CAMP PENDLETON REQUIREMENTS

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16 DECEMBER 2014
Date Signed

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INTRODUCTION TO CAMP PENDLETON REQUIREMENTS

1. INTRODUCTION: Camp Pendleton Requirements (CPR) are indexed to relate to Construction Specifications Institute (CSI) MasterFormat. They contain design and specification issues that are unique to Marine Corps Base Camp Pendleton (MCB CAMPEN) and shall be addressed during the preparation of construction documents or Request for Proposals (RFP) for work aboard Marine Corps Installation West-Marine Corps Base Camp Pendleton (MCIWEST-MCB CAMPEN).

2. SHOULD vs. SHALL: Contractor shall understand that where the word "should" is used in the manufacturer's recommendations, substitute the word "shall."

3. References and webpage addresses have been provided by proponent offices for specific sections of the CPR; and have not been verified.

4. CPR UPDATES: The CPR is updated every two years.

a. MCB CAMPEN is committed to the Continuous Process Improvement (CPI) Program and welcomes your feedback on the CPR. Your comments will help improve the quality of this document for future users.

b. Please describe your suggestions, errors found, or comments and the reason(s) for the requested change/update. Please reference the specific section number of the CPR, paragraph, and/or page number. Some questions you may find useful are as follows:

(1) What features do you find most useful?

(2) What errors have you found? (Please include page number.)

(3) What topics are hard to locate, confusing, or not covered completely?

(4) What comments or suggestions do you have to improve this document?

c. Please send your comments and suggestions to the following Point-of-Contacts (POCs):

(1) Ms. Sue Downs
AC/S G-F, Public Works Division (PWD) Architecture and Engineering (A&E) Branch
sue.downs@usmc.mil
(760) 763-8144

(2) Ms. Bonnie Lacher
AC/S G-F, PWD, A&E Branch
bonnie.lacher@usmc.mil
(760) 763-8142

d. To download an electronic version of the 2014 CPR go to:

http://www.pendleton.marines.mil/StaffAgencies/ACSGF/PublicWorks/AEBranch.aspx

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BUSINESS PASS AND RAPIDGATE

1. REFERENCES: All Business Passes and Registered and Previously Identified Gate (RAPIDGate) shall conform to the most recent edition of MCB CAMPEN Order 5000.2k, "Camp Pendleton Vehicle Registration Department of Defense (DoD) BASE Decal Requirements.

2. ACCESS ABOARD MCB CAMPEN: Contractors shall obtain a Business Pass or RAPIDGate depending on duration of expected work.

   a. The Business Pass is issued for up to 90 days, once per individual.

   b. The RAPIDGate is issued for 90 days up to 1 year, and can be renewed.

3. ASSISTANCE: If you need further assistance please contact:

MCB CAMPEN, Police Department
Access Control Branch
(760) 763-7600/7604/7605

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SUBMITTAL DISTRIBUTION

1. SUBMITTAL DISTRIBUTION: Contractor shall provide copies of each Design Submittal Package for review to the PWD listed as follows in (Figures 1-3).

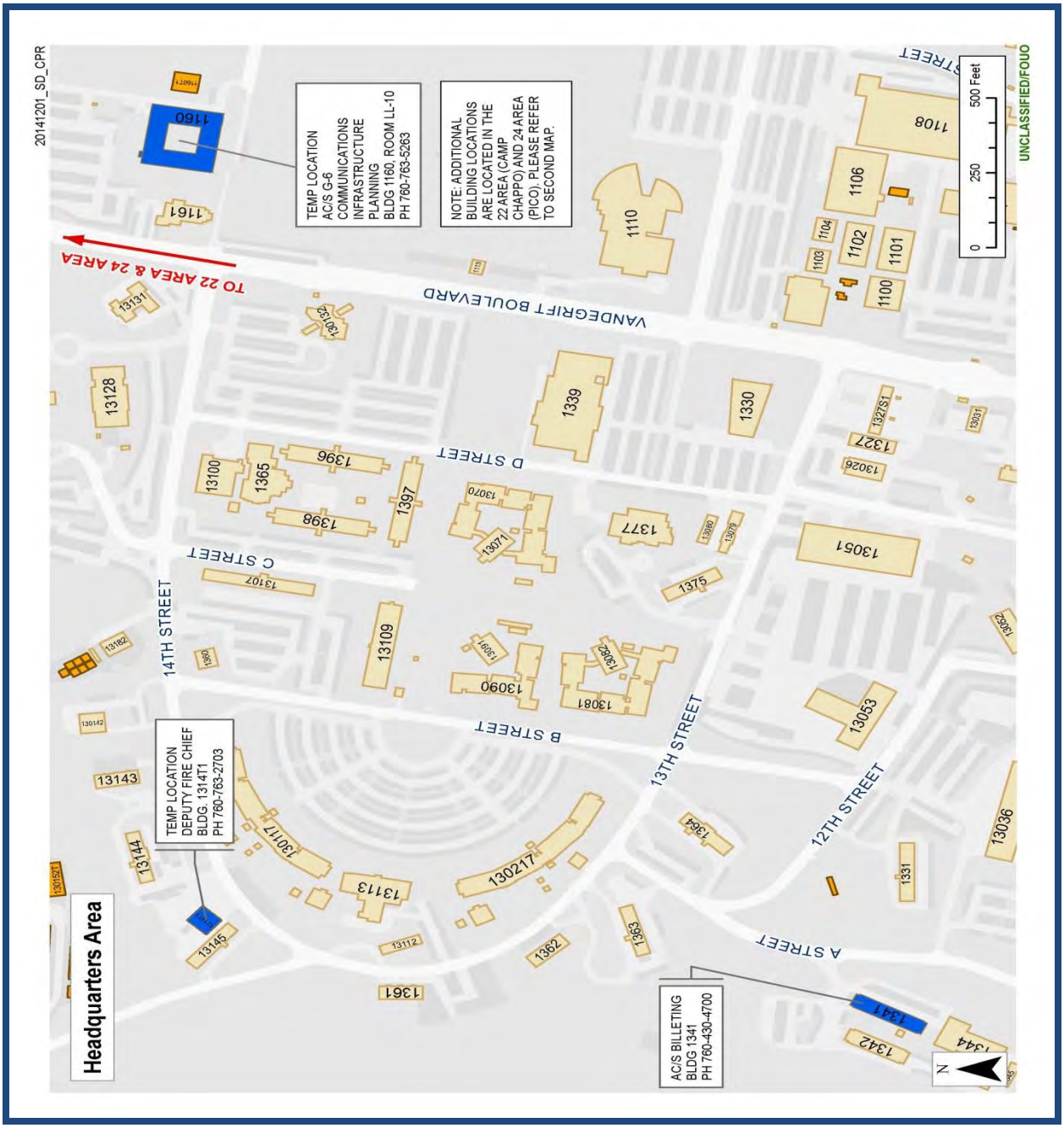

Figure 1: Building Design Submittal Assistant Chief of Staff (AC/S) Billeting Office Map

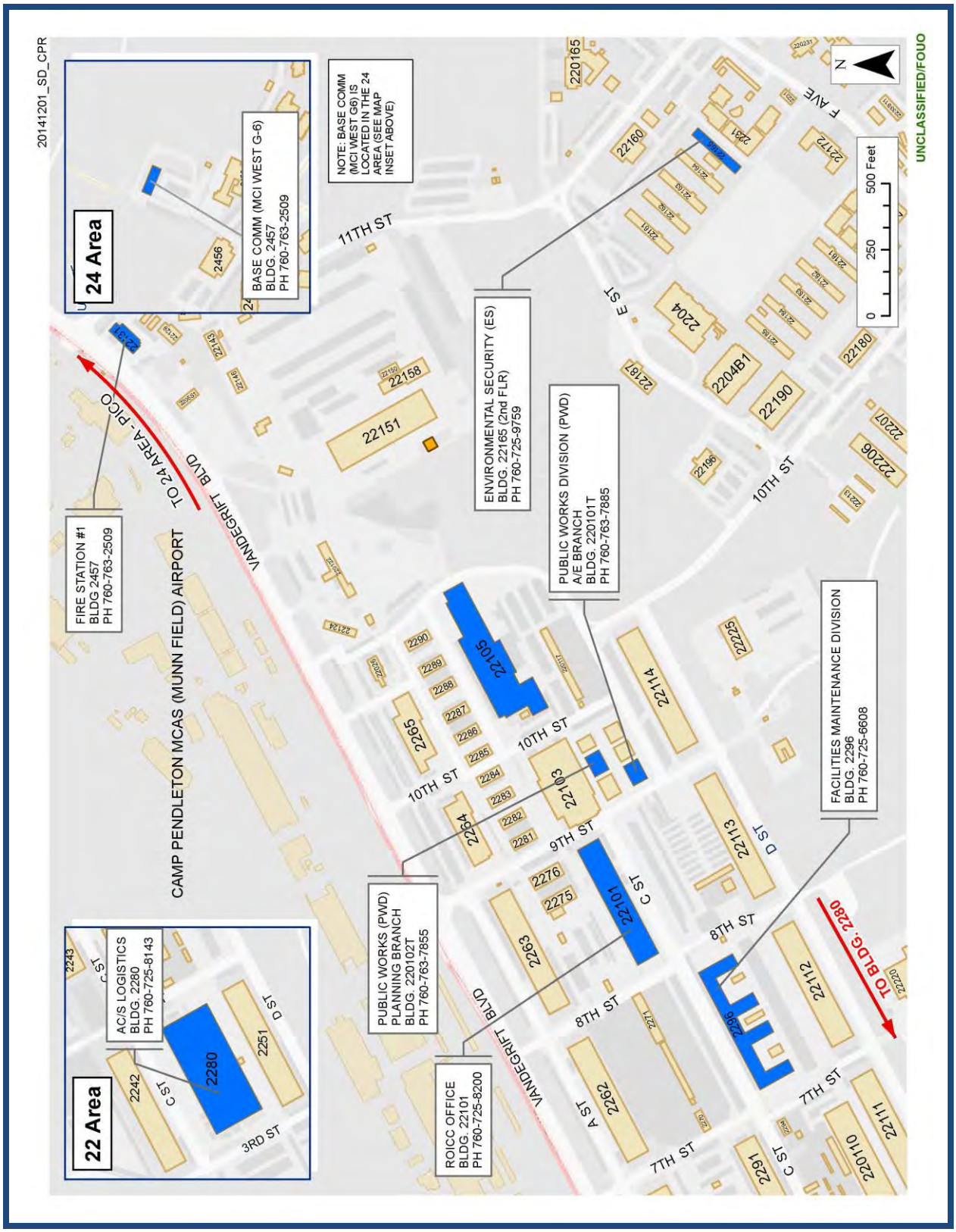

Figure 2: Building Design Submittal Building Location Map

BUILDING DESIGN SUBMITTAL DISTRIBUTION LIST

MCB CAMPEN, CA 92055

DISTRIBUTION	DESIGN SUBMITTAL FORMAT	RFP CD	Up To 100%	FINAL	FF&E BINDER
To: Project Leader (PL) AC/S FAC G-F, PWD A&E Bldg. 220101T	½ size-dwgs, pdf dwgs, CD-pdf w/bookmark of specs, AutoCAD, reports, elec. media, Stormwater Design and all others.	2	2 Sets	2 Sets	1 Set
To: Planning Director AC/S FAC G-F, PWD Bldg. 220102T	½ size-drawings and CD-pdf w/ bookmark of specifications.	1	1 Set	1 Set	N/A
To: Billeting AC/S FAC G-F, Billeting Bldg. 1341	BEQ Projects Only. ½ size-dwgs, CD-pdf w/bookmark of specs.	1	1 Set	1 Set	1 Set
To: Respective S-4 or Camp Services List to be provided by PL	½ size-dwgs, CD-pdf w/bookmark of specs.	1	1 Set	1 Set	1 Set
To: FMD P&E AC/S FAC G-F Bldg. 2291	½ size-drawings and CD-pdf w/bookmark of specs.	1	1 Set	1 Set	N/A
To: AC/S SES, Deputy Fire Chief for Prevention Bldg. 1314T1	½ size-drawings and CD-pdf w/bookmark of specs.	1	1 Set	1 Set	N/A
To: AC/S LOG G-4: CMSC Bldg. 22105, 2nd Floor	Preliminary and Final Binder	1	1	1	1
To: NEPA Branch Head: ES Bldg. 22165, 2nd Floor	½ size-dwgs and CD-pdf w/bookmark of specifications.	1	N/A	1 Set	N/A
To: ROICC CM ROICC Office, Bldg. 22101	½ size-dwgs, pdf dwgs, CD-pdf w/bookmark of specs, AutoCAD, reports, elec. media, Stormwater Design and all others	2	2 Sets	2 Sets	1 Set
To: PMO Bldg. 1523	PMO shall coordinate with SPAWAR ½ size-drawings, CD-pdf and AutoCAD CD up to 50%, CD & drawings after 50%	1	1 Set	1 Set	N/A
To: MCIWEST G-6 Bldg. 2457	CD-pdf with bookmark of specs.	2	2	2	N/A
To: AC/S FAC G-F, WRD Water Resources Division Bldg. 220105T	½ size-dwgs, pdf dwgs, CD-pdf w/bookmark of specifications, AutoCAD, reports, elec. media, Stormwater Design and all others.	1	1 Set	1 Set	N/A

Figure 3: Building Design Submittal Distribution List

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SPECIFICATIONS FOR DIGITAL DATA

1. REFERENCES: Specifications for Digital Data shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. The United States National Computer Aided Drafting Standards (U.S. NCS)

b. Computer Aided Design and Drafting /Geospatial Information System (CADD/GIS) Technology Center's Architecture, Engineering and Construction (AEC) CADD Standards https://tsc.wes.army.mil

c. Naval Facilities Instruction (NAVFACINST) 4250.1, "Electronic Bid Solicitation (EBS) Policy"

d. Environmental Systems Research Institute (ESRI) 102646, North American Datum (NAD) State Plane California Zone VI and the Federal Information Processing Standard (FIPS) 0406 Projection System

e. Geodetic Reference System (GRS) Spheroid and the NAD/World Geodetic System (WGS)

f. Epoch 1991.35

g. North American Vertical Datum (NAVD)

2. HARD COPY AND DIGITAL FORMAT: Any maps, drawings, figures, sketches, geospatial data, spreadsheets, or text files prepared for this contract shall be provided in both hard copy and digital form. The hard copy deliverables are defined in another section of this Scope of Work (SOW).

3. TEXT, SPREADSHEET, and DATABAE FILES**:** The Marine Corps standard computing software is Microsoft Office 2010.

a. Final Reports and other text documents shall be provided in Microsoft Word 2010 format and Adobe portable document format (pdf).

b. Spreadsheet files shall be provided in Microsoft Excel 2010 format.

c. Databases shall be provided in Microsoft Access format, unless specified otherwise, as approved by the Government. Prior to database development, the Contractor shall provide the Government with a Technical Approach Document for approval, which describes the Contractor's technical approach to designing and developing the database.

d. All text, spreadsheet, and database files shall be delivered on a Compact Disk Read-Only Memory (CD-ROM), Digital Versatile Disc Read-Only Memory (DVD-ROM) or portable external hard drive.

e. When full sets of drawings are submitted in pdf format, the full set shall be compiled as one pdf.

f. The name of the CADD files to include project number and building number.

4. MAPS, DRAWINGS, AND SKETCHES (Digital Geospatial Data):

a. Geospatial Data Software Format: Geographic data shall be provided in a form that does not require translation, preprocessing, or post processing before being loaded to the Installation's regionally hosted Geodatabase. The Contractor shall validate any deviation from this specification in writing with the Government Installation Geospatial Information and Services (IGI&S) Manager via the Project Manager (PM). Digital geographic maps and the related data sets shall be delivered in the following software format:

(1) CADD: All CADD data shall be provided in Automated Computer Design (AutoCAD) 2012 and shall be in the same projection and use the same coordinate system, datum, and units as stated below in the paragraph titled Geospatial Data Projection. Drawing files shall be full files, uncompressed, unzipped, and Geo-referenced.

-AND-

(2) GIS: If the Subject Project is Military Construction (MILCON) and/or utility project. Personal or file Geodatabase format using Environmental Systems Research Institute's (ESRI) mapping software (ArcGIS 9.3). The geodatabase shall be importable to a multi-user geodatabase using ESRI's mapping software (ArcSDE 9.3). The delivered data layer(s) shall be provided with x,y domain precision of 1000.

(3) NOTE: ESRI's mapping software (ArcGIS 9.3) and ArcSDE are geographic information system software produced by the ESRI of Redlands, California. AutoCAD is software produced by Autodesk, Inc.)

b. Geospatial Data Structure:

(1) GIS Data Sets: When developing/delivering geospatial data, the Contractor shall develop the initial structure consistent with the most current edition of the MCB CAMPEN Data Model. The MCB CAMPEN Data Model shall be followed for geospatial database table structure, nomenclature, and attributes. The Government may approve modifications to the MCB CAMPEN Data Model if it is determined that the MCB CAMPEN Data Model does not adequately address subject datasets. Copies of the MCB CAMPEN Data Model may be obtained by contacting the MCB CAMPEN GIS Office at (760) 763-1891.

-AND/OR-

(2) CADD Drawings/Data: The Contractor shall develop all CADD data in conformance with the latest edition of References (1a) through (1c).

c. Geospatial Data Projection: Geographic data (regardless of format) shall be provided in U.S. Survey Feet and projected into the California State Plane, "Zone VI and FIPS 0406 Projection System." The maps and data shall use the GRS 1980 spheroid and the NAD83/WGS84. Epoch 1991.35 shall be used the vertical datum used is NAVD88. This projection requirement applies to all GIS data layer deliverables as well as all CADD drawings such as As-Designed and As-built project plans. Each data set shall have a projection file if appropriate based on format.

d. Geospatial Data Collection:

(1) Survey grade Global Positioning System (GPS) data collection shall be performed when specified in the statement of work or if the Subject Project is a MILCON and/or utility project.

(a) Survey grade GPS data collection shall at a minimum use the Geoid2003 continental United States (CONUS) epoch and spatial accuracy requirements for survey grade are 95% of GPS points are within 6 cm accuracy.

(b) Every effort shall be made to capture feature locations without using offsets unless obstructions are present.

(2) All final GPS data collection activities shall be logged with the BASE GIS Office prior to initiation (temporary benchmarks set up for site work does not need to be logged).

(a) GPS data collection shall tie into the MCB CAMPEN GPS Station.

(b) Checks shall be made to existing Survey Control Monuments around the area of work (control coordinates, maps and Monument Record Sheets are available from the GIS Office).

(c) All checks made to control points shall be recorded and discrepancies noted in the deliverables.

(d) Data collected but not verified via this method shall not be accepted for submittal.

e. Map Products and Support Files: Finished map products, regardless of final print size, shall be presented separately in both hard copy and digital formats. The hard copy deliverables are defined in another section of this SOW. Final map products shall be delivered in the following digital formats:

(1) Pdf Format: Resolution of 300 dots per inch (dpi) with no image compression. All fonts shall be embedded. The Contractor shall only use fonts that are licensed and available for use by the Government.

(2) Joint Photographic Experts Group (JPEG) Format: Resolution of 96 dpi with 24-bit true color.

(3) ESRI Map Document (MXD) Format: All maps constructed shall have the associated MXD delivered to allow for future printing and modification, as necessary, by the Government. MXDs shall use the 'relative paths' option. The Table of Contents (TOC) within the MXD shall be orderly, and contain a logical naming structure.

f. Geographic Data Documentation (Metadata): For each digital file delivered containing geographic information (regardless of format), the Contractor shall provide documentation consistent with the GEOFidelis Metadata Guidelines, which follow Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata (CSDGM). Both 'Mandatory' and 'Mandatory as Applicable' fields shall be completed for each geographic data set, as well as selected 'Optional' fields. The documentation shall include, but not be limited to, the following:

(1) The name, description, abstract, and purpose of the data set/data layer.

(2) The source of the data and any related data quality information such as accuracy and time period of content.

(3) Descriptions of the receiver and other equipment used during collection and processing, base stations used for differential corrections, software used for performing differential corrections, estimated horizontal and vertical accuracies obtained, and conversion routines used to translate the data into final geographic data delivery format.

(4) Details of all checks made to existing control points and any discrepancies noted.

(5) Type of data layer (point, line, polygon, etc.).

(6) Field names of all attribute data and a description of each field name.

(7) Definition of all codes used in the data fields.

(8) Ranges of numeric fields and the meaning of these numeric ranges.

(9) The creation date of the map layer and the name of the person who created it.

(10) A POC shall be provided to answer technical questions.

(11) Metadata generation tools included in the ESRI's mapping software (ArcGIS 9.3) suite of software (or equivalent technology) shall be used in the production of the required metadata in XML format. Regardless of the tools used for metadata creation, the Contractor shall ensure that the metadata is delivered in XML format.

(12) NOTE: The metadata shall be formatted from the Installation database perspective, not the Contractor project perspective. Therefore such items as POC shall be the Installation's POC currently associated with the data and not the Contractor's PM. The Contractor shall use language and format consistent with existing Installation metadata. Specific guidelines may be found within the GEOFidelis West Metadata Authoring Guide. A copy of the guide may be obtained by contacting:

AC/S G-F, PWD, GIS
Bldg. 220103T
MCB CAMPEN, CA 92055
(760) 763-7835 (IGI&S Manager)

g. Geographic Data Review: The digital geographic maps, related data, and text documents shall be included for review in the draft and final contract submittals. The data shall be analyzed for discrepancies in subject content, correct format in accordance with these specifications, and compatibility with the existing GIS system. The Contractor shall incorporate review comments to data and text prior to approval of the final submittal.

h. Ownership: All digital files, final hard copy products, source data acquired for this project, and related materials, including that furnished by the Government, shall become the property of MCB CAMPEN and shall not be issued, distributed, or published by the Contractor.

5. ASSISTANCE: If you need further assistance please contact:

AC/S G-F, PWD, Real Property Accountability Officer (RPAO)
Bldg. 220102T
(760) 763-7832

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RANGE SAFETY REQUIREMENTS

1. REFERENCES: Range Safety Requirements shall conform to the most recent edition of MCIWEST-MCB CAMPEN 3500.1 (CH 1), "Range and Training Area Standard Operating Procedures (SOP)"; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

2. SAFETY REQUIREMENTS FOR ENTERING A TRAINING AREA OR RANGE: In order for the Contractor to work on a Range or in a Training Area, they shall have a certified Administrative Range Safety Officer (RSO) on-site whenever the site is occupied. The Contractor shall do the following in order to obtain certification as a RSO and gain access to the site:

a. The person in charge of the site or another competent person that shall be on site shall pass a written examination.

(1) The test is based on information that is presented in the remote RSO Class on-line at: https://pendleton.mciwest.nmci.usmc.mil/ot/rod/default.aspx

(2) For persons that can only access the BASE website, watch the remote RSO class online at: http://www.pendleton.usmc.mil/base/oandt/rod/index.asp

(3) Names of persons who successfully passed the written test shall be posted on the RSO Roster on the Wednesday following the day of the test.

(a) The RSO Roster can be viewed at https://pendleton.mciwest.nmci.usmc.mil/ot/rod/default.aspx

(b) If you do not have access to this site please call (760) 725-0357 or e-mail: PNDL_OTRANGEINSPECTORS@usmc.mil

b. Schedule the Range Training Area (RTA) through their BASE sponsor. Please allow a minimum of 30-calendar days to schedule a RTA.

c. Obtain a MCB CAMPEN 1:50,000 scale Military Installation Map from your BASE sponsor.

d. Obtain a radio compatible with the Range Operations Division (ROD) communication system. Obtain the radio from your BASE sponsor.

e. Maintain a copy of a letter from the RSO's company that names the RSO as a competent and knowledgeable person of the activities taking place on/in the RTAs of MCB CAMPEN. A copy of the letter shall be kept with the RSO and at the job site. The letter shall be on company letterhead signed by an officer of the company.

f. Gain positive communication prior to entering the RTA and maintain positive communication while in the RTA. Follow the directions of Range Control while in the RTA.

3. THE WRITTEN TEST:

a. is administrated on the third Thursday of each month;

b. takes place in the first floor classroom of Bldg. 2399;

c. has three testing sessions: 08:00, 09:30 and 11:00;

d. and is by appointment only. To obtain an appointment call or e-mail the following:

(1) (760) 725-0357/3510/4219

(2) PNDL_OTRANGEINSPECTORS@USMC.MIL

e. Class handout and "bubble sheet" can be obtained online at either of the following websites:

(1) https://pendleton.mciwest.nmci.usmc.mil/ot/rod/default.aspx

(2) HTTP://www.pendleton.usmc.mil/base/OandT/rod/index.asp

f. NOTE: The handout and bubble sheet shall not be provided at the test session. Test attendees shall bring to the class, picture ID, BASE sponsor information (name of POC and BASE unit name), pen or pencil, handout and bubble sheet.

4. RANGE ACCESS: Prior to entering any RTA site, the Contractor and Base sponsor shall ensure all areas requiring access have been properly scheduled and approved for the dates and times needed. Failure to schedule these areas through ROD shall result in access being denied from Range Control (LONGRIFLE) until proper scheduling of events has been completed. Contractor shall schedule the site through their Base sponsor.

5. WORK SITE ROUTE: The Contractor and their employees shall not deviate from the assigned access route or the work site unless directed by Longrifle or other ROD official.

6. PRIVATELY OWNED VECHICLE (POV): For non-company vehicles, the Contractor shall obtain POV placards from ROD.

a. Placards shall be issued only for truck type four-wheel drive vehicles. These placards shall be placed in the front window of each POV whenever the vehicle is in a training area or on a range.

b. To obtain a placard the Contractor shall provide the name of the driver of each vehicle; the year; make, model, and color of the vehicle; and license plate number.

c. The amount of parking available at the project site may be limited for operational and safety reasons.

7. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
Deputy Director, Range and Training Area Management Division (RTAMD)
(760) 763-7534

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ADAPTABLE ROOM REQUIREMENTS FOR BACHELOR ENLISTED QUARTERS

1. REFERENCES: Adaptable Room Requirements for Bachelor Enlisted Quarters (BEQ) shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. Unified Facilities Criteria (UFC) 4-721-10, "Navy and Marine Corps Unaccompanied Housing" which includes references to:

b. DoD Memorandum, "Access for People with Disabilities"

2. ADAPTABLE ROOMS: The Two Adaptable Rooms required for a typical BEQ, whether new construction or major renovation shall be located close to American's with Disabilities Act (ADA) parking and/or Duty Desk.

3. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E Branch, Facilities Project Team
(760) 763-2821

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AS-BUILT DRAWINGS

1. REFERENCES: As-built drawings shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. UFC 1-300-08, "Criteria for Transfer and Acceptance of DoD Real Property"

b. Federal Acquisition Regulations (FAR) 5252.236-9310, "Record Drawings"

2. DIVISION 01 GENERAL DESIGN CONSIDERATIONS/REQUIREMENTS: The use of CPR (CSI 017830) Closeout Submittals shall be considered to cover items such as As-built drawings and Stormwater Closeout Submittals.

a. In addition to the requirements of FAR 5252.236-9310, the Contractor shall be responsible for all of the following requirements:

(1) Redlining: notations shall be performed using the following color coding schemes:

(a) Red indicates additions or corrections.

(b) Green indicates deletions.

(c) Yellow indicates correct information.

(d) Blue/Black indicates information that may be helpful during incorporation of the mark-ups.

(2) The Contractor shall transform the redline drawings into record documents. The final record drawings shall be stamped and signed by a registered Architect or Engineer with formatting in accordance with the UFC 1-300-09N Design Procedures.

(3) The final record drawings shall be turned over to the Government at the pre-final inspection. Provide the Government the following:

(a) Provide additional sheets that contain all underground utilities. Provide 1 full size utilities sheet covered with plastic laminate.

(b) Provide electronic copies in AutoCAD 2012 and Adobe pdf format, latest edition.

(c) Provide five complete sets on CD-ROM. MCIWEST-MCB CAMPEN G-6 requires a set of the final record drawings to update the communication layers within GIS.

(d) Provide one set of redline drawings.

(e) Provide cost data on the final cost of the project using the DD1354 table at end of this specification section.

(4) Record Drawing Format: In addition to other record drawing document format requirements provide for the following:

(a) DD Form 1354 (Figure 4), Transfer/Acceptance of Real Property: Naval Facilities Southwest (NAVFAC SW) PM is responsible to ensure the A&E or in-house designer's work includes DD Form 1354 deliverables at:

1) Draft DD Form 1354 at 100% design.

2) Interim DD Form 1354 at Basis of Design (BOD)

(b) NAVFACSW Design Manager (DM) is responsible to assist the Designer of Record (DOR) in preparation of the Draft DD 1354 at 100% design and providing a copy to the RPAO.

(c) NAVFACSW Resident Officer in Charge of Construction (ROICC) Construction Manager (CM), during the Post Award Kickoff or Pre-Construction Conference, is to lay out expectations for DD Form 1354 deliverables at:

1) Draft DD Form 1354 at 100% design

2) Interim DD Form 1354 at BOD

(5) CM, during the Red Zone Meetings, and at least 60-days prior to BOD, is to remind the construction contractor of requirements to provide the cost breakout per asset at least 30-days prior to BOD.

(6) CM, 30-days prior to BOD, is to receive the Interim DD Form 1354 from the Contractor, review it and adjust for any modifications, and forward it to the RPAO with a copy to the PM.

3. DD FORM 1354: The Design Team shall be driving the draft DD Form 1354 for delivery to the RPAO at the 100% design submittal. If it is missing, please push the DM to provide it. Per the contract, the Interim DD Form 1354 shall be submitted by the Contractor at least 30-days prior to BOD. The NAVFACSW PM is responsible for providing the Final DD Form 1354 to the RPAO when the contract is financially complete.

4. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD, RPAO Office
(760) 763-7832

26. CONSTRUCTION DEFICIENCIES *(Attach blank sheet for continuations)*

27. PROJECT REMARKS *(Attach blank sheet for continuations)*

INSTRUCTIONS

GENERAL. This form has been designed and issued for use in connection with the transfer of military real property between the military departments and to or from other government agencies. It supersedes ENG Forms 290 and 290B (formerly used by the Army and Air Force) and NAVDOCKS Form 2317 (formerly used by the Navy).

Existing instructions issued by the military departments relative to the preparation of DD Form 1354 are applicable to this revised form to the extent that the various items and columns on the superseded forms have been retained. The military departments may promulgate additional instructions, as appropriate.

For detailed instructions on how to fill out this form, please refer to Unified Facilities Criteria (UFC) 1-300-08, dated 16 April 2009 or later.

SPECIFIC DATA ITEMS.

1. **From.** Name of the transferring agency.

2. **Date Prepared.** Date of actual preparation. Enter all dates in YYYYMMDD format (Example: March 31, 2010 = 20100331).

3. **Project/Job Number.** Project number on a DD Form 1391 or Individual Job Order Number.

4. **Serial Number.** Sequential serial number assigned by the preparing organization (e.g., 2010-0001).

5. **To.** Name and address of the receiving installation, activity, and Service of the Real Property Accountable Officer (RPAO).

6. **RPSUID/SITENAME/INSTCODE/INSTNAME.** Real Property Site Unique Identifier and Site Name or Installation Code and Installation Name where the constructed facility is located.

7. **Contract Number(s).** Contract number(s) for this project.

7a. **Placed-In-Service Date.** RPA Placed In Service Date. This is the date the asset is actually placed-in-service.

8. **Transaction Details.**
   a. Method of Transaction. Mark (X) as many boxes as apply.
   b. When/Event. When or event causing preparation of DD Form 1354. X only one box.
   c. Type. Draft, interim, or final DD Form 1354. X only one box.

9. **Item Number.** Use a separate item number for each facility, no item number for additional usages.

10a. Facility Number. Assigned in accordance with the Installation/Base Master Numbering Plan.

10b. RPUID. Real Property Unique Identifier - Identified in Real Property Inventory.

11. Category Code. The category code describes the facility usage.

12. Catcode Description. The category code name which describes the facility usage.

13. Type Code. Construction Type Code - Type of construction: P for Permanent; S for Semi-permanent; T for Temporary.

14. Primary Unit Of Measure. Area unit of measure; use the unit of measure associated with the category code selected in 11.

15. Primary Unit of Measure Quantity. The total area for the measure identified in Item 14. Use negative numbers for demolition.

16. Secondary Unit of Measure. Unit of Measure 2 is the capacity or other measurement unit (e.g., LF, MB, EA, etc.).

17. Secondary Unit of Measure Quantity. The total capacity/other for the measure identified in Item 16.

18. Cost. Cost for each facility; for capital improvements to existing facilities, show amount of increase only. If there is no increase for the capital improvement, enter N/A.

19. Fund Source. Enter the Fund Source Code for this item.

20. Funding Organization. Enter the code for the organization responsible for acquiring this facility.

21. Interest Code. RPA Interest Type Code. Enter the code that reflects government interest or ownership in the facility.

22. Item Remarks. Remarks pertaining only to the item number identified in Item 9; show cost sharing.

23. Statement of Completion. Typed name, signature, title, and date of signature by the responsible transferring individual or agent.

24. Accepted By. Typed name, signature, title, and date of signature by the RPAO or accepting official.

25. Property Voucher Number. Next sequential number assigned by the RPAO in voucher register.

26. Construction Deficiencies. List construction deficiencies in project during contractor turnover inspection.

27. Project Remarks. Project level remarks and continuation of blocks.

DD FORM 1354 (BACK), SEP 2009

Reset

TRANSFER AND ACCEPTANCE OF DoD REAL PROPERTY

Form Approved
OMB No. 0704-0188

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PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE ABOVE ORGANIZATION.

1. FROM *(Organization Name)*	2. DATE PREPARED *(YYYYMMDD)*	3. PROJECT/JOB NUMBER	4. SERIAL NUMBER	8. TRANSACTION DETAILS
5. TO *(Organization - Installation Code and Name)*	6. RPSUID/SITENAME/ INSTCODE/INSTNAME	7. CONTRACT NUMBER(S)	7a. PLACED-IN-SERVICE DATE *(YYYYMMDD)*	a. METHOD *(X all that apply)*: ☐ ACQUISITION BY CONSTRUCTION ☐ TRANSFER BETWEEN SERVICES ☐ CAPITAL IMPROVEMENT ☐ INVENTORY ADJUSTMENT b. WHEN/EVENT *(X one)*: ☐ TOTAL ASSET PLACED-IN-SERVICE ☐ PARTIAL ASSET PLACED-IN-SERVICE c. TYPE *(X one)*: ☐ DRAFT ☐ FINAL ☐ INTERIM

9. ITEM NO.	10a. FACILITY NO.	10b. RPUID	11. CATEGORY CODE	12. CATCODE DESCRIPTION	13. TYPE CODE	AREA: 14. PRIMARY UM	AREA: 15. PRIMARY UM QUANTITY	OTHER: 16. SECONDARY UM	OTHER: 17. SECONDARY UM QUANTITY	18. COST	19. FUND SOURCE	20. FUND ORG	21. INTEREST CODE	22. ITEM REMARKS

23. STATEMENT OF COMPLETION. The facilities listed hereon are in accordance with maps, drawings, and specifications and change orders approved by the authorized representative of the using agency except for the deficiencies listed on the reverse side.

a. TRANSFERRED BY *(Typed Name and Signature)*	b. DATE SIGNED *(YYYYMMDD)*	24.a. ACCEPTED BY *(Typed Name and Signature)*	b. DATE SIGNED *(YYYYMMDD)*
c. TITLE *(Area Engr./Base Engr./DPW/Construction Agent)*		c. TITLE *(DPW/RPAO)*	25. PROPERTY VOUCHER NUMBER

DD FORM 1354, SEP 2009 PREVIOUS EDITION IS OBSOLETE. Adobe Professional 8.0

Figure 4: DD Form 1354

CSI 01 80 00

UNITED STATES GREEN BUILDING COUNCIL LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN ACCEPTABLE NEW CONSTRUCTION STRATEGIES

1. REFERENCES: United States Green Building Council, Leadership in Energy and Environmental Design (U.S. GBC, LEED) acceptable strategies shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. BASE Master Plan, "Basewide Master Planning Vision"

b. LEED-New Construction (NC) (Follow outline in Figure 5.)

2. LEED POINT CONSIDERATIONS: Due to functional constraints aboard MCB CAMPEN the following LEED points shall be carefully considered:

a. To establish a minimum Building to Site Ratio, reference the following guidelines:

"The BASE does not have set "property lines", so the determination of the "2% of gross land area" becomes difficult. Per the BASE Master Plan 1.1.1 "Basewide Master Planning Vision", all projects shall "Optimize land use allocation and facility siting by developing a logical and functional land use plan that maximizes real estate use for training; reduces building footprints; improves efficiency; promotes land use compatibility; and permits future expansion."

b. Environmental Assessment (EA) Credit 2: On-Site Renewable Energy This credit can be obtained, and is encouraged, through the installation of renewable energy systems. MCB CAMPEN shall retain Renewable Energy Certificates (REC) to comply with renewable energy mandates. Per Headquarters Marine Corps (HQMC), MCB CAMPEN is not allowed to purchase REC's to meet energy mandates.

c. Exclusions: The following points shall not be supported by MCB CAMPEN, and shall not be included in potential project scorecards:

(1) Indoor Environmental Quality (IEQ) Credit 7.2, Thermal Comfort (Verification): MCB CAMPEN shall not be conducting "thermal comfort surveys" after project occupancy.

(2) SS Credit 5.2, Site Development (Maximize Open Space): Again, per the BASE Master Plan 1.1.1 "Basewide Master Planning Vision", all projects shall "Optimize land use allocation and facility siting by developing a logical and functional land use plan that maximizes real estate use for training; reduces building footprints; improves efficiency; promotes land use compatibility; and permits future expansion." However, the requirement that "All open space that is counted toward this credit shall be preserved for the life of the building" shall not be guaranteed "forever".

3. LEED-NC

a. Figure 5 is a chart of LEED-NC credits mandated by NAVFAC with acceptable strategies for implementing those credits at MCB CAMPEN.

b. Following the chart is a list of acceptable strategies for LEED-NC credits not mandated by NAVFAC, but preferred by MCB CAMPEN.

c. NOTE: Additional Acceptable Strategies for optional LEED-NC credits aboard MCB CAMPEN are as follows:

(1) SS 4.3: Alternative Transportation/Low Emitting and Fuel Efficient Vehicles.

(a) Electric car ports desirable/Executive Order 13514.

(b) Southwest Regional Fleet Transportation (SWRFT) Office manages vehicles aboard MCB CAMP PEN (Heavy equipment, Government Owned Vehicles (GOV), Garrison Mobile Equipment (GME), etc.).

(2) EA Prerequisite 2: Minimum Energy Performance.

(a) Use variable air control (VAC) or variable air volume (VAV) mechanical systems if technology complies with CPR. Variable refrigerant valve (VRV) systems are not allowed.

(b) Use of re-heat systems desirable.

(c) Geothermal energy shall not be explored. BASE studies have proven the ground water does not support the required temperature needed for geothermal energy design.

(3) EA2: On-Site Renewable Energy. Earn an additional point for Regional Priority Credit.

(4) EA3: Enhanced Commissioning is desired of all heating, ventilation, and air conditioning (HVAC) systems and controls, refrigeration systems and controls, renewable energy systems and hot water systems. Enhanced commissioning shall be provided by third party. Testing and Balancing (TAB) Contractor is not permitted to perform the enhanced commissioning. Return of Contractor after completion of project to implement Enhanced Commissioning shall be enforced; enhanced commissioning shall be under a separate contract from building.

(5) EA6: Green Power. NAVFAC does not allow wind-generated power.

(6) EQ1: Outdoor Air Delivery Monitoring. Desirable on all buildings and shall interface with MCB CAMPEN Energy Management System (EMS).

4. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E, Facilities Project Team
(760) 763-2821

LEED-NC NAVFAC MANDATED CREDITS		PTS	ACCEPTABLE STRATEGIES FOR USE AT MCB CAMPEN
SUSTAINABLE SITES			
SS6.1 SS6.1	Stormwater Design Quantity Control (QC)	1	Comply with: CA Gen. Constr. Stormwater Permit, EISA. Comply with DoN LID Policy and UFC 3-210-10. [Reference CPR Stormwater Section for Strategies]
SS6.2	Stormwater Design QC	1	Comply with: CA Gen. Constr. Stormwater Permit. Comply with DoN LID Policy and UFC 3-210-10. [Reference CPR Stormwater Section for Strategies]
WATER EFFICIENCY			
WE Prereq.	Water Use Reduction by 20%	0	Waterless urinals not approved for use at MCB CAMPEN
WE 1.1	Water Efficient Landscaping, Reduce by 50%	2-4 1	Passive captured rain water is acceptable (i.e. divert rain from downspouts to irrigate landscape). Use of recycled wastewater from Tertiary Treatment plants/purple pipe desired. Grey water systems not allowed. Additional Point – Regional Priority Credit.
ENERGY AND ATMOSPHERE			
EA1	Optimize Energy Performance	1-19	Daylight sensors are desired for large spaces (i.e., hangers, warehouses, hangers, storage buildings & mechanical buildings). The use of light shelf and clerestory window design is desirable. Daylight sensors are not desired for BEQ or Admin. Bldgs. If boilers are used, the best technology fire tube/firebox type available shall be utilized. Separate hot water boilers from HVAC boilers so that each system can function independent from the other.
EA 4	Enhanced Refrigerant Mgt.	2	Discretionary*
EA 5	Measurement and Verification	3	Executive Order 13423
MATERIALS AND RESOURCES			
MR 2.1	Construction Waste Mgt.	1-2	Discretionary (determined on a case-by-case basis)
MR 4.1	Recycled Content 20%	2	Discretionary (determined on a case-by-case basis)
MR 6	Rapidly Renewable Products	1	Discretionary (determined on a case-by-case basis)
MR 7	Certified Wood	1	Discretionary (determined on a case-by-case basis)
INDOOR ENVIRONMENTAL QUALITY (IEQ)			
EQ 3.1	Construction IAQ Mgmt. During Construction	1	Discretionary (determined on a case-by-case basis)
EQ 3.2	Construction IAQ Mgmt. Before Occupancy	1	Discretionary (determined on a case-by-case basis)
EQ 4	Low Emitting Materials	1-4	Executive Order 13423 and 13514
EQ 7.1	Thermal Comfort Design	1	DDC Controls required for main HVAC design.
EQ 8.1	Daylighting	1	Discretionary (determined on a case-by-case basis)
INNOVATION AND DESIGN			
ID	Moisture Control Plan	1	Discretionary (determined on a case-by-case basis)
ID	Bio-Based Products	1	Executive Order 13423
ID	Energy Star/Energy Efficient Products	1	Executive Order 12902 Sec. 301 Executive Order 13423

Figure 5: LEED-NC

CSI 02 40 00

DEMOLITION

1. REFERENCES SPECIFICATION FOR DIGITAL DATA: Shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. NAVFAC P73, "Real Estate Procedural Manual, Disposal of Real and Related Property"

b. MCIWEST, "Demolition Memorandum"

c. Secretary of the Navy Instructions (SECNAVINST) 11011.47C, "Acquisition, Management and Disposal of Real Property and Real Property Interests by the DoN"

e. 42 U.S.C. 11301, "McKinney-Vento Homeless Assistance Act"

2. UTILITIES:

a. When a building is demolished, the utilities associated with the building shall be demolished/removed back to the main connection (Figure 6).

b. When a utility is replaced, the existing utility shall be demolished/removed back to the main connection.

c. Shall the demolition of utilities path fall outside the Categorical Exclusion (CATEX) boundary, the Contractor shall contact PWD for an amended CATEX.

3. EXIT SIGNS: Tritium or radioluminious illuminated exit signs are not permitted for MCB CAMPEN. During demolition of existing facilities, shall any exit signs be found that are tritium or radioluminious self-illuminated, the Contractor shall dispose of them per the Nuclear Regulatory Commission (NRC) regulations.

4. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD, Program Management, Demolition Program
(760) 725-6454

When demolishing facilities or fire hydrants connected to existing potable water mains creation of dead ends where stagnant water can accumulate under no-flow conditions is prohibited.

Facility demolition shall include disconnection or removal of the branch lateral as close to the distribution main as possible. Usually this will be the branch tee in the main line or the downstream side of the branch valve if one exists at the main. See figure below.

The abandoned branch lateral must be physically removed or separated from the main by use of a standard rated cap or blind.

In some cases it may be impractical or too costly to physically remove the branch lateral. Abandoned laterals may be left in the ground and associated trenching avoided only by exception and with advance approval from Water Resources Division and Public Works. Any runs of pipe abandoned in place and greater than 3" in diameter shall be filled with sand or slurry.

Final configuration including branch tees, valves, and piping left in place, shall be appropriately identified and captured in as-builts and GIS.

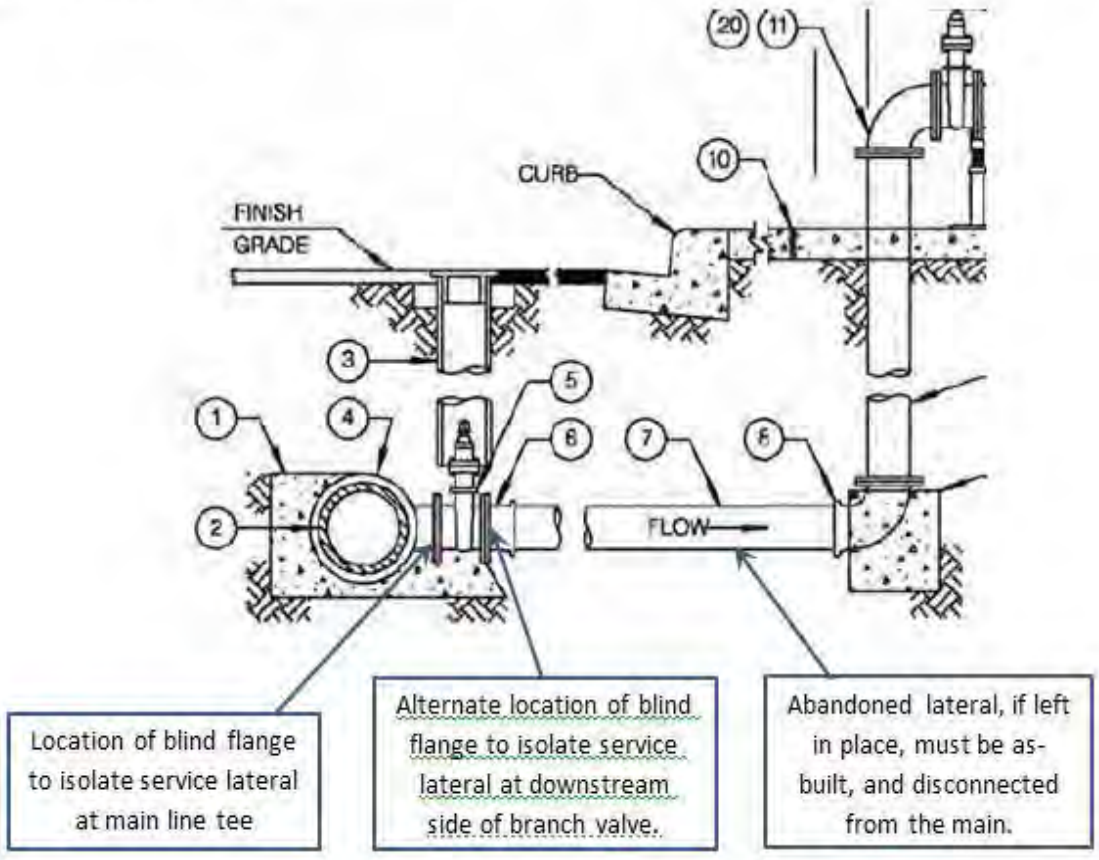


Figure 6: Potable Water Lateral Branch Demolition

CSI 02 40 00

WASTE MANAGEMENT

1. MCB CAMPEN Landfill (Three Mile Pit) is now closed.
2. There is no alternative site for construction waste disposal aboard MCB CAMPEN.
3. Contractor is responsible for removing construction waste from job site and MCB CAMPEN.

CSI 05 00 00

METAL BUILDING STANDARDS

1. REFERENCES: All construction shall conform to the most recent edition of the following references; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. UFC

b. Code of Federal Regulations (CFR)

c. U.S. GBC, LEED

d. BASE Master Plan

e. BASE Exterior Architecture Plan (BEAP)

f. International Building Code (IBC)

g. National Fire Protection Association (NFPA)

h. Unified Facilities Guide Specifications (UFGS)

i. International Mechanical Code (IMC)

j. International Plumbing Code (IPC)

k. National Electrical Code (NEC)

2. REVIEW OF PROPOSED METAL BUILDINGS: The PWD will only consider the review of proposed metal buildings where fiscal constraints will not allow the construction of a fully BEAP compliant building. All efforts must be made to consider the construction of a typical MCB CP concrete masonry unit (CMU) building structure with standing seam metal roof, prior to submission of a request for exception. In the event that available funding does not allow a required facility to comply, pre-engineered metal buildings will be considered by the PWO on a case-by-case basis, with the following requirements, beyond general BEAP compliance.

a. Building Siting and Exterior Wall Requirements:

(1) If the building is to be sited in a high visibility area, it shall include a minimum 4' high split-faced CMU, or cast-in-place concrete, "wainscot" base. Typically, this will be an exterior cladding/surround on the structural metal "skeleton" of the frame. The intent of the concrete or masonry base is to prevent potential damage from machinery or miscellaneous impact in warehouse or shop facilities at the floor level areas; and increase the durable life of the building.

(2) If the building is in a remote area, the CMU or concrete wainscot will not be required; and a standard, metal-clad, pre-engineered building may be approved. All material connections shall be properly detailed, per manufacturer's specifications, to provide weatherproof protection. Other equally effective closure details will be considered for review. (See Figures 7-16.)

b. Metal Exterior Cladding:

(1) In all cases any exterior metal wall faces will be minimum 24 gage sheet steel.

(2) Exterior metal panels shall be an integrally insulated, weather-tight system. Where insulated metal-clad panels are used above a CMU or concrete wainscot, they will have an exterior 24 gage sheet and a minimum of 26 gage interior sheet. If the panels extend down to the slab level, the interior metal sheet will be a minimum 24 gage, also.

(3) Where user comfort is important, and a more finished interior is desired, exterior panels could be single ply metal panels with steel stud, furred interior insulation, and gypsum board interior finish.

(4) Where the building does not require heating or cooling for the comfort of the users, it can be constructed of just the weather-tight, single ply, exterior metal "skin."

c. Exterior Metal Finishes:

(1) All exterior metal shall be factory-applied Fluor-polymer finish color coated. Exterior panel colors shall comply with the BEAP Color Board metal finishes (Pantone #7528 or #7536).

(2) On smaller buildings the roof shall be a standing seam metal system, with pitch and color per the BEAP (Section 3.5C3e and the Color Board). The standard color is Pantone #188 red.

(3) On larger span buildings follow manufacturers' recommended roofing specifications.

(4) Downspouts and gutters shall be installed; and drain to an underground storm drain system, or into vegetated or graveled swales. The color of the gutters shall match the roof color. The downspouts' color shall match the majority of the wall color field which they drop across.

d. Natural Lighting:

(1) Where the building spans are large (over 60 feet), the use of a roof configuration to include central clerestory windows is highly encouraged for the distribution of natural light into interior spaces (Figures 7&8). See Appendix A, BEAP Addenda, Chapter 3.5C2.

(2) Lighting will be enhanced by the use of white, or off-white finish colors on the building interiors' surfaces, particularly in larger structures.

e. General Building Components:

(1) Windows, doors and hardware shall comply with the standards of the UFC 4-010-01and the BEAP. Where applicable, they will meet strength and anchorage requirements of anti-terrorism/force protection (ATFP).

(2) At every exterior doorway serving equipment traffic, install concrete-filled, steel bollards inside the jamb areas of the doorway.

(3) All exterior panels shall be weather and insect sealed with rubber gasket inserts, or grout fills at slab level, or above wainscot level. All other closure points will be properly sealed for weather tightness; and other equally effective closure details will be considered for review.

f. Warranty: All metal buildings shall be expected to perform their intended function, without major maintenance, for a minimum of twenty years.

3. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E Branch
(760) 763-8142

Figure 7: Example of Good Use of Clerestory Lighting

Figure 8: Interior View of Clerestory Lighting

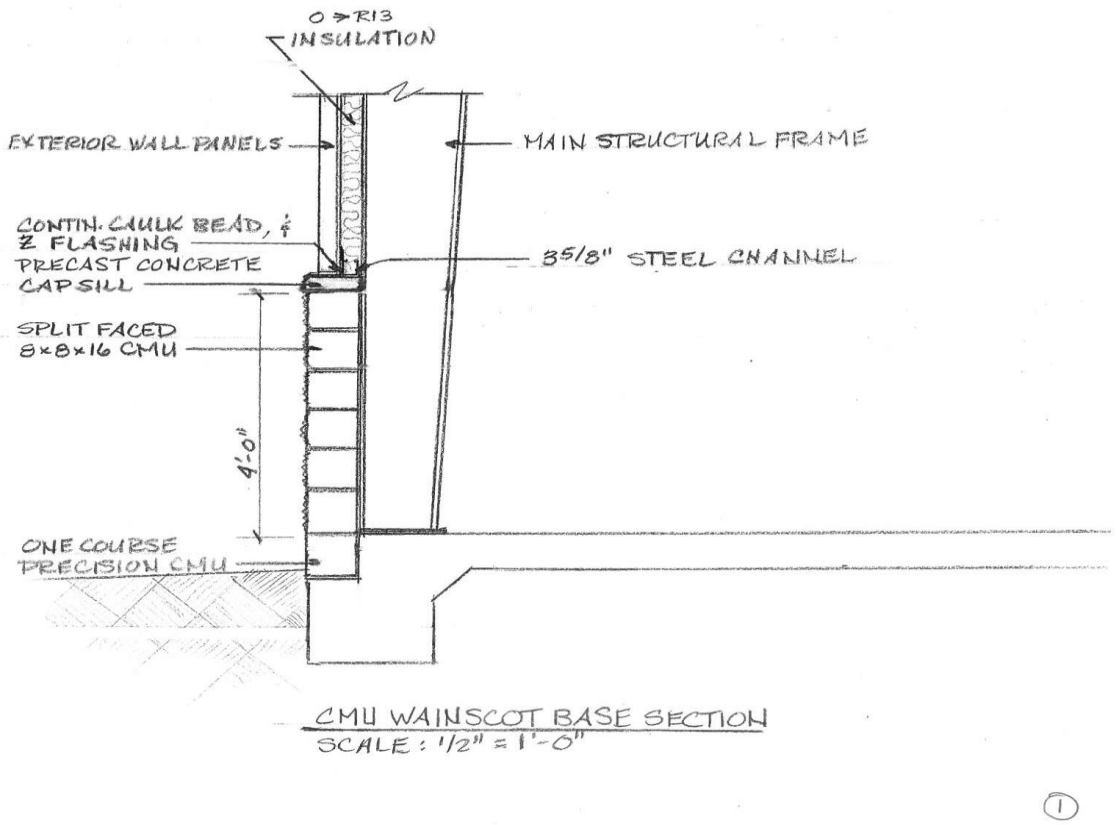


Figure 9: CMU Wainscot Base Section

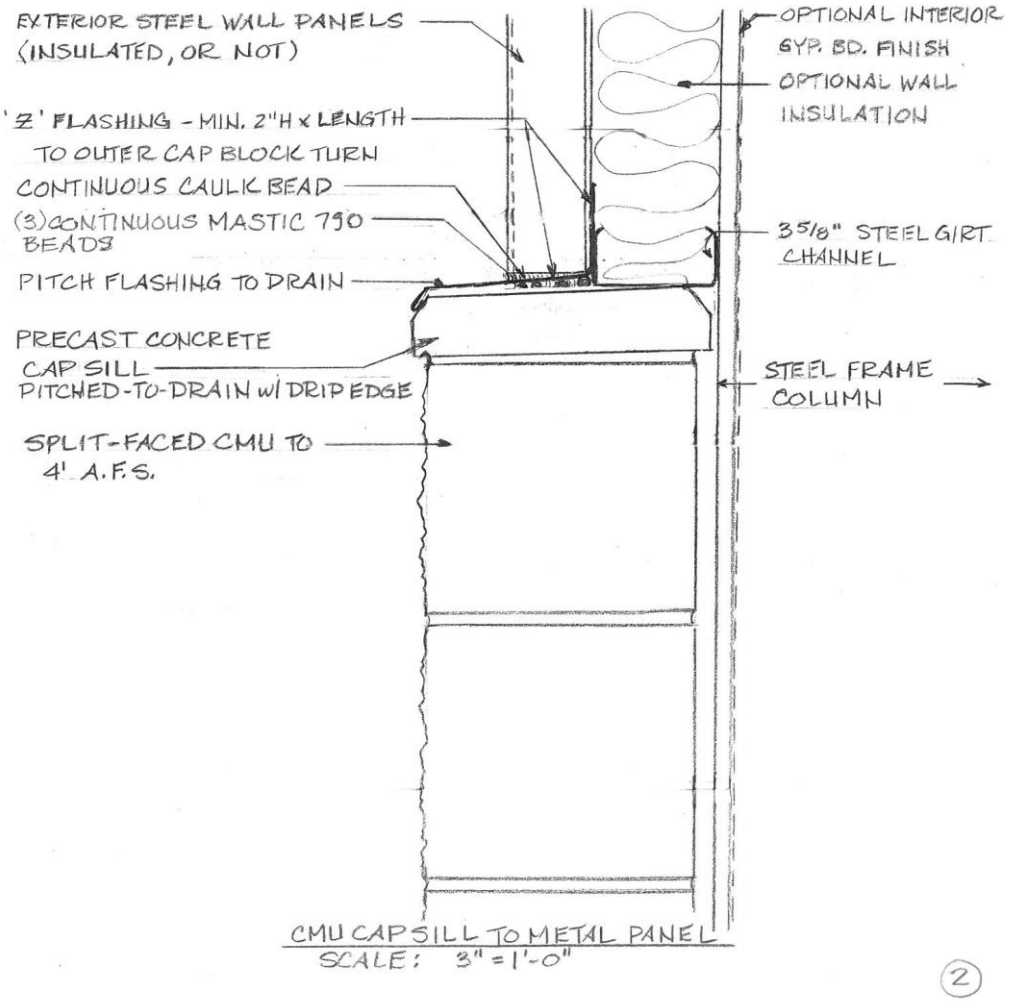


Figure 10: CMU Cap Sill to Metal Panel Detail

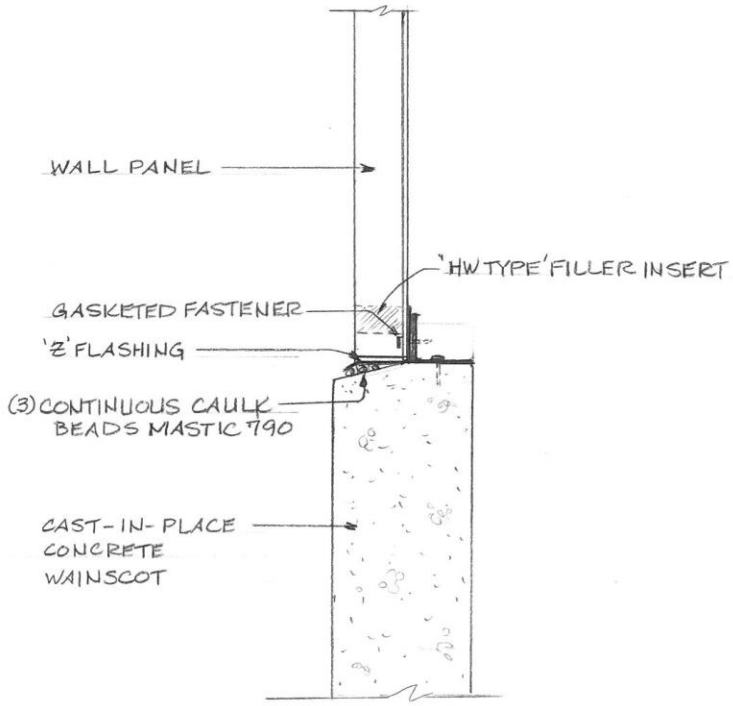


Figure 11: Concrete Sill to Metal Panel Flashing Section

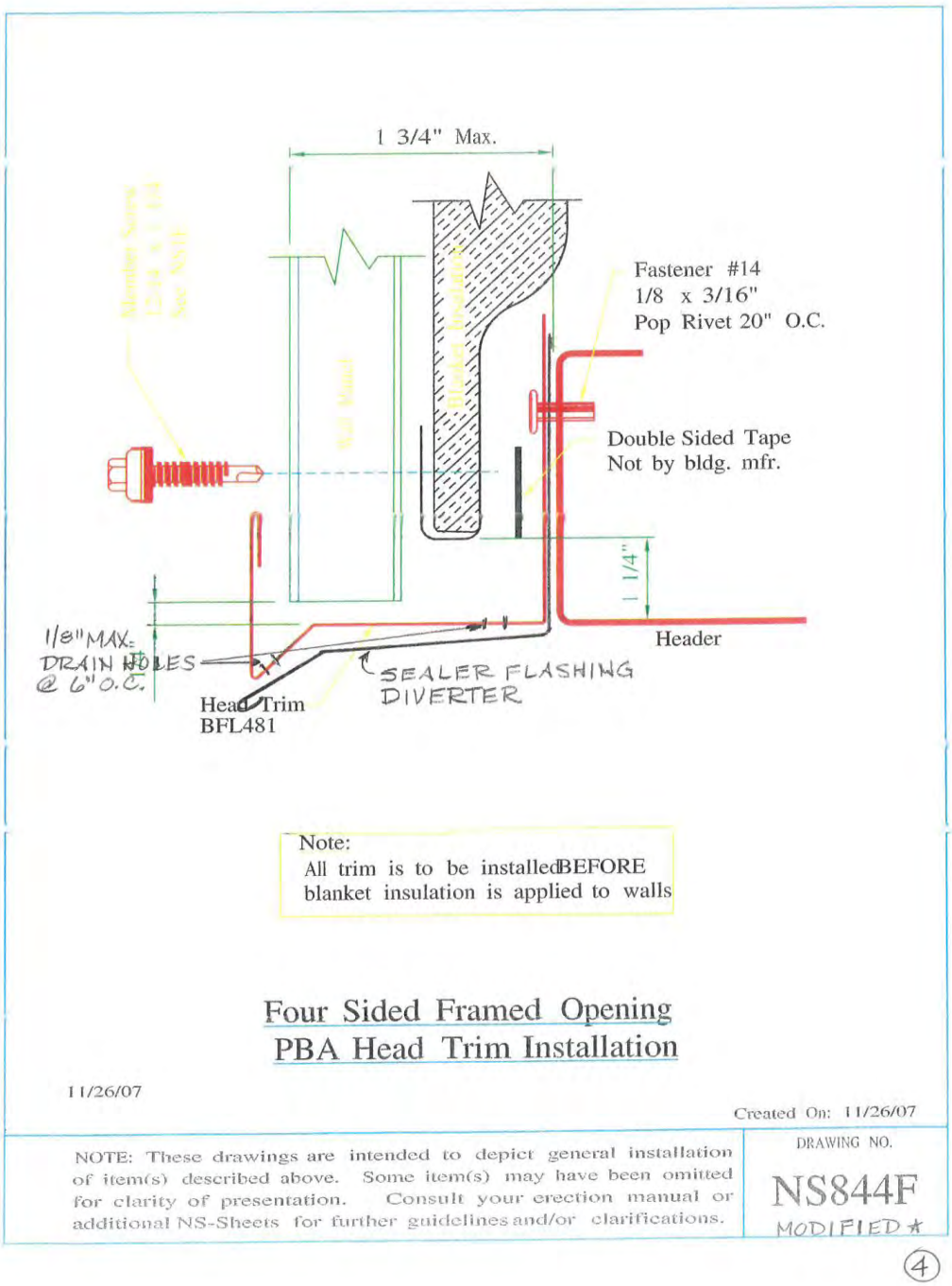


Figure 12: Four Sided Framed Opening Head Trim Installation Detail

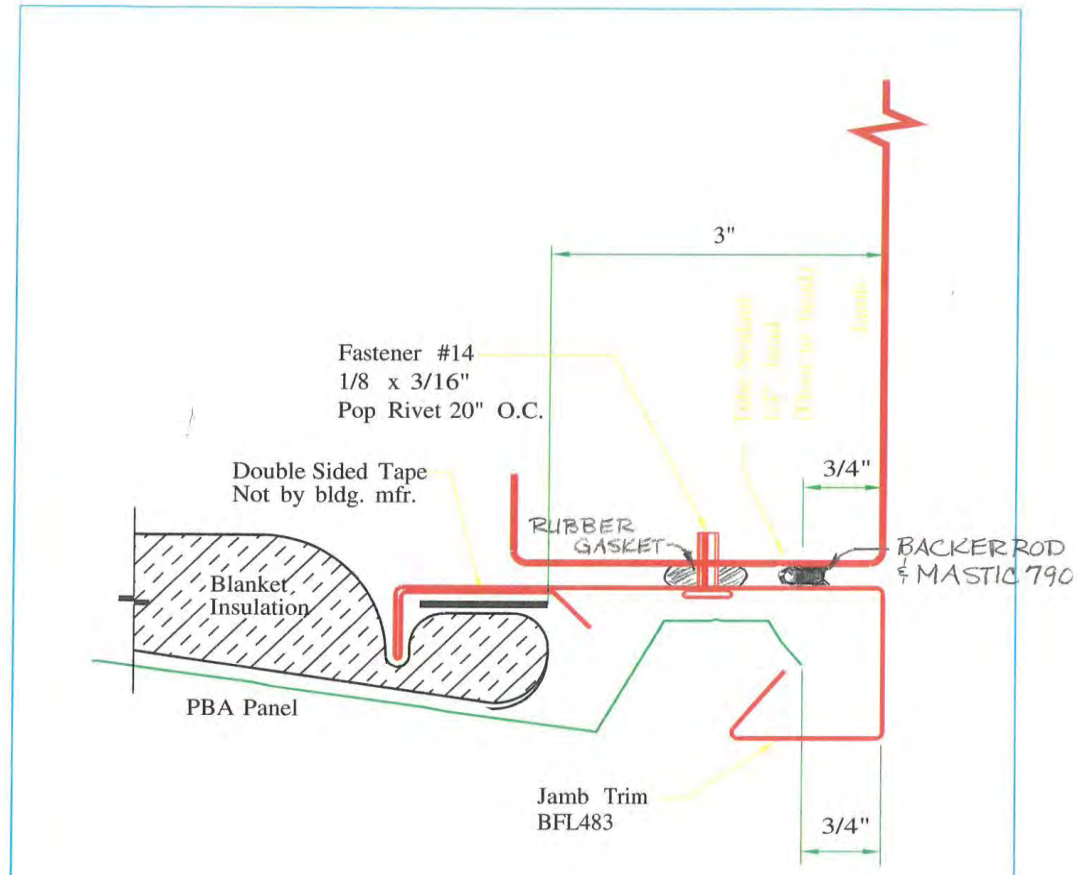


Figure 13: Four Sided Framed Opening Jamb Trim Installation Detail

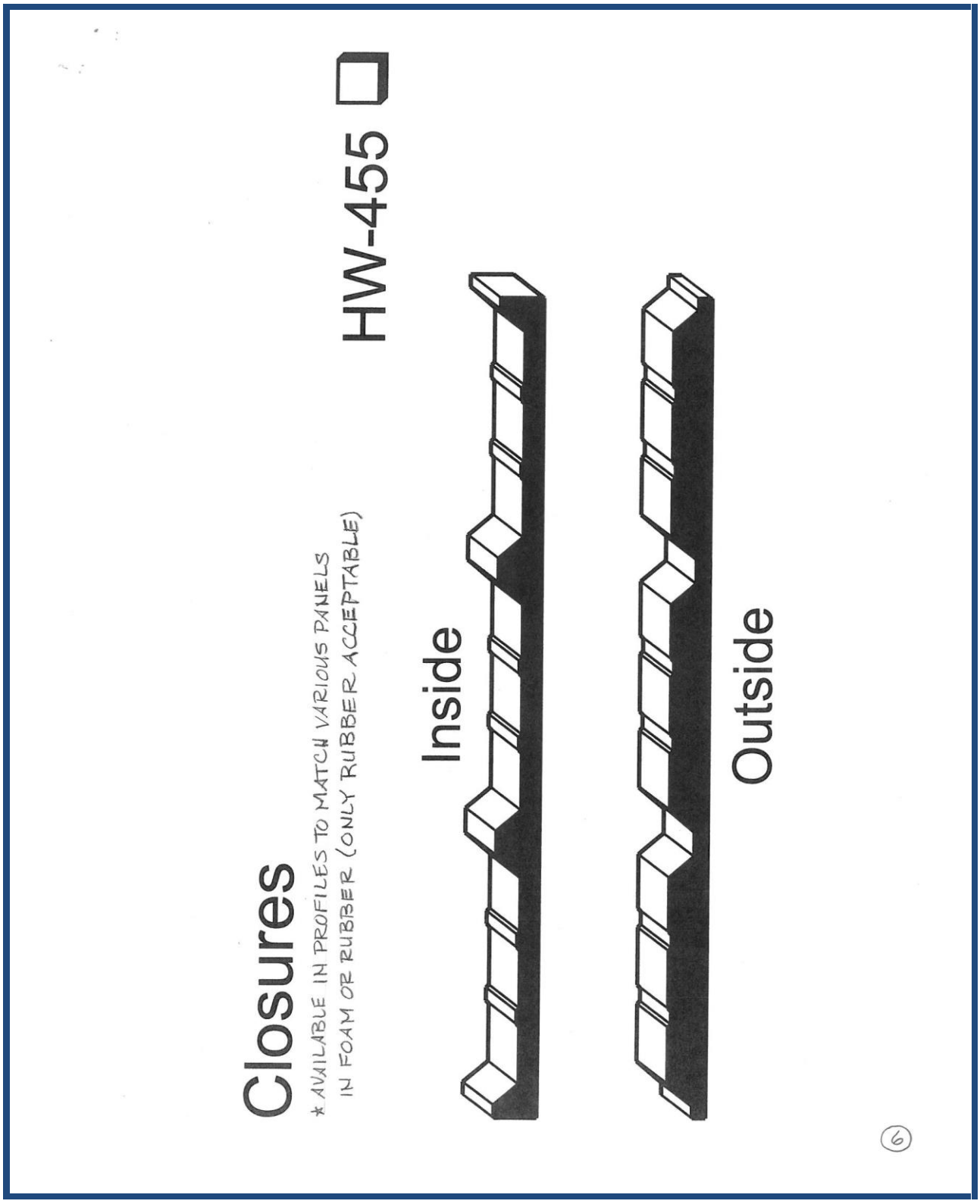
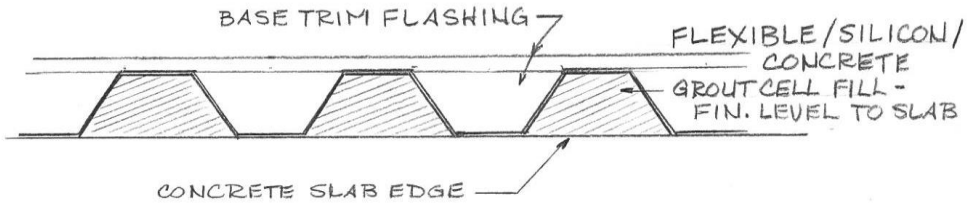


Figure 14: Metal Panel Closure Profiles



N.T.S.

PANEL BASE-TO-SLAB OPTIONAL
CELL CLOSURE FILL

7

Figure 15: Panel Base-to-Slab Optional Cell Closure Fill Detail

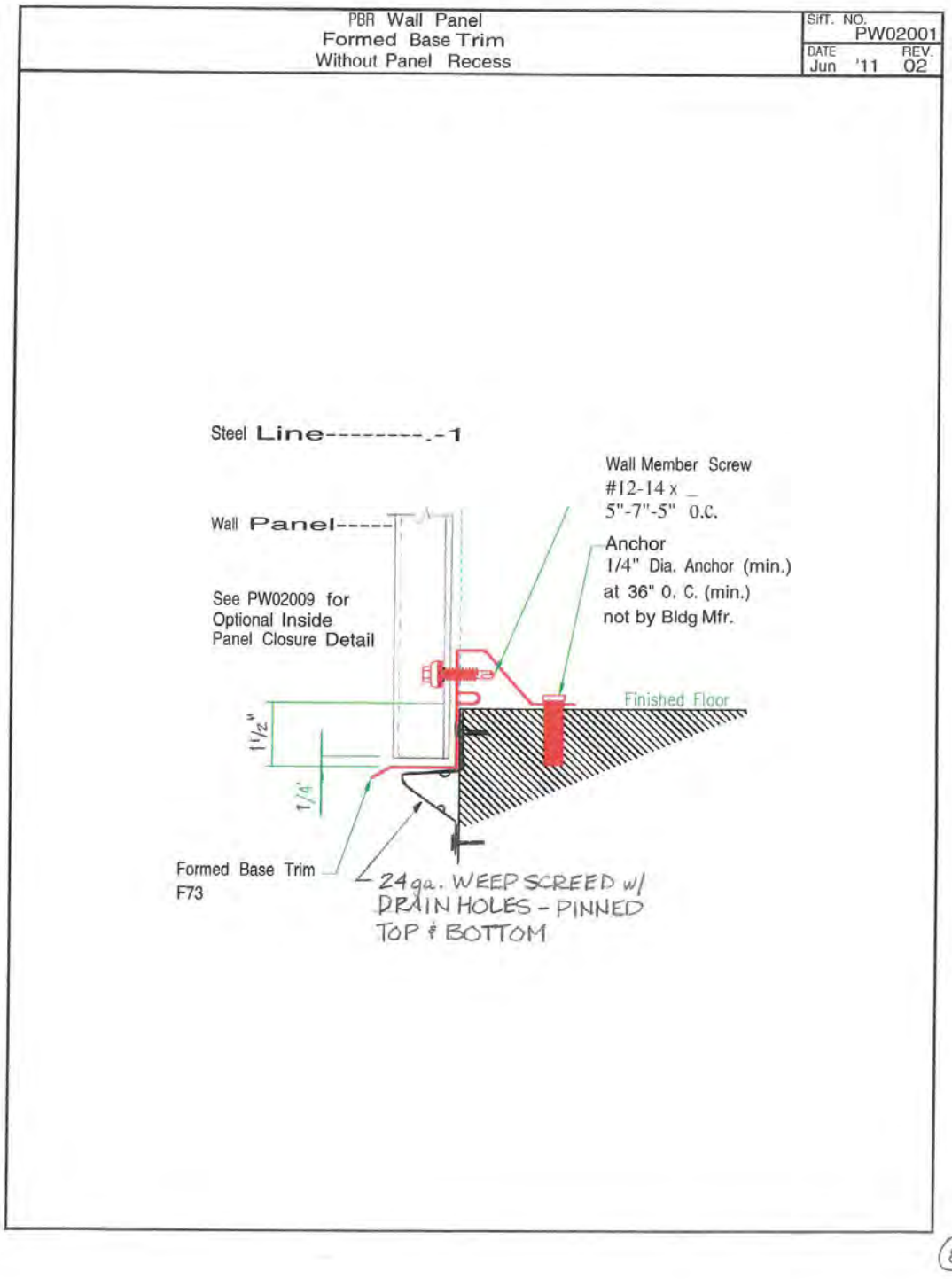


Figure 16: Wall Panel Formed Base Trim Sub-Flashing Detail

CSI 09 00 00 & CSI 12 00 00

INTERIOR DESIGN STANDARDS FOR MCB CAMPEN
(Finishes and Furnishings)

1. REFERENCES: All construction shall conform to the most recent edition of the references cited in following references; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. Marine Corps Order (MCO) 5530.14a, "Marine Corps Physical Security Manual"

b. MCO P11240.106b, "Garrison Mobile Equipment"

c. MCIWESTO 11240.3 W/CH 1 & 2, "Billing Rates for Transportation Equipment"

d. DoD 4500.36R, "Management, Acquisition, and Use of Motor Vehicles"

2. PHILOSOPHY:

a. Function:

(1) The interior design package shall meet or exceed the functional efficiency of the space for the tasks performed. (See Figures 19-28.)

(2) End users continually move throughout the MCB CAMPEN and to other locations due to changes in duties and missions. The goal is to provide an interiors package that reflects the MCB CAMPEN standard and shall not reflect the specific taste of the current end user or interior designer. By designing to the standard, the space can accommodate the needs of many end users as they move from building to building.

(3) The interiors package shall be maintainable, adaptable, functional and durable.

b. Marine Proof**:**

(1) Think muddy boots, sharp things, big young high energy Marines.

(2) Interiors shall be masculine in nature and create a sense of unity.

(3) Marines will not clean finishes or Furniture, Fixtures, and Equipment (FF&E).

(4) O & M Funds for repair or replacement is limited so make design selections accordingly.

c. Timeless Design

(1) A sense of "classic style" and timelessness is encouraged.

(2) Marine Corps motto: “The Few, The Proud, The Marines.” The interior design concept shall reflect a proud, military culture.

(3) Produce interiors that Marines will be proud to live and work in.

(4) Designs need to last for a minimum 20-30 years because there are no dollars for repair or replacement.

3. ACHIEVING THE PHILOSPHY:

a. FF&E Required:

(1) Interiors shall be commensurate with the rank or level of the individual user (See Figure 19).

(2) Classic medium to medium dark stains of wood for furniture is desirable for higher ranks, such as cherry, walnut or mahogany (See Figure 21).

(3) FF&E selections are shall be visually appealing to a male dominated Marine demographic (think heavy duty: it shall LOOK and BE heavy duty yet with a sense of style; no skinny/minimalist looking furniture).

(4) Patterns and colors of FF&E shall hide soiling (medium to dark colors and heavy patterning)

(5) Provide modesty panels on all desks.

(6) Provide cable management at all work areas (See Figure 27).

(7) Work surfaces and table top surfaces may be light in color when light reflectance is important; however, wood grain or a small pattern is preferred for soil-hiding capabilities (See Figure 20).

(8) FF&E shall be zero to low maintenance making it less expensive to maintain

(9) FF&E shall be sustainable, recyclable and environmentally friendly.

b. FF&E Prohibited:

(1) Style shall not be ultra-modern, trendy or minimalist

(2) Black/Espresso and/or white wood is not acceptable for FF&E

(3) Solid fabrics and light colored fabrics are not acceptable (even if they are commercial grade).

(4) Workstations shall not have low/credenza height work surfaces. Maintain industry standard of 29”-30” high work surfaces.

(5) Binder bins shall not be hung on panels that are less than 60” high.

(6) Mesh chair backs on office seating shall not be white or light in color. The oils from hands make the mesh look soiled/dirty. The chairs will not be cleaned, so choosing a color that hides soiling is important.

(7) Mesh backs on task chairs shall not be used at a high use area such as the check in desk at a BEQ Community Center, a control desk at a Fitness Center, etc. The mesh will fail quickly due to the high number of people pulling on the top of the chair as they move in and out of the desk area. A cellular type plastic backed task chair is a better solution.

c. Finishes Required:

(1) Patterns and colors of Structural Interior Design (SID) shall hide soiling (medium to dark colors and heavy patterning).

(2) Finishes shall be zero to low maintenance making it less expensive to maintain.

(3) Finishes shall be sustainable, recyclable and environmentally friendly

d. Finishes Prohibited:

(1) Matte sealed concrete flooring shall not be used except in utility rooms such as electric rooms, mechanical rooms, telephone equipment rooms and in some maintenance work bays. Polished concrete, epoxy, shiny sealer/stained concrete and terrazzo floors are acceptable types of concrete floors for all other areas where a concrete floor is the best solution.

(2) Do not use floor tiles that have a surface color/finish that is not integral throughout the body of the tile.

(3) Wall covering shall not be used (some wall coverings used as artwork/graphics depicting Marines is acceptable).

(4) Black/Espresso and/or white wood is not acceptable for interior building finishes

4. REQUIRED PROCEDURES FOR FF&E AND SID PACKAGES:

a. BEQ FF&E to follow the guidance in the Department of the Navy (DoN) "Policy for Procurement of BEQ FF&E". (See Figure 17)

b. Follow "Best of Breed" criteria for BEQ complexes

c. FF&E to comply with NAVFAC Performance criteria.

d. Follow criteria in the CPR Specification Guidance

e. All FF&E and SID packages to involve the end user and the PWD Project Leader (PL).

f. PWD to receive FF&E and SID submittal packages.

g. The Final FF&E and SID packages shall be signed off by the PWD PL.

5. REPLACEMENT AND MAINTENANCE:

a. To maintain consistency in the interior design, replacement of an FF&E item or SID interior finish shall duplicate what is currently installed.

b. If an FF&E item or SID interior finish has been discontinued, alternate items shall be approved by PWD and/or the Director of Billeting for BEQ's.

6. INTERIOR DESIGN SPECIFICATION GUIDANCE CSI SECTION NUMBERS are as follows:

a. CSI 03 35 00 Concrete Finishing

b. CSI 07 08 00 Commissioning of Moisture Protection

c. CSI 09 29 00 Gypsum Board

d. CSI 09 30 00 Tiling

e. CSI 09 65 00 Resilient Flooring

f. CSI 09 66 00 Terrazzo Flooring

g. CSI 09 67 00 Fluid Applied Flooring

h. CSI 09 72 00 Wall Coverings

i. CSI 09 90 00 Paints and Coatings

j. CSI 10 14 00 Signage

k. CSI 10 21 00 Compartments and Cubicles

l. CSI 10 22 10 Partitions

m. CSI 10 26 00 Wall and Door Protection

n. CSI 10 28 00 Toilet, Bath and Laundry Accessories

o. CSI 10 43 00 Emergency Aid Specialties

p. CSI 10 50 00 Storage Specialties

q. CSI 11 24 00 Maintenance Equipment

r. CSI 12 10 00 Art

s. CSI 12 21 00 Window Blinds

t. CSI 12 36 00 Countertops

u. CSI 12 41 00 Office Accessories

v. CSI 12 45 00 Bedroom Furnishings

w. CSI 12 48 00 Rugs and Mats

x. CSI 12 51 00 Office Furniture

y. CSI 12 52 00 Seating

z. CSI 12 56 00 Institutional Furniture

aa. CSI 12 59 00 Systems Furniture

bb. CSI 12 93 00 Site Furnishings

cc. CSI 22 42 00 Plumbing Fixtures

dd. CSI 41 23 00 Lifting Devices

7. CSI 03 35 00 CONCRETE FINISHING:

a. Sealed Concrete: There is no single sealer which can accommodate all types of projects. There are two main types of sealers: surface sealers (acrylic, epoxy, and urethane) and penetrating sealers (silicone-based). Be sure to specify the type of shine desired: level of sheen or matte. There are more concrete sealers than those mentioned here. The selection of a concrete sealer shall be based on the specific need and the desired sheen.

b. Surface Sealers: Surface Sealers are the most common sealers used since they protect the surface, also preventing any foreign object to pass through; to include rust, oils, salts, water, urine and other stains and chemicals. A stain or color can be applied with the sealer.

c. Acrylic: An acrylic concrete sealer is softer compared to the other types. However, this is more suitable for external applications due to its resistance to ultraviolet (UV) rays. This also lets moisture present in the concrete flow out.

d. Epoxy: An epoxy concrete sealer is stronger compared to an acrylic sealer. However, it does not allow moisture to escape. Epoxy sealers offer a shiny, clear finish. Epoxy sealers entail more surface preparation and higher costs.

e. Urethane: A urethane concrete sealer turns out as the strongest yet the most expensive among the types of concrete sealer. Urethane sealers are usually meant for industrial uses.

f. Penetrating Sealers: Penetrating sealers are oftentimes silicon-based. They infiltrate a surface and react to free lime, forming calcium silicate. This process makes it seem like the capillaries and pores are filled with cement. Through this, the concrete will be stronger and water won't migrate to it. This sealer will produce a matte finish.

8. CSI 03 35 43 POLISHED CONCRETE FINISHING:

a. When providing a polished concrete finish, use a multi-step dry mechanical process. Both products and installation shall conform to the manufacturer guidelines. These requirements shall include but are not limited to a lithium silicate densifier, a dry grind process for installation, and a predetermined gloss level:

(1) Low Gloss – 30-40

(2) Medium Gloss – 41-60

(3) High Gloss – 61 & higher

b. Imperfections: All imperfections in existing slab must be addressed and repaired. Best efforts shall be made to mitigate the appearance of all imperfections. Inspect the existing substrate and document unsatisfactory conditions in writing. Verify that surfaces and site conditions are ready to receive work. Correct unacceptable conditions prior to installation of System. Commencement of work constitutes acceptance of substrate conditions

c. Polishing aids are required for stain protection.

d. Floor protection is required after installation of polish system and is to remain through the end of construction.

e. Maintenance Data: Provide manufacturer's instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under intended use. These instructions shall contain precautions against cleaning products and methods, which may be detrimental to finishes and performance.

f. Installer must be experienced and factory-trained in the installation and experienced in performing specified work similar in design, products and scope of this project, with a documented track record of successful, in-service performance and with sufficient production capabilities, facilities and personnel to produce specified work. Installer must provide written documentation from the manufacturer confirming the Installer's accreditation and training

g. Mock-Up: Before performing the work in this section, an adequate number of on-site mock-ups must be installed for review and approval. These mock-ups shall be installed using the same Installer personnel who will perform work. Approved mock-ups may become part of completed work, if undisturbed at time of substantial completion.

h. Close areas to traffic during and after Polished Concrete System application for a time period recommended by the manufacturer.

i. Existing concrete must be cured for a sufficient time period recommended by manufacturer before the application can begin.

j. Where new or existing concrete is not within specified tolerances a polishable cementitious topping shall be installed. Chosen topping must be approved before installation. If moisture tests results exceed recommended limits refer to topical moisture mitigation system recommendations.

k. Must protect existing concrete from contamination by petroleum, oil, hydraulic fluid, acid and acidic detergents, paint and other liquid dripping from trades and equipment working over these substrates. If construction equipment must be used on these substrates, diaper all components that may drip fluids.

l. Polished concrete flooring shall not be confused with sealed concrete flooring. Polished concrete flooring holds up well on the MCB CAMPEN, is easy to maintain and is aesthetically pleasing, unlike sealed concrete (penetrating sealer) which can be hard to clean and looks like raw concrete. A stain or color can be applied. Polished concrete flooring is not suitable for areas that have a high likelihood of standing water as it becomes very slippery when wet. Polished concrete will impact the construction schedule because it will require several days to install/grind and must be coordinated with the contractor at the very beginning of the project.

9. CSI 07 08 00 COMMISSIONING OF MOISTURE PROTECTION (Moisture Testing for Concrete Slabs):

a. When installing a finished flooring over a concrete slab, provide a moisture mitigation system suited to treat areas of new concrete that may still be damp or have very high moisture readings as well as existing concrete to receive all types of flooring where the level of moisture emissions from the slab exceeds the maximum allowed by the manufacturer of the finished floor covering.

b. The moisture testing shall be completed using the standard Relative Humidity (RH) Testing Method per American Society of Testing Materials (ASTM) F2170 and the System shall be able to handle up to 98% RH sensor.

10. CSI 09 29 00 GYPSUM BOARD (Mildew Resistant Gypsum Board Ceiling):

a. Mildew and mold resistant gypsum board shall be used for ceilings in areas with high moisture content such as shower rooms and BEQ bathrooms.

b. A gypsum board ceiling is required for all telephone equipment rooms. This type of ceiling will prevent dust and other debris from contacting the telephone service equipment. Gypsum board ceilings are not required for mechanical equipment rooms or electrical rooms.

11. CSI 09 30 00 TILING (Ceramic Tile):

a. Ceramic tile is acceptable on wall surfaces, but it is not durable enough for floor surfaces. Floor surfaces on the MCB CAMPEN take a high level of abuse.

b. Where a tile floor is called for, a better solution would be porcelain tile where the color is integral through the entire tile or quarry tile.

12. CSI 09 65 00 RESILIENT FLOORING:

a. CSI 09 65 13 Resilient Base and Accessories: Resilient floor base and accessories shall be rubber (not vinyl) and 6” in height. Light colors are not acceptable as they show dirt, wear/tear and scuff marks (Figure 25).

b. CSI 09 65 19 Vinyl Composition Tile:

(1) Although the industry is now producing resilient tile flooring with bio-content and other sustainable attributes, the material requires buffing and does not have the longevity of other resilient flooring materials.

(2) Vinyl composition tile shall only be used in small areas where there is no possibility of moisture problems in the substrate/concrete slab; or there is no other alternative due to budget constraints.

c. CSI 09 65 19 Luxury Vinyl Tile: Luxury vinyl tile is desired by MCB CAMPEN. It provides a high degree of durability, is low maintenance and provides soil-hiding patterns. Luxury vinyl tile shall be 3mm gauge. The luxury vinyl tile floor shall be cleaned and sealed as part of the installation provided by the contractor. Dark colors are not allowed due to the scuff marks caused by the light soled Marine and Sailor boots.

d. CSI 09 65 43 Linoleum Flooring: Although the sustainable attributes are highly desirable, the durability of the material and the adhesive has not stood the test of time aboard the Base. When resilient flooring is called for, an alternate to linoleum is desired.

e. CSI 09 66 00 Terrazzo Flooring: The industry offers many varieties of terrazzo flooring. It is recommended that the interior designer research the types of terrazzo flooring available and select the best type for the end use. Terrazzo flooring shall not be confused with polished concrete flooring, sealed concrete flooring or epoxy flooring. Terrazzo flooring holds up well aboard MCB CAMPEN, is easy to maintain and is aesthetically pleasing, unlike matte sealed concrete which is hard to clean and looks like raw concrete. The following are the Terrazzo flooring section numbers within the CSI:

(1) CSI 09 66 13 Portland Cement Terrazzo Flooring

(2) CSI 09 66 16 Terrazzo Floor Tile

(3) CSI 09 66 23 Resinous Matrix Terrazzo Flooring

(4) CSI 09 66 33 Conductive Terrazzo Flooring

13. CSI 09 67 00 FLUID APPLIED FLOORING:

a. The industry offers many varieties of what is commonly referred to as “Epoxy” flooring. It is recommended that the interior designer research the types of epoxy flooring available and select the best type for the end use. Epoxy floor coating shall be heavy duty.

b. Epoxy flooring shall not be confused with polished concrete flooring, sealed concrete flooring or terrazzo flooring. Some epoxy flooring holds up well aboard MCB CAMPEN, is easy to maintain and is aesthetically pleasing, unlike matte sealed concrete which is hard to clean and looks like raw concrete.

c. Not all epoxy flooring is durable enough for use on the Base. Some relatively new installations have been failing/peeling up. The material shall be a “poured on” application and not “rolled on.” Also, the number of layers of the epoxy system shall match the durability of the end use.

d. The following are the Fluid Applied Flooring section numbers within the CSI:

(1) CSI 09 67 13 Elastomeric Liquid Flooring

(2) CSI 09 67 16 Epoxy Marble Chip Flooring

(3) CSI 09 67 19 Magnesium-Oxychloride Flooring

(4) CSI 09 67 23 Resinous Flooring

(5) CSI 09 67 26 Quartz Flooring

(6) CSI 09 67 66 Fluid-Applied Athletic Flooring

14. CSI 09 72 00 WALL COVERINGS:

a. Wall coverings require maintenance/repair/replacement. In general, wall covering is not desired.

b. If wall protection is necessary, another type of material such as diamond metal plate, corner guards, chair rails or tile wainscots are required. Some wall coverings used as artwork/graphics depicting Marines is acceptable when located appropriately (i.e. out of reach from public/human contact). Decorative wallcoverings in low traffic/higher end command suites may be acceptable with approval from PWD.

c. Wall covering shall not be applied within the sides of a finished window opening.

15. CSI 09 90 00 PAINT AND COATINGS (CSI 09 91 23 Interior Painting):

a. Interior paint shall be applied over a minimum Level 3 wall finish. Interior paint shall be velvet or eggshell finish unless the area being painted is subject to moisture, such as restrooms and shower rooms, or requires a high degree of clean ability such as a commercial kitchen. These areas shall have semi-gloss.

b. Red paint is a common color used for accent walls. Be aware that in some applications sunlight/artificial light reflecting off of the red paint onto an adjacent light colored wall will make the light colored wall appear pink. The use of accent walls are highly encouraged; however, be cognizant of light source.

16. CSI 10 14 00 SIGNAGE / CSI 10 14 16 PLAQUES:

a. Interior Room Identification:

(1) Sustainable materials

(2) Comply with ADA, American Barriers Act (ABA) and UFC 3-120-10 Interior Design

(3) Signs shall be designed in conjunction with the Comprehensive Interior Design Package.

(4) Finishes shall be durable (Marine-proof) and outlast the longevity of the building

(5) Require zero to low maintenance making them less expensive to maintain

(6) Sign package to coordinate with architecture/design of the building.

(7) BEQ Individual Living Unit door signs shall be 8.5" x 11" printer paper interchangeable.

(8) Administrative and other building interior signs to have interchangeable slide in labels under a clear panel strip.

(9) Some of the older facilities on the Base have room signs above the door that are mounted perpendicular to the wall. When the facility is renovated, interior room identification signs must be provided that comply with numbers (1)-(8) above (for purposes of ADA), however, if the end user desires, the perpendicular mounted signs can be provided in addition.

17. CSI 10 21 00 COMPARTMENTS AND CUBICLES:

a. CSI 10 21 13 Toilet Compartments: Toilet compartment partitions of phenolic, high density plastic (HDP) or solid surface type materials provide the best durability and longevity for Marine environments. Stainless steel or painted metal compartment panels are prone to rusting and plastic laminate compartment panels are prone to de-lamination; and both are prone to scratching/abuse. Graffiti is common (written and scratched) and the partitions shall be highly durable and repairable.

b. CSI 10 22 10 Partitions (CSI 10 22 19 Demountable Partitions): Demountable interior partitions are considered FF&E and not construction. As an FF&E item, the quality can be controlled by the Best Value Determination (BVD) process. Interior glazing becomes less expensive than traditional interior glazed partitions. There is flexibility in reconfiguring the space without using construction dollars.

18. CSI 10 26 00 WALL AND DOOR PROTECTION / CSI 10 26 13 Corner Guards: Heavy Duty corner guards either of stainless steel or Polyvinyl Chloride (PVC) material to coordinate with surrounding walls on ALL exterior corners throughout the interiors of ALL buildings will provide a durable, maintenance free wall finish to gypsum board wall construction. Heavy duty corner guards benefit all building types aboard MCB CAMPEN from industrial and BEQs to command posts, headquarters and administrative buildings. Marines often carry large gear bags throughout all types of buildings and the walls, especially the corners suffer the abuse.

19. CSI 10 28 00 TOILET, BATH AND LAUNDRY ACCESSORIES / CSI 10 28 13 TOILET ACCESSORIES): Open front toilet seats shall be provided for all toilets.

20. CSI 10 43 00 EMERGENCY AID SPECIALTIES / CSI 10 43 13 DEFIBRILLATOR CABINETS: Defibrillators are proven to save the life of people in cardiac arrest. Defibrillators can be provided at obvious points in a building near a fire extinguisher/one per floor.

21. CSI 10 50 00 STORAGE SPECIALTIES: Painted steel lockers are not as durable as recycled plastic or phenolic lockers. Steel lockers rust easily when located in areas with heavy moisture such as shower rooms and training tanks. Recycled plastic or phenolic lockers shall have adequate ventilation openings.

a. CSI 10 51 26 Recycled Plastic Lockers and

b. CSI 10 51 29 Phenolic Lockers

22. CSI 10 51 53 LOCKER ROOM BENCHES: Seating and/or benches in an area that has lockers and/or showers is desired. Careful attention shall be paid that the seating material will not rust or corrode or be damaged easily when located in areas with heavy moisture.

23. CSI 10 55 00 POSTAL SPECIALTIES: Provide 6 sets of keys for all FF&E that is lockable such as file cabinets, overhead binder storage, etc. The keys shall be presented to the end user in a key box with labels identifying each key.

24. CSI 10 56 00 STORAGE ASSEMBLIES (ARMORIES):

a. Weapons rack cabinets must meet MCO 5530.14A requirements.

b. Weapons rack cabinets must be certified by Tactical Communications (TACOMM) and Marine Corps Systems Command (MARCORSYSCOM).

c. New weapons rack storage systems aboard MCB CAMPEN must be compatible and interchangeable with the existing systems.

d. Weapons rack cabinets shall be ganged together from the inside; top to bottom, back to back, side to side, meeting security weight requirement of at least 500 lbs. [227 kilograms (kg)].

e. Weapons rack cabinets to have retractable doors that prevent blocking aisles or neighboring racks and maximize efficiency of the issuance of weapons and gear.

f. Weapons rack cabinets to have perforated doors, sides and cabinet back which aids in the efficiency of conducting weapons inventory.

g. Weapons racks components must be portable for on and off Base training exercises. The rack storage containers shall be equipped with carrying handles.

h. Weapons racks are to have a hinged locking bar on the front of the rack that meet or exceed military requirements for arms security of conventional arms, ammunitions and explosives. The locking bars will have the hinge pin welded or otherwise secured to prevent easy removal per MCO 5530.14A.

i. Door hinges on the weapons racks shall be riveted and welded.

j. Weapons racks cabinets shall be fully welded.

k. All accessories that come into contact with the weapons shall be either powder coated, vinyl dipped, rubber, thermoplastic-coated, or made from thermoplastic ensuring weapons are safe from damage.

l. IMPORTANT: It is required that the weapon racks are able to store all weapon systems with “Fully Operational” capability; all attachments shall be stored on the weapon, not in a separate location, e.g., rifle combat optics, laser attachments, etc.

m. Some armories prefer/require weapons storage rack shelving that is carried on a rail system allowing the shelves shall be stacked together thus saving space. Shall this system be required, it shall be manually operated and not motorized.

25. CSI 11 24 00 MAINTENANCE EQUIPMENT / CSI 11 24 00 WEAPONS AND PARTS CLEANING TANKS:

a. Cleaning tanks for armories, vehicle maintenance facilities, etc. are provided and serviced by an outside vendor contract. Facilities that desire to obtain cleaning tanks shall contact MCB CAMPEN ES at (760) 725-4375 / 9744.

b. Each cleaning tank requires a San Diego Air Quality Control (QC) permit which is provided by the vendor as part of the service contract; without this permit, a fine will be incurred.

26. CSI 12 10 00 ART: The use of artwork and the creativity in the display is encouraged aboard MCB CAMPEN. Alternatives to a framed and matted piece of art or photograph shall be considered. Of all the armed forces, the Marines Branch passionately celebrates the history of their missions, their leadership and their background. Photographs of historical and present day mission accomplishments are welcomed artwork themes. The use of original artwork from local artists is highly encouraged. (See Figure 23)

a. CSI 12 11 00 Murals

b. CSI 12 12 00 Wall Decorations

c. CSI 12 14 00 Sculptures

d. CSI 12 17 00 Art Glass

27. CSI 12 21 00 WINDOW BLINDS: Traditional mini blinds break easily and are noisy when a breeze comes through an open window. A roll-down blind system/solar shade system provides a mesh fabric and manually operated chain drive hardware mounted at the window in a channel system. This type of window treatment is much more durable and, when paired with a black out shade, provides filtered sunlight or total black out conditions.

a. CSI 12 21 23 Roll-Down Blinds

b. 12 21 26 Black-Out Blinds

28. CSI 12 36 00 COUNTERTOPS / CSI 12 36 61 SOLID SURFACE COUNTERTOPS:

a. Solid surface material provides a durable, repairable countertop surface. Plastic laminate countertops are not allowed. When used in a bathroom, a solid surface integral sink makes the lavatory easy to clean.

b. A solid surface backsplash shall be provided. It shall extend all the way up to the bottom of the upper cabinets. Where there are no upper cabinets, the Contractor shall provide a minimum 6” splash or higher.

29. CSI 12 41 00 OFFICE ACCESSORIES / CSI 12 41 13 COMPUTER KEYBOARD TRAYS AND DRAWERS: A computer keyboard tray/drawer shall be provided at each workstation and desk to comply with ADA. Some end users do not use the keyboard tray/drawer, so a type shall be specified that is capable of being completely pushed/moved out of the way of the end users knees without any tools or special instructions.

30. CSI 12 45 00 BEDROOM FURNISHINGS / CSI 12 45 13 BED LINENS:

a. FF&E packages to include mattress covers that prevent bed bugs.

b. The contractor shall provide a washable, durable blanket in lieu of a fitted bed cap or bedspread.

31. CSI 12 48 00 RUG AND MATS:

a. CSI 12 48 13 Entrance Mats: Entrance mats shall be provided at both the interior and exterior of all entrances to buildings.

b. CSI 12 48 43 Chair Mats: Chair mats are useful to extend the life of carpet at workstations and desk areas. Chair mats shall be provided at all carpeted workstation and desk areas and shall be extra heavy duty to withstand the weight of big Marines. The chair mats shall withstand a weight of at least 300 pounds and shall have a warrantee of at least 5 years or more.

32. CSI 12 51 00 OFFICE FURNITURE / CSI 12 54 16 CASE GOODS (See Figure 26):

a. Style shall be classic and timeless.

b. Interiors shall match the rank or level of the individual user (Figure 10).

c. Classic medium to medium dark stains of wood for furniture is desirable for higher ranks, such as cherry, walnut or mahogany.

d. Patterns and colors shall hide soiling.

e. Shall visually appeal to a male dominated Marine demographic.

(1) Think heavy duty.

(2) It shall LOOK and BE heavy duty, with a sense of style.

(3) There shall be NO skinny or minimalist looking furniture.

f. Low, credenza height returns are not acceptable. Maintain industry standard of 29”-30” high work surfaces.

g. Provide modesty panels on all desks.

h. Work surfaces and table top surfaces may be light in color when light reflectance is important (such as in some training rooms), however, wood grain is preferred for soil-hiding capabilities.

i. Require zero to low maintenance making them less expensive to maintain.

j. Sustainable, recyclable and environmentally friendly.

k. PWD PL to sign off on all FF&E and SID packages.

l. Style shall not be ultra-modern, trendy or minimalist.

m. Black/Espresso and/or white wood are not acceptable for FF&E or interior building finishes.

n. All case goods (new and replacement) to comply with NAVFAC performance criteria.

33. CSI 12 52 00 SEATING:

a. 12 52 19 Upholstered Seating

(1) Upholstered seating shall not be white or light in color. The oils from hands make the fabric look soiled/dirty. The seating will not be cleaned, so choosing a color that hides soiling is important.

(2) Choose fabrics that are dark in color and/or heavily patterned to hide soiling. Engineered fabric systems with an integral moisture barrier that promises permanent resistance to stains and spills is desirable for some applications.

b. CSI 12 52 23 Office Seating

(1) Chair backs on office seating shall not be white or light in color. The oils from hands make the fabric mesh/rubber mesh/textile fabric look soiled/dirty. The chairs will not be cleaned, so choosing a color that hides soiling is important. Mesh backs on task chairs shall not be used at a high use area such as the check in desk at a BEQ Community Center, a control desk at a Fitness Center, etc. The mesh will fail quickly due to the high number of people pulling on the top of the chair as they move in and out of the desk area. A cellular type plastic backed task chair is a better solution.

(2) Choose a seat fabric that is dark in color and/or heavily patterned to hide soiling. Engineered fabric systems with an integral moisture barrier that promises permanent resistance to stains and spills is desirable for some applications.

(3) All seating (new and replacement) to comply with NAVFAC performance criteria.

34. CSI 12 56 00 INSTITUTIONAL FURNITURE / CSI 12 56 43 DORMITORY FURNITURE:

a. Superior quality, solid wood construction with lockable compartments for storage of large gear/packs.

b. Ability to secure room and personal belongings.

c. FF&E that appeals to the new “Y Generation” Marine demographic nationwide.

d. FF&E shall be space planned with the United States Marine Corps (USMC) approved furniture standard.

e. Color and texture introduced to create visually pleasing, stimulating environments.

f. Longer warranties will save Marine Corps dollars.

g. FF&E shall be coordinated with the design of the building.

h. Style shall not be ultra-modern, trendy or minimalist.

i. Black/Espresso and/or white wood are not acceptable for FF&E or interior building finishes.

j. All dormitory furniture (new and replacement) to comply with NAVFAC performance criteria.

k. Per Marine Corps Policy Letter, all new and whole room replacement FF&E for BEQ's shall have approval from MCB CAMPEN's Bachelor Housing Director prior to placing order.

35. CSI 12 59 00 SYSTEMS FURNITURE /CSI 12 59 13 PANEL HUNG COMPONET SYSTEM FURNITURE:

a. Workstations shall not have low/credenza height work surfaces. Maintain industry standard of 29"-30" high work surfaces.

b. Binder bins shall not be hung on panels that are less than 60" high.

c. Style shall not be ultra-modern, trendy or minimalist.

d. Black/Espresso and/or white wood are not acceptable for FF&E or interior building finishes.

e. All systems furniture (new and replacement) to comply with NAVFAC performance criteria.

36. CSI 12 93 00 SITE FURNISHINGS / CSI 12 93 43 SITE SEATING AND TABLES:

a. The use of outdoor spaces is encouraged by placing suitable seating and tables in gathering areas.

b. The outdoor furniture shall be made of materials that do not require painting or ongoing maintenance.

c. The outdoor furniture shall be Marine proof (i.e. heavy duty, scaled to comfortably accommodate large people) and it shall be bolted to the ground to prevent vandalism or moving to other areas. Outdoor furnishings located on a balcony or secured private patio area need not be bolted to the ground.

37. CSI 22 42 00 PLUMBING FIXTURES:

a. CSI 22 42 16 Sinks: Porcelain coated cast iron sinks are not permitted in restrooms. Solid surface integral sinks or ceramic drop in sinks shall be used. Stainless steel sinks shall be used in break rooms, coffee messes and food service areas.

b. CSI 22 42 23 Showers:

(1) Wrap solid surfacing material from shower surround all the way to adjacent door frames and walls to prevent drywall damage from moisture.

(2) Shower pans shall be prefabricated solid surface and extend up wall behind solid surface shower surround wall panels ensuring a water tight condition.

(3) The mixing valve for showers shall be a minimum 18 gauge stainless steel surface mounted type to allow for access to plumbing behind the wall without having to break through the wall. The valve to have an adjustable stop screw to limit handle turn. The shower head shall be all brass, vandal resistant with ball joint. A triangular shaped soap dish constructed of solid surface material shall be provided.

c. CSI 22 42 39 Faucets:

(1) Water savings is important to the Base. Faucets with batteries that regulate the duration of water require replacement of the battery; which might not happen depending on funding or manpower available.

(2) Self-metering faucets are acceptable.

38. GARRISON MOBILE EQUIPMENT (GME) DEFINITIONS:

a. GME per MCO P11240.106B: GME consists of commercially available owned, leased and otherwise controlled passenger carrying vehicles, cargo vehicles, and material handling equipment (MHE), engineer equipment and railway rolling stock. The term passenger carrying includes sedans, station wagons, ambulances, buses, sport utility vehicles (SUVs), and passenger vans. GME fleet managers operate their GME fleets in support of transportation and maintenance requirements at Marine Corps activities. They will not use their GME fleet for tactical purposes, nor will they deploy GME assets. The essential characteristic that clearly identifies GME is wheels or tracks. Equipment similar to GME that does not move on its own power and/or is not wheeled or tracked equipment is not GME. (Example: A forklift is GME; a non-motorized pallet jack is FF&E.)

(1) CSI 41 23 00 LIFTING DEVICES:

(2) CSI 41 23 23 Fork Lifts

b. Centralized Equipment Pool per MCIWESTO 11240.3: Pooling of equipment, both physically and administratively, to the maximum extent possible is essential to economize effort, maximize service facilities, and ensure effective use of GME. The Fleet Site Managers and GME Responsible Officers (RO's) will establish centralized GME pools and sub pools based on mission, distance, economy, effectiveness, functionality, and other factors. Site Mangers will establish a consolidated equipment pool to provide general support to many users and refrain from assigning assets for the exclusive use by one section or individual.

c. GMEs are for Official Use Only: Determination of "Official Use" will be in strict compliance with the statutory regulations, DoD 4500.36-R, MCO P11240.106B and the policies of MCIWESTO 11240.3, "Billing Rates for Transportation Equipment."

(1) Only military and civilian personnel are allowed to operate GME. They will not use government vehicles to conduct personal business or engage in activities of a personal nature.

(2) Official use does not include stopping at the commissary, mess hall, exchange, or fast food restaurants, etc.

(3) GME will not be authorized for transporting personnel over any part of the route between their domicile and work location.

(4) GME will not be assigned to an individual or billet unless specifically authorized in writing by HQMC.

d. Requesting of any type of GME: The following steps need shall be taken when a unit decides that they need GME assigned on a permanent basis:

(1) Complete the SWRFT Vehicle/Equipment Assignment Justification Form (Figure 18) and submit it to the unit major command, e.g., Marine Logistics Group (MLG) or Division (DIV).

(2) The major command shall review their currently assigned GME to see if they can reassign equipment internally to accommodate that new requirement.

(3) If the new requirement cannot be accommodated internally, the major command will forward the request with their recommendations to the Regional Inventory Manager SWRFT at (760) 725-3583. The request will then be considered by MCB CAMPEN'S Site Manager.

e. Processing will include an analysis of vehicles currently assigned to the respective major command. SWRFT looks for possibilities to increase the efficiency of assets currently assigned to the command. If it is not possible to utilize current assets to meet the new or changed vehicle requirement, SWRFT will then consider reassignment of vehicles within MCB CAMPEN's fleet and the SWRFT Region fleet. Increasing SWRFT's inventory is not an option without specific authorization from HQMC.

f. If the requested equipment is USMC owned and has been approved for procurement, the request will be included with the annual HQMC Procurement Priority List submitted for each base. This submission usually occurs during the July-August timeframe. HQMC will then decide what will be purchased and provide the most benefit for the entire Marine Corps considering available procurement funding.

NOTE: It is recommended that additional MHE requirements be identified during the Planning Phase of any warehouse modernization/improvement program; this will allow time for the procurement process. The earliest the purchase items will arrive is the next year.

g. Warehouse Modernization Program:

(1) All GME is centrally managed at the HQMC level. SWRFT is responsible for the HQMC authorized Table of Equipment (T/E) for GME. Any equipment that will be bought, either through the Warehouse Modernization program or through HQMC utilizing Procurement, Marine Corps funding, will need to go through the SWRFT Inventory office before the purchase to properly manage the inventory and the T/E allowances.

(2) GME for Marine Corps Community Services (MCCS) projects will not follow the procedure above but shall be coordinated through MCCS management.

39. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD A&E Branch, Facilities Projects Team
(760) 763-8144

DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
2 NAVY ANNEX
WASHINGTON, DC 20380-1775

IN REPLY REFER TO:
11103
LFF/LFS
AUG 2 0 2010

From: Commandant of the Marine Corps (LF)
To: Distribution List

Subj: POLICY FOR PROCUREMENT OF BACHELOR ENLISTED QUARTERS (BEQ) FURNITURE, FURNISHINGS AND EQUIPMENT (FF&E)

Ref: (a) Bachelor Enlisted Quarters (BEQ) Facilities Oversight Board Charter, dated 9 Nov 2009

1. The reference established a Board to promote a common vision for Marine Corps barracks design and improvements, incorporating "Best of Breed" aspects in new BEQ military construction and in renovation of existing BEQs. Furniture, furnishings and equipment (FF&E), as part of these BEQ construction and renovation projects, will continue to be a critical component of this vision. This policy memorandum establishes a consistent FF&E procurement methodology which will be applied across the Marine Corps enterprise to ensure Quality of Life for the junior Marines who reside in the BEQs.

2. Across the enterprise, Base Property, Purchasing and Contracting offices have become more of an influence in the review and approval process of interior design FF&E packages for new and existing BEQs. Typically, personnel in these offices are not knowledgeable or formally trained in interior design and may desire to standardize all furnishings procured base-wide. Local policies, budget constraints and guidance from HQMC allow only minimum deviation from locally approved standard FF&E selections, result in procurement of institutional and utilitarian furnishings which do not lend to development of a welcoming, comfortable BEQ which bachelor Marines would be pleased to call their home.

3. Effective immediately, Installation commanders are directed to ensure all BEQ FF&E procurement packages are developed through collaborative efforts between Base Property, Purchasing and Contracting offices, and Installation Bachelor Housing Directors. Final approval of the BEQ FF&E specifications shall rest with the Installation's Bachelor Housing Director. However, the procurement must conform to applicable funding constraints. Installation Bachelor Housing Directors, as part

Subj: POLICY FOR PROCUREMENT OF BACHELOR ENLISTED QUARTERS (BEQ) FURNITURE, FURNISHINGS AND EQUIPMENT (FF&E)

of the Integrated Product Team approach to BEQ design and development, will incorporate recommendations of their respective Naval Facilities Engineering Command Interior Designers to the greatest extent possible. Use of the "turn-key" approach to BEQ FF&E procurement within military construction BEQ projects is directed to the greatest extent possible and practicable. This will ensure a coherent BEQ FF&E package which promotes an increased quality of life for our BEQ occupants and makes the best use of construction and renovation funding.

4. This policy only applies to BEQ furniture, furnishings, and equipment for new construction (collateral equipment) and existing BEQs (Whole Room Concept).

5. HQMC LF POCs on this issue are: Mrs. Trish Mathena (Code LFS), Commercial 703-695-6965 (DSN 225), e-mail: trish.mathena@usmc.mil; and Mrs. Darlene McCoy (Code LFF-3), Commercial 703-695-9767 (DSN 225), e-mail: darlene.mccoy@usmc.mil.

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2

Figure 17: Policy for Procurement of BEQ's FF&E

VEHICLE / EQUIPMENT ASSIGNMENT JUSTIFICATION
(Class B - Full Time Assignment to Support Daily Requirements)

REFERENCES: DoD 4500.36-R and MCO P11240.106 govern Garrison Mobile Equipment (GME) and require the adequate justification of Class B assigned GME.

Instructions: Only complete forms will be accepted. This completed form is required to justify retaining currently assigned GME, request new/additional GME, and to request a change in GME type (i.e. 12-pax van to 7-pax van, 10k forklift to 6k forklift, etc.).

Responsible Officer (RO) Name			RO Phone #		Date
Command/Activity			JON (if applicable)		SWRFT Dept. ID
Justification for:		New GME		Change GME	Current GME
Tag / ID #	Est. Annual Miles / Hours		Usual # Passengers		Usual Cargo (lbs.)
Description of GME required to accomplish the mission (7- passenger van, pickup truck, 4k forklift, etc.):					
Special equipment required to accomplish mission (lift gate, tow hitch, ladder rack, etc.)					
Justification for GME Class B assignment (Explain in detail why this GME is required):					
Explain why currently assigned equipment, POV, pooled GME, or bus service cannot be utilized:					
Signature of Responsible Officer (RO)		Date	Signature of Authorizing Official		Date
			(This MUST be an Official authorized to commit funding for GME support.		

Figure 18: SWRFT Vehicle/Equipment Assignment Justification Form

BASE INTERIORS PROGRAM RANK CHART

FURNITURE LEVELS

MILITARY OFFICERS								
NAVY		MARINE CORPS			EQUIVALENT GS LEVEL	FURNITURE LEVEL	NOTES
Fleet Admiral - 5 Star	FADM				Senior Executive Level	Tier I	Same as Level A in Garrison Property Policy Manual
Admiral - 4 Star	ADM	General - 4 Star	Gen				
Vice Admiral -3 Star	VADM	Lieutenant General - 3 Star	Lt Gen				
Rear Admiral Upper Half 2 Star	RADM	Major General - 2 Star	Maj Gen		GS-16, 17,18		
Rear Admiral Lower Half - 1 Star	RADM	Brigadier General - 1 Star	Brig Gen				
Captain	CAPT	Colonel	Col		GS-15		
Commander	CDR	Lieutenant Colonel	LtCol		GS 13-14	Tier II	Same as Level B in Garrison Property Policy Manual
Lieutenant Commander	LCDR	Major	Maj		GS-12	Tier III	Same as Level C in Garrison Property Policy Manual
Lieutenant	LT	Captain	Capt		GS 10-11		
Lieutenant Junior Grade	LTJG	First Lieutenant	1stLt		GS 8-9		
Ensign	ENS	Second Lieutenant	2ndLt		GS-7		
COMMISSIONED OFFICERS							
NAVY		MARINE CORPS			EQUIVALENT GS LEVEL	FURNITURE LEVEL	NOTES
Chief Warrant Officer 5	CWO5	Chief Warrant Officer 5	CWO5		GS 8-9	Tier III	Same as Level C in Garrison Property Policy Manual
Chief Warrant Officer 4	CWO4	Chief Warrant Officer 4	CWO4				
Chief Warrant Officer 3	CWO3	Chief Warrant Officer 3	CWO3				
Chief Warrant Officer 2	CWO2	Chief Warrant Officer 2	CWO2		GS-7		
Chief Warrant Officer	CWO1	Chief Warrant Officer 1	WO				
ENLISTED							
NAVY		MARINE CORPS			EQUIVALENT GS LEVEL	FURNITURE LEVEL	
Master Chief Petty Officer of the Navy	MCPON	Sergeant Major of the Marine Corps	SgtMaj-MarCor		GS-6	Tier III	Same as Level C in Garrison Property Policy Manual
Master Chief Petty Officer	MCPO	Sergeant Major	SgtMaj				
		Master Gunnery Sergeant	MGySgt				
Senior Chief Petty Officer	SCPO	First Sergeant	1stSgt				
		Master Sergeant	MSgt				
Chief Petty Officer	CPO	Gunnery Sergeant	GySgt				
Petty Officer 1st Class	PO1	Staff Sergeant	SSgt		GS-5		
Petty Officer 2nd Class	PO2	Sergeant	Sgt		GS-4		
Petty Officer 3rd Class	PO3	Corporal	Cpl				
Seaman	SN	Lance Corporal	LCpl		GS 1-3		
Seaman Apprentice	SA	Private First Class	PFC				
Seaman Recruit	SR	Private (no insignia)	Pvt				
Midshipman							

Figure 19: BASE Interiors Program Rank Chart – Furniture Levels

6. PHOTOGRAPHS: GOOD EXAMPLES of SOIL-HIDING COLOR, PATTERN AND TEXTURE

Darker colored patterned fabrics and flooring will help to hide soiling and wear.

Darker colored patterned carpet help to hide soiling and wear.

Darker colored patterned fabrics to hide soiling.

Patterned flooring in entry ways and high traffic areas help to hide dirt and wear.

Figure 20: Photographs of Good Examples of Soil-Hiding, Color, Pattern and Texture

7. PHOTOGRAPHS: GOOD EXAMPLES OF COMMENSURATE-WITH- RANK OFFICE SUITES.

Manager's Office

General's Office

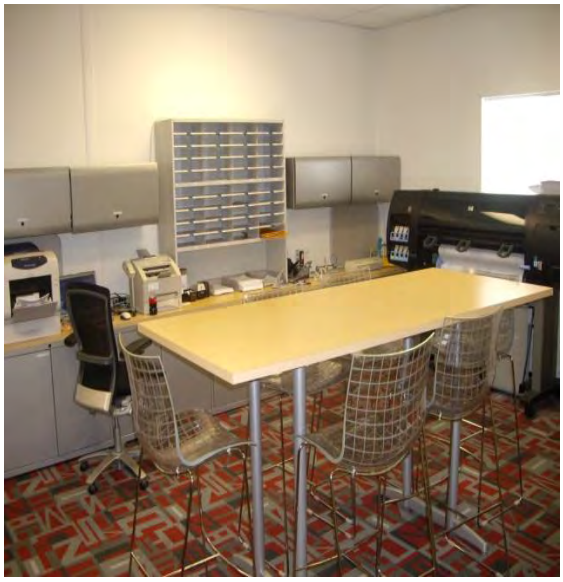
Command Deck Mess Area

Command Deck Reception Area

Figure 21: Photographs of Good Examples of Commensurate-with-Rank Office Suites

8. PHOTOGRAPHS: GOOD EXAMPLES OF MEETING SPACES.

Public areas shall have furniture that is attractive, vandal proof, secured to the ground, sturdy and sized appropriately for marines.



Business center can double as casual meeting spaces.

Conference centers to include Audio Visual (AV)/Media equipment.

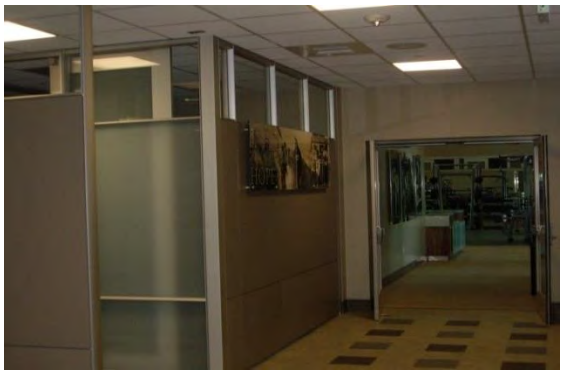
Training spaces can be customized to accommodate the instruction of specific skills.

Figure 22: Photographs of Good Examples Meeting Spaces

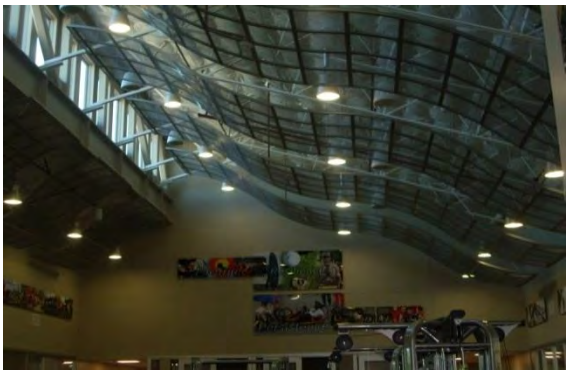
9. PHOTOGRAPHS: GOOD EXAMPLES OF CREATIVE INTERIOR FEATURES.

Interior signage to coordinate with interior design concept.

Solid surface window sills create a durable surface that is easy to clean and requires zero maintenance.



Interior glass partitions allow light to penetrate into interior spaces creating a more pleasant work environment.



A variation in ceiling heights creates a more dynamic space.

A contemporary version of a Command Board.

Artwork does not have to be a framed poster.

Figure 23: Good Examples of Creative Interior Features

10. PHOTOGRAPHS: GOOD EXAMPLES OF WORKSTATIONS

A typical 8x8 U-shape workstation is successful in many applications.

A wardrobe or locker shall be included in all workstations.

Shared workstations can be designed to meet the needs/use of the space.

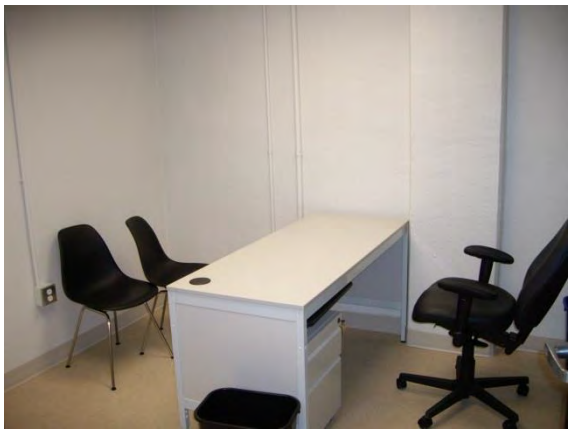
Workstation components can be applied to private offices to help maximize storage.

Figure 24: Good Examples of Workstations

Mesh chair backs do not hold up in high use areas such as a check in desk.

Mesh chair backs are acceptable for many applications but the lighter fabric colors show soiling at the top of the chair from oil/dirt from hands.

Solid, light colored fabrics will show soiling. This credenza unit will be used as a foot rest; coffee cup/drink lay down area, etc. The fabric will get stained and will not get cleaned or replaced due to limited funds.



White furniture will not hide soiling and will readily show scratches and wear. Wood grain or a darker color is a better choice.

Figure 25: Photographs of Lessons Learned (Chairs and Light Colors)

12. PHOTOGRAPHS OF LESSONS LEARNED (OFFICE FURNITURE)

The small scale and color of this furniture is too feminine for marines.

Marines do not want to crawl under their desk to get to their bookshelves.

The scale of this furniture is too small and minimalist for marines.

This storage cabinet is too big for binders but too small for wardrobe.

Figure 26: Photographs of Lessons Learned (Office Furniture)

13. PHOTOGRAPHS OF LESSONS LEARNED (CABLE MANAGEMENT)

Coordinate electrical to avoid running cables across top of carpet.

Wire/cable management shall be provided. Modesty panels shall be provided.

Figure 27: Photographs of Lessons Learned (Cable Management)

14. PHOTOGRAPHS OF LESSONS LEARNED (INTERIOR DESIGN FEATURES)

Dark paint finishes will show scratches and dings. Corner guards are required at all corners throughout a project.

Long corridors need creative design ideas to create interest and make them visually appealing. This design falls short.

Keep it simple-Utilizing several wood grain plastic laminate finishes does not add any value to the design.

Figure 28: Photographs of Lessons Learned (Interior Design Features)

CSI 10 10 00

BUILDING PLAQUE

1. PLAQUE DESIGN: Figure 29 shows the plaque design for all newly constructed buildings aboard MCB CAMPEN. A plaque shall be hung at each new building in a prominent location. (Two names maximum in a group.)

2. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E, Facilities Projects Team
(760) 763-8142

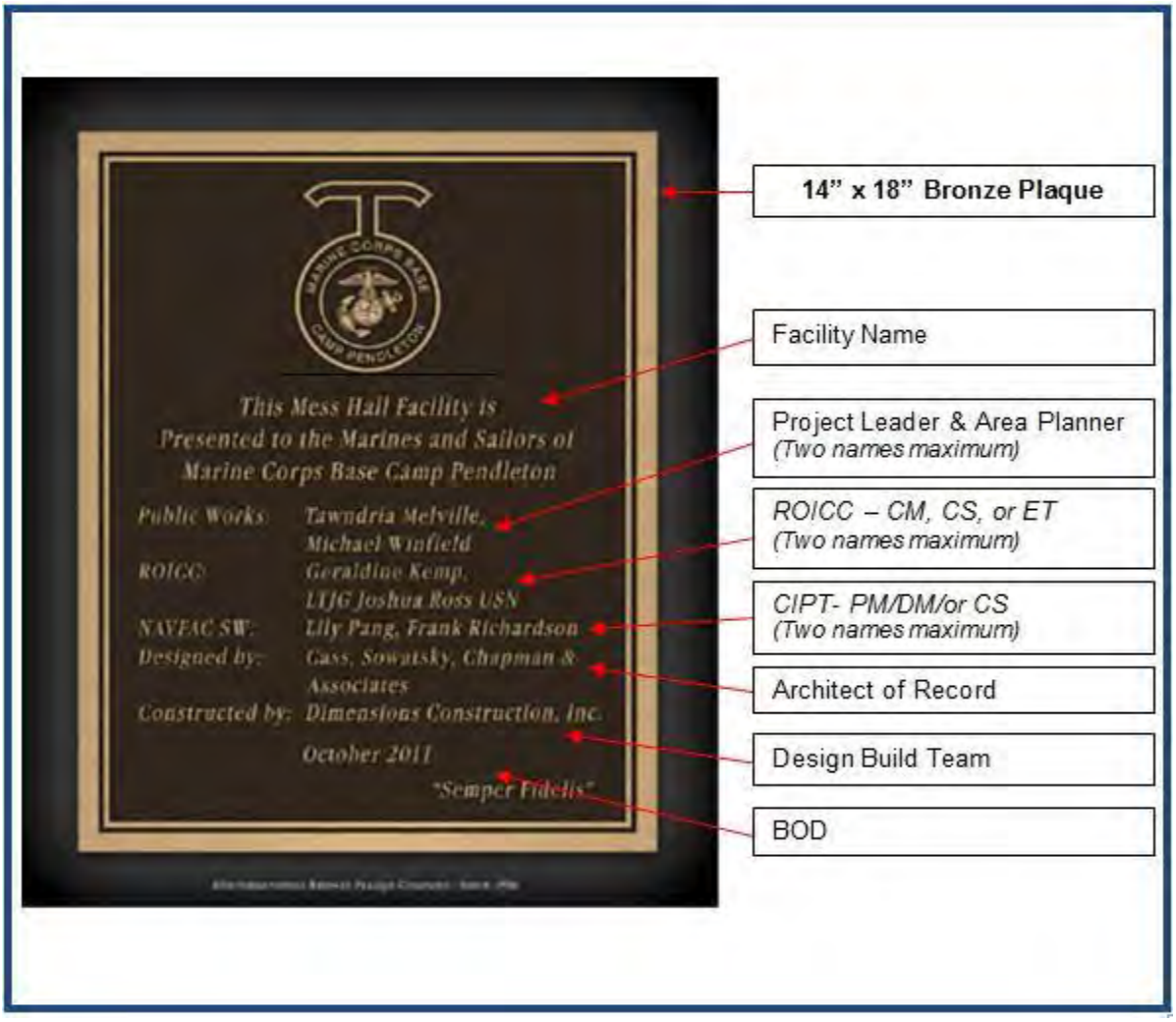


Figure 29: Building Plaque

CSI 14 20 00

ELEVATOR CONSTRUCTION REQUIREMENTS

1. REFERENCES: All Elevator Construction and installation shall conform to the most recent edition of the following standards, not the emulations California Code of Regulations (CCR), where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. Title 8, Subchapter 6, "Elevator Safety Orders"

b. American Society of Mechanical Engineers (ASME) A17, "Safety Code of Elevators and Escalators"

c. NAVFAC, "Elevator Design – Whole Building Design Guide (WBDG)"

d. NAVFAC Interim Technical Guidance (ITG), 01-13

e. UFGS 142400, "The WBDG - Hydraulic Elevators"

f. UFGS 142123, "Electrical Traction Passenger Elevators"

g. UFGS 142113, "Electric Traction Freight Elevators"

h. New elevator installations shall also follow: IBC, IPC, and NEC or NFPA 70

2. ELEVATOR CONSTRUCTION REQUIREMENTS: The following requirements shall be included as applicable:

a. Machine room and hoist-way construction shall have a two hour fire rating. Machine room doors shall have a minimum one and one-half hour fire rating, be self-closing and self-locking. Means such as fire rated caulking and foam shall be applied as necessary to add to the control of smoke and gases.

b. Only machinery, equipment, electrical equipment, electrical wiring, raceways, cables, fire detecting systems, pipes, ducts, tanks, and sprinklers used in conjunction with the function or use of the elevator shall be permitted in the elevator machine room and hoist-way.

c. Ventilation means, either natural or mechanical shall be provided in elevator machine rooms and hoist-ways. Machine room temperature and humidity shall be maintained in the range specified by the elevator equipment manufacturer to ensure safe and normal operation of the elevator. Hoist-ways of elevators serving three or more floors shall be equipped with natural or forced means of ventilation. Means such as fire rated caulking and foam shall be applied as necessary to add to the control of smoke and gases.

d. Elevator Pits [Reference: ASME A17.7/Canadian's Standards Association (CSA), Performance-Based Safety Code for Elevators and Escalators]:

(1) Shall have a submersible pump capable of removing a minimum of 3000 gallons per hour (gph) and 50 gallons per minute (gpm) of water per shaft. The submersible pump shall move the wastewater minimizing the emulsification of any trace of oil. The submersible pump shall be electric, 120 Volts (120V), and can be operated manually or operated automatically. Utilize pumped-flow installation with indirect connection as shown in Figures 30 and 31.

(2) A control panel shall be installed to alert personnel of high oil level, or high water level in the sump. The panel shall have audible and visual alarms. Dry contacts shall be used to tie into the building automation system. The panel shall operate the submersible pump. A hand-off-automatic switch (three-position switch) shall be used to operate the submersible pump.

(3) Separators shall be designed to receive oily wastewater by pump flow and process it on a once-through or circulating basis. Separators shall not have moving parts to fail or that require expensive maintenance. Separator shall be specifically designed for elevator sumps which are subject to contamination from elevator equipment. Separators shall remove hydraulic and lubrication oils which could be harmful to the sewer system. An automatic stop-valve shall be built into the separator which stops flow when separator reaches maximum oil capacity. Separators shall be equipped with a high oil float switch, and a high oil alarm panel mounted at a remote location. Authorized waste disposal company shall be able to remove oil from the separator.

(4) Separators shall be structurally and hydraulically engineered conforming to the Universal Plumbing Code (UPC). Manufacturer shall submit performance calculations for oil and water separation certified by a licensed professional engineer. Field excavation and preparation shall not be completed prior to delivery of the separator.

(5) Separators shall be sized to be twice the capacity of the hydraulic system and not the Sump (oil spill capacity). For example, if the SYSTEM oil spill capacity is 50 gallons, the separator capacity shall be 100 gallons; if the System oil spill capacity is 250 gallons, the separator capacity shall be 500 gallons.

(6) The "hydraulic system" oil capacity includes the sump. Meaning it includes the capacity of the sump and the hydraulic system.

(7) Water shall be treated prior to discharging into the local sewer.

e. Grout areas and components as necessary, i.e., landing sills at landings and underneath landing sills on the hoist-way side, entrance frames, bottom of guide rails, etc.

f. Seismic requirements shall be provided as follows:

(1) Hydraulic Elevators shall be provided with an Over-speed/Rupture/Safety Valve/Automatic Shutoff Valve, installed immediately adjacent to the hydraulic cylinder (jack) head.

(2) Electric Traction Elevators shall be provided with Counterweight Derailment Detection Devices in the hoist-way and Seismic Motion Detection Switches in the machine room.

g. The ASME A17.1 Elevator Safety Code for Elevators and Escalators requires means to automatically shut down elevators prior to the application of water through fire sprinklers located in elevator machine rooms and top of hoist-ways. A NAVFAC Fire Protection Engineer shall determine when a fire sprinkler is required at the top of the hoist-way. DoN policy requires water flow switches

(Not Heat Detectors) in the fire sprinkler lines to automatically shut down the elevator(s) through a shunt trip circuit breaker. Each water flow switch arrangement shall include a shut-off valve (SOV), check valve, and inspector's test valve. The water flow switch arrangements shall be installed on the outside of machine rooms and hoist-ways. The control voltage for the shunt trip circuit breaker shall be supervised at the building Fire Alarm Control Panel (FACP) panel. Water flow switches shall be nonadjustable factory set at zero time delay. Disconnect switches and circuit breakers shall be labeled with circuit identification and origination.

h. Smoke detectors shall be provided in elevator lobbies at all floors and in the elevator machine room. If a fire sprinkler is installed at the top of the hoist-way a smoke detector shall also be installed at the top of the hoist-way. Activation of any one of the smoke detectors mentioned here shall recall the elevator(s) in accordance with ASME A17.1 Safety Code for Elevators and Escalators. The "Fireman's Hat" light indicator located in the elevator car operating panel (COP) shall light continuously when a smoke detector in an elevator lobby is activated, and shall light intermittently (flash on-and-off) when a smoke detector in the elevator machine room or top of hoist-way is activated.

i. Ground Fault Circuit Interrupt (GFCI) convenience outlets shall be provided in every pit, elevator car top, and machine room. Convenience outlets in pits located less than 48" above the pit floor shall have a National Electrical Manufacturer's Association (NEMA) 4 water tight enclosure. Provide label with circuit identification and origination.

j. A fused or circuit breaker type disconnect switch shall be provided for each elevator in the elevator machine room for each 120 VAC dedicated lighting circuit. Lighting switches, disconnect switches, and convenience outlets shall be labeled with circuit identification and origination.

k. A Hydraulic Elevator shall be provided with two oil SOV's. One in the pit and one in the elevator machine room. The valves shall be 1500 pounds per square inch (psi) rated water/oil/gas (WOG) ball valves.

l. All elevators shall be provided with two alarm bells. One bell shall be battery operated, and one shall be a 120VAC operated bell. Both bells shall be activated through the push button marked "ALARM" located on the elevator COP. Both bells may be installed on the elevator car top.

m. A separate certificate frame shall be provided in the elevator adjacent to or on the elevator COP. The certificate frame shall not be an integral part of the COP that requires opening the COP to gain access to the certificate.

n. All elevators shall be provided with either hall lanterns and gongs at every landing, or car riding lanterns and gongs. Lighting means shall be reliable, long lasting, energy efficient, and be virtually maintenance free.

o. Hydraulic elevators with hole-less/above-ground cylinder-plunger assemblies shall utilize single-stage cylinder-plunger assemblies. Telescopic/multistage hydraulic cylinder-plunger assemblies are prohibited. Hole-less/above-ground hydraulic single-stage cylinder-plunger assemblies shall be installed with the cylinder mounted directly on the pit floor and the plunger connected to the elevator car (inverted installation is prohibited).

p. Elevator guide rails shall be "T" rails. No other type of guide rail is acceptable.

q. Standard safety railing shall be installed on the top of the elevator when the horizontal distance between the edges on the top of the elevator and the hoist-way enclosure exceeds 12".

r. Controllers, controls, control valves, switches, components, devices and tools shall be non-proprietary. Proprietary knowledge, training, tools, programs, software, or hardware shall not be required to operate, adjust, analyze, troubleshoot, or repair the elevator system in its entirety.

s. Minimum Elevator Cab shall be 6'x8', clear, interior dimensions. Contractor shall also reference "NAVFAC Elevator Guide" for required numbers and types of elevators per building stories requirements and minimum door opening 4'x7' clear.

t. Emergency communication is required from the elevator cab to an emergency response desk that is manned 24-hours a day/7-days a week (24/7); this is NOT to be an automated answering service.

(1) The emergency response communication system shall be answered by emergency personnel and not by an automated answering system.

(2) In addition, the elevator cab communication system shall automatically identify the elevator location and provide the capability for voice communication between the elevator MR and elevator cab per Off-the-Grid (OTG-2013), Requirement 2-3.3 and ASME A17-1/Section 2.27.

3. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S Safety and Emergency Services (SES), Fire Department Deputy Fire Chief for Prevention
(760) 763-2703

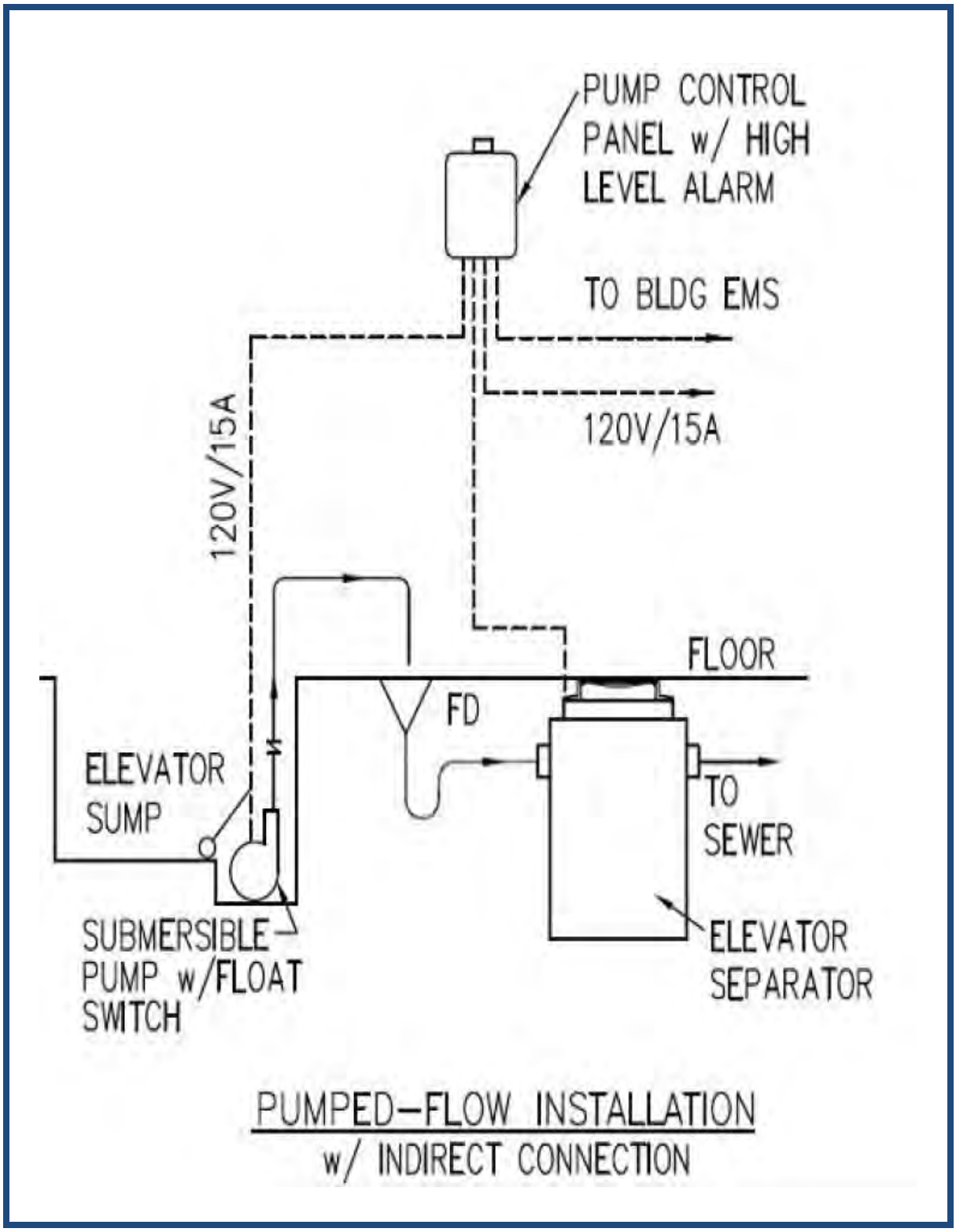


Figure 30: Pumped-Flow Installation with Indirect Connection

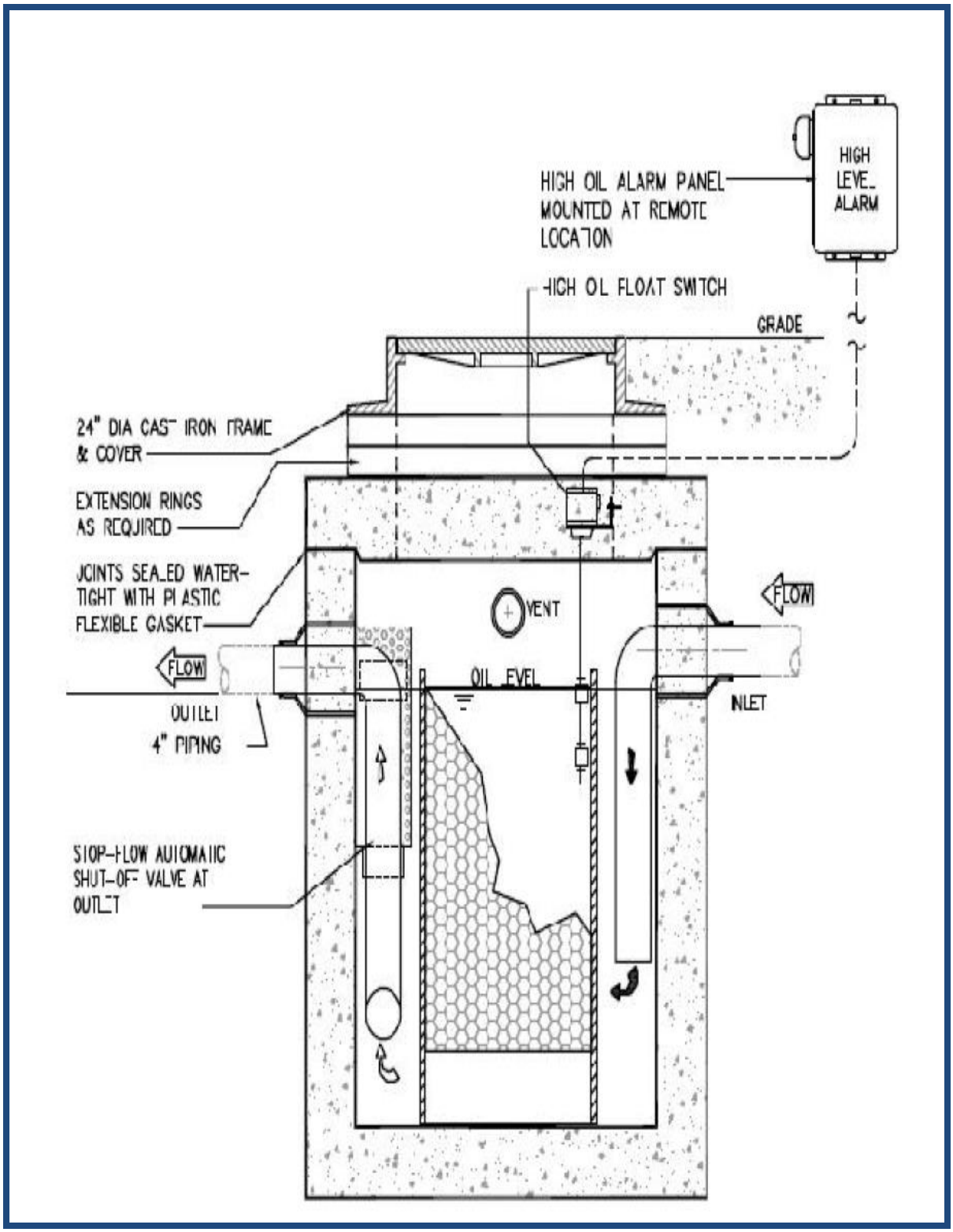


Figure 31: Pumped-Flow Installation with Indirect Connection

CSI 22 00 00

GENERAL UTILITY REQUIREMENTS

1. REFERENCES: All construction shall conform to the most recent edition of the references cited as follows; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. The ROICC Pre-construction Package

b. MCB CAMPEN Order 5000.2k, "Camp Pendleton Vehicle Registration DoD BASE Decal Requirements

2. SCOPE OF WORK (SOW): Shall include the following:

a. Utility Location Coordination Report: When utilities locations are furnished; the Contractor shall submit a report outlining the activities and agencies contacted. The "DIG ALERT" inquiry identification shall be provided in the report.

(1) No activity that could damage underground utilities may begin until the Contracting Officer approves the Utility Location Coordination Report.

(2) Contractor shall add Utility Location Coordination Report to Submittal paragraph. It shall be annotated "G" for Government approval .

b. Location of Underground Facilities/Utilities: Contractor shall provide his own facilities and utility locator services, ensure the construction site is scanned with electromagnetic or sonic equipment and mark the surface of the ground where existing underground facilities/utilities are discovered.

(1) Verification of the elevation of existing utilities, piping, and any type of underground obstruction not indicated or specified to be removed but indicated or discovered during scanning in locations to be traversed by piping, ducts, and other work to be installed.

(2) Verification of elevations before installing new work closer than nearest manhole or other structure at which an adjustment in grade can be made.

(3) Coordination after contract award and prior to commencement of any clearing and grubbing, trenching, boring, earthwork, pile driving, or other operation that may damage underground utilities.

(4) The Contractor shall coordinate utility locating service with other applicable activities and agencies including but not limited to AC/S G-6, Communication Infrastructure Planning at (760) 763-5263 and "DIG ALERT" at (800) 422-4133.

(5) Review all available As-built BASE Facility Drawings for the area under construction.

(a) These drawings are located at the Facilities Maintenance Division (FMD), Building 2296. The phone number is (760) 763-2032.

(b) Request to review these drawings shall be submitted to the Facilities Maintenance Officer (FMO), with a copy furnished to the Contracting Officer, at least 15-working days in advance of the date when the Contractor desires to review these drawings.

c. Broken Utilities: Contractors shall be required to submit an Emergency Utility Repair Plan prior to performing any excavation. Emergency shall be defined as the interruption of any and/or damage of any utility service. Including but not limited to the spill, or potential spill of any fuel oil, gas, potable water, sewage effluent, raw sewage or stormwater outside of system facilities.

(1) The Emergency Utility Repair Plan shall include the following elements:

(a) Equipment list of available pumps with sizes, excavation equipment, tools, and repair materials that are available onsite.

(b) Labor force that shall be available as a minimum to respond to emergencies.

(c) Site-specific plan for locating, potholing, protecting, avoiding, and repairing any damage caused to existing, or newly installed utilities.

(d) Include the same level of detail for any subcontractors that perform work involving excavation.

(e) Include a description of any planned effort that would involve bringing in subcontractor personnel to respond to emergencies.

(f) The Contractor shall call:

1) To report damaged telecommunications call: BASE Watch Officer at (760) 763-0173.

2) To obtain approval of repair materials and methods from AC/S G-6, Communication Infrastructure Planning Office, and Information Planning Manager call (760) 763-5263.

(g) The plan shall be subject to approval by the Contracting Officer.

(2) Contractor shall demonstrate in his Emergency Utility Repair Plan that they are capable of responding to utility interruptions that could be caused by their construction operations or impacts from them.

(a) Immediately upon discovery of the situation, the Contractor shall react in a way that shall ensure safety, minimize utility interruptions, releases, spills, impacts to utility customers, and potential for fines or notices of violations.

(b) In no case shall repairs be left to be resolved the next day without the approval of the Contracting Officer.

(3) The Contractor's Emergency Utility Repair Plan shall address the above items for each utility potentially impacted by construction, crossed by excavation, or known to be in the area but possessing properties that cause difficulties in identification of the exact location.

(4) In the event that a utility is broken, all repairs affected shall be the responsibility of the Contractor.

(a) The Contractor shall repair any damage to those facilities under the supervision of a Title 17 Distributor Operator, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work.

(b) If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

(c) Repairs to High Density Polyethylene (HDPE) piping shall use fusion welding.

(5) MCIWEST-MCB CAMPEN G-6, IT Security Requirements: All Contractors requiring access to Restricted Areas (Level II), and or Secure Spaces shall follow and be familiar with References (1a) through (1g).

(6) Access shall be coordinated through MCIWEST-MCB CAMPEN G-6 Information Technology Security Manager (ITSM) at (760) 763-1975 or Customer Service Desk at (760) 763-0173.

(7) Those Contractors that meet these regulations may obtain a DoD Common Access Card (CAC) card under the Contractor Verification System (CVS) Program. This shall eliminate the need to have the G-6 escort those Contractors that require access to controlled spaces.

(8) Once a Contractor is properly vetted they shall receive a proper credential and receive a security brief prior to being given access to MCIWEST-MCB CAMPEN G-6 controlled spaces. The DoD CAC shall also allow them to obtain a BASE Decal for the duration of the contract.

(9) Not all Contractors require a DoD CAC. Contractors that have completed the proper vetting process can escort the remaining Contractors who require access to controlled spaces. (Those security measures shall be covered during the security brief.)

3. UTILITY LATERALS: Utility laterals for buildings shall be located so each building connects to a main, i.e., building laterals shall not be linked together in any fashion absent of a main line.

4. PROHIBITED: Utility laterals are prohibited from crossing the site to achieve the shortest distance possible. All mains shall be located in roadways unless approved by the PWD.

5. MAINS: All utilities located within roadways shall be considered mains and current capacity shall be maintained, e.g., when connecting to a 4" gas main in a roadway, the 4" main shall be extended to a point that is perpendicular to the building to be serviced.

6. CAPACITY MAINTAINED: When connecting to utility mains for service and required to extend the main, this project shall size the mains so current capacity is maintained.

7. GOVERNING REQUIREMENTS: For requirements governing the installation of all pipelines by third-parties within railroad right-of-way see Appendix B.

8. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E, Utilities Team
(760) 763-6988

b. If you need further assistance with gas, electrical, or mechanical issues please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, FMD, Planning and Estimating (P&E)
(760) 725-3638 or (760) 725-3139

c. If you need further assistance with water and wastewater issues please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, Water Resources Division (WRD)
(760) 725-1059

d. If you need further assistance with safety issues please contact:

MCIWEST-MCB CAMPEN
AC/S SES
Provost Marshall's Office (PMO)
Contractor Security Coordinator
(760) 763-7604

e. If you need further assistance with Installation Utilities please contact:

INSTALLATION	UTILITIES	POC
Government Owned Utilities are as follows:		
MCB CAMPEN, AC/S G-F, FMD	Water, Sewer, Electric, Gas, Steam, Facilities, Stormwater	(760) 725-3139/3558
MCB CAMPEN, AC/S G-F, FMD Liaison Office	Maintenance Systems	(760) 725-2030
Telecommunications, Phones, Energy, GIS and Security are as follows:		
MCB CAMPEN	AC/S G-6, Communications	(760) 763-5263
MCB CAMPEN	BASE Energy Management	(760) 725-0567/0566
MCB CAMPEN	GIS Support	(760) 763-7835 or (760) 725-6281
MCB CAMPEN	Security	(760) 725-0819/0818
Private Utility Companies that the A&E shall coordinate are as follows:		
Gas and Electric		SDG&E
Petroleum Product		Southern Counties Gas Kinder-Morgan
Cable TV		Cox Cablevision
Telephone		Pacific Bell

Figure 32: Installation/Utilities POC Information

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BASE UTILITY METERS

1. REFERENCES: MCB CAMPEN utility meters shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. San Diego Gas and Electric (SDG&E) Metering Standard

b. NEC

c. UFC

2. BASE REQUIREMENTS: All new meters aboard MCB CAMPEN be compatible, field tested and verified with the BASE Itron wireless RF meter reading system. The system is Itron MV-RS. The meters shall be centrally located if feasible. This is handled on a project by project basis.

3. METER REQUIRMENTS: Are as follows.

a. Electric Meters: shall be Itron Sentinel or Centron Poly digital meters with Encoder Receiver Transmitter/Radio Frequency (ERT/RF) output. They shall be able to read demand and large customers to read Time-of-Use (TOU). Electric Meters shall be programmed at the factory with MCB CAMPEN customer requirements. The current transformer ratio shall be written on the face of the meter in the space provided.

(1) Transformer-rated Meters: shall have a test switch installed in the switchgear or metering enclosure. The meter shall be mounted in accordance with SDG&E Standards. Test switch wiring and color codes shall match SDG&E standards. The meter shall have a test switch installed in the switchgear or metering cabinet. The only approved forms are 2S, 5S, 9S and 16S.

(2) Poly-phase Electric Meters installed aboard MCB CAMPEN: shall meet the technical specifications in order to ensure compatibility with the BASE's Meter Reading System and data gathering requirements.

4. GAS METERS: shall be the American brand or equal with an Itron ERT/RF compatible model 100G with data logging or better and installed per manufacturer's recommendation. The meter shall be sized for the appropriate load of the building(s) and or cantonment area. The meter be installed by the Contractor and inspected by MCB CAMPEN gas distribution personnel after installation.

5. WATER METERS: shall be Neptune or equal with an Itron ERT/RF compatible model 100W series end point. Units shall be mounted on the meter or under the pit lid or on the wall of the mechanical room depending on location of meter. This shall be decided on a project-by-project basis. The meter shall be sized for the appropriate load of the building. The meter shall be installed by the Contractor and inspected by the FMD/Energy Office personnel after installation. The meter shall read in gallons only.

6. NOTE: All water and gas meters except for special conditions, shall be aboveground and protected from physical damage. Large master meters shall also be fenced with gravel or concrete pads. Working clearance shall be approved by MCB CAMPEN FMD personnel.

7. LOCAL VENDORS include:

a. Electric Meters:

(1) McAvoy & Markham Engineering & Sales Co. (949) 727-3966, or

(2) Approved equal

b. Gas Meters:

(1) US Metering & Technology (888) 651-1130

(2) Submeter Solutions, Inc. (888) 646-3837

(3) Measurement Control Systems, Inc. (800) 826-1682

c. Water Meters:

(1) Equarious Waterworks, (424) 271-2898

(2) Todd Piping Supply, (310) 349-5100

(3) Ferguson, (619) 515-0300

8. ASSISTANCE: Questions on BASE utility meters shall be directed to:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD, BASE Energy Office
(760) 725-0567

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CERTIFICATION AND ACCREDITATION

1. REFERENCES: Detailed information on DIACAP Risk Management Framework (RMF) process can be accessed through the following link: https://iase.disa.mil/diacap/.

2. MODIFICATIONS: The system owner shall ensure all modifications to existing Information System components to include the installation of new Information System hardware and software components connecting to the existing approved system shall be accredited through the Department of Defense Information Assurance Certification and Accreditation Process (DIACAP) prior to being placed on the Marine Corps Enterprise Network (MCEN) or any system within the installation.

3. APPROVAL: The Contractor shall obtain approval from the System Owner prior to ordering any Information System hardware or software. The information systems and programming shall be provided so the equipment functions together as an integrated system at the unit process level, the plant level, and the system-wide level in order to gain approval from the Marine Corps-Designated Approving Authority (MC-DAA).

4. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
Marine Information Technology Support Center (MITSC) WEST, IA Manager
Bldg. 2456
(760) 763-9343

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POTABLE WATER REQUIREMENTS

1. REFERENCES: All water works construction shall conform to the most recent edition of CPR and San Diego Water Authority (SDWA) requirements to the most recent UFC and CFR requirements. In case of a conflict of requirements, the most stringent shall govern. If the standard sought does not appear in these requirements, then the latest edition of the following standards shall be utilized in the order listed:

a. UFC 3-600-01, "Fire Protection Engineering for Facilities"

b. SDWA Requirements

c. CFR Requirements

d. California Department of Public Health (CDPH)

e. California Code of Regulations (CCR)

f. American Water Works Association (AWWA)

g. National Sanitation Foundation (NSF) Standard 61

h. Sand Diego Regional Standard Drawings (SDRSD)

i. City of Oceanside Water, "Sewer and Reclaimed Water Design and Construction Manual"

j. Orange County Public Works (OCPW) Standard Plans

k. Standard Specifications for Public Works Construction (SSPWC) or Greenbook

l. MCO 5090.2A, "Environmental Compliance and Protection Manual"

m. Bureau of Medicine (BUMED) Instruction 5010-5, W/CH 5, "Water Supply Ashore"

2. POTABLE WATER GENERAL REQUIREMENTS: Prior to any construction of a utility connection, all construction plans for a water system service connection shall be submitted to the PWD Utility Team and/or AC/S Facilities G-F, WRD for approval.

3. WATER PIPE MATERIAL:

a. Transmission Lines: Material shall be HDPE per AWWA C901 and C906 unless approved in advance by PWD Utilities Team.

b. Distribution Lines or Fire Loops: Material shall be HDPE per AWWA C901 and C906 unless approved in advance by PWD Utility Team. Ductile Iron (DI) per AWWA C-151, C-104 and C-105 or PVC per AWWA C-900 and C-905 may be considered.

c. Lateral Lines: For lateral lines 4" diameter or less, material shall be PVC schedule 80 or approved equal. For lateral lines greater than 4" diameter, material shall be PVC per AWWA C- 900 and C-905 or approved equal. The limits of the lateral lines are from the connection at the distribution line to a stub-out 5' from the building. Minimum 10' copper (type K) from the end of the lateral to a connection to the interior of the building is required. The interior plumbing shall be copper (type K).

d. Irrigation Lines: Material for reclaimed water shall be Schedule 40/80 purple PVC per pressure requirement.

4. NEW CONNECTIONS TO THE EXISTING WATER SYSTEM:

a. Connections to existing pipelines shall be made with the installation of a Tee with three-valve cluster. The design shall be approved in advance by PWD Utility Team or AC/S Facilities G-F, WRD prior to performing the work. Upon completion, notification shall be made to AC/S Facilities G-F, WRD and their approval shall be received prior to placing the new connection in service.

b. In certain exceptional instances, and only where approved by PWD Utility Team, wet (hot) tapping may be allowed as follows: A wet tap design and plan of execution shall be submitted to PWD Utility Team prior to performing the work.

c. New connections to existing lines solely for the purpose of a hydrant or blow-off valve may be performed with a single valve to isolate the hydrant after obtaining approval from the PWD Utility Team or AC/S Facilities G-F, WRD.

5. WATER SYSTEM STANDARD DETAILS:

a. Pressure Regulating Valve (PRV) stations shall be aboveground, on concrete pads with fence. They shall have OS and Y valves installed as isolation valves. The pressure sustaining/regulating valves shall be equipped with stem indicating assemblies and pressure gauges, indicating upstream and downstream pressures. (See Figure 35).

b. All blow-off and air relief/vacuum assemblies shall be located aboveground in compliance with California Waterworks Standards Section 64576 and 64575.

c. Back flow preventers, double-check detection assembly (DCDA) and reduced pressure principal assembly (RPPA's) are per San Diego County Requirements but with an isolation valve.

(1) Access and clearance shall include a minimum of 1' between the lowest portion of the assembly and grade, floor, or platform and a 2' clearance around the entire backflow device for maintenance access. Installations elevated more than 5' above floor or grade shall be provided with a platform capable of supporting maintenance personnel.

(2) Whenever a backflow preventer is installed the nominal diameter of the line shall remain the same through the assembly.

d. Backflow preventer concrete pad: Backflow devices larger than 2" shall have a concrete pad installed. The concrete pad shall be 6" thick concrete with wire mesh and shall be sized so that there is a minimum of 2 horizontal feet from the edge of the equipment (farthest point from center line) to the edge

of the concrete pad. The pipe risers shall be encased in a collar and the collar shall be filled on the inside with sand or a comparable material.

e. All backflow devices shall have a below-ground isolation valve adjacent to the upstream side of the backflow preventer riser. The backflow device shall have above-ground isolation valves upstream and downstream to facility removal and replacement.

f. Minimum Compacted Depth of Cover Required:

(1) 36" for 12" mains and smaller: Depths less than 36" requirement requires encasement and PWD Utility Team approval.

(2) Mains over 12" require special design and approval at the design stage.

(3) Potable water lines shall not be installed underneath or cross underneath wastewater/stormwater lines and shall follow standards specified in CCR Title 22 Section 64630 Water Main Separation.

6. MINIMUM AND MAXIMUM SYSTEM PRESSURES: shall meet UFC 3-230-01 Section 4-1.4 requirements.

7. PIPES SHALL BE SIZED BASED ON THE FOLLOWING CRITERIA:

a. Maximum allowable velocity equals 5 ft./sec at average day demands.

b. Maximum allowable velocity equals 7 ft./sec at maximum day and peak hour demands.

c. Maximum allowable velocity equals 10 ft./sec at maximum day demands and fire flow.

8. WATER SERVICE LINES: All water service lines shall be cut and capped by installation of a threaded plug on saddles, or installation of a blind flange device on the exterior of installed gate valves. The capped device shall be permanently restrained by installation of a thrust block encapsulating the restraining device, as depicted in the San Diego Green Book. San Diego Green Book, Concrete Thrust and Anchor Block Installations Drawing Number WT-01 Sheet 1 of 3 End Cap figure. Also refer to "Potable Water Lateral Branch Demolition Guidelines below:

a. Lead abatement and remediation, involving cast iron lines, shall be accomplished per CCR. No cast iron lines shall be installed.

b. See Figure 6, "Potable Water Lateral Branch Demolition."

9. ABOVEGROUND WATER SUPPLY PIPING:

a. Exposed or surface mounted supply piping shall be configured and installed to allow for maintenance repairs to piping and pipe fittings and at no time shall supply piping be embedded in block walls or concrete. The only exception is when supply piping penetrates the building, in which case the pipe shall penetrate the building or wall completely.

b. If a copper pipe or tubing is connected to PVC piping, the following adapter configuration shall be used:

(1) If the water flows from the copper pipe towards the PVC pipe, a threaded copper male adapter shall be used to connect to a threaded PVC female adapter.

(2) If the water flows from the PVC pipe to the copper pipe, a threaded PVC male adapter shall be used to connect to a threaded copper female adapter.

(3) All copper piping shall be type "K".

c. All exposed steel piping that is used for water fire demand, including the backflow device, shall be primed and painted in the industry standard color "red" to signify fire systems.

d. All pipe flanges shall have bolts and nuts torqued to manufactures' specification, have full engagement with a minimum of 2-3 threads past the face of the nut after being torqued and a maximum bolt length of 1" of exposed bolt threads past the nut.

10. WATER SOFTENER:

a. All commercial kitchens shall be plumbed for water softener equipment.

b. Number of tanks and location shall be coordinated with softener provider.

c. The use of sodium or potassium salt self-regenerating exchange processes is not allowed.

d. Water softener piping shall have a separate meter (digital read-out meter to track soft water usage) and shall only be connected to food service equipment.

11. WATER DISINFECTION:

a. For new or repaired water mains, disinfection shall be in compliance with AWWA C651-05, Standard for Disinfecting Water Mains. Contractor personnel performing disinfection and flushing procedures shall be qualified and familiar with applicable AWWA Standards.

b. New and repaired water lines shall be tested and certified in accordance with applicable codes and standards. At a minimum, samples shall be taken by a State certified laboratory and tested for Total Coliform, Escherichia Coli (E. Coli), Heterotrophic Plate Count (HPC), and free Chlorine Residual. Certified test results shall be returned to the Government for review and approval by the FMD Chemist prior to lines being returned to service. Test results shall include sample location and project number. Only certified and authorized AC/S Facilities G-F, WRD Operators may operate valves to return new or repaired lines to service.

c. All permanent chlorine delivery piping shall utilize one-quarter turn sweeps in lieu of 90 degree elbows, and shall be constructed of Schedule 80 C-PVC or equal unless approved in writing in advance by the Government.

d. When the Contractor performs repairs or modifications to a reservoir that requires the reservoir to be emptied, the Contractor shall be responsible for the final disinfection. This shall be accomplished under the supervision of a State certified operator (disinfection). The Contractor shall be responsible for final disinfection immediately prior to the refilling of the reservoir. If the Contractor performs a disinfection

prior to the reservoir being refilled and additional work is performed requiring the reservoir to be disinfected again, it shall be the responsibility of the Contractor.

12. VALVES:

a. Assume lead joints shall be present on cast iron water lines. The Contractor shall be responsible for replacement and disposal of lead joints within the project footprint.

b. Butterfly and rising stem valves are for above grade installation only.

c. Only single-disc, non-rising stem, resilient seat gate valves shall be installed into new or existing below grade water lines. Double disc valves are not allowed. "Single-disc" requirements need to include:

(1) The wedge shall be of cast iron completely encapsulated with rubber.

(2) The sealing rubber shall be permanently bonded to the cast iron wedge.

(3) ASTM test for rubber metal bond ASTM D429.

(4) Valves shall be supplied with O-ring seal at all joints.

(5) The stem nut shall be independent of the wedge and shall be made of solid bronze; there shall be a smooth, unobstructed waterway free of all pockets, cavities and depressions in the seat area.

(6) The body and bonnet shall be coated with fusion bonded epoxy both interior and exterior, complying with AWWA C550 and be NSF 61 approved.

(7) Each valve shall have the maker's name, pressure rating and year in which manufactured cast on the body and electro-plated nuts and bolts.

d. All water valve boxes shall be of the screw type, minimum 5¼'' shaft diameter, cast iron construction, consist of a base section, middle section (if required) and top section. Plastic valve covers are not acceptable. Water line valves shall be molded with the word "WATER" in the center and painted blue. Irrigation valves shall be molded with the word "IRRIGATION" in the center. Raw water line valves shall be molded with the words "RAW WATER" in the center painted red.

e. Air relief and blow-off valves shall follow detail in (Figure 33).

f. Ensure valve cans are protected in place during paving projects and all lids are freely removable after paving or sealing operations.

g. The Contractor shall install approved hot and cold water isolation ball valves for each floor or wing in large multi-story buildings to minimize outage interruptions during repairs. SOV's shall be easily accessible and shall not be installed in living spaces or offices.

13. WELL CONSTRUCTION:

a. Wells shall be constructed as per the California Department of Water Resources (DWR) Southern District. All appurtenances of the well shall be attached with structural shaller bolts, washers, and nuts;

torque to standards, witnessed and torque striped, with at least three threads exposed beyond the nut. Columns and casing shall be Type 304 Passivated Stainless Steel with Type 316 Passivated Stainless Steel threaded locking collars and screens.

b. All well installations shall be designed and constructed with appropriate splash block and energy dissipators.

c. Exceptions to the above standards are as follows:

(1) NOTE: All observation, turn-on/shut down shall be performed by AC/S Facilities G-F, WRD Operators or properly licensed Chief Operator.

(2) 304 SS wire wound screens

(3) 304 SS well casings

(4) 304 SS pump columns (with threaded connector couplings)

(5) 316 SS pump shafts

(6) 304 SS sounding tubes (with electronic transducer installed, 3" diameter)

(7) 2" diameter port capped or plugged at top of well casing aligned along inside face of well casing for use in placing well depth tape measurement tape device; placed so that the drop is straight down into the casing between pump column and the well casing without any obstruction.

(8) All controls, meters and gauges shall be set at a height to ensure accessibility by persons of average height.

(9) All doors to have "Hold-Open" door closers installed.

(10) All doors and frames shall be aluminum with fluor polymer factory coated finish color as per the BEAP.

(11) All aboveground piping shall be mechanical fitting DI, including pump control and high pressure relief discharge lines.

(12) Surge anticipators are not to be installed.

(13) All wells shall be equipped with emergency low water level shutdown with a soft alarm to FMD UNITY Room. A local bypass to the emergency shutdown shall also be installed at the well head to override a shutdown shall it be necessary by AC/S Facilities G-F, WRD Operator.

(14) Air pressure gauges for surge suppressor tank shall be accessible by persons of average height.

(15) Glass block windows type shall be of pre-manufactured unit prepared in an aluminum frame.

(16) Surface Annular Seal (Sanitary seal required by CDPH). The space between the borehole wall and the well casing shall be sealed to the depth or to a greater depth than that required by the California

DWR Bulletin 74-81 "Water Well Standards, State of California" and its supplement Bulletin 74-90. Seal material and placement of the seal material shall also conform to the California DWR Bulletin 74-81 "Water Well Standards, State of California" and its supplement Bulletin 74-90.

(17) Any and all controls, meters, etc., shall be ergonomically packaged so that all are in easy reach and vision levels without stooping or requiring steps or ladders to view in the proper perspective.

(18) Sampling devices shall be constructed of "Lead Free" brass connections, with quarter-turn ball valves, and Stainless Steel 180° gooseneck downturn tubing.

14. FIRE HYDRANTS: For additional information on Fire hydrants, reference "Water Loop Requirements" and "New Connections to the Existing Water System." (See Potable Water Requirements CSI 22 10 00.)

a. All fire hydrants shall comply with the following regardless of whether the facility is sprinklered or unsprinklered.

b. All fire protection supply hydrants shall be 2.5"x2.5"x4.0" and shall meet the requirements of UFC 3-600-01, Section 3-7.2.1, Note 2, or the following whichever is more restrictive.

c. The Contractor shall be responsible for obtaining or performing fire flow tests as part of the process. Fire flow tests shall be recorded on the Hydrant Flow Test Report and submitted to PWD Utilities Team. All Hydrant testing shall be performed by AC/S Facilities G-F, WRD Operator or properly licensed Chief Operator.

(1) The hydrant flow test procedures and report are at the end of the Potable Water Requirements section under "attachments" (See Figure 34).

(2) All new or existing facility projects shall have fire hydrants capable of providing a minimum flow of 1,250 gpm at 20 psi residual for two hours. In the event the existing water distribution system is unable to accommodate these pressures or flows, the Contractor shall provide an alternate solution incorporating a fire pump and/or water storage tanks for approval from PWD Utilities Team and shall be responsible for including this item(s) in determining the bid on the project.

d. A facility being served by a single fire hydrant may be served by a single lateral on an un-looped system subject to review of PWD. An Automatic Flush valve shall be installed. This lateral shall have a minimum inside diameter (I.D.) of 8". If multiple hydrants are required along a single lateral, they shall be in a loop, per BUMED Instruction 5010-5.

e. A facility or group of facilities requiring more than one fire hydrant shall be installed on a looped system. The loop and the laterals serving the fire hydrants shall have a minimum I.D. of 8" and shall conform to the maximum allowable velocities listed below.

f. Pipes shall be sized based on the following criteria:

(1) Maximum allowable velocity equals 5 ft./sec. at average day demands.

(2) Maximum allowable velocity equals 7 ft./sec. at maximum day and peak hour demands.

(3) Maximum allowable velocity equals 10 ft./sec. at maximum day demands and fire flow.

g. Fire Hydrant configuration shall follow, in priority:

(1) Priority 1 - CPR,

(2) Priority 2 - UFC 3-600-01, Fire Protection Engineering for Facilities and shall comply with the requirements of the City of SDRSD-104.

h. Hydrant barrels shall be red for non-potable water and yellow for potable water (UFC 3-6000-01).

i. All parts of the building exterior shall be within 106m (350') of a hydrant with consideration given to accessibility and obstructions (UFC 3-6000-01). The following requirements are in addition to what is in the referenced UFC section:

(1) UFC 3-7.3.2 Installation Requirements: Hydrant shall have a buried watch valve to isolate the hydrant if damaged and the lower section of the hydrant flange or breakaway spool shall be a minimum of 2"-4" above finished grade or concrete pad.

(2) UFC 3-7.3.4 Hydrant Protection: Hydrants installed within 3' of the curb shall be protected by bollards.

(3) Bollards shall comply with the City of SDRSD WM-4.

j. All isolation valves to shut off a hydrant shall be installed within 10' of the hydrant. UFC 600-01 SEC 3-7.3 notes a 5'-10' MIN/MAX valve distance from hydrants.

k. Hydrants shall be California Wet Barrel type Hydrants with one 4" (100mm) suction and two 2.5" connections minimum. All fire hydrant supply ports shall contain (2 each) 2.5" and (1 each) 4" hose connections.

l. "Hydrants shall be located to minimize likelihood of discharge to storm drains during flow testing and routine maintenance, and to maximize infiltration in vegetated areas, where possible. This will assist MCB CAMPEN in complying with potable water discharge permit requirements in the future."

15. MCB CAMPEN HYDRANT FLOW TEST PROCEDURES:

a. Due to insufficient data collection of hydrant flow test data aboard MCB CAMPEN, the following Hydrant Flow Testing Procedures have been developed in order to accurately capture and compile the data. The data secured during the testing of hydrants and recorded on a standard form and compiled for future use shall be extremely valuable for the analysis of the current Basewide Fire protection and water distribution system capabilities. With this in mind, it is required that the following procedures be utilized for every hydrant flow test aboard the BASE.

b. Erosion and BMP measures shall be set in place prior to flow test. "Dechlorination, land application, or discharge to the sanitary sewer may be required during flow test, and shall be coordinated through the Government construction PM. Additional information can be found in the project's environmental documentation. The State of California is in the process of adopting a new statewide

National Pollutant Discharge Elimination System (NPDES) Permit covering potable water discharges. MCB CAMPEN will be required to enroll.

c. Follow NPDES requirements for potable water included in CATEX environmental documentation.

d. For Contractors who need to perform hydrant flow tests aboard MCB CAMPEN for a project, the ROICC Engineering Technician (ET) shall use the following procedures to coordinate the testing: Following a request from the Contractor for a hydrant flow test, the ROICC shall coordinate the fire flow test with the following departments:

(1) The ROICC shall contact the FMD to observe and operate the hydrant valve (opening and closing to prevent water hammering of the system) and to determine the status of lines in the vicinity [repairs, out of service, excessive load, supply closed, etc.], and to advise the time and location of hydrant testing.

(2) The ROICC shall also contact the AC/S SES, Fire Department, Deputy Fire Chief for Prevention to advise the time and location of hydrant testing if the Fire Department wants to coordinate with area officials. The Fire Prevention Inspector, may or may not, decide to be present during the testing.

(3) The ROICC shall provide the Contractor with the Hydrant Flow Test Report Form prior to the hydrant flow testing; and shall be completed by the Contractor during the test. (See Figure 34.)

(4) The ROICC shall obtain a completed copy of the Hydrant Flow Test Report Form and submit via hard copy or electronically within 5-days to the PWD Utility Team.

e. NOTE: Contractors shall submit a copy of The Hydrant Flow Test Report to the ROICC CM/ET for the project. ROICC shall cc: MCB CAMPEN Fire Department, AC/S Facilities G-F, WRD, and PWD Utility Team.

16. WATER LOOP REQUIREMENTS:

a. Requires potable and fire suppression water systems to be designed in a Loop, i.e. continuous circulation pattern per MCO 5090.2A and BUMED Instruction 5010-5 (Rev 6-2008 or latest edition) 0510-LP-107-3451, Chapter 5, "Water Supply Ashore." This is to minimize any section of the water supply from becoming septic. The following requirements (b and c), are included as further direction to designers and constructors of new or reconditioned water services aboard MCB CAMPEN.

b. Water service for new construction shall be provided by a looped system. Dead end water lateral lines (other than building connections and fire hydrants) require the approval of PWD in the design phase. All dead ends shall be fitted with appropriate automatic flushers. Water loop systems shall be connected to two separate water supply mains. This is defined as two separate sources of supply where if one connection is shut down, there is a second water supply to the project site. In the case where the secondary water main is more than 1,000’ from the facility, the Contractor shall be allowed to connect to the same water main. However, in this event, the two points of connection shall be a minimum of 100’ apart, with a tee and three-valve cluster at each point of connection.

c. Water loops shall be designed to fall within the footprint of the approved Environmental Boundary (EA, CATEX, etc.). If a water loop cannot be installed within this boundary the Contractor shall contact PWD before beginning their design. This shall include all ground disturbances.

17. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E, Utilities Team
(760) 763-6988.

b. MCIWEST-MCB CAMPEN
AC/S SES, Deputy Fire Chief
(760) 763-2703

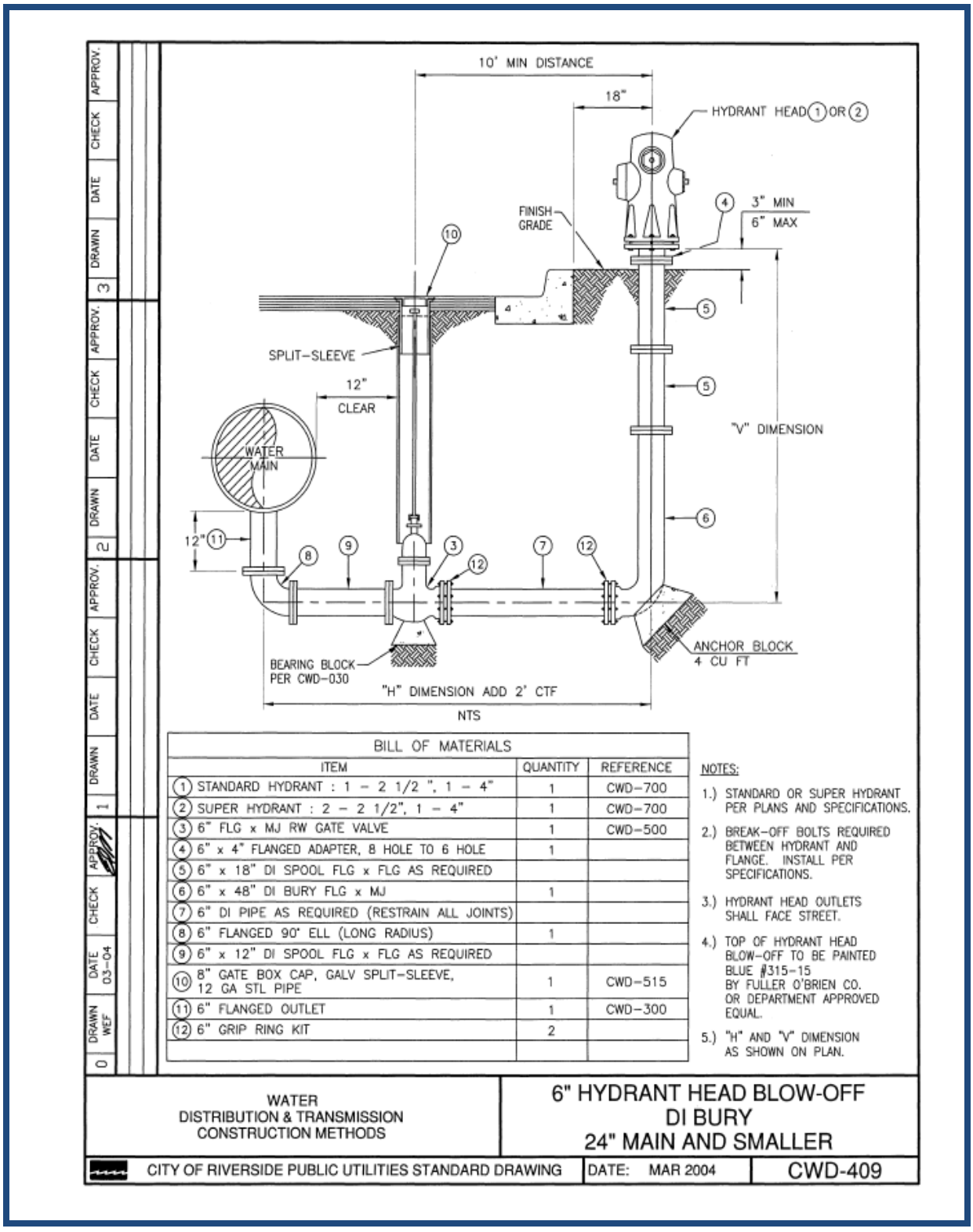


Figure 33: 6" Hydrant Head Blow-Off DI Bury 24" Main and Smaller

Hydrant Flow Test Report

Location Map:

Include a sketch of the location of the hydrants including hydrant identifications, and streets or intersections on the back of this form.

To the extent possible, show connecting lines, line sizes, and distance to next cross-connected line, valves, and hydrant branch size. Indicate North.

Show flowing hydrants – Label A1, A2, A3, A4. Show location of static and residual hydrant – Label B.

Indicate B: Hydrant Sprinkler Other (identify)

Project number/title _____

Location _____

Test made by _____

Date/Time _____

Representative of _____

Specify witness _____

State purpose of test _____

If pumps affect test, indicate pumps operating

Flow hydrants _____ A_1 _____ A_2 _____ A_3 _____ A_4

Size nozzle

Pitot reading

Discharge coefficient Total gpm

GPM

Static B _____ psi Residual B _____ psi

Projected results @20 psi Residual _____ gpm; or @ _____ psi Residual _____ gpm

Remarks:

Figure 34: Hydrant Flow Test Report

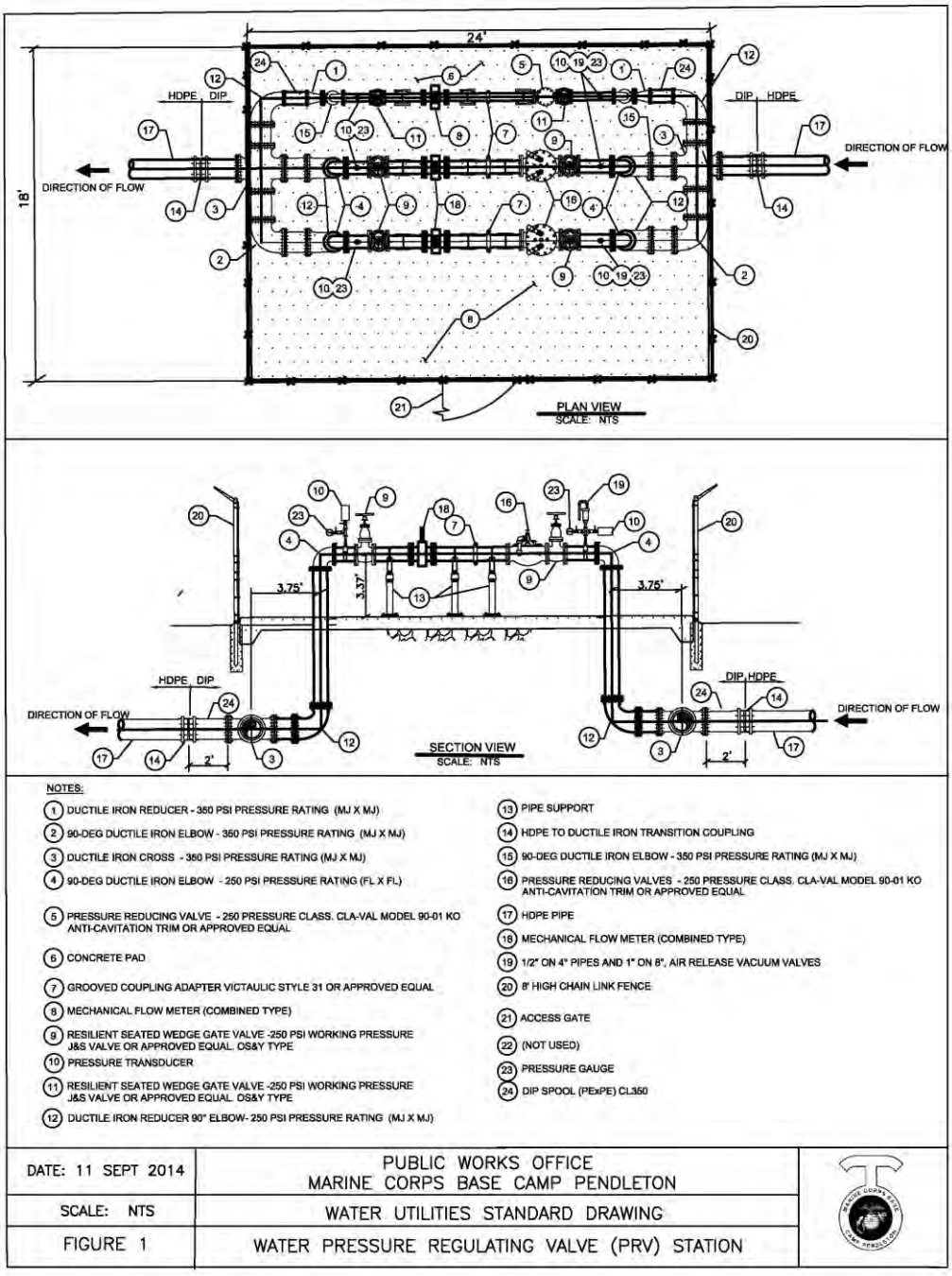


Figure 35: Water Pressure Regulating Valve (PRV) Station

CSI 22 10 00

WASTEWATER REQUIREMENTS

1. REFERENCES: All sewer system construction shall conform to the most recent CPR, UFC and CFR requirements. If the standard sought does not appear in these requirements, then the latest edition of the following standards shall be utilized in the order listed:

a. CDPH

b. AWWA Standards

c. City of Oceanside Water, "Sewer and Reclaimed Water Design and Construction Manual"

d. SDRSD

e. SSPWC or Greenbook

f. City of San Diego Design Guide , "Lift Station Emergency Storage"

g. UFC 3-240-01, Wastewater Collection

2. UTILITY CONNECTIONS: Prior to any construction of a utility connection, all construction plans for a wastewater system service connection shall be submitted to and approved by PWD Utility Team and/or AC/S Facilities G-F, WRD in order to ensure compliance with standards set forth within these requirements.

3. PRIOR TO GOVERNMENT ACCEPTANCE: All new or repaired sewer lines shall be cleaned and Closed Circuit Television (CCTV) to ensure the lines are undisturbed and clear of debris after repairs have been complete. The video shall contain the pipe segment numbers, direction of survey, manholes associated with the sewer main, pipe size, material, and distance traveled. Any deficiencies or debris found shall be corrected by the Contractor.

4. WASTEWATER CONVEYANCE: Pipe material, size, and velocity. (Gravity lines includes trunk lines, main lines, and building connections) shall include the following:

a. Size of building connections:

(1) Minimum size of building connection lines and lateral lines shall be 6".

(2) The minimum size of main lines shall be 8".

(3) For all gravity lines, a minimum velocity of 2.5 ft./sec shall be maintained at average daily flow.

b. For wastewater pipes, material shall be PVC Standard Dimension Ratio-35 (SDR-35) and shall meet ASTM D3034 requirements.

c. Laterals shall connect to the main line at a manhole. Two-way cleanouts shall be installed and a maximum 100' spacing shall be allowed between cleanouts.

d. All connections into sewer mains or laterals shall be made with the use of a wye fitting. The use of taps or saddles of any kind are prohibited.

5. FORCE MAIN LINES:

a. Material shall be minimum high density polyethylene standard dimension ration-26 (HDPE SDR-26). The maximum and minimum allowable velocity is 6.5 ft./sec and 2.5 ft./sec, respectively.

b. The minimum depth of cover required is 48". Mains over 12" require special design and shall be submitted and approved by the PWD Utility Team.

c. Each air relief valve shall be installed with a catchment container.

6. MANHOLES (Sanitary Manhole and Sewer Manhole): The location of manholes shall conform to the following:

a. Manholes shall be provided at all pipe intersections and at changes in elevation, direction, size, diameter and shape.

b. Manholes shall be placed a maximum of 400' apart in the closest paved street.

c. Manholes and clean outs serving the main lateral shall be accessible via a Vactor truck supportable path for maintenance operations and emergency access.

d. Manholes shall be installed level to a ½" above finished grade to prevent submergence of the manhole cover.

e. Manholes shall not be placed in the following locations:

(1) Gutters and other depressions;

(2) sidewalks, crosswalks, private yards, high pedestrian traffic areas, building entrance and public gathering areas;

(3) within 20' of an occupied residence building or messhall. If it is within 20' of unoccupied structure, an approved gas tight manhole cover shall be installed;

(4) within any area subject to flooding;

(5) athletic fields or sports courts; and

(6) a sewer cleanout shall not be installed or placed within 5' in any direction from the storm drain grate or catch basin inlet.

7. SEWER LIFT STATION (SLS): [Reference: City of San Diego Design Guide 2004 for Lift Station Emergency Storage]

a. Design and Construction Submittals

(1) Complete Design Submittal under RFP Part 3, Chapter 6, Section G3020, Sanitary Sewer. [Reference UFC 3-240-01, Wastewater Collection]

(2) Provide Construction and Design Documents in accordance with all applicable Contract Requirements, including the RFP Part 2 Sections.

(3) SLS Submittal Register shall include Construction and Design Documents supporting SLS. The Design Analysis shall include:

(a) BOD

(b) Code and Criteria Search (CCS)

(c) Design Calculations

(4) The SLS BOD shall include a description of project concepts that address salient points of the design including the following:

(a) How pump duty is controlled and cycled among the three pumps. (Small systems may use 2 pumps if 1 pump can handle the peak demand.)

(b) Telemetry requirements and compatibility with existing BASE System.

1) FMD UNITY Room Alarms shall include the following: high alarm, low alarm, pump run status, seal failure alarm, over-temperature alarm, generator status, daily flow, and discharge pressure.

2) Any connections to FMD UNITY Room shall be coordinated with the FMD UNITY Room and PWD.

(c) RFP Part 3 requirement to provide multiple force mains as necessary to enable expansion from commissioning to full lift station capacity.

(d) RFP Part 3 requirement to provide fail safe devices based on failure mode analysis.

(e) RFP Part 4 PTS Requirements.

(5) The construction submittals shall include all equipment and material to be reviewed and approved by the Engineer of Record. These submittals shall include the pumps, motors, controls, electric power panel, influent grinder pump, odor control chemical tank, emergency generator, flow meter, pressure transmitter, connection to FMD UNITY Room, emergency overflow tank, valves, pipe and fittings, etc.

(6) Conduct a surge analysis and include as part of design submittal.

(7) Wet wells shall be sized for a minimum 30 minute retention time at average daily flow.

(a) Spill Location Indication: Influent sewer and pump station spill locations shall be indicated on the design drawings (lowest upstream elevation or wet well cover elevation where backup spill shall occur). Mean sea level (MSL) elevation shall be included for information for spill location.

(b) A Six-Hour Emergency Storage (Special Station Requirement): For Closed Tanks: In areas where maximum protection from spillage shall be provided, such as areas where a station sewage spill would flow into a water supply reservoir or other sensitive areas as determined by the Senior Civil Engineer, a six-hour emergency overflow storage (at peak wet weather inflow rate) shall be provided. This storage requirement is in addition to the wet well operational storage.

1) The emergency storage can be an underground structure or a separate tank that is normally empty but can drain by gravity back into the wet well.

2) This storage is also available to be utilized for flow equalization during large storm events shall peak wet weather inflows exceed the pump station design capacity.

b. General Lift Station Requirements: In addition to the above submittal requirements, wastewater lift stations shall include the following:

(1) All SLS require a properly sized emergency backup diesel generator.

(2) All SLS require 3 pumps minimum. Small systems may use 2 pumps if 1 pump can handle the demand.

(3) Wet wells and all concrete components exposed to wastewater gases shall be coated or lined with a suitable, protective material.

(4) Corrosion resistant materials shall be used for all mechanical and electrical components, including impellers. Use type 316 Passivated Stainless steel for brackets, supports and impellers. Use fiberglass grating and ladders. Exterior of DI piping (if approved for use) shall be epoxy coated.

(5) Pump stations shall be equipped with soft start motor controllers or variable frequency drives (VFD's), to reduce surge pressures and reduce the impact on downstream treatment components.

(6) Station shall have ultrasonic level sensor with float backup. Pumps shall alternate between all pumps. High level alarm shall send alarm to FMD UNITY Room high/high float shall call for all pumps to run.

(7) Low level alarm shall send alarm to FMD UNITY Room low/low shall shut-off pumps.

(8) Pumps shall pass 3" solids. Plug valves shall be used for suction and discharge isolation.

(9) A post with a safety chain shall be required at wet well opening. A magnetic flow meter and bypass around meter for servicing and replacement.

(10) Night lighting.

(11) Spring assisted aluminum covers for wet well and valve vault.

(12) External arm, swing check valves.

(13) Wet well ventilation.

(14) Hour meters for each pump.

(15) Valve vault shall be large enough for easy access for changing of valves.

(16) J-Box for float and ultrasonic shall not be installed in the wet well;

(17) Pressure transducer and isolation valves on discharge piping with signal to FMD UNITY Room.

(18) A 1" Potable water hose bibb installed at the site.

(19) Fencing per UFC with a minimum 12' gate for Vactor truck access.

(20) Emergency pump connection with isolation valve and female cam-lock fitting.

(21) All conduits shall be sealed at motor control center, wet well and valve vaults.

(22) Discharge manifold shall be equipped with emergency pump connection with isolation valve and female cam-lock fitting.

(23) Asphalt paving/concrete pad.

8. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E, Utilities Team
(760) 763-6988

b. MCIWEST-MCB CAMPEN
AC/S G-F, FMD, UNITY Room
(760) 212-7417

CSI 22 10 00

RECYCLED WATER

1. REFERENCES: All new construction shall conform to the most recent edition of the UFC and CFR requirements. The latest edition of the following standards shall be utilized in order listed; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. CDPH

b. AWWA Standards

c. MCB CAMPEN, "Rules and Regulations for Recycled Water Use and Distribution"

d. City of Oceanside Water, "Sewer and Reclaimed Water Design and Construction Manual"

e. SDRSD

f. SSPWC or Greenbook Construction

g. State of California DWR

2. RECYCLED WATER SYSTEM DESIGN DRAWINGS AND SPECIFICATIONS: Per MCB CAMPEN Rules and Regulations for Recycled Water Use and Distribution, ES shall submit the recycled water system design drawings and specifications to the appropriate regulatory agencies for review. This shall include the County of San Diego Department of Environmental Health (SDDEH), who shall perform a plan check and subsequent site inspection prior to initiating recycled water usage at the site.

a. The site inspection may include a cross-connection control test, and shall also involve the AC/S Facilities G-F, WRD.

b. Recycled water plans and procedures shall be consistent with the County's "Recycled Water Plan Check and Inspection Manual," which is available of their website at the following link: http://www.sdcounty.ca.gov/deh/water/lu_recycled_water.html

3. PIPE SIZE AND MATERIAL:

a. NOTE: Pipe sizes indicated are I.D.

b. All recycled water mains shall be HDPE pipe. The maximum allowable velocity = 6.5 ft./sec.

c. The minimum diameter of mains shall be 8". Service lines may be PVC class 200 (C-900).

4. DEPTH OF PIPE COVER:

a. The minimum depth of cover required is 36".

b. Mains over 12” require special design and approval from PWD at the design stage.

c. Recycled water mains shall not be installed over potable water mains.

5. VALVES AND RISERS: Valve cans and risers shall be 6” PVC class 200, C-900 Pipe and colored purple. Three-valve clusters shall be installed at all tee connections. Valves shall be easily accessible. Piping color is purple.

6. FINAL DESIGN SUBMITTAL: Shall print recycled water piping in purple.

7. IRRIGATION SYSTEM: All new irrigation system construction shall have color purple piping and have a single point of connection.

8. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E, Utilities Team
(760) 763-6988

CSI 23 00 00

GENERAL MECHANICAL REQUIREMENTS

1. REFERENCES: All Mechanical System Construction shall conform to the most recent UFC and CFR requirements. If the standard sought does not appear in these requirements, then the latest edition of the following standards shall be utilized:

a. ASME

b. American Petroleum Institute (API)

c. American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)

d. ASTM

e. IPC

f. IMC

g. Unified Mechanical Code (UMC)

h. UPC

i. Air Conditioning, Heating, and Refrigeration Institute (AHRI)

j. AWWA

k. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)

l. NFPA

m. Underwriters Laboratories (UL)

n. American Welding Society (AWS)

o. National Board Inspection Code (NBIC)

2. ADDITIONAL REQUIREMENTS:

a. Provide accessibility and clearance for maintenance to all mechanical and electrical equipment, machines, pumps etc.

b. All HVAC units that are installed during construction shall have all filters replaced with new filters prior to the building being turned over for occupancy.

c. HVAC Secondary condensate drain lines shall not terminate above any doorway or within 5' of the entry or exit pathways. (This is to prevent an obvious slip hazard)

3. ACCESS AND SERVICE SPACE: All equipment, piping and controls located in attic and mechanical room shall be easily accessible for inspection, service, repair and replacement without disabling the functionality of other adjacent equipment.

a. Utility chases shall not be placed on or near the perimeter walls where a sloped roof interferes with access to the chase.

b. All utility chases shall be accessible for maintenance, inspection, service, repair and replacement.

c. Placement of equipment, piping and controls located in attics shall take into consideration access from below with regard to furniture, built-ins and other equipment that could prevent a ladder from being set up under access point.

4. TESTING AND BALANCING (TAB): TAB consultants shall be certified by the National Environmental Balancing Bureau (NEBB).

5. VENTILATION: Vent limiting means or devices are not permitted aboard MCB CAMPEN. Mechanical equipment with appliance pressure regulators requiring access to the atmosphere for successful operation shall be equipped with vent piping leading outdoors.

6. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
AC/S G-F, PWD A&E, Utilities Team
(760) 763-6988

b. MCIWEST-MCB CAMPEN
AC/S G-F, FMD, P&E
(760) 725-3638 or (760) 725-3139

CSI 23 00 00

FOUR-PIPE SYSTEM FOR NEW BACHELOR ENLISTED QUARTERS

1. REFERENCES: Four-Pipe System for New BEQs shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. UFC 4-721-10, "Navy and Marine Corps Bachelor Housing W/CH 2"

b. Figure 36, "Piping Specifications"

2. FOUR-PIPE SYSTEM FOR NEW BEQs:

a. Provide a four-pipe reverse-return heating and cooling piping system from the Mechanical Room throughout the building vertical pipe chase, attic, and to each individual fan coil unit in each room.

b. Provide vents at the high points of the system and drains at the low points. Drains (except BEQ fan coil units) shall be piped to a floor sink or other suitable entrance to the building's sanitary sewer system.

c. Provide expansion loops, isolation ball valves at the drops, piping insulation, control valves, and all necessary supports, joints, couplings, caps and other items to complete the piping system. Joints on direct-bury factory prefabricated, pre-insulated copper pipes shall be silver-brazed.

3. VERTICAL FOUR-PIPE FAN COIL UNITS AND CONTROLS. Provide vertical four-pipe fan coil units and controls. Heat exchange coils shall consist of copper fins on copper tubes.

4. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD A&E, Utilities Team
(760) 763-6988

ABOVE-GROUND SANITARY DRAINAGE AND VENT PIPE	
MATERIAL	**STANDARD**
Acrylonitrile butadiene styrene (ABS) plastic pipe in iron pipe standards (IPS) diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid, cellular core or composite wall.	ASTM D 2661; ASTM F 628; ASTM F 1488; CSA B181.1
Polyvinyl chloride (PVC) plastic pipe in IPS diameters, including schedule 40, DR 22 (PS 200), and DR 24 (PS 140); with a solid, cellular core or composite wall	ASTM D 2665; ASTM F 891; ASTM F 1488; CSA B181.2
PVC plastic pipe with a 3.25-inch O.D. and a solid, cellular core or composite wall	ASTM D 2949; ASTM F 14
UNDERGROUND BUILDING DRAINAGE AND VENT PIPE	
MATERIAL	**STANDARD**
ABS plastic pipe in IPS diameters, including schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid, cellular core, or composite wall	ASTM D 2661; ASTM F 628; ASTM F 1488; CSA B181.1
PVC plastic pipe in IPS diameters, including schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid, cellular core, or composite wall	ASTM D 2665; ASTM F 891; ASTM F 1488; CSA B181.2
PVC plastic pipe with a 3.25"O.D. and a solid, cellular core, or composite wall	ASTM D 2949; ASTM F1488
PIPE FITTING	
MATERIAL	**STANDARD**
ABS plastic pipe in IPS diameters	ASTM D 2661; ASTM F 628; CSA B181.1
ABS plastic pipe in sewer and drain diameters	ASTM D 2751
PVC plastic in IPS diameters	ASTM D 2665; ASTM F1866
PVC plastic pipe in sewer and drain diameters	ASTM D 3034
PVC plastic pipe with a 3.25-inch O.D.	ASTM D 2949
BUILDING SEWER PIPE	
MATERIAL	**STANDARD**
ABS plastic pipe in IPS diameters, including schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid, cellular core or composite wall	ASTM D 2661; ASTM F 628; ASTM F 1488; CSA B181.1
ABS plastic pipe in sewer and drain diameters, including Standard Dimension Ratio (SDR) 42 (PS 20), PS 35, SDR 35 (PS 45), PS 50, PS 100, PS 140, SDR 23.5 (PS 150) and PS 200; with a solid, cellular core or composite wall	ASTM F 1488; ASTM D 2751 Asbestos-cement pipe; ASTM C
PVC plastic pipe in sewer and drain diameters, including PS 25, SDR 41 (PS 28), PS 35, SDR 35 (PS 46), PS 50, PS 100, SDR 26 (PS 115), PS 140 and PS 200; with a solid, cellular core or composite wall	ASTM F 891; ASTM F 1488; ASTM D 3034; CSA B182.2; CSA B182.4
PVC plastic pipe with a 3.25" O.D. and a solid, cellular core or composite wall.	ASTM D 2949; ASTM F1488

Figure 36: Piping Specifications

CSI 23 00 00

DIRECT DIGITAL CONTROL SYSTEMS REQUIREMENTS

1. REFERENCES: Direct Digital Control (DDC) Systems Requirements shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. UFC 3-410-02, "Lonworks© DDC for HVAC and Other Local Building Systems"

b. UFGS 2309.23, "The WBDG - Lonworks © DDC for HVAC and Other Building Control Systems"

c. UFGS 2309.53.00.20, "Lonworks© Space Temperature Control Systems"

d. Specification (15910), "DDC System for HVAC"

2. THE USE OF CPR (CSI 013500): "Special Project Procedures" shall be considered to cover migration of facilities already constructed using Basewide EMS Technical Design Specification.

a. All new and/or renovated facilities shall be designed for EMS connectivity based on the technical requirements in Specification 15910, DDC System.

b. Future versions of this document shall be based on UFC 3-410-02 and UFGS 2309.23.13.20 "Lonworks© based DDC for HVAC" and UFGS 2309 53 .00.20 "Space Temperature Control Systems".

3. EMS LON control devices shall be LonMark© Certified utilizing a Lonworks© Network Services (LNS) based database structure. Configuration parameters of the LonMark certified devices shall be directly accessible via an LNS based application interface (plug-in).

a. The "plug-in" shall be installed and its use demonstrated with commercial off-the-shelf (COTS) LNS management tool.

b. The "plug-in" shall be freely available and/or provided by the installing Contractor.

4. THE SYSTEM: Shall be of a flat, open architecture and the devices shall communicate utilizing the American National Standards Institute/California Earthquake Authority (ANSI/CEA) 709.1b (LonTalk©) Protocol and CEA 852.

a. Installed LON networks shall be readied for connection to the existing Basewide MCB CAMPEN EMS system (FMD UNITY Room) utilizing the most feasible and economical option available including; hardwire (709.1b) connection to existing Facility Management System (FMS) Cable, network drop (CEA 852) located in Next Generation/Telecommunication (NEXGEN/Telcom) Room, wireless Lonworks© router (709.1b), and/or wireless network (CEA 852) connection.

b. It is recommended, as part of project design that the DDC System submittals be turned into the FMD UNITY Room Manager or representative separately for approval.

5. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, FMD, UNITY Room
(760) 212-7417

CSI 23 10 00

ABOVEGROUND STORAGE TANKS

1. REFERENCES: Aboveground Storage Tanks (AST) shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. 40 CFR 112.7, "General Requirement for Spill Prevention, Control, and Countermeasure Plans (SPCC)"

b. UL 142, "Aboveground Flammable Liquid Tanks"

c. UL 2085, "Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids"

d. NFPA, "Standard System for the Identification of the Hazards of Materials for Emergency Response"

e. National Environmental Protection Act (NEPA)

2. ALL NEW ASTs ABOARD MCB CAMPEN: Shall meet the following 40 CFR 112.7, AC/S SES, Fire Department, Deputy Fire Chief for Prevention and AC/S ES requirements:

a. Double Wall secondary containment, UL 142 listed for combustibles, UL 2085 listed for flammable liquids.

b. AST secured by mechanical fasteners to a reinforced concrete pad approved by the tank manufacturer.

c. High level alarm (better or equal to TM1 Tank Monitor).

d. Secondary space leak gauge (better or equal to At-A-Glance Leak Gauge).

e. Primary tank level gauge (better or equal to At-A-Glance Direct Reading Gauge).

f. Fill line spill bucket container (better or equal to Pomeco 221-AST Spill container, min. 5 gallons.).

g. NFPA 704 markings (fire diamonds).

h. Vehicle collision protection (concrete-filled steel pipe bollards) spaced in accordance with manufacturer's recommendations.

i. All piping shall be aboveground and visible (single wall), unless approved prior to construction by ES and PWD because of extenuating circumstances. Any underground piping shall be double-walled and electronically monitored).

j. Piping shall be painted, labeled for product contained and direction of flow indicated by arrows.

k. Gasoline tanks 250 gallons and greater require an Air Pollution Control District Permit.

l. MCB CAMPEN AC/S SES, Fire Department, Deputy Fire Chief for Prevention; AC/S ES (NEPA and Spill Prevention Sections) and AC/S G3/5, Operations ATFP shall approve tank site plans prior to installation.

3. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
ES Compliance Division
Resource Conservation and Recovery Act (RCRA) Branch
Spill Prevention and Planning Section
Bldg. 22165
MCB CAMPEN, CA 92055
(760) 725-9743/9768

CSI 23 10 00

NATURAL GAS REQUIREMENTS

1. REFERENCES: All natural gas system construction shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. NFPA 54, “Fuel Gas Code”

b. UFC 3-430-09, “The WBDG - Exterior Mechanical Utility Distribution”

c. CFR Title 49, part 192, “Transportation of Natural and Other Gas for Pipeline: Minimum Federal Safety Standards”

d. International Fuel Gas Code (IFGC)

e. ASME, “Purging of Pipelines and Mains”

f. UFGS

g. SDG&E, “Specifications and Standard Construction Details”

h. ASTM

2. STANDARD DESIGN AND CONSTRUCTION DETAILS: In addition to the preceding codes, the Contractor shall ensure the following items are adhered to during design and construction.

a. All natural gas piping layouts, SOV and excess flow valve (EFV) locations, reducer stations (Figure 37) , riser assemblies (Figure 38) and master meter station details (if part of work), shall be submitted as part of the construction plan set for PWD approval.

b. Prior to construction of a natural gas utility connection, all construction plans for the connection shall be submitted to PWD and FMD for approval. Submittal shall include drawings detailing the location, method of connection, and load calculations proving the new line shall be able to support the new and existing buildings. Personnel performing fusion welding shall submit an up-to-date polyethylene (PE) fusion card for FMD review prior to performing fusion work. Contractor shall notify FMD natural gas technicians to inspect and approve the pre-connection, installation, and post connection, in order to ensure compliance with standards set forth within the requirements.

c. All gas pipeline products shall be bimodal HDPE 4710 for mains and high-pressure service and bimodal medium-density polyethylene (MDPE) 2708 for distribution and low pressure service. Gas piping shall be minimum SDR-11. SDR calculations shall be submitted for PWD approval prior to ordering materials.

d. All pipe shall be buried a minimum of 36” below finished grade or as recommended by the manufacturer, whichever is greater. Burial of gas pipe with less than 36” of cover requires PWD approval.

e. Tape an insulated yellow #10 American Wire Gauge (AWG) PE coated tracer wire to the top of the pipe (NOT spiral wrapped) and terminated a minimum of 12” above grade at vertical risers. Tracer wire connections shall be water tight.

f. Buried piping shall include magnetic warning tape installed 12” below finished grade. Tape shall be 3” wide and have the words “Caution buried gas line below”.

g. All coated anode-less vertical risers and aboveground pipe shall be black steel, minimum schedule 40 in non-coastal areas and galvanized in coastal areas. Pipes 2” and smaller shall have threaded ends. Pipe greater than 2” shall be butt welded in accordance with ASME standards. Provide galvanized piping on regulator/meter assemblies in coastal areas.

h. All aboveground pipes and components, not factory primed and painted, shall be cleaned to Society of Protective Coatings (SSPC) 2 or 3, primed per Master Painters Institute (MPI) 23 then painted using an intermediate and top coat meeting MPI 94. The paint shall be identifying natural gas color yellow per the American Public Works Association (APWA) uniform color code.

i. All aboveground piping shall have proper labeling per ASME, including directional labeling.

j. Only pre-engineered traffic rated valve canister assemblies for valves shall be accepted by PWO/ROICC. All EFV box covers shall be molded with the letters “EFV” in the center of the cover and all SOV box covers shall be molded with the word “GAS” in the center of the cover. The top of the valve box cover shall be flush with grade and easily accessible. Top covers shall be painted with the natural gas identifying color yellow per APWA uniform color code. Valve boxes in unpaved areas shall have a 12”x12”x4” reinforced concrete pad around them.

k. All below-ground fittings shall be hot-fused, no flanges or threaded fittings are allowed. For above-ground fittings, the contractor shall use soft-set type natural gas thread sealant (pipe dope), not tape. Threaded bushings shall not be used.

l. Before purging a natural gas line, Contractor shall provide Activity Hazards Assessments (AHA) and site specific purge plan to the ROICC CM/ET for the project, or Authority having Jurisdiction (AHJ) for approval. Contractor performing the purging shall fulfill the certification requirements of the AHJ and purging shall only be performed by a qualified agency as per NFPA 54-17. All purging shall follow CFR 49 Part 192 and ASME Purging of Pipelines and Mains. All abandoned lines shall be purged with nitrogen and be checked for percentage gas with a meter at purge point.

m. New gas lines located in vegetated areas, away from paved areas shall have pipeline markers indicating presence of the lines. Contractor shall place markers at or near all taps, tees, and caps, and so as to ensure continuous line of sight is established at intervals not to exceed 500’ along natural gas lines.

n. A gas line connection shall include an HDPE SOV and an EFV. SOV shall be placed upstream of the EFV and both shall be installed close to the point of connection, approximately 18" from the main, and 18" between the SOV and EFV (if in accessible locations), allowing maintenance and maximum protection of lateral. All valves shall have a 2” operating head minimum.

o. All new gas lines shall have a SOV installed at the point of connection at the gas supply.

p. Whenever a factory-built fireplace or gas appurtenance is installed the associated gas "shut-off" valve shall not be concealed and shall be accessible nearby. Secondary means of shutting off the gas supply shall be provided on exterior of facility.

q. Where an outdoor barbeque (BBQ) is installed, all gas connections shall be accessible and the gas flex and service valve shall not be concealed. An emergency SOV shall be installed near the adjacent building. The installation of a service gas supply pressure regulator beneath the BBQ compartments or BBQ counter is prohibited. This does not include the pressure regulator supplied by the manufacturer of the BBQ unit.

r. Where a union is used on a gas line, the SOV shall be upstream of the union at all times.

s. All components on the natural gas system shall be suitable for natural gas use and pressure service.

t. Stub-out's shall include warning tape located several feet on either side in order to prevent hitting the stub-out during parallel trenching.

u. Gas lines and appurtenances shall be a minimum of 12" from any other utility or structure.

v. Aboveground structures shall have seismic and non-seismic support as needed. Riser assemblies shall be installed at appropriate distance from the building for maintainability and protection from traffic.

w. Transitional flanges shall be a minimum of 4" above grade. Pipe risers shall be primed and wrapped with grease/wax tape, bubble wrap and 20 mm gas tape, and sleeved. Piping into building shall also be sleeved and the annular space properly filled.

3. PRESSSURE REDUCER STATION/MASTER METER STATION: Reduces pressure and/or meters gas flow for whole or part of a cantonment area. Station shall include the following components and adhere to the following requirements and detail:

a. Primary Reducing Station line and secondary bypass Reducing Station line allowing maintenance to the station without service interruption to the area.

b. Two reducing valves in series on both the primary and bypass line.

c. The reducing valves shall be sized to accommodate the entire downstream load as well as a percentage to accommodate for future loads.

d. NOTE: master meter stations shall have the same requirements as a reducer station, except they don't require reducing valves.

e. For protection, install an 8' tall fence with a barbed wire top guard around the reducer station. The fence posts shall be in the concrete slab with a sleeve. Fence shall be grounded and bonded and shall have a lockable double swing gate entrance. Metal beam guard railing around station with flared end, steel posts, notched steel blocks, and guard rail reflectors.

4. ASSISTANCE: If you need further assistance please contact:
MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E, Utilities Team
(760) 763-6988.

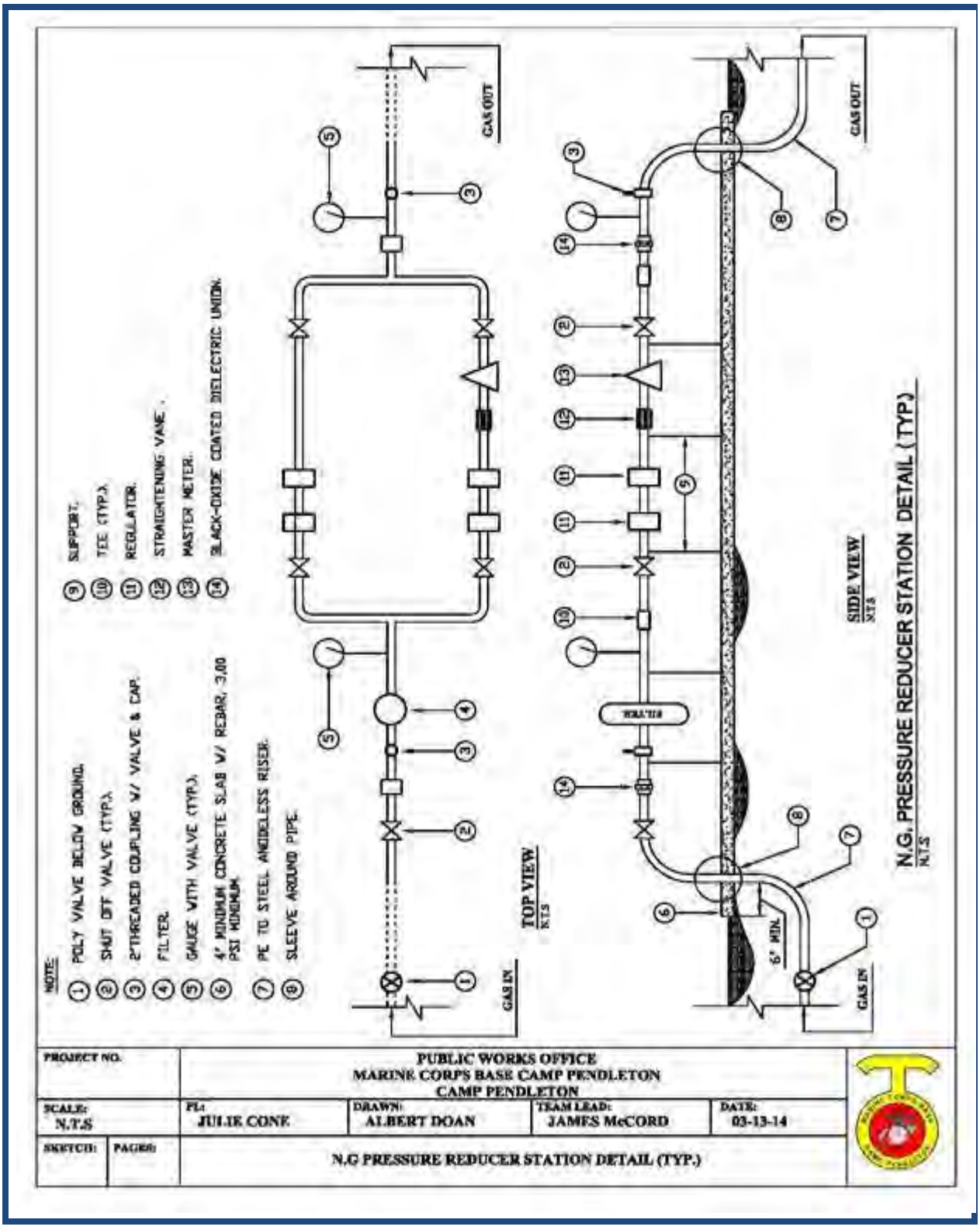


Figure 37: Natural Gas Pressure Reducer Station Detail (TYP.)

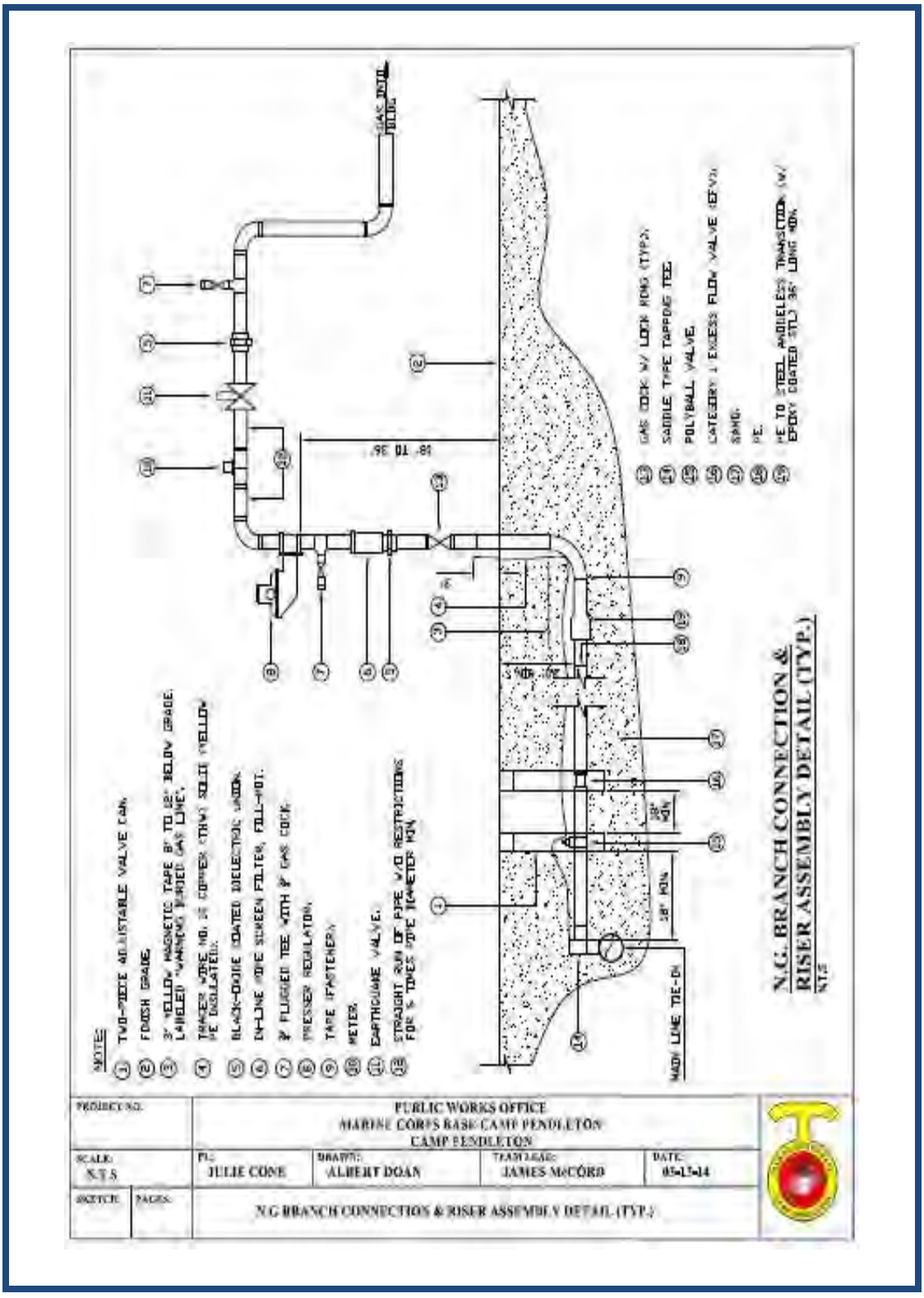


Figure 38: Natural Gas Connection and Riser Assembly Detail (TYP.)

CSI 23 50 00

BOILER REQUIREMENTS

1. REFERENCES: In order to meet the federal energy efficiency requirements and energy reduction mandates, boilers used aboard MCB CAMPEN facilities shall be of highest efficiency, best technology available, and meet the FAR Subpart 23.2 for Energy and Water Efficiency and Renewable Energy, Authorizing law and regulations for FAR 23.2. Boiler General Requirements shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. 42 U.S.C.6361(a)(1), "Environmental Protection and Conservation Act (EPCA)"

b. 42 U.S.C. 6901, et seq., "RCRA of 1976"

c. 42 U.S.C. 8253, "National Energy Conservation Policy Act (NECPA) - Energy Management Requirements"

d. 42 U.S.C. 8259b, "NECPA - Federal Procurement of Energy Efficient Products"

e. 42 U.S.C. 8262g, "NECPA - National Energy Conservation Policy Act"

f. 42 U.S.C. 8287, "NECPA - Authority to Enter into Contracts"

g. 42 U.S.C.7671, "NECPA - Clean Air Act Title VI – Stratospheric Ozone Protection"

h. Executive Order 11912, "Delegations of Authority Relating to Energy Policy and Conservation Act (EPCA)"

i. Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management"

j. Executive order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance Guidance"

k. 48 CFR 23.801(b), Authorities, Section 706 of Division D, Title VII of the Omnibus Appropriations Act

2. BOILER REQUIREMENTS:

a. All boilers used for heating hot water (HHW) shall be fire tube/fire box type boilers utilizing the best energy efficient technology available for this type of boiler. The boilers shall have Industrial Risk Insurers (IRI) gas train and meet ASME "Controls and Safety Devices-1" (CSD-1) compliance.

b. The usage of condensing boilers shall be allowed as long as the following parameters are met:

(1) The original design of the entire heating system shall be designed to use condensing boilers. The mechanical design shall not be a "fire tube/fire box" design system with a condensing boiler "plugged in" as a substitution. The implication of that would be that the distribution piping and pressures would not be adequate to support a condensing unit. It is the intent being to avoid constructing distribution piping with inadequate pressure to support a condensing unit.

(2) The system shall run at a temperature of 130-140 degrees maximum on supply, and 100-110 degrees return in a low temperature loop.

(3) All condensing water heaters and boilers shall have a neutralizer in the stack drain prior to entering MCB CAMPEN wastewater piping.

(4) The design shall be for 100% occupancy.

(5) The system shall run at approximately 50 pounds per square inch gauge (psig) operating pressure for a five story building.

(6) In order to maximize energy efficient usage of the boilers, they shall be set up as a series of smaller, modular units which meet total demand load; but, which can be programmed for staging individual unit activation as the demand load increases.

(7) The Final Submission documents shall be reviewed by FMD and the Energy Branch for their compliance with the parameters listed.

c. Domestic water boilers which are set to operate at less than 140 degrees Fahrenheit may be fin tube water tube boilers. The boilers shall have IRI gas train and meet CSD-1 compliance. All domestic heated water systems shall be designed with no "dead end" legs. The water temperature delivered to faucets and showers shall be 110 degrees Fahrenheit, provided there are no "dead end" legs in the system. For water temperatures allowed/required in uses such as Child Development Centers (CDC's), verify with the applicable UFC.

d. Any new unit (boiler, process heater, or steam generator) with a heat input rating of 1 million British Thermal Unit/per hour (BTU/hr.) or greater may require an Air Permit.

e. When acquiring energy-consuming products listed in the ENERGY STAR Program or Federal Energy Management Program (FEMP), agencies shall purchase ENERGY STAR or FEMP-designated products.

f. Per Energy Star recommendations, boilers shall have an Annual Fuel Utilization Efficiency of 85% or better.

g. The HHW supply system for swimming pools' water shall have a "double wall" heat exchanger installed, instead of the standard "single wall."

3. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, FMD, P&E
Bldg. 2291
(760) 725-3638 or (760) 725-3137

CSI 23 50 00

LOW PRESSURE WATER HEATING BOILERS
(OVER 400,000 BTU/hr. OUTPUT)

1. REFERENCES: Low Pressure Water Heating Boilers (over 400,000 BTU/hr. output) shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

   a. ASME CSD-1-2004, "CSD for Automatically Fired Boilers"

   b. NBIC

   c. OSHA 1910.22(D), "Walking-Working Surfaces"

2. USE DDC SYSTEM: Only use DDC System for FMS and Heating System instead of pneumatic control and with separate over ride switches for all equipment being controlled by FMD UNITY Room. All remote operator communication (by others) shall be through connection to the existing MCB CAMPEN FMS with connectivity to the UNITY Room.

3. APPROVAL: Boiler submittals shall be approved by FMD Boiler Inspector.

4. FIRE TUBE FIREBOX: Only install "Hurst" fire tube firebox heating boiler or equal in compliance with the enclosed Section 235233 (edited) specifications acceptable to the Government.

5. BOILER ISOLATION VALVES: Shall be ball valve or gate outside screw and yoke design and flanged ends valves and be installed closer to the boiler.

6. BOILER GAS TRAINS: Shall comply with IRI gas control system requirements with Honeywell RM-7800-L-1012 (Infrared scanner) for flame safeguard control panel. Gas train shall have leakage test valves installed as per ASME CSD-1-2004 paragraph CF-150 (d).

7. BOILER VENTS (forced draft): Shall comply with positive pressure type for boiler stacks.

8. LOW WATER CONTROL PIPING: Ensure McDonnell and Miller Test N Check Valves Model #TC-4 (or approved equal) is being installed on low water control piping.

9. QUICK DISCONNECT SWITCHES: Provide quick disconnect switches on each boiler at each entrance door properly labeled for identification. If there is more than one door to the boiler room, there shall be a switch located at each door as per ASME CSD-1-2009 paragraph CE-110 page 9 and CF-310 (d) page 21.

10. REPETITIVE SELF-CHECKING CIRCUIT: Ensure Boiler Burner Combustion Flame Safeguard system shall be provided with a repetitive self-checking circuit.

11. BOILER CONTROL PANEL CABINET: Ensure boiler control panel cabinet is remotely mounted either on the side of the boiler or on the wall away from boiler burner front, and is installed so that the alarm lights on the cabinet are located approximately 4-5' above floor.

12. VENT LINES: Ensure two separate vent lines are being installed for gas train normally open vent valve and for gas diaphragm pressure switches/gas pressure regulator.

13. DRIP LEGS: Provide drip legs on each boiler gas train as per CSD-1 paragraph CF0-140 page 17.

14. UNION FITTING: Provide union fitting on boiler relief valve discharge line.

15. WATERPROOF/DRIPTIGNT ENCLOSURE: Ensure where electrical components and devices are subject to dripping moisture/water shall be provided in a weatherproof / driptight enclosure.

16. CEMENT LINED: Provide cement lined for domestic hot water storage tank instead of glass lined. (For easier weld repairs).

17. DOUBLE WALL HEAT EXCHANGER: Per UPC 603.4.4 only double wall heat exchanger is permitted on cement lined domestic hot water storage tank.

18. CHEMICAL POT FEEDER: Only install Chemical Pot Feeder with "legs," (5 gallons capacity) with maximum pressure/ temperature of 200 psig/200F.

19. IDENTIFICATION: Ensure piping insulation and equipment are identified, labeled and marked for direction of flow.

20. WARRANTY TAGS: Per "Closeout Procedures" ensure "Warranty Tags" are being attached on each newly installed equipment/product. Furnish with each warranty the name, address, and telephone number of the guarantor's representative nearest to the location where the equipment and appliances are installed. The guarantor's representative, upon request of the station representative, shall honor the warranty during the warranty period, and shall provide services prescribed by the terms of the warranty.

21. "TYPE K": Due to the hard domestic water aboard MCB CAMPEN, provide "Type K" of copper tube for all domestic and heating water aboveground piping to reach a life expectancy of 20-years.

22. THERMOMETER: Provide a thermometer on all domestic storage tanks. The thermometer shall at all times indicate the temperature of the water in the tank at or near the outlet.

23. "GUARD POST": Provide and install "Guard Post" (4" Sch. 80 Steel Pipe filled with concrete and paint with brilliant yellow) where the gas meter and or regulator may be subjected to vehicular damage.

24. AUTOMATIC AIR VENT VALVE: Shall be equipped with a vent line running to the floor.

25. CIRCULATING PUMP INSTALLATION: Ensure circulating pumps are not installed overhead to facilitate repairs without using a step-ladder.

26. GAS LINE INSTALLATION: Ensure main gas line in the boiler room is being installed overhead to prevent trip hazard to the personnel.

27. HOSE BIB CONNECTION: Provide .5" hose bib connection in the boiler room for performing Boiler Preventative Maintenance.

28. MCB CAMPEN PROCEDURES FOR CERTIFICATION OF BOILERS ARE:

a. Witness 150% hydrostatic test of 1.5 times of the boiler highest safety valve popping pressure or 1.5 times of the boiler maximum allowable working pressure (MAWP), whichever is less. (This is to determine if leakage causing damages have occurred during shipment/installation.)

b. Receive documentation of boil-out of boiler for each boiler.

c. Receive combustion tests report of boiler for each boiler.

d. Receive documentation to show newly installed boilers have had the HHW systems chemically treated.

e. Witness operational tests of all boiler safety controls.

f. Receive Boiler Manufacturer Data Report Sheet and Manual for each boiler. (Form H2/H3 for ASME Section IV) or (Form P2/P3 for ASME Section I)

29. NEW UNITS: Any new unit (boiler, process heater, or steam generator) with a heat input rating of one million BTU/hr. or greater may require an Air Permit.

30. CHEMICALLY TREATED POOL WATER: Shall not make contact with the boiler tubes.

31. WHERE WATER PRESSURE IS IN EXCESS OF 80 psi: An approved type pressure regulator, preceded by an adequate water strainer, shall be installed to reduce the static water pressure to 80 psi or less as per UPC 608.2.

32. TRIP HAZARDS: Covers shall be provided over trip hazards to protect personnel, as per OSHA 1910.22(D) requirements.

33. MANUFACTURER'S RECOMMENDATIONS: Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall".

34. ALL MANUALLY OPERATED GAS SOV's: Shall be of the T-handle or lever-handle type and shall be operable without the use of tools, as per CSD-1 CF-150.

35. PRESSURE DIFFERENTIAL: The pressure differential between the relief valve set pressure and the boiler operating pressure shall be at least 10 psi or 25% of the boiler operating pressure, whichever is greater, per NBIC Appendix F, F-2000.

36. EYEWASH STATIONS: Shall be installed in all mechanical rooms containing chemical pots.

37. BOILER ROOMS: All boiler rooms over 500 square feet containing one or more boilers having a combined fuel capacity of 1,000,000 BTU/hr. or more shall have two means of egress, as per NBIC Part One, section 3.4.1.

38. HEATING BOILERS: Shall have a minimum of 36" of unobstructed clearance around all sides and above the boiler, as per NBIC part one, section 3.3.4.a.

39. BOILER ISOLATION VALVES: Shall not be used as throttling valves.

40. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, FMD, P&E
(760) 725-3638 or (760) 725-3139

CSI 26 00 00

ELECTRICAL REQUIREMENTS

1. REFERENCES: All electrical system construction shall conform to the most recent UFC and CFR requirements. If the Standard sought does not appear in these requirements, then the latest edition of the following Standards shall be utilized in the order listed:

a. NEC

b. SDG&E, "Specifications and Standard Construction Details"

c. ANSI c.57.12.29, "Institute of Electrical and Electronics Engineering (IEEE) Standard for Pad-Mounted Equipment-Enclosure Integrity for Coastal Environments"

d. Photovoltaic (PV) Specifications, CPR (CSI 260400), "Electrical Requirements"

e. SDG&E, "Signage Standards"

f. NRC Regulations

g. Department of Energy (DoE) LED, "Roadway Specifications"

2. PERMIT AND/OR INSPECTION: Before any digging or disturbing in any location, the Contractor shall be responsible to coordinate with the BASE ES Office for permit and/or inspection.

3. ELECTRICAL UTILITIES: Shall be installed underground in new construction projects, unless exception is approved in writing by t PWD Electrical Engineer. All underground conduit ducts for site and secondary power, telephone, cable and low voltage service cables shall be minimum PVC 40 concrete encased, unless exception is approved in writing by BASE PWD Electrical Engineer. Concrete shall have a minimum 3,000 psi compressive strength and contain red color dye added to the concrete mix.

4. ALL TRENCH GROUND WIRES: Shall not be installed with other medium voltage class cables in conduit(s), but rather shall be installed in the duct bank concrete encasement.

5. OVERHEAD ELECTRICAL UTILITIES: Shall be constructed in accordance with SDG&E Standards, SDG&E Section 1600 for Avian Protection.

6. NEW SDG&E SERVICE REQUIREMENTS: The Contractor shall be responsible to apply and pay costs for all new SDG&E service requirements.

7. ALL WET TYPE TRANSFORMERS AND SWITCHES:

a. Shall have less-flammable liquids.

b. NFPA 70 and Factory Mutual (FM) P7825 for less-flammable liquids having a fire point not less than 300 degrees C tested per ASTM D 92 and a dielectric strength not less than 33 kilovolts (kV) tested per ASTM D 877.

c. The fluid shall be a biodegradable electrical insulating and cooling liquid classified by UL and approved by FM as “less flammable”.

d. Fluid properties shall meet pour point ASTM D 97, less than -15 degree C, aquatic biodegradation Environmental Protection Agency (EPA) 712-C-98-075, 100% and trout toxicity Organization for Economic Cooperation and Development (OECD) Test 203, zero mortality of EPA 600/4-90/027F, pass.

8. LIVE-FRONT PADMOUNT SWITCHES OR TRANSFORMERS: Are not permitted.

9. SULFUR HEXAFLUORIDE 6 (SF6) GASES: Are not permitted.

10. SPARE FUSES: A complete set of spare fuses shall be provided for all medium voltage oil-filled switches and transformers.

11. WHEN INSTALLED WITHIN FIVE MILES OF THE OCEAN: All outdoor electrical equipment such as switchboards and panels, padmounted switches and transformer enclosures shall be stainless steel NEMA 4x and comply with ANSI c.57.12.29 for coastal environments.

12. SERVICE TRANSFORMER INSTALLATIONS: Aboard MCB CAMPEN shall not be considered a NEC defined “supervised location.”

13. TRANSFORMER SECONDARY OVERCURRENT PROTECTION: Shall not exceed 150% of rated capacity.

14. PAD-MOUNT TRANSFORMERS: Shall contain stainless steel bases to minimize corrosion where subject to landscape irrigation or standing water.

15. ALL REMOVABLE SUBSTATIONS AND SWITCHBOARD CIRCUIT BREAKERS: Shall be provided with mechanical hoist; circuit breaker carts and storage cabinet in the same area as the substations switchboard. Where application is outdoor, carts provided shall be made of stainless steel.

16. ELECTRICAL METERS: See CPR (CSI 220500), BASE Utility Meter Requirements.

17. ELECTRICAL DESIGN: Shall comply with Commercial building design standards and practices to allow for the traditional approach in determining the distribution system panel and feeder size/ratings based on a more conservative demand-adjusted connected load to better accommodate surges or future load growth.

18. ALL ELECTRICAL SWITCHBOARD AND PANELBOARD BUSES: Shall be copper.

19. PANELBOARD CIRCUIT BREAKERS: Shall be bolt-on type. Include a main circuit breaker or switch in every electrical subpanel.

20. ELECTRICAL PANEL PHASES/LOADS: Shall be reasonably balanced within normally accepted tolerances, standards or guidelines.

21. PANEL SCHEDULE: Shall show all connected loads per phase.

22. ALL SERVICE, FEEDER AND BRANCH CIRUIT WIRING: Shall be copper.

23. METAL-CLAD CABLE: Is not permitted.

24. ELECTRICAL METAL TUBING (EMT): Use steel compression connectors and couplings on EMT conduit.

25. NOTE: All abandoned conduits and pipes shall be properly filled and capped at all vaults, hand holes, and junction areas.

26. RECEPTACLES: Shall be minimally rated heavy-duty specification, commercial or premium grade.

27. OUTDOOR LED LUMINARIES shall be:

a. American-made,

b. listed to UL 1598,

c. tested to LM79 and LM80,

d. have an efficacy greater than 50 lumens/watt,

e. L70 greater than 75,000 hours

f. Color Rendition Index (CRI) greater than 70,

g. Correlated Color Temperature (CCT) less than 6500 and

h. IP rating greater than 54 with onboard surge protection and with a minimum 5-years light engine/enclosure coating warranty.

i. Color temperature range for outdoor LED lamps shall be from 4000k to 6000k. Roadway luminaries shall comply with DoE LED Roadway Specification have area cutoff to minimize glare and/or comply with existing installed LED fixtures approved by BASE Energy Office.

28. LIGHT FIXTURES FOR PARKING LOTS AND CANOPY LIGHTING: Shall be LED, induction or have 49-watt T-5 High Output (HO) fluorescent lamps and electronic ballasts that meet BASE Requirements and item 27 above for LED.

29. WALL PACKS: Shall be LED or induction type with individual photo or BASE EMS control unless otherwise authorized shall be High Intensity Discharge (HID) type by PWD Electrical Engineer specifically for high security or special illumination applications. HID installation shall be approved by PWD.

30. LIGHT FIXTURES LOCATED IN HI-BAY APPLICATIONS: Shall be 49-watt, T-5 HO fluorescent lamps and electronic ballasts.

31. EGRESS LIGHTING ILLUMINATION LEVEL: Shall be a minimum of one footcandle along the path of egress. Egress Lighting Photometric study is required.

32. EMERGENCY LIGHT SELF-CONTAINED WALL-PACK, CEILING, or SEPARATE HEAD UNITS: Shall contain LED light source for lower battery/power consumption and reduced maintenance costs. Tritium or radioluminious illuminated exit signs are not permitted for MCB CAMPEN. During demolition of existing facilities, shall any exit sign be found that are tritium radioluminious self-illuminated, the Contractor shall dispose of them per NRC regulations.

33. COMPACT FLUORESCENT TWIN-TUBE OR QUAD LAMPS: Shall be horizontally mounted where installed in recessed or surface downlight open-can fixtures for better, glare-free illumination.

34. FOUR-FOOT FLUORESCENT FIXTURES: Shall be provided with 25-watt Super T-8 fluorescent lamps and electronic ballasts with NEC required quick disconnects.

35. COLOR TEMPERATURE FOR FLUORESCENT LAMPS: Shall normally be 4100 (indoors) to 5000 (outdoors) degrees Kelvin for most applications except where other color temperatures can be reasonably justified for specific purposes when color rendition is of prime importance.

36. COLOR TEMPERATURE FOR INTERIOR LED LAMPS: Shall be 3500K to 4100K.

37. STEEL LIGHT POLES: Shall be powder coated inside and out.

38. EXTERIOR LIGHT POLES: Shall have dry-pack grout at base. All poles that are not direct bury type shall be securely tightened down on anchor bolts.

a. Dry-pack non-shrink mortar (grout) shall be placed under the pole base plate, base casting (where applicable), and around the conduits and ground rod, and shall have a .5" diameter drain hole located at the low point to prevent water accumulations in the base.

b. Grout shall fill all voids under the base and shall be neatly finished where exposed.

39. NEW CONDUIT: Where new conduit is specified to be installed in existing foundations, the conduit shall be installed by carefully cutting a slot in the foundation avoiding rebar reinforcement, installing the required conduit and patching the opening with grout.

40. SYSTEM-CIRCUITED STREET, WALKWAY, SECURITY, and PARKING LOT LIGHTING FIXTURES: Shall be provided with individual fusing to locally isolate internal fault-caused loss of power from affecting the remainder of the branch circuit lighting.

41. TIME SWITCHES: Shall be digital electronic type with battery back-up and shall contain astronomic or photocell control feature where used for operating lighting.

42. NIGHT LIGHTS: All old style BEQ lighting designs that do not contain a vestibule entry or hallway with separate localized illumination, but rather have entry directly into the sleeping room with a bright main light fixture over the sleeping area, shall incorporate a low-wattage compact fluorescent night light inside the main fluorescent light fixture that provides minimal lighting in sleeping area. The night light shall be separately switched from the main light and the switch shall be located at the entry door. The

main light switch shall be located near the hallway to the bathroom to avoid accidentally switching-on the main light upon sleeping room entry.

43. DIMMER OR FAN SPEED CONTROLS: Shall contain a separate "on/off" switch to allow for preset dimming or fan speed without losing the adjusted setting when the lights or fan are turned "on" or "off". The separate switch is usually more durable and has a longer operational life than continually moving the slider control for switching power "on" or "off".

44. MOLDED CASE MAIN SWITCH: Shall be installed in lieu of a main circuit breaker in an electrical subpanel as a disconnecting means where feeders are protected by a properly sized circuit breaker installed in the switchboard or panelboard immediately upstream of the affected subpanel. Provide a label adjacent to the main switch for identification to avoid possible confusion with the main circuit breaker that may be located elsewhere.

45. BASEWIDE BONDING: Is required of all 12 kV overhead pole line construction.

46. BARE GROUNDING: All “at and below” grade connections of bare grounding shall be the exothermic weld type of connection to include splicing and terminations.

47. WYE CONFIGURATION: The contractor shall ensure the secondary side of the transformers serving power to any BASE facilities that are part of either the water distribution system or the sewer system with pump and motor loads shall be a wye configuration.

48. OUTDOOR ELECTRICAL ENCLOSURES: Shall be made inaccessible to rodents and wildlife.

49. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, FMD, P&E
Bldg. 2291
(760) 725-3638 or (760) 725-3137

CSI 26 00 00

PHOTOVOLTAIC SYSTEM

1. REFERENCES: See CSI 01 00 00 General Requirements.

2. PHOTOVOLTAIC (PV) SYSTEM: All new PV systems installed aboard MCB CAMPEN shall comply with (Figures 39-44) and the following requirements:

a. PV system rated 30 kilowatt (30 kW) and larger shall have SDG&E meter, BASE meter, and third party California Energy Commission (CEC) approved data acquisition verification systems. Each Data Acquisition System (DAS) shall come with a 5-year agreement with the respective Contractor and is paid for by the project Contractor. PV System less than 30 kW shall require SDG&E meter and BASE meter. All meters shall meet current BASE specifications for Advanced Metering Infrastructure (AMI) electric meter.

b. For solar thermal systems, all arrays shall include a BTU meter that constantly monitors solar BTU contribution to respective building, equipment or training pool. BTU meters shall have communication capability to communicate in real time with Building Automation System and report back to FMD UNITY Room or Hub.

c. The selected site shall not contain elements that cause shading of the array during daylight hours.

d. For roof-mounted PV array, the roof dimension shall be used to establish a ratio that shall make the building aesthetically pleasant.

e. The PV array surface shall be desoiled by the Contractor during the last half of the warranty period.

f. Roof-mounted PV arrays shall have vertical and lateral air flow along the back surface of the modules.

g. All fixed position PV systems shall have the following orientation:

(1) The azimuth and tilt angles are equal to 195° and 33°, respectively. This is predicted to optimize the system to collect annual energy that is site specific to MCB CAMPEN.

(2) In a situation where the orientation in part (a) is not a viable option, the azimuth and tilt angles can be selected from the ranges of 170°- 210° and 20° - 40°, respectively. Attempt shall be made to select an orientation that is near the optimum azimuth and tilt angles. It is predicted that approximately 3% or less reduction in annual energy collection shall be achieved when the selected orientation stays within the azimuth and tilt angle ranges.

h. All new construction shall provide signage and placards with the new PV system with regard to primary metering, sub stations of power sources and disconnects. The information on any existing signs and placards shall be incorporated into the new sign/placard and all of the old signs/placards shall be removed so that only the one new sign/placard remains.

i. All inverter equipment for PV systems installations on grade shall be on a concrete pad and protected from damage with secured chain linked fencing and lockable gate per BEAP 3.17C Screening Guidelines.

j. The estimated orientation requirement is based on the analysis of a made-up 100 kW PV system situated in San Diego. PVWatt software that was provided by the National Renewable Energy Laboratory (NREL) was used to acquired the data. Figure 39-42 below depict PV Watt outputs for the system. Due to marine layer that is prevalent in Southern California, the azimuth is observed to have been shifted.

3. PV, SOLAR THERMAL, FUEL CELLS AND GERNERATION TECHNOLOGIES:

a. NOTE: Reference PV Specifications are in the CSI 260400 Electrical Requirements Section.

b. Currently there are no requirements in place to address the installation of certain renewable generation, co-generation and solar thermal technologies aboard BASE.

c. The BASE Energy Office has been involved in a number of installations in the last few years and has been able to include requirements during project development.

d. With the advent of MILCON projects installing these same systems it is evident that a more structured approach with specific project requirements be available to Contractors during the RFP stage to ensure that all new generating systems are functioning as intended while meeting the MCB CAMPEN requirements.

4. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, FMD, Energy Office
(760) 725-0567

Photovoltaic

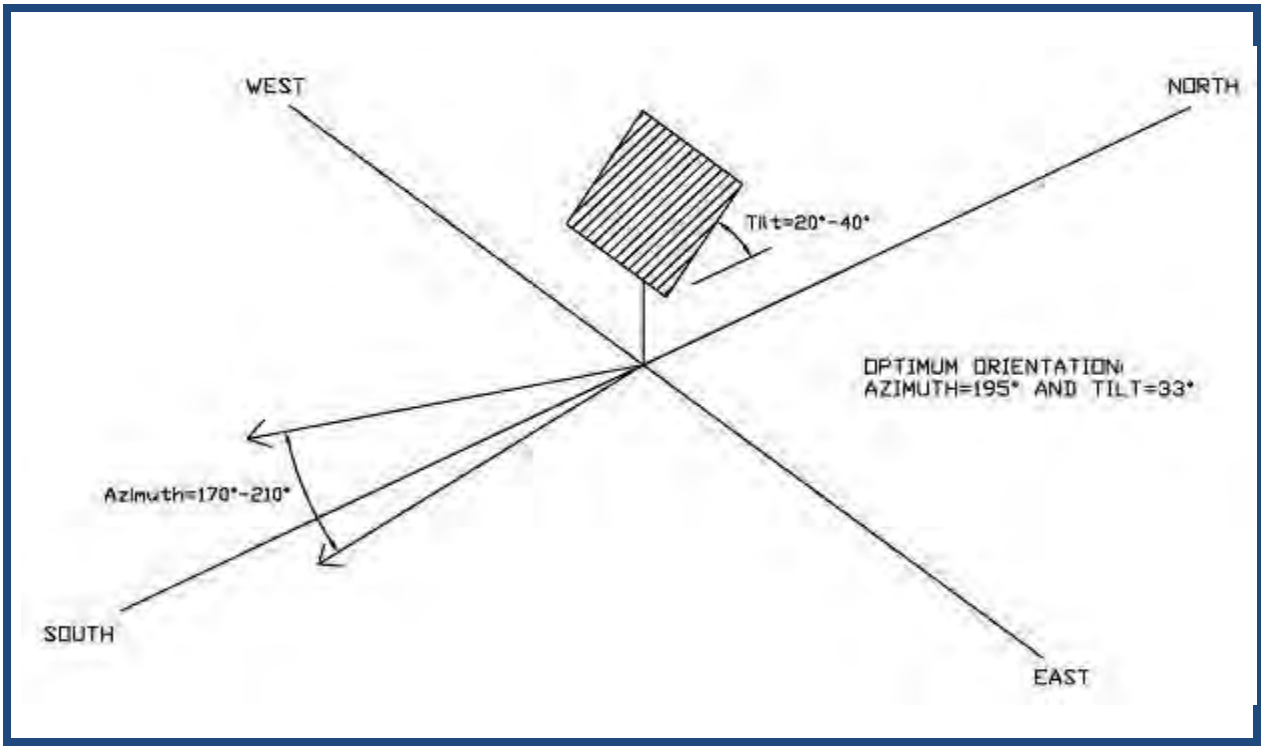


Figure 39: Array Orientation

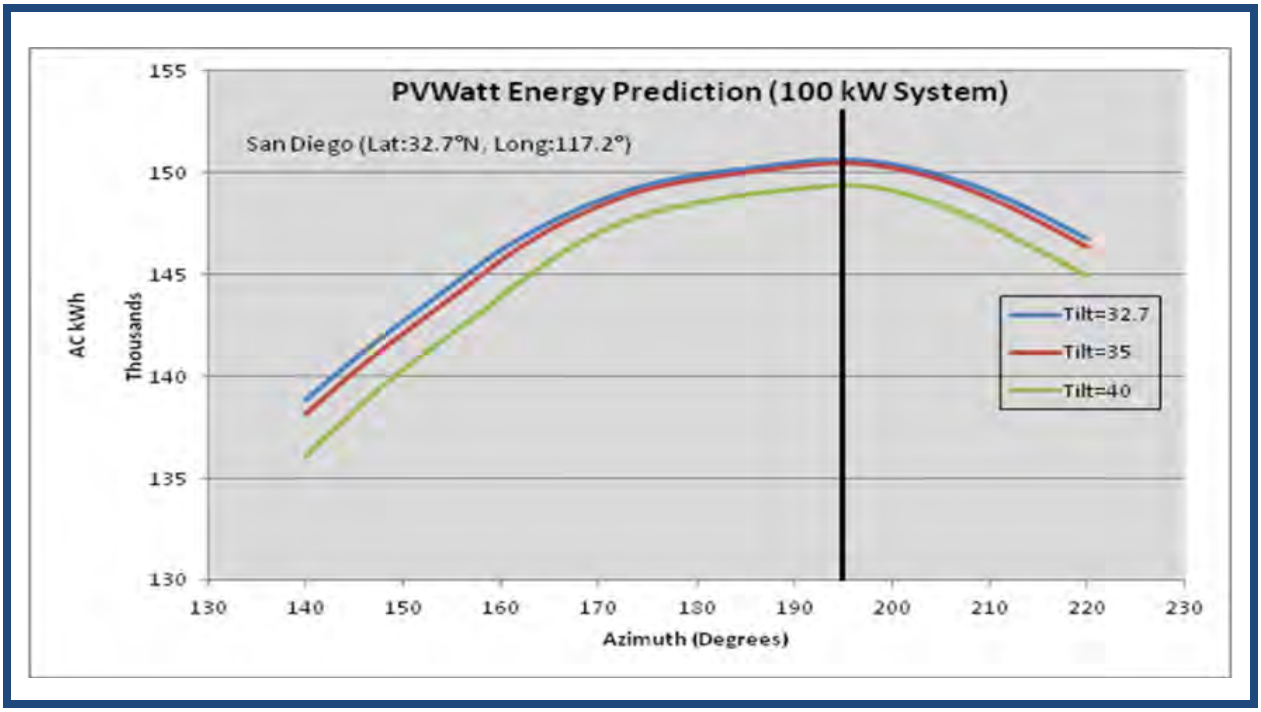


Figure 40: Annual Performance as a Function of Azimuth Angle

Photovoltaic

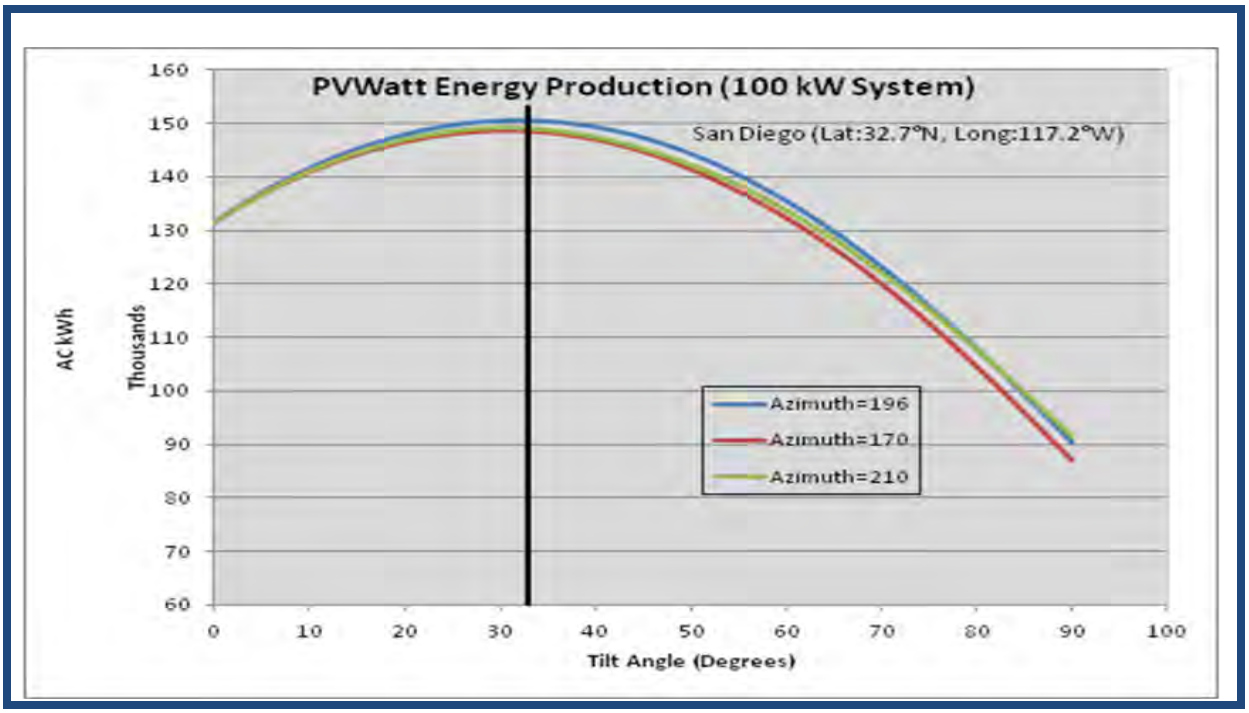


Figure 41: Annual Performance as a Function of Tilt Angle

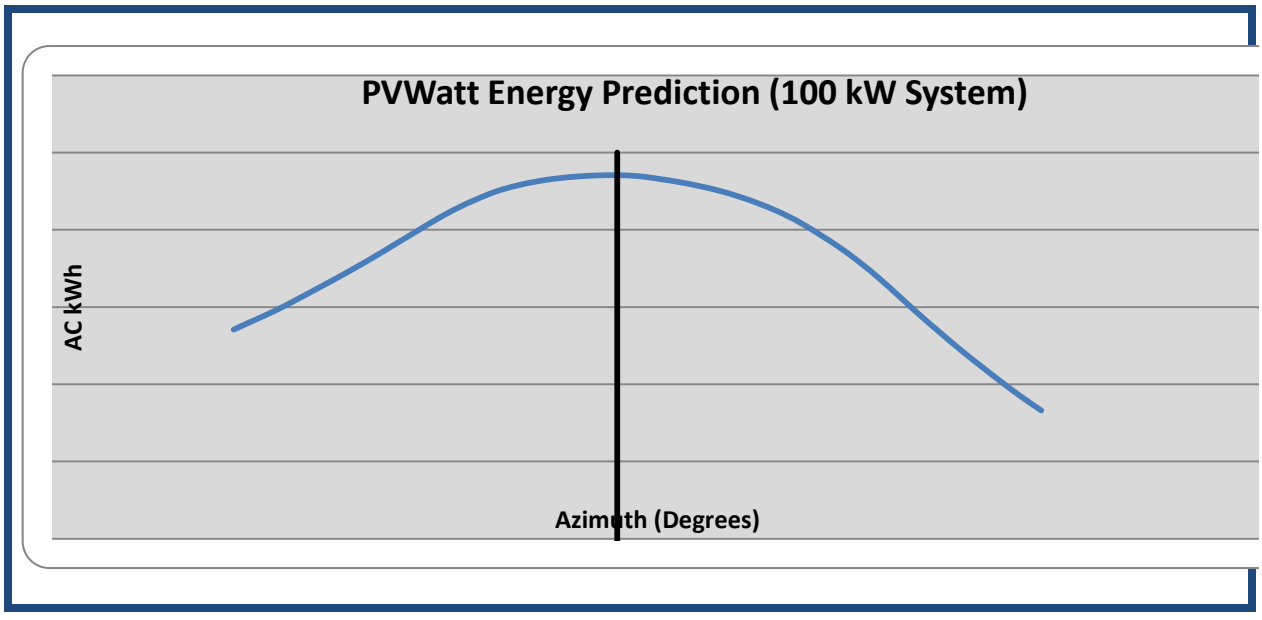
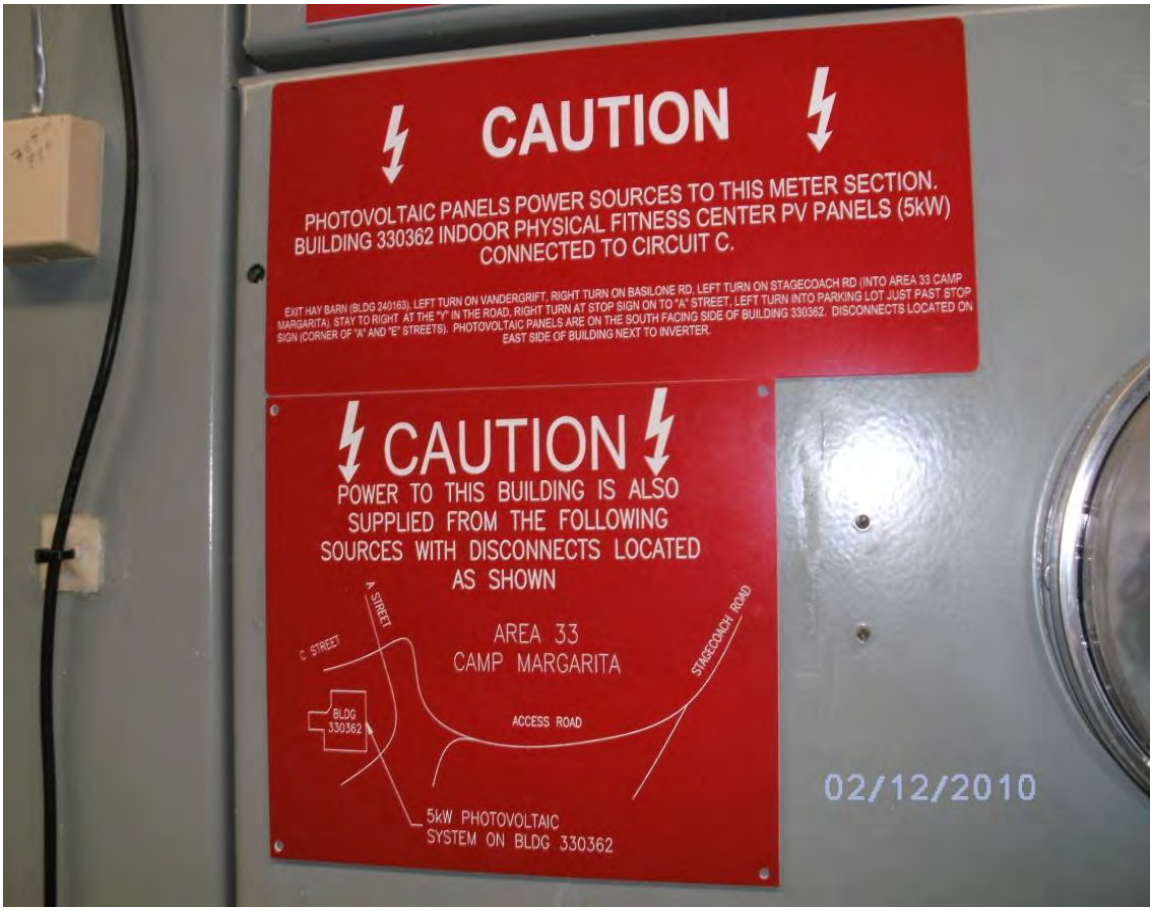


Figure 42: Made-Up System in Phoenix

NOTE: No marine layer in Phoenix so best azimuth is dead south at ~180 degrees.

Examples of Required Photovoltaic Signage: (Also see SDG&E signage standards.)



DESCRIPTION OF PLACARD:

1. Font sizes are in inches from largest to smallest as follows:

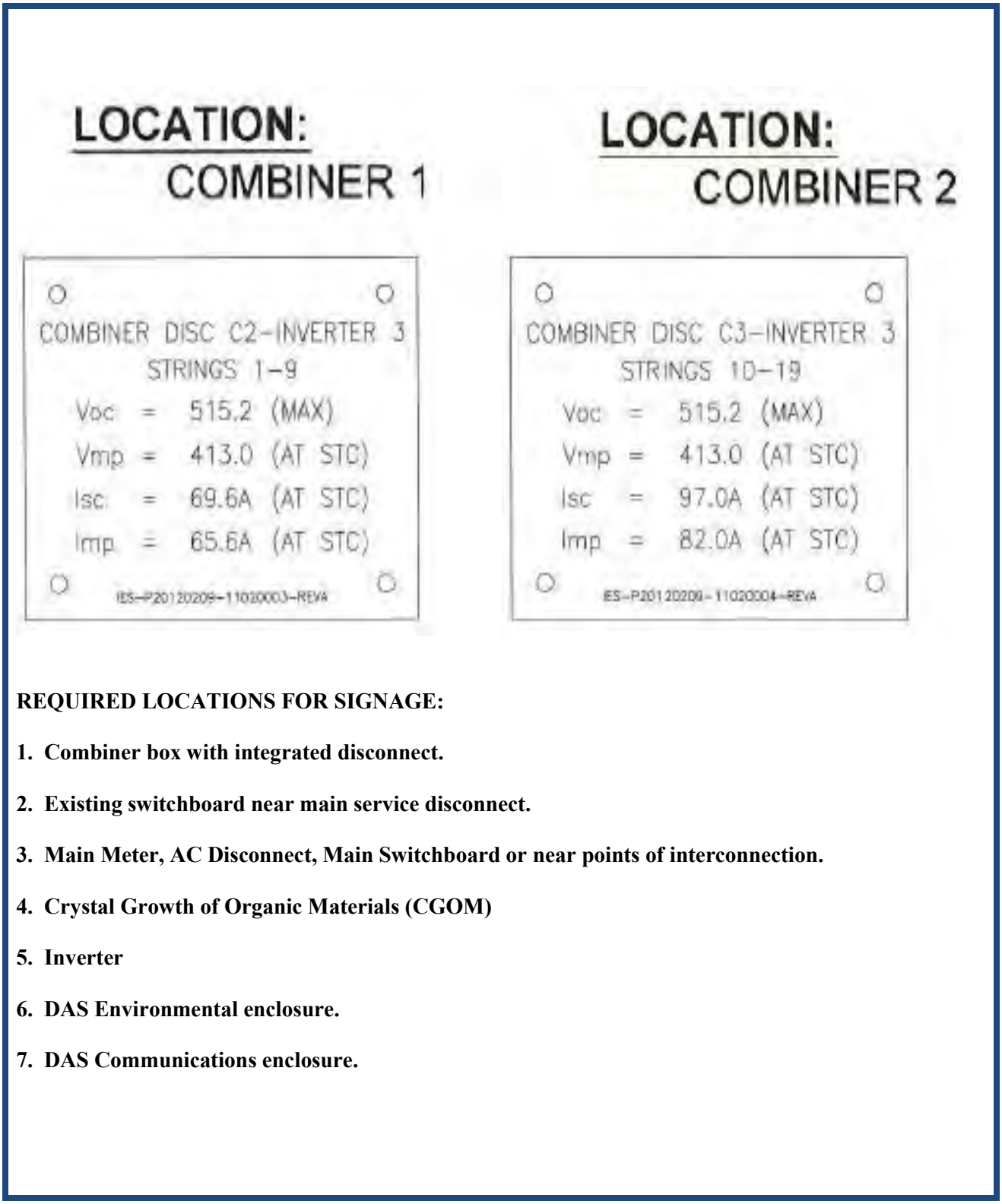
   a. .25" Title
   b. .125" Content

2. Placard color shall be red on front with white lettering engraved.

3. Mounting holes are .125" diameter through .25" from each edge typically at all four corners.

4. Break all edges, chamfer and debur.

Figure 43: Description of Placard



REQUIRED LOCATIONS FOR SIGNAGE:

1. **Combiner box with integrated disconnect.**
2. **Existing switchboard near main service disconnect.**
3. **Main Meter, AC Disconnect, Main Switchboard or near points of interconnection.**
4. **Crystal Growth of Organic Materials (CGOM)**
5. **Inverter**
6. **DAS Environmental enclosure.**
7. **DAS Communications enclosure.**

Figure 44: Required Location for Signage

CSI 26 30 00

DIESEL GENERATOR REQUIREMENTS

1. REFERENCES: All construction shall conform to the most recent edition of the following references; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. Airborne Toxic Control Measure Section (ATCM) 93115
http://www.arb.ca.gov/diesel/documents/FinalReg2011.pdf

b. San Diego Air Pollution Control District (SDAPCD) - Use for all Areas except the 64 Area (Talega). http://www.sdapcd.org/

c. South Coast Air Quality Management District (SCAQMD) – Use for equipment located in the 64 Area (Talega). http://www.aqmd.gov/

2. GENERATORS: Shall be permitted through SDAPCD for the majority of the Base and SCAQMD for equipment located in the 64 Area (Talega).

3. APPLICATION: The Contractor shall complete the application in the name of MCB CAMPEN and pay for the application costs. The ES Air Quality Office shall review and approve the application prior to submitting to SDAPCD. This process takes at least 6-weeks and could take as long as, 6-months. Submit the application as soon as possible (ASAP), even if it means submitting without knowing specific engine information, such as, engine serial numbers.

4. DIESEL ENGINES FOR MCB CAMPEN: Shall be Tier 3 certified, when available. The actual emission standards required for the engines depend on the size of the engine as follows:

5. EQUIPMENT PERMIT: All equipment greater or equal to 50 Horse Power (HP) requires a permit from local air district. The State of California developed requirements specifically for diesel engines that required certain emission standards. These Standards have been categorized into "Tier" Standards. In the near future, all diesel engines shall be meeting at least Tier 3 standards. For this reason, all new diesel equipment shall meet Tier 3 emission standards when available. This allows future flexibility for the BASE to use the engine, if needed and it helps in reducing the BASE 's emissions, which are annually monitored and reported to the district for use in regulating the BASE.

6. BACK-UP POWER: If the engine is used to provide emergency back-up power, then there typically is a self-imposed limit on the number of allowable non-emergency operation hours of operation (i.e. testing/maintenance usage). If the generator provides back-up power to a critical unit; it is typically 30, 50, or 52 hours. If the unit provides non-critical back-up power, then hours are limited to 20 hours. The regulation still requires that Tier Standards are met according to the engine size.

7. NEW ENGINE STANDARDS: Even though there are some engine sizes that do not yet require Tier 3 Standards, the BASE requires new engines to meet the most stringent standards available.

8. GENERATORS: Shall be installed per the NEC, specifically but not limited to Article 100 (Accessibility for maintenance and operation), Article 430 (Ventilation and location of motors), and Article 445 (Generators).

9. ACCESS TO EQUIPMENT: Accessibility to allow maintenance and operation of generators may require additional features such as rungs or steps on the generator, a 4' catwalk around the generator, or some means of providing access to equipment. The Contractor shall review accessibility design with FMD.

10. ADDITIONAL REQUIREMENTS:

a. The generator unit needs to comply with MCB CAMPEN SPCC Plan, which requires secondary containment for all fuel and fuel storage greater than 55 gallons.

b. BMP requires it for smaller quantities.

c. There shall not be an impact to federally listed wildlife species as a result of the project. Generally, all of the power units shall be installed within the cantonment areas and adjacent to the buildings.

d. Larger projects that require extended planned power outages (> 12 hours) need to identify which, if any, emergency backup generators will be affected, and alternative power arrangements will need to be made for the generators with air emission permits.

11. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, FMD, P&E
(760) 725-3638 or (760) 725-3139

CSI 27 00 00

COMMUNICATION SUPPORT
REQUIREMENTS FOR MONITORING UTILITIES

1. REFERENCES: All construction shall conform to the most recent edition of the references cited in the UFC; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

NOTE: Regarding the AMI, as of this writing, the specifics of the AMI are not included in the UFC 358001 or UFC 358010. Until the UFC guidance is updated contact the Subject-Matter Experts (SME), the BASE Energy Office at (760) 725-0567 or the UNITY Room Manager at (760)212-7417 if you have any questions or need clarification.

2. MCIWEST-MCB CAMPEN G-6: Must be involved with all wireless planning aboard MCB CAMPEN. The G-6 does not assume any responsibility for the installation, commissioning, operation, or maintenance of any commercial communication system. Each wireless project shall be vetted through the MCIWEST G-6 Cyber Security and approved by MC-DAA granting an Authority to Operate (ATO) prior to being placed online.

3. BASIC THEORY:

a. Signals (data) from the meter source (endpoints) are transmitted via RF to a collector (Figure 45). The meter shall use ERT technology compatible with the collector. In some cases, it may be necessary to supplement the signal strength of an endpoint with a repeater.

b. The goal is to transmit the meter data from the collector to the “Fixed Network” data repository. The collector shall have access to Inside Plant (IP) transport architecture. From the collector, the signal transport can be via hard-wire or RF Wireless-Fidelity (Wi-Fi).

c. If using RF, data from the collector shall be relayed to a subscriber RF unit. The RF subscriber unit shall be configured to communicate with an RF Access point connected to the Ethernet Backhaul. IP addresses for the collector and RF subscriber unit shall be requested and assigned (Figures 46 and 47).

d. If the collector is to use physical cabling to reach the BASE backhaul, copper or fiber optic shall be used to connect and interface with data switching equipment inside the Telecommunications Room (TR). An IP address shall be requested and assigned to provide data communications with the appropriate Network Application server (e.g., FMD UNITY Room).

4. AMI MAJOR COMPONENTS INFORMATION:

a. Meters (endpoints), Repeaters, Collectors, RF Ethernet radios, Ethernet switches, cabling)

b. Power Supply Unit(s).

c. External Conduit(s) and Path.

d. Cabling - types and terminations (external, internal); protection (physical and functional).

e. NEXGEN Ethernet - bandwidth (IP Address), interconnects, and data ports.

f. Voice/Data connectivity shall be connected from the Information Processing Node (IPN) to the Area Distribution Node (ADN) to the TR.

5. PLACEMENT OF COLLECTORS WITHIN AN AREA:

a. For collectors which are physically cabled to the TR, here are cabling types and the allowable distances for such a setup from Collector to TR (end-to-end):

(1) Use Copper Cat6/6A (24 AWG) shielded twisted pair) if distance is 295' or less.

(2) Use Copper Cat 3 PE-89 (24 AWG) twisted pair for distances up to 18,000' (load coils needed when over 5,000').

(3) Use Fiber Optic Cable (FOC) SSM PE-90 – Best for long-haul distances (requires SC duplex termination). Can be used for applications over 18".

b. All copper and fiber cabling shall be run in rigid conduit when installed external to a building.

c. Collectors that use RF to communicate data to the backhaul shall be installed in a manner consistent with the collector manufacturer's installation documents.

(1) Select approved radio subscriber unit

(2) Spectrum Analysis shall be provided to the MCIWEST-MCB CAMPEN G-6 Spectrum Manager (760) 725-2808.

6. NOTES:

a. All Outside Cable Plant (OSP) copper cabling entering a facility shall be terminated with a Protected Entrance Termination (PET) before any services can be provided by MCIWEST-MCB CAMPEN G-6 within TR.

b. All external cabling shall be run through rigid conduit. [Refer to the CPR and UFC for conduit details].

c. Enterprise Zone Modules are not to be placed within the MCIWEST-MCB CAMPEN G-6 TRs. To clarify: Any design or concept statement shall include, "Non-MCIWEST-MCB CAMPEN G-6 TRs," or words to that effect. The reason is that MCIWEST-MCB CAMPEN G-6 TRs shall be dedicated and/or exclusive for DoD system purposes.

(1) This mean AMI or any other commercial enterprise system cannot share the same Equipment Room containing MCIWEST-MCB CAMPEN G-6 TRs.

(2) Any demarcation points between MCIWEST-MCB CAMPEN G-6 and Commercial services shall be approved by MCIWEST-MCB CAMPEN G-6 Infrastructure Planning and coordinated with the

MCIWEST-MCB CAMPEN G-6 Information Security Manager. Other security and approvals may also apply.

7. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-6, Communication Infrastructure Planning
Bldg. 1160, Room LL-10
(760) 763-5263

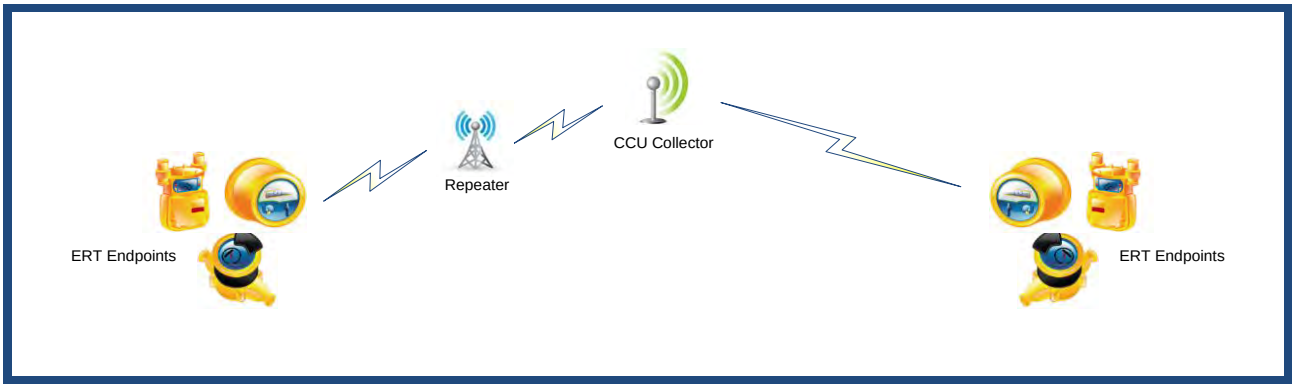


Figure 45: Basic Theory of Signals

Conceptual Examples:

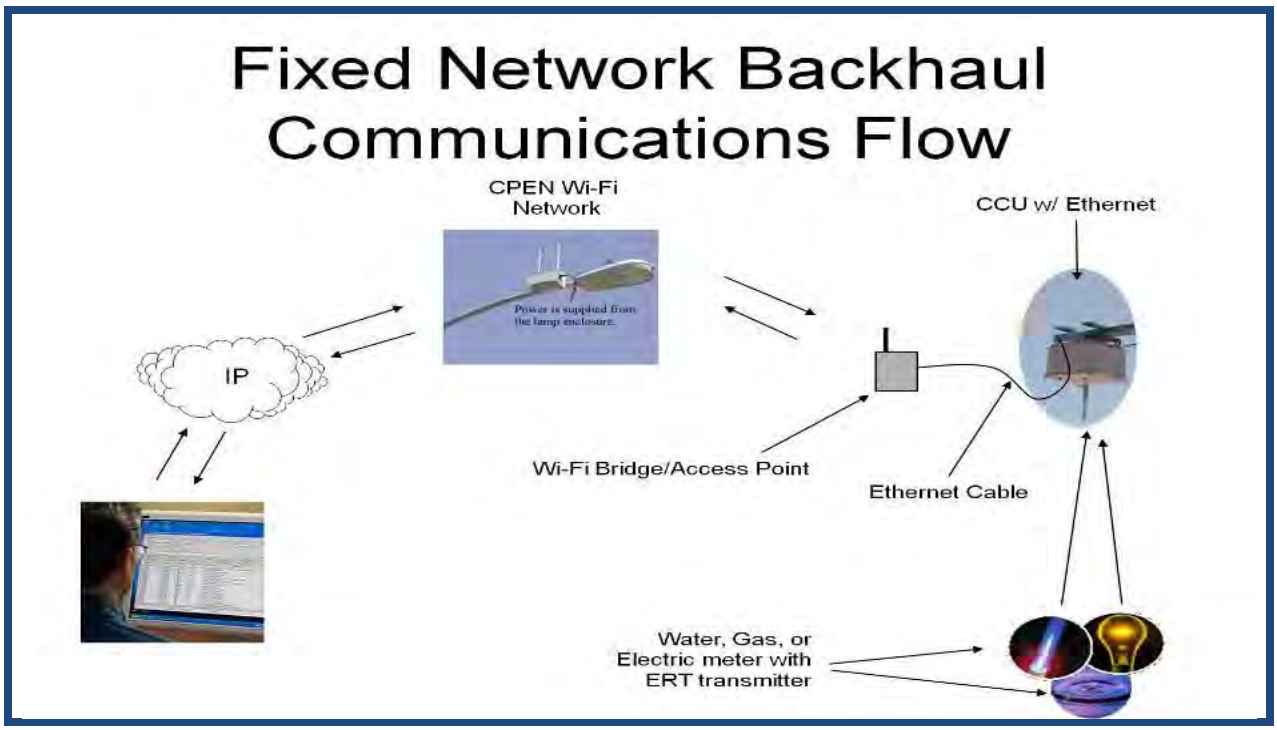


Figure 46: Backhaul Concept - Wireless connection between Collector and Data Repository

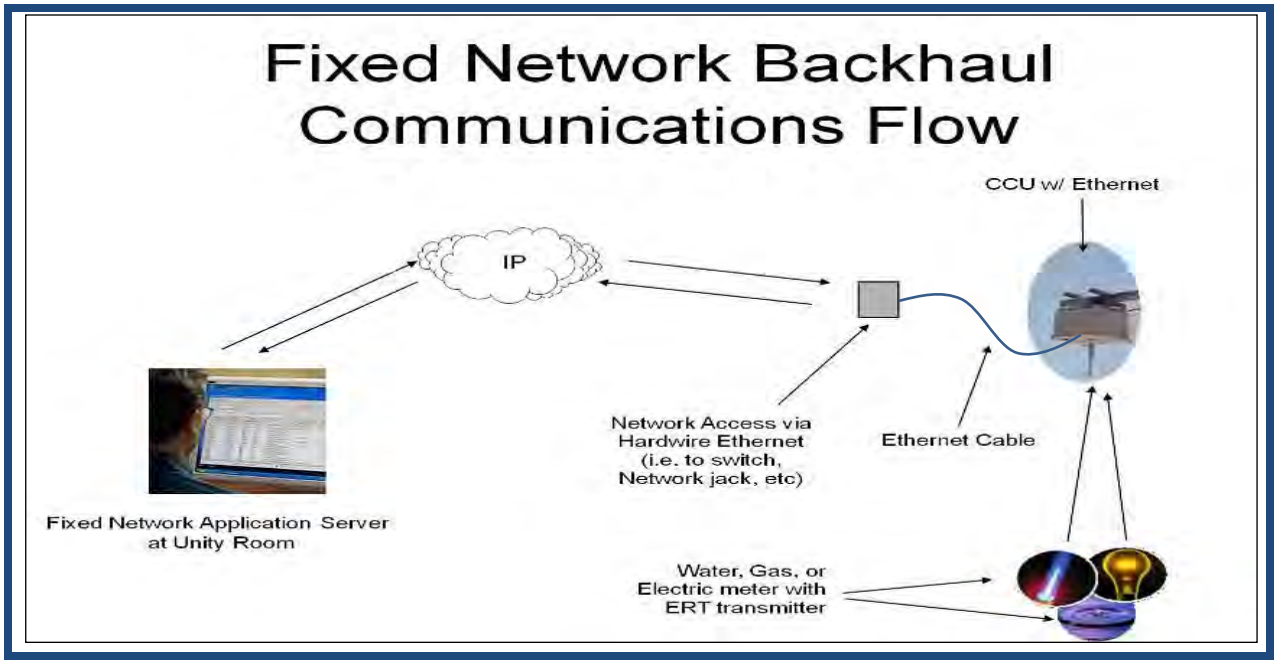


Figure 47: Backhaul Concept - Hardwire connections between Collector and Data Repository

CSI 27 00 00

TELECOMMUNICATIONS

1. CSI 27 13 00 Telecommunication Outside Plant Cabling and Pathways (OSP).

2. CSI 27 14 00 Telecommunications Protective Distribution System (PDS).

3. CSI 27 15 00 Telecommunication Inside Plant Structural Cabling (ISP).

4. ASSISTANCE: For Telecommunication Information please contact:

MCIWEST-MCB CAMPEN
AC/S G-6, Communication Infrastructure Planning
Bldg. 1160, Room LL-10
(760) 763-5263

CSI 28 00 00

VAULT AND SECURE ROOM CONSTRUCTION STANDARDS
(Open Storage Area)

1. REFERENCES: All construction shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. MCO 5530.14A, Chapter 7, Section 7006, Page 7-23, "Marine Corps Physical Security Program Manual"

b. Military Handbook (MIL-HDBK)-1013/1A, "Design Guidelines for Physical Security of Facilities"

2. VAULT:

a. Floor and Walls: 8" of reinforced concrete to meet current structural standards. Walls shall extend to the underside of the roof slab.

b. Roof: Monolithic reinforced concrete slab, with the thickness determined by structural requirements, but no less than the floors and walls.

c. Ceiling: The roof or ceiling shall be reinforced concrete of a thickness to be determined by structural requirements, but not less than the floor's end walls.

d. Doors: Vault door and frame units shall conform to Federa1 Specification AA-D-2757, Class 8 vault door, or Federal Specification AA-D-600, Class 5, vault door. Doors shall be equipped with a built-in General Services Administration (GSA) approved combination lock meeting Federal Specifications FF-L-2740.

3. SECURE ROOM (SR):

a. Walls, Floor, and Roof: Walls, floor, and roof construction shall be of permanent construction materials; plaster, gypsum wallboard, metal panels, hardboard, wood, plywood, or other materials offering resistance to, and evidence of unauthorized entry into the area. Walls shall extend from the floor to the true ceiling with permanent construction materials or 18-gauge expanded steel screen on one face.

b. Ceiling: Ceilings shall be constructed of plaster, gypsum, wallboard material, hardwood, or any other acceptable material.

c. Doors: The access doors to the room shall be substantially constructed of wood, metal, or other solid material and equipped with a built-in GSA-approved combination lock meeting Federal Specification FF-L-2740.

(1) For open storage areas approved under previous standards, the lock may be a previously approved GSA combination lock until the door has been retrofitted with a lock meeting Federal Specification FF-L-2740.

(2) When double doors are used an astragal shall be installed on the active leaf of the door. The hinge pins of the out-swinging doors shall be peened, brazed, spot-welded, or equipped with a hinge secure pin to prevent removal.

(3) Doors other than access doors shall be secured from the interior (e.g., by a dead bolt lock, panic dead bolt lock, rigid wood or metal bar that extends across the width of the door, or by any other means that shall prevent entry from the exterior).

(a) Key operated locks that can be accessed from the exterior side of the door are not authorized.

(b) A balanced magnetic switch meeting UL 634 standards shall protect each perimeter door.

d. Windows: All windows that might reasonably afford visual observation of classified activities within the facility shall be made opaque or equipped with blinds, drapes, or other coverings.

(1) Windows located less than 18' above the ground (measured from the bottom of the window), or that are easily accessible by means of objects directly beneath the windows shall be constructed from, or covered with, materials which provide protection from forced entry.

(2) The windows shall be protected with an IDS, either independently or with motion detection sensors in the space. Window protection does not need be stronger than the contiguous walls.

e. Openings: Utility openings such as ducts and vents shall be kept at less than man-passable 96 square inches opening. Openings larger than 96" square shall be hardened per reference (b).

4. ELECTRONIC SECURITY SYSTEMS (ESS): In those instances where construction projects require ESS, including Intrusion Detection System (IDS), Mass notification System (MNS), CCTV, etc. commands shall ensure that the installation PS Chief forwards a request for support and/or Cost Estimates (CE) to SES, PS Branch.

a. This shall provide notification of a requirement and allow sufficient time for planning and funding.

b. SES, PS Branch manages a centrally funded program that provides security services and equipment to the installations.

c. These systems and equipment are considered collateral equipment and cannot be funded with MILCON funds but can be included in the MILCON project contract for contracting efficiency provided the funding is separate and distinct from MILCON funds.

5. INFRASTRUCTURE REQUIREMENTS: Commands shall ensure that infrastructure requirements are coordinated with and reviewed by MCB CAMPEN AC/S G-6, SSD, Customer Service Manager and PWD.

6. FURNITURE FLOOR PLAN: Submit an electronic furniture floor plan required for MNS and IDS.

a. HQMC funded projects 1-3 years out.

b. Site funded projects as soon as user identifies areas requiring IDS.

c. No later than 50% design review. (Meeting with MCB CAMPEN, PS and end user is required).

7. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
AC/S SES, PMO, PS Branch
(760) 725-9454

b. MCIWEST-MCB CAMPEN
AC/S G-6, Communication Infrastructure Planning
Bldg. 1160, Room LL-10
(760) 763-5263

CSI 28 30 00

FIRE DETECTION AND ALARM

1. REFERENCES: All construction shall conform to the most recent edition of the following references, General Requirements; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. Department of Defense Instruction DoDI 5200.08, "Security of DoD Installations and Resources and the DoD Physical Security Review Board (PSRB)"

b. DoDI 2000.16, "DoD Antiterrorism (AT) Standards"

c. UFC 4-010-01, "DoD Minimum Antiterrorism Standards for Buildings"

d. UFC 4-021-01, "Design and Operations and Maintenance (O&M): MNS"

e. MCO P11000.5G, Real Property Facilities Manual, Volume IV, Facilities Project Manual, CH 1 & 2

f. MCO P1000.12C, "Real Property Facilities Manual, Volume III, W/CH 1"

g. MCO 5530.14A, "Marine Corps Physical Security Program Manual"

h. SECNAV M-5510.36, "DoN Information Security Program (ISP)"

2. FIRE ALARM (FA):

a. All alarm initiating devices shall be addressable. All components shall be individually attached to or contain an addressable device. All devices shall be easily accessible.

b. In Section D4010, Fire Alarm and Detection System. All Devices requiring a key to access equipment and reset devices shall be keyed alike with a CAT 60 key.

c. Type thermo-plastic weatherproof nylon/thermo-plastic heat-resistant nylon (THWN/THHN) insulated wire is not acceptable for underground wiring of FA circuits. Contractor shall provide type THW or moisture-resistant, flame retardant thermoset insulation for wiring (XHHW) in wet locations.

d. Surface boxes, when provided for surface mounted manual pull stations, shall be the station manufacturer's approved back box. Back box finish shall match station finish. Surface boxes shall have smooth side surfaces devoid of any knockouts. The surface boxes shall closely match the exterior contour of the manual pull stations.

e. The FACP shall be located in either the Telecommunication or Electrical Room A building floor plan shall be located and permanently mounted next to the FACP. The floor plan shall be at a minimum laminated, show all initiating devices, all room numbers/names, and device addresses.

f. The FACP shall have the capability to silence FA audible signals including water-flow signals.

g. The Digital Alarm Communication Receiver (DACR) is located at the Joint Emergency Communications Center is a Radionics/Bosch D6600. The receiving station dispatch software is GE MasterMind Monitoring Software. The preferred mode of fire alarm signal transmission is Contact ID.

(1) The primary and backup phone numbers shall be made available during the pre-final inspection.

(2) The FACP shall be programmed with primary and backup phone numbers.

(3) The DACR shall receive a distinct description for each type of initiating device.

h. The Digital Alarm Communication Transmitter (DACT): The phone lines shall be installed in conduit from the DACT location to the telephone backboard location.

i. All site specific programming, software, and pass codes shall be provided to MCB CAMPEN prior to final acceptance of the FA system. The Fire Alarm/Mass notification System (FA/MNS) system batteries shall provide 60 hours of standby power followed by 15 minutes of alarm power.

3. FIRE SPRINKLER:

a. Provide locks and chains on back flow preventer in lieu of tamper switches.

b. Locate Fire Department Connection (FDC) facing the street so it is easily accessible for the Fire Department.

c. Shotgun risers shall be provided eliminating the alarm check valve and retard chamber style.

d. All exposed steel piping that is used for water fire demand shall be painted in the industry standard color “red” to signify fire systems and include a backflow device.

e. Provide KNOX (lockable) FDC caps on the FDC.

4. KNOX BOX:

a. Provide all KNOX Boxes model #3275 recessed mounted with hinged door.

b. Exact size and location for installation and ordering shall be coordinated with MCB CAMPEN Fire Department.

c. Provide master keys and FA keys in KNOX box.

d. Provide KNOX box even if there is a 24-hour duty desk inside the facility.

e. BASE Fire Department has an order form for the KNOX boxes.

f. Mount KNOX boxes on outside of building near front entrance not higher than 6’.

5. FIRE ACCESS LANE: The minimum inside turning radius for any fire access lane shall be 37’**.** All fire lanes shall be 20’ wide all weather paving with continuous 13’-6’ vertical clearance.

6. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
AC/S SES, PMO, PS Branch
(760) 725-9454

b. MCIWEST-MCB CAMPEN
AC/S SES, Deputy Fire Chief
(760) 763-2703

CSI 28 30 00

MASS NOTIFICATION

1. REFERENCES: All construction shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. DoDI 5200.08, "Security of DOD Installations and Resources"

b. DoDI 2000.16, "DoD AT Standards"

c. UFC 4-010-01, "DoD Minimum Antiterrorism Standards for Buildings"

d. UFC 4-021-01, "Design and O&M MNS"

e. SECNAVINST M-5510.36 DoN, "Information Security Program (ISP)"

f. MCO P11000.5G, Real Property Facilities Manual, Volume IV, Facilities Project Manual, CH 1 & 2

h. MCO P11000.12C, "Real Property Facilities Manual", Volume II, Facilities Project Manual, CH 1

i. MCO 5530.14A, Chapter 1, Page 1-10, Section 101, "Physical Security Requirements for MNS"

2. PROJECT PLANNING: All plans for construction, MILCON, and Facility Sustainment, Repair, and Modernization (FSRM) shall incorporate PS and ATFP features, in accordance with the aforementioned references.

a. If a MNS is required, the system shall be combined with the fire alarm (Figure 48).

(1) LED text signs are not required as part of the MNS system.

(2) Provide clear strobes marked with the word "ALERT" for shared use by the building's combination MNS/FA.

(3) A means to initiate prerecorded MNS messages at the buildings MNS/FA panel shall not be required. However, the FA/MNS panel shall have the capability to provide at least eight pre-recorded messages.

b. USMC MNS utilizes the WAVES – Wireless Audio Visual Alerting Emergency System. Equipment shall be Cooper notification, SGIS software or approved equal.

c. The Voice Panel Cooper Notification Automatic Calling Unit-340 (ACU-340) or approved equal connects to the FACP.

(1) The combination Fire/Voice Evacuation Panel shall be capable of passing live and pre-recorded audio.

(2) The system is to have an Auxiliary Line Level Audio Input and integration package available to connect to the Radio Transceiver.

(3) The Fire/Voice Evacuation System shall be installed stand-alone as part of the project.

(4) Provide a 1" conduit from 12"x12"x6" junction box to the Fire/VOICE Evacuation Panel.

d. The MNS Radio Transceiver (Cooper notification TRX-401 or approved equal) links the building back to the Central Control Station at PMO and also connects to the ACU (see diagram).

(1) This wireless link back to the PMO has an RF cable to an external antenna.

(2) This system delivers all audio messages from the BASE Station(s) to the respective alerting areas and facilities.

(3) It has a battery back-up, Uninterruptible Power Supply-901 (UPS-901) or approved equal and is installed within 15 cable feet of the Voice Panel.

(4) The MNS radio transceiver and the fiberglass NEMA enclosure Space and Naval Warfare (SPAWAR) provides measures approximately 18"x18"x12" and requires a 110/220 VAC terminated to a dedicated 20 Amp breaker.

(5) Provide a 1.5" diameter rigid conduit run from a 12"x12"x6" junction box near the install location of the MNS Radio Transceiver out to the apex of the roof with a weather head termination a minimum of 4' above the roofline for the external antenna.

(6) Two local speakers shall be connected directly to the MNS Radio Transceiver.

(a) A .75" conduit is to run from the MNS Radio Transceiver location (12"x12"x6" junction box) to 2 central locations of the facility (duty room, administration room, command area, central hallway, day lounge, etc.).

(b) The conduit shall be routed to the speaker mounting areas with a flush mounted 4"x4"x4" EMT box with (decorative) cover or to a location above a suspended acoustical ceiling (well-marked for MNS).

(c) All dedicated conduit runs for the MNS Antenna and speakers are to have a pull string and shall be adequately marked.

3. FIRE SYSTEM: It is preferred that the company installing the Fire System, voice capable speakers and strobes (strobes shall be marked with "ALERT") be activated by the FACP as well as the MNS. Combination speaker/strobes are preferred for a cleaner installation.

4. MILCON AND FSRM CONSTRUTION DRAWINGS: All plans, subsequent design review phases, and final 100% drawings for MILCON and FSRM construction shall be reviewed by one or more of the following, as applicable to the specific project requirement:

a. PMO or designated representative

b. MCB CAMPEN Security Officer, SES, PS Branch

c. ATFP

d. MCB CAMPEN Fire Department

e. NOTE: Contract for Bid shall be processed after documentation of design has been reviewed by the above listed parties. The contract for bid shall not be processed without documentation of design review.

5. ALL CONSTRUCTION PROJECTS (to include MILCON and FSRM projects): Shall be reviewed by the MCB CAMPEN, PS Chief and Anti-terrorism Officer (ATO) and verified by Security Division (PS) and Commandant, U. S. Marine Corps, Installations and Logistics (CMC, I&L) during validation, to ensure PS and ATFP requirements have been addressed.

6. REQUEST FOR SUPPORT: In those instances where construction projects require ESS, (including IDS, MNS, CCTV, etc.) commands shall ensure that the installation PS Chief forwards a request for support and/or CE to SES, PS Branch.

a. This shall provide notification of a requirement and allow sufficient time for planning and funding.

b. SES, PS Branch manages a centrally funded program that provides security services and equipment to the installations.

c. These systems and equipment are considered collateral equipment and cannot be funded with MILCON funds but can be included in the MILCON project contract for contracting efficiency provided the funding is separate and distinct from MILCON funds.

7. INFRASTRUCTURE REQUIREMENTS: Commands shall ensure that infrastructure requirements are coordinated with and reviewed by MCB CAMPEN GIS-SPT Director and PWD.

8. FURNITURE FLOOR PLAN: Submit an electronic furniture floor plan (required for MNS and IDS).

a. HQMC funded projects 1-3 years out.

b. Site funded projects as soon as user identifies areas requiring IDS.

c. No later than 50% design review. (Meeting with MCB CAMPEN, PS and end user is required)

9. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S SES, PMO, PS Branch
(760) 725-9454

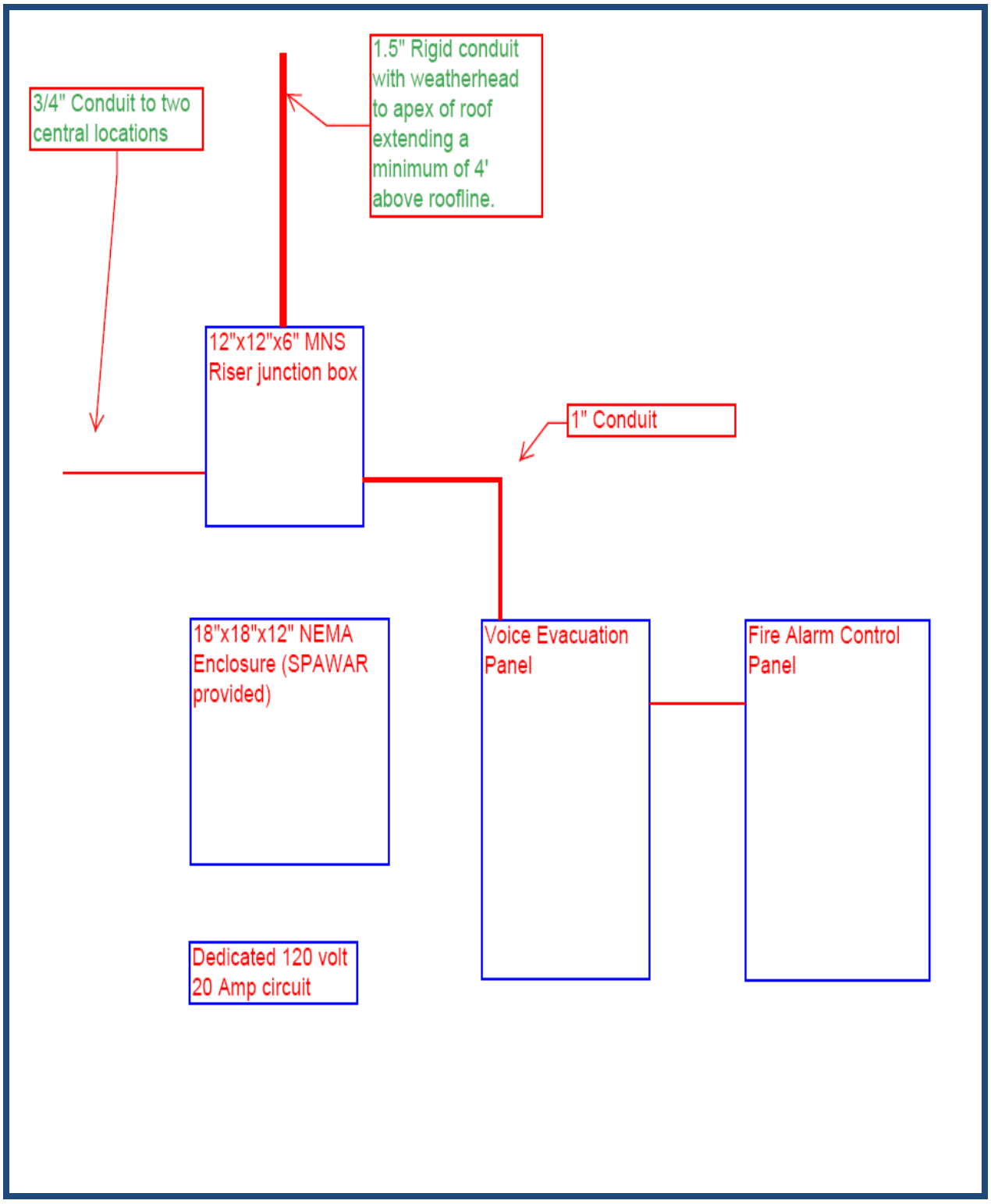


Figure 48: Physical Security Requirements for Mass Notification System (MNS)

CSI 31 20 00

UTILITY TRENCH DETAIL

1. REFERENCES: All construction shall conform to the most recent edition of the following SDRS; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply, as applicable.

a. SDRSD, "Trench Resurfacing Asphalt Concrete (AC) Streets"

b. SDRSD, "Trench Resurfacing Notes and Details"

c. SDRSD, "Trench Resurfacing Portland Cement Concrete (PCC) Surface Streets"

d. SDRSD, "Joint Trench Location"

2. UTILITY TRENCHES: Shall conform to SDRSD as applicable. Combination of wet and dry utilities in a common trench is only allowed with prior approval by MCB CAMPEN, PWD and shall not form the basis of a contractor proposal. Combination will only be considered or approved on a case-by-case basis by the MCB CAMPEN, PWD.

3. UTILITY TRENCH WORK: Shall be a two-step process:

a. First, the contractor shall sawcut AC pavement, excavate, install the pipe, and backfill while fulfilling other necessary procedures as specified on the drawings.

b. Second, the contractor shall create a "T" section by cutting the trench edges to the depth of the existing AC and to a width as specified on the drawings. If the existing AC depth is greater than 8" thick, the contractor shall be allowed to grind to 4" depth and patch, keeping the minimum width of the trench edges.

4. NOTES:

a. All communication infrastructure shall be concrete encased and separated from other utilities by a minimum of 6".

b. Effect of possible pipe migration due to subsurface water table movement shall be considered in design for underground utilities.

5. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E, Utilities Team
(760) 763-6988

CSI 32 90 00

LANDSCAPE GUIDELINES

1. REFERENCES: See CSI 01 00 00 General Requirements.

2. PLANTING:

a. No vegetation shall be planted near or around backflow devices, hydrants, or any equipment that requires routine maintenance.

b. Container plants shall be minimum 1 gallon. Use of smaller containers, such as 4" pots or plugs, may be approved by the PWD on a case-by-case basis, for example, in large bioretention areas where seeding is not viable or practical.

c. HydroSeeding, sometimes called hydraulic mulch seeding, is a planting process in which a slurry containing seed, hydroseeding mulch, fertilizer and a tackifier (bonding agent) is sprayed onto the ground. HydroSeeding can be an economical and effective way to achieve plant cover over large areas and may be acceptable as a restoration technique. However, inappropriately specified or poorly applied hydroseed is likely to fail and unsuccessful hydroseed applications will not be accepted by the PWD.

(1) Use personnel or subcontractors certified and trained in the proper procedures for mixing and application of hydroseed/hydromulch as defined by the manufacturers/suppliers specifications and verified by the DOR.

(2) Hydroseeding shall not be used in areas receiving concentrated flow or on slopes greater than 3:1 unless used in combination with other stabilization techniques.

(3) Hydroseeding is not appropriate in highly pedestrian trafficked areas unless species are traffic tolerant and protected until established.

(4) Seed mixes must be site specific. Spaces in or adjacent to natural areas and/or intended shall be re-vegetated as native scrub shall use the Environmental Security (ES) approved seed mix as a starting point and shall consult with the ES Compliance Division to address specific habitat concerns. Slope planting shall focus on long term erosion control and root mass. In populated areas, species shall be tolerant of some foot traffic and periodic mowing and are not required shall be purely native. Seed rates must be referenced by Pure Live Seed vs. bulk pounds, and native seed must be sourced within 2 counties from MCB CAMPEN. Seed mix must contain both fast establishing annuals and permanent, long-lived perennials with substantial root mass.

(5) Hydroseed shall be applied between November and January. Application of hydroseed outside of this planting window greatly reduces the chance of successful establishment, especially with native plants. If necessary, and in general to minimize the period during which a cut or filled surface remains exposed, species that provide rapid short term coverage shall be used in combination with species that provide long term permanent coverage. Mowing and re-application of permanent species will likely be necessary during the planting window.

(6) Hydroseed shall be irrigated. Permanent, below ground spray irrigation with full head to head coverage is required for most sites within cantonment areas. Aboveground, temporary spray irrigation may be approved for Range projects and on a case by case basis for Cantonment Areas, by the PWD. Temporary irrigation must be left in place for 1 year and must be removed at the end of this year. Irrigation with a water truck is generally not successful and will only be approved if no other alternative is available. Non-irrigated hydroseed is rarely successful and will only be approved in extreme circumstances, and when applied/re-applied during the planting window.

(7) Hydroseed shall be applied from two opposing directions to soil surface to achieve optimum soil surface coverage. Rough surfaces (rocky terrain, cat tracks and ripped soils) may require higher application rates to achieve 100% cover. Seedbed shall be prepared according to planting preparation specifications. A two-step application is optimal. Hydraulic mulch must be capable of maintaining integrity for minimum 9 Months.

(8) Hydroseed on slopes shall be applied to geotechnically stable slopes that have been designed and constructed to divert runoff away from the face of the slope. Slope interruption devices or water diversion techniques are required when slope lengths exceed 100 feet (30 m). Slopes greater than 3:1, and in excess of fifteen feet in vertical height, shall be planted with shrubs having a one gallon minimum size or trees having a five gallon minimum size. The maximum spacing for shrubs and trees shall be ten feet on center each way.

(9) Permanent plant cover must be established within the 1 year maintenance/establishment period. Establishment will be reviewed at the 6 month and 1 year walks by a government representative. For native species, plants shall average 4" tall and 2-4 perennial plants shall be present per square foot. Annual species shall also be present. At 1 year, coverage of 70%, as compared to the native background plants must be achieved. For turf grass and other non-natives, a minimum of 85% cover is required. If these establishment rates are not achieved at either walk, the contractor is required to re-seed and the maintenance/establishment period for these areas will restart (Figures 49-50).

Figure 49: Example of well-established hydroseed.

Figure 50: Example of failed hydroseed.

3. EDGING: When used aboard MCB CAMPEN, landscape edging must reinforce a durable and easily maintained site design. It shall be used when a more formal aesthetic is desired and/or when it reduces maintenance . Designs shall not rely exclusively on edging patterns, but shall have strong planting and paving concepts. Mulch (organic or inorganic) shall not dominate a site. Informal planting design and thoughtful choice of materials can eliminate the need for edging.

a. When used, a 6" concrete mow strip is required. In limited circumstances, commercial grade steel, or aluminum edging may be approved by the PWD. This edging shall be brown or black in color to coordinate with mulch (Not green) and 4" minimum. Redwood, faux-wood (Trex or equivalent), and plastic edgings are prohibited (Figures 51-53).

b. Provide a 6" concrete mow strip between grass/planted areas and specialized surfaces such as running tracks, exercise stations, horseshoe pits, volley ball courts, etc.

c. Provide a 6" concrete curb edging along the sides of asphalt walkways and parking lots.

Figure 51: Unacceptable redwood edging warping.

Figure 52: Unacceptable TREX edging trip hazard.

Figure 53: Unacceptable wood edging used at edge of asphalt.

4. GROUND COVER AND MULCH: All areas disturbed during construction shall receive permanent cover to retain moisture, reduce erosion, and suppress weed growth and seed germination. Permanent cover shall be achieved through a combination of inorganic mulch and planting.

a. Inorganic Mulch: Includes any type of rock (cobble, gravel, disintegrated granite (DG), glass, or rubber chips. Rock mulch shall be minimum 3" thick. DG shall be four inches 4" thick. Finish grade of mulch shall be 1" below adjacent paving. Coconut fiber jute type weed fabric (Not plastic mesh type) shall be installed below inorganic mulch. Color shall be coordinated with adjacent sites and building materials.

b. Where container plants are intended as permanent ground cover, organic mulch may be used in limited circumstances as temporary cover until plants reach their ultimate size.

c. Organic mulches include any material of natural origin that decomposes naturally, such as bark chips, grass clippings, straw, leaves, compost, rice hulls, saw dust or gorilla hair. Since they decay over time, they are temporary. As they decay, they provide nutrients. These temporary mulches will perform the various functions of mulch for approximately 1-2 years. If not replaced, they will lose effectiveness after this period. Organic mulches are generally flammable, some more than others. The following criteria must be met and clearly noted on plans in order to use organic mulch in this capacity:

(1) Planting beds must have permanent, conventional spray irrigation with full coverage able to keep mulch damp and address fire concerns.

(2) Plant quantities, species, and spacing shall provide complete ground coverage within one to two years (Figures 54-55).

(3) Mulch must be high quality, absent of trash or construction waste and filtered to remove large pieces over 4 inches long/wide.

(4) Planting beds adjacent to natural open space or identified as part of a brush management zone shall not use organic mulch due to extreme fire danger. Gorilla hair mulch is particularly flammable and must be approved by the PWD on a case by case basis. Refer to the BEAP Brush Management guidelines (3.6 H-9). These areas shall be carefully planned and planted with fire resistant species and shall use inorganic mulch.

Figure 54: Example of poor vegetative cover.

Figure 55: Example of 100% vegetative cover.

5. MAINTENANCE AND ESTABLISHMENT PERIOD: All Landscape Contractors are required to provide a 365 day (1 year) maintenance and establishment warranty period on installed landscapes.

a. A temporary sign shall be provided and located on site to notify users that the site is under warranty. This sign is to include: dates of warranty period, company providing landscape maintenance, contact number to report landscape issues. It shall be located in a centralized, clearly visible location and shall be durable enough to last through the warranty period.

b. A landscape maintenance checklist and seasonal irrigation schedules shall be included with the Operations and Maintenance Support Information (OMSI) package and provided to MCB CAMPEN, PWD. The Landscape maintenance checklist shall outline the frequency and types of tasks shall be performed during the maintenance period. The irrigation schedule shall outline seasonal and microclimate specific irrigation needs and estimated establishment period.

c. Maintenance logs/reports shall be provided to the PWD at the 6 month and 1 year warranty walks. Proper establishment is critical to the ultimate success of the landscape. At a minimum, the following maintenance tasks are required:

(1) Weeding and Cultivating: The entire site shall be kept free of weeds, noxious grasses, clods, trash and debris on a monthly basis. Hand remove all weeds larger than 3 inches tall or wide. Apply pre-emergent as required.

(2) Plant Replacement: During the maintenance period, plants which die or are in unhealthy or badly impaired condition shall be replaced by the Landscape Contractor within 1 month after unsatisfactory condition is evident. If plants are replaced during the maintenance period, then the 365 day maintenance period for those plants shall restart at the date of installation and acceptance of the replacement plants.

(3) Pruning: Prune all plant material as needed and as appropriate on a monthly basis. Remove all dead, diseased or unsightly growth. Pruning is required when necessary to provide horizontal and/or vertical sight line clearances. Prune back groundcover and shrubs overhanging curbs, sidewalks or parking lots. Do not shear plants or create vertical edges; prune them in a manner that enhances the natural form, shape and size. Prune all trees to encourage upward growth and a high branching structure (ultimately, a minimum vertical clearance of 6’ in pedestrian areas and 9’ in parking/street areas is required for all trees other than those specifically chosen as multi-trunk or low branching specimens for screening). Remove all sucker growth. Tree stakes shall be removed at the end of the maintenance period to avoid girdling and damage to trees (Figures 56-57).

(4) Mulch and Erosion Repair: Replace mulch that has been washed or knocked out of place and smooth finish surface of mulch. Repair any erosion damage and provide permanent solution to address cause of erosion. Use coconut fiber jute type erosion control fabric (Not plastic mesh type).

(5) Irrigation Adjustment and Repair: Make irrigation system inspections on the entire system for proper operation and coverage on a monthly basis. Repair and clean/flush as necessary to keep the system in proper, full operation. Adjust spray nozzles to obtain optimum coverage and minimum overspray on hardscape elements, into drains or stormwater facilities. Seasonally adjust irrigation controllers for frequency and cycle length.

Figure 56: Tree stakes broken and girdling tree.

Figure 57: Tree stakes grown into tree.

6. IRRIGATION/VALVE BOXES:

a. Valve boxes shall be chosen to blend in with surrounding ground cover (Figures 58-59).

b. Concrete valve boxes are preferred.

c. For reclaimed water, purple valve boxes must be used.

d. When plastic valve boxes are specified for potable water use, specify tan colored valve boxes when boxes will be located in wood or rock mulch areas. All valve box covers shall have identification label or number attached or engraved to the top of the cover.

Figure 58: Unacceptable green valve boxes in tan gravel.

Figure 59: Unacceptable green valve boxes in organic mulch.

CSI 33 40 00

STORMWATER

1. REFERENCES: All construction shall conform to the most recent edition of the UFC and CFR requirements and standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply. The following references shall be used to design stormwater facilities aboard MCB CAMPEN:

a. Energy Independence and Security Act (EISA), "Stormwater Management for Federal Facilities," Section 438, "Stormwater Runoff Management"

b. EISA, "Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects," under Section 438 (EPA 841-B-09-001)

c. State Water Resources Control Board (SWRCB), Water Quality Order No. 2013-0001-DWQ, "NPDES", General Permit No. CA S000004, "Waste Discharge Requirements (WDRs) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s)"

d. UFC 3-210-10, "Low Impact Development (LID)"

e. California Stormwater Quality Association (CASQA) BMP Handbooks, latest edition [New Development and Redevelopment; Municipal; Industrial; Construction]

f. Department of Water Quality (DWQ) California Construction General Permit (Order 2009-0009-DWQ, NPDES No. CAS000002)

g. UFC 3-200-10n, Civil Engineering

h. If the standard sought does not appear in the above requirements, then the latest edition of the following standards shall be used in the order listed. If a conflict exists, the MCB CAMPEN Requirements have primacy.

(1) San Diego County Drainage Design Manual

(2) San Diego County Hydrology Manual

(3) San Diego County Standard Urban Stormwater Mitigation Plan (SUSMP)

(4) UFC 3-230-17FA, Drainage in Areas other than Airfields

(5) SDRSD

(6) SSPWC or Greenbook

(7) California Transportation (CALtrans), Standard Specifications and Construction Details, Stormwater Design Guidelines

(8) Federal Highway Administration (FHWA) Urban Drainage Design Manual, Hydraulic Engineering Circular No. 22

2. SUMMARY OF REQUIRMENTS:

a. Conceptual Overview: A number of overlapping stormwater regulatory and engineering requirements apply to MCB CAMPEN projects. Many of the regulations, policies and NPDES permits require the use of LID or Green Infrastructure techniques to manage stormwater.

(1) Basic principles of LID include managing stormwater on-site, as close as possible to the source and maintaining the pre-development hydrology using natural, passive drainage systems that mimic nature by allowing for maximum infiltration, filtration through vegetation, interception by plants or trees, evaporation and slow release of stormwater.

(2) Additional principles of LID include maintaining existing soils, contours, vegetation and natural channels, disconnection and minimization of impervious surfaces, designing the site with multiple, decentralized BMPs, and minimizing compaction during construction.

(3) LID techniques are typically used to manage the stormwater from the smaller, more frequent storms, with the goal of reducing pollutant loads, improving water quality of receiving waters and preventing damage from erosion.

(4) In addition, traditional flood control measures shall also be employed to protect people and property from large, infrequent and potentially damaging flood events. Combining LID and flood control techniques ensures that both water quality and quantity are addressed during site design.

b. Regulatory Specifics:

(1) Water Quantity: The primary regulatory driver for water quantity (hydrology) is the EISA. EISA Section 438 requires development or redevelopment projects involving a Federal facility with a footprint area of disturbance that exceeds 5000 square feet to use site planning, design, construction and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the pre-development hydrology of the property with regard to temperature, rate, volume and duration of flow. This can be achieved with LID techniques using the 95th percentile storm, 24-hr. or via a site-specific hydrologic analysis using continuous simulation modeling or other tools. The DoD policy on implementing EISA defines “pre-development” as “pre-project.”

(2) Water Quality: The primary regulatory driver for water quality is the California MS4 NPDESS Permit. MCB CAMPEN is designated as a Non-traditional Small MS4 Permittee (Permit Section F). Permit coverage is limited to cantonment (developed) areas and housing areas only. Projects that create and/or replace between 2500-5000 sq. ft. of impervious surface must implement specific Site Design Measures. All new development and redevelopment projects that create and/or replace 5000 sq. ft. or more of impervious surface must implement specific LID Design Standards. This includes street and road projects with 5000 sq. ft. or more of contiguous new impervious surface, including sidewalks, bicycle lanes and road widening (addition of traffic lanes). LID Design Standards incorporates Site Design Measures, Stormwater Treatment/Hydromodification Management and Source Control Measures. The overall objective of these measures is to reduce the volume and improve the quality of runoff by maximizing infiltration, evapotranspiration, treatment and/or harvesting/reuse of stormwater. This can be achieved using the 85th percentile, 24-hr. storm.

(3) LID Policy: In addition to EISA and MS4, several other LID requirements or policies may be applicable. The California General Construction Permit requires runoff reduction using LID techniques be implemented for projects located in areas which are not already covered by the MS4 permit. Documentation of LID design must be submitted as part of the Construction Permit application process. The State Water Board Stormwater Multiple Applications and Report Tracking System (SMARTS) Post-Construction/Water Balance Calculator may be used to quantify runoff reduction predicted for permitted Construction projects located outside of cantonment/housing areas. The SMARTS Calculator may also be used to quantify runoff reduction for MS4 Site Design Measures. The DoN LID Policy (dated 2007, and often referred to as the Penn Memo) established a goal of no net increase in sediment or nutrient loading for major construction and renovation projects, and this goal was incorporated into UFC 3-210-10. LID design may be used to meet LEED stormwater credits which are also required by DoN policy. San Diego County is designated as a large MS4 and has developed a number of stormwater management plans and design manuals which can be used as guidance aboard MCB CAMPEN.

3. DEFINITIONS:

a. Best Management Practices (BMP): Structural and nonstructural methods of treating stormwater to prevent pollution.

b. Pre-development Hydrology: Pre-project hydrologic conditions of temperature, rate, volume and duration of stormwater flow.

c. 95^{th} Percentile Storm: The storm event whose precipitation total is greater than or equal to 95 percent of all 24-hour storms on an annual basis.

d. Two-year Storm: The largest amount of rainfall expected over a specified duration occurring during a 2-year interval.

e. Ten-year storm: The largest amount of rainfall expected over a specified duration occurring during a 10-year interval.

f. Run-on–Stormwater: Stormwater which drains into a project area from off-site.

g. Engineered Soil Media: A specified mixture of sand, soil and organic compost.

h. Disconnection of Impervious Surfaces: Disconnecting paved areas from the stormwater system by directing surface runoff into infiltration BMPs or other means of reuse. Disconnecting roof areas by directing roof gutter downspouts to landscaping areas or infiltration BMPs rather than connecting directly into stormwater pipes.

4. NOTE: Contractors may request a copy of the latest version of the MCB CAMPEN Illustrated Guide to Stormwater Terminology for more information regarding specific BMPs (such as basins, bioretention areas, bioswales, cisterns, permeable pavement, buffers, etc.); engineered channels; inlet and outlet structures; pipes, culverts and headwalls; manholes and junctions; flow control structures; and energy dissipators. Contractors shall use BMP terminology consistent with the CPR, Illustrated Guide, EISA and CA NPDES Permits in order to correctly identify stormwater features on design plans.

5. STORMWATER REPORT DESIGN SUBMITTALS: shall consist of four sections: Flood Control; EISA 438 and Water Quality; Schematic Stormwater Design and CE, and Closeout Submittals.

Calculations shall include contributing upstream drainage system. The submittals shall be provided to PWD, divided into sections and in accordance with CPR (CSI 01 33 00). Electronic files shall be organized with bookmarks or hyperlinks to simplify viewing. Larger submittals can be submitted on a data disk in pdf format.

a. Flood Control:

(1) Hydrology and Hydraulics: This section shall follow the typical format in the San Diego County Manuals, which includes the following: a cover page, table of contents, project discussion (boundary conditions, Manning's "n" value used, description of existing and proposed conditions, and summary tables), existing condition hydrology calculations, existing condition hydrology map, proposed condition hydrology calculations, proposed condition hydrology map, line hydraulics, water surface elevation calculations, inlet calculations, channel calculations, and energy dissipator calculations.

(2) Hydrograph and Flood Routing: This section shall be submitted for projects which include a flood control basin. The report shall follow the format of the San Diego County Manuals, which includes a cover page, TOC, project discussion (boundary conditions, description of existing and proposed conditions, and summary tables), existing condition hydrograph calculations, existing condition hydrology map, proposed condition hydrograph calculations, proposed condition hydrology map, outlet structure hydraulics, and emergency spillway calculations.

b. EISA 438 and Water Quality:

(1) EISA 438 Design: This section shall be submitted for projects subject to EISA requirements. The summary shall include the following:

(a) An explanation/justification of LID design, supporting calculations and drawings.

(b) A summary of how the requirements of EISA 438 are being achieved.

1) If EISA 438 option 1 is used, then the report shall show that the 95th percentile storm is being retained on site.

2) If EISA 438 option 2 is used, then the report shall show that post-development condition does not increase flow rates, volume, duration or temperature above the pre-development condition.

(c) For projects where LID has been deemed technically infeasible, a waiver is subject to EISA requirements and shall be approved by PWD and NAVFAC.

(2) Water Quality Design: This section shall follow the guidelines of the SUSMP and shall include the following:

(a) The facility's pollutants of concern shall be identified and the clearly addressed through various BMP facilities.

(b) Each BMP facility shall have design calculations showing compliance with MS4 design standards, proper sizing and acceptable O&M requirements.

(c) Shop drawings for manufactured treatment and/or detention BMPs and accessory equipment, including principal dimensions, filter placement, location of fittings and unit foundation.

(d) Include data to verify center of gravity with the unit empty and filled with water.

(e) Submit design flow calculations for manufactured treatment and/or detention BMPs, and include specification for type of media or filter.

(f) Submit manufacturer's certifications/qualifications, instructions, and O&M requirements.

(3) Geotechnical Engineering: Site-specific geotechnical investigation shall be attached to the Water Quality Report.

(a) Geotechnical investigation shall include sufficient borings, in-situ infiltration testing and/or laboratory soil characterization in order to adequately characterize surface soil and subsoil properties in each area of the site, and shall address the potential presence of an impermeable layer.

(b) These soil properties shall be used in LID design, as well as in Construction Stormwater Permit risk determination (if permit is required).

c. Schematic Stormwater Design and Cost Estimate (CE):

(1) Integrated Site Plan: The schematic stormwater site plan shall graphically illustrate the overall stormwater concept for the project. This plan shall be a product of the Concept Design Workshop and shall be interdisciplinary. Its purpose is to integrate the architectural, landscape, and engineering designs as they relate to stormwater and overall site design.

(a) The plan shall include: all roof runoff locations and type (downspout, sheet flow, etc.), all surface and subsurface flows (indicate if sheet flow, channelized, piped, etc.), locations and types of infiltration areas and all general LID BMPs, and basic design concepts (formal and informal areas, educational, information opportunities, etc.).

(b) The plan shall refer to and complement the Flood Control and Water Quality Sections. If available, the plan shall incorporate the recommendations of PWD's camp-by-camp Stormwater Conveyance Engineering Studies.

(2) CE: A CE of the stormwater facilities shall accompany the schematic. The cost shall include construction costs as well as ongoing maintenance costs, such as the price of filters for manufactures devices.

d. Closeout Document Submittals: Shall be submitted in accordance with CPR (CSI 017830), and shall include the following elements:

(1) O&M manuals for all stormwater BMPs, plus manufacturer's specifications and warranty for manufactured treatment/detention BMPs.

(2) Pre-operational and in-service test results for manufactured treatment/detention BMPs, including inspection reports from the maintenance period and photographs taken during the respective inspection.

(3) Pre-operational and in-service infiltration test results for infiltration BMP.

(4) Warranty inspection reports and photographs for stormwater facilities.

(5) Construction Permit documents (if permit is required): redlined Stormwater Pollution Prevention Plan (SWPPP), all permit-required submittals, including inspection and sampling records, exceedance reports, notice of Intent, notice of Intent Acceptance Letter, Certification Statements, notice of Termination, notice of Termination Acceptance Letter, and Annual Report.

6. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
ES Compliance, Environmental Engineering Branch
(760) 725-9753

b. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E Branch
Civil Projects Team, Stormwater Liaison
(760) 763-8151

CSI 33 40 00

STORMWATER DESIGN STANDARDS

1. REFERENCES: All construction shall conform to the most recent edition of the UFC and CFR requirements and standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply. The following references shall be used to design stormwater facilities aboard MCB CAMPEN:

a. San Diego County Drainage Design Manual

b. San Diego County Hydrology Manual

b. EISA 438, "Stormwater Management for Federal Facilities"

c. CASQA, "Stormwater BMP Handbook"

d. FHWA, "Urban Drainage Design Manual, Hydraulic Engineering Circular No. 22"

e. LEED, 6.1 and 6.2 Stormwater

f. NAVFAC LID, "Implementation and Site Development of NAVFAC Projects," (Penn Memo)

g. DoD Policies, "UFC for LID"

h. State of California Regulations, Regional Water Quality Control Board (RWQCB)

2. STORMWATER DESIGN: The CA Small MS4 Permit supplemented by References (1.a. & 1.b.) shall be used for stormwater design; including the required design storm duration/frequency, methodology, and capacity, except as provided below.

3. WATER QUALITY AND LID:

a. Stormwater Post-Construction Management requirements are detailed in Section F.5.g of the Small MS4 Permit. These requirements consist of Site Design Measures and LID Design Standards.

(1) Site Design Measures must be implemented for projects that create and/or replace between 2500-5000 sq. ft. of impervious surface.

(2) LID Design Standards must be applied to all new development and redevelopment projects that create, add and/or replace 5000 sq. ft. or more of impervious surface as well as to all streets and roads projects that create 5000 sq. ft. or more of new contiguous impervious surface. LID Design Standards incorporates Site Design Measures, Source Control Measures, and Stormwater Treatment/Hydromodification Management Measures, and shall be implemented subject to the requirements of CPR Section 334004.

(a) LID Design Standards apply as follows.

(1) For new development, runoff from the entire project must be included in BMP design.

(2) For redevelopment projects with more than 50% increase in impervious area, runoff from all existing, new and/or replaced impervious surfaces must be included in BMP design.

(3) For redevelopment projects with less than 50% increase in impervious area, only runoff from the new and/or replaced impervious surfaces must be included in BMP design. For new road construction projects, runoff from the entire project must be included in BMP design.

(4) For road widening projects with more than 50% increase in impervious area, runoff from all existing, new and/or replaced impervious surfaces must be included in BMP design.

(5) For road widening projects with less than 50% increase in impervious area, only runoff from the new and/or replaced impervious surfaces must be included in BMP design. Specific exclusions for roads projects; and alternative designs, adjustments for special site conditions, and exceptions for bioretention BMP facilities are stated in the Permit.

(b) Site Design Measures include:

(1) Stream setbacks and buffers

(2) Soil quality improvement and maintenance

(3) Tree planting and preservation

(4) Rooftop and impervious area disconnection

(5) Permeable pavement

(6) Vegetated swales

(7) Rain barrels and cisterns

(c) Source Control Measures includes the following areas and activities:

(1) Accidental spills or leaks

(2) Interior floor drains

(3) Parking/Storage area maintenance

(4) Indoor and structural pest control

(5) Landscape/outdoor pesticide use

(6) Pools, spas, ponds, decorative fountains, and other water features

(7) Restaurants, grocery stores, and other food service operations

(8) Storage and handling of solid waste

(9) Outdoor storage of equipment or materials

(10) Vehicle and equipment cleaning

(11) Vehicle and equipment repair and maintenance

(12) Fuel dispensing areas

(13) Loading docks

(14) Fire sprinkler test water

(15) Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources

(16) Unauthorized non-storm water discharges

(17) Building and grounds maintenance

b. MCB CAMPEN is included on the isopluvial maps necessary to follow the County of San Diego procedures, and the 85th percentile storm shall be used for water quality (treatment control) design. If there is a pollutant of concern associated with the project, then water quality BMPs must remove the pollutant to a high level (above 75%). All other pollutants shall be removed to the maximum extent practicable, but shall at a minimum remove pollutants at a medium level (above 50%).

4. WATER QUANTITY AND LID: EISA requires the 95th percentile storm. For water quantity design, EISA 438 must be followed, and is primarily implemented via LID. The 95th percentile depth is 1.5", which was calculated using data from the MCAS Pendleton rain gage. Site specific calculation of the 95th percentile event is acceptable, but must be reviewed and approved by Public Works. EISA 438 option 2 requires that the hydrographs of the pre-development condition and the post- development condition match. Special attention shall be given to the EISA 438 requirement for volume and duration since these are highly dependent upon soil conditions. Run-on shall be routed around, through or under the site, or detained upstream so that LID design may be limited to runoff generated on-site.

5. FLOOD CONTROL: Flood control basins shall be designed such that the storage volume and the flow control outlet structure, at a minimum, manage increases in the peak discharge rates for both the 2-year and 10-year storm events. If the site will affect critical facilities or major roadways downstream, then the site shall detain the 100-year storm event in addition to the 2-year and 10-year storm events. Flood control basins shall be sited upstream of cantonment areas where possible, to intercept water entering the camps and protect critical facilities from flooding. Inlets on roadways shall be designed to comply with the FHWA Urban Drainage Design Manual, Hydraulic Engineering Circular No. 22, latest edition, in order to minimum spread.

6. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
ES Compliance, Environmental Engineering Branch
(760) 725-9753

b. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E Branch
Civil Projects Team, Stormwater Liaison
(760) 763-8151

CSI 33 40 00

STORMWATER COLLECTION/CONVEYANCE SYSTEM

1. REFERENCES: Stormwater collection/conveyance system shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. San Diego County Hydrology Manual

b. San Diego County Drainage Design Manual

c. EISA 438, "Stormwater Management for Federal Facilities"

d. CASQA, " Stormwater BMP Handbook"

e. FHWA, "Urban Drainage Design Manual, Hydraulic Engineering Circular No. 22"

f. LEED, 6.1 and 6.2 Stormwater

g. NAVFAC LID, "Implementation and Site Development of NAVFAC Projects," (Penn Memo)

h. DoD Policies, "UFC for LID"

i. State of California Regulations, RWQCB

j. National Transportation Safety Board (NTSB)-PSS-73-1, "Prevention of Damage to Pipelines"

k. GSA, "Public Buildings Service Guide"

l. American Gas Association (AGA) 72-D-56, "Merco Tape Non-Detectable Underground Tape"

m. API Recommended Practice (RP) 1109, "Marking Liquid Petroleum Pipeline Facilities"

n. OSHA 1926.956 (c) (1)

o. APWA, "Uniform Color Code"

p. Department of Transportation (DoT) Office of Pipeline Safety USAS B31.8, "Federal Gas Safety Regulations"

q. Federal Gas Safety Regulations S 192-321 (e)

2. CAPACITY, SLOPE, RADIUS, ALIGNMENT, SETBACK AND COVER: References (1.a.) and (1.b.) shall be used to determine the design standards for pipe and channel capacity.

a. Minimum pipe diameter shall be 6" I.D.

b. Minimum pipe diameter for main lines shall be 24" I.D.

c. Minimum pipe diameter for laterals shall be 18" I.D.

d. Pipe capacity shall not decrease in the direction of flow.

e. Open channel capacity shall not decrease in the direction of flow.

f. Minimum bend radius shall be 22.5'.

g. Minimum longitudinal pipe slope shall be above 0.5%.

h. Minimum velocity shall be 2.5 ft./sec.

i. Slope less than 0.5% is allowable for engineered channels.

j. Side slope for earthen channels shall not be steeper than 3H:1V.

k. Stormwater pipe shall not pass under buildings and shall be set back a minimum of 10' from building foundations.

l. Minimum pipe cover shall be 12".

m. All Stormwater pipes shall be designed with sufficient cover to bear surface loads.

n. All Stormwater pipes shall have a 4' horizontal separation distance and a 1' vertical separation distance from potable water pipes and wastewater pipes, with potable water pipes on top.

3. CONVEYANCE:

a. Stormwater shall be conveyed to the next downstream stormwater facility, if existing, or to a nearby drainage channel or creek. Where downstream capacity of existing stormwater pipe or engineered channel within the project boundary is insufficient to convey the design flow, the downstream capacity shall be increased. This does not apply to natural channels. If stormwater is released to the street, the designer shall show that the gutter, if existing, has capacity. If there is no gutter, then water cannot be release to the street.

b. Where downstream engineered conveyances are damaged or unable to pass design flows, these conveyances shall be repaired or replaced. In the event that the downstream undersized or damaged stormwater facility is located outside of the project boundary, the boundary can be amended to correct the drainage problem, but PWD shall decide the appropriate course of action and obtain required environmental approvals.

c. If existing pipes cannot adequately convey increased post-construction peak flood flows, then the site shall detain to the preconstruction level. If downstream channels shall be damaged by increased peak flows, then the site shall detain to the preconstruction level.

d. Off-site run-on shall be included in the site design. Run-on may either be detained upstream or routed around or through the site drainage system.

e. Existing natural channels shall be preserved wherever possible. Additional requirements related to natural channels can be found in the project's environmental documentation.

4. PIPE MATERIAL:

a. The San Diego County Drainage Design Manual shall be used to select appropriate pipe material, except as stated below. All stormwater piping outside of cantonment areas (such as undeveloped areas susceptible to wild fires) shall be Reinforced Concrete Pipe (RCP). Stormwater piping within cantonment areas shall be RCP or corrugated HDPE pipe.

b. Underdrains shall be constructed of perforated plastic drain pipe, constructed within a washed gravel layer. Underground detention structures may be corrugated metal pipe (CMP), RCP or HDPE. CMP may be used for risers. Galvanized metal pipes shall be avoided, however if necessary, galvanized pipes with protective coating may be used (per Commander Naval Regional Southwest (CNRSW) policy).

c. All pipe materials shall have a minimum service life of 60-years. Service life of CMP shall by confirmed by Geotechnical Report using resistivity tests of the soil in which the pipe shall be placed.

5. CHANNEL MATERIAL: Vegetated or rock-lined channels are preferred. If not possible, engineered channels may be constructed of concrete. Asphalt channels are prohibited.

6. UTILITY LOCATION: Tracer tape shall be installed on stormwater pipes to enable future underground utility location. Stormwater pipe tape shall be green with the words, "CAUTION: BURIED STORM DRAIN LINE BELOW", in black ink. The tape shall be installed 6" to 12" below grade in the excavation ditch and shall conform to References (1.j.) through (1.q.).

7. CULVERTS: Concrete arch or box culverts shall be used in natural channels to allow maximum flows to pass unobstructed. Metal arches are also acceptable. One or more round, box or arch culverts may be used in small engineered channels. Elliptical culverts are allowable when existing conditions do not allow the installation of circular culverts.

8. HEADWALLS: All culvert entrances and exits shall be installed with concrete headwalls. Headwalls with flared wingwalls, headwalls with parallel wingwalls and mitered-end headwalls are allowable. Straight headwalls are prohibited. Concrete apron slabs are allowed in conjunction with headwalls.

9. ENERGY DISSIPATION: Energy dissipators shall be designed and sized to reduce the scouring potential of stormwater at the design flow rate at the inlet and outlet structures. The use of gabions is not desirable and shall be approved by PWD on a limited case-by-case basis. For pipes which discharge to a vegetated channel, outlet velocity shall not exceed 5 ft./sec. If the outlet velocity exceeds 5 ft./sec, erosion protection shall be implemented.

10. MANHOLES AND JUNCTIONS: Manhole cover shall be inscribed with the words "STORMWATER" or "STORM DRAIN" in order to delineate between storm sewer manholes and sanitary sewer manholes.

a. Design of manholes and junction boxes shall comply with County of San Diego standards.

b. Junction angles shall be 45 degrees or less.

c. Manholes shall be placed at mainline junctions, at changes in horizontal or vertical alignment of pipe at appropriate locations for maintenance and access, and at the following intervals:

(1) every 300' for pipes of diameter 24" or less;

(2) every 400' for pipes of diameter 24"-48"; and

(3) every 500' for pipes of diameter greater than 48" in diameter. "Where stormwater cleanouts are installed, the cleanout shall terminate with a threaded female adapter and plug, and have an access box over the cleanout with the word "stormwater" stamped on the lid for identification."

11. INLET AND OUTLET STRUCTURES: Water shall be released at grade. Waterfall pipe outlets are prohibited.

a. Grate-top drop inlets, curb inlets, box-top inlets, surface linear inlets (trench drains) and riser outlets are allowable. Open-pipe inlets and outlets shall be accompanied by a headwall.

b. Outlet structures may be designed with weir plates, orifices or gates to produce the design discharge flow rate. Grate inlet covers shall use "bicycle proof" design where appropriate. In landscaped areas or vegetated BMPs, elevated brass atrium or beehive-style grates may be used to prevent mulch from blocking inlets and outlets.

c. Detention basins and infiltration basins shall be designed with an emergency overflow to limit damage to the basin and to downstream facilities.

12. DOWNSPOUT: Stormwater from downspouts (roof drains) shall be controlled and routed away from the building to a nearby stormwater BMP or landscaped area.

a. The route from the downspout to the stormwater BMP can be aboveground or underground.

b. The route shall not cross over or drain onto a sidewalk, patio or other paved areas.

c. Downspouts shall not be directly connected to the conveyance system (pipes, catch basins, etc.) unless the conveyance discharges to a stormwater BMP.

13. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
ES Compliance, Environmental Engineering Branch
(760) 725-9753

b. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E Branch
Civil Projects Team, Stormwater Liaison
(760) 763-8151

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GEOTECHNICAL CONSIDERATIONS FOR STORMWATER SOIL PROPERTIES

1. REFERENCES: All construction shall conform to the most recent edition of the UFC and CFR requirements and standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply. The following references shall be used to design stormwater facilities aboard MCB CAMPEN:

a. EISA, "Stormwater Management for Federal Facilities," Section 438

b. EISA, "Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects," under Section 438 (EPA 841-B-09-001)

c. SWRCB, Water Quality Order No. 2013-0001-DWQ, "NPDES", General Permit No. CA S000004, "WDRs for Storm Water Discharges from Small MS4s"

d. UFC 3-210-10, "Low Impact Development (LID)"

e. CASQA BMP Handbooks, latest edition [New Development and Redevelopment; Municipal; Industrial; Construction]

f. DWQ California Construction General Permit (Order 2009-0009-DWQ, NPDES No. CAS000002)

g. UFC 3-200-10n, Civil Engineering

h. If the standard sought does not appear in the above requirements, then the latest edition of the following standards shall be used in the order listed. If a conflict exists, the MCB CAMPEN Requirements have primacy.

(1) San Diego County Drainage Design Manual

(2) San Diego County Hydrology Manual

(3) San Diego County SUSMP

(4) UFC 3-230-17FA, Drainage in Areas other than Airfields

(5) SDRSD

(6) SSPWC or Greenbook

(7) CALtrans, Standard Specifications and Construction Details, Stormwater Design Guidelines

(8) FHWA Urban Drainage Design Manual, Hydraulic Engineering Circular No. 22

2. INFILTRATION BMPs: Where existing soil properties do not provide sufficient infiltration rates, infiltration BMPs shall be designed using imported engineered soil media and/or underdrains.

a. Engineered soil shall be specifically developed shall be sufficiently permeable to infiltrate runoff at a design rate of 1"-5" per hour and have sufficient moisture retention to support healthy, vigorous plant growth.

b. Engineered soils shall be a mixture of 85-88% sand, 8-12% fines and 3-5% organic matter. Design infiltration rate and soil mix may be modified based upon site conditions and targeted pollutant(s) and shall be tested to meet above objectives.

c. Engineered soil shall have a Phosphorus Index less than or equal to 30.

d. Use of an underdrain (perforated pipe) may be necessary to allow BMP soils to drain properly. The underdrain conveys filtered water downstream, however with these site conditions, there may be little to no infiltration into underlying soils. In this case, EISA Section 438 Option 2 – to match existing hydrology – would be the only feasible alternative. Lining the bottom of an infiltration BMP produces the same outcome.

e. Where infiltration BMPs shall be used, consideration shall be given to the potential presence of subsurface impermeable layers and the relative likelihood that infiltrated water may migrate to alternate pathways such as structures, roadways, or utility trenches, and the site shall be designed to avoid damage to those facilities. An impervious cutoff wall may be necessary for infiltration BMPs located within 10' of structures or other geotechnical hazards, however this situation shall be avoided if possible.

3. SLOPE PROTECTION: A slope of 3H:1V is preferred for hillside cuts within cantonment areas, however a slope of 2H:1V is allowable. If a steeper slope is proposed, a geotechnical engineering analysis shall be provided to justify that the recommended slope shall be sufficiently stabilized. Water shall be intercepted at the top of slope and conveyed safely down the slope by means of a concrete brow ditch. Outlet shall be placed beyond the toe of slope so as to avoid eroding the toe of slope.

4. PERMANENT STABILIZATION: Permanent stabilization and establishment of vegetation shall be demonstrated prior to termination of construction permit (if permit is required) and prior to contract closeout.

5. EXTERIOR FOUNDATION: Stormwater shall not be allowed to accumulate at building foundation. Finished grade shall slope away from exterior foundations at a minimum of 2% to maintain positive drainage to a stormwater facility. Stormwater shall not be allowed to accumulate at building foundations.

6. COMPACTION AT INFILTRATION BMPs: Soils shall be minimally compacted in stormwater BMP areas designed to infiltrate.

7. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
ES Compliance, Environmental Engineering Branch
(760) 725-9753

b. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E Branch, Civil Projects Team, Stormwater Liaison
(760) 763-8151

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STORMWATER BEST MANAGEMENT PRACTICES

1. REFERENCES: All construction shall conform to the most recent edition of the UFC and CFR requirements and standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply. The following references shall be used to design stormwater facilities aboard MCB CAMPEN:

a. EISA, "Stormwater Management for Federal Facilities," Section 438

b. EISA, "Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects," under Section 438 (EPA 841-B-09-001)

c. SWRCB, Water Quality Order No. 2013-0001-DWQ, "NPDES", General Permit No. CA S000004, "WDR for Storm Water Discharges from Small MS4s"

d. UFC 3-210-10, "Low Impact Development (LID)"

e. CASQA BMP Handbooks, latest edition [New Development and Redevelopment; Municipal; Industrial; Construction]

f. DWQ California Construction General Permit (Order 2009-0009-DWQ, NPDES No. CAS000002)

g. UFC 3-200-10n, Civil Engineering

h. If the standard sought does not appear in the above requirements, then the latest edition of the following standards shall be used in the order listed. If a conflict exists, the MCB CAMPEN Requirements have primacy.

(1) San Diego County Drainage Design Manual

(2) San Diego County Hydrology Manual

(3) San Diego County SUSMP

(4) UFC 3-230-17FA, Drainage in Areas other than Airfields

(5) SDRSD

(6) SSPWC or Greenbook

(7) CALtrans, Standard Specifications and Construction Details, Stormwater Design Guidelines

(8) FHWA Urban Drainage Design Manual, Hydraulic Engineering Circular No. 22.

2. ACCEPTABLE BMPs: (Figure 60) contains a complete listing of BMPs which shall be allowed for each type of facility. Specific restrictions on the use of each type of BMP are detailed below the table. PWD may approve BMPs that are functionally equivalent to those in the table on a case-by-case basis.

3. PROHIBITED BMPs: BMPs not listed in the table are prohibited. Prohibited BMPs include Green Roofs, Infiltration Wells and Injection Wells. Any BMP which would require an individual discharge or drilling permit is prohibited.

4. BMP SPECIFICS:

a. Infiltration BMPs include the following: Bioretention Areas; Bioswales; Permeable Pavement; Infiltration Trench; Infiltration Basin. Infiltration BMPs are preferred unless site conditions do not allow their use. Inappropriate site conditions include unsuitable soils and hill slope locations. In order to prevent siltation and clogging of the soil voids, Infiltration BMPs shall be protected from sediment-laden inflows, and located such that runoff from bare soil areas, including training roads, cannot enter the BMP. Special care is required in designing/siting BMPs in perimeter areas of camps. Berms or curbs shall be used to control entry of runoff to infiltration BMP.

Vegetated swales and filter strips may also be used to pre-treat, collect sediment, and slow water movement into bioswales, bioretention areas, permeable pavement, infiltration trenches, and infiltration basins. Infiltration BMPs shall treat runoff from impervious areas only. Infiltration BMPs shall not be used in industrial areas, in areas where hazardous materials are handled or stored, or where spills or leaks are likely to occur. The San Diego RWQCB requires 10' of vertical separation between the bottom of the BMP's infiltration zone and groundwater.

b. Permeable Pavement: Permeable Pavement includes pavers, permeable asphalt and pervious concrete. For high volume parking lots and permeable pavement may be used in parking spaces, with traditional pavement in traveling lanes. All requirements applying to infiltration BMPs also apply to permeable pavement.

c. Detention Basin: May be used as part of a system of BMPs, or for flood control purposes. A basin alone does not qualify as LID.

d. Stormwater Wetland/Pond: Due to the large land area required, and potential natural resources concerns, constructed wetlands and ponds shall be approved by PWD on a case-by-case basis.

e. Vegetated Buffer or Riparian Buffer: Vegetated buffer areas (filter strips) may be planted, or existing vegetated areas may be maintained, to slow down and filter runoff and prevent erosion. A riparian buffer is the naturally vegetated corridor along a stream. Existing riparian buffers shall be preserved whenever possible. Buffers shall not be placed in terrain that is too steep or where excessively large tributary areas would cause erosion flow.

f. Cistern (rain barrel): Cisterns may be used to capture and reuse rainwater from building roofs. The use of a cistern requires approval by PWD and shall be determined on a case-by-case basis in the following limited circumstances: Cisterns shall only be used where there shall be a continuing, on-site use for water; where the cistern can serve a dual educational/public awareness purpose; and where the project sponsor has committed to use of the cistern. The design of cisterns shall provide a visible reminder of water conservation and stormwater goals. Cisterns may be a tank or a rain barrel, and may be

underground or aboveground. Some level of minimum treatment, such as a filter or UV light treatment, may be required, depending upon the planned re-use.

g. General LID BMPs: General LID practices include disconnected downspouts, disconnected and minimized impervious surfaces, maintaining existing soils, contours, vegetation and natural channels, and use of vegetated buffers. These BMPs are desirable at all types of facilities.

h. Manufactured Treatment BMPs: Manufactured treatment BMPs consist of filters, cartridges, separators, media or inserts, used individually or in combination, and housed within an underground vault or manhole, used for the purpose of treating stormwater and removing pollutants prior to discharge. The specific type of treatment unit shall be designed to treat the pollutants expected shall be generated at the facility, e.g. using a hydrocarbon filter at a vehicle maintenance facility. These units may be used in the following circumstances: where permanent site activities shall be industrial or commercial in nature; or where site conditions do not allow the use of infiltration BMPs. Manufactured treatment BMPs are less desirable than other BMPs and shall be avoided wherever possible. Small, individual catch basin hydrocarbon filters may only be used in high volume parking lots and industrial facilities.

i. Manufactured Detention BMPs: Manufactured detention BMPs, consisting of underground concrete, HDPE or CMP galleries or chambers, may only be used at sites with extreme space limitations. Due to the difficulty of accessing these underground detention systems for maintenance, manufactured detention BMPs shall be preceded by a pretreatment BMP designed to remove sediment, spills and any other pollutant of concern at the site. Manholes shall be included at 100' intervals, junctions or other reasonable locations to allow for maintenance of underground detention systems. Underground detention shall not be used at industrial facilities.

j. BMP Siting and Design Requirements:

(1) BMPs shall be integrated into other functional components of the site, such as the landscaping and infrastructure, without impeding or significantly affecting their function.

(a) Stormwater shall not be allowed to accumulate at building foundations.

(b) BMPs shall be customized to adapt to the physical constraints of the site, such as available open space, facility use and function, degree of soil compaction, microclimate, and the location of sewers, utilities, and the groundwater table. Infiltration BMPs, permeable pavement and detention basins shall not be sited on hillside slopes.

(c) PWD may approve on a case-by-case basis if documentation of appropriate site-specific soil characteristics is provided. BMPs shall be designed to intercept and/or treat stormwater near the source. BMPs shall be designed to meet the stormwater management objectives of a specific site.

(d) This includes addressing pollutants of concern of the specific site, as well as addressing pollutants of concern (impairments) in nearby water bodies, according to the latest approved CA 303(d) impairment list. BMPs shall be designed to minimize concentrated flows to reduce downstream erosion and maintain surface hydrology.

(2) Storm drains shall not be sited downslope of, or immediately adjacent to, loading docks, garbage dumpsters or hazardous materials/waste storage areas unless appropriate treatment and/or containment are provided.

(a) Storm drains shall be stenciled using the approved MCB CAMPEN storm drain stencil.

(b) Restaurants shall provide a janitorial area with sanitary sewer floor drain and grease interceptor for washing floor mats and disposing of mop water.

(c) For indoor maintenance or industrial areas, trench drains are not desirable, however if required, shall be dead-end containment trenches only, and shall not be connected to the sanitary sewer or to the storm drain system.

(d) Parking structure floor drains shall be connected to the sanitary sewer system. Refer to CASQA BMP Manuals for appropriate source control BMPs.

k. Construction Sequencing: Proper construction sequencing shall be used such that Infiltration BMPs shall not be installed until the drainage area has been stabilized, so as to prevent damage/siltation of BMP during construction. Similarly, proper construction sequencing shall be used such that site soils in the vicinity of infiltration BMPs do not become compacted during construction.

5. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
ES Compliance, Environmental Engineering Branch
(760) 725-9753

b. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E Branch
Civil Projects Team, Stormwater Liaison
(760) 763-8151

FACILITY CATEGORY AND ALLOWABLE BEST MANAGEMENT PRACTICES

ADMINISTRATIVE & INSTRUCTIONAL FACILITIES: Child Development Centers Classrooms Offices Schools	**ALLOWABLE BMP:** Bioretention Area Bioswale Cistern Detention Basin Infiltration Trench or Basin Manufactured Detention BMPs Manufactured Treatment BMPs Permeable Pavement Vegetated/Riparian Buffer
LODGING FACILITIES: BEQs BOQs Temporary Lodging	**ALLOWABLE BMP:** Bioretention Area Bioswale Detention Basin Infiltration Trench or Basin Manufactured Detention BMPs Manufactured Treatment BMPs Permeable Pavement Vegetated/Riparian Buffer
LIGHT INDUSTRIAL FACILITIES: Gas Stations Tactical Vehicle Maintenance and Storage Armories Wash Racks	**ALLOWABLE BMP:** Catch Basin Hydrocarbon Filters Detention Basin Manufactured Detention BMPs Vegetated/Riparian Buffer
MEDICAL & DENTAL CLINICS	**ALLOWABLE BMP:** Bioretention Area Bioswale Detention Basin Infiltration Trench or Basin Manufactured Detention BMPs Manufactured Treatment BMPs Permeable Pavement Vegetated/Riparian Buffer

HIGH VOLUME PARKING LOTS: more than 50 parking spaces	ALLOWABLE BMP: Bioretention Area Bioswale Catch Basin Hydrocarbon Filters Detention Basin Infiltration Trench or Basin Manufactured Detention BMPs Manufactured Treatment BMPs Permeable Pavement Vegetated/Riparian Buffer
LOW VOLUME PARKING LOTS: 50 parking spaces or less	ALLOWABLE BMP: Bioretention Area Bioswale Detention Basin Infiltration Trench or Basin Manufactured Detention BMPs Manufactured Treatment BMPs Permeable Pavement Vegetated/Riparian Buffer
RECREATIONAL FACILITIES: Fitness Centers Golf Courses Equine Facilities Movie Theaters Bowling Centers Skeet and Trap Areas	ALLOWABLE BMP: Bioretention Area Bioswale Detention Basin Infiltration Trench or Basin Manufactured Detention BMPs Manufactured Treatment BMPs Permeable Pavement Vegetated/Riparian Buffer
RETAIL FACILITIES: Exchange Home Center Garden Center Mini-Exchanges Apparel Other Shops	ALLOWABLE BMP: Bioretention Area Bioswale Detention Basin Infiltration Trench or Basin Manufactured Detention BMPs Manufactured Treatment BMPs Permeable Pavement Vegetated/Riparian Buffer

FOOD SERVICE ESTABLISHMENTS: Restaurants Dining Halls Vendors	**ALLOWABLE BMP:** Bioretention Area Bioswale Detention Basin Manufactured Detention BMPs Manufactured Treatment BMPs Permeable Pavement Vegetated/Riparian Buffer
EXTERIOR COMMON AREAS: Muster Areas Parade Decks Plazas Sidewalks	**ALLOWABLE BMP:** Bioretention Area Bioswale Detention Basin Infiltration Trench or Basin Manufactured Detention BMPs Manufactured Treatment BMPs Permeable Pavement Vegetated/Riparian Buffer
TRAINING FACILITIES within CANTONMENT AREAS: Rappel Towers Obstacle Courses	**ALLOWABLE BMP** Bioretention Area Bioswale Detention Basin Infiltration Trench or Basin Vegetated/Riparian Buffer

Figure 60: Facility Category and Allowable BMPs

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M ANUFACTURED TREATMENT AND DETENTION BEST MANAGEMENT PRACTICES

1. REFERENCES: All construction shall conform to the most recent edition of the UFC and CFR requirements and standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply. The following references shall be used to design stormwater facilities aboard MCB CAMPEN:

a. EISA, "Stormwater Management for Federal Facilities," Section 438

b. EISA, "Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects," under Section 438 (EPA 841-B-09-001)

c. SWRCB, Water Quality Order No. 2013-0001-DWQ, "NPDES", General Permit No. CA S000004, "WDRs for Storm Water Discharges from Small MS4s"

d. UFC 3-210-10, "Low Impact Development (LID)"

e. CASQA BMP Handbooks, latest edition [New Development and Redevelopment; Municipal; Industrial; Construction]

f. DWQ California Construction General Permit (Order 2009-0009-DWQ, NPDES No. CAS000002)

g. UFC 3-200-10n, Civil Engineering

h. If the standard sought does not appear in the above requirements, then the latest edition of the following standards shall be used in the order listed. If a conflict exists, the MCB CAMPEN Requirements have primacy.

(1) San Diego County Drainage Design Manual

(2) San Diego County Hydrology Manual

(3) San Diego County SUSMP

(4) UFC 3-230-17FA, Drainage in Areas other than Airfields

(5) SDRSD

(6) SSPWC or Greenbook

(7) CALtrans, Standard Specifications and Construction Details, Stormwater Design Guidelines

(8) FHWA Urban Drainage Design Manual, Hydraulic Engineering Circular No. 22.

2. ACCEPTABLE MANUFACTURED BMPS: Where no other BMP options are feasible, manufactured BMPs may be selected. Manufactured BMPs shall conform to the following requirements:

a. Manufactured treatment systems shall be capable of removing the specified pollutants to a high efficiency.

b. Manufactured systems shall be designed to be as simple as possible, with a minimum number of components.

c. The system shall not include moving parts.

d. Replacement parts, such as filters or media, shall be commercially available.

e. Plan drawings for the specific model shall be provided.

f. Selected system shall be functionally equivalent to existing systems aboard MCB CAMPEN so as to minimize maintenance requirements.

g. Manufactured underground detention systems shall be properly designed for aboveground structural loads.

3. PROHIBITED MANUFACTURED BMPS:

a. Proprietary/manufactured systems which would obligate the Government to obtain replacement parts or services from a single vendor are prohibited.

b. Systems requiring a pump are prohibited.

c. Systems requiring the use of chemicals are prohibited.

d. Systems requiring maintenance more than twice per year are prohibited.

e. Systems requiring permit required confined space entry for maintenance shall be avoided unless absolutely necessary.

f. Limited exceptions for industrial facilities shall be approved by PWD.

4. MANUFACTURER/INSTALLER'S QUALIFICATIONS: Prior to installation, the contractor shall submit proof of manufacturer/installer's experience and qualifications which shall include 3-years on projects of similar complexity. Documentation shall include names and locations of two projects successfully completed and proven to perform as specified.

5. DELIVERY, STORAGE, AND HANDLING: Manufactured unit materials shall be inspected for damage upon delivery. Materials stored on-site shall be housed in an enclosure or under protective coverings. Materials shall not be stored directly on the ground.

6. INSTALLATION: Manufactured unit and accessory equipment shall be installed in accordance with manufacturer's recommendations.

a. Unit shall be leveled and anti-flotation ballast shall be installed to prevent hydrostatic uplift and ensure unit stability.

b. Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model name and number, and serial number securely affixed in a conspicuous place. The nameplate of the distributing agent shall not be acceptable.

c. Cartridges/ filters/media shall not be installed until the drainage area is clean and stabilized.

7. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
ES Compliance, Environmental Engineering Branch
(760) 725-9753

b. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E Branch
Civil Projects Team, Stormwater Liaison
(760) 763-8151

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W ARRANTY, TESTING AND INSPECTION OF STORMWATER FACILITIES

1. REFERENCES: All construction shall conform to the most recent edition of the UFC and CFR requirements and standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply. The following references shall be used to design stormwater facilities aboard MCB CAMPEN:

a. EISA, "Stormwater Management for Federal Facilities," Section 438

b. EISA, "Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects," under Section 438 (EPA 841-B-09-001)

c. SWRCB, Water Quality Order No. 2013-0001-DWQ, "NPDES", General Permit No. CA S000004, "WDRs for Storm Water Discharges from Small MS4s"

d. UFC 3-210-10, "Low Impact Development (LID)"

e. CASQA BMP Handbooks, latest edition [New Development and Redevelopment; Municipal; Industrial; Construction]

f. DWQ California Construction General Permit (Order 2009-0009-DWQ, NPDES No. CAS000002)

g. UFC 3-200-10n, Civil Engineering

h. If the standard sought does not appear in the above requirements, then the latest edition of the following standards shall be used in the order listed. If a conflict exists, the MCB CAMPEN Requirements have primacy.

(1) San Diego County Drainage Design Manual

(2) San Diego County Hydrology Manual

(3) San Diego County SUSMP

(4) UFC 3-230-17FA, Drainage in Areas other than Airfields

(5) SDRSD

(6) SSPWC or Greenbook

(7) CALtrans, Standard Specifications and Construction Details, Stormwater Design Guidelines.

(8) FHWA Urban Drainage Design Manual, Hydraulic Engineering Circular No. 22

2. WARRANTY: Provide one-year warranty on all stormwater facilities, including LID features and manufactured treatment/detention systems, as well as all landscaped areas. The warranty period shall be for 365-calendar days. The warranty period shall begin on the Basic Occupancy Date (BOD) of the contract, or for projects with a construction permit, the warranty period shall begin upon acceptance and approval of the notice of Termination by the RWQCB, whichever occurs later.

3. PRIOR TO BASIS OF DESIGN (BOD): The following stormwater facility maintenance activities shall be completed prior to BOD: trash and debris removal, sediment removal, weed/brush removal, cartridge, media and/or filter replacement, street sweeping and/or vacuuming of pavement areas, system flushing or other maintenance required for proper function of the BMP.

a. All impermeable surfaces shall be clean and free of dirt and debris.

b. All catch basins, vaults, manholes, pipes and culverts shall be free of sediment and debris.

c. Erosion damage shall be repaired during maintenance period. For manufactured BMPs with a separate one-year warranty, cartridge, media and/or filter replacement and other provided maintenance shall be as directed by the manufacturer and at a minimum, mandatory at the end of the warranty period.

4. WARRANTY MAINTENANCE: Stormwater facility warranty maintenance shall be integrated with Landscape Maintenance for all vegetated BMPs. Landscape maintenance contractor shall be familiar with the design and function of the specific stormwater measure(s) to ensure proper function of stormwater BMPs. Chemical applications are prohibited. Landscape Maintenance Log shall be used to document all landscape maintenance actions in vegetated BMPs during the warranty period. Refer to BEAP Section 3.6 D LANDSCAPE GUIDELINES, Maintenance and Establishment Period.

5. FIELD QUALITY CONTROL (QC) TESTING AND INSPECTIONS:

a. The Contracting Officer shall witness field tests and conduct field inspections specified in this section.

(1) The Contractor shall perform field tests and provide labor, equipment, and incidentals required for testing.

(2) The contractor shall produce evidence, when required, that each item of work has been constructed in accordance with the drawings and specifications.

(3) The contractor shall submit written documentation of results, including photographs, after each QC test or inspection.

b. Pre-operational and in-service tests shall be conducted to ensure proper installation and functioning of stormwater BMPs.

(1) For manufactured treatment/detention BMPs, the manufacturer's service representative is required to be present and certify successful completion of tests.

(2) For infiltration BMPs, pre-operational and in-service tests shall consist of in-situ infiltration testing or other verification of design infiltration rate. Pre-operational tests shall be conducted prior to

BOD. In-service tests shall be conducted at the 11-month warranty site walk. Test results shall be documented.

c. During the warranty period, the contractor shall conduct a minimum of two physical inspections of each stormwater facility, including all BMPs.

(1) The first stormwater facility inspection shall be conducted after a significant storm event or at the end of the rainy season.

(2) The second stormwater facility inspection shall be conducted near the end of the warranty period, preferably after a significant storm event or at the end of the rainy season.

(3) Landscape warranty inspections shall be conducted concurrently for vegetated BMPs. Corrective actions required as a result of inspections shall be completed during the warranty period, and coordinated with the ROICC Office and FMD Quality Assurance (QA) Inspector. Inspection results shall be documented and photographed.

6. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
ES Compliance, Environmental Engineering Branch
(760) 725-9753

b. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E Branch
Civil Projects Team, Stormwater Liaison
(760) 763-8151

CSI 33 40 00

SPECIAL CONSIDERATIONS FOR STORMWATER MAINTENANCE AND ACCESS

1. REFERENCES: All construction shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. CASQA Stormwater BMP Handbook

b. UFC 4-010-01, DoD Minimum Antiterrorism Standards For Buildings

c. UFC 4-010-02, DoD Minimum Antiterrorism Standoff Distances For Buildings

d. LID/EISA

2. MAINTENANCE CONSIDERATIONS: Site design shall minimize long-term maintenance costs. See CASQA Stormwater BMP Handbooks for maintenance considerations.

a. Site design shall include maintenance access points which allow maintenance personnel and heavy equipment safe access to stormwater collection and conveyance system, including BMPs, basins and manholes/junctions.

b. Some underground structures, such as vaults and baffled manholes, may require multiple manhole openings in order to provide maintenance access for personnel and/or equipment such as vacuum trucks.

c. Design of maintenance access location shall account for maximum pumping height and distance for BMPs requiring maintenance by vacuum truck.

d. Access ramp and entry road shall be provided for flood control basins.

e. Forebays shall be designed as sediment cleanouts to reduce maintenance of basins.

3. VAULT DOORS/MANHOLES AND ACCESS LADERS: Contractor shall install all vault doors/manholes and access ladders in all underground manufactured treatment vaults. Each door shall be equipped with a recessed lifting handle, a locking hinge to prop doors open, and a locking latch or other means to securely close.

4. SAFETY: Roadside conveyances shall be designed with appropriate separation or physical barrier so as to minimize the possibility of vehicle accidents.

a. Metal debris rack, fencing or other protective measures shall be provided for stormwater facilities located in areas likely to be frequented by pedestrians.

b. Rack shall be sized to maintain pipe capacity while preventing access to pedestrians.

5. PUBLIC HEALTH: Standing water has the potential to harbor mosquitoes, therefore stormwater facilities shall be designed to infiltrate or drain completely within 72 hours.

6. PHYSICAL SECURITY: At all locations where perimeter security fences cross drainage channels or culverts, provide security barriers to prevent access by intruders. Designs shall comply with References (1.b.) through (1.c.). When conflicts arise between LID/EISA and UFC 4-010-01 or 4-010-02, UFCs 4-010-01 and 4-010-02 take precedence.

7. SIGNAGE (Figures 61-62):

a. Required Signage: Signage prohibiting tactical or recreational vehicle use shall be installed near applicable BMPs. Signs shall be constructed of durable exterior materials and shall be warrantied for a period of at least 5-years. Signs shall be designed in accordance with the recommendations in the BEAP and shall conform to any other MCB CAMPEN signage requirements from the Facility Maintenance Department.

b. Optional Signage: An interpretive sign covering the key site LID components may be installed where the sign can serve a dual educational/public awareness purpose. Interpretive signs may be used to meet LEED requirements. The use and content of an interpretive sign requires approval by PWD and shall be determined on a case-by-case basis. Interpretive sign shall be placed in high foot traffic areas, at an appropriate viewing location, either indoors or outdoors. Outdoor signs shall be constructed of durable exterior materials and shall be warrantied for a period of at least 5-years. Interpretive signs shall be limited to the following options:

8. ASSISTANCE: If you need further assistance please contact:

MCIWEST-MCB CAMPEN
ES Compliance, Environmental Engineering Branch
(760) 725-9753

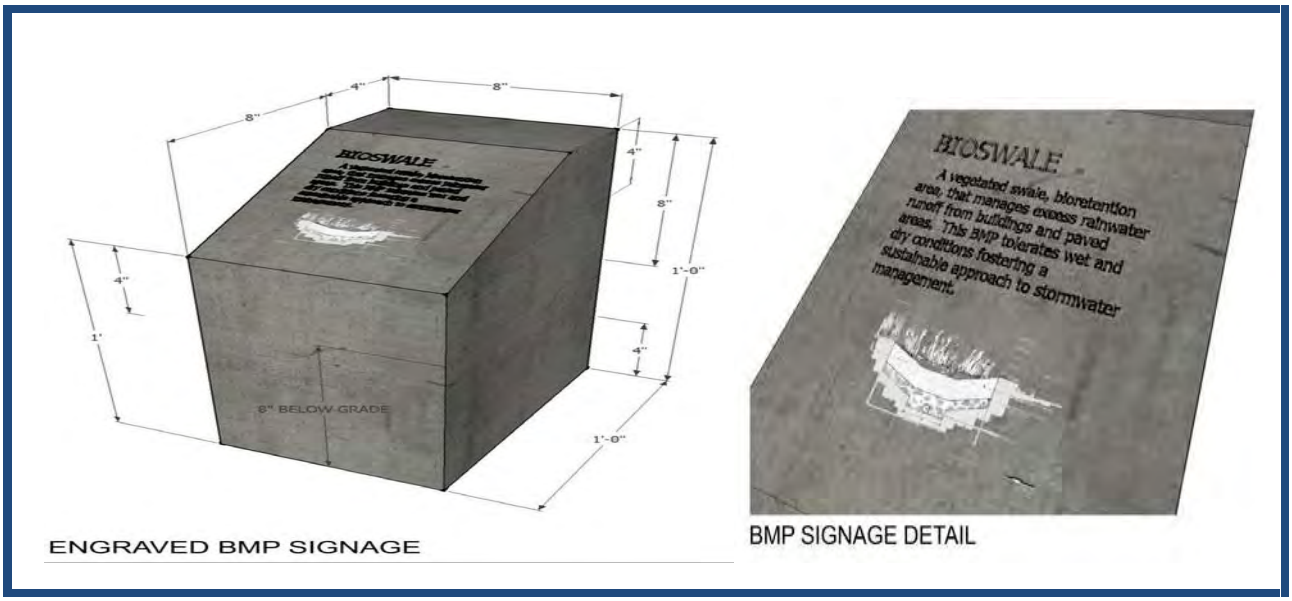

Figure 61: Engraved BMP Signage and BMP Signage Detail

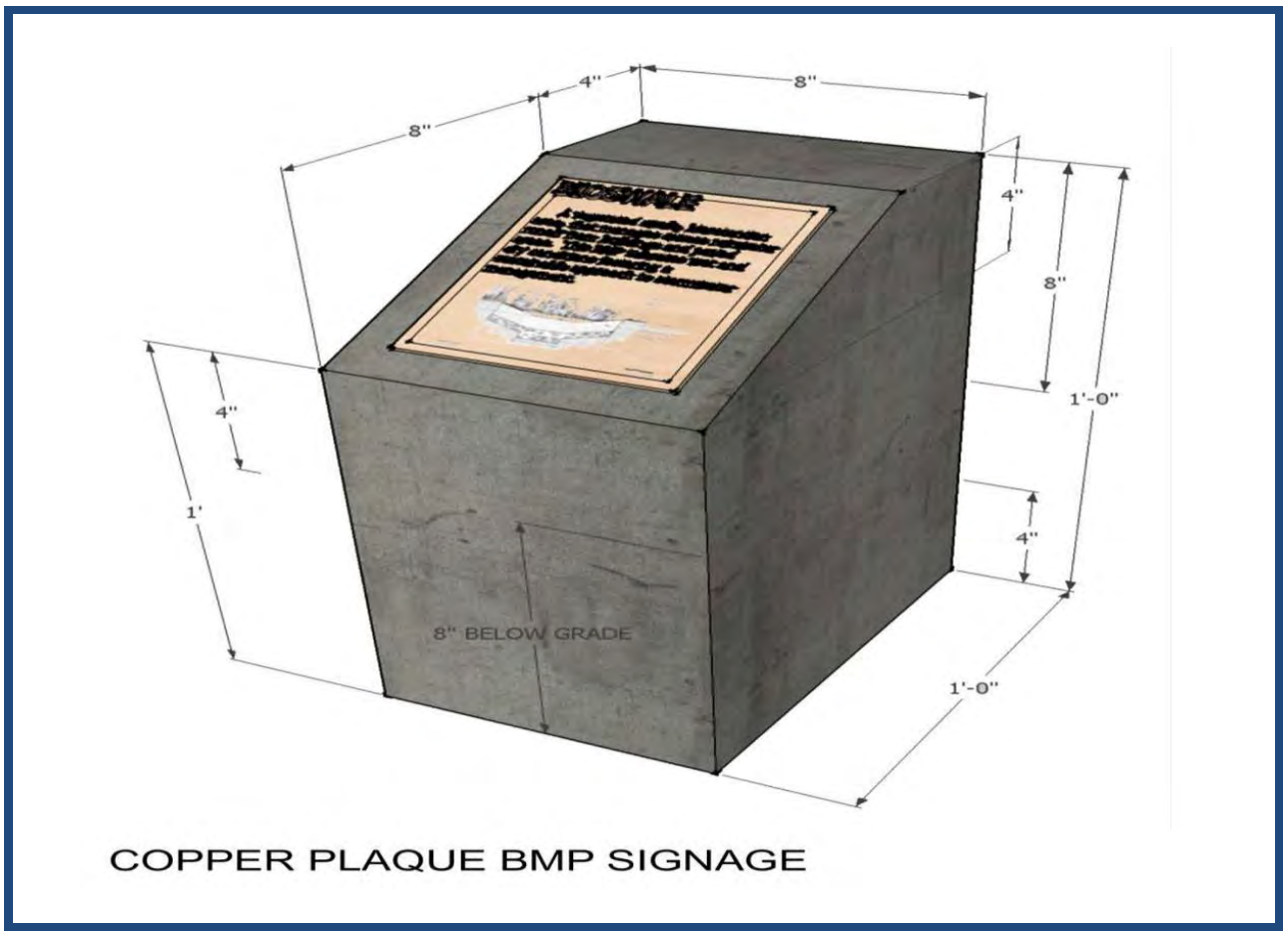

Figure 62: Copper Plaque BMP Signage

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MCB CAMPEN BASE EXTERIOR ARCHITECTURE PLAN CONSIDERATIONS FOR STORMWATER BEST MANAGEMENT PRACTICES

1. REFERENCES: All construction shall conform to the most recent edition of the following standards; where standards provide conflicting information pertaining to an issue, the most stringent information shall apply.

a. County of San Diego Standards:

(1) Concretes Structures

(2) Drainage Systems: Details D-30 to D-34 shall be used only as reference details for overall dimensions. Wing- walls shall be required for all the headwalls as indicated in Detail D-40.

(3) General Surface Improvements: Detail G-36 shall not be used.

(a) Sprinkler Irrigation Systems

(b) Traffic Control Plans

(c) Sewerage Systems: Pending review from the PWD A&E Utility Team.

(d) Water Systems: Pending review from the PWD Utility Team.

(e) The contractors shall delete the "County of San Diego" name when the standard details are used as part of the drawings and specifications.

b. State of California Manual of Traffic Controls:

(1) Construction and Maintenance Work Zones

c. CALTRANS Standards Specifications:

(1) Grading Sections

(2) Sub-bases and Bases Sections

(3) Surfacing and Pavements Sections

(4) Drainage Facilities Sections

(5) Right of Way and Traffic Control Facilities Sections

(6) Materials Sections

(a) The Caltrans Standard Specifications are only applicable in their technical or engineering value, not in "measurements, and payment" related to the to specific agency requirements.

(b) If conflict between these standard specifications and others requirements in the CPR, the CPR requirements prevail.

d. Standard Plans – State of California, DoT:

(1) Pavement Markers, Traffic Lines and Pavement Markings: All Plans

(2) Excavation and Backfill: Miscellaneous Details, Concrete Pipe Culverts, Cast-In-Place Reinforced Concrete Box and Arch Culverts, and Metal/ Plastics Culverts

(3) Portable Concrete Barrier: All Plans

(4) Object Markers, Delineators, Channelizers and Barricades

(5) Concrete Barrier Type 60 Series: All Plans

(6) Metal Beam Guard Railing: Standard Railing Sections: All Plans

(a) All Posts and Separators shall be Typical Layout for Embankments

(b) Typical Layout for Embankments

(c) Typical Layout for Structures

(d) Typical Layout for Fixed Objects

(e) End Anchorage and Rail Tensioning Assembly

(f) Connection Details and Transition Railing to Bridge Railings, Abutments and Wall

(g) Terminal System End Treatment

(h) All the posts and separators between the Beam Guard Railing and the Post shall be galvanized steel to avoid damage during wild fires.

(7) Three-Beam Barrier: All Plans

(a) Standard Barrier Sections

(b) At Fixed Objects and on Bridge

(c) End Anchorage, End Treatment and Emergency Passageway

(d) Connections to Bridge Railings, Abutments, Walls and Barrier

(e) Transition Railings

(f) All the posts and separators between the Beam Guard Railing and the Post shall be galvanized steel to avoid damage during wild fires.

(8) Crash Cushions: All Plans

(9) Steel Crib Walls: Construction Details, and Design Data

(10) Drainage Inlets, Steel Pipe Inlets, Concrete Pipe Inlets, and Grates:

(a) Drainage Inlets Details

(b) Steel Pipe Inlets Details

(c) Concrete Pipe Inlets: Ladder and Trash Rack Details

(d) Grate Details

(e) Bicycle Proof Grate Details

(11) Concrete Pipe: Direct Design Method: All Plans

(12) Box Culverts: All Plans. All Box Culverts shall include Wing Walls at Both Ends

(13) Pipe and Arch Culvert: End Walls and Warped Wing Walls: All Plans

(14) Pipe Down-drains, Anchorage Systems and Over-side Drains: All Plans

(15) Construction Loads on Culverts and Strut Details: All Plans

(16) Pipe Head Walls, End Walls, and Wing Walls: Pipe Culvert Head Walls, End Walls, and Wing Walls: Types A, B & C.

(17) Flared End Sections: Metal and Plastic Flared End Sections

(18) Pipe Coupling and Joint Details: All Plans

(19) Slotted and Grated Line Drains: All Plans

(20) Retaining Walls: All Plans

2. LANDSCAPE AND PLANTING DESIGN:

a. All landscape areas shall conform to the BEAP unless specifically outlined otherwise in this document. Plants play a very important role in natural drainage patterns, and landscape-based stormwater treatment (vegetated BMPs) is encouraged as an effective, aesthetic, and relatively simple way to achieve LID goals.

b. Plants can be used to aid in infiltration, evapotranspiration, sedimentation, pollutant trapping, phytoremediation, and soil stabilization. Given these varying and important functions, each planting plan

shall be carefully designed and shall be site and BMP specific with the long term goal of naturalization. Ability to tolerate heat, coastal conditions, flooding and wind shall also be considered.

3. SITE DESIGN:

a. The design intent shall be to integrate vegetated BMPs into the greater site and landscape design. The intent of vegetated BMPs is to mimic natural systems. Techniques to achieve this include natural contour grading, diversity of species, and full coverage of slopes. Having a cross disciplinary team (landscape architect, civil engineer and architect, etc.) involved from conceptual planning through design and construction shall ensure a more unified design.

b. Existing vegetation shall be maintained where possible to serve as a buffer.

4. PLANT SELECTION:

a. The MCB CAMPEN Approved Plant list was developed using plants with characteristics such as drought-tolerance, lack of invasive potential, and minimal maintenance demands, and which are suitable in the different micro-climates and low soil fertility found aboard MCB CAMPEN. Plants used in vegetated BMPs shall meet these criteria, and also shall tolerate periodic inundation, be adapted to well-drained soils, have phytoremediation capabilities, and not have invasive roots. Observation of the surrounding natural landscape, design that mimics plant communities, biodiversity, and overall durability shall drive the planting design. Not every species is appropriate for every site.

b. Vegetated BMP area shall contain an appropriate mix of trees, shrubs and herbaceous perennial ground cover. Containerized plants or plugs shall be used in vegetated BMP areas. Seeding is unreliable due to the fluctuating water levels that are typical in BMPs, and shall therefore not be used in inundation areas or in the flow pathway. Plant spacing shall be dense in order to achieve quick soil coverage. A density of one tree or shrub per 50 square feet of vegetated BMP areas is the desired average, with herbaceous perennials between. Additional details on plant spacing may be found in the RFP. A mix of at least three species in each category shall be used in order to avoid the development of monoculture. Trees shall be kept to the periphery of the planting area and be placed so as to provide shade for the greater landscape as necessary. All plants shall be placed in order to function properly in terms of filtration and retention, but also shall be integrated into the aesthetics of the site design. Full coverage of ground cover shall be achieved by end of warranty period.

5. IRRIGATION:

a. Permanent, automatic, below-ground irrigation is required in all landscaped areas and bioretention facilities. Irrigation shall conform to current BEAP and CPR standards. Temporary aboveground irrigation systems may be used for seeded or hydroseeded areas as approved by the PWD. Irrigation systems shall be designed to minimize water use, avoid overwatering, and prevent underdrain discharges during dry weather. Spray heads shall be positioned to avoid direct spray into stormwater inlets, outlet structures or onto paved surfaces.

b. Vegetated BMPs may need to be irrigated more than once a day. Irrigation schedules shall be designed to operate in a series of short cycles, rather than one longer cycle. This aids in water penetration and minimizes run-off. Irrigation controls shall allow separate zone control of times and durations of irrigation for vegetated BMPs vs. other landscape areas. Contractor shall confer with PWD to determine if recycled wastewater is available at project site and if it shall be allowed in vegetated BMPs.

6. FERTILIZATION:

a. Due to the potential for conveying nutrients to storm drains, no fertilizer shall be added to vegetated BMPs or landscape areas that drain into them. Compost tea, available from various nurseries and garden supply retailers, may be applied at a recommended rate of 5 gallons mixed with 15 gallons of water per acre.

b. Compost tea can be applied up to 2-weeks prior to planting and once per year between March and June. Application is not recommended when temperatures are below 50 F or above 90 F or when rain is forecast in the next 48 hours. Additional applications may be needed to correct nutrient deficiencies.

7. MULCH AND ROCK:

a. Mulch is required for the purpose of retaining moisture, preventing erosion and minimizing weed growth.

b. Rock mulch (gravel) or 6”-12” river cobble as appropriate shall be used in the flow path of stormwater for lower velocity flow areas and where complete plant cover is not expected. For higher velocity flow paths, provide 6”-12" angular cobble.

c. When using organic mulch in vegetated BMPs, aged mulch, also called composted mulch, shall be used to reduce the tendency to float into overflow inlets during intense storms.

d. Organic mulch may be used in the ponding areas. Organic mulch shall not be used in the primary flow path of stormwater.

e. Mulch shall be at least 3” thick to prevent weed growth.

f. Gravel or small diameter river rock may be used to stabilize the soil around storm drain inlets.

8. WEED CONTROL:

a. During the maintenance period, weeds shall be controlled primarily by manual methods and soil amendment.

b. In response to problem areas or threatening invasions, corn gluten, white vinegar, vinegar- based products, or non-selective natural herbicides may be used.

c. NOTE: Weed fabric shall not be used in vegetated BMPs.

9. PEST AND DISEASE CONTROL:

a. Synthetic pesticides shall not be used on bioretention facilities.

b. Beneficial nematodes and non- toxic controls may be used.

10. ASSISTANCE: If you need further assistance please contact:

a. MCIWEST-MCB CAMPEN
ES Compliance, Environmental Engineering Branch
(760) 725-9753

b. MCIWEST-MCB CAMPEN
AC/S G-F, PWD, A&E Branch
Civil Projects Team, Stormwater Liaison
(760) 763-8151

APPENDIX A

BEAP ADDENDA

Chapter 3.5	Architectural Requirements
Chapter 3.5C2	Use of Skylights vs. Clerestory Windows
Chapter 3.5C	Window Setbacks
Chapter 3.5C3e	Bird Deterrent
Chapter 3.5C4e	Building Appurtenances
Chapter 3.6D	Landscape Guidelines
Chapter 3.6H8	Erosion Control
Chapter 3.10	Signage (General and Ancillary Structures)
Chapter 3.10D1b	Secondary Entry Gate Signs
Chapter 3.10D2	Cantonment Identification Entry Sign
Chapter 3.16	Trash Enclosures/Trash & Recycling Containers
Chapter 3.17	Aboveground Storage Tank (AST)
Chapter 8.2A5	Exterior Foundation Detail
Chapter 8.9	Built-In BBQ Units
Chapter 8.9E5	Hot Charcoal Container
Chapter 8.9I5/I6	Bollard
Chapter 8.9G1	Flagpole
Chapter 11.2	Submittal Matrix
Appendix A	Basewide Color
Appendix B	Color Board Layout

CHAPTER 3.5 ARCHITECTURAL REQUIREMENTS

GENERAL

1. Provide details for transition conditions from existing to new construction components (pavement, roof, pipe, walls, etc.).

DOORS and HARDWARE

1. All steel doors shall be Level 3, Extra heavy duty, seamless construction, flush top and vertical stiffeners as defined in the Steel Door Institute manual. The doors and frames shall have reinforced backing for closers, strikes, hinges, locks and latch-sets.

2. All architectural door hardware shall be grade 1 heavy duty as defined in the ANSI and the Builders Hardware Manufacturers Association (BHMA) Inc.

3. For all MCB CAMPEN BEQ's, door hardware shall be the "vertical-swipe" feature Electro-Magnetic (Smart Card or Electronic Card) Programmable Locks, (Kaba Solataire locks- or approved equal) Matching, existing card key system for MCB CAMPEN, is preferred. Provide card key type access units for BEQs and specialized entries as required by the program. Provide alkaline battery powered, magnetic stripe keycard locksets that are ANSI/BHMA A156.13, Series 1000, Grade 1, mortise sets....tamper resistant, UL listed with 25 mm (1 inch) throw deadbolt, 19 mm (3/4 inch) backset.

4. Submit hardware specifications for approval by Public Works and ROICC prior to purchase and installation.

5. The latch bolt and dead bolt shall be operated simultaneously by rotating inside knob, except at ADA Room lever.
Locks shall be operated only by a correctly encoded cardkey. Use of a newly issued keycard automatically rekeys the lock and voids the previous keycard. Locks shall have memory that is capable of recording up to 140 entries into each room, identification of the keycard used to access the room, the date and time of entry.

6. System shall be capable of accepting a minimum of 12 keycard access levels, security auditing and computer interfacing with the existing or new management systems. On-site service shall be provided within 3 hours from request within the first 12 months of occupancy.

7. Provide a 5-year parts and labor warranty.

8. Provide large opening roll-up doors at all mechanical rooms and mechanical buildings to allow for ease of access, removal and replacement of equipment and additional natural light when open. The roll-up doors shall be manually operated unless the size of the door prohibits manual operation, and motorized operation shall be used.

MASONRY BLOCK

1. CMU precision block shall be used at all soffit and wall connections.

2. Termite control in the soil or under the slab in new construction is not necessary for buildings constructed with CMU.

SHADE STRUCTURES

1. The color of the underside of the roof shall be white.

2. Following the BEAP:

   a. The length of the roof overhang shall be a minimum of 1' with a minimum 8" fascia.

   b. Provide gutters and downspouts.

   c. The roof pitch is 4:12 or minimum 3:12 to match adjacent building roof pitch.

3. The caps on the top of the CMU columns shall be 18"x18" concrete precast, or approved by Public Works.

4. The CMU columns shall be 16"x16".

5. The color of the structural members shall be per DOR to match adjacent buildings.

ROOFING AND EAVES

1. PVC, TPO, Ethylene Propylene Diene Monomer (EPDM), or any single ply roofing materials have a scrim that acts as reinforcement to the product. A product that claims to have 60 mil. thickness shall have a minimum coverage over the scrim of at least 28 mil.

2. PVC roof materials shall be free of stress cracks and tears, prior to and post-installation.

3. All single ply, shall have a probe test completed by the manufacturer prior to turnover. for all single ply, not just PVC.

4. All roof- skylights shall be mounted on a curb at least 4" above roof plane.

5. Roofing transition shall be secured with positive drainage and material.

6. Standing Seam Metal Roofing (SSMR): Provide details for eaves, ridges, hips and gutters with closure.

7. Provide overflow drains with inlet details to scupper on low pitch new or renovation roof work.

8. Rigid insulation is required on roofs unless approved otherwise by Public Works.

9. Hi-Temp UV resistant self-adhesive membranes are required at all ridges, valleys, and shall be extended to a minimum distance of 18" each side of the ridge or valley line. Underlayment is required. All penetrations such as skylights or tubes, and curbs shall be fully covered and sealed with self-adhesive membrane. Crickets are required at all skylights or tubes, curbs and conditions where roofs slope toward walls. Counter flashing is required at all points where the roof transitions to a wall; all such conditions

require counter flashing. Counter flashing is required to be let into the CMU and fully sealed. Flashed diversion channels are required when water drains to the back side of a wall to slow the flow of water and redirect to a valley. National Roofing Contractors Association (NRCA) compliance is required, but does not limit the requirements within this section.

10. Sealants shall be silicone, color matched, and shall be approved by PWD.

11. The best warranty available in the industry shall be provided for each roofing type.

SEALANTS FOR STANDING SEAM ROOFS

Where SSMR is cut, and forms a junction with other roof members (louvers, etc.), the following issues must be addressed:

1. Sealant, or caulking is never a substitute for proper flashing detailing.

2. All sealants shall be UV reflective to a standard level comparable to the roof surface on which they are being used.

3. Where a manufacturer's recommended application of a sealant calls for two coats, two coats must be applied.

4. Acceptable sealant types are TREMCO Tremprime Silicone Metal Sealer, or approved equal. The following sealants are not recommended, but may be acceptable, only if a minimum of two coats of application can be verified: Tremprime non-porous Primer, Vulkem Primer #171, Tremprime Multi-surface Urethane Primer, Vulkem Primer #191, and Vulkem Primer #191 Low Volatile Organic Chemicals (VOC).

5. No attic or interior system supports (suspended ceiling grids, piping supports, etc.) shall ever have their fasteners drilled through the standing seam metal roofing. Care must be exercised to make sure that any drilling is done through the bottom flutes of a roof deck; and that the screws used to fasten are not longer than the dimension from the bottom to top flutes of the deck. Any penetration of these fasteners through the standing seam roof surface is unacceptable.

METAL ARCHITECTURAL ELEMENTS (AWNINGS, SHADE STRUCTURES, etc.)

1. Prior to the powder coating, the galvanized steel must have an appropriate SSPC-SPG sweep blast to etch the galvanization.

2. Prebake items in oven at 410 F, apply outgas forgiving epoxy primer.

3. Apply a "Super Durable" polyester top-coat finish in the approved color.

WINDOW BLINDS/SHADES

1. All roll down blinds/shades shall not make contact with any part of the window hardware when the blind/shade is lowered or raised.

2. Solar shading roll down screens are preferred over mini-blinds.

SHOWER

1. All glass shower doors are prohibited. Plastic shower doors are acceptable.

2. Shower valves shall be non-institutional thermostatic type.

3. Shower head shall be of the swivel type with an adjustable spray pattern and FIP threaded connection into a MIP threaded shower arm.

4. Shower curtain shall drop to 1-1/2 inches below the shower dam top edge.

5. Towel racks shall not be placed in any location where they come in contact with the opening of bathroom or toilet room doors.

6. Direction of shower head flow shall not be out of the shower.

7. Control lever shall not be on back inside wall, rather on side so the water temperature can be regulated without entry.

8. The mixing valve for showers shall be a minimum 18 gauge stainless steel surface mounted type to allow for access to plumbing behind the wall without having to break through the wall. The valve to have an adjustable stop screw to limit handle turn. The shower head shall be all brass, vandal resistant with ball joint. Diagonal corner soap shelf constructed of solid surface material to match the shower walls shall be included.

LAUNDRY

1. All washer machine laundry trays shall have only a drain pipe outlet hole and two inlet holes for the hot and cold water supply pipes. The tray shall be constructed of plastic non-corroding material. All metal laundry trays shall be prohibited.

2. Attach numbering labels to all laundry washers and dryers. Provide numbers next to circuit breakers that coordinate w/numbers on washers and dryers.

3. If the project square footage allows, it is preferred that heavy duty commercial grade washers and dryers be provided.

4. Laundry room square footage and quantities of units to comply with current HQMC standard.

5. Dryer Vent Duct:

   a. Shall not be longer than 25’ straight run.

   b. A run with up to a 45 degree bend shall not be longer than 22.5’

   c. A run with a bend 45 degree to 90 degree shall not be longer than 20’

   d. Dryer vent shall not be routed to public walkways.

6. Per IMC 504, clothes dryer transition ducts attached to the backs of the dryers shall be rigid metal or at a minimum 0.4mm thick flexible metal. Transition ducts of flexible foil or plastics is not allowed (these are combustible and not safe or durable).

ATTIC

1. Access Hatch to the roof surface is not desired until UFC 3-600-01, 2-9 Roof Access is changed.

2. All attic spaces shall have adequate maintenance access from within the building.

3. Attic spaces shall be insulated to allow temperature to remain less than 10 degrees Fahrenheit over exterior ambient temperature.

4. All attic areas must be ventilated naturally.

LIGHTNING PROTECTION

1. MCB CAMPEN is not in a weather zone that gets a significant amount of lightning (such as the Midwest, East Coast or Southern States). Lightning protection is not necessary or desired unless:

   a. The building or structure is a tower and is fabricated out of metal (such as a paraloft).

   b. The building or structure houses or stores hazardous materials or explosives.

CHAPTER 3.5C BASEWIDE ARCHITECTURAL STANDARDS

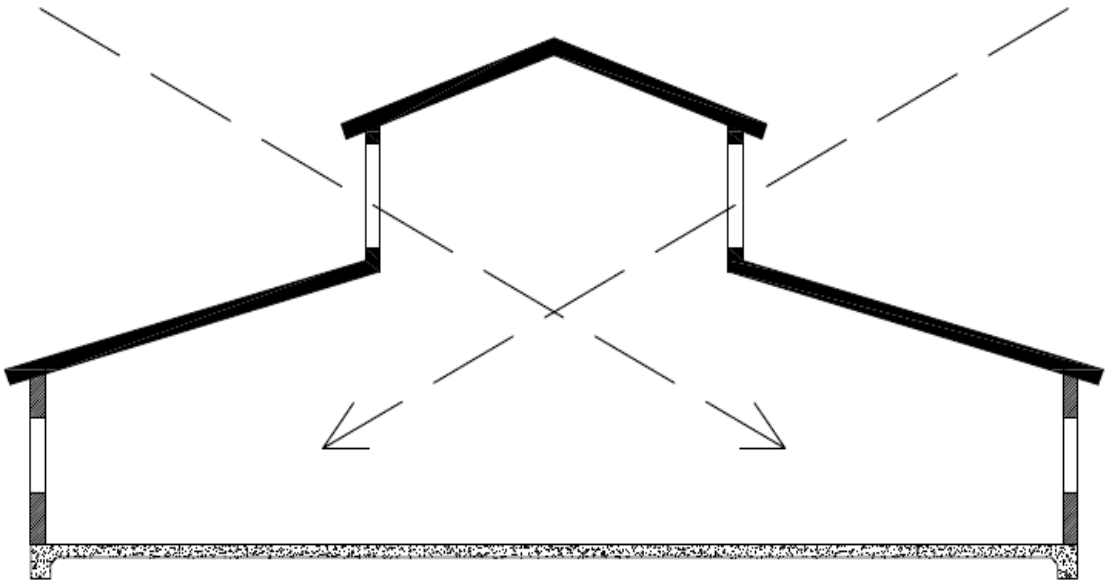
1. Provide kerf cut set back 1" from the face of exterior CMU header and precast sill. Kerf shall be min ¼" deep.

2. Window frame shall be set back 2"- 4" from the face of exterior CMU.

CHAPTER 3.5C2 BUILDING MASS AND SCALE

1. USE OF SKYLIGHTS VS. CLERESTORY WINDOWS:

The use of multiple skylights, or sunlight-reflective tube style roof openings, in new or renovation construction of long span buildings is discouraged. Multiple roof penetrations are not desired due to the increased risk of roof leakage. The preferred method of achieving interior day lighting is through the design and usage of clerestory windows when standard height windows do not provide adequate daylighting to interior spaces due to building size, configuration, etc. This simple change shall be incorporated early in the process for new roof construction design.



SIMPLE CLERESTORY WINDOWS IN LONG SPAN BUILDINGS ALLOW LIGHT TO PENETRATE DEEP INTO THE SPACES

Figure 3.5-11: Simple Clerestory Window in Long Span Building

CHAPTER 3.5C3e ROOFS

BIRD DETERRENT

1. All soffits shall be protected with 45 degree angle corner transition and metal soffit to deter mud swallows. (See Detail attached)

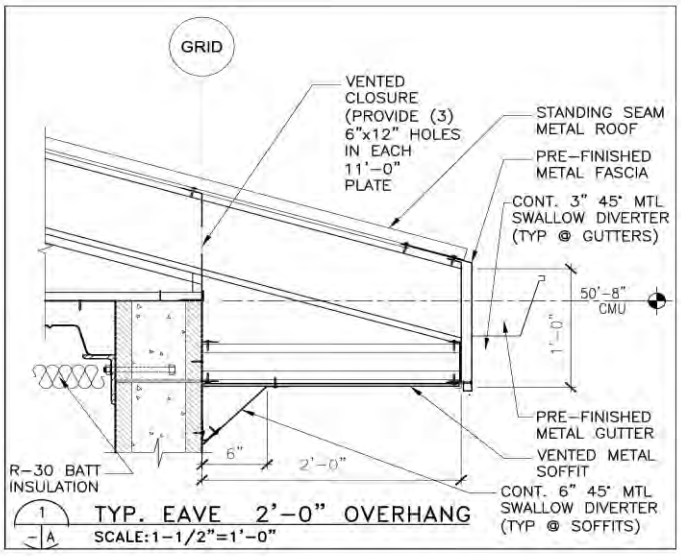


Figure 3.5C3e: Bird Deterrent Soffit

CHAPTER 3.5C4e BUILDING APPURTENANCES

1. Utilize factory applied fluor-polymer coating system resin finish to match roof color or CMU color for downspouts when applicable for all appurtenances (metal roof trim, gutters, downspouts, vents, etc.) – An unpainted galvanized finish is not allowed on roof appurtenances.

CHAPTER 3.6H8 EROSION CONTROL

1. The effects of erosion can be reduced by the appropriate use of the following methods:

a. Splash erosion is best controlled by vegetative ground covers and leafy canopies (BEAP Figure 3.6- 58).

b. To blend in with the surrounding area, use native materials adjacent to open space.

c. Sheet erosion is kept in check by grasses and plants with fibrous root systems. (BEAP 3.6-59).

d. A combination of stone rip rap and plant material is acceptable for erosion control. Use bio-degradable filter fabric under stones to control weeds (BEAP Figure 3.6-60).

e. Plant groundcover for manufactured or graded slopes adjacent to open space with mixes that are compatible in growth requirement with existing plant material.

f. Plant or hydroseed interior slopes between building pads with mixes that is compatible in growth requirements with surrounding plants.

g. Follow the natural topography when planting on slopes. Plants are to reflect the pattern that plant materials tend to exhibit in the natural environment.

h. Control ground burrowing rodents to minimize their effect in creating erosion problems.

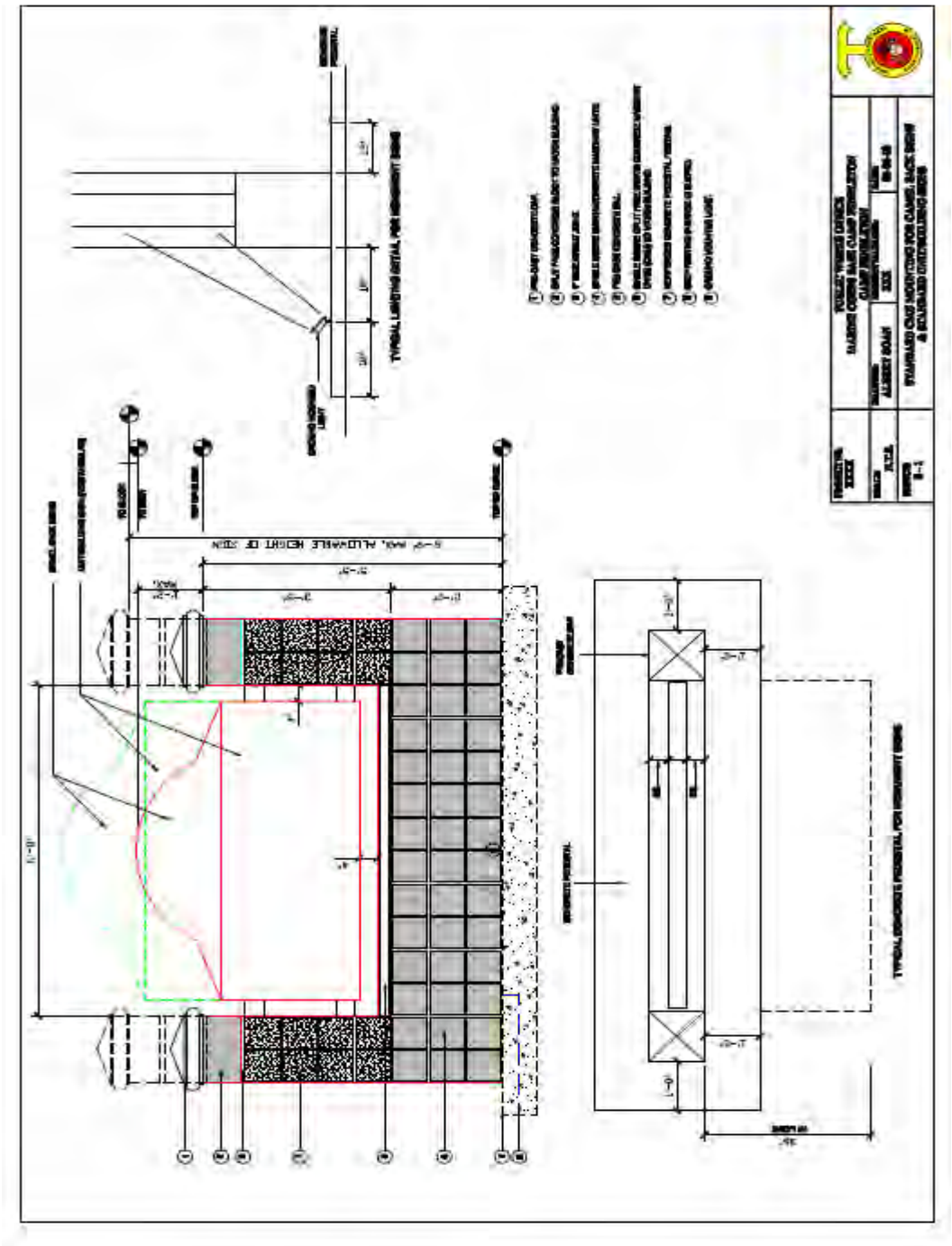


Figure 3.10a: Signage – Building Monument Sign

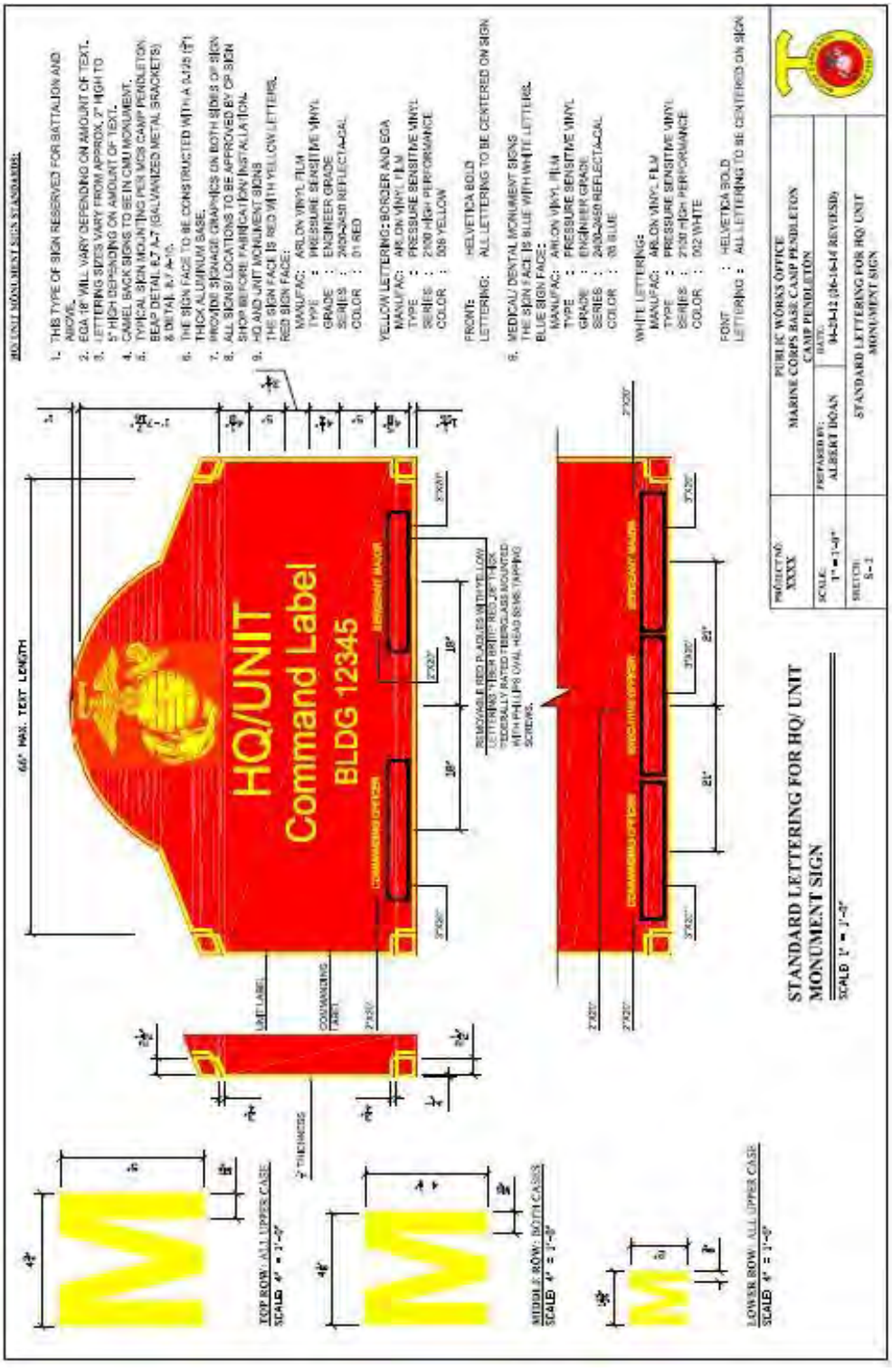


Figure 3.10b: Signage – Standard Lettering for HQ/Unit

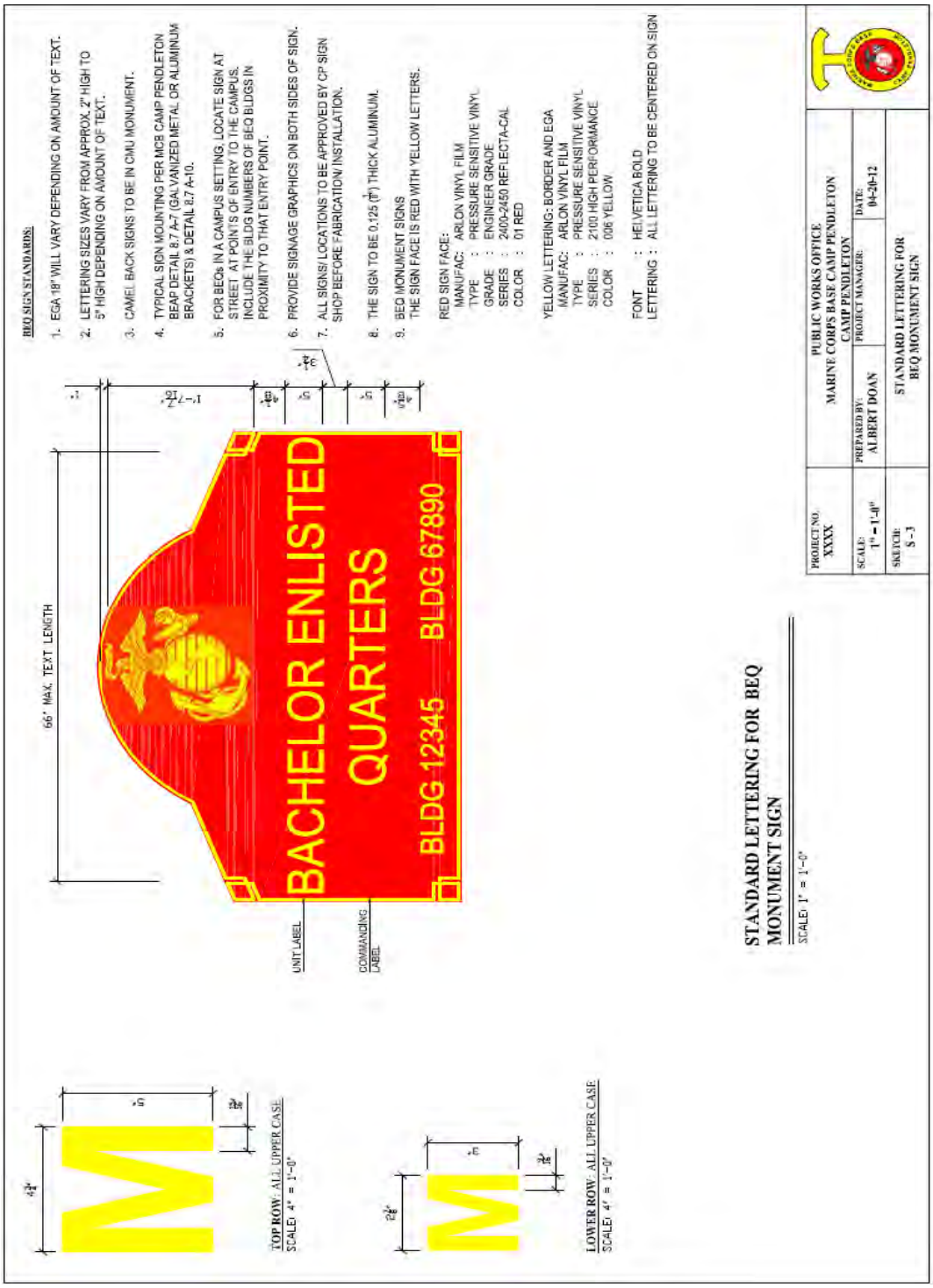


Figure 3.10c: Signage – Standard Lettering for BEQ Monument Sign

UTILITY BOXES

Locate identification number signs on the upper right hand corner on the front of the utility box. The number identification sign will be individual 3" yellow vinyl numbers.

Photo 1: Utility Box

BUS SHELTERS

Number identification signs to be mounted on ends of bus shelter so that signs are easily visible from traffic approaching from both sides. The number identification sign will be individual 3" white vinyl numbers. (Photo 2)

Photo 2: Bus Shelter

Figure 3.10d: Signage – Utility Boxes

Figure 3.10e: Signage – Bus Shelter

NUMBER IDENTIFICATION SIGNS of ANCILLARY STRUCTURES

1. Ancillary Structures include but are not limited to:

   a. Trash Enclosures

   b. Utility Boxes

   c. Bleachers/Viewing Stands

   d. Basketball Courts

   e. Bus Shelters

   f. Training Towers

   g. Valve Covers, Manholes, etc.

GENERAL:

1. A number identification sign is desired for each ancillary structure, however, if there is more than one access point (i.e. a trash enclosure that could be approached by trash trucks or emergency vehicles from opposite sides or a bus shelter that is approached from opposite sides), then two or more sets of numbers may be required.

2. All signs and their locations shall be approved by MCB CAMPEN Sign Shop before fabrication and/or installation.

3. Construction Manager (CM) to obtain ancillary structure numbers from Real Property Accounting Lead located in Building 220102T at 760-763-7832

4. Number Font: Helvetica Bold

5. Sign Material Specifications:

VINYL LETTERS:

1. Type: Pressure Sensitive Vinyl

2. Series: 2100 High Performance

3. Color: 006 Yellow, 002 White, 003 Black

SIGN BACKING:

1. Type: Federally Rated Fiberglass

2. Thickness: .06”

3. Color: White for all Marine Corps structures and blue for all NAVFAC structures

INDIVIDUAL METAL NUMBERS:

1. Type: Bronze Anodized Aluminum

2. Size: 6” high

3. Building ID Signage for multi-story shall typically be mounted at the second floor deck level, and be illuminated per BEAP Section 3.10011.

4. Ensure that the illumination of the building numbers do not create extreme shadows making the number unreadable at night.

26 May 2010

TRASH ENCLOSURES:

Locate identification number signs on the upper corner of an outside wall closest to the accessible side of the enclosure. The sign will be 6" black vinyl numbers on an 8" x 24" white fiberglass backing. The sign will be mounted onto the block wall of the trash enclosure with anchoring screws (Photo 3). Do not locate signs inside the trash enclosure (photo 4).

Photo 3: Correct Sign Placement for Trash Enclosure

Photo 4: Incorrect Sign Placement for Trash Enclosure

Page 3 of 8

Figure 3.10f: Signage – Trash Enclosure (Correct Sign Placement)

Figure 3.10g: Signage – Trash Enclosure (Incorrect Sign Placement)

26 May 2010

BASKETBALL COURTS

Number Identification Signs to be mounted on both ends of the fence near the basketball backboard/poles. The signs will be 6" black vinyl numbers on an 8" x 24" white fiberglass backing. The signs to be mounted on the fence with vandal proof hardware. (Photo 5).

If a fence is not available, the number identification sign is to be mounted vertically on the poles of the backboard with bottom of last number at 7'-0" high. The number identification sign will be individual 3" white vinyl numbers (Photo 6).

Photo 5: Sign on Fence of Basketball Court

Photo 6: Sign on pole of backstop (numbers in photo are not properly mounted at 7' high)

Page 4 of 8

Figure 3.10h: Signage – Sign on Fence of Basketball Court

Figure 3.10i: Signage – Sign on Pole of Backstop (Incorrect Sign Placement)

26 May 2010

RANGE STRUCTURES

Open Air Structures: Number Identification Signs to be mounted vertically on support poles or on an easily accessible overhang. The number identification sign will be individual 3" white vinyl numbers (Photo 7).

Concrete Block Structures: The sign will be 6" black vinyl numbers on an 8" x 24" white fiberglass backing. The sign will be mounted onto the block wall of the structure with anchoring screws (Photo 8).

Photo 7: Range Open Air Structure

Photo 8: Range Concrete Block Structure

Page 5 of 8

Figure 3.10j: Signage – Range Open Air Structure

Figure 3.10k: Signage – Range Concrete Block Structure

26 May 2010

BLEACHERS/VIEWING STANDS

Number identification signs to be mounted vertically on support poles (individual 3" white vinyl numbers) or on an easily accessible overhang (6" black vinyl numbers on an 8" x 24" white fiberglass backing). (Photos 9 and 10)

Photo 9: Sign on road accessible side of bleachers

Photo 10: Sign on overhang

Page 6 of 8

Figure 3.10l: Signage – Sign on Road Accessible Side of Bleachers

Figure 3.10m: Signage – Sign on Overhang

26 May 2010

TOWERS

The sign will be 6" black vinyl numbers on an 8" x 24" white fiberglass backing. The sign will be mounted on to the structure with anchoring screws (Photo 11).

Photo 11: Sign on accessible side of tower

Page 7 of 8

Figure 3.10n: Signage – Sign on Accessible Side of Tower

26 May 2010

BEQ SHADE STRUCTURE

Locate Number Identification Sign on an easily accessible side of the structure. Sign to be made up of 6" high individual bronze anodized aluminum characters in Helvetica Bold font per the MCB Camp Pendleton BEAP. Numbers to be in contrast with background (photo12)

Photo 12: Number Identification Sign on BEQ shade structure

NAVFAC ANCILLARY STRUCTURES

Locate identification number signs on the upper corner of an outside wall. The sign will be 6" white vinyl numbers on an 8" x 24" blue fiberglass backing. The sign will be mounted onto the structure with anchoring screws. (Photo 13)

Photo 13: NAVFAC Ancillary Structure

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Figure 3.10o: Signage – Number Identification Sign on BEQ Shade Structure

Figure 3.10p: Signage – NAVFAC Ancillary Structure

SIGNAGE - MARINE CORP LOGO

MARINE CORP LOGO
EAGLE/GLOBE/ANCHOR

PMS STANDARD COLORS

Designation Band:	Old Glory Blue	PMS 280
Letters, Borders and Rope:	Yellow	PMS 136
• when metallic is used:	Bronze	PMS 873
Background:	Scarlet or	PMS 200
	Marine Corps Scarlet	PMS 185
Device:		
Eagle, Globe, Anchor, Scroll	Gold Brown	PMS 471
• when metallic is used:	Bronze	PMS 874
Shading and Details	Black	PMS 1

Colors provided by:
Institute of Heraldry
www.tioh.hqda.pentagon.mil

Figure 3.10q: Signage – Marine Corps Logo

CHAPTER 3.10D1b SECONDARY ENTRY GATE SIGNS

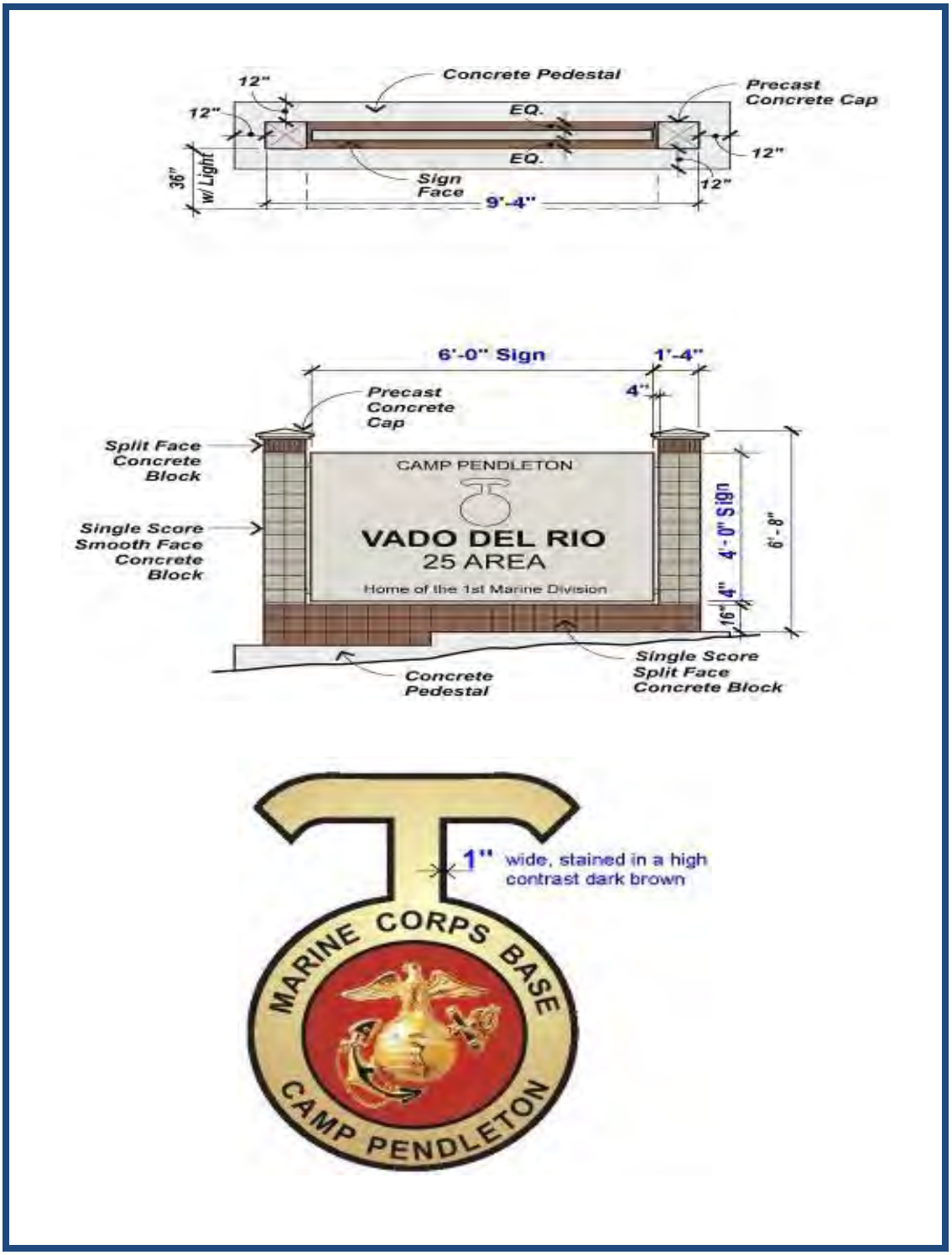

Figure 3.10D1b: Secondary Entry Gate Signs

CHAPTER 3.10D2 CANTONMENT IDENTIFICATION ENTRY SIGNS

Construct a 2x6 inch “tongue and groove” wood material sign face with a solid or opaque stain background and yellow letters.

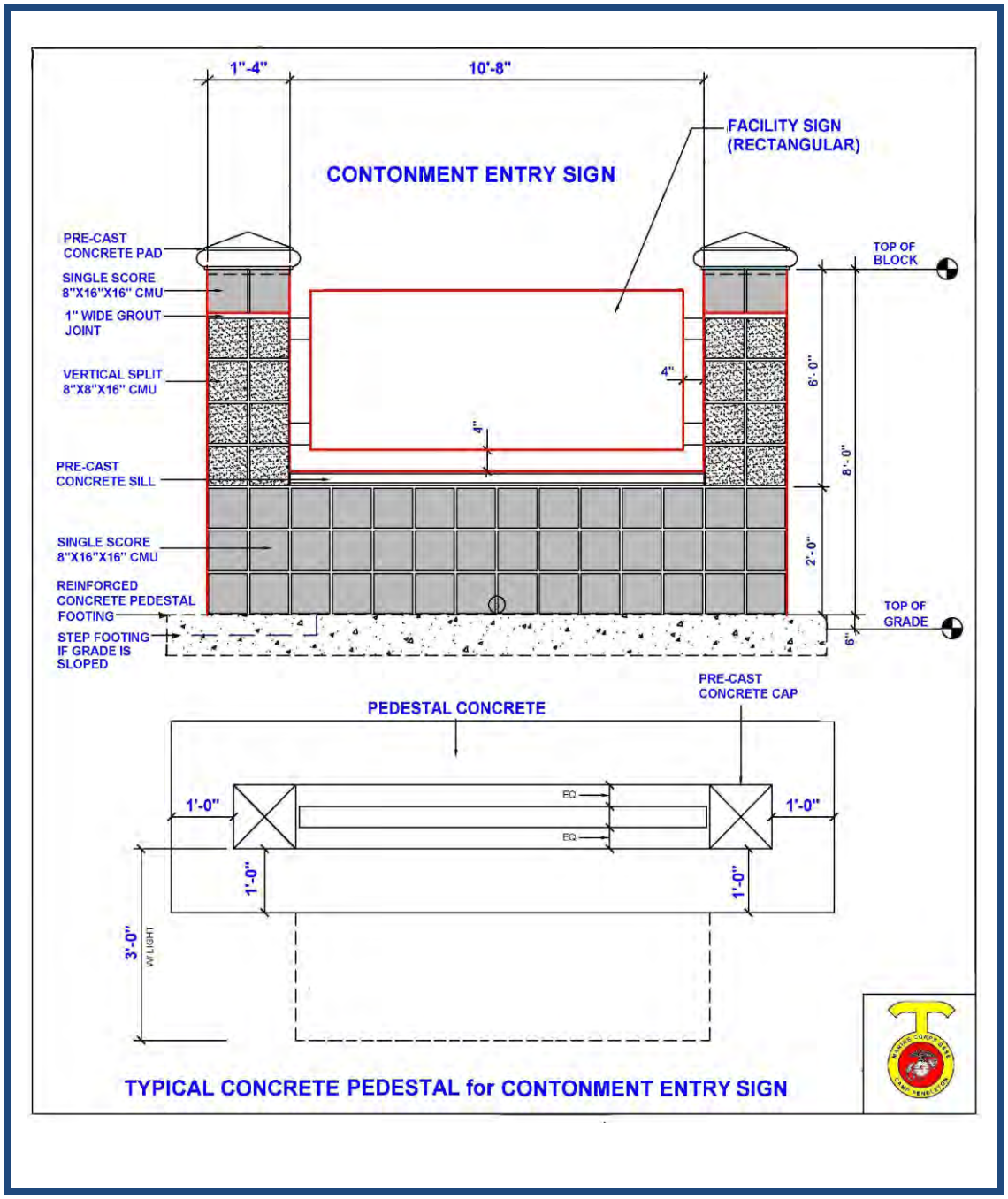

Figure 3.10D2: Cantonment Identification Entry Sign

CHAPTER 3.12 SITE FURNISHINGS:

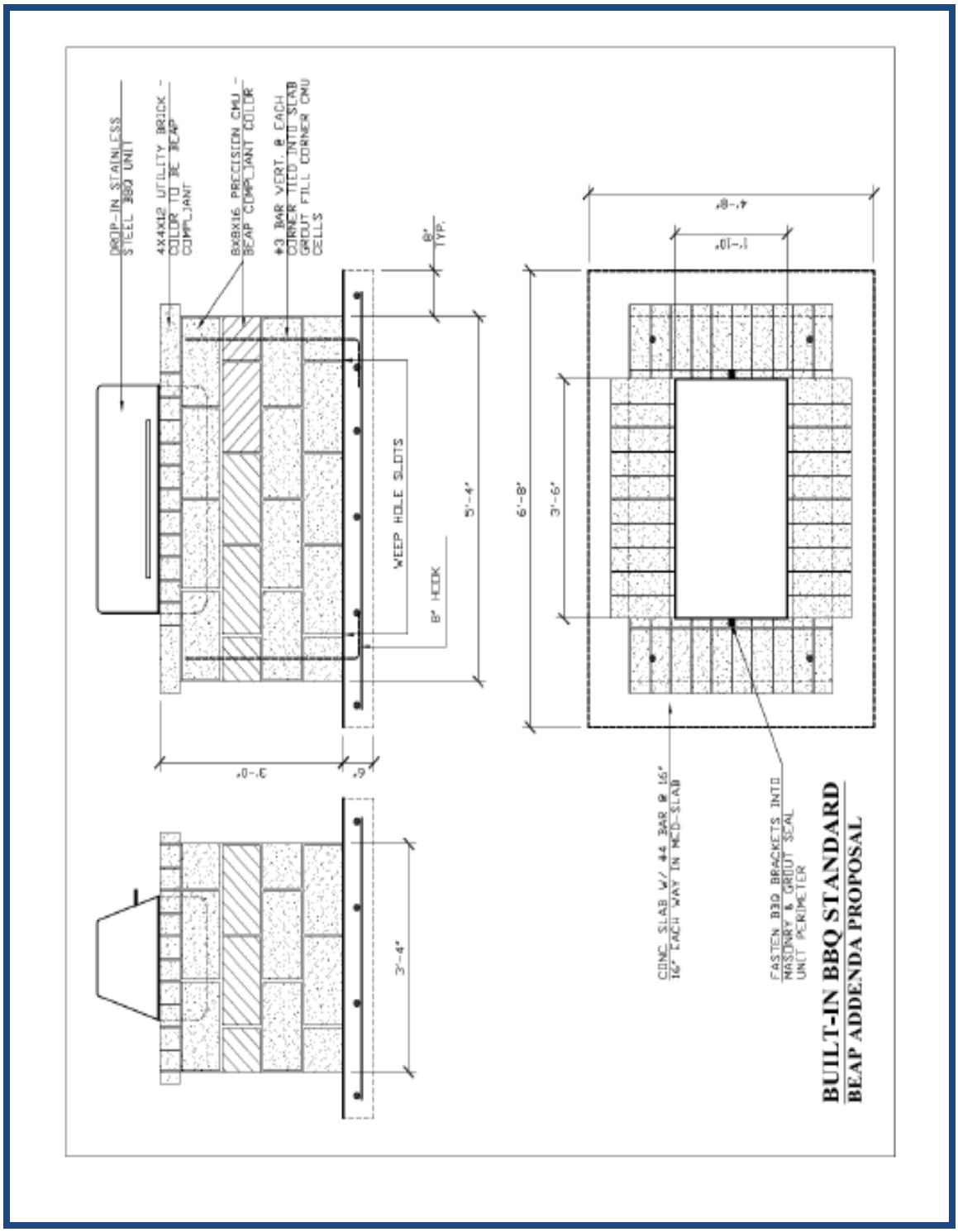

Figure 3.12: Self-Help BBQ and CMU Counter Surround

CHAPTER 3.16 TRASH ENCLOSURES/TRASH & RECYCLING CONTAINERS

These standards provide information and resources for designing solid waste (non-hazardous) and recycling enclosures that will be used by building occupants. The coordinated design of trash enclosures will enhance the function and appearances of MCB CAMPEN, reinforce the design theme, reduce maintenance requirements, and support solid waste and recycling regulations and directives at MCB CAMPEN.

Figure 3.16.1: Trash enclosure in the DelMar (21) Area.

Figure 3.16-2: Unenclosed dumpster located in the parking lot at Chappo (22) Area.

3.16 B. TRASH ENCLOSURE OBJECTIVES

The goal for trash enclosure design is to create a uniform design supportive of the overall base design theme and related to each other by compatibility of material, color, form and design detail. The location of trash enclosures has a significant visual impact and must be addressed as part of an overall building design and incorporated in site planning. Trash enclosures must meet ATFP requirements, display similar materials as approved for use aboard MCB CAMPEN, be durable, and require minimal maintenance (Figure 3.16-1).

3.16 C. TRASH ENCLOSURE GUIDELINES

1. LOCATION AND MATERIALS:

a. Locate trash enclosures shall be inconspicuous such that their presence does not detract from the overall design focus and layout of the surrounding area (Figures 3.16-2 and 3.16-3).

b. Avoid locating trash enclosures along major circulation or use areas (Figure 3.16-3). Trash enclosures shall be directly accessible by way of a paved service drive or parking lot with adequate overhead clearance for collection vehicles (Figure 3.16-4).

Figure 3.16-3: Unenclosed dumpsters in Edson Range located along main road through cantonment.

Figure 3.16-4: Enclosure wall around dumpster along a service road.

c. Driveways or aisles shall provide unobstructed access for collection vehicles and personnel and provide at least the minimum clearance required by the collection methods and vehicles utilized by the designated collector.

d. Provide vertical clearance above trash enclosures free of overhead obstructions as required by the collection methods and vehicles utilized by the designated collector.

e. Consider the location and orientation of trash enclosures as related to ATFP requirements and the design of its surrounding environment. ATFP requirements restrict the location of dumpsters to outside the designated unobstructed space from inhabited buildings, billeting and primary gathering areas. In addition, they shall face away from structures.

f. Refer to current UFC 4-010-01, Design: DoD Minimum Antiterrorism Standards for Buildings, for Standoff Distances.

2. ACCESS:

All enclosures are required to have direct access for front loading collection trucks. Direct access means the collection truck can drive directly up to the bin, and insert the forks into the sides of the bin without the driver having to get out of the truck to move the bin (Figure 3.16-4).

a. Vehicular path of travel shall have minimal conflict with on-site vehicle and pedestrian circulation patterns.

b. Driveways and drive aisles leading to enclosures shall be minimum 18 feet wide.

c. Provide sufficient area for front-end loader collection truck turning radius.

d. Provide a minimum 50 foot straight approach for access to stationary (no wheels) bins.

e. Design trash enclosure so each bin can be removed and replaced without having to take out other bins, to avoid stacking, and to maximize access.

f. For each trash enclosure containing three bins, two bins shall be designated for solid waste (nonhazardous), and one bin shall be for recycling (Figure 3.16-5). At the enclosure opening, the solid waste bins shall be on the left side, and the recycling bin shall be on the right side.

g. If wheeling (i.e., manually pushing) bins from enclosure to a truck collection area is anticipated, provide minimum ten foot wide concrete pathway with slope less than two percent.

Figure 3.16-6: Wooden rails are not allowed within an enclosure.

3. TRASH ENCLOSURE DESIGN:

a. Enclosures shall be built to accommodate three trash bins. See BEAP Detail 8.9 L-2.

b. Incorporate plantings to buffer the visual impact of screen walls. Provide a minimum three foot clearance on each side between screen walls and dumpsters to allow adequate pedestrian and truck access.

c. Storm water shall be prevented from running into the enclosure. There shall be no storm drain or wastewater connections within the enclosure.

d. Trash storage areas shall be paved with an impervious concrete surface.

e. All dumpsters shall be placed on concrete pads with aprons large enough to encompass the bearing points of the service vehicle.

f. Construct enclosure walls from concrete masonry units (CMU). Color shall match nearby buildings and screen walls.

g. Construct a concrete apron extending 10 feet from the enclosure pad the width of the enclosure opening. The enclosure base shall be six inches of concrete over two inches of aggregate base rock. The builder shall provide evidence that construction specs are engineered to withstand up to 20,000 pounds of direct force from a single truck axle.

h. Wooden rails (Figure 3.16-6) or bollards are not permitted within the enclosure. Instead, an eight inch wide by six inch high concrete curb (at inside perimeter of walls) shall be installed to prevent bins from touching the back and side walls.

i. The enclosure will not have gates.

j. 3' high steel bollards shall be installed to protect impacts to each wing wall of the enclosure.

TRASH AND RECYCLING CONTAINERS

1. BEAP TRASH AND RECYCLING CONTAINERS REQUIREMENTS: Each new building constructed on the Base shall have a CMU enclosure with trash and recycling containers. Comply with the Base Exterior Architecture Plan (BEAP) for enclosure requirements. Trash and recycling containers shall be included in the construction budget and purchased and installed by the General Contractor. Size and quantity shall be determined during initial design phase of project.

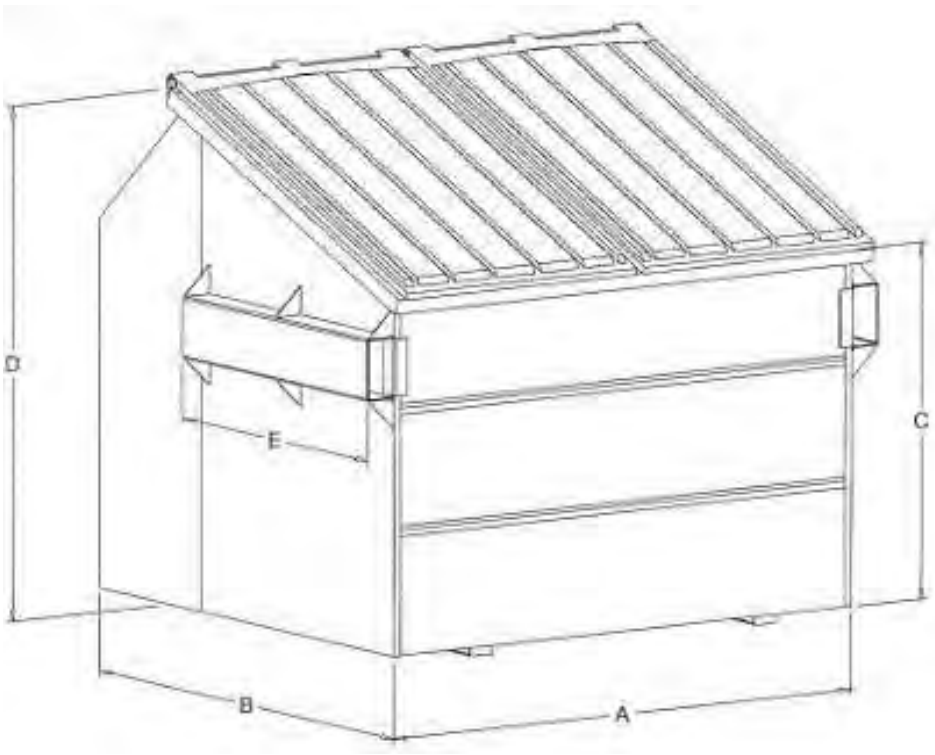

Figure 3.16-7: Trash and Recycle Container

2. TRASH CONTAINER – 6 YARD HUMPBACK WITH 12 GAUGE BOTTOM (Figure 3.16-7):

- SERIAL #: 357736 – 357831
- GSA SCHEDULE: #GS-07F-5512P
- MFG PART: #40-9007
- COLOR: Marine Corp Green
- LABEL: Stencil per special instructions
- CONTACT: MCB CAMPEN Recycling Center Manager at (760) 725-4982

SIZE	A*	B	C	D	E
6 YD	72"	66"	50"	69"	41.5

* Add 4” per side (A) for sleeve width

Figure 3.16-8: 6-Yard Humpback with 12 Gauge Bottom

3. SPLIT RECYCLING CONTAINER - 1 4 YD PITCH TOP SPLIT UNIT W/12 GA BOTTOM

- Split ½ Cans and ½ Paper/Cardboard (Figure 3.16-7)
- SERIAL #: 327467 - 327487
- GSA SCHEDULE: #GS-07F-5512P (Some options are not on GSA)
- MFG PART #40-9007
- COLOR: ½ White and ½ Blue
- LABEL: Stencil Per Special Instructions
- CONTACT: MCB CAMPEN Recycling Center Manager at (760) 725-4982

SIZE	FRONT HEIGHT	BACK HEIGHT	WIDTH	LENGTH
	C**	D**	B	A*
4 YD	46"	57"	50.5"	72"

* Add 4” per side (A) for sleeve width
** Casters add 8” to height

Figure 3.16-9: 14-Yard Pitch Top Split Unit with 12 Gauge Bottom

CHAPTER 3.17 ABOVEGROUND STORAGE TANK

Aboveground Storage Tanks (AST's) are commonly used to store gasoline, diesel fuel, oils, lubricants, and other liquids. AST's refer to both permanent, fixed tanks, as well as portable containers 55 gallons or greater in size. Aboveground Storage Tanks (AST) often have a blighting impact on MCB CAMPEN appearance. AST's will benefit from more complete screening than is offered by chain link fence. The coordinated design of AST screened enclosures will enhance the function, appearance of the MCB CAMPEN exterior, and reinforce the design theme.

3.17 A. OBSERVATIONS

There is a great diversity in the size, configuration, detail, and screening methods of AST's at MCB CAMPEN. The general observations include:

a. There is no overall uniformity in the design of screening AST enclosures (Figures 3.17-1 to 3).

b. AST screening shall display similar materials as approved for on-base use, be durable, and require minimal maintenance.

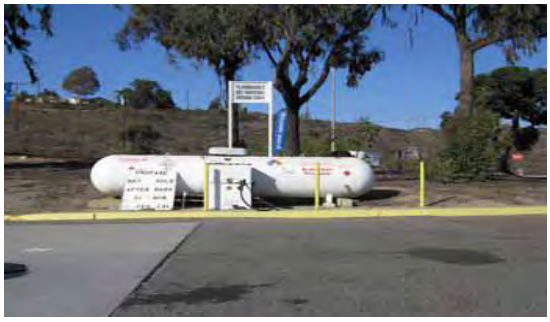

Figure 3.17-1: Typical AST

Figure 3.17-2: Bollards surrounding AST in TALEGA (64) Area.

3.17 B. OBJECTIVES

The goal for AST screening enclosure design is to create a uniform design supportive of the overall MCB CAMPEN design theme and related to each other by compatibility of material, color, form and design detail. Objectives are as follows:

a. Screen unsightly AST's from view.

b. Standardize screening elements. The design of all AST screened enclosures shall achieve unity of appearance through repetitive use of colors, materials and common details.

c. Visual disorder will be further alleviated by the use of standard screening elements and details.

d. All screen material shall be durable and low maintenance. High quality temporary screens shall also be capable of being easily removed and relocated.

e. Carefully consider the location of AST's as related to ATFP criteria and the appearance and design of its surrounding environment. AST's shall not be located within required ATFP standoff distances.

f. In new project areas, identify locations where screening is needed and describe conditions and requirements. Prepare a map showing the location of all existing screening. Note type of screen, condition and guideline conformance or nonconformance.

g. Aboveground storage tanks require secondary containment, with a containment volume no less than tank capacity plus 10%. Containments shall be constructed of materials, and in a manner which simplifies maintenance and precludes growth of vegetation.

h. Barrier posts or other means shall be provided to protect tanks from vehicular damage. The tank shall be labeled with the product name and 'no smoking' signs shall be affixed. Tanks shall be adequately grounded or bonded to prevent the accumulation of static electricity.

i. Locate tanks so as not to restrict circulation, or reduce the number of required parking spaces or vehicle back up space. Adequate space shall be available to allow for access to the dispensing mechanism by users without interfering with other circulation needs (Figure 3.17-4).

Figure 3.17-3: AST at the Naval Hospital (27) Area, unscreened from view.

Figure 3.17-4: Unobstructed access to AST.

3.17 C. SCREENING GUIDELINES

FENCES

a. Use fences where safety and security are needed, such as around electrical substations and where partial view blockage is desirable, such as at service courts and materials storage areas.

b. Construct screen fences (Figure 3.17-5).

c. Augment fences with landscaping where screening is desired and irrigation is feasible (see Section 3.6–Landscaping). Landscape planting includes trees only. Shrub planting and hedges Are not allowed. Do not use fence slats.

Figure 3.17-5: Screen Fences (Construct)

CHAPTER 8.9E5 HOT CHARCOAL CONTAINER

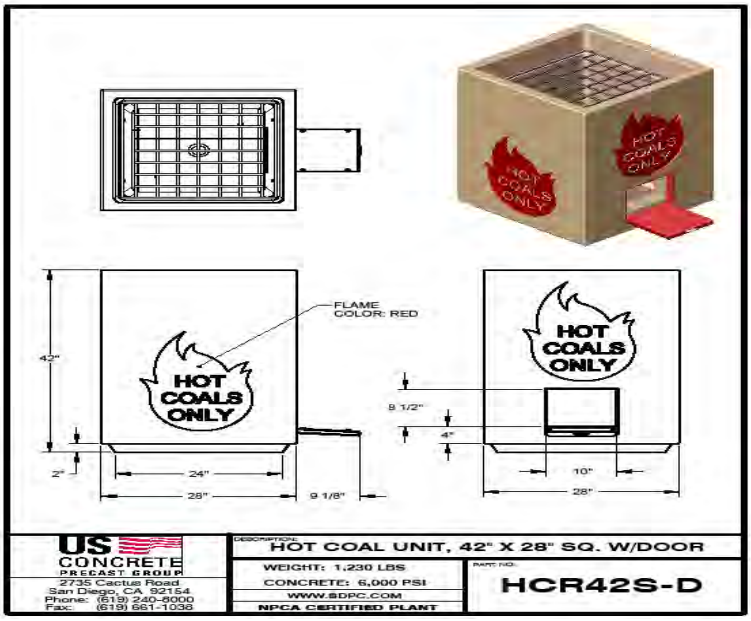

Figure 8.9E5: Hot Charcoal Container

CHAPTER 8.2A5 DOWNSPOUT AND EXTERIOR FOUNDATION

1. Top of any exterior foundation details shall extend above the elevation of the street gutter at point of discharge at the inlet of an approved drainage device a min. 12" plus 2%.

2. Stormwater from downspouts shall be controlled and routed away from the building to a nearby stormwater conveyance system (i.e. storm drain, detention/retention basin, swale, etc.) the route from the downspout to the stormwater conveyance system can be underground or aboveground. The route shall not cross over or drain onto a sidewalk, walkway or concrete patio area.

3. See also stormwater design standards & storm collection/conveyance systems section.

CHAPTER 8.9I5/I6 BOLLARD

1. Bollard color shall be yellow.

CHAPTER 8.9 G-1 FLAGPOLE

Provide flagpoles that are round, tapered, anodized aluminum **65 feet** high with a hinged base for ease of maintenance. See section G-1.

CHAPTER 11.2 SUBMITTAL MATRIX

1. Items 1-4 Submittal requirement for concept design workshop shall be 11”x17” (Not 8 1/2” x 11”).

2. Final architectural building renderings to include building exterior, floor plan and interior, arranged on one board. (perspective drawing graphically)

11.2 Submittal Matrix

Submittal Requirements Matrix	Concept Design Development Submittal		Construction Document Submittal		Special Notes
	No. of Sets	Set Size	No. of Sets	Set Size	
1. Site Analysis	10	8-1/2" x 11"			
2. Site Plan	10	8-1/2" x 11"	10	Full Size: 24" x 36" Half Size: 11" x 17"	Refer to Chapter 10 for a checklist of minimum information required.
3. Floor Plans	10	8-1/2" x 11"			
4. Rendered Elevations	10	8-1/2" x 11"			Keyed to Color Board
5. Materials Boards: 5a. Building Color & Material Boards 5b. Architectural Site Elements 5c. Photographs of Plant Material	5	16" x 20"			Provide Title Block per Section 11.6 in the upper right corner of Board. Key to a colored rendering of the buildings' elevation.
6. Landscape Plans			10	1/2 size	
7. Architecture Plans			10	1/2 size	
8. Structural Plans			10	1/2 size	
9. Mechanical & Plumbing Plans			10	1/2 size	
10. Electrical Plans			10	1/2 size	
11. Fire Protection Plan			10	1/2 size	If required by code analysis.
12. Project Manual			1		Prepared according to the latest edition in one of the following formats: - Specsintact (Navy) - AIA
13. Project Cost Estimate			5		
14. Title 24 Energy			3		
15. Erosion Control Plan			10	1/2 size	
16. Geotechnical Report			3		Prepared by a California Licensed Civil Engineer.
17. Review Period for Submittals	21 days		21 days		Provide written response to the government design review per the NAVFAC SW A/E Guide.

Figure 11.2 Submittal Matrix

BEAP APPENDIX A - BASEWIDE COLOR

BASE EXTERIOR ARCHITECTURE PLAN

Color Board Notes:

1. Refer to BEAP – Chapter 3 for additional guidance on the correct application of these standards.
2. The use of scored concrete masonry units (CMU) is acceptable. Use of 4" high block is acceptable.
3. To promote a creative exterior appearance, the final articulation of approved CMU colors and textures are at the discretion of the Designer of Record (DOR); except that one course of precision CMU shall be used adjacent to all finished grades, hardscapes, and where "through-the-wall" penetrations, louvers, and vents occur.
4. CMU mix: Approximate percentages should be as follows: 40% split-face and 60% precision block. This is graphically shown in Chapter 3.5a "Exterior Walls" of the BEAP.
5. Use factory applied Fluor Polymer Coating System for all exterior metal and aluminum finishes.
6. Minimize the use of field painted colors and finishes.
7. Guard rails shall be designed for minimal maintenance; use hot-dipped galvanized steel at hand and guardrails.
8. Use finished colors #1 and #2 for exteriors on existing buildings.
9. Downspouts shall match dominant building background color.
10. All deviations from the BEAP shall be reviewed and approved by MCB CAMPEN PWO during the Concept Development Phase. (See BEAP Appendix G for Application for Exceptions Form.)

Figure A1: Color Board Notes

Appendix A

Color Board / Building Materials - Basewide & Rehabilitation

BASEWIDE COLOR STANDARDS - NEW AND EXISTING	
ARCHITECTURAL ELEMENTS	MATERIAL DESCRIPTION
Exterior Walls	Concrete Block-Precision/Split Face - ORCO-Gray RCP-Natural ANGELUS-Warm Gray - ORCO-Cool Gray RCP-Castle Gray ANGELUS-Cool Gray - ORCO-Sourdough RCP-La Paz ANGELUS-Champagne Concrete Block Accent Colors-Precision/Split Face - ORCO-Red Brown RCP- Chestnut ANGELUS-Sienna Brown - ORCO-Black 250 RCP-Charcoal ANGELUS-Slate - ORCO-Wheat RCP-Pueblo ANGELUS-Shoreline
Exterior Finishes for Existing Buildings	Concrete plaster building wall-PANTONE 7528, PANTONE 7536
Roofing	Galvanized metal standing seam roofing with a factory applied Fluor Polymer Coating System resin finish: Color - PANTONE 188
Exterior Doors and Door Frames Window Frames Metal Accent/Trim	All windows and doors-aluminum with a factory applied Fluor Polymer Coating System resin finish of: - PANTONE 405 - PANTONE 188 - PANTONE 7 BLACK 7C
Galvanized Downspouts	Color to match dominant color of building
Gutters and Flashings	Color - PANTONE 188
Handrails and Guardrails	Hot dip galvanized steel
Door Hardware	#304 Stainless Steel, #4 Finish
Site Wall Cap	Saddleback or Peaked

A-2

Figure A2: Color Board/Building Materials – Basewide & Rehabilitation

BEAP APPENDIX B

COLOR BOARD LAYOUT-BASEWIDE & REHABILITATION-RANGES

Figure B1: BEAP – Exterior Color and Material Standards

Marine Corps Base Camp Pendleton

Color Board / Building Materials - Ranges

RANGE COLOR STANDARDS - NEW AND EXISTING	
ARCHITECTURAL ELEMENTS	MATERIAL DESCRIPTION
All Standing Seam Metal Roofs / Doors and Frames	Color - PANTONE 5535 U
Bleachers / Quonsets	Off-White High Reflectance Ceramic Paint (Per individual vendor)
Windows / Soffits / Sheds	Color - PANTONE Warm Gray 2U
Tower Base Structures	Color - PANTONE 424 U
Tower Cabins / Bleacher Cover / Sheds	Color - PANTONE 427 C
Exterior Walls	Concrete Block - Precision C.M.U. - ANGELUS-Warm Gray ORCO-Gray RCP-Natural

Figure B2: Color Board / Building Materials - Ranges

Color Board Notes:

1. Refer to BEAP - Chapter 3 for additional guidance on the correct application of these standards.

2. The use of scored concrete masonry units (CMU) is acceptable. Use of 4" high block is acceptable. Precision block is preferred.

3. To promote a creative exterior appearance, the final articulation of approved CMU colors & textures is at the discretion of the designer of record, except that one course of precision CMU shall be used adjacent to all finished grades, hardscape, and where "through the wall" penetrations, louvers, and vents occur.

4. Use factory applied Fluor Polymer Coating System for all exterior metal & aluminum finishes.

5. Minimize the use of field painted colors & finishes.

6. Guard rails shall be designed for minimal maintenance; use hot-dipped galvanized steel at hand and guardrails.

7. Downspouts shall match dominant building background color.

8. All deviations from the BEAP shall be reviewed and approved by the Camp Pendleton Public Works Officer during the Concept Development Phase (See BEAP Appendix G for Application for Exceptions).

9. Roof color shall have an SRE of 29 minimum.

Figure B3: Color Board / Building Materials – Ranges Notes

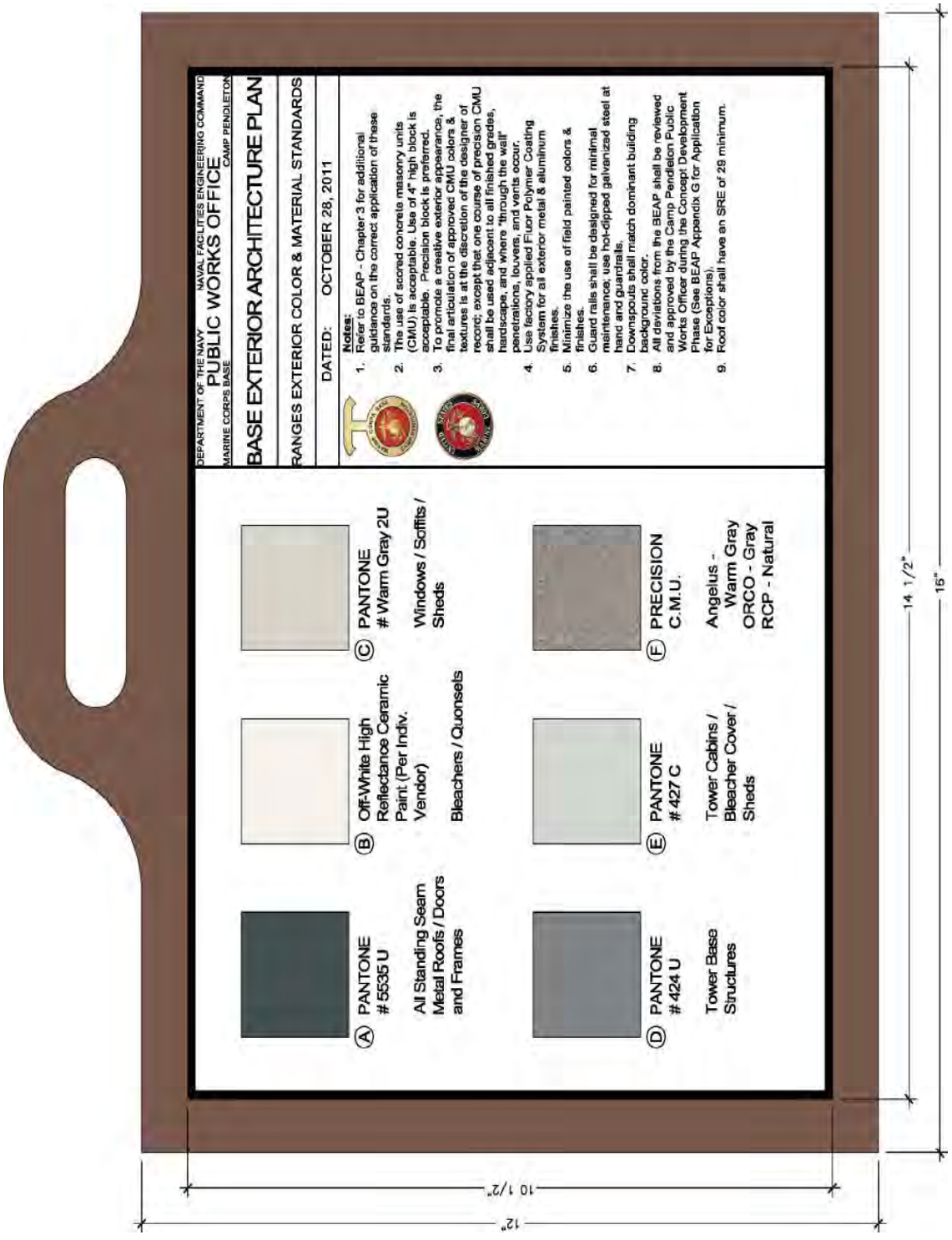

Figure B4: New Ranges Color Board

APPENDIX B

SAN DIEGO NORHTERN RAILWAY REQUIREMENTS FOR THE INSTALLATION OF PIPELINES ON RAILROAD RIGHT-OF-WAY (pages 1-8)

Part 1 – GENERAL

PREFACE

These requirements govern the installation of all pipelines by third-parties within the railroad right-of-way. All pipelines crossing railroad right-of-way shall be encased in a larger pipe or conduit called the "casing pipe" for their entire length. Pipelines shall be installed by boring or jacking, if practicable, and when practicable shall be located in a manner such that they cross tracks perpendicularly. Design of pipelines shall be such that their construction does not interfere with railroad operations. Inspection and maintenance of pipelines shall not interfere with railroad operations. Note that operations within the right-of-way are subject to the FRA and San Diego Northern Railway (SDNR's) Roadway Worker Protection (RWP) Rules and regulations as well as the rules and regulations for contracting working in SDNR's right-of-way.

REFERENCE STANDARDS

Pipelines shall comply with all local, State, and Federal codes, specifications, standards, and recommended practices, in addition to standards and recommended practices specific to the railroad industry.

The following references shall apply:

1. Standard Specifications for Public Works Construction

2. State of California Construction Safety Orders

3. California Civil Code, Section 182

4. American Welding Society (AWS)

5. Occupational Safety and Health Administration (OSHA)

6. American Association of State Highway and Transportation Officials (AASHTO)

7. American Railway Engineering and Maintenance of Way Association (AREMA)

8. California Public Utilities Commission (CPUC) General Orders (GO) 26-D, "Regulations Governing Clearances on Railroads and Street Railroads with Reference to Side and Overhead Structures, Parallel Tracks, Crossings of Public Roads, Highways and Streets"

9. CPUC GO 118, "Construction, Reconstruction and Maintenance of Walkways and Control of Vegetation Adjacent to Railroad Tracks"

10. Federal Railroad Administration (FRA) RWP Rules

11. SDNR Engineering Standards

Nominal Diameter (inches)	When Coated or Catholically Protected – Nominal Thickness (inches)	When not Coated or Catholically Protected Nominal Thickness (inches)
12 ¾ and under	0.188	0.88
14	0.188	0.250
16	0.219	0.281
18	0.250	0.312
20 and 22	0.281	0.344
24	0.312	0.375
26	0.344	0.406
28	0.375	0.438
30	0.406	0.469
32	0.438	0.500
34 and 36	0.469	0.531
38	0.500	0.562
40	0.531	0.594
42	0.562	0.625
44 and 46	0.594	0.656
48	0.625	0.688
50	0.656	0.719
52	0.688	0.750
54	0.719	0.781
56 and 58	0.750	0.812
60	0.781	0.844
62	0.812	0.875
64	0.844	0.906
66 and 68	0.875	0.938
70	0.906	0.969
72	0.938	1.00

Table 1. Minimum Wall Thickness for Steel Casing Pipe for E80 Loading

PART 2 – PIPELINES FOR FLAMMABLE SUBSTANCES

STEEL CARRIER PIPE

Pipelines that carry oil, liquefied petroleum gas, and other flammable liquid products shall be of steel and conform to the requirements of the current ANSI B31.4 Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas. Anhydrous Ammonia, and Alcohols, and other applicable ANSI codes, except that the maximum allowable stress for design of steel pipe shall not exceed the following percentages of the specified minimum yield strength (multiplied by longitudinal joint factor) of the pipe as defined in the above codes:

1. Seventy two percent (72%) for oil pipelines

2. Fifty percent (50%) for pipelines carrying condensate, natural gasoline, natural gas liquids, liquefied petroleum gas, and other liquid petroleum products.

3. Sixty percent (60%) for gas pipelines.

4. Pipe shall be laid with sufficient slack such that it is not in tension.

CASING PIPE

Casing pipe shall be of steel and of leak proof construction, capable of withstanding railway loading. The inside diameter of the casing pipe shall be at least 2 inches greater than the largest outside diameter of the carrier pipe, joints, or couplings for carrier pipe less than 6 inches in diameter and at least 4 inches greater for carrier pipe 6 inches and over in diameter. It shall, in all cases, be great enough to allow the couplings, supports, insulators, or centering devices for the carrier pipe within a casing in the railroad right-of-way shall be taken into account when determining the proper casing size.

When casing is installed without the benefit of a protective coating or the protective coating is not cathodically protected, the wall thickness shall be increased to the nearest standard size which is a minimum of 0.063 inches greater than the thickness required, except for diameters under 12 ¾ inches.

Steel pipe shall have specified minimum yield strength, S.M.Y.S., of at least 35,000 psl.

Casing pipe shall be constructed as to prevent leakage of any substances from the casing throughout its length.

Casing pipe under railroad tracks and across railroad right-of-way shall not be less than 6 feet from top of lowest railroad rail to the top of the casing at its closest point (Figure 1). On portions of the right-of-way where casing is not directly beneath any track, the depth from the ground surface or from bottom of ditches to the top of the casing shall not be less than 4 feet (Figure 1). Ends of the casing pipe shall be suitably sealed.

VENT PIPES

Casing pipes shall be properly vented. Vent pipes shall be of sufficient diameter, but in no case less than 2 inches in diameter. Vent pipes shall be attached near the end of the casing pipe and project through the ground surface and shall be outside the railroad right-of-way. Vent pipes shall bot extend less than 4 feet

aboveground surface. Top of vent pipe shall be fitted with a turned-down elbow properly screened, or a relief valve. Vents in locations subject to high water shall be extended above the maximum elevation of high water and shall be supported and protected in a manner that meets SDNR's approval. Vent pipes shall be no closer than 4 feet (vertically) from aerial electric wires.

SHUT-OFF VALVES

Accessible emergency shut-off valves (SOV) shall be installed within effective distances each side of the railroad as mutually agreed to by SDNR and the pipeline company. These valves shall be married with signs for identification. Where pipelines are provided with automatic control stations at locations and within distances approved by SDNR, no additional values shall be required.

CARRIER PIPE INSPECTION AND TESTING

Plans for the proposed installation shall be submitted to and shall be approved by SDNR before construction commences. Plans shall be drawn to scale showing the relation of the proposed pipelines to the railroad tracks, angle of crossing, location of valves, railroad survey stations, right-of-way lines and the arrangement of the tracks and railroad facilities. Plans shall also show a cross section (or sections) from field surveys, showing pipe in relation to the actual profile of ground and tracks.

Specification Number	Carrier Pipe Properties
ANSI/AWWA C900-89	Polyvinyl Chloride (PVC) pressure pipe, 4 in. through 12 in. for water distribution
ANSI/AWWA C901-96	Polyethylene (PE) pressure pipe and tubing, ½ in. through 3 in. for water service
ANSI/AWWA C902-88	Polybutylene (PB) pressure pipe and tubing, ½ in. through 3 in. for water service
ANSI/AWWA C905-88	PVC water transmission pipe, nominal diameters 14 in. through 36 in.
ANSI/AWWA C906-90	PE pressure pipe and fittings, 4 in. through 63 in. for water distribution
ANSI/AWWA C907-90	PVC pressure filling for water, 4 in. through 8 in.
ANSI/AWWA C950-95	Fiberglass pressure pipe

Table 2: Specification Number/Carrier Pipe Properties

PART 3 – PIPELINES FOR NON-FLAMMABLE SUBSTANCES

CARRIER PIPE

Carrier pipe and joints shall be of acceptable material and construction as approved by SDNR. The pipe shall be laid with sufficient slack so that it is not in tension. Acceptable plastic carrier pipe materials include Polyvinyl Chloride (PVC), Acrylonitrile Butadiene Styrene (ABS), Polyethylene (PE), Polybutylene (PB), Cellulose Acetate Butadiene Styrene (CAB), and Styrene Rubber (SR). Thermoset types include Reinforced Plastic Mortar (RPM), Reinforced Thermosetting Resin (RTR), and Fiberglass Reinforced Plastic (FRP).

Plastic pipe material shall be resistant to the chemicals with which contact can be anticipated. Plastic carrier pipe shall be utilized where there is potential for contact with petroleum contaminated soils or other non-polar organic compounds that may be present in surrounding areas.

Design shall consider differential settlement of attachments, longitudinal bending, sheer loading due to uneven settlement of pipe bending, temperature induced stresses, ground movement due of seasonal variations in moisture content (i.e., expansive clays), seismic ground movement, and potential foreground cover surface erosion.

The plastic pipe material must be compatible with the type of product conveyed and the temperature range anticipated for the transported materials and surrounding environment. The maximum allowable operating pressure is 100 psi. Plastic cover pipe design and installation shall conform to the ANSI B31.3 specifications and/or the following specifications (Table 2):

Codes, specifications, and regulations current at the time of constructing the pipeline shall govern the installation of the facility within the railroad right-of-way. The proof testing of the strength of the carrier pipe shall be in accordance with ANSI requirements.

STEEL CASING PIPE

Requirements shall be the same as for steel casing for pipelines carrying flammable substances.

SHUT-OFF VALVES

Requirements for shut-off valves (SOV) shall be the same as for pipelines carrying flammable substances.

APPROVAL OF PLANS

Requirements for the approval of plans shall be the same as for pipelines carrying flammable substances.

The Contractor shall complete and submit the Proposed Pipeline Crossing Information Form to SDNR (Table 3).

	CARRIER PIPE	CASING PIPE
Contents to be handled		
Outside Diameter		
Pipe Material		
Specifications and Grade of Pipe Material		
Wall Thickness		
Actual Working Pressure		
Type of Joint		
Coating		
Method of Installation		
Vents: Number: Size: Height Aboveground: Subject to Immersion: Yes/No		
Seals: Both Ends: One End: Type:		
Bury: Tope of Rail to Tope of Casing: Ft. in.		
Bury: (Not beneath tracks): Ft. in.		
Bury: (Roadway Ditches): Ft. in.		
Type, Size, and Spacing of Insulators of Supports:		
Distance: Centerline of Track to Face Jacking/Receiving Pits: Ft. in.		
Bury: Base of Rail to Bottom of Jacking/Receiving Pits: Ft. in.		
Cathodic Protection: Yes/No		

Table 3: Proposed Pipeline Crossing Information Form

PART 4 – ALL CASING INSTALLATIONS

CASING SUBMITTALS

The Contractor will provide a mil certificate of compliance for steel casing.

CASING INSTALLATION PLAN SUBMITTAL

The Contractor shall submit a Casing Installation Plan to SDNR for approval prior to performing any work. Indicate locations of jacking and receiving pits relative to the track. Describe method of jacking and boring including method of grouting annular space between casing and excavated soil. For directional boring/drilling, submit complete specifications for the machine to be used including:

1. Operating and maximum pressures of liquid at the drilling head

2. Water volume

3. Type of reamer or cutting tool and size of holes/nozzles on the head, and method of head control

HANDLING OF MATERIAL

Casing and ancillary items shall be handled in such a manner as not to damage the Material, Damage to the casing, lining, or coating, if any, shall be repaired to the satisfaction of SDNR. Casing shall not be dropped to or dragged over the ground, but shall be handled with rolling slings on skids or with cranes. Bent or otherwise damaged casing or ancillary items shall not be used.

EXCAVATION

Excavation shall be performed in accordance with North County Transportation District (NCTD) Standard Specification Section 02160 Excavation Support System, Jacking and receiving pits shall be at least 25’ clear of the nearest track centerline.

JACKING AND BORING - JACKING AND TUNNELING

The jacking and boring method consists of pushing the casing into the earth with a boring auger rotating inside the casing, which removes the soil. The front of the pipe shall be provided with mechanical arrangements or devices that prevent the auger from leading the casing so that no unsupported excavation is ahead of the casing.

The jacking and tunneling method consists of pushing the casing into the earth with jacks and excavation being performed by worker(s) using handheld tools from within the jacking shield at the head of the casing.

Jacking and boring, and/or jacking and tunneling shall not be used in sandy, loose, or otherwise unstable soils or where boulders are anticipated. The use of water or slurry under pressure (jetting) or puddling shall not be permitted to facilitate boring, pushing, or jacking operations. Water or slurry used to lubricate the cutter and pipe is acceptable.

In all operations, the annular space between the casing and the soil shall be grouted. Such grout shall contain at least 8 sacks of cement per cubic yard of material. The hole diameter resulting from bored or tunneled installations shall not exceed the outside diameter of the casing by more than 1.5 inches for casings of less than 12 inches in outside diameter and by 2 inches for casings of greater than 12 inches in outside diameter. For casings with drainage culvert carrier pipes, the annular space between the casing and the carrier pipe shall be grouted. Such grout shall contain at least 5 sacks of cement 8 sacks of cement per cubic yard of Material.

Shall the operation be abandoned before completion, the annular space between the casing and excavated soil shall be grouted as specified above. In addition, the complete inside of the casing shall be grouted. Such grout shall contain at least 2 sacks of cement per cubic yard of material.

Operations shall be stopped for the passage of trains. The Contractor shall employ methods to prevent loss of the excavation face as approved in advance by the SDNR.

Operations shall be stopped if ground displacement is detected. The Contractor shall develop a remediation plan that is approved by SDNR before resuming operations. The Contractor is liable for all damage resulting from ground displacement. Shall the track displace, corrective action shall be taken by the SDNR forces or the contractor as approved by SDNR. SDNR expenses shall be reimbursed by the Contractor.

Casing installation under track shall be progressed on a continuous basis without stoppage (except for adding casing sections) until the lending edge of the pipe has reached the receiving pit.

For casings with carrier pipes that are other than drain culvert pipes, the annular space between the casing and carrier pipe at the casing ends shall be sealed with a concrete bulkhead with a thickness equal to annual space or 6” whichever is greater.

DIRECTIONAL BORING AND DRILLING

This method consists of utilizing specialized drilling equipment and boring a small diameter pilot hole along the desired horizontal and vertical alignment, using a mechanical cutting head with high-pressure bentonite slurry to remove the cuttings. Bore pits at either end of the installation are not necessarily required with this method. The drill string is advanced with the bentonite slurry pumped through the drill string to the cutting head and then forced back along the drill string, carrying the cuttings back to the surface for removal. After the cutting head reaches the far side of the crossing, it is removed and a reamer (with a diameter wider than the cutting head) is attached to the lead end of the drill string. The casing is attached to the reamer and the casing is then pulled back into its final position. Methods that excavate the soil by means of jetting of fluid or slurry are not allowed. Directional boring/drilling may be used for casings 12” or less in diameter.

Slurry use shall be kept to a minimum and shall only be used for head lubrication and/or spots return. The Contractor shall calculate anticipated slurry use and shall monitor actual slurry use during the boring operation in order to determine the slurry loss into the surrounding soil. Slurry shall be bentonite slurry. The bentonite slurry shall seal the annular space between the casing and the excavated soil with a minimum return of 95%.

Bore stems or cutting tools that become immovable under the track shall be abandoned in place. Shall the operation be abandoned before completion, the complete inside of the casing shall be grouted. Such grout shall contain at least 2 sacks of cement per cubic yard of Material.

Operations shall be stopped if ground displacement is defected. The Contractor shall develop a remediation plan that is approved by SDNR before resuming operations. The Contractor is liable for all damage resulting from ground displacement. Shall the track displace, corrective action shall be taken by the SDNR forces or the Contractor as approved by SDNR. SDNR expenses shall be reimbursed by the contractor.

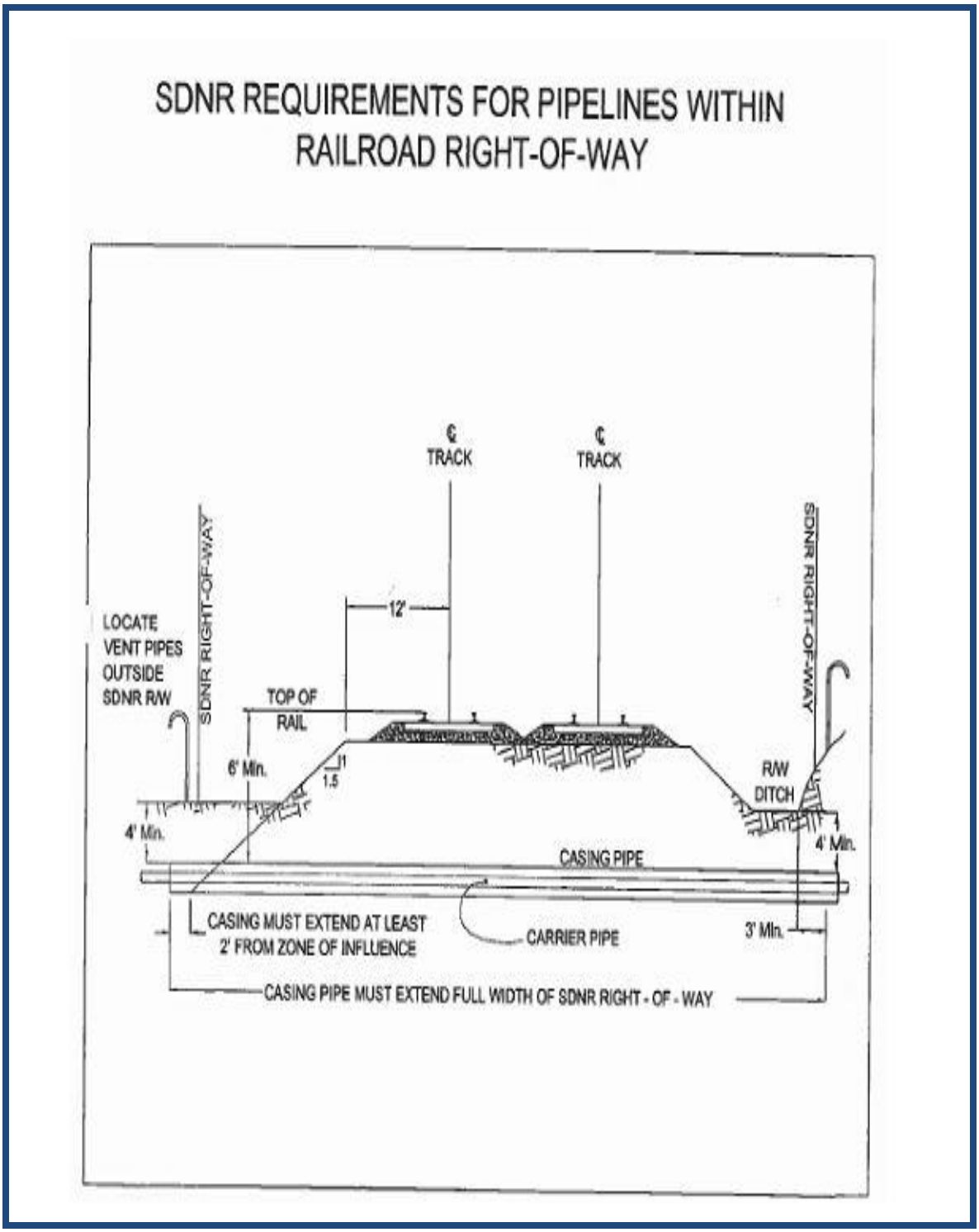

Figure D1: SDNR Requirements for Pipelines within Railroad Right-of-Way (Not to Scale)
(Installation of spacers and sand fills between the main pipe and the casing pipe will be required.)

NORTH COUNTY TRANSIT DISTRICT

Proposed Pipeline Crossing Information Form

	Carrier Pipe	Casing Pipe
Contents to be handled		
Outside Diameter		
Pipe Material		
Specification and Grade of Pipe Material		
Wall Thickness		
Actual Working Pressure		
Type of Joint		
Coating		
Method of Installation		

Vents							
Number		Size		Height Above Ground		Subject to Immersion	

Seals					
Both Ends		One End		Type	

Bury		
Top of Rail to Top of Casing	Ft.	In.
Not beneath tracks	Ft.	In.
Roadway Ditches	Ft.	In.
Base of Rail to Bottom of Jacking/Receiving Pits	Ft.	In.
Distance from Centerline of Track to Face of Jacking/Receiving Pits	Ft.	In.
Type, Size, and Spacing of Insulators of Supports		
Cathodic Protection		

Note: This form can be completed by the Contractor but can only be submitted to NCTD by the Public Works Project Leader. Per MCB/NCTD Protocol dated 1994 as amended.

Figure D2: North County Transit District Proposed Pipeline Crossing Information Form

APPENDIX C - ACRONYMS

A

A&E	Architecture and Engineering
AASHTO	American Association of State Highway and Transportation Officials
ABA	American Barriers Act
ABS	Acrylonitrile butadiene styrene
AC	Asphalt/Concrete
ACU	Automatic Calling Unit
AC/S	Assistant Chief of Staff
ADA	American's with Disabilities Act
ADAAG	American's with Disabilities Act Accessibility Guidelines
ADN	Area Distribution Node
ADPE	Automatic Data Processing Equipment
ADSL	Asymmetrical Digital Subscriber Line
AEC	Architecture, Engineering and Construction
AFF	Above Finished Floor
AFS	Above Finished Slam
AGA	American Gas Association
AHA	Activity Hazards Assessments
AHJ	Authority Having Jurisdiction
AHRI	Air Conditioning, Heating, and Refrigeration Institute
AMI	Advanced Metering Infrastructure
ANSI	American National Standards Institute
API	American Petroleum Institute
APWA	American Public Works Association
AREMA	American Railway Engineering and Maintenance of Way Association
ARRA	American Recovery and Reinvestment Act
ASAP`	As Soon As Possible
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
AST	Aboveground Storage Tank
ASTM	American Society of Testing Materials
ATFP	Anti-Terrorism/Force Protection
ATC	Authority to Connect
ATCM	Airborne Toxic Control Measure Section
ATO	Anti-Terrorism Officer
ATO	Authority to Operate
AutoCAD	Automated Computer Aided Design

AV	Audio Visual
AWG	American Wire Gauge
AWS	American Welding Society
AWWA	American Water Works Association

B

BBQ	Barbeque
BEAP	BASE Exterior Architecture Plan
BEQ	Bachelor Enlisted Quarters
BHMA	Builders Hardware Manufacturers Association
BMP	Best Management Practices
BOD	Basis of Design
BOD	Basic Occupancy Date
BTU	British Thermal Unit
BUMED	Bureau of Medicine
BVD	Best Value Determination

C

C&A	Certification and Accreditation
CAA	Controlled Access Area
CAB	Cellulose Acetate Butadiene Styrene
CAC	Common Access Card
CADD	Computer Aided Design and Drafting
Caltrans	California Transportation
CASQA	California Stormwater Quality Association
CATEX	Categorical Exclusion
CCR	California Code of Regulations
CCS	Code and Criteria Search
CCT	Correlated Color Temperature
CCTV	Closed Circuit Television
CCU	Central Collection Unit
CDC	Child Development Center
CDPH	California Department of Public Health
CDR	Commander
CD-ROM	Compact Disk Read-Only Memory
CE	Cost Estimates
CEA	California Earthquake Authority
CEC	Civil Engineering Corps
CEC	California Energy Commission
CFR	Code of Federal Regulations

CGOM	Crystal Growth of Organic Materials
CIPT	Central Integrated Project Team
CM	Construction Manager
CMC	Commandant, U. S. Marine Corps
CMMS	Computerized Maintenance Management System
CMP	Corrugated Metal Pipe
CMU	Concrete Masonry Unit
CNRSW	Commander, Naval Regional Southwest
CONUS	Continental United States
COP	Car Operating Panel
COTS	Commercial off-the-shelf
CPI	Continuous Process Improvement
CPR	Camp Pendleton Requirements
CPUC	California Public Utilities Commission
CRI	Color Rendition Index
CS	Contracting Specialist
CSA	Canadian's Standards Association
CSD	Controls and Safety Devices
CSD	Content Standards for Digital
CSDGM	Content Standards for Digital Geospatial Metadata
CSI	Construction Specifications Institute
CTTA	Certified Tempest Technical Authority
CVS	Contractor Verification System

D

DACR	Digital Alarm Communication Receiver
DACT	Digital Alarm Communication Transmitter
DAS	Data Acquisition System
DCDA	Double-Check Detection Assembly
DCO	Digital Central Office
DDC	Direct Digital Control
DG	Disintegrated Granite
DI	Ductile Iron
DIACAP	DoD Information Assurance Certification and Accreditation Process
DISN	Defense Information Systems Network
DIV	Division
DM	Design Manager
DMX	Digital Media Extension
DoD	Department of Defense
DoDI	Department of Defense Instruction

DoE	Department of Energy
DoN	Department of the Navy
DOR	Designer of Record
DoT	Department of Transportation
dpi	dots per inch
DVD-ROM	Digital Versatile Disc Read-Only Memory
DWQ	Department of Water Quality
DWR	Department of Water Resources

E

E. Coli	Escherichia Coli
EA	Environmental Assessment
EBS	Electronic Bid Solution
EF	Entrance Facility
EFV	Excess Flow Valve
EIA	Electronics Industries Association
EISA	Energy Independence and Security Act
EMS	Energy Management System
EMT	Electrical Metal Tubing
EPA	Environmental Protection Agency
EPCA	Energy Policy and Conservation Act
EPDM	Ethylene Propylene Diene Monomer
ERT	Encoder Receiver Transmitter
ES	Environmental Security
ESD	Electro-Static Dissipative
ESRI	Environmental Systems Research Institute
ESS	Electronic Security Systems
ET	Engineering Technician

F

FA	Fire Alarm
FA/MNS	Fire Alarm/Mass Notification System
FACP	Fire Alarm Control Panel
FAR	Federal Acquisition Regulations
FDC	Fire Department Connection
FEMP	Federal Energy Management Program
FF&E	Furniture, Fixtures, and Equipment
FGDC	Federal Geographic Data Committee
FHWA	Federal Highway Administration
FIPS	Federal Information Processing Standard

FM	Factory Mutual
FMD	Facilities Maintenance Division
FMO	Facilities Maintenance Officer
FMS	Facility Management System
FOC	Fiber Optic Cable
FOIDS	Fiber Optic Intrusion Detection System
FRA	Federal Railroad Administration
FRP	Fiberglass Reinforced Plastic
FSRM	Facility Sustainment, Repair, and Modernization

G

GFCI	Ground Fault Circuit Interrupt
GIS	Geospatial Information System
GME	Garrison Mobile Equipment
GOV	Government Owned Vehicles
gph	gallons per hour
gpm	gallons per minute
GPS	Global Positioning System
GRS	Geodetic Reference System
GSA	General Services Administration

H

HDP	High Density Plastic
HDPE	High Density Polyethylene
HHW	Heating hot water
HID	High Intensity Discharge
HO	High Output
HP	Horse Power
HPC	Heterotrophic Plate Count
HQMC	Headquarters Marine Corps
HSPD	Homeland Security Presidential Directive
HVAC	Heating, Ventilation, and Air Conditioning

I

I&L	Installation and Logistics
IGI&S	Installation Geospatial Information and Services
I.D.	Inside Diameter
IA	Information Assurance
IBC	International Building Code

ID	Identification
IDC	Insulation Displacement Connection
IDS	Intrusion Detection System
IEEE	Institute of Electrical and Electronics Engineering
IEQ	Indoor Environmental Quality
IFGC	International Fuel Gas Code
IMC	International Mechanical Code
IP	Inside Plant
IPC	International Plumbing Code
IPN	Information Processing Node
IPS	Iron Pipe Standards
IRI	Industrial Risk Insurers
ISDN	Integrated Services Digital Network
ISP	Information Security Program
IT	Information Technology
ITG	Interim Technical Guidance
ITSM	Information Technology Security Manager

J

JPEG	Joint Photographic Experts Group

K

KTR	Contractor
Kg	kilograms
kV	kilovolt
kW	kilowatt

L

LAA	Limited Access Area
LEC	Local Exchange Carrier
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Development

M

MARCORSYSCOM	Marine Corps Systems Command
MAWP	Maximum Allowable Working Pressure
MCB CAMPEN	Marine Corps Base Camp Pendleton
MCCS	Marine Corps Community Services

MC-DAA	Marine Corps-Designated Approving Authority
MCEN	Marine Corps Enterprise Network
MCIWEST	Marine Corps Installation West
MCIWESTO	Marine Corps Installation West Order
MCO	Marine Corps Order
MDPE	Medium-Density Polyethylene
MHE	Material Handling Equipment
MILCON	Military Construction
MIL-HDBK	Military Handbook
MIN/MAX	Minimum/Maximum
MITSC	Marine Information Technology Support Center
MJ	Mechanical Joint
MLG	Marine Logistics Group
mm	millimeters
MNS	Mass Notification System
MPI	Master Painters Institute
MS4	Municipal Separate Storm Sewer Systems
MSL	Mean Sea Level
MXD	Map Document

N

N.T.S.	Not To Scale
NACSEM	National Communications Security Emanation Memorandum
NACSI	National Communications Security Instruction
NAD	North American Datum
NAVD	North American Vertical Datum
NAVFAC	Naval Facilities
NAVFACINST	Naval Facilities Instruction
NAVFAC SW	Naval Facilities Southwest
NBIC	National Board Inspection Code
NC	New Construction
NCTD	North County Transportation District
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code
NECPA	National Energy Conservation Policy Act
NEMA	National Electrical Manufacturer's Association
NEPA	National Environmental Protection Act
NEXGEN	Next Generation
NFPA	National Fire Protection Association
NMCI	Navy and Marine Corps Instruction
No.	Number

NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NRCA	National Roofing Contractors Association
NREL	National Renewable Energy Laboratory
NSF	National Sanitation Foundation
NSI	National Security Information
NSN	National Stock Number
NSTISSI	National Security Telecommunications and Information Systems Security Instruction
NTSB	National Transportation Safety Board

O

O&M	Operations and Maintenance
O.C.	On Center
O.D.	Outside Diameter
OCPW	Orange County Public Works
OECD	Organization for Economic Cooperation and Development
OFSTP	Optical Fiber Systems Test Procedures
OMSI	Operations and Maintenance Support Information
OSHA	Occupational Safety and Health Administration
OSP	Outside plant
OTDR	Optical Time-Domain Reflectometer
OTG	Off-the-Grid
PCC	Portland cement concrete

P

P&E	Planning and Estimating
PB	Polybutylene
PBA	Performance Ballistic Alloy
PCC	Portland Cement Concrete
pdf	portable document format
PDS	Protective Distribution System
PE	Polyethylene
PET	Protected Entrance Termination
PL	Project Leader
PM	Project Manager
PMO	Provost Marshall's Office
POC	Point-of-Contact
POV	Privately Owned Vehicle
PRV	Pressure Regulating Valve

PS	Physical Security
Psi	Per square inch
psig	per square inch gauge
PSRB	Physical Security Review Board
PTS	Performance Technical Specification
PUB	Publication
PV	Photovoltaic
PVC	Polyvinyl Chloride
PWD	Public Works Division
PWO	Public Works Officer

Q

QA	Quality Assurance
QC	Quality Control

R

RAA	Restricted Access Area
RAPIDGate	Registered and Previously Identified Gate
RCP	Reinforced Concrete Pipe
RCRA	Resource Conservation and Recovery Act
REC	Renewable Energy Certificates
REV	Revision
RF	Radio Frequency
RFP	Request for Proposals
RH	Relative Humidity
RMF	Risk Management Framework
RO	Responsible Officer
ROD	Range Operations Division
ROICC	Resident Officer in Charge of Construction
RP	Recommended Practice
RPAO	Real Property Accountability Officer
RPM	Reinforced Plastic Mortar
RPPA	Reduced Pressure Principal Assembly
RSO	Range Safety Officer
RTA	Range Training Area
RTAMD	Range and Training Area Management Division
RTR	Reinforced Thermosetting Resin
RWP	Roadway Worker Protection
RWQCB	Regional Water Quality Control Board

S

SCAQMD	South Coast Air Quality Management District
SDAPCD	San Diego Air Pollution Control District
SDDEH	San Diego Department of Environmental Health
SDG&E	San Diego Gas and Electric
SDNR	San Diego Northern Railway
SDR	Standard Dimension Ratio
SDRSD	San Diego Regional Standard Drawings
SDWA	San Diego Water Authority
SECNAVINST	Secretary of the Navy Instructions
SES	Safety and Emergency Services
SF6	Sulfur Hexafluoride
SID	Structural Interior Design
SLS	Sewer Lift Station
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMARTS	Stormwater Multiple Applications and Report Tracking System
SME	Subject-Matter Experts
SOP	Standard Operating Procedures
SOV	Shut-off Valves
SOW	Scope of Work
SPAWAR	Space and Naval Warfare
SPCC	Spill Prevention, Control, and Countermeasures
SR	Secure Room
SR	Styrene Rubber
SSMR	Standing Seam Metal Roofing
SSPC	Society of Protective Coatings
SSPWC	Standard Specifications for Public Works Construction
SUSMP	Standard Urban Stormwater Mitigation Plan
SUV	Sport Utility Vehicle
SWDA	Safe Water Drinking Act
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWRFT	Southwest Regional Fleet Transportation

T

T/E	Table of Equipment
TAB	Testing and Balancing
TACOMM	Tactical Communications
TDR	Time-Domain Reflectometer
THHN	Thermo-plastic Heat-resistant Nylon

THWN	Thermo-plastic Weatherproof Nylon
TIA	Telecommunications Industry Association
TOC	Table of Contents
TOU	Time-of-Use
TR	Telecommunications Room

U

U.S. GBC	United States Green Building Council
U.S. NCS	United States National CAD Standards
UFAS	Uniform Federal Accessibility Standards
UFC	Unified Facilities Criteria
UFGS	Unified Facilities Guide Specifications
UL	Underwriters Laboratories
UMC	Unified Mechanical Code
UPC	Universal Plumbing Code
UPC	Universal Product Code
UPS	Uninterruptible Power Supply
USMC	United States Marine Corps
USN	United States Navy
UTP	Unshielded Twisted Pair
UV	Ultraviolet

V

V	Volts
VAC	Volts Alternating Current
VAC	Variable Air Control
VAV	Variable Air Volume
VCT	Vinyl Coated Tile
VFD	Variable Frequency Drives
VOC	Volatile Organic Chemicals
VRV	Variable Refrigerant Valve

W

WBDG	Whole Building Design Guide
WDR	Waste Discharge Requirements
WGS	World Geodetic System
Wi-Fi	Wireless-Fidelity
WOG	Water/Oil/Gas
WRD	Water Resources Division

APPENDIX D - MCB CAMPEN POINT-OF-CONTACTS

AC/S G-F	
MCIWEST-MCB CAMPEN **AC/S FAC G-F, Billeting** Bldg. 1341 MCB CAMPEN, CA 92055 (760) 430-4700	MCIWEST-MCB CAMPEN **AC/S G-F, Water Resources Division (WRD)** Bldg. 220105T MCB CAMPEN, CA 92055 (760) 725-1059
MCIWEST-MCB CAMPEN **AC/S G-F, FMD** MCB CAMPEN, CA 92055 Maintenance Control (760) 725-3139 (Bldg. 2296) UNITY Room (760) 212-7417 (Bldg. 2296) Customer Service (760) 725-4368 (Bldg. 2296) Liaison Office (760) 725-2030 (Bldg. 2296) P&E (760) 725-3638 (Bldg. 2296) BASE Energy Office (760) 725-0567 (Bldg. 2296) QA (760) 725-3970 (Bldg. 2291)	MCIWEST-MCB CAMPEN **AC/S G-F, PWD** MCB CAMPEN 92055 A&E (760) 763-7885 (Bldg. 220101T) RPAO (760) 763-7832 (Bldg. 220102T) Planning (760) 763-7855 (Bldg. 220102T) FSRM (760) 763-7427 (Bldg. 220103T) GIS (760) 763-7835 (Bldg. 220103T) Demolition Program Manager (760) 725-6454 (Bldg. 220103T)
ENVIRONMENTAL SECURITY (ES)	
MCIWEST-MCB CAMPEN **ES Compliance Division, RCRA Branch** Spill Prevention and Planning Section Bldg. 22165 MCB CAMPEN, CA 92055 (760) 725-9743/9768	MCIWEST-MCB CAMPEN **ES Planning Division, NEPA Section** Bldg. 22165, 2nd Floor MCB CAMPEN, CA 92055 (760) 725-9759/9763
MCIWEST-MCBCAMP **Environmental Engineering Branch** Bldg. 22165 MCB CAMPEN, CA 92055 ES Compliance Division (760) 725-9753 Air Quality Section (760) 725-9756 Wastewater Section (760) 725-0141 Drinking Water Section (760) 725-9741 Stormwater Section (760) 725-9760 Water Quality/Watersheds Section (760) 763-7881	

MCB CAMPEN POINT-OF-CONTACTS

AC/S Safety & Emergency Services (SES)	
MCIWEST-MCB CAMPEN **AC/S SES, BASE Police Department** Bldg. 1527 MCB CAMPEN, CA 92055 (760) 763-7600/7605	MCIWEST-MCBCAMPEN **AC/S SES, PMO, Physical Security Branch** Bldg. 1523 MCB CAMPEN, CA 92055 (760) 725-9454
MCIWEST-MCB CAMPEN **AC/S SES, Fire Department Deputy Fire Chief for Prevention** Bldg. 1314T1 MCB CAMPEN, CA 92055 (760) 763-2703	MCIWEST-MCB CAMPEN **AC/S SES, PMO, Contractor Security Coordinator** Bldg. 1526 MCB CAMPEN, CA 92055 (760) 763-7604
MCIWEST-MCB CAMPEN **AC/S SES, BASE Safety Center** Bldg. 1523 MCB CAMPEN, CA 92055 (760) 763-5332	
MITSC WEST, RTAMD, NEPA, ROICC	
MCIWEST-MCB CAMPEN **MITSC WEST, IA Manager** Bldg. 2456 MCB CAMPEN, CA 92055 (760) 763-9343	MCIWEST-MCBCAMP **ROICC CM** Bldg. 22101 MCB CAMPEN, CA 92055
MCIWEST-MCB CAMPEN **Deputy Director, RTAMD** Bldg. 220105T MCB CAMPEN, CA 92055 (760) 763-7534	
MCIWEST-MCB CAMPEN G-6 COMMUNICATIONS	
MCIWEST-MCB CAMPEN **AC/S G-6, Communication Infrastructure Planning** Bldg. 1160, Room LL-10 MCB CAMPEN, CA 92055 (760) 763-5263	