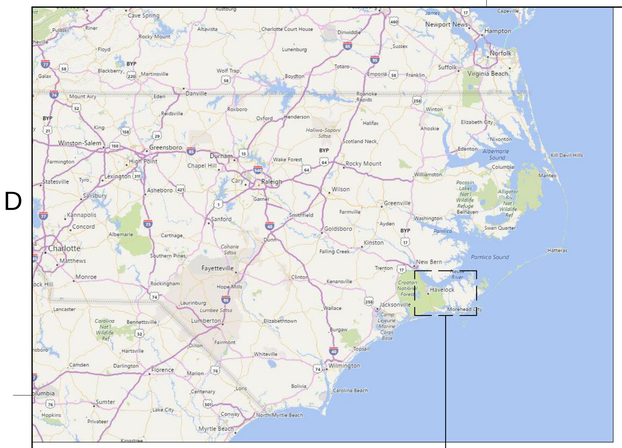
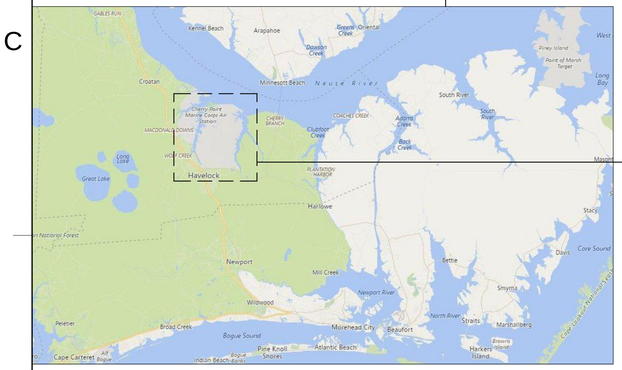
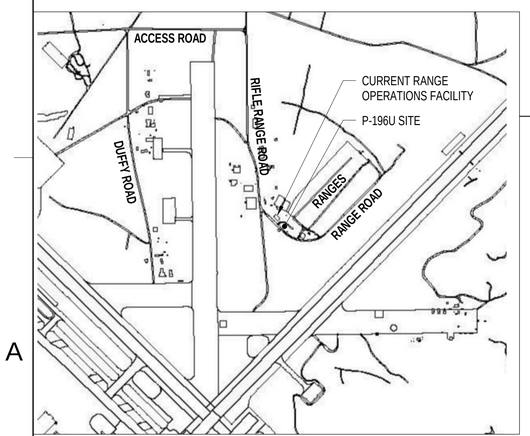
P-196U
CONSTRUCT RANGE OPERATIONS FACILITY
MARINE CORPS AIR STATION CHERRY POINT



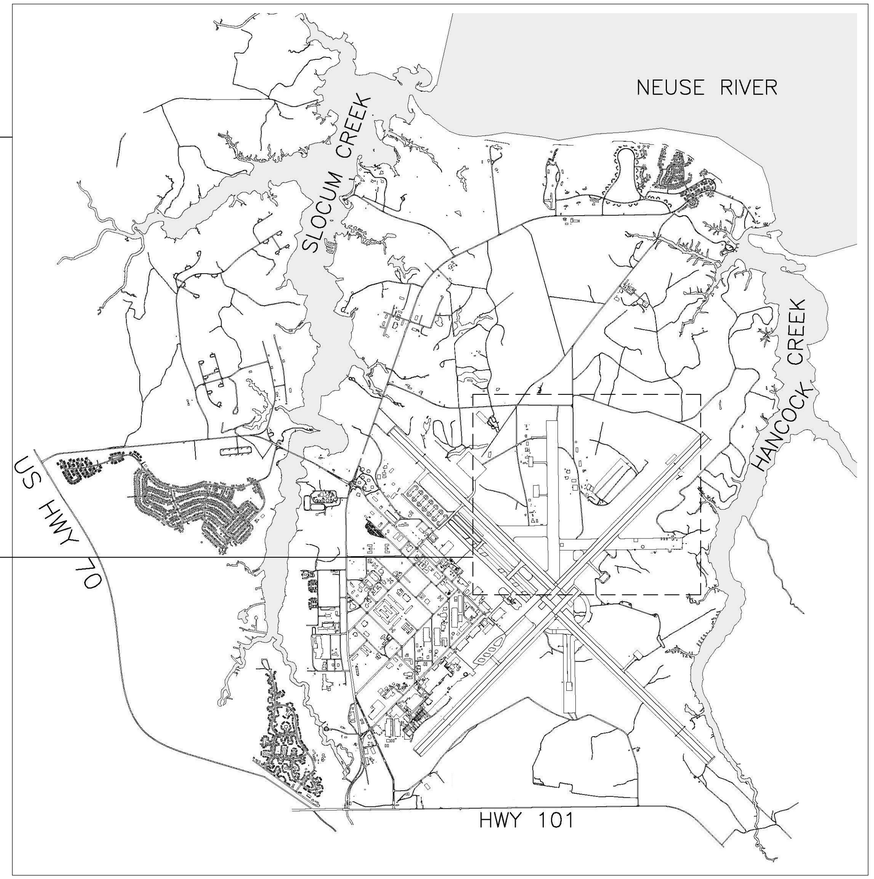
D1 REGIONAL MAP
SCALE: NOT TO SCALE



B1 VICINITY MAP
SCALE: NOT TO SCALE



A1 BUILDING LOCATION MAP
SCALE: 1" = 1/4 STATUTE MILE



A3 MCAS CHERRY POINT INSTALLATION MAP
SCALE: 1" = 1/2 STATUTE MILE

GRAPHIC SCALE: 1"=1/4 STATUTE MILE
1/2 MI 0 1/4 MI 1/2 MI 3/4 MI 1 MI

GRAPHIC SCALE: 1"=1/2 STATUTE MILE
1 MI 0 1/2 MI 1 MI 1 1/2 MI 2 MI

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MIDATLANTIC
IPT MARINE
MARINE CORPS AIR STATION
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
TITLE SHEET

MBF ARCHITECTS, P.A. REGISTERED ARCHITECTURAL CORPORATION CERT. NO. 50679 NORTH CAROLINA NEW BERN NC.

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883055
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G-001

DRAWFORM REVISION: 10 MARCH 2009

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P-196U CONSTRUCT RANGE OPERATIONS FACILITY
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EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883056
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APPLICABLE BUILDING CODES

1.	IBC	INTERNATIONAL BUILDING CODE 2021
2.	UFC 1-200-01	GENERAL BUILDING REQUIREMENTS, 1 SEPTEMBER 2022
3.	UFC 3-600-01	DESIGN: FIRE PROTECTION ENGINEERING FOR FACILITIES, 6 MAY 2021
4.	UFC 4-021-01	DESIGN AND O&M: MASS NOTIFICATION SYSTEMS, JANUARY 2010
5.	NFPA 10	PORTABLE FIRE EXTINGUISHERS 2021
6.	NFPA 13	INSTALLATION OF SPRINKLER SYSTEMS 2022
7.	NFPA 30	FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE 2021
8.	NFPA 33	SPRAY APPLICATION USING FLAMMABLE OR COMBUSTIBLE MATERIALS 2021
9.	NFPA 70	NATIONAL ELECTRIC CODE 2020
10.	NFPA 72	NATIONAL FIRE ALARM AND SIGNALING CODE 2022
11.	NFPA 90A	INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEM 2021
12.	NFPA 101	LIFE SAFETY CODE (LSC) 2021
13.	NFPA 400	HAZARDOUS MATERIALS CODE 2022

USE GROUP/OCCUPANCY

F-1 FACTORY/INDUSTRIAL (IBC 306.1, LSC 6.1.12, 40.1.2.1.1) - ORDINARY HAZARD (LSC 40.1.5)
BUSINESS GROUP B (IBC 304.1, LSC 6.1.11.1) - ORDINARY HAZARD (LSC 38.1.5 & 6.2.2.3)

PER IBC, THE BUILDING IS CLASSIFIED AS NONSEPARATED MIXED USE GROUP F-1 AND GROUP B OCCUPANCIES.

PER LSC, THE BUILDING IS CLASSIFIED AS MIXED USE INDUSTRIAL AND BUSINESS OCCUPANCIES.

FIRE PROTECTION SYSTEMS

WET PIPE SPRINKLER SYSTEMS
EMERGENCY VOICE/MASS NOTIFICATION FIRE ALARM SYSTEM.

CONSTRUCTION TYPE

TYPE II-B

ALLOWABLE AREA & HEIGHT:

BASED ON SPRINKLERED GROUP F-1//B:

ALLOWABLE AREA (IBC TABLE 506.2):	62,000 SF // 92,000
ALLOWABLE STORIES (IBC TABLE 504.4):	3-STORY // 4-STORY
ALLOWABLE HEIGHT (IBC TBALE 504.3):	75-FT // 75-FT

ACTUAL AREA & HEIGHT:

TOTAL BUILDING FOOTPRINT AREA

BASE BID	6,745 SF
BID OPTION 1	9,804 SF
TOTAL BUILDING HEIGHT	1 STORY/23 FT

FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS

(IBC TABLE 601, TYPE II-B CONSTRUCTION)

PRIMARY STRUCTRUAL FRAME, INCL. COLUMNS, GIRDERS & TRUSSES	0 HR
PRIMARY STRUCTURAL FRAME SUPPORTING A ROOF ONLY	0 HR
BEARING WALLS, INTERIOR & EXTERIOR	0 HR
FLOOR CONSTRUCTION	0 HR
ROOF CONSTRUCTION (SECONDARY MEMBERS ONLY)	0 HR

EXTERIOR WALLS

EXTERIOR FIRE EXPOSURE BASED ON SEPARATION DISTANCE (TYPE II-B)

FIRE SEPARATION DISTANCE (FSD)	GROUP F-1	GROUP B
< 5 FT	2 - HOUR	1 - HOUR
> 5 FT AND < 10 FT	1 - HOUR	1 - HOUR
> 10 FT	0 - HOUR	0 - HOUR

THERE IS A DISTANCE OF AT LEAST 20-FT BETWEEN THE BUILDING AND ANY OTHER STRUCTURES ON ALL SIDES. THIS PROVIDES A FSD OF AT LEAST 10-FT FROM THE ADJACENT BUILDINGS TO AN IMAGIANRY LOT LINE AND AT LEAST 10-FT FROM THE IMAGINARY LOTE LINE TO THE BUILDING; THEREFORE, THERE IS NO FIRE RESISTANCE RATING REQUIRED ON THE EXTERIOR WALLS BASED ON THE FSD SINCE ALL ADJACENT STRUCTURES ARE TYPE II-B CONSTRUCTION.

INTERIOR FIRE RESISTANCE REQUIREMENTS

ROOM	REQUIRED SEPARATION
WOODSHOP	SMOKE PARTITION (LSC 38.3.2.1)

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INTERIOR FINISH CLASSIFICATION LIMITS

LIMITS (BASED ON INDUSTRIAL//BUSINESS OCCUPANCY WITH REDUCTION FOR SPRINKLERS)

EXIT (TABLE A10.2.2.)	MINIMUM CLASS C // C
EXIST ACCESS CORRIDORS (TABLE A10.2.2.)	MINIMUM CLASS C // C
OTHER SPACES (TABLE A10.2.2)	MINIMUM CLASS C // C
FLOOR FINISH	NO MINIMUM REQUIREMENT

OCCUPANT LOADS

OCCUPANT LOADS (LSC TABLE 7.3.1.2 & UFC 3-600-01 TABLE 10-1)

MANUFACTURING USE	200 SQ. FT/PERSON
BUSINESS USE	150 SQ. FT/PERSON
CLASSROOM	200 SQ.FT/PERSON
MEP USE	500 SQ.FT/PERSON

* THE OCCUPANT LOAD FOR THE SHOOTING LANE AREA OF THE ISMT IS BASED ON TWO SHOOTERS PER LANE AND ONE INSTRUCTOR PER TRAINING MODULE. TWO TRAINING MODULES WITH 5 LANES EACH IS PROVIDED.

AREA	USE	APPROX. AREA (SF)	OCCUPANT LOAD FACTOR (SF/PERSON)	OCCUPANT LOAD (PERSONS)
CLASSROOM 122	CLASSROOM	793	20	40
WOODSHOP AREA	MANUFACTURING	1,178	200	6
MECHANICAL 111	MEP	250	500	1
ELECTRICAL 112	MEP	113	500	1
REMAINING AREA	BUSINESS	4,411	150	30
AIR COMP 132 (BID OPTION)	MEP	116	500	1
ELECTRICAL 133 (BID OPTION)	MEP	90	500	1
MECHANICAL 131 (BID OPTION)	MEP	247	500	1
ISMT DOWN RANGE (BID OPTION)	MEP	680	500	2
ISMT LANES (BID OPTION)	*	*	*	22
REMAINING AREA (BID OPTION)	BUSINESS	766	150	6
	TOTAL (BASE BID)	6,745	-	**78**
	TOTAL (BID OPTION)	9,804	-	**111**

TRAVEL DISTANCE (LSC TABLE A.7.6)

COMMON PATH OF TRAVEL INDUSTRIAL//BUSINESS:	100 FT // 100 FT
TOTAL TRAVEL DISTANCE INDUSTRIAL//BUSINESS:	250 FT // 300 FT
DEAD END CORRIDOR INDUSTRIAL//BUSINESS:	50 FT // 50 FT

CAPACITY OF EXITS (LSC TABLE 7.3.3.1)

LEVEL COMPONENTS (WIDTH/PERSON)	0.2 IN/PERSON

NUMBER OF EXITS (LCS 7.4)

2 FOR OCCUPANT LOAD ≤ 500, 3 FOR OCCUPANT LOAD > 500 AND ≤ 1,000.

FLOOR LEVEL	REQUIRED EXIT CAPACITY	AVAILABLE EXIT CAPACITY	NUMBER OF EXITS REQUIRED	NUMBER OF EXITS PROVIDED
FIRST FLOOR BASE BID	78	2,040	2	12
FIRST FLOOR BID OPTION 1	110	3,230	2	17

ADDITIONAL LIFE SAFETY CRITERIA

ALL MEANS OF EGRESS ARE REQUIRED TO BE ILLUMINATED IN ACCORDANCE WITH LSC 7.8 (LSC 40.2.8).

EMERGENCY LIGHTING SYSTEMS MUST BE PROVIDED IN ACCORDANCE WITH LSC 7.9.2.1 & 7.9.2.2 (LSC 40.2.9.1).

MEANS OF EGRESS MUST BE PROVIDED WITH SIGNS IN ACCORDANCE WITH LSC 7.10 AND UFC 3-600-01 10-2 (LSC 40.2.10). SIGNS MUST HAVE LETTERING ON AN OPAQUE BACKGROUND. INTERNALLY ILLUMINATED SIGNS MUST BE LIGHT EMITTING DIODE (LED) TYPE, ELECTROLUMINESCENCE (LEC), OR COLD CATHODE TYPE. INCANDESCENT FIXTURES ARE NOT PERMITTED. RADIOLUMINOUS EXIT SIGNS ARE NOT PERMITTED (UFC 3-600-01 10-2.2).

FIRE EXTINGUISHERS MUST BE PROVIDED IN BUSINESS OCCUPANCIES AND LOCATED IN ACCORDANCE WITH NFPA 10 (LSC 38.3.5).

OTHER STRUCTURES IN PROJECT

MDAS SHELTER (BASE BID):
NO FIRE PROTECTION SYSTEMS ARE REQUIRED

TRAINING SHELTER (BID OPTION 2):
NO FIRE PROTECTION SYSTEMS ARE REQUIRED

LIFE SAFETY LEGEND

X = REQUIRED EGRESS CAPACITY (PERSONS)
Y = PROVIDED EGRESS CAPACITY (PERSONS)

XXXXX — ROOM AREA (SF)
XXXX — OCCUPANT FACTOR (SF/PERSON)
XXXX — NUMBER OF OCCUPANTS (PERSONS)

SMOKE PARTITION
TD = XXFT — TRAVEL PATH AND DISTANCE
CP = XXFT — COMMON PATH OF TRAVEL
DE = XXFT — DEAD END TRAVEL DISTANCE
K — KNOX BOX
FMCP — FIRE ALARM MASS NOTIFICATION CONTROL PANEL
FIRE EXTINGUISHER CABINET

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 041524 ENGINEER KARI E. CRANE 4/7/23
SEAL

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FIRE PROTECTION

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NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA
[PT MARINE]
MARINE CORPS AIR STATION CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
LIFE SAFETY NOTES AND LEGEND

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO.: 12883057
SHEET 3 OF 121
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SHEET NOTES:

1. OVERALL BUILDING AREA IS WITHIN IBC LIMIT WITHOUT FRONTAGE INCREASE.

KEY NOTES:

1. EXIT DISCHARGE PATH
2. WALL MOUNTED FIRE DEPARTMENT CONNECTION
3. FIRE HYDRANT
4. POST INDICATOR VALVE
5. INTENDED FIRE DEPARTMENT MAIN ENTRANCE TO FACILITY
6. FIRE DEPARTMENT ACCESS ROAD
7. KNOX BOX

LINE RD

MDAS STORAGE BASE BID

NEW COVERED TRAINING AREA
BID OPTION 002

NEW ISMT
BID OPTION 001

NEW RANGE OPERATIONS FACILITY
BASE BID

TRIGGER LOOP

SEPARATION DISTANCE
147'-1"

137'

EX. CONCRETE WALK

S RANGE RD

8" PVC

10" DI FW

UGC

FW

W

D

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CODE COMPLIANCE SITE PLAN
SCALE: 1" = 20'

GRAPHIC SCALE: 1" = 20'

NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 041524 ENGINEER KARI E. CRANE 4/7/23 SEAL

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NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION – NORFOLK, VA

MARINE CORPS AIR STATION
CHERRY POINT, NC

P196U CONSTRUCT RANGE OPERATIONS FACILITY

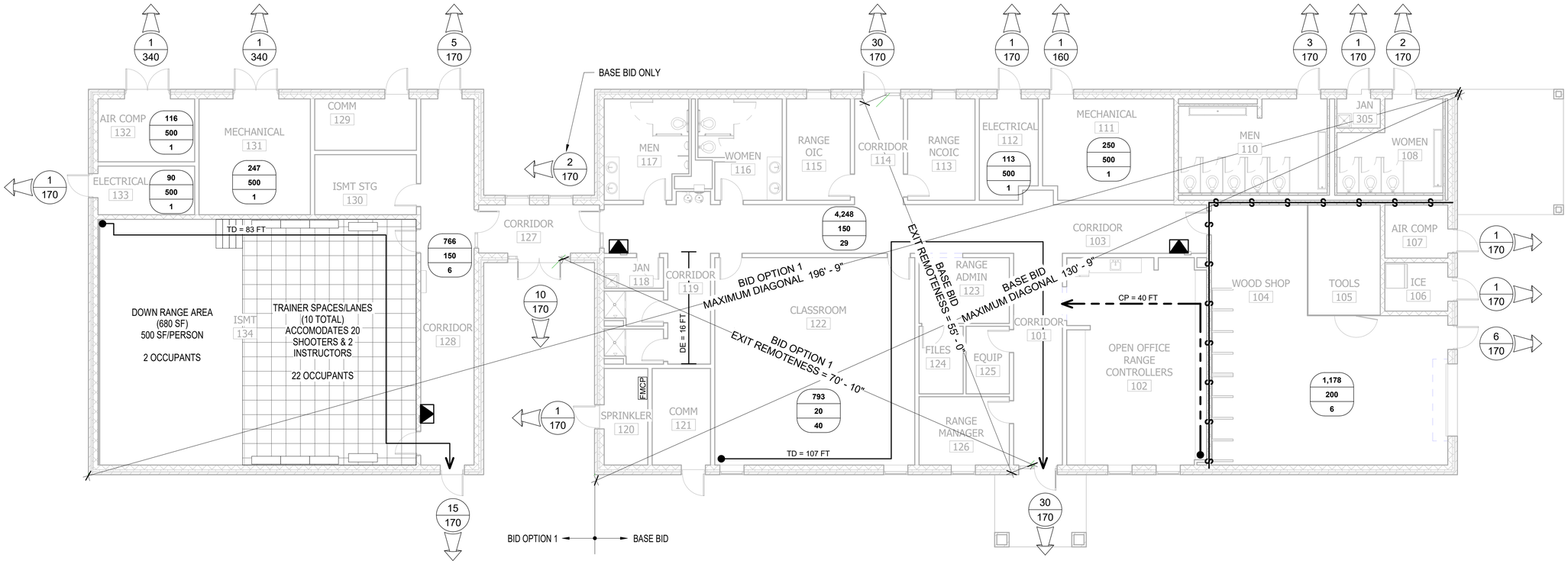
CODE COMPLIANCE SITE PLAN

SCALE: 1"=20'
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883058
SHEET 4 OF 121

GI002

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: Y:\shared\fps\legacy\virginiabeach_2022 projects\22042 1a\w22042 mbfa - p196u range ops facility\Revit - 2023\DWG\GI002.dwg LAYOUT NAME: GI002 PLOTTED: Thursday, March 30, 2023 - 8:59am



A1 LIFE SAFETY FLOOR PLAN

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

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

8' 0 4' 8' 16'

JENSEN HUGHES
Advancing the Science of Safety

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APPR | DATE | DESCRIPTION | SYM

NAVFAC

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APPROVED
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ACTIVITY
SATISFACTORY TO
DES KEC | DRW KEC | CHK AJW
PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
1PT MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
LIFE SAFETY FLOOR PLAN

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO.: 12883059
SHEET 5 OF 121
GI101
DRAWFORM REVISION: 10 MARCH 2009

GENERAL CONSTRUCTION NOTES:

1. CONSTRUCTION OPERATIONS SHALL BE COMPLETED IN COMPLIANCE WITH ALL STATE AND FEDERAL REGULATIONS AND AS SPECIFIED.
2. THE PLANS DEPICT THE GENERAL INTENT OF CONSTRUCTION. THE CONTRACTOR SHALL PROTECT ALL EXISTING FEATURES THAT ARE NOT SLATED FOR DEMOLITION. ANY ITEM DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO ITS ORIGINAL CONDITION OR REPLACED WITH NEW.
3. DIMENSIONS AND CONDITIONS SHOWN ARE APPROXIMATE AND ARE ACCURATE AS OF THE TIME OF SITE INSPECTION. THE CONTRACTOR SHALL CONFIRM TO HIS OWN SATISFACTION SITE CONDITIONS INCLUDING A VERIFICATION OF CONDITIONS SHOWN AND NOT SHOWN.
4. ADJACENT STRUCTURES AND UTILITIES MUST REMAIN IN OPERATION DURING CONSTRUCTION ACTIVITIES. EXISTING ROADS SHALL REMAIN OPEN AND ACCESSIBLE BY VEHICULAR AND PEDESTRIAN TRAFFIC. IF ROADWAY CLOSURE IS REQUIRED, APPROVAL SHALL BE SECURED FROM THE CONTRACTING OFFICER. THE CONTRACTOR SHALL PROVIDE BARRICADES, LIGHTS, SIGNAGE AND OTHER PROTECTIVE DEVICES IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
5. THE CONTRACTOR SHALL PROVIDE FENCING, BARRICADES OR OTHER PROTECTIVE DEVICES TO MAINTAIN A SECURED WORK AREA AT ALL TIMES.
6. PRIOR TO STARTING CONSTRUCTION ON ANY STRUCTURES OR UTILITIES, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS OF ANY STRUCTURES AND UTILITIES. THE CONTRACTOR SHALL DEVELOP A PLAN OF CONSTRUCTION THAT ENSURES ALL ACTIVITIES ARE COMPLETED IN A SAFE MANNER. PROVIDE ANY TEMPORARY SHORING, SHEETING OR SUPPORT REQUIRED TO COMPLETE WORK IN A SAFE MANNER.
7. COMPLETELY REMOVE ALL STRUCTURE AND UTILITIES INDICATED, BOTH ABOVE GROUND AND BELOW GROUND.
8. ALL EXCAVATIONS CREATED BY CONSTRUCTION ACTIVITIES SHALL BE BACKFILLED WITH COMMON FILL, SHALL BE GRADED TO CREATE POSITIVE DRAINAGE, AND SHALL BE VEGETATED IN ACCORDANCE WITH THE PROJECT VEGETATION PLAN. GRAVEL AND PAVED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.
9. ALL EROSION CONTROL FEATURES SHOWN SHALL BE INSTALLED PRIOR TO CONSTRUCTION ACTIVITIES STARTING.
10. THE CONTRACTOR SHALL MINIMIZE DUST GENERATED FROM CONSTRUCTION ACTIVITIES BY WET METHODS OR OTHER APPROVED METHODS.
11. WHERE ROADS, SIDEWALKS, ETC ARE INDICATED TO BE CUT AND PATCHED, EACH SHALL BE REMOVED AND REPLACED ALONG NEAT SAWCUT LINES, AND TO THE NEAREST JOINT WHERE IT EXISTS.
12. ANY FILL MATERIAL REQUIRED TO ESTABLISH THE FINISH GRADES SHOWN SHALL BE OBTAINED FROM A PROPERLY PERMITTED BORROW PIT. ANY EXCESS SOIL MATERIAL GENERATED FROM CONSTRUCTION ACTIVITIES SHALL BE DISPOSED OF OFF OF THE GOVERNMENT PROPERTY.

UTILITY CONSTRUCTION NOTES:

1. THE LOCATION AND DEPTHS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL SECURE THE SERVICES OF A PROFESSIONAL UTILITY LOCATE CONTRACTOR TO MARK ALL EXISTING UTILITIES IN THE AREA OF WORK. UTILITY MARKINGS SHALL BE MAINTAINED FOR THE DURATION OF DEMOLITION ACTIVITIES.
2. EXISTING UTILITIES SHALL NOT BE INTERRUPTED WITHOUT THE APPROVAL OF THE CONTRACTING OFFICER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR REPLACE, TO ORIGINAL CONDITION, ANY UTILITIES DAMAGED DURING CONSTRUCTION ACTIVITIES FROM THE CONTRACTOR'S OPERATIONS.
4. ALL COSTS ASSOCIATED WITH LOCATING, DISCONNECTING ABANDONING AND CAPPING OF UTILITY LINES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE REMOVAL OF ALL UTILITIES INDICATED WITH THEIR RESPECTIVE UTILITY PURVEYORS.
6. ALL PIPES AND CONDUITS THAT ARE TO BE ABANDONED IN PLACE, SHALL BE CAPPED OR PLUGGED TO SECURE ALL OPEN ENDS TO FORM A WATERTIGHT SEAL.
7. ALL ELECTRICAL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.

HAZARDOUS AND OTHER MATERIAL SPECIAL HANDLING NOTES:

1. THE CONTRACTOR SHALL REMOVE AND LEGALLY DISPOSE OF ALL CONSTRUCTION WASTE AND EXCESS MATERIAL OFF OF THE BASE PROPERTY. THE CONTRACTOR SHALL COMPLY WITH ALL STATE, LOCAL AND FEDERAL HAULING AND DISPOSAL REGULATIONS.
2. BURNING ON THE BASE PROPERTY IS NOT PERMITTED.
3. IF SUSPECT HAZARDOUS MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, WORK IN THE AFFECTED AREA SHALL STOP AND THE CONTRACTING OFFICER SHALL BE NOTIFIED IMMEDIATELY TO CONFIRM SITE CONDITIONS.
4. IF SUSPECTED AREAS OF SOIL OR GROUNDWATER CONTAMINATION ARE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK IN THE AFFECTED AREA SHALL STOP AND THE CONTRACTING OFFICER SHALL BE NOTIFIED IMMEDIATELY TO CONFIRM SITE CONDITIONS.

CIVIL LEGEND

EXISTING	DESCRIPTION	NEW
	WATER VALVE	
PIV	POST INDICATOR VALVE	
S	SANITARY SEWER MANHOLE	
C	COMMUNICATIONS MANHOLE	
CO	SANITARY SEWER CLEANOUT	CO
	STORM DRAIN DROP INLET	
DCO	STORM DRAIN CLEANOUT	
	FIRE HYDRANT	
TPED	COMMUNICATIONS PEDESTAL	
	UTILITY POLE/POLE WITH LIGHT	
	GUY WIRE	
S	SANITARY SEWER (GRAVITY)	S
FM	SANITARY FORCE MAIN	FM
D	STORM SEWER	D
W/FW	DOMESTIC/FIRE WATER	W/FW
OHE	OVERHEAD ELECTRICAL	
UGE	UNDERGROUND ELECTRICAL	UGE
UGC	UNDERGROUND COMMUNICATIONS	UGC
FO	UNDERGROUND FIBER OPTIC	
G	UNDERGROUND GAS	G
	UNDERGROUND HYDRONICS PIPING	HCW
x	FENCE	
	CONCRETE	
	ASPHALT	
	GRAVEL	
	SILT FENCE	SLT
	SURVEY CONTROL POINT	
× 5.00	SPOT ELEVATIONS	+ XX.XX
	SIGN	
	DEMOLITION ITEMS	
	BORING LOCATION/ID	B-1

ABBREVIATIONS

APPROX.	APPROXIMATE/APPROXIMATELY
CJ	CONTRACTION JOINT
CL, C/L	CENTER LINE
CF	CUBIC FEET
CONT.	CONTINUOUS
CMP	CORRUGATED METAL PIPE
CONC.	CONCRETE
CPP	CORRUGATED PLASTIC PIPE
CUMM.	CUMULATIVE
DIA, ø	DIAMETER
DI	(STORM DRAIN) DROP INLET
DMH	DRAINAGE MANHOLE
EL=, ELEV	ELEVATION
E:	EASTING
ELEC.	ELECTRIC; ELECTRICAL
ETC.	ET CETERA
EX., EXIST.	EXISTING
FES	FLARED END SECTION
FH	FIRE HYDRANT
HVAC	HEATING, VENTILATION AND AIR CONDITIONING (EQUIPMENT)
INV	INVERT
LF	LINEAR FOOT/FEET
MAG	MAG NAIL (CONTROL)
MAX	MAXIMUM
MIN	MINIMUM
N:	NORTHING
NO./#	NUMBER
PIV	POST INDICATOR VALVE
PVC	POLYVINYL CHLORIDE (PIPE)
RCP	REINFORCED CONCRETE PIPE
SMH	SANITARY SEWER MANHOLE
SF	SQUARE FOOT/FEET
SLT	SILT FENCE
SQ.	SQUARE
TBM	TEMPORARY BENCHMARK
TYP.	TYPICAL
VOL.	VOLUME
WWF	WELDED WIRE FABRIC
&	AND
@	AT
±	PLUS OR MINUS
%	PERCENT
=	EQUALS

EROSION CONTROL NOTES:

SCHEDULE OF EROSION AND SEDIMENTATION CONTROL ACTIVITIES

1. INSTALL SILT FENCING, GRAVEL CONTROL ENTRANCE AND CHECK DAMS AS INDICATED.
2. COMPLETE SITE CONSTRUCTION AS INDICATED.
3. FINE GRADE SITE AS INDICATED.
4. STABILIZE AND VEGETATE ALL AREAS NOT TO BE FURTHER DISTURBED BY CONSTRUCTION ACTIVITIES PER THE VEGETATION PLAN AND STATED TIME CONSTRAINTS.
5. INSTALL SOD TO ESTABLISH FINAL VEGETATION.
6. ADDITIONAL MISCELLANEOUS EROSION CONTROL MEASURES MAY BE REQUIRED WHEN DEEMED NECESSARY BY THE CONTRACTING OFFICER OR CONTRACTOR.
7. REMOVE SILT FENCING ONCE VEGETATION IS 95% ESTABLISHED MINIMUM.

MAINTENANCE PLAN

1. ALL EROSION AND SEDIMENTATION CONTROL DEVICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL EVENT BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL DEVICES IN THE OPERATIONAL CONDITIONS INTENDED.
2. ALL AREAS WILL BE FERTILIZED, VEGETATED AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATIONS IN THE VEGETATION PLAN IN ORDER TO ESTABLISH AND MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER. ANY SEDIMENT TRACKED ONTO THE ADJACENT ASPHALT ROAD SHALL BE REMOVED ON A DAILY BASIS.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND SILT FENCING PRIOR TO THE SEDIMENT ACCUMULATING TO A MAXIMUM DEPTH OF SIX INCHES.

SPECIAL SEEDING NOTE:

TEMPORARY: ALL DENUDED AREAS WILL, WITHIN 7 DAYS OF STOPPING GRADING ACTIVITIES AT ANY PHASE OF CONSTRUCTION, BE PLANTED AND PROVIDED WITH TEMPORARY OR PERMANENT GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.

PERMANENT: ALL DENUDED AREAS WILL, WITHIN 7 DAYS OF COMPLETION OF CONSTRUCTION, BE PROVIDED PERMANENT GROUND COVER.

EROSION CONTROL SYMBOL LEGEND:

SLT · · · SLT = SILT FENCE, SEE DETAIL A, SHEET CG501

= GRAVEL CONTROL ENTRANCE, SEE DETAIL B, SHEET CG501

= CHECK DAM, SEE DETAIL C, SHEET CG501

= INLET/OUTLET PROTECTION, SEE DETAIL D, SHEET CG501

TOTAL LIMITS OF DISTURBANCE
117,223 SF, 2.69 ACRES

NOTE:
ALL FILL MATERIAL NEEDED TO EXECUTE THIS PROJECT SHALL BE OBTAINED FROM AN NCDEQ NCDEMLR PERMITTED BORROW PIT.

NOTE:
NO WETLANDS OR SURFACE WATERS EXIST WITHIN THE LIMITS OF CONSTRUCTION.

NOTE:
THE PROJECT DRAINS TO JACKS BRANCH
SURFACE WATER CLASSIFICATION: SC,Sw,NSW
STREAM INDEX: 27-115-5

APPR | DATE | DESCRIPTION | SYM

NAVFAC

Digitally signed by John K Avolis
NORTH CAROLINA PROFESSIONAL SEAL 15738 ENGINEER JOHN K. AVOLIS
SEAL

CIVIL SURVEY/DESIGN BY:
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PROJ: 22037 A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES JKA | DRW MSP | CHK JKA
PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
1ST MARINE
MARINE CORPS AIR STATION
INVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
NOTES, LEGEND AND ABBREVIATIONS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STATION PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883060
SHEET 6 OF 121
C-001
DRAWFORM REVISION: 10 MARCH 2009

GENERAL CONSTRUCTION NOTES:

1. THE LOCATION AND DEPTHS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCANNING THE AREA OF WORK TO IDENTIFY TO HIS OWN SATISFACTION THE EXTENT OF UTILITIES PRESENT INCLUDING THE UTILITIES INDICATED TO BE PRESENT, THOSE NOT SHOWN, AND THOSE SHOWN TO BE IN A DIFFERENT LOCATION.
2. PHYSICAL SITE FEATURES OUTSIDE THE AREA OF WORK OR THOSE FEATURES NOT RELEVANT TO THE WORK BEING PERFORMED ARE NOT SHOWN FOR CLARITY.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC FLOW DURING THE COURSE OF CONSTRUCTION. THE CONTRACTOR SHALL DEVELOP A TRAFFIC CONTROL PLAN TO BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL PRIOR TO STARTING CONSTRUCTION.
4. ALL EXISTING VEGETATED AREAS DISTURBED DURING CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH THE PROJECT VEGETATION PLAN, SEE DETAIL F, SHEET CG501.
5. COMPLETE ALL TRENCH SECTION IN ACCORDANCE WITH DETAIL E, SHEET CU501.
6. GRADE EVENLY BETWEEN ALL SPOT ELEVATIONS SHOWN.

WORK ITEMS APPLICABLE TO SHEET CD101

DEMOLITION WORK ITEMS (SHEET CD101):

(1) EXISTING ASPHALT BASKETBALL COURT TO BE REMOVED.
(2) –NOT USED–
(3) EXISTING SIGN TO BE REMOVED.
(4) EXISTING CONCRETE TO BE REMOVED.
(5) EXISTING GRAVEL TO BE REMOVED.
(6) EXISTING STORM DRAIN PIPE TO BE REMOVED.
(7) EXISTING TREE/STUMP TO BE REMOVED.
(8) EXISTING FLAG POLE TO BE REMOVED.
(9) EXISTING WOOD OBSERVATION PLATFORM TO BE REMOVED.
(10) CUT AND PATCH, SEE DETAIL E, SHEET CS501.
(11) INSTALL SILT FENCE. SEE DETAIL A, SHEET CG501.
(12) INSTALL GRAVEL CONTROL ENTRANCE. SEE DETAIL B, SHEET CG501.
(13) INSTALL CHECK DAM. SEE DETAIL C, SHEET CG501.

WORK ITEMS APPLICABLE TO SHEET CS101

WORK ITEMS (SHEET CS101):

[1] NEW RANGE OPERATIONS FACILITY, SEE ARCHITECTURAL PLANS.
[2] CONCRETE FOUNDATION, SEE STRUCTURAL PLANS.
[3] NEW MDAS STORAGE BUILDING, SEE ARCHITECTURAL PLANS.
[4] CONCRETE SIDEWALK, SEE DETAIL C, SHEET CS501.
[5] STEEL BOLLARD, SEE DETAIL D, SHEET CS501.
[6] CUT AND PATCH, SEE DETAIL E, SHEET CS501.
[7] ASPHALT PAVEMENT, SEE DETAIL A, SHEET CS502.
[8] GRAVEL SURFACING, SEE DETAIL B, SHEET CS502.
[9] WHEEL STOP (NUMBER AS SHOWN), SEE DETAIL C, SHEET CS502.
[10] PAVEMENT MARKINGS, SEE DETAIL D, SHEET CS502.
[11] HANDICAP MARKINGS AND SIGNAGE, SEE DETAIL E, SHEET CS502.
[12] CHAIN LINK SECURITY FENCE AND GATE, SEE DETAIL A, SHEET CS503.
[13] CONCRETE APRON, SEE DETAIL A, SHEET CS501.
[14] NEW ISMT, SEE ARCHITECTURAL PLANS [BID OPTION 001].
[15] NEW COVERED TRAINING AREA, SEE ARCHITECTURAL PLANS [BID OPTION 002].

WORK ITEMS APPLICABLE TO SHEET CU101

WORK ITEMS (SHEET CU101):

[1] VALVE AND VALVE BOX, SEE DETAIL A, SHEET CU501.
[2] TAPPING SADDLE, SEE DETAIL B, SHEET CU501.
[3] FIRE HYDRANT ASSEMBLY, SEE DETAIL C, SHEET CU501.
[4] THRUST BLOCK, SEE DETAIL D, SHEET CU501.
[5] 101LF± 6" DI FIRE WATER SERVICE, PROVIDE MINIMUM 36" CLEAR COVER. SEE FIRE PROTECTION DRAWINGS FOR CONTINUATION.
[6] 240LF± 4" DI DOMESTIC WATER SERVICE, PROVIDE 4"x2" REDUCER WITHIN 5' OF BUILDING. PROVIDE MINIMUM 36" CLEAR COVER. SEE PLUMBING DRAWINGS FOR CONTINUATION.
[7] BOLLARD (NUMBER AS SHOWN), SEE DETAIL D, SHEET CS501.
[8] PREFABRICATED WET WELL AND PUMP STATION, SEE DETAIL A, SHEET CU502.
[9] CLEANOUT, SEE DETAIL B, SHEET CU502.
[10] 30LF± 4" PVC SEWER SERVICE. SEE PLUMBING DRAWINGS FOR CONTINUATION.
[11] 665LF± 2" PVC SEWER FORCE MIAN, PROVIDE 36" MINIMUM COVER. SEE SHEET CU102 FOR CONTINUATION.
[12] ROUTE NEW UTILITY BELOW EXISTING UTILITY, SEE DETAIL C, SHEET CU502.
[13] CONDENSING UNIT – SEE MECHANICAL PLANS.
[14] MECHANICAL EQUIPMENT – SEE MECHANICAL PLANS.
[15] MECHANICAL ENCLOSURE – SEE MECHANICAL PLANS.
[16] PROVIDE 36" COVER BURY BELOW SWALE BOTTOM.
[17] COMMUNICATIONS DUCTBANK, HAND HOLE AND WIRING – SEE ELECTRICAL PLANS.
[18] UNDERGROUND ELECTRIC SERVICE AND TRANSFORMER – SEE ELECTRICAL PLANS.

WORK ITEMS APPLICABLE TO SHEET CG101

WORK ITEMS (SHEET CG101):

[1] INSTALL SILT FENCE. SEE DETAIL A, SHEET CG501.
[2] INSTALL GRAVEL CONTROL ENTRANCE. SEE DETAIL B, SHEET CG501.
[3] INSTALL CHECK DAM. SEE DETAIL C, SHEET CG501.
[4] INSTALL INLET/OUTLET PROTECTION. SEE DETAIL D, SHEET CG501.
[5] LINED SWALE. SEE DETAIL E, SHEET CG501.
[6] INSTALL 32LF 18" RCP AND (1) FES IN FLOW LINE OF EXITING DITCH. CONNECT TO EXISTING PIPE.
[7] INSTALL 20LF 12" RCP.

WORK ITEMS APPLICABLE TO SHEET CU102

WORK ITEMS (SHEET CU102):

[1] PREFABRICATED WET WELL AND PUMP STATION, SEE DETAIL A, SHEET CU502.
[2] 655LF 2" PVC SEWER FORCE MIAN, PROVIDE MINIMUM 36" CLEAR COVER. SEE SHEET CU102 FOR CONTINUATION.
[3] ROUTE NEW UTILITY BELOW EXISTING UTILITY, SEE DETAIL C, SHEET CU502.
[4] THRUST BLOCK, SEE DETAIL D, SHEET CU501.
[5] CORE EXISTING MANHOLE TO ACCEPT 2" FORCE MAIN. GROUT ANNULAR SPACE WITH NON-SHRINK GROUT.
[6] CUT AND PATCH, SEE DETAIL E, SHEET CS501.
[7] REMOVE/REINSTALL FENCE TO ALLOW INSTALLATION OF UTILITY.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

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FOR COMMANDER NAVFAC
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SATISFACTORY TO
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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
IPT: MARINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA
MARINE CORPS AIR STATION CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
CIVIL WORK ITEMS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STATION PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883061
SHEET 7 OF 121
C-002
DRAWFORM REVISION: 10 MARCH 2009

TOTAL LIMITS OF DISTURBANCE
117,223 SF, 2.69 ACRES

SEE SHEET CD701
BID OPTION 003

SEE SHEET CD702
BID OPTION 004

BLDG 990
FFE=24.72

BLDG 1659
FFE=24.55

BLDG 4647
FFE=24.80

BLDG 4559
FFE=25.43

BLDG 4556
FFE=25.20

BARREL 1 RD

BARREL 2 RD

TRIGGER LOOP

LINE RD

S RANGE RD

EX. WOODED

EX. GRASS

EXISTING GRAVEL PARKING LOT

EX. ASPHALT BASKETBALL COURT

FOOTPRINT OF NEW COVERED TRAINING AREA BID OPTION 002

FOOTPRINT OF ISMT BID OPTION 001

FOOTPRINT OF NEW RANGE OPERATIONS FACILITY BASE BID

LIMITS OF DISTURBANCE (THIS SITE)
4,285 SF (0.10 ACRES)

LIMITS OF DISTURBANCE (THIS SITE)
112,938 SF (2.59 ACRES)

SEE SHEET CD101

4556A (MDAS)

SHED

907

908

SITE PLAN-EXISTING CONDITIONS AND DEMOLITION

SCALE: 1" = 40'

TN PN

40 0 20 40 80

GRAPHIC SCALE: 1" = 40'

APPR	DATE	DESCRIPTION	SYM

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MARINE CORPS AIR STATION
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC

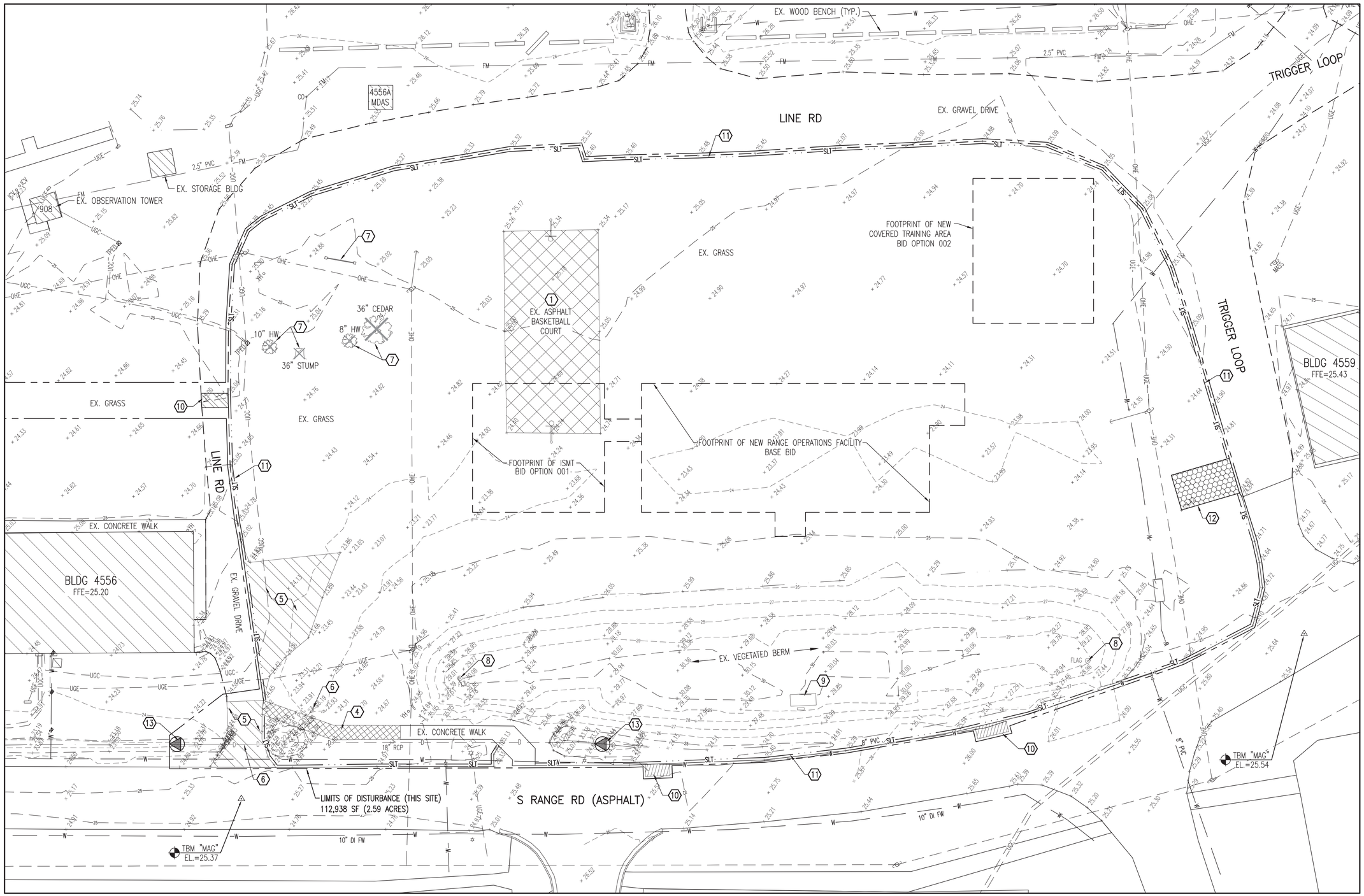
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

SITE PLAN - EXISTING CONDITIONS AND DEMOLITION

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STATION PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883062
SHEET	8 OF 121

CD100

DRAWFORM REVISION: 10 MARCH 2009



ENLARGED SITE PLAN-EXISTING CONDITIONS AND DEMOLITION

SCALE: 1" = 20'

TN PN

SEE SHEET C-002 FOR WORK ITEMS APPLICABLE TO THIS SHEET

GRAPHIC SCALE: 1" = 20'

APPR	DATE	DESCRIPTION	SYM

NAVFAC

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PROJ: 22037 A/E INFO

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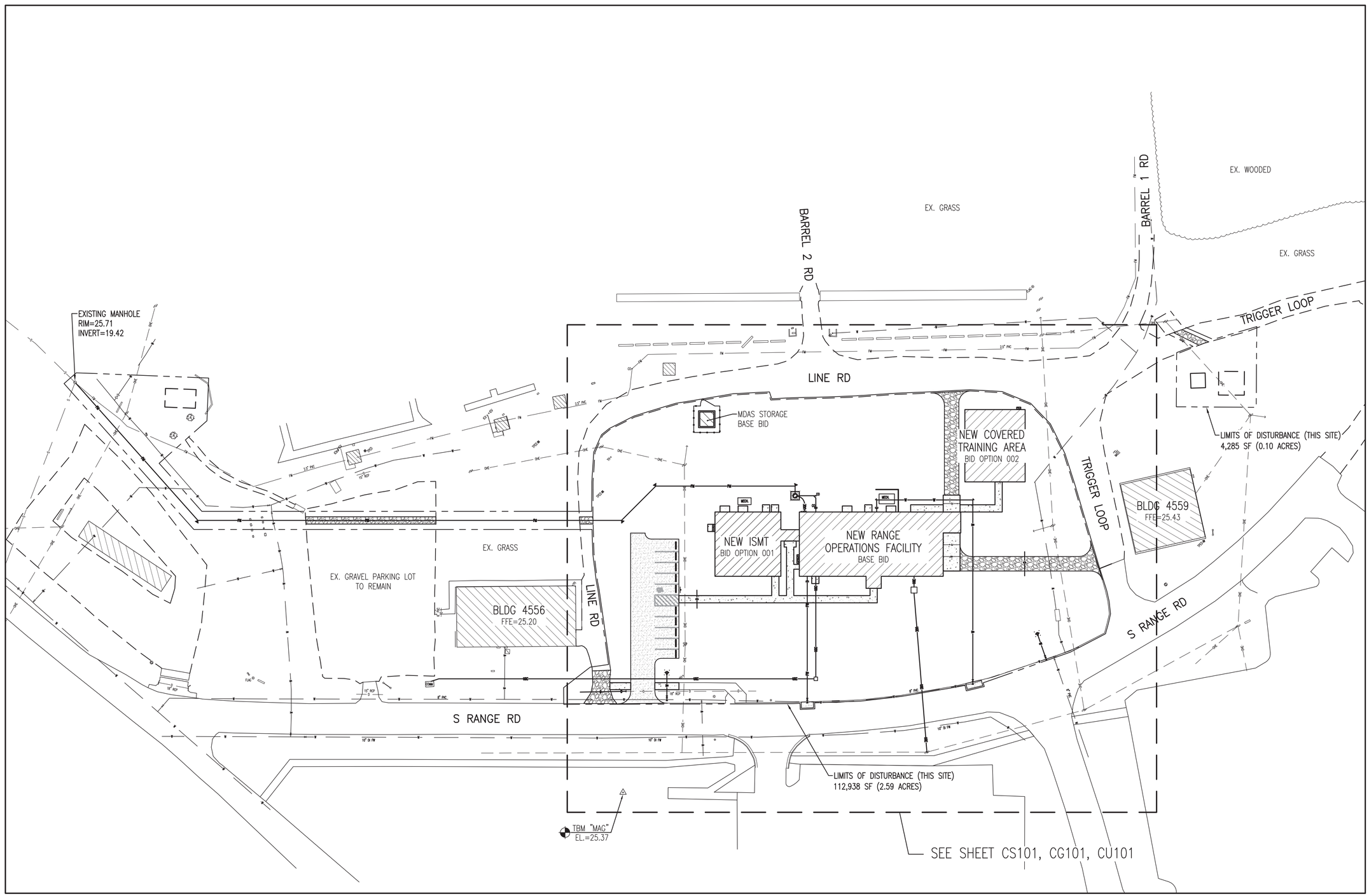
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ENLARGED SITE PLAN-EXISTING CONDITIONS AND DEMOLITION

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STATION PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883063
SHEET	9 OF 121

CD101

DRAWFORM REVISION: 10 MARCH 2009



SITE PLAN - NEW WORK

SCALE: 1" = 40'

TN PN

40 0 20 40 80

GRAPHIC SCALE: 1" = 40'

SYM	DESCRIPTION	DATE	APPR

NAVFAC

Digitally signed by John K Avolis

NORTH CAROLINA PROFESSIONAL SEAL 15738 ENGINEER JOHN K. AVOLIS

SEAL

CIVIL SURVEY/DESIGN BY:

LICENSE NO. C-0706

AVOLIS ENGINEERING, P.A.
P.O. BOX 15564
NEW BERN, NC 28561
PH.(252) 633-0068

PROJ: 22037 A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES	JKA	DRW	MSP	CHK	JKA

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
MARINE CORPS AIR STATION CHERRY POINT, NC

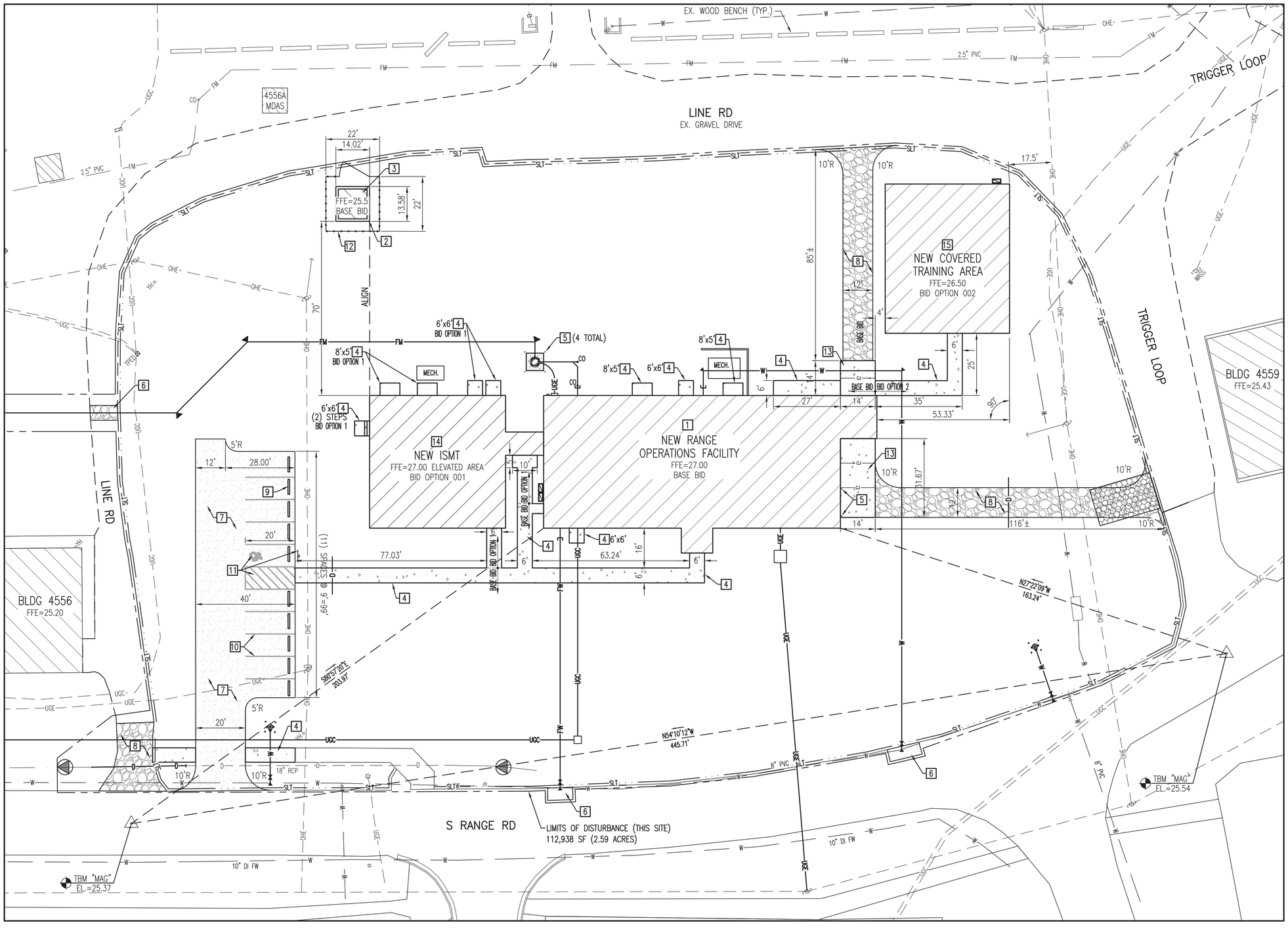
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

SITE PLAN - NEW WORK

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STATION PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883064
SHEET	10 OF 121

CS100

DRAWFORM REVISION: 10 MARCH 2009



ENLARGED SITE LAYOUT PLAN

SCALE: 1" = 20'

TN PN

SEE SHEET C-002 FOR WORK ITEMS APPLICABLE TO THIS SHEET

GRAPHIC SCALE: 1" = 20'

SYM	DESCRIPTION	DATE	APPR

NAVFAC

Digitally signed by John K Avolis

NORTH CAROLINA PROFESSIONAL SEAL 15738 ENGINEER JOHN K. AVOLIS

SEAL

CIVIL SURVEY/DESIGN BY:

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BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
2ST MARINE
MARINE CORPS AIR STATION

NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

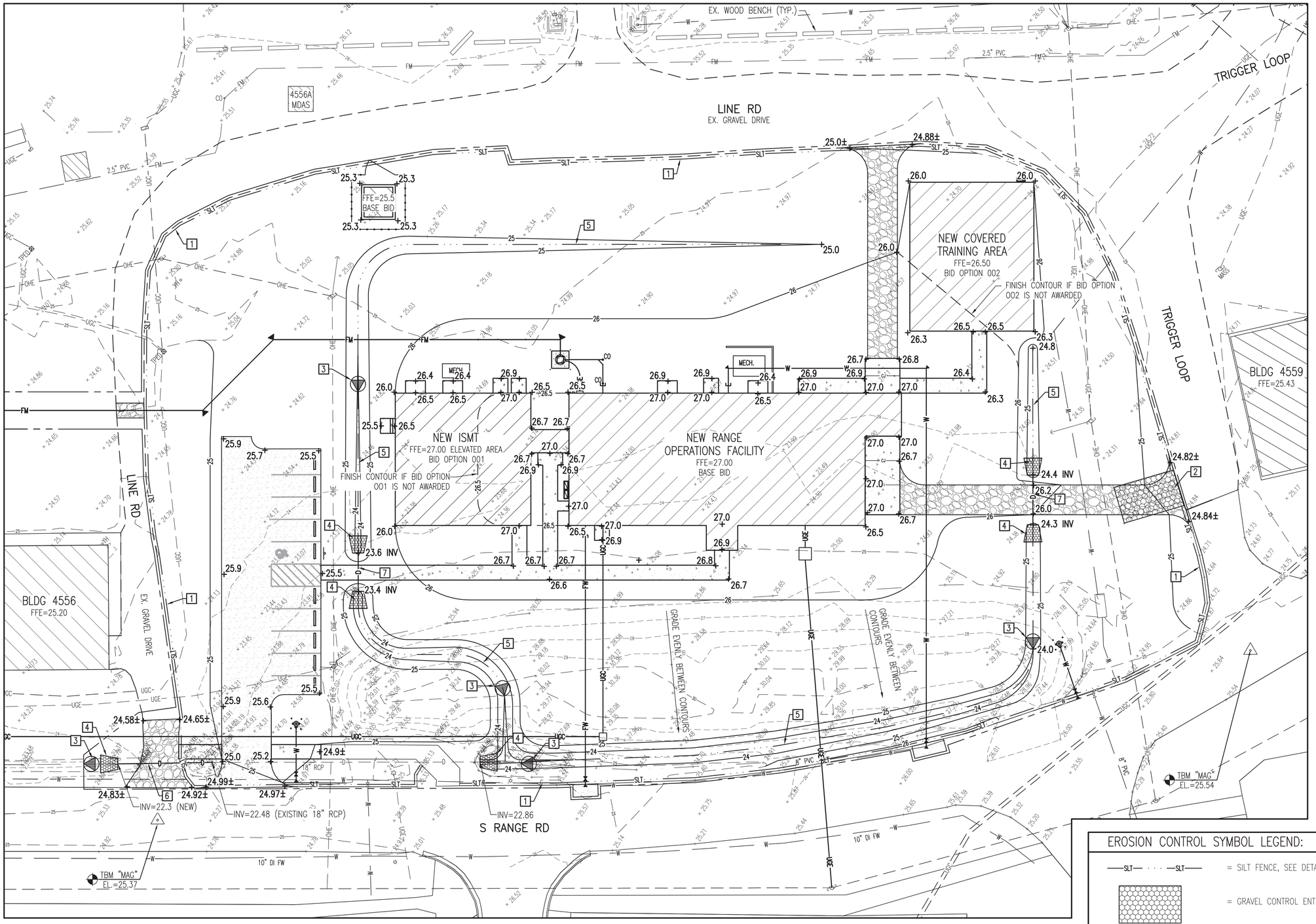
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ENLARGED SITE LAYOUT PLAN

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STATION PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883065
SHEET	11 OF 121

CS101

DRAWFORM REVISION: 10 MARCH 2009



ENLARGED SITE GRADING PLAN

SCALE: 1" = 20'

TN PN

SEE SHEET C-002 FOR WORK ITEMS APPLICABLE TO THIS SHEET

GRAPHIC SCALE: 1" = 20'

EROSION CONTROL SYMBOL LEGEND:

- SLT — · · · — SLT = SILT FENCE, SEE DETAIL A, SHEET CG501
- = GRAVEL CONTROL ENTRANCE, SEE DETAIL B, SHEET CG501
- = CHECK DAM, SEE DETAIL C, SHEET CG501
- = INLET/OUTLET PROTECTION, SEE DETAIL D, SHEET CG501

APPR	DATE	DESCRIPTION	SYM

NAVFAC

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NORTH CAROLINA PROFESSIONAL SEAL 15738 ENGINEER JOHN K. AVOLIS
SEAL

CIVIL SURVEY/DESIGN BY:

LICENSE NO. C-0706
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P.O. BOX 15564
NEW BERN, NC 28561
PH.(252) 633-0068

PROJ: 22037 A/E INFO

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PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
1ST MARINE
MARINE CORPS AIR STATION

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MIDATLANTIC
NAVAL STATION - NORFOLK, VA

CHERRY POINT, NC

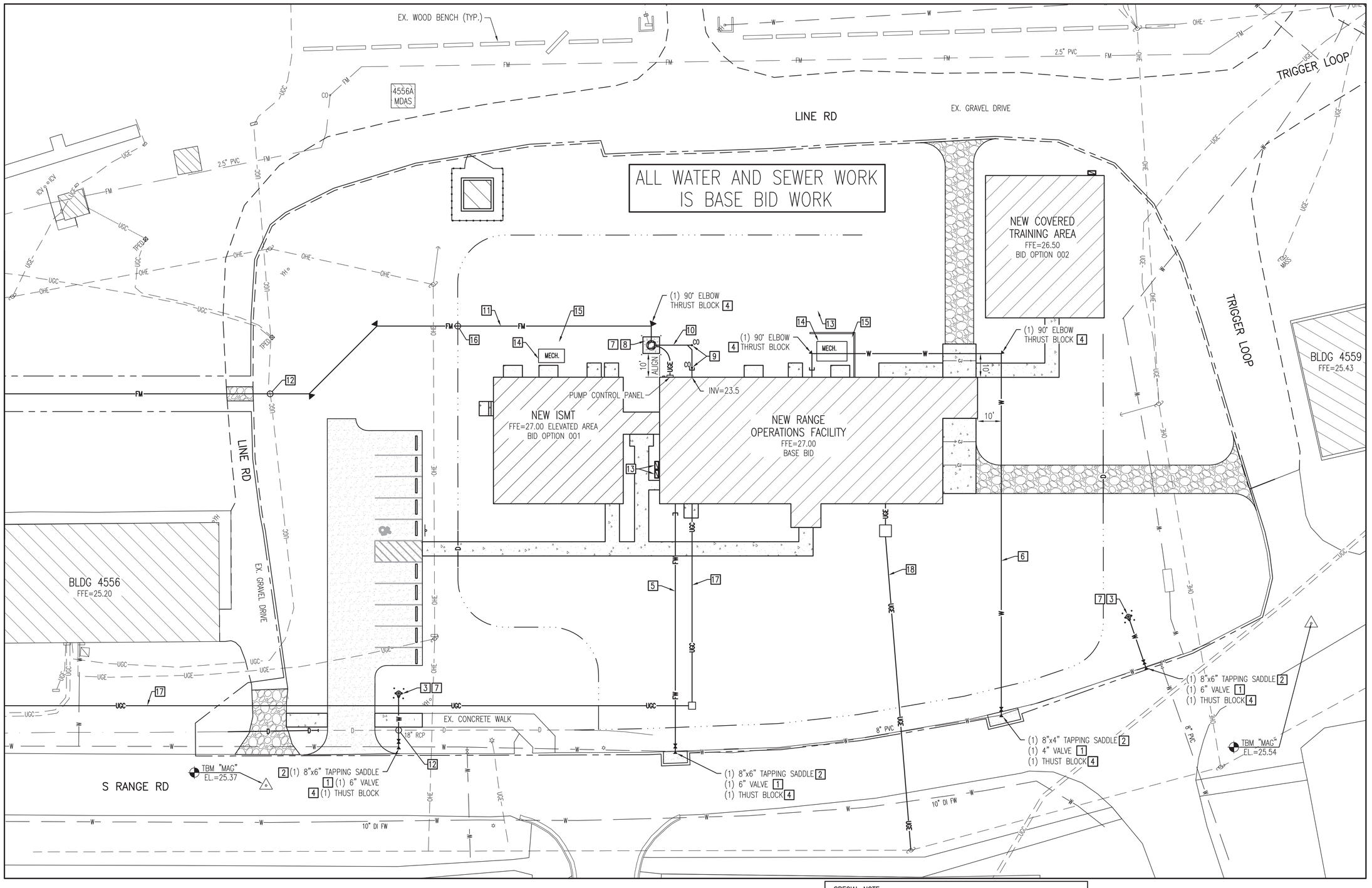
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ENLARGED SITE GRADING PLAN

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STATION PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883066
SHEET	12 OF 121

CG101

DRAWFORM REVISION: 10 MARCH 2009



ENLARGED SITE UTILITY PLAN

SCALE: 1" = 20'

TN PN

SEE SHEET C-002 FOR WORK ITEMS APPLICABLE TO THIS SHEET

SPECIAL NOTE:

1. THE CONTRACTOR SHALL PROVIDE A REDUCED PRESSURE DOUBLE CHECK BACKFLOW ASSEMBLY (RPZ) ON THE FIRE MAIN RISER IN THE MECHANICAL ROOM. THE RPZ SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARD AND CARRY THE ASSE SEAL OR APPEAR ON THE UNIVERSITY OF CALIFORNIA APPROVED LIST.

20 0 10 20 40

GRAPHIC SCALE: 1" = 20'

SYM	DESCRIPTION	DATE	APPR

NAVFAC

Digitally signed by John K Avolis

NORTH CAROLINA PROFESSIONAL SEAL 15738 ENGINEER JOHN K. AVOLIS

SEAL

CIVIL SURVEY/DESIGN BY:

A-E Engineering P.A. LICENSE NO. C-0706

AVOLIS ENGINEERING, P.A.
P.O. BOX 15564
NEW BERN, NC 28561
PH.(252) 633-0068

PROJ: 22037 A/E INFO

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PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
1ST MARINE
MARINE CORPS AIR STATION
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ENLARGED SITE UTILITY PLAN

NAVAL FACILITIES ENGINEERING COMMAND

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STATION PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883067
SHEET	13 OF 121

CU101

DRAWFORM REVISION: 10 MARCH 2009

5 EX. SMH
RIM=25.71
INV=19.42
INV=22.0 (NEW 2" FORCE MAIN)

(1) 45° ELBOW
THRUST BLOCK 4

(1) 45° ELBOW
THRUST BLOCK 4

(1) 45° ELBOW
THRUST BLOCK 4

EX. GRASS

EXISTING GRAVEL
PARKING LOT

EX. GRASS

BLDG 4556
FFE=25.20

4556A
MDAS

LINE RD

EX. GRAVEL DRIVE

NEW ISMT
FFE=27.00 ELEVATED AREA
BID OPTION 001

MECH.

EX. CONCRETE WALK

2.5" PVC

15" RCP

18" RCP

8" PVC

10" DI FW

FLDG

COMM

TPED

ICV

OHE

UGE

UGC

FM

SLT

W

D

ENLARGED SITE UTILITY PLAN

SCALE: 1" = 20'

TN PN

SEE SHEET C-002 FOR WORK ITEMS APPLICABLE TO THIS SHEET

GRAPHIC SCALE: 1" = 20'

APPR	DATE	DESCRIPTION	SYM

NAVFAC

Digitally signed by John K Avolis
NORTH CAROLINA PROFESSIONAL
SEAL 15738
ENGINEER
JOHN K. AVOLIS
SEAL

CIVIL SURVEY/DESIGN BY:
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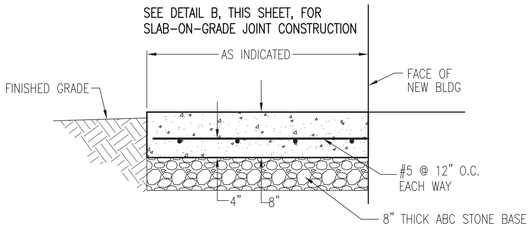
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
1PT MARINE
NAVAL STATION - NORFOLK, VA
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
ENLARGED SITE UTILITY PLAN

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STATION PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883068
SHEET	14 OF 121

CU102

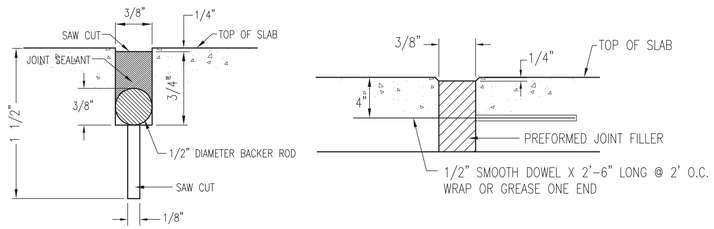
DRAWFORM REVISION: 10 MARCH 2009



CJ = CONTRACTION JOINT, SEE DETAIL B, THIS SHEET.
EJ = EXPANSION JOINT, SEE DETAIL B, THIS SHEET.

A CONCRETE APRON

SCALE: NTS



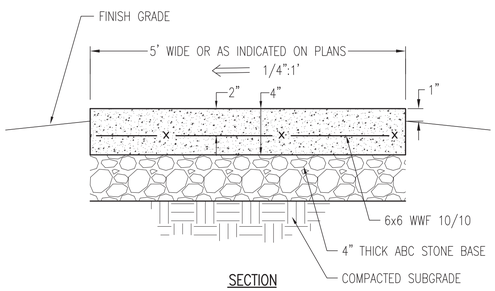
TYPICAL SLAB-ON-GRADE JOINT (CJ)

EXPANSION JOINT (EJ)

LEGEND:
CJ=CONTRACTION JOINT
EJ=EXPANSION JOINT

B SLAB-ON-GRADE JOINTS

NOT TO SCALE



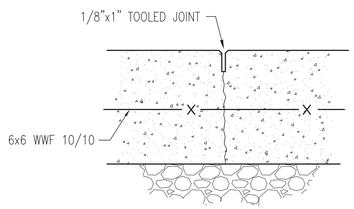
SECTION

NOTES:

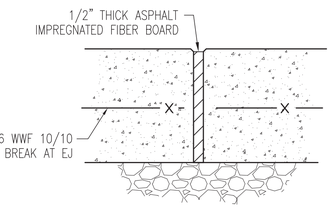
1. PROVIDE EXPANSION JOINTS ALONG ALL EXISTING STRUCTURES AND WALKS AND AT 20' INTERVALS ALONG STRAIGHT SECTIONS OF WALK.
2. PROVIDE TOOLED CONTRACTION JOINTS AT 6'-0" INTERVALS AND AT ALL CHANGES IN DIRECTION OF WALK. TOOLED CONTRACTION JOINTS MUST BE 1/8" WIDE X 1" DEEP.
3. SUBGRADE MUST BE WETTED IMMEDIATELY PRIOR TO PLACING CONCRETE, OR PROVIDE POLYETHYLENE SHEETING ON GROUND SURFACE BELOW CONCRETE.
4. PROVIDE FLOATED SURFACE WITH LIGHT BROOM FINISH.
5. PROTECT WORK IN PLACE FROM VANDALISM, GRAFFITI, ETC... UNTIL CONCRETE IS SUFFICIENTLY DRY.

C CONCRETE SIDEWALK

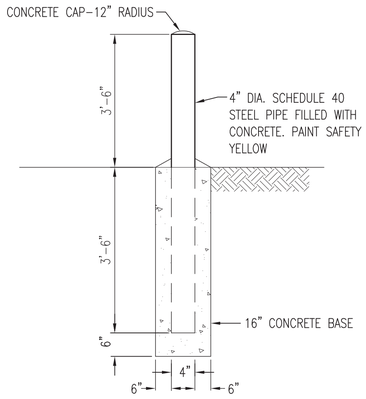
NOT TO SCALE



CONTRACTION JOINT (CJ)

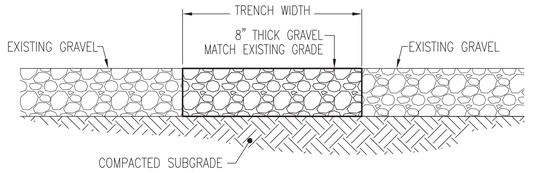


EXPANSION JOINT (EJ)

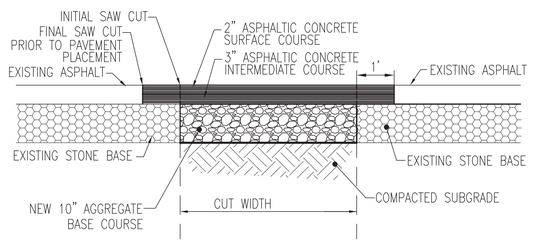


D STEEL BOLLARD

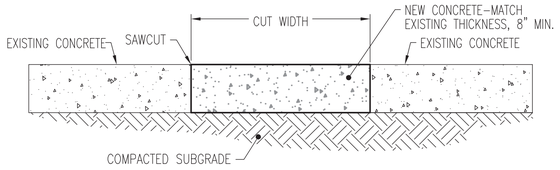
NOT TO SCALE



GRAVEL SECTION



ASPHALT SECTION



CONCRETE SECTION

E CUT AND PATCH

NOT TO SCALE

APPR	DATE	DESCRIPTION	SYM

NAVFAC

Digitally signed by John K Avolis
NORTH CAROLINA PROFESSIONAL SEAL 15738 ENGINEER JOHN K. AVOLIS
SEAL

CIVIL SURVEY/DESIGN BY:
A-E Engineering P.A.
LICENSE NO. C-0706

AVOLIS ENGINEERING, P.A.
P.O. BOX 15564
NEW BERN, NC 28561
PH.(252) 633-0068

PROJ: 22037 A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES	JKA	DRW	MSP	CHK	JKA

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL STATION - NORFOLK, VA
2PT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC

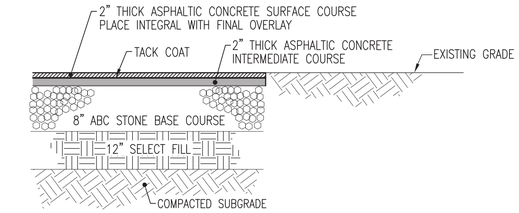
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STATION PROJ. NO.:	7290158
NAVFAC DRAWING NO.	1288306 9
SHEET	15 OF 121

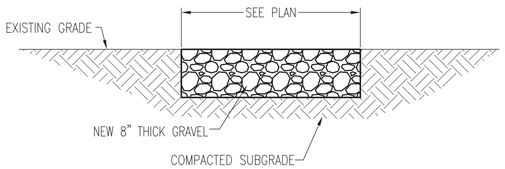
CS501

DRAWFORM REVISION: 10 MARCH 2009



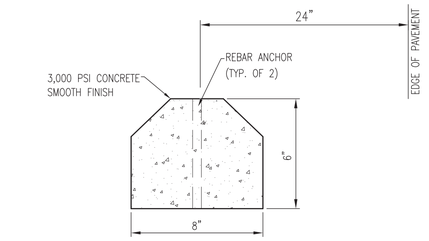
A ASPHALT PAVEMENT

NOT TO SCALE



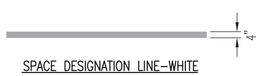
B GRAVEL SURFACING

NOT TO SCALE



C CONCRETE WHEEL STOP

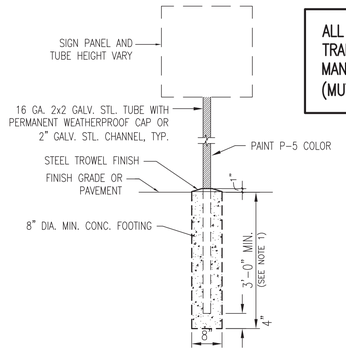
NOT TO SCALE



SPACE DESIGNATION LINE–WHITE

D PAVEMENT MARKINGS

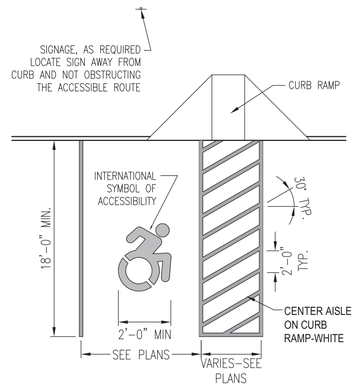
NOT TO SCALE



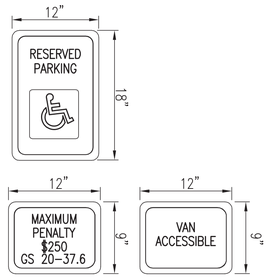
SIGN MOUNTING

ALL SIGNAGE TO CONFORM TO US DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2009 EDITION (OR CURRENT IF NEWER).

PAVEMENT MARKING



HANDICAP SPACE DESIGNATION



NOTES:

1. COLORS
   BACKGROUND: WHITE
   LEGEND AND BORDER: GREEN
   WHITE SYMBOL ON BLUE BACKGROUND
2. MOUNT THE SIGN 60" ABOVE GRADE.

TYPE A – HANDICAP PARKING SIGNAGE

E ACCESSIBLE MARKINGS AND SIGNAGE

NOT TO SCALE

SYM	DESCRIPTION	DATE	APPR

NAVFAC

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NORTH CAROLINA PROFESSIONAL SEAL 15738 ENGINEER JOHN K. AVOLIS
SEAL

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PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA
IPT: MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC

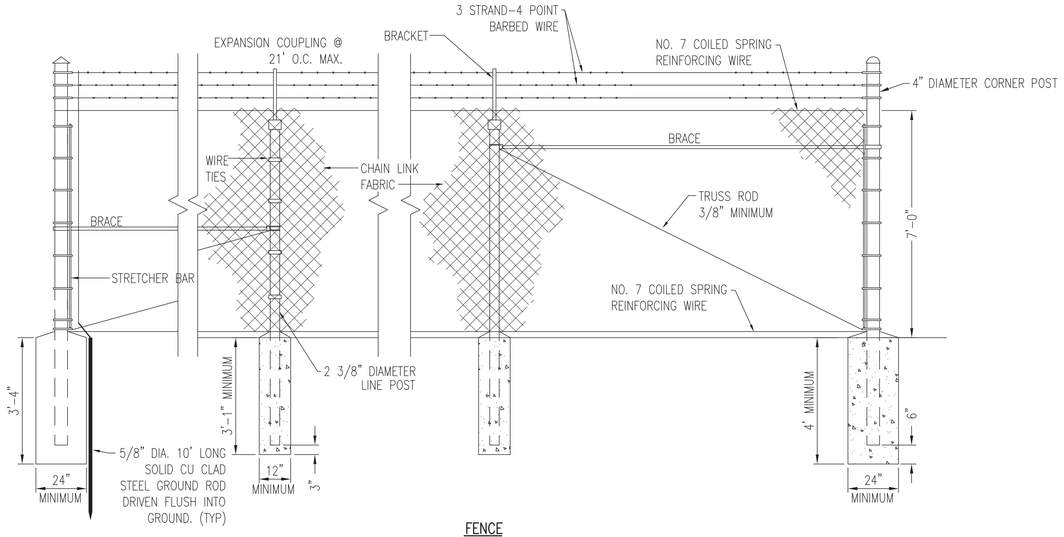
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

DETAILS

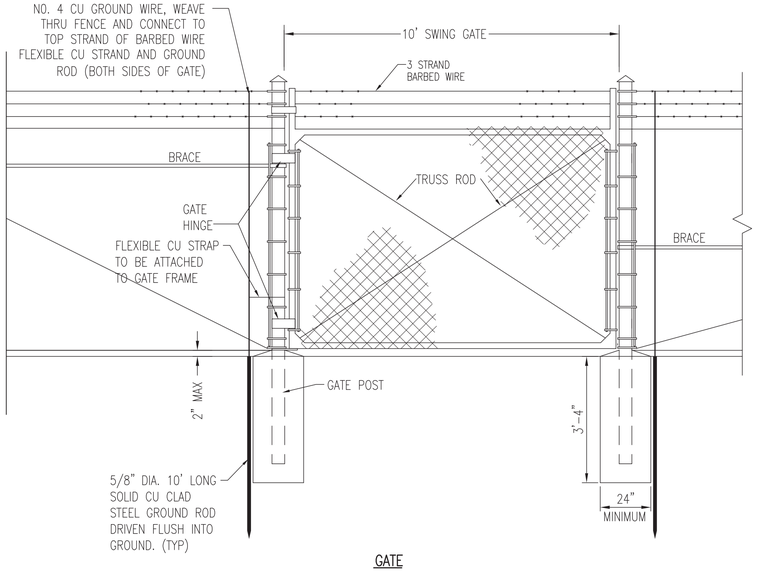
SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STATION PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883070
SHEET	16 OF 121

CS502

DRAWFORM REVISION: 10 MARCH 2009



FENCE



GATE

A SECURITY FENCE AND GATE

NOT TO SCALE

NAVFAC

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NORTH CAROLINA PROFESSIONAL SEAL 15738 ENGINEER JOHN K. AVOLIS

SEAL

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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
1ST MARINE
MARINE CORPS AIR STATION

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL STATION - NORFOLK, VA

CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

DETAILS

SCALE: AS INDICATED

EPROJECT NO.: 1715336

STATION PROJ. NO.: 7290158

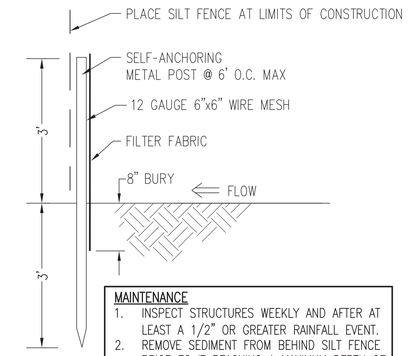
NAVFAC DRAWING NO. 12883071

SHEET 17 OF 121

CS503

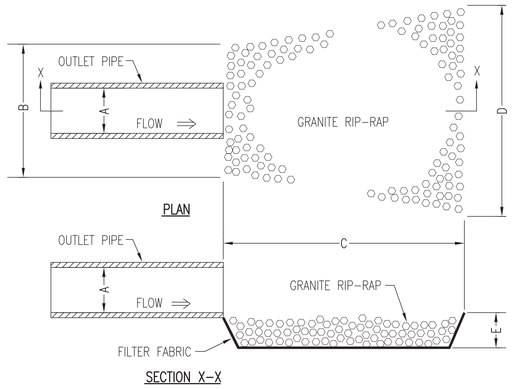
DRAWFORM REVISION: 10 MARCH 2009

APPR | DATE | DESCRIPTION | SYM



MAINTENANCE
1. INSPECT STRUCTURES WEEKLY AND AFTER AT LEAST A 1/2" OR GREATER RAINFALL EVENT.
2. REMOVE SEDIMENT FROM BEHIND SILT FENCE PRIOR TO IT REACHING A MAXIMUM DEPTH OF SIX (6) INCHES.

A SILT FENCE
NOT TO SCALE



SECTION X-X

A	B	C	D	E	MIN. RIP RAP SIZE	MAX. RIP RAP SIZE
12"	6'	10'	12'	18"	6"	9"
15"	6'	10'	12'	18"	6"	9"

MAINTENANCE:
1. INSPECT STRUCTURES AT LEAST WEEKLY AND AFTER ANY RAINFALL EVENT GREATER THAN ONE-HALF INCH.
2. IMMEDIATELY MAKE ALL NEEDED REPAIRS.

D INLET/OUTLET PROTECTION
NOT TO SCALE

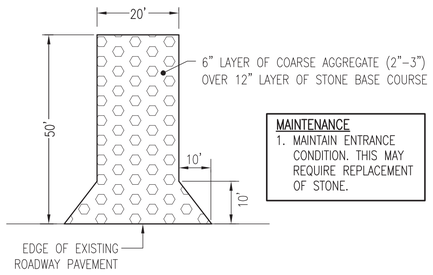
TEMPORARY GROUND COVER
ALL DISTURBED AREAS NOT COVERED WITH BUILDINGS, PAVEMENTS, OR OTHER IMPERMEABLE SURFACES MUST BE COVERED WITH MULCH AS A TEMPORARY GROUND COVER.

PERMANENT VEGETATION
ALL DISTURBED AREAS NOT COVERED WITH BUILDINGS, PAVEMENTS, OR OTHER IMPERMEABLE SURFACES MUST BE SODDED WITH CENTIPEDE SOLID SOD AS THE FINAL/PERMANENT VEGETATION.

SPECIAL GRADING NOTE:
ALL DENUDED AREAS WILL, WITHIN 7 CALENDAR DAYS OF COMPLETION OF ANY PHASE OF GRADING OR CEASING OF GRADING ACTIVITIES, BE PLANTED AND PROVIDED WITH TEMPORARY OR PERMANENT GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.

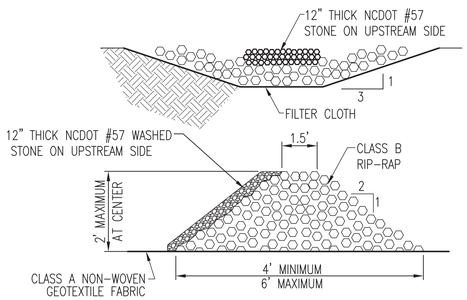
ALL DENUDED AREAS WILL, WITHIN 7 DAYS OF COMPLETION OF CONSTRUCTION, BE PROVIDED PERMANENT GROUND COVER.

F VEGETATION PLAN
NOT TO SCALE



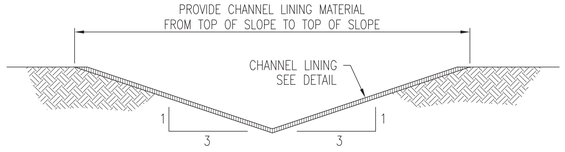
MAINTENANCE
1. MAINTAIN ENTRANCE CONDITION. THIS MAY REQUIRE REPLACEMENT OF STONE.

B GRAVEL CONTROL ENTRANCE
NOT TO SCALE

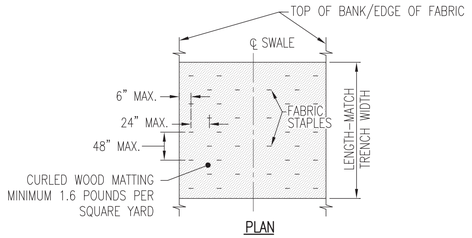


MAINTENANCE
1. CONSTRUCT CHECK DAM OF RIP-RAP STONE PLACED IN ACCORDANCE WITH DETAIL.
2. SEDIMENT BEHIND THE CHECK DAM MUST BE REMOVED PRIOR TO THE LEVEL REACHING WITHIN 6" OF THE CENTERLINE CREST OF THE DAM.
3. SHOULD SCOUR DEVELOP AT THE DOWNSTREAM END, IT MUST BE REPAIRED IMMEDIATELY.

C CHECK DAM
NOT TO SCALE



SECTION



PLAN

NOTES:
1. INSTALL MATTING IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
2. PREPARE, SEED AND FERTILIZE SWALE PRIOR TO MATTING INSTALLATION.
3. APPLY MATTING IN DIRECTION OF WATER FLOW.
4. PLACE MATTING IN CONTACT WITH SOIL.
5. BUTT ROLLS OF MATTING WITH 6" OVERLAP.
6. U-STAPLES SHOULD HAVE 6" MIN. LENGTH AND 1" MIN. CROWN.

CHANNEL LINING

E LINED SWALE
NOT TO SCALE

APPR | DATE | DESCRIPTION | SYM

NAVFAC

Digitally signed by John K Avolis
NORTH CAROLINA PROFESSIONAL SEAL 15738 ENGINEER JOHN K. AVOLIS
SEAL

CIVIL SURVEY/DESIGN BY:
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LICENSE NO. C-0706
AVOLIS ENGINEERING, P.A.
P.O. BOX 15564
NEW BERN, NC 28561
PH.(252) 633-0068
PROJ: 22037 A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES JKA | DRW MSP | CHK JKA
PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA.
1ST MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
DETAILS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STATION PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883072
SHEET 18 OF 121
CG501
DRAWFORM REVISION: 10 MARCH 2009

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Soil Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. However, all details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

Temporary and Permanent Groundcover*

STABILIZATION TIMEFRAMES
(Effective Aug. 3, 2011)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

*For Falls Lake watershed, in disturbed areas where grading activities are incomplete, provide temporary groundcover no later than seven (7) days for slopes steeper than 3:1; ten (10) days for slopes equal to or flatter than 3:1; fourteen (14) days for areas with no slope.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary groundcover • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls

NOT USED–SEE NOTE THIS SHEET

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sedimentation Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number of waste containers on site to manage the quantity of waste produced.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow.
8. Dispose waste off-site at an approved disposal facility.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

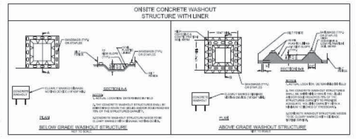
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 feet offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Remove leaking portable toilets by a licensed sanitary waste hauler and replace with a properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



BELOW GRADE WASHOUT STRUCTURE — ABOVE GRADE WASHOUT STRUCTURE

CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do note use concrete washouts for dewatering or storing defective curb sections. Stormwater accumulated within the washout may not be pumped or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters, including wetlands, unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be provided by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG-010000 DETAIL

EFFECTIVE: 03/01/19

NOTE:

1. THE INFORMATION CONTAINED ON THIS SHEET PERTAINS TO THE IMPLEMENTATION AND EXECUTION OF THE EROSION CONTROL REQUIREMENTS FOR THIS PROJECT.

2. TEMPORARY AND PERMANENT SURFACE STABILIZATION SHALL OCCUR WITH THE INSTALLATION OF SOD. DUE TO THE PROXIMITY OF THE PROJECT SITE TO THE RUNWAY, AND THE POTENTIAL FOR BIRD STRIKE HAZARDS BY AIRCRAFT, SEED SHALL NOT BE USED AS A MEANS OF STABILIZATION.

TOTAL LIMITS OF DISTURBANCE
117,223 SF, 2.69 ACRES

CONTRACTOR SITE INSPECTION REQUIREMENTS:

THE NPDES CONSTRUCTION PERMIT REQUIRES EROSION CONTROL DEVICES AND STORM WATER OUTFALLS BE INSPECTED WEEKLY (EVERY 7 CALENDAR DAYS) AND WITHIN 24 HRS OF A .5 INCH RAIN EVENT. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT THESE INSPECTIONS AND MAINTAIN RECORDS UNTIL THE AREA HAS STABILIZED, EVIDENT BY 95% VEGETATIVE GROWTH FOR AREAS PROVIDED SEEDING. TO FACILITATE RAINFALL MONITORING A RAIN GAUGE IS REQUIRED TO BE ON SITE. ADDITIONALLY THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING "SELF INSPECTIONS" INDICATING THE DATE BMPS ARE INSTALLED AND STABILIZATION MEASURES (SEEDING/MULCHING OR SOD) ARE INITIATED. THE "SELF INSPECTION" REPORTS WILL BE MAINTAINED ALONG WITH THE "NPDES" INSPECTION REPORTS. ONCE STABILIZATION HAS BEEN ACCOMPLISHED INSPECTION RECORDS ARE TO BE FORWARDED TO EAD AND ALL TEMPORARY EROSION/SEDIMENTATION CONTROL DEVICES REMOVED. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING COMPLIANCE WITH ALL PERMITS AND PLANS, ANY CHANGES WILL BE APPROVED BY THE STATE PRIOR TO EXECUTION. A COPY OF THE EROSION AND SEDIMENTATION CONTROL PLAN, LETTER OF APPROVAL, AND NPDES CONSTRUCTION PERMIT WILL BE MAINTAINED BY THE CONTRACTOR AT THE ONSITE OFFICE. IF SOIL IS REMOVED FROM OR BROUGHT ONSITE, THE APPLICABLE SOLID WASTE MANAGEMENT PERMIT NUMBER, EROSION SEDIMENTATION PERMIT NUMBER OR MINE PERMIT NUMBER WILL BE DISCLOSED.

SPECIAL SEEDING NOTE:

TEMPORARY: ALL DENUDED AREAS WILL, WITHIN 7 DAYS OF STOPPING GRADING ACTIVITIES AT ANY PHASE OF CONSTRUCTION, BE PLANTED AND PROVIDED WITH TEMPORARY OR PERMANENT GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.

PERMANENT: ALL DENUDED AREAS WILL, WITHIN 7 DAYS OF COMPLETION OF CONSTRUCTION, BE PROVIDED PERMANENT GROUND COVER.

EROSION CONTROL NOTES:

SCHEDULE OF EROSION AND SEDIMENTATION CONTROL ACTIVITIES

1. INSTALL GRAVEL CONTROL ENTRANCE AT DESIGNATED PROJECT ENTRANCE.
2. INSTALL SILT FENCING, DROP INLET PROTECTION AND CHECK DAMS AS INDICATED.
3. CONSTRUCT SITE IMPROVEMENTS.
4. STABILIZE AND SEED ALL AREAS NOT TO BE FURTHER DISTURBED BY CONSTRUCTION ACTIVITIES PER THE VEGETATION PLAN AND STATED TIME CONSTRAINTS.
5. INSTALL SOD TO ESTABLISH FINAL VEGETATION.
6. ADDITIONAL MISCELLANEOUS EROSION CONTROL MEASURES MAY BE REQUIRED WHEN DEEMED NECESSARY BY THE CONTRACTING OFFICER OR CONTRACTOR.
7. AFTER CONSTRICTION IS COMPLETE AND ALL DISTURBED AREAS ARE ESTABLISHED WITH VEGETATION, REMOVE ACCUMULATED SEDIMENT FROM FORBAY AREA TO ESTABLISHED A FINISH ELEVATION OF 6.0' LEVEL IN THE FOREBAY AREA.
8. REMOVE SILT FENCING, GRAVEL CONTROL ENTRANCE AND CHECK DAMS ONCE VEGETATION IS 95% ESTABLISHED.

MAINTENANCE PLAN

1. ALL EROSION AND SEDIMENTATION CONTROL DEVICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF–PRODUCING RAINFALL EVENT, BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL DEVICES IN THE OPERATIONAL CONDITIONS INTENDED.
2. ALL AREAS WILL BE STABILIZED IN ACCORDANCE TO THE PROJECT SPECIFICATIONS AND THE VEGETATION PLAN IN ORDER TO ESTABLISH AND MAINTAIN A STABLE GROUND COVER. ANY SEDIMENT TRACKED ONTO THE ADJACENT ASPHALT ROAD SHALL BE REMOVED ON A DAILY BASIS.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND SILT FENCING, DROP INLET PROTECTION AND CHECK DAMS PRIOR TO THE SEDIMENT ACCUMULATING TO A MAXIMUM DEPTH OF SIX INCHES.

NOTE:

PROJECT DRAINS TO: JACK'S BRANCH
WATER CLASSIFICATION: SC, Sw, NSW
STREAM INDEX: 27–115–5

NOTE:

1. ALL FILL MATERIAL NEEDED TO EXECUTE THIS PROJECT MUST BE OBTAINED FROM A PROPERLY PERMITTED COMMERCIAL BORROW PIT AT THE CONTRACTOR'S OWN EXPENSE.
2. NO WETLAND AREAS ARE LOCATED WITHIN THE PROJECT LIMITS OF DISTURBANCE.
3. NO SURFACE WATERS ARE LOCATED WITHIN THE LIMITS OF DISTURBANCE.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include [40 CFR 122.41(h)]
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) ESSC Measures	At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Corrective actions taken, and 7. Date of actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Actions taken to correct/prevent sedimentation, and 7. Date of actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Date of actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Evidence and actions taken to reduce sediment contribution, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit if this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter ESSC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1, E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be documented in the manner described:

Item to Document	Documentation Requirements
(a) Each E&SC Measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC Plan.	Initial and date each E&SC Measure on a copy of the approved E&SC Plan or complete, date and sign an inspection report that lists each E&SC Measure shown on the approved E&SC Plan. This documentation is required upon the initial installation of the E&SC Measures or if the E&SC Measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC Plan.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC Measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC Measures.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2, Additional Documentation

In addition to the E&SC Plan documents above, the following items shall be kept on the site and available for agency inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This general permit as well as the certificate of coverage, after it is received.

(b) Records of inspections made during the previous 30 days. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

(c) All data used to complete the Notice of Intent and older inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1, Occurrences that must be reported

permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2, Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Division's Emergency Response personnel at (800) 662-7956, (800) 858-0368 or (919) 733-3300.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determines that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible.*** The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 03/01/19

A EROSION CONTROL NOTES
NOT TO SCALE

NAVFAC

Digitally signed by John K Avolis
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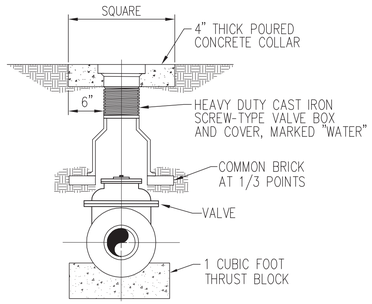
APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES JKA DRW MSP CHK JKA
PWDM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MIDATLANTIC
9TH MARINE
MARINE CORPS AIR STATION
INAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
EROSION CONTROL NOTES

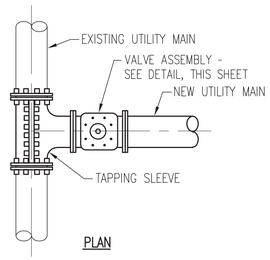
SCALE: AS INDICATED
EPROJECT NO.: 1715336
STATION PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883073
SHEET 19 OF 121
CG502
DRAWFORM REVISION: 10 MARCH 2009

APPR | DATE | DESCRIPTION | SYM

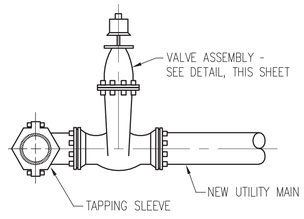


A VALVE AND VALVE BOX

SCALE: NTS



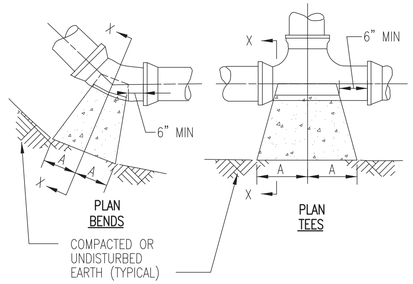
PLAN



SIDE VIEW

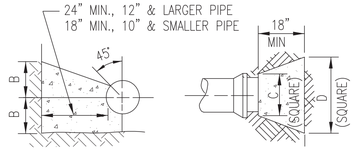
B TAPPING SLEEVE AND VALVE

SCALE: NTS



PLAN
BENDS

PLAN
TEES



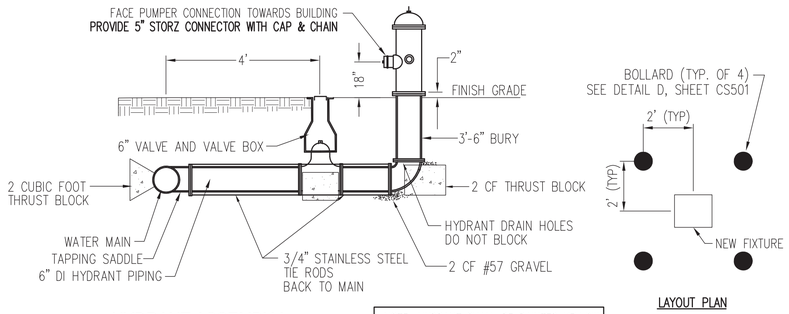
SECTION X–X
BENDS & TEES

PLAN & ELEVATION
PLUGS

SIZE	1/4 BENDS		1/8 BENDS		1/16 BENDS		TEES		PLUGS	
	A	B	A	B	A	B	A	B	C	D
6"	16"	10"	9"	10"	6"	8"	10"	12"	10"	21"
8"	22"	13"	12"	13"	8"	10"	13"	16"	12"	29"
10"	26"	17"	14"	17"	10"	13"	16"	20"	14"	36"
12"	29"	21"	16"	21"	11"	16"	18"	24"	16"	41"
14"	35"	24"	19"	24"	12"	20"	22"	27"	18"	48"
16"	38"	27"	21"	27"	12"	24"	24"	30"	20"	54"

D THRUST BLOCKING

SCALE: NTS

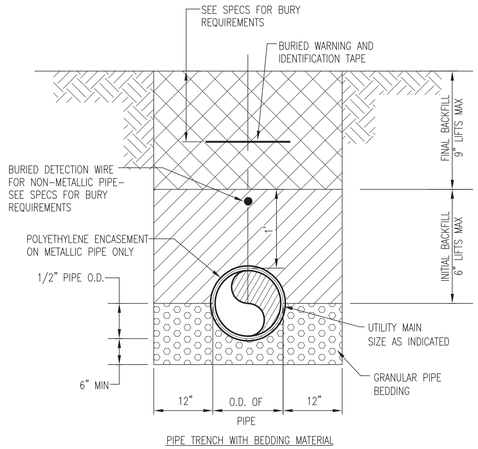


NOTE: HYDRANT SHALL BE PAINTED YELLOW

C HYDRANT ASSEMBLY

NOT TO SCALE

LAYOUT PLAN



PIPE TRENCH WITH BEDDING MATERIAL

E PIPE TRENCH SECTION

SCALE: NTS

APPR	
DATE	
DESCRIPTION	
SYM	

NAVFAC

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PROJ: 22037 A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES JKA | DRW MSP | CHK JKA
PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
1ST MARINE
MARINE CORPS AIR STATION
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC

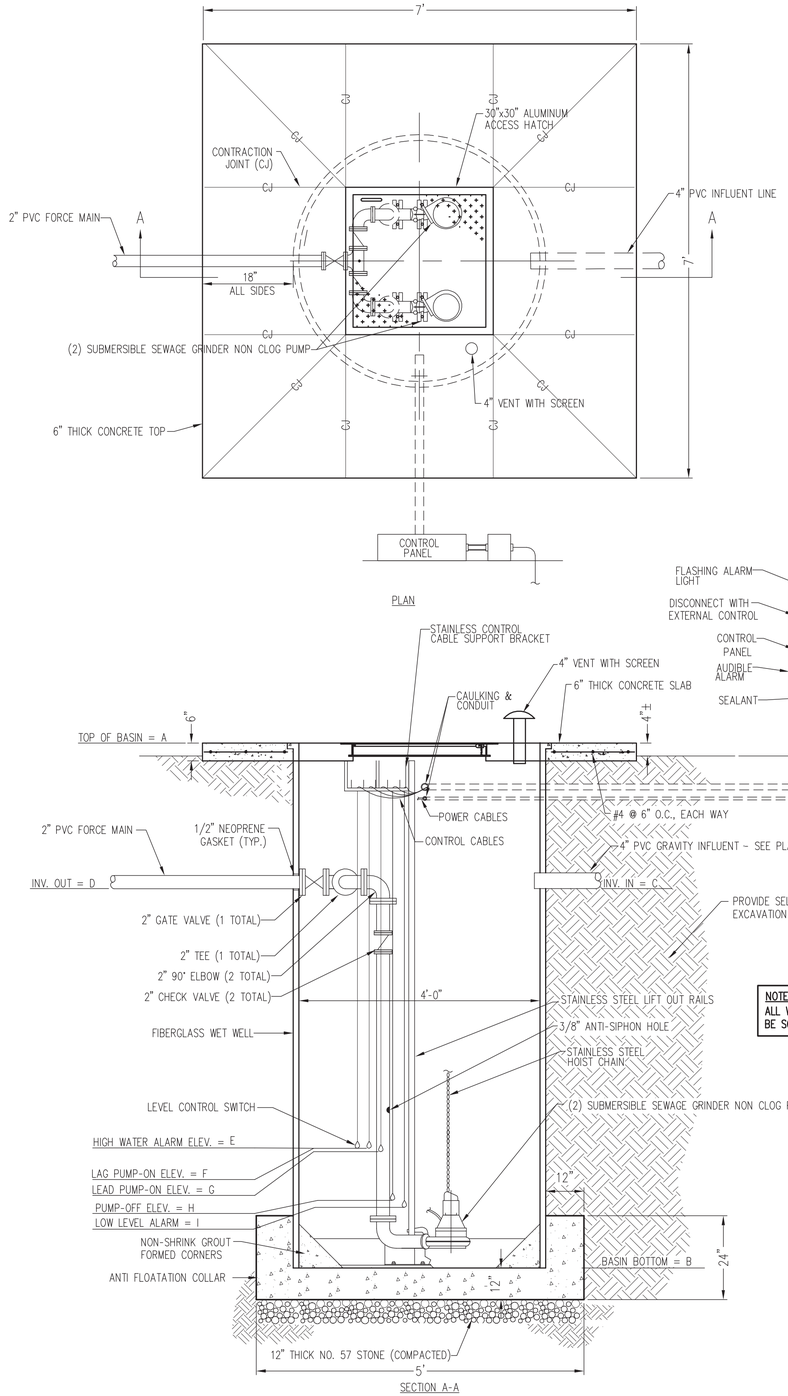
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

DETAILS

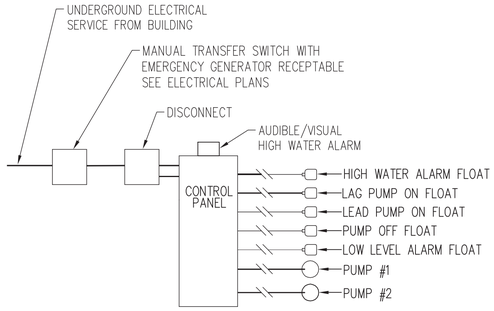
SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STATION PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883074
SHEET	20 OF 121

CU501

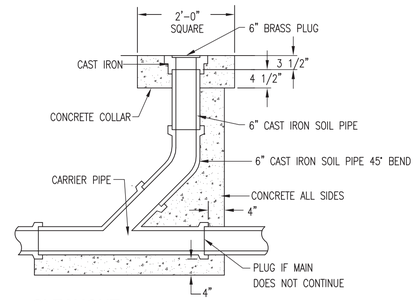
DRAWFORM REVISION: 10 MARCH 2009



PLAN



POWER/CONTROLLER SCHEMATIC
NOT TO SCALE



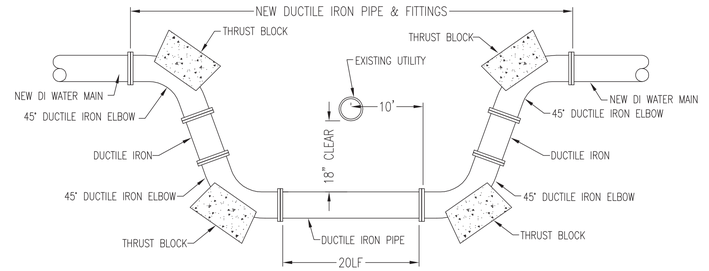
B CLEANOUT
SCALE: NTS

SECTION A-A

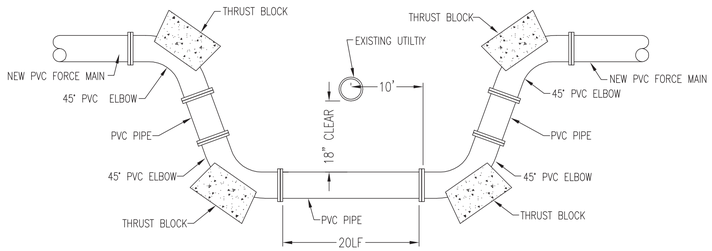
NOTE:
ALL WET WELL PIPING TO BE SCHEDULE 80 PVC

SEWER PUMP STATION SUMMARY										
TOP OF BASIN (A)	BOTTOM OF BASIN (B)	INVERT IN (C)	INVERT OUT (D)	E	F	G	H	I	PUMP CAPACITY	PUMP POWER REQUIREMENTS
26.5	18.5	23.0	23.0	23.2	23.1	23.0	20.0	19.9	40 GPM @ 26' TDH, 1.5 HP	208V, THREE PHASE

A PREFABRICATED WET WELL AND PUMP STATION
NOT TO SCALE



WATER MAIN ROUTING UNDER EXISTING UTILITY



SEWER FORCE MAIN ROUTING UNDER EXISTING UTILITY

C UTILITY CROSSING
NOT TO SCALE

NO.	DESCRIPTION	DATE	APPR

NAVFAC

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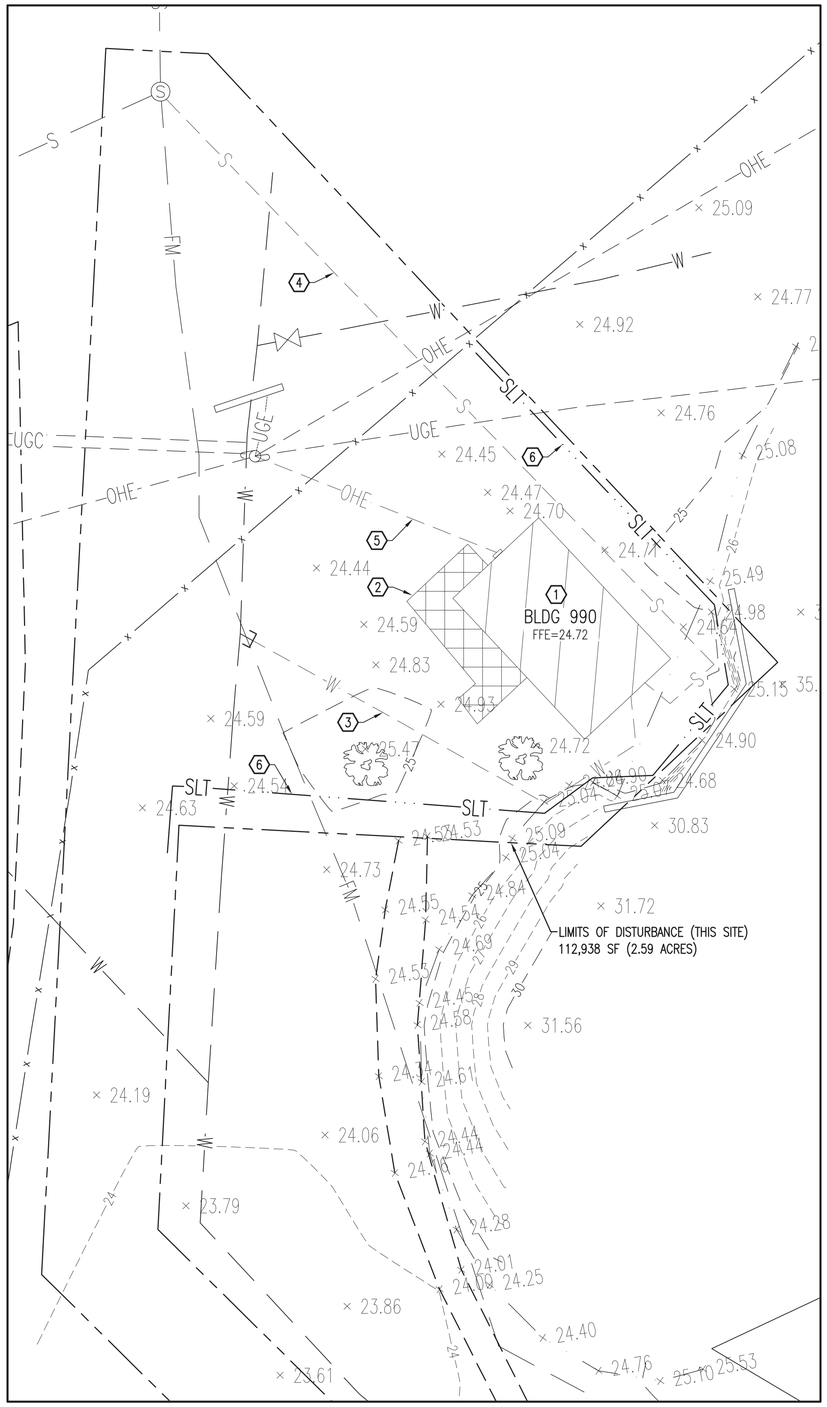
FIRE PROTECTION

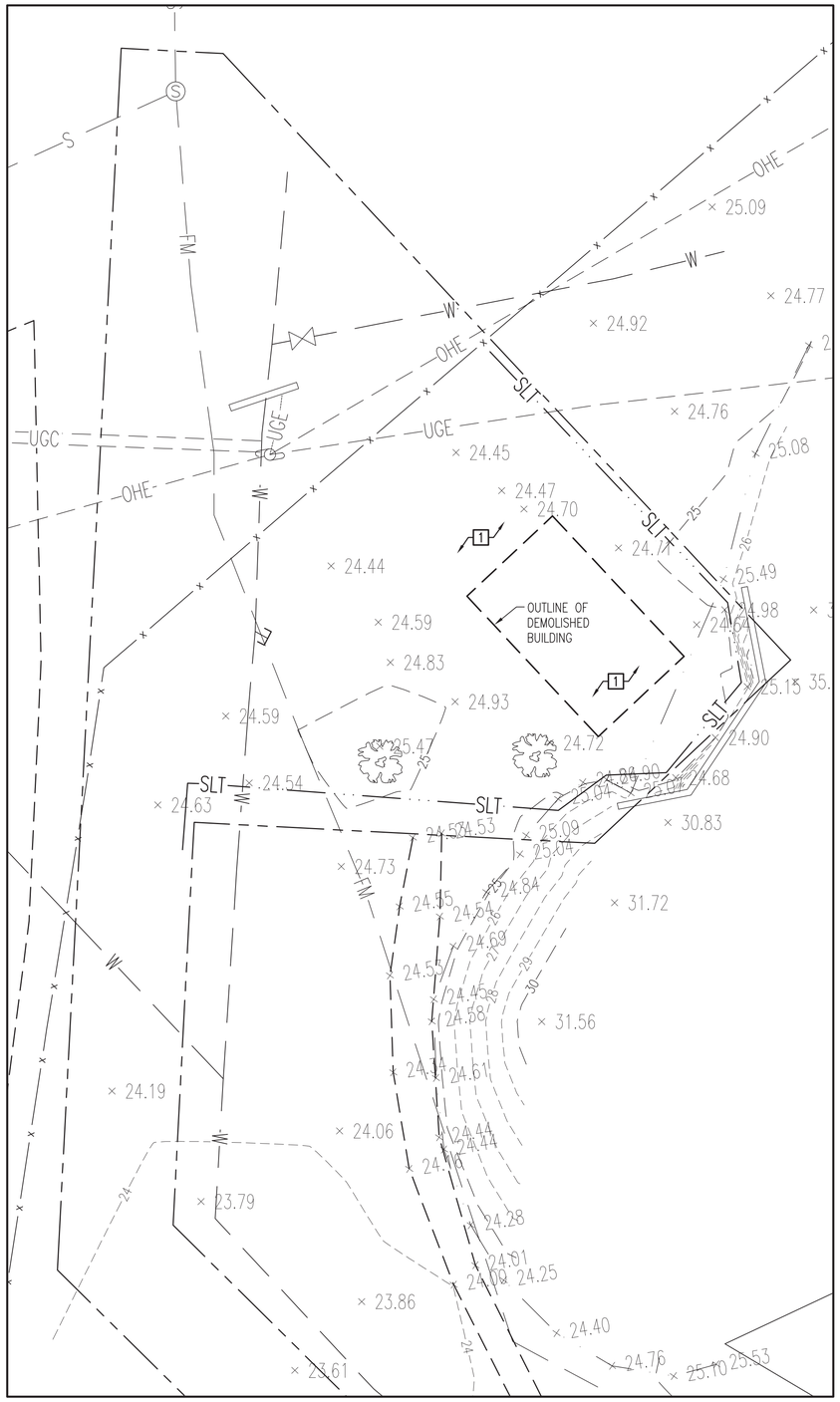
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
1ST MARINE
MARINE CORPS AIR STATION
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
LIFT STATION - PLAN, SECTION & DETAILS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STATION PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883075
SHEET 21 OF 121
CU502
DRAWFORM REVISION: 10 MARCH 2009



ENLARGED SITE PLAN-EXISTING CONDITIONS AND DEMOLITION

SCALE: 1" = 10'



ENLARGED SITE GRADING PLAN

SCALE: 1" = 10'

GENERAL CONSTRUCTION NOTES:

1. THE LOCATION AND DEPTHS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCANNING THE AREA OF WORK TO IDENTIFY TO HIS OWN SATISFACTION THE EXTENT OF UTILITIES PRESENT INCLUDING THE UTILITIES INDICATED TO BE PRESENT, THOSE NOT SHOWN, AND THOSE SHOWN TO BE IN A DIFFERENT LOCATION.
2. PHYSICAL SITE FEATURES OUTSIDE THE AREA OF WORK OR THOSE FEATURES NOT RELEVANT TO THE WORK BEING PERFORMED ARE NOT SHOWN FOR CLARITY.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC FLOW DURING THE COURSE OF CONSTRUCTION. THE CONTRACTOR SHALL DEVELOP A TRAFFIC CONTROL PLAN TO BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL PRIOR TO STARTING CONSTRUCTION.
4. ALL EXISTING VEGETATED AREAS DISTURBED DURING CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH THE PROJECT VEGETATION PLAN, SEE DETAIL F, SHEET CG501.
5. COMPLETE ALL TRENCH SECTION IN ACCORDANCE WITH DETAIL E, SHEET CU501.
6. GRADE EVENLY BETWEEN ALL SPOT ELEVATIONS SHOWN.

DEMOLITION WORK ITEMS (THIS SHEET):

(1) EXISTING BUILDING AND FOUNDATION TO BE REMOVED.

(2) EXISTING CONCRETE TO BE REMOVED.

(3) EXISTING WATER SERVICE TO BE REMOVED, CAP AT MAIN.

(4) EXISTING SEWER SERVICE TO BE REMOVED, PLUG SERVICE AT MANHOLE.

(5) EXISTING OVERHEAD ELECTRIC SERVICE TO BE REMOVED,

(6) INSTALL SILT FENCE. SEE DETAIL A, SHEET CG501.

NEW WORK ITEMS (THIS SHEET):

[1] FILL AND GRADE DISTURBED AREA TO CREATE POSITIVE DRAINAGE AND VEGETATE IN ACCORDANCE WITH THE PROJECT VEGETATION PLAN.

ALL WORK THIS SHEET IS BID OPTION 003

10 0 5 10 20

GRAPHIC SCALE: 1" = 10'

APPR | DATE | DESCRIPTION | SYM

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PWDM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA
1ST MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC

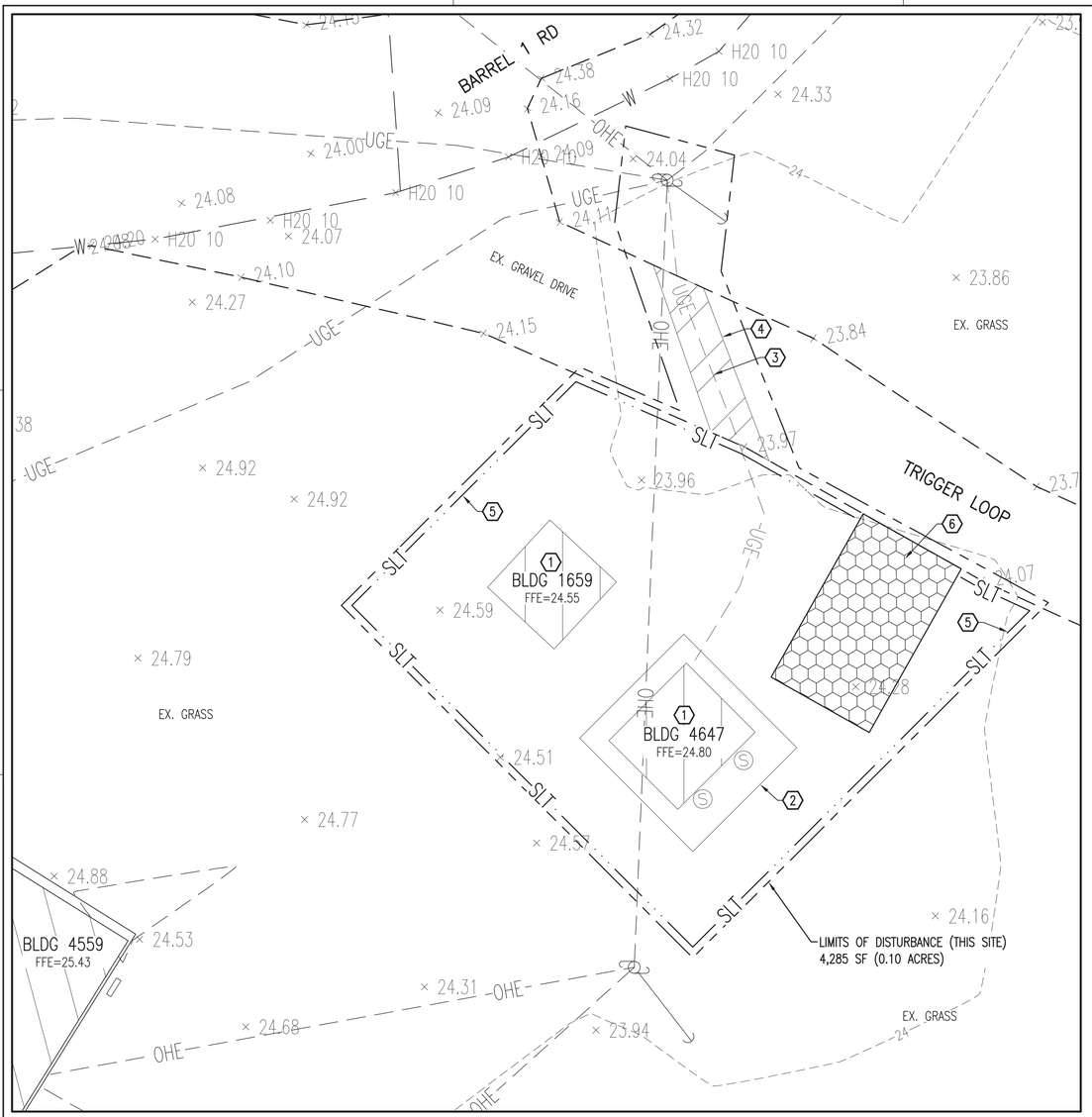
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ENLARGED SITE PLANS - BLDG 990

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STATION PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883076
SHEET 22 OF 121

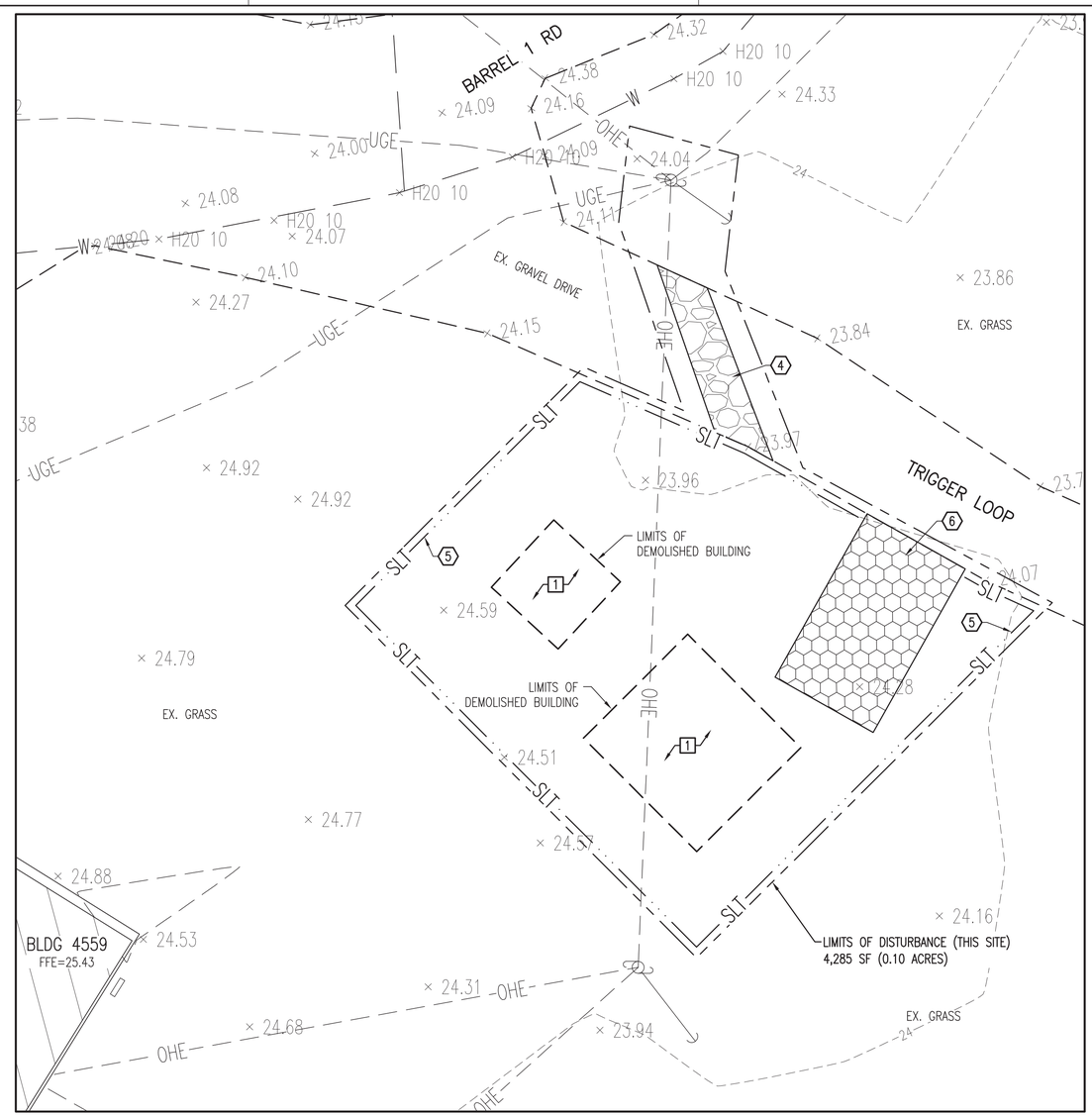
CD701

DRAWFORM REVISION: 10 MARCH 2009



ENLARGED SITE PLAN-EXISTING CONDITIONS AND DEMOLITION

SCALE: 1" = 10'



ENLARGED SITE GRADING PLAN

SCALE: 1" = 10'

GENERAL CONSTRUCTION NOTES:

1. THE LOCATION AND DEPTHS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCANNING THE AREA OF WORK TO IDENTIFY TO HIS OWN SATISFACTION THE EXTENT OF UTILITIES PRESENT INCLUDING THE UTILITIES INDICATED TO BE PRESENT, THOSE NOT SHOWN, AND THOSE SHOWN TO BE IN A DIFFERENT LOCATION.
2. PHYSICAL SITE FEATURES OUTSIDE THE AREA OF WORK OR THOSE FEATURES NOT RELEVANT TO THE WORK BEING PERFORMED ARE NOT SHOWN FOR CLARITY.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC FLOW DURING THE COURSE OF CONSTRUCTION. THE CONTRACTOR SHALL DEVELOP A TRAFFIC CONTROL PLAN TO BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL PRIOR TO STARTING CONSTRUCTION.
4. ALL EXISTING VEGETATED AREAS DISTURBED DURING CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH THE PROJECT VEGETATION PLAN, SEE DETAIL F, SHEET CG501.
5. COMPLETE ALL TRENCH SECTION IN ACCORDANCE WITH DETAIL E, SHEET CU501.
6. GRADE EVENLY BETWEEN ALL SPOT ELEVATIONS SHOWN.

DEMOLITION WORK ITEMS (THIS SHEET):

(1) REMOVE EXISTING BUILDING AND FOUNDATION.

(2) EXISTING CONCRETE COMPOSTING VAULT TO BE PUMPED AND REMOVED. PUMPING SHALL BE COMPLETED BY A NORTH CAROLINA LICENSED SEPTIC INSTALLER.

(3) REMOVE EXISTING UNDERGROUND ELECTRIC SERVICE.

(4) GRAVEL CUT AND PATCH. SEE DETAIL E, SHEET CS501.

(5) INSTALL SILT FENCE. SEE DETAIL A, SHEET CG501.

(6) INSTALL GRAVEL CONTROL ENTRANCE. SEE DETAIL B, SHEET CG501.

NEW WORK ITEMS (THIS SHEET):

[1] FILL AND GRADE DISTURBED AREA TO CREATE POSITIVE DRAINAGE AND VEGETATE IN ACCORDANCE WITH THE PROJECT VEGETATION PLAN.

ALL WORK THIS SHEET IS
BID OPTION 004

10 0 5 10 20
GRAPHIC SCALE: 1" = 10'

APPR | DATE | DESCRIPTION | SYM

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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MIDATLANTIC
9TH MARINE EXPEDITIONARY BRIGADE
NAVAL STATION – NORFOLK, VA
MARINE CORPS AIR STATION CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ENLARGED SITE PLANS - BLDGS 1659 AND 4647

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STATION PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883077
SHEET 23 OF 121

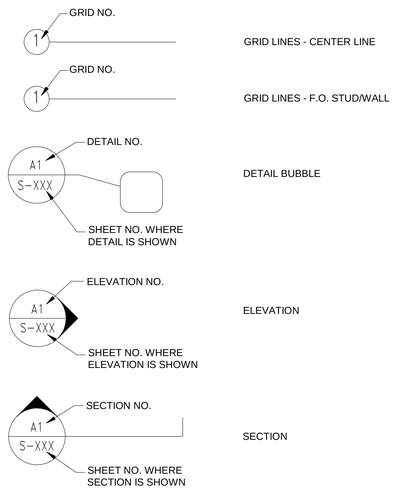
CD702
DRAWFORM REVISION: 10 MARCH 2009

DESIGN BASIS:

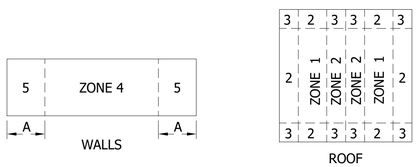
DESIGN CRITERIA

1. BUILDING CODES.....2018 IBC "INTERNATIONAL BUILDING CODE"
UFC 1-200-01, CHANGE 1, 1 OCT 2020 "GENERAL BUILDING REQUIREMENTS"
UFC 3-301-01, CHANGE 1, 4 FEBRUARY 2022 "STRUCTURAL ENGINEERING"
UFC 4-010-01, CHANGE 1, 19 AUGUST 2020 "MINIMUM ANTI-TERRORISM STANDARDS FOR BUILDINGS"
2. BUILDING RISK CATEGORY..... II
3. SUPERIMPOSED DEAD LOADS:
   a) ROOF..... 20 PSF
4. DESIGN LIVE LOADS:
   a) ROOF..... 20 PSF
   b) FLOOR (OFFICE).....50 PSF + 15PSF PARTITIONS
   c) FLOOR.....(LOBBIES AND FIRST FLOOR CORRIDORS) = 100 PSF
   d) MECHANICAL/ELECTRICAL ROOMS.....125 PSF
5. SNOW:
   a) GROUND SNOW LOAD ..... 10 PSF
   b) FLAT ROOF SNOW LOAD..... 10 PSF
   c) SNOW EXPOSURE FACTOR, Ce 1.0
   d) IMPORTANCE FACTOR, Is 1.0
   e) THERMAL FACTOR, Ct 1.0
6. WIND
   a) ULTIMATE WIND SPEED ..... 139 MPH
   b) NOMINAL WIND SPEED..... 108 MPH
   c) WIND EXPOSURE CATEGORY..... B
   d) INTERNAL PRESSURE COEFFICIENT 0.18
   e) ROOF COMPONENTS AND CLADDING ..... SEE TABLE ON SHEET S001
   f) WALL COMPONENTS AND CLADDING ..... SEE TABLE ON SHEET S001
   g) WIND BASE SHEAR (ULTIMATE)..... Vx = 10K, Vy = 35K
7. SEISMIC:
   a) SITE CLASS ..... D
   b) IMPORTANCE FACTOR, Ie 1.0
   c) MAPPED SPECTRAL RESPONSE ACCELERATION, Ss ..... 0.095 G
   d) ONE SECOND PERIOD SPECTRAL RESPONSE COEFFICIENT, ... 0.048 G
   e) SHORT PERIOD SPECTRAL RESPONSE COEFFICIENT, SDS ..... 0.102 G
   f) ONE SEC PERIOD SPECTRAL RESPONSE COEFFICIENT, SD1..... 0.077 G
   g) SEISMIC RESPONSE COEFFICIENT, Cs 0.034
   h) RESPONSE MODIFICATION FACTOR, R..... 2.0
   i) SEISMIC DESIGN CATEGORY ..... B
   j) BASIC SEISMIC FORCE RESISTING SYSTEM .... ORDINARY REINFORCED MASONRY SHEAR WALLS
   k) ANALYSIS PROCEDURE ..... EQUIVALENT LATERAL FORCE
   l) SEISMIC BASE SHEAR ..... V = 30 K

SYMBOLS:



	COMPONENTS & CLADDING NEW DESIGN WIND PRESSURE (ULTIMATE)			
	ZONE	EFFECTIVE WIND AREA	(+) PRESSURE (PSF)	(-) PRESSURE (PSF)
ROOF	1	10	21	-34
	1	20	20	-33
	1	50	17	-32
	1	100	15	-31
	2	10	21	-58
	2	20	20	-54
	2	50	17	-48
	2	100	15	-43
	3	10	21	-86
	3	20	20	-80
	3	50	17	-73
	3	100	15	-68
WALLS	4	10	37	-40
	4	20	35	-38
	4	50	33	-36
	4	100	31	-34
	4	500	28	-31
	5	10	37	-49
	5	20	35	-46
	5	50	33	-41
	5	100	31	-38
	5	500	28	-31



COMPONENTS & CLADDING PRESSURE (PSF)

ABBREVIATIONS:

A/C	Air Conditioning
A.B.	Anchor Bolt
A.C.I.	American Concrete Institute
ADJ.	Adjacent
A.F.F.	Above Finished Floor
AL.	Aluminum
ALT.	Alternate
A.P.A.	American Plywood Institute
ARCH.	Architect
A.S.T.M.	American Society for Testing Materials
BLW.	Below
BETWN.	Between
BLK.	Block
BLKG	Blocking
BM	Beam
B.N.	Boundry Nail
B.O.F.	Bottom of Footing
BOTT	Bottom
C	Channel
C.I.P.	Cast-in-Place
C.J.	Control Joint / Ceiling Joist
CLG	Ceiling
CLR	Clear
CMU	Concrete Masonry Unit
COL	Column
CONC	Concrete
CONN	Connection
CONST	Construction
CONT	Continuous
CSK	Counter Sink
CTR'D	Centered
DBL	Double
DEG	Degree
DEM	Demolish, Demolition
DEP	Depressed
DIA	Diameter
DIAG	Diagonal
DIM	Dimension
DO	Ditto
D.T.	Drag Truss
DWG	Drawing
DWL	Dowel
(E)	Existing
EA.	Each
E.F.	Each Face
E.J.	Expansion Joint
ELEC	Electric, Electrical
ELV	Elevation
E.N.	Edge Nail
EQ.	Equal
EQPT.	Equipment
E.S.	Each Side
E.W.	Each Way
EXIST'G	Existing
EXP.	Expansion
EXT.	Exterior
F.F.	Finished Floor
F.G.	Finish Grade
FIN	Finish, Finished
F.J.	Floor Joist
FLR	Floor, Flooring
F.N.	Field Nail
FND	Foundation
F.O.	Face Of
F.O.C.	Face of Concrete
F.O.M.	Face of Masonry
F.O.S.	Face of Steel (Studs)
F.S.	Far Side
FT.	Feet
FTG	Footing
FUT.	Future
GA	Gauge
GAL	Galvanized
G.B.	Grade Beam
GB	Grade Beam
GD	Grade, Grading
GLB	Glued Laminated
G.T.	Girder Truss
GUSS.	Gusset
HD	Hold Down
HDR	Header
HGR	Hanger
HORIZ	Horizontal
H.P.	High Point
HT.	Height
H.V.A.C	Heating/Ventilation/ Air Conditioning
IBC	International Building Code
I.D.	Inside Diameter
IN	Inch
INCL	Include
INFO	Information
INS	Insulated
INT.	Interior
JST	Joist
JT.	Joint
L	Length, Angle
LAM	Laminated
LB	Pound
LG	Long
L.L.	Live Load
L.L.H.	Long Leg Horizontal
L.L.V.	Long Leg Vertical
L.P.	Low Point
LVR	Louver
MAS	Masonry
MAX	Maximum
M.B.	Machine Bolt
MCJ	Masonry Control Joint
MECH	Mechanical
MED	Medium
MEZZ	Mezzanine
MFR	Manufacture, Manufacturer
MIN	Minimum
MISC	Miscellaneous
M.O.	Masonry Opening
MT.	Mount, Mounted, Mounting
MTL	Metal
N.	North
N.I.C.	Not In Contract
NO.	Number
NOM	Nominal
N.S.	Near Side
N.T.S.	Not To Scale
O.C.	On Center
O.D.	Outside Diameter
O.H.	Opposite Hand, Overhead
OPNG	Opening
P.A.F.	Powder Acuated Fasteners
PAR.	Parallel
P.C.C.	Precast Concrete
P.C.F.	Pounds per Cubic Foot
PENT.	Penetration
PEMB.	Pre-Engineered Metal Building
PL.	Plate, Property Line
℄	Plate
PLY.	Plywood
PNL.	Panel
P.S.F.	Pounds per Square Foot
P.S.I.	Pounds per Square Inch
P.T.	Pressure Treated
R.,RAD.	Radius
REF.	Reference
REINF.	Reinforcement
REQ.	Required
RET.	Return
REV.	Revision, Revised
RF.	Roof
RFT.	Rafters
RM.	Room
R.O.	Rough Opening
R.S.	Rough Sawn
R.T.	Roof Truss
S.	South
SCHED.	Schedule
SEC.	Section
SEP.	Separation
SHT.	Sheet
SIM.	Similar
SLRS	Seismic Lateral Resisting System
S.M.S.	Sheet Metal Screw
SPEC.	Specification(s)
SQ.	Square
S.S.	Stainless Steel
STD.	Standard
STIFF.	Stiffener
STL.	Steel
STRUCT	Structural
SUSP.	Suspended
SYM	Symmetrical
T&B	Top & Bottom
T&G	Tongue & Groove
T.C.	Top of Curb
THK	Thick, Thickness
T.N.	Toe Nail
T.O.B.	Top of Beam
T.O.C.	Top of Concrete
T.O.F.	Top of Footing
T.O.P.	Top of Parapet
T.O.S.	Top of Steel
T.O.W	Top of Wall
T.S.	Tube Steel
TYP.	Typical
U.N.O.	Unless Noted Otherwise
U.O.N.	Unless Otherwise Noted
V.B.	Vapor Barrier
VERT.	Vertical
W/	With
W.	West
WD.	Wood
W/O	Without
W.P.	Water Proof
W.PT.	Working Point
WT.	Weight
W.W.F.	Welded Wire Fabric
W.W.M.	Welded Wire Mesh

SHOP DRAWINGS/SUBMITTALS:

1. PRIOR TO FABRICATION SUBMIT AS A MINIMUM THE FOLLOWING SHOP SUBMITTALS TO THE ARCHITECT/ENGINEER FOR REVIEW AND COMMENT:
   a. CONCRETE MIX DESIGNS
   b. CONCRETE REINF. LAYOUT
   c. PRE-ENGINEERED BUILDING
   d. STRUCTURAL STEEL AND JOISTS

2. STEEL REINFORCING LISTS AND QUANTITIES AND LENGTH OF ALL MATERIALS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ASSURE COMPLIANCE WITH THE PLANS. THE ENGINEER WILL NOT REVIEW THESE ITEMS.

3. REVIEW OF SHOP DRAWINGS BY THE STRUCTURAL ENGINEER IS FOR THE PURPOSE OF GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS. ALL ERRORS IN DETAILING, FABRICATION, AND CORRECT FITTING OF ALL STRUCTURAL MEMBERS INCLUDING COORDINATION WITH OTHER TRADES ARE THE RESPONSIBILITY OF THE CONTRACTOR. SHOP DRAWING SUBMITTALS PROCESSED BY THE ENGINEER DO NOT CONSTITUTE CHANGE ORDERS. ANY PROPOSED CHANGES MUST BE SUBMITTED IN A LETTER OR DETAIL TO THE ARCHITECT/ENGINEER FOR APPROVAL.

4. TWO SETS OF SHOP DRAWINGS WILL BE SUBMITTED AT LEAST TWO WEEKS PRIOR TO THE SCHEDULED FABRICATION DATE. THE SUBMITTAL PACKAGE WILL CONSIST OF ONE BOND SET AND ONE REPRODUCIBLE SET. THE REPRODUCIBLE SET CLEARLY MARKED WITH ANY COMMENTS WILL BE RETURNED TO THE CONTRACTOR AND THE BOND SET WILL BE RETAINED FOR OUR OFFICE RECORDS. ANY ADDITIONAL COPIES REQUIRED FOR DISTRIBUTION MUST BE MADE BY THE CONTRACTOR FROM THE REPRODUCIBLE SET.

5. REPRODUCTION OF THESE STRUCTURAL DRAWINGS IS PROHIBITED FOR THE PURPOSE OF PREPARING SHOP DRAWINGS. SUBCONTRACTOR/FABRICATOR IS TO PROVIDE INDEPENDENTLY CREATED DRAWINGS BASED ON THE INFORMATION SHOWN IN THE CONTRACT DOCUMENTS.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 032586 ENGINEER LUCAS G. A. GELO
04.07.2023 SEAL

k-de kaydos-daniels engineers, pllc
400-201 w morgan st T 919 828 4966
raleigh nc 27603 F 919 828 4967
nc firm license #P-0279

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES	LGG	DRW	SAM	CHK	LGG

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
[PT MARINE] NAVAL STATION - NORFOLK, VA
MARINE CORPS AIR STATION CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

COVER SHEET

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883078
SHEET	24 OF 121

S-001

DRAWFORM REVISION: 10 MARCH 2009

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STRUCTURAL NOTES

1.0 GENERAL NOTES:

1.0.1 THE PROJECT SPECIFICATIONS (A BOOK OF SPECIFICATIONS WHEN PROVIDED) ARE A PART OF THE CONTRACT DOCUMENTS. IF THERE IS A DISCREPANCY FOUND BETWEEN THE SPECIFICATIONS AND THE DRAWINGS, SPECIFICATIONS TAKE PRECEDENCE, HOWEVER THE MATTER WILL BE PROMPTLY SUBMITTED TO THE SEOR FOR CLARIFICATION. ANY WORK PERFORMED BY THE CONTRACTOR WITHOUT SUCH A CLARIFICATION WILL BE AT CONTRACTOR'S OWN RISK AND EXPENSE.

1.0.2 EXAMINE THE STRUCTURAL DRAWINGS AND THE SPECIFICATIONS AND NOTIFY THE ENGINEER & CONTRACTING OFFICER OF ANY DISCREPANCIES IN ELEVATIONS, DIMENSIONS, AND SITE CONDITIONS INCLUDING ERRORS BEFORE PROCEEDING WITH ANY WORK. OMISSIONS AND CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE DRAWINGS (AND SPECIFICATIONS) WILL BE RESOLVED IN WRITING WITH THE ENGINEER/ARCHITECT & CONTRACTING OFFICER PRIOR TO START OF WORK.

1.0.3 THE DRAWINGS (AND SPECIFICATIONS) REPRESENT THE COMPLETED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. PROVIDE ALL MEASURES AND MEANS NECESSARY TO PROTECT PERSONS AND THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES WILL INCLUDE, BUT NOT BE LIMITED TO BRACING, SHORING, ETC. OBSERVATION VISITS BY THE ARCHITECT OR ENGINEER DOES NOT INCLUDE REVIEW OF THESE MEASURES.

1.0.4 TYPICAL DETAILS WILL BE USED WHENEVER APPLICABLE WHETHER SPECIFICALLY REFERENCED OR NOT.

1.0.5 DRAWINGS WILL NOT BE SCALED FOR CONSTRUCTION PURPOSES.

1.0.6 NO PIPES OR DUCTS WILL BE PLACED IN STRUCTURAL MEMBERS UNLESS SPECIFICALLY DETAILED OR APPROVED BY THE ENGINEER & CONTRACTING OFFICER.

1.0.7 REFER TO ARCHITECTURAL DRAWINGS FOR THE FOLLOWING:

A. SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS, UNLESS OTHERWISE NOTED.
B. SIZE AND LOCATION OF INTERIOR AND EXTERIOR NON-BEARING PARTITIONS.
C. SIZE AND LOCATION OF CURBS, FLOOR DRAINS, SLOPES, DEPRESSED AREAS, CHANGES IN LEVEL, RAMPS, CHAMFERS, GROOVES, INSERTS, ETC., EXCEPT AS SHOWN.
D. SIZE AND LOCATION OF FLOOR AND ROOF OPENINGS, EXCEPT AS SHOWN.
E. FLOOR AND ROOF FINISHES.
F. STAIR FRAMING AND DETAILS, EXCEPT AS SHOWN.
G. DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS.

1.0.8 REFER TO MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:

A. PIPE RUNS, SLEEVES, HANGERS, TRENCHES, SLAB OPENINGS, ETC., EXCEPT AS SHOWN OR NOTED.
B. ELECTRICAL CONDUITS, BOXES, OUTLETS.
C. CONCRETE INSERTS FOR ELECTRICAL, MECHANICAL AND PLUMBING FIXTURES.
D. SIZE AND LOCATION OF MACHINE AND EQUIPMENT BASES, ANCHOR BOLTS, ETC.

1.0.9 ASTM REFERENCES ARE FROM THE LATEST ISSUE AND LATEST REVISION, UNLESS OTHERWISE NOTED.

1.0.10 INVESTIGATE THE SITE DURING CLEARING AND EXCAVATION FOR UNSUITABLE CONDITIONS, UNCONSOLIDATED AND UNDOCUMENTED FILLS, BURIED STRUCTURES, UTILITIES, ETC., AND IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER & CONTRACTING OFFICER OF ANY SITE CONDITIONS NOT REFLECTED ON THE DRAWINGS OR DIFFERENT FROM MAXIMUM OR MINIMUM DIMENSIONS INDICATED, INCLUDING CONFLICT IN GRADES, ADVERSE SOIL CONDITIONS, GROUNDWATER PRESENT, DEEPENED FOOTINGS, UNCOVERED AND UNEXPECTED UTILITY LINES, ETC.

1.0.11 CONSTRUCTION MATERIALS, IF PLACED ON STRUCTURAL MEMBERS, WILL BE SPREAD OUT SUCH THAT THE LOADING DOES NOT EXCEED THE DESIGN LIVE LOADS. PROVIDE SHORING AND BRACING WHERE CONSTRUCTION LOADING EXCEEDS THE DESIGN STRENGTH OF THE STRUCTURAL MEMBERS OR THE STRUCTURAL STRENGTH HAS NOT BEEN ATTAINED OR THE STRUCTURE IS NOT COMPLETE.

1.0.12 DETERMINE THE LOCATION OF UTILITY SERVICES IN AREAS TO BE EXCAVATED BEFORE BEGINNING EXCAVATION. EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING. DAMAGE CAUSED AS A RESULT OF FAILING TO EXACTLY LOCATE AND PRESERVE ALL EXISTING UNDERGROUND UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

1.0.13 THE CAD DRAWING FILES ARE THE PROPERTY OF NAVFAC AND WILL NOT BE RELEASED TO THE CONTRACTOR OR SUBCONTRACTOR FOR THEIR USE.

1.0.14 STRUCTURAL DRAWINGS TO BE USED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS BY: MBF ARCHITECTS

DEFERRED SUBMITTALS

THE DEFERRED SUBMITTAL ITEMS MUST NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED BY THE ARCHITECT OR ENGINEER OF RECORD AND THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING. SUBMITTALS ARE TO BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NC.

1. STRUCTURAL STEEL AND DECK SHOP DRAWINGS AND CONNECTION DESIGN
2. SUPPORT ANCHORAGE OF MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT AND COMPONENTS
3. SUBMIT SLAB ON GRADE CONTROL JOINT PLAN (NO PE REQUIRED)
4. COLD-FORMED FRAMING /METAL STUDS CALCULATIONS AND SHOP DRAWINGS INCLUDING LAYOUT, TYPICAL CONSTRUCTION DETAILS, AND CONNECTIONS (ITEMS SHOWN IN PLANS ARE MINIMUM SIZES REQUIRED.)

2.0 FOUNDATION:

2.0.1 FOUNDATION DESIGN IS BASED ON AN ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF AS STATED IN A SUBSURFACE EXPLORATION REPORT PREPARED BY ECS SOUTHEAST, LLP DATED FEBRUARY 3, 2023.

2.0.2 GEOTECHNICAL REPORT AND ALL SUPPLEMENTAL REPORTS OR ADDENDA WILL BE KEPT ON THE JOB SITE AT ALL TIMES.

2.0.3 FOOTING DEPTHS SHOWN ARE A MINIMUM AND MAY REQUIRE DEEPENING PER DIRECTION OF THE GEOTECHNICAL ENGINEER.

2.0.4 NOT USED.

2.0.5 FOOTINGS WILL BEAR ON FIRM UNDISTURBED OR COMPACTED SOIL PER RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER. MINIMUM FOOTING DIMENSIONS AND EMBEDMENTS WILL BE AS FOLLOWS:

MIN. FOOTING SIZES			
	MIN. FTG. WIDTH	MIN. FTG. THICKNESS	MIN. EMBEDMENT
CONT. EXT. FTG.	1'-6"	12"	18"
CONT. INT. FTG.	1'-6"	12"	18"
PAD FTG.	2'-0"	12"	18"

2.0.6 GEOTECHNICAL ENGINEER WILL VERIFY IN WRITING TO THE CONTRACTING OFFICER AND ARCHITECT/ENGINEER THAT SITE GRADING WORK COMPLIES WITH ALL OF THE RECOMMENDATIONS AND CONCLUSIONS OF THE GEOTECHNICAL REPORT. SUBMIT COMPACTION TEST REPORTS FOR ALL FILL BY A QUALIFIED TESTING LAB TO ARCHITECT/ENGINEER & CONTRACTING OFFICER BEFORE FOUNDATION PLACEMENT. ALL LOOSE SOIL AND FILL DIRT WILL BE COMPACTED PER GEOTECHNICAL REPORT AND TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER TO A MINIMUM OF 95% MAXIMUM DENSITY.

2.0.7 THE FOOTING EXCAVATIONS WILL BE KEPT FREE FROM LOOSE MATERIAL AND STANDING WATER AND WILL BE NEAT AND TRUE TO LINE BEFORE ANY CONCRETE IS PLACED. EXCAVATION WILL BE CHECKED AND APPROVED BY A QUALIFIED GEOTECHNICAL ENGINEER TO ENSURE COMPLIANCE WITH THE REQUIREMENTS OF THE GEOTECHNICAL REPORT.

2.0.8 ALL SITE GRADING WORK WILL BE PERFORMED UNDER THE DIRECT OBSERVATION OF THE GEOTECHNICAL ENGINEER. ANY DEVIATIONS IN SOILS CONDITIONS FROM THOSE DESCRIBED IN THE GEOTECHNICAL REPORT ARE TO BE REPORTED TO THE ARCHITECT/ENGINEER, GEOTECHNICAL ENGINEER & CONTRACTING OFFICER IMMEDIATELY.

2.0.9 UTILITY TRENCH BACKFILL WILL BE MECHANICALLY COMPACTED IN LAYERS TO THE APPROVAL OF THE GEOTECHNICAL ENGINEER.

2.0.10 ALL ABANDONED FOOTINGS, UTILITIES, ETC. THAT INTERFERE WITH NEW CONSTRUCTION WILL BE REMOVED.

2.0.11 WALL FOOTINGS ARE CONTINUOUS POURED CONCRETE WITH CONTINUOUS REINFORCING PLACED 3" CLEAR OF BOTTOM AND SIDES.

2.0.12 UNLESS OTHERWISE NOTED, WALL FOOTINGS ARE CENTERED UNDER WALLS AND COLUMN FOOTINGS UNDER COLUMNS.

2.0.13 PROVIDE FOR DESIGN AND INSTALLATION OF ALL CRIBBING, SHEATHING AND SHORING REQUIRED TO SAFELY RETAIN ALL GRADES.

2.0.14 PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM SURFACE, GROUND, AND OR SEEPAGE WATER.

3.0 REINFORCING STEEL:

3.1.1 DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS WILL BE IN ACCORDANCE WITH ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, ACI 315-LATEST ADOPTED EDITION.

3.1.2 ALL REINFORCING WILL BE ADEQUATELY SUPPORTED TO PREVENT DISPLACEMENT BY CONCRETE PLACEMENT OR WORKERS.

3.1.3 ALL REINFORCING BARS EXCEPT BARS TO BE WELDED WILL CONFORM TO THE "STANDARD SPECIFICATION FOR DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT", ASTM A615 GRADE 60. BARS TO BE WELDED WILL CONFORM TO ASTM A706.

3.1.4 WELDING OF REINFORCING BARS TO BE IN ACCORDANCE WITH "STRUCTURAL WELDING CODE-REINFORCING STEEL", AWS D1.4. REINFORCING STEEL TO BE WELDED WILL HAVE A MAXIMUM CARBON EQUIVALENT (CE) OF 0.75. SPECIAL INSPECTION IS REQUIRED. TESTING IS REQUIRED FOR ALL WELDS THICKER THAN 5/16".

3.1.5 WHERE CONTINUOUS BARS ARE CALLED OUT IN FOOTINGS, SPLICES MAY BE USED. WHERE BARS ARE SHOWN SPLICED, THEY MAY RUN CONTINUOUS AT CONTRACTOR'S OPTION.

3.1.6 ALL REINFORCING BAR BENDS WILL BE MADE COLD.

3.1.7 UNLESS OTHERWISE SHOWN, WALL VERTICAL REINFORCING WILL BE POSITIONED AT THE CENTER OF THE WALL.

3.1.8 DOWELS BETWEEN FOOTINGS AND WALLS WILL BE THE SAME GRADE, SIZE, AND SPACING AS VERTICAL REINFORCING.

3.1.9 ALL REINFORCING BARS WILL BE PROVIDED WITH THE FOLLOWING CONCRETE COVER:

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:........ 3"

CONCRETE EXPOSED TO EARTH OR WEATHER:
NO.6 THROUGH NO.18 BAR .... 2"
NO.5 BAR, W31 OR D31 WIRE, AND SMALLER .... 1 1/2"

CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
SLABS, WALLS, JOISTS:
NO.14 AND NO.18 BAR .... 1 1/2"
NO.11 BAR AND SMALLER .... 3/4"

3.1.10 SLAB ON GRADE REINFORCEMENT WILL BE POSITIONED AT MID-DEPTH.

3.1.11 SHOP DRAWINGS FOR SIZE AND LAYOUT OF REINFORCING REBARS ARE REQUIRED WHEN NOTED IN THE LIST OF REQUIRED SHOP DRAWINGS.

3.1 CONCRETE:

3.0.1 CEMENT WILL CONFORM TO ASTM C150, TYPE II / V

3.0.2 AGGREGATES FOR NORMAL WEIGHT CONCRETE WILL CONFORM TO ASTM C33, 1 1/2" MAXIMUM SIZE.

3.0.3 ADMIXTURES MAY NOT BE USED WITHOUT PRIOR APPROVAL OF THE ENGINEER & CONTRACTING OFFICER. ADMIXTURES USED TO INCREASE THE WORKABILITY OF THE CONCRETE WILL NOT REDUCE THE STRENGTH OF CONCRETE. FLY ASH (POZZOLAN) IF PERMITED BY SPECIFICATIONS WILL NOT EXCEED 25% FOR SLAB ON GRADE AND 25% FOR ALL OTHER CONCRETE.

3.0.4 THE MIX DESIGN, INCLUDING PROPORTIONS OF MATERIALS FOR A ONE YARD BATCH, WILL BE SUBMITTED TO THE ENGINEER OF RECORD & CONTRACTING OFFICER FOR REVIEW PRIOR TO ORDERING CONCRETE.

3.0.5 READY-MIX CONCRETE WILL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C94.

3.0.6 ALL REINFORCING BARS AND INSERTS WILL BE SECURED IN PLACE PRIOR TO PLACING CONCRETE.

3.0.7 CONDUITS EMBEDDED HORIZONTALY IN THE SLAB WILL HAVE AN OUTSIDE DIAMETER NO GREATER THAN 1/3 THE THICKNESS OF THE SLAB. CONDUIT WILL NOT BE EMBEDDED IN A SLAB THAT IS LESS THAN 3 1/2" THICK. EXCEPT FOR LOCAL OFFSETS, MIN. CLEAR DISTANCE BETWEEN CONDUITS WILL BE 6".

3.0.8 NON-STRUCTURAL STEEL MEMBERS EMBEDDED IN CONCRETE WILL BE GALVANIZED OR PAINTED. ALL DAMAGED GALVANIZED AREAS WILL BE REPAIRED PRIOR TO EMBEDMENT.

3.0.9 ALL CONCRETE WILL HAVE A MAXIMUM DRY DENSITY OF 150 pcf.

3.0.10 MINIMUM CONCRETE COMPRESSIVE STRENGTHS AT 28 DAYS.

	MIN. f'c
SLAB ON GRADE	4,000 psi
FOOTINGS & ALL OTHER CONCRETE	3,000 psi

3.0.11 PROVIDE CONSTRUCTION OR CONTROL JOINTS IN SLAB ON GRADE AS SHOWN ON PLANS UNLESS SPECIFIED OTHERWISE. LOCATION OF JOINTS NOT SPECIFICALLY INDICATED WILL BE REVIEWED BY THE STRUCTURAL ENGINEER & CONTRACTING OFFICER PRIOR TO PLACING REINFORCING STEEL.

3.0.12 DRY PACK WILL BE ONE PART CEMENT AND 2 3/4 PARTS SAND WITH JUST ENOUGH WATER TO HYDRATE CEMENT AND FORM A BALL SHOWING MOISTURE ON THE SURFACE WHEN SQUEEZED. IT WILL BE RAMMED IN TIGHT TO MAXIMUM DENSITY ATTAINABLE, AND WILL BE FROM A PRODUCT THAT SPECIFIES A MINIMUM STRENGTH AT 28 DAYS OF 5000 psi.

3.0.13 NON-SHRINK GROUT WILL BE FROM A PRODUCT THAT SPECIFIES A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 7,000 psi PER ASTM C109. GROUTING OF BASE PLATES PRIOR TO PLUMBING OF COLUMN IS NOT PERMITTED.

3.0.14 PROJECTING CORNERS OF SLABS, BEAMS, WALLS, COLUMNS, ETC., WILL BE FORMED WITH A 3/4" CHAMFER OR TOOLED EDGE, UNLESS OTHERWISE NOTED.

3.0.15 ALL CONCRETE WHICH DURING THE LIFE OF THE STRUCTURE WILL BE SUBJECT TO FREEZING TEMPERATURES WHILE WET, WILL HAVE A WATER CEMENT RATIO NOT EXCEEDING 0.45 BY WEIGHT AND WILL CONTAIN ENTRAINED AIR PER ACI 613. SUCH CONCRETE WILL INCLUDE EXTERIOR SLABS, PERIMETER FOUNDATIONS, EXTERIOR CURBS, ETC.

3.2 ADHESIVE, ANCHOR RODS AND REBAR IN HARDENED CONCRETE (EPOXY ANCHORS):

3.2.1 ALL ADHESIVE ANCHOR INSTALLATIONS WILL COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND SPECIFICATIONS, INCLUDING ANY ICC-ES REPORTS.

THE FOLLOWING INSTRUCTIONS ARE MINIMUM REQUIREMENTS AND DO NOT SUPERSEDE ANY INSTRUCTIONS OR REQUIREMENTS FROM THE CONTRACTOR'S SELECTED MANUFACTURER. CONTRACTOR TO SUBMIT SELECTED ANCHOR PRODUCT FOR REVIEW AND APPROVAL.

3.2.2 DUST WILL BE BLOWN FROM THE HOLE WITH COMPRESSED AIR TO ENSURE PROPER ANCHOR SEATING DEPTH AND TO PROVIDE A CLEAN BONDING SURFACE. ADDITIONALLY, THE HOLE WILL BE BRUSHED WITH A NYLON BRUSH THEN BLOWN AGAIN WITH COMPRESSED AIR.

3.2.3 ADHESIVE WILL ONLY BE APPLIED TO DRY SURFACES.

3.2.4 BASE MATERIAL TEMPERATURE MUST BE 40°F OR ABOVE AT TIME OF INSTALLATION. FOR BEST RESULTS, MATERIAL SHOULD BE 70°F-80°F.

3.2.5 WHEN INSTALLING EPOXY ANCHORS INTO MASONRY, ANCHORS WILL BE INSTALLED IN SOLID GROUTED CELLS ONLY.

3.2.6 CHEMICAL ANCHOR SYSTEMS:

A. CONCRETE: USE ONLY ADHESIVE ANCHOR SYSTEMS THAT HAVE BEEN ISSUED AN ICC-ES REPORT IN ACCORDANCE WITH PROVISIONS OF OF ICC-ES AC308. ANCHOR SYSTEM SHOULD BE APPROVED FOR USE IN CRACKED CONCRETE AND SEISMIC DESIGN CATEGORIES A-F PER SECTION 2.0 OF THE ICC-ES EVALUATION SERVICES REPORT. ANCHOR SYSTEM WILL BE INSTALLED PER REQUIREMENTS OF THE ICC-ES EVALUATION SERVICES REPORT FOR SPECIFIC ANCHOR, AND AS REQUIRED BY THE MANUFACTURER.

B. GROUT-FILLED MASONRY UNITS: USE ONLY ADHESIVE ANCHOR SYSTEMS THAT HAVE BEEN ISSUED AN ICC-ES REPORT IN ACCORDANCE WITH PROVISIONS OF ISS-ES AC58. ANCHOR SYSTEMS WILL BE INSTALLED PER REQUIREMENTS OF ICC-ES EVALUATION SERVICES REPORT FOR THE SPECIFIC ANCHOR, AND AS REQUIRED BY THE MANUFACTURER.

3.2.7 ANCHOR RODS:

ALL RODS WILL BE ASTM A36 THREADED RODS WITH ASTM A563 GRADE A NUTS AND ANSI B18.22.1 TYPE A WASHERS, UNLESS OTHERWISE NOTED. ANCHORS DESIGNATED AS ASTM A193 GRADE B7 THREADED RODS WILL USE ASTM A563 GRADE DH HEAVY HEX NUTS AND ASTM F436 WASHERS.

3.2.8 REINFORCEMENT BARS: ASTM A615 GRADE 60 STEEL.

3.2.9 REMOVE GREASE, OIL, RUST AND ANY OTHER LAITANCE FROM RODS AND DOWELS PRIOR TO INSTALLATION.

4.0 MASONRY:

DESIGN STRENGTH: f'm = 1500 psi	
MASONRY COMPONENTS	STRENGTH @ 28 DAYS
CONCRETE MASONRY UNITS	1900 psi
GROUT	3000 psi
MORTAR (TYPE S)	1800 psi

4.0.1 ALL MASONRY WORK WILL CONFORM TO INTERNATIONAL BUILDING CODE (IBC), LATEST ADOPTED EDITION AS LISTED HEREIN.

4.0.2 CONCRETE MASONRY UNITS WILL BE MEDIUM WEIGHT UNITS IN ACCORDANCE WITH ASTM C90 WITH MAXIMUM LINEAR SHRINKAGE OF 0.065%.

4.0.3 CEMENT WILL BE AS SPECIFIED FOR CONCRETE.

4.0.4 MORTAR WILL CONFORM TO ASTM C270

TABLE 2 PROPERTY SPECIFICATION REQUIREMENTS[A]

MORTAR	TYPE	AVG. COMPRESSIVE STRENGTH AT 28 DAYS, MIN.	WATER RETENTION, MIN. %	AIR CONTENT, MAX. %[B]	AGGREGATE RATIO (MEASURED IN DAMP, LOOSE CONDITIONS)
CEMENT-LIME	M	2500 psi	75	12	
	S	1800 psi	75	12	
	N	750 psi	75	14[C]	
	O	350 psi	75	14[C]	
MORTAR CEMENT	M	2500 psi	75	12	NOT LESS THAN 2 1/4 AND NOT MORE THAN 3 1/2 THE SUM OF SEPARATE VOLUMES OF CEMENTITIOUS MATERIALS
	S	1800 psi	75	12	
	N	750 psi	75	14[C]	
	O	350 psi	75	14[C]	
MASONRY CEMENT	M	2500 psi	75	18	
	S	1800 psi	75	18	
	N	750 psi	75	20[D]	
	O	350 psi	75	20[D]	

[A] LABORATORY PREPARED MORTAR ONLY
[B] SEE NOTE
[C] WHEN STRUCTURAL REINFORCEMENT IS INCORPORATED IN CEMENT-LINE OR CEMENT MORTAR, THE MAX. AIR CONTENT WILL BE 12%.
[D] WHEN STRUCTURAL REINFORCEMENT IS INCORPORATED IN MASONRY OR CEMENT MORTAR, THE MAX. AIR CONTENT WILL BE 18%.

4.0.5 MORTAR JOINTS WILL BE STRAIGHT, CLEAN AND UNIFORM IN THICKNESS, AND WILL BE TOOLED AS SHOWN ON THE PLANS OR AS SPECIFIED (FLUSH JOINTS IF NO SPECIAL TREATMENT SPECIFIED). UNLESS OTHERWISE SPECIFIED OR DETAILED ON THE PLANS, HORIZONTAL AND VERTICAL MORTAR JOINTS WILL BE 3/8" THICK WITH FULL MORTAR COVERAGE ON THE FACE SHELL.

4.0.6 OVERHANGING MORTAR DROPPINGS AND ALL DEBRIS WILL BE REMOVED FROM ALL CELLS RECEIVING GROUT. FAILURE TO REMOVE DEBRIS WILL BE CAUSE FOR REJECTION OF WALL AND ALL REPAIR OR REWORK NECESSARY WILL BE ENTIRELY AT CONTRACTOR'S EXPENSE.

4.0.7 VERTICAL HEAD JOINTS WILL BE BUTTERED WELL FOR A THICKNESS EQUAL TO THE FACE SHELL OF THE BLOCK AND THESE JOINTS WILL BE SHOVED TIGHTLY SO THAT THE MORTAR BONDS WELL TO BOTH BLOCKS. IF IT IS NECESSARY TO MOVE A BLOCK SO AS TO OPEN A JOINT, THE BLOCK WILL BE REMOVED FROM THE WALL, CLEANED AND SET IN FRESH MORTAR

4.0.8 GROUT WILL CONFORM TO ASTM C476.
EXCERPTS FROM ASTM C476:

TABLE 2103.12
GROUT PROPORTIONS BY VOLUME FOR MASONRY CONSTRUCTION

TYPE	PARTS BY VOLUME OF PORTLAND CEMENT OR BLENDED CEMENT	PARTS BY VOLUME OF HYDRATED LIME OR LIME PUTTY	AGGREGATE, MEASURED IN A DAMP, LOOSE CONDITION	
			FINE	COARSE
FINE GROUT	1	0-1/10	2 1/4-3 TIMES THE SUM OF THE VOLUMES OF THE CEMENTITIOUS MATERIALS	-
COARSE GROUT	1	0-1/10	2 1/4-3 TIMES THE SUM OF THE VOLUMES OF THE CEMENTITIOUS MATERIALS	1-2 TIMES THE SUM OF THE VOLUMES OF THE CEMENTITIOUS MATERIALS

SPECIFIED COMPRESSIVE STRENGTH- PROPORTIONS ESTABLISHED BY 28-DAY COMPRESSIVE STRENGTH TESTS IN ACCORDANCE WITH TEST METHOD C 1019 THAT OBTAIN THE SPECIFIED COMPRESSIVE STRENGTH. THE GROUT WILL BE MIXED TO A SLUMP OF 8 in. TO 11 in. AS DETERMNINED BY TEST METHOD C 143/C 143M AND WILL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 psi AT 28 DAYS.

4.0.9 ALL CELLS WILL BE FILLED SOLID WITH GROUT UNLESS OTHERWISE NOTED.

4.0.10 ALL GROUT WILL BE CONSOLIDATED WITH A MECHANICAL VIBRATOR. MINIMUM 4000 rpm, 3/4" MAXIMUM HEAD. PROVIDE INSPECTION AND CLEANOUT HOLES AT THE BASE OF GROUTED CELLS FOR ALL LIFTS GREATER THAN 5'-0".

4.0.11 WHEN GROUTING IS STOPPED FOR ONE HOUR OR LONGER, HORIZONTAL CONSTRUCTION JOINTS WILL BE FORMED BY STOPPING THE GROUT POUR 1 1/2" BELOW TOP OF THE UPPERMOST UNIT.

4.0.12 UNLESS OTHERWISE NOTED, ALL MASONRY WILL BE CONSTRUCTED WITH A RUNNING BOND PATTERN.

4.0.13 ELECTRIC CONDUIT BOXES AND/OR OTHER OBSTRUCTIONS ARE NOT PERMITTED IN CELLS CONTAINING REINFORCING, UNLESS APPROVED BY THE ENGINEER & CONTRACTING OFFICER.

4.0.14 UNLESS OTHERWISE SHOWN ON THE PLANS, ALL LAP SPLICES OF REINFORCING STEEL IN MASONRY WILL BE PER SCHEDULE.

4.0.15 ALL HORIZONTAL REINFORCEMENT BARS WILL BE PLACED IN BOND BEAM MASONRY UNITS.

4.0.16 ALL LINTEL REINFORCEMENT BARS WILL BE PLACED IN LINTEL BEAM BLOCK.

4.0.17 ALL VERTICAL REINFORCEMENT BARS WILL BE PLACED AT THE CENTER OFTHE WALL UNLESS OTHERWISE SHOWN. VERTICAL BARS ARE TO BE TIED OR OTHERWISE FIXED IN POSITION AT INTERVALS OF NOT MORE THAN 200 BAR DIAMETERS AND AT TOP AND BOTTOM.

4.0.18 ANCHOR BOLTS MUST BE SET WITH TEMPLATES AND HELD IN PLACE PRIOR TO GROUTING.

4.0.19 PROVIDE A MINIMUM OF ONE BAR DIAMETER OF GROUT BETWEEN MAIN REINFORCING AND MASONRY UNITS. PROVIDE A MINIMUM OF 1" GROUT AROUND ALL BOLTS EMBEDDED IN MASONRY.

4.0.20 FOR ALL MASONRY WORK INSPECTIONS SEE INSPECTION AND TESTING SPECIFICATIONS.

4.0.21 REFER TO MASONRY CONSTRUCTION DETAILS ON SHEET S502.

5.0 STRUCTURAL STEEL:

5.0.1 THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL WILL BE IN ACCORDANCE WITH "AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" AND STEEL CONSTRUCTION MANUAL AISC 360, LATEST ADOPTED EDITION. EXCEPT AS AMMENDED IN IBC CHAPTER 22.

5.0.2 THE SEISMIC DESIGN OF STEEL STRUCTURES WILL BE IN ACCORDANCE WITH "AISC SEISMIC PROVISIONS FOR STRUCTUAL STEEL BUILDINGS", INCLUDING ALL SUPPLEMENTS AISC 341 EXCEPT AS AMENDED IN IBC CHAPTER 22.

5.0.3 ALL CONNECTIONS WILL BE DETAILED IN ACCORDANCE WITH LATEST EDITION OF AISC "DETAILING FOR STEEL CONSTRUCTION".

5.0.4 STEEL FURNISHED FOR STRUCTURAL LOAD-CARRYING PURPOSES WILL BE PROPERLY IDENTIFIED FOR CONFORMITY TO THE SPECIFIED GRADES SHOWN BELOW AND IN ACCORDANCE WITH ASTM STANDARDS AND PROVISIONS OF IBC CHAPTER 22. STEEL THAT IS NOT READILY IDENTIFIABLE AS TO GRADE FROM MARKING AND TEST RECORDS WILL BE TESTED TO DETERMINE CONFORMITY TO:

A. WIDE FLANGE	ASTM F992 (Fy=50 ksi)
B ANGLES AND CHANNELS	ASTM A36 (Fy=36 ksi)
C. PLATES	ASTM A36 (Fy=36 ksi)
D. HSS (RECTANGULAR)	ASTM A500 GRADE B (Fy=46 ksi)
E. ANCHOR BOLTS	ASTM F1554 GRADE 55 AT GRAVITY COLUMN

5.0.5 ALL COLUMN ENDS TO BE MILLED.

5.0.6 ALL EXTERIOR STRUCTURAL STEEL PERMANENTLY EXPOSED TO THE WEATHER WILL BE HOT-DIPPED GALVANIZED AFTER FABRICATION. ZINC COATING WILL CONFORM TO ASTM A123 (G-60 U.O.N.).

5.0.7 ALL WELDING DONE AFTER GALVANIZING WILL BE PROTECTED WITH TWO COATS OF "GALVALOY", OR EQUAL. CONTRACTOR TO USE VENTILLATION WHILE PERFORMING THIS WORK AS REQUIRED BY OSHA.

5.0.8 ALL STEEL FABRICATION WILL BE PERFORMED IN AN APPROVED FABRICATION SHOP.

5.0.9 STEEL FABRICATOR WILL VERIFY ALL DIMENSIONS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.

5.0.10 ALL METAL ITEMS, INCLUDING CONNECTORS, EXPOSED TO THE WEATHER WILL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.

5.0.11 STRUCTURAL STEEL WILL BE DELIVERED TO THE JOB SITE FREE OF EXCESSIVE RUST, MILL SCALE, GREASE, ETC.

5.0.12 SUBMIT SHOP DRAWINGS TO THE STRUCTURAL ENGINEER & CONTRACTING OFFICER FOR REVIEW PRIOR TO FABRICATION FOR ALL STRUCTURAL STEEL MEMBERS AND ACCESSORIES.

6.0 STEEL JOISTS:

6.0.1 FABRICATION AND ERECTION OF STEEL JOISTS SHALL BE IN ACCORDANCE WITH THE LATEST SPECIFICATIONS AND CODE OF STANDARD PRACTICE OF THE STEEL JOIST INSTITUTE.

6.0.2 JOISTS SHALL BE DESIGNED FOR A MINIMUM NET UPLIFT OF 25 PSF, UNLESS NOTED OTHERWISE.

6.0.3 SEE PLANS FOR JOIST DESIGNATIONS.

7.0 STEEL DECK:

7.0.1 METAL DECKING WILL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE STEEL DECK INSTITUTE SPECIFICATIONS.

7.0.2 WELDING OF METAL DECKING WILL CONFORM TO AWS D1.3, "STRUCTURAL WELDING CODE-SHEET STEEL"

7.0.3 METAL DECK WILL BE GALVANIZED AND SHOP-PRIMED STEEL SHEET: ASTM A653, STRUCTURAL STEEL (55) GRADE 33 or 50, G60 ZINC COATING; CLEAN, PRETREATED, AND PRIMED WITH MANUFACTURER'S STANDARD BAKED-ON, RUST-INHIBITIVE PRIMER. COLOR WILL BE THE MANUFACTURER'S STANDARD UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL PLANS

7.0.4 METAL DECK WILL HAVE A 3-SPAN CONDITION UNLESS NOTED OTHERWISE AND HAVE HAVE INTERLOCKING SEAM SIDELAPS.

7.0.5 FASTEN ROOF DECK PANELS TO STEEL SUPPORTING MEMBERS BY ARC SPOT (PUDDLE) WELDS WITH A 5/8" DIAMETER, NOMINAL WELD INTERIOR RIBS OF DECK UNITS AS INDICATED ON THE ROOF DECK DETAIL ON THESE DRAWINGS. FASTEN SIDELAPS OF PANELS BETWEEN SUPPORTS WITH No. 10 SELF-DRILLING CARBON STEEL SCREWS AS INDICATED ON THE ROOF DECK DETAIL ON THESE DRAWINGS. INSTALL DECK ENDS OVER SUPPORTING FRAMING WITH A 1-1/2" MINIMUM END BEARING AND LAP JOINTS 2". FASTEN ROOF DECK PANELS TO DIAPHRAGM PERIMETER, i.e. EDGE ANGLES, BY ARC SPOT (PUDDLE) WELDS WITH A 5/8" DIAMETER, NOMINAL AT 12" O.C. TYPICAL UNLESS NOTED OTHERWISE.

7.0.6 PROVIDE MISCELLANEOUS DECK ACCESSORIES NOT SPECIFICALLY NOTED ON THESE DRAWINGS AS REQUIRED TO SUBSTRATE A COMPLETE DECK INSTALLATION. THESE ACCESSORIES MAY INCLUDE RIDGE AND VALLEY PLATES, FINISH STRIPS, END CLOSURES, REINFORCING CHANNELS, AND WELD COVER PLATES AT CHANGES IN DIRECTION OF DECK PANELS ACCORDING TO DECK MANUFACTURER'S WRITTEN INSTRUCTIONS.

7.0.7 PLACE DECK PANELS ON SUPPORTING FRAME AND ADJUST TO FINAL POSITION WITH ENDS ACCURATELY ALIGNED AND BEARING ON SUPPORTING FRAME BEFORE BEING PERMANENTLY FASTENED. DO NOT STRETCH OR CONTRACT SIDELAP INTERLOCKS.

SYM | DESCRIPTION | DATE | APPR

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NORTH CAROLINA PROFESSIONAL SEAL 032586 ENGINEER LUCAS G. A. GELO
04.07.2023 SEAL

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A/E INFO

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ACTIVITY
SATISFACTORY TO
DES LGG | DRW SAM | CHK LGG
PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA
IPT MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
STRUCTURAL NOTES

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883079
SHEET 25 OF 121
S-002
DRAWFORM REVISION: 10 MARCH 2009

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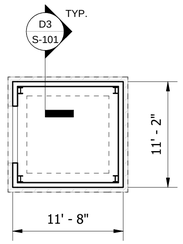
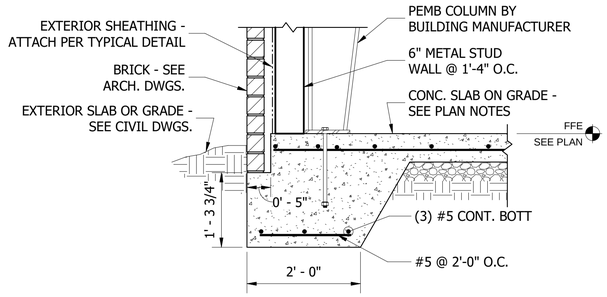




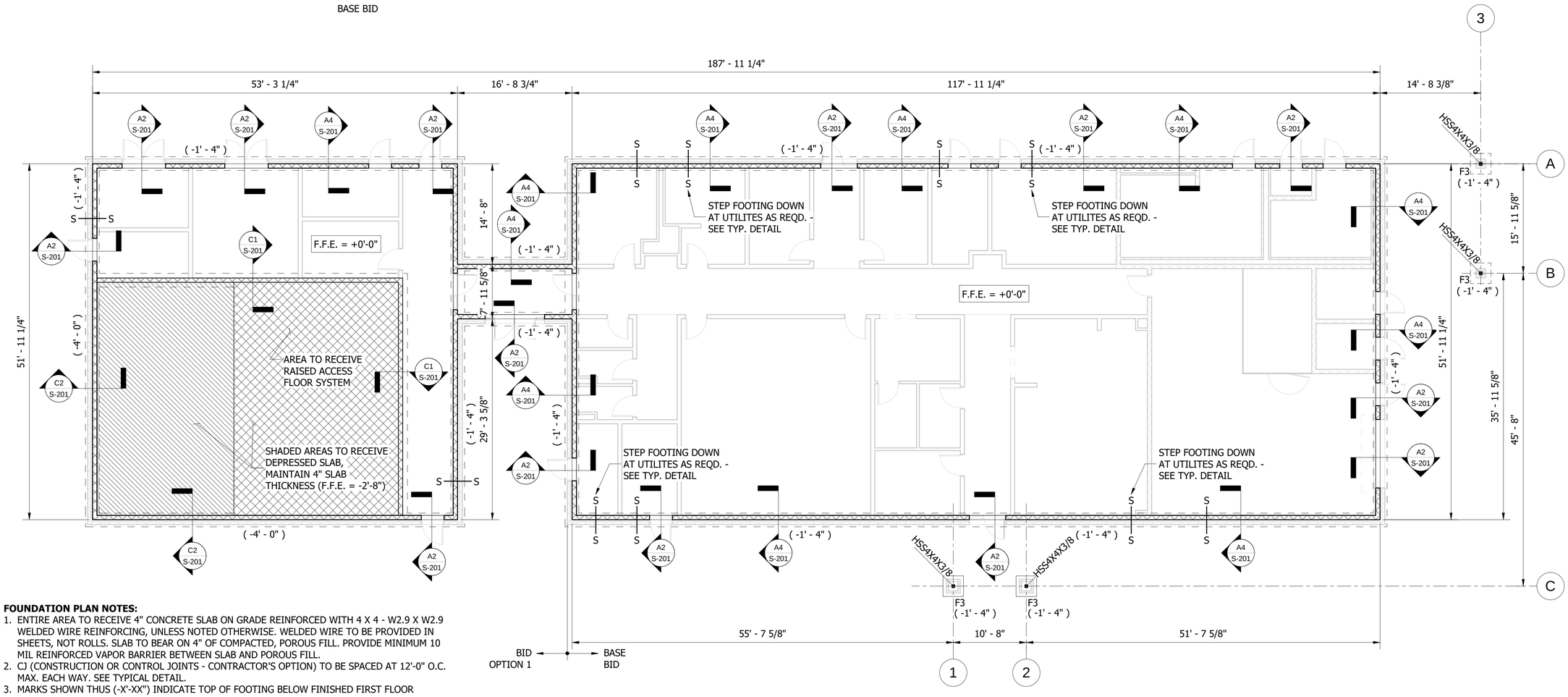
D1 FOUNDATION PLAN - MDAS SHELTER

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

BASE BID

D3 SECTION

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



A3 FOUNDATION PLAN

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

FOUNDATION PLAN NOTES:

1. ENTIRE AREA TO RECEIVE 4" CONCRETE SLAB ON GRADE REINFORCED WITH 4 X 4 - W2.9 X W2.9 WELDED WIRE REINFORCING, UNLESS NOTED OTHERWISE. WELDED WIRE TO BE PROVIDED IN SHEETS, NOT ROLLS. SLAB TO BEAR ON 4" OF COMPACTED, POROUS FILL. PROVIDE MINIMUM 10 MIL REINFORCED VAPOR BARRIER BETWEEN SLAB AND POROUS FILL.
2. CJ (CONSTRUCTION OR CONTROL JOINTS - CONTRACTOR'S OPTION) TO BE SPACED AT 12'-0" O.C. MAX. EACH WAY. SEE TYPICAL DETAIL.
3. MARKS SHOWN THUS (-X'-XX") INDICATE TOP OF FOOTING BELOW FINISHED FIRST FLOOR ELEVATION. CONTRACTOR MUST COORDINATE TOP OF FOOTING ELEVATIONS WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND CIVIL DRAWINGS. THE STRUCTURAL ENGINEER MUST BE NOTIFIED OF CONFLICTS OR DISCREPANCIES IN TOP OF FOOTING ELEVATIONS.
4. CONTRACTOR MUST COORDINATE WITH SITE DRAWINGS AND PROVIDE FOOTING STEPS AS REQUIRED. SEE TYPICAL DETAIL.
5. REFERENCE FINISH SLAB ELEVATION TO BE 0'-0", UNLESS NOTED THUS (-__'-__") ON PLAN. SEE CIVIL DRAWINGS FOR ACTUAL FINISHED FLOOR ELEVATION.
6. SEE TYPICAL CONSTRUCTION DETAILS ON SHEETS S-501, S-502.
7. SEE GENERAL NOTES ON SHEETS S-001, S-002.

GRAPHIC SCALE: 1/8"=1'-0"
8' 0 4' 8' 16'

APPR | DATE | DESCRIPTION | SYM

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032586 LUCAS G. A. GELO
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A/E INFO

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DES LGG | DRW SAM | CHK LGG
PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MIDATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
MARINE CORPS AIR STATION
[P]T MARINE

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FOUNDATION PLAN

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883080
SHEET	26 OF 121

S-101

DRAWFORM REVISION: 10 MARCH 2009

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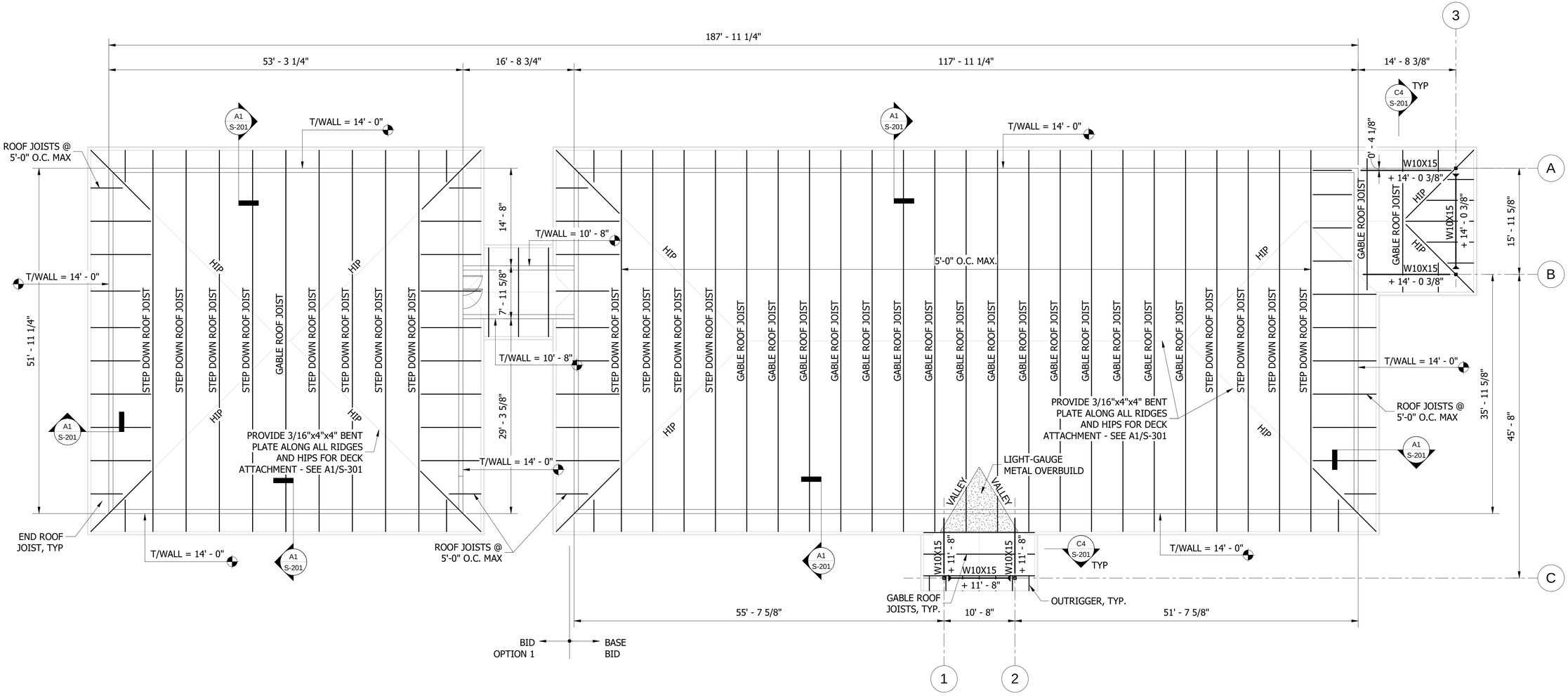

A2 ROOF FRAMING PLAN

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

N

ROOF FRAMING PLAN NOTES:

1. ENTIRE AREA TO RECEIVE 1 1/2", 20 GAGE, TYPE B, GALVANIZED METAL ROOF DECK, UNLESS NOTED OTHERWISE. SEE TYPICAL ROOF DECK ATTACHMENT DETAIL ON SHEET S-501.
2. MARKS SHOWN THUS (+ XX'-XX") INDICATE TOP OF STEEL ELEVATION ABOVE FINISH FIRST FLOOR REFERENCE ELEVATION, 0'-00".
3. ► ON PLAN INDICATES A MOMENT CONNECTION. SEE TYPICAL DETAIL.
4. SEE ELEVATION ON SHEET S-301 FOR TYPICAL GABLE ROOF JOIST.
5. SEE TYPICAL CONSTRUCTION DETAILS ON SHEETS S-501, S-502.
6. SEE GENERAL NOTES ON SHEETS S-001, S-002.

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

8' 0 4' 8' 16'

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032586 ENGINEER LUCAS G. A. GELO

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA
1PT MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC

P-196U CONSTRUCT RANGE
OPERATIONS FACILITY

ROOF FRAMING PLAN

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883081
SHEET	27 OF 121

S-102

DRAWFORM REVISION: 10 MARCH 2009

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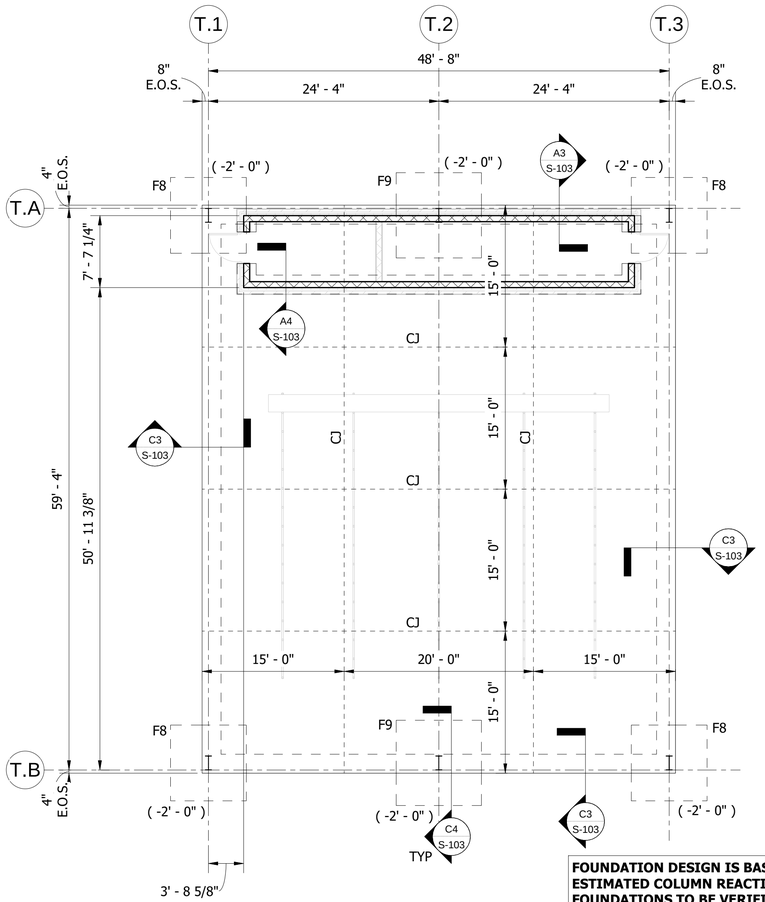


FOUNDATION DESIGN IS BASED ON ESTIMATED COLUMN REACTIONS. FOUNDATIONS TO BE VERIFIED UPON RECEIPT OF COLUMN BASE REACTIONS FROM BUILDING MANUFACTURER.

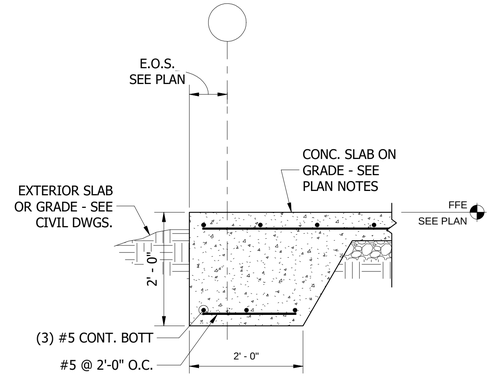
B1 FOUNDATION PLAN - TRAINING AREA

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

BID OPTION 2

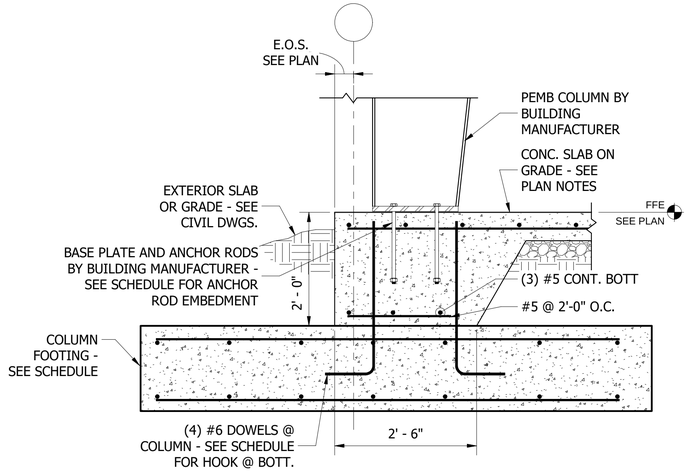
FOUNDATION PLAN NOTES:

1. ENTIRE AREA TO RECEIVE 6" CONCRETE SLAB ON GRADE REINFORCED WITH #3 BARS @ 1'-0" O.C. CENTERED IN SLAB, UNLESS NOTED OTHERWISE. SLAB TO BEAR ON 4" OF COMPACTED, POROUS FILL. PROVIDE MINIMUM 10 MIL REINFORCED VAPOR BARRIER BETWEEN SLAB AND POROUS FILL.
2. CJ (CONSTRUCTION OR CONTROL JOINTS - CONTRACTOR'S OPTION) TO BE PLACED AS INDICATED ON PLAN. SEE TYPICAL DETAIL.
3. F_ ON PLAN INDICATES A COLUMN FOOTING. SEE TYPICAL DETAIL AND SCHEDULE ON SHEET S-502.
4. MARKS SHOWN THUS (-X'-XX") INDICATE TOP OF FOOTING BELOW FINISHED FIRST FLOOR ELEVATION. CONTRACTOR MUST COORDINATE TOP OF FOOTING ELEVATIONS WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND CIVIL DRAWINGS. THE STRUCTURAL ENGINEER MUST BE NOTIFIED OF CONFLICTS OR DISCREPANCIES IN TOP OF FOOTING ELEVATIONS.
5. CONTRACTOR MUST COORDINATE WITH SITE DRAWINGS AND PROVIDE FOOTING STEPS AS REQUIRED. SEE TYPICAL DETAIL.
6. REFERENCE FINISH SLAB ELEVATION TO BE 0'-0", UNLESS NOTED THUS (-__'-__") ON PLAN. SEE CIVIL DRAWINGS FOR ACTUAL FINISHED FLOOR ELEVATION.
7. SEE TYPICAL CONSTRUCTION DETAILS ON SHEETS S-501, S-502.
8. SEE GENERAL NOTES ON SHEETS S-001, S-002.



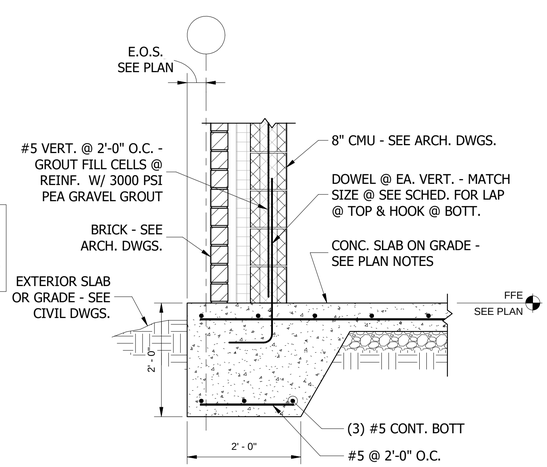
C3 SECTION

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



C4 SECTION

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



A3 SECTION

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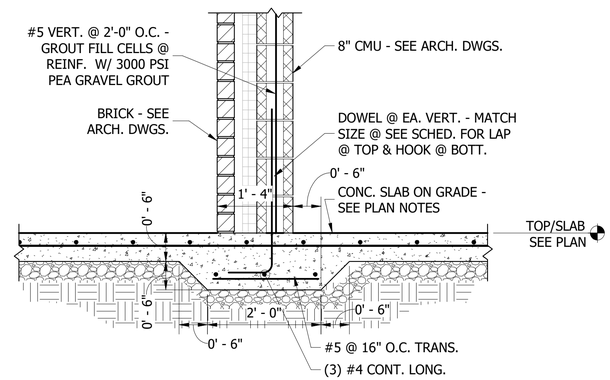

A4 SECTION

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

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

1' 0 1' 2' 3'

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

8' 0 4' 8' 16'

APPR | DATE | DESCRIPTION | SYM

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PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING COMMAND – MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
[PT MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FOUNDATION PLAN - TRAINING SHELTER

SCALE: AS INDICATED

EPROJECT NO.: 1715336

STA. PROJ. NO.: 7290158

NAVFAC DRAWING NO.
12883082

SHEET 28 OF 121

S-103

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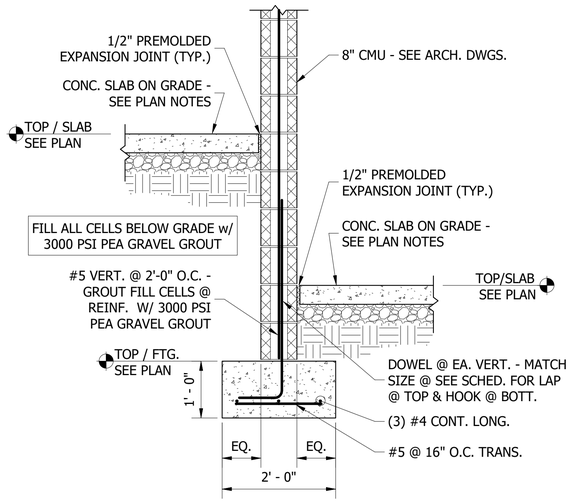

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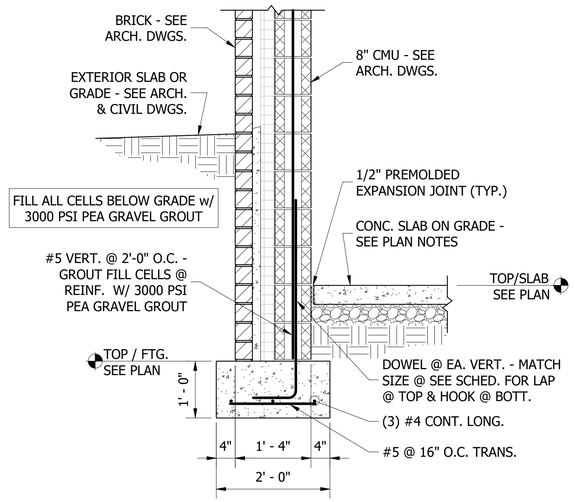

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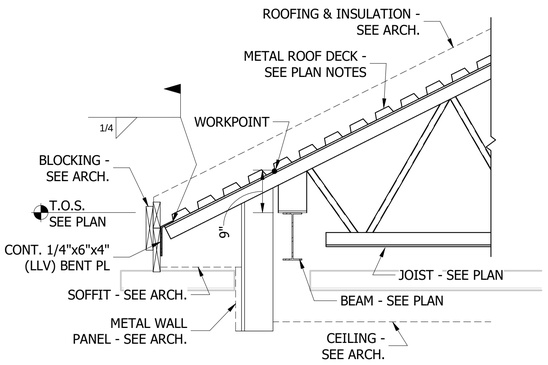

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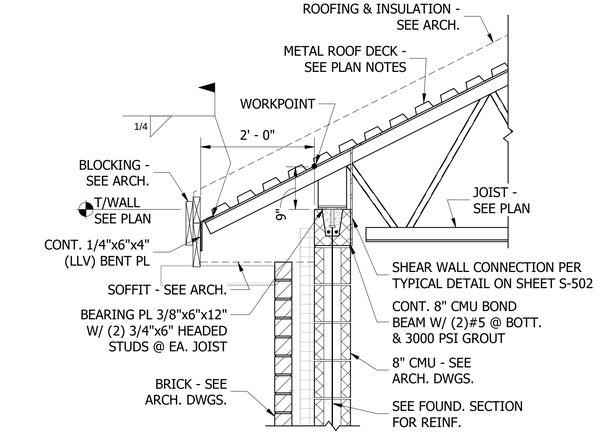

A1 SECTION

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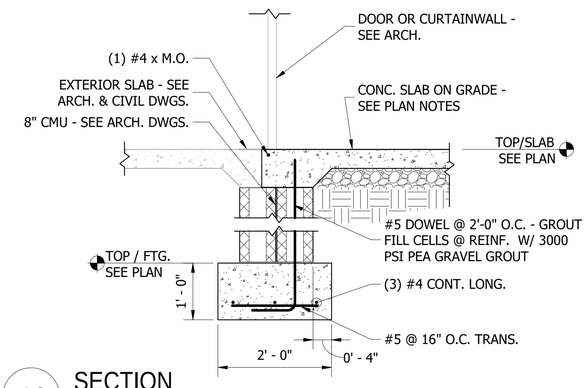

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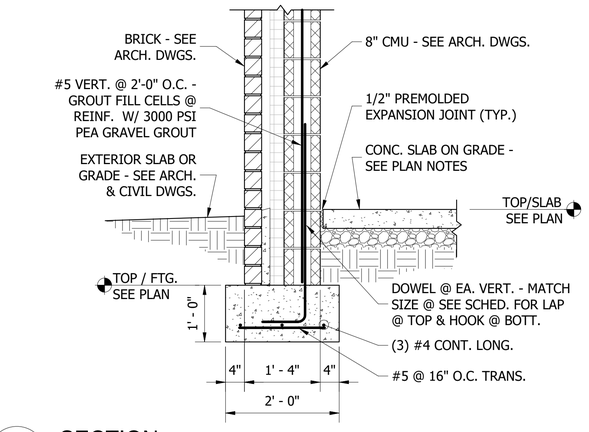

A4 SECTION

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

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

1' 0 1' 2' 3'

APPR | DATE | DESCRIPTION | SYM

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032586 ENGINEER LUCAS G. A. GELO

04.07.2023 SEAL

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A/E INFO

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ACTIVITY

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PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
[PT MARINE]
MARINE CORPS AIR STATION

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

SECTIONS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883083
SHEET	29 OF 121

S-201

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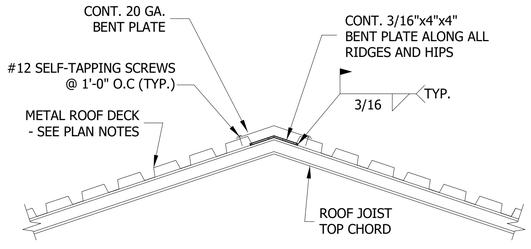
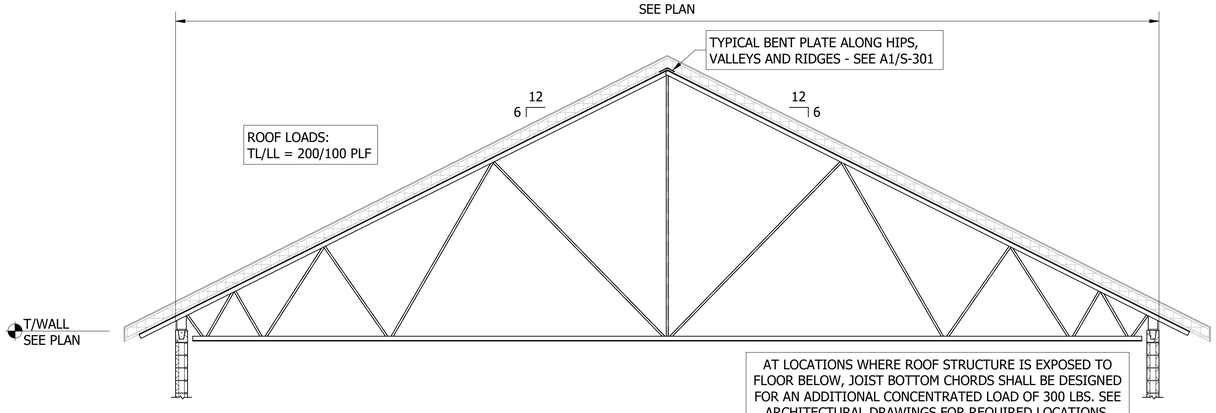


A1 BENT PLATE @ HIPS, VALLEYS & RIDGES

SCALE: 1" = 1'-0"



A4 GABLE ROOF JOIST ELEVATION

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

JOIST DESIGN NOTES

1. JOIST MANUFACTURER MUST SUBMIT JOIST SHOP DRAWINGS AND CALCULATIONS SEALED BY A REGISTERED PROFESSIONAL ENGINEER APPROVAL PRIOR TO CONSTRUCTION.
2. JOIST WEB CONFIGURATION IS AT JOIST DESIGNER'S OPTION, SUBJECT TO A/E VERIFICATION.
3. JOIST SUPPLIER WILL COORDINATE ALL HVAC/PLUMBING PENETRATIONS AND ADJUST JOIST WEB CONFIGURATION AS REQUIRED.
4. PROVIDE BRACING/BRIDGING REQUIRED FOR BOTTOM CHORD STABILITY OF JOISTS.
5. SEE PLANS AND SECTIONS FOR ALL WORK POINTS AND ELEVATIONS.
6. SEE GENERAL NOTES ON SHEETS S-001 & S-002

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

1' 0 1' 2' 3'

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 032586 ENGINEER LUCAS G. A. GELO

04.07.2023 SEAL

k-de kaydos-daniels engineers, pllc
400-201 w morgan st T 919 828 4966
raleigh nc 27603 F 919 828 4967
nc firm license #P-0279

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES LGG | DRW SAM | CHK LGG

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA
IPT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELEVATIONS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883084
SHEET	30 OF 121

S-301

DRAWFORM REVISION: 10 MARCH 2009

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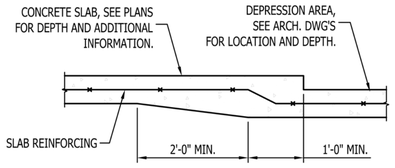
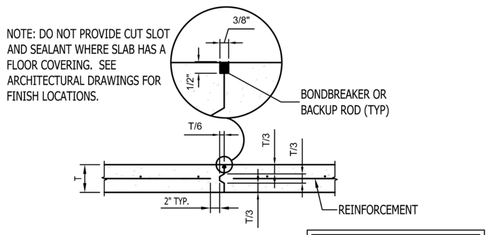
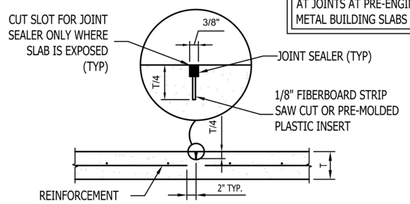


TYP. DEPRESSED SLAB

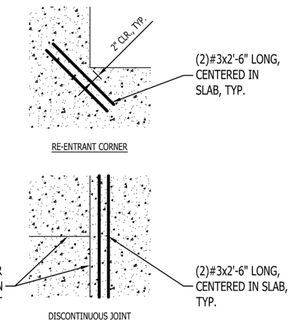


CONSTRUCTION JOINT

NOTE: DO NOT CUT REINFORCING AT JOINTS AT PRE-ENGINEERED METAL BUILDING SLABS



CONTROL JOINT



TYPICAL SLAB REINFORCEMENT AT RE-ENTRANT CORNERS & DISCONTINUOUS JOINTS

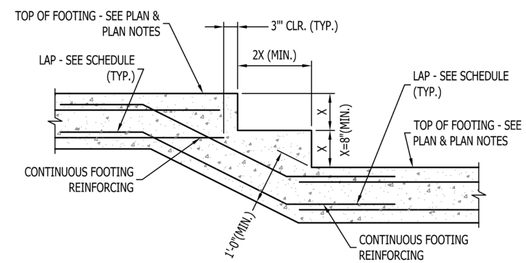
LAP SPLICE AND 90° HOOK SCHEDULE			
BAR SIZE	LAP (in.)		90° HOOK (in.)
	TOP BARS*	OTHER BARS	
#3	22	17	6
#4	29	22	8
#5	36	28	10
#6	43	33	12

* "TOP BARS" REFERS TO HORIZONTAL REINFORCING PLACED WITH MORE THAN 12" FRESH CONCRETE CAST BELOW THE REINFORCING.

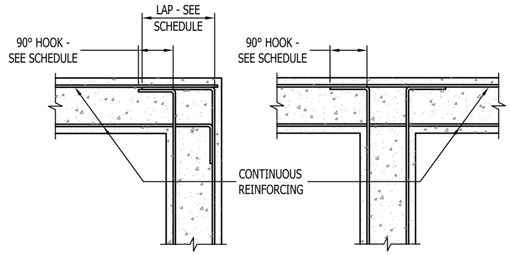
CAST-IN-PLACE CONCRETE REINFORCING BAR LAP & HOOK SCHEDULE

FOOTING SCHEDULE		
MARK	SIZE	REINFORCING
F3	3'-0" X 3'-0" X 1'-0"	(4) # 5 EA. WAY TOP & BOTT.
F8	8'-0" X 8'-0" X 1'-0"	(8) # 6 EA. WAY TOP & BOTT.
F9	9'-0" X 9'-0" X 1'-0"	(9) # 6 EA. WAY TOP & BOTT.

FOOTING SCHEDULE

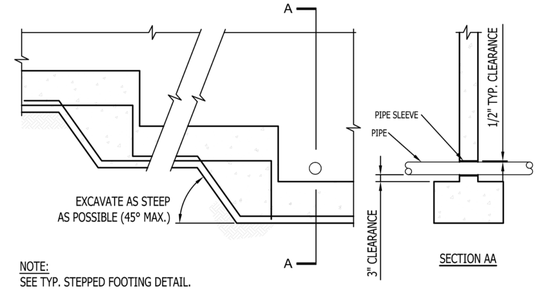


STEPPED FOOTING



NOTE: WHERE THREE OR MORE BARS OCCUR, THE CENTER BARS WILL BE TREATED AS INNER FACE REINFORCEMENT.

PLACEMENT OF CONTINUOUS REINFORCING FOR BOND BEAMS, FOOTINGS AND CONCRETE WALLS



NOTE:
SEE TYP. STEPPED FOOTING DETAIL.

NOTE:
FOR PERPENDICULAR PIPE, FOOTING MUST BE STEPPED DOWN TO ALLOW PIPE PENETRATION TO PASS ABOVE FOOTING.

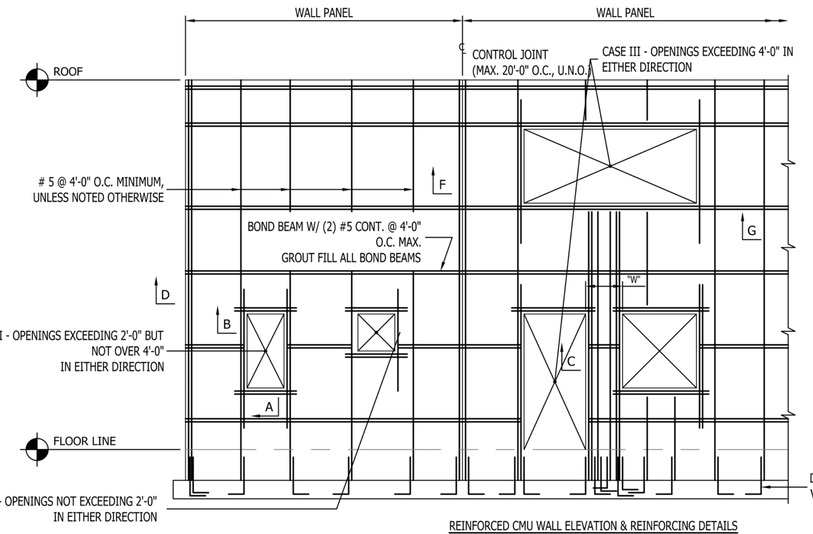
TYP. BURIED PIPE AT FOOTING

WALL TYPE	MASONRY OPENING, M.O.	TYPE	SIZE	REMARKS
4" BRICK	M.O. ≤ 6'-0"		L8X4X3/8 (LLH)	
	6'-0" < M.O. ≤ 10'-0"		L8X8X3/8	
8" CMU	M.O ≤ 6'-0"		8" X 8" W/ (2) # 5	
	6'-0" < M.O. ≤ 12'-0"		8" X 16" W/ (2) # 6	

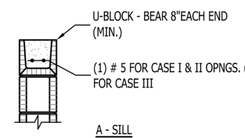
MASONRY LINTEL DETAIL NOTES

1. PROVIDE LINTELS AS SHOWN UNLESS NOTED OTHERWISE ON PLANS, SECTIONS, OR DETAILS FOR ALL OPENINGS WIDER THAN 1'-0".
2. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF REQUIRED LINTELS.
3. BEAR MASONRY LINTELS MINIMUM 8" EACH END.

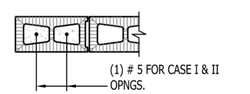
MASONRY LINTELS



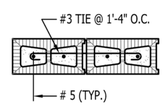
REINFORCED CMU WALL ELEVATION & REINFORCING DETAILS



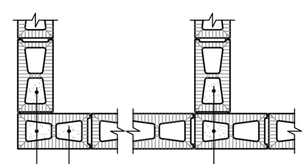
A - SILL



B - JAMB

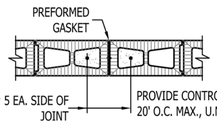


C - PIER

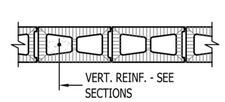


D - CORNER

E - INTERSECTION



F - CONTROL JOINT



G - TYPICAL REINFORCED WALL

CMU NOTES

1. PROVIDE MINIMUM REINFORCING AS SHOWN FOR ALL REINFORCED CMU WALLS.
2. PROVIDE LADDER TYPE, 9 GAGE, SINGLE WYTHE HORIZONTAL JOINT REINFORCEMENT @ 1'-4" O.C. AND IN FIRST AND SECOND HORIZONTAL JOINTS ABOVE AND BELOW OPENINGS. EXTEND 1'-4" MINIMUM EACH SIDE OF OPENING.
3. FOR REINFORCING AROUND OPENINGS, EXTEND REINFORCING 48 BAR DIAMETERS PAST THE EDGE OF OPENINGS.
4. HORIZONTAL BOND BEAMS MUST BE CONTINUOUS WITH VERTICAL REINFORCING EXTENDING THROUGH THE BOND BEAM OR 6" INTO BOND BEAM AT TOP OF WALL.
5. REFER TO LINTEL SCHEDULE FOR HEAD CONDITION OF OPENINGS.
6. ALL GROUT WITHIN CMU WALLS MUST BE 3000 PSI PEA GRAVEL GROUT PLACED IN 4'-0" MAX. VERTICAL LIFTS.
7. SEE GENERAL NOTES ON SHEET S001.

CMU LAP SPLICE SCHEDULE					
BAR SIZE	LAP (in.)				
	4" CMU	6" CMU	8" CMU	10" CMU	12" CMU
#3	21	19	19	19	19
#4	40	25	25	25	25
#5	n/a	39	31	31	31
#6	n/a	80	57	52	52
#7	n/a	n/a	79	61	61
#8	n/a	n/a	112	86	74

NOTE: THESE DETAILS APPLY TO ALL REINFORCED CMU WALLS. REFER TO SECTIONS & PLANS FOR EXTENT OF REINFORCED CMU.

CMU GROUTING PROCEDURE

GENERAL:

1. THE GROUTING PROCEDURE PROVIDED BELOW MUST BE STRICTLY ADHERED TO BY THE CONTRACTOR. CONTACT CONTRACTOR'S QUALITY CONTROL MANAGER 24 HOURS BEFORE PLACING GROUT FOR AN INSPECTION OF THE WORK.
2. CONTRACTOR MUST PROVIDE MATERIALS AND PERFORM ALL GROUTING WORK IN ACCORDANCE WITH ACI 530.1 - MASONRY STRUCTURES SPECIFICATIONS.

PREPARATION:

1. THOROUGHLY CLEAN EACH CORE TO BE GROUTED BY RODDING TO REMOVE ALL DELETERIOUS MATERIAL AND DEBRIS.
2. PROVIDE CLEANOUTS AT THE BASE OF WALL BY REMOVING THE FACE SHELL OF UNITS AT EACH CORE TO BE GROUTED. REMOVE DEBRIS THROUGH THE CLEANOUT. CLEANOUTS MUST BE NO SMALLER THE 5" X 5". WHERE CORES ARE TO BE GROUTED AT 8" ON CENTER, PROVIDE CLEANOUTS AT 1'-4" O.C.
3. AFTER CLEANING, CLOSE CLEANOUTS WITH CLOSURES BRACED TO RESIST GROUT PRESSURE.
4. PLACE REINFORCEMENT PRIOR TO GROUTING.

PLACEMENT:

1. GROUT MAY BE PLACED BY PUMPING, OR POURING FROM LARGE OR SMALL BUCKETS.
2. PLACE GROUT IN LIFTS NOT EXCEEDING 4'-0" HIGH.
3. THE NEXT LIFT MAY BE PLACED AFTER WATER FROM THE GROUT BELOW IS ABSORBED BY MASONRY UNITS.
4. CONSOLIDATE EACH 4'-0". LIFT WITH A LOW VELOCITY VIBRATOR WITH A 3/4" HEAD. THE VIBRATOR MUST BE PLACE AT MID HEIGHT OF THE LIFT IN EACH GROUTED CORE AND MUST BE ACTIVATED FOR ONE OR TWO SECONDS ONLY.

TYPICAL CONSTRUCTION DETAILS

TYPICAL CONSTRUCTION DETAIL NOTES

1. TYPICAL DETAILS SHOWN ON THIS SHEET APPLY THROUGHOUT THE PROJECT, IN ALL CASES, UNLESS NOTED OTHERWISE.
2. TYPICAL DETAILS MAY NOT BE SPECIFICALLY REFERENCED ON FOUNDATION PLANS OR FRAMING PLANS.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032586 LUCAS G. A. GELO
04.07.2023 SEAL

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T 919 828 4966 F 919 828 4967

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MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
GENERAL CONSTRUCTION DETAILS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883085
SHEET 31 OF 121
S-501
DRAWFORM REVISION: 10 MARCH 2009

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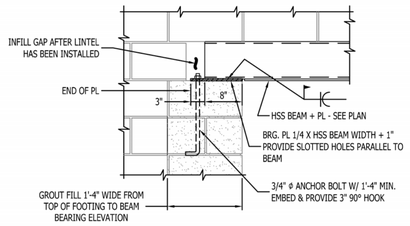
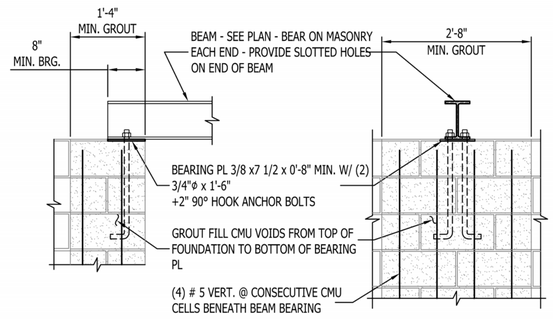
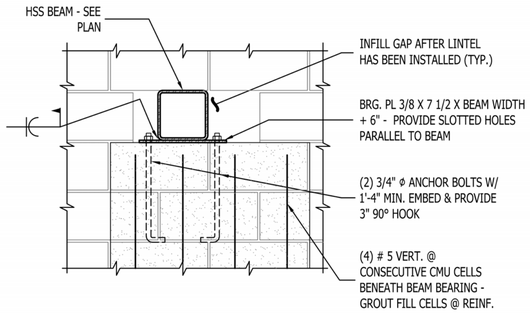


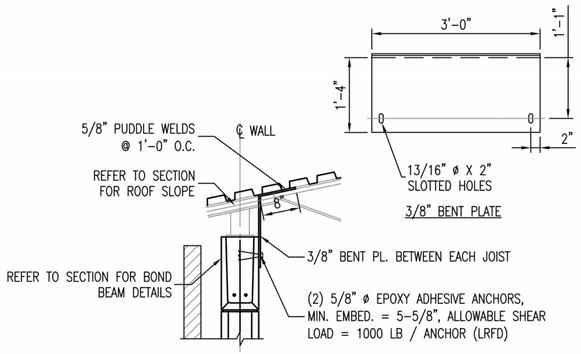
HSS BEAM BEARING ON CMU WALL
(BEAM PARALLEL WITH WALL)



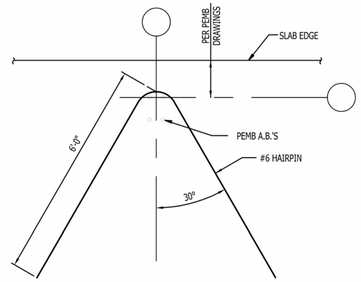
STEEL BEAM BEARING ON MASONRY WALL



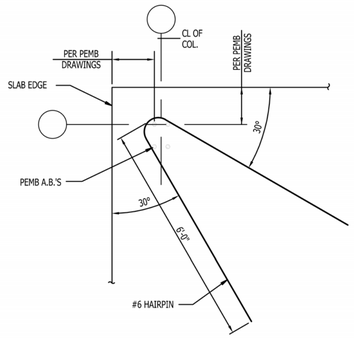
HSS BEAM BEARING ON CMU WALL
(BEAM PERPENDICULAR WITH WALL)



TYPICAL PERIMETER SHEAR WALL CONNECTION

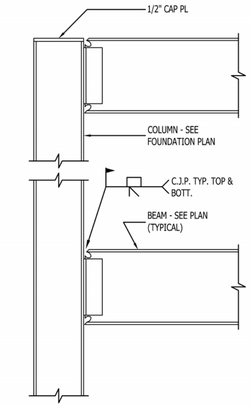


CONDITION @ SLAB EDGE

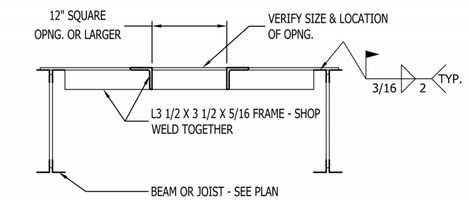


CONDITION @ SLAB CORNER

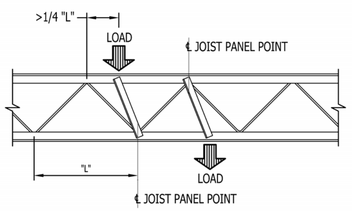
TYPICAL PEMB SLAB HAIRPIN



TYPICAL WIDE FLANGE MOMENT CONNECTION



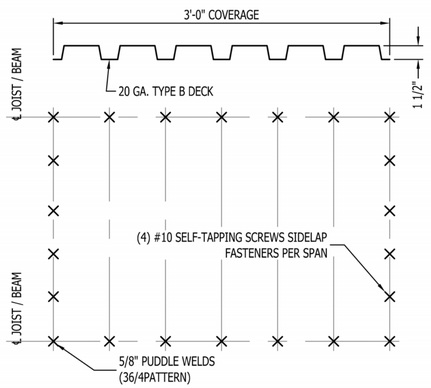
ROOF OPENING



BAR JOIST REINFORCING NOTES

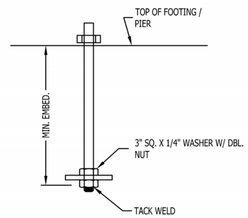
1. IF A CONCENTRATED LOAD OF 100 LB. OR MORE IS LOCATED 1/4 "L" OR GREATER FROM A PANEL POINT, A BRACE MADE OF L1 1/2 X 1 1/2 X 1/8 MUST BE FIELD WELDED TO EACH SIDE OF THE TOP AND BOTTOM CHORDS.

BAR JOIST REINFORCING



NOTE: THIS DETAIL APPLIES TO DECKING AT STRUCTURAL STEEL AND BAR JOIST FRAMING. SEE ROOF SECTIONS FOR DECK ATTACHMENT AT LIGHT-GAUGE METAL FRAMED ROOF ABOVE STAIR.

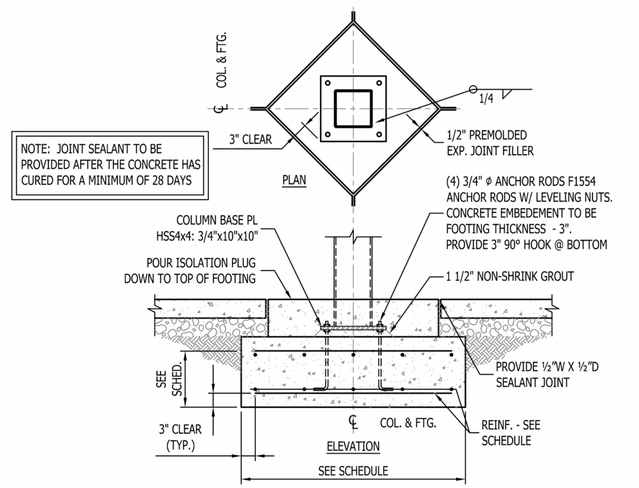
1 1/2" ROOF DECK FASTENER LAYOUT



ANCHOR EMBEDMENT	
ø (in.)	MIN. EMBED. (in.)
1/2	8
5/8	9
3/4	12
1	16

PEMB ANCHOR ROD DETAIL

NOTE: JOINT SEALANT TO BE PROVIDED AFTER THE CONCRETE HAS CURED FOR A MINIMUM OF 28 DAYS



TYPICAL COLUMN BASE

TYPICAL CONSTRUCTION DETAILS

TYPICAL CONSTRUCTION DETAIL NOTES

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NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 032586 ENGINEER LUCAS G. A. GELO
04.07.2023 SEAL

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nc firm license #P-0279

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES LGG | DRW SAM | CHK LGG

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
IPT MARINE
MARINE CORPS AIR STATION
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
GENERAL CONSTRUCTION DETAILS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883086
SHEET 32 OF 121

S-502

DRAWFORM REVISION: 10 MARCH 2009

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File
Print

SYMBOL LEGEND

DRAWING TAG
XX DETAIL/SECTION/ELEVATION TITLE — LOCATION COORDINATE; DETAIL TITLE
SCALE: X" = 1'-0" — SCALE

NORTH ARROW
N — PROJECT NORTH; TRUE NORTH

EXTERIOR ELEVATION TAG
1 / A-101 — LOCATION COORDINATE; SHEET IDENTIFICATION

INTERIOR ELEVATION TAG
XX / XX A-101 XX / XX — SHEET IDENTIFICATION; LOCATION COORDINATE TYPICAL

SECTION TAG
1 / A-101 — LOCATION COORDINATE; SHEET IDENTIFICATION

BUILDING SECTION TAG
1 / A-101 — 1 / A-101 — LOCATION COORDINATE TYPICAL; SHEET IDENTIFICATION TYPICAL

DETAIL TAG
1 / A-101 — LOCATION COORDINATE; SHEET IDENTIFICATION

COLUMN GRID
0 — COLUMN GRID NUMBER IDENTIFICATION
X — COLUMN GRID LETTER IDENTIFICATION

DEMOLITION KEYNOTE TAG
1 — KEYNOTE NUMBER

CONSTRUCTION KEYNOTE TAG
1 — KEYNOTE NUMBER

ELEVATION BENCHMARK
0'- 0" ELEV — ELEVATION DIMENSION; ELEVATION DESCRIPTION

WALL TYPE TAG
A — WALL TYPE IDENTIFIER

WINDOW TAG
00 — WINDOW TYPE IDENTIFIER

DOOR TAG
101A — DOOR NUMBER

ROOM NAME TAG
Room Name — ROOM NAME
101 — ROOM NUMBER

DIMENSIONS

FACE OF ELEMENT BEING DIMENSIONED (WALL, FRAME, ETC.)

CENTERLINE OF ELEMENT BEING DIMENSIONED (WALL, FRAME, ETC.)

ABBREVIATIONS

ACAIR	CONDITIONING
AB	ANCHOR BOLT
ADA	AMERICANS WITH DISABILITIES ACT
ABA	ARCHITECTURAL BARRIERS ACT
AFF	ABOVE FINISH FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
ALUM	ALUMINUM
ALT	ALTERNATE
ATC	ACOUSTICAL TILE CEILING
AUX	AUXILIARY
BD	BOARD
BLDG	BUILDING
BL	BUILDING LINE
BRG	BEARING
CFM	CUBIC FEET PER MINUTE
CI	CURB INLET / CAST IRON
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CM	CENTIMETER
COL	COLUMN
CONC	CONCRETE
CPT	CARPET
CY	CUBIC YARD
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DL	DEAD LOAD
DN	DOWN
DS	DOWNSPOUT
DWG	DRAWING
EA	EACH / EXHAUST AIR
EJ	EXPANSION JOINT
EJ/CJ	EXPANSION JOINT & CONTROL JOINT
ELEV	ELEVATION, ELEVATOR
ELEC	ELECTRIC(AL)
EQ	EQUAL
EQUP	EQUIPMENT
EW	EACH WAY
EX	EXHAUST
EXTG	EXISTING
EXT	EXTERIOR
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FFE	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FIN	FINISH
FIXT	FIXTURE
FLR	FLOOR
FHB	FREEZE-PROOF HOSE BIBB
FT	FEET
GA	GAGE
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
GWB	GYPSUM WALLBOARD
GYP	GYPSUM
HB	HOSE BIBB
HM	HOLLOW METAL
ID	INSIDE DIAMETER
IN	INCH
INSUL	INSULATION
INT	INTERIOR
JT	JOINT
LAV	LAVATORY
LF	LINEAR FEET
LL	LIVE LOAD
LVT	LUXURY VINYL TILE
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MO	MASONRY OPENING
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NO	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OPG	OPENING
PWD	PLYWOOD
PR	PAIR
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
QT	QUARRY TILE
RB	RESILIENT BASE
RD	ROOF DRAIN
REQ	REQUIRED
REV READ	REVERSE READ
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
SD	SMOKE DETECTOR
SECT	BUILDING SECTION
SHT	SHEET
SIM	SIMILAR
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TLT	TOILET
TOS	TOP OF STEEL
TYP	TYPICAL
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
VAV	VARIABLE AIR VOLUME
VCT	VINYL COMPOSITION TILE
W/	WITH
WD	WOOD
WH	WATER HEATER

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NAVAL FACILITIES ENGINEERING COMMAND
SYMBOL LEGEND AND ABBREVIATIONS

SCALE: AS INDICATED
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STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12882087
SHEET 33 OF 121
A-001
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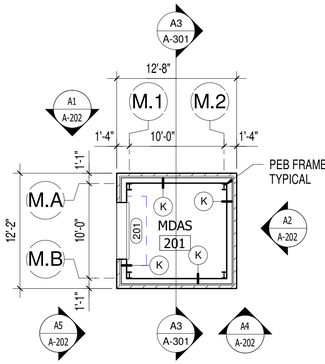


GENERAL CONSTRUCTION NOTES

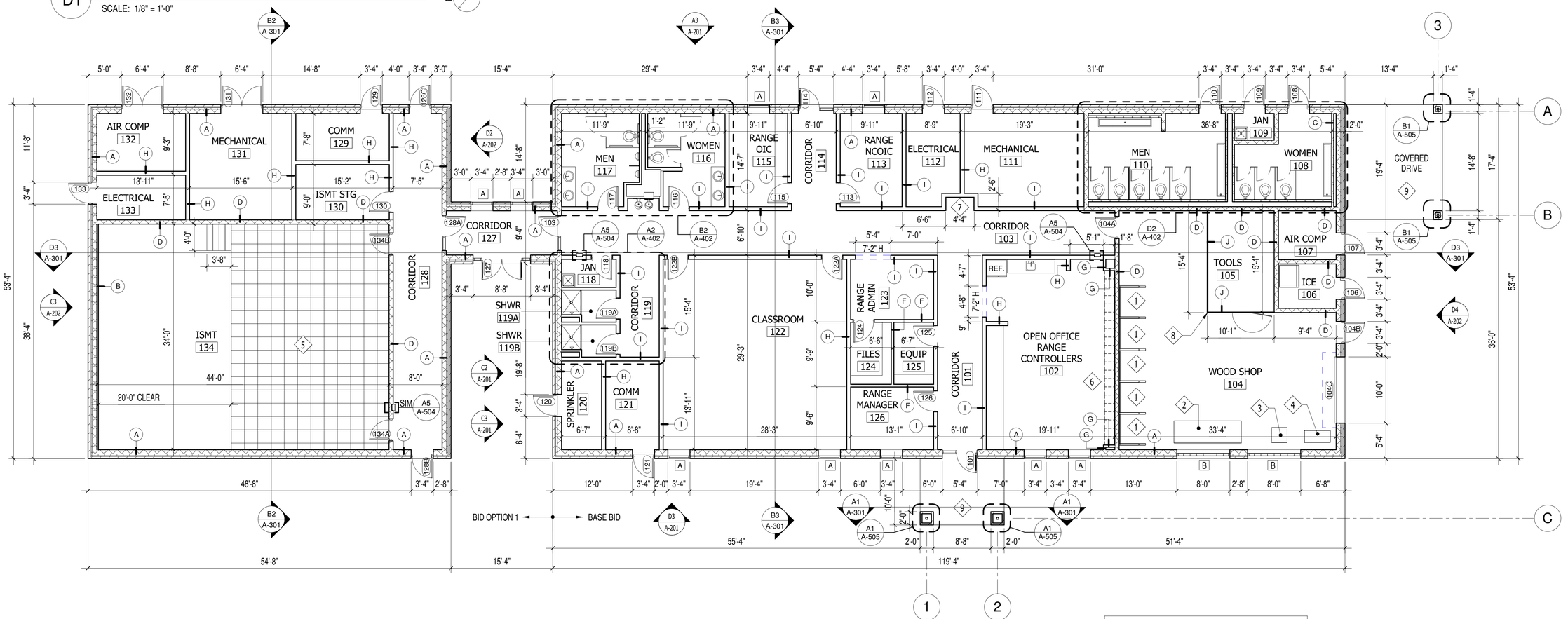
1. REFERENCE SHEET A-001 FOR SYMBOL LEGEND
2. REFERENCE SHEET A-501 FOR WALL TYPES
3. REFERENCE SHEET A-601 FOR DOOR AND FRAME SCHEDULE
4. REFERENCE SHEET A-603 FOR WINDOW SCHEDULE
5. REFERENCE INTERIOR DESIGN DRAWINGS FOR FINISH SCHEDULE
6. REFERENCE INTERIORS DRAWINGS FOR CASEWORK DIMENSIONS AND DETAILS
7. REFERENCE THE LIFE SAFETY DRAWINGS FOR LOCATIONS OF RATED WALLS AND SMOKE PARTITIONS

CONSTRUCTION KEYNOTES

1. HEAVY DUTY SINGLE SIDED CANTILEVER RACK SYSTEM, 4'-10"W x 4'-0"D x 10'-0"H. PROVIDE FIVE (5). ANCHOR TO FLOOR SLAB
2. PANEL SAW. COORDINATE EXACT SIZE AND LOCATION
3. SAFETY CHOP SAW. COORDINATE EXACT SIZE AND LOCATION
4. DUST COLLECTION SYSTEM. COORDINATE EXACT SIZE AND LOCATION
5. RAISED ACCESS FLOORING SYSTEM. SEE DETAIL
6. LOW, DOUBLE TIER LOCKERS WITH SOLID SURFACE COUNTER ABOVE. REFERENCE INTERIOR DESIGN DRAWINGS FOR ADDITIONAL INFORMATION
7. TROPHY DISPLAY CASE. REFERENCE INTERIOR DESIGN DRAWINGS FOR ADDITIONAL INFORMATION
8. WIRE MESH PARTITION TOOL CAGE. WIRE MESH CAP AT 10'-0" AFF. PROVIDE A 3'-0" SWING GATE SECURABLE BY PADLOCK
9. LIGHT BROOM FINISH AT EXTERIOR CONCRETE SURFACES

D1 FLOOR PLAN - MDAS SHELTER - BASE BID

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



A3 FLOOR PLAN - BASE BID & BID OPTION 1

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

GRAPHIC SCALE: 1/8"=1'-0"
8' 0 4' 8' 16'

SQUARE FOOTAGE TABULATION

BASE BID: PRIMARY BUILDING	6,745 SF
BASE BID: MDAS SHELTER	125 SF
BID OPTION 1: ISMT ADDITION	3,059 SF
BID OPTION 2: COVERED TRAINING	3,000 SF
PROJECT GROSS AREA	**12,929 SF**

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FLOOR PLANS - BASE BID & BID OPTION 1

SCALE: AS INDICATED
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STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12882088
SHEET 34 OF 121

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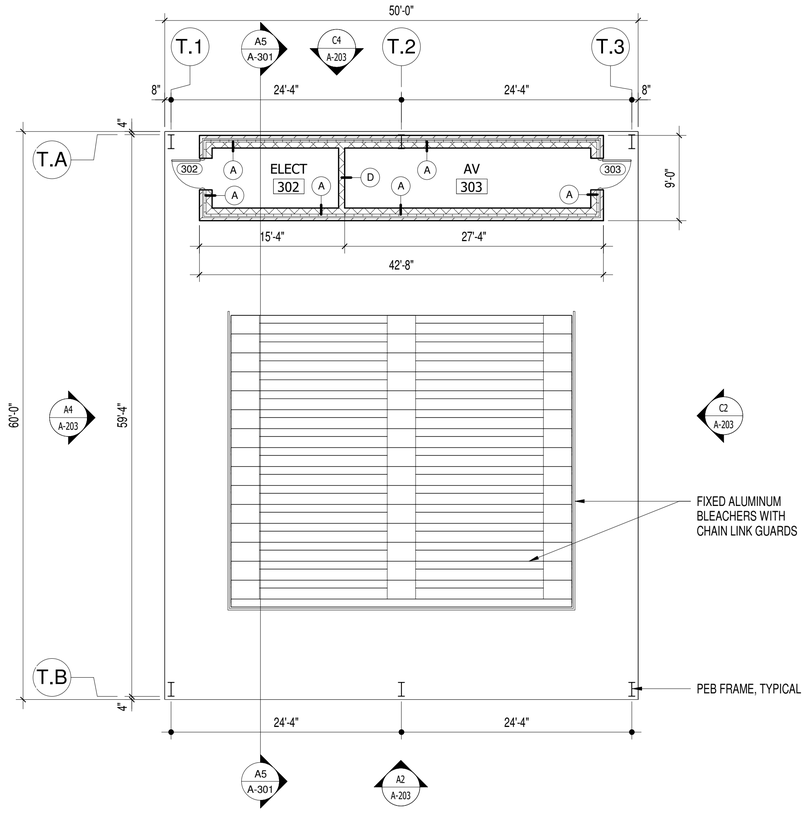
GENERAL CONSTRUCTION NOTES

1. REFERENCE SHEET A-001 FOR SYMBOL LEGEND
2. REFERENCE SHEET A-501 FOR WALL TYPES
3. REFERENCE SHEET A-601 FOR DOOR AND FRAME SCHEDULE
4. REFERENCE SHEET A-603 FOR WINDOW SCHEDULE
5. REFERENCE INTERIOR DESIGN DRAWINGS FOR FINISH SCHEDULE
6. REFERENCE INTERIORS DRAWINGS FOR CASEWORK DIMENSIONS AND DETAILS
7. REFERENCE THE LIFE SAFETY DRAWINGS FOR LOCATIONS OF RATED WALLS AND SMOKE PARTITIONS



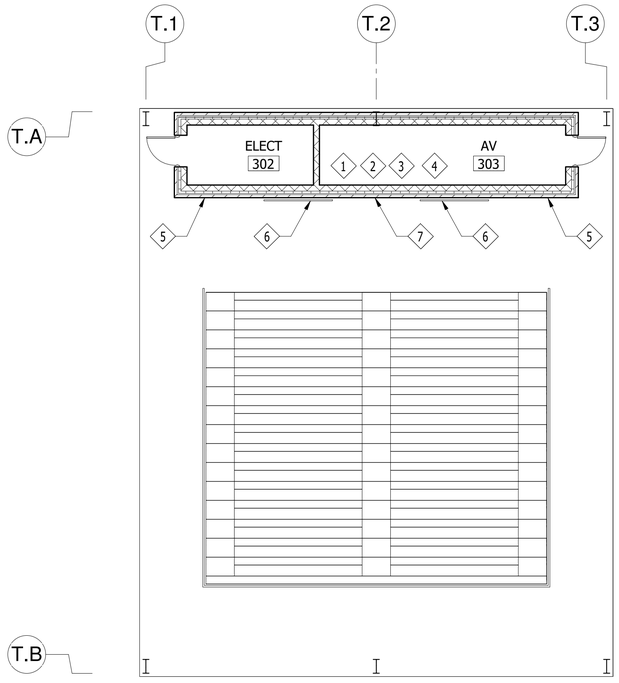
A2 FLOOR PLAN - TRAINING SHELTER - BID OPTION 2

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

N

AUDIOVISUAL KEYNOTES

1. DIGITAL WIRELESS HANDHELD MICROPHONE SYSTEM
2. 8 CHANNEL DIGITAL AUDIO MIXER WITH TOUCH SCREEN CONTROL
3. 2 CHANNEL DIGITAL HIGH RESOLUTION HDMI SPLITTER
4. CONTROLLABLE DISPLAY AUDIO TO MIXER CONVERTER
5. EXTERIOR RATED LOUDSPEAKER WITH YOKE MOUNT KIT. 16'-0" AFF TO BOTTOM OF SPEAKER
6. 98" QLED 8K EXTERIOR RATED FLAT PANEL DISPLAY AND HEAVY DUTY WALL MOUNT KIT WITH 4-WAY ADJUSTMENT. 12'-0" AFF TO BOTTOM OF DISPLAY
7. AUDIOVISUAL WALL BOX. 42" AFF



A4 AUDIOVISUAL PLAN - TRAINING SHELTER - BID OPTION 2

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

N

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

8' 0 4' 8' 16'

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FLOOR PLAN - BID OPTION 2

SCALE:	AS INDICATED
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NAVFAC DRAWING NO.	12882089
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REFLECTED CEILING PLAN LEGEND

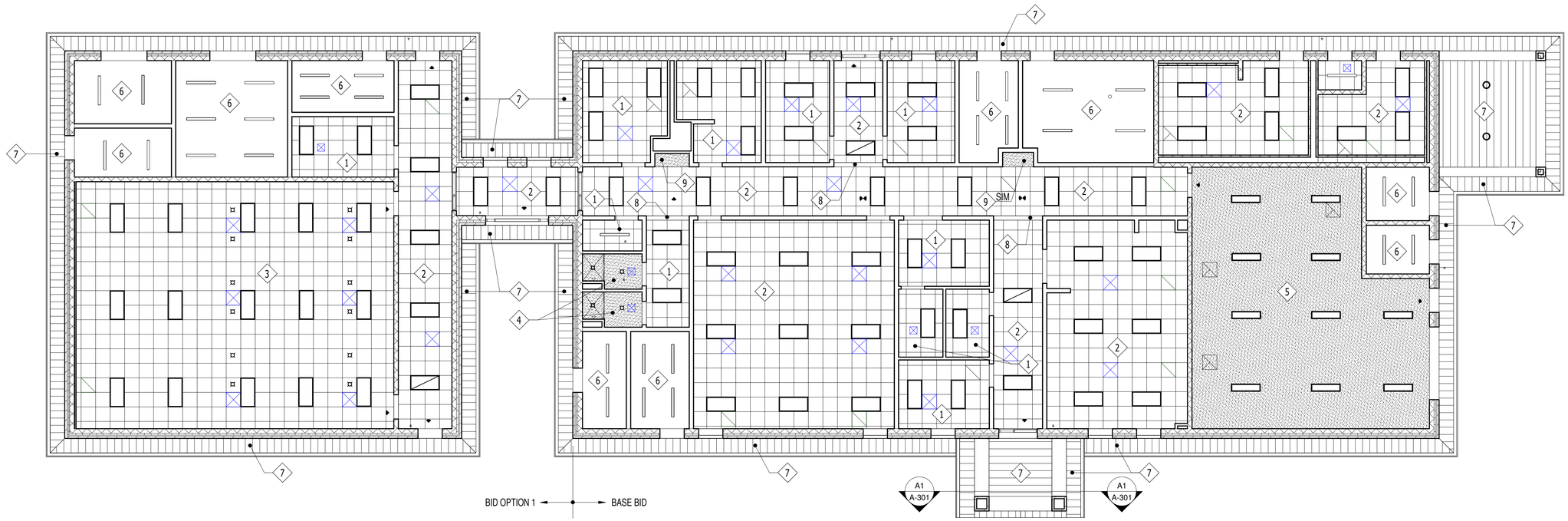
- 2'x2' ACOUSTICAL TILE CEILING SYSTEM
- GYPSUM BOARD CEILING
- 2'x4' LIGHTING FIXTURE
- 1'x4' LIGHTING FIXTURE
- UTILITY 4' LIGHTING FIXTURE
- WALL MOUNTED EMERGENCY LIGHT FIXTURE
- EXIT LIGHT FIXTURE
- CEILING SUPPLY DIFFUSER
- CEILING RETURN GRILLE
- CEILING EXHAUST GRILLE
- HEAT DETECTOR
- SMOKE DETECTOR
- WALL MOUNTED SPEAKER/STROBE
- SPRINKLER HEAD

REFLECTED CEILING PLAN NOTES

1. REFERENCE SHEET A-001 FOR SYMBOL LEGEND
2. REFERENCE INTERIOR DESIGN DRAWINGS FOR FINISH SCHEDULE
3. PROVIDE WET AREA ACOUSTICAL TILE CEILING SYSTEM AT TOILETS, JANITOR CLOSETS AND SIMILAR HIGH HUMIDITY SPACES
4. REFERENCE THE ELECTRICAL DRAWINGS FOR LIGHTING FIXTURE INFORMATION
5. REFERENCE THE MECHANICAL DRAWINGS FOR GRILLE AND DIFFUSER INFORMATION
6. REFERENCE THE LIFE SAFETY DRAWINGS FOR LOCATIONS OF RATED WALLS AND SMOKE PARTITIONS

CONSTRUCTION KEYNOTES

1. ACOUSTICAL TILE CEILINGS SYSTEM AT 9'-0" AFF
2. ACOUSTICAL TILE CEILINGS SYSTEM AT 10'-0" AFF
3. ACOUSTICAL TILE CEILINGS SYSTEM AT 12'-0" AFF
4. SUSPENDED GYPSUM BOARD CEILING AT 9'-0" AFF
5. SUSPENDED GYPSUM BOARD CEILING AT 12'-0" AFF
6. NO FINISHED CEILING. EXPOSED TO STRUCTURE ABOVE
7. FLUSH METAL SOFFIT
8. STEEL STUD AND GYPSUM BOARD BULKHEAD
9. STEEL STUD AND GYPSUM BOARD BULKHEAD AND CEILING AT DRINKING FOUNTAIN. SEE DETAIL D5 / A-504



A3 REFLECTED CEILING PLAN - BASE BID & BID OPTION 1

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

N

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

8' 0 4' 8' 16'

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REFLECTED CEILING PLANS - BASE BID & BID OPTION 1

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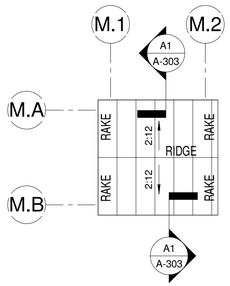

D1 ROOF PLAN - MDAS - BASE BID

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

GENERAL CONSTRUCTION NOTES

1. REFERENCE SHEET A-001 FOR SYMBOL LEGEND
2. REFERENCE SHEET A-501 FOR WALL TYPES
3. REFERENCE SHEET A-601 FOR DOOR AND FRAME SCHEDULE
4. REFERENCE SHEET A-603 FOR WINDOW SCHEDULE
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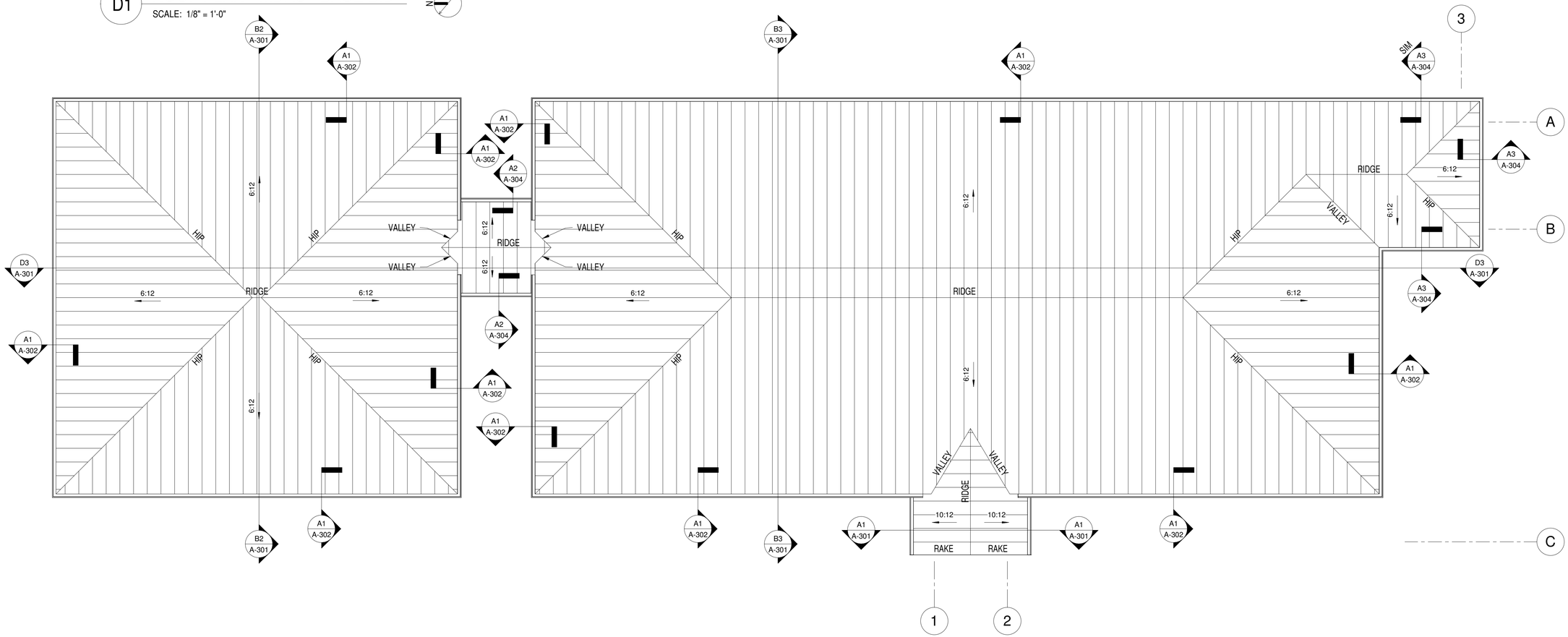
7. REFERENCE THE LIFE SAFETY DRAWINGS FOR LOCATIONS OF RATED WALLS AND SMOKE PARTITIONS



A3 ROOF PLAN - BASE BID & BID OPTION 1

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

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

8' 0 4' 8' 16'

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ROOF PLANS - BASE BID & BID OPTION 1

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NAVFAC DRAWING NO.	12882091
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GENERAL CONSTRUCTION NOTES

1. REFERENCE SHEET A-001 FOR SYMBOL LEGEND
2. REFERENCE SHEET A-501 FOR WALL TYPES
3. REFERENCE SHEET A-601 FOR DOOR AND FRAME SCHEDULE
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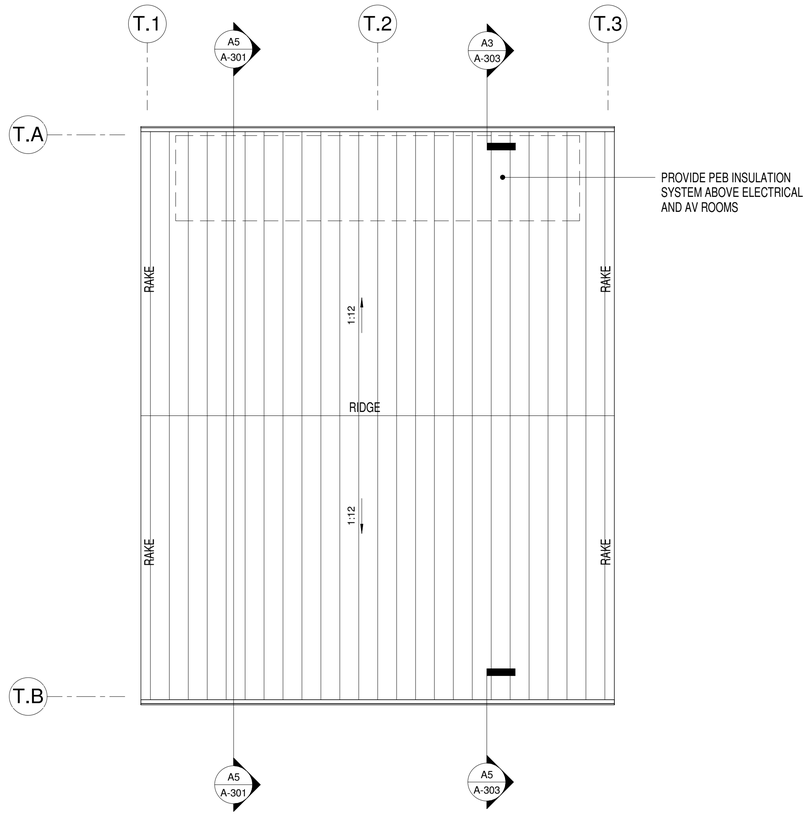

A3 ROOF PLAN - TRAINING SHELTER - BID OPTION 2

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

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

8' 0 4' 8' 16'

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ROOF PLAN - BID OPTION 2

SCALE:	AS INDICATED
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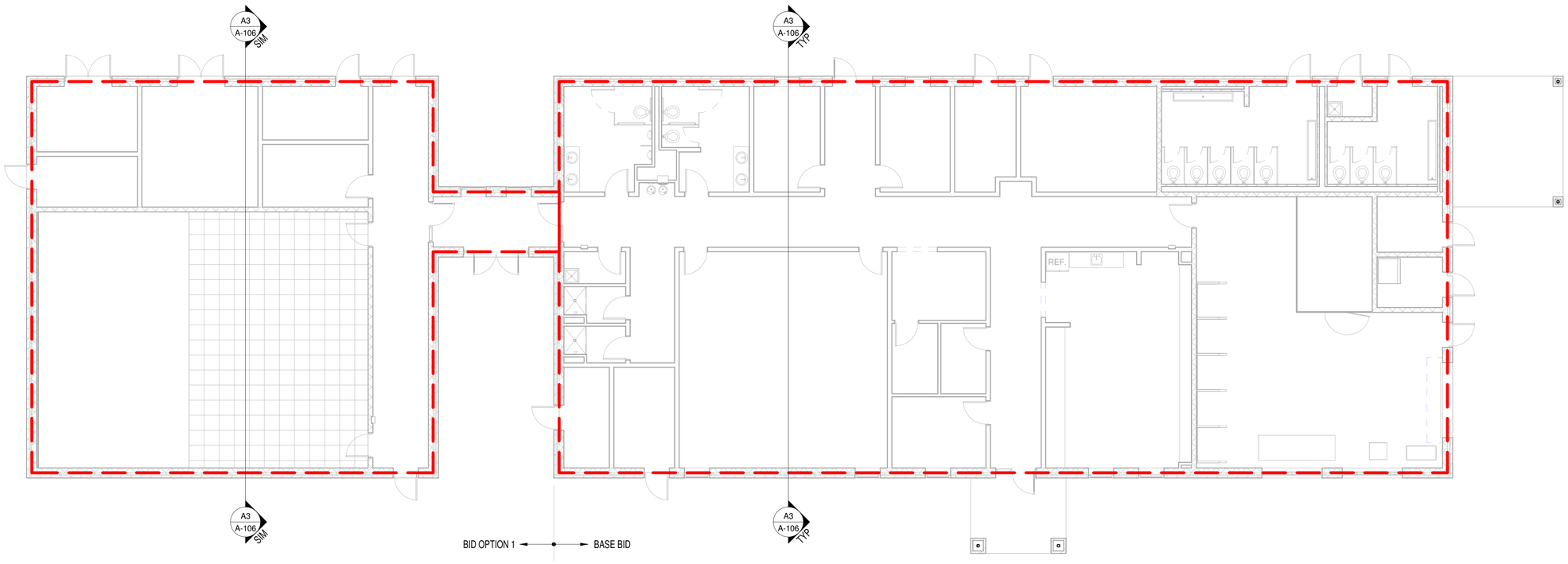


C3 AIR BARRIER PLAN - BASE BID & BID OPTION 1

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

N

AIR AND MOISTURE BARRIER LEGEND

AIR AND MOISTURE BARRIER TESTING BOUNDARY

AIR AND MOISTURE BARRIER NOTES

1. SEE SYMBOL LEGEND ON SHEET A-001
2. THE AIR AND MOISTURE BARRIER MUST BE CONTINUOUS AND UNBROKEN ON SIX SIDES OF THE BUILDING ENVELOPE AS ILLUSTRATED
3. PROVIDE AIR AND MOISTURE BARRIER SEALANT AT TRANSITIONS BETWEEN DISSIMILAR MATERIALS
4. DO NOT INSTALL AIR AND MOISTURE BARRIER WHERE THE MASONRY FOUNDATION WALL BEARS ON THE CONCRETE FOOTING
5. PROVIDE BACKER ROD AND AIR AND MOISTURE BARRIER SEALANT AT JOINTS AND GAPS 1/2" OR LESS IN WIDTH
6. PROVIDE CLOSED CELL FOAM AT THE PERIMETER OF DOOR AND WINDOWS FRAMES, AND SIMILAR DETAILS
7. PROVIDE CLOSED CELL FOAM AT ALL JOINTS AND GAPS GREATER THAN 1/2"

AIR BARRIER TEST DATA

BASE BID - PRIMARY FACILITY

FLOOR AREA (HEATED):	±6,125 SF
EXTERIOR WALL SURFACE AREA:	±5,100 SF
ROOF AREA:	±8,632 SF

BASE BID - MDAS

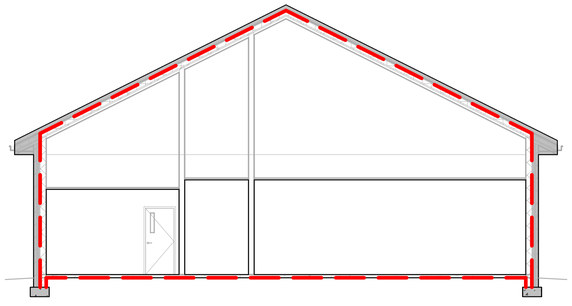
AIR BARRIER TEST NOT REQUIRED

BID OPTION 1

FLOOR AREA (HEATED):	±2,900 SF
EXTERIOR WALL SURFACE AREA:	±3,225 SF
ROOF AREA:	±3,692 SF

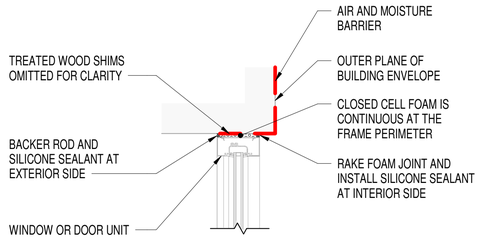
BID OPTION 2 - TRAINING SHELTER

AIR BARRIER TEST NOT REQUIRED



A3 BUILDING SECTION - AIR BARRIER

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



NOTES:
1. INTEGRATE OPENINGS INTO THE AIR & MOISTURE BARRIER SYSTEM
2. COORDINATE ENVELOPE MATERIALS AND COMPONENTS TO ENSURE COMPARABILITY
3. INSULATION AND VENEER MATERIALS OMITTED FOR CLARITY

A5 WALL OPENING SEAL DETAIL

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

GRAPHIC SCALE: 1/8"=1'-0"
8' 0 4' 8' 16'

GRAPHIC SCALE: 1 1/2"=1'-0"
1' 6" 3" 0 1'

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AIR & MOISTURE BARRIER PLAN

SCALE:	AS INDICATED
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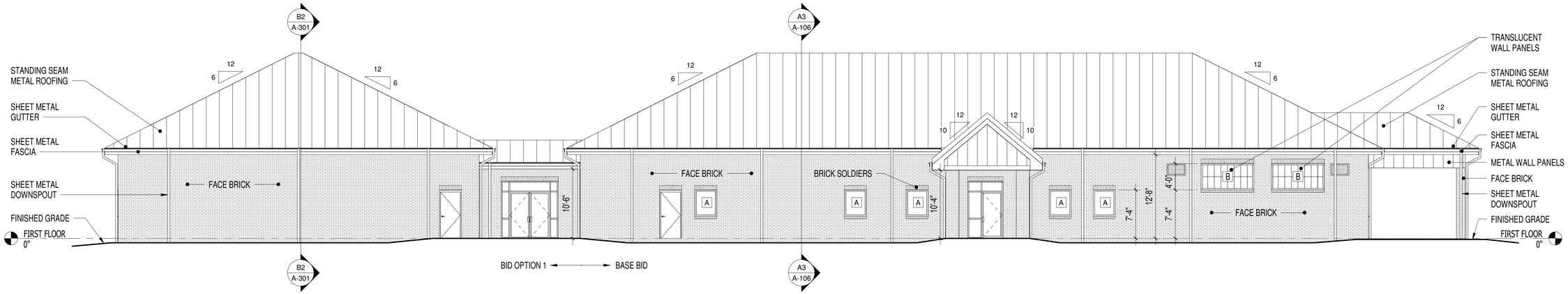
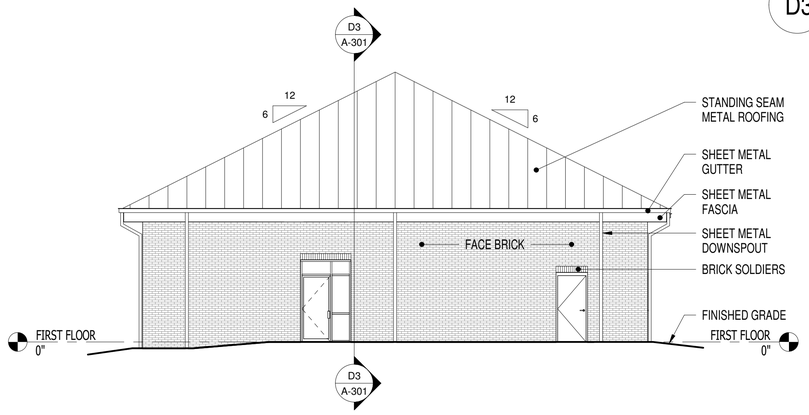


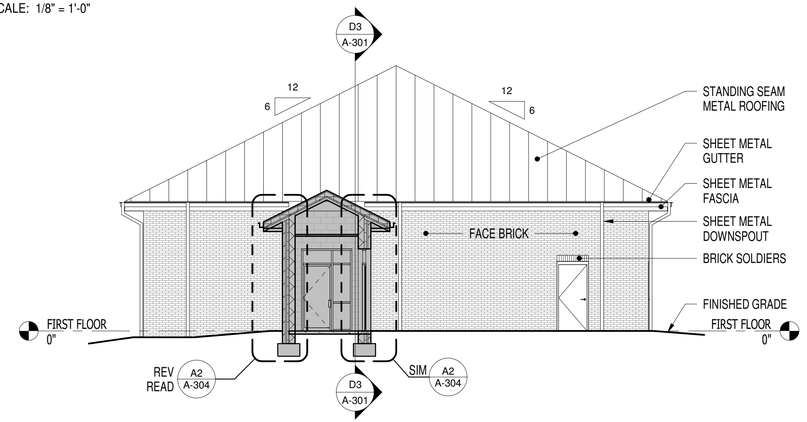
D3 SOUTH ELEVATION - RANGE OPS & ISMT

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



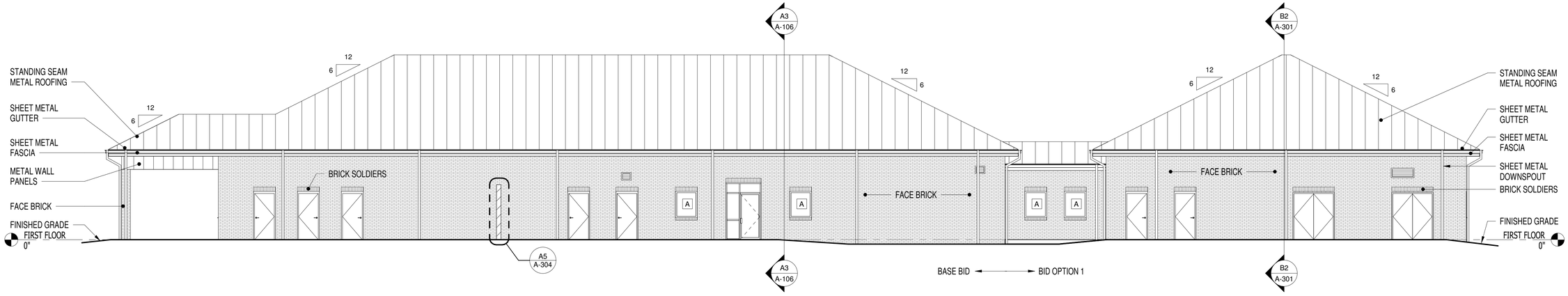
C2 WEST ELEVATION - RANGE OPS - BASE BID

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



C3 WEST ELEVATION - RANGE OPS - BID OPTION 1

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



A3 NORTH ELEVATION - RANGE OPS & ISMT

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

GENERAL CONSTRUCTION NOTES

1. REFERENCE SHEET A-001 FOR SYMBOL LEGEND
2. REFERENCE SHEET A-501 FOR WALL TYPES
3. REFERENCE SHEET A-601 FOR DOOR AND FRAME SCHEDULE
4. REFERENCE SHEET A-603 FOR WINDOW SCHEDULE
5. REFERENCE INTERIOR DESIGN DRAWINGS FOR FINISH SCHEDULE
6. REFERENCE INTERIORS DRAWINGS FOR CASEWORK DIMENSIONS AND DETAILS
7. REFERENCE THE LIFE SAFETY DRAWINGS FOR LOCATIONS OF RATED WALLS AND SMOKE PARTITIONS

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

8' 0 4' 8' 16'

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SYM	

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NAVAL STATION - NORFOLK, VA
1PT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC

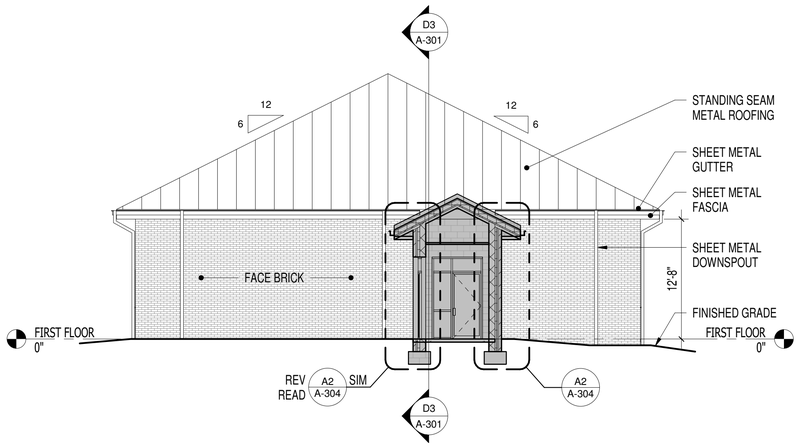
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELEVATIONS - BASE BID & BID OPTION 1

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882094
SHEET	40 OF 121

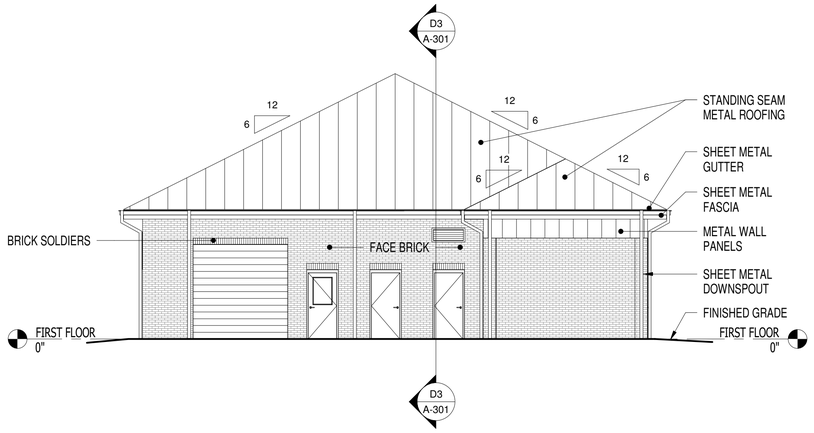
A-201

DRAWFORM REVISION: 10 MARCH 2009



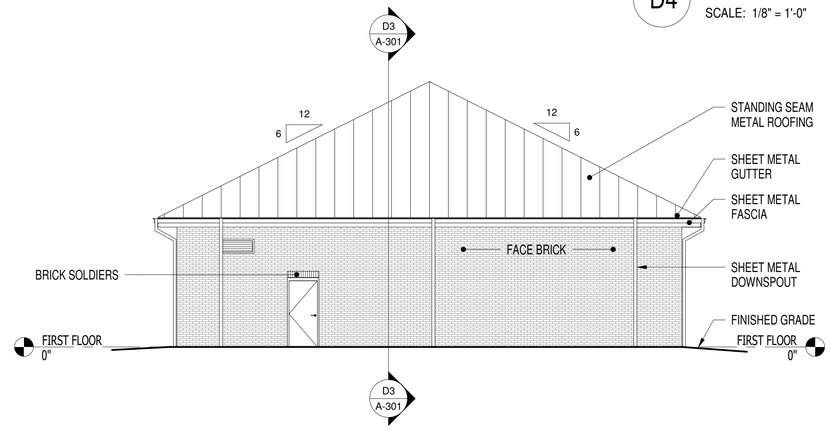
D2 EAST ELEVATION - ISMT - BID OPTION 1

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



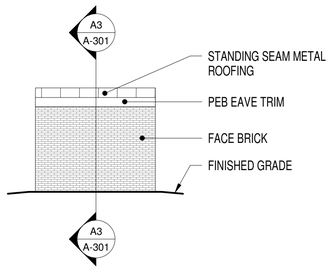
D4 EAST ELEVATION - RANGE OPS

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



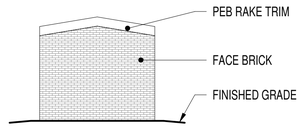
C3 WEST ELEVATION - ISMT - BID OPTION 1

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



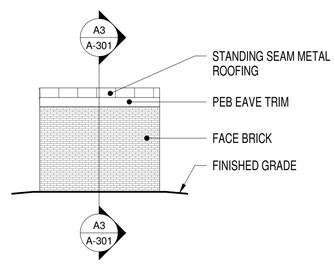
A1 EAST ELEVATION - MDAS

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



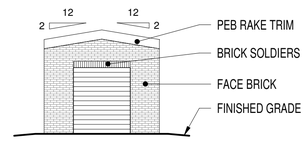
A2 SOUTH ELEVATION - MDAS

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



A4 WEST ELEVATION - MDAS

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



A5 NORTH ELEVATION - MDAS

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

GENERAL CONSTRUCTION NOTES

1. REFERENCE SHEET A-001 FOR SYMBOL LEGEND
2. REFERENCE SHEET A-501 FOR WALL TYPES
3. REFERENCE SHEET A-601 FOR DOOR AND FRAME SCHEDULE
4. REFERENCE SHEET A-603 FOR WINDOW SCHEDULE
5. REFERENCE INTERIOR DESIGN DRAWINGS FOR FINISH SCHEDULE
6. REFERENCE INTERIORS DRAWINGS FOR CASEWORK DIMENSIONS AND DETAILS
7. REFERENCE THE LIFE SAFETY DRAWINGS FOR LOCATIONS OF RATED WALLS AND SMOKE PARTITIONS

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

8' 0 4' 8' 16'

MBF ARCHITECTS P.A. REGISTERED ARCHITECTURAL CORPORATION NORTH CAROLINA CERT. NO. 50679 NEW BERN NC

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	DESCRIPTION
	SYM

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FIRE PROTECTION

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NAVAL STATION - NORFOLK, VA.
IPT MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
ELEVATIONS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882095
SHEET	41 OF 121

A-202

DRAWFORM REVISION: 10 MARCH 2009

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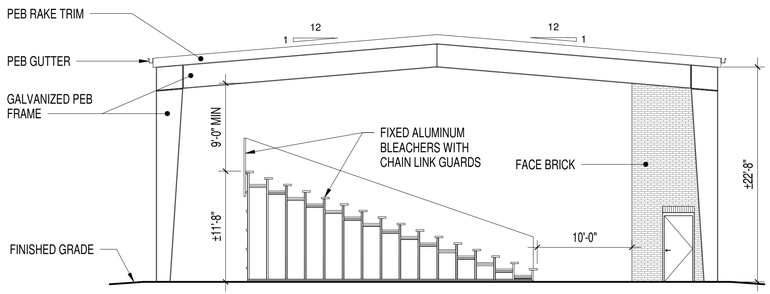
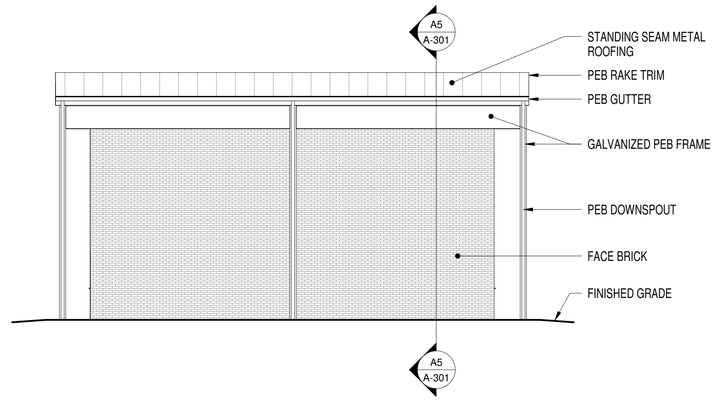


C2 EAST ELEVATION - TRAINING SHELTER - BID OPTION 2

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



C4 NORTH ELEVATION - TRAINING SHELTER - BID OPTION 2

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

GENERAL CONSTRUCTION NOTES

1. REFERENCE SHEET A-001 FOR SYMBOL LEGEND
2. REFERENCE SHEET A-501 FOR WALL TYPES
3. REFERENCE SHEET A-601 FOR DOOR AND FRAME SCHEDULE
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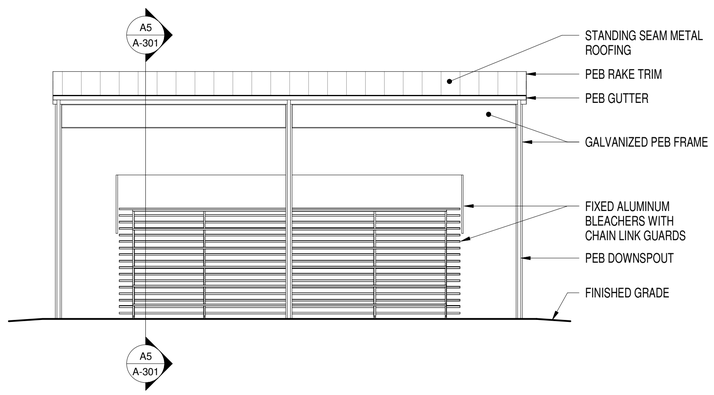
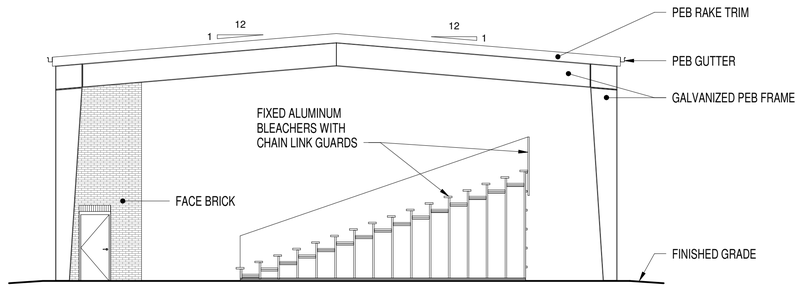
7. REFERENCE THE LIFE SAFETY DRAWINGS FOR LOCATIONS OF RATED WALLS AND SMOKE PARTITIONS



A2 SOUTH ELEVATION - TRAINING SHELTER - BID OPTION 2

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



A4 WEST ELEVATION - TRAINING SHELTER - BID OPTION 2

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

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

8' 0 4' 8' 16'

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NAVAL STATION - NORFOLK, VA
IPT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELEVATIONS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882096
SHEET	42 OF 121

A-203

DRAWFORM REVISION: 10 MARCH 2009

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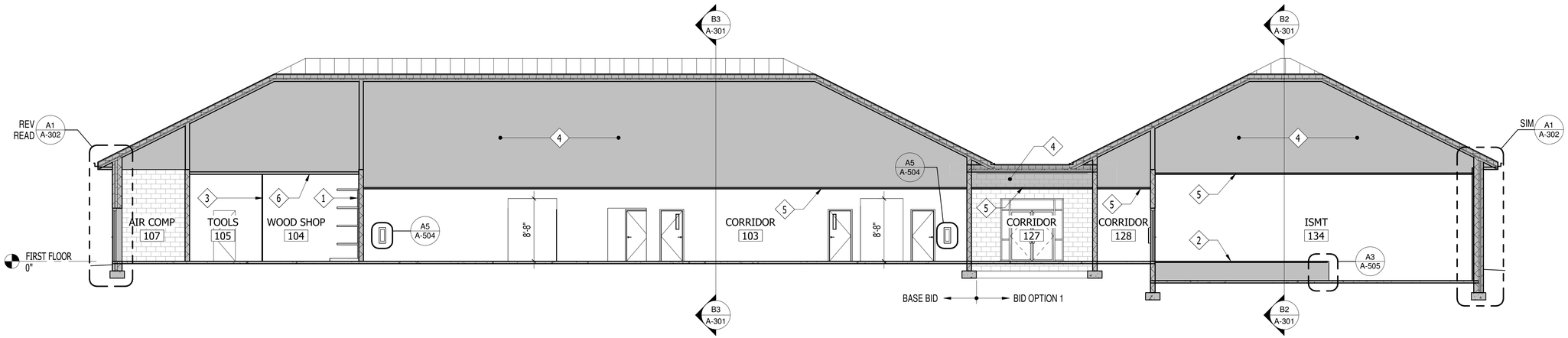

D3 LONGITUDINAL BUILDING SECTION - RANGE OPS & ISMT

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

CONSTRUCTION KEYNOTES

1. HEAVY DUTY SINGLE SIDED CANTILEVER RACK SYSTEM
2. RAISED ACCESS FLOORING SYSTEM
3. WIRE MESH PARTITION TOOL CAGE
4. OPEN WEB GABLE JOISTS
5. ACOUSTICAL TILE CEILING SYSTEM
6. SUSPENDED GYPSUM BOARD CEILING SYSTEM
7. FIXED ALUMINUM BLEACHERS
8. PREENGINEERED METAL BUILDING

GENERAL CONSTRUCTION NOTES

1. REFERENCE SHEET A-001 FOR SYMBOL LEGEND
2. REFERENCE SHEET A-501 FOR WALL TYPES
3. REFERENCE SHEET A-601 FOR DOOR AND FRAME SCHEDULE
4. REFERENCE SHEET A-603 FOR WINDOW SCHEDULE
5. REFERENCE INTERIOR DESIGN DRAWINGS FOR FINISH SCHEDULE
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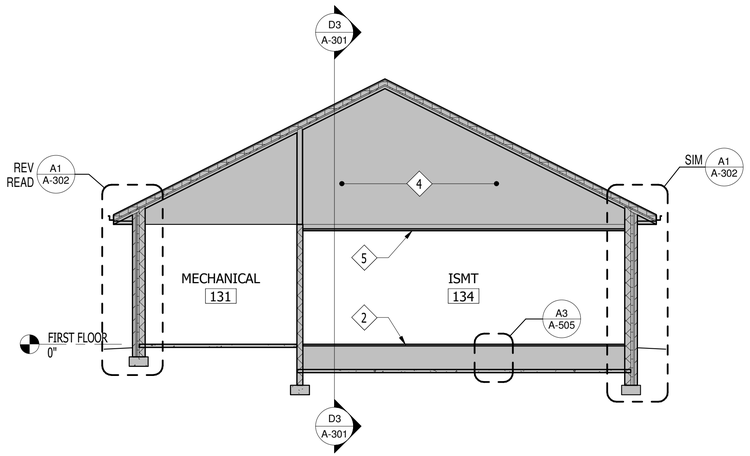
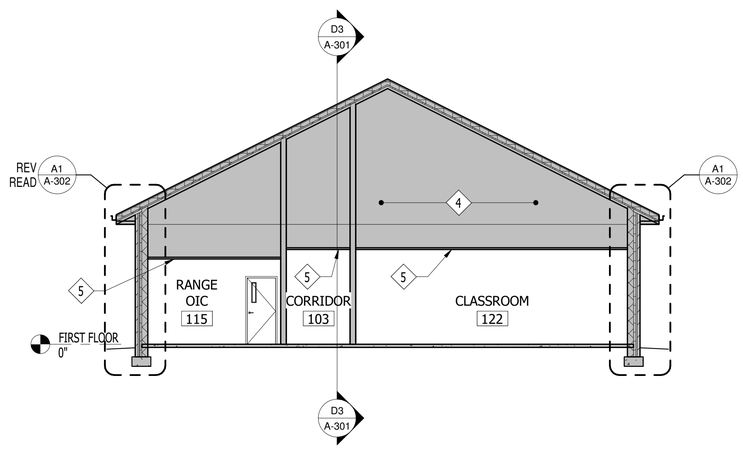
7. REFERENCE THE LIFE SAFETY DRAWINGS FOR LOCATIONS OF RATED WALLS AND SMOKE PARTITIONS



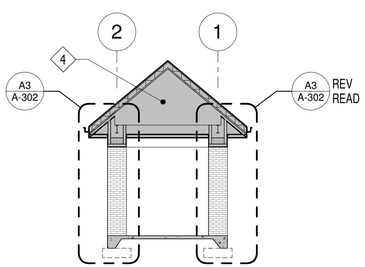
B2 TRANSVERSE BUILDING SECTION - ISMT - BID OPTION 1

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



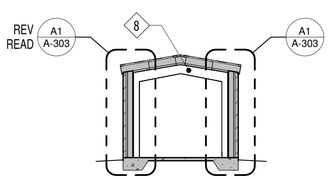
B3 TRANSVERSE BUILDING SECTION - RANGE OPS - BASE BID

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



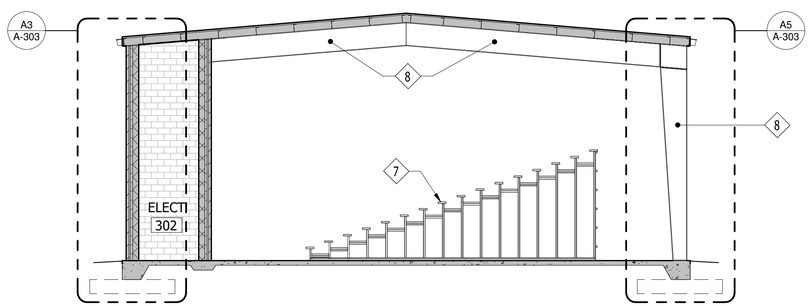
A1 COVERED ENTRY SECTION

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



A3 BUILDING SECTION - MDAS

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



A5 BUILDING SECTION - TRAINING SHELTER

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

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

8' 0 4' 8' 16'

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NAVAL STATION - NORFOLK, VA.
MARINE CORPS AIR STATION CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

BUILDING SECTIONS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882097
SHEET	43 OF 121

A-301

DRAWFORM REVISION: 10 MARCH 2009

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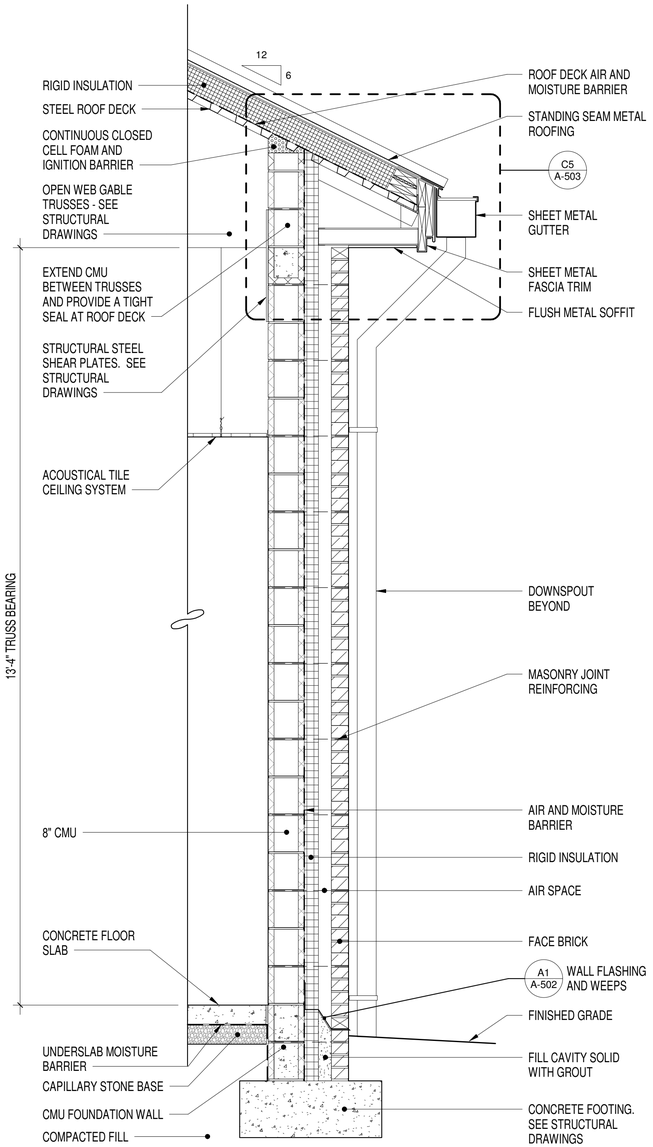
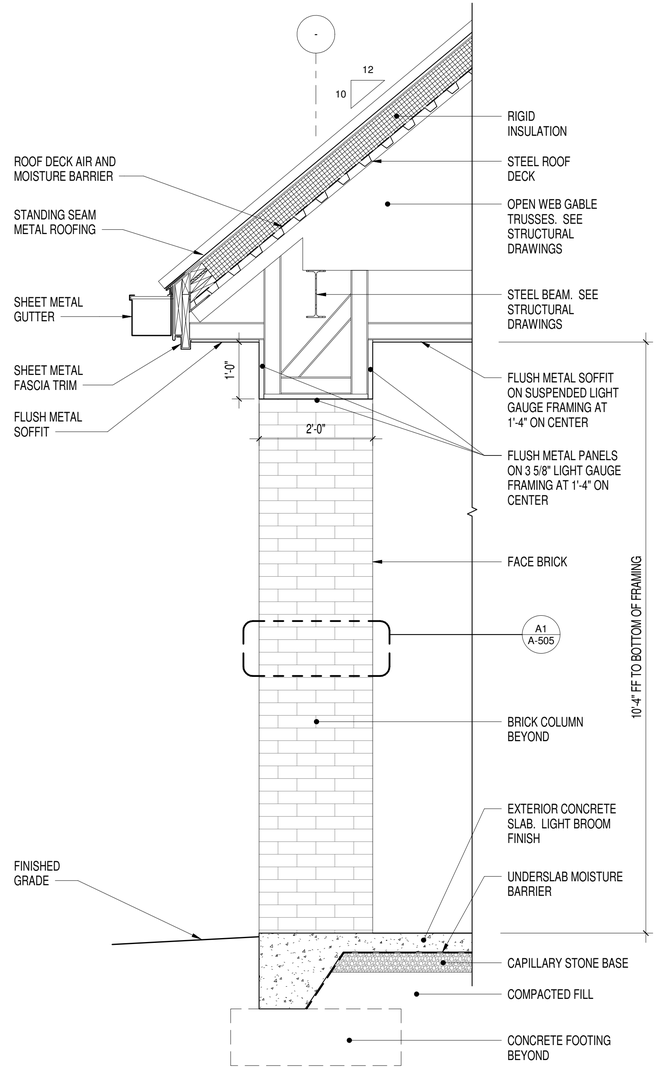


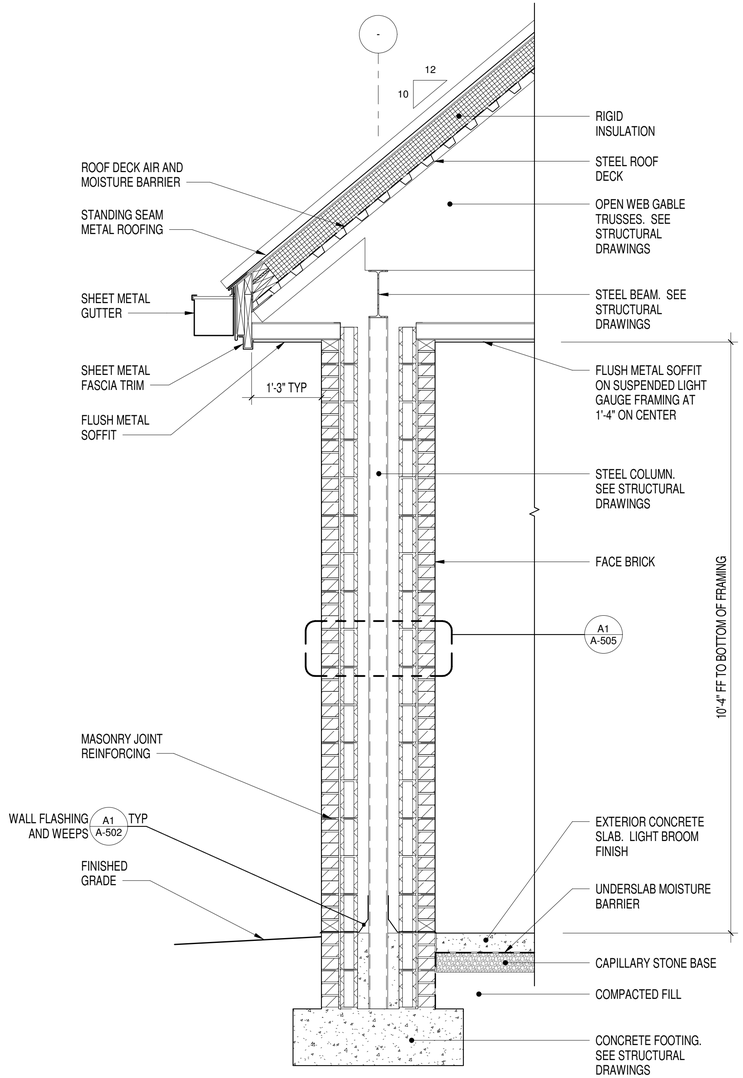
A1 TYPICAL WALL SECTION

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



A3 ENTRY EAVE SECTION

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



A5 ENTRY EAVE SECTION AT COLUMN

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

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

1' 0 1' 2' 3'

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NAVAL STATION - NORFOLK, VA.
IPT: MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

WALL SECTIONS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882098
SHEET	44 OF 121

A-302

DRAWFORM REVISION: 10 MARCH 2009

SYM	DESCRIPTION	DATE	APPR

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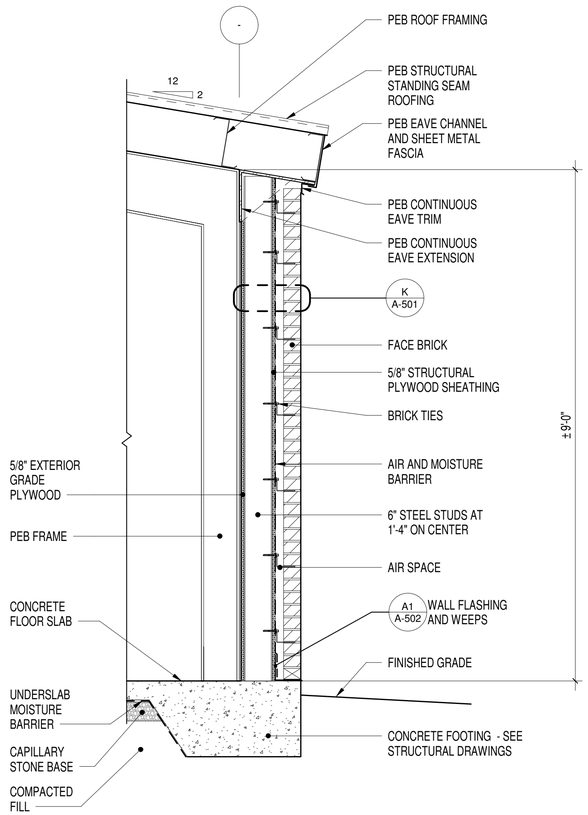
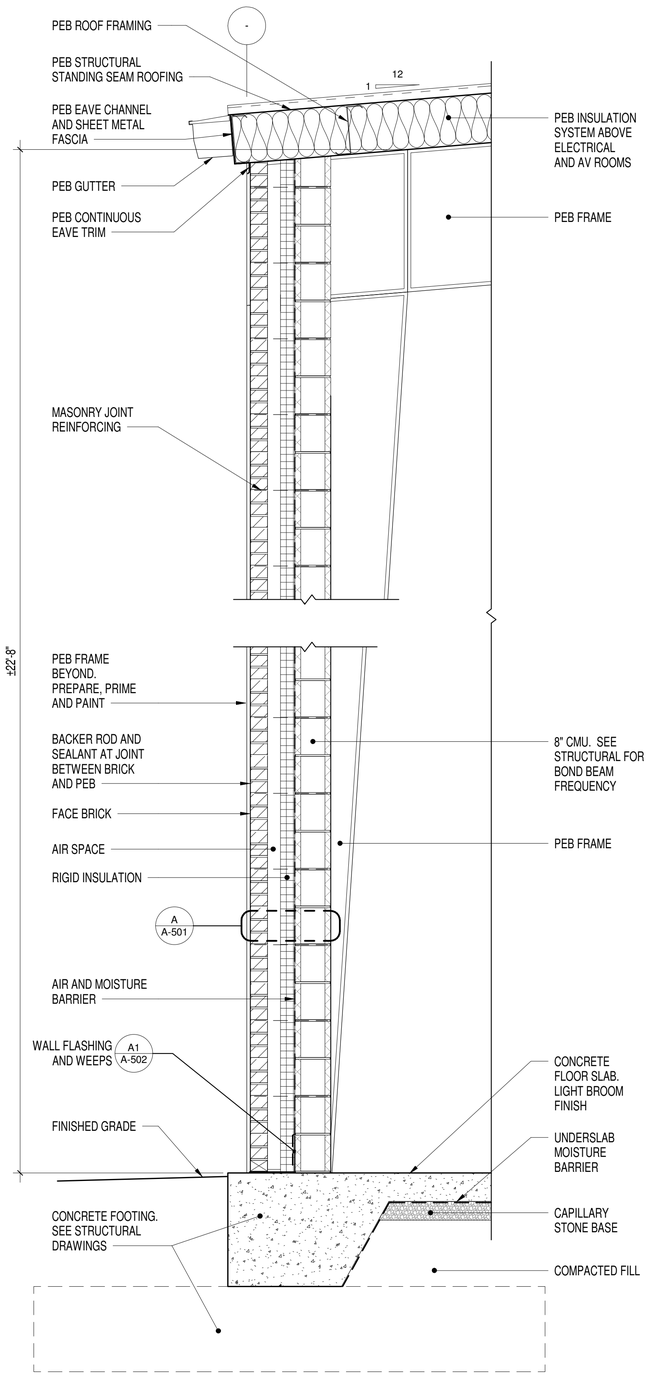


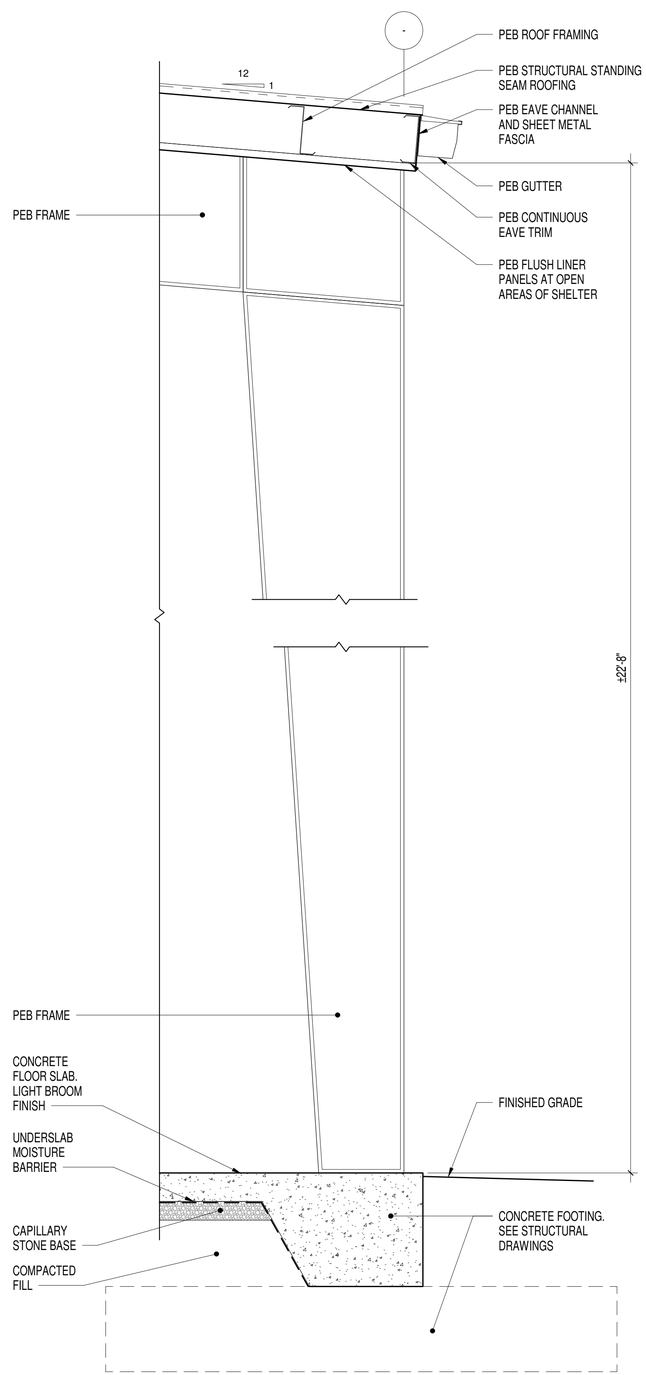
A1 MDAS WALL SECTION

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



A3 TRAINING SHELTER WALL SECTION

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



A5 TRAINING SHELTER WALL SECTION - OPEN EAVE

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

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

1' 0 1' 2' 3'

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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA.
1ST MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
WALL SECTIONS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882099
SHEET	45 OF 121

A-303

DRAWFORM REVISION: 10 MARCH 2009

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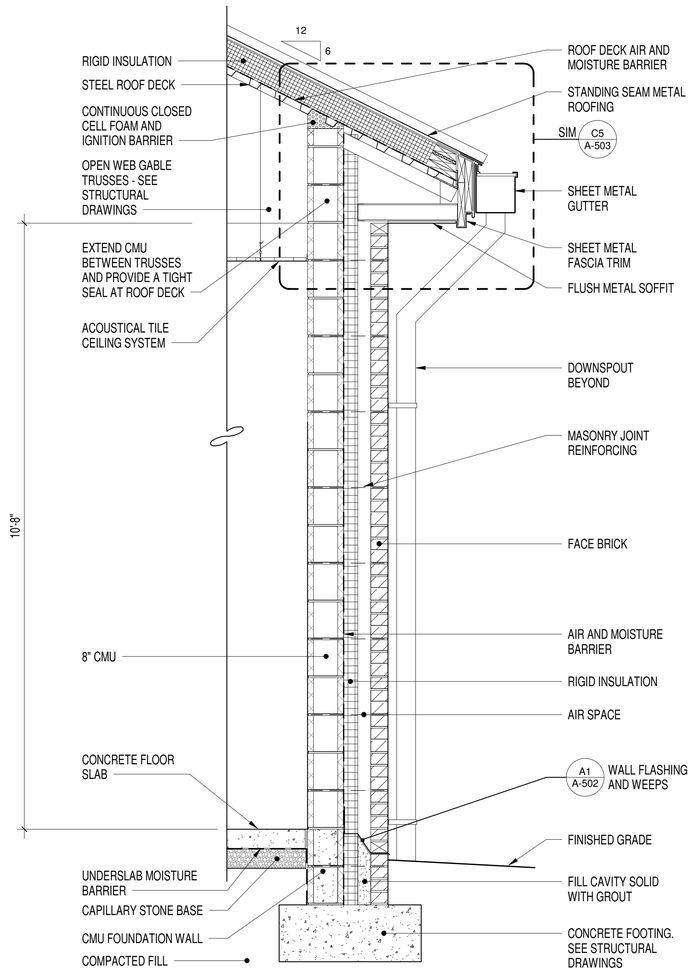
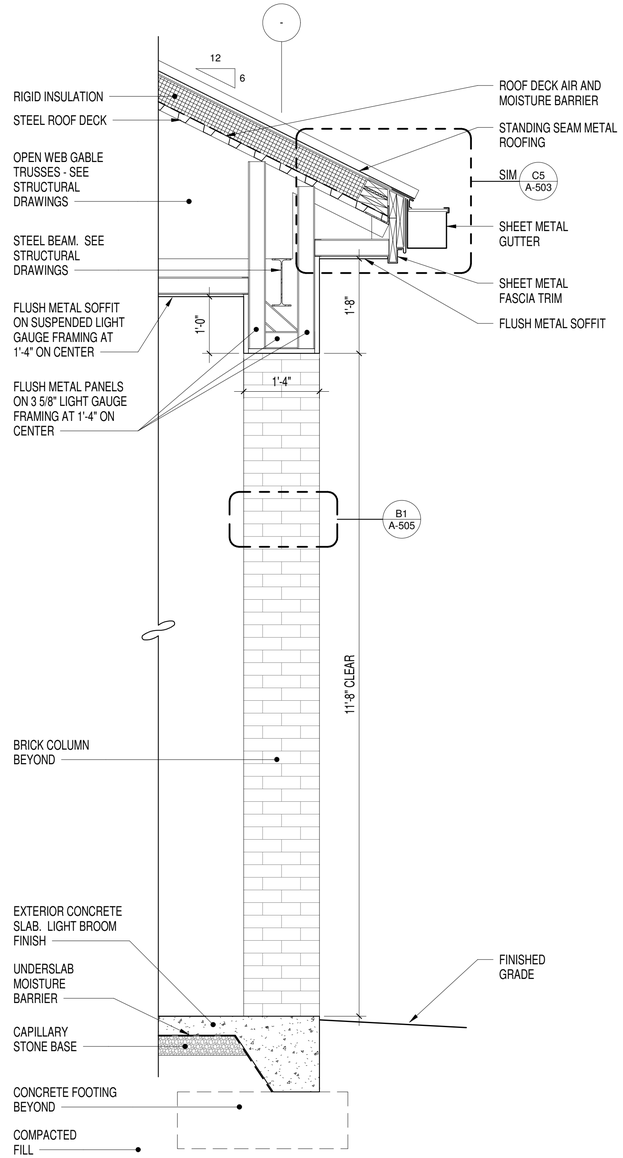


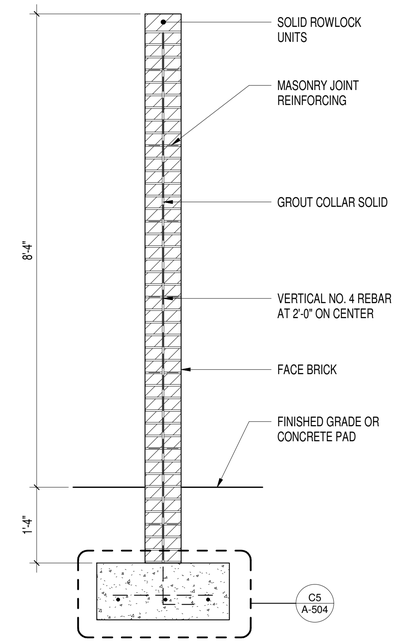
A2 CONNECTOR WALL SECTION

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



A3 COVERED DRIVE WALL SECTION

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



NOTES:
1. MAINTAIN 1'-0" GAP BETWEEN END OF SCREEN WALL AND BUILDING FACE

A5 SCREEN WALL DETAIL

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

GRAPHIC SCALE: 3/4"=1'-0"
1' 0 1' 2' 3'

MBF ARCHITECTS, P.A. REGISTERED ARCHITECTURAL FIRM NORTH CAROLINA NEW BERN N.C. CERT. NO. 50679

	DATE	DESCRIPTION	SYM

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DARDEN J. EURE, III REGISTERED ARCHITECT 8440 NORTH CAROLINA NEW BERN NC

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
1ST MARINE
MARINE CORPS AIR STATION

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

WALL SECTIONS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882100
SHEET	46 OF 121

A-304

DRAWFORM REVISION: 10 MARCH 2009

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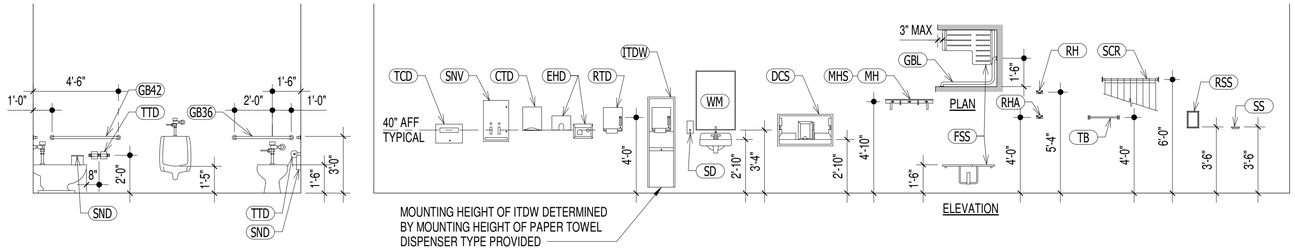
TOILET ACCESSORIES LEGEND

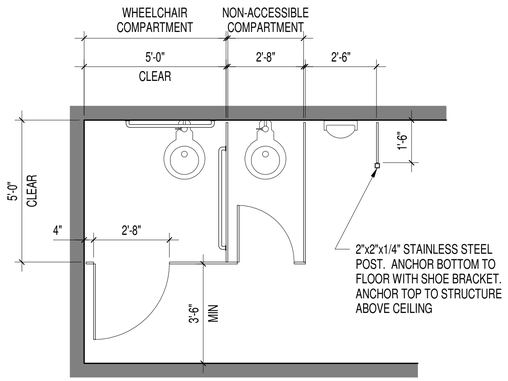
MARK	DESCRIPTION	MARK	DESCRIPTION	MARK	DESCRIPTION
TTD	TOILET TISSUE DISPENSER	PTD	PAPER TOWEL DISPENSER	RSS	RECESSED SOLID SURFACE SHOWER SHELF
GB42	GRAB BAR: 42"	ITDW	INTEGRAL TOWEL DISPENSER & WASTE RECEPTACLE	SS	SOLID SURFACE SHOWER SHELF
GB36	GRAB BAR: 36"	PTDC	PAPER TOWEL DISPENSER: "C" FOLD TYPE	DCS	DIAPER CHANGING STATION
GB18	GRAB BAR: 18"	PTDR	PAPER TOWEL DISPENSER: ROLL TYPE	MHS	MOP HOLDER WITH SHELF
GBL	GRAB BAR: L-SHAPED 24" x 18"	EHD	ELECTRIC HAND DRYER	MH	MOP HOLDER
SND	SANITARY NAPKIN DISPOSAL	SD	SOAP DISPENSER	TB	TOWEL BAR: 18"
SNV	SANITARY NAPKIN VENDOR	CSD	COUNTERTOP MOUNTED SOAP DISPENSER	SCR	SHOWER CURTAIN ROD
TCD	TOILET SEAT COVER DISPENSER	WM	WALL MIRROR: 18" x 36"	RH	ROBE HOOK
FSS	FOLDING SHOWER SEAT	WM1	WALL MIRROR (CUSTOM): SEE ELEVATION	RHA	ROBE HOOK: ACCESSIBLE MOUNTING HEIGHT

NOTES:
1. CLEARANCES AND HEIGHTS OF FIXTURES AND ACCESSORIES MUST BE IN COMPLIANCE WITH ABA
2. CLEARANCES AND HEIGHTS OF FIXTURES AND ACCESSORIES MUST BE IN COMPLIANCE WITH THE ARCHITECTURAL BARRIERS ACT (ABA) ACCESSIBILITY STANDARDS FOR DEPARTMENT OF DEFENSE FACILITIES AS ADOPTED BY DOD POLICY MEMORANDUM
3. ACCESSORIES SPECIFIED APPEAR ON DESIGNATED PLANS, HOWEVER NOT ALL ACCESSORIES SHOWN HERE MAY BE SPECIFIED. COORDINATE WITH PLAN DESIGNATIONS
4. REFERENCE THE SPECIFICATIONS FOR DETAILED PRODUCT INFORMATION INCLUDING ACCEPTABLE MANUFACTURERS, FINISHES, ETC.
5. MOUNT ACCESSORIES SUCH THAT DISPENSER OR OPERATING MECHANISM IS WITHIN ACCESSIBLE FORWARD REACH RANGES DEFINED BY THE ACCESSIBILITY STANDARDS IDENTIFIED ABOVE



D4 TOILET ACCESSORY MOUNTING HEIGHTS

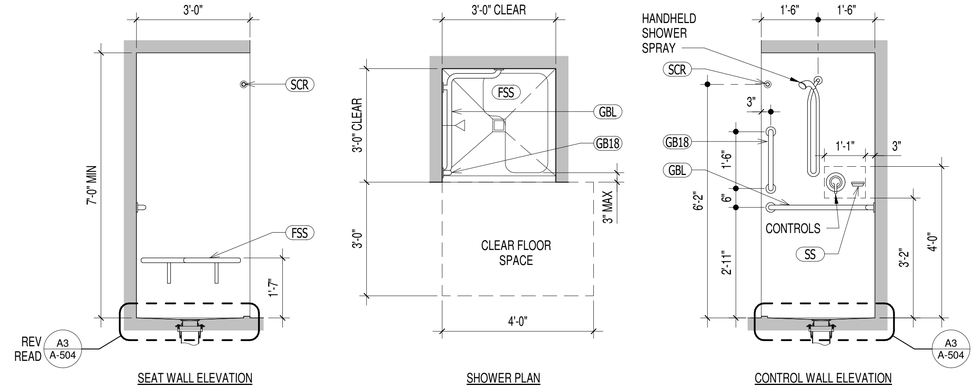
SCALE: 1/4" = 1'-0"



NOTES:
1. WHEELCHAIR ACCESSIBLE COMPARTMENTS, SECTION 604.9, ABA
2. EQUALLY SPACE NON-ACCESSIBLE TOILET COMPARTMENTS WHERE NOT INDIVIDUALLY DIMENSIONED

A2 TYPICAL TOILET COMPARTMENT DETAIL

SCALE: 3/8" = 1'-0"



NOTES:
1. SIZE AND CLEARANCES, SECTION 608.2.1, ABA
2. GRAB BARS, SECTIONS 608.3 AND 608.3.1, ABA
3. CONTROLS AND HAND SHOWER, SECTION 608.5, ABA
4. THRESHOLD, SECTION 608.6, ABA
5. SEAT, SECTIONS 610.1, 610.3.2 AND 610.4, ABA

A4 ACCESSIBLE SHOWER DETAILS - TRANSFER TYPE

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

GRAPHIC SCALE: 1/4"=1'-0"
4' 0 2' 4' 8'

GRAPHIC SCALE: 3/8"=1'-0"
3' 0 2' 6'

GRAPHIC SCALE: 1/2"=1'-0"
2' 0 1' 2' 4'

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NAVAL STATION - NORFOLK, VA
IPT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC

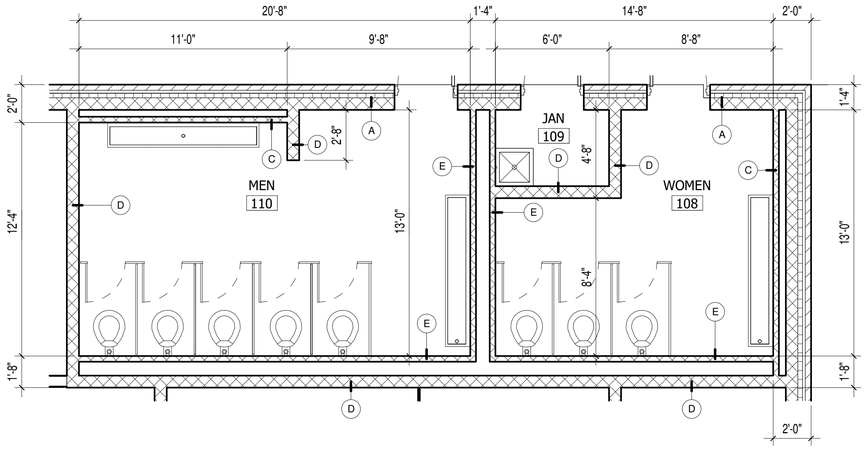
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

TYPICAL TOILET DETAILS AND ACCESSORIES LEGEND

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882101
SHEET	47 OF 121

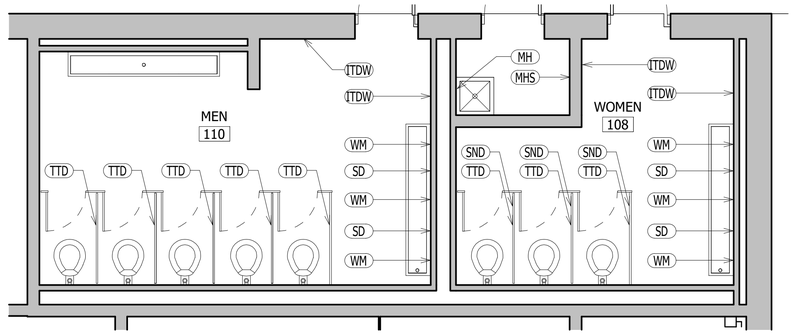
A-401

DRAWFORM REVISION: 10 MARCH 2009



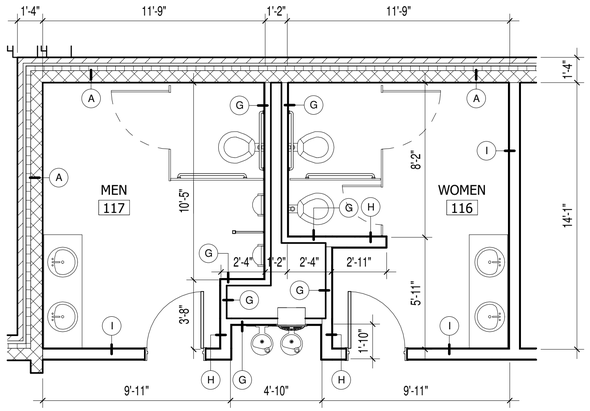
D2 ENLARGED DIMENSION PLAN - WOMEN 108 & MEN 110

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



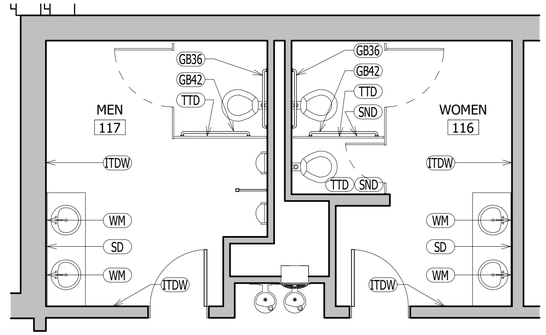
D4 TOILET ACCESSORIES PLAN - WOMEN 108 & MEN 110

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



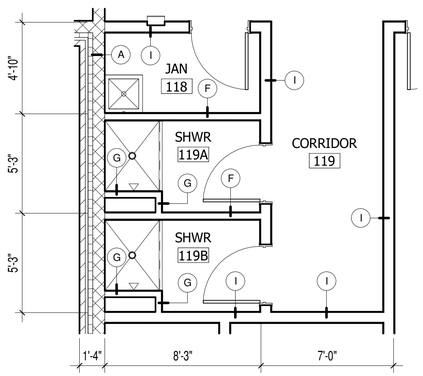
B2 ENLARGED DIMENSION PLAN - WOMEN 116 & MEN 117

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



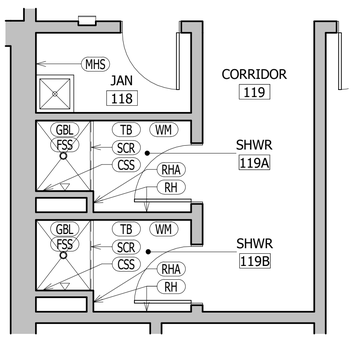
B4 TOILET ACCESSORIES PLAN - WOMEN 116 & MEN 117

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



A2 ENLARGED DIMENSION PLAN - SHOWERS

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



A4 TOILET ACCESSORIES PLAN - SHOWERS

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

ENLARDGED TOILET PLAN NOTES

1. REFERENCE SHEET A-001 FOR SYMBOL LEGEND
2. REFERENCE SHEET A-401 FOR TOILET ACCESSORIES LEGEND
3. REFERENCE SHEET A-501 FOR WALL TYPES
4. REFERENCE SHEET A-601 FOR DOOR AND FRAME SCHEDULE
5. REFERENCE SHEET A-603 FOR WINDOW SCHEDULE
6. REFERENCE INTERIOR DESIGN DRAWINGS FOR FINISH SCHEDULE
7. REFERENCE INTERIORS DRAWINGS FOR CASEWORK DIMENSIONS AND DETAILS
8. REFERENCE THE LIFE SAFETY DRAWINGS FOR LOCATIONS OF RATED WALLS AND SMOKE PARTITIONS

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

4' 0 2' 4' 8'

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P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ENLARGED TOILET ROOM PLANS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882102
SHEET	48 OF 121

A-402

DRAWFORM REVISION: 10 MARCH 2009

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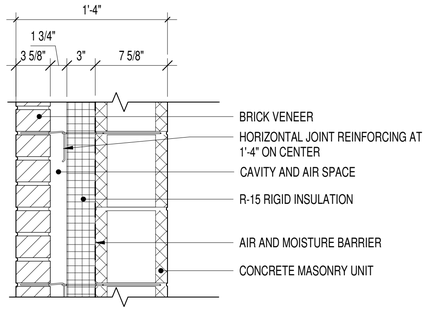
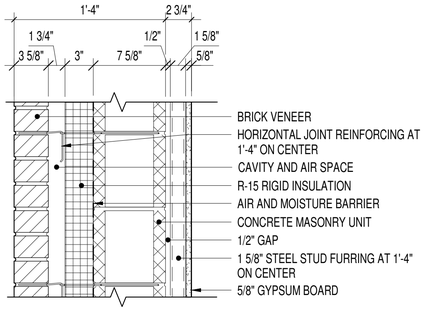


NOTES:
1. ASSEMBLY U VALUE: 0.072

A 8" CMU EXTERIOR WALL

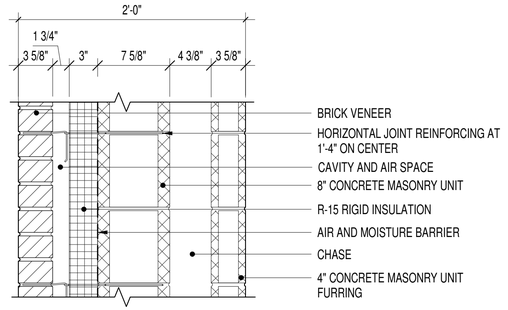
SCALE: 1 1/2" = 1'-0"



NOTES:
1. ASSEMBLY U VALUE: 0.072

B 8" CMU EXTERIOR WALL

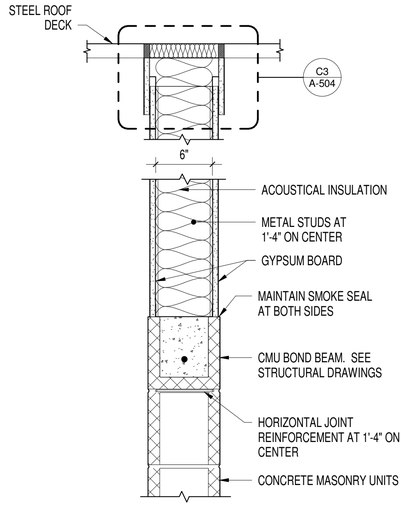
SCALE: 1 1/2" = 1'-0"



NOTES:
1. PROVIDE WALL TIES FOR 4" CMU FURRING AT 1'-4" ON CENTER VERTICALLY
2. ASSEMBLY U VALUE: 0.072

C 8" CMU EXTERIOR WALL

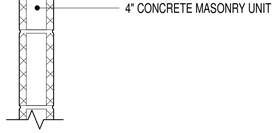
SCALE: 1 1/2" = 1'-0"



NOTES:
1. UTILIZE UL ASSEMBLY U905 FOR 1 HOUR RATED WALL LOCATIONS
2. MASONRY PARTITION WALL WITH REINFORCED AND GROUTED CONCRETE MASONRY UNITS
3. ENSURE THAT NO OTHER METAL (FASTENERS, ETC) COMES INTO CONTACT WITH HORIZONTAL REINFORCING
4. PROVIDE CHANNEL STIFFENERS AT 4'-0" ON CENTER VERTICALLY IN STUD WALL
5. PROVIDE DIAGONAL STEEL STUD BRACING TO STRUCTURE AT 4'-0" ON CENTER MAX
6. MAINTAIN SMOKE RATING

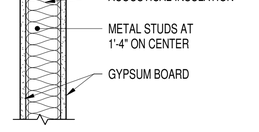
D MASONRY PARTITION

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



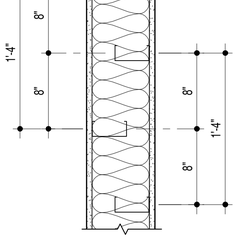
E 4" CMU INTERIOR PARTITION

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

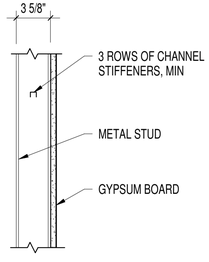


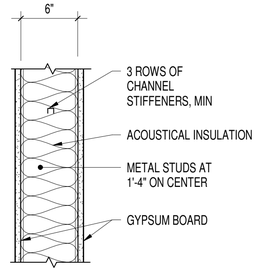
F 3 5/8" INTERIOR PARTITION

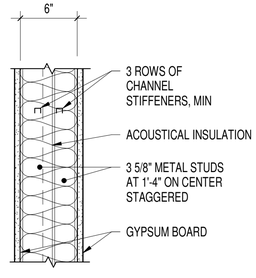
SCALE: 1 1/2" = 1'-0"



PLAN







SECTION

NOTES:
1. ASSEMBLY ACHIEVES STC 45

G 3 5/8" INTERIOR CHASE WALL

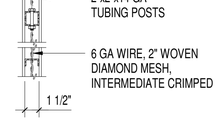
SCALE: 1 1/2" = 1'-0"

H 6" INTERIOR PARTITION

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

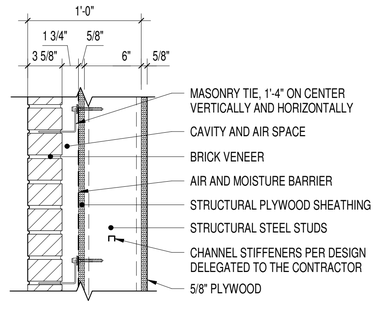
I 6" STAGGERED STUD INTERIOR PARTITION

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



J WIRE MESH PARTITION

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



K 6" METAL STUD EXTERIOR WALL

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

WALL TYPE NOTES

1. WALL TYPES AS INDICATED ON FLOOR PLANS
2. GYPSUM BOARD IS TO BE 5/8",TYPE X, MOISTURE RESISTANT, HIGH IMPACT UNLESS SPECIFICALLY NOTED OTHERWISE
3. PROVIDE 5/8" CEMENTITIOUS BACKER BOARD WHERE CERAMIC TILE IS SCHEDULED ON WALLS
4. SMOKE PARTITIONS AND RATED WALLS MUST BE PROPERLY SEALED TO THE UNDERSIDE OF THE DECK ABOVE. PROVIDE SCHEDULE 40 SLEEVES AT PIPE PENETRATIONS IN RATED PARTITIONS AND SEAL ANNULAR SPACE WITH RATED SEALANT. REFERENCE MECHANICAL DRAWINGS FOR MECHANICAL DUCT DAMPER LOCATIONS. REFERENCE THE LIFE SAFETY DRAWINGS FOR RATED WALL AND SMOKE PARTITION LOCATIONS
5. WALL FRAMING MUST BE EXTENDED TO THE UNDERSIDE OF THE DECK ABOVE AT ALL LOCATIONS FOR BRACING. EXTEND GYPSUM BOARD TO FULL HEIGHT OF WALLS
6. WALLS, INCLUDING GYPSUM BOARD WHERE SCHEDULED, AT MECHANICAL ROOMS, ELECTRICAL ROOMS, EQUIPMENT ROOMS, JANITOR CLOSETS, TOILETS AND CORRIDORS MUST BE EXTENDED TO THE UNDERSIDE OF THE DECK ABOVE UNLESS NOTED OTHERWISE. INSTALL AIR BARRIER SEALANT PERIMETER OF WALL

GRAPHIC SCALE: 1 1/2"=1'-0"
1' 6" 3" 0 1'

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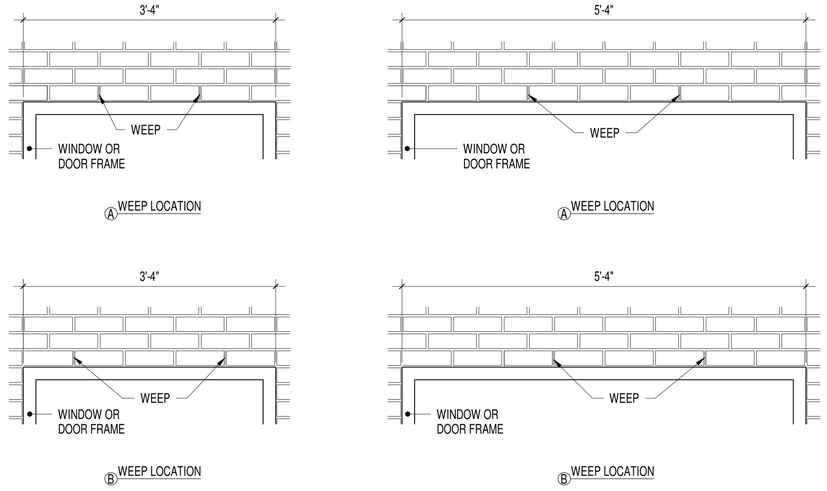
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
WALL TYPE DETAILS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12882103
SHEET 49 OF 121

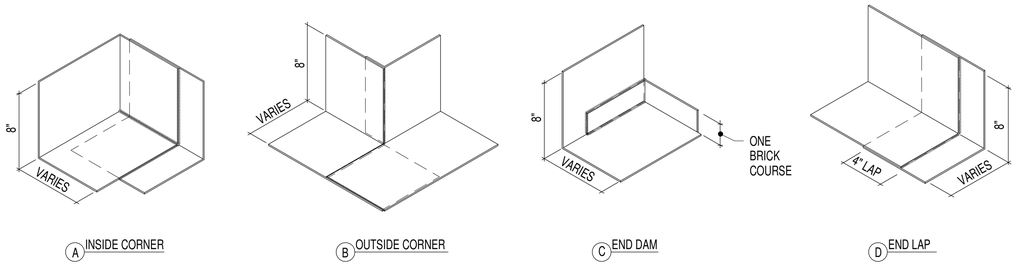
A-501

DRAWFORM REVISION: 10 MARCH 2009



C1 HEAD JOINT COURSING DETAIL

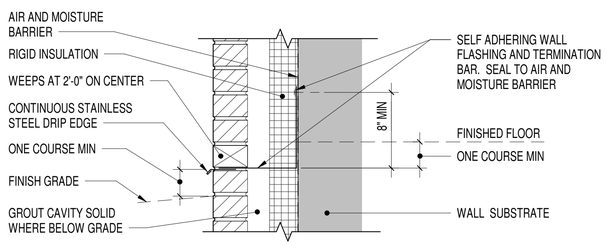
SCALE: 1" = 1'-0"



NOTES:
1. EXTEND FLASHING 8" BEYOND OPENINGS

B1 SELF ADHERING FLASHING DETAIL

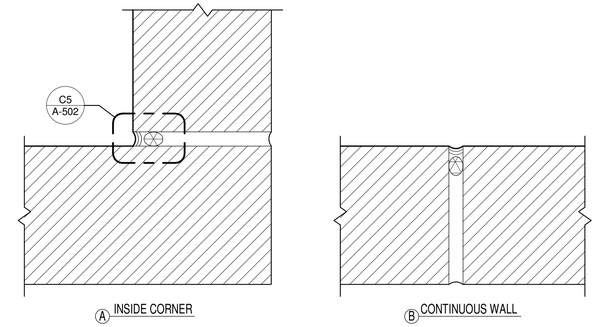
SCALE: 1 1/2" = 1'-0"



NOTES:
1. DRIP EDGE SPLICES MUST BE 3" MIN
2. PEEL & STICK WALL FLASHING CONFIGURATION MAY VARY SLIGHTLY AS ILLUSTRATED IN WALL SECTIONS AND DETAILS
3. VENEER WALL TIES AND JOINT REINFORCEMENT OMITTED FOR CLARITY

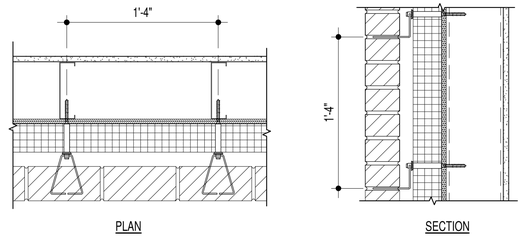
A1 THROUGH WALL FLASHING DETAIL

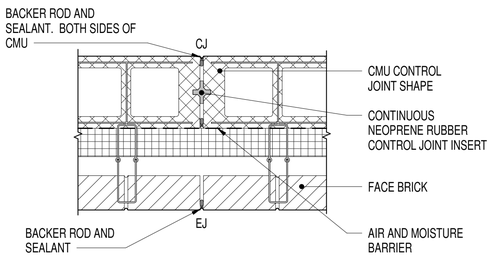
SCALE: 1 1/2" = 1'-0"



C3 CONTROL JOINTS DETAILS

SCALE: 6" = 1'-0"





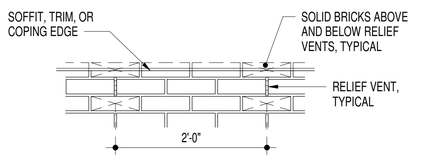
NOTES:
1. PROVIDE A CJ/EJ FOR EVERY 30 LINEAR FEET OF WALL
2. BREAK MASONRY JOINT REINFORCING AT CJ/EJ AS ILLUSTRATED

B3 VENEER ANCHOR DETAIL MTL STD WALL

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

A3 CONTROL JOINT/EXPANSION JOINT DETAIL

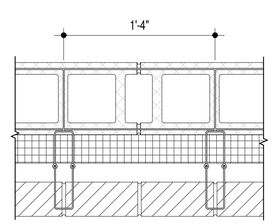
SCALE: 1 1/2" = 1'-0"



NOTES:
1. ALIGN RELIEF VENTS WITH WEEP HOLES IN WALL BELOW

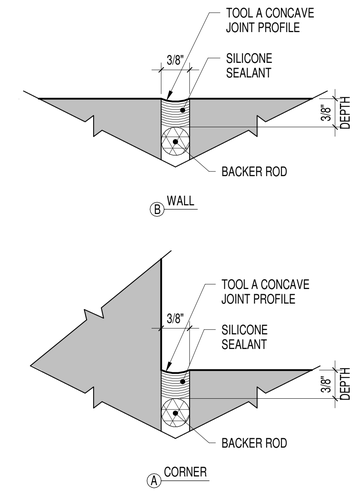
A4 HEAD JOINT RELIEF VENT DETAIL

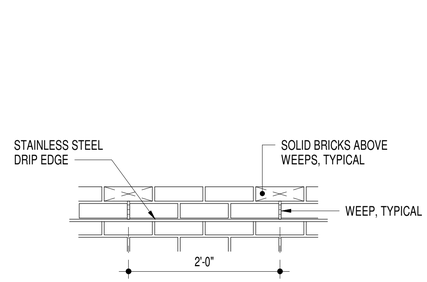
SCALE: 1" = 1'-0"



B5 VENEER ANCHOR DETAIL CMU WALL

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





NOTES:
1. CENTER DRIP EDGE LAPS BETWEEN WEEPS

A5 WEEP VENT DETAIL

SCALE: 1" = 1'-0"

C5 SEALANT POCKET DETAILS

SCALE: 1" = 1"

GRAPHIC SCALE: 1"=1'-0" (1' 0 1' 2')

GRAPHIC SCALE: 1 1/2"=1'-0" (1' 6" 3" 0 1')

GRAPHIC SCALE: 6"=1'-0" (0 3" 6")

GRAPHIC SCALE: 1"=1" (0 1" 2")

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NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
MASONRY DETAILS

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
1ST MARINE
MARINE CORPS AIR STATION

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882104
SHEET	50 OF 121

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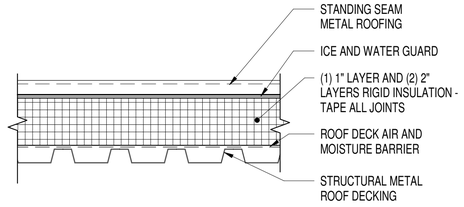
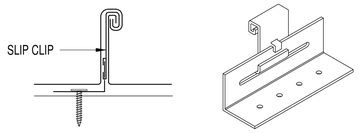


D1 ROOF ASSEMBLY - INSULATED

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

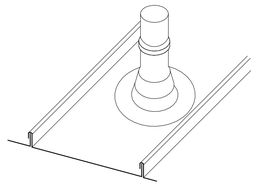


SECTION A

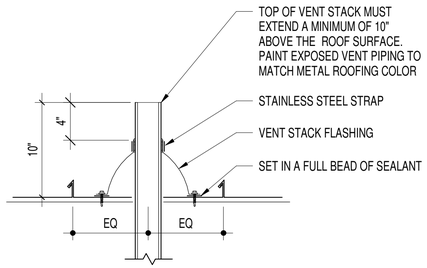
ISOMETRIC B

D2 STANDING SEAM SLIP CLIP

SCALE: NOT TO SCALE



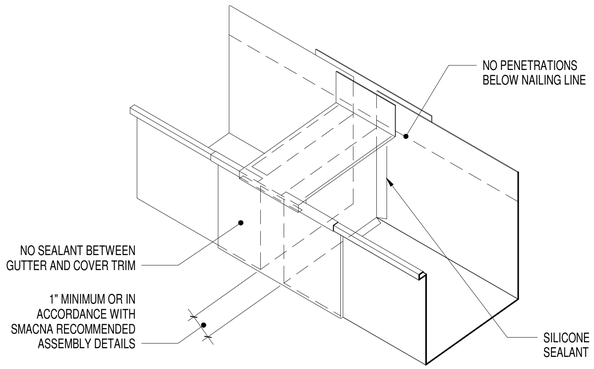
ISOMETRIC



NOTES:
1. INSTALL VENT STACK FLASHING IN ACCORDANCE WITH THE ROOF MANUFACTURER'S RECOMMENDATIONS

B1 VENT THROUGH STANDING SEAM ROOF

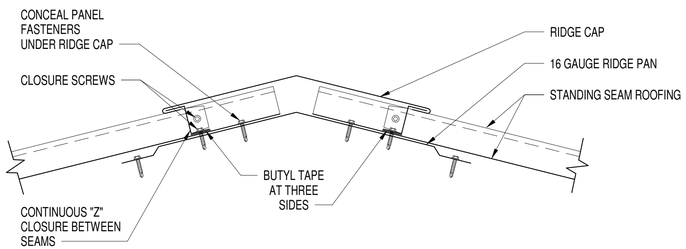
SCALE: 1 1/2" = 1'-0"



NOTES:
1. PROVIDE GUTTER EXPANSION JOINTS AT 35'-0" ON CENTER MAX

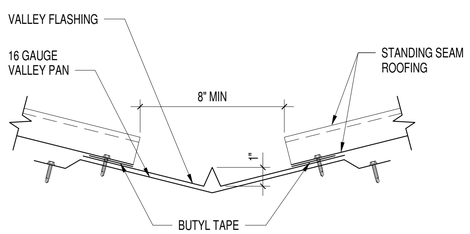
B2 GUTTER EXPANSION JOINT DETAIL

SCALE: 3" = 1'-0"



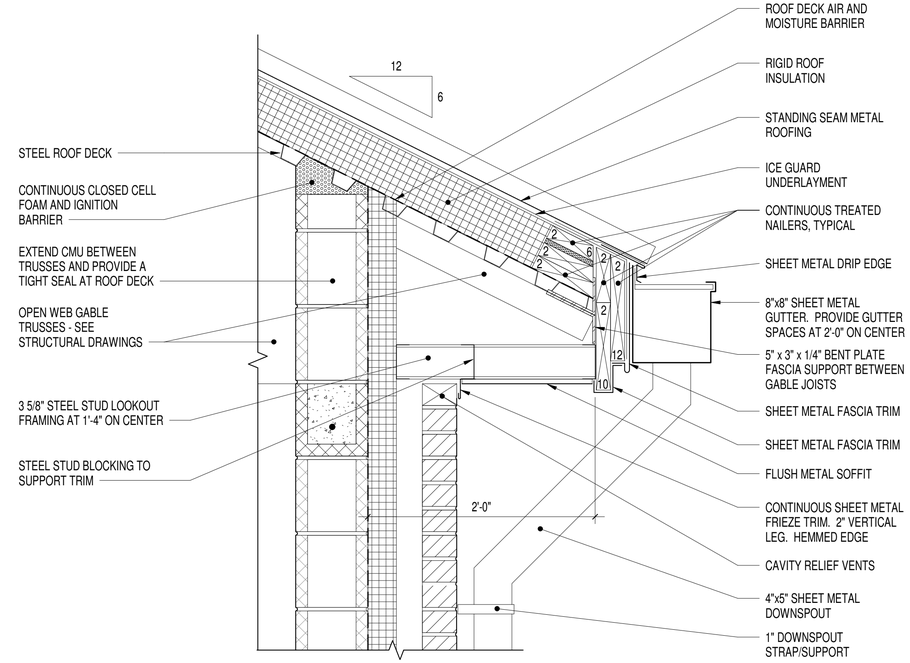
A1 RIDGE DETAIL

SCALE: 3" = 1'-0"



A2 VALLEY DETAIL

SCALE: 3" = 1'-0"



C5 TYPICAL EAVE DETAIL

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

GRAPHIC SCALE: 1 1/2"=1'-0"
1' 6" 3" 0 1"

GRAPHIC SCALE: 3"=1'-0"
0 3" 6" 1"

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CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ROOFING DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
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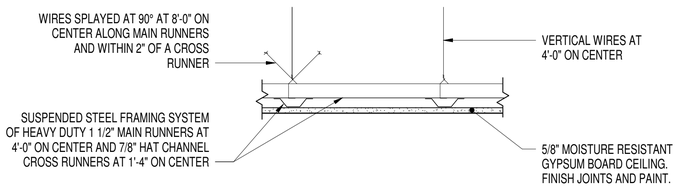
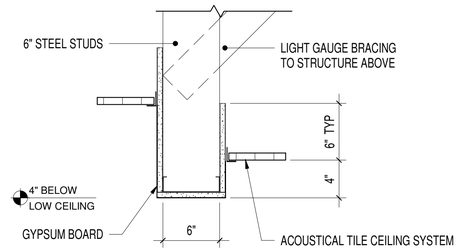


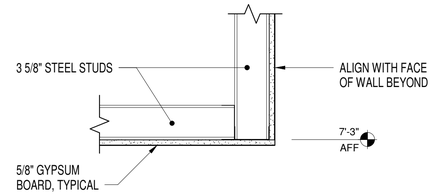
D1 SUSPENDED GYPSUM BOARD CEILING DETAIL

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



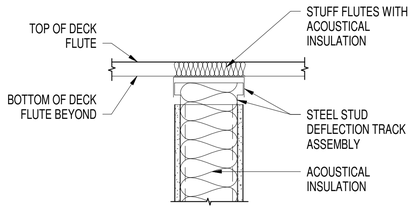
D3 TYPICAL BULKHEAD DETAIL

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



D5 BULKHEAD DETAIL AT DRINKING FOUNTAIN

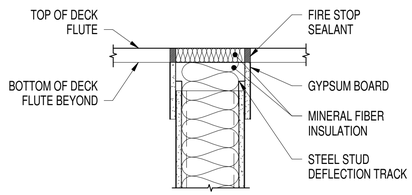
SCALE: 1 1/2" = 1'-0"



NOTES:
1. MAXIMUM DEFLECTION OF 3/4" AT ELEVATED SLABS
2. MAXIMUM DEFLECTION OF 3/4" AT ROOF DECKING
3. DETAIL IS SIMILAR AT SLOPED ROOF DECKING

C1 PARTITION DEFLECTION TRACK DETAIL

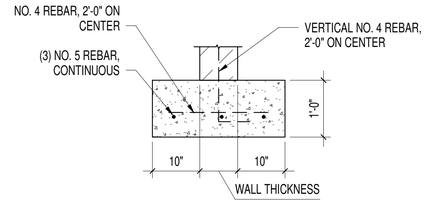
SCALE: 1 1/2" = 1'-0"



NOTES:
1. DEFLECTION TRACK SHALL MAINTAIN WALL RATING
2. MAXIMUM DEFLECTION OF 1/2" AT ELEVATED SLABS
3. MAXIMUM DEFLECTION OF 1/2" AT ROOF DECKING
4. DETAIL IS SIMILAR AT SLOPED ROOF DECKING

C3 1 HOUR RATED DEFLECTION TRACK DETAIL

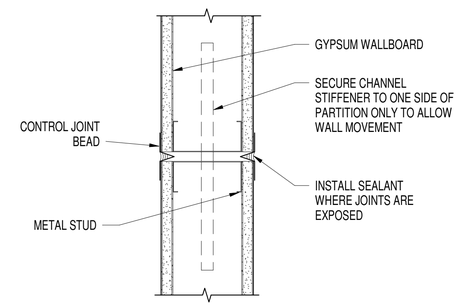
SCALE: 1 1/2" = 1'-0"



NOTES:
1. 3" MIN EDGE CLEARANCE AT REINFORCING

C5 SCREEN WALL FOOTING DETAIL

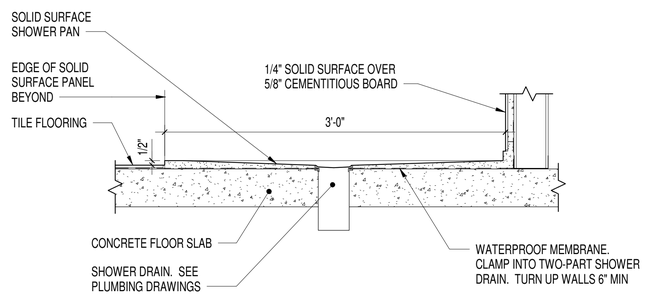
SCALE: 3/4" = 1'-0"



NOTES:
1. PROVIDE CONTROL JOINTS FOR EVERY 30'-0" OF CONTINUOUS WALL
2. ACOUSTICAL INSULATION IS OMITTED FOR CLARITY

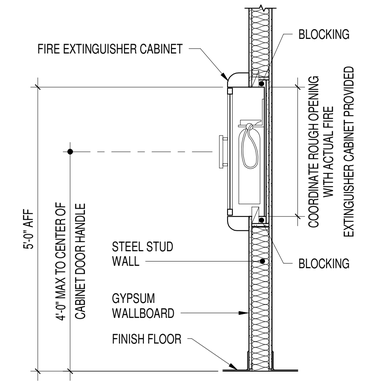
A1 GYPSUM BOARD CONTROL JOINT DETAIL

SCALE: 3" = 1'-0"



A3 SHOWER PAN DETAIL

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



NOTES:
1. 1'-3" MIN, 4'-0" MAX TO OPERATING MECHANISM OF FIRE EXTINGUISHER CABINET
2. MAINTAIN FIRE RATING AT EXTINGUISHER CABINETS IN RATED WALLS
3. PROVIDE EXTENSION TRIM AS REQUIRED FOR THE MOUNTING CONDITION

A5 FIRE EXTINGUISHER CABINET DETAIL

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

GRAPHIC SCALE: 3/4"=1'-0"
1' 0 1' 2' 3'

GRAPHIC SCALE: 1 1/2"=1'-0"
1' 6" 3" 0 1'

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NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
MISCELLANEOUS DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882106
SHEET	52 OF 121

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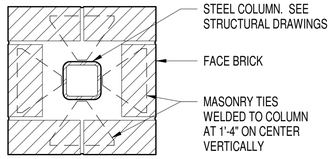
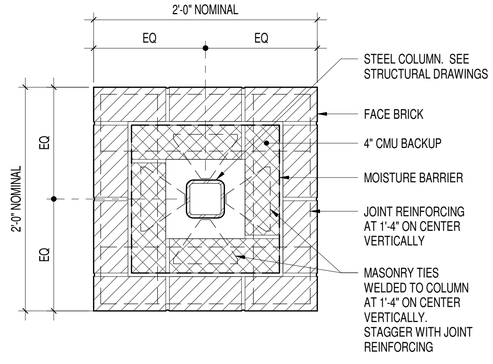


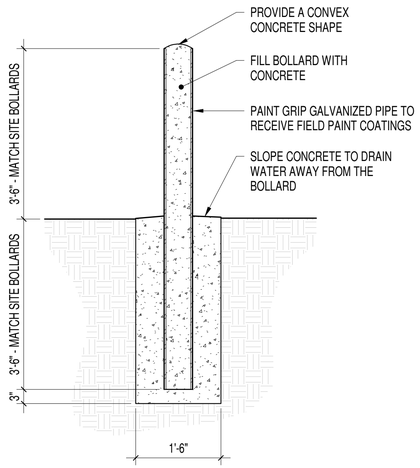
NOTES:
1. CLEAN WELDS AT MASONRY TIES AND APPLY PRIMER

B1 COLUMN DETAIL - COVERED DRIVE
SCALE: 1 1/2" = 1'-0"



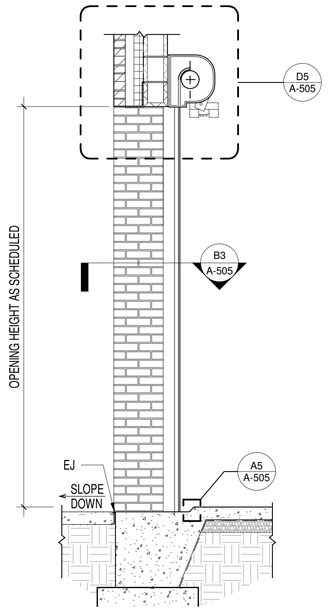
NOTES:
1. CLEAN WELDS AT MASONRY TIES AND APPLY PRIMER

A1 COLUMN DETAIL - FRONT ENTRY
SCALE: 1 1/2" = 1'-0"

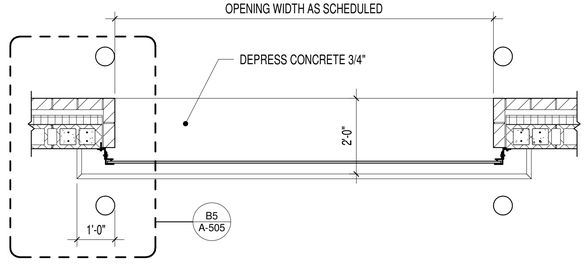


NOTES:
1. BOLLARDS ARE 8" IN DIAMETER
2. PREPARE, PRIME AND PAINT SAFETY YELLOW

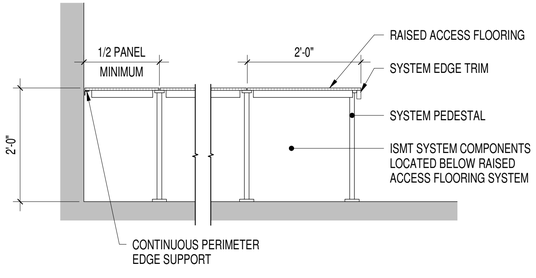
D2 BOLLARD DETAIL
SCALE: 3/4" = 1'-0"



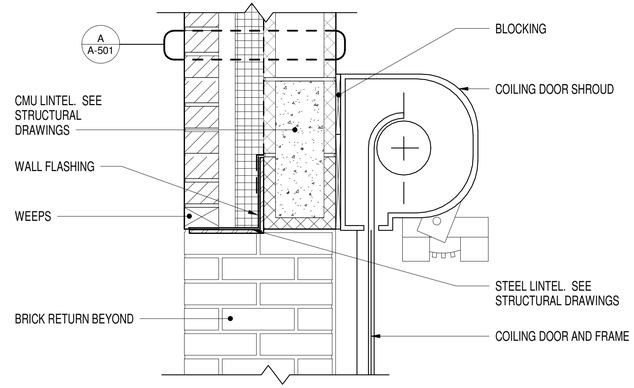
D3 COILING DOOR SECTION
SCALE: 1/2" = 1'-0"



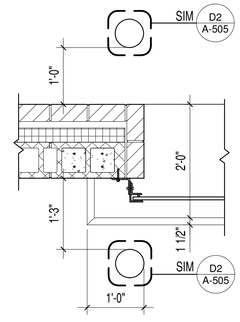
B3 COILING DOOR PLAN
SCALE: 1/2" = 1'-0"



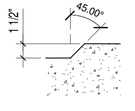
A3 ACCESS FLOORING SYSTEM DETAIL
SCALE: 3/4" = 1'-0"



D5 COILING DOOR HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



B5 COILING DOOR JAMB SECTION
SCALE: 3/4" = 1'-0"



A5 COILING DOOR SLAB DETAIL
SCALE: 1 1/2" = 1'-0"

GRAPHIC SCALE: 3/4"=1'-0"
1' 0 1' 2' 3'

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MARINE CORPS AIR STATION
CHERRY POINT, NC
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MISCELLANEOUS DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
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DOOR AND FRAME SCHEDULE - BASE BID - PRIMARY FACILITY

MARK	DOOR						FRAME					FIRE RATING	REMARKS
	TYPE	WIDTH	HT.	THK.	MATERIAL	GLAZING	TYPE	MATERIAL	HEAD	JAMB	SILL		
101	FG2	3'-0"	7'-0"	1 3/4"	ALUMINUM	INSULATED, LAMINATED, TINTED	A-A	ALUMINUM	A5A/A-602	A5B/A-602	A5C/A-602		
103	FG2	3'-0"	7'-0"	1 3/4"	ALUMINUM	INSULATED, LAMINATED, TINTED*	A-A	ALUMINUM	A5A/A-602	A5B/A-602	A5C/A-602		* NON-TINTED GLAZING IF BID OPTION 1 IS AWARDED
104A	G	3'-0"	7'-0"	1 3/4"	STEEL	1/4" TEMPERED	B	STEEL	D5A/A-602	D5B/A-602			PROVIDE THRESHOLD
104B	G	3'-0"	7'-0"	1 3/4"	STEEL	INSULATED, LAMINATED, TINTED	B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
104C	OHD	10'-0"	10'-0"	3"	STEEL		MANUF	STEEL	D5/A-505	B5/A-505	A5/A-505		
106	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
107	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
108	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
109	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
110	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
111	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
112	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
113	N	3'-0"	7'-0"	1 3/4"	WOOD	1/4" TEMPERED	A	STEEL	D4A/A-602	D4B/A-602			
114	FG2	3'-0"	7'-0"	1 3/4"	ALUMINUM	INSULATED, LAMINATED, TINTED	A-A	ALUMINUM	A5A/A-602	A5B/A-602	A4C/A-602		
115	N	3'-0"	7'-0"	1 3/4"	WOOD	1/4" TEMPERED	A	STEEL	D5A/A-602	D4B/A-602			
116	F	3'-0"	7'-0"	1 3/4"	WOOD		A	STEEL	D4A/A-602	D4B/A-602			
117	F	3'-0"	7'-0"	1 3/4"	WOOD		A	STEEL	D4A/A-602	D4B/A-602			
118	F	3'-0"	7'-0"	1 3/4"	WOOD		A	STEEL	D4A/A-602	D4B/A-602			
119A	F	3'-0"	7'-0"	1 3/4"	WOOD		A	STEEL	D4A/A-602	D4B/A-602			
119B	F	3'-0"	7'-0"	1 3/4"	WOOD		A	STEEL	D4A/A-602	D4B/A-602			
120	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
121	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
122A	N	3'-0"	7'-0"	1 3/4"	WOOD	1/4" TEMPERED	A	STEEL	D4A/A-602	D4B/A-602			
122B	N	3'-0"	7'-0"	1 3/4"	WOOD	1/4" TEMPERED	A	STEEL	D4A/A-602	D4B/A-602			
124	F	3'-0"	7'-0"	1 3/4"	WOOD		A	STEEL	D4A/A-602	D4B/A-602			
125	F	3'-0"	7'-0"	1 3/4"	WOOD		A	STEEL	D4A/A-602	D4B/A-602			
126	N	3'-0"	7'-0"	1 3/4"	WOOD	1/4" TEMPERED	A	STEEL	D4A/A-602	D4B/A-602			

DOOR AND FRAME SCHEDULE - BASE BID - MDAS

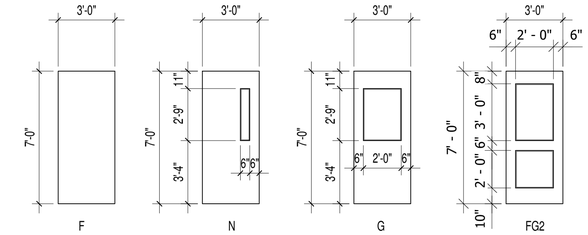
MARK	DOOR						FRAME					FIRE RATING	REMARKS
	TYPE	WIDTH	HT.	THK.	MATERIAL	GLAZING	TYPE	MATERIAL	HEAD	JAMB	SILL		
201	OHD	6'-0"	7'-0"	3"	STEEL		MANUF	STEEL	D5/A-505	B5/A-505	A5/A-505		

DOOR AND FRAME SCHEDULE - BID OPTION 1

MARK	DOOR						FRAME					FIRE RATING	REMARKS
	TYPE	WIDTH	HT.	THK.	MATERIAL	GLAZING	TYPE	MATERIAL	HEAD	JAMB	SILL		
127	FG2	6'-0"	7'-0"	1 3/4"	ALUMINUM	INSULATED, LAMINATED, TINTED	A-B	ALUMINUM	A5A/A-602	A5B/A-602	A5C/A-602		
128A	FG2	3'-0"	7'-0"	1 3/4"	ALUMINUM	INSULATED, LAMINATED	A-A	ALUMINUM	A5A/A-602	A5B/A-602	A5C/A-602		
128B	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
128C	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
129	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
130	F	3'-0"	7'-0"	1 3/4"	WOOD		A	STEEL	D4A/A-602	D4B/A-602			
131	F	6'-0"	7'-0"	1 3/4"	STEEL		C	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
132	F	6'-0"	7'-0"	1 3/4"	STEEL		C	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
133	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
134A	F	3'-0"	7'-0"	1 3/4"	WOOD		A	STEEL	D5A/A-602	D5B/A-602			
134B	F	3'-0"	7'-0"	1 3/4"	WOOD		A	STEEL	D5A/A-602	D5B/A-602			

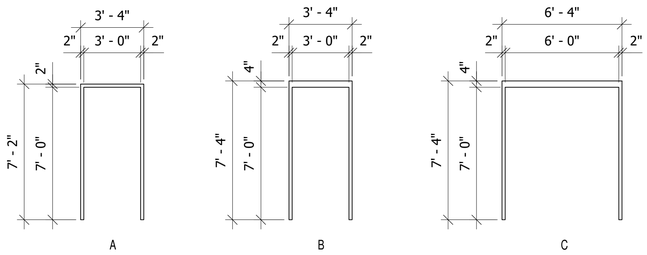
DOOR AND FRAME SCHEDULE - BID OPTION 2

MARK	DOOR						FRAME					FIRE RATING	REMARKS
	TYPE	WIDTH	HT.	THK.	MATERIAL	GLAZING	TYPE	MATERIAL	HEAD	JAMB	SILL		
302	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		
303	F	3'-0"	7'-0"	1 3/4"	STEEL		B	STEEL	A4A/A-602	A4B/A-602	A4C/A-602		



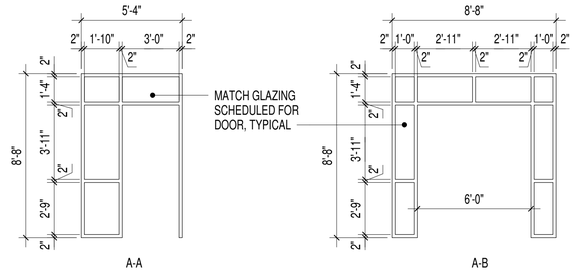
D4 DOOR DIMENSIONS

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



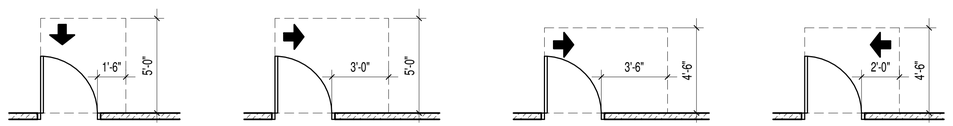
C4 STEEL FRAME DIMENSIONS

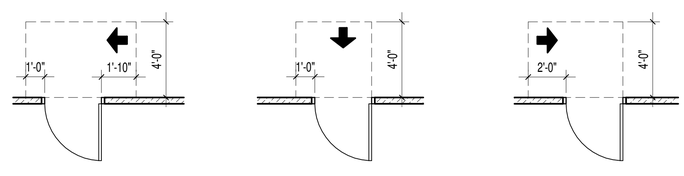
SCALE: 1/4" = 1'-0"

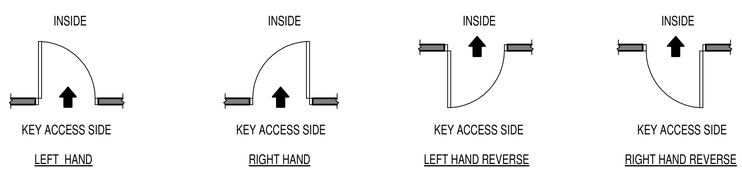


B4 ALUMINUM FRAME DIMENSIONS

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







A2 DOOR SWING AND HANDING DETAIL

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

A4 MANEUVERING CLEARANCE AT DOORS

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

GRAPHIC SCALE: 1/4"=1'-0"
4' 0 2' 4' 8'

GRAPHIC SCALE: 3/8"=1'-0"
3' 0 2' 6'

GRAPHIC SCALE: 1"=1"
0 1" 2"

MBF ARCHITECTS, P.A. REGISTERED ARCHITECTURAL CORPORATION CERT. NO. 50679 NORTH CAROLINA NEW BERN, N.C.

APPR
DATE
DESCRIPTION
SYM

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NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

DOOR AND FRAME SCHEDULE

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882108
SHEET	54 OF 121

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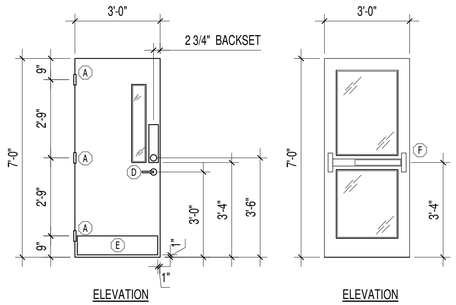
DRAWFORM REVISION: 10 MARCH 2009



ELEVATION ELEVATION

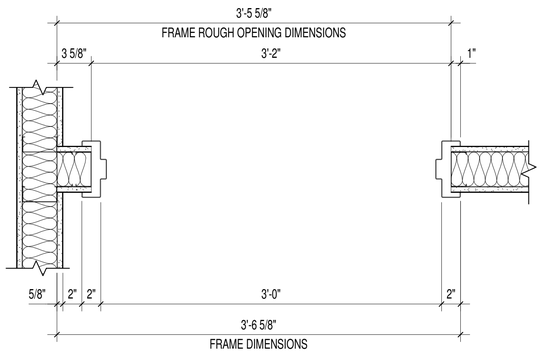
MARK	DESCRIPTION
A	4 1/2"x4 1/2" BUTT HINGE
B	NOT USED
C	NOT USED
D	TRIM, 2 3/4" BACKSET
E	KICK OR MOP PLATE, 2'-10"x8" OR 2'-10"x4"
F	PANIC BAR EXIT DEVICE

SCHEDULE

NOTES:
1. REFERENCE THE TECHNICAL SPECIFICATIONS FOR CLEARANCE DIMENSIONS AND DOOR BEVELING

D1 HARDWARE MOUNTING DIMENSIONS

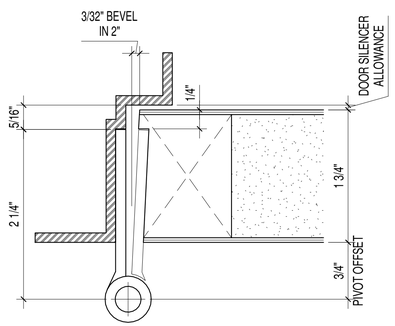
SCALE: 3/8" = 1'-0"



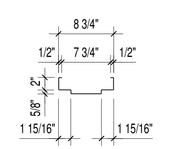
NOTES:
1. TYPICAL DOOR LAYOUT UNLESS SPECIFICALLY DIMENSIONED OR ILLUSTRATED OTHERWISE

C1 TYPICAL DOOR FRAMING DETAIL

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

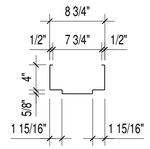


NOTES:
1. STEEL DOOR DETAILS ARE SIMILAR



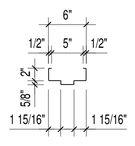
NOTES:
1. FRAME JAMB DIMENSIONS FOR EXTERIOR WALLS

EXTERIOR



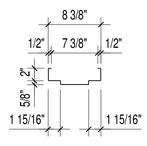
NOTES:
1. FRAME HEAD DIMENSIONS FOR EXTERIOR WALLS

EXTERIOR



NOTES:
1. FRAME DIMENSIONS FOR INTERIOR 3 5/8" PARTITION WALLS

INTERIOR



NOTES:
1. FRAME DIMENSIONS FOR INTERIOR 6" PARTITION WALLS

INTERIOR

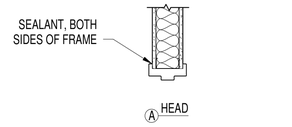
NOTES:
1. TAP AND DRILL, PRIME AND FINISH PAINT GLASS STOPS PRIOR TO INSTALLING GLAZING
2. TYPICALLY, GLAZING STOPS ARE LOCATED ON THE SAME SIDE OF THE FRAME AS THE DOOR. IN CORRIDORS, SPECIFICALLY TAG IN SWINGING DOOR FRAMES SO THAT GLAZING STOPS ARE ACCESSIBLE FROM THE CORRIDOR SIDE

A1 HINGE DETAIL

SCALE: 1" = 1"

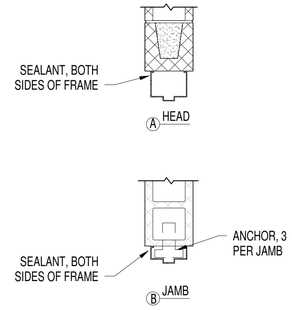
A2 STEEL FRAME SECTIONS

SCALE: 1" = 1'-0"



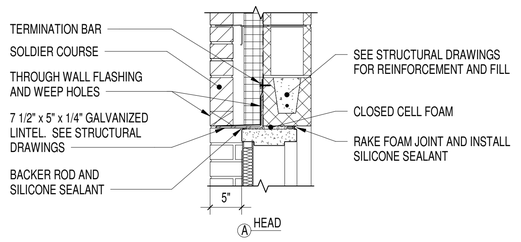
D4 INTERIOR STEEL FRAME DETAILS

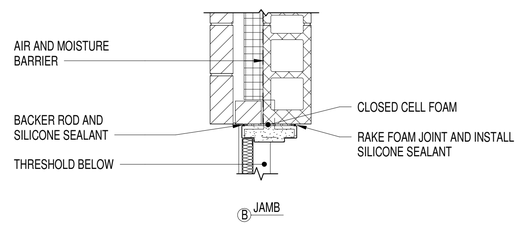
SCALE: 1" = 1'-0"

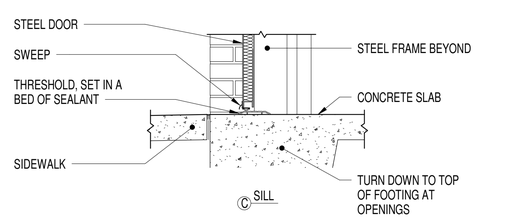


D5 INTERIOR STEEL FRAME DETAILS

SCALE: 1" = 1'-0"

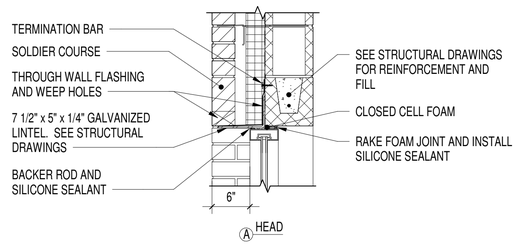


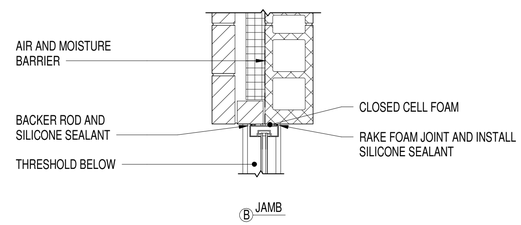


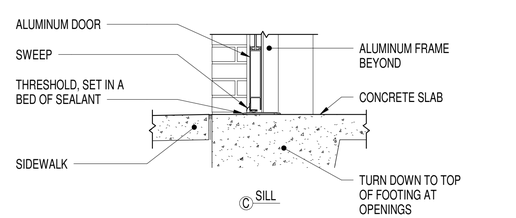


A4 EXTERIOR STEEL DOOR DETAILS

SCALE: 1" = 1'-0"







A5 EXTERIOR ALUMINUM STOREFRONT ENTRY

SCALE: 1" = 1'-0"

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

GRAPHIC SCALE: 1 1/2"=1'-0"
1' 6" 3" 0 1'

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P-196U CONSTRUCT RANGE
OPERATIONS FACILITY
DOOR AND FRAME DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158

NAVFAC DRAWING NO.
12882109

SHEET 55 OF 121

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DRAWFORM REVISION: 10 MARCH 2009

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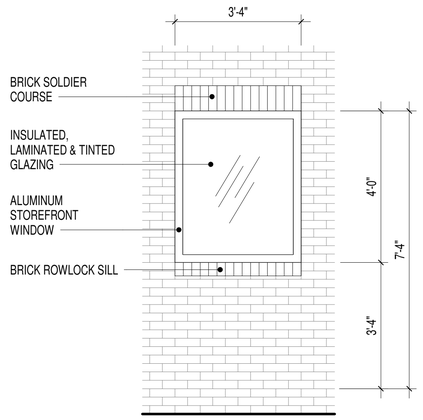
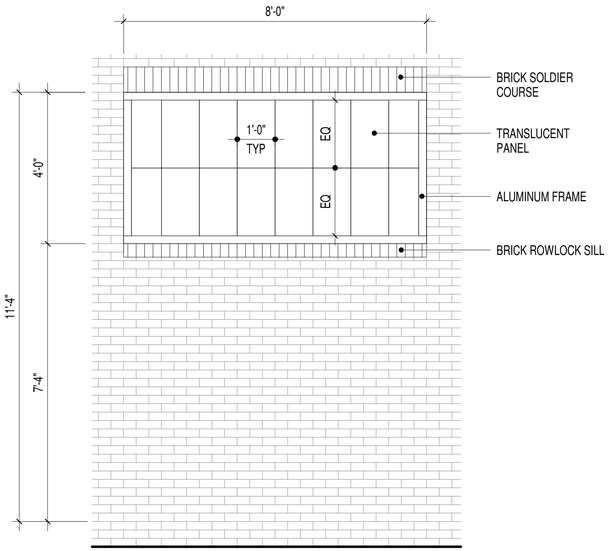


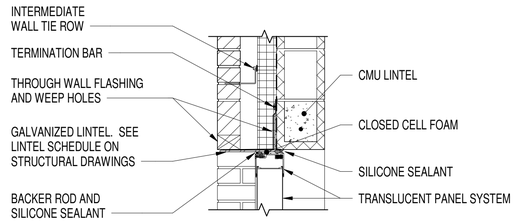
A WINDOW ELEVATION

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

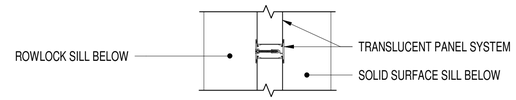


B WINDOW ELEVATION

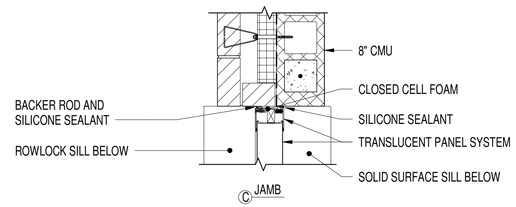
SCALE: 1/2" = 1'-0"



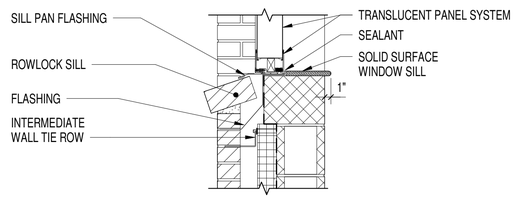
A HEAD



B VERTICAL BATTEN



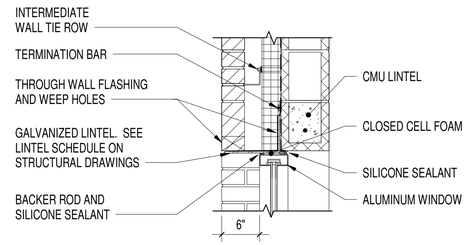
C JAMB



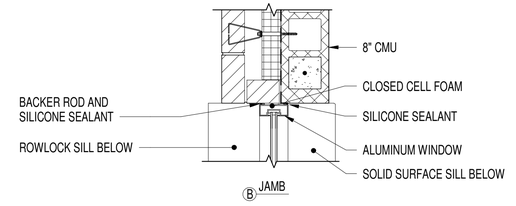
D SILL

A3 TRANSLUCENT PANEL DETAILS

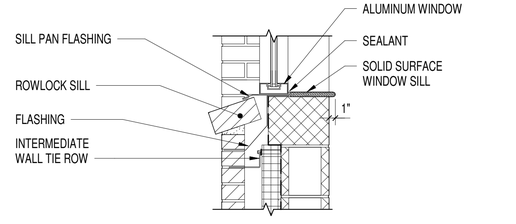
SCALE: 1" = 1'-0"



A HEAD



B JAMB



C SILL

A5 ALUMINUM WINDOW DETAILS

SCALE: 1" = 1'-0"

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

2' 0 1' 2' 4'

GRAPHIC SCALE: 1"=1"

0 1" 2"

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SYM	DESCRIPTION	DATE	APPR

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P-196U CONSTRUCT RANGE OPERATIONS FACILITY

WINDOW SCHEDULE AND DETAILS

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EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12882110
SHEET	56 OF 121

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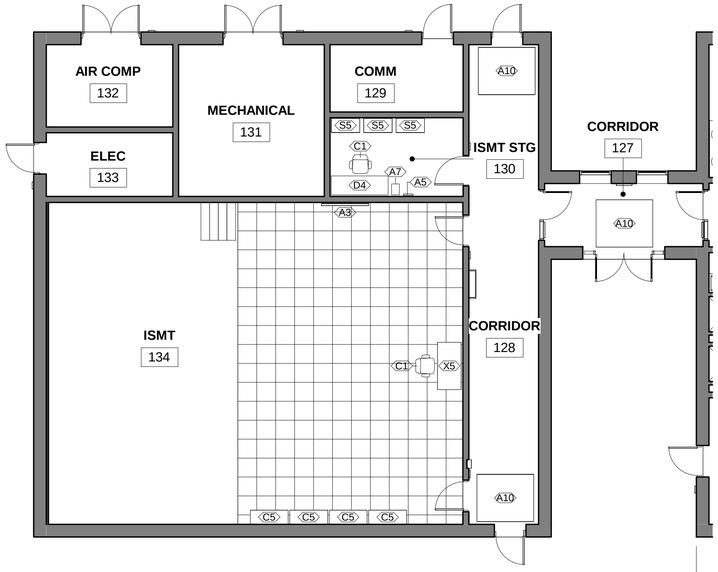
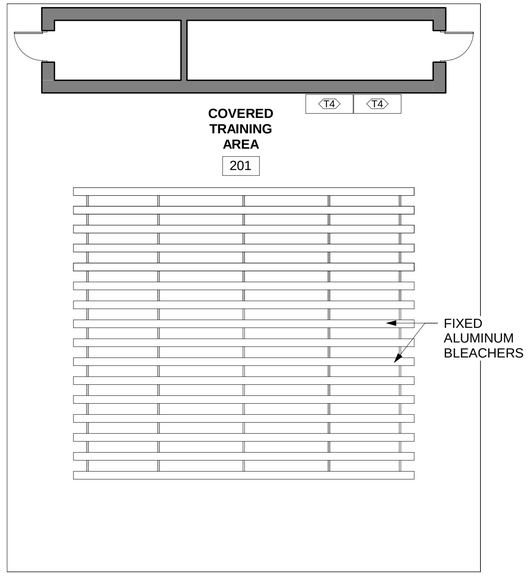


C1 ISMT FURNITURE PLAN - BID OPTION 1

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



C2 COVERED TRAINING SHELTER - BID OPTION 2

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

FURNITURE SCHEDULE

NO.	ITEM	QTY
A1	48" GLASS MARKERBOARD	3
A2	CORK BOARD	4
A3	60" GLASS MARKERBOARD	5
A4	INFORMATION DISPLAY CASE	1
A5	WALL CLOCK	6
A7	SMALL TRASH BIN	5
A8	LARGE TRASH BIN	2
A9	LARGE RECYCLE BIN	2
A10	72" X 60" WALK-OFF MAT	5
A11	SHOWER CURTAIN	2
A12	COMMAND BOARD	1
C1	PRIVATE OFFICE TASK CHAIR	6
C2	GUEST CHAIR	8
C3	OPEN OFFICE TASK CHAIR	12
C4	TRAINING CHAIR	24
C5	OBSERVATION BENCH	4
D1	U-SHAPED DESK - SIDE HUTCH	2
D2	U-SHAPED DESK - BACK HUTCH	1
D3	ADMIN DESK	1
D4	RECTANGULAR DESK	1
E1	REFRIGERATOR	1
E2	MICROWAVE	1
E3	COFFEE MAKER	1
E4	ICE MACHINE	1
S1	TROPHY CASE	1
S3	42" BOOKCASE	1
S5	36" BOOKCASE	3
S6	METAL TOOL CABINET	4
T1	LARGE WORK TABLE	1
T2	TRAINING TABLE	12
T3	LECTERN	1
T4	OUTDOOR TABLE	2

GFGI SCHEDULE

NO.	ITEM	QTY
X1	MULTI-FUNCTION PRINTER	1
X2	SHREDDER	1
X3	LARGE WALL MOUNTED TV	2
X4	SMALL WALL MOUNTED TV	1
X5	ISMT CONTROL DESK	1
X6	LARGE CHALKBOARD	1

FURNITURE NOTES

A. QUANTITIES ON FURNITURE SCHEDULE ARE TOTALS FOR ENTIRE PROJECT AND NOT INDICATIVE OF EACH SHEET.

B. REFER TO ARCHITECTURAL FLOOR PLANS FOR BUILDING LAYOUT, DIMENSIONS, AND COORDINATION TO BUILDING SYSTEMS AND STRUCTURE.

C. REFER TO ELECTRICAL DRAWINGS FOR COORDINATION OF LIGHTING, POWER, DATA, COMMUNICATIONS, AND LOCATIONS OF OTHER WALL AND FLOOR MOUNTED ELECTRICAL DEVICES AND EQUIPMENT FOR COORDINATION TO FURNITURE LAYOUTS. CONTRACTOR MUST IDENTIFY ANY CONFLICTS WITH FURNITURE LAYOUTS.

D. CONTRACTOR IS RESPONSIBLE FOR ENSURING TO PROVIDE POWER, DATA AND/OR A/V OUTLETS FOR ALL ITEMS OF FURNISHINGS AND EQUIPMENT INCLUDING FF&E, GOVERNMENT FURNISHED, CONTRACTOR INSTALLED (GFCI), AND GOVERNMENT FURNISHED, GOVERNMENT INSTALLED (GFGI), REQUIRING CABLING AND CONNECTIONS.

F. FF&E CONTRACTOR/INSTALLER MUST COORDINATE POWER/DATA/COMM CONNECTIONS & LOCATIONS WITH GC'S ELECTRICAL CONTRACTOR AND/OR DATA CONTRACTOR PRIOR TO INSTALLATION OF ELECTRIFIED FURNISHINGS.

G. FF&E CONTRACTOR TO FIELD VERIFY ALL MEASUREMENTS AND SITE CONDITIONS TO ENSURE PROPER FIT OF ALL FF&E. FURNISHINGS MUST NOT OVERLAP OR OBSTRUCT DOOR FRAMES, WALL SWITCHES, THERMOSTATS, OR OTHER WALL MOUNTED ITEMS.

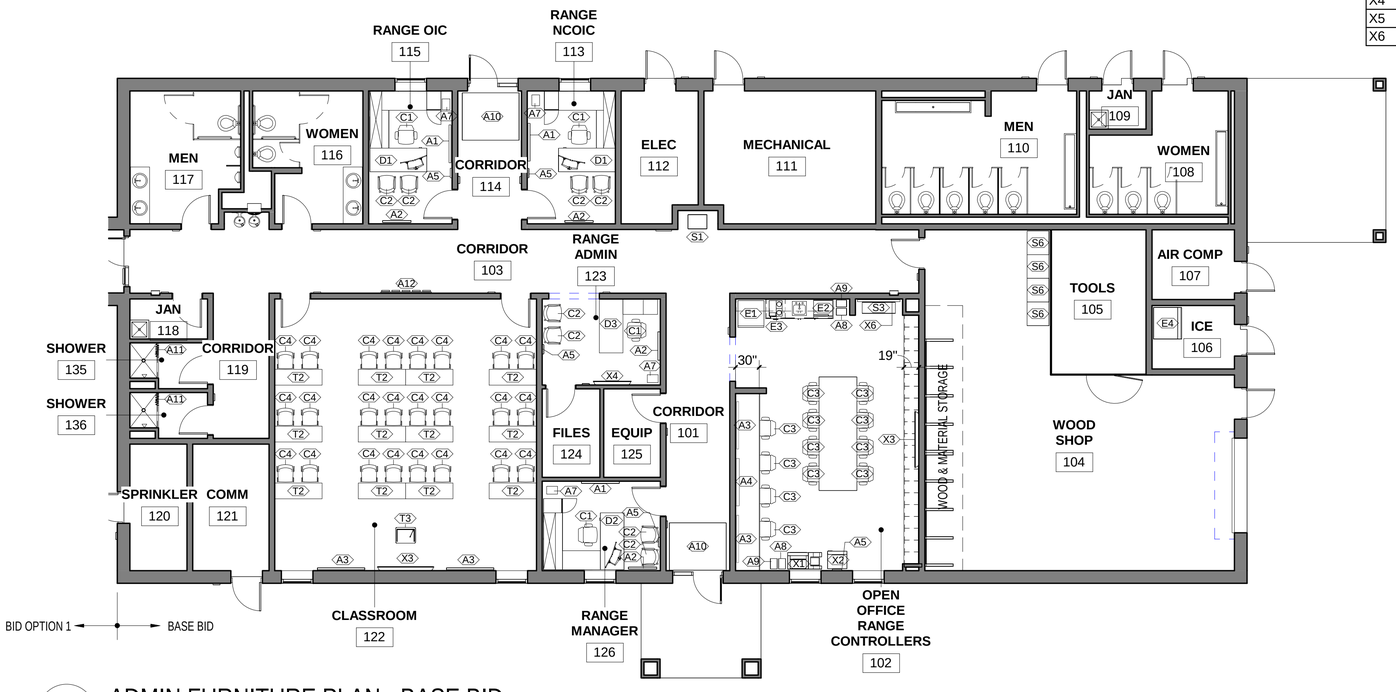
H. MODIFICATIONS TO FURNISHINGS LAYOUTS REQUIRED TO MEET BUILDING CONDITIONS AT THE TIME OF INSTALLATION MUST BE THE RESPONSIBILITY OF THE FF&E CONTRACTOR. ALL MODIFICATIONS MUST BE APPROVED IN WRITING BY A GOVERNMENT APPROVED REPRESENTATIVE PRIOR TO INSTALLATION OF THE FURNISHINGS.

I. DUAL MONITOR ARMS AND POWERSTRIPS NOT SHOWN ON DRAWINGS TO BE PROVIDED AT SYSTEMS FURNITURE AND DESKS, UNLESS NOTED OTHERWISE.

J. INSTALL MARKERBOARDS AND BULLETIN BOARDS AT 3'-0" TO THE BOTTOM OF THE UNIT UNLESS NOTED OTHERWISE.

K. INSTALL WALL CLOCKS AT 8'-0" AFF TO CENTER OF CLOCK UNLESS NOTED OTHERWISE.

L. FF&E ITEMS ARE NOT INCLUDED ON THE CONSTRUCTION CONTRACT AND MAY BE FUNDED SEPARATELY AS AN FF&E OPTION.



A1 ADMIN FURNITURE PLAN - BASE BID

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

GRAPHIC SCALE:

1/8" = 1'-0" 0' 4' 8' 16'

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SATISFACTORY TO

DES WID | DRW AG | CHK JK

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
IPT MARINE
MARINE CORPS AIR STATION

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MIDATLANTIC
NAVAL STATION - NORFOLK, VA.

CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FURNITURE PLAN

SCALE: 1/8" = 1'-0"
EPROJECT NO.: 1715336
STA. PROJ. NO. 7290158
NAVFAC DRAWING NO. 12883111
SHEET 57 OF 121

I-101

DRAWFORM REVISION: 25 AUGUST 2020

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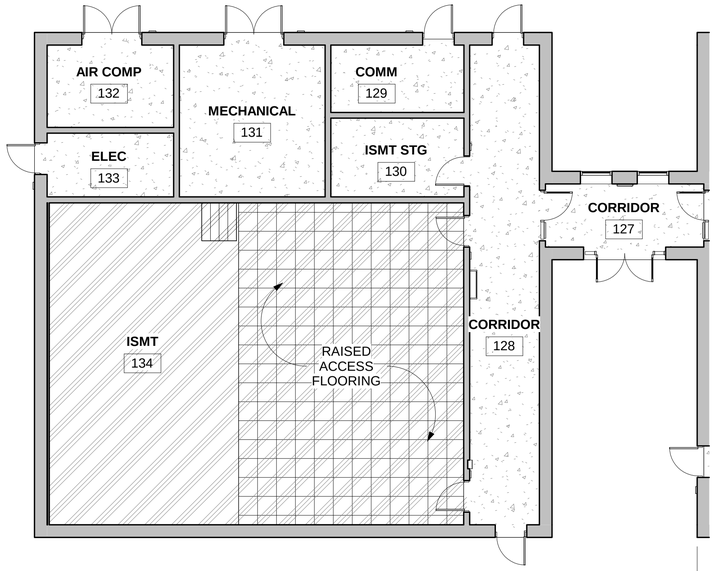
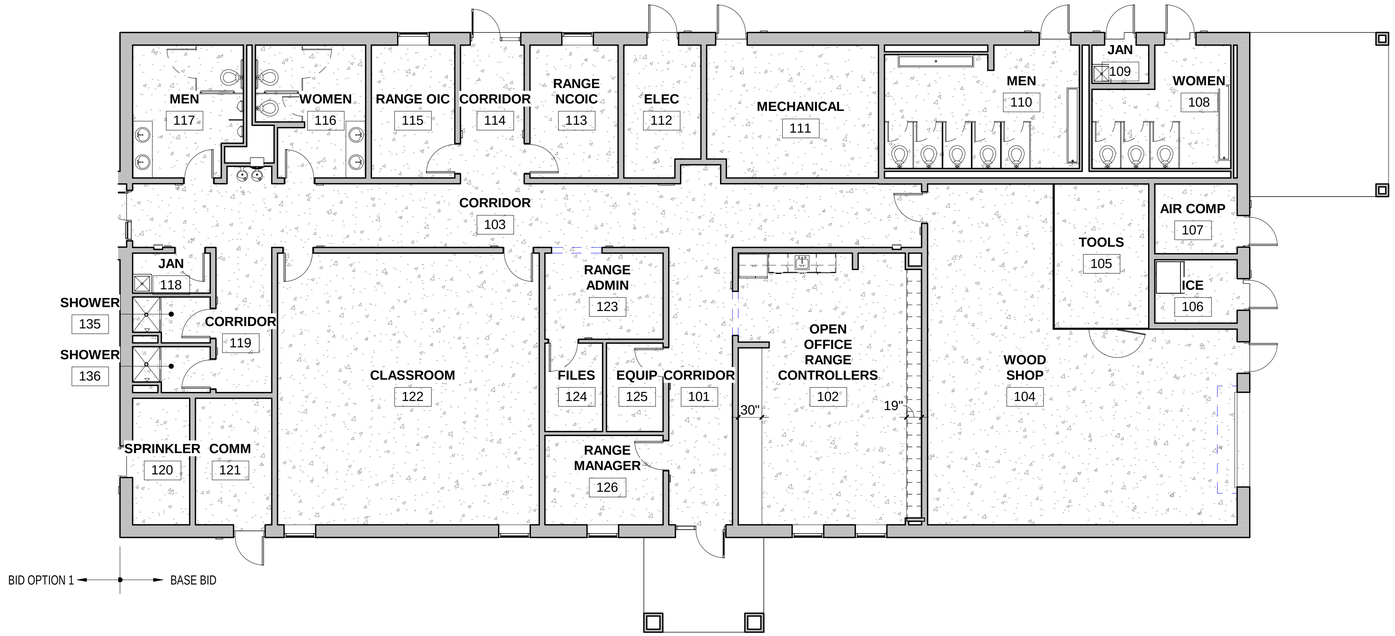


C1 ISMT FLOOR FINISH PLAN - BID OPTION 1

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



A1 ADMIN FLOOR FINISH PLAN - BASE BID

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

FLOOR FINISH KEY

- CPT-1 (ON RAF)
- CPT-1
- SC-1

GENERAL FINISH NOTES

A. FINISHES INDICATED ARE THE APPROVED BASIS OF DESIGN TO CONVEY COLOR, PATTERN, TEXTURE AND SALIENT CHARACTERISTICS ONLY. THE LISTING OF MANUFACTURER INFORMATION IS NOT INTENDED TO LIMIT THE SELECTION OF PRODUCTS PROVIDED BY OTHER MANUFACTURERS. PRODUCTS MEETING THESE CRITERIA WILL BE CONSIDERED AND MUST BE REVIEWED BY THE INTERIOR DESIGNER OF RECORD (IDOR) AND THE NAVFAC INTERIOR DESIGNER AND APPROVED BY THE CONTRACTING OFFICER.

B. FINISH ITEMS ARE NOT TO BE SUBSTITUTED DUE TO ORDERING LEAD TIMES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ORDER ALL MATERIALS IN TIME TO AVOID DELAYS.

C. COORDINATE THERMOSTAT LOCATIONS WITH MECHANICAL DRAWINGS AND CONSTRUCTION MANAGER. INSTALL THERMOSTATS NEAR A CORNER OF THE ROOM OR BY LIGHT SWITCHES. DO NOT INSTALL THERMOSTATS IN THE CENTER OF A WALL.

D. ELECTRICAL PANELS, ACCESS PANELS, AND EXPANSION JOINTS TO BE SPRAYED WITH ELECTROSTATIC PAINT TO MATCH THE ADJACENT WALL COLOR. PANELS PAINTED BY BRUSH ARE NOT ACCEPTABLE

E. ALL FLOORING TRANSITIONS MUST MEET ABA GUIDELINES. FLOORING TRANSITIONS OCCURRING UNDER DOORS MUST BE CENTERED UNDER DOOR.

F. ALL WALL AND CEILING FINISHES IN VERTICAL EXIT WAYS, EXIT LOBBIES, AND EXIT CORRIDORS MUST MEET MINIMUM CLASS A RATING.

G. ROOMS IDENTIFIED TO RECEIVE TILE ON WALLS MUST INCLUDE METAL TRANSITIONS ON ALL OUTSIDE AND INSIDE CORNERS AS WELL AS THE INTERSECTION BETWEEN FLOOR AND WALL TILE WHERE APPLICABLE FOR A COMPLETE INSTALLATION.

H. INSTALL CORNER GUARDS (CG-1) ON ALL OUTSIDE CORNERS. INSTALL END CAPS ON ALL OPEN EDED WALLS. CORNER GUARDS AND END CAPS MUST BE FULL HEIGHT AND SHOULD NOT BE USED ON CMU WALLS, TILED WALLS, OR MANUFACTURED STONE WALLS.

I. ALL AREAS TO RECEIVE RESILIENT COVE BASE WITH THE EXCEPTION OF AREAS RECEIVING WALL TILE.

J. ALL WALLS TO BE PAINTED (PNT-1) UNLESS OTHERWISE INDICATED. ALL HOLLOW METAL DOORS AND DOOR FRAMES TO BE PAINTED (PNT-5). ALL GWB & EXPOSED CEILINGS TO BE PAINTED (PNT-6).

K. IN AREAS WHERE THERE IS A GYP SOFFIT, THE FACE OF THE SOFFIT SHALL BE THE SAME FINISH AS THE CORRESPONDING WALL. THE UNDERSIDE SHALL BE PAINTED (PNT-4).

L. INTERIOR WOOD DOORS TO BE FINISHED (WD-1).

M. ALL WINDOW SILLS TO BE SOLID SURFACE (SS-2).

N. (ACT-1) TO BE INSTALLED WITH (ACG-1). (ACT-2) TO BE INSTALLED WITH (ACG-2). (ACT-3) TO BE INSTALLED WITH (ACG-3).

FLOOR FINISH NOTES

A. HATCH PATTERN DOES NOT INDICATE DIRECTION OR METHOD OF FLOORING INSTALLATION.

B. REFER TO SHEET I-602 FOR FINISH LEGEND & ABBREVIATIONS.

GRAPHIC SCALE:

1/8" = 1'-0"

0' 4' 8' 16'

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NAVAL STATION - NORFOLK, VA

CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FLOOR FINISH PLAN

SCALE:	1/8" = 1'-0"
EPROJECT NO.:	1715336
STA. PROJ. NO.	7290158
NAVFAC DRAWING NO.	12883112
SHEET	58 OF 121

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DRAWFORM REVISION: 25 AUGUST 2020

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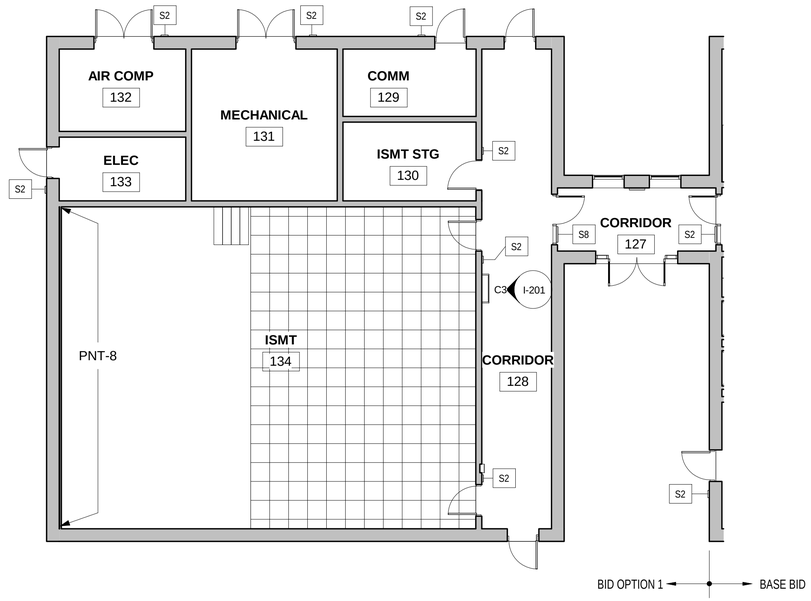

C1 ISMT WALL FINISH & SIGNAGE PLAN - BID OPTION 1

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

A1 ADMIN WALL FINISH & SIGNAGE PLAN - BASE BID

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

INTERIOR SIGNAGE

TYPE	DESCRIPTION	QTY
S1	ROOM IDENTIFICATION SIGN	1
S2	PERMANENT ROOM IDENTIFICATION SIGN	23
S4M	MENS RESTROOM IDENTIFICATION SIGN	2
S4W	WOMENS RESTROOM IDENTIFICATION SIGN	2
S6	SHOWER IDENTIFICATION SIGN	2
S7	LARGE DIRECTIONAL SIGN	2
S8	GLASS MOUNTED MEDIUM DIRECTIONAL SIGN	1
S9	MEETING ROOM SIGN	2

GENERAL FINISH NOTES

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B. FINISH ITEMS ARE NOT TO BE SUBSTITUTED DUE TO ORDERING LEAD TIMES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ORDER ALL MATERIALS IN TIME TO AVOID DELAYS.

C. COORDINATE THERMOSTAT LOCATIONS WITH MECHANICAL DRAWINGS AND CONSTRUCTION MANAGER. INSTALL THERMOSTATS NEAR A CORNER OF THE ROOM OR BY LIGHT SWITCHES. DO NOT INSTALL THERMOSTATS IN THE CENTER OF A WALL.

D. ELECTRICAL PANELS, ACCESS PANELS, AND EXPANSION JOINTS TO BE SPRAYED WITH ELECTROSTATIC PAINT TO MATCH THE ADJACENT WALL COLOR. PANELS PAINTED BY BRUSH ARE NOT ACCEPTABLE

E. ALL FLOORING TRANSITIONS MUST MEET ABA GUIDELINES. FLOORING TRANSITIONS OCCURRING UNDER DOORS MUST BE CENTERED UNDER DOOR.

F. ALL WALL AND CEILING FINISHES IN VERTICAL EXIT WAYS, EXIT LOBBIES, AND EXIT CORRIDORS MUST MEET MINIMUM CLASS A RATING.

G. ROOMS IDENTIFIED TO RECEIVE TILE ON WALLS MUST INCLUDE METAL TRANSITIONS ON ALL OUTSIDE AND INSIDE CORNERS AS WELL AS THE INTERSECTION BETWEEN FLOOR AND WALL TILE WHERE APPLICABLE FOR A COMPLETE INSTALLATION.

H. INSTALL CORNER GUARDS (CG-1) ON ALL OUTSIDE CORNERS. INSTALL END CAPS ON ALL OPEN EDED WALLS. CORNER GUARDS AND END CAPS MUST BE FULL HEIGHT AND SHOULD NOT BE USED ON CMU WALLS, TILED WALLS, OR MANUFACTURED STONE WALLS.

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L. INTERIOR WOOD DOORS TO BE FINISHED (WD-1).

M. ALL WINDOW SILLS TO BE SOLID SURFACE (SS-2).

N. (ACT-1) TO BE INSTALLED WITH (ACG-1). (ACT-2) TO BE INSTALLED WITH (ACG-2). (ACT-3) TO BE INSTALLED WITH (ACG-3).

SIGNAGE NOTES

A. SIGNAGE TO FOLLOW GUIDELINES FROM UFC 3 120 01

B. ALL SIGN TYPES, TEXT WORDING AND ROOM NUMBERS TO BE VERIFIED WITH END USER AND REVIEWED BY NAVFAC INTERIOR DESIGNER PRIOR TO FABRICATION.

C. SIGNS THAT MOUNT TO GLASS SHALL INCLUDE AN EQUALLY SIZED BLANK SIGN PANEL ALIGNED TO OPPOSITE SIDE OF THE GLASS.

D. SEE ELEVATION A4/I-501 FOR MOUNTING HEIGHT OF ACRYLIC SIGNAGE.

E. REFER TO SHEET I-501FOR SIGNAGE DETAILS.

F. REFER TO SHEET I-602 FOR FINISH LEGEND & ABBREVIATIONS.

GRAPHIC SCALE:

1/8" = 1'-0"

0' 4' 8' 16'

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NAVAL STATION - NORFOLK, VA

CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

WALL FINISH & SIGNAGE PLAN

SCALE: 1/8" = 1'-0"
EPROJECT NO.: 1715336
STA. PROJ. NO. 7290158
NAVFAC DRAWING NO. 12883113
SHEET 59 OF 121

I-103

DRAWFORM REVISION: 25 AUGUST 2020

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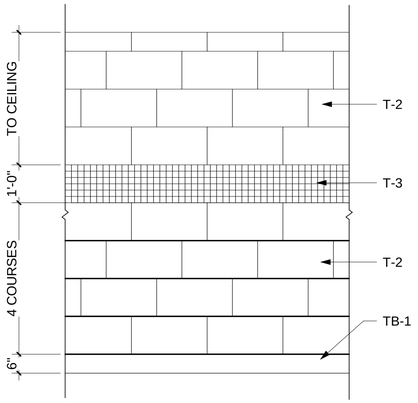
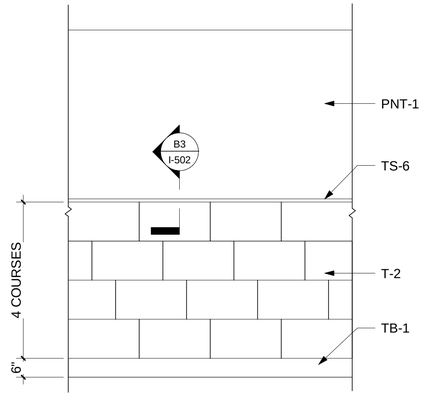


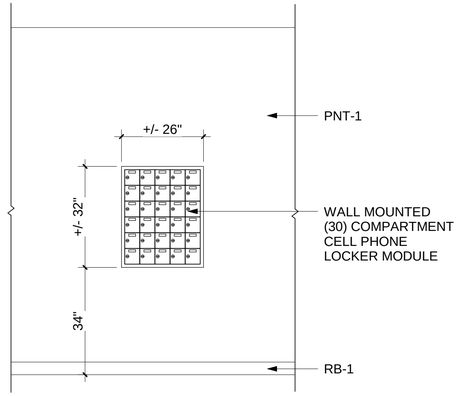
C1 TYP. RESTROOM TILE ELEVATION

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



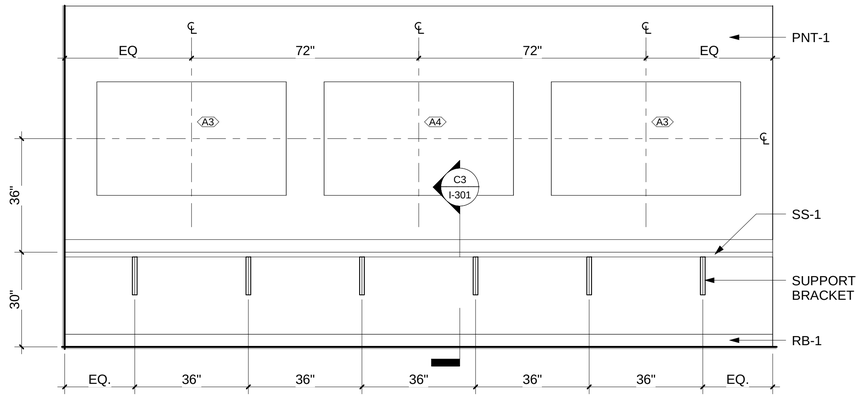
C2 TYP. JANITOR TILE ELEVATION

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



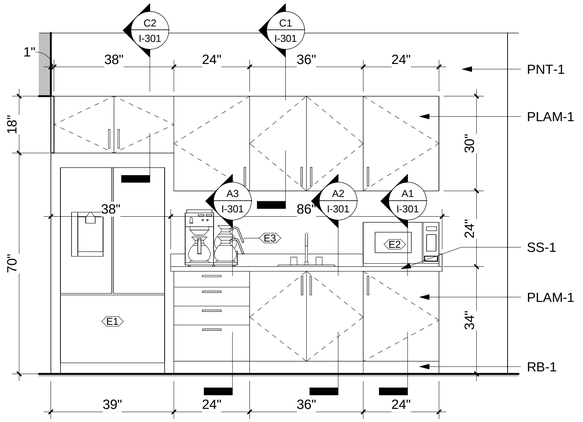
C3 CELL PHONE LOCKER ELEVATION

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



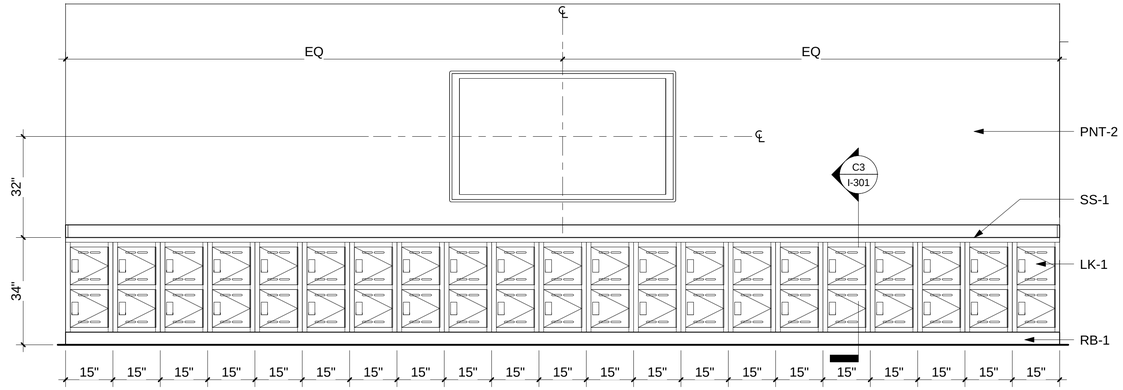
B1 OPEN OFFICE 102 - WORK COUNTER

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



B3 OPEN OFFICE 102 - BREAK AREA

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



A1 OPEN OFFICE 102 - LOCKERS

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

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C. COORDINATE THERMOSTAT LOCATIONS WITH MECHANICAL DRAWINGS AND CONSTRUCTION MANAGER. INSTALL THERMOSTATS NEAR A CORNER OF THE ROOM OR BY LIGHT SWITCHES. DO NOT INSTALL THERMOSTATS IN THE CENTER OF A WALL.

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F. ALL WALL AND CEILING FINISHES IN VERTICAL EXIT WAYS, EXIT LOBBIES, AND EXIT CORRIDORS MUST MEET MINIMUM CLASS A RATING.

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K. IN AREAS WHERE THERE IS A GYP SOFFIT, THE FACE OF THE SOFFIT SHALL BE THE SAME FINISH AS THE CORRESPONDING WALL. THE UNDERSIDE SHALL BE PAINTED (PNT-4).

L. INTERIOR WOOD DOORS TO BE FINISHED (WD-1).

M. ALL WINDOW SILLS TO BE SOLID SURFACE (SS-2).

N. (ACT-1) TO BE INSTALLED WITH (ACG-1). (ACT-2) TO BE INSTALLED WITH (ACG-2). (ACT-3) TO BE INSTALLED WITH (ACG-3).

CASEWORK NOTES

A. CASEWORK CONSTRUCTION AS INDICATED IN THE DOCUMENTS MUST BE IN ACCORDANCE WITH A.W.I. QUALITY STANDARDS FOR FLUSH OVERLAY CONSTRUCTION. SEMI-EXPOSED SURFACES TO BE CONSTRUCTED USING CUSTOM GRADE STANDARDS

B. ALL CASEWORK MUST BE IN COMPLIANCE WITH UFGS SECTION 06 41 16.0 10 AND SECTION 06 61 1.

C. REFER TO SHEET I-602 FOR FINISH LEGEND & ABBREVIATIONS.

GRAPHIC SCALE:

1/2" = 1'-0" 0' 1' 2' 4'

APPR | DATE | DESCRIPTION | SYM

SEAL

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NAVAL STATION - NORFOLK, VA.

CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

INTERIOR ELEVATIONS

SCALE:	1/2" = 1'-0"
EPROJECT NO.:	1715336
STA. PROJ. NO.	7290158
NAVFAC DRAWING NO.	12883114
SHEET	60 OF 121

I-201

DRAWFORM REVISION: 25 AUGUST 2020

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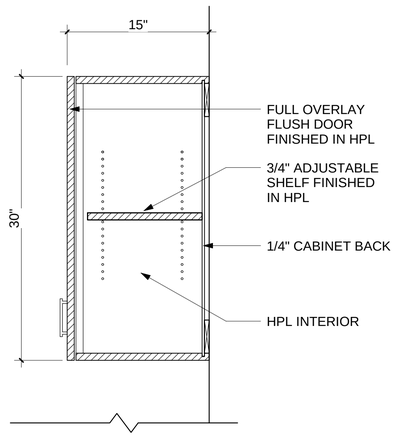
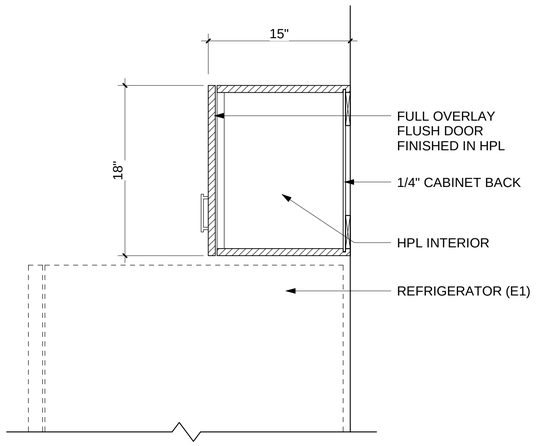


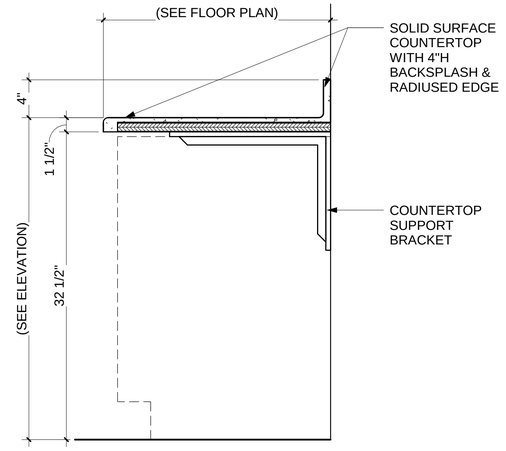
C1 SECTION - UPPER CABINET 30"H

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



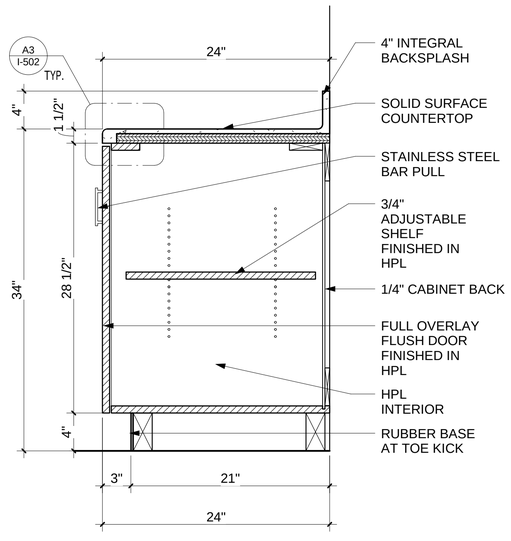
C2 SECTION - UPPER CABINET 18"H

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



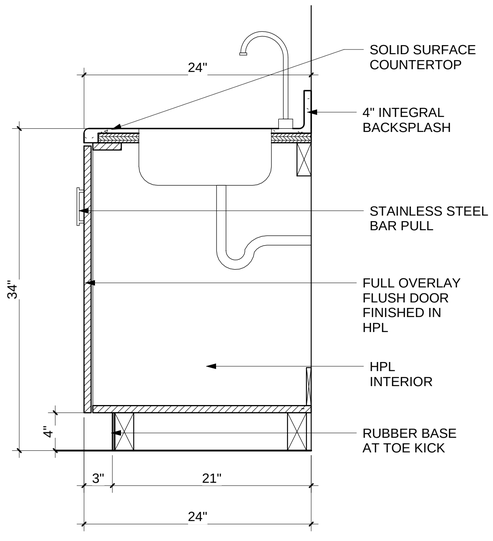
C3 SECTION - COUNTERTOP

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



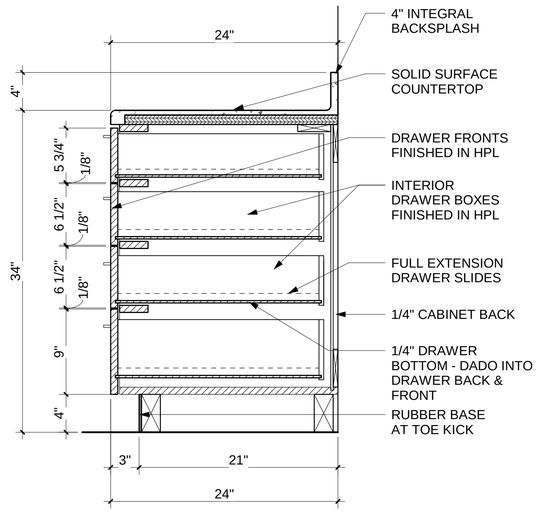
A1 SECTION - BASE CABINET

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



A2 SECTION - SINK CABINET

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



A3 SECTION - 4 DRAWER BASE CAB.

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

GENERAL FINISH NOTES

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C. COORDINATE THERMOSTAT LOCATIONS WITH MECHANICAL DRAWINGS AND CONSTRUCTION MANAGER. INSTALL THERMOSTATS NEAR A CORNER OF THE ROOM OR BY LIGHT SWITCHES. DO NOT INSTALL THERMOSTATS IN THE CENTER OF A WALL.

D. ELECTRICAL PANELS, ACCESS PANELS, AND EXPANSION JOINTS TO BE SPRAYED WITH ELECTROSTATIC PAINT TO MATCH THE ADJACENT WALL COLOR. PANELS PAINTED BY BRUSH ARE NOT ACCEPTABLE

E. ALL FLOORING TRANSITIONS MUST MEET ABA GUIDELINES. FLOORING TRANSITIONS OCCURRING UNDER DOORS MUST BE CENTERED UNDER DOOR.

F. ALL WALL AND CEILING FINISHES IN VERTICAL EXIT WAYS, EXIT LOBBIES, AND EXIT CORRIDORS MUST MEET MINIMUM CLASS A RATING.

G. ROOMS IDENTIFIED TO RECEIVE TILE ON WALLS MUST INCLUDE METAL TRANSITIONS ON ALL OUTSIDE AND INSIDE CORNERS AS WELL AS THE INTERSECTION BETWEEN FLOOR AND WALL TILE WHERE APPLICABLE FOR A COMPLETE INSTALLATION.

H. INSTALL CORNER GUARDS (CG-1) ON ALL OUTSIDE CORNERS. INSTALL END CAPS ON ALL OPEN EDED WALLS. CORNER GUARDS AND END CAPS MUST BE FULL HEIGHT AND SHOULD NOT BE USED ON CMU WALLS, TILED WALLS, OR MANUFACTURED STONE WALLS.

I. ALL AREAS TO RECEIVE RESILIENT COVE BASE WITH THE EXCEPTION OF AREAS RECEIVING WALL TILE.

J. ALL WALLS TO BE PAINTED (PNT-1) UNLESS OTHERWISE INDICATED. ALL HOLLOW METAL DOORS AND DOOR FRAMES TO BE PAINTED (PNT-5). ALL GWB & EXPOSED CEILINGS TO BE PAINTED (PNT-6).

K. IN AREAS WHERE THERE IS A GYP SOFFIT, THE FACE OF THE SOFFIT SHALL BE THE SAME FINISH AS THE CORRESPONDING WALL. THE UNDERSIDE SHALL BE PAINTED (PNT-4).

L. INTERIOR WOOD DOORS TO BE FINISHED (WD-1).

M. ALL WINDOW SILLS TO BE SOLID SURFACE (SS-2).

N. (ACT-1) TO BE INSTALLED WITH (ACG-1). (ACT-2) TO BE INSTALLED WITH (ACG-2). (ACT-3) TO BE INSTALLED WITH (ACG-3).

CASEWORK NOTES

A. CASEWORK CONSTRUCTION AS INDICATED IN THE DOCUMENTS MUST BE IN ACCORDANCE WITH A.W.I. QUALITY STANDARDS FOR FLUSH OVERLAY CONSTRUCTION. SEMI-EXPOSED SURFACES TO BE CONSTRUCTED USING CUSTOM GRADE STANDARDS

B. ALL CASEWORK MUST BE IN COMPLIANCE WITH UFGS SECTION 06 41 16.0 10 AND SECTION 06 61 1.

C. REFER TO SHEET I-602 FOR FINISH LEGEND & ABBREVIATIONS.

GRAPHIC SCALE:

1 1/2" = 1'-0"

0' 4" 8" 1'-4"

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

mbf architects pa
317-C Pollock Street | New Bern, NC 28560
252-637-6373 | mbfarchitects.com
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES WID | DRW JK | CHK AG

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
IPT MARINE
MARINE CORPS AIR STATION

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

CASEWORK SECTIONS

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

EPROJECT NO.: 1715336

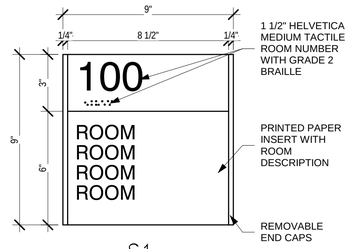
STA. PROJ. NO. 7290158

NAVFAC DRAWING NO. 12883115

SHEET 61 OF 121

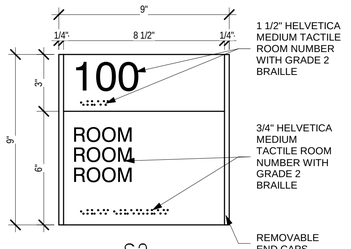
I-301

DRAWFORM REVISION: 25 AUGUST 2020



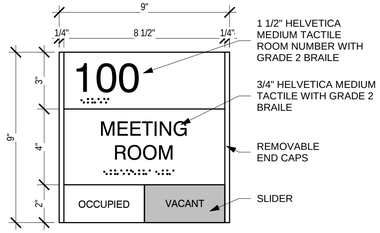
S1

ROOM IDENTIFICATION SIGN



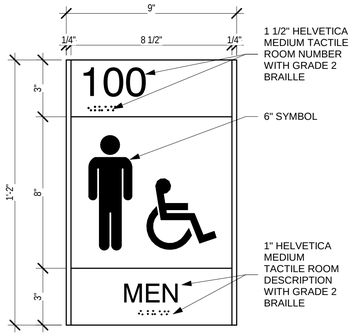
S2

PERMANENT ROOM IDENTIFICATION SIGN



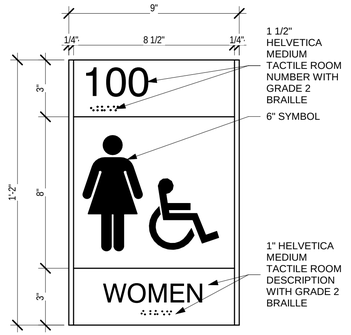
S9

CONFERENCE ROOM SIGN



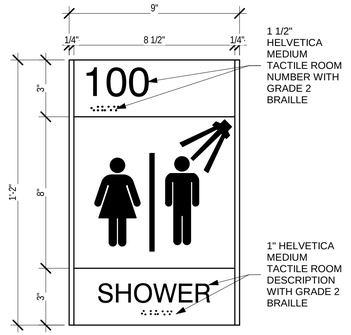
S4M

MENS RESTROOM IDENTIFICATION SIGN



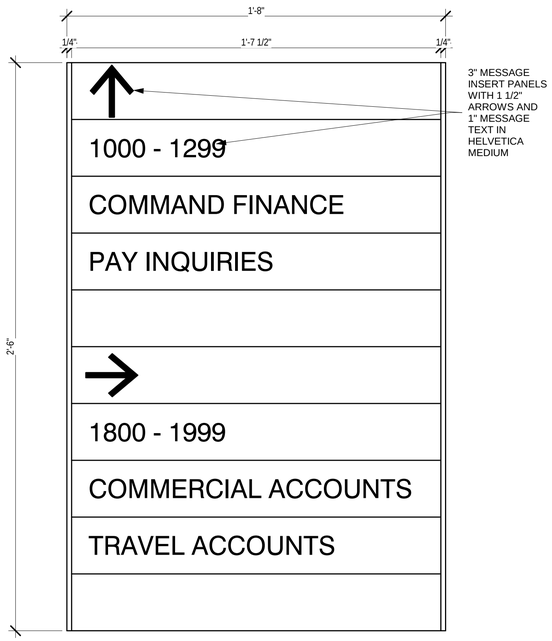
S4W

WOMENS RESTROOM IDENTIFICATION SIGN



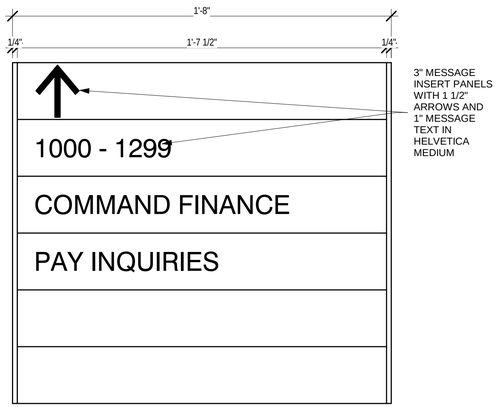
S6

SHOWER IDENTIFICATION SIGN



S7

LARGE DIRECTIONAL SIGN

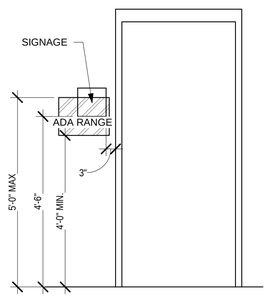


S8

GLASS MOUNTED MEDIUM DIRECTIONAL SIGN

A1 SIGNAGE TYPICALS

SCALE: 3" = 1'-0"



A4 TYPICAL SIGNAGE LOCATION

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

INTERIOR SIGNAGE

TYPE	DESCRIPTION	QTY
S1	ROOM IDENTIFICATION SIGN	1
S2	PERMANENT ROOM IDENTIFICATION SIGN	23
S4M	MENS RESTROOM IDENTIFICATION SIGN	2
S4W	WOMENS RESTROOM IDENTIFICATION SIGN	2
S6	SHOWER IDENTIFICATION SIGN	2
S7	LARGE DIRECTIONAL SIGN	2
S8	GLASS MOUNTED MEDIUM DIRECTIONAL SIGN	1
S9	MEETING ROOM SIGN	2

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C. COORDINATE THERMOSTAT LOCATIONS WITH MECHANICAL DRAWINGS AND CONSTRUCTION MANAGER. INSTALL THERMOSTATS NEAR A CORNER OF THE ROOM OR BY LIGHT SWITCHES. DO NOT INSTALL THERMOSTATS IN THE CENTER OF A WALL.

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L. INTERIOR WOOD DOORS TO BE FINISHED (WD-1).

M. ALL WINDOW SILLS TO BE SOLID SURFACE (SS-2).

N. (ACT-1) TO BE INSTALLED WITH (ACG-1). (ACT-2) TO BE INSTALLED WITH (ACG-2). (ACT-3) TO BE INSTALLED WITH (ACG-3).

SIGNAGE NOTES

A. SIGNAGE TO FOLLOW GUIDELINES FROM UFC 3 120 01

B. ALL SIGN TYPES, TEXT WORDING AND ROOM NUMBERS TO BE VERIFIED WITH END USER AND REVIEWED BY NAVFAC INTERIOR DESIGNER PRIOR TO FABRICATION.

C. SIGNS THAT MOUNT TO GLASS SHALL INCLUDE AN EQUALLY SIZED BLANK SIGN PANEL ALIGNED TO OPPOSITE SIDE OF THE GLASS.

D. SEE ELEVATION A4/I-501 FOR MOUNTING HEIGHT OF ACRYLIC SIGNAGE.

E. REFER TO SHEET I-501FOR SIGNAGE DETAILS.

F. REFER TO SHEET I-602 FOR FINISH LEGEND & ABBREVIATIONS.

GRAPHIC SCALE:

1/2" = 1'-0" 0' 1' 2' 4'

3" = 1'-0" 0' 3" 6" 9"

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

mbf architects pa
317-C Pollock Street | New Bern, NC 28560
252.637.6373 | mbfarchitects.com
A/E INFO

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DES WID | DRW AG | CHK JK

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BRANCH MANAGER

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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
IPT MARINE
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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MIDATLANTIC
NAVAL STATION - NORFOLK, VA.

CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

SIGNAGE DETAILS

SCALE: As indicated

EPROJECT NO.: 1715336

STA. PROJ. NO. 7290158

NAVFAC DRAWING NO. 12883116

SHEET 62 OF 121

I-501

DRAWFORM REVISION: 25 AUGUST 2020

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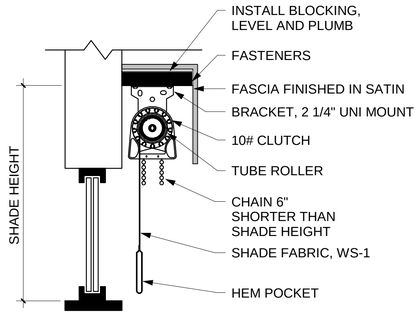
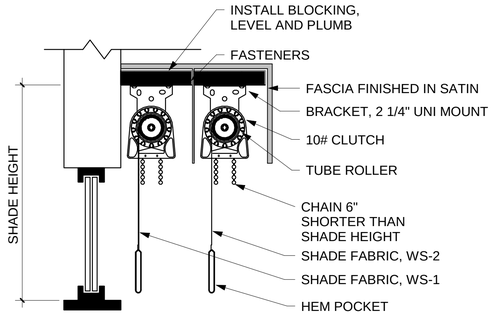


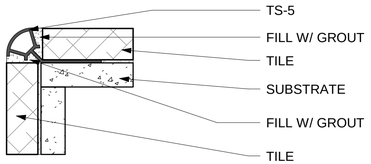
C1 SINGLE WINDOW SHADE DETAIL

SCALE: 3" = 1'-0"



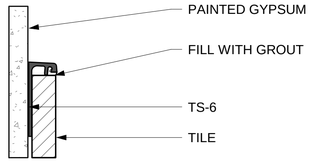
C3 DOUBLE WINDOW SHADE DETAIL

SCALE: 3" = 1'-0"



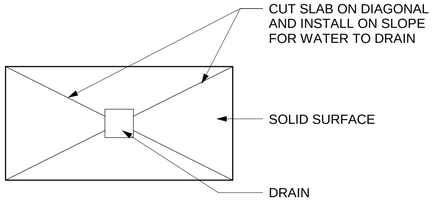
B1 WALL TILE OUTSIDE CORNER

SCALE: 12" = 1'-0"



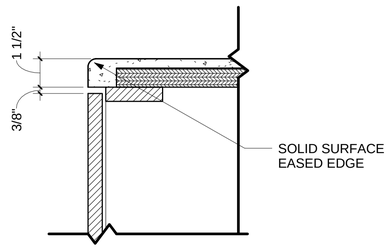
B3 WALL TILE TO GWB

SCALE: 12" = 1'-0"



A1 FLOOR DRAIN DETAIL

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



A3 COUNTER EDGE DETAIL

SCALE: 3" = 1'-0"

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M. ALL WINDOW SILLS TO BE SOLID SURFACE (SS-2).

N. (ACT-1) TO BE INSTALLED WITH (ACG-1). (ACT-2) TO BE INSTALLED WITH (ACG-2). (ACT-3) TO BE INSTALLED WITH (ACG-3).

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C. REFER TO SHEET I-602 FOR FINISH LEGEND & ABBREVIATIONS.

GRAPHIC SCALE:

3" =1'-0" 0' 3" 6" 9"

GRAPHIC SCALE:

12" = 1'-0" 0" 1/2" 1" 3"

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

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317-C Pollock Street | New Bern, NC 28560
252.637.8373 | mbfarchitects.com
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NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

INTERIOR DETAILS

SCALE: As indicated

EPROJECT NO.: 1715336

STA. PROJ. NO. 7290158

NAVFAC DRAWING NO. 12883117

SHEET 63 OF 121

I-502

DRAWFORM REVISION: 25 AUGUST 2020

ROOM FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	NOTES
101	CORRIDOR	SC-1	RB-1	PNT-1	ACT-1	
102	OPEN OFFICE RANGE CONTROLLERS	SC-1	RB-1	PNT-1, PNT-2	ACT-1	3, 4, 5, 9
103	CORRIDOR	SC-1	RB-1	PNT-1, PNT-2	ACT-1	
104	WOOD SHOP	SC-1	RB-1	PNT-1	PNT-6	
105	TOOLS	SC-1	RB-1	PNT-1	PNT-6	
106	ICE	SC-1	RB-1	PNT-1	PNT-6	
107	AIR COMP	SC-1	RB-1	PNT-1	PNT-6	
108	WOMEN	SC-1	-	T-2, T-3	ACT-3	1, 3, 4, 6, 8
109	JAN	SC-1	-	T-2, PNT-4	ACT-3	2, 8
110	MEN	SC-1	-	T-2, T-3	ACT-3	1, 3, 4, 6, 8
111	MECHANICAL	SC-1	RB-1	PNT-1	PNT-6	
112	ELEC	SC-1	RB-1	PNT-1	PNT-6	
113	RANGE NCOIC	SC-1	RB-1	PNT-1, PNT-3	ACT-1	9
114	CORRIDOR	SC-1	RB-1	PNT-1	ACT-1	
115	RANGE OIC	SC-1	RB-1	PNT-1, PNT-3	ACT-1	9
116	WOMEN	SC-1	-	T-2, T-3	ACT-3	1, 3, 4, 6, 8
117	MEN	SC-1	-	T-2, T-3	ACT-3	1, 3, 4, 6, 8
118	JAN	SC-1	RB-1	T-2, PNT-4	ACT-3	2, 8
119	CORRIDOR	SC-1	RB-1	PNT-1	ACT-1	
120	SPRINKLER	SC-1	RB-1	PNT-1	PNT-6	
121	COMM	SC-1	RB-1	PNT-1	PNT-6	
122	CLASSROOM	SC-1	RB-1	PNT-1, PNT-4	ACT-1	9
123	RANGE ADMIN	SC-1	RB-1	PNT-1, PNT-3	ACT-1	
124	FILES	SC-1	RB-1	PNT-1	ACT-1	
125	EQUIP	SC-1	RB-1	PNT-1	ACT-1	
126	RANGE MANAGER	SC-1	RB-1	PNT-1/PNT-3	ACT-1	9
127	CORRIDOR	SC-1	RB-1	PNT-1	ACT-1	10
128	CORRIDOR	SC-1	RB-1	PNT-1	ACT-1	
129	COMM	SC-1	RB-1	PNT-6	ACT-1	
130	ISMT STG	SC-1	RB-1	PNT-1	ACT-1	
131	MECHANICAL	SC-1	RB-1	PNT-1	PNT-6	
132	AIR COMP	SC-1	RB-1	PNT-1	ACT-1	
133	ELEC	SC-1	RB-1	PNT-1	ACT-1	
134	ISMT	RAF-1, CPT-1	RB-2	PNT-7, PNT-8	ACT-2	
135	SHOWER	SC-1	-	T-2, T-3	ACT-3	2, 7, 8
136	SHOWER	SC-1	-	T-2, T-3	ACT-3	2, 7, 8
201	COVERED TRAINING AREA	-	-	-	-	

* REFER TO SHEET I-601 FOR FINISH LEGEND & ABBREVIATIONS.

GENERAL FINISH NOTES

A. FINISHES INDICATED ARE THE APPROVED BASIS OF DESIGN TO CONVEY COLOR, PATTERN, TEXTURE AND SALIENT CHARACTERISTICS ONLY. THE LISTING OF MANUFACTURER INFORMATION IS NOT INTENDED TO LIMIT THE SELECTION OF PRODUCTS PROVIDED BY OTHER MANUFACTURERS. PRODUCTS MEETING THESE CRITERIA WILL BE CONSIDERED AND MUST BE REVIEWED BY THE INTERIOR DESIGNER OF RECORD (IDOR) AND THE NAVFAC INTERIOR DESIGNER AND APPROVED BY THE CONTRACTING OFFICER.

B. FINISH ITEMS ARE NOT TO BE SUBSTITUTED DUE TO ORDERING LEAD TIMES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ORDER ALL MATERIALS IN TIME TO AVOID DELAYS.

C. COORDINATE THERMOSTAT LOCATIONS WITH MECHANICAL DRAWINGS AND CONSTRUCTION MANAGER. INSTALL THERMOSTATS NEAR A CORNER OF THE ROOM OR BY LIGHT SWITCHES. DO NOT INSTALL THERMOSTATS IN THE CENTER OF A WALL.

D. ELECTRICAL PANELS, ACCESS PANELS, AND EXPANSION JOINTS TO BE SPRAYED WITH ELECTROSTATIC PAINT TO MATCH THE ADJACENT WALL COLOR. PANELS PAINTED BY BRUSH ARE NOT ACCEPTABLE

E. ALL FLOORING TRANSITIONS MUST MEET ABA GUIDELINES. FLOORING TRANSITIONS OCCURRING UNDER DOORS MUST BE CENTERED UNDER DOOR.

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G. ROOMS IDENTIFIED TO RECEIVE TILE ON WALLS MUST INCLUDE METAL TRANSITIONS ON ALL OUTSIDE AND INSIDE CORNERS AS WELL AS THE INTERSECTION BETWEEN FLOOR AND WALL TILE WHERE APPLICABLE FOR A COMPLETE INSTALLATION.

H. INSTALL CORNER GUARDS (CG-1) ON ALL OUTSIDE CORNERS. INSTALL END CAPS ON ALL OPEN EDED WALLS. CORNER GUARDS AND END CAPS MUST BE FULL HEIGHT AND SHOULD NOT BE USED ON CMU WALLS, TILED WALLS, OR MANUFACTURED STONE WALLS.

I. ALL AREAS TO RECEIVE RESILIENT COVE BASE WITH THE EXCEPTION OF AREAS RECEIVING WALL TILE.

J. ALL WALLS TO BE PAINTED (PNT-1) UNLESS OTHERWISE INDICATED. ALL HOLLOW METAL DOORS AND DOOR FRAMES TO BE PAINTED (PNT-5). ALL GWB & EXPOSED CEILINGS TO BE PAINTED (PNT-6).

K. IN AREAS WHERE THERE IS A GYP SOFFIT, THE FACE OF THE SOFFIT SHALL BE THE SAME FINISH AS THE CORRESPONDING WALL. THE UNDERSIDE SHALL BE PAINTED (PNT-4).

L. INTERIOR WOOD DOORS TO BE FINISHED (WD-1).

M. ALL WINDOW SILLS TO BE SOLID SURFACE (SS-2).

N. (ACT-1) TO BE INSTALLED WITH (ACG-1). (ACT-2) TO BE INSTALLED WITH (ACG-2). (ACT-3) TO BE INSTALLED WITH (ACG-3).

FINISH SCHEDULE KEY NOTES

1. SEE C1/I-201 FOR TYPICAL RESTROOM WALL TILE ELEVATION.
2. SEE C2/I-201 FOR TYPICAL JANITOR WALL TILE ELEVATION.
3. BASE CABINETS, WALL CABINETS, APRONS AND SHROUDS WILL BE PLASTIC LAMINATE (PLAM-1).
4. COUNTERTOP AND BACK/SIDE SPLASHES TO BE SOLID SURFACE (SS-1). BACK/SIDE SPLASHES ARE ONLY TO BE APPLIED AT WALLS WITHOUT TILE.
5. BASE CABINET TOE KICKS WILL BE RUBBER BASE TO MATCH BASE ON ADJACENT WALLS.
6. TOILET PARTITIONS TO BE HDPE FINISH (TP-1).
7. ALL SHOWER PANS AND SHOWERS WALLS TO BE SOLID SURFACE (SS-2).
8. WALL TILE (T-2 & T-3) TO RECEIVE GROUT FINISH (GR-2).
9. EXTERIOR WINDOWS TO RECEIVE DOUBLE ROLLER SHADE - ONE LAYER LIGHT FILTERING (WS-1) & ONE LAYER BLACKOUT (WS-2). SEE WINDOW SHADE DETAIL C3/I-502.
10. EXTERIOR WINDOWS TO RECEIVE SINGLE LAYER ROLLER SHADE - LIGHT FILTERING (WS-1). SEE WINDOW SHADE DETAIL C1/I-502.

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DES WID | DRW AG | CHK JK

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BRANCH MANAGER

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DEPARTMENT OF THE NAVY
IPT: MARINE

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NAVAL STATION - NORFOLK, VA.

MARINE CORPS AIR STATION
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

SCHEDULES & LEGENDS

SCALE:

EPROJECT NO.: 1715336

STA. PROJ. NO. 7290158

NAVFAC DRAWING NO. 12883118

SHEET 64 OF 121

I-601

DRAWFORM REVISION: 25 AUGUST 2020

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FINISH LEGEND

NO.	ITEM	LOCATION	MANUFACTURER	MODEL	COLOR	SIZE
ACG-1	ACOUSTICAL CEILING GRID	PAIRED W/ ACT-1	ARMSTRONG	INTERLUDE XL HRC	WHITE	9/16"W
ACG-2	ACOUSTICAL CEILING GRID	PAIRED W/ ACT-2 @ ISMT	ARMSTRONG	INTERLUDE XL HRC	MATTE BLACK	9/16"W
ACG-3	ACOUSTICAL CEILING GRID	PAIRED W/ ACT-3	ARMSTRONG	PRELUDE PLUS XL ALUMINUM GRID	WHITE	15/16"W
ACT-1	ACOUSTICAL CEILING TILE	NON-GWB OR EXPOSED CEILINGS	ARMSTRONG	FINE FISSURED HIGH NRC, SQUARE LAY-IN	WHITE	24"X24"
ACT-2	ACOUSTICAL CEILING TILE	ISMT	ARMSTRONG	CALLA, SQUARE LAY-IN	BLACK	24"X24"
ACT-3	MOISTURE RESISTANT ACOUSTICAL CEILING TILE	RESTROOMS & JANITOR	ARMSTRONG	LUMAWASH, SQUARE LAY-IN	WHITE	24"X24"
CG-1	CORNER GUARD	OUTSIDE CORNERS	INPRO	430	STAINLESS STEEL	-
CP-1	CABINET PULL	CASEWORK DOORS & DRAWERS	HAFELE	155.00.961	STAINLESS STEEL	128 MM
CPT-1	CARPET TILE	ISMT	EF CONTRACT	KINETEX, DART	DAR59 ZOOM	24"X24"
GR-2	GROUT (EPOXY)	WALL TILE (T-2 & T-3)	LATICRETE	-	45 RAVEN	-
LK-1	LOCKER FINISH	OPEN OFFICE LOCKERS	SCRANTON	TUFFTEC LOCKERS	GREY	
PLAM-1	PLASTIC LAMINATE	CASEWORK	FORMICA	-	GRAPHITE TWILL	-
PNT-1	PAINT	PRIMARY WALLS	BENJAMIN MOORE	-	HC-180 CLIFFSIDE GRAY	-
PNT-2	ACCENT PAINT	OPEN OFFICE	BENJAMIN MOORE	-	HC-158 NEWBURG GREEN	-
PNT-3	ACCENT PAINT	PRIVATE OFFICES	BENJAMIN MOORE	-	HC-179 PLATINUM GRAY	-
PNT-4	ACCENT PAINT	MEETING ROOMS	BENJAMIN MOORE	-	HC-191 HAMILTON BLUE	-
PNT-5	PAINT	DOOR FRAMES	BENJAMIN MOORE	-	HC-178 CHARCOAL SLATE	-
PNT-6	PAINT	GWB & EXPOSED CEILINGS	BENJAMIN MOORE	-	OC-61 WHITE DIAMOND	-
PNT-7	PAINT (BLACK)	ISMT	BENJAMIN MOORE	-	HC-190 BLACK	-
PNT-8	PROJECTOR PAINT	ISMT	PAINT ON SCREEN	S1 SCREEN PLUS	RADIANT WHITE	LEVEL 5 FINISH
RB-1	RUBBER BASE	PRIMARY BASE	JOHNSONITE	MILLWORK REVEAL	48 GREY	4"H
RB-2	RUBBER BASE	ISMT	JOHNSONITE	MILLWORK REVEAL	40 BLACK	4"H
S-1	SIGNAGE FINISH	COPY COLOR	2/90 SIGNS	ESSENTIALS COLLECTION	(W) WHITE	-
S-2	SIGNAGE FINISH	BACKGROUND/INSERT	2/90 SIGNS	ESSENTIALS COLLECTION	(204) BLACK	-
S-3	SIGNAGE FINISH	END CAP FINISH	2/90 SIGNS	ESSENTIALS COLLECTION	(203) COOL GREY	
SC-1	SEALED CONCRETE	ALL FLOORS U.O.N.	-	-	-	-
SS-1	SOLID SURFACE	COUNTERTOPS & WINDOW SILLS	MEGANITE	-	M302 CRATER LAKE	-
SS-2	SOLID SURFACE	SHOWERS	WILSONART	-	9115GS ZEN GREY	-
T-2	WALL TILE	BATHROOMS & JANITOR	CROSSVILLE	COLOR BLOX 2 .0	BLUE SUEDE SHOES	12"X24"
T-3	ACCENT TILE	BATHROOM WALLS	CROSSVILLE	SHADES 2.0	INK UPS MOSAIC	2" MOSAIC
TB-1	TILE BASE	BATHROOMS & JANITOR	CROSSVILLE	COLOR BLOX 2 .0	BLUE SUEDE SHOES	6'X12" COVE BASE
TP-1	TOILET PARTITIONS	RESTROOMS	ACCURATE PARTITIONS	HDPE	9205 BLACK	-
TS-4	TRANSITION STRIP	FLOOR TILE TO WALL TILE	SCHLUTER	DILEX-AHK	SATIN NICKLE	-
TS-5	TRANSITION STRIP	WALL TILE OUTSIDE CORNER	SCHLUTER	QUADEC	SATIN NICKLE	-
TS-6	TRANSITION STRIP	WALL TILE TO PAINT	SCHLUTER	RONDEC DB	SATIN NICKLE	-
WD-1	WOOD FINISH	WOOD ENTRY DOORS	MASONITE	WHITE OAK	CLEAR	-
WS-1	WINDOW SHADE	EXTERIOR WINDOWS	DRAPER	FLEX SHADE	3% OPENNESS - LIGHT GREY	-
WS-2	WINDOW SHADE (BLACKOUT)	EXTERIOR WINDOWS	DRAPER	OPAQUE APAGON	GREY	-

ADDITIONAL ABBREVIATIONS

FF&E	FURNITURE FIXTURES & EQUIPMENT
HPL	HIGH PRESSURE LAMINATE
SID	STRUCTURAL INTERIOR DESIGN
U.O.N.	UNLESS OTHERWISE NOTED

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NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

SCHEDULES & LEGENDS

SCALE:

EPROJECT NO.: 1715336

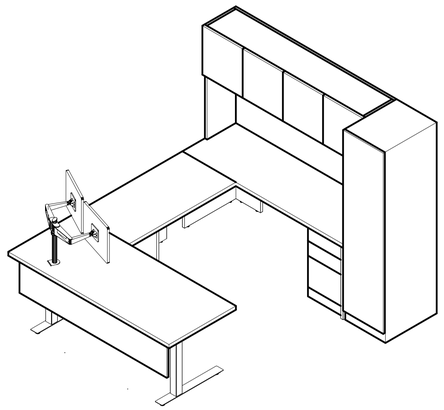
STA. PROJ. NO. 7290158

NAVFAC DRAWING NO. 12883119

SHEET 65 OF 121

I-602

DRAWFORM REVISION: 25 AUGUST 2020



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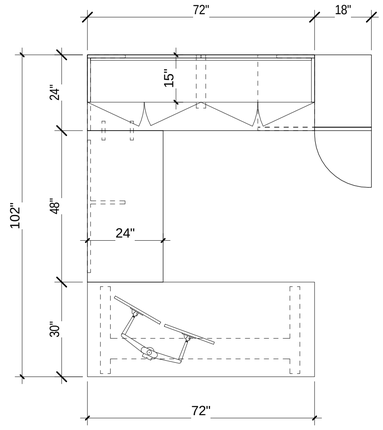


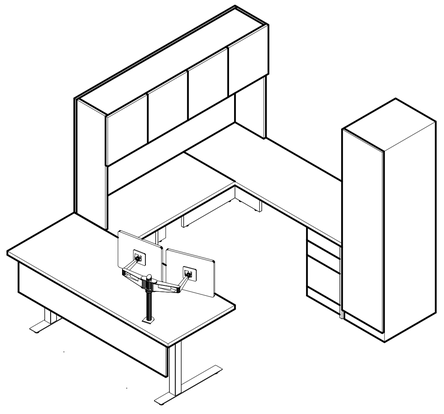
PLAN VIEW

COMPONENT LIST (NOMINAL DIMENSIONS)

- METAL CASE WITH HPL WORKSURFACE
- 72"W x 30"D HPL ADJUSTABLE HEIGHT MAIN WORK SURFACE
- 48"W x 24"D HPL BRIDGE RETURN
- 72"W x 24"D REAR CREDENZA
- 72"W x 15"D x OVERHEAD STORAGE HUTCH W/ TACKBOARD & TASK LIGHT
- 18"W x 24"D WARDROBE CABINET
- 13"H HPL MODESTY PANEL MOUNTED TO 72" MAIN WORK SURFACE. RETURN SIDE TO HAVE PARTIAL OR NO MODESTY TO ALLOW WALL ACCESS.
- (1) 18"W BOX/BOX/FILE PEDESTAL
- (1) GROMMET WITH WIRE MANAGEMENT ON EACH WORKSURFACE
- (1) DESK MOUNTED DUAL MONITOR ARM

C1 D2 - U-SHAPED DESK W/ REAR STORAGE HUTCH

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



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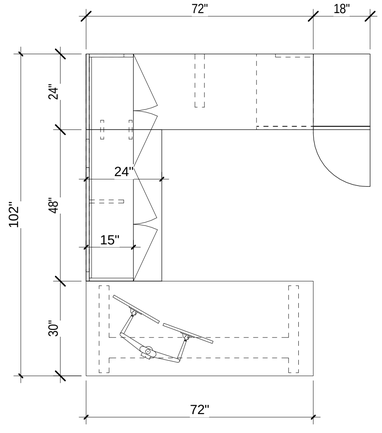

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- (1) DESK MOUNTED DUAL MONITOR ARM

A1 D1 - U-SHAPED DESK W/ SIDE STORAGE HUTCH

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

FURNITURE NOTES

A. QUANTITIES ON FURNITURE SCHEDULE ARE TOTALS FOR ENTIRE PROJECT AND NOT INDICATIVE OF EACH SHEET.

B. REFER TO ARCHITECTURAL FLOOR PLANS FOR BUILDING LAYOUT, DIMENSIONS, AND COORDINATION TO BUILDING SYSTEMS AND STRUCTURE.

C. REFER TO ELECTRICAL DRAWINGS FOR COORDINATION OF LIGHTING, POWER, DATA, COMMUNICATIONS, AND LOCATIONS OF OTHER WALL AND FLOOR MOUNTED ELECTRICAL DEVICES AND EQUIPMENT FOR COORDINATION TO FURNITURE LAYOUTS. CONTRACTOR MUST IDENTIFY ANY CONFLICTS WITH FURNITURE LAYOUTS.

D. CONTRACTOR IS RESPONSIBLE FOR ENSURING TO PROVIDE POWER, DATA AND/OR A/V OUTLETS FOR ALL ITEMS OF FURNISHINGS AND EQUIPMENT INCLUDING FF&E, GOVERNMENT FURNISHED, CONTRACTOR INSTALLED (GFCI), AND GOVERNMENT FURNISHED, GOVERNMENT INSTALLED (GFGI), REQUIRING CABLING AND CONNECTIONS.

F. FF&E CONTRACTOR/INSTALLER MUST COORDINATE POWER/DATA/COMM CONNECTIONS & LOCATIONS WITH GC'S ELECTRICAL CONTRACTOR AND/OR DATA CONTRACTOR PRIOR TO INSTALLATION OF ELECTRIFIED FURNISHINGS.

G. FF&E CONTRACTOR TO FIELD VERIFY ALL MEASUREMENTS AND SITE CONDITIONS TO ENSURE PROPER FIT OF ALL FF&E. FURNISHINGS MUST NOT OVERLAP OR OBSTRUCT DOOR FRAMES, WALL SWITCHES, THERMOSTATS, OR OTHER WALL MOUNTED ITEMS.

H. MODIFICATIONS TO FURNISHINGS LAYOUTS REQUIRED TO MEET BUILDING CONDITIONS AT THE TIME OF INSTALLATION MUST BE THE RESPONSIBILITY OF THE FF&E CONTRACTOR. ALL MODIFICATIONS MUST BE APPROVED IN WRITING BY A GOVERNMENT APPROVED REPRESENTATIVE PRIOR TO INSTALLATION OF THE FURNISHINGS.

I. DUAL MONITOR ARMS AND POWERSTRIPS NOT SHOWN ON DRAWINGS TO BE PROVIDED AT SYSTEMS FURNITURE AND DESKS, UNLESS NOTED OTHERWISE.

J. INSTALL MARKERBOARDS AND BULLETIN BOARDS AT 3'-0" TO THE BOTTOM OF THE UNIT UNLESS NOTED OTHERWISE.

K. INSTALL WALL CLOCKS AT 8'-0" AFF TO CENTER OF CLOCK UNLESS NOTED OTHERWISE.

L. FF&E ITEMS ARE NOT INCLUDED ON THE CONSTRUCTION CONTRACT AND MAY BE FUNDED SEPARATELY AS AN FF&E OPTION.

GRAPHIC SCALE:

1/2" = 1'-0" 0' 1' 2' 4'

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P-196U CONSTRUCT RANGE OPERATIONS FACILITY

WORKSTATION TYPICALS

SCALE: 1/2" = 1'-0"
EPROJECT NO.: 1715336
STA. PROJ. NO. 7290158
NAVFAC DRAWING NO. 12883120
SHEET 66 OF 121

I-701

DRAWFORM REVISION: 25 AUGUST 2020

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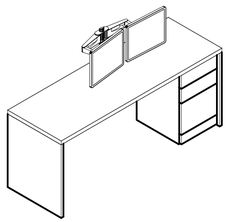
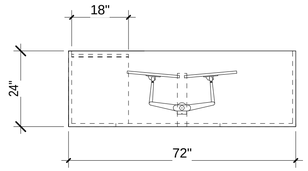


ISOMETRIC VIEW



PLAN VIEW

COMPONENT LIST (NOMINAL DIMENSIONS)

- METAL CASE WITH HPL WORKSURFACE
- 72"W x 24"D HPL STATIC HEIGHT MAIN WORK SURFACE
- MAIN WORK SURFACE TO HAVE PARTIAL OR NO MODESTY TO ALLOW WALL ACCESS.
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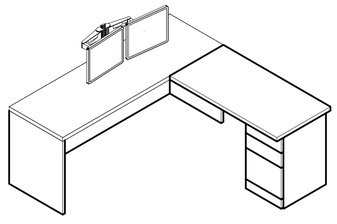
- (1) GROMMET WITH WIRE MANAGEMENT
- (1) DESK MOUNTED DUAL MONITOR ARM

C1 D4 - RECTANGULAR DESK

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



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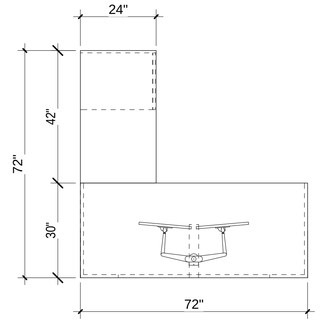

PLAN VIEW

COMPONENT LIST (NOMINAL DIMENSIONS)

- METAL CASE WITH HPL WORKSURFACE
- 72"W x 30"D HPL STATIC HEIGHT MAIN WORK SURFACE
- 42"W x 24"D HPL RETURN
- RETURN & MAIN WORK SURFACE TO HAVE PARTIAL OR NO MODESTY TO ALLOW WALL ACCESS.
- (1) 18"W BOX/BOX/FILE PEDESTAL
- (1) GROMMET WITH WIRE MANAGEMENT ON EACH WORKSURFACE
- (1) DESK MOUNTED DUAL MONITOR ARM

A1 D3 - ADMIN DESK

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C. REFER TO ELECTRICAL DRAWINGS FOR COORDINATION OF LIGHTING, POWER, DATA, COMMUNICATIONS, AND LOCATIONS OF OTHER WALL AND FLOOR MOUNTED ELECTRICAL DEVICES AND EQUIPMENT FOR COORDINATION TO FURNITURE LAYOUTS. CONTRACTOR MUST IDENTIFY ANY CONFLICTS WITH FURNITURE LAYOUTS.

D. CONTRACTOR IS RESPONSIBLE FOR ENSURING TO PROVIDE POWER, DATA AND/OR A/V OUTLETS FOR ALL ITEMS OF FURNISHINGS AND EQUIPMENT INCLUDING FF&E, GOVERNMENT FURNISHED, CONTRACTOR INSTALLED (GFCI), AND GOVERNMENT FURNISHED, GOVERNMENT INSTALLED (GFGI), REQUIRING CABLING AND CONNECTIONS.

F. FF&E CONTRACTOR/INSTALLER MUST COORDINATE POWER/DATA/COMM CONNECTIONS & LOCATIONS WITH GC'S ELECTRICAL CONTRACTOR AND/OR DATA CONTRACTOR PRIOR TO INSTALLATION OF ELECTRIFIED FURNISHINGS.

G. FF&E CONTRACTOR TO FIELD VERIFY ALL MEASUREMENTS AND SITE CONDITIONS TO ENSURE PROPER FIT OF ALL FF&E. FURNISHINGS MUST NOT OVERLAP OR OBSTRUCT DOOR FRAMES, WALL SWITCHES, THERMOSTATS, OR OTHER WALL MOUNTED ITEMS.

H. MODIFICATIONS TO FURNISHINGS LAYOUTS REQUIRED TO MEET BUILDING CONDITIONS AT THE TIME OF INSTALLATION MUST BE THE RESPONSIBILITY OF THE FF&E CONTRACTOR. ALL MODIFICATIONS MUST BE APPROVED IN WRITING BY A GOVERNMENT APPROVED REPRESENTATIVE PRIOR TO INSTALLATION OF THE FURNISHINGS.

I. DUAL MONITOR ARMS AND POWERSTRIPS NOT SHOWN ON DRAWINGS TO BE PROVIDED AT SYSTEMS FURNITURE AND DESKS, UNLESS NOTED OTHERWISE.

J. INSTALL MARKERBOARDS AND BULLETIN BOARDS AT 3'-0" TO THE BOTTOM OF THE UNIT UNLESS NOTED OTHERWISE.

K. INSTALL WALL CLOCKS AT 8'-0" AFF TO CENTER OF CLOCK UNLESS NOTED OTHERWISE.

L. FF&E ITEMS ARE NOT INCLUDED ON THE CONSTRUCTION CONTRACT AND MAY BE FUNDED SEPARATELY AS AN FF&E OPTION.

GRAPHIC SCALE:

1/2" = 1'-0" 0' 1' 2' 4'

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DES WID | DRW JK | CHK AG

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
IPT MARINE
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND – MIDATLANTIC
NAVAL STATION - NORFOLK, VA
MARINE CORPS AIR STATION
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

WORKSTATION TYPICALS

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

EPROJECT NO.: 1715336

STA. PROJ. NO. 7290158

NAVFAC DRAWING NO. 12883121

SHEET 67 OF 121

I-702

DRAWFORM REVISION: 25 AUGUST 2020

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FIRE ALARM GENERAL NOTES:

1. GENERAL SCOPE - INSTALL A COMBINED FIRE ALARM AND MASS NOTIFICATION SYSTEM FOR THE BUILDING.
2. APPLICABLE CODES:

UFC 3-600-01	DESIGN: FIRE PROTECTION ENGINEERING FOR FACILITIES, 6 MAY 2021
UFC 4-021-01	DESIGN AND O&M: MASS NOTIFICATION SYSTEMS, JANUARY 2010
NFPA 70	NATIONAL ELECTRIC CODE (NEC), 2020
NFPA 72	NATIONAL FIRE ALARM AND SIGNALING CODE, 2022

3. DEVICES MUST BE UL LISTED.
4. SIGNALING LINE CIRCUITS, NOTIFICATION APPLIANCE CIRCUITS, AND INITIATING DEVICE CIRCUITS MUST BE CLASS B.
5. CONDUIT AND BACK BOXES MUST BE CONCEALED TO THE MAXIMUM EXTENT POSSIBLE. JUNCTION BOXES AND COVERS MUST BE PAINTED RED IN UNFINISHED AREAS. IN FINISHED ARES, CONDUIT AND JUNCTION BOXES MUST BE PAINTED TO MATCH THE ROOM FINISH. FIRE ALARM CONDUITS IN FINISHED AREAS MUST BE MARKED WITH 3/4-IN RED BANDS EVERY 10-FT AND AT EACH SIDE OF A FLOOR, WALL, OR CEILING PENETRATION. JUNCTION BOXES MUST HAVE A PERMANENT, MACHINE PRINTED LABEL READING "FIRE ALARM CIRCUIT" ON THE INSIDE COVER.
6. SYSTEM POWER AND GROUND CIRCUITS MUST BE TYPE "THHN" SOLID COPPER SIZED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS AND THE APPLICABLE CODES AND BE INSTALLED IN EMT TYPE CONDUIT.
7. WIRING, CABLES, BOXES, TROUGHS AND OTHER RELATED EQUIPMENT MUST BE INSTALLED IN STRICT COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE (NEC).
8. MANUAL FIRE ALARM STATION MUST BE DOUBLE-ACTION TYPE AND SEMI-FLUSH MOUNTED IN FINISHED SPACES.
9. WALL-MOUNTED VISIBLE AND COMBINATION AUDIBLE/VISIBLE ALARM NOTIFICATION APPLIANCES MUST BE MOUNTED SUCH THAT THE ENTIRE LENS IS BETWEEN 80-IN AND 96-IN ABOVE THE FINISHED FLOOR. WHERE LOW CEILING HEIGHTS DO NOT PERMIT DEVICES AT A MINIMUM OF 80-IN, DEVICES MUST BE MOUNTED WITHIN 6-IN OF THE CEILING.
10. VISIBLE DEVICES AND VISIBLE/AUDIBLE DEVICES MUST UTILIZE A CLEAR STROBE AND BE MARKED "ALERT" FOR FIRE ALARM USE. SEE MASS NOTIFICATION GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
11. SOUND PRESSURE LEVEL FROM AUDIBLE ALARM APPLIANCES MUST NOT EXCEED 110 DBA IN ANY OCCUPIED AREA.
12. AREAS MUST BE INTELLIGIBLE WITH A COMMON INTELLIGIBILITY SCALE (CIS) RATING GREATER THAN 0.7. A SPEECH TRANSMISSION INDEX (STI) RATING OF 0.5 IS CONSIDERED EQUIVALENT TO A CIS RATING OF 0.7. CIS RATINGS LESS THAN 0.7 IS PERMITTED IN AREAS WITH EXCESSIVE HARD SURFACES PROVIDED A CIS RATING GREATER THAN 0.7 IS ACHIEVED WITHIN A 33-FT TRAVEL DISTANCE. NORMALLY UNOCCUPIED AREAS ARE PERMITTED TO HAVE A CIS SCORE LESS THAN 0.7 PROVIDED ACCEPTABLE CIS SCORE CAN BE REACHED WITHIN 50-FT TRAVEL DISTANCE.
13. 25% SPARE CAPACITY MUST BE PROVIDED ON POWER SUPPLIES, AMPLIFIERS, AND INDIVIDUAL CIRCUITS.
14. SECONDARY POWER SUPPLY MUST BE VIA BATTERIES CAPABLE OF OPERATING THE FIRE ALARM SYSTEM ON STANDBY FOR 48 HOURS FOLLOWED BY 15 MINUTES IN ALARM OR OPERATING THE MASS NOTIFICATION SYSTEM IN ALARM FOR 60 MINUTES. CHARGING AND METERING MUST BE PROVIDED IN ACCORDANCE WITH NFPA 72.
15. THE FIRE ALARM SYSTEM MUST MONITOR THE SPRINKLER SYSTEM FLOW AND TAMPER SWITCHES.
16. DEDICATED BATTERY CABINETS MUST BE MOUNTED NO MORE THAN 3-FT FROM THE FINISHED FLOOR.
17. LABEL FIRE ALARM APPLIANCES AND DEVICE WITH THE ASSIGNED ADDRESS. FOR DEVICES LOCATED ABOVE A CEILING, PROVIDE A LEGIBLE TYPED LABEL ON THE CEILING RID TO IDENTIFY ITS PURPOSE AND LOCATION.
18. PROVIDE DOCUMENT CABINET ADJACENT TO FMCP. CABINET MUST BE STEEL, LOCKING, WITH A HINGE-MOUNTED DOOR KEYED THE SAME AS THE FMCP. LABEL THE EXTERIOR OF THE CABINET "SYSTEMS RECORD DOCUMENTS".
19. DRAWINGS ARE CONCEPTUAL IN NATURE. THEY DO NOT SHOW THE EXACT LOCATIONS OF COMPONENTS OR ALL SYSTEM COMPONENTS. CONTRACTOR MUST PROVIDE ADDITIONAL COMPONENTS FOR A PROPERLY INSTALLED AND FUNCTIONAL SYSTEM IN ACCORDANCE WITH APPLICABLE CODES.
20. FOR LARGE OPEN SPACES WITH CEILING HEIGHTS GREATER THAN 12 FEET CARBON MONOXIDE DETECTION IS NOT REQUIRED IN ACCORDANCE WITH UFC 3-600-01 PARAGRAPH 9-19.2.3.
21. USE SEPARATE DEVICES FOR SMOKE DETECTOR AND CARBON MONXIDE DETECTOR. THE USE OF MULTIFUNCTION DEVICES IS PROHIBITED.

MASS NOTIFICATION GENERAL NOTES:

1. MASS NOTIFICATION TO BE PROVIDED VIA COMBINED FIRE ALARM AND MASS NOTIFICATION SYSTEM. THE SYSTEM MUST BE DESIGNED UNDER THE SUPERVISION OF A NICET LEVEL IV FIRE ALARM TECHNICIAN.
2. A CLEAR STROBE MUST BE UTILIZED FOR FIRE ALARM AND MASS NOTIFICATION. STROBES MUST BE MARKED "ALERT." STROBE LOCATIONS SHOWN ON DRAWING INDICATE APPROXIMATE LOCATION OF REQUIRED VISUAL NOTIFICATION FOR THE FIRE ALARM/MASS NOTIFICATION SYSTEM.
3. SPEAKERS MUST BE PROVIDED OUTSIDE OF THE BUILDING NEAR THE FACILITY ENTRANCES. THESE DEVICES MUST BE MULTI-TAP WITH NO MORE THAN A 15-W MAXIMUM SETTING AND ARE INTENDED TO SERVE AREAS COMMONLY USED BY BUILDING OCCUPANTS FOR AREAS AT A DISTANCE UP TO 16-FT FROM THE BUILDING.

FIRE ALARM LEGEND

FMCP	FIRE ALARM MASS NOTIFICATION CONTROL PANEL
FAC	DUALPATH ETHERNET DIALER
NAC	NOTIFICATION CIRCUIT POWER BOOSTER, EXTENDER PANEL
AMP	AMPLIFIER
TRX	TRX-401 MASS NOTIFICATION SYSTEM TRANSCIEVER (PROVIDED BY GOVERNMENT)
ANN	REMOTE ANNUNCIATOR PANEL
LOC	LOCAL OPERATING CONSOLE
CD	CEILING MOUNTED COMBINATION SPEAKER/CLEAR STROBE (SUPERSCRIPT INDICATES CANDELA RATING)
CD	WALL MOUNTED COMBINATION SPEAKER/CLEAR STROBE (SUPERSCRIPT INDICATES CANDELA RATING)
	WALL MOUNTED SPEAKER
K	KNOX BOX
MM	MONITOR MODULE
CM	CONTROL MODULE
RM	RELAY MODULE
P	MANUAL PULL STATION
SS	SURGE SUPPRESSOR
	TAMPER SWITCH
	WATER FLOW SWITCH
	AREA SMOKE DETECTOR
	DUCT SMOKE DETECTOR
	CARBON MONOXIDE DETECTOR
WP	WEATHERPROOF

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NORTH CAROLINA PROFESSIONAL SEAL 041524 4/7/23 ENGINEER KARI E. CRANE
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BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
IPT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FIRE ALARM NOTES AND LEGEND

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883122
SHEET 68 OF 121

FA001

DRAWFORM REVISION: 10 MARCH 2009

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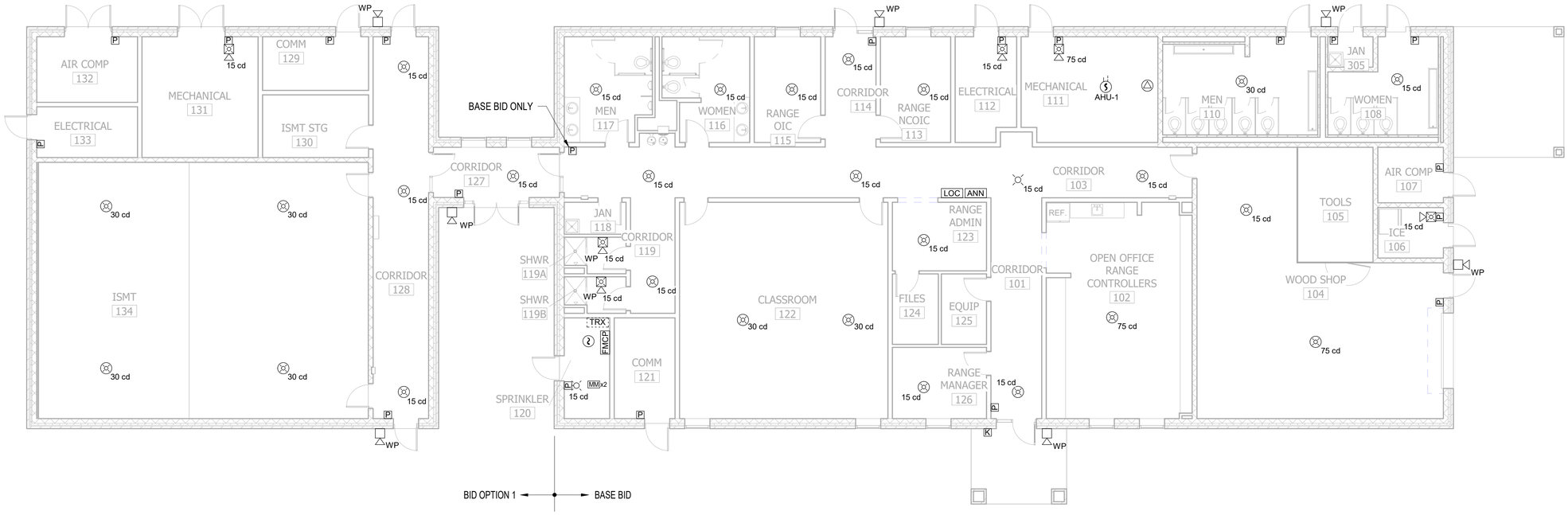

A1 FIRE ALARM FLOOR PLAN

1/8" = 1'-0"

N

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

8' 0 4' 8' 16'

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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA
IPT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FIRE ALARM FLOOR PLAN

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883123
SHEET	69 OF 121

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FIRE ALARM INPUT	ACTIVATE VISUAL "ALERT" STROBES	ACTIVATE AUDIO CIRCUITS AND BROADCAST FIRE ALARM MESSAGE	ACTIVATE AUDIO CIRCUITS AND BROADCAST CARBON MONOXIDE MESSAGE	ACTIVATE AUDIO CIRCUITS AND BROADCAST MNS MESSAGE	ACTIVATE AUDIO CIRCUITS AND BROADCAST WATERFLOW ALARM BELL	ACTIVATE EXTERIOR ELECTRIC EGRESS/EMERGENCY LIGHTING	SHUT DOWN ASSOCIATED AIR HANDLING UNIT	ALARM CONDITION AT FMCP	SUPERVISORY CONDITION AT FMCP	TROUBLE CONDITION AT FMCP	MNS SUPERVISORY FIRE ALARM OVERRIDE CONDITION AT FMCP	TRANSMIT ALARM SIGNAL TO FIRE DEPARTMENT	TRANSMIT TROUBLE SIGNAL TO FIRE DEPARTMENT	TRANSMIT SUPERVISORY SIGNAL TO FIRE DEPARTMENT
MANUAL PULL STATION	●	●				●		●				●		
AUTOMATIC SPRINKLER SYSTEM FLOW SWITCH	●	●			●	●		●				●		
AUTOMATIC SPRINKLER SYSTEM TAMPER SWITCH									●					●
AREA SMOKE DETECTOR	●	●				●		●				●		
DUCT SMOKE DETECTOR							●		●					●
CARBON MONOXIDE DETECTOR	●		●			●		●				●		
FMCP CIRCUIT FAULT (OPEN, GROUND, SHORT)										●			●	
OTHER TROUBLE CONDITION										●			●	
MASS NOTIFICATION INPUT														
FMCP/LOC EMERGENCY LIVE PAGING [1,2,3]	●			●							●			●
BASE-WIDE SYSTEM INPUT [1,2,3]	●			●							●			●

1 EMERGENCY MNS MESSAGES (LIVE) MUST TEMPORARILY OVERRIDE FIRE ALARM AUDIBLE EVACUATION.

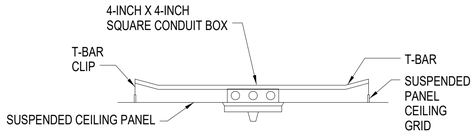
2 STROBES MUST CONTINUE TO OPERATE FOR AT LEAST 15-SECONDS AFTER THE END OF THE MESSAGE.

3 SUPERVISORY CONDITION ONLY OCCURS WHEN MASS NOTIFICATION SYSTEM IS OVERRIDING FIRE ALARM EVACUATION (ALARM CONDITION).

C1 FIRE ALARM/MASS NOTIFICATION SYSTEM SEQUENCE OF OPERATIONS

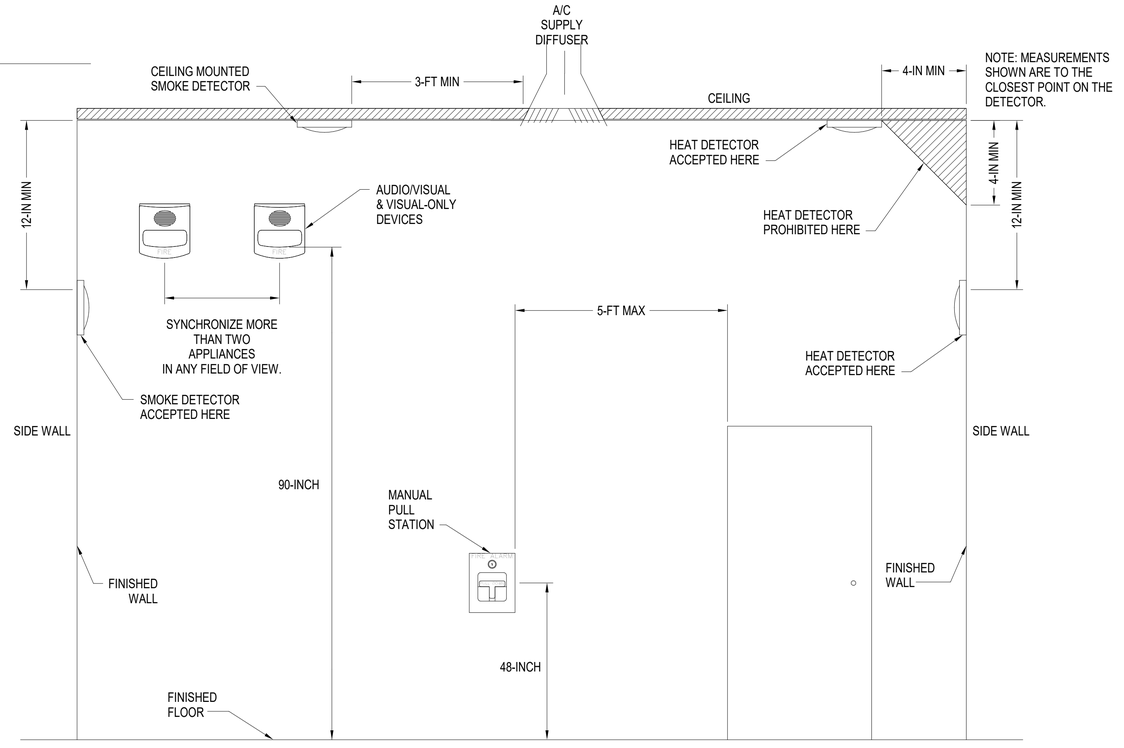
NOT TO SCALE

ALL STROBES AND SPEAKER/STROBES MUST BE INSTALLED WHERE INDICATED ON THE FIRE PROTECTION PLANS. THE ELECTRICAL CONTRACTOR MUST PROVIDE THE NECESSARY MOUNTING HARDWARE TO ACHIEVE THIS PURPOSE.



A1 TYPICAL SPEAKER/STROBE MOUNTING DETAIL

NOT TO SCALE



A3 TYPICAL DEVICE MOUNTING HEIGHTS

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CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
[PT MARINE] NAVAL STATION ~ NORFOLK, VA.
MARINE CORPS AIR STATION CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FIRE ALARM DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883124
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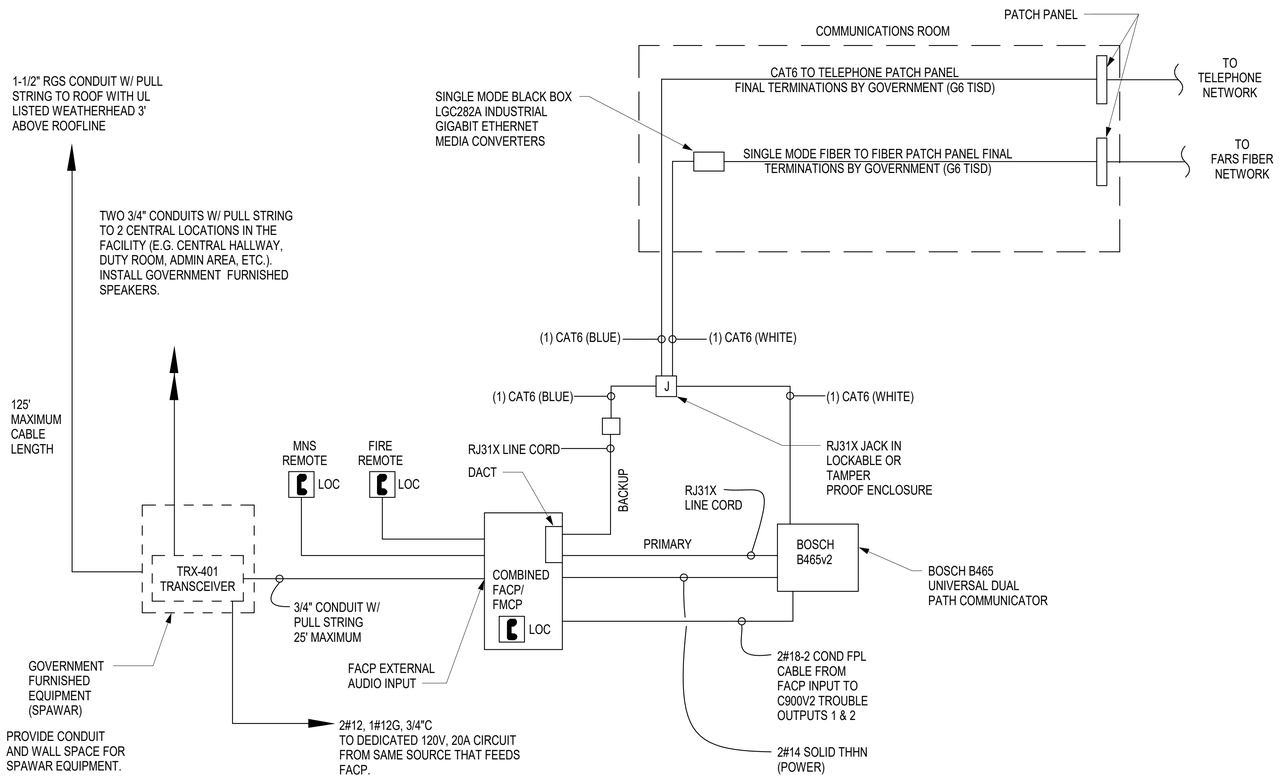

B1 FIRE ALARM/MASS NOTIFICATION SYSTEM BASE-WIDE INTERFACE

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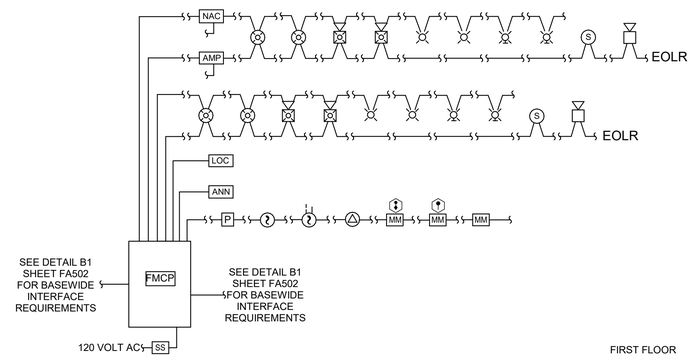
FIRE ALARM AND MNS MONITORING NOTES

1. THE FACP/FMCP MUST BE A COMBINED FIRE ALARM AND MASS NOTIFICATION SYSTEM BY JOHNSON CONTROLS, NOTIFIER, SIMPLEX, OR BOSCH. NO OTHER MANUFACTURERS ARE ACCEPTABLE.
2. THE FIRE ALARM AND DETECTION SYSTEM IS TO BE FULLY COMPLIANT WITH THE CURRENT EDITIONS OF UFC 3-600-01, UFC 3-600-10N, UFC 4-021-01, AND NFPA 72 FOR A FIRE ALARM AND EMERGENCY VOICE ALARM COMMUNICATION SYSTEM. THE SYSTEM IS DESIGNED TO INTERFACE WITH THE SITE MNS.
3. THE FMCP MUST BE CAPABLE OF ACCEPTING 10 VOLTS ROOT MEAN SQUARED (VRMS), 25 VRMS, 70.7 VRMS AND/OR LINE LEVEL (.707 VRMS) AUDIO INPUTS.
4. FACP MUST BE CONFIGURED TO ACCEPT DRY CONTACT INPUT FROM THE TRX-401 INTERFACE TO ALERT THE FIRE ALARM PANEL THAT A MNS MESSAGE IS FORTHCOMING. THE FIRE ALARM PANEL MUST BE CONFIGURED SO THAT WHILE THIS INPUT IS ACTIVE (CONTACT CLOSED) THE FIRE ALARM PANEL MUST ROUTE AUDIO PROVIDED BY THE MNS INTERFACE DIRECTLY TO ALL CONNECTED FIRE ALARM SPEAKERS. THE SYSTEM MUST BE PROGRAMMED SO THIS EXTERNAL AUDIO INPUT WILL RECEIVE PRIORITY AND OVERRIDE ALL FIRE ALARM NOTIFICATION SO LONG AS THE INPUT IS ACTIVE. WHEN THE INPUT GOES INACTIVE (CONTACT OPEN) THE EXTERNAL AUDIO ROUTING WILL CEASE AND THE FIRE ALARM PANEL MUST AUTOMATICALLY RETURN TO THE PRIOR NOTIFICATION PROGRAM THAT WAS ACTIVE BEFORE THE MNS MESSAGE.
5. FACP MUST BE COMPATIBLE AND OPERABLE WITH THE EXISTING FIRE ALARM SUPERVISING STATION LOCATED IN BLDG. 294 PROVOST MARSHALS OFFICE (PMO). EXISTING BASEWIDE FIRE ALARM REPORTING SYSTEM IS A FIBER NETWORK BASED REPORTING SYSTEM UTILIZING BOSCH CONETTIX C900V2 DIALER CAPTURE MODULES AND BOSCH D6600 RECEIVER WITH MICROKEY AUTOMATION SOFTWARE. THE SECONDARY MEANS OF TRANSMISSION IS OVER TELEPHONE LINES. CONTRACTOR MUST PROVIDE ALL EQUIPMENT AND LABOR REQUIRED TO CONNECT THE FIRE ALARM AND DETECTION SYSTEM TO THE BASE'S SUPERVISING STATION.
6. BOSCH CONETTIX C900 V2 DIALER CAPTURE MODULE MUST NOT BE LOCATED WITHIN THE FIRE ALARM CONTROL PANEL BUT MUST BE LOCATED IN A DEDICATED PANEL. C900V2 MODULE MUST BE POWERED BY THE BUILDING FIRE ALARM SYSTEM AND THE POWER CONNECTION MONITORED BY THE FIRE ALARM SYSTEM. INCLUDE POWER REQUIREMENTS OF THE MODULE IN THE FIRE ALARM SYSTEM BATTERY AND CURRENT DRAW CALCULATIONS. MODULE PANEL MUST BE KEYED THE SAME AS THE FIRE ALARM SYSTEM EQUIPMENT.
7. DACT MUST BE CONFIGURED TO TRANSMIT SIGNALS IN CONTACT ID FORMAT.
8. SIGNALS TRANSMITTED OVER THE PRIMARY AND SECONDARY MEANS OF TRANSMISSION MUST BE POINT SPECIFIC WITH EACH ADDRESS AND CONDITION INDICATED AT THE FIRE ALARM PANEL TRANSMITTED SEPARATELY. ALL FIRE ALARMS, SUPERVISORY ALARMS, AND TROUBLE CONDITIONS MUST BE TRANSMITTED TO THE SUPERVISING STATION. CONNECTION TO THE FIRE ALARM REPORTING SYSTEM AND PROGRAMMING OF THE BOSCH C900V2 DIALER CAPTURE MODULE AND HEAD END EQUIPMENT MUST BE COORDINATED WITH THE FIRE ALARM REPORTING SYSTEM (FARS) ADMINISTRATOR. CONTACT THE FACILITY SYSTEM SERVICES OFFICE (FSSO) AT EMAIL: CHPT.FACSSO.OMB@USMC.MIL. TECHNICIAN MAKING SOFTWARE CHANGES MUST BE MICROKEY TRAINED/CERTIFIED. PROVIDE PROOF OR TRAINING/CERTIFICATION TO FASSO UPON REQUEST. ALL FIRE ALARM PANEL POINTS MUST BE PROGRAMMED AS INDIVIDUAL POINTS AT THE HEAD END.
9. IF C900V2 IS EXISTING, IT MUST BE LOCATED TO NEW FACP. EXTEND EXISTING CONDUIT AND PULL NEW UNSPLICED CAT6 CABLE.
10. PROVIDE A LAMINATED GRAPHIC FLOOR PLAN ADJACENT TO THE FACP DEPICTING ALL FIRE ALARM DEVICES AND EQUIPMENT WITHIN THE FACILITY.
11. FIRE ALARM PLANS INDICATE AREA OF STROBE COVERAGE AND ARE DIAGRAMMATIC ONLY. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADDITIONAL SPEAKERS FOR EACH FACILITY TO MEET ALL MASS NOTIFICATION SYSTEM INTELLIGIBILITY REQUIREMENTS IN ACCORDANCE WITH UFC 4-021-01.
12. SPAWAR POCS:

JEFF WOODARD	(843) 218-5549	JEFF.WOODARD@NAVY.MIL
BIFF BROWN	(843) 218-6292	ROBERT.K.BROWN1.CTR@NAVY.MIL



1. THE RISER DIAGRAM IS CONCEPTUAL IN NATURE. IT IS NOT INTENDED TO REPRESENT ACTUAL NUMBER OF DEVICES, CIRCUITS, OR APPLIANCES; OR ACTUAL WIRING AND RACEWAY INSTALLATION. ALL CONDUCTORS AND WIRING MUST BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS, NFPA 72, 2022 EDITION, AND NFPA 70-2023 EDITION.
2. FINAL QUANTITY AND LOCATION(S) OF AUXILIARY ENCLOSURES ARE TO BE COORDINATED DURING CONSTRUCTION BY CONTRACTOR.

A4 FIRE ALARM/MASS NOTIFICATION SYSTEM RISER DIAGRAM

NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL SEAL 041524 ENGINEER KARI E. CRANE
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CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
IPT: MARINE
MARINE CORPS AIR STATION
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
FIRE ALARM DETAILS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883125
SHEET 71 OF 121

FA502

DRAWFORM REVISION: 10 MARCH 2009

FIRE SUPPRESSION GENERAL NOTES:

1. GENERAL SCOPE - PROVIDE WET-PIPE SPRINKLER SYSTEMS THROUGHOUT THE BUILDING.
2. APPLICABLE CODES:

UFC 3-600-01	DESIGN: FIRE PROTECTION ENGINEERING FOR FACILITIES, 6 MAY 2021
NFPA 13	INSTALLATION OF SPRINKLER SYSTEMS, 2022
NFPA 33	STANDARD FOR SPRAY APPLICATION USING FLAMMABLE OR COMBUSTIBLE MATERIALS, 2021

3. THE SYSTEM MUST BE DESIGNED UNDER THE SUPERVISION OF A NICET LEVEL III WATER-BASED SYSTEMS LAYOUT TECHNICIAN.
4. SPRINKLER PIPE MUST BE U.L. LISTED BLACK STEEL, MINIMUM SCHEDULE 40 FOR PIPE DIAMETERS 2-IN AND SMALLER AND A MINIMUM SCHEDULE 10 FOR PIPE DIAMETERS LARGER THAN 2-IN.
5. SPRINKLERS PROVIDED IN FINISHED AREAS MUST BE ORDINARY TEMPERATURE RECESSED.
6. SPRINKLERS PROVIDED IN AREAS WITH EXPOSED CEILINGS MUST BE ORDINARY TEMPERATURE UPRIGHT.
7. SPRINKLERS MUST BE QUICK-RESPONSE.
8. AREAS ARE LIGHT HAZARD UNLESS OTHERWISE INDICATED ON CONTRACT DRAWINGS.
9. PROVIDE A MINIMUM OF SIX SPARE SPRINKLERS WITH AT LEAST TWO SPARE SPRINKLERS OF EACH TYPE AND TEMPERATURE CLASSIFICATION. PROVIDE SPARE SPRINKLER CABINET, WRENCHES, AND POSTED LIST OF ITEMS WITHIN THE CABINET. PROVIDE WITHIN 4-FT OF THE FIRE SPRINKLER RISER.
10. SPRINKLER COVERAGE MUST BE HYDRAULICALLY DESIGNED.
11. PIPE PENETRATIONS THROUGH FIRE RATED BARRIERS MUST BE PROVIDED WITH U.L. LISTED FIRE STOP SYSTEMS. THIS INCLUDES BUT IS NOT LIMITED TO STAIRS, FLOORS, CEILINGS AND SHAFTS.
12. UL CLASSIFICATIONS AND MATERIAL PRODUCT DATA SHEETS FOR FIRESTOPPING SYSTEMS MUST BE SUBMITTED AND APPROVED BEFORE FIRESTOPPING IS PROVIDED.
13. THESE DRAWINGS DEMONSTRATE THE CONFIGURATION OF MAJOR SYSTEM COMPONENTS. THEY ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO SHOW EXACT LOCATIONS. PIPE LENGTHS AND ELEVATIONS INDICATED ON THE DRAWINGS (IF SHOWN) ARE APPROXIMATE. COORDINATE FINAL INSTALLATION WITH ACTUAL FIELD CONDITIONS AND OTHER CONSTRUCTION TRADES. DESIGN THE SPRINKLER SYSTEM TO PROVIDE COMPLETE PROTECTION THROUGHOUT IN ACCORDANCE WITH NFPA 13.

FIRE SUPPRESSION LEGEND

- SPRINKLER PIPE
- OS&Y VALVE
- SUPERVISED CONTROL VALVE
- WATERFLOW SWITCH
- REDUCED PRESSURE BACKFLOW PREVENTER
- WALL MOUNT TEST HEADER
- WATERFLOW ALARM BELL
- 5" STORZ FIRE DEPARTMENT CONNECTION
- WET RISER
- SPRINKLER VALVE TAMPER SWITCH
- SPRINKLER WATER FLOW SWITCH
- XX — HAZARD CLASSIFICATION
- SPRINKLER RISER

SPRINKLER HAZARD LEGEND

ALL AREAS ARE LIGHT HAZARD UNLESS NOTED OTHERWISE. A MINIMUM DENSITY OF 0.10 GPM/SF WITH A DESIGN AREA OF 1,500 SF AND A HOSE ALLOWANCE OF 250 GPM MUST BE USED. SPRINKLER LAYOUT MUST COMPLY WITH NFPA 13 LIGHT HAZARD SPACING. SPRINKLERS MUST HAVE A MINIMUM K-FACTOR OF 5.6.

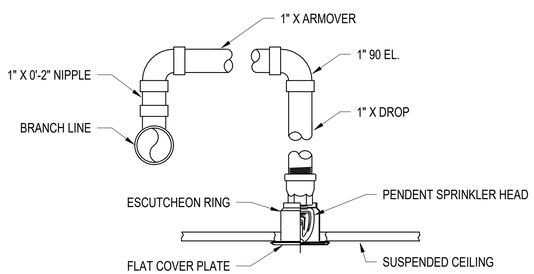
OH — ORDINARY HAZARD. A MINIMUM DENSITY OF 0.20-GPM/SF WITH A DESIGN AREA OF 2,500-SF AND A HOSE ALLOWANCE OF 250 GPM MUST BE USED. SPRINKLER LAYOUT MUST COMPLY WITH NFPA 13 ORDINARY HAZARD SPACING. SPRINKLERS MUST HAVE A MINIMUM K-FACTOR OF 8.0.

NOTE: NFPA 13 DESIGN AREA REDUCTION FOR QUICK RESPONSE SPRINKLERS IS NOT PERMITTED.

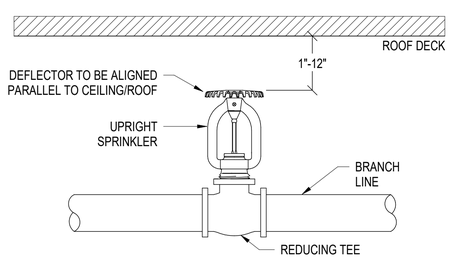
WATER SUPPLY

AVAILABLE.WATER SUPPLY TEST DATA IS AS FOLLOWS:

DATE TEST PERFORMED:	AUGUST 2, 2022
STATIC PRESSURE:	52-PSI
RESIDUAL PRESSURE:	38-PSI
FLOW RATE:	1000-GPM



A1 TYPICAL CONCEALED PENDENT SPRINKLER
N.T.S.



A2 TYPICAL UPRIGHT SPRINKLER
N.T.S.

SPACING BETWEEN HANGERS (STEEL PIPES)											
NOMINAL PIPE SIZE (in.)	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	5"	6"	8"
STEEL PIPE SCHEDULE 10	N/A	N/A	N/A	N/A	15-0	15-0	10-0	10-0	5-0	5-0	5-0
STEEL PIPE SCHEDULE 40	12-0	12-0	15-0	15-0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A4 HANGER SPACING CHART
N.T.S.

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ACTIVITY

SATISFACTORY TO

DES KEC | DRW KEC | CHK AJW

PM/DM

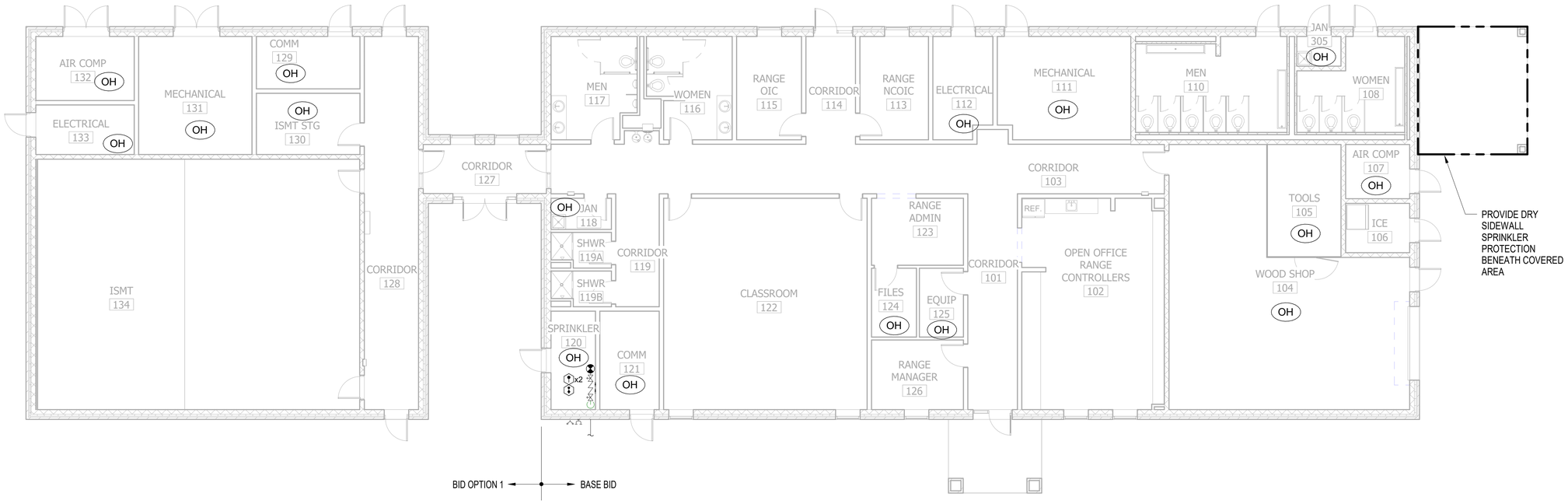
BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
[PT MARINE]
MARINE CORPS AIR STATION
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
FIRE SPRINKLER NOTES AND LEGEND

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO.: 12883126
SHEET 72 OF 121
FX001
DRAWFORM REVISION: 10 MARCH 2009



A1 FIRE SPRINKLER FLOOR PLAN
1/8" = 1'-0"

GRAPHIC SCALE: 1/8"=1'-0"
8' 0 4' 8' 16'

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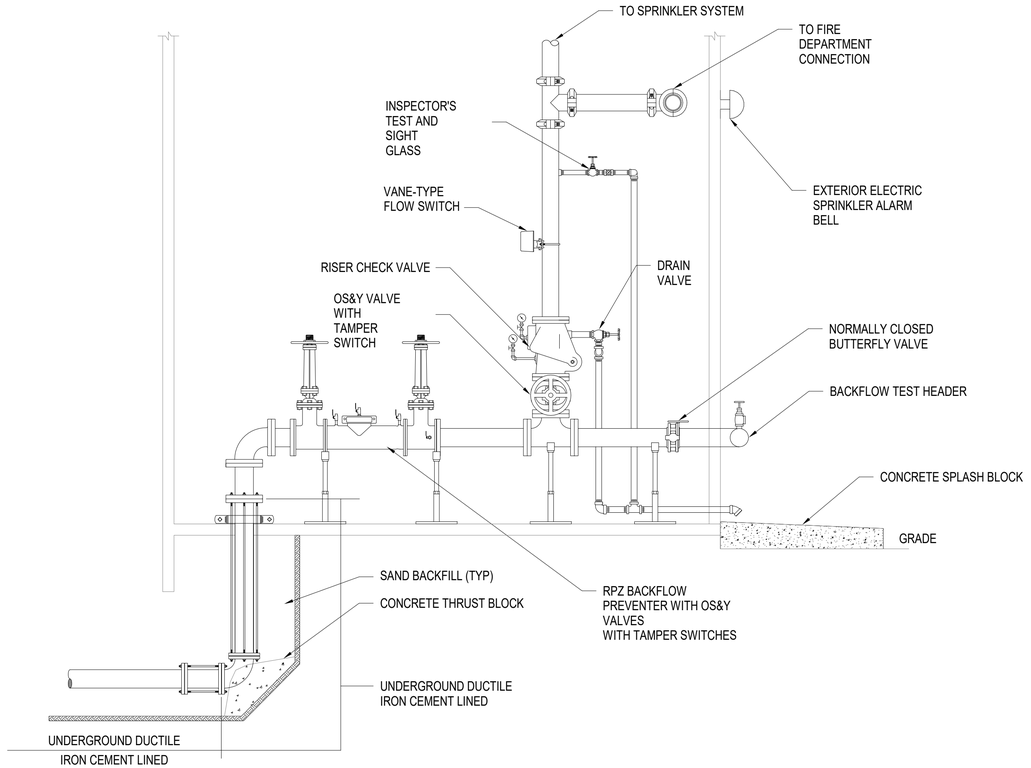
NAVAL FACILITIES ENGINEERING COMMAND – MIDATLANTIC
NAVAL STATION - NORFOLK, VA
IPT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
FIRE SPRINKLER FLOOR PLAN

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883127
SHEET 73 OF 121
FX101
DRAWFORM REVISION: 10 MARCH 2009



NOTE: PORTIONS OF THE DETAIL ARE ROTATED FOR CLARITY

A1 SPRINKLER RISER DETAIL

N.T.S.

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CHIEF ENG/ARCH

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA
1ST MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FIRE SPRINKLER DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883128
SHEET	74 OF 121

FX501

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PLUMBING LEGEND AND ABBREVIATIONS

———	SANITARY SEWER PIPING (W)
- - - - - - - - - -	VENT PIPING (V)
——-—-—-—-	COLD WATER PIPING (CW)
——--—--—--	HOT WATER PIPING (HW)
——-——--—--	HOT WATER RETURN PIPING (HWR)
	TEE TURNS UP
	ELL TURNS UP
	ELL TURNS DOWN
	TEE FROM BELOW
	CHECK VALVE
	BALL VALVE
	CLEANOUT IN GROUND (GCO)
	CLEANOUT IN FLOOR OR SLAB (FCO)
	CLEANOUT IN WALL (WCO)
P - #	PLUMBING FIXTURE - NO.
A.F.F.	ABOVE FINISH FLOOR
B.F.F.	BELOW FINISH FLOOR
FD - X	FLOOR DRAIN - TYPE (SEE SCHEDULE)
H.B.	HOSE BIBB
P.C.	PLUMBING CONTRACTOR
V.T.R.	VENT THROUGH ROOF
CV	COMMON VENT
BOCV	BEGINNING OF CIRCUIT VENT
EOCV	END OF CIRCUIT VENT
RPZ	REDUCED PRESSURE ZONE
HD	HUB DRAIN
FM	FORCE MAIN
TP	TRAP PRIMER

PLUMBING SUMMARY

SYSTEM & MATERIAL	FIXTURE UNITS	MAIN SIZE
WASTE AND VENT SYSTEM		
ABOVE SLAB: PVC DWV SCHEDULE 40 IPS SOLID WALL BELOW SLAB: PVC DWV SCHEDULE 40 IPS SOLID WALL	93	4"
DOMESTIC WATER SYSTEM		
BELOW SLAB: TYPE "K" SOFT COPPER WITH NO JOINTS BELOW SLAB ABOVE SLAB: TYPE "L" ANNEALED COPPER WITH 95/5 SOLDER JOINTS.	136.5	2" 74 GPM

PROJECT NOTES

1. COORDINATE WITH THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF PLUMBING FIXTURES AND DRAINS.
2. HOSE BIBBS MUST BE PROTECTED WITH AN APPROVED NON-REMOVABLE TYPE BACKFLOW PROTECTION DEVICE. HOSE BIBBS MUST BE MOUNTED AT 18" ABOVE FINISH FLOOR UNLESS OTHERWISE NOTED.
3. COORDINATE AND VERIFY SIZES, LOCATIONS, DEPTHS AND PIPING PRESSURES OF ALL BUILDING UTILITIES WITH CIVIL.
4. COORDINATE AND SCHEDULE TIMING FOR UTILITY SERVICE CONNECTION.
5. ALL LINES BELOW SLAB OR GRADE TO BE LOCATED AWAY FROM ALL LOAD BEARING FOOTINGS.
6. ALL VENTS THRU ROOF MUST BE A MINIMUM OF 18" VERTICAL AND TEN FEET HORIZONTAL AWAY FROM ALL AIR CONDITIONING FRESH AIR INTAKES AND PROVIDED WITH VANDAL PROOF HOODS.
7. COORDINATE ALL EQUIPMENT LOCATIONS, PIPE PENETRATIONS AND EQUIPMENT PAD LOCATIONS WITH STRUCTURAL DRAWINGS PRIOR TO WORK.
8. COORDINATE INSTALLATION OF ALL EQUIPMENT AND PIPING WITH OTHER TRADES PRIOR TO INSTALLATION. ENSURE THAT ALL CONTROL DEVICES, SHUT-OFF VALVES, ETC. ARE ACCESSIBLE FOR MAINTENANCE. WHERE ACCESS PANELS ARE REQUIRED IN FINISHED SPACES, OTHER THAN THAT SHOWN, CONTRACTOR MUST PROVIDE AND COORDINATE EXACT LOCATION OF PANELS WITH ARCHITECT PRIOR TO INSTALLATION.
9. PERFORM ALL WORK IN ACCORDANCE WITH UFC 3-420-01 PLUMBING SYSTEMS.
10. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL MATERIALS NECESSARY TO COMPLETE SCOPE OF WORK UNLESS OTHERWISE SPECIFIED.
11. INSTALLATION OF PLUMBING PIPING MUST BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS.
12. CONTRACTOR MUST NOT ORDER EQUIPMENT OR BEGIN FABRICATION OF PARTS PRIOR TO SHOP DRAWING APPROVAL.
13. TEST, BALANCE, STERILIZE AND FLUSH PIPING SYSTEMS. CLEAN ALL EQUIPMENT AND FIXTURES AT THE COMPLETION OF THE PROJECT. KEEP PREMISES CLEAN DURING CONSTRUCTION.
14. PROVIDE ACCESS DOORS/PANELS AT LOCATION OF VALVES AND OTHER COMPONENTS WHERE LOCATED ABOVE HARD CEILINGS OR INSIDE WALLS.
15. ALL SLOPES AND INVERT ELEVATIONS MUST BE VERIFIED BEFORE ANY PIPING IS INSTALLED IN ORDER TO INSURE THAT PROPER SLOPES ARE MAINTAINED.
16. ALL WATER LINES MUST HAVE SHUT-OFF VALVES AT CONNECTIONS OF FIXTURES AND EQUIPMENT. PROVIDE DRAIN VALVES AT PIPING LOW POINTS.
17. PIPE PENETRATIONS THROUGH FIRE OR SMOKE PARTITIONS, WALLS, AND/OR FLOORS MUST BE MADE FIRE AND SMOKE TIGHT. MAINTAIN FIRE RATING OF FLOOR AND WALL ASSEMBLIES IN ACCORDANCE WITH UL SYSTEMS. INSTALL PIPE PENETRATION ASSEMBLIES IN ACCORDANCE WITH UL LISTED MANUFACTURER'S RECOMMENDATIONS. PENETRATIONS MUST BE IN ACCORDANCE WITH IAW UL THROUGH-WALL DIRECTORY.
18. FIELD VERIFY CONDITIONS BEFORE STARTING CONSTRUCTION AND NOTIFY THE ARCHITECT/ENGINEER OF DISCREPANCIES WITH THE CONSTRUCTION DOCUMENTS AND/OR POTENTIAL PROBLEMS OBSERVED BEFORE COMMENCING WORK IN AFFECTED AREAS.
19. PROVIDE ALL NECESSARY HANGERS FOR SUPPORT OF HORIZONTAL AND VERTICAL PIPING IN ACCORDANCE WITH GOOD PRACTICE AND MANUFACTURER'S RECOMMENDATIONS. PROVIDE SLEEVES AND ESCUTCHEONS FOR ALL PIPING PASSING THROUGH WALLS AND FLOORS.
20. IN GENERAL, ALL PIPING MUST BE RUN CONCEALED IN SUSPENDED CEILING AND PIPE SPACES PROVIDED UNLESS NOTED OR INDICATED OTHERWISE.
21. DEAD ENDS MUST BE PROHIBITED IN THE INSTALLATION OF ANY PART OF THE DRAINAGE SYSTEM (EXCEPT FUTURE PROVISIONS).
22. PENETRATIONS FOR SHOWER HEAD ROUGH-INS MUST BE MADE WATERTIGHT BY CAULKING THE SHOWER HEAD ESCUTCHEON PLATES TO FINISHED SURFACE.

SYM	DESCRIPTION	DATE	APPR

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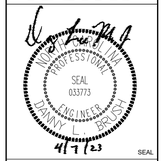

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Raleigh, North Carolina, 27609
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ACTIVITY

SATISFACTORY TO

DES	PRC	DRW	DJG	CHK	DLB

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
IPT MARINE
MARINE CORPS AIR STATION

NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.

CHERRY POINT, NC

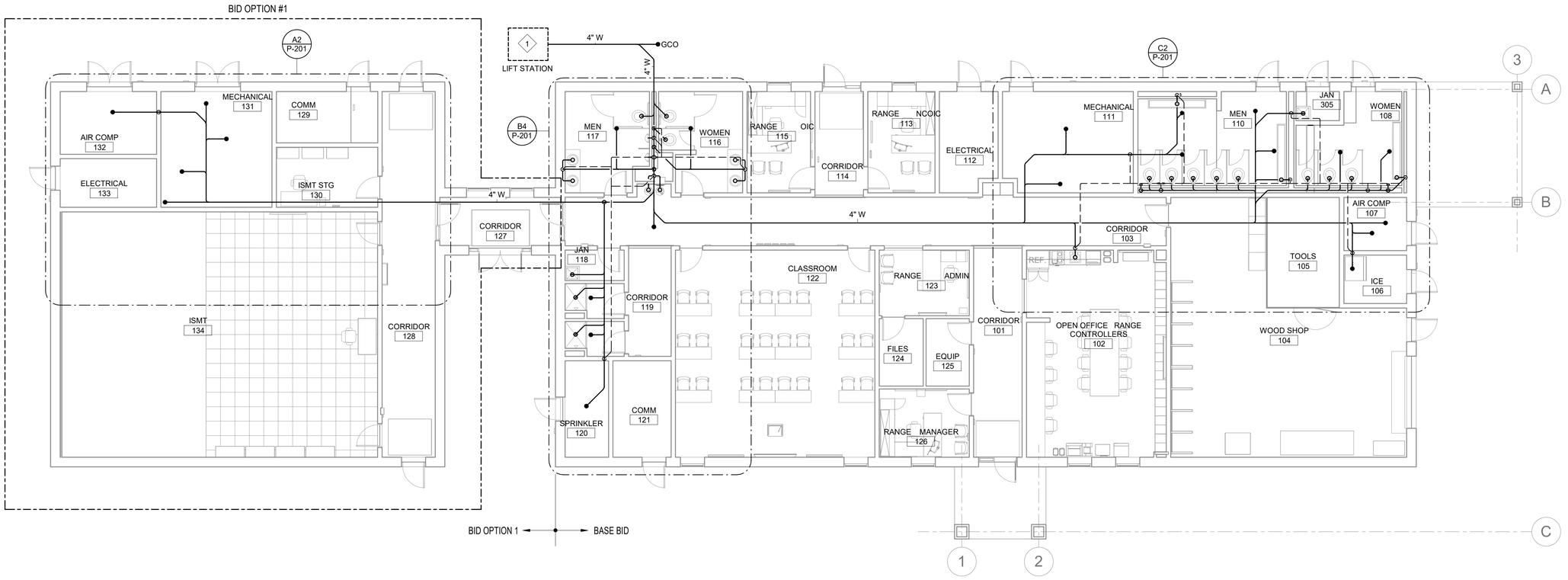
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

PLUMBING COVER SHEET

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883129
SHEET	75 OF 121

P-001

DRAWFORM REVISION: 10 MARCH 2009



A3 FLOOR PLAN - WASTE AND VENT

1/8" = 1'-0"

N

PLAN NOTES - P-101

1 4"W TO SANITARY LIFT STATION PROVIDED BY OTHERS. SEE SITE PLAN FOR EXACT LOCATION OF LIFT STATION AND CONTINUATION OF SANITARY SEWER FORCE MAIN PIPING.

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

8' 0 4' 8' 16'

SYM	DESCRIPTION	DATE	APPR

NAVFAC

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BRANCH MANAGER

CHIEF ENG/ARCH

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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
IPT MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FLOOR PLAN - WASTE AND VENT

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883130
SHEET	76 OF 121

P-101

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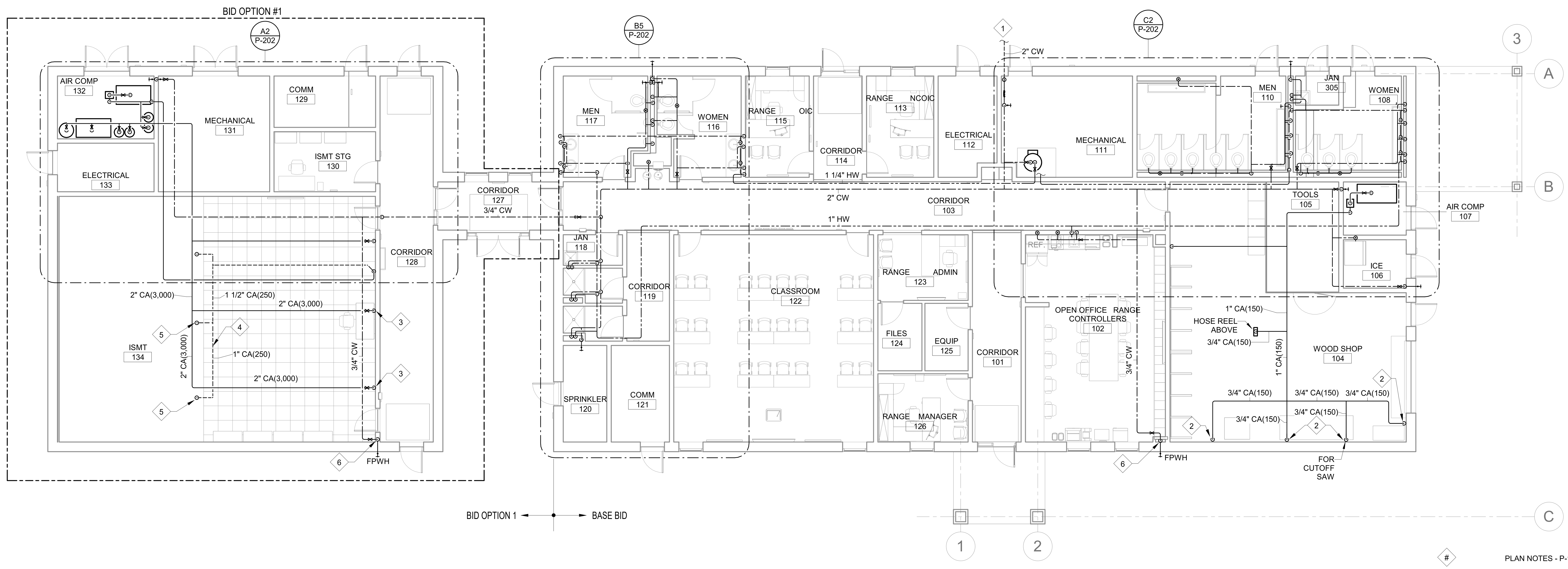

A3 FLOOR PLAN - WATER AND COMPRESSED AIR

1/8" = 1'-0"

N

PLAN NOTES - P-102

#	
1	2"CW TO SITE UTILITY. SEE SITE PLAN FOR CONTINUATION OF DOMESTIC WATER PIPING.
2	DROP 3/4" COMPRESSED AIR DOWN WALL. PROVIDE QUICK CONNECT FITTING (MALE & FEMALES), SHUTOFF VALVE, AND 6" DIRT LEG AT CONNECTION. SEE DETAIL B3 ON P-502 FOR MORE INFORMATION.
3	2" 3,000 PSI COMPRESSED AIR WITH REGULATOR ASSEMBLY MAXIMUM 18" ABOVE WORK TABLE COMPLETE WITH DRIP LEG AND BLOWDOWN VALVE. SEE D4 ON SHEET P-502.
4	250 PSI COMPRESSED AIR PIPING ROUTED BELOW RAISED ACCESS FLOOR.
5	COMPRESSED AIR REGULATOR ASSEMBLY WITH THREE OUTLETS (100 PSI, 125 PSI, 150 PSI). SEE DETAIL B4 ON SHEET P-502.
6	DROP 3/4"CW DOWN WALL TO FREEZE PROOF WALL HYDRANT. MOUNT AT 18" AFF.

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

8' 0 4' 8' 16'

SYM	DESCRIPTION	DATE	APPR

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CHIEF ENG/ARCH

FIRE PROTECTION

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NAVAL FACILITIES ENGINEERING COMMAND
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NAVAL STATION - NORFOLK, VA
IPT MARINE
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CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FLOOR PLAN - WATER AND COMPRESSED AIR

SCALE: AS INDICATED

EPROJECT NO.: 1715336

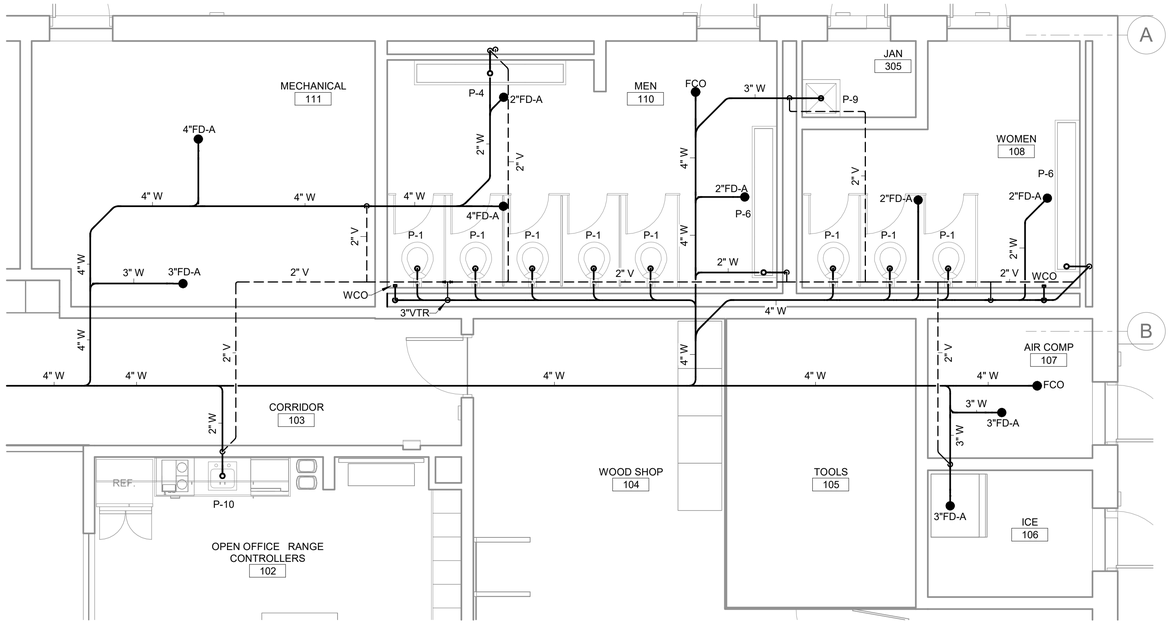
STA. PROJ. NO.: 7290158

NAVFAC DRAWING NO. 12883131

SHEET 77 OF 121

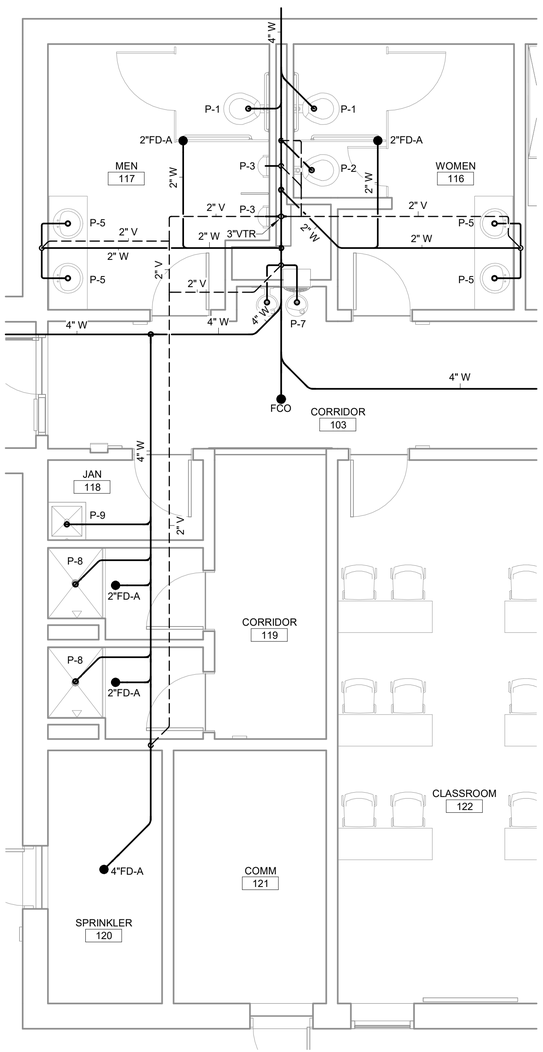
P-102

DRAWFORM REVISION: 10 MARCH 2009



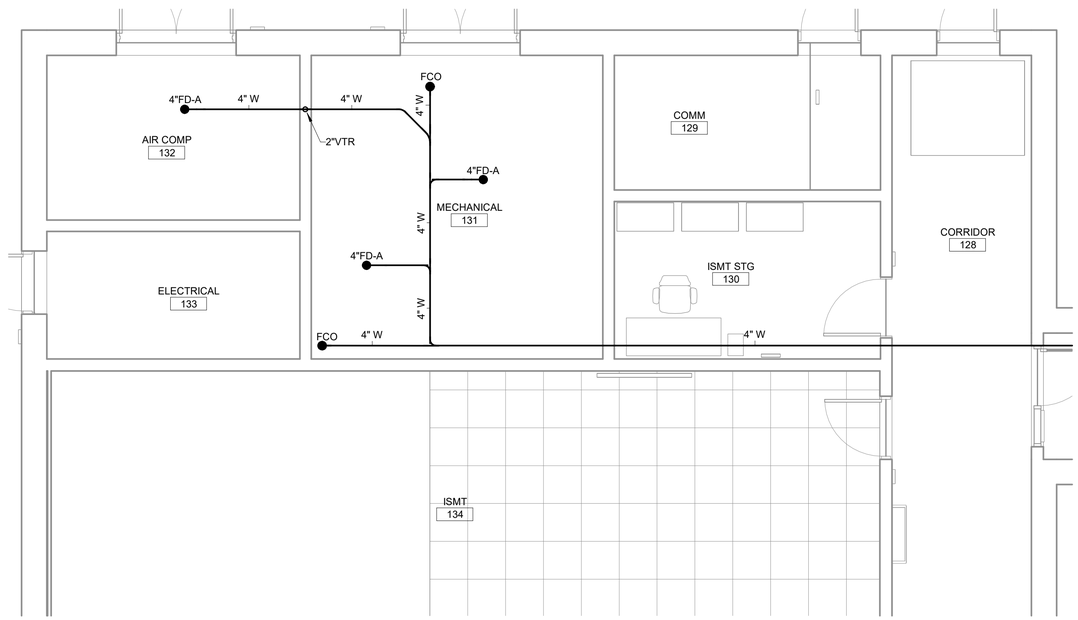
C2 ENLARGED PLAN - EAST - WASTE AND VENT

1/4" = 1'-0"



B4 ENLARGED PLAN - CENTRAL - WASTE AND VENT

1/4" = 1'-0"



A2 ENLARGED PLAN - WEST - WASTE AND VENT

1/4" = 1'-0"

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

4' 0 2' 4' 8'

APPR	DATE	DESCRIPTION	SYM

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CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ENLARGED PLANS - WASTE AND VENT

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
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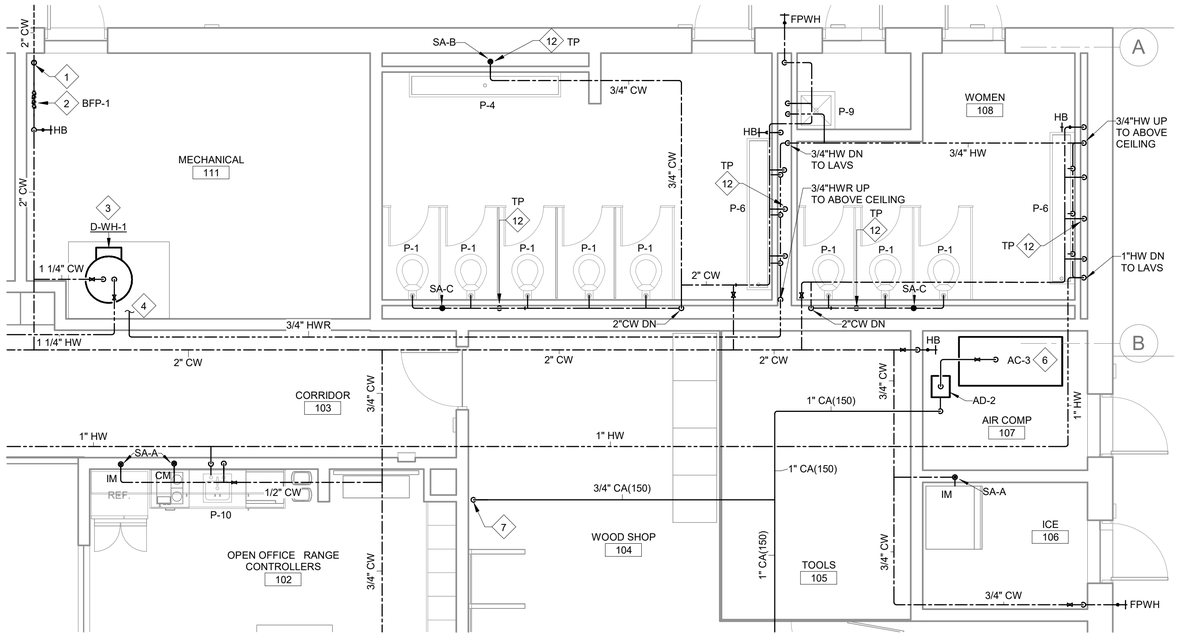
SHEET	78 OF 121

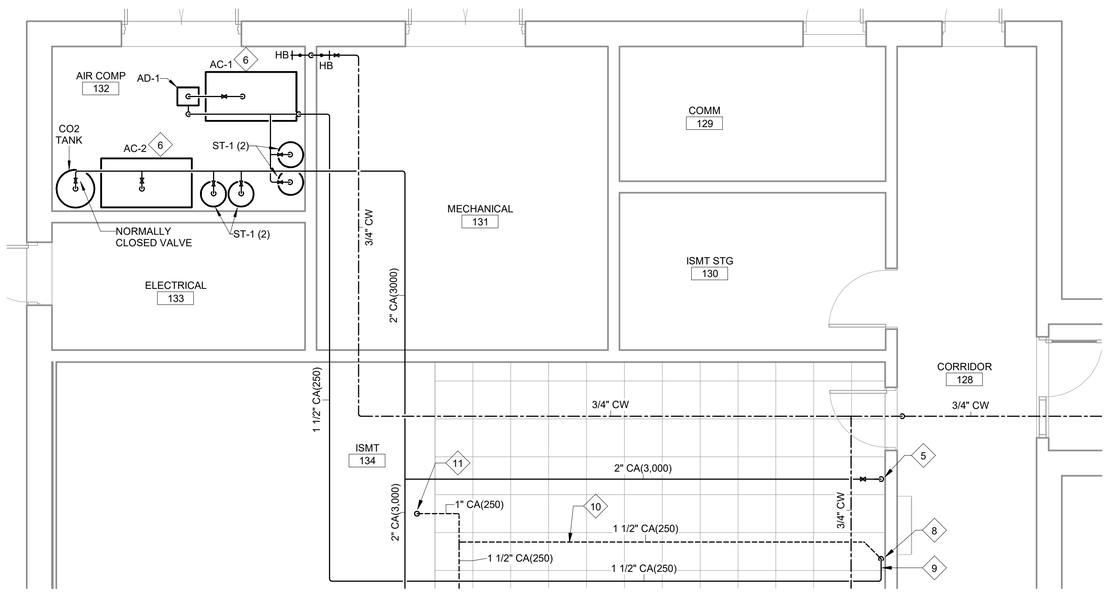
P-201

DRAWFORM REVISION: 10 MARCH 2009



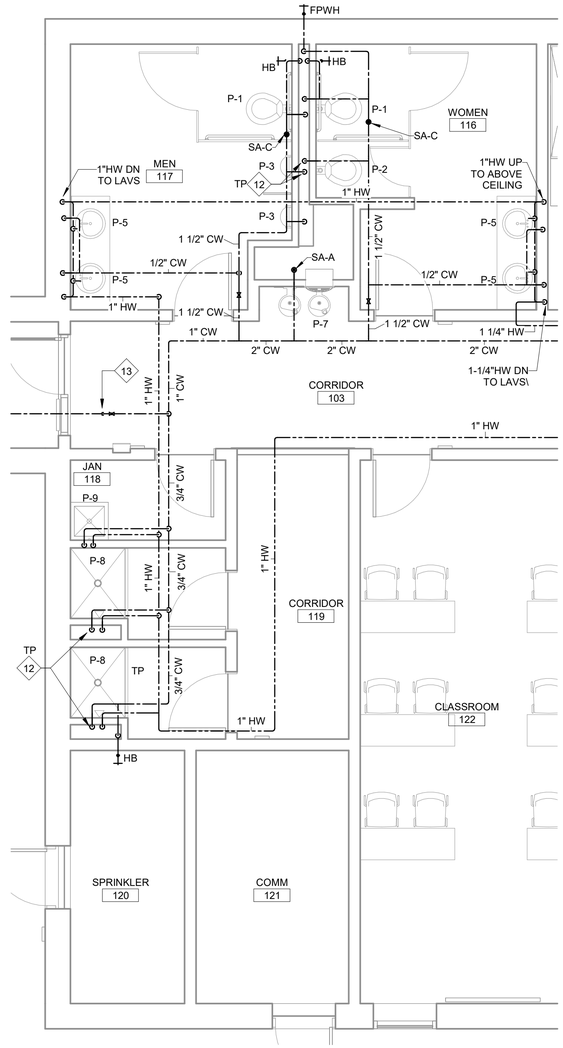
C2 ENLARGED PLAN - EAST - WATER AND COMPRESSED AIR

1/4" = 1'-0"



A2 ENLARGED PLAN - WEST - WATER AND COMPRESSED AIR

1/4" = 1'-0"



B5 ENLARGED PLAN - CENTRAL - WATER

1/4" = 1'-0"

#	PLAN NOTES - P-202
1	TURN 2" DOMESTIC WATER MAIN UP ABOVE SLAB AT THIS LOCATION. PROVIDE MAIN SHUTOFF VALVE IN ACCESSIBLE LOCATION.
2	2" RPZ TYPE BACKFLOW PREVENTER. SEE BACKFLOW PREVENTER DETAIL FOR MORE INFORMATION.
3	119 GALLON ELECTRIC WATER HEATER ON HOUSE KEEPING PAD. ROUTE 1" PIPE FROM DRAIN PAN TO NEARBY FLOOR DRAIN. SEE WATER HEATER DETAIL FOR MORE INFORMATION.
4	SEE WATER HEATER DETAIL FOR CONTINUATION OF HOT WATER RECIRCULATION PIPING.
5	2" 3,000 PSI COMPRESSED AIR WITH REGULATOR ASSEMBLY MAXIMUM 18" ABOVE WORK TABLE COMPLETE WITH DRIP LEG AND BLOWDOWN VALVE. SEE C4 ON SHEET P-502.
6	SEE AIR COMPRESSOR SCHEDULE AND DETAILS FOR MORE INFORMATION.
7	DROP 3/4" COMPRESSED AIR DOWN WALL. PROVIDE QUICK CONNECT FITTING (MALE & FEMALES), SHUTOFF VALVE, AND 6" DIRT LEG AT CONNECTION. SEE DETAIL B3 ON P-502 FOR MORE INFORMATION.
8	1-1/2" 250 PSI COMPRESSED AIR DOWN TO BELOW RAISED ACCESS FLOOR.
9	250 PSI COMPRESSED AIR WITH REGULATOR ASSEMBLY, SHUT OFF VALVE, DRIP LEG AND BLOWDOWN VALVE. SEE DETAIL B3 ON SHEET P-502 FOR TYPICAL AIR DROP DETAIL.
10	250 PSI COMPRESSED AIR PIPING ROUTED BELOW RAISED ACCESS FLOOR.
11	COMPRESSED AIR REGULATOR ASSEMBLY WITH THREE OUTLETS (100 PSI, 125 PSI, 150 PSI). SEE DETAIL B4 ON SHEET P-502.
12	DROP 1/2"CW TO TRAP PRIMER VALVE. ROUTE 1/2"CW BELOW SLAB TO FLOOR DRAIN'S TRAP PRIMER CONNECTION.
13	PROVIDE BALL VALVE AND CAP WATER PIPING ABOVE CEILING AS PART OF BID OPTION 1.

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

4' 0 2' 4' 8'

APPR | DATE | DESCRIPTION | SYM

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ACTIVITY

SATISFACTORY TO

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PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
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NAVAL STATION - NORFOLK, VA

CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ENLARGED PLANS - WATER AND COMPRESSED AIR

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883133
SHEET 79 OF 121

P-202

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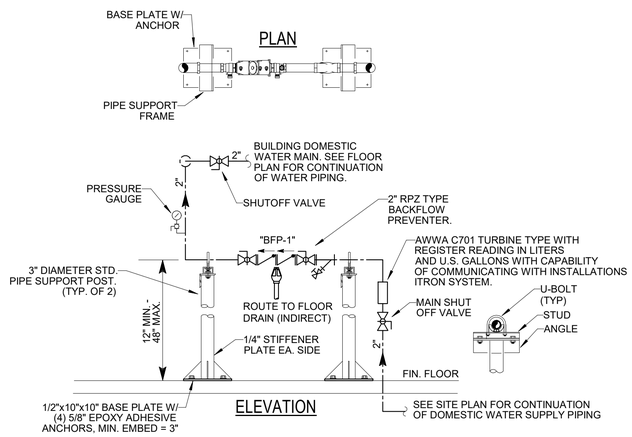
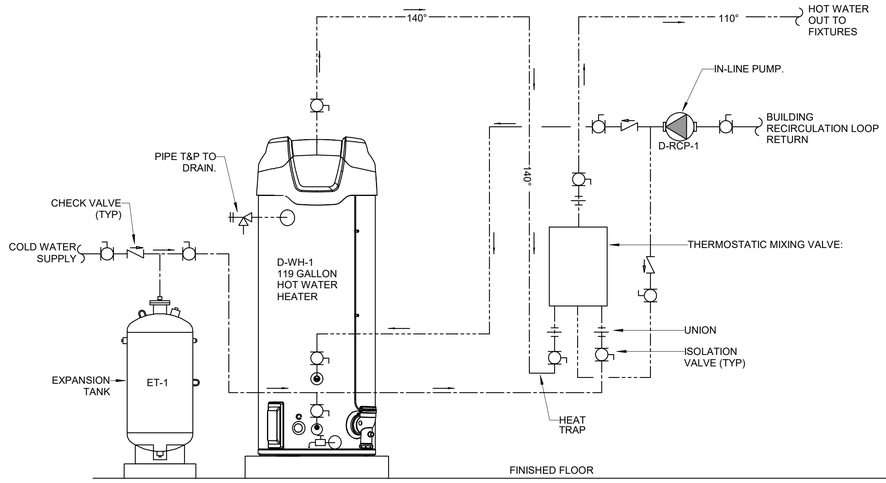
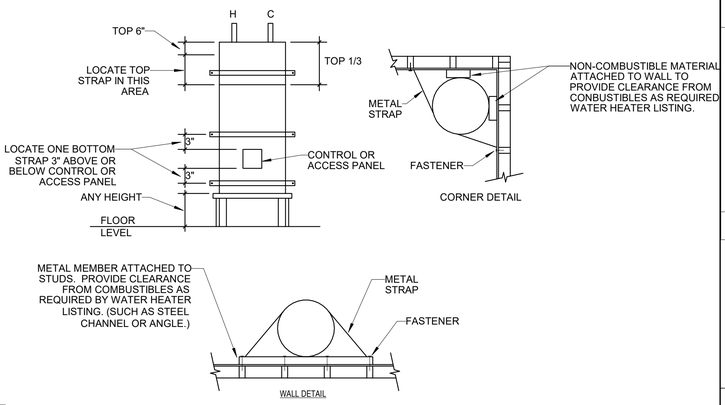


D1 BACKFLOW PREVENTER DETAIL
NTS



D3 WATER HEATER DETAIL (D-WH-1)
NTS



D4 SEISMIC BRACING DETAIL
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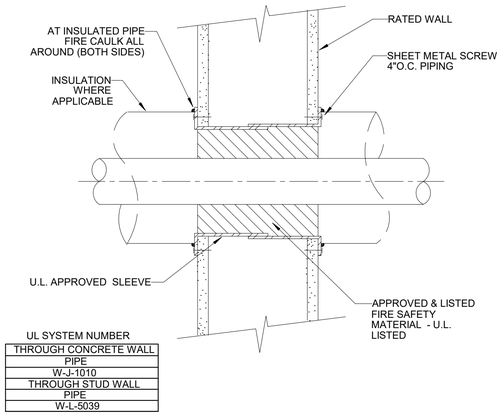
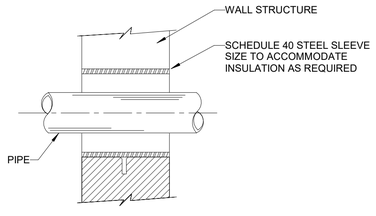


UL SYSTEM NUMBER
THROUGH CONCRETE WALL
PIPE
W-J-1010
THROUGH STUD WALL
PIPE
W-L-5039

B1 PIPE THRU FIRE WALL DETAIL
NTS



B2 PIPE THRU NON-RATED WALL DETAIL
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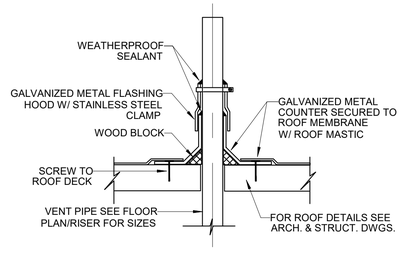

B3 VENT THRU ROOF DETAIL
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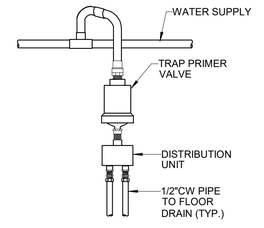

B4 TRAP PRIMER DETAIL
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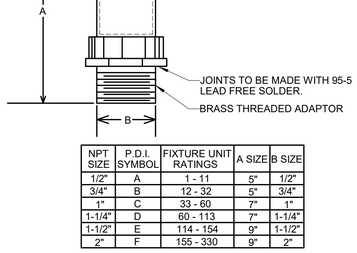
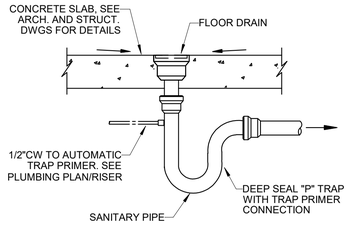


NPT SIZE	P.D.I SYMBOL	FIXTURE UNIT RATINGS	A SIZE	B SIZE
1/2"	A	1 - 11	5"	1/2"
3/4"	B	12 - 32	5"	3/4"
1"	C	33 - 60	7"	1"
1-1/4"	D	60 - 113	7"	1-1/4"
1-1/2"	E	114 - 154	9"	1-1/2"
2"	F	155 - 330	9"	2"

B5 SHOCK ABSORBER DETAIL
NTS



A1 FLOOR DRAIN DETAIL
NTS

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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
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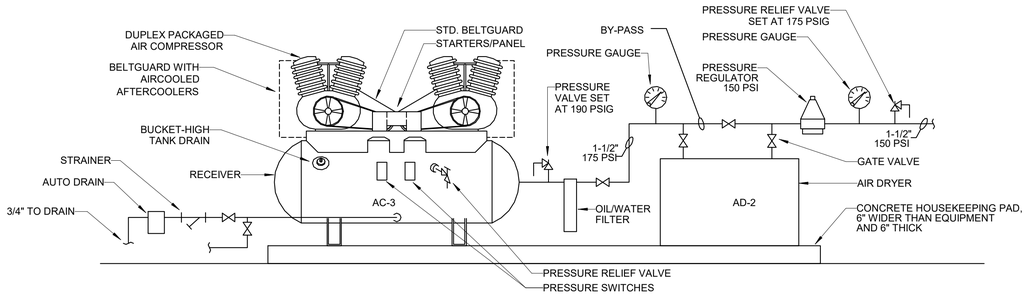
NAVAL STATION - NORFOLK, VA.
1PT MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
PLUMBING DETAILS

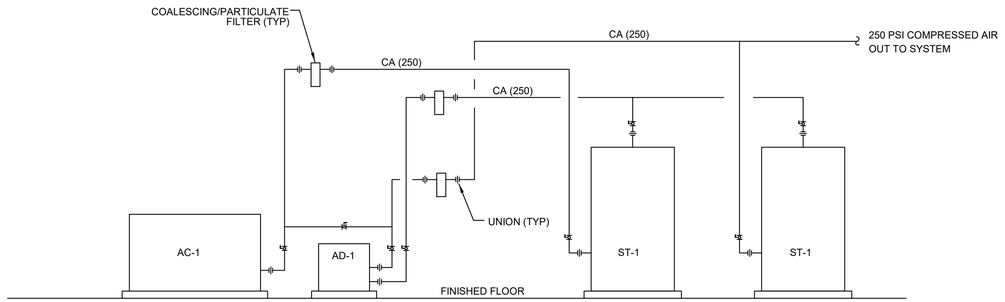
SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883134
SHEET 80 OF 121

P-501

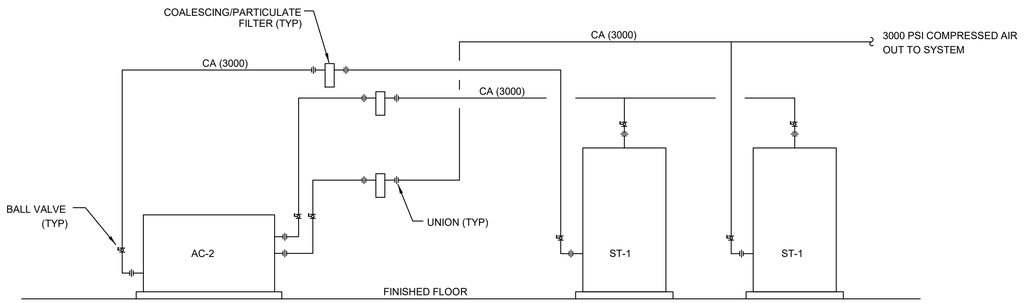
DRAWFORM REVISION: 10 MARCH 2009



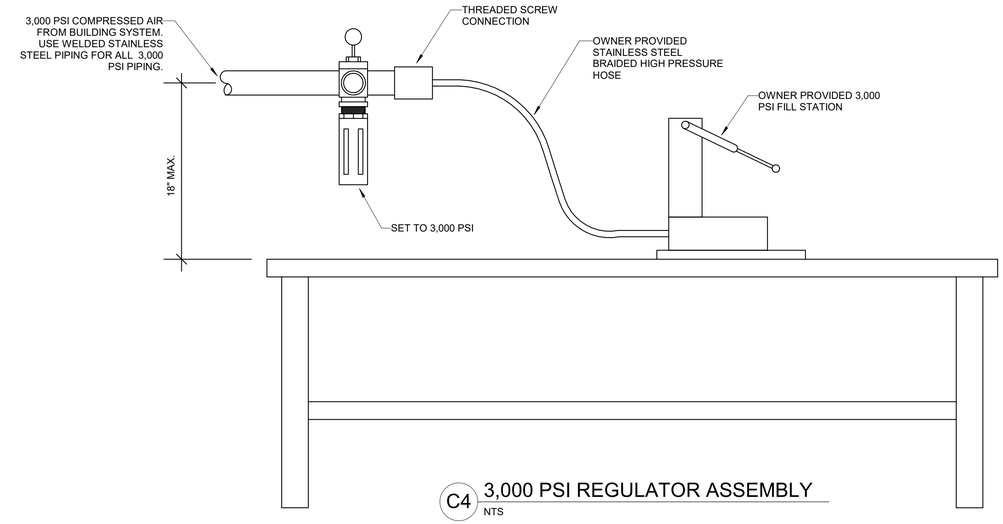
D2 AIR COMPRESSOR DETAIL - LOW PRESSURE
NTS



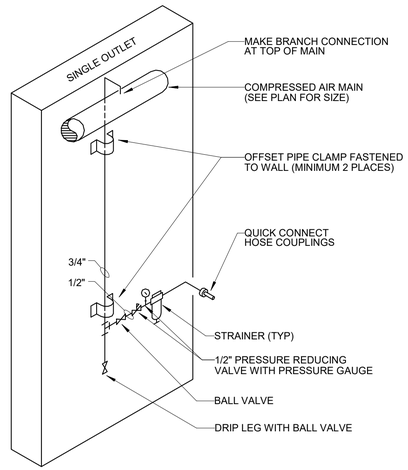
C2 AIR COMPRESSOR DETAIL - MEDIUM PRESSURE
NTS



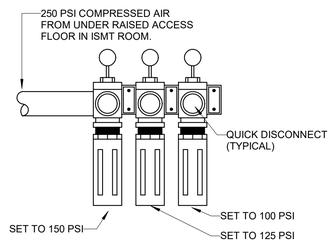
B2 AIR COMPRESSOR DETAIL - HIGH PRESSURE
NTS



C4 3,000 PSI REGULATOR ASSEMBLY
NTS



B3 TYPICAL COMPRESSED AIR DROP
NTS



B4 250 PSI REGULATOR ASSEMBLY
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NAVAL STATION - NORFOLK, VA
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MARINE CORPS AIR STATION
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P-196U CONSTRUCT RANGE OPERATIONS FACILITY
PLUMBING DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
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NAVFAC DRAWING NO.
12883135

SHEET 81 OF 121

P-502

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PLUMBING EQUIPMENT SCHEDULE

TAG	TYPE	DESCRIPTION	LOCATION
D-WH-1	DOMESTIC WATER HEATER	ELECTRIC WATER HEATER, 119 GALLON STORAGE, MIN. 95% THERMAL EFFICIENCY, 30kW, 208V, 3 PHASE, 154 GPH RECOVERY @ 80° F RISE,	MECHANICAL 111
D-RCP-1	DOMESTIC HOT WATER RECIRCULATING PUMP	1/6 HP, 115V, 7 GPM, 5' HEAD, IN-LINE, SINGLE STAGE WET ROTOR TYPE, WITH BOTH TIMER AND THERMOSTATIC CONTROLLERS.	MECHANICAL 111
ET-1	EXPANSION TANK	20 GALLON CAPACITY, 15 GALLON ACCEPTANCE VOLUME, MAXIMUM WORKING PRESSURE OF 150 PSI AND MAXIMUM TEMPERATURE OF 180° F.	MECHANICAL 111
BFP-1 (2")	BACKFLOW PREVENTER	THE ASSEMBLY SHALL MEET THE REQUIREMENTS OF ASSE 1013 AND BE PROVIDED TO PREVENT BACKFLOW DUE TO BACKSIPHONAGE AND/OR BACKPRESSURE.	MECHANICAL 111
TMV-1	THERMOSTATIC MIXING VALVE	THERMOSTATIC MIXING VALVE DESIGN PARAMETER: RATED FOR 1 GPM MINIMUM FLOW AND 35 GPM MAXIMUM FLOW. WITH MAX. 10 PSI PRESSURE DROP	MECHANICAL 111
WM-1	WATER METER	AWWA C701 TURBINE TYPE METER WITH REGISTER READING IN LITERS AND U.S. GALLONS.	MECHANICAL 111

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	PIPE SERVICE AND CONN. SIZE				REMARKS
		CW	HW	WASTE	VENT	
P-1	WATER CLOSET FLR. MTD. HANDICAPPED	1"	-	4"	2"	SEE SPECIFICATIONS
P-2	WATER CLOSET FLR. MTD.	1"	-	4"	2"	SEE SPECIFICATIONS
P-3	URINAL WALL MTD.	3/4"	-	2"	2"	SEE SPECIFICATIONS
P-4	URINAL TROUGH	3/4"	-	2"	2"	SEE SPECIFICATIONS
P-5	LAVATORY WALL HUNG	1/2"	1/2"	2"	2"	SEE SPECIFICATIONS
P-6	LAVATORY TROUGH	1/2"	1/2"	2"	2"	SEE SPECIFICATIONS
P-7	ELECTRIC WATER COOLER W/ BOTTLE FILLING STATION HANDICAPPED	1/2"	-	2"	2"	SEE SPECIFICATIONS
P-8	SHOWER	1/2"	1/2"	2"	2"	SEE SPECIFICATIONS
P-9	MOP SINK	1/2"	1/2"	3"	2"	SEE SPECIFICATIONS
P-10	SINK SINGLE BOWL UNDERMOUNT	1/2"	1/2"	2"	2"	SEE SPECIFICATIONS

PLUMBING ACCESSORIES SCHEDULE

MARK	DESCRIPTION	BASIS OF DESIGN FIXTURE SPECIFICATIONS
TP	TRAP PRIMER	PRESSURE DROP ACTIVATED TRAP PRIMER VALVE.
FD-A	FLOOR DRAIN	CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH 6" POLISHED NICKEL BRONZE SQUARE STRAINER. PROVIDE DEEP SEAL TRAPS FOR DRAINS.
FD-B	FLOOR DRAIN	CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH 7" DIAMETER RECESSED POLISHED NICKEL BRONZE STRAINER. PROVIDE DEEP SEAL TRAPS FOR DRAINS.
FCO	FLOOR CLEAN OUT	ADJUSTABLE FLOOR CLEANOUT, COATED CAST IRON BODY WITH GAS AND WATERTIGHT ABS TAPERED THREAD PLUG AND ROUND SCORIATED POLISHED NICKEL BRONZE TOP ADJUSTABLE TO FINISH FLOOR.
GCO	FLOOR CLEAN OUT	ADJUSTABLE GROUND CLEANOUT, CAST IRON BODY WITH GAS AND WATERTIGHT ABS TAPERED THREAD PLUG AND ROUND POLISHED NICKEL BRONZE TOP ADJUSTABLE TO FINISHED GRADE.
WCO	WALL CLEAN OUT	WALL CLEANOUT, COATED CAST IRON BODY WITH GAS AND WATERTIGHT ABS TAPERED THREAD PLUG AND ROUND SMOOTH STAINLESS STEEL ACCESS COVER WITH SECURING SCREW.
SA	SHOCK ABSORBER	WATER HAMMER ARRESTOR TO MEET ALL REQUIREMENTS OF ASSE 1010
VB	VACUUM BREAKER	VACUUM BREAKER TO MEET ALL REQUIREMENTS OF ASSE 1022
IM	ICE MAKER	1/4 TURN BRASS BALL HAMMER BALL VALVE COPPER SWEAT, WALL MOUNTED AT 36" AFF. PROVIDE TUBING AND NECESSARY FITTINGS FOR FINAL CONNECTION.
CM	COFFEE MAKER	1/4 TURN BRASS BALL HAMMER BALL VALVE COPPER SWEAT, WALL MOUNTED AT 18" AFF. PROVIDE TUBING, GROMIT FOR CONTERTOP, AND NECESSARY FITTINGS FOR FINAL CONNECTION. COORDINATE WITH MILLWORK PROVIDER.
HB	HOSE BIBB	EXPOSED ANTI-SIPHON AUTOMATIC DRAINING WALL HYDRANT COMPLETE WITH INTEGRAL BACKFLOW PREVENTER, ALL BRONZE INTERIOR PARTS, AND POLISHED CHROME FACE WITH OPERATING KEY.
FPWH	FREEZE PROOF WALL HYDRANT - KEYED	WALL HYDRANT WITH ANTI-SIPHON VACUUM BREAKER, AND LOOSE TEE KEY OPERATION.

AIR COMPRESSOR SCHEDULE

TAG	TYPE	DESCRIPTION	LOCATION
AC-1	RECIRPROCATING SKID MOUNT AIR COMPRESSOR	27.5 ACFM OUTPUT, 250 PSI PRESSURE OUTLET, 10 HP MOTOR 208V, 3 PHASE.	AIR COMP 132
AC-2	RECIRPROCATING SKID MOUNT AIR COMPRESSOR	14.1 ACFM OUTPUT, 3,000 PSI PRESSURE OUTLET, 10 HP MOTOR 208V, 3 PHASE. AIR DRYER ON 200 GALLON RECEIVER TANK.	AIR COMP 132
AC-3	RECIRPROCATING SKID MOUNT AIR COMPRESSOR	35 ACFM OUTPUT, 175 PSI PRESSURE OUTLET, 10 HP MOTOR 208V, 3 PHASE, MOUNTED ON 200 GALLON RECEIVER TANK.	AIR COMP 107

AIR DRYER SCHEDULE

TAG	TYPE	DESCRIPTION	LOCATION
AD-1	REFRIGERATED AIR DRYER	725 PSI MAXIMUM PRESSURE, 120V, 1 PHASE.	AIR COMP 132
AD-2	REFRIGERATED AIR DRYER	250 PSI MAXIMUM PRESSURE, 120V, 1 PHASE.	AIR COMP 107

AIR RECEIVER TANK SCHEDULE

TAG	TYPE	DESCRIPTION	LOCATION
ST-1	AIR RECEIVER	VERTICAL, 55 GALLON STORAGE RATED AT 5,000 PSI.	AIR COMP 132

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NAVAL STATION - NORFOLK, VA.
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P-196U CONSTRUCT RANGE OPERATIONS FACILITY
PLUMBING SCHEDULES

SCALE: AS INDICATED
EPROJECT NO.: 1715336
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NAVFAC DRAWING NO.: 12883136
SHEET 82 OF 121

P-601

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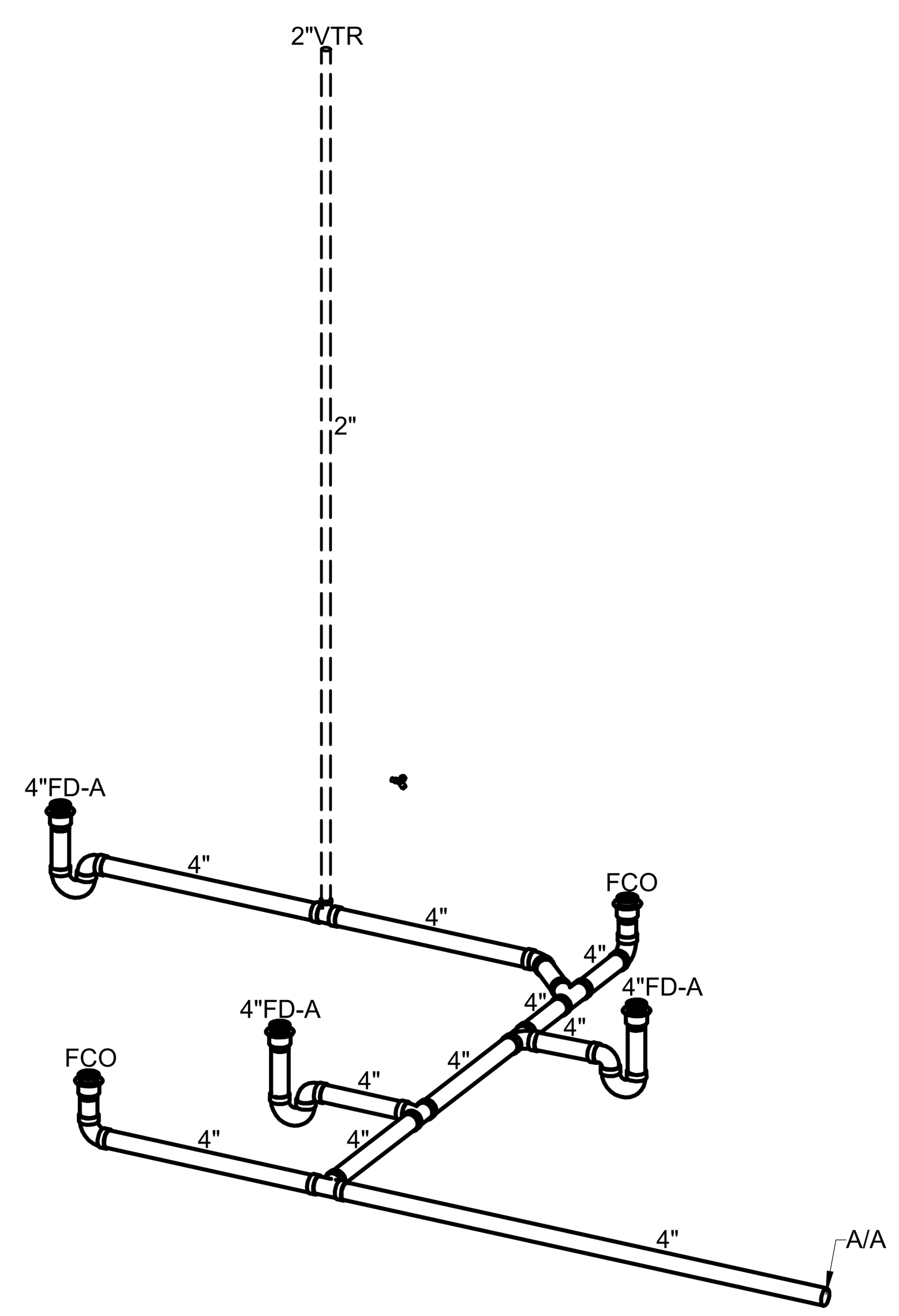
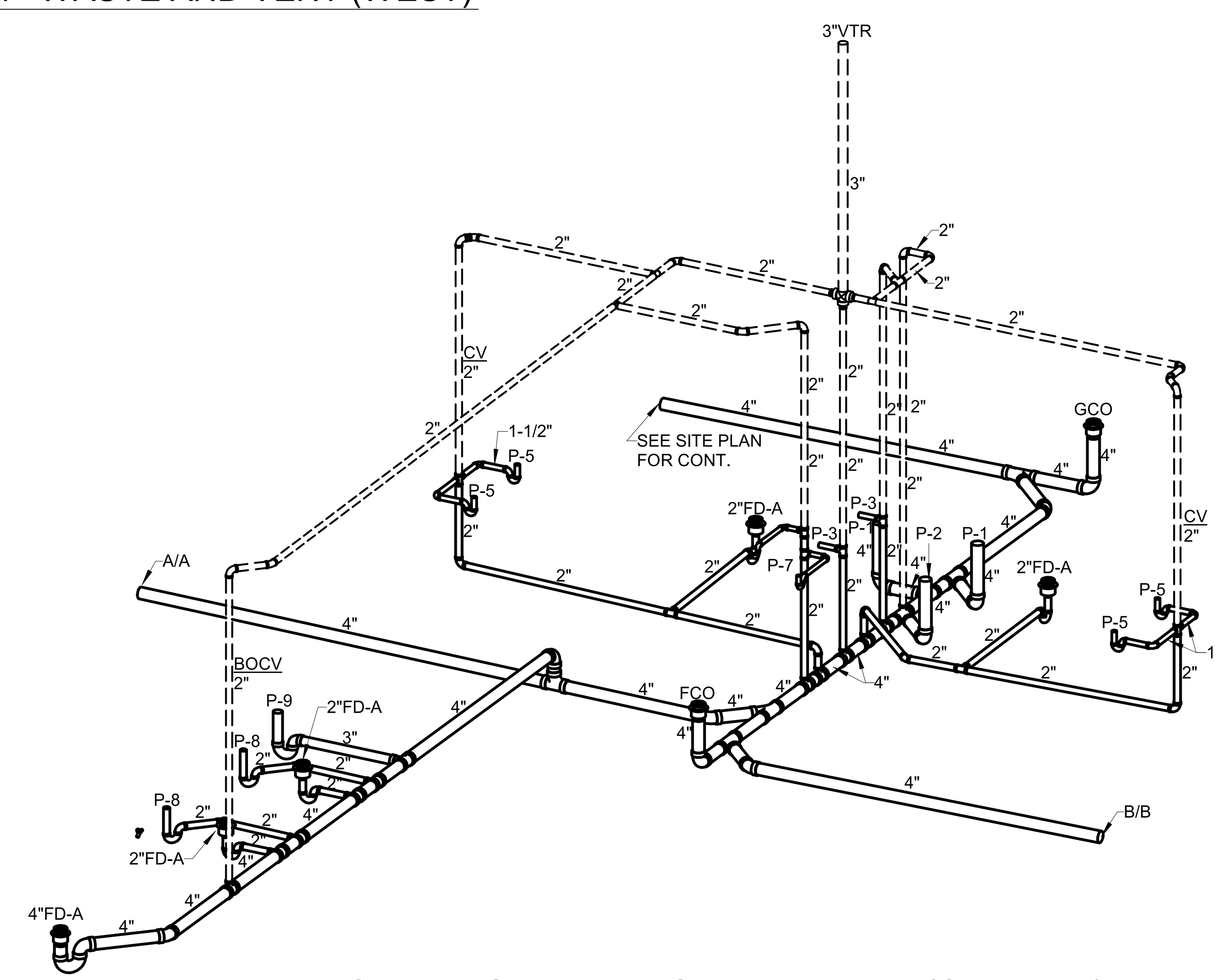
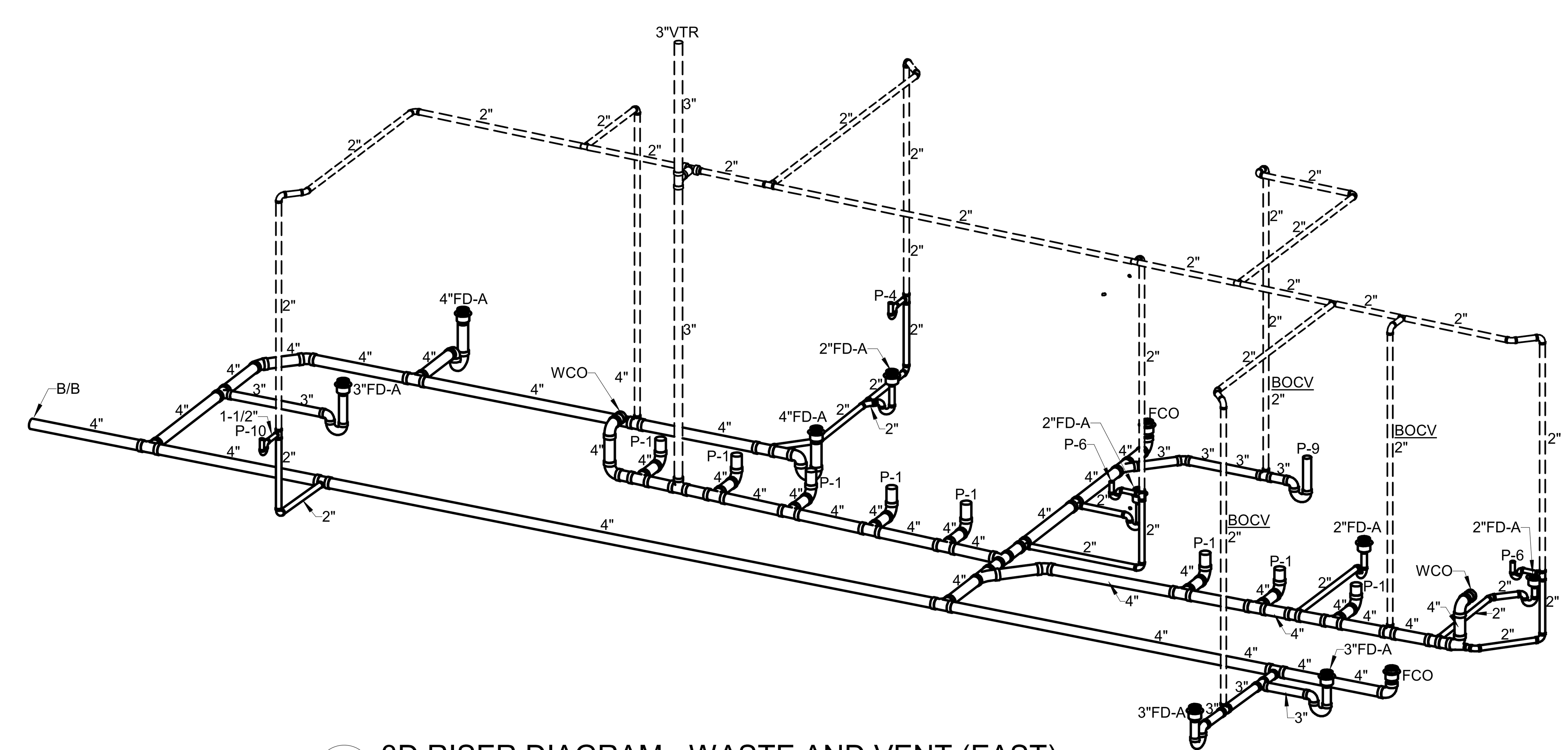


C1 3D RISER DIAGRAM - WASTE AND VENT (WEST)
NTS



A2 3D RISER DIAGRAM - WASTE AND VENT (CENTRAL)
NTS



A4 3D RISER DIAGRAM - WASTE AND VENT (EAST)
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4/7/23

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RISER DIAGRAMS - WASTE AND VENT

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SHEET	83 OF 121

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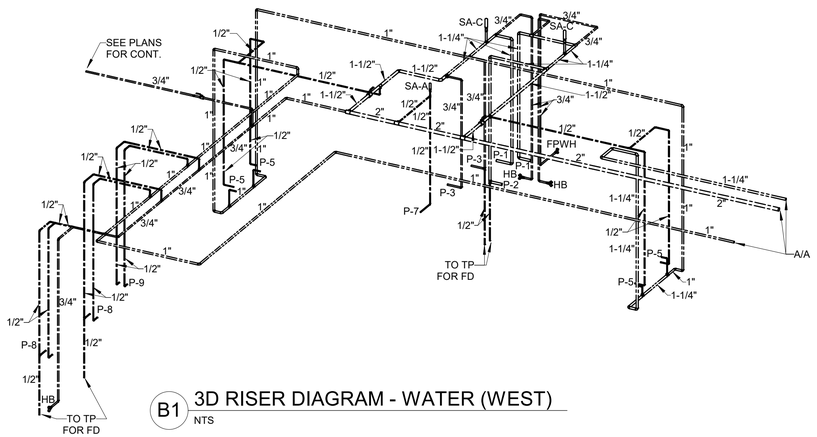
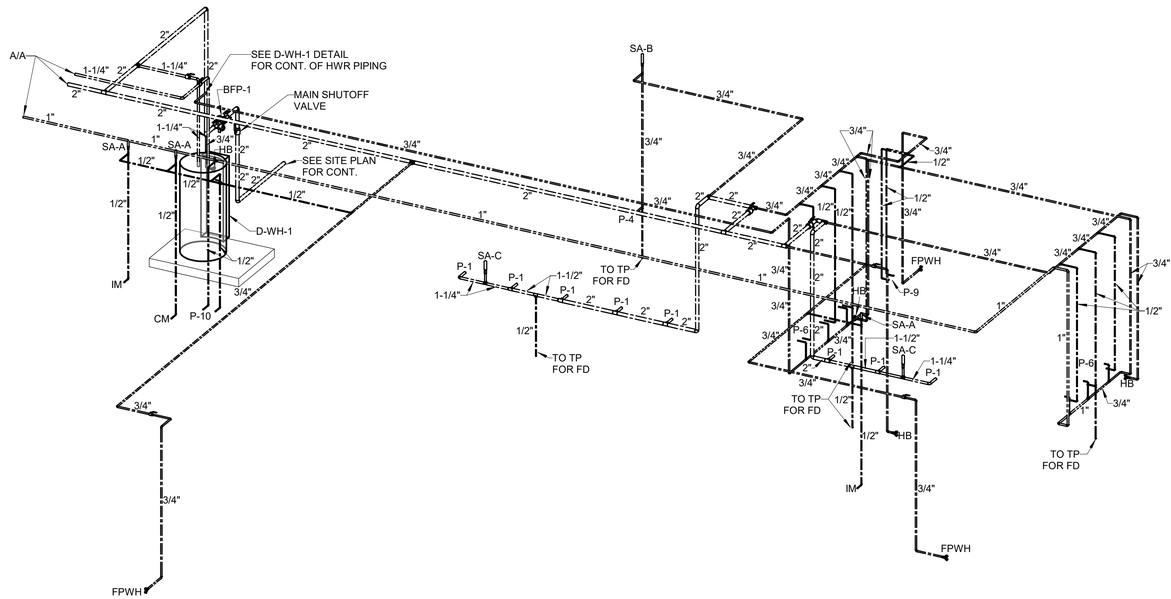


B1 3D RISER DIAGRAM - WATER (WEST)
NTS



A4 3D RISER DIAGRAM - WATER (EAST)
NTS

SYM	DESCRIPTION	DATE	APPR

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033773 DANIEL J. GRUCH
4/7/23
SEAL

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CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

RISER DIAGRAMS - WATER

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883138
SHEET	84 OF 121

P-702

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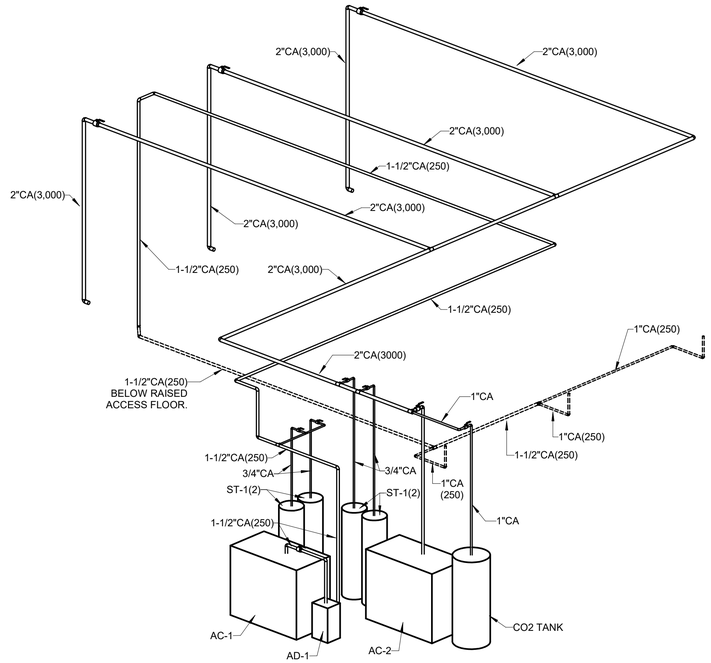
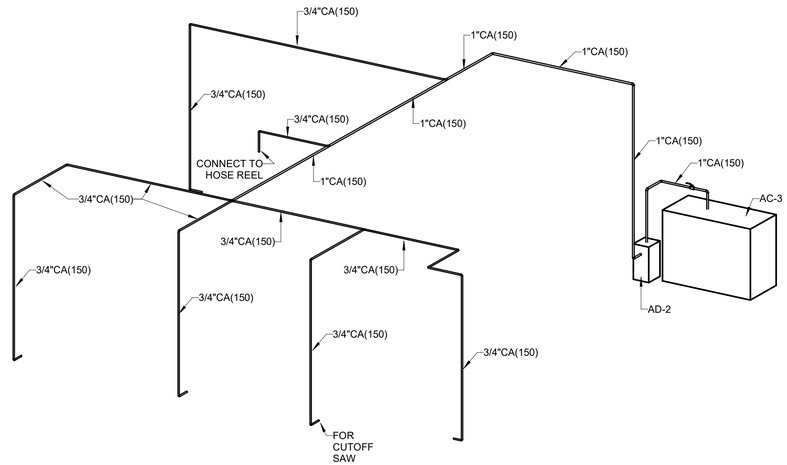


A2 3D RISER DIAGRAM - COMPRESSED AIR (WEST)
NTS



A4 3D RISER DIAGRAM - COMPRESSED AIR (EAST)
NTS

SYM	DESCRIPTION	DATE	APPR

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NAVAL STATION - NORFOLK, VA.
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P-196U CONSTRUCT RANGE OPERATIONS FACILITY

RISER DIAGRAMS - COMPRESSED AIR

SCALE:	AS INDICATED
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SHEET	85 OF 121

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DRAWFORM REVISION: 10 MARCH 2009

MECHANICAL NOTES

GENERAL REQUIREMENTS

1. THE CONTRACTOR MUST PROVIDE ALL SPECIFIED AND MISCELLANEOUS MATERIAL AND LABOR AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM AS DESCRIBED BY THE CONTRACT DOCUMENTS.
2. ALL EQUIPMENT AND MATERIALS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES AND RECOMMENDATIONS OF THE MANUFACTURERS. IF THERE IS A CONFLICT IN THE ABOVE REQUIREMENTS, THE MORE STRINGENT MUST BE USED.
3. ALL DUCTWORK AND EQUIPMENT SHOWN ON THESE DRAWINGS IS STRICTLY DIAGRAMMATIC. ALL DUCTWORK SIZES SHOWN ARE FREE AREA SIZES. FIELD VERIFY DIMENSIONS AND CONDITIONS BEFORE COMMENCING WORK. IF A CONFLICT IS IDENTIFIED, REPORT IT TO THE CONTRACTING OFFICER BEFORE PROCEEDING.
4. ALL SHEET-METAL DUCTWORK MUST BE CONSTRUCTED OF GALVANIZED STEEL SHEETS IN ACCORDANCE WITH SMACNA GAGES AND STANDARDS AND SEALED TO SMACNA CLASSIFICATION "A".
5. PRIOR TO CONSTRUCTION, THE CONTRACTOR MUST COORDINATE HIS WORK BETWEEN ALL TRADES. ALL DRAWINGS INDICATE THE GENERAL ARRANGEMENT DESIRED. THE EXACT LOCATIONS AND DETAILS OF CONSTRUCTION MAY BE SUCH THAT VARIANCES ARE REQUIRED. THE DRAWINGS DO NOT SHOW ALL BENDS, OFFSETS, AND FITTINGS THAT MAY BE REQUIRED FOR THE COMPLETE EXECUTION OF THIS CONTRACT. SUCH VARIANCES AND CONTINGENCIES MUST BE ALLOWED FOR IN THE CONTRACTOR'S BID AND MUST BE ACCOMPLISHED WITHOUT ADDITIONAL COST TO THE GOVERNMENT. PRIOR TO ORDERING EQUIPMENT, THE CONTRACTOR MUST PREPARE COORDINATION DRAWINGS SHOWING HOW ALL EQUIPMENT IS TO BE LOCATED IN THE SPACE INDICATED. THIS DRAWING MUST SHOW THE NEW AND EXISTING WORK OF ALL TRADES.
6. DO NOT SCALE THESE DRAWINGS. REFER TO THE ARCHITECTURAL PLANS FOR DIMENSIONS.
7. ALL EQUIPMENT MUST BE LOCATED AND INSTALLED TO PROVIDE MAXIMUM SPACE FOR MAINTENANCE AND SERVICE, PER EQUIPMENT MANUFACTURERS RECOMMENDATIONS.
8. ALL MATERIALS USED MUST BE NEW AND FREE OF DEFECTS. ALL MATERIALS AND EQUIPMENT MUST BEAR THE UL LABEL OR EQUIVALENT WHERE APPLICABLE.
9. COORDINATE EXACT LOCATION OF ALL DIFFUSERS WITH LIGHTS, SPRINKLER HEADS, AND OTHER CEILING MOUNTED DEVICES. SEE THE REFLECTED CEILING PLAN.
10. THE CONTRACTOR MUST, AT THE COMPLETION OF THE WORK, CLEAN, POLISH, AND/OR WASH ALL EXPOSED ITEMS OF MATERIALS, EQUIPMENT, AND FIXTURES IN HIS CONTRACT TO LEAVE SUCH ITEMS BRIGHT AND CLEAN. THE CONTRACTOR MUST KEEP THE PREMISES CLEAR OF DEBRIS FROM HIS WORK DURING CONSTRUCTION AND LEAVE THE AREA AND BUILDING CLEAN AT COMPLETION OF THE CONTRACT.
11. MECHANICAL AND ELECTRICAL EQUIPMENT MUST OPERATE WITHOUT OBJECTIONABLE NOISE OR VIBRATION, AS DETERMINED BY THE CONTRACTING OFFICER. IF SUCH OBJECTIONABLE NOISE OR VIBRATION SHOULD BE PRODUCED AND TRANSMITTED TO OCCUPIED PORTIONS OF THE BUILDING, THE CONTRACTOR MUST MAKE THE NECESSARY CHANGES TO CORRECT THE NOISE OR VIBRATION WITHOUT ADDITIONAL COST TO THE GOVERNMENT.
12. VENTILATION AIR INTAKES MUST BE LOCATED A MINIMUM OF 10 FEET ABOVE THE GROUND AND 10 FEET FROM ALL EXHAUST DISCHARGE AND PLUMBING VENTS.
13. REPLACE ALL FILTERS JUST PRIOR TO ACCEPTANCE BY THE OFFICER IN CHARGE OF CONSTRUCTION.
14. ROUTE REFRIGERANT PIPING ABOVE THE DROP CEILING IN THE MOST DIRECT PATH POSSIBLE. INSULATE PER SPECIFICATIONS. PROVIDE LONG LINE REFRIGERATION KIT AS REQUIRED.
15. PROVIDE AN AUXILIARY DRAIN PAN FOR ANY AIR CONDITIONING EQUIPMENT LOCATED ABOVE A CEILING OR WHERE CONDENSATE OVERFLOW WOULD DAMAGE BUILDING COMPONENTS. THE AUXILIARY DRAIN PAN MUST BE PROVIDED WITH A FLOAT SWITCH THAT STOPS THE FAN UPON ACCUMULATION OF CONDENSATE IN THE PAN. LOCATE ALL EQUIPMENT ABOVE THE CEILING SO THAT ADEQUATE SLOPE IS PROVIDED FOR ALL DRAIN LINES. IF A CONDENSATE PUMP IS SPECIFIED, EXTEND THE AUXILIARY DRAIN PAN UNDER THE CONDENSATE PUMP. CONDENSATE DRAIN LINES MUST BE MADE OF TYPE 'K' COPPER PIPE. INSULATE DRAIN LINES TO PREVENT SWEATING. ROUTE CONDENSATE DRAINS TO NEAREST ROOF/FLOOR DRAIN, OR AS DIRECTED ON PLANS.
16. ALL MECHANICAL CONTROL WIRING MUST BE INSTALLED IN CONDUIT.
17. LOCATE TEMPERATURE/HUMIDITY SENSORS AS INDICATED ON THE PLANS.

ABBREVIATIONS

AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
BAS	BUILDING AUTOMATION SYSTEM
BTUH	BRITISH THERMAL UNIT PER HOUR
CFM	CUBIC FEET PER MINUTE
COND	CONDENSATE
CV	FLOW COEFFICIENT
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
DB	DRY BULB
DP	DEW POINT
EAT	ENTERING AIR TEMPERATURE
EA	EXHAUST AIR
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
F	FAHRENHEIT
FD	FLOOR DRAIN
FT	FEET
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HSPF	HEATING SEASONAL PERFORMANCE FACTOR
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
HZ	HERTZ
KW	TOTAL POWER INPUT, KILOWATTS
LWT	LEAVING WATER TEMPERATURE
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
MBH	MILLIONS BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPS
MOCP	MAXIMUM OVER CURRENT PROTECTION
OA	OUTSIDE AIR
PH	PHASE
PD	PRESSURE DROP
P/T	PRESSURE/TEMPERATURE
PSI	POUNDS PER SQUARE INCH
RA	RETURN AIR
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SF	SQUARE FEET
SHR	SENSIBLE HEAT RATIO
SP	STATIC PRESSURE
STM	STEAM
TYP	TYPICAL
WB	WET BULB
WC	WATER COLUMN
WPD	WATER PRESSURE DROP
VFD	VARIABLE FREQUENCY DRIVE

DRAWING LEGEND

	CEILING SUPPLY DIFFUSER
	CEILING RETURN GRILLE
	CEILING EXHAUST GRILLE
WXH	RECTANGULAR DUCT (W = WIDTH, H = HEIGHT)
D"Ø	ROUND DUCT (D = DIAMETER)
	45° EXPANDED THROAT TAKEOFF WITH MANUAL VOLUME DAMPER
	MANUAL VOLUME DAMPER
	RECTANGULAR DUCT TURNS DOWN
	RECTANGULAR DUCT TURNS UP
	ROUND DUCT TURNS DOWN
	ROUND DUCT TURNS UP
E	HVAC SYSTEM EMERGENCY SHUTDOWN SWITCH
M	CLASS 1A MOTORIZED DAMPER
SD	DUCT MOUNTED SMOKE DETECTOR
A / 150	DIFFUSER TAG — DIFFUSER TYPE / CFM
T	WALL MOUNTED THERMOSTAT WITH HUMIDITY SENSOR

MARKS

AHU	AIR HANDLING UNIT
DAC	DUCTLESS SPLIT AIR HANDLING UNIT
DCU	DUCTLESS SPLIT CONDENSING UNIT
EF	EXHAUST FAN
L	LOUVER
EUH	ELECTRIC UNIT HEATER
VAV	VAV TERMINAL UNIT

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NAVFAC

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A/E INFO

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ACTIVITY

SATISFACTORY TO

DES	MPM	DRW	LWM	CHK	JDL

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
IPT MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC

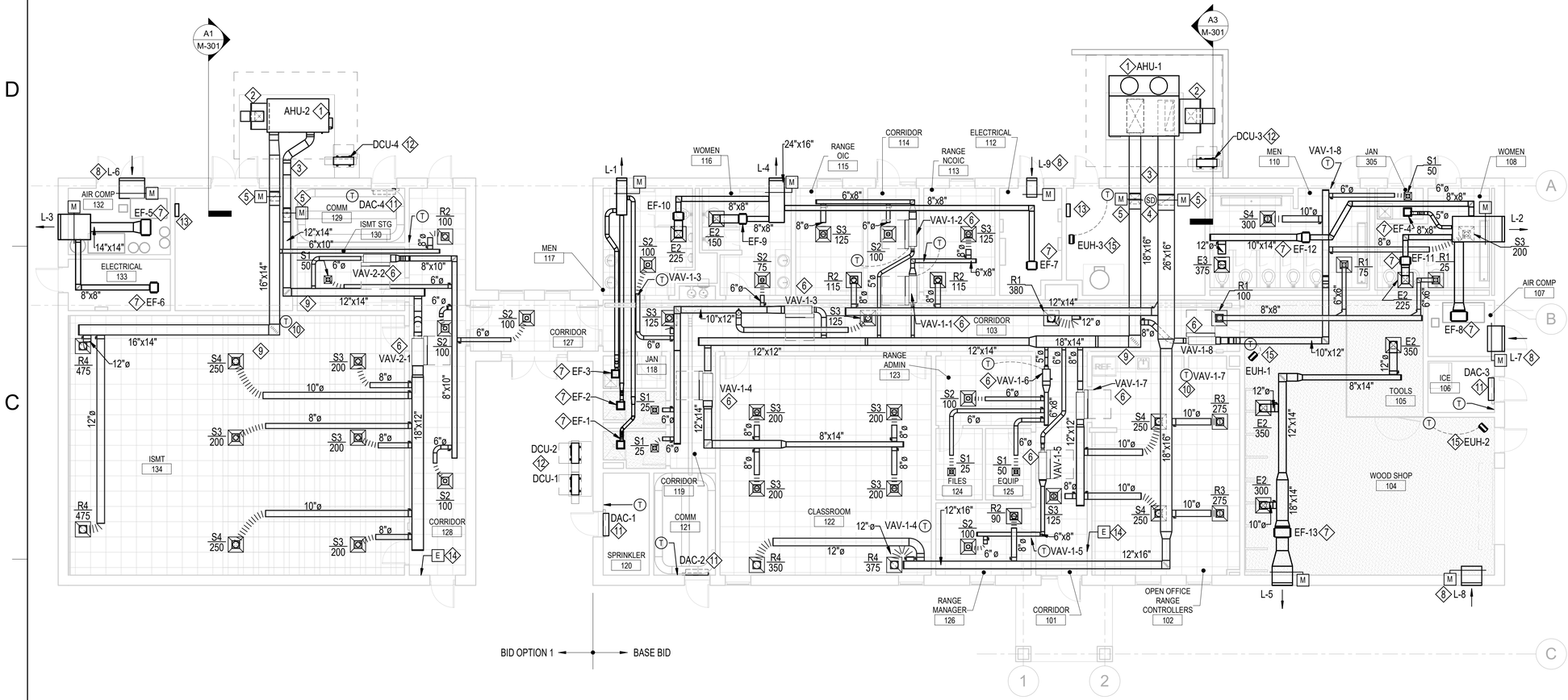
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

MECHANICAL NOTES, LEGEND & ABBREVIATIONS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7179507
NAVFAC DRAWING NO.: 12883140
SHEET 86 OF 121

M-001

DRAWFORM REVISION: 10 MARCH 2009



B1 FLOOR PLAN - MECHANICAL DUCTWORK - BASE BID & BID OPTION 1

1/8" = 1'-0"

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

8' 0 4' 8' 16'

GENERAL NOTES:

1. SEE M-001 FOR GENERAL NOTES, SPECIFICATIONS AND LEGENDS.

PLAN NOTES

1 MOUNT PACKAGED AIR HANDLER ON EQUIPMENT SUPPORT PAD ON GRADE. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CLEARANCES. ROUTE CONDENSATE TO GRADE OR NEAREST DRY WELL.

2 FACTORY PROVIDED OA HOOD TO BE REMOVED AND PLENUM INSTALLED TO MATCH SIZE OF OA INTAKE. PROVIDE OA DUCT FROM OA PLENUM UP TO SNORKEL TO PROVIDE A MINIMUM OF 10'-0" CLEARANCE FROM INLET TO GRADE. PROVIDE 1/2" WIRE MESH SCREEN OVER OPENING. EXTERIOR OUTSIDE AIR DUCT SNORKEL TO BE UNINSULATED.

3 ROUTE SUPPLY AND RETURN DUCT FROM AIR HANDLER THROUGH WALL. PROVIDE WEATHERPROOF EXTERIOR WALL PENETRATION.

4 DUCT MOUNTED SMOKE DETECTOR IN SUPPLY DUCT AFTER DUCT PENETRATION INTO THE BUILDING. COORDINATE WITH FIRE ALARM CONTRACTOR.

5 PROVIDE CLASS 1A MOTORIZED DAMPER AND ACCESS PANEL IN SUPPLY AND RETURN DUCT AFTER DUCT PENETRATION INTO THE BUILDING.

6 INSTALL TERMINAL UNIT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CLEARANCES. SUPPORT FROM ABOVE. SEE DETAIL ON M-501 FOR INSTALLATION. (TYPICAL)

7 INSTALL EXHAUST FAN PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CLEARANCES. ROUTE DUCTWORK TO EXTERIOR WALL LOUVER WITH CLASS 1A MOTORIZED DAMPER. BOTTOM OF LOUVER MUST BE AT LEAST 10'-0" ABOVE GRADE. COORDINATE WITH ARCHITECTURAL PLANS FOR EXACT LOUVER LOCATION AND ELEVATION. (TYPICAL)

8 PROVIDE NEW OUTSIDE AIR LOUVER ON EXTERIOR WALL WITH CLASS 1A MOTORIZED DAMPER TO BE TIED TO THE EXHAUST FAN OPERATION. BOTTOM OF LOUVER MUST BE AT LEAST 10'-0" ABOVE GRADE.

9 NEW ABOVE CEILING SUPPLY AND RETURN DUCTWORK, FROM GRADE MOUNTED AIR HANDLER TO VAV BOXES AND DIFFUSERS.

10 PROVIDE NEW WALL-MOUNTED THERMOSTAT/CONTROLLER. MOUNT AT 44" A.F.F. (TYPICAL)

11 INSTALL DUCTLESS SPLIT AIR HANDLER OVER DOOR. COORDINATE EXACT LOCATION OF AIR HANDLING UNIT WITH ALL OTHER EQUIPMENT TO BE INSTALLED WITHIN THE ROOM.

12 NEW CONDENSING UNIT ON GRADE MOUNTED CONCRETE PAD PER MANUFACTURER'S CLEARANCES.

13 WALL MOUNTED HVAC CONTROL PANEL. COORDINATE LOCATION WITH ALL OTHER EQUIPMENT IN SPACE.

14 PROVIDE WALL MOUNTED EMERGENCY HVAC SHUTDOWN SWITCH.

15 INSTALL ELECTRIC UNIT HEATER UP HIGH PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CLEARANCES. SUPPORT FROM ABOVE. PROVIDE WITH WALL MOUNTED THERMOSTAT.

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PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

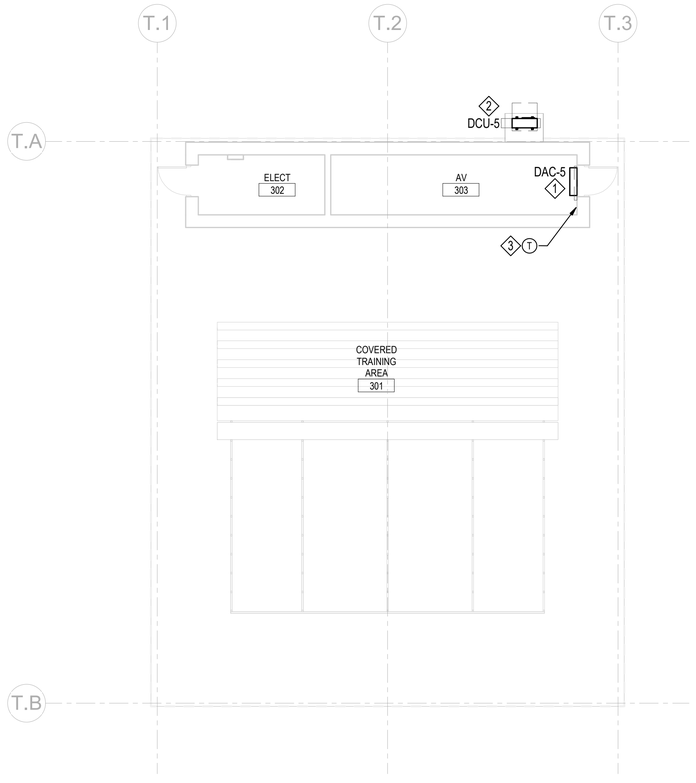
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
IPT MARINE
MARINE CORPS AIR STATION
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
FLOOR PLAN - MECHANICAL - BASE BID & BID OPTION 1

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7179507
NAVFAC DRAWING NO. 12883141
SHEET 87 OF 121

M-101

DRAWFORM REVISION: 10 MARCH 2009



A2 FLOOR PLAN - MECHANICAL - BID OPTION 2

1/8" = 1'-0"

N

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

8' 0 4' 8' 16'

GENERAL NOTES:

1. SEE M-001 FOR GENERAL NOTES, SPECIFICATIONS AND LEGENDS.

 # PLAN NOTES

1 INSTALL DUCTLESS SPLIT AIR HANDLER OVER DOOR. COORDINATE EXACT LOCATION OF AIR HANDLING UNIT WITH ALL OTHER EQUIPMENT TO BE INSTALLED WITHIN THE ROOM.

2 NEW CONDENSING UNIT ON GRADE MOUNTED CONCRETE PAD PER MANUFACTURER'S CLEARANCES.

3 PROVIDE NEW WALL-MOUNTED THERMOSTAT/CONTROLLER. MOUNT AT 44" A.F.F. (TYPICAL)

SYM	DESCRIPTION	DATE	APPR

NAVFAC

NORTH CAROLINA
SEAL
28374
ENGINEER
JONATHAN D. LEHMAN
09-07-23

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BRANCH MANAGER

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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
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IPT MARINE

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FLOOR PLAN - MECHANICAL - BID OPTION 2

SCALE: AS INDICATED

EPROJECT NO.: 1715336

STA. PROJ. NO.: 7179507

NAVFAC DRAWING NO. 12883142

SHEET 88 OF 121

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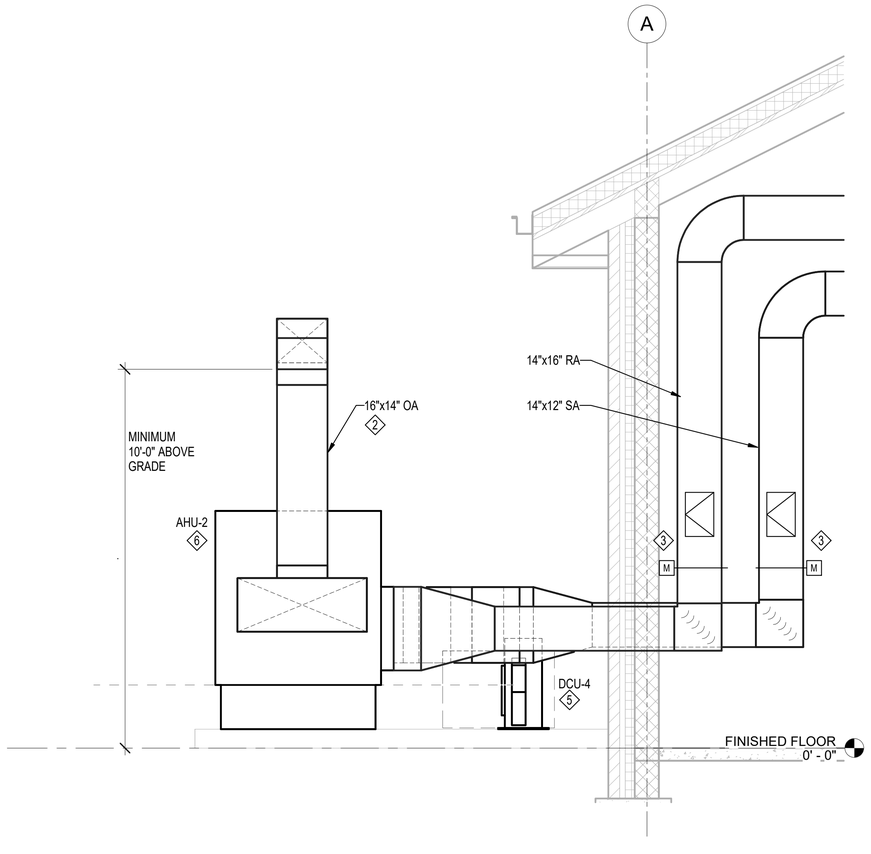
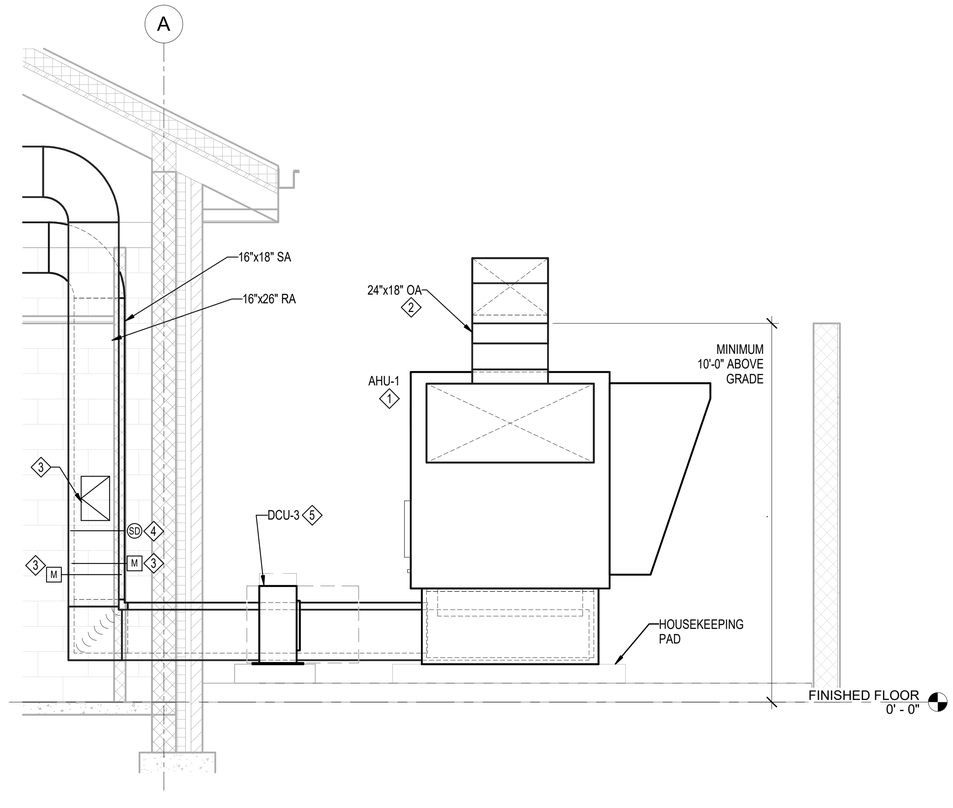
DRAWFORM REVISION: 10 MARCH 2009



A1 SECTION VIEW AT AHU-2
1/2" = 1'-0"



A3 SECTION VIEW AT AHU-1
1/2" = 1'-0"

GENERAL NOTES:

1. SEE M-001 FOR GENERAL NOTES, SPECIFICATIONS AND LEGENDS.

PLAN NOTES

1 MOUNT PACKAGED AIR HANDLER ON HOUSEKEEPING PAD ON CONCRETE SLAB IN MECHANICAL YARD. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CLEARANCES. ROUTE CONDENSATE TO GRADE OR NEAREST DRY WELL.

2 FACTORY PROVIDED OA HOOD TO BE REMOVED AND PLENUM INSTALLED TO MATCH SIZE OF OA INTAKE. PROVIDE OA DUCT FROM OA PLENUM UP TO SNORKEL TO PROVIDE A MINIMUM OF 10'-0" CLEARANCE FROM INLET TO GRADE. PROVIDE 1/2" WIRE MESH SCREEN OVER OPENING. EXTERIOR OUTSIDE AIR DUCT SNORKEL TO BE UNINSULATED.

3 ROUTE SUPPLY AND RETURN DUCT FROM AIR HANDLER THROUGH THE EXTERIOR OF THE BUILDING AS LOW AS POSSIBLE INTO BUILDING. PROVIDE WEATHERPROOF EXTERIOR WALL PENETRATION. ROUTE DUCT UP TO ABOVE CEILING. PROVIDE CLASS 1A MOTORIZED DAMPER AND ACCESS PANEL IN SUPPLY AND RETURN DUCT AFTER DUCT PENETRATION INTO THE BUILDING.

4 DUCT MOUNTED SMOKE DETECTOR IN SUPPLY DUCT AFTER DUCT PENETRATION INTO THE BUILDING. COORDINATE WITH FIRE ALARM CONTRACTOR.

5 NEW CONDENSING UNIT ON GRADE MOUNTED CONCRETE PAD PER MANUFACTURER'S CLEARANCES.

6 MOUNT PACKAGED AIR HANDLER ON EQUIPMENT SUPPORT PAD ON GRADE. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CLEARANCES. ROUTE CONDENSATE TO GRADE OR NEAREST DRY WELL.

GRAPHIC SCALE: 1/2"=1'-0"
2' 0 1' 2' 4'

SYM	DESCRIPTION	DATE	APPR

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NAVAL STATION - NORFOLK, VA.
IPT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

MECHANICAL SECTION VIEWS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7179507
NAVFAC DRAWING NO.	12883143
SHEET	89 OF 121

M-301

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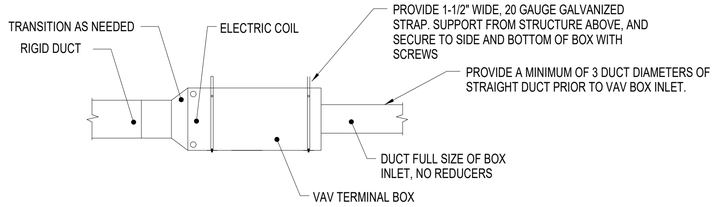
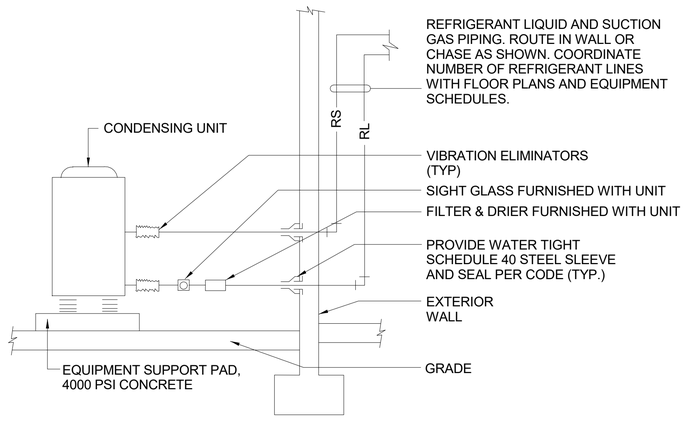


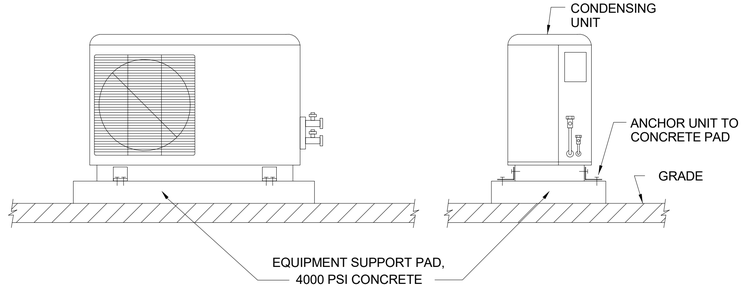
NOTE:

1. VAV BOXES MUST BE MOUNTED AS HIGH AS POSSIBLE FOR MAINTENANCE ACCESS.
2. PROVIDE SUFFICIENT ACCESS TO ALL TERMINAL BOX CONTROLLERS

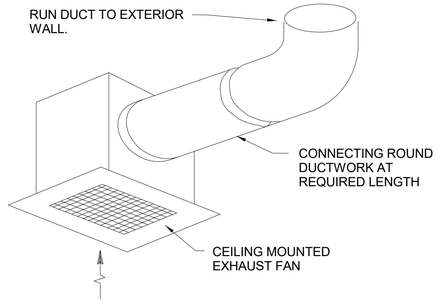
C1 TERMINAL UNIT INSTALLATION DETAIL
NTS



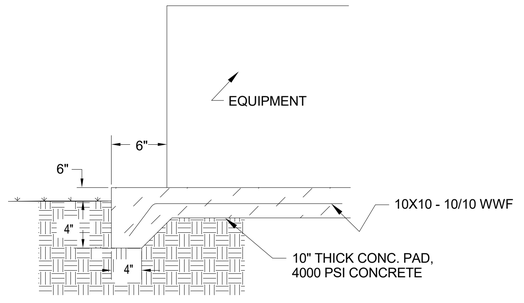
B1 REFRIGERANT PIPING DETAIL
NTS



A1 SPLIT SYSTEM CONDENSING UNIT MOUNTING DETAIL
NTS



C3 CEILING MOUNTED EXHAUST FAN DETAILI
NTS



B3 EQUIPMENT SUPPORT PAD DETAIL
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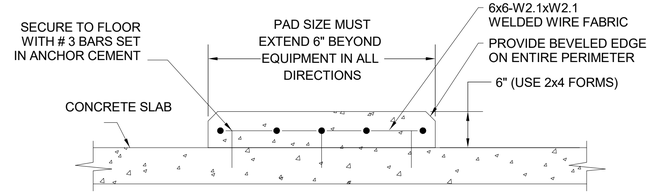
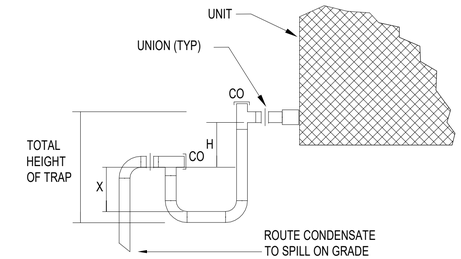


NOTES

1. CONTRACTOR MUST PROVIDE PADS FOR AIR HANDLERS, PUMPS AND OTHER FLOOR MOUNTED EQUIPMENT.

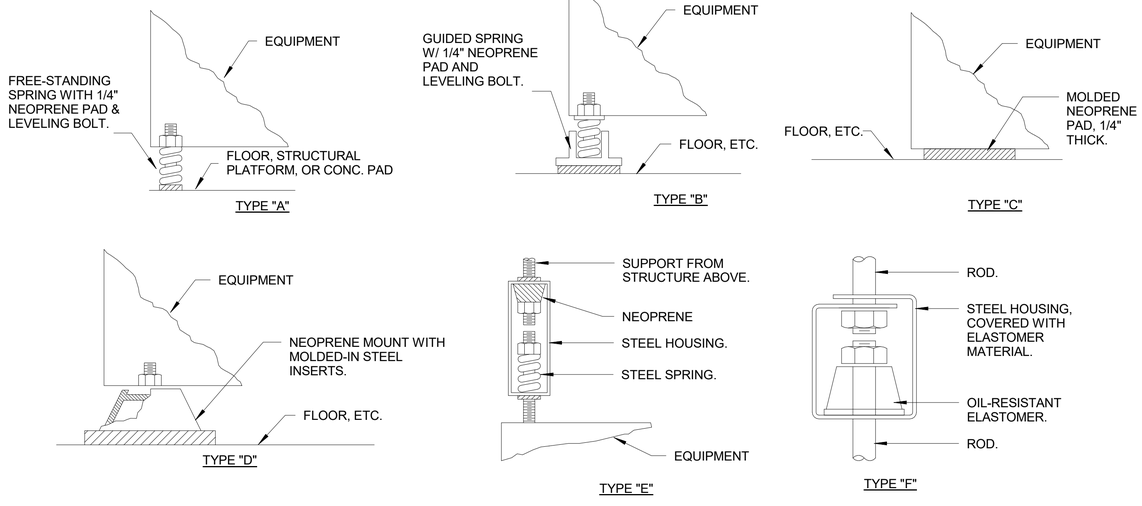
D4 HOUSEKEEPING PAD DETAIL
NTS



TOTAL HEIGHT OF TRAP = X+H+(1-1/2 x PIPE DIAMETER)
(WITHOUT INSULATION)

BLOW THROUGH	DRAW THROUGH
X = MIN. 1" PLUS CASING STATIC PRESSURE	X = 1/2 "H"
H = MIN. 1"	H = MIN. 1" PLUS CASING STATIC PRESSURE

B4 COIL DRAIN PIPING DETAIL
NTS



A3 VIBRATION ISOLATION DETAIL
NTS

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
1ST MARINE
MARINE CORPS AIR STATION
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

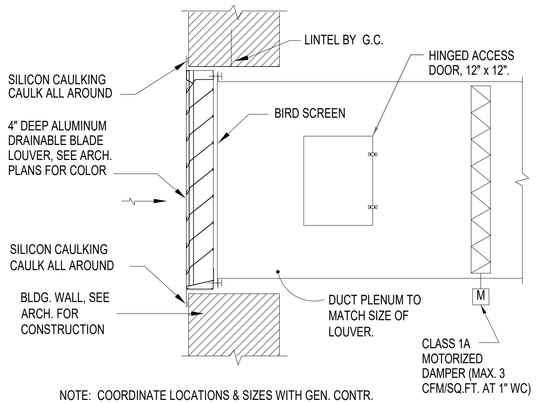
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

MECHANICAL DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7179507
NAVFAC DRAWING NO.	12883144
SHEET	90 OF 121

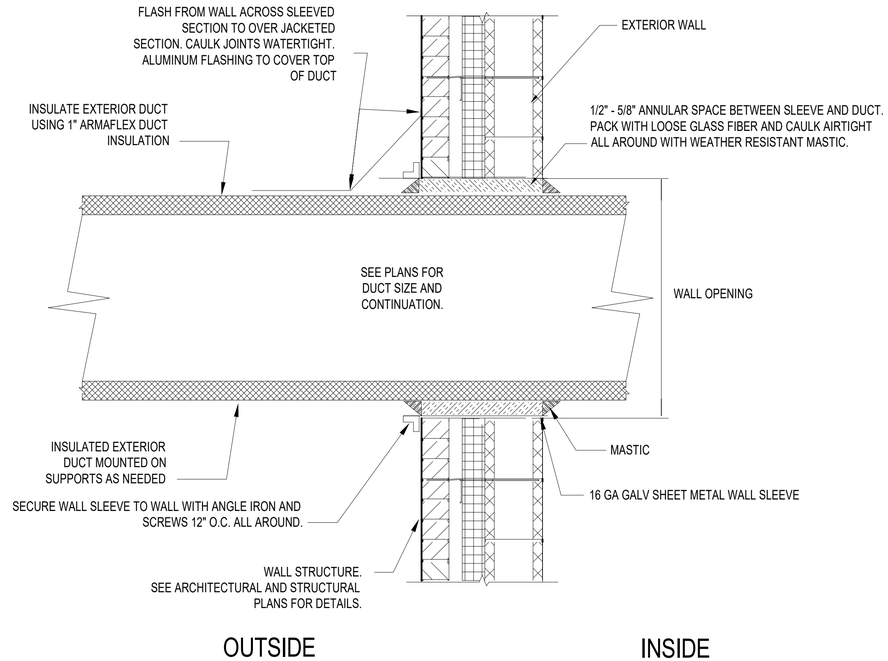
M-501

DRAWFORM REVISION: 10 MARCH 2009

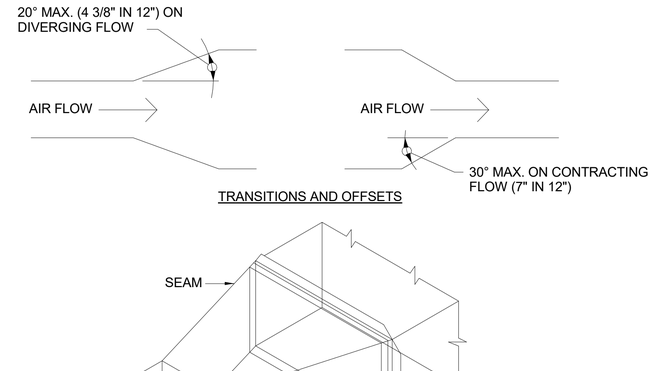


NOTE: COORDINATE LOCATIONS & SIZES WITH GEN. CONTR.

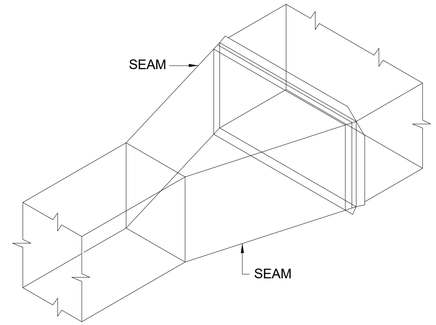
C1 LOUVER DETAIL
NTS



C2 DUCT PENETRATION - EXTERIOR WALL
NTS



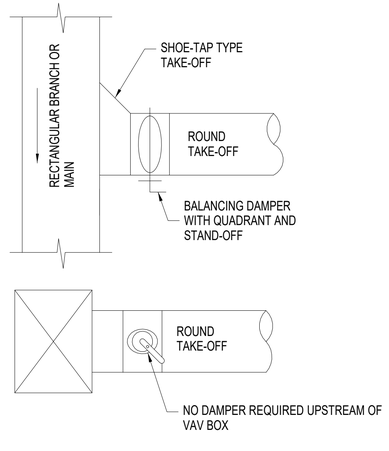
TRANSITIONS AND OFFSETS



LARGEST DIMENSION GOVERNS CONSTRUCTION

CROSS BREAK OR BEAD FOR DUCT PAGE 1-36 (SMACNA LOW PRESSURE STAND. 5th ED.)

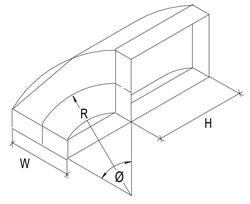
C4 DUCT TRANSITION DETAIL
NTS



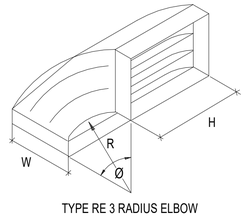
NOTE:

1. USE 90° SHOE TAP TYPE CONNECTIONS.
2. STRAIGHT IN FACTORY BUILT CONNECTIONS ARE PERMITTED FOR:
   A. SINGLE DIFFUSER, GRILLE OR REGISTER RUNOUTS FOR EXHAUST OR RETURN AIR APPLICATIONS.
   B. SINGLE DIFFUSER, GRILLE OR REGISTER RUNOUTS ON THE LOW PRESSURE SIDE OF TERMINAL BOXES.
3. STANDOFF REQUIRED FOR DAMPER HANDLE ON ALL INSULATED DUCT.

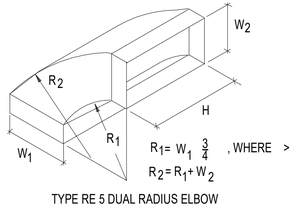
A1 DUCT TAKE-OFF DETAIL
NTS



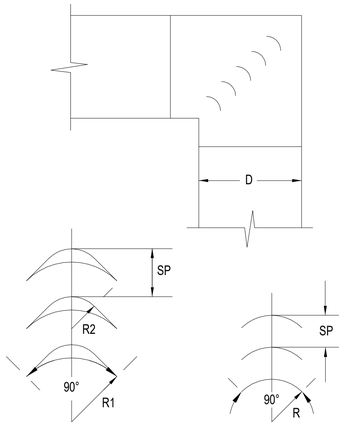
TYPE RE 1 RADIUS ELBOW
CENTERLINE = 3W = STD RADIUS
2



TYPE RE 3 RADIUS ELBOW WITH VANES



TYPE RE 5 DUAL RADIUS ELBOW



DOUBLE VANE SCHEDULE						
	D	H	R1	R2	SP	GA
LARGE	>18"	>18"	4-1/2"	2-1/4"	3-1/4"	24

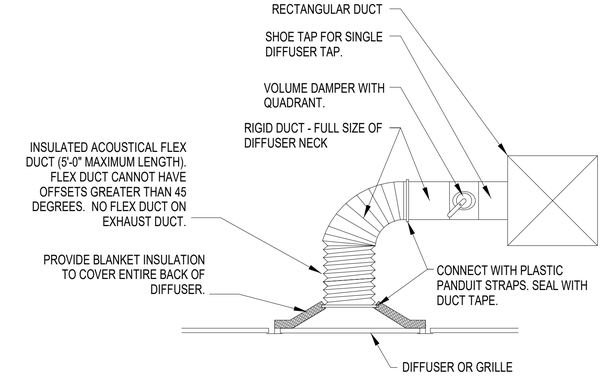
SINGLE VANE SCHEDULE					
	D	H	R	SP	GA
SMALL	≤18"	≤18"	2"	1-1/2"	24

MAXIMUM UNSUPPORTED VANE LENGTH
LARGE DOUBLE VANE 72"

NOTE:

1. SINGLE VANES ALLOWED IN ELBOWS LESS THAN OR EQUAL TO 18" X 18".
2. TURNING VANES REQUIRED IN ALL ELBOWS.

A2 DUCT RADIUS AND MITERED 90 ELBOW DETAIL
NTS



NOTE:

1. PROVIDE VOLUME DAMPERS ON RUN OUTS TO ALL DIFFUSERS AND GRILLES EXCEPT DO NOT INSTALL A VOLUME DAMPER ON A SUPPLY WHEN THERE IS ONLY ONE SUPPLY OUTLET ON TERMINAL BOX.
2. LOCATE DAMPER WHERE ACCESSIBLE.
3. STANDOFF REQUIRED FOR DAMPER HANDLE ON ALL INSULATED DUCT.
4. NO FLEXIBLE DUCT CAN BE USED IN EXHAUST SYSTEM. USE SNAPLOCK TYPE ROUND DUCT FOR ALL GRILLE RUN-OUTS.
5. SUPPLY CAN BE WIRE HELIX NON-METALLIC TYPE FLEXIBLE DUCT. RETURN MUST BE ALUMINUM METALLIC TYPE FLEXIBLE DUCT.
6. DETAIL SIMILAR FOR EXHAUST DUCT, ALL EXHAUST DUCT MUST BE RIGID METAL.

A4 DIFFUSER ASSEMBLY DETAIL
NTS

APPR	DATE	DESCRIPTION	SYM

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A/E INFO

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DES	MPM	DRW	LWM	CHK	JDL

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BRANCH MANAGER

CHIEF ENG/ARCH

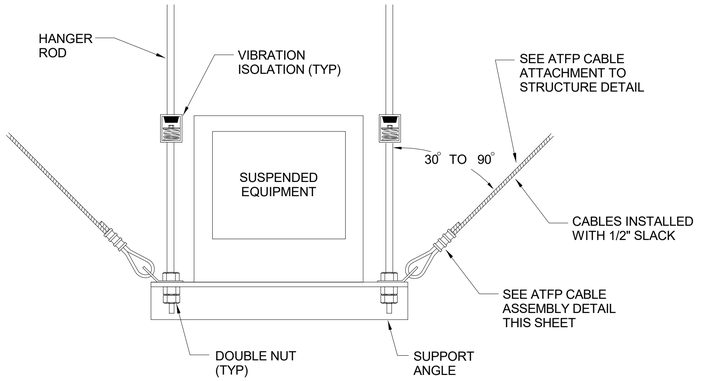
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
1ST MARINE
MARINE CORPS AIR STATION
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
MECHANICAL DETAILS

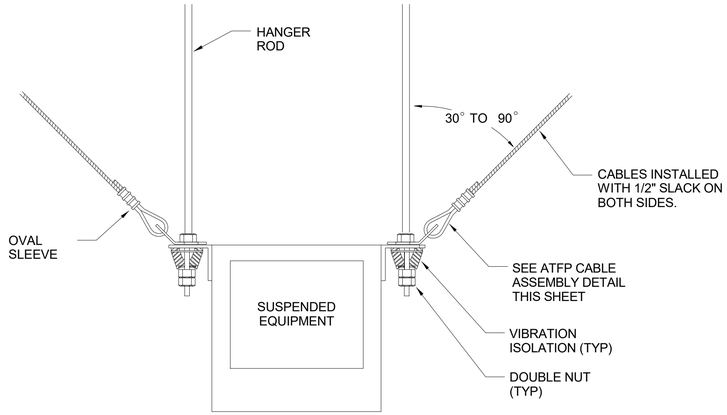
SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7179507
NAVFAC DRAWING NO.	12883145
SHEET	91 OF 121

M-502

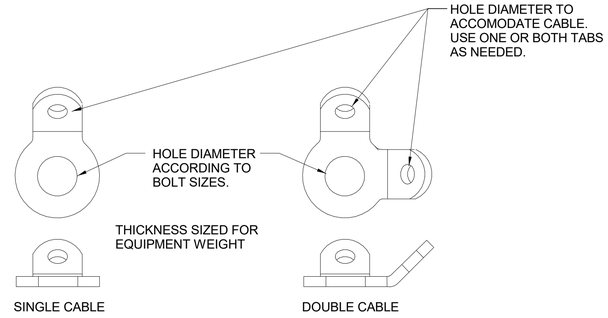
DRAWFORM REVISION: 10 MARCH 2009



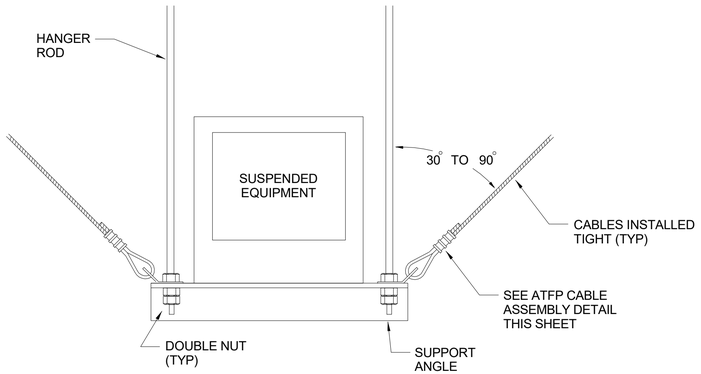
C1 ATFP ELEVATION
NTS



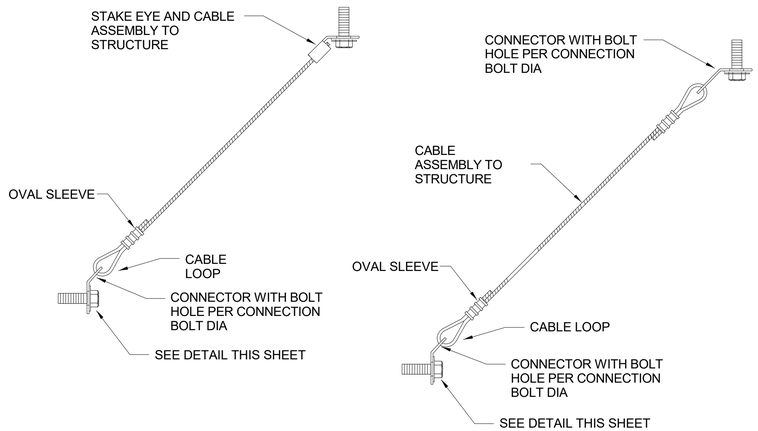
C2 ATFP ELEVATION
NTS



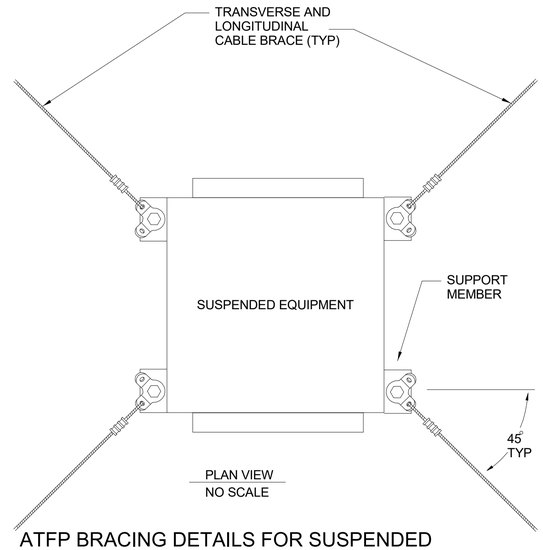
C4 ATFP BRACING CONNECTOR DETAIL
NTS



B1 ATFP ELEVATION
NTS

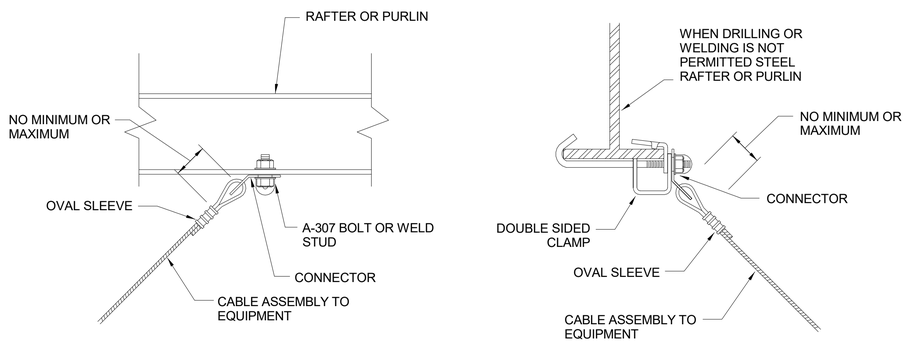


B2 ATFP CABLE BRACING ASSEMBLY DETAILS
NTS



ATFP BRACING DETAILS FOR SUSPENDED EQUIPMENT WITH INTERNAL VIBRATION ISOLATORS OR NO REQUIREMENT FOR VIBRATION ISOLATION

A4 NTS



A2 ATFP CABLE BRACING ATTACHMENT TO STRUCTURE DETAIL
NTS

SUSPENDED EQUIPMENT:

1. ALL SUSPENDED EQUIPMENT WEIGHING OVER 31 POUNDS MUST BE INSTALLED TO RESIST FORCES OF 0.5 TIMES THE EQUIPMENT WEIGHT IN ANY DIRECTION AND 1.5 TIMES THE EQUIPMENT WEIGHT IN THE DOWNWARD DIRECTION.
2. THESE DETAILS ARE PROVIDED AS GUIDANCE FOR THE SUPPORT OF SUSPENDED EQUIPMENT WEIGHING OVER 31 POUNDS.
3. EQUIPMENT INSTALLED IN EQUIPMENT ROOMS DOES NOT HAVE TO MEET THE ATFP STANDARDS FOR SUSPENDED EQUIPMENT.
4. CONTRACTOR MUST PROVIDE ON THE CONTRACT DRAWINGS AN ATFP BRACING FOR EQUIPMENT SCHEDULE AS SHOWN BELOW FOR ALL SUSPENDED EQUIPMENT WEIGHING 31 POUNDS AND OVER.

APPR	DATE	DESCRIPTION	SYM

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NAVAL STATION - NORFOLK, VA
IPT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
MECHANICAL DETAILS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7179507
NAVFAC DRAWING NO.: 12883146
SHEET 92 OF 121

M-503

DRAWFORM REVISION: 10 MARCH 2009

DUCT CONSTRUCTION AND LEAKAGE TESTING TABLE

LOCATION	DUCT PRESSURE CLASS INCHES OF WATER						SUPPLY / EXHAUST ROUND / OVAL		SUPPLY / EXHAUST RECTANGULAR		RETURN/OUTSIDE AIR		DUCT TEST PRESSURE INCHES OF WATER COLUMN	REMARKS
	SUPPLY DUCT	SUPPLY DUCT(BETWEEN AHU AND VAV	SUPPLY DUCT (DOWNSTREAM OF VAV BOXES)	RETURN DUCT	EXHAUST/ RELIEF DUCT	OUTSIDE AIR DUCT	DUCT SEAL CLASS	DUCT LEAK CLASS	DUCT SEAL CLASS	DUCT LEAK CLASS	DUCT SEAL CLASS	DUCT LEAK CLASS		
AIR HANDLING UNIT - VAV	-	2	-	-	-	-	A	3	A	6	-	-	3	1
	-	-	1	-	-	-	A	3	A	6	-	-	1	1
	-	-	-	-2	-	-	-	-	-	-	A	6	2	1
	-	-	-	-	-1	-	-	-	A	6	-	-	1	1
	-	-	-	-	-	-1	-	-	-	-	A	6	1	1
EXHAUST DUCT	-	-	-	-	-1	-	-	-	A	6	-	-	1	1

REMARKS:
1. TEST IN ACCORDANCE WITH SPECIFICATION SECTION 23 05 93 TESTING, ADJUSTING, AND BALANCING FOR HVAC, AND WITH THE PROCEDURES IN SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL.

AIR DISTRIBUTION SCHEDULE

MARK	DESCRIPTION	THROW	CEILING MODULE SIZE	NECK SIZE	MINIMUM CFM	MAXIMUM CFM	MAX. NC	REMARKS
S1	SQUARE PLAQUE FACE DIFFUSER	4 WAY	12x12	6"ø	50 CFM	50 CFM	30	1,2,3,4
S2	SQUARE PLAQUE FACE DIFFUSER	4 WAY	24x24	6"ø	75 CFM	100 CFM	30	1,2,3,4
S3	SQUARE PLAQUE FACE DIFFUSER	4 WAY	24x24	8"ø	125 CFM	200 CFM	30	1,2,3,4
S4	SQUARE PLAQUE FACE DIFFUSER	4 WAY	24x24	10"ø	225 CFM	275 CFM	30	1,2,3,4
E1	PERFORATED EXHAUST DIFFUSER	NA	24x24	6"ø	0 CFM	100 CFM	30	1,2,3,4
E2	PERFORATED EXHAUST DIFFUSER	NA	24x24	10"ø	225 CFM	300 CFM	30	1,2,3,4
E3	PERFORATED EXHAUST DIFFUSER	NA	24x24	12"ø	325 CFM	500 CFM	30	1,2,3,4
R1	PERFORATED RETURN DIFFUSER	NA	24X24	6"ø	25 CFM	50 CFM	30	2,3,4
R2	PERFORATED RETURN DIFFUSER	NA	24X24	8"ø	90 CFM	200 CFM	30	2,3,4
R3	PERFORATED RETURN DIFFUSER	NA	24X24	10"ø	205 CFM	300 CFM	30	2,3,4
R4	PERFORATED RETURN DIFFUSER	NA	24X24	12"ø	350 CFM	700 CFM	30	2,3,4

REMARKS
1. VERIFY ALL CEILING TYPES WITH ARCHITECTURAL PLANS TO DETERMINE MOUNTING DETAILS AND ACCESSORIES REQUIRED. COORDINATE COLOR WITH ARCHITECT.
2. PROVIDE WITH SQUARE TO ROUND TRANSITION AS NECESSARY.
3. ALL AIR DISTRIBUTION MUST BE 100% ALUMINUM CONSTRUCTION.
4. PROVIDE BLANKET INSULATION ON THE BACK OF ALL DIFFUSERS.

LOUVER SCHEDULE

MARK	SERVES	FLOW	SIZE WxH (in.)	FREE AREA REQUIRED (s.f.)	MAX AIR VELOCITY (fpm)	CFM	REMARKS
L-1	EF-1,2,3	EXHAUST	16X12	0.30	500	150	1,2,3
L-2	EF-4,8,11,12	EXHAUST	40X24	2.80	500	1400	1,2,3
L-3	EF-5,6	EXHAUST	40X16	1.80	500	950	1,2,3
L-4	EF-7,9,10	EXHAUST	24X16	0.92	500	525	1,2,3
L-5	EF-13	EXHAUST	32X20	2.00	500	1000	1,2,3
L-6	EF-5	INTAKE	40X16	1.60	500	800	1,2,3
L-7	EF-8	INTAKE	40X16	1.60	500	800	1,2,3
L-8	EF-13	INTAKE	32X20	2.00	500	1000	1,2,3
L-9	EF-7	INTAKE	16X12	0.30	500	150	1,2,3

REMARKS :
1. PROVIDE FULL SIZE PLENUM BEHIND LOUVER AND PAINT INSIDE OF PLENUM FLAT BLACK
2. PROVIDE ALL ALUMINUM LOUVER WITH DRAINABLE BLADES. COORDINATE COLOR WITH ARCHITECT.
3. PROVIDE WITH ALUMINUM BIRDSCREEN.

DESIGN CONDITIONS

	SUMMER	WINTER
INDOORS	OCCUPIED: 78° DB/57.9° DP UNOCCUPIED 82° DB/65% RH	OCCUPIED: 68° DB UNOCCUPIED 55° DB
OUTDOORS	91.3° DB/77.6° WB (1% ASHRAE)	26.9° DB (99.0% ASHRAE)
ASHRAE CLIMATE ZONE - 3A		

SEISMIC

BUILDING RISK CATEGORY	II
WIND EXPOSURE CATEGORY	B
SEISMIC DESIGN CATEGORY	B
SEE STRUCTURAL PLANS FOR FURTHER INFORMATION	

OUTSIDE AIR CALCULATION

UNIT MARK	FLOOR AREA (SQ.FT.)	ASHRAE CLASSIFICATION	TOTAL PEOPLE	CFM PER PERSON	CFM PER SQ. FT.	REQUIRED CFM	TOTAL REQUIRED CFM	TOTAL PROVIDED CFM	REMARKS
AHU-1	1,026	OFFICE SPACE	23	5	0.06	177	221	1,100	1,2,3
	113	STORAGE	1	5	0.06	12	15		1,2,3
	388	CORRIDOR	0	0	0.06	23	29		1,2,3
	793	CLASSROOM	26	7.5	0.06	243	303		1,2,3
	381	RESTROOM	0	0	0	0	0		1,2,3
AHU-2	1,496	SIMULATOR SPACE	22	7.5	0.18	434	543	600	1,2,3
	115	STORAGE	0	0	0.06	7	9		1,2,3
	514	CORRIDOR	0	0	0.06	31	39		1,2,3
						TOTAL	1,158	1,700	

REMARKS:
1. CALCULATIONS PERFORMED IN ACCORDANCE WITH ASHRAE 62.1-2016.
2. THE 'REQUIRED CFM' IS ADJUSTED BY THE ZONE AIR DISTRIBUTION EFFECTIVENESS (EZ) OF 0.8 TO GET THE 'TOTAL REQUIRED CFM'.
3. THE 'TOTAL REQUIRED CFM' IS ROUNDED UP TO THE NEAREST 5 IN EACH ROOM, TO GET THE 'TOTAL PROVIDED CFM'.

BUILDING AIR BALANCE CALCULATION

AREA	OUTSIDE AIR (CFM)	EXHAUST AIR (CFM)	REMARKS
AHU-1	1100	1075	1
AHU-2	600	0	1

REMARKS
1. OVERALL BUILDING PRESSURIZATION IS POSITIVE.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA.
IPT MARINE
MARINE CORPS AIR STATION CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

MECHANICAL SCHEDULES

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7179507
NAVFAC DRAWING NO. 12883147
SHEET 93 OF 121

M-601

DRAWFORM REVISION: 10 MARCH 2009

PACKAGED AIR HANDLING UNIT SCHEDULE

MARK	SUPPLY FAN			DX COOLING COIL						HOT GAS REHEAT		ELECTRIC HEATER			ELECTRICAL					EER	WEIGHT (LBS)	REMARKS
	CFM	OA CFM	E.S.P. "W.C.	TOTAL MBH	SENSIBLE MBH	EAT (°F)		LAT (°F)		LAT (°F)		EAT (°F)	LAT (°F)	ELEC. (KW)	FAN HP	FLA	MCA	MOCP	V/PH			
						DB	WB	DB	WB	DB	WB											
AHU-1	3,075	1100	1.50	157.8	100.2	83.4	69.7	53.9	53.5	84.2	64.8	45.0	60.4	15.0	2.0	56.2	62.5	80.0	208/3	13.5	3,300	1,2,3,4,6,7,8,9,10,11
AHU-2	1,650	600	1.25	83.4	69.7	83.4	69.7	54.0	53.8	80.1	63.7	45.0	64.1	10.0	1.0	33.4	41.8	60.0	208/3	12.0	1,500	1,2,3,4,5,7,8,9,10,11

REMARKS:
1. PROVIDE WITH 2" MERV 8 PREFILTERS AND 2" MERV 13 FINAL FILTERS ON BOTH THE RETURN AIR INTAKE AND THE OUTSIDE AIR INTAKE.
2. PROVIDE DIRECT DRIVE VARIABLE SPEED SUPPLY FAN, DIGITAL SCROLL COMPRESSOR ON 1ST REFRIGERATION CIRCUIT, CONDENSER FAN HEAD PRESSURE LOW AMBIENT CONTROL AND MINIMUM 6 ROW DX COOLING COIL.
3. PROVIDE WITH MODULATING HOT GAS REHEAT COIL.
4. PROVIDE WITH MODULATING SCR ELECTRIC HEATER, WITH SINGLE POINT POWER CONNECTION FOR ENTIRE UNIT.
5. PROVIDE UNIT WITH HORIZONTAL DISCHARGE DUCT CONNECTION, HORIZONTAL RETURN CONNECTION. UNIT MUST HAVE 2" DOUBLE WALL FOAMED IN PLACE CABINET CONSTRUCTION AND STAINLESS STEEL DRAIN PAN.
6. PROVIDE UNIT WITH DOWNFLOW DISCHARGE AND RETURN DUCT CONNECTION. PROVIDE UNIT WITH HORIZONTAL DISCHARGE CURB. UNIT MUST HAVE 2" DOUBLE WALL FOAMED IN PLACE CABINET CONSTRUCTION AND STAINLESS STEEL DRAIN PAN.
7. PROVIDE 6000 HR SALT SPRAY PROTECTIVE COATING ON THE ENTIRE UNIT CABINET, ON THE COOLING COIL AND ON THE HOT GAS REHEAT COIL.
8. PROVIDE CONDENSER COIL HAILGUARD. OUTSIDE AIR DAMPER MUST BE CLASS 1A. SEE CONTROL DIAGRAM FOR ADDITIONAL FACTORY SUPPLIED AND INSTALLED CONTROL DEVICES.
9 PROVIDE BACNET CONTROLLER WITH UNIT MOUNTED DISPLAY. PROVIDE SUPPLY AIR TEMPERATURE SENSOR, SUPPLY AIR HUMIDITY SENSOR AND SUPPLY AIR AIRFLOW MEASURING DEVICE FOR FIELD MOUNTING.
10. PROVIDE 1 YEAR PARTS WARRANTY AND 5 YEAR COMPRESSOR WARRANTY.
11. CONTRACTOR MUST VERIFY THAT UNIT CAN BE INSTALLED IN LOCATION SHOWN ON DRAWINGS PRIOR TO SUBMITTING FOR APPROVAL.

DUCT-FREE SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE

MARK	SERVES	TYPE	CFM	MCA	REFRIG. TYPE	WEIGHT (LBS)	REMARKS
DAC-1	SPRINKLER 120	AC	450	1.0	R-410A	35	1,2,3,4,5
DAC-2	COMM 121	AC	450	1.0	R-410A	35	1,2,3,4,5
DAC-3	ICE 106	AC	450	1.0	R-410A	35	1,2,3,4,5
DAC-4	COMM129	AC	450	1.0	R-410A	35	1,2,3,4,5
DAC-5	AV 303	AC	450	1.0	R-410A	35	1,2,3,4,5

REMARKS:
1. PROVIDE UNIT WITH WIRED WALL MOUNTED THERMOSTAT, AND CLEANABLE TYPE FILTERS.
2. PROVIDE UNIT WITH WALL MOUNTED CONDENSATE PUMP, WIRED TO MOTOR RATED SWITCH.
3. AHU IS POWERED FROM CONDENSING UNIT.
4. DUCTLESS SPLIT SYSTEM MUST BE CAPABLE OF HANDLING 100 FEET OF REFRIGERANT LINE BETWEEN AC AND CU.
5. PROVIDE CONDENSATE PUMP FOR USE WITH UNIT, EQUAL TO LITTLE GIANT "VCMX-20UL", 10 GPH AT 20' HEAD, 1/30 HP, 120/1, 1.5 FLA.

SPLIT SYSTEM CONDENSING UNIT SCHEDULE

MARK	SERVES	NOMINAL TONS	TYPE	SEER	VOLT/PH	MCA	MOCP	WEIGHT (LBS)	REMARKS
DCU-1	SPRINKLER 120	1 1/2	AC	19.8	208/1	11	28	100	1,2
DCU-2	COMM 121	1 1/2	AC	19.8	208/1	11	28	100	1,2
DCU-3	ICE 106	1 1/2	AC	19.8	208/1	11	28	100	1,2
DCU-4	COMM129	1 1/2	AC	19.8	208/1	11	28	100	1,2
DCU-5	AV 303	1 1/2	AC	19.8	208/1	11	28	100	1,2

REMARKS:
1. PROVIDE ALL ACCESSORIES REQUIRED FOR LOW AMBIENT OPERATION TO 0ºF. PROVIDE COIL GUARDS AND 1,000 SALT-HOUR SEACOAST CONSTRUCTION. COATINGS MUST NOT REDUCE UNIT PERFORMANCE BELOW SCHEDULED QUANTITIES.
2. DUCTLESS SPLIT SYSTEM MUST BE CAPABLE OF HANDLING 100 FEET OF REFRIGERANT LINE BETWEEN AC AND CU.

ELECTRIC HEATER SCHEDULE

Mark	TYPE	ELEC. HEAT (KW)	ELEC. HEAT (BTUH)	VOLT/PH	WEIGHT (LBS)	REMARKS
EUH-1,2	UNIT HEATER	5.0	17,000	208/1	27	1
EUH-3	UNIT HEATER	3.0	10,200	208/1	27	1

REMARKS:
1. HEATER MUST BE PROVIDED WITH MOUNTING BRACKET, BUILT-IN ADJUSTABLE THERMOSTAT (SET FOR 50°F) AND OVERHEAT PROTECTION.

FAN SCHEDULE

MARK	AREA SERVED	TYPE	CFM	ESP (IN. H20)	MOTOR SIZE (HP)	RPM	DRIVE	SONES	VOLT/PH	WEIGHT (LBS)	REMARKS
EF-1	SHOWER 15	INLINE	50	0.25	1\20	685	DIRECT	1.3	120/1	11	1, 2
EF-2	SHOWER 14	INLINE	50	0.25	1\20	685	DIRECT	1.3	120/1	11	1, 2
EF-3	JAN 118	INLINE	50	0.25	1\20	685	DIRECT	1.3	120/1	11	1, 3
EF-4	JAN 203	INLINE	50	0.25	1\20	685	DIRECT	1.3	120/1	11	1, 3
EF-5	AIR COMP 132	INLINE	800	0.5	467 W	1070	DIRECT	2	120/1	60	1, 4
EF-6	ELECTRICAL 133	INLINE	150	0.35	145 W	1050	DIRECT	2	120/1	11	1, 4
EF-7	ELECTRICAL 112	INLINE	150	0.35	145 W	1050	DIRECT	2	120/1	11	1, 4
EF-8	AIR COMP 107	INLINE	800	0.5	467 W	1070	DIRECT	2	120/1	60	1, 4
EF-9	WOMEN 116	INLINE	150	0.5	145 W	1050	DIRECT	2	120/1	26	1, 5
EF-10	MEN 117	INLINE	225	0.5	1\20	1050	DIRECT	4.1	120/1	26	1, 5
EF-11	WOMEN 108	INLINE	225	0.5	1\20	1050	DIRECT	4.1	120/1	26	1, 5
EF-12	MEN 204	INLINE	325	0.5	1\20	1350	DIRECT	5.1	120/1	26	1, 5
EF-13	WOOD SHOP 104	INLINE	1,000	0.75	799 W	1310	DIRECT	3	120/1	57	3

REMARKS:
1. PROVIDE FAN WITH BACKDRAFT DAMPER AND HANGING ISOLATOR KIT. SUPPORT FAN FROM STRUCTURE.
2. FAN TO BE CONTROLLED BY WALL MOUNTED DEHUMIDISTAT. RH SETPOINT OF 50%.
3. FAN TO BE CONTROLLED BY WALL SWITCH INSTALLED BY ELECTRICAL CONTRACTOR.
4. FAN TO BE CONTROLLED BY WALL MOUNTED, LINE VOLTAGE THERMOSTAT PROVIDED BY MECHANICAL CONTRACTOR.
5. FAN TO BE CONTROLLED BY WALL MOUNTED MOTION DETECTOR.

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

MARK	TYPE	INLET SIZE (IN.)	MAX. PRIMARY CFM	MIN. PRIMARY CFM	ELECTRIC HEATER KW	HEAT STAGES	VOLT/PH	REMARKS
VAV-1-1	SINGLE DUCT	5	125	85	1.0	1	208/1	1,2,3,4,5,6
VAV-1-2	SINGLE DUCT	5	125	85	1.0	1	208/1	1,2,3,4,5,6
VAV-1-3	SINGLE DUCT	8	575	190	2.5	1	208/1	1,2,3,4,5,6
VAV-1-4	SINGLE DUCT	10	800	180	3.0	1	208/1	1,2,3,4,5,6
VAV-1-5	SINGLE DUCT	5	100	85	1.0	1	208/1	1,2,3,4,5,6
VAV-1-6	SINGLE DUCT	5	175	85	1.0	1	208/1	1,2,3,4,5,6
VAV-1-7	SINGLE DUCT	8	625	190	2.5	1	208/1	1,2,3,4,5,6
VAV-1-8	SINGLE DUCT	8	550	190	2.5	1	208/1	1,2,3,4,5,6
VAV-2-1	SINGLE DUCT	12	1300	525	6.5	2	208/1	1,2,3,4,5,6
VAV-2-2	SINGLE DUCT	6	350	125	1.5	1	208/1	1,2,3,4,5,6

REMARKS:
1. PROVIDE UNIT WITH MULTI-POINT AVERAGING DIAMOND FLOW SENSOR.
2. PROVIDE UNIT WITH TOP HANGER BRACKETS.
3. PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION.
4. PROVIDE ELECTRIC HEAT IN UNIT WITH SILENT SOLID STATE RELAYS.
5. PROVIDE UNIT WITH INTERNAL STEP DOWN TRANSFORMER FOR 24V CONTROLS.
6. MINIMUM PRIMARY CFM IS MINIMUM REQUIRED AIRLFOW FOR BOX SIZE WITH LISTED HEATER KW.

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ACTIVITY

SATISFACTORY TO

DES MPM | DRW LWM | CHK JDL

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVFAC
1PT MARINE
MARINE CORPS AIR STATION
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
MECHANICAL SCHEDULES

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7179507
NAVFAC DRAWING NO. 12883148
SHEET 94 OF 121

M-602

DRAWFORM REVISION: 10 MARCH 2009

PROVIDE WITH
CLEAR COVER

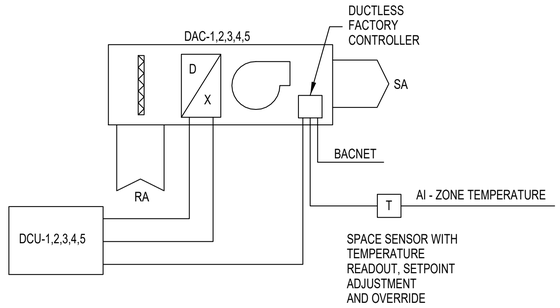
NOTES:

1. EMERGENCY AIR DISTRIBUTION SHUTDOWN, LOCATED AT AN EXIT DOOR.
2. UPON ACTIVATION OF EMERGENCY PUSHBUTTONS, ALL AIR HANDING UNITS AND EXHAUST FANS MUST BE DISABLED AND REMAIN OFF UNTIL A MANUAL RESET HAS OCCURRED.
3. UPON ACTIVATION OF THE EMERGENCY PUSHBUTTON, ALL OUTSIDE AND EXHAUST AIR INTAKE DAMPERS MUST CLOSE FULLY.
4. MAINTAINED MUSHROOM BUTTON WITH CLEAR HINGED COVER, PULL TO RESET, LABELED "EMERGENCY HVAC SHUTDOWN".

C2 EMERGENCY HVAC SHUTDOWN SWITCH
NTS

CONTROLS LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AI	DDC ANALOG INPUT POINT W/ ADJUSTABLE PID GAIN CONTROL	BAS	BUILDING AUTOMATION SYSTEM
		KW	KILOWATTS, ELECTRIC HEATER
AO	DDC ANALOG OUTPUT POINT W/ ADJUSTABLE PID GAIN CONTROL	DDC	DIRECT DIGITAL CONTROL
		ATFP	ANTI-TERRORISM / FORCE PROTECTION
BI	DDC BINARY DIGITAL INPUT POINT W/ INDICATING LIGHT ON DDC PANEL	DP	DIFFERENTIAL PRESSURE
BO	DDC BINARY DIGITAL OUTPUT POINT W/ MANUAL OVERRIDE AND INDICATING LIGHT ON DDC PANEL	SP	STATIC PRESSURE SENSOR
AV	DDC ANALOG VALUE	VFD	VARIABLE FREQUENCY DRIVE
BV	DDC BINARY DIGITAL VALUE	CFM	CUBIC FEET PER MINUTE, AIRFLOW MEASURING STATION
	CURRENT SENSOR	F	FREEZESTAT
M	MOTOR, PROPORTIONAL ELECTRIC	TS	THERMOSTAT / HUMIDISTAT
SD	DUCT SMOKE DETECTOR - COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER SUPPLY	T	TEMPERATURE SENSOR
	MOTORIZED DAMPER	RH	RELATIVE HUMIDITY SENSOR



SEQUENCE OF OPERATION

DAC/DCU-1,2,3,4,5:

NORMAL MODES:
COOLING MODE: IF THE ROOM STAT CALLS FOR COOLING, THE DAC DDC SHALL ACTIVATE COOLING MODE TO MAINTAIN ROOM STAT SETPOINT 76°F (ADJ.).

OVERRIDE MODES:
UNOCCUPIED MODE: UNOCCUPIED MODE SHALL BE AVAILABLE AS AN OVERRIDE AT THE DDC SYSTEM. UPON ENTERING BUILDING UNOCCUPIED MODE, THE ROOM STAT SHALL COMMAND THE DAC DDC TO STOP THE DAC FAN, THE ROOM STAT SHALL CONTINUE TO MONITOR SPACE TEMPERATURE AND PROVIDE CONTROL SIGNALS TO THE DAC.

THE DDC SYSTEM SHALL MONITOR THE SPACE TEMPERATURE, THROUGH THE BACNET CONNECTION, AND ALARM IF THE TEMPERATURE EXCEEDS 80 DEGREES. ANY OTHER SPLIT SYSTEMS ALARMS SHALL BE SENT TO THE DDC SYSTEM.

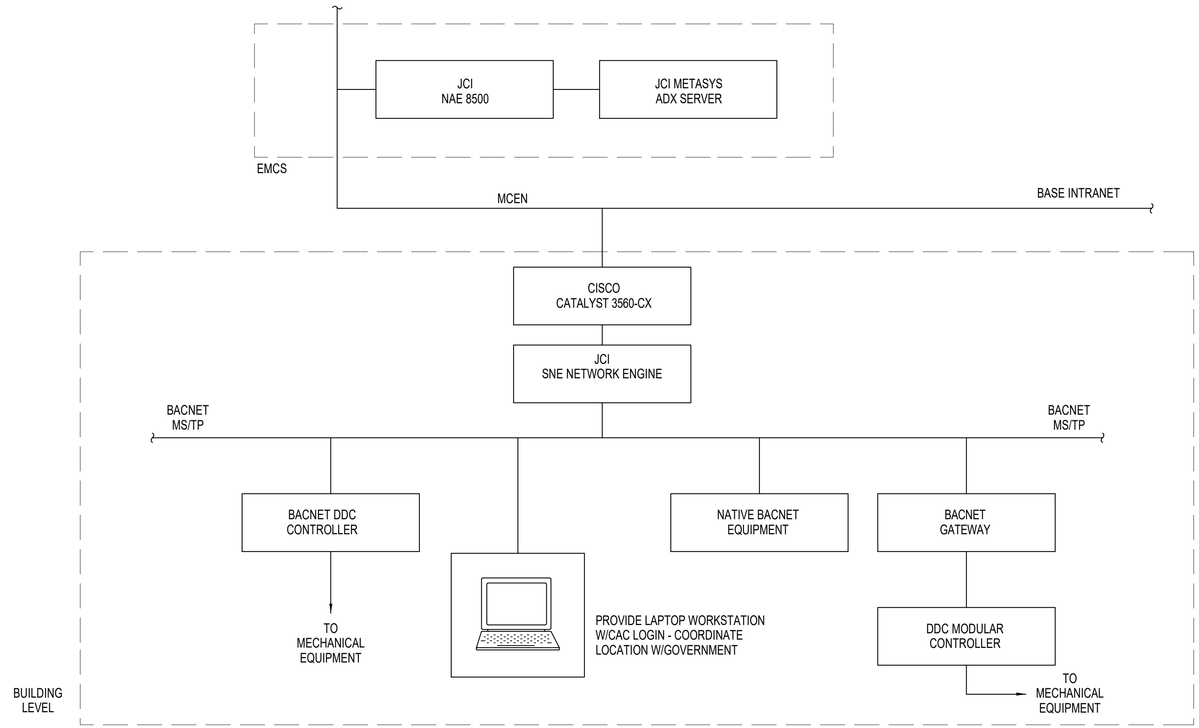
ATFP EMERGENCY ACTUATION: IF THE HVAC ATFP SHUTDOWN SIGNAL IS RECEIVED, THE DAC DDC SHALL IMMEDIATELY SHUTDOWN THE FAN. ATFP SHUTDOWN SHALL BE ACCOMPLISHED BY BOTH A HARDWIRED SHUTDOWN WIRED IN SERIES WITH OTHER SAFETIES, AND A DDC SHUTDOWN REQUIRING A MANUAL RESET.

FIRE ALARM SHUTDOWN: IF THE BUILDING FIRE ALARM CONTROL PANEL SIGNALS AN ALARM, THE FAN SHALL BE DE-ENERGIZED, AND THE DAC DDC SHALL SIGNAL AN ALARM AT THE DDC SYSTEM.

DUCTLESS SPLIT POINTS LIST

POINT NAME	HARDWARE				SOFTWARE				FAILURE MODE / ALARM SETPOINT	SHOW ON GRAPHICS
	AI	AO	BI	BO	AV	BV	TREND	ALARM		
ZONE HIGH TEMP ALARM	●							●		
ZONE SETPOINT ADJUST	●									●
ZONE TEMP	●									●
DUCTLESS SPLIT BACNET						●				●

A1 DUCTLESS SPLIT UNIT CONTROL DETAIL
NTS



A3 DDC SYSTEM ARCHITECTURE
NTS

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A/E INFO

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ACTIVITY

SATISFACTORY TO

DES	MPM	DRW	LWM	CHK	JDL

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

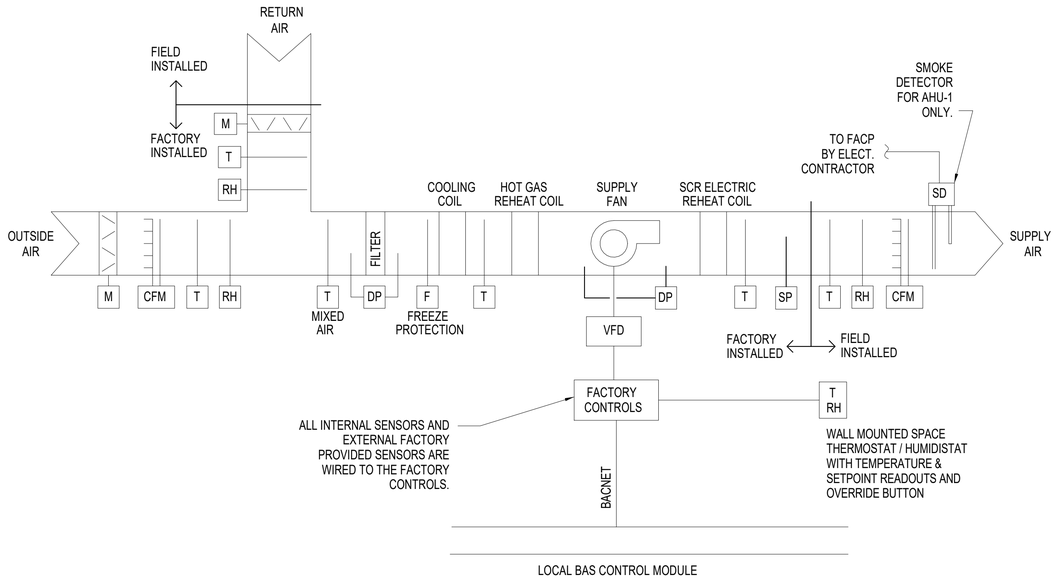
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA
IPT MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE
OPERATIONS FACILITY
MECHANICAL CONTROLS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7179507
NAVFAC DRAWING NO.	12883149
SHEET	95 OF 121

M-701

DRAWFORM REVISION: 10 MARCH 2009



A1 PACKAGED AIR HANDLER UNIT CONTROL DETAIL
NTS

SEQUENCE OF OPERATION

THE OCCUPANCY SCHEDULE AS INDICATED BY THE SEQUENCE OF OPERATIONS MUST BE DEFINED AS 6AM TO 6PM MONDAY THRU FRIDAY FOR OCCUPIED HOURS OR AS REQUESTED BY THE OWNER. UNOCCUPIED HOURS MUST BE 6PM TO 6AM MONDAY THRU FRIDAY AND 12 AM TO 12 AM SATURDAY AND SUNDAY. OCCUPANCY SCHEDULE MUST BE ADJUSTABLE THROUGH THE BAS.

THE PACKAGED AIR HANDLER MUST BE PROVIDED WITH ITS OWN INTERNAL CONTROLLER FOR FULL UNIT CONTROL. THE INTERNAL CONTROLLER MUST PROVIDE FULL 2-WAY COMMUNICATION TO THE BUILDING BAS THROUGH A BACNET MS/TP INTERFACE. THE FACTORY CONTROLS SHALL IMPLEMENT A STATIC PRESSURE RESET SEQUENCE, BASED ON THE MOST OPEN TERMINAL UNIT.

SUPPLY FAN CONTROL: THE VARIABLE SPEED SUPPLY FAN WILL BE STARTED BASED ON OCCUPANCY SCHEDULE. THE SUPPLY FAN SPEED WILL MODULATE TO MAINTAIN THE DISCHARGE STATIC PRESSURE SETPOINT (FINAL SETPOINT TO BE DETERMINED BY THE BALANCING CONTRACTOR). UPON A LOSS OF AIRFLOW, THE SYSTEM WILL AUTOMATICALLY RESTART. THE DUCT STATIC PRESSURE SENSOR IS FACTORY MOUNTED AND WIRED. THE SUPPLY AIRFLOW MEASURING STATION IS FACTORY PROVIDED BUT FIELD INSTALLED AND WIRED.

OA CONTROL: THE UNIT MOUNTED OA DAMPER WILL MODULATE OPEN BASED UPON THE OA CFM WHEN THE UNIT OPERATES IN THE OCCUPIED MODE, AND REMAIN CLOSED WHEN THE UNIT IS IN ANY OTHER MODE OF OPERATION (ADJUSTABLE). THE RETURN AIR DAMPER OPERATION IS THE INVERSE OF THE OA DAMPER. THE OA AND RETURN DAMPERS MODULATE TO MAINTAIN A CONSTANT OUTSIDE AIRFLOW.

TEMPERATURE CONTROL: THE UNIT WILL CONTROL TO MAINTAIN A CONSTANT DISCHARGE AIR TEMPERATURE OF 55 F IN COOLING (ADJUSTABLE). THE SETPOINT TEMPERATURES MUST BE PROVIDED TO THE PACKAGED UNIT CONTROLLER BY THE BAS. THE DISCHARGE TEMPERATURE AND HUMIDITY SENSORS ARE FACTORY PROVIDED BUT FIELD INSTALLED AND WIRED. THE SCR HEATER SHALL OPERATE TO ENSURE THAT THE MINIMUM SUPPLY AIR TEMPERTAURE TO THE SPACES IS AT 55 DEGREES OR ABOVE. THE HOT GAS REHEAT COIL CAN ALSO BE USED TO MAINTAIN THE SUPPLY AIR TEMPERATURE DURING NORMAL OPERATION, AND DURING DEHUMIDIFICATION OPERATION.

WARMUP/COOLDOWN MODE: THE WARMUP/COOLDOWN MODES MUST OPERATE THE SAME AS OCCUPIED MODE EXCEPT THE OUTSIDE AIR DAMPER MUST BE CLOSED. PROVIDE A OPTIMUM START-UP SEQUENCE.

DEHUMIDIFICATION SEQUENCE: IF A SPACE HUMIDISTAT INDICATED A HUMIDITY LEVEL OF 65% OR HIGHER, THE UNIT SHALL ENTER DEHUMIDIFICATION MODE BY RAMPING THE SUPPLY FAN UP TO 100%, SETTING THE COOLING COIL DISCHARGE TEMPERATURE TO 55 DEGF, MODULATING THE HOT GAS REHEAT VALVE, AND OPENING THE TERMINAL UNITS TO 100% AND USING THE TERMINAL UNIT ELECTRIC HEATERS TO MAINTAIN THE SPACE TEMPERATURE. DISENGAGE DEHUMIDIFICATION MODE WHEN THE ALL SPACE HUMIDITY SENSORS ARE AT 55% RH OR LESS.

OCCUPIED MODE: THE OCCUPANCY MODE WILL BE CONTROLLED VIA A NETWORK INPUT. THE OCCUPANCY MODE CAN ALSO BE OVERRIDDEN BY A NETWORK INPUT.

UNOCCUPIED MODE: THE UNIT WILL CYCLE TO MAINTAIN UNOCCUPIED ZONE SETPOINTS DURING UNOCCUPIED PERIODS.\

SHUTDOWN: THE UNIT MUST SHUT DOWN AS PROGRAMMED BY THE OWNER UPON SMOKE DETECTION, FIRE ALARM OR ATFP EMERGENCY SHUTDOWN SWITCH INPUTS.

AHU POINTS LIST

POINT NAME	HARDWARE				SOFTWARE				FAILURE MODE / ALARM SETPOINT	SHOW ON GRAPHICS
	AI	AO	BI	BO	AV	BV	TREND	ALARM		
SUPPLY AIR FLOW CFM	●						●			●
SUPPLY AIR TEMPERATURE	●						●	●	> 3 DEG FROM SETPOINT	●
SUPPLY AIR RELATIVE HUMIDITY	●						●			●
SUPPLY FAN STOP/START				●			●			●
SUPPLY FAN SPEED		●								●
SUPPLY FAN STATUS			●				●	●		●
SUPPLY FAN DP	●						●			●
COOLING COIL LEAVING AIR TEMPERATURE	●						●			●
FREEZESTAT			●					●		●
MIXED AIR TEMPERATURE	●						●			●
RETURN AIR TEMPERATURE	●						●			●
RETURN AIR RELATIVE HUMIDITY	●						●			●
RETURN AIR DAMPER		●							OPEN	●
RETURN AIR DAMPER POSITION	●						●			●
OUTSIDE AIR DAMPER		●							CLOSED	●
OUTSIDE AIR DAMPER POSITION	●						●			●
OUTDOOR AIR SENSOR CFM	●						●			●
OUTSIDE AIR TEMPERATURE	●						●			●
OUTSIDE AIR RELATIVE HUMIDITY	●						●			●
SPACE TEMPERATURE SENSOR	●						●	●	> 3 DEG FROM SETPOINT	●
SPACE HUMIDITY SENSOR	●						●			●
COOLING SETPOINT					●		●			●
HEATING SETPOINT					●		●			●
DEHUMIDIFICATION MODE STATUS						●	●			●
DUCT SMOKE DETECTOR			●					●		●

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PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING COMMAND – MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
IPT MARINE
MARINE CORPS AIR STATION
CHERRY POINT, NC

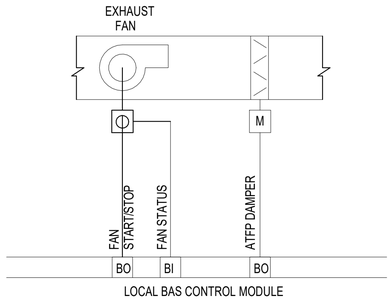
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

MECHANICAL CONTROLS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7179507
NAVFAC DRAWING NO. 12883150
SHEET 96 OF 121

M-702

DRAWFORM REVISION: 10 MARCH 2009



EXHAUST FAN CONTROL

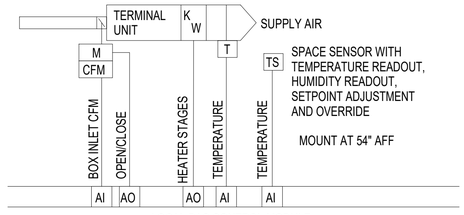
ALL FANS MUST OPERATE WHENEVER THE BUILDING IS IN OCCUPIED MODE AND MUST BE CONTROLLED BY THE DDC SYSTEM.

HVAC ATFP SHUTDOWN SWITCH: UPON ACTIVATION OF THE HVAC ATFP EMERGENCY SHUTDOWN SWITCH, THE EXHAUST FAN WILL SHUT DOWN AND THE EXHAUST DAMPER WILL CLOSE.

EXHAUST FAN POINTS LIST

POINT NAME	HARDWARE				SOFTWARE				FAILURE MODE	SHOW ON GRAPHICS
	AI	AO	BI	BO	AV	BV	TREND	ALARM		
EXHAUST FAN START/STOP				●			●		OFF	●
EXHAUST FAN STATUS			●				●	●		●
EXHAUST DAMPER				●					CLOSED	●
EXHAUST DAMPER POSITION			●				●			●

C2 EXHAUST SYSTEM CONTROL
NTS



SEQUENCE OF OPERATION

THE VARIABLE VOLUME (VAV) TERMINAL UNIT WILL BE CONTROLLED INDEPENDENT OF SYSTEM PRESSURE FLUCTUATIONS BY AN APPLICATION SPECIFIC DDC CONTROLLER UTILIZING ELECTRIC ACTUATION.

OCCUPIED AND UNOCCUPIED OPERATIONS ARE THE SAME. OCCUPIED SETPOINTS ARE 78°F COOLING, 68°F HEATING. UNOCCUPIED SETPOINTS ARE 82°F COOLING AND 55°F HEATING, 65% RELATIVE HUMIDITY.

THE TERMINAL UNIT MUST OPERATE WITH A MINIMUM COOLING AIRFLOW, MINIMUM HEATING AIRFLOW AND MAXIMUM AIRFLOW. THERE MUST BE ONE GLOBAL SETPOINT BASED ON AMBIENT CONDITIONS. THE GLOBAL SETPOINT MUST BE 70°F AT LESS THAN 50°F AMBIENT, AND 76°F AT GREATER THAN 80°F AMBIENT. BETWEEN 50°F AND 80°F, THE GLOBAL SETPOINT MUST RESET LINEARLY, OR IN NO FEWER THAN 3 STEPS. THE THERMOSTAT MUST BE CAPABLE OF A +/- 3°F ADJUSTMENT TO THE GLOBAL SETPOINT BY THE OCCUPANT. WHEN ABOVE THE GLOBAL SETPOINT, WHEN SPACE TEMPERATURE EXCEEDS SETPOINT, THE DAMPER MUST MODULATE TO MAINTAIN SETPOINT. WHEN SPACE TEMPERATURE IS BELOW SETPOINT, THE HEATING COIL CONTROL MUST STEP TO MAINTAIN SETPOINT.

TEMPERATURE SENSORS LOCATED IN PUBLIC AREAS SUCH AS CORRIDORS MUST HAVE NO SET POINT ADJUSTMENT CAPABILITY AT THE WALL MOUNTED SENSORS. ALL OTHER TEMPERATURE SENSORS MUST BE PROVIDED WITH LIMITED MANUAL SET POINT ADJUSTMENT AT THE WALL MOUNTED TEMPERATURE SENSOR AND WITH AN OVERRIDE BUTTON TO ENABLE THE RESPECTIVE AIR HANDLER TO PROVIDE HEATING OR COOLING AS REQUIRED.

A2 TYPICAL TERMINAL UNIT CONTROL DETAIL
NTS

TERMINAL UNIT POINTS LIST

POINT NAME	HARDWARE				SOFTWARE				FAILURE MODE	SHOW ON GRAPHICS
	AI	AO	BI	BO	AV	BV	TREND	ALARM		
SUPPLY AIR FLOW CFM	●						●			●
DAMPER POSITION		●					●		OPEN	●
ELECTRIC HEATER STOP/START		●								●
ELECTRIC HEATER STAGE		●					●			●
TERMINAL UNIT LEAVING AIR TEMPERATURE	●						●	●		●
SPACE HUMIDITY	●						●	●		●
ZONE TEMPERATURE SETPOINT ADJUSTMENT					●		●			●
SPACE TEMPERATURE					●		●	●		●

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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA
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MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
MECHANICAL CONTROLS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7179507
NAVFAC DRAWING NO. 12883151
SHEET 97 OF 121

M-703

DRAWFORM REVISION: 10 MARCH 2009

GENERAL NOTES AND REQUIREMENTS

1. WORKMANSHIP MUST CONFORM TO NECA INSTALLATION STANDARDS INCLUDING NECA 1.
2. INSTALLATION MUST COMPLY WITH NATIONAL ELECTRICAL CODE, INTERNATIONAL BUILDING CODE, APPLICABLE UFCS AND ALL REQUIREMENTS OF THE LOCAL INSPECTOR (FURNISH INSPECTION CERTIFICATE). ALL WORK MUST BE BY LICENSED CONTRACTOR.
3. THE CONTRACTOR MUST REFER TO THE ARCHITECTURAL PLANS FOR FLOOR PLAN DIMENSIONS. DO NOT SCALE THESE DRAWINGS. THE LOCATION OF ALL WALL MOUNTED DEVICES, INCLUDING MOUNTING HEIGHTS, MUST BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION. COORDINATE LOCATIONS OF ALL LIGHT FIXTURES WITH THE REFLECTED CEILING PLANS. LIGHT FIXTURES INSTALLED IN MECHANICAL AREAS MUST AVOID MECHANICAL PIPING, EQUIPMENT, DUCTWORK, ETC.
4. THE CONTRACTOR MUST COORDINATE ANY AND ALL WORK WITH OTHER TRADES INVOLVED IN THE PROJECT, PRIOR TO INSTALLATION OF ELEC. EQUIPMENT, SO AS TO AVOID CONFLICTS DURING CONSTRUCTION AND TO ALLOW FOR OPTIMUM MAINTENANCE AND WORKING SPACE.
5. CONDUITS AND CABLES MUST BE CONCEALED WHEREVER POSSIBLE BY EITHER ROUTING ABOVE CEILING, IN INTERSTITIAL SPACES OR RUNNING EXPOSED IN UNFINISHED SPACES AS MUCH AS FEASIBLE. CONDUITS MAY BE RUN EXPOSED IN MECHANICAL AREAS OR OTHER AREAS NOT SUBJECT TO PUBLIC VIEW WHERE APPROVED BY THE OWNER. WHEREVER CONDUITS OR CABLES ARE APPROVED TO BE EXPOSED, CONDUITS AND CABLES MUST BE RUN PARALLEL OR PERPENDICULAR TO STRUCTURAL ELEMENTS AND MUST BE RUN AND BUNDLED IN GROUPS, AND THE INSTALLATION MUST BE NEAT AND ORDERLY. EVEN WHEN EXPOSED, CONDUITS AND CABLES MUST BE ROUTED TO MINIMIZE VIEW FROM PERSONNEL. SEAL ALL PENETRATIONS AIR TIGHT AROUND ALL CONDUITS PASSING THROUGH WALLS OR FLOORS USING APPROPRIATE PENETRATION PROTECTION WHEN PASSING INTO OR THROUGH RATED ASSEMBLIES.
6. ALL LIGHT FIXTURES MUST BE SUPPORTED INDEPENDENTLY OF THE SUSPENDED CEILING SYSTEM.
7. WHERE BRANCH CIRCUIT TOTAL LENGTH IS GREATER THAN FIFTY (50) FEET FROM THE PANELBOARD, SEE VOLTAGE DROP SCHEDULE.
8. ALL MOUNTING HEIGHTS ARE GIVEN TO THE BOTTOM OF THE DEVICE UNLESS NOTED OTHERWISE.
9. ALL FUSES, DISCONNECT SWITCHES, AND BREAKER SIZES, SHOWN FOR MECHANICAL EQUIPMENT, MUST BE VERIFIED BEFORE THE PURCHASE OR INSTALLATION OF SAID EQUIPMENT, WITH THE EQUIPMENT SUPPLIER AND THE MECHANICAL CONTRACTOR.
10. ALL DISCONNECT SWITCHES ARE TO BE HEAVY DUTY FUSIBLE TYPE. FUSES MUST BE THE APPROPRIATE TYPE FOR THE LOAD SERVED. THE CONTRACTOR MUST COMPARE ALL INSTALLED EQUIPMENT NAMEPLATE INFORMATION WITH THE ELECTRICAL PLANS AND NOTIFY THE ENGINEER IMMEDIATELY WITH ANY DISCREPANCIES. THE CONTRACTOR MUST COORDINATE ALL FUSE SIZES WITH ACTUAL INSTALLED EQUIPMENT NAMEPLATE INFORMATION PRIOR TO PURCHASING OR INSTALLING FUSES. WHERE THE NAMEPLATE INFORMATION DOES NOT INDICATE AN OVERCURRENT PROTECTION SIZE OR MAXIMUM AMPACITY RATING, FUSES MUST BE INSTALLED AS INDICATED ON THE ELECTRICAL PLANS WHERE IN AGREEMENT WITH NAMEPLATE DATA.
11. THE CONTRACTOR MUST PROVIDE ALL NECESSARY DISCONNECTS, SWITCHES, AND RECEPTACLES UNDER THE BID AND MUST INCLUDE ALL NECESSARY CIRCUITS TO AND FINAL CONNECTIONS TO THE EQUIPMENT PROVIDED BY ALL SUPPLIERS, UNLESS NOTED OTHERWISE BY OTHER DISCIPLINES. COORDINATE CLOSELY.
12. ALL ELECTRICAL EQUIPMENT MUST BE INSTALLED SO THAT ALL CODE-REQUIRED AND MANUFACTURER-RECOMMENDED SERVICING CLEARANCES ARE MAINTAINED. INSTALLATIONS MUST FULLY COMPLY WITH NEC 110.26 AND NEC 408.18 FOR CLEARANCE REQUIREMENTS.
13. PROVIDE GROUNDING CONDUCTOR FOR ALL CIRCUITS PER N.E.C. GROUNDING SYSTEMS MUST MEET ALL REQUIREMENTS OF NEC 250.
14. THE CONTRACTOR MUST PATCH ANY WALL, CEILING, OR FLOOR OPENINGS AND PENETRATIONS RESULTING FROM DEMOLITION OR NEW WORK IN EXISTING AREAS. PATCH MUST MEET OR EXCEED THE STRUCTURE'S INTEGRITY AND FIRE RATING. FINISH MUST MATCH STRUCTURE'S FINISH.
15. ALL MULTIWIRE BRANCH CIRCUITS MUST HAVE MULTIPOLE BREAKERS AS REQUIRED BY NEC 210.4(B).
16. ALL CIRCUITS MUST BE TESTED WITH 600 VOLT TESTER PRIOR TO ENERGIZING.
17. ALL WALL OUTLET BOXES, RECEPTACLES, SWITCHES, COVERPLATES, ETC. MUST BE COMMERCIAL SPECIFICATION GRADE, STANDARD OR HEAVY DUTY. SEE BOOK SPECIFICATIONS FOR ADDITIONAL DETAILS. VERIFY COLOR / MATERIALS FOR ALL DEVICES AND COVERPLATES PRIOR TO PURCHASE. PROVIDE LABEL FOR EACH DEVICE IDENTIFYING THE CIRCUIT SERVING THE DEVICE. VERIFY IF LABEL SHOULD BE ON INSIDE OR OUTSIDE FACE OF COVERPLATE WITH OWNER/TENANT.
18. IT IS THE <u>SOLE</u> RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE W/ ALL OTHER TRADES REGARDING VOLTAGES, LOADS, CIRCUIT BREAKERS, ETC. PRIOR TO BEGINNING ANY WORK.
19. AS USED ON THESE DOCUMENTS, THE WORD "PROVIDE" MEANS TO FURNISH AND INSTALL THE ITEM OR EQUIPMENT AND MAKE THE FINAL CONNECTION AS REQUIRED.
20. ALL PANELS MUST BE STANDARD COMMERCIAL GRADE FROM A REPUTABLE NATIONAL MANUFACTURER AS SPECIFIED IN BOOK SPECIFICATIONS OR ON PLANS. PANELS MUST BE RATED AS INDICATED ON PANEL SCHEDULES.
21. CONTRACTOR IS RESPONSIBLE TO COMPLY WITH ALL REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE, ABA, AND UFCS WHICH ARE APPLICABLE TO THIS PROJECT REGARDLESS OF WHETHER ALL DETAILS ARE INDICATED ON PLANS.
22. CONTRACTOR MUST VERIFY ALL AREAS THAT ARE USED AS A RETURN PLENUM WITH MECHANICAL CONTRACTOR AND PROVIDE PLENUM RATED CABLE FOR ALL CABLES NOT RUN IN METAL CONDUIT. THIS INCLUDES ALL TELECOMMUNICATIONS, FIRE ALARM, OR CONTROL WIRING ABOVE CEILING.
23. CONTRACTOR MUST COMPLY WITH ALL APPLICABLE SEISMIC REQUIREMENTS.
24. ELECTRICAL BOXES AND WIRING MUST NOT BE RECESSED INTO OR PENETRATE STRUCTURAL COLUMNS. BOXES/CONDUITS MUST BE SURFACE MOUNTED TO COLUMN AND/OR RECESSED IN STUD WALL WHERE POSSIBLE. COORDINATE WITH ARCHITECT.
25. ALL RECEPTACLES, SWITCHES, AND ELECTRICAL DEVICES REQUIRED TO BE ABA ACCESSIBLE MUST BE MOUNTED PER ANSI 117.1 SECTIONS 308 AND 309.
26. ALL EQUIPMENT CONNECTED TO OR ASSOCIATED WITH THE ELECTRICAL, FIRE ALARM OR TELECOM SYSTEMS OR OTHERWISE INCLUDED IN THE SCOPE OF WORK MUST BE LISTED AND LABELED BY A THIRD PARTY ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION.
27. CONTRACTOR MUST PROVIDE ROUGH-INS FOR ALL CONTRACTOR PROVIDED EQUIPMENT (INCLUDING SUB-CONTRACTED EQUIPMENT AS APPLICABLE) AND DEVICES LOCATED ON THESE PLANS IN ACCORDANCE WITH NEC, NFPA, AND MANUFACTURER REQUIREMENTS. UNLESS OTHERWISE NOTED, BOX PROVIDED MUST BE SUITABLE FOR AND SIZED FOR THE PURPOSE, WITH A MINIMUM 3/4" CONDUIT TO ACCESSIBLE LOCATION ABOVE CEILING OR CONDUIT SIZED AS APPROPRIATE FOR THE DEVICE IN QUESTION.

VOLTAGE DROP SCHEDULE

120 VOLT BRANCH CIRCUITS UP TO 8 AMPS (<1.0 KVA)

RUN DISTANCE IN FEET			WIRE SIZE AWG
1'	-	120'	#12
121'	-	190'	#10
191'	-	300'	#8
301'	-	470'	#6

120 VOLT BRANCH CIRCUITS 9 AMPS TO 14 AMPS (1- 1.7 KVA)

RUN DISTANCE IN FEET			WIRE SIZE AWG
1'	-	65'	#12
66'	-	110'	#10
111'	-	170'	#8
171'	-	270'	#6

277 VOLT BRANCH CIRCUITS UP TO 14 AMPS (<3.9 KVA)

RUN DISTANCE IN FEET			WIRE SIZE AWG
1'	-	160'	#12
161'	-	250'	#10
251'	-	390'	#8
391'	-	620'	#6

WIRE SIZES INDICATED IN GENERAL NOTES AND CONNECTIONS SCHEDULES ARE MINIMUM WIRE SIZES. CONTRACTOR SHALL UPSIZE WIRES BASED ON LOAD AND LENGTH OF RUN AS INDICATED IN SCHEDULE ABOVE.

ELECTRICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
A	AMPERES
ARCH	ARCHITECT
C	CONDUIT
EX	EXISTING
EXT	EXTERIOR
FA	FIRE ALARM
FURN	FURNITURE
GFI	GROUND-FAULT CIRCUIT INTERRUPTER
GFCI	GROUND-FAULT CIRCUIT INTERRUPTER
GND	GROUND
IG	ISOLATED GROUND
JB	JUNCTION BOX
MECH	MECHANICAL
NTS	NOT TO SCALE
OC	ON-CENTER
PLMB	PLUMBING
PROV	PROVIDED BY
SFC	SURFACE MOUNTED
TP	TAMPER PROOF
V	VOLTS
W/	WITH
WP	WEATHERPROOF AND RATED FOR EXTERIOR TEMPERATURES

POWER SYMBOL LEGEND

SYMBOL	TYPICAL HEIGHT	DESCRIPTION
	---	HOMERUN TO PANEL/BRANCH CIRCUIT CONNECTION. SHORT TICKS REPRESENT PHASE CONDUCTORS. LONG TICKS REPRESENT GROUNDED CONDUCTORS. EQUIPMENT GROUNDING CONDUCTOR IS NOT SHOWN BUT ALWAYS REQUIRED. MINIMUM SIZE PER NEC BASED ON CIRCUIT BREAKER, SCHEDULE, AND VOLTAGE DROP TABLE.
	---	CIRCUIT WIRE. CONDUCTORS SHALL MATCH THAT OF THE ASSOCIATED HOMERUN.
	---	CIRCUIT WIRE. FUNCTION AS INDICATED ON PLANS.
	18"	NEMA 5-20R DUPLEX RECEPTACLE
	18"	NEMA 5-20R DUPLEX RECEPTACLE, SPLIT-CIRCUIT: BOTTOM RECEPTACLE SWITCHED, TOP UNSWITCHED.
	18"	NEMA 5-20R QUADRAPLEX RECEPTACLE
	18"	POWER RECEPTACLE, NEMA CONFIGURATION AS NOTED <u>RECEPTACLE MODIFIERS:</u> • G: GROUND-FAULT CURRENT INTERRUPTER • A: 3" ABOVE COUNTER OR BACKSPLASH • WP: WEATHERPROOF IN-USE ENCLOSURE • C: FLUSH IN CEILING TILE • U: INTEGRAL USB TYPE A CHARGER NOTE: MODIFIERS MAY BE COMBINED (E.G. 'AG' IS A COMBINATION OF 'A' AND 'G'.)
J	18"	JUNCTION BOX, WALL-MOUNTED, PURPOSE AS NOTED
J	--	JUNCTION BOX, ABOVE OR ON CEILING, PURPOSE AS NOTED
⊠	---	POWER TRANSFORMER, WITH HOUSEKEEPING PAD
	---	PANELBOARD OR OTHER ELECTRICAL EQUIPMENT
	---	DISCONNECT SWITCH, FUSED
$	44" BOTTOM	TOGGLE SWITCH
		<u>SWITCH MODIFIERS:</u> • M: MOTOR-RATED

HEIGHTS ARE TO THE BOTTOM OF THE DEVICE UNLESS NOTED OTHERWISE.
TOP: HEIGHT TO THE TOP OF THE DEVICE
BOTTOM: HEIGHT TO THE BOTTOM OF THE DEVICE.
HEIGHTS ARE TYPICAL AND MAY BE SUPERCEDED BY PLANS.

LIGHTING SYMBOL LEGEND

SYMBOL	TYPICAL HEIGHT	DESCRIPTION
$	44"	TOGGLE SWITCH <u>SWITCH MODIFIERS:</u> • 2: DOUBLE-POLE SWITCH • 3: THREE-WAY • 4: FOUR-WAY • S: OCCUPANCY SENSOR (AUTO ON/AUTO OFF) • V: VACANCY SENSOR (MANUAL ON/AUTO OFF) • L: LOW VOLTAGE SWITCH. PROVIDE COMPATIBLE POWER PACK AS REQUIRED. • D: DIMMING (SUITABLE FOR DIMMING TECHNOLOGY) • T: DIGITAL TIMER, ADJUSTABLE TO 12 HOURS • WP: IN WEATHERPROOF ENCLOSURE • MODIFIERS MAY BE COMBINED. (E.G. "LVD" IS A LOW VOLTAGE, DIMMING SWITCH WITH VACANCY SENSOR.)
S1	---	CEILING/WALL SENSOR. PROVIDE POWER PACKS AND OTHER ACCESSORIES AS REQUIRED BY LIGHTING CONTROL TECHNOLOGY. 'S' TYPE SENSORS SHALL BE CONFIGURED FOR AUTO ON/AUTO OFF CONTROL. 'V' TYPE SENSORS SHALL BE CONFIGURED FOR MANUAL ON/AUTO OFF CONTROL. <u>CEILING SENSOR TYPES:</u> • S1: LOW-VOLTAGE DUAL TECHNOLOGY MOTION SENSOR FOR CORRIDOR APPLICATIONS. AUTO OFF CONTROL SETTING MUST DIM TO 25%-50%. • S2/V2: LOW-VOLTAGE 360° DUAL TECHNOLOGY MOTION SENSOR FOR STANDARD COVERAGE. • S3/V3: LOW-VOLTAGE 360° DUAL TECHNOLOGY MOTION SENSOR FOR EXTENDED COVERAGE. • S4/V4: LOW-VOLTAGE DUAL TECHNOLOGY MOTION SENSOR, CORNER MOUNTED COVERAGE.
	---	OVERHEAD LIGHTING FIXTURE (VARIOUS SYMBOLS). TAG INDICATES FIXTURE TYPE ACCORDING TO LIGHT FIXTURE SCHEDULE.
	---	DOWNLIGHT OR PENDANT LIGHTING FIXTURE (VARIOUS SYMBOLS). TAG INDICATES FIXTURE TYPE ACCORDING TO LIGHT FIXTURE SCHEDULE.
	AS INDICATED	WALL-MOUNTED LIGHTING FIXTURE (VARIOUS SYMBOLS). TAG INDICATES FIXTURE TYPE ACCORDING TO LIGHT FIXTURE SCHEDULE.
	AS INDICATED	DIRECTIONAL LIGHT SUCH AS FLOOD OR TRACK HEAD. TAG INDICATES FIXTURE TYPE ACCORDING TO LIGHT FIXTURE SCHEDULE.
	AS INDICATED	POLE OR AREA LIGHT (VARIOUS SYMBOLS). TAG INDICATES FIXTURE TYPE ACCORDING TO LIGHT FIXTURE SCHEDULE.
	---	EXIT LIGHT. WALL- OR CEILING- MOUNT AS SUITABLE FOR THE APPLICATION. FACES AND CHEVRONS AS INDICATED. FIXTURE TYPE ACCORDING TO LIGHT FIXTURE SCHEDULE.
	---	COMBINATION EMERGENCY LIGHTING UNIT AND EXIT SIGN. WALL- OR CEILING-MOUNT AS SUITABLE FOR THE APPLICATION. FACES AND CHEVRONS AS INDICATED. FIXTURE TYPE ACCORDING TO LIGHT FIXTURE SCHEDULE.
	---	EMERGENCY LIGHTING UNIT. WALL- OR CEILING-MOUNT AS SUITABLE FOR THE APPLICATION. FIXTURE TYPE ACCORDING TO LIGHT FIXTURE SCHEDULE.
	---	SLASHES OR HALF-SHADING INDICATES THE FIXTURE SHALL BE CONNECTED AS A NIGHT LIGHT, AHEAD OF ALL SWITCHING AND OTHER CONTROL DEVICES (24-HOUR OPERATION). TYPICAL OF VARIOUS LIGHT FIXTURE SYMBOLS.

HEIGHTS ARE TO THE BOTTOM OF THE DEVICE UNLESS NOTED OTHERWISE.
TOP: HEIGHT TO THE TOP OF THE DEVICE
BOTTOM: HEIGHT TO THE BOTTOM OF THE DEVICE.
HEIGHTS ARE TYPICAL AND MAY BE SUPERCEDED BY PLANS.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 045329 ENGINEER MICHAEL K. WILSON, JR.
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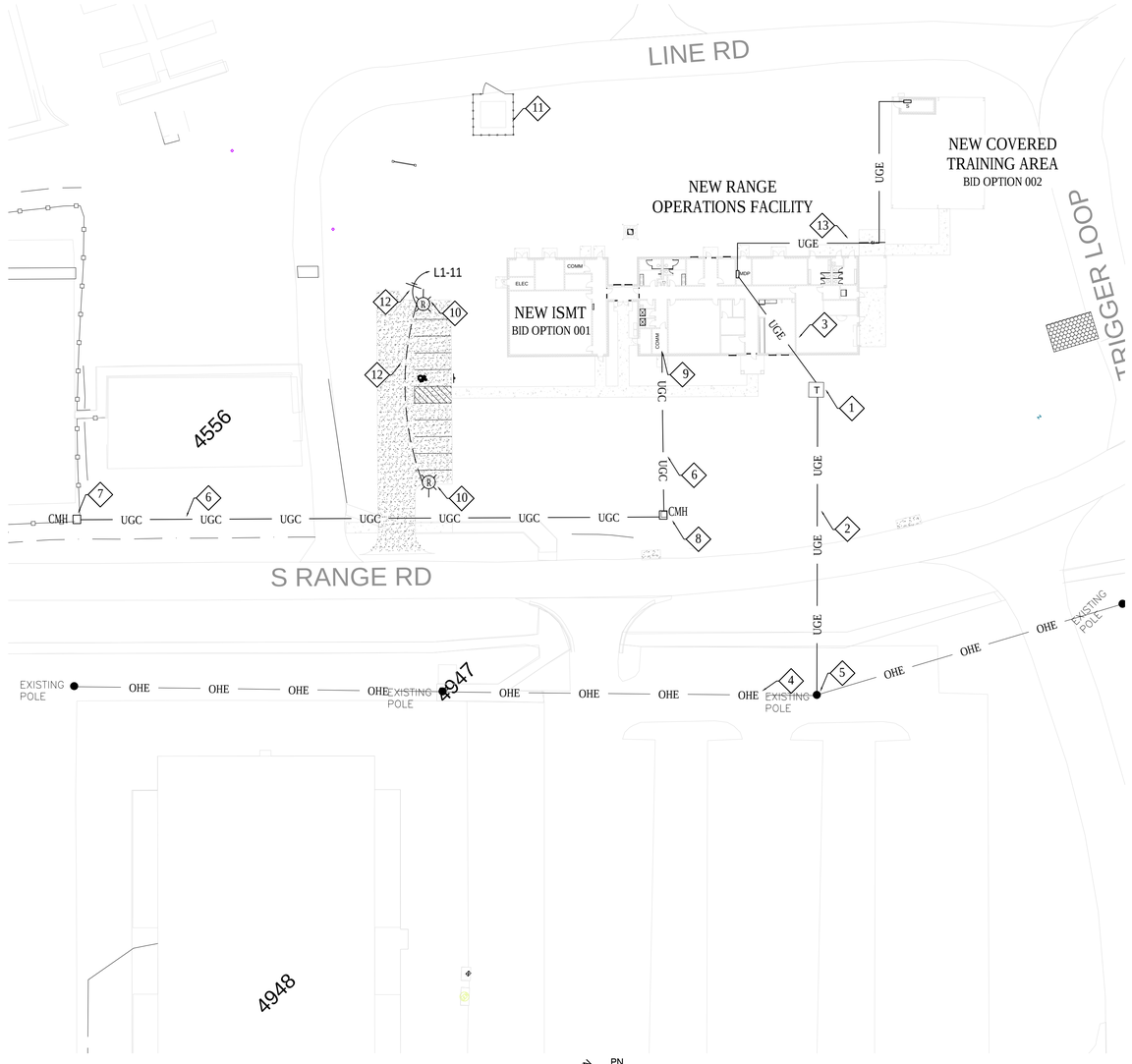
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA
IPT MARINE CORPS
MARINE CORPS AIR STATION
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELECTRICAL NOTES AND LEGENDS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883152
SHEET 98 OF 121

E-001



SITE LINETYPE LEGEND

OHE	OVERHEAD ELECTRICAL
UGE	UNDERGROUND ELECTRICAL
UGC	UNDERGROUND TELECOMMUNICATIONS
— — — —	UNDERGROUND ELECTRICAL (BRANCH CIRCUIT)

A2 SITE PLAN - ELECTRICAL
SCALE: 1/40" = 1'-0"

TN PN

PLAN NOTES:

1 PROVIDE PAD-MOUNTED TRANSFORMER. SEE RISER DIAGRAM AND SITE ELECTRICAL DETAILS.

2 PROVIDE UNDERGROUND PRIMARY SERVICE CONDUCTORS FOR NEW PAD-MOUNTED TRANSFORMER. SEE RISER DIAGRAM AND DUCT BANK DETAIL.

3 PROVIDE UNDERGROUND SECONDARY SERVICE CONDUCTORS FOR NEW BUILDING SERVICE. SEE RISER DIAGRAM.

4 EXISTING OVERHEAD PRIMARY SERVICE.

5 EXISTING UTILITY POLE 'T-131'. CONNECT TO EXISTING OVERHEAD PRIMARY. SEE DETAILS ON SHEET ES502.

6 PROVIDE 3-4" CONCRETE-ENCASED COMM DUCTBANK FOR OSP TELECOMMUNICATIONS SERVICE. PROVIDE 3X3 FABRIC MESH INNERDUCT IN FIBER CONDUIT. SEE DETAILS AND BUILDING PLANS FOR MORE INFORMATION.

7 EXISTING HANDHOLE 'FF1602' FOR OSP CABLING POINT OF CONNECTION.

8 PROVIDE TRAFFIC RATED TYPE 4 HANDHOLE FOR OSP TELECOMMUNICATIONS SERVICE.

9 APPROXIMATE LOCATION OF BUILDING SERVICE ENTRANCE. PROVIDE 50 PAIR OSP COPPER AND 24 STRAND OSP SINGLE MODE RIBER. SEE BUILDING PLANS FOR MORE INFORMATION.

10 APPROXIMATE LOCATION OF NEW POLE MOUNTED PARKING LOT LIGHT.

11 COORDINATE EXACT LOCATION OF MDAS WITH CIVIL. SEE SHEET E-105 FOR LIGHTNING PROTECTION DETAILS.

12 SITE LIGHTING CIRCUITS FOR 120/1 20 AMP CIRCUITS MUST HAVE MINIMUM OF 2-#10 CONDUCTORS W/ 1-#10 GROUND. PROVIDE 2-#8 CONDUCTORS W/ 1-#8 GROUND WHEN THE TOTAL LENGTH OF THE CIRCUIT IS GREATER THAN 175 FEET.

13 APPROXIMATE ROUTING OF UNDERGROUND FEEDER TO SHELTER BUILDING AS PART OF BID OPTION #2. COORDINATE WITH CIVIL. SEE E-701 FOR DETAILS.

GRAPHIC SCALE: 1/40"=1'-0"
40' 0 20' 40' 80'

SYM	DESCRIPTION	DATE	APPR

NAVFAC

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PM/DM
BRANCH MANAGER
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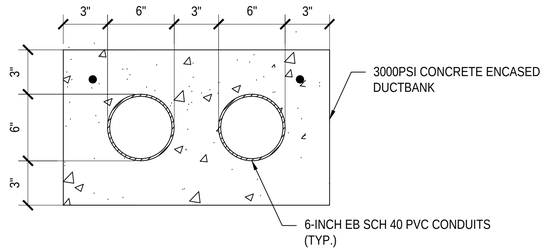
NAVAL STATION - NORFOLK, VA
IPT MARINE CORPS
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
SITE PLAN - ELECTRICAL

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO.: 12883153
SHEET 99 OF 121

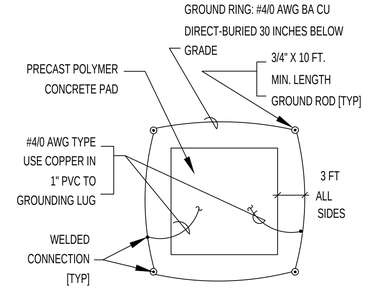
ES101

DRAWFORM REVISION: 10 MARCH 2009



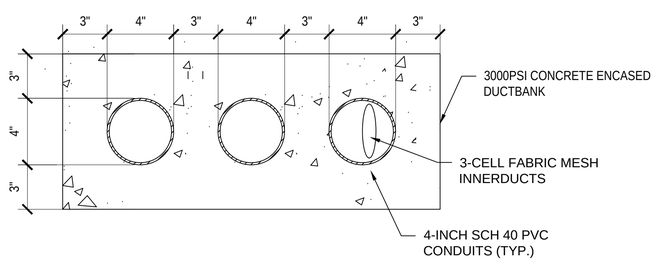
C1 PRIMARY DUCT BANK DETAIL

SCALE: NTS



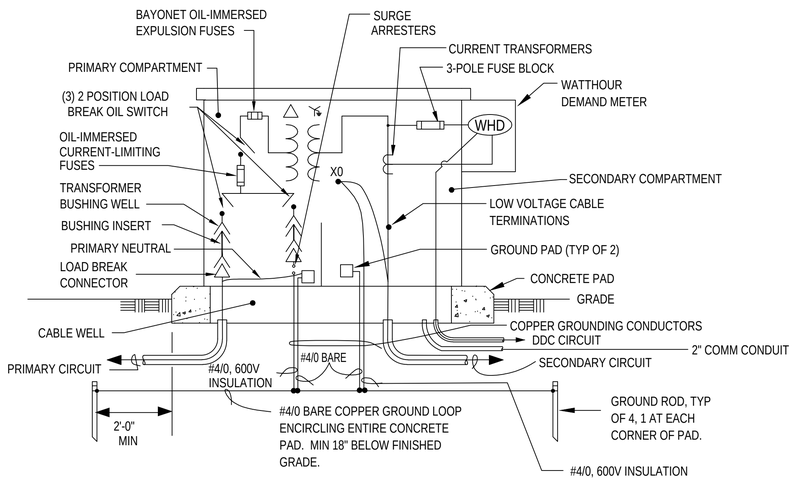
C3 GROUNDING PLAN FOR PAD-MOUNTED TRANSFORMER

SCALE: NTS



A1 3-WAY COMM DUCTBANK DETAIL

SCALE: NTS



A3 PAD-MOUNTED TRANSFORMER DETAIL- (DELTA WYE) WITH SURGE ARRESTORS

SCALE: NTS

SYM	DESCRIPTION	DATE	APPR

NAVFAC

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P-196U CONSTRUCT RANGE OPERATIONS FACILITY
SITE ELECTRICAL DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883154
SHEET	100 OF 121

ES501

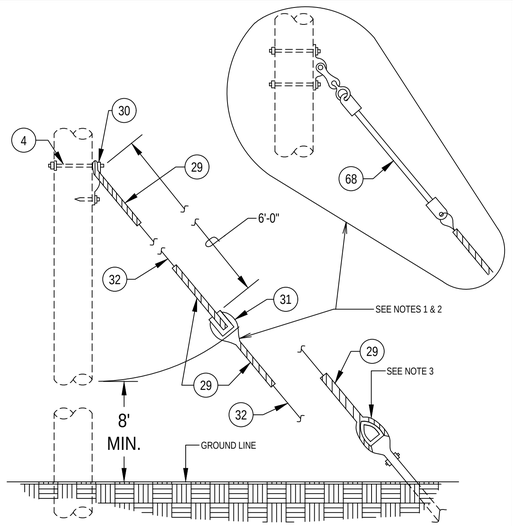
DRAWFORM REVISION: 10 MARCH 2009

POLE LINE MATERIAL LIST

1. FLAT STEEL BRACE (TWO PIECES)
2. MACHINE BOLT, 3/8" X LENGTH NEEDED WITH WASHER, NUT AND LOCKWASHER
3. 8' WOOD CROSSARM WITH CROSS SECTION DIMENSIONS OF 3 1/2" X 4 1/2"
4. MACHINE BOLT, 5/8" X LENGTH NEEDED WITH WASHER, NUT AND LOCKWASHER
5. TIMBER CONNECTOR
6. LAGSCREW, 1/2" X 4"
7. ANGLE STEEL BRACE (TWO PIECES)
8. MACHINE BOLT, 1/2" X LENGTH NEEDED, WITH WASHER, NUT & LOCKWASHER
9. DEADEND BOX
10. STEEL PIN
11. PIN INSULATOR
12. GRID GAIN, USED ONLY WHEN THERE IS NO POLE GAIN
13. ANGLE STEEL BRACE (ONE PIECE)
14. 10' WOOD CROSSARM WITH CROSS SECTION DIMENSIONS OF 3 1/2" X 4 1/2"
15. 5/8" EYE NUT
16. 5/8" EYE BOLT, LENGTH AS NEEDED, WITH WASHER, NUT & LOCKWASHER
17. EXTENSION LINK
18. BELL TYPE SUSPENSION INSULATOR WITH CONNECTING HARDWARE
19. STRAIN CLAMP
20. STEEL ANGLE PIN
21. CLUSTER MOUNTING BRACKET, STEEL
22. TRANSFORMER GROUNDING CONNECTION
23. STIRRUP
24. SECONDARY LEAD SUPPORT BRACKET
25. ADAPTER PLATE FOR CLUSTER MOUNTING
26. CLEVIS BRACKET FOR SPOOL INSULATOR
27. SPOOL INSULATOR
28. U BOLT CLAMP
29. PREFORMED GUY GRIP
30. GUY HOOK
31. GUY STRAIN INSULATOR
32. GUY WIRE, SIZE AS SPECIFIED
33. #4 WP CU. SOFT DRAWN GROUND WIRE
34. GROUND CLAMP
35. CONDUIT COUPLING
36. CONDUIT BEND
37. INSULATED BUSHING
38. PERFORATED STRAPPING, 1-1/2" WIDE
39. HOT LINE CLAMP
40. FUSED CUTOUT, AS SPECIFIED
41. SURGE ARRESTER, AS SPECIFIED
42. POLE TOP PIN (RIDGE PIN) - 24 INCHES LONG
43. CROSSARM ANGLE PIN
44. ANGLE POLE TOP PIN
45. WEATHERPROOF SOFT DRAWN WIRE-SIZE
    (a) T0 MATCH OR EXCEED AMPACITY OF CONNECTING CABLE, OR
    (b) AT 125% OF TRANSFORMER FULL LOAD CURRENT, BUT NOT LESS THAN NO. 4 AWG

POLE LINE MATERIAL LIST

SKETCH DATE	JUNE 2002	STYLE	OH-1.5

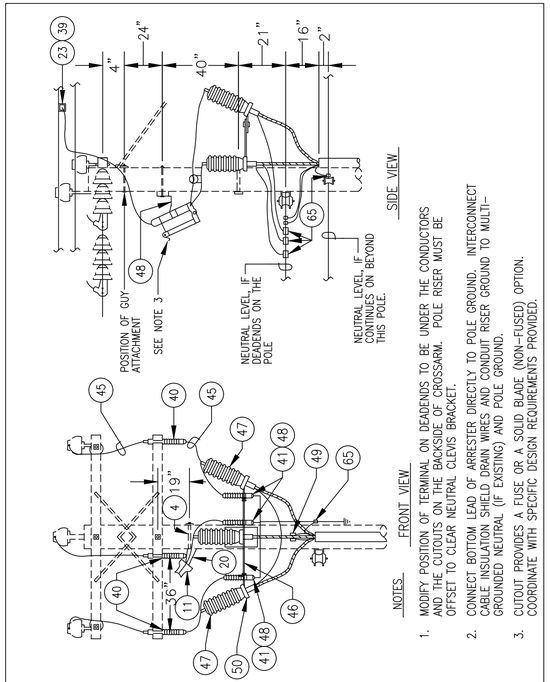


NOTES

1. DRAWING REPRESENTS SYMBOL FOR "GUY-I". OMIT ITEM 31 FOR THE "GUY" SYMBOL.
2. ON CIRCUIT OPERATING VOLTAGES GREATER THAN 15KV, SUBSTITUTE 68 FOR 31 .
3. COORDINATE INSTALLATION WITH ANCHOR AS SPECIFIED.
4. UTILIZE ITEM 68 WHEN GUYING ATTACHMENT IS LOCATED IN THE PRIMARY AREA OF THE POLE AS INDICATED BY SPECIFIC DESIGN REQUIREMENTS PROVIDED.
5. BOND ALL GUYS (SUPPLY & COMMUNICATION) AND CONNECT TO POLE GROUND AND SYSTEM NEUTRAL (IF EXISTING).

GUY-I
GUY

SKETCH DATE	JUNE 2002	STYLE	OH-32



NOTES

1. MODIFY POSITION OF TERMINAL ON DEADENDS TO BE UNDER THE CONDUCTORS AND THE CUTOUTS ON THE BACKSIDE OF CROSSARM. POLE RISER MUST BE OFFSET TO CLEAR NEUTRAL CLEVIS BRACKET.
2. CONNECT BOTTOM LEAD OF ARRESTER DIRECTLY TO POLE GROUND. INTERCONNECT CABLE INSULATION SHIELD DRAIN WIRES AND CONDUIT RISER GROUND TO MULTI-GROUNDED NEUTRAL (IF EXISTING) AND POLE GROUND.
3. CUTOUT PROVIDES A FUSE OR A SOLID BLADE (NON-FUSED) OPTION. COORDINATE WITH SPECIFIC DESIGN REQUIREMENTS PROVIDED.

U.G. TERMINAL
(0-25KV)

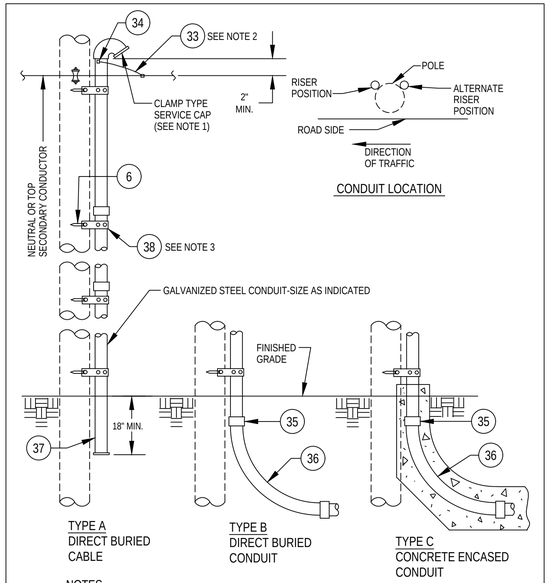
SKETCH DATE	JUNE 2002	STYLE	OH-31

POLE LINE MATERIAL LIST

46. TRI-MOUNT BRACKET
47. TERMINATOR
48. MOUNTING BRACKET
49. CABLE GRIP HANGER
50. HOSE CLAMP
51. STUD, 3/4" X 1-3/4"
52. LINE POST INSULATOR
53. TRIPLE INSULATOR BRACKET
54. ANGLE CLAMP
55. INSULATOR, LINE POST CLAMP
56. 4' CROSSARM
57. CROSSARM GAIN BRACKET
58. PULLEY BRACKET
59. WEDGE CLAMP
60. MIDSPAN SERVICE CLAMP
61. STUD, 7"
62. SADDLE, ANGLE
63. SADDLE CROSSARM
64. FITTING, POLE TOP
65. CONNECTOR
66. SUSPENSION CLAMP
67. TIE, SERVICE CABLE
68. 54" FIBERGLASS STRAIN INSULATOR
69. PVC RISER SHIELD
70. PVC EXTENSION SHIELD
71. PVC BACK PLATE
72. 8' WOOD CROSSARM WITH CROSS SECTION DIMENSIONS OF 4 3/4" X 5 3/4"
73. 10' WOOD CROSSARM WITH CROSS SECTION DIMENSIONS OF 4 3/4" X 5 3/4"
74. BACK-UP CURRENT LIMITING FUSE

POLE LINE MATERIAL LIST

SKETCH DATE	JUNE 2002	STYLE	OH-1.5A

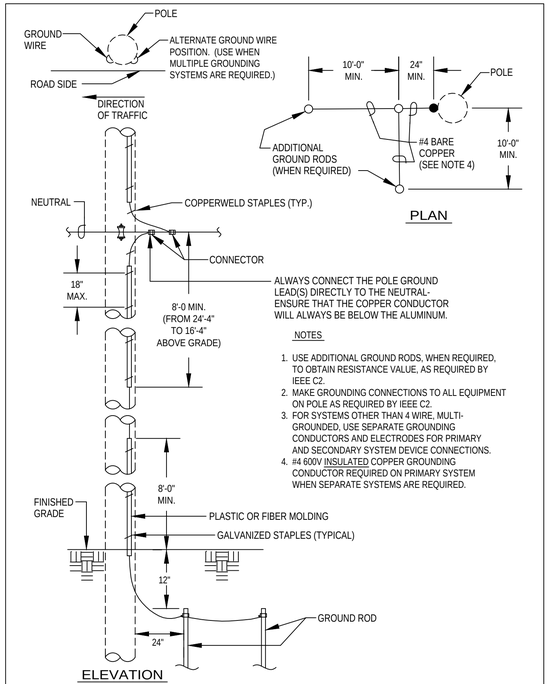


NOTES

1. ON CONDUIT RISER FOR PRIMARY CIRCUITS, ELIMINATE SERVICE CAP AND PROVIDE GROUNDING TYPE INSULATING BUSHING.
2. BOND CONDUIT TO POLE GROUND AND SYSTEM NEUTRAL (IF EXISTING). SEE GROUNDING NOTES ON SKETCH OH-41.
3. SPACE STRAPS AT MAXIMUM OF 4' INTERVALS.

CONDUIT RISER
(SIZE & TYPE AS INDICATED)

SKETCH DATE	JUNE 2002	STYLE	OH-35



NOTES

1. USE ADDITIONAL GROUND RODS, WHEN REQUIRED, TO OBTAIN RESISTANCE VALUE, AS REQUIRED BY IEEE C2.
2. MAKE GROUNDING CONNECTIONS TO ALL EQUIPMENT ON POLE AS REQUIRED BY IEEE C2.
3. FOR SYSTEMS OTHER THAN 4 WIRE, MULTI-GROUNDED, USE SEPARATE GROUNDING CONDUCTORS AND ELECTRODES FOR PRIMARY AND SECONDARY SYSTEM DEVICE CONNECTIONS.
4. #4 600V INSULATED COPPER GROUNDING CONDUCTOR REQUIRED ON PRIMARY SYSTEM WHEN SEPARATE SYSTEMS ARE REQUIRED.

GROUND

SKETCH DATE	JUNE 2002	STYLE	OH-41

APPR	DATE	DESCRIPTION	SYM

NAVFAC

NORTH CAROLINA
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045329
ENGINEER
MICHAEL K. WITCOSKY, P.E.
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES	MKW	DRW	ABB	CHK.	JTR

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
1PT MARINE CORPS
NAVAL STATION - NORFOLK, VA
MARINE CORPS AIR STATION
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

SITE ELECTRICAL DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883155
SHEET	101 OF 121

ES502

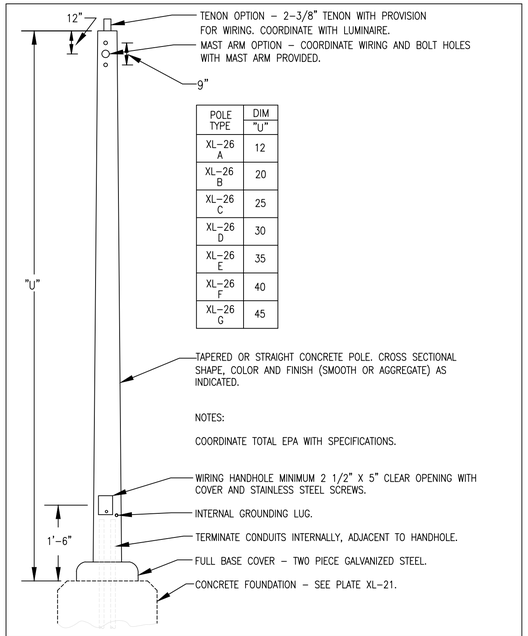
DRAWFORM REVISION: 10 MARCH 2009

LIGHT FIXTURE SCHEDULE

DESIGNATION	TEMPLATE	DESCRIPTION	VOLTAGE	BALLAST TYPE/ QUANTITY	NUMBER/TYPE LAMPS	TOTAL WATTS
R	XL-5 (SINGLE HEAD) MOUNTED ON 30 FOOT CONCRETE POLE	LED SITE POLE FIXTURE WITH INTEGRAL PHOTOCELL DISTRIBUTION TYPE II	120/1	1-LED DRIVER	LED (15,000 LUM) 4,000 K	120

NOTE:

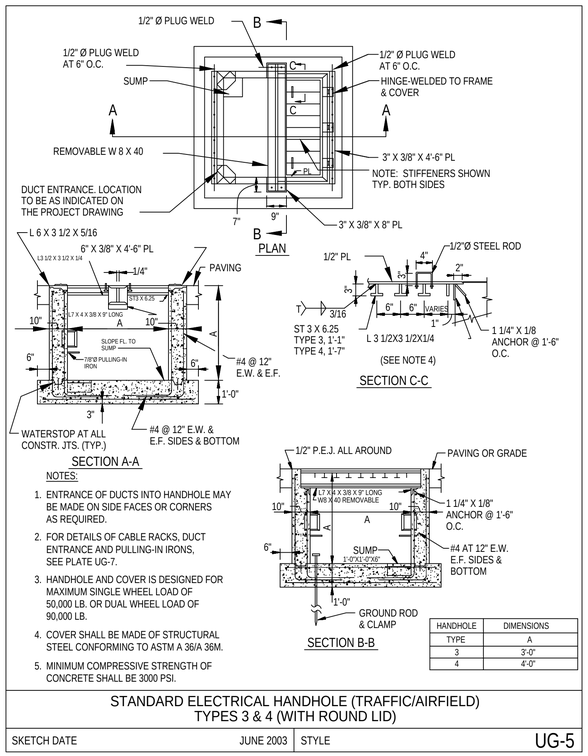
EPA RATINGS FOR POLES SHALL BE MINIMUM 150 MPH.



POLE TYPE	DIM "U"
XL-26 A	12
XL-26 B	20
XL-26 C	25
XL-26 D	30
XL-26 E	35
XL-26 F	40
XL-26 G	45

ANCHOR BASE CONCRETE POLE

REVISED: NOVEMBER 2020 | LUMINAIRE PLATE: XL-20



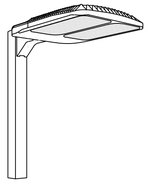
NOTES:

1. ENTRANCE OF DUCTS INTO HANDHOLE MAY BE MADE ON SIDE FACES OR CORNERS AS REQUIRED.
2. FOR DETAILS OF CABLE RACKS, DUCT ENTRANCE AND PULLING-IN IRONS, SEE PLATE UG-7.
3. HANDHOLE AND COVER IS DESIGNED FOR MAXIMUM SINGLE WHEEL LOAD OF 50,000 LB. OR DUAL WHEEL LOAD OF 90,000 LB.
4. COVER SHALL BE MADE OF STRUCTURAL STEEL CONFORMING TO ASTM A 36/A 36M.
5. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 3000 PSI.

HANDHOLE	DIMENSIONS
TYPE	A
3	3'-0"
4	4'-0"

STANDARD ELECTRICAL HANDHOLE (TRAFFIC/AIRFIELD) TYPES 3 & 4 (WITH ROUND LID)

SKETCH DATE: JUNE 2003 | STYLE: UG-5



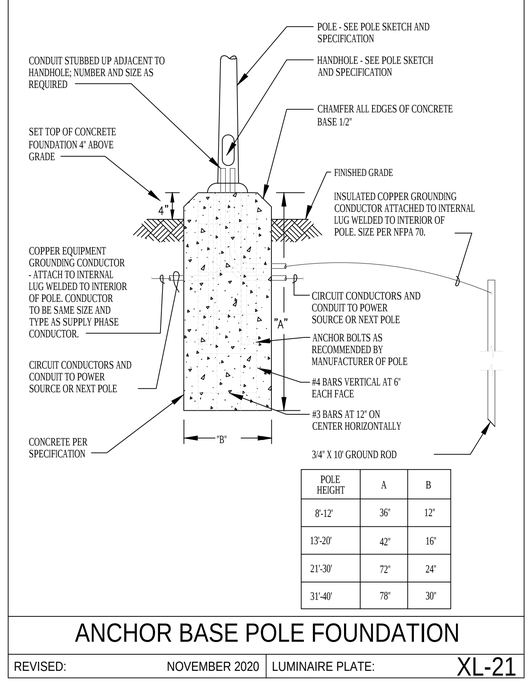
NOTE: THIS SKETCH IS A NON-PROPRIETARY GRAPHIC REPRESENTATION OF A LUMINAIRE THAT MAY MEET THE SPECIFICATION REQUIREMENTS. IT IS NOT INTENDED TO INDICATE A CERTAIN MANUFACTURER OR PREFERENCE.

LUMINAIRE REQUIREMENTS:

1. HOUSING - DIE-CAST ALUMINUM HOUSING WITH POWDER COAT FINISH.
2. OPTICS - INJECTION MOLDED OPTICS WITH TYPE I, II, III, IV, OR V DISTRIBUTIONS. BUG UPLIGHT RATING OF U0, WITH GLARE RATING AS DETERMINED BY LIGHTING ZONE INSTALLED.
3. LIGHT SOURCE - SOLID STATE LEDS, 3000K CCT UON, MINIMUM 70 CRI UON, AND MINIMUM EFFICACY OF 100 LUMENS/WATT UON. INITIAL LUMEN OUTPUT AS INDICATED IN LUMINAIRE SCHEDULE.
4. DRIVER - REPLACEABLE, INTEGRAL, HIGH-EFFICIENCY DIMMABLE DRIVER WITH THERMAL MANAGEMENT. ON-OFF CONTROL AND FULLY DIMMABLE DOWN TO 10% MINIMUM OR AS INDICATED IN LUMINAIRE SCHEDULE. MEETS ELEVATED 10KV/10KA REQUIREMENTS PER IEEE.
5. CERTIFICATION - UL LISTED FOR WET LOCATION, ROHS COMPLIANT. COMPLIES WITH IES LM79, LM80 AND TM21 TESTING STANDARDS.
6. MOUNTING - ARM-MOUNTED ON POLE.
7. OPTIONS - MOUNTING ARM LENGTH, LIGHT DISTRIBUTION, HOUSE-SIDE SHIELD, PHOTOCELL, INTEGRAL MOTION SENSOR, AND ANSI 7-PIN RECEPTACLE.

LED PARKING LOT LUMINAIRE

REVISED: NOVEMBER 2020 | LIGHTING PLATE: XL-5



POLE HEIGHT	A	B
8'-12'	36"	12"
13'-20'	42"	16"
21'-30'	72"	24"
31'-40'	78"	30"

ANCHOR BASE POLE FOUNDATION

REVISED: NOVEMBER 2020 | LUMINAIRE PLATE: XL-21

APPR | DATE | DESCRIPTION | SYM

NAVFAC

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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC
IPT MARINE CORPS
MARINE CORPS AIR STATION
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
SITE ELECTRICAL DETAILS

SCALE: AS INDICATED

EPROJECT NO.: 1715336

STA. PROJ. NO.: 7290158

NAVFAC DRAWING NO. 12883156

SHEET 102 OF 121

ES503

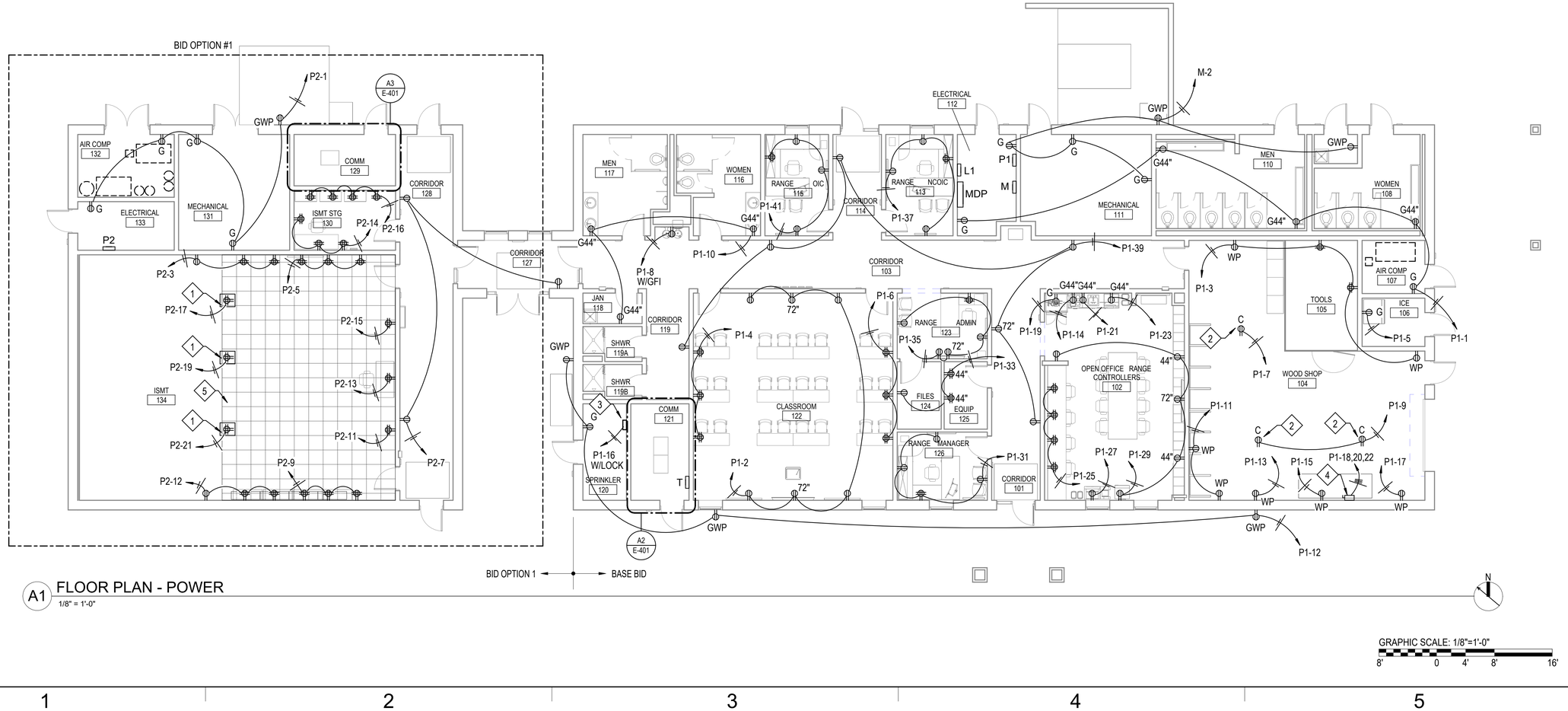
DRAWFORM REVISION: 10 MARCH 2009

POWER NOTES

1. ALL ELECTRICAL BOXES MOUNTED IN RATED WALLS MUST COMPLY WITH ALL REQUIREMENTS OF THE IBC. UNLESS OTHERWISE NOTED, DEVICES SHOWN IN RATED WALLS MUST BE FLUSH WITH CONDUIT CONCEALED. PROVIDE HORIZONTAL SEPARATION, PUTTY PADS, RATED BOXES ETC. AS REQUIRED FOR REQUIRED INSTALLATION.
2. SEE VOLTAGE DROP SCHEDULE FOR WIRE SIZING INFORMATION FOR ALL BRANCH CIRCUITS OVER 65' IN LENGTH.
3. ALL RECEPTACLES WITHIN 6 FEET FROM THE OUTSIDE EDGE OF ANY SINK MUST BE GFI PER NEC 210.8(B)(5).
4. LOCATE ALL DEVICES, EQUIPMENT, AND/OR JUNCTION BOXES REQUIRING ACCESS IN ACCESSIBLE LOCATIONS. AT HARD CEILING AREAS, COORDINATE ANY ACCESS HATCHES WITH ARCHITECT PRIOR TO INSTALLATION AND ROUGH-IN. TYPICALLY, ELECTRICAL DEVICES, ETC REQUIRING ACCESS MUST AVOID HARD CEILING AREAS OR MUST SHARE ACCESS POINTS WITH SUPPLIED MECHANICAL/PLUMBING EQUIPMENT (DISCONNECTS, ETC).
5. SEE ARCHITECTURAL SHEETS FOR INDICATIONS OF RATED WALLS.
6. PROVIDE LABEL PRINTER TYPE LABELING FOR ALL RECEPTACLES INDICATING SOURCE FEED WITH PANEL AND CIRCUIT NUMBER.
7. PROVIDE MACHINE ENGRAVED PLACARD LABELING ATTACHED WITH RIVETS TO ALL DISCONNECTS, PANELS, AND MOTOR-DISCONNECT SWITCHES INDICATING EQUIPMENT NAME, VOLTAGE AND PHASE, AMPERAGE, HERTZ AND SOURCE FEED.
8. ALL DISCONNECT SWITCHES ARE TO BE HEAVY DUTY TYPE.
9. CONTRACTOR MUST LOCATE JUNCTION BOXES, CONDUIT BODIES OR OTHER EQUIPMENT OR FITTINGS ABOVE INACCESSIBLE CEILING SUCH THAT THEY HAVE ACCESS PER NEC REQUIREMENTS.

PLAN NOTES

1 SURFACE MOUNTED QUAD RECEPTACLE MOUNTED TO THE SLAB. COORDINATE LOCATION WITH RAISED FLOOR SUCH THAT RECEPTACLE IS UNDER THE RAISED FLOOR BUT ACCESSIBLE TO THE OPEN EDGE AS SHOWN.
2 PROVIDE CORD REEL AND SURFACE MOUNT DUPLEX RECEPTACLE TO UNDERSIDE OF CEILING FOR CONNECTION TO CORD REEL.
3 CONNECT POWER FOR FIRE ALARM CONTROL PANEL. COORDINATE WITH FIRE PROTECTION.
4 PROVIDE DISCONNECT FOR CUTOFF SAW. VERIFY EXACT VOLTAGE AND AMPERAGE REQUIREMENTS WITH EQUIPMENT SUPPLIER.
5 PROVIDE GROUNDING SYSTEM FOR RAISED FLOOR. SEE DETAIL ON SHEET E-503.



A1 FLOOR PLAN - POWER
1/8" = 1'-0"

APPR | DATE | DESCRIPTION | SYM

NAVFAC

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ACTIVITY
SATISFACTORY TO
DES MKW | DRW ABB | CHK JTR
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BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
IPT MARINE CORPS
NAVAL STATION - NORFOLK, VA.
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
FLOOR PLAN - POWER

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO.
12883157
SHEET 103 OF 121

E-101

DRAWFORM REVISION: 10 MARCH 2009

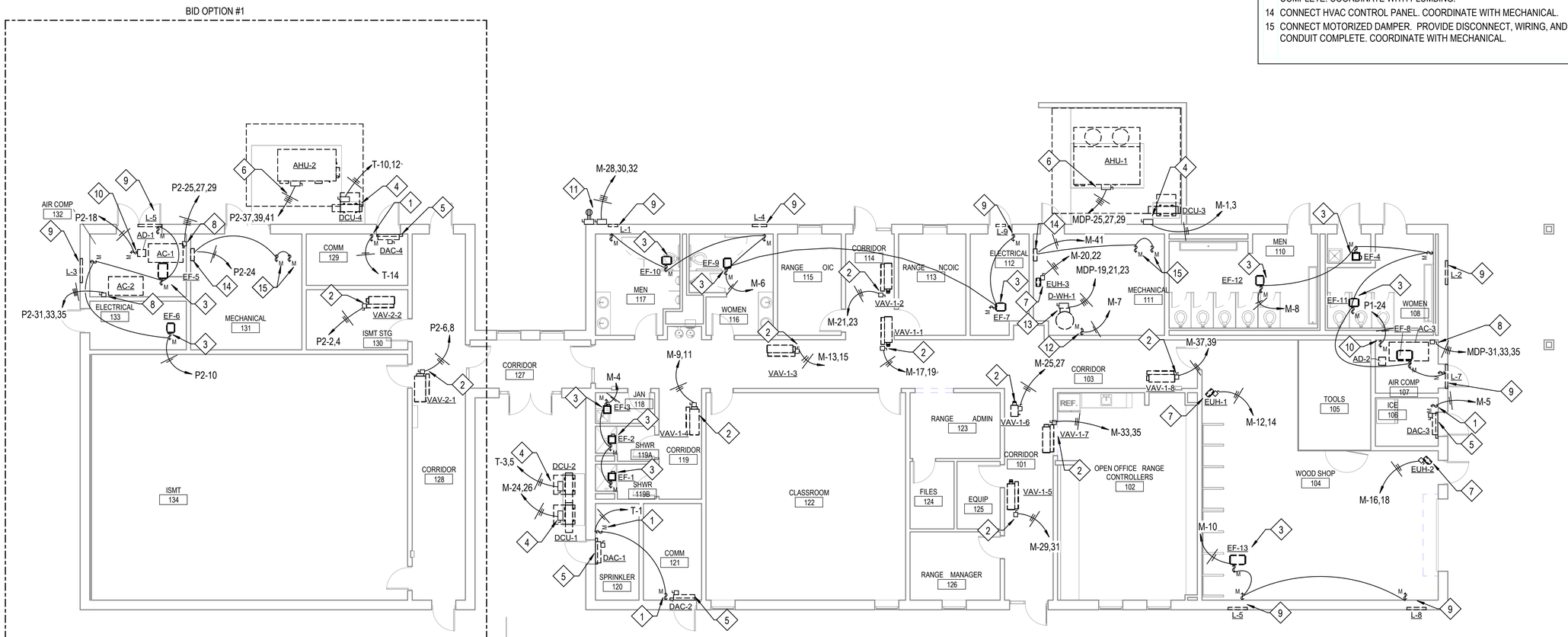
POWER NOTES

1. ALL ELECTRICAL BOXES MOUNTED IN RATED WALLS MUST COMPLY WITH ALL REQUIREMENTS OF THE IBC. UNLESS OTHERWISE NOTED, DEVICES SHOWN IN RATED WALLS MUST BE FLUSH WITH CONDUIT CONCEALED. PROVIDE HORIZONTAL SEPARATION, PUTTY PADS, RATED BOXES ETC. AS REQUIRED FOR REQUIRED INSTALLATION.
2. SEE VOLTAGE DROP SCHEDULE FOR WIRE SIZING INFORMATION FOR ALL BRANCH CIRCUITS OVER 65' IN LENGTH.
3. ALL RECEPTACLES WITHIN 6 FEET FROM THE OUTSIDE EDGE OF ANY SINK MUST BE GFI PER NEC 210.8(B)(5).
4. LOCATE ALL DEVICES, EQUIPMENT, AND/OR JUNCTION BOXES REQUIRING ACCESS IN ACCESSIBLE LOCATIONS. AT HARD CEILING AREAS, COORDINATE ANY ACCESS HATCHES WITH ARCHITECT PRIOR TO INSTALLATION AND ROUGH-IN. TYPICALLY, ELECTRICAL DEVICES, ETC REQUIRING ACCESS MUST AVOID HARD CEILING AREAS OR MUST SHARE ACCESS POINTS WITH SUPPLIED MECHANICAL/PLUMBING EQUIPMENT (DISCONNECTS, ETC).
5. SEE ARCHITECTURAL SHEETS FOR INDICATIONS OF RATED WALLS.
6. PROVIDE LABEL PRINTER TYPE LABELING FOR ALL RECEPTACLES INDICATING SOURCE FEED WITH PANEL AND CIRCUIT NUMBER.
7. PROVIDE MACHINE ENGRAVED PLACARD LABELING ATTACHED WITH RIVETS TO ALL DISCONNECTS, PANELS, AND MOTOR-DISCONNECT SWITCHES INDICATING EQUIPMENT NAME, VOLTAGE AND PHASE, AMPERAGE, HERTZ AND SOURCE FEED.
8. ALL DISCONNECT SWITCHES ARE TO BE HEAVY DUTY TYPE.
9. CONTRACTOR MUST LOCATE JUNCTION BOXES, CONDUIT BODIES OR OTHER EQUIPMENT OR FITTINGS ABOVE INACCESSIBLE CEILING SUCH THAT THEY HAVE ACCESS PER NEC REQUIREMENTS.

PLAN NOTES

1. CONNECT CONDENSATE PUMP. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
2. CONNECT VAV. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
3. CONNECT EXHAUST FAN. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
4. CONNECT DUCTLESS SPLIT CONDENSING UNIT. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
5. CONNECT DUCTLESS SPLIT AIR HANDLING UNIT. INDOOR UNIT IS POWERED BY OUTDOOR UNIT. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
6. CONNECT AIR HANDLING UNIT. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
7. CONNECT UNIT HEATER. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
8. CONNECT AIR COMPRESSOR. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
9. CONNECT MOTORIZED LOUVER. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
10. CONNECT AIR DRYER. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
11. CONNECT WET WELL PUMP STATION. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. SEE CIVIL PLAN FOR EXACT LOCATION. COORDINATE WITH EQUIPMENT SUPPLIER. PROVIDE GENERATOR RECEPTACLE AND MANUAL TRANSFER SWITCH FOR PORTABLE GENERATOR CONNECTION.
12. CONNECT RECIRCULATING PUMP. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH PLUMBING.
13. CONNECT WATER HEATER. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH PLUMBING.
14. CONNECT HVAC CONTROL PANEL. COORDINATE WITH MECHANICAL.
15. CONNECT MOTORIZED DAMPER. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.

BID OPTION #1



BID OPTION 1 ← → BASE BID

A1 FLOOR PLAN - EQUIPMENT CONNECTIONS
1/8" = 1'-0"

GRAPHIC SCALE: 1/8"=1'-0"
8' 0 4' 8' 16'

APPR	DATE	DESCRIPTION	SYM

NAVFAC

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ACTIVITY

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BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
1PT MARINE CORPS
MARINE CORPS AIR STATION

NAVAL FACILITIES ENGINEERING COMMAND - MIDATLANTIC
NAVAL STATION NORFOLK, VA.
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FLOOR PLAN - EQUIPMENT CONNECTIONS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883158
SHEET	104 OF 121

E-102

DRAWFORM REVISION: 10 MARCH 2009

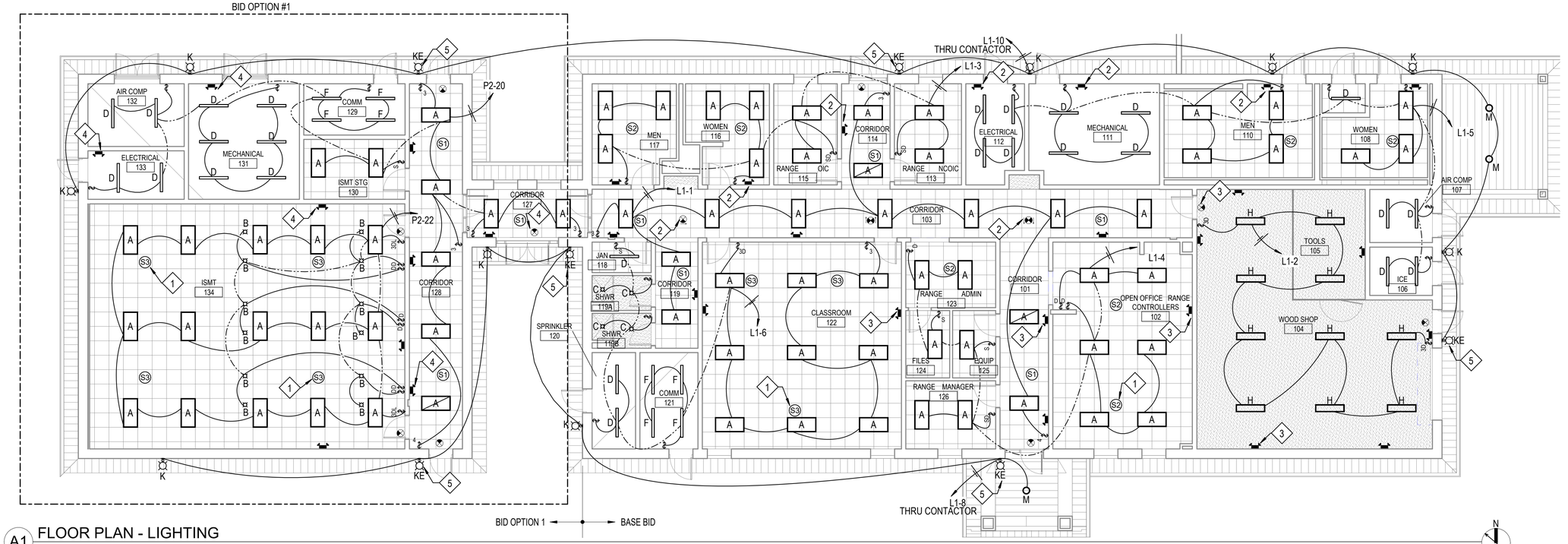
LIGHTING NOTES

1. ALL ELECTRICAL BOXES MOUNTED IN RATED WALLS MUST COMPLY WITH ALL REQUIREMENTS OF THE IBC. UNLESS OTHERWISE NOTED, DEVICES SHOWN IN RATED WALLS MUST BE FLUSH WITH CONDUIT CONCEALED. PROVIDE HORIZONTAL SEPARATION, PUTTY PADS, RATED BOXES ETC. AS REQUIRED FOR REQUIRED INSTALLATION.
2. SEE VOLTAGE DROP SCHEDULE FOR WIRE SIZING INFORMATION FOR ALL BRANCH CIRCUITS OVER 65' IN LENGTH.
3. LOCATE ALL DEVICES, EQUIPMENT, AND/OR JUNCTION BOXES REQUIRING ACCESS IN ACCESSIBLE LOCATIONS. AT HARD CEILING AREAS, COORDINATE ANY ACCESS HATCHES WITH ARCHITECT PRIOR TO INSTALLATION AND ROUGH-IN. TYPICALLY, ELECTRICAL DEVICES, ETC REQUIRING ACCESS MUST AVOID HARD CEILING AREAS OR MUST SHARE ACCESS POINTS WITH SUPPLIED MECHANICAL/PLUMBING EQUIPMENT (DISCONNECTS, ETC).
4. SEE ARCHITECTURAL SHEETS FOR INDICATIONS OF RATED WALLS.
5. PROVIDE LABEL PRINTER TYPE LABELING FOR ALL SWITCHES INDICATING SOURCE FEED WITH PANEL AND CIRCUIT NUMBER.

PLAN NOTES

1. LOW VOLTAGE DUAL TECHNOLOGY CEILING MOUNTED MOTION SENSOR. MUST BE AT LEAST 6' FROM ANY SUPPLY DIFFUSER. CONNECT TO ALL LIGHTS IN THIS AREA. SEE MOTION SENSOR DETAIL. TYPICAL.
2. CONNECT ALL EMERGENCY LIGHTS AND EXIT SIGNS SHOWN AS PART OF BASE BID IN THIS AREA TO CIRCUIT #L1-9 ON LOCKED BREAKER. CIRCUIT MUST RUN THROUGH FIRE ALARM RELAY DEVICE. COORDINATE WITH FIRE ALARM.
3. CONNECT ALL EMERGENCY LIGHTS AND EXIT SIGNS SHOWN AS PART OF BASE BID IN THIS AREA TO CIRCUIT #L1-11 ON LOCKED BREAKER. CIRCUIT MUST RUN THROUGH FIRE ALARM RELAY DEVICE. COORDINATE WITH FIRE ALARM.
4. CONNECT ALL EMERGENCY LIGHTS AND EXIT SIGNS SHOWN AS PART OF BID OPTION #1 IN THIS AREA TO CIRCUIT #L1-13 ON LOCKED BREAKER. CIRCUIT MUST RUN THROUGH FIRE ALARM RELAY DEVICE. COORDINATE WITH FIRE ALARM.
5. CONNECT BATTERY IN LIGHT FIXTURE AHEAD OF CONTACTOR SO THAT EMERGENCY BATTERY COMES ON ONLY IN THE EVENT OF POWER LOSS. FIXTURE IS NORMALLY CONTROLLED BY EXTERIOR LIGHTING TIMECLOCK.

BID OPTION #1



A1 FLOOR PLAN - LIGHTING
1/8" = 1'-0"

GRAPHIC SCALE: 1/8"=1'-0"
8' 0 4' 8' 16'

APPR	DATE	DESCRIPTION	SYM

NAVFAC

NORTH CAROLINA REGISTERED SEAL 045329 ENGINEER MICHAEL K. WILSON, JR.
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A/E INFO

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MARINE CORPS AIR STATION

NAVAL FACILITIES ENGINEERING COMMAND - MIDATLANTIC
NAVAL STATION - NORFOLK, VA.

CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FLOOR PLAN - LIGHTING

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883159
SHEET	105 OF 121

E-103

DRAWFORM REVISION: 10 MARCH 2009

LIGHTING NOTES

1. ALL ELECTRICAL BOXES MOUNTED IN RATED WALLS MUST COMPLY WITH ALL REQUIREMENTS OF THE IBC. UNLESS OTHERWISE NOTED, DEVICES SHOWN IN RATED WALLS MUST BE FLUSH WITH CONDUIT CONCEALED. PROVIDE HORIZONTAL SEPARATION, PUTTY PADS, RATED BOXES ETC. AS REQUIRED FOR REQUIRED INSTALLATION.
2. SEE VOLTAGE DROP SCHEDULE FOR WIRE SIZING INFORMATION FOR ALL BRANCH CIRCUITS OVER 65' IN LENGTH.
3. LOCATE ALL DEVICES, EQUIPMENT, AND/OR JUNCTION BOXES REQUIRING ACCESS IN ACCESSIBLE LOCATIONS. AT HARD CEILING AREAS, COORDINATE ANY ACCESS HATCHES WITH ARCHITECT PRIOR TO INSTALLATION AND ROUGH-IN. TYPICALLY, ELECTRICAL DEVICES, ETC REQUIRING ACCESS MUST AVOID HARD CEILING AREAS OR MUST SHARE ACCESS POINTS WITH SUPPLIED MECHANICAL/PLUMBING EQUIPMENT (DISCONNECTS, ETC).
4. SEE ARCHITECTURAL SHEETS FOR INDICATIONS OF RATED WALLS.
5. PROVIDE LABEL PRINTER TYPE LABELING FOR ALL SWITCHES INDICATING SOURCE FEED WITH PANEL AND CIRCUIT NUMBER.

POWER NOTES

1. ALL ELECTRICAL BOXES MOUNTED IN RATED WALLS MUST COMPLY WITH ALL REQUIREMENTS OF THE IBC. UNLESS OTHERWISE NOTED, DEVICES SHOWN IN RATED WALLS MUST BE FLUSH WITH CONDUIT CONCEALED. PROVIDE HORIZONTAL SEPARATION, PUTTY PADS, RATED BOXES ETC. AS REQUIRED FOR REQUIRED INSTALLATION.
2. SEE VOLTAGE DROP SCHEDULE FOR WIRE SIZING INFORMATION FOR ALL BRANCH CIRCUITS OVER 65' IN LENGTH.
3. ALL RECEPTACLES WITHIN 6 FEET FROM THE OUTSIDE EDGE OF ANY SINK MUST BE GFI PER NEC 210.8(B)(5).
4. LOCATE ALL DEVICES, EQUIPMENT, AND/OR JUNCTION BOXES REQUIRING ACCESS IN ACCESSIBLE LOCATIONS. AT HARD CEILING AREAS, COORDINATE ANY ACCESS HATCHES WITH ARCHITECT PRIOR TO INSTALLATION AND ROUGH-IN. TYPICALLY, ELECTRICAL DEVICES, ETC REQUIRING ACCESS MUST AVOID HARD CEILING AREAS OR MUST SHARE ACCESS POINTS WITH SUPPLIED MECHANICAL/PLUMBING EQUIPMENT (DISCONNECTS, ETC).
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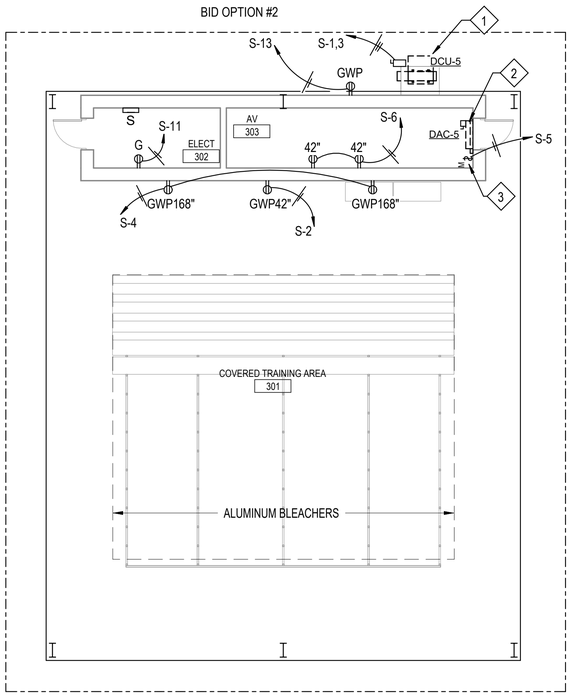
7. PROVIDE MACHINE ENGRAVED PLACARD LABELING ATTACHED WITH RIVETS TO ALL DISCONNECTS, PANELS, AND MOTOR-DISCONNECT SWITCHES INDICATING EQUIPMENT NAME, VOLTAGE AND PHASE, AMPERAGE, HERTZ AND SOURCE FEED.
8. ALL DISCONNECT SWITCHES ARE TO BE HEAVY DUTY TYPE.
9. CONTRACTOR MUST LOCATE JUNCTION BOXES, CONDUIT BODIES OR OTHER EQUIPMENT OR FITTINGS ABOVE INACCESSIBLE CEILING SUCH THAT THEY HAVE ACCESS PER NEC REQUIREMENTS.

PLAN NOTES

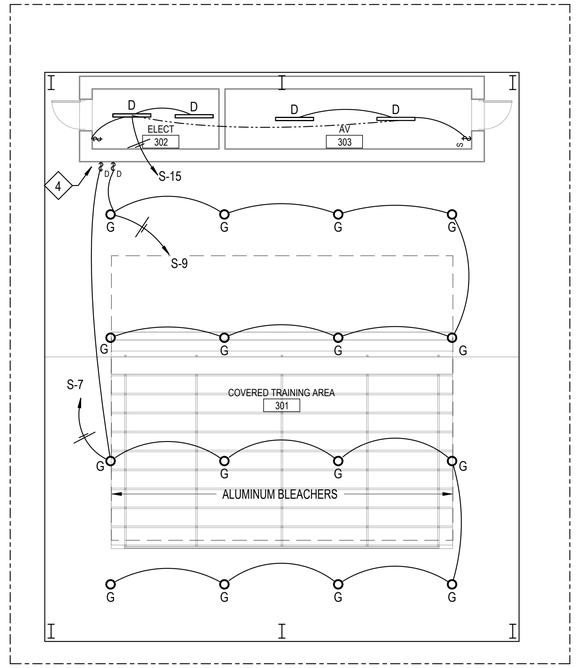
1 CONNECT DUCTLESS SPLIT CONDENSING UNIT. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
2 CONNECT DUCTLESS SPLIT AIR HANDLING UNIT. INDOOR UNIT IS POWERED BY OUTDOOR UNIT. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
3 CONNECT CONDENSATE PUMP. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
4 PROVIDE WEATHERPROOF SWITCHES.

BID OPTION #2



A1 FLOOR PLAN - TRAINING AREA - POWER
1/8" = 1'-0"

BID OPTION #2



A3 FLOOR PLAN - TRAINING AREA - LIGHTING
1/8" = 1'-0"

GRAPHIC SCALE: 1/8"=1'-0"
8' 0 4' 8' 16'

SYM	DESCRIPTION	DATE	APPR

NAVFAC

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A/E INFO

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PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
IPT MARINE CORPS
NAVAL FACILITIES ENGINEERING COMMAND - MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
MARINE CORPS AIR STATION
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
FLOOR PLAN - TRAINING AREA - ELECTRICAL

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883160
SHEET 106 OF 121

E-104

DRAWFORM REVISION: 10 MARCH 2009

COMPATIBLE MATERIALS

THE MATERIALS SECTION OF U.L. 96A (SECTION 5) REQUIRES THAT METALS MUST BE USED IN COMBINATIONS THAT ARE GALVANICALLY COMPATIBLE. THEREFORE, ALUMINUM COMPONENTS MUST NOT BE INSTALLED IN DIRECT CONTACT WITH BARE COPPER ROOFING MATERIALS/SURFACES, AND COPPER COMPONENTS MUST NOT BE INSTALLED IN DIRECT CONTACT WITH BARE ALUMINUM ROOFING MATERIALS/SURFACES. METALS ACCEPTABLE FOR USE WITH COPPER AND ALUMINUM ARE AS FOLLOWS:

METALS ACCEPTABLE FOR USE WITH COPPER:
NICKEL, BRASS, TIN, LEAD, STAINLESS STEEL, AND MONEL.

METALS ACCEPTABLE FOR USE WITH ALUMINUM:
MAGNESIUM, ZINC, GALVANIZED STEEL, STAINLESS STEEL, LEAD, AND WROUGHT IRON.

PAINT IS NOT CONSIDERED ACCETABLE BETWEEN GALVANICALLY INCOMPATIBLE ROOFING, FLASHING, AND OTHER MATERIALS AND SURFACES.

GENERAL NOTES

1. SEE SHEET E-001 FOR GENERAL NOTES AND LEGEND.
2. JOB CONDITIONS MAY NECESSITATE SLIGHT VARIATION IN LOCATION OF DOWN LEADS AND AIR TERMINALS.
3. INSTALLATION MUST BE IN ACCORDANCE WITH U.L. REQUIREMENTS AND RECIEVE THE U.L. LIGHTNING PROTECTION INSPECTION CERTIFICATE. INSTALLATION MUST BE PROVIDED BY A U.L. MASTER INSTALLER.
4. BOND ALL BODIES OF CONDUCTANCE AND BODIES OF INDUCTANCE LOCATED WITHIN 6 FEET OF MAIN CONDUCTOR AS REQURIED.
5. CONDUCTOR MUST BE FASTENED A MAXIMUM OF 3 FEET ON CENTER.
6. ALL CONDUCTOR BENDS MUST BE A MINIMUM OF 90 DEGREES WITH A MINIMUM 8 INCH RADIUS.
7. INSTALLATION TO BE PERFORMED IN A NEAT AND ORDERLY MANNER, AND MUST BE DONE AS INCONSPICUOUSLY AS POSSIBLE.
8. VERIFY ELECTRICAL GROUND, WATER LINE, AND OTHER UNDERGROUND PIPING IS COMMON WITH THE LIGHTNING PROTECTION GROUDNING.
9. A SURGE PROTECTIVE DEVICE OR UNIT MUST BE PROVIDED ON EACH ELECTRICAL AND TELECOMMUNICATIONS SERVICE ENTRANCE, ALONG WITH EACH RADIO AND TELEVISION LEAD-IN BY THE ELECTRICAL CONTRACTOR OR RESPECTIVE SYSTEM INSTALLER.
10. ALL MATERIALS MUST BE U.L. LISTED.
11. INSTALLATION IS BASED UPON ALL ROOF-MOUNTED LIGHTNING PROTECTION COMPONENTS BEING MECHANICALLY FASTENED TO ROOF SURFACE. ANY VARIANCE OR SPECIAL PROVISIONS MUST BE RESPONSIBILITY OF THE ROOFING OR GENERAL CONTRACTOR.
12. ALUMINUM MATERIALS MUST BE USED ON ALUMINUM SURFACES.
13. THE LIGHTNING PROTECTION SYSTEM IS DESIGNED AND DETAILED PER THE CURRENT NFPA 780 AND U.L. 96A CODES. THE U.L. 96A MASTER LABEL CERTIFICATION WILL BE ISSUED PRIOR TO BUILDING ACCEPTANCE.
14. CONTRACTOR MUST ENSURE THAT THE BASE PWD IS PRESENT FOR FINAL TESTING OF GROUNDING SYSTEM.

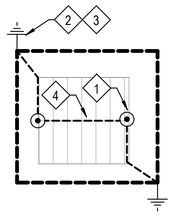
PLAN NOTES

1 CLASS I AIR TERMINAL, 12 INCHES IN HEIGHT/LENGTH. USE 3/8 INCH DIAMETER FOR COPPER OR 1/2 INCH DIAMETER FOR ALUMINUM. AIR TERMINAL MATERIAL SHALL MATCH AND BE COMPATIBLE WITH MATERIAL USED FOR CONDUCTORS. TYPICAL.

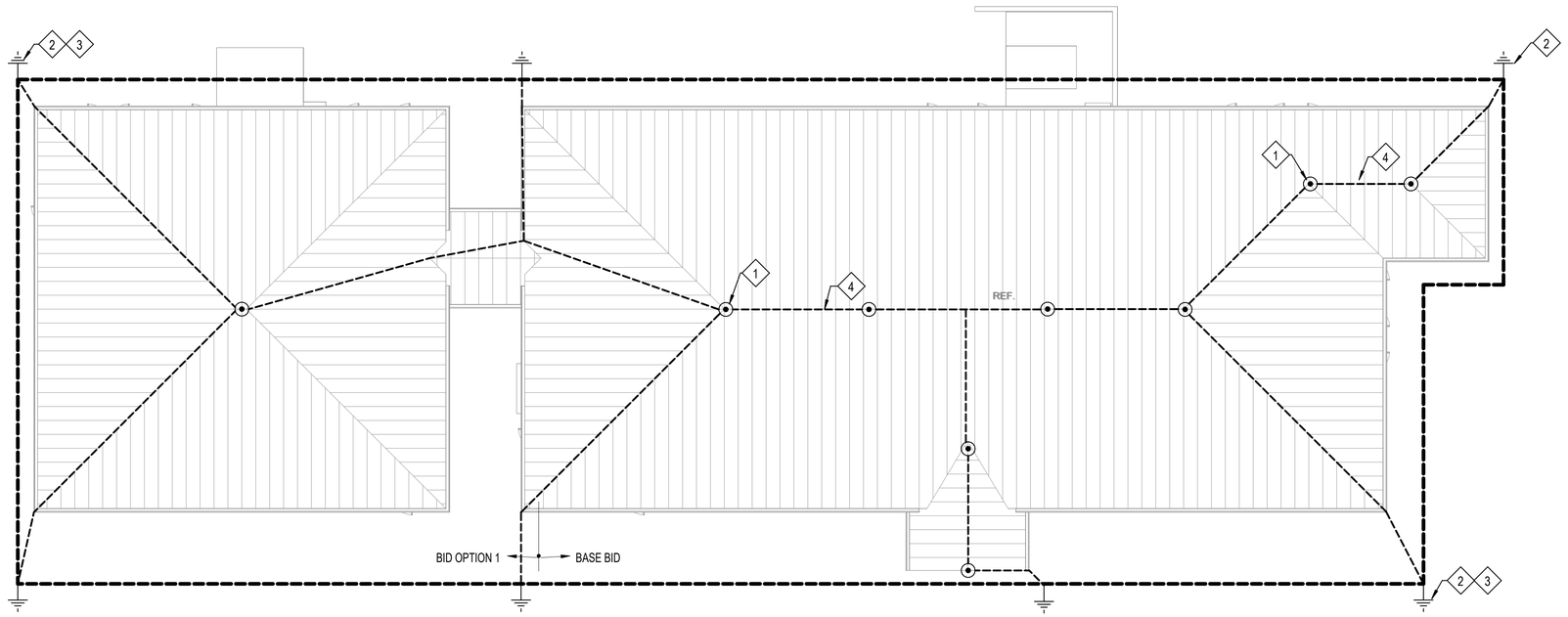
2 DOWN LEAD CONDUCTOR TO GROUND LOOP. PROVIDE PVC SCHEDULE 40 TO PROTECT CONDUCTOR FROM PHYSICAL DAMAGE. CONNECT DOWN LEAD CONDUCTOR TO #1/0 AWG COPPER GROUND LOOP AND USE 3/4 INCH BY 10 FOOT COPPERCLAD GROUND ROD BY EXOTHERMIC CONNECTION. SEE GROUNDING DETAIL.

3 PROVIDE TEST WELL AT DOWNLEAD GROUND ROD LOCATION FOR FUTURE TESTING AND MAINTENANCE.

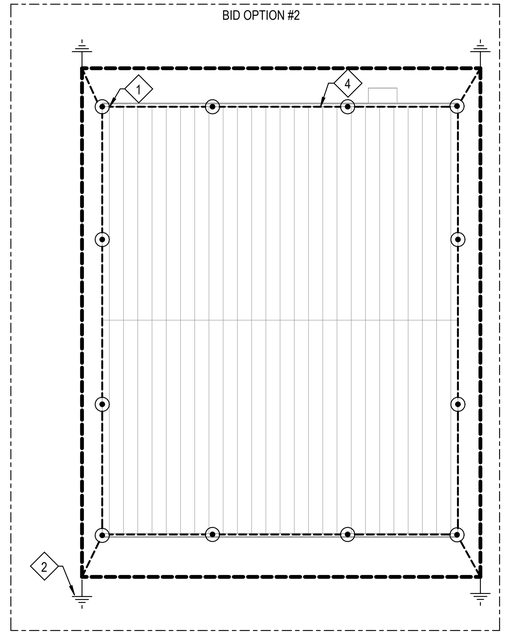
4 CLASS I CONDUCTORS MUST BE #17 AWG, 29 STRAND COPPER. TYPICAL.



3 FIRST FLOOR - MDAS LIGHTNING PROTECTION
3/32" = 1'-0"



A1 ROOF PLAN - LIGHTNING PROTECTION
3/32" = 1'-0"



GRAPHIC SCALE: 3/32"=1'-0"
8' 0 8' 16' 24'

N

APPR | DATE | DESCRIPTION | SYM

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NORTH CAROLINA
REGISTERED
SEAL
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DES MKW | DRW ABB | CHK JTR

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
IPT MARINE CORPS
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
MARINE CORPS AIR STATION
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ROOF PLAN - LIGHTNING PROTECTION

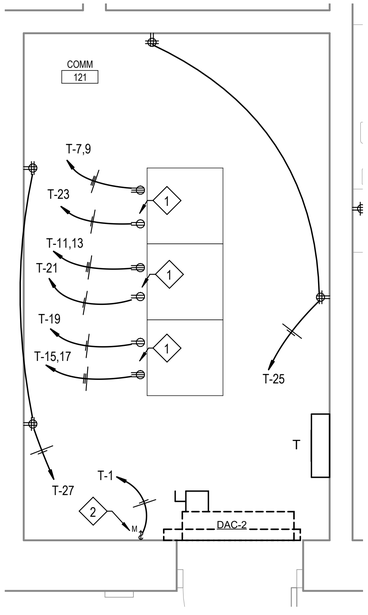
SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO.: 12883161
SHEET 107 OF 121

E-105

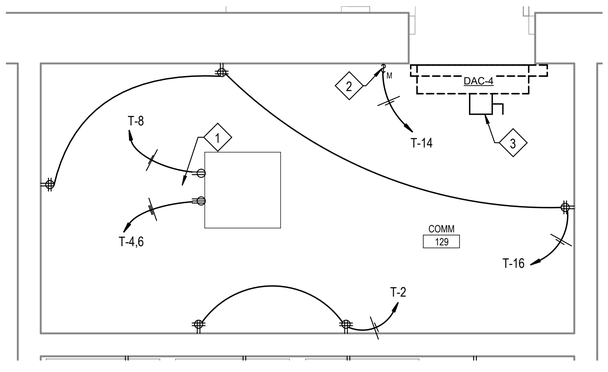
DRAWFORM REVISION: 10 MARCH 2009

PLAN NOTES

1. PROVIDE (1) NEMA 5-20R RECEPTACLE AND (1) 30 AMP, 208 VOLT TWIST-LOCK RECEPTACLE FOR EACH COMMUNICATIONS RACK. PROVIDE 2-#10, #10 GND, IN 3/4" C FOR THE 30 AMP RECEPTACLE. VERIFY EXACT NEMA CONFIGURATIONS WITH BASE TELEPHONE. PROVIDE CONNECTIONS NEAR THE TOP PORTION OF VERTICAL MANAGEMENT SIDE OF RACK.
2. CONNECT CONDENSATE PUMP. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.
3. CONNECT DUCTLESS SPLIT AIR HANDLING UNIT. INDOOR UNIT IS POWERED BY OUTDOOR UNIT. PROVIDE DISCONNECT, WIRING, AND CONDUIT COMPLETE. COORDINATE WITH MECHANICAL.



A2 ENLARGED PLAN - COMM 121 -POWER
1/2" = 1'-0"
BASE BID



A3 ENLARGED PLAN - COMM 129 - POWER
1/2" = 1'-0"
BID OPTION #1

GRAPHIC SCALE: 1/2"=1'-0"
2' 0 1' 2' 4'

SYM	DESCRIPTION	DATE	APPR

NAVFAC

NORTH CAROLINA
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BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
1ST MARINE CORPS
MARINE CORPS AIR STATION
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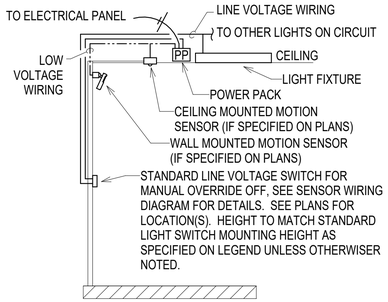
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
ENLARGED PLANS - COMM ROOMS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883162
SHEET	108 OF 121

E-401

DRAWFORM REVISION: 10 MARCH 2009

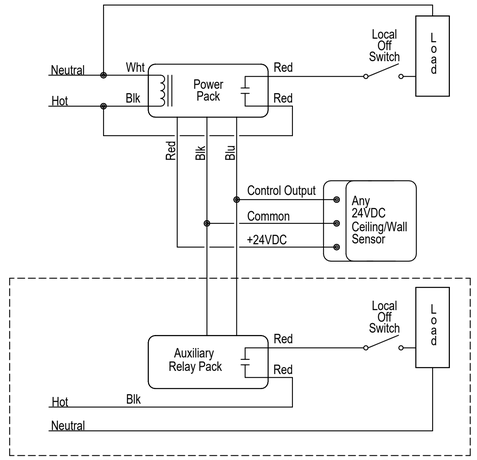


NOTES

1. THERE SHALL BE A MAXIMUM OF 2 MOTION SENSORS PER POWER PACK.
2. CEILING MOUNTED MOTION SENSORS MUST BE MOUNTED AT LEAST 6' FROM A DIFFUSER.
3. MOTION SENSORS AND MOTION SENSOR SWITCHES SHALL BE SET FOR 30 MINUTE TIME DELAY. CONTRACTOR MUST ADJUST SENSITIVITY ON SENSOR AS REQUIRED TO MEET ROOM CONDITIONS AND SIZE.
4. CONTRACTOR SHALL PROVIDE THE PROPER QUANTITY OF POWER PACKS FOR THE DESIGN. IN ROOMS THAT UTILIZE 277 AND 120 VOLT LIGHTING, A MINIMUM OF 2 POWER PACKS WILL BE REQUIRED (1 FOR EACH VOLTAGE).
5. DUAL TECHNOLOGY SENSORS MUST BE PROGRAMMED SUCH THAT BOTH TECHNOLOGIES ARE NEEDED TO TURN ON THE LIGHTS INITIALLY, BUT ONLY ONE TECHNOLOGY IS REQUIRED TO KEEP THE LIGHTS ON.

C1 TYPICAL MOTION SENSOR W/ LINE VOLTAGE SWITCH DETAIL

NTS



OPTIONAL IF TWO SWITCHES USE SAME MOTION SENSOR

C2 LOW VOLTAGE MOTION SENSOR WIRING DIAGRAM

NTS

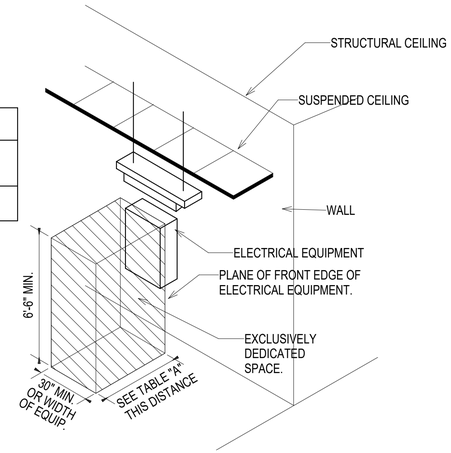
TABLE A - WORKING CLEARANCES			
VOLTAGE TO GROUND NOMINAL	MINIMUM CLEAR DISTANCE (FEET) CONDITION: 1	2	3
0-150	3	3	3
151-800	3	3-1/2	4

WHERE THE "CONDITIONS" ARE AS FOLLOWS:

1. EXPOSED LIVE PARTS ON ONE SIDE AND NO LIVE OR EXPOSED GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES EFFECTIVELY GUARDED BY SUITABLE WOOD OR OTHER INSULATING MATERIALS.
   INSULATED WIRE OR INSULATED BUSBARS OPERATING AT NOT OVER 300V MUST NOT BE CONSIDERED LIVE PARTS.
2. EXPOSED LIVE PARTS ON ONE SIDE AND GROUNDED PARTS ON THE OTHER SIDE.
3. EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.

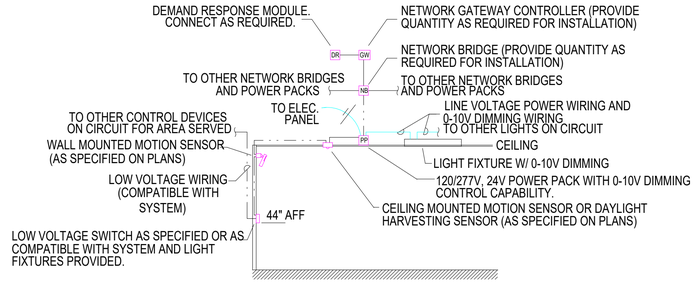
NOTE:

THIS FIGURE ILLUSTRATES THE WORKING SPACE IN FRONT OF THE ELECTRICAL EQUIPMENT REQUIRED BY SECTION 110.26 OF THE NATIONAL ELECTRICAL CODE.



C4 NEC 110.26 WORKING CLEARANCE DETAIL

NTS

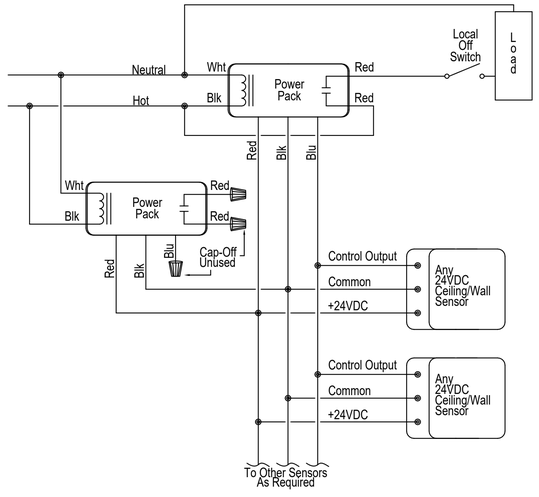


NOTES:

1. CONTRACTOR MUST PROVIDE ALL COMPONENTS AS REQUIRED FOR PROPER OPERATION OF LIGHTING CONTROLS.
2. CEILING MOUNTED MOTION SENSORS MUST BE MOUNTED AT LEAST 6' FROM A DIFFUSER.
3. MOTION SENSORS AND MOTION SENSOR SWITCHES INDICATED AS OCCUPANCY SENSORS MUST BE SET TO TURN OFF AFTER A 15 MINUTE TIME DELAY. CONTRACTOR MUST ADJUST SENSITIVITY ON SENSOR AS REQUIRED TO MEET ROOM CONDITIONS AND SIZE.
4. MOTION SENSORS AND MOTION SENSOR SWITCHES INDICATED AS VACANCY SENSORS MUST BE SET FOR MANUAL ON, AUTOMATIC OFF FUNCTION WHEN NO MOTION HAS BEEN DETECTED FOR 15 MINUTES. CONTRACTOR MUST ADJUST SENSITIVITY ON SENSOR AS REQUIRED TO MEET ROOM CONDITIONS AND SIZE.
5. LIGHTING CONTROLS SUPPLIER MUST DEVELOP FULL SYSTEM SHOP DRAWING INCLUDING ALL DEVICE LOCATIONS, REQUIRED WIRE RUNS, AND ALL REQUIRED BRIDGES FOR PROPER SYSTEM OPERATION AND INTEGRATION. SHOP DRAWING MUST BE PROVIDED WITH LIGHTING CONTROLS SUBMITTAL TO ENGINEER FOR REVIEW.

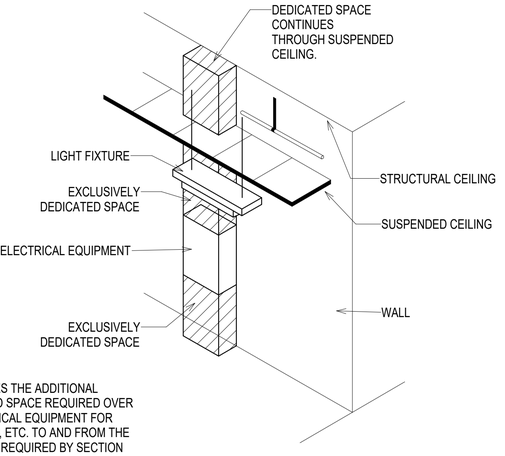
A1 TYPICAL MOTION SENSOR W/ LOW VOLTAGE SWITCH DETAIL

NTS



A2 LOW VOLTAGE MOTION SENSOR W/ MULTIPLE POWER PACKS WIRING DIAGRAM

NTS



NOTE:

THIS FIGURE ILLUSTRATES THE ADDITIONAL EXCLUSIVELY DEDICATED SPACE REQUIRED OVER AND UNDER THE ELECTRICAL EQUIPMENT FOR THE CABLES, RACEWAYS, ETC. TO AND FROM THE ELECTRICAL EQUIPMENT REQUIRED BY SECTION 110.26 (F) OF THE NATIONAL ELECTRICAL CODE.

A4 NEC 110.26(F) DEDICATED SPACE DETAIL

NTS

APPR	DATE	DESCRIPTION	SYM

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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
1ST MARINE CORPS
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MARINE CORPS AIR STATION
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

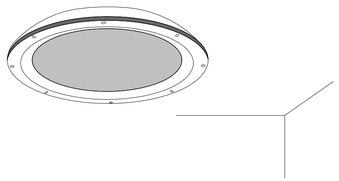
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELECTRICAL DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883163
SHEET	109 OF 121

E-501

DRAWFORM REVISION: 10 MARCH 2009



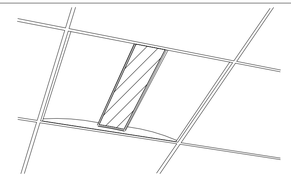
NOTE: THIS SKETCH IS A NON-PROPRIETARY GRAPHIC REPRESENTATION OF A LUMINAIRE THAT MAY MEET THE SPECIFICATION REQUIREMENTS. IT IS NOT INTENDED TO INDICATE A CERTAIN MANUFACTURER OR PREFERENCE.

LUMINAIRE REQUIREMENTS:

1. HOUSING - DIE-CAST ALUMINUM HOUSING WITH POWDER COAT FINISH.
2. OPTICS - INJECTION MOLDED ACRYLIC EDGE-LIT LENS.
3. LIGHT SOURCE - SOLID STATE LEDS, 3000K CCT UON MINIMUM 80 CRI UON, AND MINIMUM EFFICACY OF 110 LUMENS/WATT UON. INITIAL LUMEN OUTPUT AS INDICATED IN LUMINAIRE SCHEDULE.
4. DRIVER - REPLACEABLE, INTEGRAL, HIGH-EFFICIENCY DIMMABLE DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120-277V, THERMAL MANAGEMENT, AND < 20% THD. ON/OFF CONTROL AND DIMMABLE AS INDICATED IN LUMINAIRE SCHEDULE.
5. CERTIFICATION - UL LISTED FOR DAMP LOCATION, ROHS COMPLIANT. COMPLIES WITH IES LM79, LM80 AND TM21 TESTING STANDARDS.
6. MOUNTING - SURFACE MOUNTED WITH STAINLESS STEEL MOUNTING HARDWARE.
7. OPTIONS - INTEGRAL MOTION SENSOR, PHOTOCELL, EMERGENCY BATTERY BACK-UP.

LED PARKING GARAGE LUMINAIRE

REVISED:	NOVEMBER 2020	LIGHTING PLATE:	XL-6



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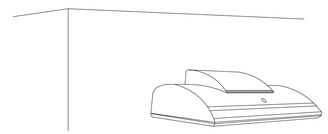
LUMINAIRE REQUIREMENTS:

1. HOUSING - HEAVY GAUGE COLD ROLLED STEEL OR DIE CAST ALUMINUM. SIZE SHOWN AS INDICATED IN LUMINAIRE SCHEDULE.
2. OPTICS - FROSTED ACRYLIC OR POLYCARBONATE LENS WITH DIE FORMED COLD ROLLED SHEET STEEL REFLECTORS.
3. LIGHT SOURCE - SOLID STATE LEDS, 3500K CCT UON, MINIMUM 80 CRI UON, AND MINIMUM EFFICACY OF 100 LUMENS/WATT UON. INITIAL LUMEN OUTPUT AS INDICATED IN LUMINAIRE SCHEDULE.
4. DRIVER - REPLACEABLE, INTEGRAL, HIGH-EFFICIENCY DIMMABLE DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120-277V, THERMAL MANAGEMENT, AND < 20% THD. ON/OFF CONTROL AND FULLY DIMMABLE DOWN TO 10% MINIMUM OR AS INDICATED IN LUMINAIRE SCHEDULE.
5. CERTIFICATION - UL LISTED FOR DRY OR DAMP LOCATION, ROHS COMPLIANT. DLC QUALIFIED. COMPLIES WITH IES LM79, LM80 AND TM21 TESTING STANDARDS.
6. MOUNTING - RECESSED IN HARD OR ACOUSTICAL TILE CEILING.
7. OPTIONS - EMERGENCY BATTERY BACK-UP, INTEGRAL OCCUPANCY/VACANCY SENSOR, VARIOUS SIZE AND OUTPUT OPTIONS, SURFACE-MOUNTING KIT.

DIRECT/INDIRECT LED LUMINAIRE

REVISED:	NOVEMBER 2020	LIGHTING PLATE:	NL-1



NOTE: 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.

LUMINAIRE REQUIREMENTS:

1. HOUSING - DIE-CAST OR EXTRUDED ALUMINUM WITH INTEGRAL PASSIVE COOLING MECHANISM. HEAT SINK INCORPORATED DIRECTLY INTO HOUSING OR DRIVER COMPARTMENT.
2. OPTICS - PRECISION MOLDED ACRYLIC LENS WITH TYPE II, III, OR IV DISTRIBUTIONS. BUG UPLIGHT RATING OF U0, WITH GLARE RATING AS DETERMINED BY LIGHTING ZONE INSTALLED.
3. LIGHT SOURCE - SOLID STATE LEDS, 3000K CCT UON, MINIMUM 70 CRI UON, AND MINIMUM EFFICACY OF 80 LUMENS/WATT UON. INITIAL LUMEN OUTPUT AS INDICATED IN LUMINAIRE SCHEDULE.
4. DRIVER - REPLACEABLE, INTEGRAL, HIGH-EFFICIENCY DIMMABLE DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120-277V, THERMAL MANAGEMENT, AND < 20% THD. ON-OFF CONTROL AND FULLY DIMMABLE DOWN TO 10% MINIMUM OR AS INDICATED IN LUMINAIRE SCHEDULE.
5. CERTIFICATION - UL LISTED FOR WET LOCATION, ROHS COMPLIANT. COMPLIES WITH IES LM79, LM80 AND TM21 TESTING STANDARDS.
6. MOUNTING - SURFACE MOUNTED WITH STAINLESS STEEL MOUNTING HARDWARE.
7. OPTIONS - VARIOUS LIGHT DISTRIBUTIONS. INTEGRAL MOTION SENSOR, PHOTOCELL, BATTERY BACK-UP.

LED WALL PACK

REVISED:	NOVEMBER 2020	LUMINAIRE PLATE:	XL-10

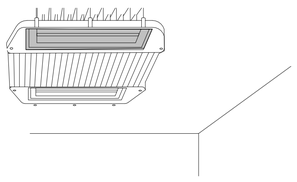
NOTE: THIS SKETCH IS A NON-PROPRIETARY GRAPHIC REPRESENTATION OF A LUMINAIRE THAT MAY MEET THE SPECIFICATION REQUIREMENTS. IT IS NOT INTENDED TO INDICATE A CERTAIN MANUFACTURER OR PREFERENCE.

LUMINAIRE REQUIREMENTS:

1. HOUSING - DIE-CAST ALUMINUM OR HIGH-IMPACT, UV-STABILIZED, INJECTION-MOLDED THERMOPLASTIC.
2. LIGHT SOURCE - SOLID STATE LEDS.
3. DRIVER - INTEGRAL, HIGH-EFFICIENCY DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120/277V, THERMAL MANAGEMENT, AND < 20% THD.
4. CERTIFICATION - NFPA 101, UL LISTED FOR DAMP OR WET LOCATION, AND ROHS COMPLIANT.
5. MOUNTING - SURFACE MOUNTED ON CEILING AND/OR WALL.
6. OPTIONS - RED OR GREEN LETTERING, ONE- OR TWO-SIDED. ELU REMOTE HEAD CAPABILITIES. BATTERY BACKUP.

EXIT SIGN

REVISED:	NOVEMBER 2020	LIGHTING PLATE:	NL-28



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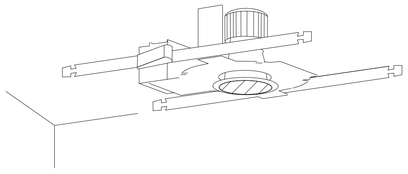
LUMINAIRE REQUIREMENTS:

1. HOUSING - HEAVY GAUGE COLD ROLLED STEEL OR CAST ALUMINUM HOUSING.
2. OPTICS - POLYCARBONATE DIFFUSE LENS.
3. LIGHT SOURCE - SOLID STATE LEDS, 3500K CCT UON, MINIMUM 80 CRI UON, AND MINIMUM EFFICACY OF 140 LUMENS/WATT UON. INITIAL LUMEN OUTPUT AS INDICATED IN LUMINAIRE SCHEDULE.
4. DRIVER - REPLACEABLE, INTEGRAL, HIGH-EFFICIENCY DIMMABLE DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120-277V, THERMAL MANAGEMENT, AND < 20% THD. ON/OFF CONTROL AND FULLY DIMMABLE DOWN TO 10% MINIMUM OR AS INDICATED IN LUMINAIRE SCHEDULE .
5. CERTIFICATION - UL LISTED FOR DAMP OR WET LOCATION, ROHS COMPLIANT, DLC QUALIFIED. COMPLIES WITH IES LM79, LM80 AND TM21 TESTING STANDARDS.
6. MOUNTING - PENDANT, STEM, OR SURFACE MOUNTED WITH STAINLESS STEEL MOUNTING HARDWARE.
7. OPTIONS - INTEGRAL OCCUPANCY SENSOR, EMERGENCY BATTERY BACK-UP, VARIOUS OPTICAL DISTRIBUTIONS.

LED INDUSTRIAL HIGH-BAY

REVISED:	NOVEMBER 2020	LIGHTING PLATE:	NL-24



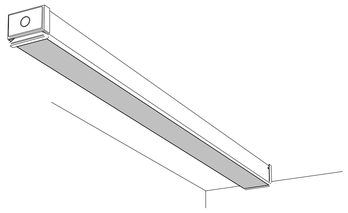
NOTE: THIS SKETCH IS A NON-PROPRIETARY GRAPHIC REPRESENTATION OF A LUMINAIRE THAT MAY MEET THE SPECIFICATION REQUIREMENTS. IT IS NOT INTENDED TO INDICATE A CERTAIN MANUFACTURER OR PREFERENCE.

LUMINAIRE REQUIREMENTS:

1. HOUSING - COLD-ROLLED STEEL OR DIE CAST ALUMINUM, WITH HEAT SINK. APERTURE SIZE AND SHAPE AS INDICATED IN LUMINAIRE SCHEDULE.
2. LIGHT SOURCE - SOLID STATE LEDS, 3500K CCT UON, MINIMUM 80 CRI UON, AND MINIMUM EFFICACY OF 70 LUMENS/WATT UON. INITIAL LUMEN OUTPUT AS INDICATED IN LUMINAIRE SCHEDULE.
3. DRIVER - REPLACEABLE, INTEGRAL, HIGH-EFFICIENCY DIMMABLE DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120-277V, THERMAL MANAGEMENT, AND < 20% THD. ON/OFF CONTROL AND FULLY DIMMABLE DOWN TO 10% MINIMUM OR AS INDICATED IN LUMINAIRE SCHEDULE.
4. CERTIFICATION - UL LISTED FOR DRY OR DAMP LOCATION, ROHS COMPLIANT. COMPLIES WITH IES LM79, LM80 AND TM21 TESTING STANDARDS.
5. MOUNTING - RECESSED IN HARD OR ACOUSTICAL TILE CEILING. PROVIDE T-BAR HANGERS FOR INSTALLATION IN ACOUSTICAL TILE CEILINGS OR TABS WHEN MOUNTING IN HARD CEILINGS.
6. OPTIONS - EMERGENCY BATTERY BACK-UP, VARIOUS ACRYLIC OR POLYCARBONATE LENSES, REFLECTORS, LOUVERS AND TRIMS. VARIOUS BEAM ANGLES. IC RATED HOUSING.

FIXED RECESSED DOWNLIGHT

REVISED:	NOVEMBER 2020	LIGHTING PLATE:	NL-12



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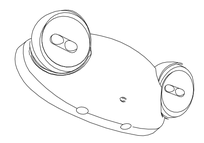
LUMINAIRE REQUIREMENTS:

1. HOUSING - EXTRUDED ALUMINUM OR WELDED STEEL HOUSING WITH SNAP-ON END CAPS. SIZE AS INDICATED IN LUMINAIRE SCHEDULE.
2. OPTICS - DIFFUSE ACRYLIC LENS.
3. LIGHT SOURCE - SOLID STATE LEDS, 3500K CCT UON, MINIMUM 80 CRI UON, AND MINIMUM EFFICACY OF 90 LUMENS/WATT UON. INITIAL LUMEN OUTPUT AS INDICATED IN LUMINAIRE SCHEDULE.
4. DRIVER - REPLACEABLE, INTEGRAL, HIGH-EFFICIENCY DIMMABLE DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120-277V, THERMAL MANAGEMENT, AND < 20% THD. ON/OFF CONTROL AND FULLY DIMMABLE DOWN TO 10% MINIMUM OR AS INDICATED IN LUMINAIRE SCHEDULE.
5. CERTIFICATION - UL LISTED FOR DAMP OR WET LOCATION, ROHS COMPLIANT. DLC QUALIFIED. COMPLIES WITH IES LM79, LM80 AND TM21 TESTING STANDARDS.
6. MOUNTING - PENDANT, STEM, OR SURFACE MOUNTED WITH STAINLESS STEEL MOUNTING HARDWARE.
7. OPTIONS - INTEGRAL OCCUPANCY SENSOR, EMERGENCY BATTERY BACK-UP, VARIOUS PROFILE DIMENSIONS AND RUN LENGTHS, AND VARIOUS CLEAR OR FROSTED POLYCARBONATE LENSES.

LED INDUSTRIAL LIGHT

REVISED:	NOVEMBER 2020	LIGHTING PLATE:	NL-23



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LUMINAIRE REQUIREMENTS:

1. HOUSING - HIGH-IMPACT, UV-STABILIZED, INJECTION-MOLDED THERMOPLASTIC HOUSING.
2. LIGHT SOURCE - SOLID STATE LEDS.
3. DRIVER - INTEGRAL, HIGH-EFFICIENCY DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120-277V, THERMAL MANAGEMENT, AND < 20% THD. ON/OFF CONTROL AND BATTERY BACKUP INTEGRAL TO UNIT.
4. CERTIFICATION - NFPA 101. UL LISTED FOR DAMP OR WET LOCATION, ROHS COMPLIANT. COMPLIES WITH IES LM79, LM80 AND TM21 TESTING STANDARDS.
5. MOUNTING - WALL SURFACE MOUNTED.
6. OPTIONS - WHITE OR BLACK FINISH.

LED EMERGENCY LIGHTING UNIT (ELU)

REVISED:	NOVEMBER 2020	LIGHTING PLATE:	NL-26

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA — Michael K. Wilson — SEAL 045329 — ENGINEER — MICHAEL K. WILSON, PE — 4/7/23 — SEAL

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www.crenshawconsulting.com
3516 Bush Street, Suite 200
Raleigh, North Carolina 27609
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES	MKW	DRW	ABB	CHK	JTR

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
1ST MARINE CORPS
MARINE CORPS AIR STATION
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

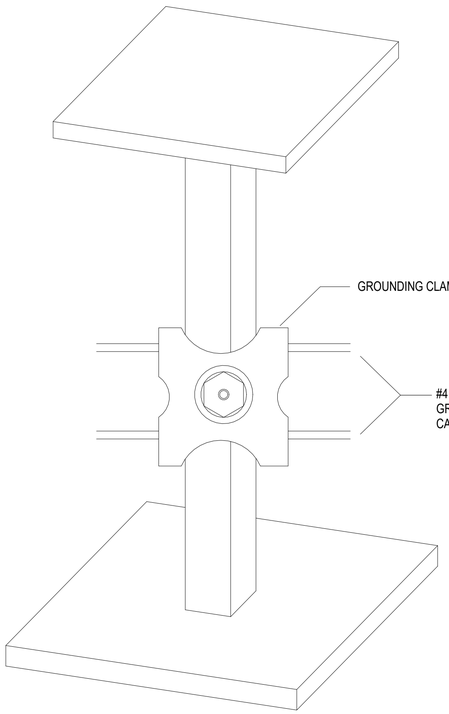
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

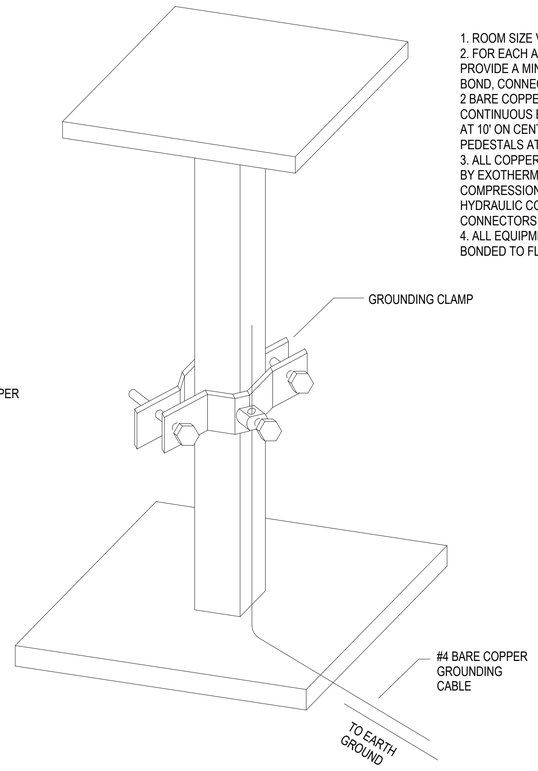
ELECTRICAL DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883164
SHEET	110 OF 121

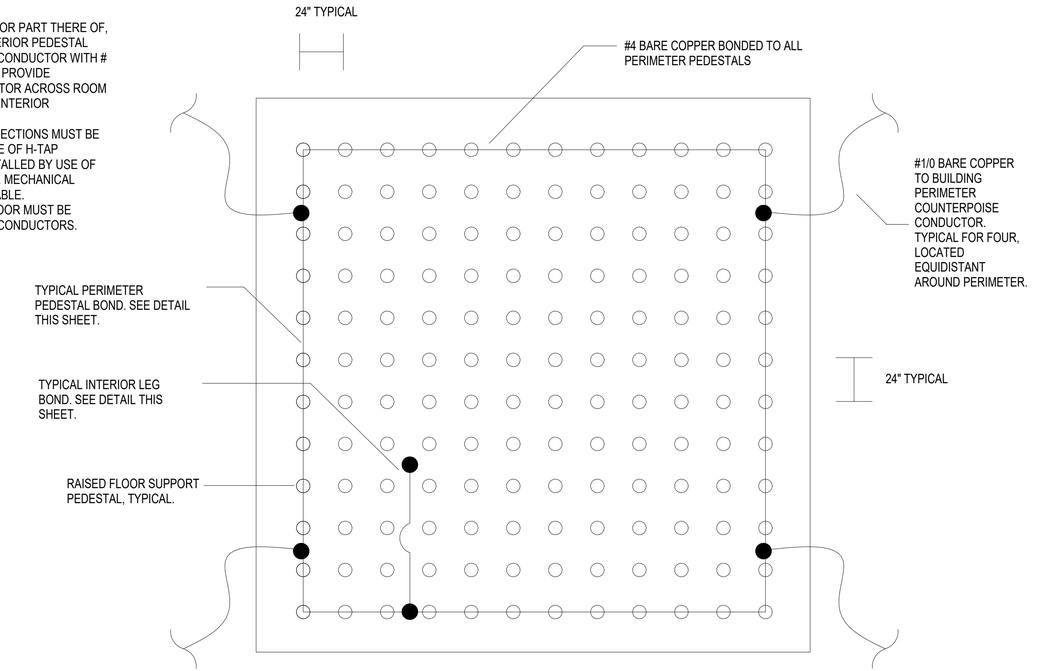
E-502

DRAWFORM REVISION: 10 MARCH 2009

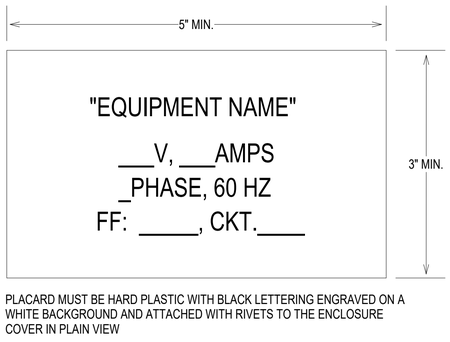




1. ROOM SIZE VARIES
2. FOR EACH AREA OF 100 SQ FT, OR PART THERE OF, PROVIDE A MINIMUM OF ONE INTERIOR PEDESTAL BOND, CONNECT TO PERIMETER CONDUCTOR WITH # 2 BARE COPPER CONDUCTOR OR PROVIDE CONTINUOUS BARE #1/0 CONDUCTOR ACROSS ROOM AT 10' ON CENTER AND BOND TO INTERIOR PEDESTALS AT 10' INTERVALS.
3. ALL COPPER TO COPPER CONNECTIONS MUST BE BY EXOTHERMIC WELD OR BY USE OF H-TAP COMPRESSION CONDUCTOR INSTALLED BY USE OF HYDRAULIC COMPRESSION TOOL. MECHANICAL CONNECTORS ARE NOT ACCEPTABLE.
4. ALL EQUIPMENT ON RAISED FLOOR MUST BE BONDED TO FLOOR GROUNDING CONDUCTORS.



B1 RAISED FLOOR GROUNDING DETAIL
NTS

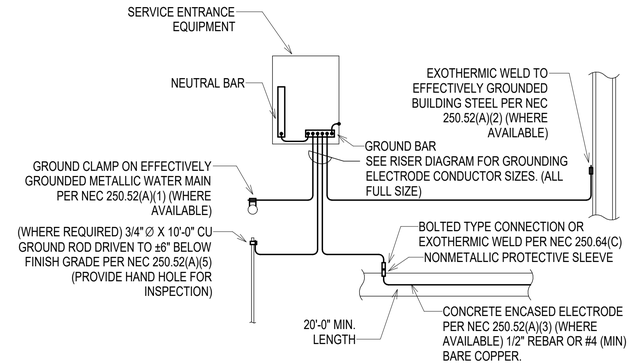


PLACARD MUST BE HARD PLASTIC WITH BLACK LETTERING ENGRAVED ON A WHITE BACKGROUND AND ATTACHED WITH RIVETS TO THE ENCLOSURE COVER IN PLAIN VIEW

A2 DISCONNECT IDENTIFICATION PLACARD
NTS

GROUNDING INTERCONNECTION:
THE GROUNDING METHOD PROVIDED FOR THE ELECTRICAL SERVICE MUST BE INTERCONNECTED WITH THE BUILDING LIGHTNING PROTECTION SYSTEM AND TELECOMMUNICTIONS GROUNDING SYSTEM.

NOTE:
THIS DETAIL IS INTENDED AS AN AID ONLY, THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL PROVISIONS AND REQUIREMENTS OF NEC 250 SECTION III INCLUDING THOSE NOT SPECIFICALLY REFERENCED HERE.



A4 SERVICE GROUND DETAIL
NTS

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA
Michael K. Wilson
SEAL
045329
ENGINEER
MICHAEL K. WILSON, JR.
4/7/25
SEAL

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919-571-1570 Fax 571-5820

A/E INFO

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ACTIVITY

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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND - MIDATLANTIC
IPT MARINE CORPS
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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

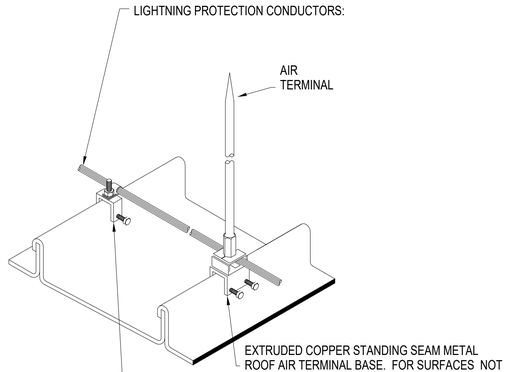
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELECTRICAL DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883165
SHEET	111 OF 121

E-503

DRAWFORM REVISION: 10 MARCH 2009



NOTES:
AIR TERMINAL SPACING SHALL CONFORM TO NFPA 780 & UL 96A REQUIREMENTS.

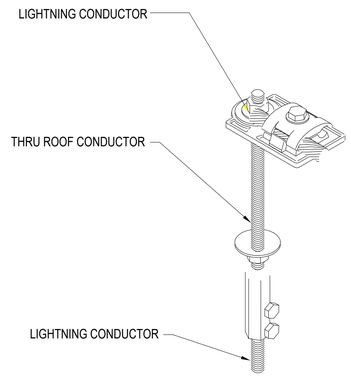
MATERIAL COMPATIBILITY SHALL CONFORM TO NFPA 780 & 96A REQUIREMENTS.

MATERIAL CLASS SHALL CONFORM TO NFPA 780 & UL 96A REQUIREMENTS.

AIR TERMINALS SHALL BE UL LISTED & CAL-OSHA APPROVED.

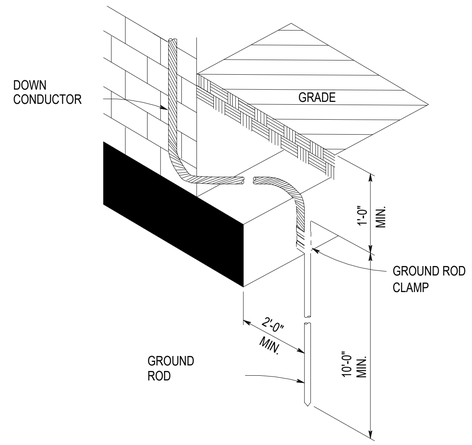
AIR TERMINAL DETAIL

NTS



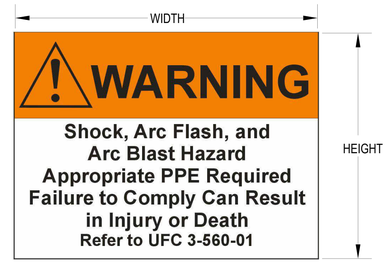
THRU WALL ASSEMBLY DETAIL

NTS LRODTWL1



GROUNDING DETAIL

NTS BLDGSG



NOTES:

1. PROVIDE SELF-ADHESIVE VINYL LABEL TO AFFIX TO ELECTRICAL EQUIPMENT TO WARN OF ARC FLASH HAZARDS.

2. THE LABEL FORMAT AND TEXT SHALL BE IN ACCORDANCE WITH THE FIGURE.

3. THE LABEL SHALL 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 SHALL BE MINIMUM:

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

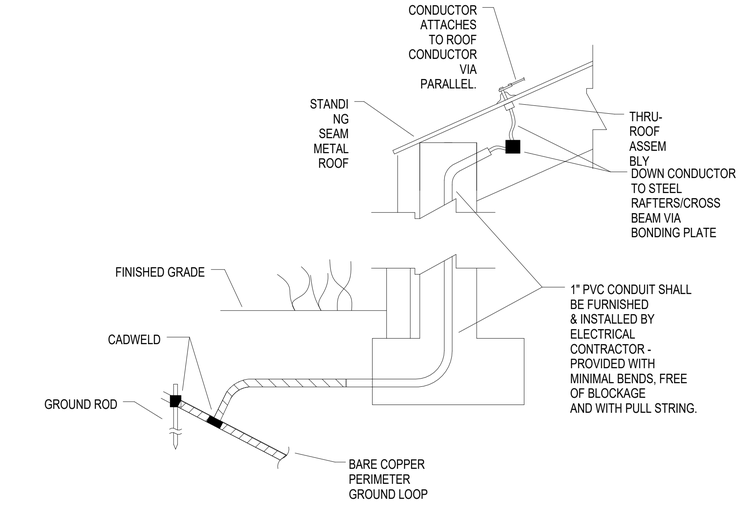
5. A DOWNLOADABLE WINDOWS METAFILE IS AVAILABLE ON THE WHOLE BUILDING DESIGN GUIDE WEBSITE (WWW.WDBG.ORG) FOR USE IN A LABEL MAKING MACHINE.

A. THE FILE IS LOCATED ON THE "NAVFAC CADD DETAILS" PAGE. TO NAVIGATE TO THIS LOCATION, FOLLOW: HOME > DOCUMENTS & REFERENCES > CCB > CADD LIBRARY > NAVFAC CADD RESOURCES > NAVFAC CADD DETAILS.

B. ALTERNATIVELY, TYPE IN THE FOLLOWING ADDRESS IN INTERNET EXPLORER: HTTP://WWW.WBDG.ORG/CCB/BROWSE_CAT.PHP?C=232

GENERAL ARC FLASH WARNING LABEL

SKETCH DATE APRIL 2015 STYLE AF-1



A4 LIGHTNING PROTECTION GROUNDING DETAIL

NTS

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA REGISTERED SEAL 045329 ENGINEER MICHAEL K. WILSON, JR. 4/7/23

SEAL

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DEPARTMENT OF THE NAVY
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1ST MARINE CORPS
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NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELECTRICAL DETAILS

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883166
SHEET 112 OF 121

E-504

DRAWFORM REVISION: 10 MARCH 2009

EQUIPMENT CONNECTIONS SCHEDULE

MARK	DESCRIPTION	FURN BY	KVA	VOLTAGE	PHASE	AMPERAGE	DISCONNECT SIZE	NEMA	BREAKER SIZE/FUSE SIZE	WIRE SIZE	GROUND SIZE	CONDUIT	NOTES
AHU-1	AIR HANDLING UNIT	MECH	21.0	208	3	58.2	100/3	3R	80/3	4-#4	#8	1 1/4"	
AHU-2	AIR HANDLING UNIT	MECH	12.0	208	3	33.4	60/3	3R	60/3	4-#6	#10	1"	
VAV-1-1	VAV BOX	MECH	1.0	208	1	4.8	30/2	1	15/2	3-#12	#12	3/4"	
VAV-1-2	VAV BOX	MECH	1.0	208	1	4.8	30/2	1	15/2	3-#12	#12	3/4"	
VAV-1-3	VAV BOX	MECH	2.5	208	1	12.0	30/2	1	20/2	3-#12	#12	3/4"	
VAV-1-4	VAV BOX	MECH	3.0	208	1	14.4	30/2	1	20/2	3-#12	#12	3/4"	
VAV-1-5	VAV BOX	MECH	1.0	208	1	4.8	30/2	1	15/2	3-#12	#12	3/4"	
VAV-1-6	VAV BOX	MECH	1.0	208	1	4.8	30/2	1	15/2	3-#12	#12	3/4"	
VAV-1-7	VAV BOX	MECH	2.5	208	1	12.0	30/2	1	20/2	3-#12	#12	3/4"	
VAV-1-8	VAV BOX	MECH	2.5	208	1	12.0	30/2	1	20/2	3-#12	#12	3/4"	
VAV-2-1	VAV BOX	MECH	6.5	208	1	31.2	60/2	1	40/2	3-#8	#10	3/4"	
VAV-2-2	VAV BOX	MECH	1.5	208	1	7.2	30/2	1	15/2	3-#12	#12	3/4"	
EF-1	EXHAUST FAN	MECH	0.1	120	1	0.8	M	1	15/1	2-#12	#12	3/4"	
EF-2	EXHAUST FAN	MECH	0.1	120	1	0.8	M	1	15/1	2-#12	#12	3/4"	
EF-3	EXHAUST FAN	MECH	0.1	120	1	0.8	M	1	15/1	2-#12	#12	3/4"	
EF-4	EXHAUST FAN	MECH	0.1	120	1	0.8	M	1	15/1	2-#12	#12	3/4"	
EF-5	EXHAUST FAN	MECH	0.5	120	1	4.2	M	1	15/1	2-#12	#12	3/4"	
EF-6	EXHAUST FAN	MECH	0.2	120	1	1.6	M	1	15/1	2-#12	#12	3/4"	
EF-7	EXHAUST FAN	MECH	0.2	120	1	1.6	M	1	15/1	2-#12	#12	3/4"	
EF-8	EXHAUST FAN	MECH	0.5	120	1	4.2	M	1	15/1	2-#12	#12	3/4"	
EF-9	EXHAUST FAN	MECH	0.2	120	1	1.6	M	1	15/1	2-#12	#12	3/4"	
EF-10	EXHAUST FAN	MECH	0.1	120	1	0.8	M	1	15/1	2-#12	#12	3/4"	
EF-11	EXHAUST FAN	MECH	0.1	120	1	0.8	M	1	15/1	2-#12	#12	3/4"	
EF-12	EXHAUST FAN	MECH	0.1	120	1	0.8	M	1	15/1	2-#12	#12	3/4"	
EF-13	EXHAUST FAN	MECH	0.8	120	1	3.5	M	1	15/1	2-#12	#12	3/4"	
EUH-1	ELECTRIC UNIT HEATER	MECH	5.0	208	1	24.0	30/2	1	35/2	3-#10	#10	3/4"	
EUH-2	ELECTRIC UNIT HEATER	MECH	5.0	208	1	24.0	30/2	1	35/2	3-#10	#10	3/4"	
EUH-3	ELECTRIC UNIT HEATER	MECH	3.0	208	1	14.4	30/2	1	20/2	3-#12	#12	3/4"	
L-1,2,3,4,5,6,7,8,9	MOTORIZED LOUVER (9 TOTAL)	MECH	0.1	120	1	0.8	M	1	15/1	2-#12	#12	3/4"	
DAC-1	SPLIT SYSTEM AHU	MECH	0.1	208	1	1.0	30/2	1	30/2	3-#10	#10	3/4"	INDOOR UNIT POWERED BY OUTDOOR UNIT
DCU-1	SPLIT SYSTEM CONDENSER	MECH	2.3	208	1	11.0	30/2	3R	30/2	3-#10	#10	3/4"	
DAC-2	SPLIT SYSTEM AHU	MECH	0.1	208	1	1.0	30/2	1	30/2	3-#10	#10	3/4"	INDOOR UNIT POWERED BY OUTDOOR UNIT
DCU-2	SPLIT SYSTEM CONDENSER	MECH	2.3	208	1	11.0	30/2	3R	30/2	3-#10	#10	3/4"	
DAC-3	SPLIT SYSTEM AHU	MECH	0.1	208	1	1.0	30/2	1	30/2	3-#10	#10	3/4"	INDOOR UNIT POWERED BY OUTDOOR UNIT
DCU-3	SPLIT SYSTEM CONDENSER	MECH	2.3	208	1	11.0	30/2	3R	30/2	3-#10	#10	3/4"	
DAC-4	SPLIT SYSTEM AHU	MECH	0.1	208	1	1.0	30/2	1	30/2	3-#10	#10	3/4"	INDOOR UNIT POWERED BY OUTDOOR UNIT
DCU-4	SPLIT SYSTEM CONDENSER	MECH	2.3	208	1	11.0	30/2	3R	30/2	3-#10	#10	3/4"	
DAC-5	SPLIT SYSTEM AHU	MECH	0.1	208	1	1.0	30/2	1	30/2	3-#10	#10	3/4"	INDOOR UNIT POWERED BY OUTDOOR UNIT
DCU-5	SPLIT SYSTEM CONDENSER	MECH	2.3	208	1	11.0	30/2	3R	30/2	3-#10	#10	3/4"	
-	CONDENSATE PUMP (5 TOTAL)	MECH	0.1	120	1	0.8	M	1	15/1	2-#12	#12	3/4"	
D-WH-1	ELECTRIC WATER HEATER	PLMB	30.0	208	3	83.2	200/3	1	110/3	4-#2	#6	1 1/4"	
-	RECIRC PUMP	PLMB	0.5	120	1	4.4	M	1	15/1	2-#12	#12	3/4"	
AC-1	AIR COMPRESSOR	PLMB	11.2	208	3	30.8	60/3	1	60/3	4-#6	#10	1"	
AC-2	AIR COMPRESSOR	PLMB	11.2	208	3	30.8	60/3	1	60/3	4-#6	#10	1"	
AC-3	AIR COMPRESSOR	PLMB	11.2	208	3	30.8	60/3	1	60/3	4-#6	#10	1"	
-	AIR DRYER	PLMB	0.5	120	1	4.4	M	1	15/1	2-#12	#12	3/4"	
-	AIR DRYER	PLMB	0.5	120	1	4.4	M	1	15/1	2-#12	#12	3/4"	
-	CUTOFF SAW		8.8	208	3	24.4	60/3	1	50/3	4-#8	#10	3/4"	
-	WET WELL PUMP	CIVIL	4.2	208	3	11.7	30/3	3R	20/3	4-#12	#12	3/4"	

1. ALL DISCONNECTS FOR EQUIPMENT MUST BE OF HEAVY DUTY TYPE.
2. BREAKER SIZES FOR ALL EQUIPMENT SIZED AT MOCP WHERE APPLICABLE.
3. COORDINATE REQUIRED BREAKER/FUSE SIZES WITH EQUIPMENT PROVIDER (MECH/PLUMB/ETC) AND ACTUAL EQUIPMENT INSTALLED ON SITE.
4. AN 'M' IN THE DISCONNECT COLUMN INDICATES A MOTOR SWITCH IS TO BE USED AS THE DISCONNECTING MEANS.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 045329 MICHAEL K. WILSON, JR. 4/7/23

SEAL

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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES MKW | DRW ABB | CHK JTR

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
1ST MARINE CORPS
MARINE CORPS AIR STATION
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELECTRICAL SCHEDULES

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883167
SHEET 113 OF 121

E-601

DRAWFORM REVISION: 10 MARCH 2009

Branch Panel: P1

Supply From: MDP
Mounting: SURFACE
Enclosure: NEMA 1
Accessory:

Volts: 120/208 Wye
Phases: 3
Wires: 4
Poles: 42

A.I.C. Rating: 30,000
Mains Type: MAIN LUGS ONLY
Mains Rating: 200 A

CKT	Circuit Description	Trip	Poles	Fn	A	B	C	A	B	C	Fn	Poles	Trip	Circuit Description	CKT
1	108 & 110 HEAD, 109 JAN. RECEP	20 A	1		0.9			1.1				1	20 A	122 CLASSROOM RECP	2
3	104 WOOD, 105 TOOL RECPS	20 A	1			1.1			1.1			1	20 A	122 CLASSROOM RECP	4
5	106 ICE	20 A	1				1.0			1.1		1	20 A	122 CLASSROOM RECP	6
7	104 WOODSHOP 'C' RECP	20 A	1		0.2			1.0			G	1	20 A	103 WATER COOLER	8
9	104 WOODSHOP 'C' RECP	20 A	1			0.4			0.5			1	20 A	116, 117 HEAD, 118 JAN. RECP	10
11	104 WOODSHOP 'WP' RECP	20 A	1				0.4			0.7		1	20 A	EXTERIOR RECS	12
13	104 WOODSHOP CHOP SAW	20 A	1		1.0			1.0				1	20 A	COFFEE MAKER	14
15	104 WOODSHOP PANEL SAW	20 A	1			1.0			0.1		L	1	20 A	FMCP	16
17	104 WOODSHOP DUST	20 A	1				1.0			2.9					18
19	102 REFRIGERATOR	20 A	1		1.2			2.9				3	50 A	CUTOFF SAW	20
21	KITCHEN RECP	20 A	1			1.0			2.9						22
23	KITCHEN RECP	20 A	1				1.0			1.0		1	20 A	AIR DRYER	24
25	102 OPEN OFFICE RECP	20 A	1		1.4			0.0			--	1	20 A	SPARE	26
27	COPIER	20 A	1			0.2			0.0		--	1	20 A	SPARE	28
29	102 OFFICE RANGE CONTROLLER	20 A	1				0.9			0.0	--	1	20 A	SPARE	30
31	126 RANGE MANAGER RECP	20 A	1		0.9			0.0			--	1	20 A	SPARE	32
33	125 EQUIP RECP	20 A	1			0.4			0.0		--	1	20 A	SPARE	34
35	123 RANGE ADMIN RECP	20 A	1				1.1			0.0	--	1	20 A	SPARE	36
37	113 RANGE NCOIC RECP	20 A	1		0.9			--			--	1	--	SPACE	38
39	103,114,119 CORRIDOR RECP	20 A	1			0.7			--		--	1	--	SPACE	40
41	115 RANGE OIC RECP	20 A	1				0.9			--	--	1	--	SPACE	42
		Connected Load:			12.5 kVA	9.4 kVA	12.0 kVA								
					107.8 A	77.9 A	103.1 A								

Load Classification	Connected Load	Demand Factor	Demand Load	Panel Totals	
Other	17.100 kVA	100.00%	17.100 kVA	**Total Connected Load:**	33.9 kVA
Receptacle	16.760 kVA	79.83%	13.380 kVA		94.0 A
				Total Demand Load:	30.5 kVA
					84.6 A

Notes:

Branch Panel: M

Supply From: MDP
Mounting: SURFACE
Enclosure: NEMA 1
Accessory:

Volts: 120/208 Wye
Phases: 3
Wires: 4
Poles: 42

A.I.C. Rating: 30,000
Mains Type: MAIN LUGS ONLY
Mains Rating: 200 A

CKT	Circuit Description	Trip	Poles	Fn	A	B	C	A	B	C	Fn	Poles	Trip	Circuit Description	CKT
1	DCU-3	30 A	2		1.2			0.5				1	20 A	EXTERIOR/ELEC ROOM REC	2
3						1.2			0.3			1	15 A	EF-1,2,3	4
5	CONDENSATE PUMP	15 A	1				0.1			0.6		1	15 A	EF-7,9,10	6
7	RECIRC PUMP	15 A	1		0.0			1.5				1	15 A	EF-4,8,11,12	8
9	VAV-1-4	20 A	2			1.5			1.0			1	15 A	EF-13	10
11							1.5			2.5		2	35 A	EUH-1	12
13	VAV-1-3	20 A	2		1.5			2.5							14
15						1.5			2.5			2	35 A	EUH-2	16
17	VAV-1-1	15 A	2				0.5			2.5					18
19					0.5			1.5				2	20 A	EUH-3	20
21	VAV-1-2	15 A	2			0.5			1.5						22
23							0.5			1.2		2	30 A	DCU-1	24
25	VAV-1-6	15 A	2		0.5			1.2							26
27						0.5			1.4			3	20 A	WET WELL PUMP	28
29	VAV-1-5	15 A	2				0.5			1.4					30
31					0.5			1.4							32
33	VAV-1-7	20 A	2			2.3			--		--	1	--	SPACE	34
35							2.3			--	--	1	--	SPACE	36
37	VAV-1-8	15 A	2		1.3			--			--	1	--	SPACE	38
39						1.3			--		--	1	--	SPACE	40
41	HVAC CONTROL PANEL	20 A	1				0.1			--	--	1	--	SPACE	42
		Connected Load:			14.1 kVA	15.4 kVA	13.6 kVA								
					118.0 A	129.0 A	113.3 A								

Load Classification	Connected Load	Demand Factor	Demand Load	Panel Totals	
Other	42.550 kVA	100.00%	42.550 kVA	**Total Connected Load:**	43.1 kVA
Receptacle	0.540 kVA	100.00%	0.540 kVA		119.6 A
				Total Demand Load:	43.1 kVA
					119.6 A

Notes:

Branch Panel: P2

Supply From: MDP
Mounting: SURFACE
Enclosure: NEMA 1
Accessory:

Volts: 120/208 Wye
Phases: 3
Wires: 4
Poles: 42

A.I.C. Rating: 22,000
Mains Type: MAIN BREAKER
Mains Rating: 225 A

CKT	Circuit Description	Trip	Poles	Fn	A	B	C	A	B	C	Fn	Poles	Trip	Circuit Description	CKT
1	132,133 & EXTERIOR RECP	20 A	1		0.9			0.8				2	15 A	VAV-2-2	2
3	134 ISMT RECP	20 A	1			1.1			0.8						4
5	134 ISMT RECP	20 A	1				1.1			3.3		2	40 A	VAV-2-1	6
7	128 CORRIDOR RECP	20 A	1		0.2			3.3							8
9	134 ISMT RECP	20 A	1			1.1			0.3			1	15 A	EF-5,6	10
11	134 ISMT RECP	20 A	1				0.4			1.1		1	20 A	134 ISMT REC	12
13	134 ISMT RECP	20 A	1		0.4			0.4				1	20 A	130 ISMT STG RECP	14
15	134 ISMT RECP	20 A	1			0.4			0.4			1	20 A	130 ISMT STG RECP	16
17	134 ISMT RECP	20 A	1				0.4			0.1		1	20 A	AIR DRYER	18
19	134 ISMT RECP	20 A	1		0.4			1.7				1	20 A	ISMT CORRIDOR LIGHTING	20
21	134 ISMT RECP	20 A	1			0.4			0.6			1	20 A	ISMT LIGHTING	22
23	SPARE	20 A	1	--			0.0			0.1		1	20 A	HVAC CONTROL PANEL	24
25					3.7			0.0			--	1	20 A	SPARE	26
27	AC-1	60 A	3			3.7			0.0		--	1	20 A	SPARE	28
29							3.7			0.0	--	1	20 A	SPARE	30
31					3.7			0.0			--	1	20 A	SPARE	32
33	AC-3	60 A	3			3.7			0.0		--	1	20 A	SPARE	34
35							3.7			0.0	--	1	20 A	SPARE	36
37					4.0			--			--	1	--	SPACE	38
39	AHU-2	60 A	3			4.0			--		--	1	--	SPACE	40
41							4.0			--	--	1	--	SPACE	42
		Connected Load:			19.3 kVA	16.4 kVA	17.8 kVA								
					162.7 A	136.7 A	150.1 A								

Load Classification	Connected Load	Demand Factor	Demand Load	Panel Totals	
Lighting	2.336 kVA	125.00%	2.920 kVA	**Total Connected Load:**	53.5 kVA
Other	42.900 kVA	100.00%	42.900 kVA		148.5 A
Receptacle	8.280 kVA	100.00%	8.280 kVA		
				Total Demand Load:	54.1 kVA
					150.2 A

Notes:

PANEL SCHEDULE NOTES

1. VALUES FOR DEMAND LOADS INCLUDE ALL CODE FACTORS SUCH AS 125% FOR CONTINUOUS LOADS, 125% LARGEST MOTOR, ETC.
2. BREAKER SIZES SHOWN FOR NEW EQUIPMENT IN PANEL SCHEDULES ARE FOR REFERENCE ONLY, SEE EQUIPMENT CONNECTION SCHEDULE(S) FOR ADDITIONAL INFORMATION. WHERE BREAKER / FUSE SIZE BETWEEN SCHEDULES CONFLICT, THE EQUIPMENT CONNECTION SCHEDULE MUST TAKE PRECEDENCE.
3. CIRCUIT BREAKERS USED FOR HVAC EQUIPMENT MUST BE 'HACR' TYPE.
4. ALL PANEL DIRECTORIES MUST BE COMPLETED IN ACCORDANCE WITH NEC 408.4. LABELING FOR PANELBOARD DIRECTORIES MUST BE SPECIFIC.
5. CONTRACTOR MUST PROVIDE MULTI-POLE BREAKERS IN LIEU OF ALL SINGLE POLE BREAKERS SHOWN WHEN MULTI-WIRE BRANCH CIRCUITS ARE INSTALLED PER NEC 210.4(B).
6. CONTRACTOR MUST LABEL ALL BREAKERS FEEDING EMERGENCY AND EXIT LIGHTING PER NEC 700.12(F).
7. PROVIDE ARC FLASH HAZARD WARNING LABELS AS REQUIRED ON ALL PANELS AFFECTED BY THIS WORK PER NEC 110.16.
8. CONTRACTOR MUST PROVIDE IDENTIFICATION FOR NEW FEEDERS AND ANY NEW BRANCH CIRCUITS PER NEC 200.6, 210.5, AND 215.2.
9. CIRCUIT BREAKERS USED FOR SWITCHING LIGHTS MUST BE LISTED FOR SWITCHING AND MARKED ACCORDING TO NEC 240.83(D).
10. THE FUNCTION (FN) COLUMN OF PANEL SCHEDULES INDICATES THAT BREAKER FOR RESPECTIVE CIRCUIT MUST BE PROVIDED WITH THE FOLLOWING FUNCTIONS:
    A: ARC-FAULT CIRCUIT INTERRUPTER (AFCI) PROTECTION
    G: GROUND-FAULT CIRCUIT INTERRUPTER (GFCI) PROTECTION
    H: BREAKER HASP TO PREVENT UNINTENTIONAL OPENING
    L: LOCKABLE ACCORDING TO NEC 110.25
11. PROVIDE LABELING ON ALL EQUIPMENT TO INDICATE MINIMUM CLEARANCE REQUIREMENTS.
12. FIRE ALARM EQUIPMENT MUST BE CONNECTED ON LOCKED BREAKERS. BREAKERS MUST BE RED IN COLOR AND LABELED FIRE PROTECTION/LIFE SAFETY.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA — Michael K. Wilson — SEAL 045329 — ENGINEER — MICHAEL K. WILSON JR. — 4/7/25 — SEAL

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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES	MKW	DRW	ABB	CHK	JTR

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
1ST MARINE CORPS
MARINE CORPS AIR STATION

NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELECTRICAL SCHEDULES

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883168
SHEET 114 OF 121

E-602

DRAWFORM REVISION: 10 MARCH 2009

Branch Panel: S

Supply From: MDP
Mounting: SURFACE
Enclosure: NEMA 1
Accessory:

Volts: 120/208 Wye
Phases: 3
Wires: 4
Poles: 30

A.I.C. Rating: 22,000
Mains Type: MAIN BREAKER
Mains Rating: 60 A

CKT	Circuit Description	Trip	Poles	Fn	A	B	C	A	B	C	Fn	Poles	Trip	Circuit Description	CKT
1	DCU-5	30 A	2		1.2			0.2				1	20 A	PRESENTER REC	2
3						1.2			0.4			1	20 A	TV RECS	4
5	CONDENSATE PUMP	15 A	1				0.1			0.2		1	20 A	AV ROOM RECS	6
7	CANOPY LIGHTING	20 A	1		0.7			0.0			--	1	20 A	SPARE	8
9	CANOPY LIGHTING	20 A	1			0.7			0.0		--	1	20 A	SPARE	10
11	ELECTRICAL ROOM REC	20 A	1				0.2			0.0	--	1	20 A	SPARE	12
13	EXTERIOR RECS	20 A	1		0.2			--			--	1	--	SPACE	14
15	ELEC/AV LIGHTING	20 A	1			0.1			--		--	1	--	SPACE	16
17	SPARE	20 A	1	--			0.0			--	--	1	--	SPACE	18
19	SPARE	20 A	1	--	0.0			--			--	1	--	SPACE	20
21	SPARE	20 A	1	--		0.0			--		--	1	--	SPACE	22
23	SPARE	20 A	1	--			0.0			--	--	1	--	SPACE	24
25					0.0			--			--	1	--	SPACE	26
27	SPD	60 A	3			0.0			--		--	1	--	SPACE	28
29							0.0			--	--	1	--	SPACE	30
	Connected Load:				2.2 kVA			2.3 kVA			0.5 kVA				
					20.8 A			21.3 A			3.8 A				

Load Classification	Connected Load	Demand Factor	Demand Load	Panel Totals	
Lighting	1.388 kVA	125.00%	1.735 kVA	**Total Connected Load:**	5.0 kVA
Other	2.500 kVA	100.00%	2.500 kVA		13.8 A
Receptacle	1.080 kVA	100.00%	1.080 kVA		
				Total Demand Load:	5.3 kVA
					14.8 A

Notes:
PANEL MUST BE ULSE RATED.

Branch Panel: L1

Supply From: MDP
Mounting: SURFACE
Enclosure: NEMA 1
Accessory:

Volts: 120/208 Wye
Phases: 3
Wires: 4
Poles: 42

A.I.C. Rating: 30,000
Mains Type: MAIN LUGS ONLY
Mains Rating: 100 A

CKT	Circuit Description	Trip	Poles	Fn	A	B	C	A	B	C	Fn	Poles	Trip	Circuit Description	CKT
1	CORRIDOR LIGHTING	20 A	1		0.4			1.0				1	20 A	WOOD SHOP LIGHTING	2
3	OFFICE/RESTROOM LIGHTING	20 A	1			0.4			0.4			1	20 A	OPEN OFFICE/ADMIN LIGHTING	4
5	RESTROOM/UTILITY LIGHTING	20 A	1				1.0			1.3		1	20 A	CLASSROOM/SHOWER/COMM...	6
7	PARKING AREA LIGHTS	20 A	1		0.0			0.3				1	20 A	EXTERIOR LIGHTING	8
9	EMERGENCY/EXIT LIGHTING	20 A	1	L		0.1			0.6			1	20 A	EXTERIOR LIGHTING	10
11	EMERGENCY/EXIT LIGHTING	20 A	1	L			0.1			0.0	--	1	20 A	SPARE	12
13	EMERGENCY/EXIT LIGHTING	20 A	1	L	0.1			0.0			--	1	20 A	SPARE	14
15	SPARE	20 A	1	--		0.0			0.0		--	1	20 A	SPARE	16
17	SPARE	20 A	1	--			0.0			0.0	--	1	20 A	SPARE	18
19	SPARE	20 A	1	--	0.0			0.0			--	1	20 A	SPARE	20
21	SPARE	20 A	1	--		0.0			0.0		--	1	20 A	SPARE	22
23	SPARE	20 A	1	--			0.0			0.0	--	1	20 A	SPARE	24
25	SPARE	20 A	1	--	0.0			0.0			--	1	20 A	SPARE	26
27	SPARE	20 A	1	--		0.0			0.0		--	1	20 A	SPARE	28
29	SPARE	20 A	1	--			0.0			0.0	--	1	20 A	SPARE	30
31	SPARE	20 A	1	--	0.0			--			--	1	--	SPACE	32
33	SPARE	20 A	1	--		0.0			--		--	1	--	SPACE	34
35	SPARE	20 A	1	--			0.0			--	--	1	--	SPACE	36
37	SPARE	20 A	1	--	0.0			--			--	1	--	SPACE	38
39	SPARE	20 A	1	--		0.0			--		--	1	--	SPACE	40
41	SPARE	20 A	1	--			0.0			--	--	1	--	SPACE	42
	Connected Load:				1.7 kVA			1.4 kVA			2.4 kVA				
					14.9 A			11.5 A			20.5 A				

Load Classification	Connected Load	Demand Factor	Demand Load	Panel Totals	
Lighting	5.516 kVA	125.00%	6.895 kVA	**Total Connected Load:**	5.5 kVA
Other	0.000 kVA	0.00%	0.000 kVA		15.3 A
				Total Demand Load:	6.9 kVA
					19.1 A

Notes:

Branch Panel: T

Supply From: MDP
Mounting: SURFACE
Enclosure: NEMA 1
Accessory:

Volts: 120/208 Wye
Phases: 3
Wires: 4
Poles: 42

A.I.C. Rating: 22,000
Mains Type: MAIN BREAKER
Mains Rating: 150 A

CKT	Circuit Description	Trip	Poles	Fn	A	B	C	A	B	C	Fn	Poles	Trip	Circuit Description	CKT
1	CONDENSATE PUMP	15 A	1		0.2			0.7				1	20 A	COMM 129 QUAD RECEPTACLES	2
3	DCU-2	30 A	2			1.2			2.5			2	30 A	COMM 129 RACK RECEPTACLE	4
5							1.2			2.5					6
7	COMM 121 RACK RECEPTACLE	30 A	2		2.5			1.5				1	20 A	COMM 129 RACK RECEPTACLE	8
9						2.5			1.2			2	30 A	DCU-4	10
11	COMM 121 RACK RECEPTACLE	30 A	2				2.5			1.2					12
13					2.5			0.1				1	15 A	CONDENSATE PUMP	14
15	COMM 121 RACK RECEPTACLE	30 A	2			2.5			1.1			1	20 A	COMM 129 QUAD RECEPTACLES	16
17							2.5			--	--	1	--	SPACE	18
19	COMM 121 RACK RECEPTACLE	20 A	1		1.5			--			--	1	--	SPACE	20
21	COMM 121 RACK RECEPTACLE	20 A	1			1.5			--		--	1	--	SPACE	22
23	COMM 121 RACK RECEPTACLE	20 A	1				1.5			--	--	1	--	SPACE	24
25	COMM 121 QUAD RECEPTACLES	20 A	1		0.4			--			--	1	--	SPACE	26
27	COMM 121 QUAD RECEPTACLES	20 A	1			0.4			--		--	1	--	SPACE	28
29	SPARE	20 A	1	--			0.0			--	--	1	--	SPACE	30
31	SPARE	20 A	1	--	0.0			--			--	1	--	SPACE	32
33	SPARE	20 A	1	--		0.0			--		--	1	--	SPACE	34
35	SPARE	20 A	1	--			0.0			--	--	1	--	SPACE	36
37	SPARE	20 A	1	--	0.0			--			--	1	--	SPACE	38
39	SPARE	20 A	1	--		0.0			--		--	1	--	SPACE	40
41	SPARE	20 A	1	--			0.0			--	--	1	--	SPACE	42
	Connected Load:				9.4 kVA			12.8 kVA			11.4 kVA				
					78.2 A			109.6 A			97.6 A				

Load Classification	Connected Load	Demand Factor	Demand Load	Panel Totals	
Other	31.100 kVA	100.00%	31.100 kVA	**Total Connected Load:**	33.6 kVA
Receptacle	2.520 kVA	100.00%	2.520 kVA		93.3 A
				Total Demand Load:	33.6 kVA
					93.3 A

Notes:

APPR
DATE
DESCRIPTION
SYM

NAVFAC

NORTH CAROLINA
REGISTERED
SEAL
045329
ENGINEER
MICHAEL K. WILSON, JR.
4/7/25
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A/E INFO

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES MKW | DRW ABB | CHK JTR

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
1ST MARINE CORPS
MARINE CORPS AIR STATION
NAVAL STATION - NORFOLK, VA
CHERRY POINT, NC

P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELECTRICAL SCHEDULES

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883169
SHEET 115 OF 121

E-603

DRAWFORM REVISION: 10 MARCH 2009

LIGHT FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	VOLTAGE	BALLAST	LAMPS	LOAD	NOTES
A	2'x4' RECESSED LED	NL-1	120 V	LED	LED (4,000 LUMEN - 3,500K)	36 VA	
B	RECESSED LED DOWNLIGHT	NL-12	120 V	LED	LED (500 LUMEN - 3,500K)	9 VA	
C	RECESSED LED DOWNLIGHT	NL-12	120 V	LED	LED (500 LUMEN - 3,500K)	9 VA	WET LISTED
D	4' LED STRIP	NL-23	120 V	LED	LED (4,000 LUMEN - 3,500K)	15 VA	PENDANT MOUNT FIXTURE SUSPENDED 1' FROM THE ROOF ABOVE.
F	4' LED STRIP	NL-23	120 V	LED	LED (7,000 LUMEN - 3,500K)	50 VA	PENDANT MOUNT FIXTURE SUSPENDED 1' FROM THE ROOF ABOVE.
G	EXTERIOR CANOPY LED	XL-6	120 V	LED	LED(11,000 LUMEN - 4,000K)	83 VA	
H	HIGH BAY LED LIGHT	NL-24	120 V	LED	LED (12,000 LUMEN - 3,500K)	100 VA	PENDANT MOUNTED. MOUNT FIXTURE AT 10'.
K	EXTERIOR WALL SCONCE	XL-10	120 V	LED	LED (4,000 LUMEN - 4,000K)	50 VA	WET LISTED
KE	EXTERIOR WALL SCONCE WITH BATERY BACKUP	XL-10	120 V	LED	LED (4,000 LUMEN - 4,000K)	50 VA	WET LISTED WITH ZERO DEGREE BATTERY
M	EXTERIOR CANOPY LED	XL-6	120 V	LED	LED (4,000 LUMEN - 4,000K)	50 VA	WET LISTED. SURFACE MOUNTED TO EXTERIOR CANOPY.
EMERGENCY							
EM	EMERGENCY LIGHTING UNIT	NL-26	120 V	LED	LED (2OO LUMEN)	6 VA	PROVIDE IN WHITE FINISH.
X	EXIT SIGN (BATTERY)	NL-28	120 V	LED	LED	10 VA	PROVIDE WITH RED LETTERING. PROVIDE ONE AND TWO SIDE OPTIONS AS SHOWN ON PLANS.

LIGHT FIXTURE SCHEDULE NOTES

1. ALL FIXTURES, BALLASTS, AND DRIVERS MUST COMPLY WITH INTERNATIONAL BUILDING CODE, 2018 INTERNATIONAL ENERGY CONSERVATION CODE AND MUST BE UL LISTED. ALL LED DRIVERS MUST COMPLY WITH NEMA 410.
2. ALL FIXTURES NOTED AS EMERGENCY MUST HAVE EMERGENCY ILLUMINATION FUNCTIONALITY AS DESCRIBED BELOW. IN ALL CASES, BATTERIES MUST BE RATED FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.
   - INTERIOR LINEAR FLUORESCENT & LED FIXTURES MUST HAVE 1,100 LUMEN (MINIMUM) OUTPUT, 90 MINUTE BATTERY PACK. FLUORESCENT & LED DOWNLIGHTS MUST HAVE A 500 LUMEN (MINIMUM) OUTPUT, 90 MINUTE BATTERY PACK OR MUST BE PROVIDED WITH A FULL OUTPUT INVERTER.
   - EXTERIOR EMERGENCY LIGHTS MUST HAVE AN INTEGRAL EXTERIOR RATED (0° F) OR REMOTE MOUNTED 1,100 LUMEN OUTPUT 90 MINUTE BATTERY.
   - TEST SWITCHES FOR EMERGENCY BATTERIES MUST BE INTEGRAL TO THE FIXTURE SERVED BY THE BATTERY.
   - EMERGENCY FIXTURES MUST OPERATE ONE LAMP WHERE MULTIPLE EMERGENCY FIXTURES ARE TO BE INSTALLED IN AN AREA, AND MUST OPERATE TWO LAMPS WHERE THE LOSS OF A SINGLE LAMP WOULD RENDER THE SPACE IN TOTAL DARKNESS DURING EMERGENCY OPERATION.
   - WHERE EMERGENCY LIGHTS PROVIDE EMERGENCY ILLUMINATION IN AREAS NORMALLY LIT BY METAL HALIDE FIXTURES (OR SIMILAR SOURCES) WITH RESTRIKE DELAY, THE EMERGENCY BATTERY MUST BE PROVIDED WITH A TIME DELAY TO MAINTAIN BATTERY ILLUMINATION FOR 15 MINUTES AFTER THE RESTORATION OF NORMAL POWER.
   - EMERGENCY LIGHTING DESIGN IS BASED ON EXISTING FIXTURES LUMEN OUTPUTS AS DESCRIBED ABOVE. CONTRACTOR MUST VERIFY ANY EXISTING EMERGENCY FIXTURE BATTERIES HAVE LUMEN OUTPUTS AS INDICATED AND MUST REPLACE ANY BATTERIES RATED LESS.
   - EMERGENCY LIGHTING UNITS WITH DEDICATED EMERGENCY HEADS MUST PROVIDE 1 F.C. FOR AT LEAST 25' FOR A MINIMUM OF 90 MINUTES.
3. FIXTURES INDICATED AS DIMMABLE MUST BE PROVIDE WITH ALL NECESSARY COMPONENTS (BALLAST, DRIVER, SWITCH ETC.) AS NECESSARY TO ACHIEVE 5% (OR LESS) MINIMUM DIMMING UNLESS A SPECIFIC MINIMUM DIMMING LEVEL IS INDICATED.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

NORTH CAROLINA REGISTERED SEAL 045329 ENGINEER MICHAEL K. WILSON, JR.
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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
1ST MARINE CORPS
MARINE CORPS AIR STATION
NAVAL FACILITIES ENGINEERING COMMAND ~ MIDATLANTIC
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

ELECTRICAL SCHEDULES

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883170
SHEET 116 OF 121

E-604

DRAWFORM REVISION: 10 MARCH 2009

Branch Panel: MDP

Supply From: SURFACE
Mounting: NEMA 1
Enclosure:
Accessory:

Volts: 120/208 Wye
Phases: 3
Wires: 4
Poles: 42

A.I.C. Rating: 30,000
Mains Type: MAIN BREAKER
Mains Rating: 800 A

CKT	Circuit Description	Trip	Poles	Fn	A	B	C	A	B	C	Fn	Poles	Trip	Circuit Description	CKT
1					12.5			9.4							2
3	PANEL P1	200 A	3			9.4			12.8			3	150 A	PANEL TR	4
5							12.0			11.4					6
7					14.1			2.2							8
9	PANEL M	200 A	3			15.4			2.3			3	60 A	PANEL S	10
11							13.6			0.5					12
13					1.7			19.3							14
15	PANEL L1	100 A	3			1.4			16.4			3	225 A	PANEL P2	16
17							2.4			17.8					18
19					10.0			--			--	1	--	SPACE	20
21	D-WH-1	110 A	3			10.0			--		--	1	--	SPACE	22
23							10.0			--	--	1	--	SPACE	24
25					7.0			--			--	1	--	SPACE	26
27	AHU-1	80 A	3			7.0			--		--	1	--	SPACE	28
29							7.0			--	--	1	--	SPACE	30
31					3.7			--			--	1	--	SPACE	32
33	AC-2	60 A	3			3.7			--		--	1	--	SPACE	34
35							3.7			--	--	1	--	SPACE	36
37					0.0			--			--	1	--	SPACE	38
39	SPD	60 A	3			0.0			--		--	1	--	SPACE	40
41							0.0			--	--	1	--	SPACE	42
				Connected Load:	80.0 kVA		78.4 kVA		78.4 kVA						
					666.8 A		653.4 A		653.0 A						

Load Classification	Connected Load	Demand Factor	Demand Load	Panel Totals	
Lighting	9.240 kVA	125.00%	11.550 kVA	**Total Connected Load:**	236.8 kVA
Other	198.350 kVA	100.00%	198.350 kVA		657.2 A
Receptacle	29.180 kVA	67.14%	19.590 kVA		
				Total Demand Load:	229.5 kVA
					637.0 A

Notes:
PANEL MUST BE ULSE RATED.

ELECTRICAL RISER NOTES:

1 300 KVA, 12.47 KV DELTA PRIMARY, 208/120 V WYE SECONDARY, PAD-MOUNTED TRANSFORMER. TRANSFORMER MUST UTILIZE LESS-FLAMMABLE, BIODEGRADABLE FLUID AND SHALL HAVE 200 AMP LOAD BREAK ELBOWS AND 9 KV SURGE ARRESTORS. PROVIDE METER PER BASE STANDARDS.

2 PROVIDE SERVICE-ENTRANCE RATED SURGE PROTECTIVE DEVICE (SPD). CONTRACTOR MUST INSTALL UNIT WITH SHORTEST POSSIBLE LEAD LENGTH FROM BREAKER AND MUST NOT EXCEED 5 FEET TO SPD UNIT. CONDUTORS MUST BE MINIMUM #6 CU WIRE AND AVOID SHARP BENDS.

3 NEW MECHANICALLY HELD 20/8, 8 POLE LIGHTING CONTACTOR WITH 120/1 COIL. CONNECT SPECIFIED CIRCUITS THROUGH CONTACTOR AS REQUIRED. SEE LIGHTING PLANS FOR CIRCUITS.

4 7-DAY PROGRAMMABLE TIME CLOCK TO TURN LIGHTS OFF W/SEASONABLE DAYLIGHT SCHEDULE ADJUSTMENT AND 10 HOUR BATTERY BACKUP.

5 PHOTOCELL ON ROOF FACING NORTH TO TURN LIGHTS ON. ADJUST SENSITIVITY AS REQURIED FOR PROPER OPERATION.

6 PROVIDE #2/0 SERVICE GROUND.

7 PROVIDE 4-#3, #8 GND, 1 1/4"C.

8 PROVIDE 4-#3/0, #6 GND, 2"C.

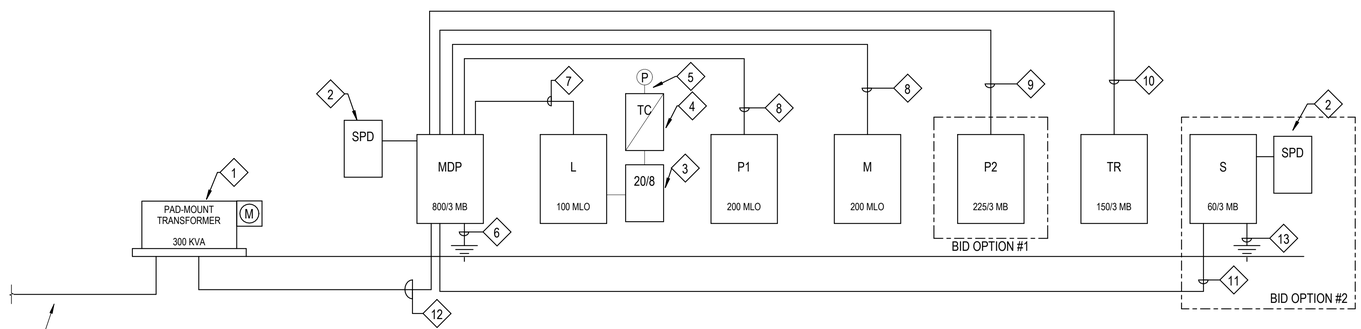
9 PROVIDE 4-#4/0, #4 GND, 2 1/2"C.

10 PROVIDE 4-#1/0, #6 GND, 2"C.

11 PROVIDE 4-#6, #10 GND, 1"C.

12 PROVIDE 3 RUNS OF 4-300 KCM IN 4" C EACH RUN AND (1) 4" SPARE CONDUIT.

13 PROVIDE #8 SERVICE GND IN ACCORDANCE WITH NEC 250.50. CONNECT ALL BRANCH CIRCUIT GROUNDS AND GROUNDING ELECTRODE TO PANEL GROUND BAR. DO NOT BOND TO NEUTRAL BAR IN PANEL.



TO EXISTING OVERHEAD POWER POLE. SEE SITE PLAN FOR DETAILS.

PROVIDE 3-#2 COPPER EPR CONDUCTORS WITH 1-#2 GROUND IN 5" PVC CONDUIT WITH CONDUCTORS RATED AT 15KV, 133% INSULATED, TYPE MV90 FOR UNDERGROUND APPLICATIONS. PROVIDE (1) SPARE 5" CONDUIT.

A3 ELECTRICAL RISER DIAGRAM
NTS

APPR | DATE | DESCRIPTION | SYM

NAVFAC

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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
IPT MARINE CORPS
MARINE CORPS AIR STATION
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
ELECTRICAL RISER DIAGRAM

SCALE: AS INDICATED
EPROJECT NO.: 1715336
STA. PROJ. NO.: 7290158
NAVFAC DRAWING NO. 12883171
SHEET 117 OF 121

E-701

DRAWFORM REVISION: 10 MARCH 2009

ABBREVIATIONS

A	ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
C	CONDUIT
NIC	NOT IN CONTRACT
OC	ON CENTER
UON	UNLESS OTHERWISE NOTED
PR	PAIR
S	SURFACE-MOUNTED
TGB	TELCOMM GROUND BUS BAR
TMGB	TELCOMM MAIN GROUND BUS BAR
IDC	INSULATION DISPLACEMENT CONNECTOR
FOC	FIBER OPTIC CABLING
OSP	OUTSIDE PLANT
ISP	INSIDE PLANT

TELECOMMUNICATIONS NOTES

1. PROVIDE ALL COMMUNICATIONS CABLING, RACKS, CONDUITS, TERMINATIONS AND MISC. HARDWARE FOR TELE/DATA, BACKBOARDS, AND PATHWAYS FOR COMPLETE AND OPERATIONAL COMMUNICATIONS SYSTEMS.
2. LABEL ALL OUTLETS / JACKS PER BASE STANDARDS. AT COMPLETION, PROVIDE TEST REPORTS AND INSTALLED LOCATION AND NUMBERING OF ALL PORTS.
3. REFER TO BASE TELECOMMUNICATIONS SPECIFICATION FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
4. PROVIDE ALL LADDER RACKS, FITTINGS, BONDING JUMPERS, PATCH PANELS, WIRE MANAGEMENT DEVICES AND CABINETS AND FULLY CONNECT AND TEST ALL ELEMENTS. ALL CONDUITS TO BE SECURELY FASTENED AND FIRE STOPPED AND MUST OVERLAP THE BACKBOARD BY 3-6".
5. MAINTAIN 12" OF CLEARANCE ABOVE ALL CABLE TRAY SYSTEMS FOR MAINTENANCE. CABLE TRAY SYSTEMS MUST BE PROVIDED WITH ALL NECESSARY COMPONENTS AND ACCESSORIES FOR A COMPLETE SYSTEM.
6. TELECOMMUNICATIONS CABLING MUST NOT EXCEED 295 FEET IN LENGTH BETWEEN PATCH PANEL AND WORK AREA OUTLET.
7. MAINTAIN 6" OF SEPARATION BETWEEN TELECOMMUNICATIONS AND POWER CONDUITS.
8. ALL GROUNDING MUST COMPLY WITH TIA J-STD-607.
9. LADDER RACK FOR COMM ROOMS MUST BE A MINIMUM OF 12 INCHES WIDE BY 2 INCHES DEEP.
10. SURFACE-MOUNTED APPLICATIONS SHALL UTILIZE HOLOCOMM OR EQUAL TYPE PRODUCT FOR OUTLET BOXES AND RACEWAY.
11. REFER TO LIFE SAFETY PLANS FOR LOCATIONS OF RATED WALLS.
12. HEIGHTS ARE TO THE BOTTOM OF THE DEVICE UNLESS NOTED OTHERWISE.

TELECOMMUNICATIONS LEGEND

◀ TELECOMMUNICATIONS OUTLET - 18" AFF, UON, 5" SQUARE X 3" DEEP BOX WITH 2" DEEP MUD RING FOR MASONRY WALLS OR PLASTER RING TO MATCH GWB THICKNESS WITH 1-1/4" CONDUIT STUBBED TO DATA CABLE TRAY. PROVIDE (4) CAT6 CABLES. RUN (2) GREEN CAT6 CABLES TO DATA PATCH PANEL AND (2) BLUE CAT6 CABLES TO VOICE PATCH PANEL. SEE TELECOMMUNICATIONS OUTLET DETAILS FOR ADDITIONAL INFORMATION.

◀W TELECOMMUNICATIONS WALL OUTLET - 54" AFF, UON, 5" SQUARE X 3" DEEP BOX WITH 2" DEEP MUD RING FOR MASONRY WALLS OR PLASTER RING TO MATCH GWB THICKNESS WITH 1" CONDUIT STUBBED TO DATA CABLE TRAY. PROVIDE (1) BLUE CAT6 CABLE TO VOICE PANEL. SEE TELECOMMUNICATIONS OUTLET DETAILS FOR ADDITIONAL INFORMATION.

◁ TELECOMMUNICATIONS WALL OUTLET - HEIGHT AS INDICATED, 5" SQUARE X 3" DEEP BOX WITH 2" DEEP MUD RING FOR MASONRY WALLS OR PLASTER RING TO MATCH GWB THICKNESS WITH 1" CONDUIT STUBBED TO DATA CABLE TRAY. PROVIDE (2) GREEN CAT6 CABLES. SEE TELECOMMUNICATIONS OUTLET DETAILS FOR ADDITIONAL INFORMATION.

TELEPHONE BACKBOARD - 4'W X 8'H X 3/4" FIRE-RATED PLYWOOD SHEETS MINIMUM WITH ADDITIONAL AS REQUIRED FOR MOUNTING OR AS INDICATED ON PLANS. PROVIDE QUANTITY AS REQUIRED TO COVER WALLS SHOWN ON PLANS. PROVIDE #1/0 GROUND. SEE TELECOMM DETAILS FOR MORE INFORMATION.

AV RECESSED A/V WALL BACKBOX -72" TO CENTER OF BOX UNLESS NOTED OTHERWISE. BOX MUST BE APPROXIMATELY 12" X 12" X 4". PROVIDE (1) 3/4" CONDUIT FOR POWER, AND (1) 1-1/4" CONDUIT FOR A/V WITH PULL WIRE. SEE A/V WALL BACKBOX DETAIL. COORDINATE WITH A/V CONTRACTOR FOR EXACT HEIGHT AND LOCATION.

◁AV CONNECTIVITY WALL OUTLET - 18"AFF, UON , 5" SQUARE X 3" DEEP BOX WITH 2" DEEP MUD RING FOR MASONRY WALLS OR PLASTER RING TO MATCH GWB THICKNESS WITH 1 1/4" CONDUIT STUBBED FROM OUTLET AT TV HEIGHT TO WALL OUTLET AT 18". PROVIDE (1) VGA CABLE AND (1) HDMI CABLE FROM WALL OUTLET TO AV BACKBOX OR TO ADJACENT CONNECTIVITY OUTLET. PROVIDE FACEPLATES AND CONNECTION PORTS.

SYM	DESCRIPTION	DATE	APPR

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NORTH CAROLINA PROFESSIONAL SEAL 045329 ENGINEER MICHAEL K. WILSON, JR.
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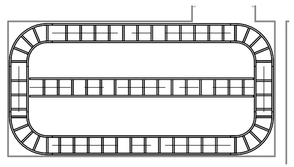
IPT MARINE CORPS
MARINE CORPS AIR STATION
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
TELECOMMUNICATIONS LEGEND AND NOTES

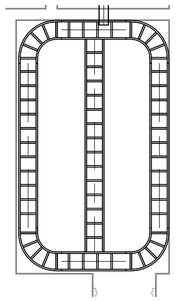
SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883172
SHEET	118 OF 121

T-001

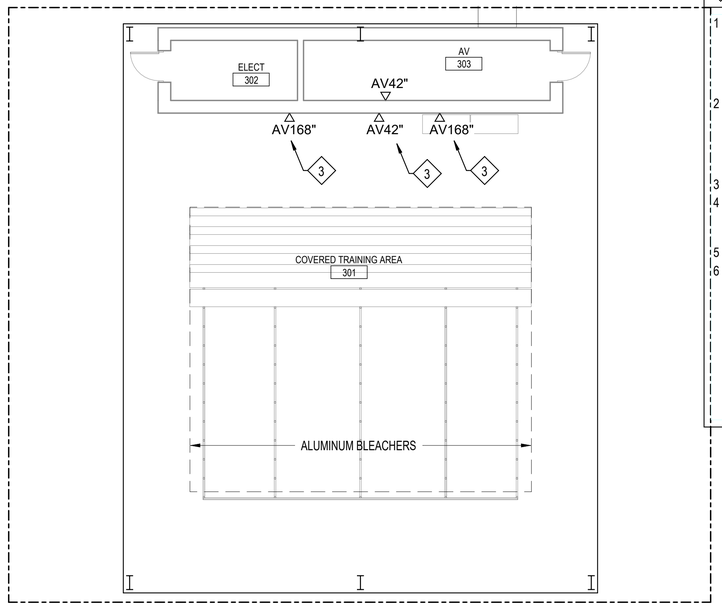
DRAWFORM REVISION: 10 MARCH 2009



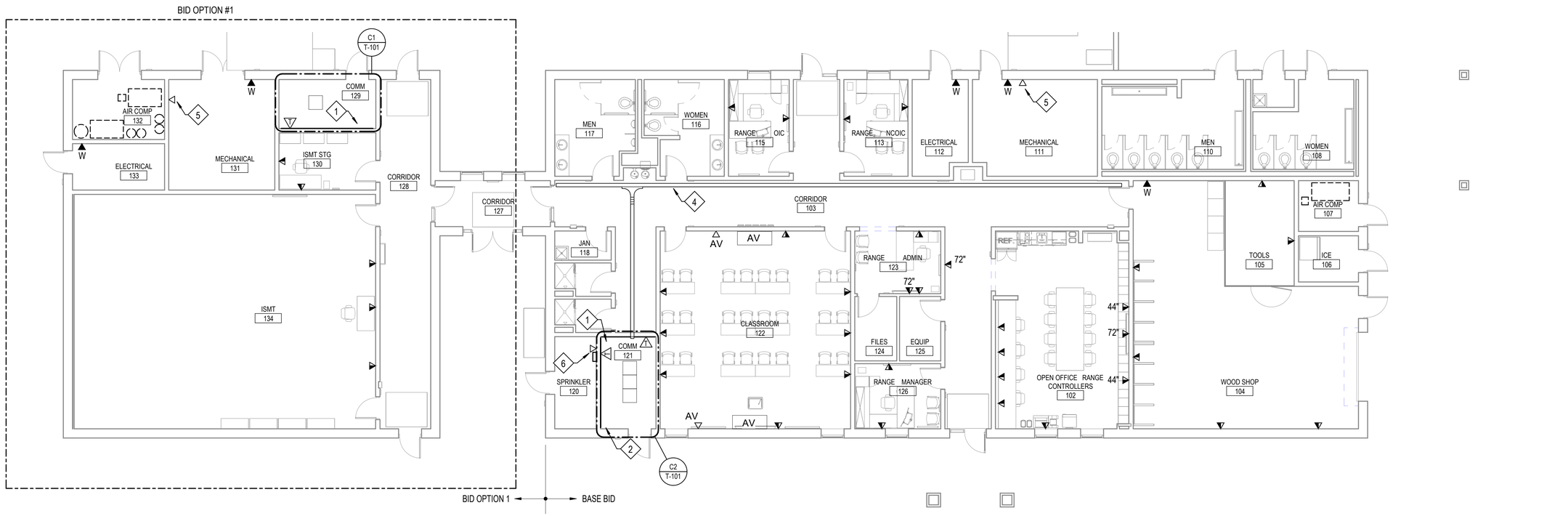
C1 COMM 129 - LADDER RACK LAYOUT
1/4" = 1'-0"



C2 COMM 121 - LADDER RACK LAYOUT
1/4" = 1'-0"



C3 FLOOR PLAN - TRAINING AREA - TELECOMMUNICATIONS
1/8" = 1'-0"



A1 FLOOR PLAN - TELECOMMUNICATIONS
1/8" = 1'-0"

GRAPHIC SCALE: 1/8"=1'-0"
8' 0 4' 8' 16'

PLAN NOTES

1. PROVIDE (2) 4" CONDUITS WITH 25 PAIR BACKBONE COPPER AND 12 STRAND BACKBONE FIBER (IN MESH INNERDUCT) FROM COMM ROOM 121 TO COMM ROOM 129 AS A PART OF BID OPTION #1. IF BID OPTION IS NOT SELECTED, PROVIDE (2) 4" TO BUILDING WEST EXTERIOR WALL. SEE RISER DIAGRAM ON T-501 FOR DETAILS.
2. PROVIDE 3-4" CONDUITS (WITH PULL WIRE) FROM HANDHOLE ON SITE ELECTRICAL PLANS TO SERVICE ENTRANCE. PROVIDE 50 PAIR OSP COPPER CABLING IN (1) 4" CONDUIT AND 24 STRAND SINGLE MODE FIBER OPTIC CABLING IN (1) 4" CONDUIT WITH 3X3 CELL MESH INNERDUCT. (1) 4" CONDUIT MUST REMAIN SPARE.
3. PROVIDE WEATHERPROOF COVER FOR AV CONNECTIONS.
4. 6"W X 4" D WIRE BASKET CABLE TRAY FOR TELECOMMUNICATIONS SYSTEM. MAINTAIN 12" CLEARANCE ABOVE AND TO ONE SIDE OF TRAY SYSTEM. SEE DETAILS SHEET T-501.
5. PROVIDE DATA CONNECTION FOR HVAC CONTROL PANEL.
6. PROVIDE DATA CONNECTION FOR FIRE ALARM AND MASS NOTIFICATION CONTROL PANEL. COORDINATE WITH FIRE PROTECTION.

APPR	DATE	DESCRIPTION	SYM

NAVFAC

NORTH CAROLINA REGISTERED SEAL 045329 ENGINEER MICHAEL K. WILSON, JR. 4/7/25
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SEAL

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MIDATLANTIC
NAVAL STATION - NORFOLK, VA

CHERRY POINT, NC

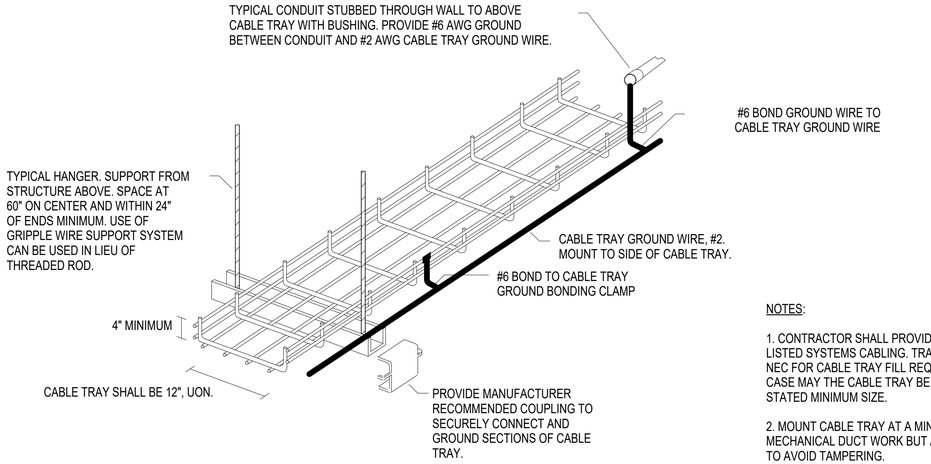
P-196U CONSTRUCT RANGE OPERATIONS FACILITY

FLOOR PLAN - TELECOMMUNICATIONS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883173
SHEET	119 OF 121

T-101

DRAWFORM REVISION: 10 MARCH 2009



NOTES:

1. CONTRACTOR SHALL PROVIDE PATHWAY FOR ALL LISTED SYSTEMS CABLING. TRAY MUST COMPLY WITH NEC FOR CABLE TRAY FILL REQUIREMENTS. IN NO CASE MAY THE CABLE TRAY BE LESS THAN THE STATED MINIMUM SIZE.

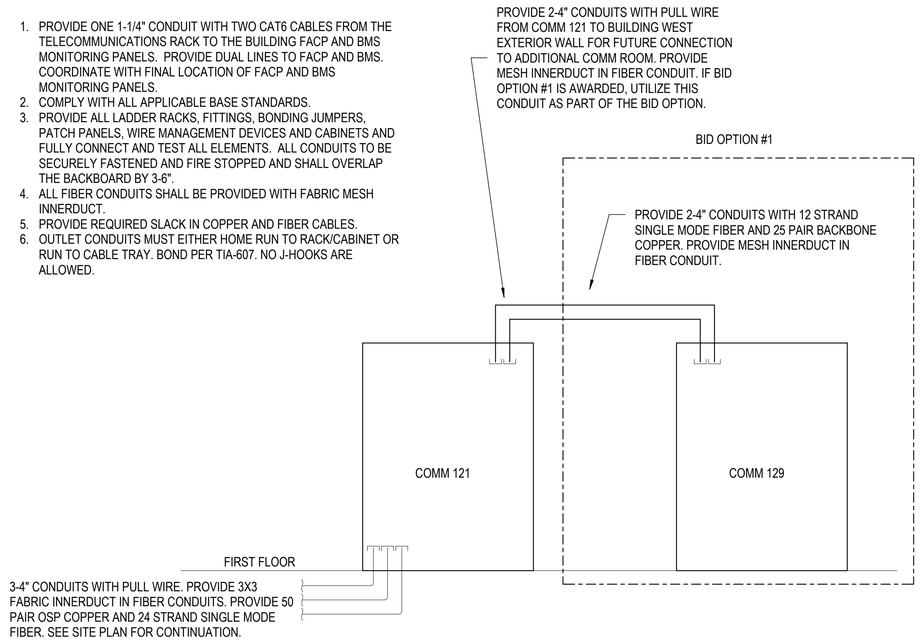
2. MOUNT CABLE TRAY AT A MINIMUM OF 12" BELOW MECHANICAL DUCT WORK BUT AS HIGH AS POSSIBLE TO AVOID TAMPERING.

3. TYPICAL MOUNTING METHOD.

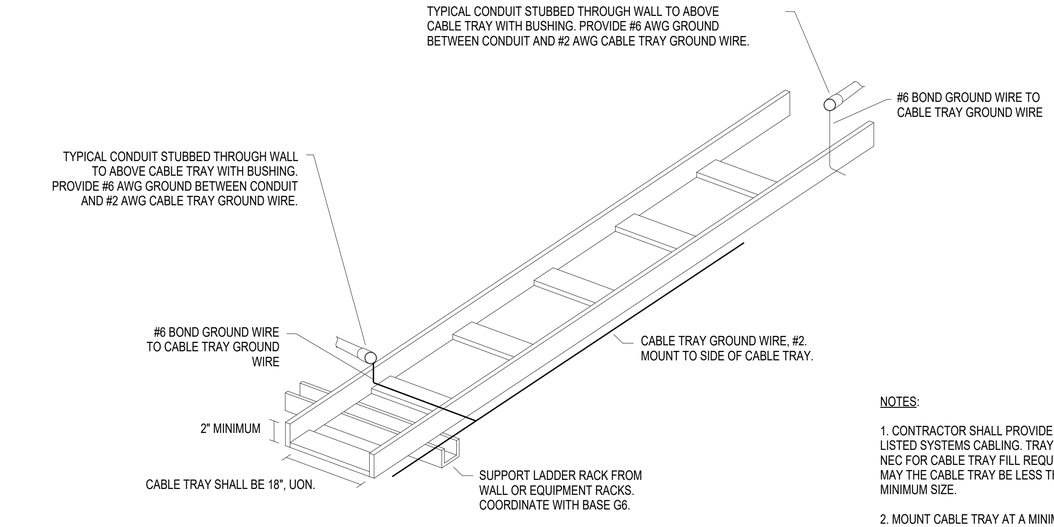
C1 WIRE BASKET CABLE TRAY DETAIL
NTS

NOTES:

1. PROVIDE ONE 1-1/4" CONDUIT WITH TWO CAT6 CABLES FROM THE TELECOMMUNICATIONS RACK TO THE BUILDING FACP AND BMS MONITORING PANELS. PROVIDE DUAL LINES TO FACP AND BMS. COORDINATE WITH FINAL LOCATION OF FACP AND BMS MONITORING PANELS.
2. COMPLY WITH ALL APPLICABLE BASE STANDARDS.
3. PROVIDE ALL LADDER RACKS, FITTINGS, BONDING JUMPERS, PATCH PANELS, WIRE MANAGEMENT DEVICES AND CABINETS AND FULLY CONNECT AND TEST ALL ELEMENTS. ALL CONDUITS TO BE SECURELY FASTENED AND FIRE STOPPED AND SHALL OVERLAP THE BACKBOARD BY 3-6".
4. ALL FIBER CONDUITS SHALL BE PROVIDED WITH FABRIC MESH INNERDUCT.
5. PROVIDE REQUIRED SLACK IN COPPER AND FIBER CABLES.
6. OUTLET CONDUITS MUST EITHER HOME RUN TO RACK/CABINET OR RUN TO CABLE TRAY. BOND PER TIA-607. NO J-HOOKS ARE ALLOWED.



C4 TELECOMMUNICATIONS RISER DIAGRAM
NTS



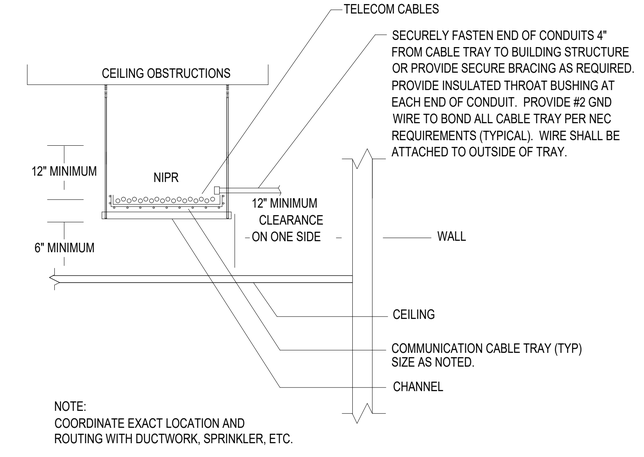
NOTES:

1. CONTRACTOR SHALL PROVIDE PATHWAY FOR ALL LISTED SYSTEMS CABLING. TRAY MUST COMPLY WITH NEC FOR CABLE TRAY FILL REQUIREMENTS. IN NO CASE MAY THE CABLE TRAY BE LESS THAN THE STATED MINIMUM SIZE.

2. MOUNT CABLE TRAY AT A MINIMUM OF 12" BELOW MECHANICAL DUCT WORK BUT AS HIGH AS POSSIBLE TO AVOID TAMPERING.

3. TYPICAL MOUNTING OVER RACKS IN TELECOM ROOM.

A1 LADDER CABLE TRAY DETAIL
NTS



CROSS SECTIONAL VIEW: ABOVE CEILING INSTALLATION

A4 CABLE TRAY DETAIL
NTS

APPR	DATE	DESCRIPTION	SYM

NAVFAC

NORTH CAROLINA SEAL 045329 ENGINEER MICHAEL K. WILSON, JR. 4/7/23 SEAL

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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES	MKW	DRW	ABB	CHK	JTR

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

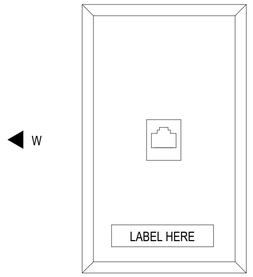
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MIDATLANTIC
1ST MARINE CORPS
MARINE CORPS AIR STATION
NAVAL STATION - NORFOLK, VA.
CHERRY POINT, NC
P-196U CONSTRUCT RANGE OPERATIONS FACILITY
TELECOMMUNICATIONS DETAILS

SCALE:	AS INDICATED
EPROJECT NO.:	1715336
STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883174
SHEET	120 OF 121

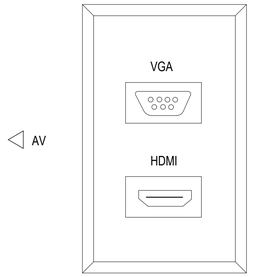
T-501

DRAWFORM REVISION: 10 MARCH 2009

COLOR DESIGNATIONS:
BLUE - VOICE

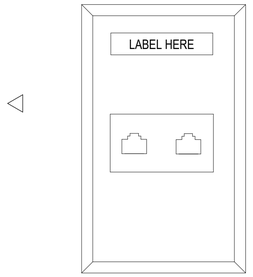


C1 TYPICAL WALL PHONE OUTLET
NTS

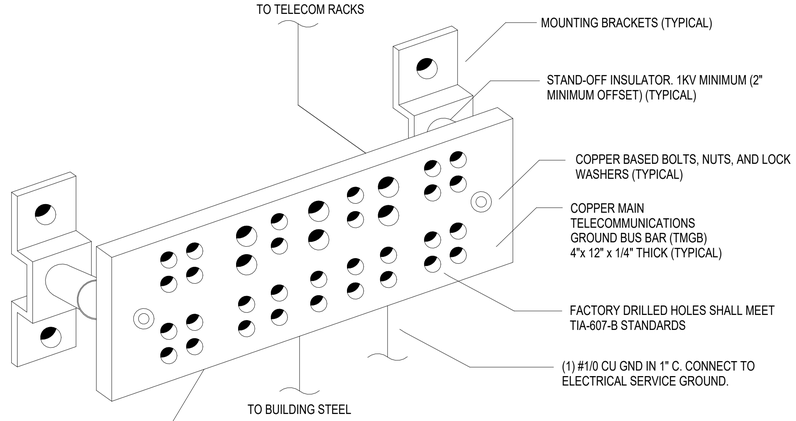


C2 TYPICAL MONITOR/CONNECTIVITY OUTLET
NTS

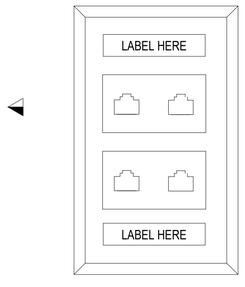
COLOR DESIGNATIONS:
GREEN - DATA



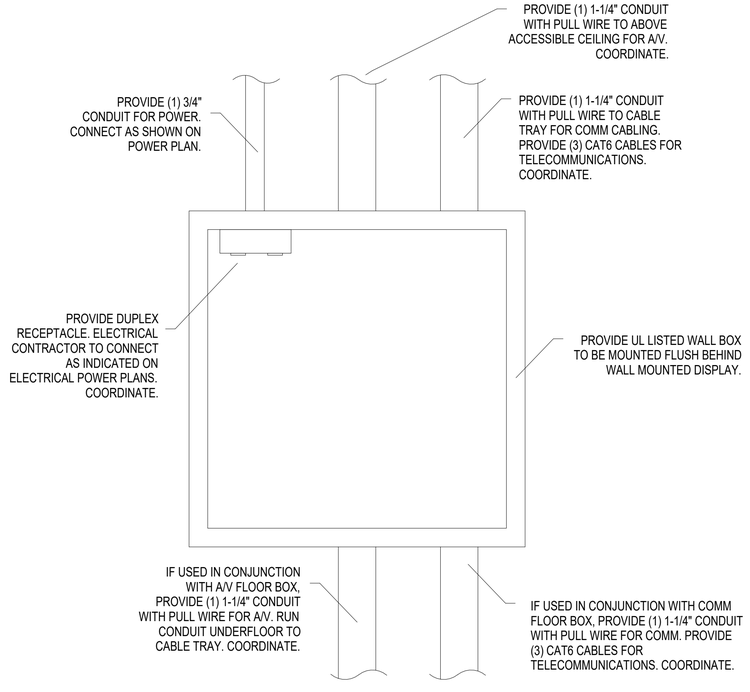
C3 TYPICAL DATA OUTLET
NTS



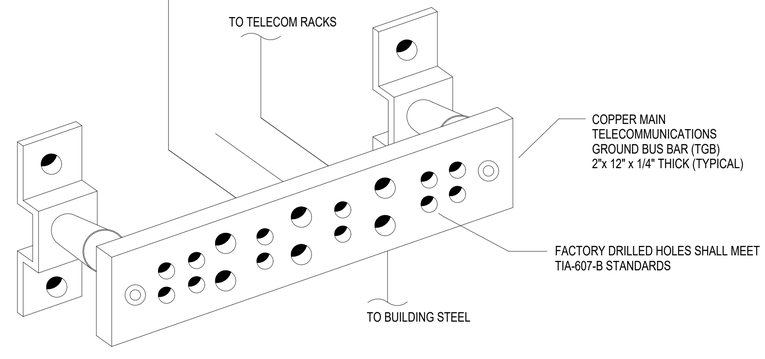
COLOR DESIGNATIONS:
BLUE - VOICE
GREEN - DATA



A1 TYPICAL WORKSTATION OUTLET
NTS



A2 RECESSED A/V DISPLAY BACKBOX
NTS



A4 TYPICAL GROUND BUS BAR DETAIL
NTS

APPR	DATE	DESCRIPTION	SYM

NAVFAC

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SCALE:	AS INDICATED
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STA. PROJ. NO.:	7290158
NAVFAC DRAWING NO.	12883175
SHEET	121 OF 121

T-502

DRAWFORM REVISION: 10 MARCH 2009