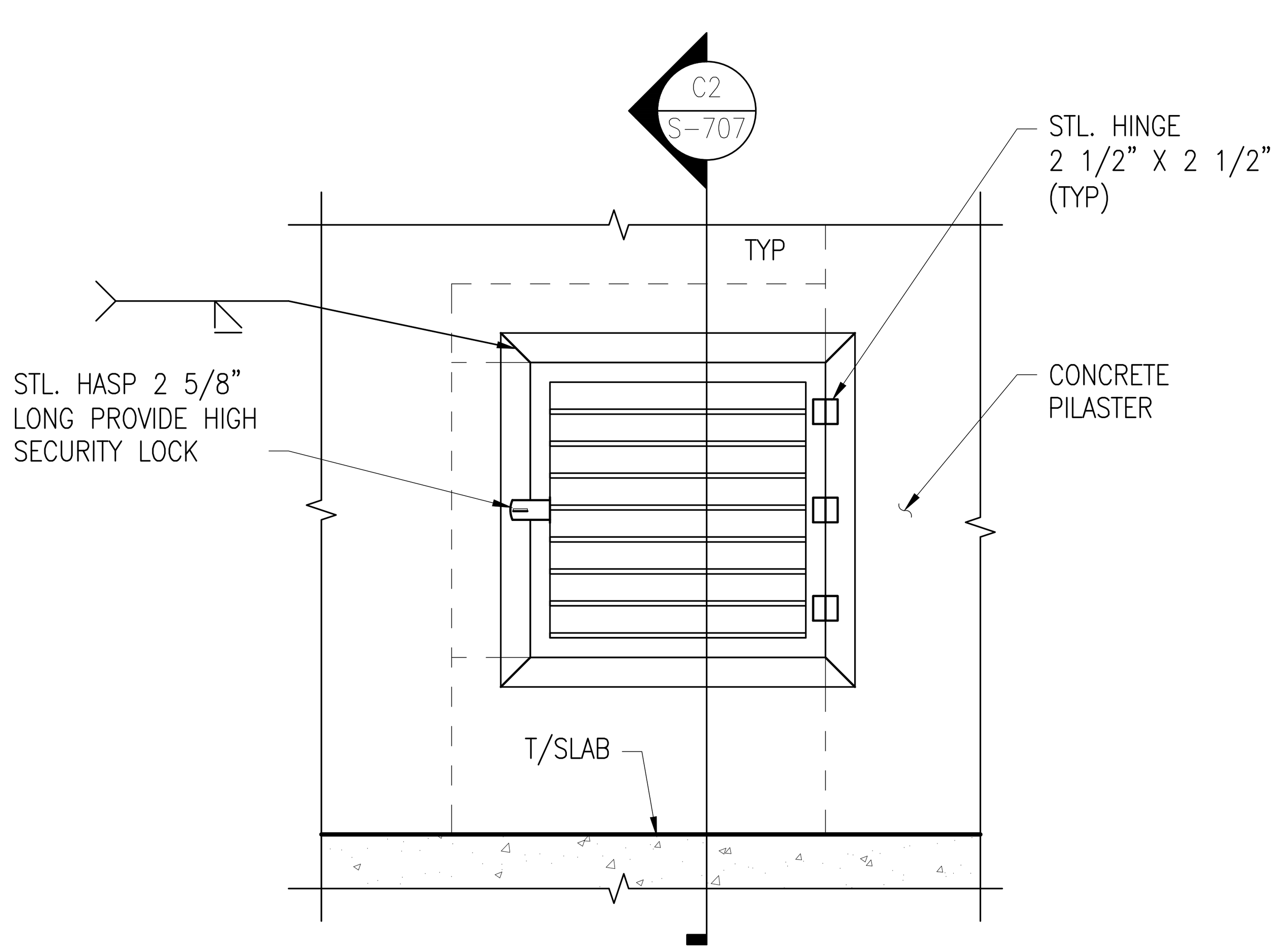
1. NATURAL VENTILATION INTAKE AND RELIEF SHAFTS ARE NOT REQUIRED WHEN THE MECHANICAL ROOM OPTION IS EXERCISED.



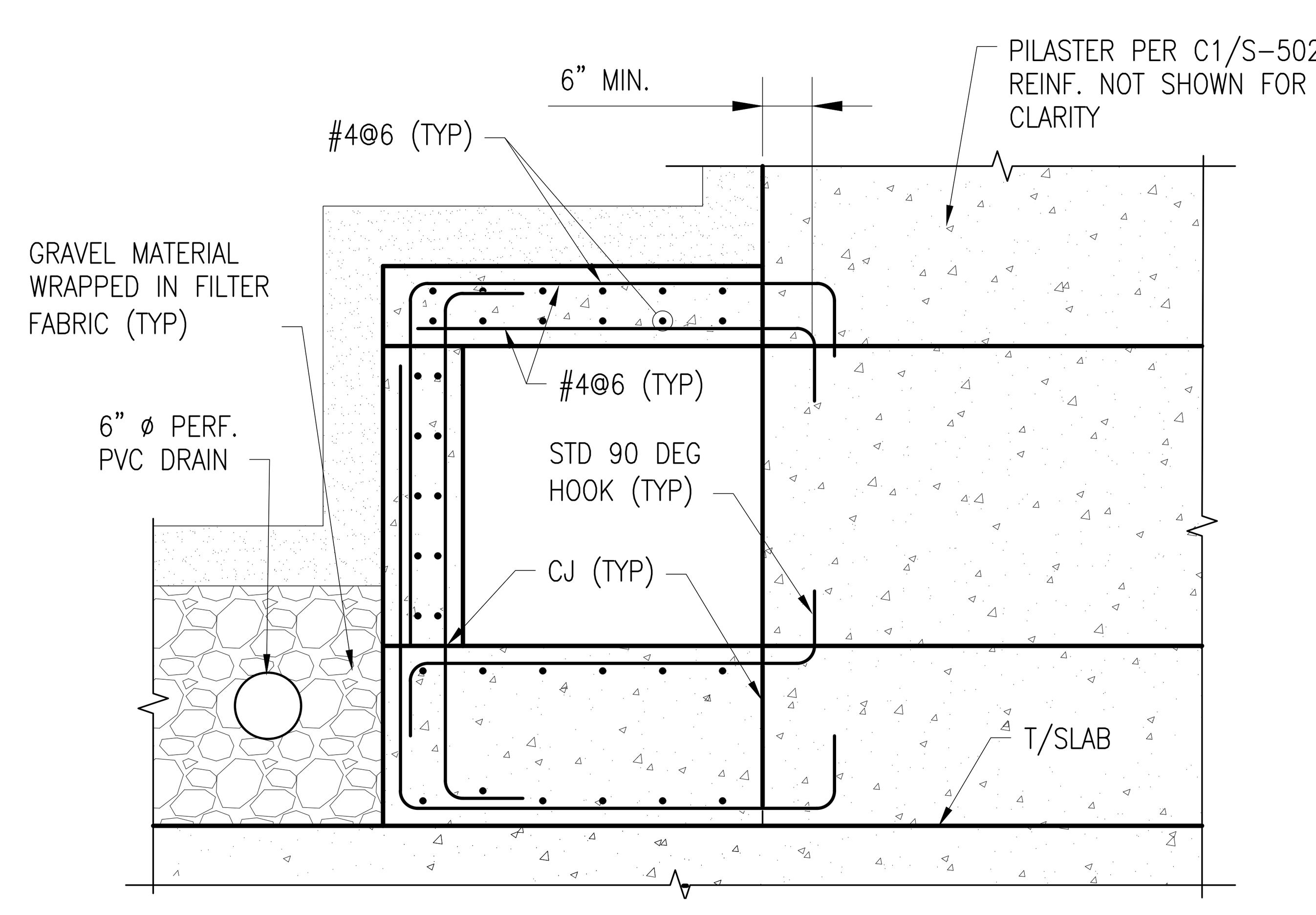
C2 SECTION
SCALE: 3/4" = 1'-0"



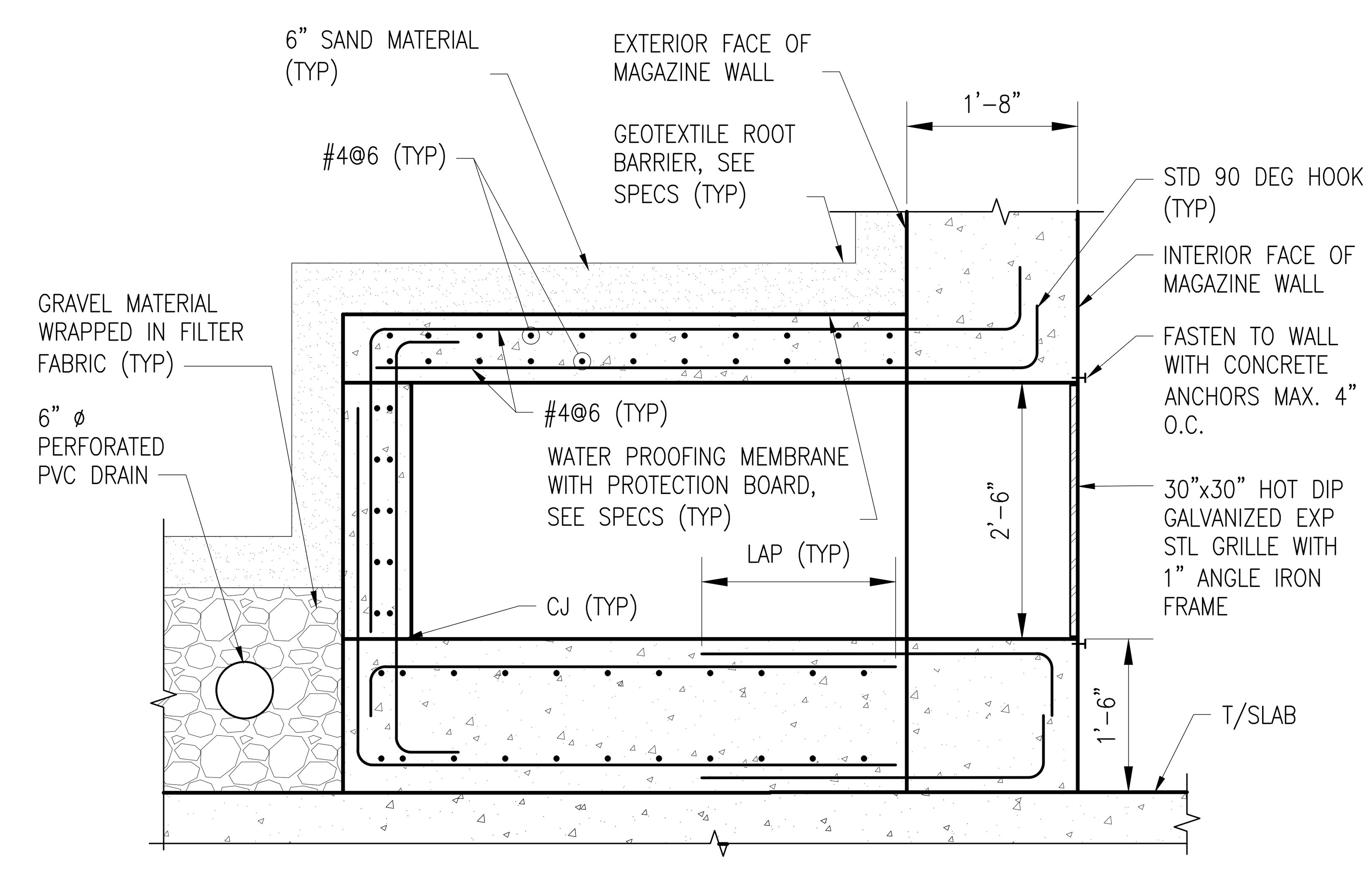
B4 ENLARGED PLAN VIEW
SCALE: 3/4" = 1'-0"



A1 SECTION
SCALE: 3/4" = 1'-0"



A3 SECTION
SCALE: 3/4" = 1'-0"



A4 SECTION
SCALE: 3/4" = 1'-0"

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

AIR INTAKE SECTIONS AND DETAILS

APPROVED	05/22/2024
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO	DATE
DES FJ	DRW MR	CHK DW
PM/DM	--
BRANCH MANAGER	--
CHIEF ENG/ARCH	--
FIRE PROTECTION	--
SCALE:	3/4" = 1'-0"
EPROJECT NO.	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138823
SHEET 47 OF 85	

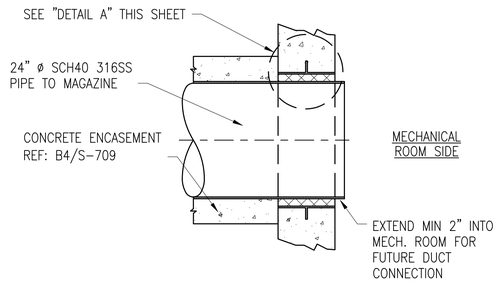
S-707

DRAWFORM REVISION: 25 AUGUST 2020

SYM | DESCRIPTION | DATE | APPR

SEAL

A/E INFO



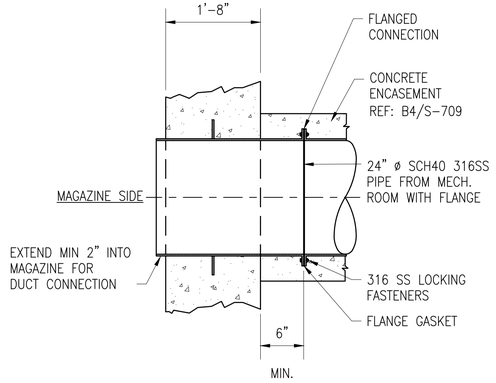
DETAIL A

NOTES:

1. THE NEED FOR A FIRE DAMPER AT MECHANICAL ROOM PENETRATIONS MUST BE DETERMINED BY THE SITE ADAPT ENGINEER.
2. ADJUST DESIGN TO INCORPORATE OUT-OF-WALL FIRE DAMPERS IF REQUIRED.
3. OUTER STEEL SLEEVE SIZE TO BE COORDINATED WITH CHAIN COMPRESSION LINK SEAL REQUIREMENTS.
4. INSTALL CONNECTING DUCTWORK AND FITTINGS IN ACCORDANCE WITH DUCTWORK MANUFACTURER'S RECOMMENDATIONS.
5. FILL VOID BETWEEN LINK SEALS WITH MINERAL WOOL.

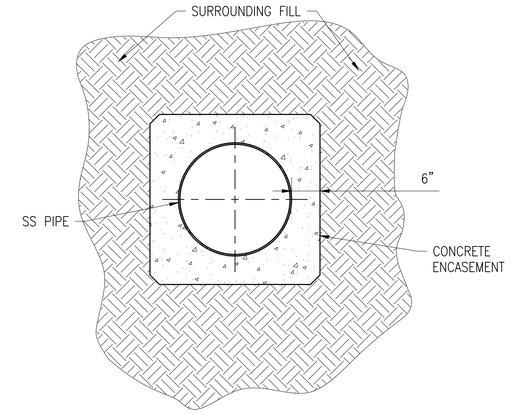
B3 PIPE THRU MECH. ROOM WALL DETAIL

SCALE: 3/4" = 1'-0"



A3 PIPE THRU MAGAZINE WALL DETAIL

SCALE: 3/4" = 1'-0"



NOTES:

1. DUCTWORK INSTALLED UNDERGROUND MUST BE 24" DIAMETER SCH40 304SS PIPE.
2. TRENCHES MUST BE PITCHED TO PREVENT THE BUILDUP OF WATER AROUND THE PIPE OR WALL PENETRATIONS.
3. PIPE MUST BE TIED DOWN TO AVOID FLOATING DURING POURING OF CONCRETE ENCASEMENT.
4. CONCRETE MUST NOT BE POURED DIRECTLY ONTO THE PIPE. IT MUST BE POURED IN SUCCESSIVE LAYERS AND TAMPED FIRMLY AROUND THE PIPE.
5. FIELD APPLY BITUMEN COATING TO PIPE PRIOR TO CONCRETE ENCASEMENT.
6. CONCRETE ENCASEMENT TO BE MINIMUM OF 6" THICK.
7. WRAP CONCRETE ENCASED DUCTS IN WATERPROOFING MEMBRANE AND SEAL AGAINST ADJACENT MEMBRANE AT STRUCTURAL PENETRATION POINTS.

B4 CONCRETE ENCASED PIPE DETAIL

SCALE: 3/4" = 1'-0"

NOTES TO DESIGNER – REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION.

1. MECHANICAL ROOMS AND THEIR ASSOCIATED DETAILS ARE AN ALTERNATE AND NOT PART OF THE BASE DESIGN. IF THE MECHANICAL ROOM OPTION IS NOT EXCERCISED, THIS SHEET MAY BE REMOVED.

APPR'R | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/OM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
FIRE PROTECTION	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

PENETRATION DETAILS

SCALE:	3/4" = 1'-0"
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	

NAVFAC DRAWING NO.
14138824

SHEET 48 OF 85

S707A

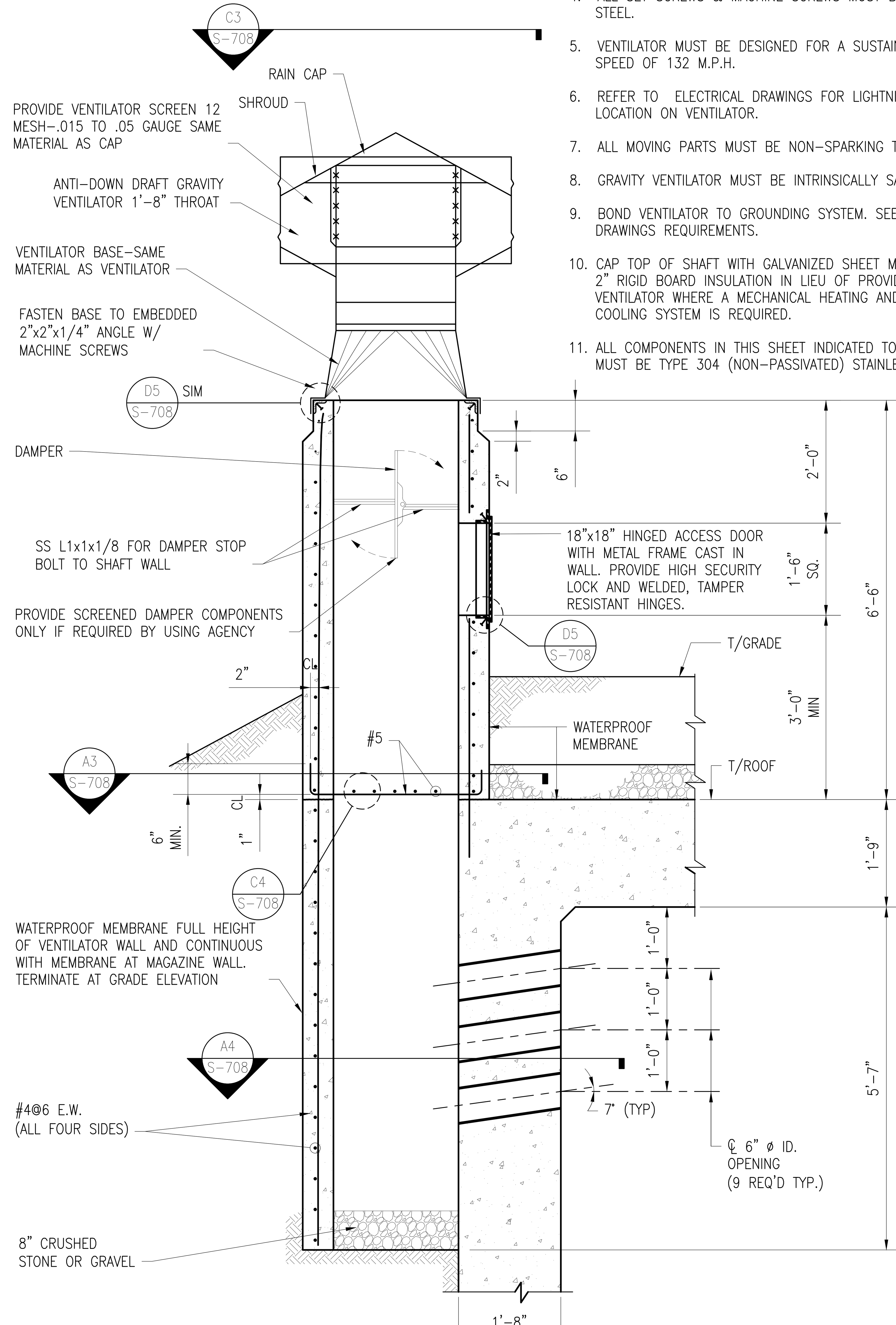
DRAWFORM REVISION: 25 AUGUST 2020

NOTES TO DESIGNER – REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION.

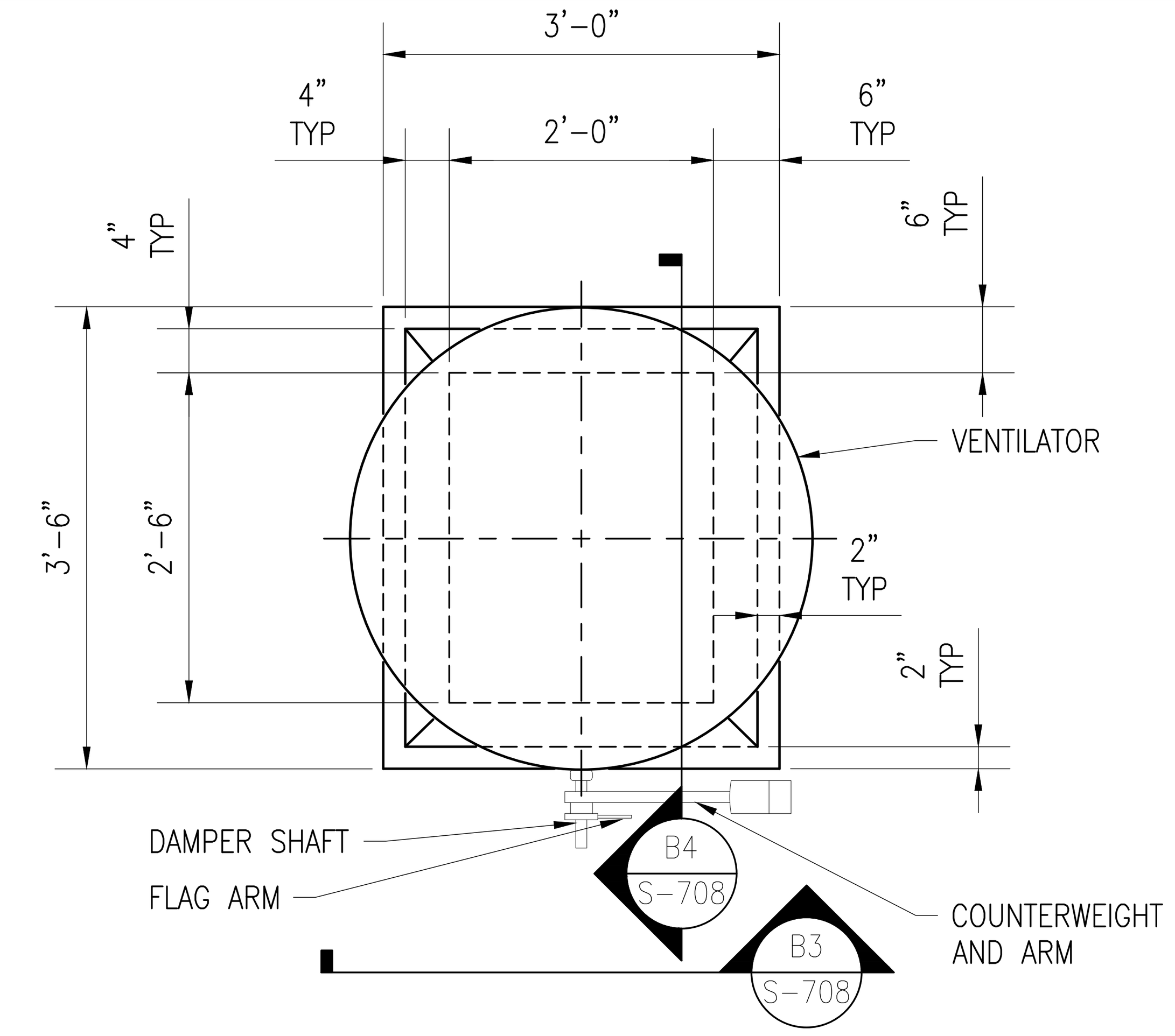
1. NATURAL VENTILATION INTAKE AND RELIEF SHAFTS ARE NOT REQUIRED WHEN THE MECHANICAL ROOM OPTION IS EXERCISED.

NOTES

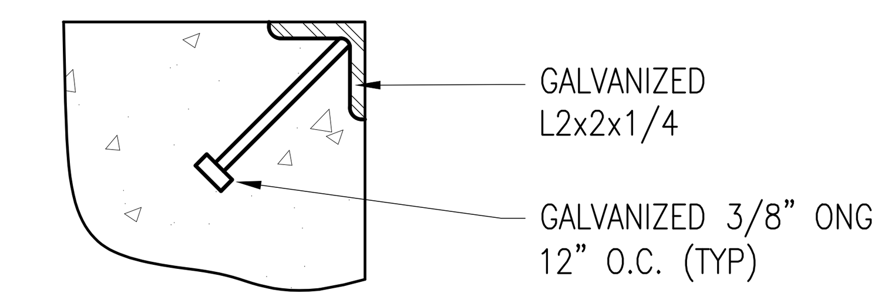
1. PROVIDE SCREENED FIRE DAMPER COMPONENTS ONLY IF REQUIRED BY USING AGENCY.
2. ALL DAMPER AND SHAFT ASSEMBLIES MUST OPERATE FREELY AND POSITIVELY.
3. FUSIBLE LINKS MUST HAVE MELTING POINTS OF 160° TO 165° F. BREAKING STRENGTH MUST BE SUITABLE FOR LOADS IMPOSED BY COUNTERWEIGHTS.
4. ALL SET SCREWS & MACHINE SCREWS MUST BE STAINLESS STEEL.
5. VENTILATOR MUST BE DESIGNED FOR A SUSTAINED WIND SPEED OF 132 M.P.H.
6. REFER TO ELECTRICAL DRAWINGS FOR LIGHTNING ROD LOCATION ON VENTILATOR.
7. ALL MOVING PARTS MUST BE NON-SPARKING TYPE.
8. GRAVITY VENTILATOR MUST BE INTRINSICALLY SAFE.
9. BOND VENTILATOR TO GROUNDING SYSTEM. SEE ELECTRICAL DRAWINGS REQUIREMENTS.
10. CAP TOP OF SHAFT WITH GALVANIZED SHEET METAL WITH 2" RIGID BOARD INSULATION IN LIEU OF PROVIDING VENTILATOR WHERE A MECHANICAL HEATING AND / OR COOLING SYSTEM IS REQUIRED.
11. ALL COMPONENTS IN THIS SHEET INDICATED TO BE "SS" MUST BE TYPE 304 (NON-PASSIVATED) STAINLESS STEEL.



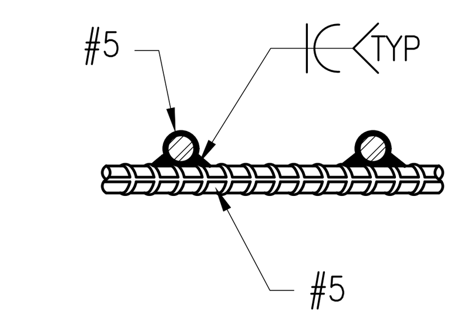
A1 SECTION AT VENTILATOR
SCALE: 3/4" = 1'-0"



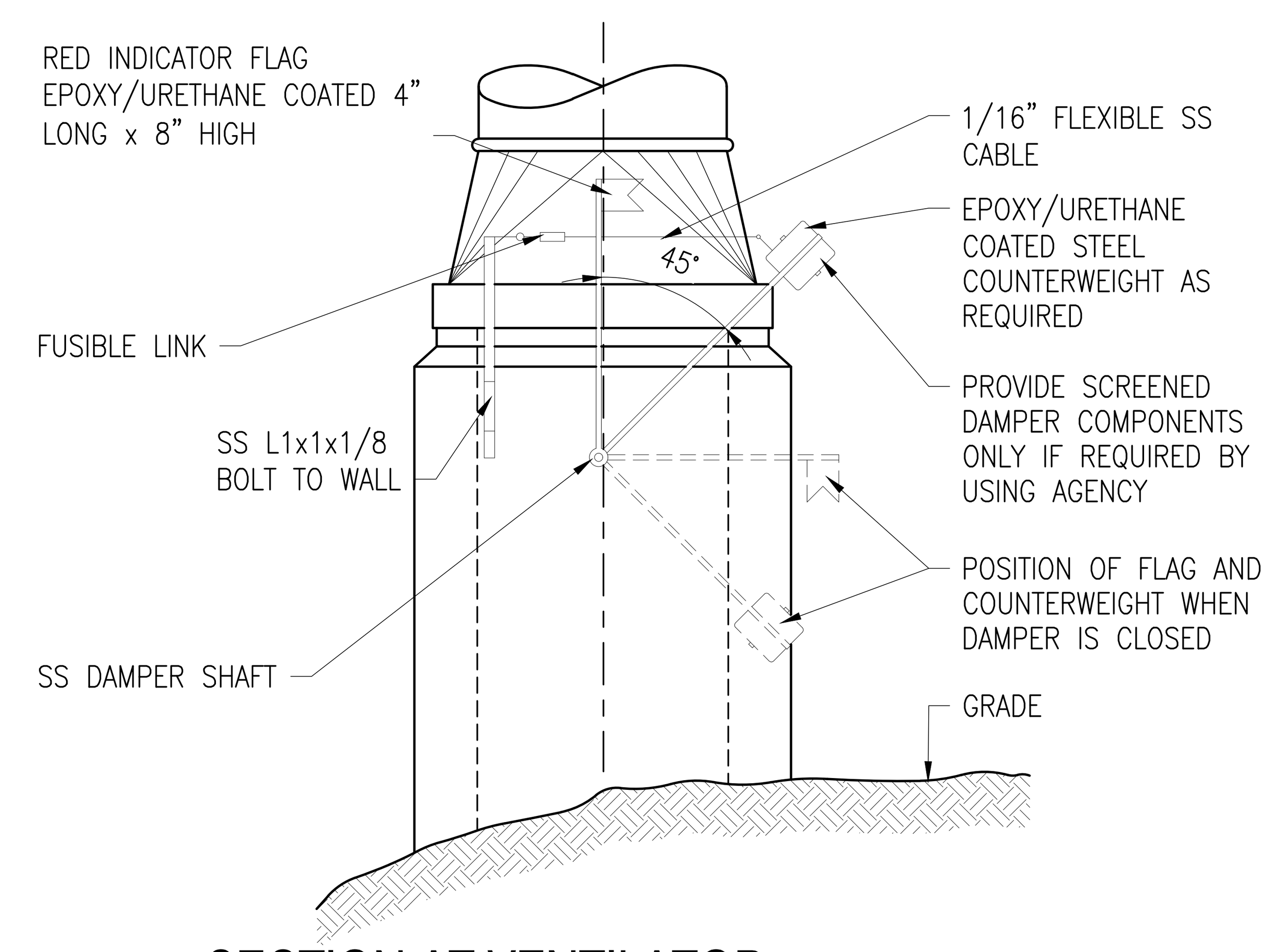
C3 DETAIL AT VENTILATOR
SCALE: 3/4" = 1'-0"



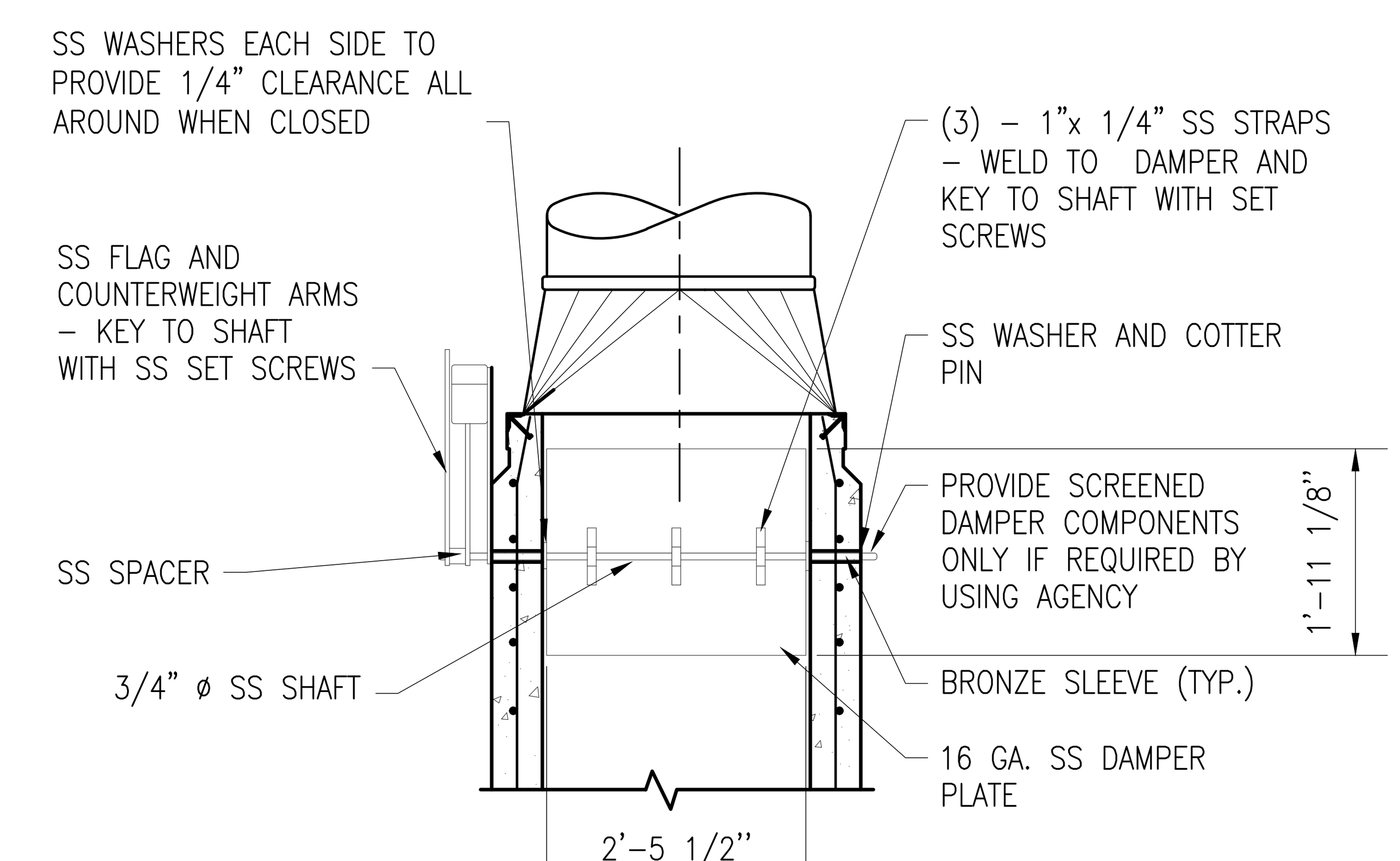
D5 DETAIL
SCALE: 3" = 1'-0"



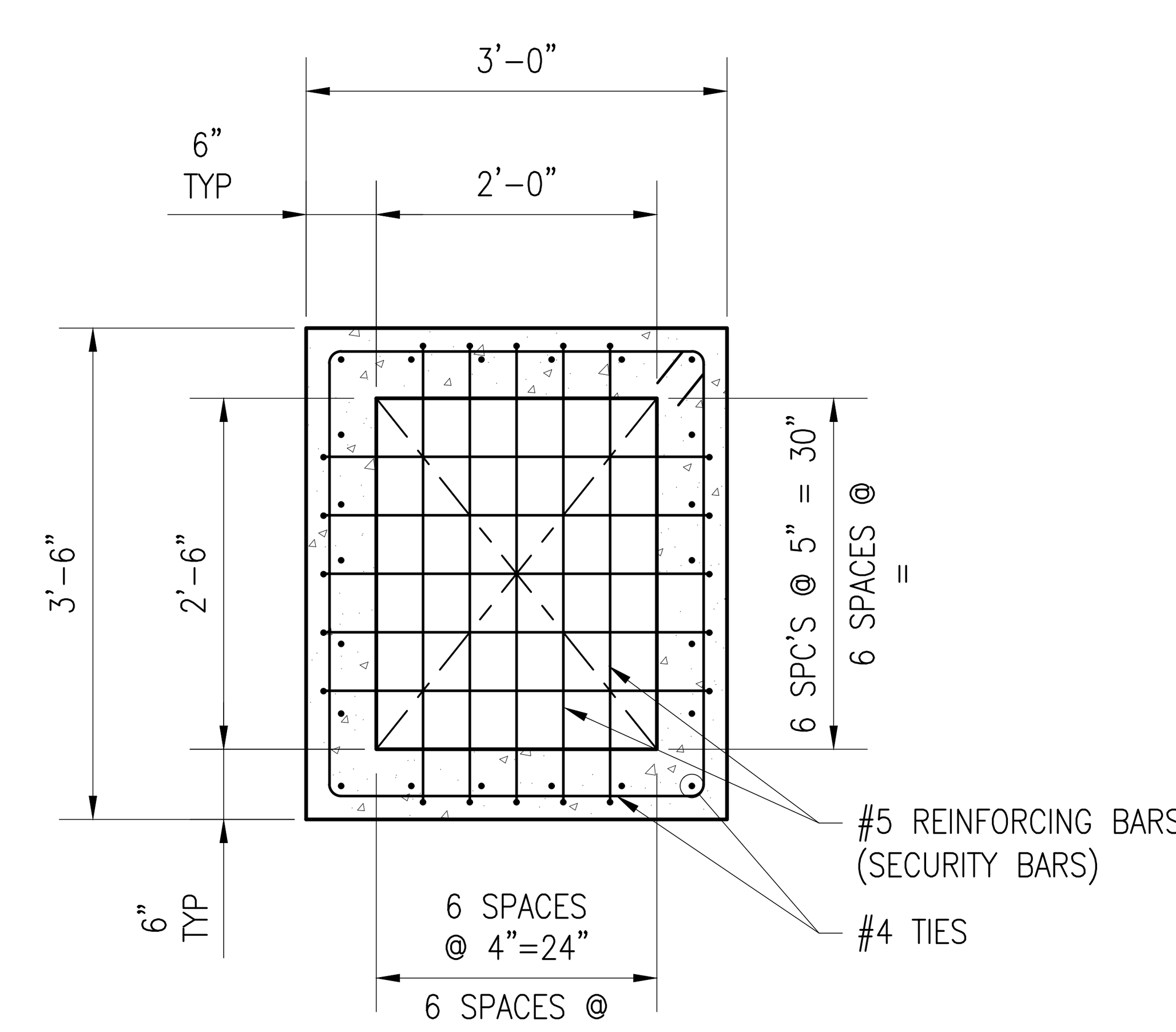
C4 DETAIL
SCALE: 3" = 1'-0"



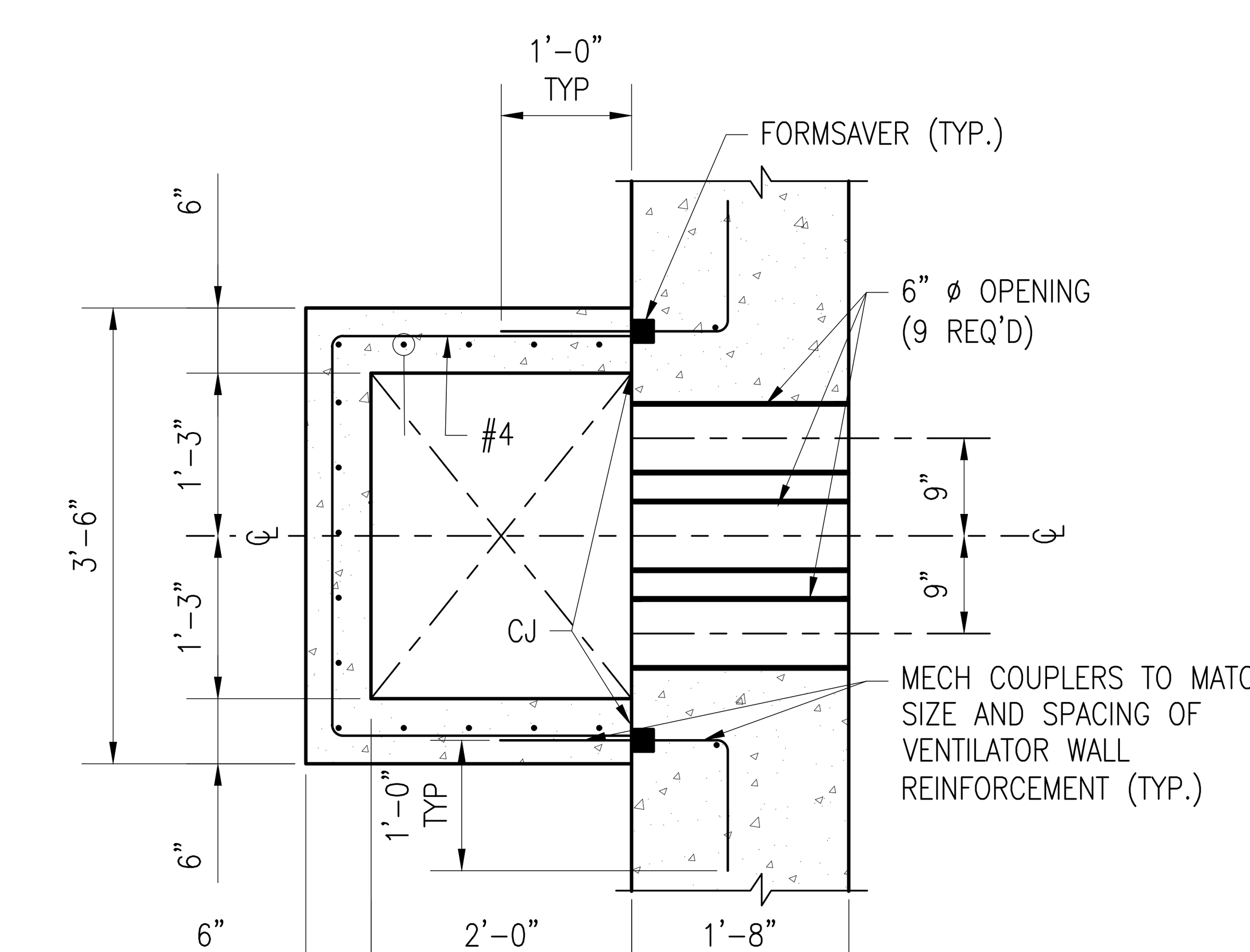
B3 SECTION AT VENTILATOR
SCALE: 3/4" = 1'-0"



B4 SECTION AT VENTILATOR
SCALE: 3/4" = 1'-0"



A3 SECTION AT VENTILATOR
SCALE: 3/4" = 1'-0"



A4 SECTION AT VENTILATOR
SCALE: 3/4" = 1'-0"

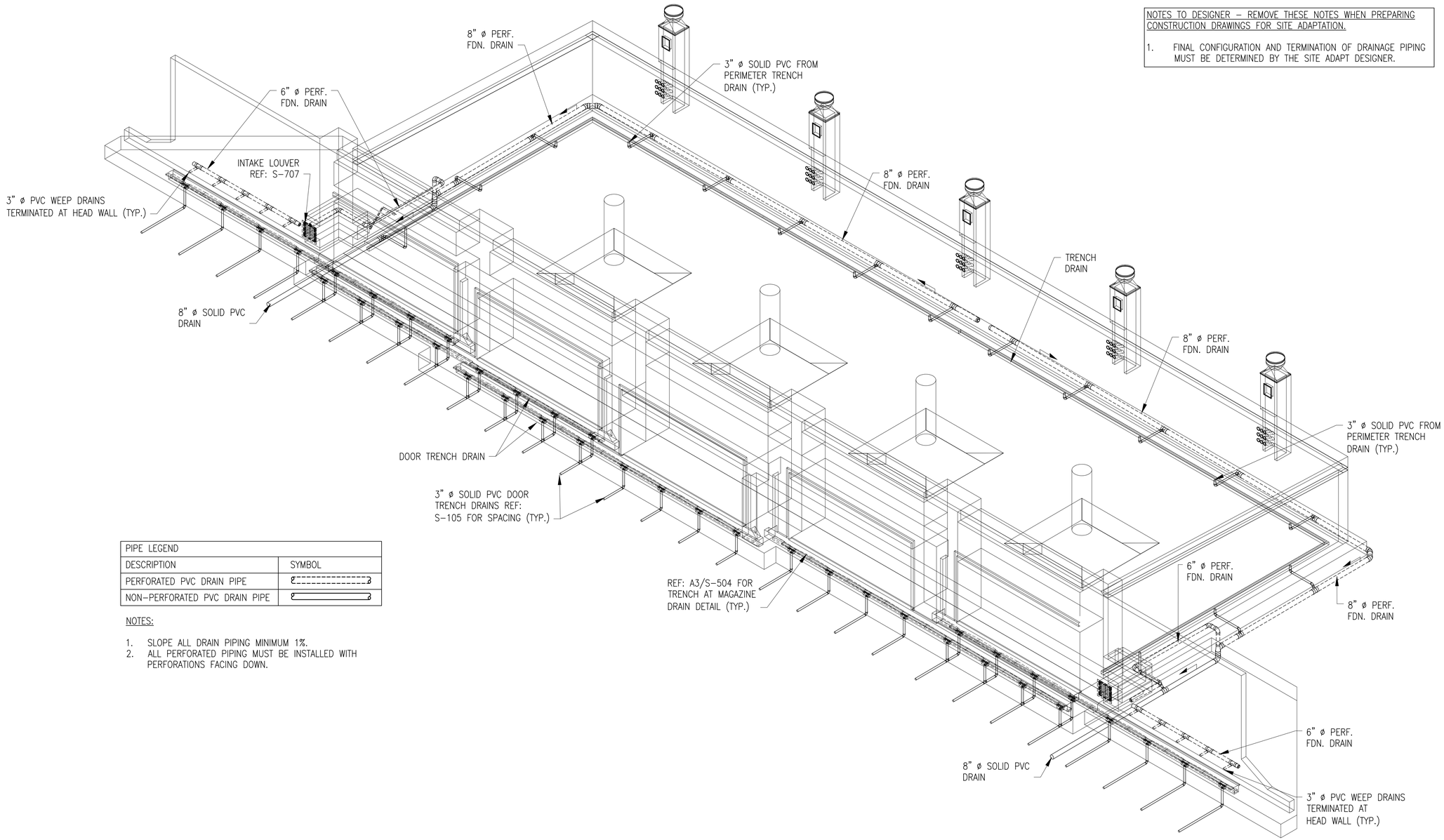
APPROVED 05/22/2024
FOR COMMANDER NAVFAC
DES FJ | DRW MR | CHK DW

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

VENTILATOR DETAILS, SECTIONS, AND ELEVATIONS

SCALE: AS NOTED
EPROJECT NO: 1702805
NAVFAC DRAWING NO. 14138825
SHEET 49 OF 85
S-708



NOTES TO DESIGNER – REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION.

1. FINAL CONFIGURATION AND TERMINATION OF DRAINAGE PIPING MUST BE DETERMINED BY THE SITE ADAPT DESIGNER.

PIPE LEGEND	
DESCRIPTION	SYMBOL
PERFORATED PVC DRAIN PIPE	
NON-PERFORATED PVC DRAIN PIPE	

NOTES:

1. SLOPE ALL DRAIN PIPING MINIMUM 1%.
2. ALL PERFORATED PIPING MUST BE INSTALLED WITH PERFORATIONS FACING DOWN.

A1 DRAINAGE ISOMETRIC
NOT TO SCALE

APPR.	DATE	SYM	DESCRIPTION

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	FJ	DRW	MR	CHK	DW

PM/DM --

BRANCH MANAGER --

CHIEF ENG/ARCH --

FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

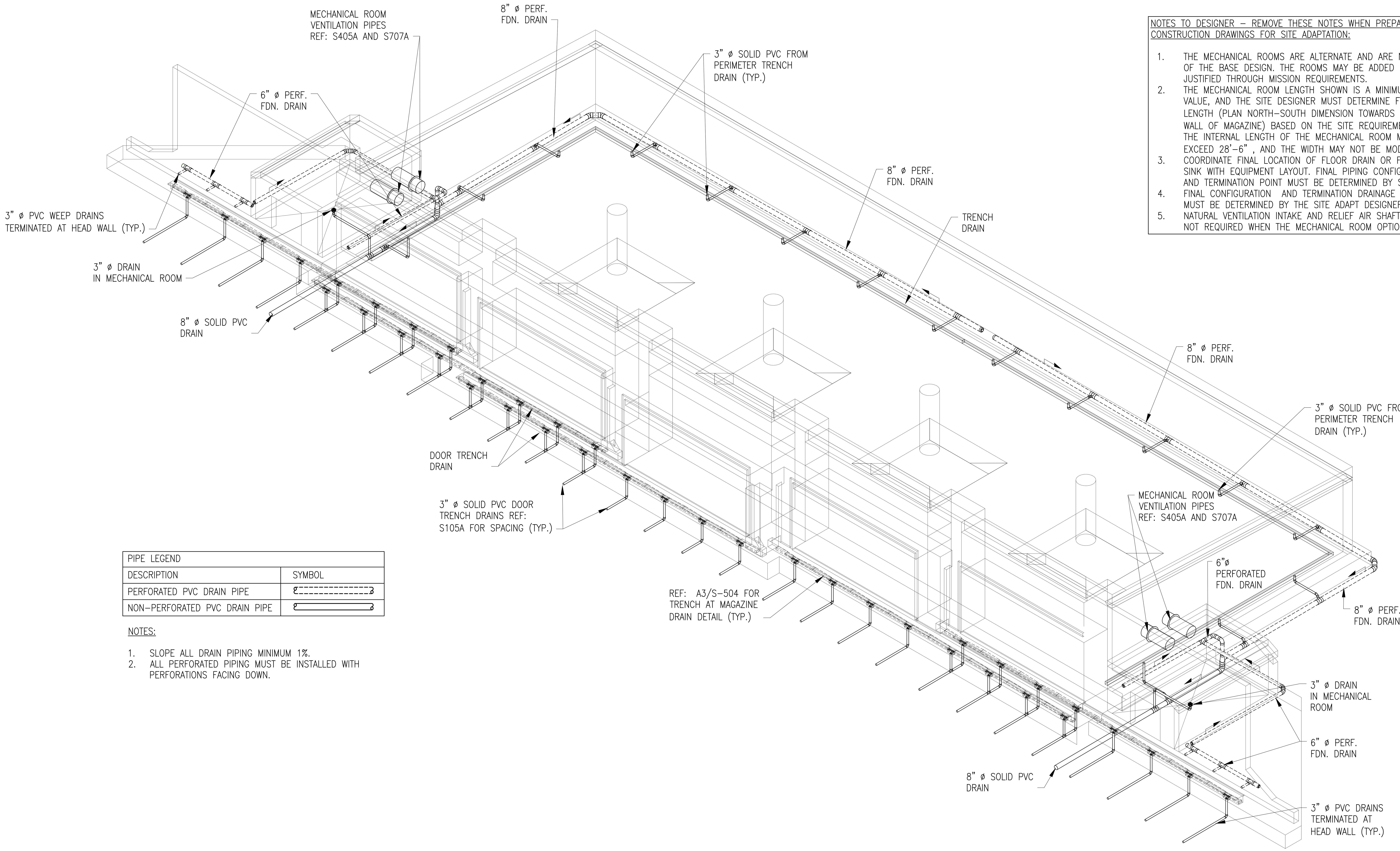
TYPE H BOX MAGAZINE

DRAINAGE ISOMETRIC

SCALE: NOT TO SCALE
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138826
SHEET 50 OF 85

S-709

DRAWFORM REVISION: 25 AUGUST 2020



NOTES TO DESIGNER – REMOVE THESE NOTES WHEN PREPARING CONSTRUCTION DRAWINGS FOR SITE ADAPTATION:

1. THE MECHANICAL ROOMS ARE ALTERNATE AND ARE NOT PART OF THE BASE DESIGN. THE ROOMS MAY BE ADDED ONLY IF JUSTIFIED THROUGH MISSION REQUIREMENTS.
2. THE MECHANICAL ROOM LENGTH SHOWN IS A MINIMUM VALUE, AND THE SITE DESIGNER MUST DETERMINE FINAL LENGTH (PLAN NORTH–SOUTH DIMENSION TOWARDS BACK WALL OF MAGAZINE) BASED ON THE SITE REQUIREMENTS. THE INTERNAL LENGTH OF THE MECHANICAL ROOM MUST NOT EXCEED 28'–6", AND THE WIDTH MAY NOT BE MODIFIED.
3. COORDINATE FINAL LOCATION OF FLOOR DRAIN OR FLOOR SINK WITH EQUIPMENT LAYOUT. FINAL PIPING CONFIGURATION AND TERMINATION POINT MUST BE DETERMINED BY SITE ADAPT DESIGNER.
4. FINAL CONFIGURATION AND TERMINATION DRAINAGE PIPING MUST BE DETERMINED BY THE SITE ADAPT DESIGNER.
5. NATURAL VENTILATION INTAKE AND RELIEF AIR SHAFTS ARE NOT REQUIRED WHEN THE MECHANICAL ROOM OPTION IS EXERCISED.

PIPE LEGEND	
DESCRIPTION	SYMBOL
PERFORATED PVC DRAIN PIPE	(dashed pipe symbol)
NON–PERFORATED PVC DRAIN PIPE	(solid pipe symbol)

NOTES:

1. SLOPE ALL DRAIN PIPING MINIMUM 1%.
2. ALL PERFORATED PIPING MUST BE INSTALLED WITH PERFORATIONS FACING DOWN.

A1 DRAINAGE ISOMETRIC - ALTERNATE

NOT TO SCALE

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES FJ	DRW MR	CHK DW
PM/DM		--
BRANCH MANAGER		--
CHIEF ENG/ARCH		--
FIRE PROTECTION		--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

DRAINAGE ISOMETRIC – ALTERNATE

SCALE: NOT TO SCALE

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138827

DRAWFORM REVISION: 25 AUGUST 2020

PC — PHOTOCELL

OS — OCCUPANCY SENSOR – CEILING MOUNTED

OS — OCCUPANCY SENSOR – WALL MOUNTED

X Y Z — CEILING/PENDANT MOUNTED LUMINAIRE – COMPACT FLUORESCENT OR LED

X Y Z — WALL MOUNTED LUMINAIRE – COMPACT FLUORESCENT OR LED

X Y Z — CEILING/PENDANT MOUNTED LUMINAIRE – FLUORESCENT OR LED

X Y Z — WALL/SURFACE MOUNTED LUMINAIRE – FLUORESCENT OR LED

X Y Z — CEILING/PENDANT MOUNTED LUMINAIRE – COMPACT FLUORESCENT OR LED (NORMAL/EMERGENCY)

X Y Z — WALL MOUNTED LUMINAIRE – COMPACT FLUORESCENT OR LED (NORMAL/EMERGENCY)

X Y Z — CEILING/PENDANT MOUNTED LUMINAIRE – FLUORESCENT OR LED (NORMAL/EMERGENCY)

X Y Z — WALL/SURFACE MOUNTED LUMINAIRE – FLUORESCENT OR LED (NORMAL/EMERGENCY)

X Y Z — EMERGENCY LIGHT FIXTURE, 2 ATTACHED HEADS AS SHOWN

X 20A 3P OR x 100AF 80AT 3P — LOW – VOLTAGE CIRCUIT BREAKER (CB). RATINGS AND NO. OF POLES AS SHOWN. WHEN SPECIFIC TYPE IS REQUIRED, X INDICATES TYPE.

TYPES:
MCCB – MOLDED CASE
ICCB – INSULATED CASE
LVP – LOW – VOLTAGE POWER
MCP – MOTOR CIRCUIT PROTECTOR (RATING PER CONNECTED LOAD)

CB — SEPARATELY MOUNTED CIRCUIT BREAKER; SEE ELECTRICAL ONE – LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

GFP — GROUND FAULT PROTECTION

FUSE, SIZE, AND NUMBER OF FUSES AS NOTED

FUSED CUTOUT, CURRENT RATING, FUSE SIZE, AND NUMBER OF POLES AS NOTED

FUSIBLE SWITCH, CURRENT RATING, FUSE SIZE, AND QUANTITY AS NOTED

NON–FUSED SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED

DISCONNECT OR DRAWOUT CONNECTION

A C & A C B B — MAGNETIC MOTOR STARTER AND SEPARATELY MOUNTED COMBINATION MAGNETIC MOTOR STARTER

D C & D C — MOTOR CONTROLLER AND SEPARATELY MOUNTED MOTOR CONTROLLER WITH SHORT CIRCUIT PROTECTION AND DISCONNECT

MOTOR STARTER AND CONTROLLER SUBSCRIPTS:
A – MAGNETIC STARTER NEMA SIZE
B – STARTER TYPE
NONE – FULL VOLTAGE
NON–REVERSING (FVNR)
FVR – FULL VOLTAGE REVERSING
2S – TWO SPEED
RVAT – REDUCED VOLTAGE AUTO TRANSFORMER
C – CONTROL DIAGRAM OR CONTROLS
SCHEDULE NUMBER (IF REQUIRED)
D – CONTROLLER TYPE
VFD – VARIABLE FREQUENCY DRIVE
SS – SOLID STATE
SSRV – SOLID STATE REDUCED VOLTAGE

OR — DISCONNECT OR SAFETY SWITCH, 30A, 3P, NON–FUSED UNLESS OTHERWISE NOTED

T — DISCONNECT OR SAFETY SWITCH WITH AUXILIARY CONTACTS, 30A, 3P, NON–FUSED UNLESS OTHERWISE NOTED

7 1/2 OR HP — MOTOR WITH DESIGN HORSEPOWER (WHEN INDICATED)

MOTOR

GENERATOR

ATS — TRANSFER SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED
ATS – AUTOMATIC
MTS – MANUAL

TRANSFORMER
△ 3–PHASE, 3–WIRE DELTA CONNECTION
Y 3–PHASE, 4–WIRE GROUNDED WYE CONNECTION

LP100 208/120V 3Ø,4W — SWITCHBOARD OR PANELBOARD; NAME, VOLTAGE, PHASE, NUMBER OF WIRES WHEN INDICATED

100 KVA — NON–MOTOR LOAD WITH DESIGN KVA, KW, OR AMP

CPT — CONTROL POWER TRANSFORMER (CPT)

VOLTAGE TRANSFORMER (VT OR PT)

CURRENT TRANSFORMER (CT)

WH — UTILITY WATT–HOUR METER PER UTILITY REQUIREMENTS

DMP — DIGITAL METERING PACKAGE

RTM — RUN TIME METER

GROUND

LIGHTNING ARRESTER

SPD — LOW VOLTAGE SURGE PROTECTIVE DEVICE

ELECTRICAL CONNECTION

OR — NO ELECTRICAL CONNECTION

X Y — CONTROL/RELAY COIL; X INDICATES TYPE, Y INDICATES LOOP NO. WHEN USED

TYPES:
CR – CONTROL RELAY
DP – DEFINITE PURPOSE RELAY
LC – LIGHTING CONTACTOR
M – MOTOR STARTER
PC – PHOTO CELL
TC – TIME CLOCK
TR – TIMING RELAY

NORMALLY OPEN CONTACT (N.O.)

NORMALLY CLOSED CONTACT (N.C.)

OFF HAND AUTO XOO OOX — 3 POSITION SELECTOR SWITCH, MAINTAINED CONTACTS; UNLESS OTHERWISE NOTED, 2–POSITION SIMILAR

NORMALLY OPEN PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

NORMALLY CLOSED PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

T — TRANSFORMER

PUSHBUTTON

SPECIAL PURPOSE DEVICE

CONTROL PANEL INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

CONTROL PANEL WITH DISCONNECT SWITCH INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

J — JUNCTION OR PULL BOX

EQUIPMENT CONNECTION

ELECTRICAL EQUIPMENT ENCLOSURE: PANELBOARD, SWITCHBOARD, MOTOR CONTROL CENTER, CONTROL PANEL, OR OTHER EQUIPMENT AS INDICATED

480/277V PANELBOARD

208/120V PANELBOARD

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD
PM/OM					– –
BRANCH MANAGER					– –
CHIEF ENG/ARCH					– –
FIRE PROTECTION					– –

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

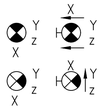
ELECTRICAL SYMBOLS & LEGEND

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138828
SHEET 52 OF 85

E-001

DRAWFORM REVISION: 25 AUGUST 2020

FILE NAME: C:\Users\kenus.ulrichs\OneDrive – US Navy-flonkspeed\Projects\Update Std Mags\BOX TYPE G AND H\Type H Box ECM Standard Drawings Working Set\E-001.dwg LAYOUT NAME: E-001 – ELECTRICAL SYMBOLS & LEGEND PLOTTED: Wednesday, October 09, 2024 – 11:55am USER: kenus.ulrichs



DOUBLE-FACED CEILING OR WALL MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

SINGLE-FACED CEILING OR WALL MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

LIGHTING FIXTURE SUBSCRIPTS:

X – INDICATES FIXTURE TYPE PER LIGHTING FIXTURE SCHEDULE
Y – INDICATES CIRCUIT NUMBER FROM PANELBOARD
z – INDICATES CONTROLLING SWITCH (IF REQUIRED)

TOGGLE SWITCH

SUBSCRIPTS:

X – INDICATES TYPE
NONE – SINGLE POLE
3 – THREE-WAY
4 – FOUR-WAY
M – TOGGLE SWITCH, HORSEPOWER/MOTOR RATED
K – KEY SWITCH
TE – MANUAL MOTOR STARTER WITH THERMAL ELEMENT
P – PILOT LIGHT
L – LIGHTED HANDLE
Y – INDICATES CONTROLLING SWITCH (IF REQUIRED)
WP – WEATHER PROOF
DS – 0-10V DIMMING
OS – DUAL TECH OCCUPANCY SENSOR

SPECIAL-PURPOSE RECEPTACLE AS DEFINED ON PLANS

QUAD-DUPLEX RECEPTACLE, TWO NEMA 5-20R UNDER COMMON COVER PLATE

DUPLEX RECEPTACLE, NEMA 5-20R

SIMPLEX RECEPTACLE, NEMA 5-20R

RECEPTACLE IN FLOOR BOX

SUBSCRIPTS:

X – INDICATES TYPE
GFCI – GROUND FAULT CIRCUIT INTERRUPTER
WP – WEATHER PROOF
C – CONTROLLED RECEPTACLE, MARKING PER NEC 406.3(E), GREEN
Y – INDICATES CIRCUIT NUMBER FROM PANELBOARD

SPECIAL DEVICE AND/OR CONNECTION AS NOTED

CONDUIT TURNING UP

CONDUIT TURNING DOWN

HOME RUN TO PANEL, 2 #12, 1 #12G IN 3/4"C UNLESS OTHERWISE NOTED

CIRCUIT RUN BETWEEN DEVICES EXPOSED IN NON-ARCHITECTURALLY FINISHED AREAS; CONCEALED IN ARCHITECTURALLY FINISHED AREAS. CONDUIT AND CONDUCTOR SIZES MUST BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

CONDUIT RUN BETWEEN DEVICES CONCEALED IN NON-ARCHITECTURALLY FINISHED AREAS OR UNDER FLOOR SLAB. CONDUIT AND CONDUCTOR SIZES MUST BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

UNDERGROUND CONDUIT

CIRCUIT CONTINUATION

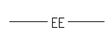
CONDUIT STUBBED OUT AND CAPPED

GROUNDING CONDUCTOR

UNDERGROUND ELECTRICAL DUCT BANK

UNDERGROUND COMMUNICATIONS CONCRETE ENCASED DUCT BANK

OVERHEAD SECONDARY CIRCUIT AND CONDUCTORS



DIRECT BURIED CONDUIT

PILASTER GROUNDING CONDUCTOR

GROUND ROD

GROUND TEST WELL

HH: HANDHOLE
MH: MANHOLE

AIR TERMINAL

GROUND CONNECTION

ELECTRICAL ABBREVIATIONS

A	AMPERES OR TRIP AMPERES
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	SYMMETRICAL AMPS INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAUGE
A/R	AS REQUIRED
ARR.	ARRESTOR
BLDG	BUILDING
BRKT	BRACKET
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CL	CURRENT LIMITING
CO	CONDUIT ONLY
CTL	CONTROL
DC	DIRECT CURRENT
D.T.C.	DATA TERMINAL CABINET
EMCS	ENERGY MONITORING AND CONTROL SYSTEM
FACP	FIRE ALARM CONTROL PANEL
FT	FOOT, FEET
GFCI	GROUND FAULT CIRCUIT INTERRUPTER, 5MA PERSONNEL PROTECTION UNLESS OTHERWISE NOTED.
GND	GROUND
HZ	HERTZ
IAW	IN ACCORDANCE WITH
IG	ISOLATED GROUND
IN	INCH, INCHES
IR	INFRARED
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPS REACTIVE
KWH	KILOWATT HOURS
L-L	LINE TO LINE
L-N	LINE TO NEUTRAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MTD	MOUNTED
MTG	MOUNTING
NAFSEA	NAVAL SEA SYSTEMS COMMAND
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEUT	NEUTRAL
NOSSA	NAVAL ORDNANCE SAFETY & SECURITY ACTIVITY
N.O.	NORMALLY OPEN
NLT	NOT LESS THAN
NMT	NOT MORE THAN
OH	OVERHEAD
PAS	PUBLIC ADDRESS SYSTEM
PE	PHOTOELECTRIC
PH	PHASE
PLCS	PLACES
PNL	PANELBOARD
PVC	POLYVINYL CHLORIDE
	ELECTRICAL RACEWAY USED ONLY U.G., CARLON OR EQUIVALENT
RC	RIGID STEEL CONDUIT
REF	REFERENCE
REQ'D	REQUIRED
RGC	RIGID GALVANIZED STEEL CONDUIT
RM	ROOM
RMC	RIGID METALIC CONDUIT
SHT	SHEET
SOB	STANDOFF BRACKET
SPACE	SPACE(S) ONLY (NO BREAKER DEVICE)
SPARE	SPARE BREAKER OR DEVICE
SPDT	SINGLE-POLE, DOUBLE-THROW
SPECS	CONTRACT SPECIFICATIONS
SPST	SINGLE-POLE, SINGLE-THROW
S/N	SOLID NEUTRAL
TB	TELEPHONE BACKBOARD
TYP	TYPICAL
UG	UNDERGROUND
UL	LISTED BY UNDERWRITER'S LABORATORIES
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT AMPERES
W	WATT
WH	WEATHERHEAD
W/	WITH
ø	PHASE
2W+G	CIRCUIT TYPE
3W+G	CIRCUIT TYPE
4W+G	CIRCUIT TYPE

1. THIS IS A STANDARD ELECTRICAL SYMBOLOGY SHEET. NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT.

2. SCREENING OR SHADING OF WORK IS TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.

GENERAL NOTES:

1. PROJECT DESIGN AND EXECUTION MUST CONFORM TO THE LATEST VERSIONS OF:
(A) NFPA 70 (NATIONAL ELECTRICAL CODE)
(B) NESC (NATIONAL ELECTRICAL SAFETY CODE)
(C) NFPA 101 (LIFE SAFETY CODE)
(D) NFPA 780 (STANDARD FOR INSTALLATION OF LIGHTNING PROTECTION SYSTEM)
(E) NAVSEA OP 5 (AMMUNITIONS AND EXPLOSIVES SAFETY ASHORES)
(F) APPLICABLE LOCAL, STATE AND FEDERAL CODES.

2. CONTRACTOR MUST COORDINATE FINAL LOCATION OF ELECTRICAL EQUIPMENT AND COMPONENTS WITH ALL OTHER TRADES PRIOR INSTALLATION. THE CONTRACTOR MUST BE RESPONSIBLE FOR SECURING SPACE REQUIREMENTS FOR ELECTRICAL EQUIPMENT CLEARANCE AND CORRECT ROUGH-IN LOCATIONS OF ELECTRICAL CONNECTIONS.

3. DRAWINGS ARE IN GENERAL DIAGRAMMATIC IN NATURE. FIELD ADJUST CONDUIT AND TRAY ROUTING BASED ON COORDINATION WITH OTHER NEW UTILITIES, STRUCTURES AND EQUIPMENT. NOT ALL COMPONENTS, CONDUITS, AND EQUIPMENT ARE SHOWN IN ALL VIEWS. THE CONTRACTOR MUST MAKE USE OF THE ENTIRE SET OF DRAWINGS, REQUIREMENTS, AND SPECIFICATIONS IN ORDER TO INCLUDE ALL COMPONENTS NECESSARY TO CONSTRUCT A FULLY OPERATIONAL SYSTEM.

6. ALL EQUIPMENT MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S APPROVED, PUBLISHED LITERATURE.

7. ALL UTILITY SERVICES SUCH AS ELECTRIC, TELECOM, SECURITY, INTRUSION DETECTION SYSTEM, FIRE ALARM SYSTEM MUST BE ROUTED UNDERGROUND AT MINIMUM OF 50-FEET AWAY FROM BUILDING FOR SERVICE CONNECTION.

8. ALL CONDUITS MUST BE A RIGID GALVANIZED STEEL CONDUIT (RGS) OR LIQUID-TIGHT, METAL FLEXIBLE CONDUIT. CONDUIT PENETRATIONS THROUGH CONCRETE MUST BE PVC-COATED RIGID GALVANIZED STEEL CONDUIT (PVC-RGS) THROUGH THE LENGTH OF THE PENETRATION, WITH 3" TO 6"AT BOTH PENETRATION ENDS FOR CLEARANCE. CONDUITS PENETRATING UNDERNEATH FOUNDATION IS PROHIBITED. CONDUIT ELBOW PLACEMENT MUST CONSIDER THIS CLEARANCE DURING DESIGN AND INSTALLATION.

9. PROVIDE AND INSTALL THW OR THWN INSULATED CONDUCTORS WITH MINIMUM OF #12 AWG, STRANDED COPPER.

10. ALL NEMA ENCLOSURE RATINGS INDICATED ON DOCUMENTS MAY BE REVISED AS REQUIRED BY THE ENVIRONMENTAL CONDITIONS DURING SITE ADAPTATION PROJECTS.

11. DIMENSIONS SHOWN WITHIN BRACKETS ARE IN UNITS OF MILLIMETERS ROUNDED TO THE NEAREST INTEGER NUMBER.

APPR	DATE	SYM	DESCRIPTION

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SEAL

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APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM --

BRANCH MANAGER --

CHIEF ENG/ARCH --

FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

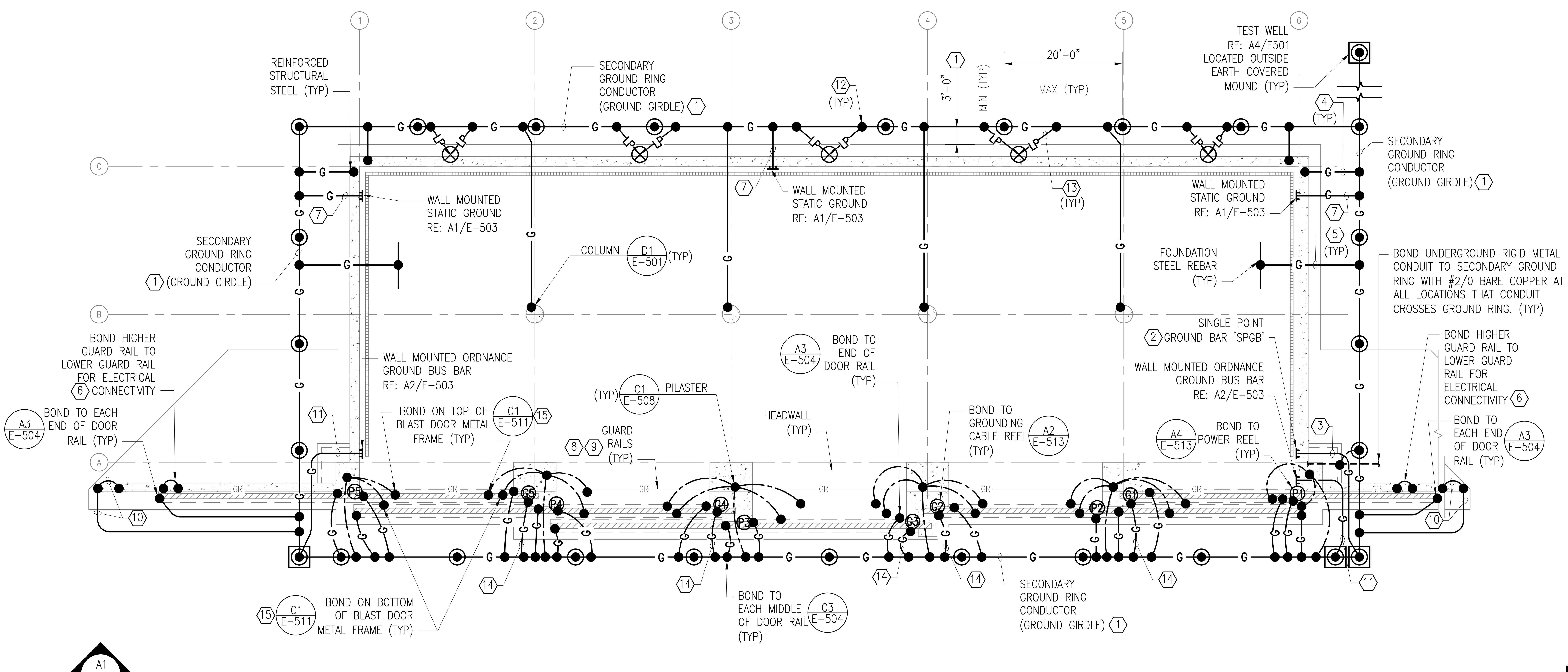
ELECTRICAL SYMBOLS & LEGEND

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138829
SHEET 53 OF 85

E-002

DRAWFORM REVISION: 25 AUGUST 2020

SEE SHEET EG102 FOR SHEET AND KEYED NOTES.



A1 ELECTRICAL LIGHTNING PROTECTION & GROUNDING PLAN

SCALE: 3/32" = 1'-0"

SYM	DESCRIPTION
DATE	APPR

NAVFAC

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES KL	DRW FO	CHK PKD
PM/DM		--
BRANCH MANAGER		--
CHIEF ENG/ARCH		--
FIRE PROTECTION		--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

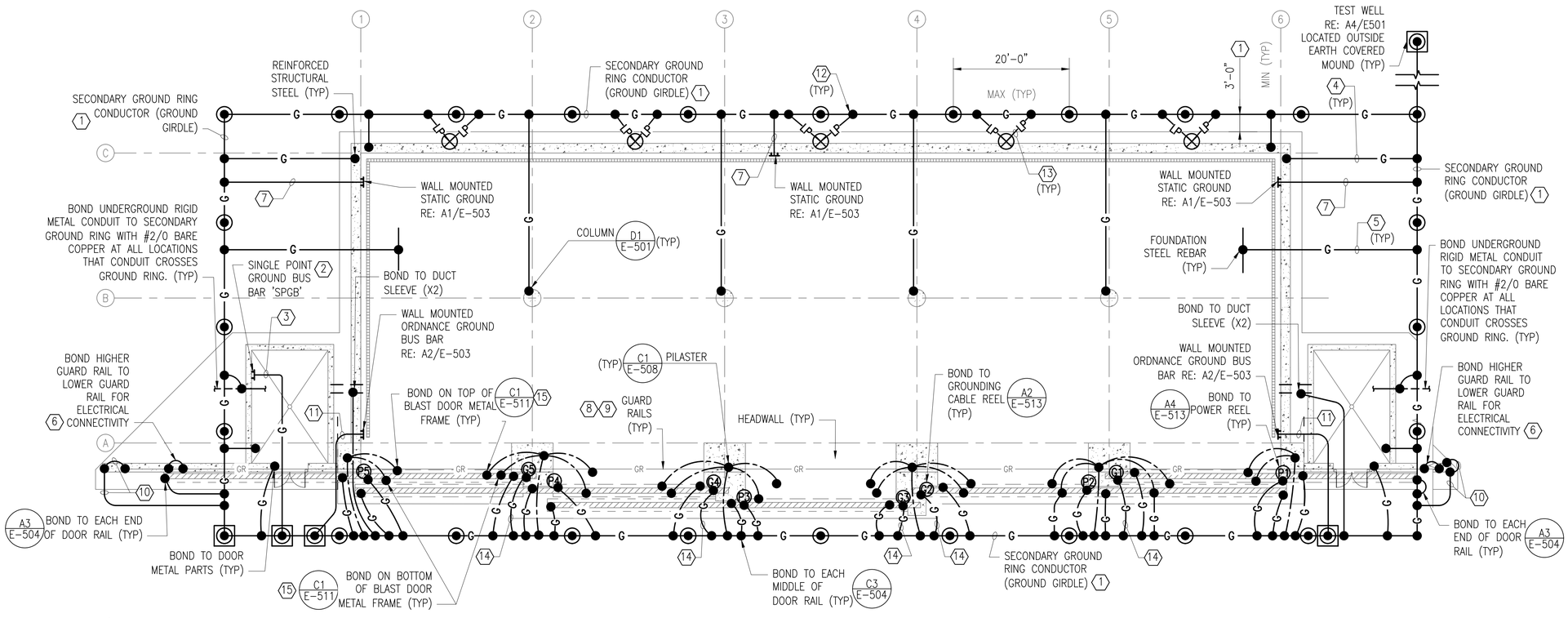
ELECTRICAL GROUNDING PLAN

SCALE: AS NOTED
EPROJECT NO: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138830
SHEET 54 OF 85

EG101

DRAWFORM REVISION: 25 AUGUST 2020

SEE SHEET EG102A FOR SHEET AND KEYED NOTES.



B1
EG201

A1 ELECTRICAL LIGHTNING PROTECTION & GROUNDING PLAN (ALTERNATE)

SCALE: 3/32" = 1'-0"

0 8' 16' 32'

NO.	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL GROUNDING PLAN (ALTERNATE)

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138831
SHEET 55 OF 85

EG101A

DRAWFORM REVISION: 25 AUGUST 2020

SHEET NOTES

1. THE TERM 'LIGHTNING PROTECTION SYSTEM' MUST BE REFERRED TO AS 'LPS' HENCEFORTH.
2. THE STANDARD DESIGN DRAWINGS FOR LPS INSTALLATION ARE IN COMPLIANCE WITH NFPA 780 AND AFMAN 32-1065 CRITERIA, AND MANUFACTURED IN ACCORDANCE WITH U.L. 96, IN ACCORDANCE WITH NAVSEA OP 5 OR DESR 6055.09_AFMAN 91-201.
3. CONTRACTOR MUST PROVIDE AN UNDERWRITER'S LABORATORY (UL) LIGHTNING PROTECTION INSPECTION CERTIFICATE FOR ANY FACILITY HAVING A LPS INSTALLATION. ADDITIONALLY, A THIRD PARTY INSPECTION COMPANY MUST CERTIFY THE LPS IS IN COMPLIANCE WITH THE STANDARD DESIGN DRAWINGS AS INDICATED. IN ADDITION, CONTRACTOR MUST NOTIFY CONTRACTING OFFICER FOR NAVFAC TO INSPECT AND CERTIFY THE LPS PRIOR TO COMPLETION. REFER TO S-002 FOR PROCEDURE TESTING AND VERIFICATION REQUIREMENTS.
4. COMPONENTS INDICATED ON THIS SHEET SHOW GENERAL DIRECTION FOR THE LPS COMPONENTS. CONTRACTOR MUST PROVIDE NECESSARY COMPONENTS FOR A COMPLETE LPS.
5. ALL GROUNDING CONDUCTORS MUST BE #2/0 BARE COPPER. PROVIDE BARE COPPER GROUND CONDUCTOR FOR ALL BONDING AND GROUNDING, INCLUDING THE BONDING TO ALL METAL PARTS, INCLUDING STAIR GUARDRAILS, DOOR AND DOOR FRAMES, REINFORCEMENT IN FLOOR/WALL, METAL AIR VENTILATOR AND LOUVERS.
6. METAL BODIES WITHIN 6'-0" OF THE LIGHTNING PROTECTION SYSTEM MUST BE BONDED TO THE SYSTEM IN ACCORDANCE WITH NFPA 780.
7. REFER TO LIGHTNING PROTECTION SYSTEM DETAILS ON SHEET E-502 AND E-509 FOR ADDITIONAL INFORMATION.
8. ORDNANCE AND STATIC GROUND BUS BARS MUST BE COPPER. INSTALL 30" ABOVE FINISHED FLOOR.

SHEET NOTES

9. METAL GUARDRAILS MUST BE CONSTRUCTED AND SERVED AS STRIKE TERMINATION DEVICES AS PER NFPA 780 (LATEST REV). GUARD RAILS MUST NOT EXCEED 45" HIGH AND MUST BE IN COMPLIANCE WITH OSHA REG. 1926.502 FALL PROTECTION SYSTEM CRITERIA AND PRACTICES PER 1926.502 (B)(1).
10. THE GROUND RING RESISTANCE TO EARTH MUST BE MAINTAINED AT 25 OHM OR LESS. IF THIS REQUIREMENT IS NOT ACHIEVABLE, EVEN THROUGH ADDITIONAL GROUND RODS OR GRID CONDUCTOR LOOP, NOTIFY NOSSA/GOVERNMENT FOR ADDITIONAL ACTIONS TAKEN TO DECREASE THE RESISTANCE TO EARTH AS LOW AS POSSIBLE.
11. ALL BONDING CONNECTIONS MUST HAVE RESISTANCE MAXIMUM OF 1 OHM, INCLUDING AIR TERMINATION SYSTEM, DOWN CONDUCTORS TO LIGHTNING PROTECTION GROUNDING SYSTEM IAW NAFSEA OP5, SECTION 5-4.1.
12. A CATENARY SYSTEM MAY BE PROVIDED IN ADDITION TO FARADAY CAGE SYSTEM UNDER SITE-ADAPTATION. THE SYSTEM MUST BE BONDED BACK TO THE HEADWALL AS REQUIRED. CONTRACTOR MUST SUBMIT FARADAY CAGE DETAILS FOR APPROVAL PRIOR TO CONSTRUCTION. REFER TO NAVSEA OP 5 FOR PRIMARY GROUNDING SYSTEM OR AFMAN 10-65.
13. THE GROUND GIRDLE/RING MUST BE INSTALLED IN EARTH UNDISTURBED BY EXCAVATION, NOT IN EARTH FILL OR WHOLLY UNDER PAVED AREAS OR ROADWAYS WHERE RAINFALL CANNOT PENETRATE TO KEEP SOIL MOIST.
14. THE STRUCTURAL COMPONENTS OF THE BUILDING MUST BE BONDED BETWEEN THE FLOOR, WALLS AND ROOF. REBAR MUST BE BONDED TOGETHER OR BY ADDING EXTERNAL BONDING GROUND CONDUCTORS BETWEEN COMPONENTS. THE COMPONENTS MUST BE BONDED AT EVERY 5 FEET MAXIMUM INTERVAL IN ACCORDANCE WITH OP5 6-4.1.1.3. REFER TO DETAIL A1/E-504.
15. DOR MUST MODIFY THE STANDARD DESIGN DRAWINGS PER SITE-ADAPTATION.

SHEET NOTES

16. REFER TO GENERAL NOTES ON E-002 FOR ADDITIONAL INFORMATION.
17. LIGHTNING PROTECTION MUST BE A FARADAY CAGE TYPE SYSTEM WITH THE STRUCTURAL COMPONENTS OF THE MAGAZINES BONDED TOGETHER AS REQUIRED BY THE NAVSEA OP5 REQUIREMENTS. ADDITIONALLY, 3/16-INCH THICK MINIMUM AND 42-INCH HIGH MAXIMUM METAL GUARDRAILS MUST BE UTILIZED AS STRIKE TERMINATION DEVICES ON THE MAGAZINE HEADWALLS WHICH MUST BE BONDED TO THE SECONDARY GROUND RING AT BOTH ENDS PROVIDING A TWO-WAY PATH TO GROUND.

KEYED NOTES

1. ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR (BURIED GROUNDING RING) AS INDICATED, AT 30" MIN. BELOW FINISHED GRADE AND MINIMUM 3'-0" FROM FOUNDATION AROUND FACILITY OR AT LEAST 2'-0" FROM THE BUILDING EXTERIOR DRIP LINE. RE: C2/E-508.
2. PROVIDE ELECTRICAL COPPER GROUNDING BUS BAR. COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN. RE: C4/E-501 AND A3/E-508.
3. ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR FROM SINGLE POINT GROUND BUS BAR TO SECONDARY GROUNDING RING.
4. ROUTE #2/0 BARE COPPER GROUNDING ELECTRODE FROM REINFORCED STRUCTURAL STEEL TO SECONDARY GROUNDING RING.
5. ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR FROM FOUNDATION STEEL REBAR TO SECONDARY GROUND RING.
6. ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR BETWEEN UPPER AND LOWER GUARD RAILS AND SECURE TO HEADWALL. RE: A1/EG201
7. PROVIDE #2/0 BARE COPPER GROUNDING CONDUCTOR FROM STATIC GROUND TO SECONDARY GROUNDING RING AS INDICATED UTILIZING BOLTED CONNECTIONS FOR EASE IN DISCONNECTING DURING TESTING. PERFORM TESTING PER NAVSEA OP5.
8. ALL HEADWALL GUARD RAILS AND ALL ASSOCIATED POSTS MUST BE DRILLED AND TAPPED WITH THREADED STUDS FOR CONNECTION TO COPPER GROUNDING CONDUCTORS WITH #2/0 COPPER WIRE LUGS. ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR EXPOSED ALONG THE ENTIRE LENGTH OF HEADWALL. PROVIDE BIMETALLIC CONNECTORS AS REQUIRED FOR ATTACHING GUARD RAILS TO DOWN GROUNDING CONDUCTORS. ALL CONNECTORS, DEVICES AND COMPONENTS UTILIZED MUST BE EITHER UL LISTED OR LABELED AND LISTED FOR ITS USE.
9. GUARD RAILS MUST BE ALUMINUM PIPE. THICKNESS MUST NOT BE LESS THAN 3/16" AND MAXIMUM HEIGHT OF 42" (+/-3") . REFER TO ARCHITECTURAL SPECIFICATIONS AND ELEVATIONS ON DETAIL A1/EG201 FOR ADDITIONAL INFORMATION.
10. ROUTE #2/0 BARE COPPER GROUNDING DOWN CONDUCTOR IN A 1" CONDUIT TO SECONDARY GROUNDING ELECTRODE. DOWN CONDUCTOR MUST BE CONTINUOUS AND ON EXTERIOR OF BUILDING.
11. PROVIDE #2/0 NOT IN GREEN INSULATED COPPER GROUNDING CONDUCTOR IN 1" PVC BETWEEN ORDNANCE GROUND BUS BAR UNDER SLAB TO GROUND TEST WELL AS INDICATED UTILIZING BOLTED CONNECTIONS FOR EASE IN DISCONNECTING DURING TESTING. INSULATION MUST BE STRIPPED BARE FROM TERMINATION POINT UP TO THE POINT OF CONCEALMENT IN CONDUIT. PERFORM TESTING PER NAVSEA OP5. PROVIDE A 3"X9" BLACK PLASTIC BACKGROUND LABEL WITH 1" WHITE LETTERS INDICATING "ORDNANCE GROUND" AT EXPOSED LOCATIONS.
12. PROVIDE #2/0 BARE COPPER LIGHTNING PROTECTION DOWN CONDUCTORS TO SECONDARY GROUNDING ELECTRODE.
13. PROVIDE TWO (2) LIGHTNING GROUND CONDUCTORS – #2/0 BARE COPPER AND CONNECT TO AIR TERMINALS AS INDICATED. RE: C1/E-511.
14. PROVIDE A #2/0 BONDING CONDUCTOR FROM SECONDARY GROUND RING TO BLAST DOOR'S GROUND REEL. EXTEND #6 GROUND CONDUCTOR THROUGH FLEXIBLE CARRIER TRACK. MAKE BONDING AT FEASIBLE LOCATION TO ALLOW A FULL DOOR OPERATION WITHOUT ANY INTERFERENCES WITH CABLE REEL OPERATION.
15. PROVIDE #2/0 BONDING CONDUCTOR FROM DOOR METAL EQUIPMENT/DEVICES/METAL DOOR FRAME TO BOTTOM OF PILASTER'S REBAR AND BOND TO SECONDARY GROUND RING AS INDICATED.

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TYPE H BOX MAGAZINE

ELECTRICAL GROUNDING PLAN

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138832
SHEET 56 OF 85

EG102

DRAWFORM REVISION: 25 AUGUST 2020

SHEET NOTES

1. THE TERM 'LIGHTNING PROTECTION SYSTEM' MUST BE REFERRED TO AS 'LPS' HENCEFORTH.
2. THE STANDARD DESIGN DRAWINGS FOR LPS INSTALLATION ARE IN COMPLIANCE WITH NFPA 780 AND AFMAN 32-1065 CRITERIA, AND MANUFACTURED IN ACCORDANCE WITH U.L. 96, IN ACCORDANCE WITH NAVSEA OP 5 OR DESR 6055.09_AFMAN 91-201.
3. CONTRACTOR MUST PROVIDE AN UNDERWRITER'S LABORATORY (UL) LIGHTNING PROTECTION INSPECTION CERTIFICATE FOR ANY FACILITY HAVING A LPS INSTALLATION. ADDITIONALLY, A THIRD PARTY INSPECTION COMPANY MUST CERTIFY THE LPS IS IN COMPLIANCE WITH THE STANDARD DESIGN DRAWINGS AS INDICATED. IN ADDITION, CONTRACTOR MUST NOTIFY CONTRACTING OFFICER FOR NAVFAC TO INSPECT AND CERTIFY THE LPS PRIOR TO COMPLETION. REFER TO S-002 FOR PROCEDURE TESTING AND VERIFICATION REQUIREMENTS.
4. COMPONENTS INDICATED ON THIS SHEET SHOW GENERAL DIRECTION FOR THE LPS COMPONENTS. CONTRACTOR MUST PROVIDE NECESSARY COMPONENTS FOR A COMPLETE LPS.
5. ALL GROUNDING CONDUCTORS MUST BE #2/0 BARE COPPER. PROVIDE BARE COPPER GROUND CONDUCTOR FOR ALL BONDING AND GROUNDING, INCLUDING THE BONDING TO ALL METAL PARTS, INCLUDING STAIR GUARDRAILS, DOOR AND DOOR FRAMES, REINFORCEMENT IN FLOOR/WALL, METAL AIR VENTILATOR AND LOUVERS.
6. METAL BODIES WITHIN 6'-0" OF THE LIGHTNING PROTECTION SYSTEM MUST BE BONDED TO THE SYSTEM IN ACCORDANCE WITH NFPA 780.
7. REFER TO LIGHTNING PROTECTION SYSTEM DETAILS ON SHEET E-502 AND E-509 FOR ADDITIONAL INFORMATION.
8. ORDNANCE AND STATIC GROUND BUS BARS MUST BE COPPER. INSTALL 30" ABOVE FINISHED FLOOR.

SHEET NOTES

9. METAL GUARDRAILS MUST BE CONSTRUCTED AND SERVED AS STRIKE TERMINATION DEVICES AS PER NFPA 780 (LATEST REV). GUARD RAILS MUST NOT EXCEED 45" HIGH AND MUST BE IN COMPLIANCE WITH OSHA REG. 1926.502 FALL PROTECTION SYSTEM CRITERIA AND PRACTICES PER 1926.502 (B)(1).
10. THE GROUND RING RESISTANCE TO EARTH MUST BE MAINTAINED AT 25 OHM OR LESS. IF THIS REQUIREMENT IS NOT ACHIEVABLE, EVEN THROUGH ADDITIONAL GROUND RODS OR GRID CONDUCTOR LOOP, NOTIFY NOSSA/GOVERNMENT FOR ADDITIONAL ACTIONS TAKEN TO DECREASE THE RESISTANCE TO EARTH AS LOW AS POSSIBLE.
11. ALL BONDING CONNECTIONS MUST HAVE RESISTANCE MAXIMUM OF 1 OHM, INCLUDING AIR TERMINATION SYSTEM, DOWN CONDUCTORS TO LIGHTNING PROTECTION GROUNDING SYSTEM IAW NAFSEA OP5, SECTION 5-4.1.
12. A CATENARY SYSTEM MAY BE PROVIDED IN ADDITION TO FARADAY CAGE SYSTEM UNDER SITE-ADAPTATION. THE SYSTEM MUST BE BONDED BACK TO THE HEADWALL AS REQUIRED. CONTRACTOR MUST SUBMIT FARADAY CAGE DETAILS FOR APPROVAL PRIOR TO CONSTRUCTION. REFER TO NAVSEA OP 5 FOR PRIMARY GROUNDING SYSTEM OR AFMAN 10-65.
13. THE GROUND GIRDLE/RING MUST BE INSTALLED IN EARTH UNDISTURBED BY EXCAVATION, NOT IN EARTH FILL OR WHOLLY UNDER PAVED AREAS OR ROADWAYS WHERE RAINFALL CANNOT PENETRATE TO KEEP SOIL MOIST.
14. THE STRUCTURAL COMPONENTS OF THE BUILDING MUST BE BONDED BETWEEN THE FLOOR, WALLS AND ROOF. REBAR MUST BE BONDED TOGETHER OR BY ADDING EXTERNAL BONDING GROUND CONDUCTORS BETWEEN COMPONENTS. THE COMPONENTS MUST BE BONDED AT EVERY 5 FEET MAXIMUM INTERVAL IN ACCORDANCE WITH OP5 6-4.1.1.3. REFER TO DETAIL A1/E-504.
15. DOR MUST MODIFY THE STANDARD DESIGN DRAWINGS PER SITE-ADAPTATION.

SHEET NOTES

16. REFER TO GENERAL NOTES ON E-002 FOR ADDITIONAL INFORMATION.
17. LIGHTNING PROTECTION MUST BE A FARADAY CAGE TYPE SYSTEM WITH THE STRUCTURAL COMPONENTS OF THE MAGAZINES BONDED TOGETHER AS REQUIRED BY THE NAVSEA OP5 REQUIREMENTS. ADDITIONALLY, 3/16-INCH THICK MINIMUM AND 42-INCH HIGH MAXIMUM METAL GUARDRAILS MUST BE UTILIZED AS STRIKE TERMINATION DEVICES ON THE MAGAZINE HEADWALLS WHICH MUST BE BONDED TO THE SECONDARY GROUND RING AT BOTH ENDS PROVIDING A TWO-WAY PATH TO GROUND.

KEYED NOTES

1. ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR (BURIED GROUNDING RING) AS INDICATED, AT 30" MIN. BELOW FINISHED GRADE AND MINIMUM 3'-0" FROM FOUNDATION AROUND FACILITY OR AT LEAST 2'-0" FROM THE BUILDING EXTERIOR DRIP LINE. RE: C2/E-508.
2. PROVIDE ELECTRICAL COPPER GROUNDING BUS BAR. COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN. RE: C4/E-501 AND A3/E-508.
3. ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR FROM SINGLE POINT GROUND BUS BAR TO SECONDARY GROUNDING RING.
4. ROUTE #2/0 BARE COPPER GROUNDING ELECTRODE FROM REINFORCED STRUCTURAL STEEL TO SECONDARY GROUNDING RING.
5. ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR FROM FOUNDATION STEEL REBAR TO SECONDARY GROUND RING.
6. ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR BETWEEN UPPER AND LOWER GUARD RAILS AND SECURE TO HEADWALL. RE: B1/EG201
7. PROVIDE #2/0 BARE COPPER GROUNDING CONDUCTOR FROM STATIC GROUND TO SECONDARY GROUNDING RING AS INDICATED UTILIZING BOLTED CONNECTIONS FOR EASE IN DISCONNECTING DURING TESTING. PERFORM TESTING PER NAVSEA OP5.
8. ALL HEADWALL GUARD RAILS AND ALL ASSOCIATED POSTS MUST BE DRILLED AND TAPPED WITH THREADED STUDS FOR CONNECTION TO COPPER GROUNDING CONDUCTORS WITH #2/0 COPPER WIRE LUGS. ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR EXPOSED ALONG THE ENTIRE LENGTH OF HEADWALL. PROVIDE BIMETALLIC CONNECTORS AS REQUIRED FOR ATTACHING GUARD RAILS TO DOWN GROUNDING CONDUCTORS. ALL CONNECTORS, DEVICES AND COMPONENTS UTILIZED MUST BE EITHER UL LISTED OR LABELED AND LISTED FOR ITS USE.
9. GUARD RAILS MUST BE ALUMINUM PIPE. THICKNESS MUST NOT BE LESS THAN 3/16" AND MAXIMUM HEIGHT OF 42" (+/-3") . REFER TO ARCHITECTURAL SPECIFICATIONS AND ELEVATIONS ON DETAIL B1/EG201 FOR ADDITIONAL INFORMATION.
10. ROUTE #2/0 BARE COPPER GROUNDING DOWN CONDUCTOR IN A 1" CONDUIT TO SECONDARY GROUNDING ELECTRODE. DOWN CONDUCTOR MUST BE CONTINUOUS AND ON EXTERIOR OF BUILDING.
11. PROVIDE #2/0 NOT IN GREEN INSULATED COPPER GROUNDING CONDUCTOR IN 1" PVC BETWEEN ORDNANCE GROUND BUS BAR UNDER SLAB TO GROUND TEST WELL AS INDICATED UTILIZING BOLTED CONNECTIONS FOR EASE IN DISCONNECTING DURING TESTING. INSULATION MUST BE STRIPPED BARE FROM TERMINATION POINT UP TO THE POINT OF CONCEALMENT IN CONDUIT. PERFORM TESTING PER NAVSEA OP5. PROVIDE A 3"X9" BLACK PLASTIC BACKGROUND LABEL WITH 1" WHITE LETTERS INDICATING "ORDNANCE GROUND" AT EXPOSED LOCATIONS.
12. PROVIDE #2/0 BARE COPPER LIGHTNING PROTECTION DOWN CONDUCTORS TO SECONDARY GROUNDING ELECTRODE.
13. PROVIDE TWO (2) LIGHTNING GROUND CONDUCTORS – #2/0 BARE COPPER AND CONNECT TO AIR TERMINALS AS INDICATED. RE: C1/E-511
14. PROVIDE A #2/0 BONDING CONDUCTOR FROM SECONDARY GROUND RING TO BLAST DOOR'S GROUND REEL. EXTEND #6 GROUND CONDUCTOR THROUGH FLEXIBLE CARRIER TRACK. MAKE BONDING AT FEASIBLE LOCATION TO ALLOW A FULL DOOR OPERATION WITHOUT ANY INTERFERENCES WITH CABLE REEL OPERATION.
15. PROVIDE #2/0 BONDING CONDUCTOR FROM DOOR METAL EQUIPMENT/DEVICES/METAL DOOR FRAME TO BOTTOM OF PILASTER'S REBAR AND BOND TO SECONDARY GROUND RING AS INDICATED.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES KL DRW FO CHK PKD

PM/DM ---

BRANCH MANAGER ---

CHIEF ENG/ARCH ---

FIRE PROTECTION ---

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL GROUNDING PLAN (ALTERNATE)

SCALE: AS NOTED

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
14138833

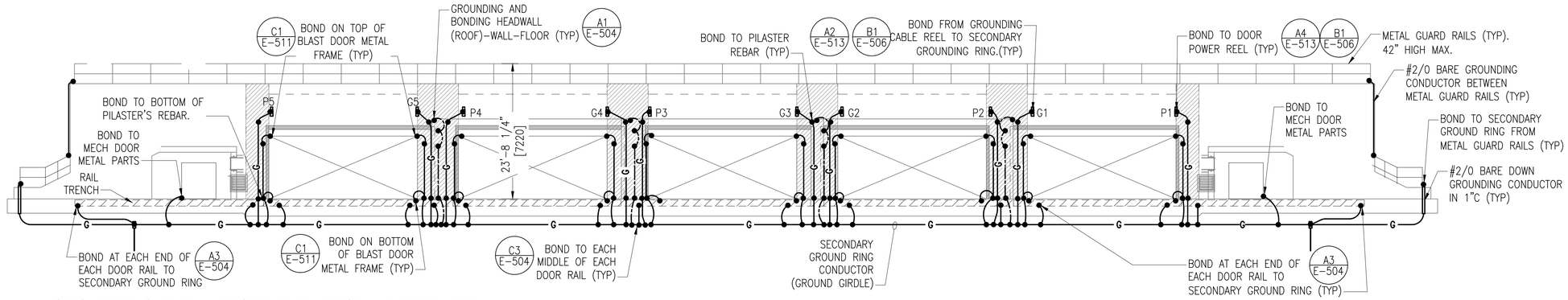
SHEET 57 OF 85

EG102A

DRAWFORM REVISION: 25 AUGUST 2020

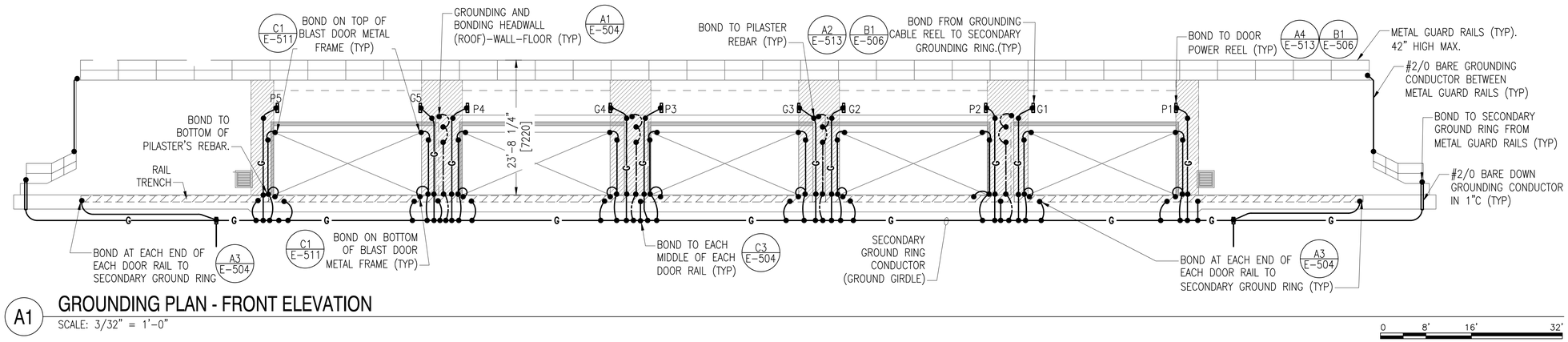
SHEET NOTES

1. REFER TO SHEET EG101, EG101A AND GENERAL NOTES ON SHEET E-002 FOR ADDITIONAL INFORMATION.
2. LINE WORK ON THIS SHEET ARE #2/0 BARE COPPER GROUNDING CONDUCTORS.



B1 GROUNDING PLAN - FRONT ELEVATION - ALTERNATE

SCALE: 3/32" = 1'-0"



A1 GROUNDING PLAN - FRONT ELEVATION

SCALE: 3/32" = 1'-0"

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM	---
BRANCH MANAGER	---
CHIEF ENG/ARCH	---
FIRE PROTECTION	---

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

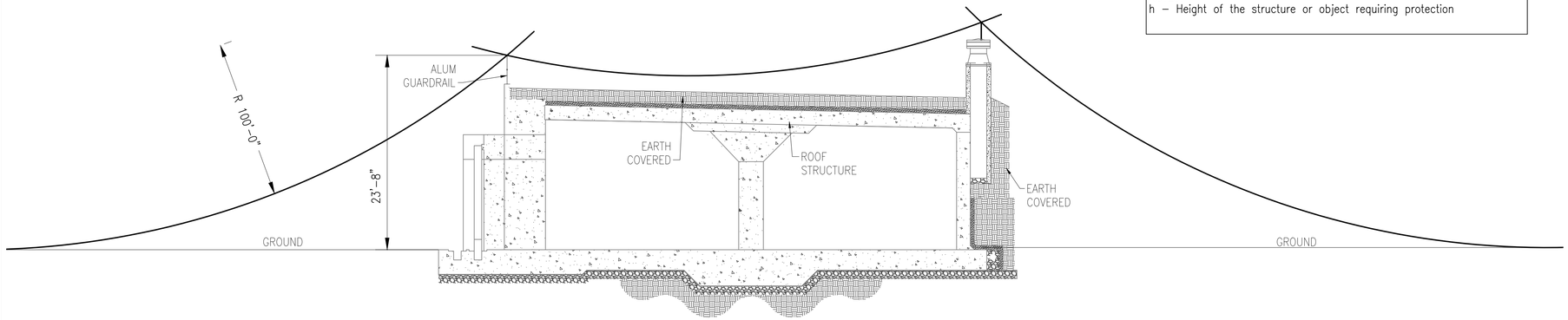
ELECTRICAL GROUNDING PLAN ELEVATIONS

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138834
SHEET 58 OF 85

EG201

DRAWFORM REVISION: 25 AUGUST 2020

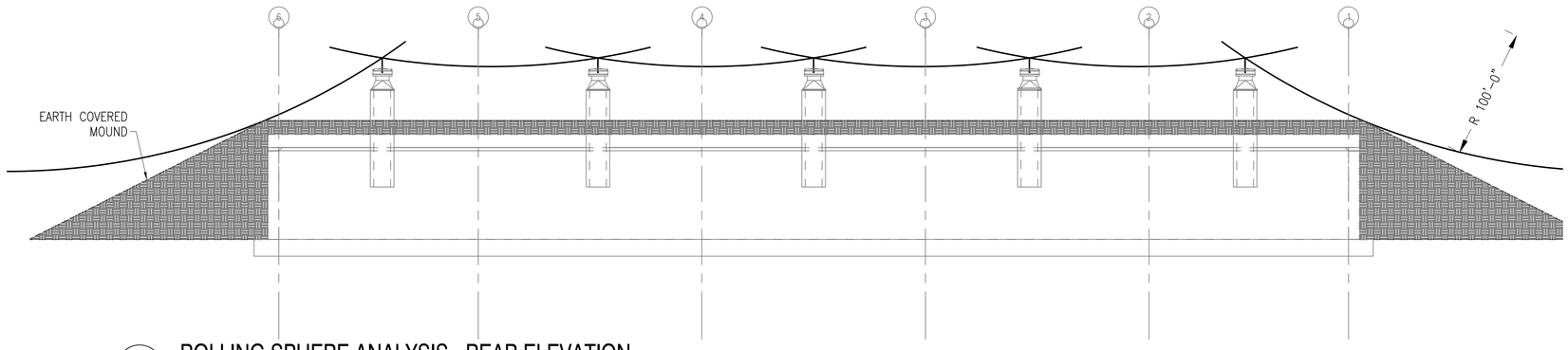
SIDEFLASH – At Highest Point of Building	Metal Parts (Guard Rails)
h – Height of Protected Structure (ft): D = Sideflash (D=h/6) (ft):	23.7 3.9
NOTES: h – Height of the structure or object requiring protection	



C1 ROLLING SPHERE ANALYSIS - SIDE ELEVATION - BOTH OPTIONS

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

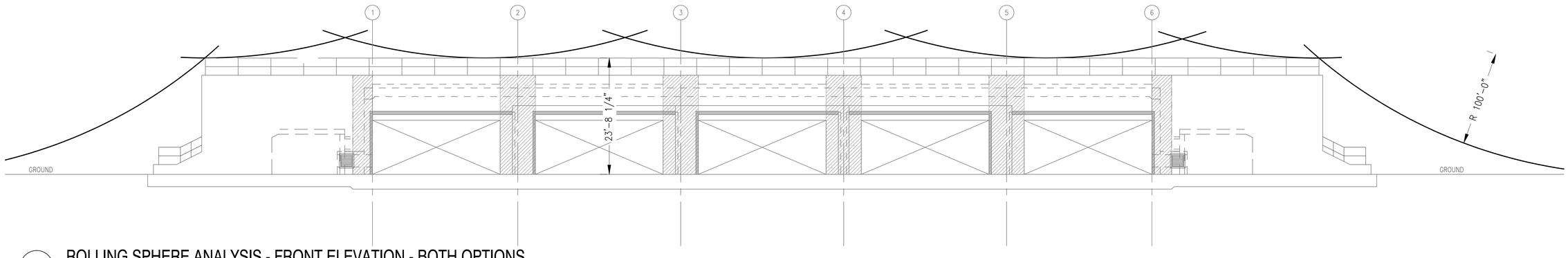
0 4' 8' 16'



B1 ROLLING SPHERE ANALYSIS - REAR ELEVATION

SCALE: 3/32" = 1'-0"

0 8' 16' 32'



A1 ROLLING SPHERE ANALYSIS - FRONT ELEVATION - BOTH OPTIONS

SCALE: 3/32" = 1'-0"

0 8' 16' 32'

SHEET NOTES

1. REFER TO GENERAL NOTES ON E-002 FOR ADDITIONAL INFORMATION.

APPR	DATE	DESCRIPTION	SYM

NAVFAC

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A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
FIRE PROTECTION	

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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

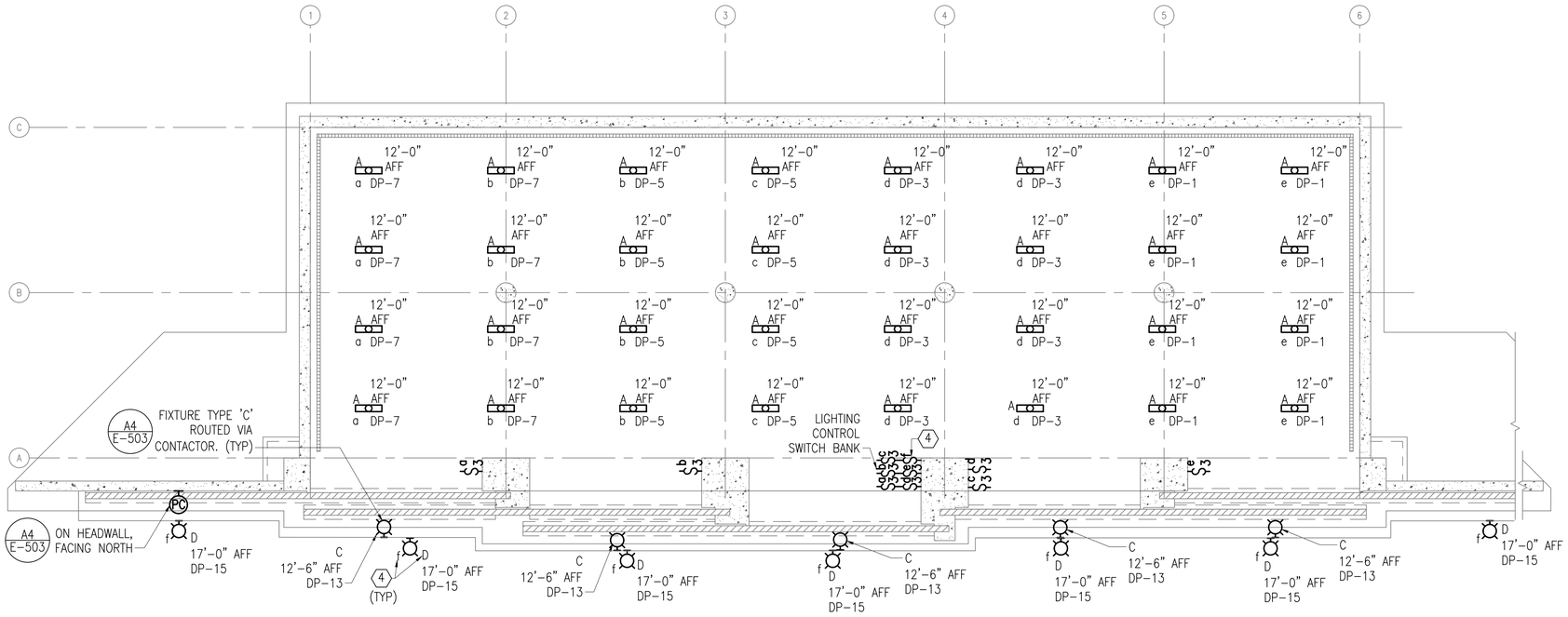
ELECTRICAL LIGHTNING ZONE PROTECTION ELEVATION

SCALE:	AS NOTED
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138835
SHEET	59 OF 85

EG202

DRAWFORM REVISION: 25 AUGUST 2020

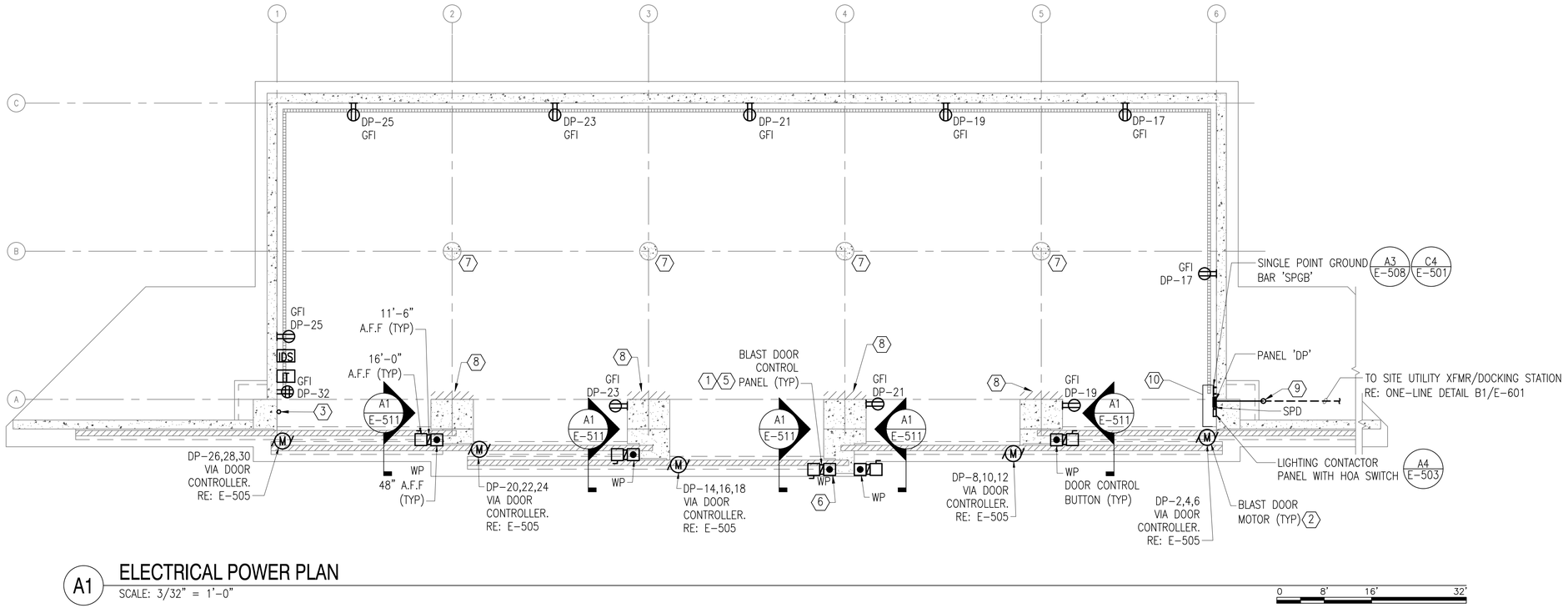
SEE SHEET E-102 FOR SHEET AND KEYED NOTES.



C1 ELECTRICAL LIGHTING PLAN

SCALE: 3/32" = 1'-0"

0 8' 16' 32'



A1 ELECTRICAL POWER PLAN

SCALE: 3/32" = 1'-0"

0 8' 16' 32'

NAVFAC

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND

TYPE H BOX MAGAZINE

ELECTRICAL FLOOR PLAN

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138836
SHEET 60 OF 85

E-101

DRAWFORM REVISION: 25 AUGUST 2020

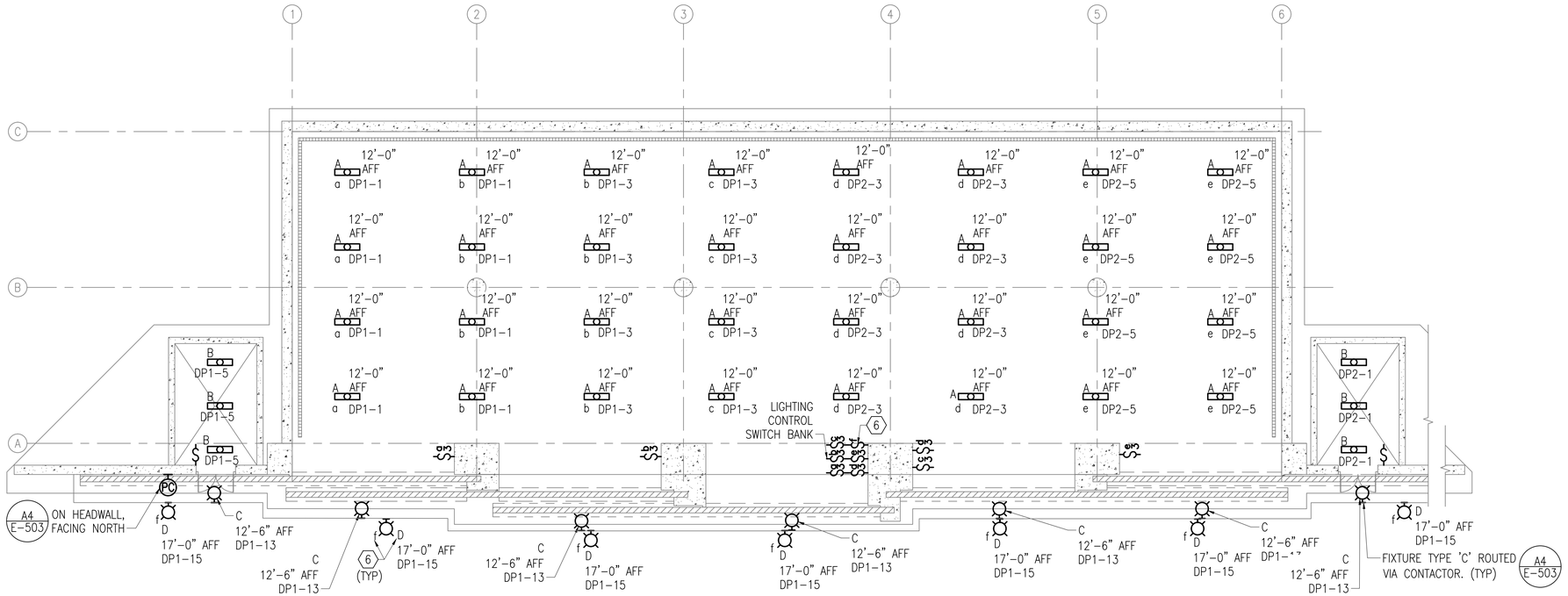
APPR'D | DATE | SYM | DESCRIPTION

SEAL

A/E INFO

APPROVED 05/22/2024
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES FJ | DRW FO | CHK PKD
PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

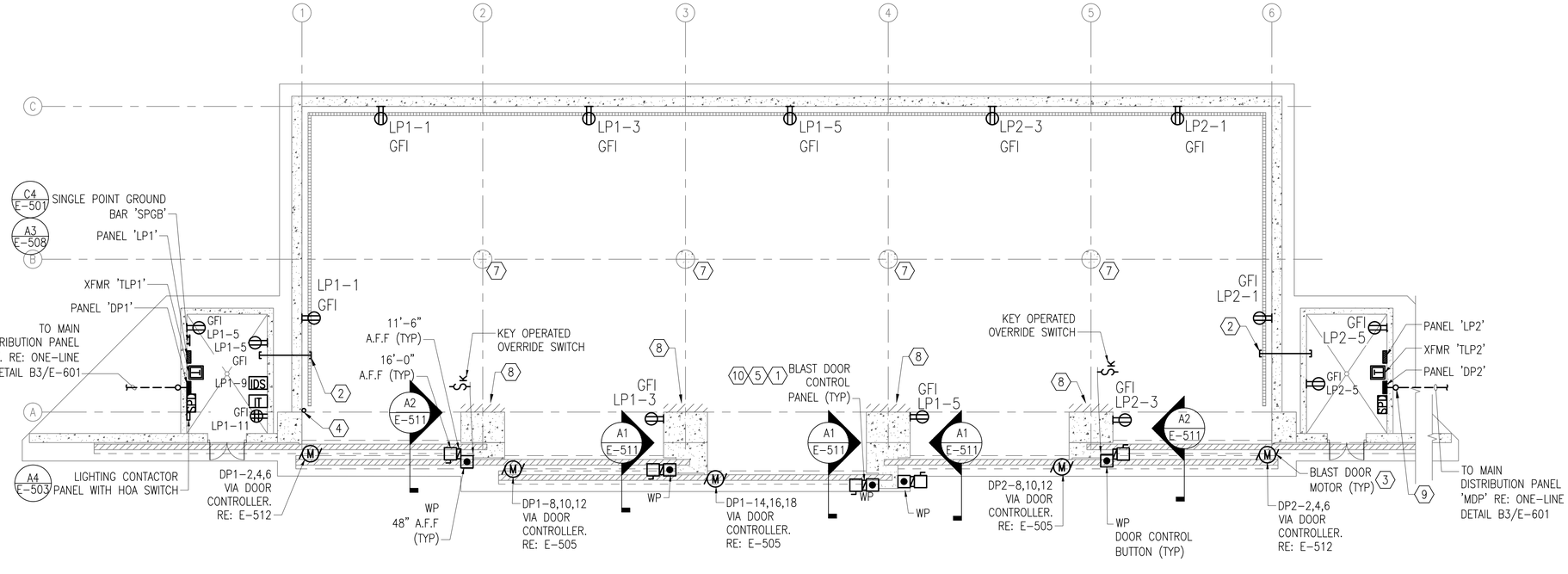
SEE SHEET E102A FOR SHEET AND KEYED NOTES.



C1 ELECTRICAL LIGHTING PLAN - ALTERNATE

SCALE: 3/32" = 1'-0"

0 8' 16' 32'



A1 ELECTRICAL POWER PLAN - ALTERNATE

SCALE: 3/32" = 1'-0"

0 8' 16' 32'

NO.	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL FLOOR PLAN – ALTERNATE

SCALE:	AS NOTED
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138837
SHEET	61 OF 85

E101A

DRAWFORM REVISION: 25 AUGUST 2020

SHEET NOTES

1. REFER TO GENERAL NOTES ON E-002 FOR ADDITIONAL INFORMATION.
2. COORDINATE FINAL LOCATIONS OF ALL LIGHTING FIXTURES AND ASSOCIATED LIGHTING CONTROLS WITH OTHER TRADES PRIOR TO ROUGH-IN.
3. ALL CONDUIT MUST BE RIGID GALVANIZED STEEL CONDUIT UNLESS INDICATED OTHERWISE.
4. EXPOSED CONDUITS ON EXTERIOR WALLS IS PROHIBITED.
5. PROVIDE A MINIMUM NEMA 3R ENCLOSURE FOR ALL ELECTRICAL EQUIPMENT/DEVICES LOCATED OUTDOORS. FOR WET/CORROSION ENVIRONMENT AREA AS DEFINED PER UFC 1-200-01, CHAPTER 4 CORROSION PROTECTION AND CONTROL AND APPENDIX A, DOR MUST SPECIFY CORROSION PROTECTION FOR ENCLOSURES AS DEFINED PER CODE.
6. REFER TO T-SERIES DRAWINGS FOR TELECOM/SECURITY FOR ADDITIONAL INFORMATION.

KEYED NOTES

1. COORDINATE ALL POWER AND CONTROL RACEWAY REQUIREMENTS WITH MANUFACTURER. PROVIDE CONTROL WIRING FOR INTERLOCKS WITH DOOR LIMIT SWITCHES AND IDL DOOR LOCKING SYSTEM FOR OPERATION.
2. REFER TO DOOR CONTROL DIAGRAM ON SHEET E-505 FOR ADDITIONAL CONTROL INFORMATION.
3. ROUTE ALL CONDUITS ON SURFACE AS REQUIRED TO AVOID CONDUIT PENETRATIONS ON HEADWALL ABOVE BLAST DOOR.
4. FIXTURE TYPE 'D' MUST BE CONTROLLED BY SWITCHLEG 'f'.
5. COORDINATE WITH DOOR MANUFACTURER FOR QUANTITY.
6. LOCATE OUTSIDE THE PILASTER COLUMN WITH WATERPROOF COVER.
7. DO NOT MOUNT ELECTRICAL EQUIPMENT ON SURFACE AROUND THE COLUMN.
8. DO NOT MOUNT ELECTRICAL EQUIPMENT ON SURFACE OF THIS PILASTER WALL. PROVIDE 16" CLEARANCE IN FRONT OF THE WALL AREA.
9. UNDERGROUND CONDUIT MUST STUB-UP BEFORE PENETRATING THRU WALL FOR CONNECTION TO PANELBOARD.
10. UTILIZE THE FIRST 7' IN FRONT OF PILASTER FOR ELECTRICAL PANEL AND ELECTRICAL EQUIPMENT AS SHOWN. NO FURTHER THAN 7' INSIDE THE MAGAZINE FOR STORAGE SPACE. IF NOT FEASIBLE, DOR SHALL ADD NOTE TO HAVE THE CONTRACTOR SUBMIT AN RFI EXPLAINING THE REASON WHY IT'S NOT FEASIBLE FOR GOVERNMENT APPROVAL

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES FJ	DRW FO	CHK PKD

PM/DM --
BRANCH MANAGER --
CHIEF ENG/ARCH --
FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL FLOOR PLAN

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138838
SHEET 62 OF 85

E-102

SHEET NOTES

1. REFER TO GENERAL NOTES ON E-002 FOR ADDITIONAL INFORMATION.
2. COORDINATE FINAL LOCATIONS OF ALL LIGHTING FIXTURES AND ASSOCIATED LIGHTING CONTROLS WITH OTHER TRADES PRIOR TO ROUGH-IN.
3. ALL CONDUIT MUST BE RIGID GALVANIZED STEEL CONDUIT UNLESS INDICATED OTHERWISE.
4. EXPOSED CONDUITS ON EXTERIOR WALLS IS PROHIBITED.
5. PROVIDE A MINIMUM NEMA 3R ENCLOSURE FOR ALL ELECTRICAL EQUIPMENT/DEVICES LOCATED OUTDOORS. FOR WET/CORROSION ENVIRONMENT AREA AS DEFINED PER UFC 1-200-01, CHAPTER 4 CORROSION PROTECTION AND CONTROL AND APPENDIX A, DOR MUST SPECIFY CORROSION PROTECTION FOR ENCLOSURES AS DEFINED PER CODE.
6. REFER TO T-SERIES DRAWINGS FOR TELECOM/SECURITY FOR ADDITIONAL INFORMATION.

⬡ KEYED NOTES

1. COORDINATE ALL POWER AND CONTROL RACEWAY REQUIREMENTS WITH MANUFACTURER. PROVIDE CONTROL WIRING FOR INTERLOCKS WITH DOOR LIMIT SWITCHES AND IDL DOOR LOCKING SYSTEM FOR OPERATION.
2. IN ADDITION TO THE CONDUITS REQUIRED FOR RECEPTACLES/LIGHTING/LOW VOLTAGE SYSTEMS/IDS/ CONTROLS/BRIDGE CRANE/BLAST DOOR/EQUIPMENT, PROVIDE ADDITIONAL (1) 3/4"C FOR POWER SITE ADAPTATION, (1) 1"C FOR FUTURE HVAC CONTROLS AND (3) 1-1/2"C SPARES. CONNECT CONDUITS BETWEEN MECHANICAL ROOM AND MAGAZINE AREA AND CAP AT BOTH ENDS.
3. REFER TO DOOR CONTROL DIAGRAM DETAIL AS INDICATED FOR ADDITIONAL CONTROL INFORMATION.
4. ROUTE ALL CONDUITS ON SURFACE AS REQUIRED TO AVOID CONDUIT PENETRATIONS ON HEADWALL ABOVE BLAST DOOR.
5. COORDINATE WITH DOOR MANUFACTURER FOR QUANTITY.
6. FIXTURE TYPE 'D' MUST BE CONTROLLED BY SWITCHLEG 'f'.
7. DO NOT MOUNT ELECTRICAL EQUIPMENT ON SURFACE AROUND THE COLUMN.
8. DO NOT MOUNT ELECTRICAL EQUIPMENT ON SURFACE OF THIS PILASTER WALL. PROVIDE 16" CLEARANCE IN FRONT OF THE WALL AREA.
9. UNDERGROUND CONDUIT MUST STUB-UP BEFORE PENETRATING THRU WALL FOR CONNECTION TO PANELBOARD.
10. DOOR CONTROLLER MUST BE PROVIDED WITH SAFETY INTERLOCK FEATURE WHEN SENSING MECHANICAL ROOM IN VACANCY MODE. DOOR CONTROL FEATURE MUST INCLUDE A DOOR CONTACT/RELAY INTERLOCKING WITH BLAST DOOR CONTROL SYSTEM AND MECHANICAL DOOR, SO THAT ONCE THE MECHANICAL DOOR IS IN 'OPEN MODE' OR UNLOCKED', THE BLAST DOOR CONTROL SYSTEM MUST BE DISABLED FROM MOVING THE BLAST DOOR.

SYM	DESCRIPTION	DATE	APPR

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	F0	CHK	PKD

PM/DM	--
BRANCH MANAGER	--
CHIEF ENG/ARCH	--
FIRE PROTECTION	--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

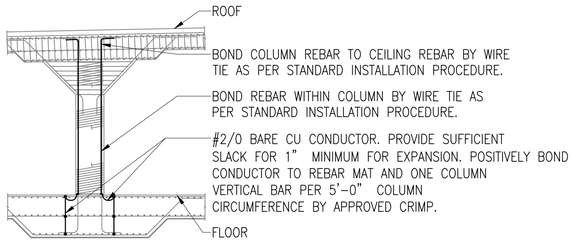
TYPE H BOX MAGAZINE

ELECTRICAL FLOOR PLAN – ALTERNATE

SCALE:	AS NOTED
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138839
SHEET	63 OF 85

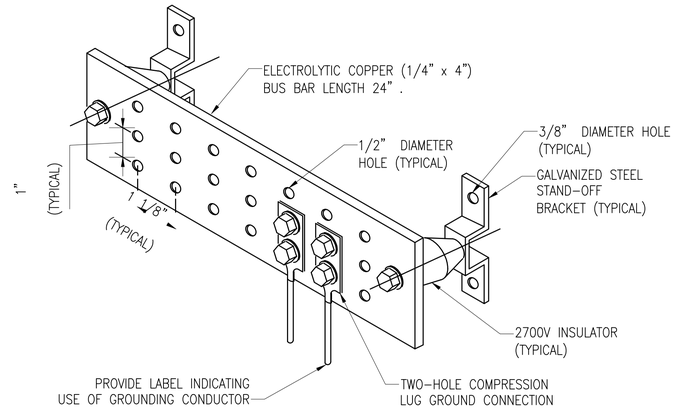
E102A

DRAWFORM REVISION: 25 AUGUST 2020



D1 COLUMN GROUNDING AND BONDING DETAIL

SCALE: NO SCALE



C4 SINGLE POINT GROUNDING BUS BAR (SPGB) BAR DETAIL - TYPICAL

SCALE: NO SCALE

NOTES:

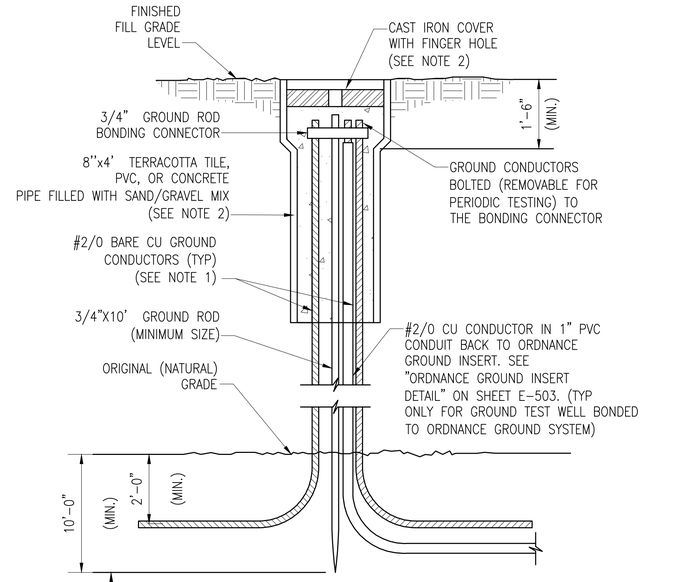
1. PROVIDE SELF-ADHESIVE VINYL LABEL TO AFFIX TO ELECTRICAL EQUIPMENT TO WARN OF ARC FLASH HAZARDS.
2. THE LABEL FORMAT AND TEXT CAN BE MODIFIED PROVIDED THAT THE INFORMATION REQUIRED BY UFC 3-501-01 IS INCLUDED.
3. THE LABEL MUST BE LOCATED ON THE EQUIPMENT TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT.
4. THE SIZE OF THE LABEL MUST BE MINIMUM:

EQUIPMENT TYPE	HEIGHT	WIDTH
INDOOR	2"	3"
OUTDOOR	3"	4.5"

5. A DOWNLOADABLE WINDOWS METAFILE IS AVAILABLE FROM LINK BELOW. TYPE IN THE FOLLOWING ADDRESS IN INTERNET EXPLORER:
   http://www.wbdg.org/ccb/NAVGRAPH/arc_flash_warning_labels.zip
6. REFER TO UFC 3-560-01, SECTION 1-12 FOR ADDITIONAL ARC-FLASH LABELS INFORMATION AND REQUIREMENT. ADDITIONAL LABELS CAN BE FOUND WITHIN BASIS OF DESIGN, APPENDIX E-ELECTRICAL

A1 ARC FLASH WARNING LABEL

SCALE: NO SCALE



NOTE 1: MAINTAIN THE GROUND CONDUCTORS ISOLATED FROM THE GROUND ROD UNTIL THE BOND CONNECTION AT THE TOP

NOTE 2: PROVIDE "TRAFFIC RATED" TEST WELL AND COVER FOR PAVED AREAS

A4 GROUND TEST WELL INSTALLATION IN EARTH FILL

SCALE: NO SCALE

APPR'D | DATE | SYM | DESCRIPTION

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM --

BRANCH MANAGER --

CHIEF ENG/ARCH --

FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138840

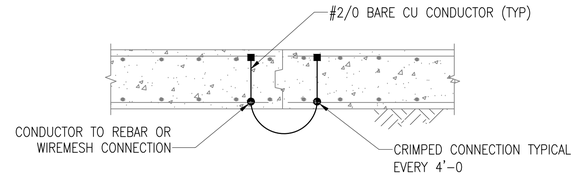
SHEET 64 OF 85

E-501

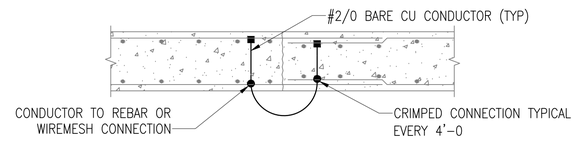
DRAWFORM REVISION: 25 AUGUST 2020

NOTES:

1. PROVIDE EXOTHERMIC WELD OR HIGH COMPRESSION FOR LIGHTNING PROTECTION GROUNDING CONDUCTORS THAT ARE BURIED OR CONCEALED WITHIN STRUCTURE.
2. CABLE SPLICE OR OTHER BONDING CONNECTORS MUST BE INSTALLED PER ITS LABEL REQUIREMENTS AND WITH AN APPROVED UL96 LISTING.



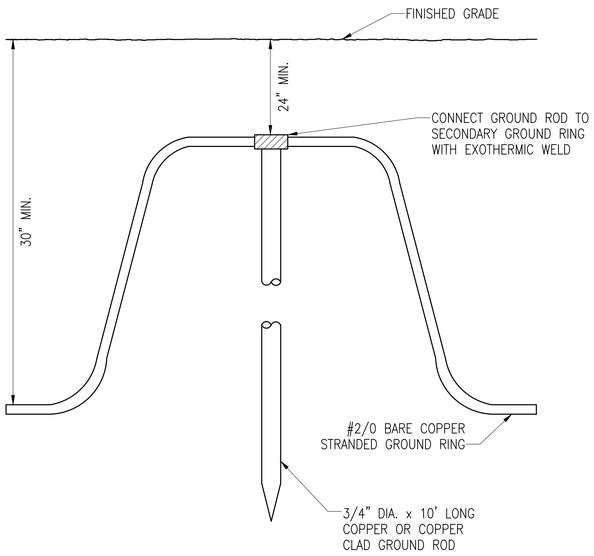
KEYED CONSTRUCTION JOINT (KCJ)



ROUGHENED CONSTRUCTION JOIN (CJ)

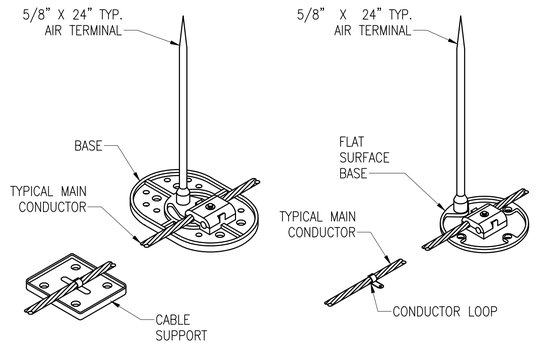
B4 TYPICAL BOND CONNECTION AT EACH CONSTRUCTION JOINT

SCALE: NO SCALE



A1 GROUND ROD DETAIL

SCALE: NO SCALE



152 – ADHESIVE BASE

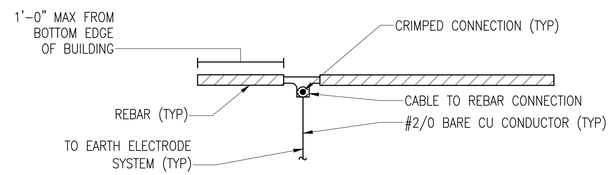
FLAT SURFACE BASE

NOTES:

1. ADHESIVE FASTENERS ARE NOT PERMITTED ON DOWN CONDUCTORS AND CROSS CONDUCTORS.
2. BOLTED CONNECTORS ARE NOT PERMITTED ON DOWN CONDUCTOR OR ROOF CONDUCTORS BONDING, EXCEPT AT AIR TERMINAL OR ALUMINUM OR METAL BODIES FOR BONDING PURPOSES. PROVIDE EXOTHERMIC WELDING OR HIGH COMPRESSION ON THE DOWN CONDUCTORS AND ROOF CONDUCTORS.

A2 TYPICAL ROOF MOUNTED AIR TERMINAL DETAIL

SCALE: NO SCALE



A4 GROUNDING REINFORCING STEEL

SCALE: NO SCALE

APPR	
DATE	
DESCRIPTION	
SYM	

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

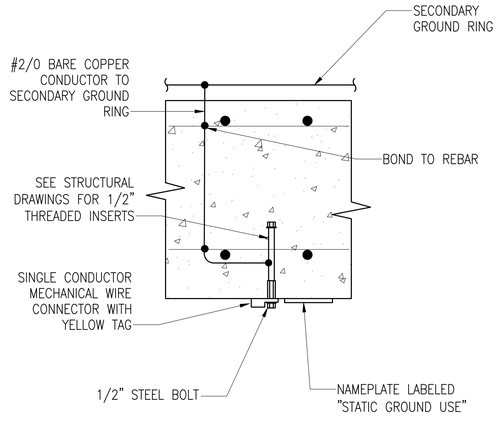
NAVFAC DRAWING NO. 1413841

SHEET 65 OF 85

E-502

DRAWFORM REVISION: 25 AUGUST 2020

NOTES:
1. CONCEAL GROUNDING CONDUCTORS WHERE POSSIBLE.
2. FOR GROUNDING CONDUCTORS RUN EXPOSED, SUPPORT CONDUCTORS 36" ON CENTERS AND WITHIN 12" OF GROUND CONNECTIONS.
3. PROVIDE WALL FASTENER IN ACCORDANCE WITH THE WALL TYPE SEE "SIDE VIEW DETAILS" FOR REQUIREMENTS.
4. THIS GROUNDING DETAIL IS NOT FOR ORDNANCE GROUNDING SYSTEM.



STATIC GROUND INSERT DETAIL NOTES:

1. PROVIDE A REMOVABLE YELLOW MELAMINE PLASTIC TAG THAT ATTACHES TO THE STATIC GROUND INSERT. THE TAG MUST INCLUDE THE FOLLOWING INFORMATION:

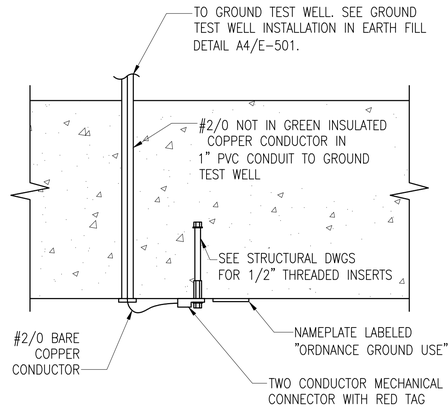
   "NOT IN SERVICE. NO MAINTENANCE REQUIRED.

   INSTALLATION MEETS STATIC/FACILITY GROUND REQUIREMENT PER NAVSEA OP-5. ACTIVITY MUST PERFORM TESTING PER NAVSEA OP-5 AND ENACT MAINTENANCE SCHEDULE WHEN THE STATIC/FACILITY GROUND INSERT IS PLACED IN SERVICE.

   RETAIN THIS TAG TO REATTACH WHEN REMOVED FROM SERVICE."

A1 STATIC GROUND INSERT PLAN

SCALE: NO SCALE



ORDNANCE GROUND INSERT DETAIL NOTES:

1. PROVIDE A REMOVABLE RED MELAMINE PLASTIC TAG THAT ATTACHES TO THE ORDNANCE GROUND INSERT. THE TAG MUST INCLUDE THE FOLLOWING INFORMATION:

   "NOT IN SERVICE. NO MAINTENANCE REQUIRED.

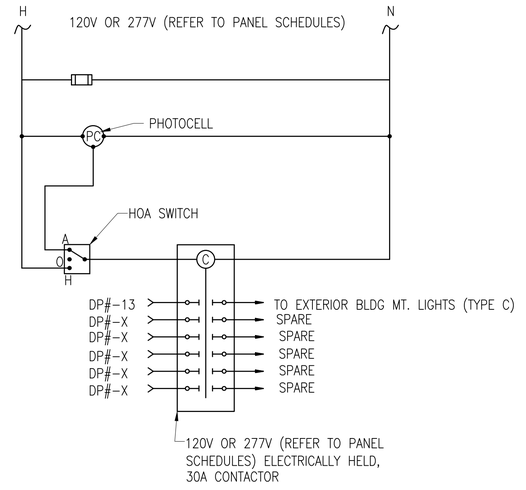
   INSTALLATION MEETS ORDNANCE GROUND REQUIREMENT PER NAVSEA OP-5. ACTIVITY MUST PERFORM TESTING PER NAVSEA OP-5 AND ENACT MAINTENANCE SCHEDULE WHEN THE ORDNANCE GROUND INSERT IS PLACED IN SERVICE.

   RETAIN THIS TAG TO REATTACH WHEN REMOVED FROM SERVICE."

2. MAINTAIN THREADED INSERT ISOLATION. DO NOT ALLOW THE THREADED INSERT TO TOUCH REBAR OR OTHER METALLIC OBJECTS IN THE WALL.

A2 ORDNANCE GROUND INSERT PLAN

SCALE: NO SCALE



A4 LIGHTING CONTACTOR PANEL 'LCP'

SCALE: NO SCALE

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1702805

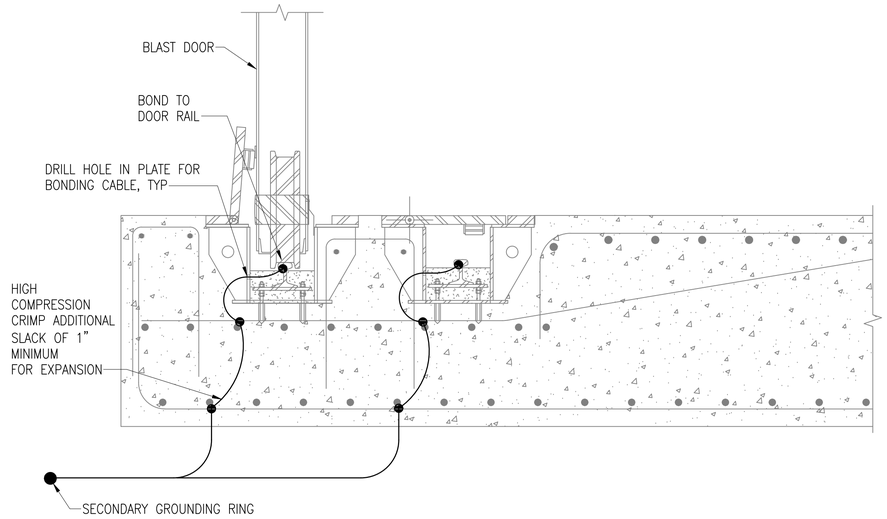
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138842

SHEET 66 OF 85

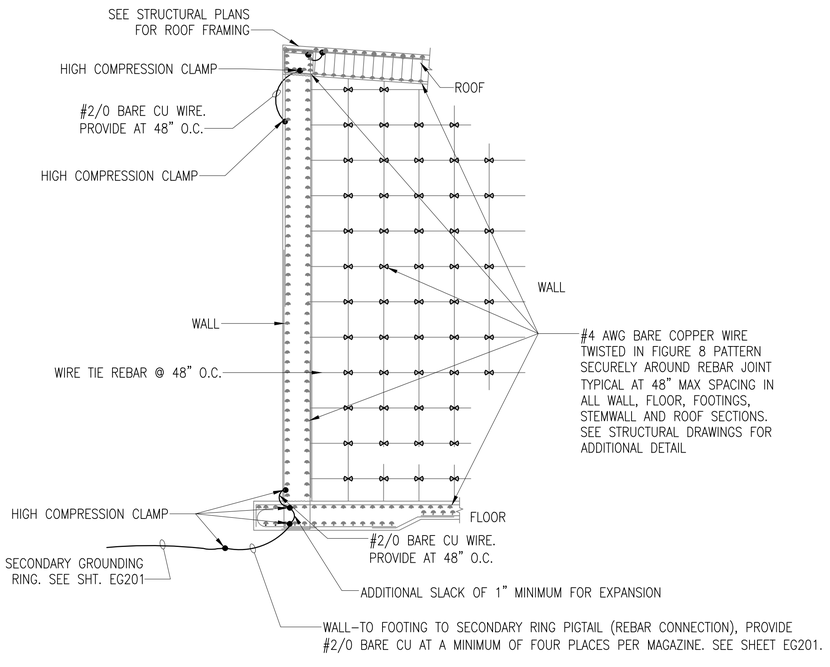
E-503

DRAWFORM REVISION: 25 AUGUST 2020



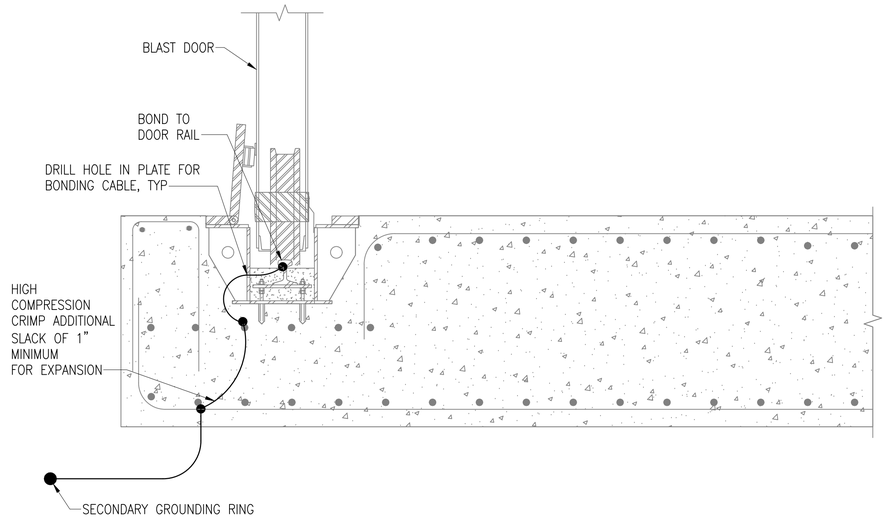
C3 **DOOR RAIL BONDING DETAIL (TYPICAL)**

SCALE: NO SCALE



A1 **WALL/FLOOR/ROOF BONDING DETAIL (TYPICAL)**

SCALE: NO SCALE



A3 **DOOR RAIL BONDING DETAIL (TYPICAL)**

SCALE: NO SCALE

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM --

BRANCH MANAGER --

CHIEF ENG/ARCH --

FIRE PROTECTION --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1702805

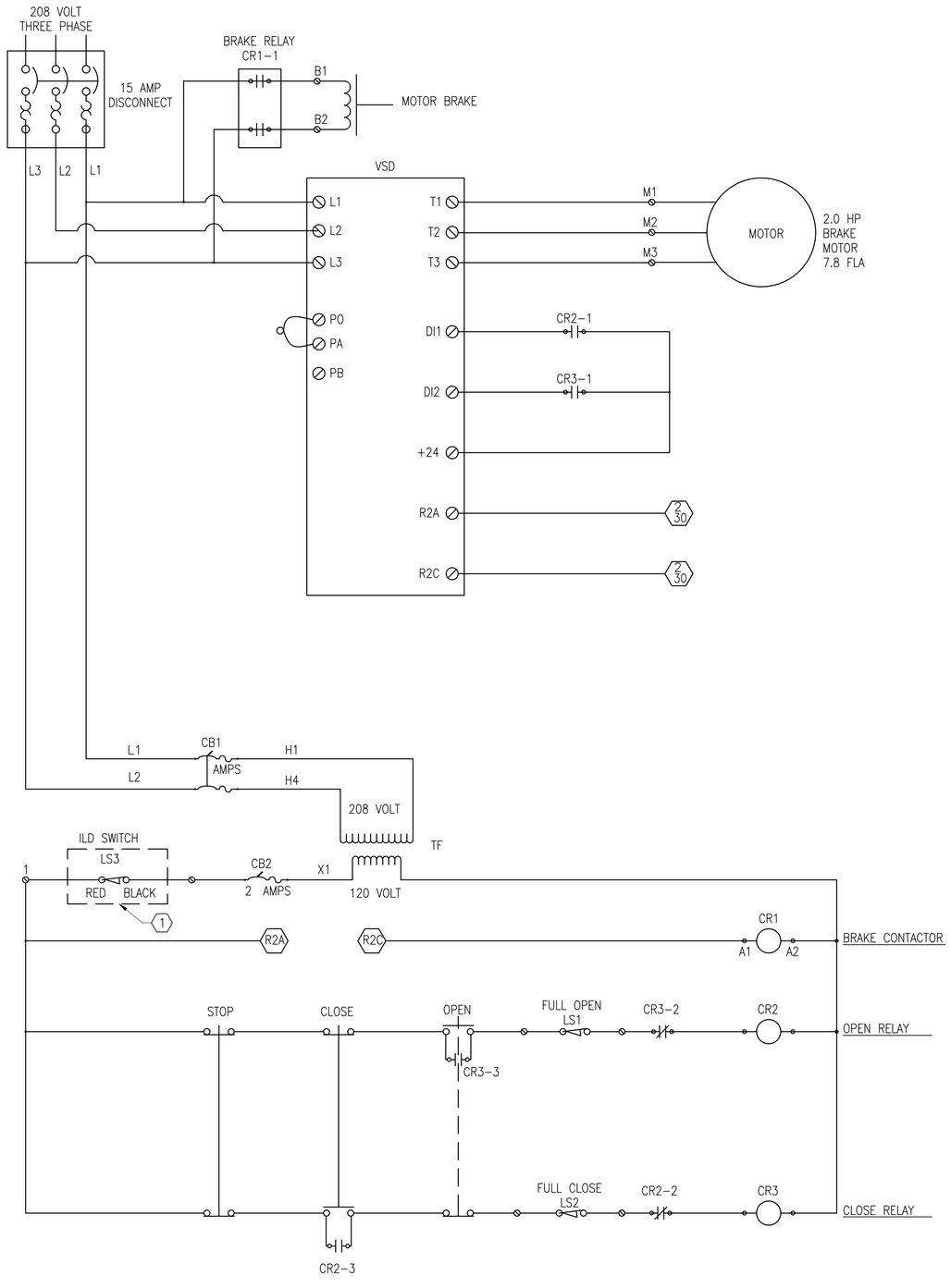
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
14138843

SHEET 67 OF 85

E-504

DRAWFORM REVISION: 25 AUGUST 2020



A1 DOOR CONTROL DIAGRAM

SCALE: NO SCALE

GENERAL ELECTRICAL NOTES:

1. RIGID METAL CONDUIT TO BE USED.
2. LIQUID TIGHT FLEXIBLE METAL CONDUIT ALLOWED UP TO 3'-0" WHERE NECESSARY.
3. COMPONENTS MUST BE NON-HAZARDOUS.

ITEM	DESCRIPTION
ENCLOSURE	NEMA 4/12 ENCLOSURE
VSD	VARIABLE SPEED DRIVE – 2HP
TF	208 X 120 TRANSFORMER
CR1	5 POLE CONTROL RELAY
CR2, CR3	DPDT RELAY
CB1	2P 1AMP CIRCUIT BREAKER
CB2	1P 2AMP CIRCUIT BREAKER
LS1,LS2	LIMIT SWITCHES
EXT. ENCLOSURE	NEMA 4/12 ENCLOSURE
EXT. OPEN PB	OPEN LEGEND
EXT. CLOSE PB	CLOSE LEGEND
LS3	LIMIT SWITCHES LOCATED INSIDE ILD BOLTWORKS

SHEET NOTES

1. THE DOOR CONTROL DIAGRAM IS A TYPICAL DOOR STANDARD DESIGN AND SHOWN AS SCHEMATIC DESIGN ONLY. DOR WILL COORDINATE WITH DOOR MANUFACTURER FOR SPECIFIC DESIGN APPLICABLE TO LOCAL CODES AND ORDINANCES.
2. PROVIDE A MINIMUM NEMA 3R ENCLOSURE FOR ALL ELECTRICAL EQUIPMENT LOCATED OUTDOOR. FOR WET/CORROSION ENVIRONMENT AREA AS DEFINED PER UFC 1-200-01, CHAPTER 4 CORROSION PROTECTION AND CONTROL AND APPENDIX A, DOR WILL SPECIFY CORROSION PROTECTION FOR ENCLOSURES AS DEFINED PER CODE.
3. THIS DETAIL REPRESENTS TO CONTROL EACH DOOR AS INDEPENDENTLY.

⬡ KEYED NOTES

1. THE RELAY WILL BE INTERLOCKED WITH ILD LOCKING SYSTEM SO THAT DOOR POWER WILL BE DISCONNECTED WHEN ILD IS IN 'CLOSE' POSITION OR IN 'LOCKING' POSITION. DESIGN TEAM WILL COORDINATE WITH LOCAL AHJ FOR ADDITIONAL REQUIREMENT ON ILD SYSTEM CONNECTION. REFER TO KEYED NOTE 2/T101A AND T101B FOR ADDITIONAL INFORMATION.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES KL | DRW FO | CHK PKD

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

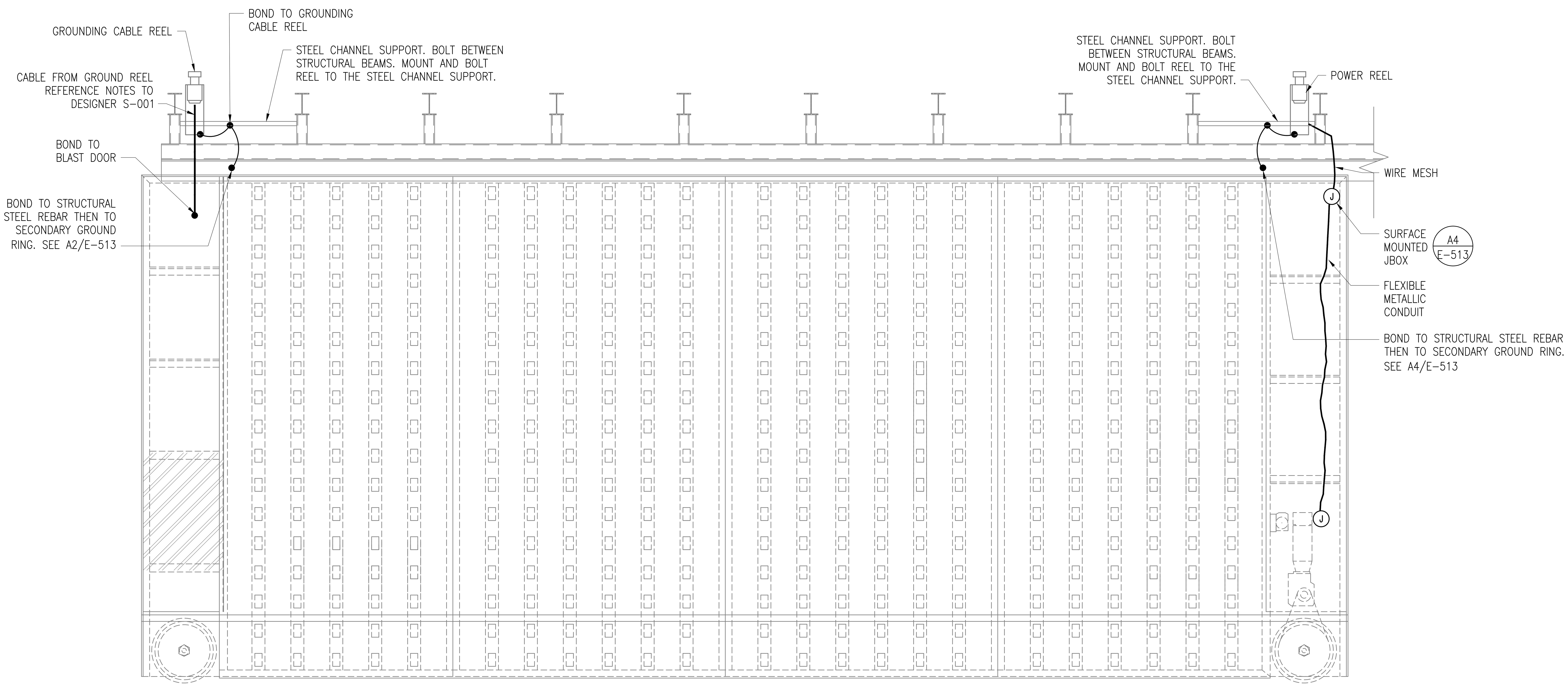
NAVFAC DRAWING NO.
14138844

SHEET 68 OF 85

E-505

DRAWFORM REVISION: 25 AUGUST 2020

SEE SHEET E-513 FOR SHEET AND KEYED NOTES.



B1 DOOR EXTERIOR PLATE ELEVATION

SCALE: NO SCALE

SYM | DESCRIPTION | DATE | APPR

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES KL	DRW FO	CHK PKD
PM/DM		--
BRANCH MANAGER		--
CHIEF ENG/ARCH		--
FIRE PROTECTION		--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.

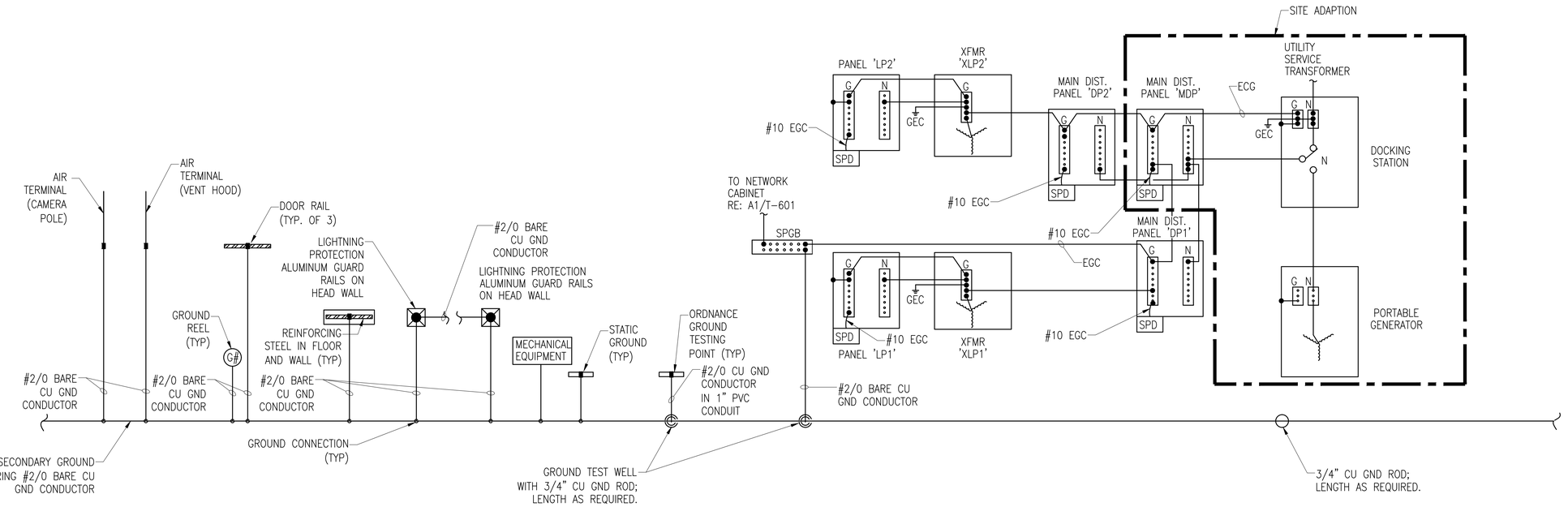
NAVFAC DRAWING NO. 14138845

SHEET 69 OF 85

E-506

DRAWFORM REVISION: 25 AUGUST 2020

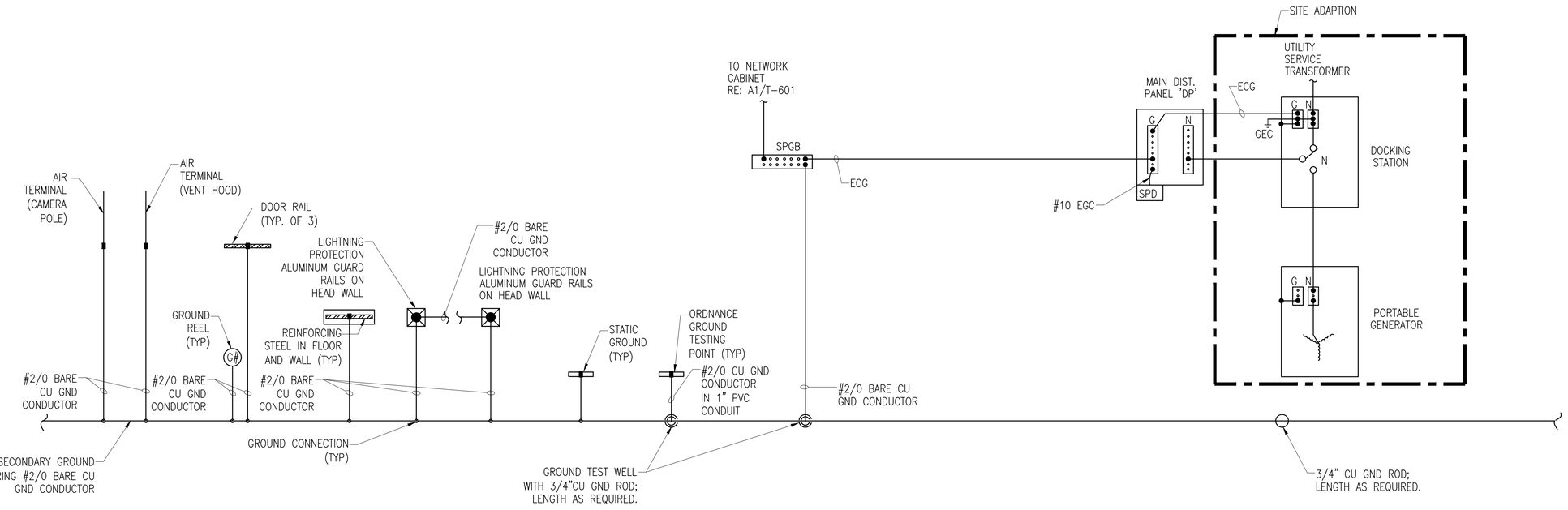
FILE NAME: C:\Users\konus.c.ulrichs\OneDrive - US Navy-flankspeed\Projects\Update Std Mags\BOX TYPE G AND H\Type H Box ECM Standard Drawings Working Set\E-506.dwg LAYOUT NAME: E-506 - ELECTRICAL DETAILS PLOTTED: Wednesday, October 09, 2024 - 11:55am USER: konus.c.ulrichs



GROUNDING ELECTRODE SYSTEM - ALTERNATE (TYPICAL FOR EACH MAGAZINE)

C1

SCALE: NO SCALE



GROUNDING ELECTRODE SYSTEM (TYPICAL FOR EACH MAGAZINE)

A1

SCALE: NO SCALE

NOTE: ALL GROUNDS MUST IN COMPLIANCE WITH NEC REQUIREMENTS AND BONDED IN THROUGH SECONDARY GROUND RING.

APPR'D | DATE | DESCRIPTION | SYM

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
FIRE PROTECTION	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

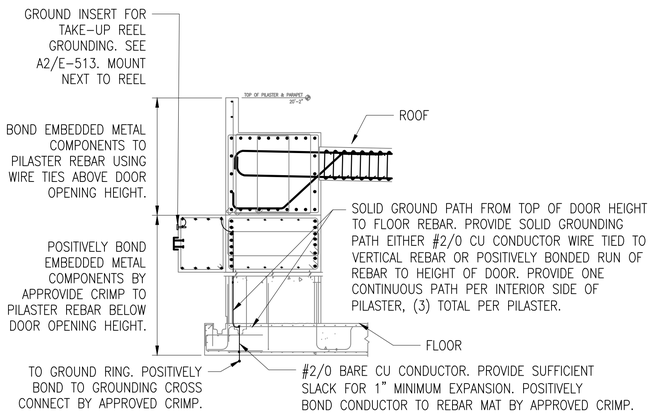
TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE:	AS NOTED
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138846
SHEET	70 OF 85

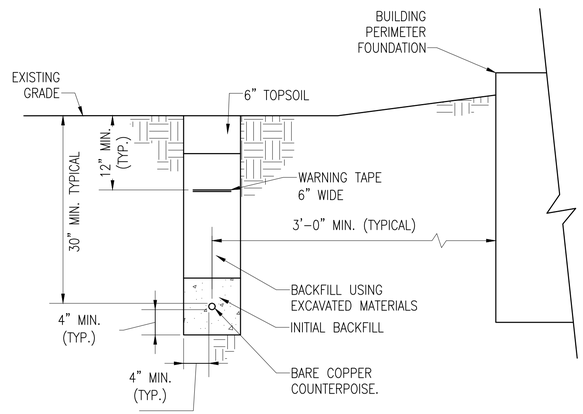
E-507

DRAWFORM REVISION: 25 AUGUST 2020



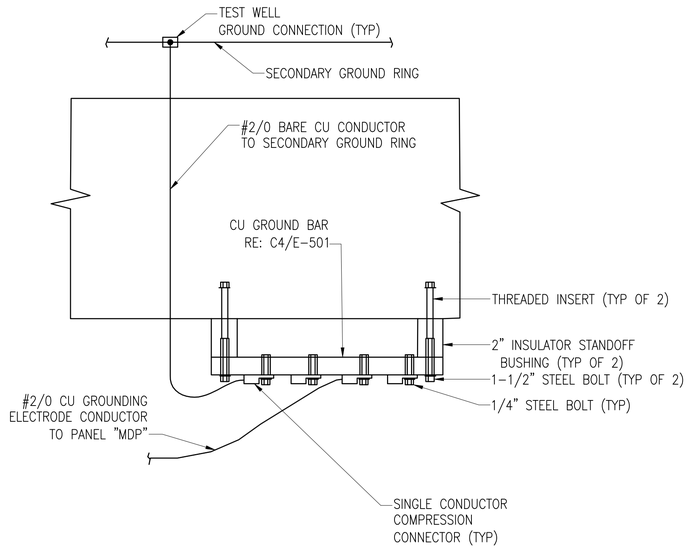
C1 PILASTER GROUNDING AND BONDING DETAIL

SCALE: NO SCALE



C2 TYPICAL GROUND RING INSTALLATION DETAIL

SCALE: NO SCALE



A3 SINGLE POINT GROUND BAR DETAIL

SCALE: NO SCALE

APPR'D | DATE | SYM | DESCRIPTION

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138847

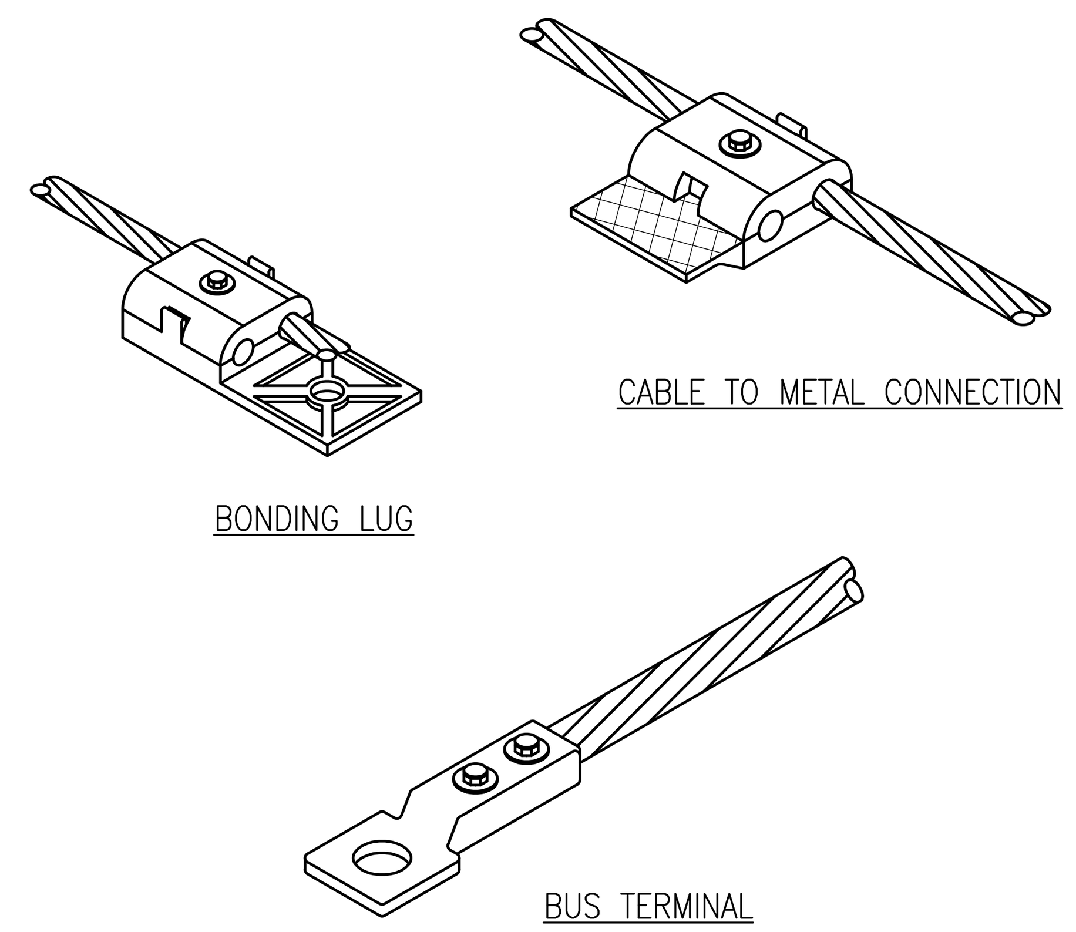
SHEET 71 OF 85

E-508

DRAWFORM REVISION: 25 AUGUST 2020

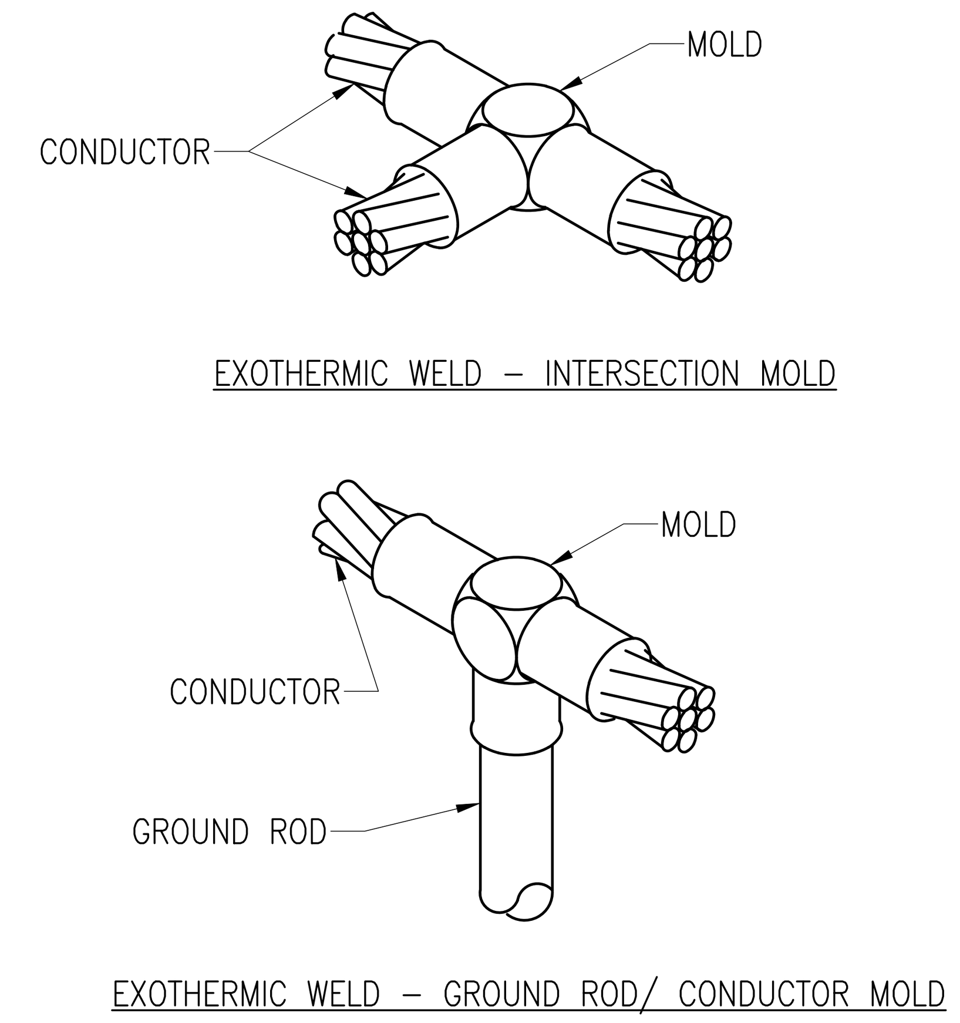
NOTES:

1. PROVIDE EXOTHERMIC WELD OR HIGH COMPRESSION FOR LIGHTNING PROTECTION GROUNDING CONDUCTORS THAT ARE BURIED OR CONCEALED WITHIN STRUCTURE.
2. CABLE SPLICE OR OTHER BONDING CONNECTORS MUST BE INSTALLED PER ITS LABEL REQUIREMENTS AND WITH AN APPROVED UL96 LISTING.



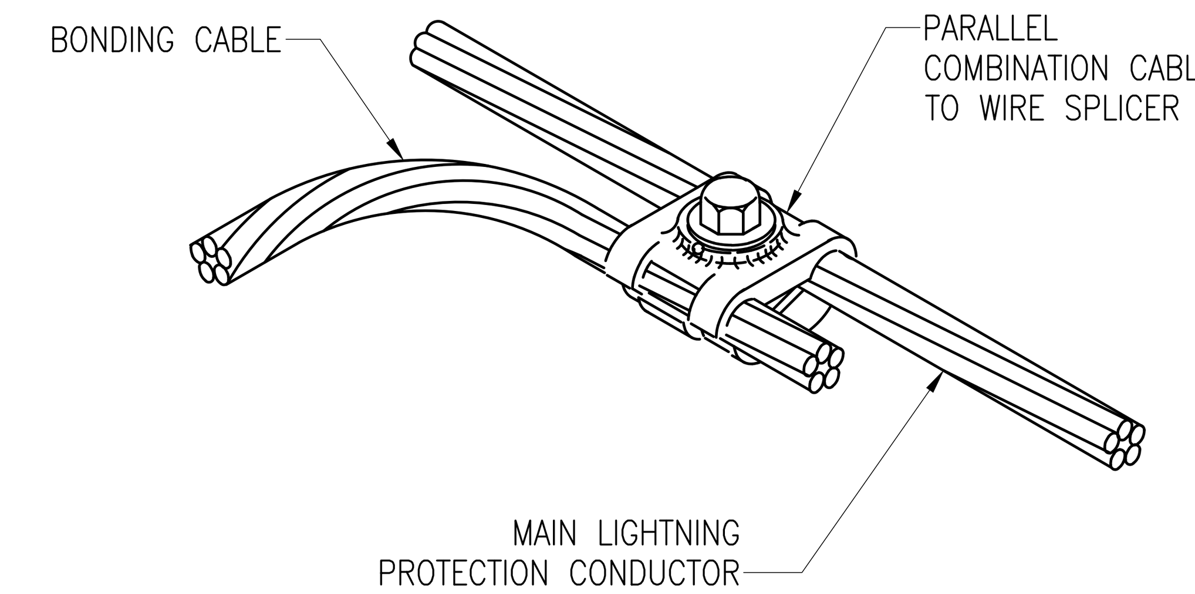
C2 TYPICAL CABLE TERMINATIONS / CONNECTIONS DETAIL

SCALE: NO SCALE



C3 TYPICAL CABLE EXOTHERMIC WELD DETAIL

SCALE: NO SCALE



C4 TYPICAL CABLE SPLICE DETAIL

SCALE: NO SCALE

SYM	DESCRIPTION
DATE	APPR

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES KL	DRW FO	CHK PKD
PM/DM		--
BRANCH MANAGER		--
CHIEF ENG/ARCH		--
FIRE PROTECTION		--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

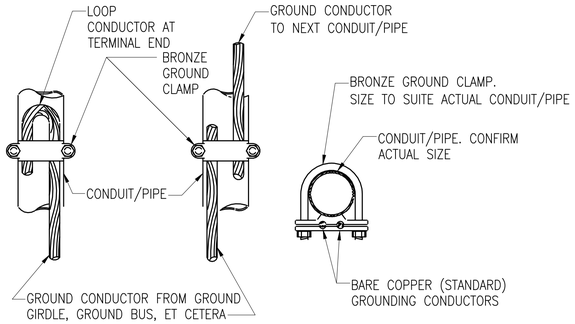
ELECTRICAL DETAILS

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138848
SHEET 72 OF 85

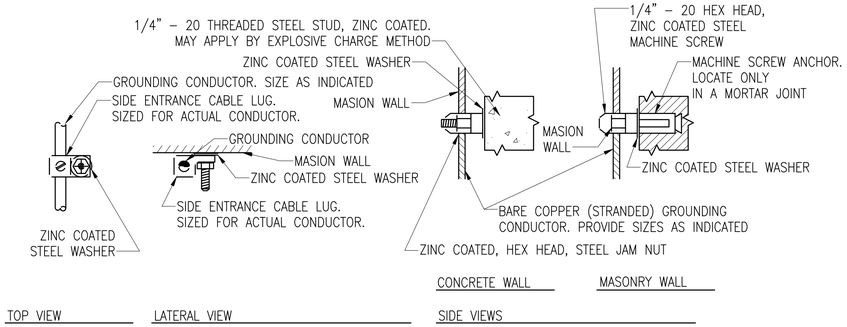
E-509

DRAWFORM REVISION: 25 AUGUST 2020

NOTES:
1. CONCEAL GROUNDING CONDUCTORS WHERE POSSIBLE.
2. FOR GROUNDING CONDUCTORS RUN EXPOSED, SUPPORT CONDUCTORS 36" ON CENTERS AND WITHIN 12" OF GROUND CONNECTIONS.
3. PROVIDE WALL FASTENER IN ACCORDANCE WITH THE WALL TYPE SEE "SIDE VIEW DETAILS" FOR REQUIREMENTS.
4. THIS GROUNDING DETAIL IS NOT FOR ORDNANCE GROUNDING SYSTEM.



C2 CONDUIT/PIPE GROUND CONNECTION
SCALE: NO SCALE



C4 GROUNDING CONDUCTOR SUPPORT DETAIL (TYPICAL FOR EXPOSED CONDUCTORS)
SCALE: NO SCALE

APPR	DATE	SYM	DESCRIPTION

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/OM —

BRANCH MANAGER —

CHIEF ENG/ARCH —

FIRE PROTECTION —

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1702805

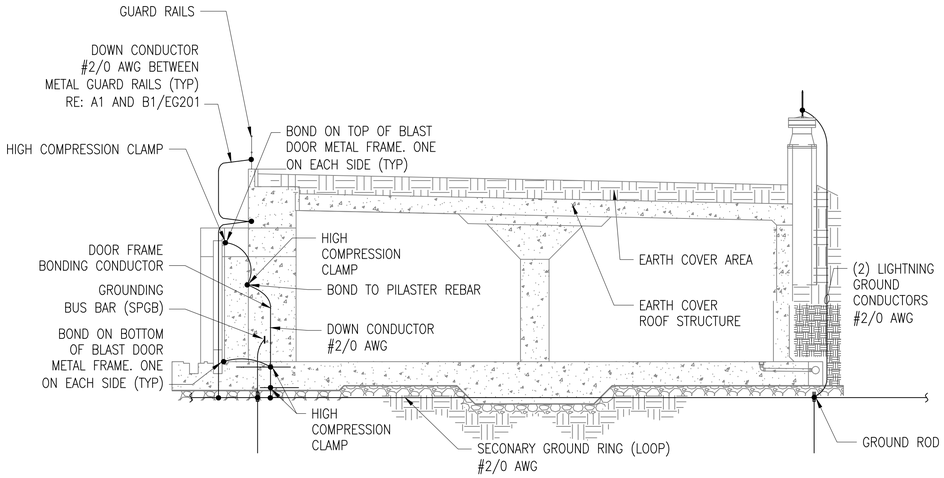
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
14138849

SHEET 73 OF 85

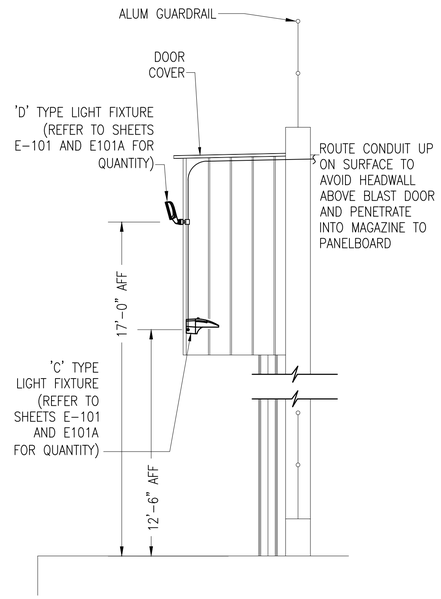
E-510

DRAWFORM REVISION: 25 AUGUST 2020

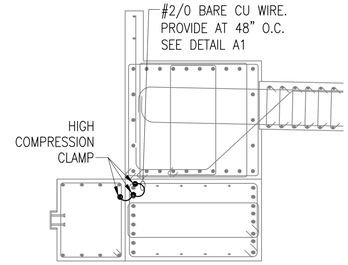


NOTES:
1. FOR MISCELLANEOUS STEEL SHAPES, BOLTED CONNECTOR MAY BE USED.
2. CRIMPED CONNECTORS MAY ALSO BE ANOTHER ALTERNATE CONNECTORS.

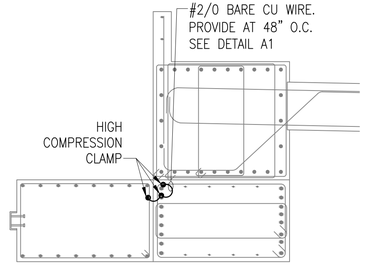
C1 ECM GROUND SECTION (TYPICAL)
SCALE: NO SCALE



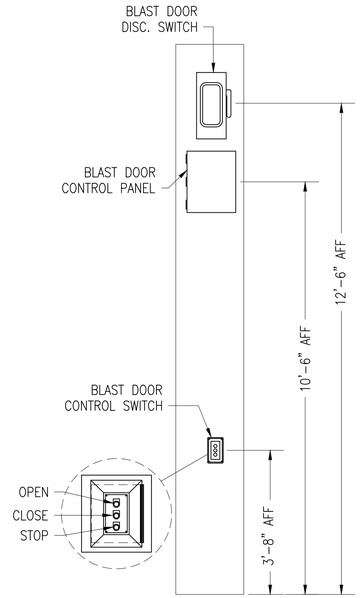
C4 EXTERIOR WALL MOUNTED LIGHTING
SCALE: NO SCALE



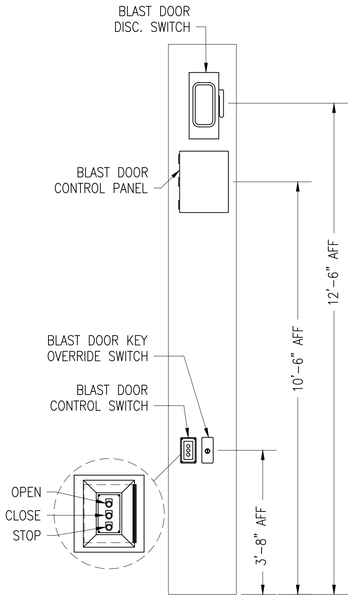
D5 HEADER BEAM END - BONDING DETAIL
SCALE: NO SCALE



C5 HEADER BEAM MIDSPAN - BONDING DETAIL
SCALE: NO SCALE



A1 DOOR CONTROL RISER (TYPICAL)
SCALE: NO SCALE



A2 DOOR CONTROL RISER (ALTERNATE)
SCALE: NO SCALE

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	F0	CHK	PKD

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

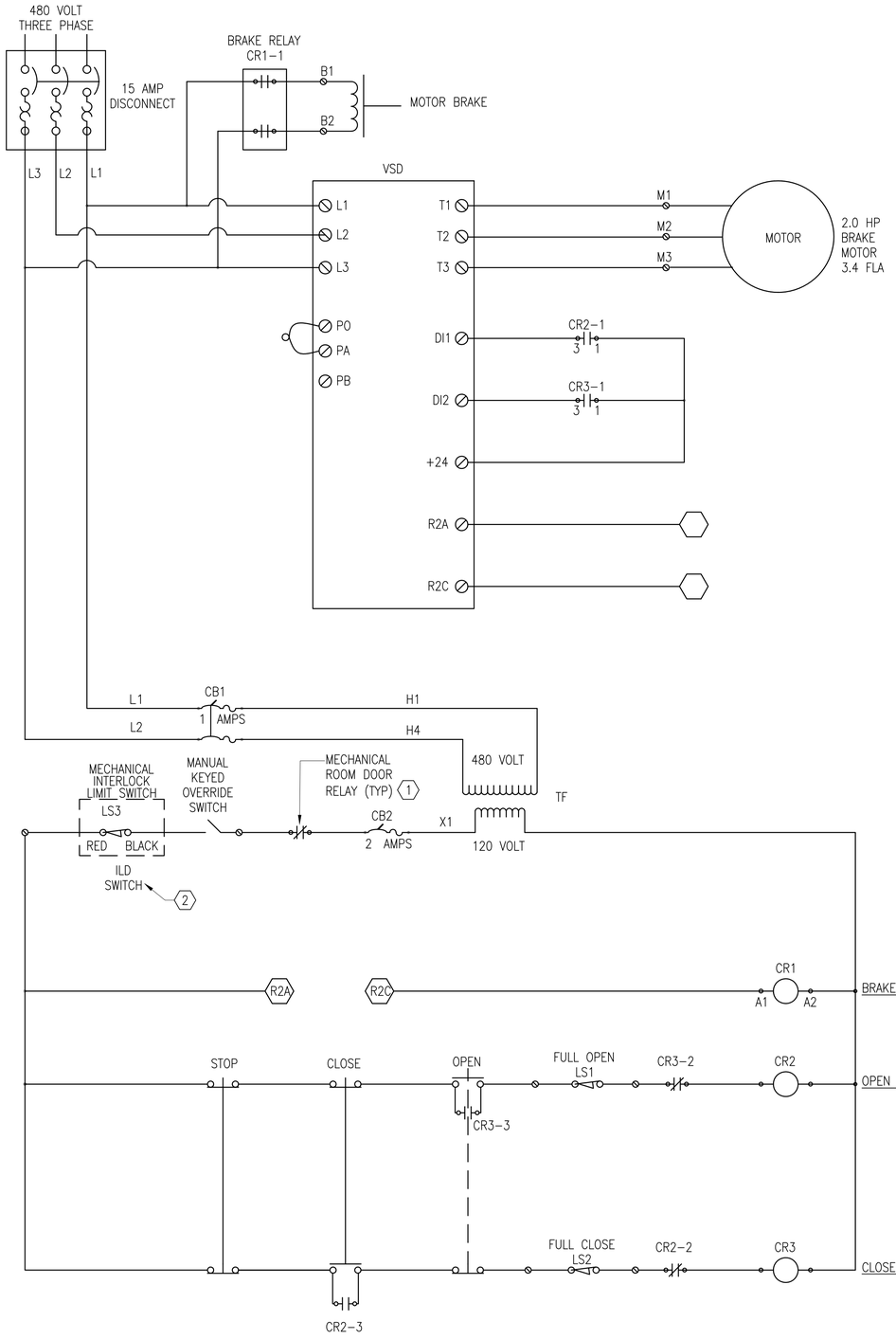
TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138850
SHEET 74 OF 85

E-511

DRAWFORM REVISION: 25 AUGUST 2020



A1 DOOR CONTROL DIAGRAM - ALTERNATE

SCALE: NO SCALE

GENERAL ELECTRICAL NOTES:

1. RIGID METAL CONDUIT TO BE USED.
2. LIQUID TIGHT FLEXIBLE METAL CONDUIT ALLOWED UP TO 3'-0" WHERE NECESSARY.
3. COMPONENTS MUST BE NON-HAZARDOUS.

ITEM	DESCRIPTION
ENCLOSURE	NEMA 4/12 ENCLOSURE
VSD	VARIABLE SPEED DRIVE - 2HP
TF	208 X 120 TRANSFORMER
CR1	5 POLE CONTROL RELAY
CR2, CR3	DPDT RELAY
CB1	2P 1AMP CIRCUIT BREAKER
CB2	1P 2AMP CIRCUIT BREAKER
LS1,LS2	LIMIT SWITCHES
EXT. ENCLOSURE	NEMA 4/12 ENCLOSURE
EXT. OPEN PB	OPEN LEGEND
EXT. CLOSE PB	CLOSE LEGEND
LS3	LIMIT SWITCHES LOCATED INSIDE ILD BOLTWORKS

SHEET NOTES

1. THE DOOR CONTROL DIAGRAM IS A TYPICAL DOOR STANDARD DESIGN AND SHOWN AS SCHEMATIC DESIGN ONLY. DOR MUST COORDINATE WITH DOOR MANUFACTURER FOR SPECIFIC DESIGN APPLICABLE TO LOCAL CODES AND ORDINANCES.
2. PROVIDE A MINIMUM NEMA 3R ENCLOSURE FOR ALL ELECTRICAL EQUIPMENT LOCATED OUTDOOR. FOR WET/CORROSION ENVIRONMENT AREA AS DEFINED PER UFC 1-200-01, CHAPTER 4 CORROSION PROTECTION AND CONTROL AND APPENDIX A, DOR MUST SPECIFY CORROSION PROTECTION FOR ENCLOSURES AS DEFINED PER CODE.
3. THIS DETAIL REPRESENTS TO CONTROL EACH DOOR AS INDEPENDENTLY.

⬡ KEYED NOTES

1. THE RELAY MUST BE INTERLOCKED TO CLOSE MECHANICAL DOOR LATCH. RELAY MUST OPEN WHEN MECHANICAL DOOR IS UNLOCKED. DOOR POWER MUST BE DISCONNECTED AND RELEASED THE DOOR CONTROL POWER. THE KEY OVERRIDE SWITCH MUST CONTROL WHEN DOOR POWER DISCONNECTED.
2. THE RELAY MUST BE INTERLOCKED WITH ILD LOCKING SYSTEM SO THAT DOOR POWER MUST BE DISCONNECTED WHEN ILD IS IN 'CLOSE' POSITION OR IN 'LOCKING' POSITION. DESIGN TEAM MUST COORDINATE WITH LOCAL AHJ FOR ADDITIONAL REQUIREMENT ON ILD SYSTEM CONNECTION. REFER TO KEYED NOTE 2/T101A AND T101B FOR ADDITIONAL INFORMATION.

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
FIRE PROTECTION	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL DETAILS - ALTERNATE

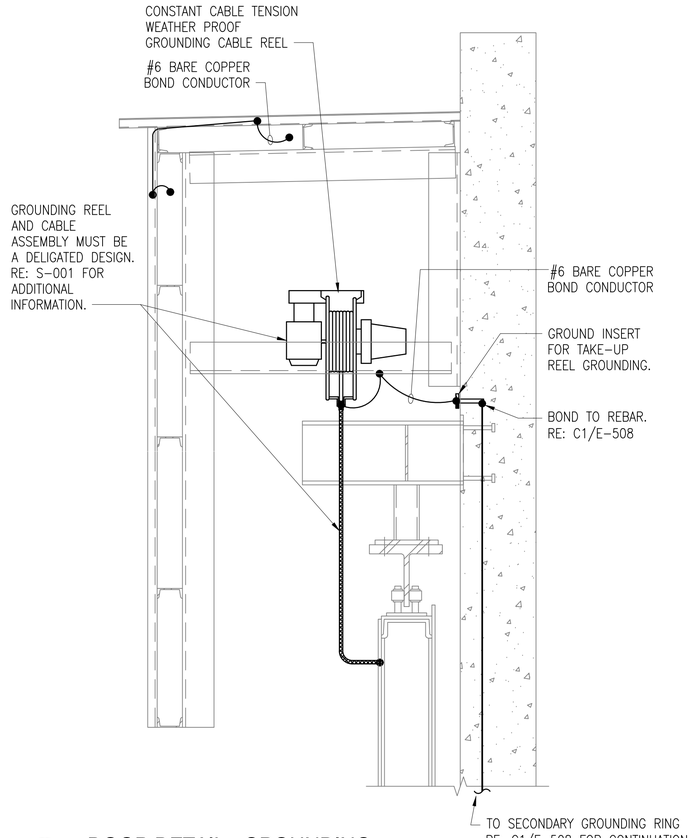
SCALE:	AS NOTED
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138851
SHEET	75 OF 85

E-512

DRAWFORM REVISION: 25 AUGUST 2020

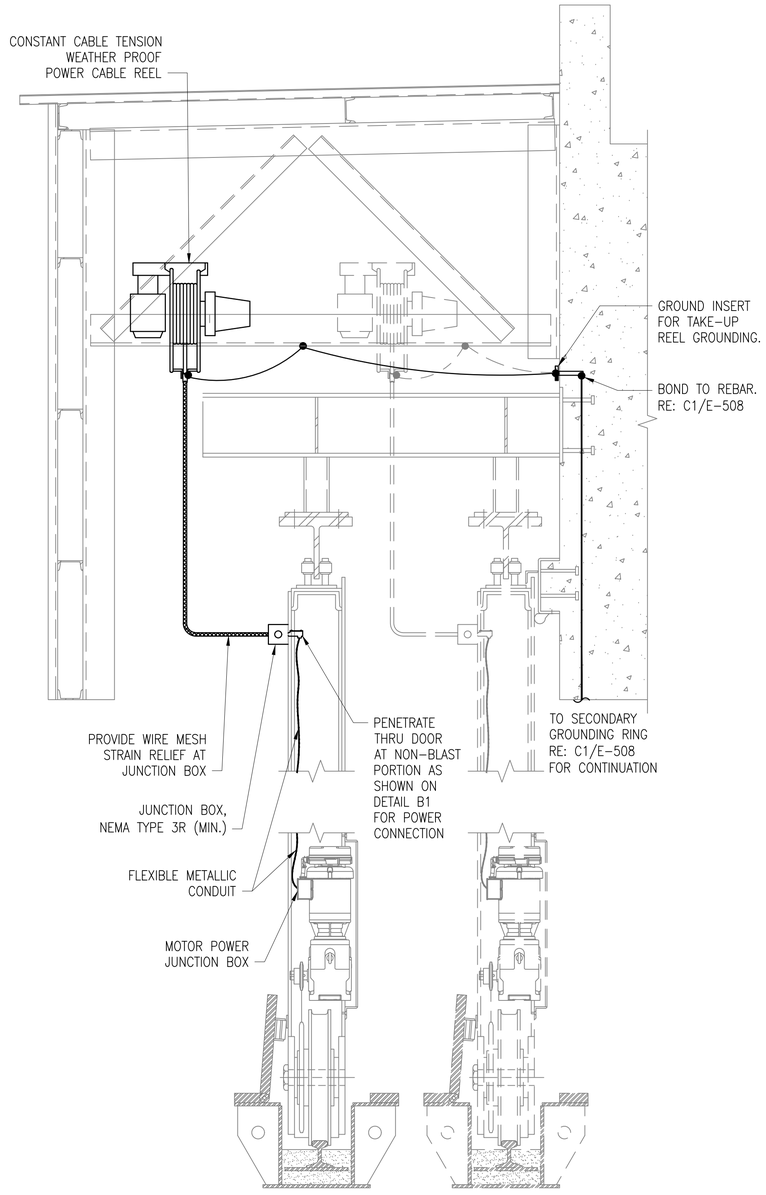
SHEET NOTES

1. PROVIDE A MINIMUM NEMA 3R ENCLOSURE FOR ALL ELECTRICAL EQUIPMENT LOCATED OUTDOOR. FOR WET/CORROSION ENVIRONMENT AREA AS DEFINED PER UFC 1-200-01, CHAPTER 4 CORROSION PROTECTION AND CONTROL AND APPENDIX A, DOR WILL SPECIFY CORROSION PROTECTION FOR ENCLOSURES AS DEFINED PER CODE.



A2 DOOR DETAIL - GROUNDING

SCALE: NO SCALE



A4 DOOR DETAIL - POWER

SCALE: NO SCALE

SYM	DESCRIPTION	DATE	APPR

NAVFAC

A/E INFO:

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	FO	CHK	PKD

PM/DM	-- --
BRANCH MANAGER	-- --
CHIEF ENG/ARCH	-- --
FIRE PROTECTION	-- --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

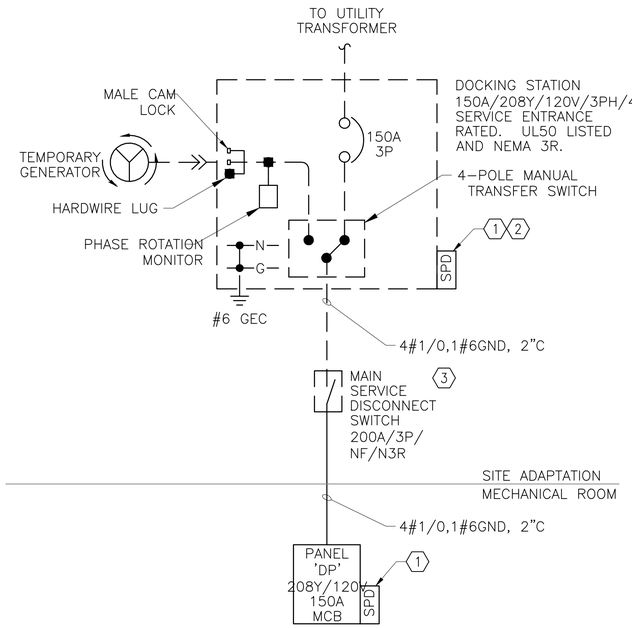
TYPE H BOX MAGAZINE

ELECTRICAL DETAILS

SCALE:	AS NOTED
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138852
SHEET	76 OF 85

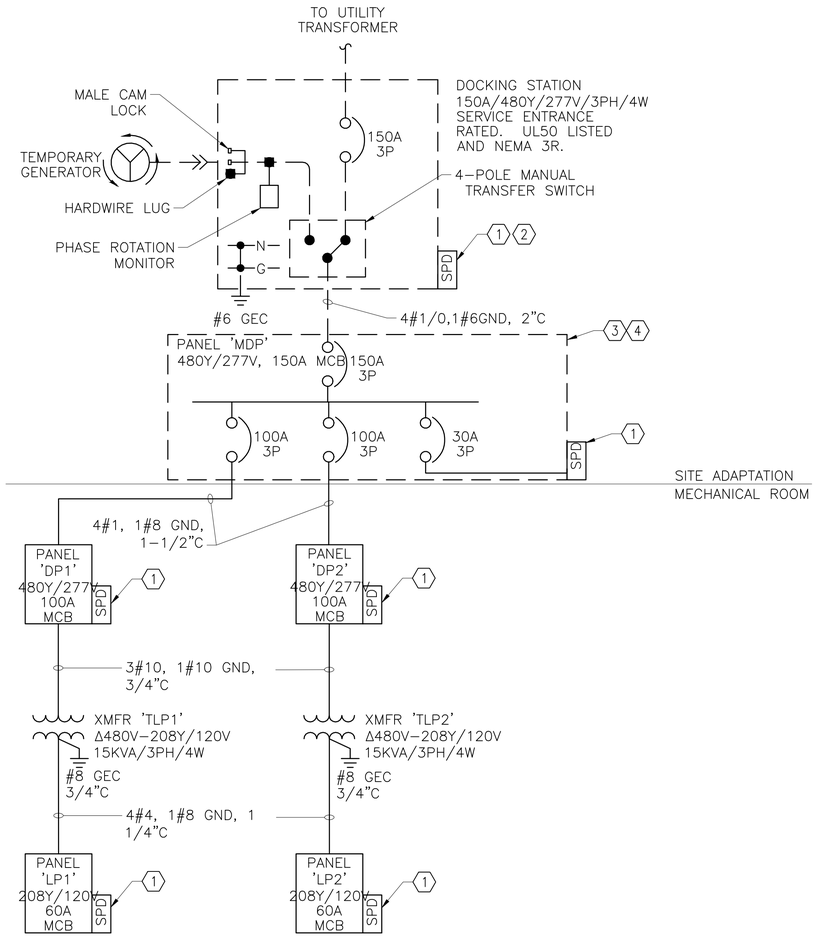
E-513

DRAWFORM REVISION: 25 AUGUST 2020



B1 ELECTRICAL ONE-LINE DIAGRAM

SCALE: NO SCALE



B3 ELECTRICAL ONE-LINE DIAGRAM - ALTERNATE

SCALE: NO SCALE

SERVICE LOAD ANALYSIS

PROJECT:	USM-BOX H
SQ FOOTAGE:	–

MAIN DISTRIBUTION:	DP	208 VOLT

	NEW CONNECTED		NEW DEMAND	
TYPE	AMPACITY	VA	AMPACITY	VA
EQUIPMENT:	2	720	2	720
RECEPTACLES:	8	2,880	8	2,880
LIGHTING:	13	4,514	15	5,417
A/C OR HEATING	0	0	0	0
HEATING	0	0	0	0
CONT. MOTORS	39	14,050	39	14,050
25% LRG MOTOR (DOOR MOTOR)	–	–	2	703
15% SPARE CAPACITY	–	–	10	3,565
TOTAL	62	22,164	76	27,335

SERVICE VOLTAGE: 208 VOLTS
SERVICE LOAD AMPACITY: 76 AMPS
SCHEDULED SERVICE AMPACITY: 150 AMPS

SERVICE LOAD ANALYSIS – ALTERNATE

PROJECT:	USM-BOX H
SQ FOOTAGE:	–

MAIN DISTRIBUTION:	MDP	480	VOLT

	NEW CONNECTED		NEW DEMAND	
TYPE	AMPACITY	VA	AMPACITY	VA
EQUIPMENT:	1	720	1	720
RECEPTACLES:	3	2,520	3	2,520
LIGHTING:	6	4,964	7	5,957
A/C OR HEATING	0	0	0	0
HEATING	0	0	0	0
CONT. MOTORS	17	14,134	17	14,134
25% LRG MOTOR (DOOR MOTOR)	–	–	1	707
15% SPARE CAPACITY	–	–	4	3,606
TOTAL	27	22,338	33	27,643

SERVICE VOLTAGE: 480 VOLTS
SERVICE LOAD AMPACITY: 33 AMPS
SCHEDULED SERVICE AMPACITY: 150 AMPS

SEE SHEET E-602 FOR SHEET AND KEYED NOTES.

APPR	DATE	DESCRIPTION	SYM

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	KL	DRW	F0	CHK	PKD

PM/DM	– –
BRANCH MANAGER	– –
CHIEF ENG/ARCH	– –
FIRE PROTECTION	– –

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND-ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL ONE-LINE

SCALE:	AS NOTED
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138853
SHEET	77 OF 85

E-601

DRAWFORM REVISION: 25 AUGUST 2020

SHEET NOTES

1. THE INDICATED FAULT CURRENT RATING ON PANEL SCHEDULES IS MINIMUM REQUIREMENT. DESIGNER MUST DETERMINE THE FINAL EQUIPMENT FAULT CURRENT RATING BASED ON THE MAXIMUM AVAILABLE FAULT CURRENT FROM UTILITY SERVICE TRANSFORMER. PROVIDE HIGHER RATING AS REQUIRED PER SITE ADAPTATIONS.
2. DOCKING STATION AS SHOWN IS PART OF SITE ADAPTATIONS.
3. THE DESIGN STANDARD INDICATES THE POWER DISTRIBUTION SYSTEM FOR CONUS PROJECTS, BUT DEFERRED FOR OCONUS PROJECTS TO THE PROJECT DELIVERY DESIGN TEAMS FOR SITE ADAPTATION AND FURTHER DEVELOPMENT AS NEEDED.
4. ALL ELECTRICAL POWER DISTRIBUTION EQUIPMENT LOCATED OUTSIDE THE EARTH COVERD MAGAZINE, INCLUDING DOCKING STATION, MANUAL TRANSFER SWITCH, PORTABLE GENERATOR POWER CONNECTION MUST BE PART OF SITE ADAPTATION AS SHOWN IN DASH.
5. PROVIDE A MINIMUM NEMA 3R ENCLOSURE FOR ALL ELECTRICAL EQUIPMENT LOCATED OUTDOORS. FOR WET/CORROSION ENVIRONMENT AREA AS DEFINED PER UFC 1-200-01, CHAPTER 4 CORROSION PROTECTION AND CONTROL AND APPENDIX A, DOR MUST SPECIFY CORROSION PROTECTION FOR ENCLOSURES AS DEFINED PER CODE.
6. THE EQUIPMENT ELECTRICAL INFORMATION IS BASIS OF DESIGN, DOR MUST UPDATE VOLTAGE/PHASE, DEMAND LOAD, OVERCURRENT PROTECTION DEVICES AND DISCONNECTING MEANS SIZES PER EQUIPMENT SPECIFICATION AND / OR VENDOR'S PROVIDED SHOP DRAWINGS / DATA INFORMATION. UPDATE THE ELECTRICAL EQUIPMENT AS REQUIRED TO MEET CODES.

⬡ KEYED NOTES

1. PROVIDE EXTERNALLY MOUNTED SPD ON LOAD SIDE OF A DEDICATED CIRCUIT BREAKER (BREAKER SIZE AND WIRE SIZE AS RECOMMENDED BY MANUFACTURER). LOCATE AS CLOSE AS PRACTICAL TO THE BREAKER WITH A MAXIMUM LEAD OF 3FT .
2. PROVIDE AN ENCLOSED CIRCUIT BREAKER FOR SPD.
3. EQUIPMENT MUST BE LOCATED IN GENERAL VICINITY OF THE MAGAZINE AND BE READILY ACCESSIBLE. PROVIDE WORKING CLEARANCES IN FRONT OF EQUIPMENT AS DEFINED PER NFPA 780, ARTICLE 110, AS CONTINUOUS AND UNOBSTRUCTED TO EGRESS PATHWAY.
4. EQUIPMENT MUST SERVE UP TO A GROUP OF FIVE MAGAZINES ONLY.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES KL	DRW FO	CHK PKD
PM/DM		--
BRANCH MANAGER		--
CHIEF ENG/ARCH		--
FIRE PROTECTION		--

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL ONE-LINE

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138854
SHEET 78 OF 85

E-602

DRAWFORM REVISION: 25 AUGUST 2020

LIGHTING FIXTURE SCHEDULE

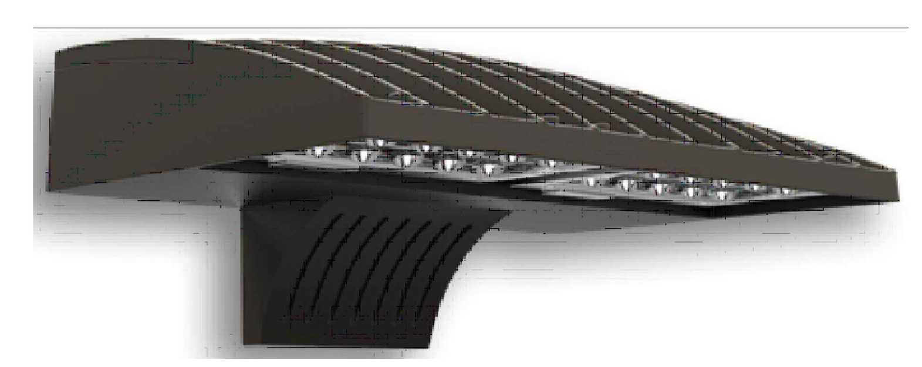
MARK	DESCRIPTION	MOUNTING TYPE/HEIGHT (RE: E-101)	LAMP TYPE	INPUT VA	COLOR TEMPERATURE	CRI	VOLTAGE	LUMINAIRE PLATE NUMBER
A	LED FROSTED POLYCARBONATE ENCLOSURE 3500K 80 CRI 15000LM	STEM	LED	115 VA	3500 K	80	MVOLT	NL-11
B	LED FROSTED POLYCARBONATE ENCLOSURE 3500K 80 CRI 6000LM	SURFACE	LED	50 VA	3500 K	80	MVOLT	NL-11
C	LED WALL PACK SINGLE-PIECE DIE-CAST ALUMINUM HOUSING 7000LM	WALL	LED	54 VA	4000 K	70	MVOLT	XL-17
D	LED FLOOD LIGHT DIE-CAST ALUMINUM HOUSING 12000LM	WALL	LED	102 VA	4000 K	70	MVOLT	XL-21

LUMINAIRE REQUIREMENTS:

1. HOUSING – FIBERGLASS OR FIBERGLASS-REINFORCED POLYESTER OUTER HOUSING, WITH ALUMINUM COMPONENT TRAY AND HEAT SINK. OPTIONAL LENGTHS OF 4FT OR 8FT.
2. LENS – IMPACT-RESISTANT ACRYLIC OR OPTIONAL POLYCARBONATE, WITH CONTINUOUS CLOSED-CELL POLYURETHANE GASKET, SECURED WITH STAINLESS STEEL OR POLYCARBONATE LATCHES.
3. LIGHT SOURCE – SOLID STATE LEDS WITH MINIMUM 50K HOURS RATED LIFE AT L70, 3500K CCT UON, MINIMUM 80 CRI, MAXIMUM 4-STEP MCADAM ELLIPSE BINNING TOLERANCE FOR COLOR CONSISTENCY, AND MINIMUM EFFICACY OF 100 LUMENS/WATT. INITIAL LUMEN OUTPUT AS INDICATED IN LUMINAIRE SCHEDULE.
4. DRIVER – REPLACEABLE, INTEGRAL, HIGH-EFFICIENCY DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120-277V, THERMAL MANAGEMENT, < 20% TOTAL HARMONIC DISTORTION. ON-OFF CONTROL, STEP-DIMMABLE OR FULLY DIMMABLE AS INDICATED.
5. CERTIFICATION – UL 1598, WET LOCATION (IP65, IP66, IP67), DLC QUALIFIED, AND ROHS COMPLIANT. COMPLIES WITH LM79, LM80 AND TM21 TESTING STANDARDS. UL 924 WHEN EQUIPPED WITH EMERGENCY BATTERY BACK-UP.
6. MOUNTING – SURFACE-MOUNTED OR SUSPENDED FROM CEILING.
7. OPTIONS – EMERGENCY BACK-UP.
8. THIS SKETCH IS A NON-PROPRIETARY GRAPHIC REPRESENTATION OF A LUMINAIRE THAT MAY MEET THE SPECIFICATION REQUIREMENTS. IT IS NOT INTENDED TO INDICATE A CERTAIN MANUFACTURER OR PREFERENCE.

LED ENCLOSED AND GASKETED

REVISED: APRIL 2016 LIGHTING PLATE: NL-11



LUMINAIRE REQUIREMENTS:

1. HOUSING – DIE-CAST OR EXTRUDED ALUMINUM WITH INTEGRAL PASSIVE COOLING MECHANISM. HEAT SINK MUST BE INCORPORATED DIRECTLY INTO HOUSING OR DRIVER COMPARTMENT TO ENSURE MAXIMUM HEAT TRANSFER AND DISSIPATION.
2. FINISH – MULTI-STAGE PRE-TREATMENT, FINISHED WITH BAKED-ON POLYESTER POWDER COAT. FINISH MUST PASS 2500 HOUR SALT SPRAY TEST PER ASTM B117. STANDARD FINISH IS DARK BRONZE, WITH OTHER CUSTOM COLORS AVAILABLE.
3. POWER SUPPLY/LED DRIVER – CLASS 1 DRIVER MUST OPERATE AT 120/277 VOLTS, 50/60 HZ, WITH OTHER VOLTAGES OPTIONAL; POWER FACTOR GREATER THAN 0.9 AND THD LESS THAN 20% AT FULL LOAD. MINIMUM EFFICACY MUST BE 60 LM/W AT MAXIMUM 600mA OPERATING CURRENT.
4. LED OPTICAL ASSEMBLY – PRECISION MOLDED ACRYLIC LENS PROVIDED FOR MULTIPLE HIGH-POWERED LEDS PRODUCING NEMA TYPE III DISTRIBUTION OR AS OTHERWISE INDICATED. BUG UPLIGHT RATING OF U0, WITH GLARE RATING AS DETERMINED BY LIGHTING ZONE INSTALLED. MINIMUM COLOR RENDERING INDEX (CRI) MUST BE 70 FOR CORRELATED COLOR TEMPERATURE (CCT) OF 4000-4500 DEGREES K.
5. CERTIFICATION – UL AND/OR ETL LISTED FOR DAMP OR WET LOCATIONS AS INDICATED, AND RoHS COMPLIANT.
6. OPTIONS – VARIOUS LUMEN OUTPUT RATING AS INDICATED, AND 0-10 VOLT DIMMING DRIVER.
7. OTHER – THE ABOVE SKETCH IS A NON-PROPRIETY GRAPHIC REPRESENTATION OF A LUMINAIRE THAT MAY MEET THE SPECIFICATION REQUIREMENTS AND IS NOT INTENDED TO INDICATE A CERTAIN MANUFACTURER'S PREFERENCE. ALL DIMENSIONS ARE NOMINAL AND VARY PER MANUFACTURER. MANUFACTURER'S PREFERENCE. ALL DIMENSIONS ARE NOMINAL AND VARY PER MANUFACTURER.

LED WALL PACK

REVISED: MARCH 2013 LUMINAIRE PLATE: XL-17

LUMINAIRE REQUIREMENTS:

1. HOUSING – DIE CAST ALUMINUM WITH INTEGRAL PASSIVE COOLING MECHANISM. HEAT SINK MUST BE INCORPORATED DIRECTLY INTO HOUSING TO ENSURE MAXIMUM HEAT TRANSFER AND DISSIPATION.
2. FINISH – MULTI-STAGE PRE-TREATMENT, FINISHED WITH BAKED-ON POLYESTER POWDER COAT. FINISH MUST PASS 2500 HOUR SALT SPRAY TEST PER ASTM B117. DARK BRONZE FINISH COLOR IS STANDARD.
3. POWER SUPPLY/LED DRIVER – CLASS 1 ELECTRONIC DRIVER MUST OPERATE AT 120/277 VOLTS, 50/60 HZ, WITH OTHER VOLTAGES OPTIONAL. POWER FACTOR MUST BE GREATER THAN 0.9 AND THD LESS THAN 20% AT FULL LOAD. MINIMUM EFFICACY MUST BE 60 LM/W AT MAXIMUM 600mA OPERATING CURRENT.
4. LED OPTICAL ASSEMBLY – MULTI-LED ARRAY OPTIMIZED FOR SPECIFIC DISTRIBUTION PATTERN AS INDICATED. MINIMUM COLOR RENDERING INDEX (CRI) OF 70 FOR CORRELEATED COLOR TEMPERATURE OF 4000-4500 DEGREES K.
5. LENS – TEMPERED GLASS IN DIE-CAST ALUMINUM FRAME WITH SILICONE GASKET.
6. SURGE PROTECTION – 6 KV MINIMUM, COMPLIANT WITH ANSI C62.41.2.
7. CERTIFICATION – UL AND/OR ETL LISTED FOR WET LOCATIONS AND 2G VIBRATION STANDARD PER ANSI C136.32. OPTICAL ASSEMBLY MUST BE MINIMUM IP65 PER ANSI/IEC 60529.
8. OPTIONS – FINISH COLOR, OUTPUT DISTRIBUTION TYPE AND TRUNNION OR SLIPFITTER TYPE MOUNTING.
9. OTHER – THE ABOVE SKETCH IS A NON-PROPRIETARY GRAPHIC REPRESENTATION OF A LUMINAIRE THAT MAY MEET THE SPECIFICATION REQUIREMENTS AND IS NOT INTENDED TO INDICATE A CERTAIN MANUFACTURER'S PREFERENCE. ALL DIMENSIONS ARE NOMINAL AND VARY PER MANUFACTURER.

LED FLOOD LUMINAIRE

REVISED: MARCH 2013 LUMINAIRE PLATE: XL-21

SYM | DESCRIPTION | DATE | APPR

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES KL | DRW FO | CHK PKD

PM/DM --

BRANCH MANAGER --

CHIEF ENG/ARCH --

FIRE PROTECTION --

DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC

HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

ELECTRICAL SCHEDULES

SCALE: AS NOTED

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138855

SHEET 79 OF 85

E-603

DRAWFORM REVISION: 25 AUGUST 2020

PANEL 'DP'

LOCATION: MECHANICAL ROOM | VOLTAGE: 120/208 V | KAIC: 22 | BUSSING SHALL BE FULLY RATED
MOUNTING: SURFACE | PHASE: 3 P/ 4W | CODES: 0=EQPT, 1=RCPT, 2=LTG, 3=A/C, 4=HEAT
ENCLOSURE: NEMA 1 SYTLE: NQOD | BUSSING: 150 A | 5=CONTINUOUS MOTORS, 6=LRGST MOTOR, 7=PANEL
BRKR MTG: BOLT-ON (REF: SQUARE D) | MCB: 150 A | ACCESSORIES: GROUND BUS, 42 SPACE
BREAKERS: 75 DEGREE TERMINALS | MLO: A

CODE	BRKR	CIRCUIT USE	CKT	LOAD	A	B	C	LOAD	CKT	CIRCUIT USE	BRKR	CODE
2	20/1	LTG – MAIN MAGAZINE	1	920	X			937	2	PWR – BLAST DOOR (2 HP)	20/3	5
2	20/1	LTG – MAIN MAGAZINE	3	920		X		937	4			5
2	20/1	LTG – MAIN MAGAZINE	5	920			X	937	6			5
2	20/1	LTG – MAIN MAGAZINE	7	920	X			937	8	PWR – BLAST DOOR (2 HP)	20/3	5
	20/1	SPARE	9	–		X		937	10			5
0	20/1	LTG – LIGHTING CONTACTOR COIL	11	180			X	937	12			5
2	20/1	LTG – EXTERIOR (TYPE C)	13	324	X			937	14	PWR – BLAST DOOR (2 HP)	20/3	5
2	20/1	LTG – EXTERIOR (TYPE D)	15	510		X		937	16			5
1	20/1	RECEPT – BAY 1	17	360			X	937	18			5
1	20/1	RECEPT – BAY 2	19	360	X			937	20	PWR – BLAST DOOR (2 HP)	20/3	5
1	20/1	RECEPT – BAY 3	21	360		X		937	22			5
1	20/1	RECEPT – BAY 4	23	360			X	937	24			5
1	20/1	RECEPT – BAY 5	25	360	X			937	26	PWR – BLAST DOOR (2 HP)	20/3	5
	20/1	SPARE	27	–		X		937	28			5
	20/1	SPARE	29	–			X	937	30			5
	20/1	SPARE	31	–	X			360	32	EQPT – IT CABINET	20/1	0
	20/1	SPARE	33	–		X		180	34	IDS SYSTEM PANEL	20/1	0
	20/1	SPARE	35	–			X	–	36	SPARE	20/1	
	20/1	SPARE	37	–	X			–	38			
	20/1	SPARE	39	–		X		–	40	SPD	30/3	
	20/1	SPARE	41	–			X	–	42			

	EQPT VA	RCPT VA	LTG VA	AC/HEAT VA	MOTORS	CONN VA	FTL VA	PANEL VA	PHASE AMP
PHASE A	360	1080	2164	0	4683	8287		9999	83
PHASE B	180	720	1430	0	4683	7013		8542	71
PHASE C	180	1080	920	0	4683	6863		8264	69
TOTAL	720	2880	4514	0	14050	22164		26805	

PANEL DEMAND KVA: 26.81 | PANEL DEMAND AMPACITY: 74 AMPS
RESERVE KVA: 5.36 | RESERVE AMPACITY: 11 AMPS
DESIGN KVA: 32.17 | DESIGN AMPACITY: 86 AMPS

PANEL 'DP1' (ALTERNATE)

LOCATION: MECHANICAL ROOM | VOLTAGE: 480/277 V | KAIC: 14 | BUSSING SHALL BE FULLY RATED
MOUNTING: SURFACE | PHASE: 3 P/ 4W | CODES: 0=EQPT, 1=RCPT, 2=LTG, 3=A/C, 4=HEAT
ENCLOSURE: NEMA 1 SYTLE: NF | BUSSING: 100 A | 5=CONTINUOUS MOTORS, 6=LRGST MOTOR, 7=PANEL
BRKR MTG: BOLT-ON (REF: SQUARE D) | MCB: 100 A | ACCESSORIES: GROUND BUS, 42 SPACE
BREAKERS: 75 DEGREE TERMINALS | MLO: A

CODE	BRKR	CIRCUIT USE	CKT	LOAD	A	B	C	LOAD	CKT	CIRCUIT USE	BRKR	CODE
2	20/1	LTG – MAIN MAGAZINE	1	920	X			942	2	PWR – BLAST DOOR (2 HP)	20/3	5
2	20/1	LTG – MAIN MAGAZINE	3	920		X		942	4			5
2	20/1	LTG – MECH ROOM	5	150			X	942	6			5
	20/1	SPARE	7	–	X			942	8	PWR – BLAST DOOR (2 HP)	20/3	5
	20/1	SPARE	9	–		X		942	10			5
0	20/1	LTG – LIGHTING CONTACTOR COIL	11	180			X	942	12			5
2	20/1	LTG – EXTERIOR (TYPE C)	13	324	X			942	14	PWR – BLAST DOOR (2 HP)	20/3	5
2	20/1	LTG – EXTERIOR (TYPE D)	15	510		X		942	16			5
	20/1	SPARE	17	–			X	942	18			5
	20/1	SPARE	19	–	X			–	20	SPARE	20/1	
	20/1	SPARE	21	–		X		–	22	SPARE	20/1	
	20/1	SPARE	23	–			X	–	24	SPARE	20/1	
	20/1	SPARE	25	–	X			–	26	SPARE	20/1	
	20/1	SPARE	27	–		X		–	28	SPARE	20/1	
	20/1	SPARE	29	–			X	–	30	SPARE	20/1	
		SPACE	31	–	X			–	32	SPACE		
		SPACE	33	–		X		–	34	SPACE		
		SPACE	35	–			X	–	36	SPACE		
7			37	720	X			–	38			
7	25/3	PANEL 'LP' VIA XFMR 'TLP'	39	540		X		–	40	SPD	30/3	
7			41	720			X	–	42			

	EQPT VA	RCPT VA	LTG VA	AC/HEAT VA	MOTORS	CONN VA	FTL VA	PANEL VA	PHASE AMP
PHASE A	0	720	1244	0	2827	4791		5808	21
PHASE B	180	360	1430	0	2827	4797		5861	21
PHASE C	540	360	150	0	2827	3877		4621	17
TOTAL	720	1440	2824	0	8480	13464		16290	

PANEL DEMAND KVA: 16.29 | PANEL DEMAND AMPACITY: 20 AMPS
RESERVE KVA: 3.26 | RESERVE AMPACITY: 3 AMPS
DESIGN KVA: 19.55 | DESIGN AMPACITY: 23 AMPS

PANEL 'DP2' (ALTERNATE)

LOCATION: MECHANICAL ROOM | VOLTAGE: 480/277 V | KAIC: 14 | BUSSING SHALL BE FULLY RATED
MOUNTING: SURFACE | PHASE: 3 P/ 4W | CODES: 0=EQPT, 1=RCPT, 2=LTG, 3=A/C, 4=HEAT
ENCLOSURE: NEMA 1 SYTLE: NF | BUSSING: 100 A | 5=CONTINUOUS MOTORS, 6=LRGST MOTOR, 7=PANEL
BRKR MTG: BOLT-ON (REF: SQUARE D) | MCB: 100 A | ACCESSORIES: GROUND BUS, 42 SPACE
BREAKERS: 75 DEGREE TERMINALS | MLO: A

CODE	BRKR	CIRCUIT USE	CKT	LOAD	A	B	C	LOAD	CKT	CIRCUIT USE	BRKR	CODE
2	20/1	LTG – MECH ROOM	1	300	X			942	2	PWR – BLAST DOOR (2 HP)	20/3	5
2	20/1	LTG – MAIN MAGAZINE	3	920		X		942	4			5
2	20/1	LTG – MAIN MAGAZINE	5	920			X	942	6			5
	20/1	SPARE	7	–	X			942	8	PWR – BLAST DOOR (2 HP)	20/3	5
	20/1	SPARE	9	–		X		942	10			5
	20/1	SPARE	11	–			X	942	12			5
	20/1	SPARE	13	–	X			–	14	SPARE	20/1	
	20/1	SPARE	15	–		X		–	16	SPARE	20/1	
	20/1	SPARE	17	–			X	–	18	SPARE	20/1	
	20/1	SPARE	19	–	X			–	20	SPARE	20/1	
	20/1	SPARE	21	–		X		–	22	SPARE	20/1	
	20/1	SPARE	23	–			X	–	24	SPARE	20/1	
	20/1	SPARE	25	–	X			–	26	SPARE	20/1	
	20/1	SPARE	27	–		X		–	28	SPARE	20/1	
	20/1	SPARE	29	–			X	–	30	SPARE	20/1	
		SPACE	31	–	X			–	32	SPACE		
		SPACE	33	–		X		–	34	SPACE		
		SPACE	35	–			X	–	36	SPACE		
7			37	360	X			–	38			
7	25/3	PANEL 'LP2' VIA XFMR 'TLP2'	39	360		X		–	40	SPD	30/3	
7			41	360			X	–	42			

	EQPT VA	RCPT VA	LTG VA	AC/HEAT VA	MOTORS	CONN VA	FTL VA	PANEL VA	PHASE AMP
PHASE A	0	360	300	0	1884	2544		3091	11
PHASE B	0	360	920	0	1884	3164		3866	14
PHASE C	0	360	920	0	1884	3164		3866	14
TOTAL	0	1080	2140	0	5653	8873		10822	

PANEL DEMAND KVA: 10.82 | PANEL DEMAND AMPACITY: 13 AMPS
RESERVE KVA: 2.16 | RESERVE AMPACITY: 2 AMPS
DESIGN KVA: 12.99 | DESIGN AMPACITY: 15 AMPS

PANEL 'LP1' (ALTERNATE)

LOCATION: MECHANICAL ROOM | VOLTAGE: 208/120 V | KAIC: 10 | BUSSING SHALL BE FULLY RATED
MOUNTING: SURFACE | PHASE: 3 P/ 4W | CODES: 0=EQPT, 1=RCPT, 2=LTG, 3=A/C, 4=HEAT
ENCLOSURE: NEMA 1 STYLE: NQOD | BUSSING: 100 A | 5=CONTINUOUS MOTORS, 6=LRGST MOTOR, 7=PANEL
BRKR MTG: BOLT-ON (REF: SQUARE D) | MCB: 60 A | ACCESSORIES: GROUND BUS, 42 SPACE
BREAKERS: 75 DEGREE TERMINALS | MLO: A

CODE	BRKR	CIRCUIT USE	CKT	LOAD	A	B	C	LOAD	CKT	CIRCUIT USE	BRKR	CODE
1	20/1	RECEPT – BAY 1	1	360	X				2	SPARE	20/1	
1	20/1	RECEPT – BAY 2	3	360		X			4	SPARE	20/1	
1	20/1	RECEPT – BAY 3	5	360			X		6	SPARE	20/1	
1	20/1	RECEPT – MECH ROOM	7	360	X				8	SPARE	20/1	
0	20/1	IDS SYSTEM PANEL	9	180		X			10	SPARE	20/1	
0	20/1	EQPT – IT CABINET	11	360			X		12	SPARE	20/1	
	20/1	SPARE	13		X				14	SPARE	20/1	
	20/1	SPARE	15			X			16	SPARE	20/1	
	20/1	SPARE	17				X		18	SPARE	20/1	
	20/1	SPARE	19		X				20	SPARE	20/1	
	20/1	SPARE	21			X			22	SPARE	20/1	
	20/1	SPARE	23				X		24	SPARE	20/1	
	20/1	SPARE	25		X				26	SPARE	20/1	
	20/1	SPARE	27			X			28	SPARE	20/1	
	20/1	SPARE	29				X		30	SPARE	20/1	
		SPACE	31		X				32	SPACE		
		SPACE	33			X			34	SPACE		
		SPACE	35				X		36	SPACE		
		SPACE	37		X				38	SPACE		
		SPACE	39			X			40	SPD	30/3	
		SPACE	41				X		42			

	EQPT VA	RCPT VA	LTG VA	AC/HEAT VA	MOTORS	CONN VA	FTL VA	PANEL VA	PHASE AMP
PHASE A	0	720	0	0	0	720		720	6
PHASE B	180	360	0	0	0	540		540	5
PHASE C	360	360	0	0	0	720		720	6
TOTAL	540	1440	0	0	0	1980		1980	

PANEL DEMAND KVA: 1.98 | PANEL DEMAND AMPACITY: 5 AMPS
RESERVE KVA: 0.40 | RESERVE AMPACITY: 1 AMPS
DESIGN KVA: 2.38 | DESIGN AMPACITY: 6 AMPS

PANEL 'LP2' (ALTERNATE)

LOCATION: MECHANICAL ROOM | VOLTAGE: 208/120 V | KAIC: 10 | BUSSING SHALL BE FULLY RATED
MOUNTING: SURFACE | PHASE: 3 P/ 4W | CODES: 0=EQPT, 1=RCPT, 2=LTG, 3=A/C, 4=HEAT
ENCLOSURE: NEMA 1 STYLE: NQOD | BUSSING: 100 A | 5=CONTINUOUS MOTORS, 6=LRGST MOTOR, 7=PANEL
BRKR MTG: BOLT-ON (REF: SQUARE D) | MCB: 60 A | ACCESSORIES: GROUND BUS, 42 SPACE
BREAKERS: 75 DEGREE TERMINALS | MLO: A

CODE	BRKR	CIRCUIT USE	CKT	LOAD	A	B	C	LOAD	CKT	CIRCUIT USE	BRKR	CODE
1	20/1	RECEPT – BAY 4	1	360	X				2	SPARE	20/1	
1	20/1	RECEPT – BAY 5	3	360		X			4	SPARE	20/1	
1	20/1	RECEPT – MECH ROOM	5	360			X		6	SPARE	20/1	
	20/1	SPARE	7		X				8	SPARE	20/1	
	20/1	SPARE	9			X			10	SPARE	20/1	
	20/1	SPARE	11				X		12	SPARE	20/1	
	20/1	SPARE	13		X				14	SPARE	20/1	
	20/1	SPARE	15			X			16	SPARE	20/1	
	20/1	SPARE	17				X		18	SPARE	20/1	
	20/1	SPARE	19		X				20	SPARE	20/1	
	20/1	SPARE	21			X			22	SPARE	20/1	
	20/1	SPARE	23				X		24	SPARE	20/1	
	20/1	SPARE	25		X				26	SPARE	20/1	
	20/1	SPARE	27			X			28	SPARE	20/1	
	20/1	SPARE	29				X		30	SPARE	20/1	
		SPACE	31		X				32	SPACE		
		SPACE	33			X			34	SPACE		
		SPACE	35				X		36	SPACE		
		SPACE	37		X				38	SPACE		
		SPACE	39			X			40	SPD	30/3	
		SPACE	41				X		42			

	EQPT VA	RCPT VA	LTG VA	AC/HEAT VA	MOTORS	CONN VA	FTL VA	PANEL VA	PHASE AMP
PHASE A	0	360	0	0	0	360		360	3
PHASE B	0	360	0	0	0	360		360	3
PHASE C	0	360	0	0	0	360		360	3
TOTAL	0	1080	0	0	0	1080		1080	

PANEL DEMAND KVA: 1.08 | PANEL DEMAND AMPACITY: 3 AMPS
RESERVE KVA: 0.22 | RESERVE AMPACITY: 0 AMPS
DESIGN KVA: 1.30 | DESIGN AMPACITY: 3 AMPS

APPR'D
DATE
DESCRIPTION
SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES KL | DRW FO | CHK PKD
PM/OM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

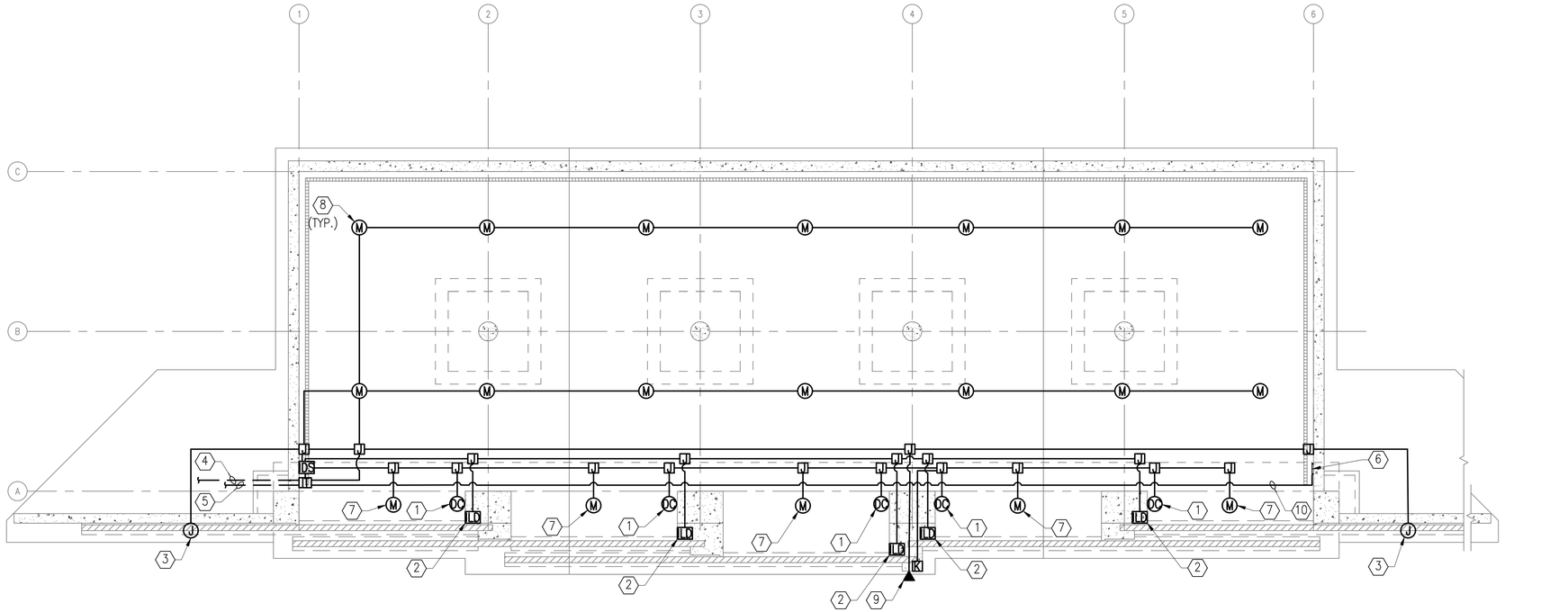
ELECTRICAL SCHEDULES

SCALE: AS NOTED
EPROJECT NO.: 1702805
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 14138856
SHEET 80 OF 85

E-604

DRAWFORM REVISION: 25 AUGUST 2020

FILE NAME: C:\Users\kvonus.c.ulrichs\OneDrive - US Navy-flonkspeed\Projects\Update Std Mags\BOX TYPE G AND H\Type H Box ECM Standard Drawings Working Set\E-604.dwg LAYOUT NAME: E-604 - ELECTRICAL SCHEDULES PLOTTED: Wednesday, October 09, 2024 - 11:56am USER: kvonus.c.ulrichs



A1 TELECOMMUNICATION FLOOR PLAN
SCALE: 3/32" = 1'-0"

0 8' 16' 32'

LEGEND

DC	HIGH SECURITY BMS DOOR CONTACT
IK	KEYPAD
M	MOTION DETECTOR, CEILING MOUNTED
M	MOTION DETECTOR, WALL MOUNTED
J	RECESSED JUNCTION BOX
J	SURFACE JUNCTION BOX
IDS	IDS CONTROLLER
IT	IT CABINET
ILD	INTERNAL LOCKING DEVICE

SHEET NOTES

1. ALL CONDUIT MUST BE RIGID GALVANIZED STEEL CONDUIT UNLESS INDICATED OTHERWISE.
2. EXPOSED CONDUITS ON EXTERIOR WALLS MUST BE PROHIBITED.
3. PROPOSED IDS VENDOR TO PERFORM COVERAGE CALCULATIONS, INCLUDING OBSTRUCTIONS, TO VERIFY QUANTITY AND LOCATION OF MOTION DETECTORS. FINAL LOCATIONS AND QUANTITIES OF MOTION DETECTORS TO BE INSTALLED PER IDS VENDOR SHOP DRAWINGS.
4. ALL CONDUITS WILL BE MINIMUM 1"C UNLESS NOTED OTHERWISE. REFER TO T-601 FOR CONDUIT SIZES.
5. CONDUITS WILL BE EXPOSED INSIDE THE MAGAZINE UNLESS INDICATED OTHERWISE. LOCATE CONDUITS AS HIGH AS POSSIBLE AND COORDINATE ROUTING WITH OTHER TRADES. JUNCTION BOXES WILL BE SURFACE MOUNTED.

KEYED NOTES

1. DOOR CONTACT FOR ECM DOOR. COORDINATE WITH DOOR MANUFACTURER FOR EXACT LOCATION AND ROUGH-IN REQUIREMENTS. COORDINATE WITH THE CONTRACTING OFFICER FOR THE CONNECTION OF THE BALANCED MAGNETIC SWITCH (BMS) ON THE DOOR.
2. ILD BOLTWORKS SLEEVE IN PILASTER. PROVIDE EMPTY 1" CONDUIT TO IDS PULLBOX FOR WIRING BY GOVERNMENT.
3. RECESSED ROUGH-IN FOR FUTURE CCTV CAMERA. HOMERUN TO IT CABINET. MOUNT 12" ABOVE TOP OF SLIDING MAGAZINE DOOR.
4. EXTEND TWO 1-1/2" CONDUITS TO SITE POLE, LOCATION TO BE DETERMINED THROUGH COORDINATION WITH BASE SSO AND COMM SQUADRON, FOR PoE IP CAMERA AND PoE WIRELESS ACCESS POINT. POLE LOCATION AND CONDUIT ROUTE WILL BE LIMITED BY MAXIMUM CABLE LENGTH OF 295' FROM PATCH PANEL TO DEVICE. REFER TO DETAIL B1/T-501 AND A1/T601. CONDUIT WILL EXIT THE MAGAZINE THROUGH THE SIDE WALL, PENETRATION OF THE FOUNDATION IS NOT PERMITTED.
5. EXTEND TWO 4" CONDUITS TO NEAREST TELECOMM MANHOLE. CONDUITS WILL EXIT THE MAGAZINE THROUGH THE SIDE WALL, PENETRATION OF THE FOUNDATION IS NOT PERMITTED.
6. SINGLE POINT GROUND BAR. REFER TO E-101.
7. MOTION DETECTOR WILL BE INSTALLED 3' FROM THE INSIDE FACE OF THE MAGAZINE DOOR.
8. MOTION DETECTORS WILL BE EVENLY SPACED FOR COVERAGE OF THE ENTIRE INTERIOR SPACE.
9. EXTERIOR EMERGENCY PHONE. REFER TO B3/T-501.
10. TELECOMMUNICATIONS BONDING BACKBONE CONDUCTOR IN CONDUIT.

ABBREVIATIONS

BMS	BALANCED MAGNETIC SWITCH
CCTV	CLOSED-CIRCUIT TELEVISION
IDS	INTRUSION DETECTION SYSTEM
ILD	INTERNAL LOCKING DEVICE
IT	INFORMATION TECHNOLOGY
PIR	PASSIVE INFRARED SENSOR
POE	POWER OVER ETHERNET
RGC	RIGID GALVANIZED STEEL CONDUIT
WAP	WIRELESS ACCESS POINT

NO.	DESCRIPTION	DATE	APPR.

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES. DS	DRW GC	CHK KD
PM/DM		---
BRANCH MANAGER		---
CHIEF ENG/ARCH		---
FIRE PROTECTION		---

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

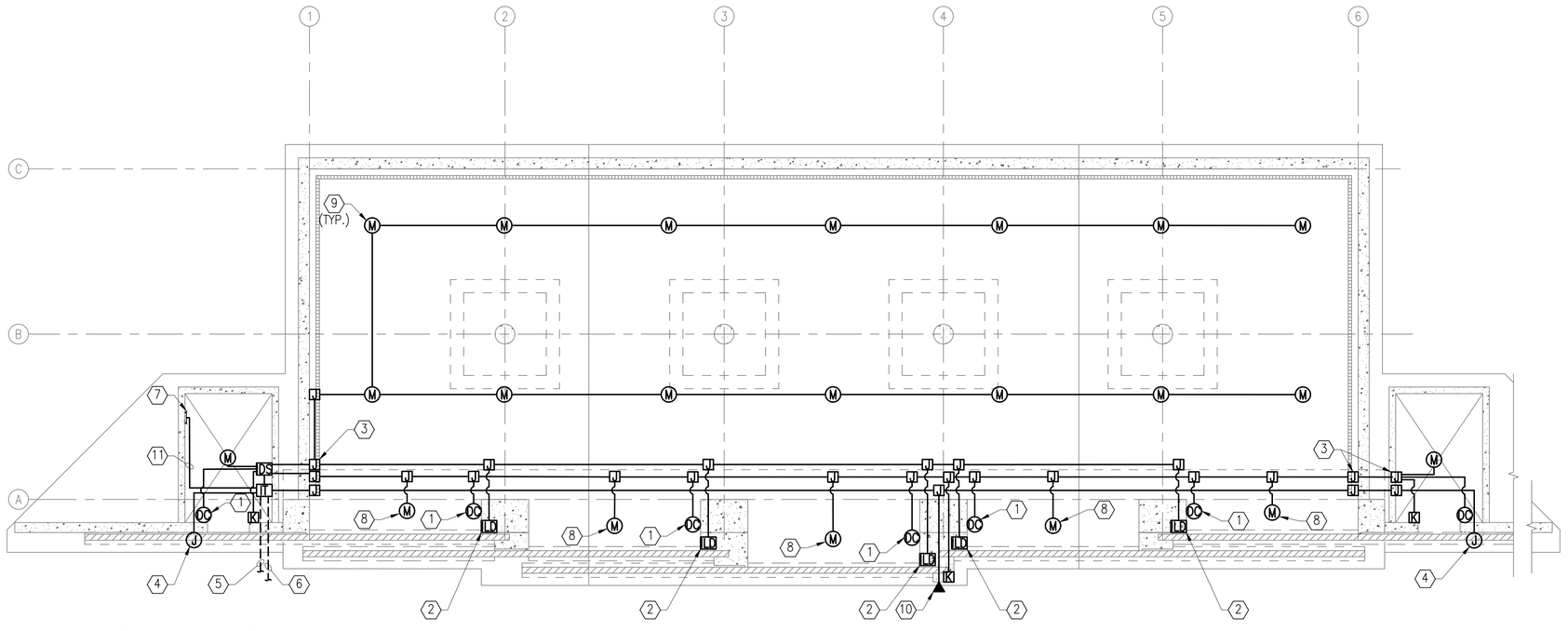
TELECOMMUNICATION FLOOR PLAN

SCALE:	AS NOTED
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138857
SHEET	81 OF 85

T-101

DRAWFORM REVISION: 25 AUGUST 2020

FILE NAME: C:\Users\kanus.c.ulrichs\OneDrive - US Navy-flankspeed\Projects\Update Std Mags\BOX TYPE G AND H\Type H Box ECM Standard Drawings Working Set\T-101.dwg LAYOUT NAME: T-101 - TELECOMMUNICATION FLOOR PLAN PLOTTED: Wednesday, October 09, 2024 - 11:56am USER: kanus.c.ulrichs



A1 TELECOMMUNICATION FLOOR PLAN - ALTERNATE

SCALE: 3/32" = 1'-0"

0 8' 16' 32'

SHEET NOTES

1. ALL CONDUIT MUST BE RIGID GALVANIZED STEEL CONDUIT UNLESS INDICATED OTHERWISE.
2. EXPOSED CONDUITS ON EXTERIOR WALLS MUST BE PROHIBITED.
3. ECM AND MECHANICAL ROOM WILL BE SEPARATE IDS ZONES. PROVIDE DEVICES, CONTROLLERS, AND PROGRAMMING, AS REQUIRED.
4. PROPOSED IDS VENDOR TO PERFORM COVERAGE CALCULATIONS, INCLUDING OBSTRUCTIONS, TO VERIFY QUANTITY AND LOCATION OF MOTION DETECTORS IN THE ECM AND MECHANICAL ROOM. FINAL LOCATIONS AND QUANTITIES OF MOTION DETECTORS TO BE INSTALLED PER IDS VENDOR SHOP DRAWINGS.
5. ALL CONDUITS WILL BE MINIMUM 1"C UNLESS NOTED OTHERWISE. REFER TO T601A FOR CONDUIT SIZES.
6. CONDUITS WILL BE EXPOSED INSIDE THE MAGAZINE AND MECHANICAL ROOM UNLESS INDICATED OTHERWISE. LOCATE CONDUITS AS HIGH AS POSSIBLE AND COORDINATE ROUTING WITH OTHER TRADES. JUNCTION BOXES WILL BE SURFACE MOUNTED.

⬡ KEYED NOTES

1. DOOR CONTACT FOR ECM DOOR. COORDINATE WITH DOOR MANUFACTURER FOR EXACT LOCATION AND ROUGH-IN REQUIREMENTS. COORDINATE WITH THE CONTRACTING OFFICER FOR THE CONNECTION OF THE BALANCED MAGNETIC SWITCH (BMS) ON THE DOOR.
2. ILD BOLTWORKS SLEEVE IN PILASTER. PROVIDE EMPTY 1" CONDUIT TO IDS PULLBOX FOR WIRING BY GOVERNMENT.
3. SURFACE MOUNTED JUNCTION BOX. REFER TO TELECOMMUNICATIONS AND SECURITY RISER ON T601A.
4. RECESSED ROUGH-IN FOR FUTURE CCTV CAMERA. HOMERUN TO IT CABINET. MOUNT 12" ABOVE TOP OF SLIDING MAGAZINE DOOR.
5. EXTEND TWO 1-1/2" CONDUITS TO SITE POLE, LOCATION TO BE DETERMINED THROUGH COORDINATION WITH BASE SSO AND COMM SQUADRON, FOR PoE IP CAMERA AND PoE WIRELESS ACCESS POINT. POLE LOCATION AND CONDUIT ROUTE WILL BE LIMITED BY MAXIMUM CABLE LENGTH OF 295' FROM PATCH PANEL TO DEVICE. REFER TO DETAIL B1/T-501 AND A1/T601A. CONDUIT WILL EXIT THE MAGAZINE THROUGH THE SIDE WALL, PENETRATION OF THE FOUNDATION IS NOT PERMITTED.
6. EXTEND TWO 4" CONDUITS TO NEAREST TELECOMM MANHOLE. CONDUITS WILL EXIT THE MAGAZINE THROUGH THE SIDE WALL, PENETRATION OF THE FOUNDATION IS NOT PERMITTED.
7. SINGLE POINT GROUND BAR. REFER TO E101A.
8. MOTION DETECTOR WILL BE INSTALLED 3' FROM THE INSIDE FACE OF THE MAGAZINE DOOR.
9. MOTION DETECTORS WILL BE EVENLY SPACED FOR COVERAGE OF THE ENTIRE INTERIOR SPACE.
10. EXTERIOR EMERGENCY PHONE. REFER TO B3/T-501.
11. TELECOMMUNICATIONS BONDING BACKBONE CONDUCTOR IN CONDUIT.

NO.	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DS	DRW	GC	CHK	KD

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

TELECOMMUNICATION FLOOR PLAN - ALTERNATE

SCALE: AS NOTED

EPROJECT NO.: 1702805

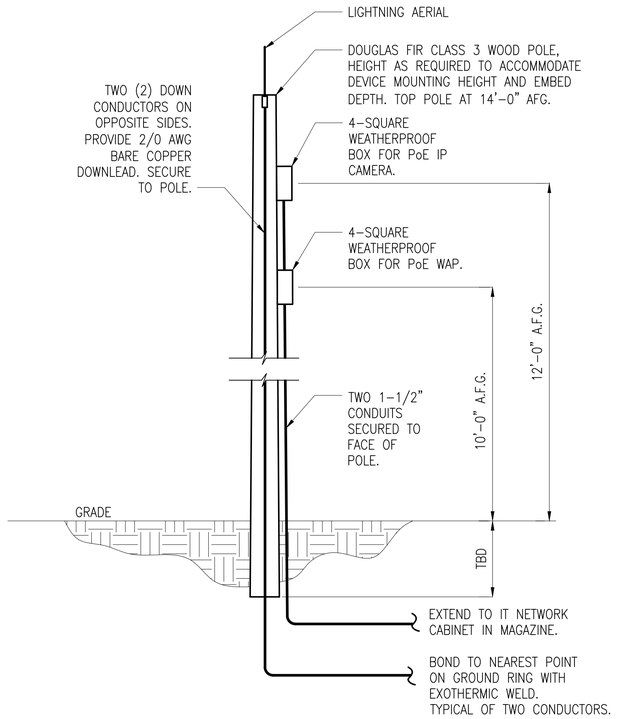
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
14138858

SHEET 82 OF 85

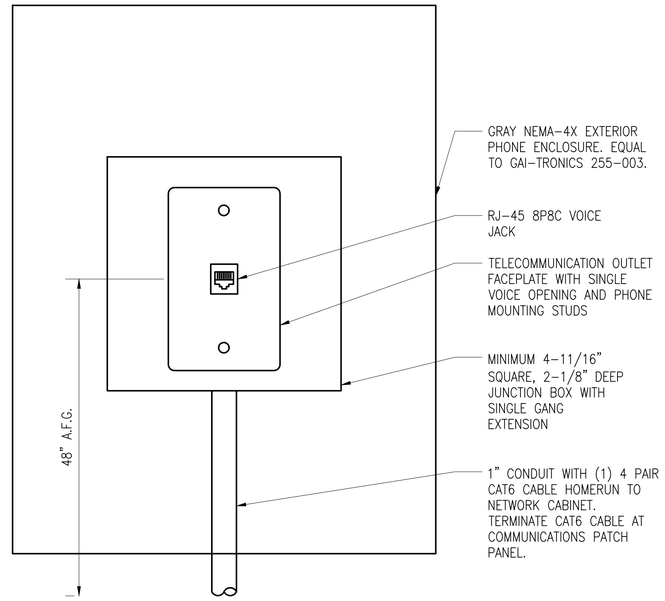
T101A

DRAWFORM REVISION: 25 AUGUST 2020



B1 POLE FOR SITE CAMERA AND WAP

SCALE: NO SCALE



B3 VOICE WALL OUTLET

SCALE: NO SCALE

SYMBOL: ▼

APPR	DATE	SYM	DESCRIPTION

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DS	DRW	GC	CHK	KD

PM/DM	-.-
BRANCH MANAGER	-.-
CHIEF ENG/ARCH	-.-
FIRE PROTECTION	-.-

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

TELECOMMUNICATION DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

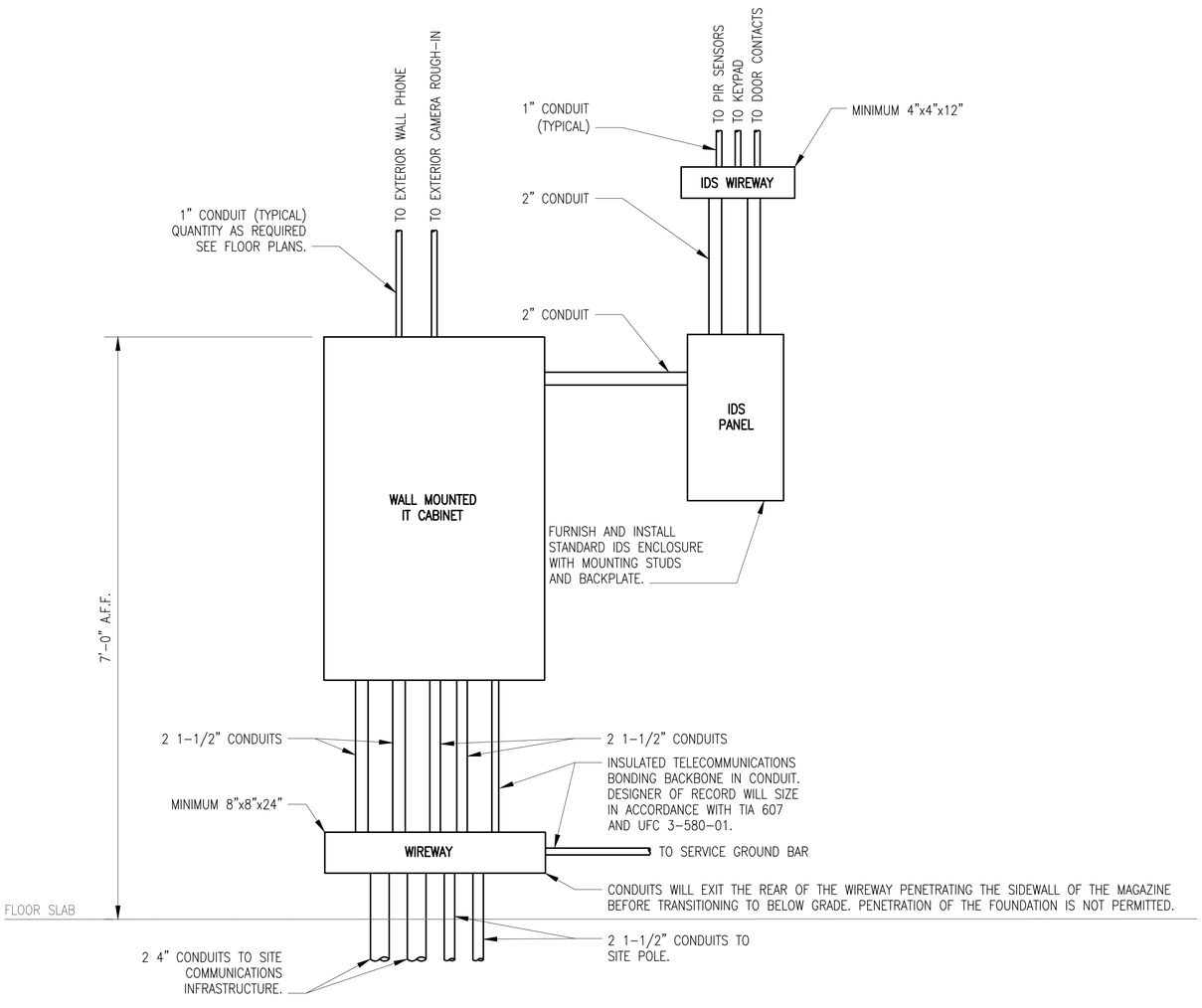
NAVFAC DRAWING NO.
14138859

SHEET 83 OF 85

T-501

DRAWFORM REVISION: 25 AUGUST 2020

ECM



A1 TELECOMMUNICATION AND SECURITY RISER

SCALE: NO SCALE

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DS	DRW	GC	CHK	KD

PM/OM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
FIRE PROTECTION	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

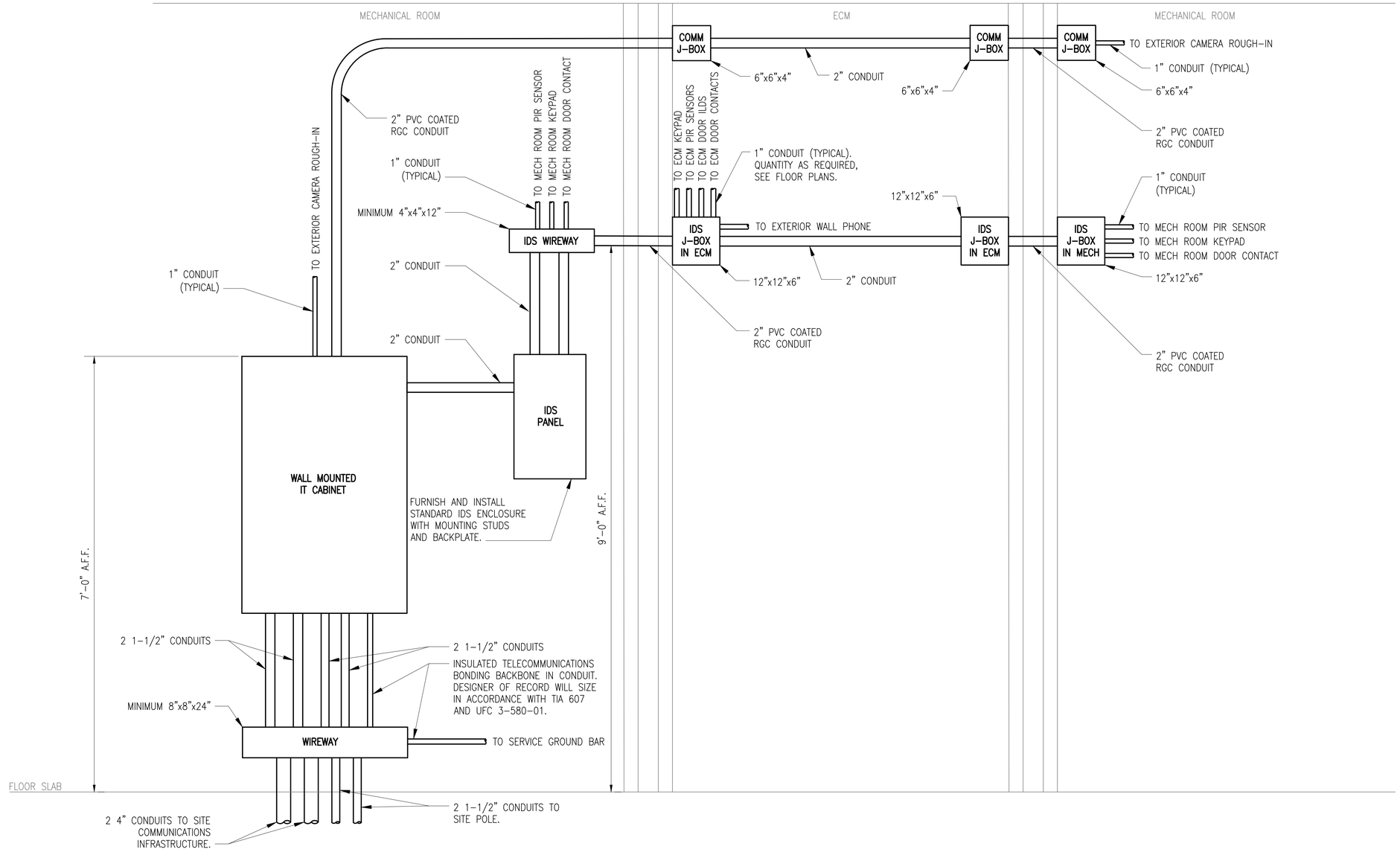
TYPE H BOX MAGAZINE

TELECOMMUNICATION AND SECURITY RISER

SCALE:	AS NOTED
EPROJECT NO.:	1702805
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	14138860
SHEET	84 OF 85

T-601

DRAWFORM REVISION: 25 AUGUST 2020



A1 TELECOMMUNICATION AND SECURITY RISER - ALTERNATE

SCALE: NO SCALE

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

A/E INFO

APPROVED 05/22/2024

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DS	DRW	GC	CHK	KD

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND- ATLANTIC
HAMPTON ROADS, VIRGINIA

TYPE H BOX MAGAZINE

TELECOMMUNICATION AND SECURITY RISER-ALTERNATE

SCALE: AS NOTED

EPROJECT NO.: 1702805

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 14138861

SHEET 85 OF 85

T601A

DRAWFORM REVISION: 25 AUGUST 2020