

SECTION 01 11 00

SUMMARY OF WORK

04/22

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1.1.1 Project Description

The work includes all items of work as described in the attached project description.

1.1.2 Location

The work shall be located at the Marine Corps Base Camp Lejeune, North Carolina, at the building and/or area as described in the attached project description. The exact location will be indicated by the Contracting Officer.

1.2 PHASED CONSTRUCTION SCHEDULE

Within the overall project schedule, commence and complete the work in phases as described in the attached project description.

1.3 EXISTING WORK

In addition to "FAR 52.236-9, Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements":

- a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which remain.
- b. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the Contracting Officer. At the completion of operations, existing work shall be in a condition equal to or better than that which existed before new work started.

1.4 LOCATION OF UNDERGROUND FACILITIES

The Contractor will be responsible for obtaining the services of a professional utility locator to scan the construction site with electromagnetic or sonic equipment, and mark the surface of the ground where existing underground utilities are discovered. Verify the elevations of existing piping, utilities, 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. Verify elevations before installing new work closer than nearest manhole or other structure at which an adjustment in grade can be made.

1.4.1 Notification Prior to Excavation

Notify the Contracting Officer's Representative (COR) 48 hours prior to starting excavation work.

1.5 GOVERNMENT-FURNISHED MATERIAL AND EQUIPMENT

Government furnished material and equipment will be indicated on drawings and in scope of work if applicable.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 14 00

WORK RESTRICTIONS (MCBL)

04/22

PART 1 GENERAL

1.1 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

List of Contact Personnel

1.2 SPECIAL SCHEDULING REQUIREMENTS

- a. The Contractor shall comply with all special scheduling requirements as described in the attached project description.
- d. Permission to interrupt any Station roads, railroads, and/or utility service shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption.

1.3 CONTRACTOR ACCESS AND USE OF PREMISES

1.3.1 Activity Regulations

Ensure that Contractor personnel employed on the Activity become familiar with and obey Activity regulations including safety, fire, traffic and security regulations. Keep within the limits of the work and avenues of ingress and egress. Wear appropriate personal protective equipment (PPE) in designated areas. Do not enter any restricted areas unless required to do so and until cleared for such entry. Ensure all Contractor equipment, include delivery vehicles, are clearly identified with their company name.

1.3.1.1 Subcontractors and Personnel Contacts

Provide a list of contact personnel of the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

1.3.1.2 Installation Access

Obtain access to Navy installations through participation in the Defense Biometrics Identification System (DBIDS). Requirements for Contractor employee registration, and transition for employees currently under Navy Commercial Access Control System (NCACS), are available at <https://www.cnic.navy.mil/om/dbids.html>. No fees are associated with obtaining a DBIDS credential.

Participation in the DBIDS is not mandatory, and Contractor personnel may apply for One-Day Passes at the Base Visitor Control Office to access an installation.

The following are specific details regarding contractor personnel

requirements. For the most up-to-date information regarding Base Access please visit <https://www.lejeune.marines.mil/Base-Access/>.

1.3.1.2.1 Registration for DBIDS

Registration for DBIDS is available at <https://www.cnic.navy.mil/om/dbids.html>. Procedure includes:

- a. Present a letter or official award document (i.e. DD Form 1155 or SF 1442) from the Contracting Officer, that provides the purpose for access, to the base Visitor Control Center representative.
- b. Present valid identification, such as a passport or Real ID Act-compliant state driver's license.
- c. Provide completed SECNAV FORM 5512/1 to the base Visitor Control Center representative to obtain a background check. This form is available for download at <https://www.cnic.navy.mil/om/dbids.html>.
- d. Upon successful completion of the background check, the Government will complete the DBIDS enrollment process, which includes Contractor employee photo, fingerprints, base restriction and several other assessments.
- e. Upon successful completion of the enrollment process, the Contractor employee will be issued a DBIDS credential, and will be allowed to proceed to worksite.

1.3.1.2.2 DBIDS Eligibility Requirements

Throughout the length of the contract, the Contractor employee must continue to meet background screen standards. Periodic background screenings are conducted to verify continued DBIDS participation and installation access privileges. DBIDS access privileges will be immediately suspended or revoked if at any time a Contractor employee becomes ineligible.

An adjudication process may be initiated when a background screen failure results in disqualification from participation in the DBIDS, and Contractor employee does not agree with the reason for disqualification. The Government is the final authority.

1.3.1.2.3 DBIDS Notification Requirements

- a. Immediately report instances of lost or stolen badges to the Contracting Officer.
- b. Immediately collect DBIDS credentials and notify the Contracting Officer in writing under the following circumstances:
 - (1) An employee has departed the company without having properly returned or surrendered their DBIDS credentials.
 - (2) There is a reasonable basis to conclude that an employee, or former employee, might pose a risk, compromise, or threat to the safety or security of the Installation or anyone therein.

1.3.1.2.4 One-Day Passes

Personnel applying for One-Day passes at the Base Visitor Control Office are subject to daily mandatory vehicle inspection, and will have limited access to the installation. The Government is not responsible for any cost or lost time associated with obtaining daily passes or added vehicle inspections incurred by non-participants in the DBIDS.

1.3.2 No Smoking Policy

Smoking is prohibited within and outside of all buildings on installation, except in designated smoking areas. This applies to existing buildings, buildings under construction and buildings under renovation. Discarding tobacco materials other than into designated tobacco receptacles is considered littering and is subject to fines. The Contracting Officer will identify designated smoking areas.

1.3.3 Working Hours

Regular working hours shall be 0730-1600, Monday through Friday, excluding Government holidays.

1.3.4 Work Outside Regular Hours

Work outside regular working hours requires COR approval. Provide written request at least 15 calendar days prior to such work to allow arrangements to be made by the Government for inspecting the work in progress. During periods of darkness, the different parts of the work shall be lighted in a manner approved by the COR.

1.3.5 Occupied Building and Existing Buildings

The Contractor shall be working in a a portion of an existing building which is not occupied. The existing building and its contents shall be kept secure at all times.

1.3.6 Utility Cutovers and Interruptions

- a. The Contractor shall coordinate a minimum of 14 calendar days prior to any planned utility cutover / interruption. Make utility cutovers and interruptions during normal working hours.
- b. Ensure that new utility lines are complete, except for the connection, before interrupting existing service.
- c. Interruption to water, sanitary sewer, storm sewer, telephone service, electric service, air conditioning, heating, fire alarm, and compressed air shall be considered utility cutovers. This time limit includes time for deactivation and reactivation.
- d. Operation of Station Utilities: The Contractor shall not operate nor disturb the setting of control devices in the station utilities system, including water, sewer, electrical, and steam services. The Government will operate the control devices as required for normal conduct of the work. The Contractor shall notify the Contracting Officer at least 15 days prior to such operation.

1.4 SECURITY REQUIREMENTS

Contract Clause "FAR 52.204-2, Security Requirements and Alternate II," "FAC 5252.236-9301, Special Working Conditions and Entry to Work Area," apply.

1.5 EMERGENCY UNEXPLODED ORDNANCE (UXO) RESPONSE

In the event that UXO, as defined in 40 CFR 260 is encountered during the construction activities that are deemed to be a threat to human health or the environment, Camp Lejeune Military Police and EOD professionals shall be immediately contacted to conduct an emergency response. Additionally, immediately contact the Contracting Officer if UXO is encountered. An evaluation of this scenario and procedures, with contract numbers, shall be included in the Health and Safety Plan (HASP) for the fieldwork.

1.5.1 3R TRAINING

All Contractor personnel performing ground disturbing activities must complete contractor awareness training related to recognizing UXO. This training (3R TRAINING) is available online at:
<http://www.lejeune.marines.mil/OfficesStaff/EnvironmentalMgmt/TrainingVideo.aspx>

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES (MCBCL)

04/22

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EP 1110-1-8

(2021) Engineering and Design --
Construction Equipment Ownership and
Operating Expense Schedule

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Schedule of Prices; G

1.3 SCHEDULE OF PRICES

1.3.1 Data Required

Within 15 calendar days of notice of award, prepare and deliver to COR a schedule of prices (construction contract). Provide a detailed breakdown of the contract price, giving quantities for each of the various kinds of work, unit prices, and extended prices therefor. Schedule of prices shall be separated by individual building numbers with subtotals for each building.

1.3.2 Payment Schedule Instructions

Payments will not be made until the Schedule of Prices has been submitted to and accepted by the Contracting Officer.

Additionally, the Schedule of Prices must be separated as follows:

a. Primary Facilities Cost Breakdown:

Defined as work on the primary facilities out to the 5 foot line. Work out to the 5 foot line includes construction encompassed within a theoretical line 5 foot from the face of exterior walls and includes attendant construction, such as pad mounted HVAC cooling equipment, cooling towers, and transformers placed beyond the 5 foot line.

b. Supporting Facilities Cost Breakdown:

Defined as site work, including incidental work, outside the 5 foot line.

1.4 CONTRACT MODIFICATIONS

In conjunction with the Contract Clause DFARS 252.236-7000 Modification Proposals-Price Breakdown, and where actual ownership and operating costs of construction equipment cannot be determined from Contractor accounting records, base equipment use rates upon the applicable provisions of the EP 1110-1-8.

1.5 CONTRACTOR'S INVOICE AND CONTRACT PERFORMANCE STATEMENT

1.5.1 Content of Invoice

Requests for payment will be processed in accordance with the Contract Clause FAR 52.232-27 Prompt Payment for Construction Contracts and FAR 52.232-5 Payments Under Fixed-Price Construction Contracts. Invoices not completed in accordance with contract requirements will be returned to the Contractor for correction of the deficiencies. The requests for payment shall include the documents listed below.

- a. The Contractor's invoice, on NAVFAC Form 7300/30 furnished by the Government, showing in summary form, the basis for arriving at the amount of the invoice. Form 7300/30 must include certification by Quality Control (QC) Manager as required by the Contract.
- b. The Estimate for Voucher/ Contract Performance Statement on NAVFAC Form 4330/54 furnished by the Government. Use NAVFAC Form 4330, unless otherwise directed by the Contracting Officer, on NAVFAC Contracts when a Monthly Estimate for Voucher is required.
- c. Contractor's Monthly Estimate for Voucher and Contractors Certification (NAVFAC Form 4330) with Subcontractor and supplier payment certification. Other documents, including but not limited to, that need to be received prior to processing payment include the following submittals as required. These items are still required monthly even when a pay voucher is not submitted.
- d. Monthly Work-hour report.
- e. Updated Construction Progress Schedule and tabular reports required by the contract.
- f. Contractor Safety Self Evaluation Checklist.
- g. Updated submittal register.
- h. Solid Waste Disposal Report.
- i. Certified payrolls.
- j. Updated testing logs.
- k. Other supporting documents as requested.

1.5.2 Submission of Invoices

If DFARS Clause 252.232-7006 Wide Area WorkFlow Payment Instructions is included in the Contract, provide the documents listed in above paragraph CONTENT OF INVOICE in their entirety as attachments in Wide Area Work Flow

(WAWF) for each invoice submitted. The maximum size of each WAWF attachment is two megabytes, but there are no limits on the number of attachments. If a document cannot be attached in WAWF due to system or size restriction, provide it as instructed by the Contracting Officer.

Monthly invoices and supporting forms for work performed through the anniversary award date of the Contract must be submitted to the Contracting Officer within 5 calendar days of the date of invoice. For example, if Contract award date is the 7th of the month, the date of each monthly invoice must be the 7th and the invoice must be submitted by the 12th of the month.

1.5.3 Final Invoice

- a. A final invoice must be accompanied by the certification required by DFARS 252.247.7023 Transportation of Supplies by Sea, and the Contractor's Final Release. If the Contractor is incorporated, the Final Release must contain the corporate seal. An officer of the corporation must sign and the corporate secretary must certify the Final Release.
- b. For final invoices being submitted via WAWF, the original Contractor's Final Release Form and required certification of Transportation of Supplies by Sea must be provided directly to the respective Contracting Officer prior to submission of the final invoice. Once receipt of the original Final Release Form and required certification of Transportation of Supplies by Sea has been confirmed by the Contracting Officer, the Contractor must then submit final invoice and attach a copy of the Final Release Form and required certification of Transportation of Supplies by Sea in WAWF.
- c. Final invoices not accompanied by the Contractor's Final Release and required certification of Transportation of Supplies by Sea will be considered incomplete and will be returned to the Contractor.

1.6 PAYMENTS TO THE CONTRACTOR

Payments will be made on submission of itemized requests by the Contractor which comply with the requirements of this section, and will be subject to reduction for overpayments or increase for underpayments made on previous payments to the Contractor.

1.6.1 Obligation of Government Payments

The obligation of the Government to make payments required under the provisions of this Contract will, at the discretion of the Contracting Officer, be subject to reductions and suspensions permitted under the FAR and agency regulations including the following in accordance with FAR 32.103 Progress Payments Under Construction Contracts:

- a. Reasonable deductions due to defects in material or workmanship;
- b. Claims which the Government may have against the Contractor under or in connection with this Contract;
- c. Unless otherwise adjusted, repayment to the Government upon demand for overpayments made to the Contractor; and
- d. Failure to maintain accurate "as-built" or record drawings in

accordance with FAR 52.236.21.

1.6.2 Payment for Onsite and Offsite Materials

Progress payments may be made to the Contractor for materials delivered on the site, for materials stored off construction sites, or materials that are in transit to the construction sites under the following conditions:

- a. FAR 52.232-5(b) Payments Under Fixed Price Construction Contracts.
- b. Materials delivered on the site but not installed, including completed preparatory work, and off-site materials to be considered for progress payment must be major high cost, long lead, special order, or specialty items, not susceptible to deterioration or physical damage in storage or in transit to the construction site. Examples of materials acceptable for payment consideration include, but are not limited to, structural steel, non-magnetic steel, non-magnetic aggregate, equipment, machinery, large pipe and fittings, precast/prestressed concrete products, plastic lumber (e.g., fender piles/curbs), and high-voltage electrical cable. Materials not acceptable for payment include consumable materials such as nails, fasteners, conduits, gypsum board, glass, insulation, and wall coverings.
- c. Materials to be considered for progress payment prior to installation must be specifically and separately identified in the Contractor's estimates of work submitted for the Contracting Officer's approval in accordance with Schedule of Prices requirement of this Contract. Requests for progress payment consideration for such items must be supported by documents establishing their value and that the title requirements of the clause at FAR 52.232-5 Payments Under Fixed-Price Construction Contracts have been met.
- d. Materials are adequately insured and protected from theft and exposure.
- e. Provide a written consent from the surety company with each payment request for offsite materials.
- f. Materials to be considered for progress payments prior to installation must be stored either in Hawaii, Guam, Puerto Rico, or the Continental United States. Other locations are subject to written approval by the Contracting Officer.
- g. Materials in transit to the job site or storage site are not acceptable for payment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

11/20, CHG 1: 08/21

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1

(2014) Safety -- Safety and Health
Requirements Manual

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

[SD-01 Preconstruction Submittals](#)

[View Location Map](#)

[Progress and Completion Pictures](#)

1.3 VIEW LOCATION MAP

Submit, prior to or with the first digital photograph submittals, a sketch or drawing indicating the required photographic locations. Update as required if the locations are moved.

1.4 PROGRESS AND COMPLETION PICTURES

Photographically document site conditions prior to start of construction operations. Provide monthly, and within one month of the completion of work, digital photographs, 1600x1200x24 bit true color minimum resolution in JPEG file format showing the sequence and progress of work. Take a minimum of 20 digital photographs each week throughout the entire project from a minimum of ten different viewpoints selected by the Contractor unless otherwise directed by the Contracting Officer. Submit with the monthly invoice two sets of digital photographs, each set on a separate compact disc (CD) or data versatile disc (DVD), cumulative of all photos to date. Indicate photographs demonstrating environmental procedures. Provide photographs for each month in a separate monthly directory and name each file to indicate its location on the view location sketch. Also provide the view location sketch on the CD or DVD as a digital file. Include a date designator in file names. Photographs provided are for unrestricted use by the Government.

1.5 MINIMUM INSURANCE REQUIREMENTS

Provide the minimum insurance coverage required by FAR 28.307-2 Liability, during the entire period of performance under this contract. Provide other insurance coverage as required by State law.

1.6 ELECTRONIC MAIL (EMAIL)

- a. The Contractor is required to establish and maintain electronic mail (email) capability along with the capability to open various electronic attachments in Microsoft, Adobe Acrobat, and other similar formats.
- b. Within 10 days after contract award; the Contractor shall provide the Contracting Officer a single (only one) email address for the ROICC office to send communications related to this contract correspondence. The ROICC office may also use email to notify the Contractor of base access conditions when emergency conditions warrant, such as hurricanes, terrorist threats, etc.
- c. Multiple email addresses are not authorized.
- d. It is the Contractor's responsibility to make timely distribution of all ROICC email within its own organization, including field office(s).
- e. The Contractor shall promptly notify the Contracting Officer, in writing, of any changes to their email address.

1.7 SUPERVISION

1.7.1 Superintendent Qualifications

Provide project superintendent with a minimum of 10 years experience in construction with at least 5 of those years as a superintendent on projects similar in size and complexity. The individual must be familiar with the requirements of EM 385-1-1 and have experience in the areas of hazard identification and safety compliance. The individual must be capable of interpreting a critical path schedule and construction drawings. The qualification requirements for the alternate superintendent are the same as for the project superintendent. The Contracting Officer may request proof of the superintendent's qualifications at any point in the project if the performance of the superintendent is in question.

For projects where the superintendent is permitted to also serve as the Quality Control (QC) Manager as established in Section 01 45 00.00 20 QUALITY CONTROL, the superintendent must have qualifications in accordance with that section.

1.7.2 Minimum Communication Requirements

Have at least one qualified superintendent, or competent alternate, capable of reading, writing, and conversing fluently in the English language, on the job-site at all times during the performance of Contract work. In addition, if a Quality Control (QC) representative is required on the Contract, then that individual must also have fluent English communication skills.

1.7.3 Duties

The project superintendent is primarily responsible for managing subcontractors and coordinating day-to-day production and schedule adherence on the project. The superintendent is required to attend Red

Zone meetings, partnering meetings, and quality control meetings. The superintendent or qualified alternative must be on-site at all times during the performance of this contract until the work is completed and accepted.

1.7.4 Non-Compliance Actions

The Project Superintendent is subject to removal by the Contracting Officer for non-compliance with requirements specified in the contract and for failure to manage the project to ensure timely completion. Furthermore, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders is acceptable as the subject of claim for extension of time for excess costs or damages by the Contractor.

1.8 PRECONSTRUCTION MEETING

Immediately after award, prior to commencing any work at the site, coordinate with the Contracting Officer a time and place to meet for the Preconstruction Meeting. The meeting must take place within 35 calendar days after award of the contract, but prior to commencement of any work at the site. The purpose of this meeting is to discuss and develop a mutual understanding of the administrative requirements of the Contract including but not limited to: daily reporting, invoicing, value engineering, safety, base-access, outage requests, hot work permits, schedule requirements, quality control, schedule of prices or earned value report, shop drawings, submittals, cybersecurity, prosecution of the work, government acceptance, final inspections and contract close-out. Contractor must present and discuss their basic approach to scheduling the construction work and any required phasing.

1.8.1 Attendees

Contractor attendees must include the Project Manager, Superintendent, Site Safety and Health Officer (SSHO), Quality Control Manager and major subcontractors.

1.9 FACILITY TURNOVER PLANNING MEETINGS (Red Zone Meetings)

Meet with the Government to identify strategies to ensure the project is carried to expeditious closure and turnover to the Client. Start planning the turnover process at the Pre-Construction Conference meeting with a discussion of the Red Zone process and convene at regularly scheduled NRZ Meetings beginning at approximately 75 percent of project completion. Include the following in the facility Turnover effort:

1.9.1 Red Zone Checklist

- a. Contracting Officer's Technical Representative (COTR) will provide the Contractor a copy of the Red Zone Checklist template.
- b. Prior to 75 percent completion, modify the Red Zone Checklist template by adding or deleting critical activities applicable to the project and assign planned completion dates for each activity. Submit the modified Red Zone Checklist to the Contracting Officer. The Contracting Officer may request additional activities be added to the Red Zone Checklist at any time as necessary.

1.9.2 Meetings

- a. Conduct regular Red Zone Meetings beginning at approximately 75 percent project completion, or three to six months prior to Beneficial Occupancy Date (BOD), whichever comes first.
- b. The Contracting Officer will establish the frequency of the meetings, which is expected to increase as the project completion draws nearer. At the beginning, Red Zone meetings may be every two weeks then increase to weekly towards the final month of the project.
- c. Using the Red Zone Checklist as a Plan of Action and Milestones (POAM) and basis for discussion, review upcoming critical activities and strategies to ensure work is completed on time.
- d. During the Red Zone Meetings discuss with the COTR any upcoming activities that require Government involvement.
- e. Maintain the Red Zone Checklist by documenting the actual completion dates as work is completed and update the Red Zone Checklist with revised planned completion dates as necessary to match progress. Distribute copies of the current Red Zone Checklist to attendees at each Red Zone Meeting.

1.10 PARTNERING

Contractor shall host the partnering session within 45 calendar days of contract award. To most effectively accomplish this Contract, the Contractor and Government must form a cohesive partnership with the common goal of drawing on the strength of each organization in an effort to achieve a successful project without safety mishaps, conforming to the Contract, within budget and on schedule. The partnering team must consist of personnel from both the Government and Contractor including project level and corporate level leadership positions. Key Personnel from the supported command, end user, NAVFAC, PWD, FEAD/ROICC, Contractor, key subcontractors and the Designer of Record are required to participate in the Partnering process.

1.10.1 Facilitated (Formal) Partnering

- a. Within 35 calendar days after award and prior to the start of work, host a Formal Partnering session with key personnel from the project team including both Contractor and Government personnel. All costs associated with the Partnering session including the third-party independent Facilitator Consultant, meeting room and other incidental items are the responsibility of the Contractor.
- b. Before the Facilitated (Formal) Partnering session, coordinate with the Facilitator all requirements for incidental items (such as audio-visual equipment, easels, flipchart paper, colored markers, note pads, pens/pencils, colored flash cards) and have these items available at the Partnering session. Provide copies of any documents required for distribution to all attendees. Participants will bear their own costs for meals, lodging and transportation associated with Partnering.
- c. The Initial Partnering Session must be a duration of one day and be held at a location off base as agreed to by the Contracting Officer. Partnering session may take place concurrently with the Pre-Construction Meeting.

- d. Facilitator must be experienced in conducting corporate Partnering sessions and must be a third-party independent facilitating consultant - not an employee of the Contractor. The Facilitator is responsible for leading all aspects of the Partnering session necessary to achieve the Partnering goal.
- e. An outcome of the Partnering session must be an escalation matrix agreed upon by both the Government and Contractor, which identifies key Government and Contractor decision makers by name and anticipated decision durations.
- f. Host follow-on Partnering Sessions at three- to six-month intervals or more frequently if needed and lasting generally a half day or less. Attendees need only be those required to resolve current issues. The same Facilitator used in the Initial Partnering session must lead the follow-on sessions unless an alternative is permitted by the Contractor Officer. All costs associated with follow-on Partnering sessions are the responsibility of the Contractor.

1.11 MOBILIZATION

Contractor shall mobilize to the jobsite within 60 calendar days after contract award. Mobilize is defined as having equipment AND having a physical presence of at least one person from the contractor's team on the jobsite.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 31 23.13 20

ELECTRONIC CONSTRUCTION AND FACILITY SUPPORT CONTRACT MANAGEMENT SYSTEM
05/17, CHG 7: 11/21

PART 1 GENERAL

1.1 CONTRACT ADMINISTRATION

Utilize the Naval Facilities Engineering Command's (NAVFAC's) Electronic Construction and Facility Support Contract Management System (eCMS) for the transfer, sharing, and management of electronic technical submittals and documents. The web-based eCMS is the designated means of transferring technical documents between the Contractor and the Government. Paper media or e-mail submission, including originals or copies, of the documents identified in Table 1 are not permitted, except where eCMS is unavailable, non-functional, or specifically requested in addition to electronic submission.

1.1.1 Format Naming Convention for Files Uploaded Into eCMS

Include the identification number of the document, the type of document, the name/subject or title, and for daily reports, the date (day of work) with format YYYY/MM/DD in the filename. For example, for RFI's, 0011_RFI_Roof_Leaking.doc; for submittals, 0032a_Submittals_Light_Fixture.pdf; for Daily Reports, 0132_Daily_Report_20190504.xls. Contact the Contracting Officer's Representative (COR) regarding availability of eCMS training and reference materials.

1.1.2 Uploading Documents Processed Outside of eCMS

When specifically requested to provide documents outside of eCMS, upload all final project documentation (e.g., documents that are signed and/or adjudicated by the Government) mentioned in Table 1 into eCMS by creating a record in the module associated with that document type and uploading the document(s). Subject/title of the record should include the type of record i.e., RFI/Submittal/Other, the identification number(s), and the statement "Processed Outside of eCMS". For example, "RFI 001-012 Processed Outside of eCMS".

1.2 USER PRIVILEGES

The Contractor will be provided access to eCMS. All technical submittals and documents must be transmitted to the Government via the COR. Project roles and system roles will be established to control each user's menu, application, and software privileges, including the ability to create, edit, or delete objects.

1.3 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

[SD-01 Preconstruction Submittals](#)

[List of Contractor's Personnel; G](#)

1.4 SYSTEM REQUIREMENTS AND CONNECTIVITY

1.4.1 General

The eCMS requires a web-browser (platform-neutral) and Internet connection. Obtain from an approved vendor an External Certification Authority (ECA), Primary Key Infrastructure (PKI) certificate, or other similar digital identification to support two-factor authentication and access to eCMS. Provide and maintain computer hardware and software for the eCMS access throughout the duration of the contract for all Contractor-designated users. Provide connectivity, speed, bandwidth, and access to the Internet to ensure adequate functionality. 70 mbps download speed recommended, 40 mbps minimum for loading large files. Neither upgrading of the Contractor's computer system nor delays associated from the usage of the eCMS will be justification or grounds for a time extension or cost adjustment to the Contract.

1.4.2 Contractor Personnel List

Within 20 calendar days of contract award, provide to the Contracting Officer a [list of Contractor's personnel](#) who will have the responsibility for the transfer, sharing and management of electronic technical submittals and documents and will require access to the eCMS. Project personnel roles to be filled in the eCMS include the Contractor's Project Manager, Superintendent, Quality Control (QC) Manager, and Site Safety and Health Officer (SSHO). Personnel must be capable of electronic document management. Notify the COR immediately of any personnel changes to the project. The Contracting Officer reserves the right to perform a security check on all potential users. Provide the following information:

- First Name
- Last Name
- E-mail Address
- Office Address
- Project Role (e.g. Project Manager, QC Manager, Superintendent)

1.5 SECURITY CLASSIFICATION

In accordance with Department of Navy guidance, all military construction contract data are unclassified, unless specified otherwise by a properly designated Original Classification Authority (OCA) and in accordance with an established Security Classification Guide (SCG). Refer to the project's OCA when questions arise about the proper classification of information.

The eCMS and tablet computer must only be used for the transaction of unclassified information associated with construction projects. In conformance with the Freedom of Information Act (FOIA), DoD INSTRUCTION 5200.48 CONTROLLED UNCLASSIFIED INFORMATION (CUI), and DoD requirements, any unclassified project documentation uploaded into the eCMS must be designated either "U - UNCLASSIFIED" (U) or "CUI - CONTROLLED UNCLASSIFIED INFORMATION" (CUI).

1.6 ECMS UTILIZATION

Establish, maintain, and update data and documentation in the eCMS throughout the duration of the contract.

Personally Identifiable Information (PII) transmittal is not permitted in

the eCMS.

1.6.1 Information Security Classification/Identification

The eCMS must be used for the transmittal of the following documents. This requirement supersedes conflicting requirements in other sections, however, submittal review times in Section 01 33 00 SUBMITTAL PROCEDURES remain applicable. Table 1 - Project Documentation Types provides the appropriate U and CUI designations for various types of project documents. Construction documents requiring CUI status must be marked accordingly. Apply the appropriate markings before any document is uploaded into eCMS. Markings are not required on U documents.

Table 1 also identifies which eCMS application is to be used in the transmittal of data (these are subject to change based on the latest software configuration). If a designated application is not functional within 4 hours of initial attempt, defer to the Submittal application and submit the required data as an uploaded portable document (e.g. PDF), word processor, spreadsheet, drawing, or other appropriate format. Hard copy or e-mail submission of these items is acceptable only if eCMS is documented to be not available or not functional or specifically requested in addition to electronic submission. After uploading documents to the Submittal application, transmit the submittals and attachments to the COR via the Transmittal application. For Submittals, select the following:

- Preparation by = Contractor personnel assigned to prepare the submittal
- Approval by = Contracting Officer Representative (COR)
- Returned by = Design Lead/Manager
- Forwarded to = Contractor project manager

Table 1 - Project Documentation Types

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
As-Built Drawings	U	Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager	Submittals and Transmittals
Building Information Modeling (BIM)	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Construction Permits	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Construction Schedules (Activities and Milestones)	U	After the schedule submittal is approved by the COR, import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Submittals, Transmittals and Scheduling App
Construction Schedules (Cost-Loaded)	CUI	After the schedule submittal is approved by the COR, import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Submittals, Transmittals and Scheduling App
Construction Schedules (3-Week Lookahead)	U	Import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Scheduling App
DD 1354 Transfer of Real Property	U		Submittals and Transmittals
Daily Production Reports	CUI	Provide weather conditions, crew size, man-hours, equipment, and materials information	Daily Report
Daily Quality Control (QC) Reports	CUI	Provide QC Phase, Definable Features of Work Identify visitors	Daily Report
Designs and Specifications	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Environmental Notice of Violation (NOV), Corrective Action Plan	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals
Environmental Protection Plan (EPP)	CUI		Submittals and Transmittals

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Invoice (Supporting Documentation)	CUI	Applies to supporting documentation only. Invoices are submitted in Wide-Area Workflow (WAWF)	Submittals and Transmittals
Jobsite Documentation, Bulletin Board, Labor Laws, SDS	U		Submittals and Transmittals
Meeting Minutes	CUI		Meeting Minutes
Modification Documents	CUI	Provide final modification documents for the project. Upload into "Modifications - RFPs"	Document Management
Operations & Maintenance Support Information (OMSI/eOMSI), Facility Data Worksheet	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Photographs	U	Subject to base/installation restrictions	Submittals and Transmittals
QCM Initial Phase Checklists	CUI		Checklists (Site Management)
QCM Preparatory Phase Checklists	CUI		Checklists (Site Management)
Quality Control Plans	CUI		Submittals and Transmittals
QC Certifications	U		Submittals and Transmittals
QC Punch List	U		Punch Lists (Testing Logs)
Red-Zone Checklist	U		Checklists (Site Management)
Rework Items List	CUI		Punch Lists (Testing Logs)

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Request for Information (RFI) Post-Award	CUI		RFIs
Safety Plan	CUI		Daily Report
Safety - Activity Hazard Analyses (AHA)	CUI		Daily Report
Safety - Mishap Reports	CUI		Daily Report
SCIF/SAPF Accreditation Support Documents	CUI	Note: Some Construction Security plans may be classified as Secret. Classified information must not be uploaded into eCMS. Refer to the Site Security Manager, as applicable.	Submittals and Transmittals
Shop Drawings	U	Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager	Submittals and Transmittals
Storm Water Pollution Prevention (Notice of Intent - Notice of Termination)	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals
Submittals and Submittal Log	U		Submittals and Transmittals
Testing Plans, Logs, and Reports	CUI		Submittals and Transmittals
Training/Reference Materials	U		Submittals and Transmittals
Training Records (Personnel)	CUI		Submittals and Transmittals
Utility Outage/Tie-In Request/Approval	CUI		Submittals and Transmittals
Warranties/BOD Letter	CUI		Submittals and Transmittals

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Quality Assurance Reports	CUI		Checklists (Government initiated)
Non-Compliance Notices	CUI		Non-Compliance Notices (Government initiated)
Other Government-prepared documents	CUI		GOV ONLY
All Other Documents	CUI	Refer to FOIA guidelines and contact the FOIA official to determine whether exemptions exist	As applicable

1.6.2 Markings on CUI documents

- a. Only CUI documents being electronically uploaded into the eCMS (.docx, .xlsx, .pptx, and others as appropriate), and associated paper documents described in the paragraph CONTRACT ADMINISTRATION require CUI markings as indicated in the subparagraphs below.
- b. CUI documents that are originally created within the eCMS application using the web-based forms (RFIs, Daily Reports, and others as appropriate) will be automatically watermarked by the eCMS software, and these do not require additional markings.
- c. CUI documents must be marked "CONTROLLED UNCLASSIFIED INFORMATION" at the bottom of the outside of the front cover (if there is one), the title page, the first page, and the outside of the back cover (if there is one).
- d. CUI documents must be marked on the internal pages of the document as "CONTROLLED UNCLASSIFIED INFORMATION" at top and bottom.
- e. Where Installations require digital photographs to be designated CUI, place the markings on the face of the photograph.
- f. For visual documentation, other than photographs and audio documentation, mark with either visual or audio statements as appropriate at both the beginning and end of the file.

1.7 QUALITY ASSURANCE

Requested Government response dates on Transmittals and Submittals must be in accordance with the terms and conditions of the Contract. Requesting response dates earlier than the required review and response time, without concurrence by the Government COR, may be cause for rejection.

Incomplete submittals will be rejected without further review and must be resubmitted. Required Government response dates for resubmittals must reflect the date of resubmittal, not the original submittal date.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- End of Section --

SECTION 01 31 50

TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

04/22

PART 1 GENERAL

1.1 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00
SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

Interim DD-1354, Transfer & Acceptance of Military Real Property

1.2 Interim DD-1354, Transfer & Acceptance of Military Real Property

Submit Interim DD-1354 thirty (30) days prior to beneficial occupancy date
(draft copy attached).

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- End of Section --

SECTION 01 32 16

CONSTRUCTION PROGRESS DOCUMENTATION

04/12

PART 1 GENERAL

1.1 SUBMITTALS

Submit the following in accordance with Section 01 33 00, "Submittal Procedures."

SD-01 Preconstruction Submittals

Construction schedule

Equipment delivery schedule

1.2 CONSTRUCTION SCHEDULE

Within 15 days after receipt of the Notice of Award, prepare and submit to the COR for approval a Construction Schedule in accordance with the terms in Contract Clause "FAR 52.236-15, Schedules for Construction Contracts," except as modified in this contract.

1.3 EQUIPMENT DELIVERY SCHEDULE

1.3.1 Initial Schedule

Within 30 calendar days after approval of the proposed construction schedule, submit for Contracting Officer approval a schedule showing procurement plans for materials, plant, and equipment. Submit in the format and content as prescribed by the Contracting Officer, and include as a minimum the following information:

- a. Description.
- b. Date of the purchase order.
- c. Promised shipping date.
- d. Name of the manufacturer or supplier.
- e. Date delivery is expected.
- f. Date the material or equipment is required, according to the current construction schedule.

1.4 NETWORK ANALYSIS SYSTEM (NAS)

The schedule shall identify as a minimum:

- a. Construction time for all major systems and components;

- b. Major submittals and submittal processing time; and
- c. Major equipment lead time.

1.4.1 CPM Submittals and Procedures

The Contractor shall use the critical path method (CPM) to schedule and control project activities. The network analysis system shall be kept current, with changes made to reflect the actual progress and status of the construction.

1.5 UPDATED SCHEDULES

Update the construction schedule and equipment delivery schedule at monthly intervals or when schedule has been revised. Reflect any changes occurring since the last update. Submit copies of the purchase orders and confirmation of the delivery dates as directed.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 32 17.00 20

COST-LOADED NETWORK ANALYSIS SCHEDULES (NAS)

05/18, CHG 3: 08/20

PART 1 GENERAL

1.1 DEFINITIONS

The cost-loaded Network Analysis Schedule (NAS) is a tool to manage the project, both for Contractor and Government activities. The NAS is also used to report progress, evaluate time extensions, and provide the basis for progress payments.

For consistency, when scheduling software terminology is used in this section, the terms in Primavera's scheduling programs are used.

1.2 SCHEDULE REQUIREMENTS PRIOR TO THE START OF WORK

1.2.1 Preliminary Scheduling Meeting

Before preparation of the Project Baseline Schedule, and prior to the start of work, meet with the Contracting Officer to discuss the proposed schedule and the requirements of this section. Propose projected data dates for monthly update schedules for the project and incorporate each monthly update submittal into submittal register. Discuss required forms, terminology, and submittal requirements of this section and other requirements related to schedule management for this contract.

1.2.2 Project Baseline Schedule

Submit the Baseline NAS within 45 calendar days after contract award. Data date must be set to contract award date and no progress statused for any activity. Only bonds may be paid prior to acceptance of the Baseline NAS. The acceptance of a Baseline NAS is a condition precedent to:

- a. The Contractor starting demolition work or construction stage(s) of the contract.
- b. Processing Contractor's invoices(s) for any items other than bonds.
- c. Review of any schedule updates.

Submittal of the Baseline NAS is the Contractor's certification that the submitted schedule meets the requirements of the Contract Documents and represents the Contractor's plan on how the work will be accomplished. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES with baseline NAS submittal.

1.3 THREE-WEEK LOOK AHEAD SCHEDULE

1.3.1 Weekly CQC Coordination and Production Meeting

Deliver electronic file of 3-Week Look Ahead Schedule to the Contracting Office at least 24 hours prior to the weekly scheduled CQC Coordination and Production Meeting. Contractor is required to provide all attendees at the CQC Coordination and Production Meeting with a hard copy of the 3-Week Look Ahead Schedule.

1.3.2 Look Ahead Schedule Requirements

Prepare and issue a 3-Week Look Ahead schedule to provide a more detailed day-to-day plan of upcoming work identified on the Project Network Analysis Schedule. Requirements include:

- a. For each Look Ahead schedule activity, identify parent NAS activity number(s). The parent NAS activity is the activity in the NAS that would incorporate the Look Ahead schedule activity requirement and or scope of work.
- b. Update schedule each week to show the planned work for the current and following two-week period. Also include previous week, as-built work, showing actual start and finish dates.
- c. Include upcoming outages, closures, preparatory meetings, and initial meetings, testing and inspections.
- d. Clearly identify longest path activities on the Three-Week Look Ahead Schedule. Include a key or legend that distinguishes longest path activities. Include all Longest Path activity NAS start/finish dates exceeded and/or occurring during this period.
- e. The detail work plans are to be bar chart type schedules, derived from but maintained separately from the Project NAS on an electronic spreadsheet program and printed on 11 by 17 inch sheets as directed by the Contracting Officer.
- f. Activities must not exceed 5 working days in duration and have sufficient level of detail to assign crews, tools and equipment required to complete the work.

1.4 MONTHLY NETWORK ANALYSIS

Submittal of Monthly NAS is the Contractor's certification that the submitted schedule meets the requirements of the Contract Documents and represents the Contractor's plan on how the work will be accomplished. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES with the monthly NAS submittal.

1.4.1 Monthly Network Analysis Updates

- a. Regardless of whether an invoice is being submitted monthly, an updated schedule must be submitted monthly to the Government. The Monthly NAS update must be submitted within 10 calendar days of the data date.
- b. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES, with each monthly NAS update submittal.
- c. Meet with Government representative(s) at monthly intervals to review and agree on the information presented in the updated project schedule. The submission of an accepted, updated schedule to the Government is a condition precedent to the processing of the Contractor's invoice.
- d. Activity progress must incorporate as-built events as they occurred and correspond to records including but not limited to submittals and daily production and quality control reports. Software Settings: Handle

schedule calculations and Out-of-Sequence progress (if applicable) through Retained Logic, not Progress Override. Show all activity durations and float values in days. Show activity progress using Remaining Duration. Set default activity type to "Task Dependent".

- e. Update schedule must reflect current Contract Completion Date and contract value in accordance with all conformed contract modifications issued prior to data date of NAS update.

1.4.2 As-Built Schedule

As a condition precedent to the release of retention and making final payment, submit an "As-Built Schedule," as the last schedule update showing all activities at 100 percent completion. This schedule must reflect the exact manner in which the project was actually constructed.

1.5 CORRESPONDENCE AND TEST REPORTS

Reference Schedule activity IDs that are being addressed in each correspondence (e.g., letters, Requests for Information (RFIs), e-mails, meeting minute items, Production and QC Daily Reports, material delivery tickets, photographs) and test report (e.g., concrete, soil compaction, weld, pressure).

1.6 ADDITIONAL SCHEDULING REQUIREMENTS

Other specification sections may include additional scheduling requirements, including systems to be inspected, tested and commissioned, and submittal procedures. Those schedule requirements must be incorporated into the NAS schedule.

1.7 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Baseline NAS; G

Designated Project Scheduler; G

SD-07 Certificates

Three-Week Look Ahead Schedule; G

Monthly Network Analysis Updates; G

SD-11 Closeout Submittals

As-Built Schedule; G

1.8 SOFTWARE

Prepare and maintain project schedules using Primavera P6 software in a version compatible with Government's current version. Importing data into P6 using data conversion techniques or third party software is cause for rejection of the submitted schedule. Schedules with Performing

Organizational Breakdown Structure (POBS) data is cause for rejection.

1.9 DESIGNATED PROJECT SCHEDULER

Within 30 calendar days of contract award, submit to the Contracting Officer for approval an individual who will serve as the Designated Project Scheduler. Include a copy of the candidate's resume with qualifications. The Contracting Officer may remove the Designated Project Scheduler, and require replacement, if the scheduler does not effectively fulfill their duties in accordance with the contract requirements. Payment request will not be processed without an approved Designated Project Scheduler.

1.9.1 Qualifications

The Designated Project Scheduler must have prepared and maintained at least three previous construction schedules, of similar size and complexity to this contract, using Primavera P6.

1.9.2 Duties

Duties of the Designated Project Scheduler:

- a. Prepare Baseline NAS.
- b. Prepare monthly schedule updates.
- c. Prepare tabular reports.
- d. Prepare Time Impact Analysis (TIA) as necessary.
- e. Provide certification that NAS and TIA submittals conform to the contract requirements.
- f. Participate with the Prime Contractor and Government Representative in a monthly meeting and scheduled with sufficient time to support the Monthly Network Analysis Updates process, to discuss project status, schedule updates, critical activities, potential delays, and contract modifications impacting the schedule. Have a computer with P6 software available during the meeting.

1.10 NETWORK SYSTEM FORMAT

Prepare the schedule in accordance with the following Primavera P6 settings and parameters. Deviation from these settings and parameters, without prior consent of the Contracting Officer, is cause for rejection of schedule submission.

1.10.1 Schedule Activity Properties and Level of Detail

1.10.1.1 Activity Identification and Organization

- a. Identify construction activities planned for the project and other activities that could impact project completion if delayed in the NAS.
- b. Each activity must have a unique name.
- c. Identify administrative type activity/milestones, including all pre-construction submittal and permit requirements prior to demolition or construction stage.

- d. Include times for procurement, Contractor quality control and construction, acceptance testing and training in the schedule.
- e. Include the Government approval time required for the submittals that require Government Approval prior to construction, as indicated in [Section 01 33 00 SUBMITTAL PROCEDURES](#).
- f. Create separate activities for each Phase, Area, Floor Level and Location the activity is occurring.
- g. Do not use construction category activity to represent non-work type reference (e.g. Serial Letter, Request for Information) in NAS. Place Non-work reference within the P6 activity details notebook.

Activity categories included in the schedule are specified below.

1.10.1.2 Activity Logic

- a. With the exception of the Contract Award and Contract Completion Date (CCD) milestone activities, activity must not be open-ended; each activity must have at least one predecessor and at least one successor.
- b. Activities must not have open start or open finish (dangling) logic.
- c. Do not use lead or lag logic without Contracting Officer prior approval.
- d. Minimize redundant logic ties.
- e. Once an activity exists on the schedule it must not be deleted or renamed to change the scope of the activity and must not be removed from the schedule logic without approval from the Contracting Officer.
 - (1) While an activity cannot be deleted, where said activity is no longer applicable to the schedule, but must remain within the logic stream for historical record, change the activity original and remaining duration to zero and clearly label "(NO LONGER REQUIRED)" after the activity name. Actual finish date for activity that falls behind the data date. Redistribute accordingly any remaining budget associated with that activity, to other remaining appropriate activity.
 - (2) Document any such change in the activities' "Notebook," including a date and explanation for the change.
 - (3) The ID number for a "NO LONGER REQUIRED" activity must not be re-used for another activity.

1.10.1.3 Longest Path Activity Baseline Limitation

For P6 settings, critical activities are defined as being on the Longest Path. Longest Path (Critical) Activities must not make up more than 30 percent of all activity within the Construction Baseline Schedule.

1.10.1.4 Assigned Calendars

All NAS activity must be assigned calendars that reflect required and anticipated non-work days.

1.10.1.5 Activity Categories

1.10.1.5.1 Pre-construction Activities

Examples of pre-construction activities include, but are not limited to, bond approval, permits, pre-construction submittals and approvals. Include pre-construction activities that are required to be completed prior to the Contractor starting the demolition or construction stage of work.

1.10.1.5.2 Procurement Activities

Examples of procurement activities include, but are not limited to: Material/equipment submittal preparation, submittal and approval of material/equipment; material/equipment fabrication and delivery, and material/equipment on-site. As a minimum, separate procurement activities must be provided for critical items, long lead items, items requiring Government approval and material/equipment procurement for which payment will be requested in advance of installation. Show each delivery with relationship tie to the Construction Activity specifically for the delivery.

1.10.1.5.3 Government Activities

Government and other agency activities that could impact progress must be clearly identified. Government activities include, but are not limited to; Government approved submittal reviews, Government conducted inspections/tests, environmental permit approvals by State regulators, utility outages, and delivery of Government Furnished Material/Equipment.

1.10.1.5.4 Construction Quality Management (CQM) Activities

The Preparatory and Initial Phase meetings for each Definable Feature of Work identified in the Contractor's Quality Control Plan must be included in the Three-Week Look Ahead Schedule. Preparatory and Initial phase meetings are not required in the NAS, but can be represented by a start milestone linked to successor parent Construction Activity. The Follow-up Phase must be represented by the Construction Activities themselves in the NAS.

1.10.1.5.5 Construction Activities

On-site construction activities must not have a duration in excess of 20 working days. Contractor activities must be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days, unless otherwise defined in this contract. [Federal Holidays are as defined in 5 USC 6103.](#)

1.10.1.5.6 Turnover and Closeout Activities

Include activities or milestones for items on the NAVFAC Red Zone Checklist/POAM that are applicable to this project. As a minimum, include required Contractor testing, required Government acceptance inspections on equipment, Pre-Final Inspection, Punch List Completion, Final Inspection and Acceptance. Add an unconstrained start milestone for the initial NAVFAC Red Zone - Facility Turnover Planning Meeting at approximately 75 percent construction contract completion or six months prior to Contract Completion Date (CCD), whichever is sooner.

1.10.1.6 Contract Milestones and Constraints

1.10.1.6.1 Project Start Date Milestones

Include as the first activity on the schedule a start milestone titled, "Contract Award", which must have a Mandatory Start constraint equal to the Contract Award Date.

1.10.1.6.1.1 Post-Award Kickoff (PAK) meeting Milestone

Include an unconstrained finish milestone on the schedule titled, "Post-Award Kickoff Meeting". The Post Award Kickoff Meeting may be a single day, or it may range over several days. The intent is to cover all PAK topics, including Partnering and Concept Design Workshop (if required) in one continuous session.

1.10.1.6.2 Pre-Construction Meeting Milestone

Include an unconstrained finish milestone on the schedule titled, "Pre-Construction Meeting". The Pre-Construction meeting may be a single day, or it may range over several days. The intent to cover all the Pre-Con topics, including Partnering and DD1354.

1.10.1.6.3 Preconstruction Submittals Finish Milestone

Include an unconstrained finish milestone on the schedule titled, "Preconstruction Submittals". This milestone is complete when all required preconstruction submittals have been reviewed and approved by the Government.

1.10.1.6.4 Contractor Mobilization Finish Milestone

Include an unconstrained finish milestone on the schedule titled, "Contractor Mobilization".

1.10.1.6.5 NAVFAC Red Zone - Facility Turnover Planning Meeting Milestones

See paragraph TURNOVER AND CLOSEOUT ACTIVITIES above.

1.10.1.6.6 Substantial Completion Milestone

Include an unconstrained finish milestone on the schedule titled "Substantial Completion." Substantial Completion is defined as the point in time the Government would consider the project ready for beneficial occupancy wherein by mutual agreement of the Government and Contractor, Government use of the facility is allowed while construction access continues in order to complete remaining items (e.g. punch list and other close out submittals). Include a separate Substantial Completion Milestone for each phase if the contract requires construction to be completed in phases.

1.10.1.6.7 DD-1354 Finish Milestone

Add unconstrained finish milestone, titled "DD-1354" and scheduled 30 calendar days prior to Substantial Completion, whenever a Form DD-1354 is required in accordance with Section 01 78 00 CLOSEOUT SUBMITTALS.

1.10.1.6.8 Projected Completion Milestone

Include an unconstrained finish milestone on the schedule titled "Projected Completion." Projected Completion is defined as the point in time all contract requirements are complete and verified by the Government with a successful Final Inspection in accordance with [Section 01 45 00.00 20 QUALITY CONTROL](#). This milestone must have the Contract Completion Date (CCD) milestone as its only successor.

1.10.1.6.9 Contract Completion Date (CCD) Milestone

Last schedule entry must be an unconstrained finish milestone titled "Contract Completion (CCD: DD-MM-YY)." DD-MM-YYYY is the current contract completion date at data date, day-month-year corresponding to P6 Must Finish By Date. NAS milestone updates of Project Completion finish date for longest path must reflect calculated float as positive or negative based on CCD. Calculation of schedule updates must be such that if the finish of the "Projected Completion" milestone falls after the contract completion date, then negative float is calculated on the longest path. If the finish of the "Projected Completion" milestone falls before the contract completion date, the float calculation must reflect positive float on the longest path.

1.10.1.6.10 Additional Milestones

Provide up to 5 additional milestones as required by Contracting Officer.

1.10.1.7 Work Breakdown Structure & Activity Code

At a minimum, establish a Work Breakdown Structure (WBS) and provide activity codes identified as follows:

1.10.1.7.1 Work Breakdown Structure (WBS)

Group all activities and milestones within appropriate WBS categories including, at a minimum, the following:

a. Project Milestones:

- (1) Management Milestones
- (2) Project Administrative Meetings
- (3) Permits

b. Pre-Construction Phase:

- (1) Submittals and Reviews
- (2) Procurement
- (3) Mobilization

c. Construction Phase: Create multiple sub-sections in accordance with project specific categories of work including in WBS descending order as follows:

- (1) General Area

(a) Type of Work Item

1. Location

- d. Project Closeout: Include activity items such as, but not limited to, Punchlist, Demobilization, O&M, As-built Drawings, Training, and As-built NAS.
- e. Modifications: Create sub-category of Conformed and Non-Conformed under Modification WBS. Create multiple sub-sections as the project progresses identified by issue and Fragnet placed in Conformed for modifications issued prior data date, or Non-Conformed for issues not modified to contract prior data date.
- f. Removed Activity: Activity is "removed" by remaining within logic sequence, eliminating duration and adding "(NO LONGER REQUIRED)" after Activity Name in Activity Table.

1.10.1.7.2 Responsibility Code

All activities in the project schedule must be identified with the resource for completing the task. Activities must not belong to more than one responsible party.

1.10.1.7.3 Activity Category Code

Provide user defined "CAT" codes for Project Level activity codes. Use the following codes:

- a. Assign "PROC" value to Procurement type activity
- b. Assign "PRE-CON" value to Pre-construction activity
- c. Assign "CONS" value to Construction type activity
- d. Assign "TEST" value to dedicated testing type activities
- e. Assign "CX" value to dedicated Commissioning type activities
- f. Assign "CLOS" value to dedicated Close Out type activity
- g. Assign "OTHR" to other activity not otherwise designated

1.10.1.8 Adverse Weather Lost Work Days

Assign the Weather Calendar to any activity that could be impacted by adverse weather. The Contracting Officer will issue a modification in accordance with the contract clauses, giving the Contractor a time only extension for the difference of days between the anticipated and actual adverse weather delay if the number of actual adverse weather delay days exceeds the number of days anticipated for the month in which the delay occurs and the adverse weather delayed activities are on the longest path to contract completion in the period when delay occurred. A lost workday due to weather conditions is defined as a day in which the Contractor cannot work at least 50 percent of the day on the impacted activity. Impacts resulting from adverse weather must be documented in Narrative Report for the month that it occurred.

Make changes to P6 project calendars to reflect as-built conditions where

work occurred where originally anticipated as non-work days, and where work did not occur (lost work day).

1.10.1.9 Cost Loading

The Project Network Analysis Schedule (NAS) must be cost-loaded and will provide the basis for progress payments. Earned Value Reports must be derived from and correspond to cost loaded NAS. Use the Critical Path Method (CPM) and the Precedence Diagram Method (PDM) to satisfy time and cost applications.

1.10.1.9.1 Cost Loading Activities

Assign material and equipment costs, including their quantities, for which payment will be requested in advance of installation, to their respective procurement activity. Assign labor costs, including their quantities, for material and equipment paid for after installation to their respective construction activities. Include all typical mobilization costs dispersed over early construction activities. Costs for mobilization will not be paid as individual pay items with the exception of batch plant set-up, mobilization of dredging equipment or other similar labor-intensive situations. The value of commissioning, testing and closeout WBS section may not be less than 10 percent of the total costs for procurement and construction activities. ALL activities assigned Government responsibility will have Zero Cost. No contractor cost should be assigned to an activity designated as a Government responsibility. Do not include field overhead positions as individual pay items. Evenly disperse overhead costs and profit to each activity over the duration of the project.

1.10.1.9.2 Partial Payment

Breakdown unit of measure and cost must be defined within P6 Activity Detail Expenses for partial payment of any cost loaded activity. Lump sum cost loaded activity will not be partially paid.

1.10.2 Schedule Software Settings and Restrictions

- a. Activity Constraints: Date/time constraint(s), other than those required by the contract, are not allowed unless accepted by the Contracting Officer. Identify any constraints proposed and provide an explanation for the purpose of the constraint in the Narrative Report as described in paragraph REQUIRED TABULAR REPORTS.
- b. Default Progress Data Disallowed: Actual Start is date work begins on activity with intent to pursue work to substantial completion. Actual Finish is date work is substantially complete to point where successor activity can begin. Actual dates on the CPM schedule must correspond with activity dates reported on the Contractor Quality Control and Production Reports.
- c. At a minimum, include the following settings and parameters in P6 Schedule preparation:
 - (1) General: Define or establish Calendars and Activity Codes at the "Project" level, not the "Global" level.
 - (2) Admin Drop-Down Menu, Admin Preferences, Time Periods Tab:
 - (a) Set time periods for P6 to 8.0 Hours/Day, 40.0 Hours/Week,

172.0 Hours/Month and 2000.0 Hours/Year.

(b) Use assigned calendar to specify the number of work hours for each time period: Must be checked.

(3) Admin Drop-Down Menu, Admin Preferences, Earned Value Tab:

(a) Earned Value Calculation: Use "Budgeted values with current dates".

(4) Project Level, Dates Tab:

(a) Set "Must Finish By" date to "Contract Completion Date", and set "Must Finish By" time to 05:00pm.

(5) Project Level, Defaults Tab:

(a) Duration Type: Set to "Fixed Duration & Units".

(b) Percent Complete Type: Set to "Physical".

(c) Activity Type: Set to "Task Dependent".

(d) Calendar: Set to "Standard 5 Day Workweek". Calendar must reflect Saturday, Sunday and all Federal holidays as non-work days. Alternative calendars may be used with Contracting Officer approval.

(6) Project Level, Calculations Tab:

(a) Default Price/Unit for activities without resource or role Price/Units: Set to "\$1/h".

(b) Activity percent complete based on activity steps: Must be Checked.

(c) Link Budget and At Completion for not started activities: Must be Checked.

(d) Reset Remaining Duration and Units to Original: Must be Selected.

(e) Subtract Actual from At Completion: Must be Selected.

(f) Recalculate Actual units and Cost when duration percent complete changes: Must be Checked.

(g) Update units when costs change on resource assignments: Must be Unchecked.

(h) Link Actual to Date and Actual This Period Units and Cost: Must be Checked.

(7) Project Level, Settings Tab:

(a) Define Critical Activities: Check "Longest Path".

(8) Work Breakdown Structure Level, Earned Value Tab:

(a) Technique for Computing Performance Percent Complete:
"Activity percent complete" is selected.

(b) Technique for Computing Estimate to Complete (ETC): "PF = 1"
is selected.

1.10.3 Required Tabular Reports and Native P6 XER Files

Include the following reports with the Baseline, Monthly Update and any other required schedule submittals:

a. Time Scaled Logic Schedule

Provide formatted 11 by 17-inch Time-scaled Logic Schedule in color and landscape-oriented with each schedule submittal. Clearly show activities on the longest path setting Gantt chart longest path activity bars to red. Group activities by WBS and sort by finish date in ascending order. Include the following information in column form for each activity and include accompanying Gantt chart:

- (1) Activity ID
- (2) Activity Name
- (3) Original Duration
- (4) Remaining duration
- (5) Physical Percent Complete
- (6) Start Date
- (7) Finish Date
- (8) Total Float

b. Previous Monthly Update Comparison Time Scaled Logic Schedule (Submit with all Monthly Update Schedule Submittals.)

Provide formatted 11 by 17-inch Time-scaled Logic Schedule in color and landscape-oriented with each monthly update schedule submittal. Clearly show activities on the current month longest path setting Gantt chart longest path activities bars to red. Show previous month activities as yellow bars and previous month milestones in yellow within Gantt chart. Sort by finish date in ascending order. Filter activities for longest path. Maintain and assign the accepted previous month update or the accepted baseline schedule for the first update submittal as the baseline and primary baseline in P6 before printing the schedule. Include the following information in column form for each activity and include accompanying Gantt chart:

- (1) Activity ID
- (2) Activity Name
- (3) Original Duration
- (4) Current Month Remaining Duration

- (5) Current Month Start Date
 - (6) Previous Month Update Start Date (BL Project Start)
 - (7) Start Date Delta between Current Month and Previous Month
(Variance - BL Project Start Date)
 - (8) Current Month Finish Date
 - (9) Previous Month Finish Date (BL Project Finish)
 - (10) Finish Date Delta between Current Month and Previous Month
(Variance - BL Project Start Date)
 - (11) Current Month Total Float
- c. P6 native XER file: Include the back-up native .xer program file compatible with the Government version of P6. Each native schedule file must have a unique file name to include project name and data date using (yyyy-mm-dd) convention. Each native schedule must have a unique Project ID and Project Name.
- d. Log Report: P6 Scheduling/Leveling Report.
- e. Narrative Report: Identify and justify:
- (1) Provide Project Summary Data in format below:
 - (a) Data Date _____
 - (b) Award Date: _____
 - (c) Original Project Duration: _____ days post Award Date
 - (d) Current Project Duration: _____ days post Award Date
 - (e) Time percent elapsed: _____ percent at data date
 - (f) Original CCD: _____
 - (g) Current CCD: _____ (thru MOD _____)
 - (h) Anticipated CCD: _____ (___ calendar days early/late)
 - (i) Original Contract Value: \$_____
 - (j) Current Contract Value: \$_____
 - (k) Invoiced Amount: \$_____ (___ percent)
 - (l) Cost Growth: _____ percent
 - (m) Schedule Growth: _____ percent
 - (n) There are a total of _____ activities, _____ activities complete (___ percent), _____ activities in progress (___ percent), _____ activities not started (___ percent). Of the in progress and not started activities; _____ (___ percent) are on the longest path. The longest path has duration of _____ calendar

days from data-date to anticipated project completion.

- (2) Progress made in each area of the project;
- (3) Longest Path;
- (4) Date/time constraint(s), other than those required by the contract
- (5) Listing of all changes made between the previous schedule and current updated schedule include: added or deleted activities, original and remaining durations for activities that have not started, logic (sequence constraint lag/lead), milestones, planned sequence of operations, longest path, calendars or calendar assignments, and cost loading;
- (6) Any decrease in previously reported activity Earned Amount;
- (7) Pending items and status thereof, including permits, changes orders, and time extensions;
- (8) Status of Contract Completion Date and interim milestones;
- (9) Status of Projected Completion Milestone and account of difference in calendar days between previous update Projected Completion Milestone
- (10) Current and anticipated delays listing Activity Names and IDs for impacted activities (describe cause of delay and corrective actions(s) and mitigation measures to minimize);
- (11) Description of current and potential future schedule problem areas.
- (12) Identification of any weather and restricted lost time as compared to anticipated weather for the month and anticipated restricted days for which the update is submitted. Impacts resulting from adverse weather must be documented in tabular form showing the calendar month (or billing period) with the days on which construction activity incurred Lost Work Days due to adverse weather. In narrative form, describe the adverse weather cause such as precipitation measurement, temperature, wind or other influencing factors, and why work was impacted. Describe the construction activity(s) that was (were) scheduled, impacted.

Each entry in the narrative report must cite the respective Activity ID and Activity Name, the date and reason for the change, and description of the change.

- f. Earned Value Report: Derive from and correspond to P6 cost loaded schedule. List all activities having a budget amount cost loaded. Compile total earnings on the project from notice to proceed to current progress payment request. Show current budget, previous physical percent complete, to-date physical percent complete, previous earned value, to-date earned value, cost this period and cost to complete on the report for each activity.
- g. Schedule Variance Control (SVC) Diagram: With each schedule submission, provide a SVC diagram showing 1) A Cash Flow Curve indicating planned project cost based on each of projected early and

projected late activity finish dates and 2) one curve for Earned Value to-date. Revise Cash Flow Curves when the contract is modified, or as directed by the Contracting Officer Include a legend on report clearly indication 3 curves: early finish, late finish, and earned-value to date.

Use the following settings in Activity Usage Profile Options:

- (1) In the Data section, under Display, the radio box for Cost must be selected.
 - (2) In the Data section, under Filter for Bars/Graphs, the checkbox for Total must be checked.
 - (3) In the Show Bars/Curves section:
 - (a) Under the By Date column, the checkboxes for Baseline, Actual and Remaining Late must be checked. The checkboxes for Budgeted and Remaining Early must be unchecked.
 - (b) Under the Cumulative column, the checkboxes for Baseline, Actual and Remaining Late must be checked. The checkboxes for Budgeted and Remaining Early must be unchecked.
 - (c) Set the color for Baseline to green.
 - (d) Set the color for Actual to blue.
 - (e) Set the color for Remaining Late to red.
 - (4) In the Show Earned Value Curves section, the checkboxes for Planned Value Cost, Earned Value Cost and Estimate at Completion must be unchecked.
- h. Logic Diagram showing timescale from data date to 60 days after data date with filter for longest path. Leave Group By selection blank and sort by finish date in ascending order.
- i. Baseline or Monthly Update Checklist as applicable completed and certified by Qualified Scheduler. Baseline Project Schedule and Monthly Update Schedule Checklists can be found on the Whole Building Design Guide website at <https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-32-17-00-20>
- j. Screen shot PDF of P6 Time Periods Settings referenced in paragraph SCHEDULE SOFTWARE SETTINGS AND RESTRICTIONS, list item d.(2): ADMIN DROP-DOWN MENU, ADMIN PREFERENCES, TIME PERIODS TAB

1.11 CONTRACT MODIFICATION

1.11.1 Time Impact Analysis (TIA)

Submit a Time Impact Analysis with each cost and time proposal for a proposed change. TIA must illustrate the influence of each change or delay on the Contract Completion Date or milestones. No time extensions will be granted nor delay damages paid unless a delay occurs which consumes all available Project Float, impacts the longest path, and extends the Projected Completion beyond the Contract Completion Date.

- a. Each TIA must be in both narrative and schedule form. The narrative must define the scope and conditions of the change; provide start and finish dates of impact, successor and predecessor activity to impact period, responsible party; describe how it originated, and how it impacts the schedule's longest path. The schedule submission must consist of three native XER files:
 - (1) Fragnet used to define the scope of the changed condition
 - (2) Most recent accepted schedule update as of the time of the impact start date. Update this schedule to show all activity progress as of the time of the impact start date. The impact start date is identified as the time when an existing activity is impeded for either starting or finishing.
 - (3) The impacted schedule that has the fragnet inserted in the updated schedule and the schedule "run" so that the new completion date is determined.
- b. For claimed as-built project delay, the inserted fragnet TIA method must be modified to account for as-built events known to occur after the data date of schedule update used. Updated schedules for periods following the impact start date will be used to evaluate how the project progressed (as-built) through the finish of impact. Impact to longest path must be determined for each following update period.
- c. All TIAs must include any mitigation, and must determine the apportionment of the overall delay assignable to each individual delay. Apportionment must provide identification of delay type and classification of delay by compensable and non-compensable events. The associated narrative must clearly describe analysis methodology used, and the findings in a chronological listing beginning with the earliest delay event.
 - (1) Identify and classify types of delay defined as follows:
 - (a) Force majeure delay (e.g. weather delay): Any delay event caused by something or someone other than the Government or the Contractor, or the risk of which has not been assigned solely to the Government or the Contractor. If the force majeure delay is on the longest path, in absence of other types of concurrent delays, the Contractor is granted an extension of contract time, classified as a non-compensable event.
 - (b) A Contractor-delay: Any delay event caused by the Contractor, or the risk of which has been assigned solely to the Contractor. If the contractor-delay is on the longest path, in absence of other types of concurrent delays, Contractor is not granted extension of contract time, and classified as a non-compensable event. Where absent other types of delays, and having impact to project completion, Contractor must provide to Contracting Officer a Corrective Action Plan identifying plan to mitigate delay.
 - (c) A Government-delay: Any delay event caused by the Government, or the risk of which has been assigned solely to the Government. If the Government-delay is on the longest path, in absence of other types of concurrent delays, the Contractor is granted an extension of contract time, and classified as a compensable event.

(2) Functional concurrency must be used to analyze concurrent delays, where: separate delay issues delay project completion, do not necessarily occur at same time, rather occur within same monthly schedule update period at minimum, or within same as-built period under review. If a combination of functionally concurrent delay types occurs, it is considered Concurrent Delay, which is defined in the following combinations:

(a) Government-delay concurrent with contractor-delay: excusable time extension, classified non-compensable event.

(b) Government-delay concurrent with force majeure delay: excusable time extension, classified non-compensable event.

(c) Contractor-delay concurrent with force majeure delay: excusable time extension, classified non-compensable event.

(3) Pacing delay reacting to another delay (parent delay) equally or more critical than paced activity must be identified prior to pacing. Contracting Officer will notify Contractor prior to pacing. Contractor must notify Contracting Officer prior to pacing. Notification must include identification of parent delay issue, estimated parent delay time period, paced activity(s) identity, and pacing reason(s). Pacing Concurrency is defined as follows:

(a) Government-delay concurrent with contractor-pacing: excusable time extension, classified compensable event.

(b) Contractor-delay concurrent with Government-pacing: inexcusable time extension, classified non-compensable event

d. Submit electronic file containing the narrative and the source schedule files used in the time impact analysis.

1.12 PROJECT FLOAT

Project Float is the length of time between the Contractor's Projected Completion Milestone and the Contract Completion Date. Project Float available in the schedule will not be for the exclusive use of either the Government or the Contractor.

The use of Resource Leveling or other techniques used for the purpose of artificially adjusting activity durations to consume float and influence longest path is prohibited.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 33 00

SUBMITTAL PROCEDURES

04/22

PART 1 GENERAL

1.1 SUMMARY

1.1.1 Government-Furnished Information

Submittal register will be delivered to the contractor in hard copy format. Register will have the following fields completed, to the extent that will be required by the Government during subsequent usage.

Column (c): Lists specification section in which submittal is required.

Column (d): Lists each submittal description (SD No. and type, e.g. SD-04 Drawings) required in each specification section.

Column (e): Lists one principal paragraph in specification section where a material or product is specified. This listing is only to facilitate locating submitted requirements. Do not consider entries in column (e) as limiting project requirements.

Column (f): Indicate approving authority for each submittal. The Contracting Officer is approving authority for all submittals.

1.2 DEFINITIONS

1.2.1 Submittal

Shop drawings, product data, samples, and administrative submittals presented for review and approval. Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.2.2 Types of Submittals

All submittals are classified as indicated in paragraph "Submittal Descriptions (SD)". Submittals also are grouped as follows:

- a. Shop drawings: As used in this section, drawings, schedules, diagrams, and other data prepared specifically for this contract, by contractor or through contractor by way of subcontractor, manufacturer, supplier, distributor, or other lower tier contractor, to illustrate portion of work.
- b. Product data: Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate portion of work, but not prepared exclusively for this contract.

- c. Samples: Physical examples of products, materials, equipment, assemblies, or workmanship that are physically identical to portion of work, illustrating portion of work or establishing standards for evaluating appearance of finished work or both.
- d. Administrative submittals: Data presented for reviews and approval to ensure that administrative requirements of project are adequately met but not to ensure directly that work is in accordance with design concept and in compliance with contract documents.

1.2.3 Submittal Descriptions (SD)

SD-01 Preconstruction Submittals

Submittals that are required prior to or commencing with the start of work on site.

Preconstruction Submittals include schedules and a tabular list of locations, features, and other pertinent information regarding products, materials, equipment, or components to be used in the work.

Certificates Of Insurance

Surety Bonds

List Of Proposed Subcontractors

List Of Proposed Products

Baseline Network Analysis Schedule (NAS)

Submittal Register

Schedule Of Prices Or Earned Value Report

Accident Prevention Plan

Work Plan

Quality Control (QC) plan

Environmental Protection Plan

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or

system to be provided has been tested in accord with specified requirements. Unless specified in another section, testing must have been within three years of date of contract award for the project.

Report that includes findings of a test required to be performed on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report that includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports

Daily logs and checklists

Final acceptance test and operational test procedure

SD-07 Certificates

Statements signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

Confined space entry permits.

Text of posted operating instructions

SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and (SDS) concerning impedances, hazards and safety precautions.

SD-10 Operation and Maintenance Data

Data provided by the manufacturer, or the system provider, including manufacturer's help and product line documentation, necessary to maintain and install equipment, for operating and maintenance use by facility personnel.

Data required by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

Data incorporated in an operations and maintenance manual or control system.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

Submittals required for Guiding Principle Validation (GPV) or Third

Party Certification (TPC).

Special requirements necessary to properly close out a construction contract. For example, Record Drawings, as-built drawings and training plan. Also, submittal requirements necessary to properly close out a major phase of construction on a multi-phase contract.

1.2.4 Approving Authority

Office or designated person authorized to approve the submittal.

1.2.5 Work

As used in this section, on-site and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction. In exception, excludes work to produce SD-01 submittals.

1.3 SUBMITTALS

Submit the following in accordance with the requirements of this section.

SD-11 Closeout Submittals

Submittal register

Complete Submittal Package 2 CD/DVD's

1.4 USE OF SUBMITTAL REGISTER

Prepare and maintain submittal register, as the work progresses. Use the hard copy submittal register furnished by the Government or other approved format. Do not change data which is output in columns (c), (d), (e), and (f) as delivered by government; retain data which is output in columns (a), (g), (h), and (i) as approved.

1.4.1 Submittal Register

Submit submittal register as a hard copy. Submit with quality control plan and project schedule required by Section 01 45 10 Quality Control. Do not change data in columns (c), (d), (e), and (f) as delivered by the government. Verify that all submittals required for project are listed and add missing submittals. Complete the following on the register:

Column (a) Activity Number: Activity number from the project schedule.

Column (g) Contractor Submit Date: Scheduled date for approving authority to receive submittals.

Column (h) Contractor Approval Date: Date contractor needs approval of submittal.

Column (i) Contractor Material: Date that contractor needs material delivered to contractor control.

1.4.2 Contractor Use of Submittal Register

Update the following fields in the government-furnished submittal register.

Column (b) Transmittal Number: Contractor assigned list of consecutive numbers.

Column (j) Action Code (k): Date of action used to record contractor's review when forwarding submittals to QC.

Column (l) List date of submittal transmission.

Column (q) List date approval received.

1.4.3 Approving Authority Use of Submittal Register

Update the following fields in the government-furnished submittal register.

Column (b).

Column (l) List date of submittal receipt.

Column (m) through (p).

Column (q) List date returned to contractor.

1.4.4 Contractor Action Code and Action Code

Entries used will be as follows (others may be prescribed by Transmittal Form):

NR - Not Received

AN - Approved as noted

A - Approved

RR - Disapproved, Revise, and Resubmit

1.4.5 Copies Delivered to the Government

Deliver one copy of submitted register updated by contractor to government with each invoice request.

1.4.6 Submittals reserved for Marine Corps North Carolina IPT approval

a. Section 27 10 00 BUILDING TELECOMMUNICATIONS CABLING SYSTEM: All submittals. Provide an information copy of all submittals to Base Telephone through the Contracting Officer. Base Telephone will coordinate their review and approval through the Marine Corps North Carolina IPT.

b. Section 33 82 00 TELECOMMUNICATIONS OUTSIDE PLANT (OSP): All submittals. Provide an information copy of all submittals to Base Telephone through the Contracting Officer. Base Telephone will coordinate their review and approval through the Marine Corps North Carolina IPT.

1.5 PROCEDURES FOR SUBMITTALS

1.5.1 Reviewing, Certifying, Approving Authority

QC organization shall be responsible for reviewing and certifying that submittals are in compliance with contract requirements. The Contracting Officer is the approving authority for all submittals.

1.5.2 Constraints

- a. Submittals listed or specified in this contract shall conform to provisions of this section, unless explicitly stated otherwise.
- b. Submittals shall be complete for each definable feature of work; components of definable feature interrelated as a system shall be submitted at same time.
- c. When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, submittal will be returned without review.
- d. Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

1.5.3 Scheduling

- a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential requirements to resubmit.
- b. Except as specified otherwise, allow review period, beginning with receipt by approving authority, that includes at least 15 working days for submittals for QC manager approval and 20 working days for submittals for contracting officer approval. Period of review for submittals with contracting officer approval begins when Government receives submittal from QC organization. Period of review for each resubmittal is the same as for initial submittal.
- c. For submittals requiring review by fire protection engineer, allow review period, beginning when government receives submittal from QC organization, of 45 working days for return of submittal to the contractor. Period of review for each resubmittal is the same as for initial submittal.

1.5.4 Variations

Variations from contract requirements require Government approval pursuant to contract Clause entitled "FAR 52.236-21, Specifications and Drawings for Construction" and will be considered where advantageous to government.

1.5.4.1 Considering Variations

Discussion with contracting officer prior to submission, will help ensure functional and quality requirements are met and minimize rejections and resubmittals. When contemplating a variation which results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

1.5.4.2 Proposing Variations

When proposing variation, deliver written request to the contracting officer, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to government. If lower cost is a benefit, also include an estimate of the cost saving. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

1.5.4.3 Warranting That Variation Are Compatible

When delivering a variation for approval, contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

1.5.4.4 Review Schedule Is Modified

In addition to normal submittal review period, a period of 10 working days will be allowed for consideration by the Government of submittals with variations.

1.5.5 Contractor's Responsibilities

- a. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and contract documents.
- b. Transmit submittals to QC organization in accordance with schedule on approved Submittal Register, and to prevent delays in the work, delays to government, or delays to separate contractors.
- c. Advise contracting officer of variation, as required by paragraph entitled "Variations."
- d. Correct and resubmit submittal as directed by approving authority. When resubmitting disapproved transmittals or transmittals noted for resubmittal, the contractor shall provide copy of that previously submitted transmittal including all reviewer comments for use by approving authority. Direct specific attention in writing or on resubmitted submittal, to revisions not requested by approving authority on previous submissions.
- e. Furnish additional copies of submittal when requested by contracting officer, to a limit of 20 copies per submittal.
- f. Complete work which must be accomplished as basis of a submittal in time to allow submittal to occur as scheduled.
- g. Ensure no work has begun until submittals for that work have been returned as "approved," or "approved as noted", except to the extent that a portion of work must be accomplished as basis of submittal.

1.5.6 QC Organization Responsibilities

- a. Note date on which submittal was received from contractor on each submittal.

- b. Review each submittal; and check and coordinate each submittal with requirements of work and contract documents.
- c. Review submittals for conformance with project design concepts and compliance with contract documents.
- d. Act on submittals, determining appropriate action based on QC organization's review of submittal.

(1) When QC manager is approving authority, take appropriate action on submittal from the possible actions defined in paragraph entitled, "Actions Possible."

(2) When contracting officer is approving authority or when variation has been proposed, forward submittal to Government with certifying statement or return submittal marked "not reviewed" or "revise and resubmit" as appropriate. The QC organization's review of submittal determines appropriate action.

- e. Ensure that material is clearly legible.
- f. Stamp each sheet of each submittal with QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

(1) When approving authority is contracting officer, QC organization will certify submittals forwarded to contracting officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number N40085-17-B-0056, is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval.

Certified by Submittal Reviewer _____, Date _____
(Signature when applicable)

Certified by QC manager _____, Date _____"
(Signature)

- g. Sign certifying statement or approval statement. The person signing certifying statements shall be QC organization member designated in the approved QC plan. The signatures shall be in original ink. Stamped signatures are not acceptable.
- h. Update submittal register as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by contracting officer.
- i. Retain a copy of approved submittals at project site, including contractor's copy of approved samples.

1.5.7 Government's Responsibilities

When approving authority is contracting Officer, the Government will:

- a. Note date on which submittal was received from QC manager, on each submittal for which the contracting officer is approving authority.
- b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with contract documents.
- c. Identify returned submittals with one of the actions defined in paragraph entitled "Actions Possible" and with markings appropriate for action indicated.

1.5.8 Actions Possible

Submittals will be returned with one of the following notations:

- a. Submittals marked "not reviewed" will indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by contractor or for being incomplete, with appropriate action, coordination, or change.
- b. Submittals marked "approved" "approved as submitted" authorize contractor to proceed with work covered.
- c. Submittals marked "approved as noted" authorize contractor to proceed with work as noted provided contractor takes no exception to the notations.
- d. Submittals marked "revise and resubmit" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and shall be resubmitted with appropriate changes. No work shall proceed for this item until resubmittal is approved.

1.6 FORMAT OF SUBMITTALS

1.6.1 Complete Submittal Package

Contractor shall make electronic copies of all submittals, including the approved transmittal sheets, and provide two (2) CD/DVD's containing all submittals for the project.

The CD/DVD's shall be marked "Complete Submittal Package - Contract # _____"

1.6.2 Transmittal Form

Transmit each submittal, except sample installations and sample panels, to office of approving authority. Transmit submittals with transmittal form prescribed by contracting officer and standard for project. The transmittal form shall identify contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample panels and sample installations.

1.6.3 Identifying Submittals

Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location.
- b. Construction contract number.
- c. Section number of the specification section by which submittal is required.
- d. Submittal description (SD) number of each component of submittal.
- e. When a resubmission, alphabetic suffix on submittal description, for example, SD-10A, to indicate resubmission.
- f. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other second tier contractor associated with submittal.
- g. Product identification and location in project.

1.6.4 Format for Product Data

- a. Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data.
- b. Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains.
- c. Supplement product data with material prepared for project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for project.

1.6.5 Format for Shop Drawings

- a. Shop drawings shall not be less than 8 1/2 by 11 inches nor more than 30 by 42 inches.
- b. Present 8 1/2 by 11 inches sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.
- c. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled "Identifying Submittals."
- d. Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Shop drawing dimensions shall be the same unit of measure as indicated on the contract drawings. Identify materials and products for work shown.

1.6.6 Format of Samples

- a. Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately same size as specified:
 - (1) Sample of Equipment or Device: Full size.
 - (2) Sample of Materials Less Than 2 by 3 inches: Built up to 8 1/2 by 11 inches.
 - (3) Sample of Materials Exceeding 8 1/2 by 11 inches: Cut down to 8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.
 - (4) Sample of Linear Devices or Materials: 10 inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.
 - (5) Sample of Non-Solid Materials: Pint. Examples of non-solid materials are sand and paint.
 - (6) Color Selection Samples: 2 by 4 inches.
 - (7) Sample Panel: 4 by 4 feet.
 - (8) Sample Installation: 100 square feet.
- b. Samples Showing Range of Variation: Where variations are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range.
- c. Reusable Samples: Incorporate returned samples into work only if so specified or indicated. Incorporated samples shall be in undamaged condition at time of use.
- d. Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final clean up of project.
- e. When color, texture or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.

1.6.7 Format of Administrative Submittals

- a. When submittal includes a document which is to be used in project or become part of project record, other than as a submittal, do not apply contractor's approval stamp to document, but to a separate sheet accompanying document.
- b. Operation and Maintenance Manual Data: Submit in accordance with Section 01 78 23, "Operation and Maintenance Data." Include components required in that section and the various technical sections.

1.7 QUANTITY OF SUBMITTALS

1.7.1 Number of Copies of Product Data

- a. Submit five copies of submittals of product data requiring review and approval only by the Contracting Officer. Submit three copies of submittals of product data for operation and maintenance manuals.

1.7.2 Number of Copies of Shop Drawings

Submit shop drawings in compliance with quantity requirements specified for product data.

1.7.3 Number of Samples

- a. Submit two samples, or two sets of samples showing range of variation, of each required item. One approved sample or set of samples will be retained by approving authority and one will be returned to contractor.
- b. Submit one sample panel. Include components listed in technical section or as directed.
- c. Submit one sample installation, where directed.
- d. Submit one sample of non-solid materials.

1.7.4 Number of Copies of Administrative Submittals

- a. Unless otherwise specified, submit administrative submittals compliance with quantity requirements specified for product data.
- b. Submit administrative submittals required under "SD-19 Operation and Maintenance Manuals" to conform to Section 01 78 23, "Operation and Maintenance Data."

1.8 FORWARDING SUBMITTALS

1.8.1 Samples and Submittals

Except as otherwise noted, submit samples and submittals to:

ROICC/OICC
Jacksonville, North Carolina Area
1005 Michael Road
Camp Lejeune, NC 28542-2521

--OR--

Architect-Engineer Firm
Full Address

1.8.1.1 Administrative Submittals

Submit administrative submittals for asbestos/lead removal and environmental protection plan to the Resident Officer in Charge of Construction (ROICC/OICC).

1.8.1.2 Fire Protection and Fire Alarm System Submittals

Submit fire protection and fire alarm system submittals to ROICC/OICC.

1.8.1.3 TAB Submittals

Submit to ROICC/OICC for all projects.

1.8.2 Shop Drawings, Product Data, and O&M Data

As soon as practicable after award of the contract, and before procurement or fabrication, submit shop drawings, product data and O&M Data required in the technical sections of this specification.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 35 26

GOVERNMENTAL SAFETY REQUIREMENTS
11/20, CHG 3: 02/22

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B30.3	(2020) Tower Cranes
ASME B30.5	(2021) Mobile and Locomotive Cranes
ASME B30.7	(2021) Winches
ASME B30.8	(2020) Floating Cranes and Floating Derricks
ASME B30.9	(2018) Slings
ASME B30.20	(2018) Below-the-Hook Lifting Devices
ASME B30.22	(2016) Articulating Boom Cranes
ASME B30.23	(2016) Personnel Lifting Systems Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings
ASME B30.26	(2015; R 2020) Rigging Hardware

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.22	(2007; R 2017) Safety Requirements for Rope-Guided and Non-Guided Workers' Hoists
ASSP A10.34	(2021) Protection of the Public on or Adjacent to Construction Sites
ASSP A10.44	(2020) Control of Energy Sources (Lockout/Tagout) for Construction and Demolition Operations
ASSP Z244.1	(2016) The Control of Hazardous Energy Lockout, Tagout and Alternative Methods
ASSP Z359.0	(2018) Definitions and Nomenclature Used for Fall Protection and Fall Arrest
ASSP Z359.1	(2020) The Fall Protection Code
ASSP Z359.2	(2017) Minimum Requirements for a Comprehensive Managed Fall Protection

Program

- ASSP Z359.3 (2019) Safety Requirements for Lanyards and Positioning Lanyards
- ASSP Z359.4 (2013) Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components
- ASSP Z359.6 (2016) Specifications and Design Requirements for Active Fall Protection Systems
- ASSP Z359.7 (2019) Qualification and Verification Testing of Fall Protection Products
- ASSP Z359.11 (2014) Safety Requirements for Full Body Harnesses
- ASSP Z359.12 (2019) Connecting Components for Personal Fall Arrest Systems
- ASSP Z359.13 (2013) Personal Energy Absorbers and Energy Absorbing Lanyards
- ASSP Z359.14 (2014) Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems
- ASSP Z359.15 (2014) Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems
- ASSP Z359.16 (2016) Safety Requirements for Climbing Ladder Fall Arrest Systems
- ASSP Z359.18 (2017) Safety Requirements for Anchorage Connectors for Active Fall Protection Systems

ASTM INTERNATIONAL (ASTM)

- ASTM F855 (2019) Standard Specifications for Temporary Protective Grounds to Be Used on De-energized Electric Power Lines and Equipment

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

- IEEE 1048 (2016) Guide for Protective Grounding of Power Lines
- IEEE C2 (2017; Errata 1-2 2017; INT 1 2017) National Electrical Safety Code

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

- NEMA Z535.2 (2011; R 2017) Environmental and Facility Safety Signs

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2022) Standard for Portable Fire Extinguishers
NFPA 51B	(2019; TIA 20-1) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code
NFPA 70E	(2021) Standard for Electrical Safety in the Workplace
NFPA 241	(2022) Standard for Safeguarding Construction, Alteration, and Demolition Operations

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)

TIA-222	(2018H; Add 1 2019) Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures
TIA-1019	(2012; R 2016) Standard for Installation, Alteration and Maintenance of Antenna Supporting Structures and Antennas

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety -- Safety and Health Requirements Manual
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U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

10 CFR 20	Standards for Protection Against Radiation
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1910.147	The Control of Hazardous Energy (Lock Out/Tag Out)
29 CFR 1910.333	Selection and Use of Work Practices
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1915.89	Control of Hazardous Energy (Lockout/Tags-Plus)
29 CFR 1919	Gear Certification

29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.16	Rules of Construction
29 CFR 1926.450	Scaffolds
29 CFR 1926.500	Fall Protection
29 CFR 1926.552	Material Hoists, Personal Hoists, and Elevators
29 CFR 1926.553	Base-Mounted Drum Hoists
29 CFR 1926.1400	Cranes and Derricks in Construction
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
CPL 02-01-056	(2014) Inspection Procedures for Accessing Communication Towers by Hoist
CPL 2.100	(1995) Application of the Permit-Required Confined Spaces (PRCS) Standards, 29 CFR 1910.146

1.2 DEFINITIONS

1.2.1 Competent Person (CP)

The CP is a person designated in writing, who, through training, knowledge and experience, is capable of identifying, evaluating, and addressing existing and predictable hazards in the working environment or working conditions that are dangerous to personnel, and who has authorization to take prompt corrective measures with regards to such hazards.

1.2.2 Competent Person, Confined Space

The CP, Confined Space, is a person meeting the competent person requirements as defined EM 385-1-1 Appendix Q, with thorough knowledge of OSHA's Confined Space Standard, 29 CFR 1910.146, and designated in writing to be responsible for the immediate supervision, implementation and monitoring of the confined space program, who through training, knowledge and experience in confined space entry is capable of identifying, evaluating and addressing existing and potential confined space hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.3 Competent Person, Cranes and Rigging

The CP, Cranes and Rigging, as defined in EM 385-1-1 Appendix Q, is a person meeting the competent person requirements, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the Crane and Rigging Program, who through training, knowledge and experience in crane and rigging is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.4 Competent Person, Excavation/Trenching

A CP, Excavation/Trenching, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and 29 CFR 1926, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the excavation/trenching program, who through training, knowledge and experience in excavation/trenching is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.5 Competent Person, Fall Protection

The CP, Fall Protection, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and in accordance with ASSP Z359.0, who has been designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the fall protection program, who through training, knowledge and experience in fall protection and rescue systems and equipment, is capable of identifying, evaluating and addressing existing and potential fall hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.6 Competent Person, Scaffolding

The CP, Scaffolding is a person meeting the competent person requirements in EM 385-1-1 Appendix Q, and designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the scaffolding program. The CP for Scaffolding has enough training, knowledge and experience in scaffolding to correctly identify, evaluate and address existing and potential hazards and also has the authority to take prompt corrective measures with regard to these hazards. CP qualifications must be documented including experience on the specific scaffolding systems/types being used, assessment of the base material that the scaffold will be erected upon, load calculations for materials and personnel, and erection and dismantling. The CP for scaffolding must have a documented minimum of 8-hours of scaffold training to include training on the specific type of scaffold being used (e.g. mast-climbing, adjustable, tubular frame), in accordance with EM 385-1-1 Section 22.B.02.

1.2.7 Competent Person (CP) Trainer

A competent person trainer as defined in EM 385-1-1 Appendix Q, who is qualified in the training material presented, and who possesses a working knowledge of applicable technical regulations, standards, equipment and systems related to the subject matter on which they are training Competent Persons. A competent person trainer must be familiar with the typical hazards and the equipment used in the industry they are instructing. The training provided by the competent person trainer must be appropriate to that specific industry. The competent person trainer must evaluate the knowledge and skills of the competent persons as part of the training process.

1.2.8 High Risk Activities

High Risk Activities are activities that involve work at heights, crane and rigging, excavations and trenching, scaffolding, electrical work, and confined space entry.

1.2.9 High Visibility Accident

A High Visibility Accident is any mishap which may generate publicity or high visibility.

1.2.10 Load Handling Equipment (LHE)

LHE is a term used to describe cranes, hoists and all other hoisting equipment (hoisting equipment means equipment, including crane, derricks, hoists and power operated equipment used with rigging to raise, lower or horizontally move a load).

1.2.11 Medical Treatment

Medical Treatment is treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even when provided by a physician or registered personnel.

1.2.12 Near Miss

A Near Miss is a mishap resulting in no personal injury and zero property damage, but given a shift in time or position, damage or injury may have occurred (e.g., a worker falls off a scaffold and is not injured; a crane swings around to move the load and narrowly misses a parked vehicle).

1.2.13 Operating Envelope

The Operating Envelope is the area surrounding any crane or load handling equipment. Inside this "envelope" is the crane, the operator, riggers and crane walkers, other personnel involved in the operation, rigging gear between the hook, the load, the crane's supporting structure (i.e. ground or rail), the load's rigging path, the lift and rigging procedure.

1.2.14 Qualified Person (QP)

The QP is a person designated in writing, who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems related to the subject matter, the work, or the project.

1.2.15 Qualified Person, Fall Protection (QP for FP)

A QP for FP is a person meeting the definition requirements of [EM 385-1-1 Appendix Q](#), and [ASSP Z359.2](#) standard, having a recognized degree or professional certificate and with extensive knowledge, training and experience in the fall protection and rescue field who is capable of designing, analyzing, and evaluating and specifying fall protection and rescue systems.

1.2.16 Recordable Injuries or Illnesses

Recordable Injuries or Illnesses are any work-related injury or illness that results in:

- a. Death, regardless of the time between the injury and death, or the length of the illness;

- b. Days away from work (any time lost after day of injury/illness onset);
- c. Restricted work;
- d. Transfer to another job;
- e. Medical treatment beyond first aid;
- f. Loss of consciousness; or
- g. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (a) through (f) above

1.2.17 Government Property and Equipment

Interpret "USACE" property and equipment specified in USACE EM 385-1-1 as Government property and equipment.

1.2.18 Load Handling Equipment (LHE) Accident or Load Handling Equipment Mishap

A LHE accident occurs when any one or more of the eight elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; or collision, including unplanned contact between the load, crane, or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents, even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, or roll over). Document an LHE mishap or accident using the NAVFAC prescribed Navy Crane Center (NCC) accident form.

1.3 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

- APP - Construction; G
- Dive Operations Plan; G
- Accident Prevention Plan (APP); G

SD-06 Test Reports

- Monthly Exposure Reports
- Notifications and Reports
- Accident Reports; G
- LHE Inspection Reports

SD-07 Certificates

Contractor Safety Self-Evaluation Checklist

Crane Operators/Riggers

Standard Lift Plan; G

Critical Lift Plan ; G

Naval Architecture Analysis; G

Activity Hazard Analysis (AHA)

Confined Space Entry Permit

Hot Work Permit

Certificate of Compliance

Third Party Certification of Floating Cranes and Barge-Mounted Mobile Cranes

License Certificates

Radiography Operation Planning Work Sheet; G

Portable Gauge Operations Planning Worksheet; G

1.4 MONTHLY EXPOSURE REPORTS

Provide a Monthly Exposure Report and attach to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both Prime and subcontractor. Failure to submit the report may result in retention of up to 10 percent of the voucher.

1.5 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction meeting. Complete the checklist monthly and submit with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90 may result in retention of up to 10 percent of the voucher. The Contractor Safety Self-Evaluation checklist can be found on the Whole Building Design Guide website at www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-35-26

1.6 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this Contract, comply with the most recent edition of USACE EM 385-1-1, and the following federal, state, and local laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements govern.

1.6.1 Subcontractor Safety Requirements

For this Contract, neither Contractor nor any subcontractor may enter into Contract with any subcontractor that fails to meet the following requirements. The term subcontractor in this and the following paragraphs means any entity holding a Contract with the Contractor or with a subcontractor at any tier.

1.6.1.1 Experience Modification Rate (EMR)

Subcontractors on this Contract must have an effective EMR less than or equal to 1.10, as computed by the National Council on Compensation Insurance (NCCI) or if not available, as computed by the state agency's rating bureau in the state where the subcontractor is registered, when entering into a subcontract agreement with the Prime Contractor or a subcontractor at any tier. The Prime Contractor may submit a written request for additional consideration to the Contracting Officer where the specified acceptable EMR range cannot be achieved. Relaxation of the EMR range will only be considered for approval on a case-by-case basis for special conditions and must not be anticipated as tacit approval. Contractor's Site Safety and Health Officer (SSHO) must collect and maintain the certified EMR ratings for all subcontractors on the project and make them available to the Government at the Government's request.

1.6.1.2 OSHA Days Away from Work, Restricted Duty, or Job Transfer (DART) Rate

Subcontractors on this Contract must have a DART rate, calculated from the most recent, complete calendar year, less than or equal to 3.4 when entering into a subcontract agreement with the Prime Contractor or a subcontractor at any tier. The OSHA Dart Rate is calculated using the following formula:

$$(N/EH) \times 200,000$$

where:

N = number of injuries and illnesses with days away, restricted work, or job transfer

EH = total hours worked by all employees during most recent, complete calendar year

200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year)

The Prime Contractor may submit a written request for additional consideration to the Contracting Officer where the specified acceptable OSHA Dart rate range cannot be achieved for a particular subcontractor. Relaxation of the OSHA DART rate range will only be considered for approval on a case-by-case basis for special conditions and must not be anticipated as tacit approval. Contractor's Site Safety and Health Officer (SSHO) must collect and maintain self-certified OSHA DART rates for all subcontractors on the project and make them available to the Government at the Government's request.

1.7 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

1.7.1 Personnel Qualifications

1.7.1.1 Site Safety and Health Officer (SSHO)

Provide an SSHO that meets the requirements of EM 385-1-1 Section 1. The SSHO must ensure that the requirements of 29 CFR 1926.16 are met for the project. Provide a Safety oversight team that includes a minimum of one person at each project site to function as the Site Safety and Health Officer (SSHO). The SSHO or an equally-qualified Alternate SSHO must be at the work site at all times to implement and administer the Contractor's safety program and Government-accepted Accident Prevention Plan. The SSHO and Alternate SSHO must have the required training, experience, and qualifications in accordance with EM 385-1-1 Section 01.A.17, and all associated sub-paragraphs.

If the SSHO is off-site for a period longer than 24 hours, an equally-qualified alternate SSHO must be provided and must fulfill the same roles and responsibilities as the primary SSHO. When the SSHO is temporarily (up to 24 hours) off-site, a Designated Representative (DR), as identified in the AHA may be used in lieu of an Alternate SSHO, and must be on the project site at all times when work is being performed. Note that the DR is a collateral duty safety position, with safety duties in addition to their full time occupation.

1.7.1.2 Competent Person Qualifications

Provide Competent Persons in accordance with EM 385-1-1, Appendix Q and herein. Competent Persons for high risk activities include confined space, cranes and rigging, excavation/trenching, fall protection, and electrical work. The CP for these activities must be designated in writing, and meet the requirements for the specific activity (i.e. competent person, fall protection).

The Competent Person identified in the Contractor's Safety and Health Program and accepted Accident Prevention Plan, must be on-site at all times when the work that presents the hazards associated with their professional expertise is being performed. Provide the credentials of the Competent Persons(s) to the Contracting Officer for information in consultation with the Safety Office.

1.7.1.2.1 Competent Person for Confined Space Entry

Provide a Confined Space (CP) Competent Person who meets the requirements of EM 385-1-1, Appendix Q, and herein. The CP for Confined Space Entry must supervise the entry into each confined space in accordance with EM 385-1-1, Section 34.

When the work involves marine operations that handle combustible or hazardous materials, this qualified person shall be a NFPA certified marine chemist.

1.7.1.2.2 Competent Person for the Health Hazard Control and Respiratory Protection Program

Provide a competent person meeting the requirements of EM 385-1-1 who is:

- a. Capable by education, specialized training and/or experience of

anticipating, recognizing, and evaluating employee exposure to hazardous chemical, physical and biological agents in accordance with USACE EM 385-1-1, Section 6.

b. Capable of specifying necessary controls and protective actions to ensure worker health.

1.7.1.2.3 Competent Person for Scaffolding

Provide a Competent Person for Scaffolding who meets the requirements of EM 385-1-1, Section 22.B.02 and herein.

1.7.1.2.4 Competent Person for Fall Protection

Provide a Competent Person for Fall Protection who meets the requirements of EM 385-1-1, Section 21.C.04, 21.B.03, and herein.

1.7.1.3 Qualified Trainer Requirements

Individuals qualified to instruct the 40 hour contract safety awareness course, or portions thereof, must meet the definition of a Competent Person Trainer, and, at a minimum, possess a working knowledge of the following subject areas: EM 385-1-1, Electrical Standards, Lockout/Tagout, Fall Protection, Confined Space Entry for Construction; Excavation, Trenching and Soil Mechanics, and Scaffolds in accordance with 29 CFR 1926.450, Subpart L.

Instructors are required to:

- a. Prepare class presentations that cover construction-related safety requirements.
- b. Ensure that all attendees attend all sessions by using a class roster signed daily by each attendee. Maintain copies of the roster for at least five years. This is a certification class and must be attended 100 percent. In cases of emergency where an attendee cannot make it to a session, the attendee can make it up in another class session for the same subject.
- c. Update training course materials whenever an update of the EM 385-1-1 becomes available.
- d. Provide a written exam of at least 50 questions. Students are required to answer 80 percent correctly to pass.
- e. Request, review and incorporate student feedback into a continuous course improvement program.

1.7.1.4 Dredging Contract Requirements

1.7.1.4.1 Dredging Safety Personnel Requirements

- a. Provide a minimum of one SSHO assigned per project site for the primary working shift.
- b. For a project involving multiple work shifts, provide one collateral duty SSHO for each additional shift.
- c. For individual dredging projects or sites with a dredge crew and fill

crew on watch of eight employees or less, a CDSO must be appointed, instead of an SSHO. The CDSO assumes the same responsibilities as a full-time SSHO.

- d. An example of one dredging project site is reflected in each of the following:
 - (1) a mechanical dredge, tug(s) and scow(s), scow route, and material placement site; or
 - (2) a hydraulic pipeline dredge, attendant plant, and material placement site; or,
 - (3) a hopper dredge (include land-based material placement site - if applicable.)
- e. For Hopper Dredges with the U.S. Coast Guard, documented crews may designate an officer as a Collateral Duty Safety Officer (CDSO) instead of having a full-time SSHO onboard if the officer meets the SSHO training and experience requirements.

1.7.1.4.2 SSHO Requirements for Dredging

- a. In addition to requirements stated elsewhere in this specification, an individual serving as a SSHO must be present at the project site, located so that they have full mobility and reasonable access to all major work operations, for at least one shift in each 24 hour period when work is being performed. The SSHO must be available during their shift for immediate verbal consultation and notification, either by phone or radio.
- b. The SSHO is a full-time, dedicated position, except as noted above, who must report to a senior project (or corporate) official. When the SSHO is permitted to be a collateral duty, the SSHO is not permitted to be in another position requiring continuous mechanical or equipment operations, such as equipment operators.
- c. The SSHO must inspect all work areas and operations during initial set-up and at least monthly observe and provide personal oversight on each shift during dredging operations for projects with many work sites, more often for those with less work sites.

1.7.1.4.3 Collateral Duty Safety Officer (CDSO) Requirements for Dredging

- a. A CDSO is an individual who is assigned collateral duty safety responsibilities in addition to their full-time occupation, and who supports and supplements the SSHO efforts in managing, implementing and enforcing the Contractor's Safety and Health Program. The assigned CDSO must be an individual(s) with work oversight responsibilities, such as master, mate, fill foreman, or superintendent. A CDSO must not be an employee responsible for continuous mechanical or equipment operations, such as an equipment operator.
- b. A CDSO performs safety program tasks as assigned by the SSHO and must report safety findings to the SSHO. The SSHO must document results of safety findings and provide information for inclusion in the CQC reports to the Contracting Officer.

1.7.1.4.4 Safety Personnel Training Requirements for Dredging

A SSHO and a CDSO for dredging Contracts must take either a formal classroom or online OSHA 30-hour Construction Safety Course, or an equivalent 30 hours of formal classroom or online safety and health training covering the subjects of the OSHA 30-hour Course in accordance with EM 385-1-1 Appendix A, paragraph 3.d.(3), applicable to dredging work, and given by qualified instructors. In exception to EM 385-1-1, Section 01.A.17, comply with the following:

- a. The SSHO must maintain competency through having taken 8 hours of formal classroom or online safety and health related coursework every year. Hours spent as an instructor in such courses will be considered the same as attending them, but each course only gets credit once (for example, instructing a 1-hour asbestos awareness course five times in a year provides one hour credit for training).
- b. The SSHO and a CDSO must have a minimum of three years of experience within the past five years in one of the following:
 - (1) Supervising/managing dredging activities
 - (2) Supervising/managing marine construction activities
 - (3) Supervising/managing land-based construction activities
 - (4) Work managing safety programs or processes
 - (5) Conducting hazard analyses and developing controls in activities or environments with similar hazards

1.7.1.5 Crane Operators/Riggers

Provide Operators, Signal Persons, and Riggers meeting the requirements in EM 385-1-1, Section 15.B for Riggers and Section 16.B for Crane Operators and Signal Persons. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacities of 50,000 pounds or greater, designate crane operators qualified by a source that qualifies crane operators (i.e., union, a Government agency, or an organization that tests and qualifies crane operators). Provide proof of current qualification.

1.7.2 Personnel Duties

1.7.2.1 Duties of the Site Safety and Health Officer (SSHO)

The SSHO must:

- a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Attach safety inspection logs to the Contractors' daily production report.
- b. Conduct mishap investigations and complete required accident reports. Report mishaps and near misses.
- c. Use and maintain OSHA's Form 300 to log work-related injuries and illnesses occurring on the project site for Prime Contractors and subcontractors, and make available to the Contracting Officer upon

request. Post and maintain the Form 300A on the site Safety Bulletin Board.

- d. Maintain applicable safety reference material on the job site.
- e. Attend the pre-construction meeting, pre-work meetings including preparatory meetings, and periodic in-progress meetings.
- f. Review the APP and AHAs for compliance with EM 385-1-1, and approve, sign, implement and enforce them.
- g. Establish a Safety and Occupational Health (SOH) Deficiency Tracking System that lists and monitors outstanding deficiencies until resolution.
- h. Ensure subcontractor compliance with safety and health requirements.
- i. Maintain a list of hazardous chemicals on site and their material Safety Data Sheets (SDS).
- j. Maintain a weekly list of high hazard activities involving energy, equipment, excavation, entry into confined space, and elevation, and be prepared to discuss details during QC Meetings.
- k. Provide and keep a record of site safety orientation and indoctrination for Contractor employees, subcontractor employees, and site visitors.

Superintendent, QC Manager, and SSHO are subject to dismissal if the above or any other required duties are not being effectively carried out. If either the Superintendent, QC Manager, or SSHO are dismissed, project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out.

1.7.3 Meetings

1.7.3.1 Preconstruction Meeting

- a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the preconstruction meeting. This includes the project superintendent, Site Safety and Occupational Health Officer, quality control manager, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).
- b. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the Contract. This list of proposed AHAs will be reviewed and an agreement will be reached between the Contractor and the Contracting Officer as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, and Government review of AHAs to preclude project delays.
- c. Deficiencies in the submitted APP, identified during the Contracting Officer's review, must be corrected, and the APP re-submitted for review prior to the start of construction. Work is not permitted to begin until an APP is established that is acceptable to the Contracting

Officer.

1.7.3.2 Safety Meetings

Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors at the project location. The SSHO, supervisors, foremen, or CDSOs must conduct meetings at least once a week for the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Maintain documentation on-site and furnish copies to the Contracting Officer on request. Notify the Contracting Officer of all scheduled meetings 7 calendar days in advance.

1.8 ACCIDENT PREVENTION PLAN (APP)

1.8.1 APP - Construction

A qualified person must prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of EM 385-1-1, Appendix A, and as supplemented herein. Cover all paragraph and subparagraph elements in EM 385-1-1, Appendix A. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP must interface with the Contractor's overall safety and health program referenced in the APP in the applicable APP element, and made site-specific. Describe the methods to evaluate past safety performance of potential subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of subcontractors. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the Contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP must be signed by an officer of the firm (Prime Contractor senior person), the individual preparing the APP, the on-site superintendent, the designated SSHO, the Contractor Quality Control Manager, and any designated Certified Safety Professional (CSP) or Certified Health Physicist (CIH). The SSHO must provide and maintain the APP and a log of signatures by each subcontractor foreman, attesting that they have read and understand the APP, and make the APP and log available on-site to the Contracting Officer. If English is not the foreman's primary language, the Prime Contractor must provide an interpreter.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction meeting for acceptance. Work cannot proceed without an accepted APP. Once reviewed and accepted by the Contracting Officer, the APP and attachments will be enforced as part of the Contract. Disregarding the provisions of this Contract or the accepted APP is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. Continuously review and amend the APP, as necessary, throughout the life of the Contract. Changes to the accepted APP must be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and Quality Control Manager. Incorporate unusual or high-hazard activities not identified in the

original APP as they are discovered. Should any severe hazard exposure (i.e. imminent danger) become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate and remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSP A10.34), and the environment.

1.8.2 Names and Qualifications

Provide plans in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

- a. Names and qualifications (resumes including education, training, experience and certifications) of site safety and health personnel designated to perform work on this project to include the designated Site Safety and Health Officer and other competent and qualified personnel to be used. Specify the duties of each position.
- b. Qualifications of competent and of qualified persons. As a minimum, designate and submit qualifications of competent persons for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; and personal protective equipment and clothing to include selection, use and maintenance.

1.8.3 Plans

Provide plans in the APP in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

1.8.3.1 Confined Space Entry Plan

Develop a confined or enclosed space entry plan in accordance with EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, OSHA Directive CPL 2.100, and any other federal, state and local regulatory requirements identified in this Contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by Contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

1.8.3.2 Standard Lift Plan (SLP)

Plan lifts to avoid situations where the operator cannot maintain safe control of the lift. Prepare a written SLP in accordance with EM 385-1-1, Section 16.A.03, using Form 16-2 for every lift or series of lifts (if duty cycle or routine lifts are being performed). The SLP must be developed, reviewed and accepted by all personnel involved in the lift in conjunction with the associated AHA. Signature on the AHA constitutes acceptance of the plan. Maintain the SLP on the LHE for the current lift(s) being made. Maintain historical SLPs for a minimum of three months.

1.8.3.3 Critical Lift Plan - Crane or Load Handling Equipment

Provide a Critical Lift Plan as required by EM 385-1-1, Section 16.H.01, using Form 16-3. In addition, Critical Lift Plans are required for the following:

- a. Lifts over 50 percent of the capacity of barge mounted mobile crane's hoist.
- b. When working around energized power lines where the work will get closer than the minimum clearance distance in EM 385-1-1 Table 16-1.
- c. For lifts with anticipated binding conditions.
- d. When erecting cranes.

1.8.3.3.1 Critical Lift Plan Planning and Schedule

Critical lifts require detailed planning and additional or unusual safety precautions. Develop and submit a critical lift plan to the Contracting Officer 30 calendar days prior to critical lift. Comply with load testing requirements in accordance with EM 385-1-1, Section 16.F.03.

1.8.3.3.2 Lifts of Personnel

In addition to the requirements of EM 385-1-1, Section 16.H.02, for lifts of personnel, demonstrate compliance with the requirements of 29 CFR 1926.1400 and EM 385-1-1, Section 16.T.

1.8.3.4 Barge Mounted Mobile Crane Lift Plan

Provide a Naval Architecture Analysis and include an LHE Manufacturer's Floating Service Load Chart in accordance with EM 385-1-1, Section 16.L.03.

1.8.3.5 Multi-Purpose Machines, Material Handling Equipment, and Construction Equipment Lift Plan

Multi-purpose machines, material handling equipment, and construction equipment used to lift loads that are suspended by rigging gear, require proof of authorization from the machine OEM that the machine is capable of making lifts of loads suspended by rigging equipment. Written approval from a qualified registered professional engineer, after a safety analysis is performed, is allowed in lieu of the OEM's approval. Demonstrate that the operator is properly trained and that the equipment is properly configured to make such lifts and is equipped with a load chart.

1.8.3.6 Fall Protection and Prevention (FP&P) Plan

The plan must be in accordance with the requirements of EM 385-1-1, Section 21.D and ASSP Z359.2, be site specific, and address all fall hazards in the work place and during different phases of construction. Address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 6 feet. A competent person or qualified person for fall protection must prepare and sign the plan documentation. Include fall protection and prevention systems, equipment and methods employed for every phase of work, roles and responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Review and revise, as necessary, the Fall Protection and Prevention Plan documentation as conditions change, but at a minimum

every six months, for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. Keep and maintain the accepted Fall Protection and Prevention Plan documentation at the job site for the duration of the project. Include the Fall Protection and Prevention Plan documentation in the Accident Prevention Plan (APP).

1.8.3.7 Rescue and Evacuation Plan

Provide a Rescue and Evacuation Plan in accordance with EM 385-1-1 Section 21.N and ASSP Z359.2, and include in the FP&P Plan and as part of the APP. Include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility.

1.8.3.8 Hazardous Energy Control Program (HECP)

Develop a HECP in accordance with EM 385-1-1 Section 12, 29 CFR 1910.147, 29 CFR 1910.333, 29 CFR 1915.89, ASSP Z244.1, and ASSP A10.44. Submit this HECP as part of the Accident Prevention Plan (APP). Conduct a preparatory meeting and inspection with all effected personnel to coordinate all HECP activities. Document this meeting and inspection in accordance with EM 385-1-1, Section 12.A.02. Ensure that each employee is familiar with and complies with these procedures.

1.8.3.9 Excavation Plan

Identify the safety and health aspects of excavation, and provide and prepare the plan in accordance with EM 385-1-1, Section 25.A and Section 31 00 00 EARTHWORK.

1.8.3.10 Lead, Cadmium, and Chromium Compliance Plan

Identify the safety and health aspects of work involving lead, cadmium and chromium, and prepare in accordance with Section 02 83 00 LEAD REMEDIATION.

1.8.3.11 Asbestos Hazard Abatement Plan

Identify the safety and health aspects of asbestos work, and prepare in accordance with Section 02 82 00 ASBESTOS REMEDIATION.

1.8.3.12 Site Safety and Health Plan

Identify the safety and health aspects, and prepare in accordance with Section 01 35 29.13 HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES.

1.8.3.13 Polychlorinated Biphenyls (PCB) Plan

Identify the safety and health aspects of Polychlorinated Biphenyls work, and prepare in accordance with Sections 02 84 33 REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBs) and 02 61 23 REMOVAL AND DISPOSAL OF PCB CONTAMINATED SOILS.

1.8.3.14 Site Demolition Plan

Identify the safety and health aspects, and prepare in accordance with Section 02 41 00 DEMOLITION and referenced sources. Include engineering

survey as applicable.

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

Before beginning each activity, task or Definable Feature of Work (DFOW) involving a type of work presenting hazards not experienced in previous project operations, or where a new work crew or subcontractor is to perform the work, the Contractor(s) performing that work activity must prepare an AHA. AHAs must be developed by the Prime Contractor, subcontractor, or supplier performing the work, and provided for Prime Contractor review and approval before submitting to the Contracting Officer. AHAs must be signed by the SSHO, Superintendent, QC Manager and the subcontractor Foreman performing the work. Format the AHA in accordance with EM 385-1-1, Section 1 or as directed by the Contracting Officer. Submit the AHA for review at least 15 working days prior to the start of each activity task, or DFOW. The Government reserves the right to require the Contractor to revise and resubmit the AHA if it fails to effectively identify the work sequences, specific anticipated hazards, site conditions, equipment, materials, personnel and the control measures to be implemented.

AHAs must identify competent persons required for phases involving high risk activities, including confined entry, crane and rigging, excavations, trenching, electrical work, fall protection, and scaffolding.

1.9.1 AHA Management

Review the AHA list periodically (at least monthly) at the Contractor supervisory safety meeting, and update as necessary when procedures, scheduling, or hazards change. Use the AHA during daily inspections by the SSHO to ensure the implementation and effectiveness of the required safety and health controls for that work activity.

1.9.2 AHA Signature Log

Each employee performing work as part of an activity, task or DFOW must review the AHA for that work and sign a signature log specifically maintained for that AHA prior to starting work on that activity. The SSHO must maintain a signature log on site for every AHA. Provide employees whose primary language is other than English, with an interpreter to ensure a clear understanding of the AHA and its contents.

1.10 DISPLAY OF SAFETY INFORMATION

1.10.1 Safety Bulletin Board

Prior to commencement of work, erect a safety bulletin board at the job site. Where size, duration, or logistics of project do not facilitate a bulletin board, an alternative method, acceptable to the Contracting Officer, that is accessible and includes all mandatory information for employee and visitor review, may be deemed as meeting the requirement for a bulletin board. Include and maintain information on safety bulletin board as required by EM 385-1-1, Section 01.A.07. Additional items required to be posted include:

- a. Confined space entry permit.
- b. Hot work permit.

1.10.2 Safety and Occupational Health (SOH) Deficiency Tracking System

Establish a SOH deficiency tracking system that lists and monitors the status of SOH deficiencies in chronological order. Use the tracking system to evaluate the effectiveness of the APP. A monthly evaluation of the data must be discussed in the QC or SOH meeting with everyone on the project. The list must be posted on the project bulletin board and updated daily, and provide the following information:

- a. Date deficiency identified;
- b. Description of deficiency;
- c. Name of person responsible for correcting deficiency;
- d. Projected resolution date;
- e. Date actually resolved.

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in paragraph REFERENCES. Maintain applicable equipment manufacturer's manuals.

1.12 EMERGENCY MEDICAL TREATMENT

Contractors must arrange for their own emergency medical treatment in accordance with [EM 385-1-1](#). Government has no responsibility to provide emergency medical treatment.

1.13 NOTIFICATIONS and REPORTS

1.13.1 Mishap Notification

Notify the Contracting Officer as soon as practical, but no more than twenty-four hours, after any mishaps, including recordable accidents, incidents, and near misses, as defined in [EM 385-1-1](#) Appendix Q, any report of injury, illness, or any property damage. For LHE or rigging mishaps, notify the Contracting Officer as soon as practical but not more than four hours after mishap. The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. Immediate reporting is required for electrical mishaps, to include Arc Flash; shock; uncontrolled release of hazardous energy (includes electrical and non-electrical); load handling equipment or rigging; fall from height (any level other than same surface); and underwater diving. These mishaps must be investigated in depth to identify all causes and to recommend hazard control measures.

Within notification include Contractor name; Contract title; type of Contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (for example, type of construction equipment used and PPE used). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted. Assist and cooperate fully with the Government's investigation(s) of any mishap.

1.13.2 Accident Reports

- a. Conduct an accident investigation for recordable injuries and illnesses, property damage, and near misses as defined in EM 385-1-1, to establish the root cause(s) of the accident. Complete the applicable NAVFAC Contractor Incident Reporting System (CIRS), and electronically submit via the NAVFAC Enterprise Safety Applications Management System (ESAMS). Complete and submit an accident investigation report in ESAMS within 5 days for mishaps defined in EM 385-1-1 01.D.03 and 10 days for accidents defined by EM 385-1-1 01.D.05. Complete an investigation report within 30 days for those mishaps defined by EM 385-1-1 01.D.04. Mishaps defined by EM 385-1-1 01.D.04 and 01.D.05 must include a written report submitted as an attachment in ESAMS using the following outline: (1) Mishap summary description to include process, findings and outcomes; (2) Root Cause; (3) Direct Factors; (4) Indirect and Contributing Factors; (5) Corrective Actions; and (6) Recommendations. The Contracting Officer will provide copies of any required or special forms.
- b. Near Misses: For Navy Projects, complete the applicable documentation in NAVFAC Contractor Incident Reporting System (CIRS), and electronically submit via the NAVFAC Enterprise Safety Applications Management System (ESAMS). Near miss reports are considered positive and proactive Contractor safety management actions.
- c. Conduct an accident investigation for any load handling equipment accident (including rigging accidents) to establish the root cause(s) of the accident. Complete the LHE Accident Report (Crane and Rigging Accident Report) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Do not proceed with crane operations until cause is determined and corrective actions have been implemented to the satisfaction of the Contracting Officer. The Contracting Officer will provide a blank copy of the accident report form.

1.13.3 LHE Inspection Reports

Submit LHE inspection reports required in accordance with EM 385-1-1 and as specified herein with Daily Reports of Inspections.

1.13.4 Certificate of Compliance and Pre-lift Plan/Checklist for LHE and Rigging

Provide a FORM 16-1 Certificate of Compliance for LHE entering an activity under this Contract and in accordance with EM 385-1-1. Post certifications on the crane.

Develop a Standard Lift Plan (SLP) in accordance with EM 385-1-1, Section 16.H.03 using Form 16-2 Standard Pre-Lift Crane Plan/Checklist for each lift planned. Submit SLP to the Contracting Officer for approval within 15 calendar days in advance of planned lift.

1.13.5 Third Party Certification of Floating Cranes and Barge-Mounted Mobile Cranes

Floating cranes and barge-mounted mobile cranes used to perform work under the terms of this Contract must be certified in accordance with 29 CFR 1919 by an OSHA accredited person prior to submitting the required Lift Plan. Include proof of certification with the initial Lift Plan submission.

1.14 HOT WORK

1.14.1 Permit and Personnel Requirements

Submit and obtain a written permit prior to performing "Hot Work" (i.e. welding or cutting) or operating other flame-producing/spark producing devices, from the Fire Division. A permit is required from the Explosives Safety Office for work in and around where explosives are processed, stored, or handled. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. Provide at least two 20 pound 4A:20 BC rated extinguishers for normal "Hot Work". The extinguishers must be current inspection tagged, and contain an approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch must be trained in accordance with NFPA 51B and remain on-site for a minimum of one hour after completion of the task or as specified on the hot work permit.

When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Division phone number. REPORT ANY FIRE, NO MATTER HOW SMALL, TO THE RESPONSIBLE FIRE DIVISION IMMEDIATELY.

1.14.2 Work Around Flammable Materials

Obtain permit approval from a NFPA Certified Marine Chemist, or Certified Industrial Hygienist for "HOT WORK" within or around flammable materials (such as fuel systems or welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, or vaults) that have the potential for flammable or explosive atmospheres.

Whenever these materials, except beryllium and chromium (VI), are encountered in indoor operations, local mechanical exhaust ventilation systems that are sufficient to reduce and maintain personal exposures to within acceptable limits must be used and maintained in accordance with manufacturer's instruction and supplemented by exceptions noted in EM 385-1-1, Section 06.H

1.15 RADIATION SAFETY REQUIREMENTS

Submit License Certificates, employee training records, and Leak Test Reports for radiation materials and equipment to the Contracting Officer and Radiation Safety Office (RSO), and Contracting Oversight Technician (COT) for all specialized and licensed material and equipment proposed for use on the construction project (excludes portable machine sources of ionizing radiation including moisture density and X-Ray Fluorescence (XRF)). Maintain on-site records whenever licensed radiological materials or ionizing equipment are on Government property.

Protect workers from radiation exposure in accordance with 10 CFR 20, ensuring any personnel exposures are maintained As Low As Reasonably Achievable.

1.15.1 Radiography Operation Planning Work Sheet

Submit a Gamma and X-Ray Radiography Operation Planning Work Sheet to Contracting Officer 14 days prior to commencement of operations involving radioactive materials or radiation generating devices. For portable machine sources of ionizing radiation, including moisture density and XRF,

use and submit the [Portable Gauge Operations Planning Worksheet](#) instead. The Contracting Officer and COT will review the submitted worksheet and provide questions and comments.

Contractors must use primary dosimeters processed by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory.

1.15.2 Site Access and Security

Coordinate site access and security requirements with the Contracting Officer and COT for all radiological materials and equipment containing ionizing radiation that are proposed for use on a government facility. For gamma radiography materials and equipment, a Government escort is required for any travels on the Installation. The Navy COT or Government authorized representative will meet the Contractor at a designated location outside the Installation, ensure safety of the materials being transported, and will escort the Contractor for gamma sources onto the Installation, to the job site, and off the Installation. For portable machine sources of ionizing radiation, including moisture density and XRF, the Navy COT or Government authorized representative will meet the Contractor at the job site.

Provide a copy of all calibration records, and utilization records to the COT for radiological operations performed on the site.

1.15.3 Loss or Release and Unplanned Personnel Exposure

Loss or release of radioactive materials, and unplanned personnel exposures must be reported immediately to the Contracting Officer, RSO, and Base Security Department Emergency Number.

1.15.4 Site Demarcation and Barricade

Properly demark and barricade an area surrounding radiological operations to preclude personnel entrance, in accordance with [EM 385-1-1](#), Nuclear Regulatory Commission, and Applicable State regulations and license requirements, and in accordance with requirements established in the accepted Radiography Operation Planning Work Sheet.

Do not close or obstruct streets, walks, and other facilities occupied and used by the Government without written permission from the Contracting Officer.

1.15.5 Security of Material and Equipment

Properly secure the radiological material and ionizing radiation equipment at all times, including keeping the devices in a properly marked and locked container, and secondarily locking the container to a secure point in the Contractor's vehicle or other approved storage location during transportation and while not in use. While in use, maintain a continuous visual observation on the radiological material and ionizing radiation equipment. In instances where radiography is scheduled near or adjacent to buildings or areas having limited access or one-way doors, make no assumptions as to building occupancy. Where necessary, the Contracting Officer will direct the Contractor to conduct an actual building entry, search, and alert. Where removal of personnel from such a building cannot be accomplished and it is otherwise safe to proceed with the radiography, position a fully instructed employee inside the building or area to prevent exiting while external radiographic operations are in process.

1.15.6 Transportation of Material

Comply with [49 CFR 173](#) for Transportation of Regulated Amounts of Radioactive Material. Notify Local Fire authorities and the site Radiation Safety Officer (RSO) of any Radioactive Material use.

1.15.7 Schedule for Exposure or Unshielding

Actual exposure of the radiographic film or unshielding the source must not be initiated until after 5 p.m. on weekdays.

1.15.8 Transmitter Requirements

Adhere to the base policy concerning the use of transmitters, such as radios and cell phones. Obey Emissions control (EMCON) restrictions.

1.16 CONFINED SPACE ENTRY REQUIREMENTS

Confined space entry must comply with Section 34 of [EM 385-1-1](#), OSHA [29 CFR 1926](#), OSHA [29 CFR 1910](#), OSHA [29 CFR 1910.146](#), and OSHA Directive [CPL 2.100](#). Any potential for a hazard in the confined space requires a permit system to be used.

1.16.1 Entry Procedures

Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. Comply with [EM 385-1-1](#), Section 34 for entry procedures. Hazards pertaining to the space must be reviewed with each employee during review of the AHA.

1.16.2 Forced Air Ventilation

Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its action level.

1.16.3 Sewer Wet Wells

Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

1.16.4 Rescue Procedures and Coordination with Local Emergency Responders

Develop and implement an on-site rescue and recovery plan and procedures. The rescue plan must not rely on local emergency responders for rescue from a confined space.

1.17 DIVE SAFETY REQUIREMENTS

Develop a [Dive Operations Plan](#), AHA, emergency management plan, and personnel list that includes qualifications, for each separate diving operation. Submit these documents to the District Dive Coordinator (DDC) via the Contracting Officer or Government Designated Authority (GDA), for review and approval at least 15 working days prior to commencement of

diving operations. These documents must be at the diving location at all times. Provide each of these documents as a part of the project file.

1.18 SEVERE STORM PLAN

In the event of a severe storm warning, the Contractor must comply with the applicable Storm Plan and:

- a. Secure outside equipment and materials and place materials that could be damaged in protected areas.
- b. Check surrounding area, including roof, for loose material, equipment, debris, and other objects that could be blown away or against existing facilities.
- c. Ensure that temporary erosion controls are adequate.

PART 2 PRODUCTS

2.1 CONFINED SPACE SIGNAGE

Provide permanent signs integral to or securely attached to access covers for new permit-required confined spaces. Signs for confined spaces must comply with NEMA Z535.2. Provide signs with wording: "DANGER--PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" in bold letters a minimum of one inch in height and constructed to be clearly legible with all paint removed. The signal word "DANGER" must be red and readable from 5 feet.

PART 3 EXECUTION

3.1 CONSTRUCTION AND OTHER WORK

Comply with EM 385-1-1, NFPA 70, NFPA 70E, NFPA 241, the APP, the AHA, Federal and State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard prevails.

PPE is governed in all areas by the nature of the work the employee is performing. Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Safety glasses must be worn or carried/available on each person. Mandatory PPE includes:

- a. Hard Hat
- b. Long Pants
- c. Appropriate Safety Shoes
- d. Appropriate Class Reflective Vests

3.1.1 Worksite Communication

Employees working alone in a remote location or away from other workers must be provided an effective means of emergency communications (i.e., cellular phone, two-way radios, land-line telephones or other acceptable means). The selected communication must be readily available (easily within the immediate reach) of the employee and must be tested prior to the start of work to verify that it effectively operates in the

area/environment. Develop an employee check-in/check-out communication procedure to ensure employee safety.

3.1.2 Hazardous Material Use

Each hazardous material must receive approval from the Contracting Office or their designated representative prior to being brought onto the job site or prior to any other use in connection with this Contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

3.1.3 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this Contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint, and hexavalent chromium, are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. Low mercury lamps used within fluorescent lighting fixtures are allowed as an exception without further Contracting Officer approval. Notify the Radiation Safety Officer (RSO) prior to excepted items of radioactive material and devices being brought on base.

3.1.4 Unforeseen Hazardous Material

Contract documents identify materials such as PCB, lead paint, and friable and non-friable asbestos and other OSHA regulated chemicals (i.e. 29 CFR Part 1910.1000). If material(s) that may be hazardous to human health upon disturbance are encountered during construction operations, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to FAR 52.243-4 Changes and FAR 52.236-2 Differing Site Conditions.

3.2 UTILITY OUTAGE REQUIREMENTS

Apply for utility outages at least 30 days in advance. At a minimum, the written request must include the location of the outage, utilities being affected, duration of outage, any necessary sketches, and a description of the means to fulfill energy isolation requirements in accordance with EM 385-1-1, Section 11.A.02 (Isolation). Some examples of energy isolation devices and procedures are highlighted in EM 385-1-1, Section 12.D. In accordance with EM 385-1-1, Section 12.A.01, where outages involve Government or Utility personnel, coordinate with the Government on all activities involving the control of hazardous energy.

These activities include, but are not limited to, a review of HECF and HEC procedures, as well as applicable Activity Hazard Analyses (AHAs). In accordance with EM 385-1-1, Section 11.A.02 and NFPA 70E, work on energized electrical circuits must not be performed without prior Government authorization. Government permission is considered through the permit process and submission of a detailed AHA. Energized work permits are

considered only when de-energizing introduces additional or increased hazard or when de-energizing is infeasible.

3.3 OUTAGE COORDINATION MEETING

After the utility outage request is approved and prior to beginning work on the utility system requiring shut-down, conduct a pre-outage coordination meeting in accordance with EM 385-1-1, Section 12.A. This meeting must include the Prime Contractor, the Prime and subcontractors performing the work, the Contracting Officer, and the Public Utilities representative. All parties must fully coordinate HEC activities with one another. During the coordination meeting, all parties must discuss and coordinate on the scope of work, HEC procedures (specifically, the lock-out/tag-out procedures for worker and utility protection), the AHA, assurance of trade personnel qualifications, identification of competent persons, and compliance with HECP training in accordance with EM 385-1-1, Section 12.C. Clarify when personal protective equipment is required during switching operations, inspection, and verification.

3.4 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

Provide and operate a Hazardous Energy Control Program (HECP) in accordance with EM 385-1-1 Section 12, 29 CFR 1910.333, 29 CFR 1915.89, ASSP A10.44, NFPA 70E, and paragraph HAZARDOUS ENERGY CONTROL PROGRAM (HECP).

3.4.1 Safety Preparatory Inspection Coordination Meeting with the Government or Utility

For electrical distribution equipment that is to be operated by Government or Utility personnel, the Prime Contractor and the subcontractor performing the work must attend the safety preparatory inspection coordination meeting, which will also be attended by the Contracting Officer's Representative, and required by EM 385-1-1, Section 12.A.02. The meeting will occur immediately preceding the start of work and following the completion of the outage coordination meeting. Both the safety preparatory inspection coordination meeting and the outage coordination meeting must occur prior to conducting the outage and commencing with lockout/tagout procedures.

3.4.2 Lockout/Tagout Isolation

Where the Government or Utility performs equipment isolation and lockout/tagout, the Contractor must place their own locks and tags on each energy-isolating device and proceed in accordance with the HECP. Before any work begins, both the Contractor and the Government or Utility must perform energy isolation verification testing while wearing required PPE detailed in the Contractor's AHA and required by EM 385-1-1, Sections 05.I and 11.B. Install personal protective grounds, with tags, to eliminate the potential for induced voltage in accordance with EM 385-1-1, Section 12.E.06.

3.4.3 Lockout/Tagout Removal

Upon completion of work, conduct lockout/tagout removal procedure in accordance with the HECP. In accordance with EM 385-1-1, Section 12.E.08, each lock and tag must be removed from each energy isolating device by the authorized individual or systems operator who applied the device. Provide formal notification to the Government (by completing the Government form if provided by Contracting Officer's Representative), confirming that steps of

de-energization and lockout/tagout removal procedure have been conducted and certified through inspection and verification. Government or Utility locks and tags used to support the Contractor's work will not be removed until the authorized Government employee receives the formal notification.

3.5 FALL PROTECTION PROGRAM

Establish a fall protection program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify roles and responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures in accordance with [ASSP Z359.2](#) and [EM 385-1-1](#), Sections 21.A and 21.D.

3.5.1 Training

Institute a fall protection training program. As part of the Fall Protection Program, provide training for each employee who might be exposed to fall hazards and using personal fall protection equipment. Provide training by a competent person for fall protection in accordance with [EM 385-1-1](#), Section 21.C. Document training and practical application of the competent person in accordance with [EM 385-1-1](#), Section 21.C.04 and [ASSP Z359.2](#) in the AHA.

3.5.2 Fall Protection Equipment and Systems

Enforce use of personal fall protection equipment and systems designated (to include fall arrest, restraint, and positioning) for each specific work activity in the Site Specific Fall Protection and Prevention Plan and AHA at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards as specified in [EM 385-1-1](#), Section 21.

Provide personal fall protection equipment, systems, subsystems, and components that comply with [EM 385-1-1](#) Section 21.I, [29 CFR 1926.500](#) Subpart M, [ASSP Z359.0](#), [ASSP Z359.1](#), [ASSP Z359.2](#), [ASSP Z359.3](#), [ASSP Z359.4](#), [ASSP Z359.6](#), [ASSP Z359.7](#), [ASSP Z359.11](#), [ASSP Z359.12](#), [ASSP Z359.13](#), [ASSP Z359.14](#), [ASSP Z359.15](#), [ASSP Z359.16](#) and [ASSP Z359.18](#).

3.5.2.1 Additional Personal Fall Protection Measures

In addition to the required fall protection systems, other protective measures such as safety skiffs, personal floatation devices, and life rings, are required when working above or next to water in accordance with [EM 385-1-1](#), Sections 21.0 through 21.0.06. Personal fall protection systems and equipment are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall protection systems are required when operating other equipment such as scissor lifts. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, travel, or while performing work.

3.5.2.2 Personal Fall Protection Equipment

Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. The use of body belts is not acceptable. Harnesses must have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Snap

hooks and carabineers must be self-closing and self-locking, capable of being opened only by at least two consecutive deliberate actions and have a minimum gate strength of 3,600 lbs in all directions. Use webbing, straps, and ropes made of synthetic fiber. The maximum free fall distance when using fall arrest equipment must not exceed 6 feet, unless the proper energy absorbing lanyard is used. Always take into consideration the total fall distance and any swinging of the worker (pendulum-like motion), that can occur during a fall, when attaching a person to a fall arrest system. Equip all full body harnesses with Suspension Trauma Preventers such as stirrups, relief steps, or similar in order to provide short-term relief from the effects of orthostatic intolerance in accordance with EM 385-1-1, Section 21.I.06.

3.5.3 Fall Protection for Roofing Work

Implement fall protection controls based on the type of roof being constructed and work being performed. Evaluate the roof area to be accessed for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

- (1) For work within 6 feet from unprotected edge of a roof having a slope less than or equal to 4:12 (vertical to horizontal), protect personnel from falling by the use of conventional fall protection systems (personal fall arrest/restraint systems, guardrails, or safety nets) in accordance with EM 385-1-1, Section 21 and 29 CFR 1926.500. A safety monitoring system is not adequate fall protection and is not authorized.
- (2) For work greater than 6 feet from the unprotected roof edge, addition to the use of conventional fall protection systems the use of a warning line system is also permitted, in accordance with 29 CFR 1926.500 and EM 385-1-1, Section 21.L.

- #### b. Steep-Sloped Roofs:
- Work on a roof having a slope greater than 4:12 (vertical to horizontal) requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also applies to residential or housing type construction.

3.5.4 Horizontal Lifelines (HLL)

Provide HLL in accordance with EM 385-1-1, Section 21.I.08.d.2. Commercially manufactured horizontal lifelines (HLL) must be designed, installed, certified and used, under the supervision of a qualified person, for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500). The competent person for fall protection may (if deemed appropriate by the qualified person) supervise the assembly, disassembly, use and inspection of the HLL system under the direction of the qualified person. Locally manufactured HLLs are not acceptable unless they are custom designed for limited or site specific applications by a Registered Professional Engineer who is qualified in designing HLL systems.

3.5.5 Guardrails and Safety Nets

Design, install and use guardrails and safety nets in accordance with EM 385-1-1, Section 21.F.01 and 29 CFR 1926 Subpart M.

3.5.6 Rescue and Evacuation Plan and Procedures

When personal fall arrest systems are used, ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. Prepare a Rescue and Evacuation Plan and include a detailed discussion of the following: methods of rescue; methods of self-rescue or assisted-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. Include the Rescue and Evacuation Plan within the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP). The plan must be in accordance with the requirements of [EM 385-1-1](#), [ASSP Z359.2](#), and [ASSP Z359.4](#).

3.6 WORK PLATFORMS

3.6.1 Scaffolding

Provide employees with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Comply with the following requirements:

- a. Scaffold platforms greater than 20 feet in height must be accessed by use of a scaffold stair system.
- b. Ladders commonly provided by scaffold system manufacturers are prohibited for accessing scaffold platforms greater than 20 feet maximum in height.
- c. An adequate gate is required.
- d. Employees performing scaffold erection and dismantling must be qualified.
- e. Scaffold must be capable of supporting at least four times the maximum intended load, and provide appropriate fall protection as delineated in the accepted fall protection and prevention plan.
- f. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward.
- g. Special care must be given to ensure scaffold systems are not overloaded.
- h. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material are prohibited. The first tie-in must be at the height equal to 4 times the width of the smallest dimension of the scaffold base.
- i. Scaffolding other than suspended types must bear on base plates upon wood mudsills (2 in x 10 in x 8 in minimum) or other adequate firm foundation.
- j. Scaffold or work platform erectors must have fall protection during the erection and dismantling of scaffolding or work platforms that are more than 6 feet.
- k. Delineate fall protection requirements when working above 6 feet or above dangerous operations in the Fall Protection and Prevention (FP&P)

Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.6.2 Elevated Aerial Work Platforms (AWPs)

Workers must be anchored to the basket or bucket in accordance with manufacturer's specifications and instructions (anchoring to the boom may only be used when allowed by the manufacturer and permitted by the CP). Lanyards used must be sufficiently short to prohibit worker from climbing out of basket. The climbing of rails is prohibited. Lanyards with built-in shock absorbers are acceptable. Self-retracting devices are not acceptable. Tying off to an adjacent pole or structure is not permitted unless a safe device for 100 percent tie-off is used for the transfer.

Use of AWPs must be operated, inspected, and maintained as specified in the operating manual for the equipment and delineated in the AHA. Operators of AWPs must be designated as qualified operators by the Prime Contractor. Maintain proof of qualifications on site for review and include in the AHA.

3.7 EQUIPMENT

3.7.1 Material Handling Equipment (MHE)

- a. Material handling equipment such as forklifts must not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions. Material handling equipment fitted with personnel work platform attachments are prohibited from traveling or positioning while personnel are working on the platform.
- b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. Material Handling Equipment Operators must be trained in accordance with OSHA 29 CFR 1910, Subpart N.
- c. Operators of forklifts or power industrial trucks must be licensed in accordance with OSHA.

3.7.2 Load Handling Equipment (LHE)

The following requirements apply. In exception, these requirements do not apply to commercial truck mounted and articulating boom cranes used solely to deliver material and supplies (not prefabricated components, structural steel, or components of a systems-engineered metal building) where the lift consists of moving materials and supplies from a truck or trailer to the ground; to cranes installed on mechanics trucks that are used solely in the repair of shore-based equipment; to crane that enter the activity but are not used for lifting; nor to other machines not used to lift loads suspended by rigging equipment. However, LHE accidents occurring during such operations must be reported.

- a. Equip cranes and derricks as specified in EM 385-1-1, Section 16.
- b. Notify the Contracting Officer 15 working days in advance of any LHE entering the activity, in accordance with EM 385-1-1, Section 16.A.02, so that necessary quality assurance spot checks can be coordinated. Prior to cranes entering federal activities, a Crane Access Permit must be obtained from the Contracting Officer. A copy of the permitting process will be provided at the Preconstruction Meeting. Contractor's operator must remain with the crane during the spot check. Rigging

gear must be in accordance with OSHA, ASME B30.9 Standards safety standards.

- c. Comply with the LHE manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Perform erection under the supervision of a designated person (as defined in ASME B30.5). Perform all testing in accordance with the manufacturer's recommended procedures.
- d. Comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, ASME B30.8 for floating cranes and floating derricks, ASME B30.9 for slings, ASME B30.20 for below the hook lifting devices and ASME B30.26 for rigging hardware.
- e. When operating in the vicinity of overhead transmission lines, operators and riggers must be alert to this special hazard and follow the requirements of EM 385-1-1 Section 11, and ASME B30.5 or ASME B30.22 as applicable.
- f. Do not use crane suspended personnel work platforms (baskets) unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Do not lift personnel with a line hoist or friction crane. Additionally, submit a specific AHA for this work to the Contracting Officer. Ensure the activity and AHA are thoroughly reviewed by all involved personnel.
- g. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.
- h. All employees must keep clear of loads about to be lifted and of suspended loads, except for employees required to handle the load.
- i. Use cribbing when performing lifts on outriggers.
- j. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
- k. A physical barricade must be positioned to prevent personnel access where accessible areas of the LHE's rotating superstructure poses a risk of striking, pinching or crushing personnel.
- l. Maintain inspection records in accordance by EM 385-1-1, Section 16.D, including shift, monthly, and annual inspections, the signature of the person performing the inspection, and the serial number or other identifier of the LHE that was inspected. Records must be available for review by the Contracting Officer.
- m. Maintain written reports of operational and load testing in accordance with EM 385-1-1, Section 16.F, listing the load test procedures used along with any repairs or alterations performed on the LHE. Reports must be available for review by the Contracting Officer.
- n. Certify that all LHE operators have been trained in proper use of all safety devices (e.g. anti-two block devices).
- o. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. At wind speeds greater than 20 mph, the operator, rigger and lift supervisor must cease all

crane operations, evaluate conditions and determine if the lift may proceed. Base the determination to proceed or not on wind calculations per the manufacturer and a reduction in LHE rated capacity if applicable. Include this maximum wind speed determination as part of the activity hazard analysis plan for that operation.

- p. On mobile cranes, lifts where the load weight is greater than 90 percent of the equipment's capacity are prohibited.
- q. Follow FAA guidelines when required based on project location.

3.7.3 Machinery and Mechanized Equipment

- a. Proof of qualifications for operator must be kept on the project site for review.
- b. Manufacture specifications or owner's manual for the equipment must be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Incorporate such additional safety precautions or requirements into the AHAs.

3.7.4 Base Mounted Drum Hoists

- a. Operation of base mounted drum hoists must be in accordance with EM 385-1-1 and ASSP A10.22.
- b. Rigging gear must be in accordance with applicable ASME/OSHA standards.
- c. When used on telecommunication towers, base mounted drum hoists must be in accordance with TIA-1019, TIA-222, ASME B30.7, 29 CFR 1926.552, and 29 CFR 1926.553.
- d. When used to hoist personnel, the AHA must include a written standard operating procedure. Operators must have a physical examination in accordance with EM 385-1-1 Section 16.B.05 and trained, at a minimum, in accordance with EM 385-1-1 Section 16.U and 16.T. The base mounted drum hoist must also comply with OSHA Instruction CPL 02-01-056 and ASME B30.23.
- e. Material and personnel must not be hoisted simultaneously.
- f. Personnel cage must be marked with the capacity (in number of persons) and load limit in pounds.
- g. Construction equipment must not be used for hoisting material or personnel or with trolley/tag lines. Construction equipment may be used for towing and assisting with anchoring guy lines.

3.7.5 Use of Explosives

Explosives must not be used or brought to the project site without prior written approval from the Contracting Officer. Such approval does not relieve the Contractor of responsibility for injury to persons or for damage to property due to blasting operations.

Storage of explosives, when permitted on Government property, must be only where directed and in approved storage facilities. These facilities must be kept locked at all times except for inspection, delivery, and withdrawal

of explosives.

3.8 EXCAVATIONS

Soil classification must be performed by a competent person in accordance with 29 CFR 1926 and EM 385-1-1.

3.8.1 Utility Locations

Provide a third party, independent, private utility locating company to positively identify underground utilities in the work area in addition to any station locating service and coordinated with the station utility department.

3.8.2 Utility Location Verification

Physically verify underground utility locations, including utility depth, by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within 3 feet of the underground system.

3.8.3 Utilities Within and Under Concrete, Bituminous Asphalt, and Other Impervious Surfaces

Utilities located within and under concrete slabs or pier structures, bridges, parking areas, and the like, are extremely difficult to identify. Whenever Contract work involves chipping, saw cutting, or core drilling through concrete, bituminous asphalt or other impervious surfaces, the existing utility location must be coordinated with station utility departments in addition to location and depth verification by a third party, independent, private locating company. The third party, independent, private locating company must locate utility depth by use of Ground Penetrating Radar (GPR), X-ray, bore scope, or ultrasound prior to the start of demolition and construction. Outages to isolate utility systems must be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement.

3.9 ELECTRICAL

Perform electrical work in accordance with EM 385-1-1, Sections 11 and 12.

3.9.1 Conduct of Electrical Work

As delineated in EM 385-1-1, electrical work is to be conducted in a de-energized state unless there is no alternative method for accomplishing the work. In those cases obtain an energized work permit from the Contracting Officer. The energized work permit application must be accompanied by the AHA and a summary of why the equipment/circuit needs to be worked energized. Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Attach temporary grounds in accordance with ASTM F855 and IEEE 1048. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator is allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method.

When working in energized substations, only qualified electrical workers are permitted to enter. When work requires work near energized circuits as defined by [NFPA 70](#), high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves and electrical arc flash protection for personnel as required by [NFPA 70E](#). Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA. Ensure that each employee is familiar with and complies with these procedures and [29 CFR 1910.147](#).

3.9.2 Qualifications

Electrical work must be performed by QP with verifiable credentials who are familiar with applicable code requirements. Verifiable credentials consist of State, National and Local Certifications or Licenses that a Master or Journeyman Electrician may hold, depending on work being performed, and must be identified in the appropriate AHA. Journeyman/Apprentice ratio must be in accordance with State, Local requirements applicable to where work is being performed.

3.9.3 Arc Flash

Conduct a hazard analysis/arc flash hazard analysis whenever work on or near energized parts greater than 50 volts is necessary, in accordance with [NFPA 70E](#).

All personnel entering the identified arc flash protection boundary must be QPs and properly trained in [NFPA 70E](#) requirements and procedures. Unless permitted by [NFPA 70E](#), no Unqualified Person is permitted to approach nearer than the Limited Approach Boundary of energized conductors and circuit parts. Training must be administered by an electrically qualified source and documented.

3.9.4 Grounding

Ground electrical circuits, equipment and enclosures in accordance with [NFPA 70](#) and [IEEE C2](#) to provide a permanent, continuous and effective path to ground unless otherwise noted by [EM 385-1-1](#).

Check grounding circuits to ensure that the circuit between the ground and a grounded power conductor has a resistance low enough to permit sufficient current flow to allow the fuse or circuit breaker to interrupt the current.

3.9.5 Testing

Temporary electrical distribution systems and devices must be inspected, tested and found acceptable for Ground-Fault Circuit Interrupter (GFCI) protection, polarity, ground continuity, and ground resistance before initial use, before use after modification and at least monthly. Monthly inspections and tests must be maintained for each temporary electrical distribution system, and signed by the electrical CP or QP.

-- End of Section --

SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS
02/19

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization (e.g., ASTM B564 Standard Specification for Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
Two Park Avenue
New York, NY 10016-5990
Ph: 800-843-2763
Fax: 973-882-1717
E-mail: customercare@asme.org
Internet: <https://www.asme.org/>

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)
520 N. Northwest Highway
Park Ridge, IL 60068
Ph: 847-699-2929
E-mail: customerservice@assp.org
Internet: <https://www.assp.org/>

AMERICAN WATER WORKS ASSOCIATION (AWWA)
6666 W. Quincy Avenue
Denver, CO 80235 USA
Ph: 303-794-7711 or 800-926-7337
Fax: 303-347-0804
Internet: <https://www.awwa.org/>

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: <https://www.astm.org/>

GREEN SEAL (GS)
1001 Connecticut Avenue, NW
Suite 827
Washington, DC 20036-5525
Ph: 202-872-6400
Fax: 202-872-4324
E-mail: green seal@green seal.org
Internet: <https://www.green seal.org/>

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
445 and 501 Hoes Lane
Piscataway, NJ 08854-4141
Ph: 732-981-0060 or 800-701-4333
Fax: 732-981-9667
E-mail: onlinesupport@ieee.org
Internet: <https://www.ieee.org/>

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
1300 North 17th Street, Suite 900
Arlington, VA 22209
Ph: 703-841-3200
Internet: <https://www.nema.org>

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
Quincy, MA 02169-7471
Ph: 800-344-3555
Fax: 800-593-6372
Internet: <https://www.nfpa.org>

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)
1320 North Courthouse Road, Suite 200
Arlington, VA 22201
Ph: 703-907-7700
Fax: 703-907-7727
E-mail: marketing@tiaonline.org
Internet: <https://www.tiaonline.org/>

U.S. ARMY CORPS OF ENGINEERS (USACE)
CRD-C DOCUMENTS available on Internet:
<http://www.wbdg.org/ffc/army-coe/standards>
Order Other Documents from:
Official Publications of the Headquarters, USACE
E-mail: hqpublications@usace.army.mil
Internet: <http://www.publications.usace.army.mil/>
or
<https://www.hnc.usace.army.mil/Missions/Engineering-Directorate/TECHINFO/>

U.S. DEPARTMENT OF DEFENSE (DOD)
Order DOD Documents from:
Room 3A750-The Pentagon
1400 Defense Pentagon
Washington, DC 20301-1400
Ph: 703-571-3343
Fax: 215-697-1462
E-mail: customerservice@ntis.gov
Internet: <https://www.ntis.gov/>
Obtain Military Specifications, Standards and Related Publications

from:
Acquisition Streamlining and Standardization Information System
(ASSIST)
Department of Defense Single Stock Point (DODSSP)
Document Automation and Production Service (DAPS)
Building 4/D
700 Robbins Avenue
Philadelphia, PA 19111-5094
Ph: 215-697-6396 - for account/password issues
Internet: <https://assist.dla.mil/online/start/>; account
registration required
Obtain Unified Facilities Criteria (UFC) from:
Whole Building Design Guide (WBDG)
National Institute of Building Sciences (NIBS)
1090 Vermont Avenue NW, Suite 700
Washington, DC 20005
Ph: 202-289-7800
Fax: 202-289-1092
Internet:
<https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc>

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Internet: <https://www.archives.gov/>
Order documents from:
Superintendent of Documents
U.S. Government Publishing Office (GPO)
732 N. Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800 or 866-512-1800
Bookstore: 202-512-0132
Internet: <https://www.gpo.gov/>

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

-- End of Section --

SECTION 01 45 10

QUALITY CONTROL

12/21

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

- | | |
|-------------|--|
| ASTM A 880 | (1996) Criteria for Use in Evaluation of Testing Laboratories and Organizations for Examination and Inspection of Steel, Stainless Steel, and Related Alloys |
| ASTM C 1077 | (1998) Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation |
| ASTM D 3666 | (2000) Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials |
| ASTM D 3740 | (1999c) Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction |
| ASTM E 329 | (2009) Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction |
| ASTM E 543 | (1999) Evaluating Agencies that Perform Nondestructive Testing |

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00, "Submittal Procedures."

SD-11 Closeout Submittals

Quality Control Plan (QC PLAN)

Submit a QC plan within 15 calendar days after receipt of Notice of Award.

1.3 INFORMATION FOR THE CONTRACTING OFFICER

Deliver the following to the Contracting Officer:

- a. Combined Contractor Production Report/Contractor Quality Control Report (1 sheet): Original and 1 copy, by 10:00 AM the next working day after each day that work is performed;
- b. QC Specialist Reports and Test Results: Originals and 1 copy, by 10:00 AM the next working day after each day that work is performed;
- c. Testing Plan and Log, 1 copy, at the end of each month;
- d. QC Meeting Minutes: 1 copy, within 2 calendar days of the meeting;
- e. Rework Items List: 1 copy, by the last working day of the month and;
- f. QC Certifications: As required by the paragraph entitled "QC Certifications".

1.4 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program as described in this section. The QC program consists of a QC Organization, a QC Plan, attending a QC Plan meeting, attending a Coordination and Mutual Understanding Meeting, conducting QC meetings, performing three phases of control, performing submittal review, ensuring testing is performed, and preparing QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract. The QC program shall cover construction operations on-site and off-site and shall be keyed to the proposed construction sequence.

1.5 QC ORGANIZATION

1.5.1 QC Manager

1.5.1.1 Duties

Provide a QC Manager at the work site to manage and implement the QC program. The QC Manager is required to attend the QC Plan meeting, attend the Coordination and Mutual Understanding Meeting, conduct the QC meetings, perform the three phases of control, perform submittal review, ensure testing is performed and prepare QC certifications and documentation required in this Contract. The QC Manager is responsible for managing and coordinating the three phases of control and documentation performed by the QC specialists. In addition to managing and implementing the QC program, the QC Manager may perform the duties of project superintendent.

1.5.1.2 Qualifications

An individual with a minimum of five years experience as a foreman, superintendent, inspector, QC Manager, project manager, or construction manager on similar size construction contracts which included the major trades that are part of this Contract.

Provide a separate QC Specialist at the work site for each of the areas of responsibilities for the following:

Electrical and Telecommunication Systems QC Specialists.

Provide ICC IBC Special Inspection Certification from the following specialist:

Telecommunications Systems Installation Specialist, (10) years minimum experience in Telecommunication Systems Installation.

Area of responsibility:

Telecommunication Systems, all Division 27, Division 28, and Division 33 Outside Plant work.

Frequency of specialists is full time during systems installation and testing. QC Specialists are required to attend the Coordination and Mutual Understanding Meeting, QC meetings and be physically present at the construction site to perform the three phases of control and prepare documentation for each definable feature of work in their area of responsibility.

1.5.1.3 Construction Quality Management Training

In addition to the above experience and education requirements, the QC Manager shall have completed the course entitled "Construction Quality Management for Contractors." This course is periodically offered by the Navy and the Corps of Engineers. However, it is sponsored by both the AGC and the ABC of Charlotte, North Carolina. Call one of the following to sign up for the next available class:

The Army Corps of Engineers, Baltimore District;
(Offered in Baltimore, MD)
Contact: Corps of Engineers, Baltimore District
10 South Howard Street
Baltimore, MD 21201
Phone: 410-962-2323

The Associated General Contractors (AGC), Virginia Chapter
in Cooperation with the Army Corps of Engineers, Norfolk District, and
the Naval Facilities Engineering Command, Atlantic Division.
(Offered at rotating locations in Norfolk, Williamsburg, and Richmond)
Contact: AGC of Virginia
8631 Maylan Drive, Parham Park
Richmond, VA 23294
Phone: 804-346-3383

Carolinas Associated General Contractors (CACG)
Contact: CACG
1100 Euclid Avenue
Charlotte, NC 28203
Phone: 704-372-1450 (ext. 5248)

Associated Builders and Contractors (ABC), Carolinas Chapter
Contact: ABC, Carolinas Chapter
3705 Latrobe Drive
Charlotte, NC 28211
Phone: 704-367-1331
or: 877-470-4819

1.5.2 Alternate QC Manager Duties and Qualifications

Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year. The qualification requirements for the Alternate QC Manager shall be three years of experience in one of the specified positions.

1.6 QC PLAN

1.6.1 Requirements

Provide for approval by the Contracting Officer, a QC plan submitted in a 3-ring binder with pages numbered sequentially that covers, both on-site and off-site work and includes, the following:

- a. A table of contents listing the major sections identified with tabs in the following order:
 - I. QC ORGANIZATION
 - II. NAMES AND QUALIFICATIONS
 - III. DUTIES, RESPONSIBILITY AND AUTHORITY OF QC PERSONNEL
 - IV. OUTSIDE ORGANIZATIONS
 - V. APPOINTMENT LETTERS
 - VI. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER
 - VII. TESTING LABORATORY INFORMATION
 - VIII. TESTING PLAN AND LOG
 - IX. PROCEDURES TO COMPLETE REWORK ITEMS
 - X. DOCUMENTATION PROCEDURES
 - XI. LIST OF DEFINABLE FEATURES
 - XII. PROCEDURES FOR PERFORMING THE THREE PHASES OF CONTROL
 - XIII. PERSONNEL MATRIX
 - XIV. PROCEDURES FOR COMPLETION INSPECTION
- b. A chart showing the QC organizational structure and its relationship to the production side of the organization.
- c. Names and qualifications, in resume format, for each person in the QC organization.
- d. Duties, responsibilities and authorities of each person in the QC organization.
- e. A listing of outside organizations such as, architectural and consulting engineering firms that will be employed by the Contractor and a description of the services these firms will provide.
- f. A letter signed by an officer of the firm appointing the QC Manager and stating that he/she is responsible for managing and implementing the QC program as described in this contract. Include in this letter the QC Manager's authority to direct the removal and replacement of non-conforming work.
- g. Procedures for reviewing, approving and managing submittals. Provide the names of the persons in the QC organization authorized to review and certify submittals prior to approval.
- h. Testing laboratory information required by the paragraphs entitled

"Accredited Laboratories" or "Testing Laboratory Requirements", as applicable.

- i. A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.
- j. Procedures to identify, record, track and complete rework items.
- k. Documentation procedures, including proposed report formats.
- l. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks and requires separate control requirements. As a minimum, if approved by the Contracting Officer, consider each Section of the Specifications as a definable feature of work. However, at times, there may be more than one definable feature of work in each Section of the Specifications.
- m. A personnel matrix showing, for each section of the specification, who will perform and document the three phases of control, and who will perform and document the testing.
- o. Procedures for Identifying and Documenting the Completion Inspection process. Include in these procedures the responsible party for punch out inspection, prefinal inspection, and final acceptance inspection.

1.6.2 Preliminary Work Authorized Prior to Approval

The only work that is authorized to proceed prior to the approval of the QC plan is mobilization of storage and office trailers and surveying.

1.6.3 Approval

Approval of the QC plan is required prior to the start of construction. The Contracting Officer reserves the right to require changes in the QC plan and operations as necessary to ensure the specified quality of work. The Contracting Officer reserves the right to interview any member of the QC organization at any time in order to verify his/her submitted qualifications.

1.6.4 Notification of Changes

Notify the Contracting Officer, in writing, of any proposed change, including changes in the QC organization personnel, a minimum of seven calendar days prior to a proposed change. Proposed changes must be approved by the Contracting Officer.

1.7 QC PLAN MEETING

Prior to submission of the QC plan, meet with the Contracting Officer to discuss the QC plan requirements of this Contract. The purpose of this meeting is to develop a mutual understanding of the QC plan requirements prior to plan development and submission.

1.8 COORDINATION AND MUTUAL UNDERSTANDING MEETING

After submission of the QC Plan, but prior to the start of construction,

meet with the Contracting Officer to discuss the QC program required by this Contract. The purpose of this meeting is to develop a mutual understanding of the QC details, including forms to be used for documentation, administration for on-site and off-site work, and the coordination of the Contractor's management, production and QC personnel with the Contracting Officer. As a minimum, the Contractor's personnel required to attend shall include the project manager, project superintendent, and QC Manager. Minutes of the meeting shall be prepared by the QC Manager and signed by both the Contractor and the Contracting Officer.

1.9 QC MEETINGS

After the start of construction, the QC Manager shall conduct weekly QC meetings at the work site with the project superintendent and QC specialists. The QC Manager shall prepare the minutes of the meeting and provide a copy to the Contracting Officer within 2 working days after the meeting. The Contracting Officer may attend these meetings. The QC Manager shall notify the Contracting Officer at least 48 hours in advance of each meeting. As a minimum, the following shall be accomplished at each meeting:

- a. Review the minutes of the previous meeting;
- b. Review the schedule and the status of work:
 - Work or testing accomplished since last meeting
 - Rework items identified since last meeting
 - Rework items completed since last meeting;
- c. Review the status of submittals:
 - Submittals reviewed and approved since last meeting
 - Submittals required in the near future;
- d. Review the work to be accomplished in the next 2 weeks and documentation required. Schedule the three phases of control and testing:
 - Establish completion dates for rework items
 - Preparatory phases required
 - Initial phases required
 - Follow-up phases required
 - Testing required
 - Status of off-site work or testing
 - Documentation required;
- e. Resolve QC and production problems; and
- f. Address items that may require revising the QC plan:
 - Changes in QC organization personnel
 - Changes in procedures.

1.9.1 THREE PHASES OF CONTROL

The QC Manager shall perform the three phases of control to ensure that work complies with Contract requirements. The Three Phases of Control shall adequately cover both on-site and off-site work and shall include the following for each definable features of work: A definable feature of work

is a task which is separate and distinct from other tasks and requires separate control requirements.

1.9.2 Preparatory Phase

Notify the Contracting Officer at least 48 hours in advance of each preparatory phase. Conduct the preparatory phase with the superintendent, and the foreman responsible for the definable feature. Document the results of the preparatory phase actions in the daily Contractor Quality Control Report. Perform the following prior to beginning work on each definable feature of work:

- a. Review each paragraph of the applicable specification sections;
- b. Review the Contract drawings;
- c. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;
- d. Review the testing plan and ensure that provisions have been made to provide the required QC testing;
- e. Examine the work area to ensure that the required preliminary work has been completed;
- f. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;
- g. Review the safety plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted; and
- h. Discuss construction methods

1.9.3 Initial Phase

Notify the Contracting Officer at least 48 hours in advance of each initial phase. When construction crews are ready to start work on a definable feature of work, conduct the initial phase with the QC Specialists, the superintendent, and the foreman responsible for that definable feature of work. Observe the initial segment of the definable feature of work to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily Contractor Quality Control Report. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each definable feature of work:

- a. Establish the quality of workmanship required;
- b. Resolve conflicts;
- c. Review the Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met; and
- d. Ensure that testing is performed by an approved laboratory.

1.9.4 Follow-Up Phase

Perform the following for on-going work daily, or more frequently as necessary until the completion of each definable feature of work and document in the daily Contractor Quality Control Report:

- a. Ensure the work is in compliance with Contract requirements;
- b. Maintain the quality of workmanship required;
- c. Ensure that testing is performed by an approved laboratory; and
- d. Ensure that rework items are being corrected.

1.9.5 Notification of Three Phases of Control for Off-Site Work

Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases.

1.10 SUBMITTAL REVIEW

Procedures for submittals are as described in Section entitled "01 33 00 Submittal Procedures."

1.11 TESTING

Except as stated otherwise in the specification sections, perform sampling and testing required under this Contract.

1.11.1 Testing Laboratory Requirements

Provide an independent testing laboratory or establish a laboratory qualified to perform sampling and tests required by this Contract. When the proposed testing laboratory is not accredited by an acceptable accreditation program as described by the paragraph entitled "Accredited Laboratories", submit to the Contracting Officer for approval, certified statements signed by an official of the testing laboratory attesting that the proposed laboratory meets or conforms to the following requirements:

- a. Sampling and testing shall be under the technical direction of a Registered Professional Engineer (P.E) with at least 5 years of experience in construction material testing.
- b. Laboratories engaged in testing of concrete and concrete aggregates shall meet the requirements of [ASTM C 1077](#).
- c. Laboratories engaged in testing of bituminous paving materials shall meet the requirements of [ASTM D 3666](#).
- d. Laboratories engaged in testing of soil and rock, as used in engineering design and construction, shall meet the requirements of [ASTM D 3740](#).
- e. Laboratories engaged in inspection and testing of steel, stainless steel, and related alloys will be evaluated according to [ASTM A 880](#). Laboratories shall meet the requirements of [ASTM E 329](#).
- f. Laboratories engaged in nondestructive testing (NDT) shall meet the requirements of [ASTM E 543](#).

- g. Laboratories engaged in hazardous materials testing shall meet the requirements of OSHA and EPA.

1.11.2 Accredited Laboratories

Acceptable accreditation programs are the National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHTO) program and the American Association for Laboratory Accreditation (A2LA) program. Furnish to the Contracting Officer, a copy of the Certificate of Accreditation, Scope of Accreditation and latest directory of the accrediting organization for accredited laboratories. The scope of the laboratory's accreditation shall include the test methods required by the Contract.

1.11.3 Inspection of Testing Laboratories

Prior to approval of non-accredited laboratories, the proposed testing laboratory facilities and records shall be subject to inspection by the Contracting Officer. Records subject to inspection include equipment inventory, equipment calibration dates and procedures, library of test procedures, audit and inspection reports by agencies conducting laboratory evaluations and certifications, testing and management personnel qualifications, test report forms, and the internal QC procedures.

1.11.4 Capability Check

The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.

1.11.5 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results shall be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager. Furnish a summary report of field tests at the end of each month. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month.

1.12 QC CERTIFICATIONS

1.12.1 Contractor Quality Control Report Certification

Each Contractor Quality Control Report shall contain the following statement: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in this report".

1.12.2 Invoice Certification

Furnish a certificate to the Contracting Officer with each payment request, signed by the QC Manager, attesting that as-built drawings are current and attesting that the work for which payment is requested, including stored material, is in compliance with contract requirements.

1.12.3 Completion Certification

Upon completion of work under this Contract, the QC Manager shall furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested and is in compliance with the Contract".

1.13 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities.

1.13.1 Contractor Production Report

Reports are required for each day that work is performed and shall be attached to the Contractor Quality Control Report prepared for the same day. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule. Contractor Production Reports are to be prepared, signed and dated by the project superintendent and shall contain the following information:

- a. Date of report, report number, name of contractor, contract number, title and location of Contract and superintendent present.
- b. Weather conditions in the morning and in the afternoon including maximum and minimum temperatures.
- c. A list of Contractor and subcontractor personnel on the work site, their trades, employer, work location, description of work performed and hours worked.
- e. A list of job safety actions taken and safety inspections conducted. Indicate that safety requirements have been met including the results on the following:
 - (1) Was a job safety meeting held this date? (If YES, attach a copy of the meeting minutes.)
 - (2) Were there any lost time accidents this date? (If YES, attach a copy of the completed OSHA report.)
 - (3) Was crane/manlift/trenching/scaffold/hv electrical/high work/hazmat work done? (If YES, attach a statement or checklist showing inspection performed.)
 - (4) Was hazardous material/waste released into the environment? (If YES, attach a description of incident and proposed action.)
- f. A list of safety actions taken today and safety inspections conducted.
- g. A list of equipment/material received each day that is

incorporated into the job.

- h. A list of construction and plant equipment on the work site including the number of hours used, idle and down for repair.
- i. Include a "remarks" section in this report which will contain pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site.

1.13.2 Contractor Quality Control Report

Reports are required for each day that work is performed and for every seven consecutive calendar days of no-work and on the last day of a no-work period. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule. Contractor Quality Control Reports are to be prepared, signed and dated by the QC Manager and shall contain the following information:

- a. Identify the control phase and the definable feature of work.
- b. Results of the Preparatory Phase meetings held including the location of the definable feature of work and a list of personnel present at the meeting. Indicate in the report that for this definable feature of work, the drawings and specifications have been reviewed, submittals have been approved, materials comply with approved submittals, materials are stored properly, preliminary work was done correctly, the testing plan has been reviewed, and work methods and schedule have been discussed.
- c. Results of the Initial Phase meetings held including the location of the definable feature of work and a list of personnel present at the meeting. Indicate in the report that for this definable feature of work the preliminary work was done correctly, samples have been prepared and approved, the workmanship is satisfactory, test results are acceptable, work is in compliance with the Contract, and the required testing has been performed and include a list of who performed the tests.
- d. Results of the Follow-up Phase inspections held including the location of the definable feature of work. Indicate in the report for this definable feature of work that the work complies with the Contract as approved in the Initial Phase, and that required testing has been performed and include a list of who performed the tests.
- e. Results of the three phases of control for off-site work, if applicable, including actions taken.
- f. List the rework items identified, but not corrected by close of business.
- g. List the rework items corrected from the rework items list along with the corrective action taken.

- h. Include a "remarks" section in this report which will contain pertinent information including directions received, quality control problem areas, deviations from the QC plan, construction deficiencies encountered, QC meetings held, acknowledgement that as-built drawings have been updated, corrective direction given by the QC Organization and corrective action taken by the Contractor.
- i. Contractor Quality Control Report certification.

1.13.3 Testing Plan and Log

As tests are performed, the QC Manager shall record on the "Testing Plan and Log" the date the test was conducted, the date the test results were forwarded to the Contracting Officer, remarks and acknowledgement that an accredited or Contracting Officer approved testing laboratory was used. Attach a copy of the updated "Testing Plan and Log" to the last daily Contractor Quality Control Report of each month.

1.13.4 Rework Items List

The QC Manager shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Contractor Rework Items List" to the last daily Contractor Quality Control Report of each month. The Contractor shall be responsible for including on this list items needing rework including those identified by the Contracting Officer.

1.13.5 As-Built Drawings

The QC Manager is required to review the as-built drawings required by Section 01 78 00, "Closeout Submittals", to ensure that as-built drawings are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings. The QC Manager shall initial each deviation and each revision. Upon completion of work, the QC Manager shall furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the Contracting Officer.

1.13.6 Report Forms

The following forms, which are attached at the end of this section, are acceptable for providing the information required by the paragraph entitled "Documentation". While use of these specific formats are not required, any other format used shall contain the same information:

- a. Combined Contractor Production Report and Contractor Quality Control Report (1 sheet), with separate continuation sheet
- b. Testing Plan and Log
- c. Rework Items List

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

SECTION 01 50 00

TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS

12/21

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C511 (2017) Reduced-Pressure Principle Backflow Prevention Assembly

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2014) Safety and Health Requirements Manual

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Traffic Control Plan - if applicable

SD-03 Product Data

Backflow Preventers

SD-06 Test Reports

Backflow Preventer Tests

SD-07 Certificates

Backflow Tester Certification

Backflow Preventers Certificate of Full Approval

1.3 BACKFLOW PREVENTERS CERTIFICATE

Certificate of Full Approval from FCCCHR List, University of Southern California, attesting that the design, size and make of each backflow preventer has satisfactorily passed the complete sequence of performance testing and evaluation for the respective level of approval. Certificate of provisional approval will not be acceptable.

1.3.1 Backflow Tester Certificate

Prior to testing, submit to the Contracting Officer certification issued by

the State or local regulatory agency attesting that the backflow tester has successfully completed a certification course sponsored by the regulatory agency. Tester must not be affiliated with a company participating in other phases of this Contract.

1.3.2 Backflow Prevention Training Certificate

Submit a certificate recognized by the State or local authority that states the Contractor has completed at least 10 hours of training in backflow preventer installations. The certificate must be current.

1.4 WEATHER PROTECTION

Take necessary precautions to ensure that roof openings and other critical openings in the building are monitored carefully. Take immediate actions required to seal off such openings when rain or other detrimental weather is imminent, and at the end of each workday. Ensure that the openings are completely sealed off to protect materials and equipment in the building from damage.

1.5 DOD CONDITION OF READINESS (COR)

DOD will set the Condition of Readiness (COR) based on the weather forecast for sustained winds 50 knots (60 mph) or greater. Contact the Contracting Officer for the current COR setting.

Monitor weather conditions a minimum of twice a day and take appropriate actions according to the approved Emergency Plan in the accepted Accident Prevention Plan, EM 385-1-1 Section 01 Emergency Planning and the instructions below.

Unless otherwise directed by the Contracting Officer, comply with:

- a. Condition FOUR (Sustained winds of 58 mph or greater expected within 72 hours): Normal daily jobsite cleanup and good housekeeping practices. Collect and store in piles or containers scrap lumber, waste material, and rubbish for removal and disposal at the close of each work day. Maintain the construction site including storage areas, free of accumulation of debris. Stack form lumber in neat piles less than 3.3 feet high. Remove all debris, trash, or objects that could become missile hazards. Review requirements pertaining to "Condition THREE" and continue action as necessary to attain "Condition FOUR" readiness. Contact Contracting Officer for weather and COR updates and completion of required actions.
- b. Condition THREE (Sustained winds of 58 mph or greater expected within 48 hours): Maintain "Condition FOUR" requirements and commence securing operations necessary for "Condition ONE" which cannot be completed within 18 hours. Cease all routine activities which might interfere with securing operations. Commence securing and stow all gear and portable equipment. Make preparations for securing buildings. Reinforce or remove formwork and scaffolding. Secure machinery, tools, equipment, materials, or remove from the jobsite. Expend every effort to clear all missile hazards and loose equipment from general base areas. Contact Contracting Officer for weather and COR updates and completion of required actions. Review requirements pertaining to "Condition TWO" and continue action as necessary to attain "Condition THREE" readiness.

- c. Condition TWO (Sustained winds of 58 mph or greater expected within 24 hours): Secure the jobsite, and leave Government premises.
- d. Condition ONE. (Sustained winds of 58 mph or greater expected within 12 hours): Contractor access to the jobsite and Government premises is prohibited.

1.6 TRAILERS OR STORAGE BUILDINGS

Trailers or storage buildings will be permitted, where space is available, subject to the approval of the Contracting Officer. The trailer or building shall be in good condition, free from visible damage, rust, and deterioration, and meet all applicable safety requirements. Trailers shall be roadworthy and comply with all appropriate State and local vehicle requirements. Failure to maintain storage trailers or buildings to these standards shall result in the removal of non-complying units at the Contractor's expense. A sign not smaller than 24 by 24 inches shall be conspicuously placed on the trailer depicting the company name, business phone number, and emergency phone number. Trailers shall be anchored to resist high winds and must meet applicable state and local standards for anchoring mobile trailers.

Trailers that are placed outside of project boundaries will require base site approval and NEPA review. Any temporary trailer utilities outside the project boundary limit also will require base site approval and NEPA review. Allow 30 days for approval processing and NEPA documentation.

1.7 STORAGE AREAS

The Contract Clause entitled "FAR 52.236-10, Operations and Storage Areas" applies.

PART 2 PRODUCTS

2.1 BACKFLOW PREVENTERS

Reduced pressure principle type conforming to the applicable requirements [AWWA C511](#).

PART 3 EXECUTION

3.1 EMPLOYEE PARKING

Construction Contract employees must park privately owned vehicles in an area designated by the Contracting Officer. Employee parking must not interfere with existing and established parking requirements of the Government installation.

3.2 AVAILABILITY AND USE OF UTILITY SERVICES

3.2.1 Temporary Utilities

- a. The Contract clause related to utilities applies. Reasonable amounts of water and electricity from the nearest outlet will be provided free of charge for pursuance of work within a facility under this contract. If the nearest available outlet cannot be utilized by the Contractor because of improper voltage, insufficient current, improper pressure, incompatible connectors, etc., it shall be the responsibility of the Contractor to provide temporary utilities as

required.

b. Reasonable amounts of utilities for contractor trailers and storage buildings will be made available to the Contractor, when available. The Contractor shall be responsible for providing transformers, electrical service poles and drops for electrical services, and backflow preventer devices on connections to domestic water lines. Final taps and tie-ins to the Government utility grid will be made by the Contractor after approval by the Contracting Officer. Tap-in cost, if any, shall be the responsibility of the Contractor. Under no circumstances will taps to base fire hydrants be allowed for obtaining domestic water.

c. Any and all utilities outside the established site boundary in support of trailers or temporary facilities will require both a Site Approval and REIR, which can either be routed separately from the trailer approvals or under the same request.

3.2.2 Energy and Utilites Conservation

The Contractor shall carefully conserve utilities furnished without charge. The Contractor, at his own expense and in a manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines and remove the same prior to final acceptance of the construction.

3.2.3 Location of Underground Utilites

Location and Protection of underground utilities shall be the responsibility of the Contractor. Where existing-to-remain piping, utilities, and underground obstructions of any type are indicted in locations to be traversed by new piping, ducts, and other excavations the elevations of the existing utilities and obstructions shall be determined before the new work is completed.

a. In addition, the Contractor will be responsible for obtaining the services of a professional utility locator prior to digging. Contractor will provide documentation that the site has been surveyed and checked for underground utilities. All utilities must be located, including but not limited to power, water, sewer, storm drains, fiber optics, T.V. cable, telephone, and intrusion detection wiring. A set of known utility drawings will be available in the ROICC office for review to assist the locator.

b. It is mandatory that the Contractor also contact the Base Telephone Office (451-2531) prior to accomplishing any digging at Camp Lejeune. A telephone office representative will assist in locating telephone lines.

c. It is mandatory that the Contractor also contact Charter Communications, cable TV service prior to accomplishing any digging at Camp Lejeune, to ensure that all buried cable lines are identified. Contact Mr. Olin Criswell at 353-8677 for assistance.

d. It is mandatory that the contractor also contact the North Carolina One-Call Center to coordinate the location of underground natural gas infrastructure. North Carolina 811, Inc. can be reached at 811 on a touch-tone phone in the state of North Carolina or toll-free at 1.800.632.4949 if calling from out of state.

3.2.4 Damage to Underground Utilities

Immediate notice shall be delivered to the Contracting Officer of any damage. The Contractor shall make temporary repairs immediately, and shall provide permanent repairs as soon as practicable. For any additional work required by reason of conflict between the new and existing work, an adjustment in contract price will be made in accordance with Contract clause entitled "Differing Site Conditions", if appropriate.

3.2.5 Sanitation

Provide adequate sanitary conveniences of a type approved for the use of persons employed on the work, properly secluded from public observation, and maintained in such a manner as required and approved by the Contracting Officer. Maintain these conveniences at all times without nuisance. Upon completion of the work, remove the conveniences from the premises, leaving the premises clean and free from nuisance. Dispose of sewage through connection to a municipal, district, or station sanitary sewage system. Where such systems are not available, use chemical toilets or comparably effective units, and periodically empty wastes into a municipal, district, or station sanitary sewage system, or remove waste to a commercial facility. Include provisions for pest control and elimination of odors.

3.3 STATION OPERATION AFFECT ON CONTRACTOR OPERATIONS

3.3.1 Restricted Access Areas

Follow guidelines identified on drawings and in scope of work.

3.4 TRAFFIC PROVISIONS

3.4.1 Traffic Control Plan

If during the performance of work, it becomes necessary to modify vehicular traffic patterns at any locations, notify the Contracting Officer at least 15 calendar days prior to the proposed modification date, and provide a Traffic Control Plan detailing the proposed controls to traffic movement for approval. The plans shall be in accordance with State and local regulations and the MUTCD, Part VI. Make all notifications and obtain any permits required for modification to traffic movements outside Station's jurisdiction. Provide cones, signs, barricades, lights, or other traffic control devices and personnel required to control traffic.

3.4.2 Dust Control

Dust control methods and procedures must be approved by the Contracting Officer. Coordinate dust control methods with 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS.

3.5 REDUCED PRESSURE BACKFLOW PREVENTERS

Provide an approved reduced pressure backflow prevention assembly at each location where the Contractor taps into the Government potable water supply.

Perform [backflow preventer tests](#) using test equipment, procedures, and certification forms conforming to those outlined in the latest edition of the Manual of Cross-Connection Control published by the FCCCHR Manual. Test and tag each reduced pressure backflow preventer upon initial installation (prior to continued water use). Tag must contain the

following information: make, model, serial number, dates of tests, results, maintenance performed, and signature of tester. Record test results on certification forms conforming to requirements cited earlier in this paragraph.

3.6 DUMPSTERS

Equip dumpsters with a secure cover and paint the standard installation color. Keep dumpster closed, except when being loaded with trash and debris. Empty site dumpsters at least once a week, or as needed to keep the site free of debris and trash. If necessary, provide 55 gallon trash containers painted the darker installation color to collect debris in the construction site area. For large demolitions, large dumpsters without lids are acceptable, but must not have debris higher than the sides before emptying.

3.7 CLEANUP

Remove construction debris, waste materials, packaging material and the like from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways must be cleaned away. Store all salvageable materials resulting from demolition activities within the fenced area described above or at the supplemental storage area. Neatly stack stored materials not in trailers, whether new or salvaged.

3.8 RESTORATION OF STORAGE AREA

Upon completion of the project remove the bulletin board, signs, barricades, haul roads, and all other temporary products from the site. After removal of trailers, materials, and equipment from within the fenced area, remove the fence. Restore areas used during the performance of the Contract to the original or better condition. Remove gravel used to traverse grassed areas and restore the area to its original condition, including top soil and seeding as necessary.

-- End of Section --

SECTION 01 57 19

TEMPORARY ENVIRONMENTAL CONTROLS

05/12

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

U.S. DEPARTMENT OF DEFENSE (DOD)

- | | |
|-------------|---|
| MIL-S-16165 | (Rev E) Shielding Harnesses, Shielding Items and Shielding Enclosures for Use in the Reduction of Interference from Engine Electrical Systems |
| MIL-STD-461 | (2015; Rev G) Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment |
| MIL-STD-462 | (Rev D; Notice 4) Electromagnetic Interference Characteristics |

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

- | | |
|-------------|---|
| 29 CFR 1910 | Occupational Safety and Health Standards |
| 40 CFR 261 | Identification and Listing of Hazardous Waste |
| 40 CFR 262 | Generators of Hazardous Waste |
| 40 CFR 263 | Transporters of Hazardous Waste |
| 40 CFR 264 | Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities |
| 40 CFR 265 | Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities |
| 40 CFR 300 | National Oil and Hazardous Substances Pollution Contingency Plan |
| 49 CFR 171 | General Information, Regulations, and Definitions |
| 49 CFR 172 | Hazardous Materials Tables and Hazardous Materials Communications Regulations |

1.2 Contractor Liabilities for Environmental Protection

Contractors shall complete and provide [environmental training documentation](#) for training required by Federal, State, and local regulations.

1.3 DEFINITIONS

1.3.1 Sediment

Soil and other debris that have eroded and have been transported by runoff water or wind.

1.3.2 Solid Waste

Rubbish, debris, garbage, and other discarded solid materials, except recyclables and hazardous waste as defined in paragraph entitled "Hazardous Waste," resulting from industrial, commercial, and agricultural operations and from community activities.

1.3.3 Sanitary Wastes

Wastes characterized as domestic sanitary sewage.

1.3.4 Rubbish

Combustible and noncombustible wastes such as non-recyclable paper and cardboard, crockery, and bones.

Recyclables includes: clean paper, cardboard, glass, plastics (No. 1 & 2), metal, and cans.

Non-recyclable paper and cardboard are defined as material that has become wet or contaminated with food or other residue that render it un-acceptable for recycling.

Treated wood/lumber is defined as wood that has been stained or treated to prevent rot, or composite wood products such as OSB, pressboard furniture, etc.

Untreated wood is defined as lumber, trees, stumps, limbs, tops, and shrubs.

1.3.5 Debris

Combustible and noncombustible wastes such as ashes and waste materials resulting from construction or maintenance and repair work, (excluding organic matter) leaves, pine straw, grass and shrub clippings.

1.3.6 Chemical Wastes

This includes salts, acids, alkalies, herbicides, pesticides, and organic chemicals.

1.3.7 Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.3.8 Hazardous Waste

Hazardous substances as defined in 40 CFR 261 or as defined by applicable State and local regulations.

1.3.9 Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

1.3.10 Landscape Features

Trees, plants, shrubs, and ground cover.

1.3.11 Lead Acid Battery Electrolyte

The electrolyte substance (liquid medium) within a battery cell.

1.3.12 Oily Waste

Petroleum products and bituminous materials.

1.3.13 Class I Ozone Depleting Substance (ODS)

Class I and Class II ODS are defined in Sections 602 (a and b) of The Clean Air Act.

1.4 SUBMITTALS

Submit the following in accordance with Section 01 33 00, "Submittal Procedures."

SD-01 Preconstruction Submittals

Environmental Protection Plan

SD-06 Test Reports

Abrasive blasting

waste materials - if applicable

Submit a copy of an approved laboratory analysis of materials collected as a result from abrasive blasting operations before disposing of waste materials.

SD-11 Closeout Submittals

Solid waste disposal permit

Disposal permit for hazardous waste

Environmental training documentation

Permit to transport hazardous waste

Hazardous waste certification

Environmental Plan Review

Annual Report of Products Containing Recovered Materials

1.4.1 Solid Waste Disposal Permit

Submit one copy of a State permit or license for the solid waste disposal facility. If the contract permits the use of the Base Landfill, request a letter from the Contracting Officer authorizing permission to dump on base; submit the letter to the Base Landfill Office. In lieu of the letter a copy of the contract must be delivered to the Landfill Office for review.

1.4.2 Disposal Permit for Hazardous Waste

Submit a copy of the applicable EPA and State permits, manifests, or licenses for transportation, treatment, storage, and disposal of hazardous waste by permitted facilities.

1.4.3 Permit to Transport Hazardous Waste

Submit one copy of the EPA or State permit license, or regulation for the transporter who will ship the hazardous waste to the permitted Treatment, Storage, and Disposal (TSD) facility.

1.4.4 Hazardous Waste Certification

Submit written certification that hazardous waste turned in for disposal was generated on Government property and is identified, packaged, and labeled in accordance with 40 CFR 261, 40 CFR 262, and 40 CFR 263.

1.5 ENVIRONMENTAL PROTECTION REGULATORY REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined in this Section. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, State, and local regulations pertaining to the environment, including but not limited to water, air, solid waste, and noise pollution.

1.6 ENVIRONMENTAL PROTECTION PLAN

1.6.1 Contents of environmental Protection Plan

- a. Include any hazardous materials (HM) planned for use on the station shall be included in the station HM Tracking Program maintained by the Safety Department. To assist this effort, submit a list (including quantities) of HM to be brought to the station and copies of the corresponding material safety data sheets (MSDS). Submit this list to the Contracting Officer. At project completion, remove any hazardous material brought onto the station. Account for the quantity of HM brought to the station, the quantity used or expended during the job, and the leftover quantity which (1) may have additional useful life as a HM and shall be removed by the Contractor, or (2) may be a hazardous waste, which shall then be removed as specified herein.

- b. The Environmental Protection Plan shall list and quantify any Hazardous Waste (HW) to be generated during the project.
- c. In accordance with station regulations, store HW near the point of generation up to a total quantity of **one quart** of hazardous waste or **55 gallons** of hazardous waste. Move any volume exceeding these quantities to a HW permitted area within 3 days. Prior to generation of HW, contact Contracting Officer for labeling requirements for storage of hazardous wastes.
- d. In accordance with station regulations, substitute materials as necessary to reduce the generation of HW and include a statement to that effect in the Environmental Plan.
- e. Contact Contracting Officer for conditions in the area of the project which may be subject to special environmental procedures. Include this information in the Preconstruction Survey. Describe in the Environmental Protection Plan any permits required prior to working the area, and contingency plans in case an unexpected environmental condition is discovered.
- f. Obtain permits for handling HW, and deliver completed documents to Contracting Officer for review. File the documents with the appropriate agency, and complete disposal with the approval of Contracting Officer. Deliver correspondence with the State concerning the environmental permits and completed permits to Contracting Officer.

1.6.2 Environmental Protection Plan Format

The Environmental Protection Plan shall follow the following format:

ENVIRONMENTAL PROTECTION PLAN

Contractor Organization
Address and Phone Numbers

1. Hazardous materials to be brought onto the station
2. MSDS package
3. Employee training documentation
4. HW storage plan
5. HW to be generated
6. Preconstruction survey results
7. Permitting requirements identified

1.6.3 Environmental Plan Review

Fourteen days after the environmental protection meeting, submit the proposed environmental plan for further discussion, review, and approval.

1.7 ADMINISTRATIVE REQUIREMENTS

1.7.1 Licenses and Permits

Obtain licenses and permits pursuant to "FAR 52.236-7, Permits and Responsibilities" .

For permits obtained by the Contracting Officer, whether or not required by

the permit, perform inspections of the work in progress, and submit certifications to the applicable regulatory agency, via the Contracting Officer, that the work conforms to the contract and permit requirements. The inspections and certifications shall be provided through the services of a Professional Engineer, registered in the State where the work is being performed. As a part of the quality control plan, which is required to be submitted for approval by the quality control section, provide a subitem containing the name, P.E. registration number, address, and telephone number of the professional engineer(s) who will be performing the inspections and certifications for each permit listed above.

1.8 GENERAL ENVIRONMENTAL MANAGEMENT SYSTEM AND ENVIRONMENTAL AWARENESS

The Contractor shall familiarize himself with requirements of the attached "Marine Corps Base (MCB), Camp Lejeune, Contractor Environmental Guide."

1.9 CAMP LEJEUNE SANITARY LANDFILL INFORMATION SHEET

a. Contractors may ONLY use the Camp Lejeune Sanitary Landfill for the disposal of asbestos containing materials, building products with tightly adhered lead containing paint, non-contaminated clean dirt and clean gravel. The hours of operation are 0730-1530.

b. Delivery of acceptable materials (identified above) shall be by appointment only. Appointments made by phone at 910-451-5011 or 910-451-2946. ALL other contractor generated material shall be weighed through the Base Landfill scales before being removed from the Base. Contractors utilizing the base scales will require Contracting Officer assisted pre-registration with the Landfill Manager.

c. The Contracting Officer will register the contract via E-mail, with the base landfill. All haul vehicles will maintain a secure vehicle placard as a condition to utilize the scale. E-mail the contract information to the Landfill Clerk, including the name on the Prime Contractor, contract number, job name/description, completion date and whether or not any of the above materials will be delivered to the Landfill.

d. As of May 01 2014 the above supersedes any other statements/specifications pertaining to the delivery of materials to the Base Landfill.

PART 2 PRODUCTS

2.1 ANNUAL REPORT OF PRODUCTS CONTAINING RECOVERED MATERIALS

The Contractor shall submit data annually (by December 1) products used during the previous fiscal year (October 1 - September 30) as required by 6002 of the Solid Waste Disposal Act as amended by Resource Conservation and Recovery Act (RCRA). Report forms is attached to end of this section as "Appendix A."

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved

condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified. Conform to the state permitting requirements of the Clean Water Act.

3.1.1 Land Resources

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without Contracting Officer's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by Contracting Officer. Where such use of attach ropes, cables, or guys is authorized, the Contractor shall be responsible for any resultant damage.

3.1.1.1 Protection of Trees

Protect existing trees which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. By approved excavation, remove trees with 30 percent or more of their root systems destroyed. Removal of trees and the procedure for removal requires approval of the Contracting Officer.

3.1.1.2 Landscape Replacement

Remove trees and other landscape features scarred or damaged by equipment operations, and replace with equivalent, undamaged trees and landscape features. Obtain Contracting Officer's approval before removal or replacement.

3.1.1.3 Temporary Construction

Remove traces of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other signs of construction. Grade temporary roads, parking areas, and similar temporarily used areas to conform with surrounding contours.

3.1.2 Water Resources

3.1.2.1 Stream Crossings

The Contracting Officer's approval is required before any equipment will be permitted to ford live streams.

3.1.2.2 Oily Wastes

Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. Surround all temporary fuel oil or petroleum storage tanks with a temporary earth berm of sufficient size and strength to contain the contents of the tanks in the event of leakage or spillage.

3.1.3 Fish and Wildlife Resources

Do not disturb fish and wildlife. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as indicated or specified.

3.2 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Carefully protect in-place and report immediately to the Contracting Officer historical and archaeological items or human skeletal remains discovered in the course of work. Stop work in the immediate area of the discovery until directed by the Contracting Officer to resume work. The Government retains ownership and control over historical and archaeological resources.

3.3 NOISE

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives will not be permitted without written permission from the Contracting Officer, and then only during designated times.

3.4 RESTRICTIONS ON EQUIPMENT

3.4.1 Electromagnetic Interference Suppression

- a. Electric motors must comply with MIL-STD-461 relative to radiated and conducted electromagnetic interference. A test for electromagnetic interference will not be required for motors that are identical physically and electrically to those that have previously met the requirements of MIL-STD-461. An electromagnetic interference suppression test will not be required for electric motors without commutation or sliprings having no more than one starting contact and operated at 3,600 revolutions per minute or less.
- b. Equipment used by the Contractor shall comply with MIL-S-16165 for internal combustion engines and MIL-STD-461 for other devices capable of producing radiated or conducted interference.
- c. Conduct tests for electromagnetic interference on electric motors and Contractor's construction equipment in accordance with MIL-STD-461 and MIL-STD-462. Test location shall be reasonably free from radiated and conducted interference. Furnish testing equipment, instruments, and personnel for making the tests; a test location; and other necessary facilities.

3.4.2 Radio Transmitter Restrictions

Conform to the restrictions and procedures for the use of radio transmitting equipment, as directed. Do not use transmitters without prior approval.

3.5 CONTROL AND DISPOSAL OF SOLID WASTES

Pick up and separate solid wastes, and place in covered containers which are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean.

3.5.1 Disposal of Metal Paint Cans

All metal paint cans shall be taken to Building 962 for recycling. The cans shall be empty and completely dry. The cans shall be triple rinsed and stenciled "Triple Rinsed" prior to turn in. The Contractor shall give

the Government 72 hours advance notice prior to turn-in. Contractor is responsible for rinsing, stenciling, crushing, and depositing in Government owned receptable, located at Building 962.

3.5.2 Disposal of Rubbish and Debris, **Metal and Dirt**

Rubbish and debris shall be taken off-base for disposal, unless specifically directed otherwise below:

Metals shall be taken to the DRMO disposal area at Lot 203, as specified.

CONSTRUCTION DEBRIS DISPOSAL - BASE
SANITARY LANDFILL EXAMPLE/GENERAL
INFORMATION FOR DEPOSIT IN THE LANDFILL

CATEGORY

Recyclable Cardboard	Breakdown corrugated cardboard boxes and deliver to the Base Recycling Center located at Building 982. If base personnel rejects the cardboard, take cardboard for off-base disposal.
Recyclable Wood Pallets	Deliver usable pallets to the Base Recycling Center located at Building 982. If base personnel rejects the pellets, take pallets for off-base disposal.
Organic Matter	Organic matter will not be accepted at the landfill.
*****	Weigh each and every vehicle delivering debris upon entrance and exit. Cover debris.
<hr/>	
Metals	Metals will not be accepted at the landfill. Remove metals from each and every category before delivery to landfill. (Example: Remove hardware from doors and windows.) Dispose of metal construction debris at Defense Reutilization Maintenance Office (DRMO). Aluminum, brass, copper, lead, other metal, electrical wiring, cable (cut in 3 foot or less sections)
Treated & Untreated Wood/Lumber	Treated & untreated wood/lumber will not be accepted at the landfill.
Concrete	Concrete will not be accepted at the landfill.
Construction Material	Construction material should be managed and placed in a designated area. Area shall be kept clean of debris and all material removed at the end of the project.
Solid Waste	Separate each category of solid waste to enhance recycling.
Hazardous Material	This project involves demolition, renovation/repair and/or construction activities; therefore, hazardous material (such as paints, solvents, thinners, adhesives, etc) may be used during the execution of this project. The contractor

CONSTRUCTION DEBRIS DISPOSAL - BASE
SANITARY LANDFILL EXAMPLE/GENERAL
INFORMATION FOR DEPOSIT IN THE LANDFILL

CATEGORY

will be required to appropriately manage the hazardous material and provide secondary containment.

Solid Waste Report

All solid waste generated and recycled will be weighed. Contractor will report the amount of solid waste disposed and recycled at the end of the project to EMD's Solid Waste Manager or the Pollution Prevention Manager via the OICC.

Tonnage information for all materials delivered to the Base Landfill is available at the Landfill Office. Submit a written request to the Landfill Manager, specifying the desired information.

Recycling of
Construction Debris

Recyclable material (ex. Scrap metal/aluminum/brass/copper/lead, and other metal) may be recycled through Defense Utilization Maintenance Office) DRMO using a 1348-1a with the following information (Proceeds for the sale of recyclable material are to go to the Qualified Recycling financial account - 17F3875 27RM 00767001 0 000027 3c 000000 06700198004). For additional information contact the Base Recycling Coordinator 910-451-4214.

Electrical Equipment

Before demolition or removal of electrical equipment from the Base - Contractor shall contact Base High Voltage Shop Supervisor at (910) 451-2790, to allow for first right of refusal of electrical equipment such as: ATS, transformers, and generators. Electrical equipment will not be accepted at landfill.

3.5.3 Disposal Off-Base

- a. Provide 24-hour advance written notice to the Contracting Office of Contractor's intention to dispose of off base.
- b. Disposal at sites or landfills not holding a valid State of North Carolina permit is specifically prohibited. The prohibition also applies to sites where a permit may have been applied for but not yet obtained.
- c. Off-base disposal of construction debris outside the parameters of this paragraph at site without State permits and/or not in accordance with regulatory requirements shall require the Contractor at his own expense to remove, transport and relocate the debris to a State approved site. The Contractor shall also be required to pay any fines, penalties, or fees related to the illegal disposal of construction debris

3.6 CONTROL AND DISPOSAL OF HAZARDOUS WASTE

3.6.1 Hazardous Waste Generation

Handle generated hazardous waste in accordance with 40 CFR 262.

3.6.2 Hazardous Waste Disposal

Dispose of hazardous waste in accordance with Federal, State, and local regulations, especially 40 CFR 263, 40 CFR 264, and 40 CFR 265. Removal of hazardous waste from Government property shall not occur without prior notification and coordination with the Contracting officer. Transport hazardous waste by a permitted, licensed, or registered hazardous waste transported to a TSD facility. Hazardous waste shall be properly identified, packaged, and labeled in accordance with 49 CFR 172. Provide completed manifest for hazardous waste disposed of off-site to the Contracting Officer within 7 days of disposal. Hazardous waste shall not be brought onto the station.

3.6.3 Hazardous Waste Storage

Store hazardous waste in containers in accordance with 49 CFR 178. Identify hazardous waste in accordance with 40 CFR 261 and 40 CFR 262. Identify hazardous waste generated within the confines of the station by the station's EPA generator identification number.

3.6.4 Spills of Oil and Hazardous Materials

Take precautions to prevent spills of oil and hazardous material. In the event of a spill, immediately notify the Contracting Officer. Spill response shall be in accordance with 40 CFR 300 and applicable State regulations.

3.6.5 Lead-Acid Batteries

Dispose of lead-acid batteries that are not damaged or leaking at a State-approved battery recycle or at a permitted or interim status

hazardous waste TSD facility. For lead-acid batteries that are leaking or have cracked casings, dispose of the electrolyte solution using one of the following alternatives:

- a. An industrial waste water treatment plant, if available and approved by the Contracting Officer for disposing of lead-acid battery electrolyte.
- b. Dispose of the lead-acid battery electrolyte at a permitted or interim status hazardous waste TSD facility.

The management and disposal of waste lead-acid batteries and electrolyte shall comply with requirements for management and disposal of hazardous wastes.

3.6.6 Mercury Control

Prior to starting work, remove thermostats, switches, and other components that contain mercury. Upon removal, place items containing mercury in doubled polyethylene bags, label, and turn over to the Contracting Officer for disposal.

3.6.7 Petroleum Products

Protect against spills and evaporation during fueling and lubrication of equipment and motor vehicles. Dispose of lubricants to be discarded and excess oil.

3.7 DUST CONTROL

Keep dust down at all times, including nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not shake bags of cement, concrete mortar, or plaster unnecessarily.

3.7.1 Abrasive Blasting

3.7.1.1 Blasting Operations

The use of silica sand is prohibited in abrasive blasting.

Provide tarpaulin drop cloths and windscreens to enclose abrasive blasting operations to confine and collect dust, abrasive agent, paint chips, and other debris in accordance with the requirements specified. Perform work involving removal of hazardous material in accordance with [29 CFR 1910](#).

3.7.1.2 Disposal Requirements

Collect dust, abrasive, paint, and other debris resulting from abrasive blasting operations and store in [55 gallon](#) drums with watertight lids. Take a representative sample of this material, and test for EP toxicity with respect to lead, chromium, and cadmium content. The sampling and testing shall be performed in accordance with [40 CFR 261](#). Handle debris resulting from the abrasive blasting operations as a hazardous material, and dispose of in accordance with [40 CFR 262](#), [40 CFR 263](#), [40 CFR 264](#), and

40 CFR 265. Transport hazardous material by a transporter licensed and permitted for transportation of hazardous materials. Dispose of hazardous material in an EPA-approved and permitted facility specifically designated for hazardous waste disposal.

3.8 QUARANTINE FOR IMPORTED FIRE ANT (4/82)

Onslow, Jones, and Cartaret Counties and portions of Duplin and Craven Counties have been declared a generally infested area by the United States Department of Agriculture (USDA) for the imported fire ant. Compliance with the quarantine regulations established by this authority as set forth in USDA Publication 301.81 of 31 December 1992, is required for operations hereunder. Pertinent requirements of the quarantine for materials originating on the Camp Lejeune reservation, the Marine Corps Air Station (Helicopter), New River and the Marine Corps Air Station, Cherry Point, which are to be transported outside Onslow County or adjacent suppression areas, include the following:

- a. Certification is required for the following articles and they shall not be moved from the reservation to any point outside Onslow County and adjacent designated areas unless accompanied by a valid inspection certificate issued by an Officer of the Plant Protection and Quarantine Program (PPQ) of the U.S. Department of Agriculture.
 - (1) Bulk soil
 - (2) Used mechanized soil-moving equipment. (Used mechanized soil-moving equipment is exempt if cleaned of loose noncompacted soil).
 - (3) Other products, articles, or means of conveyances, if it is determined by an inspector that they present a hazard of transporting spread of the imported fire ant and the person in possession thereof has been so notified.
- b. Authorization for movement of equipment outside the imported fire and regulated area shall be obtained from USDA, Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ), Box 28, Goldsboro, North Carolina, 27533-0028, Attn: Mr. William Scroggins or Mr. Frank Best, telephone (919) 735-1941. If Mr. Scroggins or Mr. Best are not available, contact Mr. Jim Kelley at (910) 815-4667, the supervisor's office in Wilmington. Requests for inspection shall be made sufficiently in advance of the date of movement to permit arrangements for the services of authorized inspectors. The equipment shall be prepared and assembled so that it may be readily inspected. Soil on or attached to equipment, supplies, and materials shall be removed by washing with water or such other means as necessary to accomplish complete removal. Resulting spoil shall be wasted as necessary and as directed.

ANNUAL REPORT OF PRODUCTS CONTAINING RECOVERED MATERIALS

Contractor shall submit data annually (By 1 December) for the following products used during the previous fiscal year (1 October - 30 September) as required by 6002 of the Solid Waste Disposal Act as ammended by Resource Conservation and Recovery Act (RCRA):

Contract Number: _____ Fiscal Year: _____

<u>MATERIAL</u>	<u>UNIT</u>	<u>QUANTITY (CRM)</u>	<u>TOTAL QUANTITY</u>
<u>A. Insulation</u>			
1. Loose fill	Ft3		
2. Blanket or batt	Ft2		
3. Board	Ft2		
4. Spray-in-place	m3		
5. Other			
<u>B. Cement and Concrete</u>			
	yd3		
<u>C. Paper and Paper Products</u>			
1. Copy Paper	Box		
2. Printing/Writing Paper	Box		
3. Corrugated and fiberboard boxes	Box		
4. Folding boxboard and cartons	Box		
5. Stationary, office papers, envelopes, and computer paper	\$Amt		
6. Toilet tissue, paper towels, fasial tissue, paper napkins, doilies and industrial wipes	\$Amt		
7. Brown papers and coarse papers	Box		
8. Other			

APPENDIX A

MATERIAL	DEFINITION
1. Quantity (CRM)	Quantity used containing recovered materials.
2. Total Quantity	Quantity used containing recovered materials plus quantity used not containing recovered materials.
3. Unit	Ft3 (cubic feet), Ft2 (square feet), m3 (cubic meters), yd3 (cubic yards), box (number of boxes used), \$ Amt (dollar value of material used)
4. Loose-Fill Insulation	Includes, but is not limited to..."cellulose fiber, mineral fibers (fiberglass and rock wool), vermiculite, and perlite.
5. Blanket or Batt Insulation	Includes, but is not limited to... "mineral fibers (fiberglass and rock wool)."
6. Board Insulation	This category refers to sheathing, roof decking, and wood panel insulation. It includes, but is not limited to... "cellulose fiber fiberboard, perlite composite board, polyurethane, polyisocyanurate, polystyrene, phenolics, and composites."
7. Spray-in-place Insulation	Includes, but is not limited to... "foam-in-place polyurethane and polyisocyanurate, and spray-on cellulose."
8. Cement or Concrete Containing Recovered Materials, Cement, or Concrete Containing Fly Ash	
9. Copy Paper	This item refers to... "any grade of paper suitable for copying by the xerographic method."
10. Printing & Writing Paper	This item refers to... "paper designed for printing, other than newsprint, such as offset or book paper," and... "paper suitable for pen and ink, pencil, typewriter or printing."

APPENDIX A

<u>MATERIAL</u>	<u>DEFINITION</u>
11. Corrugated & Fiberboard Boxes	Corrugated boxes refer to... "boxes made of corrugated paperboard, which, in turn, is made from a fluted corrugating medium pasted to two flat sheets of paperboard (linerboard)." Fiber or fiberboard boxes refer to... "boxes made from containerboard, either solid fiber or corrugated paperboard (general term); or boxes made from solid paperboard of the same material throughout."
12. Folding Boxes and Cartons	This item refers to... "a paperboard suitable for the manufacture of folding cartons."
13. Stationery, Office Papers, Envelopes, and Manifold Business Forms	This item is considered self-explanatory, however, if questions arise refer to 40 CFR 250.4 for definitions of any of these items.
14. Toilet Tissue, Paper Towels, Facial Tissue, Paper Napkins, Doilies, and Industrial Wipes	This item is considered self-explanatory, however, if questions arise refer to 40 CFR 250.4 for definitions of any of these items.
15. Brown Papers, and Coarse Papers	Brown papers refer to... "papers usually made from unbleached kraft pulp and used for bags, sacks, wrapping paper, and so forth." Coarse papers refer to... "papers used for industrial purposes, as distinguished from those used for cultural or sanitary purposes."
16. Other	Any other type of paper not included in any of the above categories.

APPENDIX A

-- End of Section --

SECTION 01 78 00

CLOSEOUT SUBMITTALS

04/22

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM E1971 (2005; R 2011) Standard Guide for Stewardship for the Cleaning of Commercial and Institutional Buildings

GREEN SEAL (GS)

GS-37 (2017) Cleaning Products for Industrial and Institutional Use

U.S. DEPARTMENT OF DEFENSE (DOD)

FC 1-300-09N (2014; with Change 4) Navy and Marine Corps Design Procedures

UFC 1-300-08 (2009, with Change 2) Criteria for Transfer and Acceptance of DoD Real Property

1.2 DEFINITIONS

1.2.1 As-Built Drawings

As-built drawings are developed and maintained by the Contractor and depict actual conditions, including deviations from the Contract Documents. These deviations and additions may result from coordination required by, but not limited to: contract modifications; official responses to Contractor submitted Requests for Information; direction from the Contracting Officer; designs which are the responsibility of the Contractor, and differing site conditions. Maintain the as-builts throughout construction as red-lined hard copies on site. These files serve as the basis for the creation of the record drawings.

1.2.2 Record Drawings

The record drawings are the final compilation of actual conditions reflected in the as-built drawings.

1.2.3 Final Approved Shop Drawings

The final approved shop drawings are all approved submittals created during the execution of the project. All submittals, regardless of the approving authority, shall be submitted. Include the submittal cover sheet and all relevant attachments for all submittals. Each submittal shall be saved as a

separate file or have its own unique folder if a submittal includes attachments of multiple files or file types. Include a PDF copy of the completed submittal register.

1.3 SOURCE DRAWING FILES

Request the full set of electronic drawings, in the source format, for Record Drawing preparation, after award and at least 30 days prior to required use.

1.3.1 Terms and Conditions

Data contained on these electronic files must not be used for any purpose other than as a convenience in the preparation of construction data for the referenced project. Any other use or reuse shall be at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor must make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Government, its agents or sub consultants that may arise out of or in connection with the use of these electronic files. The Contractor must, to the fullest extent permitted by law, indemnify and hold the Government harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic CAD drawing files are not construction documents. Differences may exist between the CAD files and the corresponding construction documents. The Government makes no representation regarding the accuracy or completeness of the electronic CAD files, nor does it make representation to the compatibility of these files with the Contractor hardware or software. In the event that a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished Source drawing files, the signed and sealed construction documents govern. The Contractor is responsible for determining if any conflict exists. Use of these Source Drawing files does not relieve the Contractor of duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors for the project. If the Contractor uses, duplicates or modifies these electronic source drawing files for use in producing construction data related to this contract, remove all previous indicia of ownership (seals, logos, signatures, initials and dates).

1.4 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Warranty Management Plan

Warranty Tags

Final Cleaning

Spare Parts Data

SD-08 Manufacturer's Instructions

Posted Instructions

SD-10 Operation and Maintenance Data

Operation and Maintenance Manuals; G

SD-11 Closeout Submittals

As-Built Drawings; G

Record Drawings; G

As-Built Record of Equipment and Materials

Final Approved Shop Drawings

Construction Contract Specifications

Certification of EPA Designated Items; G

Certification Of USDA Designated Items; G

Interim DD FORM 1354; G

Checklist for DD FORM 1354; G

High Performance and Sustainable Building (HPSB) Checklist; G

1.5 SPARE PARTS DATA

Submit two copies of the Spare Parts Data list.

- a. Indicate manufacturer's name, part number, nomenclature, and stock level required for maintenance and repair. List those items that may be standard to the normal maintenance of the system.

1.6 WARRANTY MANAGEMENT

1.6.1 Warranty Management Plan

Develop a warranty management plan which contains information relevant to FAR 52.246-21 Warranty of Construction. At least 30 days before the planned pre-warranty conference, submit one set of the warranty management plan. Include within the warranty management plan all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan must be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below must include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase must be submitted to the Contracting Officer for approval prior to each monthly pay estimate.

Assemble approved information in a binder and turn over two (2) copies of the binder to the Government upon submittal of the initial Test & Balance (TAB) Report or no later than ninety (90) days prior to contract completion date (CCD), whichever is sooner. The contents of the binder will be verified onsite for accuracy and completeness of contents by a representative of MCBCL Public Works. Upon site approval of the binder,

one copy will be distributed to the PWD representative and one copy will be stored in the O&M cabinet in the mechanical room.

The construction warranty period will begin on the date of project acceptance and continue for the full product warranty period. A joint 4 month and 9 month warranty inspection will be conducted, measured from time of acceptance, by the Contractor, Contracting Officer and the Customer Representative. Include within the warranty management plan, but not limited to, the following:

- a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.
- b. Furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.
- c. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.
- d. **As-Built Record of Equipment and Materials** list for each warranted equipment, item, feature of construction or system indicating:
 - (1) Name of item.
 - (2) Model and serial numbers.
 - (3) Location where installed.
 - (4) Name and phone numbers of manufacturers or suppliers.
 - (5) Names, addresses and telephone numbers of sources of spare parts.
 - (6) Warranties and terms of warranty. Include one-year overall warranty of construction, including the starting date of warranty of construction. Items which have extended warranties must be indicated with separate warranty expiration dates.
 - (7) Cross-reference to warranty certificates as applicable.
 - (8) Starting point and duration of warranty period.
 - (9) Summary of maintenance procedures required to continue the warranty in force.
 - (10) Cross-reference to specific pertinent Operation and Maintenance manuals.
 - (11) Organization, names and phone numbers of persons to call for warranty service.
 - (12) Typical response time and repair time expected for various warranted equipment.
- e. The plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.
- f. Procedure and status of tagging of all equipment covered by extended warranties.
- g. Copies of **instructions** to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.6.2 Performance Bond

The Performance Bond must remain effective throughout the construction

period .

- a. In the event the Contractor fails to commence and diligently pursue any construction warranty work required, the Contracting Officer will have the work performed by others, and after completion of the work, will charge the remaining construction warranty funds of expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.
- b. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Contracting Officer will have the right to recoup expenses from the bonding company.
- c. Following oral or written notification of required construction warranty repair work, respond in a timely manner. Written verification will follow oral instructions. Failure to respond will be cause for the Contracting Officer to proceed against the Contractor.

1.6.3 Pre-Warranty Conference

Prior to contract completion, and at a time designated by the Contracting Officer, meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification of construction warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty will be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue construction warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, be continuously available, and be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

1.6.4 Warranty Tags

At the time of installation, tag each warranted item with a durable, oil and water resistant tag approved by the Contracting Officer. Attach each tag with a copper wire and spray with a silicone waterproof coating. Also, submit two record copies of the warranty tags showing the layout and design. The date of acceptance and the QC signature must remain blank until the project is accepted for beneficial occupancy. Show the following information on the tag.

Type of product/material	
Model number	
Serial number	
Contract number	

Warranty period from/to	
Inspector's signature	
Construction Contractor	
Address	
Telephone number	
Warranty contact	
Address	
Telephone number	
Warranty response time priority code	
WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.	

PART 2 PRODUCTS

2.1 CERTIFICATION OF EPA DESIGNATED ITEMS

Submit the [Certification of EPA Designated Items](#) as required by FAR 52.223-9 Estimate of Percentage of Recovered Material Content for EPA Designated Items and FAR 52-223-17 Affirmative Procurement of EPA designated items in Service and Construction Contracts.. Include on the certification form the following information: project name, project number, Contractor name, license number, Contractor address, and certification. The certification will read as follows and be signed and dated by the Contractor. "I hereby certify the information provided herein is accurate and that the requisition/procurement of all materials listed on this form comply with current EPA standards for recycled/recovered materials content. The following exemptions may apply to the non-procurement of recycled/recovered content materials:

- 1) The product does not meet appropriate performance standards;
- 2) The product is not available within a reasonable time frame;
- 3) The product is not available competitively (from two or more sources);
- 4) The product is only available at an unreasonable price (compared with a comparable non-recycled content product)."

2.2 CERTIFICATION OF USDA DESIGNATED ITEMS

Submit the [Certification of USDA Designated Items](#) as required by FAR 52-223-1 Bio-based Product Certifications and FAR 52.223-2 Affirmative Procurement of Biobased Products Under Service and Construction Contracts. Include on the certification form the following information: project name, project number, Contractor name, license number, Contractor address, and

certification. The certification will read as follows and be signed and dated by the Contractor. "I hereby certify the information provided herein is accurate and that the requisition/procurement of all materials listed on this form comply with current USDA standards for biobased materials content. The following exemptions may apply to the non-procurement of biobased content materials:

- 1) The product does not meet appropriate performance standards;
- 2) The product is not available within a reasonable time frame;
- 3) The product is not available competitively (from two or more sources);
- 4) The product is only available at an unreasonable price (compared with a comparable bio-based content product)."

PART 3 EXECUTION

3.1 AS-BUILT DRAWINGS

Provide and maintain two black line print copies of the PDF contract drawings for As-Built Drawings. At a minimum of 30 days prior to Beneficial Occupancy Date (BOD), certify both sets of as-built drawings as correct, sign, and submit the As-Built Drawings for Contracting Officer approval.

3.1.1 Markup Guidelines

Make comments and markup the drawings complete without reference to letters, memos, or materials that are not part of the As-Built drawing. Show what was changed, how it was changed, where item(s) were relocated and change related details. These working as-built markup prints must be neat, legible and accurate as follows:

- a. Use base colors of red, green, and blue. Color code for changes as follows:
 - (1) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes.
 - (2) Deletions (Red) - Over-strike deleted graphic items (lines), lettering in notes and leaders.
 - (3) Additions (Green) - Added items, lettering in notes and leaders.
- b. Provide a legend if colors other than the "base" colors of red, green, and blue are used.
- c. Add and denote any additional equipment or material facilities, service lines, incorporated under As-Built Revisions if not already shown in legend.
- d. Use frequent written explanations on markup drawings to describe changes. Do not totally rely on graphic means to convey the revision.
- e. Use legible lettering and precise and clear digital values when marking prints. Clarify ambiguities concerning the nature and application of change involved.
- f. Wherever a revision is made, also make changes to related section

views, details, legend, profiles, plans and elevation views, schedules, notes and call out designations, and mark accordingly to avoid conflicting data on all other sheets.

- g. For deletions, cross out all features, data and captions that relate to that revision.
- h. For changes on small-scale drawings and in restricted areas, provide large-scale inserts, with leaders to the applicable location.
- i. Indicate one of the following when attaching a print or sketch to a markup print:
 - 1) Add an entire drawing to contract drawings
 - 2) Change the contract drawing to show
 - 3) Provided for reference only to further detail the initial design.
- j. Incorporate all shop and fabrication drawings into the markup drawings.

3.1.2 As-Built Drawings Content

Show on the as-built drawings, but not limited to, the following information:

- a. The actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, show by offset dimensions to two permanently fixed surface features the end of each run including each change in direction on the record drawings. Locate valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Also record the average depth below the surface of each run.
- b. The location and dimensions of any changes within the building structure.
- c. Layout and schematic drawings of electrical circuits and piping.
- d. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.
- e. Changes in details of design or additional information obtained from working drawings specified to be prepared or furnished by the Contractor; including but not limited to shop drawings, fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment, and foundations.
- f. The topography, invert elevations and grades of drainage installed or affected as part of the project construction.
- g. Changes or Revisions which result from the final inspection.
- h. Where contract drawings or specifications present options, show only the option selected for construction on the working as-built markup drawings.

- i. If borrow material for this project is from sources on Government property, or if Government property is used as a spoil area, furnish a contour map of the final borrow pit/spoil area elevations.
- j. Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler, and irrigation systems.
- k. Changes in location of equipment and architectural features.
- j. Modifications (include within change order price the cost to change working as-built markup drawings to reflect modifications) and compliance with FC 1-300-09N procedures.
- l. Actual location of anchors, construction and control joints, etc., in concrete.
- m. Unusual or uncharted obstructions that are encountered in the contract work area during construction.
- n. Location, extent, thickness, and size of stone protection particularly where it will be normally submerged by water.

3.2 RECORD DRAWINGS

Prepare and provide Record Drawings in accordance with FC 1-300-09N. Provide 2 copies of Record Drawings on two separate CDs or DVDs 30 days after BOD.

3.3 OPERATION AND MAINTENANCE MANUALS

Provide project operation and maintenance manuals as specified in Section 01 78 23 OPERATION AND MAINTENANCE MANUALS DATA. Provide four electronic copies of the Operation and Maintenance Manual files. Submit to the Contracting Officer for approval within 60 calendar days of the Beneficial Occupancy Date (BOD). Update and resubmit files for final approval at BOD. Provide one hard copy and place in cabinet in main mechanical room.

3.4 CLEANUP

Provide final cleaning in accordance with ASTM E1971 and submit two copies of the listing of completed final clean-up items. Leave premises "broom clean." Comply with GS-37 for general purpose cleaning and bathroom cleaning. Use only nonhazardous cleaning materials, including natural cleaning materials, in the final cleanup. Clean interior and exterior glass surfaces exposed to view; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces; vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition. Replace filters of operating equipment and comply with the Indoor Air Quality (IAQ) Management Plan. Clean debris from roofs, gutters, downspouts and drainage systems. Sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish and construction facilities from the site. Recycle, salvage, and return construction and demolition waste from project in accordance with Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS, and 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

3.5 REAL PROPERTY RECORD

Near the completion of Project, but a minimum of 60 days prior to final acceptance of the work, complete, update draft DD FORM 1354 attached to this section, and submit an accounting of all installed property with Interim DD FORM 1354. Include any additional assets, improvements, and alterations from the Draft DD FORM 1354. Contact the Contracting Officer for any project specific information necessary to complete the DD FORM 1354. Refer to UFC 1-300-08 for instruction on completing the DD FORM 1354. Attach the Real Property receiving Component's completed High Performance and Sustainable Building (HPSB) Checklist for each applicable building to the completed DD 1354, in accordance with Section 01 33 29 SUSTAINABILITY REPORTING. For convenience, a blank fillable PDF DD FORM 1354 may be obtained at the following link:

www.esd.whs.mil/Portals/54/Documents/DD/forms/dd/dd1354.pdf

Submit the completed Checklist for DD FORM 1354 of Installed Building Equipment items. Attach this list to the updated DD FORM 1354.

3.6 FINAL APPROVED SHOP DRAWINGS

Provide 2 copies of Final Approved Shop Drawings on two separate CDs or DVDs within 30 days after BOD.

-- End of Section --

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

04/22

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM E1971 (2005; R 2011) Standard Guide for Stewardship for the Cleaning of Commercial and Institutional Buildings

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-10 Operation and Maintenance Data

O&M Database ; G

Training Plan ; G

Training Outline ; G

Training Content ; G

SD-11 Closeout Submittals

Training Video Recording ; G

Validation of Training Completion ; G

1.3 OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data for the provided equipment, product, or system, defining the importance of system interactions, troubleshooting, and long-term preventive operation and maintenance. Compile, prepare, and aggregate O&M data to include clarifying and updating the original sequences of operation to as-built conditions. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this section and Section 01 33 00 SUBMITTAL PROCEDURES.

1.3.1 Package Quality

Documents must be fully legible. Operation and Maintenance data must be consistent with the manufacturer's standard brochures, schematics, printed instructions, general operating procedures, and safety precautions.

1.3.2 Package Content

Provide data package content in accordance with paragraph SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES. Comply with the data package requirements specified in the individual technical sections, including the content of the packages and addressing each product, component, and system designated for data package submission, except as follows. Use Data Package 3 for commissioned items without a specified data package requirement in the individual technical sections. Provide a Data Package 3 instead of Data Package 1 or 2, as specified in the individual technical section, for items that are commissioned.

1.3.3 Changes to Submittals

Provide manufacturer-originated changes or revisions to submitted data if a component of an item is so affected subsequent to acceptance of the O&M Data. Submit changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data within 30 calendar days of the notification of this change requirement.

1.3.4 Commissioning Authority Review and Approval

Submit the commissioned systems and equipment submittals to the Government's Commissioning Authority (CxA) to review for completeness and applicability. Obtain validation from the CxA that the systems and equipment provided meet the requirements of the Contract documents and design intent, particularly as they relate to functionality, energy performance, water performance, maintainability, sustainability, system cost, indoor environmental quality, and local environmental impacts. The CxA communicates deficiencies to the Contracting Officer. Submit the O&M manuals to the Contracting Officer upon a successful review of the corrections, and with the CxA recommendation for approval and acceptance of these O&M manuals. This work is in addition to the normal review procedures for O&M data.

1.4 OPERATION AND MAINTENANCE MANUAL FILE FORMAT

Assemble data packages into electronic Operation and Maintenance Manuals. Assemble each manual into a composite electronically indexed file using the most current version of Adobe Acrobat or similar software capable of producing PDF file format. Provide compact disks (CD) or data digital versatile disk (DVD) as appropriate, so that each one contains operation, maintenance and record files, project record documents, and training videos. Include a complete electronically linked operation and maintenance directory. Place one hard copy of each in cabinet in main mechanical room.

1.4.1 Organization

Bookmark Product and Drawing Information documents using the current version of CSI Masterformat numbering system, and arrange submittals using the specification sections as a structure. Use CSI Masterformat and UFGS numbers along with descriptive bookmarked titles that explain the content of the information that is being bookmarked.

1.4.2 CD or DVD Label and Disk Holder or Case

Provide the following information on the disk label and disk holder or case:

- a. Building Number

- b. Project Title
- c. Activity and Location
- d. Construction Contract Number
- e. Prepared For: (Contracting Agency)
- f. Prepared By: (Name, title, phone number and email address)
- g. Include the disk content on the disk label
- h. Date
- i. Virus scanning program used

1.5 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

The following are a detailed description of the data package items listed in paragraph SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES.

1.5.1 Operating Instructions

Provide specific instructions, procedures, and illustrations for the following phases of operation for the installed model and features of each system:

1.5.1.1 Safety Precautions and Hazards

List personnel hazards and equipment or product safety precautions for operating conditions. List all residual hazards identified in the Activity Hazard Analysis provided under Section 01 35 26 GOVERNMENT SAFETY REQUIREMENTS. Provide recommended safeguards for each identified hazard.

1.5.1.2 Operator Prestart

Provide procedures required to install, set up, and prepare each system for use.

1.5.1.3 Startup, Shutdown, and Post-Shutdown Procedures

Provide narrative description for Startup, Shutdown and Post-shutdown operating procedures including the control sequence for each procedure.

1.5.1.4 Normal Operations

Provide Control Diagrams with data to explain operation and control of systems and specific equipment. Provide narrative description of Normal Operating Procedures.

1.5.1.5 Emergency Operations

Provide Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Provide Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of utility systems including required valve positions, valve locations and

zones or portions of systems controlled.

1.5.1.6 Operator Service Requirements

Provide instructions for services to be performed by the operator such as lubrication, adjustment, inspection, and recording gauge readings.

1.5.1.7 Environmental Conditions

Provide a list of Environmental Conditions (temperature, humidity, and other relevant data) that are best suited for the operation of each product, component or system. Describe conditions under which the item equipment should not be allowed to run.

1.5.1.8 Operating Log

Provide forms, sample logs, and instructions for maintaining necessary operating records.

1.5.1.9 Additional Requirements for HVAC Control Systems

Provide Data Package 5 and the following for control systems:

- a. Narrative description on how to perform and apply functions, features, modes, and other operations, including unoccupied operation, seasonal changeover, manual operation, and alarms. Include detailed technical manual for programming and customizing control loops and algorithms.
- b. Full as-built sequence of operations.
- c. Copies of checkout tests and calibrations performed by the Contractor (not Cx tests).
- d. Full points list. Provide a listing of rooms with the following information for each room:
 - (1) Floor
 - (2) Room number
 - (3) Room name
 - (4) Air handler unit ID
 - (5) Reference drawing number
 - (6) Air terminal unit tag ID
 - (7) Heating or cooling valve tag ID
 - (8) Minimum cfm
 - (9) Maximum cfm
- e. Full print out of all schedules and set points after testing and acceptance of the system.
- f. Full as-built print out of software program.

- g. Marking of system sensors and thermostats on the as-built floor plan and mechanical drawings with their control system designations.

1.5.2 Preventive Maintenance

Provide the following information for preventive and scheduled maintenance to minimize repairs for the installed model and features of each system. Include potential environmental and indoor air quality impacts of recommended maintenance procedures and materials.

1.5.2.1 Lubrication Data

Include the following preventive maintenance lubrication data, in addition to instructions for lubrication required under paragraph OPERATOR SERVICE REQUIREMENTS:

- a. A table showing recommended lubricants for specific temperature ranges and applications.
- b. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities.
- c. A Lubrication Schedule showing service interval frequency.

1.5.2.2 Preventive Maintenance Plan, Schedule, and Procedures

Provide manufacturer's schedule for routine preventive maintenance, inspections, condition monitoring (predictive tests) and adjustments required to ensure proper and economical operation and to minimize repairs. Provide instructions stating when the systems should be retested. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

- a. Define the anticipated time required to perform each of each test (work-hours), test apparatus, number of personnel identified by responsibility, and a testing validation procedure permitting the record operation capability requirements within the schedule. Provide a remarks column for the testing validation procedure referencing operating limits of time, pressure, temperature, volume, voltage, current, acceleration, velocity, alignment, calibration, adjustments, cleaning, or special system notes. Delineate procedures for preventive maintenance, inspection, adjustment, lubrication and cleaning necessary to minimize repairs.
- b. Repair requirements must inform operators how to check out, troubleshoot, repair, and replace components of the system. Include electrical and mechanical schematics and diagrams and diagnostic techniques necessary to enable operation and troubleshooting of the system after acceptance.

1.5.2.3 Cleaning Recommendations

Provide environmentally preferable cleaning recommendations in accordance with ASTM E1971.

1.5.3 Repair

Provide manufacturer's recommended procedures and instructions for correcting problems and making repairs for the installed model and features of each system. Include potential environmental and indoor air quality impacts of recommended maintenance procedures and materials.

1.5.3.1 Troubleshooting Guides and Diagnostic Techniques

Provide step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

1.5.3.2 Wiring Diagrams and Control Diagrams

Provide point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to actual installation configuration and numbering.

1.5.3.3 Repair Procedures

Provide instructions and a list of tools required to repair or restore the product or equipment to proper condition or operating standards.

1.5.3.4 Removal and Replacement Instructions

Provide step-by-step procedures and a list of required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Use a combination of text and illustrations.

1.5.3.5 Spare Parts and Supply Lists

Provide lists of spare parts and supplies required for repair to ensure continued service or operation without unreasonable delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead-time to obtain.

1.5.3.6 Repair Work-Hours

Provide manufacturer's projection of repair work-hours including requirements by type of craft. Identify, and tabulate separately, repair that requires the equipment manufacturer to complete or to participate.

1.5.4 Appendices

Provide information required below and information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment. Include the following:

1.5.4.1 Product Submittal Data

Provide a copy of SD-03 Product Data submittals documented with the

required approval.

1.5.4.2 Certificates

Provide a copy of SD-07 Certificates submittals documented with the required approval.

1.5.4.3 Manufacturer's Instructions

Provide a copy of SD-08 Manufacturer's Instructions submittals documented with the required approval.

1.5.4.4 O&M Submittal Data

Provide a copy of SD-10 Operation and Maintenance Data submittals documented with the required approval.

1.5.4.5 Parts Identification

Provide identification and coverage for the parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing must show the index, reference, or key number that will cross-reference the illustrated part to the listed part. Group the parts shown in the listings by components, assemblies, and subassemblies in accordance with the manufacturer's standard practice. Parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as typically shown in a master parts catalog.

1.5.4.6 Warranty Information

List and explain the various warranties and clearly identify the servicing and technical precautions prescribed by the manufacturers or contract documents in order to keep warranties in force. Include warranty information for primary components of the system. Provide copies of warranties required by Section 01 78 00 CLOSEOUT SUBMITTALS.

1.5.4.7 Extended Warranty Information

List all warranties for products, equipment, components, and sub-components whose duration exceeds one year. For each warranty listed, indicate the applicable specification section, duration, start date, end date, and the point of contact for warranty fulfillment. Also, list or reference the specific operation and maintenance procedures that must be performed to keep the warranty valid. Provide copies of warranties required by Section 01 78 00 CLOSEOUT SUBMITTALS.

1.5.4.8 Personnel Training Requirements

Provide information available from the manufacturers that is needed for use in training designated personnel to properly operate and maintain the equipment and systems.

1.5.4.9 Testing Equipment and Special Tool Information

Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components. Provide final set points.

1.5.4.10 Testing and Performance Data

Include completed prefunctional checklists, functional performance test forms, and monitoring reports. Include recommended schedule for retesting and blank test forms. Provide final set points.

1.5.4.11 Field Test Reports

Provide a copy of Field Test Reports (SD-06) submittals documented with the required approval.

1.5.4.12 Contractor Information

Provide a list that includes the name, address, and telephone number of the General Contractor and each Subcontractor who installed the product or equipment, or system. For each item, also provide the name address and telephone number of the manufacturer's representative and service organization that can provide replacements most convenient to the project site. Provide the name, address, and telephone number of the product, equipment, and system manufacturers.

1.6 SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES

Provide the O&M data packages specified in individual technical sections. The information required in each type of data package follows:

1.6.1 Data Package 1

- a. Safety precautions and hazards
- b. Cleaning recommendations
- c. Maintenance and repair procedures
- d. Warranty information
- e. Extended warranty information
- f. Contractor information
- g. Spare parts and supply list

1.6.2 Data Package 2

- a. Safety precautions and hazards
- b. Normal operations
- c. Environmental conditions
- d. Lubrication data
- e. Preventive maintenance plan, schedule, and procedures

- f. Cleaning recommendations
- g. Maintenance and repair procedures
- h. Removal and replacement instructions
- i. Spare parts and supply list
- j. Parts identification
- k. Warranty information
- l. Extended warranty information
- m. Contractor information

1.6.3 Data Package 3

- a. Safety precautions and hazards
- b. Operator prestart
- c. Startup, shutdown, and post-shutdown procedures
- d. Normal operations
- e. Emergency operations
- f. Environmental conditions
- g. Operating log
- h. Lubrication data
- i. Preventive maintenance plan, schedule, and procedures
- j. Cleaning recommendations
- k. Troubleshooting guides and diagnostic techniques
- l. Wiring diagrams and control diagrams
- m. Maintenance and repair procedures
- n. Removal and replacement instructions
- o. Spare parts and supply list
- p. Product submittal data
- q. O&M submittal data
- r. Parts identification
- s. Warranty information
- t. Extended warranty information

- u. Testing equipment and special tool information
- v. Testing and performance data
- w. Contractor information
- x. Field test reports

1.6.4 Data Package 4

- a. Safety precautions and hazards
- b. Operator prestart
- c. Startup, shutdown, and post-shutdown procedures
- d. Normal operations
- e. Emergency operations
- f. Operator service requirements
- g. Environmental conditions
- h. Operating log
- i. Lubrication data
- j. Preventive maintenance plan, schedule, and procedures
- k. Cleaning recommendations
- l. Troubleshooting guides and diagnostic techniques
- m. Wiring diagrams and control diagrams
- n. Repair procedures
- o. Removal and replacement instructions
- p. Spare parts and supply list
- q. Repair work-hours
- r. Product submittal data
- s. O&M submittal data
- t. Parts identification
- u. Warranty information
- v. Extended warranty information
- w. Personnel training requirements
- x. Testing equipment and special tool information
- y. Testing and performance data

z. Contractor information

aa. Field test reports

1.6.5 Data Package 5

a. Safety precautions and hazards

b. Operator prestart

c. Start-up, shutdown, and post-shutdown procedures

d. Normal operations

e. Environmental conditions

f. Preventive maintenance plan, schedule, and procedures

g. Troubleshooting guides and diagnostic techniques

h. Wiring and control diagrams

i. Maintenance and repair procedures

j. Removal and replacement instructions

k. Spare parts and supply list

l. Product submittal data

m. Manufacturer's instructions

n. O&M submittal data

o. Parts identification

p. Testing equipment and special tool information

q. Warranty information

r. Extended warranty information

s. Testing and performance data

t. Contractor information

u. Field test reports

v. Additional requirements for HVAC control systems

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 TRAINING

Prior to acceptance of the facility by the Contracting Officer for Beneficial Occupancy, provide comprehensive training for the systems and equipment specified in the technical specifications. The training must be targeted for the [Facilities Management Specialist](#), building maintenance personnel, and applicable building occupants. Instructors must be well-versed in the particular systems that they are presenting. Address aspects of the [eOMSI Manual, as submitted in Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION \(eOMSI\)](#). Training must include classroom or field lectures based on the system operating requirements. The location of classroom training requires approval by the Contracting Officer.

3.1.1 Training Plan

Submit a written training plan to the Contracting Officer for approval at least 60 calendar days prior to the scheduled training. [Training plan must be approved by the Government's Commissioning Authority \(CxA\) prior to forwarding to the Contracting Officer.](#) Also, coordinate the training schedule with the Contracting Officer and CxA. Include within the plan the following elements:

- a. Equipment included in training
- b. Intended audience
- c. Location of training
- d. Dates of training
- e. Objectives
- f. Outline of the information to be presented and subjects covered including description
- g. Start and finish times and duration of training on each subject
- h. Methods (e.g. classroom lecture, video, site walk-through, actual operational demonstrations, written handouts)
- i. Instructor names and instructor qualifications for each subject
- j. List of texts and other materials to be furnished by the Contractor that are required to support training
- k. Description of proposed software to be used for video recording of training sessions.

3.1.2 Training Content

The core of this training must be based on manufacturer's recommendations and the operation and maintenance information. The CxA is responsible for overseeing and approving the content and adequacy of the training. [Provide a brief summary of the FACILITY INFORMATION manual, and a more detailed presentation of the PRODUCT AND DRAWING MANUAL, specified in Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT](#)

INFORMATION (eOMSI). Spend 95 percent of the instruction time during the presentation on the OPERATION AND MAINTENANCE DATA. Include the following for each system training presentation:

- a. Start-up, normal operation, shutdown, unoccupied operation, seasonal changeover, manual operation, controls set-up and programming, troubleshooting, and alarms.
- b. Relevant health and safety issues.
- c. Discussion of how the feature or system is environmentally responsive. Advise adjustments and optimizing methods for energy conservation.
- d. Design intent.
- e. Use of O&M Manual Files.
- f. Review of control drawings and schematics.
- g. Interactions with other systems.
- h. Special maintenance and replacement sources.
- i. Tenant interaction issues.

3.1.3 Training Outline

Provide the eOMSI Manual files as specified in Section 01 78 24.00 20, FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI), and a written course outline listing the major and minor topics to be discussed by the instructor on each day of the course to each trainee in the course. Provide the course outline 14 calendar days prior to the training.

3.1.4 Training Video Recording

Record classroom training session(s) on video. Provide to the Contracting Officer two copies of the training session(s) in DVD video recording format. Capture within the recording, in video and audio, the instructors' training presentations including question and answer periods with the attendees. The recording camera(s) must be attended by a person during the recording sessions to assure proper size of exhibits and projections during the recording are visible and readable when viewed as training.

3.1.5 Unresolved Questions from Attendees

If, at the end of the training course, there are questions from attendees that remain unresolved, the instructor must send the answers, in writing, to the Contracting Officer for transmittal to the attendees, and the training video must be modified to include the appropriate clarifications.

3.1.6 Validation of Training Completion

Ensure that each attendee at each training session signs a class roster daily to confirm Government participation in the training. At the completion of training, submit a signed validation letter that includes a sample record of training for reporting what systems were included in the training, who provided the training, when and where the training was performed, and copies of the signed class rosters. Provide two copies of

the validation to the Contracting Officer, and one copy to the Operation and Maintenance Manual Preparer for inclusion into the Manual's documentation.

3.1.7 Quality Control Coordination

Coordinate this training with the CxA in accordance with [Section 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL FOR DESIGN-BUILD](#).

-- End of Section --

SECTION 01 78 24.00 20

FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI)
04/22

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. DEPARTMENT OF DEFENSE (DOD)

FC 1-300-09N

(2014; with Change 4) Navy and Marine
Corps Design Procedures

1.2 DEFINITIONS AND ABBREVIATIONS

1.2.1 eOMSI Manual

Manual (PDF file) provided by the Contractor that includes, but is not limited to, product information, a facility description with photos, and a list of primary facility systems.

1.2.2 eOMSI Facility Data Workbook (FDW)

A Microsoft Excel file containing required facility information populated by the Contractor.

1.2.3 Systems

The words "system", "systems", and "equipment", when used in this document refer to as-built systems and equipment.

1.2.4 Computer Assisted Design and Drafting (CADD)

Electronic Computer Assisted Design and Drafting graphic software program that is used to create facility design contract documents and Record Drawings.

1.2.5 KTR

An abbreviation for "Contractor."

1.3 EOMSI MEETINGS

1.3.1

Be prepared to discuss the following during this meeting:

- a. eOMSI Manual and eOMSI Facility Data Workbook Development Meetings
- b. Processes and methods of gathering eOMSI Manual and eOMSI Facility Data Workbook information during construction.
- c. The eOMSI Submittals schedule. Include the eOMSI submittal schedule on

the Baseline Construction Schedule in accordance with Section
01 32 17.00 20 COST-LOADED NETWORK ANALYSIS SCHEDULE (NAS).

- d. Electronic eOMSI Facility Data Workbook file for Contractor's use and completion.

1.3.2 eOMSI Manual and Facility Data Workbook Coordination Meeting

Facilitate a meeting after the Post-Award Kickoff Meeting prior to the submission of the eOMSI Progress Submittal. Meeting attendance must include the Contractor's eOMSI Manual and Facility Data Workbook Preparer, and Quality Control Manager, the Commissioning Authority (CxA), and the Government's Design Manager (DM), Contracting Officer's Representative, and NAVFAC Public Works (PW) Facilities Management Division (FMD). Include any Mechanical, Electrical, and Fire Protection Sub-Contractors.

The purpose of this meeting is to reach a mutual understanding of the scope of work concerning the contract requirements for eOMSI and coordinate the efforts necessary by both the Government and Contractor to ensure an accurate collection, preparation and timely Government review of eOMSI.

1.3.3 Facility Turnover Meeting

Include eOMSI in NAVFAC Red Zone (NRZ) facility turnover meetings as specified in Section 01 30 00, ADMINISTRATIVE REQUIREMENTS.

1.4 SUBMITTAL SCHEDULING

1.4.1 eOMSI, Progress Submittal

Submit the Progress submittal when construction is approximately 50 percent complete, to the Contracting Officer for approval. Provide eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel). Include the elements and portions of system construction completed up to this point.

The purpose of this submittal is to verify progress is in accordance with contract requirements as discussed during the eOMSI Coordination Meeting. Field verify a portion of the eOMSI information in accordance with paragraph FIELD VERIFICATION.

1.4.2 eOMSI, Prefinal Submittal

Submit the 100 percent submittal of the eOMSI Prefinal Submittal to the Contracting Officer for approval within 90 calendar days of the Beneficial Occupancy Date (BOD). This submittal must provide a complete, working document that can be used to operate and maintain the facility. Any portion of the submittal that is incomplete or inaccurate requires the entire submittal to be returned for correction. Any discrepancies discovered during the Government's review of eOMSI Progress submittal must be corrected prior to the Prefinal submission.

The eOMSI Prefinal Submittal must include eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel).

1.4.3 eOMSI, Final Submittal

Submit completed eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel). The Final submittal is due at BOD. Any discrepancies discovered during the Government's review of the Prefinal

eOMSI submittal, including the Field Verification, must be corrected prior to the Final eOMSI submission.

1.5 UNITS OF MEASURE

Provide eOMSI utilizing the **English Inch-Pound** units of measure.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section **01 33 29 SUSTAINABILITY REPORTING**. Submit the following in accordance with Section **01 33 00 SUBMITTAL PROCEDURES**:

SD-11 Closeout Submittals

eOMSI, Progress Submittal; G

eOMSI, Prefinal Submittal; G

eOMSI, Final Submittal; G

PART 2 PRODUCTS

2.1 eOMSI FILES FORMAT

Format eOMSI manuals and files in accordance with Section **01 78 23 OPERATION AND MAINTENANCE DATA**. Include a complete electronically linked operation and maintenance directory. Provide four electronic copies of the eOMSI Manuals to the Contracting Officer for approval.

Provide four (4) copies of eOMSI Manuals and Files on compact disks (CD) or data digital versatile disk (DVD) disks. Scan eOMSI Manuals and Files for viruses, malware, and spyware using a commercially available scanning program that is routinely updated to identify and remove current virus threats. Provide one hard copy of eOMSI Manuals and Files in the cabinet in the main mechanical room.

2.1.1 eOMSI Manual Organization

Organize the eOMSI Manuals into two parts: 1) Product and Drawing Information, and 2) Facility Information. Bookmark the PDF files for easy access to the information.

- a. Bookmark Product and Drawing Information documents in accordance with Section **01 78 23 OPERATION AND MAINTENANCE DATA**.
- b. Bookmark Facility Information to at least one level lower than the major system.

2.1.2 eOMSI Manual CD or DVD Disk Label and Disk Holder or Case

Provide disks in accordance with Section **01 78 23 OPERATION AND MAINTENANCE DATA**. At a minimum, provide four (4) disks and place one hard copy of all O&M Data in the cabinet in the main mechanical room.

2.2 eOMSI MANUAL

2.2.1 Product and Drawing Information

Provide an organized record of the facility products, materials, equipment, and minimum information necessary to operate the facility. Provide Product and Drawing Information for the systems in the final constructed facility.

2.2.1.1 O&M Data

As a minimum, provide the approved O&M Data, submitted in the technical specification sections, in accordance with paragraph TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES in Section 01 78 23 OPERATION AND MAINTENANCE DATA.

2.2.1.2 Record Drawings

Provide an electronic, PDF copy of the Record Drawings, prepared in accordance with FC 1-300-09N and 01 78 00 CLOSEOUT SUBMITTALS. Bookmark drawings using the sheet title and sheet number.

Include Record Drawings as part of the Red-Zone specified in Section 01 30 00 ADMINISTRATIVE REQUIREMENTS.

2.2.1.3 Utility Record Drawings

Using Record Source Drawings, show and document details of the actual installation of the utility systems; annotate and highlight the eOMSI information. Provide Utility Record Drawings in PDF format. Provide the following drawings at a large enough scale to differentiate designated isolation units from surrounding valves and switches.

- a. Utility Schematic Diagrams - Provide a one line schematic diagram for each utility system such as power, water, wastewater, and gas/fuel. Schematic diagram must show from the point where the utility line is connected to the mainline up to the five-foot connection point to the facility. Indicate location or area designation for route of transmission or distribution lines; locations of duct banks, manholes/handholes or poles; isolation units such as valves and switches; and utility facilities such as pump stations, lift stations, and substations.
- b. Enlarged Connection and Cutoff Plans - Provide enlarged floor plans that provide information between the five foot utility connection point and where utilities connect to facility distribution. Enlarge floor plans/ elevations of the rooms where the utility enters the building and indicate on these plans locations of the main interior and exterior connection and cutoff points for the utilities. Also enlarge floor plans / elevations of the rooms where equipment is located. Include enough information to enable someone unfamiliar with the facility to locate the connection and cutoff points. Indicate designations such as room number, panel number, circuit breaker, or valve number, of each utility and equipment connection and cutoff point, and what that connection and cutoff point controls.

2.2.2 Facility Information

Provide the following in Facility Information:

2.2.2.1 General Facility and System Description

Describe the function of the facility. Detail the overall dimensions of the facility, number of floors, foundation type, expected number of occupants, and facility Category Code. List and generally describe all the facility systems and any special building features (for example, HVAC Controls, Sprinkler Systems, Cranes, Elevators, and Generators). Include photographs marked up and labeled to show key operating components and the overall facility appearance.

2.2.2.2 Floor Plans

Provide uncluttered, legible 11 by 17 inches floor plans. Include room numbers, type or function of spaces, and overall facility dimensions on the floor plans. Do not include items such as construction instructions, references, or frame numbers.

2.2.2.3 Floor Coverings, Wall Surfaces, and Ceiling Surfaces

Provide a table that lists by room number (including hallways and common spaces), the type, and area of finish, manufacturer's product name, identifying number, and color. Include a facility summary of the total area for each type of space and floor, wall, or ceiling finish in the table.

2.2.2.4 Windows

Provide a table that lists by room number (including hallways and common spaces), the type of window, window size, number of each size and type, special features, manufacturer's product name, identifying number, and color. The table must include a facility summary of the total number for each type and size of window.

2.2.2.5 Roofing

Provide the total area of each type of roof surface and system. Provide the name of the roofing product and system; manufacturer's, supplier's, and installer's names, addresses, and phone numbers; manufacturer's product name, identifying number, and color. For each type of roof, provide a recommended inspection, maintenance and repair schedule that details checkpoints, frequencies, and prohibited practices. List roof structural load limits.

2.2.2.6 HVAC Filters

Provide a table that lists the quantity, type, size, and location of each HVAC filter, manufacturer's product name, and identifying number.

2.2.2.7 Plumbing Fixtures

Provide a table that lists by room number, the number and type of plumbing and bathroom plumbing fixtures (for example, sinks, water closets, urinals, showers and drinking fountains).

2.2.2.8 Lighting Fixtures

Provide a table that lists by room number (including hallways and common spaces), the type of lighting fixture, ballast, number of lighting fixtures, type of lamps and number of lamps, and the manufacturer's product name and the identifying number. The table must include a facility summary

of the total number of fixtures of each type and number of lamps of each type.

2.2.2.9 Equipment Listing

Provide a table that lists the major equipment shown on the design equipment schedules. Show the item descriptions, locations, model numbers; and the names, addresses, and telephone numbers of the manufacturers, suppliers, contractors, and subcontractors.

2.2.2.10 System Flow Diagrams

Provide a flow diagram indicating system liquid, air or gas flow during normal operations. Integrate the system components into the diagram. A compilation of non-integrated, flow diagrams for the individual system components are not acceptable.

2.2.2.11 Valve List

Provide a list of all valves associated with the system. Show valve type, identification number, function, location and normal operating position.

2.2.2.12 Riser Diagrams

Provide riser diagrams and settings of equipment.

2.3 eOMSI FACILITY DATA WORKBOOK

An initial, pre-edited draft of the Model & Facility Data Matrix tab within the eOMSI Facility Data Workbook is attached to this section. The Government will provide this eOMSI Facility Data Workbook electronically to the Contractor upon award. Add, delete, and update Mastersystems, Systems, and Subsystems that may have changed during construction, or any items that may have been omitted or missed during design, at no additional cost to the Government. Complete the KTR Facility Data File tab based on the selection of Mastersystems, Systems, and Subsystems installed. The following tabs are included in the eOMSI Facility Data File Workbook and serve the purpose stated:

- a. Instructions Tab: Instructions for completing Model & Facility Data Matrix Tab and KTR Facility Data File Tab. If a discrepancy exists between what is required in this section and the Workbook, the instructions within the workbook take precedence.
- b. Model & Facility Data Matrix Tab: - The Matrix lists Required Facility Asset Fields for each SYSTEM and SUBSYSTEM. The Designer of Record selects SYSTEMS and SUBSYSTEMS that are within the project scope, which the Contractor needs to include and populate in KTR Facility Data File tab. The "Required Facility Asset Field Position Numbers," one through thirty-five, are pre-populated, and are not editable.
- c. Required Facility Asset Fields Tab: Defines the 35 Required Facility Asset Field Position Numbers used in Model and Facility Data Matrix and KTR Facility Data File tabs.
- d. KTR Sample Facility Data File Tab: Sample KTR eOMSI facility data file. This tab provides an example of the mandatory fields of equipment installed by the Contractor, and populated in the KTR eOMSI Facility Data File Tab, along with their descriptions.

- e. KTR Facility Data File Tab: Required eOMSI facility data file deliverable provided to the Government. Provide a separate and unique new row for each facility component or piece of equipment installed. Coordinate with the Government's Contracting Officer's Representative and NAVFAC PW FMD for specific facility component naming convention.

PART 3 EXECUTION

3.1 FIELD VERIFICATION

Field verify eOMSI Maximo and Warranty Binder information with Contractor and Government personnel. Include the following personnel in this meeting: Contractor's eOMSI Manual and Facility Data Workbook Preparer and Quality Control Manager, Commissioning Authority, and the Government's Contracting Officer's Representative and NAVFAC PW FMD. Request, and provide, an eOMSI Field Verification Meeting no sooner than 14 calendar days after submission of the Progress eOMSI submittal, and another, no sooner than 14 calendar days after submission of the Prefinal eOMSI submittal. During this meeting, the Government and Contractor will verify that the eOMSI Facility Data Workbook is complete and accurate.

Field verify that at least 5 Subsystems under each of the Mastersystems are accurate, for a total of 25 Subsystems. For each of these items, verify that the required facility asset field, as defined in the "Model & Facility Data Matrix" tab, contains the specified data and it is accurate (i.e. item description, manufacturer, model no., serial no.). 100 percent accuracy of eOMSI Maximo and Warranty Binder information is required for successful field verification. If data discrepancies are discovered amongst the 25 Subsystems verified, resubmit an updated eOMSI FDW, and request a make-up field verification meeting. At the make-up field verification meeting 25 new Subsystems and their associated required facility asset fields will be field verified; the 25 new Subsystems must be 100% accurate. Any discrepancies discovered must be corrected prior to next eOMSI Facility Data Workbook Submittal.

- (1) D10 - CONVEYING
- (2) D20 - PLUMBING
- (3) D30 - HVAC
- (4) D40 - FIRE PROTECTION
- (5) D50 - ELECTRICAL

3.2 eOMSI TRAINING

Provide training on eOMSI Manuals and Facility Data Workbook in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

-- End of Section --

SECTION 01 78 30.00 22

GIS DATA DELIVERABLES

5/22

PART 1 GENERAL

1.1 OBJECTIVE

The primary objective of this section is to provide detailed specifications for collection and delivery of geospatial data commonly referred to as Geographic Information System (GIS) data. Additionally, this section shall provide guidance to ensure that all GIS data delivered is compatible and will add value to the Marine Corps Base (MCB) Camp Lejeune Installation Geospatial Information and Services (IGI&S) GEODatabase.

Failure to comply with the specifications outlined in this document will result in non-acceptance of data deliverables.

1.1.1 Point of Contact for MCB Camp Lejeune

The Points of Contact (POC) for assistance in preparation of GIS deliverables are as follows:

Resident Officer In Charge Of Construction Construction Manager (CM) 1005 Michael Drive Camp Lejeune, NC 28547-2521 (910) 451-2581 (Main Number)	Public Works Assigned GIS Data Manager 1005 Michael Road Camp Lejeune, NC 28547-2521 (910) 000-0000 ext 0000 TBD Lejeune_PWD_GIS@usmc.mil
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1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

GIS Data Deliverables; G

1.3 GOVERNMENT GEOSPATIAL DATA, SCHEMA, AND DOMAINS

Geo-spatial data is based on the Spatial Data Standards for Facilities, Infrastructure and Environment (SDSFIE) GEOFidelis Data Model. Because there are recurring business driven modifications and or adaptations within the SDSFIE schema, provide all spatial and non-spatial data in the most current version by the USMC utilized at the time of delivery.

1.3.1 Data Request Package Requirements

Request the existing GIS Data, Schema and Domain Properties by utilizing a Data Request Package (DRP), which is supplied via the government sponsor.

- a. The DRP should be submitted prior to the start of data collection efforts and again 4 weeks prior to data delivery to ensure that GIS

data has been created and will be delivered utilizing the most up to date SDSFIE schema.

1.3.1.1 Instruction for submitting a Geospatial DRP to the CM or the Project Manager (PM)

- a. Each CM or PM will provide DRP forms upon request from the contractor. Complete the request and include all information as instructed on the data request form.
- b. Request only GIS data, schema and domains for feature classes that are relevant to the contract and within the boundary of project area and provide justifications as necessary.
- c. Attach the Scope of Work, which is defined by this GIS DATA DELIVERABLES section for each DPR submittal.
- d. Return the DRP to the CM or PM for sponsorship and submittal as instructed with required attachments and justifications for submittal.
- e. Incomplete forms may delay receipt of the requested GIS data.
- f. GIS data deliverables do not supplement or replace as-built drawings.

1.3.2 Data Collection and Utility Locates

- a. Utilize the most up to date SDSFIE Schema when delivering GIS Data.
- b. Prior to GPS efforts all underground utilities are to be located utilizing a utility locating service in order to obtain and verify accurate feature locations.
- c. Actual conditions in the field always supersede drawings. Locate and field verify all features to ensure location is correctly recorded.
- d. Data will be created to represent the real world, for example, water, sewer, and transportations systems will be connected. All segments will be created from source to sink in the direction of flow.
- e. Research may be required to collect data. Verification of existing data which is located [in the Technical Records in the Public Works Department at 1005 Michael Street, MCB Camp Lejeune](#).
- f. Infrastructure data, as identified in paragraph "ATTRIBUTE DATA COLLECTION AND GPS REQUIREMENTS FOR SPECIFIC FEATURES" may be collected utilizing Sub-Foot or better GPS data collection methods.
- g. Utility data, as identified in paragraph "ATTRIBUTE DATA COLLECTION AND GPS REQUIREMENTS FOR SPECIFIC FEATURES" will be collected utilizing Survey Grade GPS data collection methods.

1.3.3 Attribute Data Requirements

- a. All attributes will be populated in accordance with paragraph ATTRIBUTE DATA COLLECTION AND GPS REQUIREMENTS FOR SPECIFIC FEATURES and will be obtained via contract specifications, plans and record drawings.
- b. Demolished / Removed Real Property data will be captured, attributed and delivered in the Disposal feature classes which include Disposal

Facility Area, Disposal Facility Line and Disposal Facility Point.

- c. Demolished / Removed UTILITY data will be captured, attributed and delivered by creating a new feature class which will consists of adding DEMO to the feature's naming convention for each feature, such as, but not limited to the following examples; DEMO.WastUtilNode_SPump (point), DEMO.Feat_SwRetentionBasinArea, (polygon), and DEMO.WastUtilSegment (polyline)
 1. The Contractor will be responsible for properly delivering demolished features with the current attributes associated with the feature and additionally updating the new contract number, date of demolition, and optional status.
- d. Spatial and non-spatial data may be copied from existing data, with the exception of specific attributes. Potable water wells are an exception to this rule and shall remain in the feature class and attributed as Removed or AIP.
- e. Abandoned In Place (AIP) utility lines will be located and updated in the current feature data set and be attributed as AIP as required.

1.3.4 GIS Topology Rules for Geospatial Data

All data must be created using GIS topology rules for polygons, points and lines, such as, but not limited to the following examples:

- a. Utility and transportation systems will be created from source to sink.
- b. All utilities shall be drawn in the direction of flow with no breaks in polyline except for fittings, manholes and other features nodes within the feature Dataset.
- c. All utility or infrastructure system data, which is, but is not limited to, transportation system and electrical, water, thermal distribution, and wastewater collection, etc., will be created using GIS spatial connectivity rules which specify that vertex, edge and endpoints be snapped to features within the system.
- d. All polygons will be closed without slivers and be topologically correct.
- e. All polylines will be topologically correct, and should be connected to avoid undershoots, overshoots and dangles and will cross only if they share a point in common, at least one of which is not an endpoint.
- f. For all Polygons, Polylines and points rules; please reference illustrating topology rules in ArcGIS at www.esri.com.

1.3.5 Global Positioning System (GPS) Data Collection

Utilize field survey GPS data collected by means of non-recreational GPS equipment

- a. Only bench marks included in the [North Carolina](#) Geodetic Survey Base Station Network are to be used for GPS data collection.
- b. Mission planning is essential. Utilize the best Position Dilution of Precision (PDOP) values for data accuracy.

- c. Mission planning for GPS collection should be conducted when positional dilution of precision (PDOP) value is 4 or less.
- d. Spatial accuracy requirements
 - 1. Survey and Sub-Foot GPS grade data collection requirements are as follows:
 - i. Sub-Foot requirements:
 - 1) All points shall be within plus or minus 12 inches
 - 2) 95 percent accuracy rate for all points.
 - ii. Survey Grade requirements:
 - 1) All points shall be within plus or minus 1 centimeter
 - 2) 98 percent accuracy rate for all points
- e. Make every effort to capture feature locations without using Offsets. All Offsets will be noted in the Final Report for each feature. Deliver report in PDF format.
 - 1. Resubmittal of data will be required if PDOP planning was not observed per this specification.

1.3.6 Coordinate System Requirements

The data must be collected in the following Spatial Reference / Coordinate System for each feature for all MCB Camp Lejeune and surrounding bases:

- 1. Transverse Mercator (UTM) Zone 18N
 - a. GRS 1980 spheroid
 - b. North American Datum 1983 (NAD83) horizontal datum
 - c. North American Vertical Datum 1988 (NAVD88) vertical datum.
- 2. Domain precision of 1000 which will result in a database accuracy of 1/1000 m

1.3.7 Formats and Version Guidelines

All data deliverables shall be presented in the following formats and/or versions.

- a. GIS data will be provided in an ArcGIS 10.8 or higher if a higher version is being used by the Government at the time of this project. Verify the ArcGIS version, via the CM or PM at the commencement of this contract.
- b. Microsoft Windows 10 operating system, unless otherwise approved by the Government.
- c. All reports and maps will be delivered as a hard copy and in a searchable Adobe Portable Document Format (PDF).

1.3.8 GIS Deliverable Submittal Requirements

All GIS Submittals will be submitted to the CM or PM and then analyzed by Government GIS personnel prior to final approval. Failure to comply with the specifications outlined in this document will result in non-acceptance of GIS data deliverables.

- a. Prior to any spatial and non-spatial development, provide the Government with a technical approach document, in PDF format, for review and approval. The Technical Approach document will describe in detail the Contractor's technical approach for developing GIS data to include utility locating, collecting, and attributing all GIS data.
- b. Provide a GIS deliverable at the end of each phase and at each Beneficial Occupancy Date (BOD) when contracted efforts, studies or construction are delivered in phases.
- c. To ensure specifications compliance and quality a preliminary GIS deliverable shall be provided for review when 25 percent of the data has been collected and updated according to this specification.
- d. Deliver digital geographic maps, GPS collection files and related data. All working text and documents and personal geodatabase will be included for review in the draft and final delivery of data in PDF format.
- e. Do not deliver blank unused schema or feature class data with no attributes. Deliver only data pertinent to the contract that adds value to the Geodatabase per this section.
- f. Do not include existing data in the GIS deliverable.
- g. Spatial and non-spatial GIS data must be provided in a format that does not require translation or pre/post processing.
- h. It is the Contractor's responsibility to perform quality assurance for all data and related materials required in this section prior to submitting product to the Government.
- i. The data will be analyzed for discrepancies in subject content, correct format in accordance with this statement of work, and compatibility with the existing SDSFIE Schema as well as all other specifications included in this section.

1.3.9 GIS Deliverable Package Requirements

All reports must be provided in pdf format. Each GIS deliverable must contain the following information and be in the most up to date SDSFIE format utilized by the USMC at the time of delivery.

- a. Digital and Paper Maps.
 1. All maps of **GIS DATA DELIVERABLES** will be ANSI C size.
 2. Each map will include a project title, contract number, scale, legend, standard symbology, attributes, i.e., building numbers, road names, etc.

3. All utilities will be labeled with direction of flow and segment line size.
 4. Provide paper copy and pdf copies of Maps for project.
 5. Provide a copy of all red-line construction drawings in pdf format.
 6. Communication data will be provided on a separate map.
- b. Provide all spatial and non-spatial data for review and acceptance.
 - c. Provide a report of specific procedures, list GPS equipment, software and versions that were utilized for the GPS data collection and creation of geospatial data.
 - d. Submit all GPS data files collected in the field.
 - e. Provide details on any offsets to include justification as to why offsets were utilized and which features and or points offsets were used.
 - f. Provide the source that was utilized for required attributes, such as redlines drawings and or field notes.
 - g. Summit DD form 1354, Transfer and Acceptance of DOD Real Property.
 - h. Provide a coversheet that specifies the CM / PM, contract number, contract title, point of contract for GIS related questions.
 - i. All geospatial data, pdf reports, spreadsheet, database files, reports, and maps will be submitted on a Digital Versatile Disc (DVD) platform.
 - j. Failure to comply will result in non - compliance and rejection of data.
- 1.3.10 Ownership

All digital files, hardcopy products, GPS raw data, source data acquired for this project, and related materials, including that furnished by the Government, will become the property of the Government and will not be issued, posted, distributed, or published by the Contractor. All documentation will be delivered in the final delivery.

Note: No endorsement of software or hardware is implied.

1.4 ATTRIBUTE DATA COLLECTION AND GPS REQUIREMENTS FOR REAL PROPERTY AND OTHER MISCELLANEOUS FEATURES THAT ARE NOT CONSIDERED A UTILITY

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required. Items in this section that require Survey Grade GPS are property identified in the feature class description.

1.4.1 Feature Dataset CLJN.CL.AccessControl

Locate, GPS and collect attribute data as specified for each feature listed with GPS accuracy as described in paragraph "Global Positioning System

(GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.AccessControlPoint (point) -The location of a feature, manned or unmanned, intended to selectively restrict entrance to or use of a place or other resource.

- a) accessControlType - The type of access control. Domain values, i.e., gate, tireShedder, barricade, etc.
- b) builtDate - The calendar date on which the original construction was completed for a facility.
- c) contractNumber - The contract number associated with the feature.
- d) facilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) gatePurposeType - Purpose that the gate exists and functions under. Domain values i.e., decorative, insternalSecurity, perimaterSecurity, recreation, residential, safely, vehicleBarrier, other, etc.
- h) gateTypeMaterial - The type of material of the gate. Domain values i.e., metal, steel, wood, wroughtiron, etc.
- i) isBaseEntryPoint -The Yes / No indicator of whether or not the location is an entry point for the military installation.
- j) isCheckpoint - Indicator if location is where officials check vehicle contents or personnel. Yes / No
- k) mediaId - gpsDataCollected
- l) MetadataId - metaID000072
- m) isManned - Yes / No
- n) isRangeAccess - Yes / No
- o) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.AccessControlLine (polyline) - The location of a feature, manned or unmanned, intended to selectively restrict entrance to or use of a place or other resource.

- a) accessControlTypeThe type of access control. Domain AccessControlType
- b) builtDate - The calendar date on which the original construction was completed for a facility.
- c) contractNumber- The contract number associated with the feature.
- d) facilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) gatePurposeType- - Purpose that the gate exists and functions under. Domain values i.e., decorative, insternalSecurity, perimaterSecurity, recreation, residential, safely,

- vehicleBarrier, other, etc.
- h) gateTypeMaterial - The type of material of the gate. Domain values i.e., metal, steel, wood, wroughtiron, etc.
- i) gateUse - The type of a gate (or similar route barrier) based on its intended use.
- j) mediaId - gpsDataCollected
- k) MetadataId - metaID000072
- l) isBaseEntryPoint - Yes / No
- m) isCheckpoint - Yes / No
- n) isManned - Yes / No
- o) isRangeAccess - Yes / No
- p) operationalStatus- The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.BarricadePoint (point) - The coordinated series of obstacles designed or employed to channel, direct, restrict, delay, or stop the movement of personnel, equipment, or an opposing force and to impose additional losses in personnel, time, and equipment on the opposing force. Barricades can exist naturally, be man-made, or a combination of both.

- a) accessControlType - The type of access control. Domain values, i.e., gate, tireShedder, barricade, etc.
- b) builtDate - The calendar date on which the original construction was completed for a facility.
- c) contractNumber - The contract number associated with the feature.
- d) facilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) barricadeType -The type of barricade. Domain values i.e., bollard, bollardPipe, pedestrianBarrier, other, etc.
- h) barricadeUse - The intended use of the barricade Domain values i.e., pedestrianTraffic, security, vehicularTraffic, etc.
- i) gatePurposeType - Purpose that the gate exists and functions under. Domain values i.e., internalSecurity, perimeterSecurity, recreation, residential, safety, vehicleBarrier, etc.
- j) gateTypeMaterial - The type of material of the gate. Domain values i.e., metal, steel, wood, wroughtiron, etc.
- k) gateUse - The type of a gate (or similar route barrier) based on its intended use.
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.BarricadeLine (polyline) - The coordinated series of obstacles designed or employed to channel, direct, restrict, delay, or stop the movement of personnel, equipment, or an opposing force and to impose additional losses in personnel, time, and equipment on the opposing force. Barricades can exist naturally, be man-made, or a combination of both.

- a) accessControlType - The type of access control. Domain

- values, i.e., gate, tireShedder, barricade, etc.
- b) barricadeUse - The intended use of the barricade Domain values i.e., pedestrianTraffic, security, vehicularTraffic, etc.
- c) builtDate - The calendar date on which the original construction was completed for a facility.
- d) contractNumber - The contract number associated with the feature.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) gatePurposeType - Purpose that the gate exists and functions under. Domain values i.e., internalSecurity,
- i) perimeterSecurity, recreation, residential, safety, vehicleBarrier, etc.
- j) mediald - gpsDataCollected
- k) 1) MetadataId - metaID000072
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) gateTypeMaterial - The type of material of the gate. Domain values i.e., metal, steel, wood, wroughtiron, etc.

1.4.2 Feature Dataset CLJN.CL.CivilWorks

Locate, GPS and collect attribute data as specified for each feature listed with GPS accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.PitOrQuarry (Polygon) - The location where material has been or is being excavated or extracted for use at another location.

- a) featureDescription - The narrative describing the feature. (Review current data for description)
- b) featureName - The common name of the feature. (Review current data for common name)
- c) contractNumber - The contract number associated with the feature.
- d) mediald - gpsDataCollected
- e) MetadataId -metaID000072
- f) isWaterFilled - Yes / No
- g) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

1.4.3 Feature Dataset CLJN.CL.HarbourArea

Locate, GPS and collect attribute data as specified for each feature listed with GPS accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.BoatRampPoint - (Point) - The partially submerged hard surfaced or non-hardsurface structure on a shoreline for launching or retrieving vessels or vehicles.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) isLighted - Yes / No
- g) mediaId - gpsDataCollected
- h) MetadataId - metaID000072
- i) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.DockOrWharf (Polygon) - The location of a manmade water-land interface structure often used for access to boats, ships, or barges.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) dockType - The kind or type of the dock. Domain values i.e., access ramp, pier, slipway, general, etc.
- d) dockUseType - The predominant use. Domain values i.e., fishing, fueling, loading, staging, etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) materialType - The material composition of the feature. Domain values i.e., concrete, steel, wood, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.

CLJN.CL.MarineNavigationAid (Point) - The physical object that serves as an aid to navigation. *Requires Survey Grade GPS.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature.

- (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) heightAboveSurfaceLevel - The vertical distance measured from the lowest point of the base of the feature at ground or water level to the tallest point of the feature.
- g) heightAboveSurfaceLevelUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.
- h) isLighted - Yes / No
- i) mediald - gpsDataCollected
- j) MetadataId - metaID000072
- k) navaidType - Type of the navaid. Domain value i.e., buoyMarkerDangerPoint, buoyMarkerDangerPoint etc.
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, closed, abandoned, etc.

1.4.4 Feature Dataset CLJN.CL.RealProperty

Locate, GPS and collect attribute data as specified for each feature listed with GPS accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

Specific instruction for all Disposal polygons, polylines and points. All demolished or removed property shall be accounted for in the following 3 disposal features. A simple copy and paste with the following exceptions as explains in the disposal area, polyline and point may be permitted with the exception of the directions for attribution for each feature as noted. However, under no circumstance should potable water wells be removed from their original feature class. Potable wells are never deleted from their main feature, all that is required is the water wells are attributed in such a way that indicated if they are abandoned in Place (AIP) or Removed.

CLJN.CL.Disposal_FacilityArea (polygon)- The location of a facility asset in the DoD real property inventory for which a disposal action is being or has been taken to physically demolish, remove, or release the DoD of accountability for and control of the asset.

- a) abandonedDate - The date the feature was abandoned. Leave blank if removed.
- b) builtDate - The calendar date on which the original construction was completed for a facility.
- c) contractNumber - The contract number associated with the feature demolition or abandonment.
- d) ClassType - Population is contingent only if data is currently available for feature.
- e) disposalCompletionDate - The actual calendar date of the disposal or abandonment of the asset.
- f) facilityNumber - Asset Identification such as building or structure number.
- g) featureDescription -Population is contingent only if data is currently available for feature.
- h) featureName (Mandatory) - Feature Name and subtype
- i) facilityIdfk - Population is contingent only if data is currently available for feature.
- j) operationalStatus - The state of usability of the feature.

- Domain values i.e., removed, abandoned, etc.
- k) owner - Population is contingent only if data is currently available for feature.
 - l) removedDate - The date the feature was removed. Leave blank if abandoned.
 - m) realPropertyJurisdictionType - Population is contingent only if data is currently available for feature.
 - n) registryIdentifier - Population is contingent only if data is currently available for feature.
 - o) sourceFeatureClass (Mandatory) - The feature class containing the polygon feature.

CLJN.CL.Disposal_FacilityLine (polyline) - The location of a personal property asset in the DoD real property inventory for which a disposal action is being or has been taken to physically demolish, remove, or release the DoD of accountability for and control of the asset.

- a) abandonedDate - The date the feature was abandoned. Leave blank if removed.
- b) builtDate - The calendar date on which the original construction was completed for a facility.
- c) contractNumber - The contract number associated with the feature demolition or abandoned.
- d) classType - Population is contingent only if data is currently available for feature.
- e) disposalCompletionDate - The actual calendar date of the disposal or abandonment of the asset.
- f) facilityNumber - Asset Identification RoadName, fence, utility line, fence gate information, etc.
- g) featureDescription - Population is contingent only if data is currently available for feature.
- h) featureName (Mandatory) - Feature Name and subtype
- i) operationalStatus - The state of usability of the feature. Domain values i.e., removed, abandoned, etc.
- j) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.
- k) removedDate - The date the feature was removed. Leave blank if abandoned.
- l) realPropertyJurisdictionType - The type of real property jurisdiction. Domain values i.e., tbd, etc.
- m) registryIdentifier - Population is contingent only if data is currently available for feature.
- n) sdsId - Population is contingent only if data is currently available for feature.
- o) sourceFeatureClass (Mandatory) - The feature class containing the line feature.

CLJN.CL.Disposal_FacilityPoint (point) - The location of a personal property asset in the DoD real property inventory for which a disposal action is being or has been taken to physically demolish, remove, or release the DoD of accountability for and control of the asset.

- a) abandonedDate - The date the feature was abandoned. Leave blank if removed.
- b) builtDate - The calendar date on which the original construction was completed for a facility.
- c) contractNumber - The contract number associated with the

- feature demolition or abandoned.
- d) ClassType - Population is contingent only if data is currently available for feature.
- e) disposalCompletionDate - The actual calendar date of the disposal or abandonment of the asset.
- f) facilityNumber - Asset Identification such as generator, ows, towers, etc.
- g) featureDescription - Population is contingent only if data is currently available for feature.
- h) featureName (Mandatory) - Feature Name and subtype
- i) facilityIdfk - Population is contingent only if data is currently available for feature.
- j) operationalStatus - The state of usability of the feature. Domain values i.e., removed, abandoned, etc.
- k) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.
- l) removedDate - The date the feature was removed. Leave blank if abandoned.
- m) realPropertyJurisdictionType - The type of real property jurisdiction. Domain values i.e., tbd, etc.
- n) registryIdentifier - Population is contingent only if data is currently available for feature.
- o) sdsId - Population is contingent only if data is currently available for feature.
- p) sourceFeatureClass (Mandatory) - The feature class containing the point feature.

CLJN.CL.Bridge - Bridge (polygon) - The structure erected over a depression or an obstacle such as a body of water, railroad, etc., to provide a pathway for vehicles, rail services, pedestrians or to carry utility services.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) contractNumber - The contract number associated with the feature.
- e) featureDescription - The narrative describing the feature. Value Base Area or Road Name Crossing
- f) featureName - The common name of the feature. Pedestrian, Railroad, Road, other, etc.
- g) heightAboveSurfaceLevel - The vertical distance measured from the lowest point of the base of the feature at ground or water level to the tallest point of the feature.
- h) heightUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.
- i) mediald - gpsDataCollected
- j) MetadataId - metaID000072
- k) isFixed - Indicator of whether the bridge cannot be opened for navigation or other purposes. Yes / No
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.Building - Building (polygon) - The roofed and floored facility enclosed by exterior walls and consisting of one or more levels.

- a) `builtDate` - The calendar date on which the original construction was completed for a facility.
- b) `contractNumber` - The contract number associated with the feature.
- c) `facilityNumber` - Asset number used for visual identification of the facility.
- d) `featureDescription` - The narrative describing the feature if feature function does not accurately address the description of building.
- e) `featureName` - The common name of the feature. (Review current data for common name)
- f) `featureFunction` - The purpose(s) of, or intended role(s) served by, the feature. Domain values i.e., Fishing (3), Aircraft Repair (341), Motor Vehicle Repair (343), Utilities (350), Water Treatment (362), Water Distribution (363), Residence (563), Guard (781), Government (811), Recreation (921) etc.
- g) `floorCount` - The number of floors
- h) `mediaId` - `gpsDataCollected`
- i) `MetadataId` - `metaID000072`
- j) `operationalStatus` - The state of usability of the feature i.e., `inService`, `notInService`, `abandoned`, etc.

CLJN.CL.Fence (polyline) - The freestanding structure designed to restrict or prevent movement across a boundary.

- a) `builtDate` - The calendar date on which the original construction was completed for a facility.
- b) `contractNumber` - The contract number associated with the feature.
- c) `facilityNumber` - Asset number used for visual identification of the facility.
- d) `featureDescription` - The narrative describing the feature. (Review current data for description)
- e) `featureName` - FENCE or GATE.
- f) `FenceDesignType` - The configuration of fabricated fence materials in a particular manner to build a fence. This may or may not include specifications of the post type(s). Domain values i.e., `cross`, `postAndFrame`, `metalRail`, `postAndFrame`, etc.
- g) `fenceFabricatedMaterialType` - The fabricated material of the fence. Domain values i.e., `barbedWire`, `chainLink`, `wroughtIron`, `metalOther`, `steel`, `wood`, etc.
- h) `fencePrimaryMaterialType` - The fundamental or raw substance of the fence. Domain values i.e., `jute`, `metalOther`, `steel`, `wood`, `wroughtIron`, etc.
- i) `fenceTopType` - The fabricated material used as an upper barrier on the fence. Domain values i.e., `spiked`, `electricfiedWire`, etc.
- j) `fenceUseType` - The purpose that the fence serves. Domain values, i.e., `internalSecurity`, `perimeterSecurity`, `recreation`, `residential`, `safety`, `vehicleBarrier`, etc.
- k) `heightAboveSurfaceLevel` - The vertical distance measurement in feet.
- l) `heightUom` - The unit of measure for the height measurement. Domain values `0.3048 metres` or `feet`, etc.
- m) `mediaId` - `gpsDataCollected`

- n) MetadataId - metaID000072
- o) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.Gate (polyline) - A movable barrier that closes an opening in a fence, wall, or other enclosure or enclosure.

- a) accessControlType - The type of access control. Domain values, i.e., gate etc.
- b) builtDate - The calendar date on which the original construction was completed for a facility.
- c) contractNumber - The contract number associated with the feature.
- d) facilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) gateTypeMaterial - The type of material of the gate. Domain values i.e., metal, steel, wood, wroughtiron, etc.
- h) gatePurposeType - Purpose that the gate exists and functions under. Domain values i.e., decorative, insternalSecurity, perimaterSecurity, recreation, residential, safely, vehicleBarrier, other, etc.
- i) gateTopType - The fabricated material used as an upper barrier on the fence. Domain values i.e., spiked,
- j) isBaseEntryPoint - Yes or No
- k) isCheckpoint - Yes or No
- l) isManned - Yes or No
- m) isPortable - Yes or No
- n) isRangeAccess - Yes or No
- o) mediaId - gpsDataCollected
- p) metadataId - metaID000072
- q) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.RecreationBoundary (polygon) - The area designated for recreational purposes.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) isFormallyDelineated Yes / No
- g) isHandicappedAccessible Yes / No
- h) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.OpenStorage - Open Storage (polygon) - The non-covered and/or

covered storage areas, paved or otherwise established, for the storage of general supply materials or the receipt, processing, staging and issue of materials.

- a) `builtDate` - The calendar date on which the original construction was completed for a facility.
- b) `contractNumber` - The contract number associated with the feature.
- c) `facilityNumber` - Asset number used for visual identification of the facility.
- d) `featureDescription` - The narrative describing the feature. (Review current data for description)
- e) `featureName` - The common name of the feature. (Review current data for common name)
- f) `mediald` - `gpsDataCollected`
- g) `MetadataId` - `metaID000072`
- h) `operationalStatus` - The state of usability of the feature i.e., `inService`, `notInService`, `abandoned`, etc.

`CLJN.CL.PavementSectionAirfieldArea` - Pavement Section Airfield (polygon) - The location of a surface feature that comprises a section of a military airfield area. *Requires Survey Grade GPS.

- a) `builtDate` - The calendar date on which the original construction was completed for a facility.
- b) `contractNumber` - The contract number associated with the feature.
- c) `facilityNumber` - Asset number used for visual identification of the facility.
- d) `airfieldPavementUse` - The use of the airfield. Domain values i.e., `apron`, `fueling area`, `helipad`, `runway`, `taxiway`, etc.
- e) `featureDescription` - The narrative describing the feature. Values should include Area i.e., `MCAS NEW RIVER`, `HADNOT POINT`, `RIFLE RANGE`, `MCOLF CAMP DAVIS`, `GSRA`, `HOSPITAL`, etc.
- f) `featureName` - The common name of the feature. (Review current data for common name)
- g) `highestElevation` - The elevation from a specified vertical datum to the highest point on a feature.
- h) `highestElevationUom` - The unit of measure Domain values i.e. `0.3048 metres`, `feet`, etc.
- i) `isLighted` - Yes / No
- j) `isPaved` - Yes / No
- k) `mediald` - `gpsDataCollected`
- l) `MetadataId` - `metaID000072`
- m) `operationalStatus` - The state of usability of the feature i.e., `inService`, `notInService`, `abandoned`, etc.
- n) `owner` - The entity that owns the feature. Domain values, i.e., `ppv`, `usmc`, `usn`, `leased`, `federalOther`, etc.
- o) `runwayClassification` - Classification of the runway. Domain values i.e., `classA`, `classB`, `rotary`, `olf`, etc.

`CLJN.CL.PavementSectionParkingArea` (polygon) - The area used for parking vehicles not including residential streets and driveways.

- a) `builtDate` - The calendar date on which the original construction was completed for a facility.
- b) `contractNumber` - The contract number associated with the

- feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
 - d) featureDescription - The narrative describing the feature. (Review current data for description)
 - e) featureName - The common name of the feature. (Review current data for common name)
 - f) isLighted - Yes / No
 - g) mediald - gpsDataCollected
 - h) MetadataId - metaID000072
 - i) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
 - j) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.
 - k) pavementSurfaceType - The type of material used to construct the surface of the pavement feature. Domain values i.e., asphalt, gravel, asphaltOverAsphaltConcrete, portlandCementConcrete, etc.
 - l) vehicleType - The type of vehicle permitted on the pavement section. Domain value i.e., all, gov, mil, pov, etc.

CLJN.CL.PavementSectionRoadway (polygon) - The surface area that comprise a road area, upon which vehicles drive and park.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - FULL Road Name All Capital Letters, i.e., D STREET, SIXTH STREET, FOSTER BOULEVARD, PORTLAND COURT
- f) isPaved - Yes / No
- g) mediald - gpsDataCollected
- h) MetadataId - metaID000072
- i) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- j) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.
- k) pavementSurfaceType - The type of material used to construct the surface of the pavement feature. Domain values i.e., gravel, asphalt, asphaltOverAsphaltConcrete, portlandCementConcrete, etc.
- l) roadSectionType - The type of road asset represented by this section. Domain values i.e., roadway, stagingArea, etc.
- m) vehicleType - The type of vehicle permitted on the pavement section. Domain value i.e., all, gov, mil, pov, etc.

CLJN.CL.PavementSection - Pavement Section (polygon) - The portion of a pavement branch that differs in some aspect from other sections such that further segmentation is required to uniquely identify that section.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the

- feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
 - d) featureDescription - The narrative describing the feature. Value i.e., GENERATOR PAD, TRANSFORMER PAD, DUMPSTER PAD, BLEACHER PAD, UTILITY PANEL PAD, etc.
 - e) FeatureName - Slab.
 - f) featureName - The common name of the feature. (Review current data for common name)
 - g) mediaId - gpsDataCollected
 - h) MetadataId - metaID000072
 - i) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
 - j) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.

CLJN.CL.PavementSectionSidewalk (polygon) - The paved pedestrian walkway prepared to facilitate travel on foot. It may or may not be adjacent to a street/road.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) isLighted - Yes / No
- g) isPaved - Yes / No
- h) materialType - The material composition of the feature. Domain values i.e., asphalt, concrete, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.

CLJN.CL.StructureArea - Structure (polygon) - The facility, other than a building or linear structure, which is constructed on or in the land.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. Values i.e., Picnic Pavilion, Gazebo, Postal Shelter, Buss Stop, Golf Shelter, Vehicle Wash Platform, Outdoor Classroom,
- e) featureName - The common name of the feature. Values i.e., CANOPY, PLATFORM, PAVILLION, RAMP, WEIGH STATION, etc.
- f) mediaId - gpsDataCollected
- g) MetadataId - metaID000072

- h) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.TowerPoint (point) - The vertical projection, higher than its diameter, generally used for observation, etc.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. I.e., Range, Observation, Cell, etc.
- e) featureName - Common name utilized for Range Area name.
- f) heightMax - Maximum height of structure in feet.
- g) heightUom - The unit of measure for the height measurement. Domain values .3048 metres or feet, etc.
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- k) towerUseType - The primary operational use of the tower. Domain values, i.e., fire, observation, communication, training, etc.

CLJN.CL.TrafficControlLight (point) - A feature used to represent traffic lights.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) heightAboveSurfaceLevel - Maximum height of structure in feet.
- g) heightAboveSurfaceLevelUom - The unit of measure for the height measurement. Domain values .3048 metres or feet, etc.
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.WallLine - Wall - The linear feature used for separation of facilities, ornamental decoration, or structural reinforcement.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) facilityNumber - Asset number used for visual identification of the facility.

- d) featureDescription - The narrative describing the feature. Values i.e., BENCH, DUMSPETER ENCLOSURE, UTILITY ENCLOSURE, RETAINING WALL, BLAST PROTECTION, BAFFLE WALL, MECHANICAL YARD, etc.
- e) featureName - The common name of the feature. (Review current data for common name)
- f) height - The height of the feature in feet.
- g) heightUom - The unit of measure for the height measurement. Domain values .3048 metres or feet, etc.
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- k) wallMaterialType - The material from which the majority of the wall is constructed. Domain values i.e., brick, cinderblock, grass, glassBlock, masonry, wood, etc.

1.4.5 Feature Dataset CLJN.CL.Recreation

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.RecreationTrail - Recreation Trail (Polyline) - The path or walkway providing opportunity for physical activities.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature area. Values i.e., HADNOT POINT, FRECH CREEK, WALLAS CREEK, MCAS, etc.
- e) featureName - The common name of the feature such as common trail name. Values, i.e., GREENWAY, MCAS, KNOX, etc.
- f) MediaId - gpsDataCollected
- g) MetadataId - metaID000072
- h) materialType - The material composition of the feature. Domain values i.e., asphalt, concrete, etc.
- i) officialLength - The officially reported length of the feature in feet.
- j) officialLengthUom - The official length. Domain values i.e. 0.3048 metres, feet, etc.
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.Playground - Playground (Polygon) The area designed for children to play outdoors.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the

- feature.
- c) featureDescription - The narrative describing the feature. (Review current data for description).
 - d) featureName - The common name of the feature. (Review current data for common name)
 - e) featureName - The common name of the feature such as common trail name.
 - f) isHandicappedAccessible - Yes / No
 - g) MediaId - gpsDataCollected
 - h) MetadataId - metaID000072
 - i) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
 - j) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.
 - k) isHandicappedAccessible - Yes / No
 - l) playgroundCategory - Playground categorization by physical location on the installation. Domain values i.e., childDevCenter, generalPurpose, housingArea, school, etc.
 - m) playgroundMaterial - The primary material that the play pieces are constructed from. Domain values i.e., paintedMetal, plastic, vinylCoatedMetal, wood, etc.
 - n) recreationFeatureType - The type of recreation feature. Domain values i.e., paintball, playground, obstacleCourse, picnicSite, tennisCourt, volleyballCourt, swimmingPool, etc.
 - o) heightAboveSurfaceLevel - The vertical distance measured from the lowest point of the base of the feature at ground or water level to the tallest point of the feature.
 - p) heightAboveSurfaceLevelUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.

CLJN.CL.RecreationFeatureArea - Recreation Feature Area (Polygon) - The location of an object or other physical asset associated with a recreation site. - Recreation area, i.e., swimming pool, basketball, tennis, baseball, football, and other recreation features.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) facilityNumber - Asset number used for visual identification of the facility.
- c) contractNumber - The contract number associated with the feature.
- d) featureDescription - The narrative describing the feature.
- e) featureName - The common name of the feature if not addressed in RecreationFeatureType field.
- f) mediaId - gpsDataCollected
- g) MetadataId - metaID000072
- h) heightAboveSurfaceLevel - The vertical distance measured from the lowest point of the base of the feature at ground or water level to the tallest point of the feature.
- i) heightAboveSurfaceLevelUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.
- j) isHandicappedAccessible - Recreation Area has a formal designation. Yes / No
- k) isIndoor - Yes or No
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.

- n) RecreationFeatureType - The type of recreation feature. Domain values. i.e., athleticCourt, athleticField, basketballCourt, climbingStructure, dugout, exerciseStation, footballField, picnicSite, recreationalFirearmsRange, volleyballCourt, etc.

1.4.6 Feature Dataset CLJN.CL.Transportation

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.Sign - Sign (point) - The structure that conveys directional, warning, or other information.

- a) builtDate - The calendar date on which the original construction was completed for a facility.
- b) contractNumber - The contract number associated with the feature.
- c) mediald - gpsDataCollected
- d) MetadataId - metaID000072
- e) heightAboveSurfaceLevel - The vertical distance measured from the lowest point of the base of the feature at ground or water level to the tallest point of the feature.
- f) heightAboveSurfaceLevelUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.
- g) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- h) signAssemblyType - The type of sign assembly material. Domain values i.e., IBeamSteelBreakaway, PedestrianPole, SignalMastArm, signalPole, fire, safety, etc.
- i) signText - The text displayed on the sign.
- j) signType - The type of sign. Domain values i.e., regulatory, school, warning, etc.
- k) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.

CLJN.CL.RoadCenterline - The center of a roadway, as measured from the edge of the navigable road with the paved or unpaved surface. Polyline is to be drawn in direction of flow with no breaks except where naturally occurring such as intersections and crossings.

- a) dataSource - The agency that last updated the record.
- b) dateUpdated - The date the record was created or last modified.
- c) elevationFrom - Elevation value at start of segment.
- d) elevationTo - Elevation value at end of segment.
- e) featureDescription - The narrative describing the feature.
- f) featureName - the common name of the feature.
- g) fullStreetName - The combined full street name.
- h) isPaved - The yes or no indicator of whether the feature has a paved surface. Domain values i.e., yes, no.
- i) mediald - gpsDataCollected
- j) MetadataId - metaID000072

- k) numLanes - The number of traffic lanes throughout the length of the centerline.
- l) oneWayDirection - The one-way road directionality. Domain values i.e. ft, tf, b, etc.
- m) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- n) owner - The entity that owns the feature. Domain values, i.e., usmc, ncdot, etc.
- o) roadClass - The general description of the type of road, based on the US Census MAF/TIGER Feature Classification Codes (MTFCC). Domain values i.e., primary, secondary, local, etc.
- p) roadWidth - The width of the feature.
- q) roadWidthUom - The width unit of measure in feet
- r) Domain: GsipLengthUom (i.e. usSurveyFoot, metre, etc.)
- s) speedLimit - The posted speed limit in MPH.
- t) verticalDatum - The vertical reference datum for the z location value. Domain values i.e. navd88, etc.
- u) verticalEpoch - The time period epoch to which the elevation measurement is referenced. Domain values i.e., opus, etc.

1.4.7 Attribute Data Collection and GPS Requirements for Utilities

Locate, GPS and collect attribute data as specified for each feature listed with (Survey Grade GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

1.4.8 Feature Dataset CLJN.CL.Telecommunication

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.CommUtilSegment (polyline) - The location of a feature used for destruction in a communication network, particularly a cable for the transmission of a signal.

- a) availableStrands - A list of fiber strands that are available.
- b) cableCount - The number of copper pairs or fiber strands dedicated at a given location.
- c) cableId - The cable identifier. (Review current data for description)
- d) cableInstaller - The name of the group responsible for installation of the cable feature.
- e) cableInstallType - The type of installation of the cables. Domain values i.e., aeria, directBuried, tunnel, underground, etc.
- f) cableInsulation - The material composition of the insulation of the cable. Domain values i.e., pvc, xlpe, etc.
- g) cableMaterial - The material composition of the cable. Domain values i.e., fiberOpt, cu, etc.
- h) cableRoute - The start and end points of a cable section. (Review current data for description)

- i) cableSheathing - The type of sheathing or insulation of the cable. Domain values i.e., bp, cpnm, cj, etc.
- j) communicationsSegmentType - The type of communications network segment that this feature represents. Domain values i.e., cCoaxial, cFiberOptic, etc.
- k) contractNumber - The contract number associated with the feature.
- l) dateInService - The date the utility equipment was put in service.
- m) featureDescription - The narrative describing the feature. (Review current data for description)
- n) featureName - The common name of the feature. (Review current data for naming convention)
- o) numberOfPairs - The number of wire pairs in the cable.
- p) numberOfSingleModeStrands - The number of single-mode fiber strands.
- q) numberOfStrands -The total number of fiber strands in the cable.
- r) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- s) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- t) wireGauge - The gauge of the wire.

CLJN.CL.Feat_CUGEnclosureAccess (point) - The location of a communication access point to the related communication underground enclosure.

- a) commUtilityFeatureType - Type of communication feature, i.e., CUGEnclosureAccess
- b) contractNumber- The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for naming convention)
- f) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., elevated, semiBuried, underground, etc.
- g) mediaId - gpsDataCollected
- h) MetadataId - metaID000072
- i) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., communications.
- j) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- k) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- l) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., communications, etc.

CLJN.CL.Feat_CPedestal (point) - The location of an above-ground enclosed structure that provides access to buried plant and a place to house utility features.

- a) commUtilityFeatureType - Type of communication feature, i.e.,

- cPedestal
- b) contractNumber- The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for naming convention)
- f) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., elevated, semiBuried, underground, etc.
- g) mediaId - gpsDataCollected
- h) MetadataId - metaID000072
- i) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., communications.
- j) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- k) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.

CLJN.CL.CommUtilNode_CAntenna (point) - A device that can transmit or receive radio frequency signals.

- a) communicationsNodeType - Type of communication node, i.e., cAntenna
- b) contractNumber- The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) facilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for naming convention)
- g) mediaId - gpsDataCollected
- h) MetadataId - metaID000072
- i) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- j) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.

CLJN.CL.Feat_CDuctBank (polyline) - The location of one or more ducts routed in parallel between two nodes.

- a) commUtilityFeatureType - Type of communication feature, i.e., cDuctBank, etc.
- b) contractNumber- The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) ductDiameterUom - - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) ductMaterial - The material composition of the feature. Domain values i.e., cooper, carbonSteel, etc.
- f) featureDescription - The narrative describing the feature.

- (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for naming convention)
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., communications.
- k) NumberOfDucts
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- n) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., communications, etc.

1.4.9 Feature Dataset CLJN.CL.Utilities_Electrical Class

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.AlternativeEnergyArea (polygon) - The apparatus or device used for the production of energy from a renewable resource.

- a) alternativeEnergyType - The type of alternative energy that the feature represents. Domain values i.e., photovoltaic, windTurbine, tbd, etc.
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) expansionDistributionNetwork - An indication of the distribution network interconnection an alternative energy feature uses to supply renewable energy. Domain values i.e., partOElectricalNetwork, etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, recreational, tbd, etc.
- i) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- j) hasInverter - Yes / No
- k) isMetered - Yes / No
- l) mediaId - gpsDataCollected
- m) MetadataId - metaID000072
- n) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- o) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.

- p) panelType - The type of panel present.
- q) systemCapacityDc - The system capacity for the DC current produced by the solar photovoltaic array, preferably measured in kilowatts.

CLJN.CL.ElecUtilNode_EFuse (point) - The location of a device used to protect electric distribution devices from dangerously high currents, and reduce risk of severe injury for personnel.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) alternativeEnergyType - The type of alternative energy that the feature represents. Domain values i.e., photovoltaic, windTurbine, tbd, etc.
- c) contractNumber - The contract number associated with the feature.
- d) dateInService - The date the utility equipment was put in service.
- e) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., efuse.
- f) facilityNumber - Asset number used for visual identification of the facility.
- g) featureDescription - The narrative describing the feature. (Review current data for description)
- h) featureName - The common name of the feature. (Review current data for common name)
- i) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, recreational, etc.
- j) mediald - gpsDataCollected
- k) MetadataId - metaID000071
- l) numberOfPhases - Number of phases. Domain values i.e., one, two, three, etc.
- m) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- n) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.

CLJN.CL.ElecUtilNode_EGenerator (point) - The location of an available kinetic power source providing electricity.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., eGenerator.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature.

- (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) generatorPowerSource - The power source of the generator. Domain values, i.e., gas, natural gas, propane, solarPower, etc.
- j) generatorType - The type of electrical generator. Domain values i.e., emergency, primary, standby, etc.
- k) isPortable - Yes / No
- l) kvaRate - The rating of the complex power that the generator creates.
- m) kwRate - The rating of the real power that the generator creates.
- n) Manufacturer - The name of the manufacturer of the feature.
- o) mediaId - gpsDataCollected
- p) MetadataId - metaID000072
- q) modelNumber - The model, product, catalog, or item number for the feature item.
- r) numberOfPhases - Number of phases. Domain values i.e., one, two, three, etc.
- s) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- t) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- u) serialNumber - The manufacturer serial or unique identification number for the feature item.
- v) voltage - The system voltage applied to the subject item. Domain value i.e., 120V, 480V, 480Yto277V etc.

CLJN.CL.ElecUtilNode_EMeter (point) - The location of a device that measures the amount of electric energy consumed by the power user.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., eMeter.
- e) energySource - Indicates if the meter is measuring a standard power source or an alternative energy source. Domain values i.e., standardPowerSource, alternativeEnergySource, tbd, etc.
- f) facilityNumber - Asset number used for visual identification of the facility.
- g) featureDescription - The narrative describing the feature. (Review current data for description)
- h) featureName - The common name of the feature. (Review current data for common name)
- i) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.

- j) isAmi - An indicator of whether or not the meter is an AMI or smart meter. Yes / No
- k) mediaId - gpsDataCollected
- l) MetadataId - metaID000072
- m) meterType - The type of meter. Domain values i.e., diaphragm, orifice, rotary, other, tbd, etc.
- n) meterUse - An indication of the type of service the meter is monitoring. Domain values eleMeter, generator, loadPoint, commercial, etc.
- o) mountingType - The type of mounting for the subject item. Domain values electrical, pole, pad, transformer, wall, etc.
- p) numberOfPhases - Number of phases. Domain values i.e., one, two, three, etc.
- q) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- r) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- s) transformerKva - The kva rate for the transformer.
- t) voltage - The system voltage applied to the subject item. Domain value i.e., 120V, 480V, 480YTo277V etc.

CLJN.CL.ElecUtilNode_ECircuitBreaker (point) - The location of a circuit breaker, an automatically operated electrical switch designed to protect an electrical circuit from damage caused by excess current from an overload or short circuit.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., eCircuitBreaker.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.

CLJN.CL.ElecUtilNode_EExteriorLight (point) - The location of a lighting device that is supplied by local distribution systems and is generally the only service for which the electric utility installs, operates and maintains utilization equipment.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., eExteriorLight.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) exteriorLightType - The type of exterior light. Domain i.e., landscapelight, parkingLotLight, pedestrianLight, recreationFieldLight, securityLight, streetlight, sidewalkLight, etc.
- g) featureDescription - The narrative describing the feature. (Review current data for description)
- h) featureName - The common name of the feature. (Review current data for common name)
- i) feederId - The Feeder Manager identifier assigned to electric feeders and devices that participate in a specific distribution circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- j) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- k) hasSensor - Yes / No
- l) heightAboveSurfaceLevel - The vertical distance measured from the lowest point of the base of the feature at ground or water level to the tallest point of the feature.
- m) heightAboveSurfaceLevelUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.
- n) isSolar - Yes / No
- o) lampType - The type of lamp per fixture. Domain i.e., led, hps, mh, etc.
- p) mediald - gpsDataCollected
- q) MetadataId - metaID000072
- r) mountingType - The type of mounting for the subject item. Domain values i.e., pole, pad, transformer, wall, ground, etc.
- s) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- t) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- u) voltage - The system voltage applied to the subject item. Domain value i.e., 120V, 480V, 480YTo277V etc.

CLJN.CL.ElecUtilNode_EAirfieldLight (point) - The location of an electrical device used to illuminate runways, taxiways, helipads, aprons, and any other aircraft movement area, as well as to guide ground traffic.

- a) airfieldLightType - The type of lighting present on the airfield. Domain value i.e., runwayLight, taxiwayLight, apron, helipadLight, approachLight, etc.
- b) circuitId - An operator generated identifier locally used to

reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)

- c) contractNumber - The contract number associated with the feature.
- d) dateInService - The date the utility equipment was put in service
- e) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., eAirfieldLight.
- f) facilityNumber - Asset number used for visual identification of the facility.
- g) featureDescription - The narrative describing the feature. (Review current data for description)
- h) featureName - The common name of the feature. (Review current data for common name)
- i) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- j) mediaId - gpsDataCollected
- k) MetadataId - metaID000072
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- n) voltage - The system voltage applied to the subject item. Domain value i.e., 120V, 480V, 480YTo277V etc.

CLJN.CL.ElecUtilNode_EEnergyStorage - The location of energy storage device or natural system capable of capture of energy produced at one time for use at a later time, within the relative span of a human lifetime.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., eEnergyStorage.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The narrative describing the feature. (Review current data for description)
- g) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- h) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- i) ownerName - The name of the item owner, i.e., MCB CL, Company Name, etc.

CLJN.CL.ElecUtilNode_ESubstation (point) - A substation is a part of an

electrical generation, transmission, and distribution system. Substations transform voltage from high to low, or the reverse, or perform any of several other important functions. Between the generating station and consumer, electric power may flow through several substations at different voltage levels.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., eSubstation
- d) facilityNumber - Asset number used for visual identification of the facility.-
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) numberOfAvailableBays - The number of available bays at the substation.
- k) numberOfCircuits - The number of circuits present at the substation.
- l) numberOfSpareBreakers - The number of Spare Breakers in the substation.
- m) numberOfTransformers - The number of transformers present.
- n) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- o) ownerName - The name of the item owner, i.e., MCB CL, Company Name, etc.
- p) voltageIn - The line-to-line voltage of the transmission line that is the source for the substation. Domain value i.e., 120V, 480V, 480YTo277V etc.
- q) voltageOut - The line-to-line output voltage of the substation. Domain value i.e., 120V, 480V, 480YTo277V etc.

CLJN.CL.Feat_ESubstation (Polygon) - The location of a facility in an electrical system where the voltage is reduced from transmission levels to distribution levels.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) electricalUtilityFeatureType - The type of electrical utility feature. Domain value, i.e., eSubstation.
- d) FacilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) functionalArea - The principle activity within a landuse

- area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- h) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
 - i) mediaId - gpsDataCollected
 - j) MetadataId - metaID000072
 - k) networkType - The primary type of utility network to which this feature relates. Domain values i.e., electrical, etc.
 - l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
 - m) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
 - n) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., electrical, etc.

CLJN.CL.ElecUtilNode_EVoltageRegulator (point) - Current Regulators are different that Voltage Regulators and are used on the airfield lighting systems.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., ecurrentRegulator.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) numberOfPhases - Number of phases. Domain values i.e., one, two, three, etc.
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.

CLJN.CL.ElecUtilNode_ESwitchingStation (point) - A Switching Station is an electrical substation with only one voltage level, whose only function are switching actions.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD

- GIS Office)
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., eSwitchingStation.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - Number of Switches.
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) mediaId- gpsDataCollected
- j) MetadataId - metaID000072
- k) numberOfSwitches -The number of switches present.
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.

CLJN.CL.ElecUtilNode_ESwitch (point) - The location of a device throughout distribution feeder circuits to redirect power flows to balance loads or for sectionalizing to allow repair of damaged lines or equipment.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes, i.e., eSwitch.
- e) electricalSwitchInstallation - The mounting/installation style of the electrical switch. Domain values buildingMounted, padMounted, poleMounted, electricalPanel, etc.
- f) electricalSwitchType - The type or style of electrical switch. Domain values circuitBrkr, disconnect, fuseCutout, gangDisc, hdSaftly, iso, reclosure, etc.
- g) facilityNumber - Asset number used for visual identification of the facility.
- h) featureDescription - The narrative describing the feature. (Review current data for description)
- i) featureName - The common name of the feature. (Review current data for common name)
- j) feederId - The Feeder Manager identifier assigned to electric feeders and devices that participate in a specific distribution circuit, utilize (tbd) if unknown.
- k) feederId2 - The feeder Manager Identifier assigned if the electric device is supplied by second feeder, utilize. (Data

can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)

- l) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- m) mediaId - gpsDataCollected
- n) MetadataId - metaID000072
- o) numberOfPhases - Number of phases. Domain values i.e., one, two, three, etc.
- p) numberOfSwitches - The number of switches present, i.e.,
- q) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- r) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- s) switchPosition - Code indicating normal position of switch, per phase. Domain value closed, closedOpen, open, openClosed, unknown, tbd, etc.
- t) voltage - The system voltage applied to the subject item. Domain value i.e., 120V, 480V, 480YTo277V etc.

CLJN.CL.Feat_EPedestal (point) An aboveground service entrance, allowing maintenance access to the specific utility, usually electric or communications.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) bcontractNumber - The contract number associated with the feature.
- c) cdateInService - The date the utility equipment was put in service.
- d) electricalUtilityFeatureType - The type of electrical utility feature, i.e., ePedestal
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) featureName - The common name of the feature. (Review current data for common name)
- i) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- j) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- k) mediaId - gpsDataCollected
- l) MetadataId - metaID000072
- m) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- n) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- o) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., electrical, etc.

ElecUtilNode_ETransformer - Electrical Utility Node - Transformer
(point) - The location of an electric distribution or power transformer.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) electricalNodeType - The type of electrical network node that this feature represents. Domain values consist of electrical nodes i.e., eTransformer.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) feederId - The Feeder Manager identifier assigned to electric feeders and devices that participate in a specific distribution circuit, utilize (tbd) if unknown.
- i) feederId2 - The feeder Manager Identifier assigned if the electric device is supplied by second feeder, utilize (tbd) if unknown.
- j) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- k) mediaId - gpsDataCollected
- l) MetadataId - metaID000072
- m) Manufacture - The name of the manufacturer of the feature.
- n) modelNumber - The model, product, catalog, or item number for the feature item.
- o) mountingType - The type of mounting for the subject item. Domain value ground, pad, pole, transformer, wall, tbd, etc.
- p) numberOfPhases - Number of phases. Domain values i.e., one, two, three, etc.
- q) numberOfTransformers - The number of transformers present.
- r) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- s) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- t) primaryVoltage - The voltage on the source side of the regulator with the associated units given. Domain value i.e., 120V, 480V, 480YTo277V etc.
- u) secondaryVoltage - The voltage on the load side of the regulator with the associated units given. Domain value i.e., 120V, 480V, 480YTo277V etc.
- v) totalKva - The total kva rate.
- w) transformerType - The type of transformer. Domain values i.e., inverter, isolation, stepDown, stepUp, vault, etc.

CLJN.CL.ElecUtilSegment (polyline) - The location of a linear feature, particularly a cable that transmits, distributes or connects customers to electricity. All polylines shall be drawn in the direction of flow with no breaks except for what is naturally occurring such at nodes,

etc.

- a) `ElectricalSegmentType` - The identifier for Primary or Secondary line segments within an electrical distribution system.
- b) `cableInsultaion` - The material composition of the insulation of the cable. Domain value, i.e., ip, epr, pe, pvc, rubber, xipe, tdb, unknow, etc.
- c) `cableMaterial` - The material composition of the cable. Domain value, i.e., ac, al, copper, fiberOpt, steel, steelGalv, etc.
- d) `cableSheathing` - The type of sheathing or insulation of the cable. Domain value, i.e., shielded, weatherProof, asbestos, cellulose, tapeArmor, tbd, etc.
- e) `circuitId` - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- f) `conductorSize` - The size of the conductor.
- g) `contractNumber` - The contract number associated with the feature.
- h) `dateInService` - The date the utility equipment was put in service.
- i) `facilityNumber` - Asset number used for visual identification of the facility.
- j) `featureDescription` - The narrative describing the feature. (Review current data for description)
- k) `featureName` - The common name of the feature. (Review current data for common name)
- l) `feederId` - The Feeder Manager identifier assigned to electric feeders and devices that participate in a specific distribution circuit, utilize (tbd) if unknown.
- m) `feederId2` - The feeder Manager identifier assigned if the electric device is supplied by second feeder, utilize. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- n) `functionalArea` - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- o) `groundConfiguration` - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- p) `mediaId` - `gpsDataCollected`
- q) `MetadataId` - metaID000072
- r) `neutralSize` - The size of a single neutral conductor. Domain value i.e., .5, .75, 1, 1.25, 2, 4, etc.
- s) `numberOfPhases` - Number of phases. Value, i.e., 1, 2, 3, 4, etc.
- t) `operationalStatus` - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- u) `ownerName` - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- v) `voltage` - The system voltage applied to the subject item. Domain value i.e., 120V, 480V, 480YTo277V etc.

`CLJN.CL.Feat_EScadaSensor` (point) - The location of a device that is used to remotely measure the status of electrical network components as part of a Supervisory Control and Data Acquisition (SCADA) system.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) electricalUtilityFeatureType - The type of electrical utility feature, i.e., eScadaSensor
- d) FacilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- h) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., electrical.
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- n) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., electrical, etc.

CLJN.CL.Feat_EDemarcationPoint (point) - The location where the electrical service provider ownership ends, and the customer ownership begins.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) electricalUtilityFeatureType - The type of electrical utility feature, i.e., eDemarcationPoint.
- d) facilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- h) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., electrical.
- l) operationalStatus - The state of usability of the feature

- i.e., inService, notInService, abandoned, etc.
- m) outsideProvider - The name of the outside provider for the Utility Feature. Value, i.e., owner of point may be 3rd party company.
- n) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- o) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., electrical, etc.

CLJN.CL.Feat_ESupportStructure (point) - The location of a structural framework that holds electric devices in an elevated position.

- a) circuitId - An operator generated identifier locally used to reference a specific electrical circuit. (Data can be found in Geodatabase, i.e., RG2, FC1, CHB, IND, etc. or contact PWD GIS Office)
- b) configurationType - The cable mounting configuration on the pole or tower. Domain value, i.e, armless, crossarmEqual, crossarmUnequal, shortArm, vertical, other, tbd, unknown, etc.
- c) contractNumber - The contract number associated with the feature.
- d) dateInService - The date the utility equipment was put in service.
- e) electricalUtilityFeatureType - The type of electrical utility feature i.e., eSupportStructure.
- f) facilityNumber - Asset number used for visual identification of the facility.
- g) featureDescription - The narrative describing the feature. (Review current data for description)
- h) featureName - The common name of the feature. (Review current data for common name)
- i) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- j) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- k) heightAboveSurfaceLevel - The vertical distance measured from the lowest point of the base of the feature at ground or water level to the tallest point of the feature in feet.
- l) heightAboveSurfaceLevelUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.
- m) materialType - The material composition of the feature. Domain value, i.e., cement, fiberglass, log, metal, steel, wood, etc.
- n) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., electrical.
- o) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- p) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- q) serialNumber - Physical ID on pole that is a unique identifier added to pole on label by contractor/shop.
- r) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., electrical, etc.

CLJN.CL.Feat_ESurfaceStructure - The location of a structural framework that holds electric devices in a position at or near the ground surface.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) electricalStructureType - The type of electrical feature. Domain values i.e., electricalCabinet, handHole, junctionBox, manhole, etc.
- d) electricalUtilityFeatureType - The type of electrical utility feature i.e., eSurfaceStructure.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The common name of the feature. (Review current data for common name)
- i) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- j) mediaId - gpsDataCollected
- k) MetadataId - metaID000072
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc. utilityNetworkSubtype

CLJN.CL.Feat_EAnchorGuy (point) - The location of a wire or set of wires running from the top of the pole to an anchor installed in the ground and consist of wires, appropriate fastenings and the anchor.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) electricalUtilityFeatureType - The type of electrical utility feature, i.e., eAnchorGuy.
- d) facilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- h) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., electrical.
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

- m) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- n) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., electrical, etc.

CLJN.CL.Feat_EUgEnclosureAccess (point) - The location of an electrical access point to the related electrical underground enclosure.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) electricalUtilityFeatureType - The type of electrical utility feature i.e., eUgEnclosureAccess.
- d) facilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- h) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., electrical.
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- n) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., electrical, etc.

1.4.10 Feature Dataset CLJN.CL.Utilities_Pol

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.PolUtilNode_OOwsSystem (point) - A filtering device placed in the fuel stream specifically to remove oil and water from the fuel.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.

- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) mediald - gpsDataCollected
- h) MetadataId - metaID000072
- i) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- j) polNetworkSubType - The subtype of POL network in which this feature participates. Domain values i.e., contaminatedMedia, b5, automotiveDiesal, etc.
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.

CLJN.CL.PolUtilNode_OValve (point) -The location of a network component used to control flow, pressure, and level within fueling systems.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) depth - The distance, measured vertically downward to the base in inches.
- d) depthUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- f) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- g) facilityNumber - Asset number used for visual identification of the facility.
- h) featureDescription - The narrative describing the feature. (Review current data for description)
- i) featureName - The common name of the feature. (Review current data for common name)
- j) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- k) mediald - gpsDataCollected
- l) MetadataId - metaID000072
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- n) polNetworkSubType - The subtype of POL network in which this feature participates. Domain values i.e., jetA, kerosene, marineDiesel, jp5, automotiveDiesel, etc.
- o) polNodeType - The type of POL network node that this feature represents i.e., oValve, etc.
- p) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- q) valveMaterial - The material composition of the valve. Domain values, i.e., ductileIron, carbonSteel, etc.
- r) valveType - The normal status or operating position of the valve. Domain values i.e., check, gate, etc.

CLJN.CL.PolUtilNode_OMeter (point) - The location of a device that measures the volumetric flow rate of fuel passing through the meter.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) isAmi - Description of meter - meter is an AMI or smart meter. Yes / No
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) meterType - The type of meter. Domain values i.e., diaphragm, orifice, rotary, other, tbd, etc.
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) ownerName - The name of the item owner, i.e., MCB CL, AmeriGas, etc., etc.
- m) polNetworkSubType - The subtype of POL network in which this feature participates. Domain values i.e., jetA, kerosene, marineDiesel, jp5, automotiveDiesel, contaminatedMedia, etc.
- n) polNodeType - The type of POL network node that this feature represents i.e., oMeter

CLJN.CL.PolUtilNode_OTank (point) -The location of a container for storage of POL products at atmospheric pressure.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- h) locatedUnderground - Yes / No
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) nominalCapacity - The numeric volume of the feature when filled to its design capacity.
- l) nominalCapacityUom - The unit of measure of the like named value. Domain values i.e., usgallon

- m) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- n) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- o) polNetworkSubType - The subtype of POL network in which this feature participates. Domain values i.e., jetA, kerosene, marineDiesel, jp5, automotiveDiesel, contaminatedMedia, etc.
- p) secondaryContainment - Indicates the storage tank has a secondary containment area that contains spills. Domain values i.e., concreteVault, doubleBottom, plasticPanSystem, other, etc.
- q) polNodeType - The type of POL network node that this feature represents. Domain values, i.e, (oTank)
- r) secondaryContainment - Indicates the storage tank has a secondary containment area that contains spills, i.e., spillPan, etc.
- s) storageTankProduct - The product contained in the storage tank. Domain values i.e., automotiveDiesel, bf5, dielectricOil, diesel, ethanol, gasoline, heatingOilUnspecified, jp, marineDiesel, propane, reclaimedFuel, usedCookingOil, usedFuel, usedOil, etc.
- t) tankTopHeight - The top of the tank reservoir measured from the lowest point of the base of the feature at ground or water level to the tallest point of the feature.
- u) tankTopHeightUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.

CLJN.CL.PolUtilNode_ODispenser (point) - The location of a machine at a fueling station that is used to pump fuel into vehicles or Aerospace Ground Equipment (AGE).w

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. Type of dispenser i.e., Marine, Aircraft, Automobile, HeavyEquipment, POV, GOV, etc.
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) networkType - The primary type of utility network to which this feature relates. Domain values i.e., (pol)
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- m) polNetworkSubType - The subtype of POL network in which this

- feature participates. Domain values i.e., jetA, kerosene, marineDiesel, jp5, automotiveDiesel, contaminatedMedia, etc.
- n) polNodeType - The type of POL network node that this feature represents i.e., oDispenser

CLJN.CL.PolUtilSegment (polyline) - The location of a linear feature, particularly a pipeline, used for the conveyance of petroleum, oil, and lubricants (POL) product. All polylines shall be drawn in the direction of flow with no breaks except for what is naturally occurring such as at nodes, etc.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) depth - The distance, measured vertically downward to the base in inches.
- d) depthUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- f) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- g) facilityNumber - Asset number used for visual identification of the facility.
- h) featureDescription - The narrative describing the feature. (Review current data for description)
- i) featureName - The common name of the feature. (Review current data for common name)
- j) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- k) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- l) materialType - The material composition of the feature. Domain values i.e., cooper, carbonSteel, etc.
- m) mediald - gpsDataCollected
- n) MetadataId - metaID000072
- o) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- p) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- q) polNetworkSubType - The subtype of POL network in which this feature participates. Domain values i.e., jetA, kerosene, marineDiesel, jp5, automotiveDiesel, contaminatedMedia, etc.

1.4.11 Feature Dataset CLJN.CL.Utilities_Sewer

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.Feat_SDemarcationPoint (point) - The location where the

wastewater service provider ownership ends, and the customer ownership begins.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) networkType - The primary type of utility network to which this feature relates. Domain values i.e., wastewater, etc.
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) outsideProvider - The name of the outside provider for the Utility Feature. Value, i.e., owner of point may be 3rd party company.
- m) owner - The entity that owns the feature. Domain values, i.e., ppv, usmc, usn, leased, federalOther, etc.
- n) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates. Domain values i.e., domesticSewage, oilyWaste, industrialWaste, etc.
- o) wastewaterNodeType - The type of water utility feature i.e., sDemarcationPoint.

CLJN.CL.WastUtilNode_SMeter (point) - The location of a device or set of devices used to measure the flow of wastewater.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) isAmi - An indicator of whether or not the meter is an AMI or smart meter. Yes / No
- h) Manufacturer - The name of the manufacturer of the feature.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) meterType - The type of meter. Domain valves i.e.,

- diaphragm, orifice, rotary, other, tbd, etc.
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- n) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates. Domain values i.e., domesticSewage, oilyWaste, industrialWaste, etc.
- o) wastewaterNodeType - The type of wastewater network node that this feature represents i.e., smeter.

CLJN.CL.Feat_SScadaSensor (point) - The location of a device that is used to remotely measure the status of wastewater network components as part of a Supervisory Control and Data Acquisition (SCADA) system.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) mediaId - gpsDataCollected
- h) MetadataId - metaID000072
- i) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., wastewater, etc.
- j) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- k) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- l) utilityNetworkSubType - The subtype of wastewater network in which this feature participates. Domain values i.e., domesticSewage, etc.
- m) wastewaterUtilityFeatureType - The type of water utility feature i.e., sScadaSensor

CLJN.CL.Feat_SUGenclosureAccess (point) -The location of a wastewater access point to the related wastewater underground enclosure.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing,

- recreational, training, water, etc.
- g) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- h) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- i) invertElevation - The elevation of the bottom of the feature in inches.
- j) invertElevationUom - The invert elevation. Domain values, i.e., length equal to .0254, inch, etc.
- k) numberOfPipes - The number of pipes connecting to the manhole.
- l) mediaId - gpsDataCollected
- m) MetadataId - metaID000072
- n) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., wastewater.
- o) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- p) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- q) rimElevation - The elevation at the top of the feature in feet.
- r) rimElevationUom - The unit of measure for rim elevation. Domain values i.e. measurement equal to 0.3048 metres, etc.
- s) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., wastewater, etc.
- t) wastewaterUtilityFeatureType - The type of water utility feature i.e., sUgEnclosureAccess.

CLJN.CL.WastUtilNode_SCleanOut (point) - The location of a wastewater device access point in a lateral used for maintenance purposes.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- g) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) materialType - The material composition of the feature. Domain values i.e., copper, ductileIron, fiber, fiberglassReinforcedPolyester, galvanizedIron, galvanizedSteel, PVC, terracotta, etc.
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.

- n) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, etc.
- o) wastewaterNodeType - The type of wastewater network node that this feature represents. i.e., scleanOut.

CLJN.CL.WastUtilNode_SFitting (point) - The location of a mechanical device on the wastewater system that caps or plugs a single pipe, or connects two or more pipes.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- d) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) fittingMaterial - The material of the pipe fitting. Domain values i.e., copper, ductileIron, fiber, fiberglassReinforcedPolyester, galvanizedIron, galvanizedSteel, PVC, steel, etc.
- i) fittingType - The type of pipe fitting. Domain values, i.e., bend, reducer, tee, plug, etc.
- j) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- k) mediaId - digitized
- l) MetadataId - metaID000071
- m) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- n) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- o) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, etc.
- p) wastewaterNodeType - The type of wastewater network node that this feature represents. i.e., sFitting.

CLJN.CL.WastUtilNode_SSystemValve (point) - The location of a device that regulates, directs, or controls the flow of wastewater.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- d) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature.

- (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) ownerName - The name of the item owner, i.e., MCB CL, M CCS, PPV, Company Name, etc.
- m) valveMaterial - The material composition of the valve. Domain values, i.e., ductileIron, carbonSteel, etc.
- n) valvePosition - The normal status or operating position of the valve. Domain values i.e., normallyClosed, normallyOpen, other, tbd, unknown.
- o) valveType - The normal status or operating position of the valve. Domain values i.e., flowControl, butterfly, check, gate, postIndicator, etc.
- p) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, etc.
- q) wastewaterNodeType - The type of wastewater network node that this feature represents. i.e., sSystemValve.

CLJN.CL.WastUtilNode_SReleaseValve (point) - The location of a wastewater device used to purge air from a force main.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- d) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) ownerName - The name of the item owner, i.e., MCB CL, M CCS, PPV, Company Name, etc.
- m) valveMaterial - The material composition of the valve. Domain values, i.e., ductileIron, carbonSteel, etc.
- n) valveType - The normal status or operating position of the valve. Domain values i.e., airRelease.
- o) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, etc.
- p) wastewaterNodeType - The type of wastewater network node that

this feature represents. i.e., sReleaseValve.

CLJN.CL.WastUtilNode_SGreaseTrap (point) - The location of a tank which separates grease from water, collects the grease for removal, and allows the water to exit.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) mediaId - gpsDataCollected
- h) MetadataId - metaID000072
- i) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- j) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- k) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, etc.
- l) wastewaterNodeType - The type of wastewater network node that this feature represents. i.e., sGreaseTrap.

CLJN.CL.WastUtilNode_STank (point) - The location of a container for storage of products associated with the wastewater network.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) diameter - Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.5, 1.75, 2, etc.
- d) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription- The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- j) hasSecondaryContainment - Yes / No
- k) materialType - The material composition of the feature. Domain values i.e., concrete, etc.
- l) nominalCapacity - The unit total numeric capacity in gallons.

- m) nominalCapacityUom - The unit of measure of the like named value i.e., usGallon
- n) mediaId - gpsDataCollected
- o) MetadataId - metaID000072
- p) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- q) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc
- r) storageTankProduct - The product contained in the storage tank. Domain values i.e., oilyWastewater, rawWater, wasteFuel.
- s) volume - The volumetric capacity of the feature
- t) volumeUom - The unit of measure of the like named value i.e., usGallon
- u) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, oilyWaste, etc.
- v) wastewaterNodeType - The type of wastewater network node that this feature represents. i.e.,stank.
- w) width - The dimension of a feature in feet.
- x) widthUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.

CLJN.CL.WastUtilNode_SOilWateSeparator (point) - The location of a device or structure placed in the wastewater stream to separate water from oil products.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) mediaId - gpsDataCollected
- h) MetadataId - metaID000072
- i) nominalCapacity - The unit total numeric capacity in gallons.
- j) nominalCapacityUom - The unit of measure of the like named value i.e., usGallon
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- m) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, oilyWaste, etc.
- n) wastewaterNodeType - The type of wastewater network node that this feature represents. i.e., sOilWaterSeparator.

CLJN.CL.WastUtilNode_SPump (point) - The location of a piece of wastewater equipment that adds energy to a fluid being conveyed through

a pipe or other closed conduit.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) mediaId - gpsDataCollected
- h) MetadataId - metaID000072
- i) isMainPump - Yes / No
- j) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- k) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- l) pumpType - Type of pump. Domain values i.e., liftstation, booster, submersible, grinder, etc.
- m) ratedFlow - The common rate of flow of each pump.
- n) ratedFlowUom - The rate of flow for each pump. Domain value i.e., galMin
- o) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, etc.
- p) wastewaterNodeType - The type of wastewater network node that this feature represents. i.e., sPump.

CLJN.CL.Feat_SPumpStation (polygon) - The location of a facility that collects and discharges wastewater via pumps.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature.
- e) featureDescription - The narrative describing the feature. (Review current data for description)
- f) featureName - The common name of the feature. (Review current data for common name)
- g) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- h) hasGeneratorBackup - Yes / No
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) isMainPump - Yes / No
- l) nominalCapacity - The station total capacity in gallons.
- m) nominalCapacityUom - The unit of measure of the like named value i.e., usGallon
- n) numberOfPumps - The number of pumps in the feature.
- o) operationalStatus - The state of usability of the feature

- i.e., inService, notInService, abandoned, etc.
- p) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- q) pumpStationType - Type of pumping station. Domain value i.e., pumpingStation, ejectorStation, liftStation, etc.
- r) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, etc.
- s) wastewaterNodeType - The type of wastewater network node that this feature represents. i.e., sPumpStation.

CLJN.CL.Feat_SSepticTankPoint (point) - The location of a small-scale anaerobic digester and leach field designed to treat wastewater from an individual facility, and is not connected to the wastewater collection system.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) materialType - The material composition of the feature. Domain values i.e., plastic, concrete, fiberglass, etc.
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., wastewater.
- k) nominalCapacity - The unit total numeric capacity in gallons.
- l) nominalCapacityUom - The unit of measure of the like named value i.e., usGallon
- m) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- n) secondaryContainment - Indicates the storage tank has a secondary containment area that contains spills. Domain values i.e., concreteVault, doubleBottom, plasticPanSystem, other, etc.
- o) septicTankType - The type of septic tank. Domain values, i.e., mound, septicTank, etc.
- p) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., domesticSewage, etc.
- q) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- r) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, oilyWaste, etc.
- s) wastewaterNodeType - The type of wastewater network node that this feature represents. i.e., tbd

CLJN.CL.WastUtilSegment (polyline) - The location of a feature used for

the conveyance of wastewater. All polylines shall be drawn in the direction of flow with no breaks except for what is naturally occurring such at nodes, etc.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- d) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) materialType - The material composition of the feature. Domain values i.e., asbestosCement, pvc, etc.
- j) invertElevationDownstream - Numeric number of the elevation downstream invert in inches.
- k) invertElevationDownstreamUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, etc.
- l) invertElevationUpstream - Numeric number of the elevation upstream invert in inches.
- m) invertElevationUpstreamUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, etc.
- n) isLined - Yes / No
- o) mediaId - gpsDataCollected
- p) MetadataId - metaID000072
- q) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- r) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- s) pipeType - The type of pipe used. Domain values i.e., box, circular, pipArch, tbd, etc.
- t) slope - The slope of the bottom of the subject item expressed as a percentage.
- u) wastewaterNetworkSubType - The subtype of wastewater network in which this feature participates, i.e., domesticSewage, etc.
- v) wastewaterSegmentType - The type of wastewater network segment that this feature represents. Domain values i.e., sForceMain, sGravityMain, sLateralLine, sPressurizedServiceLine, etc.

1.4.12 Feature Dataset CLJN.CL.Utilities_Stormwater

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.StormUtilNode_SwInlet (point) - The location where stormwater is collected and received into the utility system.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. Values i.e., CATCHBASIN, ENDWALL, HEADWALL, INLET, ETC.
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) inletCoverType - The type of inlet cover. Domain values i.e., Domain values i.e., concrete, metalGate, etc.
- h) inletDiameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.5, 1, 4, etc.
- i) inletDiameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- j) inletOpeningSize - The size of the inlet opening in inches.
- k) inletOpeningSizeUom - The unit of measure for the inlet opening size. Domain values, i.e., 0.0254 metres, inches etc.
- l) invertElevation - The elevation of the bottom of the feature in inches.
- m) invertElevationUom - The invert elevation. Domain values, i.e., length equal to .0254, inch, etc.
- n) materialType - The material composition of the feature. Domain values i.e., concrete, steel, pvc, etc.
- o) mediald - gpsDataCollected
- p) MetadataId - metaID000072
- q) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- r) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- s) rimElevation - The elevation at the top of the feature in feet.
- t) rimElevationUom - The unit of measure for rim elevation. Domain values i.e. measurement equal to 0.3048 metres, etc.
- u) stormwaterInletType - The type of stormwater inlet feature. Domain values i.e., catch basin, curbinlet, grateInlet, weirInlet, etc.
- v) stormwaterNodeType - The type of stormwater network node that this feature represents. Domain values i.e., swCatchBasin, swCleanout, swDownspout, swInlet, swInfall, etc.

CLJN.CL.Feat_SwUgEnclosureAccess (point) - The location of a Stormwater access point to the related Stormwater underground enclosure.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- d) diameterUom - The diameter unit of measure. Domain values,

- i.e., 0.0254 metres, inches etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. Values i.e., swManhole, etc.
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) invertElevation - The elevation of the bottom of the feature in inches.
- j) invertElevationUom - The invert elevation. Domain values, i.e., length equal to .0254, inch, etc.
- k) mediaId - gpsDataCollected
- l) MetadataId - metaID000072
- m) networkType - The type of stormwater network node that this feature represents. Domain values i.e., stormwater.
- n) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- o) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- p) rimElevation - The elevation at the top of the feature in feet.
- q) rimElevationUom - The unit of measure for rim elevation. Domain values i.e. measurement equal to 0.3048 metres, etc.
- r) stormwaterUtilityFeatureType - The type of stormwater utility feature, i.e., swUgEnclosureAccess
- s) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., stormwater, etc.

CLJN.CL.StormUtilSeg (polyline) - The location of a feature used for the conveyance of stormwater. For example, a pipeline, culvert, or ditch. All polylines shall be drawn in the direction of flow with no breaks except for what is naturally occurring such at nodes, etc.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- d) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The narrative describing the feature. (Review current data for description)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) invertElevation - The elevation of the bottom of the feature in inches.
- j) invertElevationUom - The invert elevation. Domain values, i.e., length equal to .0254, inch, etc.

- k) invertElevationDownstream - Numeric number of the elevation downstream invert in inches.
- l) invertElevationDownstreamUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, etc.
- m) invertElevationUpstream - Numeric number of the elevation upstream invert in inches.
- n) invertElevationUpstreamUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, etc.
- o) mediaId - gpsDataCollected
- p) MetadataId - metaID000072
- q) openDrainSurface - The surface material of the drain, typically at the bottom of the structure.
- r) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- s) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- t) percentSlope - The slope of the bottom of the subject item expressed as a percentage.
- u) pipeType - The type of pipe used. Domain values i.e., box, circular, pipArch, tbd, etc.
- v) stormwaterSegmentType - The type of stormwater network segment that this feature represents. Domain values i.e., swCulvert, swForceMain, swGravityMain, swLateralLine, swOpenDrain, swSwale, swTrenchDrain, tbd.

CLJN.CL.StormUtilNode_SwOilWateSepa (point) - The location of a device or structure placed in the stormwater stream to separate water from oil products.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service degradationIndex
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- h) isCovered - Yes / No
- i) nominalCapacity - The numeric volume of the feature when filled to its design capacity.
- j) nominalCapacityUom - The unit of measure of the like named value. Domain values i.e., usgallon
- k) operationalStatus - The state of usability of the feature i.e., inService, abandoned, etc.
- l) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- m) stormwaterNodeType - The type of stormwater network node that this feature represents. Domain values i.e., swCatchBasin, swCleanout, swDownspout, swInlet, swInfall, etc.

CLJN.CL.Feat_SwRetentionBasinArea (polygon) - The location of a human-created area installed to improve water quality by permanently storing runoff.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) mediaId - gpsDataCollected
- h) MetadataId - metaID000072
- i) networkType - The type of stormwater network node that this feature represents. Domain values i.e., stormwater.
- j) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- k) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- l) stormwaterUtilityFeatureType - The type of stormwater utility feature, i.e. swRetentionBasinArea
- m) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., stormwater, etc.

1.4.13 Feature Dataset CLJN.CL.Utilities_Thermal

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.TherUtilNode_TPump (point) - The location of a facility that operates to maintain flow at adequate pressure for the thermal system.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.

- g) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- h) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- i) pumpElevation - The elevation of the pump feature in feet.
- j) pumpElevationUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.
- k) pumpType - The type of pump.
- l) ratedFlow - The numeric flow rating of the pump.
- m) ratedFlowUom - The rate of flow for each pump. Domain value i.e., galMin
- n) thermalNodeType - The type of thermal network node that this feature represents, tPump.

CLJN.CL.TherUtilNode_TProdStruc (point) - The location of a facility which produce steam, high-temperature water, low-temperature water, dual-temperature water or chilled water.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) heightAboveSurfaceLevel - The vertical distance measured from the lowest point of the base of the feature at ground or water level to the tallest point of the feature in feet.
- h) heightAboveSurfaceLevelUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) nominalCapacity - The numeric volume of the feature when filled to its design capacity
- l) nominalCapacityUom - The unit of measure for nominal capacity. Domain value i.e., tons, btu, etc.
- m) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- n) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- o) thermalNetworkSubType - The subtype of thermal network in which this feature participates. Domain values i.e., steamSupply, otherSupply, geothermalSupply (well), highTemperatureHotWaterSupply, etc.
- p) thermalNodeType - The type of thermal network node that this feature represents, tProductionStructure.
- q) thermalProdStrucType - The type of production structure based upon various classifications including methods of transferring heat, piping arrangement, pumping arrangement, or the relative temperature of transferred media. Examples include Boilers, Chillers, Cooling Towers, Heat Pumps, Single/Double pipe systems, Low/Medium/High Temperatures

systems, etc.

- r) volume - The volumetric capacity of the feature
- s) volumeUom - Rate of flow in tons, btu, etc.

CLJN.CL.TherUtilNode_TCondCollector (point) - The location of a thermal related well or a tank that collects condensation.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- h) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- i) thermalNetworkSubType - The subtype of thermal network in which this feature participates. Domain values i.e., chilledWaterReturn, dualTemperatureWaterSupply, geothermalReturn, highTemperatureHotWaterSupply, lowTemperatureHotWaterSupply, steamSupply, etc.
- j) thermalNodeType - The type of thermal network node that this feature represents, tCondCollector.

CLJN.CL.TherUtilNode_TSystemValve (point) - The location of a device that regulates, directs, or controls the flow of steam or water.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- h) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- i) thermalNetworkSubType - The subtype of thermal network in which this feature participates. Domain values i.e., chilledWaterReturn, dualTemperatureWaterSupply, geothermalReturn, highTemperatureHotWaterSupply, lowTemperatureHotWaterSupply, steamSupply, etc.

- j) thermalNodeType - The type of thermal network node that this feature represents, tSystemValve
- k) valveMaterial - The material composition of the valve. Domain values i.e., steel, etc.
- l) valvePosition - The normal status or operating position of the valve. Domain value i.e., normallyClose, normallyOpen, other, tbd, unknown.
- m) valveType - The normal status or operating position of the valve. Domain values i.e., reliefValve, flowControl, gate, pressureRegulator, pressureReducing, etc.

CLJN.CL.Feat_TUgEnclosureAccess (point) - The location of a thermal access point to the related thermal underground enclosure.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- h) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- i) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- j) networkType - The primary type of utility network to which this feature relates. Domain values i.e., thermal.
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- m) thermalUtilityFeatureType - The type of thermal utility feature tUgEnclosureAccess.
- n) thermalNetworkSubType - The subtype of thermal network in which this feature participates. Domain values i.e., steamSupply, otherSupply, geothermalSupply, highTemperatureHotWaterSupply, etc.

ThermalUtilitySegment (polyline) - The location of a feature used for the conveyance of steam, high-temperature water, low-temperature water, or chilled water. All polylines shall be drawn in the direction of flow with no breaks except for what is naturally occurring such at nodes, etc.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.

- c) depth - The distance, measured vertically downward to the base in inches.
- d) depthUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- f) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- g) facilityNumber - Asset number used for visual identification of the facility.
- h) featureDescription - The narrative describing the feature. (Review current data for description)
- i) featureName - The common name of the feature. (Review current data for common name)
- j) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- m) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- n) materialType - Type of segment material. Domain values i.e., steel, castiron, etc.
- o) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- p) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- q) pipeType - The type of pipe used. Domain values i.e., box, circular, pipArch, tbd, etc.
- r) thermalNetworkSubType - The subtype of thermal network in which this feature participates. Domain values i.e., steamSupply, otherSupply, geothermalSupply, highTemperatureHotWaterSupply, etc.
- s) thermalSegmentType - The type of termal network segment that this feature represents. Domain values i.e., tMainLine, tService Line.

1.4.14 Feature Dataset CLJN.CL.Utilities_Water

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.WateUtilNode_WSystemValve (point) - The location of a device that regulates, directs, or controls the flow of water.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) depth - The distance, measured vertically downward to the base in inches.

- d) depthUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- f) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- g) facilityNumber - Asset number used for visual identification of the facility.
- h) featureDescription - Utilize CLJN.CL.Feat_WUtilityArea to use Service Area Values i.e., Stone Bay, Onslow Beach, Handnot Point, etc.
- i) featureName - The common name of the feature. (Review current data for common name)
- j) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- k) mediaId - gpsDataCollected
- l) MetadataId - metaID000072
- m) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- n) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- o) turnDirectionToClose - The turn direction to close the valve. Domain values i.e., leftToClose, rightToClose, other, na, tbd, unknown, etc.
- p) valveMaterial - The material composition of the valve. Domain values i.e., ductileIron, steel, pvc, etc.
- q) valvePosition - The normal status or operating position of the valve. Domain value i.e., normallyClose, normallyOpen, other, tbd, unknown.
- r) valveType - The subtype of water network in which this feature participates. Domain values i.e., ball, gate, postIndicator, waterServiceValve, postIndicator, fireHydrantValve, etc.
- s) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater, etc.
- t) waterNodeType - The type of water network node that this feature represents. Domain values i.e., wAirGap, wControlValve, wFireHydrant, wFitting, wFlushingStation, wHydrant, wMeter, etc.

CLJN.CL.WateUtilNode_WReliefValve (point) - The location of a water related device designed to release when the set pressure is exceeded.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) depth - The distance, measured vertically downward to the base in inches.
- d) depthUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 1.75, 2, etc.
- f) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.

- g) facilityNumber - Asset number used for visual identification of the facility.
- h) featureDescription - The common name of the feature. (Review current data for common name)
- i) featureName - The common name of the feature. (Review current data for common name)
- j) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- k) mediaId - gpsDataCollected
- l) MetadataId - metaID000072
- m) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- n) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- o) valveMaterial - The material composition of the valve. Domain values i.e., steel, pvc, etc.
- p) valveType - The subtype of water network in which this feature participates. Domain values i.e., wReliefValve.
- q) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.
- r) waterNodeType - The type of water network node that this feature represents. Domain values i.e., wReliefValve

CLJN.CL.WateUtilNode_WPressReduStation (point) - The location of a feature which reduces the pressure from line pressure to the desired operating pressure and can switch from low to high pressure for flushing.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) featureDescription - The common name of the feature. (Review current data for common name)
- d) featureName - The common name of the feature. (Review current data for common name)
- e) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- f) mediaId - gpsDataCollected
- g) MetadataId - metaID000072
- h) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- i) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- j) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.
- k) waterNodeType - The type of water network node that this feature represents. Domain values i.e., wPressureReducingStation.

CLJN.CL.WateUtilNode_WBackPrevDevice (point) - The location of a

feature that is used to protect water supplies from contamination or pollution.

- a) bfpType - Backflow prevention device type. Domain values i.e., ag, avb, dcva, pvb, rpz, spvb, etc.
- b) contractNumber - The contract number associated with the feature.
- c) dateInService - The date the utility equipment was put in service.
- d) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.75, 2, etc.
- e) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- f) featureDescription - The common name of the feature. (Review current data for common name)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- m) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.
- n) waterNodeType - The type of water network node that this feature represents. Domain values i.e., wBackflowPreventionDevice.

CLJN.CL.WateUtilNode_WMeter (point) - The location of a device used to measure the quantity and/or rate of water flowing through a pipe, which may be the amount of water used by the customer.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.75, 2, etc.
- d) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The common name of the feature. (Review current data for common name)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) fittingType - The type of pipe fitting. Domain values i.e., bend, tap, cap, other, tbd, etc.
- i) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- j) isAmi - The yes or no indicator of whether or not the meter

- is an AMI or smart meter.
- k) mediaId - gpsDataCollected
- l) MetadataId - metaID000072
- m) meterType - The type of meter. Domain values i.e., turbine, rotary, etc.
- n) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- o) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- p) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.
- q) waterNodeType - The type of water network node that this feature represents, wMeter.

CLJN.CL.WateUtilNode_WHydrant (point) - Hydrants not exclusively used for firefighting. Secondary uses are flushing main lines and laterals, filling tank trucks, and providing a temporary water source for construction jobs.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The common name of the feature. (Review current data for common name)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) HydrantPurpose - The purpose of the Hydrant. Values i.e., fireHydrant, flushedFDC, YardHydrant, etc.
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- k) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- l) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.
- m) waterNodeType - The type of water network node that this feature represents. Domain values i.e., whHydrant.

CLJN.CL.WateUtilNode_WFireHydrant (point) a valve connection on a water supply system having one or more outlets and that is used in firefighting to supply hose and fire department pumpers with water.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.

- c) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.5, 1.75, 2, etc.
- d) diameter1 - The diameter of the outlet.
- e) diameter2 - The diameter of the outlet.
- f) diameter3 - The diameter of the outlet.
- g) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- h) facilityNumber - Asset number used for visual identification of the facility.
- i) featureDescription - The common name of the feature. (Review current data for common name)
- j) featureName - The common name of the feature. (Review current data for common name)
- k) fireConnectionType - The yes or no indicator of whether or not the fire hydrant is a fire protection connection. Yes or No
- l) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- m) hydrantNumber - The equipment number as designated by the fire department that is primarily responsible for the fire hydrants operation and maintenance.
- n) inletDiameter - The diameter of the inlet.
- o) inletDiameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- p) mediald - gpsDataCollected
- q) MetadataId - metaID000072
- r) isFireConnection - The yes or no indicator of whether or not the fire hydrant is a fire protection connection. Yes or No
- s) outletDiameter - The diameter of the outlet.
- t) outletDiameter1 - The diameter of the outlet.
- u) outletDiameter2 - The diameter of the outlet.
- v) outletDiameter3 - The diameter of the outlet.
- w) outletDiameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- x) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- y) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- z) waterNodeType - The type of water network node that this feature represents, wFireHydrant.

CLJN.CL.WateUtilNode_WFitting (point) - The location of a mechanical device that connects two or more pipes, or caps or plugs a single pipe, on the water system.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) Diameter - The diameter of the feature in inches. Domain value i.e., .5, 1, 1.25, 1.5, 1.75, 2, etc.
- d) diameter1 - The diameter of the outlet.
- e) diameter2 - The diameter of the outlet.
- f) diameter3 - The diameter of the outlet.
- g) diameter4 - The diameter of the outlet.
- h) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.

- i) facilityNumber - Asset number used for visual identification of the facility.
- j) featureDescription - The common name of the feature. (Review current data for common name)
- k) featureName - The common name of the feature. (Review current data for common name)
- l) fittingType - The type of pipe fitting. Domain values i.e., bend, cap, tee, etc.
- m) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- n) mediaId - digitized
- o) MetadataId - metaID000071
- p) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- q) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- r) waterNodeType - The type of water network node that this feature represents. Domain values i.e., wfitting.
- s) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.

CLJN.CL.WateUtilNode_WPump (point) - The location of a water related piece of equipment that adds energy to a fluid, such as water, being conveyed through a pipe or other closed conduit.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The common name of the feature. (Review current data for common name)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) mediaId - gpsDataCollected
- h) MetadataId - metaID000072
- i) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- j) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- k) pumpType - Type of pump. Domain values i.e., booster, submersible, etc.
- l) ratedFlow - The common rate of flow of each pump.
- m) ratedFlowUom - The rate of flow for each pump. Domain value i.e., galMin
- n) waterNodeType - The type of water network node that this feature represents. Domain values i.e., wpump.
- o) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.

CLJN.CL.WateUtilNode_WStorageStructure (point) - The location of a facility that store large volumes of water.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) Elevation - The elevation from a specified vertical datum to the highest point on a feature.
- d) elevationUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The common name of the feature. (Review current data for common name)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- j) groundElevation - The elevation of the ground at the location of the item in feet.
- k) invertElevation - The elevation of the bottom of the feature in feet.
- l) mediaId - gpsDataCollected
- m) MetadataId - metaID000072
- n) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- o) overflowElevation - The elevation of the overflow device (i.e., pipe invert).
- p) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- q) secondaryContainment - Indicates the storage tank has a secondary containment area that contains spills. Domain values i.e., concreteVault, doubleBottom, plasticPanSystem, other, etc.
- r) storageTankProduct - The product contained in the storage tank.
- s) storageTankType - The primary type of storage tank.
- t) topElevation - The elevation at the top of the feature.
- u) topElevationUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.
- v) volume - The volumetric capacity of the feature in usgallons.
- w) volumeUom - Unit of measure in usgallons
- x) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.
- y) waterNodeType - The type of water network node that this feature represents. Domain values i.e., wstorageStructure.
- z) width - The dimension of a feature in feet.
- aa) widthUom - The unit of measure Domain values i.e. 0.3048 metres, feet, etc.

CLJN.CL.Feat_WUgEnclosureAccess (point) - The location of a water access point to the related water underground enclosure.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.5, 1.75, 2, etc.
- d) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) facilityNumber - Asset number used for visual identification of the facility.
- f) featureDescription - The common name of the feature. (Review current data for common name)
- g) featureName - The common name of the feature. (Review current data for common name)
- h) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- i) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- j) lidDiameter - Diameter of the lid or cover that allows access to the manhole.
- k) lidDiameterUom - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 2, etc.
- l) lidMaterial - Material type of the manhole access lid or cover.
- m) mediaId - gpsDataCollected
- n) MetadataId - metaID000072
- o) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- p) ownerName - The name of the item owner, i.e., MCB CL, MCCA, PPV, Company Name, etc.
- q) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.
- r) waterUtilityFeatureType - The type of water utility feature i.e., wUgEnclosureAccess.

WateUtilNode_WSource(point) - A source of water intake to the water system including reservoirs, natural water bodies, wells, and/or feeds from external water networks. Do not delete potable from any feature class, please attribute as removed or AIP.

- a) abandonedDate - The date the feature was abandoned - see feature name to add contract number for abandoned.
- b) contractNumber - The contract number associated with the original construction of this feature.
- c) dateInService - The date the utility equipment was put in service.
- d) facilityNumber - Asset number used for visual identification of the facility.
- e) featureDescription - The common name of the feature. (Review current data for common name)

- f) featureName - The common name of the feature. Until such a time that the well is abandoned or removed. (Add contract number associated with removal or abandonment of water well)
- g) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- k) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- l) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.
- m) removedDate - Enter Remove date; however, do not delete water well from well feature class. (Attribute contract number to remove well in featureName)
- n) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.
- o) waterNodeType - The type of water network node that this feature represents. Domain values i.e., wSource.
- p) waterSourceType - Source of water, well.

CLJN.CL.Feat_WScadaSensor (point) - The location of a device that is used to remotely measure the status of water network components as part of a Supervisory Control and Data Acquisition (SCADA) system.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The common name of the feature. (Review current data for common name)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities,
- g) familyHousing, recreational, training, water, etc.
- h) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- i) mediaId - gpsDataCollected
- j) MetadataId - metaID000072
- k) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., water.
- l) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- n) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., water, etc.
- o) waterUtilityFeatureType - The type of water utility feature

is wScadaSensor.

CLJN.CL.Feat_WDemarcationPoint (point) - The location where the water service provider ownership ends, and the customer ownership begins.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The common name of the feature. (Review current data for common name)
- e) featureName - The common name of the feature. (Review current data for common name)
- f) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- g) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
- h) mediaId - gpsDataCollected
- i) MetadataId - metaID000072
- j) networkType - The primary type of utility network to which this feature relates. Domain values, i.e., water.
- k) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
- l) outsideProvider - The name of the outside provider for the Utility Feature.
- m) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- n) utilityNetworkSubtype - The primary subtype of utility to which this feature relates. Domain values i.e., water, etc.
- o) waterUtilityFeatureType - The type of water utility feature is wDemarcationPoint.

CLJN.CL.WaterUtilitySegment (polyline) - The location of a feature used for the conveyance of water.

- a) contractNumber - The contract number associated with the feature.
- b) dateInService - The date the utility equipment was put in service.
- c) depth - The distance, measured vertically downward to the base in inches.
- d) depthUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- e) Diameter - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.5, 1.75, 2, etc.
- f) diameterUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- g) elevation - The elevation at the top of the feature.
- h) elevationUom - The elevation unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- i) facilityNumber - Asset number used for visual identification of the facility.
- j) featureDescription - The narrative describing the feature.

- (Review current data for description)
- k) featureName - The common name of the feature. (Review current data for common name)
 - l) functionalArea - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
 - m) groundConfiguration - The configuration of the asset in relationship to the ground. Domain values i.e., aboveground, elevated, semiBuried, underground, etc.
 - n) invertElevationDownstream - Numeric number of the elevation downstream invert in inches.
 - o) invertElevationDownstreamUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, etc.
 - p) invertElevationUpstream - Numeric number of the elevation upstream invert in inches.
 - q) invertElevationUpstreamUom - The diameter unit of measure. Domain values, i.e., 0.0254 metres, etc.
 - r) lateralSegmentType - The type of lateral water network segment that this feature represents. Domain values i.e., wDomesticLateral, wFireProtectionLateral, wHydrantLateral, wInlineStorageLateral, wIrrigationLateral, wTransportPipeLateral, etc.
 - s) materialType - The material composition of the feature. Domain values i.e., pvc, tbd, etc.
 - t) mediald - gpsDataCollected
 - u) MetadataId - metaID000072
 - v) operationalStatus - The state of usability of the feature i.e., inService, notInService, abandoned, etc.
 - w) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
 - x) waterNetworkSubType - The subtype of water network in which this feature participates. Domain values i.e., fireProtectionWater, nonPotableWater, potableWater, rawWater, saltWater.
 - y) waterSegmentType - The type of wastewater network segment that this feature represents. Domain values i.e., wDistributionMain, wGravityMain, wLateral, wTransmissionMain

1.4.15 Feature Dataset CLJN.CL.Wells

Locate, GPS and collect attribute data as specified for each feature listed with (GPS) accuracy as described in paragraph "Global Positioning System (GPS) Data Collection". Attribute fields may be associated with Domains, which are utilized to constrain the values allowed in a particular field, attribute table or feature class. Domains must be utilized when populating the feature where required.

CLJN.CL.WellPoint - (point) - The man-made vertical excavation penetrating the surface of the Earth used collect environmental samples or monitor fluid or gas characteristics, inject fluids, gases or thermal energy into the subsurface, or extract contamination or other impurities from the subsurface. (*Potable Water Wells used for water distribution are not to be deleted from the this feature class, if they are demolished or AIP, the contract number utilize to make any changes should be attributed in featureName and the operation status should be changed to removed*)

- a) abandonedDate - The date the feature was abandoned - see

- feature name to add contract number for abandoned.
- b) `builtDate` - The calendar date on which the original construction was completed for a facility.
- c) `contractNumber` - The contract number associated with the original construction of this feature.
- d) `depth` - The distance, measured vertically downward to the base in inches.
- e) `depthUom` - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- f) `Diameter` - The diameter of the feature in inches. Domain value i.e., .5, .75, 1, 1.25, 1.5, 2, 3, etc.
- g) `diameterUom` - The diameter unit of measure. Domain values, i.e., 0.0254 metres, inches etc.
- h) `facilityNumber` - Asset number used for visual identification of the facility.
- i) `featureDescription` - Utilize `CLJN.CL.Feat_WUtilityArea` to use Service Area Values i.e., Stone Bay, Onslow Beach, Handnot Point, etc.
- j) `featureName` - The common name of the feature. Until such a time that the well is abandoned or removed. (Add contract number associated with removal or abandonment of water well)
- k) `functionalArea` - The principle activity within a landuse area. Domain values i.e., utilities, familyHousing, recreational, training, water, etc.
- l) `locationAccuracy` - The location accuracy for the data that was collected and verified i.e., Survey Grade GPS
- m) `mediald` - `gpsDataCollected`
- n) `MetadataId` - `metaID000072`
- o) `operationalStatus` - The state of usability of the feature i.e., `inService`, `notInService`, `removed`, etc.
- p) `ownerName` - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company Name, etc.
- q) `removedDate` - Enter Remove date; however, do not delete water well from well feature class. (*Attribute contract number to remove well in featureName*)
- r) `wellCapacity` - The total capacity in gallons.
- s) `wellCapacityUom` - The unit of measure of the like named value i.e., `usGallon`
- t) `wellPurposeType` - The purpose of the well. Domain values extraction.
- u) `wellResourceType` - The resource type which is being extracted, i.e. `waterNonPotable`.

1.4.16 Feature Dataset `CLJN.CL.CadFloorPlan`

All new and renovated buildings or structures shall be required to have a linear representation, "clean floor plan", for each floor. A polyline for each level will include exterior and interior walls, doors and windows, exits and stairwells, etc. No nonpermanent fixtures, such as furniture, shall be included. Please note the dataset/feature name may change, however, the attribution requirements will remain the same.

`CLJN.CL.CadFloorPlan` (polyline) A linear representation of the floor plan representing the outer and inner walls, doors and windows of a building or structure that has been exported into a GIS Feature. (Note - Naming convention may change in the future)

This feature will present all levels, entry, exits, windows,

stairwells. No none permanent fixtures, such as furniture should be included.

- a) contractNumber - The contract number associated with the feature.
- b) builtDate - The date the utility equipment was put in service.
- c) facilityNumber - Asset number used for visual identification of the facility.
- d) featureDescription - The narrative describing the feature. (Review current data for description)
- e) featureName - The narrative describing the feature. (Review current data for description)
- f) florid - Floor Level
- g) mediald - digitized
- h) MetadataId - metaID000071
- i) operationalStatus - The state of usability of the feature i.e., inService, notInService, removed, etc.
- j) ownerName - The name of the item owner, i.e., MCB CL, MCCS, PPV, Company

1.4.17 Non-Compliance

Failure to follow the specification outlined in this document will result in non-acceptance of data deliverable.

Note: Geospatial data delivery does not replace record drawing requirements.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- End of Section --